RECORD OF COMMENTS

NOTICE OF INQUIRY: REQUEST FOR PUBLIC COMMENTS ON DEEMED EXPORT ADVISORY COMMITTEE RECOMMENDATIONS: NARROWING THE SCOPE OF TECHNOLOGIES ON THE COMMERCE CONTROL LIST SUBJECT TO DEEMED EXPORT LICENSING REQUIREMENTS AND IMPLEMENTING A MORE COMPREHENSIVE SET OF CRITERIA FOR ASSESSING PROBABLE COUNTRY AFFILIATION FOR FOREIGN NATIONALS

Original publication in the Federal Register: May 19, 2008 (**73 FR 28795**); comments due August 18, 2008

Reopening of comment period: August 22, 2008 (**73 FR 49645**); comments due September 22, 2008

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Forest system roads, the use of temporary roads, and the decommissioning of some system and temporary roads. The project would be implemented through a combination of commercial timber sales, service contracts, and agency crews.

Alternatives

Alternatives proposed to date are the Proposed Action as described above and the No Action.

Responsible Official and Mailing Address: Kathleen Morse, Forest Supervisor, 2550 S. Riverside Drive, Susanville, CA 96130 is the responsible official.

Nature of Decision to Be Made: The decision to be made is whether to implement the proposed action as described above, to meet the purpose and need for action through some other combination of activities, or to take no action at this time.

Scoping Process

The environmental analysis will be documented in an environmental impact statement. This notice of intent initiates the scoping process which guides the development of the environmental impact statement. The scoping process will be used to identify issues regarding the proposed action. An issue is defined as a point of dispute, debate, or disagreement related to a specific proposed action based on its anticipated effects. Significant issues brought to our attention are used during an environmental analysis to develop alternatives to the proposed action. Some issues raised in scoping may be considered non-significant because they are: (1) Beyond the scope of the proposed action and its purpose and need; (2) already decided by law, regulation, or the Land and Resource Management Plan; (3) irrelevant to the decision to be made; or (4) conjectural and not supported by scientific or factual evidence.

Reviewer's Obligation to Comment

On December 27, 2007, the Herger-Feinstein Quincy Library Group (HFQLG) Forest Recovery Act was amended by H.R. 2764 to utilize the analysis and appeal process identified under H.R. 1904, known as the Healthy Forests Restoration Act of 2003 (HFRA). Provisions 104–106 of the HFRA apply to HFQLG projects with a fuels reduction component. The Creeks II Forest Restoration Project is authorized under the HFRA and is subject to the use of notice, comment, and objection process as described under 36 CFR 218. The comment period on the draft EIS will be 45 days from the date the Environmental Protection Agency publishes the notice of availability of the draft EIS in the **Federal Register**. To be eligible to object to an EIS, an individual or organization must submit specific written comments related to a project during the comment period for the draft EIS. A 30-day objection period prior to a decision being made will be provided for this project, rather than an appeal process after decision. Objections will receive administrative review and will be responded to within 30 days and before a decision is made.

The Forest Service believes, at this early stage, it is important to give reviewers notice of several court rulings related to public participation in the environmental review process. First, reviewers of draft statements must structure their participation in the environmental review of the proposal so that it is meaningful and alerts an agency to the reviewer's position and contentions. *Vermont Yankee Nuclear Power Corp.* v. *NRDC,* 435 U.S. 519, 553 (1978). Also, environmental objections that could be raised at the draft environmental impact statement stage but that are not raised until after completion of the final environmental impact statement may be waived or dismissed by the courts. *City of Angoon* v. *Hodel,* 803 F.2d 1016, 1022 (9th Cir. 1986) and *Wisconsin Heritages, Inc.* v. *Harris,* 490 F. Supp. 1334, 1338 (E.D. Wis. 1980). Because of these court rulings, it is very important that those interested in this proposed action participate by the close of the 45-day comment period so that comments and objections are made available to the Forest Service at a time when it can meaningfully consider them and respond to them in the final environmental impact statement.

To assist the Forest Service in identifying and considering issues and concerns on the proposed action, comments on the draft environmental impact statement should be as specific as possible. It is also helpful if comments refer to specific pages or chapters of the draft statement. Comments may also address the adequacy of the draft environmental impact statement or the merits of the alternatives formulated and discussed in the statement. Reviewers may wish to refer to the Council on Environmental Quality Regulations for implementing the procedural provisions of the National Environmental Policy Act at 40 CFR 1503.3 in addressing these points.

Comments received, including the names and addresses of those who comment, will be considered part of the public record on this proposal and will be available for public inspection.

Jack T. Walton,

Acting Lassen National Forest Supervisor.

[FR Doc. E8–11063 Filed 5–16–08; 8:45 am]

BILLING CODE 3410–11–M

DEPARTMENT OF COMMERCE

Bureau of Industry and Security

[Docket No. 080512652–8653–01]

Request for Public Comments on Deemed Export Advisory Committee Recommendations: Narrowing the Scope of Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements and Implementing a More Comprehensive Set of Criteria for Assessing Probable Country Affiliation for Foreign Nationals

AGENCY: Bureau of Industry and Security, Commerce.

ACTION: Notice of Inquiry.

SUMMARY: The Bureau of Industry and Security (BIS) is publishing a notice of inquiry in order to elicit comments regarding two specific recommendations made by the Deemed Export Advisory Committee (DEAC) with respect to BIS's deemed export licensing policy. BIS is requesting comments on whether the scope of technologies on the Commerce Control List that are subject to deemed export licensing requirements should be narrowed, and if so, which technologies should be subject to deemed export licensing requirements. Additionally, BIS is seeking comments on whether a more comprehensive set of criteria should be used to assess country affiliation for foreign nationals with respect to deemed exports.

DATES: Comments must be received no later August 18, 2008.

FOR FURTHER INFORMATION CONTACT: Alex Lopes, Director, Deemed Exports and Electronics Division, 202–482–4875, *alopes@bis.doc.gov.* Ilona Shtrom, Senior Export Policy Analyst, Deemed Exports and Electronics Division, 202–482–3235, *ishtrom@bis.doc.gov.* The DEAC report may be accessed at *http://tac.bis.doc.gov/2007/deacreport.pdf.*

ADDRESSES: You may submit comments, identified by ''DEAC Report comments,'' by any of the following methods:

- Federal eRulemaking Portal: *http://www.regulations.gov.* Follow the instructions for submitting comments.
- E-mail: *rpd2@bis.doc.gov.* Include ''DEAC Report comments'' in the subject line of the message.

- Fax: 202–482–3355
- Hand Delivery/Courier: Steven Emme, U.S. Department of Commerce, Bureau of Industry and Security, Regulatory Policy Division, 14th & Pennsylvania Avenue, NW., Room 2705, Washington, DC 20230, ATTN: DEAC Report comments.

SUPPLEMENTARY INFORMATION:

Background

Under the Export Administration Regulations (EAR), 15 CFR parts 730–774 (2008), which implement the Export Administration Act of 1979, as amended, 50 U.S.C. app. 2401–2420 (2000), and the International Emergency Economic Powers Act (50 U.S.C. 1701–1706 (2000)), the Bureau of Industry and Security (BIS) administers licensing for deemed exports, which are the ''release of technology or source code subject to the EAR to a foreign national'' (§ 734.2(b)(ii) of the EAR). When technology or source code is released to a foreign national, it is deemed to be an export to the home country or home countries of the foreign national. For purposes of the EAR's deemed export rule, foreign nationals do not include U.S. citizens, U.S. permanent residents, and protected individuals under the Immigration and Naturalization Act ((8 U.S.C. 1324b(a)(3)).

To determine a foreign national's home country for purposes of deemed export licensing, BIS uses a foreign national's most recently established legal permanent residency or most recently established citizenship. For example, in the deemed exports context, an Iranian foreign national who establishes legal permanent residency in Canada and subsequently immigrates to the United States would be treated as a Canadian. Similarly, an Iranian foreign national who establishes citizenship in the United Kingdom (U.K.) and subsequently immigrates to the United States would be treated as a U.K. citizen for deemed export licensing purposes. In implementing this policy, BIS relies on exporters to self-determine a foreign national's home country with additional guidance provided on the BIS Web site at *http://www.bis.doc.gov.*

The existing guidance provided on the BIS Web site emphasizes that there will be deemed export licensing scenarios where an exporter will have difficulty determining where a foreign national's ties lie. Some of these difficulties may include the following scenarios: prior or current employment at a prohibited end-user (such as employment at an entity on the Entity List in Supplement No. 4 to part 744), expiration of the foreign national's permanent residency status while that foreign national continues to receive technology or source code subject to deemed export licensing requirements, and the possibility of a foreign national not being able to comply with a country's permanent residency requirements. In these instances, exporters are advised to submit a license application or to seek guidance from BIS before proceeding with the release of controlled technology or source code subject to the EAR to the foreign national.

The issue of home country determinations was highlighted in a report issued by the Office of the Inspector General (OIG) of the Department of Commerce in March of 2004. The OIG report concluded that BIS policies could enable foreign nationals from countries and entities of concern to access controlled technology and source code without a license. Among its findings, the OIG recommended that the foreign national's country of birth should be used to determine deemed export license requirements rather than the foreign national's most recent citizenship or legal permanent residency.

In response to this and other recommendations made by the OIG, BIS published an advance notice of proposed rulemaking on March 28, 2005 (70 FR 15607), seeking comments on how the OIG's recommendations would affect industry, the academic community, and government agencies involved in research. On May 22, 2006, BIS published a notice (71 FR 29301) that announced the creation of the Deemed Export Advisory Committee (DEAC), a federal advisory committee established under the terms of the Federal Advisory Committee Act (FACA), 5 U.S.C., app. 2 (2005), the EAA, and IEEPA to provide recommendations to the Secretary on BIS's deemed export policy. The DEAC was formed to help ensure that the deemed export licensing policy most effectively protects U.S. national security while ensuring U.S. technological innovation.

After reviewing comments submitted in response to the advance notice of proposed rulemaking, BIS published a withdrawal of advance notice of proposed rulemaking on May 31, 2006 (71 FR 30840). In that notice, BIS stated that it would maintain the current policy of using a foreign national's most recent country of citizenship or legal permanent residency when determining licensing requirements. BIS reasoned that a declarative assertion of affiliation was more significant than the geographical circumstances of birth when determining the home country of the foreign national.

Comments submitted in response to the advanced notice of proposed rulemaking were reviewed by the DEAC. Following six public meetings held in Washington, DC and in cities around the country at which the committee heard from interested stakeholders in academia, industry, and government, the DEAC submitted its final report, ''The Deemed Export Rule in the Era of Globalization,'' to the Secretary of Commerce on December 20, 2007. The report contained several recommendations to improve and streamline BIS's deemed export rule. This notice of inquiry focuses on two of those recommendations.

DEAC Recommendations

Narrowing the Scope of Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements and Conducting an Outside Review of Technologies

Among its recommendations, the DEAC urged that BIS narrow the scope of technologies on the Commerce Control List (CCL) and involve an outside panel of experts to conduct an annual ''zero-based'' review of which technologies should be on the CCL, with an eye toward determining which technologies should be subject to deemed export licensing requirements. In its report, the DEAC recommended narrowing the scope of technologies on the CCL because it believed that BIS should concentrate on those technologies having the greatest national security concerns and should eliminate from the CCL those technologies having little national security concerns. By building higher walls around fewer technologies, the DEAC believed that BIS could more effectively protect U.S. national security interests while maintaining U.S. innovation.

Partly in response to the DEAC's recommendation regarding the scope of technologies on the CCL, BIS announced the formation of the Emerging Technologies and Research Advisory Committee (ETRAC), a technical advisory committee that will be established under the terms of the EAA, IEEPA, and FACA, and will comprise representatives from research universities, government research labs, and industry. The ETRAC will make recommendations to BIS regarding emerging technologies on a regular basis as well as advise BIS on the conduct of a ''zero-based'' technology review envisioned by the DEAC. A zero-based review means determining what should

be controlled without reference to what is currently controlled, rather than reviewing current controls and identifying what should be decontrolled. While BIS is already conducting a systematic review of the CCL to assess what controls should be retained or revised, many technologies on the CCL are subject to multilateral controls and thus cannot be changed unilaterally by the United States. However, deemed export licensing requirements are not multilateral and thus may be changed by the United States without agreement by other countries. Therefore, BIS is focusing this recommendation for a zero-based review only on those technologies that should be subject to deemed export licensing requirements.

With this notice of inquiry, BIS is seeking comments from the public on the DEAC's recommendation to narrow the scope of technologies on the CCL in the specific context of BIS's deemed export licensing requirements.

Comprehensive Assessment of Foreign National Affiliation

Within the recommended environment of narrowing technologies subject to deemed export licensing requirements, the DEAC also recommended that BIS expand its analysis of determining the home country of the foreign national, for deemed export licensing purposes, in favor of a more comprehensive assessment of a foreign national's country of affiliation. Specifically, the DEAC recommended expanding the determination of national affiliation to include country of birth, prior countries of residence, current citizenship, and character of individual's prior and present activities to provide an increased level of assurance that technology subject to deemed export licensing requirements would not be diverted to unauthorized end-users or activities. The DEAC reasoned that using the most recent citizenship or legal permanent residency may not take into account the actual risk of diversion of export-controlled technology by the foreign national. For instance, the DEAC noted that most criminal cases of export control violations of which it had been made aware involve U.S. citizens and U.S. legal permanent residents, who are not even subject to deemed export licensing requirements under current BIS policy. Further, the DEAC stated that an adequate distinction has not been made for a foreign national residing in a specific country for the majority of his or her lifetime. For example, the risk of diversion posed by an individual recently attaining U.K. citizenship who was born and raised in Iran may be different from that of a native Iranian who became a citizen of the U.K. shortly after birth.

BIS intends to consider the DEAC's recommendation of an expanded set of criteria in determining home country/national affiliation in the context of the DEAC's other recommendation that BIS narrow the scope of technologies on the CCL, in the context of deemed exports, to a few critical technologies. With this notice of inquiry, BIS is seeking comments on the DEAC's recommendation to expand the criteria for determining national affiliation of foreign nationals for deemed export licensing purposes.

Requests for Comments

To assist in developing a response to these two recommendations made by the DEAC, BIS is interested in comments from the public. BIS encourages all interested parties to submit comments in response to this notice of inquiry.

With respect to the first recommendation for an outside, zero-based review of technologies, BIS is seeking comments on whether technologies on the CCL that are subject to deemed export licensing requirements should be narrowed to a few critical technologies (i.e., a narrower set of technologies than those on the current CCL). If so, BIS would like comments to address which technologies the commenter believes should be subject to deemed export licensing requirements and what criteria should be used to make that determination. Comments providing a description of the technology as well as the use of the technology would be particularly helpful. Moreover, comments identifying the Export Control Classification Number (ECCN) of the technology would aid BIS in assessing whether the technology would rise to a level warranting deemed export control under the ''higher walls, fewer fences'' construct outlined by the DEAC. Comments made in response to this first DEAC recommendation will also be shared with the ETRAC for its analysis.

Additionally, BIS is seeking comments with respect to the DEAC recommendation that a more comprehensive assessment of foreign national affiliation should be used in the context of making home country determinations in the deemed export licensing process. BIS is interested in public comments addressing the issue of making foreign national affiliation determinations in situations where a foreign national's ties may be easily established and in situations where it may be difficult to determine where a foreign national's ties lie (such as for a foreign national employed at a prohibited entity). Comments submitted in favor of a more comprehensive assessment will be particularly helpful if they address what information should be taken into account for such a comprehensive assessment. Comments submitted in opposition to a more comprehensive assessment will be particularly helpful if they suggest what parameter(s) should be used in determining the home country for foreign nationals.

Parties submitting comments are asked to be as specific as possible. Comments including detailed statements of support will likely be more useful than comments that state a position without providing any support. BIS encourages interested persons who wish to comment to do so at the earliest possible date. The period for submission of comments will close August 18, 2008. BIS will consider all comments received before the close of the comment period in responding to the DEAC recommendations. Comments received after the end of the comment period will be considered if possible, but their consideration cannot be assured. BIS will not accept public comments accompanied by a request that a part or all of the material be treated confidentially because of its business proprietary nature or for any other reason. BIS will return such comments and materials to the persons submitting the comments and will not consider them in the development of a response. All public comments on this notice of inquiry must be in writing (including fax or e-mail) and will be a matter of public record, available for public inspection and copying. The Office of Administration, Bureau of Industry and Security, U.S. Department of Commerce, displays these public comments on BIS's Freedom of Information Act (FOIA) Web site at *http://www.bis.doc.gov/foia*. This office does not maintain a separate public inspection facility. If you have technical difficulties accessing this Web site, please call BIS's Office of Administration at (202) 482–0953 for assistance.

Dated: May 14, 2008.

Matthew S. Borman,

Acting Assistant Secretary for Export Administration.

[FR Doc. E8–11169 Filed 5–16–08; 8:45 am]

BILLING CODE 3510–33–P

blind over products produced and offered for sale by qualified nonprofit agencies for other severely handicapped (41 U.S.C. 47(d)(2)). National Industries for the Blind (NIB) has not previously waived the priority for all staplers in the stapler line. Spring powered staplers have been available to the Government from commercial vendors via GSA schedule contracts concurrent with the sale of the nonprofit's standard stapler for a considerable time; therefore the addition to the Procurement List of spring powered staplers will not have a severe adverse impact on the sale of standard staplers by the nonprofit agency.

The following material pertains to all of the items being added to the Procurement List:

After consideration of the material presented to it concerning capability of qualified nonprofit agencies to provide the product and services and impact of the additions on the current or most recent contractors, the Committee has determined that the products and services listed below are suitable for procurement by the Federal Government under 41 U.S.C. 46–48c and 41 CFR 51–2.4.

Regulatory Flexibility Act Certification

I certify that the following action will not have a significant impact on a substantial number of small entities. The major factors considered for this certification were:

1. The action will not result in any additional reporting, recordkeeping or other compliance requirements for small entities other than the small organizations that will furnish the products and services to the Government.

2. The action will result in authorizing small entities to furnish the products and services to the Government.

3. There are no known regulatory alternatives which would accomplish the objectives of the Javits-Wagner-O'Day Act (41 U.S.C. 46–48c) in connection with the products and services proposed for addition to the Procurement List.

End of Certification

Accordingly, the following products and services are added to the Procurement List:

Products

Bulletin Rails

NSN: 7520–00–NIB–1801—48″, Natural Cork, Aluminum Frame.
NSN: 7520–00–NIB–1802—36″, Natural Cork, Aluminum Frame.
NSN: 7520–00–NIB–1803—24″, Natural Cork, Aluminum Frame.

Marker Board, Wall Mounted

NSN: 7110–00–NIB–0037—3′x2′ , Combo Dry Erase, Cork Board, Oak Finish.
NSN: 7110–00–NIB–0038—24″x18″, Melamine, Dry Erase Board, Thin Aluminum Frame.
NSN: 7110–00–NIB–0042—24″x18″, Cork Board, Oak Finish.
NSN: 7110–00–NIB–0047—3′x2′, Fabric Board, Grey, Black Plastic Radius Corners.
NSN: 7110–00–NIB–0048—4—12″x12″, Cork, Panels w/Adhesive Backing (no frame).
NSN: 7110–00–NIB–0050—1″x3″, Cork Board, Vertical, Slim Line Oak Finish.
NSN: 7110–00–NIB–0060—5′x3′, Porcelain Magnetic Dry Erase Board, Thick Aluminum.
NSN: 7110–01–416–5198—24″x18″, Melamine, Dry Erase Board, Thin Aluminum.
NSN: 7195–01–235–4161—3′x2′, Cork Board, Oak Finish.
Coverage: A-List for the total Government requirements as specified by the General Services Administration.

Bulletin Board

NSN: 7195–01–218–2026–4′x3′, Cork Board, Oak Finish.

Marker Board, Wall Mounted

NSN: 7110–00–NIB–0028—24″x13″, Dry Erase, Cubicle Board, Aluminum.
NSN: 7110–00–NIB–0029—30″x18″, Dry Erase, Cubicle Board, Aluminum.
NSN: 7110–00–NIB–0030—30″x18″, Combo Dry Erase, Cubicle Color Cork Board, Aluminum.
NSN: 7110–00–NIB–0031—30″x18″, Cubicle Color Cork Board, Aluminum.
NSN: 7110–00–NIB–0032—30″x18″, Dry Erase, 1 mo. Calendar, Aluminum.
NSN: 7110–00–NIB–0039—4′x3′, Combo Dry Erase, Cork Board, Oak Finish.
NSN: 7110–00–NIB–0040—6′x4′, Melamine Dry Erase Magnetic, Thick Aluminum Frame.
NSN: 7110–00–NIB–0043—6′x4′, Porcelain, Dry Erase Magnetic, Thick Aluminum Frame.
NSN: 7110–00–NIB–0045—24″x18″, In/Out Board System, Thin Aluminum Frame.
NSN: 7110–00–NIB–0046—4′x3′, Fabric Board, Black Plastic, Radius Corners.
NSN: 7110–00–NIB–0049—6′x4′, Cork Board, Thin Aluminum Frame.
NSN: 7110–00–NIB–0051—6′x4′, Cork Board, Oak Finish.
Coverage: B-List for the broad Government requirement as specified by the General Services Administration
NPA: The Lighthouse for the Blind, Inc. (Seattle Lighthouse), Seattle, WA.
Contracting Activity: General Service Administration, Federal Supply Service, National Furniture Acquisition Center, Arlington, VA.

Stapler, Spring Powered

NSN: 7520–00–NIB–1916—20 sheet capacity.
NSN: 7520–00–NIB–1917—60 sheet capacity.
NSN: 7520–00–NIB–1992—15 sheet capacity.
NSN: 7520–00–NIB–1993—25 sheet capacity.
Coverage: A-List for the total Government requirements as specified by the General Services Administration.
NPA: Winston-Salem Industries for the Blind, Winston-Salem, NC.
Contracting Activity: General Services Administration, Federal Supply Services, Region 2, New York, NY.

Services

Service Type/Location: Custodial Services, Illinois Military Academy, 1301 North MacArthur Road, Springfield, IL.
NPA: United Cerebral Palsy of the Land of Lincoln, Springfield, IL.
Contracting Activity: Illinois National Guard—Camp Lincoln, Springfield, IL.
Service Type/Location: Facilities Management, Naval Surface Warfare Center, Acoustic Research Detachment (ARD), Bayview, ID.
NPA: Skookum Educational Programs, Bremerton, WA.
Contracting Activity: Naval Facilities Engineering Command (NAVFAC), Silverdale, WA.

This action does not affect current contracts awarded prior to the effective date of this addition or options that may be exercised under those contracts.

Kimberly M. Zeich,

Director, Program Operations.

[FR Doc. E8–19476 Filed 8–21–08; 8:45 am]

BILLING CODE 6353–01–P

DEPARTMENT OF COMMERCE

Bureau of Industry and Security

[Docket No. 080416579–81111–02]

Reopening of Request for Public Comments on Deemed Export Advisory Committee Recommendations: Narrowing the Scope of Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements and Implementing a More Comprehensive Set of Criteria for Assessing Probable Country Affiliation for Foreign Nationals

AGENCY: Bureau of Industry and Security, Commerce.

ACTION: Notice of inquiry; reopening of comment period.

SUMMARY: This notice reopens the comment period on the notice of inquiry (73 FR 28795) that sought comments regarding two specific recommendations made by the Deemed Export Advisory Committee (DEAC) with respect to the Bureau of Industry and Security's (BIS's) deemed export licensing policy. The new comment period deadline is September 22, 2008.

DATES: Comments must be received no later than September 22, 2008.

FOR FURTHER INFORMATION CONTACT: Steven Emme, Regulatory Policy Division, 202–482–2440,

semme@bis.doc.gov. The DEAC report may be accessed at *http://tac.bis.doc.gov/2007/deacreport.pdf.*

ADDRESSES: You may submit comments, identified by ''DEAC Report comments,'' by any of the following methods:

- Federal eRulemaking Portal: *http://www.regulations.gov.* Follow the instructions for submitting comments.
- E-mail: *rpd2@bis.doc.gov.* Include ''DEAC Report comments'' in the subject line of the message.
- Fax: 202–482–3355
- Hand Delivery/Courier: Steven Emme, U.S. Department of Commerce, Bureau of Industry and Security, Regulatory Policy Division, 14th & Pennsylvania Avenue, NW., Room 2705, Washington, DC 20230, ATTN: DEAC Report comments.

SUPPLEMENTARY INFORMATION: On May 19, 2008, the Bureau of Industry and Security (BIS) published a notice of inquiry (73 FR 28795) to elicit comments regarding two specific recommendations made by the Deemed Export Advisory Committee (DEAC) with respect to the Bureau of Industry and Security's (BIS's) deemed export licensing policy. BIS is continuing to seek comments on whether the scope of technologies on the Commerce Control List that are subject to deemed export licensing requirements should be narrowed, and if so, which technologies should be subject to deemed export licensing requirements. Additionally, BIS is continuing to seek comments on whether a more comprehensive set of criteria should be used to assess country affiliation for foreign nationals with respect to deemed exports.

The original deadline for comments was August 18, 2008. BIS is now reopening the comment period to allow the public more time to comment on this notice of inquiry. The new comment period will end September 22, 2008.

Dated: August 18, 2008.

Bernard Kritzer,

Director, Office of Exporter Services.

[FR Doc. E8–19558 Filed 8–21–08; 8:45 am]

BILLING CODE 3510–33–P

DEPARTMENT OF COMMERCE

International Trade Administration

(A–533–847, A–570–934)

1–Hydroxyethylidene–1, 1–Diphosphonic Acid from the Republic of India and the People's Republic of China: Postponement of Preliminary Determinations of Antidumping Duty Investigations

AGENCY: Import Administration, International Trade Administration, Department of Commerce.

EFFECTIVE DATE: August 22, 2008.

FOR FURTHER INFORMATION CONTACT: Brian C. Smith (India) or Maisha Cryor (People's Republic of China), AD/CVD Operations, Offices 2 and 4, Import Administration, International Trade Administration, U.S. Department of Commerce, 14th Street and Constitution Avenue, NW, Washington, DC 20230; telephone: (202) 482–1766 or (202) 482–5831, respectively.

SUPPLEMENTARY INFORMATION:

Postponement of Preliminary Determinations

On April 8, 2008, the Department of Commerce (the Department) initiated the antidumping investigations on 1–Hydroxyethylidene–1, 1–Diphosphonic Acid from the Republic of India and the People's Republic of China. *See 1–Hydroxyethylidene–1, 1–Diphosphonic Acid from the Republic of India and the People's Republic of China: Initiation of Antidumping Duty Investigations*, 73 FR 20023 (April 14, 2008). The notice of initiation stated that the Department would issue the preliminary determinations for these investigations no later than 140 days after the date of issuance of the initiation, in accordance with section 773(b)(1)(A) of the Tariff Act of 1930, as amended (the Act).

On July 30, 2008, the petitioner, Compass Chemical International LLC, made a request pursuant to 19 CFR 351.205(b)(2) and (e) for a 50–day postponement of the preliminary determinations. The petitioner requested postponement of the preliminary determinations in order to allow more time to analyze and comment on the respondents' questionnaire responses.

For the reasons identified by the petitioner and because there are no compelling reasons to deny the request, the Department is postponing the deadline for the preliminary determinations under section 773(c)(1)(A) of the Act by 50 days from the current deadline of August 26, 2008, to October 15, 2008. The deadline for the final determinations will continue to be 75 days after the date of the preliminary determinations, unless extended.

This notice is issued and published pursuant to sections 733(c)(2) of the Act and 19 CFR 351.205 (f)(1).

Dated: August 14, 2008.

David M. Spooner,

Assistant Secretary for Import Administration.

[FR Doc. E8–19555 Filed 8–21–08; 8:45 am]

BILLING CODE 3510–DS–S

DEPARTMENT OF COMMERCE

National Institute of Standards and Technology

National Institute of Standards and Technology Performance Review Board Membership

The National Institute of Standards and Technology Performance Review Board (NIST PRB) reviews performance appraisals, agreements, and recommended actions pertaining to employees in the Senior Executive Service and reviews performance-related pay increases for ST–3104 employees. The Board makes recommendations to the appropriate appointing authority concerning such matters so as to ensure the fair and equitable treatment of these individuals.

This notice lists the membership of the NIST PRB and supersedes the list published in **Federal Register** Vol. 72, No. 179, pages 52859–52860, on September 17, 2007.

Eric Amis (C) (alternate), Deputy Director, Materials Science and Engineering Laboratory, National Institute of Standards & Technology, Gaithersburg, MD 20899, Appointment Expires: 12/31/10.

W. Todd Grams (C) (alternate), Chief Financial Officer, National Institute of Standards & Technology, Gaithersburg, MD 20899, Appointment Expires: 12/31/10.

Stella Fiotes (C), Chief Facilities Management Officer, National Institute of Standards & Technology, Gaithersburg, MD 20899, Appointment Expires: 12/31/10.

James Olthoff (C), Deputy Director, Electronics and Electrical Engineering Laboratory, National Institute of Standards & Technology, Gaithersburg, MD 20899, Appointment Expires: 12/31/10.

Patricia Sefcik (C), Senior Director to the Deputy Assistant Secretary for Manufacturing, Manufacturing and Services, International Trade Administration, Washington, DC

PUBLIC SUBMISSION

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Docket: BIS-2008-0010
Request for Public Comments on Deemed Export Advisory Committee Recommendations: Narrowing the Scope of Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements and Implementing a More Comprehensive Set of Criteria for Assessing Probable Country Affiliation for Foreign Nationals

Comment On: BIS-2008-0010-0001
Request for Public Comments on Deemed Export Advisory Committee Recommendations: Narrowing the Scope of Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements and Implementing a More Comprehensive Set of Criteria for Assessing Probable Country Affiliation for Foreign Nationals

Document: BIS-2008-0010-DRAFT-0001
Comment on FR Doc # E8-11169

Submitter Information

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General Comment

Any technology that is available openly through the world free market, especially the internet, and is not directly related to advanced weapons technology should be decontrolled. We must narrow the list of technologies that are controlled, deemed or not. Export control is hurting the US economy and appears to have little effect, and probably negative, on national security. Licensing, for the narrowed list, MUST be faster and easier. As for Foreign National determination, a more comprehensive set of criteria is not needed. IF anything, we need to increase the possible exceptions to open up US free trade broadly.

From: <ken_montgomery@aeanet.org>
To: <rpd2@bis.doc.gov>
Date: Thu, Aug 14, 2008 10:58 AM
Subject: DEAC Report Comments

Please accept the attached comment letter in pdf format on behalf of the 2500 AeA member companies.

(See attached file: AeADeemedExportNOIComments081408Final.pdf)

Best regards,

Ken Montgomery
Sr. Director, International Trade Regulation
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202-682-4433 direct
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Advancing the Business of Technology

August 14, 2008

U.S. Department of Commerce
Bureau of Industry and Security
Regulatory Policy Division
Office of Exporter Services
14th St. and Constitution Ave. NW, Room 2705
Washington, DC 20230

RE: Request for Public Comments on Deemed Export Advisory Committee Recommendations: Narrowing the Scope of Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements and Implementing a More Comprehensive Set of Criteria for Assessing Probable Country Affiliation for Foreign Nationals (73 Fed. Reg., No. 97, May 19, 2008 p. 39052)

Dear Sir or Madam:

AeA (formerly the American Electronics Association) welcomes the opportunity to comment on this Notice of Inquiry. AeA members regard the US system of deemed export controls as a potential tool in preventing or delaying the dissemination of strategic U.S. technology, and we also recognize and applaud the contribution of the Deemed Export Advisory Committee in examining the issue.

As a general matter, AeA wishes to point out that US deemed export controls are a unilateral US control, and one which, in its present form, is relatively recent. Prior to 1995, controls on release of technology to non-US nationals in the US were based on the principle that an unauthorized export was not presumed or "deemed" unless there were specific facts that would indicate to a US entity that such a violation were probable.

We believe that this continues to be a sound basis for controls on technology to non-US nationals, and is conceptually consistent with the DEAC recommendations. The issue becomes 1.) How comprehensive is the scope of controls (i.e., to which items do they apply), and 2.) What responsibility exists for US entities to investigate the background, record and other facts pertinent to non-US national employees or others who are not US nationals, and what negative implications this may have on licensing and the desire to simplify the process.

Under the assumptions that currently prevail in the US deemed export control system, we believe that the scope of these unilateral controls is much too extensive and are not demonstrably effective. In this context, simply implementing the "comprehensive assessment" called for by the DEAC in all technical areas affected by deemed export would only make a bad situation worse. However, we do agree that the DEAC focus on applying deemed export to a subset of the current controls does make sense and could have a positive impact on the effectiveness of the program.

The following comments specifically address these issues.

1. Technical Scope of Deemed Export Controls

Dual-use technology controls pervade the activities of America's most competitive civilian industries. The need to provide access to them is often unpredictable in a particular engineering or design situation, and yet may be the critical factor in permitting a technical breakthrough or eliminating a serious bottleneck.

Given the widespread use of technically trained non-US nationals in product development activities in the US, imposition of a deemed export requirement has a disproportionate impact on the use of technical talent and the organization of R&D in large segments of US industry.

In the course of its deliberations, the DEAC recognized that the scope of controls is entirely too broad, and recommended a "zero-based" review to determine a more realistic range of technologies. In our view, only technology areas that are specifically controlled by one of the multilateral proliferation regimes (the Australia Group, the Missile Technology Control Regime and the Nuclear Suppliers Group), are focused enough and are of high enough risk to have specific deemed export requirements.

Items controlled by the proliferation regimes represent a relatively small subset of those currently caught by deemed export controls, and as a general matter are not widely disseminated within civilian enterprises. As a result, they are more likely to be confined to companies that specialize in these critical products and technologies.

In addition, there is a clear multilateral consensus both on the need to control these technologies, and on which countries are the targets of these controls. Similar agreement does not exist for other dual-use items controlled by Wassenaar. Moreover, the US should make an effort to "multilateralize" the concept of deemed export for this subset of technologies, so that US companies using them may be placed on a level playing field.

For dual-use technologies not on the multilateral proliferation lists, AeA recommends that the US return to the system that existed for the duration of the Cold War, which is to require a validated authorization or Foreign National Review when there is reason to believe that an individual may illicitly transfer controlled technology to his/her home country or other destination.

AeA fully endorses the DEAC concept of a zero-based review of all technology controls. Availability in fact of the technology outside the US should be a major, if not determining factor as to whether an item remains on the control list. In addition, technology for which there is no corresponding product control other than non-specific EPCI "catch-all" restrictions, should likewise be excluded from the list.

2. Criteria for Assessing Foreign National Country Affiliation

AeA believes the current formulation of country affiliation based on "last in time" acquired citizenship or permanent residency status provides a time honored and desired "bright line" test that, despite initial concerns, has now become accepted and well entrenched in the recruitment, hiring and technology access control practices of companies that employ, and interface with, foreign nationals.

In our view, adding new, and arguably more subjective, criteria would be highly problematic for U.S. companies, would artificially and unnecessarily increase the number of license submissions, and in the end would be counterproductive to the DEAC's avowed objective to simplify the license process.

For example, it has been suggested that an individual's places of former residence should be an added consideration bearing on country affiliation. Would a third country national's residence in China, even if relatively brief in duration, result in treatment as a Group D national for licensing purposes? Similarly, should an individual's acquisition of permanent residency or citizenship status in a third country not be afforded recognition on its face but rather be called in question due to its timing and other undefined circumstances?

From a purely licensing perspective, would the presence of any factor suggesting a problematic country affiliation require companies to err on the side of caution and submit a license? Given the current state of global mobility, these circumstances would undoubtedly come up with some frequency. If so, this would lead to unwelcome complications and delay in the hiring and deployment of foreign nationals and, ultimately, a more complex and taxing licensing process for both industry and the government.

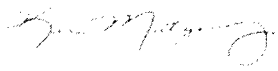
Placing the burden on U.S. companies to define these and other gray area criteria would require delving into areas of inquiry that could open up potential employment discrimination litigation and add burdensome compliance risk, while resulting in a procedurally problematic and expensive divergence from current and accepted employment and technology access practices.

In today's environment, export controls do not exist in a vacuum. Rather they are part of a larger, and ultimately far more sophisticated network of security initiatives. In this more general context, we see continuing enhancements in the visa process and better coordination with existing security controls in other areas of commerce, coupled with enhanced information sharing as between interested government agencies as the way to

identify and deter individuals, whether foreign or otherwise, with agendas contrary to our national security interests. While AeA acknowledges the perceived concerns over so-called escapements in the current process, we believe adding subjective criteria of limited, if any, proven probative value to the country affiliation mix would be unduly problematic and, on balance, contrary to the stated process simplification objectives of the DEAC report.

We again thank BIS for this opportunity to provide comments in response to the Notice of Inquiry.

Sincerely,



Ken Montgomery
Senior Director, International Trade Regulation

From: "Smith, Toby" <toby_smith@aau.edu>
To: <rpd2@bis.doc.gov>
Date: Sun, Aug 17, 2008 4:56 PM
Subject: DEAC Report Comments from AAU and COGR

Please find enclosed joint comments from the Association of American Universities (AAU) and the Council on Governmental Relations (COGR) pertaining to the May 19 Federal Register notice soliciting comments on recommendations made by the Deemed Export Advisory Committee.

Tobin L. Smith

Associate Vice President for Federal Relations

Association of American Universities

1200 New York Avenue N.W., Suite 550

Washington, D.C. 20005

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CC: "Robert Hardy" <rhardy@cogr.edu>, "Decrappeo, Anthony" <tdecrappeo@cogr.edu>

AAU *Association of American Universities*
COGR *Council on Governmental Relations*

August 15, 2008

U.S. Department of Commerce
Bureau of Industry and Security, Regulatory Policy Division
14th & Pennsylvania Avenue, NW, Room 2705
Washington, DC 20230

Via Fax: 202-482-3355

RE: Comments on DEAC Report Recommendations (Docket No. 080512652-8653-01)

On behalf of the Association of American Universities (AAU) and the Council on Governmental Relations (COGR), we are pleased to respond to the May 19, 2008 Federal Register Notice soliciting comments on two specific recommendations made by the Deemed Export Advisory Committee (DEAC) in its report, "The Deemed Export Rule in the Era of Globalization."

AAU represents 60 leading U.S. public and private research universities and is devoted to maintaining a strong national system of academic research and education. COGR is an association of 178 research-intensive universities, affiliated hospitals, and research institutes that is specifically concerned with the impact of government regulations, policies, and practices on the performance of research conducted at its member institutions. COGR and AAU and our member universities participated in many of the DEAC's regional public meetings; we were pleased the DEAC chose to hold several of those meetings on university campuses. Our associations greatly appreciate the work of the DEAC and its members' thoughtful analysis of problems with the current deemed export control rules.

The Commerce Department Bureau of Information and Security (BIS) has requested information from the affected communities on two specific issues examined by the DEAC. The first issue concerns narrowing the scope of technologies on the Commerce Control List (CCL) subject to deemed export licensing requirements and conducting an outside review of such technologies. The second issue concerns whether the various affiliations that a foreign national might have with countries other than those in which they enjoy citizenship should be factored into export license requirements and if so, what types of affiliations should be considered and by whom.

Below are our joint comments concerning these two matters.

1) Narrowing the Scope of Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements and Conducting an Outside Review of Technologies

For the most part, the research conducted on university campuses is of a fundamental nature and specifically intended for broad-based dissemination for purposes of scientific advancement. It is therefore excluded from current deemed export control licensing requirements under parts 734.3 and 734.8 of the Export Administration Regulations (EAR).

In those areas where our universities are under contractual agreement to control particular technologies, have agreed not to publish or disseminate research findings, or have made specific agreements that require confidentiality or involve non-disclosure agreements, clearly deemed export licensing may apply if the technical information is, in fact, controlled. In such situations our universities must be vigilant in ensuring that they have adequate export control compliance and control plans in place. In these areas, export controls can have a significant impact on our ability to conduct university based research.

