W March 31, 1999

TO: G/General Counsel
I/Associate Administrator for External Relations

FROM: W/Assistant Inspector General for Auditing

SUBJECT: Final Report on Audit of NASA Control of Export-Controlled Technologies
Assignment Number A9901200
Report Number IG-99-020

The subject final report is provided for your information and use. Please refer to the Executive Summary for the overall audit results. Our evaluation of your response is incorporated into the body of the report. In response to management's comments, we revised recommendation 1. Recommendations 1, 2, 3, 4, 5, and 6 are resolved but will remain undispositioned and open for reporting purposes. Please notify us when action has been completed on these recommendations, including the extent of testing performed to ensure corrective actions are effective.

If you have questions concerning the report, please contact Mr. Dennis E. Coldren, Program Director, Human Exploration and Development of Space Audits, at (281) 483-4773, or Mrs. Loretta Garza, Auditor-in-Charge, at (281) 483-0483. We appreciate the courtesies extended to the audit staff. See Appendix D for the report distribution.

[Original signed by]

Russell A. Rau

Enclosure

cc:
B/Chief Financial Officer
JM/Director, Management Assessment Division

IG-99-020

AUDIT REPORT

NASA CONTROL OF EXPORT-CONTROLLED TECHNOLOGIES

March 31, 1999

National Aeronautics and Space Administration

Office of Inspector General

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NASA Office of Inspector General

IG-99-020 **March 31, 1999**
A9901200

NASA Control of Export-Controlled Technologies

Executive Summary

Background. The threat to NASA's technological information is continually increasing as foreign entities seek to gain technological and economic advantages. While the National Aeronautics and Space Act of 1958 (the Space Act) promotes the sharing of information to the greatest practical extent, it also seeks to preserve the preeminent position of the United States in aeronautics and space. Moreover, the obligation to protect export-controlled technologies from unauthorized disclosure is found not only in policy statements, such as those in the Space Act, but also in statutes such as the Trade Secrets Act and the export control laws (see Appendix B) that have strict criminal, civil, and administrative penalties. In 1995, NASA established an Export Control Program. The program consists of a NASA-wide system established to ensure that exports[1] to foreign parties in international activities are consistent with the U.S. Export Administration Regulations (the Export Regulations) and the International Traffic in Arms Regulations (the Arms Regulations).

Objectives. Our overall objective was to evaluate NASA's control of export-controlled technologies. Specifically, we determined whether NASA identified all export-controlled technologies related to the Space Station, Space Shuttle, and other major programs and established adequate controls over export-controlled technologies to preclude unauthorized or unlicensed transfers. Appendix A contains additional details on our objectives, scope, and methodology.

Results of Audit. NASA has not identified all export-controlled technologies related to its major programs and does not maintain a catalog of classifications for transfers of export-controlled technologies (see Finding A). Also, Agency oversight of and training for personnel in the Export Control Program (the Program) need improvement. Specifically, annual audits of each Center's[2] export control system were not adequately performed (see Finding B) and NASA personnel lack training in controlling and documenting export-controlled technologies (see Finding C). As a result, NASA may not have adequate control over export-controlled technologies to preclude unauthorized or unlicensed transfers.

Revised Recommendation. In response to management's comments on a draft of this report, we revised the recommendation to state that NASA should develop a cataloging process for export-controlled technologies, whereas the draft recommendation showed that NASA should maintain an inventory for all sensitive technologies.

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[1]Exports are transfers of any commodities, software, or technologies to foreign entities.

[2]Of the three Centers' (Johnson Space Center, Glenn Research Center, and Marshall Space Flight Center) annual export control audits that we reviewed, Marshall Space Flight Center showed greater attention to fulfilling the Program requirements.

Recommendations. The Office of External Relations should develop policies and procedures to ensure that all export-controlled technologies are identified and protected, only qualified personnel perform export control audits, and NASA employees involved directly or indirectly with technology are trained in classifying and protecting export-controlled technologies. In particular, the Associate Administrator for External Relations should:

- Establish policy and procedures for a cataloging process of controlled technology export classifications that would be available for all NASA Installations.

- Define qualifications of personnel who perform Export Control Program audits.

- Designate only qualified personnel to perform the annual audits of the Export Control Program, in accordance with established policy.

- Establish policy for resolving and following up on recommendations resulting from export control audits.

- Enhance the current export control training program for NASA personnel, to include training in U.S. export laws and regulations and in procedures for classifying and documenting exports.

- Expand training on a recurring basis to NASA employees involved directly or indirectly with technology control.

Management's Response. Management concurred with the revised recommendations and stated it was taking action to correct the reported weaknesses. Management plans to develop a catalog of classifications for specific exports, improve training and guidance for Export Control Program auditors, and enhance and strengthen training for NASA employees involved directly or indirectly with technology control.

Evaluation of Management's Response. Management's planned actions are responsive to all of the recommendations.

