

GAO

June 1987

FEDERAL  
RESEARCH

Effectiveness of Small  
Business Innovation  
Research Program  
Procedures



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United States  
General Accounting Office  
Washington, D.C. 20548

**Resources, Community, and  
Economic Development Division**

B-209790

June 2, 1987

The Honorable Dale L. Bumpers  
Chairman, Committee on Small Business  
United States Senate

The Honorable John J. LaFalce  
Chairman, Committee on Small Business  
House of Representatives

The Honorable Robert A. Roe  
Chairman, Committee on Science and Technology  
House of Representatives

The Honorable John D. Dingell  
Chairman, Committee on Energy and Commerce  
House of Representatives

This is our second report on the Small Business Innovation Development Act of 1982, which seeks to encourage innovation by requiring federal agencies to award portions of their external research budgets to small businesses. This report provides an assessment of agencies' evaluation and selection procedures for fiscal years 1983 through 1985 for use by the Congress in its oversight of the program.

We are sending copies of the report to the Administrator, Small Business Administration, the heads of agencies subject to the act, and other interested parties. We will also make copies available to others upon request.

The review was performed under the direction of Neal Curtin, Deputy Director, Resources, Community, and Economic Development Division. Major contributors are listed in appendix IX.

J. Dexter Peach  
Assistant Comptroller General

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# Executive Summary

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## Purpose

Approximately \$1.1 billion will be awarded to small businesses by Small Business Innovation Research (SBIR) programs through fiscal year 1987. The Small Business Innovation Development Act of 1982 established these programs to encourage innovation by requiring federal agencies to award portions of their research funds to small businesses through special research programs.

The act directs GAO to report to the Congress on agencies' implementation efforts. This report, which fulfills GAO's legislative mandate, provides information on agencies' evaluation and selection procedures for fiscal years 1983-85. The report addresses three objectives of the act by answering the following questions:

- Do agencies' SBIR award procedures provide for selection based on merit?
- How much time are agencies taking in awarding SBIR contracts and grants?
- Are agencies using procedures to make participation in the program simpler for small businesses than in other research programs?

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## Background

The act requires federal agencies which spend more than \$100 million annually on extramural research (research done by outside parties) to establish an SBIR program. Through these programs, agencies spend a specified percentage of their research budget each year in procuring research from highly innovative small businesses. These small firms submit proposals in response to research topics contained in agencies' solicitation documents, published at least annually by each participating agency.

Federal funding occurs in three phases. Phase I authorizes a limited amount of money and time to determine the feasibility of the proposed idea. Only those completing phase I may compete for a phase II award, which provides further funding and additional time to do the detailed research. Once phase II work is finished, small businesses are expected to obtain phase III funding from non-federal sources or through federal, non-SBIR research programs to commercialize their research results.

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## Results in Brief

The 11 agencies GAO reviewed have established and followed SBIR evaluation and selection procedures that are systematic and fair, and reasonably assure that awards are based on technical merit. Although data were limited, average scores of funded proposals at most agencies are high, indicating that good quality research is being funded.

The number of agencies taking more than 6 months, on average, to award phase I contracts and grants has increased from year to year. The Small Business Administration (SBA), which is responsible for providing SBIR policy guidance to agencies, has established a goal that phase I awards should normally be made within 6 months from the date proposals are received. SBA has not established a similar goal for phase II awards.

Agencies are trying to make participation in the SBIR program less burdensome to small businesses by using procedures which are simpler than those used in their regular research programs.

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## GAO's Analysis

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### Evaluation and Selection Procedures

The act requires agencies to review and select SBIR proposals for funding. Although their procedures differ to some degree, GAO found that the 11 agencies it reviewed adhered to procedures, which, in GAO's opinion, helps assure a fair and objective selection process that resulted in funding highly rated proposals. The procedures included

- using experts to do technical evaluations,
- using SBA evaluation criteria,
- using a system to rate or rank proposals, and
- selecting proposals for funding based on a rating system.

For those agencies which provided data, most had funded proposals with high average scores for each fiscal year—9 of 11 agencies in 1983, 6 of 12 agencies in 1984, and 10 of 16 agencies in 1985. Data on both phase I and II scores were limited because agencies had not retained this information in their files, could not readily retrieve it from field units, or in the case of phase II, had not selected proposals for funding at the time of GAO's review. (See ch. 2.)

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### Time to Award SBIR Contracts and Grants

SBA's policy guidance states that phase I contract and grant awards should normally be made to small businesses within 6 months of receiving the proposal. The number of agencies taking more than 6 months, on average, to award phase I SBIR contracts and grants has increased each year. In fiscal year 1983, 5 of 19 agencies took more than 6 months to make awards. However, in fiscal years 1984 and 1985, this

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figure increased to 14 of 19 and 17 of 21, respectively. (The total number of agencies GAO reviewed increased from 19 to 21 in 1985 because 2 agencies which did not have programs in 1983 and 1984 started theirs in 1985.) After GAO informed SBA officials of the number of agencies that were taking longer than 6 months, they agreed to begin to monitor the situation.

SBA has not established a goal for the amount of time agencies may take to make phase II awards. Further, because many agencies could not provide data on the time to make individual awards, GAO could not calculate the average time for awarding contracts and grants. (See ch. 3.)

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### Simple Procedures

Policy guidance requires that the SBIR program should be simple and minimize the regulatory burden on small businesses. GAO found that all agencies are using various procedures designed to do this. Such procedures include issuing SBIR solicitations which are comprehensive and informative and using abbreviated, more easily understood contracts. (See ch. 4.)

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### Recommendations

This report does not make any recommendations.

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### Agency Comments

The agencies generally agreed with GAO's findings and conclusions. SBA said, as part of its monitoring of the time it takes for agencies to award contracts and grants, it will collect and include pertinent information on time frames as part of its annual report. The Department of Energy (DOE) suggested another way to measure agency compliance with SBA's goal that phase I contracts and grants should normally be awarded within 6 months of receipt of proposals.



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**Abbreviations**

ADAMHA	Alcohol, Drug Abuse and Mental Health Administration
ASD	Aeronautical Systems Division
BMO	Ballistic Missile Office
CECOM	Communications-Electronics Command
DARPA	Defense Advanced Research Projects Agency
DNA	Defense Nuclear Agency
DOD	Department of Defense
DOE	Department of Energy
DOT	Department of Transportation
EPA	Environmental Protection Agency
GAO	General Accounting Office
HHS	Department of Health and Human Services
NASA	National Aeronautics and Space Administration
NAVAIR	Naval Air Systems Command
NAVSEA	Naval Sea Systems Command
NCI	National Cancer Institute
NHLBI	National Heart, Lung, and Blood Institute
NIAAA	National Institute on Alcohol Abuse and Alcoholism
NIH	National Institutes of Health
NRC	Nuclear Regulatory Commission
NSF	National Science Foundation
OSTP	Office of Science and Technology Policy
PHS	Public Health Service
P.L.	Public Law
R&D	research and development
SBA	Small Business Administration
SBIR	Small Business Innovation Research
SDIO	Strategic Defense Initiative Organization
USAMRDC	U.S. Army Medical Research Command
USDA	U.S. Department of Agriculture



# Introduction

The role of small businesses in research and development (R&D), and in the nation's economy has been of great interest to the U.S. Congress. Consequently, the Congress passed the Small Business Innovation Development Act of 1982 (P.L. 97-219) to increase the participation of small businesses in federally funded R&D programs. The act requires federal agencies having an annual extramural (external) R&D budget of \$100 million or more to spend specified percentages of that budget for a Small Business Innovation Research (SBIR) program. In this way, small firms can participate in federal R&D as a base for technological innovation to meet the needs of both the agencies and the nation. The major objectives of Public Law 97-219 are to

- stimulate technological innovation,
- use small business to meet federal R&D needs,
- foster and encourage minority and disadvantaged persons to participate in technological innovation, and
- increase private-sector commercialization of innovations derived from federal R&D.

Through policy directives, which the act authorizes the Small Business Administration (SBA) to issue, agencies' SBIR programs must also be timely, standard, and simple so that the regulatory burden on small businesses is minimized. In addition to these objectives, Public Law 97-219 establishes program oversight and monitoring responsibilities for SBA and the Office of Science and Technology Policy.

