99TH CONGRESS
2d Session

SENATE

REPORT
99-283

FEDERAL TECHNOLOGY TRANSFER ACT OF 1986

APRIL 21, 1986.—Ordered to be printed

Mr. DANFORTH, from the Committee on Commerce, Science, and Transportation, submitted the following

REPORT

[To accompany H.R. 3773]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (H.R. 3773) to amend the Stevenson-Wydler Technology Innovation Act of 1980 to promote technology transfer by authorizing Government-operated laboratories to enter into cooperative research agreements and by establishing a Federal Laboratory Consortium for Technology Transfer within the National Science Foundation, and for other purposes, having considered the same, reports favorably thereon with an amendment in the nature of a substitute and recommends that the bill do pass.

PURPOSE OF THE BILL

The purpose of this bill is to improve the transfer of commercially useful technologies from the Federal laboratories and into the private sector. It amends the Stevenson-Wydler Technology Innovation Act of 1980 to allow the Federal laboratories to enter into cooperative research with private industry, universities, and others; it establishes a dual employee award system of royalty sharing and cash awards; and it establishes the Federal Laboratory Consortium for Technology Transfer.

BACKGROUND AND NEEDS

The Federal Government will spend approximately $18 billion in fiscal year 1986 on research and development at over 700 Federal laboratories. These laboratories employ one-sixth of the Nation's scientists and engineers. Although their main purpose is to serve government needs, these laboratories also have produced over 28,000 patents. Many of these inventions may have commercial ap-

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plications. Over the years, however, only approximately 5 percent of Federal patents have been licensed.

There is broad agreement that we can and should improve the flow of technology from these laboratories to the private sector. The National Governors' Association, for example, issued a report in 1983 critical of the lack of cooperation or collaboration between the Federal laboratories and industry or universities.[1]

In addition, in 1982, the White House Science Council created a Federal Laboratory Review Panel, chaired by David Packard. The Panel surveyed both the Government-operated and contractor-operated Federal laboratories. In its 1983 report, the Panel made a number of findings related to the laboratories' missions, personnel, funding, management, and interaction with universities, industry, and outside groups. In its discussion of interaction, the report states:

> The United States can no longer afford the luxury of isolating its government laboratories from university and industry laboratories. Already endowed with the best research institutions in the world, this country is increasingly challenged in its military and economic competitiveness. The national interest demands that the Federal laboratories collaborate with universities and industry to ensure continued advances in scientific knowledge and its translation into useful technology. The Federal laboratories must be more responsive to national needs.
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> The ultimate purpose of Federal support for R&D is to develop the science and technology base needed for a strong national defense, for the health and well-being of U.S. citizens, and for a healthy U.S. economy. Federal laboratories should recognize that they are an important part of the partnership with universities and industry in meeting this goal. A strong coooperative relationship must exist between Federal laboratories, universities, industry and other users of the laboratories' research results.
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> Federal laboratories have felt traditionally that they are part of the government, committed to its highest service and totally dependent on it for support. They perceive industry as an awkward partner with a different value system. Although the degree of interaction with universities and industry varied among the laboratories visited, the Panel feels that this interaction could be increased at all Federal laboratories.[2]

The Panel report concluded that "Federal laboratories should encourage much more access to their facilities by universities and industry," and that "R&D interactions between Federal laboratories and industry should be greatly increased by more exchange of knowledge and personnel, collaborative projects, and industry funding of laboratory work. . . ."[3]

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[1] Technology and Growth, State Initiatives in Technological Innovation National Governors' Association, Sharwin Cowan, (Washington, DC), 1983.

[2] Report of the White House Science Council Federal Laboratory Review Panel, at 11 (1983).

[3] Supra, at 12.

Congress has enacted several laws designed to improve technology transfer. One of the first was the Bayh-Dole Patent and Trademark Amendments of 1980 (Public Law 96-517). As passed, it did not apply to Federal laboratories. Instead, it gave nonprofit organizations (especially universities) and small businesses rights to inventions made under Federal grants and contracts. The new patent policy led to increased efforts by universities to report, license, and develop inventions. In 1984, Congress extended the new policy to Federal laboratories operated by universities and nonprofit corporations (Public Law 98-620).

THE STEVENSON-WYDLER ACT

Also in 1980, Congress enacted the Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96-480). The act makes the transfer of Federal technology to industry, States, and localities a national policy and the duty of each laboratory. It set aside 0.5 percent of the agencies' research budgets to fund technology transfer. This set-aside may be waived, but the agency must show that it is otherwise accomplishing technology transfer.

The act created Offices of Research and Technology Applications in the larger laboratories to evaluate new technologies, to promote the transfer of those with commercial potential, and to make laboratory resources more available to those outside the laboratory. It also created the Center for the Utilization of Federal Technology in the Department of Commerce as a clearinghouse for information on Federal inventions. Agencies use the resources of the Center for patent licensing and other assistance in transferring technology. The Department of Commerce has placed the Center in the National Technical Information Service. The Center was intended to provide a networking function among the Offices of Research and Technology Applications, but has failed to do so.

Otherwise, most of the Stevenson-Wydler Act has not been implemented. Other major provisions in the act: (1) establish an Office of Industrial Technology, the duties of which are being performed by the Office of Productivity, Technology, and Innovation, in the Department of Commerce; (2) establish a grant program to fund Centers for Industrial Technology at universities to do research of interest to industry (an appropriation for this program in 1981 was rescinded, and the Centers have not been funded since); (3) establish a National Industrial Technology Board, which has never existed; and (4) establish a National Technology medal as a counterpart to the National Science Medal. The President awarded these medals for the first time in 1985 and awarded a second set in March 1986.

COOPERATIVE RESEARCH AND DEVELOPMENT

Despite the Bayh-Dole Act as amended in 1984 and the Stevenson-Wydler Act, the Federal laboratories still face problems and disincentives in trying to transfer technology. This is especially true for those laboratories operated by the Federal Government, as opposed to those operated by contractors. Many of them have no clear legal authority to enter into cooperative research projects. The Secretary of Commerce, in his February 1984 report to the

President and Congress on operations under the Stevenson-Wydler Act stated:

> It appears to be no accident that technology complexes such as Silicon Valley, Route 128, Research Triangle, and Princeton's Forrestal Center have evolved around major universities. Direct access to the university and the university's right to transfer the results of its research on an exclusive basis is an important incentive for business to invest in the further development and commercialization of new technologies. In contrast, Federal laboratories generally have not served as nuclei for similar arrangements. They often perceive themselves as unable to enter into cooperative development arrangements because of organizational and legal restraints. This is one reason why national reviews of Federal laboratories have concluded that too little of the results of laboratory research is used in the private sector.[4]

To improve technology transfer, the Federal laboratories need clear authority to do cooperative research, and they need to be able to exercise that authority at the laboratory level. Agencies need to delegate to their laboratory directors the authority to manage and promote the results of their research. A requirement to go to agency headquarters for approval of industry collaborative arrangements and patent licensing agreements can effectively prevent them. Lengthy headquarters approval delays can cause businesses to lose interest in developing new technologies.

THE FEDERAL LABORATORY CONSORTIUM FOR TECHNOLOGY TRANSFER

The Federal Laboratory Consortium is an existing ad hoc group of scientists who form a network among the Federal laboratories to transfer technology. It began within Department of Defense laboratories in 1971. It now consists of almost 300 laboratories from 11 agencies. The laboratories appoint employees as representatives to the consortium. The representatives are often the Office of Research and Technology Applications officers at the laboratories. The Consortium is thus an association of those responsible for technology transfer at the working level.