With this in mind, we offer the following comments on the DEAC's specific recommendation to narrow the scope of technologies on the CCL subject to deemed export licensing requirements.

As we have expressed in previous comments to BIS, we fully concur with the DEAC's basic finding that too many technologies are subject to deemed export control. We believe the list of covered technologies should be drastically reduced. Particularly important is the DEAC report's recognition of the increasingly global nature of the scientific and engineering enterprise and the critical need for the U.S. scientific community to partner in that enterprise.

We also agree fully with the report's conclusion that erecting high walls around large segments of the nation's scientific and engineering knowledge is not only increasingly impracticable, but also counterproductive to our economic competitiveness and national security. Clearly, the current Commerce Control List (CCL) is applied far too broadly for purposes of deemed exports and should be greatly reduced.

We believe that deemed export requirements should be applied to only a very narrow subset of technologies for two reasons. First, since other countries do not have regulations which are comparable to our U.S. deemed export policies, experts in those countries are free to share the same information the United States seeks to restrict. Hence the U.S.' deemed export rule is more likely to hurt U.S. industry and our universities as well as U.S. economic competitiveness, instead of preventing the dissemination of information.

Second, in many instances knowledge transferred to foreign nationals in the U.S. is transferred for specific work or research that the foreign national is conducting in the U.S either at a particular company, or at a U.S. university. We question the basis for a presumption that such knowledge will be exported abroad. In fact, a vast majority of these foreign nationals have no intention of exporting that information abroad. We, therefore, believe that clear intent to export information must be incorporated by the Commerce Department as a consideration in determining if a deemed export license is required.

How then do we best limit access to technologies and for whom and when specifically should such limitations apply? Clearly, careful consideration is needed as to which of these technologies warrant such high fences. Such decisions must be based upon clear criteria as discussed below. In accordance with the DEAC report, a zero-based review of CCL technologies currently controlled for deemed export should be conducted. Moreover, the technologies on the list need to be reviewed annually and updated by removing those that no longer warrant protection and adding as necessary new emerging technologies of concern.

The zero-based assessment should be undertaken by the new BIS Emerging Technologies and Research Advisory Committee (ETRAC). Recently, the university community enthusiastically recommended a number of experts from our campuses for membership on the new Emerging Technologies and Research Advisory Committee (ETRAC). This group would be in a position to help to

assess which very short list of technologies can and should be protected for national security purposes through the use of deemed export control licenses as opposed to classification.

To supplement and support the work of the ETRAC, BIS must be provided with the resources and technical staff capabilities to support this review process on an annual basis. Obviously, a review of this nature will be a daunting task with more than five hundred Export Control Classification Numbers (ECCNs), which, in turn, have many different subcomponents that must be considered. Additional BIS staff may be required to undertake the initial review and to update the CCL regularly. We call upon the Department and the Congress to ensure that BIS has the appropriate personnel to carry out this review process annually. We also encourage BIS to examine if there is a role for the National Academies in making recommendations pertaining to the review.

We recommend that the ETRAC and BIS staff adopt the following principles in conducting their review:

a) Only information about specific technologies that pose a clear threat to U.S. security interests and cannot be controlled more appropriately by classification should be controlled as deemed exports. An assessment of whether and how information about a particular technology, if exported from the U.S., could threaten U.S. national security interests must be conducted. Is the technology a unique emerging technology that poses a clear security threat? If no valid security threat from the transfer of specific knowledge about a particular technology from the United States exists, then it should be removed from the CCL for purposes of deemed exports.

b) If information about a particular technology is reasonably available and can readily be gleaned from elsewhere in the world, deemed export controls should not be applied to it. The current state of international technological knowhow must be evaluated. There is no value in controlling technological information which is widely available outside of the United States. The technological information that most deserves protection is that which is exclusively confined to the United States and our allies.

c) All "use" technology should be removed from regulation by deemed export controls except for specific instances where it is demonstrated that it meets the criteria set forth above. "Use" technology has value only to the extent that someone has the physical technology in hand and can thereby take advantage of that technology. Because the CCL provides rigorous controls on physical exports, additional constraints through the application of deemed export controls on use technology are redundant. Regulating the transfer of information about use technology serves only to overburden Commerce staff while serving no useful purpose in protecting our national security. If a technology should be controlled for deemed export under a) or b) above, controls will apply to the technical data, and the scope of control may be addressed in the listing. The focus of our deemed export regulations should rightfully be on "production" and "development" technology, as opposed to "use" technology.

d) Dual-use items and information controlled for purposes of deemed export should be consistent with regulations issued by other federal agencies pertaining to the protection of national and homeland security. For example, the Department of Commerce should reconcile the Category I biological agents on the CCL (1C351-4, 1C360 and 1C35) with the agents regulated by the CDC, USDA and NIH from which the CCL is derived. To the extent that biologicals are listed on the CCL, the DOC should include all the exemptions that those agencies recognize. "Vesicular Stomatitis Virus" (ECCN 1C352) is a specific example, and there are others. While the USDA has identified "Vesicular Stomatitis Virus (exotic)" as a Select Agent, the CCL listing includes domestic and

attenuated strains that are not regulated by the USDA. It makes no sense to regulate for deemed export information about a biological agent that the CDC, USDA and NIH have determined to pose no security risk. This is an issue that applies equally to actual physical exports.

As the BIS moves to create the ETRAC and to assess current and future technologies that are controlled for purposes of deemed export, we would strongly encourage BIS to adopt these principles.

2) Comprehensive Assessment of Foreign National Affiliation

The DEAC recommended a broad-based review of the background of foreign nationals and specifically that an individual's personal loyalty to countries of concern should be assessed in determining if export licenses are required. An earlier recommendation put forward by the Commerce Department's Inspector General (IG) proposed that an individual's birthplace should be considered in determining if export licenses were required.

AAU and COGR have expressed deep concern about both the IG's recommendation concerning country of birth and the DEAC's recommendation suggesting that universities and industry assess individual loyalties in their determination whether an export license application is required. However, universities do not have the information, expertise or resources to adequately conduct such security, background or loyalty checks on our foreign national students and employees. Once foreign nationals, especially students, arrive at our campuses to conduct research, we are not in a position to further assess their foreign loyalties or affiliations beyond citizenship. Expecting universities to do this, as opposed to the government, is unreasonable and certainly will not be an effective means to ensure our national security. ***We continue to maintain that the visa screening process provides our best defense against individuals affiliated with nations, foreign entities, or terrorist groups that threaten our national and homeland security or who have criminal intent and aim to do our country harm.***

Moreover, we believe that such an expansion of export control requirements raises serious questions about privacy and civil liberties that arise when the federal government makes distinctions based on national origin or perceived foreign loyalties. While national security is certainly a compelling interest, any blanket policy premised on the assumption that all individuals who hold affiliations with particular foreign countries, but who are not citizens of those countries, still may hold some foreign allegiance is overly broad.

As an alternative, we recommend that the Department of Commerce establish clear and reasonable criteria for what justifies a determination that an individual could not be trusted with access to technologies on the CCL. We believe the criteria should be consistent with the standards used in Visa Mantis reviews. If a particular individual is deemed to pose a threat to the United States such that he or she cannot be trusted with access to CCL technologies, that person should not be granted a visa to study or work in such fields in the first place. Once an individual is admitted to the United States, knowledge provided to them about specific export controlled technologies should only require an export license if a university has actual knowledge that the individual being provided the information has the specific intent of exporting it to a controlled country.

It is important that the criteria reflect the recognition that pervades the DEAC report—that international scientific exchanges are in the United States' interests. We suggest that the basis of the new criteria should be:

A foreign national from a country of concern for a particular technology should be excluded from access to that controlled technology only if the person transferring the technical information to a foreign national has specific and credible information that this individual will: a) export controlled technology abroad to a country for which the technology is controlled, or b) commit or support an attack on the United States with information they have obtained about a controlled technology.

The university community stands ready to work with the Department to develop such criteria and enact more reasonable ways to facilitate security, such as the use of non-disclosure agreements or affidavits.

Conclusion

Current deemed export control policy has been damaging to U.S. industry, U.S. research and U.S. competitiveness. We therefore commend the DEAC and the Department of Commerce for their work in reviewing the current deemed export system. We agree fully with the DEAC's primary finding that *"...the existing Deemed Export Regulatory Regime no longer effectively serves its intended purpose and should be replaced with an approach that better reflects the realities of today's national security needs and global economy."*

We believe that part this system is failing in part because the list of technologies for which we are trying to regulate knowledge transfer abroad is far too expansive and based upon technological information for which the U.S. no longer has a world leadership position. We look forward to the ETRAC review of the current CCL to determine if there is an identifiable set of emerging technologies with substantial security implications for which deemed export control rules do actually make sense as well as existing technologies that should remain controlled based on revised, realistic criteria.

On behalf of the AAU and COGR, we greatly appreciate this opportunity to provide you with our views and look forward to continuing to engage with you on this matter as the Commerce Department looks to enact significant reforms to current deemed export control policies.

Sincerely,

Robert M. Berdahl
President
Association of American Universities

Anthony P. DeCrappeo
President
Council on Governmental Relations

From: "Reighley, Twila F" <twila-reighley@uiowa.edu>
To: <rpd2@bis.doc.gov>
Date: Mon, Aug 18, 2008 2:27 PM
Subject: DEAC Report comments

The University of Iowa, in its capacity as a leading public research university, welcomes the opportunity to comment upon recommendations made by the Deemed Export Advisory Committee (DEAC) in its report, "The Deemed Export Rule in the Era of Globalization." The University concurs in the recommendations made by the Council on Governmental Relations (COGR) in its response to the DEAC report. The University strongly supports greatly decreasing the technologies subject to deemed export regulation by the Bureau of Industry and Security (BIS) by removing the technologies currently included on the Commerce Control List (CCL) whose export, deemed or otherwise, does not pose clear threats to the security of the United States. In addition, the University opposes expanding background checks of foreign nationals working in research on campus in an attempt to determine potential foreign alliances.

As a research university committed to public dissemination of its research findings as well as supporting global research by welcoming and collaborating with researchers throughout the world, the University of Iowa strongly supports greatly decreasing the technologies regulated by classification on the CCL and consequently subject to deemed export regulation. The current CCL, containing five hundred plus Export Control Classification Numbers (ECCN) many of which in turn contain multiple subcomponents, is unwieldy due to its sheer size. Adding to the difficulty of making classification determinations is the fact that often even individuals intimately familiar with the technology cannot conceive of a valid security threat related to the technology and sometimes report the technology can be purchased at local retail stores. The University supports the creation of a knowledgeable group, or groups, to review the various CCL listings with the goal of removing the items which pose no clear threat to the security interests of the United States.

In addition to limiting the technologies listed on the CCL, the University supports reviewing the dual-use items to promote consistency with respect to the regulations of other agencies. The example which occurs frequently at the University is the regulations governing biologicals which other agencies, such as the CDC, USDA and NIH, have determined pose no security risk.

Lastly, the University strongly opposes implementing a broad-based review of the background of foreign nationals engaged in research on its campus in order to determine personal loyalties to countries of concern. It would appear that universities should be able to rely on the VISA process to explore and determine on a personal basis which foreign nationals pose security threats to the United States and deny entry on that determination. Certainly the Federal Government is in a better

position to make the needed inquiries to make determinations about such individual threats.

The University of Iowa appreciates the opportunity to provide comments to you on these matters which directly impact the research work performed on our campus.

Twila Fisher Reighley

Assistant Vice President for Research

University of Iowa

319.335.2109; Fax 319.335.2199

319.335.2110 (Dawn Rogers, Executive Secretary)

twila-reighley@uiowa.edu <mailto:twila-reighley@uiowa.edu>

From: "Palma, Kathleen L (GE, Corporate)" <kathleen.palma@ge.com>
To: <rpd2@bis.doc.gov>
Date: Mon, Aug 18, 2008 2:54 PM
Subject: DEAC Report Comments

Please see attached comments from the General Electric Company.

<<DEAC Recommendations GE Comments.pdf>>

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Counsel, International Trade Regulation
GE

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GE imagination at work

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August 18, 2008

U.S. Department of Commerce
Bureau of Industry and Security
Regulatory Policy Division
14th St. and Constitution Avenue, N.W.
Room 2705
Washington, D.C. 20230

Attention: DEAC Report Comments

Re: Notice of Inquiry: Request for Public Comments on Deemed Export Advisory Committee Recommendations

Dear Sir or Madam:

The General Electric Company ("GE") submits the following comments in response to the Commerce Department's Bureau of Industry and Security's ("BIS's") May 19, 2008, Request for Public Comments on Deemed Export Advisory Committee Recommendations (73 Fed. Reg. 28,795). GE welcomes the opportunity to comment on this important issue.

Background on GE

GE is one of the oldest, largest and most innovative companies in the United States, with operations in over 100 countries, more than 300,000 employees and 2007 revenues of more than $170 billion. As a company dedicated to technology leadership and innovation, as well as worldwide operations and sales, all of GE's diverse businesses deal with some form of export controls making us a key stakeholder in export control issues.

GE has a strong commitment to integrity and requires all employees to abide by and periodically reaffirm their responsibilities under our compliance policies, including GE's International Trade Controls Policy. The GE businesses are constantly striving to maintain world-class standards in the critical area of export controls.

DEAC Recommendation: Narrowing the Scope of Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements

GE supports the recommendation of the DEAC to conduct a "zero-based" review of technologies that should be subject to deemed export licensing requirements under the EAR. A smaller list of technologies, that lack widespread foreign availability and that have true significance from a technology perspective on their own merits would allow such technologies to be controlled far more effectively both by industry and by government.

We agree that it makes sense to task such a zero-based review to the new advisory group the Emerging Technologies and Research Advisory Committee ("ETRAC"). For this new advisory group to be most effective, BIS should seek to include representatives from corporate research labs such as GE's Global Research Center. Corporate research scientists have a detailed and comprehensive grasp of the current state of technology in their fields.

Currently, there are many items on the CCL that we believe would not make the list in a zero-based technology review, including all technologies that are controlled for AT purposes. These technologies are generally not significant from a national security perspective (as contrasted with the purpose of the AT-control).

One possible approach to conducting a zero-based review would be to generate lists based on sets of technology, perhaps using the CCL categories. To bring intellectual rigor to the process, each technology on the list should include a written articulated analysis as to why that technology falls within the guidelines or should otherwise be included. The final list proposed by the sub-committee should require consensus to be included in the final zero based review list. Without consensus that a technology belongs on the control list, it should be omitted from deemed export controls.

DEAC Recommendation: Comprehensive Assessment of Foreign National Affiliation

The DEAC also recommended expanding the determination of national affiliation to include country of birth, prior countries of residence, current citizenship, and the character of individual's prior and present activities. The DEAC reasoned that using the most recently acquired nationality may not take into account the actual risk of diversion of export-controlled technology by the non-US person. While the DEAC recommended both reducing the number of technologies subject to deemed export licensing and conducting a more comprehensive assessment of nationality, it is impossible to evaluate the combined impact without understanding the specific technologies that are in or out. Since BIS could decide to pursue the second recommendation without the first, or to wait for the ETRAC to provide specific lists, we are commenting on this Recommendation based on its own merits.

1. Businesses Protect Valuable Technologies Today

First, it is critical to understand the context in which U.S. technology companies approach the deemed export issues. Businesses that invest heavily in R&D rely on technological differentiation for business success and must protect their intellectual property to remain competitive in the market. GE, which invests more than $3 billion annually in R&D, has a powerful interest in protecting its technology. That interest is both broader and deeper than the EAR, extending both to U.S. persons and technologies that are not subject to export controls. GE businesses take great care in selecting our employees, contractors and partners, including those that are U.S. persons, through due diligence and background checks. GE requires stringent confidentiality and non-disclosure agreements, in addition to conditioning employment and benefits on adherence to corporate compliance policies. These measures are essential to protecting our innovations and our reputation, our most valuable assets.

For innovator companies like GE, therefore, the requirements of the EAR deemed export rule adds an additional layer to the pre-existing commercial incentives. This additional layer imposes greater costs to ensure compliance. Even for a sophisticated exporter, with exceptional compliance process capabilities like GE, it is challenging to build management of these requirements into our systems including technology classification, maintaining accurate nationality status information on individuals, imposing access controls, training and recordkeeping.

Under the current deemed export regulatory regime, we estimate that GE's dedicated team of trade controls compliance attorneys, leaders and specialists spend at least 20% of their time and resources managing issues related to deemed exports. And these challenges persist with a regime that was initially promulgated more than ten years ago and has largely remained stable.

2. The DEAC Recommendation Does Not Appear to Offer Greater Security Protection

The apparent premise of the Recommendation seems speculative: that on the basis of other national affiliations non-U.S. persons would exploit relationships with U.S. companies to obtain export-controlled technology. Further, the DEAC simply asserted that evaluating a more comprehensive set of criteria to assess country affiliation would provide additional protection. In our view, requiring a comprehensive assessment of all possible countries of affiliation would necessarily result in subjective determinations that would introduce variability across industry as well as additional financial, recruiting, and administrative burdens on U.S. businesses, without apparent security benefit.

The current standard used by BIS, on the other hand, is an objective criterion, which determines an individual's country of affiliation and with greater accuracy given that it reflects the informed choice of the individual, generally as an adult. BIS was correct in 2006 when it explained that a declarative assertion of affiliation through an immigration process is more significant that the geographical circumstances of birth when determining the home country of a non-U.S. person.[1]

As for the impact on individuals with improper motives, the DEAC Recommendation is more likely to encourage attempts to evade the requirements, instead of resulting in their detection. Additional subjective criteria will enhance the incentives for subversives to create false documentation. And as the DEAC Report observed, it would not address the issue of corporate espionage cases involve U.S. citizens or legal permanent residents.

In GE's experience, many technically skilled non-U.S. persons have the interest and intent to remain indefinitely, if not permanently, in the United States, and they often pursue naturalization for themselves and their families. As a company, we generally recruit skilled scientists and engineers for permanent positions. The investment in employees and the critical importance of having continuity in the process of developing intellectual property incentivize companies to retain employees.

With respect to non-U.S. persons who eventually leave the United States, we are confident that many do so with greater admiration, respect, and affection for the U.S. and for U.S. companies, products, and technologies. Some even continue to work for U.S. companies with a global presence, such as GE outside the U.S. In our judgment, such employees enhance, not detract from, U.S. national security.

3. The DEAC Recommendation Would Impose Additional Financial and Administrative Costs

Even for one of the largest U.S. corporations, which can leverage economies of scale, GE would face significant costs and complexities if BIS adopted the DEAC Recommendation. Adding additional "potential" criteria that must be interpreted, applied to a wide variety of individual circumstances, and evaluated will greatly increase the burden on companies and on the U.S. Government. Companies will have to collect significant additional information and, in many cases from multiple sources in order to ensure completeness, to evaluate its potential significance. Moreover, the types of criteria that have been suggested by DEAC involve subjective assessments and companies are likely to adopt a conservative position and apply for licenses even when an individual has a marginal connection to a

[1] 71 FR 30840 (May 31, 2006) available at http://edocket.access.gpo.gov/2006/pdf/E6-8370.pdf (downloaded August 11, 2008)

country that could require a license for a particular technology. This will likely result in a significant increase in requests for licenses or interpretations from BIS, thereby adding workload to BIS. Additional applications would not necessarily result in greater protection either since in practice, only about 1% of license applications are rejected. [2]

In 2005 when we responded to the BIS request for comments concerning the OIG's Country of Birth proposal, GE gathered data from a small subset of its operations and we updated this analysis to take into account the current DEAC recommendation. Our businesses with CCL technology would face substantial additional costs associated with the collection and analysis of the additional nationality information of its employees, the potential need for additional deemed export licenses, additional burdens in the hiring process (delays, reduction in the pool of talented applicants, additional administrative costs), the need to restructure IT support, costs of resources necessary to assemble additional license applications and manage those license, and substantial costs associated with developing and implementing training. The estimate below does not cover the full potential impact of the change on all GE's businesses nor its operations outside the United States.

Estimated Direct Costs for a Small Subset of GE Operations

Costs to identify additional national affiliations validate status, update records, etc.	$236,500
Costs associated with developing deemed export license applications, managing licenses, recordkeeping and administrative costs	$206,250
Training costs	$716,520
Total	**$1,159,270**

This more than $1 million impact would increase by several multiples considering the effect on non-employees, global operations and the other GE businesses. Indeed, we understand that U.S. and other countries' privacy, employment and immigration law requirements would complicate these efforts and increase the compliance challenge.

4. The Recommendation Would Have a Detrimental Impact on Current and Prospective Employees

In addition to the substantial compliance costs, the DEAC Recommendation would also impose "human" costs on U.S. businesses, such as disruption of current staffing impacted by such a change and discouraging talented applicants who are not U.S. persons from seeking employment with the company. For example, an engineer who is currently considered a Canadian national for deemed export licensing but was born in Iran (and fled that country decades ago), studied in the UK, resided for a period of time in the UAE and then emigrated to Canada could suddenly become subject to substantial licensing requirements and the company would face challenges collecting documentation to validate all of these potential affiliations. An engineering staff that relies on team work and the contribution of each member to the common task could/would be disrupted in its work by a reassignment, even temporarily, while the company located and obtained relevant and sufficient documentation, evaluate such documentation and the facts presented in the documentation, and then applied for a license. Moreover, the GE business could face delays in important product

[2] DEAC Report (December 20, 2007). According to the DEAC, the total number of deemed export license applications were 1056 in FY07 85% of which were granted. 14 % of applications were returned because they were incomplete or not required. Only less than 1% of the applications submitted were rejected. The statistics are comparable for other yeors.

development activities during the license application process. This uncertainty could ultimately encourage such employees to seek technical positions outside of the United States, enhancing the talent pool available to our foreign competitors, and diminishing that available in the U.S.

GE has made a significant commitment to research and development and faces a very competitive recruiting environment trying to hire from top U.S. PhD programs where an overwhelming majority of the qualified candidates are non-U.S. persons. A rule change that would make integrating these scientists into our export-controlled programs more difficult, time consuming and costly would put GE and the United States at a competitive and technology security disadvantage.

5. Alternative Approaches Will Provide More Protection to Controlled Technology

If BIS is concerned that the existing deemed export rule does not provide adequate protection for sensitive U.S. technologies, GE encourages BIS to seek an alternative approach. The U.S. Government and exporting community, in collaboration, could develop an effective system to manage the technology transfer risk through an enhanced internal screening and controls program that met security, reliability and other criteria, such as potentially the Internal Company Transfer license exception that is currently under development. Such a system would benefit the exporting community by eliminating the need for qualifying companies to seek individual licenses. This mechanism would also benefit BIS by allowing resources currently dedicated to reviewing deemed export license applications to be rededicated to other valuable purposes. GE respectfully submits that such an alternative system would likely be more effective in managing the potential threat to U.S. national security and far more efficient than the Proposal's approach of basing licensing determinations on the country of birth, prior countries of residence and /or other comprehensive set of criteria.

Technology kept within the confines of a company should not require individual licensing, particularly to share with employees inside the United States. Empowering companies to rely on internal control programs and leverage the strong internal controls around intellectual property protection will increase efficiency and benefit national security by ensuring resources are devoted to the highest and best use by industry and government.

GE strongly urges BIS not to adopt the DEAC Recommendation concerning the addition of multiple factors for a comprehensive assessment of national affiliation. We thank BIS and the Department of Commerce for the opportunity to provide these comments.

Sincerely,

Kathleen Lockard Palma
Counsel, International Trade Regulation

From: Beth Israel <Beth.Israel@asu.edu>
To: "Rpd2@bis.doc.gov" <Rpd2@bis.doc.gov>
Date: Mon, Aug 18, 2008 4:46 PM
Subject: DEAC Report comments

August 18, 2008

VIA E-MAIL

Steven Emme
U.S. Department of Commerce,
Bureau of Industry and Security, Regulatory Policy Division
14th & Pennsylvania Avenue, NW, Room 2705,
Washington, DC 20230

RE: Comments on DEAC Report Recommendations (Docket No. 080512652-8653-01)

I am pleased to respond to the May 19, 2008 Notice of Inquiry published by the Bureau of Industry and Security (BIS) soliciting comments on two specific recommendations made by the Deemed Export Advisory Committee (DEAC) in its report, "The Deemed Export Rule in the Era of Globalization" on behalf of Arizona State University.

The BIS has requested comments regarding the following DEAC recommendations: (1) narrowing the scope of technologies on the Commerce Control List subject to deemed export licensing requirements and conducting an outside zero-based review of such technologies; and (2) whether a more comprehensive assessment of foreign national affiliation should be used in the context of making home country determinations in the deemed export licensing process. In short, ASU fully supports the comments offered by the Association of American Universities and the Council on Government Relations concerning the DEAC report. For purposes of clarity, I will respond to each of the above recommendations in turn.

1) Narrowing the Scope of Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements and Conducting an Outside Review of Technologies

Research conducted on ASU's campus, and, indeed, on most university campuses, is of a fundamental nature and specifically intended for broad-based dissemination for purposes of scientific advancement. It is therefore excluded from current deemed export control licensing requirements under 734.3 and 734.8 of the Export Administration Regulations. Nevertheless, export controls may have a significant impact on ASU's ability to conduct university-based research.

ASU fully agrees with the DEAC's finding that too many technologies are subject to deemed export control. ASU further agrees that the scope of covered technologies on the Commerce Control List (CCL) should be sharply narrowed to encompass those technologies having the greatest national security concerns. Particularly important is the DEAC's recognition of the increasingly global nature of the scientific and engineering enterprise and the critical need for the U.S. scientific community to partner in that enterprise.

ASU also agrees fully with the DEAC's conclusion that erecting high walls around large segments of the nation's scientific and engineering knowledge is not only increasingly impracticable, but also counterproductive to the country's economic competitiveness and national security. Certainly, the current CCL is applied far too broadly for purposes of deemed exports and should be greatly reduced. Building higher walls around those critical technologies having the greatest potential impact on national security would allow BIS to concentrate more effectively on areas of concern to homeland security without unnecessary and unwanted negative impact on U.S. innovation.

The current deemed export rule has a greater potential to hurt U.S. industry and the nation's universities as well as U.S. economic competitiveness, rather than prevent the dissemination of information given the fact that other countries do not have comparable export control regulations.

ASU believes a review of the CCL should be undertaken by the Emerging Technologies and Research Advisory Committee to be established by BIS. This group would be in a position to help assess which very short list of technologies can and should be protected for national security purposes through the use of deemed export control licenses as opposed to classification.

ASU recommends the following principles be adopted in conducting this review:

a) Only information about specific technologies that pose a clear threat to U.S. security interests and cannot be controlled more appropriately by classification should be controlled for deemed exports.

b) If information about a particular technology is reasonably available and can readily be gleaned from elsewhere in the world, deemed export controls should not be applied to it.

c) All "use technology" controls should be removed from regulation by deemed exports unless a specific case can be developed that they meet the criteria set forth in a) and b) above.

d) Dual-use items and information controlled for purposes of deemed export should be consistent with regulations issued by other federal agencies pertaining to the protection of national and homeland security.

2) Comprehensive Assessment of Foreign National Affiliation

The DEAC recommended a broad-based review of the background of foreign nationals and specifically that an individual's personal loyalty to countries of concern should be assessed in determining if export licenses are required. A different recommendation had been put forward earlier by the Commerce Department's Inspector General (IG) that an individual's birthplace should be considered in determining if export licenses were required.

AAU, COGR, and the university community have previously expressed deep concern about both the IG's recommendation concerning country of birth and the DEAC's recommendation suggesting that individual loyalties be assessed in the determination as to whether an export license application is required. ASU reaffirms that concern and does not believe that expanding considerations for deemed export control licenses beyond those which already exist based upon citizenship is needed, or that such an expansion of licensing requirements would be effective in further enhancing national security.

Generally speaking, universities have neither the information or expertise and ability to adequately conduct security or loyalty checks on foreign nationals. Nor are universities in any position to assess foreign national loyalties or any affiliations beyond their citizenship once they arrive on campus to conduct research as students, researchers or faculty. Expecting universities to do this, as opposed to the government, is unreasonable and certainly will not be an effective means to ensure the nation's national security. ASU continues to maintain that the visa screening process provides our best defense against individuals affiliated with nations and/or terrorist groups that threaten our national and homeland security or who have criminal intent and aim to do our country harm.

Conclusion

ASU thanks you for your work reviewing the current deemed export system. We agree fully with the DEAC's finding that "...the existing Deemed Export Regulatory Regime no longer effectively serves its intended purpose and should be replaced with an approach that better reflects the realities of today's national security needs and global economy."

ASU believes that the current deemed export policy is flawed because it is based on the misguided assumption that all foreign nationals automatically will export information about controlled technologies, when in fact, the vast majority have no intention of exporting that information abroad.

ASU greatly appreciates this opportunity to provide you with its views. Please do not hesitate to contact the undersigned if you would like clarification of any of the above.

Sincerely yours,

Beth H. Israel

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August 18, 2008

VIA E-MAIL

Steven Emme
U.S. Department of Commerce,
Bureau of Industry and Security, Regulatory Policy Division
14th & Pennsylvania Avenue, NW, Room 2705,
Washington, DC 20230

RE: Comments on DEAC Report Recommendations (Docket No. 080512652-8653-01)

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Research conducted on ASU's campus, and, indeed, on most university campuses, is of a fundamental nature and specifically intended for broad-based dissemination for purposes of scientific advancement. It is therefore excluded from current deemed export control licensing requirements under 734.3 and 734.8 of the Export Administration Regulations. Nevertheless, export controls may have a significant impact on ASU's ability to conduct university-based research.

ASU fully agrees with the DEAC's finding that too many technologies are subject to deemed export control. ASU further agrees that the scope of covered technologies on the Commerce Control List (CCL) should be sharply narrowed to encompass those technologies having the greatest national security concerns. Particularly important is the DEAC's recognition of the increasingly global nature of the scientific and engineering enterprise and the critical need for the U.S. scientific community to partner in that enterprise.

ASU also agrees fully with the DEAC's conclusion that erecting high walls around large segments of the nation's scientific and engineering knowledge is not only increasingly impracticable, but also counterproductive to the country's economic competitiveness and national security. Certainly, the current CCL is applied far too broadly for purposes of deemed exports and should be greatly reduced. Building higher walls around those critical technologies having the greatest potential impact on national security would allow BIS to concentrate more effectively on areas of

concern to homeland security without unnecessary and unwanted negative impact on U.S. innovation.

The current deemed export rule has a greater potential to hurt U.S. industry and the nation's universities as well as U.S. economic competitiveness, rather than prevent the dissemination of information given the fact that other countries do not have comparable export control regulations.

ASU believes a review of the CCL should be undertaken by the Emerging Technologies and Research Advisory Committee to be established by BIS. This group would be in a position to help assess which very short list of technologies can and should be protected for national security purposes through the use of deemed export control licenses as opposed to classification.

ASU recommends the following principles be adopted in conducting this review:

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b) If information about a particular technology is reasonably available and can readily be gleaned from elsewhere in the world, deemed export controls should not be applied to it.

c) All "use technology" controls should be removed from regulation by deemed exports unless a specific case can be developed that they meet the criteria set forth in a) and b) above.

d) Dual-use items and information controlled for purposes of deemed export should be consistent with regulations issued by other federal agencies pertaining to the protection of national and homeland security.

2) Comprehensive Assessment of Foreign National Affiliation

The DEAC recommended a broad-based review of the background of foreign nationals and specifically that an individual's personal loyalty to countries of concern should be assessed in determining if export licenses are required. A different recommendation had been put forward earlier by the Commerce Department's Inspector General (IG) that an individual's birthplace should be considered in determining if export licenses were required.

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Generally speaking, universities have neither the information or expertise and ability to adequately conduct security or loyalty checks on foreign nationals. Nor are universities in any position to assess foreign national loyalties or any affiliations beyond their citizenship once they

arrive on campus to conduct research as students, researchers or faculty. Expecting universities to do this, as opposed to the government, is unreasonable and certainly will not be an effective means to ensure the nation's national security. ASU continues to maintain that the visa screening process provides our best defense against individuals affiliated with nations and/or terrorist groups that threaten our national and homeland security or who have criminal intent and aim to do our country harm.

Conclusion

ASU thanks you for your work reviewing the current deemed export system. We agree fully with the DEAC's finding that "...the existing Deemed Export Regulatory Regime no longer effectively serves its intended purpose and should be replaced with an approach that better reflects the realities of today's national security needs and global economy."

ASU believes that the current deemed export policy is flawed because it is based on the misguided assumption that all foreign nationals automatically will export information about controlled technologies, when in fact, the vast majority have no intention of exporting that information abroad.

ASU greatly appreciates this opportunity to provide you with its views. Please do not hesitate to contact the undersigned if you would like clarification of any of the above.

Sincerely yours,

Beth H. Israel

Beth H. Israel
Associate Vice President Research Administration

SIA | SEMICONDUCTOR INDUSTRY ASSOCIATION

August 18, 2008

Mr. Steven Emme
U.S. Department of Commerce
Bureau of Industry and Security
Regulatory Policy Division
14th & Pennsylvania Avenue, N.W., Room 2705
Washington, DC 20230

ATTN: DEAC Report Comments.

Re: Request for Public Comments on the Deemed Export Advisory Committee Recommendations (73 Fed. Reg. 28,795)

Dear Mr. Emme:

The Semiconductor Industry Association ("SIA") is pleased to respond to the request for comments on the Deemed Export Advisory Committee ("DEAC") recommendations concerning narrowing the scope of technologies on the Commerce Control List ("CCL") subject to deemed export licensing requirements and implementing criteria for assessing probable country affiliation for foreign nationals.

The SIA is the leading voice for the semiconductor industry and has represented U.S. semiconductor companies since 1977. SIA member companies comprise more than 85 percent of the U.S. semiconductor industry.

In March 1994, without prior notice or public comment, the Export Administration Regulations ("EAR") were amended to make the release of technology and source code to foreign nationals in the United States a "deemed export" to the recipient's home country.[1] This sudden and far-reaching change was not accompanied by a national security rationale or justification. The regulatory notice merely stated that the change was made to codify longstanding government interpretations and to conform Commerce Department policy with other export control agencies.

Until this change, including during the height of the Cold War, the EAR held that a transfer of technology in the United States to a foreign national was to be treated as an export only if the transfer was made with knowledge or intent that an export would occur. At most, this amounted to a presumption of an export, a presumption that could be

[1] Revisions to the Export Administration Regulations; Transfers of Technology to Foreign Nationals in the United States, 59 Fed. Reg. 13,449 (March 22, 1994).

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overcome by evidence or circumstances. This gave companies the opportunity and incentive to ensure that technology provided to foreign nationals in the United States would be treated in accordance with the EAR, that is, any subsequent export of technology by the foreign national would be pursuant to appropriate authorization.

Prior to the deemed export rule, the sole focus for U.S. companies with respect to foreign nationals was on protecting technology from unlawful diversion by foreign nationals. This could be achieved in a variety of ways depending upon the circumstances. Non-disclosure agreements, monitoring arrangements and internal control systems were some of the measures companies employed to rebut the presumption that a domestic transfer of technology would result in an export. There has never been any showing that this approach was insufficient to protect against diversions.

Far from being a clarification or minor adjustment as it was characterized upon its promulgation, the deemed export rule constituted a seminal change in the U.S. export controls. It has had a major and costly impact on U.S. technology companies that employ foreign national workers and for many companies represents their largest export licensing activity. Furthermore, administration of the deemed export rule has required a high level of attention and resources from government regulators.

Given its lack of a statutory or regulatory justification, the deemed export rule deserves fundamental reexamination rather than further refinement. This is consistent with the primary finding of the DEAC that, ". . . the existing Deemed Export Regulatory Regime no longer effectively serves its intended purpose and should be replaced with an approach that better reflects the realities of today's national security needs and global economy."[2]

In these circumstances, SIA welcomes the willingness of the Bureau of Industry and Security ("BIS") to conduct a "zero-based" review of the CCL in order to determine which technologies should be subject to the deemed export rule. SIA is also pleased to submit comments concerning the content of the deemed export rule and in particular the determination of national affiliation for foreign nationals.

Narrowing the Scope of Technologies on the CCL

SIA believes there are no technologies in Category 3, "Electronics," that should be subject to the deemed export rule. The technologies set forth in Category 3 are primarily used in the manufacture of widely available semiconductor devices that pose minimal risk for U.S. national security.

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[2] Letter from the Deemed Export Advisory Committee to Carlos Gutierrez, U.S. Secretary of Commerce (December 20, 2007).

In any event and at a minimum, only technology for the development of items that currently require a license for export should be subject to the deemed export rule in accordance with the General Technology Note (Supplement No. 2 to Part 774).

Criteria for Assessing Probable Country Affiliation for Foreign Nationals

The deemed export rule is premised on a legal fiction that domestic workplace exchanges of technical knowledge and information with foreign national employees are, in every case, equivalent to an export and therefore government authorization and special requirements and conditions are warranted. In fact, absent specific evidence or indications to the contrary, there is no meaningful basis to presume that a transfer of technology to a foreign national in the United States will result in an unauthorized export or diversion.

Having built the deemed export rule on one legal fiction, the Department is now considering adding another: the country of the presumed export will not necessarily be the country of legal citizenship of the foreign national, but may be presumed to be other countries, such as country of birth, country of prior residence or even country of emotional affiliation.

The 2007 report of the DEAC recommended:

> Expanding the determination of the national affiliation of potential licensees to include consideration of country of birth, prior countries of residence, and current citizenship, as well as the character of a person's prior and present activities, to provide a more comprehensive assessment of probable loyalties.[3] [Emphasis added.]

Similarly, the inclusion of country of birth as a surrogate of citizenship was initially recommended in a report published by the Office of Inspector General.[4]

None of the recommendations for a broad review of a foreign national's background, including the character of the individual's prior and present activities, explains how such information bears on the country of export. No showing has been made of harm to national security as a result of relying on country of citizenship. Nor has a rationale been provided as to how such a background review would decrease the likelihood of a foreign national disclosing controlled information in a way that would harm U.S. national security. There is simply no demonstrated need or justification for companies to try to look behind legal citizenship as a means of predicting future unlawful diversion of technology.

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[3] Deemed Export Advisory Committee, "The Deemed Export Rule in the Era of Globalization" (December 20, 2007).

[4] Office of the Inspector General, "Deemed export controls may not stop the transfer of sensitive technology to foreign nationals in the U.S.," Final Inspection Report no. IPE-16176-March 2004.

At the same time, expanding the requirements on U.S. exporters to obtain additional information about foreign nationals represents a significant cost. First, it can be very difficult as a practical matter and quite complicated as a legal matter to obtain data about a person's birth since this is often treated as suspect information in jurisdictions throughout the world. Privacy laws of other nations can protect employees from being forced to divulge nationality information.

Second, U.S. companies are better equipped to maintain effective internal control systems to prevent unlawful diversions of technology than to investigate the potential affiliation of their employees. Trying to decipher national affiliation through checks on background or state of mind is an intrusive, uncertain exercise that provides no reasonable connection to future, unlawful behavior. If the government has concerns about the trustworthiness of particular individuals, it should address them when an individual is seeking an immigration status that would allow them to study or work in the United States.

Loyalty reviews of foreign nationals are complex, time consuming, expensive and beyond the scope of any potential problem. There is no basis for concluding that expanding the determination of national affiliation will enhance or improve the United States' ability to reduce the threat of unauthorized and harmful diversions of U.S. technology.

Expanding the deemed export rule to consider country of birth, prior countries of residence, current citizenship and the character of a person's prior and present activities will unfairly target legitimate and highly-educated foreign nationals who, in most cases, have been trained in the United States and intend to pursue careers with U.S. employers. It is self defeating for the U.S. government to help educate and train highly talented foreign scientists and engineers via academic grants and fellowships and then prevent or restrict their ability to work for a U.S. company after graduation, a point when they offer the most value to U.S. companies.

