AEROSPACE INDUSTRIES ASSOCIATION

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Bureau of Industry and Security
Regulatory Policy Division
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Room 2099B
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ATTN: Kevin Wolf, Assistant Secretary for Export Administration, U.S. Department of Commerce
Ed Peartree, Director, Office of Defense Trade Controls Policy, U.S. Department of State

SUBJECT: ITAR Amendment – Category XII; RIN 0694-AF75

The Aerospace Industries Association (AIA) and our member companies welcome the opportunity to provide comment on the proposed revised rule for U.S. Munitions List (USML) Category XII (Fire control, range finder, optical and guidance and control equipment) of the International Traffic in Arms Regulations (ITAR) and the corresponding controls on the Commerce Control List (CCL) of the Export Administration Regulations. While our members are encouraged with the continued progress on the Export Control Reform (ECR) initiative, we have several concerns, highlighted below, regarding the Category XII proposed rule and corresponding EAR revisions.

AIA continues to support the Administration's goal of eliminating the confusion and ambiguity that arise from overly restrictive control lists that contain numerous redundancies, leading to an inefficient system with an adverse impact on the U.S. economy and by extension the domestic industrial base. With this goal in mind, it is our concern that the proposed Category XII revisions will negatively impact our member companies' ability to compete in the global marketplace.

The intent of the ECR initiative was not to roll-back controls on ubiquitous technologies that have an inherent dual-use purpose and have been controlled as commercial items for decades. Yet, many items with wide-spread commercial availability in foreign markets will either remain controlled under the ITAR, or in fact move from a lower to higher level of control under these proposed changes. In some instances, the proposed controls do not eliminate ambiguity, relying on design intent to

determine jurisdiction or parameters that do not reflect military-specific or most-sensitive capabilities that warrant continued control as munitions items. Furthermore, we encourage the elimination of redundant USML entries across categories, which will greatly improve the efficiency with which items can be classified.

Finally, it is critical to have clear and specific definitions for a number of terms used throughout Category XII, the USML writ large, and the EAR, such as the terms "military" and "commercial." We encourage the Administration to use specific performance parameters, some of which we have included below, to clarify these definitions.

AIA and our member companies thank the Administration for their continued efforts in implementing Export Control Reform, and for considering our comments and proposed revisions.

ITAR Amendment - Category XII

General Comments:

Definition of "Equipment" and its use in Cat XII (and other categories)
We request that the current definition of "equipment" be better defined. Currently, the term "equipment" can be applied to almost any item, including any combination of the listed entries in 120.45 (a)-(g). "Equipment" can be hardware or software, it can be an end-item or not, it can be a system or parts, pieces, components of a system or it can be a separate accessory or attachment to a system. We recommend clarifying the term "Equipment" by amending the ITAR definition to: "Equipment is an end-item used in the production, testing, inspection, or maintenance of an end-item, combination of parts, components, accessories, attachments, firmware, or software." Similar to "accessories" or "attachments," "equipment" is often referring to associated articles that are not parts or components of the system itself; but differs in that the functions and capabilities are similar to items as described in the CCL "B" Group.

We further recommend "equipment" be only enumerated or otherwise described in paragraph XII(e). The term "equipment" is not needed in major system and sub-system paragraphs of Cat XII (as well as in Cat XI or others); however, since the term "equipment" has wide-ranging application, it has the unintended consequence of controlling previously XII(e) parts, pieces, components, accessories and attachment as significant military equipment in paragraphs XII(a)-(c). For example, "equipment" is not needed to be described or controlled in Cat XII(b)(2), "Aiming or target illumination systems or equipment having a laser output wavelength exceeding 710 nm." Only the aiming or target illumination "systems" should be controlled as SME; however, the addition of "or equipment" adds controls beyond the system itself to control the tripod, cleaning kit, adapter cables, and even the transport carry bag. These minor equipment items should have moved from XII(e) to the CCL; but, are now controlled and designated SME on the USML.

SME classification for parts, pieces, and components
We recommend parts, pieces and components only be enumerated or described in XII(e) and the SME designation be removed from the XII(a), (b), (c) & (f) major paragraphs. SME designation should only be placed on individual subparagraphs as appropriate and consistent with SME controls for systems, parts, and components, etc. found in other USML categories. For example, XII(a)(1) enumerates fire control systems, but now also controls formerly XII(e) specially designed parts and components as SME. Helmet

mounted display systems for a combat vehicle are designated SME in XII(a)(9); however, if the helmet mounted display is for an aircraft it is not designated SME in VIII(h)(15).