Introduction

NASA treats as export-controlled technology any item listed on either the Munitions List, published by the Department of State, or the Commerce Control List, published by the Department of Commerce. The Munitions List is part of the Arms Regulations, which contains the restrictions with respect to exports of munitions, or defense articles and services. The Commerce Control List is part of the Export Regulations and regulates exports of dual-use (this term is explained in detail in Appendix B) items, or items that can be used both in military and other strategic uses and commercial applications. Export control provisions are intended to serve the national security, foreign policy, nonproliferation, and short supply interests of the United States and, in some cases, to carry out its international obligations. Controls are designed to restrict access to munitions and dual-use items by countries or persons that might apply such items to uses detrimental to U.S. interests.

When NASA needs to export a controlled technology, the Agency takes special steps to ensure compliance with the Arms and Export Regulations. NASA uses the Denied Persons List[3] to screen the foreign party recipient for clearance. After determining that the foreign party has a clearance, the item is classified as to whether it is governed by either the Munitions List or by the Commerce Control List, if either, and is classified accordingly. After another series of screenings, if required, NASA submits the request for an export license to either the Department of State or the Department of Commerce. The NASA Headquarters Export Administrator serves as a liaison between NASA and the two Federal Departments, as well as other agencies with export control roles. Once a license is obtained, NASA may export the item.

An essential part of the NASA Export Control Program is the establishment of mechanisms within the Agency that provide effective oversight to preclude NASA officials and contractors from making transfers that may be contrary to U.S. export controls or that may be inconsistent with requirements under the export and arms regulations. To institute the control mechanisms, NASA published a pamphlet, the "NASA Export Control Program," October 1998, which also describes the program. NASA plans to strengthen the program by issuing a NASA program directive and procedures and guidelines during fiscal year 1999.

[3]The Bureau of Export Administration maintains the Denied Persons List, which documents person(s) denied export privileges in whole or in part.

Findings and Recommendations

Finding A. Identifying Export-Controlled Technologies

NASA has not identified all specific technologies that should be controlled and does not currently maintain a catalog of classifications for transfers of export-controlled technologies. Although the Agency has designated special categories for protection, such as export items, scientific and technical information,[4] and software, NASA has not provided sufficiently comprehensive guidance or training[5] to identify and classify export-controlled technology. As a result, NASA risks inappropriately transferring export-controlled technologies.

Policies and Procedures Related to Identifying Export-Controlled Technologies

NASA has established several policies and procedures related to identifying export-controlled technologies, based on the need to disseminate the information. For example, the "NASA Export Control Program" pamphlet describes specific steps involved in exporting technologies. NASA Procedures and Guidelines 2200.2A, "Guidelines for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information," September 3, 1997, prescribes specific guidelines, procedures, and standards for creating, acquiring, organizing, publishing, and disseminating scientific and technical information. NASA Procedures and Guidelines 2210.1, "External Release of NASA Software," January 4, 1999, establishes procedures, guidelines, and responsibilities for the domestic and foreign release of software created by or for NASA. NASA Procedures and Guidelines 7120.5A, "Program and Project Management Processes and Requirements," April 3, 1998, requires program teams to ensure that planned technology exchange and partnership agreements comply with all laws and regulations regarding the transfer of export-controlled and proprietary technologies. However, those policies do not adequately instruct NASA employees on how to identify and classify export-controlled information or software. Additionally, the policies do not provide a reference list of the general categories or types of export-controlled technology that have been classified in other NASA export activities. This list would be useful to future classifications. Appendix B contains additional details on export control laws and regulations relating to export-controlled technologies.

Classifying Exports

Generally, the Agency classifies items after it identifies them for export or dissemination. NASA relies on classifying an export request in accordance with the 21 categories of the U.S. Munitions List or the 10 categories of the Commerce Control List.[6] Each Center is responsible for identifying its export-controlled technologies during the export process. The Center

[4]Scientific and technical information includes a collected set of facts, analyses, and conclusions resulting from scientific, technical, and related engineering research and development efforts, both basic and applied.

[5] The lack of training is further discussed in Findings B and C.

[6]See Appendix B for the Munitions List and Commerce Control List categories.

Export Administrators are trained to recognize items that could be export-controlled or that need an export license, including scientific and technical information and computer software.

Tracking System Needed for Export-Controlled Technologies

NASA needs an export control identification and classification process to control all the Agency's export-controlled technologies so that NASA employees are aware of the technologies they need to protect. In our view, this process would include controls governing the identification, classification, marking, tracking, storage, receipt, transfer, and disposition of data reflecting export-controlled technologies. The Headquarters Export Administrator expressed concern about the cost of additional controls and stated that most of NASA's controlled technology is associated with specific hardware and that the hardware can be found on the Munitions List or the Commerce Control List. However, inclusion on those lists is not a substitute for identifying and protecting specific technologies for which NASA maintains data. Without a more comprehensive classification and cataloging process, a Center may be unaware of decisions by other Centers concerning the release of similar technology. Moreover, without a process, the prospect of unknowingly exporting export-controlled technology exists, which could result in damage to NASA and the national security. Obviously, in designing any classification process, NASA must take deliberate steps to ensure the security of the export-controlled data from unauthorized and otherwise illegal theft, including electronic theft.