By conducting background investigations during the visa process, when foreign students and workers have yet to enter the country, the U.S. government could obviate the need for additional and duplicative investigations by firms and other U.S. government agencies when U.S. firms need to give the foreign nationals access to controlled technology.

Finally, an inquiry into national affiliation goes beyond what has been the regulatory standard for a "deemed" export in the International Traffic in Arms Regulations ("ITAR"). The ITAR impose an export license requirement for technical data "disclosed to a national of another country."[5] But even for the more sensitive munitions items, the ITAR do not define foreign national to depend upon country of birth. The recommendation to include in the EAR country of birth would have the anomalous result of creating a more sweeping regime for the transfer of dual-use technology than exists in the ITAR.

In short, SIA believes the deemed export rule is unnecessary. But if it is to continue, SIA recommends that the legal citizenship of the foreign national be the standard for determining the country of export.

"Use Technology" Should Not Be Controlled for Deemed Exports

SIA agrees with the university community that "use technology" should generally not be controlled for deemed exports. Use technology has value only if an individual has access to the technology and can therefore use the technology. Because the EAR already places controls on the export of the technology, the additional control on use technology is unnecessary and redundant.

U.S. Industry Needs an Intracompany License Exception

From the industry's standpoint, the deemed export rule has meant major complications and costs related to the employment of foreign nationals in the United States and in overseas facilities. Foreign nationals comprise a major segment of the pool of existing and prospective employees for U.S. technology companies. This situation is driven by the disproportionate number of foreign nationals receiving advanced degrees in technical fields from U.S. institutions, as well as the attractiveness of working for world-class U.S. technology companies. This scenario places the United States in an enviable and fortunate position of having access to many of the most capable and talented technical personnel in the world.

Not only do U.S.-based research and manufacturing facilities have a highly globalized workforce, but they are also located throughout the world. SIA therefore recommends that, at a minimum, the deemed export rule contains an exception for intracompany transfers that would authorize U.S. companies to provide access to controlled technology to foreign nationals within their operating units and manufacturing facilities anywhere in the world. The companies themselves are well suited to minimize the prospects that their sensitive technology will be diverted by foreign nationals subject to their internal control. They did so effectively for years prior to the deemed export rule and can do so again.

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[5] 22 C.F.R. 125.1(c)

SIA appreciates the opportunity to comment on these important issues.

Respectfully submitted,

Cynthia Johnson
Vice Chair, SIA Export Controls Committee

From: "Stout, Michelle B" <michelle.b.stout@intel.com>
To: "rpd2@bis.doc.gov" <rpd2@bis.doc.gov>
Date: Mon, Aug 18, 2008 11:16 PM
Subject: DEAC Report Comments (Intel Corporation)

To Whom It May Concern,

Please see attached letter from Intel Corporation in response to the DEAC's request for public comments noted in Federal Register Vol 73.

Thank you.

Regards,

Michelle on behalf of Jeff Rittener

Michelle Buensuceso Stout
Export Compliance Ops Manager
Intel Corporation - Global Tax & Trade
Ph: 408.765.1199
Fax: 408.765.1352

CC: "Rittener, Jeff" <jeff.rittener@intel.com>, "Rose, David" <david.rose@intel.com>, "Dasari, Rama" <rama.dasari@intel.com>, "Martelles,Raph" <raph.martelles@intel.com>

Intel Corporation
2200 Mission College Blvd.
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August 18, 2008

US Department of Commerce
Bureau of Industry and Security
Regulatory Policy Division
14th Street and Pennsylvania, NW Room 2705
Washington, D.C. 20230
Attn: DEAC Report Comments

Re: Request for Public Comments on Deemed Advisory Committee (DEAC) Recommendations
Federal Register Vol 73, No. 97 Monday, May 19, 2008

Dear To Whom It May Concern,

Intel is pleased to comment on the two recommendations made by the DEAC which contemplates narrowing the scope of technologies on the CCL subject to deemed export licensing requirements and implementing a more comprehensive set of criteria for assessing probable country of affiliation.

Introduction

Intel is the world leader in silicon innovation. Intel's technology leadership is a result of its strong research and development arm, which in turn relies for its success on people hired from the global marketplace. Intel's employees span the globe, and approximately half of those employees are not U.S. citizens.

On December 20, 2007, the members of the Deemed Export Advisory Committee released a report entitled "The Deemed Export Rule in the Era of Globalization" (hereinafter referred to as the DEAC report). The DEAC report concluded that the existing Deemed Export Regulatory Regime was outdated in the new global marketplace.

Intel agrees that the current deemed export rule is outdated. In addition to its inapplicability to the current global marketplace, it creates administrative overhead and also limits the ability of companies to make use of the skills of highly-qualified foreign national employees. In addition, the rule indirectly creates a hostile environment for skilled foreign technology workers, causing them to seek employment in other countries rather than remain in the U.S. Many of these workers were educated in the U.S., but while the U.S. continues to lead in the education of

foreign workers, the deemed export rule can cause it to lose, to other countries, the competitive advantage they could have provided to the U.S.

Since the promulgation of the deemed export rule, Intel has applied for ~1200 deemed export licenses. These license applications often take the U.S. government up to 3 months to review. When a license is granted, Intel still must comply with its terms and conditions, requiring Intel to create and manage a stringent internal controls program to: (1) classify every project within the company to ascertain the appropriate ECCNs for any technology that is accessible to project members; (2) screen the nationalities of employees working on each project within the company; (3) acquire, upgrade, and renew all needed export licenses; (4) track and manage network, physical, and access to controlled technologies for all foreign national project members; and (5) ensure compliance to the conditions of the individual validated export licenses. This burden is a significant one.

The delay and cost of assessing, obtaining, and managing export licenses and access to technologies burdens Intel's ability to hire and deploy skilled foreign nationals to work on critical technology. The U.S. government generally grants deemed export license applications and provides for license conditions that allow the foreign national(s) in question to work on the desired project, but the technology industry is a highly volatile industry. Intel's business needs change rapidly, but the foreign national employees cannot be moved to a new project or access new equipment or technology without obtaining a license upgrade. The delay incurred in applying for such an upgrade creates a competitive hindrance for Intel. It negatively affects Intel's ability to deploy foreign nationals in important technology projects and licensing delays have been a salient problem in this area, since they prevent foreign nationals from being used in key Intel technology projects in a timely manner.

Comments: Scope of Technologies

The proposed rulemaking seeks comments on the scope of technologies on the CCL subject to deemed export license requirements. We believe technologies captured in Category 3 should no longer be subject to deemed export controls because they are used in commercial devices. The CCL should only capture technologies that are not broadly geared to commercial applications but instead possess characteristics that could have significant military value (I.e. Radiation-hardened or heat resistant integrated circuit entries in CAT 3).

Comments: Country of Affiliation

The proposed rulemaking also seeks comments on whether a more comprehensive set of criteria should be used to assess country affiliation for foreign nationals with respect to deemed exports. We believe this rule would magnify deemed export restrictions and burdens by changing today's licensing standard from a foreign national's most recent citizenship or permanent residency to one based on his/her country of affiliation.

Intel understands that this change would require U.S. entities to follow a seven step process proposed in the DEAC report which claims to simplify the current deemed export rule. We believe this process in fact serves only to complicate it. Under the new process, companies will need to provide more information than before, including a new loyalty assessment. Deemed export license applications seem likely to require longer than the three months they take now, given the two 30 day periods that are allowed for the government to respond (or not respond) in the initial steps of the new process. Our assessment of this expansive criterion concludes that

deemed export license application reviews will take longer than your typical 3 month approval time, under the new rule. It also appears as though both additional licensing burdens and legal ramifications are considered in this evaluation. For example, counsel for the Computer Coalition for Responsible Export states the following:

- Privacy Laws: Under the 1995 EU Data Privacy Directive, the collection and processing of employee data on "racial or ethnic origin" without employee consent is generally illegal, and the Directive forbids companies from taking adverse action against employees who fail to provide such personal data. (Employees even have a "right to lie" when asked to provide such data, calling into question the effectiveness of any BIS regulation.)
- Anti-discrimination Liability: In Canada and the EU, the law generally recognizes "indirect discrimination" claims relating to the disparate impact of neutral employer practices. Hungary is one example of a country that explicitly protects employees against disparate impact discrimination based on "national origin."

Laws such as this place a US company with international presence into a legally untenable position.

Conclusions and Recommendations

Intel supports effective policies that recognize, rather than compromise, the positive correlation between national security and U.S. economic and technological vitality. We thus believe that the DEAC should reconsider the validity of the deemed export rule rather than contemplate its expansion. In particular, we believe the DEAC should:

- Eliminate the technology controls for decontrolled products and focus on those that possess characteristics that could have significant military value.
- Remove the seven step process and instead, simplify the deemed export regulatory process and implement the Inter-Company Transfer license exception. To this end, Intel joins with many industry colleagues in supporting a license exception for global intra-company transfers of technology. This action, properly executed, would eliminate the burden of case-by-case licensing for both deemed exports and technology transfers to foreign subsidiaries of U.S. companies.
- Abandon the idea of expanding the deemed export rule to country of affiliation. Intel particularly opposes any use of a country of birth or a fallback country-of-affiliation criterion.

Thank you for the opportunity to comment on this highly important matter.

Sincerely,

Jeff Rittener

Jeff Rittener
Global Export Compliance Manager, Intel Corporation

EDA CONSORTIUM
Electronic Design
Automation Consortium

August 14, 2008

U.S. Department of Commerce
Bureau of Industry and Security
Regulatory Policy Division
Office of Exporter Services
14th St. and Constitution Ave. NW, Room 2705
Washington, DC 20230
ATTN: DEAC Report Comments

RE: Request for Public Comments on Deemed Export Advisory Committee Recommendations: Narrowing the Scope of Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements and Implementing a More Comprehensive Set of Criteria for Assessing Probable Country Affiliation for Foreign Nationals (73 Fed. Reg., No. 97, May 19, 2008 p. 28795)

Dear Sir or Madam,

On behalf of the EDA Consortium, we appreciate that BIS is offering an opportunity to comment on the two recommendations made by the DEAC concerning Deemed Export regulations; namely the recommendation for an outside, zero-based review of technologies subject to these regulations; and requiring an assessment of foreign national affiliation in determining the need for a Deemed Export license.

1. Technical Scope of Deemed Export Controls.

We firmly support the recommendation for an outside, zero-based review of technologies subject to Deemed Export regulations. We agree with the DEAC that the existing range of technologies under control is too broad, and that positive justification for including a technology on a Deemed Exports restriction list is the correct approach. We believe that only technologies that are specifically controlled by the proliferation regimes (the Missile Technology Control Regime, the Australia Group and the Nuclear Suppliers Group) are a logical subset of technologies to be subject to Deemed Exports regulations. This is for several reasons:

1) There is broad multinational consensus for the types of controls to be placed on these technologies, including restrictions on countries of concern. This is unlike the broader range of Wassennaar controlled items, for which consensus between the nations is not assured.

2) The regime-controlled technologies are likely to be confined to companies that specialize in these products, often military contractors, unlike general dual-use technologies found on the Wassenaar control list, which are broad-based and found throughout many disciplines.

3) There is growing availability of Wassenaar – level controlled technologies being created outside the US. As the Deemed Export rule is a unilateral control, the imposed restrictions have limited value in curtailing the spread of these technologies.

4) Dual use items controlled unilaterally under AT-level controls should be dropped from the Deemed Export regulations altogether, as these controls cannot prevent access to this technology which is often readily available from international sources.

2. Foreign National Affiliation:

The regulation as it exists today provides clear, objective guidance on when a Deemed Export situation requires licensing, as one can easily determine restrictions based on ECCN and country of citizenship. Expanding this to "affiliation" would require a detailed review and questioning the citizenship status of every foreign national employee in every country. Potentially hundreds of thousands of Country Group D1 employees with access to AT level technologies would now require licensing reviews. Potentially millions of Country Group B employees with access to AT and NS level technologies would face the same review.

Attempting to obtain this information violates privacy regulations in many nations, especially in Europe. Effectively we would also be telling our allies, such as Canada, the UK and other European countries, that we do not trust their decisions in granting permanent residency and citizenship status to their residents.

Replacing "bright line" objective guidelines with a subjective policy open to contradictory interpretations leaves the prudent export compliance practitioner in a quandary. We would foresee these practitioners applying for countless Deemed Export and Deemed Re-Export licenses in the attempt to shift the burden of proof back to BIS, reversing twenty years of BIS policy intent on lessening licensing requirements and processing.

We again thank BIS for allowing us to comment on this proposal.

Sincerely,
On behalf of the EDA Consortium,

Laurence K. Disenhof
Cadence Design Systems, Inc.

Douge Martin
Mentor Graphics Corporation

From: "George, Reed A." <GeorgeR@janelia.hhmi.org>
To: <rpd2@bis.doc.gov>
Date: Thu, Aug 21, 2008 9:21 AM
Subject: DEAC Report comments - Howard Hughes Medical Institute

Dear Mr. Emme:

Please find the attached response to Docket BIS-2008-0010. We appreciate the opportunity to comment on this important topic. Please feel free to contact me if you have any questions.

Regards,

Reed A. George
Director of Scientific Services
Howard Hughes Medical Insitute
Janelia Farm Research Campus
19700 Helix Drive
Ashburn, VA 20147
Phone: 571-209-4370

CC: "Henning, Heidi" <henningh@hhmi.org>, "Lowe, Essala D." <lowee@janelia.hhmi.org>

ATTENTION: Docket BIS-2008-0010
Submitted via email to rpd2@bis.doc.gov
August 21, 2008

Steven Emme
U.S. Department of Commerce
Bureau of Industry and Security
Regulatory Policy Division
14th & Pennsylvania Avenue, N.W.
Room 2705
Washington, D.C. 20230

Dear Mr. Emme:

I write on behalf of the Howard Hughes Medical Institute (HHMI) in response to the notice of inquiry published by the Bureau of Industry and Security (BIS) requesting comments on two specific recommendations made by the Deemed Export Advisory Committee (DEAC) with respect to BIS's deemed export licensing policy. The recommendations on which BIS is requesting comments are (1) whether the scope of technologies on the Commerce Control List (CCL) that are subject to deemed export licensing requirements should be narrowed and if so, which technologies should be subject to deemed export licensing requirements; and (2) whether a more comprehensive set of criteria should be used to assess country affiliation for foreign nationals with respect to deemed exports.

As background, HHMI is a private non-profit medical research organization that owns and operates the Janelia Farm Research Campus, a biomedical research complex in northern Virginia, and that is engaged in basic research in collaboration with non-profit hospitals, universities, and research institutes around the country. While HHMI's research, including all research at Janelia Farm Research Campus, is fundamental research, we are concerned about the deemed export rules and their adverse effect on the academic research community of which we are a part.

HHMI supports the comments submitted by the Association of American Universities (AAU) and the Council on Government Relations (COGR) in response to the BIS notice of inquiry. Like AAU and COGR, we fully concur with the DEAC's basic finding that too many technologies are subject to deemed export control; we believe that the current CCL should be greatly reduced, including for purposes of deemed exports.

We believe that the assessment of which technologies should be subject to deemed export licensing requirements should be undertaken by a panel of experts that is provided with sufficient support to conduct the complete review recommended by the DEAC. We agree with the DEAC that given the pace at which technology is developed (often outside of the U.S.) and becomes commonly used around the world, the CCL should be subject to an annual "sunset" (zero-based) review by a panel of outside experts.

As to the criteria used to assess country affiliation for foreign nationals with respect to deemed exports, we agree with AAU and COGR that the significant expansion of the considerations for deemed export control licenses that is under consideration would raise serious concerns about privacy and civil liberties, and is unlikely to be effective in increasing national security. We believe that the visa and permanent residence screening process is the best way to evaluate the background of foreign nationals, and that U.S. universities and research institutions should not be required to conduct a further comprehensive assessment after an individual has been admitted to and given authorization to work in the U.S.

Sincerely,

Reed A. George
Director of Scientific Services
Janelia Farm Research Campus
Howard Hughes Medical Institute
19700 Helix Drive
Ashburn, VA 20147
571-209-4000

From: "Rivaleau, Susan A." <RivaleauS@cofc.edu>
To: <rpd2@bis.doc.gov>
Date: 9/2/2008 10:53:01 AM
Subject: DEAC Report Comments

Hello,

I am writing to comment on the DEAC's recommendations.

I agree that the scope of technologies subject to licensing must be narrowed. Logically, anything can be used in a dangerous way, but trying to cover everything diminishes resources needed to address those technologies most likely to harm. Without technical knowledge, it would be difficult for me to suggest specific technologies that should remain (or be added) to the list that is subject to controls. Consulting with knowledgeable security and scientific experts would seem reasonable to me for making these determinations.

Regarding county of origin, I feel strongly that where one happens to be born has little or no relevance to a foreign national's level on risk on deemed exports. To the contrary, I believe that establishing this as a criterion provides a false sense of validity. Again, this serves as a distraction. At some level, having checked off all the items on a checklist gives one the impression of having accomplished a goal, whereas if checklist items are in fact meaningless, the problem for which the checklist was developed remains unresolved.

Thank you for the opportunity to register my comments.

Best regards,

Susan E. Anderson

Assistant Director

Office of Research & Grants Administration

College of Charleston

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From: "Dreiberg, Twila L." <tldreiberg@hrl.com>
To: "rpd2@bis.doc.gov" <rpd2@bis.doc.gov>
Date: Tue, Sep 9, 2008 1:03 PM
Subject: DEAC Report Comments

To Whom It May Concern,

Please accept our apologies and we graciously ask that you accept our late comments regarding the Notice of Inquiry on the DEAC Report.

Thank you for your consideration,

Twila Dreiberg

HRL Laboratories, LLC

Manager, Import / Export Operations

3011 Malibu Canyon Road

Malibu, Ca 90265

Ph # (310) 317-5315

Fax # (310) 317-5099

tldreiberg@hrl.com

"If you have ten thousand regulations you destroy all respect for the law" Winston Churchill

CC: "alopes@bis.doc.gov" <alopes@bis.doc.gov>

HRL
LABORATORIES

August 14, 2008

U.S. Department of Commerce
Bureau of Industry and Security (BIS)
Regulatory Policy Division
14th & Pennsylvania Avenue, NW
Room 2705
Washington, DC 20230

Attn: DEAC Report Comments

To Whom It May Concern,

HRL Laboratories, LLC ("HRL") would like to thank BIS for the invitation to comment on the recent Federal Register Notice of Inquiry regarding:

> ***Deemed Export Advisory Committee Recommendations: Narrowing the Scope of the Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements and Implementing a More Comprehensive Set of Criteria for Assessing Probable Country Affiliation for Foreign Nationals***

HRL is a research laboratory located in Malibu, California, owned jointly by The Boeing Company ("BA") and General Motors ("GM"). HRL conducts research for both of its owners, for other commercial companies and, through government contracts or subcontracts, for a number of U.S. Government agencies. Information regarding HRL's history, mission and research activities is available at www.hrl.com

In response to this invitation, HRL Laboratories, LLC, provides the following recommendations and comments:

1) Comment on whether the scope of the technologies on the Commerce Control List that are subject to deemed export licensing requirements should be narrowed, and if so, which technologies should be subject to deemed export licensing requirements.

HRL agrees with the recent concept regarding putting a "high wall around a few technologies" and agrees that the deemed export licensing requirements should be narrowed. HRL collaborates with many universities in conducting research and has had first hand experience involving the difficulties working through the complex issues associated with foreign nationals and deemed exports at those universities.

The deemed export rules contain an exemption for "fundamental" research, but some college officials, as well as HRL, feel that the Commerce Department has interpreted too many university studies as falling outside the exemption. Moreover, subjecting the use of certain equipment required for the conduct of fundamental research to deemed export control provisions stifles the open, collaborative, and often-times spontaneous research environment characteristic of the campus research atmosphere and one that is required to stimulate innovative thinking and cutting-edge ideas.

The current regulations and procedures make the existing EAR compliance process more complicated and vague. An arguably greater fear is that deemed export control policy is ultimately having a chilling effect on research and development of new technologies in the United States by limiting or encumbering the work of talented individuals and encouraging organizations to move research activities overseas in an effort to remain competitive.

An example of a technology area within HRL that we have "tripped into" is in the area of carbon fibers and filamentary materials. We believe carbon nanotubes actually fall under the technical definitions of the EAR (i.e., strength, etc.), however, we believe the specification and controls are really meant for carbon fibers which are used in military grade composites. Exclusions or exemptions for nanotubes or nanoscale carbon materials might be helpful.

However, we specifically urge that BIS adopt clear guidance for the "publicly available technology" and "fundamental" research exemptions in a way that protects and fosters innovation. Furthermore, we urge BIS to consider carefully the impact that adding even more burdens on researchers interested in working in the United States would have on U.S. competitiveness.

The recommendation would be to remove the seemingly arbitrary distinction between research that is "fundamental" because it is performed at a learning institution and is normally published without restriction and the very same research performed at a for-profit organization which requires approval before publication. What constitutes "fundamental" research shouldn't depend on who performs it or whether it can be published without restriction. Putting learning institutions like universities and for-profit companies on the same footing with respect to "fundamental" research would allow for more collaboration and remove the spectra of a "deemed export" when collaboration is pursued.

2) Comment on whether a more comprehensive set of criteria should be used to assess country affiliation for foreign nationals with respect to deemed exports.

The DEAC recommends expanding the analysis of determining the home country of the foreign national for deemed export licensing purposes as well as other criteria in order to determine home country / national affiliation, however, a foreign national's home country of origin is, at best, an ambiguous indicator of security risk. For example, consider a foreign national born in China, but whose parents emigrate from China to Canada when she is only six months old. Under this proposal the person would be subjected to export restrictions placed on China, despite being a permanent resident of Canada almost her whole life. She would be subject to much more scrutiny than any of her Canadian colleagues, creating different burdens on essentially the same pool of researchers.

Given the scope of the countries involved and the different export controls for each, this change could create substantial new costs for universities and industry and additional delays in getting world-class researchers working on and with significant new technologies. HRL urges BIS to carefully weigh the extent that this change would provide useful and relevant security information, against the additional, and likely substantial, costs it would create.

Thank you again for this opportunity to comment.

Sincerely,
HRL Laboratories, LLC

Daniel R. Allemeier
Secretary and General Counsel

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September 3, 2008

U.S. Department of Commerce
Bureau of Industry and Security
Regulatory Policy Division
14th & Pennsylvania Avenue, NW Room 2705
Washington, D.C. 20230
ATTN: DEAC Report Comments

Ladies and Gentlemen:

We applaud and support the Department of Commerce's current focus on generating policies and processes that allow the U.S. to attract the best scientists from around the world to participation in key areas of science and technology while protecting our national security.

As invited by BIS in the May 19, 2008, Federal Register, we appreciate this opportunity to comment on two specific recommendations made by the Deemed Export Advisory Committee (DEAC) with respect to BIS's export licensing policy.

The first BIS question asks, "Should the scope of technologies on the Commerce Control List that are subject to deemed export licensing requirements be narrowed, and if so, to which technologies?"

It is absolutely clear that the range of technologies listed on the CCL as subject to export controls, including deemed export controls, must be narrowed to be effective. In its current form the CCL is far too broad and outdated to be a useful tool for protecting vital U.S. national interests. Narrowing the list drastically is essential for strategic effectiveness, credibility and compliance clarity.

The key issue is how to define a narrow list of technologies that (1) are not readily available to the international science and technology community beyond the scope of U.S. controls; and (2) should be intensively protected from dissemination because of substantive and significant application to national security. Both of these essential factors are evolving targets that require sophisticated technical analysis on a continuous basis, and are not readily defined by either blanket classifications or existing ECCNs. For example, despite the notion in popular culture that "nanotechnology" means "cutting edge," nanotechnology is a term covering a huge array of techniques now used in products including textiles, cosmetics and shampoos, which clearly should not be restricted. Another illustration is that many computer encryption technologies that were

rarified knowledge very few years ago are now internationally publicly available, and the latest encryption technologies today may not be adequately defined by existing ECCNs.

The list of export-controlled technologies subject to deemed export regulations must be both narrow and very current to justify the significant costs of export controls – both financial costs and national scientific and technical development opportunity costs.

We strongly advise that the core purpose of the Emerging Technology and Research Advisory Committee (ETRAC) should be to identify and define now, and on an ongoing basis, the key technologies that merit the resource expenditures and restrictions of deemed export controls. Appropriate infrastructure support should be provided to ETRAC to make the ETRAC's operations effective and its output timely.

The second solicited commentary is on the question: "Should a more comprehensive set of criteria be used to assess country affiliation for foreign nationals with respect to deemed exports?"

There are two issues raised by this question: (1) what are the criteria and processes for assessing "probable loyalty" (the term used in the report) and (2) the definition of persons to whom and context in which the assessment criteria will be applied.

The process described in the DEAC report for assessing "probable loyalty" of individuals includes submission to BIS of a detailed set of information about individuals "of interest" relative to an export license, including not only country of birth and current citizenship but also all prior countries of residence and the list and character of all past and present activities of the individual. Assembling such a detailed dossier of information on any individual would be an expensive time-consuming process for the submitting institution as most of our nation's universities employ and educate many scholars with ties to foreign jurisdictions. For the BIS personnel receiving the information packets, the process would be even more resource intensive: evaluation of the veracity and completeness of the received information; assessment of "probable loyalty"; and responding to challenges to assessments of "probable loyalty." It is likely that BIS would frequently be unable to meet the 30-day deadline and that a form letter automatically extending the deadline, perhaps multiple times, would become commonplace, with all of the attendant costs to the nation's research enterprise and to BIS credibility. This is the type of assessment appropriate to security clearance for classified research. It is not cost effective for deemed export in nonclassified research scenarios.

In addition to the increased expense per individual evaluation, the DEAC report appears to contemplate expanding the number and scope of "individuals of interest" subject to this evaluation process by including in the definition of "foreign nationals" individuals who have been granted permanent U.S. residency status. The report even alludes to possible interest in persons with U.S. citizenship, noting "United States citizens are exempt from these regulations, yet most cases involving violations (export violations in general) of which the Committee has been made aware of [sic] involved United States

citizens." (p.82) As we have suggested above, for all but classified research, a detailed subjective probe of factors other than citizenship and permanent residency is neither cost effective nor likely to provide meaningful information. Citizenship and permanent residency are not guarantees of loyalty; however, for export control purposes generally, they offer a reasonable combination of verifiable information with presumption of underlying affiliation.

The burden should be on U.S. intelligence and visa agencies to ensure that those individuals entering the United States to work or obtain citizenship have been appropriately screened prior to entry. The DEAC report states that the committee was unwilling to "further burden an already challenged visa processing system." The proposed "loyalty assessment" process would have material costs regardless of where it is performed, and those responsibilities do belong to the visa system. The appropriate response is to make sure that there are adequate resources to perform their mission rather than to pass the burden along to other agencies and institutions that also are overburdened performing their own existing responsibilities. Intelligence and visa agencies should have the responsibility to update the denied persons lists to account for individuals whose affiliations do not merit the presumption of citizenship-based affiliation and universities should be able to assume that all those in the U.S. on a valid work or study visa may have access to all but classified research.

We agree with General Brent Scowcroft that our national security is more effectively served by policies that focus on ensuring that the U.S. stays ahead in key areas of science and technology rather than in trying to keep other countries behind. The outmoded latter strategy is a losing proposition now that other countries are investing heavily in their own education, research and technical development programs. Major challenges to the vitality of our national research enterprise going forward are likely to be (1) attracting international scientific talent to participation in our own research to compensate for inadequate numbers of domestic U.S. scientists and researchers and (2) gaining access for our scientists to break-through research funded and led in other countries. An onerous, delaying and offensive federal government assessment of "probable loyalty" of research participants, unless confined to appropriately "classified" research, is likely to do incalculable harm to our national research enterprise and to represent to taxpayers and to commercial interests alike a federal waste of resources and obstruction of technology development in the United States.

Thank you again for the opportunity to comment on these policy and process issues. We stand ready to assist in the vital work we have suggested as the mission of the ETRAC.

Sincerely,

Tony G. Waldrop
Vice Chancellor for Research and Economic Development

From: "Michael Lutz" <mlutz@google.com>
To: "STEVEN EMME" <semme@bis.doc.gov>, <rpd2@bis.doc.gov>
Date: Wed, Sep 17, 2008 4:23 PM
Subject: DEAC Report Comments

Thank you for the opportunity for Google Inc. to comment on the Deemed Export Advisory Committee Recommendations [Docket No. 080512652-8653-01]. Google regards the US system of deemed export controls as a potential tool in preventing or delaying the dissemination of strategic U.S. technology, and Google also recognizes and applauds the contribution of the Deemed Export Advisory Committee in examining the issue.

Our comment will focus on why we oppose the DEAC's recommendation to adopt a more comprehensive set of criteria to determine country affiliation for foreign nationals with respect to deemed exports.

We agree with the Committee's findings that, under the current deemed export regime, "increasingly . . . the consequence of establishing barriers to the transfer of knowledge to foreign nationals is to make the United States a less desired partner in the global scientific and engineering communities and thus assign the United States to the fringes of the world's creative enterprise – with adverse consequences for both the nation's economy and national security."1<https://docs.google.com/a/google.com/RawDocContents?docID=dg72t4dd_23hp6zg7hh&justBody=false&revision=_latest&timestamp=1221682675521&editMode=true&strip=true#sdfootnote1sym>

We also agree with the observations that non-U.S. companies gain by being free of the exclusively U.S. deemed export controls and that deemed export controls are becoming less effective as non-U.S. sources of technology are increasingly available. Reducing the number of technologies that are subject to deemed export licensing requirements is a step in the right direction to encouraging continued U.S. technological innovation while protecting our national security interests. We also believe that adding complex rules incorporating birth nationality to assess country affiliation for foreign nationals will place additional burdens on U.S. technological innovation without corresponding national security benefits.

As a general matter, Google wishes to point out that US deemed export controls are a unilateral US control, and one which, in its present form, is relatively recent. Prior to 1995, controls on release of technology to non-US nationals in the US were based on the principle that an unauthorized export was not presumed or "deemed" unless there were specific facts that would indicate to a US entity that such a violation were probable.

We believe that this continues to be a sound basis for controls on technology to non-US nationals, and is conceptually consistent with the DEAC

recommendations. The issues become (1) How comprehensive is the scope of controls (i.e., to which items do they apply), and (2) What responsibility exists for US entities to investigate the background, record and other facts pertinent to non-US national employees or others who are not US nationals, and what negative implications this may have on licensing and the desire to simplify the process.

The current system of using a foreign national's most recent citizenship or legal permanent residency to determine country affiliation allows for relatively straightforward identification of which employees may need to apply for a deemed export license. Incorporating the DEAC's recommendation to include "country of birth, prior countries of residence, current citizenship, and character of individual's prior and present activities" would require universities and companies to collect and maintain a large database of information and to make difficult, complex judgments for who needs a license.2<https://docs.google.com/a/google.com/RawDocContents?docID=dg72t4dd_23hp6zg7hh&justBody=false&revision=_latest&timestamp=1221682675521&editMode=true&strip=true#sdfootnote2sym>This may also result in unnecessary deemed export licenses that do not improve national security and an even greater burden on U.S. innovation than under the current system.

It would be useful to test any proposed criteria against a set of past export violations over a number of years and assessing whether the proposed rules would have had a positive impact on national security. As the DEAC report notes "most cases involving export violations (of all types) of which the Committee is aware involved United States citizens."3<https://docs.google.com/a/google.com/RawDocContents?docID=dg72t4dd_23hp6zg7hh&justBody=false&revision=_latest&timestamp=1221682675521&editMode=true&strip=true#sdfootnote3sym>A review of the Bureau of Industry and Security's Electronic FOIA Reading Room export violation records4<https://docs.google.com/a/google.com/RawDocContents?docID=dg72t4dd_23hp6zg7hh&justBody=false&revision=_latest&timestamp=1221682675521&editMode=true&strip=true#sdfootnote4sym>was inconclusive as to whether there were any foreign nationals who would not already have been required to have a deemed export license under current rules that committed export violations. The orders published in the Reading Room generally did not report the citizenship of foreign nationals who committed export violations, and most of the individuals were U.S. citizens or residents who would not be covered by deemed export rules. A study that demonstrated quantitative national security improvements of new country affiliation criteria would provide a compelling explanation to entities that are subject to deemed export regulations.

We finally want to state our opposition to any expansion of the definition of deemed exports to include U.S. citizens or U.S. permanent residents. The DEAC report says that one of the "escapements to the existing regulatory regime" is that "a foreign-born individual who becomes a United States

citizen and then returns to his or her native country (perhaps with dual citizenship) is not covered by the Deemed Export regulations. Correspondingly, United States citizens are exempt from these regulations."5<https://docs.google.com/a/google.com/RawDocContents?docID=dg72t4dd_23hp6zg7hh&justBody=false&revision=_latest&timestamp=1221682675521&editMode=true&strip=true#sdfootnote5sym>The DEAC report suggests that these "escapements" should be eroded. However, we believe that United States citizens should not be presumptively suspect or considered disloyal because of their foreign birth. We agree with the reasoning of BIS in its May 2006 withdrawal of advance notice of proposed rulemaking that a declarative assertion of affiliation was more significant than the geographical circumstances of birth. Any expansion of deemed export regulation to U.S. citizens would also force technology firms and universities to review every employee as a potential source of for deemed export violations.

We hope that BIS follows its example in its May 2006 decision not to adopt the recommendation of the Office of the Inspector General that a foreign national's country of birth be used to determine deemed export license requirements. BIS should continue to look to ensure that the deemed export restrictions are narrowly and effectively tailored to achieve their national security purposes with the least unnecessary burden on legitimate research and commerce.

We again thank BIS for this opportunity to provide comments in response to the Notice of Inquiry.

1<https://docs.google.com/a/google.com/RawDocContents?docID=dg72t4dd_23hp6zg7hh&justBody=false&revision=_latest&timestamp=1221682675521&editMode=true&strip=true#sdfootnote1anc>The Deemed Export Advisory Committee, *The Deemed Export Rule in the Era of Globalization*, December 20, 2007, at 33. <http://tac.bis.doc.gov/2007/deacreport.pdf>

2<https://docs.google.com/a/google.com/RawDocContents?docID=dg72t4dd_23hp6zg7hh&justBody=false&revision=_latest&timestamp=1221682675521&editMode=true&strip=true#sdfootnote2anc>Department of Commerce, Bureau of Industry and Security, "Notice of Inquiry", *Federal Register*, Vol. 73, No. 97, May 19, 2008, at 28797.

3<https://docs.google.com/a/google.com/RawDocContents?docID=dg72t4dd_23hp6zg7hh&justBody=false&revision=_latest&timestamp=1221682675521&editMode=true&strip=true#sdfootnote3anc>The Deemed Export Advisory Committee, *The Deemed Export Rule in the Era of Globalization*, at 17.

4<https://docs.google.com/a/google.com/RawDocContents?docID=dg72t4dd_23hp6zg7hh&justBody=false&revision=_latest&timestamp=1221682675521&editMode=true&strip=true#sdfootnote4anc>Bureau

of Industry and Security Electronic FOIA Reading Room U.S. Department of Commerce, *TOC Export Violations*, * http://efoia.bis.doc.gov/exportcontrolviolations/tocexportviolations.htm*, visited on August 26, 2008.

5<https://docs.google.com/a/google.com/RawDocContents?docID=dg72t4dd_23hp6zg7hh&justBody=false&revision=_latest&timestamp=1221682675521&editMode=true&strip=true#sdfootnote5anc>The Deemed Export Advisory Committee, *The Deemed Export Rule in the Era of Globalization*, at 17.

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650-253-7148

From: "Brady, David" <dbrady@vt.edu>
To: <rpd2@bis.doc.gov>
Date: Fri, Sep 19, 2008 3:01 PM
Subject: DEAC Report Comments

Dear Mr. Emme,

Pursuant to the May 19, 2008 Bureau of Industry and Security (BIS) notice of inquiry (73 FR 28795) and subsequent August 22, 2008 Reopening of Request for Public Comments on Deemed Export Advisory Committee Recommendations: Narrowing the Scope of Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements and Implementing a More Comprehensive Set of Criteria for Assessing Probable Country Affiliation for Foreign Nationals(73 FR 49645), attached please find the comments of Virginia Polytechnic Institute and State University ("Virginia Tech").

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September 18, 2008

Steven Emme
U.S. Department of Commerce,
Bureau of Industry and Security, Regulatory Policy Division
14th & Pennsylvania Avenue, NW, Room 2705
Washington, DC 20230

RE: DEAC Report Comments (Docket No. 080512652-8653-01)

Dear Mr. Emme,

On behalf of Virginia Polytechnic Institute and State University ("Virginia Tech") I am pleased to respond to the May 19, 2008 Federal Register Notice soliciting comments on two specific recommendations made by the Deemed Export Advisory Committee ("DEAC") in its report, "The Deemed Export Rule in the Era of Globalization.", with the comment period extended pursuant to the August 22, 2008 Federal Register Notice.

Virginia Tech is Virginia's land grant university and leading research university in the Commonwealth. Virginia Tech has actively participated in the Commerce Department Bureau of Information and Security's ("BIS") revision process of the deemed export regulations, submitting comments to the Advanced Notice of Proposed Rulemaking in 2005, and participating in three of the Deemed Export Advisory Committee's meetings, including an invited presentation to the DEAC by Virginia Tech's Director of Export and Secure Research Compliance. David Brady. Virginia Tech has continued its positive support of BIS reforms of the Commerce Control List (CCL) and deemed export rules, by nominating Dr. Jeffrey Reed, a nationally recognized expert in wireless technology, for membership on the Emerging Technology and Research Advisory Committee (ETRAC). Virginia Tech welcomes the opportunities the Commerce Department has provided to universities to participate in this process and greatly appreciates the work of the DEAC and its members' thoughtful analysis of problems with the current deemed export control rules.

BIS has requested information from the affected communities on two specific areas examined by the DEAC. The first issue concerns narrowing the scope of technologies on the Commerce Control List subject to deemed export licensing requirements and conducting a zero-based review of such technologies. The

second issue addresses the DEAC's concerns whether the various affiliations that a foreign national might have with countries other than those in which they enjoy citizenship should be factored into export license requirements and if so, what types of affiliations should be considered and by whom.

On both subject areas, Virginia Tech agrees with the comments of the Council on Government Relations ("COGR"), and the American Association of Universities ("AAU") memorialized in their August 15, 2008 letter. Virginia Tech provides the following additional comments in response to questions raised by BIS in its May 19, 2008 Federal Register Notice.

How Can a Unilateral Deemed Export Licensing Regime Provide National Security?

In its 20 December 2007 final report, the DEAC notes that:

> "The United States is the only nation that controls Deemed Exports and also participates in multilateral export control regimes as, for example, the 40-nation Wassenaar Agreement. Other nations depend largely on their visa processes, intelligence information, and commercial intellectual property controls rather than a formal Deemed Export licensing regime. As a consequence, unlike many other export control practices, changes to United States Deemed Export policy can be made unilaterally at the United States' discretion."

In the May 19, 2008 Federal Register Notice BIS observes that:

> "... deemed export licensing requirements are not multilateral and thus may be changed by the United States without agreement by other countries. Therefore, BIS is focusing this recommendation for a zero-based review only on those technologies that should be subject to deemed export licensing requirements."

The fact that the United States, solely among its multilateral export regime partners, controls for deemed export raises the question of how this unilateral deemed export regime can be effective in enhancing United States national security. The DEAC concluded that it was not effective as currently employed, and needed to be reformed to include deemed export controls only those few technologies critical for national security. But what criteria should one use to determine if a technology is critical to the national security of the United States?

In Virginia Tech's view, a unilateral deemed export regime does not serve national security- *unless the controlled technology is (1) critical to the national security of the United States, and (2) is solely available in the United States.* Foreign nationals seeking access to other controlled technologies do not have to

come to the United States to get them. They can obtain comparable access in companies and institutions of higher education in countries outside the United States with no deemed export license regime- countries such as the United Kingdom, Germany, South Korea, or Taiwan.

