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**SURVEY OF LABORATORIES AND IMPLEMENTATION OF
THE FEDERAL DEFENSE LABORATORY
DIVERSIFICATION PROGRAM**

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February 1994

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This report responds to Public Law 102-484,
Section 4224(b), 23 October 1992

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DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING

WASHINGTON, DC 20301-3010

08 MAR 1994

Honorable Robert Byrd
Chairman, Committee on Appropriations
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

Pursuant to Section 4224(b) of Public Law 102-484, the National Defense Authorization Act for Fiscal Year 1993, I am submitting the report entitled: Survey of Laboratories and Implementation of the Federal Defense Laboratory Diversification Program. This report addresses technology transition between the Federal Defense Laboratories (FDLs) and private industry, state and local governments and academia. The activities of the FDLs are only one aspect of a broader Department of Defense effort to promote economic growth and merge the national and defense industrial bases through defense reinvestment, diversification and conversion. The FDL's contributions are particularly important, because they represent interactions at the leading edge of technology.

During the present fiscal year, the Office of Technology Transition plans to audit the FDL technology transition processes. Our intentions are to search for lessons learned, to establish best practices, to lead a search for and discussion of more facile technology transition mechanisms and to promote their implementation.

With the recent appointment of a former industrial executive as Director of the Office of Technology Transition in my office, we are now poised to provide additional leadership in support of Administration and Congressional initiatives for defense reinvestment and economic growth.

Sincerely,


Anita K. Jones

Enclosure

cc:
Honorable Mark O. Hatfield
Ranking Republican

DTIC QUALITY INSPECTED 3



DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING

WASHINGTON, DC 20301-3010

08 MAR 1994

Honorable Bill Natcher
Chairman, Committee on Appropriations
House of Representatives
Washington, DC 20515

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Sincerely,

[Handwritten signature of Anita K. Jones]
Anita K. Jones

Enclosure

cc:
Honorable Joseph M. McDade
Ranking Republican

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DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING

WASHINGTON, DC 20301-3010

08 MAR 1994

Honorable Sam Nunn
Chairman, Committee on Armed Services
United States Senate
Washington, DC 20510

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Sincerely,

A handwritten signature in black ink, appearing to read "Anita Jones", written over a vertical line.

Anita K. Jones

Enclosure

cc:
Honorable Strom Thurmond
Ranking Republican



DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING

WASHINGTON, DC 20301-3010

08 MAR 1994

Honorable Ronald V. Dellums
Chairman, Committee on Armed Services
House of Representatives
Washington, DC 20515

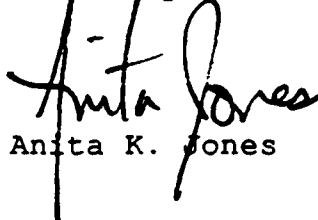
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Anita K. Jones

Enclosure

cc:
Honorable Floyd D. Spence
Ranking Republican



DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING

WASHINGTON, DC 20301-3010

08 MAR 1994

Honorable Albert Gore, Jr.
President of the Senate
Washington, DC 20510

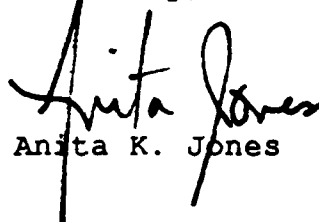
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Anita K. Jones

Enclosure



DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING

WASHINGTON, DC 20301-3010

08 MAR 1994

Honorable Thomas S. Foley
Speaker of the House of Representatives
Washington, DC 20515

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Sincerely,

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Anita K. Jones

Enclosure

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EXECUTIVE SUMMARY

Background

This report addresses the contributions of the Federal Defense Laboratories (FDLs) to the transition of Department of Defense technology to third parties to enhance economic competitiveness. It responds to Section 4224(b) of Public Law 102-484. It was assembled by a Working Group chaired by the Office of Technology Transition/OSD which included representatives from the Military departments and Defense agencies.

