104TH CONGRESS, 2d Session | HOUSE OF REPRESENTATIVES | REPORT 104–850

PILOT SMALL BUSINESS TECHNOLOGY TRANSFER PROGRAM EXTENSION ACT OF 1996

SEPTEMBER 26, 1996.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mrs. MEYERS of Kansas, from the Committee on Small Business, submitted the following

R E P O R T

[To accompany H.R. 3158]

[Including cost estimate of the Congressional Budget Office]

The Committee on Small Business, to whom was referred the bill (H.R. 3158) to amend the Small Business Act to extend the pilot Small Business Technology Transfer program, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

The amendment is as follows:

Strike out all after the enacting clause and insert in lieu thereof the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the "Pilot Small Business Technology Transfer Program Extension Act of 1996".

SEC. 2. PROGRAM EXTENSION.

Section 9(n) of the Small Business Act (15 U.S.C. 638(n)) is amended—

(1) in paragraph (1)—

(A) by striking "in fiscal year 1994, 1995, or 1996,";

(B) by striking "and" at the end of subparagraph (B);

(C) by striking the comma at the end of subparagraph (C) and inserting "; and"; and

(D) by inserting after subparagraph (C) the following new subparagraph:

"(D) not less than 0.25 percent of such budget in fiscal year 1997 and each succeeding fiscal year,"; and

(2) by adding at the end the following new paragraph:

"(4) PROGRAM EXPIRATION.—Authorization to carry out the STTR program pursuant to this subsection (and subsections (o) and (p) of this section) shall expire on September 30, 2000.".

29–006

SEC. 3. ASSESSMENT BY THE COMPTROLLER GENERAL.

(a) ASSESSMENT REQUIRED.—The Comptroller General of the United States shall conduct an assessment of the ongoing implementation of the Small Business Innovation Research (SBIR) program and the pilot Small Business Technology Transfer (STTR) program. The assessment shall address the following issues with respect to each program:

(1) The extent of competition and the quality of proposals submitted for the award of SBIR and STTR agreements, and the quality of subsequent performance by the recipients of such awards.

(2) Whether any adverse effects on the research or research and development programs of any sponsoring agency are attributable to the agency's participation in the SBIR program or the pilot STTR program.

(3) Whether any awards by a sponsoring agency in each fiscal year represent the applicable percentages of such agency's extramural budget, identifying any systemic management weaknesses contributing to such limitation on implementation.

(4) Any management techniques initiated by sponsoring agencies that attempt to minimize delays between the successful completion of a Phase I agreement and the award (and commencement of performance) under a Phase II agreement or ameliorate the adverse effects of such delays.

(5) The implementation of Phase III by participating agencies, including awards in support of Phase III and other techniques adopted by the agencies to foster commercialization.

(6) The extent to which small business participants in each program, especially recipients of STTR awards, utilize the results of research undertaken for Federal agencies by universities, federally funded research and development centers, and other research institutions, and the extent to which the results were subsequently developed by such small firms to meet the needs of Federal, State, and local government or advanced to use in the commercial marketplace.

(7) Whether the required and structured collaboration between a small business and a research institution under the pilot STTR program is necessary in light of the experiences with voluntary collaborations under the SBIR program.

(8) Any duplication between the SBIR program and the pilot STTR program.

(9) The extent to which each agency participating in the SBIR program has complied with the policy directives to enhance outreach efforts to increase the participation of socially and economically disadvantaged small business concerns and women-owned small business concerns issued under section (9)(j)(2)(F) of the Small Business Act (15 U.S.C. 638(j)(2)(F)) and the extent to which each agency participating in the STTR program has made outreach efforts to increase the participation of such concerns in the agency's STTR program.

(10) Any other relevant information as determined by the Comptroller General.

(b) PERIOD OF ASSESSMENT.—The assessment required by subsection (a) shall focus on the implementation of each program during the period beginning October 1, 1995, and ending September 30, 1999.

(c) REPORT.—

(1) SUBMISSION OF REPORT.—The Comptroller General shall submit a report of the assessment required by subsection (a) to the Committees on Small Business of the Senate and House of Representatives not later than February 1, 2000.

(2) APPENDICES TO REPORT.—The report shall include—

(A) an appendix summarizing the findings of previous reports issued by the Comptroller General with respect to the SBIR program and the pilot STTR program; and

(B) an appendix listing reports of other assessments of the SBIR program or the pilot STTR program issued by the Small Business Administration, any of the sponsoring agencies, and any other entities determined by the Comptroller General to be useful resources to the Congress in evaluating each program for reauthorization.

SEC. 4. INTERAGENCY TASK FORCE ON COMMERCIALIZATION.

(a) IN GENERAL.—The Administrator of the Small Business Administration shall convene and supervise an interagency task force on fostering commercialization of the results of projects being undertaken by small business concerns through the SBIR program and the pilot STTR program.

(b) DUTIES.—The interagency task force shall—

(1) review existing studies and analyses and conduct independent assessments, as may be appropriate, regarding the obstacles faced by small business entrepreneurs seeking to commercialize results of basic research or research and development undertaken through Federal funding;

(2) devise recommendations to overcome (or minimize the effects of) such obstacles; and

(3) address other matters that the Administrator determines are appropriate to ensure a comprehensive analysis and the development of practical recommendations.

(c) PARTICIPATION.—

(1) TASK FORCE MEMBERSHIP.—The interagency task shall include participation by representatives of—

(A) the Office of the Chief Counsel for Advocacy of the Small Business Administration;

(B) the 5 Executive agencies having the greatest dollar value of awards under the SBIR program in fiscal year 1995;

(C) the Executive agencies participating in the pilot STTR program in fiscal year 1995;

(D) the Office of Science and Technology Policy, Executive Office of the President; and

(E) any other Executive agencies invited by the Administrator.

(2) PUBLIC PARTICIPATION.—In undertaking its assessments and fashioning its recommendations, the interagency task force shall provide opportunities for consultation with representatives of—

(A) small businesses and other entities that have participated in the SBIR program or the pilot STTR program;

(B) organizations representing small business concerns;

(C) organizations representing venture capital sources, especially those focusing on the needs of small high-technology entrepreneurs; and

(D) any other public or private entities that the Administrator determines are appropriate.

(d) SCHEDULE.—

(1) NOTICE AND INITIAL CALL FOR PUBLIC PARTICIPATION.—Not earlier than May 1, 1997, the Administrator shall publish in the Federal Register (and through other means likely to result in broad dissemination) a notice, which at a minimum, announces the existence of the interagency task force, identifies the members of task force, summarizes purposes and objectives of the task force, requests suggestions and recommendations from the public regarding the work of the task force, providing at least 180 days to make a submission in response to such notice, and announces any schedule of meetings of the task force or other public meetings.

(2) ON-GOING PUBLIC PARTICIPATION.—In conducting its assessments and fashioning its recommendations the task force shall make every reasonable effort to solicit ideas from the public.

