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25<sup>th</sup> March 2016

Director, Office of Defense Trade Controls Policy  
U.S. Department of State  
PM/DDTC, SA-1, 12th Floor  
2401 E Street, NW  
Washington, DC 20037  
United States of America  
[DDTCTPublicComments@state.gov](http://DDTCTPublicComments@state.gov)

**ATTN: ITAR Amendment--Categories VIII and XIX**

Dear Sir,

I write to you on behalf of the Export Group for Aerospace, Defence & Dual-Use (EGADD), which is a not-for-profit-making special interest industry group, focusing exclusively on all aspects of export and trade control compliance matters, and is the only dedicated national industrial body in the UK dealing exclusively with export and trade control issues. EGADD operates under the joint auspices of ADS Group Ltd (ADS), British Marine, the British Naval Equipment Association (BNEA), the Society of Maritime Industries (SMI), and TechUK.

This is in response to the consultations which were launched by the US Department of State on 9<sup>th</sup> February 2016 ([www.gpo.gov/fdsys/pkg/FR-2016-02-09/html/2016-02587.htm](http://www.gpo.gov/fdsys/pkg/FR-2016-02-09/html/2016-02587.htm)) on the proposals to amend the International Traffic in Arms Regulations (ITAR) to revise Categories VIII (aircraft and related articles) and XIX (gas turbine engines and associated equipment) of the US Munitions List (USML) to describe more precisely the articles warranting control on the USML.

We have been keenly watching from the UK as the on-going overhaul of US export controls has been developing with considerable interest, and are now delighted that, contrary to the pessimistic predictions of some, these efforts have progressed so far. We have always strongly supported the plans for the proposed reforms, from the viewpoint of UK Industry, and are aware that other companies and Industry trade bodies from around the World have equally been watching what has been happening with ECR in the US with equally great interest.

On behalf of UK Industry we would like to submit the following comments and observations to you, for your consideration. As we indicated at our meeting in London with Brian Nilsson, and other senior figures in the DDTC, on Thursday 28<sup>th</sup> January 2016, we very much welcome the opportunity not only to present our views face-to-face, but also to comment on any proposals which are being published for consultation, which we regard as being hugely constructive.

We trust that the DDTC will be receiving informed and constructive technical input and considered views on the series of questions and queries that it has posed in this consultation exercise from other Industry respondees, such as to have the answers that it needs and has sought.

Our own more general and generic comments and observations are as follows:

One of the most fundamentally important aspects of the whole ECR process has been the provision of greater clarity and precision on those items which are deemed to be still on the USML, and, thus, still subject to ITAR control, and the US Government is to be commended for its efforts in this regard, as this instils greater certainty for US exporters, as well as for their overseas industrial and governmental customers and partners. We believe that the State Department is to be warmly congratulated for its role in this, for consulting (in its Notice of Inquiry of 2<sup>nd</sup> March 2015) on where further clarification and certainty was perceived to be needed, and for seeking to provide yet further precision on the USML, which has been invaluable.

However, we are strongly led to believe from comments that we have received that some UK companies who are deeply concerned (we hope incorrectly), from some of the proposals and the tone of this proposed rule change announcement, that there might be some perceptions relating to the significant reconsideration and/or possible reversal of the whole concept behind the ECR process.

We are extremely keen for the fundamental and (in our view) sound reasoning and justification behind the underlying principles of the ECR should not be undermined and potentially fall prey to any aspirations on the part of some who may have a secret desire to try to constrain at least part of it. In our view, this would merely serve to threaten the potential undercutting of many of the intended commercial benefits from ECR process.

If some aspects of the ECR process were able to be reversed, this could force on companies, based both in the US as well as overseas, and their customers, the essential need to re-classify their items and re-assess what the impacts of the regulations are on their classification. Then, in instances where their interpretation is that their status has changed, potentially re-apply for the necessary licensing permissions that they would need, as well as re-configure their internal enterprise resource planning (ERP) systems, etc, as items which had moved from the ITAR to the EAR only since October 2013, were now moved back again. This would be deeply frustrating and resource-intensive for the companies concerned, and add considerably to their operational costs, which would have the potential negative ramification of thereby adding to their overhead costs, with the result of negatively affecting their overall competitiveness. This could also, thereby, generate some confusion, and, with confusion, comes uncertainty, and greater resulting potential threat of inadvertent non-compliance by perfectly responsible and law-abiding companies.

We sincerely hope and pray that the above perception is incorrect.

Thank you in advance for your consideration of these comments. If you have any questions about this correspondence please contact me.

Regards  


Brinley Salzmänn - Secretary, EGADD



**Request for Comments:** “ITAR Amendment— Categories VIII and XIX.” - RIN (1400–AD89).

Airbus Group offers the following comments to RIN 1400-AD89, ITAR Amendment – Categories VIII and XIX:

**Cat VIII(a)(15) (ii)**

Category VIII(a)(15)(ii) covers foreign-origin aircraft which are specially designed to provide functions equivalent to aircraft listed in Category VIII (a)(15)(i). The U.S. military designations listed in Category VIII(a)(15)(i) are generally unfamiliar to non-U.S. military aircraft manufacturers and their suppliers.

In addition, since VIII(a)(1) to VIII(a)(14) does not specify whether the aircraft is of U.S. or of foreign origin, we suggest that foreign aircraft should be captured by a positive description of their functionality and not by “similarity” with U.S.-origin aircraft.

It seems that these functionalities are already covered:

- A-Attack (captured by VIII(a)(2) and VIII(a)(4))
- B-Bomber (captured by VIII(a)(1) and VIII(a)(16))
- E-Special Electronic Installation (captured by VIII(a)(8))
- F-Fighter (captured by VIII(a)(2))
- K-Refueling Tanker (captured by VIII(a)(9))
- M-Multi-mission (captured by VIII(a)(7) and VIII(a)(8))
- P-Patrol (captured by VIII(a)(7) and VIII(a)(8))
- R-Reconnaissance (captured by VIII(a)(7) and VIII(a)(8))
- S-Anti-submarine (captured by VIII(a)(2), VIII(a)(4), VIII(a)(7) and VIII(a)(8))

Proposed Changes

**Delete VIII(a)(15)(ii)**

Alternatively, if VIII(a)(15)(ii) is not delete, a note should be added to VIII(a) to read

**Note (3) to paragraph (a): U.S. Military Designations are as follows: A-Attack, B-Bomber, E-Special Electronic Installation, F-Fighter, K-Refueling Tanker, M-Multi-mission, P-Patrol, R-Reconnaissance, or S-Anti-submarine.**

**Cat VIII(h)(2)**

The following performance levels are not specifically military

- Internal pitch line velocities above 20,000 feet per minutes may be used in all sorts of helicopters regardless of their military application or not; and
- Ability to operate 30 minutes with loss of lubrication and without an emergency auxiliary lubrication may be a safety requirement in demanding environments, such as civil passenger transportation at sea, or Oil & Gas missions (including the ability to continue flight after the helicopter has been fired at)

**Cat VIII(h)(3)**

Tail boom and rotor blade folding systems allows optimizing space when operating helicopters in narrow environments, especially on ships.

Although mostly used for military naval helicopters, such technology could also be used for civil end-uses, such as Oil & Gas helicopters or VIP helicopters operated aboard yachts. This technology should therefore not be considered as a military specific function.

**Cat VIII(h)(20) - Note to paragraph VIII(h)(20)**

This note is repeated in multiple locations throughout the USML Paragraph 121( Cat IV, Cat VI, Cat XI, Cat XV, ...), we suggest that a definition of “Classified” be incorporated in Paragraph 120, rather than repeated throughout the various Categories with the same wording.

**Cat. VIII(h)(27)**

This technology allows to differentiate the output speed between the main rotor and the helicopter’s propellers, and to vary the speed of the propeller.

This technology is not specifically military and allows for specific levels of performance that would benefit civil aircraft:

- Varying the speed of propellers is a safety feature, especially when the helicopter is grounded in narrow environments
- Varying the speed of propellers / turboprops addresses environment concerns: varying the speed of turboprops can enhance fuel efficiency as well as reduce the helicopter noise.



For further information, please contact Corinne Kaplan at 703 466 5741, or  
Corinne.kaplan@airbusna.com.

Respectfully,

A handwritten signature in blue ink, appearing to be "P. Cardin", with a long horizontal line extending to the right.

Pierre Cardin

SVP, Group Export Compliance Officer

A handwritten signature in blue ink, appearing to be "A. Groba", written in a cursive style.

Alexander Groba

Coordinator U.S. Regulations



March 18, 2016

Mr. C. Edward Peartree, Director  
Office of Defense Trade Controls Policy  
Directorate of Defense Trade Controls  
Department of State  
SA-1, 12th Floor  
Washington, DC 20522-0112

**Subject: Review of USML Categories VIII and XIX**

**Reference: Federal Register/ Vol. 81, No. 26/ Tuesday, February 9, 2016/ Proposed Rule: Amendment to the International Traffic in Arms Regulations: U.S. Munitions List Categories VIII and XIX**

Dear Mr. Peartree,

Thank you for the opportunity to provide comments on the *Amendment to the International Traffic in Arms Regulations: U.S. Munitions List Categories VIII and XIX*, published February 9, 2016. The Boeing Company (“Boeing”) appreciates the level of effort required to accomplish the challenging objectives of Export Control Reform (“ECR”) and we hope our comments further your intent in this regard.

Overall we have found Categories VIII and XIX clear with respect to their controls, and appreciate the State Department’s incorporation in this Proposed Rule of several of Boeing’s recommendations submitted in response to the Notice of Inquiry of March 2, 2015<sup>1</sup>. In particular, the removal of the control in VIII(a)(11) for aircraft incorporating a mission system; the revision to VIII(f) regarding DoD contract amendments; the removal of the control in VIII(h)(13) on lithium-ion batteries; the revisions to VIII(h)(2) on gearboxes; the revision to VIII(h)(18) to include specially designed parts and components; the removal of the control in VIII(h)(24) on thermal engines; and the addition of a note to Category XIX excluding from ITAR control engines incorporated into a 9A610.a aircraft.

We have identified several sections in this newest draft where additional clarification to the regulatory text would be helpful to prevent redundancy, vagueness, or inconsistent application. These address several controls affecting unmanned aerial vehicles (UAVs) in VIII(a)(5) for UAVs incorporating or specially designed to incorporate a defense article; VIII(d) for launching and recovery equipment; VIII(h)(6) for UAV airborne launching systems; VIII(h)(8) and VIII(h)(12) for flight control systems; and VIII(h)(29) for flight control algorithms. In addition, we comment on the proposed language in VIII(h)(27) on gearboxes and in VIII(h)(6) on launchers. Finally, we

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<sup>1</sup> March 2, 2015, “Notice of Inquiry, Request for Comments Regarding Review of United States Munitions List Categories VIII and XIX.” 80 Fed. Reg. 11314 and 80 Fed. Reg. 11315



recommend a change to Category VIII and ECCN 9A610 to address the issue of Category XIII materials incorporated into military aircraft parts and components.

**Specific Comments:**

**1. VIII(a)(5): Unmanned aerial vehicles incorporating a defense article**

We appreciate the change to VIII(a), but we have concerns about continuing to maintain a separate control in VIII(a)(5) on UAVs. Specifically, we believe VIII(a)(5) should be removed in its entirety because the control is redundant given that all sub-categories under the proposed VIII(a) would capture UAVs by defining the technical parameters for USML control. As proposed, it is not clear if a UAV equipped with electro-optical and infrared payloads controlled in USML Category XII would fall under VIII(a)(5) or VIII(a)(7). Certain Boeing base configuration UAV platforms are equipped with such payloads and are used for the purpose of intelligence, surveillance, and reconnaissance (ISR) missions. The proposed language in VIII(a)(7) clearly defines these UAVs when equipped with these payloads, as does VIII(a)(5). Boeing does not see any areas in which the sub-paragraphs in VIII(a), or the “see through principle,” would fail to capture a USML-controlled technology related to, or used on, a UAV controlled under the USML proposed category VIII(a).

- **Recommendation:** Remove VIII(a)(5) in its entirety.

**2. VIII(d): Launching and recovery equipment**

Boeing UAV launching and recovery equipment includes systems for small UAVs (less than 600 kg maximum gross takeoff weight (“MGTOw”)) to take off from or land on vessels; for example, pneumatic rail-based launchers and vertical rope capture systems. We believe the intent of the proposed language is to capture the equipment for larger aircraft, including large UAVs, to launch from or land on a ship controlled on the USML, but not to capture the systems used to launch or capture smaller UAV platforms on a vessel in VI(a)-(c). Therefore, we recommend the addition of a qualifier to make clear that this control is limited to launch and recovery equipment for military platforms over 600 kg MGTOw.

- **Recommendation:** Modify the text of VIII(d), as follows:

“Launching and recovery equipment specially designed to allow an aircraft **with a maximum gross takeoff weight (MGTOw) greater than 600kg** described in paragraph (a) of this category to take off **from** or land on a vessel described in Category VI paragraphs (a) through (c) (MT if the launching and recovery equipment is



for an aircraft, excluding manned aircraft, that has a range equal to or greater than 300 km).

### **3. VIII(h)(6): UAV airborne launching systems and aircraft rocket launchers**

Our recommendations for VIII(h)(6) include one qualification on the UAV-specific control and one clarification on aircraft-based rocket launchers. With regard to the proposed control on airborne UAV launching systems, this language would capture a multi-copter that picks up and drops a UAV in the air for launch. Certain systems in development have short endurance (approximately 15 minutes) and a low operating ceiling (less than 5,000 feet), that allow the UAV to launch at minimum airspeed (approximately 20 meters per second). The sole purpose of this system is to accomplish vertical takeoff and landing (VTOL) for a fixed-wing aircraft. Boeing proposes inclusion of technical thresholds in this control so that dual-use VTOL capabilities are not captured. These thresholds will separate UAV launching systems that are used on high altitude, long endurance aircraft versus UAV short flight-duration launching systems.

With regard to launchers, we note that VIII(h)(6) includes various types of launchers for aircraft, but does not specifically include rocket launchers, which are essentially unguided missiles. Such rocket launchers do not appear to be covered in USML Category IV. For clarification, Boeing believes it would be helpful to include rocket launchers for aircraft in VIII(h)(6).

- **Recommendation:** Modify the text of VIII(h)(6), as follows:

\* (h)(6) Bomb racks, missile **or rocket** launchers, missile rails, weapon pylons, pylon-to-launcher adapters, unmanned aerial vehicle (UAV) airborne launching systems **specially designed to launch UAVs above 5000 ft. Above Ground Level (AGL) or greater than 80 meters per second**, external stores support systems for ordnance or weapons, and specially designed parts and components therefor (MT if the bomb rack, missile launcher, missile rail, weapon pylon, pylon-to-launcher adapter, UAV airborne launching system, or external stores support system is for an aircraft, excluding manned aircraft, or missile that has a “range” equal to or greater than 300 km);

### **4. VIII(h)(8) and (h)(12): Flight control systems**

We believe VIII(h)(8) and VIII(h)(12) catch current UAV commercial systems and technologies and, as such, should be refined and combined into one flight control system subparagraph. The proposed language in VIII(h)(8) will capture UAV “sense-and-avoid”



technology, which is a key requirement for the opening of U.S. commercial airspace to UAVs and has been mandated as part of the FAA program to open the commercial airspace to commercial UAVs (see the FAA's document entitled "Integration of Civil Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS) Roadmap" :

[https://www.faa.gov/uas/legislative\\_programs/uas\\_roadmap/media/UAS\\_Roadmap\\_2013.pdf](https://www.faa.gov/uas/legislative_programs/uas_roadmap/media/UAS_Roadmap_2013.pdf) ).

Commercial sense-and-avoid technology will require autonomous collision avoidance and UAV interaction to de-conflict airspace. We believe the proposed language could inhibit development of commercial UAV technology and hamper the FAA program for UAV acceptance into commercial airspace.

- **Recommendation: Merge VIII(h)(8) and (h)(12) into one control for flight control systems:**

(h)(8) Threat-adaptive autonomous flight control systems **specially designed for aircraft controlled in Category VIII(a)**, where a "threat adaptive autonomous flight control system" is a flight control system that, without input from the operator or pilot, adjusts the aircraft control or flight path to minimize risk caused by hostile threats; and ~~unmanned aerial vehicle (UAV)~~ flight control systems and vehicle management systems with swarming capability **specially designed for aircraft controlled in Category VIII(a)** (i.e., **weaponized** UAVs interact with each other **to avoid collisions and to stay together, or, if weaponized, coordinate targeting**) **swarming for the purposes of targeting**) (MT if for an aircraft, excluding manned aircraft, or missile that has a "range" equal to or greater than 300 km);

~~(h)(12) [Reserved] Unmanned aerial vehicle (UAV) flight control systems and vehicle management systems with swarming capability (i.e., UAVs interact with each other to avoid collisions and stay together, or, if weaponized, coordinate targeting) (MT if for a UAV, drone or missile that has a "range" equal to or greater than 300 km);~~

**5. VIII(h)(29): Flight control algorithms or software that aid in landing a fixed-wing aircraft on any vessel controlled in VI(a)-(c)**

We believe this proposed control captures certain commercial UAV technology. Certain Boeing UAV platforms include software algorithms that aid in capture "landing" of the aircraft, but the software algorithms are not unique to vessels or land-based capture activities. For this reason, we propose clarifying language to limit the control to the unique software that gives the ability for fixed-wing aircraft to land on a vessel controlled in Category VI(a)-(c), including UAVs with MGTOW greater than 600 kg.



- **Recommendation:** Modify the text of VIII(h)(29), as follows:

Flight control algorithms or software **specially designed** to aid in landing a fixed-wing aircraft on any vessel controlled in Category VI(a)-(c);

#### **6. VIII(h)(27): Variable speed gearboxes**

Boeing appreciates the change limiting VIII(h)(2) to rotorcraft engines. However, the proposed VIII(h)(27) may yet limit future commercial prop-fan or tilt-rotor development. We believe that the 50 percent output variance criteria proposed in VIII(h)(27) is aimed primarily at tilt-rotor or lift-fan programs. A gearbox of this sort might also employ hydraulic means such as a hydraulic motor/generator to achieve such a controlled variance in output speed. Such a gearbox might be useful to vary rotor speeds in a multi-rotor tilt-rotor or lift-fan aircraft. We believe that such a gearbox would be of more benefit to systems that do not employ variable pitch rotors, or rotors having limited variable pitch. However, the proposed language could limit future commercial drone or manned systems employing tilt-rotor, lift-fan, or prop-fan technology.

- **Recommendation: Modify text of VIII(h)(27)**

(27) Variable speed gearboxes capable of varying output speed by 50% or greater and providing power to rotors, proprotors, propellers, propfans, or liftfans **specially designed for aircraft described in VIII(a)**; and specially designed parts and components therefor;

#### **7. Conflicting controls on USML VIII and ECCN 9A610 aircraft parts and components having USML Category XIII coatings, materials and treatments**

Boeing's letter to the Directorate of Defense Trade Controls ("DDTC") dated December 8, 2015, with comments to proposed revisions to USML Categories VI, VII, XIII, and XX, discussed an issue regarding the classification of parts that have been coated with materials controlled in USML Category XIII. It has come to our attention that the position of DDTC is that parts coated with XIII(j)(2) materials are themselves classified as XIII(j)(2) items. Boeing is raising this again in this letter on USML Category VIII, as well as in our letter to the Bureau of Industry and Security on 9y610, because such parts might otherwise be classified as VIII(h)(1) or ECCN 9A610.

USML Category XIII addresses controls for equipment, materials, coatings, and treatments. Industry practice has generally interpreted materials, coatings, and treatments as raw materials. As



such, when they are applied, incorporated or modified during manufacturing processes they become so fully integrated as to be indistinguishable or inseparable from the item under manufacture. However, under Export Control Reform, the ITAR and published guidance are unclear about how to determine the jurisdiction and classification for aircraft parts that incorporate these materials. It would seem that, when one of these materials is incorporated into a commodity controlled by an ECCN such as 9A610.x, the item retains the jurisdiction and classification of the item, 9A610.x. Alternatively, if the item under consideration is a part otherwise controlled in VIII(h)(1) and incorporates a XIII(j)(2) material, the classification of the part would remain VIII(h)(1).

It has recently come to our attention that this is not a view held by DDTC regarding all materials, coatings, and treatments. Rather, a higher standard has been expressed regarding materials in XIII(j)(2) that turns on the ability to discern any property of the material, coating, or treatment through inspection or testing of the commodity after its application to an item is complete (*i.e.*, the paint has dried). This standard requires the commodity to be classified as XIII(j)(2)\*, regardless of the jurisdiction of the commodity to which the material, coating, or treatment was applied, and any discernible properties with respect to these coatings to be controlled as technical data under XIII(1). By extension, Boeing is applying this standard to other materials in Category XIII, such as XIII(g)(4), that are applied to aircraft parts, moving those parts from 9A610.x to XIII(g)(4)\*.

This alternative standard presents several challenges. First, it has not been published by DDTC and therefore is not broadly understood or applied under the ITAR. Second, it is a difficult standard to apply and one which requires assessing the ability to discern through inspection or testing any property of the material, coating, or treatment for every part, component, or other such commodity incorporating a material or coating controlled under Category XIII. In addition, this interpretation means that many military aircraft parts and components that would otherwise be classified as ECCN 9A610 or VIII(h)(1) become ITAR Significant Military Equipment (“SME”). Prior to Export Control Reform these parts were not designated as SME.

- **Recommendation:** Request DDTC publish guidance as appropriate to clarify the appropriate standard to use for classification of military aircraft parts incorporating Category XIII materials, coatings, and treatments.

One result of classifying parts or components according to their Category XIII materials, coatings, or treatments is confusion between materials and commodities, which could have far-ranging implications.

- **Recommendation:** We recommend the creation of commodity controls in the relevant USML or CCL part and component subcategories. For example, a commodity control could be added to Category VIII to address aircraft parts and components incorporating



Mr. Edward Peartree  
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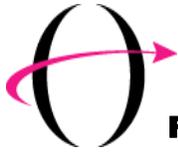
Category XIII materials, coatings, or treatments. In parallel, a Related Control Note could also be added to ECCN 9A610 to direct exporters to review the proposed control in VIII when considering classification of military aircraft parts and components under the EAR. This would ensure that exporters do not misclassify commodities and associated technical data, given that it is not intuitive to look for aircraft part controls in Category XIII, "Materials and Miscellaneous Articles."

