Mr. BAILEY of Pennsylvania, Mr. JONES of Oklahoma, Mrs. KENNELLY, and Mr. LELAND changed their votes from "aye" to "no."

Messrs. BUTLER and FINDLEY changed their votes from "no" to "aye."

So the amendment was rejected.

The result of the vote was announced as above recorded.

Mr. LAFALCE. Mr. Chairman, I move that the committee do now rise.

The motion was agreed to.

June 17, 1982 CONGRESSIONAL RECORD — HOUSE H 3645

Mr. BAILEY of Pennsylvania, Mr. JONES of Oklahoma, Mrs. KENNELLY, and Mr. LELAND changed their votes from "aye" to "no."

Messrs. BUTLER and FINDLEY changed their votes from "no" to "aye."

So the amendment was rejected.

The result of the vote was announced as above recorded.

Mr. LAFALCE. Mr. Chairman, I move that the committee do now rise.

The motion was agreed to.

Accordingly the Committee rose; and the Speaker having resumed the chair, Mr. BRODHEAD, Chairman of the Committee of the Whole House on the State of the Union, reported that that Committee, having had under consideration the bill (H.R. 4346) to amend the Small Business Act to strengthen the role of the small, innovative firms in federally funded research and development, and to utilize Federal research and development as a base for technological innovation to meet agency needs and to contribute to the growth and strength of the Nation's economy, had come to no resolution thereon.

PERMISSION FOR COMMITTEE ON AGRICULTURE TO HAVE UNTIL MIDNIGHT FRIDAY, JUNE 18, 1982, TO FILE A REPORT ON H.R. 6590, NO-NET-COST TOBACCO PROGRAM ACT OF 1982

Mr. FOLEY. Mr. Speaker, I ask unanimous consent that the Committee on Agriculture may have until midnight tomorrow night to file a report on the bill, H.R. 6590.

The SPEAKER. Is there objection to the request of the gentleman from Washington?

Mr. ROUSSELOT. Mr. Speaker, reserving the right to object, could the gentleman tell us what this is all about?

Mr. FOLEY. Mr. Speaker, if the gentleman will yield, it is a normal request to ask permission to file by midnight tomorrow a bill ordered reported by the Agriculture Committee. The bill is H.R. 6590, which is the bill to implement a no-cost tobacco program.

Mr. ROUSSELOT. A no-cost tobacco program?

Mr. FOLEY. A no-cost tobacco program.

Mr. ROUSSELOT. Well, I certainly would not want to object to that.

Mr. Speaker, I withdraw my reservation of objection.

The SPEAKER. Is there objection to the request of the gentleman from Washington?

There was no objection.

□ 1720

LEGISLATIVE PROGRAM

(Mr. MICHEL asked and was given permission to address the House for 1 minute and to revise and extend his remarks.)

Mr. MICHEL. Mr. Speaker, I take this time to inquire of the distinguished majority leader the program for the balance of this week and next week, and I yield to the gentleman.

Mr. WRIGHT. Mr. Speaker, will the gentleman yield?

Mr. MICHEL. I yield to the gentleman.

Mr. WRIGHT. Mr. Speaker, we have completed the business scheduled for this week and I expect soon to ask unanimous consent that when we adjourn today, we adjourn until Monday.

We will come in at noon on Monday and have the Consent Calendar and such bills as may be ripe for consideration under suspension of the rules. There are two of them now that we have:

H.R. 6590: No-net-cost Tobacco Program Act of 1982; and

H.R. 6451: United States Code title 10 amendments for military construction and military family housing.

Also, we expect to bring up for general debate only the Refugee Assistance Amendments of 1982. Assuming that we can complete that general debate that day, we will put it off until the following day for a vote, as well as any votes on the suspensions.

Votes will be postponed until Tuesday.

Tuesday we will come in at noon and we will have recorded votes on the suspensions, try to complete the Refugee Assistance Amendments Act and the Small Business Innovation and Development Act.

Wednesday and Thursday we meet at 10 a.m.

Members should expect that the conference report on House Concurrent Resolution 352, the first budget resolution for fiscal year 1983, will be brought to the floor as soon as possible, Tuesday if possible, and if not Tuesday, then Wednesday or Thursday.

It is also conceivable, I suppose, that we might be put in the position of having to do something else on the urgent emergency supplemental appropriations bill—the urgent-urgent supplemental appropriations bill.

Then H.R. 6337, the National Energy Emergency Preparedness Act, subject to the granting of a rule.

At the close of business on Thursday, the House will adjourn for the Independence Day recess and district work period and will convene at noon on Monday, July 12, assuming that these matters have been completed in this House and the other body.

Conference reports may be brought up at any time, of course.

Mr. MICHEL. The gentleman made no reference to the debt ceiling legislation. Would the gentleman volunteer any information on the possibility of having that to contend with next week?

Mr. WRIGHT. I think it would depend entirely on passage by the House of the conference report on the budget resolution. Assuming that were to be passed, there would be no necessity for a resolution on the debt ceiling. But if that were rejected, then in all likelihood we might have to take action on the debt ceiling.

Mr. MICHEL. One other item that I heard might have been under consideration for next week was the extended unemployment benefits legislation.

Mr. WRIGHT. As I understand it, there is no rule yet established on that bill, and any further program would have to be announced later.

Mr. MICHEL. All right.

Mr. FISH. Mr. Speaker, will the gentleman yield?

Mr. MICHEL. I will be happy to yield to the gentleman from New York.

Mr. FISH. I thank the distinguished minority leader for yielding.

I would like to put a question to the distinguished majority leader, who said that the refugee assistance amendments, the rule for which is adopted today, will come up for general debate only on Monday?

Mr. WRIGHT. That is correct.

Mr. FISH. Do I understand, therefore, that the 5-minute rule consideration would follow on Tuesday?

Mr. WRIGHT. That is exactly right. Amendments would be postponed until Tuesday.

Mr. FISH. Consideration of amendments would occur on Tuesday. Would that be the first order of business on Tuesday?

Mr. WRIGHT. It probably will be. However, we would precede that with the votes on the suspensions from the preceding day, and it is conceivable that we might have a conference report.

The SPEAKER. The majority leader is recalling the conference report.

Mr. WRIGHT. If the conference report were to come to us, we might opt for considering it before we went back into the consideration under the 5-minute rule of the Refugee Assistance Act.

Mr. FISH. I thank the gentleman.

Mr. MICHEL. I am glad to have the majority leader make that observation, that if we are fortunate enough to have an agreement on the conference report on the budget resolution that that would take precedence over the other legislation so that we could really dispose of that first.

Mr. WRIGHT. Very definitely. It would take precedence over anything else.

Mr. ROUSSELOT. Mr. Speaker, will the gentleman yield?

Mr. MICHEL. I yield to the gentleman from California (Mr. ROUSSELOT).

Mr. ROUSSELOT. I appreciate my colleague yielding to me.

Our majority leader has stated that if we passed on the conference report on the budget resolution that there will be no need to deal with an increase in the deficit ceiling. So what the gentleman is saying—does he

recall what the contemplated amount of the deficit increase is that is being suggested in the conference report on the budget?

Mr. WRIGHT. If the gentleman will yield, it is, I am advised, an amount amply adequate to accommodate any foreseeable needs, not just for a period of 1 or 2 months, but through the entirety of the fiscal year.

Mr. ROUSSELOT. Up through 1983.

Mr. WRIGHT. Through fiscal year 1983.

Mr. ROUSSELOT. So that would be $195 billion add-on debt.

Mr. WRIGHT. It would be a substantial amount. I must say to the gentleman that I am not privy to the councils of the conference committee and I would best not speak with precision because I could be mistaken.

Mr. ROUSSELOT. Well, roughly $190 billion to $195 billion of add-on debt would be included in the budget resolution; is that correct?

Mr. WRIGHT. That seems correct to me, yes. President Reagan's——

Mr. ROUSSELOT. I do not think that is President Reagan's recommendation. We spend the money here, as the gentleman well knows.

Mr. OTTINGER. Mr. Speaker, will the gentleman yield?

Mr. MICHEL. I yield to the gentleman from New York.

Mr. OTTINGER. I thank the gentleman for yielding.

I would like to inquire of the majority leader what his plans are with respect to the bill we have just been considering, the Small Business Innovation Development Act?

Mr. WRIGHT. We probably will take that up and deal with it again on Tuesday, after dealing with the refugee assistance bill. We would expect to complete it on Tuesday.

Mr. OTTINGER. I thank the gentleman for yielding, and I thank the majority leader.

The SPEAKER. The Chair hopes the gentleman from Texas will make mention of the fact that there may be some night sessions next week. The leadership is intending, if things go right, to be out of here by Thursday night. If not, there is a great possibility the House would meet the following week, although our plans are for 2 weeks off at the Fourth of July.

The budget must be completed, the public debt limit must be out of the way, which is included in the budget at the present time. There are some things in the supplemental appropriation bill that, as of July 1, some of the departments may be without money.

There may also be a couple of authorizations which must be passed before we adjourn.

The gentleman from Texas.

Mr. WRIGHT. The Speaker took the words right out of my mouth.

The SPEAKER. I am sorry that I did that. I transgressed on your right as the majority leader.

Mr. WRIGHT. I am glad the Speaker did, because he said it so much better than I could have said it.

ADJOURNMENT TO MONDAY, JUNE 21, 1982

Mr. WRIGHT. Mr. Speaker, I ask unanimous consent that when the House adjourns today, it adjourn to meet at noon on Monday next.

The SPEAKER. Is there objection to the request of the gentleman from Texas?

Mr. WALKER. Mr. Speaker, reserving the right to object, I do so only to ask the majority leader, I think the Speaker did make clear that there is the potential for the week that was designated as a recess week that we could be back if we do not complete the action.

Would that also pertain to next Friday, as well, that the Members would have to count on next Friday, as well?

Mr. WRIGHT. Indeed it would.

Mr. WALKER. And possibly the weekend as well?

Mr. WRIGHT. I do not want to anticipate that we are going to fail to do our business.

The SPEAKER. The Chair would point out that the Democrats are having a miniconvention in Philadelphia and it opens at 4 o'clock on Friday. It is the intention that this body—we have been assured by the Republican leadership that there will be every cooperation on their part that we would give to them if they were in the same circumstances—but the present plan is no session for next Friday. But there could very, very well be a session on the following week.

□ 1730

Mr. WALKER. Further reserving the right to object, so in other words, with the convention then we are assured that probably there would be no session on Friday even if we had not completed business, no session on the weekend, but a potential that we could come back early next week.

Mr. WRIGHT. The gentleman is correct, and Members should be advised that it would do well for the House to complete its schedule in order that we might enjoy fulfilling those many commitments which we have made with constituent groups back home.

Mr. WALKER. Mr. Speaker, I thank the gentleman, and I withdraw my reservation of objection.

The SPEAKER. Is there objection to the request of the gentleman from Texas?

There was no objection.

DISPENSING WITH CALENDAR WEDNESDAY BUSINESS ON WEDNESDAY NEXT

Mr. WRIGHT. Mr. Speaker, I ask unanimous consent that the business in order under the Calendar Wednesday rule be dispensed with on Wednesday next.

The SPEAKER. Is there objection to the request of the gentleman from Texas?

There was no objection.

MONETARY POLICY REFORM ACT OF 1982

(Mr. PATTERSON asked and was given permission to address the House for 1 minute and to revise and extend his remarks and include extraneous matter.)

Mr. PATTERSON. Mr. Speaker, our Nation has undergone dramatic changes throughout the past few decades. We have moved, out of necessity, from a position of isolated prosperity and a superior strategic status to a position of international interdependence and economic cooperation. As those of us in Congress know, changes in public policy are a natural and necessary method of adaptation to these changing circumstances.

An example of changing policy to adapt to new realities is the recent effort in Congress to better control Federal spending through the enactment of the Congressional Budget Act and other current efforts to reform past fiscal policy. These efforts are a step in the right direction in confronting the economic malaise facing our country. However, Mr. Speaker, I believe that we need to take our economic reforms one step further and reexamine the role of our central bank, the Federal Reserve, in the development of economic policy. The skepticism of the marketplace, the confusion of leading economic indicators, and the continued degeneration of the domestic economy attest to the concern over mismatched monetary and fiscal policy.

To correct the imbalance between Federal monetary and fiscal policy that is inherent in a system where the central bank is accountable to no one, I am introducing today a bill to reform the Federal Reserve Act of 1936. My bill will provide greater coordination between our Nation's monetary and fiscal policy and will allow the Congress, the administration, and the American people to participate more fully in monetary policymaking.

Mr. Speaker, I do not advocate that the Congress or the administration should set monetary targets. Nor do I contend that the bill which I am introducing is a panacea for lowering interest rates.

But I do think that the time has come to initiate a thorough examination of one of this country's most powerful institutions. It seems to me that we should be concerned that a major component of our national economic policy is decided and implemented by a handful of unelected individuals. The Board of Governors of the Federal Reserve do not even have to account for their actions to the President! This, Mr. Speaker, is extraordinary. Presidents are elected and defeated on

Neff's retirement from the Illinois General Assembly. After 22 years of dedicated service to his many constituents in Wester, IL, Clarence has decided that its time to go into a working retirement at home in Stronghurst, IL with his lovely wife, Elaine; son, Chuck; and daughter, Janice.

Clarence Neff is recognized as one of the finest, most trusted and most respected public servants that the State of Illinois has ever produced. There is nothing flashy about Clarence's political style; he operates quietly and behind the scenes. But, after 22 years of maintaining this low political profile, Clarence has accomplished more in the way of providing excellent constituent services and delivering necessary transportation projects to the people of his district than any other public servant I know of.

For all of his public years, Clarence has held true to one eloquent principle: helping people is the substance of politics; the friends you make, its decoration. And, there are few people in our great State more deserving of praise and recognition than Clarence Neff. It is truly a political blessing in Illinois politics to have Clarence Neff counted as one of your friends and allies.

Mr. President, it is my privilege and distinct honor to join with friends throughout the State of Illinois in saying "thank you" to Clarence Neff for 22 years of outstanding and dedicated public service.●

TRADEMARK CLARIFICATION ACT OF 1984

● Mr. DOLE. Mr. President, I have just been informed that the House has concurred in the Senate amendments to H.R. 6163, which passed the Senate on October 3. I would take just a few moments to express my appreciation for the expeditious consideration of the bill, as amended, in the House and my support for the package of legislative items that it contains.

H.R. 6163 has become the vehicle for an important collection of measures in the areas of patent, trademark, and copyright law and court improvements. The items that make up that package include the Trademark Clarification Act of 1984, the Semiconductor Chip Protection Act, the Patent Procurement Policy Act, State Justice Institute, civil priorities clarification, the District Courts Organization Act, and a group of technical amendments to the Federal Court Improvements Act of 1980. Each of these items had been more than adequately considered in both House and Senate in the normal course of the legislative process before inclusion in H.R. 6163.

I take particular interest in the provisions of title V of the bill. This title amends various sections of title 35, U.S. Code that govern the ownership and licensing of patent rights to inventions developed by individuals working for or with universities or other nonprofit institutions that operate Government laboratories on a contract basis.

This Senator has been involved with this issue for a number of years, beginning in the late 1970's when the problem of inadequate commercialization of inventions developed with Government research and development dollars first came to my attention. I worked closely with our former colleague, Senator Bayh of Indiana, in shaping legislation that initiated a change in the philosophy in favor of Government ownership of inventions that had prevailed in the agencies up to that time. In studying the question of why so few Government patents have seen the light of day in the marketplace, where their benefits can be returned to the public in the form of new products and new jobs, it became apparent that agency rules requiring Government ownership were the crux of the problem. Our work led to the passage, in 1980, of the Patent Law Amendments Act of that year, Public Law 96-517. That legislation established—for the first time—a rule in favor of contractor ownership of inventions developed under Federal research contracts. Due to some concerns, however, over precisely how well the new policy would work, the 1980 law was limited in its application to universities and small businesses.

The 1980 amendments to the patent laws spurred a quantum leap in the number of new inventions patented by universities and small business operating under such contracts. Prior to the passage of Public Law 96-517, university invention disclosures had shown a steady decline. Now, such disclosures are up by a substantial percentage, university and industry collaboration is at an all time high, and many new technologies—such as recent advances in gene engineering—are creating new opportunities for economic advancement while improving the quality of life.

In spite of this success story, it has become apparent during the past 4 years that the 1980 law can be improved. Moreover, there are important areas of Government research that were not covered by the 1980 legislation that will benefit from an application of its principle of contractor ownership. The objectives of the new legislation are to improve upon the 1980 law with regard to universities and expand its reach to the Government contract laboratories managed by the Department of Energy, which have so far been exempted from the reach of the 1980 law by agency regulation.

Mr. President, I will not take the time now to detail the changes in law that are provided for in title V of H.R. 6163. I ask that a colloquy between myself and Senator DECONCINI, one of the cosponsors of the legislation, and a sectional analysis of title V appear at the conclusion of my remarks in the RECORD. I want also to express my thanks for the support of Senator LAXALT on the bill, and the assistance of Senators HATCH, MATHIAS, HEFLIN, and LEAHY and their staffs for their work in helping to move this legislation off the Senate floor. I would also note for the record the invaluable assistance rendered by Congressmen KASTENMEIER, FISH, and MOORHEAD in securing approval the House floor.

The material follows:

SUMMARY OF MAJOR PROVISIONS CONTAINED IN TITLE V OF H.R. 6163

1. S. 2171 allows agencies to limit patent ownership by small business or nonprofit organizations that are not located or do have a place of business in the United States. This will clarify that agencies can control the export of technology in cases where the performer is not a domestic organization.

2. S. 2171 repeals the P.L. 96-517 provision excepting inventions made by nonprofit organizations when operating Government-owned laboratory facilities. This provides for uniform treatment of all domestic nonprofit organizations regardless of where they perform their federally funded work and is particularly important to organizations that manage Department of Energy laboratories.

3. As part of the change affecting nonprofit contractors of Government-owned facilities, S. 2171 includes a limit on the amount of royalties that the contract operators are entitled to retain after paying patent administrative expenses and a share of the royalties to inventors. The limit is based on five percent of the annual budget of the laboratory, but includes an incentive provision rather than a simple cap to stimulate continued efforts to transfer technology if royalties ever reach the five percent figure. This provision ensures that Government shares in the results of its research expenditures in the event the contract operator of a Government laboratory makes a major discovery.

4. S. 2171 includes the favorable reporting provisions that were developed in OMB Circular A-124. These provisions have been proven to work. Small business and nonprofit organizations should be assured of their continuance beyond February 1985 when A-124 is scheduled for sunset expiration.

5. S. 2171 repeals certain conditions placed on licensing of inventions by nonprofit organizations. Among the conditions repealed is the five year cap on the grant of an exclusive license to an industrial concern (other than a small business). This provision has made the licensing and development of invention that require Food and Drug Administration approval prior to marketing difficult to negotiate. Its repeal will remove a substantial barrier to industry participation in research projects at universities and other nonprofit organizations.

6. The authority to issue regulations under P.L. 96-517 is consolidated by S. 2171 from the General Services Administration and the Office of Management and Budget into the Department of Commerce. This consolidation is consistent with other Commerce responsibilities for creating an environment favorable to the commercialization of the results of federally-funded research.

7. S. 2171 expands the definition of "invention" in P.L. 96-517 to include—"any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321 et. seq.)." This assures nonprofit organization ownership of some inventions resulting from research in agriculture which were not previously covered by P.L. 96-517.

and a group of technical amendments to the Federal Court Improvements Act of 1980. Each of these items had been more than adequately considered in both House and Senate in the normal course of the legislative process before inclusion in H.R. 6163.

I take particular interest in the provisions of title V of the bill. This title amends various sections of title 35, U.S. Code that govern the ownership and licensing of patent rights to inventions developed by individuals working for or with universities or other non-contract laboratories managed by the Department of Energy, which have so far been exempted from the reach of the 1980 law by agency regulation.

Mr. President, I will not take the time now to detail the changes in law that are provided for in title V of H.R. 6163. I ask that a colloquy between myself and Senator DECONCINI, one of the cosponsors of the legislation, and a sectional analysis of title V appear at the conclusion of my remarks in the RECORD. I want also to express my thanks for the support of Senator from the General Services Administration and the Office of Management and Budget into the Department of Commerce. This consolidation is consistent with other Commerce responsibilities for creating an environment favorable to the commercialization of the results of federally-funded research.

7. S. 2171 expands the definition of "invention" in P.L. 96-517 to include—"any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321 et. seq.)." This assures nonprofit organization ownership of some inventions resulting from research in agriculture which were not previously covered by P.L. 96-517.

SECTIONAL ANALYSIS

SECTION 501

Subsections (1) and (2) expand the definition of "invention" in P.L. 96-517 to include—"any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321 et. seq.)." This assures nonprofit organization ownership of some inventions resulting from research in agriculture which were not previously covered by P.L. 96-517.

