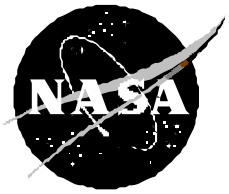
JULY 14, 2009

AUDIT REPORT

OFFICE OF AUDITS

IMPROVEMENTS NEEDED IN NASA'S OVERSIGHT AND MONITORING OF SMALL BUSINESS CONTRACTOR TRANSFERS OF EXPORT-CONTROLLED TECHNOLOGIES

OFFICE OF INSPECTOR GENERAL



National Aeronautics and
Space Administration

REPORT NO. IG-09-018 (ASSIGNMENT NO. A-08-005-00)

Final report released by:

/signed/ Debra Pettitt for
Evelyn R. Klemstine
Assistant Inspector General for Auditing

Acronyms

COTR	Contracting Officer Technical Representative
DDTC	Directorate of Defense Trade Controls
DoD	Department of Defense
DTSA	Defense Technology Security Administration
EAR	Export Administration Regulations
FAR	Federal Acquisition Regulation
GAGAS	Generally Accepted Government Auditing Standards
HQ	Headquarters
ITAR	International Traffic in Arms Regulations
NAICS	North American Industry Classification System
NFS	NASA Federal Acquisition Regulation (FAR) Supplement
NPR	NASA Procedural Requirements
SBIR	Small Business Innovation Research
STTR	Small Business Technology Transfer

OVERVIEW

IMPROVEMENTS NEEDED IN NASA'S OVERSIGHT AND MONITORING OF SMALL BUSINESS CONTRACTOR TRANSFERS OF EXPORT-CONTROLLED TECHNOLOGIES

The Issue

The United States has enacted strict controls over the export of certain defense-related goods and technical information and the technology associated with the design, manufacture, and use of those goods and technologies. Controls are needed for reasons of national security and foreign policy. Unauthorized disclosure of export-controlled technology could give a foreign country or adversary a military or economic advantage over the United States, and unauthorized disclosure of export-controlled technology to a foreign national is deemed an export to the foreign national's home country by export regulations.

Contractor compliance with U.S. export-control regulations is particularly relevant to NASA because a large percentage of the work to support NASA's mission is done by contract to companies and universities. NASA FY 2008 procurement information shows that approximately 83 percent of NASA's obligated appropriations was for contractor-provided products and services. While NASA is not directly responsible for a contractor's compliance with export regulations, lack of compliance could put NASA's mission in jeopardy because consequences of export-control violations could seriously impede a contractor's ability to provide supplies or services to NASA.

The Office of the Inspector General is required to report annually to Congress the extent to which NASA is carrying out its activities in compliance with Federal export-control laws. We systematically selected 13 active NASA contracts that were performed by 10 contractors and had a high probability of involving critical technologies and technical information. Of the 10 contractors, 4 were large corporations, 2 were universities, and 4 were small companies with either Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) contracts. Our objective was to evaluate whether NASA had maintained effective oversight and monitoring of contractor transfers of critical technologies and technical information to foreign nationals and countries of concern.

Results

NASA could improve its oversight and monitoring of small business contractor transfers of critical technology and technical information to foreign nationals and countries of concern. Although the large corporations and universities we reviewed generally had adequate procedures to protect export-controlled technology from illegal transfer, the procedures at the small business contractors did not adequately protect export-controlled technology. Specifically, we found a lack of export-control awareness among small business contractors and NASA and small business procurement personnel. As a result, small business contractors are at increased risk of improperly releasing critical technology and technical information. Increased awareness of export regulations and improved oversight and monitoring of small business contractors' compliance should enhance and reduce the attendant risks to NASA's mission and national security.

The large corporations' and universities' export-control programs included robust physical security such as double perimeter fence lines, barbed wire, and security officers; personnel security procedures such as swiping badges, badge verification, and logging in and escorting visitors; and information technology (IT), or logical,[1] security procedures to prevent unauthorized personnel from gaining access to critical and sensitive technologies. Each of the large corporations and universities had also established procedures to restrict foreign visitors' access to sensitive or critical technologies.

We identified procedural weaknesses at each of the four small business contractors' locations. Only one of the small business contractors employed foreign nationals; the other three had established a policy to only employ U.S. citizens, which significantly reduced their risk of disclosing export-controlled technology to foreign nationals and countries of concern. However, among the four contractors we found a lack of physical security procedures such as procedures for determining the nationality of visitors and for recording the presence of foreign visitors, lack of a physical security plan, and lack of restrictions to areas that contained potentially export-controlled technology. We determined that one small business contractor inappropriately provided at least two foreign national employees with access to export-controlled technology. We are coordinating with our Office of Investigations on this matter.

NASA procurement personnel also were not always aware of export-control regulations. Although NASA is not directly responsible for a contractor's compliance with export regulations, it is responsible for administration of the export-control program at NASA Centers and facilities. We determined that NASA procurement officials do not monitor exports as part of their contract administration duties and NASA's export-control outreach efforts did not include small business procurement personnel.

[1] IT, or "logical," security procedures" refers to the collection of policies, procedures and electronic access controls designed to restrict access to computer software and data files.

Recently, the Department of Defense (DoD) developed a draft final rule to address DoD contractor compliance with export controls and to prevent unauthorized disclosure of export controlled information and technology. The draft final rule was developed in coordination with the Departments of State, Commerce, and Justice to remind contractors of their responsibility to comply with export control laws and regulations. The rule emphasizes the importance of registering with the State Department's Directorate of Defense Trade Controls, which is charged with controlling the export and temporary import of defense articles and defense services, and directs contractors to contact either the Department of State or Department of Commerce regarding any questions related to either the International Traffic in Arms Regulations or Export Administration Regulation. NASA could improve both NASA contracting officers' and small business contractor awareness of export regulations by monitoring export-control rule developments in other Federal agencies and amending the NASA FAR Supplement to align with those agency's best practices.

