U.S. DEPARTMENT OF COMMERCE
Office of Inspector General

PUBLIC RELEASE

BUREAU OF INDUSTRY AND SECURITY

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

Office of Inspections and Program Evaluations

UNITED STATES DEPARTMENT OF COMMERCE
The Inspector General
Washington, D.C. 20230

March 31, 2004

FOR OFFICIAL USE ONLY
(With Addenda)

MEMORANDUM FOR: Kenneth I. Juster
Under Secretary for Industry and Security

FROM: Johnnie E. Frazier

SUBJECT: Final Report: *Deemed Export Controls May Not Stop the Transfer of Sensitive Technology to Foreign Nationals in the U.S.* (IPE-16176)

As a follow-up to our February 25, 2004, draft report, attached is our final report on deemed exports, the fifth report required by the National Defense Authorization Act for Fiscal Year 2000. As you know, this legislation mandates that by March 30 of each year through 2007, we issue a report to the Congress on the policies and procedures of the U.S. government with respect to the export of technologies and technical information to countries and entities of concern. This fifth report focuses on the effectiveness of the dual-use deemed export control regulations and policies, including the implementation of them by the Bureau of Industry and Security (BIS), as well as compliance with the regulations by U.S. industry, academic institutions, and Federal research facilities.

While our report highlights some areas that are working well, such as certain aspects of BIS' deemed export outreach program, it also highlights issues and problems that hamper both BIS' and the U.S. government's efforts to more effectively prevent the transfer of sensitive technology to foreign nationals from countries or entities of concern while they are in the United States. We offer a number of specific recommendations beginning on page 36 that we believe, if implemented, will help the government's efforts to protect against illicit technology transfer.

We are pleased to note that BIS, in its written response to our draft report, indicated that it has already taken or plans to take action on many of our recommendations. We request that you provide us with an action plan addressing the status of the recommendations in our report within 60 calendar days.

We want to thank you and other members of the BIS staff for your assistance and courtesies extended to us during our review. If you would like to discuss this report or the requested action plan, please call me at (202) 482-4661 or Jill Gross, Assistant Inspector General for Inspections and Program Evaluations, at (202) 482-2754.

Attachment

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EXECUTIVE SUMMARY

The Inspectors General of the Departments of Commerce, Defense, Energy, and State, in consultation with the Director of Central Intelligence and the Director of the Federal Bureau of Investigation, are required by the National Defense Authorization Act (NDAA) for Fiscal Year 2000 to conduct an 8-year assessment of the adequacy of current export controls and counterintelligence measures to prevent the acquisition of sensitive U.S. technology and technical information by countries and entities of concern. The NDAA mandates that the Inspectors General report to the Congress no later than March 30 of each year, until 2007, on the status of efforts to maintain and improve export controls.

The United States controls the export of sensitive goods and technologies for national security, foreign policy, antiterrorism, and nonproliferation reasons under the authority of several different laws. The primary legislative authority is the Export Administration Act of 1979.[1] Under the act, the Commerce Department's Bureau of Industry and Security (BIS) administers the Export Administration Regulations (EAR) by developing export control policies, issuing export licenses, and enforcing the laws and regulations for dual-use exports.

Export controls of technical data apply to a wide variety of information, including technology related to the design, development, and use of certain products such as computers, semiconductors, integrated circuits, lasers, and sensors. According to the EAR, any release to a foreign national of technology or software subject to the regulations is deemed to be an export to the home country of the foreign national. These exports are commonly referred to as "deemed exports," and may involve the transfer of sensitive technology to foreign visitors or workers at U.S. private, public or government research laboratories and private companies. In FY 2003 BIS processed 12,446 export license applications; approximately 846 (7 percent) were for deemed exports.

To comply with the NDAA's FY 2004 requirement, the Offices of Inspector General[2] agreed to conduct an interagency review to determine whether current deemed export control laws and regulations adequately protect against the transfer of controlled U.S. technologies and technical information to foreign nationals from countries and entities of concern. Within Commerce, we sought to assess the effectiveness of the dual-use deemed export regulations and policies, including the implementation of them by BIS, as well as compliance with the regulations by U.S. industry, academic institutions, and Federal research facilities. We also followed up on prior OIG findings and recommendations related to deemed exports, as appropriate.

Our specific observations are as follows:

[1] Although the act last expired on August 21, 2001, the President extended existing export regulations under Executive Order 13222, dated August 17, 2001, invoking emergency authority under the International Emergency Economic Powers Act.

[2] This year's review included the participation of the Department of Homeland Security's OIG.

BIS Regulations and Policies Could Enable Foreign Nationals from Countries and Entities of Concern to Access Otherwise Controlled Technology

Some of the deemed export licensing exemptions listed under the EAR as well as BIS' deemed export licensing policies may inadvertently affect national security and require further examination. First, as we noted in our 1999[3] and 2000[4] reports on export controls, several of the deemed export licensing exemptions outlined in the EAR eliminate a large number of foreign nationals from the licensing requirements. Specifically, items not subject to the EAR include publicly available technology and software, that (1) are already published or will be published, (2) arise during or result from fundamental research, (3) are educational, or (4) are included in certain patent applications. As such, many foreign students or researchers at U.S. academic institutions and many Federal research facilities are exempted from the regulations. In addition, foreign nationals with permanent U.S. resident status are also exempt from the deemed export licensing requirements.

We previously recommended that BIS work with the National Security Council (NSC) to ensure that deemed export control policies and regulations are clear so as to eliminate avoidable loopholes that could deliberately or inadvertently be used by countries or entities of concern to obtain U.S. equipment or technology subject to export controls. Although BIS raised this issue with the NSC in 2000, no action has been taken on this matter. Despite the lack of action with regard to our prior recommendations, we believe it necessary to again raise awareness of these issues in order to address our congressional mandate to assess the adequacy of current export controls to prevent the acquisition of sensitive U.S. technology by countries and entities of concern.

Second, confusion exists over the definition and implementation of controls associated with the "use" of EAR-controlled equipment by foreign nationals in the United States. According to the EAR, the term "use" is defined as,

> Operation, installation (including on-site installation), maintenance (checking), repair, overhaul, and refurbishing.

As such, some of BIS' senior licensing officials maintain that for consistency purposes in the EAR, the word "and" in the definition infers that all of the activities have to be accomplished to constitute "use." We disagree. While BIS normally grants approval for a foreign entity to operate, install, maintain, repair, overhaul, and refurbish a piece of controlled equipment exported from the United States in order to permit the full range of uses for an export, the same definition of use does not seem to apply to deemed exports (i.e., foreign nationals "using" the equipment in the United States.). It is unlikely that one individual would have the responsibility or be capable of accomplishing all these tasks in most situations. In addition, two of the four

[3] *Improvements Are Needed to Meet the Export Licensing Requirements of the 21st Century*, U.S. Department of Commerce Office of Inspector General, IPE-11488, June 1999.

[4] *Improvements Are Needed in Programs Designed to Protect Against the Transfer of Sensitive Technologies to Countries of Concern*, U.S. Department of Commerce Office of Inspector General, IPE-12454-1, March 2000.

multilateral control regimes[5] define the term either with an "or," or without any connector word (i.e., a bullet listing of the activities). Furthermore, the Defense Technology Security Administration notes each of the listed activities with the compound conjunction "and/or." After discussing this issue at our exit conference, senior BIS officials agreed that the interpretation should be modified to read "and/or."

This difference in interpretation is critical in determining how to implement and enforce the deemed export provisions in the EAR. For instance, the U.S. academic and Federal research community generally use the fundamental research exemption under the EAR for most of the research they conduct. However, when controlled equipment is used by foreign nationals at a U.S. university or Federal research facility it is most likely accompanied by some transmittal of use or other information or instruction constituting "technology." While many of the academic and Federal officials we spoke with had not contemplated the transfer of technology associated with the "use" of controlled equipment and deemed exports, others contend that the "use" of controlled equipment in the context of fundamental research is also exempt under the regulations. However, according to BIS, the technology for the "use" of controlled equipment—regardless of how it is defined—is subject to the deemed export provisions regardless of whether the research being conducted with that equipment is fundamental or not. This would mean that many of the academic and Federal laboratories might need to seek deemed export licenses for some foreign nationals working with controlled equipment or otherwise restrict their access to such equipment.

As such, we recommend that BIS modify the definition of "use" in the EAR and then inform the U.S. academic community, industry, and Federal agencies on the deemed export controls associated with the technology for the use of the EAR-controlled equipment by foreign nationals.

Third, BIS' deemed export licensing policy, in contrast to State Department's, only recognizes a foreign national's most recent citizenship or permanent residency. As such, this policy allows foreign nationals originally from countries of concern to obtain access to controlled dual-use technology without scrutiny if they maintain current citizenship or permanent resident status from a country to which the export of the technology would not be controlled. As such, we recommend that BIS amend its policy to require U.S. entities to apply for a deemed export license for employees or visitors who are foreign nationals and have access to dual-use controlled technology if they were born in a country where the technology transfer in question is EAR-controlled regardless of their most recent citizenship or permanent resident status.

Fourth, despite a general policy of denial for exports to certain terrorist-supporting countries, BIS approved 78 of 107 deemed export license applications (73 percent) involving foreign nationals from Iran (76) and Iraq (2) between FYs 2000-2003. BIS officials informed us that its

[5] The United States is a member of several multilateral regimes concerned with the export of dual-use and munitions items to countries of concern. Those organizations include the Australia Group (concerned with the proliferation of chemical and biological weapons), the Missile Technology Control Regime (concerned with the proliferation of missiles capable of delivering weapons of mass destruction), the Nuclear Suppliers Group (concerned with nuclear weapons proliferation), and the Wassenaar Arrangement (concerned mainly with the transfer of conventional weapons).

justification for approving such licenses—despite a general export prohibition to embargoed countries[6]—is based on a 1997 BIS legal opinion stating that deemed export licenses are permissible for foreign nationals from Iran and Iraq because the laws prohibiting "exports" to those two countries did not apply to their respective nationals. However, according to the EAR, the release of controlled technology to a foreign national "is deemed to be an export to the home country or countries of the foreign national." As such, we are concerned that BIS' legal opinion does not specifically address the concept of deemed export controls and recommend that BIS reevaluate its approval of deemed export licenses for foreign nationals from Iran and Iraq to ensure such approvals are consistent with current deemed export control licensing policies and procedures (see page 10).

BIS' Expanded Efforts to Raise Awareness of Deemed Export Control Regulations Could Be Enhanced by Refocusing Outreach and Clarifying Information

BIS has greatly expanded its efforts to raise awareness of deemed export controls since our March 2000 report, but two areas still need improvement. First, while BIS greatly expanded its deemed export outreach activities in FY 2003, it mainly focused on those companies and industry sectors that currently apply for deemed export licenses rather than those entities that do not (such as small businesses, defense contractors, and the academic and Federal research community). Therefore, we recommend that BIS establish a strategic outreach plan for deemed exports that has annual goals and identifies priority industries, Federal agencies, and academic institutions that are not currently applying for deemed export licenses.

Second, while BIS offers supplemental questions and answers in the EAR and on its web site to help exporters better evaluate individual applicability of the deemed export regulations, we found at least two of the answers provided may be inaccurate or unclear. Therefore, we recommend that BIS clarify and periodically update the deemed export "Questions and Answers" in Supplement 1 to Part 734 of the EAR (see page 20).

BIS Needs a Deemed Export Compliance Program

BIS does not perform on-site inspections or reviews of deemed export license holders to ensure compliance with license conditions. As a result, there is no check on whether deemed export license holders are complying with license conditions. The EAR allows BIS to further limit a transaction authorized under an export license by placing conditions on the license itself. For instance, deemed export license conditions might state "no exposure to [Defense] contracts will be allowed" or "use of computers [above a certain threshold] must be controlled and monitored to ensure that only job-related work is performed." Placement of conditions on a license is an important part of the interagency export licensing process and offers BIS an additional means of monitoring certain transactions. However, according to BIS, it does not monitor compliance with deemed export licenses—including those with conditional approvals from license referral

[6] On May 22, 2003, the United Nations Security Council issued Resolution 1483 that lifted the comprehensive United Nations trade sanctions on Iraq, while retaining restrictions on the sale or supply to Iraq of arms related material. BIS is currently in the process of preparing an amendment to the EAR to reflect Iraq's significantly changed status.

agencies—because it does not have the resources to perform this function. Nevertheless, BIS' failure to monitor license conditions could degrade the integrity of the interagency licensing process by, for example, allowing companies to continuously receive deemed export licenses regardless of whether they comply with license conditions.

In response to prior OIG recommendations related to exporter compliance with license conditions, BIS plans to develop a "license condition enforcement program" in FY 2005. The program will reportedly address compliance by export license holders, including deemed. However, based on our discussions with BIS management, it does not appear that this program will include any type of on-site verifications or reviews of the license conditions outside of an official enforcement action. As such, BIS needs to develop a compliance program that effectively evaluates deemed export license holders' compliance with license conditions and deemed export regulations (see page 25).

Deemed Export Control Compliance by Commerce Bureaus is Mixed

In an effort to conduct follow-up on prior OIG recommendations related to deemed exports, we conducted a brief survey at two of Commerce's scientific agencies—the National Institute of Standards and Technology (NIST) and the National Oceanic and Atmospheric Administration (NOAA). Based on discussions with senior officials and an overview of security procedures at both agencies, we identified some potential weaknesses with regard to deemed exports and foreign national visitors.

NIST

After our March 2000 review, NIST instituted a written export control policy that attempts to control foreign national access to controlled technologies. It also provided deemed export control training to its employees. Despite these efforts, NIST officials maintain that the majority of its research is fundamental and, therefore, exempt from deemed export controls. However, we determined that NIST officials were unaware that the technology for the "use" of controlled equipment during the conduct of fundamental research by foreign nationals is still subject to the EAR.

During our current survey work, we identified at least one EAR-controlled commodity—a 5-axis machine tool[7]--at NIST's Manufacturing Engineering Laboratory located in Gaithersburg, Maryland. It is unclear what foreign nationals may have access to the machine or its operation manual. (NIST officials estimated that the Manufacturing Engineering Laboratory has approximately 45 foreign guest researchers at any given time.) Given that NIST is unsure of what other EAR-controlled equipment may be housed at this or its other facilities, we recommend that NIST (1) review the equipment on hand in the labs to identify EAR-controlled

[7] Machine tools cut and form metals or other hard materials with varying degrees of precision. They are essential to civilian industry, but they have a range of military industrial applications as well. Specifically, they are useful for manufacturing many types of conventional weapons and vehicles; building nuclear weapons; manufacturing high-speed centrifuges that can enrich uranium to go into nuclear weapons; and making precision missile parts.

equipment, (2) interview managers of labs that have controlled equipment to establish what foreign nationals (if any) use or have access to the equipment, and (3) work with BIS to develop an effective means to identify when a deemed export license might be required. In addition, although NIST has provided deemed export training to its employees in the past, we believe that it should conduct continuous training for all NIST employees that work with EAR-controlled technology and/or equipment. Finally, we noted that NIST's new Editorial Review Board process—which requires a prepublication clearance for all materials to identify sensitive material—may disqualify them from using the fundamental research exemption in the EAR. We raised this issue with BIS officials. However, they indicated they would need more information on NIST's new process before making a decision as to whether it voids the fundamental research exemption. As such, we recommend that NIST work with BIS to determine if its Editorial Review Board process voids the fundamental research exemption in the EAR.

NOAA

NOAA lacks an overall deemed export control policy to effectively monitor foreign national access to controlled technology despite OIG recommendations to this effect in our March 2000 report and subsequent follow up work in this area. NOAA officials, with the exception of the National Environmental Satellite, Data, and Information Service, did not believe deemed export controls apply to them because the majority of their work is fundamental research. However, we determined that NOAA officials were unaware that the technology for the "use" of controlled equipment during the conduct of fundamental research by foreign nationals is subject to the EAR. As a result of this new information, the Deputy Assistant Secretary for International Affairs indicated that some of NOAA's facilities might contain controlled equipment which foreign visitors or guest researchers might have access to.