Subsection (3) allows agencies to limit patent ownership by small business or nonprofit organizations that are not located or do not have a place of business in the United States. This will clarify that agencies can control the export of technology in cases where the performer is not a domestic organization. The section also repeals the P.L. 96-517 provision excepting inventions made by nonprofit organizations when operating Government-owned laboratory facilities. This provides for uniform treatment of all domestic nonprofit organizations regardless of where they perform their federally funded work and is particularly important to organizations that manage Department of Energy laboratories. Finally, the section adds a new sub "(iv)" to 35 U.S.C. 202(a) that would exempt laboratories which focus on nuclear propulsion work or nuclear weapons development from contractor ownership requirements.

Subsection (4) creates an oversight in the Department of Commerce of agency use of the exceptions to small business or nonprofit organization invention ownership.

Subsection 4A amends 35 U.S.C. s. 202(b) to bring agency determinations on questions of contractor ownership within the provisions of 35 U.S.C. s. 203(2).

Subsection (5) includes the favorable reporting provisions that were developed in OMB Circular A-124. These provisions have been proven to work. Small business and nonprofit organizations should be assured of their continuance beyond February 1985 when A-124 is scheduled for sunset expiration.

Subsection (6) provides assurance that agencies can protect information provided to the Government on their invention utilization efforts.

Subsection (7) and (8) repeal certain conditions placed on licensing of inventions by nonprofit organizations. Among the conditions repealed is the five year cap on the grant of an exclusive license to an industrial concern (other than a small business). This provision has made the licensing and development of inventions that require Food and Drug Administration approval prior to marketing difficult to negotiate. Its repeal will remove a substantial barrier to industry participation in research projects at universities and other nonprofit organizations.

Subsection (8) also places a limit on the amount of royalties that the contract operators of Government-owned laboratories are entitled to retain after paying administrative expenses and a share of the royalties to inventors. The limit is based on five percent of the annual budget of the laboratory, but includes an incentive provision rather than a simple cap to stimulate continued efforts to transfer technology if royalties ever reach the five percent figure. This provision ensures that the Government will share in the results of its research expenditures in the event the contract operator of a Government laboratory makes a really major discovery.

Subsection (9) assures that a dispute which arises under either a grant or a contract will be handled in a similar manner by the Federal agencies, and provides for Judicial review of agency decisions.

Subsection (10), (11), (12) consolidate the authority to issue regulations under P.L. 96-517 from the General Services Administration and the Office of Management and Budget into the Department of Commerce. This consolidation is consistent with other Commerce responsibilities including creating an environment favorable to the commercialization of the results of federally-funded research. In addition, section (11) provides to the Department of Commerce certain information clearinghouse functions that will enable the Department to better serve the needs of the Federal agencies.

Subsection (13) assures that no agency will be permitted to waive the normal license retained by the Government or the capability to march-in in accordance with P.L. 96-517 in any situation where a Federal contractor elects to retain ownership of an invention made with Federal support.

Subsection (14) prohibits the agency retention of patent rights in any invention developed under an educational grant. The scope of the provision includes all types of such grants and it is intended to be a complete ban upon retention or rights by grantor agencies.

Subsection (15) makes appropriate caption changes.

COLLOQUY CONCERNING THE PROVISIONS OF TITLE V OF H.R. 6163

Senator DECONCINI. I would like to ask the Senior Senator from Kansas a few questions about the provisions of Title V of H.R. 6163, passed by the Senate on October 3rd and by the House on October 9th, 1984. I know that he was the principal sponsor of this legislation as well as the principal sponsor of P.L. 96517, which Title V amends. First, would you please explain how this bill will affect Government owned laboratories that are operated by university or other nonprofit contractors?

Senator DOLE. The answer to this question has three parts. First, P.L. 96-517 gave nonprofit organizations the right to own inventions made with government research and development funding. That law included, however, an exception allowing the Government to retain title to inventions made by the nonprofit contractors of Government owned laboratories. In the main, this bill removes that exception and allows nonprofit contractors to own their federally funded inventions regardless of whether they are made at their own or at Government owned facilities.

Second, most Federal agencies that have nonprofit organizations operating their laboratories have not been using the Government owned, contractor-operated (GOCO) exception and are allowing the contract operators to own their inventions. The Department of Energy, however, has made a blanket use of the GOCO exception, so the bill primarily affects the nonprofit DOE lab operators. "For profit" contractors, such as the operators of labs at Sandia and Oak Ridge, are not directly affected by this bill.

Third, this bill includes a provision that allows the Department of Energy to own the inventions related to DOE's naval nuclear propulsion or weapons related programs that are made in the labs that are primarily dedicated to these programs. This means that, for example, inventions in these categories made at Los Alamos or Lawrence Livermore could be owned by DOE. Inventions that do not fall into these categories would be owned by the nonprofit contractors.

Senator DECONCINI. In the case of Los Alamos, which is operated by a contractor based in another State, who specifically would manage inventions that do not fit in the nuclear propulsion or weapons categories?

Senator DOLE. This bill contains a provision that requires, to the extent it provides for the most effective technology transfer, that the licensing of subject inventions shall be administered by contract employees on locations at the facility. Acting under the Stevenson-Wydler Act, Los Alamos has established a particularly strong technology transfer office and program that is administered at the lab site.

In addition, it is our intent that title to inventions being licensed should be held in the name of a wholly owned subsidiary running the facility for the Government so that in the event of a change of contractors, the licensing rights may be transferred intact to the successor organization as a continuing operation of the contract laboratory.

Our intent is that the laboratory should deal directly with State agencies or foundations and the private sector on invention ownership and technology transfer problems.

Senator DECONCINI. Is it possible that some inventions outside the specific categories just mentioned but produced in the DOE contract labs should be kept secret for national security reasons? If so, should not the Department of Energy retain title to them?

Senator DOLE. This is an important question, and there is a great deal of misunderstanding about it. It is likely that some inventions outside of naval nuclear propulsion and weapons related programs will be classified or placed under Patent Office Secrecy Orders. But national security protection is not compromised by who owns the invention. When a Secrecy Order is placed on a patent applications, the application is locked up in a vault in the Patent Office and no patent is issued so long as the Order is in effect. The Department of Energy can call for a Secrecy Order and will have control over how long it is maintained. So even if a contractor is entitled to own and invention, the contractor can not obtain a patent until the Secrecy Order is lifted. If the invention is also classified, the contractor is bound by law to control access to it and information about it. Many agencies—including the Department of Defense—have contractors that perform classified research and development. These agencies experience no particular difficulties in routinely allowing contractor ownership of inventions affected by Secrecy Orders or which are classified.

Contractor ownership can actually improve the chances of avoiding accidental disclosure of new technology. The financial incentives of patent ownership cause both researchers and their employers to review their work for possible inventions of commercial value before writing articles for publication. In cases where an application is filed, there is another safety check. The Patent Office has a unit that reviews applications for those might involve national security. Every year, this unit flags thousands of applications, many of which have passed security reviews, for the agencies to consider and determine if a Secrecy Order is needed. This is an effective process that safeguards hundreds of inventions a year.

In short, there is no reason why title to such inventions should necessarily be retained by the Department of Energy.

Senator DECONCINI. I also note that some changes have been made in the procedures regarding oversight of agency use of the exceptions to contractor retention of title in 35 U.S.C. 202(b). What is the purpose of these changes?

of the annual budget of the laboratory, but includes an incentive provision rather than a simple cap to stimulate continued efforts to transfer technology if royalties ever reach the five percent figure. This provision ensures that the Government will share in the results of its research expenditures in the event the contract operator of a Government laboratory makes a really major discovery.

Subsection (9) assures that a dispute which arises under either a grant or a contract will be handled in a similar manner by the Federal agencies, and provides for Judicial review of agency decisions.

allows the Department of Energy to own the inventions related to DOE's naval nuclear propulsion or weapons related programs that are made in the labs that are primarily dedicated to these programs. This means that, for example, inventions in these categories made at Los Alamos or Lawrence Livermore could be owned by DOE. Inventions that do not fall into these categories would be owned by the nonprofit contractors.

Senator DECONCINI. In the case of Los Alamos, which is operated by a contractor based in another State, who specifically would manage inventions that do not fit in

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In short, there is no reason why title to such inventions should necessarily be retained by the Department of Energy.

Senator DECONCINI. I also note that some changes have been made in the procedures regarding oversight of agency use of the exceptions to contractor retention of title in 35 U.S.C. 202(b). What is the purpose of these changes?

Senator DOLE. Though changed, paragraphs (b)(1) and (2) are substantially similar to the existing provisions, except that the Department of Commerce, rather than the General Accounting Office, will maintain regular oversight over the use of exceptions. However, the GAO is still charged with annually reviewing overall implementation of the Act. A new paragraph (4) has also been added which gives the contractor the right to access to the courts when he believes the agency has abused its discretion in exercising an exception.

Senator DECONCINI. Why have more detailed reporting, election, and filing provisions been substituted in 35 U.S.C. 202(c)?

Senator DOLE. The new provisions in 35 U.S.C. 202(c)(1)–(3) are based on the standard clause now in use under OMB Circular A-124, which implemented P.L. 96-517. This specificity is intended to eliminate any future arguments concerning the intent of the Congress. We had thought that the Senate Report on the current provisions of P.L. 96-517 was clear but this did not prevent resistance from some agencies.

Senator DECONCINI. And what about the revision of 35 U.S.C. 202(c)(4)?

Senator DOLE. 35 U.S.C. 202(c)(4) deals with the license rights reserved to the Government. The process of implementing P.L. 96-517 revealed some ambiguities concerning the rights the Government could retain in order to honor foreign commitments. This change clarifies that the agency may retain more than a mere license in foreign rights if this is what is necessary to honor a treaty. At the same time the amendment is intended to clarify the types of foreign agreements covered by section 35 U.S.C. 202(c)(4) and to require an agency to tie its use of this right to a foreign treaty or agreement that is in existence at the time the contract is executed. The current language includes "future treaties," which is too open ended and can place a cloud over the foreign rights retained by the contractor.

Senator DECONCINI. I applaud the addition of the small business preference language in section 202(c)(7). How is it intended to work?

Senator DOLE. Basically, it is intended to place a duty on nonprofit organizations to seek small business licensees. However, it recognizes that in many cases this will not be feasible either because no small businesses are interested or because those that are may lack the resources necessary to bring the invention to the market. We expect the universities to make good faith efforts to license small business firms but to retain the discretion to choose large firms over small businesses in cases when they have legitimate concerns over the capabilities and financial resources of a small business firm. The burden is on the nonprofit contractor, of course, to make a reasonable injury as to the suitability of small business licensing.

Senator DECONCINI. What is the purpose of the new language that has been added to the march-in rights section?

Senator DOLE. The language that has been added to 35 U.S.C. 203 has two main purposes. First, there is currently some confusion as to whether march-in determinations are subject to the Contracts Dispute Act and therefore reviewable by Boards of Contract Appeals. Current regulations imply they are. This has created a dichotomy in agency procedures between grant and contract inventions.

The proposed language will take march-in decisions out of the Contract Dispute Act so that the same procedures can be used under grants and contracts. It is also intended to make clear that review of march-in decisions should be done by policy officials at the agencies, with a view toward the purposes of his legislation. It is strictly a matter of legal interpretation.

Finally, this language makes express the unstated assumption in the current law that march-in determinations are reviewable by the courts.

Senator DECONCINI. A new section 212 has been added covering fellowship and other awards having educational purposes. I would have thought that the agencies would not claim patent rights in non-research projects. Why is this necessary?

Senator DOLE. You are correct in your assumption; however, some agencies nevertheless claim patent rights in awards that are made to help educate or train scientists. This amendment is intended to stop this practice. This will be true even if the fellowship involves university research.

I should note that it is rare for inventions to be made exclusively by educational grant recipients, and government retenion of rights in such cases has made established inventors unwilling to train such individuals for fear of government retention of rights if the student is listed on the patient application as a co-inventor with the professor or employer.

Senator DECONCINI. It is my understanding that many federally funded inventions are either being developed or currently marketered under licensing requirements far more restrictive than those in this bill. What is the effect of this legislation on the licensing requirements applicable to these inventions?

Senator DOLE. While this bill encourages the full development of new federally-funded inventions by authorizing exclusive licenses for the life of the patent, you are correct that many inventions were discovered and are being marketed under the terms of Institutional Patent Agreements or the provision of Public Law 96-517, before the current amendments, which provided for a maximum of five years of on-market exclusivity. This restriction, if continued, will place older inventions at a competitive disadvantage with newer ones, for which more lengthy exclusivity is permissible, and may well result in the failure of these older inventions to be fully developed for the benefit of the public.

It is our intent, in enacting this legislation, to create a uniform patent and licensing policy applicable to all federally-funded inventions. Although the bill is silent on the question of retroactivity, it is certainly our intent to strongly encourage agencies administering university patents filed before the current amendments to permit companies marketing products under these patents to extend their exclusive licenses for the life of the patent, consistent with the provisions of this bill, provided that the companies that request such an extension have complied with the requirements of the IPA and have acted responsibly in commercializing the invention.

Senator DECONCINI. I thank the Senator from Kansas for his clarifying remarks.

NATO: HONING THE GRAND STRATEGY

● Mr. LUGAR. Mr. President, I would like to share with all my colleagues an article which was written by David Abshire, U.S. Ambassador to NATO, and published in the Wall Street Journal on Wednesday, September 12. This article brings to light the NATO Alliance's grand strategy and focuses in particular on four key factors that motivate that strategy: Political dynamics, military deterrence, resources, and public diplomacy. I ask that this article be printed in the RECORD.

The article follows:

NATO: HONING THE GRAND STRATEGY

(By David M. Abshire)

BRUSSELS.—A popular refrain of critics of the North Atlantic Treaty Organization is it does not have a comprehensive strategy. After serving as U.S. Permanent Representative to the North Atlantic Council for more than a year, I would reject this criticism. The alliance does have a strategy—indeed, a grand strategy—and has been actively adjusting it to realities of the 1980s.

This question is especially timely in light of the first official visit to the U.S. by NATO's new secretary general, Lord Carrington. A former foreign and defense secretary of the United Kingdom, Lord Carrington brings impressive skills and experience to his new post. He has signaled a special commitment to strengthening the overall strategy of the alliance.

Grand strategy is not just a military concept. It also encompasses political, economic, and even public affairs elements—all the force that can be brought to bear to achieve the strategy's end. In the West's case, the end is clearly stated in the preamble of the 1949 North Atlantic Treaty, which affirms the allies' determination to unite in a collective defense of "the freedom, common heritage and civilization of their peoples." These goals continue today, 35 years later, to be the binding force of the alliance. They motivate allied strategy, which centers on four key factors: political dynamics, military deterrence, resources and public diplomacy.

Political Strategy. Soviet strategy during the drama over deployment of intermediate-range missiles was not only to divide Europe from America but also to divide Europe within itself. Soviet intimidation was equaled only by that displayed during the Cuban missile and Berlin crises. Yet, to the Kremlin's surprise, NATO remained united in defense of peace in freedom.

After the high point of the missile drama, the NATO Council agreed to a proposal by Belgian Foreign Minister Leo Tindemans calling for a detailed assessment of the last 17 years of East-West relations—a study that led to the June NATO Foreign Ministers' "Washington Statement on East-West Relations." The allies agreed that in the early years of detente substantial progress was made in reducing tension, spurring trade and expanding the East-West dialogue. However, they concurred that Moscow's relentless arms buildup, aggression in Afghanistan and pressure on Poland have in more recent years caused a serious deterioration in East-West relations. Thus, they saw a need to fine-tune political strategy by paying closer attention to requirements of restraint, reciprocity and accountability in a "more realistic and constructive dialogue."

The allies have been actively trying to stimulate the dialogue with the East by advancing a host of new proposals this year—at ongoing negotiations in Stockholm, Vienna and Geneva. In contrast, the Soviets continue to boycott negotiations on nuclear weapons. Nevertheless, when the Soviets do decide to return to the negotiating table, they will find interlocutors prepared to talk.

Deterrence Strategy. NATO is the first great alliance in history ever to have a clear-cut deterrence strategy.

In the wake of sustained debate in the early 1980s on both sides of the Atlantic, it is generally agreed that NATO's strategy of "flexible response" and forward defense remains the best available. That strategy is meant to deter an aggressor from thinking he might gain objectives militarily at an ac-

poses. First, there is currently some confusion as to whether march-in determinations are subject to the Contracts Dispute Act and therefore reviewable by Boards of Contract Appeals. Current regulations imply they are. This has created a dichotomy in agency procedures between grant and contract inventions.

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Glickman
Gonzalez
Gore
Gradison
Gramm
Gray
Green
Gregg
Grisham
Guarini
Gunderson
Hagedorn
Hall (OH)
Hall, Ralph
Hall, Sam
Hamilton
Hammerschmidt
Hance
Hansen (UT)
Harkin
Hartnett
Hatcher
Hawkins
Heckler
Hefner
Heftel
Hendon
Hertel
Hightower
Hiler
Hillis
Hollenbeck
Holt
Hopkins
Horton
Howard
Hoyer
Hubbard
Huckaby
Hughes
Hunter
Hutto
Hyde
Ireland
Jacobs
Jeffords
Jeffries
Johnston
Jones (NC)
Jones (OK)
Jones (TN)
Kastenmeier
Kazen
Kennelly
Kildee
Kindness
Kramer
LaFalce
Lagomarsino
Lantos
Latta
Leach
Leath
LeBoutillier
Lee
Lehman
Leland
Lent
Levitas
Lewis
Livingston
Loeffler
Long (LA)
Long (MD)
Lott
Lowery (CA)
Lowry (WA)
Lujan
Lundine
Lungren
Madigan
Markey
Marienee
Marriott
Martin (IL)
Martin (NC)
Martin (NY)
Matsui
Mattox
Mavroules
Mazzoli
McClory
McCollum
McCurdy
McDade
McDonald
McEwen
McGrath
McHugh
McKinney
Mica
Michel
Mikulski
Miller (CA)
Miller (OH)
Mineta
Minish
Mitchell (MD)
Mitchell (NY)
Moakley
Molinari
Mollohan
Montgomery
Moore
Moorhead
Morrison
Mottl
Murphy
Murtha
Myers
Natcher
Neal
Nelligan
Nelson
Nichols
Nowak
O'Brien
Oakar
Oberstar
Obey
Oxley
Panetta
Parris
Pashayan
Patman
Patterson
Paul
Pease
Pepper
Perkins
Petri
Peyser
Pickle
Porter
Price
Pritchard
Pursell
Quillen
Rahall
Railsback
Rangel
Ratchford
Regula
Reuss
Rhodes
Rinaldo
Ritter
Roberts (KS)
Roberts (SD)
Robinson
Rodino
Roe
Roemer
Rogers
Rose
Rosenthal
Rostenkowski
Roth
Roukema
Rousselot
Rudd
Russo
Sabo
Santini
Sawyer
Schneider
Schroeder
Schumer
Seiberling
Sensenbrenner
Shamansky
Shannon
Sharp
Shaw
Shelby
Shumway
Shuster
Siljander
Skeen
Skelton
Smith (AL)
Smith (IA)
Smith (NE)
Smith (NJ)
Smith (OR)
Snowe
Snyder
Solarz
Solomon
Spence
St Germain
Stangeland
Stanton
Stark
Staton
Stenholm
Stokes
Studds
Stump
Synar
Tauke
Tauzin
Taylor
Thomas
Traxler
Trible
Udall
Vander Jagt
Vento
Volkmer
Walgren
Walker
Wampler
Washington
Watkins
Waxman
Weaver
Weber (MN)
Weber (OH)
Weiss
White
Whitehurst
Whitley
Whittaker
Whitten
Williams (MT)
Williams (OH)
Wilson
Winn
Wirth
Wolf
Wolpe
Wortley
Wright
Wyden
Wylie
Yates
Yatron
Young (AK)
Young (FL)
Young (MO)
Zeferetti

NAYS—6

Conyers
Dingell
Emerson
McCloskey
Quillen
Taylor

NOT VOTING—38

AuCoin
Beard
Biaggi
Blanchard
Bolling
Breaux
Broomfield
Brown (OH)
Carney
Chisholm
Clay
Collins (TX)
Coyne, James
Dowdy
Edwards (OK)
Erlenborn
Ertel
Evans (IN)
Ginn
Goldwater
Goodling
Hansen (ID)
Holland
Jenkins
Kemp
Kogovsek
Luken
Marks
Moffett
Richmond
Roybal
Savage
Scheuer
Schulze
Simon
Smith (PA)
Stratton
Zablocki

□ 1145

Mr. RAILSBACK and Mr. COELHO changed their votes from "nay" to "yea."

So the resolution was agreed to.

The result of the vote was announced as above recorded.

A motion to reconsider was laid on the table.

MESSAGE FROM THE SENATE

A message from the Senate, by Mr. Sparrow, one of its clerks, announced that the Senate agrees to the following resolution:

S. RES. 409

That it is the sense of the Senate that the plan submitted on March 26, 1982, by the Secretary of the Interior pursuant to the Indian Judgment Funds Act of October 19, 1973 (87 Stat. 466), for the distribution of judgment funds to the Gros Ventre Tribe of the Fort Belknap Reservation awarded by the Court of Claims in Docket 649-80L be disapproved.