Finally, Public Law 97-219 originally required the Comptroller General of the United States to report to the Congress by July 22, 1987, on the act's implementation and on the nature of research conducted under it. The act was to have expired on October 1, 1988, unless reauthorized. However, in October 1986, the Congress amended the act, reauthorized it until 1993, changed the Comptroller General's mandate, and set new GAO reporting dates.<sup>1</sup>

<sup>1</sup>Section 6(a) of P.L. 97-219, as amended by P.L. 99-443, now requires the Comptroller General of the United States to report to the Congress no later than December 31, 1988, on the effectiveness of phase I and II of the SBIR program, on the quality of research, and on the goals of the program. Section 6(b) now requires the Comptroller General to transmit an updated report mandated under subsection (a) to the Congress no later than December 31, 1991, and include an evaluation of the phase III program.

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## Scope of Activities Under the Act

The 12 following federal agencies managed SBIR programs during fiscal years 1983 to 1985:<sup>2</sup>

- The Department of Agriculture.
- The Department of Commerce.
- The Department of Defense (DOD).
- The Department of Education.
- The Department of Energy (DOE).
- The Department of Health and Human Services (HHS).
- The Department of the Interior.
- The Department of Transportation (DOT).
- The Environmental Protection Agency (EPA).
- The National Aeronautics and Space Administration (NASA).
- The National Science Foundation (NSF).
- The Nuclear Regulatory Commission (NRC)

SBA estimates that a total of \$1.1 billion in SBIR awards will be awarded to small businesses from the beginning of the program through fiscal year 1987. SBA estimated that \$320 million will be awarded in fiscal year 1986 and about \$450 million will be awarded in fiscal year 1987. During fiscal years 1983 to 1985, the 12 participating agencies obligated over \$355 million under SBIR. During this same period, these agencies released 43 solicitations, received around 27,000 proposals, and made about 3,800 SBIR awards.

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## How the SBIR Program Works

Agencies with SBIR programs solicit proposed research from small businesses to address agencies' R&D needs. The process begins when each agency develops research topics for its SBIR solicitations, to which small businesses respond with research proposals. Most often, agencies use their in-house technical staff to develop topics which are broadly defined and reflect the mission and research needs of the particular agency. The solicitation is a comprehensive document which is usually issued annually by each participating agency (some HHS units have issued more than one per year). The solicitation provides interested small businesses with not only research topics but also with information on how the program works and application procedures.

Once proposals are submitted, agencies evaluate and fund them in a three-phase process. Proposals are technically evaluated by scientists

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<sup>2</sup>Interior dropped out of the program in fiscal year 1985 because its extramural research budget fell below \$100 million. Thus, we did not do audit work at Interior.

and engineers to determine scientific merit and feasibility. Phase I awards are given to deserving proposals to demonstrate the scientific and technical feasibility of the idea contained in the proposal. These awards are usually for \$50,000 or less and cover a 6-month work period. On the basis of the results of their projects, phase I awardees can compete for a phase II award, and agencies make phase II awards to those judged to be the best of the phase I awardees. Phase II work is to further develop the phase I research; awards are made for \$500,000 or less and usually cover 1 to 2 years of work. Phase III awards involve either nonfederal funding or federal, non-SBIR funding for commercial applications of the research conducted under the SBIR program.

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## SBIR Contract and Grant Administration

In addition to requirements regarding SBIR evaluation and selection procedures, Public Law 97-219 requires participating federal agencies to have simplified and standardized funding processes for their SBIR programs. It also requires them to make payments to SBIR recipients based on progress toward or completion of funding agreement requirements.

Funding agreements awarded to small business participants are in the form of either contracts or grants, although cooperative agreements may be used also. Most agencies use different types of contracts and grants for phase I and phase II awards. Phase I recipients are usually awarded firm, fixed-price contracts with incremental payments made periodically during the work period, while phase II recipients are usually awarded cost-type contracts with monthly, cost-reimbursable payments.<sup>3</sup>

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## Objectives, Scope, and Methodology

As noted earlier in this chapter, the Small Business Innovation Development Act of 1982 originally required the Comptroller General to review and report to the Congress by July 22, 1987 on the act's implementation. We had planned to fulfill this mandate through a series of reports—the first issued in October 1985, this current report, and a final summary report to be issued by the July deadline—all of which would assist the Congress in its reauthorization deliberations. However, in October 1986, the act was amended to change our reporting requirements and deadlines as well as to reauthorize the act until 1993. Although the law no longer specifically requires that we report on agencies' implementation

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<sup>3</sup>"Fixed-price" refers to a family of pricing arrangements which has a ceiling beyond which the government bears no responsibility for payment. "Cost type" refers to a family of pricing arrangements which provides for paying allowable and reasonable costs incurred during the performance of a contract.

efforts by July 22, 1987, we continued our work on this report in order to provide information on agencies' selection and award procedures to aid the Congress in its continuing oversight of the program.

This report provides information on SBIR evaluation, selection, and contract award procedures of the participating agencies for fiscal years 1983-85. Specifically, our objectives were to determine

- if agencies' SBIR evaluation and selection procedures provide for selection of proposals based on merit,
- the time agencies are taking in awarding SBIR contracts and grants, and
- the procedures agencies use to make the SBIR program simpler and less burdensome to small business.

We reviewed procedures and collected data at 11 agencies that are required to participate in the SBIR program. Two agencies—DOD and HHS—operate decentralized programs whereby subunits within these agencies administer individual and independent programs. Since we did not have the resources to review every subunit in DOD and HHS, we selected two subunits in each agency which spent the most SBIR dollars. Although the subunits we covered had SBIR obligations representing 30 to 92 percent of their respective agencies' total SBIR awards, we could not comment on DOD's and HHS' implementation efforts as a whole since the subunits run autonomous programs.

Within DOD, we visited two subunits within each Service, the Army, Navy, and Air Force. These were the Medical Research and Development Command, Ft. Detrick, and the Communications-Electronics Command, Ft. Monmouth for the Army; the Naval Air Systems Command and Naval Sea Systems Command, for the Navy; and the Ballistic Missile Office, Norton Air Force Base, and the Aeronautical Systems Division, Wright-Patterson Air Force Base, for the Air Force. We also reviewed programs at three defense agencies—the Defense Nuclear Agency, Defense Advanced Research Projects Agency, and Strategic Defense Initiative Organization.

Within HHS, we only visited subunits within the Public Health Service because it obligates over 90 percent of HHS' SBIR funds. These subunits were the National Institutes of Health (NIH) and the Alcohol, Drug Abuse and Mental Health Administration. Because HHS awards both SBIR contracts and grants and uses different award procedures for each, we reviewed groups within NIH and the Alcohol, Drug Abuse and Mental Health Administration which either awarded the most SBIR money or

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administered contracts and grants. Within NIH, we visited the National Heart, Lung, and Blood Institute (NHLBI) and the National Cancer Institute (NCI). For the Administration, only one group administered both contracts and grants—the National Institute on Alcohol Abuse and Alcoholism (NIAAA).

Although the text of the law uses the term “agency” when defining who must participate in the program, we reviewed SBIR programs at units within agencies, as noted above, because some agencies do not have one central SBIR program but have several decentralized ones instead. In order to avoid confusion and use one consistent term throughout the report, we also refer to the units within agencies as “agencies.” Consequently, we obtained information from a total of 21 agencies.

We obtained our information from interviews with SBIR program managers and cognizant officials in contract offices of the agencies visited. We also collected and examined relevant documents such as agencies’ SBIR policy guidance, program solicitations, evaluation forms, and instructions to evaluators. Agency officials also provided data to us on the contract and grant award dates of each SBIR award made for fiscal years 1983 through 1985 as well as the score of each funded proposal.<sup>4</sup> We did not independently verify this information but, where possible, conducted a spot-check of agencies’ contract and grant files. We conducted our work in accordance with generally accepted government auditing standards.

In addition to the information we gathered on this assignment, we also used some of the information collected from SBIR participants in a concurrent GAO review of the SBIR program. The information in that review is based on questionnaires sent to a total of 1,405 phase I and phase II recipients who received their awards between fiscal years 1983 and 1985. We drew a stratified sample of SBIR projects for each agency from a universe of 3,234 projects funded within this time frame. Although the sample of projects drawn for DOD and HHS was from all research units which participate in the SBIR program, this report only covered a limited number of units in these agencies. The questionnaire asked recipients for demographic information on their firms and opinions on aspects of the SBIR program and agency responsiveness. The complete results of that GAO review will be included in a following report.