In response to our past and present concerns, the Deputy Assistant Secretary for International Affairs was recently tasked with developing NOAA's deemed export control policies and procedures. We believe this effort to be a positive first step and look forward to reviewing the procedures when completed. Once NOAA issues its deemed export policies and procedures, we recommend that it establish an employee- training program that effectively disseminates its deemed export policies and procedures. We also recommend NOAA review its equipment inventory to determine (1) what commodities are EAR-controlled, (2) what foreign nationals have access to those commodities and whether improved access controls are needed, and (3) whether a deemed export license may be required. Finally, we recommend that NOAA review its research and NOAA-sponsored research to determine the applicability of deemed export controls (see page 27).

In addition, given the potential security vulnerabilities identified at these two Commerce bureaus, we offer our findings related to this topic in an addendum report (For Official Use Only) in which we also recommend that the Department's Office of Security enforce—including conducting periodic on-site security reviews—its security policies related to foreign national visitors or guest researchers in Commerce facilities and hold these bureaus accountable.

In its March 17, 2004, written response to our draft report, the Deputy Under Secretary for Industry and Security generally agreed to take action on all our recommendations. In addition, written responses to our draft report from NIST, NOAA, and the Department of Commerce's Chief Financial Officer and Assistant Secretary for Administration generally agreed to take action on our recommendations. However, NIST's response did take issue with a number of our observations and conclusions from the draft report. NIST's specific concerns, as appropriate, are addressed in the body of the report. Where appropriate, we have made changes to the report and recommendations in response to comments from the various agencies, and we discuss pertinent aspects of their responses in appropriate sections of the report. The complete responses from BIS, NIST, NOAA, and the Department are included as appendixes to this report.

BACKGROUND

The Inspectors General of the Departments of Commerce, Defense, Energy, and State, in consultation with the Director of Central Intelligence and the Director of the Federal Bureau of Investigation, are required by the National Defense Authorization Act (NDAA) for FY 2000 to conduct an 8-year assessment of the adequacy of current export controls and counterintelligence measures to prevent countries and entities of concern[8] from acquiring sensitive U.S. technology and technical information. NDAA mandates that the Inspectors General report to Congress no later than March 30 of each year, until 2007, on the status of efforts to maintain and improve export controls.

The United States controls the export of dual-use commodities—equipment and technologies that have both military and civilian applications—for reasons of national security, foreign policy, antiterrorism, and nonproliferation of weapons, and does so under the authority of several different laws, but primarily the Export Administration Act (EAA) of 1979. Under the act, BIS administers the Export Administration Regulations (EAR) through development of export control policies, issuance of export licenses, and enforcement of the laws and regulations governing dual-use exports. Although the act last expired on August 21, 2001, the President extended existing export regulations under Executive Order 13222, dated August 17, 2001, invoking emergency authority under the International Emergency Economic Powers Act.

BIS' Office of Chief Counsel and Office of Administration are involved in some aspects of export licensing as well as export enforcement; however, the two operating units principally responsible for export controls are Export Administration and Export Enforcement (See table 1).

Table 1: Organizational Structure of BIS' Principal Export Control Units

Export Administration	**Office of Exporter Services** is responsible for outreach (e.g., educational seminars and conferences) and counseling efforts to help ensure exporters' compliance with the EAR and coordination of policy within Export Administration. This office is also responsible for monitoring certain license conditions to determine exporters' compliance with them.
	Office of Nonproliferation Controls and Treaty Compliance and the **Office of Strategic Trade and Foreign Policy Controls** each have a full range of responsibilities associated with export licensing. Within the Office of Strategic Trade and Foreign Policy Controls, the Deemed Export and Short Supply Division (hereafter, referred to as the Deemed Export Division) is responsible for processing deemed export licenses.
	Office of Strategic Industry and Economic Security oversees issues related to U.S. defense industry competitiveness.
Export Enforcement	**Office of Export Enforcement** investigates alleged export control violations and coordinates its enforcement activities with other Federal agencies.
	Office of Enforcement Analysis is the central point for the collection, research, and analysis of classified and unclassified information on end users who are of export control concern.
	Office of Antiboycott Compliance enforces the anti-boycott provisions of the EAA and the EAR, assists the public in complying with these provisions, and compiles and analyzes information regarding international boycotts.

Source: Bureau of Industry and Security

[8] For the purpose of our review, the countries of concern include: China, Cuba, India, Iran, Iraq, Israel, Libya, North Korea, Pakistan, Russia, Sudan, and Syria.

Deemed Export Control Terminology, Rules, and Interpretations

The U.S. government controls not only the export of products, but also of technical data. Export controls of technical data apply to a wide variety of information, including technology related to the design and development of certain telecommunications products, computers, semiconductors, integrated circuits, lasers, and voice, fingerprint, or other identification systems. The term "technology" itself is broadly defined in the EAR to include instruction, skills training, working knowledge, consulting services, the transfer of engineering designs and specifications, manuals, and instructions written or recorded on other media.

Items not subject to the EAR include publicly available technology and software that (1) are already published or will be published, (2) arise during or result from fundamental research, (3) are educational, or (4) are included in certain patent applications.

Before 1994 the EAR's definition of "export of technical data" included "any release of technical data in the United States with the *knowledge or intent* that the data will be shipped or transported from the United States to a foreign country"[9] [emphasis added]. However, according to the former BIS Deputy Chief Counsel, the former Bureau of Export Administration (now BIS)[10] amended this portion of the definition in 1994 to address industry's request for clearer language. The definition currently found in the EAR is as follows:

> Any release of technology or source code subject to the EAR to a foreign national. Such release is deemed to be an export to the home country or countries of the foreign national. This deemed export rule does not apply to persons lawfully admitted for permanent residence in the United States and does not apply to persons who are protected individuals (e.g., a person admitted as a political refugee) under the Immigration and Naturalization Act (8 U.S.C. 1324b(a)(3)). . . . [11]

The phrase "Such release is deemed to be an export . . ." more clearly reflects the idea that foreign nationals may eventually return home and take with them whatever knowledge they have gained while in the United States. It also more narrowly identifies who is exempt—permanent residents and protected individuals. Thus the rule applies to all foreign nationals working as employees of U.S. companies and at research facilities and to any foreign national given access to controlled U.S. technology including visitors to U.S. companies or students at U.S. academic institutions. The U.S. entity employing or sponsoring the foreign national is responsible for submitting a deemed export license application to BIS for review.

Furthermore, "Such release . . ." can occur in many ways. For example, according to the EAR, technology or software can be considered "released" for export through:

[9] 15 CFR 779.1(b)(1).
[10] All references to BIS also include those to its predecessor agency—the Bureau of Export Administration.
[11] 15 CFR 734.2(b)(2)(ii).

- visual inspection of U.S.-origin equipment and facilities by foreign nationals;
- oral exchanges of information in the United States or abroad; or
- the application to situations abroad of personal knowledge or technical experience acquired in the United States.[12]

In addition, the transfer of technology to a foreign national in the United States for the "design", "development," or "use" of controlled dual-use equipment—regardless of whether it is U.S. or foreign-origin—is subject to the EAR.

Deemed Export Licensing Process

The EAA authorizes the Secretary of Commerce to issue rules and procedures for processing dual-use export license applications. Initially, Congress intended that the Secretary of Commerce would make determinations concerning individual export license applications, to the maximum extent possible, without referral to any other government department or agency. The Secretary, in turn, delegated authority to manage the dual-use export licensing process to BIS. However, in response to the need for more transparency in the dual-use licensing process, the President issued Executive Order 12981 on December 5, 1995, authorizing the Departments of Defense, Energy, and State, and the Arms Control and Disarmament Agency each to review any license application received by Commerce.[13]

Although the three referral agencies have provided Commerce with delegations of authority for certain types of applications based on the level of technology, the appropriateness of the item's stated end use, and the country of destination, they receive and review all deemed export license applications. In addition, given that these applications involve foreign nationals' access to sensitive technology in the United States, Commerce refers all deemed export applications to the FBI for a name check review. The FBI has received derogatory "hits" based on its review of foreign nationals subject to deemed export license applications.

Commerce also generally refers license applications that potentially involve missile, nuclear, chemical, or biological proliferation, to the Central Intelligence Agency's Weapons Intelligence, Nonproliferation and Arms Controls Center for an end-user review. It should be noted, however, that since October 2001, that agency has declined to review deemed export license applications because of the lack of derogatory "hits" they have obtained from this exercise in the past. In an attempt to conduct some type of intelligence review for these applications, however, BIS has made other arrangements with the agency. Specifically, the CIA sends BIS an updated CD-ROM of end-user reports on a monthly basis. BIS licensing officers from the Deemed Export Division query the database for information on any foreign national associated with the license application and/or any affiliated entities the foreign national has listed on his résumé (e.g., previous employers or universities attended). However, according to BIS officials, they have not received any derogatory hits against this database since they began this exercise.

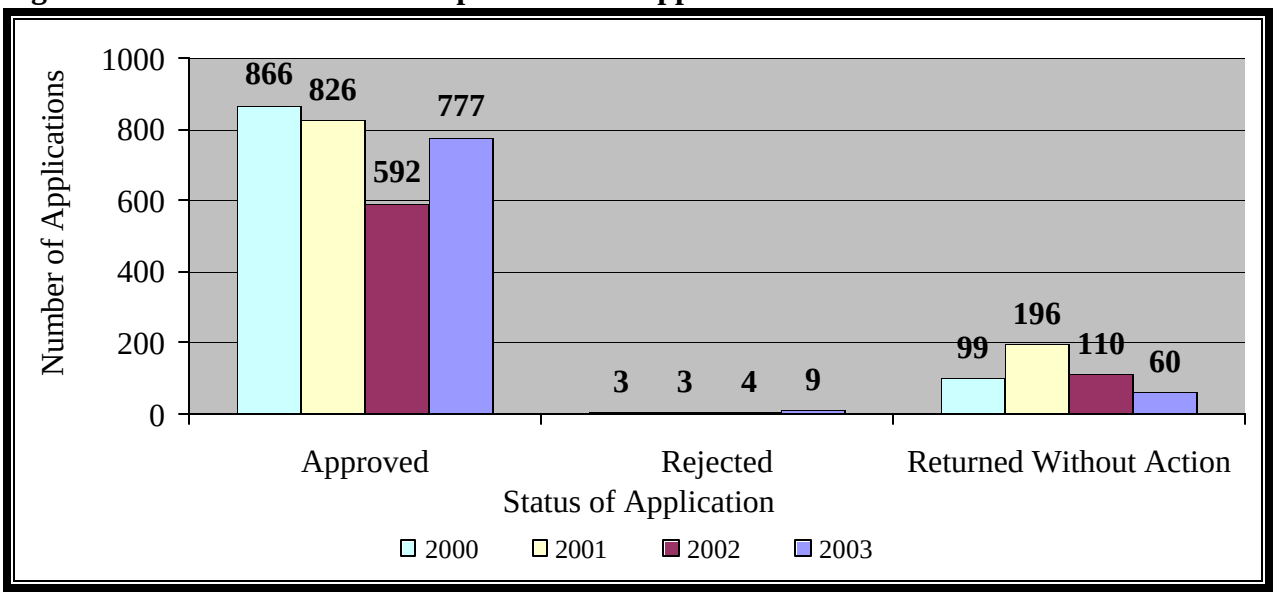
[12] 15 CFR 734.2(b)(3).

[13] The U.S. Arms Control and Disarmament Agency was dissolved on April 1, 1999. Its licensing review function was moved to the State Department.

Deemed Export License Statistics

Of the 12,446 export license applications BIS received during FY 2003, approximately 846 (7 percent) were for deemed exports.[14] Of that number, 777 (approximately 92 percent) were approved, 9 (roughly 1 percent) were rejected, and 60 (about 7 percent) were returned without action. During FYs 2000 through 2003 the number of deemed export applications decreased 13 percent from 968 to 846, and many of the FY 2003 applications were renewals. Figure 1 depicts the status of FY 2000 to 2003 deemed export license applications.

Figure 1: Number of Deemed Export License Applications Processed in FYs 2000-2003



Source: Export Administration, Bureau of Industry and Security

As is shown in table 2, most of the applications involved technologies categorized under electronics, computers, and telecommunications and information security.[15] Four companies accounted for more than 60 percent of the applications.

[14] While BIS processed 846 license applications as deemed exports, an undetermined number of these did not qualify as deemed export applications. Specifically, some U.S. exporters inadvertently submitted deemed export license applications—versus export license applications—for foreign nationals who obtained the controlled technology abroad instead of in the United States.

[15] It should be noted that these numbers do not indicate which technologies all foreign nationals working or visiting the United States are seeking, but only those technologies which have been the subject of a deemed export license application.

Table 2: Deemed Export License Applications, FY 2003

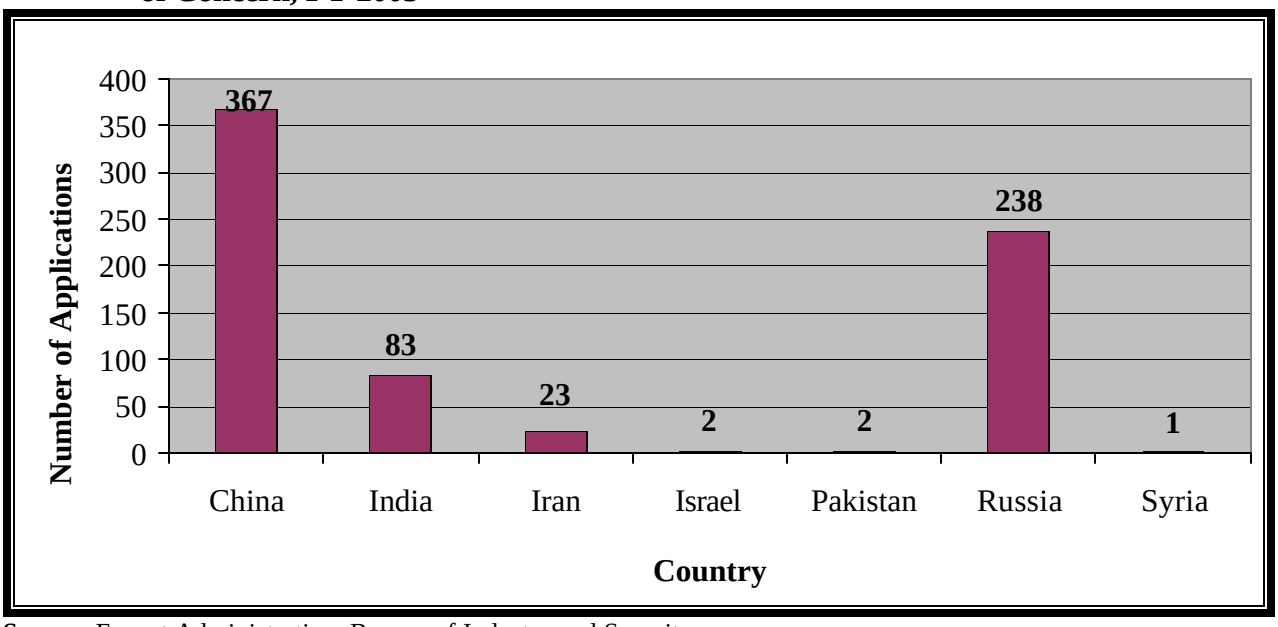
Category	Description of Category	Number of Applications*
0	Nuclear Materials, Facilities, and Equipment	0
1	Materials, Chemicals, "Microorganisms," and Toxins	79
2	Materials Processing	34
3	Electronics	338
4	Computers	661
5	Telecommunications and Information Security	357
6	Lasers and Sensors	3
7	Navigation and Avionics	10
8	Marine	0
9	Propulsion Systems, Space Vehicles, and Related Equipment	80
EAR99	Classification used for items subject to the Export Administration Regulations that are not on the Commerce Control List	3

***Note**: Because applications may contain a request to export more than one technology, the number of applications in this column does not equal the total number of deemed export applications BIS received during FY 2003.

Source: Export Administration, Bureau of Industry and Security

We also determined that 716 (or approximately 85 percent) of the 846 deemed export applications received in FY 2003 were for foreign nationals from countries of concern (see figure 2).