Similarly, controlling all technical data and defense services related to the defense articles enumerated in this category (XII(f)) as SME has broad ramifications on existing commercial practices. We recommend removing SME control from this category or limiting the application of SME to data and services related to items of greatest military significance.

Order of Review

One purpose of ECR was to create bright lines for unambiguous classification of articles; however, similar/identical technologies continue to be described in multiple entries in addition to being subject to various "catch-all" paragraphs on the USML (e.g. fire control systems). At the same time, an article can also have multiple capabilities which meet the criteria in multiple entries, even in different categories, creating conflict and difficulty in classifying the article. For example, by definition every system with a cooled thermal imager meets the requirements of multiple sections of the document. We therefore first recommend reconciling and eliminating duplicate/overlapping entries where ever possible in the USML; starting with this proposed rule.

For example, Category XV (Spacecraft Systems and Related Articles) and Category XII appear to overlap in several areas. While this does not affect licensing jurisdiction, clarification for where an item is controlled is critical to industry compliance with U.S. export control laws and regulations. In particular, some redundant controls may treat an item as SME. Specific examples include, but may not be limited to:

- Spacecraft payload cable: Category XV(e)(17) or Category XII(a)(7)
- Lasers: Category XV(a)(5) or Cat XII
- Spacecraft Gyroscopes: Category XV(e)(13) or Cat XII(d)(3)
- Developmental Imaging Systems: Category XV(e)(18) or Category XII(c)(21)

Second we recommend adding language to §121.1 USML (b)(1) Order of Review to provide clear guidance for the classification of an article that meets the criteria for multiple USML entries. Should the particular characteristics and functions of an article match more than one entry; it is recommended the entry with the highest level of control (i.e. SME over non-SME or MT over non-MT controlled) be the appropriate classification. Also, to better align with the EAR, it is also recommended that enumerated articles or "otherwise described" articles take precedence over "catch all" paragraphs. Finally, if a defense article still meets the criteria for multiple equally controlled sub-paragraphs, the single predominant subparagraph shall take precedence. While these clarifications were not necessary prior to ECR as each USML category had only one "catch-all" paragraph for all parts, components, etc., they are now essential in order for industry to have a common understanding of the order of review for classifying items.

Finally, an order of precedence/review is necessary for USML categories where conflict/overlap remains between air, land, sea, and space systems and their Cat XI and XII components. Category XI currently defers to Cat XII by clarifying "Electronic equipment and systems not included in Category XII of the U.S. Munitions List," but there are still other instances which need to be reconciled. We recommend XI and XII take precedence over other USML categories with the possible exception of Category XV, as it includes Category XI and XII items that are then "space qualified." We recommend similar language be added as found in XI(a) to, as necessary, provide clear guidance on whether Category XV or Categories XI

or XII takes precedence. For the remaining categories we recommend adding "not included in Category XI or XII of the USML" as follows:

> Cat VI(f) Vessel and naval equipment, parts, components, accessories, attachments, associated equipment, and systems not included in Category XI or XII of the USML, as follows:
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> Cat VII(g) Ground vehicle parts, components, accessories, attachments, associated equipment, and systems, not included in Category XI or XII of the USML, as follows:
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> Cat VIII(h) Aircraft parts, components, accessories, attachments, associated equipment and systems, not included in Category XI or XII of the USML, as follows:
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> Cat X(a) Personal protective equipment, not included in Category XI or XII of the USML, as follows:
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> Cat XX(c) Parts, components, accessories, attachments, and associated equipment, including production, testing, and inspection equipment and tooling, specially designed for any of the articles in paragraphs (a) and (b) of this category and not included in Category XI or XII of the USML, (MT for launcher mechanisms specially designed for rockets, space launch vehicles, or missiles capable of achieving a range greater than or equal to 300 km).

Paragraph (a) Fire control, weapons sights, aiming, and imaging systems and equipment:

(1) Fire control systems: We recommend control of these systems, regardless of end use platform (air, land, or sea), under Cat XII and not designated SME. Fire control systems are proposed to be controlled without caveats or exclusion and their specially designed components, as SME, in Cat XII(a)(1). However; fire control computers, stores management systems, armament control processors, etc. are currently non-SME controlled in USML Cat VI(f)(6), VII(g)(12), VIII(h)(16), and also in the catch-all XX(c). We recommend implementing the order of review proposal we have outlined above, removing the redundancy across USML categories by controlling all fire control systems, etc. under one USML entry.

(9) Helmet mounted display systems: We recommend removing this system from USML Cat VIII(h)(15). Cat XII(a)(9) should control all these devices based on stated performance parameters and not on end use. Therefore we recommend removing these systems from USML Category VIII(h)(15). We also recommend they not be SME controlled as they are not SME controlled in Cat VIII(h)(15).