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<sup>4</sup>In some cases, agencies did not provide individual scores for each funded proposal but provided an overall average.



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This review was conducted from August 1985 to September 1986 primarily at the agencies' headquarters offices in the Washington, D.C., area. However, we made field visits to Air Force and Army units in California, Maryland, New Jersey, and Ohio.

# Agencies' SBIR Evaluation and Selection Procedures Have Resulted in Funding for Worthy Proposals

Public Law 97-219 states that agencies will receive, evaluate, and select proposals for SBIR funding. In order to review agencies' implementation efforts, we examined each agency's procedures to determine if they were fair and reasonably assured that highly rated proposals would be funded. Although differences from agency to agency exist, we found that all agencies use the following procedures to help ensure fairness: (1) evaluations are done by technical experts, (2) SBA's evaluation criteria are used, (3) a system is used to rate or rank proposals, and (4) selection is based on their ranking system.

We also found that agencies are funding proposals of high technical quality as evidenced by the high average scores of funded proposals and the opinions of program managers as to their quality. Most agencies' average scores for funded phase I and II proposals fell between 80 and 100 percent of their perfect score. Additionally, 16 of 23 program managers stated that the quality of funded proposals was "good" to "excellent." (Although we visited 21 agencies, some had more than 1 program manager.) The remaining program managers said the quality of the funded proposals varied. Further, the competitiveness of the program, as measured as a percentage of awards made to proposals received, is keen, thus increasing their chances for selecting high-quality proposals.

## Agencies Use Merit-Based Selection Procedures

Public Law 97-219 requires agencies to receive and evaluate proposals resulting from SBIR and unilaterally select awardees for its SBIR funding agreements. The SBA policy directive encourages agencies to use their normal evaluation procedures to review the proposals. Since few specific criteria exist against which to evaluate agencies' procedures, we examined each agency's procedures to determine if the systems for reviewing and selecting SBIR projects are fair and judicious, and reasonably assure that the "best" proposals are funded. In our review, we found that all agencies use the following methods:

- The evaluations of the SBIR proposals are done by technical experts in the area of research which the proposal addresses.
- The evaluation criteria on which the proposals are scored are those which are recommended in the SBA policy directive, which includes the technical and scientific merit of the proposal.
- A system is in place by which to rate or rank proposals so that priority is assigned to them for funding.
- The selection of proposals to fund is based on this ranking system.

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**Technical Experts Evaluate  
SBIR Proposals**

We found that all agencies use persons who are experts in the particular research area to evaluate proposals in those areas. However, agencies use different combinations of in-house and external experts to evaluate proposals. For example, 11 agencies use in-house staff, 7 use outside consultants, and 3 use both.

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**SBA Evaluation Criteria  
Are Being Used**

In its September 1984 Policy Directive, SBA put forth the following minimum criteria which it believed agencies should use to evaluate phase I and II SBIR proposals:

- The technical approach and the anticipated benefits that may be derived from the research.
- The adequacy of the proposed effort and its relationship to fulfilling the requirements of the research topic or subtopics.
- The soundness and technical merit of the proposed approach and its incremental progress toward topic and subtopic solution.
- Qualifications of the proposed principal investigators.
- Special consideration of proposals which demonstrate phase III commitments in phase II evaluations of proposals of equal technical and scientific merit.

We found that all agencies use these criteria either on their evaluation forms or discuss them in their program solicitations. Additionally, most agencies emphasize the technical merit criterion by giving it twice as much weight in the scoring process.

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**All Agencies Have a Rating  
System in Place**

Although all agencies use SBA's criteria to evaluate their SBIR proposals, each uses its own systems for rating or scoring proposals against these criteria. We found that 2 of 21 agencies visited—the Communications-Electronics Command and the Defense Nuclear Agency—use qualitative ratings such as “critical” or “high.” Four other agencies—DOT, the Strategic Defense Initiative Organization, NSF, and the Ballistic Missile Office—use a combination of numerical and qualitative scoring. For example, the Ballistic Missile Office first scores proposals numerically, then on the basis of the scores, puts the proposals into corresponding quality categories. NSF, on the other hand, uses a numerical system for phase I proposals and a qualitative system for phase II. NRC does not have a scoring system, per se; evaluators either recommend or do not

recommend a proposal for funding. The recommendation and the evaluators' written comments are sent forward for approval, and the recommendation can be changed by either the branch or division chief. The remaining 13 agencies use a numerical scoring system.

## **Final Selection Systems**

Each agency has a system in place by which it selects proposals for funding based on the proposal's rating. However, as with evaluation and scoring practices, agencies do this differently.

Fourteen agencies use panels to discuss the SBIR proposals and to make final selections for funding. The panel members vary, consisting of a combination of division directors of the agencies' participating units or divisions, SBIR program managers, technical staff, and outside peer reviewers. For example, at NRC, the final selection panel consists of the Deputy Director of the Office of Nuclear Regulatory Research and division directors within that office. The panel considers for approval only those SBIR proposals recommended for funding by the division's directors.

The remaining agencies' divisions and units either send in a ranked list of recommended proposals to the SBIR office from which the SBIR program manager makes final selections for funding (usually in coordination with a higher level office) or the divisions and units make the final selections themselves (within a target number provided to them from the SBIR office) and inform the SBIR office as to which ones they will fund.

## **Innovation and Commercialization: Additional Factors Which Agencies Consider**

In addition to SBA's criteria, we found that all agencies consider, to some degree, the innovation and commercial potential of SBIR proposals in their SBIR evaluation and selection processes. However, officials at eight agencies stated that research needs and priorities are usually given emphasis over these two factors. Specifically, in regard to innovation and commercialization, we found that

- all agencies explicitly discuss innovation in their phase I evaluation criteria and most also used it as phase II criteria and

- agencies consider commercial potential through the use of nonfederal follow-on funding agreements,<sup>1</sup> and in their topic development and final selection processes.

Although innovation is not specified in SBA's evaluation criteria (contained in the 1984 Policy Directive), all agencies have revised SBA's phase I criterion addressing technical merit to include consideration of a proposal's innovativeness and originality. DOE took a further step in fiscal year 1985 and separated innovation and originality from technical merit to make it a criterion of its own. SBIR program officials stated that they did this so that DOE evaluators would be sure to consider it in their evaluations and address it in their review comments.

Officials at six agencies said that they consider the commercial potential of SBIR projects either in the final selection decisions for funding or by developing SBIR research topics which they believe will result in marketable results for the SBIR participant. Six agencies stated that one way they assess the commercial potential of a proposal is through nonfederal phase III funding agreements. Although submission of nonfederal funding agreements is optional, Public Law 97-219 requires that when two proposals are approximately equal in scientific merit, agencies are to give special consideration to phase II proposals which submit a nonfederal phase III funding commitment along with their proposal.

Most program managers stated that they did not have tie breaking situations and any commitments which proposers submitted were simply used as additional information in the selection process. Lastly, only four agencies—Education, DOE, NASA, and NSF—had procedures in place to determine the validity of the commitments which they received.

NSF is one agency which places considerable emphasis on using nonfederal funding agreements in its funding decisions. NSF officials consider all phase II proposals rated as "very good"—its second highest scoring category—to be of equal merit and requires these proposers to submit nonfederal funding commitments. NSF officials also emphasize that the funding commitments must be valid, which NSF determines by the degree of commitment which the nonfederal source makes. NSF will delay the funding of a proposal until a valid commitment is obtained.

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<sup>1</sup>Nonfederal funding commitments are agreements between the proposer of the phase II research and an interested third party for possible future funding for further development of the proposer's ideas.