(e) REPORT.—Not later than March 1, 1999, the Administrator shall submit to the Committees on Small Business of the Senate and House of Representatives a report of the work of the interagency task force, including such recommendations for legislative or administrative action.

SEC. 5. TECHNICAL CORRECTION.

Section 9(e)(4)(A) of the Small Business Act (15 U.S.C. 638(e)(4)(A)) is amended by striking "(B)(ii)" and inserting "(B)".

PURPOSE

The purpose of the bill, H.R. 3158, the "Pilot Small Business Technology Transfer Program Extension Act of 1996," is to: (1) Extend for four additional years the three-year Pilot Small Business Technology Transfer (STTR) Program, through September 30, 2000, providing a longer period to evaluate thoroughly the Program's effectiveness as a means to foster small business commercialization of Federally-sponsored research through structured collaborations between small firms and non-profit research institutions, such as universities or Federally-funded Research and Development Centers (FFRDCs); (2) increase by one-tenth of one percent, from 0.15

percent to 0.25 percent, the percentage of the extramural research budgets dedicated to the Pilot STTR Program by participating Federal agencies, those agencies with annual extramural research budgets of $1 billion or more (five in FY 95); (3) specify the parameters of on-going monitoring of the implementation of the Pilot STTR Program and the complementary Small Business Innovation Research (SBIR) Program by the General Accounting Office (GAO) so as to have available for Congressional consideration a comprehensive report prior to September 30, 2000, the current expiration date for the SBIR Program and the bill's proposed expiration date for the Pilot STTR Program; and (4) establish a public-private task force on fostering commercialization of the results of projects undertaken by small businesses through the SBIR Program and the Pilot STTR Program, which is required to submit to Congress a report, with appropriate legislative and administrative recommendations, by March 1, 1999.

BACKGROUND ON THE PILOT SMALL BUSINESS TECHNOLOGY TRANSFER PROGRAM AND JUSTIFICATION FOR ITS EXTENSION

I. PROGRAM HISTORY

The Pilot Small Business Technology Transfer (STTR) Program was established by Title II of Public Law 102–564, the "Small Business Research and Development Enhancement Act of 1992," and authorized for an initial three-year demonstration, beginning in fiscal year 1994. Building upon the established model of the Small Business Innovation Research (SBIR) Program, the Pilot STTR Program provides the statutory basis for structured collaborations between small technology entrepreneurs and non-profit research institutions, such as universities or Federal-funded Research and Development Centers (FFRDCs), to foster commercialization of the results of Federally sponsored research. Title I of P.L. 102–564 provided a multi-year extension of the SBIR Program, extending it through fiscal year 2000. This 1992 extension of the SBIR Program was the third, and longest, since that Program's creation in 1982.

The SBIR Program and Pilot STTR Program both seek to stimulate technological innovation and increase private-sector commercialization of innovations derived from basic research as well as more mission-oriented advanced research and development undertaking by Federal agencies. Each program is founded upon independent separate statutory authority that provides legislative frameworks aimed at providing sustained support for those innovations that are most technologically competitive and show promise for commercialization. Both programs also assure minimal involvement of small businesses in the so-called extramural research and development (R&D) activities conducted by Federal agencies, that is, those undertaken through private sector sources, including Federally-supported research institutions such as universities and FFRDCs. To assure such minimal small business participation and to maintain stable funding for technology commercialization, both the SBIR Program and the Pilot STTR Program require a participating Federal agency to reserve a small percentage of its external R&D budget for each program. Both the Pilot STTR Program and the basic SBIR Program use a highly competitive three-stage proc-

ess that is designed to identify and nurture only the most promising technology innovations, seeking to move them to full commercialization, under the technical and entrepreneurial leadership of small business owners. The common technological and entrepreneurial objectives of both the Pilot STTR Program and the underlying SBIR Program are to:

Stimulate technological innovation, especially that with application in the commercial marketplace;

Foster small businesses participation in meeting the needs of Federal agencies for both basic and applied research and subsequent development that addresses agency mission requirements; and

Increase successful private-sector commercialization of innovations derived from Federally-sponsored basic research and more advanced mission-oriented agency R&D projects.

Both programs are directed at small business concerns with fewer than 500 employees, including those owned and controlled by socially and economically disadvantaged individuals. P.L 102–564 provided additional emphasis with regard to such historically underutilized firms within the on-going STTR Program as well as for the implementation of the Pilot STTR Program. The two programs differ, however, in one fundamental aspect: under the Pilot STTR Program, a small business must collaborate with a nonprofit research institution, such as a university or FFRDC.

In considering the rationale for a separate STTR Program in 1992, the House Committee on Small Business noted that the STTR Program was expected to address a core problem in U.S. economic competitiveness—the country's inability to translate its worldwide leadership in basic science and technology into marketable technology, especially with broad commercial applications, benefitting the national economy and fostering competitiveness internationally. What was needed was an effective, systematic technology transfer mechanism to move innovation from the research institution to practical application in the commercial marketplace. The Committee agreed that the Pilot STTR Program would provide an effective mechanism for such small business-led technology transfer. The Pilot STTR Program was established on the premise that collaborative endeavors between a small business entrepreneur and a researcher at a university, Federal laboratory, or nonprofit research institution holds great potential for effectively transforming the new ideas and innovations derived from basic research from the laboratory to the marketplace.

The Small Business Administration (SBA) is the coordinating agency for both the established SBIR Program and the Pilot STTR Program. It assists the participating Federal agencies in implementing each program, monitors and analyzes their performance, and reports annually to Congress on the programs" operations. The SBA is also the centralized information provider for the Pilot STTR Program, collecting solicitation information from each participating agency and publishing periodically a Pre-Solicitation Announcement (PSA). The PSA is the single source for the research topics designated by each participating agency, identifying the anticipated release date for each agency's solicitations as well as the expected closing date for submission of proposals.

II. ELIGIBILITY AND FUNDING FOR THE PILOT STTR PROGRAM

A. Program eligibility criteria

The Pilot STTR Program involves cooperative research and development performed jointly by a small business and a qualified research institution. To be eligible for competitive selection for an STTR award, each partner must meet the specified eligibility criteria, as follows:

Small Business Partners: Company size limited to 500 employees; American-owned and independently operated; other than the dominant firms in the field in which they are proposing to carry-out the STTR project; for-profit enterprise; and principal researcher need not be employed by small business.

Nonprofit Research Institution: Located in the U.S.

Meet one of the following definitions: Nonprofit college or university; domestic nonprofit research organization; and federally funded research and development center (FFRDC).

One of the core features of the Pilot STTR Program, which makes it distinct from the SBIR Program, is the statutory requirement that a small business concern must lead the team working under an STTR award. Under the Pilot STTR Program, a small business must perform at least 40 percent of the work; the research institution must perform at least 30 percent of the work. The small business is required to be responsible for management and control of the STTR project. This is in sharp contrast to the SBIR Program, which permits collaborative endeavors with Federally-sponsored research institutions, but fails to prescribe the small business leadership position and other protections for the small business partners that are the core rationale for the Pilot STTR Program.

