DEPARTMENT OF DEFENSE

AUDIT REPORT

THE DoD DOMESTIC TECHNOLOGY TRANSFER PROGRAM

No. 90-006

October 19, 1989

Office of the Inspector General

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
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MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR ACQUISITION
ASSISTANT SECRETARY OF THE ARMY (FINANCIAL MANAGEMENT)
ASSISTANT SECRETARY OF THE NAVY (FINANCIAL MANAGEMENT)
ASSISTANT SECRETARY OF THE AIR FORCE (FINANCIAL MANAGEMENT AND COMPTROLLER)

SUBJECT: Report on the Audit of the DoD Domestic Technology Transfer Program (Report No. 90-006)

This is our final report on the Audit of the DoD Domestic Technology Transfer Program (the Program) for your information and use. Comments on a draft of this report were considered in preparing the final report. The audit was made from June 1988 through February 1989. The audit objective was to evaluate the overall management of the Program. We evaluated the adequacy of procedures and controls established to identify commercial application of DoD laboratory project results, to disseminate potential commercial application information, to transfer technology, and to ensure compliance with applicable public laws. The audit also addressed internal controls, as applicable, and the oversight provided by cognizant offices within the Office of the Secretary of Defense. In FY 1986, DoD budgeted about $6.5 billion for research and development at 68 DoD laboratories. We selected and evaluated 26 of the 68 DoD laboratories responsible for conducting research and development, and these 26 laboratories had a total in-house research and development budget of $1.3 billion in FY 1988.

The audit showed that 26 DoD laboratories effectively identified transferable technology and established internal controls and procedures to prevent the untimely disclosure of patentable technologies. The Under Secretary of Defense for Acquisition established overall policy for managing the Program through the issuance of DoD Directive 3200.12-R4, "Domestic Technology Transfer Program Regulations." The Under Secretary also coordinates the Program with the Military Departments. The Stevenson-Wydler Technology Innovation Act and the Federal Technology Transfer Act (the domestic technology transfer acts), identified the Military Departments as independent Federal agencies that allow them to implement provisions in the domestic technology transfer acts. Therefore, the Secretaries of the Military Departments have oversight responsibility to ensure that the intent of the domestic technology transfer acts is carried out. The Military Departments' laboratories did not fully comply

with and implement the domestic technology transfer acts by disseminating information and by transferring technology. The Military Departments also were not processing in a timely manner invention disclosures that were approved for patent applications. The results of the audit are summarized in the following paragraphs, and the details, audit recommendations, and management comments are in Part II of this report.

Nine Military Departments' laboratories did not fully comply with and implement the domestic technology transfer acts. A total of 18 of the 26 laboratories evaluated were required by the domestic technology transfer acts to staff the Office of Research and Technology Applications with one or more persons to equal the time a full-time employee would devote to Office of Research and Technology Applications duties. A total of 22 of 26 laboratories visited did not implement the section of the Federal Technology Transfer Act that permits the Secretaries of the Military Departments to allow laboratory commanders and directors to enter into cooperative research and development agreements with the private sector and with State and local governments. Also, 20 of 26 laboratories' Office of Research and Technology Applications were not adequately disseminating technology developed within the laboratories. Consequently, the laboratories did not effectively transfer their technology to the private sector and to State and local governments. The laboratories also lost royalty revenues that could have been generated by licensing technology. We recommended that the Secretaries of the Military Departments provide adequate staffing and funding for the Office of Research and Technology Applications, establish guidance on cooperative research and development agreements, and develop and implement a strategy for marketing and licensing patented technologies. We also recommended that the Secretary of the Navy delegate authority to laboratory commanders and directors to enter into cooperative research and development agreements as required by Executive order (page 5).

The Military Departments' laboratories were not processing in a timely manner invention disclosures that were approved for patent applications. As a result, the patent process and the availability of patented technology for disseminating to State and local governments and for licensing to the private sector was delayed. We recommended that the Secretaries of the Military Departments take steps to obtain and retain patent attorneys by offering pay differentials to make DoD competitive with the private sector (page 19).

On June 30, 1989, a draft of this report was provided to the Assistant Secretary of the Army (Financial Management); the Assistant Secretary of the Navy (Financial Management); the Assistant Secretary of the Air Force (Financial Management and Comptroller) (formerly the Comptroller of the Air Force); and the commanders of the 26 laboratories visited. The Army Domestic

Technology Transfer Program Manager, the Assistant Secretary of the Navy (Research, Engineering and Systems), and the Assistant Secretary of the Air Force (Acquisition) concurred with the findings and all recommendations addressed to the Secretaries of the Military Departments. The complete texts of managements' comments are in Appendixes I through K.

The management responses to the draft report conformed to the provisions of DoD Directive 7650.3. The respondents' proposed actions are responsive, therefore, additional management comments on the final report are not required.

This report does not claim quantifiable monetary benefits and does not identify internal control weaknesses. However, we believe that when our recommendations are implemented, the DoD Domestic Technology Transfer Program will become more effective in disseminating information and in transferring technology, and the income from royalty revenues will increase.

The courtesies extended to the audit staff are appreciated. If you have any questions on this audit, please contact Mr. Shelton R. Young at (202) 694-6221 (AUTOVON 224-6221) or Mr. Michael Simpson at (202) 693-0371 (AUTOVON 223-0371). The audit team members who contributed to this report are listed in Appendix M. Copies of the final report will be distributed to the activities listed in Appendix N.

Stephen A. Trodden
Assistant Inspector General
for Auditing

Enclosure

cc:
Secretary of the Army
Secretary of the Navy
Secretary of the Air Force

REPORT ON THE AUDIT OF
THE DoD DOMESTIC TECHNOLOGY TRANSFER PROGRAM

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REPORT ON THE AUDIT OF THE DOD DOMESTIC TECHNOLOGY TRANSFER PROGRAM

PART I - INTRODUCTION

Background

The transfer of technology from DoD laboratories to the private sector for commercial application has become an issue of rapidly growing importance since 1980. The President and Congress have been concerned about the U.S. trade deficit and the inability of U.S. industries to compete in world markets. According to a report issued by the Sandia National Laboratory, "Technology Transfer, Transferring Federal Research and Development Results for Domestic Commercial Utilization" (SAND88-1716, UC-29, August 1988), factors contributing to this inability to compete included the continued use of obsolete technology in many industries, inadequate quality of many manufactured products, and a declining growth in innovation and productivity. One other factor stated was the frequent failure of industries and Government officials to capitalize on the results of U.S. federally-funded research and development before other nations capitalized on those results.

The Sandia National Laboratory report further stated that the domestic decline of innovation and competitiveness is a cause for concern for reasons of national security and defense. The report stated that national security requires that the United States maintain a stable position with respect to technological advancement. To avoid excessive dependence on foreign sources, the report stated that the United States should develop and maintain the industrial capabilities needed to produce advanced materials, components, and systems. To maintain a level of general economic success in the world market, the United States also needs to facilitate the rapid application of Federal research and development results into the private sector and State and local governments.

Examples of technology that have been transferred include new roofing construction techniques, improved lightweight clothing, and advances in the storage of plasma.

In response to concerns about U.S. industries' competitiveness, and national security, regarding the transfer of technology, the President and Congress acted to strengthen the relationship between U.S. industries and the Federal research and technology community. Increased private sector access to technology funded by the Government was one way to strengthen the relationship between the Government and the private sector. Congress passed laws, and the President issued an Executive order that facilitated the transfer of technology from Federal laboratories to the private sector and to State and local governments. These

laws and the Executive order were the Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96-480); the Patent and Trademark Amendments of 1980 (Public Law 96-517); the Federal Technology Transfer Act of 1986 (Public Law 99-502); and Executive Order 12591, "Facilitating Access to Science and Technology," April 10, 1987. A description of these laws is included in Appendix A. A description of the Executive order is included in Finding A.

Objectives and Scope

Our objective was to evaluate the overall management of the DoD Domestic Technology Transfer Program. We evaluated the adequacy of procedures and controls established to identify commercial application of DoD laboratory project results, to disseminate potential commercial application information, to transfer technology, and to ensure compliance with applicable public laws. The audit also evaluated internal controls, as applicable, and the oversight provided by cognizant offices within the OSD.

We judgmentally selected 26 of 68 DoD laboratories for review based on the amount of their in-house research and development budget and on the type of research (such as construction, clothing, and medicine) and the potential for commercial application. The laboratories' in-house research and development budgets ranged from $2 million to $183 million and totaled $1.3 billion for the 26 laboratories we reviewed. We interviewed personnel within the Office of the Under Secretary of Defense for Acquisition to identify what specific responsibilities OSD has regarding the Stevenson-Wydler Technology Innovation Act and the Federal Technology Transfer Act (the domestic technology transfer acts). At each laboratory, we examined funding and personnel documents for FY's 1987 and 1988 to determine the laboratory's in-house research and development budget and the total number of scientists, engineers, and technicians engaged in research and development efforts . We also reviewed laboratory documents for FY's 1984 through 1987 to determine the number of patents and cooperative research and development agreements each laboratory had completed. In addition, we interviewed the laboratory commander or director, scientists, engineers, and technicians engaged in research and development at each location to obtain their views on technology transfer and the effect of the domestic technology transfer acts. We also interviewed the staff performing the technology transfer functions to document the transfer of technology at each laboratory. Activities visited or contacted are listed in Appendix L.

We determined that the internal controls applicable to disseminating patentable material were effective since we found no material deficiencies. The report does not contain quantifiable monetary benefits. However, we believe that when our recommendations are implemented, the DoD Domestic Technology

Transfer Program will become more effective in disseminating information and in transferring technology, and the income from royalty revenues will increase.

This economy and efficiency and compliance audit was made from June 1988 through February 1989 in accordance with generally accepted government auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD, and accordingly included such tests of internal controls as were considered necessary.