The Consortium is funded by voluntary contributions from the member-agencies. For most of the last decade it funded a program manager at the National Science Foundation who acted as a Washington coordinator with the agencies. The Consortium has not been able to fund this office consistently for the last few years, and the Foundation no longer makes the office space and support available.

LEGISLATIVE HISTORY

The Science, Technology, and Space Subcommittee held three hearings, on April 17, May 2, and July 1, 1985, on technology transfer and the effect of new technologies on economic competitiveness. As a result of the hearings, Senator Gorton introduced S. 1914 on

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[4] The Stevenson-Wydler Technology Innovation Act; Report to the President and Congress from the Secretary of Commerce; February 1984, p. 24.

December 9, 1985, with Senators Danforth, Riegle, Heflin, Gore, Rockefeller, Dole, Hollings, Inouye, D'Amato, Simon, Bingaman, Dixon, Pressler, and Bumpers.

S. 1914 incorporates other legislation designed to allow Federal laboratories to do cooperative research. In the 98th Congress the Senate Committee on the Judiciary reported S. 2172, which included provisions allowing cooperative research and royalty sharing, among other things, but which were removed before the legislation passed the full Senate (Public Law 98-620). Senators Dole and Danforth introduced these provisions as S. 65 in the 99th Congress. Most of S. 65 is included in S. 1914, along with provisions creating the Federal Laboratory Consortium for Technology Transfer and other amendments to the Stevenson-Wydler Act.

The House passed a bill parallel to S. 1914; H.R. 3773, by unanimous vote on December 9, 1985. Both H.R. 3773 and S. 1914 were referred to the Senate Committee on Commerce, Science, and Transportation. On March 13, 1986, the Committee ordered H.R. 3773 reported favorably, with an amendment in the nature of a substitute. The language of the amendment reported by the Committee is that of S. 1914, with minor amendments.

Summary of Major Provisions

As reported, H.R. 3773 would:

1. Improve the technology transfer provisions of the Stevenson-Wydler Act (section 11) by bringing them into conformity with actual practice and by eliminating some waivers;
2. Create the Federal Laboratory Consortium for Technology Transfer, located at the National Bureau of Standards and funded for 5 years through a set-aside equal to 0.005 percent of each agency's research and development budget spent at its laboratories;
3. Permit agencies to allow their laboratories to enter into cooperative research agreements with industry, universities, and others, and to negotiate patent licensing agreements;
4. Direct the head of agencies with large laboratories to use existing law to institute a cash awards program to reward scientific, engineering, and technical personnel; and
5. Require that agencies give at least 15 percent of royalties received from licensing an invention to the inventor, and distribute the balance of any royalties among its laboratories.

Estimated Costs

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, April 8, 1986.

Hon. JOHN C. DANFORTH,
Chairman, Committee on Commerce, Science, Transportation, U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has reviewed H.R. 3773, the Federal Technology Transfer Act of 1986, as amended and ordered reported by the Senate Committee on Commerce, Science, and Transportation, March 13, 1986. We estimate that enactment of this bill could result in annual costs to the federal government of up to $2.5 million.

The bill would amend the Stevenson-Wydler Technology Innovation Act of 1980 and would establish a number of procedures to encourage the development of technologies by laboratories owned or operated by the federal government, to facilitate the transfer of such technologies to the public, and to promote cooperation between those laboratories and the private sector. These activities would be funded by a transfer of 0.005 percent of the research and development budgets of federal laboratories in each of fiscal years 1987 through 1991. To the extent that future appropriations may be increased to accommodate the transfer, such activities may result in additional annual costs of about $900,000.

This bill would also require an agency to pay to an inventor at least 15 percent of the royalties deriving from the invention, if the invention was produced by an agency employee using agency resources. The balance of the royalties would be distributed among the agency's laboratories. These payments would be subject to appropriations beginning in fiscal year 1988. Currently, these royalties are paid to the U.S. Treasury. About $1.6 million in royalties were collected in fiscal year 1985.

CBO estimates that payments to inventors and laboratories would result in additional outlays by the federal government of about $1.6 million in fiscal year 1987; this would occur without appropriation action. Additional outlays of up to $1.6 million could occur in each year thereafter, but would be subject to appropriation action.

No costs would be incurred by state or local governments as a result of enactment of this bill.

If you wish further details on this estimate, we will be pleased to provide them.

Sincerely,

RUDOLPH G. PENNER, *Director.*

REGULATORY IMPACT STATEMENT

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported.

NUMBER OF PERSONS COVERED

This legislation permits the Federal laboratories to do cooperative research with outside parties, it codifies an existing network of

laboratory employees, and it establishes an employee award system for Federal employees. It does not require new regulations. The legislation anticipates that a significant number of businesses, universities, State agencies, and others will choose to do cooperative research with the laboratories. They will do so voluntarily, however. The provisions allowing agencies to delegate authority should reduce regulatory burdens on industries working with the laboratories.

ECONOMIC IMPACT

This legislation authorizes no new Federal spending. It has two provisions with potential economic effects: (1) A set-aside of 0.005 percent of an agency's research and development budget that it spends on its laboratories; and (2) a pass-through of royalty income to laboratories. Royalties presently go into the Treasury. Both of these economic effects are small (less than $1 million estimated for fiscal year 1987 for (1), above, and $1.6 million for fiscal year 1986 for (2), above). Both expenditures, by increasing incentives to transfer Federal technology to the private sector, should yield benefits to the economy as a whole.

PRIVACY

Private parties that choose to do cooperative research with Federal laboratories may have to report inventions, patents, and royalties, give the laboratories access to research results, and have other similar intrusions on their privacy. These will be voluntary arrangements, however, and the terms will be negotiated before entering into the agreements.

PAPERWORK

This legislation requires a report to Congress from the Department of Commerce every 2 years on the use of the new authorities under the act. It also requires Federal agencies to report on their receipt of and disposition of royalty income as part of their regular budget submissions.

SECTION-BY-SECTION ANALYSIS

SECTION 1

This section provides that this act may be cited as the "Federal Technology Transfer Act of 1986".

SECTION 2

This section contains amendments to the Stevenson-Wydler Technology Innovation Act of 1980. Section 2(a) amends the policy statement to provide that technology transfer efforts should be treated positively in evaluations and promotions of Federal employees. The Committee does not intend that agencies would be required by this section to change their job descriptions and formal employee evaluation and promotion forms.

Section 2(b) changes the size of a laboratory which must have one full-time staff member in its Office of Research and Technology

Applications from a laboratory with a $20 million annual budget to one with 200 or more scientists, engineers, and technicians. It eliminates the waiver of this requirement, but it also changes the requirement from "one professional individual full-time" to "one or more full-time equivalent positions" for those laboratories that use a team approach.

This subsection adds a new function to the Offices of Research and Technology Applications: that of participating with regional, State, and local government programs to transfer technology for the benefit of the area in which the laboratory is located. There is a great deal of activity at the State and local level to promote technological development. This legislation is consistent with the administration's policy to encourage these efforts. It envisions a decentralized approach to technology transfer, in which the laboratories contribute to regional development.

Section 2(c) changes the name of the Center for the Utilization of Federal Technology to the National Technical Information Service, and clarifies its duties. It eliminates the duty to coordinate the activities of the Offices of Research and Technology Applications, which is transferred to the Federal Laboratory Consortium. These changes are designed to reduce confusion and to reflect reality. The Committee intends that the Center for the Utilization of Federal Technology continue to perform its present functions. The Center is within the National Technical Information Service, however, and the Committee believes it is unnecessarily confusing to include the name of the subunit in law.