(1) An Assessment of the Potential of Each Defense Laboratory to Promote Technology Transition

Pursuant to the requirements of the 1980 Stevenson-Wydler Act and the 1986 Federal Technology Transfer Act, the FDLs have established organizations and mechanisms to effect technology transition. The annexes to this report enumerate their activities in this regard in detail. In response to the assessment requested by Section 4224(b)(1), their "potential" to promote technology transition is high.

(2) Recommendations for Improving FDL Technology Transition

At the laboratory level, recommendations for improving the technology transition process largely relate to continued optimization and more aggressive use of mechanisms already in place. At the OSD level, the Office of Technology Transition will initiate new efforts to improve the process, including consideration of the proposals listed below, which surfaced during assembly of this report. Generally speaking, any action which would increase flexibility at the local level, enhance information flow, provide additional organizational or personal incentives and/or mediate regulatory concerns of third party partners should be considered.

(3) Performance vs. Previous Plan

As this is the first report, no previous plan was developed.

(4) Recommendations for Improvement of the FDL Diversification Program

Following more substantive discussion of issues detailed in the body of this report, recommendations will be presented, where appropriate.

BACKGROUND

Introduction

The technology transition¹ efforts of the Department of Defense are intended to ensure that industry, other Federal agencies, State and local governments, colleges and universities and private persons benefit from the United States investment in defense technology. The development of dual-use products, processes and expertise by the DoD can and does make important contributions to the economic competitiveness of U.S. industry through the transition of DoD technology to the private sector. As the Department of Defense pursues its primary national security mission, close DoD-third party interactions can also foster the development of commercial technologies that are subsequently applied within DoD technology and system development programs (spin-on). These interactions improve DoD technology managers' understanding and utilization of scientific and technological progress outside the department and are particularly important given the current emphasis on merging the national and defense industrial bases.

This report focuses on the contributions of the Federal Defense Laboratories (FDLs) to technology transition. It responds to requirements mandated in Section 4224 of Public Law 102-484 (Appendix A). It is based on inputs developed by a Defense Technology Transition Working Group, which was chaired by the Office of Technology Transition and included representatives from science and technology management organizations within the three Military departments, the Ballistic Missile Defense Organization, the Advanced Research Projects Agency and the Defense Nuclear Agency.

Technology transfer or technology transition has been an important laboratory activity, in a formal sense, since it was mandated by the 1980 Stevenson-Wydler Technology Innovation Act: **...the Federal Government shall strive where appropriate to transfer federally owned or originated technology to State and local government and to the private sector. Technology transfer, consistent with mission responsibilities, is a responsibility of each laboratory science and engineering professional.** {Chapter 63, USC, Title 15, Section 3710(a)}. The Federal Technology Transfer Act of 1986 (Public Law 99-502) formalized some of the mechanisms of technology transfer by authorizing the heads of federal laboratories to enter into Cooperative R&D Agreements with third parties.

¹"Technology transition" is defined by the mechanisms listed in Table 2 below.

Consistent with these laws each laboratory with 200 or more full-time-equivalent scientific, engineering, and technical personnel has established an Office of Research and Technology Applications (ORTA), which functions as an agent and marketing organization for the laboratory. The major ORTA missions are outlined in Table 1.

TABLE 1. FUNCTIONS OF THE DOD LABORATORY OFFICES OF RESEARCH AND TECHNOLOGY APPLICATIONS (Federal Technology Transfer Act of 1986)²

- 1) Prepare application assessments for laboratory research and development projects with potential commercial applications.
- 2) Disseminate information on laboratory originated products, processes, and services and potential application to state and local governments and to private industry.
- 3) Cooperate with and assist other organizations that support technology transition, e.g., the National Technical Information Service and the Federal Laboratory Consortium for Technology Transfer.
- 4) Provide technical assistance to state and local government officials.
- 5) Participate, where feasible, in regional, state, and local programs designated to facilitate or stimulate the transfer of technology for the benefit of the region, state, or local jurisdiction in which the Federal laboratory is located.

²15 USC 3710(c) and ORTA Handbook, Federal Laboratory Consortium for Technology Transfer, FLC Handbook Series No. 2, 1992.

TECHNOLOGY TRANSITION MECHANISMS

A framework developed by the Federal Laboratory Consortium for Technology Transfer was used to develop an inventory of the primary mechanisms through which Defense Laboratory technology transition occurs (Table 2). This framework provided the basis for data calls to the Military departments requesting information regarding the technology transition accomplishments and plans of their laboratories.