**Keen Competition and  
 High Average Scores  
 Indicate That Quality  
 Research Is Being  
 Funded**

**SBIR Is a Competitive  
 Program**

Even with adequate procedures in place and being used, agencies still need to have a large enough "pool" of proposals to draw from to help ensure funding of worthy proposals. This is true because the greater the number of proposals that an agency receives, the greater are its opportunities of finding ones which meet its standard for technical quality. We therefore examined the competitiveness of the program, using as our measure the relationship between the total number of awards made to the total number of proposals received and found that the competition in the SBIR program is keen. Table 2.1 shows that the overall competitiveness of the phase I program remained high as shown by the average award ratios for all SBIR agencies—8.5 percent in fiscal year 1983, 12.5 percent in fiscal year 1984, and 14.7 percent in fiscal year 1985.

**Table 2.1: Competitiveness of the SBIR Program**

FY	Phase I proposals			Phase II proposals		
	Received	Awarded	Percentage accepted	Received	Awarded	Percentage accepted
1983	6,385	543	8.5	N/A	N/A	N/A
1984	5,314	662	12.5	366	201	54.9
1985	6,368	935	14.7	446	203	45.5

FY = Fiscal year.  
 N/A = Not applicable.

The competitiveness of the phase II program appears to be much lower, with overall award percentages of 54.9 percent for fiscal year 1984 and 45.5 percent for fiscal year 1985. However, the number of phase II proposals is restricted and includes only phase I projects already judged to be of high quality because only phase I awardees may apply for phase II funding. As a result, the higher phase II award ratio does not necessarily indicate selection of poorer quality projects.

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**Average Scores of Funded  
Proposals Show That "Top"  
Proposals Are Being Funded**

As discussed earlier in this chapter, we found that agencies have SBIR procedures in place which are designed to reasonably assure fair and unbiased selections based on merit. To test the application of these procedures, we collected data on the scores of the funded proposals, calculated an average score for each agency, and determined what percentage the average score was to an agency's perfect score. (Apps. I through V show the perfect score, average score, and percentages for each agency and fiscal year.) We grouped the percentages into three ranges—80-100, 70-79, and below 70. We found that for most agencies, the average scores of funded phase I and II proposals fell into the highest range—80-100. Additionally, most SBIR program managers judged proposal quality to be good.

Although we technically reviewed data at a total of 21 agencies as discussed in chapter 1, NCI, NIAAA, and NHLBI award both contracts and grants and use a different scoring system for each. As a result, we counted these agencies twice in our data analysis for this chapter—once using contract data and once using grant data. Consequently, the total number of agencies from which we obtained scoring data is 24 for this chapter. Figure 2.1 shows for those groups which could provide data, percentage ranges for average scores of funded proposals, and the number of agencies which funded proposals in each range for fiscal years 1983-85. Figure 2.2 shows similar data for fiscal years 1984-85.

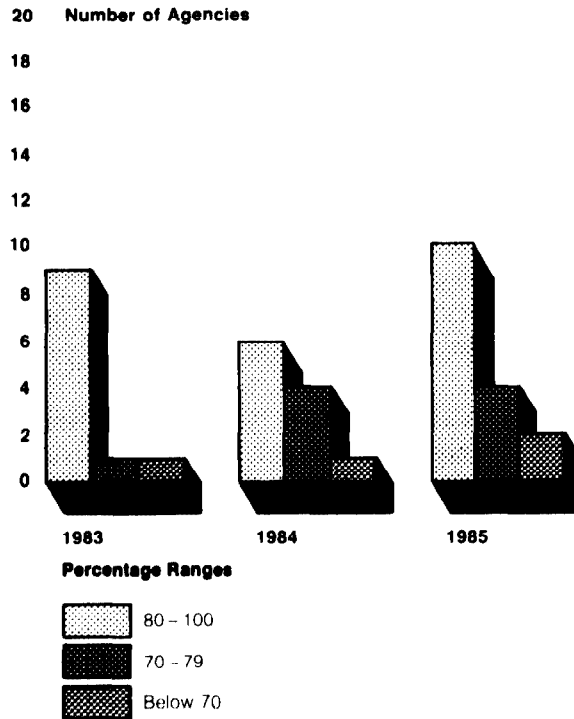
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**Phase I Scores**

For the 24 agencies reviewed, we obtained score data from 12 for fiscal years 1983 and 1984 and 18 for 1985. Figure 2.1 shows that for each fiscal year, most agencies funded highly rated phase I proposals, as evidenced by the number of agencies whose average score fell into the highest percentage range. (Apps. I through III show individual agency scores by fiscal year.)

**Chapter 2  
Agencies' SBIR Evaluation and Selection  
Procedures Have Resulted in Funding for  
Worthy Proposals**

**Figure 2.1: Phase I Average Scores**



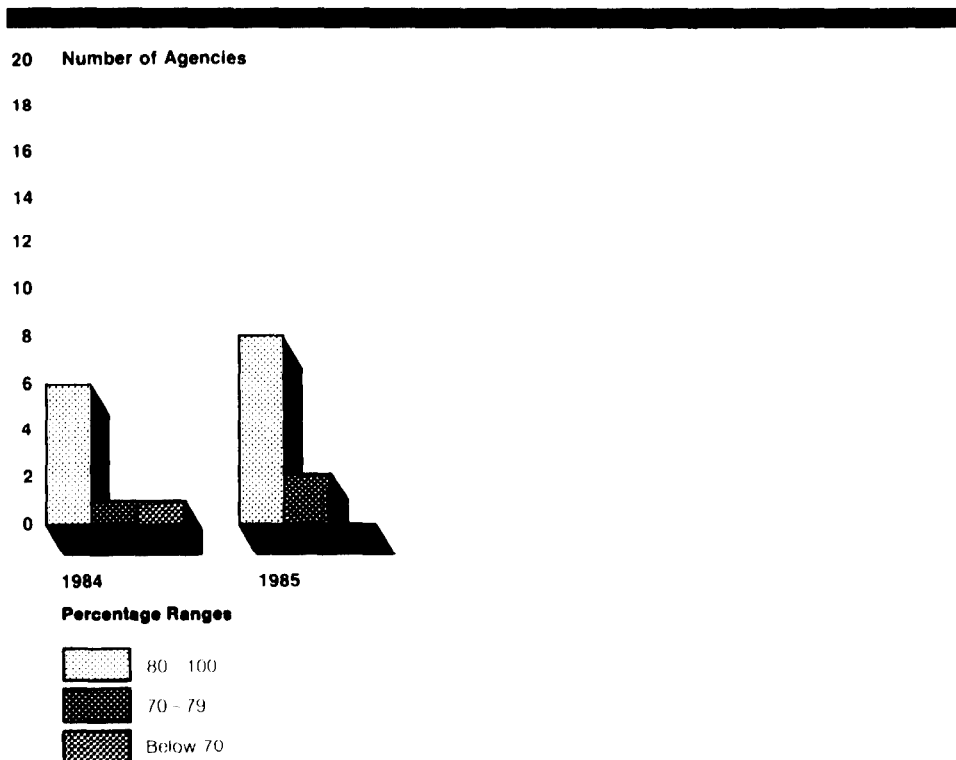
However, we could not obtain data from five agencies for fiscal years 1983 and 1984 and three agencies for fiscal year 1985. Agencies could not provide these data because they either had not retained this information in their files or it was located in field unit files and could not readily be retrieved. Also, a number of agencies did not have a program for all 3 years, and thus did not have data to give us. Finally, some agencies did not have numerical scoring systems which we could analyze in this manner.

**Phase II Scores**

Nine of the 24 agencies were able to provide us with 1984 data while 12 were able to do so for 1985. As with the phase I data, figure 2.2 shows that most agencies' average phase II scores fell into relatively high percentage ranges. (Apps. IV and V show individual agency scores by fiscal year.)



**Figure 2.2: Phase II Average Scores**



We did not obtain fiscal year 1984 phase II scoring data for 15 agencies. Program officials at seven agencies stated that they did not have data on phase II scores for the same reasons as stated earlier. Six agencies did not have programs in fiscal year 1983 and thus did not have phase II selections to make in fiscal year 1984 as stated earlier. Two agencies did not have scoring systems which we could analyze in this manner.

We could not obtain fiscal year 1985 phase II scoring data from 12 agencies. Eight of these had not yet selected phase II proposals for funding at the time of our visit or had just started participating in the program and thus had not begun a phase II cycle. Two agencies had not retained these data in their files, and two agencies did not have scoring systems we could analyze in this manner.