SMALL BUSINESS INNOVATION DEVELOPMENT ACT OF 1981

Mr. LAFALCE. Mr. Speaker, I move that the House resolve itself into the Committee of the Whole House on the State of the Union for the consideration of the bill (H.R. 4326) to amend the Small Business Act to strengthen the role of the small, innovative firms in federally funded research and development, and to utilize Federal research and development as a base for technological innovation to meet agency needs and to contribute to the growth and strength of the Nation's economy.

The SPEAKER pro tempore. The question is on the motion offered by the gentleman from New York (Mr. LAFALCE).

The question was taken; and the Speaker pro tempore announced that the ayes appeared to have it.

RECORDED VOTE

Mr. CORCORAN. Mr. Speaker, I demand a recorded vote.

A recorded vote was ordered.

The vote was taken by electronic device, and there were—ayes 383, noes 5, not voting 44, as follows:

[Roll No. 156]

AYES—383

Addabbo
Akaka
Albosta
Alexander
Anderson
Andrews
Annunzio
Anthony
Applegate
Archer
Aspin
Atkinson
Badham
Bafalis
Bailey (MO)
Bailey (PA)
Barnard
Barnes
Bedell
Beilenson
Benedict
Benjamin
Bennett
Bereuter
Bethune
Bevill
Bingham
Bliley
Boggs
Boner
Bonior
Bonker
Bouquard
Bowen
Breaux
Brinkley
Brodhead
Brooks
Brown (CA)
Brown (CO)
Broyhill
Burgener
Burton, John
Burton, Phillip
Butler
Byron
Campbell
Carman
Chappell
Chappie
Cheney
Clausen
Clinger
Coats
Coelho
Coleman
Collins (IL)
Conable
Conte
Corcoran
Coughlin
Courter
Coyne, William
Craig
Crane, Daniel
Crane, Philip
Crockett
D'Amours
Daniel, Dan
Daniel, R. W.
Dannemeyer
Daschle
Daub
Davis
de la Garza
Deckard
Dellums
DeNardis
Derrick
Derwinski
Dicks
Dixon
Donnelly
Dorgan
Dornan
Dougherty
Downey
Dreier
Duncan
Dunn
Dwyer
Dymally
Dyson
Early
Eckart
Edgar
Edwards (AL)
Edwards (CA)
Emerson
Emery
English
Erdahl
Evans (DE)
Evans (GA)
Evans (IA)
Fary
Fascell
Fazio
Fenwick
Ferraro
Fiedler
Fields
Findley
Fish
Fithian
Flippo
Florio
Foglietta
Foley
Ford (MI)
Ford (TN)
Forsythe
Fountain
Fowler
Frank
Frenzel
Frost
Fuqua
Garcia
Gaydos
Gejdenson
Gephardt
Gibbons
Gilman
Gingrich
Glickman
Gonzalez
Goodling
Gore
Gradison
Gramm
Gray
Green
Grisham
Guarini
Gunderson
Hagedorn
Hall, Ralph
Hall, Sam
Hamilton
Hammerschmidt
Hance
Hansen (UT)
Harkin
Hartnett
Hatcher
Hawkins
Heckler
Hefner
Heftel
Hendon
Hertel
Hightower
Hiler
Hillis
Hollenbeck
Holt
Hopkins
Horton
Howard
Hoyer
Hubbard
Huckaby
Hughes
Hutto
Hyde
Ireland
Jacobs
Jeffords
Jeffries
Jones (NC)
Jones (OK)
Jones (TN)
Kastenmeier
Kazen
Kennelly
Kildee
Kindness
Kramer
LaFalce
Lagomarsino
Lantos
Latta
Leach
Leath
LeBoutillier
Lee
Lehman
Leland
Lent
Levitas
Lewis
Livingston
Loeffler
Long (LA)
Long (MD)
Lott
Lowery (CA)
Lowry (WA)
Lujan
Lundine
Lungren
Madigan
Markey
Marienee
Marriott
Martin (IL)
Martin (NC)
Martin (NY)
Matsui
Mattox
Mavroules
Mazzoli
McClory
McCollum
McCurdy
McDade
McDonald
McGrath
McHugh
Mica
Michel
Mikulski
Miller (CA)
Miller (OH)
Mineta
Minish
Mitchell (MD)
Mitchell (NY)
Moakley
Molinari
Mollohan
Montgomery
Moore
Moorhead
Morrison
Mottl
Murphy
Myers
Napier
Natcher
Neal
Nelligan
Nelson
Nichols
Nowak
O'Brien
Oakar
Oberstar
Obey
Ottinger
Oxley
Panetta
Parris
Pashayan
Patman
Patterson
Paul
Pease
Pepper
Perkins
Petri
Peyser
Pickle
Porter
Price
Pritchard
Pursell
Quillen
Rahall
Railsback
Rangel
Ratchford
Regula
Reuss
Rhodes
Rinaldo
Ritter
Roberts (KS)
Roberts (SD)
Robinson
Rodino
Roe
Roemer
Rogers
Rose
Rosenthal
Rostenkowski
Roth
Roukema
Rousselot
Rudd
Russo
Sabo
Santini
Sawyer
Scheuer
Schneider
Schroeder
Schumer
Seiberling
Sensenbrenner
Shamansky
Sharp
Shaw
Shelby
Shumway
Shuster
Siljander
Simon
Skeen
Smith (AL)
Smith (IA)
Smith (NE)
Smith (NJ)
Smith (OR)
Snowe
Snyder
Solarz
Solomon
Spence
St Germain
Stangeland
Stanton
Stark
Staton
Stenholm
Stokes
Studds
Stump
Swift
Synar
Tauke
Tauzin

Taylor	Weaver	Wolf
Thomas	Weber (MN)	Wolpe
Traxler	Weber (OH)	Wortley
Trible	Weiss	Wright
Vander Jagt	White	Wyden
Vento	Whitehurst	Wylie
Volkmer	Whitley	Yates
Walgren	Whittaker	Yatron
Walker	Whitten	Young (AK)
Wampler	Williams (OH)	Young (FL)
Washington	Wilson	Young (MO)
Watkins	Winn	Zeferetti
Waxman	Wirth	

NOES—5

Conyers	Johnston	Shannon
Dingell	McCloskey	

NOT VOTING—44

AuCoin	Edwards (OK)	Marks
Beard	Erlenborn	McEwen
Biaggi	Ertel	McKinney
Blanchard	Evans (IN)	Moffett
Boland	Ginn	Murtha
Bolling	Goldwater	Richmond
Broomfield	Gregg	Savage
Brown (OH)	Hall (OH)	Schulze
Carney	Hansen (ID)	Skelton
Chisholm	Holland	Smith (PA)
Clay	Hunter	Stratton
Collins (TX)	Jenkins	Udall
Coyne, James	Kemp	Williams (MT)
Dickinson	Kogovsek	Zablocki
Dowdy	Luken	

□ 1200

So the motion was agreed to.

The result of the vote was announced as above recorded.

IN THE COMMITTEE OF THE WHOLE

Accordingly the House resolved itself into the Committee of the Whole House on the State of the Union for the consideration of the bill, H.R. 4326, with Mr. BRODHEAD in the chair.

The Clerk read the title of the bill.

The CHAIRMAN. Pursuant to the rule, the first reading of the bill is dispensed with.

The gentleman from New York, Mr. LAFALCE, will be recognized for 30 minutes, and the gentleman from Pennsylvania, Mr. MCDADE, will be recognized for 30 minutes, and the following Members for 15 minutes each:

The gentleman from Georgia, Mr. MCDONALD;

The gentleman from Alabama, Mr. DICKINSON;

The gentleman from Michigan, Mr. DINGELL;

The gentleman from North Carolina, Mr. BROYHILL;

The gentleman from New York, Mr. BINGHAM;

The gentleman from California, Mr. LAGOMARSINO;

The gentleman from Florida, Mr. FUQUA;

The gentleman from Kansas, Mr. WINN;

The gentleman from Mississippi, Mr. MONTGOMERY;

The gentleman from Arkansas, Mr. HAMMERSCHMIDT;

The gentleman from Massachusetts, Mr. BOLAND; and

The gentleman from Virginia, Mr. ROBINSON.

The Chair will attempt to reach the committees engaging in general debate in the order listed, but will at the same time attempt to accommodate Members who cannot be present when called.

The Chair recognizes the gentleman from New York (Mr. LAFALCE).

Mr. LAFALCE. Mr. Chairman, I yield myself 5 minutes.

(Mr. LAFALCE asked and was given permission to revise and extend his remarks.)

Mr. LAFALCE. Mr. Chairman, today the House has before it landmark legislation that has the support of the current administration, the past administration, all Federal agencies, 90 Senators, 200 House Members, and the small-business and high-technology communities. This legislation is the Small Business Innovation Development Act.

This bill has such universal support because it is needed now. The United States faces its most serious economic crisis since the Great Depression. Unemployment stands at more than 10 million—the highest level in over 40 years. Our basic industries that sustained us for so long are collapsing and have lost their ability to compete and create new jobs. Productivity has fallen dramatically. Even the high-technology sector, the one bright spot in our economy, finds it difficult to keep ahead of the Japanese, our main challenger.

Most serious of all, we are losing our ability to innovate. Many scientific, technological, and economics experts warn that our ingenuity and our ability to capitalize upon scientific findings and create new technologies that lead to new products is faltering.

We cannot afford to lose our ability to innovate. If we lose that, we lose our ability to increase U.S. productivity; we lose our ability to maintain U.S. technological preeminence; we lose our ability to create many of the 20 million new jobs essential for a full employment recovery; we lose our ability to compete in world markets; and we lose our ability to prevent permanent damage to our economy and society.

We do not have time to waste. The Japanese realize that the only way to sustain their economic miracle is to move from being master imitators to being master innovators. Innovation is one of the few areas where we still are a world leader. The Japanese Government has embarked on a major program to stimulate scientific innovation. To accomplish that, it has set upon a policy of sharp increases in research and development spending. It is also consolidating physically some of its research in order to improve efficiency. Japanese companies, too, are increasing their R. & D. efforts, especially in such industries as electronics.

We must act, and act now, if we are to preserve our position as the world's leading innovator. The action we must take is before us today—the Small Business Innovation Development Act. This bill will tap the innovation and job creation abilities of the tens of thousands of small-science and high-technology firms in our nation.

Their record is impressive. The National Science Foundation has found that small-science and high-technology firms produce 24 times as many major innovations per R. & D. dollar as large firms, and four times as many as medium-sized firms. Gellman Associates reports that small firms are 2½ times more innovative per employee than large firms and bring innovations into the market sooner. Yet it finds that large firms are nearly three times as likely to receive assistance from public funds for their innovative efforts than small companies.

Other studies show that small business created many of the millions of new jobs that put a record number of people to work in the last decade. Moreover, new high-technology firms have an average annual employment growth rate of 30 percent.

Clearly, small-science and high-technology firms are the most cost-effective generators of innovation and the most prolific creators of new jobs in our economy. These small companies are an essential element if we are to revitalize our economic and technological base. They are a resource that we have no choice but tap at this critical time.

This is easier said than done. For there are many obstacles which make it difficult to fully utilize this resource. One obstacle is capital. Many small-science and high-technology firms find it difficult to raise the funds not only to get started, but to develop their new ideas and then take them to the marketplace. Venture capital and tax breaks simply do not help these firms. Fledgling firms have neither the management team nor a demonstrated capability or feasibility that can be assessed. Nor do they have profits that can be written off on taxes. All they have is an innovative idea.

The second obstacle is government. Federal R. & D. agencies have long neglected and ignored small-science and high-technology firms. A study by the Office of Management and Budget's Office of Federal Procurement Policy concluded that only 3.5 percent of total Federal R. & D. funds go to small firms despite the fact that they are such cost-effective innovators. The National Science Foundation reports that although 85 percent of all U.S. companies conducting R. & D. are small firms, these firms receive only 2 percent of Federal R. & D. funds going to industry.

A recent study by the Research and Planning Institute of Cambridge, Mass., on the growth of innovative high-technology companies reported that small firms are unable to receive basic research support from agencies like the National Institutes of Health and the National Science Foundation. "In fact," the report said, "their ideas are not even given a fair hearing * * * While most people were in favor of Government support of basic research,

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The Chair will attempt to reach the committees engaging in general debate in the order listed, but will at the same time attempt to accommodate Members who cannot be present when called.

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there was resentment that in those cases where a profit-making business could do the work better than another institution at no additional cost, it still was denied the opportunity to do so."

The third obstacle is largeness. Prof. Walter Adams, a distinguished economist and former president of Michigan State University, recently warned of the dangers of industrial giantism. His comments apply to universities too. Let me quote Professor Adams:

Industrial giantism, whether or not accompanied by monopoly power in specific markets, is not benign and therefore cannot be ignored. At the very least, it breeds an arrogance of power which ultimately causes those who wield it to lose touch with reality—to their own detriment and the detriment of the society they are supposed to serve. It also tends to divert entrepreneurship from risk-taking, investment, research and development, productivity enhancement, and market expansion into efforts to manipulate the state for protectionist ends. It transforms the firm from an economic organism seeking to maximize profits by excelling in the marketplace into a quasi-political institution seeking the quiet life in "orderly markets" protected and guaranteed by the state.

The strength of America's scientific and economic system has been its openness. We need this openness even more today if we are to overcome our serious economic problems.

More important, we need a mechanism to insure that the Federal Government fosters that openness by fully utilizing the unique ability of small businesses to generate innovation.

The Small Business Innovation Development Act is that mechanism. It mandates that all Federal agencies with R. & D. budgets of more than $100 million a year establish Small Business Innovation Research programs to develop innovative products and ideas. These programs would be funded by earmarking a very small percentage of each agency's R. & D. budget that goes for extramural R. & D. That budget totaled $30.3 billion for fiscal 1982. The earmarking will start with a mere two-tenths of 1 percent in the first year, rising to 1¼ percent in the fourth year. The Defense Department will have a 5-year phasein that begins with one-tenth of 1 percent.

The program will have three phases. Under phase I, the most technically and economically feasible proposals would be awarded grants of up to $50,000 to perform feasibility studies. Those projects which demonstrate their technical and economic viability could then qualify for phase II awards of up to $500,000. Commercialization of the results would be left entirely to the private sector in phase III.

Unlike other Government R. & D. programs, this one will rely on ideas generated in the private sector rather than on specific projects requested by Government agencies. The grants will be awarded strictly on a competitive basis and will go only to ideas of scientific and technical merit. All of these requirements are spelled out in the act.

The legislation also would require Federal agencies with annual R. & D. budgets of more than $20 million to establish small business R. & D. goals. These goals would not be less than the percentage of the total R. & D. funds awarded to small businesses in the preceding year. The bill clearly states that SBIR programs could be counted toward meeting these goals.

WHAT THE SMALL BUSINESS INNOVATION DEVELOPMENT ACT WOULD DO

The bill contains congressional findings: That technical innovation contributes to job creation, increased productivity and economic growth, and that small business is a major source of innovation when compared to large business, universities, and Government-owned laboratories; that there is a disproportionately minor involvement of small business concerns in federally funded research and development; and that it is in the national interest to strengthen the role of small business in innovation and commercialization of innovations derived from Federal R. & D.

The bill's stated purpose is to increase the efficiency of federally funded R. & D. by providing a long-needed mechanism—the small business innovation research program—to enable agency personnel to tap the resources of small, innovative firms; to facilitate the conversion of federally funded research results into commercially viable products and services; and to increase the share of the Federal R. & D. budget awarded to small businesses.

1. CHARACTER OF THE SMALL BUSINESS INNOVATION RESEARCH PROGRAM

The key element in the effort to stimulate the innovative potential of small-science and high-technology companies is the small business innovation research program that Federal agencies with large R. & D. budgets would be required to establish.

The agency SBIR programs are to be modeled on the highly successful small business innovation research program at the National Science Foundation. The general approach of the NSF program has already been adopted by the Department of Defense in its small business advanced technology program. The program also has been endorsed by Presidents Carter and Reagan. As a matter of fact, the Reagan administration reaffirmed its support in writing for the Small Business Innovation Development Act.

The application of the SBIR programs to Federal agencies is straightforward. Any agency whose total R. & D. budget exceeds $100 million annually would be required to establish a program to assist small business in obtaining a more equitable share of Federal R. & D. expenditures. The bill would use the same definition of "research" and "research and development" that is used in the Office of Management and Budget Circular A-11, section 44. This is the definition agencies currently use in reporting to OMB.

The bill would define Federal agency in a way that differs from that used for other Small Business Administration programs. The committee feels that a separate definition is necessary to insure that the broadest application of "agency" with title 5 of the United States Code would be used. In addition, the bill would provide that work under SBIR programs may be conducted through contracts, grants, or cooperative agreements.

A. PROGRAM PHASES

The bill defines the small business innovation research program and describes the program's three phases. For purposes of this bill, language describing the first phase of the SBIR program has been changed from requiring phase I proposals to be evaluated according to "technical and economic feasibility" to requiring that they be judged principally upon their "scientific and technical merit." Phase I is often too early to accurately evaluate economic feasibility in R. & D. efforts. Phase II, however, can introduce both technical and economic feasibility for Government needs. Further, the commercial potential of proposals is assessed effectively at the second phase through the follow-on funding commitment.

The most scientifically and technically feasible proposals would be awarded small grants ($30,000-$50,000) in phase I to fund a feasibility research or R. & D. effort. Those projects judged most promising in the first phase could then qualify for a second phase of funding (which currently ranges from $100,000-$500,000). Not only does the Federal Government obtain the free use of any invention developed, but it also obtains tax revenue resulting from commercialization of any such patented invention by the R. & D. recipient.

Commercialization of the results of the R. & D. would be left in most cases to the private sector under phase III. The definition of the third phase was changed to clarify the committee's intent that commitments for follow-on private funding to pursue commercial applications receive extra consideration in the evaluation process. The Committee also wanted to clarify its intent that follow-on production contracts may be competitively procured, and added language to this effect.

B. EARMARKED FUNDING

The bill does not authorize or require that any new Federal money be authorized for these programs. Rather, 0.2 percent in the first fiscal year, 0.6 percent in the second fiscal year, 1 percent in the third fiscal year, and 1.25 percent in all subsequent fiscal years of every qualifying agency's R. & D. budget, other than defense, would be reallocated to fund the agency's SBIR program. For the Defense Department, the phase in

could then qualify for phase II awards of up to $500,000. Commercialization of the results would be left entirely to the private sector in phase III.

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period would last for 5 years, starting at 0.10 percent in the first year, followed by 0.30 percent in the second year, 0.50 percent in the third year, 1.00 percent in the fourth year, and reaching the 1.25 percent maximum in the fifth year. The following chart sets out Federal R. & D. expenditures estimated for fiscal 1982 and the funding for each agency's SBIR program:

1982 RESEARCH AND DEVELOPMENT BUDGETS

[Dollars in millions]

	Total	Inhouse	Extramural	1¼ percent SBIR (extramural)
Defense	$21,523	$5,586	$15,937	199.2
NASA	6,017	1,381	4,636	58.0
Energy	4,690	367	4,323	54.0
HHS	4,169	894	3,275	40.9
(NIH)	(3,571)	(650)	(2,921)	(36.5)
NSF	1,000	82	918	11.5
Agriculture	860	563	297	3.7
Transportation	404	134	270	3.4
Interior	398	272	126	1.6
EPA	303	113	190	2.4
Commerce	288	242		
Nuclear Regulatory Commission	225	19	206	2.6
Veterans' Administration	153	151		
AID	151	8	[1] 143	0
Total	40,181	9,812	30,321	377.3

[1] Excluded from program as AID falls below $100 million threshold due to compromise * * *.

Note.—Senate 881 affects 6 agencies (Defense, NASA, Energy, HHS, NSF and Agriculture) with an SBIR program level of approximately $293 million. House Small Business Committee proposed compromise would include these 6 and 4 more (Transportation, Interior, EPA and Nuclear Regulatory Commission) with an SBIR program level of approximately $377.3 million.

The committee believes that a statutory allocation is essential if Federal SBIR programs are to succeed. The committee feels that there is ample flexibility in each agency's R. & D. budget to target the required percentage of their funds to implement the SBIR programs. It is left to the agencies' discretion to decide which funds to use for this purpose. However, the committee expects agencies to exercise this discretion in a manner that will not result in significant disproportionate taxing of any componment of the R. & D. budget. For example, concern has been expressed that basic research may, in some instances, be required to bear a greater share of the burden of funding SBIR programs. It is the committee's intent that this not occur, and it has consequently included a provision which limits to only 1.25 percent the SBIR share that can come from basic research funds. I should add that OMB's analysis for fiscal year 1982 and 1983 reflects a 9-percent increase in basic research obligations.

In order to insure that allocation of funds to SBIR programs does not lead to reduction in current levels of small business R. & D. funding agreements with the agency, the bill specifies that funding agreements with small businesses resulting from competitive or single-source selections other than under an SBIR program shall not be counted as meeting any portion of the percentage requirements set forth in the bill for overall agency R. & D. funding awards to small business.