Prior Audit Coverage

The General Accounting Office Report RCED 8460 (OSD case number 6478), "Federal Agencies' Actions To Implement Section 11 of the Stevenson-Wydler Technology Innovation Act of 1980," August 24, 1984, stated that most of the Federal agencies and their laboratories had implemented the Stevenson-Wydler Act. The General Accounting Office also reported that patent policies and the lack of resources to perform technical assistance may hamper technology transfer efforts. The report made no recommendations.

The General Accounting Office also issued briefing Report RCED 88-116BR (OSD case number 005741), "Technology Transfer, Constraints Perceived by Federal Laboratory and Agency Officials," March 4, 1988. The briefing report listed four constraints that needed to be addressed to further improve the effectiveness of Federal laboratories' efforts to transfer technology. The first constraint was that public dissemination of Government software limits any incentive for private industries to license, to develop fully, and to market software technology. Second, private-sector researchers were reluctant to collaborate on federally-funded research projects with Federal laboratories because of the potential for proprietary research information being released under the Freedom of Information Act. Third, Department of Energy regulations reduced industry's interest in pursuing technology developed by the Department of Energy. Fourth, Federal laboratories may institute burdensome and time-consuming procedures that may inhibit industry's participation. The report made no recommendations.

PART II - FINDINGS AND RECOMMENDATIONS

A. Compliance With Domestic Technology Transfer Acts

FINDING

Of the 18 Military Departments' laboratories required to have an Office of Research and Technology Applications (ORTA), 9 did not fully comply with provisions of the domestic technology transfer acts, which require that the ORTA be staffed with one or more employees to perform ORTA functions equal to the time a full-time employee would devote to the duties. A total of 22 of 26 laboratories we evaluated also did not implement the Federal Technology Transfer Act of 1986 provision that permits the commanders and directors of Federal laboratories to enter into cooperative research and development agreements (cooperative agreements) with the private sector and with State and local governments. In addition, 20 of 26 laboratories we evaluated did not adequately disseminate technology. These three conditions were caused by:

- inadequate staffing and funding for functions of the ORTA,

- lack of guidance on cooperative agreements,

- lack of delegating authority to commanders and directors in the Navy to enter into cooperative agreements, and

- lack of a marketing strategy on technology dissemination.

As a result, the laboratories did not effectively transfer technology they developed to the private sector and to State and local governments. In addition, the laboratories lost royalty revenues that could have been generated by licensing patented technology.

DISCUSSION OF DETAILS

Background. The Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96-480), as amended by the Federal Technology Transfer Act of 1986 (Public Law 99-502), established the ORTA. These domestic technology transfer acts require that each Federal laboratory with a staff of 200 or more full-time professional scientists, engineers, and technicians engaged in research and development establish an ORTA or use an existing organization to perform the ORTA functions. The functions of the ORTA include:

- preparing technical assessments for selected research and development projects that may have commercial potential;

- providing and disseminating information on technology that has potential commercial application to the private sector and to State and local governments;

- cooperating with and assisting State and local governments and the private sector in the transfer of technology;

- providing technical assistance to State and local government officials; and

- participating in regional, State, and local programs designed to benefit the transfer of technology.

The Stevenson-Wydler Technology Innovation Act (Stevenson-Wydler Act) also requires that each Federal agency operating or directing one or more Federal laboratories will provide at least 0.5 percent of its research and development budget to support the technology transfer function at the agency and its laboratories. The Stevenson-Wydler Act allows an agency to waive the monetary requirement if the reasons for the waiver are explained and alternative plans for conducting the technology transfer function at the Federal agency are provided.

The Federal Technology Transfer Act of 1986 (Public Law 99-502), October 20, 1986, permits laboratory commanders and directors to enter into cooperative agreements. A cooperative agreement is a joint venture between a Federal laboratory and an organization in the public or private sector in which the parties involved attempt to generate new technology. The Federal Technology Transfer Act states that a Federal agency may issue regulations on suitable procedures for implementing the cooperative agreements. However, implementing these agreements shall not be delayed until such regulations are issued. The Federal Technology Transfer Act also established the Federal Laboratory Consortium for Technology Transfer (Federal Laboratory Consortium) and required the Federal agencies to fund the Federal Laboratory Consortium (this service organization assists in linking laboratory members and potential users of technology by developing and supporting various technology transfer methods). In addition, the Federal Technology Transfer Act allows inventors to share in any royalty revenues received by the Military Departments from the licensing of the inventions. See Appendix A for more details on the domestic technology transfer acts.

Executive Order 12591, "Facilitating Access to Science and Technology," April 10, 1987, directs each executive department and agency head to encourage and facilitate collaboration of technology transfers among Federal laboratories, State and local governments, universities, and the private sector, particularly small businesses. The Executive order further directs that the executive department and agency heads shall delegate authority to its federally-owned, federally-operated laboratories to enter into cooperative agreements. The Executive order also directs that executive department and agency heads license, assign, or waive rights to technology developed by the Federal laboratories under cooperative agreement or by individual laboratory.

Compliance with Technology Transfer Acts. Based on our review of 26 of 68 DoD laboratories, we concluded that some DoD laboratories were not fully complying with and implementing provisions of the domestic technology transfer acts. Specifically, 9 of the 18 laboratories required to have an ORTA, did not staff the ORTA, as required, with one or more persons to equal the time a full-time employee would devote to the duties; 22 of the 26 laboratories had not entered into cooperative agreements; and 20 of the 26 laboratories did not include marketing patents as part of the dissemination function. The causes of noncompliance are discussed in the following paragraphs.

Staffing of the ORTA Functions. Eighteen laboratories met the thresholds of the domestic technology transfer acts, which require the assignment of one or more persons to perform ORTA functions on a full-time basis. However, nine laboratories, (one Army, three Navy, and five Air Force) did not provide adequate staffing to perform the duties assigned to the ORTA (Appendix B). Persons designated to perform ORTA functions were assigned other duties, which resulted in less than a full-time effort devoted to the ORTA functions. We attributed this inadequate staffing to the Military Departments' not allocating sufficient personnel to their laboratories to adequately staff the ORTA. As a result, the laboratories did not have the personnel resources available to transfer technology effectively to the private sector and to State and local governments. Below are examples, by Military Department, of the minimal personnel resources devoted to the ORTA functions.

Belvoir Research, Development and Engineering Center. The ORTA functions at the Belvoir Research, Development and Engineering Center, Fort Belvoir, Virginia, were assigned to the Industrial Liaison Office. In addition to performing the ORTA functions, this office was responsible for nine other functions, including the Small Business Innovation Research Program. The office was staffed with two persons who spent only about 30 percent of their time on ORTA functions.

Naval Civil Engineering Laboratory. At the Naval Civil Engineering Laboratory, Port Hueneme, California, the ORTA functions were assigned to the Facilities Engineering Support Office. Because of other duties, this office was not performing the technical application assessments of the research and development projects that were identified as having potential commercial applications. This office also had the overall responsibility for coordinating the Naval Civil Engineering Laboratory's facility engineering assistance efforts. This responsibility included: maintaining a log of incoming requests, arranging for the apportionment of assistance funds within the Naval Civil Engineering Laboratory, monitoring programs to ensure

timely and responsive action, maintaining records of assistance requested and rendered, and submitting periodic status reports to the Technical Director and commanding officer. In summary, this office was staffed with two persons who spent about 34 percent of their total time on non-ORTA functions.

Air Force Wright Aeronautical Laboratories. The Aero Propulsion Laboratory, the Avionics Laboratory, the Flight Dynamics Laboratory, and the Materials Laboratory are collectively referred to as the Air Force Wright Aeronautical Laboratories,[1/] Wright-Patterson Air Force Base, Ohio. One person within the Air Force Wright Aeronautical Laboratories was designated to perform ORTA, functions. We believe that the responsibility of monitoring and identifying projects with commercial potential for these four laboratories, which had 1,967 scientists, engineers, and technicians engaged in research and development, is too much for one person to handle efficiently. Because each of the four laboratories had 200 or more scientists, engineers, and technicians, each laboratory met the criteria for having a full-time person assigned to perform the ORTA functions. We believe a more efficient arrangement would be to assign one person in each laboratory to act as a liaison between the science and engineering personnel at the laboratories and the ORTA, because various technologies were being developed within the four laboratories.

In comparison, the ORTA office at the Naval Ocean Systems Center, San Diego, California, had three persons performing the ORTA functions, including the marketing of the laboratory's patented technology. The Naval Ocean Systems Center had 1,948 scientists, engineers, and technicians engaged in research and development. The ORTA staff sent various companies 402 license solicitation letters on 25 patents within the last 12 months. As a result of the laboratory's marketing efforts, the Naval Ocean Systems Center had two active licenses on two patents and was negotiating one license on one patent. Conversely, the ORTA official at the Air Force Wright Aeronautical Laboratories had not implemented a program for identifying and marketing the laboratories' patented technologies. As a result, the Air Force Wright Aeronautical Laboratories had not licensed any patented technologies since assigning a person as a full-time ORTA in 1984.

Funding for the ORTA Functions. DoD laboratories could have an effective technology transfer program with adequate funding for operational expenses. On February 5, 1987, in his letter to the President of the Senate, the Secretary of Defense requested a

1/ The Air Force Wright Aeronautical Laboratories was recently renamed the Wright Research and Development Center. Also, a fifth laboratory, the Electronics Laboratory, was added.

waiver to the requirement to provide 0.5 percent of the research and development budget for the transfer of DoD technology, as prescribed by the Stevenson-Wydler Act. The Secretary's letter stated ". . . current DoD technology transfer activities substantially achieve the objectives of the Act." As a result of the approval of the waiver, the DoD laboratories were using the laboratory overhead budget to support ORTA functions. If the 0.5 percent set-aside waiver had not been requested by the Secretary of Defense, the Army, Navy, and Air Force probably would have funded each of their laboratories an average of $0.9 million, $2.4 million, and $6.7 million, respectively (Appendix C).