Management Action

We recommended that the Assistant Administrator for Procurement coordinate with the Department of State to monitor any modifications made to the DoD draft final rule intended to increase contractors' awareness of their export-control responsibilities, and amend the NASA FAR Supplement accordingly. We also recommended that the NASA Assistant Administrator for Procurement improve NASA's oversight and monitoring of contractors compliance with export-control regulations. Finally, we recommended that the Assistant Administrator for External Relations expand current export-control outreach efforts to NASA SBIR/STTR Program Management Office personnel, procurement personnel involved in the administration of SBIR/STTR contracts, and small business contractors.

In response to a draft of this report, issued May 27, 2009, the Assistant Administrator for Procurement concurred with the recommendation to monitor modifications to the DoD draft final rule intended to increase contractor awareness of their export-control responsibilities and, if required, amend the NASA FAR Supplement. We consider management's proposed actions to be responsive. The recommendation is resolved and will be closed upon completion and verification of management's corrective action.

The Assistant Administrator for Procurement partially concurred with our recommendation to require contracting officers to monitor and oversee contractors' compliance with export-control regulations. He agreed that contractors should be aware of and comply with export control regulations but noted that updating the solicitation requirements for small business contractors would be a more appropriate way to increase contractor awareness than requiring the delivery of an export control compliance plan or the reporting of major safety and security breaches and illegal technology transfers. Although management's proposed actions are responsive to the intent of the recommendation, the effectiveness of those actions can only be measured by the extent to

which SBIR/STTR contractors comply with applicable export control regulations. The recommendation is resolved; however, it will remain open until we evaluate the effectiveness of the efforts to increase contractor awareness.

The Assistant Administrator for External Relations concurred with the recommendation to expand current export-control outreach efforts to NASA personnel involved in the administration of SBIR/STTR contracts and to small business contractors. We consider management's proposed actions to be responsive. The recommendation is resolved and will be closed upon completion and verification of management's corrective action. (See Appendix B for the full text of management's comments.)

CONTENTS

INTRODUCTION

Background

For reasons related to national security, foreign policy, antiterrorism, and nonproliferation of weapons of mass destruction, the United States controls the export of certain goods and technologies. The Department of State controls the export of Defense articles[2] and services, and the Department of Commerce controls the export of goods and technologies that have both commercial and military use (dual-use commodities). The Department of State, Office of Defense Trade Controls, implements the authority of the Arms Export-Control Act through the International Traffic in Arms Regulations (ITAR). The Department of Commerce, Bureau of Industry and Security, controls the export of dual-use commodities under the authority of the Export Administration Act and through implementing Export Administration Regulations (EAR).

According to EAR, "export" means an actual shipment or transmission of items subject to EAR out of the United States or release of technology or software subject to EAR to a foreign national in the United States, and "technology" means specific information necessary for the "development," "production," or "use" of a product. ITAR defines "export" as sending or taking a defense article out of the United States, in any manner, or the disclosure or transfer of technical data to a foreign person, whether in the United States or abroad. The EAR at 15 CFR § 734.2(b)(2)(ii), notes that the release of export-controlled technology to a foreign national is deemed an export to the foreign national's home country, commonly referred to as a "deemed export." The deemed export rule applies to any foreign person except a foreign national who is granted (1) permanent U.S. residence, as demonstrated by the issuance of a permanent resident visa (i.e., Green Card); or (2) U.S. citizenship; or (3) status as a "protected person." Deemed exports may involve the transfer of sensitive technology to foreign employees or visitors at U.S. companies, universities, or Federal research facilities.

NASA's programs and projects in many cases involve research and technology that must be protected because unauthorized disclosure could provide a foreign country or adversary a military or economic advantage. According to the Defense Security Service,[3] aeronautics, laser and optics, and space systems are 3 of the top 10 U.S. technologies most frequently targeted for theft by foreign entities. The two most common methods of collection by foreign entities are request for information and directly acquiring controlled technology. Other methods of collecting controlled information include covertly obtaining the information through foreign nationals working in or visiting U.S. companies, universities, research facilities, and other sources.

[2] A defense article is any item or technical data designated in the United States Munitions List.

[3] Defense Security Service, "Targeting U.S. Technologies: A Trend Analysis of Reporting from Defense Industry" (January 26, 2009).

NASA is responsible for administration of the export-control program at its Centers and facilities. NASA's export-control procedures are documented in NASA Procedural Requirements (NPR) 2190.1, "NASA Export-control Program - Revalidated w/changes," February 1, 2007. This NPR outlines the Agency's policies and procedures for ensuring compliance with Federal export-control laws established in EAR and ITAR. NPR 2190.1 also documents the roles and responsibilities of NASA employees, support contractors, universities, and partners engaged in activities that involve the transfer of commodities, software, or technologies to foreign individuals or organizations.

In general, it is the responsibility of the U.S. entity to apply for and obtain an export license from the Department of State or the Department of Commerce. While NASA is not directly responsible for a contractor's compliance with export regulations, NASA's ability to accomplish its mission could be jeopardized as a result of the consequences of noncompliance. For example, if a contractor releases export-controlled technology to a foreign country or individual without a license, if caught the company could be subject to civil and criminal penalties, which could delay or prevent delivery of goods or technologies NASA needs. Penalties for violations of ITAR can be severe and include imprisonment, monetary fines, and debarment from participating in the import or export of defense articles or services. NASA's reliance on contractors' compliance with export-control regulations is particularly relevant because contracts represent the majority of NASA's budget. In FY 2008, NASA's procurements totaled $16,785.4 million, which represented 82.7 percent of NASA's obligated appropriations. Of the $16,785.4 million obligated, 73.7 percent went to business firms, 10.5 percent went to the Jet Propulsion Laboratory, and 6.5 percent went to educational institutions. The remaining 9.3 percent was divided among other Government agencies, nonprofit organizations, and companies outside the United States.