2. FUNCTION OF THE AGENCIES

The bill includes several provisions that give Federal agencies the flexibility needed to design and operate their SBIR programs within the context of a Government-wide format. The following are examples of how the committee expects that this flexibility will be applied:

Agencies are given full discretion to decide the R. & D. topics they want to include in their SBIR programs. In outlining those topics, the committee expects that emphasis will be on describing agency needs and any controlling parameters rather than any specific or design approach to the problem to encourage innovative and more effective solutions.

While each agency is allowed to set the release dates of its own SBIR program solicitations, the committee expects the agencies to coordinate the release of these solicitations with SBA and other agencies conducting SBIR programs so as to maximize small business opportunities to participate in these programs. The committee recommends that the major procuring agencies, such as the Departments of Defense, Energy, and Health and Human Services, and the National Aeronautics and Space Administration, conduct more than one solicitations annually due to the size of their budgets—such as quarterly for DOD and semi-annually for the other three major agencies.

Agencies should also attempt to disseminate these solicitations as broadly as possible in order to promote maximum participation in the SBIR programs.

Although the bill requires each qualifiying agency to administer its own SBIR funding agreements or to delegate such administration to another agency, the committee expects that delegation will occur only where it would facilitate the cost-effective accomplishment of the goals of the bill.

Agencies are given the flexibility to establish their own payment schedules for SBIR funding agreements and to consider the cash flow needs of recipients in making the payments.

3. COORDINATION OF AGENCY SBIR PROGRAMS

A. ROLE OF SBA AS LEAD AGENCY

The bill provides for the establishment of uniform policy directives for the general conduct of SBIR programs within the Federal Government. The Small Business Administration is required to establish these directives within 120 days of the enactment of the bill, but only after consultation with the Administrator of the Office of Federal Procurement Policy, the Director of the Office of Science and Technology Policy, and the Intergovernment Affairs Division of the Office of Management and Budget.

SBA's primary function is to insure that the needs of small science and technology-based firms are protected. The consultation process, overseen by SBA, is essential to insure that the directives are based upon a well-informed understanding of the requirements for improving the excellence of federally funded R. & D. and upon a sensitivity to ongoing efforts to insure uniformity throughout Federal contracting, grants, and cooperative agreement procedures under the Office of Federal Procurement Policy Act, Public Law 95-507, and the Federal Grants and Cooperative Agreements Act (Public Law 95-244).

SBA's role in issuing the policy directives is essential to insure uniformity in the operation of the SBIR programs. Such uniformity is important to facilitate participation by small businesses in the program. The agency has been given this coordinating and supervisory function as it has had almost 30 years of small business Federal procurement experience, which means that SBA is sensitized to the needs of both the small business concern and the procuring agency.

B. ROLE OF OSTP

The primary responsibility of the Office of Science and Technology Policy is to insure that the quality of Federal R. & D. is protected. The committee does not intend that OSTP actually audit agencies conducting SBIR programs but rather that it review the reports on the SBIR programs submitted by the agencies.

C. AGENCY REPORTING

OSTP and SBA would report to Congress not less than annually to allow Congress to oversee the SBIR programs and have the opportunity to make improvements when necessary.

D. POLICY DIRECTIVES

The policy directives are designed to facilitate participation by small business in SBIR programs and to insure that only the highest quality R. & D. is conducted. Policy directives are to include, but are not limited to, the following:

A uniform solicitation format. The committee expects agencies to make every effort to adopt, in as timely a manner as possible, uniform program solicitations including standardized formats for submissions of phase I and phase II proposals.

Timely receipt and review of proposals. This is essential if the SBIR programs are to achieve the goals of the bill. The committee therefore recommends that no more than 6 months elapse between the deadline for the receipt of phase I proposals and the granting of SBIR awards, and no more than 6 months pass between the completion of phase I funding agreements and the funding of phase II proposals.

Outside peer review. The committee urges agencies to use outside peer review for both phase I and phase II proposals where appropriate. At the very least, agencies should adhere to their existing review standards, provided they do not fundamentally discriminate against small business applicants, in evaluating the type of R. & D. which will be funded under phase I.

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Where these review standards include outside peer review, utilize them for phase II as well.

Protection of proprietary information. Where existing agency procedures provide such protection, they should be applied in SBIR programs as well. Where current procedures do not provide adequate protection, at the very least the agencies should be required to hold confidential, clearly labeled proprietary information provided in proposals and reports for an extended period of time so that the proposer may seek patent protection where appropriate.

Selection of awardees under SBIR programs. The committee expects that the directives will harmonize with the requirements that SBIR proposals be reviewed and received in a timely manner and complement the efforts to establish a single, simplified procurement policy.

Protection of data generated by small business in the performance of funding agreements. For many years it has been the practice of the Federal Government in awarding R. & D. grants to nonprofit organizations to require periodic and final performance reports, or both. However, detailed technical data and information which is unnecessary to an understanding of the scientific findings disclosed in the performance reports has not been required. This practice is consistent with the theory of grants embodied in the Federal Grants and Cooperative Agreements Act (Public Law 95-244) in that the performance report is intended to explain the results of the research without burdening the grant recipients with the administrative requirements of maintaining and delivering technical information which is of little or no value to the Government. Further, to the extent that such technical data may gain some value in the commercial marketplace, the committee believes that its possession by the grant recipient would be more likely to result in its ultimate use than its possession by the Government. This is also consistent with the general view that grants are often awarded for the purpose of meeting a public need rather than for obtaining a service or product for Government use.

While past practices support only the submission of performance reports as a condition of a grant, in some circumstances a contract may require the negotiation and delivery of technical data generated in performance of the contract. Where such information is necessary for an agency to fulfill its mission through the purchase of services or a product through competitive procurement, the committee urges that this information be kept confidential by the agency and under no circumstances disclosed to competitors of the sudmitting company or use the information to produce future technical procurement specifications which would harm the small business which discovered and developed the innovative product, process, or idea. This practice is consistent with the theory of contracts embodied in the Patent Trademark Amendments of 1980 and the Federal Grant and Cooperative Agreement Act of 1977, Public Law 95-224, in that the acquisition of technical data and its future use is intended to directly benefit the Federal Government.

It is the committee's expectation that the requirement to submit technical data will be used very sparingly and that this approach will be reflected in the directives.

Transfer of title of property provided by an agency to a small business concern under the funding process where such transfer would be more cost effective than the recovery of the property by the agency. Under current procedures, the transfer of property provided by agencies for purposes of extramural research and development tends to be limited to funding agreements with nonprofit entities. The committee recognizes the basic validity of this approach and believes that, in most instances, profit-seeking organizations should bear the costs associated with the market-related activities. However, the reclamation of property provided to profitmakers has not always been cost effective for the Government. For this reason, the committee strongly believes where the Federal Government can purchase new equipment for the same amount or less than the cost of recovering equipment provided to small businesses under SBIR programs, that title should be transferred to small businesses.

Cost principles. In contrast with many large-profit and non-profit institutions which often achieve "economies of scale" by participating in several Federal programs at one time, small businesses tend to focus on a single contract with a correspondingly greater overhead. For this reason, cost principles established for SBIR programs should take into account the importance of providing full and adequate remuneration for R. & D. services provided to the Federal Government.

Exemptions from policy directives in circumstances where an agency's national security or intelligence functions clearly would be jeopardized. To assure that our national security interests are not compromised, the committee has explicitly exempted the Central Intelligency Agency, the National Security Council, and the Defense Intelligence Agency from compliance with the SBIR requirements. For all other agencies, the committee expects that the Administrator of the Small Business Administration will require clear and convincing evidence of such jeopardy before granting an exemption.

4. SMALL BUSINESS R. & D. GOALS

The bill requires all Federal agencies with R. & D. budgets exceeding $20 million a year beginning in fiscal 1982 to unilaterally establish goals for funding agreements for R. & D. with small business. These goals shall not be less than the percentage of the total R. & D. funds awarded by the agency to the small businesses in the preceding fiscal year.

The committee expects that this new requirement will lead to steady and significant increases in the percentage share of each agency's R. & D. budget received by small businesses. The committee recognizes that Public Law 95-507 requires Federal agencies to establish annual goals for total dollars going to small business. However, the committee is concerned that small businesses' share of agency R. & D. awards remains at a very low figure—4 percent—and that the more specific requirement in the bill targeted at R. & D. awards is essential. As with the other goals, the committee would expect the new goals would be set in a timely fashion, certainly no later than 120 days after the date of enactment.

High technology, innovative small businesses have been found not only to provide some of the greatest advances in the country's technology base but to be the most cost-effective innovators. We have seen over the past three decades that small, high-technology companies, free of the bureaucratic fetters and institutional inertia of larger enterprises, have been the generators of most pioneering innovations. Their involvement in the innovation process is greatest at the earliest and riskiest stage and in what initially appears to be small markets, but this is where major new breakthroughs are often made. Promoting the involvement of the small business sector in R. & D., and specifically in federally funded efforts, can provide significant benefits to Government R. & D. and the economy at virtually no additional cost. It is time to take that initiative.

Directing a larger share of Federal R. & D. to small firms also increases needed competition in Federal R. & D. The resulting private sector benefits may also increase such competition in the marketplace. Both should benefit the public and stimulate innovation.

These changes in Federal R. & D. policy would help achieve several important social and economic goals. The goals include increased productivity, job creation, new products for export, and the generation of significant additional tax revenues without an increase in price or in Federal spending. We believe the SBIR program will increase the Nation's return on investment from federally funded research and development, and this statement is based on fact, not wishful thinking.

The Small Business Committee has every reason to believe that the multiagency SBIR program will be every bit as successful as the one being currently administered by the National Science Foundation. Using that program as a model, it is noteworthy that

contract. Where such information is necessary for an agency to fulfill its mission through the purchase of services or a product through competitive procurement, the committee urges that this information be kept confidential by the agency and under no circumstances disclosed to competitors of the sudmitting company or use the information to produce future technical procurement specifications which would harm the small business which discovered and developed the innovative product, process, or idea. This practice is consistent with the theory of contracts embodied in the Patent Trademark Amendments of 1980 and the Federal Grant and Cooperative Agreement Act of 1977, Public Law 95-224, in that the acquisition of technical data and its future use is intended to directly benefit the Federal Government.

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The committee expects that this new requirement will lead to steady and significant increases in the percentage share of each agency's R. & D. budget received by small businesses. The committee recognizes that Public Law 95-507 requires Federal agencies to establish annual goals for total dollars going to small business. However, the committee is concerned that small businesses' share of agency R. & D. awards remains at a very low figure—4 percent—and that the more specific requirement in the bill targeted at R. & D. awards is essential. As with the other goals, the committee would expect the new goals would be set in a timely fashion, certainly no later than 120 days after the date of enactment.

High technology, innovative small businesses have been found not only to provide some of the greatest advances in the country's technology base but to be the most cost-effective innovators. We have seen over the past three decades that small, high-technology companies, free of the bureaucratic fetters and institutional inertia of larger enterprises, have been the generators of most pioneering innovations. Their involvement in the innovation process is greatest at the earliest and riskiest stage and in what initially appears to be small markets, but this is where major new breakthroughs are often made. Promoting the involvement of the small business sector in R. & D., and specifically in federally funded efforts, can provide significant benefits to Government R. & D. and the economy at virtually no additional cost. It is time to take that initiative.

Directing a larger share of Federal R. & D. to small firms also increases needed competition in Federal R. & D. The resulting private sector benefits may also increase such competition in the marketplace. Both should benefit the public and stimulate innovation.

These changes in Federal R. & D. policy would help achieve several important social and economic goals. The goals include increased productivity, job creation, new products for export, and the generation of significant additional tax revenues without an increase in price or in Federal spending. We believe the SBIR program will increase the Nation's return on investment from federally funded research and development, and this statement is based on fact, not wishful thinking.

The Small Business Committee has every reason to believe that the multiagency SBIR program will be every bit as successful as the one being currently administered by the National Science Foundation. Using that program as a model, it is noteworthy that

NSF awarded $5 million to small technology firms in its first SBIR solicitation. These firms have since generated more than eight times that amount—$41 million in follow-on private funding to pursue commercial applications from the Government research. The total number of jobs with firms that received follow-on private funding has increased by more than 300 percent, more inventions have been made, and new products have been introduced in the marketplace. All of these accomplishments have been achieved at almost no additional cost to the Government, since Federal funds were spent solely on NSF's research program objectives.

Multiply this effect by 75 times, as this bill would do, and we will see a major stimulant to new products, job creation, competition, and innovation.

SMALL BUSINESS COMMITTEE SUBSTITUTE AMENDMENT

The Small Business Committee reported a bill that it felt was strong and would result in a meaningful program. However, arguments have been raised against the original version. The committee has always been reasonable in listening to those who have concerns. It wants to fashion a bill that can attract the broadest support. In the interest of harmony, the committee unanimously adopted a substitute amendment on May 18 that addresses many of the concerns expressed and includes many of the suggestions for modifications that would strengthen the legislation. The substitute would:

First, reduce the percentage required in the program. The revised percentages would be: 0.20 percent in the first year; 0.60 percent in the second year; 1 percent in the third year; and 1.25 percent in the fourth and all subsequent years; except that an agency with an annual R. & D. budget in excess of $10 billion; namely, Defense would be phased in over 5 years: 0.10 percent in the first year; 0.30 percent in the second year; 0.50 percent in the third year; 1 percent in the fourth year; and 1.25 percent in the fifth and all subsequent years.

Second, exclude in-house R. & D. from the base against which the percentages are applied.

Third, prohibit any agency from including more than the stated percentages of basic R. & D. in the program.

Fourth, exclude intelligence agencies from the program—CIA, the National Security Agency, and the Defense Intelligence Agency.

Fifth, exclude AID international research centers and grants to foreign governments from the base against which the precentages are applied.

These changes being H.R. 4326 closer to the Senate version of the innovation bill, while keeping the bill much simpler and more direct than the Senate bill. This is an eminently reasonable compromise that we feel all can support in the interest of strengthening American research and development efforts.

We already know what the small business innovation research program will do. The National Science Foundation has had its own small business innovation research program for 6 years, which has had impressive results. The 21 firms that received $5 million in the first two phases of the NSF program today have attracted $41 million in follow-on private capital to develop their ideas. That translates into $8 of private investment for $1 of Government investment. The grants were for such important work as laser optics, genetics, agricultural, drilling, and robotics research. This is just the type of leverage that is needed to expand limited Government resources. This also demonstrates what small firms can contribute.

Everyone agrees that the SBIR concept works. The House Science and Technology Oversight and Science, Research, and Technology Subcommittees hailed the NSF program as "an outstanding example of how a Federal agency can encourage and promote innovation." They recommended, after exhaustive hearings in 1980, that "Federal agencies should examine NSF's SBIR program and implement similar types of programs which comport with their needs."

A report by the General Accounting Office last year found that small business innovation research programs meet all the criteria for innovation to occur.

The Department of Defense recognizes the importance of SBIR programs, and last year established its own SBIR program, which it calls the defense small business advanced technology program (DESAT). DOD said in its program solicitation:

Recognizing that small business has an established record for innovation, the DOD is interested in increasing the participation of this important national resource in DOD research and development to meet national defense needs. . . . The DESAT program seeks to increase the incentive and opportunity for small firms to undertake high-risk research and development that has a high potential payoff if successful.

The Small Business Innovation Development Act deliberately uses the NSF small business innovation research program as its model. The key attribute of this program—the attribute that has made it such a striking success—is that it has the same flexibility and openness that has allowed small science firms to be so creative and productive.

Ordinarily, this bill would pass quietly. But that is not to be the case because of the opposition of the administrators of a few large universities and a lone trade association that is dominated by big companies. They have taken it upon themselves to wage a relentless campaign of misrepresentation and innuendo against the bill. They know that they cannot defeat the bill if the issue is stimulating innovation and tapping the most effective generators of innovation.

Let me take a few moments to review the arguments raised against the Small Business Innovation Development Act.

ARGUMENTS

1. BASIC RESEARCH

It is alleged that the Small Business Innovation Development Act is a raid on basic research and will undermine excellence in science.

The fact is that basic research is an amorphous term that has been much misused in the debate over the bill by those who want to protect the status quo.

The National Science Foundation said the following on basic research in its Science Indicators 1980 report:

There is not always a clear distinction between "basic" and "applied" research. A particular research effort may be identified as "basic" or "applied" depending on whether the classification is made by the research sponsor, by the performing organization, or by the individual performing the work.

I want to emphasize that there is no inherent conflict between basic research and a small business innovation research program. In fact, all the testimony I have seen clearly demonstrates that they complement one another and that SBIR programs enhance public support for scientific research.

Listen to Dr. Arthur Obermayer, a prominent chemist who is a member of the Advisory Council of the National Science Foundation:

In the long run this legislation will lead to significantly increased support for basic research at universities. This bill is designed to focus on the linkage between basic research and practical application. This linkage. . . we call innovation. . . . The public supports basic research at universities because it expects that it will ultimately benefit mankind, and it is the innovative entrepreneur who is best at converting the laboratory curiosity into a product or process that will benefit mankind. When the government invests in academic research without the corresponding support for technology transfer and small business innovation, it is doing a disservice to academia and society as a whole because it is not providing the mechanism for eventual public utilization.

Paul Grey and Derek Bok, the presidents of the Massachusetts Institute of Technology and Harvard University, respectively, stress the need to transfer the results of research from the laboratory to the marketplace. Paul Grey, said:

Creative thought does not in itself insure the transfer of invention to the world in a useful way. Consequently, it is important that we continue to foster cooperative activities between universities and industry that will help assure the vitality of important research progress, the rapid and effective transfer of new technologies and the relevance of educational programs to important problems in society.

Derek Bok wrote in his annual report to Harvard's Board of Overseers last year:

We must work harder at the process referred to somewhat clumsily as technology transfer. . . . Academic officials and scientists are certainly aware that massive feder-

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al appropriations for campus-based research are largely based on the conviction that this work will eventually lead to practical results. Hence, it is only prudent for universities to take serious interest in the process of translating scientific knowledge into commercial uses.

The Small Business Committee appreciates the concerns fo those who feel that Federal support for basic research may be affected by the Small Business Innovation Development Act. We do not feel that will be the case, but we support an amendment to the bill that would limit the amount of funds that could be taken from basic research programs to the overall percentage amount earmarked to support SBIR programs. This is known popularly as the Schmitt amendment.

2. LIFE SCIENCES

It is alleged that there is not a sufficient number of qualified small science and high technology firms to fully utilize funds for small business innovation research programs.

The fact is that there are many qualified small science and high technology firms. Listen to Richard DiCicco, president of Technology Catalysts, a company in the business of matching up large companies with small high technology research firms. This one company alone has developed a data base which shows 2,636 small high technology firms in the life sciences field. They are divided into the following categories: 144 in biomedical engineering; 162 in biochemistry; 168 in pure cancer research; 164 in cell biology; 173 in genetics; 206 in immunology; 211 in medical electronics and instruments; 180 in molecular biology; 157 in nutrition; 295 in pharmacology; 109 in recombinant DNA; 195 in toxicology; 55 in tumors; 198 in virology; and 291 in other categories. All of these are critical areas of research that will be at the cutting edge of technology and science in this decade.

In contrast, Mr. DiCicco found on the basis of inquiries to the Department of Health and Human Services that "the total mailing list for HHS bids by small business for basic research grants is less than 100 firms." When one small business can develop a high technology resource list over 2,600 firms and a massive Federal department can only find fewer than 100 firms, the need for a mandatory SBIR program becomes readily apparent, as well as demonstrating that there are thousands of firms eligible and qualified to participate in such a program.

3. NIH AND SMALL R. & D. FIRMS

It is alleged that NIH is doing everything possible to increase funding of R. & D. at small high-technology firms.

The facts are that on June 28, 1978, the NIH small business specialist stated in a memorandum to the Director of Contracts and Grants at NIH:

New vigor can be added to the NIH research program by eliminating some of the barriers which have tended to be an inhibiting factor and by taking some new initiatives to stimulate this sector of the economy.

Among the barriers facing small firms highlighted were: Exclusion of small firms from NIH grants, the predominate NIH award instrument for research; a lack of policies and procedures to facilitate the submission and evaluation of unsolicited proposals; the denial of independent research and development work costs as an allowable cost for reimbursement under NIH contracts; the lack of any set-asides for small firms; and preclusion of small firms from receiving advanced payments under NIH letters of credit even though nonprofit institutions could receive such payments. In an August 2, 1978, memorandum to the Director of NIH, the contract specialist for the Contract and Evaluation Branch, Division of Contracts and Grants, Office of Administration, NIH, also noted these obstacles and stated:

It is not enough to say that there is not a strong base of profit-making concerns engaged in biomedical research from which to draw. It is HEW/NIH policy which has actually erected barriers to the federal acquisition of research from profit-making concerns.

Although NIH recently opened up its competition for grants to for-profit firms, HHS Secretary Schweiker certified in connection with the new regulation: "This rule will not have a significant economic impact on a substantial number of small entities."

4. SMALL BUSINESS UNSUITED TO DO BASIC RESEARCH

It is alleged that the work funded by NIH is not of interest to for-profit firms or is not appropriate for commericalization because it is "basic" biomedical research.