B. Program funding

Like the SBIR Program, the Pilot STTR Program is funded by annually reserving for the Program's support a percentage of the extramural (or contracted-out) research and development budget of the participating agency. To be designated a participant in the Pilot STTR Program, an agency must have an extramural R&D budget of at least $1 billion. Agencies become participants in the SBIR Program when the annual extramural R&D budget exceeds $1,000,000.

During FY 1996, five agencies participate in the Pilot STTR Program: Department of Defense (DOD), Department of Energy (DOE), National Institutes of Health (NIH) within the Department of Health and Human Services, National Aeronautics and Space Administration (NASA), and the National Science Foundation (NSF). P.L. 102–564 specified a very small, but gradually increasing, minimum percentage of the agency's extramural R&D budget for support of STTR Program projects, as follows: 0.05 percent in Fiscal Year 1994; 0.10 percent in Fiscal Year 1995; and 0.15 percent in Fiscal Year 1996.

During the first two years of the Pilot STTR Program, the five participating agencies made 436 Phase I awards valued at $40.5 million and 22 Phase II awards valued at $10.7 million. The SBA estimates that in fiscal year 1996, approximately $50 million in awards can be expected under the Pilot STTR Program.

C. Demonstrated need for a separate STTR Program

From the initial authorization of the Pilot STTR Program, questions have been raised regarding whether the Program duplicates the SBIR Program, without adequate justification. As previously noted, the Pilot STTR Program contains statutory requirements that concurrently assure the leadership of the small business entrepreneur in a collaborative enterprise with a Federally-sponsored research institution, and afford the small firm essential protections with respect to its likely larger and more established for-profit partner.

All of the witnesses at the Committee's March 6, 1996 hearing advocated maintaining a separate STTR Program, despite the expansion of the SBIR Program, addressing in more detail the benefits summarized in this report. Several statements for the record also cited the importance of a distinct STTR Program, the most thorough and persuasive of which came from the largest agency participant in the Pilot STTR Program. On behalf of the Department of Defense, the Honorable R. Noel Longuemare, Principal Deputy Under Secretary of Defense for Acquisition and Technology, stated:

> The Department of Defense (DOD) administers the largest of the SBIR and STTR programs in the federal government, accounting for about half of the total program funding. * * * We find evidence that the DOD STTR Program, while much newer, serves as an important complement to our SBIR program by harnessing a new and different source of technologies—technologies that originate in our nation's research institutions.
>
> STTR is the vehicle enabling a researcher at a research institution to spin off a commercially-promising idea by joining forces with a small technology company. Thus, whereas SBIR harnesses the ideas in our small business sector, STTR taps into a vast new reservoir of ideas in our nation's research institutions.
>
> These institutions employ one in four R&D scientists and engineers in the United States, and perform more than $40 billion in R&D each year. * * * The quarter of a million scientists and engineers in these institutions often recognize important commercial applications of their research. But there exist few efficient mechanisms enabling these scientists and engineers to pursue commercial applications of their research.

DOD recently conducted an informal survey of 25 small companies and research institutions that participate in the DOD STTR Program. The participants were asked why they chose to participate in the STTR Program and, if in their experience, the STTR Program serves a different function than the SBIR Program. Their responses indicate that the Pilot STTR Program is serving its intended purpose.

University collaborators, for example, noted that the two programs serve very different functions. STTR is more focused on technology transfer. As one professor observed, "Without STTR, technology transfer, if it occurs, would occur by serendipity, and

would take much longer." Another noted that "STTR makes an immense difference to a university professor who's an entrepreneur but finds it unfeasible or undesirable to leave the university to start a new business."

A small business partner in an STTR project told SBA that "STTR taps into something different than SBIR—it gives a direct, practical channel for technology transfer."

Mr. Robert M. Pap, President and CEO of Accurate Automation Corporation of Chattanooga, Tennessee echoed similar sentiments in the March 6th testimony that he provided to the Committee. Mr. Pap's small company has extensive experience with both Programs. Accurate Automation Corporation has received 30 SBIR Phase I awards, 17 SBIR Phase II awards, and one of the first STTR awards from the Department of Defense, winning both a Phase I and Phase II award. He also identified a concern expressed by the Committee concerning foreign interests in and lost economic benefit from U.S. innovation and research:

> The STTR does a number of things that SBIR does not and it allows room for greater basic discoveries in the future. We will still need SBIR as it is formulated. The STTR program can solve a number of problems that divide the research community. The STTR allows small business to access technology that is in the National Labs or FFRDCs today. The only way this technology can get into commercial use is for the information to be published for all the world to see and exploit before small business can get at it. STTR provides the technology maturation for our country to benefit from our research investment.

As Daniel O. Hill, Assistant Administrator for Technology SBA, stated in testimony before the Committee:

> Studies show that small businesses are our leading source of innovations and that small firms produce twice as many innovations per employee as large firms. The SBIR and STTR Programs serve to ensure that high-quality small business talent is able to participate in federal R&D efforts. As a result of these programs, there is a flow of innovative new products and services to the American marketplace.

III. EXTENSION OF PILOT STTR PROGRAM

The STTR Program was established as a three-year pilot program under Title II of P.L. 102–564, the "Small Business Research and Development Enhancement Act of 1992." Unless reauthorized, the program will terminate on September 30, 1996. As repeatedly noted in this report, there is broad support for extension of the Pilot STTR Program by private and public sector participants, by the Administration, and by the General Accounting Office.

H.R. 3158 extends the Pilot STTR Program through September 30, 2000. The program extension provides for the expiration of STTR at the same time as the most recent extension of SBIR Program, in October, 1992. This extension will facilitate concurrent oversight and future legislative consideration of these related small business technology programs by the Congress and provide an ad-

ditional four years to assess more conclusively the value of the Pilot STTR Program.

IV. COMMITTEE ACTION

A. Hearing—March 6, 1996

The Committee held a hearing on March 6, 1996 to assess the implementation of P.L. 102–564, the "Small Business Research and Development Enhancement Act of 1992," which improved and expanded the SBIR Program and authorized the Pilot STTR Program. Testimony was received from small business participants in both the Pilot STTR Program and the established SBIR Program. Two of these small business witnesses expressed support on behalf the U.S. Chamber of Commerce and National Small Business United. As previously noted, SBA expressed support of extension of the Pilot STTR Program on behalf of the Administration. Similarly, GAO's representatives recommended extension of the Pilot STTR Program to provide a longer period for evaluation, but were complimentary of STTR in their preliminary assessments of the Program.

B. 1995 White House Conference on Small Business

The Committee emphasizes that a recommendation regarding both the SBIR Program and the Pilot STTR Program was ranked 13th by the delegates to the 1995 White House Conference on Small Business. The recommendations call on Congress and the President to "expand, improve and make permanent the SBIR/STTR programs."

