U.S. GENERAL ACCOUNTING OFFICE
WASHINGTON, D. C. 20548

FOR RELEASE ON DELIVERY
Expected at 9:30 a.m., EST
Tuesday, January 26, 1982

STATEMENT OF

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BEFORE THE

HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY

ON

H.R. 4326 - "SMALL BUSINESS INNOVATION DEVELOPMENT ACT OF 1981"

Mr. Chairman and Members of the Committee:

We are pleased to be here today to discuss GAO's work on small businesses and innovation and to comment on the Small Business Innovation Development Act of 1981, H.R. 4326, as reported by the House Small Business Committee. In addition, we will comment on selected sections of S. 881, the Senate counterpart measure passed by the Senate on December 8, 1981. Both of these bills would increase the use of small businesses in meeting Federal research and development needs by the creation of individual, agency-sponsored, small business innovation research programs (SBIRs) to foster innovation by small businesses.

SMALL BUSINESSES AND INNOVATION

It is clear from the work we have done in the area of small businesses and innovation that small businesses have been important contributors to the innovation process in this country.

The objective of our work over the last 2 years has been to construct a comprehensive picture of small business innovation. To do this, we have addressed four questions: 1/

--What conclusions can be drawn from the existing literature about the contributions of small businesses to invention and innovation?

--What factors influence the environment within which small businesses innovate?

--How do small businesses act as innovators within that environment?

--How could an understanding of the answers to these two questions contribute to Federal policymaking efforts to support small businesses as innovators?

We found, based on an analysis of the existing literature, that small businesses have been important contributors to invention and innovation in this country--both in terms of the amount and the significance of inventions and innovations produced. While we were not able to generalize from the existing evidence to specify the level of small businesses' future contributions, no evidence was found to suggest that they might be less important to invention and innovation in the future than they have been in the past.

Further, we found that the environment within which small businesses innovate is influenced by three kinds of factors:

--broad economy-wide factors, such as tax policy;

--factors specific to individual industries, such as the rate of growth of the industry; and

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1/Detailed information addressing these questions is presented in, "Small Businesses Are More Active As Inventors Than As Innovators In the Innovation Process," U.S. General Accounting Office, PAD-82-19, December 31, 1981; and in "Consistent Criteria Are Needed to Assess Small Business Innovation Initiatives," U.S. General Accounting Office, PAD-81-15, July 7, 1981.

--the characteristics of individual firms, including the entrepreneurial nature of key individuals within it.

Based on our understanding of (1) the factors that influence small-business innovation and (2) the activities of small businesses as innovators, we identified the conditions that are necessary to foster innovation by small businesses. Actually, there are three sets of conditions: those that are necessary for small-business innovation to occur, those that are important but not as necessary, and those that are desirable but not as important.

Analysis of the conditions that are necessary, important and desirable for small businesses to be active in innovation enabled us to develop criteria to judge the extent to which Federal initiatives meet these conditions. We recommended that the Congress use the criteria to assess the degree to which proposed initiatives would enhance the conditions that foster innovation by small business.

Briefly, for a Federal initiative to help to meet these necessary conditions, it should

--encourage the exploitation of technological opportunity,

--ensure the managerial and technical capacity of firms undertaking innovation,

--ensure the adequacy of financial and human resources throughout the innovation process, and

--promote innovation in technologies and industries in which small businesses can be expected to assemble requisite resources.

Federal initiatives that are to address the conditions that are important but not as necessary to foster small-business innovation should

--stimulate the creation and augmentation of technological opportunity, and

--increase the availability of financial and human resources.

And, finally, if a Federal initiative is to help meet the conditions that are desirable but not as important in fostering small businesses in innovation, it should

--address enough individual incentives and barriers to influence the balance between them positively.

H.R. 4326 and S. 881

Both H.R. 4326 and S. 881 call for the creation of small business innovation research programs when agency research or research and development budgets meet certain thresholds. The framework for the SBIRs provided by the bills is sufficiently flexible to allow agencies to design small business innovation research programs that could address a number of the conditions that we have found to be important in fostering small-business innovation. However, a number of questions having to do with funding for SBIR programs and implementation strategies to be employed in establishing the programs deserve attention.

SBIRs Could Address Important Conditions

One condition necessary to foster small-business innovation is encouraging the exploitation of technological opportunity. These bills would allow the design of small business innovation research programs to do this. They would also permit programs to be designed that could stimulate the creation of technological opportunity or augment existing technological opportunity--an important condition in fostering small-business innovation.

These conditions could be addressed by agencies soliciting research proposals to seek technological solutions in problem areas the agencies specify. In applying existing methods or technologies in solving new problems, existing or perhaps new firms would be exploiting technological opportunity. Firms responding to such a solicitation might also be stimulated to augment existing technology or to create new technologies in order to meet solicitation and program requirements.

Another necessary condition is that firms undertaking innovation must have adequate managerial and technical capacity. Although we recognize that it is difficult to develop criteria that would identify or predict such capacity, the acquisition process outlined in these bills would at least provide the opportunity to obtain information on a firm's technical and organizational capabilities. It is our view that participating firms could benefit from this process in judging their own technical and managerial well-being.