TABLE 2. TECHNOLOGY TRANSITION MECHANISMS³

MECHANISM	DESCRIPTION	CHARACTERISTICS/ FEATURES
1) Collegial Interchange, Conference, Publication	DoD scientists and engineers participate in most of the major U.S. and international technical societies, sponsor and participate in many symposia, present papers in numerous professional journals	<ul style="list-style-type: none"> o Personal interaction promotes exchange of ideas and pursuit of solutions to technical problems of interest to Govt. and industry o Technical papers and journal articles provide brief descriptions of technical problems or objectives, insight into ongoing R&D and possible solutions to shared technological challenges o Sponsorship and participation in symposia promote sharing of technical agendas between Govt. and the S&E community at large
2) Consulting to the Laboratory	A party outside the laboratory provides advice and/or information	<ul style="list-style-type: none"> o Formal written contract, generally short-term and specific o Intellectual property aspects require care
3) Consulting by Laboratory Personnel	Consultation provided to a private sector party by laboratory personnel to further technology transfer	<ul style="list-style-type: none"> o Laboratory must approve of the laboratory personnel consulting arrangement o Conflict of interest must be avoided o Intellectual property aspects require care

Table 2, CONTINUED

<p>4) Exchange Program</p>	<p>A transfer of personnel either to the laboratory from another party or from the laboratory to another party to exchange expertise and information</p>	<ul style="list-style-type: none"> o Usually for a period of up to one year o Allows participant to work in the other party's environment/facility o Helps the participating laboratory gain valuable insight to outside ideas/methods
<p>5) Procurement</p>	<p>A procurement is an acquisition instrument entered into between the Government and a contractor for the contractor to provide supplies or services to the Government</p>	<ul style="list-style-type: none"> o Used to fund R&D to meet Government requirements o Work builds a technology base, facilities, and knowledge base in non-Federal sector that can meet commercial as well as Government needs o Contractor retains title to intellectual property; Government receives royalty free license for government use
<p>6) Cost-Shared Contract</p>	<p>A contract is entered into between the Government and a contractor in which costs associated with the work are shared as specified in the contract</p>	<ul style="list-style-type: none"> o Includes in-cash and in-kind arrangements o Must be of mutual benefit to industry and Government o Commercially valuable data may be protected for a limited period of time o Contractor retains title to intellectual property; Government receives royalty free license for government use
<p>7) Grant and Cooperative Agreement</p>	<p>Grant and Cooperative Agreements are entered into solely by the Government with a recipient whereby money or property is transferred to the recipient to support or stimulate research</p>	<ul style="list-style-type: none"> o Government can enter into these agreements o Less involvement between the Government and recipients than acquisition instruments o Sharing of intellectual property and property rights negotiated as part of agreement
<p>8) Cooperative Research and Development Agreement (CRADA)</p>	<p>A CRADA is an agreement between one or more federal laboratories and one or more nonfederal parties under which the Government, through its laboratories, provides personnel, facilities, or other resources with or without reimbursement (but not funds to nonfederal parties). The nonfederal parties provide funds, personnel, services, facilities, equipment or other resources or development efforts that are consistent with the laboratory's mission.</p>	<ul style="list-style-type: none"> o Requirement that no funds leave the laboratory (under a CRADA) o Not subject to 31 USC6303-6305 terms for procurement contracts, grants, or cooperative agreements o Rights to inventions and other intellectual property are negotiated as part of the agreement o Certain data generated by the federal laboratory may be protected for up to five years