Figure 2: Deemed Export Applications Received for Foreign Nationals from Countries of Concern, FY 2003



Source: Export Administration, Bureau of Industry and Security

Previous OIG Findings and Recommendations Related to Deemed Export Controls

In our June 1999[16] and March 2000[17] reports on export controls, we found that compliance with deemed export regulations by U.S. companies and federal agencies was low. In addition, we found that deemed export control regulations were ambiguous and deemed export control policy ill defined, which we concluded might have accounted for some of the noncompliance. We therefore recommended in both reports that BIS work with the National Security Council (NSC) to ensure that the deemed export control policy and regulations are clear and do not provide any avoidable loopholes that could deliberately or inadvertently be used by countries and entities of concern to obtain U.S. equipment or technology subject to export controls. While BIS has raised this issue with the NSC, as we note later in this report, no action has been taken on this matter.

In our 1999 and 2000 reports, we also recommended that BIS be more proactive and increase its outreach to high-technology companies, industry associations, and federal agencies to educate them about deemed export regulations and to help ensure their compliance. Our current report assesses BIS' actions on this recommendation.

[16] *Improvements Are Needed to Meet the Export Licensing Requirements of the 21st Century*, U.S. Department of Commerce Office of Inspector General, IPE-11488, June 1999.

[17] *Improvements Are Needed in Programs Designed to Protect Against the Transfer of Sensitive Technologies to Countries of Concern*, U.S. Department of Commerce Office of Inspector General, IPE-12454-1, March 2000.

OBJECTIVES, SCOPE, AND METHODOLOGY

To comply with NDAA's FY 2004 requirement, the Offices of Inspector General[18] agreed to conduct an interagency review to assess whether current deemed export control laws and regulations adequately protect against the transfer of controlled U.S. technologies and technical information by foreign nationals to countries and entities of concern. (See Appendix B for a list of our reports conducted under the NDAA from FY 2000 through FY 2003.)

Within Commerce, we sought to assess the effectiveness of the dual-use deemed export control regulations and policies and their implementation by BIS, as well as compliance with the regulations by U.S. industry, academic institutions, and Federal research facilities. We also followed up on prior OIG findings and recommendations from our March 2000 report.

To conduct our program evaluation we interviewed Commerce personnel from several bureaus, divisions, and offices; Federal and university academicians, administrators, and researchers; and Federal export control enforcement staff. We also reviewed export control regulations, policies, and processes in an effort to assess compliance and reasons for noncompliance and to address issues of confusion related to terminology. At the end of our review, we discussed our findings and conclusions with BIS' Under Secretary, Deputy Under Secretary, and other senior BIS officials.

Interviews. Within Export Administration, we met with the Assistant Secretary and Deputy Assistant Secretary and the Directors of the Offices of Strategic Trade and Foreign Policy Controls, Nonproliferation Controls and Treaty Compliance, and Strategic Industries and Economic Security. Within Export Enforcement, we interviewed the Deputy Assistant Secretary and the Director of the Office of Enforcement Analysis. We also met with:

- Directors of the Deemed Export Controls Division, Chemical and Biological Controls Division, Foreign Policy Controls Division, Nuclear and Missile Technology Controls Division, Strategic Analysis Division, and Strategic Trade Division;
- BIS' staff attorneys;
- Office of Exporter Services staff;
- the Director of BIS' Western Regional Office; and
- other licensing officials.

Within Commerce we met with officials from the National Institute of Standards and Technology (NIST)and the National Oceanic and Atmospheric Administration (NOAA) to follow up on recommendations we made in previous reports related to deemed exports. We also met with representatives from the Department's Office of Security.

External to Commerce, we met with officials from the FBI, the State Department's Bureau of Economic Affairs and Directorate of Defense Trade Controls, and the Treasury Department's Office of Foreign Assets Control to review their roles in preventing the release of controlled

[18] The Department of Homeland Security's OIG also participated in this year's review.

technology to foreign nationals. In addition, we met with the Associate Director for Science and other senior officials at the Office of Science and Technology Policy to discuss the overall impact and current relevance of the 1985 National Security Decision Directive 189—which maintains that fundamental research should be unrestricted to the maximum extent possible and that classification should be the mechanism used to exercise any required controls—on deemed export controls. We also requested a meeting with the dual-use export control representative at the NSC to discuss current deemed export controls, but that office declined the meeting.

Reviews. To evaluate BIS' regulatory, budgetary, and organizational policies and processes related to deemed export regulations, we reviewed previous and current regulations and policies governing deemed export controls. We also reviewed previous OIG and General Accounting Office reports on the subject. In addition, we tried to research the circumstances leading to the 1994 amendment to the deemed export regulations to assess its impact and the influence of industry and academia that contributed to the current deemed export rule. However, BIS had very limited information pertaining to this subject.

To review BIS' implementation of the deemed export regulations, we evaluated Export Administration's procedures for processing deemed export licenses. As part of that process, we reviewed deemed export licenses from FY 2000 to 2003 (through June 16, 2003). However, we could not fully evaluate 111 licenses we selected for further study because BIS was unable to provide us with the supporting documentation (e.g., foreign nationals résumés, intelligence review results, FBI name check results, etc.) due to technical difficulties with the system that maintains this data. We also assessed BIS' educational outreach to the business and academic communities and followed up on its previous outreach efforts to other government agencies.

Assessments. To assess their awareness of deemed exports and discuss their internal control policies for compliance with deemed export regulations, we interviewed export compliance officers and/or legal counsels from three major high-technology companies and two defense contractors. As part of this effort, we obtained information on the number of foreign nationals from countries of concern that visited and/or worked at these facilities between FYs 2000 and 2002. We also talked with members of BIS' Regulations and Procedures Technical Advisory Committee[19] and with members from a major trade association to obtain their views on the effectiveness of the current dual-use deemed export regulations.

To assess academic institutions' compliance with deemed export regulations, we visited and held discussions with appropriate officials from the following nine major academic institutions across the country to assess their knowledge of the deemed export regulations and obtain their feedback regarding the EAR's fundamental research exemption:

- California Institute of Technology (including the Jet Propulsion Laboratory)
- Carnegie Mellon University
- Emory University

[19] The Regulations and Procedures Technical Advisory Committee is composed of industry and government representatives who advise and assist BIS in the implementation of the EAR and on any necessary revisions to the regulations.

- Georgia Institute of Technology
- Johns Hopkins University (including the Applied Physics Laboratory)
- Massachusetts Institute of Technology (including Lincoln Laboratory)
- Stanford University
- University of California at Berkeley
- University of Maryland at College Park

We also reviewed university policies and, to a limited extent, research contracts to determine whether sufficient information regarding compliance with deemed export regulations was included.

OBSERVATIONS AND CONCLUSIONS

I. BIS Regulations and Policies Could Enable Foreign Nationals from Countries and Entities of Concern to Access Otherwise Controlled Technology

Some of the EAR's broadly applied exemptions as well as BIS' deemed export licensing policies may offer means to circumvent deemed export regulations and, as a result, affect national security. As we noted in our 1999 and 2000 reports, several of the deemed export licensing exemptions outlined in the EAR eliminate a large number of foreign nationals in the United States from licensing requirements. In addition, while BIS maintains that the technology for the "use" of controlled equipment is subject to the deemed export provisions regardless of whether the research being conducted with that equipment is fundamental or not, we noted confusion within the Federal government as to how the term "use" is defined. How "use" is interpreted is critical in determining how to implement and enforce this particular deemed export provision. Furthermore, from our discussions about deemed export controls with leading U.S. academic institutions and Federal research agencies, we learned that most had not thought about the transfer of technology involved in the "use" of controlled equipment in the context of deemed exports.

BIS' deemed export licensing policy also only recognizes the most recent citizenship or permanent residency of a foreign national, regardless of his/her homeland. As such, this policy allows foreign nationals originally from countries of concern to obtain controlled dual-use technology without scrutiny if they are current citizens or permanent residents from a country where the technology would not be controlled. Finally, we found that despite a general policy of denial for exports to certain terrorist supporting countries, BIS issues deemed export licenses to foreign nationals from Iran and Iraq.

A. EAR exemptions eliminate a large number of foreign nationals from dual-use export controls

Several of the deemed export licensing exemptions outlined in the EAR eliminate a large number of foreign nationals from deemed export licensing requirements. As stated earlier, exemptions apply to publicly available technology and software that (1) are already published or will be published, (2) arise during or result from fundamental research, (3) are educational, or (4) are included in certain patent applications. In addition, foreign nationals with permanent resident status are exempt from the deemed export licensing requirements. Our concern is that each of these issues may identify areas of vulnerability.

- **Publishability.** Research that is intended for publication, whether it is ever accepted by a scientific journal or not, is exempt from the regulations. As such, if a foreign graduate student from a country of concern—such as China—works with a U.S. researcher on the dengue fever virus, no deemed export license is required as long as the U.S. researcher intends to publish the research results. While we understand that a researcher's ultimate goal

is to publish his/her work, anyone could claim to intend to publish research but ultimately decide not to for various reasons.

Although not in the context of deemed exports, the scientific community itself (especially with regard to biotechnology) is struggling with the publishability issue as it relates to national security. Specifically, since September 11, 2001, the U.S. scientific community has been debating whether researchers and publishers should start censoring research results if publication of those results could allow misuse by terrorists. Some scientific journals are beginning to screen out the publication of research results if they deem that the risk of misuse outweighs potential scientific benefit.

For instance, while the American Society for Microbiology does not support unwarranted restrictions on the free flow of legitimate scientific communications within microbiology that could lead to valuable advances in biomedical science, according to testimony before the House Committee on Science, it has adopted specific policies and procedures for its journals[20] to provide a degree of careful scrutiny in the peer review process for submitted manuscripts dealing with certain biological agents. Essentially, this review seeks to determine if an article contains details of methods or materials that might be misused. At the American Association for the Advancement of Science's annual meeting in February 2003, the President of the American Association for Microbiology noted that an example of a study that probably would not get published would involve "…a study that tinkers with a pathogen such as anthrax to make it more deadly."[21]

While we believe these are positive steps in protecting the release of unclassified but sensitive and potentially dangerous research results, these are "back-end" measures that may come too late to protect sensitive and possibly export-controlled information if a foreign national from a country of concern was a part of the team conducting the research. As such, researchers—both in the academic and Federal community—need to review the subject of their research "upfront" to determine its sensitivity and potential applicability to deemed export controls.

- **Fundamental Research**. National Security Decision Directive 189, dated September 21, 1985, establishes the national policy for controlling the flow of science, technology, and engineering information produced by federally funded fundamental research at colleges, universities, and laboratories. Some of the fundamental research areas these academic institutions and Federal laboratories work on include nuclear engineering, lasers, sensors, ceramics, radar, and virology. The principle set out by the 1985 directive maintains that the results of fundamental research should be unrestricted to the maximum extent possible and that classification should be the mechanism for what control might be required. This policy was more recently upheld in a November 1, 2001, memorandum from the Assistant to the

[20] The American Association for Microbiology publishes eleven scientific journals focusing on distinct specialties within the microbiological sciences, including *Infection and Immunity*, *Journal of Bacteriology*, and *Journal of Virology*.

[21] *Nature*, "Biologists Undertake Bioterror Surveillance: Scientists and journals agree to watch for risky research," February 16, 2003.

President for National Security Affairs to a think tank representative. Specifically, the memo stated:

> The key to maintaining U.S. technological preeminence is to encourage open and collaborative basic research. The linkage between the free exchange of ideas and scientific innovation, prosperity, and U.S. national security is undeniable. This linkage is especially true as our armed forces depend less and less on internal research and development for the innovations they need to maintain the military superiority of the United States . . .. The policy on the transfer of scientific, technical, and engineering information set forth in NSDD-189 shall remain in effect, and we will ensure that this policy is followed.

However, as we reported in our March 2000 report, we are concerned that the classification, or definition, of fundamental research may be vague and unclear. According to the EAR, fundamental research is defined as

> . . . basic and applied research in science and engineering where the resulting information is *ordinarily published and shared broadly* within the scientific community. Such research can be distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary reasons or national security reasons. [Emphasis added].

While this definition is broadly accepted within the Federal government and the academic community, neither the government nor academic representatives we met with could clearly classify "basic" or "applied" science as compared to "developmental." Developmental research is generally the third stage in research and development activities (coming after basic and applied research) and is defined by the Office of Management and Budget's Circular A-11 as the:

> Systemic application of knowledge toward the production of useful materials, devices, and systems and methods, including the design, development, and improvement of prototypes and new processes to meet specific requirements.

As such, this type of research is not normally published or shared and, therefore, not considered "fundamental." It should be noted that a number of the above officials we spoke with defined "applied" science as "developmental."

However, deciding whether research is "basic," "applied," or "developmental" does not appear to be the deciding factor for either the academic community or Federal laboratories in determining whether research qualifies as "fundamental." Instead, the decision rests more on the "publishability" of the research and whether there are any restrictions placed on it; if

there are no restrictions placed on the publication of the research, these individuals classify their research as "fundamental."

- **Educational.** Educational information is exempt from the regulations if it is released as instruction in catalog courses and associated teaching laboratories of academic institutions.

  For example, a course on design and manufacture of high-performance machine tools would not be subject to the EAR if taught to foreign nationals as part of a university graduate course. However, this same information, if taught as a proprietary course by a U.S. company to foreign nationals, would require a license because the company does not qualify as an "academic institution."

- **Foreign Nationals with Permanent Resident Status**. As mentioned earlier in this report, prior to 1994, the definition of "export of technical data" in the EAR included ". . . any release of technical data in the United States with the knowledge or intent that the data will be shipped or transported from the United States to a foreign country."[22] However, in a 1994 change to clarify this language for industry, BIS amended this portion of the definition to the following:

  > Any release of technology or source code subject to the EAR to a foreign national. Such release is deemed to be an export to the home country or countries of the foreign national. This deemed export rule does not apply to persons lawfully admitted for permanent residence in the United States . . ..[23]

  The rationale for eliminating foreign nationals with permanent resident status from deemed export controls appears to have been that persons who hold such status have made a commitment to the United States and most likely will not return home. However, it should be noted that a foreign national may hold permanent resident status indefinitely and never become a U.S. citizen and is under no requirement to do so. In addition, given the fact that there are no travel restrictions placed on permanent residents, these individuals could travel back and forth to their home country with controlled technology without any monitoring by the U.S. government.

Despite the lack of action with regard to our previous recommendations in this area, we believe that it is necessary to again raise the awareness of these issues in order to address our congressional mandate to assess the adequacy of current export controls to prevent the acquisition of sensitive U.S. technology by countries and entities of concern. However, due to the fact that BIS cannot address these policy issues alone, we believe that BIS should work with the Congress and/or the NSC to address them.

[22] 15 CFR 779.1(b)(1) (1994).
[23] 15 CFR 734.2(b)(2)(ii) (2003).

B. Confusion exists over what is meant by "use" of EAR-controlled equipment by foreign nationals

Technology and technological data involved in operating equipment included on the Commerce Control List (CCL) is subject to the deemed export provisions of the EAR. For example, because of their use related to chemical and biological warfare and anti-terrorism, the technologies associated with a fermenter having a 20-liter, or larger, capacity are controlled by inclusion on the CCL under Export Control Classification Number (ECCN) 2E301. According to the EAR, "use" of equipment included on the Commerce Control List is defined as:

> Operation, installation (including on-site installation), maintenance (checking), repair, overhaul and refurbishing.[24]

As such, some of BIS' senior licensing officials maintain that for consistency purposes in the EAR, the word "and" in the definition infers that all of the activities have to be accomplished to constitute "use." We disagree.

First, we believe the definition could be interpreted as simply a listing of the various activities associated with the term "use" which does not require that *each* activity be accomplished to constitute use. Second, although BIS normally grants approval for a foreign end user to operate, install, maintain, repair, overhaul, and refurbish a piece of controlled equipment exported from the United States in order to permit the full range of uses for an export, the same definition of use does not seem to apply to deemed exports (i.e., foreign nationals "using" the equipment in the United States.). It is unlikely that one individual who has access to the technology for the use of a controlled piece of equipment—as is the case with a deemed export—would have the "know-how" and be assigned the responsibility for undertaking all six of these tasks.