Objectives

Our audit objective was to evaluate whether NASA had maintained effective oversight and monitoring of contractor transfers of critical technologies and technical information to foreign nationals and countries of concern. We reviewed internal controls as they related to the audit objective. See Appendix A for details of the audit's scope and methodology, our review of internal controls, and a list of prior coverage.

SBIR/STTR PROCEDURES DO NOT ADEQUATELY PROTECT EXPORT-CONTROLLED TECHNOLOGY

We reviewed 13 contracts performed by 10 contractors: 4 large corporations, 2 universities, and 4 small companies with either Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) contracts. The large corporations and universities we visited generally had adequate procedures in place to protect export-controlled technology. However, at each of the 4 small business contractors we reviewed, we identified weaknesses in their procedures to protect export-controlled technology. This occurred because the small business contractors and NASA procurement officials were not always aware of export-control regulations or that the contract performance involved export-controlled technology. In addition, NASA procurement officials were not overseeing or monitoring small business contractors for export-control compliance. As a result, small business contractors are at increased risk of improperly releasing critical technology and technical information to foreign nationals and countries of concern.

Export-Control Guidance

The primary legislative authority for controlling the export of defense articles and services is the Arms Export-Control Act of 1976 (22 USC section 2751), implemented by the Department of State, Office of Defense Trade Controls through ITAR. The primary legislative authority for controlling the export of dual-use items is the Export Administration Act of 1979, as amended (50 USC appendix 2401), implemented by the Department of Commerce, Bureau of Industry and Security, under authority provided in EAR.

The State Department's Directorate of Defense Trade Controls (DDTC) is charged with controlling the export and temporary import of defense articles and defense services covered by the United States Munitions List, in accordance with ITAR. ITAR requires any person in the U.S. who engages in either the manufacture or export of defense articles to register with DDTC, even someone who engages in manufacturing or exporting defense articles on only one occasion. Registering with DDTC provides the Government necessary information on who is involved in certain manufacturing and exporting activities.

DDTC's compliance guidelines recommend that companies involved in manufacturing export-controlled goods implement a comprehensive operational export-control compliance program. According to DDTC, an export-control program should articulate

the company's policy on and commitment to compliance with U.S. defense trade laws and regulations, outline the procedures for dealing with licensing and compliance matters, and provide employees with the knowledge to understand when and how ITAR affects the company's controlled items and technical data. In addition, DDTC recommends that the plan contain a methodology to identify and account for all ITAR-controlled items, including technical data. The purpose of developing an export-control plan and providing export-control training is to reduce the risk of employees inadvertently releasing critical and sensitive technologies to foreign nationals.

NASA Procedural Requirements (NPR) 2190.1, "NASA Export-Control Program - Revalidated w/changes," February 1, 2007, outlines the roles and responsibilities for implementing NASA's export-control program. Center Export Administrators are responsible for implementing and managing the export-control programs at NASA Centers and for (1) assisting procurement officials with export-control issues; (2) coordinating with Center Export Counsel, Transportation Officers, and Program/Project Managers on export-control matters affecting Center programs and activities; and (3) providing assistance in developing Technology Transfer Control Plans that define which NASA technologies or technical data require protection and what level of foreign access is permissible. NPR 2190.1 also details export-control requirements, instructions, and responsibilities for all NASA employees and contractors as well as universities and partners engaged in NASA activities that involve the transfer of commodities, software, or technologies to foreign individuals or organizations.

The SBIR and STTR Programs provide an opportunity for small, high technology companies to participate in Government sponsored research and development efforts in key technology areas. NASA's SBIR/STTR Program Management Office annually issues solicitations based on the technical needs of the Mission Directorates. Companies submit proposals to the SBIR/STTR Program Management Office detailing how they can provide NASA with the desired key technologies described in the solicitations. The SBIR/STTR Program Management Office provides the proposals to appropriate technical experts at various NASA Centers to evaluate the probability that the proposed technology will meet NASA's needs. Based on the technical experts' evaluations, the SBIR/STTR Program Management Office decides which companies it will award with a contract and which NASA Center is best suited to manage the contract based on the subject matter. The "requiring activity" in this process is the Mission Directorate that identified the technological need.

Contracts Selected for Review

We queried the Federal Procurement Data System-Next Generation[4] for active NASA contracts that were not performed at a NASA Center. To identify contracts that

[4] Federal Procurement Data System-Next Generation is the Federal Government's central repository for capturing information on all Federal procurement actions.

potentially contained export-controlled technology relevant to NASA, we based our selection on the North American Industry Classification System (NAICS) codes[5] identifying space vehicles, guided missiles, and related equipment and then systematically selected contracts with a total award value greater than $500,000. Selected contracts contained one of the following NAICS codes:

- 336414 Guided Missile and Space Vehicle Manufacturing
- 336415 Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing
- 336419 Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing
- 927110 Space Research and Technology

We also focused only on contracts administered by Goddard, Marshall, and Kennedy based on both the number of contracts awarded and the award value of contracts. We reviewed ITAR, EAR, and NASA guidance and consulted with NASA export-control personnel and determined that 13 contracts contained technologies potentially subject to export controls.

The services and products involved in performance of the contracts included developing instruments for use on spacecraft, launching space vehicles, developing optical sensors to detect leaks during launch operations, adapting special polymers for use on spacecraft and military body armor, developing launch range surveillance equipment, and developing cameras that track explosion debris. The 13 contracts were performed by 10 contractors: 4 were large corporations, 2 were universities, and 4 were small business contractors.