Paragraph (b) Lasers, and laser systems and equipment:

The proposed controls on lasers and laser systems are overbroad, potentially capturing many commercial – and in some cases systems that have been controlled as EAR99 items. The note to (b)(6) notes that the controls on LIDAR and LADAR systems do not apply to certain civil automotive systems. Yet, there are also systems designed and utilized for civilian aviation and meteorological applications deployed in numerous international civilian airports that would apparently be captured under Category XII.

Controlling all LIDAR and LADAR systems as munitions items will inhibit commercial innovation and undermine the U.S. industrial capability to deliver quality systems for the U.S. military. USML controls on these items should be limited to sensitive technologies and military-specific capabilities. Accordingly, paragraph (b) would benefit from not only expanding the exclusion beyond civil automotive applications

to include other civilian systems, but also from providing more clearly defined parameters for those items that remain on the USML:

(b)(1) Laser target designators: We recommend defining, in terms of performance parameters, what constitutes a USML laser target designator.

(b)(3)(ii) Laser output wavelength exceeding 1,000nm would control a large number of commercially available laser rangefinders due to the eye safety improvements and availability of low-cost pulsed diodes.

(b)(7) Synthetic aperture LADAR systems with standoff greater than 100m would limit many potential commercial uses for these cameras.

(b)(8)(i) & (ii) The capabilities defined in (8)(i) (resolution of 0.2m or less from an altitude of 16,500 ft) and incorporating a gimbal-mounted transmitter/beam director is easily achieved with commercially available systems with gimbals. The range/resolution requirements specified in (8)(ii) would similarly control capabilities that could be achieved with commercial off-the-shelf components.

(b)(8)(4) Is the intent to control a full system including the algorithms, or just the LADAR capability? Specifying the capability for a heterodyning system with CNR less than 10 is not useful without range parameters, as CNR is range dependent.

(b)(10) Controls on tunable lasers should include a metric for turnability, as there are many commercial products with this capability.

(b)(13) Laser stacked arrays: We request clarification on the location of the power density to be measured, i.e. measured at the laser aperture or elsewhere?

Paragraph (c) Infrared focal plane arrays, image intensifier tubes, night vision, electro-optic, infrared and terahertz systems, equipment and accessories, including cameras and cores:

(c)(2) Photon detector, micro bolometer detector, etc.: We request further definition/clarification as to what constitutes an "encapsulated sensor assembly."

(c)(4) Two-Dimensions photon detectors, etc.: We request clarification if "greater than 256 detector elements" refers to the total number of elements or the number of elements in either direction.

(c)(10) Gimbals with two or more axes of active stabilization having a minimum RMS stabilization less than 200 microradians, and specially designed etc.: As currently written, we believe the catch and release criteria of the "specially designed" definition would "release" nearly every gimbal under (b)(3) because they have "the same function, performance capabilities, and the same or 'equivalent' form and fit, as a commodity or software that: (i) is or was in "production" (i.e., not in "development"); and (ii) is not 'enumerated' on the [USML]." To better clarify the reason for control, it is suggested that the phrase "specially designed for articles controlled in this subchapter" be rewritten similar to USML XI(a)(5)(i) "are specially designed to integrate, incorporate, network, or employ defense articles that are controlled in paragraphs or subparagraphs of the categories of §121.1 of this part that do not use the term specially designed" and/or define specific military characteristics that warrant control.

(c)(11) Gimbals with two or more axes of active stabilization having a minimum RMS stabilization less than 100 microradians: This paragraph does not distinguish between commercial gimbals and those use in or with defense articles. We recommend adding "specially designed for defense articles in this chapter" to ensure that widely-available and utilized commercial capabilities are not controlled under the ITAR. The note about the "non-removable camera payload" would impact commercial gimbal systems " where the customer would like to switch between various styles of commercial visible cameras. The interchangeability of the camera payload feature is used by numerous film makers who would like to switch between various types of commercial visible cameras to capture various images. The proposed rule would force these commercial users to buy more than one gimbal because they use more than one camera. The note could be rewritten to limit the tampering of the system that could prevent an impermissible camera such as ultra-violet, infrared or laser payload from being used in the gimbal system.