BIS officials were unable to provide us any documents discussing the origin of the EAR definition or what the original intent of the definition may have been. To expand our search for source documentation, we reviewed the control lists from the four multilateral regimes concerned with the export of dual-use and munitions items to countries of concern,[25] but we found that even these regimes were split as to how the term "use" is defined. Specifically, the commodity lists for the Wassenaar Arrangement and the Nuclear Suppliers Group offer the same definition as the CCL. However, the Australia Group and the Missile Technology Control Regime define the term either with an "or," or without any connector word (i.e., as a bullet list of the activities). All of these lists, we should note, are focused on regular exports rather than deemed exports.

[24] 15 CFR 772.

[25] The United States is a member of several multilateral regimes concerned with a variety of issues. The four concerned with dual-use and munitions items are the Australia Group (concerned with the proliferation of chemical and biological weapons), the Missile Technology Control Regime (concerned with the proliferation of missiles capable of delivering weapons of mass destruction), the Nuclear Suppliers Group (concerned with nuclear weapons proliferation), and the Wassenaar Arrangement (concerned mainly with the transfer of conventional weapons).

Given the Defense Technology Security Administration's role in the interagency licensing process, we asked how it interprets the term "use." According to its interpretation, ". . . the 'use' term means operation *and/or* installation (including on-site installation) *and/or* maintenance (checking) *and/or* repair *and/or* overhaul *and/or* refurbishing." [Emphasis added.] After discussing this issue at our exit conference, senior BIS officials agreed that the interpretation should be modified to read "and/or."

How "use" is interpreted is critical in determining how to implement and enforce the deemed export provisions in the EAR. For instance, as we noted in our March 2000 report, the U.S. academic and Federal research communities generally consider most of the research they conduct to be exempt from export controls because of the EAR fundamental research exemption. However, when foreign nationals are given access to equipment at a U.S. university or Federal research facility, that equipment may be accompanied by some transmittal of use or other information or instruction constituting controlled technology. From our discussions about deemed export controls with some of the leading U.S. academic institutions and Federal research agencies, we learned that most had not thought about the transfer of technology for the "use" of controlled equipment in the context of deemed exports. (Further discussion on this issue, as it relates to NIST and NOAA, is provided in Chapter Four of this report.) Other academic representatives we met with contend that in the context of fundamental research, technology relating to the "use" of controlled equipment is also exempt under the EAR fundamental research exemption. However, according to BIS, technology relating to controlled equipment—regardless of how "use" is defined—is subject to the deemed export provisions even if the research being conducted with that equipment is fundamental. This would mean that many of the academic and Federal laboratories or other institutions would need to seek deemed export licenses for some foreign nationals working with controlled equipment or otherwise restrict their access to such equipment.

In relation to our fermenter example (above), we noted that at least two of the nine academic institutions we visited have state-of-the-art fermentation facilities (one housing a 250-liter fermenter and the second a 300-liter fermenter). These fermentation facilities are usually accessible to any university student, researcher, or employee and, in some cases, to the private sector. However, using BIS' current interpretation of "use"—that all activities listed in the definition must be undertaken—the objective of technology control associated with this or other EAR-controlled equipment becomes almost unobtainable.

RECOMMENDATIONS: BIS should modify the definition of "use" in the EAR in order to help licensing and enforcement officials better implement and enforce deemed export controls associated with the technology for the use of controlled equipment. Once this effort has been completed, BIS should inform the U.S. academic community, industry, and Federal agencies of the deemed export controls associated with the technology for the use of EAR-controlled equipment by foreign nationals.

In its written response to our draft report, BIS stated that it is prepared to work with the Office of Chief Counsel for Industry and Security as well as the Departments of Defense and State to

determine whether the current definition of "use" technology should be revised in the EAR and whether this definition in the multilateral export control regimes should be harmonized. It further stated that if the agencies agree to revise the regulation, BIS will publish the regulatory revision and incorporate it into outreach to government agencies, industry, and universities to ensure that there is a common interpretation and correct application of this term as it relates to deemed exports. In addition, BIS stated that future outreach efforts will make clear that technology for the "use" of controlled equipment is subject to licensing requirements even if the research being conducted with that equipment is fundamental. To assure wider distribution of this information to the general exporting community, BIS stated that it will modify the generic "use" technology presentation currently used in its export control seminars to clarify the term and when license requirements are triggered for deemed exports.

C. BIS' deemed export control policy does not take into account all the nationalities a foreign national has ever maintained.

According to senior BIS officials and guidance provided on its web site,[26] BIS' deemed export licensing policy only recognizes a foreign national's most recent citizenship or permanent residency. Thus foreign nationals who are citizens or permanent residents of countries not designated as countries of concern and, therefore, not subject to licensing requirements, can gain access to controlled dual-use technology without scrutiny regardless of their country of origin. For example, a person born in Iran who is currently a citizen of Canada would be categorized as Canadian according to the EAR even if she/he maintained dual citizenship as an Iranian. In this instance, given that most exports to Canada are not controlled,[27] a deemed export license would not be required for this foreign national.

By not requiring employers to obtain export licenses in this type of situation, foreign nationals who originate from countries of concern and have access to controlled dual-use technology are able to bypass the extensive screening process required of a deemed license application. Comparatively, if that same foreign national came directly to the United States from Iran on an H1-B visa[28] with the intent of working on controlled dual-use technology, the U.S. employer would be required to apply for a BIS deemed export license for that particular foreign national.

BIS' policy contrasts with that of the State Department's Directorate of Defense Trade Controls, which requires export license applications involving munitions to include all current nationalities for all foreign national employees expected to receive defense services and technical data. As such, State prescribes that a person born in Syria, who later becomes a citizen or permanent resident of Canada while retaining his Syrian citizenship, should be regarded as both Syrian and Canadian.

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[26] See http://www.bis.doc.gov/deemedexports/deemedexportsfaqs.html (January 6, 2004).

[27] The EAR maintains limited controls for exports to Canada, including items controlled for chemical and biological weapons concerns and for items, such as shotguns and optical sighting devices, that fall under the jurisdiction of the 1997 Organization of American States firearms convention.

[28] High-technology visas are issued under the H1-B visa category. H1-B is a temporary visa category, which is valid for three years and can be extended for another three. This category includes specialty occupations, such as architects, engineers, doctors, college professors, and computer programmers.

In a 1998 memorandum to the then-Assistant Secretary for Export Administration, State recommended that BIS amend the dual-use export regulations to follow its policy of noting dual citizenship. Specifically, State recommended that "place of birth be taken into consideration when reviewing applications" because "nationals from state sponsors of terrorism may travel on European passports or have multiple nationalities." BIS could not tell us whether it had responded to State's memo; however, its policy remained unchanged.

RECOMMENDATION: BIS should amend its current policy to require U.S. entities to apply for a deemed export license when a foreign national employee or visitor was born in a country where the technology in question is EAR-controlled.

In its written response to our draft report, BIS stated that it is prepared to consider modifying the current policy of only recognizing a foreign national's most recent country of permanent residency or citizenship for purposes of determining deemed export license requirements. However, BIS noted that its current policy reflects the traditional understanding that citizenship denotes a substantial personal connection to a given country. In addition, BIS noted that its current licensing practice includes conducting a thorough review of the foreign national's contacts (personal, professional, financial, and employment-related). However, it stated that it would conduct an internal review with the Office of Chief Counsel for Industry and Security to determine whether there are any legal impediments or any inappropriate policy outcomes that should be considered if BIS were to modify its current policy on this matter. We acknowledge BIS' efforts to further examine this matter, and we look forward to reviewing a copy of its internal review upon completion.

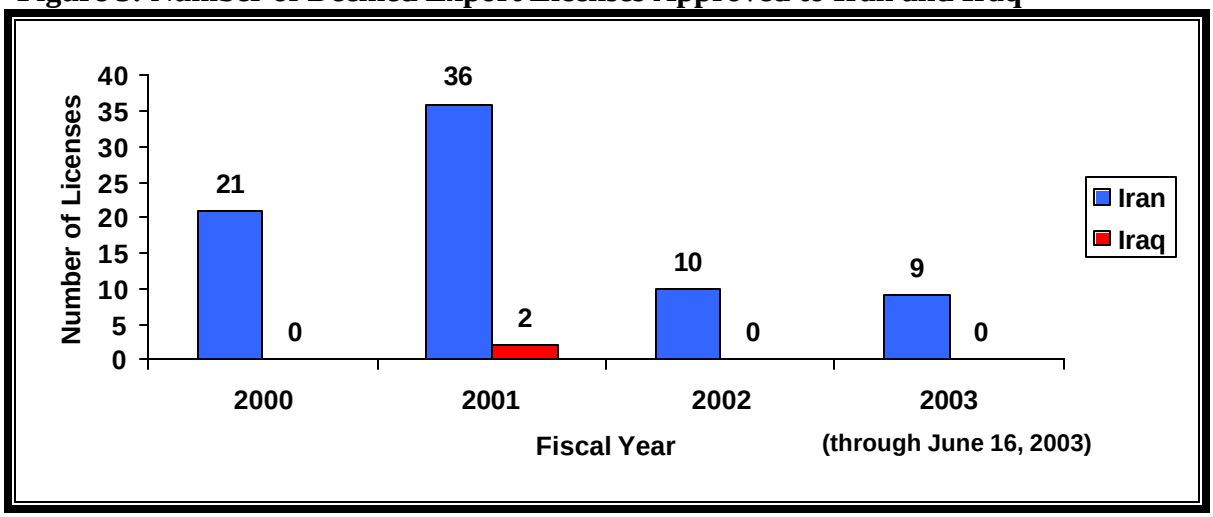
It should also be noted that in its written response to our draft report, NIST took issue with our recommendation for BIS to amend its policy to require U.S. entities to apply for a deemed export license for foreign national employees or visitors who have access to dual-use technology if they were born in a country where the technology transfer in question is EAR-controlled. Specifically, it stated that our recommendation could be interpreted to include naturalized citizens of the U.S., particularly those who were born in a sensitive country. However, if a foreign national becomes a naturalized citizen of the United States, they are no longer considered a foreign national, but rather a U.S. citizen (and the EAR controls involving the transfer of technology to such an individual no longer apply). In the NIST example cited, the Libyan who is a naturalized British citizen, is, on the other hand, still considered a foreign national and the controls related to the transfer of EAR-controlled technology do apply.

D. BIS has approved deemed export licenses for foreign nationals from Iran and Iraq despite a "presumption of denial" policy.

From FY 2000 through June 16, 2003, BIS approved 78 of 107 deemed export license applications (73 percent) involving foreign nationals from Iran (76) and Iraq (2) (see figure 3).

The controlled technology involved was classified as, mainly, electronics, computers, and telecommunications items.

Figure 3: Number of Deemed Export Licenses Approved to Iran and Iraq



Source: Export Administration, Bureau of Industry and Security

According to the EAR, licenses for nearly all exports to Iran and Iraq[29] are subject to a general export prohibition to embargoed countries and to a general policy of denial for specific technologies. A few exceptions are allowed for items such as medical supplies and agricultural products.

In 1997 the former BIS Deputy Chief Counsel issued a legal opinion stating that deemed export licenses are permissible for foreign nationals from Iran and Iraq because the laws[30] prohibiting exports to those two countries did not apply to their respective nationals in the United States. Specifically, in referencing deemed exports related to Iranian nationals, the legal opinion further states that:

> It seems beyond argument that a statutory requirement to deny licenses for any export to Iran has a plain meaning that does not encompass the release of technical data to someone outside of Iran when the release is made without knowledge that the recipient intends to take or send the data to Iran.

However, quoting BIS' current definition of deemed exports, the release of controlled technology to a foreign national "is deemed to be an export to the home country or countries of

[29] On May 23, 2003, the Department of Treasury's Office of Foreign Assets Control issued a general license for exports of goods and technology to Iraq that, in effect, suspended the economic embargo that had been instituted by Presidential Executive Order 12722, dated August 2, 1990.

[30] The Iraq Sanctions Act of 1990 (P.L. 101-513) imposed trade sanctions against Iraq; the Iran-Iraq Arms Non-Proliferation Act of 1992 (P.L. 102-484) applied the Iraqi sanctions to Iran.

the foreign national."[31] As such, we are concerned that BIS' 1997 legal opinion, still currently in use, fails to recognize the concept and objectives of deemed export controls.

RECOMMENDATION: BIS should reevaluate its approval of deemed export licenses for foreign nationals from Iran and Iraq to ensure such approvals are consistent with relevant law and current deemed export control licensing policies and procedures.

In its response to our draft report, BIS stated that its current deemed export control policies and procedures are consistent with applicable statutes. Specifically, BIS stated that it interprets the Iran Sanctions Act of 1990 and the Iran-Iraq Non-Proliferation Act of 1992 as prohibiting transfers of controlled technology in the United States only in situations where there is knowledge or intent that the technology will be provided to Iran and Iraq. It further stated that deemed exports frequently involve situations when no such knowledge or intent is present, and, in these cases, BIS has the discretion to approve deemed export license applications to Iraqi or Iranian nationals.

With regard to BIS' statement concerning "knowledge or intent" in the case of Iranian and Iraqi nationals, we maintain that BIS' current deemed export control rule no longer reflects the "knowledge and intent" standard, as it did before 1994. Instead, BIS' deemed export control rule states that the release of controlled technology is "deemed to be an export" to the foreign national's home country or countries regardless of whether there is knowledge or intent that the foreign national will return home with the technology.

In addition, while we acknowledge BIS' discretion to approve deemed export license applications to Iraqi and Iranian nationals, we want to remind BIS that, according to the EAR, export applications to Iran and Iraq are subject to a general policy of denial. As such, while BIS has the authority to approve deemed export license applications involving Iraqi and Iranian nationals, we are concerned that a 73 percent approval rate may not be in accordance with the EAR.

[31] 15 CFR 734.2(b)(2)(ii)

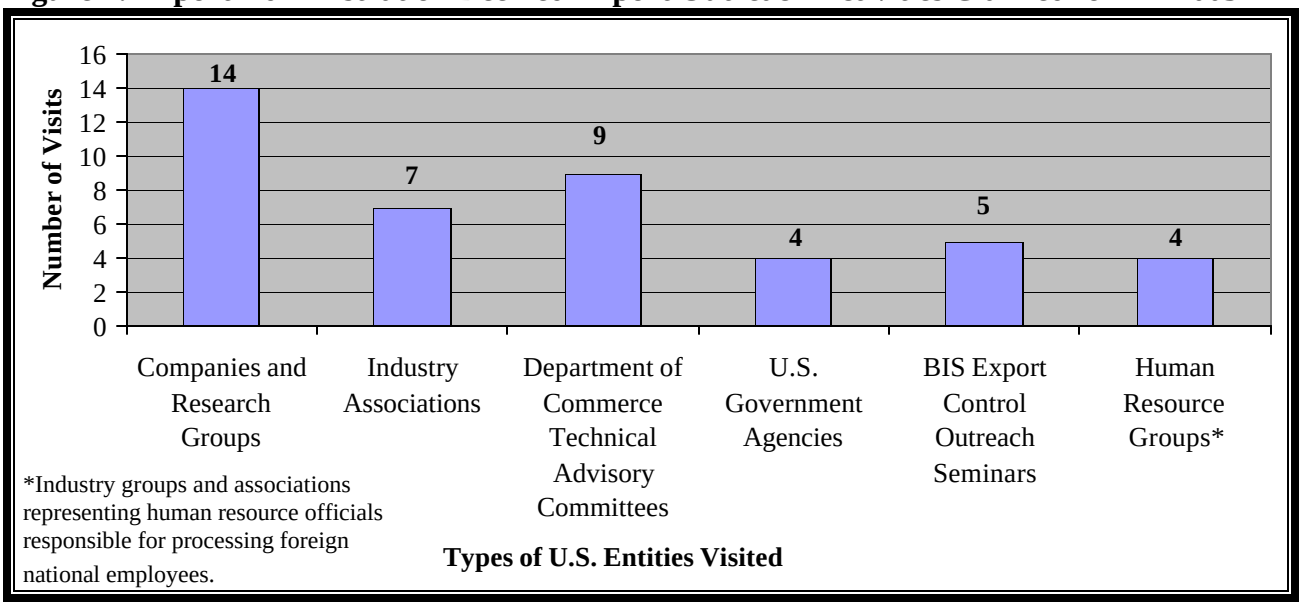
II. BIS' Expanded Efforts to Raise Awareness of Deemed Export Control Regulations Could Be Enhanced by Refocusing Outreach and Clarifying Information

BIS has greatly expanded its efforts to raise awareness of deemed export control regulations since our March 2000 report. Within this issue, however, we found two areas that still need improvement. First, although BIS increased its deemed export outreach activities in FY 2003, it mainly focused on those companies and industry sectors that currently apply for deemed export licenses rather than those entities that do not (such as small businesses, defense contractors, and the academic and Federal research community). Second, while the EAR offers supplemental questions and answers to help exporters better evaluate individual applicability of the deemed export regulations, we found at least two of the answers provided may be inaccurate or unclear

A. BIS substantially increased its deemed export outreach efforts in fiscal year 2003, but targeted a limited audience.

The BIS Office of Strategic Trade and Foreign Policy Controls began implementing a deemed export outreach program in November 2002, visiting a variety of entities involved with technologies and equipment subject to deemed export controls. According to BIS, the intent of its program is to "ensure full compliance with the deemed export regulatory requirements." From November 2002 through September 2003, the Deemed Export Division reportedly conducted 43 specific deemed export outreach events (38 visits and 5 seminars). The events, however, were primarily focused on a limited audience (see figure 4 for a breakout), and it should be noted that the total includes multiple visits to some of the same U.S. entities to update them on proposed changes to deemed export license conditions. While updating knowledgeable entities on deemed export licensing requirements facilitates continuing education, it does not expand educational outreach to those not currently aware of or complying with the requirements.

