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

From: Alan J. Ramsbotham, Jr. ramsboth@oei-tech.com 540-775-2033

Subject: "Specially designed"

References: (a) Specially Designed Definition - ITAR RIN 1400-AD22
(b) Specially Designed Definition - EAR RIN 0694-AF66

I. Background on the Commenter:

My training was in electrical engineering, where I have a master's degree. The first 17 years of my professional life I was employed by the Navy. My work for the Navy as a laboratory researcher, branch head, and acquisition manager afforded me direct experience in the development of some of the most significant military capabilities extant: nuclear weapon fuzing and electronic warfare systems. This work was predominately done prior to the sweeping changes in acquisition effected in the mid 1970's.[1] Thus, I had the benefit of being directly involved in developments from conception through design-for-production, limited rate production, and testing.

Changes in acquisition policies dramatically eroded the roles and responsibilities of the DoD laboratories and technical program and project managers. Since 1979—first as civil servant for the Naval Materiel Command, and subsequently as President of Orion Enterprises, Inc.—I have worked continuously in areas of technology security and export control. As a DoD contractor/subcontractor I served on, and as chair of a number of the Technology Working Groups (TWG) responsible for formulating the Militarily Critical Technologies List. In that capacity, I was also directly involved in the development of the initial product and technology annex for the Missile Technology Control Regime. I have served as a member of the US team at numerous Expert Group meetings of the Wassenaar Arrangement, and its predecessor, the COCom.

I have attended and participated in Department of Commerce Technical Advisory Committees as a DoD observer for more than two decades. I recently accepted an invitation to serve on the Information Systems Technical Advisory Committee (ISTAC) as an industry consultant. All told, I have over 45 years of experience directly pertinent to the issues being addressed. These experiences form the basis for my comments, which I hope be accepted and understood in that context.

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[1] These changes were documented primarily in OMB Circular A-76, Performance of Commercial Activities, and OMB Circular A-109 Major System Acquisitions. I believe the latter has since been rescinded because its provisions largely duplicate those of later revisions to Circular A-11, which provides guidance for preparation, submission and execution of the budget.

II. General Discussion:

1. Those developing the proposed language have made Herculean efforts to attack the issues constructively. Critical comments notwithstanding, significant progress in understanding and attacking the scope of the task has been made. The problems are many and complex, and are not amenable to simple solutions. The problem is complicated by the need to conform to the existing federal legislation and to the terms and conditions of international agreements. The efforts of the government are sincerely appreciated, as is the opportunity to offer comments.

2. We are attempting to reform export controls based on a world view and model of technology and how it is used to develop and produce militarily significant goods and services that are--for the vast majority of products and service on the current lists--categorically outdated. The changes are multi-faceted and pervasive. With respect to "specially designed," the most important of these can be summarized simply: Until a certain point in time (precisely when is not critical to the discussion) the requirements of vast majority of components and assemblies used by the military exceeded what the civil sector could provide from stock. They had to be specially-designed and produced. The US also dominated in production of hardware—including as a critical subset, high-strength to weight mechanical structures whose design and manufacture required special know-how and technology. Today, Commercial-off-the-shelf technology readily meets or exceeds the basic requirements for the vast majority of components and assemblies required by the military.

3. Two specific examples:

Digital Electronics. The Very High Speed Integrated Circuits project was launched in 1980. Microprocessors had just emerged as commodity products. Prior to that systems employed large numbers of discrete components. Military combat systems are exposed to extreme environments. In the case of electronics, those of us who designed them learned early on that, in such environments, every part and every connection was a failure in waiting. The design challenge was to achieve a mean time between failure (MTBF) that exceeded the expected length of the mission. As advances in integrated circuit technology reduced the number of external interconnections MTBFs at the systems level went from hours, to days, and ultimately to months or years. At the same time, functional capabilities increased and costs plummeted dramatically.

Mechanics and Structures. In the case of mechanical structures, increases in fuel cost drove manufacturers to adopt lighter materials. During the same time frame, the emphasis on safety increased, driving the manufacturers to better structural performance. As economies of scale kicked in, technologies—like carbon-fiber reinforced composites, once used almost exclusively in high performance military aircraft—became commonplace in production world-wide.