This subsection also changes the recipient of biannual reports required by the technology transfer provisions in the Stevenson-Wydler Act from the Center for the Utilization of Federal Technology to the Secretary of Commerce.

SECTION 3

This section adds a new section to the Stevenson-Wydler Act to establish the Federal Laboratory Consortium for Technology Transfer. This section establishes the Consortium's duties and membership; provides that the Director of the National Bureau of Standards shall provide it with administrative services on a reimbursable basis; and provides that each agency shall provide the Consortium with an amount equal to 0.005 percent of its laboratories' research and development budgets, which will total approximately $1 million per year for 1987 through 1991.

This funding is intended to be temporary and is not intended to be reauthorized in 1991. Agencies and laboratories may supplement this funding through voluntary contributions, and the Committee intends that voluntary contributions will provide full funding after 1991, including reimbursing the National Bureau of Standards.

The duties of the Consortium include training Federal laboratory employees in technology transfer with the consent of the laboratories involved; helping agencies with technology transfer; providing a clearinghouse at the laboratory level for outside requests for technical assistance; helping laboratories establish programs to provide technical assistance to local communities; and facilitating com-

munication both among the Offices of Research and Technology Applications and between the Offices and outside parties.

The Committee intends that the Consortium exist within the bounds of policy set by the various agencies with Government laboratories. None of its responsibilities is intended to interfere with each agency's ability to set policy for its own laboratories or with the Offices of Research and Technology Applications officers' ability to work directly with each other and with potential users of federal technology. Although the legislation provides for an office at the National Bureau of Standards, the Committee does not intend for the Consortium to change its decentralized organization. Agency heads and laboratory directors will designate the representatives to the Consortium, and they should continue to be, generally, the officer of the Office of Research and Technology Applications. For smaller laboratories, without full-time professionals in these offices, agency heads may choose to designate a single Consortium representative for more than one laboratory.

H.R. 3773 as it passed the House of Representatives places the Consortium at the National Science Foundation. The Committee substitute places the Consortium at the National Bureau of Standards because of the Bureau's extensive contacts and experience with industry. The Committee expects the Consortium to select a person to serve as its Washington, DC representative, to maintain liaison with interested agencies and with the national offices of various common-interest groups, such as trade associations and associations of State and local public officials. The Consortium may obtain additional office space in Washington, DC to facilitate this liaison function; any agency willing to provide such space, on a no-cost or cost-reimbursed basis, may do so.

The fund transfers for the Consortium are to be made to the National Bureau of Standards at the start of each fiscal year in which they are required. These funds should not be subject to controls imposed on National Bureau of Standards funds, such as personnel ceilings and domestic travel limits. The Committee expects the Bureau to transfer funds as requested by the Consortium. The Bureau is not to be held responsible for performing the duties of the Consortium or accountable for the actions of the Consortium.

SECTION 4

This section amends the Stevenson-Wydler Act to clarify the duties of the Secretary of Commerce and to require a biannual report to Congress and the President on how Federal agencies are using the authorities established under this act.

The Secretary of Commerce is to make the Department of Commerce's expertise available to interested agencies to help those agencies make best use of the authorities granted under this act. The Department of Commerce will develop and disseminate techniques for evaluating the commercial potential of inventions, model agreements covering the disposition of inventions for use in establishing cooperative arrangements, and advice and assistance for laboratory directors.

SECTION 5

This section adds a new section to the Stevenson-Wydler Act authorizing agencies to permit their Government-operated laboratories to enter into cooperative research and development arrangements with private industry, other units of Government, universities, or other persons. It authorizes a broad range of cooperative research and development arrangements where there is a mutual interest between the laboratory mission and other levels of government or private sector organizations.

Section 5 defines cooperative agreements as those in which the Federal Government provides resources, but not funds, along with a collaborating party, toward the conduct of specific research or development which is consistent with the missions of the agency. Nevertheless, this section is not intended to prohibit Federal financial contributions as might be authorized and appropriated by other acts of Congress.

To effectuate cooperative research agreements, the section gives Federal laboratories the authority to accept funds, services, and property from the collaborating parties; to agree to grant in advance licenses to patents on inventions made by Federal employees; to waive the Government's right of ownership in inventions made by an employee of a collaborating party; and to permit employees or former employees to help commercialize their inventions, to the extent this is consistent with agency requirements.

Section 5, as well as the other sections of H.R. 3773, make no changes in the conflict of interest laws affecting Federal employees or former Federal employees. The Committee does not believe that this section releases former employees from conflict of interest restraints in current law, and does not intend this result. Agencies have the flexibility under this section to establish standards for cooperative research arrangements which prevent former employees from benefitting unjustly from their former employment. Conversely, laboratories may need the assistance of former employees to develop the commercial potential of inventions, and this provision is intended to allow their participation according to agency standards.

In addition, section 5 does not alter the patent laws to give existing or former Federal employees ownership of inventions discovered in the course of Federal employment. A former employee may file for a patent on an invention made as a Federal employee under current law. Under Executive Order No. 10,096, 15 Fed. Reg. 389 (1950), however, Federal employees must report and assign the rights to all inventions made in the course of their employment to the Federal Government.

The authorities conveyed by section 5 are permissive. Section 5 authorizes but does not require agencies to extend these decentralized authorities to their Government-operated laboratories. Moreover, whenever an agency does extend these authorities to a laboratory director, the director retains discretion to decide into which cooperative agreements, if any, to enter. The director may reject any offer and may use decision criteria, and set such terms and conditions, as the director sees fit, subject only to the requirements set forth in section 5, other applicable law, and agency directives.

A director may, for example, give priority to proposed cooperative agreements which, in the judgment of the director, are most likely to benefit employment in the United States or the technical development of U.S. companies.

Section 5 also allows agencies to permit their laboratories to negotiate and assign or issue patent licenses on inventions the Government owns. Industrial firms may be attracted to a laboratory by interest in an existing invention, and the laboratories need the authority to negotiate directly with firms that may wish to enter into cooperative arrangements to develop the invention further.

Often, collaboration between a laboratory and some other organization can be expected to lead to future inventions. All parties should be clear on who will have what rights to future inventions when the work begins. This amendment allows Federal laboratories to assign rights in future inventions to the cooperating, outside parties. It is anticipated that agencies will normally retain for the Government a paid license to use or have future inventions used in the Government's behalf.

Section 5 defines a laboratory as a "facility or group of facilities owned, leased, or otherwise used by a Federal agency, a substantial purpose of which is the performance of research and development by employees of the Federal Government." This is a broad definition which is intended to include the widest possible range of research institutions operated by the Federal Government.

This definition would include, for example, the Earth Resources Observation System Data Center, which the U.S. Geological Survey operates in Sioux Falls, SD. Universities, other Federal agencies, and private companies are interested in establishing a cooperative research institute there for remote sensing applications. The Center would clearly have the authority to participate under this legislation.

Most of the cooperative arrangements and patent assignments are expected to be forms of cooperative agreements as established by section 6305 of title 31, United States Code. Although these cooperative research and development arrangements must be consistent with the missions of the laboratories, the primary purpose of the agreements is to take technologies that originate in the laboratories and to stimulate or support their development and commercialization.

It is expected that these authorities will open an entirely new form of benefit to State and local governments by allowing the Federal laboratories to become active partners and contributors of technologies to promote regional economic development. Where desired, the contributions may be made through foundations or organizations established to advance State and local economic activity, such as the Rio Grande Technology Foundation in New Mexico.