Figure 4: Export Administration Deemed Export Outreach Activities Claimed for FY 2003



Source: Export Administration, Bureau of Industry and Security

During FY 2003, BIS met with several large companies, Commerce Technical Advisory Committees, and trade associations primarily associated with the semiconductor industry. BIS admittedly focused on the semiconductor industry because it accounts for 78 percent (661)[32] of the approximately 846 deemed export license applications processed in FY 2003. In addition, while BIS reported that it met on four occasions with other Federal agencies, only two of these visits, to the Department of Energy and to NOAA, involved deemed export education. The other visits involved discussions with other license referral agencies about the deemed export licensing process.

BIS currently lacks an overall written strategy to identify other U.S. entities that may employ or host foreign nationals. However, license application data suggest that many industries (including chemical and biotechnology), academic institutions, and Federal research facilities that may employ or host foreign nationals are not applying for deemed export licenses.

Another industry sector not historically targeted by BIS for deemed export outreach is the small business community. One large semiconductor company we met with claimed that several small semiconductor companies should be applying for deemed export licenses but lack the resources or knowledge of export controls. In addition, representatives from large companies stated that many of the smaller companies are not aware of deemed export requirements because they do not traditionally export their products or technology and thus are not familiar with the EAR; without a perceived need to understand general export controls, companies may never learn about deemed exports.

In addition, it appears that small businesses serving as defense contractors are relying on contract language to identify export control issues or requirements and/or are completely unaware of the regulations. Specifically, one contractor Defense OIG visited during our interagency review—which develops pressure and magnetic field sensors for a missile system—had a foreign national from an EAR-restricted country (South Africa) participate in at least two separate Defense contracts on a limited basis. Under the first contract, the item involved magnetic field sensors. According to the Defense Technology Security Administration, these items are controlled under ECCN 6A006 (magnetometers) for national security and anti-terrorism and would require a license to South Africa. While the contract contained a prepublication restriction clause—which could have made the technology subject to export controls—it did not specify that the project involved export-controlled technologies. The contractor stated they relied on the contract to identify export-controlled technology and therefore did not consider any of the technology to be export-controlled.

Under the second contract, the items of concern were shape memory alloys involved in developing rotary blades. Again, the Defense Technology Security Administration determined these items are controlled under ECCN 1C002 (metal alloys, metal alloy powder, and alloyed materials) for national security, nonproliferation, and anti-terrorism and would require a license

[32] Because applications may contain a request to export more than one technology, this number represents the total number of requests for this technology from all applications.

to South Africa. The second contract did contain an export control clause[33] that stated, the "information generated in performance of this solicitation and/or contract is subject to export control by the Arms Export Control Act"; however, there was no reference to the Export Administration Act. Again, the contractor stated that because the contract did not specifically prohibit the use of foreign nationals or identify the technology subject to export controls, they did not know that the technologies were subject to dual-use export controls and, therefore, did not seek a deemed export license from BIS for the foreign national for either contract.

Based on conversations with this and other Defense contractors, it appears that they are very knowledgeable about how to protect classified information from inappropriate disclosure but are not that knowledgeable about how to deal with unclassified but export-controlled information or technology.

Finally, as a result of our current review, BIS began to conduct outreach with the academic community. Specifically, the director for the Deemed Export Division presented a briefing on deemed exports at the Association of International Educators' regional conference in November 2003. As a first step, this effort represents a positive attempt at targeting an audience that hosts a large number of foreign nationals with potential access to controlled technology.

RECOMMENDATION: BIS should establish and implement a strategic outreach plan for deemed exports that has annual goals and identifies priority industries, Federal agencies, and academic institutions that are not currently applying for deemed export licenses.

In its written response to our draft report, BIS stated that it has taken a number of actions to address our recommendation. For instance, BIS stated that it monitors and evaluates the type and quantity of its deemed export outreach on a quarterly basis to ensure that it targets the appropriate industry sectors. Specifically, BIS reported that during FY 2004, to date, it has conducted over 40 outreach activities, including visits to U.S. Government research labs, universities, small business associations, and foreign student associations. BIS also stated it will continue to identify priority industries and conduct outreach later this year to small and medium-sized business and defense contractors to educate these types of companies about deemed export rules. In addition, BIS stated that it has already targeted outreach in the area of biotechnology by discussing deemed export policies and procedures with the biotechnology industry and academia. We are pleased that BIS is expanding its deemed export outreach program. We request that a copy of BIS' written strategic outreach plan—including its proposed outreach efforts for the remainder of FY 2004—be provided to us as part of the action plan.

[33] The contract also contained a publication clause that required the contractor to submit and receive approval from the contracting officer before publishing the results of the research.

B. The EAR supplemental "Questions and Answers" on deemed exports need clarification

The EAR offers supplemental questions and answers to help exporters better evaluate individual applicability of the deemed export regulations.[34] The supplement is divided into nine wide-ranging categories:

- publication of technology and exports and re-exports of technology that has been or will be published;
- release of technology at conferences;
- educational instruction;
- research, correspondence, and informal scientific exchanges;
- federal contract controls;
- commercial consulting;
- software;
- availability in a public library; and
- miscellaneous.

Although the questions and answers do not cover all scenarios, BIS' intent was to help potential license applicants understand how BIS interprets specific circumstances as they relate to deemed export regulations. However, we found that at least two of the answers provided may be inaccurate or unclear.

First, Question A(4) from the supplement, which falls under the "publication of technology" category, discusses whether "prepublication clearance" by a government sponsor (in this case Energy) would void the "publishability" exemption in the EAR and trigger the deemed export rule. The answer states "no…the transaction is not subject to the EAR." However, according to §734.11 of the EAR, if research is funded by the U.S. government and national security controls are in place to protect any resulting information, the research is subject to the EAR. Furthermore, after discussing this issue with senior BIS licensing officials, they agreed that a prepublication clearance clause in government-sponsored research would trigger the deemed export rule.

[34] 15 CFR 734, Supplemental No. 1.

Second, Question D(1), which falls under the "research, correspondence, and informal scientific exchanges" category, discusses whether a license would be required for a foreign graduate student to "work" in a laboratory. The answer states, "not if the research on which the foreign student is working qualifies as 'fundamental research'. . .." Since allowing scientists, engineers, or students to work in a laboratory may necessitate their "use" of EAR-controlled equipment, based on this answer, a potential license applicant may logically assume that "use" of controlled equipment is covered under the fundamental research exemption. Yet, despite the answer given for Question D(1), BIS officials informed us that while the research performed in a laboratory may be fundamental and exempt from the EAR, the "use" of controlled equipment is not.

In discussions with BIS officials on these inconsistencies, we were told that the questions and answers in the supplemental were drafted several years ago by a licensing official no longer working for the bureau. BIS officials also acknowledged that a review of the questions and answers is probably in order. While we agree that providing questions and answers in Supplement No. 1 to Part 734 of the EAR is beneficial to exporters, we believe BIS needs to review them periodically to ensure they are accurate and up-to-date.

RECOMMENDATION: BIS should clarify and periodically update the deemed export "Questions and Answers" in Supplement No. 1 to Part 734 of the EAR.

In its written response to our draft report, BIS stated that it would update the question and answer section in the EAR to provide clarity to the exporting community and government and academic research laboratories. Specifically, BIS acknowledged the need for further clarification on Question A(4) and agreed with our assessment that prepublication review by a government sponsor of research *would* void the publishability exemption in the EAR.

With regard to Question D(1), BIS acknowledged the need for further clarity on the interpretation of "use" technology that may be implicated in fundamental research. As such, BIS' response stated that it will revise the answer in D(1) to state that a license may be required if in conducting fundamental research the foreign graduate student needs access to controlled technology to "use" EAR-controlled equipment." We request that a copy of the revisions be provided to us when completed.

III. BIS Needs a Deemed Export License Compliance Program

Because BIS does not perform on-site inspections or reviews of deemed export license holders to ensure compliance with license conditions (as it does under its end-use check program[35]), deemed export license holders are not held accountable for complying with license conditions. Compliance programs should involve on-site inspections of facilities to determine if the license holder is complying with specific license conditions. In particular, all potential points of access to the controlled technology should be reviewed for appropriate safeguards and technology control plan implementation to ensure compliance with license conditions.

In addition to on-site inspections, the EAR allows BIS to limit a transaction authorized under an export license by placing conditions on the license itself. This is an important part of the interagency export license resolution process and offers BIS an additional means of monitoring certain transactions, such as technology transfers within the United States to foreign nationals from countries of concern. In fact, we noted a number of deemed export licenses were approved by Defense with the condition that BIS monitor compliance with the license terms by the license holder.

However, BIS informed us that it is not monitoring compliance with any deemed export licenses—including those with conditional approvals from license referral agencies—because it does not have the resources to perform this function. BIS' failure to monitor license conditions could degrade the integrity of the interagency licensing process. For example, licensing referral agencies that depend on BIS to notify them of negative outcomes of license conditions are making decisions about future licenses with no information about the license holder's compliance with conditions attached to previously issued licenses because no such information exists. As a result, the same companies are continuously receiving deemed export licenses regardless of whether they comply with the license conditions.

In an attempt to address this issue, in the summer of 2003 BIS managers met with representatives of two companies considered to be large deemed export license holders to review each company's technology control plan.[36] Although BIS officials talked with company representatives about how they were implementing their plans, the officials did not test the effectiveness of the programs to ensure compliance with the license conditions. As a result, despite the meetings, BIS could not definitively determine the company's compliance with the deemed export license conditions.

In response to prior OIG recommendations related to exporter compliance with license conditions, BIS plans to develop a "license condition enforcement program" in FY 2005. Reportedly the program will address compliance by export license holders, including deemed

[35] End-use checks verify the legitimacy of overseas dual-use export transactions controlled by BIS. A pre-license check validates information on export license applications by determining if an overseas entity is a suitable party to a transaction involving controlled U.S.-origin goods or technical data. Post-shipment verifications strengthen assurances that exporters or foreign entities comply with the terms of export licenses by determining whether goods exported from the U.S. were actually received by the appropriate entity and are being used in accordance with the license provisions.

[36] A technology control plan outlines company programs and policies to protect controlled technology.

exports. However, based on our initial discussions with BIS management, it does not appear that this program will include any type of on-site verifications or reviews of compliance with the license conditions. Instead, BIS officials indicated that this program will most likely focus on reviews of licenses and conditions by headquarters staff to identify "red flags" (e.g., not complying with a license requirement to send BIS information about the shipment of the goods within a specified timeframe) that can be referred out to export enforcement agents for investigative purposes, rather than targeting companies for compliance reviews.

RECOMMENDATION: BIS needs to develop a compliance program that effectively evaluates deemed export license holders' compliance with license conditions. At a minimum, the review should determine whether:

- ❖ All research, including access to technology, is being performed in accordance with license conditions;
- ❖ Deviations to the foreign national's job responsibilities stay within the technical parameters of the license; and,
- ❖ The technology control plan used by the subject U.S. entity accurately and fully reflects its practices.

In its written response to our draft report, BIS stated that Export Enforcement would initiate a pilot post shipment verification (PSV) program on the most sensitive deemed export licenses issued by BIS. The PSVs will reportedly be conducted by a joint team incorporating both Export Administration engineers and Office of Export Enforcement agents. The teams will be responsible for determining compliance with the deemed export license conditions and detecting any violations. BIS' plans to re-evaluate the pilot program after 12 months to assess its effectiveness.

In addition, BIS' response stated that Export Enforcement is prepared to initiate a small pilot program involving pre-license checks (PLCs) on new deemed export license applicants. BIS anticipates that the PLC program will provide assurances before exports are made that the parties to the transaction know their responsibilities. In addition, BIS believes this program will provide it with a preview of the company's internal compliance programs as well as better insight on whether a deemed license should be issued. As a part of these pilot programs, we encourage BIS to consider determining whether (1) all research, including access to technology, is being performed in accordance with license conditions; (2) deviations to the foreign national's job responsibilities stay within the technical parameters of the license; and, (3) the technology control plan used by the subject U.S. entity accurately and fully reflects its practices. Overall, we believe this end-use check program for deemed exports will meet the intent of our recommendations once implemented. As such, we request a status of the two pilot programs, including the number of PLC and PSVs conducted in FY 2004, in BIS' action plan.

IV. Deemed Export Control Compliance by Commerce Bureaus is Mixed

As part of conducting follow-up on prior OIG findings and recommendations related to deemed export compliance by Federal research facilities, we conducted a brief survey at two of Commerce's scientific bureaus—the National Institute of Standards and Technology (NIST) and the National Oceanic and Atmospheric Administration (NOAA). Based on discussions with senior officials and an overview of security procedures at both agencies, we identified some potential weaknesses with regard to deemed exports and foreign national visitors. Given the potential security vulnerabilities identified at these two bureaus, we offer our findings related to foreign national visitor access in an addendum to this report.

Based on the security vulnerabilities we identified at these two bureaus, we also recommend that the Department's Office of Security enforce—including conducting periodic on-site security reviews—its security policies related to foreign national visitors or guest researchers in Commerce facilities and hold bureaus accountable for compliance with those policies.

A. NIST's deemed export control policies and procedures need to be strengthened

An agency of the Department of Commerce's Technology Administration, NIST strives to strengthen the U.S. economy and improve the quality of life by working with industry to develop and apply technology, measurements, and standards. It carries out this mission through four major programs:

- The NIST Measurement and Standards Laboratories aid U.S. industry by providing technical leadership for vital components of the nation's technology infrastructure including electrical engineering, physics, information technology and weights and measures; and

- The Advanced Technology Program, which accelerates the development of innovative technologies for broad national benefit through research and development partnerships with the private sector.

- The Manufacturing Extension Program provides technical and business assistance to smaller manufacturers through a nationwide network of service centers with access to specialists and outside consultants.

- The Malcolm Baldrige Program aims to promote and recognize organizational performance excellence by enhancing the competitiveness, quality, and productivity of U.S. organizations for the benefit of all residents.

Through its Foreign Guest Researcher Program, NIST offers scientists from around the world the opportunity to work collaboratively with its scientists on these programs. Although the majority of activities NIST is involved with may fall under the area of fundamental research, we are concerned about how NIST safeguards its controlled equipment from its foreign national visitors

and researchers. Again, as discussed in Chapter One of this report, the technology associated with the use of controlled equipment—even in the context of fundamental research—is not exempt from deemed export controls. We discuss this issue and others involving NIST's deemed export efforts below, and the issue of clearances and access controls related to foreign nationals is in the report's addendum which has limited distribution.