Paragraph (d) Guidance, navigation, and control systems and equipment:

Inertial sensor and systems nomenclature: We recommend that inertial sensor and systems nomenclature reflect designations in the 2010 DoD "Policy for International Transfer and Export Control of Inertial Navigation Systems, Gyroscopes, Accelerometers' Other Systems and Related Technology" and the CCL Category 7; namely, Accelerometers; Gyroscopes; Airborne INS; Land INS; Marine INS; IMU and AHRS. We believe a consistent nomenclature would be extremely helpful to industry and the government in relating one classification to another and driving consistency among various requirements. It is also recommended the government work toward aligning all USML, CCL, DOD policies, MTCR and license proviso nomenclatures.

Note to paragraph (d)(1): We recommend deleting "Note to paragraph (d)(1)" as well as removing and reserving USML Cat IV(h)(1), Cat VI(f)(4) & Cat III(c)(1). This would place controls for the same/similar technology for all guidance, navigation and control systems in XII(d) verses multiple USML categories. Navigation systems were already removed from Cat XI and this proposed rule already removes and reserves USML Cat VIII(e) which is also referenced in the "Note to paragraph (d)(1)."

Note 1 to paragraph (d)(2): We recommend deleting "Note 1 to paragraph (d)(2)." All accelerometers should be controlled in this category. USML fuze accelerometers should be controlled in XII(d)(2) vs. III(d) or IV(h) for same rationale above.

We also recommend adding notes to paragraphs III(d) and IV(h) redirecting to XII(d) for accelerometer fuzes, as follows:

> Cat III(d)(2): Safing, arming and fuzing components (including target detection and localization devices) for the articles in paragraph (a) of this category; and
> Note to paragraph III(d)(2): For weapon fuze accelerometers, see USML Category XII(d);
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> Cat IV(h)(25): Fuzes specially designed for articles enumerated in paragraph (a) of this category (e.g., proximity, contact, electronic, dispenser proximity, airburst, variable time delay, or multi-option) (MT for those fuzes usable in systems enumerated in paragraph (a)(1) of this category);
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> Note to paragraph VI(h)(25): For weapon fuze accelerometers, see USML Category XII(d).

Note 3 to paragraph (d)(2): We recommend clarifying that the measurement of 'bias' and 'scale factor' refer to one sigma standard deviation with respect to a fixed calibration over a period of one year.

Product line performance: We recommend a note be added to clarify how performance levels should be applied, i.e. are these performance levels against the product line or against each system? It is our recommendation that performance levels be applied against the product line – or model, where a manufacturer has developed a foreign export variant; otherwise there could be instances in which specific items from a product line would fall under USML CAT XII and other items from that product line would fall under CCL Category 7. This could result in significant confusion and increase per unit cost for US suppliers. We recommend using the certification methodology from the DOD Policy as well.

Performance parameters: We recommend that performance levels for USML Category XII be harmonized, excluding several specific exceptions, with "Policy for International Transfer and Export Control of Inertial Navigation Systems, gyroscopes, Accelerometers' Other Systems and Related Technology." DoD has already established that these levels of performance are of interest for control. Maintaining consistency between the DoD Export Policy and the USML would eliminate potential confusion. We recommend the following performance parameters:

Gyroscope: 0.0005deg/√Hr

Recommend lowering the gyro Angle Random Walk performance value from 0.00125 deg/√Hr to 0.0005 deg/√Hr to better align the gyro with the accel and INS performance values. Angle Random Walk is clearly defined by the industry by invoking the Allan Variance. Rationale: this performance parameter is unambiguous and its value is more consistent with the levels specified for the accelerometer control.

Accelerometers: 10 μg and 10 ppm

Using the term uncertainty rather than stability provides better clarity as how to define the terms. Note: Defining "uncertainty" and linking that to "stability" in the CCL is required to avoid confusion.

INS: Airborne INS: 0.28 nmph CEP; at a 1 hour period
Land INS: 0.28 mrad secant (Lat)
Marine INS: 0.2 nm in 8 hour period, CEP

Providing distinct performance parameters for INS configured for airborne, land and marine applications will be easier to both industry and government to understand what is covered by Category XII. Also recommend inserting a statement that INS performance is without position aiding devices

IMU: Gyroscope and accelerometer parameters or airborne INS value

Industry has two ways in which to describe an IMU; as the performance of the gyros and accels, which make up the IMU, or as an equivalent INS performance expressed in nmph CEP. With the proposed USML performance values, this would result in a bit of an asymmetry since the gyro performance levels are more consistent with an 0.8 nmph CEP performance. Thus, changing to the proposed gyro performance would provide the proper balance.