SECTION 6

This section adds a new section 13 to the Stevenson-Wydler Act which establishes a dual employee award system. First, it requires Federal agencies that do a substantial amount of research and development to set up a cash award system to reward scientists and technicians for inventions, innovations, or other outstanding contri-

butions. It directs agencies to use existing authority or multiple authorities for these awards. For example, under section 4502(a) of title 5, United States Code, an agency may award an employee up to $10,000. Section 4502(b) of title 5, United States Code, allows awards up to $25,000 with the concurrence of the Office of Personnel Management. Section 4504 of title 5, United States Code, allows Presidential awards of unlimited amounts. The National Aeronautics and Space Administration has additional authority to award employees up to $100,000 under the National Aeronautics and Space Act of 1958 (42 U.S.C. 2458).

Second, it requires a direct payment of at least fifteen percent of royalties received for the right to use Government-owned inventions to the Federal employee-inventor(s). The Bayh-Dole Act has required universities to share royalties for Federal funded research since 1980. The universities have found royalty sharing with their inventors to be a powerful incentive which increases the number of inventions reported and encourages inventors to contribute to their commercialization. The committee believes this provision will accomplish the same end in Federal laboratories.

The Committee regards 15 percent as a minimum amount and believes the Federal laboratories will learn from the university experience and increase this percentage. The Committee recognizes, however, that agency cultures differ, and agencies such as the National Aeronautics and Space Administration, which has an active employee award system, may want to keep royalty sharing at this minimum.

The new section 13(b) allows Federal agencies to retain royalty income rather than return it to the Treasury. Agencies must transfer the balance of royalties, after paying inventors, to their Government-operated laboratories, with a substantial percentage going to the laboratory which produced the invention. The laboratory may keep all royalties it receives, up to five percent of its annual budget, and 25 percent of royalties in excess of the 5-percent limit. The laboratory may use the income for mission-related research and development, for education programs for laboratory employees, for employee awards, for scientific exchange, and to pay patenting and other costs.

This section is intended to provide predictable incentives to Federal researchers and their laboratory managers to develop the commercial potential of their work. This incentive approach is an innovation in the Federal Government which should be monitored. Accordingly, the new section 13 includes three provisions to insure that royalty income over and above a laboratory's normal budget does not adversely affect the laboratory's primary mission.

First, the new section 13(b)(2) limits the amount of royalties a laboratory may retain in relation to its annual budget, as discussed above. Second, new section 13(d) requires agencies to report on royalty receipts and dispositions to Congress in their annual budget submissions. Third, new section 13(b) requires that, beginning in fiscal year 1988, royalties shall be subject to appropriations.

Beginning in fiscal year 1988, the Committee anticipates that agencies will submit reasonable upper estimates of the royalty amounts they anticipate receiving. The Committee intends that these estimates will be appropriated in addition to regular agency

budgets. The Committee intends that royalty or other income from inventions received after the enactment of this act and before fiscal year 1988 shall be retained by the agency and distributed as provided in this act.

The new section 13(b)(2)(E) provides that agencies may use their royalty income to pay patenting costs and other expenses incidental to managing inventions, including the fees or costs of services of other agencies or other services. In some cases, for example, agencies make arrangements with the National Technical Information Service whereby the Service provides patent and licensing services. This new section allows agencies, if they and the Service agree, to pay for the services out of royalties.

The Committee does not intend, however, that the new section 13 be interpreted as eliminating the Service's existing authority to accept payment for services through an alternative mechanism of user charges. Because the Service's patent licensing program is expected to be increasingly self-sustaining, the Service would run into severe cash-flow problems if it were forced to rely only on delayed payments from a royalty stream. Moreover, the Committee intends that any such user charges shall continue to be exempt from the appropriations process. Therefore, the term "royalties or related income" in new section 13(b)(2) means funds paid by a licensee or assignee for rights to an invention but does not include user charges (as defined in OMB circular No. A–25) paid by such licensee or assigned for retention by the Service as reimbursement for costs of developing licenses or assignments, including payments for foreign patent filing, maintenance, or other costs.

Some representatives of businesses that employ scientists fear that establishing royalty sharing for Federal employees will set a precedent for legislation mandating royalty sharing for private inventors. The Committee believes that the government is different from private industry in that it cannot promote or reward inventors as easily, and that more inventions will be reported and developed if Federal employees have a guaranteed share in potential royalties. The Committee does not intend for this provision affecting Government employees to set a precedent for private employees.

Section 6 includes cash award provisions in addition to royalty sharing so that agencies do not neglect productive employees (and laboratories) who either do not work in commercially productive areas or who contribute to, but do not have their names on, patents. The Committee intends that a substantial percentage of royalties go to the laboratories that produce the inventions. The Committee intends that "a substantial percentage" mean more than half and perhaps all of the royalties. Nevertheless, section 6 allows an agency to distribute royalties to non-commercially productive laboratories as well as those that produce inventions that are transferred to the private sector. The report of the Packard panel emphasized the need for laboratory managers to have discretionary funds to invest in innovative activities in the laboratory. This need exists for these laboratories as well as for those doing commercially applicable work.

SECTION 7

This section authorizes Federal agencies to transfer rights of ownership in an invention to the inventor if the agency does not intend to file for a patent license on the invention or otherwise to move the invention into the private sector. This section is intended to codify the policies expressed in Executive Order No. 10,096, 15 Fed. Reg. 389 (1950).

Under section 7, agencies would file Statutory Invention Disclosures for inventions they determine to have no commercial potential. In some cases, however, the inventor may not agree with this determination. This provision allows the invention to be given to the inventor for patenting and commercial exploitation. It is expected that when this is done, the government will retain its normal right to use the invention without paying royalties. Laboratory employees may also voluntarily transfer to the laboratory the ownership of an invention made outside of assigned duties for patenting and promotion.

SECTION 8

This section contains technical amendments to the Stevenson-Wydler Act. They are generally designed to bring the act into conformity with existing practice. These amendments include repealing the National Industrial Technology Board and changing the name of the Centers for Industrial Technology to Cooperative Research Centers, the name the National Science Foundation uses. There is no authorization for these Centers, however.

Section 8 also amends the Stevenson-Wydler Act to change references to the Office of Industrial Technology to the Assistant Secretary for Productivity, Technology, and Innovation. The Assistant Secretary's office has been performing these functions. The Committee is aware that the administration has proposed reducing the budget of the Assistant Secretary's office. The changes in this bill are not intended to serve as a reauthorization of this office, which is authorized under separate, annual legislation. If Congress follows the administration's proposal, the Committee notes that the Assistant Secretary's office will be fully staffed in 1987, and will continue to exist as a small, executive office after 1987. Therefore, it is not inconsistent with the administration's proposal to bring the act into conformity with existing practice.

The Committee initially considered reauthorizing the Stevenson-Wydler Act, which had a 5-year authorization which expired in 1985. The administration strongly opposed reauthorization. In two hearings in April and May 1985, however, the Department of Commerce expressed its continuing support for the technology transfer provisions in the act (section 11), and its belief that, because they are funded through a set-aside, they did not need to be reauthorized. Department of Commerce officials also stated their intention to fund other provisions of the Act, such as the National Technology Medal and duties being performed by the Office of Productivity, Technology, and Innovation, out of general Department of Commerce funding. The Committee concluded reauthorization would be needed for only those portions of the act, specifically sections 6, 7, and 10, which had never been implemented.