Table 2, CONTINUED

<p>9) Licensing from the Government to the Private Sector</p>	<p>Licensing is the transfer of less-than-ownership rights in intellectual property to a third party, to permit the third party to use intellectual property</p>	<ul style="list-style-type: none"> o Can be exclusive or non-exclusive, for a specific field of use for a specific geographic area, or U.S. or foreign usage o License normally provides for some payments of royalty to Government for commercial use of a Government invention. Royalties often tied to degree of commercial success. o Preferences for U.S. industry and small businesses o Subject to conflict-of-interest consideration o Non-exclusive licenses preferred over exclusive licenses o Potential licensee must present plans to commercialize the invention o Government obtains a non-executive, royalty-free, worldwide license to the invention for Government use
<p>10) Licensing from the Private Sector to the Government</p>	<p>Licensing is the transfer of less-than-ownership rights in intellectual property to a third party, to permit the third party to use intellectual property</p>	<ul style="list-style-type: none"> o Government may utilize private inventions for Government purposes subject to payment of just compensation o Must follow existing procurement rules and instructions
<p>11) Small Business Innovation Research (SBIR)</p>	<p>The SBIR program is federally funded to promote small business participation in Government programs</p>	<ul style="list-style-type: none"> o 4-year confidentiality limit on data o Contractor retains commercial rights
<p>12) Use of User Facilities</p>	<p>User facilities are unique, complex, experimental scientific facilities including equipment and expertise at a Government laboratory designated by the Government for use by the technical community, universities, industry, other laboratories, and other Government entities</p>	<ul style="list-style-type: none"> o Includes Designated User Facilities and Other User Resources o Research may be conducted on a proprietary or nonproprietary basis o For proprietary R&D, cost recovery is required. Patent rights generally go to inventor and proprietary data of the user is protected o If funded under another Government contract or international agreement, users are subject to those intellectual property clauses

Table 2, CONTINUED

<p>13) Documentation and Dissemination of DoD R&D efforts</p>	<p>DoD policy requires the documentation and widest possible dissemination of all completed R&D efforts in a timely manner</p>	<ul style="list-style-type: none"> o About 15,000 DoD technical reports provided to the National Technical Information Service (NTIS) for general public access on an annual basis. o Ballistic Missile Defense Organization maintains an on-line data base of technologies to facilitate technology transfer to the civil sector
<p>14) Technology Reinvestment Program (TRP)</p>	<p>Application of defense and commercial resources to develop dual-use technologies, manufacturing and technology assistance to small firms, and education and training programs that enhance U.S. manufacturing skills and target displaced defense industry workers</p>	<ul style="list-style-type: none"> o Inter-Agency program o ARPA-chaired Defense Technology Conversion Council o Initial evaluation of TRP proposals underway as this report was being prepared
<p>15) Office of Research and Technology Applications (ORTA)</p>	<p>Mandated by Federal Technology Transfer Act of 1986 (PL 99-502). Technology transition agents within DoD and other federal laboratories</p>	<ul style="list-style-type: none"> o Missions summarized in Table 1.
<p>16) Independent Research & Development (IR&D)</p>	<p>Considered the cost of doing business, the company's cost of R&D not associated with a contract or other Government-funded effort is an overhead charge and is recoverable under the General and Administrative category on all Federal contracts. The Government has no oversight of, nor rights to, the work performed by the company.</p>	<p>IR&D funds may be used to commercialize company technology, including technology licensed from the Government or developed under a CRADA. Further, companies may use IR&D funds as their contributions to CRADAs.</p>

³ORTA Handbook, Federal Laboratory Consortium for Technology Transfer, FLC Consortium Handbook Series No. 2, November 1992, used as the basis for entries 1) through 12). References to "technology transfer" changed to "technology transition", consistent with practice elsewhere within this report. Technology transition mechanisms 13) through 16) were added to the FLC inventory because of their importance for DoD technology transition efforts.

The FLC-defined mechanisms (entries 1 through 12) were developed so that they are applicable, in general terms, for all Executive Branch activities. Because each department has different requirements and legal authorities, some department-specific adaptations and modifications are required to support application of these general mechanisms.

METHODOLOGY

This report uses a definition for "defense laboratories" pursuant to 10 USC 2514:

"(4) In this subsection, the term "defense laboratory" means any laboratory owned or operated by the Department of Defense that carries out research in fiscal year 1993 in an amount in excess of \$50,000,000."

There is, however, no category in standard DoD budgeting/accounting systems for "research". Consequently, the criterion of \$50M or more in Research, Development, Test, and Evaluation (RDT&E) funding was employed. This report only covers laboratories that are directly funded with RDT&E dollars; it does not include laboratories with greater than \$50M of research performed on a reimbursable basis, e.g., a Corps of Engineers laboratory performing reimbursable research for a Defense agency. The laboratories corresponding to this definition are listed in Table 3. Some of the "laboratories" for which information is presented are aggregates of subordinate lab facilities at multiple locations.