We agree with the Secretary of Defense's decision to waive the 0.5 percent set-aside requirement, because the above amounts exceed the funds necessary for an effective program. For example, the Naval Ocean Systems Center spent about $80,000 annually, instead of $2.4 million as would have been required by the Stevenson-Wydler Act. The Navy laboratory had a staff of three persons performing the ORTA functions. The ORTA staff at the laboratory had implemented a technical volunteer program 2/ and had attended several meetings sponsored by the Federal Laboratory Consortium. The ORTA staff also implemented a marketing plan for licensing the laboratory's patented technology. The laboratory had two active licenses and had received royalty income of $4,000 in FY 1989.

Although the laboratory had received royalty income of only $4,000, we believe that with increased marketing efforts by the laboratory, additional licenses and royalty income are achievable. As discussed later in this report, the University of Utah's expenditure for technology transfer increased in 1 year from $286,000 to $422,000; however, the royalty income increased from $87,000 to $686,000, which more than offset the technology transfer expenditures. Financial records for some of the laboratories indicated that actual spending for the ORTA function ranged from $12,000 to $178,000 annually. We believe that the Military Departments should fund an amount at each laboratory to staff the ORTA with a full-time journeyman-level person or equivalent (as required by the domestic technology transfer acts) and to provide funds for administrative support, travel, and other expenses to include implementing a strategy for marketing and licensing patents. If the Military Departments funded an adequate amount to support the ORTA functions at each laboratory, we believe the laboratories could eventually offset the expenditure with royalty income.

2/ The technical volunteer program is an assistance program in which scientists, engineers, and technicians volunteer their time to help educational institutions and State and local governments in solving technical problems.

Cooperative Research and Development Agreements. Of 26 laboratories we evaluated, only 2 Army and 2 Air Force laboratories had entered into cooperative agreements or had begun negotiations on such agreements (Appendix D). The Federal Technology Transfer Act permits the Secretaries of the Military Departments to delegate authority to laboratory commanders or directors to enter into cooperative agreements with the private sector and with State and local governments to generate new technology. The Federal Technology Transfer Act also states that implementation should not be delayed until regulations are issued. However, laboratory commanders and directors within the Navy and the Air Force indicated their reluctance to pursue cooperative agreements until the Secretaries of the Military Departments issued policy and guidelines on executing the agreements. In addition, within the Navy, authority to enter into such agreements was not delegated to the laboratory commanders and directors.

Cooperative agreements are beneficial to the Government through the transfer of technology to U.S. industries and through royalty revenues. For example, the Army Electronics Technology and Devices Laboratory recently entered into four cooperative agreements on technologies. The cooperative agreements were with private industries, universities, and civilian agencies. Although the laboratory had not received royalty income at the time of our audit, we believe the technology and competitiveness of the participating industries were strengthened by the transfer of this Federal technology and will result in royalties. Similarly, the Army Construction Engineering Research Laboratory had three active cooperative agreements, which had the potential to produce royalty revenues of $22,000 annually from two exclusive licenses.

Policy and Guidance. Army Regulation 70-57, "Military Civilian Technology Transfer," May 1983, reflects provisions of the Stevenson-Wydler Act and provides policy and procedures for cooperative agreements with civilian agencies. The Regulation was not revised to include cooperative agreements with private industry. However, on July 8, 1988, the Army Deputy Director for Research and Technology issued "Revised Interim Guidelines for the Preparation and Review of Cooperative and Patent License Agreements" regarding cooperative agreements with the private sector to commanders and directors of Army laboratories and of research, development, and evaluation centers. The Navy and Air Force did not issue policy and guidance on the Federal Technology Transfer Act regarding these cooperative agreements.

Delegating Authority to Enter into Cooperative Agreements. Executive Order 12591, April 10, 1987, states that the head of each executive department and agency shall delegate authority to federally-owned and federally-operated laboratories

to enter into cooperative agreements. In a December 4, 1987, memorandum, the Assistant Secretary of the Army (Research, Development and Acquisition) delegated authority for the following to enter into cooperative agreements: the Commander, U.S. Army Materiel Command; the U.S. Army Surgeon General; the Commander, U.S. Army Corps of Engineers; the U.S. Army Deputy Chief of Staff of Personnel; and the Commander, U.S. Army Strategic Defense Command. The Assistant Secretary of the Army also directed that the above Army commanders redelegate authority to the commanders and directors of their respective laboratories and of their research, development, and evaluation centers to enter into cooperative agreements.

The Secretary of the Navy has delegated authority neither to the Chief of Naval Research nor to commanders and directors of Navy laboratories to enter into cooperative agreements with the private sector and with State and local governments. We believe that the intent of Congress in adding the provision that laboratory commanders and directors be permitted to enter into cooperative agreements was to improve technology transfer. A review of the legislative history for the Federal Technology Transfer Act revealed that Congress intended that laboratory commanders and directors be given authority to manage and promote the results of their research. The legislative history stated that "a requirement to go to agency headquarters for approval of industry collaborative arrangements . . . can effectively prevent them. Lengthy headquarters approval delays can cause businesses to lose interest in developing new technologies."

In an October 31, 1988, memorandum, the Assistant Secretary of the Air Force (Acquisition) delegated authority to the Commander, Air Force Systems Command, to enter into cooperative agreements. In a February 4, 1989, memorandum, the Commander, U.S. Air Force Systems Command, redelegated authority to the commanders and directors of the Air Force laboratories to enter into cooperative agreements.

Our discussions with laboratory commanders and directors indicated that definitive policy and guidance from the Secretaries of the Military Departments is needed to initiate additional cooperative agreements.

Disseminating Technology. Of the 26 laboratories we visited, only 3 Army and 3 Navy laboratories implemented a marketing strategy for disseminating patented technology to the private sector and to State and local governments (Appendix E). The ORTA's at the remaining 20 laboratories, lacked an effective marketing strategy. As a result, of the 2,456 patents issued to the DoD during FY's 1984 through 1987, the 68 DoD laboratories were successful in licensing only 14 patents providing $42,923 in royalty revenues in FY 1987.

The ORTA is responsible for preparing technical assessments of research and development projects that have the potential for commercial application. These assessments and project data are provided to the National Technical Information Service operated by the Department of Commerce. The ORTA is also responsible for disseminating information on inventions and processes originating in the laboratory to interested persons and industries. When a patent is obtained, the National Technical Information Service and the Federal Laboratory Consortium are notified so that information can be disseminated through publications, reports, and symposiums. We found that 20 ORTA's did not actively solicit industries to license the laboratories' patents. As a result, during FY's 1984 through 1987, DoD laboratories issued 2,456 patents, but the laboratories had only 10 active licenses that generated royalty revenues from 14 patents in FY 1987.

Congress recognized the lack of incentives in this process and passed the Federal Technology Transfer Act of 1986. The Act included incentives for Federal laboratories to solicit the private sector for the laboratories' patentable technology. The Act also encourages the laboratories to enter into cooperative agreements with State and local governments. The specific incentives in the Act include a requirement that Federal agencies pay the inventor or coinventors at least 15 percent of the royalties or other income received by the Federal agency from the licensing of, or assigning the right of, an invention to an industry for the industry's use. The maximum payment that an inventor or coinventor can receive is $100,000 annually, unless the President approves a larger award (the excess over $100,000 is treated as a Presidential award). The Federal Technology Transfer Act also requires that the majority of the balance of royalty revenue be disbursed to the laboratory where the invention occurred and that the remainder be distributed among the Military Department laboratories. In implementing this domestic technology transfer act, DoD Directive 3200.12-R4, "Domestic Technology Transfer Program Regulation," December 28, 1988, requires that the Military Departments pay the inventor or coinventors 20 percent (up to $100,000 annually) of the income that they receive on inventions. Since inventors and laboratories can share in royalty revenues, the laboratories should implement an effective strategy for marketing and licensing patents.

Implementing a Strategy for Marketing Patents. A marketing strategy involves identifying and contacting industries that have an interest in the same technological areas as the laboratory's patented technologies. Initial contact involves informing the industries of patents that are available for licensing and the procedures needed to license the patent. Some examples of marketing strategies that were implemented by 6 of the 26 laboratories evaluated involved attending industrial and trade shows, contracting with a marketing broker, and contacting

industries by direct mailing of patent descriptions and brochures on technologies available for licensing. For example, the Naval Air Development Center, Warminster, Pennsylvania, contracted with a marketing broker to analyze the commercial potential of its patents and to solicit licensing arrangements with industries. We found that direct mailings to industries was the most effective marketing strategy used that resulted in additional licenses and royalty income. This strategy required the use of a data base of industries and their technological areas. We identified several data bases available for use in direct mailing. For example, the ORTA at the Naval Ocean Systems Center, San Diego, California, used data bases of the Corporation Technology and the Small Business Procurement Automated Source System.

We spoke with representatives from the Federal Laboratory Consortium to determine what the non-DoD laboratories were doing in the area of marketing their patents. We were told that the Federal Laboratory Consortium had contracted with the University of Utah to develop a demonstration project, in which technologies within the Federal laboratories would be used to expand the University of Utah's Technology Targeting Database.

University of Utah Demonstration Strategy. The Technology Transfer Office at the University of Utah was very successful in implementing a direct mailing marketing strategy to solicit industries in licensing the University's patented technologies. The Technology Transfer Office established the Technology Targeting Database to match the University's patented inventions with industries having an interest in the same technological area as the patent. As a result, 30 patents were licensed, and the University of Utah received approximately $1.1 million in royalty revenues during FY's 1987 and 1988. The total cost of operation for the 2 years was $848,369.

The Technology Targeting Database contained detailed information on technological interests of 1,000 high technology industries throughout the United States. The Technology Targeting Database identified industries interested in specific technologies where the University of Utah had been granted a patent. The University initially contacted an industry by letter requesting that the industry consider evaluating a technology developed at the University. When an industry wanted additional information on the technology, a confidential disclosure agreement was executed. In a confidential disclosure agreement, an industry agrees not to use the data for any commercial purpose other than for evaluation and not to disclose the data to other industries. If the industry is interested in doing additional research and development on the patented technology, a research agreement is executed. A license agreement is executed when the industry is interested in licensing the technology.