Virginia Tech recommends that when BIS, advised by the ETRAC, screens the technologies proposed for retention on the CCL for deemed export control, it considers whether or not the technology is available from our allies without comparable deemed export license requirements, or if it is available worldwide. If it is readily available elsewhere, there would seem to be small point in controlling it for deemed export unilaterally in the United States. To be controlled for deemed export, the technology should be determined to be both critical for United States national security, *and* solely available in the United States.

Narrowing the Scope of Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements and Conducting an Outside Review of Technologies

Virginia Tech attempted to determine if there were technologies readily identifiable meeting the above criteria (critical technology solely available in the United States) by consulting with key subject matter experts in affected academic departments about "narrowing" the Commerce Control List (CCL) as it relates to deemed exports. Faculty members were asked to review technology entries on the CCL in their fields of expertise and to discuss these entries in the context of several questions:

1) Is the technology controlled for deemed export critical for national security (or other reason)?
2) Is the technology widely available elsewhere in the world at commercial and/or peer research institutions?
3) Are there other reasons to decontrol the technology for deemed export?

Faculty experts provided input and comments relating to Category 1 "Microorganisms" and Toxins, Category 3 Electronics, and Category 8 Unmanned underwater vehicles, Comments of the researchers are attached to this letter, in bold red text associated with the respective Export Control Classification Numbers (ECCNs) reviewed. Their conclusions were informative.

Almost invariably, the technologies controlled on the Commerce Control List in which they had expertise, were available worldwide (or common among multilateral partners) both commercially and in research institutions.

In Category 3 Electronics, researchers noted that many building block technologies controlled for deemed export for national security reasons are in fact manufactured almost exclusively outside of the United States. For example, Field

Programmable Gate Assembly (FPGA) chips are all manufactured in Taiwan. The tools needed to design FPGAs are increasingly designed and developed in India and China. The intellectual property (IP), in some ways analogous to technology, needed for common use functions for FPGAs, are designed and developed in India and China. Researchers questioned the need to control these technologies in the United States for deemed export when they are readily accessible from other sources internationally.

Similarly, a microorganism and toxin expert questioned the necessity for controlling some parts of 1C353 Genetic elements and genetically-modified organisms (and related technologies controlled under 1E001). Citing examples such as *Francisella tularensis* and many other bacteria, he noted that the genetic sequences are already well known world wide, and that using commonly available Polymerase Chain Reaction (PCR) the gene(s) may be amplified (developed and produced) based on this publically available information.

And, an unmanned underwater vehicle (UUV) expert cited widespread availability of technology relating to the development and production of controlled UUVs and their components among the United States' multilateral partners in Europe (and Japan). If none of these countries have a deemed export licensing regime, and foreign nationals can obtain technology comparable to what is controlled for in the United States without export license.

These facts beg the question of what benefit accrues to the United States for unilaterally restricting access to these technologies to foreign nationals in a licensing regime that our NATO, major non-NATO allies, and Wassenaar partners others do not?

In only two cases did participating researchers recommend specific technologies be retained for deemed export on national security reasons, though they could not establish whether or not the technologies were available outside the United States. In Category 3 Electronics, researchers felt that controls on technology (3E001) for two CCL items merited retention:

> 3A001.b.4.a Microwave solid state amplifiers (used in radar jammers), and 3A001.c Acoustic wave devices (used in EW applications)

Finally, in the May 19, 2008 Notice, BIS wrote:

> 'With respect to the first recommendation for an outside, zero-based review of technologies, BIS is seeking comments on whether technologies on the CCL that are subject to deemed export licensing requirements should be narrowed to a few critical technologies (i.e., a narrower set of technologies than those on the current CCL).'

technologies deemed by one party or another to be "critical" to national security. Given the framework and time allowed for Technical Advisory Committees to interact annually, BIS should not depend on voluntary labor solely to accomplish this task. Virginia Tech suggests that BIS augment technical staff to support this activity, or hire experts to do this assessment, and would support any such request for additional resources advocated by BIS.

Comprehensive Assessment of Foreign National Affiliation

The second question raised in the May 19, 2008 Notice addressed the DEAC recommendation that a broad-based review of the background of foreign nationals and specifically that an individual's personal loyalty to countries of concern should be assessed in determining if export licenses are required.

Virginia Tech concurs with the deep concerns expressed by COGR and AAU in their response to the May 19, 2008 Notice. As an employer, Virginia Tech is required to comply with the 1986 Immigration Reform and Control Act, which prohibits discrimination on the basis of national origin. Justice Department established procedures for determining employee eligibility do not include screening for country of birth, or for loyalty to countries of concern. Comparable checks for security related affiliations (e.g., access to select agents, classified materials) are expressly statutorily required, and are conducted by the Federal Bureau of Investigation. It would seem to Virginia Tech that any such screenings proposed by BIS in the Notice would also need statutory authorization and federal management, which, as COGR and AAU noted would be a considerable federal management burden.

Conclusion

In conclusion, Virginia Tech appreciates the opportunity provided by BIS to comment on these very important areas, and continue the dialogue of how best to comply with needed measures to ensure national security while balancing the need for free and open academic exchanges in a university environment.

Sincerely,

Robert W. Walters
Vice President for Research

Attachment A: Comments of Faculty to Commerce Control List entries
Attachment B: Curricula Vitae of Participating Faculty

Attachment A

Comments of Faculty to Commerce Control List entries

1A995

Protective and detection equipment and components not specially designed for military use and not controlled by ECCN 1A004 or ECCN 2B351, as follows (see List of Items Controlled).

License Requirements

Reason for Control: AT

Control(s)	Country Chart
AT applies to entire entry	AT Column 1

License Exceptions

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled

Unit: $ value
Related controls: See ECCNs 1A004, 2B351, and 2B352.
Related Definitions: N/A
Items:
a. Personal radiation monitoring dosimeters;
b. Equipment limited by design or function to protect against hazards specific to civil industries, such as mining, quarrying, agriculture, pharmaceuticals, medical, veterinary, environmental, waste management, or to the food industry.

Note: This entry (1A995) does not control items for protection against chemical or biological agents that are consumer goods, packaged for retail sale or personal use, or medical products, such as latex exam gloves, latex surgical gloves, liquid disinfectant soap, disposable surgical drapes, surgical gowns, surgical foot covers, and surgical masks. Such items are classified as EAR99.

1C351

Human and zoonotic pathogens and "toxins", as follows (see List of Items Controlled).

License Requirements

Reason for Control: CB, CW, AT

Control(s)	Country Chart
CB applies to entire entry	CB Column 1
CW applies to 1C351.d.5 and d.6 and a license is required for CW reasons for all destinations, including Canada, as follows: CW applies to 1C351.d.5 for ricin in the form of 1) Ricinus Communis AgglutininII (RCAII), also known as ricin D or Ricinus Communis LectinIII (RCLIII); and 2) Ricinus Communis LectinIV (RCLIV), also known as ricin E. CW applies to 1C351d.6 for saxitoxin identified by C.A.S. 35523-89-8. See §742.18 of the EAR for licensing information pertaining to chemicals subject to restriction pursuant to the Chemical Weapons Convention (CWC). The Commerce Country Chart is not designed to determine licensing requirements for items controlled for CW reasons.	
AT applies to entire entry	AT Column 1

License Exceptions

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled

Unit: $ value.
Related Controls: (1) Certain forms of ricin and saxitoxin in 1C351.d.5. and d.6 are CWC Schedule 1 chemicals (see §742.18 of the EAR). The U.S. Government must provide advance notification and annual reports to the OPCW of all exports of Schedule 1 chemicals. See §745.1 of the EAR for notification procedures. See 22 CFR part 121, Category XIV and §121.7 for additional CWC Schedule 1 chemicals controlled by the Department of State. (2) All vaccines and

"immunotoxins" are excluded from the scope of this entry. Certain medical products and diagnostic and food testing kits that contain biological toxins controlled under paragraph (d) of this entry, with the exception of toxins controlled for CW reasons under d.5 and d.6, are excluded from the scope of this entry. Vaccines, "immunotoxins", certain medical products, and diagnostic and food testing kits excluded from the scope of this entry are controlled under ECCN 1C991. (3) For the purposes of this entry, only saxitoxin is controlled under paragraph d.6; other members of the paralytic shellfish poison family (e.g. neosaxitoxin) are classified as EAR99. (4) Clostridium perfringens strains, other than the epsilon toxin-producing strains of Clostridium perfringens described in c.14, are excluded from the scope of this entry, since they may be used as positive control cultures for food testing and quality control. (5) The Animal and Plant Health Inspection Service (APHIS), U.S. Department of Agriculture, and the Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, maintain controls on the possession, use, and transfer within the United States of certain items controlled by this ECCN (for APHIS, see 7 CFR §331.3(c), 9 CFR §121.3(c), and 9 CFR §121.4(c); for CDC, see 42 CFR §73.3(c) and 42 CFR §73.4(c)).

Related Definitions: (1) For the purposes of this entry "immunotoxin" is defined as an antibody-toxin conjugate intended to destroy specific target cells (e.g., tumor cells) that bear antigens homologous to the antibody. (2) For the purposes of this entry "subunit" is defined as a portion of the "toxin".

Items:

a. Viruses, as follows:

a.1. Chikungunya virus;

a.2. Congo-Crimean haemorrhagic fever virus (a.k.a. Crimean-Congo haemorrhagic fever virus);

a.3. Dengue fever virus;

a.4. Eastern equine encephalitis virus;

a.5. Ebola virus;
a.6. Hantaan virus;
a.7. Japanese encephalitis virus;
a.8. Junin virus;
a.9. Lassa fever virus
a.10. Lymphocytic choriomeningitis virus;
a.11. Machupo virus;
a.12. Marburg virus;
a.13. Monkey pox virus;
a.14. Rift Valley fever virus;
a.15. Tick-borne encephalitis virus (Russian Spring-Summer encephalitis virus);
a.16. Variola virus;
a.17. Venezuelan equine encephalitis virus;
a.18. Western equine encephalitis virus;
a.19. White pox;
a.20. Yellow fever virus;
a.21. Kyasanur Forest virus;
a.22. Louping ill virus;
a.23. Murray Valley encephalitis virus;
a.24. Omsk haemorrhagic fever virus;
a.25. Oropouche virus;
a.26. Powassan virus;
a.27. Rocio virus;
a.28. St. Louis encephalitis virus;
a.29. Hendra virus (Equine morbillivirus);
a.30. South American haemorrhagic fever (Sabia, Flexal, Guanarito);
a.31. Pulmonary and renal syndrome-haemorrhagic fever viruses (Seoul, Dobrava, Puumala, Sin Nombre); or
a.32. Nipah virus.

b. Rickettsiae, as follows:
b.1. Bartonella quintana (Rochalimea quintana, Rickettsia quintana);
b.2. Coxiella burnetii;
b.3. Rickettsia prowasecki (a.k.a. Rickettsia prowazekii); or
b.4. Rickettsia rickettsii.

c. Bacteria, as follows:
c.1. Bacillus anthracis;
c.2. Brucella abortus;
c.3. Brucella melitensis;
c.4. Brucella suis;
c.5. Burkholderia mallei (Pseudomonas mallei);
c.6. Burkholderia pseudomallei (Pseudomonas pseudomallei);
c.7. Chlamydia psittaci;
c.8. Clostridium botulinum;
c.9. Francisella tularensis;
c.10. Salmonella typhi;
c.11. Shigella dysenteriae;

c.12. Vibrio cholerae;
c.13. Yersinia pestis;
c.14. Clostridium perfringens, epsilon toxin producing types; or
c.15. Enterohaemorrhagic Escherichia coli, serotype O157 and other verotoxin producing serotypes.

d. "Toxins", as follows, and "subunits" thereof:
d.1. Botulinum toxins;
d.2. Clostridium perfringens toxins;
d.3. Conotoxin;
d.4. Microcystin (Cyanginosin);
d.5. Ricin;
d.6. Saxitoxin;
d.7. Shiga toxin;
d.8. Staphylococcus aureus toxins;
d.9. Tetrodotoxin;
d.10. Verotoxin and other Shiga-like ribosome inactivating proteins;
d.11. Aflatoxins;
d.12. Abrin;
d.13. Cholera toxin;
d.14. Diacetoxyscirpenol toxin;
d.15. T-2 toxin;
d.16. HT-2 toxin;
d.17. Modeccin toxin
d.18. Volkensin toxin; or
d.19. Viscum Album Lectin 1 (Viscumin).

e. "Fungi", as follows:
e.1. Coccidioides immitis; or
e.2. Coccidioides posadasii.

1C352

Animal pathogens, as follows (see List of Items Controlled).

License Requirements

Reason for Control: CB, AT

Control(s)	Country Chart
CB applies to entire entry	CB Column 1
AT applies to entire entry	AT Column 1

License Exceptions

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled

Unit: $ value
Related Controls: (1) All vaccines are excluded from the scope of this entry. See also 1C991. (2) The Animal and Plant Health Inspection Service (APHIS), U.S. Department of Agriculture, and the Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, maintain controls on the possession, use, and transfer within the United States of certain items controlled by this ECCN (for APHIS, see 7 CFR §331.3(c), 9 CFR §121.3(c), and 9 CFR §121.4(c); for CDC, see 42 CFR §73.3(c) and 42 CFR §73.4(c)).
Related Definition: N/A
Items:
a. Viruses, as follows:
a.1. African swine fever virus;
a.2. Avian influenza virus that are:
a.2.a. Defined in EC Directive 92/40/EC (O.J. L.16 23.1.92 p.19) as having high pathogenicity, as follows:
a.2.a.1. Type A viruses with an IVPI (intravenous pathogenicity index) in 6 week old chickens of greater than 1.2; or
a.2.a.2. Type A viruses H5 or H7 subtype for which nucleotide sequencing has demonstrated multiple basic amino acids at the cleavage site of haemagglutinin;
a.3. Bluetongue virus;
a.4. Foot and mouth disease virus;
a.5. Goat pox virus;
a.6. Porcine herpes virus (Aujeszky's disease);
a.7. Swine fever virus (Hog cholera virus);
a.8. Lyssa virus;
a.9. Newcastle disease virus;
a.10. Peste des petits ruminants virus;
a.11. Porcine enterovirus type 9 (swine vesicular disease virus);
a.12. Rinderpest virus;
a.13. Sheep pox virus;

a.14. Teschen disease virus;
a.15. Vesicular stomatitis virus;
a.16. Lumpy skin disease virus;
a.17. African horse sickness virus.

b. Bacteria, as follows:

b.1 Mycoplasma mycoides, as follows:

b.1.a. Mycoplasma mycoides subspecies mycoides SC (small colony) (a.k.a. contagious bovine pleuropneumonia);

b.1.b. Mycoplasma capricolum subspecies capripneumoniae ("strain F38").

b.2 [RESERVED.]

1C353

Genetic elements and genetically-modified organisms, as follows (see List of Items Controlled).

Some parts of 1C353 are excessive, particularly control of genetic elements. For bacteria that do not produce toxins, such as *Francisella tularensis* and many others, genetic elements associated with pathogenicity are already known, even toxins. For instance, the lipopolysaccharide (LPS) is associated with pathogenicity, and the genes for it and their sequence are known. Other genes associated with pathogenicity are the capability to survive within macrophages, etc. The genes themselves are harmless, only the final functional product could be of concern in the case of toxins. In the case of surviving in macrophages or other cells, it is a very complicated organizational structure with multiple regulatory components involved. Besides, with the use of Polymerase Chain Reaction (PCR) you can amplify any gene or genes you want; all you need to have is knowledge of the sequence, which is available on the web at numerous sites, and you can purchase primers to amplify any genes you want. Therefore, there is no sense in regulating genetic elements. The same applies to genetic elements in genetically modified organisms, like E. coli. Again, PCR can be used to amplify any gene and shuttle vectors are available to put those genes in any commercial live organism.

License Requirements

Reason for Control: CB, AT

Control(s)	Country Chart
CB applies to entire entry	CB Column 1
AT applies to entire entry	AT Column 1

License Exceptions

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled

Unit: $ value
Related Controls: Vaccines that contain genetic elements or genetically modified organisms identified in this entry are controlled by ECCN 1C991. The Animal and Plant Health Inspection Service (APHIS), U.S. Department of Agriculture, and the Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, maintain controls on the possession, use, and transfer within the United States of certain items controlled by this ECCN, including (but not limited to) genetic elements, recombinant nucleic acids, and recombinant organisms associated with the agents or toxins in ECCN 1C360 (for APHIS, see 7 CFR §331.3(c), 9 CFR §121.3(c), and 9 CFR §121.4(c); for CDC, see 42 CFR §73.3(c) and 42 CFR §73.4(c)).
Related Definition: N/A
Items:
a. Genetic elements, as follows:
a.1. Genetic elements that contain nucleic acid sequences associated with the pathogenicity of microorganisms controlled by 1C351.a to .c, 1C352, 1C354, or 1C360;
a.2. Genetic elements that contain nucleic acid sequences coding for any of the "toxins" controlled by 1C351.d or "sub-units of toxins" thereof.
b. Genetically modified organisms, as follows:
b.1. Genetically modified organisms that contain nucleic acid sequences associated with the pathogenicity of microorganisms controlled by 1C351.a to .c, 1C352, 1C354, or 1C360;
b.2. Genetically modified organisms that contain nucleic acid sequences coding for any of the "toxins" controlled by 1C351.d or "sub-units of toxins" thereof.
Technical Note: 1. "Genetic elements"

include, inter alia, chromosomes, genomes, plasmids, transposons, and vectors, whether genetically modified or unmodified.

2. This ECCN does not control nucleic acid sequences associated with the pathogenicity of enterohaemorrhagic Escherichia coli, serotype O157 and other verotoxin producing strains, except those nucleic acid sequences that contain coding for the verotoxin or its sub-units.

3. "Nucleic acid sequences associated with the pathogenicity of any of the microorganisms controlled by 1C351.a to .c, 1C352, 1C354, or 1C360" means any sequence specific to the relevant controlled microorganism that:

a. In itself or through its transcribed or translated products represents a significant hazard to human, animal or plant health; or

b. Is known to enhance the ability of a microorganism controlled by 1C351.a to .c, 1C352, 1C354, or 1C360, or any other organism into which it may be inserted or otherwise integrated, to cause serious harm to human, animal or plant health.

1C354

Plant pathogens, as follows (see List of Items Controlled).

License Requirements

Reason for Control: CB, AT

Control(s)	Country Chart
CB applies to entire entry	CB Column 1
AT applies to entire entry	AT Column 1

License Exceptions

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled

Unit: $ value

Related Controls: (1) All vaccines are excluded from the scope of this entry. See ECCN 1C991. (2) The Animal and Plant Health Inspection Service (APHIS), U.S. Department of Agriculture, maintains controls on the possession, use, and transfer within the United States of certain items controlled by this ECCN (see 7 CFR §331.3(c), 9 CFR §121.3(c), and 9 CFR §121.4(c)).
Related Definitions: N/A
Items:
a. Bacteria, as follows:
a.1. Xanthomonas albilineans;
a.2. Xanthomonas campestris pv. citri including strains referred to as Xanthomonas campestris pv. citri types A,B,C,D,E or otherwise classified as Xanthomonas citri, Xanthomonas campestris pv. aurantifolia or Xanthomonas campestris pv. citrumelo;
a.3. Xanthomonas oryzae pv. oryzae (syn. Pseudomonas campestris pv. oryzae);
a.4. Clavibacter michiganensis subspecies sepedonicus (syn. Corynebacterium michiganensis subspecies sepedonicum or Corynebacterium sepedonicum);
a.5. Ralstonia solanacearum Races 2 and 3 (syn. Pseudomonas solanacearum Races 2 and 3 or Burkholderia solanacearum Races 2 and 3);
b. Fungi, as follows:
b.1. Colletotrichum coffeanum var. virulans (Colletotrichum kahawae);
b.2. Cochliobolus miyabeanus (Helminthosporium oryzae);
b.3. Microcyclus ulei (syn. Dothidella ulei);
b.4. Puccinia graminis (syn. Puccinia graminis f. sp. tritici);
b.5. Puccinia striiformis (syn. Puccinia glumarum);
b.6. Magnaporthe grisea (pyricularia grisea/pyricularia oryzae);
c. Viruses, as follows:
c.1. Potato Andean latent tymovirus;
c.2. Potato spindle tuber viroid.

1C360

Select agents not controlled under ECCN 1C351, 1C352, or 1C354.

License Requirements

Reason for Control: CB, AT

Controls	Country Chart
CB applies to entire entry	CB Column 1
AT applies to entire entry	AT Column 1

License Exceptions

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled

Unit: $ value.
Related Controls: (1) All vaccines are excluded from the scope of this entry. Vaccines excluded from the scope of this entry are controlled under ECCN 1C991. (2) Also see ECCNs 1C351 (AG-controlled human and zoonotic pathogens and "toxins"), 1C352 (AG-controlled animal pathogens), and 1C354 (AG-controlled plant pathogens). (3) The Animal and Plant Health Inspection Service (APHIS), U.S. Department of Agriculture, and the Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, maintain controls on the possession, use, and transfer within the United States of items controlled by this ECCN (for APHIS, see 7 CFR §331.3(b), 9 CFR §121.3(b), and 9 CFR §121.4(b); for CDC, see 42 CFR §73.3(b) and 42 CFR §73.4(b)).
Related Definitions: N/A.
Items:

Note: The control status of items listed in this ECCN is not affected by the exemptions or exclusions contained in the domestic possession,

use, and transfer regulations maintained by
APHIS (at 7 CFR part 331 and 9 CFR part 121)
and/or CDC (at 42 CFR part 73).

a. Human and zoonotic pathogens, as follows:
    a.1. Viruses, as follows:
        a.1.a. Central European tick-borne encephalitis viruses, as follows:
            a.1.a.1. Absettarov;
            a.1.a.2. Hanzalova;
            a.1.a.3. Hypr;
            a.1.a.4. Kumlinge;
        a.1.b. Cercopithecine herpesvirus 1 (Herpes B virus);
        a.1.c. Reconstructed replication
competent forms of the 1918 pandemic influenza
virus containing any portion of the coding regions
of all eight gene segments;
    a.2. [RESERVED];
b. Animal pathogens, as follows:
    b.1. Viruses, as follows:
        b.1.a. Akabane virus;
        b.1.b. Bovine spongiform encephalopathy agent;
        b.1.c. Camel pox virus;
        b.1.d. Malignant catarrhal fever virus;
        b.1.e. Menangle virus;
    b.2. Mycoplasma, as follows:
        b.2.a. Mycoplasma capricolum, except subspecies
capripneumoniae (see ECCN 1C352.b.1.b);
        b.2.b. Mycoplasma mycoides capri;
    b.3. Rickettsia, as follows:
        b.3.a. Erhlichia ruminantium (a.k.a. Cowdria ruminantium);
        b.3.b. [RESERVED];
c. Plant pathogens, as follows:
    c.1. Bacteria, as follows:
        c.1.a. Candidatus Liberobacter africanus (a.k.a. Liberobacter africanus);
        c.1.b. Candidatus Liberobacter asiaticus (a.k.a. Liberobacter asiaticus);
        c.1.c. Xylella fastidiosa pv. citrus variegated chlorosis (CVC);
    c.2. Fungi, as follows:
        c.2.a. Peronosclerospora philippinensis;
        c.2.b. Sclerophthora rayssiae var. zeae;
        c.2.c. Synchytrium endobioticum.

1E351

"Technology" according to the "General Technology Note" for the disposal of chemicals or microbiological materials controlled by 1C350, 1C351, 1C352, 1C353, 1C354, or 1C360.

License Requirements

Reason for Control: CB, AT

Control(s)	Country Chart
CB applies to "technology" for the disposal of items controlled by 1C351, 1C352, 1C353, 1C354, or 1C360	CB Column 1
CB applies to "technology" for the disposal of items controlled by 1C350	CB Column 2
AT applies to entire entry	AT Column 1

License Exceptions

CIV: N/A
TSR: N/A

Items Controlled

Unit: N/A
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

1C991

Vaccines, immunotoxins, medical products, diagnostic and food testing kits, as follows (see List of Items controlled).

Reason for Control: CB, AT

Control(s)	Country Chart
CB applies to 1C991.d	CB Column 3
AT applies to entire entry	AT Column 1

LVS: N/A
GBS: N/A
CIV: N/A

Unit: $ value

Related Controls: (1) Medical products containing ricin or saxitoxin, as follows, are controlled for CW reasons under ECCN 1C351:

(a) Ricinus Communis AgglutininII (RCAII), also known as ricin D, or Ricinus Communis LectinIII (RCLIII);

(b) Ricinus Communis LectinIV (RCLIV), also known as ricin E; or

(c) Saxitoxin identified by C.A.S. 35523-89-8.

(2) The export of a "medical product" that is an "Investigational New Drug" (IND), as defined in 21 CFR §312.3, is subject to certain U.S. Food and Drug Administration (FDA) requirements that are independent of the export requirements specified in this ECCN or elsewhere in the EAR. These FDA requirements are described in 21 CFR §312.110 and must be satisfied in addition to any requirements specified in the EAR.

(3) Also see 21 CFR §314.410 for FDA requirements concerning exports of new drugs and new drug substances.

Related Definitions: For the purpose of this entry, "immunotoxin" is defined as an antibody-toxin conjugate intended to destroy specific target cells (e.g., tumor cells) that bear antigens homologous to the antibody. For the purpose of this entry, "medical products" are: (1) pharmaceutical formulations designed for testing and human administration in the treatment of medical conditions, (2) prepackaged for distribution as clinical or medical products, and (3) approved by the U.S. Food and Drug Administration either to be marketed as clinical or medical products or for use as an "Investigational New Drug" (IND) (see 21 CFR Part 312). For the purpose of this entry, "diagnostic and food testing kits" are specifically developed, packaged and marketed for diagnostic or public health purposes. Biological toxins in any other configuration, including bulk shipments, or for any other end-uses are controlled by ECCN 1C351 or ECCN 1C360. For the

purpose of this entry, "vaccine" is defined as a medicinal (or veterinary) product in a pharmaceutical formulation, approved by the U.S. Food and Drug Administration or the U.S. Department of Agriculture to be marketed as a medical (or veterinary) product or for use in clinical trials, that is intended to stimulate a protective immunological response in humans or animals in order to prevent disease in those to whom or to which it is administered.

Items:

a. Vaccines against items controlled by ECCN 1C351, 1C352, 1C353, 1C354, or 1C360;

b. Immunotoxins containing items controlled by 1C351.d;

c. Medical products containing botulinum toxins controlled by ECCN 1C351.d.1 or conotoxins controlled by ECCN 1C351.d.3;

d. Medical products containing items controlled by ECCN 1C351.d (except botulinum toxins controlled by ECCN 1C351.d.1, conotoxins controlled by ECCN 1C351.d.3, and items controlled for CW reasons under 1C351.d.5 or .d.6);

e. Diagnostic and food testing kits containing items controlled by ECCN 1C351.d (except items controlled for CW reasons under ECCN 1C351.d.5 or .d.6).

2B352

Equipment capable of use in handling biological materials, as follows (see List of Items Controlled).

As far as the equipment and technology goes, this is the same equipment and technology used for all recombinant DNA work. >95% of this work is used for non-select agents by everyone using molecular biology techniques. Therefore, it should not be broadly restricted.

License Requirements

Reason for Control: CB, AT

Control(s)	Country Chart
CB applies to entire entry	CB Column 2
AT applies to entire entry	AT Column 1

License Exceptions

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled

Unit: Equipment in number
Related Controls: See ECCNs 1A004 and 1A995 for protective equipment that is not covered by this entry. Also see ECCN 9A120 for controls on certain "UAV" systems designed or modified to dispense an aerosol and capable of carrying elements of a payload in the form of a particulate or liquid, other than fuel components of such vehicles, of a volume greater than 20 liters.
Related Definitions: (1) "Lighter than air vehicles" - balloons and airships that rely on hot air or on lighter-than-air gases, such as helium or hydrogen, for their lift.
(2) "UAVs" Unmanned Aerial Vehicles.
(3) "VMD" Volume Median Diameter.
Items:
a. Complete containment facilities at P3 or P4 containment level.
Technical Note: P3 or P4 (BL3, BL4, L3, L4) containment levels are as specified in the WHO Laboratory Biosafety Manual (3rd edition, Geneva, 2004).
b. Fermenters capable of cultivation of pathogenic microorganisms, viruses, or for toxin production, without the propagation of aerosols, having a capacity equal to or greater than 20 liters.
Technical Note: Fermenters include bioreactors, chemostats, and continuous-flow systems.
c. Centrifugal separators capable of the continuous separation of pathogenic microorganisms, without the propagation of aerosols, and having all of the following characteristics:
c.1. One or more sealing joints within the steam containment area;
c.2. A flow rate greater than 100 liters per hour;
c.3. Components of polished stainless steel

or titanium; and

c.4. Capable of in-situ steam sterilization in a closed state.

Technical Note: Centrifugal separators include decanters.

d. Cross (tangential) flow filtration equipment and accessories, as follows:

d.1. Cross (tangential) flow filtration equipment capable of separation of pathogenic microorganisms, viruses, toxins or cell cultures, without the propagation of aerosols, having all of the following characteristics:

d.1.a. A total filtration area equal to or greater than 1 square meter (1 m2); and

d.1.b. Capable of being sterilized or disinfected in-situ.

N.B.: 2B352.d.1 does not control reverse osmosis equipment, as specified by the manufacturer.

d.2. Cross (tangential) flow filtration components (e.g., modules, elements, cassettes, cartridges, units or plates) with filtration area equal to or greater than 0.2 square meters (0.2 m2) for each component and designed for use in cross (tangential) flow filtration equipment controlled by 2B352.d.1.

Technical Note: In this ECCN, "sterilized" denotes the elimination of all viable microbes from the equipment through the use of either physical (e.g., steam) or chemical agents. "Disinfected" denotes the destruction of potential microbial infectivity in the equipment through the use of chemical agents with a germicidal effect. "Disinfection" and "sterilization" are distinct from "sanitization", the latter referring to cleaning procedures designed to lower the microbial content of equipment without necessarily achieving elimination of all microbial infectivity or viability.

e. Steam sterilizable freeze-drying equipment with a condenser capacity of 10 kgs of ice or greater in 24 hours, but less than 1,000 kgs of ice in 24 hours.

f. Protective and containment equipment, as follows:

f.1. Protective full or half suits, or hoods

dependant upon a tethered external air supply and operating under positive pressure;

Technical Note: This entry does not control suits designed to be worn with self-contained breathing apparatus.

f.2. Class III biological safety cabinets or isolators with similar performance standards, e.g., flexible isolators, dry boxes, anaerobic chambers, glove boxes or laminar flow hoods (closed with vertical flow).

g. Chambers designed for aerosol challenge testing with microorganisms, viruses, or toxins and having a capacity of 1 m3 or greater.

h. Spraying or fogging systems and components therefor, as follows:

h.1. Complete spraying or fogging systems, specially designed or modified for fitting to aircraft, "lighter than air vehicles," or "UAVs," capable of delivering, from a liquid suspension, an initial droplet "VMD" of less than 50 microns at a flow rate of greater than 2 liters per minute;

h.2. Spray booms or arrays of aerosol generating units, specially designed or modified for fitting to aircraft, "lighter than air vehicles," or "UAVs," capable of delivering, from a liquid suspension, an initial droplet "VMD" of less than 50 microns at a flow rate of greater than 2 liters per minute;

h.3. Aerosol generating units specially designed for fitting to the systems specified in paragraphs h.1 and h.2 of this ECCN.

Technical Notes: 1. "Aerosol generating units" are devices specially designed or modified for fitting to aircraft and include nozzles, rotary drum atomizers and similar devices.

2. This ECCN does not control spraying or fogging systems and components, as specified in 2B352.h., that are demonstrated not to be capable of delivering biological agents in the form of infectious aerosols.

3. Droplet size for spray equipment or nozzles specially designed for use on aircraft or "UAVs" should be measured using either of the following methods (pending the adoption of internationally accepted standards):

a. Doppler laser method,

b. Forward laser diffraction method.

2E002

Technology" according to the General Technology Note for the "production" of equipment controlled by 2A (except 2A983, 2A991, or 2A994), or 2B (except 2B991, 2B993, 2B996, 2B997, or 2B998).

License Requirements

Reason for Control: NS, MT, NP, CB, AT

Control(s)	Country Chart
NS applies to "technology" for equipment controlled by 2A001, 2B001 to 2B009	NS Column 1
MT applies to "technology" for equipment controlled by 2B004, 2B009, 2B018, 2B104, 2B105, 2B109, 2B116, 2B117, or 2B119 to 2B122 for MT reasons	MT Column 1
NP applies to "technology" for equipment controlled by 2A225, 2A226, 2B001, 2B004, 2B006, 2B007, 2B009, 2B104, 2B109, 2B116, 2B201, 2B204, 2B206, 2B207, 2B209, 2B225 to 2B232 for NP reasons	NP Column 1
NP applies to "technology" for equipment controlled by 2A290 to 2A293, 2B290 for NP reasons	NP Column 2
CB applies to "technology" for equipment controlled by 2B350 to 2B352 and for valves controlled by 2A226 or 2A292 having the characteristics of those controlled by 2B350.g	CB Column 2
AT applies to entire entry	AT Column 1

License Requirement Notes: See §743.1

of the EAR for reporting requirements for exports under License Exceptions.

License Exceptions

CIV: N/A
TSR: Yes, except N/A for MT

Items Controlled

Unit: N/A
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

2E301

"Technology" according to the "General Technology Note" for "use" of items controlled by 2B350, 2B351, and 2B352.

License Requirements

Reason for Control: CB, AT

Control(s)	Country Chart
CB applies to entire entry	CB Column 2
AT applies to entire entry	AT Column 1

License Exceptions

CIV: N/A
TSR: N/A

Items Controlled

Unit: N/A
Related Controls: N/A
Related Definitions: N/A
Items:
The lists of items controlled are contained in the ECCN headings.

3A001

Electronic components, as follows (see List of Items Controlled).

A general comment about Field Programmable Gate Assemblies (FPGAs):
FPGA chips are all manufactured in Tiawan
The tools needed to design FPGAs are increasingly designed and developed in India and China.
The IP needed for common use functions for FPGAs are designed and developed in India and China.

License Requirements:

Reason for Control: NS, MT, NP, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
MT applies to 3A001.a.1.a when usable in "missiles"; and to 3A001.a.5.a when "designed or modified" for military use, hermetically sealed and rated for operation in the temperature range from below -54 °C to above +125 °C.	MT Column 1
NP applies to pulse discharge capacitors in 3A001.e.2 and superconducting solenoidal electromagnets in 3A001.e.3 that meet or exceed the technical parameters in 3A201.a and 3A201.b, respectively	NP Column 1
AT applies to entire entry	AT Column

License Exceptions:

LVS: N/A for MT or NP
Yes for:
$1500: 3A001.c
$3000: 3A001.b.1, b.2, b.3, b.9, .d, .e, .f, and .g
$5000: 3A001.a (except a.1.a and a.5.a when controlled for MT), and .b.4 to b.7

GBS: Yes for 3A001.a.1.b, a.2 to a.12 (except .a.5.a when controlled for

MT), b.2, b.8 (except for TWTAs exceeding 18 GHz), b.9., and .g.
CIV: Yes for 3A001.a.3, a.4, a.7, and a.11.

Items Controlled:

Unit: Number.
Related Controls: 1.) The following commodities are under the export licensing authority of the Department of State, Directorate of Defense Trade Controls (22 CFR part 121) when "space qualified" and operating at frequencies higher than 31.8 GHz: helix tubes (traveling wave tubes (TWT)) defined in 3A001.b.1.a.4.c; microwave solid state amplifiers defined in 3A001.b.4.b traveling wave tube amplifiers (TWTA) defined in 3A001.b.8; and derivatives thereof; 2.) "Space qualified" and radiation hardened photovoltaic arrays, as defined in 3A001.e.1.c, having silicon cells or having single, dual or triple junction solar cells that have gallium arsenide as one of the junctions, are subject to the export licensing authority of the Department of Commerce. All other "space qualified" and radiation hardened photovoltaic arrays defined in 3A001.e.1.c and spacecraft/satellite concentrators and batteries are under the export licensing authority of the Department of State, Directorate of Defense Trade Controls (22 CFR part 121). (3) The following commodities are under the export licensing authority of the Department of State, Directorate of Defense Trade Controls (22 CFR part 121): (a) Radiation-hardened microelectronic circuits controlled by Category XV (d) of the United States Munitions List (USML); and (b) All specifically designed or modified systems or subsystems, components, parts, accessories, attachments, and associated equipment controlled by Category XV (e) of the USML.

See also 3A101, 3A201, and 3A991.

Related Definitions: For the purposes of integrated circuits in 3A001.a.1, 5 x 103 Gy(Si) = 5 x 105 Rads (Si); 5 x 106 Gy (Si)/s = 5 x 108 Rads (Si)/s. For purposes of photovoltaic arrays in 3A001.e.1.c, an array predominately consists of: a substrate; solar cells having silicon cells or having single, dual, and or triple junction solar cells that have gallium arsenide as one of the junctions; coverglass; ultra-violet coating(s); and bonding agent(s). Spacecraft/satellite: solar concentrators, power conditioners and or controllers, bearing and power transfer assembly, and or deployment hardware/systems are controlled under the export licensing authority of the Department of State, Directorate of Defense Trade Controls (22 CFR part 121).

Items:

a. General purpose integrated circuits, as follows:

Note 1: The control status of wafers (finished or unfinished), in which the function has been determined, is to be evaluated against the parameters of 3A001.a.

Note 2: Integrated circuits include the following types:

"Monolithic integrated circuits";

"Hybrid integrated circuits";

"Multichip integrated circuits";

"Film type integrated circuits", including silicon-on-sapphire integrated circuits;

"Optical integrated circuits".

a.1. Integrated circuits, designed or rated as radiation hardened to withstand any of the following:

a.1.a. A total dose of 5 x 103 Gy (Si), or higher;

a.1.b. A dose rate upset of 5 x 10[6] Gy (Si)/s, or higher; or

a.1.c. A fluence (integrated flux) of neutrons (1 MeV equivalent) of 5 x 10[13] n/cm[2] or higher on silicon, or its equivalent for other materials;

Note: 3A001.a.1.c does not apply to Metal Insulator Semiconductors (MIS).

a.2. "Microprocessor microcircuits", "microcomputer microcircuits", microcontroller

microcircuits, storage integrated circuits manufactured from a compound semiconductor, analog-to-digital converters, digital-to-analog converters, electro-optical or "optical integrated circuits" designed for "signal processing", field programmable logic devices, neural network integrated circuits, custom integrated circuits for which either the function is unknown or the control status of the equipment in which the integrated circuit will be used in unknown, Fast Fourier Transform (FFT) processors, electrical erasable programmable read-only memories (EEPROMs), flash memories or static random-access memories (SRAMs), having any of the following:

a.2.a. Rated for operation at an ambient temperature above 398 K (125°C);

a.2.b. Rated for operation at an ambient temperature below 218 K (-55°C); or

a.2.c. Rated for operation over the entire ambient temperature range from 218 K (-55°C) to 398 K (125°C);

Note: 3A001.a.2 does not apply to integrated circuits for civil automobile or railway train applications.

a.3. "Microprocessor microcircuits", "micro-computer microcircuits" and microcontroller microcircuits, manufactured from a compound semiconductor and operating at a clock frequency exceeding 40 MHz;

Includes all computers, many commercial phones- any research service wireless in the last 10 years operates at frequencies higher than this

Note: 3A001.a.3 includes digital signal processors, digital array processors and digital coprocessors.

a.4. Storage integrated circuits manufactured from a compound semiconductor;

a.5. Analog-to-digital and digital-to-analog converter integrated circuits, as follows:

a.5.a. Analog-to-digital converters having any of the following:

a.5.a.1. A resolution of 8 bit or more, but less than 10 bit, with an output rate greater than 500 million words per second; **High end CatScan**

a.5.a..2 A resolution of 10 bit or more, but less than 12 bit, with an output rate

greater than 200 million words per second; **Digital storage oscilloscopes, standard lab equipment**

a.5.a.3. A resolution of 12 bit with an output rate greater than 105 million words per second; **Broadly available worldwide in Cell Phone base stations**

a.5.a.4. A resolution of more than 12 bit but equal to or less than 14 bit with an output rate greater than 10 million words per second; or **This technology is 15 years out of date**

a.5.a.5. A resolution of more than 14 bit with an output rate greater than 2.5 million words per second.

a.5.b. Digital-to-analog converters with a resolution of 12 bit or more, and a "settling time" of less than 10 ns;

Technical Notes:

1. A resolution of n bit corresponds to a quantization of 2n levels.

2. The number of bits in the output word is equal to the resolution of the analogue-to-digital converter.

3. The output rate is the maximum output rate of the converter, regardless of architecture or oversampling. Vendors may also refer to the output rate as sampling rate, conversion rate or throughput rate. It is often specified in megahertz (MHz) or mega samples per second (MSPS).