TABLE 3. DOD LABORATORIES COVERED IN THIS REPORT

ARMY
Armament Research, Development and Engineering Center (ARDEC)
Aviation Research, Development and Engineering Center (AVRDEC)
Belvoir Research, Development and Engineering Center (BRDEC)
Communications-Electronics Command Research, Development and Engineering Center (CERDEC)
Edgewood Research, Development, and Engineering Center (ERDEC)
Missile Command Research, Development and Engineering Center (MRDEC)
Natick Research, Development and Engineering Center (NRDEC)
Army Research Laboratory (ARL)
Space and Strategic Defense Command (SSDC)
Tank-Automotive Research, Development and Engineering Center (TARDEC)
Waterways Experiment Station (WES)
Walter Reed Army Institute of Research (WRAIR)
NAVY
Naval Research Laboratory (NRL)
Naval Medical Research and Development Center (NMRDC)
Naval Air Warfare Center (NAWC)
Naval Command, Control, and Ocean Surveillance Center (NCCOSC)
Naval Surface Warfare Center (NSWC)
Naval Undersea Warfare Center (NUWC)
AIR FORCE
Armstrong Laboratory
Phillips Laboratory
Rome Laboratory
Wright Laboratory
Air Force Development Test Center
Air Force Flight Test Center

The Defense Technology Transition Working Group chaired by the Office of Technology Transition within OSD/DDR&E was constituted to respond to the specific Congressionally-mandated reporting requirements addressed in this report and to address internal-to-the-department technology transition issues. Key elements in the methodology used by the Working Group in the preparation of this report included:

- o A data call to the Military Departments requesting information concerning the technology transition potential of their laboratories.
- o A second data call requesting information on laboratories' technology transition accomplishments and plans. As noted, the framework for this data call was based on an inventory of mechanisms developed by the Federal Laboratory Consortium for Technology Transition (Table 2).
- o Requests for comments were published in the Federal Register (9 August 1993) and in Commerce Business Daily (23 July 1993) soliciting contributions from universities, colleges, private individuals, industry, and other Federal agencies. (Copies of these requests are reproduced in Appendix B.)

As this is the first report on this subject, there was some unevenness in the responses to the data calls, i.e., some organizations had not routinely collected all of the data requested. Nonetheless, this stands as a comprehensive summary of the available base line data on Federal Defense Laboratory technology transition efforts.

(1) AN ASSESSMENT OF THE POTENTIAL OF EACH DEFENSE LABORATORY TO PROMOTE TECHNOLOGY TRANSITION

As indicated above, the FDLs have technology transition organizations in place, their staffs have been sensitized to the value of broad application of dual use technologies and they have some resources at their disposal to pursue technology transition. Many of them work in cooperation with other Federal agencies, the Federal Laboratory Consortium and the National Technology Transfer Center, for example, so they remain part of the ongoing dialog concerning optimization of the technology transition process. In this context, their "potential" to promote technology transition is high. Indeed, a wide variety of lab/third party interactions is detailed in the annexes to this report for the laboratories operated by the Army (Annex A), Navy (Annex B), and Air Force (Annex C). These characterizations also include summaries of commercialization success stories and future plans. Inasmuch as the efforts of the Ballistic Missile Defense Organization often involve DoD laboratories, their technology transition activities are summarized in Annex D.

Table 4 provides some aggregate highlights of the data in the annexes. An examination of the annexes would show that, on a relative basis, the contributions of different labs are variable. It is not clear whether this is a natural consequence of the mix of activities at the lab, whether some labs are more determined in their efforts or whether the numbers themselves should not be taken too literally. For example, a consortium related to one technology area could have 50 members, each with a separate CRADA. It is not clear whether such an arrangement has more, less or equal "value" to 50 CRADA's in 50 different application areas. Indeed, it is not clear that there are any contemporaneous quantitative measures of the "value" of technology transfer efforts that would allow one to measure the relative success of defense labs or the success of defense labs versus labs in other government agencies. To address these issues, DoD is an active participant in the Interagency Working Group on Measurement and Evaluation under the Interagency Committee on Federal Technology Transfer. Suffice it to say for the present, that the FDLs appear to be vigorously pursuing all the technology transition avenues listed in Table 2.