The Federal Laboratory Consortium's contract with the University of Utah Technology Transfer Office to expand the Technology Targeting Database included several Federal laboratories. The following three Federal laboratories were chosen for a project to demonstrate the feasibility of expanding the Technology Targeting Database: the Naval Civil Engineering Laboratory, Port Hueneme, California; the National Aeronautics and Space Administration, Ames Research Center, Sunnyvale, California; and the Department of Energy Lawrence Livermore National Laboratory, Livermore, California. With the inclusion of Federal laboratories' technologies on the University's expanded Technology Targeting Database, Federal laboratories could purchase the right to use the database to contact industries directly to solicit interest in licensing the laboratories' patents. The Federal laboratories could also contract the services of the University of Utah Technology Transfer Office as a marketing broker. The Naval Civil Engineering Laboratory did not use this expanded data base as a marketing device.

As evidenced by the approximately $1.1 million in royalty revenues that the University of Utah received during FY's 1987 and 1988, direct mailing to industries was the most effective strategy for marketing and licensing patents. Before the University of Utah implemented the Technology Targeting Database, total royalty revenues received by the University of Utah in FY 1986 were $87,045. After using the Technology Targeting Database, the University of Utah received royalty revenues of $686,000 in FY 1987 and $416,000 in FY 1988, which was an increase of 688 percent and 378 percent, respectively, over FY 1986.

Conclusion. The Military Departments did not fund their Domestic Technology Transfer Program at the 0.5-percent level prescribed in the Stevenson-Wydler Act. Also, the Military Departments did not staff the ORTA with one or more persons to equal the time a full-time employee would devote to the duties. We believe that the Military Departments should provide adequate personnel resources to staff the ORTA and to provide sufficient funds for administrative support, travel, and other expenses to include implementing a strategy for marketing and licensing patents. Additionally, Federal laboratories were reluctant to enter into cooperative agreements without formal guidance from the Secretaries of the Military Departments. Therefore, technology was not transferred to the private sector and to State and local governments. The Navy has yet to delegate authority to enter into cooperative agreements to its laboratory commanders and directors. The Secretaries of the Military Departments need to revise existing regulations or issue new regulations to include policy and procedures for entering into cooperative agreements.

Only six of the laboratories that we evaluated had a strategy for marketing and licensing their patents. The laboratories were listing patents available for licensing in various publications, but the use of the printed media is not, by itself, an effective strategy for marketing and licensing patents. However, if laboratories used a data base to match their technology with those of industries, and subsequently contacted these industries to solicit their interest in licensing the laboratories' patents, this strategy would be more effective. We believe that if the following recommendations are implemented, the transfer of Federal technology will be more effective.

RECOMMENDATIONS FOR CORRECTIVE ACTION

1. We recommend that the Secretaries of the Army, Navy, and Air Force require that Military Departments comply with and implement provisions in the Stevenson-Wydler Technology Innovation Act and the Federal Technology Transfer Act of 1986 by:

a. Requiring each laboratory that has 200 or more full-time scientists, engineers, and technicians engaged in research and development to assign staff whose time devoted to Office of Research and Technology Applications functions would total the equivalent of at least one full-time employee.

b. Providing adequate personnel resources to staff the Office of Research and Technology Applications with a full-time journeyman-level person or equivalent and to provide funds for administrative support, travel, and other expenses to include implementing a strategy for marketing and licensing patents.

c. Revising existing regulations or issuing new regulations to include policy and procedures for laboratory commanders and directors to enter into cooperative research and development agreements.

d. Requiring research and development laboratories to develop and implement a strategy for matching the laboratories' technology with industries' technology and to contact industries to solicit their interest in licensing the laboratories' patented technologies. Such a strategy may include sending direct mailings to industries, hiring contractors to analyze commercial potential of patents and to solicit licensing arrangements, and using an expanded data base to contact industries directly.

2. We recommend that the Secretary of the Navy delegate authority to the laboratory commanders and directors that would allow them to enter into cooperative research and development agreements with the private sector and with State and local governments as required by Executive order.

MANAGEMENT COMMENTS

The Army's Domestic Technology Transfer Program Manager provided comments on the finding and recommendations addressed to the Secretary of the Army. The complete text of the comments is in Appendix I. The Assistant Secretary of the Navy (Research, Engineering and Systems) provided comments on the finding and recommendations addressed to the Secretary of the Navy. The complete text of the comments is in Appendix J. The Assistant Secretary of the Air Force (Acquisition) provided comments on the finding and recommendations addressed to the Secretary of the Air Force. The complete text of the comments is in Appendix K. Management comments on the recommendations are discussed below.

Recommendation A.1

The Army concurred with our recommendation stating that all Army laboratory ORTA's are not adequately staffed, and better guidance needs to be provided to the laboratory directors and their ORTA staffs on identifying technology for cooperation and licensing, on marketing the technology, and on negotiating the legal agreements. To rectify these situations, the Army stated that an Implementation Working Group has been formed to redesignate the laboratories that must have a full-time ORTA staff and to revise Army Regulation 70-57 to provide adequate guidance, including the staffing requirements, to laboratories on implementing the legislation. The redesignation of the laboratories and the first draft of the regulation are to be accomplished by December 31, 1989, with the final regulation to be issued in 1 year.

The Navy concurred with the recommendation stating that the Office of the Chief of Naval Research is drafting a domestic technology instruction that will include the requirement to establish and fund the ORTA. The instruction will also establish policy and procedures for entering into cooperative agreements and will encourage laboratories to develop marketing approaches. The target date for the publication of the instruction is February 28, 1990.

The Air Force concurred with our recommendation and stated that appropriate language has been inserted in AFR-80-27, "Domestic Technology Transfer Program," which will be issued February 28, 1990. Also, the Air Force stated that ORTA staffing requirements will be reevaluated and funds will be programmed for administrative support, travel, and other expenses to include implementing a strategy for marketing and licensing patents.

Recommendation A.2

The Navy concurred with the intent of the recommendation stating that the Secretary of the Navy will continue to delegate

authority to enter into cooperative agreements on a case-by-case basis. However, blanket authority will not be issued until laboratories demonstrate the ability to develop suitable agreements. Policies and procedures regarding cooperative agreements will be included in the Office of the Chief of Naval Research technology transfer instruction planned for a February 28, 1990, publication.

B. Staffing of Patent Attorneys

FINDING

The Military Departments' laboratories did not process in a timely manner invention disclosures that were approved for patent applications. This condition occurred because the staffing level of Government patent attorneys was inadequate to process an increased number of invention disclosures. As a result, a backlog of invention disclosures existed, and the patent process and the availability of patented technology for disseminating to State and local governments and for licensing to the private sector was delayed.

DISCUSSION OF DETAILS

Background. DoD Directive 5535.3, "Licensing of Government-Owned Inventions by the Department of Defense," November 2, 1973, establishes policy for making available for licensing Government-owned inventions that are in the custody of the Government. The private sector can use Government technology after the Government obtains a patent and grants an exclusive or nonexclusive license for the invention. State and local governments can obtain patented technology developed by the Federal laboratories through cooperative research and development agreements.

The patent process involves preparing and evaluating the invention disclosure form and filing the patent application. The invention disclosure form states the identification of the inventor, an abstract of the invention, and critical dates on the conception and creation of the invention. The disclosure form is filed with the laboratory's patent office and is evaluated by the chief patent attorney and an Invention Evaluation Committee (the Committee) to determine the invention's patentability and commercial potential. The Committee usually consists of a patent attorney and the division head of each technical division within the laboratory.

If the Committee decides not to process the disclosure form, the inventor is notified that the Government has removed itself from the patent process. The inventor can then decide whether or not to proceed with the patent process at his or her own expense. If the disclosure form is approved by the Committee, the patent attorney performs a preliminary search to determine whether similar technology exists (called prior art). If prior art is found, then the patent process is stopped. If prior art is not found, the patent attorney continues the patent process by preparing a patent application. The patent application is then filed at the U.S. Patent and Trademark Office, where it is subjected to a rigorous review. Typically, most applications are rejected as unpatentable, and a period of negotiation follows between the U.S. Patent and Trademark Office and the Military

Department patent organizations. The patent attorney, through a series of amendments and other responses, distinguishes the invention from prior art to make the new invention patentable. Once the application is processed and found to be patentable, the U.S. Patent and Trademark Office issues a Notice of Allowance and a patent is subsequently granted. The total time from first filing of the invention disclosure form to granting of the patent can take from 2 to 4 years.

Processing of Invention Disclosures. The Military Departments' laboratories did not process invention disclosures that were approved for patent applications in a timely manner. Of the 26 laboratories that we evaluated, 14 laboratories (8 Army and 6 Navy) reported a backlog of invention disclosures. Per laboratory, the backlog ranged from 18 to 250 invention disclosures with an estimated completion time from 1 to 5 years to process all disclosures into patent applications (Appendix F). The additional years needed to alleviate the backlog unnecessarily lengthened the time needed to issue a patent. The backlog was caused by a low staffing level of patent attorneys and an increase in the number of invention disclosures received by the laboratory. The Military Departments were having difficulty recruiting and retaining patent attorneys because of the large pay differential between the Government and the private sector.

Increase in Invention Disclosures and Low Staffing Level of Patent Attorneys. Of the 26 laboratories that we evaluated, 11 laboratories (6 Army and 5 Navy) reported an increase in the number of invention disclosures received from FY's 1986 to 1988. This increase ranged from 8 percent to 200 percent within the last 3 years (Appendix G). The Military Departments' patent divisions were not adequately staffed to handle the influx of invention disclosure forms, either because not enough patent attorney positions were authorized or because authorized positions were not filled (Appendix H). The following are examples of the laboratories with an increase in invention disclosures and low staffing levels.