Revisions to Report

As a result of management's comments on a draft of this report, we revised the report, Finding A, and recommendation 1. We revised the report to reflect a change in terminology from "sensitive technologies" to "export-controlled technologies." We also revised Finding A and draft recommendation 1 which principally sought to establish policy and procedures for an inventory process that defines, identifies, marks, tracks, and protects all types of sensitive technologies, including those not planned for export. Management nonconcurred with the draft report recommendation and provided an acceptable alternative action. The complete text of management's comments on the draft report is in Appendix C.

Revised Recommendation, Management's Response, and Evaluation of Response

1. **The Associate Administrator for External Relations should establish policy and procedures, including enhanced training, for an identification and classification cataloging process that results in a catalog of export-controlled technologies which would be available to all NASA installations.**

Management's Response. Concur. The Associate Administrator agreed to develop a catalog of classifications of goods and technologies for export and to provide enhanced training and guidance on classification processes and require a process to maintain inventories of completed classifications for use among NASA exporters.

Evaluation of Response. The actions planned by management are responsive to the recommendation.

Finding B. Oversight of Export Control Program

NASA must improve oversight of the Export Control Program. Specifically, annual audits performed at each Center on the export control program were not adequate. The Centers' oversight is not adequate because NASA has not defined the necessary qualifications of the Export Control Auditor, and those auditors lacked experience and training. Consequently, the audits did not provide adequate assurance that the Export Control Program was operating as intended.

NASA Export Control Program Audit Requirements

The "NASA Export Control Program" pamphlet states that the Headquarters Export Administrator and the Center Export Administrator shall designate a qualified individual as the Export Control Auditor to review the operations of the program. Furthermore, the pamphlet states:

- The audit should be done annually using a written audit module or checklist.
- The work should verify, through the use of sampling, that required procedures and documentation are regularly followed and maintained in accordance with the Export Regulations and the Arms Regulations.
- The results should be submitted in a written report to the Headquarters or Center Export Administrator, as appropriate, that includes a description of the review process, results, and the recommendations, if any.

The export control auditors performed the audits using an audit module provided by the Headquarters Export Administrator. However, most of the audit work lacked supporting working papers that documented whether NASA officials and personnel followed export procedures, and the audit results were not documented in an audit report.

Experience and Training

The Export Control Auditors at Johnson Space Center (Johnson) and John H. Glenn Research Center at Lewis Field (Glenn Research Center):

- had no experience and had not received training in how to perform the annual audit,
- had not prepared working papers to support their work, and
- completed the audit module by asking questions of the cognizant parties without verifying the answers.

Furthermore, the Export Control Auditor at Johnson did not perform a complete audit because a significant portion of Johnson's exports relates to the Space Station,[7] and the auditor did not review any Space Station exports.

Although we did not interview export control auditors from the remaining NASA Centers, we obtained and reviewed copies of the other Centers' audit reports. Our review showed that those auditors did not prepare an audit report as required by the "NASA Export Control Program" pamphlet. Instead, the export control auditors completed the blanks on the audit module and submitted the completed module as the audit report to the Center Export Administrator. The audit module is basically a questionnaire that can be completed with very limited response options. Although we recognize that this process fulfills the less-restrictive requirements for auditing mandated by the Export Regulations, we are concerned that it does not permit the audit requester to make an informed determination about the adequacy of the process or of the work performed by the export control auditor, as required by the "NASA Export Control Program" pamphlet.

Export Control Audit Follow-up Procedures

The Export Control Auditor at Marshall Space Center (Marshall) properly verified export policies and procedures and prepared working papers to document his work for the 1997 annual audit. Also, the audit report, dated January 26, 1998, contained suggestions to improve the export control system. Specifically, the audit report recommended that Marshall take the following actions:

- Distribute a memorandum delegating positions of authority and outlining general requirements of the Export Control Program to all Center employees.

- Require "all employees" to attend a brief overview course on the Export Control Program.

- Require officials for each project to develop an Export Control Management Plan during the initial phases of a project, outlining the roles and responsibilities of each team member concerning the Export Control Program. The plan should identify any potential export-controlled technologies to be developed and used over the project's life.

As of February 1999, Marshall had not yet adequately addressed any of the export control auditor's recommendations, and the "NASA Export Control Program" pamphlet does not specify a procedure that allows an export control auditor to follow up on audit suggestions.

[7]Because of the volume of Space Station-related exports, Johnson appointed a separate Export Control Administrator to oversee those exports. The Space Station Export Control Administrator is responsible for ensuring Space Station exports comply with export laws and regulations.