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 email at [bryon.l.angvall@boeing.com](mailto:bryon.l.angvall@boeing.com).

Sincerely,

A handwritten signature in black ink that reads "Bryon Angvall". The signature is written in a cursive, flowing style.

Bryon Angvall  
Director, Global Trade Controls



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**Advisors in Export  
Compliance and Licensing**

Submission Via Email

March 25, 2016

Mr. C. Edward Peartree  
Director, Office of Defense Trade Controls Policy  
Directorate of Defense Trade Controls  
U.S. Department of State

**Subject:           Comments on Proposed Revision of USML Categories VIII and XIX, as Propounded in  
Federal Register Notice 81 Fed. Reg. 2587**

Dear Mr. Peartree:

FD Associates, Inc., a consulting firm specializing in providing export compliance support to clients, hereby submits the following comment in response to the February 9, 2016 Federal Register Notice, 81 Fed Reg. 2587 pertaining to the further amendment of USML Categories VIII and XIX as a result of Export Control Reform ("ECR").

These comments are aimed at USML Categories VIII and XIX. However, the comments apply to a number of other USML Categories that have been affected by ECR as well.

In particular, we would like for the Department of State's Directorate of Defense Trade Controls ("DDTC") to revise the language in the (x) paragraphs in both USML Category VIII and XIX to be consistent with the language in the ECR revised version of USML Category XI, XV, and the currently proposed, pending version of the ECR amendment to USML Category XII.

Specifically, we are requesting that the (x) paragraph in both USML Category VIII and USML Category XIX be revised to remove the word "technical data" in both USML Categories, while replacing the term with "technology". By making this simple revision of USML Categories VIII and XIX, DDTC will bring these USML Categories in line with the language in USML Categories XI, XV, and the proposed USML Category XII revision.

We believe that the use of the term "technology" in the (x) paragraphs of ALL USML Categories affected by ECR is appropriate, as the term "technology" is the appropriate term of art under the Export Administration Regulations ("EAR"), and includes not only "technical data" but also the provision of "technical assistance". There isn't a term of art corresponding with "defense service" in the EAR. Rather, the term "technology" is used to include releases of controlled technical data as well as the provision of technical assistance.

By replacing the words “technical data” in the (x) paragraphs in USML Categories VIII and XIX, DDTC will permit exporters, for example, to obtain approval under Technical Assistance Agreements (“TAAs”) for the release of ITAR controlled technical data, ITAR controlled defense services, **and** EAR-controlled “technology” that is to be used “in or with” the ITAR technical data and defense services authorized for release. By using the term “technical data” in the (x) paragraph in USML Categories VIII and XIX, exporters can only license the release of “technical data” controlled for export under the EAR under TAAs or other export approvals issued by DDTC.

EAR-related technical assistance, that is, the release of EAR-controlled “technology”, related to the defense articles, technical data, and defense services authorized under a TAA or other DDTC authorization **cannot** be undertaken by including provisions in the TAA or other document requesting export approval from DDTC for the release of paragraph (x) technical data.

As a result of the use of the term “technical data”, instead of “technology” in USML Categories VIII and XIX, DDTC is, in effect requiring exporters to obtain licensing for the release of EAR-controlled “technology” related to their ITAR programs from the Department of Commerce’s Bureau of Industry & Security (“BIS”) in addition to the export licensing needed for the export of the pertinent defense articles and technical data and the provision of defense services.

We do not believe that it is the intention of the US Government for there to be a requirement for duplicative, unnecessary licensing with two agencies. We believe that exporters should be able to obtain a single export license/authorization for the release of EAR “technology” and the export of EAR hardware that is used “in or with” defense articles. As a result, we request that DDTC revise the (x) paragraphs in USML Categories VIII and XIX to strike the term “technical data” and to insert the term “technology”. Doing so is consistent with the tenets of ECR.

Should you have any questions regarding these comments, please do not hesitate to contact the undersigned by email at [kritterpusch@fdassociates.net](mailto:kritterpusch@fdassociates.net) or by phone to (703) 847-5809.

Cordially yours,  
FD ASSOCIATES, INC.

Keil J. Ritterpusch  
Senior Associate



GE

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March 23, 2016

C. Edward Peartree  
Director, Office of Defense Trade Policy  
Directorate of Defense Trade Controls  
U.S. Department of State  
Washington, D.C.

Regulation ID: RIN 1400-AD89; Public Notice: 9395

**Subject: Comments on Proposed Amendment to the International Traffic in Arms  
Regulations: U.S. Munitions List Categories VIII and XIX**

Dear Mr. Peartree:

On behalf of General Electric Company (GE), the undersigned submits the following comments in response to the Department of State, Directorate of Defense Trade Controls' (DDTC's) February 9, 2016 Proposed Amendment to the International Traffic in Arms Regulations: U.S. Munitions List (USML) Categories VIII and XIX (Proposed Rules) in the International Traffic in Arms Regulations (ITAR) (81 Fed. Reg. 6797). GE welcomes the opportunity to comment on the Proposed Rules.

## **I. SPECIFIC COMMENTS PERTAINING TO USML CATEGORY VIII**

### **1. Paragraph (h)(27)**

Paragraph (h)(27) refers to variable speed gearboxes. GE believes the intent of the proposed paragraph is to control gearboxes that have variable gear ratios, whereby the output shaft speed (rpm) of the gearbox may vary, while the input shaft speed (rpm) remains constant. As written, the Department's proposed language would control any constant ratio gearbox used on an aircraft, including commercial aircraft, because every gearbox enables propeller or rotor speeds to be varied<sup>1</sup>. We believe it is important to clarify this point.

To address this concern, GE recommends a change to paragraph (h)(27) as follows (changes in **RED**):

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<sup>1</sup> Reasons for speed variation include take-off, landing, flight conditions and pilot inputs.

“Variable speed-ratio gearboxes capable of varying output speed by 50% or greater and providing power to rotors, proprotors, propellers, propfans, or liftfans; and specially designed parts and components therefor.”

## 2. Paragraph (h)(30)

In the original export reform changes related to aircraft and related articles, effective October 15, 2013, test models, rigs, jigs and other test equipment listed in (h)(30) (i), (ii), and (iv) were not described in Category VIII. If such equipment were specially designed for an aircraft described in (h)(1), the equipment, if not released pursuant to a ‘specially designed’ release paragraph, would have been classified under the appropriate CCL entry under the EAR, such as 9B610. Placing this equipment on the USML at this time will result in significant expense to Industry with questionable regulatory benefit.

- Industry has already gone through the process of reclassifying items under the October 15, 2013 ECR changes. This change would require the same items to be reclassified for the second time in 3 years.
- Some equipment described under this new paragraph may have already been exported under the EAR.
- If this change is enacted, it will be necessary for the Department to create new transition provisions to accommodate the issues that arise from moving items from the CCL to the USML, including timing and existing licenses.
- This change will likely cause further confusion to Non-US suppliers and customers.
- These changes will also likely lead foreign Governments with jurisdiction over components for this equipment manufactured in their countries to follow suit and classify the components under a military classification. With a military classification, licensing requirements from those Governments will increase, as will related requirements for end-use and end-user certifications (including from the US Government in order for Industry to supply any such equipment containing foreign content to the USG).
- USG insight into the export and use of these types of equipment will exist without making this change. The aircraft for which the equipment is specially designed will still be subject to control under the ITAR, and the equipment itself will be subject to the licensing authority of the Department of Commerce. If there is USG concern about visibility into any such equipment exported pursuant to the EAR STA exception, the Department of Commerce could restrict the use of STA for any such equipment specially designed for (h)(1) aircraft.

To address these concerns, GE recommends deleting these paragraphs.

## II. SPECIFIC COMMENTS PERTAINING TO USML CATEGORY XIX

### 1. Paragraph (b)(2)

GE has a number of concerns regarding the proposed new USML Category XIX(b)(2). Specifically:

- a. The specific power level of 225 appears to be arbitrary
  - i. This level is expected to be met by many next generation medium to heavy lift turboshaft and turboprop engines.
  - ii. There is no unique military significance to the number<sup>2</sup>.
  - iii. Insofar as the engines for these aircraft are designed to meet transport needs, both military and civil users require the performance of engines at or above these levels<sup>3</sup>.
- b. The method of calculating specific power is unclear and ambiguous.
  - i. As the specific power number is seemingly arbitrary, it is difficult to determine what the Department is trying to control. There would be a completely different power level number if the calculation is based on the maximum take-off power allowed under a type certification versus the rating for "one engine inoperable" emergency conditions, a characteristic required in civil aviation.
  - ii. Similarly, there would be a different power level number if the calculation were required at sea-level static conditions, high altitude conditions, standard day conditions, or cold day conditions.
- c. The term "capable" is ambiguous.
  - i. In the context of this control, it is unclear whether it is intended to mean
    - Operational capability that enables an engine to fly to certain prescribed engine missions, or
    - Emergency capability, which goes beyond the operational design limits and enables an engine to operate temporarily beyond its normal limits in an emergency situation.
  - ii. Civil requirements in this area could be more stringent than military.
    - Civil certification standards require the ability, in the event of a single engine failure, to fly safely for a significant amount of time to safe landing with the remaining operable engine, while
    - Most military requirements typically only require the ability to make a forced landing in such an event.

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<sup>2</sup> Commercial engine operators have an equally valid interest in this power level, because it enables more available power with less fuel cost to the operator. The market for new civil transport helicopters has been surging for offshore oil and gas drilling and production, remote search and rescue and passenger transport, with demand for heavier helicopters with greater range, more payload and increased operating margins. Similarly, there is an increased demand for turbo-prop aircraft for general aviation and regions passenger uses, which in turn call for new engines with better power performance. There are numerous trade studies and development programs being considered and the resulting aircraft will require engines that can meet higher power requirements while improving fuel efficiency.

<sup>3</sup> The functionality of the engines is the same: power for lifting and carrying. The engines contain no special military intelligence, functionality or performance capability, and do not contain or facilitate operation of weapons.

- d. The term "armament gas" is ambiguous and potentially overbroad; and should be defined and limited to gases that are unique to armament deployment and conditions that do not occur in civil operations. While GE understands that the Department's intent is to capture designs that are specific and unique to battle conditions, the same consequences arising from armament gas ingestion may be experienced in many civil operating conditions.
- i. Rotorcraft by nature have high thermal and pressure rate of change engine requirements to deal with rotor downwash, sideways and rearward flight exposure to engine exhaust re-ingestion, and to prevent compressor stall in various operating conditions. This is not a unique military requirement. It is a key consideration and requirement for civil use in search, rescue, evacuation and firefighting applications in extreme conditions.
  - ii. DoD's own engine specification guide regarding armament gas ingestion focuses primarily on engine stability when changes in temperature and pressure are experienced, and not on the chemistry involved with ingestion of the gas. Nonetheless, designs related to engine inlet temperature and pressure changes have equally valid civil purposes.
  - iii. Some of the same rapid gas pressure and temperature effects experienced in firefighting and severe oil rig circumstances are experienced from armament deployment. For example burning materials and extremely hot vapor are common concerns for helicopter firefighting operations.
  - iv. While few turboshaft engine requirements that GE sees, including those from the DoD, expressly include armament gas ingestion specifications, all engines have a maximum allowable rate-of-change pressure and temperature requirement. If an engine is capable of armament gas ingestion because it is designed to meet civil pressure and temperature change requirements, it should not be controlled as a military item<sup>4</sup>.
  - v. Not all armament gases are the same.
    - There are pre-ignition vapors, exhaust and residual gases.
    - These types of gases may be found in civil operating environments involving no armaments.
    - Some types of gas may cause engine corrosion by elements and compounds that occur outside of normal or natural conditions. Some of those elements and compounds may result from the use of armaments, but most gases resulting from armament use do not cause concerns that don't also exist in other civil applications as noted above.

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<sup>4</sup> A compressor stall margin necessary to accelerate an engine for takeoff or meet deterioration requirements required by civil operators might also meet armament gas ingestion requirements.

- If armament gas ingestion is to be used to distinguish an engine with unique military capabilities from an engine with capabilities valued in civil applications, it must be limited to those specific gases that do not occur in civil application environments.
  - vi. Unless, this paragraph is changed, GE is seriously concerned that many new designs for civil uses will be captured on the USML<sup>5</sup>.
- e. The term “transient maneuvers” should be defined and limited to maneuvers that are unique to battlefield or military deployment.
  - i. By definition, all maneuvers are transient since no aircraft will perpetually remain in one position.
  - ii. All aircraft are designed to execute particular maneuvers related to their intended operation and safety of flight in expected and unexpected conditions.
  - iii. Applying the plain meaning of transient<sup>6</sup>, this control characteristic would broadly include civil operating flight adjustments to address a sudden or unexpected weather or other natural condition (e.g. updraft from an explosion in a fire).
  - iv. Engines and flight controls are designed to enable quick decisions by a civil aircraft pilot to keep her aircraft safe.
  - v. Applying a broad definition of “transient maneuvers” would result in many civil engines coming under ITAR control<sup>7</sup>.
  - vi. The Department should limit application of this characteristic to maneuvers that are unique to a battle condition. An example of a uniquely military maneuver would be one that results in zero or negative G forces for a sustained duration. There might also be a maneuver duration requirement that would only be needed in a unique military scenario<sup>8</sup>.

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<sup>5</sup> Assuming that the Department does not intend to regulate engines that are designed for civil requirements and applications, GE does not understand what exactly this new USML paragraph is intended to capture. To the extent there is uniquely military requirement to regulate the engines on the USML, we would be better able to help the Department to more accurately and clearly construct the control paragraph if we understood exactly what the Government had in mind. There is little of specific military utility beyond what is required for civil operations in GE’s turboshaft transport engine designs. At the same time, there is a surging demand for helicopters in the civil sector.

<sup>6</sup> According to Merriam-Webster’s on-line dictionary, <http://www.merriam-webster.com/dictionary/transient>, the term means “passing especially quickly into and out of existence”

<sup>7</sup> For example, the CPX38 engine, for which GE obtained a Commodity Jurisdiction from the Department, has a “specific power” of 268.

<sup>8</sup> All civil helicopters will experience some transient negative g loads and FAA Regulations require consideration of those loads: See 29 CFR §29.337 *Limit maneuvering load factor*. The rotorcraft must be designed for— (a) A limit maneuvering load factor ranging from a positive limit of 3.5 to a negative limit of –1.0; or (b) Any positive limit maneuvering load factor not less than 2.0 and any negative limit maneuvering load factor of not less than –0.5 for which— (1) The probability of being exceeded is shown by analysis and flight tests to be extremely remote; and (2) The selected values are appropriate to each weight condition between the design maximum and design minimum weights.

- f. It is unclear whether this control is meant to apply when either armament gas ingestion or a transient maneuver is present, or only when both are simultaneously present. Due to the syntax of the language used to describe the particular characteristics of this control, acceptable application of the English language permits both conflicting interpretations. The control language should be modified to clarify this point.

To address these concerns, GE recommends that paragraph (b)(2) be rewritten to:

- Limit the scope of the control so as to not include civil applications
- Clarify the meaning of “capable” to an objective measurement
- Limit the term “armament gas” to gas produced only as the result of the ignition of propellants included in Category IV of the U.S. Munitions list.
- Limit the term “transient maneuver” to unique military maneuvers not normally required in civil flight conditions and not addressed by any requirement for engine civil certification by a civil aviation authority of a Wassenaar Arrangement Participating State.
- Clarify that both the specified armament gas ingestion and transient maneuver characteristics must be present to be included in the control.
- Define specific power to an objective and measurable independent standard and specify the conditions at which specific power is to be calculated, such as maximum rated takeoff shaft horsepower divided by compressor inlet flow at standard pressure and temperature at rated takeoff horsepower (lbm/sec), where “rated” means calculated in accordance with the applicable requirements of a civil aviation authority for type-certification of an engine’s maximum allowed takeoff horsepower.

## 2. Paragraph (c)

Proposed new language added to Paragraph XIX(c) references unmanned aerial vehicle systems “*controlled in this category*”. GE believes that the Department intended to reference such vehicle systems controlled in Category VIII, and therefore recommends an appropriate change to the reference.

## 3. Paragraph (d)

GE respectfully would like to point out that “GE38” was a marketing name used during the development of the engine which the Army now formally calls the T408. In production, the name of the engine will no longer be “GE38”, so GE recommends removing this name from the list to avoid confusion.

## 4. Paragraph (f)(7)

In the original export reform changes related to aircraft engines, effective October 15, 2013, test stands were not described in Category XIX. If a test stand were specially designed for an engine controlled in this category, the equipment, if not released pursuant to a ‘specially designed’ release paragraph would have been classified under the appropriate CCL entry under the EAR, such as

9B619. Placing test stands on the USML at this time will result in significant expense to Industry with questionable regulatory benefit. Similar concerns to those expressed in GE's Comment above to paragraph VIII(h)(30) are caused by this addition:

- This change will require the same items to be reclassified for the second time in 3 years.
- Some items described may have already been exported under the EAR.
- New Transition provisions will be necessary.
- Further confusion for Non-US suppliers and customers.
- Foreign Governments with jurisdiction over components for the test stands will likely follow suit with a military classification of those components, leading to increased requirements for end-use and end-user certifications.
- This change adds a new concept, not used elsewhere in Category XIX(f): "variable cycle engines." Although one must presume that it does not add any engines not already described in Paragraphs (a) – (d), this term is not defined. Because of the absence of a definition, GE is unsure which engines that are described in these paragraphs would be considered "variable cycle engines." Further GE knows of no explanation why variable cycle engine test equipment should be treated differently than test equipment for any other production engine described in Category XIX.
- There are adequate controls under the EAR's 600-Series for the U.S. Government to maintain oversight over the export of the equipment proposed to be controlled under this new paragraph.

To address these concerns, GE recommends deleting paragraph (f)(7) and changing the text to "Reserved".

#### **5. Paragraphs (f)(8) and (16)**

For reasons analogous to those described for Paragraph (f)(7) and explained in detail in GE's Comment No. 4 above, GE recommends deleting paragraphs (f)(8) and (f)(16) and changing the text to "Reserved".

#### **6. Paragraph (f)(10)**

It is unclear whether the term "three-stream fan systems" in this new paragraph includes systems with two core streams that also extract bleed air for aircraft and accessory usage. GE believes that the intent of the Department in adding this entry to Category XIX is to capture advanced engine technologies relating to complex three-stream airflows. A two-stream system should not be controlled in this Category simply because the fan size is larger to accommodate a non-engine need for bleed air.

To address this concern, GE recommends a note to paragraph (f)(10) be added as follows:

**"Note to paragraph (f)(10): Engine bleed air extracted in the engine fan system shall not be counted as a fan system air stream for purposes of this paragraph."**

## 7. Paragraph (f)(10, 11 and 12)

It appears that it is the Department's intent to regulate commercial engines that may currently be contemplated using the described air stream and compressor technologies. GE questions whether there is a uniquely military application for engines with these technologies or a unique military capability that is not also useful for commercial flight, to justify control on the ITAR. To include these technologies on the USML without any 'specially designed' release possible<sup>9</sup>, will have a chilling effect on consideration of the technologies for commercial engines. While these technologies might be important to national security such that they warrant higher levels of control, GE does not believe, other than to the extent uniquely for an engine controlled in Category XIX, that they should be controlled on the USML and essentially precluded from any commercial use.

To address this concern, GE recommends "specially designed" be included in paragraphs (f)(10), (11) and (12) as follows (changes in **RED**):

"(10) Three-stream fan systems *specially designed for engines controlled in this Category* that allow the movement of airflow between the streams to control fan pressure ratio or bypass ratio (by means other than use of fan corrected speed or the primary nozzle area to change the fan pressure ratio or bypass ratio), and specially designed parts, components, accessories, and attachments therefor;

(11) High pressure compressors *specially designed for engines controlled in this Category* with core-driven bypass streams that have a pressure ratio greater than one, occurring across any section of the bypass duct, and specially designed parts, components, accessories, and attachments therefor;

(12) Intermediate compressors of a three-spool compression system *specially designed for engines controlled in this Category* with an intermediate spool-driven bypass stream that has a pressure ratio greater than one, occurring across any section of the bypass duct, and specially designed parts, components, accessories, and attachments therefor."

## 8. Paragraph (f)(13, 14 and 15)

There are several issues resulting from the addition of Paragraphs (f)(13), (14) and (15).

- a. Paragraph XIX(f) by its own terms, does not include materials. It only covers parts, components, accessories, attachments, associated equipment, and systems. There is a substantial and avoidable risk that people responsible for classifying materials for their companies could miss the requirement. Material controls are more properly listed in USML Category XIII.
- b. Most materials existing or being developed for aircraft engines are being developed for both commercial and military uses. The military is not unique in seeking the advantages that arise from use of these materials in gas turbine engines. If a manufacturer uses a material in a military engine, there are several potentially serious problems:

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<sup>9</sup> 'Specially designed' is not used to describe the controlled fan systems or compressors; only the related parts, components, accessories and attachments.

- Use in an engine described in Category XIX triggers the “catch” part of ‘specially designed’.
  - Many such materials are already in use in civil engines.
  - But there is no “specially designed” release for materials.
  - These materials are primarily being developed with private industry funding.
  - As written, these paragraphs would control:
    - current production thermal barrier coatings in use on nearly every commercial engine currently in production at GE
    - GE’s proprietary current single crystal alloy in use on all modern commercial GE engines
    - ceramic matrix composite material used in the recently certified LEAP-1A engine turbine shroud.
- c. Once a material is transformed into a product it should no longer be regulated as a material. This point must be clarified.

To address these concerns, GE recommends deleting paragraphs (f)(13), (f)(14) and (f)(15) and changing the text to “Reserved”.

In the event GE’s above recommendation to remove paragraphs (f)(13), (14) and (15) are not accepted, GE requests that the Department at least provide mechanisms to release materials used or intended for use in commercial engines similar to those in Section 104.41 paragraph (b) (Specially Designed) of the ITAR, and that once a material is transformed into a commodity, it be released to coverage under the USML or CCL classification applicable to the commodity itself.

GE proposes the following new notes to paragraphs (f)(13), (f)(14) and (f)(15):

“Note 1 to paragraphs (f)(13), (f)(14) and (f)(15): For purposes of these paragraphs, any powder, superalloy or matrix material included in these paragraphs is not specially designed if it:

- (1) Is subject to the EAR pursuant to a commodity jurisdiction determination;
- (2) [Reserved];
- (3) Is identical to a material used in or with a commodity that:
  - i. Is or was in production (*i.e.*, not in development); and
  - ii. Is not enumerated on the U.S. Munitions List;
- (4) Was or is being developed with knowledge that it is or would be for use in or with both defense articles enumerated on the U.S. Munitions List and also commodities not on the U.S. Munitions List; or
- (5) Was or is being developed for use in or with a general purpose commodity, *i.e.*, with no knowledge for use in or with a particular commodity or type of commodity.