4. These global environmental changes do not, per se, eliminate the need for specially designed systems and components for military use. Nor do they change, fundamentally, the design process and what it means to say that something is "specially-designed." What has changed is

the administrative landscape—the scope and number of goods and technologies for which export control can be effective. This has dramatically affected the utility of "specially designed" as a discriminating term.

5. Because of the separate legislative authorities, extensive cross-referencing between the ITAR and EAR draft language has been necessary. Further, as the language is currently formulated, whether items are "specially-designed" and whether they fall under the CCL or the ITAR is a function of if (and where) they are "enumerated" in the ITAR or the EAR--either by specification or as "specially-designed."

It is not clear that the legal effects of the proposed definition of "specially designed" be effectively assessed without consideration of the complex interactions among the different parts. This includes the details of the specific items on the USML and CCL.

The de facto use of USML Category VII (Ground Vehicles) as the initial model and baseline for the process is unfortunate. Ground vehicles arguably involve the simplest and most mature technologies. It is not at clear how well the final construct will work even for this simple case. It is recommended that the practical effect of applying the definition to other types of products and technologies with more complex and varied applications be evaluated prior to promulgation of a final rule. Specifically, the effect needs to be considered for families of commodities whose performance commonly comprises both controlled and uncontrolled items.

III. Comments on proposed definitions for "Specially Designed."

The discussion and analysis of the proposed definition and the rationale for the "catch and release" approach represents a significant progress has been made in clarifying the critical distinction between products that are specially designed and those that are simply capable of being used in a given application.

The following notes suggest a line of thought to further the initial goals of eliminating "specially-designed" and simplify the list. While the problem is approached from a different perspective, it does not, per se, contradict or reduce the value of the work done to date.

1. Because of the changes discussed in II.3 and 4 above, intent and end application have become ineffective as a basis of export control determinations. As a practical matter, from a design development and production engineering standpoint, the form, fit, and functional performance specifications are what determines the suitability of an item for any particular application or end use.

2. The unique significance of component is determined (whether in military or dual-use application) not by the fact of its use in a given application, but by the extent to which the application "requires" the specific form, fit, and function of the design in question.

3. In simple terms, if the only requirement for a given component is in military application, that

product is uniquely military. If the item has a legitimate market for other civil uses, it is, by definition, dual-use, regardless of the original intent of the designer.

4. The distinction is not as difficult as it appears. In the case of military systems, if a part requires distinctive features and characteristics not available from commercial stock, it will be specifically documented.

5. The demarcation between the two is not a hard line. Nor is it immutable. As an example, VHSIC digital signal processing products were originally listed on the ITAR, and subsequently migrated to the EAR as commercial markets and general-purpose processors capable of meeting the same essential form, fit and function requirement developed.

6. This line of thought suggests that, for national security purposes, priority should be placed on those items that are "required" to implement significant military functions—in the sense that the item MUST meet defined form, fit, and function specs for the system to work. The military significance is independent of whether the product has any other uses.

7. "Required for" while a necessary condition for control, is not sufficient. The underlying presumption in the enabling legislation for the EAR is that export controls will be imposed for national security purposes only if they can be practically effective.

8. Export controls are practically effective under two broad conditions. The first is when the requirement for the item is uniquely military. In this case, the main use of USML restrictions has been to prevent an adversary from maintaining critical capabilities in a timely manner. The second is when a "required" dual-use item is not available from unrestricted sources in sufficient quantity and quality to support effective military application.

9. The vast majority of dual-use items will fail the definition of being uniquely "required." Of those that meet that definition, a significant number will be commodities, for which export controls will be ineffective.

IV. Suggestions/Recommendations:

If, as has been suggested in the Federal Register, multinational arrangements preclude the elimination of "specially designed," its use should be restricted to the context of specially designed to achieve defined specifications required for the development, production, or effective employment of significant military capabilities.

Consideration should be given to the use of an alternative qualifier, "required for" for uniquely military items. This will facilitate the tailoring of language that effects the intent of the proposed reform, unhindered by association with past problems with "specially designed." All other cases should be addressed with reference to technical specifications in the list.