EAR-Controlled Equipment

As a result of our March 2000 report, NIST issued guidance to its employees concerning export controls and foreign national access to controlled technologies. However, this guidance does not consider the applicability of deemed export controls associated with the technology for the "use" of controlled dual-use equipment.

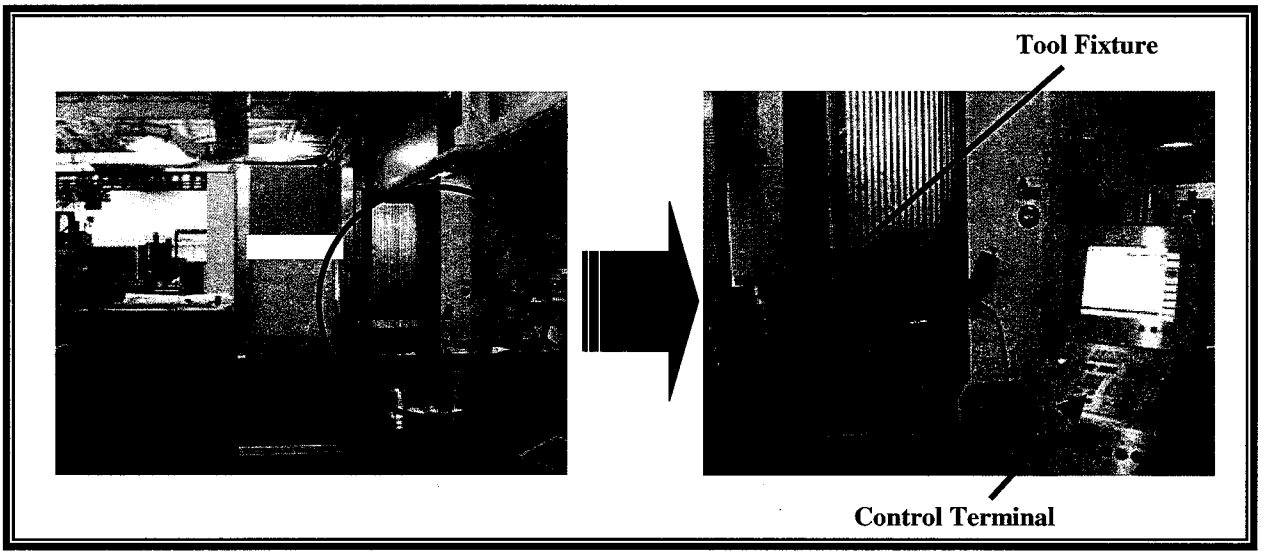
During the course of our review, we identified at least one EAR-controlled commodity—a 5-axis machine tool[37]—located at NIST's Manufacturing Engineering Laboratory (MEL) machine shop in Gaithersburg, Maryland (see figure 5). Machine tools cut and form metals or other hard materials with varying degrees of precision. They are essential to civilian industry, but they have a range of military industrial applications as well. Specifically, they are useful for manufacturing many types of conventional weapons and vehicles; building nuclear weapons; manufacturing high-speed centrifuges that can enrich uranium to go into nuclear weapons; and making precision missile parts. According to the CCL, machine tools are controlled under ECCN 2B001, while the "technology" for the (1) "use" of the equipment or (2) "software" is controlled under ECCN 2E201. As such, this piece of equipment is controlled for national security, nuclear nonproliferation, and anti-terrorism reasons and requires a license to export it to countries of concern. Under the current regulations, it should be noted that a license application involving the export of this equipment to a terrorist-supporting country would most likely be denied.

According to NIST, the only two individuals who are authorized to "operate" the 5-axis machine are NIST employees as well as U.S. citizens and both utilize private passwords to operate the machine. While MEL hosts 45 foreign guest researchers at any given time (including a foreign national from a terrorist-supporting country whose original assignment included participating in ". . . experimental research using recently acquired equipment at NIST for the study of machining process metrology . . . and develop a plan to conduct additional tests and recommendations for the optimized process conditions."),[38] based on discussions with NIST officials, no foreign national from a country of concern conducted research involving this machine. However, NIST informed us that the machine shop is open during normal business hours to all MEL researchers—including guest researchers. Furthermore, during our tour of the machine shop, we noted the 5-axis machine tool's operations manual lying in the open on a tool cabinet across from the machine.

[37] Although this machine tool was manufactured in Germany, it is still subject to U.S. export control laws and regulations.

[38] The foreign national from the terrorist-supporting country is no longer at NIST and reportedly never began his research while there.

Figure 5: The 5-Axis Machine Tool



Source: Office of Inspector General

Besides the 5-axis machine, it is highly possible that NIST has other dual-use controlled equipment. Specifically, after our initial inquiry concerning the 5-axis machine, one engineer from MEL indicated that there may be several pieces of controlled dual-use equipment in that lab. Although NIST conducts a continuous inventory of its equipment, it has not identified whether any of that equipment falls under the CCL and what foreign nationals have access to it.

NIST's Editorial Review Board

In response to a 2002 memo from the White House Chief of Staff to all cabinet agencies offering guidance for safeguarding information regarding weapons of mass destruction, NIST instituted a new publication review procedure for NIST materials with potentially sensitive information. Specifically, a NIST division chief must review all materials with potentially sensitive information and certify that the material to be published does not contain sensitive information before the NIST Washington/Boulder Editorial Review Board approves any publication. While we believe this is a positive step in protecting the release of unclassified but sensitive research results, this "back-end" measure may be too late to protect sensitive and possibly export-controlled information if a foreign national from a country of concern is a part of the team conducting the research. In addition, we noted that NIST's new procedure—which requires a prepublication clearance for all materials to identify sensitive material—may disqualify them from using the fundamental research exemption in the EAR. We raised this issue with BIS officials. However, they indicated they would need more information on NIST's new process before making a decision as to whether it voids the fundamental research exemption.

Deemed Export Training

NIST informed us that it conducts deemed export control training for all of its employees. Specifically, the NIST Chief Counsel told us that every NIST employee participated in one of 16 training sessions held between 2000 and 2001. These training sessions covered various topics, such as ethics and deemed exports. In addition, we were told that all new NIST employees receive new employee training, which may cover deemed export controls. Finally, NIST informed us that the materials presented at the above sessions are included on its intranet. Thus, NIST officials believe all of its employees understand the constraints imposed by the deemed export control regulations. However, as we noted above, NIST officials were not aware that the technology associated with the "use" of controlled equipment is subject to the EAR and, therefore, this information was not included in any of the training sessions involving deemed exports.

RECOMMENDATIONS: NIST should do the following:

- Review the equipment on hand in the labs to identify EAR-controlled equipment; interview managers of labs that have controlled equipment to establish what foreign nationals (if any) use or have access to the equipment; and work with BIS to develop an effective means to identify when a deemed export license might be required.

- Conduct periodic deemed export control training, including coverage of the transfer of technology associated with the "use" of controlled equipment, for all NIST employees that work with EAR-controlled technology and/or equipment.

- Ensure that NIST management reviews the subject of NIST's research "upfront" to determine its sensitivity and applicability to deemed export controls.

- Work with BIS to determine if its Editorial Review Board process voids the fundamental research exemption in the EAR and seek appropriate deemed export licenses, as necessary.

In its written response to our draft report, NIST stated that it is currently in the process of inventorying its EAR-controlled equipment. Once NIST completes its inventory, it will need to identify what foreign nationals use or have access to the EAR-controlled equipment and work with BIS to develop an effective means to identify when a deemed export license is required. Once completed, we would appreciate receiving a copy of the results of this review.

In addition, NIST's response did not address what action it would take with regard to our recommendation concerning the need for periodic deemed export control training for its employees.

Furthermore, while NIST's response did not specifically address our recommendation to ensure that NIST *researchers* review the subject of their research "upfront" to determine its sensitivity and applicability to deemed export controls, it stated that it would be more effective if our recommendation required NIST *management* to review the subject research "upfront." We agree. Therefore, we revised our recommendation and state that NIST should ensure that its managers review the subject of NIST research "upfront" to determine its sensitivity and applicability to deemed export controls.

Finally, with regard to our recommendation concerning its Editorial Review Board, NIST disagreed with our finding that its new procedure—which requires a prepublication clearance for all materials to identify sensitive material—may disqualify it from using the fundamental research exemption in the EAR. Specifically, NIST's response stated that based on BIS' definition of "fundamental research," if the intent of NIST's research is to publish and widely disseminate the results, then its work is fundamental, regardless of whether or not it pre-reviews the results. The response further stated that if NIST did not intend to publish, it would not send the document for review. While NIST's prepublication review process may consider factors other than national security when reviewing a publication for public release, it is our understanding that one of the original purposes of the prepublication review—per the White House guidance—was to safeguard U.S. government information regarding weapons of mass destruction and to prevent the public release of such information. Again, it was not clear to us during our review whether NIST's prepublication review process nullified the fundamental research exemption. As we stated in our draft report, we discussed this issue with BIS officials, who indicated they would need more information on NIST's process before making a decision as to whether it voids the fundamental research exemption. In response to our draft report, BIS indicated that it was willing to work with NIST on this issue. Therefore, we reiterate our recommendation that NIST work with BIS to determine if its Editorial Review Board process voids the fundamental research exemption in the EAR and seek appropriate deemed export licenses, if necessary.

It should also be noted that NIST's written response took issue with some of our statements in the draft report. For instance, NIST raised several concerns with our statement in the draft report that it is unclear what foreign nationals may have access to the [5-axis] machine, or its operations manual, given the fact that the machine shop that houses both is 'open' to all lab employees and its guest researchers.

NIST stated that based on the current BIS definition of "use," no foreign nationals from countries of concern have ever "used" the 5-axis machine tool. While our draft report does acknowledge that only two individuals—who are both NIST employees and U.S. citizens—reportedly "operate" the 5-axis machine, our concern mainly focused on the transfer of technology associated with the "use" of the machine to the foreign guest researchers at MEL. As such, a foreign guest researcher does not technically have to "use" the machine for a transfer of the controlled technology to take place. According to the EAR, the "use" control—as it relates to deemed exports—is based on the transfer of technology associated with the "use" of EAR-controlled equipment. As such, while the transfer of technology can occur through physically "operating" this machine, it might also be accomplished through (1) conducting research "on" the machine's capabilities, or (2) reading the operations manual.

NIST also raised a concern that this statement, inferring that the "foreign national from a terrorist-supporting country" may have had access to the 5-axis machine, was inaccurate because the individual (1) was housed in a separate building, (2) was escorted at all times while on-site, and (3) never "used", or had "access to", the 5-axis machine tool. While we acknowledge that we were told this information by other departmental officials during our review, our concern mainly focused on the research this individual was originally brought to NIST to conduct. According to this individual's agreement with NIST, his proposed assignment included participating in experimental research using recently acquired metrology equipment at NIST for the study of machining process metrology. Specific technical work involved (1) reviewing state-of-the-art literature of high-speed machining process metrology, (2) using the newly acquired instrumentation for experimentation, and (3) developing a plan to conduct additional tests and recommendations for the optimized process conditions. If the equipment to be used by the foreign national during his research was the 5-axis machine tool, the research may have involved the transfer of controlled technology associated with the "use" of the machine.

NIST also believes that the draft report suggests that NIST has an open door policy pertaining to the 5-axis machine and that anyone—including the 45 foreign guest researchers assigned to MEL—can go into the machine shop and use it. Again, as we reported in our draft report, MEL officials informed us that anyone who was assigned to MEL had access to *all* of MEL's facilities—including its machine shop. Furthermore, based on our two tours of MEL's machine shop, as well as discussions with NIST and OSY personnel during our review, none of NIST's labs—including the facility that houses the machine shop—had security controls in place to restrict access by foreign guest researchers. In addition, the 5-axis machine tool [redacted] is not segregated from other equipment. (Redacted)

Finally, we are pleased to note that NIST reportedly took action with regard to our concern that the 5-axis machine's operations manual was left unattended on a workbench. Specifically, the response stated that the operations manuals are now stored in locked cabinets when not in use. We believe this action should help NIST prevent unauthorized release of EAR-controlled technology.

B. NOAA lacks adequate deemed export control policies and procedures

NOAA gathers data and conducts research on the oceans, the atmosphere, space, and the sun, and applies this knowledge to practical concerns, such as weather prediction or coastal zone management. NOAA's five line offices are the National Ocean Service, the National Weather Service, the National Marine Fisheries Service, the Office of Oceanic and Atmospheric Research, and the National Environmental Satellite, Data, and Information Service. Staff at all NOAA line offices collaborate internationally, which includes having foreign nationals visit or work at NOAA research facilities or data centers.

In our March 2000 report, we recommended that NOAA work with BIS to establish procedures to ensure that the release of controlled technology to foreign nationals complies with deemed

export licensing requirements. As stated in our September 2001[39] follow-up report, the National Environmental Satellite, Data, and Information Service has formed an Export Action Team to review incoming export actions and ensure that line offices are staffed for export compliance, develop an International Visitor Policy with comprehensive guidance to include export controls, and develop an export control awareness and training program. At the beginning of our current review, we learned that no action had been taken to address our recommendation for NOAA's other line offices. Instead, agency officials informed us that the majority of its work is fundamental research and, therefore, not subject to deemed export controls. However, based on our discussions with NOAA's Deputy Assistant Secretary for International Affairs, it seems unlikely that NOAA officials considered the "use" of controlled equipment when rendering this decision.

In August 2003, NOAA and BIS officials finally met to discuss deemed export regulations. Representatives from all of NOAA's line offices were present and several expressed an interest in having BIS review their programs. BIS offered to work with the individual line offices, on request, to ensure that technical information or know-how released to foreign nationals is in compliance with Federal export licensing requirements.

In November 2003, after further discussions between OIG and senior NOAA officials, the Deputy Assistant Secretary for International Affairs was tasked with developing NOAA's deemed export control policies and procedures. In addition, the Deputy Assistant Secretary indicated that NOAA facilities might have some types of controlled technology or equipment. At the time of our draft report, the Deputy Assistant Secretary informed us that he was in the process of developing formalized and extensive policies and procedures for NOAA to address these issues. We encourage NOAA to work with BIS on this effort and look forward to reviewing the new policies when drafted.

Training

We were unable to identify any deemed export training programs for NOAA employees (with the exception of one at the National Environmental Satellite, Data, and Information Service).

RECOMMENDATIONS: NOAA should do the following:

- ❖ Create and implement an agency-wide deemed export policy and procedures.
- ❖ Review its equipment inventory to determine (1) what commodities are EAR-controlled, (2) what foreign nationals have access to those commodities and whether improved access controls are needed, and (3) whether a deemed export license may be required.

[39] *Annual Follow-Up Report on Previous Export Control Recommendations, As Mandated by the National Defense Authorization Act for Fiscal Year 2000,* U.S. Department of Commerce Office of Inspector General, IPE-14246-2, September 2001.

- Establish an employee training program that effectively disseminates the necessary deemed export control provisions to all NOAA employees that work with EAR-controlled technology and/or equipment.

- Review NOAA research and NOAA-sponsored research to determine the applicability of deemed export controls.

In its written response to our draft report, NOAA stated that it agreed with all of our recommendations. First, with regard to creating and implementing an agency-wide deemed export control policy and procedures, the response stated that NOAA is in the process of developing formalized policies and procedures to address deemed export controls. Specifically, NOAA reported that it is revising a draft version of its new policy and procedures that the OIG, as well as OSY and BIS, provided comments on. It further stated that discussions between NOAA and OSY confirm that the development and implementation of NOAA's policy and procedures in this area should be done in close coordination with OSY and take into consideration OSY's pending Departmental Administrative Order pertaining to the access to department facilities by foreign national visitors. We agree with NOAA and look forward to reviewing its new deemed export control policy and procedures when completed.

Second, with regard to reviewing its equipment to identify what is EAR-controlled and what foreign nationals have access to it, NOAA's response stated that although it maintains an automated database of all NOAA-owned equipment costing $5,000 or more, in addition to all equipment defined by the Department as "sensitive," it does not presently maintain an inventory of those commodities that may be EAR-controlled or subject to a deemed export license. As such, NOAA stated that it is working with BIS to identify how best to inventory commodities subject to EAR-controls and/or deemed export licensing provisions, and to ensure that appropriate measures are incorporated within NOAA's deemed export control policy and procedures to address inventory, license, and access issues.