Procedures for Protecting Export-Controlled Technology at Contractor Locations

While the large corporations and universities we reviewed had adequate procedures in place to protect export-controlled technology, the procedures in place at each of the small business contractors did not adequately protect export-controlled technology from unauthorized disclosure.

At each location, we reviewed procedures for controlling physical access and logical access and procedures for determining the nationality of employees and visitors. Where available, we also reviewed the contractor's export-control program and obtained and

[5] The Office of Management and Budget (OMB) developed the North American Industry Classification System (NAICS) as the standard for use by Federal statistical agencies in classifying business establishments for the collection, analysis, and publication of statistical data. (Source: http://www.naics.com/faq.htm#q1.)

reviewed the contractor's applicable technical assistance agreements, DDTC registration number, and export licenses and exceptions.

Procedures at Large Corporations and Universities. The four large corporations and two universities had physical and logical access controls in place to prevent unauthorized personnel from gaining access to critical and sensitive technologies. Although the security procedures varied by location, examples of security included access control badges, cipher locks, visitor sign-in logs and escorts, double perimeter fence lines, barbed wire, security officers, and logical access controls.

Two of the large corporations employed only U.S. citizens and had procedures in place to identify and escort all foreign visitors on the premises. The remaining two large corporations and the two universities employed foreign personnel and had procedures to identify non-U.S. citizens and restrict their access to only those physical areas and computer systems that did not contain export-controlled technology. One of the large corporations established an "ITAR-free zone" within one building that was controlled by employee access-control badges. The non-U.S. citizens only had access to that area of the building and their computer access was restricted to a network that did not contain export-controlled technology. The remaining large corporation had developed an extensive technology transfer control plan, with assistance from the Defense Technology Security Administration (DTSA), that restricted the physical and logical access their non-U.S. employees had within the facility.

Both of the universities we visited had established separate areas that contained the export-controlled technology related to the contracts we reviewed. Only U.S. citizens were allowed unrestricted access to these areas. Foreign visitors were required to be escorted by a U.S. citizen and were not allowed access to export-controlled technology. All the technical data related to the contracts we reviewed resided on computers that were not part of the university networks, and logical access was limited to only those people authorized. Each of the large corporations and universities had also obtained applicable export licenses and were aware of the requirement to register with the DDTC, indicating a thorough knowledge of export-control regulations.

Procedures at Small Business Contractors. At each small business contractor we reviewed, we identified procedural weaknesses that increased their risk of violating export-control regulations. Three of the four contractors had not developed an export-control plan and did not provide export-control training to their employees. Two of the four contractors did not have physical security procedures adequate to protect export-controlled technology. As a result of the procedural weaknesses, we determined that at least one small business contractor inappropriately provided foreign national employees access to potentially export-controlled technology.

Export-control plan. Small business contractors 1, 2, and 3 had not developed an export-control plan and did not provide export-control training to their employees. As a result, the export-control efforts at each of the three contractors focused on the physical

shipment of goods and not the transfer of technical data to foreign nationals. Although contractors 2 and 3 were at a reduced risk of releasing technical data to foreign nationals because they employed only U.S. citizens, none of the three contractors appeared to understand the concept of deemed exports sufficiently to protect technical data from being released to foreign nationals. For example, when we explained deemed exports to the Chief Operating Officer for one of the contractors, the officer stated that their company was at risk of inadvertently releasing export-controlled technology because they do not review the technical information they presented at industry trade shows to market the company's technical capabilities for any export-controlled data that might be included. A manager responsible for export-control compliance at another contractor stated that he did not know what a deemed export was and believed that an export only occurred when a good or product was shipped outside the United States.

Physical security procedures. Contractor 1, who employed foreign nationals, had not developed a physical security plan, did not have procedures to identify the nationality of foreign visitors, and did not restrict access to any visitors. As a result, contractor 1 did not restrict the access their employees had to potentially export-controlled technology. The technical data associated with the contract we reviewed involved optical sensors to detect leaks during launch operations. We requested technical assistance from DTSA to verify that technical data associated with the contract was export controlled. (DTSA frequently performs similar reviews for the Department of State.) DTSA concluded that the technical data was, at a minimum, export controlled by the Department of Commerce and possibly by the Department of State, depending on the use of the end product. Because of the procedural weaknesses, the contractor inappropriately provided at least two foreign national employees with access to export-controlled technology. One employee was a citizen of the People's Republic of China and the other was a citizen of India. We are coordinating with our Office of Investigations on this matter.

Contractor 4, who employed only U.S. citizens, did not have a physical security plan and the only physical security procedure we identified was that they locked the front doors at the end of the business day. Technical data associated with the contract we reviewed involved the development of polymers that could potentially be used by the military for body armor, which is technology controlled under ITAR. However, the contractor did not have badges to identify employees and had no access restrictions to locations that contained the potentially export-controlled technology. Although the contractor employed only U.S. citizens, the contractor did not have procedures for determining the nationality of visitors and did not have procedures for documenting the presence of foreign visitors.

Awareness of Export-Control Regulations

NASA procurement personnel and small business contractors were not always aware that export-controlled items were involved in contract performance or aware of export-control

regulations intended to protect critical and sensitive technologies from being improperly released to foreign nationals and countries of concern. Specifically, we determined that NASA procurement personnel and small business contractors did not properly identify potentially export-controlled information in the contracts we reviewed. Additionally, the small business contractors were also not aware of the ITAR requirement to register with DDTC when engaged in the manufacture or export of export-controlled technology. NASA provides outreach to educate some NASA personnel and contractors about export-control issues relevant to NASA; however, NASA's export-control outreach efforts did not include small business procurement personnel.