Conclusion

Without adequate operations reviews, NASA cannot assure it has an effective Export Control Program. Qualified export control auditors are essential for verifying that Program controls are effective. Furthermore, the Agency needs a policy for resolution of and following up on recommendations that will strengthen the Program.

Recommendations, Management's Response, and Evaluation of Response

The Associate Administrator for External Relations should:

2. **Define in the NASA Program Guide that will be issued during fiscal year 1999 the qualifications of personnel who perform Export Control Program audits.**

3. **Designate only qualified personnel to perform the annual audits of the Export Control Program, in accordance with the established policy.**

4. **Establish policy for resolving and following up on recommendations resulting from export control audits.**

Management's Response. Concur. Management stated that it would improve training and guidance for Export Control Program auditors and provide a systematic approach to resolving Export Control Program audit recommendations through the planned NASA Procedures and Guidelines.

Evaluation of Response. The actions planned by management are responsive to the recommendations.

Finding C. Export Control Program Training

NASA personnel lack sufficient training in their responsibilities for export-controlled technologies and for submitting required documentation for exports. Personnel lack training because the Program does not require training in U.S. export laws and regulations for all NASA employees who are involved directly or indirectly with technology. Some NASA employees, across the Agency, have received training in export control matters, including training regarding export laws and regulations; however, this training must be expanded and enhanced. Without adequate training, NASA employees could misclassify export-controlled technology, thereby causing it to be inappropriately transferred to foreign entities.

Educating Employees Reduces Misclassification

The consensus of the Center Export officials we interviewed[8] was that educating NASA personnel in their responsibility for controlling export-controlled technologies needed strengthening. A memorandum from the Acting Deputy Administrator to Officials-in-Charge of Headquarters Offices; Directors, the NASA Centers; and the Director, Jet Propulsion Laboratory, dated September 2, 1998, emphasized the obligation of those NASA employees to protect proprietary and/or export-controlled technological information, regardless of classification. However, a December 1998 poll conducted by the Headquarters Export Administrator showed that only half of the 25 attendees in a NASA International Project Management Class were familiar with the U.S. export laws and regulations. Further, the poll also showed that almost none of them had received training in U.S. export laws and regulations.

We did observe efforts by NASA to improve training in this area. For example, the NASA Export Administrator and Counsel have conducted annual training conferences for Center export control officials, as well as periodic training for program/project managers and Center staffs, and have developed an export control training video. Additionally, the Johnson Center Export Administrator attempted to correct this condition by providing training to some Center personnel in October 1998. Our limited review of export documentation since the training showed an improvement in documentation, but the files still lacked some required support. Specifically, the export files lacked the purpose and end use for the exported commodity or a certification by the exporters that the classification is correct to the best of their knowledge.

Training is needed to ensure that export documentation is complete and includes the required information to ensure compliance with the Export Control Program. Employees involved directly or indirectly with technology control should receive the training. Thorough documentation of exports reduces the risk of unknowingly exporting technology and provides an audit trail for the export administrator and transportation officer in satisfying requests for clarification and additional information.

[8]Center Export Administrators, Center Export Counsels, and Center Export Representatives from Johnson, Glenn Research Center, and Marshall.

Recommendations, Management's Response, and Evaluation of Response

The Associate Administrator for External Relations should:

5. **In conjunction with the Office of the General Counsel, enhance and strengthen the export control training program for NASA personnel, to include training in U.S. export laws and regulations and in procedures for classifying and documenting exports.**

6. **Expand training on a recurring basis to NASA employees involved directly or indirectly with technology control.**

Management's Response. Concur. Management stated that it would enhance and strengthen training for NASA personnel on U.S. export laws and regulations. Management also stated it would provide recurring training to the employees who are directly or indirectly involved with technology control.

Evaluation of Response. The actions planned by management are responsive to the recommendations.

Appendix A. Objectives, Scope, and Methodology

Objectives

Our overall objective was to evaluate NASA's control of export-controlled technologies. Specifically, we determined whether NASA identified all export-controlled technologies related to the Space Station, Space Shuttle, and other major programs and established adequate controls over export-controlled technologies to preclude unauthorized or unlicensed transfers.

Scope and Methodology

To satisfy our objectives, we:

- Attended Export Control familiarization training at Virginia Beach, Virginia, in December 1998.

- Conducted interviews from December 14, 1998, through January 29, 1999, at Johnson, Glenn Research Center, and Marshall.

- Reviewed documents, dated October 1997 through January 1999, related to exports from Johnson, Glenn Research Center, and Marshall.

- Reviewed "NASA Export Control Program" pamphlet; NASA Procedures and Guidelines 2200.2A, "Guidelines for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information"; NASA Procedures and Guidelines 2210.1, "External Release of NASA Software"; and NASA Handbook 1620.3C, "NASA Security Handbook" for information related to exports, scientific and technical information, and software.

We did not rely on computer-generated data during our audit.