Third, with regard to establishing an employee training program that deals with deemed export controls, NOAA's response stated that training for all NOAA employees that work with EAR-controlled technology and/or equipment has been specified in the draft NOAA deemed export control policy and procedures and an appropriate training program will be established upon its implementation.

Fourth, with regard to our recommendation that NOAA review its research, as well as, NOAA-sponsored research, to determine the applicability of deemed export controls, NOAA's response stated that provisions for the review of NOAA research are incorporated within NOAA's draft deemed export control policy and procedures. In addition, NOAA stated that it is currently reviewing the applicability of EAR deemed export controls to NOAA sponsored research.

In its written response to our draft report, the Department's Office of the Chief Financial Officer and Assistant Secretary for Administration stated that it has completed a draft Department Administrative Order (DAO) related to, among other things, foreign national visitors and guest researchers. In addition, it has developed a new risk assessment program, scheduled for implementation before June 2004, which includes on-site assessments to mitigate risks associated with espionage. We look forward to reviewing a copy of the new Department Administrative Order when completed. In addition, we would appreciate receiving a copy of the risk assessment program plan when it is finalized.

SUMMARY OF RECOMMENDATIONS

We recommend that the Under Secretary for Industry and Security ensure that the following actions are taken:

1. Modify the definition of "use" in the EAR in order to help licensing and enforcement officials better implement and enforce deemed export controls associated with the technology for the use of controlled equipment (see page 14).

2. Inform the U.S. academic community, industry, and Federal agencies of the deemed export controls associated with the technology for the use of EAR-controlled equipment by foreign nationals (see page 14).

3. Amend BIS' current policy to require U.S. entities to apply for a deemed export license when a foreign national employee or visitor was born in a country where the technology transfer in question is EAR-controlled (see page 16).

4. Reevaluate its approval of deemed export licenses for foreign nationals from Iran and Iraq to ensure such approvals are consistent with current law and deemed export control licensing policies and procedures (see page 17).

5. Establish and implement a strategic outreach plan for deemed exports that has annual goals and identifies priority industries, Federal agencies, and academic institutions that are not currently applying for deemed export licenses (see page 20).

6. Clarify and periodically update the deemed export "Questions and Answers" in Supplement No. 1 to Part 734 of the EAR (see page 23).

7. Develop a compliance program that effectively evaluates deemed export license holders' compliance with license conditions (see page 25). At a minimum, the review should determine whether:

    a. All research, including access to technology, is being performed in accordance with license conditions;
    b. Deviations to the foreign national's job responsibilities stay within the technical parameters of the license; and,
    c. The technology control plan used by the subject U.S. entity accurately and fully reflects its practices.

****

We recommend that the Director for NIST ensure that the following actions are taken:

1. Review NIST's equipment on hand in the labs to identify EAR-controlled equipment, interview managers of labs that have controlled equipment to establish what foreign nationals (if any) use or have access to the equipment, and work with BIS to develop

an effective means to identify when a deemed export license might be required (see page 27).

2. Conduct periodic deemed export control training, including coverage of the transfer of technology associated with the "use" of controlled equipment, for all NIST employees that work with EAR-controlled technology and/or equipment (see page 27).

3. Ensure that NIST management reviews the subject of NIST research "upfront" to determine its sensitivity and applicability to deemed export controls (see page 27).

4. Work with BIS to determine if NIST's Editorial Review Board process voids the fundamental research exemption in the EAR and seek appropriate deemed export licenses, as necessary (see page 27).

****

We recommend that the Under Secretary for Oceans and Atmosphere ensure that the following actions are taken:

1. Create and implement agency-wide export control policies and procedures relating to foreign national access to EAR-controlled technology (see page 32).

2. Review its equipment inventory to determine (see page 32):

   a. What commodities are EAR-controlled.
   b. What foreign nationals have access to those commodities and whether improved access controls are needed.
   c. Whether a deemed export license may be required.

3. Establish an employee training program that effectively disseminates the necessary deemed export control provisions to all NOAA employees that work with EAR-controlled technology and/or equipment (see page 32).

4. Review NOAA research and NOAA-sponsored research to determine the applicability of deemed export controls (see page 32).

****

We recommend that the Chief Financial Officer and Assistant Secretary for Administration ensure that the following action is taken:

1. Enforce—including conducting periodic on-site security reviews—the Department's security policies related to foreign national visitors or guest researchers and hold Commerce bureaus accountable for compliance with those policies (see pages 27 and 32).

APPENDICES

APPENDIX A

List of Acronyms

BIS	Bureau of Industry and Security
CCL	Commerce Control List
CFR	Code of Federal Regulations
CIA	Central Intelligence Agency
DTSA	Defense Technology Security Administration
EAA	Export Administration Act
EAR	Export Administration Regulations
ECCN	Export Control Classification Number
FBI	Federal Bureau of Investigation
FY	Fiscal Year
MEL	Manufacturing Engineering Laboratory
NSC	National Security Council
NIST	National Institute of Standards and Technology
NOAA	National Oceanographic and Atmospheric Administration
NSDD	National Security Decision Directive
OIG	Office of Inspector General
OSY	Office of Security (Department of Commerce)
P.L.	Public Law
U.S.C.	United States Code

APPENDIX B

NDAA Reports, Fiscal Years 2000-2003

- ***Improvements Are Needed in Programs Designed to Protect Against the Transfer of Sensitive Technologies to Countries of Concern*, U.S. Department of Commerce Office of Inspector General, IPE-12454-1, March 2000**. Commerce OIG evaluated the following Bureau of Industry and Security (BIS) activities aimed at helping to prevent the illicit transfer of sensitive technology: (1) deemed export controls, (2) the Visa Application Review Program, and (3) the Committee on Foreign Investment in the United States. This evaluation was part of an interagency OIG review of each respective agency's export controls and counterintelligence measures.

- ***Management of Commerce Control List and Related Processes Should be Improved*, U.S. Department of Commerce Office of Inspector General, IPE-13744, March 2001.** Commerce OIG reviewed BIS' policies and procedures for the design, maintenance, and application of the Commerce Control List as part of the interagency OIG review of the Commerce Control List and the U.S. Munitions List.

- ***BXA Needs to Strengthen Its ECASS Modernization Efforts to Ensure Long-Term Success of the Project*, U.S. Department of Commerce Office of Inspector General, IPE-14270, February 2002.** Commerce OIG's evaluation focused on BIS' efforts to modernize its aging Export Control Automated Support System (ECASS) as part of an interagency review of the automated export licensing systems maintained by Federal licensing agencies to determine how the systems interact and whether it is feasible to develop a single Federal automated export licensing network or other alternatives.

- ***Improvements Are Needed to Better Enforce Dual-Use Export Control Laws*, U.S. Department of Commerce Office of Inspector General, IPE-15155, March 2003.** Commerce OIG evaluated the adequacy and effectiveness of BIS' export enforcement program for dual-use commodities (goods and technologies that have both civilian and military applications) as part of an interagency review of the Federal government's export enforcement efforts.

APPENDIX C

UNITED STATES DEPARTMENT OF COMMERCE
Deputy Under Secretary for Industry and Security
Washington, D.C. 20230

March 17, 2004

MEMORANDUM FOR JILL GROSS
OFFICE OF INSPECTOR GENERAL

FROM: Mark Foulon MF

SUBJECT: Audit Report No. IPE-16176/February 2004

Draft Report Date: February 25, 2004

Audited Entity: Bureau of Industry and Security

Attached is the Bureau of Industry and Security's action plan and comments addressing the recommendations in the Inspector General's draft report entitled: Deemed Export Controls May Not Stop the Transfer of Sensitive Technology to Foreign Nationals in the U.S., IPE-16176, February 2004.

If you have any questions regarding our submission, please call me at (202) 482-1427.

Attachment

ACTION PLAN & COMMENTS:
DEEMED EXPORT CONTROLS MAY NOT STOP THE TRANSFER OF SENSITIVE TECHNOLOGY TO FOREIGN NATIONALS IN THE U.S., IPE-16176, February 2004.

IG Recommendations

Recommendation 1: Modify the definition of the "use" in the EAR in order to help licensing and enforcement officials better implement and enforce deemed export controls associated with the technology for the use of controlled equipment (page 14).

BIS Response: The Bureau is prepared to work with the Office of the Chief Counsel for Industry and Security (OCC/IS) as well as the Departments of Defense and State to determine whether the current definition issue of "use" technology should be revised in the EAR and whether this definition in the multilateral export control regimes should be harmonized. If agencies agree to revise the regulation, BIS will publish the regulatory revision and incorporate it into outreach to government agencies, industry and universities to ensure that there is a common interpretation and correct application of this term to technology exports and to deemed exports.

Recommendation 2: Inform the U.S. academic community, industry, and Federal agencies of the deemed export controls associated with the technology for the use of EAR-controlled equipment by foreign nationals (see page 14).

BIS Response: The Bureau will continue to focus its outreach efforts on universities, industry and government agencies, particularly those sectors involved in research to inform them that there should be a distinction between export licensing requirements for controlled "use" technology and for the technology released as a result of fundamental research. Specifically, outreach efforts will make clear that technology for the "use" of controlled equipment is subject to licensing requirements even if the research being conducted with that equipment is fundamental. To assure a wider distribution of this information to the general exporter community, we will modify the generic "use" technology presentation currently used in BIS export control seminars to clarify the definition of the term and when license requirements are triggered for deemed exports and technology exports.

Recommendation 3: Amend BIS's current policy to require U.S. entities to apply for a deemed export license when a foreign employee or visitor was born in a country where the technology transfer in question is EAR-controlled (see page 16).

BIS Response: Current BIS licensing practice is that the Bureau conducts a thorough review of contacts (personal, professional, financial, and employment-related) of the individual to whom a release of controlled technology will be made. BIS is prepared to consider modifying the current policy of recognizing the foreign national's most recent country of permanent residency for purposes of determining deemed export license requirements. However, the policy of

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recognizing the most recent country of citizenship reflects the traditional understanding that citizenship denotes a substantial personal connection to a given country. We will conduct an internal review with BIS OCC/IS to determine whether there are any legal impediments and further determine whether there are any inappropriate policy outcomes that should be considered if BIS were to modify the current deemed export policy, which exempts foreign nationals from deemed export licensing requirements based on the country of their most recent legal permanent residence.

Recommendation 4: Reevaluate its approval of deemed export licenses for foreign nationals from Iran and Iraq to ensure such approvals are consistent with current deemed export control licensing policies and procedures (see page 17).

BIS Response: BIS has reviewed the recommendation of the Inspector General's draft report, which suggests that BIS "reevaluate its approval of deemed export licenses for foreign nationals from Iran and Iraq to ensure such approvals are consistent with current deemed export control licensing policies and procedures." BIS believes that current deemed export control policies and procedures are consistent with the applicable statutes. BIS interprets the Iran Sanctions Act of 1990 and the Iran-Iraq Non-Proliferation Act of 1992 as prohibiting transfers of controlled technology in the United States only in situations where there is knowledge or intent that the technology will be provided to Iran or Iraq. Deemed exports frequently involve situations when no such knowledge or intent is present, and, in these cases, BIS has the discretion to approve deemed export license applications to Iraqi or Iranian nationals.

Recommendation 5: Establish and implement a strategic outreach plan for deemed exports that has annual goals and identifies priority industries, Federal agencies, and academic institutions that are not currently applying for deemed export licenses (see page 19).

BIS Response: BIS has taken a number of actions that address the IG's recommendation. Deemed export outreach is a strategic goal, and we monitor and re-evaluate every quarter the type and quantity of deemed exports outreach to ensure that we target the appropriate sectors. During FY2004, the Bureau has already conducted over 40 outreach activities, including visits to U.S. Government research labs, universities, small business associations, and foreign student associations. (See attached list.) We also will continue to identify priority industries and conduct outreach later this year to small and medium-sized businesses and defense contractors to educate these types of companies about deemed export rules. BIS has already targeted outreach in the area of biotechnology by discussing deemed export policies and procedures with industry and academia.

Recommendation 6: Clarify and periodically update the deemed export "Questions and Answers" in Supplement No. 1 to Part 734 of the EAR (see page 22).

BIS Response: BIS will update the questions and answers section to provide clarity to the exporting community and government and academic research laboratories. Specifically, we will work with OCC/IS and the Chief Counsel of NIST to clarify the two questions cited by the IG.

On Question A(4), BIS acknowledges the need for further clarification on this issue. We understand that prepublication review by the government sponsor of research (e.g., NIST) would void the publishability exemption in the EAR. BIS will clarify in the answer to Question A(4) that if the reviewer determines that the item still qualifies as falling under fundamental research, the review would not trigger a deemed export or technology review requirement. If, however, the reviewer (e.g., NIST and its legal counsel) were to determine that the item or technology requires further regulatory review, this would trigger consultation with BIS pursuant to the deemed export and technology rules.

With respect to Question D(1), in response to the IG's first recommendation, BIS has acknowledged the need for further clarity on the interpretation of "use" technology that may be implicated in fundamental research. BIS also will revise the Q&A for D(1) to qualify the statement that no license is required, by stating that a license may be required if in conducting fundamental research the foreign graduate student needs access to controlled technology to "use" EAR-controlled equipment.

Recommendation 7: Develop a compliance program that effectively evaluates deemed export license holders' compliance with license conditions (see page 23). At a minimum, the review should determine whether:

a. All research, including access to technology, is being performed in accordance with license conditions;
b. Deviations to the foreign national's job responsibilities stay within the technical parameters of the license; and,
c. The technology control plan used by the subject U.S. entity accurately and fully reflects its practices.

BIS Response: Export Enforcement (EE) will initiate a pilot program for post shipment verifications (PSVs) on the most sensitive deemed export licenses issued by BIS. These PSVs will be conducted by a joint team of Export Administration engineers and Office of Export Enforcement agents to determine compliance with the deemed export license conditions and to detect any violations. After 12 months, the pilot program will be re-evaluated to assess the effectiveness of the program. In addition, EE is prepared to initiate a small pilot program to conduct pre license checks (PLCs) on new applicants for deemed export licenses. This PLC program will provide assurances before exports are made that the parties to the transaction know their responsibilities. The PLC program will also preview the nature of internal company compliance programs and provide guidance on whether a deemed license should be issued.

Attachment

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APPENDIX D

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

MAR 1 1 2004

MEMORANDUM FOR Jill Gross
Assistant Inspector General for Inspections
And Program Evaluations

From: Hratch Semerjian
Deputy Director

Subject: Comments on Draft Inspection Report No. IPE-16176 Entitled "*Deemed Export Controls May Not Stop the Transfer of Sensitive Technology to Foreign Nationals in the U.S.*"

This is in response to your memorandum and draft report dated February 25, 2004, regarding your office's 2004 report to the Congress on the policies and procedures of the U.S. government with respect to the export of technologies and technical information to countries and entities of concern. Thank you for the opportunity to review and comment on this draft.

NIST takes seriously the matter of the control of transfer of sensitive technology and information to any foreign national. As indicated in your report, we are already taking steps to control access to NIST buildings and facilities by foreign nationals as well as working with the Bureau of Industry and Security to clarify when deemed export licenses are required.

The attached comments are intended to clarify statements in the draft report and to update you on actions taken since the completion of your evaluation and issuance of the report.

Thank you, again, for the opportunity to comment on the draft. We are looking forward to receiving, and responding to, your final report. Please contact Steve Willett on (301) 975-8707, should you have any questions about this response.

Attachment

NIST

ATTACHMENT – Comments on Draft Audit Report Entitled "*Deemed Export Controls May Not Stop the Transfer of Sensitive Technology to Foreign Nationals in the U.S.*" (IPE-16176)

1. ***See page i "Executive Summary" for references to the assessment of the effectiveness of the dual-use deemed export regulations and policies.*** Currently, the draft report states: "Within Commerce, we sought to assess the effectiveness of the dual-use deemed export regulations and policies, including the implementation of them by BIS, as well as compliance with the regulations by U.S. industry and academic institutions."