Identification of Export-Control Technology. Each of the small business contracts we reviewed included the NASA Federal Acquisition Regulation (FAR) Supplement (NFS) export-control clause 1852.225-70, Export Licenses, which informs contractors of their responsibility to comply with export laws and regulations. However, the export-control clause does not necessarily indicate that the contract involves export-controlled technology because NFS section 1825.1103-70 requires the export-control clause in all NASA solicitations and contracts, except in contracts with foreign entities. Further, the export-control clause does not specifically inform contactors of the requirement to register with DDTC when engaged in the manufacture or export of export-controlled items, nor does it require contractors to consult with the Department of State regarding any questions relating to the ITAR or with the Department of Commerce regarding any questions related to the EAR.

For the small business contracts we selected for review, contract performance involved technology that was potentially export-controlled. We asked both the contracting officer technical representatives (COTRs) and the small business contractors whether their contract involved potentially export-controlled technology: of the five COTRs that managed the contracts for the four contractors we reviewed, two said no, one said yes, and two were not sure; of the four small business contractors, three said no and one was not sure. For one contract, the COTR said the contract involved export-controlled technology, while the small business contractor said that it did not. We found no evidence that the contracting officer had informed the small business contractor that the contract involved export-controlled technology.

DDTC Registration. None of the four small business contractors we reviewed had registered with DDTC, despite that each of the small business contracts involved potentially export-controlled products or technical data. The products involved in performance of the small business contracts included optical sensors to detect leaks during launch operations, special polymers for use on spacecraft and military body armor, launch range surveillance equipment, and cameras that track explosion debris. These products, and their related technical data, are categorized as export-controlled products by either ITAR or EAR. Although three of the four small business contractors did not know their contract involved export-controlled technology, in addition to not registering, none of the small business contractors were aware of the registration requirement and did not know how to register with DDTC.

In March 2009, Department of Defense (DoD) developed a draft final rule to amend the Defense Federal Acquisition Regulation Supplement and establish an export-control clause to ensure DoD contractors complied with export-control laws and regulations and to prevent unauthorized disclosure of export-controlled information and technology. DoD coordinated with the Departments of State, Commerce, and Justice in developing the clause. Responsible personnel with the Department of State informed us that the export-control clause was developed to emphasize the importance of the requirement for contractors to register with the DDTC, and to direct contractors to contact either the Departments of State or Commerce regarding any questions related to either the ITAR or EAR.

It is in NASA's best interests to monitor export-control rule developments in other Federal agencies and look for opportunities to improve both NASA contracting officers' and small business contractors' awareness of export regulations. DoD is coordinating with the Departments of State, Commerce, and Justice to ensure that the Defense Federal Acquisition Regulation Supplement rule is in compliance with other Federal regulations. Adopting provisions in the DoD draft final rule could help NASA improve contactors' awareness of export-control regulations. NASA should be aware of the latest changes to assure NASA policy is aligned with the best practices.

Office of External Relations Outreach Efforts. NASA's Office of External Relations has developed multiple outreach efforts to educate NASA personnel and increase awareness of export-control issues relevant to NASA. The Office of External Relations sends to selected personnel throughout each Mission Directorate and Center, via e-mail, a weekly activity report that includes export-control issues and activities. The Export Control and Interagency Liaison Division, within the Office of External Relations, annually holds an export-control conference that is attended by NASA personnel from every Center, and they frequently send e-mails addressing specific export-control issues to personnel within the NASA Export Control Program at Headquarters and each NASA Center. According to the Export Control and Interagency Liaison Division, in 2008, personnel with the NASA Export Control Program at Headquarters and the Centers provided training to 3,200 NASA employees and on-site contractors. Additionally, NASA Export Control Program personnel frequently accept invitations at non-NASA events and conferences that are attended by U.S. companies. We acknowledge the extensive efforts undertaken by the Office of External Relations to increase the awareness of export-control issues. However, most of the outreach efforts are directed to Center export-control personnel and do not target the SBIR/STTR Program Management Office staff or procurement personnel, or small business contractors.

In a 2006 Government Accountability Office (GAO) report, "Agencies Should Assess Vulnerabilities and Improve Guidance for Protecting Export-Controlled Information at Companies" (GAO-07-69, December 2006), it was stated that training and outreach by Government agencies was particularly important because smaller businesses working in advanced technology areas were not as aware of the extent of their responsibilities to protect export-controlled information. GAO also found that, while the Departments of

State and Commerce provide export-control training to companies, the Departments do not strategically target companies where the greatest risk of violations of the export regulations may exist. GAO recommended that the Department of State improve its oversight of export-controlled information at companies by strategically assessing potential vulnerabilities in the company's protection of export-controlled information.

The results of our review indicate that SBIR/STTR Program Management Office contractors are at a higher risk than larger corporations of improperly releasing export-controlled technology. Given the lack of export-control awareness we identified with SBIR/STTR procurement personnel and small business contractors, we believe that expanding outreach efforts to NASA personnel involved in the SBIR/STTR procurement process and small business contractors would increase export-control awareness among NASA personnel and reduce the risk of small business contractors violating export-control regulations.

NASA Oversight and Monitoring of Small Business Contractor Compliance with Export-Control Guidance

Through interviews with contracting officers, COTRs, and the Program Managers for the small business contracts, we determined that procurement officials do not monitor technology transfers, i.e. exports, as part of their contract administration duties. Even when the COTR said yes, the contract contained export-controlled technology, the COTR informed us that his oversight did not include monitoring the export-control compliance of the small business contractor.