Army. The U.S. Army Communications Electronics Command had three laboratories at Fort Monmouth, New Jersey. In addition to performing the patent work for these three laboratories, the Intellectual Property Law Division also performed the patent work for the Electronics Technology and Devices Laboratory and the Avionics Research and Development Activity, which are located at Fort Monmouth. The Intellectual Property Law Division was authorized seven full-time patent attorneys. However, during our audit, the Division was staffed with only four patent attorneys, one of whom worked part-time.

The Assistant Chief Counsel stated that the Intellectual Property Law Division needed 1 additional patent attorney position

authorized, for a total of 8, because the number of invention disclosures that the Division received increased by 48 percent in 2 years, from 79 invention disclosures in FY 1986 to 117 in FY 1988. The Assistant Chief Counsel indicated that eight patent attorneys would provide a reasonable staff for prompt processing of patent applications and for handling the new technology transfer mission. As of October 1988, the Intellectual Property Law Division had a backlog of 135 invention disclosures that were to be written as patent applications, which the Assistant Chief Counsel estimated would take from 4 to 5 years to prepare and file.

Navy. At the Naval Research Laboratory, Washington, D.C., there were nine authorized patent attorney positions, but the laboratory was staffed with only eight. However, the Associate Counsel, Patents Division, stated that all nine positions were needed to keep up with the influx of invention disclosures. Invention disclosures increased 61 percent, from 94 invention disclosures in FY 1986 to 151 in FY 1988. As of October 1988, the backlog of invention disclosures that were to be written as patent applications totaled 250, and the Associate Counsel estimated the time needed to prepare and file these applications was from 2 to 3 years.

Air Force. Although the Air Force laboratories did not report an invention disclosure backlog, the Air Force reported a problem with retaining patent attorneys. The Air Force had a centralized approach to its patent operations. Three offices prepared and filed Air Force patent applications. The headquarters patent office was located in Washington, D.C., and two field offices were located at Wright-Patterson Air Force Base, Dayton, Ohio, and at Hanscom Air Force Base, Waltham, Massachusetts. The Patent Division Chief stated that the Air Force patent offices were capable of preparing and filing approximately 200 patent applications each year using 30 patent attorneys. At the time of our visit, the Air Force had a total of 24 patent attorneys assigned throughout all 3 offices. The Patent Division Chief advised us that he hoped to fill the six vacancies before any backlog occurred. However, the Patent Division Chief said that retaining patent attorneys was a continuing problem due to the pay differential between the Government and the private sector.

Pay Differential. We believe that the educational requirements necessary to become a patent attorney are not reflected in the Government patent attorney's salary. In addition to a bachelor's degree in a science or engineering field, the attorney must obtain a law degree and pass both the bar examination and the U.S. Patent and Trademark Office examination. According to a national survey that the American Intellectual Property Law Association conducted in 1987, a patent attorney with less than 3 years of experience in the private

sector earns an average of $45,000 per year. In comparison, an entry-level Government patent attorney earns only $28,852 per year, a difference of 56 percent. Further, a Government patent attorney with 10 years of experience earns an average of $47,976 a year. If this same attorney worked for the private sector, the average salary would be $63,500 a year, a difference of 32 percent. According to Navy and Air Force officials, most patent attorneys stay in the Government 3 to 4 years to get experience and then leave for the private sector. As a result, the turnover rate is high for patent attorneys with 3 or more years of Government experience. For the 1-year period ending March 1, 1988, the Navy documented a turnover rate of 21 percent. In addition, the Air Force reported a 33-percent turnover rate of patent attorneys in FY 1988. The Military Departments' officials acknowledged that recruiting and retaining patent attorneys was difficult.

The Army and the Air Force believed that a pay differential would help the Military Departments to compete with the private sector. To obtain a special salary rate for patent attorneys, the Office of Personnel Management (OPM) requires that the Military Departments conduct a study on the current and proposed staffing levels. This study must cover a 12-month period and include the turnover rate and the problems in recruiting and retaining personnel in this field. The Military Departments must also certify that special salary rates are needed and that funds are available. The Office of the Chief of Naval Research has completed the required OPM study and is awaiting approval from the Navy Office of General Counsel before submitting the results to OPM.

We believe that a pay differential should be approved for patent attorneys so that the Military Departments can effectively recruit and retain patent attorneys. This will enable the laboratories to process invention disclosures and have patents granted in a timely manner, thereby allowing the availability of patented technology for disseminating to State and local governments and for licensing to the private sector without delay.

Conclusion. As a result of a low staffing level of patent attorneys and an increase in invention disclosures, the Military Departments experienced a backlog of invention disclosures that were approved for patent applications. The difficulty in recruiting and retaining patent attorneys was the high pay differential between the Government and the private sector. Understaffing, along with the increase in invention disclosures, created a backlog that had unnecessarily lengthened the processing time for issuing a patent. Thus, the availability of patented technology for disseminating to State and local governments and for licensing to the private sector was delayed.

RECOMMENDATION FOR CORRECTIVE ACTION

We recommend that the Secretaries of the Army, Navy, and Air Force perform and process the pay differential study required by the Office of Personnel Management.

MANAGEMENT COMMENTS

Recommendation B.

The Army concurred with the recommendation stating that the Army is having difficulty in the recruitment and retention of patent attorneys. The Army agreed that patent attorneys and agents should be on a special salary scale. Although not included in the management response, the Army confirmed to us telephonically that along with representatives from the Navy and Air Force, it will conduct a new pay study that will be completed by February 28, 1990.

The Navy concurred with the recommendation stating that in conjunction with the Army and Air Force, the Navy will conduct another pay study to be completed by February 28, 1990. If a pay differential appears to be appropriate, the study will be forwarded to the Office of Personnel Management with a request for action.

The Air Force concurred with the recommendation stating that the Air Force will participate in a pay differential study pertaining to patent attorneys.

PUBLIC LAWS APPLICABLE TO THE TRANSFER OF TECHNOLOGY

The transfer of Federal technology to the private sector and to State and local governments is encouraged by the three Public Laws listed below. These Public Laws promote technology transfer through the establishment of the Office of Research and Technology Applications, the authorization to exclusively license patents, and the establishment of, and funding for, the Federal Laboratory Consortium for Technology Transfer.

Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96-480). The intent of the Stevenson-Wydler Act is to promote technological innovation for achieving national, economic, environmental, and social goals through the transfer of technology from Federal laboratories to the private sector.

The Stevenson-Wydler Act requires that each Federal laboratory establish an Office of Research and Technology Applications (ORTA). Also, each laboratory having an annual budget of $20 million or more will provide at least one professional individual full-time as staff for its Office of Research and Technology Applications. This provision of the Stevenson-Wydler Act was amended by the Federal Technology Transfer Act of 1986.

The Patent and Trademark Amendments of 1980 (Public Law 96-517). The objectives of these Amendments include the following: using the patent system to promote the use of inventions arising from federally-supported research and development; encouraging maximum participation of small business firms in federally-supported research and development efforts; promoting collaboration between industries and nonprofit organizations, including universities; and minimizing related administrative costs.

These Amendments to the Trademark Act of 1946 encourage the licensing of inventions developed by Government-operated laboratories. Federal agencies are authorized to grant exclusive and partially exclusive licenses to other agencies and to industries in the private sector if the Federal agency determines that the license is appropriate and is in the public's interest.

These Amendments also give universities, other nonprofit organizations, and small industries the option, with a few exceptions, to retain title rights to federally-funded inventions that they developed. If a nonprofit organization or small business elected to exercise its right to patent the invention, the Amendments state that the Government will have a royalty-free license to use the invention.

The Federal Technology Transfer Act of 1986 (Public Law 99-502). This Act amends provisions in the Stevenson-Wydler Act concerning criteria for establishing the Office of Research and Technology Applications (ORTA). This Act facilitates the transfer of technology by establishing and funding the Federal Laboratory Consortium for Technology Transfer. The Act requires that Federal agencies provide 0.005 percent of their in-house research and development budget for the Federal Laboratory Consortium functions.

LABORATORIES WITHOUT A FULL-TIME OFFICE OF RESEARCH AND TECHNOLOGY APPLICATIONS

Laboratory	No. of Scientists, Engineers, and Technicians 1/
Belvoir Research, Development and Engineering Center	400
David Taylor Research Center	1,396
Naval Civil Engineering Laboratory	221
Naval Weapons Center	1,833
Aero Propulsion Laboratory 2/	283
Avionics Laboratory 2/	517
Flight Dynamics Laboratory 2/	549
Materials Laboratory 2/	285
Air Force Weapons Laboratory	546

1/ The Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96-517) and the Federal Technology Transfer Act of 1986 (Public Law 99-502) require that laboratories with 200 or more full-time scientists, engineers, and technicians engaged in research and development establish an Office of Research and Technology Applications (ORTA).

2/ These laboratories are under the Air Force Wright Aeronautical Laboratories command. Each laboratory meets the criteria for establishing an ORTA. The Air Force regards these laboratories as one. Therefore, the Air Force established one ORTA for all four laboratories.

MILITARY DEPARTMENT FUNDING LEVELS REQUIRED BY LAW FOR THE OFFICE OF RESEARCH AND TECHNOLOGY APPLICATIONS 1/

Military Departments	Total R&D 2/ (FY 1988) (Millions)	Multiplied by 0.5 3/ Percent	ORTA 4/ Funding (Millions)	Divided by Number of Laboratories	Average Funding Per Laboratory (Millions)
Army	$ 5,709.0	.005	$28.5	32	$0.9
Navy	10,562.6	.005	52.8	22	2.4
Air Force	18,688.0	.005	93.4	14	6.7

1/ The Stevenson-Wydler Technology Innovation Act of 1980 (Public 96-517) and the Federal Technology Transfer Act of 1986 (Public Law 99-502) require that the Military Departments set aside 0.5 percent of their research and development budget to support technology transfer efforts, including the functions of the Office of Research and Technology Applications.