TABLE 4. SELECTED DEFENSE LABORATORY AND OTHER DOD TECHNOLOGY TRANSITION ACCOMPLISHMENTS, FY 1992⁴

ACTIVITY	FY 1992 ACCOMPLISHMENTS
Number of Active CRADAs	243
Number of Patent Applications Filed	803
Patent Licenses Granted	15
Royalty Income	\$267k
Small Business Innovation Research Funds Obligated	\$174M

⁴These statistics do not capture all relevant DoD technology transition accomplishments during FY 1992, since a special definition has been employed for defense laboratories. Final FY 1993 statistics were not available at the time this report was prepared.

(2) RECOMMENDATIONS FOR IMPROVING FDL TECHNOLOGY TRANSITION

By its nature, technology transition requires person-to-person contact and, as indicated above, the Federal Defense Laboratories have organizations and mechanisms at their disposal to facilitate such contacts. Recommendations for improving the process at the local laboratory level essentially relate to continued optimization and more aggressive pursuit of efforts presently in

At higher organizational levels, generally speaking, any actions which would increase flexibility at the local level, enhance information flow, provide additional organizational or personal incentives and/or mediate regulatory concerns of third party partners would enhance the process. The plan of the Office of Technology Transition/OSD during the present fiscal year is to audit the FDL technology transition processes in the broad sense to establish best practices and lessons learned, to catalyze and lead a search for and discussion of more facile technology transition mechanisms and to promote their implementation through appropriate OSD or congressional action. Issues and/or proposals for improvement which have surfaced for discussion as part of the Working Group deliberations and in response to the request for comments published in the Federal Register and Commerce Business Daily include the following:

- 1) Provide RDT&E funding to support technology transition by establishment of a new program element(s).
- 2) Permit laboratory directors the discretion to fund cooperative research and development from their R&D accounts. This could permit the support of civilian sector technology development with perceived long term spin-on potential.
- 3) Develop streamlined procedures for review and approval of CRADAs and licensing agreements, to include delegation of authority to the maximum extent practicable to the lab director level, drawing on precedents elsewhere within the Federal Government and on current best practice within DoD.
- 4) Implement use of more flexible cooperative agreements by the FDLs. Recently, a new DoD Directive was published which will permit increased use of "Cooperative Agreements and Other Transactions" under Section 2371 of Title 10 to support technology transition. These agreements permit more flexible organizational agreements and patterns of interaction than can be supported using traditional procurement contracts or grants. Under this framework, a DoD laboratory could assist a private firm, on a reimbursable basis, in a program of mutual interest. This type of arrangement has been specifically authorized (by statute) for the U.S. Army Corps of Engineers laboratories. Other specific relationships have been authorized on a case-by-case basis.

- 5) **Place greater emphasis on commercialization potential as a selection criterion when selecting SBIR winners for Phase I and II. The new Small Business Technology Transfer program specifically addresses commercial potential and should be open to DoD laboratory participation.**
- 6) **Use technology transition evaluation criteria for R&D contracting.**
- 7) **Audit the performance of selected ORTAs to establish best practices and lessons learned as a means to ensure more uniform performance across the FDLs.**
- 8) **Establish a DoD technology transfer clearinghouse. Work with the National Technology Transfer Center, the National Technical Information Service and the DoD Defense Technical Information Center to enhance their databases or create a new comprehensive user-friendly database designed to facilitate access to technology transition information.**
- 9) **Emphasize technology transition activities in position descriptions, promotion policies and evaluations of FDL personnel. This is consistent with the standards specified in Section 3710(a)(2-3) of the Stevenson-Wydler Technology Innovation Act.**
- 10) **Establish a DoD recognition/award system for technology transition accomplishments.**
- 11) **Clarify conflict-of-interest policies. Neither the emphasis currently being given to technology transition nor the range of mechanisms being employed were envisioned when the laws and regulations governing conflict-of-interest for Government employees were developed.**
- 12) **Streamline acquisition policies. The length of time and accounting practices required by current contracting regulations are out of sync with the timelines and costs for moving commercial products to market. This makes technology transition more difficult.**