A recommendation ranked 6th by the delegates to the 1980 White House Conference on Small Business was instrumental in the enactment of the initial authorization for the SBIR Program in 1982. Similarly, a recommendation ranked 14th by the delegates to the 1986 White House Conference on Small Business was used to propel the enactment of P.L. 102–564.

V. ASSESSMENTS OF SBIR PROGRAM AND PILOT STTR PROGRAM

A. GAO assessments of the SBIR Program—Numerous and favorable

The "Small Business Research and Development Enhancement Act of 1992," P.L. 102–564, continued the practice of requiring the Comptroller General to conduct another assessment of the SBIR Program, as modified and expanded by Title I of the Act, as well as the initial implementation of the Pilot STTR Program, authorized by Title II of the Act. The GAO issued two of these statutorily-mandated reports on the SBIR Program and the Pilot STTR Program. The March, 1995 report, Interim Report on the Small Business Innovation Research Program (GAO Report No. RCED 95–59; March 8, 1995), compared the Program's performance during the three prior fiscal years to its performance during FY 1993, the initial year of the Program modifications and higher percentages of agency participation mandated by Title I of P.L. 102–564. The GAO is continuing to monitor the implementation of the expanded SBIR Program, with a comprehensive report on the Program's implemen-

tation during Fiscal Year 1993 through Fiscal Year 1996, currently required for submission in October, 1997.

In January, 1996, GAO submitted a report entitled: "Preliminary Information on the Small Business Technology Transfer Program" (GAO Report No. RCED 96–19; January 24, 1996). This report provided GAO's initial, and favorable, impressions of the Pilot STTR Program, after only a single fiscal year's implementation during FY 1994.

While the GAO's March 1995 report on the SBIR Program was styled as an "interim report," it was actually the GAO's eighth report on the SBIR Program since the program was initially authorized in 1982. The GAO has previously submitted the following reports on the SBIR Program:

Implementing the Small Business Innovation Act—The First Two Years (GAO Report No. RCED 86–13; October 25, 1985);

A Profile of Selected Firms Awarded Small Business Innovation Research Funds (GAO Report No. RCED 86–113FS; March 21, 1986);

Effectiveness of Small Business Innovation Research Program Procedures (GAO Report No. RCED 87–63; June 2, 1987);

Small Business Innovation Research Participants Give Program High Marks (GAO Report No. 87–161BR; July 27, 1987);

Assessment of Small Business Innovation Research Programs (GAO Report No. RCED 89–39; January 23, 1992);

Proposed Amendments to the Small Business Innovation Research Program (GAO Report No. RCED 89–173; June 30, 1989); and

Small Business Innovation Research Shows Success But Can Be Strengthened (GAO Report No. RCED 92–37; March 30, 1992)

B. March 1995 GAO Review of SBIR—Quality being maintained

The March, 1995 report, Interim Report on the Small Business Innovation Research Program (GAO Report No. RCED 95–59; March 8, 1995), compared the Program's performance over the three prior fiscal years to its performance during FY 1993, the initial year of the Program modifications and higher percentages of agency participation mandated by Title I of P.L. 102–564. The GAO presented the results of this preliminary review to the Committee's Subcommittee on Government Programs during a hearing in April, 1995. To address the allegations that the expansion of the SBIR Program, although phased and gradual, would result in a diminution of the quality of proposals submitted, GAO focused on this issue. The GAO also looked at the question of SBIR Program participants receiving awards from more than one participating agency in support of the same proposal. Finally, GAO was tasked with reviewing the implementation of Section 301 of P.L. 102–564, which granted discretionary authority to the Executive agencies participating in the SBIR Program to provide technical assistance to SBIR awardees.

The GAO found that:

The high level of competition and large numbers of worthy but unfunded projects suggest that the quality of research pro-

posals kept pace with the Program's initial increase in funding from 1.25 to 1.50 percent. However, GAO noted that after reviewing only one-year's experience, it could not make a conclusive judgment about the long-term quality of research proposals.

The five major agencies have not taken steps to implement the discretionary technical assistance program to provide small businesses engaged in SBIR projects with technical assistance services. SBIR officials did not see a need for technical assistance because projects are selected primarily for their technical merit. Further, there was concern that the funds available for awards would be reduced to pay for the technical assistance program. Some agencies have, however, taken other steps to foster commercialization of research results.

Duplicate funding of similar research projects submitted to more than one agency has become a problem, as awardees seek to aggregate funding to provide sufficient support for increasingly costly projects.

GAO recommended that the SBA Administrator take the following steps to reduce the incidence of duplicate funding:

Determine whether the certification form included in SBIR proposals needs to be improved and take any necessary steps to revise the form.

Define key terms and guidelines for agencies and companies regarding "duplicate" research.

Provide interagency access to current information regarding SBIR awards.

Mr. Daniel O. Hill, SBA Assistant Administrator for Technology, reported to the Committee during its March 6th hearing that the SBA has taken action, including issuance of a modification to the SBA's policy directive, to address the duplicate funding of SBIR Research Proposals. The SBA has also: (1) clarified and further defined the role of the principal investigator; and (2) refined the certification of possible duplication statement and added further clarification of the similar award definition. Further, SBA has begun work on developing a computer system that would allow all agencies to access information on awards being made by other agencies. The system is expected to be operational by the end of fiscal year 1996.

C. DOD's assessment of expanded SBIR Program—Quality maintained

During House consideration of the legislation that became P.L. 102–564, the "Small Business Research and Development Enhancement Act of 1992," concern was expressed by the Committee on Armed Services that the increased percentages of extramural R&D directed to the SBIR Program might adversely affect DOD's research programs and result in the funding of SBIR proposals of lesser quality. Section 106 of P.L. 102–564 directed the Secretary of Defense to assess these potential problems and to furnish a report, independent of the GAO's assessment, to the Congress by March 31, 1996.

On May 30, 1996, the Under Secretary of Defense for Acquisition and Technology, Dr. Paul R. Kaminski, submitted the report re-

quired by Section 106, Quality of Research under the DOD Small Business Innovation Research (SBIR) Program. Despite the substantial increase in funding allocated to the SBIR Program, DOD's assessment reflected that there has been no decrease in the quality of proposals receiving funding. Specifically, the DOD analysis cites two indicators, also used by the GAO: (1) the ratio of funded to unfunded proposals; and (2) the number of proposals deemed worthy of funding, but for which existing SBIR Program funding allocations were insufficient to make awards. Despite the program expansion authorized by P.L. 102–564, DOD found that its ratio of funded to unfunded SBIR proposals remained essentially constant at 1:7 or 12 percent. Similarly, SBIR Program managers within the Military Services and participating Defense agencies all reported a "large pool" of proposals with the "highest technical and commercial merit" and "worthy of funding" but unfunded.

The DOD report also cited examples of SBIR-developed technologies that resulted in improvements to capabilities of U.S. military forces as well as significant savings. Some of these are subsequently highlighted in the "Success Stories" section of this report.