Management Controls Reviewed

We reviewed management controls relative to identification and control of export-controlled technologies. Specifically, we reviewed Federal policies on export licensing; NASA regulations on export control, including draft NASA Program Directive 2190, "NASA Export Control Program," [9] and NASA policy pamphlet, "NASA Export Control Program," dated November 1995 (revised October 1998).

[9]The draft program directive defines and explains the Export Control Program, including responsibilities for Program officials. The draft directive will be issued in final form during fiscal year 1999.

We considered management controls to be inadequate because NASA had not:

- Identified and classified all export-controlled technologies that it needs to protect (see Finding A).
- Ensured that only qualified personnel performed the annual audits of the Export Control Program (see Finding B).
- Ensured that NASA employees who are involved directly or indirectly with technology were trained in procedures for classifying, protecting, and documenting export-controlled technologies (see Finding C).

Performance Measures

NASA addressed performance measures in the draft NASA Program Directive 2190, "NASA Export Control Program." The Program plans to measure adherence with the directive by quantifying yearly NASA export license applications made to the Department of State and Department of Commerce and by quantifying the number of voluntary disclosures[10] submitted by NASA to the Department of State. However, since the directive is still in draft, we did not review the adequacy of the stated performance measures.

Audit Field Work

We conducted our audit from December 1998 through February 1999 at Johnson, Glenn Research Center, and Marshall in accordance with generally accepted government auditing standards.

[10]A voluntary disclosure is a self-admission to the appropriate export authority that an organization believes it may have violated a provision of the Arms or Export Regulations.

Appendix B. Laws and Regulations Relating to Export-Controlled Technologies

Trade Secrets Act, 18 U.S.C. § 1905. The Trade Secrets Act prohibits unauthorized release of any information relating to trade secrets or confidential business data by a Federal employee who receives such information in the course of his employment. Such information includes advance procurement information, prices, technical proposals, proprietary information, income information etc. A violation requires removal from office and a fine of up to $1,000 and/or imprisonment for up to 1 year.

Export Administration Act, 50 U.S.C. app. § 2401. The Export Administration Act provides the President and the Secretary of Commerce with the authority to control exports of dual-use items (goods, software, and technology) for national security, foreign policy, nonproliferation, and short supply purposes. The Act's provisions are implemented by the Export Administration Regulations, and the items subject to control are identified on the Commerce Control List. Although the Act has expired, the President has used his authority, under the International Emergency Economic Powers Act, to continue the Export Administration Regulations provisions, to the extent permitted by law. Violations of the Act or Export Administration Regulations are punishable by debarment, fines of up to $1,000,000 and imprisonment for up to 10 years.

U.S. Export Administration Regulations. The U.S. Department of Commerce, Bureau of Export Administration, issues the Export Regulations under laws relating to the control of exports, re-exports, and activities. The Export Regulations were designed to implement the Export Administration Act of 1979. The term "dual use" distinguishes the types of items covered by the Export Regulations from those covered by the regulations of certain other U.S. Government departments and agencies with export licensing responsibilities. The term dual use also distinguishes Export Regulation-controlled items that can be used both in military and other strategic uses and in civil applications from those that are weapons and for military-related use or designs and are subject to the controls of the Department of State. The export items are classified in at least 1 of the 10 categories of the Commerce Control List, which are as follows:

- Category 0 - Nuclear Materials, Facilities and Equipment and Miscellaneous
- Category 1 - Materials, Chemicals, Microorganisms and Toxins
- Category 2 - Materials Processing
- Category 3 - Electronics
- Category 4 - Computers
- Category 5 - Telecommunications and Information Security
- Category 6 - Lasers and Sensors
- Category 7 - Navigation and Avionics
- Category 8 - Marine
- Category 9 - Propulsion Systems, Space Vehicles, and Related Equipment

Appendix B

Arms Export Control Act, 22 U.S.C. § 2778. The Arms Export Control Act, among other things, authorizes the President to control the export of defense articles and services. This authority has been delegated to the Department of State, which implements the Act through the International Traffic in Arms Regulations. Defense articles and services subject to the Act are identified in broad categories on the United States Munitions List. Violations of the Act are punishable by debarment, fines of up to $500,000, and imprisonment for up to 10 years.

International Traffic in Arms Regulations. The U.S. Department of State, Office of Defense Trade Controls, Bureau of Politico-Military Affairs, issues the Arms Regulations to control the export and import of defense articles and defense services. The President shall designate the articles and services deemed to be defense articles and services. These defense articles and services constitute the U.S. Munitions List, a subpart of the Arms Regulations. The intended use of the article or service after its export is not relevant in determining whether the article or service is subject to the controls of the Arms Regulations. The defense articles or services fall into one of the 21 categories of the U.S. Munitions List which are:

- Category I - Firearms
- Category II - Artillery Projectors
- Category III - Ammunition
- Category IV - Launch Vehicles, etc.
- Category V - Explosives, Propellants, Incendiary Agents and Their Constituents
- Category VI - Vessels of War and Special Naval Equipment
- Category VII - Tanks and Military Vehicles
- Category VIII - Aircraft and Associated Equipment
- Category IX - Military Training Equipment
- Category X - Protective Personnel Equipment
- Category XI - Military Electronics
- Category XII - Fire Control, Range Finder, Optical and Guidance and Control Equipment
- Category XIII - Auxiliary Military Equipment
- Category XIV - Toxicological Agents and Equipment and Radiological Equipment
- Category XV - Spacecraft Systems and Associated Equipment
- Category XVI - Nuclear Weapons Design and Related Equipment
- Category XVII - Classified Articles, Technical Data and Defense Services Not Otherwise Enumerated
- Category XVIII - Reserved
- Category XIX - Reserved
- Category XX - Submersible Vessels, Oceanographic and Associated Equipment
- Category XXI - Miscellaneous Articles

Appendix B

NASA Procedures and Guidelines 2200.2A, "Guidelines for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information." The publication prescribes specific guidelines, procedures, and standards for creating, acquiring, organizing, publishing, and disseminating scientific and technical information. The creation, acquisition, production, and dissemination of scientific and technical information are derived from NASA activities, including those generated by NASA-sponsored research and development and related efforts. The cognizant NASA official uses NASA Form 1676, "Document Availability Authorization," to determine which restrictions, if any, need to be placed on the availability of the scientific and technical information. Unless a determination is made that the information must be prohibited or restricted, NASA scientific and technical information is made available to the public. If the determination is made to prohibit or restrict the information, the information is then marked as subject to the applicable Arms Regulations, Export Regulations, trade secrets, or copyright laws. Information protected for national security reasons under appropriate security classification must be treated in accordance with NASA Handbook 1620.3C, "NASA Security Handbook."

NASA Handbook 1620.3C, "NASA Security Handbook." The Handbook details responsibility for ensuring the proper safeguarding of classified information and material. Each NASA Installation Chief of Security is responsible for implementing the policies and procedures outlined in the handbook for the safeguarding of classified information and material. All NASA employees who generate, have possession of, or otherwise handle classified information or material are responsible for complying with the requirements of the handbook. Only the NASA Administrator and other NASA designated officials at Headquarters have original classification authority to determine the level of classification to be assigned to a document generated by NASA. The classifications are Top Secret, Secret, or Confidential.

NASA Procedures and Guidelines 2210.1, "External Release of NASA Software." The publication establishes procedures, guidelines and responsibilities for the domestic and foreign release of software created by or for NASA. The Center Export Administrator is responsible for coordinating an export classification on all software prior to any public release. The Center Releasing Authority will coordinate and oversee efforts to ensure that NASA-funded software is reported, administered, and inventoried as any other invention, discovery, improvement, or innovation.

NASA Procedures and Guidelines 7120.5A, "Program and Project Management Processes and Requirements." The publication provides for the development of plans and the establishment of partnerships to transfer technologies, discoveries, and processes with potential for commercialization. To accomplish technology and commercialization planning, the publication requires program teams to ensure that the planned technology exchange and partnership agreements comply with all laws and regulations regarding the transfer of export-controlled and proprietary technologies.

Appendix C. Management's Response

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

MAR 26 1999

Reply to Attn of: ID

TO: W/Assistant Inspector General for Auditing

FROM: I/Associate Administrator for External Relations

SUBJECT: Draft Report on Audit of NASA Control of Sensitive Technologies
Assignment Number A9901200

In response to your February 22, 1999, request, and as a result of our discussions on March 19, 1999, and the resulting redraft, we generally concur with your recommendations. I appreciate the Inspector General's efforts in helping us review and improve this area of our business. I would also like to acknowledge what I understand were excellent working relationships between your audit personnel and the various export control and program personnel that were interviewed or contacted during the conduct of the audit.

NASA is unique among Government agencies in establishing and implementing a comprehensive Agency-wide Export Control Program (ECP). NASA's program is to ensure that the Agency's export activities comply with both the Export Administration Regulations (EAR) and the International Traffic in Arms Regulations (ITAR). It represents a substantial achievement for NASA since prior to its existence the Agency's export activities were fragmented and subject to far less oversight that they have been under the ECP since 1996. We believe that through the implementation of the ECP that the Agency has made great strides in developing an awareness of export control issues and requirements and in implementing processes to ensure that necessary exports receive proper review for consistency with the export control laws.

We also believe it is important to point out, as an initial matter, the confusion originally created by use of the term "sensitive technologies." This is not a term defined in either statute or regulation, and it is susceptible to a wide range of interpretation. Instead, the term "export-controlled technologies" is more appropriate to describe the subject of this report. Export-controlled technologies are those identified within the Commerce Control List (CCL), 15 CFR Part 774, Supplement 1, or the United States Munitions List (USML), 22 CFR Part 121. They are comprised of non-public domain information (including proprietary information and software) required for the design, development, manufacture, production, use, operation, assembly, maintenance, repair or modification of any item on either the CCL or USML. For example, the non-public domain technical data associated with the International Space Station is split between the CCL and USML,

with only technical data required for the detailed design, development, manufacture or production of the Station being on the USML, and all other technical data being on the CCL. We are pleased that you have agreed to replace the term "sensitive technologies" with "export controlled technologies."