   Comment: As currently written, it appears that NIST has been included in the categories of "U.S. industry and academic institutions", yet NIST is neither. It is requested that the category of "government labs" be added to this portion of the report.

2. ***See page ii for the definition of "use" of EAR-controlled equipment.*** As defined on page ii of the subject draft report, "use" is "Operation, installation, (including on-site installation), maintenance (checking), repair, overhaul and refurbishing"

   Comment: The 5-axis machine tool in question (discussed on page 26) can only be "used" by two properly trained NIST staff. The report does not include the information stated to the auditors that the machine tool can only be "used" with the private password known only by the two trained NIST staff. While the discussion on page 26 is titled *"Use" of Controlled Equipment*, the implication is that "access to" (meaning in this context visual sight of the machine) equates to "use".

3. ***See page iii for references to foreign nationals originally from countries of concern.*** Page iii states:"…BIS' deemed export policy, in contrast to the State Department's, only recognizes a foreign national's most recent citizenship or permanent residency. As such, this policy allows foreign nationals originally from countries of concern to obtain access to controlled dual–use technology without scrutiny if they maintain current citizenship or permanent residence status from a country to which the export of technology would not be controlled. As such, we recommend that BIS amend its policy to require U.S. entities to apply for a deemed export license for foreign national employees or visitors who have access to dual-use controlled technology if they were born in a country where the technology transfer in question is EAR-controlled regardless of their most recent citizenship or permanent residence status."

   Comment: As currently drafted, this paragraph could be interpreted to include naturalized citizens of the U.S., particularly those who were born in a sensitive country. For example, if a Libyan who is a naturalized British citizen is of concern, then what about an Iranian who is a naturalized citizen of the U.S.? We recommend this paragraph be clarified.

4. ***See page iii for references to transmittal of use or other information or instruction constituting "technology".*** On page iii, the draft report states: "However, when equipment is exposed to foreign nationals at U.S. university or federal research facility it most likely is accompanied by some transmittal of use or other information or instruction constituting "technology"."

Comment: Just because a researcher is "exposed" to a particular piece of equipment does not mean that researcher is "using" that equipment. Typically "use" and "expose" have different meanings. It is recommended that the paragraph above be corrected and/or removed, and that a definition be provided for the term "exposed".

5. ***See pages v, vi, 28, and 30, for references to the recommendations concerning the NIST equipment inventory and the five-axis machine tool.*** The draft report states: "Given that NIST is unsure of what other EAR-controlled equipment may be housed at this, or its other facilities, we recommend that NIST review its equipment inventory to determine (1) what commodities are controlled, (2) what foreign nationals have access to them, and (3) in which situations a deemed export license may be required."

   Comment: While the NIST inventory is complete in the general cataloging of equipment that is on hand, and the location of that equipment, it is not sufficient to support the identification of Export Administration Regulations (EAR)-controlled items, who has access to this equipment, or determining when a deemed export license might be required.

   It would be more effective, and would more effectively achieve the objectives of the draft report, if the recommendations were that NIST (1) review the equipment on-hand in the labs to identify controlled equipment, (2) interview equipment owners to establish what foreign nationals (if any) use the equipment, and (3) work with the Bureau of Industry and Security (BIS) to develop an effective means to identify when a deemed export license might be required.

6. ***See page v for comments concerning a foreign national recently departed from NIST.*** The draft report states: "During our current survey work, we identified at least one EAR-controlled commodity – a "5-axis machine tool" – at NIST's Gaithersburg, Maryland facility. It is unclear what foreign nationals may have access to the machine, or its operation manual, given the fact that the machine shop that houses both is "open" to all lab employees and it's guest researchers. (NIST officials estimate that this particular lab has approximately 45 guest researchers at any given time, *including a recently departed foreign national from a terrorist-supporting country.*)"

   Comment: Based on the current BIS definition of "use", no foreign nationals from countries of concern at NIST have ever "used" the 5-axis machine tool. The comment about the foreign national from a "terrorist supporting country" is inaccurate. NIST indicated to the I.G. many times, that the person was housed in a separate building, was escorted at all times while on-site, and never "used", or had "access to", the 5-axis machine tool.

   In addition, this portion of the report appears to state that there are up to 45 guest researchers with access to the 5-axis machine area (referred to as a "lab") when this is not the case at all. The "lab" referred to, that has up to 45 guest researchers is the Manufacturing Extension Laboratory (MEL), *not* the physical space where the 5-axis

machine is housed. The definition, and use of the term, "lab" should be clearly stated, and this portion of the report corrected and/or eliminated.

Further, the reference to the 5-axis machine tool is misleading. The paper suggests that NIST has an open door policy for that piece of equipment and that anyone can go in and use it, when in fact its "use" is quite limited and no foreign national from any country of concern has access to "use" that equipment. Again the definition of "use" needs to be clarified as well as the word "exposed" and the words "release of technology". These terms seemed to be used indiscriminately and interchangeably. It is recommended that this section be corrected and/or removed from the report.

7. ***See page 25 for the mention of two major programs under which NIST carries out the mission to strengthen the U.S. economy and improve the quality of life by working with industry to develop and apply technology, measurements, and standards.***

   Comment: The programs listed do, indeed forward this area of NIST's mission, however, there are two additional programs that have been overlooked and should be included in this section. These are the Manufacturing Extension Program (MEP), and the Malcolm Baldrige Program. Both of these programs should be included in this portion of the report.

8. ***See page 26 for reference to a Canadian researcher using the 5-axis machine tool.*** The draft report states " NIST officials contend that the only foreign national to have conducted research with this machine was a Canadian guest researcher. However, NIST informed us that the machine shop is open during normal business hours to all MEL researchers – including guest researchers. Furthermore, during our tour of the machine shop, we noted the 5-axis machine tool's operating manual lying in the open on a tool cabinet across from the machine."

   Comment: The auditors were informed in clear terms that the Canadian guest researcher was present at the machine to monitor the data output of added experimental equipment attached to the machine and that the machine itself was operated ("used") by the authorized NIST staff member at all times. The 5-axis capabilities of this machine were not relevant to the data output and experimental equipment in this work.

   The circumstances that led to the operations manual being found unattended at the workbench have been resolved, and operating manuals are now stored in locked cabinets when not in use. This portion of the report should be corrected and/or removed.

9. ***See page 27 for references pertaining to the prepublication clearance required for all NIST published materials to identify sensitive material.*** The draft report states: "In addition, we noted that NIST's new procedure – which requires a prepublication clearance for all materials to identify sensitive material – may disqualify them from using the fundamental research exemption in the EAR."

   Comment:, Based on the definition of "fundamental research" currently on the BIS website, NIST does not agree that implementing a pre-review, *which was mandated by*

the White House – nullifies our position that the majority of work at NIST is fundamental research. According to BIS's web site "Fundamental research is basic and applied research in science and engineering where the resulting information is ordinarily published and shared broadly within the scientific community. It is distinguished from proprietary research and from industrial development, design, production, and product utilizations, the results of which ordinarily are restricted for proprietary and/or specific national security reasons. Normally, the results of "fundamental research" are published in scientific literature, thus making it publicly available. Research which is intended for publication, whether it is ever accepted by scientific journals or not, is considered to be "fundamental research"… Because any information, technological or otherwise, that is publicly available is not subject to the Export Administration Regulations (EAR) (except for encryption object code and source code in electronic form or media) and thus does not require a license, "fundamental research" is not subject to the EAR and does not require a license. Please see §734.8 for a full discussion." If the intent is to publish and widely disseminate, NIST would argue the work is "fundamental" by BIS' definition, regardless of whether or not we "pre-review" the results – if NIST did not intend to publish, we would not send the document for review.

It is recommended that this section of the report be amended and/or removed. Further, it should be noted in this section that in the two years since NIST was mandated to institute the pre-review, not one publication has been withheld because of concerns about releasing sensitive information.

10. ***See page 28 and 31 for references pertaining to the review of the subject of NIST's research.*** The draft response states "Ensure that NIST **researchers** review the subject of NIST's research "upfront" to determine sensitivity and applicability of deemed export controls."

    Comment: While the NIST personnel who are reviewing potential research may be considered "researchers" it would be more effective if this recommendation required that NIST "management" review the subject of research upfront in order to determine sensitivity and applicability of deemed export controls.

11. ***See Addendum A, page A-2 for references pertaining to adherence to departmental policy regarding vetting foreign nationals and guest researchers before allowing them access to NIST facilities.***

    Comment: The Department's policy is presently in a state of flux. The NIST Security Office is working with the Department's Office of Security to identify and resolve a number of concerns related to the April 2003 release to ensure that NIST is in a position to achieve full compliance with the next policy release.

12. ***See Addendum A, page A-2 for references pertaining to installing additional card readers to prevent foreign national guest researchers to enter laboratories to which they are not currently assigned.***

Comment: Implementation of this recommendation would be expensive and impractical given the generally collaborative nature of NIST's mission. NIST's employees and associates, to include foreign nationals, have traditionally interacted in an open, academic manner in which the free flow of information, opinions and ideas is heavily encouraged. The more practical and cost effective approach is to identify EAR-controlled equipment and provide safeguards to ensure it is only used by approved individuals.

13. ***See Addendum A; page A-2 for references pertaining to installing additional card readers within laboratories as appropriate to safeguard EAR-controlled equipment.***

Comment: NIST is in the process of inventorying EAR-controlled equipment. Based on that inventory, the NIST Security Officer will work with the organizations that own that equipment to identify appropriate, cost-effective physical security safeguards that will meet all legal and regulatory requirements. If additional card readers are the most efficient and cost-effective means to achieve this aim, then NIST will install additional card readers at the appropriate locations.

APPENDIX E

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA FINANCE AND ADMINISTRATION

MAR 15 2004

MEMORANDUM FOR: Jill A. Gross
Assistant Inspector General
for Inspections and Program Evaluations

FROM: William Broglie
Chief Administrative Officer

SUBJECT: NOAA Response to Draft OIG Inspection Report
Deemed Export Controls May Not Stop the Transfer of Sensitive Technology to Foreign Nationals in the U.S.
Report No. IPE-16176, February 2004

We are in receipt of your office's Draft Inspection Report No. IPE-16176/February 2004. This report details your office's review of the effectiveness of the dual-use deemed export control regulations and policies, including the implementation of them by the Bureau of Industry Security (BIS), as well as compliance with the regulations by U.S. industry, academic institutions, and Federal research facilities, including those of National Oceanic and Atmospheric Administration (NOAA).

We have carefully reviewed your report and its recommendations. Your report concludes that deemed export control compliance by Commerce bureaus is mixed and that, while there are areas that are working well, problems exist that hamper efforts to effectively prevent the transfer of sensitive U. S, technologies. Your report offers recommendations designed to help NOAA ensure that it is both informed of deemed export regulations, and in compliance with these regulations. An addendum to your report identifies potential security vulnerabilities identified at NOAA as they relate to deemed export controls.

(1) Create and implement an agency-wide deemed export policy and procedures.

We agree with this recommendation.

Discussions between the Office of Inspector General and NOAA's Deputy Assistant Secretary for International Affairs, as confirmed in your report, indicate that NOAA is in the process of developing formalized and extensive policies and procedures to address deemed export controls. A first draft of this policy and procedures document has been circulated and reviewed within NOAA and within the Department of Commerce (DOC), including your office, the Office of Security (OSY) and the BIS. A revised draft is currently under review.

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It should be noted that concurrent with the development of NOAA's policies and procedures in this regard, the DOC OSY has sent out for review a draft Departmental Administrative Order (DAO) pertaining to access to DOC facilities by foreign national visitors. Discussion between NOAA and OSY confirms that the development and implementation of a NOAA policy and procedure in this area should be done in close coordination with OSY and in harmony with OSY's schedule for development and implementation of its administrative order.

(2) Review its equipment inventory to determine (1) what commodities are EAR-controlled, (2) what foreign nationals have access to those commodities and whether improved access controls are needed, and (3) whether a deemed export license may be required.

We agree with this recommendation.

Although NOAA maintains an automated database of all NOAA-owned equipment costing $5,000 or more, in addition to all equipment defined by the Department as "sensitive," NOAA does not presently maintain an inventory of those commodities that may be EAR-controlled or subject to a deemed export license. NOAA is working with BIS to identify how best to inventory commodities subject to EAR-control and/or deemed export-licensing provisions, and to ensure that appropriate measures are incorporated within NOAA's deemed export policy and procedures to address inventory, license and access issues.

(3) Establish an employee training program that effectively disseminates the necessary deemed export control provisions to all NOAA employees that work with EAR-controlled technology and/or equipment.

We agree with this recommendation.

Training for all NOAA employees that work with EAR-controlled technology and/or equipment has been specified in the NOAA deemed export control policy and procedures and an appropriate training program will be established upon its implementation.

(4) Review NOAA research and NOAA-sponsored research to determine the applicability of deemed export controls.

We agree with this recommendation.

Provisions for the review of NOAA research are incorporated within the NOAA deemed export policy and procedures. We are currently reviewing the applicability of EAR deemed export controls to NOAA sponsored research.

Addendum B: **NOAA should formulate adequate security procedures governing visits by foreign national to its facilities that adhere to departmental security policy.**

We agree with this recommendation.

As noted in response to Recommendation (1) above, a NOAA deemed export policy and procedures document is being finalized concurrent with the development of a DOC Office of Security DAO pertaining to access to DOC facilities by foreign national visitors. These procedures will be coordinated and harmonized to provide security governing visits by foreign nationals to NOAA facilities.

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APPENDIX F

UNITED STATES DEPARTMENT OF COMMERCE
Chief Financial Officer and
Assistant Secretary for Administration
Washington, D.C. 20230

MAR 23 2004

MEMORANDUM FOR: Jill Gross
Assistant Inspector General for
Inspections and Program Evaluations

FROM: Otto J. Wolff
Chief, Financial Officer and
Assistant Secretary for Administration

SUBJECT: Draft Report: *Deemed Export Controls May Not Stop the Transfer of Sensitive Technology to Foreign Nationals in the U.S.*

We appreciate your efforts to address an important aspect of the foreign visitor issue. As discussed with the Inspector General in 2000, we have been very concerned with the minimal attention given this issue both internal and external to the Department. Accordingly, we actively pressed for improved procedures with the National Institute of Standards and Technology, National Oceanic and Atmospheric Administration, Bureau of Industry and Standards, Office of Personnel Management and others.

Over the past three years, we have made initial progress and will continue to accelerate improvements in the coming months. We have:

- Developed and published Chapter 16 of the Security Manual to establish reporting and control procedures.
- Coordinated extensively on foreign visitor issues such as the J-1 Visa waiver process with other activities including the State Department.
- Reshaped the Department's counterintelligence program and significantly increased the number of counterintelligence agents.
- Improved the timeliness, quality and quantity of indices checks.
- Met with other departments and agencies, including the White House Office of Science and Technology, to determine best practices.
- Completed a new draft policy related to foreign national visitors and guest researchers. This draft Departmental Administrative Order is currently being coordinated.
- Developed a new risk assessment program that includes on-site assessments to mitigate risks associated with espionage. The early stages of this program provided a risk assessment process that resulted in the removal of the foreign national mentioned in the report. This program will be fielded before June 2004.

We thank you for your support and emphasis on this important issue.

Legislative Authority

The Office of Inspector General conducted this program evaluation in accordance with the *Quality Standards for Inspections* issued by the President's Council on Integrity and Efficiency, and under authority of the Inspector General Act of 1978, as amended, and Department Organization Order 10-13, dated May 22, 1980, as amended.

Program evaluations are reviews the OIG undertakes to achieve one or more of the following purposes:

- Provide agency managers with timely information about operations. A primary goal of a program evaluation is to encourage effective, economical, and efficient operations.
- Identify or prevent fraud, waste, and abuse in federal programs. By asking questions, identifying problems, and suggesting solutions, the OIG helps managers determine how best to quickly address issues identified during the review.
- Highlight effective programs or operations, particularly if their success may be useful or adaptable for agency managers or program operations elsewhere.

Acknowledgments

Major contributors to this report were Jennifer Nobles, Eleazar Velazquez, and Erin Reuther, Office of Inspections and Program Evaluations.