“Note 2 to paragraphs (f)(13), (f)(14) and (f)(15): For purposes of these paragraphs, when materials have reached a stage in manufacture where they are clearly

identifiable as commodities, they are not described by the provisions of these paragraphs.

As an alternative, the Department could consider amending the definition of 'specially designed' to allow release of materials under the provisions of 22 CFR 120.41(b).

### 9. Paragraph (f)(16)

In the event GE's recommendations to delete paragraphs (f)(7), (f)(8) and (f)(16) in GE's comments 4 and 5 above are not accepted, and to avoid confusion about which entry describes a particular item, GE recommends a change to paragraph (f)(16) as follows (changes in **RED**):

"The following, if specially designed for a defense article in paragraph (f)(1), and not described in paragraphs (f)(7) or (f)(8):

(i) Jigs, locating fixtures, templates, gauges, molds, dies, or caul plates, for production of engine parts and components; or

(ii) Test cells or test stands."

### 10. Comments related to Paragraphs XIX(f)(1) and VIII(h)(1)

Lastly, because of the order of review rules and the language in Categories XIX(f)(1) and VIII(h)(1), certain types of parts recognized by the USG as being of low regulatory value when dropped to ECCN 9A619.y on the EAR, continue to be controlled as defense articles when used on a Category XIX(f)(1) listed engine or VIII(h)(1) listed aircraft. For ECR to achieve the goal of easing the burden on smaller manufacturers of these items, those parts identified in ECCN's 9A610.y or 9A619.y on the Commerce Control List but unique to XIX(f)(1) listed engines and VIII(h)(1) listed aircraft, should be similarly excluded from the ITAR because they are not critical to national security.

\* \* \* \* \*

GE appreciates the opportunity to provide comments on the Proposed Rules. If you have any questions or require additional information concerning this submission, please contact the undersigned at (781) 594-3406 or by email at: [george.pultz@ge.com](mailto:george.pultz@ge.com) or Kathleen Palma (202) 637-4206 or by email at: [kathleen.palma@ge.com](mailto:kathleen.palma@ge.com).

Sincerely,



George S. Pultz  
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**Gerald Musarra**  
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March 25, 2016

Submitted Via E-Mail ([DDTCTPublicComments@state.gov](mailto:DDTCTPublicComments@state.gov))

Mr. Edward Peartree  
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Directorate of Defense Trade Controls  
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**ATTN: ITAR Amendment – USML Categories VIII and XIX (RIN 1400-AD89)**

Lockheed Martin Corporation (Lockheed Martin) is pleased to submit the following comments in response to the February 9, 2015 proposed rule regarding Categories VIII and XIX of the U.S. Munitions List (USML). The proposed rule follows the March 2, 2015 notice of inquiry that initiated a review of these USML categories to “ensure they are clear, do not inadvertently control items in normal commercial use, account for technological developments, and properly implement the national security and foreign policy objectives of the reform effort.” We appreciate this categorical review as part of the control list “refresh process.” Comprehensive reviews of the USML categories and Commerce Control List (CCL) will greatly help to ensure the objectives of the Export Control Reform (ECR) initiative are achieved.

In particular, regulatory clarifications provided in the proposed rule for the notes, comments related to the order of review, and the interpretation of specially designed parts and components as they pertain to connectors, cables, and cable assemblies are valuable to our export control implementation and compliance program. Proposed changes to the section addressing aircraft-weapon interface units and computers also provides important clarity.

However, the proposed rule does not adequately address several issues that were raised in Lockheed Martin’s May 1, 2015 response to the notice of inquiry, including jurisdiction for the commercial LM-100J aircraft. As discussed below, the LM-100J, as a modern replacement to the aging L-100 commercial aircraft, has a long history of “normal commercial use.” In fact, the proposed revisions to Category VIII acknowledge that the L-100 does not warrant control as a defense article. Controlling the LM-100J, which has similar performance capabilities, on the USML is not in keeping with the stated reform objectives.

Similarly, the proposed control parameters in Categories VIII would capture a number of other commercial items, including civil rotorcraft gearboxes, which do not warrant control on the USML. The following comments also address concerns related to multiple transfers of jurisdictional control and other proposed revisions that warrant further review and clarification.

## **I. USML Category VIII(a)(14): Military Airlift**

Under the current Category VIII(a)(14), “aircraft with a roll-on/roll-off [RO/RO] ramp, capable of airlifting payloads over 35,000 lbs. to ranges over 2,000 nm without being refueled in-flight, and landing onto short or unimproved airfields” are deemed to be military aircraft worthy of control as defense articles. As discussed in our March 2015 comments, Lockheed Martin does not consider these capabilities – which are inherent to existing commercial aircraft and important for many commercial/civil applications – to be sufficient criteria for controlling military aircraft on the USML.

We welcome the proposed change that corrects the inadvertent and unanticipated control of commercial L-100 aircraft (and associated parts & components) on the USML by explicitly excluding the aircraft from (a)(14) controls. The Department has asked for “public comment on the scope and effect of this control and exclusion.” We do not find the rationale for capturing other modern commercial aircraft, which have the same inherent capabilities as the L-100, on the USML simply because they were manufactured after 2013 to be compelling. Accordingly, we have provided new information to assist the Department reassess and modify these proposed controls.

### **LM-100J: A Modern L-100**

L-100 aircraft have been in commercial service and controlled under the jurisdiction of the Department of Commerce for decades. From 1965-1992, Lockheed Martin produced over 100 of these commercial freighters. More than 50 of these legacy L-100s remain in operation today, all of which all have the capability of “airlifting a payload over 35,000 lbs over 2,000 nm,” come equipped with RO/RO, and are capable of “landing onto short or unimproved runways.” The proposed rule acknowledges that the Department “partially accepted” public comments to avoid inadvertent capture of commercial aircraft by excluding “L-100 aircraft manufactured prior to 2013.” Unfortunately, this approach is not sufficient to avoid the inadvertent capture of other commercial U.S. aircraft that are capable of achieving the (a)(14) control parameters, including the LM-100J.

In addition to their age, the L-100 aircraft face other operational challenges, such as complying with air safety and noise/emissions standards and high direct-operating costs relative to newer aircraft. The Lockheed Martin LM-100J is the multi-role commercial aircraft freighter designed to replace these aircraft and serve multiple global markets, including freight transport; heavy equipment and fuel delivery; firefighting; and search & rescue. Although the L-100 requires more manpower and has higher operating and support costs, it is just as capable as the LM-100J in carrying payloads over 35,000 lbs. to ranges over 2,000 nm with the same RO/RO and landing/takeoff capability. The L-100 is simply older and at the end of life-cycle. Accordingly, delineating controls based on manufacture date makes little sense from a national security perspective.

According to the Department of State: “With limited exceptions, the defense articles that warranted control on the USML were those that provided the United States with a critical military or intelligence advantage. All other items were to become subject to the Export Administration Regulations [EAR].” In defining military airlift platforms worthy of control on the USML, the current broad criteria does not meet this objective. The LM-100J offers no unique or sensitive military capability that would warrant control on the USML. The range/payload, austere operating capability, and RO/RO capacities identified as the rationale for inclusion on the USML are all common attributes that commercial aircraft operators around the world are looking for to fulfill their civil, commercial, and humanitarian requirements.

Lockheed Martin is not aware of commercial aircraft other than the LM-100J manufactured in the United States that satisfy these requirements. But that does not mean it is unique. The LM-100J will compete in a class of 16-25 ton aircraft with offerings from numerous foreign competitors – including Russia, Europe, Brazil, and China. All of these competitive aircraft are not identical, and some capabilities (e.g., jet propulsion, expanded cargo space) may be more suitable for certain customer requirements. Lockheed Martin believes the LM-100J is an attractive platform for domestic and international customers looking to fulfill civil, commercial, and humanitarian requirements. Yet, controlling the LM-100J as a military aircraft will greatly complicate the sale, operation, and servicing of these aircraft in a commercial environment making these foreign offerings more attractive.

Control on the ITAR presents substantial obstacles to the potential civil operators, including additional restrictions on marketing and financing, complicating the provision of parts and maintenance to broken aircraft, increased licensing requirements for related services, and temporary import license requirements for repair of spares serviced in the United States. These complications not only increase the cost of commercial operations, but also add time in a fast-paced, profit-driven market that places a premium on efficiency. As we noted in previous comments, the ease of repair and maintenance on the LM-100J is one of its most attractive commercial qualities, but this market advantage will be diminished if subjected to the extensive licensing requirements that accompany USML control. Simply put, international customers looking to fulfill commercial aircraft requirements are more likely to prefer commercial aircraft.

As noted in the March 2, 2015 notice of inquiry, one of the objectives of reviewing the control list is to “strengthen the U.S. industrial base by, among other things, reducing incentives for foreign manufacturers to design out and avoid U.S.-origin content and services.” Ensuring that the L-100/LM-100J are able to be sold and maintained as commercial aircraft is in the U.S. national interest and will bring economic gain for the United States – as well as reduce costs for aircraft sold to the U.S. Government.

#### Defining Military vs. Civilian Airlift Capabilities:

Lockheed Martin has argued that what makes an aircraft useful for military purposes is not a set of generic airframe flight characteristics and capabilities – many of which are shared with commercial aircraft. For example, the ability of the L-100 and LM-100J to land on dirt/unimproved runways is a key aspect of the utility of the aircraft, but not an inherently military capability or a critical military advantage. There are many other civil aircraft that have a proven capability to operate out of unimproved runways. Similarly, RO/RO is not unique to military aircraft, but attractive to any customer that is interested in the efficient loading of oversize payloads. This is a critical feature for many commercial customers that do not have pre-positioned loading equipment in remote areas. In addition to the L-100 operating commercially around the globe, both the Russian AN-12 and IL-76 aircraft have RO/RO ramps and are capable of landing on short or unimproved airfields. These aircraft are flown by many commercial transport operators.

Moreover, it is not unusual for aircraft to have a military and a civilian variant. While the LM-100J traces its origins to the military C-130J, it is a significantly different aircraft. There are many examples of aircraft – both U.S. and foreign made – that have military and commercial versions of the same basic platform. For example, the latest USAF tanker aircraft, the KC-46A Pegasus, is a militarized version of the Boeing 767. One of the most attractive operational benefits for this aircraft is the commercial origin and commonality of many of the major structures of the aircraft. Yet, no one who would argue that a 767 is inherently a military aircraft.

Whether a commercial aircraft is derived from a military aircraft or vice versa is no longer relevant to export control jurisdiction. Control list reform was specifically intended to move away from design-origin as the basis for control and focus on critical and sensitive military capabilities. In fact, it is the integrated military systems/equipment that transforms a commercial aircraft into a viable military aircraft, not the basic airframe or performance parameters.

All of the systems and functions that make the C-130J a sophisticated military platform, including self-defense systems, aircraft survivability systems, military IFF transponder modes, military mission equipment, military tactical radios, targeting systems, electronic counter measures, and ballistic protection, have all been removed. In this way, the LM-100J is more like the legacy L-100 aircraft than its modern military variant. The demilitarization process for the LM-100J was necessary to remove unneeded functionality, but also to reduce the cost of the aircraft. Additionally, some of the equipment not certified by the FAA for use in commercial aircraft was removed as well. Here are several examples:

- The sophisticated APN-241 Radar, a very high resolution radar, was replaced with a commercial color weather radar for lower cost and increased reliability.
- There are no military-specific radios, data links, or encryption capabilities. The military functionality of these radios to frequency hop and encrypt transmissions was neither required nor desired by our customer set.
- Foam in the fuel tanks has also been removed. The foam, which prevents a spark from exploding the fuel fumes in the aircraft fuel tanks, is a proven safety feature of the C-130 protecting the aircraft from ground fire. Ground fire is not a design factor for the LM-100J, but the threat of sparks from electrical wiring in the fuel tanks is. Working with the FAA, Lockheed Martin implemented a new design of wiring and circuit breakers that meets modern safety standards and allows up to 3,000 lbs of additional fuel to be carried in the aircraft.
- The traditional red nylon paratroop seats have been removed. The densely packed seating (which can hold 128 passengers or 92 paratroopers,) while acceptable for military use, does not meet FAA standards for passenger restraint. End users interested in carrying passengers will have to get an FAA Supplemental Type Certificate (STC) to use airline style palletized seating.
- Other airdrop equipment, such as static line cables, static line retriever winches, airdrop warning lights, and paratroop platforms have been removed. The paratroop air deflector doors are still part of the aircraft, but they have been deactivated through software not to open in flight.
- Military GPS receivers were retained, because they are part of the embedded GPS/INS of the aircraft. The ability to load the “military only” codes and use “military only” modes has been removed, and the receivers operate like a normal civil GPS, except they lack several key civilian features. Two WAAS enabled civil GPS systems have been added to the aircraft so that it can have an FAA compliant navigation solution and enable the aircraft to achieve compliance with US and international civil airspace mandates for Communication, Navigation and Surveillance/Air Traffic Management (CNS/ATM).

These are just several examples of the extensive effort Lockheed Martin has undertaken to ensure that military functionality has been removed. Without these systems, the LM-100J is just a proven commercial aircraft designed to replace an aging fleet of L-100 aircraft that have been operating successfully as commercial air freighters for over 40 years.

### Militarizing Civilian Platforms

Another factor in determining military significance is the ability and ease in transforming a civilian platform into a militarily significant system. Again, context is important. A civilian pickup truck can be easily transformed into a transport for a large caliber machine gun. It is not so simple to militarize a modern aircraft. Due to the integrated nature of the LM-100J avionics, an unauthorized third-party would find it very difficult to integrate military systems onto the aircraft.

The LM-100J is specifically designed to be a highly-integrated aircraft to improve automation and ensure control over modifications. Unlike older aircraft, the technology and automation of the LM-100J, handled by the central mission computer, requires modifications to be performed by the original equipment manufacturer (OEM). The intent of the central mission computer is to eliminate wiring, improve fault reporting, control the thrust of the engines, and eliminate the need for a flight engineer. The aircraft knows when a light bulb is burnt out or a piece of equipment has failed, which results in improved reliability. But that level of complexity means that it is extremely difficult to add or take away capabilities of the aircraft, even for the OEM. The software that runs the mission computers is proprietary and exclusive to Lockheed Martin; it has never been provided to another party.

There are modifications that a purchaser could make to the aircraft without the involvement of the OEM, but the end user would not be able to integrate or take advantage of the full capabilities of the aircraft. In addition, modifications could potentially endanger the flight safety of the aircraft and crew.

If export licensing jurisdiction for the LM-100J is transferred to the CCL, the export of military mission systems suitable for militarizing the aircraft would still be controlled under the ITAR, further helping to prevent unauthorized modifications to the aircraft. Similarly, foreign mission systems with U.S. ITAR content will continue to require USG authorization for integration into the aircraft. And under Commerce control, the aircraft themselves would still require an export license to most destinations and be prohibited from export to countries of concern. With all of these stops in place, and the inherent difficulty with modifying the aircraft without OEM assistance, the risk of militarization is extremely low.

### Recommendations:

There are a several revisions to Category VIII(a)(14) that could effectively address this issue. In our May 2015 comments, Lockheed Martin identified options, including deleting Paragraph VIII(a)(14) in its entirety, since controls on integrated military mission systems would have effectively controlled the C-130J and other military airlift platforms. However, with the removal of mission system controls in Category VIII by deleting paragraph (a)(11) in the proposed rule, this is no longer a viable option.

Based on its long history of success as a commercial aircraft, the Department has acknowledged that the commercial L-100 does not warrant control on the USML, even though it is inherently capable of achieving the parameters identified in Category VIII(a)(14). This same rationale should apply to other commercial aircraft as well. The intent of the options outlined below is to ensure

that military aircraft, including the C-130J, remain controlled on the USML, while enabling other commercial aircraft with similar performance capabilities, such as the LM-100J, to transition to Commerce Export Commodity Classification Number (ECCN) 9A610. This would ensure continued USG oversight for the export of these aircraft, but enable them to be operated and serviced as commercial aircraft.

- 1) Revise Paragraph (a)(14) with a specific exclusion for LM-100J aircraft. This option is unambiguous and ensures affected commercial aircraft are not controlled on the USML.

“Aircraft with a roll-on/roll-off ramp, capable of airlifting payloads over 35,000 lbs. to ranges over 2,000 nm without being refueled in-flight, and landing onto short or unimproved airfields, other than L-100 and LM-100J aircraft ~~manufactured prior to 2013.~~”

As discussed above, manufacturing date should not be a factor in determining the military utility of an operational aircraft. There is no logical reason for not excluding other commercial aircraft from (a)(14) with similar capabilities. The LM-100J is the only commercial aircraft manufactured in the United States that meets these criteria. Moreover, identification of specific aircraft for exclusion in (a)(14) is not unique in this Category as multiple other aircraft are listed throughout Category VIII. Accordingly, a specific exclusion is the easiest and most logical approach to ensure that military aircraft with these capabilities continue to be controlled without adversely affecting the commercial operations of the LM-100J.

- 2) Revise Paragraph (a)(14) to reference integrated military functions: This option maintains the explicit control of military airlift aircraft, but limits controls to those with one or more military mission systems. With the deletion of paragraph (a)(11), integrated mission systems would need to be specifically identified or referenced in the USML for this option to be effective.

“Aircraft with a roll-on/roll-off ramp, capable of airlifting payloads over 35,000 lbs. to ranges over 2,000 nm without being refueled in-flight, ~~and~~ landing onto short or unimproved airfields *and incorporating systems, equipment, assemblies, modules, and/or components that provides one or more of the following functions:*

- (i) *Aircraft Missile/Self Protection Systems, including:*
  - (A) *Radar Warning*
  - (B) *Missile Warning*
  - (C) *Infrared Countermeasure*
  - (D) *Flare/Chaff Countermeasures*
- (ii) *Electronic Warfare (EW) and/or Electronic Counter Measure (ECM)*
- (iii) *Voice and/or Data Communications that includes Electronic Counter-Counter Measure (ECCM) (i.e. HAVEQUICK I/II, SINCGARS, SATURN)*
- (iv) *U.S. government Identification Friend or Foe (IFF) Modes 4 or 5*
- (v) *Military and/or intelligence cryptographic (including encryption, decryption, and key management)*
- (vi) *Protective/Self-protection armor (for crewmembers and critical systems)*
- (vii) *Global Positioning System (GPS) receiving equipment that can decrypt precise positioning service (PPS) signals and/or used with antenna designed to reduce or avoid jamming signals.”*

This option would ensure clarity in the controls to ensure the mission systems of greatest concern are identified. Moreover, as discussed in the analysis above, these are military mission systems that are not easily integrated into the aircraft without the assistance of Lockheed Martin as the OEM. Accordingly, explicitly controlling their integration at the time of

export would help to ensure future military modernization could not happen without explicit authorization from the USG.

- 3) Revise Category VIII(a)(14) to include a negative list of excluded aircraft: This option would rely on civil certification to exempt commercial aircraft as follows:

*“Aircraft with a roll-on/roll-off ramp, capable of airlifting payloads over 35,000 lbs. to ranges over 2,000 nm without being refueled in-flight, and landing onto short or unimproved airfields, excluding aircraft that have both a Civil Aircraft Design Type certificate and a Standard Certificate of Airworthiness that are FAA approved, active, current, and valid;”*

As a general matter, it would be difficult for any military aircraft to be eligible for this type of certification. Military equipment would need to be converted to FAA approved equivalent, essentially requiring that any aircraft undertake the same demilitarization process as the LM-100J.

## **II. USML Category VIII(h)(2): Commercial Gearboxes**

Another example where the proposed rule inadvertently controls items in normal commercial use is rotorcraft gearboxes. Lockheed Martin expects Category VIII(h)(2) of the proposed rule to capture a number of U.S and non-U.S. civil rotorcraft gearboxes capable of operating for 30 minutes with loss of lubrication without an emergency or auxiliary lubrication system.

### Loss of Lubrication

Military and commercial helicopters have the capability to continue operating after a loss of lubrication – often (erroneously) referred to as “run-dry.” Although run-dry capability is prevalent in the civil market, the performance requirements for military rotorcraft gearboxes differ significantly from the civil requirements. In the case of military aircraft, the requirement is to provide the ability to escape from enemy territory and return to base or a safe zone after a total loss of lubrication. For commercial aircraft, the rationale is to fly to the nearest safe landing area. Many civil aircraft manufacturers are advertising civil aircraft with gearboxes capable of meeting or exceeding a 30 minute run-dry scenario. For example, the Sikorsky model S-92A commercial helicopter in the offshore oil transport configuration is sized to carry 19 passengers plus crew and provides a run-dry capability of at least 30 minutes.

Both military and civilian requirements specify a minimum 30-minute capability. (See 14 CFR 29.927(c) Lubrication system failure. Per FAA regulations, normal use lubrication system will not prevent continued safe operation for at least 30 minutes.) A number of approaches have been developed by helicopter OEMs to provide additional run time after failure of the primary lubrication system: auxiliary lubrication recirculating systems, residual oil management systems, leak isolation valves, and single-pass emergency lubrication systems. Materials, finishing, and coatings have been developed and incorporated specifically into gear and bearing designs, producing improved performance in low or residual lubrication situations. None of these technologies are specifically military in nature, and all serve to provide a capability to operate after a loss of lubrication event (including operation with an emergency lubrication system and following the complete loss of all oil).

There are, however, significant differences in the elements of these capabilities. These differences are best seen in the actual civil and military testing requirements, outlined in AC-29-2C, MIL-HDBK-516C, and JSSG-2009. Specific details of the military and civil requirements for the 30-minute loss of lubrication testing are outlined in Table 1. Power Condition (Row 4) presents the clearest and most substantial difference between the two levels of requirements. The military requirement of “2 minutes at max rated power (10 minute rating)” is a significantly more stringent and difficult capability to achieve than the civil requirement of “max continuous power” at max GW. Accordingly, a gearbox may be civilly certified for a 30-minute loss of lubrication capability yet not meet the military requirements found in MIL-HDBK-516C.