4. For the purpose of measuring output rate, one output word per second is equivalent to one Hertz or one sample per second.

a.6. Electro-optical and "optical integrated circuits" designed for "signal processing" having all of the following:

a.6.a. One or more than one internal "laser" diode;

a.6.b. One or more than one internal light detecting element; and

a.6.c. Optical waveguides;

a.7. Field programmable logic devices having any of the following: **In general, a.7 is archaic, if technology this primitive is in production anywhere in the world, it is in production in Tiawan**

a.7.a. An equivalent usable gate count of more than 30,000 (2 input gates); **Devices with an order of magnitude greater capability are available worldwide**

a.7.b. A typical "basic gate propagation

delay time" of less than 0.1 ns; or **Widespread in devices accessible worldwide! BGPD is no longer a metric used by manufacturers, you would have to use a conversion factor**

a.7.c. A toggle frequency exceeding 133 MHz;

Widespread in devices accessible worldwide- educational products sold in China are 10*3 more capable a.7.b&a.7c are common in high end cars produced worldwide, are not even state of the art, not suitable for industry standard HDTV-PA/CP

Note: 3A001.a.7 includes: Simple Programmable Logic Devices (SPLDs), Complex Programmable Logic Devices (CPLDs), Field Programmable Gate Arrays (FPGAs), Field Programmable Logic Arrays (FPLAs), and Field Programmable Interconnects (FPICs).

N.B.: Field programmable logic devices are also known as field programmable gate or field programmable logic arrays.

a.8. [RESERVED]

a.9. Neural network integrated circuits; **Way too broad and vague a category, commercially available worldwide**

a.10. Custom integrated circuits for which the function is unknown, or the control status of the equipment in which the integrated circuits will be used is unknown to the manufacturer, having any of the following:

a.10.a. More than 1,000 terminals;

a.10.b. A typical "basic gate propagation delay time" of less than 0.1 ns; or

a.10.c. An operating frequency exceeding 3 GHz;

a.11. Digital integrated circuits, other than those described in 3A001.a.3 to 3A001.a.10 and 3A001.a.12, based upon any compound semiconductor and having any of the following:

a.11.a. An equivalent gate count of more than 3,000 (2 input gates); or **Current gates are so small, that this could not be manufactured anymore, (such a device would be 1/10 of a nanometer on a side**

a.11.b. A toggle frequency exceeding 1.2 GHz; **a.11.a & a.11.b terms archaic, technology consistent with Intel 8008 of the late 1970s- Technology this primitive is used in appliances (e.g., washing machines, in devices in which performance is not an issue**

a.12. Fast Fourier Transform (FFT) processors having a rated execution time for an N-point complex FFT of less than (N log2 N)/20,480 ms, where N is the number of points;

Technical Note: When N is equal to 1,024 points, the formula in 3A001.a.12 gives an

execution time of 500 s. **Pre-ORTDM (Ortho frequency division multiplex) technology available worldwide. 60,000 arithmatic ops per point/ 0.5 sec- any processor can do this, e.g., wristwatches circa 1970**

b. Microwave or millimeter wave components, as follows: **Can't parse this entry-**

b.1. Electronic vacuum tubes and cathodes, as follows:

Note 1: 3A001.b.1 does not control tubes designed or rated for operation in any frequency band which meets all of the following characteristics:

a) Does not exceed 31.8 GHz; and

b) Is "allocated by the ITU" for radio-communications services, but not for radio-determination.

Note 2: 3A001.b.1 does not control non-"space-qualified" tubes which meet all the following characteristics:

a) An average output power equal to or less than 50 W; and

b) Designed or rated for operation in any frequency band which meets all of the following characteristics:

1) Exceeds 31.8 GHz but does not exceed 43.5 GHz; and

2) Is "allocated by the ITU" for radio-communications services, but not for radio-determination.

b.1.a. Traveling wave tubes, pulsed or continuous wave, as follows:

b.1.a.1. Operating at frequencies exceeding 31.8 GHz;

b.1.a.2. Having a cathode heater element with a turn on time to rated RF power of less than 3 seconds;

b.1.a.3. Coupled cavity tubes, or derivatives thereof, with a "fractional bandwidth" of more than 7% or a peak power exceeding 2.5 kW;

b.1.a.4. Helix tubes, or derivatives thereof, with any of the following characteristics:

b.1.a.4.a. An "instantaneous bandwidth" of more than one octave, and average power (expressed in kW) times frequency (expressed in GHz) of more than 0.5;

b.1.a.4.b. An "instantaneous bandwidth" of one octave or less, and average power (expressed in kW) times frequency (expressed in GHz) of more than 1; or

b.1.a.4.c. Being "space qualified";

b.1.b. Crossed-field amplifier tubes with a gain of more than 17 dB;

b.1.c. Impregnated cathodes designed for electronic tubes producing a continuous emission current density at rated operating conditions exceeding 5 A/cm2;

b.2. Microwave monolithic integrated circuits (MMIC) power amplifiers having any of the following: **Lots of worldwide commercial local multipoint distribution systems (WiMax 802.16)**

b.2.a. Rated for operation at frequencies exceeding 3.2 GHz up to and including 6 GHz and with an average output power greater than 4W (36 dBm) with a "fractional bandwidth" greater than 15%;

b.2.b. Rated for operation at frequencies exceeding 6 GHz up to and including 16 GHz and with an average output power greater than 1W (30 dBm) with a "fractional bandwidth" greater than 10%;

b.2.c. Rated for operation at frequencies exceeding 16 GHz up to and including 31.8 GHz and with an average output power greater than 0.8W (29 dBm) with a "fractional bandwidth" greater than 10%; **Specs not clear enough, common commercially worldwide**

b.2.d. Rated for operation at frequencies exceeding 31.8 GHz up to and including 37.5 GHz;

b.2.e. Rated for operation at frequencies exceeding 37.5 GHz up to and including 43.5 GHz and with an average output power greater than 0.25W (24 dBm) with a "fractional bandwidth" greater than 10%; or

b.2.f. Rated for operation at frequencies exceeding 43.5 GHz.

Note 1: 3A001.b.2 does not control broadcast satellite equipment designed or rated to operate in the frequency range of 40.5 to 42.5 GHz.

Note 2: The control status of the MMIC whose rated operating frequency includes frequencies listed in more than one frequency range, as defined by 3A001.b.2.a through 3A001.b.2.f, is determined by the lowest average output power control threshold.

Note 3: Notes 1 and 2 following the Category 3 heading for A. Systems, Equipment, and Components mean that 3A001.b.2. does not control MMICs if they are specially designed for other applications, e.g., telecommunications, radar, automobiles.

b.3. Discrete microwave transistors having any of the following:

b.3.a. Rated for operation at frequencies exceeding 3.2 GHz up to and including 6 GHz and having an average output power greater than 60W (47.8 dBm);

b.3.b. Rated for operation at frequencies exceeding 6 GHz up to and including 31.8 GHz and having an average output power greater than 20W (43 dBm);

b.3.c. Rated for operation at frequencies exceeding 31.8 GHz up to and including 37.5 GHz and having an average output power greater than 0.5W (27 dBm);

b.3.d. Rated for operation at frequencies exceeding 37.5 GHz up to and including 43.5 GHz and having an average output power greater than 1W (30 dBm); or

b.3.e. Rated for operation at frequencies exceeding 43.5 GHz.

Note: The control status of a transistor whose rated operating frequency includes frequencies listed in more than one frequency range, as defined by 3A001.b.3.a through 3A001.b.3.e, is determined by the lowest average output power control threshold.

b.4. Microwave solid state amplifiers and microwave assemblies/modules containing microwave amplifiers having any of the following:

b.4.a. Rated for operation at frequencies exceeding 3.2 GHz up to and including 6 GHz and with an average output power greater than 60W (47.8 dBm) with a "fractional bandwidth" greater than 15%; **Retain- only used in Radar Jammers**

b.4.b. Rated for operation at frequencies exceeding 6 GHz up to and including 31.8 GHz and with an average output power greater than 15W (42 dBm) with a "fractional bandwidth" greater than 10%; **This is a gray area. This applies to WiMax, which is a necessary to implement a worldwide standard. The United States can't control this.**

b.4.c. Rated for operation at frequencies exceeding 31.8 GHz up to and including 37.5 GHz;

b.4.d. Rated for operation at frequencies exceeding 37.5 GHz up to and including 43.5 GHz and with an average output power greater than 1W (30 dBm) with a "fractional bandwidth" greater than 10%;

b.4.e. Rated for operation at frequencies

exceeding 43.5 GHz; or **Used in car radars manufactured worldwide (including China, e.g., Deso Industrial Co., Ruian Fengda Electron Co. Ltd, others). Worldwide car radar systems generally operate at 77Ghz. Additionally, there are emerging international commercial specs for 60Ghz that may be jeopardized if these controls remain**

b.4.f. Rated for operation at frequencies above 3.2 GHz and all of the following:

b.4.f.1. An average output power (in watts), P, greater than 150 divided by the maximum operating frequency (in GHz) squared [P > 150 W*GHz2/fGHz2];

b.4.f.2. A fractional bandwidth of 5% or greater; and

b.4.f.3. Any two sides perpendicular to one another with length d (in cm) equal to or less than 15 divided by the lowest operating frequency in GHz [d ± 15 cm*GHz/ fGHz]. **Could not parse these specs, they did not appear to make sense**

Technical Note: 3.2 GHz should be used as the lowest operating frequency (fGHz) in the formula in 3A001.b.4.f.3., for amplifiers that have a rated operation range extending downward to 3.2 GHz and below [dï¿½15cm*GHz/3.2 fGHz].

N.B.: MMIC power amplifiers should be evaluated against the criteria in 3A001.b.2.

Note 1: 3A001.b.4. does not control broadcast satellite equipment designed or rated to operate in the frequency range of 40.5 to 42.5 GHz.

Note 2: The control status of an item whose rated operating frequency includes frequencies listed in more than one frequency range, as defined by 3A001.b.4.a through 3A001.b.4.e, is determined by the lowest average output power control threshold.

b.5. Electronically or magnetically tunable band-pass or band-stop filters having more than 5 tunable resonators capable of tuning across a 1.5:1 frequency band (fmax/fmin) in less than 10 µs having any of the following:

b.5.a. A band-pass bandwidth of more than 0.5% of center frequency; or **Reconfigurable front ends are emerging, worldwide now with all applications**

b.5.b. A band-stop bandwidth of less

than 0.5% of center frequency; **Multi. Transmitters commonly available- Pole-O coupling is even easier than b.5.a**

b.6. [RESERVED]

b.7. Mixers and converters designed to extend the frequency range of equipment described in 3A002.c, 3A002.e or 3A002.f beyond the limits stated therein;

b.8. Microwave power amplifiers containing tubes controlled by 3A001.b and having all of the following:

b.8.a. Operating frequencies above 3 GHz;

b.8.b. An average output power density exceeding 80 W/kg; and

b.8.c. A volume of less than 400 cm3;

Note: 3A001.b.8 does not control equipment designed or rated for operation in any frequency band which is "allocated by the ITU" for radio-communications services, but not for radio-determination.

b.9. Microwave power modules (MPM), consisting of, at least, a traveling wave tube, a microwave monolithic integrated circuit and an integrated electronic power conditioner, having all of the following characteristics:

b.9.a. A turn-on time from off to fully operational in less than 10 seconds;

b.9.b. A volume less than the maximum rated power in Watts multiplied by 10 cm3/W; and

b.9.c. An "instantaneous bandwidth" greater than 1 octave (fmax > 2fmin,) and any of the following:

b.9.c.1. For frequencies equal to or less than 18 GHz, an RF output power greater than 100 W; or

b.9.c.2. Having a frequency greater than 18 GHz.

Technical Notes:

1. To calculate the control volume in 3A001.b.9.b., the following example is provided: for a maximum rated power of 20 W, the volume would be: 20 W X 10 cm3/W = 200 cm3.

2. The turn-on time in 3A001.b.9.a. refers to the time from fully-off to fully operational; i.e., it includes the warm-up time of the MPM.

c. Acoustic wave devices, as follows, and specially designed components therefor: **EW applications- retain**

c.1. Surface acoustic wave and surface skimming (shallow bulk) acoustic wave devices (i.e., "signal processing" devices employing elastic waves in materials), having any of the following:

c.1.a. A carrier frequency exceeding 2.5 GHz;

c.1.b. A carrier frequency exceeding 1 GHz, but not exceeding 2.5 GHz, and having any of the following:

c.1.b.1. A frequency side-lobe rejection exceeding 55 dB;

c.1.b.2. A product of the maximum delay time and the bandwidth (time in µs and bandwidth in MHz) of more than 100;

c.1.b.3. A bandwidth greater than 250 MHz; or

c.1.b.4. A dispersive delay of more than 10 µs; or

c.1.c. A carrier frequency of 1 GHz or less, having any of the following:

c.1.c.1. A product of the maximum delay time and the bandwidth (time in µs and bandwidth in MHz) of more than 100;

c.1.c.2. A dispersive delay of more than 10 µs; or

c.1.c.3. A frequency side-lobe rejection exceeding 55 dB and a bandwidth greater than 50 MHz;

c.2. Bulk (volume) acoustic wave devices (i.e., "signal processing" devices employing elastic waves) that permit the direct processing of signals at frequencies exceeding 1 GHz;

c.3. Acoustic-optic "signal processing" devices employing interaction between acoustic waves (bulk wave or surface wave) and light waves that permit the direct processing of signals or images, including spectral analysis, correlation or convolution;

d. Electronic devices and circuits containing components, manufactured from "superconductive" materials specially designed for operation at temperatures below the "critical temperature" of at least one of the "superconductive" constituents, with any of the following: **Cellular filters based on HyPres SC A/d Converters**

d.1. Current switching for digital circuits using "superconductive" gates with a product of delay time per gate (in seconds) and power dissipation per gate (in watts) of less than 10-14 J;

or

d.2. Frequency selection at all frequencies using resonant circuits with Q-values exceeding 10,000;

e. High energy devices, as follows:

e.1. Cells and photovoltaic arrays, as follows:

e.1.a. Primary cells having an energy density exceeding 550 Wh/kg at 293 K (20 °C);

e.1.b. Secondary cells having an energy density exceeding 250 Wh/kg at 293 K (20 °C);

Technical Notes:

1. For the purpose of 3A001.e.1., energy density (Wh/kg) is calculated from the nominal voltage multiplied by the nominal capacity in ampere-hours divided by the mass in kilograms. If the nominal capacity is not stated, energy density is calculated from the nominal voltage squared then multiplied by the discharge duration in hours divided by the discharge load in Ohms and the mass in kilograms.

2. For the purpose of 3A001.e.1., a 'cell' is defined as an electrochemical device, which has positive and negative electrodes, and electrolyte, and is a source of electrical energy. It is the basic building block of a battery.

3. For the purpose of 3A001.e.1.a., a 'primary cell' is a 'cell' that is not designed to be charged by any other source.

4. For the purpose of 3A001.e.1.b., a 'secondary cell' is a 'cell' that is designed to be charged by an external electrical source.

Note: 3A001.e. does not control batteries, including single cell batteries.

e.1.c. "Space qualified" and radiation hardened photovoltaic arrays with a specific power exceeding 160 W/m2 at an operating temperature of 301 K (28 °C) under a tungsten illumination of 1 kW/m2 at 2,800 K (2,527 °C);

e.2. High energy storage capacitors, as follows:

e.2.a. Capacitors with a repetition rate of less than 10 Hz (single shot capacitors) having all of the following:

e.2.a.1. A voltage rating equal to or more than 5 kV;

e.2.a.2. An energy density equal to or more than 250 J/kg; and

e.2.a.3. A total energy equal to or

more than 25 kJ;

e.2.b. Capacitors with a repetition rate of 10 Hz or more (repetition rated capacitors) having all of the following:

e.2.b.1. A voltage rating equal to or more than 5 kV;

e.2.b.2. An energy density equal to or more than 50 J/kg;

e.2.b.3. A total energy equal to or more than 100 J; and

e.2.b.4. A charge/discharge cycle life equal to or more than 10,000;

e.3. "Superconductive" electromagnets and solenoids specially designed to be fully charged or discharged in less than one second, having all of the following:

Note: 3A001.e.3 does not control "superconductive" electromagnets or solenoids specially designed for Magnetic Resonance Imaging (MRI) medical equipment.

e.3.a. Energy delivered during the discharge exceeding 10 kJ in the first second;

e.3.b. Inner diameter of the current carrying windings of more than 250 mm; and

e.3.c. Rated for a magnetic induction of more than 8 T or "overall current density" in the winding of more than 300 A/mm2;

f. Rotary input type shaft absolute position encoders having any of the following:

f.1. A resolution of better than 1 part in 265,000 (18 bit resolution) of full scale; or

f.2. An accuracy better than ± 2.5 seconds of arc.

g. Solid-state pulsed power switching thyristor devices and thyristor modules using either electrically, optically, or electron radiation controlled switch methods, having any of the following:

1. A maximum turn-on current rate of rise (di/dt) greater than 30,000 A/ s and off-state voltage greater than 1,100 V; or

2. A maximum turn-on current rate of rise (di/dt) greater than 2,000 A/ s and all of the following:

a. An off-state peak voltage equal to or greater than 3,000 V; and

b. A peak (surge) current equal to or greater than 3,000 A.

Note 1: 3A001.g. includes:

- Silicon Controlled Rectifiers (SCRs)
- Electrical Triggering Thyristors (ETTs)
- Light Triggering Thyristors (LTTs)
- Integrated Gate Commutated Thyristors (IGCTs)
- Gate Turn-off Thyristors (GTOs)
- MOS Controlled Thyristors (MCTs)
- Solidtrons

Note 2: 3A001.g. does not control thyristor devices and thyristor modules incorporated into equipment designed for civil railway or "civil aircraft" applications.

Technical Note: For the purposes of 3A001.g., a 'thyristor module' contains one or more thyristor devices.

3A002

General purpose electronic equipment, as follows (see List of Items Controlled).

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Requirement Notes: See §743.1 of the EAR for reporting requirements for exports under License Exceptions.

License Exceptions:

LVS: $3000: 3A002.a, .e, .f, .g;
$5000: 3A002.b to .d

GBS: Yes for 3A002.a.1.; and 3A002.b (synthesized output frequency of 2.6 GHz or less and a "frequency switching time" of 0.3 ms or more).

CIV: Yes for 3A002.a.1 (provided all of the following conditions are met: 1) Bandwidths do not exceed: 4 MHz per track and have up to 28 tracks or 2 MHz per track and have up to 42 tracks; 2) Tape speed does not exceed

6.1 m/s; 3) They are not designed for underwater use; 4) They are not ruggedized for military use; and 5) Recording density does not exceed 653.2 magnetic flux sine waves per mm); and 3A002.b (synthesized output frequency of 2.6 GHz or less; and a "frequency switching time" of 0.3 ms or more).

Items Controlled:

Unit: Number
Related Controls: "Space qualified" atomic frequency standards defined in 3A002.g.2 are subject to the export licensing authority of the Department of State, Directorate of Defense Trade Controls (22 CFR 121.1 Category XV). See also 3A292 and 3A992.
Related Definitions: Constant percentage bandwidth filters are also known as octave or fractional octave filters.
Items:
a. Recording equipment, as follows, and specially designed test tape therefor:
a.1. Analog instrumentation magnetic tape recorders, including those permitting the recording of digital signals (e.g., using a high density digital recording (HDDR) module), having any of the following: **Archaic**
a.1.a. A bandwidth exceeding 4 MHz per electronic channel or track;
a.1.b. A bandwidth exceeding 2 MHz per electronic channel or track and having more than 42 tracks; or
a.1.c. A time displacement (base) error, measured in accordance with applicable IRIG or EIA documents, of less than ± 0.1 µs;
Note: Analog magnetic tape recorders specially designed for civilian video purposes are not considered to be instrumentation tape recorders.
a.2. Digital video magnetic tape recorders having a maximum digital interface transfer rate exceeding 360 Mbit/s; **Archaic**
Note: 3A002.a.2 does not control digital

video magnetic tape recorders specially designed for television recording using a signal format, which may include a compressed signal format, standardized or recommended by the ITU, the IEC, the SMPTE, the EBU , the ETSI, or the IEEE for civil television applications.

a.3. Digital instrumentation magnetic tape data recorders employing helical scan techniques or fixed head techniques, having any of the following:

a.3.a. A maximum digital interface transfer rate exceeding 175 Mbit/s; or

a.3.b. Being "space qualified";

Note: 3A002.a.3 does not control analog magnetic tape recorders equipped with HDDR conversion electronics and configured to record only digital data.

a.4. Equipment, having a maximum digital interface transfer rate exceeding 175 Mbit/s, designed to convert digital video magnetic tape recorders for use as digital instrumentation data recorders; **Archaic- 60 Mbs routine**

a.5. Waveform digitizers and transient recorders having all of the following:

N.B.: See also 3A292.

a.5.a. Digitizing rates equal to or more than 200 million samples per second and a resolution of 10 bits or more; and

a.5.b. A continuous throughput of 2 Gbit/s or more; **Commercial and scientific versions available worldwide in public domain nonexotic instrumentation**

Technical Note: For those instruments with a parallel bus architecture, the continuous throughput rate is the highest word rate multiplied by the number of bits in a word. Continuous throughput is the fastest data rate the instrument can output to mass storage without the loss of any information while sustaining the sampling rate and analog-to-digital conversion.

a.6. Digital instrumentation data recorders, using magnetic disk storage technique, having all of the following: **Easy to cobble together from commercial components, broad range of internationally available research applications**

a.6.a. Digitizing rate equal to or more than 100 million samples per second and a resolution of 8 bits or more; and

a.6.b. A continuous throughput of 1 Gbit/s or more; **Commercial phones do this- 1mB is a long time…**

b. "Frequency synthesizer" "electronic assemblies" having a "frequency switching time" from one selected frequency to another of less than 1 ms; **Probably available worldwide**

Note: The control status of signal analyzers, signal generators, network analyzers, and microwave test receivers as stand-alone instruments is determined by 3A002.c., 3A002.d., 3A002.e., and 3A002.f., respectively.

c. Radio frequency "signal analyzers", as follows:

c.1. "Signal analyzers" capable of analyzing any frequencies exceeding 31.8 GHz but not exceeding 37.5 GHz and having a 3 dB resolution bandwidth (RBW) exceeding 10 MHz;

c.2. "Signal analyzers" capable of analyzing frequencies exceeding 43.5 GHz;

c.3. "Dynamic signal analyzers" having a "real-time bandwidth" exceeding 500 kHz;

Note: 3A002.c.3 does not control those "dynamic signal analyzers" using only constant percentage bandwidth filters (also known as octave or fractional octave filters). **Within the last 15 years, a broad class of spectrum analyzers has emerged with this capability**

d. Frequency synthesized signal generators producing output frequencies, the accuracy and short term and long term stability of which are controlled, derived from or disciplined by the internal master reference oscillator, and having any of the following:

d.1. A maximum synthesized frequency exceeding 31.8 GHz, but not exceeding 43.5 GHz and rated to generate a pulse duration of less than 100 ns;

d.2. A maximum synthesized frequency exceeding 43.5 GHz**; Conflicts with emerging 60 Ghz emerging IEEE international standards**

d.3. A "frequency switching time" from one selected frequency to another as specified by any of the following:

d.3.a. Less than 10 ns;

d.3.b. Less than 100 µs for any frequency change exceeding 1.6 GHz within the synthesized frequency range exceeding 3.2 GHz but not exceeding 10.6 GHz;

d.3.c. Less than 250 µs for any frequency change exceeding 550 MHz within the synthesized frequency range exceeding 10.6 GHz but not exceeding 31.8 GHz;

d.3.d. Less than 500 µs for any frequency change exceeding 550 MHz within the synthesized frequency range exceeding 31.8 GHz but not exceeding 43.5 GHz; or

d.3.e. Less than 1 ms within the synthesized frequency range exceeding 43.5 GHz; or

d.4. A single sideband (SSB) phase noise better than (126 + 20 log10F - 20 log10f) in dBc/Hz, where F is the off-set from the operating frequency in Hz and f is the operating frequency in MHz; **Exeryone wants this capability in products worldwide- the spec is no longer used to discriminate classes or types of equipment**

Note 1: For the purpose of 3A002.d., the term frequency synthesized signal generators includes arbitrary waveform and function generators.

Note 2: 3A002.d. does not control equipment in which the output frequency is either produced by the addition or subtraction of two or more crystal oscillator frequencies, or by an addition or subtraction followed by a multiplication of the result.

Technical Notes:

1. Arbitrary waveform and function generators are normally specified by sample rate (e.g., GSample/s), which is converted to the RF domain by the Nyquist factor of two. Thus, a 1 GSample/s arbitrary waveform has a direct output capability of 500 MHz. Or, when oversampling is used, the maximum direct output capability is proportionately lower.

2. For the purposes of 3A002.d.1., 'pulse duration' is defined as the time interval between the leading edge of the pulse achieving 90% of the peak and the trailing edge of the pulse achieving 10% of the peak.

Note: 3A002.d does not control equipment in which the output frequency is either produced by the addition or subtraction of two or more crystal oscillator frequencies, or by an addition or subtraction followed by a multiplication of the result.

e. Network analyzers with a maximum operating frequency exceeding 43.5 GHz; **Commonly available worldwide- JR/SE**

f. Microwave test receivers having all of the following:
f.1. A maximum operating frequency exceeding 43.5 GHz; and
f.2. Being capable of measuring amplitude and phase simultaneously;
g. Atomic frequency standards having any of the following:
g.1. Long-term stability (aging) less (better) than 1 x 10 11/month; or
g.2. Being "space qualified".
Note: 3A002.g.1 does not control non-"space qualified" rubidium standards.

3A003

Spray cooling thermal management systems employing closed loop fluid handling and reconditioning equipment in a sealed enclosure where a dielectric fluid is sprayed onto electronic components using specially designed spray nozzles that are designed to maintain electronic components within their operating temperature range, and specially designed components therefor.

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Number of systems, components in $
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

3A101

Electronic equipment, devices and components, other than those controlled by 3A001, as follows (see List of Items Controlled).

License Requirements:

Reason for Control: MT, AT

Control(s)	Country Chart
MT applies to entire entry	MT Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Number
Related Controls: Items controlled in 3A101.a are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (See 22 CFR part 121).
Related Definitions: N/A
Items:
a. Analog-to-digital converters, usable in "missiles", designed to meet military specifications for ruggedized equipment;
b. Accelerators capable of delivering electromagnetic radiation produced by bremsstrahlung from accelerated electrons of 2 MeV or greater, and systems containing those accelerators, usable for the "missiles" or the subsystems of "missiles".
Note: 3A101.b above does not include equipment specially designed for medical purposes.

3A201

Electronic components, other than those controlled by 3A001, as follows (see List of Items Controlled).

License Requirements:

Reason for Control: NP, AT

Control(s)	Country Chart
NP applies to entire entry	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Number
Related Controls: (1) See ECCNs 3E001 ("development" and "production") and 3E201 ("use") for technology for items controlled under this entry. (2) Also see 3A001.e.2 (capacitors) and 3A001.e.3 (superconducting electromagnets). (3) Superconducting electromagnets specially designed or prepared for use in separating uranium isotopes are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).
Related Definitions: N/A
Items:
a. Pulse discharge capacitors having either of the following sets of characteristics:
a.1. Voltage rating greater than 1.4 kV, energy storage greater than 10 J, capacitance greater than 0.5 µF, and series inductance less than 50 nH; or
a.2. Voltage rating greater than 750 V, capacitance greater than 0.25 µF, and series inductance less than 10 nH;
b. Superconducting solenoidal electromagnets having all of the following characteristics:
b.1. Capable of creating magnetic fields greater than 2 T;
b.2. A ratio of length to inner diameter greater than 2;
b.3. Inner diameter greater than 300 mm; and

b.4. Magnetic field uniform to better than 1% over the central 50% of the inner volume;

Note: 3A201.b does not control magnets specially designed for and exported "as parts of" medical nuclear magnetic resonance (NMR) imaging systems. The phrase "as part of" does not necessarily mean physical part in the same shipment; separate shipments from different sources are allowed, provided the related export documents clearly specify that the shipments are dispatched "as part of" the imaging systems.

c. Flash X-ray generators or pulsed electron accelerators having either of the following sets of characteristics:

c.1. An accelerator peak electron energy of 500 keV or greater, but less than 25 MeV, and with a "figure of merit" (K) of 0.25 or greater; or

c.2. An accelerator peak electron energy of 25 MeV or greater, and a "peak power" greater than 50 MW;

Note: 3A201.c does not control accelerators that are component parts of devices designed for purposes other than electron beam or x-ray radiation (electron microscopy, for example) nor those designed for medical purposes.

Technical Notes:

(1) The "figure of merit" K is defined as: K = 1.7 x 103V2.65Q. V is the peak electron energy in million electron volts. If the accelerator beam pulse duration is less than or equal to 1 µs, then Q is the total accelerated charge in Coulombs. If the accelerator beam pulse duration is greater than 1 µs, then Q is the maximum accelerated charge in 1 µs. Q equals the intergral of i with respect to t, over the lesser of 1 µs or the time duration of the beam pulse
(Q = ? idt), where i is beam current in amperes and t is time in seconds.

(2) "Peak power" = (peak potential in volts) x (peak beam current in amperes).

(3) In machines based on microwave accelerating cavities, the time duration of the beam pulse is the lesser of 1 µs or the duration of the bunched beam packet resulting from one microwave modulator pulse.

(4) In machines based on microwave

accelerating cavities, the peak beam current is the average current in the time duration of a bunched beam packet.

3A225

Frequency changers (also known as converters or inverters) or generators, other than those described in 0B001.c.11, having all of the following characteristics (see List of Items Controlled).

License Requirements:

Reason for Control: NP, AT

Control(s)	Country Chart
NP applies to entire entry	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Number
Related Controls: (1) See ECCNs 3E001 ("development" and "production") and 3E201 ("use") for technology for items controlled under this entry. (2) Frequency changers (also known as converters or inverters) specially designed or prepared for use in separating uranium isotopes are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).
Related Definitions: N/A
Items:
a. A multiphase output capable of providing a power of 40 W or more;
b. Capable of operating in the frequency range between 600 and 2000 Hz;
c. Total harmonic distortion below 10%; and
d. Frequency control better than 0.1%.

3A226

High-power direct current power supplies, other than those described in 0B001.j.6, having both of the following characteristics (see List of Items Controlled).

License Requirements:

Reason for Control: NP, AT

Control(s)	Country Chart
NP applies to entire entry	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: $ value
Related Controls: (1) See ECCNs 3E001 ("development" and "production") and 3E201 ("use") for technology for items controlled under this entry. (2) Also see ECCN 3A227. (3) Direct current power supplies specially designed or prepared for use in separating uranium isotopes are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).
Related Definitions: N/A
Items:
a. Capable of continuously producing, over a time period of 8 hours, 100 V or greater with current output of 500 A or greater; and
b. Current or voltage stability better than 0.1% over a time period of 8 hours.

3A227

High-voltage direct current power supplies, other than those described in 0B001.j.5, having both of the following characteristics (see List of Items Controlled).

License Requirements:

Reason for Control: NP, AT

Control(s)	Country Chart
NP applies to entire entry	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: $ value
Related Controls: (1) See ECCNs 3E001 ("development" and "production") and 3E201 ("use") for technology for items controlled under this entry. (2) Also see ECCN 3A226. (3) Direct current power supplies specially designed or prepared for use in separating uranium isotopes are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).
Related Definitions: N/A
Items:
a. Capable of continuously producing, over a time period of 8 hours, 20 kV or greater with current output of 1 A or greater; and
b. Current or voltage stability better than 0.1% over a time period of 8 hours.

3A228

Switching devices, as follows (see List of Items Controlled).

License Requirements:

Reason for Control: NP, AT

Control(s)	Country Chart
NP applies to entire entry	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Number
Related Controls: (1) See ECCNs 3E001 ("development" and "production") and 3E201 ("use") for technology for items controlled under this entry. (2) Also see ECCN 3A991.k.
Related Definitions: N/A
Items:
a. Cold-cathode tubes, whether gas filled or not, operating similarly to a spark gap, having all of the following characteristics:
    a.1. Containing three or more electrodes;
    a.2. Anode peak voltage rating of 2.5 kV or more;
    a.3. Anode peak current rating of 100 A or more; and
    a.4. Anode delay time of 10 microsecond or less.
    Technical Note: 3A228.a includes gas krytron tubes and vacuum sprytron tubes.
b. Triggered spark-gaps having both of the following characteristics:
    b.1. An anode delay time of 15 s or less; and
    b.2. Rated for a peak current of 500 A or more.
c. Modules or assemblies with a fast switching function having all of the following characteristics:
    c.1. Anode peak voltage rating greater than 2 kV;
    c.2. Anode peak current rating of 500 A or more; and
    c.3. Turn-on time of 1 s or less.

3A229

Firing sets and equivalent high-current pulse generators (for detonators controlled by 3A232), as follows (see List of Items Controlled).
License Requirements:

Reason for Control: NP, AT

Control(s)	Country Chart
NP applies to entire entry	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Number
Related Controls: (1) See ECCNs 3E001 ("development" and "production") and 3E201 ("use") for technology for items controlled under this entry. (2) High explosives and related equipment for military use are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 22 CFR part 121).
Related Definitions: In 3A229.b.5, "rise time" is defined as the time interval from 10% to 90% current amplitude when driving a resistive load.
ECCN Controls: 3A229.b includes xenon flash-lamp drivers.
Items:
a. Explosive detonator firing sets designed to drive multiple controlled detonators controlled by 3A232;
b. Modular electrical pulse generators (pulsers) having all of the following characteristics:
- b.1. Designed for portable, mobile, or ruggedized use;
- b.2. Enclosed in a dust-tight enclosure;
- b.3. Capable of delivering their energy in less than 15 µs ;
- b.4. Having an output greater than 100 A;
- b.5. Having a "rise time" of less than 10 µs into loads of less than 40 ohms;
- b.6. No dimension greater than 254 mm;
- b.7. Weight less than 25 kg; and
- b.8. Specified for use over an extended temperature range 223 K (-50 °C) to 373 K (100 °C) or specified as suitable for aerospace applications.

3A230

High-speed pulse generators having both of the following characteristics (see List of Items Controlled).

License Requirements:

Reason for Control: NP, AT

Control(s)	Country Chart
NP applies to entire entry	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Number
Related Controls: See ECCNs 3E001 ("development" and "production") and 3E201 ("use") for technology for items controlled under this entry.
Related Definitions: In 3A230.b, "pulse transition time" is defined as the time interval between 10% and 90% voltage amplitude.
Items:
a. Output voltage greater than 6 V into a resistive load of less than 55 ohms; and
b. "Pulse transition time" less than 500 ps.

3A231

Neutron generator systems, including tubes, having both of the following characteristics (see List of Items Controlled).

License Requirements:

Reason for Control: NP, AT

Control(s)	Country Chart
NP applies to entire entry	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Number; parts and accessories in $ value
Related Controls: See ECCNs 3E001 ("development" and "production") and 3E201 ("use") for technology for items controlled under this entry.
Related Definitions: N/A
Items:
a. Designed for operation without an external vacuum system; and
b. Utilizing electrostatic acceleration to induce a tritium-deuterium nuclear reaction.

3A232

Detonators and multipoint initiation systems, as follows (see List of Items Controlled).

License Requirements:

Reason for Control: NP, AT

Control(s)	Country Chart
NP applies to entire entry	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Number
Related Controls: (1) See ECCNs 3E001 ("development" and "production") and 3E201 ("use") for technology for items controlled under this entry. (2) High explosives and related equipment for military use are subject

to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 22 CFR part 121).

Related Definitions: N/A

ECCN Controls: This entry does not control detonators using only primary explosives, such as lead azide.

Items:

a. Electrically driven explosive detonators, as follows:
   a.1. Exploding bridge (EB);
   a.2. Exploding bridge wire (EBW);
   a.3. Slapper;
   a.4. Exploding foil initiators (EFI);

b. Arrangements using single or multiple detonators designed to nearly simultaneously initiate an explosive surface over an area greater than 5,000 mm2 from a single firing signal with an initiation timing spread over the surface of less than 2.5 µs.

Technical Note: The detonators controlled by this entry all utilize a small electrical conductor (bridge, bridge wire or foil) that explosively vaporizes when a fast, high-current electrical pulse is passed through it. In nonslapper types, the exploding conductor starts a chemical detonation in a contacting high-explosive material, such as PETN (Pentaerythritoltetranitrate). In slapper detonators, the explosive vaporization of the electrical conductor drives a flyer or slapper across a gap and the impact of the slapper on an explosive starts a chemical detonation. The slapper in some designs is driven by a magnetic force. The term exploding foil detonator may refer to either a EB or a slapper-type detonator. Also, the word initiator is sometimes used in place of the word detonator.

3A233

Mass spectrometers, other than those described in 0B002.g, capable of measuring ions of 230 atomic mass units or greater and having a resolution of better than 2 parts in 230, and ion sources therefor.

License Requirements:

Reason for Control: NP, AT

Control(s)	Country Chart
NP applies to entire entry	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Number
Related Controls: (1) See ECCNs 3E001 ("development" and "production") and 3E201 ("use") for technology for items controlled under this entry. (2) Mass spectrometers specially designed or prepared for analyzing on-line samples of UF6 gas streams are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).
Related Definitions: N/A
Items:
a. Inductively coupled plasma mass spectrometers (ICP/MS);
b. Glow discharge mass spectrometers (GDMS);
c. Thermal ionization mass spectrometers (TIMS);
d. Electron bombardment mass spectrometers that have a source chamber constructed from, lined with or plated with materials resistant to UF6;
e. Molecular beam mass spectrometers having either of the following characteristics:
e.1. A source chamber constructed from, lined with or plated with stainless steel or molybdenum and equipped with a cold trap capable of cooling to 193 K (-80° C) or less; or
e.2. A source chamber constructed from, lined with or plated with materials resistant to UF6;
f. Mass spectrometers equipped with a

microfluorination ion source designed for actinides or actinide fluorides.

3A292

Oscilloscopes and transient recorders other than those controlled by 3A002.a.5, and specially designed components therefor.

License Requirements:

Reason for Control: NP, AT

Control(s)	Country Chart
NP applies to entire entry	NP Column 2
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Number
Related Controls: See ECCN 3E292 ("development", "production", and "use") for technology for items controlled under this entry.
Related Definitions: "Bandwidth" is defined as the band of frequencies over which the deflection on the cathode ray tube does not fall below 70.7% of that at the maximum point measured with a constant input voltage to the oscilloscope amplifier.
Items:
a. Non-modular analog oscilloscopes having a bandwidth of 1 GHz or greater;
b. Modular analog oscilloscope systems having either of the following characteristics:
b.1. A mainframe with a bandwidth of 1 GHz or greater; or
b.2. Plug-in modules with an individual bandwidth of 4 GHz or greater;
c. Analog sampling oscilloscopes for the analysis of recurring phenomena with an effective

bandwidth greater than 4 GHz;
d. Digital oscilloscopes and transient recorders, using analog-to-digital conversion techniques, capable of storing transients by sequentially sampling single-shot inputs at successive intervals of less than 1 ns (greater than 1 giga-sample per second), digitizing to 8 bits or greater resolution and storing 256 or more samples.