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## **Program Managers State That the Quality of Funded Proposals Is High**

Sixteen of the 23 SBIR program managers at the agencies from which we sought scoring information stated that the quality of funded SBIR proposals was good to excellent. (Although we visited 21 agencies, the Communications-Electronics Command had a total of four program managers—not one—while NCI, NHLBI, and NIAAA, had two managers instead of three. Consequently, there is not a one-for-one correlation between the number of agencies visited and the number of program managers.) For example, the SBIR program manager at the Defense Nuclear Agency told us that the quality of funded SBIR proposals was as good as those funded under the Defense Nuclear Agency's traditional research program. DOE officials stated that the quality was not only high in their own view but also in the view of the DOE technical staff managing the SBIR projects. Additionally, the Commander of the Ballistic Missile Office commented that although his staff was not enthusiastic about the program at first, they like it very much now and believe it is an important tool in helping the Air Force meet its readiness needs. The remaining SBIR program managers thought the overall quality of funded proposals had varied from year to year, although some believed that it had improved.

Although the average scores of funded proposals tend to support SBIR program managers' assessments of their quality, some agencies' average scores fell into percentage ranges lower than 80. We therefore discussed these scores with appropriate managers to ensure that these scores were, in their opinion, indicative of high-quality proposals.

We contacted SBIR program managers at seven agencies—DOT, EPA, the Naval Air Systems Command, the Communications-Electronics Command, NCI, NIAAA, and NHLBI. All agency officials said that the quality of their funded SBIR proposals is good. Cognizant officials for NCI and NHLBI further explained that external peer review panels, which these units use to evaluate SBIR proposals, tend to be more strict and, as a consequence, score proposals relatively lower than internal reviewers, which are used by most other agencies. EPA's program manager characterized the average score for EPA's fiscal year 1984 phase II proposals as low, but still fundable, and stated that this was because fiscal year 1984 was the first year EPA received phase II proposals. He added that the average scores were much higher in later years.

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## **Conclusions**

Agencies use technical experts and standard criteria to evaluate the scientific and technical merit of SBIR proposals. In addition, they have designed systems by which they score proposals on these criteria, rank

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**Chapter 2**  
**Agencies' SBIR Evaluation and Selection**  
**Procedures Have Resulted in Funding for**  
**Worthy Proposals**

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them, and then fund proposals based on their ranking. Although we could not independently verify the quality of the SBIR proposals being funded, we believe that the use of such procedures show that agencies are making good faith efforts to maintain a system which is fair and provides for final selection based on technical merit. The high average scores of funded proposals for fiscal years 1983 through 1985 further support our belief that quality research is being funded under agencies' SBIR programs.

# More Agencies Are Taking Additional Time to Award Contracts and Grants

SBA established a goal that phase I SBIR contract and grant awards should normally be made within 6 months after receiving the proposal. However, since 1983, the number of agencies taking more than 6 months, on average, to make awards has increased each year. In fiscal year 1983, for example, 5 of the 19 agencies reviewed took more than 6 months to award phase I contracts and grants. Furthermore, the number of agencies taking more than 6 months to award increased to 14 in fiscal year 1984 and 17 in fiscal year 1985. We found no relationship between the number of proposals received by agencies and the length of time to make awards.

SBA has not established a goal for the amount of time agencies may take to make phase II awards because, unlike phase I, phase II involves the actual research and, therefore, cannot adhere as easily to specific milestones. Further, because many agencies could not provide information on the time to make individual awards, we could not calculate the average time for awarding phase II contracts and grants.

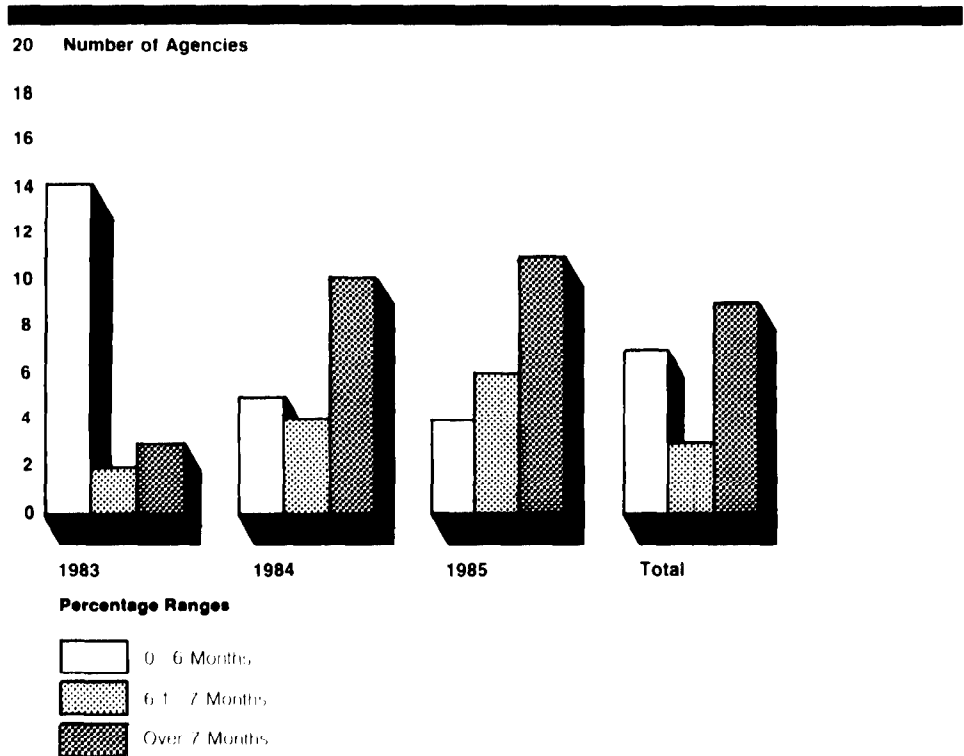
Although we measured the time it takes for agencies to award phase I SBIR contracts and grants, we did not attempt to determine for each agency the degree, if any, to which timeliness could be improved.

## Award Process Time Increasing

In its requirement for establishing a simplified and standardized funding process, the SBIR legislation requires that specific attention be given to the timely review and award of research proposals. The SBA policy directive provides that the receipt, evaluation, and award of phase I contracts and grants should normally be completed in 6 months. SBA did not set a similar goal for phase II.

We gathered data on the time agencies have taken to award phase I contracts and grants for fiscal years 1983 through 1985. We computed time to award by calculating the average time agencies took each year to award all SBIR contracts and grants. Figure 3.1 summarizes the average time agencies took to make awards for each year as well as for the 3-year cumulative period. (App. VI highlights the average time to award as well as the number of proposals received for each agency by fiscal year.) Time-to-award includes the period from the closing solicitation date (the last day by which agencies will accept proposals) to actual award dates of contracts and grants. For the cumulative average (labeled "Total" in fig. 3.1), we weighted each agency's time frame by the number of proposals it received each year.

Figure 3.1: Time Taken by Agencies to Award Phase I Contracts and Grants



As figure 3.1 shows, the number of agencies taking more than 6 months, on average, to award phase I SBIR contracts and grants is increasing each year. For example, in 1983, 5 of the agencies we reviewed took more than 6 months to make phase I awards. However, this figure increased to 14 and 17 agencies in fiscal years 1984 and 1985, respectively. All agencies provided data, but we did not include the Department of Commerce and the Strategic Defense Initiative Organization in the analysis for 1983 and 1984 because their SBIR programs began in fiscal year 1985.

We discussed with SBA officials the increase in the number of agencies taking more than 6 months, on average, to award phase I contracts and grants. SBA officials agreed to monitor the situation, including the collection of data on the time taken to make awards from the 11 participating agencies. According to SBA, the information will be included, for the first time, in its annual report covering fiscal year 1987 SBIR activities.

We also analyzed the number of proposals received by each agency to determine if “workloads” affected the time that agencies took to award phase I contracts and grants. Our analysis, displayed in table 3.1, indicates no apparent relationship between these two factors.

**Table 3.1: Average Time to Award by the Number of Proposals Received**

Year	Proposals received			
	0-99	100-499	500-999	1,000 and up
1983	4.67	5.03	4.60	6.30
1984	9.96	6.84	6.57	N/A
1985	7.98	7.27	6.57	8.00

N/A = Not applicable.