	<b>Military (MIL-HDBK-516C)</b>	<b>Commercial (AC-29-2C)</b>
<b>Number of Test Specimens</b>	2	1
<b>Gearbox</b>	All Gearboxes – pressurized and splash	Pressurized Oil System only
<b>Power Condition</b>		
-Starting Point	<i>2 minutes at rated Max Power (10 minute rating) *Most severe Power rating</i>	<i>Max continuous power at max GW</i>
	26 minutes at cruise	29.6 minutes at power to sustain flight
	2 minutes at vertical landing	25 sec auto rotation with 10 sec of power landing.
<b>Starting Temperature</b>	No requirement	Highest temperature limit for continual operation
<b>Pass Condition</b>	30 minutes with No Imminent Failure	30 minutes minimum - extended beyond is highly desired - A time interval should be established and reduced significantly when compared to the bench test.
<b>Oil Cut-Off Point</b>	Down Stream of Pump to exit gearbox - No recirculation only scavenge	Down Stream of Pump to exit gearbox - No recirculation only scavenge
<b>Rational</b>	Egress from hostile area from ballistic damage	Internal or external failure Unless such failures are extremely remote*  Aux system must be independent to not have a common point with the main system

**Table 1: Comparison of Military and Civil 30-minute lubrication loss requirements**

We recognize that government aviation authorities, such as the FAA and EASA, have considered eliminating the provision for “remote possibility” failures (such as that found in 14 CFR 29.927(c)) and instead enforce the testing with merely residual oil in the gearbox. Under these circumstances, the difference between the military and the civil requirements will further shrink.

### Emergency Lubrication

Neither military qualification nor civil certification requirements mandate the installation of an emergency or auxiliary lubrication system. Our research indicates that there are at least six (6) civil helicopter manufacturers with over ten (10) models in flight test or production that do not have an auxiliary lubrication system yet meet or exceed the 30 minute criteria – including the S-92 and S-76 Sikorsky helicopters.

### Recommendation:

The civil rotorcraft market has pursued gearbox improvements to address safety of operation (*i.e.*, designed to fly to the nearest safe landing area.) Controlling commercial gearboxes under the USML greatly complicates the commercial sale, operation, and servicing of these aircraft. The proposed regulatory revisions would tailor USML control criteria to those gearboxes that are qualified to published U.S. military gearbox standards – effectively ensuring that only rotorcraft gearboxes specially designed for military applications are captured on the USML. We recommend that the note on military qualification be amended in (h)(2) to differentiate the civil vs. military capabilities. This addition will remove any current or future conflicts as civil and military aviation specifications continue to evolve.

“(2) Rotorcraft gearboxes with internal pitch line velocities exceeding 20,000 feet per minute and *qualified to military requirements (i.e. MIL-HDBK-516-C or equivalent)* and able to operate 30 minutes with loss of lubrication without an emergency or auxiliary lubrication system, and specially designed parts and components therefor;

“Note to (h) (2): Loss of lubrication means a situation where oil/ lubrication is mostly or completely lost from a transmission/gearbox such that only a residual coating remains due to the lubrication system failure and *is qualified to military requirements only. Loss of lubrication certified to FAA/EASA (or other civil aviation authority) is not subject to this control.*”

### **III. USML Category VIII(h)(10): Radar Altimeters**

Category VIII(h)(10) controls “Radar altimeters with output power management LPI (low probability of intercept) or signal modulation (*i.e.*, frequency hopping, chirping, direct sequence-spectrum spreading) LPI capabilities (MT if for an unmanned aerial vehicle, drone, or missile that has a “range” equal to or greater than 300 km).” Export control parameters applicable to radar altimeters are contained in both Category VIII(h)(10) and Category XI(a)(3). Category XI(a)(3) includes the following note: “Note to paragraph (a)(3): This paragraph does not control: . . .(c) radio altimeter equipment conforming to FAA TSO C87.”

Lockheed Martin requests a similar note be added to Category VIII(h)(10) for consistency of application with regard to radar altimeters that conform to and are certified to FAA TSO C87. This approach is already used in other revised categories of the USML. For example, in a note to Category XI(a)(3), the USML excludes control of various specific radar/radio systems, including

radar altimeter equipment conforming to FAA TSO-C87. The Department has made similar corrections in the past, including language added to Category VIII(h)(20). Referencing commercial standards for radar/radio altimeter equipment, as contained in FAA TSO-C87, would ensure that paragraph (h)(10) does not inadvertently capture commercial civil-certified avionics equipment.

Recommendation: Lockheed Martin recommends adding a note to (h)(10) to match analogous entries in USML Category XI(a)(3):

“NOTE TO PARAGRAPH (h)(10): This paragraph does not control radar/radio altimeter equipment conforming to FAA TSO C87.”

#### **IV. USML Category VIII(h)(18): Addition of Specially-Designed Parts and Components**

The proposed rule adds controls on “specially designed parts and components” for “drive systems and flight control systems specially designed to function after impact of a 7.62mm or larger projectile” in Category VIII(h)(18). Currently, these items are controlled under ECCN 9A610.x of the Commerce Control List (CCL). The proposed rule provides no justification for the additional controls, other than to note that “Paragraph (h)(18) is modified to control specially designed parts and components of the subject systems.”

Prior to the ECR effort to restructure the USML, parts and components of drive and flight control systems were controlled in Category VIII(h). Several foreign suppliers produced these parts and components for Sikorsky, now a Lockheed Martin company, pursuant to ITAR agreements. When these items transitioned to the CCL in October 2013, these ITAR agreements were no longer required, and Sikorsky either obtained BIS licenses for the export of technology (as well as the export of the items themselves) or modified existing ITAR agreements. We estimate that approximately 60-70 percent of the Sikorsky H-60 Drive/Flight Control System is currently controlled on the 600-series. Under the proposed rule, approximately 20-25 percent of those 600-series items would revert back to ITAR control under Category VIII(h)(18).

Accordingly, the proposed rule will require Sikorsky to implement a second comprehensive analysis of all military drive & flight control systems to determine whether attendant parts and components will move from the 600 series back to the ITAR, modify numerous “mixed” ITAR agreements, and in some cases, replace current BIS licenses with ITAR authorizations. This spans all of Sikorsky’s military platforms and will require a significant amount of planning and man hours, and engagement of engineers/experts outside of the compliance organization.

In addition, we expect that some U.S. exporters to have shipped items NLR to Canada and potentially under license exceptions. Under the proposed rule, exporters would be required to conduct outreach to customers (and potentially customers to their end users) and notify them that the exported items are now subject to the ITAR. This will be a difficult, time-consuming, and costly task.

The USML/CCL “refresh process” provides the opportunity to ensure that the controls are “clear, do not inadvertently control items in normal commercial use, account for technological developments, and properly implement the national security and foreign policy objectives of the reform effort,” as stated in the proposed rule. It also enables the Department to correct inadvertent omissions in previous rules and harmonize controls. However, multiple jurisdictional

reversions, such as that occurring in Category VIII(h)(18), could result in less clarity and have a significant impact on U.S. industry operations and compliance efforts.

The return of specially designed parts and components for drive systems and flight control systems to the ITAR is unnecessary. The systems will remain controlled on the ITAR, and the control of the parts and components in the “600 Series” ensures sufficient USG licensing oversight.

If the USG proceeds with the proposed regulatory change, Lockheed Martin recommends a 24 month transition period, which has been used for similar ECR rule changes, to prevent any disruption in international business activities. In addition, the Departments should consider a grandfathering provision for all affected items exported prior to the effective date of the final rule. This would allow U.S. companies to avoid the need to unwind completed transactions with foreign customers located in allied and partner nations.

Recommendation: Delete the addition of new controls on specially designed parts and components.

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

## **V. USML Category VIII(30)**

The proposed rule removes the reference to “equipment” in Category VIII(h)(1) and creates a new paragraph (h)(30) to “capture the limited range of equipment relevant to a defense article described in paragraph (h)(1) and meriting ITAR control.” Lockheed Martin recognizes that there are certain types of production and test equipment for the aircraft identified in (h)(1) that should be controlled on the USML because they are of a nature that inherently reveals technical data directly related to the controlled defense article. However, the proposed control structure in (h)(30) poses several challenges.

Due to the changes to Category VIII implemented in 2013, Lockheed Martin undertook a review of approximately 50,000 parts and equipment that fell under the definition of equipment specially designed for use on aircraft identified in (h)(1) (e.g., F-35 and F-22.) From an implementation perspective, the proposed change would place additional burden on limited resources to reclassify these items to (h)(30) or ECCN 9B610 and amend approximately 200+ TAAs/MLAs to include updated language (including paragraph VIII.x in order to allow export of 9B610 hardware.)

Moreover, the proposed Category VIII(h)(30) includes several specific controls on items that do not warrant control on the USML, create confusion, and/or are redundant. For example, paragraph (h)(30)(iii) controls autonomic logistics information systems (ALIS) for platforms in (h)(1). The majority of hardware that makes up ALIS for these aircraft is Commerce-controlled computers, server racks, and networking components. The software associated with ALIS, however, is technical data already controlled under Category VIII(i). The only USML controlled hardware is encryption/decryption components that are called out under Category XIII. Accordingly, controlling the ALIS as a complete system in (h)(30) is both overbroad and redundant.

In addition, the note to (h)(30) creates confusion regarding the definition of “airframe,” which is otherwise not defined in the ITAR/USML. An “airframe” is more than just a shape, elsewhere defined as “a mechanical structure typically considered to include fuselage, wings and undercarriage and exclude the propulsion system.” The proposed language includes other vague terms, including “readily removable items.” On the one hand, “pylons for external stores,” which we would consider to be a readily removable item, is called out as part of the “airframe.” On the other hand, we would consider landing gear, which are expressly not included in the definition, to be part of the assembled structure that influences the strength of the “airframe.”

Recommendation: As a general matter, Lockheed Martin would view the jigs, locating fixtures, and other items identified in paragraph (h)(30)(iv) to be controlled under paragraph (h)(1) as parts and components of those controlled aircraft. Accordingly, we recommend deleting paragraph (h)(30) and the associated note for the reasons discussed above.

## **CONCLUSION**

Thank you for the opportunity to provide comments in response to the notice of inquiry regarding USML Categories VIII and XIX. Lockheed Martin remains committed to supporting the ongoing effort to reform and improve the U.S. export control system. We are confident that the changes recommended above will have a positive impact on our ability to support U.S. national security and foreign policy priorities.

If you have any questions related to these comments or would like additional information related to the issues discussed above, please contact Mark Webber, Director, International Trade Policy, Government & Regulatory Affairs at 703-413-5951 or [Mark.J.Webber@lmco.com](mailto:Mark.J.Webber@lmco.com).

For Lockheed Martin Corporation,



Gerald Musarra  
Vice President, Government & Regulatory Affairs

cc: [publiccomments@bis.doc.gov](mailto:publiccomments@bis.doc.gov)  
Bureau of Industry and Security  
U.S. Department of Commerce

March 25, 2016

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: Mr. C. Edward Peartree  
Director, Defense Trade Controls Policy

SUBJECT: FRN 2015-04291 Review of USML Categories VIII and XIX

Dear Mr. Peartree:

Northrop Grumman Corporation wishes to thank the Department of State for the opportunity to submit comments in review of the above proposed rule as we support the Department's objective of establishing a positive and dynamic United States Munitions List (USML). In response, we provide the following recommendations:

**USML CAT VIII(h)(1).** We recommend that DTC add to the end of the Note to paragraph (h)(1):

*This paragraph controls aircraft parts only. This paragraph does not control parts, components, accessories and attachments that are not aircraft parts even if they are being used in or integrated into the U.S.-origin aircraft identified in this paragraph. The applicable controls for such items that are not aircraft parts must be determined by following the Order of Review and Specially Designed analysis outlined in the USML at § 121.1(b) and the CCL at Supplement 4 to Part 774.*

We feel that this specific clarification is necessary given recent interpretations that USML Cat VIII(h)(1) now controls parts and components of radars, radios, EO/IR and other USML Cat XI & XII end-items that are not aircraft parts and are being used on the F-35. In addition, industry has received RWA's on Commerce License submissions for radar parts stating that they are controlled on the ITAR under VIII(h)(1) because the end use platform is the F-35. These interpretations are inconsistent with the plain language of Category VIII and Category XI of the USML, and Category 9 and Category 3 of the CCL, and with the Order of Review analysis in both the ITAR and the EAR. Therefore, we believe that clarification is necessary in order to articulate the government's position and provide adequate notice to exporters. It is important to note, that prior to ECR, all of these parts, components, etc. were USML Cat XI(c) or XII(e).

The DOS agreed on page 6799 in the "Revision of Category VIII" portion of this Notice with previously submitted comments that the AN/APG-81 AESA radar remains USML Cat \*XI(a)(3) when installed in an F-35 aircraft. Consistent with this determination, the same logic should apply to the parts and components of the AN/APG-81. The key components that provide the technological advantage for the AN/APG-81 are the transmit/receive modules, the antenna, and

the software, all of which remain controlled on the USML. However, we believe using the Order of Review and Specially Designed criteria in accordance with §121.1, minor electronic components such as cable assemblies, power supplies, amplifiers, and brackets which are not enumerated, listed or otherwise described in a ‘specially designed catch-all’ paragraph of USML Category XI should be classified under 3A611. These components should not be classified as VIII(h)(1) “Aircraft” parts simply because they do not meet the USML control criteria for “Military Electronics.”

We believe the level of controls defined in USML Cat XI for electronic parts are sufficient and it is not necessary to control the minor parts and components simply because they are used on VIII(h)(1) platforms. However, if the U.S. Government disagrees, we recommend that proper notice be given in Category XI and any other applicable categories in a manner consistent with current USML Category XIX. For example, the parts, components, accessories, attachments, and equipment specially designed for the F-35 engines (F-135 & F-136) are not controlled in Cat VIII(h)(1), but are instead controlled under Cat XIX(f)(1), which serves as a “catch all” for “specially designed” parts of select engines.

**USML Cat VIII(h)(15) and USML Cat VIII(h)(16).** Based upon the close correlation between these sub-categories and USML Category XII, for clarity and consistency we recommend that these categories be reconciled with USML Cat XII prior to final publication.

**USML Cat VIII(h)(20) and similar paragraphs in other categories.** We appreciate the DOS clarification within this Notice that this paragraph “functions as a ‘catch-all’ for classified defense articles not elsewhere described on the USML.” We recommend that for added clarity, DTC add language for Cat VIII(h)(20) and similar paragraphs as follows: “Any part, component, accessory, attachment, equipment, or system, *not elsewhere enumerated or described* that...”. Technically, per Note to paragraph (b) of §120.41 Specially Designed, paragraph VIII(h)(20) does not meet the definition of a “catch-all” and this added language would clarify that classified systems in “enumerated” paragraphs such as VIII(h)(17) for a mission computer would take precedent.

Should clarification or subsequent technical discussions be necessary, please contact either Steve Headley at [james.headley@ngc.com](mailto:james.headley@ngc.com), (703 280-4806), or myself at [thomas.p.donovan@ngc.com](mailto:thomas.p.donovan@ngc.com) (703-280-4045).

Sincerely,

Thomas P. Donovan  
Director, Export Management  
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Directorate of Defense Trade Controls  
Office of Defense Trade Controls Policy  
U.S. Department of State  
Washington DC

24 March 2016

Submittal via email to: [DDTCPublicComments@state.gov](mailto:DDTCPublicComments@state.gov)

**Reference:** RIN1400-AD89  
Request for Comments

**Subject:** ITAR Amendment – Categories VIII and XIX

Dear Mr. Peartree:

On behalf of Rolls-Royce North America Holdings Inc. and Rolls-Royce plc (Rolls-Royce), we are pleased to respond to the Federal Register Notice dated 9 February 2016 requesting comments on the *ITAR Amendment – Categories VIII and XIX*. Rolls-Royce commends the Administration's continued efforts on Export Control Reform (ECR) and agrees with the clarification to the positive list. However, Rolls-Royce believes that many of the additions are repealing the basic concepts of ECR. Rolls-Royce has reviewed the proposed changes, and has the following comments.

**General**

Rolls-Royce would like to take this opportunity to provide feedback on the experience of reclassifying defense articles, software and technical data under ECR. The transition period was very effective and permitted both the process to reclassify items but also to obtain required authorizations to permit export, re-export and retransfer. This was a resource intensive activity to support the reclassification effort as well as reviewing, rewriting and submitting hundreds of authorizations. The proposed language, as a drawback of ECR, would require additional resource and effort to undo the previous work. The reclassification of the defense articles, software and technical data affected under this proposed rule, would benefit from another transition period, which would not only permit US applicants to submit the appropriate ITAR export authorizations, but for foreign companies to request authorizations from the US applicants as well.

Rolls-Royce would also request consideration of whether it would be permissible to use General Correspondence to obtain re-export and retransfer approval for Items subject to ITAR under the rule change. This would be regarded as a temporary measure of obtaining approval during the transition (especially if a validity date that was included in the approval) and would allow foreign companies and US applicants to submit new ITAR authorizations in their place.

**Category VIII**

1. Rolls-Royce agrees to the removal of Mission Systems as a determining factor as well as the clarification of the L-100 aircraft. The updated language helps to clarify the intent to capture specific airframes with strategic military capability.

2. Rolls-Royce is concerned by the removal of the term “equipment” from VIII(h)(1). Based on the definitions in §120.45, “equipment” should be captured. Removing the term “equipment” does not clarify the items to control. Major modules should be captured the same as parts and components.
3. Rolls-Royce questions the inclusion of VIII(h)(28) without including “specially designed” because the dual use electrical power or thermal management systems used with a Category XIX engine will be captured. Rolls-Royce strongly suggests inserting the word “specially designed” into VIII(h)(28).
4. The addition of VIII(h)(30)(vi) repeals the basic intent of ECR as these items have been captured under 9B610 since 15 October 2013. Rolls-Royce understands there is confusion on the term “equipment” in the ITAR versus “test, inspection and production equipment” captured in the EAR. The ITAR definitions are clear the term does not include test, inspection and production equipment as used in VIII(h)(1), however some license applications that did not use this export classification were Returned Without Action. This will cause industry to reclassify all items included in the proposed VIII(h)(30)(vi) as well as mandate updated licensing. These items already require export licenses under 9B610.

### Category XIX

1. Rolls-Royce understands and agrees with the addition of variable cycle engines in Category XIX.
2. For XIX(b)(2) Rolls-Royce requests further interpretation of the term “transient maneuvers” in the context of turboshafts and turboprops.
3. Rolls-Royce disagrees with the addition of the MT7 engine in XIX(d) because it is unnecessary duplication. To explain, the MT7 is a derivative of the AE1107C, which is already captured under XIX(b)(1). The original MT7 carried over the same oil sump sealing capability as used on the AE1107C but the MT7 does not require special oil sump sealing capability and is being removed and designed out in all future production models of the MT7 engine. The MT7, by capability, will therefore be captured in 9A619.a and would require a license under the EAR to most destinations. Adding it to the ITAR would amount to ignoring the existing controls which already apply to the MT7 under the EAR. Further, the vast majority (80%) of the parts and components of the MT7 are already dual use as they are drawn from the common core of the Rolls-Royce AE family of engines. Placing the MT7 on the ITAR would directly hurt US export prospects when being sold outside the US in competition with other suppliers. It would also add discrete ITAR licensing requirements (alongside those already necessary under EAR) for permanent export, temporary export, and provision of defense services to non-US customers, increasing the associated compliance burden and hurting competitiveness.
4. Rolls-Royce is concerned by the removal of the term “equipment” from XIX(f)(1). Based on the definitions in §120.45, “equipment” should be captured. Removing the term “equipment” does not clarify the items to control. Major modules should be captured the same as parts and components.
5. XIX(f)(2) has added the term “actively” to describe cooled turbine components. Rolls-Royce appreciates the clarification. This clarification would be more effective if the term “actively” was defined. In addition XIX(f)(3) continues to utilize the term “uncooled” as an identifier. This would be clearer and more consistent by utilizing the term “passively cooled” in tandem with “uncooled” as the “passively cooled” items are not captured with the addition of “actively cooled” in XIX(f)(2). This would also require a definition of “passively”.
6. XIX(f)(2) has added a term “Intermediate Pressure Turbine”, Rolls-Royce believes updating the order will clarify the inclusion of this language. The order should be high pressure turbine, intermediate pressure turbine and then low pressure turbine.
7. The term “Engine Health Monitoring Systems” remains undefined and open to interpretation. A definition is necessary to outline the level of granularity of a “system”. This will be similar to the Wassenaar FADEC System discussion in 2009 to determine what ancillary equipment needs to be included.

8. The addition of XIX(f)(7), (8) and (16) repeats the basic intent of ECR as these items have been captured under 9B619 since 15 October 2013. Rolls-Royce can accept XIX(f)(7) as it includes the term “specially designed”. Rolls-Royce understands there is confusion on the term “equipment” in the ITAR versus test, inspection and production “equipment” captured in the EAR. The definitions are clear the term does not include test, inspection and production equipment as used in XIX(f)(1), however some license applications that did not use this export classification were Returned Without Action. This will cause industry to reclassify all items included in the proposed XIX(f)(8) and (16) as well as mandate updated licensing. These items already require export licenses under 9B619.
9. Rolls-Royce welcomes the addition of Pressure Gain Combustors (PGC) however there are differing levels of technology in the different PGCs. There needs to be a positive identification with the PGCs including but not limited to PGCs with detonation versus those without (wave rotor). Rolls-Royce has instituted PGCs in land based demonstrators to test use in industrial applications. The land based demonstrators in no way have a military application. They are intended to demonstrate the technology for dual use purposes. Rolls-Royce would welcome the opportunity to discuss the proprietary nature of these programs to demonstrate the dual use nature of the PGCs.
10. The addition of XIX(f)(10), (11) and (12) repeats the basic intent of ECR as these items have been captured under 9A619 since 15 October 2013. The term “specially designed” is not captured in any of these proposed rules. The proposed regulations appear to control adaptive/variable cycle engines although not explicitly called out in the proposed language. Rolls-Royce strongly suggests adding the term “specially designed for adaptive/variable cycle engines in category XIX” into these three items.