Note: Specially designed components controlled by this item are the following, for analog oscilloscopes:

1. Plug-in units;
2. External amplifiers;
3. Pre-amplifiers;
4. Sampling devices;
5. Cathode ray tubes.

3A980

Voice print identification and analysis equipment and parts, n.e.s.

License Requirements:

Reason for Control: CC	
Control(s)	Country Chart
CC applies to entire entry	CC Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Equipment in number
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

3A981

Polygraphs (except biomedical recorders designed for use in medical facilities for monitoring biological and neurophysical responses); fingerprint analyzers, cameras and equipment, n.e.s.; automated fingerprint and identification retrieval systems, n.e.s.; psychological stress analysis equipment; electronic monitoring restraint devices; and specially designed parts and accessories, n.e.s.

License Requirements:

Reason for Control: CC

Control(s)	Country Chart
CC applies to entire entry	CC Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Equipment in number
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

3A991

Electronic devices and components not controlled by 3A001.

License Requirements:

Reason for Control: AT

Control(s)	Country Chart
AT applies to entire entry	AT Column 1

License Requirements Notes:
See 744.17 of the EAR for additional license requirements for commodities classified as 3A991.a.1.

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Equipment in number
Related Controls: N/A
Related Definitions: N/A
Items:
a. "Microprocessor microcircuits", "microcomputer microcircuits", and microcontroller microcircuits having any of the following:
a.1. A performance speed of 5 GFLOPS or more and an arithmetic logic unit with an access width of 32 bit or more;
a.2. A clock frequency rate exceeding 25 MHz; or
a.3. More than one data or instruction bus or serial communication port that provides a direct external interconnection between parallel "microprocessor microcircuits" with a transfer rate of 2.5 Mbyte/s.
b. Storage integrated circuits, as follows:
b.1. Electrical erasable programmable read-only memories (EEPROMs) with a storage capacity; **You can't buy this anymore without flash. All are manufactured in Korea (Samsung)-PA/CP**
b.1.a. Exceeding 16 Mbits per package for flash memory types; or
b.1.b. Exceeding either of the following limits for all other EEPROM types:
b.1.b.1. Exceeding 1 Mbit per package; or
b.1.b.2. Exceeding 256 kbit per package and a maximum access time of less than 80 ns;
b.2. Static random access memories (SRAMs) with a storage capacity: **Not commercially viable –PA/CP**
b.2.a. Exceeding 1 Mbit per package; or
b.2.b. Exceeding 256 kbit per package and a maximum access time of less than 25 ns;
c. Analog-to-digital converters having any of the following:
c.1. A resolution of 8 bit or more, but less than 12 bit, with an output rate greater than 100 million words per second;

c.2. A resolution of 12 bit with an output rate greater than 5 million words per second;

c.3. A resolution of more than 12 bit but equal to or less than 14 bit withan output rate greater than 500 thousand words per second; or

c.4. A resolution of more than 14 bit with an output rate greater than 500 thousand words per second.

d. Field programmable logic devices having either of the following: **1980s technology, not manufactured anymore, you can't order these chips because they have been discontinued worldwide**

d.1. An equivalent gate count of more than 5000 (2 input gates); or

d.2. A toggle frequency exceeding 100 MHz;

e. Fast Fourier Transform (FFT) processors having a rated execution time for a 1,024 point complex FFT of less than 1 ms. **Technology (including operational code) to design, develop, and manufacture this is web-available, textbook available, and two decades old.**

f. Custom integrated circuits for which either the function is unknown, or the control status of the equipment in which the integrated circuits will be used is unknown to the manufacturer, having any of the following:

f.1. More than 144 terminals; or

f.2. A typical "basic propagation delay time" of less than 0.4 ns.

g. Traveling wave tubes, pulsed or continuous wave, as follows:

g.1. Coupled cavity tubes, or derivatives thereof;

g.2. Helix tubes, or derivatives thereof, with any of the following:

g.2.a. An "instantaneous bandwidth" of half an octave or more; and

g.2.b. The product of the rated average output power (expressed in kW) and the maximum operating frequency (expressed in GHz) of more than 0.2;

g.2.c. An "instantaneous bandwidth" of less than half an octave; and

g.2.d. The product of the rated average output power (expressed in kW) and the maximum operating frequency (expressed in GHz) of more than 0.4;

h. Flexible waveguides designed for use at frequencies exceeding 40 GHz;

i. Surface acoustic wave and surface skimming (shallow bulk) acoustic wave devices (i.e., "signal processing" devices employing elastic waves in materials), having either of the following:

i.1. A carrier frequency exceeding 1 GHz; or

i.2. A carrier frequency of 1 GHz or less; and

i.2.a. A frequency side-lobe rejection exceeding 55 Db;

i.2.b. A product of the maximum delay time and bandwidth (time in microseconds and bandwidth in MHz) of more than 100; or

i.2.c. A dispersive delay of more than 10 microseconds.

j. Cells as follows:

j.1. Primary cells having an energy density of 550 Wh/kg or less at 293 K (20°C);

j.2. Secondary cells having an energy density of 250 Wh/kg or less at 293 K (20°C).

Note: 3A991.j. does not control batteries, including single cell batteries.

Technical Notes:

1. For the purpose of 3A991.j energy density (Wh/kg) is calculated from the nominal voltage multiplied by the nominal capacity in ampere-hours divided by the mass in kilograms. If the nominal capacity is not stated, energy density is calculated from the nominal voltage squared then multiplied by the discharge duration in hours divided by the discharge load in Ohms and the mass in kilograms.

2. For the purpose of 3A991.j, a 'cell' is defined as an electrochemical device, which has positive and negative electrodes, and electrolyte, and is a source of electrical energy. It is the basic building block of a battery.

3. For the purpose of 3A991.j.1, a 'primary cell' is a 'cell' that is not designed to be charged by any other source.

4. For the purpose of 3A991.j.2., a 'secondary cell' is a 'cell' that is designed to be charged by an external electrical source.

k. "Superconductive" electromagnets or solenoids specially designed to be fully charged or discharged in less than one minute, having all of the following:

Note: 3A991.k does not control

"superconductive" electromagnets or solenoids designed for Magnetic Resonance Imaging (MRI) medical equipment.

k.1. Maximum energy delivered during the discharge divided by the duration of the discharge of more than 500 kJ per minute;

k.2. Inner diameter of the current carrying windings of more than 250 mm; and

k.3. Rated for a magnetic induction of more than 8T or "overall current density" in the winding of more than 300 A/mm2.

l. Circuits or systems for electromagnetic energy storage, containing components manufactured from "superconductive" materials specially designed for operation at temperatures below the "critical temperature" of at least one of their "superconductive" constituents, having all of the following:

l.1. Resonant operating frequencies exceeding 1 MHz;

l.2. A stored energy density of 1 MJ/M3 or more; and

l.3. A discharge time of less than 1 ms;

m. Hydrogen/hydrogen-isotope thyratrons of ceramic-metal construction and rate for a peak current of 500 A or more;

n. Digital integrated circuits based on any compound semiconductor having an equivalent gate count of more than 300 (2 input gates).

3A992

General purpose electronic equipment not controlled by 3A002.

License Requirements:

Reason for Control: AT	
Control(s)	Country Chart
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: $1000 for Syria for .a only
GBS: N/A

CIV: N/A

Items Controlled:

Unit: Equipment in number
Related Controls: N/A
Related Definitions: N/A
Items:
a. Electronic test equipment, n.e.s.
b. Digital instrumentation magnetic tape data recorders having any of the following any of the following characteristics;
b.1. A maximum digital interface transfer rate exceeding 60 Mbit/s and employing helical scan techniques;
b.2. A maximum digital interface transfer rate exceeding 120 Mbit/s and employing fixed head techniques; or
b.3. "Space qualified";
c. Equipment, with a maximum digital interface transfer rate exceeding 60 Mbit/s, designed to convert digital video magnetic tape recorders for use as digital instrumentation data recorders;

3A999

Specific processing equipment, n.e.s., as follows (see List of Items Controlled).

License Requirements:

Reason for Control: AT
Control(s) Country Chart
AT applies to entire entry. A license is required for items controlled by this entry to North Korea for anti-terrorism reasons. The Commerce Country Chart is not designed to determine AT licensing requirements for this entry. See §742.19 of the EAR for additional information.

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: $ value
Related Controls: See also 0B002, 3A225 (for frequency changers capable of operating in the frequency range of 600 Hz and above), 3A233
Related Definitions: N/A
Items:
a. Frequency changers capable of operating in the frequency range from 300 up to 600 Hz, n.e.s;
b. Mass spectrometers n.e.s;
c. All flash x-ray machines, and components of pulsed power systems designed thereof, including Marx generators, high power pulse shaping networks, high voltage capacitors, and triggers;
d. Pulse amplifiers, n.e.s.;
e. Electronic equipment for time delay generation or time interval measurement, as follows:
e.1. Digital time delay generators with a resolution of 50 nanoseconds or less over time intervals of 1 microsecond or greater; or
e.2. Multi-channel (three or more) or modular time interval meter and chronometry equipment with resolution of 50 nanoseconds or less over time intervals of 1 microsecond or greater;
f. Chromatography and spectrometry analytical instruments.

3B001

Equipment for the manufacturing of semiconductor devices or materials, as follows (see List of Items Controlled), and specially designed components and accessories therefor.

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Requirement Notes: See §743.1 of the EAR for reporting requirements for exports under License Exceptions.

License Exceptions:

LVS: $500
GBS: Yes, except 3B001.a.2 (metal organic chemical vapor deposition reactors), a.3 (molecular beam epitaxial growth equipment using gas sources), .e (automatic loading multi-chamber central wafer handling systems only if connected to equipment controlled by 3B001.a.2, a.3, or .f), and .f (lithography equipment).
CIV: Yes for equipment controlled by 3B001.

Items Controlled:

Unit: Number
Related Controls: See also 3B991
Related Definitions: N/A
Items:
a. Equipment designed for epitaxial growth, as follows:
a.1. Equipment capable of producing a layer of any material other than silicon with a thickness uniform to less than ± 2.5% across a distance of 75 mm or more;
a.2. Metal organic chemical vapor deposition (MOCVD) reactors specially designed for compound semiconductor crystal growth by the chemical reaction between materials controlled by 3C003 or 3C004;
a.3. Molecular beam epitaxial growth equipment using gas or solid sources;
b. Equipment designed for ion implantation, having any of the following:
b.1. A beam energy (accelerating voltage) exceeding 1MeV;
b.2. Being specially designed and optimized to operate at a beam energy (accelerating voltage of less than 2 keV;
b.3. Direct write capability; or
b.4. A beam energy of 65 keV or more and a beam current of 45 mA or more for high energy oxygen implant into a heated semiconductor

material "substrate";
c. Anisotropic plasma dry etching equipment, as follows:
c.1. Equipment with cassette-to-cassette operation and load-locks, and having any of the following:
c.1.a. Designed or optimized to produce critical dimensions of 180 nm or less with ± 5% 3 sigma precision; or
c.1.b. Designed for generating less than 0.04 particles/cm2 with a measurable particle size greater than 0.1 µm in diameter;
c.2. Equipment specially designed for equipment controlled by 3B001.e. and having any of the following:
c.2.a. Designed or optimized to produce critical dimensions of 180 nm or less with ± 5% 3 sigma precision; or
c.2.b. Designed for generating less than 0.04 particles/cm2 with a measurable particle size greater than 0.1 ±m in diameter;
d. Plasma enhanced CVD equipment, as follows:
d.1. Equipment with cassette-to-cassette operation and load-locks, and designed according to the manufacturer's specifications or optimized for use in the production of semiconductor devices with critical dimensions of 180 nm or less;
d.2. Equipment specially designed for equipment controlled by 3B001.e. and designed according to the manufacturer's specifications or optimized for use in the production of semiconductor devices with critical dimensions of 180 nm or less;
e. Automatic loading multi-chamber central wafer handling systems, having all of the following:
e.1. Interfaces for wafer input and output, to which more than two pieces of semiconductor processing equipment are to be connected; and
e.2. Designed to form an integrated system in a vacuum environment for sequential multiple wafer processing;
Note: 3B001.e. does not control automatic robotic wafer handling systems not designed to operate in a vacuum environment.
f. Lithography equipment, as follows:
f.1. Align and expose step and repeat (direct

step on wafer) or step and scan (scanner) equipment for wafer processing using photo-optical or x-ray methods, having any of the following:

f.1.a. A light source wavelength shorter than 245 nm; or

f.1.b. Capable of producing a pattern with a minimum resolvable feature size of 180 nm or less;

Technical Note: The minimum resolvable feature size is calculated by the following formula:

MRF =

$$\frac{\text{(an exposure light source wavelength in nm)} \times \text{(K factor)}}{\text{numerical aperture}}$$

where the K factor = 0.45

MRF = minimum resolvable feature size.

f.2 Imprint lithography equipment capable of production features of 180 nm or less.

Note: 3B001.f.2 includes:

- Micro contact printing tools
- Hot embossing tools
- Nano-imprint lithography tools
- Step and flash imprint lithography (S-FIL) tools

f.3. Equipment specially designed for mask making or semiconductor device processing using deflected focused electron beam, ion beam or "laser" beam, having any of the following:

f.3.a. A spot size smaller than 0.2 µm;

f.3.b. Being capable of producing a pattern with a feature size of less than 1 µm; or

f.3.c. An overlay accuracy of better than ± 0.20 µm (3 sigma);

g. Masks and reticles designed for integrated circuits controlled by 3A001;

h. Multi-layer masks with a phase shift layer.

Note: 3B001.h. does not control multi-layer masks with a phase shift layer designed for the fabrication of memory devices not controlled by 3A001.

i. Imprint lithography templates designed for integrated circuits by 3A001.

3B002

Test equipment, specially designed for testing finished or unfinished semiconductor devices, as follows (see List of Items Controlled), and specially designed components and accessories therefor.

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: $500
GBS: Yes
CIV: N/A

Items Controlled:

Unit: Number
Related Controls: See also 3A999.a and 3B992
Related Definitions: N/A
Items:
a. For testing S-parameters of transistor devices at frequencies exceeding 31.8 GHz;
b. [RESERVED]
c. For testing microwave integrated circuits controlled by 3A001.b.2.

3B991

Equipment not controlled by 3B001 for the manufacture of electronic components and materials, and specially designed components and accessories therefor**.**

License Requirements:

Reason for Control: AT

Control(s)	Country Chart
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Equipment in number, and components and accessories in $ value
Related Controls: N/A
Related Definitions: 'Sputtering' is an overlay coating process wherein positively charged ions are accelerated by an electric field towards the surface of a target (coating material). The kinetic energy of the impacting ions is sufficient to cause target surface atoms to be released and deposited on the substrate. (Note: Triode, magnetron or radio frequency sputtering to increase adhesion of coating and rate of deposition are ordinary modifications of the process.)
Items:
a. Equipment specially designed for the manufacture of electron tubes, optical elements and specially designed components therefor controlled by 3A001 or 3A991;
b. Equipment specially designed for the manufacture of semiconductor devices, integrated circuits and "electronic assemblies", as follows, and systems incorporating or having the characteristics of such equipment:
Note: 3B991.b also controls equipment used or modified for use in the manufacture of other devices, such as imaging devices, electro-optical devices, acoustic-wave devices.
b.1. Equipment for the processing of materials for the manufacture of devices and components as specified in the heading of 3B991.b, as follows:
Note: 3B991 does not control quartz furnace tubes, furnace liners, paddles, boats (except specially designed caged boats), bubblers, cassettes or crucibles specially designed for the

processing equipment controlled by 3B991.b.1.

b.1.a. Equipment for producing polycrystalline silicon and materials controlled by 3C001;

b.1.b. Equipment specially designed for purifying or processing III/V and II/VI semiconductor materials controlled by 3C001, 3C002, 3C003, 3C004, or 3C005 except crystal pullers, for which see 3B991.b.1.c below;

b.1.c. Crystal pullers and furnaces, as follows:

Note: 3B991.b.1.c does not control diffusion and oxidation furnaces.

b.1.c.1. Annealing or recrystallizing equipment other than constant temperature furnaces employing high rates of energy transfer capable of processing wafers at a rate exceeding 0.005 m2 per minute;

b.1.c.2. "Stored program controlled" crystal pullers having any of the following characteristics:

b.1.c.2.a. Rechargeable without replacing the crucible container;

b.1.c.2.b. Capable of operation at pressures above 2.5 x 10[5] Pa; or

b.1.c.2.c. Capable of pulling crystals of a diameter exceeding 100 mm;

b.1.d. "Stored program controlled" equipment for epitaxial growth having any of the following characteristics:

b.1.d.1. Capable of producing a silicon layer with a thickness uniform to less than ±2.5% across a distance of 200 mm or more;

b.1.d.2. Capable of producing a layer of any material other than silicon with a thickness uniformity across the wafer of equal to or better than ± 3.5%; or

b.1.d.3. Rotation of individual wafers during processing;

b.1.e. Molecular beam epitaxial growth equipment;

b.1.f. Magnetically enhanced 'sputtering' equipment with specially designed integral load locks capable of transferring wafers in an isolated vacuum environment;

b.1.g. Equipment specially designed for ion implantation, ion-enhanced or photo-enhanced

diffusion, having any of the following characteristics:

b.1.g.1. Patterning capability;

b.1.g.2. Beam energy (accelerating voltage) exceeding 200 keV;

b.1.g.3 Optimized to operate at a beam energy (accelerating voltage) of less than 10 keV; or

b.1.g.4. Capable of high energy oxygen implant into a heated "substrate";

b.1.h. "Stored program controlled" equipment for the selective removal (etching) by means of anisotropic dry methods (e.g., plasma), as follows:

b.1.h.1. Batch types having either of the following:

b.1.h.1.a. End-point detection, other than optical emission spectroscopy types; or

b.1.h.1.b. Reactor operational (etching) pressure of 26.66 Pa or less;

b.1.h.2. Single wafer types having any of the following:

b.1.h.2.a. End-point detection, other than optical emission spectroscopy types;

b.1.h.2.b. Reactor operational (etching) pressure of 26.66 Pa or less; or

b.1.h.2.c. Cassette-to-cassette and load locks wafer handling;

Notes: 1. "Batch types" refers to machines not specially designed for production processing of single wafers. Such machines can process two or more wafers simultaneously with common process parameters, e.g., RF power, temperature, etch gas species, flow rates.

2. "Single wafer types" refers to machines specially designed for production processing of single wafers. These machines may use automatic wafer handling techniques to load a single wafer into the equipment for processing. The definition includes equipment that can load and process several wafers but where the etching parameters, e.g., RF power or end point, can be independently determined for each individual wafer.

b.1.i. "Chemical vapor deposition" (CVD) equipment, e.g., plasma-enhanced CVD (PECVD) or photo-enhanced CVD, for

semiconductor device manufacturing, having either of the following capabilities, for deposition of oxides, nitrides, metals or polysilicon:

b.1.i.1. "Chemical vapor deposition" equipment operating below 105 Pa; or

b.1.i.2. PECVD equipment operating either below 60 Pa (450 millitorr) or having automatic cassette-to-cassette and load lock wafer handling;

Note: 3B991.b.1.i does not control low pressure "chemical vapor deposition" (LPCVD) systems or reactive "sputtering" equipment.

b.1.j. Electron beam systems specially designed or modified for mask making or semiconductor device processing having any of the following characteristics:

b.1.j.1. Electrostatic beam deflection;

b.1.j.2. Shaped, non-Gaussian beam profile;

b.1.j.3. Digital-to-analog conversion rate exceeding 3 MHz;

b.1.j.4. Digital-to-analog conversion accuracy exceeding 12 bit; or

b.1.j.5. Target-to-beam position feedback control precision of 1 micrometer or finer;

Note: 3B991.b.1.j does not control electron beam deposition systems or general purpose scanning electron microscopes.

b.1.k. Surface finishing equipment for the processing of semiconductor wafers as follows:

b.1.k.1. Specially designed equipment for backside processing of wafers thinner than 100 micrometer and the subsequent separation thereof; or

b.1.k.2. Specially designed equipment for achieving a surface roughness of the active surface of a processed wafer with a two-sigma value of 2 micrometer or less, total indicator reading (TIR);

Note: 3B991.b.1.k does not control single-side lapping and polishing equipment for wafer surface finishing.

b.1.l. Interconnection equipment which includes common single or multiple vacuum chambers specially designed to permit the integration of any equipment controlled by 3B991

into a complete system;

b.1.m. "Stored program controlled" equipment using "lasers" for the repair or trimming of "monolithic integrated circuits" with either of the following characteristics:

b.1.m.1. Positioning accuracy less than ± 1 micrometer; or

b.1.m.2. Spot size (kerf width) less than 3 micrometer.

b.2. Masks, mask "substrates", mask-making equipment and image transfer equipment for the manufacture of devices and components as specified in the heading of 3B991, as follows:

Note: The term "masks" refers to those used in electron beam lithography, x-ray lithography, and ultraviolet lithography, as well as the usual ultraviolet and visible photo-lithography.

b.2.a. Finished masks, reticles and designs therefor, except:

b.2.a.1. Finished masks or reticles for the production of unembargoed integrated circuits; or

b.2.a.2. Masks or reticles, having both of the following characteristics:

b.2.a.2.a. Their design is based on geometries of 2.5 micrometer or more; and

b.2.a.2.b. The design does not include special features to alter the intended use by means of production equipment or "software";

b.2.b. Mask "substrates" as follows:

b.2.b.1. Hard surface (e.g., chromium, silicon, molybdenum) coated "substrates" (e.g., glass, quartz, sapphire) for the preparation of masks having dimensions exceeding 125 mm x 125 mm; or

b.2.b.2. "Substrates" specially designed for X-ray masks;

b.2.c. Equipment, other than general purpose computers, specially designed for computer aided design (CAD) of semiconductor devices or integrated circuits;

b.2.d. Equipment or machines, as follows, for mask or reticle fabrication:

b.2.d.1. Photo-optical step and repeat cameras capable of producing arrays larger than 100 mm x 100 mm, or capable of producing a

single exposure larger than 6 mm x 6 mm in the image (i.e., focal) plane, or capable of producing line widths of less than 2.5 micrometer in the photoresist on the "substrate";

b.2.d.2. Mask or reticle fabrication equipment using ion or "laser" beam lithography capable of producing line widths of less than 2.5 micrometer; or

b.2.d.3. Equipment or holders for altering masks or reticles or adding pellicles to remove defects;

Note: 3B991.b.2.d.1 and b.2.d.2 do not control mask fabrication equipment using photo-optical methods which was either commercially available before the 1st January, 1980, or has a performance no better than such equipment.

b.2.e. "Stored program controlled" equipment for the inspection of masks, reticles or pellicles with:

b.2.e.1. A resolution of 0.25 micrometer or finer; and

b.2.e.2. A precision of 0.75 micrometer or finer over a distance in one or two coordinates of 63.5 mm or more;

Note: 3B991.b.2.e does not control general purpose scanning electron microscopes except when specially designed and instrumented for automatic pattern inspection.

b.2.f. Align and expose equipment for wafer production using photo-optical or x-ray methods, e.g., lithography equipment, including both projection image transfer equipment and step and repeat (direct step on wafer) or step and scan (scanner) equipment, capable of performing any of the following functions:

Note: 3B991.b.2.f does not control photo-optical contact and proximity mask align and expose equipment or contact image transfer equipment.

b.2.f.1. Production of a pattern size of less than 2.5 micrometer;

b.2.f.2. Alignment with a precision finer than ± 0.25 micrometer (3 sigma);

b.2.f.3. Machine-to-machine overlay no better than ± 0.3 micrometer; or

b.2.f.4. A light source wavelength shorter than 400 nm;

b.2.g. Electron beam, ion beam or x-ray equipment for projection image transfer capable of producing patterns less than 2.5 micrometer;

Note: For focused, deflected-beam systems (direct write systems), see 3B991.b.1.j or b.10.

b.2.h. Equipment using "lasers" for direct write on wafers capable of producing patterns less than 2.5 micrometer.

b.3. Equipment for the assembly of integrated circuits, as follows:

b.3.a. "Stored program controlled" die bonders having all of the following characteristics:

b.3.a.1. Specially designed for "hybrid integrated circuits";

b.3.a.2. X-Y stage positioning travel exceeding 37.5 x 37.5 mm; and

b.3.a.3. Placement accuracy in the X-Y plane of finer than ± 10 micrometer;

b.3.b. "Stored program controlled" equipment for producing multiple bonds in a single operation (e.g., beam lead bonders, chip carrier bonders, tape bonders);

b.3.c. Semi-automatic or automatic hot cap sealers, in which the cap is heated locally to a higher temperature than the body of the package, specially designed for ceramic microcircuit packages controlled by 3A001 and that have a throughput equal to or more than one package per minute.

Note: 3B991.b.3 does not control general purpose resistance type spot welders.

b.4. Filters for clean rooms capable of providing an air environment of 10 or less particles of 0.3 micrometer or smaller per 0.02832 m3 and filter materials therefor.

3B992

Equipment not controlled by 3B002 for the inspection or testing of electronic components and materials, and specially designed components and accessories therefor.

License Requirements:

Reason for Control: AT

Control(s)	Country Chart
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Equipment in number
Related Controls: See also 3A992.a.
Related Definitions: N/A
Items:
a. Equipment specially designed for the inspection or testing of electron tubes, optical elements and specially designed components therefor controlled by 3A001 or 3A991;
b. Equipment specially designed for the inspection or testing of semiconductor devices, integrated circuits and "electronic assemblies", as follows, and systems incorporating or having the characteristics of such equipment:
Note: 3B992.b also controls equipment used or modified for use in the inspection or testing of other devices, such as imaging devices, electro-optical devices, acoustic-wave devices.
b.1. "Stored program controlled" inspection equipment for the automatic detection of defects, errors or contaminants of 0.6 micrometer or less in or on processed wafers, "substrates", other than printed circuit boards or chips, using optical image acquisition techniques for pattern comparison;
Note: 3B992.b.1 does not control general purpose scanning electron microscopes, except when specially designed and instrumented for automatic pattern inspection.
b.2. Specially designed "stored program controlled" measuring and analysis equipment, as

follows:

b.2.a. Specially designed for the measurement of oxygen or carbon content in semiconductor materials;

b.2.b. Equipment for line width measurement with a resolution of 1 micrometer or finer;

b.2.c. Specially designed flatness measurement instruments capable of measuring deviations from flatness of 10 micrometer or less with a resolution of 1 micrometer or finer.

b.3. "Stored program controlled" wafer probing equipment having any of the following characteristics:

b.3.a. Positioning accuracy finer than 3.5 micrometer;

b.3.b. Capable of testing devices having more than 68 terminals; or

b.3.c. Capable of testing at a frequency exceeding 1 GHz;

b.4. Test equipment as follows:

b.4.a. "Stored program controlled" equipment specially designed for testing discrete semiconductor devices and unencapsulated dice, capable of testing at frequencies exceeding 18 GHz;

Technical Note: Discrete semiconductor devices include photocells and solar cells.

b.4.b. "Stored program controlled" equipment specially designed for testing integrated circuits and "electronic assemblies" thereof, capable of functional testing:

b.4.b.1. At a 'pattern rate' exceeding 20 MHz; or

b.4.b.2. At a 'pattern rate' exceeding 10 MHz but not exceeding 20 MHz and capable of testing packages of more than 68 terminals.

Notes: 3B992.b.4.b does not control test equipment specially designed for testing:

1. Memories;

2. "Assemblies" or a class of "electronic assemblies" for home and entertainment applications; and

3. Electronic components, "assemblies" and integrated circuits not controlled by 3A001 or 3A991 provided such test equipment does not incorporate computing facilities with "user

accessible programmability".

Technical Note: For purposes of 3B992.b.4.b, 'pattern rate' is defined as the maximum frequency of digital operation of a tester. It is therefore equivalent to the highest data rate that a tester can provide in non-multiplexed mode. It is also referred to as test speed, maximum digital frequency or maximum digital speed.

b.4.c. Equipment specially designed for determining the performance of focal-plane arrays at wavelengths of more than 1,200 nm, using "stored program controlled" measurements or computer aided evaluation and having any of the following characteristics:

b.4.c.1. Using scanning light spot diameters of less than 0.12 mm;

b.4.c.2. Designed for measuring photosensitive performance parameters and for evaluating frequency response, modulation transfer function, uniformity of responsivity or noise; or

b.4.c.3. Designed for evaluating arrays capable of creating images with more than 32 x 32 line elements;

b.5. Electron beam test systems designed for operation at 3 keV or below, or "laser" beam systems, for non-contactive probing of powered-up semiconductor devices having any of the following:

b.5.a. Stroboscopic capability with either beam blanking or detector strobing;

b.5.b. An electron spectrometer for voltage measurements with a resolution of less than 0.5 V; or

b.5.c. Electrical tests fixtures for performance analysis of integrated circuits;

Note: 3B992.b.5 does not control scanning electron microscopes, except when specially designed and instrumented for non-contactive probing of a powered-up semiconductor device.

b.6. "Stored program controlled" multifunctional focused ion beam systems specially designed for manufacturing, repairing, physical layout analysis and testing of masks or semiconductor devices and having either of the

following characteristics:

b.6.a. Target-to-beam position feedback control precision of 1 micrometer or finer; or

b.6.b. Digital-to-analog conversion accuracy exceeding 12 bit;

b.7. Particle measuring systems employing "lasers" designed for measuring particle size and concentration in air having both of the following characteristics:

b.7.a. Capable of measuring particle sizes of 0.2 micrometer or less at a flow rate of 0.02832 m3 per minute or more; and

b.7.b. Capable of characterizing Class 10 clean air or better.

3C001

Hetero-epitaxial materials consisting of a "substrate" having stacked epitaxially grown multiple layers of any of the following (see List of Items Controlled).

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: $3000
GBS: N/A
CIV: N/A

Items Controlled:

Unit: $ value
Related Controls: This entry does not control equipment or material whose functionality has been unalterably disabled are not controlled.
Related Definitions: III/V compounds are polycrystalline or binary or complex monocrystalline products consisting of elements of groups IIIA and VA of Mendeleyev's periodic classification table

(e.g., gallium arsenide, gallium-aluminium arsenide, indium phosphide).

Items:

a. Silicon;
b. Germanium;
c. Silicon Carbide; or
d. III/V compounds of gallium or indium

3C002

Resist materials, as follows (see List of Items Controlled), and "substrates" coated with controlled resists.

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: $3000

GBS: Yes for positive resists not optimized for photolithography at a wavelength of less than 365 nm, provided that they are not controlled by 3C002.b through .d.

CIV: Yes for positive resists not optimized for photolithography at a wavelength of less than 365 nm, provided that they are not controlled by 3C002.b through .d.

Items Controlled:

Unit: $ value

Related Controls: N/A

Related Definitions: Silylation techniques are defined as processes incorporating oxidation of the resist surface to enhance performance for both wet and dry developing.

Items:

a. Positive resists designed for semiconductor

lithography specially adjusted (optimized) for use at wavelengths below 245 nm;
b. All resists designed for use with electron beams or ion beams, with a sensitivity of 0.01 µcoulomb/mm2 or better;
c. All resists designed for use with x-rays, with a sensitivity of 2.5 mJ/mm2 or better;
d. All resists optimized for surface imaging technologies, including silylated resists.

3C003

Organo-inorganic compounds, as follows (see List of Items Controlled).

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: $3000
GBS: N/A
CIV: N/A

Items Controlled:

Unit: $ value
Related Controls: This entry controls only compounds whose metallic, partly metallic or non-metallic element is directly linked to carbon in the organic part of the molecule.
Related Definition: N/A
Items:
a. Organo-metallic compounds of aluminium, gallium or indium having a purity (metal basis) better than 99.999%;
b. Organo-arsenic, organo-antimony and organo-phosphorus compounds having a purity (inorganic element basis) better than 99.999%.

3C004

Hydrides of phosphorus, arsenic or antimony, having a purity better than 99.999%, even diluted in inert gases or hydrogen.

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: $3000
GBS: N/A
CIV: N/A

Items Controlled:

Unit: $ value
Related Controls: N/A
Related Definition: N/A
Items:
The list of items controlled is contained in the ECCN heading.
Note: This entry does not control hydrides containing 20% molar or more of inert gases or hydrogen.

3C005

Silicon carbide (SiC) wafers having a resistivity of more than 10,000 ohm-cm.

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: $3000

GBS: Yes
CIV: Yes

Items Controlled:

Unit: $ value
Related Controls: See ECCN 3E001 for related development and production technology, and ECCN 3B991.b.1.b for related production equipment.
Related Definition: N/A
Items:
The list of items controlled is contained in the ECCN heading.

3C992

Positive resists designed for semiconductor lithography specially adjusted (optimized) for use at wavelengths between 370 and 245 nm.

License Requirements:

Reason for Control: AT

Control(s)	Country Chart
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: $ value
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

3D001

"Software" specially designed for the "development" or "production" of equipment controlled by 3A001.b to 3A002.g or 3B (except 3B991 and 3B992)., **Anyone can acquire the tools on the worldwide web to design FPGAs, however, the barrier to entry into the market is the state of the art tools everyone wants are controlled by a few companies (e.g., Cadence, Mentor Graphics) and be licensed from them. Cadence has development groups in India and China.**

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to "software" for equipment controlled by 3A001.b to 3A001.f, 3A002, and 3B	NS Column 1
AT applies to entire entry	AT Column 1

License Requirement Notes: See §743.1 of the EAR for reporting requirements for exports under License Exceptions

License Exceptions:

CIV: N/A
TSR: Yes, except for "software" specially designed for the "development" or "production" of Traveling Wave Tube Amplifiers described in 3A001.b.8 having operating frequencies exceeding 18 GHz.

Items Controlled:

Unit: $ value
Related Controls: "Software" specially designed for the "development" or "production" of the following equipment is under the export licensing authority of the Department of State, Directorate of Defense Trade Controls (22 CFR part 121):
1.) When opera ting at frequencies higher than 31 GHz and "space qualified": Helix tubes (traveling wave tubes (TWT)) defined

in 3A001.b.1.a.4.c; microwave solid state amplifiers defined in 3A001.b.4.b; microwave "assemblies" defined in 3A001.b.6; and traveling wave tube amplifiers (TWTA) defined in 3A001.b.8; 2.) "Space qualified" and radiation hardened photovoltaic arrays defined in 3A001.e.1.c (i.e., not having silicon cells or single, dual or triple junction solar cells that have gallium arsenide as one of the junctions), spacecraft/satellite solar concentrators and batteries; and 3.) "Space qualified" atomic frequency standards defined in 3A002.g.2. See also 3D101

Related Definitions: For purposes of photovoltaic arrays in 3A001.e.1.c, an array predominately consists of: a substrate; solar cells having silicon cells or having single, dual, and or triple junction solar cells that have gallium arsenide as one of the junctions; coverglass; ultra-violet coating(s); and bonding agent(s). Spacecraft/satellite: solar concentrators, power conditioners and or controllers, bearing and power transfer assembly, and or deployment hardware/systems are controlled under the export licensing authority of the Department of State, Directorate of Defense Trade Controls (22 CFR part 121).

Items:
The list of items controlled is contained in the ECCN heading.

3D002

"Software" specially designed for the "use" of any of the following (see List of Items Controlled).

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: Yes

Items Controlled:

Unit: $ value
Related Controls: Also see 3D991.
Related Definitions: N/A
Items:
a. Equipment controlled by 3B001.a. to f.; or
b. Equipment controlled by 3B002.

3D003

Physics-based simulation "software" specially designed for the "development" of lithographic, etching or deposition processes for translating masking patterns into specific topographical patterns in conductors, dielectrics or semiconductor materials.

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: Yes

Items Controlled:

Unit: $ value
Related Controls: N/A
Related Definitions: 1.) Libraries, design attributes or associated data for the design of semiconductor devices or integrated circuits are considered as "technology".
2.) 'Physics-based' in 3D003 means using computations to determine a sequence of physical cause and effect events based on

physical properties (e.g., temperature, pressure, diffusion constants and semiconductor materials properties).

Items:
The list of items controlled is contained in the ECCN heading.

3D004

"Software" specially designed for the "development" of the equipment controlled by 3A003.

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: Yes

Items Controlled:

Unit: $ value
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

3D101

"Software" specially designed or modified for the "use" of equipment controlled by 3A101.b.

License Requirements:

Reason for Control: MT, AT

Control(s)	Country Chart
MT applies to entire entry	MT Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: N/A

Items Controlled:

Unit: $ value
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

3D980

"Software" specially designed for the "development", "production", or "use" of items controlled by 3A980 and 3A981.

License Requirements:

Reason for Control: CC, AT

Control(s)	Country Chart
CC applies to entire entry	CC Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: N/A

Items Controlled:

Unit: $ value
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

3D991

"Software" specially designed for the "development", "production", or "use" of electronic devices or components controlled by 3A991, general purpose electronic equipment controlled by 3A992, or manufacturing and test equipment controlled by 3B991 and 3B992; or "software" specially designed for the "use" of equipment controlled by 3B001.g and .h.

License Requirements:

Reason for Control: AT

Control(s)	Country Chart
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: N/A

Items Controlled:

Unit: $ value
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

3E001

"Technology" according to the General Technology Note for the "development" or "production" of equipment or materials controlled by 3A (except 3A292, 3A980, 3A981, 3A991 or 3A992), 3B (except 3B991 or 3B992) or 3C (except 3C992).

License Requirements:

Reason for Control: NS, MT, NP, AT

Control(s)	Country Chart
NS applies to "technology" for items controlled by 3A001, 3A002, 3B001, 3B002, or 3C001 to 3C005	NS Column 1
MT applies to "technology" for equipment controlled by 3A001 or 3A101 for MT reasons	MT Column 1

NP applies to "technology" for equipment controlled by 3A001, 3A201, or 3A225 to 3A233 for NP reasons — NP Column 1
AT applies to entire entry — AT Column 1
License Requirement Note: See §743.1 of the EAR for reporting requirements for exports under License Exceptions.

License Exceptions:

CIV: N/A
TSR: Yes, except N/A for MT, and "technology" specially designed for the "development" or "production" of Traveling Wave Tube Amplifiers described in 3A001.b.8 having operating frequencies exceeding 18 GHz.

Items Controlled:

Unit: N/A
Related Controls: 1.) See also 3E101 and 3E201. 2.)"Technology" according to the General Technology Note for the "development" or "production" of the following commodities is under the export licensing authority of the Department of State, Directorate of Defense Trade Controls (22 CFR part 121): (a) When operating at frequencies higher than 31 GHz and "space qualified": helix tubes (traveling wave tubes (TWT)) defined in 3A001.b.1.a.4.c; microwave solid state amplifiers defined in 3A001.b.4.b; microwave "assemblies" defined in 3A001.b.6; or traveling wave tube amplifiers (TWTA) defined in 3A001.b.8; (b) "Space qualified" and radiation hardened photovoltaic arrays defined in 3A001.e.1.c (i.e., not having silicon cells or single, dual or triple junction solar cells that have gallium arsenide as one of the junctions), and spacecraft/satellite solar concentrators and batteries; and (c) "Space qualified" atomic frequency standards defined in 3A002.g.2.
Related Definition: For purposes of

photovoltaic arrays in 3A001.e.1.c, an array predominately consists of: a substrate; solar cells having silicon cells or having single, dual, and or triple junction solar cells that have gallium arsenide as one of the junctions; coverglass; ultra-violet coating(s); and bonding agent(s). Spacecraft/satellite: solar concentrators, power conditioners and or controllers, bearing and power transfer assembly, and or deployment hardware/systems are controlled under the export licensing authority of the Department of State, Directorate of Defense Trade Controls (22 CFR part 121).