Finally, the DOD report identified Program management improvements developed by DOD, which are now being implemented. For example, DOD is putting in place procedures to accelerate proposal evaluation, contract award, and payment, all major concerns to the often very small technology firms that participate in the SBIR Program. DOD is also initiating a process in which prospective SBIR proposers can informally interact with the authors of SBIR solicitation topics to better understand the technology objectives being pursued. Further, DOD has begun to implement its pilot SBIR "Fast Track" process for Phase II awards that give priority to those proposals that can demonstrate financial support for commercialization from non-Federal sources.

D. GAO's initial report on STTR—More experience needed

The GAO's January 1996 report on the first year of the STTR Program focused on three areas:

> The quality and commercial potential of the STTR Program's research as shown by technical evaluations of the winning proposals in the first year;
>
> How agencies addressed potential conflicts of interest resulting from the involvement of FFRDCs; and
>
> Agencies" views on the effects of and need for the STTR Program in view of its close similarity to the SBIR Program.

The GAO found that:

> Participating agencies rated highly the quality and commercial potential of the proposals received. Technical experts were somewhat cautious, though, about the commercial potential of the Pilot STTR Program, due to limited duration of experience and the inability to assess the commercial risks associated with the proposals. GAO found that the evaluation process varied greatly among agencies.
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> The five agencies have taken steps to prevent conflicts of interest from occurring as a result of the involvement of FFRDCs in the program. For example, DOD and DOE, which received the greatest number of proposals and accounted for all but 3

of the 32 awards involving FFRDCs as research partners, have taken steps to prevent the centers from gaining an unfair advantage in preparing follow-on proposals.

Agency officials have not found any evidence that the STTR Program was competing for quality proposals with SBIR. Conclusive data concerning the effect, if any, of the STTR Program on SBIR and other agency R&D were not available because of the program's newness and smallness.

GAO suggested monitoring of three key issues during subsequent assessments of the Pilot STTR Program:

1. Does the technology being commercialized originate primarily in the research institution or is it originating in the small business?

2. Is the mandatory collaboration between the small business and the research institution and the protections accorded the small entrepreneurs under the STTR Program essential to effect commercialization of Federally-sponsored research to the marketplace?

3. Can the SBIR Program accomplish the same technology commercialization objective without the required collaboration, small business leadership and other protections provided by the Pilot STTR Program?

VI. SUCCESS STORIES

A. SBIR Program

After more than ten years of implementation, the SBIR Program has matured sufficiently to be a steady source of "success stories." They can be found in the annual reports on the Program issued by the SBA's Office of Technology, the SBA office charged with the Program's policy direction and the coordination of the various agency SBIR Programs. In 1995, the SBA's Office of Advocacy initiated the Tibbetts Awards process to identify through a national competition models of excellence in the SBIR Program. The program is named for recently-retired Roland Tibbetts of the National Science Foundation (NSF), who in 1977 designed the prototype of the program that became the SBIR Program. The first Tibbetts Awards competition was conducted in 1996, with awards being made in June during Small Business Week. At least one SBIR recipient in each State was identified for recognition under the Tibbetts Awards program.

The following are just a few examples of the remarkable success achieved by SBIR Program award recipients:

II–VI, Inc.

II–VI of Saxonburg, Pennsylvania, developed a process, under a DOD SBIR contract, which substantially reduced the deficits in optical codings used with high energy lasers. The technology was so successful that it was commercialized during phase II and was in full operation by the end of Phase II. Since 1988, the technology has generated roughly $30 million in revenue from sales, 20 to 30 percent of which have been to DOD or defense contractors—including Hughes Aircraft, Raytheon, Martin-Marietta, Texas Instruments, and Westinghouse—and the rest to private sector customers.

Microflip, Inc.

Microflip, located in Glenn Dale, Maryland, is the recipient of two Phase I and two Phase II awards. Mr. Dillip Emmanuel, vice president, is profoundly deaf and has earned numerous awards and recognition for his work in the field of disabilities. Without SBIR Program funding, Microflip would have been unable to sustain the research and development in the field of disabilities, which produced the first internal modem. The modem and software is widely used in corporations, banks and investment houses to provide access for persons who are deaf.

Integrated Systems, Inc.

Integrated Systems of Santa Clara, California, conducted two of the most commercially-successful DOD SBIR projects, as identified by the 1992 GAO study. The SBIR projects involved the development of technology for the efficient writing of embedded software, including software for a robot to load munitions, which had important spin-offs in the automobile industry. Cumulative sales revenues to date from the SBIR-developed technology exceeded $100 million, about 15–20 percent of which are from sales to DOD or prime contractors. All of the software for the DC–X experimental launch vehicle developed by McDonnell Douglas used Integrated Systems' technology. McDonnell Douglas has said that if it has not used that technology, the software would have cost two times as much to develop, and taken two to three times as long. DC–X was the first launch vehicle project in which software was developed ahead of hardware and within schedule and budget.

Chemtrak Inc.

Located in Sunnyvale, California, Chemtrak has developed the AccuMeter, a palm size, disposable device that measures substances in biological fluids. It does this in minutes with accuracy comparable to major clinical analyzers. The device has been used on whole blood samples to measure cholesterol, High Density Lipoproteins (HDL), and drug levels, and to detect infectious diseases. The device and its applications are covered by over a dozen United States and international patents.

Chemtrak invested over $20 million in the development of AccuMeter technology, received regulatory clearance, and built an automated manufacturing assembly line for high volume production. The first commercial application, CholesTrak is a Home Cholesterol Test that allows consumers to measure accurately their cholesterol in minutes. This is the only device for home testing of cholesterol that has been approved by the FDA. Manufacturing and distribution began three years after expiration of the Phase II grant.

Abiomed, Inc.

Abiomed, Inc., in Danvers, Massachusetts, has taken advantage of the idea that temperature differentials can be used to detect active periodontal disease sites. They have developed a periodontal disease screening device, PerioTemp, that measures temperature in the region between the gum and the tooth to detect an active inflammatory process. With Phase I and II support from NIH,

Abiomed invested more that $8 million in clinical trials and the development of automated manufacturing techniques for low cost production of disposable components. Manufacturing and distribution began six years after expiration of Phase II support. Annual sales are in excess of $1 million, and their annual growth rate is greater the 100 percent. So far, about 15 persons per year are employed as a direct result of the development of this instrument, and this number is expected to rise as sales increase.

Oval Window Audio

Individuals with hearing impairments are greatly helped by induction loop systems, which compensate for the effects of room noise, reverberation, and distance effects. Initially supported by the Department of Education, Oval Window Audio in Nederland, Colorado, improved on this 50-year old technology by developing a new "3–D loop" that makes it possible to use two adjacent induction loop systems (for example, two classrooms) at the same time without interference problems. The 3–D loop also improves over conventional loop systems by minimizing signal spillover and signal uniformity problems. Patented in 1990, the 3–D loop has exceeded $600,000 in sales, and distribution agreements in several foreign countries are being concluded.