If you require additional information or would like to discuss in greater detail, please contact the following:

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Sincerely,



Andrew W T Wood  
Director, Group Strategic Export Control  
Rolls-Royce plc



William J. Merrell, Vice President  
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March 23, 2016

**VIA EMAIL**

Department of State  
Directorate of Defense Trade Controls  
PM/DDTC, SA-1, 12<sup>th</sup> Floor  
Bureau of Political Military Affairs  
Washington, D.C. 20522-0112

RE: ITAR Amendment – Categories VIII and XIX (RIN 1400-AD89) 81 FR  
6797 (February 9, 2016)

Dear Sir/Madam:

I am writing on behalf of S3 International, LLC (“S3”), a provider of commercial and military aircraft spare parts, repair services, aftermarket spare parts support and logistic services to military operators, commercial airlines and maintenance facilities around the world. S3 appreciates the opportunity to comment on the proposed Amendment to the International Traffic in Arms Regulations: U.S. Munitions List Categories VIII and XIX (RIN 1400-AD89), 81 FR 6797 (February 9, 2016).

**Changes to VIII(a)(14)**

S3 supports the proposed revision to VIII(a)(14) to narrow the scope to capture only those aircraft platforms that provide critical military or intelligence capabilities and to avoid inadvertent capture of commercial aircraft, such as the L-100. Specifically, the Department proposes excluding the L-100 aircraft, manufactured prior to 2013, from control under (a)(14). S3 seeks clarification and guidance from the Department on the impact the exclusion of the L-100 (manufactured prior to 2013) from (a)(14) would have on the classification of parts and components that are (a) not enumerated or otherwise described on the USML and (b) common to the C-130 and L-100/L-382 aircraft but not any other aircraft. Excluding the L-100 aircraft (manufactured prior to 2013) from control under paragraph (a)(14) would have a direct impact on the Department of Commerce’s guidance on the classification of parts and components that are not enumerated or otherwise described on the USML and common to the C-130 and

L-100/L-382. Pursuant to the ECR FAQ posted on the Bureau of Industry and Security, Department of Commerce website:

The manufacturer of the aircraft, the Lockheed Martin Corporation, and the Department of State have confirmed that all models and versions of both types of aircraft are within the scope of the USML Category VIII(a)(14) (22 CFR § 121.1). This means that parts, components, accessories, and attachments for use in or with the C-130 and L-100/L-382 aircraft that are not enumerated or otherwise described on the USML are controlled under ECCN 9A610.x, or if specifically identified in 9A610.y, controlled under 9A610.y, unless one of the release provisions in paragraph (b) to the EAR's definition of "specially designed" applies (15 CFR § 772.1).

Bureau of Industry and Security, U.S. Department of Commerce, ECR FAQs, March 22, 2016, <http://www.bis.doc.gov/index.php/2012-03-30-17-54-11/ecr-fags>. See also Attachment A.

If the L-100 aircraft no longer falls within the scope of VIII(a)(14) and is considered a commercial aircraft (see proposed Amendment to the International Traffic in Arms Regulations: U.S. Munitions List Categories VIII and XIX (RIN 1400-AD89), 81 FR 6799 (February 9, 2016)), it should be controlled under ECCN 9A991.b because it is not a 'military aircraft' as defined in 9A610.a. This then raises the question of whether the parts, components, accessories, and attachments that are (a) not enumerated or otherwise described on the USML and (b) common to the C-130 and L-100/L-382 aircraft but not any other aircraft are controlled under ECCN 9A991.d. Pursuant to the "specially designed" catch-and-release analysis, under (b)(3), a part, component, accessory, attachment, or software is not specially designed if it has the same function, performance capabilities, and the same or 'equivalent' form and fit, as a commodity or software used in or with an item that: (i) is or was in "production"; and (ii) is either not 'enumerated' on the CCL or USML, *or is described in an ECCN controlled only for Anti-Terrorism (AT) reasons*. If the L-100 is controlled under ECCN 9A991.b, it is described in an ECCN controlled only for Anti-Terrorism reasons. Therefore, if a part, component, accessory, attachment is not enumerated on the USML, is common to the C-130 and L-100/L-382, it would no longer be controlled under ECCN 9A610.x as stated on BIS FAQs because it would be "released" and not considered "specially designed".

In light of the above, S3 requests that the Department provide clarification and guidance on the classification of the L-100 and parts and components not enumerated on the USML and common to both the C-130 and L-100/L-382. While S3 recognizes that the State Department does not have jurisdiction over

items on the Commerce Control List, the proposed exclusion of the L-100 from paragraph (a)(14) affects the classification position that has been published by the Department of Commerce. Thus, rather than wait for the proposal to VIII(a)(14) to be adopted and then seek guidance from the Department of Commerce, S3 believes it is more efficient to consider the full impact of the proposed exclusion at this time in hopes that the State Department and the Department of Commerce will jointly assess the effect of the proposed exclusion and provide uniform clarification and guidance.

S3 appreciates the opportunity to provide comments on the proposed change.

Sincerely,

A handwritten signature in cursive script that reads "Mai Der Yang".

Mai Der Yang  
Legal Counsel  
Trade Compliance Manager



**Bryce V. Bittner**  
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March 25, 2016

Via Email – [DDTCTPublicComments@state.gov](mailto:DDTCTPublicComments@state.gov)

Mr. C. Edward Peartree  
Director, Office of Defense Trade Controls Policy  
Directorate of Defense Trade Controls  
U.S. Department of State  
Washington, D.C. 20522-0112  
ATTN: ITAR Amendment – USML Categories VIII and XIX

**Subject: Comments on the Proposed Revisions to USML Category VIII**

Dear Mr. Peartree,

On February 9, 2016, the Department of State, Directorate of Defense Trade Controls (“DDTC”) and the Department of Commerce, Bureau of Industry & Security (“BIS”) issued Federal Register notices proposing, respectively, to amend the International Traffic in Arms Regulations (“ITAR”) to revise U.S. Munitions List (“USML”) Categories VIII and XIX, and to amend the Export Administration Regulations (“EAR”) to revise Commerce Control List (“CCL”) Category 9. DDTC and BIS set the deadline for comments on the Proposed Rules as March 25, 2016.<sup>1</sup>

In response to the Propose Rules, Textron Inc. (“Textron”) respectfully submits the following comments. Thank you for your consideration. We hope that our feedback will help DDTC and BIS continue to improve the U.S. export control system.

**I. DDTC and BIS Should Finalize Many of the Changes in the Proposed Rule**

First, Textron agrees with the majority of the changes that DDTC proposes, and we respectfully request that the agency issue a Final Rule to adopt the following changes as proposed:

- The addition to the chapeau of VIII(a) to clarify that the subparagraphs of section (a) apply to “manned, unmanned, remotely piloted, or optionally piloted” aircraft;
- The deletion of VIII(a)(6) in its entirety;
- The deletion of “military” from VIII(a)(7);
- The deletion of VIII(a)(11) in its entirety, along with Notes 1 and 2 to VIII(a)(11);

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<sup>1</sup> Clarifications and Revisions to Military Aircraft, Gas Turbine Engines and Related Items License Requirements, 81 Fed. Reg. 6791 (BIS); Amendment to the International Traffic in Arms Regulations: U.S. Munitions List Categories VIII and XIX, 81 Fed. Reg. 6797 (DDTC) (Feb. 9, 2016).

- The deletion of VIII(a)(13) in its entirety;
- The deletion of “Face gear gearboxes, split-torque gearboxes, variable speed gearboxes, synchronization shafts, interconnecting drive shafts, or” from VIII(h)(2) and the addition of “without an emergency or auxiliary lubrication system” to VIII(h)(2); and
- The deletion of “or controlled in ECCN 9A610” from VIII(h)(17).

Textron believes that these revisions significantly clarify the USML and remove controls that either no longer reflect the current state of industry or are adequately and more efficiently covered by other sections of the USML.

## **II. The USML Would Benefit from Additional Revisions to Category VIII**

Textron respectfully submits that in addition to the changes in the Proposed Rule, DDTC could take further steps towards achieving the goals of Export Control Reform and implement a more positive export control list by adopting the recommendations in the following sections.

### **A. To Avoid Reintroducing the Burden on Industry that DDTC Sought to Remove by Eliminating VIII(a)(11), DDTC Should Clarify the Scope of VIII(a)(7) and VIII(a)(8)**

First, Textron commends DDTC for removing USML Category VIII(a)(11). In the Proposed Rule, DDTC responded to comments received on May 1, 2015 regarding VIII(a)(11), as follows:

“Five commenting parties observed that the control set forth in paragraph (a)(11) created a significant burden for industry, by capturing any aircraft incorporating a mission system already controlled elsewhere on the USML, and thus recommended deletion of the control. Since the mission systems at issue in this paragraph are already subject to ITAR control and there is no other described feature that causes the aircraft at issue to merit ITAR control, the Department accepted these recommendations and deleted the paragraph and the notes to the paragraph.”<sup>2</sup>

Textron agrees with the stated rationale for deleting USML Category VIII(a)(11), and we participated extensively in the comments submitted by the Aerospace Industries Association (“AIA”) to DDTC on this issue on May 1, 2015; however, Textron would argue that the proposed revisions to USML Categories VIII(a)(7) and VIII(a)(8), without further refinement, significantly detract from the clarity and efficiencies gained by the removal of VIII(a)(11).

As stated above, Textron agrees with the removal of “military” from the beginning of USML Category VIII(a)(7), but the fact that this subparagraph does not define what aircraft are considered to be “Intelligence, surveillance, and reconnaissance” (“ISR”) aircraft reintroduces the burden on industry that DDTC sought to remove. A similar issue is caused by the fact that neither “Electronic warfare”

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<sup>2</sup> 81 Fed. Reg 6797, 6798.

Mr. C. Edward Peartree  
Office of Defense Trade Controls Policy  
March 25, 2016

nor “command, control, and communication” aircraft are defined in USML Category VIII(a)(8). Unless DDTC clarifies these issues, many of the aircraft formerly classified under VIII(a)(11) will simply move to VIII(a)(7) or VIII(a)(8) thereby negating the benefits that DDTC stated that it wished to achieve.

As DDTC is aware, like others in industry, Textron’s businesses manufacture many aircraft and helicopters that fall under ECCN 9A991 of the CCL – such as the Beechcraft King Air, Cessna Grand Caravan and Citation, and Bell 412 and 429 – and our customers often request the installation of defense articles that provide search and rescue, police surveillance, and other audio/visual capabilities, such as EO/IR cameras or military radios, or they install these items after purchase without our knowledge or involvement. At present, Textron generally classifies these aircraft under USML Category VIII(a)(11) since the “mission systems” are the only features that cause the aircraft to be controlled; but if the Proposed Rule is finalized as currently written, one could argue that these aircraft will simply move to USML Category VIII(a)(7) as “ISR” aircraft or USML Category VIII(a)(8) as “command, control, and communications” (“CCC”) aircraft. This seems to be an unintended consequence and contrary to DDTC’s intent.

General Aviation aircraft are not inherently designed to satisfy ISR or CCC mission requirements; for instance, there is a stark difference between the capabilities of aircraft categorized as ISR in the U.S. Air Force inventory – such as the U-2, RC-135, E-8, and U-28 aircraft – and a Cessna Grand Caravan or Beechcraft King Air with a USML-controlled EO/IR camera. Accordingly, we recommend that DDTC clarify the technical parameters or capabilities that merit ITAR control as ISR or CCC aircraft. Since the defense articles in question are already subject to ITAR control and there is no other feature that causes the aircraft at issue to merit ITAR control, one way to accomplish this goal would be to add the following note to USML Category VIII(a):

“Aircraft issued a standard category airworthiness certificate and not bearing an original U.S. military designation of A, B, E, F, K, M, P, R, S, or U, or a foreign country equivalent thereof, are not controlled under Category VIII(a)(7) or VIII(a)(8). Any defense articles installed on such aircraft remain subject to the controls of the ITAR in the USML Category(ies) into which the defense articles fall.”

Alternatively, if DDTC elects to finalize the revisions to VIII(a)(7) and VIII(a)(8) as currently written, Textron respectfully requests DDTC to explain how registrants should address the fact that USML Category VIII(a)(11) is not controlled as Significant Military Equipment (“SME”), whereby USML Categories VIII(a)(7) and VIII(a)(8) are SME. For example, would industry need to obtain DSP-83 Non-Transfer and Use Certificates retroactively? What would happen if industry had relied on a license exemption permitted for non-SME defense articles but not for SME defense articles, such as 22 C.F.R. § 123.16(b)(5)? These issues cause significant confusion for industry.

Textron believes that DDTC can give meaning to its proposed revisions to USML Category VIII(a)(11) by clarifying that items previously controlled under VIII(a)(11) will not simply move to USML Categories VIII(a)(7) or VIII(a)(8).

B. DDTC Should Remove USML Category VIII(a)(5) in Its Entirety

In the Proposed Rule, DDTC deleted USML Categories VIII(a)(6) and VIII(a)(13) and added language to the chapeau of VIII(a) to clarify that aircraft are controlled “whether manned, unmanned, remotely piloted, or optionally piloted.” Textron believes that these proposed changes will streamline and clarify the USML. Nevertheless, for similar reasons stated above with respect to VIII(a)(7), VIII(a)(8), and VIII(a)(11), Textron recommends that DDTC also remove subparagraph VIII(a)(5).

Unmanned Aerial Vehicles (UAVs) that do not contain defense articles are already adequately controlled under the CCL, such as by ECCN 9A012. If a party were to give a UAV capabilities described in any other subparagraph of USML Categories VIII(a), it would fall under that subparagraph by operation of the chapeau to VIII(a). If the UAV did not have such capabilities, but otherwise contained defense articles, Textron respectfully submits that the UAV airframe should fall on the CCL and the defense articles should be controlled by the USML Categories into which the defense articles fall, *e.g.*, USML Categories XI or XII.

It is not clear what DDTC gains by retaining VIII(a)(5) while deleting VIII(a)(6) and VIII(a)(13). Any provisioning or other items incorporated into the UAV to “specially design” it for a defense article should be controlled because they relate to the defense article, not to the otherwise CCL-controlled UAV.

C. The U.S. Government Should Revisit the MTCR Definition of “Range” at the Next Possible Opportunity

Note 2 to Paragraph (a) states, in part, that “Range” should be “determined independently of any external factors such as operational restrictions, limitations imposed by telemetry, data links, or other external constraints.” Textron understand that this requirement stems from the Missile Technology Control Regime (“MTCR”), and DDTC is unable to modify this language unilaterally, but we would recommend that the U.S. government seek to revisit this definition at the next possible opportunity.

Textron understands the intent behind the definition, and we share the U.S. government’s desire to prevent UAVs and other aircraft from being repurposed and used for nefarious ends. However, our potential customers have expressed the desire to purchase UAVs that are capable of remaining on station for extended periods of time, which requires a certain amount of fuel. As DDTC is aware, an aircraft that can fly in circles for hours over an oil pipeline or fishing territory could easily trip the MTCR range thresholds if not for operational restrictions and limitations imposed by telemetry and data links.

Textron respectfully requests that the U.S. government take this into consideration and work with industry to develop appropriate technological safeguards that would allow industry to sell products that meet our customers’ requirements for endurance and time on station while preventing the aircraft from being turned into a missile or weapon of mass destruction. For example, such safeguards could take

the form of an automatic return to base/automatic land feature if the UAV exceeded a defined operational area or lost its connection to the ground control station.

D. DDTC and BIS Should Clarify What Specific Factors Make Certain UAV Launching, Recover, and Landing Systems ITAR-Controlled, and When such Systems Fall under the CCL

Although certain UAVs take off and land like manned aircraft, other variants use launching, recovery, and landing systems, especially in environments where a traditional runway is not an option.<sup>3</sup> However, these systems are used for aircraft that have valid dual-use applications, and they are not uniquely military.

The USML and CCL currently contain multiple overlapping entries into which the same UAV launching, recover, and landing system could fall, and it is not clear why some are ITAR-controlled and others are EAR-controlled. Specifically, proposed USML Category VIII(h)(5) would control “On-aircraft arresting gear (*e.g.*, tail hooks and drag chutes) and specially designed parts and components therefor,” but proposed ECCN 9A610.e would control “Mobile aircraft arresting and engagement systems for aircraft controlled by either USML Category VIII(a) or ECCN 9A610.a.” Textron does not believe that such systems for small aircraft like UAVs warrant control, and we suggest that DDTC impose an aircraft weight limit to clarify this issue.

Similarly, ECCNs 9A610.u and 9A115 overlap significantly with respect to launching UAVs, and ECCN 9A115 simply refers industry back to the USML. If BIS adopted its Proposed Rule, the two ECCNs would read, in pertinent part, as follows:

- **Proposed ECCN 9A610.u** - “Apparatus and devices ‘specially designed’ for the . . . non-ship-based launching of UAVs or drones controlled by either USML paragraph VIII(a) or ECCN 9A610.a, and capable of a range equal to or greater than 300 km. (Such apparatus and devices for aircraft capable of a range less than 300km are controlled in 9A610.x).
- **ECCN 9A115** – “Apparatus, devices and vehicles, designed or modified for the transport, handling, control, activation and launching of . . . unmanned aerial vehicles capable of achieving a “range” equal to or greater than 300 km. (These items are ‘subject to the ITAR.’ See 22 CFR parts 120 through 130.)”

In other words, a launching apparatus or device for a UAV controlled by VIII(a) or ECCN 9A610.a that is capable of a range equal to or greater than 300 km could never fall under ECCN 9A610.u, although this entry clearly covers such items, because ECCN 9A115 would send the apparatus/device back to the ITAR, although it does not specify where on the USML the items would fall.

Textron respectfully requests that DDTC and BIS clarify that all non-ship based UAV launching, recovery, and landing systems fall under ECCN 9A610.u (or another CCL category) or clarify when to use ECCN 9A610.u and when to use the various USML Categories identified above.

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<sup>3</sup> See, *e.g.*, Aerosonde Mark 4.7 - <http://www.aerosonde.com/pdfs/aerosonde-mark-47.pdf>.

Mr. C. Edward Peartree  
Office of Defense Trade Controls Policy  
March 25, 2016

\* \* \* \* \*

We appreciate DDTC's and BIS's consideration of these issues, and we look forward to discussing these topics with you further.

Thank you

United Technologies Corporation  
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10<sup>th</sup> Floor  
Washington, D.C. 20004-2545



**Submitted Via Email**

March 25, 2016

C. Edward Peartree  
Director, Office of Defense Trade Controls Policy  
Directorate of Defense Trade Controls  
U.S. Department of State

Attn: ITAR Amendment—USML Categories VIII and XIX

Re: Proposed Rule: Amendment to the International Traffic in Arms Regulations, U.S. Munitions List Categories VIII and XIX (81 Fed. Reg. 6797, February 9, 2016)

Dear Mr. Peartree:

United Technologies Corporation (“UTC”) appreciates the opportunity to submit these comments with respect to the proposed revisions of United States Munitions List (“USML”) controls of aircraft, gas turbine engines, and parts thereof, outlined in the proposed rule issued on February 9, 2016 (“Proposed Rule”). From the outset of Export Control Reform (“ECR”), the Directorate of Defense Trade Controls (“DDTC”) has stated that it is their intent to review the current USML with the goal of controlling only those items providing a critical military or intelligence advantage and releasing items that do not warrant USML controls. This principle has been codified in Section 120.3 of the International Traffic in Arms Regulations (“ITAR”) (*see* ITAR §120.3(b), “*For the purposes of this subchapter, a specific article of defense service shall be determined in the future as a defense article or defense service if it provides a critical military or intelligence advantage such that it warrants control under this subchapter*”).

UTC understands and supports the need for continual review of all USML Categories to ensure they are clear, account for technological advancements, and properly implement the national security and foreign policy objectives of the reform effort. However, UTC believes the Proposed Rule, in part, reverses course on the stated intent and objectives of ECR. Specifically, the Proposed Rule re-controls certain items, such as tooling, equipment, and various parts and components, which were originally transitioned from the USML to the Commerce Control List (“CCL”) at the start of the ECR initiative. The Proposed Rule also appears to assert first-time control over materials and various parts and components that have historically been classified, appropriately, on the CCL. In the Proposed Rule, the DDTC does not provide any explanation as to why these items are now being deemed to provide a critical military advantage; therefore, it is difficult to understand the need to re-control, or control for the first time, these items.

UTC notes that the re-control and first-time control of certain items will pose several challenges for industry. For instance, re-control or first-time control will require industry to undertake another lengthy reclassification effort. Re-control and first-time control will take items subject to the less restrictive controls of the Export Administration Regulations (“EAR”) and place them under the more restrictive controls of the ITAR. If this is done without first establishing a well-crafted transition plan, the re-control and first-time control will have immediate negative consequences with regards to industry’s ability to support ongoing programs such as the F-35 Joint Strike Fighter (“JSF”) aircraft program. The initial decontrol and subsequent re-control of items is likely to lead to confusion for non-U.S. customers and suppliers as well as smaller U.S. companies. Before subjecting any items to re-control or first-time control on the USML, UTC recommends that the DDTC consider the consequences mentioned above and explained in more detail below. At a minimum, UTC believes that the DDTC should sufficiently explain the critical military advantage associated with any item being re-controlled or subjected to first-time control on the USML as a result of this Proposed Rule.

For ease of review, the comments below are separated into three primary sections. Section I addresses comments applying to both USML Categories VIII and XIX. Section II addresses comments pertaining to only Category VIII revisions. Section III addresses comments pertaining to only Category XIX revisions.

## **I. Comments Common to USML Categories VIII and XIX**

### **A. Transition Plan**

With the first set of ECR final rules issued on April 16, 2013 (“Final Rules”), a large number of aircraft, gas turbine engines, and related items transitioned from USML Category VIII to the newly created “600-series” Export Control Classification Numbers (“ECCNs”) of 9x610, 9x619 and 3x611, or to legacy ECCNs (e.g., ECCN 9A991 and EAR99). To effectively manage the transition of items from the USML to the CCL, the DDTC published a transition plan on April 16, 2013 (“2013 Transition Plan”) (*see* 78 Fed. Reg. 22740). The transition plan addressed: (i) the timeline for implementing changes; (ii) temporary licensing procedures; and (iii) permanent licensing procedures.

With this Proposed Rule, some items that were initially transitioned from the USML to the 9x610, 9x619, 3x611 and legacy ECCNs will be re-controlled in USML Categories VIII or XIX (“Re-controlled Items”).<sup>1</sup> Also, as mentioned in the preamble, some items will now be subject to first-time control in USML Categories VIII or XIX. For purposes of UTC’s comment regarding the need for a well-crafted transition plan, items subject to first-time control will be treated as Re-controlled Items. As was the case when items were initially transitioned from the USML to the CCL, the transition of Re-controlled Items from the CCL to the USML will require a transition plan that addresses the following: (i) the timeline for implementing changes; (ii) temporary licensing procedures; and (ii) permanent licensing procedures. UTC provides the following transition plan recommendations and justifications.