2/ Research and Development. The estimated FY 1988 research and development budget for the Military Departments was provided by the Science Resources Studies Office of the National Science Foundation to the Federal Laboratory Consortium (FLC) for billing Military Departments for contributions to the FLC.

3/ 0.5 percent expressed in decimals is .005.

4/ Office of Research and Technology Applications

LABORATORIES HAVING COOPERATIVE AGREEMENTS

Laboratory	Cooperative Agreements
Army	
Avionics Research and Development Activity	
Belvoir Research, Development and Engineering Center	
Center for Command, Control and Communications	
Center for Electronic Warfare	
Center for Night Vision and Electro-Optics	
Center for Software Engineering	
Construction Engineering Research Laboratory	X
Electronics Technology and Devices Laboratory	X
Engineer Topographic Laboratories	
Harry Diamond Laboratories	
Natick Research, Development and Engineering Center	
Navy	
David Taylor Research Center	
Naval Air Development Center	
Naval Civil Engineering Laboratory	
Naval Medical Research Institute	
Naval Ocean Systems Center	
Naval Research Laboratory	
Naval Underwater Systems Center	
Naval Weapons Center	
Air Force	
Aero Propulsion Laboratory	
Aerospace Medical Research Laboratory	
Weapons Laboratory	
Avionics Laboratory	
Flight Dynamics Laboratory	
Materials Laboratory	X
Rome Air Development Center	X

LABORATORIES HAVING A MARKETING PLAN

Laboratory	Marketing Plan
Army	
Avionics Research and Development Activity	
Belvoir Research, Development and Engineering Center	
Center for Command, Control and Communications	
Center for Electronic Warfare	
Center for Night Vision and Electro-Optics	
Center for Software Engineering	
Construction Engineering Research Laboratory	X
Electronics Technology and Devices Laboratory	X
Engineer Topographic Laboratories	
Harry Diamond Laboratories	X
Natick Research, Development and Engineering Center	
Navy	
David Taylor Research Center	
Naval Air Development Center	X
Naval Civil Engineering Laboratory	
Naval Medical Research Institute	
Naval Ocean Systems Center	X
Naval Research Laboratory	
Naval Underwater Systems Center	X
Naval Weapons Center	
Air Force	
Aero Propulsion Laboratory	
Aerospace Medical Research Laboratory	
Weapons Laboratory	
Avionics Laboratory	
Flight Dynamics Laboratory	
Materials Laboratory	
Rome Air Development Center	

INVENTION DISCLOSURE BACKLOG

Laboratory	No. of Disclosures 1/	Estimated Completion Time (years) 1/
Army		
Belvoir Research, Development and Engineering Center	18	1 to 1.5
Center for Night Vision and Electro-Optics	35	2
Fort Monmouth Laboratories 2/	135	4 to 5
Harry Diamond Laboratory	25	2
Navy		
David Taylor Research Center	49	2
Naval Air Development Center	75	3
Naval Civil Engineering Laboratory	30	2
Naval Ocean Systems Center	130	2
Naval Research Laboratory	250	2 to 3
Naval Weapons Center	104	3 to 5

1/ Patent data, as of October 1988, that were obtained from the Chief Patent Attorney at each laboratory. The number of years shown here represents the time needed to prepare and file invention disclosures as patent applications.

2/ The Intellectual Property Law Division at the U.S. Army Communications Electronics Command performed the patent work for all laboratories and centers located at Fort Monmouth, including the following: Avionics Research and Development Activity; Center for Command, Control and Communications; Center for Electronic Warfare; Center for Software Engineering; and the Electronics Technology and Devices Laboratory.

INVENTION DISCLOSURE INCREASES

Laboratory	No. of Invention Disclosures Received FY 1986	FY 1987	FY 1988	Percent of Increase From FY 1986 To FY 1988
Army				
Fort Monmouth Laboratories *	79	93	117	48
Harry Diamond Laboratories	5	15	15	200
Navy				
Naval Air Development Center	25	28	27	8
Naval Ocean Systems Center	50	73	73	46
Naval Research Laboratory	94	114	151	61
Naval Underwater Systems Center	10	17	26	160
Naval Weapons Center	33	28	59	79

* The Intellectual Property Law Division at the U.S. Army Communications Electronics Command performed the patent work for all laboratories and centers located at Fort Monmouth, including the following: Avionics Research and Development Activity; Center for Command, Control and Communications; Center for Electronic Warfare; Center for Software Engineering; and the Electronics Technology and Devices Laboratory.

PATENT ATTORNEY POSITIONS

Laboratory	Number Required 1/	Number Authorized	Number Assigned
Army			
Belvoir Research Development and Engineering Center	3	1	1
Fort Monmouth Laboratories 2/	8	7	4 3/
Corps of Engineers 4/	3	1	1
Navy			
Naval Air Development Center	3	2	2
Naval Ocean Systems Center	4	4	4
Naval Research Laboratory	9	9	8
Naval Weapons Center	5	5	3
Air Force			
Air Force Headquarters, Washington, D.C.	9	9	6
Hanscom Air Force Base	7	7	5
Wright-Patterson Air Force Base	8	8	7

1/ The number of patent attorney positions needed, according to the Chief Patent Attorney at the laboratory.

2/ The Intellectual Property Law Division at the U.S. Army Communications Electronics Command performed the patent work for all laboratories and centers located at Fort Monmouth, including the following: Avionics Research and Development Activity; Center for Command, Control and Communications; Center for Electronic Warfare; Center for Software Engineering; and the Electronics Technology and Devices Laboratory.

3/ Includes one part-time patent attorney.

4/ The Corps of Engineers Patent Attorney performed the patent work for the Corps of Engineers' Laboratories, including the Engineering Topographic Laboratories and the Construction Engineering Research Laboratory.

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, DC 20310 0103

SLCHD-TT

31 August 1989

MEMORANDUM FOR Assistant Inspector General for Auditing, Department of Defense, ATTN: ASP (Michael Simpson), Room 725, 400 Army Navy Drive, Arlington, VA 22202-2884

SUBJECT: DOD-IG Draft Report on the Audit of the DOD Domestic Technology Transfer Program (8AB-0071)

1. The DOD-IG transmittal memorandum and subject draft report have been reviewed by the Army Domestic Technology Transfer Program (ADTTP) Manager on behalf of the Office of the Assistant Secretary of Army for Research, Development and Acquisition and by the Intellectual Property Division of the Office of the Judge Advocate General. Thus, this memorandum provides a combined response for the Department of the Army.

2. We appreciate the opportunity you have provided to review and comment upon your draft report on the DOD Technology Transfer Program. In general, we wish to commend you for your effort and your insight into the complex issues of implementing a decentralized technology transfer activity in DOD and, in particular, your appreciation of the need for the laboratories to develop an approach to "marketing" which was previously uncommon to government.

3. Beyond this positive general comment, I wish to point out our different interpretations of the Stevenson-Wydler Act, both the original and as amended, from those in your Appendix A, and some other definitional problems. Then, we will address your individual findings as required. First, the Stevenson-Wydler Act (originally Section 11) states that "each Federal laboratory" will establish "an ORTA" or combine the functions in an existing organization. Each laboratory must have an organizational element to perform the ORTA functions regardless of budget or staff. Then, the ORTA should have at least one full-time person if its budget exceeded $20 million according to the original law, and must have at least one full-time equivalent if it has 200 or more S&Es according to the amended law. We understand that all laboratories must be served by an "ORTA" and that those larger than a certain size must meet a minimum staffing requirement. With this interpretation, we question either the title of your Appendix B or the inclusion of the Belvoir Research, Development and Engineering Center, since the Belvoir Center does have an organization actively performing the ORTA functions even though we agree that it is not staffed as it should be. Second, the legislation and the executive order do not require that laboratories enter into agreements but provide for the delegated authority for the laboratories

SLCHD-TT
SUBJECT: DOD-IG Draft Report on the Audit of the DOD Domestic Technology Transfer Program (8AB-0071)

to enter into such agreements. Actually entering into such agreements depends on the existance and willingness of cooperating organizations, the legal complexity of the needed agreements, and many other factors. Thus, the use of the word "comply" in your Appendix B is not appropriate. A number of Army laboratories listed in your Appendix B which do not have agreements in place have made various efforts to obtain agreements since the time the legislation was signed in October 1986.

4. In response to Finding A, and with the strong qualifications noted in paragraph 3 above, we largely concur with the finding that not all Army laboratory ORTAs are adequately staffed, and that better guidance needs to be provided to the laboratory directors and their ORTA staffs on the identification of technology for cooperation and licensing, the marketing of the technology, and the negotiation of the legal agreements. To rectify these situations, an Implementation Working Group has been formed to redesignate the laboratories which must have full-time ORTA staff and to revise the Army regulation (AR 70-57) to provide adequate guidance to laboratories, including the staffing requirements, on implementing the legislation. The redesignation of the laboratories and the first draft of the regulation are to be accomplished by 1 October 1989 with the final regulation to be issued in 1 year.

5. We do not agree with the idea that Army implementation to date was limited by the waiver of the 0.5 percent funding. Further, we do not see this figure in the law as a set-aside to be expended on the establishment of ORTAs. We believe this is a targeted minimum of investment to be made in transfer efforts which includes the funding of the ORTA but also includes in-kind contributions to cooperative agreements. This funding can come from individual laboratory overhead as well as from an agency level set-aside and this does not appear to be specified in the legislation. The maintainance of the waiver, however, is important since accounting for exactly which activities should be counted toward this 0.5 percent is exceptionally difficult and time consuming.

6. With regard to Finding B, we concur with the findings set forth in the report. The Army is having difficulty in the recruitment and retention of patent attorneys. The primary problem is salary. The working grade for patent attorneys and agents in the Army is GS-13. The working grade should be at least a GS-14. However, given the current salaries paid by the private sector, the GS-14 salary grade is not truly competitive with

the private sector. We strongly agree that patent attorneys and agents should be on a special salary scale.