Given the performance parameters above, we recommend removing USML paragraph entry XII(d)(1)(iii), eliminating the "or 25 g" performance requirement. Assuming that the objective of Category XII is to control inertial performance of strategic value while letting the lower performance inertial be controlled by the CCL, the 25 g "or" condition will result in lower performing inertial systems remaining under USML jurisdiction. Defining performance levels, such as in the DoD Export Policy, is sufficient to maintain the intent of the control. We also recommend that a note be added to paragraph (d)(2) and (d)(3) to clarify that the ITAR "see-through rule" does not apply when these items are integrated into and included as an integral part of an item subject to the EAR.

(d)(6)(iv) GPS receiving equipment "specially designed" for use with rockets, missiles, SLVs, drones, or UAVs capable of delivering at least a 500 kg payload to a range of at least 300 (km) (MTCR Category 1 systems). GPS receiving systems for air-breathing UAVs do not require similar survivability capabilities as those that might be designed for inclusion on a rocket or missile. GPS systems would not be designed to take into account range/payload capability, as it is irrelevant to the operation of the system. Accordingly, this could be interpreted to capture virtually any GPS system capable of airborne operation. Moreover, the control relies on design intent, rather than positive criteria for control. The likely outcome would be that any UAV that integrates a GPS capability would be controlled on the USML, effectively negating previous efforts to control commercial/civilian UAVs on the Commerce Control List.

Paragraph (e): Parts, components, accessories, attachments, and associated equipment:

(9) Infrared lenses, mirrors, etc.: We recommend removing and reserving this entry and controlling these lesser items if "specially designed" on the CCL. Otherwise, we recommend providing performance threshold control parameters for each.

(10) & (11) Signal or image processing electronics: We recommend these items be placed under XI(b), or remove and reserve XI(b), or define/reconcile what is controlled between these USML entries.

(11)(i) Automatic or aided detection etc.: We recommend these terms be defined, including the threshold for what constitutes a "military or intelligence" item. Does the recognition/classification of a generic "man", "truck" or "plane" which can be performed by commercial systems meet this entry threshold or does the recognition/classification have to be a "military" soldier, a tank, or Mig-29. Being able to discriminate a commercial tanker truck or other item may not have any "intelligence" value unless combined with location or the number of trucks over a period of time.

Note to paragraph (e)(11)(ii). As currently written, this paragraph confirms that combining data from two Category XI systems does not constitute sensor fusion and is not USML controlled. This should be clearly stated in the note to ensure that the definition for multi-sensor fusion aligns with other USG standards, such as DoDI S-5230.28.

Paragraph (f): Technical data and defense services:

Notes 1, 2, & 3 to paragraph (f): We recommend the USG confirm their intent not to control any technical data or software which is not enumerated in these notes. As stated in the Supplementary Information of this proposed rule, these notes are revised to clearly describe the technical data and defense services controlled in paragraph (f). Note 2, paragraph A enumerated what software and technical data is "included" in paragraph (f). It did not make any reference or enumerate any entries in

paragraph (d); therefore as written, any technical data, including manufacturing know-how, of a USML accelerometer, gyroscope, or INS is no longer enumerated on the USML. If it is the intent of the government to still control this data on the USML, we recommend a complete review of Notes 1, 2 & 3 to paragraph (f).

Note 2 paragraph C: These items are also enumerated or described in USML Cat IX(b). We recommend removing paragraph C or make a reference note in Cat IX(b) that these items are controlled in Cat XII(f).

Defense Services: We were pleased to see the 3 June 2015 published rule clearly state the maintenance of an item subject to the EAR that has been integrated or installed into a defense article not be defined as a defense service.

Software: We agree with the DOS decision to separate "software" from the definition of "technical data." We believe this is a positive step toward a single list and will make it easier to enumerate what software should be controlled as was attempted in Note 2 to paragraph (f).

Administrative Notes

Title: We recommend adding a clarifying comma to the title; "Fire Control, Range Finder, Optical, and Guidance and Control Equipment"

Proper use of "or": The second to last entries in XII(a), XII(b), and XII(c) should have "; or" at the end as done in XII(d) or XII(e) and rest of the USML. The third to the last entry in XII(c) is followed by "or" which should be deleted.

RIN 0694-AF75: Revisions to the Export Administration Regulations (EAR): Control of Fire Control, Range Finder, etc.

Under the proposed revisions to the EAR, it appears that certain cameras typically used for cinematic or news gathering applications would be moved from the non-ECR (e.g. non-500 or 600 series) ECCNs (e.g. 6A004, EAR99) into more-restrictive ECCNs (e.g. 6A615), increasing the level of control for articles that are in broad commercial use and have foreign availability. This runs contrary to the state purpose of ECR and AIA encourages the Administration to reconsider the implementation of this more-restrictive control.

Best Regards,

Remy Nathan
Vice President – International Affairs
Aerospace Industries Association