Items:
The list of items controlled is contained in the ECCN heading.

Note 1: 3E001 does not control "technology" for the "production" of equipment or components controlled by 3A003.

Note 2: 3E001 does not control "technology" for the "development" or "production" of integrated circuits controlled by 3A001.a.3 to a.12, having all of the following:

a) Using "technology" of 0.5 µm or more; and

b) Not incorporating multi-layer structures.

Technical Note: The term multi-layer structures in Note 2 of 3E001 does not include devices incorporating a maximum of three metal layers and three polysilicon layers.

3E002

Technology" according to the General Technology Note other than that controlled in 3E001 for the "development" or "production" of a "microprocessor microcircuit", "micro-computer microcircuit" and microcontroller microcircuit core, having an arithmetic logic unit with an access width of 32 bits or more and any of the following features or characteristics (see List of Items Controlled).

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 1

AT applies to entire entry AT Column 1

License Exceptions:

CIV: Yes, for deemed exports, as described in §734.2(b)(2)(ii) of the EAR, of "technology" for the "development" or "production" of general purpose microprocessors with a vector processor unit with operand length of 64-bit or less, 64-bit floating operations not exceeding 32 GFLOPS, or 16-bit or more floating-point operations not exceeding 32 GMACS (billions of 16-bit fixed-point multiply-accumulate operations per second). Deemed exports under License Exception CIV are subject to a Foreign National Review (FNR) requirement, see §740.5 of the EAR for more information about the FNR. License Exception CIV does not apply to ECCN 3E002 technology also required for the development or production of items controlled under ECCNs beginning with 3A, 3B, or 3C, or to ECCN 3E002 technology also controlled under ECCN 3E003.
TSR: Yes

Items Controlled:

Unit: N/A
Related Controls: N/A
Related Definitions: N/A
Items:
a. A vector processor unit designed to perform more than two calculations on floating-point vectors (one dimensional arrays of 32-bit or larger numbers) simultaneously;

Technical Note: A vector processing unit is a processor element with built-in instructions that perform multiple calculations on floating-point

vectors (one-dimensional arrays of 32-bit or larger numbers) simultaneously, having at least one vector arithmetic logic unit.
b. Designed to perform more than two 64-bit or larger floating-point operation results per cycle; or
c. Designed to perform more than four 16-bit fixed-point multiply-accumulate results per cycle (e.g., digital manipulation of analog information that has been previously converted into digital form, also known as digital signal processing).
Note: 3E002.c does not control technology for multimedia extensions.
Notes:
1. 3E002 does not control "technology" for the "development" or "production" of microprocessor cores, having all of the following:
a. Using "technology" at or above 0.130 µm; and
b. Incorporating multi-layer structures with five or fewer metal layers.
2. 3E002 includes "technology" for digital signal processors and digital array processors. **Note 1 and Note 2 capable processors are readily available worldwide. For example, Mathstar has its own chip and is sold worldwide. It's performance far exceeds Note 1 and 2 capabilities**

3E003

Other "technology" for the "development" or "production" of items described in the List of Items Controlled.

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: Yes, except .f and .g

Items Controlled:

Unit: N/A
Related Controls: 1) Technology for the "development" or "production" of "space qualified" electronic vacuum tubes operating at frequencies of 31.8 GHz or higher, described in 3E003.g, is under the export license authority of the Department of State, Directorate of Defense Trade Controls (22 CFR part 121); 2) See 3E001 for silicon-on-insulation (SOI) technology for the "development" or "production" related to radiation hardening of integrated circuits.
Related Definitions: N/A
Items:
a. Vacuum microelectronic devices;
b. Hetero-structure semiconductor devices such as high electron mobility transistors (HEMT), hetero-bipolar transistors (HBT), quantum well and super lattice devices;
Note: 3E003.b does not control technology for high electron mobility transistors (HEMT) operating at frequencies lower than 31.8 GHz and hetero-junction bipolar transistors (HBT) operating at frequencies lower than 31.8 GHz.
c. "Superconductive" electronic devices;
d. Substrates of films of diamond for electronic components;
e. Substrates of silicon-on-insulator (SOI) for integrated circuits in which the insulator is silicon dioxide;
f. Substrates of silicon carbide for electronic components;
g. Electronic vacuum tubes operating at frequencies of 31.8 GHz or higher.

3E101

"Technology" according to the General Technology Note for the "use" of equipment or "software" controlled by 3A001.a.1 or .2, 3A101, or 3D101.

License Requirements:

Reason for Control: MT, AT

Control(s)	Country Chart
MT applies to entire entry	MT Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: N/A

Items Controlled:

Unit: N/A
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

3E102

"Technology" according to the General Technology Note for the "development" of "software" controlled by 3D101.

License Requirements:

Reason for Control: MT, AT

Control(s)	Country Chart
MT applies to entire entry	MT Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: N/A

Items Controlled:

Unit: N/A
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the

ECCN heading.

3E201

"Technology" according to the General Technology Note for the "use" of equipment controlled by 3A001.e.2 or .e.3, 3A201 or 3A225 to 3A233.

License Requirements:

Reason for Control: NP, AT

Control(s)	Country Chart
NP applies to "technology" for equipment controlled by 3A001.e.2, or .e.3, 3A201 or 3A225 to 3A233 for NP reasons	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: N/A

Items Controlled:

Unit: N/A
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

3E292

"Technology" according to the General Technology Note for the "development", "production", or "use" of equipment controlled by 3A292.

License Requirements:

Reason for Control: NP, AT

Control(s)	Country Chart
NP applies to entire entry	NP Column 2
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: N/A

Items Controlled:

Unit: N/A
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

3E980

"Technology" specially designed for "development", "production", or "use"of items controlled by 3A980 and 3A981.

License Requirements:

Reason for Control: CC, AT

Control(s)	Country Chart
CC applies to entire entry	CC Column 1
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: N/A

Items Controlled:

Unit: N/A
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the

ECCN heading.

3E991

"Technology" for the "development", "production", or "use" of electronic devices or components controlled by 3A991, general purpose electronic equipment controlled by 3A992, or manufacturing and test equipment controlled by 3B991 or 3B992, or materials controlled by 3C992.

License Requirements:

Reason for Control: AT

Control(s)	Country Chart
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: N/A

Items Controlled:

Unit: N/A
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

8A001

Submersible vehicles and surface vessels, as follows (see List of Items Controlled).

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Requirement Notes: See §743.1of the EAR for reporting requirements for exports under License Exceptions.

License Exceptions:

LVS: $5000; N/A for 8A001.b and .d
GBS: N/A
CIV: N/A

Items Controlled:

Unit: Number
Related Controls: For the control status of equipment for submersible vehicles, see: Category 5, Part 2 "Information Security" for encrypted communication equipment; Category 6 for sensors; Categories 7 and 8 for navigation equipment; Category 8A for underwater equipment.
Related Definitions: N/A
Items:
a. Manned, tethered submersible vehicles designed to operate at depths exceeding 1,000 m;
b. Manned, untethered submersible vehicles, having any of the following:
b.1. Designed to operate autonomously and having a lifting capacity of all the following:
b.1.a. 10% or more of their weight in air; and
b.1.b. 15 kN or more;
b.2. Designed to operate at depths exceeding 1,000 m; or
b.3. Having all of the following:
b.3.a. Designed to carry a crew of 4 or more;
b.3.b. Designed to operate autonomously for 10 hours or more;
b.3.c. Having a range of 25 nautical miles or more; and

b.3.d. Having a length of 21 m or less;

Technical Notes:

1. For the purposes of 8A001.b, "operate autonomously" means fully submerged, without snorkel, all systems working and cruising at minimum speed at which the submersible can safely control its depth dynamically by using its depth planes only, with no need for a support vessel or support base on the surface, sea-bed or shore, and containing a propulsion system for submerged or surface use.

2. For the purposes of 8A001.b, "range" means half the maximum distance a submersible vehicle can cover.

c. Unmanned, tethered submersible vehicles designed to operate at depths exceeding 1,000 m, having any of the following:

c.1. Designed for self-propelled manoeuvre using propulsion motors or thrusters controlled by 8A002.a.2; or

c.2. Having a fiber optic data link;

d. Unmanned, untethered submersible vehicles, having any of the following:

d.1. Designed for deciding a course relative to any geographical reference without real-time human assistance;

d.2. Having an acoustic data or command link; or

d.3. Having a fiber optic data or command link exceeding 1,000 m;

HUGIN AUV has acoustic data link and is rated for up to 4500 m (Kongsberg Maritime AS). See webpage,

http://www.km.kongsberg.com/ks/web/nokbg0240.nsf/AllWeb/B3F87A63D8E419E5C1256A68004E946C?OpenDocument

Japanese AUV r2D4 has depth rating of 4000 m. It can navigate relative to geographical references without real-time human intervention. See,

http://underwater.iis.u-tokyo.ac.jp/top/sado/sado-e.html

e. Ocean salvage systems with a lifting capacity exceeding 5 MN for salvaging objects from depths exceeding 250 m and having any of the following:

e.1. Dynamic positioning systems capable of

position keeping within 20 m of a given point provided by the navigation system; or

e.2. Seafloor navigation and navigation integration systems for depths exceeding 1,000 m with positioning accuracies to within 10 m of a predetermined point;

f. Surface-effect vehicles (fully skirted variety) having all of the following characteristics:

f.1. A maximum design speed, fully loaded, exceeding 30 knots in a significant wave height of 1.25 m (Sea State 3) or more;

f.2. A cushion pressure exceeding 3,830 Pa; and

f.3. A light-ship-to-full-load displacement ratio of less than 0.70;

g. Surface-effect vehicles (rigid sidewalls) with a maximum design speed, fully loaded, exceeding 40 knots in a significant wave height of 3.25 m (Sea State 5) or more;

h. Hydrofoil vessels with active systems for automatically controlling foil systems, with a maximum design speed, fully loaded, of 40 knots or more in a significant wave height of 3.25 m (Sea State 5) or more;

i. Small waterplane area vessels having any of the following:

i.1. A full load displacement exceeding 500 tons with a maximum design speed, fully loaded, exceeding 35 knots in a significant wave height of 3.25 m (Sea State 5) or more; or

i.2. A full load displacement exceeding 1,500 tons with a maximum design speed, fully loaded, exceeding 25 knots in a significant wave height of 4 m (Sea State 6) or more.

Technical Note: A small waterplane area vessel is defined by the following formula: waterplane area at an operational design draught less than 2 x (displaced volume at the operational design draught)2/3.

8A002

Systems, equipment and components, as follows (see List of Items Controlled).

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Requirement Notes: See §743.1 of the EAR for reporting requirements for exports under License Exceptions.

License Exceptions:

LVS: $5000; N/A for 8A002.o.3.b
GBS: Yes for 8A002.e.2 and manipulators for civil end-uses (e.g., underwater oil, gas or mining operations) controlled by 8A002.i.2 and having 5 degrees of freedom of movement
CIV: Yes for 8A002.e.2 and manipulators for civil end-uses (e.g., underwater oil, gas or mining operations) controlled by 8A002.i.2 and having 5 degrees of freedom of movement

Items Controlled:

Unit: Systems and equipment in number, components in $ value
Related Controls: See also 8A992 and for underwater communications systems, see Category 5, Part I - Telecommunications. 8A002 does not control closed and semi-closed circuit (rebreathing) apparatus that is controlled under 8A018.a. See also 8A992 for self-contained underwater breathing apparatus that is not controlled by 8A002 or released for control by the 8A002.q Note.
Related Definitions: N/A
Items:
a. Systems, equipment and components, specially designed or modified for submersible vehicles, designed to operate at depths exceeding 1,000 m, as follows:
a.1. Pressure housings or pressure hulls with a maximum inside chamber diameter exceeding 1.5 m;
a.2. Direct current propulsion motors or thrusters;

The AUVs in the earlier section is DC electric motors

a.3. Umbilical cables, and connectors therefor, using optical fiber and having synthetic strength members;

Here's a Swiss company that builds ROV tethers with fiber optics.
http://www.omnisens.ch/ditest/3434-energy-rov.php

a.4. Components manufactured from material specified in ECCN 8C001.

Technical Note: The object of this control should not be defeated by the export of syntactic foam controlled by 8C001 when an intermediate stage of manufacture has been performed and it is not yet in its final component form.

b. Systems specially designed or modified for the automated control of the motion of submersible vehicles controlled by 8A001 using navigation data and having closed loop servo-controls:

b.1. Enabling a vehicle to move within 10 m of a predetermined point in the water column;

This system (Norway) provides position accuracy less than 10 m
http://www.km.kongsberg.com/KS/WEB/NOKBG0240.nsf/AllWeb/CD81027CDE8C21ADC125721800428002?OpenDocument

Another (France) system that uses acoustic transponders for very accurate underwater positioning

http://www.ixsea.com/en/products/002.001.001.009/transponders-beacons.html

b.2. Maintaining the position of the vehicle within 10 m of a predetermined point in the water column; or

This is also known as dynamic positioning. I think it's common. Here's a British ROV vendor whose ROVs have dynamic positioning capability

http://www.smd.co.uk/products/workclass_quantum.php

b.3. Maintaining the position of the vehicle within 10 m while following a cable on or under the seabed;

I know of people that are working on this, but I don't know if it is a commercial product yet. I have enclosed two papers, one with authors from Singapore and Japan, and one with authors from Spain, that address cable tracking.

c. Fiber optic hull penetrators or connectors;

If ROV tethers with fiber optics are available, then the hull penetrators must all be available. I don't have any example, but common sense might hold here.

d. Underwater vision systems, as follows:

d.1. Television systems and television cameras, as follows:

d.1.a. Television systems (comprising camera, monitoring and signal transmission equipment) having a limiting resolution when measured in air of more than 800 lines and specially designed or modified for remote operation with a submersible vehicle;

It seems that HD is up to 800 lines, and I cannot find anything greater than HD. This technology might well be usual.

d.1.b. Underwater television cameras having a limiting resolution when measured in air of more than 1,100 lines;

d.1.c. Low light level television cameras specially designed or modified for underwater use containing all of the following:

d.1.c.1. Image intensifier tubes controlled by 6A002.a.2.a; and

d.1.c.2. More than 150,000 "active pixels" per solid state area array;

Technical Note: Limiting resolution in television is a measure of horizontal resolution usually expressed in terms of the maximum number of lines per picture height discriminated on a test chart, using IEEE Standard 208/1960 or any equivalent standard.

d.2. Systems, specially designed or modified for remote operation with an underwater vehicle, employing techniques to minimize the effects of back scatter, including range-gated illuminators or "laser" systems;
e. Photographic still cameras specially designed or modified for underwater use below 150 m having a film format of 35 mm or larger, and having any of the following:
e.1. Annotation of the film with data provided by a source external to the camera;
e.2. Automatic back focal distance correction; or
e.3. Automatic compensation control specially designed to permit an underwater camera housing to be usable at depths exceeding 1,000 m;

It seems that most folks have gone to digital cameras, so the 35mm film technology does not seem to interfere with any work that I know being done.

f. Electronic imaging systems, specially designed or modified for underwater use, capable of storing digitally more than 50 exposed images;

Here's a Norwegian example

http://www.ashtead-technology.com/us/Offshore/Content/040_S.html

Note: 8A002.f does not control digital cameras specially designed for consumer purposes, other than those employing electronic image multiplication techniques.
g. Light systems, as follows, specially designed or modified for underwater use:
g.1. Stroboscopic light systems capable of a light output energy of more than 300 J per flash and a flash rate of more than 5 flashes per second;
g.2. Argon arc light systems specially designed for use below 1,000 m;
h. "Robots" specially designed for underwater use, controlled by using a dedicated computer,

having any of the following:

h.1. Systems that control the "robot" using information from sensors which measure force or torque applied to an external object, distance to an external object, or tactile sense between the "robot" and an external object; or

h.2. The ability to exert a force of 250 N or more or a torque of 250 Nm or more and using titanium based alloys or "fibrous or filamentary" "composite" materials in their structural members;

I can't find examples of these other than Schilling Robotics which is a US company. However, I believe the are the principal supplier to the commercial ROV community. There's not much more I can say on the topic of "robots".

i. Remotely controlled articulated manipulators specially designed or modified for use with submersible vehicles, having any of the following:

i.1. Systems which control the manipulator using the information from sensors which measure the torque or force applied to an external object, or tactile sense between the manipulator and an external object; or

i.2. Controlled by proportional master-slave techniques or by using a dedicated computer, and having 5 degrees of freedom of movement or more;

Note: Only functions having proportional control using positional feedback or by using a dedicated computer are counted when determining the number of degrees of freedom of movement.

j. Air independent power systems, specially designed for underwater use, as follows:

j.1. Brayton or Rankine cycle engine air independent power systems having any of the following:

j.1.a. Chemical scrubber or absorber systems specially designed to remove carbon dioxide, carbon monoxide and particulates from recirculated engine exhaust;

j.1.b. Systems specially designed to use a monoatomic gas;

j.1.c. Devices or enclosures specially designed for underwater noise reduction in

frequencies below 10 kHz, or special mounting devices for shock mitigation; or

j.1.d. Systems specially designed:

j.1.d.1. To pressurize the products of reaction or for fuel reformation;

j.1.d.2. To store the products of the reaction; and

j.1.d.3. To discharge the products of the reaction against a pressure of 100 kPa or more;

j.2. Diesel cycle engine air independent systems, having all of the following:

j.2.a. Chemical scrubber or absorber systems specially designed to remove carbon dioxide, carbon monoxide and particulates from recirculated engine exhaust;

j.2.b. Systems specially designed to use a monoatomic gas;

j.2.c. Devices or enclosures specially designed for underwater noise reduction in frequencies below 10 kHz or special mounting devices for shock mitigation; and

j.2.d. Specially designed exhaust systems that do not exhaust continuously the products of combustion;

j.3. Fuel cell air independent power systems with an output exceeding 2 kW having any of the following:

j.3.a. Devices or enclosures specially designed for underwater noise reduction in frequencies below 10 kHz or special mounting devices for shock mitigation; or

j.3.b. Systems specially designed:

j.3.b.1. To pressurize the products of reaction or for fuel reformation;

j.3.b.2. To store the products of the reaction; and

j.3.b.3. To discharge the products of the reaction against a pressure of 100 kPa or more;

j.4. Stirling cycle engine air independent power systems, having all of the following:

j.4.a. Devices or enclosures specially designed for underwater noise reduction in frequencies below 10 kHz or special mounting devices for shock mitigation; and

j.4.b. Specially designed exhaust systems

which discharge the products of combustion against a pressure of 100 kPa or more;
k. Skirts, seals and fingers, having any of the following:
k.1. Designed for cushion pressures of 3,830 Pa or more, operating in a significant wave height of 1.25 m (Sea State 3) or more and specially designed for surface effect vehicles (fully skirted variety) controlled by 8A001.f; or
k.2. Designed for cushion pressures of 6,224 Pa or more, operating in a significant wave height of 3.25 m (Sea State 5) or more and specially designed for surface effect vehicles (rigid sidewalls) controlled by 8A001.g;
l. Lift fans rated at more than 400 kW specially designed for surface effect vehicles controlled by 8A001.f or 8A001.g;
m. Fully submerged subcavitating or supercavitating hydrofoils specially designed for vessels controlled by 8A001.h;
n. Active systems specially designed or modified to control automatically the sea-induced motion of vehicles or vessels controlled by 8A001.f, 8A001.g, 8A001.h or 8A001.i;
o. Propellers, power transmission systems, power generation systems and noise reduction systems, as follows:
o.1. Water-screw propeller or power transmission systems, as follows, specially designed for surface effect vehicles (fully skirted or rigid sidewall variety), hydrofoils or small waterplane area vessels controlled by 8A001.f, 8A001.g, .8A001.h or 8A001.i:
o.1.a. Supercavitating, super-ventilated, partially-submerged or surface piercing propellers rated at more than 7.5 MW;
o.1.b. Contrarotating propeller systems rated at more than 15 MW;
o.1.c. Systems employing pre-swirl or post-swirl techniques for smoothing the flow into a propeller;
o.1.d. Light-weight, high capacity (K factor exceeding 300) reduction gearing;
o.1.e. Power transmission shaft systems, incorporating "composite" material components, capable of transmitting more than 1 MW;

o.2. Water-screw propeller, power generation systems or transmission systems designed for use on vessels, as follows:

o.2.a. Controllable-pitch propellers and hub assemblies rated at more than 30 MW;

o.2.b. Internally liquid-cooled electric propulsion engines with a power output exceeding 2.5 MW;

o.2.c. "Superconductive" propulsion engines, or permanent magnet electric propulsion engines, with a power output exceeding 0.1 MW;

o.2.d. Power transmission shaft systems, incorporating "composite" material components, capable of transmitting more than 2 MW;

o.2.e. Ventilated or base-ventilated propeller systems rated at more than 2.5 MW;

o.3. Noise reduction systems designed for use on vessels of 1,000 tons displacement or more, as follows:

o.3.a. Systems that attenuate underwater noise at frequencies below 500 Hz and consist of compound acoustic mounts for the acoustic isolation of diesel engines, diesel generator sets, gas turbines, gas turbine generator sets, propulsion motors or propulsion reduction gears, specially designed for sound or vibration isolation, having an intermediate mass exceeding 30% of the equipment to be mounted;

o.3.b. Active noise reduction or cancellation systems, or magnetic bearings, specially designed for power transmission systems, and incorporating electronic control systems capable of actively reducing equipment vibration by the generation of anti-noise or anti-vibration signals directly to the source;

p. Pumpjet propulsion systems having a power output exceeding 2.5 MW using divergent nozzle and flow conditioning vane techniques to improve propulsive efficiency or reduce propulsion-generated underwater-radiated noise.

q. Self-contained, closed or semi-closed circuit (rebreathing) diving and underwater swimming apparatus.

Note: 8A002.q does not control an individual apparatus for personal use when accompanying its user.

8A018

Items on the Wassenaar Arrangement Munitions List.

License Requirements:

Reason for Control: NS, AT, UN

Control(s)	Country Chart
NS applies to entire entry	NS Column 1
AT applies to entire entry	AT Column 1
UN applies to entire entry	Iraq, North Korea, and Rwanda

License Exceptions:

LVS: $5000, except N/A for Rwanda
GBS: N/A
CIV: N/A

Items Controlled:

Unit: $ value
Related Controls: See also 8A002 and 8A992.
Related Definitions: N/A
Items:

a. Closed and semi-closed circuit (rebreathing) apparatus specially designed for military use, and specially designed components for use in the conversion of open-circuit apparatus to military use;

b. Naval equipment, as follows:

b.1. Diesel engines of 1,500 hp and over with rotary speed of 700 rpm or over specially designed for submarines;

b.2. Electric motors specially designed for submarines, i.e., over 1,000 hp, quick reversing type, liquid cooled, and totally enclosed;

b.3. Nonmagnetic diesel engines, 50 hp and over, specially designed for military purposes. (An engine shall be presumed to be specially designed for military purposes if it has

nonmagnetic parts other than crankcase, block, head, pistons, covers, end plates, valve facings, gaskets, and fuel, lubrication and other supply lines, or its nonmagnetic content exceeds 75 percent of total weight.);

b.4. Submarine and torpedo nets; and

b.5. Components, parts, accessories, and attachments for the above.

8A918

Marine Boilers.

License Requirements:

Reason for Control: RS, AT, UN

Controls	Country Chart
RS applies to entire entry	RS Column 2
AT applies to entire entry	AT Column 1
UN applies to entire entry	Iraq, North Korea, and Rwanda

License Exceptions:

LVS: $5000, except N/A for Rwanda
GBS: N/A
CIV: N/A

Items Controlled:
Unit: $ value
Related Controls: N/A
Related Definitions: N/A
Items:

a. Marine boilers designed to have any of the following characteristics:

a.1. Heat release rate (at maximum rating) equal to or in excess of 190,000 BTU per hour per cubic foot of furnace volume; or

a.2. Ratio of steam generated in pounds per hour (at maximum rating) to the dry weight of the boiler in pounds equal to or in excess of 0.83.

b. Components, parts, accessories, and attachments for the above.

8A992

Vessels, marine systems or equipment, not controlled by 8A001, 8A002 or 8A018, and specially designed parts therefor.

License Requirements:

Reason for Control: AT	
Control(s)	Country Chart
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: $ value
Related Controls: See also 8A002 and 8A018
Related Definitions: N/A
Items:
a. Underwater vision systems, as follows:
a.1. Television systems (comprising camera, lights, monitoring and signal transmission equipment) having a limiting resolution when measured in air of more than 500 lines and specially designed or modified for remote operation with a submersible vehicle; or

These exist overseas. See http://www.kongsbergmaritime.com/web/site/Products/UnderwaterImaging/ColourCameras/OE14_502a.asp

This applies for the item below, too.

Actually, I'm not sure what to make of this list. It includes lifevests! Of course you can get lifevests overseas.

a.2. Underwater television cameras having a limiting resolution when measured in air of more than 700 lines;
Technical Note: Limiting resolution in

television is a measure of horizontal resolution usually expressed in terms of the maximum number of lines per picture height discriminated on a test chart, using IEEE Standard 208/1960 or any equivalent standard.

b. Photographic still cameras specially designed or modified for underwater use, having a film formate of 35 mm or larger, and having autofocussing or remote focussing specially designed for underwater use;
c. Stroboscopic light systems, specially designed or modified for underwater use, capable of a light output energy of more than 300 J per flash;
d. Other underwater camera equipment, n.e.s.;
e. Other submersible systems, n.e.s.,;
f. Vessels, n.e.s., including inflatable boats, and specially designed components therefor, n.e.s.;
g. Marine engines (both inboard and outboard) and submarine engines, n.e.s.; and specially designed parts therefor, n.e.s.;
h. Other self-contained underwater breathing apparatus (scuba gear) and related equipment, n.e.s.;
i. Life jackets, inflation cartridges, compasses, wetsuits, masks, fins, weight belts, and dive computers;
j. Underwater lights and propulsion equipment;
k. Air compressors and filtration systems specially designed for filling air cylinders.

8B001

Water tunnels, having a background noise of less than 100 dB (reference 1 µPa, 1 Hz) in the frequency range from 0 to 500 Hz, designed for measuring acoustic fields generated by a hydro-flow around propulsion system models.

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: $3000
GBS: N/A

CIV: N/A

Items Controlled:

Unit: $ value
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

8C001

Syntactic foam designed for underwater use, having all of the following (see List of Items Controlled).

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions:

LVS: N/A
GBS: N/A
CIV: N/A

Items Controlled:

Unit: $ value
Related Controls: See also 8A002.a.4.
Related Definition: Syntactic foam consists of hollow spheres of plastic or glass embedded in a resin matrix.
Items:
a. Designed for marine depths exceeding 1,000 m; and
b. A density less than 561 kg/m3.

8D001

"Software" specially designed or modified for the "development", "production" or "use" of equipment or materials controlled by 8A (except 8A018 or 8A992), 8B or 8C.

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 1
AT applies to entire entry	AT Column 1

License Requirement Notes: See §743.1 of the EAR for reporting requirements for exports under License Exceptions.

License Exceptions:

CIV: N/A

TSR: Yes, except for exports or reexports to destinations outside of Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom of "software" specially designed for the "development" or "production" of equipment controlled by 8A001.b, 8A001.d, or 8A002.o.3.b.

Items Controlled:

Unit: $ value
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

8D002

Specific "software" specially designed or modified for the "development", "production", repair, overhaul or refurbishing (re-machining) of propellers specially designed for underwater noise reduction.

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 1
AT applies to entire entry	AT Column 1

License Requirement Notes: See §743.1 of the EAR for reporting requirements for exports under License Exceptions**.**

License Exceptions:

CIV: N/A
TSR: Yes

Items Controlled:

Unit: $ value
Related Controls: See also 8D992.
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

8D992

"Software" specially designed or modified for the "development", "production" or "use" of equipment controlled by 8A992.

License Requirements:

Reason for Control: AT

Control(s)	Country Chart
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: N/A

Items Controlled:

Unit: $ value
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

8E001

"Technology" according to the General Technology Note for the "development" or "production" of equipment or materials controlled by 8A (except 8A018 or 8A992), 8B or 8C.

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 1
AT applies to entire entry	AT Column 1

License Requirement Notes: See §743.1 of the EAR for reporting requirements for exports under License Exceptions.

License Exceptions:

CIV: N/A
TSR: Yes, except for exports or reexports to destinations outside of Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom of "technology" for items controlled by 8A001.b, 8A001.d or 8A002.o.3.b.

Items Controlled:

Unit: N/A
Related Controls: N/A
Related Definitions: N/A
Items:

The list of items controlled is contained in the ECCN heading.

8E002

Other "technology", as follows (see List of Items Controlled).

License Requirements:

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 1
AT applies to entire entry	AT Column 1

License Requirement Notes: See §743.1 of the EAR for reporting requirements for exports under License Exceptions.

License Exceptions:

CIV: N/A
TSR: Yes

Items Controlled:

Unit: N/A
Related Controls: See also 8E992
Related Definitions: N/A
Items:
a. "Technology" for the "development", "production", repair, overhaul or refurbishing (re-machining) of propellers specially designed for underwater noise reduction;
b. "Technology" for the overhaul or refurbishing of equipment controlled by 8A001, 8A002.b, 8A002.j, 8A002.o or 8A002.p.

8E992

"Technology" for the "development", "production" or "use" of equipment controlled by 8A992.

License Requirements:

Reason for Control: AT

Control(s)	Country Chart
AT applies to entire entry	AT Column 1

License Exceptions:

CIV: N/A
TSR: N/A

Items Controlled:

Unit: N/A
Related Controls: N/A
Related Definitions: N/A
Items:
The list of items controlled is contained in the ECCN heading.

Attachment B

Cirriculum Vitae of Faculty Participating in the Review

Dr. Peter Athanas
Dr. Steven Ellingson
Dr. Tom Inzana
Dr. Cameron Patterson
Dr. Jeff Reed
Dr. Dan Stilwell

COLUMBIA UNIVERSITY
EXECUTIVE VICE PRESIDENT FOR RESEARCH
535 WEST 116TH STREET, NEW YORK, NY 10027
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	Dr. David Hirsh
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☐ URGENT ☐ FOR REVIEW ☐ PLEASE COMMENT ☐ PLEASE REPLY ☐ PLEASE RECYCLE

NOTES/COMMENTS:

Please find attached a letter from Dr. David Hirsh, Executive Vice President for Research.

COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK
EXECUTIVE VICE PRESIDENT FOR RESEARCH

September 22, 2008

U.S. Department of Commerce
Bureau of Industry and Security, Regulatory Policy Division
14th & Pennsylvania Avenue, NW, Room 2705
Washington, DC 20230

Re: DEAC Report Comments

Columbia University in the City of New York submits this response to the Commerce Department Bureau of Industry and Security's (BIS) request for comment on two recommendations in the Deemed Export Advisory Committee (DEAC) report, "The Deemed Export Rule in the Era of Globalization." In short, we concur with the joint comments submitted by the Association of American Universities (AAU) and the Council on Governmental Relations (COGR) concerning these two recommendations.

First, we agree with both DEAC and the AAU/COGR joint comments that the list of Commerce Control List (CCL) technologies subject to deemed export control is over-inclusive and should be reduced. The DEAC report fittingly recommends a zero-base analysis of technologies to subject to deemed export licensing requirements; AAU and COGR offer a compelling set of principles to guide the BIS and Emerging Technologies and Research Advisory Committee in that review.

Second, we disagree with DEAC's proposal for an "overall assessment of the probable loyalty of the individual of interest, including consideration of the time and character of past and present foreign involvements." We echo AAU/COGR's concerns about privacy and civil liberties. Moreover, while national security should be a central concern of government regulation, the DEAC proposal places the burden of inquiry on the wrong party. We share AAU/COGR's view that universities—including Columbia University—lack the information, expertise, and resources to gather reliable travel and habitation histories in a way that will bolster national security.

We therefore urge the BIS to adopt AAU/COGR's proposals for clear and reasonable criteria for excluding individuals from access to CCL technologies. Such criteria should be consistent with criteria used to grant or deny visas, and applied at the visa application stage. We also support AAU/COGR's proposal for restricting the access of admitted foreign nationals to information relating to covered technologies if there is specific and credible information indicating planned export of the information, or use of the information to commit or support an attack on the United States.

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We greatly appreciate the efforts of the Bureau of Industry and Security to address the university community's concerns.

Sincerely,

David Hirsh, Ph.D.
Executive Vice President for
Research

ICOTT INDUSTRY COALITION ON TECHNOLOGY TRANSFER
1700 K Street, N.W., Washington, D.C. 20006 (202) 282-5994

September 22, 2008

VIA ELECTRONIC MAIL

Bureau of Industry and Security
U.S. Department of Commerce
Fourteenth Street & Pennsylvania Avenue, NW
Washington DC 20230

ATTENTION: DEAC Report Comments

Re: Request for Public Comment on Deemed Export Advisory Committee Recommendations, 73 Fed. Reg. 28795 (May 19, 2008)

Gentlemen/Ladies:

The Industry Coalition on Technology Transfer (ICOTT) appreciates the opportunity to comment on two of the recommendations of the Deemed Export Advisory Committee (DEAC)—namely (1) whether the scope of Commerce Control List technologies subject to the deemed export rule should be narrowed and, if so, which technologies should remain subject to the rule, and (2) whether a more comprehensive set of criteria should be used to assess country affiliation for foreign nationals with respect to deemed exports.

ICOTT is a nonprofit group of major trade associations (names listed below) whose individual member companies export controlled goods and technology from the United States. ICOTT's principal purposes are two—to advise U.S. Government officials of industry concerns about export controls and to inform exporters about the U.S. Government's export control and embargo activities and policies.

Home country determinations

The Notice would tighten the deemed export regulation, which was promulgated in 1994. ICOTT long has objected to the existing regulation as being unduly restrictive and has seen no evidence suggesting that the pre-1994 regulation was inadequate.

We oppose the proposals in the Notice not only for what they are but for what they are a part of. Although narrow in scope, the Notice has broad—indeed, fundamental—implications for our economy and the high technology companies that play a significant role in the health of that economy. Our nation's global leadership in technology is due in significant part to scientists and engineers who were born elsewhere, as well as by the relatively unhindered flow of ideas

into and out of our borders. Conversely, science in totalitarian societies like the Soviet Union has suffered grievously because of their governments' unwillingness to allow scientists and their ideas to flow freely into and out of the country.

Recent developments such as the 1994 revision of the deemed export rule and our post-9/11 visa policy are moving us away from the traditional U.S. model, which actively encouraged the participation of foreign-born scientists and engineers in our R&D infrastructure, and toward the model that proved so disastrous for the former USSR. The proposals contained in the Notice would continue that unfortunate and self-destructive trend. Our current policies already have had an adverse effect on the flow of foreign-born engineers and scientists coming here to work.

These policies also are leading many companies whose research and development activity has been based in the United States to conduct that work offshore, where it is easier to make use of intelligent, capable individuals who do not happen to be "United States persons." For example, in May 2005 Sun Microsystems announced an expansion of its research and development facilities in four foreign locations.[1] Around the same time, Bill Gates complained that Microsoft is unable to hire the engineers it needs because of the visa restrictions.[2] Although changes such as those proposed in the Notice ostensibly seek to ensure that "American" knowledge remains here, the proposals in fact are having the opposite effect because they discourage smart people from coming here to *create* "American" knowledge and encourage businesses to establish their R&D facilities *outside* the United States.

In mid-2005, the National Academies[3] released a report entitled "Policy Implications of International Graduate Students and Postdoctoral Scholars in the United States" ("NA Report"). The 2000 Census, the NA Report notes, found that thirty-eight percent of doctorate-level employees in science and engineering firms ("S&E") were foreign born. NA Report at 1. This compares with twenty-four percent in 1990. NA Report at 1. The report found that "[i]nnovation is crucial to the success of the US economy," that "[t]o maintain excellence in S&E research, which fuels technologic innovation, the United States must be able to recruit talented people," and that "[a] substantial proportion of those people . . . come from other countries." NA Report at 4. Further, the report points out, international competition to attract smart young S&E students and graduates is increasing sharply, NA Report at 7, though once foreigners decide to come here, most prefer to stay here after completing their training, NA Report at 95. Finally, the NA Report states that the deemed export situation in the United States "is causing immense frustration" among foreign students and workers. NA Report at 77.

It's interesting to note that from a policy standpoint, the trend of which the Notice is a part is completely at variance with what Congress sought to do in the Exon-Florio Act (1988)—

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[1] *See* "Sun Microsystems to Expand Overseas," N.Y. Times, May 7, 2005, at B4:1 (reporting Sun Microsystems' decision to expand its research and development facilities in Bangalore, Beijing, St. Petersburg, and Prague).

[2] D. Vise, "Gates Cites Hiring Woes, Criticizes Visa Restrictions," Wash. Post, Apr. 28, 2005, at E5.

[3] The National Academies comprise the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the National Research Council.

namely keep high technology R&D here in the United States. The message today seems to be "Conduct your R&D offshore. Stop 'draining the brains' of other countries, even though many of their best and brightest want to come here, because some small percentage of them might be technology spies or eventually might decide to return to their native lands."

Doubtless some who come here will acquire technological know-how and then take it back home. We believe, however, that such individuals are far fewer in number than those who come because they want to live in our open, democratic, and economically robust society—not only while they are students but also as they proceed on into their professional careers and the raising of their children. By tightening our visa policies and by considering export control policies such as those espoused in the Notice, we are discouraging *all* such individuals from coming here and thus are throwing the baby out with the bath water.[4] Indeed, such policies probably deter the few with improper intentions *less* than they deter the many whose intentions are honorable. And an obvious consequence of our loss is the *gain* of other nations—many of them economic or military competitors of the United States—who are reaping the benefit of having foreign-born scientists studying at their universities and working in their high technology industries.

The Notice would judge the need for a deemed export license, as well as whether the license would be granted, based upon the individual foreign person's country of birth and any other countries with which the individual has had a connection. This is even broader than the Inspector General suggestion that met such broad resistance three years ago. Currently the criterion is the most recent country of citizenship or permanent residence.

The proposal would be next to impossible to enforce, particularly against the dishonest. It is fairly easy to tell from an individual's passport and other documents where he currently has residence or citizenship but it is quite a different matter to ascertain where he was born. Moreover, it is unclear what good it would do the United States government to know that a person was born in a "questionable" country, as it is unlikely that such countries will permit United States agents to poke around asking questions about émigrés.

Further, the disruption caused to current and future research and development work would far outweigh any benefit in terms of national security. Each company would have to ascertain (as well as it could) the country of birth of each of the sometimes thousands of employees who are not United States citizens or permanent residents. Companies with offshore facilities would have to conduct the same exercise for every employee who is not a citizen of the host country. In some countries, even requesting such information is prohibited. The Notice does not offer any advice on how companies should deal with that type of situation. The disruption that will be occasioned by this hunt for information and the consequent effort to

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[4] Interestingly, Congress appears to have awakened to the short-sightedness of these policies more quickly than the Executive branch. For example, the H-1B Visa Reform Act of 2004, signed in December 2004, added 20,000 H-1B visas annually for those holding advanced academic degrees. *See* Allocation of Additional H-1B Visas Created by the H-1B Visa Reform Act of 2004, 70 Fed. Reg. 23775 (May 5, 2005). Nevertheless, each year's allocation of these visas continues to be consumed almost immediately.

prepare and submit rafts of deemed export license applications—each of which can take months for the government to process and can be rendered nearly useless by limiting conditions and provisos—will not be outweighed by benefits to our national security.

In addition, many countries who send significant numbers of technically skilled students and workers to the United States have fair employment and similar laws that prohibit their employers from requesting the type of information the proposal would require. Among these are Australia and Canada, which suggests that adoption of the proposal would engender struggles with a number of countries—among them some of our closest allies—mirroring the years-long struggle between the State Department and the Canadian government over State's similar approach.