- 13) Clarify product liability concerns. Some industries and firms are particularly risk-averse with respect to product liability considerations. The apparent concern is that they may be held liable for actions over which they had no control as a result of adopting a Government-developed technology. Furthermore, they do not have an in-house record to use in defense against product liability suits when they accept Government-developed technologies.
- 14) Harmonize patent regulations in the Code of Federal Regulations (CFR) with technology transfer objectives. Current patent regulations in the CFR were written prior to some current technology transition legislation. These regulations entail time-consuming delays and conditions, e.g., the 120 day waiting period and requirement to identify the patent license applicant required by 37 CFR 404.7, which make commercialization less attractive to industry.
- 15) Consider standards for royalties for non-Government co-inventors. Concern has been expressed by industry regarding lack of consistent standards for assignments of royalties or other income to non-Government employee co-inventors.
- 16) Grant copyrights to the Federal Government for internally developed intellectual property, such as computer software. Private sector companies are reluctant to commercialize such properties is the absence of competitive protection.

All of these issues will be considered in discussion with R&D executives in the Military departments, with laboratory management and other interested parties, including the Interagency Committee on Federal Technology Transfer.

(3) PERFORMANCE VS. PREVIOUS PLAN

As this is the first report, no previous plan was developed.

(4) RECOMMENDATIONS FOR IMPROVEMENT OF THE FDL DIVERSIFICATION PROGRAM

Recommendations will follow, if appropriate, after substantive discussion of the issues raised above and other issues, as they are identified.

APPENDIX A

PUBLIC LAW 102-484

SEC. 4224. ENCOURAGEMENT OF TECHNOLOGY TRANSFER

(a) **IN GENERAL.**—Subchapter III of chapter 148, as amended by section 4223, is further amended by inserting after section 2513 the following:

"2514. Encouragement of Technology Transfer

"(a) ENCOURAGEMENT OF TRANSFER REQUIRED.—The Secretary of Defense shall encourage, to the extent consistent with national security objectives, the transfer of technology between the laboratories and research centers of the Department of Defense and other Federal agencies, State and local governments, colleges and universities, and private persons in cases that are likely to result in accomplishing the objectives set forth in section 2501(a) of this title.

"(b) EXAMINATION AND IMPLEMENTATION OF METHODS TO ENCOURAGE TRANSFER.—The Secretary shall examine and implement methods, in addition to the encouragement referred to in subsection (a) and the program described in subsection (c), that are consistent with national security objectives and will enable Department of Defense personnel to promote technology transfer.

"(c) PROGRAM TO ENCOURAGE DIVERSIFICATION OF DEFENSE LABORATORIES.—(1) The Secretary of Defense shall examine and implement a program to be known as the Federal Defense Laboratory Diversification Program (hereinafter in this subsection referred to as the 'Program'). The purpose of the Program shall be to encourage greater cooperation in research and production activities carried out by defense laboratories and by private industry of the United States in order to enhance and improve the products of such research and production activities.

(2) Under the Program, the defense laboratories, in coordination with the Office of Technology Transfer in the Office of the Secretary of Defense, shall carry out cooperative activities with private industry in order to promote (by the use or exchange of patents, licenses, cooperative research and development agreements and other cooperative agreements, and other similar mechanisms) the transfer of defense or dual-use technologies from the defense laboratories to private industry, and the development and application of such technologies by the defense laboratories and private industry, for the purpose of the commercial utilization of such technologies by private industry.

(3) The Secretary of Defense shall develop and annually update a plan for each defense laboratory that participates in the Program under which plan the laboratory shall carry out cooperative activities with private industry to promote the transfers described in subsection (b).

"(4) In this subsection, the term "defense laboratory" means any laboratory owned or operated by the Department of Defense that carries out research in fiscal year 1993 in excess of \$50,000,000.

"(5) The Secretary shall coordinate the Program with the National Defense Technology and Industrial Base Council.