The Committee believes that a separate authorization of sections 6, 7, and 10 of the Stevenson-Wydler Act is not necessary at this time. The Committee intends that the Department of Commerce continue to fund sections 5, 9, 11, 12, and 13 out of its standing authorizations.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new material is printed in italic, existing law in which no change is proposed is shown in roman):

THE STEVENSON-WYDLER TECHNOLOGY INNOVATION ACT OF 1980

Section 3 of that Act

SEC. 3. PURPOSE.

It is the purpose of this Act to improve the economic, environmental, and social well-being of the United States by—

(1) establishing organizations in the executive branch to study and stimulate technology;

(2) promoting technology development through the establishment of [centers for industrial technology] *cooperative research centers*;

(3) stimulating improved utilization of federally funded technology developments by State and local governments and the private sector;

(4) providing encouragement for the development of technology through the recognition of individuals and companies which have made outstanding contributions in technology; and

(5) encouraging the exchange of scientific and technical personnel among academia, industry, and Federal laboratories.

Section 4 of that Act

SEC. 4. DEFINITIONS.

As used in this Act, unless the context otherwise requires, the term—

(1) "Office" means the Office of [Industrial Technology] *Productivity, Technology, and Innovation* established under section 5 of this Act.

(2) "Secretary" means the Secretary of Commerce.

(3) ["Director" means the Director of the Office of Industrial Technology], *"Assistant Secretary" means the Assistant Secretary for Productivity, Technology, and Innovation* appointed pursuant to section 5 of this Act.

(4) "Centers" means the [Centers for Industrial Technology] *Cooperative Research Centers* established under section 6 or section 8 of this Act.

(5) "Nonprofit institution" means an organization owned and operated exclusively for scientific or educational purposes, no part of the net earnings of which inures to the benefit of any private shareholder or individual.

[(6) "Board" means the National Industrial Technology Board established pursuant to section 10.]

[7] (6) "Federal laboratory" means any laboratory, any federally funded research and development center, or any center established under section 6 or section 8 of this Act that is [owned and funded] *owned, leased, or otherwise used by a Federal agency and funded* by the Federal Government, whether operated by the Government or by a contractor.

[8] *(7)* "Supporting agency" means either the Department of Commerce or the National Science Foundation, as appropriate.

(8) "Federal agency" means any executive agency as defined in section 105 of title 5, United States Code, and the military departments, as defined in section 102 of such title.

(9) "Invention" means any invention or discovery which is or may be patentable or otherwise protected under title 35, United States Code, or any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.).

(10) "Made", when used in conjunction with any invention, means the conception or first actual reduction to practice of such invention.".

Section 5 of that Act

SEC. 5. COMMERCE AND TECHNOLOGICAL INNOVATION.

(a) GENERAL.—The Secretary shall establish and maintain an Office of [Industrial Technology] *Productivity, Technology, and Innovation* in accordance with the provisions, findings, and purposes of this Act.

(b) [DIRECTOR] *ASSISTANT SECRETARY.*—The President shall appoint, by and with the advice and consent of the Senate, [a Director of the Office, who shall be compensated at the rate provided for level V of the Executive Schedule in section 5316 of title 5, United States Code.] *an Assistant Secretary for Productivity, Technology, and Innovation.*

(c) DUTIES.—The Secretary, through [the Director] *the Assistant Secretary,* on a continuing basis, shall—

(1) determine the relationships of technological developments and international technology transfers to the output, employment, productivity, and world trade performance of United States and foreign industrial sectors;

(2) determine the influence of economic, labor and other conditions, industrial structure and management, and government policies on technological development in particular industrial sectors worldwide;

(3) identify technological needs, problems, and opportunities within and across industrial sectors that, if addressed, could make a significant contribution to the economy of the United States;

(4) assess whether the capital, technical and other resources being allocated to domestic industrial sectors which are likely to generate new technologies are adequate to meet private and

social demands for goods and services and to promote productivity and economic growth;

(5) propose and support studies and policy experiments, in cooperation with other Federal agencies, to determine the effectiveness of measures with the potential of advancing United States technological innovation;

(6) provide that cooperative efforts to stimulate industrial innovation be undertaken between [the Director] *the Assistant Secretary* and other officials in the Department of Commerce responsible for such areas as trade and economic assistance;

(7) consider government measures with the potential of advancing United States technological innovation and exploiting innovations of foreign origin; and

(8) publish the results of studies and policy experiments.

(d) REPORT.—The Secretary shall prepare and submit to the President and Congress, within 3 years after the date of enactment of this Act, a report on the progress, findings, and conclusions of activities conducted pursuant to sections 5, 6, 8, 11, 12, and 13 of this Act *as then in effect* and recommendations for possible modifications thereof.

Section 6 of that Act

[SEC. 6. CENTERS FOR INDUSTRIAL TECHNOLOGY.] *SEC. 6. COOPERATIVE RESEARCH CENTERS.*

(a) ESTABLISHMENT.—The Secretary shall provide assistance for the establishment of [Centers for Industrial Technology] *Cooperative Research Centers.* Such Centers shall be affiliated with any university, or other nonprofit institution, or group thereof, that applies for and is awarded a grant or enters into a cooperative agreement under this section. The objective of the Centers is to enhance technological innovation through—

(1) the participation of individuals from industry and universities in cooperative technological innovation activities;

(2) the development of the generic research base, important for technological advance and innovative activity, in which individual firms have little incentive to invest, but which may have significant economic or strategic importance, such as manufacturing technology;

(3) the education and training of individuals in the technological innovation process;

(4) the improvement of mechanisms for the dissemination of scientific, engineering, and technical information among universities and industry;

(5) the utilization of the capability and expertise, where appropriate, that exists in Federal laboratories; and

(6) the development of continuing financial support from other mission agencies, from State and local government, and from industry and universities through, among other means, fees, licenses, and royalties.

(b) ACTIVITIES.—The activities of the Centers shall include, but need not be limited to—

(1) research supportive of technological and industrial innovation including cooperative industry-university [basic and applied] research;

(2) assistance to individuals and small businesses in the generation, evaluation and development of technological ideas supportive of industrial innovation and new business ventures;

(3) technical assistance and advisory services to industry, particularly small businesses; and

(4) curriculum development, training, and instruction in invention, entrepreneurship, and industrial innovation.

Each Center need not undertake all of the activities under this subsection.

(c)–(d) * * *

[(e) RESEARCH AND DEVELOPMENT UTILIZATION.—(1) To promote technological innovation and commercialization of research and development efforts, each Center has the option of acquiring title to any invention conceived or made under the auspices of the Center that was supported at least in part by Federal funds: Provided, That—

[(A) the Center reports the invention to the supporting agency together with a list of each country in which the Center elects to file a patent application on the invention;

[(B) said option shall be exercised at the time of disclosure of invention or within such time thereafter as may be provided in the grant or cooperative agreement;

[(C) the Center intends to promote the commercialization of the invention and file a United States patent application;

[(D) royalties be used for compensation of the inventor or for educational or research activities of the Center;

[(E) the Center make periodic reports to the supporting agency, and the supporting agency may treat information contained in such reports as privileged and confidential technical, commercial, and financial information and not subject to disclosures under the Freedom of Information Act; and

[(F) any Federal department or agency shall have the royalty-free right to practice, or have practiced on its behalf, the invention for governmental purposes.

The supporting agency shall have the right to acquire title to any patent on an invention in any country in which the Center elects not to file a patent application or fails to file within a reasonable time.