When this issue was considered in 2005, Assistant Secretary Peter Lichtenbaum hinted that the government might make the criterion the most export-restricted country of which an individual is a *citizen*. Although he stated during the May 6, 2005 discussion at the National Academies that neither the IG Report nor the 2005 notice sought to impose new restrictions on green card holders or naturalized United States citizens, it is well known that there are influential individuals and agencies within the government who do wish to impose such tests. Indeed, we were advised at the time that Mr. Lichtenbaum and other interested parties negotiated with the Inspector General's staff until late on the night of May 5, 2005 to secure clearance for Mr. Lichtenbaum to back off from the IG Report's threat to extend the deemed export rule to green card holders. Moreover, even putting aside what *our* government might do in this regard, other allied governments doubtless would reciprocate and hence *would* ask similar questions of United States green card holders who seek employment within their borders.

Whether the criterion were to be country of nativity, as suggested in the Notice, or country/ies of citizenship, as suggested by Mr. Lichtenbaum in 2005, the entire issue rests upon the false premise that most, or even a substantial number, of those who come here to study or work in technical fields intend to return to their home countries bearing the knowledge they have acquired here. We anticipate that the comments of individual companies and universities will present statistics that demonstrate otherwise. The vast majority of students who come here from abroad to study for advanced degrees remain in the United States after graduation, at least for their first jobs.

Before 1994, the applicable rule was that a license was required only when the initial transmitter of controlled data had "the knowledge or intent that the data will be transmitted [by the recipient or a later recipient] from the United States to a foreign country."[5] Neither in 1994, when the current deemed export rule was promulgated, nor subsequently has the government offered any evidence that the old rule did not work. Moreover, the First Amendment requires that even where the government's objectives are legitimate, restrictions on speech must be narrowly tailored to achieve those objectives.[6] The government's failure to make a case for the

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[5] 15 C.F.R. § 779.1(b)(1) (1993).

[6] *Arkansas Writers' Project, Inc. v. Ragland*, 481 U.S. 221, 231 (1987); *see Central Hudson Gas & Elec. Co. v. PSC*, 447 U.S. 557, 565, 569-71 (1980) (imposing similar requirement where commercial speech is concerned).

broader rule imposed in 1994, let alone the still broader rule proposed in the Notice, raises serious questions about whether the Notice or the 1994 rule can pass constitutional muster.

We recommend that the change in home country determination proposed by the Notice not be adopted and that the rule be restored to its pre-1994 state.

Possible reduction of software and technology categories subject to the deemed export rule

The Notice also asks whether the rule should apply to fewer than all the technologies on the Commerce Control List ("CCL"). Despite numerous disappointments flowing from prior reviews of the CCL, ICOTT believes that this is a goal worth pursuing.

We recommend that the scope of the rule be narrowed so that it extends only to the most critical technologies covered by the CCL—namely, those appearing on the Wassenaar "very sensitive" list and similarly narrow subsets of the items controlled for nuclear, missile, chemical/biological, and other reasons.

* * *

A further issue—one that relates to the entire deemed export program, not just the proposals set out in the Notice—is whether there is credible evidence that deemed export licensing does *anything* to protect our technology. How many spies will provide accurate information—as opposed to a carefully composed and documented cover story—to a United States employer or the Department of Commerce? Only a handful of the 1056 deemed export license applications processed in Fiscal Year 2007 were turned down. In all probability, most if not all of those rejections were due to lack of information or poor presentation of information, rather than affirmative conclusions by the government that the individuals involved are security risks.

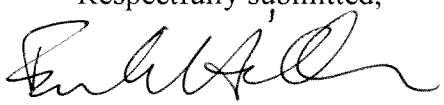
One additional, important point can be made in a Jeopardy-type format: What is the question to which the answer is "Zbigniew Brzezinski, Henry Kissinger, Madeleine Albright, John Shalikashvili, Albert Einstein, Niels Bohr, Enrico Fermi, Edward Teller, Werner von Braun, and many other scientists who spearheaded the Manhattan Project and our space program"? The question, of course, is "Name a few of the prominent Americans who've helped make our country strong and successful, and had considerable access to controlled technology in the process, despite having been born abroad?"[7] To be sure, some of these people were naturalized before they gained such access, but some were not. Werner von Braun, for example, did not become a citizen until five years *after* he began directing the technical development of

[7] Drs. Brzezinski and Kissinger are former Assistants to the President for National Security Affairs. Dr. Kissinger and Ms. Albright served as Secretaries of State. Gen. Shalikashvili was Chairman of the Joint Chiefs of Staff. Drs. Einstein, Bohr, Fermi, and Teller were leading physicists and were intimately involved in this country's nuclear weapons programs; all but Teller were Nobel laureates in Physics. Dr. von Braun was one of the leading scientists in our missile and space programs in the decades following World War II; he previously had been a prominent scientist in Nazi Germany's missile program.

the Army's ballistic missile program in 1950.[8] The important point for our purposes, though, is whether they would have come here in the first place if we had the kind of society that the proponents of the Notice seek—deliberately or otherwise—to create.

Again, we appreciate the opportunity to comment on the Notice. ICOTT and its members would be happy to meet with appropriate Administration officials to discuss this matter further.

Respectfully submitted,



Eric L. Hirschhorn
Executive Secretary

[8] NASA web site (http://liftoff.msfc.nasa.gov/academy/history/VonBraun/VonBraun.html) (last visited May 5, 2005).

From: "Thomas, Gina (NIH/OD) [E]" <gthomas@od.nih.gov>
To: <rpd2@bis.doc.gov>
Date: Mon, Sep 22, 2008 4:24 PM
Subject: DEAC Report comments

Attention: Steven Emme

On behalf of Dr. Michael Gottesman, Deputy Director of the Office of Intramural Research, and Dr. Norka Ruiz Bravo, Deputy Director of the Office of Extramural Research, National Institutes of Health (NIH), attached please find NIH's comments (in PDF format) to the DEAC comments on the Deemed Export Advisory Committee Recommendations as published at 73 Fed. Reg. 49645 (Aug. 22, 2008).

Should you have any difficulty viewing the attached document, please do not hesitate to contact me at gthomas@mail.nih.gov and/or 301-435-5377. Thank you for the opportunity to submit comments.

Sincerely,

Gina Thomas
Technology Transfer Policy Assistant
Office of Technology Transfer
6011 Executive Blvd; Suite 325
Rockville, MD 20852
Dir-301-435-5377
Fax-301-480-4576
gthomas@mail.nih.gov
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CC: "Hammersla, Ann (NIH/OD) [E]" <hammerslaa@mail.nih.gov>

DEPARTMENT OF HEALTH & HUMAN SERVICES Public Health Service

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Office of Technology Transfer
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September 22, 2008

Steven Emme
U.S. Department of Commerce
Bureau of Industry and Security, Regulatory Policy Division
14th and Pennsylvania Avenue, N.W. Room 2705
Washington, DC 20230
Attention: DEAC Report Comments

Subject: NIH's Comments on DEAC Report Recommendations (Federal Register Vol. 73, No. 97 and Federal Register Vol. 73, No. 164 Request for Comments)

Dear Mr. Emme:

The National Institutes of Health (NIH), a part of the U.S. Department of Health and Human Services, is the primary Federal agency for conducting and supporting medical research. NIH is the steward of medical and behavioral research for the Nation. Its mission is science in pursuit of fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to extend healthy life and reduce the burdens of illness and disability. This mission is advanced by NIH's lead in funding and supporting both an extensive intramural research program that has approximately 3,500 foreign national scientists and its 45,000 extramural and international scientists from around the globe toward developing important medical discoveries that prevent disease or relate to the causes, treatments and cures for common and rare diseases.

The Bureau of Industry and Security (BIS) Department of Commerce, has requested comments about the following two recommendations made by the Deemed Export Advisory Committee (DEAC) in its final December 20, 2007 report to The Secretary of Commerce entitled "*The Deemed Export Rule in the Era of Globalization.*"

NIH recognizes the mission of BIS is to advance the U.S. national security, foreign policy, and economic objectives by ensuring an effective export control and treaty compliance system and promoting continued U.S. strategic technology leadership. NIH appreciates the Department of Commerce's efforts to further streamline and improve the export control process. As such, the comments herein are offered in support of these efforts.

DEAC Recommendation 1. ***Narrowing the Scope of Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements and Conducting an Outside Review of Technologies.***

NIH supports a zero-based review of all the technologies currently identified on the Commerce Control List (CCL). NIH further recommends that this review and audit be conducted by the proposed Emerging Technologies and Research Advisory Committee (ETRAC) on a frequent on-going basis. The purpose of the zero-based review would be both to: (1) identify emerging technologies that should be added or should remain on the CCL because they form a direct threat to

and affect national security; and, (2) remove technologies from the CCL that no longer directly affect and threaten national security and are readily available outside of the U.S. In support of this, ETRAC should be sufficiently funded to effectively and efficiently conduct or have conducted this important review and any on-going reviews by representatives from research universities, government research laboratories, and industry.

The CCL was first developed as a result of the Export Administration Act of 1979. Today, "There is no longer a single country (or even a small group of countries) leading the world in a preponderance of the fields of science and technology (S&T)."[1] Many of the technologies that are currently identified on the CCL requiring controls and licenses are now often freely and openly available around the world. Whereas control of certain CCL technologies was important for national security even five years ago, today world-wide access and use of these same CCL-identified technologies should no longer require control or licenses for use. In many cases, the resultant U.S. export control licensing processes only harm scientists and researchers in the U.S. as their international collaborators can obtain the same technologies with no control or licensing procedures from their own countries. Maintaining and erecting new restrictions on large segments of science and engineering technologies and know-how that are known and accessible through-out the world harms the U.S. competitiveness. Only those technologies that both directly threaten the U.S. national security and are not easily available outside of the U.S. and cannot be controlled through the classification system should be controlled and require export control licensing. A zero-based review of all technologies currently listed on the CCL by trained representatives from the research and science disciplines affected by the CCL and by those with security experience should be conducted to identify only those technologies that could harm the U.S. and would be consistent with the availability of technologies world-wide.

Any review of licensed-control technologies for export purposes should be coordinated consistent with the regulations governing other federal agencies such as the U.S. Department of Health and Human Services (42. C.F.R. Parts 72, 73 and 1003) and the U.S. Department of Agriculture (7 C.F.R. Part 5 331; 9 C.F.R. Part 121). NIH and these other federal agencies have published final rules regarding possession, use, and transfer of select agents and toxins in response to the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Public Law 107-188). These rules require that any individual with access to select biological agents and toxins as well as the Responsible Official and Alternate Responsible Official be approved through a security risk assessment conducted by the Attorney General. When reviewing the CCL, any differences in the listing of controlled agents on the CCL and the Department of Health and Human Services and the Department of Agriculture should be coordinated with the applicable agencies.

2. DEAC Recommendation 2: *Comprehensive Assessment of Foreign National Affiliation*

The National Security Decision Directive 189 (NSDD-189) establishes the national policy for controlling the flow of science, technology, and engineering information produced in federally-funded fundamental research at colleges, universities, and federal laboratories. Any impact on restricting a foreign nationals' ability to engage in unclassified fundamental research at NIH and any restriction of the foreign nationals engaged in fundamental research by its grantees could have a devastating impact to the U.S. competitiveness, national security, economic growth and our Nation's preeminence in science and biomedical research.

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[1] "The Deemed Export Rule in the Era of Globalization", p. 51.

The Visa Mantis security review is a comprehensive system involving the participation of multiple U.S. government agencies to identify students and scholars that may be affiliated or associated with terrorist groups that could threaten the U.S.'s security or who may pose a threat to the U.S.'s national security by illegally transferring sensitive technology. Once the Visa Mantis process has cleared an individual to be admitted to the U.S., it needs to be seriously considered as to whether any additional background review beyond current citizenship would be duplicative, costly, and add significant time delays in conducting time-sensitive research and technology development that is important to the U.S.. The Visa Mantis security review is exhaustive and comprehensive and any additional criteria for review for access to CCL technologies by a foreign national should only be based on credible and specific information that a specific individual will export controlled technology for the purpose of doing harm to the U.S.

Thank you for the opportunity to comment on these two important export control issues and the future actions of BIS.

Sincerely,

Michael Gottesman, M.D.
Deputy Director, Intramural Research

Sincerely,

Norka Ruiz Bravo, Ph.D.
Deputy Director, Extramural Research

From: "Carol Rhodes" <carhodes@u.washington.edu>
To: "rpd2@bis.doc.gov." <rpd2@bis.doc.gov>
Date: Mon, Sep 22, 2008 5:57 PM
Subject: DEAC Report Comments

Generator Microsoft Word 11 (filtered medium) Attached is the University of Washington' s letter in response to the Deemed Export Advisory Committee recommendations to BIS. Thank you for the opportunity to comment.

Sincerely,

Carol

Carol Rhodes
Interim Associate Director
Export Control Specialist
Office of Sponsored Programs University of Washington (206) 543-2139

OSP's new address is: 4333 Brooklyn Avenue NE, Box 359472, Seattle, WA 98195-9472

UNIVERSITY OF WASHINGTON

Office of Research
Office of Sponsored Programs

Steven Emme
U.S. Department of Commerce
Bureau of Industry and Security
Regulatory Policy Division
14th & Pennsylvania Avenue, NW, Room 2705
Washington, DC 20230

Attn: DEAC Report Comments

Dear Steven Emme,

At the University of Washington, our community is committed to compliance with the export control regulations as well as assisting with ensuring the regulations support national security goals in the most effective and efficient manner.

In the rare cases that the fundamental research exclusion or other exclusions do not apply to technologies present during research, the University has a comprehensive export control compliance program in place. The framework of this program ensures that all necessary steps are taken to prevent a deemed export of controlled technology to a foreign national in violation of the export control regulations, including the Export Administration Regulations (EAR). The University has committed resources to this program and is continually seeking to educate faculty, students, and staff on export controls.

In order to apply the University's resources towards the important purpose of the EAR in the most effective manner, the University of Washington supports the Deemed Export Advisory Committee (DEAC) recommendation that the technologies controlled by the Commerce Control List (CCL) be streamlined. Specifically, the CCL should control technologies:

a) that are closer to application than theory;
b) in which there is science AND intelligence that the technology could and would be used in the development, production or use of weapons; and
c) that are unavailable elsewhere in the global community.

Finally, the risk of potential military/terrorist application must be weighed with the benefit of open dissemination/sharing of technologies. In some cases, the most secure measure to be taken is allowing certain technologies to be shared openly in order to achieve scientific results to curb any known or suspected threat.

The University of Washington agrees that the most harmful technologies should be controlled and the CCL requires a sustained and regular review by informed, knowledgeable experts in the field of technology that is proposed to be controlled. Indeed, the types of technologies analyzed under the zero-based review should not be decided by the same experts for all categories of

UNIVERSITY OF WASHINGTON

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technologies as the scope is wide. The Emerging Technology and Research Advisory Committee (ETRAC) should have broad membership for this reason, including members of the academic community.

The second recommendation by the DEAC is not supported by the University of Washington. UW, along with other U.S. universities, relies on the visa process to review foreign nationals' intent on attending a U.S. university. If any monitoring based on the DEAC criteria is to be done, it is more appropriate to do it before presence in the United States is allowed for a fixed duration. Even at that stage, assessing "loyalty" is too vague and subjective a term to be meaningful. Moreover, tracing an individual's place of residence, from birthplace to current country of citizenship is a difficult task that would require resources above and beyond UW's and most universities' ability. Any determination of a person's likelihood to export dangerous technologies based on this range of information would not be objective or formulaic. Even if UW could gather the necessary information as part of a deemed export license application, it would be difficult for BIS to know which time frame of a person's residence history would prove to be most revealing of a person's intent to commit a security threat.

Finally, UW would find that engaging in such detailed background research of foreign-born students would violate the principle of nondiscrimination and create an environment of "us" and "them" on campus. In fact, UW's strength and that of many other U.S. universities is the collaborative, open environment in which our faculty and students work. The United States benefits from this strength of U.S. universities, creating a strong, capable community of academia within our borders.

The University of Washington encourages the review of the Export Administration Regulations as they pertain to deemed exports. UW believes that the DEAC serves an important role in making the EAR more effective and supports the zero-based review of technologies that rightly belong on the CCL. However, UW does not see the value in changing the foreign national determination criteria or requiring extensive background information-gathering of foreign nationals in support of a deemed export control license application.

We appreciate the opportunity to comment on the DEAC recommendations.

Sincerely,

Carol Rhodes
Export Control Specialist
University of Washington

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From: "Patrick Schlesinger" <Patrick.Schlesinger@ucop.edu>
To: <rpd2@bis.doc.gov>
Date: Mon, Sep 22, 2008 7:02 PM
Subject: DEAC Report Comments

Please find attached the comments of the University of California in Docket No. 080416579-81111-02.

Patrick Schlesinger

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September 22, 2008

Steven Emme
U.S. Department of Commerce
Bureau of Industry and Security
Regulatory Policy Division
14th & Pennsylvania Ave., NW, Rm. 2705
Washington, D.C. 20230
ATTN: DEAC Report Comments

Comments on DEAC Report Recommendations (Docket No. 080416579-81111-02)

The University of California appreciates the opportunity to respond to the August 22, 2008 Federal Register notice reopening the comment period on recommendations made by the Deemed Export Advisory Committee (DEAC) in its report, "The Deemed Export Rule in the Era of Globalization." The Department of Commerce Bureau of Industry and Security (BIS) requested comments on two specific recommendations. The first issue concerned the scope of technologies on the Commerce Control List and whether the CCL should be narrowed. The second issue related to the question of whether BIS should use a more comprehensive set of criteria to assess country affiliation for foreign nationals with respect to deemed exports. In addition to the comments provided below, the University supports and incorporates by reference the August 15, 2008 comments submitted by the Association of American Universities and the Council on Governmental Relations.

Narrowing the Scope of Technologies on the Commerce Control List

The University performs its on-campus research as fundamental research, which means that it is ordinarily published and shared broadly within the scientific community. Therefore, under sections 734.3 and 734.8 of the Export Administration Regulations (EAR), such research is excluded from the deemed export rule. However, in those rare instances in which a research project involves export controlled information provided by an outside third-party under a confidentiality or non-disclosure agreement, the University must be extremely diligent about appropriately and securely managing such information. This is true even where such information is not protected in other countries.

The University agrees with the DEAC's recommendation that the CCL be carefully reviewed to ensure that it does not continue to erect "high walls" around large segments of the nation's science and engineering knowledge base. We believe that the DEAC was correct in finding such walls are not only increasingly impracticable but are likely to prove counterproductive.

The DEAC observed that, in the present environment, "most scientific and technologic knowledge and items will not be denied to enemies even by a perfect United States control regime: they will simply be obtained by others."

The University of California joined many of its sister institutions in academia in nominating individuals to serve on the BIS Emerging Technologies and Research Advisory Committee (ETRAC.) We support this BIS initiative and believe that the ETRAC should provide an effective way to produce a CCL that truly contains those items of significant military or "dual-use" (civilian and military) value.

In addition, the University continues to support the concept of building expiration periods or "sunset provision" into the CCL. Given the rapid pace of technological innovation, especially in fields such as electronics, many of the technologies that were sensitive at the time of listing are being incorporated into everyday consumer products. We believe that a distinction should be made, for example, between items in Category 1 (including certain chemicals, biological agents, and toxins) and those in Category 3 (electronics). Category 1 items might well be listed for an indefinite period while certain items in Category 3 would only be listed for a defined period. Without a showing that a particular technology or item should remain on the CCL, the item would be removed by operation of the deadline.

The University encourages ETRAC and BIS to consider these comments and the principles listed in the AAU/COGR comments as it reviews the technologies on the CCL.

Comprehensive Assessment of Foreign National Affiliation

The University joins AAU and COGR in raising deep concerns with the DEAC's recommendation that colleges and universities perform individual loyalty assessments in determining whether an export license is required. We agree that universities do not have the information, expertise or resources to conduct security, background or loyalty checks on foreign national students and employees. We also believe that the visa screening process should be the primary method of providing information to the federal government on national security threats posed by individuals seeking to enter the U.S.

On a related note, the University would also observe that the assessment of individual loyalty in the Implementing Construct in the DEAC appears to be at odds with some of the basic principles that exist in the current regulatory scheme. Step I of the Implementing Construct requires an overall assessment of the probably loyalty of an individual interest before determining the nature of the research. Under the DEAC's construct, the question of whether an activity is going to be conducted as fundamental research is not even raised until Step V. Should BIS be inclined to pursue a regulatory program along the lines of the Implementing Construct, the University would urge BIS to pose the question of whether something is fundamental research, which necessarily involves publicly available information, as the very first step in the construct. Such an approach would be consistent with the EAR, in which one first asks whether an item is subject to the EAR before performing the additional steps of classification, licensing, and license exception analysis.

The University of California appreciates the opportunity to comment on these issues and looks forward to the work of BIS and the ETRAC in reforming the current use of the CCL under the deemed export rule.

Sincerely,

Steven V.W. Beckwith
Vice President
Office of Research and Graduate Studies

cc: Interim Provost & EVP Grey
Executive Director Auriti
Director Schlesinger

From: Kathleen Gebeau <kgebeau@qualcomm.com>
To: <rpd2@bis.doc.gov>
Date: Tue, Sep 23, 2008 1:05 AM
Subject: DEAC Report Comments

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QUALCOMM employees should visit the Export Compliance website: http://qualnet.qualcomm.com/departments/export/
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Qualcomm Incorporated

5775 Morehouse Drive
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September 22, 2008

U.S. Department of Commerce
Bureau of Industry and Security
Regulatory Policy Division
Attn: Steven Emme
14th Street and Pennsylvania Avenue, NW.
Room 2705
Washington, D.C. 20230

Re: DEAC Report comments

Dear Sir/Madam:

Qualcomm Incorporated (Qualcomm) welcomes the opportunity to comment on recommendations made by the Deemed Export Advisory Committee (DEAC) with respect to BIS's deemed export licensing policy, in response to BIS's Notice of Inquiry, "Request for Public Comments on Deemed Export Advisory Committee Recommendations: Narrowing the Scope of Technologies on the Commerce Control List Subject to Deemed Export Licensing Requirements and Implementing a More Comprehensive Set of Criteria for Assessing Probable Country Affiliation for Foreign Nationals" (73 Fed. Reg. 39052 (May 19, 2008)).

Qualcomm is a leader in developing and delivering innovative digital wireless communications products and services worldwide based on Qualcomm's CDMA digital technology. Qualcomm has licensed its essential CDMA patent portfolio to more than 100 telecommunications equipment manufacturers worldwide. Headquartered in San Diego, California, Qualcomm is included in the S&P 500 Index and is a FORTUNE 500® company traded on The Nasdaq Stock Market® under the ticker symbol QCOM.

Qualcomm is in favor of narrowing the scope of technologies on the Commerce Control List (CCL) subject to deemed export licensing requirements, but believes that the proposed changes to assessing probable country of affiliation for foreign nationals would be infeasible, ineffective and more difficult to enforce.

Qualcomm has historically received a high proportion of BIS deemed export licenses issued to foreign nationals in the United States (U.S.), and has extensive experience with the present system, which has imposed significant compliance burdens on our company since the introduction of the deemed export rule in 1994. Because the contributions of foreign nationals to U.S. industry and the academic community are immense, the ability to hire and employ foreign nationals effectively and efficiently to work in the high-technology sector is crucial to U.S. competitiveness. Qualcomm relies on its ability to attract, hire, contract and collaborate with foreign nationals as well as U.S. Persons in order to improve existing and create new technologies and products and thus to compete effectively in today's global environment. U.S. companies are faced with a serious shortfall of qualified technical experts in technology industries, and it is becoming increasingly more difficult to attract and hire not only qualified U.S. Persons but also foreign nationals. Unilateral U.S. government policies such as deemed export controls place U.S. companies at a disadvantage when competing globally for the best qualified workforce. While the U.S. is a favored destination for individuals seeking academic and professional career opportunities, other countries are increasing their success in attracting the same talent supply. In this competitive environment, U.S. government policies placing barriers to the hiring, deployment and utilization of foreign nationals should be narrowly crafted to clearly and effectively address specific policy objectives without excessively and inappropriately burdening industry.

1. Narrowing the Scope of Technologies on the CCL Subject to Deemed Export Licensing Requirements

Qualcomm agrees with the DEAC's recommendation to narrow the scope of technologies on the CCL subject to deemed export licensing requirements, and supports the recommended "zero-based" review. Qualcomm believes the primary focus of such a review is the elimination of deemed export requirements on technology that is available in multilateral partner countries, since they do not control deemed exports. Current deemed export licensing requirements are ineffective at protecting national security when the controlled technology has been on the market for a long period of time, or there is high foreign availability of similar technology not controlled for deemed exports.

1.1. The CCL should not include proprietary technology that does not significantly threaten U.S. national security

Imposing controls on certain proprietary technologies such as spread spectrum communications does not restrict access to fundamental technologies, but rather only on unique deployments and efficient manufacturing of such technologies, which is of little risk to national security. Much of Qualcomm's key spread spectrum communications technologies are patented and thus published. In addition, other fundamental spread spectrum technologies are published in standards such as IEEE (Institute of Electrical and Electronics Engineers) and TIA (Telecommunications Industry Association). Qualcomm and other companies also publish significant papers at conferences, in technical journals, and elsewhere where there are no contractual restrictions on the ability to do so. One of the reasons the U.S. and other industrialized countries have and maintain technological lead time as compared with countries that have tighter controls on information is that we impose few controls on sharing such information, which helps everyone make new technological breakthroughs. To the extent that fundamental controlled technologies for spread spectrum communications have been published, we should not attempt to impose ineffective controls on related proprietary technologies involved in the implementation and deployment of these fundamental technologies because foreign nationals can already access what they truly need. Most new hires which require deemed export licenses have graduated from engineering programs that have already given them the fundamental knowledge they need to further develop at Qualcomm. In those cases, restrictions on proprietary technologies impose administrative burdens on U.S. companies, which need to apply for, obtain and manage licenses, and on the government agencies which review them, but do not in fact protect national security. Qualcomm has effectively obtained deemed export licenses on an individual basis for certain telecommunications technologies, but the burden of making the explanation as to why foreign national employees should be allowed access to such technology in license application after license application continues to be disproportionate to the benefit.

1.2. The CCL should not include proprietary technology that has been on the market for a long period of time or there is high foreign availability

Telecommunications technology has been on the market for a long period of time and is highly available in other countries. The deemed export controls do nothing to prevent a foreign national employed by a foreign firm from acquiring fundamentally the same technology. The controls only serve to place U.S. companies at a disadvantage when looking to recruit top talent. Foreign companies dealing with the same technology do not need to condition a job offer on obtaining an export license or have to deal with the delays and obstacles associated with deemed export controls, even though they may be working with fundamentally the same technology. Narrowing the scope of technologies on the CCL subject to deemed export licensing requirements to concentrate on those which have the greatest national security concerns would increase the value of deemed export controls.

Unilateral deemed export licensing requirements for technologies similar to technology that is not controlled by foreign multilateral partners creates a burden on industry and BIS to license foreign

nationals without enhancing national security. Other Wassenaar Arrangement members impose few controls on items on the "basic list", but impose greater controls on items on a subset of the basic list called the "sensitive list," and impose the strictest controls on a further subset of the latter called the "very sensitive list." A good start at a zero based review would be to impose deemed export licensing requirements only on those items on the "very sensitive list", reflected in the *"Additional Restrictions On Use Of License Exception GOV"* in Supplement No. 1 to EAR 740.11.

2. Comprehensive Assessment of Foreign National Affiliation

Qualcomm disagrees with the recommendation to expand the assessment of foreign national affiliation to include country of birth, prior countries of residence, current citizenship, and character of individuals' prior and present activities. Expanding the definition of nationality would:

- Expose U.S. companies to potential liability under conflicting foreign privacy, data protection, and discrimination laws;
- Create a more subjective definition of nationality which would overburden industry and lessen the effectiveness and enforceability of the deemed export rule;
- Place responsibility on industry to screen foreign workers when it should be placed on an appropriate government agency; and,
- Impose a burden on domestic industry to understand and make a subjective assessment of the propriety of immigration decisions by foreign governments.

This issue was thoroughly addressed in the greatest volume of public comments ever submitted to BIS on any subject when BIS asked for comments on whether to expand the definition of nationality to include country of birth on June 27, 2005 (http://efoia.bis.doc.gov/pubcomm/revision-to-the-deemed-export-regs-2005/final-document.pdf). There is no need to reopen this question of the scope of nationals who should be subject to deemed export licensing requirements. Qualcomm suggests that country loyalty be considered in the U.S. government's licensing decisions rather than considering it a factor for industry in determining which foreign nationals should be subjected to deemed export licensing requirements.

2.1. Companies exposed to potential liability under conflicting foreign laws

Industry is faced with many barriers including privacy, data protection and discrimination laws, which may have a significant impact on the implementation of the recommendations. Requiring sensitive personal data of prospective job candidates needed for such a comprehensive nationality review puts U.S. companies in an untenable position even though they are exempt in the United States from the normal prohibition against asking for such information under U.S. anti-discrimination laws, such as Title VII of the Civil Rights Act of 1964 (Title VII) prohibiting employment discrimination based on race, color, religion, sex, or national origin. U.S. companies still have to explain this exemption to foreign nationals in the United States, as the questions are extremely sensitive. Explaining that national origin discrimination in this context is lawful does not make the questions any less intrusive or sensitive.

Moreover, the recommendation has failed to analyze international citizenship and nationality laws. For example, under international law, place of birth does not necessarily identify an individual's nationality. Qualcomm also has extensive operations in the European Union (EU). EU privacy and employment laws prohibit companies from asking its employees or prospective employees questions such as their place of birth to determine employment eligibility to comply with extraterritorial provisions of U.S. export laws, thus exposing industry to significant risk of administrative and civil liability under EU laws. Other countries do not have any exemption from their antidiscrimination laws for compliance with unilateral U.S. deemed export rules.

2.2. A more subjective definition of nationality would overburden industry and BIS while lessening the effectiveness and enforceability of the deemed export rule

Objective criteria to determine a foreign national's nationality, such as the current BIS policy of using the most recently established citizenship or permanent residency, permits industry to determine when an export license is required. The DEAC's recommendation seems to envision that industry employ a subjective, multi-factor balancing test, which would make it unclear when a license is required and when it is not, adding additional complexity to an already complex export licensing regime.

Qualcomm acknowledges DEAC's concern that the current BIS policy may not provide the government with the opportunity in all cases to address the potential for conflicting national loyalties for foreign nationals who have multiple nationalities, since the more recently acquired citizenship or nationality can "trump" the prior nationality and eliminate license requirements that would otherwise apply.

However, the suggested solution goes too far in the opposite direction, as it would seem to require industry to make an individualized assessment of the national loyalties of a job applicant, usually based only on a resume and employment references. When tasked to look at measures such as "character of individuals' prior and present activities," the definition of nationality becomes entirely too subjective. Further, there is simply no way that industry could predict whether the U.S. government would agree with a company's assessment based on such a vague metric.

Especially when conflicting laws do not allow for the collection of all information that would be required by the DEAC recommendation, this would likely cause industry to act conservatively and err on the side of applying for deemed export licenses for any dual national, even when the current policy would not require it. This will in turn increase the demand on BIS to review more deemed export license applications for dual nationals who have immigrated to friendly countries like the UK or Canada.

The increased subjectivity of the assessment of nationality may also complicate the enforcement of deemed export controls. Allowing for a subjective assessment by the exporter of whether a license is required would place the burden on the government to prove that such a subjective assessment was made improperly, or willfully.

2.3. Appropriate government agency, not industry, should be primarily responsible for screening foreign workers

Responsible companies follow the existing visa and work authorization procedures maintained by the State Department and U.S. Citizenship and Immigration Services (USCIS). In that process, the U.S. government screens and conducts background checks on potential foreign national employees. Although anything suspicious found in the background of a candidate for employment should be investigated further by a company before making a hiring decision, the ultimate responsibility to screen those who enter the country legally for security risks should remain with the government, through due diligence by the State Department, USCIS, the FBI, and other cognizant agencies. Industry simply lacks access to the intelligence and diplomatic resources to assess whether a specific foreign national poses a threat of diversion or espionage. Industry should be able to rely on the U.S. government's vetting process to adequately address U.S. government security concerns with respect to individual foreign nationals.

Qualcomm believes that what the DEAC may have intended to express is not that such loyalty factors should expand the pool of nationals who would be subject to deemed export licenses, but rather the government should consider these when reviewing license applications for those already subject to deemed export licensing requirements under current determination procedures. That is what BIS and other reviewing agencies already do and would be a workable solution.

2.4. Industry analysis of nonimmigrant hires

Qualcomm acknowledges DEAC's concern that most recent citizenship or legal permanent residency may not take into account the actual risk of diversion of export controlled technology. However, this concern may be misplaced, as evidenced by criminal export control or industrial espionage cases that involve natural born U.S. citizens or legal permanent residents who engage in prohibited exports of technical data or other espionage activities. Such cases involve individuals who are not and lawfully cannot be subject to the deemed export rule because they are U.S. Persons for export control purposes. The participation of U.S. citizens and legal permanent residents in such activities calls into question what is perhaps the fundamental supposition underlying the deemed export rules - that ties of nationality are correlated to a propensity to engage in the actual diversion of export controlled technology to third countries. These are issues which again are not best handled through the deemed export rule but by the appropriate U.S. government agencies enforcing existing laws against actual exports of technology out of the U.S. and industrial espionage. Industry has a good record of working with government in industrial espionage cases regardless of nationality of the employee. That is a better way to address such concerns than deemed export rule, which is a blunt instrument and an ineffective tool given that at least 99% of all license applications, including Qualcomm's, are approved and do not address the root concern very well.

Questioning how and under what circumstance a foreign national obtained their most recently established citizenship or permanent residency to determine a foreign national's nationality would force industry to speculate, or invest considerable resources in becoming experts on the immigration laws and practices of literally dozens and dozens of other countries. Immigration laws differ from country to country, and it is well beyond the scope of industry to analyze each country's immigration laws to determine whether or not the citizenship or legal permanent residency obtained should not be considered acceptable solely for deemed export compliance purposes.

3. Summary

As stated above, Qualcomm is in favor of narrowing the scope of technologies on the CCL subject to deemed export licensing requirements, but against the proposed expansion of assessment of probable country of affiliation for foreign nationals. Narrowing the scope of technologies on the CCL subject to deemed export licensing requirements would be beneficial since current deemed export licensing requirements are ineffective at protecting national security when similar technology is not controlled for deemed exports and technology has been on the market for a long period of time or there is high foreign availability. Expanding the assessment of foreign national affiliation would ask companies to follow sometimes contradicting laws, create a more subjective definition of nationality which would overburden industry and lessen the effectiveness and enforceability of the deemed export rule, place responsibility on industry to screen foreign workers when it should be placed on an appropriate government agency, and create an environment where foreign governments' immigration decisions are second guessed.

4. Contact Points

Qualcomm thanks BIS for the opportunity to provide these comments, which we hope will be helpful. Should you have any questions regarding these comments, please feel free to contact me at (858) 658-2757, or by e-mail at kgebeau@qualcomm.com.

Sincerely,
Qualcomm Incorporated

Kathleen F. Gebeau

Kathleen F. Gebeau
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September 22, 2008

The Honorable Mario Mancuso
Under Secretary of Commerce for Industry and Security
Bureau of Industry and Security
U.S. Department of Commerce
1401 Constitution Avenue, N.W.
Washington, D.C. 20230

Via Fax: 202-482-3355

Re: ***Docket No. 080512652-8653-01—***
Response to Request for Public Comments on Two DEAC Recommendations

Dear Mr. Mancuso:

I submit this response on behalf of Cornell University ("Cornell"). Cornell is the federal land-grant institution of New York State, a private endowed university, and a member of the Ivy League. Cornell is one of the world's premier research and teaching institutions in the humanities and sciences. Twenty-nine Nobel laureates have been affiliated with Cornell as faculty members or students, and the current faculty includes two Nobel laureates in the sciences.

Cornell greatly appreciates the establishment and efforts of the Deemed Export Advisory Committee (DEAC) and concurs in its Report's articulation of key requirements for advancing U.S. interests, namely (1) to preserve foreign participation in scientific research in the absence of sufficient American researchers; (2) to profit from the rise of foreign scientific prowess by participating fully in multinational research endeavors; and (3) to facilitate scientific research by controlling the transfer of only those few technologies that are critical to U.S. military interests and generally inaccessible in the global marketplace.

To these ends, Cornell supports the comment submitted by the Association of American Universities and the Council on Governmental Relations in response to the DEAC recommendations to limit the deemed export advisory policy to only the most critical U.S. technologies and to expand the factors under consideration in determining a potential controlled technology recipient's "country of affiliation" for deemed export purposes. Cornell emphasizes its support of the AAU/COGR comment by adding the following thoughts:

I. Controlling the deemed export of only the most critical technologies will facilitate the scientific research and innovation necessary to advance U.S. security.

Limiting the number and types of controlled technologies subject to the deemed export policy promotes scientific innovation in two key ways: first, it allows U.S. researchers to dialogue more freely with foreign and multinational research groups, which smoothes the conduct of research and helps to maintain American scientific leadership (*see* DEAC Report at 11-12); and second, it allows university research groups to devote their increasingly scarce resources to controlling the transfer of truly critical technologies. Moreover, identifying the most critical U.S. technologies will provide the government and the research community with the knowledge needed to assess the state of American technology and identify needed innovations — knowledge which the current CCL obscures in its thousands of outdated entries and cross-references. *See* DEAC Report at 57-58

We support, therefore, the Commerce Department's establishment of the new Emerging Technologies and Research Advisory Committee (ETRAC). We also agree with the AAU/COGR comment's proposal of principles by which the ETRAC should identify the most critical technologies.

II. Basing license decisions on the "probable loyalties" of potential technology recipients is an inadministrable and error-prone process.

We share in the concerns raised by AAU/COGR in opposition to the Report's proposal to assess the "probable loyalties" of potential recipients of a controlled technology in deciding license applications or other proposed exchanges of scientific information. *See* Report at 21. Subjective judgments of personal character cannot be reduced to administrable formulae. Factors unrelated to national affiliation can influence an individual's propensity to steal technology for the benefit of a foreign nation or criminal enterprise — plain greed, for one. Personal psychology is another. An individual who has spent just a few years in the United States can develop a gratitude and affection for this country which is deeper than that of an American-born individual of any ethnicity.

Furthermore, the very act of making these judgments will generate unprecedented levels of ill will among the scientific elites of the world — the very people whom the Report stresses the United States scientific effort desperately needs. *See, e.g.*, Report at 37, 57-58, 63-66, 68. The trend of multinational research groups to exclude American participation due to the costs and delays of U.S. export controls compliance will grow, and U.S. researchers, too, may seek to avoid foreign scientists to limit the reputational and administrative costs of doing research.

Moreover, the proposal that universities facilitate the judgment process by providing "names and relevant information" to the government license reviewers, *see* Report at 24, would violate not only myriad university policies and privacy laws, but also the spirit of openness and inclusiveness that have been the hallmark and strength of the American research university for decades. The national security is best served by allowing us to retain this spirit, which has brought foreign-born luminaries like Albert Einstein, Enrico Fermi, Hans Bethe and many others to the national scientific and security effort.

We, therefore, concur in the AUU/COGR recommendation that (1) the DOC continue to ascribe to potential technology recipients the nationality of their most recently acquired citizenship and to rely on the visa screening process to keep probable wrongdoers out of the country and the stream of technology exchange; or (2) to rely on clear and reasonable visa screening-type criteria *and* specific and credible information of an individual's bad intentions to justify a determination that he or she cannot be entrusted with access to controlled critical technologies.

Sincerely,

Robert A. Buhrman

Robert A. Buhrman
Senior Vice Provost for Research