### **SBA Has Not Established a Specific Time Goal for Phase II Awards**

SBA has not prescribed a specific time goal for awarding phase II contracts and grants as it did for phase I contracts and grants. SBA officials told us that because phase I is a feasibility study to do proposed research, it is more readily subject to specific milestones than the actual research performed in phase II.

We also encountered difficulties in collecting phase II data from agencies. To calculate the amount of time it took them to make phase II awards, we needed the date by which agencies received phase II proposals. But unlike phase I, many agencies do not have a standard deadline for receiving phase II proposals. In lieu of this, we asked agencies to provide the actual receipt date, but most could not do this either. Appendix VII shows that of the 21 agencies and units reviewed, 11 were able to provide these necessary data for fiscal year 1984, and 10 were able to do so for fiscal year 1985.

### **Conclusions**

The number of agencies taking more than 6 months, on average, to award phase I SBIR contracts and grants has increased each year. In 1983, only 5 of the agencies we reviewed took more than 6 months to award contracts and grants. However, this figure increased to 14 in 1984 and 17 in 1985. SBA has agreed to monitor the situation by collecting these data from agencies for future annual reports. Additionally, although the number of proposals each agency receives varies considerably, we found no apparent relationship between this and the length of time it took agencies to make awards.

SBA has not established a goal for the amount of time agencies may take to award phase II contracts and grants. Also, because many agencies could not provide data on the time to make awards, we could not calculate the average time for awarding contracts and grants.

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## **Agency Comments and Our Response**

The agencies generally agreed with GAO's findings and conclusions. SBA said, as part of its monitoring of the time it takes for agencies to award contracts and grants, it will collect and include pertinent information on time frames as part of its annual report.

DOE suggested that another measure of agency compliance with SBA's goal would be the percentage of awards made within the SBA-prescribed 6-month period. We acknowledge that SBA's directive provides that awards shall normally be made within 6 months and that some could take longer. However, we used an exact 6-month period to measure the time to make awards because SBA officials told us that agencies should be able to complete the award process in that time frame. Furthermore, because we used an average of all proposals considered by each agency, some could have taken longer than 6 months to award yet still could have met the "average 6 months" goal. Accordingly, we believe our use of a 6-month period is a valid standard to measure agency timeliness; DOE's suggested measure is but another way to gauge timeliness.

# Agencies Are Using Procedures to Make SBIR Simpler and Less Burdensome to Small Businesses

All agencies we reviewed are using procedures intended to make their SBIR programs simpler and less burdensome for small businesses. The procedures most frequently identified by program and contract office officials include issuing SBIR program solicitations, using fixed-price contracts and grants, limiting reviews of accounting systems, and using incremental or advanced payments.

Three agencies have unique procedures designed to make SBIR easier for small businesses. These include interim funding by DOE, model SBIR contracts by NASA and DOE, and multiple receipt dates for PHS research proposers.

To gauge small businesses' perceptions of agency timeliness in the SBIR program, we asked SBIR recipients two questions about their experiences with agencies in a concurrent GAO review. Respondents said that less paperwork and time is required for SBIR as compared with other government research programs. Recipients also said they were satisfied with several aspects affecting the simplicity of the SBIR program.

## Procedures Are Making SBIR Simpler and Less Burdensome

According to the SBA policy directive, simplifying regulations is an important objective of the SBIR program. Further, the directive encourages participating agencies to initiate or continue developing simplified administrative procedures for their use on SBIR programs.

We asked SBIR program and contract personnel to identify procedures their agencies have initiated to make the SBIR program simpler and less burdensome to small businesses. Appendix VIII summarizes the procedures agency personnel said they are using in their SBIR programs. The appendix may not identify every agency using a listed procedure because agency personnel responded to a general GAO question, not a specific checklist of possible procedures.

Appendix VIII shows that all reviewed units have procedures intended to make the SBIR program simpler and less burdensome to small businesses. The procedures agency personnel mentioned most frequently are described below.

## SBIR Program Solicitation

All agencies, as required by the SBA policy directive, issue program solicitations at least once a year. They include program descriptions, proposal preparation instructions and requirements, methods of selecting and evaluating criteria, and research topics. Agency personnel told us



this makes SBIR simple because all the information that firms need in order to respond to the research program is in one document. DOD, for example, issues one annual solicitation covering all of its components.

**Fixed-Price Contracts and Grants**

Most agencies use fixed-price contracts and grants as funding instruments for SBIR in phase I. Agency officials said that these are administratively less burdensome on recipients and simpler than other forms of funding agreements because they have fewer clauses, restrictions, and procedures. According to an Education Department contract specialist, fixed-price contracts allow the recipient to complete work with little government involvement.

**Limited Review of Accounting Systems**

Nine agencies told us they limit their review of accounting systems when a firm, fixed-price contract is used because those funds can only be used for a specific purpose. For example, DOT, NASA, NCI, and USDA are some of the agencies that do not review contractors' accounting systems in phase I when firm, fixed-price contracts are the funding mechanism.

**Incremental or Advanced Payments**

Most agencies, as encouraged by the SBA policy directive, use some form of incremental or advanced payments for SBIR awardees.

Other procedures frequently mentioned by program officials who make their SBIR programs simpler and less burdensome to small businesses include limiting the number of pages on proposals, requiring fewer copies of research proposals, and using easier reporting requirements.

**Unique Procedures Make SBIR Simpler and Less Burdensome**

DOE, NASA, NCI, NIAAA, and NHLBI have procedures that other agencies are not using which, according to program officials, make the SBIR program simpler and less burdensome to small businesses. DOE provides interim funding for its phase II recipients. NASA and DOE developed model contracts tailored to phase I SBIR awardees. Finally, NCI, NIAAA, NHLBI have three receipt dates each year for phase I grant proposals. More detailed descriptions of these procedures follow; however, they may not be appropriate for other agencies.

**DOE's Interim Funding**

DOE developed an interim funding procedure specifically for SBIR that enables recipients to begin phase II projects with no gap in funding between phases. Under this policy, phase I contractors have the option

of submitting their phase II proposals 6 weeks before the end of the phase I term. DOE reviews the proposals and continues the successful projects into phase II with no gap in funding. According to DOE officials, this allows the recipient to keep staff and maintain continuity on research projects between phases. Although DOE risks losing the additional funding if the contract cannot be negotiated, DOE officials said that this has not happened.

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### **NASA's and DOE's Model Contracts**

NASA and DOE are the only agencies reviewed which developed model, fixed-price contracts tailored to phase I recipients. According to agency officials, the following aspects of their contracts make the SBIR program simpler. First, unlike regular contracts, NASA and DOE contracts for SBIR contain full text contract clauses. Because small businesses may not be familiar with the usual government procurement lexicon, inserting full text clauses in contracts is easier for small businesses. Second, agency officials said their phase I contracts contain only essential contract provisions and that contract language is simplified to the extent possible. NASA's model contract has fewer pages than other contracts used for the agency's regular research programs. DOE officials said its contract contains modifications to aid in a uniform and simplified transition to phase II.

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### **NCI's, NIAAA's, and NHLBI's Multiple-Receipt Dates**

NCI, NIAAA, and NHLBI instituted, for their SBIR grant proposals, three proposal receipt dates annually instead of limiting the small business community to a single opportunity each year. Both phase I and phase II proposals are accepted on each receipt date. This policy, which is in effect for their traditional research programs as well as for SBIR, is an advantage, according to program managers, because if a company misses one deadline, it need only wait 4 months, not a year, for the next submission date. According to these agency officials, this approach has been well received by the small business community.

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### **Participants' Views**

As previously discussed, we mailed questionnaires to a sample of small businesses to gauge their perceptions of the SBIR program. We asked awardees who had received both SBIR and traditional government research awards (1) to compare the time required to prepare the proposal and the paperwork requirements for SBIR projects with other federal R&D programs and (2) how satisfied they were with two specific aspects of the SBIR program's administration. The survey results are highlighted below.

**SBIR Awardees Perceive Time and Paperwork Requirements to Be Less for SBIR**

SBIR awardees believe that less paperwork is required for SBIR than for traditional research programs. As table 4.1 shows, 63 percent of the respondents stated that SBIR paperwork requirements are either less or much less than those required for other research programs. Fifty-one percent of the participants perceived that the time required to prepare SBIR proposals was less than for other research programs.