The framework of both of these bills would also allow SBIR programs to be designed to ensure financial and human resources adequate to support innovation. This would occur in two ways. First, SBIR programs would provide successful applicants with specific financial support, thus meeting this condition quite directly. Second, the bills would allow programs to be designed to address this condition indirectly through "phased support."

The three phases of support outlined in the bills coincide with the three stages of the innovation process as we have defined it--invention, development, and commercialization.

Under the bills, the first phase of support would provide funds to investigate an idea's technical feasibility, an activity that corresponds to the invention stage in the innovation process. The second phase would provide funds to develop and explore the concepts determined to be technically feasible in phase one. The third phase, moving the invention into commercialization, would encourage third-party follow-on funding to commercialize the results of inventive and developmental activities. Until an innovation has been commercialized and put to use--whether in the private or the public sector--the economic benefits of innovation do not accrue to individuals or to society.

Funding for SBIR Programs

To fund the SBIR programs called for in the bills, each Federal agency meeting certain threshold criteria would be required to allocate a minimum percentage of research or research and development funds for expenditure through an SBIR program. It is our opinion that it would be better if the funding were more targeted and more flexible than currently exists in the bills. One way to accomplish this would be to authorize SBIRs for each agency with large research and development programs, with funding levels set through the normal budget process. This would allow funding for some SBIR programs to be set at higher or lower levels, depending on individual agency circumstances, and also address concerns that SBIR funding requirements would have an adverse affect on already constrained basic research budgets.

As currently written, H.R. 4326 would require 13 agencies to establish SBIR programs. Based on FY 82 R&D obligations data, we estimate that funding through SBIRs established through H.R. 4326 would be about $200 million in the first year of operation of the programs, $400 million in the second year, $800 million in the third year, and $1.2 billion in the fourth and subsequent years. Using the Senate formula, we estimate funding through the program at some $60 million for the first year, $175 million for the second year, and $280 million for the third and subsequent years. 1/

You asked that we comment on the provision in S. 881 that would limit funds taken from basic research and research in government-owned, contractor-operated facilities (GOCO's) to support SBIR programs. That provision would limit to one percent funds from those sources used for SBIR purposes. However, if concern is with unintended effects of the SBIR programs on funding for basic research, maximum flexibility and control over funds taken from basic research to support SBIRs can be best achieved by funding SBIRs through the normal authorizations and appropriations process rather than by limiting the amount of the set-aside as this provision would do.

In addition, the language in S. 881 to establish funding levels for SBIR programs is complex and difficult to follow. A number of steps would be required to calculate the "amount

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1/ Under H.R. 4326, qualifying agencies, based on National Science Foundation FY82 R&D obligations data, are DOD, NASA, DOE, HHS, EPA, NRC, AID, VA, and the Departments of Agriculture, the Interior, Transportation, and Commerce. Under S. 881, DOD, NASA, DOE, HHS, and NSF would qualify.

available for obligation" under the programs. First, a formula would establish a ratio between research by specified performers and all agency research using the latest actual NSF data available. That ratio is then applied to the total amount of funds an agency has "available for obligation for research or research and development" in a given year. However, the formula does not reflect the provision to limit to one percent the amount of basic research and GOCO funds used to meet SBIR funding requirements. This would require agencies to recalculate funding for SBIRs after application of the formula to account for the one percent limitation. We urge that the language of the legislation be clarified to prevent possible misinterpretations to ensure that the desired result of the funding provisions is accomplished.

Implementation of the SBIR Programs

H.R. 4326 and S. 881, although quite similar in purpose and objectives, do employ different strategies for implementation. In the House version, the Small Business Administration (SBA) is designated responsibility for operational, monitoring, and reporting activities, while the Office of Science and Technology Policy (OSTP) is designated the same monitoring and reporting duties as SBA. The Senate version of the bill charges OSTP with monitoring and reporting responsibilities, with SBA performing the operational duties. We prefer S. 881 because it avoids duplication of responsibilities between SBA and OSTP, and separates oversight responsibilities from operational responsibilities.

And, finally, I would like to comment on a provision included in S. 881, which is not included in H.R. 4326, that would require the GAO to submit a report to the Congress 2 years after enactment of the Act on the "quality, quantity, and nature of the basic research" conducted under the Act. GAO's existing authority to conduct reviews of Federal R&D procurement and contracting functions would allow us to examine the impact of SBIR programs without need for legislating additional authority. In addition, there appears to be some overlap between the study that would be required by GAO and the responsibilities outlined for OSTP and SBA to "survey and monitor all phases of the implementation and operation" of SBIR programs. Hence, we prefer the House bill in this regard because it does not establish a statutory report requirement for GAO.

However, if it should be deemed essential to legislate a reporting role for GAO under this legislation, we would strongly urge that review and reporting responsibilities between OSTP, SBA, and GAO be clearly delineated and that the following language be substituted for the provision currently contained in S. 881.

> "The Comptroller General shall, no later than three years following enactment of the Small Business Innovation Research Act of 1981, report to the Senate and House of Representatives on the implementation of and nature of research or research and development conducted under this Act, including the judgement of the departments and agencies involved as to the effect of this Act on their overall basic research programs."

I would be happy to answer any questions you may have at this time.