Each of the small business contracts we reviewed contained NFS clause 1852.223-75, Major Breach of Safety or Security, which states that "a major breach of security may constitute a breach of contract that entitles the Government to exercise any of its rights and remedies applicable to material parts of this contract, including termination for default. A major breach of security may occur on or off Government installation, but must be related directly to the work on the contract." The clause defines a major breach of security as an act or omission by the contractor that results in compromise or illegal technology transfer of export-controlled technology. The clause also states that in the event of a major breach of safety or security, the contractor shall report the breach to the contracting officer. This clause is required in all solicitations and contracts with estimated values of $500,000 or more, unless waived at a level above the contracting officer position with the concurrence of the project manager and the installation official(s) responsible for matters of security, export-control, safety, and occupational health.

Contracting officers should monitor safety and security, to include illegal technology transfers, as part of their contract administration duties. However, none of the small business contracts we reviewed included safety or security reporting as a deliverable, even though the contracts involved potentially export-controlled technology. Based on

the contractor's reporting requirements of NFS clause 1852.223-75, contracting officers could increase oversight and monitoring of contractor compliance with export regulations by requiring contractors to report major safety and security breaches, to include actual or suspected illegal technology transfers, as a deliverable. By requiring reporting on actual or suspected illegal technology transfers, NASA will have documented assurance from contractors that they are protecting sensitive NASA technology from inappropriate transfers to foreign nationals or countries of concern.

Conclusion

Space systems and aeronautics technologies are frequently targeted for theft by foreign entities. The unauthorized disclosure of certain information may enable a foreign country or adversary to gain an advantage militarily. NASA's programs and projects in many cases involve research and technology that must be protected, and that work is frequently performed for NASA by contractors. Small business contractors usually enter into contracts with NASA to develop technology and products to satisfy a need that has been identified by NASA. Although NASA is not responsible for contractors' export compliance in the execution of contracted work, NASA has a vested interest in ensuring the companies they contract with comply with export-control laws. Otherwise, NASA's ability to accomplish their mission could be put in jeopardy if fines or debarment seriously impedes a contractor's ability to provide supplies or services to NASA. We believe that NASA can reduce the small business contractors' risk of violating export-control procedures by informing the contractors when a contract contains technology that is potentially export-controlled, and monitoring contractors' compliance with export-control laws and procedures.

Recommendations, Management's Response, and Evaluation of Management's Response

1. The Assistant Administrator for Procurement should:

   a. coordinate with the Department of State to monitor the modifications to the DoD draft final rule intended to increase contractor awareness of their export-control responsibilities, and, if required, amend the NASA FAR Supplement (NFS) to align with other Federal agencies best practices.

Management's Response. The Assistant Administrator for Procurement concurred and stated that the Office of Procurement will monitor the modifications to the DoD draft final rule and, if required and appropriate, amend the NASA FAR Supplement to align with other Federal agencies best practices.

Evaluation of Management's Response. Management's proposed action is responsive. The recommendation is resolved and will be closed upon completion and verification of management's corrective action.

b. require contracting officers to monitor and oversee contractors' compliance with export-control regulations by

   i. requiring contractors with contracts that contain export-controlled technology to provide the contracting officers with an export compliance plan at the time of contract award, and

   ii. adding the reporting of major safety and security, to include actual or suspected, illegal technology transfers as a contract deliverable on contracts that involve export-control technology.

Management's Response. The Assistant Administrator for Procurement partially concurred and agreed that SBIR and STTR contractors should be aware of and comply with export control regulations. However, the Assistant Administrator for Procurement believed that updating the solicitation requirements for small business contractors would be a more appropriate way of increasing SBIR and STTR contractor awareness when compared to requiring the delivery of an export control compliance plan. The Assistant Administrator for Procurement stated that the SBIR and STTR solicitations will direct contractors to contact the Department of State for questions related to the International Traffic in Arms Regulations and to contact the Department of Commerce for questions related to the Export Administration Regulations. The solicitations will also remind contractors of the requirement to report major breaches of safety and security, to include illegal technology transfers, in accordance with NFS clause 1852.223-75 Major Breach of Safety and Security; direct contractors to comply with specific export control requirements such as registering with the Directorate of Defense Trade Controls, obtaining applicable technical assistance agreements, and requesting commodity jurisdictions from the Department of State.

Evaluation of Management's Response. Management's proposed actions are responsive to the intent of the recommendation; however, the recommendation will remain open until we evaluate the effectiveness of the efforts to increase contractor awareness. At that time, we will determine whether the actions taken by the Office of Procurement have resulted in an increase in the number of SBIR and STTR contractors that are in compliance with export control regulations.

2. The Assistant Administrator for External Relations should expand current export-control outreach efforts to NASA SBIR/STTR Program Management Office personnel, procurement personnel involved in the administration of SBIR/STTR contracts, and small business contractors.

Management's Response. The Assistant Administrator for External Relations concurred and stated that the Office of External Relations will provide briefings on NASA compliance to the SBIR/STTR contractor community and will work with the Office of Procurement and the SBIR/STTR Program management Office to schedule export control training. Additionally, the Office of External Relations plans to provide the Department of State with a list of NASA small business contractors for their outreach efforts.

Evaluation of Management's Response. Management's proposed action is responsive. The recommendation is resolved and will be closed upon completion and verification of management's corrective action.

APPENDIX A

Scope and Methodology

We performed this audit from November 2007 through May 2009 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We interviewed NASA procurement officers, contracting officers, COTRs, the NASA Export-control Administrator, Center Export-Control Administrators, and Program Managers to obtain an understanding of the procedures in place at NASA for controlling the access foreign nationals have to export-controlled technology at contractor locations. We reviewed relevant NASA criteria, the Federal Acquisition Regulation, the NASA Federal Acquisition Regulation Supplement, Export Administration Regulations, and the International Traffic in Arms Regulations. We also reviewed export compliance program guidelines issued by the Department of State and examined industry best practices.