[(2) Where a Center has retained title to an invention under paragraph (1) of this subsection the supporting agency shall have the right to require the Center or its licensee to grant a nonexclusive, partially exclusive, or exclusive license to a responsible applicants, upon terms that are reasonable under the circumstances, if the supporting agency determines, after public notice and opportunity for hearing, that such action is necessary—

[(A) because the Center or licensee has not taken and is not expected to take timely and effective action to achieve practical application of the invention;

[(B) to meet health, safety, environmental, or national security needs which are not reasonably satisfied by the contractor or licensee; or

[(C) because the granting of exclusive rights in the invention has tended substantially to lessen competition or to result in undue market concentration in the United States in any line of commerce to which the technology relates.

[(3) Any individual, partnership, corporation, association, institution, or other entity adversely affected by a supporting agency determination made under paragraph (2) of this subsection may, at any time within 60 days after the determination is issued, file a petition to the United States Court of Claims which shall have jurisdiction to determine that matter de novo and to affirm, reverse, or modify as appropriate, the determination of the supporting agency.]

(e) RESEARCH AND DEVELOPMENT UTILIZATION.—In the promotion of technological innovation and commercialization of research and development efforts by Centers under this section, chapter 18 of title 35, United States Code, shall apply.

(f) ADDITIONAL CONSIDERATION.—The supporting agency may request the Attorney General's opinion whether the proposed joint research activities of a Center would violate any of the antitrust laws. The Attorney General shall advise the supporting agency of his determination and the reasons for it within 120 days after receipt of such request.

Section 8 of that Act

SEC. 8. NATIONAL SCIENCE FOUNDATION [CENTERS FOR INDUSTRIAL TECHNOLOGY] *COOPERATIVE RESEARCH CENTERS*

(a) ESTABLISHMENT AND PROVISIONS.—The National Science Foundation shall provide assistance for the establishment of [Centers for Industrial Technology] *Cooperative Research Centers.* Such Centers shall be affiliated with a university, or other nonprofit institution, or a group thereof. The objective of the Centers is to enhance technological innovation as provided in section 6(a) through the conduct of activities as provided in section 6(b). [The provisions of sections 6(e) and 6(f) shall apply to Centers established under this section.]

(b)–(c) * * *

Section 9 of that Act

SEC. 9. ADMINISTRATIVE ARRANGEMENTS.

(b)–(c) * * *

(d) COOPERATIVE EFFORTS.—The Secretary and the National Science Foundation shall, on a continuing basis, provide each other the opportunity to comment on any proposed program of activity under section 6, 8, [or 13] *10, or 14* of this Act before funds are committed to such program in order to mount complementary efforts and avoid duplication.

Section 10 of that Act

[SEC. 10. NATIONAL INDUSTRIAL TECHNOLOGY BOARD.

[(a) ESTABLISHMENT.—There shall be established a committee to be known as the National Industrial Technology Board.

[(b) DUTIES.—The Board shall take such steps as may be necessary to review annually the activities of the Office and advise the Secretary and the Director with respect to—

[(1) the formulation and conduct of activities under section 5 of this title;

[(2) the designation and operation of Centers and their programs under section 6 of this Act including assistance in establishing priorities;

[(3) the preparation of the report required under section 5(d); and

[(4) such other matters as the Secretary or Director refers to the Board, including the establishment of Centers under section 8 of this Act, for review and advice.

The Director shall make available to the Board such information, personnel, and administrative services and assistance as it may reasonably require to carry out its duties. The National Science Foundation shall make available to the Board such information and assistance as it may reasonably require to carry out its duties.

[(c) MEMBERSHIP, TERMS, AND POWERS.—(1) The Board shall consist of 15 voting members who shall be appointed by the Secretary. The Director shall serve as a nonvoting member of the Board. The members of the Board shall be individuals who, by reason of knowledge, experience, or training are especially qualified in one or more of the disciplines and fields dealing with technology, labor, and industrial innovation or who are affected by technological innovation. The majority of the members of the Board shall be individuals from industry and business.

[(2) The term of office of a voting member of the Board shall be 3 years, except that of the original appointees, five shall be appointed for a term of 1 year, five shall be appointed for a term of 2 years, and five shall be appointed for a term of 3 years.

[(3) Any individual appointed to fill a vacancy occurring before the expiration of the term for which his or her predecessor was appointed shall be appointed only for the remainder of such term. No individual may be appointed as a voting member after serving more than two full terms as such a member.

[(4) The Board shall select a voting member to serve as the Chairperson and another voting member to serve as the Vice Chairperson. The Vice Chairperson shall perform the functions of the Chairperson in the absence or incapacity of the Chairperson.

[(5) Voting members of the Board may receive compensation at a daily rate for GS–18 of the General Schedule under section 5332 of title 5, United States Code, when actually engaged in the performance of duties of such Board, and may be reimbursed for actual and reasonable expenses incurred in the performance of such duties.]

Section 11 of that Act

[11.] *10.* UTILIZATION OF FEDERAL TECHNOLOGY.

(a) POLICY.—*(1.)* It is the continuing responsibility of the Federal Government to ensure the full use of the results of the Nation's Federal investment in research and development. To this end the Federal Government shall strive where appropriate to transfer fed-

erally owned or originated technology to State and local governments and to the private sector.

(2) Each laboratory director shall ensure that efforts to transfer technology are considered positively in laboratory job descriptions, employee promotion policies, and evaluation of the job performance of scientists and engineers in the laboratory.

(b) ESTABLISHMENT OF RESEARCH AND TECHNOLOGY APPLICATIONS OFFICES.—Each Federal laboratory shall establish an Office of Research and Technology Applications. Laboratories having existing organizational structures which perform the functions of this section may elect to combine the Office of Research and Technology Applications within the existing organization. The staffing and funding levels for these offices shall be determined between each Federal laboratory and the Federal agency operating or directing the laboratory, except that (1) each laboratory having [a total annual budget exceeding $20,000,000 shall provide at least one professional individual full-time] *200 or more full-time scientific, engineering, and related technical positions shall provide one or more full-time equivalent positions* as staff for its Office of Research and Technology Applications, and (2) after September 30, 1981, each Federal agency which operates or directs one or more Federal laboratories shall make available not less than 0.5 percent of the agency's research and development budget to support the technology transfer function at the agency and at its laboratories, including support of the Office of Research and Technology Applications. The agency head may waive the [requirements set forth in (1) and/or (2) of this subsection] *requirement set forth in clause (2) of the preceding sentence.* If the agency head waives [either requirement (1) or (2)] *such requirement,* the agency head shall submit to Congress at the time the President submits the budget to Congress an explanation of the reasons for the waiver and alternate plans for conducting the technology transfer function at the agency.

(c) FUNCTIONS OF RESEARCH AND TECHNOLOGY APPLICATIONS OFFICES.—

It shall be the function of each Office of Research and Technology Applications—

[(1) to prepare an application assessment of each research and development project in which that laboratory is engaged which has potential for successful application in State or local government or in private industry;]

(1) to prepare application assessments for selected research and development projects in which that laboratory is engaged and which in the opinion of the laboratory may have potential commercial applications;";

(2) to provide and disseminate information on federally owned or originated products, processes, and services having potential application to State and local governments and to private industry;

(3) to cooperate with and assist [the Center for the Utilization of Federal Technology] *the National Technical Information Service, the Federal Laboratory Consortium for Technology Transfer,* and other organizations which link the research and development resources of that laboratory and the Federal Gov-

ernment as a whole to potential users in State and local government and private industry [; and];

(4) to provide technical assistance [in response to requests from State and local government officials.] *to State and local government officials; and*

(5) to participate, where feasible, in regional, State, and local government programs designed 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.