With regard to the specific findings and recommendations of the *redrafted* report, the following are our responses:

Finding A/Recommendation 1 – The Associate Administrator for External Relations should establish policy and procedures, including enhanced training, for a comprehensive identification and classification process that results in a catalog of export controlled technologies which would be available to all NASA Installations. Headquarters.

Response – Concur - To a large extent such policies and procedures are already in place. NASA policies and procedures for identifying and marking export controlled technologies are already well established in various NASA Policy Directive (NPD) and NASA Procedures and Guidelines (NPG) documents; i.e., NASA's Scientific and Technical Information Program (NPD 2220.5/NPG 2200.2), the External Release of NASA Software (NPD/NPG 2220.1), the Space Act Agreements Manual (NPD/NPG 1050.1), and the NASA Export Control Program (soon to become an NPD/NPG). These policies and procedures are the responsibility of a variety of offices at NASA Headquarters, and they are supplemented by others that provide for the review of information to be placed on the internet, for identifying, marking, tracking and protecting "classified" information, and for the review, processing and badging of foreign nationals that proposed to visit NASA Installations.

We do agree that, for export-controlled technologies, a broader, more practiced understanding is needed of how to identify and classify items (goods and technologies) for export against the CCL and USML, including the development of an catalog of classifications which have been performed or provided for specific exports. As such, we plan to provide enhanced training and guidance on classification processes, and will include in the newly planned NPG on export control a requirement for implementing processes to maintain inventories of completed classifications for use by and dissemination among NASA exporters

Finding B/Recommendation 2 – Define in the NASA Program Guide that will be issued during fiscal year 1999 the qualifications of personnel who perform Export Control Program audits.

Response – Concur - The existing NASA Export Control Program requires the Export Administrator to designate "qualified" personnel as Export Control Auditors (ECAs), without specifying particular qualifications. It goes on to state that Export Administrators should not designate themselves as ECA's; however, Internal Control Officers, Program/Project Managers, or other qualified officials may be properly designated as ECA's. Although we note that the ECP Audit Module exceeds the

requirements of the export control regulations, we do agree that the Agency and the ECP will benefit from improved training and guidance for ECP auditors, and from a more systematic approach to addressing ECP audit findings and recommendations. NASA will work to improve requirements for the ECP auditing process through the planned NPG on export control.

Finding B/Recommendation 3 – Designate only qualified personnel to perform the annual audits of the Export Control Program, in accordance with the established policy.

Response – See response to Recommendation 2 above.

Finding B/Recommendation 4 – Establish policy for resolving and following up on recommendations resulting from export control audits.

Response – See response to Recommendation 2 above.

Finding C/Recommendation 5 – In conjunction with the Office of General Counsel, enhance and strengthen the export control training program for NASA personnel, to include training in U.S. export laws and regulations and in procedures for classifying and documenting exports.

Response – Concur – While the NASA ECP currently contains a training requirement; i.e., at least annually Export Administrators are to conduct or arrange training for concerned NASA officials, including Export Counsel, Program/Project Managers, Transportation Officers, and others, on issues and developments in export controls which impact NASA's international activities, enhanced and strengthened training is appropriate. Since the inception of the ECP, Headquarters has sponsored an annual ECP training conference for all Export Administrators and Export Counsel, and an ECP training video has been produced for viewing by all employees. Export control training is also a part of the Agency's International Project Management course held three times yearly.

The Agency is committed to making every NASA employee aware of export control issues in its programs.

Finding C/Recommendation 6 – Expand training on a recurring basis to NASA employees involved directly or indirectly with technology control.

Response – Concur - We agree and plan to enhance the existing training program.

In addition to the comments discussed above we would like to offer some clarifying points to enhance the accuracy of the draft report, as follows:

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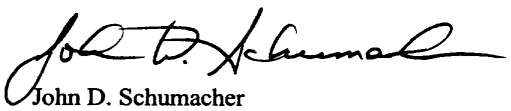
- In the Background paragraph, it should be noted that the export control laws provide for administrative (e.g., debarment) penalties, in addition to criminal and civil sanctions. Administrative penalties are among the most effective features of the export control laws. Also in this section, and in the first footnote, the term "transfers" does not require definition or distinction from the term "export". In simple terms, an export is a transfer of goods, software or technology to a foreign entity. In our proposed revisions to the draft report, we have provided additional text to remedy these technical inaccuracies and omissions.

Appendix B

- Although this section of the draft report discusses the Trade Secrets Act and the primary export control regulations, it does not discuss the fundamental export control statutes. We recommend that it include a discussion of the Arms Export Control Act, 22 U.S.C. § 2778 et seq., and the Export Administration Act, 50 U.S.C. app § 2401 et seq., and have drafted proposed descriptions of these statutes for inclusion in the final report.