We selected contracts that appear to contain critical technologies and technical information relevant to NASA based on the North American Industry Classification System (NAICS) codes.[6] By querying the Federal Procurement Data System-Next Generation, we identified the universe of active contracts performed off-site (i.e., not at a NASA Center or facility) and likely to involve export-controlled technology. We identified potentially export-controlled technology using the NAICS codes related to space vehicles, guides missiles, and related equipment. We systematically selected active contracts with a total award value greater than $500,000 that appeared to contain export-controlled technology based on the following NAICS codes:

- 336414 Guided Missile and Space Vehicle Manufacturing
- 336415 Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing
- 336419 Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing
- 927110 Space Research and Technology

[6] The Office of Management and Budget (OMB) developed the North American Industry Classification System (NAICS) as the standard for use by Federal statistical agencies in classifying business establishments for the collection, analysis, and publication of statistical data related to the business economy of the U.S. A business establishment is assigned one NAICS code, based on its primary business activity.

We focused on contracts administered by Goddard, Marshall, and Kennedy based on both the number and award value of contracts at those Centers. We also limited the places of performance to California, Massachusetts, and Florida. We selected California and Massachusetts because these states have largest number of contracts, and we included Florida because, based on our query of the Federal Procurement Data System-Next Generation, there are a significant number of contracts and several high-dollar awards. Using this methodology, we identified 15 contracts that appeared to contain export-controlled technology. We obtained and reviewed the 15 contracts to determine whether they contained export-controlled technology based on ITAR and NASA guidance. Based on our review and consultation with the NASA export-control personnel, we concluded that 2 contracts did not contain export-controlled technology. As a result, we eliminated these contracts, leaving 13 contracts within the scope of the audit.

Use of Computer-Processed Data. We used computer-processed data to select the contracts but did not use computer-processed data to evaluate the data within those contracts.

Review of Internal Controls. We contacted responsible export-control and contracting personnel at each of the contractor locations to obtain an initial understanding of their procedures for protecting export-controlled technology. We also visited each of the contractor locations for the 13 contracts we reviewed and tested their procedures for controlling the access foreign nationals have to export-controlled technology. Specifically, we reviewed the contractor's export-control program, observed and tested the procedures for controlling physical access and IT access, and reviewed the procedures the contractors had in place to verify the citizenship of all employees. We also obtained and reviewed the contractor's technical assistance agreements, Directorate of Defense Trade Controls registration number, and export licenses and exceptions. As stated in the report, we identified internal control weaknesses with NASA's procedures for overseeing and monitoring small business contractor transfers of potentially critical technology and technical information to foreign nationals and countries of concern need improvement. We also referred one small business contract to the OIG Office of Investigations to determine whether an export-control violation had occurred.

Prior Coverage

During the last 5 years, the Government Accountability Office (GAO) and the NASA Office of Inspector General (OIG) have issued four reports of particular relevance to the subject of this report. Unrestricted reports can be accessed over the Internet at http://www.gao.gov (GAO) and http://oig.nasa.gov/audits/reports/FY09 (NASA).

Government Accountability Office

"Agencies Should Assess Vulnerabilities and Improve Guidance for Protecting Export-Controlled Information at Universities" (GAO-07-70, December 2006)

"Agencies Should Assess Vulnerabilities and Improve Guidance for Protecting Export-Controlled Information at Companies" (GAO-07-69, December 2006)

National Aeronautics and Space Administration

"NASA Can Improve Its Mitigation of Risks Associated with International Agreements With Japan for Science Projects" (IG-06-020, September 2006)

"Final Memorandum on NASA's Policies for Protecting Technology Exported to Foreign Entities" (IG-06-006, March 2006)

MANAGEMENT COMMENTS

National Aeronautics and
Space Administration
Headquarters
Washington, DC 20546-0001

Reply to Attn of:

TO: Assistant Inspector General for Auditing

FROM: Assistant Administrator for Procurement

SUBJECT: Response to Draft Audit Report, "Improvements Needed in NASA's Oversight and Monitoring of Small Business Contractor Transfers of Export-Controlled Technologies" (Assignment No. A-08-005-00)

In response to your memorandum of May 27, 2009, regarding Draft Audit Report A-08-005-00, the Office of Procurement and the Office of External Relations have reviewed the report's recommendation and comments.

The draft report provides useful findings and recommendations. Of particular interest was your finding that large corporations and universities which you reviewed had adequate procedures to protect export-controlled technology from illegal transfer; however, certain small business contractors appeared to lack similar safeguards. Further, you found that certain small business contractors reviewed were not aware of the requirement to comply with U.S. export control laws and regulations and, as such, were at increased risk of improperly releasing critical technology and technical information. Management responses to the specific recommendations of the draft report are provided below.

OIG Recommendation:

1a. Recommend the Assistant Administrator for Procurement coordinate with the Department of State to monitor the modifications to the DoD draft final rule intended to increase contractor awareness of their export-control responsibilities, and, if required, amend the NASA FAR Supplement to align with other Federal agency's best practices.

NASA Management Response:

Concur. The Office of Procurement will monitor the modifications to the DoD draft final rule intended to increase contractor awareness of their export control requirements and, if required and appropriate, amend the NASA FAR Supplement to align with other Federal agency's best practices.

OIG Recommendation:

1b. Recommend the Assistant Administrator for Procurement require contracting officers to monitor and oversee contractor's compliance with export-control regulations by

i. requiring contractors with contracts that contain export-controlled technology to provide the contracting officers with an export compliance plan at the time of contract award, and

ii. adding the reporting of major safety and security, to include actual or suspected, illegal technology transfers as a contract deliverable on contracts that involve export-control technology.