"(b) REPORTS ON SURVEY OF LABS AND IMPLEMENTATION OF PROGRAM.-
-Not later than September 30, 1993, the Secretary of Defense shall submit to Congress a report containing the following:

- (1) An assessment of the potential of each defense laboratory to promote the transfers described in section 2414(c) of title 10, United States Code, as amended in subsection (a).
- (2) Recommendations on the manner in which each such laboratory might better promote such transfer.
- (3) A description of the extent to which each such laboratory has implemented effectively the plan established for the laboratory under such subsection (c) during the year preceding the date of the report.
- (4) Recommendations of the Secretary for the improvement of the Federal Defense Laboratory Diversification Program established pursuant to such section 2514(c)."

APPENDIX B

REQUESTS FOR COMMENTS PUBLISHED IN THE FEDERAL REGISTER AND IN COMMERCE BUSINESS DAILY

FEDERAL REGISTER/VOL. 58, NO. 151/MONDAY, AUGUST 9, 1993/NOTICES
42301-42302

DEPARTMENT OF DEFENSE

Office of the Secretary
Defense Technology Transfer Working
Group

AGENCY: Director, Defense Research
and Engineering.

ACTION: solicitation in inputs for
defense technology transfer.

The Defense Technology Transfer Working Group (DTTWG) has been constituted to prepare a Congressional report required by Section 4224, entitled "Encouragement of Technology Transfer" of the National Defense Authorization Act of Fiscal Year 1993. This working group chaired by DDR&E has been established to: (1) identify the technology transfer activities and accomplishments that are currently under way, (2) assess core competencies of major DoD laboratories in dual-use technologies; (3) investigate existing barriers to more effective technology transfer; and (4) provide recommendations on how to streamline the process. The working group includes representatives of the Military Departments, Defense Nuclear Agency, Advanced Research Projects Agency, and Ballistic Missile Defense Organization.

Inputs are welcomed from other Federal agencies, State and local governments, colleges and universities, private individuals, and industry, particularly constructive comments concerning any of the points listed above. The working group needs inputs regarding those aspects of DoD technology transfer which work well today, and recommendations for improvement.

The Defense Nuclear Agency has agreed to serve as the point-of-contact for receipt of industry comments. Please provide inputs by 30 August 1993 to: Defense Nuclear Agency; Attn: Dr. C. STUART Kelley, OTA/DTT; 6801 Telegraph Road, Alexandria, VA 22310-3398.

Dated: August 4, 1993.

L.M. Byaum,
Alternate OSD Federal Register Liaison
Officer, Department of Defense.

**Defense Nuclear Agency, 6801 Telegraph Road, Alexandria, VA
22310-3398**

A - SOURCES SOUGHT FOR INPUTS FOR DEFENSE TECHNOLOGY TRANSFER POC Dr. C. Stuart Kelley, OTA/DTT, 6801 Telegraph Road, Alexandria, VA 22310-3398. The Defense Technology Transfer Working Group (DTTWG) has been constituted to prepare a Congressional report required by Section 4224, entitled "Encouragement of Technology Transfer" of the National Defense Authorization Act for Fiscal Year 1993. This working group chaired by DDR&E has been established to: (1) identify the technology transfer activities and accomplishments that are currently under way; (2) assess core competencies of major DoD laboratories in dual-use technologies; (3) investigate existing barriers to more effective technology transfer; and (4) provide recommendations on how to streamline the process. The working group includes representatives of the Military Departments, Defense Nuclear Agency, Advanced Research Projects Agency, and Ballistic Missile Defense Organization. Inputs are welcomed from other Federal agencies, State and local governments, colleges and universities, private individuals, and industry, particularly constructive comments concerning any of the points listed above. The working group needs inputs regarding those aspects of DoD technology transfer which work well today, and recommendations for improvement. The Defense Nuclear Agency has agreed to serve as the point-of-contact for receipt of industry comments. Please provide inputs by 23 Aug 93 to: Defense Nuclear Agency, ATTN: Dr. C. Stuart Kelley, OTA/DTT, 6801 Telegraph Road, Alexandria, VA 22310-3398. Reference Synopsis No. 93-100 (0202)