**Table 4.1: Participants' Opinions on Time to Prepare SBIR Proposals and Paperwork Requirements**

Amount of time in percent					
Factor	Much more	More	The same	Less	Much less
Amount of time to prepare proposal	1	7	41	37	14
Amount of paperwork required	1	4	32	38	25

**SBIR Awardees Are Satisfied With Program Aspects Which Simplify SBIR**

SBIR recipients are generally satisfied with two aspects of the SBIR program—the solicitation document and the responsiveness of agency personnel. Agency officials also identified both of these items as ways in which the SBIR program was easier for small businesses to participate. (See table 4.2.) Specifically, 78 percent of the awardees said they were satisfied with the clarity of proposal solicitation documents, and 81 percent of the respondents said they were satisfied with the response of agency personnel to their inquiries.

**Table 4.2: Participants' Satisfaction With Selected SBIR Program Aspects**

Aspect	Percent				
	Very satisfied	Satisfied	Neither	Dissatisfied	Very dissatisfied
Clarity of solicitation	25	53	13	6	2
Response of agency personnel	37	44	12	5	2

**Conclusions**

Since SBIR's inception, all agencies we reviewed have instituted procedures which agency officials said make their SBIR programs simpler and less burdensome to small businesses. Procedures most often identified as such by agency personnel include issuing SBIR program solicitations, using fixed-price contracts and grants in phase I, limiting reviews of accounting systems, and using incremental or advanced payments.

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**Chapter 4  
Agencies Are Using Procedures to Make SBIR  
Simpler and Less Burdensome to  
Small Businesses**

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We found that three agencies are using some unique procedures. DOE uses interim funding to allow SBIR firms to keep staff and maintain continuity on research between phases. NASA and DOE developed model firm, fixed-price contracts, which eliminate bureaucratic jargon for better comprehension. Finally, the Public Health Service's multiple-proposal receipt policy allows firms to submit proposals several times a year instead of just once.

Participants' responses to our SBIR questionnaire tend to support the effectiveness of agency simplification efforts. Specifically, most SBIR recipients said that less paperwork is required for SBIR than for other government research programs. Additionally, they were satisfied with agencies' efforts to simplify program solicitation documents and the response of agency personnel to their inquiries.



# 1983 Phase I Scores as a Percentage of the Perfect Score

Agency	Perfect score	Average score	Percentage
ASD	100	90.8	90.8
BMO	N/D	N/D	N/D
CECOM	Critical	N/A	Critical/High
Commerce	N/A	N/A	N/A
DARPA	4	3.47	86.75
DNA	N/D	N/D	N/D
DOE	100	98.6	98.6
DOT	100	85.3	85.3
Education	100	89.5	89.5
EPA	100	97	97
NASA	N/D	N/D	N/D
NAVAIR	20	16.2	81
NAVSEA	N/D	N/D	N/D
NCI (C)	N/A	N/A	N/A
NCI (G)	100	187	78.25
NHLBI (C)	N/A	N/A	N/A
NHLBI (G)	100	232	67
NIAAA (C)	N/A	N/A	N/A
NIAAA (G)	N/A	N/A	N/A
NRC	N/A	N/A	N/A
NSF	20	16.3	82
SDIO	N/A	N/A	N/A
USAMRDC	500	417.8	83
USDA	N/D	N/D	N/D
<b>Summary:</b>			
	N/A = 8		
	N/D = 5		
	<b>Subtotal = 13</b>		
<b>Average Score:</b>			
	80-100 = 9		
	70-79 = 1		
	Below 70 = 1		
	<b>Subtotal = 11</b>		
	<b>Total = 24</b>		

C: Contracts.  
 G: Grants.  
 N/A: Not applicable.  
 N/D: No data.

# 1984 Phase I Scores as a Percentage of the Perfect Score

Agency	Perfect score	Average score	Percentage
ASD	100	89	89
BMO	N/D	N/D	N/D
CECOM	Critical	N/A	High
Commerce	N/A	N/A	N/A
DARPA	N/D	N/D	N/D
DNA	N/D	N/D	N/D
DOE	100	93.6	93.6
DOT	5	3.97	79.4
Education	100	84.5	84.5
EPA	100	92.4	92.4
NASA	N/D	N/D	N/D
NAVAIR	25	19	76
NAVSEA	N/D	N/D	N/D
NCI (C)	N/A	N/A	N/A
NCI (G)	100	289	52.75
NHLBI (C)	N/A	N/A	N/A
NHLBI (G)	100	220	70
NIAAA (C)	N/A	N/A	N/A
NIAA (G)	100	201	74.75
NRC	N/A	N/A	N/A
NSF	20	16.3	83
SDIO	N/A	N/A	N/A
USAMRDC	100	90.6	90.6
USDA	N/D	N/D	N/D
Summary:			
	N/D = 6		
	N/A = 7		
	<b>Subtotal = 13</b>		
Average Score:			
	80-100 = 6		
	70-79 = 4		
	Below 70 = 1		
	<b>Subtotal = 11</b>		
	<b>Total = 24</b>		

C: Contracts.  
 G: Grants.  
 N/A: Not applicable.  
 N/D: No data.

# 1985 Phase I Scores as a Percentage of the Perfect Score

Agency	Perfect score	Average score	Percentage
ASD	100	92.6	92.6
BMO	Green	N/A	Green/Yellow
CECOM	Critical	N/A	Critical/High/Medium
Commerce	20	18.7	93.5
DARPA	N/D	N/D	N/D
DNA	HIGH	HIGH	N/A
DOE	100	93.6	93.6
DOT	5	4.3	86
Education	100	88.1	88.1
EPA	100	90.9	90.9
NASA	N/D	N/D	N/D
NAVAIR	25	18.7	74.8
NAVSEA	N/D	N/D	N/D
NCI (C)	100	68	68
NCI (G)	100	206	73.5
NHLBI (C)	100	74	74
NHLBI (G)	100	231	67.25
NIAAA (C)	100	79.6	79.6
NIAAA (G)	100	178	80.5
NRC	N/A	N/A	N/A
NSF	20	16.1	81
SDIO	N/A	N/A	N/A
USAMRDC	120	105.6	88
USDA	20	17.4	87
Summary:			
	N/A = 5		
	N/D = 3		
	<b>Subtotal = 8</b>		
Average Score:			
	80-100 = 10		
	70-79 = 4		
	Below 70 = 2		
	<b>Subtotal = 16</b>		
	<b>Total = 24</b>		

C: Contracts.

G: Grants.

N/A: Not applicable.

N/D: No data.

Green/Yellow: Highest scoring categories.



# 1984 Phase II Scores as a Percentage of the Perfect Score

Agency	Perfect score	Average score	Percentage
ASD	102	95.4	93.5
BMO	N/D	N/D	N/D
CECOM	Critical	N/A	N/A
Commerce	N/A	N/A	N/A
DARPA	N/D	N/D	N/D
DNA	N/D	N/D	N/D
DOE	100	92.4	92.4
DOT	5	4.7	94
Education	N/D	N/D	N/D
EPA	100	71.5	71.5
NASA	100	90	90
NAVAIR	N/D	N/D	N/D
NAVSEA	N/D	N/D	N/D
NCI (C)	N/A	N/A	N/A
NCI (G)	100	258	60.50
NHLBI (C)	N/A	N/A	N/A
NHLBI (G)	100	173	81.75
NIAAA (C)	N/A	N/A	N/A
NIAAA (G)	100	N/A	N/A
NRC	N/A	N/A	N/A
NSF	Excellent	Very good	N/A
SDIO	N/A	N/A	N/A
USAMRDC	120	113	94.17
USDA	N/D	N/D	N/D
Summary:			
	N/A = 9		
	N/D = 7		
	<b>Subtotal = 16</b>		
Average Score:			
	80-100 = 6		
	70-79 = 1		
	Below 70 = 1		
	<b>Subtotal = 8</b>		
	<b>Total = 24</b>		

C: Contracts.  
 G: Grants.  
 N/A: Not applicable.  
 N/D: No data.