Spin-off products include a full line of conventional induction loop system technologies used by the Congress (both the House and the Senate), the Social Security Administration, the Veterans Administration, the American School for the Deaf, and Gallaudet University. With additional Phase I support from NIH, Oval Window Audio and United Airlines have recently completed a project to develop technology to assist hearing-impaired airplane passengers.

Savi Technology, Inc.

The SaviTag, developed under a Navy SBIR Program, uses patented, advanced two-way radio communications/microcomputer technology to monitor remotely the movement and location of trucks/trailers, rail/air cargo and containers in minutes, automatically and simultaneously. GAO estimates that $3.4 billion of excess inventory (five times the required material) was sent to Saudi Arabia in Desert Shield/Desert Storm because soldiers had no way of finding their goods. Often, the needed material was actually at the destination port, but goods could not be expediently found and additional supplies were ordered. According to Principal Deputy Under Secretary of Defense for Acquisition and Technology, Noel Longuemare, "The SaviTag solves a real problem for the DOD. The Army has estimated that if an effective way of tracking the location and content of the cargo containers—such as the SaviTags—had existed at that time, DOD would have saved roughly $2 billion. That is an enormous savings—far more than our entire annual SBIR budget."

Power Spectra, Inc.

Under a DOD SBIR contract, Power Spectra of Sunnyvale, California, developed and tested a bulk avalanche semiconductor switch activated by a laser. The switch can deliver 15 kilovolts in less than a nanosecond and can achieve this in an excess of a bil-

lion times during its life. Boeing Corp. was the principal source of financing after phase II, supplying $21 million since 1989 for the development of technology into a product with broad commercial and military applications—primarily ultra wide band radars for foliage and earth penetration. The technology has since become classified, and the primary customer is the military electronic warfare community. Cumulative sales revenues from the switch are roughly $11 to $12 million—$9 million to DOD and $2–3 million to the private sector.

Irvine Sensors Corporation

Irvine Sensors Corporation, Inc., of Irvine, California, developed a chip-stacking technology, using funding from NASA's SBIR program and a small contract from the Air Force. The technology enables four to eight computers or memory chips to be glued into a small stack in the footprint of a single chip. After phase II, IBM and Irvine Sensors invested over $20 million to develop the technology into a manufacturable product. Total sales this year (1996) are expected to be $5–6 million, about half of which will be to the DOD or defense contractors and half will be to private sector customers. Sales are expected to increase significantly in the subsequent years.

B. STTR Program

Although the STTR Program is young, with the first Phase I awards made only three years ago, the Program can point to numerous success stories from the small firms who have received awards.

Zoex Corporation

Zoex Corporation in Lincoln, Nebraska, a small business with two employees, received STTR funding in 1995 from the National Science Foundation to collaborate with Southern Illinois University at Carbondale. The collaboration has been very successful, developing a method for observing and identifying more than 6,000 individual chemical substances in gasoline. There are numerous potential applications, especially in the environmental chemistry and petroleum industry.

HNC Software, Inc.

Under STTR, HNC, Inc. of San Diego, California, is working with the University of Maryland to develop a high-performance target identification system, with high-detection probability and a very low false alarm rate. It has broad applicability in many types of target identification, in the battlefield situation and threat assessment, as well as in resource monitoring and weather forecasting. The president of the company says that the STTR program makes sense—it gets universities and companies working together. HNC's collaboration with the University of Maryland has been a very positive activity, resulting in a close working relationship and an effective transfer of technology.

Magnetic Imaging Technologies, Inc.

Under STTR, Magnetic Imaging Technologies, Inc., a start-up company in Durham, North Carolina, is developing and commercializing the results of basic research done in optical physics at Princeton. Their new technology would significantly improve the ability of MRI machines to create images of a patient's head, lungs, and heart, and thus potentially represents a major advance in medical diagnosis. The estimated market size is $100 million. The STTR project is now completing Phase I, but has already attracted independent investors from the private sector to match STTR funding.

Megan Health

Collaborating with Washington University, Megan Health in St. Louis, Missouri, won Phase I and Phase II STTR grants from NIH to develop vaccine technology that would provide higher levels of immunity against disease. A third proposal is pending. Megan Health found the STTR Program "has a special role that is quite separate and vital to the technology transfer process which is not addressed by the SBIR Program."

Advance Process Combinatorics, Inc.

Advance Process Combinatorics, Inc., of West Lafayette, Indiana, in collaboration with Purdue University, is developing a distributed decision support system called DOMINION. DOMINION will work as a stand-alone system that can run on desktop workstation networks, and as the computation engine for proprietary chemical plant scheduling and design software. DOMINION will be scaleable to handle very large problems. Advance Process Combinatorics anticipates a widespread and lucrative market for DOMINION, and several chemical and petroleum companies have expressed serious interest in using DOMINION as it becomes available.

Accurate Automation Corporation

Accurate Automation in Chattanooga, Tennessee, and Wake Forest University won Phase I and Phase II awards from the Department of Defense. Their collaboration resulted in the development of a new, revolutionary technology that will allow Accurate Automation to field the first sensor fusion integrated circuit.

Digital System Resources, Inc.

Digital System Resources (DSR) of Fairfax, Virginia, successfully collaborated with Duke University to win an STTR award from the Department of Defense for technology research and applications to improve U.S. weapons systems. DSR and Duke have submitted a proposal for Phase II funding to expand the project.

Holoplex, Inc.

Under the DOD STTR program, Holoplex, Inc., a small start-up company in Pasadena, California, is working with Jet Propulsion Laboratory (JPL) to develop and commercialize an important breakthrough in optical storage disk technology. Their new technology uses holography to store hundreds of billions of bytes of data on an optical disk—a many-fold increase over the current

technology—and therefore has major commercial and military applications. It was the cover story for the November 1995 issue of Scientific American. STTR is an effective vehicle for working with JPL because, in order for the technology to be developed and ultimately commercialized, JPL must do the more basic research on the project. STTR provides Holoplex with a direct, practical channel for technology transfer.

VII. COMMERCIALIZATION

A. SBA Three-year commercialization study

In 1992, the SBA issued the report of its three-year study of commercialization under the SBIR Program, Results of Three-Year Commercialization Study of the SBIR Program. During FY 1988, FY 1989, and FY 1990, SBA's Office of Innovation, Research and Technology reviewed the status of Phase II awards made to 834 SBIR projects during FY 1984 through FY 1986.

The study found that commercialization was successful and had, in fact, already exceeded original expectations. Further, the study found that the SBIR Program played a critical role in this commercialization success: nearly 85 percent of the program participants said their technology development would not have been pursued without SBIR assistance. Of the eleven participating agencies, the Department of Health and Human Services had the largest percentage of commercialized projects, with more than 30 percent of its SBIR projects in commercialization.