The facts are that the percentage of scientific and technical articles concerning basic biomedical research written by scientists and engineers rose from 32 percent of the total articles in 1973 to 49 percent in 1979. These figures are taken from Science Indicators 1980, published by the National Science Board. Basic research articles in biology by industrial scientists and engineers rose from 32 percent of the total articles in 1973 to 49 percent in 1979. In a May 6, 1982, editorial, Nature, the prestigious British scientific journal, wrote concerning this legislation:

In objecting to the legislation, spokesmen for universities and for basic research have been anxious to preserve their own turf at the expense of everyone else's . . . What is missing here is any perspective from the scientists that they are part of any large effort . . . Small firms are also part of the "fund" from which practical applications are drawn, both those which do basic research and those which do not. If the university spokesmen are truly concerned about national productivity, creating new inventions, and economic health—as they have said they were in selling their own budget requests to Congress in the past—they should support any measures that further that goal. At least they should offer constructive alternatives. But they do the image of science—and the U.S. economy—no good by limiting their comments to paranoiac fears that their particular sector will be hurt.

To underscore this belief, the Small Business Administration estimates that there are between 15,000 and 20,000 small firms whose principal work is in the research and development field. There are estimated to be between 20,000 to 30,000 small firms which have R. & D. capability as part of their principal function, such as manufacturing. As of January 31, 1982, of the 62,000 small firms listed in the agency's procurement data base (PASS), 12,607 are either R. & D. firms or possess R. & D. capability.

5. PERCENT REQUIRED

It is alleged that the funds earmarked for SBIR programs are really much larger than the percentage included in the bill and will seriously squeeze agency R. & D. budgets. For example, the impact on the Defense Department of the set-aside will not be 1.25 percent, but more on the order of 26 percent.

The fact is that simply because a large percentage of funds is committed in advance to certain projects does not mean that these projects should be exempted before figuring the impact of the SBIR earmarking. NASA, in a report prepared for the Science and Technology Committee, performed the following mathematical wonders:

	Thousands
Fiscal year 1980 R. & D. and R. & P.M. appropriation	$5,084,054
Institutional costs:	996,000
Total R. & D. awards to private sector	3,572,000
Less fiscal year 1980 funding of preexisting programs	2,789,000
Private sector awards for new requirements	783,000
Less fiscal year 1980 small business R. & D. and R. & P.M. awards	301,146
Unappropriated funds uncommitted to preexisting programs and current level of small business	481,854
Maximum SBIR set-aside required in H.R. 4326 (31.7 percent	152,522

A number of issues must be raised. First, from a $5,084,000,000 budget, NASA has subtracted out funds for preexisting programs in fiscal year 1980 of $2,789,000 to bring the base to which the SBIR program will be applied down extremely low.

Second, NASA applies the maximum 1.25 percent set-aside to a remaining base of just over $480,000. The bill does not envision that this level will be reached until 1984 and probably not until 1985. There is no discussion of what level of 1984 or 1985 funds will be committed to preexisting programs.

Third, NASA does not discuss whether portions of these preexisting programs could be made available for the SBIR programs. Is it not possible that some of the R. & D. in these programs could be performed by small business?

Finally, if NASA is going to subtract out funding of preexisting programs in

fiscal year 1980, and if we are to accept their contention that a like sum will be committed to preexisting programs upon enactment of this legislation, then fairness would require that the first year set-aside be applied to the remaining uncommitted balance.

Applying 0.2 percent, the percentage required in the committee amendment, to the total private sector awards of $3,572 billion results in making $7,144,000 available for the balance, or 1.25 percent of the "uncommitted" balance.

The fact that such a large percentage of funds is "previously committed" speaks to the need for this legislation. Since NASA subtracted out both funding for preexisting programs and small business R. & D. and R. & P.M. awards, it must be assumed that small business is not receiving access to $2.789 billion, or 54.9 percent of NASA's R. & D. budget.

This same convolution of the numbers was performed by NIH and DOD to indicate the much larger impact of the SBIR program on agency R. & D. budgets.

6. UNWISE POLICY

It is alleged that mandatory earmarking of funds for SBIR programs is unwise and bad policy.

The fact is that the highly acclaimed National Science Foundation small business innovation research program was initially supported with earmarked funds. The research funded under that program is of only the highest quality. In addition, no one can say that NSF suffered because of that; on the contrary, the Foundation has broadened its impact on American science and technology with its SBIR program.

We have no choice but adopt a mandatory funding approach to insure that SBIR programs are established and adequately funded. We have to do this because of the ingrained resistance of Federal agencies to this type of effort. According to testimony before the House Small Business Oversight Subcommittee, the Office of Management and Budget recommended in 1977 that Federal agencies sharply increase their use of small science and high-technology firms. The agencies ignored that recommendation.

Two years later, Federal agencies ignored President Carter's directive to establish small business innovation research programs.

Dr. Ernest Blase, formerly head of the Office of Advanced Technology Projects in the Department of Energy, described in a letter to the House Small Business Oversight Subcommittee how two Secretaries of the Department of Energy—Charles Duncan and James Edwards—refused to establish an agency SBIR program after telling Congress that the Department would.

Thus, we are left with no choice but to mandate the establishment of SBIR programs and funding mechanisms if we are to overcome entrenched bureaucratic intransigence and thereby effectively reverse the decline in innovation in the United States.

7. VENTURE CAPITAL

It is alleged that SBIR programs are not needed because there is adequate venture capital. Moreover, tax breaks can help fledgling R. & D. firms.

The fact is that venture capital is categorically not available for the type of research envisioned to be performed through SBIR programs. Venture capitalists require that development be advanced to the point of a prototype before they will ever consider investing in a small firm. To suggest otherwise is a red herring, for the facts will not support it. Let me state again that venture capitalists will not fund phase I and II types of research and development. This is borne out by the fact that NSF's phase II awards are made to develop prototypes and develop innovative ideas to the point where venture capitalists and other private sector investors will consider investing in them.

The SBIR program is designed to provide the necessary funding to bring small businesses to this point of development so they can then attract follow-on private venture capital funding.

It should be noted that since enactment of the Small Business and University Patent Reform Act of 1980, this is increasingly what Federal R. & D. funds are providing to universities. Universities develop a product or process to a point where they can obtain a patent and they then may license the technology or process to commercial ventures. It is only at this stage of development of an idea in a small business that private venture capital can be attracted. Tax breaks do not help new R. & D. firms. Businesses at the startup point do not have profits that they can write off on taxes and cannot look forward to them for a while. Without a tax liability, tax deductions or credits are worthless. They instead need front-end seed money.

OVERSPENDING ON SMALL BUSINESS

It is alleged that the bill will force agencies to spend a certain percentage on top of what they currently devote to small business.

The fact is that H.R. 4326 would extend to all agencies a proven program that enhances the ability of small science and high technology firms to develop innovative ideas and products. The program will expand the small amount of Federal R. & D. funds already received by our Nation's small businesses. The amount will be $60 million in the first year of the program and will reach $380 million in the fourth year. These are all small amounts, even when compared with the $2 billion or 5 percent of the $40 billion Federal R. & D. budget that small business now receives. However, it should be reemphasized that the intent of the bill is not to establish another small business program but to set up an effective mechanism to reverse the decline in innovation.

9. SPECIAL INTEREST LEGISLATION

It is alleged that the Small Business Innovation development Act is just another piece of special interest legislation and duplicates existing small business programs.

The fact is that the purpose of the bill is to stimulate the development of innovation in the United States. That is why it is titled the Small Business Innovation Development Act. It is also a fact that the sector of the economy that has the most impressive rate of innovation—a rate recognized by the National Science Foundation—is the small science and high technology sector. All we are doing in this bill is creating a new program that would target a small percentage of Federal R. & D. funds to stimulate innovation by the most productive and cost-effective generators of innovation. This bill does not duplicate existing programs that set aside R. & D. contracts for small business.

I do not want to get involved in an argument over the share of R. & D. work that small business currently receives from Federal agencies. The figures are dismal. The National Science Foundation reported that despite the fact that small R. & D. firms represent 85 percent of all firms carrying out R. & D., they receive only about 2 percent of the total Federal R. & D. funds allotted to industry. Overall, small firms receive only 4 percent of total Federal R. & D. funds and 6 percent of Federal R. & D. contracts of more than $10,000. It is a paltry amount however you cut it.

10. ADMINISTRATIVE COST

It is alleged that the small business innovation research program will cost at least $193 million to administer over 5 years.

The fact is that the SBIR program will cost nowhere near that amount to administer. I cannot understand how various numbers have been developed on the cost of running this program. All you really need do is look at the NSF experience in administering its SBIR program, since the NSF program is the model for the legislation.

The NSF SBIR program is funded at $5 million for fiscal year 1982. It has received 2,000 proposals and currently oversees 150 phase I and phase II awards. According to NSF, the program is administered by a staff of two program managers who are GS-15's, a secretary, and a student aide. Their salaries come to about $115,000 a year. If we add printing and telephone expenses that total annually $10,000 to the personnel costs, we would find that a $5 million program is being administered at a cost of $125,000 a year.

The program relies on NSF staff to handle each of the 24 topic areas in which the SBIR program is assisting research. This would follow along with the work they are already doing. The NSF tells me that the administrative

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costs of its SBIR program would be $125,000, regardless of whether the program were at a $5 or $10 million funding level.

If we were to apply this administrative cost percentage to an SBIR program at a 1¼-percent funding level that costs $380 million Government-wide, we could expect the administrative costs to be about $4.75 million annually when it reached full funding. That is a very efficient use of Government funds.

I fully expect that congressional committees will keep close tabs on the SBIR programs of various agencies that will be established when the bill is enacted.

11. AMERICAN ELECTRONICS ASSOCIATION

It is alleged that the American Electronics Association speaks for the Nation's small R. & D. firms in opposing the innovation bill.

The facts are just the opposite. What AEA does not say is that it is a house that is deeply divided over the Small Business Innovation Development Act. That trade association has taken it upon itself to speak for all of its members on this bill, when actually many of AEA's small R. & D. members strongly support the bill. In fact, AEA's small R. & D. members are up in arms over AEA's position and the association's refusal to poll them before taking a position against the bill.

We have received letters of protest from numerous small R. & D. firms that are AEA members saying that the association does not speak for them.

Let us set the record straight on AEA. The association does not speak for research and development firms. It really is a trade association representing electronics manufacturers. Of the approximately 1,800 member companies in AEA, only 140 have identified themselves under the single category "R. & D., Consulting, Management Services" in the AEA directory. Prior to 1978, AEA was named the Western Electronic Manufacturers Association.

A MAJORITY OF THE R. & D. COMPANIES IN AEA FAVOR PASSAGE OF THE SMALL BUSINESS INNOVATION DEVELOPMENT ACT

Ned Rasor of Rasor Associates, a small R. & D. firm in Sunnyvale, Calif., polled AEA's small R. & D. member firms to find out their position on the bill. He found that 59 percent of AEA's small R. & D. member firms favor passage of the legislation.

We must remember that AEA speaks for the largest electronics manufacturers which oppose small business set-asides because of the competitive threat from small business. They are instead content to push for more and more tax breaks for themselves. These tax breaks are nothing more than a set-aside for the multibillion-dollar giants of the electronics industry.

In contrast, the Electronics Association of California strongly supports the Small Business Innovation Development Act. EAC was set up 5 years ago because AEA was not meeting the needs of its small R. & D. members. Today, EAC has almost 500 members. Until now, it has never taken a position on legislation. But AEA's relentless campaign against the innovation bill has changed that. Before it acted, EAC polled its members on their position on the bill. Its poll found support running 2 to 1 in favor of the bill. The question thus is, who legitimately speaks for whether this measure is needed and can be effectively used by small business: AEA, which is dominated and controlled by Fortune 500 electronics firms, or the Electronics Association of California, which is comprised solely of smaller companies.

In addition, the Smaller Business Association of New England, which represents hundreds of New England high technology firms, strongly backs the Small Business Innovation Development Act.

It is fair to conclude that small science and high technology firms strongly favor the bill and that AEA's position should certainly be discounted.

12. SET-ASIDES

It is alleged that set-asides skew a procurement system that is competitive. In addition, Government set-aside programs for small business are riddled with scandal.

The facts are as follows:

First, those who would compare the proposed SBIR program with the much abused 8(a) minority business program simply are showing their ignorance of the procurement process. First of all, 8(a) is not a set-aside; it more accurately could be called a "put-aside" of Government contracts for exclusive and noncompetitive award to minority businesses as subcontractors.

In contrast, the SBIR program is not a business development program, as is the 8(a) program. The design and purpose of SBIR arises from the conviction of proponents, supported by empirical data, that small businesses are the most innovative sector of our economy. These innovative businesses are proven performers who have been denied the ability to compete for Federal R. & D. funding in the past.

The design of the SBIR program positively precludes abuses similar to those which have occurred in the 8(a) program. The SBIR program is competitive; in other words, firms will respond to agency solicitations and awards will be based on the quality of the proposals submitted. Agencies are expected to carefully review proposals, as they would in such instance, and make awards based on quality and agency mission needs.

Second, currently, a significant share of Federal procurement funds are awarded through negotiation on a noncompetitive basis.

In the more specific area of research and development, awards also reflect this noncompetitive track record.

SEVENTY PERCENT OF R. & D. CONTRACTS ARE AWARDED NONCOMPETITIVELY

These facts should put to rest any belief that Government procurement is by its nature a competitive process. The Government does not buy like the private sector buys. Differences are insignificant, and successful marketing with the Government requires a substantial effort on the part of the proposers.

Third, committees of the Congress which considered this bill have made oblique references to the wasteful nature of set-aside programs generally and have further inferred that this will also be the result of the SBIR program.

It is noteworthy that not one committee has supported this conclusion with even a scintilla of data, very clearly because the data is not there. The committees have preyed on a general impression of set-asides as protectionist measures for special interests while disregarding the record of performance under set-asides and their purposes.

It again must be pointed out that comparisons with the 8(a) program are not legitimate and in fact are spurious.

Set-asides as designed by the Congress and implemented by procuring agencies are not business development programs, do not result in less quality in products or processes provided, and do not result in additional costs to the Government.

Set-asides are designed to counter the impediments which preclude small business from participating on an equal footing with other Government procurement performers. What exactly are these impediments?

First, there is a market impediment which is solely a result of business size. Small business resources are spent more productively because they cannot afford to carry significant overhead costs. This means that a small business cannot mount a Government marketing effort equal to that of its big business or university competitors. Of course, this fact makes it more difficult for small businesses to comply with necessary paperwork and regulation, a fact which the Congress recognized in passing the Regulatory Flexibility Act during the 96th Congress.

Second, small businesses have been excluded from participation in many agencies' R. & D. projects because of their "for-profit" standing. Only in December 1981 did HHS and specifically NIH open their grant procedures to for-profit entities.

Certain examples can prove conclusively that set-asides do not result in additional costs to the Government.

13. FAIR SHARE

It is alleged that small business already receives more than its fair share of Federal R. & D. contracts. To support that, opponents of the bill claim that small business employs 5.5 percent of the scientists and engineers

for the largest electronics manufacturers which oppose small business set-asides because of the competitive threat from small business. They are instead content to push for more and more tax breaks for themselves. These tax breaks are nothing more than a set-aside for the multibillion-dollar giants of the electronics industry.

In contrast, the Electronics Association of California strongly supports the Small Business Innovation Development Act. EAC was set up 5 years ago because AEA was not meeting the

awards will be based on the quality of the proposals submitted. Agencies are expected to carefully review proposals, as they would in such instance, and make awards based on quality and agency mission needs.

Second, currently, a significant share of Federal procurement funds are awarded through negotiation on a noncompetitive basis.

In the more specific area of research and development, awards also reflect this noncompetitive track record.

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and receives 6.8 percent of Federal contracts.

That argument is just another example of how the opponents have twisted and manipulated figures to make it appear that small business is receiving more than its fair share of Federal R. & D. funds when, in fact, it is not. It further illustrates a thorough lack of understanding of the Federal R. & D. procurement process.

The facts are that the 5.5-percent figure on small business employment of scientists and engineers cannot be compared to the 6.8-percent figure on small business's share of Federal R. & D. contracts. These figures cannot be compared because they are taken from different sources and are based on definitions of R. & D. that have widely differing bases. The 5.5-percent figure is taken from NSF. The 6.8-percent figure comes from the Federal Procurement Data Center, which uses a much broader definition of R. & D. in classifying contract actions, thus inflating small business's participation in Federal R. & D. contracting.

This is what the data really shows:

Federal funds for R. & D. in industry—including subcontracts—totaled $12.46 billion in 1979, of which $288 million went to firms with fewer than 1,000 employees. This means that smaller firms received only 2.3 percent of the private sector awards. At the same time, firms with fewer than 1,000 employees had 7 percent of industrial R. & D. scientists and engineers. Comparing small firms to the entire private sector, including universities and other nonprofit entities, yields a small firm's meager share of private sector Federal funds of only 1.5 percent. This figure is comparable to the 5.5 percent share of scientists and engineers quoted by the American Electronics Association. Thus, if employment is a satisfactory measure of small business capability, use of comparable data shows that small business is being utilized at a rate of less than one-third of its current capabilities.

What is most disturbing is the broad acceptance of the figures and citing and National Science Foundation as their source. The NSF has indicated that the 5.5/6.8 comparison is an inconsistent application of disparate data. NSF has also indicated that the comparisons cited earlier, that is small business performs only 1.5 percent of the R. & D. work, are an appropriate and consistent application of the figures included in their report.

Furthermore, employment of scientists and engineers may not be a satisfactory measure of small businesses' ability to perform Federal R. & D. In a report titled "Consistent Criteria Are Needed to Assess Small Business Innovation Initiatives," GAO concluded:

> This measure is biased toward labor-intensive R. & D. activity and it covers only employees formally or exclusively employed to conduct R. & D. activities. At best, this measure is only a partial indicator of potential to innovate.

14. FREE MARKET

It is alleged that the Small Business Innovation Development Act will upset the operation of the free market. The opponents say, "Allow the free market to work."

The fact is that the free market will not work unless this bill is enacted. The small business innovation research programs, with their seed money awards, lower the barriers to entry of small science and high technology firms into the marketplace. These barriers include lack of capital and lack of a competitive Federal R. & D. contracts and awards system. Without this bill, small firms with innovative ideas will not be able to develop those ideas to the point where private capital will become available for full scale development and commercialization.

The opposition to the bill comes from the giants of industry and the giants of academia, who feel threatened by any program to encourage competition in research and development.

15. INADEQUATE OVERSIGHT

It is alleged that the Small Business Innovation Research programs will divert management attention from an agency's total research and development objectives.

The fact is that the Small Business Innovation Research program is designed to complement agency needs and research objectives. The small business advanced technology program at the Defense Department is the first SBIR program in a mission-oriented agency. Under that program, small firms are invited to submit R. & D. proposals on topics selected by the agency in accordance with its R. & D. objectives. Thus, the SBIR program fits right in with what the agency is doing and what the agency needs.

16. MARGINAL RESEARCH

It is alleged that potential remaining funds in small business innovation research programs will be committed to marginal research.

The fact is that the small business innovation research programs will be phased in starting with 0.2 percent in the first year and reaching 1.25 percent in the fourth year. The exclusion of in-house research from the funding base reduces the dollar size of the program by about 25 percent. Thus, on an agency-by-agency basis, you are talking about very small amounts of money.

The 4-year phase-in allows the agencies to start off with the smaller phase I awards for feasibility studies. These awards are expected to be in the $20,000 to $50,000 range. As the program expands, so do the amounts of the awards, which are expected to range up from $500,000 for phase II development grants. Thus, the program will not be overloaded with money in the early stages.

The experiences of the NSF SBIR program and the Defense Department's small business advanced technology program show the respones that can be expected to agency SBIR programs. The NSF has had a surfeit of applicants and has selected 1 out of 8 applications. The DOD program received 1,103 proposals in response to its first solicitation last year. It made awards to only 100 firms.

As it is, the awards are small. Many of the recipients of NSF awards have applied their own funds to the SBIR grants because those grants are so low.

17. UNIVERSITIES

It is alleged that the bill discriminates against universities by not allowing them to participate in the SBIR program.

The fact is that the bill allows all individuals with innovative ideas to compete for SBIR awards. This includes scientists and engineers who work for universities, corporations, or nonprofit institutes.

Only government laboratories, companies with over 500 employees, and nonprofit institutions are excluded from participation in the program, not their employees.

The purpose of the SBIR program—ultimate commercialization of innovations—is not compatible with the research conducted by universities. The SBIR program helps take innovations into the marketplace.

18. AGRICULTURE

It is alleged that the Department of Agriculture's R. & D. effort will be harmed by the SBIR program and that only 20 firms perform research for USDA.

The fact is that an SBIR program at USDA will have minimal impact on existing R. & D. programs under the substitute amendment. The Agriculture Department has an $860 million R. & D. budget for fiscal year 1982. Under the Small Business Committee substitute amendment that excludes in-house research, two-tenths of 1 percent will be earmarked for the SBIR program for its first year; six-tenths of 1 percent for the second year; 1 percent for the third year; and 1¼ percent for the fourth and all subsequent years. That means $500,000 in the first year; $1.8 million in the second year; $3 million in the third year; and $3.7 million in the fourth year. That is far less than the $23 million that has been alleged would be set aside from the USDA R. & D. budget.