V. Specific issues with respect to the language of the definition, as related to a number of stated objectives.

At this point, the definitions of "specially designed" proposed in references (a) and (b) appear to fall short of the stated objectives in a number of key respects as outlined in the detailed comments below. If the basic approach to the definition of "specially-designed" is retained, it is recommended that the following concerns be considered, and addressed as appropriate. Again, I appreciate the complexity of the task. A comprehensive solution to all issues may be mutually exclusive and compromises be will be required.

Objective 1: The proposed approach does not preclude multiple or overlapping controls of similar items within and across the two control lists.

Conclusive assessment of this requires consideration of the specific language of the two lists. However, a general comment is that generation of explicit positive lists will inherently expand the number of items that the exporter will have to consider in determining whether an item is "specially designed."

Objective 2: Be easily understood and applied by exporters, prosecutors, juries, and the U.S. Government, *e.g.*, by using objective, knowable, and clear requirements that do not rely upon a need to investigate and divine the intentions of the original designer of a part or the predominant market applications for such items.

The "catch and release" approach, in some respects, does the best job to date of getting at the philosophical essence of what is needed. The relatively long list of qualifications for being not "specially-designed," being "or"ed, appears to offer considerable relief. However, the implementation is fraught with peril for the exporter, who must ensure that their application of the rules is correct and defensible in a court of law.

Specifically, to invoke and defend (b)(3) of the release criteria, the exporter must exhaustively review both the USML and the CCL and determine that the form, fit, and function of whatever they are exporting does not correspond to anything on either list. Having tried to do it for a single simple case, I have concluded that the exporters' burdens will be multiplied by an order of magnitude.

In terms of defense in a court of law, (b)(4) is even more problematic. To invoke it an exporter must be prepared, no only to testify to what the original developer's market expectations were at the time of development, but also make the case that those expectations were reasonable at the time. The problem: the exporter is not necessarily the manufacturer, and the manufacturer may not be the original developer, who may or may not still be in business.

Objective 3: Be consistent with definitions used by the multilateral export control regimes**.**

The MTCR definition includes a requirement for that they have unique properties that suit them

for predetermined purposes. The concept of uniqueness (see Para III for related discussion) is a crucial distinction that must be addressed to meet this objective.

Objective 4: Not include any item specifically enumerated on either the USML or the CCL and, in order to avoid a definitional loop, do not use "specially designed" as a control criterion.

The second part of this objective does not appear to be attainable if the terms "specially-designed" continue to appear in the list items specifying controlled products and technologies.

Objective 5: Be capable of excluding from control simple or multi-use parts such as springs, bolts, and rivets, and other types of items the U.S. Government determines do not warrant significant export controls.

The current language overreaches with respect to this objective and poses significant national security risks. Specifically the use of the construct "of a type commonly used in multiple types of commodities" is ambiguous. The term "type," by definition indicates a class of things having properties in common. It does not require that all properties be common. Thus, as a hypothetical example, a titanium bolt designed to meet requirements unique to a deep-ocean submersible might still be construed to belong to a class of threaded fasteners, (i.e., bolts, comprising an identifiable type) used to assemble a type of commodity not enumerated on any list (e.g., swing sets.)

Objective 6. Apply to both descriptions of end items that are "specially designed" to have particular characteristics and to parts and components that were "specially designed" for particular end items.

Objective 7. Apply to materials and software because they are "specially designed" to have a particular characteristic or for a particular type of end item.

These two objectives are cannot be harmonized with Objective 2 with the present language. As noted in the discussion under III., above, whether a product was designed to have particular characteristics can be discerned from its technical specifications. The extent to which component subsystems, assemblies, and parts are designed for a particular type of end-item is a function of the intent of the designer.

Objective 8. Not increase the current control level to "600 series" control or other higher end controls of items (*i.e.*, not move items currently subject to a lower control status to a higher level control status) particularly current EAR99 items, which are now controlled at lower levels

9. Not, merely as a result of the definition, cause historically EAR-controlled items to become ITAR controlled

The extent to which the definition of "specially designed" achieves these last two objectives will be a function of the specific language of the revised USML "positive list" and the corresponding

"600 series items." Again, discussion of the individual lists is outside the scope of these comments. However, considering the proposed rules for USML Categories to date indicates substantial additional analysis and work on the proposed language of the controls will be required to meet these objectives.