Agencies which have established organizational structures outside their Federal laboratories which have as their principal purpose the transfer of federally owned or originated technology to State and local government and to the private sector may elect to perform the functions of this subsection in such organizational structures. No Office of Research and Technology Applications or other organizational structures performing the functions of this subsection shall substantially compete with similar services available in the private sector.

[(d) CENTER FOR THE UTILIZATION OF FEDERAL TECHNOLOGY.—There is hereby established in the Department of Commerce a Center for the Utilization of Federal Technology. The Center for the Utilization of Federal Technology shall—] *(d) DISSEMINATION OF TECHNICAL INFORMATION.—The National Technical Information Service shall—*

(1) serve as a central clearinghouse for the collection, dissemination and transfer of information of federally owned or origninated technologies having potential application to State and local governments and to private industry;

[(2) coordinate the activities of the Offices of Research and Technology Applications of the Federal laboratories;]

[(3)] *(2)* utilize the expertise and services of the National Science Foundation and the [existing] Federal Laboratory Consortium for Technology Transfer; particularly in dealing with State and local governments;

[(4) receive requests for technical assistance from State and local governments and refer these requests to the appropriate Federal laboratories;] *(3) receive requests for technical assistance from State and local governments, respond to such requests with published information available to the Service, and refer such requests to the Federal Laboratory Consortium for Technology Transfer to the extent that such requests require a response involving more than the published information available to the Service;*

[(5)] *(4)* provide funding, at the discretion of the Secretary, for Federal laboratories to provide the assistance specified in subsection [(c)(4)]*(c)(3);* and

[(6)] *(5)* use appropriate technology transfer mechanisms such as personnel exchanges and computer-based systems.

(e) ESTABLISHMENT OF FEDERAL LABORATORY CONSORTIUM FOR TECHNOLOGY TRANSFER.—(1) There is established the Federal Laboratory Consortium for Technology Transfer (hereinafter referred to as the "Consortium") which, in cooperation with Federal laboratories and the private sector, shall—

(A) develop and, with the consent of the Federal laboratory concerned, administer techniques, training courses, and materials concerning technology transfer to increase the awareness of Federal laboratory employees regarding the commercial potential of laboratory technology and innovations;

(B) furnish advice and assistance requested by Federal agencies and laboratories for use in their technology transfer programs (including the planning of seminars for small business and other industry);

(C) provide a clearinghouse, at the laboratory level, for requests for technical assistance from States and units of local governments, businesses, industrial development organizations, not-for-profit organizations (including universities), Federal agencies and laboratories, and other persons, and—

(i) to the extent that a response to such requests can be made with published information available to the National Technical Information Service, refer such requests to that Service; and

(ii) otherwise refer such requests to the appropriate Federal laboratories and agencies;

(D) facilitate communication and coordination between Offices of Research and Technology Applications of Federal laboratories;

(E) utilize (with the consent of the agency involved) the expertise and services of the National Science Foundation, the Department of Commerce, the National Aeronautics and Space Administration, and other Federal agencies, as necessary;

(F) with the consent of any Federal laboratory, facilitate the use by such laboratory of appropriate technology transfer mechanisms such as personnel exchanges and computer-based systems;

(G) with the consent of any Federal laboratory, assist such laboratory to establish programs, such as technical volunteer services, for the purpose of providing technical assistance to communities related to such laboratory; and

(H) facilitate communication and cooperation between Offices of Research and Technology Applications of Federal laboratories and regional, State, and local technology transfer organizations.

(2) The membership of the Consortium shall consist of the Federal laboratories described in clause (1) of subsection (b) and such other laboratories as may choose to join the Consortium. The representatives to the Consortium shall include a senior staff member of each Federal laboratory which is a member of the Consortium and a representative appointed from each Federal agency with one or more member laboratories.

(3) The representatives to the Consortium shall elect a Chairman of the Consortium.

(4) The Director of the National Bureau of Standards shall provide the Consortium, on a reimbursable basis, with administrative services, such as office space, personnel, and support services of the Bureau, as requested by the Consortium and approved by such Director.

(5) Not later than 1 year after the date of the enactment of this subsection, and every year thereafter, the Chairman of the Consortium shall submit a report to the President, to the appropriate authorization and appropriation committees of both Houses of the Congress, and to each agency with respect to which a transfer of funding is made (for the fiscal year or years involved) under paragraph (6), concerning the activities of the Consortium and the expenditures made by it under this subsection during the year for which the report is made.

(6)(A) Subject to subparagraph (B), an amount equal to 0.005 percent of that portion of the research and development budget of each Federal agency that is to be utilized by the laboratories of such agency for a fiscal year referred to in subparagraph (B)(ii) shall be transferred by such agency to the National Bureau of Standards at the beginning of the fiscal year involved. Amounts so transferred shall be provided by the Bureau of the Consortium for the purpose of carrying out activities of the Consortium under this subsection.

(B) A transfer may be made by any Federal agency under subparagraph (A), for any fiscal year, only if—

(i) the amount so transferred by that agency (as determined under such subparagraph) would exceed $10,000; and

(ii) such transfer is made with respect to the fiscal year 1987, 1988, 1989, 1990, or 1991.

(C) The heads of Federal agencies and their designees, and the directors of Federal laboratories, may provide such additional support for operations of the Consortium as they consider appropriate.

[(e)]*(f)* AGENCY REPORTING.—Each Federal agency which operates or directs one or more Federal laboratories shall prepare biennially a report summarizing the activities performed by that agency and its Federal laboratories pursuant to the provisions of this section. The report shall be transmitted to the [Center for the Utilization of Federal Technology] *Secretary* by November 1 of each year in which it is due.

(g) FUNCTIONS OF THE SECRETARY.—(1) The Secretary, in consultation with other Federal agencies, may—

(A) make available to interested agencies the expertise of the Department of Commerce regarding the commercial potential of inventions and methods and options for commercialization which are available to Federal laboratories, including research and development limited partnerships;

(B) develop and disseminate to appropriate agency and laboratory personnel model provisions for use on a voluntary basis in cooperative research and development arrangements; and

(C) furnish advice and assistance, upon request, to Federal agencies concerning their cooperative research and development programs and projects.

(2) Two years after the date of enactment of this subsection, and every 2 years thereafter, the Secretary shall submit a report to the President and the Congress on the use by the agencies and the Secretary of the authorities specified in this Act. Other Federal agencies shall, to the extent permitted by law, provide the Secretary with all information necessary to prepare such reports.

SEC. 11. COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS.

(a) GENERAL AUTHORITY.—(1) Each Federal agency may permit the director of any of its Government-operated Federal laboratories—

(A) to enter into cooperative research and development arrangements (subject to such regulations or review procedures as the agency considers appropriate) with other Federal agencies, units of State or local government, industrial organizations (including corporations, partnerships and limited partnerships), public and private foundations, non-profit organizations (including universities), or other persons (including licensees of inventions owned by the Federal agency); and

(B) to negotiate licensing agreements under section 207 of title 35, United States Code, or other authorities for Government-owned inventions made at the laboratory and other inventions of Federal employees that may be voluntarily assigned to the Government.

(2) Under arrangements entered into pursuant to paragraph (1), a laboratory may—

(A) accept funds, services, and property from collaborating parties and provide services and property to collaborating parties;

(B) grant or agree to grant in advance to a collaborating party patent licenses, assignments, or options thereto, in any invention made by a Federal employee under the arrangement, retaining such rights as the Federal agency considers appropriate;

(C) waive, in whole or in part, any right of ownership which the Government may have under any other statute to any inventions made by a collaborating party or employee of a collaborating party under the arrangement; and

(D) to the extent consistent with any applicable agency requirements, permit employees or former employees of the laboratory to participate in efforts to commercialize inventions they made while in the service of the United States.