# 1985 Phase II Scores as a Percentage of the Perfect Score

Agency	Perfect score	Average score	Percentage
ASD	102	92.8	90.9
BMO	Green	Green	N/A
CECOM	Critical	N/D	N/D
Commerce	N/A	N/A	N/A
DARPA	N/D	N/D	N/D
DNA	High	High	N/A
DOE	100	89.2	89.2
DOT	5	4.25	85
Education	100	86	86
EPA	100	83.1	83.1
NASA	100	93	93
NAVAIR	N/D	N/D	N/D
NAVSEA	N/D	N/D	N/D
NCI (C)	N/A	N/A	N/A
NCI (G)	100	203	74.25
NHLBI (C)	N/A	N/A	N/A
NHLBI (G)	100	214	71.5
NIAAA (C)	N/A	N/A	N/A
NIAAA (G)	N/A	N/A	N/A
NRC	N/A	N/A	N/A
NSF	Excellent	Very good	N/A
SDIO	N/A	N/A	N/A
USAMRDC	120	117.8	98.17
USDA	26	22	84.62
Summary:			
	N/A = 10		
	N/D = 4		
	<b>Subtotal = 14</b>		
Average Score:			
	80-100 = 8		
	70-79 = 2		
	Below 70 = 0		
	<b>Subtotal = 10</b>		
	<b>Total = 24</b>		

C: Contracts.  
 G: Grants.  
 N/A: Not applicable.  
 N/D: No data.  
 Green: Highest scoring category.

# Average Time Agencies Took to Award Phase I SBIR Contracts and Grants

Time of award in months								
Agency	Time to award 1983	No. of proposals received	Time to award 1984	No. of proposals received	Time to award 1985	No. of proposals received	Weighted averages	No. of proposals
ASD	4.1	261	7.6	489	7.1	541	6.2	1,291
BMO	3.6	9	9.2	87	9.2	199	9	295
CECOM	9.1	33	7	16	6.8	113	7.9	162
Commerce	N/A	N/A	N/A	N/A	3.6	154	N/A	154
DARPA	5.6	128	8	107	9	130	7.6	365
DNA	3.5	88	5.8	80	6.4	95	5.6	263
DOE	6.0	1,734	6.1	844	6.0	861	6.0	3,439
DOT	4.6	372	6.1	366	5.1	318	5.4	1,056
Education	1.1	84	5.1	234	6.7	142	4.8	460
EPA	5.3	214	5.3	136	6.7	154	6	504
NASA	4.6	977	7.1	919	8	1,164	6.8	3,060
NAVAIR	7	179	9.8	185	8.1	84	8.2	448
NAVSEA	8.2	344	9.1	113	13.5	62	9	519
NCI*	5	98	12	92	10	135	9.6	325
NHLBI*	5.4	91	9	112	9.3	119	8.3	322
NIAAA*	5	15	12	16	10.4	13	10.3	44
NRC	3.8	172	5	110	4.2	72	4.3	354
NSF	6.5	1,186	6.5	974	6.5	938	6.5	3,098
SDIO	N/A	N/A	N/A	N/A	14.9	415	N/A	415
USAMRDC	8.6	126	10.9	106	11	80	10.3	312
USDA	3.1	274	4.6	328	6.3	298	4.8	900
Summary:		0-6 mos = 14		0-6 mos = 5		0-6 mos = 4		0-6 mos = 7
		6.1-7 mos = 2		6.1-7 mos = 4		6.1-7 mos = 6		6.1-7 mos = 3
		Over 7 mos = 3		Over 7 mos = 10		Over 7 mos = 11		Over 7 mos = 9
		N/A = 2		N/A = 2				N/A = 2
		<b>Total = 21</b>		<b>Total = 21</b>		<b>Total = 21</b>		<b>Total = 21</b>

N/A: Not applicable because Commerce and SDIO began their SBIR programs in 1985.

\*Data for NCI, NHLBI, and NIAAA include grants only because PHS began using contracts as a funding instrument in 1985. Also, we did not measure the length of time to award contracts in 1985 because PHS issued two program solicitations.

# Average Time Agencies Took to Award Phase II SBIR Contracts and Grants

Time of award in months				
Agency	Time to award 1984	No. of proposals received	Time to award 1985	No. of proposals received
ASD	7.3	N/D	6.7	N/D
BMO	6.6	N/D	10.8	N/D
CECOM	9.5	N/D	(d)	N/D
Commerce <sup>a</sup>	N/A	N/A	N/A	N/A
DARPA	N/D	8	N/D	7
DNA	3.2	1	11.2	2
DOE	(c)	96	(c)	91
DOT	7.4	6	3.9	16
Education	5.4	7	6.2	11
EPA	4.8	8	4.7	10
NASA	N/D	92	N/D	92
NAVAIR	N/D	N/D	N/D	N/D
NAVSEA	11.9	N/D	9.8	N/D
NCI	N/D	15	N/D	10
NHLBI	N/D	14	N/D	16
NIAAA	N/A	N/A	N/A	N/A
NRC	4.9	7	5	5
NSF	(b)	81	(b)	126
SDIO <sup>a</sup>	N/A	N/A	N/A	N/A
USAMRDC	15.9	N/D	7.6	N/D
USDA	4.1	12	4.5	14
Summary 1984:				
		0-6 mos = 5	Summary 1985:	0-6 mos = 4
		6.1-7 mos = 1		6.1-7 mos = 2
		Over 7 mos = 5		Over 7 mos = 4
		N/D = 7		N/D = 8
		N/A = 3		N/A = 3
		<b>Total = 21</b>		<b>Total = 21</b>

<sup>a</sup>N/A because Commerce and SDIO began their SBIR programs in 1985.

<sup>b</sup>NSF estimated that it took 8 months to award contracts and grants in 1984 and 1985.

<sup>c</sup>According to DOE, about 40 percent of the DOE awardees had continuous contract coverage and no gap in funding between phases. The remaining 60 percent had an average gap of four months.

<sup>d</sup>CECOM had not made 1985 awards at the time of our review.

N/A: Not applicable.

N/D: No data.



# Procedures Agencies Are Using to Make SBIR Simpler and Less Burdensome

Procedures	Agencies							
	ASD	BMO	CECOM	COMM	DARPA	DNA	DOE	DOT
<b>Contracts/grants:</b>								
Special/simpler							X	
Fixed-price (phase I)	X	X	X	X	X	X	X	X
<b>General procurement:</b>								
Full text contracts							X	
Leniency in applying contract regs.							X	X
Req. less documentation			X	X			X	
Reduced number of steps in contract process							X	
<b>Reports:</b>								
Req. fewer copies				X			X	
Easier reporting reqs.	X			X	X	X	X	
<b>Payments:</b>								
Incremental/advanced	X	X	X		X	X	X	X
Less stringent acct./aud. reqs.			X	X	X	X	X	X
Interim funding							X	
Wire payments under \$25,000								
<b>Proposals:</b>								
Page limits on proposals			X	X	X	X	X	
Multiple receipt dates							X	
Broad generic topics	X							X
<b>Other:</b>								
Program solicitation	X	X	X	X	X	X	X	X
Special meetings/conf.								
Additional guidance	X		X					X
Program standardization			X				X	

**Appendix VIII  
Procedures Agencies Are Using to Make SBIR  
Simpler and Less Burdensome**

<b>Agencies</b>													
<b>EDUC</b>	<b>EPA</b>	<b>NASA</b>	<b>NAVAIR</b>	<b>NAVSEA</b>	<b>NCI</b>	<b>NHLBI</b>	<b>NIAAA</b>	<b>NRC</b>	<b>NSF</b>	<b>SDIO</b>	<b>USAMRDC</b>	<b>USDA</b>	<b>Total</b>
		X											2
X	X			X	X(C)	X(C)	X(C)	X	X	X	X	X	19
		X											2
		X				X							4
X								X					5
				X	X	X	X						5
		X			X	X	X(C)		X			X	8
X		X			X	X			X			X	11
X	X	X	X	X	X	X(C)	X	X	X	X	X	X	20
X		X			X	X		X	X	X	X	X	15
													1
	X												1
		X		X	X	X	X		X	X	X	X	14
					X(G)	X(G)	X(G)						4
		X			X	X							5
X	X	X	X	X	X	X	X	X	X	X	X	X	21
					X	X	X						3
					X	X					X	X	7
													2

C: Contracts  
G: Grants

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