7. DOD was recently granted the authority to place engineers and scientists on a special salary scale. Most, if not all, patent attorneys and agents have a science or engineering degree. Thus, it appears that patent attorney and agents should also be placed on a special salary scale.

8. In addition, while not addressed directly by the report, the current patent organization of the Army tends to depress the grade level of patent attorneys and agents. The patent professionals are part of various legal offices. Thus, the grade level of patent professionals is aligned with the grade levels of the 905 series attorneys which are not difficult to recruit.

9. If you have any questions or wish elaboration of the comments in this memorandum on the implementation of the legislation, contact the undersigned on commercial 394-4210. Questions on the response to Finding B should be directed to Mr. Anthony Lane, Intellectual Property Counsel of the Army on commercial 756-2617.

Clifford E. Lanham
CLIFFORD E. LANHAM
Army Domestic Technology
Transfer Program Manager

THE ASSISTANT SECRETARY OF THE NAVY
(RESEARCH, ENGINEERING AND SYSTEMS)
WASHINGTON, D C 20350-1000

SEP 0 1 1989

MEMORANDUM FOR THE ASSISTANT INSPECTOR GENERAL FOR AUDITING,
OFFICE OF THE INSPECTOR GENERAL DOD

Subj: OAIG(A) DRAFT REPORT ON THE AUDIT OF THE DOD DOMESTIC TECHNOLOGY TRANSFER PROGRAM (PROJECT NO. 8AB-0071)

Encl: (1) DON Response to Subject Draft Report

In response to the subject draft audit report of 30 June 1989, we have reviewed each of the findings, conclusions and recommendations. Enclosure (1) provides the Department of Navy comments for inclusion in the final report. We generally agree that the Navy can improve compliance with applicable technology transfer acts; however, the report implies non-compliance in some areas for which there are no criteria. We also agree that the current staffing level of patent attorneys affects the timely processing of invention disclosures.

In order to help ensure compliance with applicable laws and regulations, both the Secretary of the Navy and the Office of the Chief of Naval Research are preparing to issue instructions containing technology transfer policies and procedures. These instructions will be published very soon and help ensure adequate staffing, funding, and marketing strategies related to transferring technology to private industry. Additionally, the instructions will provide guidance regarding licensing and royalty agreements with private industry related to the use of new technology. The Navy also plans to perform a study to determine if a pay differential is an appropriate way of improving the staffing level of patent attorneys. The study will be completed by 28 February 1990.

Richard L Rumpf
RICHARD L. RUMPF
Acting

Copy to:
ASN(FM)
OCNR(01IR)
OGC
SPAWARSYSCOM(SPAWAR-10R)
NAVFACSYSCOM(FAC-01A1)
NAVCOMPT(NCB-53)

Department of the Navy Response

to

AIG(A) Draft Report of 30 June 1989

on

The Audit of the DOD Domestic Technology Transfer Program

(Project No. 8AB-0071)

PART I - INTRODUCTION

Page 3, line 17: It is not clear whether the figures shown are total in-house budgets or total in-house R&D budgets. 2

Page 4, line 4: The number of scientists, engineers, and technicians reviewed should only be those engaged in R&D effort, not the total number employed at laboratories. 2

Page 5, lines 11 & 12: The sentence would be more accurate if it read, "...may hamper technology transfer efforts." 3

PART II - FINDINGS AND RECOMMENDATIONS

A. COMPLIANCE WITH DOMESTIC TECHNOLOGY TRANSFER ACTS (PAGE 7) 5

FINDING

Three of the eight Navy laboratories required to have an Office of Research and Technology Applications (ORTA), did not fully comply with provisions of the domestic technology transfer acts, which require that the ORTA be staffed with one or more employees to perform ORTA functions equal to the time a full-time employee would devote to the duties. None of the eight Navy laboratories we evaluated fully complied with the domestic technology transfer acts' provision that permits the commanders and directors of Federal laboratories to enter into cooperative research and development agreements (cooperative agreements) with the private sector and with State and local governments. In addition, five of the eight Navy laboratories reviewed did not adequately disseminate technology. As a result, the laboratories did not effectively transfer technology they developed to the private sector and to State and local governments. In addition, the laboratories lost royalty revenues that could have been generated by licensing patented technology.

MANAGEMENT COMMENTS

Page 7, line 8: Since the law does not require laboratories to enter into cooperative agreements, the lack of such agreements does not put laboratories in non-compliance with the law. 5

Page 7, line 16: Given the guidance contained in the law and the DOD Instruction, there appears to be adequate guidance concerning cooperative agreements. 5

Page 8, line 3: There is no requirement in the law or DOD Instruction to have a marketing plan. It might be appropriate to suggest that such a plan would be useful, but the lack of one does put laboratories in non-compliance. 5

Page 8, line 6: The statement is technically true; however, since the Navy has long had an active licensing program, the "lost royalty revenues" are small. 5

Page 8, line 13: The paragraph should be clarified in two ways. First, the law doesn't mention "technicians" but rather related technical positions. Second, the 200 or more people should be engaged in research and development and not in other laboratory pursuits (e.g., in-service engineering, production contract monitoring, etc.). 5

Page 9, lines 10 - 14: The law implies that the 0.5 percent is of the in-house R&D budget, not the laboratories' total R&D budget. The Navy customarily grants contractors commercial rights to all contracted R&D; consequently, these rights are not available for licensing. Therefore, all contracts should be excluded from the calculations. 6

Page 10, line 23 - page 11, line 1: The Executive Order does not require that blanket authority be delegated. Rather, it implies that specific authority can be granted. The Navy is currently doing this. 6

Page 11, lines 1 - 4: The Executive Order is incorrectly stated. It should read, "The Executive Order also directs that executive department and agency heads shall delegate authority to their Government-owned, Government-operated Federal laboratories to license, assign or waive rights to intellectual property developed by the Federal laboratories under cooperative agreements or by individual laboratories". 6

Page 11, lines 13-14: The implication is that the law requires a marketing plan. Although it may be a good idea to have one, the lack of such a plan does not put a laboratory in non-compliance with the law. 7

Page 12, lines 1 - 3: The law does not require the 0.5 percent to be spent exclusively by the ORTA. Rather, the law states that 0.5 percent must be spent in technology transfer activities. 6

Page 13, lines 18 - 20: Two people, each spending 66 percent of their time on ORTA functions meets the one full-time equivalent criteria. 8

Page 15, line 12: In the case of Appendix C, the amounts are not correct. Specifically, the total Navy R&D appropriation for FY 1988 was $9.5 billion not $10.6 billion. While the appropriation was $9.5 billion, only a small portion, about $1.3 billion, of that amount was spent in-house at the 22 Navy laboratories included in the survey. The law implies that it is only the in-house expenditures against which the 0.5 percent is to be applied. The vast majority of the appropriation is contracted out. As a result, the commercial rights for patents resulting from the contracted R&D are given to the contractors and are not available for licensing by the Navy. Therefore, contracts should not be included in the calculation. It should be noted that these dollars are not earmarked for ORTA use only, but rather for all technology transfer purposes (e.g, patent fees, DON Fact Sheet costs, etc.). 9

Using the $1.3 billion in-house amount and multiplying by 0.5 percent results in total technology transfer funding of $6.5 million, an average of about $295 thousand for each of the 22 laboratories. This is much less than the $2.4 million per laboratory cited in Appendix C.

Additionally, Navy R&D does spend about $2.9 billion annually at in-house activities of the Navy and other DOD and government activities. Much of this effort goes to fund the Navy's major ranges and test facilities and other Navy activities which are not included in the laboratory base. This $2.9 billion is mentioned to avoid confusion since it is reflected as in-house in the Navy R&D input to the National Science Foundation report.

Page 16, lines 19 - 22: A separate line item, as implied by the word "appropriated", would be extremely vulnerable in difficult budget times (such as we are having now). Accordingly, the Navy plans to fund laboratory technology transfer out of laboratory overhead. Regardless, the Navy believes that it will be several years, if ever, before licensing fees ever reach the amount needed to offset the 0.5 percent required funding. 9

Page 17, lines 13 - 15: The lack of blanket delegation of authority to sign cooperative agreements has not prevented such agreements from being made. Two have been signed and several are currently being reviewed. 10

Page 19, lines 17 - 24: The current Navy procedure, which requires the Office of the Chief of Naval Research review before a request for signature authority is forwarded to the Secretary of the Navy, adds only a few weeks to the signature process. Even that delay will be eliminated when the pending Secretary of the Navy Instruction is signed. There are no facts contained in the audit report to support the auditors' conclusion that a blanket delegation of authority would increase private industries' interest in such agreements. The Navy has not seen any data to indicate that industry's interest would be increased. 11

Page 20, lines 1 - 7: There have been no great numbers of cooperative agreements from the Air Force or Army laboratories even though they have been delegated authority to enter into them. 11

Page 20, line 13: The Naval Ocean Systems Center is not indicated as having a marketing plan; however, page 16, line 1, indicates that the Center's marketing plan was instrumental in licensing some patented technology. 11 9

Page 21, lines 5 - 6: Public Law 99-502 disestablished the Center for Utilization of Federal Technology. 12

RECOMMENDATION A-1 (Page 27)

We recommend that the Secretary of the Navy comply with the Stevenson-Wydler Technology Innovation Act and the Federal Technology Transfer Act by: 15

a. Requiring each laboratory that has 200 or more full-time scientists, engineers, and technicians to assign staff whose time devoted to ORTA functions would total the equivalent of at least one full-time employee.

b. Providing adequate funding to staff the ORTA with a full-time journeyman-level person or equivalent and to provide funds for administrative support, travel, and other expenses to include implementing a strategy for marketing and licensing patents.

c. Revising existing regulations or issuing new regulations to include policy and procedures for laboratory commanders and directors to enter into cooperative research and development agreements.

d. Requiring research and development laboratories to develop and implement a strategy for matching the laboratories' technology with industries' technology and to contact industries to solicit their interest in licensing the laboratories' patented technologies. Such a strategy may include sending direct mailings to industries, hiring contractors to analyze commercial potential of patents and to solicit licensing arrangements, and using an expanded data base to contact industries directly.