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<sup>1</sup> Although USML Category XI is not part of the proposed rule, some of the Re-controlled Items are electronic in nature, and some parts and components may be classified in ECCN 3A611. As an example, printed circuit boards for Re-controlled Items would be re-controlled in USML subparagraph XI(c)(2).

*i. Timeline for Implementing Changes*

UTC recommends that DDTC adopt a one-year transition period to implement Proposed Rule classification changes. In the 2013 Transition Plan, DDTC established a 180-day transition period, which was intended to provide industry with enough time to reclassify all items affected by the Final Rules. For UTC, the process for reclassifying all items in accordance with the Final Rules took significantly longer than the 180-day transition period.<sup>2</sup> Although the actual reclassification effort extended well past the 180-day transition period, the practical consequences were minimal as items that were not yet reclassified could, so long as they were properly licensed in accordance with the 2013 Transition Plan, be exported under the legacy USML classification(s).

With the Proposed Rule, UTC expects that many items currently classified under 9x610, 9x619, 3x611 or legacy ECCNs as a result of the 2013 Final Rules will require a reclassification analysis. Unlike the transition from the USML to the CCL, UTC could experience practical consequences if the reclassification of items cannot be completed before the transition period expires. At UTC, we estimate that roughly 275,000 items will be subject to a reclassification analysis to determine if they are re-controlled on the USML. In addition to the roughly 275,000 items that will be subject to reclassification analysis, UTC will need to assist suppliers that have designed items, such as equipment and tooling, for the production of UTC-designed items. For example, a supplier manufacturing items classified in VIII(h)(1) could have developed tooling that will, as a result of the Proposed Rule, need to be reclassified.

UTC does not believe that a one-year transition period will negatively impact U.S. national security or foreign policy interests as these Re-controlled Items will have been exported, re-exported and/or retransferred for roughly three years before the Proposed Rule becomes effective.

*ii. Temporary Licensing Procedure*

Since October 2013, UTC has obtained hundreds of Bureau of Industry and Security (“BIS”) licenses authorizing the export, re-export and/or retransfer of Re-controlled Items and has employed a number of available EAR license exceptions (e.g., STA). In some instances, UTC has been authorized to export under the authority of No License Required (“NLR”) (i.e., exports of “600-series” items to Canada, exports of items controlled in the .y paragraph of Yx600 ECCNs, and exports of items otherwise controlled solely for anti-terrorism (“AT”) reasons). In many cases, the BIS licenses are still active (i.e., they have not expired or been exhausted) and the use of EAR license exceptions and NLR remain available. Requiring industry to immediately cease using active BIS licenses, EAR license exceptions and the NLR authorization would create a temporary blackout period in which no exports, re-exports and/or retransfers can occur. Any blackout period will negatively impact industry and customers.

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<sup>2</sup> The original reclassification process took longer than the 180-day transition period because of the volume and complexity of the changes required in business processes and IT systems to implement new classifications. For a large corporation with hundreds of thousands of parts and millions of pieces of associated technical data, the reclassification process required writing procedures, preparing training materials, and training personnel on the changes. Further, considerable time was required to ensure that IT systems were modified to handle new USML and CCL paragraphs and subparagraphs.

UTC recommends that DDTC adopt a three-year transition period in which industry can continue to export, re-export and/or retransfer Re-controlled Items against active BIS licenses obtained prior to the effective date of the Proposed Rule, under existing EAR license exceptions, or as NLR, as appropriate. UTC believes a three-year transition period is appropriate for the following reasons:

- The three-year transition period is consistent with the 2013 Transition Plan, as amended by DDTC in a web notice published on October 9, 2015.
- A three-year transition period is necessary given the significant time required to obtain DDTC agreements, which for complex cases and/or cases requiring Congressional review can require more than one year to be completed.
- All “600-series” items licensed for export, re-export and/or retransfer by BIS have been subject to review by the DDTC and DOD. Because the items have already been licensed for export, re-export and/or retransfer, there is no obvious benefit in requiring industry to immediately obtain a new export, re-export and/or retransfer licenses, and it would place a significant strain on limited industry and government resources.
- The only license exceptions available for the re-export and retransfer of 9x610, 9x619 and 3x611 are BAG, GOV, LVS, RPL, TMP, TSU, and STA. In effect, the continued export, re-export and/or retransfer of Re-controlled Items will be largely limited to certain government end-users, end-users already in possession of the item(s), and strategic allies.
- All items controlled for AT-only purposes, such as those controlled under the .y paragraph of 600-series ECCNs, were originally determined to be of such low sensitivity that minimal controls were required.

*iii. Permanent License Procedure*

UTC recommends that the USG allows Re-controlled Items previously exported, re-exported and/or retransferred pursuant to a BIS license, license exception or NLR, to remain controlled in the 9x610, 9x619, 3x611 and legacy ECCNs for purposes of re-export and/or retransfer pursuant to BIS authorization. Since October 2013, it is likely that tens of thousands of Re-controlled Items have been exported, re-exported and/or retransferred. Requiring foreign end-users to now treat those items as ITAR-controlled is not practical for the following reasons:

- To ensure that as of the effective date of the Proposed Rule all Re-controlled Items are identified and all end-users in possession of Re-controlled Items are advised, the following actions must occur. First, the design authority responsible for completing a reclassification analysis would need to complete the analysis. Second, once the reclassification analysis is completed, the design authority would need to identify and advise all customers who had purchased the item of any reclassification. Third, if the initial customer has resold or retransferred the Re-controlled Item, the initial customer

will then need to identify and advise all subsequent customers of the reclassification. The ability for industry to effectively ensure that all actions occur will be nearly impossible.

- The Re-controlled Items will have been exported, re-exported and/or retransferred in accordance with EAR requirements for more than three years when the Proposed Rule become effective. Subjecting the items now to the more restrictive controls would have little benefit to national security.
- The only license exceptions available for the re-export and retransfer of 9x610, 9x619 and 3x611 are BAG, GOV, LVS, RPL, TMP, TSU, and STA. In effect, the continued re-export and/or retransfer of Re-controlled Items will be largely limited to certain government end-users, end-users already in possession of the item(s), and strategic allies.

Alternatively, UTC recommends that DDTC create ITAR license exceptions that mirror the current BIS license exceptions. Use of the ITAR license exceptions could be restricted exclusively to the re-export and/or retransfer of Re-controlled Items.

#### B. Equipment/Tooling

USML subparagraphs VIII(h)(30)(iv) and XIX(f)(16)(i) will re-control ECCN 9B610 and 9B619 jigs, locating fixtures, gauges, templates, molds, dies, and caul plates, for the production of aircraft and engine parts and components controlled in USML subparagraphs VIII(h)(1) and XIX(f)(1). USML subparagraph XIX(f)(16)(ii) will control test cells and test stands specially designed for defense articles captured in USML subparagraph XIX(f)(1). In the Proposed Rule, the DDTC specifically requested that industry comment as to whether the identified production and test equipment *per se* reveals technical data directly related to a defense article.

##### *i. VIII(h)(30)(iv) and XIX(f)(16)(i)*

Jigs, fixtures, gauges, templates, molds, dies and caul plates do not *per se* reveal technical data directly related to a defense article. As illustrated below, whether a jig, fixtures, gauge, template, mold, die or caul plate reveals technical data depends on the specific item.

Templates, molds, dies, and caul plates (collectively “Production Equipment”) provide a shape of the item being produced. When used to produce a semi-finished or finished item that is clearly identifiable as a defense article, Production Equipment will provide some information about the defense article. Whether the information constitutes technical data, as defined in ITAR §120.10, depends on the individual item and the specific process. For example, when using a 6.00 inch by 4.00 inch template to produce an item that doesn’t require precision (i.e., 6.00 inches by 4.00 inches to create a rough item to be trimmed later), the information revealed by the template would not necessarily provide technical data related to the defense article. However, when using a 6.00 inch by 4.00 inch template to produce an item that does require precision (i.e., 6.00 inches by 4.00 inches is mandatory), the information revealed by the template would provide technical data related to the defense article. The same principles hold true when determining whether a mold, die, or caul plate reveals technical data related to a defense article.

A jig or locating fixture can be used to locate a part to be worked. As with Production Equipment, whether a jig or locating fixture provides technical data depends on the specific jig or fixture. For example, a locating fixture that perfectly mimics a turbine blade root to hold a turbine blade in place while drilling is performed will provide technical data related to the turbine blade root. In comparison, a locating fixture that is as simple as a pin on a flat piece of metal and used to hold a turbine blade in place while drilling is completed will not provide any technical data related to the turbine blade. As another example, a locating fixture designed to clamp down on a turbine blade would indicate that that some surfaces of the turbine blade are a set distance apart; however, the information would not constitute technical data because it would not reveal information required for the design, development, production or manufacture (i.e., the actual shape) of the turbine blade.

Gauges are used for measuring. As with Production Equipment, jigs and locating fixtures, whether a gauge provides technical data depends on the specific gauge and what is being measured. For example, a measuring gauge could consist of a bar of metal made to a specific dimension, with a dial micrometer on one end. This gauge is used to measure between two set points on a part. The dial micrometer is used to determine the exact measurement. While the gauge provides specific detail about the part (i.e., that two very specific points are a specific distance apart), it does not necessarily provide information as to where those points are on the part. In this case, the information provided by the gauge would not constitute technical data. If however, the gauge was designed to measure the diameter of the shaft, the measurement point is clear, and the information provided would constitute technical data. Another type of gauge is a go/no-go gauge. Similar to a measuring gauge, it will fit onto a part. If measuring between two points, without knowing the location of the two points, it provides no technical data. If the go/no-go gauge is for a part profile, it will provide technical data.

UTC notes that a proposed note to USML subparagraph VIII(h)(30) will limit control of jigs, locating fixtures, gauges and Production Equipment to just those used for production of airframe parts and components influencing strength, integrity or shape. In accordance with the proposed note, a locating fixture used for the production of USML subparagraph VIII(h)(1) actuators or hoses (i.e., non-structural components) would not be controlled on the USML. The DDTC has not proposed an equivalent note for USML subparagraph XIX(f)(16). Absent a similar note, a locating fixture used for the production of USML subparagraph XIX(f)(1) actuators or hoses would be controlled on the USML. As a result, similar tools for the manufacture of similar components, revealing the same level of information, are treated differently depending on either airframe or engine applications.

Because jigs, locating fixtures, gauges and Production Equipment do not *per se* reveal technical data related to a defense article, UTC recommends that USML subparagraphs VIII(h)(30)(iv) and XIX(f)(16)(i) not be adopted.

ii. XIX(f)(16)(ii)

Test cells and test stands do not *per se* reveal technical data related to a defense article. As with jigs, locating fixtures, gauges and Production Equipment, whether a test cell and test stand reveals technical data related to a defense article, depends on the defense article and the

purpose of the test cell or test stand. A test stand could be sized to apply a opposing force range for an USML subparagraph XIX(f)(1) actuator. In this case, the test stand would only reveal what range of forces the actuator may apply. The test stand would not reveal information necessary for the design, development, production or manufacture (i.e., no specific capabilities) of the actuator. Another test stand could provide acceptance criteria for a USML subparagraph XIX(f)(1) actuator. In this case, the test stand would reveal technical data.

As noted in Section I.B.i above, the proposed note for USML subparagraph VIII(h)(30) creates a discrepancy between USML Category VIII and XIX equipment. For example, test cells and test stands for USML subparagraph VIII(h)(1) actuators would be not be captured on the USML while test cells and test stands for USML subparagraph XIX(f)(1) actuators would be captured on the USML.

Because test cells and test stands do not *per se* reveal technical data related to a defense article, UTC recommends that USML subparagraph XIX(f)(16)(ii) not be adopted. If UTC's recommendation is not accepted, UTC requests confirmation that the proposed control of test cells and test stands does not also control their related accessories, such as tail cones for use in a test cell.

*iii. New Standard Adopted for USML Control*

As stated above, the objective of ECR is to control items on the USML only when they provide a critical military or intelligence advantage. The Proposed Rule, through the addition of USML subparagraphs VIII(h)(30) and XIX(f)(16), will establish a new standard for control. Specifically, the proposed subparagraphs will establish a standard of control based on an item's ability to reveal technical data related to a defense article. This new principle is contrary to the stated intent of ECR. Absent any explanation or assessment of how the tooling and equipment to be controlled provides a critical military advantage, UTC recommends that DDTC not adopt USML subparagraphs VIII(h)(30)(iv) and XIX(f)(16).

If DDTC intends to establish this new standard for determining whether an item should be controlled on the USML, UTC offers the following for consideration:

- USML subparagraphs VIII(h)(30)(iv) and XIX(f)(16)(i) will only control jigs, locating fixtures, gauges and Production Equipment used for the production of defense articles captured in catchall paragraphs as a result of their being specially designed for listed aircraft and engines (e.g., F-35 and F135). The proposed control will not control jigs, locating fixtures, gauges and Production Equipment used for the production of defense articles enumerated in other USML Category VIII and XIX subparagraphs (e.g., Category XIX(f)(2)-(5)) and specially designed for the same listed aircraft and engines (e.g., F-35 and F135). Arguably, any technical data revealed related to an F135 engine high pressure turbine blade controlled in XIX(f)(2) has greater military significance than a F135 engine actuator controlled in XIX(f)(1).

- USML subparagraph XIX(f)(16)(ii) will not control test cells and test stands for production engines.<sup>3</sup> Test cells and test stands for production engines listed in USML subparagraph XIX(f)(1) will remain controlled on the CCL under ECCN 9B619. Further, test cells and test stands for systems, parts and components controlled in USML subparagraphs XIX(f)(2)-(5) for listed engines (e.g., F135) will remain controlled on the CCL under ECCN 9B619.

iv. Impact of New Control

If the proposed subparagraphs are adopted, the result will be a re-control of tooling and equipment currently captured on the CCL. Tooling and equipment controlled in ECCNs 9B610 and 9B619 are subject to national security (“NS”) and regional stability (“RS”) controls. Although EAR license exceptions are available for items controlled under ECCNs 9B610 and 9B619, they are largely limited to government end-users, end-users already in possession of the item(s), and strategic allies.

The proposed re-control of tooling and equipment will disproportionately impact a specific industry segment and, specifically, have a substantial impact on the programs such as the F-35 JSF aircraft program. The F-35 JSF aircraft program is currently in the ramp-up phase – aircraft and engines are being delivered to program partners, part and component production is increasing, off-shore engine assembly is beginning, and overhaul and maintenance activities will commence in the near future. Production tooling and equipment has or is being provided today under BIS authorizations and BIS license exception STA. The re-control of tooling and equipment will require significant resources to reclassify the items and obtain new authorizations. This will inevitably have an impact on the ability of industry to effectively support the ramp-up phase of the F-35 JSF aircraft program.

v. Recommendation

UTC recommends that DDTC does not adopt proposed subparagraphs VIII(h)(30)(iv) and XIX(f)(16)(i)-(ii). Instead, UTC recommends that DDTC convene an industry group to determine what specific tooling and equipment requires control on the USML before proposing any further re-control.

C. Security Classified Defense Articles

The preamble to the Proposed Rule clarifies that USML subparagraph VIII(h)(20) is only for items not otherwise described on the USML, making it a catch-all classification of last resort. UTC assumes that this clarification applies to similar security classified USML subparagraphs (e.g., XIX(f)(6)). UTC appreciates this clarification; however, we note that the clarification does not eliminate all issues related to having security classified USML classifications within multiple USML categories.

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<sup>3</sup> While test stand and test cells for demonstrator engines and developmental engines will be controlled in proposed USML subparagraph XIX(f)(7), production engines likely are not controlled therein. See UTC’s comments in Section III.E.

USML subparagraphs VIII(h)(20)(iii) and XIX(f)(6)(iii) control any part, component accessory, attachment, equipment or system, that *is being developed* using classified information. If the production version of the item is security classified, these subparagraphs are superfluous because the defense article, whether in development or production, is already captured by USML subparagraphs VIII(h)(20)(i) and XIX(f)(6)(i). If the production version of the item is not security classified, then subparagraph (iii) over-controls the item as Significant Military Equipment (“SME”) while in development but that becomes “600-series” upon entering production.<sup>4</sup> UTC does not believe it is the intent of the DDTC to control items as security classified and SME in development, when the item in production could well be unclassified and controlled on the CCL. UTC recommends that the DDTC delete paragraphs VIII(h)(20)(iii) and XIX(f)(6)(iii).

USML subparagraphs VIII(20)(iii) and XIX(f)(6)(iii) also create potential conflicts with security classification disclosure requirements. Prior to ECR, a security classified defense article enumerated or described on the USML would be controlled under the specific USML subparagraph in which it was enumerated or described. In that way, from an export control perspective, security classified items were indistinguishable from similar unclassified items controlled under the same category. Security classified defense articles not enumerated or described in a USML subcategory were controlled in USML Category XVII, a catchall for security classified defense articles and technical data. With the pre-ECR approach, all security classified defense articles and technical data were controlled by the ITAR in some form, the majority of which were indistinguishable by USML subparagraph from non-security classified articles.

Post-ECR, all revised USML Categories that have become effective to date, with the exception of USML Category XX, now include specific subparagraphs capturing security classified defense articles (e.g., VIII(h)(20) and XIX(f)(6)). As a result of the new security classified USML subparagraphs, items that were previously controlled in unclassified USML paragraphs (e.g. VIII(h)), but would otherwise transition to the EAR, are now classified in security classified USML subparagraphs (e.g., VIII(h)(20)(i)) and, therefore, can be distinguished from similar unclassified items.

In the post-ECR environment, conflicts have become more common as a result of different disclosure priorities. For the DDTC, disclosure of an item’s USML export classification, even when disclosing a security classification, is appropriate and necessary for compliance with the ITAR. Disclosure of an item that is security classified is not always compatible with the DOD NISPOM/contractual obligations. With regards to certain security classified programs, the individual program may impose contractual requirements dictating that identifying an item as security classified is itself security classified data. For example, a document identifying that an item is classified in USML subparagraph VIII(h)(20)(i), could, pursuant to contractual requirements, become a security classified document. As with all security classified documents, disclosure thereof is significantly restricted. At a minimum, it creates a “security indicator.” The conflict between the DDTC and DOD disclosure priorities creates a difficult management challenge for industry.

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<sup>4</sup> Only items that transition from the USML to the CCL can be caught in the (iii) paragraph, as all other USML entries take precedent.

Although the conflicting disclosure priorities existed prior to ECR, the increase in items from mixed classified/unclassified USML subparagraphs to new security classified subparagraphs has increase the number of conflicts industry experiences as it relates to disclosure priorities. In order to minimize the aforementioned conflicts, UTC recommends that the DDTC reconsider the approach to controlling classified defense articles in the USML paragraphs/subparagraphs that unambiguously identify the defense articles as classified.

#### D. Term “Capable Of”

The term “capable of” is used in seven entries in USML Categories VIII and XIX,<sup>5</sup> but the term often creates confusion when classifying items. The word “capable” has the dictionary definition of “to have the ability.” Components, assemblies, systems and end-items, may have the ability to meet a performance threshold (i.e., they are “capable of”), but that performance threshold may not be within the normal design space. For example, a gas turbine engine designed and rated for 14,500 pounds of thrust could operate outside of the design and rating limits, with consequential and significant reduction in operation life and reliability, and under some circumstances, be “capable of” over 15,000 pounds of thrust.

UTC believes it is the intent of DDTC to capture items with certain designed performance characteristics. For clarity, UTC recommends replacing the term “capable of” with “designed to” or “designed for” in USML subparagraphs VIII(a)(14), (h)(4)(ii)(E), (h)(27), XIX(a), XIX(b)(1) and (2) and with “equipped to” in USML subparagraph VIII(a)(12), to indicate that the performance criteria is within the intended design space of the item.

#### E. Systems

Categories VIII and XIX have several entries that control “systems” and specially designed parts and components thereof.<sup>6</sup> Categories VIII and XIX also have several subparagraphs that control systems, but not the specially designed parts and components thereof.<sup>7</sup> UTC believes that it is appropriate to control systems in some USML subparagraphs, and in others, control the systems and the parts and components thereof.

ITAR §120.45(g) defines a system as “a combination of parts, components, accessories, attachments, firmware, software, equipment, or end-items that operate together to perform a function.” ITAR §120.45(b) defines components as “an item that is useful only when used in conjunction with an end-item.” A major component includes “any assembled element that forms a portion of an end-item without which the end-item is inoperable.” A minor component includes “any assembled element of a major component.”

After applying definitions provided in the ITAR, various systems may be classified on the USML while releasing the parts and components thereof to the CCL. For example, the F100 engine monitoring system is controlled in USML subparagraph XIX(f)(5), while sensors, wiring,

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<sup>5</sup> USML subparagraphs VIII(a)(12), VIII(a)(14), VIII(h)(4)(ii)(E), VIII(h)(27), XIX(a), XIX(b)(1) and XIX(b)(2).

<sup>6</sup> To include USML subparagraphs VIII(e), VII(h)(3), (h)(4) and (h)(11).

<sup>7</sup> To include USML subparagraphs VIII(h)(8), h(9), XIX(e) and XIX(f)(5).

indicators and a processor for the system fall under the CCL. UTC believes this is correct as USML subparagraph XIX(f)(5) controls engine monitoring systems, but does not control the parts and components thereof. As the sensors, wiring, indicators and electronic processing unit cannot perform the function of the engine monitoring system on their own, classifying them individually as a system is not appropriate. The sensors, wiring harness, indicators and processor are more appropriately classified as parts and components. Only when the sensors, wiring harness, indicators and processor are incorporated within the engine monitoring system can they perform the function of an engine monitoring system.

As another example, USML subparagraph XIX(e) controls engine control systems, but does not control the parts and components thereof. The F100 engine control processing unit (“DEEC”) is controlled under USML subparagraph XIX(e). In applying the ITAR definitions, the sensors, wiring harness and actuators incorporated within the F100 DEEC are not captured in subparagraph XIX(e) but are controlled on the CCL as they cannot, as standalone items, perform the function of the F100 DEEC.

Although UTC believes this is the correct application of the definitions and subsequent classification analysis, BIS periodically has raised questions concerning the classification of the engine monitoring electronic processing unit (i.e., a component of the USML subparagraph XIX(f)(5) engine monitoring system) as ECCN 9A619.x, rather than treating the processing unit itself as a “system” under USML subparagraph XIX(f)(5). To avoid future confusion, UTC recommends that the DDTC clarify that USML subparagraphs that control “systems” only (e.g., USML subparagraph XIX(f)(5)) do not also control the parts and components thereof, regardless of the significance of the parts and components.