The argument that since only 20 firms perform research for USDA, there is not a sufficient number of qualified firms to participate in an SBIR program. That is as dishonest as the argument of NIH that there are not enough qualified small R. & D. firms in the life sciences. The simple fact is that the agencies have not in the past sought out and do not now seek out qualified small R. & D. firms. If they did, they would find many.

COMMITTEE AMENDMENTS

The innovation bill was referred sequentially to six committees in addi-

ures included in their report.

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The innovation bill was referred sequentially to six committees in addi-

tion to Small Business. They were the Energy and Commerce, Science and Technology, Veterans' Affairs, Foreign Affairs, Armed Services, and Select Intelligence Committees. These committees held hearings on the legislation and reported amendments.

The Small Business Committee has reviewed the proposed amendments and feels that many of the concerns embodied in them are resolved in the committee substitute. Let me review the amendments:

1. VETERANS' AFFAIRS

The Veterans' Affairs Committee proposes to exclude any in-house research and research done at Government-owned, Government-operated facilities. In-house research accounts for $9.8 billion or about 25 percent of the Federal R. & D. budget of $40.4 billion for fiscal year 1982.

We do not see any problems with including in-house research in the funding base for Small Business Innovation Research programs. But, as I have stated many times during the debate, the goal of the Small Business Committee is to see the adoption of the Small Business Innovation Development Act and to include the small business community in the effort to reverse the decline in innovation. Reducing the R. & D. funding base for SBIR programs would meet the concern expressed that SBIR programs would be too costly if a larger funding base were used. We have included the thrust of the amendment of the Veterans' Affairs Committee in our committee substitute. It in no way weakens the purpose of the legislation—to establish SBIR programs that are assured of steady and adequate funding.

2. INTELLIGENCE

The Select Committee on Intelligence proposes to exclude R. & D. by any agency within the intelligence community. That specifically includes the Central Intelligence Agency, the Defense Intelligence Agency, and the National Security Agency.

We never considered that R. & D. conducted by the intelligence community would be covered by the Small Business Innovation Development Act. While we feel small business is capable of making an important contribution to the many facets of intelligence R. & D., we have no problems with the intent of the Intelligence Committee's amendment and have included language to that effect in our committee substitute.

3. FOREIGN AFFAIRS

The Foreign Affairs Committee has not issued specific recommendations prior to the floor debate on H.R. 4326. Nevertheless, the Small Business Committee recognizes the unique aspects of R. & D. conducted by the Agency for International Development that falls within the requirements of the Small Business Innovation Development Act. We thus have included in our substitute an exclusion of AID international research centers and grants to foreign governments from the base against which the bill's funding percentages are applied. The effect is to remove AID from the SBIR program and coverage of the legislation.

The Small Business Committee believes that all of the major Federal R. & D. agencies must be included in the Small Business Innovation Development Act and that the small business innovation research programs must have mandatory funding to be effective. Thus, the committee strongly opposes the following amendments.

4. ENERGY AND COMMERCE

The Energy and Commerce Committee proposes to exclude any health-related R. & D. conducted by or through the Department of Health and Human Services.

We feel very strongly that this is bad public and science policy. If the Small Business Innovation Development Act is to stimulate the development of the innovation that the United States desperately needs today, it must include all aspects of science in this effort. There are over 2,000 and as many as 3,500 small, high technology, biomedical and life science research firms in the United States that have important contributions to make. They should be working with the National Institutes of Health. Most of them have not been utilized by NIH because of that agency's longstanding bias against working with these types of firms.

This bias has very harmful consequences. We are entering a new era where the life sciences are exploding as the electronics industry did in the 1960's and 1970's. As small firms were critical to that explosion, so they are critical to this new explosion. We must insure that their abilities will be tapped and that HHS and NIH establish and fund an SBIR program.

The Small Business Committee substitute recognizes the deeply felt concerns of the university and basic research communities that the United States basic research effort not be harmed by this bill. We feel this legislation will only increase support for basic research. We have made every effort to work with the universities to find means of assuring that basic research will not be hurt. Regrettably, the university spokesmen refused to engage in a serious effort with our committee and to propose concrete ways of resolving their concerns.

We have not ceased our efforts. We have included in our substitute a provision that caps that amount of money that can be used from the extramural budget for basic research at the percentages included in the Small Business Innovation Development Act to fund the SBIR programs.

We feel this should satisfy the concerns of the universities and the National Institutes of Health. The Senate version of the innovation bill includes the same provision. These changes make the Energy and Commerce Committee amendment unnecessary.

5. ARMED SERVICES

The Armed Services Committee proposes to exclude the Department of Defense and atomic energy defense programs conducted under the Department of Energy from participation in the Small Business Innovation Research program.

We find it very difficult to understand the rationale for the Armed Services Committee's amendment since the Department of Defense established an SBIR program on its own—the defense small business advanced technology program. That program mailed out 30,000 brochures for its first solicitation in April 1981, inviting proposals from small R. & D. firms in a wide variety of research areas. Over 1,000 proposals were submitted and 100 winners were selected. The Department of Defense clearly recognizes the contribution an SBIR program can make to national defense.

The Department has expressed concerns about the size of the SBIR program under the 3-percent earmarking included in the original version of the Small Business Innovation Development Act reported by the Small Business Committee. We appreciate the concerns of the Defense Department and the Armed Services Committee and have included modifications in the Small Business Committee substitute to deal with them. We have excluded in-house R. & D. from the SBIR funding base. We have reduced the amount of funding earmarking to 1¼ percent. Moreover, we provide for a 5-year phase-in of an SBIR program at the Defense Department. We have done all these things to facilitate the Department of Defense's participation in the SBIR program and in recognition of the department's unique situation. These changes bring the Small Business Innovation Development Act much closer to the Senate version of the bill, which the Defense Department has testified in support of.

We feel very strongly that it would be bad public and science policy to exclude the defense programs from the small business innovation research program. The defense-oriented R. & D. budget accounts for half of the Federal R. & D. budget. Clearly, United States R. & D. has a large defense-oriented component. We have found many civilian spin-offs from that research. It would be unwise to remove the Government agency that influences the direction of so much American research and development from the one Government program that is directly aimed at stimulating innovation.

6. SCIENCE AND TECHNOLOGY

The Science and Technology Committee proposes a substitute for the Small Business Innovation Development Act reported by the Small Business Committee. We find the Science and Technology Committee's substi-

substitute.

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6. SCIENCE AND TECHNOLOGY

The Science and Technology Committee proposes a substitute for the Small Business Innovation Development Act reported by the Small Business Committee. We find the Science and Technology Committee's substi-

tute unacceptable. Its purpose is to gut the Small Business Innovation Development Act and establish a meaningless small business innovation research program that would not be assured of adequate or long-term funding. It would strike at the heart of the innovation bill by eliminating the provision mandating earmarked funding for the programs. As we have said countless times during the debate on the bill, earmarked funding is the only way that the SBIR program will be assured, given the ingrained resistance of government agencies to establishing SBIR programs on their own and to utilizing small science and high technology firms in the Federal R. & D. effort. Let me point out once again that the highly acclaimed NSF SBIR program was established only after Congress mandated it and provided for earmarked funding.

Other provisions of the Science and Technology Committee substitute would seriously weaken the SBIR program. It proposes removing requirements that the regulatory burden on small business be minimized and that a simplified, standardized and timely annual report be submitted by agencies to the Small Business Administration and the Office of Science and Technology Policy. It proposes to remove the requirement for peer review from Phase II proposals. It proposes to remove the requirement that policy directives, procedures, and objectives for the program be issued within 120 days of the enactment of the Small Business Innovation Development Act. It proposes, in effect, an SBIR program in name but not in fact.

It also proposes to remove the requirement that small business R. & D. for agencies not be less than the actual R. & D. expenditures by the agencies with small business in the immediately preceding fiscal year. This is ludicrous. We are talking about goals which are important to encouraging agencies to do what they should, as a matter of efficient use of the taxpayer's money, be doing.

It also proposes removing the Small Business Administration as the lead agency to issue policy directives for the SBIR programs and the requirement that the Office of Science and Technology Policy report to the Committees on Small Business on the SBIR program. We feel that SBA has been given the general type of leadership role required by this legislation to oversee a decentralized program. We see no need to change that. We also welcome all committees to conduct vigorous oversight of the SBIR program. But we feel that the Small Business Committees have a major role to play in overseeing the operation of the program. We have been working on this legislation for three Congresses and are the leaders in the effort to get the Federal Government to effectively and fully use the abilities of small science and high technology companies.

We feel there is merit in the Science and Technology Committee's recommendation that basic research funding be given special consideration in the funding of SBIR programs and that the earmarked funding percentages be reduced. We have included these changes in the Small Business Committee substitute and feel that they achieve a middle ground that all of us can support.

CONCLUSION

The week of May 10 was Small Business Week. Many of you used that time to tell your small businessmen how important they are to our Nation's well-being. Now we have the opportunity to vote our rhetoric by enacting the Small Business Innovation Development Act.

The national interest demands that a very small portion of Federal R. & D. funds be reallocated to the most productive generators of innovation. This will mean some slight pain for certain special interests. But the crisis we face today demands that we fully involve all components of our national science system in the effort to rebuild our economic and technological base and create the new jobs we desperately need. Nature, the prestigious scientific journal, has endorsed this bill for just these reasons.

The beauty of the Small Business Innovation Development Act is that it establishes a linkage between research done in the laboratory and practical application. This linkage is called innovation. Innovation is what made the U.S. economy and U.S. technology such a powerful engine for the past century and will power us into the next century

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Mr. McDADE. Mr. Chairman, I yield 5 minutes to my distinguished friend, the gentleman from Ohio (Mr. STANTON) who has worked for many, many years in building a platform upon which this bill can come to the floor. He has done yeoman work. I am delighted to yield 5 minutes to my friend, the gentleman from Ohio (Mr. STANTON).

(Mr. STANTON of Ohio asked and was given permission to revise and extend his remarks.)

Mr. STANTON of Ohio. Mr. Chairman, I would like to add a few words to those of my colleague from New York concerning this very important piece of legislation which is before us today. H.R. 4326, now amended as H.R. 6587, presents this Congress with a unique opportunity to take a stand on behalf of small business in this country.

We have just been through an agonizing effort to reduce the size of our Federal budget; we have had to cut spending in almost every program run by this Government. It is more urgent than ever before that we make the very most productive use of our Federal dollars.

Thus, Mr. Chairman, when we have an opportunity to channel some of the $40 billion in Federal funds which goes to research and development through various federally sponsored programs, if we can channel just 1.25 percent of this amount—only about $44 million the first year—into more productive use, we will have contributed toward getting the most bang for our Federal bucks.

Particularly in these times of great economic hardship, with high interest rates, high unemployment, inflation, limited access to equity capital, and a slowdown in our national economic growth, it is more important than ever before to insure that we spend these dollars in the most economically productive way we can. This bill provides us with an opportunity to increase productivity in research and development and to open up for competitive bidding among small businesses some of the research and development which has heretofore been the exclusive territory of large corporations and universities.

It has been proven over and over again that the cost per innovation in a small firm is far less than in a large one; that small firms produce up to 24 times more innovations per R. & D. dollar than large ones; that small business receives a miniscule amount of those funds; and that 80 percent of the research in industry is done by only 200 firms.

This legislation is not a set-aside program like the SBA 8(a) program. This legislation would ask each Federal agency with R. & D. budgets over $100 million to review its research and development needs, and to come up with those needs which can be reasonably addressed by small businesses, and then to open up those project proposals to competition from among the small business community. There is no attempt in this legislation to either reduce the amount of basic research conducted by the private sector—universities or corporations—nor is there any mandate which would increase beyond 1.25 percent the amount of R. & D. to be performed by small business. And there is no attempt here to set up one more bureaucratic program run by Uncle Sam. Each agency is responsible for running its own small business program within its already established R. & D. needs.

Mr. Chairman, during the past decade we have watched our country gradually slide backwards in terms of world leadership in the area of technological innovation and productivity. The annual rate of increase of productivity for the United States has declined tenfold over the past 10 years and now lags behind that of the rest of the world's major industrial nations.

We all know that small business makes up 99 percent of our economy, produces 86 percent of new jobs created, and over half of the gross nation-

oversee a decentralized program. We see no need to change that. We also welcome all committees to conduct vigorous oversight of the SBIR program. But we feel that the Small Business Committees have a major role to play in overseeing the operation of the program. We have been working on this legislation for three Congresses and are the leaders in the effort to get the Federal Government to effectively and fully use the abilities of small science and high technology companies.

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We all know that small business makes up 99 percent of our economy, produces 86 percent of new jobs created, and over half of the gross nation-

al product. If we are going to address the economic problems of our Nation, we must start with small business, where the economic hardships hit first and hardest and where the productivity is highest. To solve our economic problems we need only to address the problems of small business, and here in this bill, we have an excellent opportunity to kill two birds with one stone—to increase our national technological and innovative know-how, and our international prestige, and to address our economic problems which begin with small business.

Mr. LAFALCE. Mr. Chairman, I yield 5 minutes to the distinguished chairman of the full Committee on Small Business, the gentleman from Maryland (Mr. MITCHELL).

(Mr. MITCHELL of Maryland asked and was given permission to revise and extend his remarks.)

Mr. MITCHELL of Maryland. Mr. Chairman, I want to follow up on something that my colleague, the gentleman from Ohio (Mr. STANTON) just said. He indicated the needs and the hurt of small business right now are great and said that this bill would help small businesses. And indeed it will. But there is a much larger issue.

The larger issue relates to the fact that this country has slipped from first to dead last among industrialized nations in the rate of productivity increase. At one time we were No. 1 in productivity increase; we are now dead last.

The Committee on Small Business has been examining this issue since 1978, and over those years we have heard more and more expressions of concern that the leadership in some technologies had shifted to Japan and West Germany and would stay there permanently. I say it will unless we begin to give small businesses an opportunity to participate in research.

I also want to comment very briefly on the matter of the universities which are in opposition. The problem there is, as my colleague, the gentleman from Ohio, had indicated, that they simply have not read the bill.

We are talking about 1.25 percent of all R. & D. money over a 5-year period. How can two-fifths of 1 percent in R. & D. going to small business hurt any university? How indeed could 5 percent hurt? It will not. But we are so modest. It is only 1.25 percent over a 5-year period.

There are several factors that have impeded the involvement of small firms in Government-sponsored R. & D. First, unquestionably, there is a bias in Government agencies in favor of large firms and research labs. Second, the agencies are motivated by an antirisk attitude. They are afraid to get out there and dare to take a risk.

Well, if we do not take a risk, we are going to stay dead last in productivity. There is a general kind of inertia in the agencies. They have been doing the same things the same way over and over again, and they just do not want to change. And, finally, most of the agencies are just unfamiliar with the capabilities of small business firms.

I must confess that I was unaware of the fact that it was a small business firm that created the first oral contraceptive. I did not know that. The famous CAT scanner that is sought after assiduously by almost every hospital of any size came out of the small business community.

Without Government relations and marketing staff, small firms are consistently overlooked and underutilized. The bill, as the subcommittee chairman, the gentleman from New York (Mr. LAFALCE) has said, simply establishes the mechanism whereby we can effectively tap these resources. By redirecting a small portion of the R. & D. budget, 1¼ percent phased in over the next 5 years, our Federal research dollar will be used in such a way as to maximize returns to the economy.

So really in this bill we are getting the best of two worlds. We are getting a chance to help the small businesses of this Nation, and we are getting a chance to help the Nation in its entirety by letting these small businesses take a lead role in beginning to raise us from being dead last in productivity and try to move us to first where we were for such a long period of time.

The concept of the bill is sound. The SBIR program has proven itself in terms of returns to the economy and by successfully stimulating innovation.

As has been indicated, the bill is supported by every small business organization, by the past Administrators and the current Administrator of the Small Business Administration, by the first Chief Counsel of Advocacy, and by the present Chief Counsel of Advocacy. As was pointed out, this was the only legislation specifically endorsed in the White House Conference in 1980.

I would urge my colleagues to ignore all of the misconceptions, all of the half truths, and all of the quarter truths that are being put out about this bill. I would urge my colleagues to listen very carefully to the arguments that are going to be raised that the budget has been cut and, therefore, R. & D. has been cut and the agencies might be in difficulty. I would say that when we hear those arguments, we should just bear in mind that we are talking about 1¼ percent over a 4- or 5-year period.

Mr. Chairman, we have made many compromises in this legislation. I urge the Members to support it fully and completely.

Mr. McDADE. Mr. Chairman, I yield myself 5 minutes.

(Mr. McDADE asked and was given permission to revise and extend his remarks.)

Mr. McDADE. Mr. Chairman, I rise to support this bill.

Mr. Chairman, the House at long last today debates a bill that has been discussed, studied, reviewed, and argued about for 4 years. It was first introduced in 1979 by my colleague NEAL SMITH from Iowa. It is based on a highly successful model at the National Science Foundation that since 1977 has tested and proven the principle that small businesses are an innovative power that has remained untapped for far too long.

In 1979 the President directed that agencies develop their own SBIR program. In 1980 the White House Conference on Small Business made this one of their top 15 priorities, along with the Small Business and University Patent Act that this body already has passed. In 1981 the President went on record supporting the companion bill in the Senate, which passed 90 to 0. In 1982 the President committed to this concept in his State of Small Business Report.

Here we are today, debating this bill because no agency except DOD has moved an inch to begin an SBIR program. What we are doing here today is what should not be necessary. But asking, requesting, promoting—all has done no good.

We know we need a change. Look at what we have now. Of all Federal R. & D., 95 percent goes to big business and nonprofit organizations—foreign contracts and State/local equals 1.5 percent; small business equals 3.5 percent. What have we received for this highly centralized program where 60 percent of all contracts are sole source?

A Department of Commerce report cites 36 firms doing 60 percent of all U.S. industrial research, 20 universities receive 40 percent of all Federal funds to such institutions. Patent filings by U.S. firms have dropped by 13 percent in the last decade. Now 40 percent of all U.S. patents are from foreign firms. In 1980 alone 11 percent of all U.S. patents went to Japanese firms and individuals—Business Week. Productivity rates, an area where America was once the leader, have decreased ten-fold in the last decade.

What this bill is all about is competition and free enterprise. This bill brings to an almost closed system an opportunity for small business to apply its innovative, creative entrepreneural force.

Why do we need this bill that the President and every small business group I know of clearly supports? We must open up the doors of competition. Until January of this year, no for-profit business could even apply for an NIH grant—none. But in 1979 my committee received a letter from the Director at NIH stating that the agency would change its regulations. But those regulatory changes came just this year, only after the Senate passed this bill and the House committee reported it out unanimously. The Secretary of Energy testified in 1980 that he would voluntarily start an SBIR program. None yet exists. Let us give small business a chance.

al product. If we are going to address the economic problems of our Nation, we must start with small business, where the economic hardships hit first and hardest and where the productivity is highest. To solve our economic problems we need only to address the problems of small business, and here in this bill, we have an excellent opportunity to kill two birds with one stone—to increase our national technological and innovative know-how, and our international prestige, and to address our economic problems which begin with small business.

Mr. LAFALCE. Mr. Chairman, I yield 5 minutes to the distinguished chairman of the full Committee on Small Business, the gentleman from Maryland (Mr. MITCHELL).

(Mr. MITCHELL of Maryland asked and was given permission to revise and extend his remarks.)

Mr. MITCHELL of Maryland. Mr. Chairman, I want to follow up on something that my colleague, the gentleman from Ohio (Mr. STANTON) just said. He indicated the needs and the hurt of small business right now are great and said that this bill would help small businesses. And indeed it will. But there is a much larger issue.

The larger issue relates to the fact that this country has slipped from first to dead last among industrialized nations in the rate of productivity increase. At one time we were No. 1 in productivity increase; we are now dead last.

The Committee on Small Business has been examining this issue since 1978, and over those years we have heard more and more expressions of concern that the leadership in some technologies had shifted to Japan and West Germany and would stay there permanently. I say it will unless we begin to give small businesses an opportunity to participate in research.

I also want to comment very briefly on the matter of the universities which are in opposition. The problem there is, as my colleague, the gentleman from Ohio, had indicated, that they simply have not read the bill.

We are talking about 1.25 percent of all R. & D. money over a 5-year period. How can two-fifths of 1 percent in R. & D. going to small business hurt any university? How indeed could 5 percent hurt? It will not. But we are so modest. It is only 1.25 percent over a 5-year period.

There are several factors that have impeded the involvement of small firms in Government-sponsored R. & D. First, unquestionably, there is a bias in Government agencies in favor of large firms and research labs. Second, the agencies are motivated by an antirisk attitude. They are afraid to get out there and dare to take a risk.

Well, if we do not take a risk, we are going to stay dead last in productivity. There is a general kind of inertia in the agencies. They have been doing the same things the same way over and over again, and they just do not compromises in this legislation. I urge the Members to support it fully and completely.