B. Too early to assess STTR commercialization success

Fostering increased private-sector commercialization of innovations derived from Federal research and development is a fundamental objective of the SBIR Program and the Pilot STTR Program. During the Committee's March 6th hearing, various witnesses, including the representatives of the GAO, observed that with respect to the commercialization potential of STTR-funded projects, it may be too soon to ascertain the STTR Program's potential. Like the SBIR Program, the commercialization-potential of STTR projects will require further program maturation, given the typical time needed to transform a concept into a marketable technology. In a statement for the record from SBA's Chief Counsel for Advocacy, Jere W. Glover, he identified the time it takes for "technology transfer," or the time required to move products from the laboratory to the marketplace for various industry segments, as follows:

> In health sciences, clinical trials may involve three to ten years before a product is declared safe and efficacious.
>
> In the defense community, technical evaluations and operational evaluations may involve four to seven years before production authorization is provided.
>
> Even in the commercial or consumer marketplace, three to ten years for product acceptance is a common time line for new technologies.
>
> The data from the SBA's commercialization study [Results of Three-Year Commercialization Study of the SBIR

Program] indicates a typical product maturation schedule of seven to ten years.

During the March 6th hearing, SBA's Assistant Administrator for Technology, Daniel O. Hill, indicated that SBA anticipates a commercialization success rate for STTR similar to the high percentage rate demonstrated in the SBIR Program. Firms that have completed a Phase II SBIR project have achieved approximately a 24 percent rate of commercialization after four years. The percentage rises to nearly 40 percent when considering products that are the result of more than one contributory SBIR project.

VIII. SECTION-BY-SECTION ANALYSIS

Section 1. Short title

This section establishes the short title of the bill as the "Pilot Small Business Technology Transfer Program Extension Act of 1996".

Section 2. Program extension

This section extends the Pilot Small Business Technology Transfer (STTR) Program, authorized by Section 9(n) of the Small Business Act, through September 30, 2000. Established as a three-year pilot program by Title II of Public Law 102–564, the "Small Business Research and Development Act of 1992," the Pilot STTR Program will otherwise expire on September 30, 1996. The proposed program extension provides for the expiration of the Pilot STTR Program at the same time as Small Business Innovation Research (SBIR) Program, initially authorized in 1982 and most recently reauthorized in 1992 by Title I of Public Law 102–564. The proposed extension will facilitate concurrent oversight and future legislative consideration of these related small business technology programs by the Congress and provide an additional four years to assess more conclusively the value of the Pilot STTR Program.

This section also provides for a one-tenth of one percent increase in the percentage of extramural research budgets dedicated to awards under the Pilot STTR Program, from 0.15 percent to 0.25 percent, by those agencies participating in the program. Only those Executive agencies with an annual extramural research budget of $1 billion or more are required to reserve at least the specified percentage for exclusive competition among proposals from small businesses collaborating with non-profit research institutions, such as universities or Federally Funded Research and Development Centers (FFRDCs). The proposed percentage would remain constant during the entire four-year term of the program extension. As initially authorized in 1992, the Pilot STTR Program provided for annual increases.

Section 3. Assessment by the Comptroller General

Subsection (a) requires the General Accounting Office (GAO) to monitor the implementation of both the extension of the Pilot STTR Program and the on-going SBIR Program, specifying the matters to be assessed. Similar statutory requirements for assessing the implementation of both programs were included in Public Law 102–564, and resulted in two thorough and thoughtful reports.

In March, 1995, GAO issued its report entitled Federal Research: Interim Report on the Small Business Innovation Research Program (GAO Report No. RCED 95–59), which reviewed the results of the SBIR Program modifications and expansion made by Public Law 102–564 for Fiscal Years 1993 and 1994. The report was highly favorable in that the expansion in the SBIR Program resulted in an expansion in the intensity of competition for awards and sustained or enhanced the high quality of the proposals being submitted. Pursuant to Section 105 of Public Law 102–564, the GAO is required to submit, by October 28, 1997, a report on the implementation of the enhanced SBIR Program encompassing Fiscal Year 1993 through Fiscal Year 1995.

In January, 1996, the GAO issued its report entitled Federal Research: Preliminary Information on the Small Business Technology Transfer Program (GAO Report No. RCED 96–19), which reviewed the initial year's implementation of the Pilot STTR Program. The GAO reported that the participating Federal agencies rated highly the quality of the proposals received under the STTR Program. With respect to the commercialization potential of STTR-funded projects, the GAO observed that it was simply too early to tell. Additional years of experience with the program would provide a more reliable assessment.

Subsection (b) specifies that the GAO assessment address implementation of both the SBIR Program and the STTR Program over a four-year period, covering Fiscal Year 1995 through Fiscal Year 1999.

Subsection (c) requires that a report be submitted by not later than February 1, 2000. It also specifies that the report include summaries of previous GAO reports relating to the SBIR Program and the STTR Program as well as any reports by the Small Business Administration, any of the sponsoring agencies, or others, that would be helpful during consideration of the reauthorization of both programs during Fiscal Year 2000.

Section 4. Interagency task force on commercialization

Subsection (a) establishes an interagency task force on fostering commercialization of the results of projects being undertaken by small businesses through the SBIR Program and the Pilot STTR Program. The Administrator of the SBA (or a designee) is tasked with leading the effort.

Subsection (b) establishes the purposes and objectives of the work of the interagency task force.

Subsection (c) specifies the Executive agencies to be represented on the interagency task force. They include representatives of the Office of the Chief Counsel for Advocacy, the five Executive departments or agencies having the greatest dollar value of awards under the SBIR Program during Fiscal Year 1995, the five Executive departments or agencies participating in the Pilot STTR Program in fiscal year 1995, and the President's Office of Science and Technology Policy. The SBA Administrator may invite participation by representatives of other Executive agencies. The subsection also requires the interagency task force to consult closely with representatives of the small business community and others in the private sector.

Subsection (d) requires the SBA Administrator to give notice of the work of the interagency task force, invite public participation, and announce any schedule of public meetings. The subsection also makes explicit that the interagency task force should seek public participation throughout its work.

Subsection (e) requires the interagency task force to submit a report of its work, including recommendations for appropriate legislative and administrative actions, to the Committees on Small Business by March 1, 1999.

Section 5. Technical correction

This section corrects an erroneous cross-reference in Section 9(e) of the Small Business Act, which authorizes the SBIR Program.

IX. MATTERS REQUIRED TO BE DISCUSSED UNDER HOUSE RULES

Committee action

In compliance with clause 2(l)(2) of rule XI of the House of Representatives, the following statement is made relative to the vote on the motion to report H.R. 3158. The Committee met on March 29, 1996. A quorum of the Committee was present and the motion to order the bill reported was approved by unanimous voice vote, 21 members being present. Prior to ordering the bill reported, the Committee adopted by a voice vote an amendment to Section 3 offered by Rep. Nydia Velazquez of New York. The amendment would assure that the General Accounting Office continues to monitor the extent to which each participating agency has implemented enhanced outreach efforts to foster increased participation of small business concerns owned and controlled by socially and economically disadvantaged individuals and women and the results of those efforts.