DON RESPONSE

Concur with the intent of the recommendation as discussed below:

1.a. Concur with the proviso that the "200 or more full-time scientists, engineers, and technicians" are engaged in research and development activities and does not include those performing research and development related functions. Accordingly, the DON suggests that the recommendation be reworded to include "involved in research and development" after the word "technicians". The requirement to establish an ORTA will be included in the OCNR domestic technology instruction which is currently being drafted. The Instruction will be finalized after publication of the related SECNAV instruction. Target date for publication of the OCNR instruction is 28 February 1990.

1.b. Concur. The ORTA will be funded through the use of laboratory overhead funds. Funding procedures will be included in the OCNR technology transfer instruction planned for publication by 28 February 1990.

1.c. Concur with the intent. The OCNR technology transfer instruction will encourage laboratory commanders/directors to enter into cooperative agreements as appropriate and will include the necessary policy and procedures. Target date for publication of the instruction is 28 February 1990.

1.d. Concur with the intent. The OCNR technology transfer instruction will encourage laboratories to develop a marketing strategy as appropriate. Target date for publication of the instruction is 28 February 1990.

Since there is no requirement for a marketing strategy, the DON suggests that the recommendation be revised to include the word "encourage" instead of "require".

RECOMMENDATION A-2 (Page 27) 15

We recommend that the Secretary of the Navy delegate authority to the laboratory commanders and directors that would allow them to enter into cooperative research and development agreements with the private sector and with State and local overnments as required by Executive Order.

DON RESPONSE

Concur with the intent. The Secretary of the Navy has delegated and will continue to delegate authority to enter into cooperative agreements on a case-by-case basis. However, blanket authority will not be issued until laboratories demonstrate the ability to develop suitable agreements. The DON approach will result in blanket agreements, but will also ensure that adequate internal controls are in place to protect the Government's interests and develop meaningful cooperative agreements. Policies and procedures regarding cooperative agreements will be included in the OCNR technology transfer instruction planned for publication by 28 February 1990.

B. STAFFING OF PATENT ATTORNEYS (Page 29) 19

FINDING

Navy laboratories did not process in a timely manner invention disclosures that were approved for patent applications. This condition occurred because the staffing level of Government patent attorneys was inadequate to process an increased number of invention disclosures. As a result, a backlog of invention disclosures existed, and the patent process and the availability of patented technology for disseminating to State and local governments and for licensing to the private sector was delayed.

RECOMMENDATION B-1 (Page 37) 23

We recommend that the Secretary of the Navy perform and process the pay differential study required by the Office of Personnel Management.

DON RESPONSE

Concur. The Office of the General Counsel conducted a special pay study in 1987-1988 addressing intellectual property lawyers. It was not sent forward for several reasons, including the fact that our recruitment/retention statistics are improving. However, we still face a greater challenge in hiring and retaining intellectual property lawyers than we do with general

lawyers. Whether a special pay program for some or all of our intellectual property lawyer positions would generate a net benefit to the Navy as a whole is an issue that merits periodic re-examination. Consequently, in conjunction with the Army and Air Force, the Navy will conduct another study to be completed by 28 February 1990. A new study is necessary in order to gather current information. Upon completion of the study, the Navy will evaluate the results to determine whether or not a pay differential for patent attorneys is necessary. If a pay differential appears to be appropriate, the study will be forwarded to OPM with a request for action.

APPENDIX A (Page 41, line 2): The word "in-house" should be inserted between "their" and "research". 26

APPENDIX B (Page 43, Title): For accuracy, the title should be "LABORATORIES WITHOUT A FULL TIME OFFICE OF RESEARCH AND TECHNOLOGY APPLICATIONS" 27

APPENDIX B (Page 43, Footnote 1): The words "involved in research and development" should be inserted between "technician" and "establish". 27

APPENDIX C (Page 45, Second Column): The column is misleading. It should contain total in-house R&D amounts ($1.2 billion not $10.562 billion). The mistake propagates through the fourth and sixth columns. 29

APPENDIX C (Page 45, Footnote 1): The word "in-house" should be inserted between "their" and "research". 29

APPENDIX E (Page 49): The Naval Ocean Systems Center is not annotated as having a marketing plan. However, on page 16 (lines 1 - 3), the report states that the Center's marketing plan has resulted in two licenses and royalty income. Appendix E should reflect the presence of a marketing plan at that Laboratory. 33

V

DEPARTMENT OF THE AIR FORCE
WASHINGTON DC 20330-1000

OFFICE OF THE ASSISTANT SECRETARY

8 September 1989

MEMORANDUM FOR ASSISTANT INSPECTOR GENERAL FOR AUDITING
OFFICE OF THE INSPECTOR GENERAL
DEPARTMENT OF DEFENSE

SUBJECT: Draft Report of the Audit of the DoD Domestic Technology Transfer Program, June 30, 1989, DoD (IG) Report Number 8AB-0071 - INFORMATION MEMORANDUM

This is in reply to your memorandum for COMPTROLLER OF THE AIR FORCE requesting comments on the findings and recommendations made in subject report.

We concur with the findings and recommendations of the report. Specific comments are contained in Attachment 1.

This audit has reemphasized the importance of the DoD Domestic Technology Transfer Program, and has served to focus on the importance and necessity of pursuing a coordinated, comprehensive program to transfer technology from the DoD laboratories to the private sector for commercialization.

Robert D. Eaglet

ROBERT D. EAGLET, MGen, USAF
Assistant Deputy
Assistant Secretary of the
Air Force (Acquisition)

Attachment
Comments on DoD (IG) Audit
of the Domestic Technology
Transfer Program

COMPTROLLER OF THE AIR FORCE COMMENTS

DRAFT REPORT OF THE AUDIT OF THE DOD DOMESTIC TECHNOLOGY TRANSFER PROGRAM, PROJECT NUMBER 8AB-0071, JUNE 30, 1989

1. Page 11-12, Staffing of the ORTA Functions. 7

Funding alone will not resolve the staffing problems. ORTA staffing must compete for a fixed number of manpower positions within each laboratory or additional manpower positions need to be authorized.

2. Page 13-15, Air Force Wright Aeronautical Laboratories. 8

Staffing of the ORTA function at the Air Force Wright Aeronautical Laboratory (recently renamed as the Wright Research and Development Center) will be reevaluated based on the report's comment.

3. Page 18, Policy and Guidance. 10

Air Force policy on Cooperative Research & Development Agreements has been drafted as Air Force Regulation 80-27, Domestic Technology Transfer Program. It is currently in editing/printing, and will be distributed by the end of the current calendar year.

4. Page 27-28, Recommendations for Corrective Action. 15

a. Recommendation 1.a. We concur. Appropriate language has been placed in the soon to be published AFR 80-27.

b. Recommendation 1.b. We concur. ORTA staffing requirements will be reevaluated and funds will be programmed for administrative support, travel, and other expenses to include implementing a strategy for marketing and licensing patents.

c. Recommendation 1.c. We concur. The forthcoming Air Force regulation cited above will accomplish this recommendation.

d. Recommendation 1.d. We concur. There are currently a number of such initiatives underway, including the Rome Air Development Center/New York State Photonics Development Center; the Human Systems Division/University of Texas technology marketing demonstration; and the Wright Research and Development Center/Ohio State agreement of the interchange of technology.

5. Page 37, Recommendation for Corrective Action. 23

We concur. The Air Force will participate in a pay differential study pertaining to patent attorneys.

ACTIVITIES VISITED OR CONTACTED

Office of the Secretary of Defense

Under Secretary of Defense for Acquisition, Washington, DC
Office of the Director, Defense Research and Engineering, Washington, DC

Department of the Army

Assistant Secretary of the Army (Research, Development and Acquisition), Washington, DC
Deputy Chief of Staff for Personnel, Washington, DC
Judge Advocate General, Patents Copyrights and Trademarks Division, Washington, DC
Surgeon General, Washington, DC
Corps of Engineers Command, Fort Belvoir, VA
Strategic Defense Command, Arlington, VA
Laboratory Command, Adelphi, MD
Avionics Research and Development Activity, Fort Monmouth, NJ
Belvoir Research, Development and Engineering Center, Fort Belvoir, VA
Center for Command, Control and Communications, Fort Monmouth, NJ
Center for Electronic Warfare, Fort Monmouth, NJ
Center for Night Vision and Electro-Optics, Fort Belvoir, VA
Center for Software Engineering, Fort Monmouth, NJ
Construction Engineering Research Laboratory, Campaign, IL
Electronics Technology and Devices Laboratory, Fort Monmouth, NJ
Engineer Topographic Laboratories, Fort Belvoir, VA
Harry Diamond Laboratories, Adelphi, MD
Natick Research, Development and Engineering Center, Natick, MA

Department of the Navy

Office of the Chief of Naval Research, Arlington, VA
General Counsel, Arlington, VA
David Taylor Research Center, Carderock, MD
Naval Air Development Center, Warminster, PA
Naval Civil Engineering Laboratory, Port Hueneme, CA
Naval Medical Research Institute, Bethesda, MD
Naval Ocean Systems Center, San Diego, CA
Naval Research Laboratory, Suitland, MD
Naval Underwater Systems Center, New London, CT
Naval Weapons Center, China Lake, CA

Department of the Air Force

Assistant Secretary of the Air Force (Acquisition), Washington, DC
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Aero Propulsion Laboratory, Dayton, OH

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Flight Dynamics Laboratory, Dayton, OH
Materials Laboratory, Dayton, OH
Rome Air Development Center, Rome, NY

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Brookhaven National Laboratory, Long Island, NY
Sandia National Laboratory, Albuquerque, NM

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