## **II. USML Category VIII**

### **A. VIII(a)(7) and (a)(8)**

The Proposed Rule revises USML subparagraphs VIII(a)(7) and (8) to, among other things, add the phrase “incorporating or specially designed to incorporate a defense article.” We understand these subparagraphs, as proposed, would capture otherwise civil aircraft that incorporate a defense article for any of the military purposes identified in the paragraphs. For instance, and otherwise EAR-controlled civil aircraft (e.g., Cessna Caravan) incorporating a USML Category XI radar system and used for surveillance purposes will be controlled in USML subcategory VIII(a)(7) (*Intelligence, surveillance, and reconnaissance aircraft incorporating or specially designed to incorporate a defense article*). Through application of the specially designed definition, all unmodified parts, components and systems on the civil aircraft remain EAR-controlled (e.g., 9A991). Further, the technical data associated with those EAR-controlled parts, components and systems remains EAR-controlled (e.g., 9E991). Although the aircraft as a whole would be controlled under USML VIII(a)(7) due to the incorporation of a defense article, UTC believes the only technical data associated with that aircraft that is subject to the USML is that technical data directly related to the incorporated defense article. UTC requests confirmation of this understanding, or clarification as to what other technical data would be controlled on the USML.

## B. VIII(h)(7) & (18)

Currently, USML subparagraphs VIII(h)(7) and (18) control damage or failure-adaptive flight control systems and drive/flight control systems. When USML Category VIII was revised in 2013, the parts and components of these systems were transitioned from USML to the CCL in accordance with articulated intent of ECR (i.e., to only control items on the USML if they provide critical military significance). As a result of the initial transitions, items such as actuators, sensors and bell cranks, transitioned to ECCN 9A610.x.

The Proposed Rule, if adopted, will revise these USML subparagraphs by adding the phrase “*and specially designed parts and components therefor.*” As a result of adding this language, DDTC will effectively be re-controlling parts and components that, as a result of ECR, were initially transitioned to ECCN 9A610.x. In re-controlling these items, the DDTC did not indicate how the items provide a critical military advantage warranting control on the USML. As mentioned in the preamble of UTC’s comments, re-capturing items previously transitioned will require industry to devote significant resources to the reclassification of parts, components and related technical data, will likely require new license authorizations, and likely will cause confusion for industry and non-U.S. customers and suppliers.

UTC recommends that DDTC not revise USML subparagraphs VIII(h)(7) and (18) by adding the phrase “*and specially designed parts and components therefor.*” Instead, if there are certain parts and components that do offer a significant military advantage, UTC recommends that DDTC revise subparagraph VIII(h)(7) and (18) to identify those items specifically. UTC also recommends that if re-controlling parts and components is deemed necessary, that the DDTC clearly articulate the critical military advantage warranting control.

## C. VIII(h)(27)

The Proposed Rule creates USML subparagraph VIII(h)(27) to control variable speed gearboxes capable of varying output speed by 50% or greater and providing power to rotors, prorotors, propellers, propfans, or liftfans. These gearboxes are currently controlled in USML subparagraph VIII(h)(2). UTC does not believe that the gearboxes require continued control on the USML through the addition of USML subparagraph VIII(h)(27) as they do not provide a critical military advantage and are equally beneficial to commercial aircraft.

In 2006, the National Aeronautics and Space Administration’s (“NASA”) Fundamental Aeronautics Subsonic Rotary Wing Program (“NASA Rotary Wing Program”) published a paper regarding the civil competitiveness of rotorcraft.<sup>8</sup> In the paper, the NASA Rotary Wing Program found that speed variation would improve civil rotorcraft efficiency (including aerodynamic performance and structural weight), productivity (which requires high speed, large payload, long range, and good maneuverability) and environmental acceptance (particularly, noise and handling qualities). In the paper, the NASA Rotary Wing Program found that speed variations of 50% will have a dramatic effect on reducing external noise while increasing civil rotorcraft performance.

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<sup>8</sup> [http://cafe.foundation/v2/pdf\\_tech/NASA.Aeronautics/PAV.NASA.ARMD.RotaryWing.pdf](http://cafe.foundation/v2/pdf_tech/NASA.Aeronautics/PAV.NASA.ARMD.RotaryWing.pdf)

With increasing restrictions and flight path limitations on both fixed-wing and rotary-wing aircraft, rotorcraft noise is an issue with civil aircraft operations throughout the world. As demonstrated by the 2006 NASA Rotary Wing Program paper, gearboxes designed to improve rotorcraft noise are beneficial for commercial rotorcraft. Controlling these gearboxes on the USML does not protect a critical military advantage and will have the effect of limiting the ability of civil aircraft to benefit from the gearboxes in terms of noise reduction and increased aircraft performance. As such, UTC recommends that the DDTC not adopt the proposed subparagraph.

If the DDTC does intend to control variable speed gearboxes, UTC recommends that DDTC amend the control in several respects. First, USML subparagraph VIII(h)(27) uses a 50% or greater parameter. DDTC should revise the subparagraph to provide the method of calculating the speed variation. Without identifying a method for calculating the speed variation, industry could arrive at a different jurisdiction for two similar gearboxes. For example, a gearbox with a maximum speed of 100 rpm that can go down to 62 rpm has a 38% speed variation. But if a gearbox starts with 62 rpm as a minimum speed, the 100% is a 61% increase and above the threshold. UTC recommends that the subparagraph be revised to state that the threshold is a 50% reduction from the maximum design speed. If this is accepted, UTC would propose the following equation:

$$\% \text{ Variation} = \frac{(\text{Maximum Output Rotational Speed} - \text{Minimum Output Rotational Speed})}{\text{Maximum Output Rotational Speed}} \times 100$$

In addition to the aforementioned recommendation regarding the speed variation calculation, UTC also recommends revising the subparagraph to clarify that the term “rotor” pertains to helicopter rotors and does not pertain to other rotors such as gas turbine engine compressor rotors. Finally, UTC notes that the term “capable of” is problematic when used with an objective threshold. UTC recommends that the subparagraph replace the term “capable of” with “designed to” or “designed for.” This recommendation is consistent with UTC’s recommendation in Section I.D above.

#### D. VIII(h)(28)

The proposed rule would add USML subparagraph VIII(h)(28) to control electrical or thermal management systems which have any of four features. UTC understands that integrating the electrical and thermal management with the propulsion system is essential to the packaging, efficiency, and thermal signature constraints of fighter aircraft; however, the proposed (h)(28) entry should be modified to enhance the clarity and effectiveness of the control.

##### i. Proper USML Category Issues

Prior to ECR, USML aircraft, gas turbine engines, and their parts and components were controlled in USML Category VIII. With ECR, the DDTC moved the control of gas turbine engines and related parts and components to USML Category XIX, while retaining control of aircraft and related parts and components in USML Category VIII. As some systems are shared

between the aircraft and the gas turbine engine, classification issues have arisen periodically. For example, a fuel line for an aircraft/engine identified in USML subparagraphs VIII(h)(1) and XIX(f)(1) (e.g., F-35/F-135) that connects the aircraft to the engine could be controlled in Category VIII or XIX. This is not a trivial distinction, as the proper classification of defense articles is required and necessary for license authorizations, and as noted above in Section I.B above, impacts the proposed classification of certain tooling.

With the Proposed Rule, USML subparagraph VIII(h)(28) will control items in USML Category VIII that are incorporated into Category XIX engines, creating additional classification issues. Should the DDTC choose to adopt the subparagraphs identified below, UTC recommends that the DDTC provide guidance as to the proper classification of systems identified in USML Category VIII, but incorporated in USML Category XIX engines.

*ii. VIII(h)(28)(i)*

The Proposed Rule will control electrical or thermal management systems that include electrical power generators providing greater than 300 kW of electrical power and exceeding 2 kW/pound gravimetric power density. UTC recommends DDTC clarify that the use of the term “pound” in gravimetric power density refers to the generator only (i.e., it does not include the controller).

*iii. VIII(h)(28)(ii)*

The Proposed Rule will control electrical or thermal management systems that include heat exchangers that can exchange 200 kW or more of heat into a gas turbine flow path. As written, this control is not complete.

The ability of a heat exchanger to dump heat is a function of the cooling flow rate and density, and the temperature difference between the flow to be cooled and the cooling flow (collectively “operating conditions”). The current 200 kW control parameter does not capture any of these necessary operating conditions; therefore, industry would be unable to identify items that are controlled within USML subparagraph VIII(h)(28)(ii). UTC recommends that DDTC clarify the heat exchanger performance (typically in kW per delta temperature) along with specific operating conditions for measuring the threshold.

For packaging reasons, it is common for a thermal management system to include multiple small heat exchangers. As written, the proposed subparagraph does not indicate whether the 200kW control parameter refers to the total heat exchanger capacity or the capacity of a single heat exchanger. UTC recommends that DDTC clarify whether the thresholds reflects the total heat exchanger capacity or a single heat exchanger.

*iv. VIII(h)(28)(iii)*

The Proposed Rule will control electrical or thermal management systems that include logic controls that maintain gas turbine engine operability during pneumatic and shaft power

extraction of 2 kW/pound. At a minimum, the proposed control requires clarifications before industry will be able to correctly identify whether an item is controlled.

As currently written, subparagraph VIII(h)(28) sets a pneumatic and shaft power extraction threshold of 2 kW/pound. It is unclear as to what the term “pound” refers. If adopted as-is, industry could interpret this to be a pound of inlet air, a pound of engine thrust, a pound of fuel, or some other unspecified measurement. Further, the proposed subparagraph does not state whether the threshold is the ceiling (i.e., less than 2 kW/pound) or a floor (i.e., greater than 2 kW/pound). Finally, the proposed subparagraph does not include operating conditions. UTC recommends that the DDTC revise the control to add clarity surrounding the aforementioned issues.

In addition to the lack of clarity, subparagraph VIII(h)(28)(iii) also creates issues with regards to the term “logic control.” Engine operability logic is typically located in the engine control. Since the engine control is controlled under USML subparagraph XIX(e), the engine control algorithms (i.e., logic) are controlled as technology in USML subparagraph XIX(g). For this reason, it is unlikely that a thermal management system will incorporate engine operability logic. However, if the engine operability logic is, for whatever reason, controlled in the thermal management system, it should technically be controlled as technology in subparagraph VIII(i). This creates a classification conflict in determining if such engine operability logic is controlled in Category VIII(i) or the present Category XIX(g) entries.

As this entry would control electrical management systems and thermal management systems on the basis of engine performance aspects and not their specific performance, UTC recommends that the DDTC does not adopt this subparagraph.

v. VIII(h)(28)(iv)

The Proposed Rule will control electrical or thermal management systems that include direct-cooling thermal electronic package heat exchangers that transfer 20 kW of heat or greater at  $100\text{W}/\text{cm}^2$  or greater. UTC believes that this proposed subparagraph is incomplete for the same reasons as specified in USML subparagraph VIII(h)(28)(ii) (i.e., the proposed control does not identify operating conditions and is not clear as to whether the control parameter applies to the total heat exchanger capacity or the single heat exchanger). Please see Section II.B.iii above for additional detail. If the proposed control is adopted as-is, industry will be unable to properly determine whether items are classified within USML subparagraph VIII(h)(28)(iv).

As stated with regards to USML subparagraph VIII(h)(28)(iv), UTC recommends that the DDTC clarify: (1) the heat exchanger performance (typically in kW per delta temperature) along with specific operating conditions for measuring the threshold; and (2) if the thresholds reflect the total heat exchanger capacity or a single unit.

vi. Recommendation

As written, USML subparagraph VIII(h)(28) does not provide sufficiently clear and unambiguous performance thresholds that industry can use to properly evaluate if the proposed

entry would inadvertently control items in normal commercial use and, if adopted, would not enable industry to properly determine the correct jurisdiction of items. UTC recommends that DDTC not adopt USML subparagraph VIII(h)(28). Further, UTC recommends that DDTC convene an industry group to identify the desired controls and recommend performance characteristics.

E. VIII(h)(29)

The Proposed Rule adds USML subparagraph VIII(h)(29) to control flight control algorithms/software that aides in landing fixed-wing aircraft on any Category VI(a)-(c) vessel. USML subparagraph VIII(h) currently controls “*aircraft parts, components, accessories, attachments, associated equipment and systems.*” As flight control algorithms/software would be classified as technical data/software, the proposed control in USML subparagraph VIII(h) is incorrect. As such, UTC recommends that the DDTC should not adopt proposed USML subparagraph VIII(h)(29).

In the event that the DDTC does not accept the aforementioned recommendation, UTC points out the proposed control, as written, will capture flight control algorithms currently classified under ECCN 9D610.a and used in “600-series” aircraft with the capability of landing on vessels controlled in USML subparagraphs VI(a)-(c). For example, the proposed control would control ECCN 9D610.a flight control algorithms used in the ECCN 9A610.a Grumman C-2A Greyhound aircraft. Because the USML Category VIII Note does not currently identify technology/software, industry would be required to either obtain a BIS license for the export of “600-series” aircraft and a separate DDTC license for the USML-controlled flight control algorithms, or a DDTC authorization for flight control algorithms and an entire aircraft as VIII(x).

As written, USML subparagraph VIII(h)(29) uses the phrase “aid in landing the aircraft.” The proposed control does not identify the specific performance criteria that “aids” in the landing of an aircraft. The definition of “aid” is to “help, assist, or support.” Without additional performance criteria, this proposed control is overly-broad. For example, any flight control algorithm that reduces pilot workload with regards to heading hold, automatic trim, and/or auto-decent landing the aircraft on a vessel, would “aid in landing the aircraft.” This could potentially control commercial flight control algorithms.

In the event that the DDTC does not accept the aforementioned recommendation, UTC recommends that DDTC temporarily remove USML subparagraph VIII(h)(29). Instead, DDTC should convene an industry group tasked with the goal of identifying items requiring control and developing a clear and unambiguous entry which focuses on those critical features necessary for a shipboard landing. At the very minimum, UTC recommends adding technology/software into the USML Category VIII note and defining specific performance criteria that “aids in the landing of aircraft.”

F. VIII(h)(30)

The Proposed Rule adds a USML control on certain equipment/tooling currently controlled on the CCL under ECCN 9B610.

i. VIII(h)(30)(ii)

The Proposed Rule, if adopted, will control full scale iron bird ground rigs used to test major aircraft systems. The terms “iron bird,” “full scale” and “major aircraft systems” are not well-defined; therefore, industry will be unable to identify with consistency the items controlled in this proposed paragraph.

In industry, an iron bird is typically a ground-based system integration test bench, where actual aircraft parts and systems are connected to develop and test a system. Actual aircraft hardware for aircraft listed in Category VIII(h)(1) is already controlled in Category VIII(h), so an additional control is both unnecessary and confusing. Using USML-listed parts and components in a test rig does not remove the parts from USML control.

The term “full scale” could refer to simulation of the whole aircraft. Alternatively, “full scale” could refer to actual size hardware, but for a subset of a major aircraft system. If the term “full scale” refers to a rig testing a subset of the hardware, a definition of a “major aircraft system” is required in order to differentiate it from a test rig for a “minor aircraft system.”

UTC recommends that DDTC provide well-defined terms that will clearly establish the items to be controlled in proposed USML subparagraph VIII(h)(ii).

ii. VIII(h)(30)(iii)

The Proposed Rule, if adopted, will control the Autonomic Logistics Information System (“ALIS”). The ALIS is currently controlled under USML subparagraph VIII(i); therefore, the proposed control is not necessary.

The ALIS is a product name specific to the F-35 JSF aircraft. Specifically, the ALIS is maintenance concept software for the F-35 JSF aircraft and associated systems.<sup>9</sup> The ALIS integrates a broad range of capabilities including operations, maintenance, prognostics, supply chain, customer support services, training and technical data.

Since ALIS is software, it is captured under USML paragraph VIII(i) when directly related to defense articles in USML Category VIII. Since the F-35 JSF aircraft and non-enumerated systems, parts and components are controlled in USML subparagraphs VIII(a)(2) and VIII(h)(1), respectively, the directly related software (e.g., ALIS) is appropriately controlled in USML paragraph VIII(i). Further, as mentioned in Section II.E above, USML paragraph VIII(h) controls only “*aircraft parts, components, accessories, attachments, associated*

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<sup>9</sup> <http://www.lockheedmartin.com/us/products/ALIS.html>

*equipment and systems.*” USML paragraph VIII(h) does not, and should not, control technical data and software.

UTC recommends that the DDTC not adopt proposed USML subparagraph VIII(h)(30)(iii) as the ALIS software is already controlled under USML paragraph VIII(i).

*iii. VIII(h)(30)(iv)*

The Proposed Rule, if adopted, will control jigs, locating fixtures, templates, gauges, molds, dies, and caul plates for production of airframe parts and components, when specially designed for a defense article described in USML subparagraph VIII(h)(1). For UTC’s comments regarding the proposed control in USML subparagraph VIII(h)(30)(iv), please see Section I.B above.

**III. USML Category XIX**

A. XIX(b)(1)

Under the proposed rule, USML subparagraph XIX(b)(1) will control turboshaft and turboprop engines (including technology demonstrators and developmental engines) that are capable of 1500 mechanical shp (1119kW) or greater and are specially designed with oil sump sealing when the engine is in the vertical position. This control largely reflects the defense articles controlled in USML subparagraph XIX(b), as currently written. In the proposed rule, DDTC requested that industry identify any commercial engine models that exceed the capability outlined in the proposed subparagraph. In response to that request, UTC confirms that the PT6C-67A, a commercial developmental engine manufactured by Pratt & Whitney Canada, would exceed this capability.<sup>10</sup>

B. XIX(b)(2)

The Proposed Rule adds USML subparagraph XIX(b)(2) to control a new class of turboshaft and turboprop engines. Specifically, USML subparagraph XIX(b)(2), as proposed, will control turboshaft and turboprop engines capable of 225 specific power or greater and specially designed for armament gas ingestion and transient maneuvers. The proposed subparagraph is not limited to engines providing a significant military advantage.

The specific power parameter identified in the proposed control is indicative of a highly efficient turboshaft or turboprop gas turbine engine. High efficiency improves fuel burn and is, therefore, a characteristic of both military and commercial engines. UTC notes that the specific power identified in the proposed control, although not currently available in commercial engines, is expected to be met by next generation medium and heavy lift turboshaft and turboprop engines, which are currently in development. Further, the proposed control could inhibit development of highly efficient commercial engines going forward.

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<sup>10</sup> The PT6C-67A engine was subject to a Commodity Jurisdiction (“CJ”) request submitted by P&W Canada in 2013. In response to the CJ request, the DDTC determined that the engine was not subject to ITAR control.

As proposed, only engines specially designed for transient maneuvers will be controlled under USML subparagraph XIX(b)(ii). The proposed performance parameter offers no significant military advantage. All aerospace, ground vehicle and marine turboshaft engines are designed for transient maneuvers. For example, a commercial aircraft engine undergoes transient maneuvers on take-off, landing, and during in-flight turbulence.

As proposed, only engines specially designed for armament gas ingestion will be controlled under USML subparagraph XIX(b)(ii). The features which support armament gas ingestion design is not limited to military engines; therefore, the parameter, as proposed, does not offer a significant military advantage. Armament gas ingestion is typically handled through engine control laws and ignitor design so as to avoid engine stalls and support rapid re-light in case of engine flame-out. The same engine control laws addressing armament gas ingestion are also typically the same engine control laws that handle certain inlet distortion effects caused by cross-wind operation, which is common requirement in commercial engines.

UTC notes that when a military customer specifies that an engine operate under armament gas ingestion congestion conditions, the customer usually provides the requirement in the form of specific performance parameters, such as a defined set of temperature transients over a specific time period in a specific solid angle of engine inlet. These specific performance parameters could represent a significant military advantage. General armament gas ingestion requirements do not represent a military advantage.

To ensure that only engines providing a critical military advantage are captured, UTC recommends that DDTTC revise USML subparagraph XIX(b)(ii) as follows: (1) increase the specific power parameter to ensure that next generation commercial engines will not be captured; (2) provide a set of performance requirements that reflect military-specific transient maneuvers (e.g., specific angular rates of change, angle of attack, vibratory conditions, etc.); and (3) provide a set of performance requirements that reflect military-specific armament gas ingestion requirements (e.g., defined set of temperature transients over a specific time period in a specific solid angle of engine inlet).

#### C. XIX(c)

The Proposed Rule revises USML subparagraph XIX(c) to better define the gas turbine engines controlled. In making these revisions, the DDTTC added the words “controlled in this category” to “unmanned aerial vehicles.” As unmanned aerial vehicles are not controlled in USML Category XIX, UTC recommends that “controlled in this category” be revised to read “controlled in Categories VIII or IV” or “in this sub-chapter.”

#### D. XIX(f)(2)

The Proposed Rule will revise USML subparagraph XIX(f)(2) by adding the term “actively” to the term “cooled.” The Proposed Rule will also add “actively cooled” intermediate components and power turbines to the list of hot section items identified in USML subparagraph XIX(f)(2). UTC believes these changes will cause confusion for and potential inconsistent application by industry unless clarifications and revisions are made.

UTC interprets the addition of the term “actively,” when applied to the term “cooled,” to be a clarification of the items controlled in subparagraph XIX(f)(2) (i.e., actively cooled are controlled while passively cooled items are not controlled). UTC does not view the addition of the term “actively,” when applied to the term “cooled,” as a change in the normal understanding of what is “cooled” and “uncooled.” Although UTC only considers this to be a clarification and not a change of scope, others in industry may interpret a change of wording as a scope change. To ensure even application across industry and to avoid interpretation conflicts with suppliers and customers, UTC recommends that the DDTC confirm the UTC interpretation when addressing public comments in the subsequent final rule.

The Proposed Rule adds “actively cooled power turbine” components to USML subparagraph XIX(f)(2). The term “power turbine” can refer to the turbine stage that drives the gas generator, such as those described in ECCN 9E003.i. Alternatively, the term “power turbine” can refer to a free turbine stage driving a shaft, as in a turboshaft or turboprop engine. As these two meanings control significantly different items, UTC recommends that DDTC clarify what is meant by the term “power turbine” when addressing public comments in the subsequent final rule.