Mr. McDADE. Mr. Chairman, I yield myself 5 minutes.

(Mr. McDADE asked and was given permission to revise and extend his remarks.)

Mr. McDADE. Mr. Chairman, I rise to support this bill.

Mr. Chairman, the House at long last today debates a bill that has been discussed, studied, reviewed, and for-profit business could even apply for an NIH grant—none. But in 1979 my committee received a letter from the Director at NIH stating that the agency would change its regulations. But those regulatory changes came just this year, only after the Senate passed this bill and the House committee reported it out unanimously. The Secretary of Energy testified in 1980 that he would voluntarily start an SBIR program. None yet exists. Let us give small business a chance.

Small businessmen and individual inventors have a great record of innovation. A National Science Foundation study shows that during a 20-year period ending in 1973, almost half of all major U.S. innovations came from smaller firms.

Look back to xerography, Polaroid cameras, and the laser. These are only a few of the major technological breakthroughs that have come from small business.

These small businesses do more than just develop innovations—they make jobs. Small high-tech firms have an 88 percent greater employment rate than the average of all businesses—17-year study by DOC—and they pay taxes—34 percent more per dollar of sales than mature companies. And, they decrease product prices, not increase them—44 percent less price increases than the average firm.

The question is, How long must we sit before we recognize what is right in front of us? Our Nation needs to unleash the innovative, job creative, tax paying power of small business.

In 1975 the President created a blue ribbon panel to look at why our Nation's technological base was deteriorating. Their findings support what we are trying to do here today and were the basis for the NSF test. The report found "that small businesses face impediments in Federal R. & D. procurement not found in the private sector." The report, agreed to by every senior cabinet department official, directs that changes be made. But they have not occurred.

We must now do by statute what could have been done years ago. Why must this program be mandatory? Because 6 years of inaction make it clear that the bureaucracy will not change unless required to do so. It is too easy for them to just wait it out. We know from the NIH example that they will not change unless forced to do it.

We want to open the door, providing a way to bring innovative ideas into use. In testimony given by a small anticancer drug manufacturer who had five derivitives that proved positive in initial tests, we heard that this for-profit business did not qualify at NIH. So they formed a nonprofit subsidiary and got funding on two out of three proposals. Is this the way we must do business?

Just the other day a small business that testified before our committee announced that it has perfected the commercial production of interferon from gene-spliced yeast. Its seed money came not from NIH. It could not qualify.

Here is how our program will work. Each agency decides what its own research priorities are. Then, in phase I of the SBIR program, the agency decides on which research topics, among these priorities, small business can submit proposals. These proposals are evaluated on the basis of scientific and technical merit and feasibility. They are eligible for up to $50,000 for feasibility research.

In phase II, awards up to $500,000 are available but merit and feasibility are the keys.

Our competition is based on merit and feasibility.

Will there be competition? Yes. Our two-line tests show that there were eight qualifying projects for each one funded at NSF and 10 to 1 at DOD. That is competition.

This idea works. Since the Korean war, when DOD realized how important small business was to the defense effort, we have had a small business set-aside. Our most recent test (1982) shows that when the Air Force set-aside 181 contracts for high-tech spare parts, it saved 38.5 percent per contract average. Savings on some contracts ran as high as 99.5 percent. Test savings were 6.7 million taxpayer dollars—that is competition.

We want competition. We want opportunity. We want a chance for America's entrepreneurial spirit to be put to use. We do not want broken promises, broken commitments or last-minute patchwork solutions.

We are asking for a mandatory program that in its first year sets-aside for small business competition 20 percent of the amount of R. & D. funds we now give to foreign contractors.

This country needs the new ideas, new jobs, and new tax revenues that will result from this bill. My colleagues, it is time to act.

□ 1230

Mr. LAFALCE. Mr. Chairman, I yield 2 minutes to the gentleman from New York (Mr. NOWAK).

(Mr. NOWAK asked and was given permission to revise and extend his remarks.)

Mr. NOWAK. Mr. Chairman, I wish to speak in support of H.R. 4326, the Small Business Innovation Development Act of 1982. This bill was reported by the Small Business Committee in recognition of the contributions smaller firms have made to the economic prosperity of the Nation.

A study conducted by David Birch and the Massachusetts Institute of Technology indicates that 80 percent of all net new jobs were created by firms with 100 or fewer employees. Along with being the Nation's job creator, small business is in the vanguard of innovation and invention.

A National Science Foundation study for the period between 1953 and 1973 concludes that small firms are about four times as innovative as medium-sized firms and about 24 times as innovative as large firms, on a per-research-dollar basis.

We talk about helping small business, but we often do very little to help them substantively. Today, the Congress has a chance to pass legislation which will require Federal agencies with R. & D. budgets of greater than $100 million to set aside 1.25 percent of these budgets for small businesses, once the measure is fully phased in.

This R. & D. program will provide small high-technology and growth firms with much needed funds for new product development. The Small Business Innovation Development Act does not provide a substitute for venture capital money. In converse, venture capital money is not a substitute for the legislation before us today.

H.R. 4326 will insure that smaller firms receive important R. & D. funds at the earliest stages of new product development. Once new product development for a firm reaches a mature stage, venture capital firms will begin making private investments in that company. At that juncture, the venture capitalist will provide much needed funds for managerial expertise, product marketing, and plant expansion.

Recently, a Wall Street Journal article reported 11 isolated incidents of abuse with respect to the small business investment company program of the SBA. SBIC's are private venture capital firms, as licensed by the SBA. What disturbs me is that the article presents a distorted picture of the SBIC program. In contrast to these few abusive situations, the SBIC program has provided over $4 billion in financing to more than 48,000 small concerns. Some of these firms are nationally known, and have become big success stories. Examples of such firms are Federal Express, Memorex, and Teledyne.

A recent study by the international accounting firm of Deloitte Haskins & Sells indicates that the SBIC program resulted in the payment in 1979 of approximately $441.3 million to the Federal Government in taxes. This is in contrast to the mere $4 million cost to the Federal Government of the program in 1979. I would like to emphasize that this is a direct return to the Treasury of $110 for each $1 spent. There are not many other Federal programs which provide as much bang for the buck as the SBIC program does.

I believe that the Innovation Act will prove to be as cost-effective and efficient as the SBIC program. Both programs are important vehicles for moving the Nation to increased prosperity and economic growth. In closing, I urge the House to vote today in favor of H.R. 4326.

Mr. McDADE. Mr. Chairman, I yield 5 minutes to my distinguished colleague, the gentleman from Massachusetts (Mr. CONTE).

(Mr. CONTE asked and was given permission to revise and extend his remarks.)

Mr. CONTE. Mr. Chairman, first of all I want to congratulate my good friend, the gentleman from New York (Mr. LAFALCE) for his leadership on this bill, and I also commend my good friend, the gentleman from Pennsylvania (Mr. McDADE).

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(Mr. CONTE asked and was given permission to revise and extend his remarks.)

Mr. CONTE. Mr. Chairman, first of all I want to congratulate my good friend, the gentleman from New York (Mr. LAFALCE) for his leadership on this bill, and I also commend my good friend, the gentleman from Pennsylvania (Mr. McDADE).

Mr. Chairman, I rise in strong support of H.R. 4326, the Small Business Innovation Research Act, but I rise with some trepidation. I fear that amidst the boisterous debate over this bill, the truly significant issues have gotten lost.

The first issue is industrial productivity. It is not a new issue. We have been living with it for the past decade and a half, and it is a problem we have not licked, not by any account. Our national productivity growth, so strong after World War II, slowed in late 1960's, turned negative in the late 1970's, and has now finally turned around slightly. We are now growing again, but still very, very slowly. And our competitors continue to grow faster than us. We must reverse that trend.

I hope one fact has gotten through the debate on this issue. Small businesses are up to 24 times—I repeat 24 times—more productive with research and development dollars than big businesses. The reason is that small businesses have to innovate to survive. If you are worried about our industrial productivity, and you think the Federal Government should use its research and development dollars as wisely as possible, then vote for this bill.

The second significant issue is whether Congress can learn from history. Increasing small business' share of Federal R. & D. is not a new idea. As far back as 1967, the Commerce Department produced a widely read report recommending an increased role for small business in Federal R. & D. Nothing came of it. Nine years later another study made similar recomendations. Again, nothing happened. In 1978, an OMB task force did it again, to no avail.

Then Congress entered the picture. The Senate and House Small Business Committees held joint hearings resulting in, you guessed it, another comprehensive domestic policy review on innovation. Finally, President Carter in 1979 directed all agencies to set up small business innovation research programs. So all agencies now have an SBIR program, right? Wrong. There are two, one in the National Science Foundation and one in the Department of Defense.

So here we are today, 15 years later, with a stack of studies to our credit. The time for studies is over. The time for directives is over. The time for begging is over. Panel after panel, now President after President—including President Reagan—Small Business Committees of two Congresses, a 90-0 vote in the Senate, and over 200 cosponsors here in the House have endorsed this legislation. History makes it unmistakably clear that unless Congress takes affirmative action on this bill, the same thing will happen that has happened for the last 15 years—nothing.

Given the need for increasing productivity, given the potential that small business has to do the job, and it will create a lot of jobs at the same time, I guarantee you, we cannot afford to pass up the opportunity we have here today. Let's stop playing games and get this show on the road.

Mr. LAFALCE. Mr. Chairman, I yield 2½ minutes to the gentleman from Massachusetts (Mr. MAVROULES).

(Mr. MAVROULES asked and was given permission to revise and extend his remarks.)

Mr. MAVROULES. Mr. Chairman, I would like to take this opportunity to associate myself with those Members who have long supported this legislative initiative.

It has been widely recognized that technological innovation creates new jobs, increases productivity, enhances the competitiveness of products in foreign markets, and stimulates economic growth. It also has served as a valuable countermeasure to inflation and this Nation's balance-of-payments deficit. There is legitimate cause for concern when innovation lags.

I believe that our Nation is missing a great opportunity by not involving small business to a greater extent in the area of innovation. Despite being the Nation's leading innovator and job generator, small businesses receive only a small percentage of the Federal research and development funds.

Incredibly, the latest figures indicate that this percentage is actually declining. By trying to minimize the risk inherent in research and development activity, Federal agencies have shown an amazing bias against giving contracts and grants to our Nation's major innovators—small business.

We are at a point in time in this Nation where we must look beyond our parochial interests, and toward individuals and institutions cooperating for the betterment of society. The advancement of our society and the health of our economy must come first. The world of ideas and the world of practice must join hands in the spirit of cooperation. My support for the Small Business Innovation and Research Act stems from the growing need for such cooperation.

I believe that we can strengthen our national economy by making better use of the ingenuity that resides in America's small business sector. Their superior efficiency and startling rate of innovation assures us that our national economic efforts will be getting more results for every dollar spent.

To encourage the individual entrepreneur and small business firm to engage in the kind of productive, innovative activity that our economy so desperately needs, we must change the policies that have virtually excluded them from federally funded research and development. I urge my colleagues, on both sides of the aisle, to support this needed legislation.

Mr. McDADE. Mr. Chairman, I yield 2 minutes to the gentleman from Ohio (Mr. WEBER).

(Mr. WEBER of Ohio asked and was given permission to revise and extend his remarks.)

Mr. WEBER of Ohio. Mr. Chairman, I rise in strong support of H.R. 4326 because this bill addresses the cost effectiveness of public funding of research.

I would like to call attention to the Gellman Report, a study of 635 innovations developed and brought to market in the United States.

This study discovered that there is a rule of two and a half in the matter of small business innovation. First, small businesses per employee are two and a half times as innovative as large businesses. Second, large businesses are two and a half times more likely to receive public funding for innovation.

In addition, small firms bring innovations to market faster than large companies.

The Gellman Report reaches the following conclusions which I would like to quote.

First of all, "the finding that small firms produce significantly more innovations than large firms per employee, coupled with earlier findings that small firms are more efficient in their use of R. & D. dollars, indicates that public R. & D. funding of small technologically aware firms will be significantly more cost effective than the funding of larger firms." Second, "The cost effectiveness of public funding of small firm R. & D. is further enhanced because small firm innovations are brought to market sooner than those of large firms."

If my colleagues are concerned about cost effectiveness of taxpayers' dollars they will vote for the bill.

Mr. Chairman, we are aware that according to recent studies, 66 percent of all new jobs in the Nation are created by firms with fewer than 20 employees: 77 percent of all new jobs are created by firms with 50 or fewer employees.

Are we also aware of the following? That in addition, the National Science Foundation reports that small businesses are 4 to as much as 24 times more innovative than medium- or large-sized companies per dollar spent on research and development. Per employee, small business is two to three times as innovative as the larger companies.

These statistics are very important. There is considerable evidence, and we are all aware of it—especially in the industrial Northeast-Midwest—that our preeminent position as a world leader in technological innovation has changed to that of a follower. From 1970 to 1980, the number of patents filed with the U.S. Patent Office has dropped 13 percent. Yet the percent of U.S. Patents issued to residents of foreign countries has risen from 25 percent to over 40 percent in just one decade.

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Mr. McDADE. Mr. Chairman, I yield 2 minutes to the gentleman from Ohio (Mr. WEBER).

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Our country's annual increase in productivity has declined tenfold in

the past 10 years, and has been surpassed by several European countries and Japan. In 1980 alone, Japanese firms and individuals received close to 11 percent of all U.S. patents issued. I believe that this decline is the most critical long-range problem of this country. The answer lies not with penalizing those foreign countries, but rather to support domestic innovation.

The low rate of participation by small business in Federal R. & D. funds is clearly documented. Of Federal R. & D. funds awarded in contracts and grants in fiscal year 1981, small business received the following:

Only 1 percent of the grant funds;

Only 6 percent of the contract funds in contract actions of $10,000 and over; and

Only 5 percent of the total grant and contract funds awarded.

The other 95 percent goes to large firms, universities, Government laboratories, and other entities. Many of these firms are very large. Just 70 firms do 80 percent, 80 percent of this research. Roughly 60 percent of these funds are awarded non-competitively. Thus, for the most part, small business could not increase its share of these funds regardless of how hard it collectively worked or competed or proved itself. Adjusting upward the small business share of Federal R. & D. funds is another critical purpose of this legislation.

I wish to point out that H.R. 4326 is not, as some Members contend, a small business welfare bill. Rather, it is a reasoned effort to respond to the national problem of declining productivity by harnessing the creative, productive, and innovative capabilities of small R. & D. firms to national needs.

I urge my colleagues to support this bill because technological innovation creates jobs, increases productivity, stimulates competition, causes economic growth, combats inflation, and helps to reduce our balance of payments deficit.

Some people fail to recognize what an innovative and dynamic economic force small business can be.

Mr. LAFALCE. Mr. Chairman, I yield 5 minutes to the gentleman from Tennessee (Mr. GORE) who was so helpful in the drafting and framing of the substitute that is before us today.

(Mr. GORE asked and was given permission to revise and extend his remarks.)

Mr. GORE. Mr. Chairman, to my colleagues on the Small Business Committee, the gentleman from New York, the gentleman from Maryland, the gentleman from Iowa, the other gentleman from New York, the gentleman from Florida, and others who have played such an important role in bringing this bill to the floor: I want to pay my compliments and tell them how much their efforts are appreciated by so many in this country.

I speak on this bill today in this Chamber not merely out of some feeling of obligation to small business people in my district, although certainly all of us feel that kind of obligation. I am here talking about this bill because I believe that this bill is truly in the best interests of this country.

Let me say, too, that I have five universities in my district and I have been contacted by the university community about this legislation. They are opposed to it. We all know that.

□ 1245

Many of our colleagues will say about this measure that "the small business community is pushing the bill but really the universities need the money, and we do not like the idea of a set-aside. Therefore, do not vote for it."

Well, oftentimes there are deeper reasons behind the short little story that you hear on the way in to vote. And in this case, I hope my colleagues will listen carefully to the arguments in favor of this bill. I believe in them very deeply.

A subcommittee that I chair over in the Science and Technology Committee had a series of hearings on the NSF program on which this legislation is based. I came to this issue as a skeptic, and I came away from those hearings as a believer.

Let me tell you why. We are in the middle of an accelerating scientific revolution that is unlike anything this world has ever seen before. We are going through a period of change comparable in magnitude to the Industrial Revolution that is going to occur not over 200 years but between now and the end of this century. How is the United States going to remain competitive in that kind of business environment? If we are to succeed, the advantages we have had in the past must serve as well again.

What are our advantages? Our No. 1 advantage, our "hole card," is the inovative genius of our people. But there is something unique about innovative genius in America. It does not always thrive well inside a suffocating, large bureaucracy or institution, whether it is a Government institution or a corporate institution.

Look at the history of the laser. The man who invented the laser was in A.T. & T., at Bell Laboratories. He went to his superiors, and he said, "I have got this great idea and I need a commitment of resources and a little time to work on it."

"Sorry," they said. "It does not fit with our corporate priorities. We do not see how it fits in."

So he said, "All right. I am going to do it on my own."

And he went off on his own. Luckily, in this case, he was able to attract the support and the time that he needed, and he brought forward this great new invention that has had such dramatic implications for our country.

Look also at this fellow in Tennessee who invented the brandnew socket wrench. He was working for Sears and Roebuck. And he has been in the courts for years and years and years, trying to get a fair allocation of the resources created as a product of his own inventiveness, his own imagination. What kind of incentive does his experience give to others in large corporations?

We have got to make it possible for American inventors in the tradition of Bell and Edison and others who have worked on their own, with small groups and few resources in the beginning, and make it possible for them to let their imaginations and spirits soar, as can happen so frequently in this country, to make it possible for the United States to take advantage of this hole card. This legislation makes that possible.

The NSF program on which it is based has been an unparalleled success. All of the witnesses said that this is an idea that works, it is an idea that makes it possible for America to reach out to the small inventors, to reach out to the inventive genius that rests in some of the small firms, most of them centered around a single figure, or a single group that works well together.

We have got so much money being spent by the Federal Government on research and development, and if you look at the overwhelming amount that goes to these large institutions, it is incredible. And they just sort of crank it out and they keep on going. We get some money back on the investment, sure; but if you look at the payoff from the small firms, if you look at what we get in return for their efforts, you will support this bill.

Mr. WEBER of Minnesota. Mr. Chairman, I yield 1 minute to the gentleman from California (Mr. DREIER).

Mr. DREIER. Mr. Chairman, I rise in strong support of this legislation. Next to substantially reducing interest rates, which of course is a top priority of ours, I believe that passage of this bill is the most important thing that we can do for America's small businesses. This act will finally ensure that small businesses will receive their fair share of Federal research and development dollars. This act makes perfectly good sense when one recalls that the cost per innovation in a small firm is far less than in a larger firm. There is a proven relationship between the decline in U.S. productivity and the decrease in American innovation as compared to other nations. Small high-technology firms have one of the fastest rates of growth in net new employment.

Now, no one has said that this bill is the panacea for America's economic problems. I do not think that anyone would make that claim. But, simply, it is an attempt to harness America's most ingenious source of innovation, the small business sector.

I represent many colleges and universities, and I, too, am very concerned about them. By enacting this bill we will not be saying that universities,

colleagues on the Small Business Committee, the gentleman from New York, the gentleman from Maryland, the gentleman from Iowa, the other gentleman from New York, the gentleman from Florida, and others who have played such an important role in bringing this bill to the floor: I want to pay my compliments and tell them how much their efforts are appreciated by so many in this country.

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nonprofit labs and big businesses do not have a unique and valuable role to play with regard to research and innovation. We are saying that small businesses have a similarly unique role and valuable role, and they deserve the opportunity to fulfill that role.

I urge support of this bill.

Mr. LAFALCE. Mr. Chairman, I yield 2 minutes to the gentleman from New York (Mr. ADDABBO).

(Mr. ADDABBO asked and was given permission to revise and extend his remarks.)

Mr. ADDABBO. I thank my colleague for yielding, and I thank the chairmen of the subcommittee and the full committee for bringing this legislation forward.

The need for this legislation has been upon us for may years. H.R. 4326 did not come about just by chance. I have sat as a member of the Small Business Committee for many years now and chaired the oversight committee. And for many years we have tried and urged the various agencies to do more, to do more to break out small business contracts to help all parts of our economy.

We know that small business is at least 96 percent of our total economy. The biggest buyer is the Government, and in that Government the biggest buyer is the Department of Defense. We have urged them to break out, take large contracts, look at them, review them for division into smaller parts. There is much that can be done to help competition by helping to build small businesses. We have found where that has happened, the cost to the Government has gone down.

There is a question as far as DOD set-aside. I tell my colleagues, and my colleagues on the Armed Services Committee in particular, the Deputy Under Secretary of Defense for R. & D. stated:

> We wholeheartedly support this concept, as we believe it is the most far-reaching initiative to bring small innovative high-technology firms into the Federal Government's procurement process for R. & D. Our conviction of the soundness of the SBIR program is evidenced by the fact that we initiated the development of an almost identical program approximately a year ago.

As many of my colleagues are aware, at that time the Department felt it could not support our bill as it felt that the percentage of the R. & D. budget earmarked for the SBIR program was too high and the in-house R. & D. budget was not excluded from the SBIR base. It was supporting legislation which would be along the lines of the Senate's bill, S. 881. I am pleased to say that the substitute amendment before you today is in accordance with the Department's position, and that this version has the wholehearted support of the President.