We appreciate this opportunity to comment on your findings and recommendations and look forward to working with the Office of Inspector General as we move forward to improve this important Agency program.



John D. Schumacher

cc:
B/A. Holz
G/E. Frankle
J/J. Sutton
JM/D. Green

Appendix D. Report Distribution

Code AE/Chief Engineer
Code AF/Chief Technologist
Code AO/Chief Information Officer
Code B/Chief Financial Officer
Code C/Associate Administrator for Headquarters Operations
Code E/Associate Administrator for Equal Opportunity Programs
Code F/Associate Administrator for Human Resources & Education
Code G/General Counsel
Code H/Acting Associate Administrator for Procurement
Code I/Associate Administrator for External Relations
Code ID/Director, Assessments and Technology Division
Code IM/Director, Resources Management Office
Code J/Associate Administrator for Management Systems & Facilities
Code JL/Acting Director Security, Logistics, Aircraft, & Industrial Relations Division
Code JM/Director, Management Assessment Division
Code K/Associate Administrator for Small & Disadvantaged Business Utilization
Code L/Associate Administrator for Legislative Affairs
Code M/Associate Administrator for Space Flight
Code P/Associate Administrator for Public Affairs
Code Q/Associate Administrator for Safety & Mission Assurance
Code R/Associate Administrator for Aero-Space Technology
Code S/Associate Administrator for Space Science
Code U/Associate Administrator for Life & Microgravity Sciences & Applications
Code Y/Associate Administrator for Earth Science
Code Z/Associate Administrator for Policy & Plans

NASA Centers

Director, Ames Research Center
  Center Export Administrator, Ames Research Center
  Center Export Counsel, Ames Research Center
Director, Dryden Flight Research Center
  Center Export Administrator, Dryden Flight Research Center
  Center Export Counsel, Dryden Flight Research Center
Director, John H. Glenn Research Center at Lewis Field
  Audit Liaison Representative, John H. Glenn Research Center at Lewis Field
  Center Export Administrator, John H. Glenn Research Center at Lewis Field
  Center Export Counsel, John H. Glenn Research Center at Lewis Field
Director, Goddard Space Flight Center
  Center Export Administrator, Goddard Space Flight Center
  Center Export Counsel, Goddard Space Flight Center

Appendix D

NASA Centers (continued)

Director, Jet Propulsion Laboratory
  Center Export Administrator, Jet Propulsion Laboratory
Director, Lyndon B. Johnson Space Center
  Audit Liaison Representative, Lyndon B. Johnson Space Center
  Center Export Administrator, Lyndon B. Johnson Space Center
  Center Export Counsel, Lyndon B. Johnson Space Center
  International Space Station Export Administrator, Lyndon B. Johnson Space Center
Director, John F. Kennedy Space Center
  Center Export Administrator, John F. Kennedy Space Center
  Center Export Counsel, John F. Kennedy Space Center
Director, Langley Research Center
  Center Export Administrator, Langley Research Center
  Center Export Counsel, Langley Research Center
Director, George C. Marshall Space Flight Center
  Audit Liaison Representative, George C. Marshall Space Flight Center
  Center Export Administrator, George C. Marshall Space Flight Center
  Center Export Counsel, George C. Marshall Space Flight Center
Director, John C. Stennis Space Center
  Center Export Administrator, John C. Stennis Space Center
  Center Export Counsel, John C. Stennis Space Center

NASA Offices of Inspector General

Ames Research Center
Dryden Flight Research Center
John H. Glenn Research Center at Lewis Field
Goddard Space Flight Center
Jet Propulsion Laboratory
Lyndon B. Johnson Space Center
John F. Kennedy Space Center
Langley Research Center
George C. Marshall Space Flight Center
John C. Stennis Space Center

Appendix D

Non-NASA Federal Organizations and Individuals

Assistant to the President for Science and Technology Policy
Deputy Associate Director, Energy and Science Division, Office of Management and Budget
Budget Examiner, Energy Science Division, Office of Management and Budget
Associate Director, National Security and International Affairs Division, General Accounting Office
Special Counsel, House Subcommittee on National Security, International Affairs, and Criminal Justice
Professional Assistant, Senate Subcommittee on Science, Technology and Space

Chairman and Ranking Minority Member - Congressional Committees and Subcommittees

Senate Committee on Appropriations
Senate Subcommittee on VA, HUD, and Independent Agencies
Senate Committee on Commerce, Science and Transportation
Senate Subcommittee on Science, Technology and Space
Senate Committee on Governmental Affairs
House Committee on Appropriations
House Subcommittee on VA, HUD, Independent Agencies
House Committee on Government Reform and Oversight
House Committee on Science
House Subcommittee on Space and Aeronautics, Committee on Science

Congressional Member

The Honorable Pete Sessions, U.S. House of Representatives

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