USML subparagraph XIX(f)(3), as currently written, controls “uncooled” items. USML subparagraph XIX(f)(2), as proposed, would now only control “actively cooled” items. If this proposed rule is adopted, “passively cooled” items would no longer be controlled in either USML subparagraphs XIX(f)(2) or XIX(f)(3). UTC requests that the DDTC confirm the UTC understanding when addressing public comments in the subsequent final rule.

UTC notes that this proposed rule, if adopted, would result in the use of different terms in USML subparagraph XIX(f)(2) and (3) and ECCNs 9A619.c, 9A619.d, 9E003.a.4, and 9E003.a.5. To ensure the USML and CCL are consistent, UTC recommends the following:

- USML subparagraph XIX(f)(3) should be revised to read: “Uncooled (**i.e., not actively cooled**) turbine blades, vanes, disks, and tip shrouds specially designed for gas turbine engines controlled in this category”;
- The EAR could be brought into agreement with the USML by adding a technical note to state that cooled components on the CCL are the same as actively cooled components on the USML, and that uncooled components on the CCL are not actively cooled.

In the preamble to this proposed rule, DDTC stated the following in response to a comment UTC made in response to the DDTC’s March 2015 Notice of Inquiry (*see* 80 Fed. Reg. 11314):

*“A commenting party remarked that paragraph (f)(2) does not control augmenter parts and components. The Department confirms this observation and notes that parts and components specially designed for hot section components not controlled by paragraph (f)(2) are controlled by ECCN 9A619.x”*

UTC recommends that the DDTC clarify that USML subparagraphs XIX(f)(1)-(6) (and additional subparagraphs added by this Proposed Rule) must be reviewed before classifying augmentor parts and components in “600-series” ECCNs. This clarification can be provided when addressing public comments in the subsequent final rule.

E. XIX(f)(7)

The Proposed Rule adds USML subparagraph XIX(f)(7) to control test cells and test stands for technology demonstrator engines, developmental engines or variable cycle engines, controlled in USML Category XIX. Demonstrator and development engines, as their names imply, are not production engines; therefore, it appears that the intent of the proposed control is not to control test cells or test stands for production engines. However, as the ITAR does not define variable cycle engines, this entry requires additional clarification to confirm that test cells and test stands for variable cycle engines in production are not controlled in the proposed subparagraph.

The ITAR does not define “variable cycle engines,” but a frequently used definition within industry and academia describes variable cycle engines as those designed to operate efficiently under multiple flight conditions. In this usage, both subsonic and supersonic operation is implied, but not required. This definition of a variable cycle engines does not, however, distinguish between engines in production, development or for demonstration purposes.

Using this definition of a variable cycle engine, almost all engines controlled on the USML and CCL would be considered “variable cycle engines;” therefore, without better defining the term, the proposed subparagraph will control all test stands and test cells for all development or production gas turbine engines controlled on the USML. As ECCN 9B619.b currently controls test cells and test stands for engines controlled in USML Category XIX, UTC does not believe it is the DDTC’s intent to control all test cells and test stands in USML subparagraph XIX(f)(7).

To enable proper classification of test cells and test stands for USML-controlled engines, UTC recommends the following:

- The term “variable cycle engine” should be defined so that it is clear that test cells and test stands for production variable cycle engines are not controlled in USML subparagraph XIX(f)(7).
- USML subparagraph XIX(f)(7) should be revised to make it clear that the control only applies to test stands and test cells for entire engines, not components or assemblies.

As proposed, USML subparagraph XIX(f)(7) will only control test cells and test stands for engines. The proposed subparagraph does not control test cells and test stands for engine systems, parts or components. If adopted, ECCN 9B619.b would continue to control test cells and test stands for engine systems, parts and components. UTC believes that ECCN 9B619.b is the appropriate place to control these test cells and test stands as they provide no critical military advantage.

F. XIX(f)(8)

The Proposed Rule will control investment casting cores, dies, or wax patterns for parts or components enumerated in USML subparagraphs XIX(f)(1)-(3). Subparagraph XIX(f)(8) does not include the limiting term “specially designed.”

In the Proposed Rule, the DDTC specifically requests comment on whether the identified production and test equipment (i.e., investment casting cores, dies and wax patterns) would *per se* reveal technical data directly related to a defense article. As the result of casting is usually a near-final shape, an investment casting core, die or wax pattern would reveal three-dimensional technical data about the defense article. With regards to the DDTC’s general concern as to whether production and test equipment reveals technical data, UTC believes that the technical data revealed by investment casting cores, dies or wax patterns would be the most useful. As such, UTC does not disagree with this proposed control.

UTC notes that proposed USML subparagraphs XIX(f)(8) and XIX(f)(16)(i) have overlapping controls. For example, USML subparagraphs XIX(f)(8) and XIX(f)(16)(i) would both control molds, dies, and templates (e.g., wax patterns) for parts and components of the F135 gas turbine engine. To avoid classification discrepancies, UTC recommends that the DDTC:

- Clarify which USML subparagraph takes precedence when there is overlap; and
- Add the term “specially designed” to USML subparagraph XIX(f)(8). With the addition of the term “specially designed,” USML subparagraph XIX(f)(8) would read:

*“Investment casting cores, core dies, or wax patterns dies, specially designed for parts and components enumerated in paragraphs (f)(1), (f)(2), or (f)(3).”*

G. XIX(f)(9)

The Proposed Rule will add USML subparagraph XIX(f)(9) to control pressure gain combustors, and parts and components thereof. As written, industry will not be able to determine what pressure gain combustors, and parts and components thereof, are controlled.

Currently, rocket, space launch vehicle, and missile pressure gain combustors, and the parts and components thereof, are controlled in USML Category IV(h)(14), because they are specially designed for propulsion systems controlled in USML subparagraph IV(d)(6). Combustion chambers and liners for USML Category XIX(a)-(d) engines are controlled in USML subparagraph XIX(f)(2). Combustor cowls, diffusers, domes, and shells are controlled in USML subparagraph (f)(4), with no limitation on the combustion method.

As currently proposed, it is not clear what pressure gain combustors, not already controlled on the USML, will be captured under this proposed subparagraph. To avoid overlap between USML subparagraphs and promote consistent export classification, UTC recommends that DDTC should not adopt this proposed control. At a minimum, UTC recommends that the

DDTC identify the pressure gain combustors controlled under the proposed subparagraph, when addressing industry comments in the subsequent final rule.

H. XIX(f)(10)

The proposed rule adds USML subparagraph XIX(f)(10) to control certain three-stream fan systems. As written, this proposed control is overly-broad.

Three-stream fan systems allow modified flow patterns useful for engine performance optimization and more efficient use of cooling air. A three-stream engine, which incorporates the three-stream fan system, is one version of a variable cycle engine, which supports high specific thrust for maneuvers and optimizes fuel efficiency for cruise or loiter. While these benefits are critical features for military engines and being developed under military contracts, they do not provide a uniquely military advantage. For example, high specific thrust for take-off and improved fuel efficiency, a benefit of a three-stream fan system, is also highly desirable in the design commercial aircraft. Controlling three-stream fan systems, specially designed parts and components thereof, and associated technical data, under the USML will have a chilling effect on the ongoing development of commercial three-stream engines. UTC notes that three-stream fan systems and specially designed parts and components thereof are currently controlled under ECCN 9A619.

UTC notes that the proposed control is more extensive than USML subparagraphs XIX(f)(2)–(5). Currently, only the critical components of combustor and turbine sections (i.e., “hot section”) are controlled in USML subparagraphs XIX(f)(2)–(5). Other than for USML subparagraph XIX(f)(1) listed engines, specially designed parts and components of combustor and turbine sections for USML paragraphs XIX(a)–(d) engines are controlled on the CCL, generally in ECCN 9A619. With the proposed control, three-stream fan system specially designed parts and components such as shafts, bleed valves, cases, structures, bearing compartments, sensors and actuators, will be controlled on the USML, whereas the turbine shaft or bearing compartment are not. Application of the definition of specially designed will rarely release three-stream fan system parts and components as they will generally have performance requirements specific to the application.

UTC does not object to the control of three-stream fan systems on the USML that provide a critical military advantage. Further, UTC does not object to the control of specially designed three-stream fan system parts and components that provide a critical military advantage. However, as written, UTC believes that the proposed control captures three-stream fan systems and specially designed parts and components that do not offer a critical military advantage.

As such, UTC recommends that the DDTC revises USML subparagraph XIX(f)(10) to (1) limit the control to three-stream fan systems to those specially designed for engines controlled in USML Category XIX; and (2) identify only those specific components in three-stream fan systems that provide a critical military advantage.

## I. XIX(f)(11)

The Proposed Rule, if adopted, will control two additional compressor types, and specially designed parts and components thereof, on the USML. Specifically, USML subparagraph XIX(f)(11) will control “high pressure compressors with core-driven bypass streams that have a pressure ratio greater than one, occurring across any section of the bypass duct,” and USML subparagraph XIX(f)(12) will control “intermediate compressors of a three-spool compression system with an intermediate spool-driven bypass stream that has a pressure ratio greater than one, occurring across any section of the bypass duct.” As written, the proposed control is overly-broad and will capture commercial engine compressors that provide no critical military advantage.

USML subparagraph XIX(f)(11) will control high pressure compressors with a core-driven bypass stream that have a pressure ratio greater than one. UTC believes the proposed control is intended to capture high pressure compressors designed to drive a fan stage that performs work on (boosts) the bypass duct flow. As written, the proposed subparagraph can be interpreted to describe conventional civil engine compressors. For example, commercial engines such as the PW4000, PW2000, and V2500 families have valves that vent high compressor air into the bypass duct for ease of starting the engine or maintaining engine stability. Technically, such compressors pressurize the bypass stream, and since air flows from the compressor into the stream, the pressure would be, at least at the point of the valve, higher than the bypass input stream (i.e., a pressure ratio greater than one). UTC does not believe that it is the DDTC’s intent to capture conventional civil engine compressors; however, the nomenclature used in the entry is confusing and, therefore, it is not obvious what compressor configuration(s) the DDTC intends to control.

As with the proposed control of three-stream fan systems in USML subparagraph XIX(f)(10), UTC does not object to controlling compressors that provide a critical military advantage on the USML. Further, UTC does not object to controlling specially designed compressor parts and components that provide a critical military advantage on the USML. However, as written, UTC believes the proposed control captures compressors and specially designed parts and components thereof that do not provide a critical military advantage. Further, UTC believes that the proposed control may capture compressors for commercial engines currently in production (i.e., PW4000, PW2000 and V2500).

As such, UTC recommends that DDTC revise USML subparagraph XIX(f)(11) to: (1) clarify the nomenclature; (2) limit the control of compressors to those specially designed for engines controlled in USML Category XIX; and (3) identify only those specific compressor parts and components that provide a critical military advantage.

## J. XIX(f)(12)

USML subparagraphs XIX(f)(11) and (12) are identical except for the stage driving the fan; therefore, UTC’s comments and recommendations with regards to USML subparagraph XIX(f)(12) are the same as those identified in the preceding section.

K. XIX(f)(13) – (15)

The Proposed Rule would add USML subparagraphs XIX(f)(13), (f)(14), and (f)(15) to the USML. The new USML subparagraphs would control a range of structural and non-structural materials specially designed for USML components. If adopted, the proposed subparagraph will re-control materials providing a significant but not critical military advantage (i.e., ECCN 9C619 materials). Further, if adopted, the proposed subparagraph will for the first time control materials classified for decades in legacy-EAR classifications (i.e., EAR99 materials). At a minimum, the proposed control will impose a significant re-classification and authorization burden on industry.

i. Paragraph XIX(f)

The heading of USML subparagraph XIX(f) reads “*parts, components, accessories, attachments, associated equipment, and systems, as follows.*” As materials are not controlled within these terms (see ITAR § 120.45), materials should not be captured in USML XIX(f).

ii. Specially Designed

As written, the definition of specially designed can capture an item in two ways. First, an item can be captured if, as a result of development, it has properties peculiarly responsible for achieving or exceeding the controlled performance levels, characteristics, or functions described in the relevant USML paragraph (see ITAR §120.41(a)(1)). Second, an item can be captured if it is a part, component, accessory, attachment, or software for use in or with a defense article (see ITAR §120.41(a)(2)). Items captured under the specially designed definition can be released if they are parts, components, accessories, attachments, or software and certain conditions are met (see ITAR §120.41(b)).

As addressed in Section III.K.i above, materials are not parts, components, accessories or attachments. Further, a material does not meet the definition of software (see ITAR 120.45(g)). As a result, determining whether a material is captured and released under the definition of specially designed is limited to subparagraph (a)(1) (i.e., the manufacturer must determine whether the material, as a result of development, has properties peculiarly responsible for achieving or exceeding controlled performance levels, characteristics, or functions described in the relevant USML paragraph). Under certain circumstances, this is a hard burden to satisfy and can lead to the capture of materials having no critical military advantage.

In some cases, materials currently used on commercial aircraft engines such as Alloy 454, DS 1000, and Yttrium oxide stabilized Zirconium oxide, were developed several decades ago and the development information may no longer be available. In the event that development information is no longer available, industry will be unable to claim that the material, as a result of development, did not have properties peculiarly responsible for achieving or exceeding the controlled performance levels, characteristics, or functions described in the relevant USML paragraph. The unintended consequence in this case is the materials, which offer no critical military advantage, would be captured on the USML. In the event that development information is available, industry is still faced with a significant reclassification effort to establish whether materials are or are not specially designed.

Given the current limitations associated with the application of the specially designed definition to materials, UTC recommends that the DDTC does not adopt USML subparagraphs XIX(f)(12)-(15) until specially designed is revised.

*iii. XIX(f)(13)*

The proposed USML subparagraph XIX(f)(13) will control powders for thermal or environmental barrier coatings for defense articles enumerated in USML subparagraphs XIX(f)(1)-(4). Prior to January 6, 2014, structural materials specifically designed, developed, configured, modified, or adapted for defense articles were controlled in USML paragraph XIII(f). Although 9C619 has existed since October 15, 2013, it currently controls materials “specially designed” for engines classified under ECCN 9A619 only. With the Proposed Rule, ECCN 9C619 would only now be updated to include materials “specially designed” for engines in USML Category XIX.

As of January 2014, structural materials previously controlled on the USML and specially designed for USML subparagraph XIX(f)(1)-(4) are now classified as EAR99, if not otherwise caught in another ECCN (e.g., 1C001). Non-structural materials were never controlled on the USML. As with structural materials, non-structural materials specially designed for USML XIX(f)(1)-(4) are classified as EAR99, unless caught in another ECCN (e.g., 1C001).

Powders for thermal or environmental barrier coatings are not structural in nature; therefore, the powders enumerated in proposed USML subparagraph XIX(f)(13) were never controlled on the USML. The adoption of the proposed subparagraph would result in a new and substantial control. For example, the USML paragraph XIX(a) F100 engine was designed in the 1970s, is still in production, and incorporates parts and components described in USML subparagraphs XIX(f)(2)-(4). For economic reasons, some of these parts and components still use the original coating materials, despite the availability of newer and usually better coatings. The proposed rule could capture these decades-old coatings on the USML, without any consideration as to whether they provide a critical military advantage.

UTC recommends that the DDTC not adopt proposed USML subparagraph XIX(f)(13) as it is not clear that it captures materials with a specific military advantage and the current limitations associated with the application of specially designed, as described in Section III.K.ii above, will make the control overly-broad.

*iv. XIX(f)(14)*

The proposed USML subparagraph XIX(f)(14) will control superalloys used in directionally solidified or single crystal castings used for defense articles enumerated in USML subparagraphs XIX(f)(1)-(f)(4). The term superalloy is an industry term. It is defined in the EAR; however, it is not defined in the ITAR. This proposed control identifies no performance characteristics against the material other than that through development the material was designed for a military commodity.

Currently, the EAR controls all superalloys used in directionally solidified or single crystal castings as EAR99. In the majority of cases, the superalloys used in USML subparagraph XIX(f)(1)-(f)(4) components have no special performance advantage over those EAR99 superalloys used in commercial combustors and turbines (i.e., the superalloys to be controlled in USML subparagraph XIX(f)(14) provide no critical military advantage).

UTC recommends that the DDTC not adopt proposed USML subparagraph XIX(f)(14) as it is not clear that it captures materials with a specific military advantage and the current limitations associated with the application of specially designed, as described in Section III.K.ii above, will make the control overly-broad.

v. XIX(f)(15)

The proposed USML subparagraph XIX(f)(15) will control specific composite materials specially designed for defense articles enumerated in USML subparagraphs XIX(f)(1)-(4). Composite materials are made by combining fibers with a matrix material. An advantage of composite materials is that the fibers in the form of ribbon or fabric can be laid up into the final shape with the liquid matrix and then cured, producing a strong and light form. In comparison, a metal alloy can only be made into different shapes by melting and casting or through forging. When manufacturing a composite material for aerospace purposes, stock materials (i.e., sheet, bar, or rod) are rarely used. In most cases, once the item reaches the stage of being a composite, it is in a form clearly identifiable by geometry or material properties as the final part, and as such, is classified as the final part. If that part is enumerated on USML subparagraphs XIX(f)(1)-(4), the composite is already controlled on the USML. If the part is not enumerated on the USML, the Proposed Rule will have the effect of controlling composite materials that have not been deemed to warrant USML control (i.e., 9A619.x actuators). As composite items enumerated within USML subparagraphs XIX(f)(1)-(4) are already controlled, UTC recommends that DDTC not adopt proposed USML subparagraph XIX(f)(15).

vi. Critical Military Advantage

The USML controls a limited number of materials that unquestionably have a critical military advantage.<sup>11</sup> As illustrated above, the materials controlled in proposed USML subparagraphs XIX(f)(13)-(15) do not clearly provide a critical military advantage, as evidenced by their classification in some instances as EAR99. In many cases, the materials identified in the proposed subparagraphs have lower performance capabilities than commercial materials used on commercial aircraft engines.

UTC does not disagree that there are materials used on USML Category XIX engines that could provide a critical military advantage and warrant control on the USML. If a material does provide a critical military advantage, UTC recommends that DDTC specifically identify the material as done in other USML Categories.

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<sup>11</sup> Material for signature reduction are controlled in USML paragraphs II(e) and XIII(j). Materials for explosives are controlled in USML Category V. Materials for personal protection and other armor is controlled in USML paragraphs X(d) and XIII(e). Materials for missile bodies is controlled in USML paragraph XIII(d).

vii. Recommendation

UTC recommends that the DDTC does not adopt USML subparagraphs XIX(f)(13)-(15). Instead, UTC recommends that DDTC convene an industry group to identify materials that do provide a critical military advantage and would be appropriately controlled in these paragraphs.

IV. Summary

UTC appreciates that the DDTC is instituting a regular review and revision of the USML categories to address advances in technology and the ongoing need for more clarification.

Under the Proposed Rule, some items, which as a result of ECR previously transitioned from the USML to the CCL, will now be recaptured on USML. In other cases, items that have appropriately been classified on the CCL will come under USML control for the first time. As addressed above, this re-control and first-time control will have significant impacts on industry. For instance, re-control or first-time control will require industry to undertake another lengthy reclassification effort. This reclassification effort will take place at a time when industry is just emerging from the original reclassification effort. Re-control and first-time control will also take items subject to the less restrictive controls of the EAR and place them under the more restrictive controls of the ITAR. If this is done without first establishing a well-crafted transition plan, the re-control and first-time control will have immediate negative consequences with regards to industry's ability to support ongoing military programs, such as the F-35 JSF aircraft program.

As reflected in the extensive comments above, a number of the proposed changes resulted in overly-broad, redundant, inconsistent, and/or structurally incorrect regulatory language. Because of the significant impact these regulations have on industry, UTC has indicated where it recommends DDTC not institute the proposed USML paragraph or subparagraph. Such recommendations do not necessarily mean no aspect of the entry deserves to be on the USML, but that the entry requires more than minor adjustments. Because rework only extends the already long turn-time associated with the proposal/comment cycle, UTC recommends that going forward DDTC and BIS work with the available Advisory Committees (e.g., DTAG, TACs) and through Industry outreach to review proposed regulatory language to remove inconsistencies and better reflect DDTC's intent.

\* \* \*

If you have any questions regarding UTC's comments, please contact the undersigned at 202-336-7467 or [peter.jordan@utc.com](mailto:peter.jordan@utc.com), or Ari Novis at 860-557-2353 or [ari.novis@pw.utc.com](mailto:ari.novis@pw.utc.com).

Sincerely,



Peter S. Jordan

Executive Director & Associate General Counsel, International Trade Compliance  
United Technologies Corporation



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March 24, 2016

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

ATTN: Mr. C. Edward Peartree  
Director, Defense Trade Controls Policy

Subject: Review of Proposed new rule for USML Category XIX  
(Federal Register, Volume 81 Issue 26, (Tuesday, February 9, 2016))

Dear Mr. Peartree:

Vericor Power Systems wishes to thank the Department for the opportunity to submit comments in review of the above published rules as we support the Department's objective of establishing a positive United States Munitions list (USML).

Vericor requests that the TF60 be removed from the list in Category XIX, paragraph (d) for the following reasons:

1. The components of the marine gas turbine on which the TF60 gas turbine was based were comprised of only EAR controlled components.
2. The design effort for the TF60 gas turbine was Vericor funded, and the design goal was, as a minimum, to achieve the performance requirements stipulated in the requirements document issued by the United States Navy for the Ship-to-Shore Connector (SSC) program.
3. The TF60 has no "Specially Designed" components or configurations to meet the SSC performance requirements, nor does it have any ITAR controlled materials or technology.
4. The TF60 configuration had the same internal and external geometry as the original marine gas turbine on which it was based, and it incorporated increased rotor speed and improved EAR controlled commercially available materials and coatings to permit operation at higher temperatures.
5. The TF60 ultimately did not meet the performance requirements of the SSC program, hence was not selected for the SSC program. As a result, development was never completed and the engine has not been put into production.
6. Had the TF60 gas turbine been selected for the SSC program, it would have been put into production and employed in both commercial applications (ECCN: EAR99 with its technology controlled under ECCN: 9E003) as well as the SSC program.

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An MTU Aero Engines Company

With the TF60 removed from Category XIX, paragraph (d), its associated FADEC would likewise not be ITAR controlled.

Should you require additional materials, explanations, or have questions, please contact Ken Peters at 770-569-8838, or by email at [ken.peters@vericor.com](mailto:ken.peters@vericor.com).

I appreciate your consideration in this matter.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Richard S. Clinton". The signature is fluid and cursive, with a large initial 'R' and 'C'.

Richard S. Clinton  
President & CEO  
Empowered Official