NASA Management Response:

Concur in part. The Office of Procurement agrees that the Small Business Innovation research/Small Business Technology Transfer (SBIR/STTR) contractors should be aware of the export-control regulations and adhere to them. We do not believe that the delivery of an export compliance plan is the appropriate way to do this. In order to provide more information to small businesses on their requirement to comply with U.S. export control laws and regulations, the NASA SBIR/STTR solicitation will: direct contractors to contact the Department of State Directorate for Defense Trade Controls for questions related to the International Traffic in Arms Regulations and the Department of Commerce Bureau of Industry and Security for questions related to the Export Administration; remind offerors of the requirement to report major breaches of safety and security, to include illegal technology transfers, in accordance with clause 1852.223-75 Major Breach of Safety or Security; and direct the contractor to comply with export control requirements (DDT registration, technical assistance agreements, commodity jurisdiction, etc.), when applicable. We will also include in the solicitation links to the respective web sites that contain guidance for developing an export-control plan. In addition, as part of their proposal submission, SBIR/STTR contractors will be required to confirm their compliance with export control regulations

The clause 1852.223-75 Major Breach of Safety or Security already requires the contractor to report all major breaches of safety or security to the contracting officer; a major breach of security includes an act or omission by the Contractor that results in illegal technology transfer. This clause is included in all contracts over $500,000.

OIG Recommendation:

2. We also recommend that the Assistant Administrator for External Relations expand current export-control outreach efforts to NASA SBIR/STTR Program Management Office personnel, procurement personnel involved in the administration of SBIR/STTR contracts, and small business contracts.

NASA Management Response:

Concur. NASA's management will endeavor to increase outreach efforts to NASA SBIR/STTR Program Management Office personnel, NASA procurement personnel, and small business contractors, where practicable.

The Office of External Relations (OER) recently provided instructional materials that include an overview of U.S. export control laws and regulations to the NASA SBIR office for inclusion in material to be made available to NASA small business contractors; OER will also provide briefings on NASA compliance with U.S. export control laws and regulations to the SBIR/STTR contractor community, as requested and feasible. Additionally, OER will work with the NASA Office of Procurement and the SBIR/STTR Program Management Office to schedule NASA Export Control Program training. OER can also provide the Department of State Directorate of Defense Trade Controls (DDTC) with a list of NASA Phase II ($500K >) small business contractors for their outreach efforts. It is important to recognize that NASA is not an export control regulatory authority and OER will continue to stress that contractors should contact DDTC concerning the International Traffic in Arms Regulations and the Department of Commerce Bureau of Industry and Security concerning the Export Administration Regulations.

Thank you for your assistance and the opportunity to respond to the findings and conclusions of the draft audit report. If you have any questions or require additional information, please contact Ms. Sandra Morris at 358-0532.

William P. McNally

cc: OER/Mr. O'Brien

REPORT DISTRIBUTION

National Aeronautics and Space Administration

Administrator
Deputy Administrator
Chief of Staff
Assistant Administrator for Procurement
Assistant Administrator for External Relations

Non-NASA Organizations and Individuals

Office of Management and Budget
    Deputy Associate Director, Energy and Science Division
        Branch Chief, Science and Space Programs Branch
Government Accountability Office
    Director, Defense, State, and NASA Financial Management, Office of Financial Management and Assurance
    Director, NASA Issues, Office of Acquisition and Sourcing Management

Congressional Committees and Subcommittees, Chairman and Ranking Member

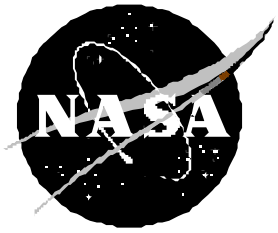
Senate Committee on Appropriations
    Subcommittee on Commerce, Justice, Science, and Related Agencies
Senate Committee on Commerce, Science, and Transportation
    Subcommittee on Space, Aeronautics, and Related Sciences
Senate Committee on Homeland Security and Governmental Affairs
House Committee on Appropriations
    Subcommittee on Commerce, Justice, Science, and Related Agencies
House Committee on Oversight and Government Reform
    Subcommittee on Government Management, Organization, and Procurement
House Committee on Science and Technology
    Subcommittee on Investigations and Oversight
    Subcommittee on Space and Aeronautics

Major Contributors to the Report:

Raymond Tolomeo, Director, Space Operations (Acting)
G. Paul Johnson, Project Manager
Mark J. Benson, Auditor
Julia K. Eggert, Management and Program Analyst
James E. Richards, Auditor
Janet Overton, Editor

JULY 14, 2009

REPORT No. IG-09-018



OFFICE OF AUDITS

OFFICE OF INSPECTOR GENERAL

ADDITIONAL COPIES

Visit http://oig.nasa.gov/audits/reports/FY09 to obtain additional copies of this report, or contact the Assistant Inspector General for Auditing at 202-358-1232.

COMMENTS ON THIS REPORT

In order to help us improve the quality of our products, if you wish to comment on the quality or usefulness of this report, please send your comments to Ms. Jacqueline White, Quality Assurance Director, at Jacqueline.White@nasa.gov or call 202-358-0203.

SUGGESTIONS FOR FUTURE AUDITS

To suggest ideas for or to request future audits, contact the Assistant Inspector General for Auditing. Ideas and requests can also be mailed to:

Assistant Inspector General for Auditing
NASA Headquarters
Washington, DC 20546-0001

NASA HOTLINE

To report fraud, waste, abuse, or mismanagement, contact the NASA OIG Hotline at 800-424-9183 or 800-535-8134 (TDD). You may also write to the NASA Inspector General, P.O. Box 23089, L'Enfant Plaza Station, Washington, DC 20026, or use http://oig.nasa.gov/hotline.html#form. The identity of each writer and caller can be kept confidential, upon request, to the extent permitted by law.