(3) Each agency shall maintain a record of all agreements entered into under this section.

(b) DEFINITION.—As used in this section, the term—

(1) "cooperative research and development agreement" means any agreement between one or more Federal laboratories and one or more non-Federal parties under which the Government provides personnel, services, facilities, equipment, or other resources (but not funds to non-Federal parties) and the non-Federal parties provide funds, personnel, services, facilities, equipments, or other resources toward the conduct of specified research or development efforts which are consistent with the missions of the agency, except that such term does not include a procurement contract or cooperative agreement as those terms are used in sections 6303, 6304, and 6305 of title 31, United States Code; and

(2) "laboratory" means a facility or group of facilities owned, leased, or otherwise used by a Federal agency, a substantial purpose of which is the performance of research and development by employees of the Federal Government.".

(c) RELATIONSHIP TO LAWS.—Nothing in this section is intended to limit or diminish existing authorities of any agency.

SEC. 12. REWARDS FOR SCIENTIFIC, ENGINEERING, AND TECHNICAL PERSONNEL OF FEDERAL AGENCIES.

(a) CASH AWARDS PROGRAM.—The head of each Federal agency that is making expenditures at a rate of more than $50,000,000 per fiscal year for research and development in its Government-operated laboratories shall use the appropriate statutory authority to develop and implement a cash awards program to reward its scientific, engineering, and technical personnel for—

(1) inventions, innovations, or other outstanding scientific or technological contributions of value to the United States due to commercial applications or due to contributions to missions of the Federal agency or the Federal government; and

(2) exemplary activities that promote the domestic transfer of science and technology development within the Federal Government and result in utilization of such science and technology by American industry or business, universities, State or local governments, or other non-Federal parties.

(b) PAYMENT OF ROYALTIES.—Any royalties or other income received by an agency from the licensing or assignment or inventions under this section or under section 207 of title 35, United States Code, or other authority shall be retained by the agency whose laboratory produced the invention, except that beginning with fiscal year 1988, such royalties or other income shall be subject to appropriations, and shall be disposed of as follows:

(1) At least 15 percent of the royalties or other income received each year by the agency on account of any invention shall be paid to the inventor or coinventors if they were employees of the agency at the time the invention was made. Payments made under this paragraph are in addition to the regular pay of the employee and to any awards made to that employee, and such payments shall not affect the entitlement or limit the amount of the regular pay, annuity, or other awards to which the employee is otherwise entitled or for which the employee is otherwise eligible.

(2) The balance of any royalties or related income earned during any fiscal year after paying the inventors' portions under paragraph (1) shall be transferred to the agency's Government-operated laboratories with a substantial percentage being returned to the laboratories whose inventions produced the royalties or income. Such royalties or income may be retained by the laboratory up to the limits specified in this paragraph, and used—

(A) for mission-related research and development of the laboratory;

(B) to support development and education programs for employees of the laboratory;

(C) to reward employees of the laboratory for contributing to the development of new technologies and assisting in the transfer of technology to the private sector, and for inventions of value to the Government that will not produce royalties;

(D) to further scientific exchange to and from the laboratory; and

(E) for payment of patenting costs and fees and other expenses incidental to promoting, administering, and licensing inventions, including the fees or costs for services of other agencies or other persons or organizations for invention management and licensing services.

If the balance for any laboratory after paying the inventors' shares under paragraph (1) exceeds 5 percent of the annual budget of the laboratory, 75 percent of the excess shall be paid to the Treasury of the United States and the remaining 25 percent shall be used for the purposes listed in subparagraphs (A) through (E), by the end of the fiscal year subsequent to the one in which they were received. Any funds not so used or obligated by the end of such fiscal year shall be paid to the Treasury of the United States.

(c) ASSIGNED INVENTIONS.—If the invention was one assigned to the agency either (1) by a contractor, grantee, or the recipient of a cooperative agreement of the agency, or (2) by an employee of the agency that was not working in the laboratory at the time the invention was made, the agency unit that funded or employed or assinged the assignee shall, for purposes of this section, be considered to be a laboratory.

(d) REPORTS.—In making their annual budget submissions, Federal agencies shall submit to the appropriate authorization and appropriation committees of both Houses of the Congress summaries of the amount of royalties or other income received and expenditures made (including inventor awards) under this section.".

SEC. 13. EMPLOYEE ACTIVITIES.

(a) IN GENERAL.—If a Federal agency which has the right of ownership to an invention under this act does not intend to file for a patent application or otherwise to promote commercialization of such invention, the agency may allow the inventor, if the inventor is a Government employee or former employee who made the invention during the course of employment with the Government, to retain title to the invention (subject to reservation by the Government of a nonexclusive, nontransferrable, irrevocable, paid up license to practice or have practiced the invention throughout the world by or on behalf of the Government). In addition, the agency may condition the inventor's right to title on the timely filing of a patent application in cases when the Government determines that it has or may have a need to practice the invention.

(b) DEFINITION.—For purposes of this section, Federal employees include "special Government employees" as defined in section 202 of title 18, United States Code.

(c) RELATIONSHIP TO OTHER LAWS.—Nothing in this section is intended to limit or diminish existing authorities of any agency.

Section 12 of that Act

SEC. [12] *14.* NATIONAL TECHNOLOGY MEDAL.

(a) ESTABLISHMENT.—There is hereby established a National Technology Medal, which shall be of such design and materials and bear such inscriptions as the President, on the basis of recommen-

dations submitted by the Office of Science and Technology Policy, may prescribe.

(b) AWARD.—The President shall periodically award the medal, on the basis of recommendations received from the Secretary or on the basis of such other information and evidence as he deems appropriate, to individuals or companies, which in his judgment are deserving of special recognition by reason of their outstanding contributions to the promotion of technology or technological manpower for the improvement of the economic, environmental, or social well-being of the United States.

(c) PRESENTATION.—The presentation of the award shall be made by the President with such ceremonies as he may deem proper.

Section 13 of that Act

SEC. [13] *15.* PERSONNEL EXCHANGES.

The Secretary and the National Science Foundation, jointly, shall establish a program to foster the exchange of scientific and technical personnel among academia, industry, and Federal laboratories. Such program shall include both (1) federally supported exchanges and (2) efforts to stimulate exchanges without Federal funding.

Section 14 of that Act

SEC. [14] *16.* AUTHORIZATION OF APPROPRIATIONS.

(a) There is authorized to be appropriated to the Secretary for purposes of carrying out section 6, not to exceed $19,000,000 for the fiscal year ending September 30, 1981, $40,000,000 for the fiscal year ending September 30, 1982, $50,000,000 for the fiscal year ending September 30, 1983, and $60,000,000 for each of the fiscal years ending September 30, 1984, and 1985.

(b) In addition to authorizations of appropriations under subsection (a) there is authorized to be appropriated to the Secretary for purposes of carrying out the provisions of this Act, not to exceed $5,000,000 for the fiscal year ending September 30, 1982, and $14,000,000 for each of the fiscal years ending September 30, 1983, 1984, and 1985.

(c) Such sums as may be appropriated under subsections (a) and (b) shall remain available until expended.

(d) To enable the National Science Foundation to carry out its powers and duties under this Act only such sums may be appropriated as the Congress may authorize by law.

Section 15 of that Act

SEC. [15] *17.* SPENDING AUTHORITY.

No payments shall be made or contracts shall be entered into pursuant to this Act except to such extent or in such amounts as are provided in advance in appropriation Acts.

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