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, April 17, 1996.

Hon. JAN MEYERS,
Chairman, Committee on Small Business,
House of Representatives, Washington, DC.

DEAR MADAM CHAIR: The Congressional Budget Office has prepared the enclosed cost estimate for H.R. 3158, the Pilot Small Business Technology Transfer Program Extension Act of 1996.

Enactment of H.R. 3158 would not affect direct spending or receipts. Therefore, pay-as-you-go procedures would not apply to the bill.

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

Sincerely,

JAMES L. BLUM
(For June E. O'Neill, Director).

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

1. Bill number: H.R. 3158.

2. Bill title: Pilot Small Business Technology Transfer Program Extension Act of 1996.

3. Bill status: As ordered reported by the House Committee on Small Business on March 29, 1996.

4. Bill purpose: H.R. 3138 would extend from 1996 to 2000 the expiration date of the Pilot Small Business Technology Transfer (STTR) program. The STTR program requires federal agencies with annual appropriations for extramural research of more than $1 billion to set aside a specified percentage of their extramural research budget for cooperative research between small businesses and a federal laboratory or nonprofit research institution. The Small Business Administration (SBA) is responsible for policy direction and oversight of the STTR program.

H.R. 3138 would require the General Accounting Office (GAO) to monitor the implementation of both the STTR program and the similar Small Business Innovation Research (SBIR) program. The bill also would require the Administrator of the SBA to establish an interagency task force to foster commercial applications of STTR funded research.

5. Estimated cost to the Federal Government: CBO estimates that enacting H.R. 3158 would result in costs to the federal government of about $8 million over the 1997–2000 period, assuming appropriations of the necessary amounts. The average estimated cost of about $2 million a year for 1997 through 2000 exceeds the $1.2 million that is being spent for administering the STTR program in fiscal year 1996. The estimated increase reflects the cost of a larger set-aside for the STTR program and the new requirements that would be placed on SBA and GAO by H.R. 3158. The costs of this bill fall within several budget functions.

6. Basis of estimate: H.R. 3158 would require agencies with annual extramural research budget in excess of $1 billion to earmark 0.25 percent of their research and development (R & D) budget for the STTR program in each of fiscal years 1997 through 2000. The five federal agencies that meet the $1 billion threshold and currently participate in the program are: Department of Defense; Department of Energy; Department of Health and Human Services; National Aeronautics and Space Administration; and National Science Foundation.

Assuming that the number of agencies qualified to participate in the program does not change, and that their R & D Budgets remain at or near current levels, CBO estimates that the total amount allocated to small business would be about $100 million in each fiscal year.

The costs to the STTR program to the participating agencies consist primarily of personnel, overhead, printing, and mailing expenses. The costs associated with administering awards through the STTR program are slightly higher than administering the same awards though regular program channels. Based on information from the affected agencies, CBO estimates that the costs of administering the awards would be between $1 million and $2 million in each of fiscal years 1997–2000, assuming appropriations of the necessary amounts. We estimate that the costs of SBA to monitor the program and establish the interagency task force would total less

than $500,000 per year, subject to the availability of appropriated funds.

Based on information from the GAO, CBO estimated that it would cost about $500,000 over the next four years to monitor the STTR and SBIR programs and report to Congress.

7. Pay-as-you-go considerations: None.

8. Estimated impact on state, local, and tribal governments: H.R. 3158 contains no intergovernmental mandates as defined by Public Law 104–4 and would not result in direct costs to any state, local, or tribal government.

9. Estimated impact on the private sector: This bill would impose no new private sector mandates, as defined in Public Law 104–4.

10. Previous CBO estimate: None.

11. Estimate prepared by: Federal Cost Estimate: Rachel Forward. State and Local Government Mandates Estimate: Marc Nicole. Private Sector Mandates Estimates: Amy Downs.

12. Estimate approved by: Robert R. Sunshine (for Paul N. Van de Water, Assistant Director for Budget Analysis).

INFLATIONARY IMPACT STATEMENT

Pursuant to clause 2(l)(4) of rule XI of the Rules of the House of Representatives, the Committee estimates that H.R. 3158 will have no inflationary impact on prices or costs in the operation of the national economy.

UNFUNDED FEDERAL MANDATES ESTIMATE

Pursuant to the provisions of P.L. 104–4 (109 Stat. 48, et seq.), the Unfunded Mandates Reform Act of 1995, the Committee estimates that H.R. 3158 will not impose unfunded mandates as defined in the Act.

OVERSIGHT FINDINGS

In accordance with clause 2(l)(3)(D) of rule XI of the Rules of the House of Representatives, the Committee states that no oversight findings or recommendations have been made by the Committee on Government Reform and Oversight with respect to the subject matter contained in H.R. 3158.

In accordance with clause 2(l)(3)(A) of rule XI and clause 2(b)(1) of rule X of the Rules of the House of Representatives, the oversight findings and recommendations of the Committee on Small Business with respect to the subject matter contained in H.R. 3158 are incorporated into the descriptive parts of this report.

CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3 of rule XIII of the Rules of the House of Representatives, 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 matter is printed in italic, existing law in which no change is proposed is shown in roman):

SECTION 9 OF THE SMALL BUSINESS ACT

SEC. 9. (a) * * *

* * * * * * *

(e) For the purpose of this section—

(1) * * *

* * * * * * *

(4) the term "Small Business Innovation Research Program" or "SBIR" means a program under which a portion of a Federal agency's research or research and development effort is reserved for award to small business concerns through a uniform process having—

(A) a first phase for determining, insofar as possible, the scientific and technical merit and feasibility of ideas that appear to have commercial potential, as described in subparagraph **[**(B)(ii)**]** *(B)*, submitted pursuant to SBIR program solicitations;

* * * * * * *

(n) REQUIRED EXPENDITURES FOR STTR BY FEDERAL AGENCIES.—

(1) REQUIRED EXPENDITURE AMOUNTS.—Each Federal agency which has an extramural budget for research or research and development in excess of $1,000,000,000 **[**in fiscal year 1994, 1995, or 1996,**]** is authorized to expend with small business concerns—

(A) not less than 0.05 percent of such budget in fiscal year 1994;

(B) not less than 0.1 percent of such budget in fiscal year 1995; **[**and**]**

(C) not less than 0.15 percent of such budget in fiscal year 1996**[**,**]***; and*

(D) not less than 0.25 percent of such budget in fiscal year 1997 and each succeeding fiscal year,

specifically in connection with STTR programs which meet the requirements of this section, policy directives, and regulations issued under this section.

* * * * * * *

(4) PROGRAM EXPIRATION.—Authorization to carry out the STTR program pursuant to this subsection (and subsections (o) and (p) of this section) shall expire on September 30, 2000.

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