It is not difficult to understand why the Department of Defense would find the SBIR program embodied in this legislation attractive. The administration's budget calls for a large defense buildup. Many, however, have raised questions about the ability to the existing defense industry to support this buildup. The SBIR program is an excellent way for the Department to become part of the communication network which flows between small, innovative high-technology firms. Not only does the Department have the advantage of the work conducted under its SBIR program, it also has the advantage of finding out about new technologies and firms due to the large number of proposals submitted for the limited number of SBIR funding awards. In its first competition last year, DOD received over 10 proposals for each award it made. As one Air Force officer noted:

> The limited number of awards means that many of the losing proposals are also of very high quality. We find that we are learning about new technologies we never knew existed before.

The SBIR approach is no doubt also attractive to the Department because of the proven cost efficiency and innovativeness of small high-technology companies. A study for NSF found "Any given R. & D. project would cost 3 to 10 times as much to develop by a large firm as by a small one." Another NSF study found that small firms produce 24 times as many major innovations per R. & D. dollar as large firms and 4 times as many as medium-size firms. For a Department trying to eliminate inefficiency and waste in its R. & D. funding, those are important findings.

Small firms can conduct a wide variety of research and development for the Department of Defense. Under SBIR programs, the agency retains total control over the topics to be chosen, the proposals to be funded, and the administration of those projects. As the Department testified, the topics listed in its first SBIR solicitation were chosen by the Army, Air Force, Navy, and the Defense Advanced Research Project Agency in accordance with their assessment of where small firms could make major contributions to that Agency's mission. The list of topics is instructive of the potential contributions small firms can make. It included: Acoustics, aerodynamics, artificial intelligence and stochastic processes, chemical detection and decontamination, combustion processes, computer architecture and software development, computer graphics and control displays, disease prevention and treatment, biotechnology, electromagnetics, electronic communications, and noise suppression, fluid mechanics, human performance and productivity measurements, lasers and photo-optics, manufacturing processes, materials and coatings, navigation, nuclear burst and radiation detection, ocean physics and engineering, ocean science, solar and electrical power, and solid lubrication.

It is revealing to compare these topics with the areas highlighted as vital for national security in the latest 5-year outlook on science and technology which was submitted to Congress in January of this year. These topics were developed by an interagency task group on national security. They are microelectronics, electronic systems, materials technology, aeronautics, space defense and surveillance, nuclear test detection, and human resources. The correspondence between these topics and the Department of Defense's SBIR topics cannot be taken as accidental. In all parts of our economy, small firms have become the scientific and technological pathfinders, often developing totally new industries such as biotechnology, computer software, and artificial intellegence in the process.

As the 5-year outlook notes: "The strength and productivity of a nation's advanced technological capability have become major elements in any geopolitical calculation." Small high-technology firms are the primary source of major innovations in the United States. They are among the most cost efficient performers of R. & D. and have one of the fastest rates of productivity growth. This legislation will provide an important and vital stimulus to this key part of our defense industries. And since these firms also have one of the fastest U.S. rates of growth in net new jobs, and tax dollars, it will also provide an essential shot in the arm for our ailing economy.

Mr. McDADE. Mr. Chairman, I yield such time as she may consume to the gentlewoman from Maine (Mrs. SNOWE).

Mrs. SNOWE. I thank the gentleman from Pennsylvania for yielding me this time.

Mr. Chairman, I rise in support of H.R. 4326, the Small Business Innovation Act. This bill will unquestionably aid the small business sector of our American economy. New production innovation is essential to the growth of the U.S. economy. It is a proven fact that small businesses produce these innovations at a rate 24 times greater per research dollar than larger firms. Currently, small businesses nationwide receive only an estimated 3.5 percent of all Federal research and development funds. Given the fact that small firms are much more productive when it comes to producing results in the field of research and development, does it not follow that we should channel more Federal money to that sector? I think we have a responsibility to the U.S. taxpayer to insure that his money is spent where it will produce the best results.

The Small Business Innovation Act targets, after a 4-year phasein, a maximum of 1.25 percent of the $43 billion of the Federal research and development budget to fund initial work on innovative concepts by small companies. If the Small Business Committee's substitute amendment is agreed to, the set-aside in 1982 dollars would

& D. budget was not excluded from the SBIR base. It was supporting legislation which would be along the lines of the Senate's bill, S. 881. I am pleased to say that the substitute amendment before you today is in accordance with the Department's position, and that this version has the wholehearted support of the President.

It is not difficult to understand why the Department of Defense would find the SBIR program embodied in this legislation attractive. The administration's budget calls for a large defense graphics and control displays, disease prevention and treatment, biotechnology, electromagnetics, electronic communications, and noise suppression, fluid mechanics, human performance and productivity measurements, lasers and photo-optics, manufacturing processes, materials and coatings, navigation, nuclear burst and radiation detection, ocean physics and engineering, ocean science, solar and electrical power, and solid lubrication.

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amount to $377 million of the $43 billion budget for research and development. I might emphasize that we are not asking for increased outlays for this program, but for a rechanneling of a small segment of total funds to a highly productive, efficient component of the economy with a proven track record.

Also, I think it important to note that the method of awarding these research and development funds under the small business innovation program will be carried out on a truly competitive basis. Small businesses will be solicited to submit their research and development proposals to appropriate agencies. After analysis, those proposals which are deemed worthy will be partially funded so the companies involved will be able to further demonstrate the economic and technological feasibility of their concept. Review of proposals at this point will determine which are the most promising among the applicants, but final development and marketing of the projects will be left to the private sector.

This same highly competitive review process has been successfully used by the National Science Foundation where 400 awards were made from 3,800 proposals. That is true competition. Mr. Chairman, this bill will give the United States a proven, systematic approach to increase innovation and aid the small business sector while not requiring increased appropriations. It will be the catalyst for increasing our Nation's productivity via innovation. Mr. Chairman, I strongly endorse the passage of H.R. 4326, the Small Business Innovation Act.

Mr. LAFALCE. Mr. Chairman, I yield such time as he may consume to the gentleman from Florida (Mr. IRELAND).

(Mr. IRELAND asked and was given permission to revise and extend his remarks.)

Mr. IRELAND. Mr. Chairman, I rise to speak in support of H.R. 6587. Why are we here today? The answer is simply that small business is the Nation's innovator yet Federal policies pay only lipservice to that fact. First, some facts if you will indulge me. A National Science Foundation study, "Science Indicators," NSF, 1979, disclosed that, for every R. &. D. dollar, small companies produce 4 times more innovations than medium-sized companies and 24 times more innovations than large companies.

A study by the Office of Management and Budget has shown that more than half of the major technological advances this century originated from individual inventors and small companies. Many of these inventions sparked major new U.S. industries and growth companies.

If we have tended to disregard American's inventive talents, other nations have not. One disturbing trend is that foreign interests have been buying control of several of our small high-technology companies. Moreover, Federal R. & D. expenditures relative to GNP have slipped gradually while the R. & D. ratios of such countries as Japan and West Germany have been rising. One reflection of this is that foreign companies and inventors have been claiming a rising proportion of U.S. patents. In 1964, only 22 percent of the patents issued by the U.S. Patent and Trademark Office went to foreign applicants. In 1979, that share reached 38 percent.

Innovation has always been a hallmark of America's strength. "Technology transfer" to other countries has been a bulwark of our international trade. Yet the Nation risks losing its leadership in innovation.

The most productive target for R. & D. dollars is unquestionably small businesses. Polaroid, Xerox, and countless other growth companies of the 1960's and 1970's were, after all, once small entities themselves. A more recent success story is small business' development of the microelectronic industry. I think that says enough about the need for the bill.

Now let us discuss who opposes the bill. It is no secret that large universities and other large institutions have fought this bill. They do not want to give up a share of their pie. We know that.

But let me talk about another group—That is, those in our Federal agencies who are reluctant to change their ways and direct their attention to small and medium-size businesses. Whether by design or inertia they have not responded to the many requests, supported by serious studies, to include the innovative small businesses of America in their research and development plans. With this legislation we will be able to exercise the necessary oversight to see that the public requests of the past 15 years are honored. I urge support of this important legislation.

The CHAIRMAN. The gentleman from New York (Mr. LAFALCE) has 9 minutes remaining, and the gentleman from Pennsylvania (Mr. MCDADE) has 11 minutes remaining.

Mr. LAFALCE. Mr. Chairman, I reserve the balance of my time.

Mr. MCDADE. Mr. Chairman, I yield 1½ minutes to my distinguished colleague, the gentleman from New Jersey (Mr. SMITH), who has done so much on this bill and on so many other matters in the committee.

Mr. SMITH of New Jersey. I thank the gentleman from Pennsylvania for yielding and for his kind comments.

Mr. Chairman, I rise in strong support of H.R. 4326, the Small Business Innovation Research Act. As a sponsor of this legislation, I believe this bill present us with an opportunity to revitalize small business—the most innovative and productive sector of our economy.

Support for this legislation has been very strong—it was endorsed by the Small Business Committee by 40–0, and passed in the Senate by 90–0. I also want to remind my colleagues that H.R. 4326 would earmark a modest 1.25 percent of each Federal agency's R. & D. budget for small business. It would phase in this amount over a 4-year period, beginning with 0.2 percent the first year. Clearly, however, this modest amount of Government funding would be a strong and beneficial investment in small business research.

Mr. Chairman, between 1977 and October 1981, the National Science Foundation small business research program received over 2,000 research proposals and funded 286 of them. According to the Small Business Committee report on this program, the results have been very impressive. Twenty one phase II grantees in the 1977 solicitation received $23 million in private follow on funding. Major investments have included two small firms by a major chemical company and a small business investment company, and six smaller one in six other firms. These 21 firms have since doubled their employment.

The National Science Foundation has reported a number of new firms started as a result of the program, and some 15 inventions reported. There are now a number of new products and processes under development, including an instrument to measure the fracture toughness of metal which is already on a worldwide market. This impressive list of accomplishments is a tribute to the great success of this program.

Mr. Chairman, there is a proven relationship between the drop in our Nation's productivity and the decrease in innovation we have experienced in our national economy. I firmly believe that the expansion of small business is the key to turn the burden of unemployment around, and get productivity on the move again. We should remind ourselves of the vital contributions which small business makes to our economy—86 percent of the new jobs created in our economy and over half of the private sector gross national product.

The opportunity to pass this legislation comes at a time when small business has been suffering in our economy. High interest rates, unemployment, inflation, and a slowdown in economic growth have hit the small businessman the first and hardest. Small businesses are failing at a rate of 25,000 per year. All of this adds on more and more numbers to the unemployment rolls, and further decreases tax revenues. Mr. Chairman, we need to act now in order to turn this situation around.

The Small Business Innovation Research Act is the answer to many of these problems. Without the additional bureaucratic redtape associated with other set-aside programs, at least 1.25 percent of research and development funds will be awarded on a highly competitive basis to small business. The legislation requires that an

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agency determine within its research and development needs the categories of projects to be opened up for bidding by small business. There is no reappropriation of funds from one program area to another without direct authorization and appropriation of those funds.

It is time, Mr. Chairman, that Congress took a strong stand in favor of small business in this country. We must make the most productive use of our limited Federal dollars. High technology is the hope of America in the future, and as we have seen from the past success of this program, the Small Business Innovation Research Act is the first step to help pull us through.

Mr. Chairman, I yield back the balance of my time.

Mr. McDADE. Mr. Chairman, I reserve the balance of my time.

Mr. LAFALCE. Mr. Chairman, I yield 2 minutes to the gentleman from Louisiana (Mr. ROEMER).

(Mr. ROEMER asked and was given permission to revise and extend his remarks.)

Mr. ROEMER. I thank the gentleman for yielding.

Mr. Chairman, I have heard a lot of conversation today about this bill. I think it is a good bill. I think it is the kind of bill that we need.

Some people have critcized the bill, saying it is a protectionism bill, that by the set-aside of this small amount of our research and development money, we are somehow protecting small business to the harm of free enterprise and a competitive America.

Nothing could be further from the truth. The evidence presented here today and in our committee shows clearly that both on the yardstick of innovation and on the yardstick of job creation, small business stands No. 1, far outstripping big business. This small set-aside is not for small business. It is for our country. The fact is that the bureaucrats and the agencies, as currently constructed, like to deal eye to eye with component parts, other large agencies in private industry, that is, big business, bureaucrat to bureaucrat.

What we are trying to do here is let small business get a toe in the door. The fear of the opponents is not so-called protectionism. Their real fear is the ultimate competition for research dollars rising from this bill will mean a great deal for our country in terms of innovation. And job creation, and a loss of monopoly advantage for big business and big universities.

Mr. Chairman, I urge the support of the Members for this fine bill.

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Mr. McDADE. Mr. Speaker, I reserve the balance of my time.

Mr. LAFALCE. Mr. Speaker, I reserve the balance of my time.

The CHAIRMAN. Both the gentleman from Pennsylvania (Mr. McDADE) and the gentleman from New York (Mr. LAFALCE) reserve their time to the end of the debate.

The gentleman from Georgia (Mr. McDONALD) is recognized for 15 minutes.

Mr. McDONALD. Mr. Chairman, I rise in support of the Committee on Armed Services amendments to the legislation cited as the Small Business Innovation Act of 1982. The amendments proposed by the Committee on Armed Services:

First, would exclude the Department of Defense (DOD) and the Central Intelligence Agency from the term "Federal agency" for the purposes of H.R. 6587; and second, would exclude the funds appropriated for atomic energy defense programs of the Department of Energy from the research and R. & D. budget of that department for the purposes of the small business innovation research program defined in H.R. 6587.

Mr. Chairman, the stated purpose of H.R. 6587 is to amend the Small Business Act to strengthen the role of the small, innovative firm in federally funded research and development; to utilize Federal research and development as a base for technological innovation to meet agency needs; and to contribute to the growth and strength of the Nation's economy. The Committee on Armed Services strongly agrees with this purpose.

However, the committee does not agree with the approach incorporated in this legislation. In fiscal year 1981 the Department of defense awarded 7.4 percent of its prime research and development contracts to small business. Almost all of those awards were for hard-core research and development. The vast majority of these contracts were awarded as a result of open fair competition. Thus, small innovative businesses have successfully competed in the marketplace when pitted against medium- and large-sized businesses.

The bill considered would allow only small businesses to bid on certain contracts; thus, H.R. 6587 would thwart the efforts currently undertaken to maximize competition.

In the hearings before the Research and Development Subcommittee, the witnesses were in agreement that this program is a beneficial program for small business, although some believe various changes should be made. The small business programs in the Department of Defense and the Department of Energy are very effective in stimulating small business participation in these agencies' activities. H.R. 6587 would disrupt these highly successful programs and require that they be completely restructured.

Furthermore, essentially all of the funding for the Department of Energy atomic energy defense program must be provided directly to the federally funded Government-owned contract-operated (GOCO) facilities that include seven fabricating facilities and three weapons laboratories. Research, development, design, and testing of nuclear weapons prototypes and the manufacture of nuclear weapons on the Department of Energy atomic energy defense program take place at the GOCO's. Small business is not equipped to handle the highly classified equipment and radioactive materials necessary in the design, development, and testing of nuclear weapons. However, due largely to the efforts of the Department of Energy, more than 500 highly qualified and certified small businesses are awarded subcontracts each year for specialized parts and equipment for use in the nuclear weapons and naval propulsion programs.

In addition to the receipt of prime contract awards, small businesses are receiving an increasing share of subcontract research and development awards. The Department of Defense recently surveyed 36 of its largest prime contractors. Of the dollars received by these prime contractors, small business received 6.6 percent of that money in subcontract awards.

Furthermore, both the Department of Defense and the Department of Energy have established small business programs. For example, the Department of Defense has instituted the defense small business advanced technology program, known as the DESAT program. The purpose of DESAT is to exploit the innovative capabilities of this Nation's small science- and technology-based companies in providing solutions to some of the difficult research and development problems confronting the Department of Defense. In support of this program, DOD recently mailed approximately 32,000 copies of the program opportunities brochure (holdup brochure). The small business R. & D. community responded with 1,103 proposals. To date 100 firms have been selected for contract awards as a result of this program.

The Committee on Armed Services is fully supportive of increasing the Nation's overall technology and enhancing the environment for small business; but the Department of Defense and the Department of Energy should be able to continue to expand their already successful small business programs as presently structured.

I would strongly urge, therefore, that you support the Committee on Armed Services amendments to allow these programs to continue as they currently exist.

Mr. Chairman, I yield 3 minutes to the gentleman from California (Mr. McCLOSKEY).

(Mr. McCLOSKEY asked and was given permission to revise and extend his remarks.)

Mr. McCLOSKEY. Mr. Chairman, I would like to speak against this bill. In the 15 years that I have been in the House I have rarely seen better intentions with a worse result.

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Mr. McDADE. Mr. Speaker, I reserve the balance of my time.

Mr. LAFALCE. Mr. Speaker, I reserve the balance of my time.

The CHAIRMAN. Both the gentleman from Pennsylvania (Mr. McDADE) and the gentleman from New York

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(Mr. McCLOSKEY asked and was given permission to revise and extend his remarks.)

Mr. McCLOSKEY. Mr. Chairman, I would like to speak against this bill. In the 15 years that I have been in the House I have rarely seen better intentions with a worse result.

Every report that the Government Accounting Office has ever given to us about the effectiveness of the expenditures of Federal moneys in set-aside programs has indicated grave concern over the use of the set-aside program to accomplish a good purpose.

Now last year, in 1982, so far as we know, about 5.5 percent of the Nation's engineers and scientists were engaged in companies that qualify as small businesses, yet 6.8 percent of the Federal research and development awards went to such small businesses around the country. In other words, they received more awards for research and development than the number, percentagewise, of scientists and engineers employed by those small businesses.

Second, this assistance to small business does not go to the small businesses that are in difficulty in this country, the mom and pop groceries, the small manufacturing plants. This assistance is set aside for a particular kind of small business, the high technology research and development companies.

I represent a district in California known as Siliconce Valley. For good reason, it is the headquarters of the American Electronic Association, the largest professional association of small high technology businesses in the country.

That association has come and testified against this bill and said in effect if small businesses want to succeed in this country, the last thing they want is government assistance. What hurts small business is the paperwork and compliance with government regulations, including those dealing with Federal Government contracts. Small businesses are successful, when they are, in par because they do not have to maintain the overhead to comply with complex governmental regulations.

When Congress changed our tax law in 1978 to reduce capital gains ceilings from 48 to 28 percent, and this last July when we reduced it further to 20 percent, we did more for small high technology businesses than we could possibly do by a set-aside program. In the year 1977, for example, only $75 million was available for capital investment in high technology research companies.

By the changes we have made in the tax law this year about $1.8 billion will be invested in small high technology businesses. There is no segment of small business today that is more successful with private enterprise and private dollars, or less needing of government subsidy, than high technology businesses.

Take the high technology, for example, that developed the Apple computer or the Atari games or the semiconductor or the laser companies.

The CHAIRMAN. The time of the gentleman from California (Mr. McCLOSKEY) has expired.

Mr. McDONALD. Mr. Chairman, I yield 3 additional minutes to the gentleman from California (Mr. McCLOSKEY).

Mr. McCLOSKEY. In not one of those businesses has mandated Federal research money been an essential, necessary or even a desired part of the development of those businesses. Small high-technology business today can attract capital because if you or I or any other investor had been privileged, for example, to get 100 shares of Atari stock, or 100 shares of Apple or 100 shares of a similar small company, we would be millionnaires today because a high-risk investment in high technology can pay off many times the investment dollar. If we wanted to give a subsidy to a small building contractor, if we wanted to give a subsidy to the small manufacturer, it would be understandable, but no proponents of this bill would deny that in this bill we are setting aside 1¼ percent, that would be $377 million this year, we are setting aside $377 million as a subsidy to small high-technology companies. At a time of diminishing research dollars we are assigning some of those dollars to one of the most flourishing parts of the small business economy. It does not make sense. Now one other thing. What does this bill do.

It sets up by its very nature a required small business innovative research program in every Federal agency that is assigning out money for Federal research and development over the $100 million level. The Congressional Budget Office indicates—and the administration concurs—that this program will cost $14 million to administer. Note that the bill says no more than 1.25 percent and no less. So that in effect, if we have a $40 billion research budget, each agency with a piece of that budget must say that 1¼ percent will be administered under this particular program. And note on page 7 of the bill, that that is in addition to whatever the 6.8 percent that small businesses may presently get by free competition or sole source awards. So, if small businesses last year got 6.8 percent, next year they must get additional awards until they get an additional 1.25 percent.

Note the difficulty that each agency that gets dollars awarded by Congress to do research must estimate what will ordinarily be received by small businesses and then set aside a specific sum of money in addition to that to go out and seek for awards to small businesses.

In my judgment, this perverts the entire research process. We are trying to spend research money for the Government's benefit, not for the benefit of small business. If small business successfully competes for some of that benefit to the Government, as it obviously has in the past, then there is no need for this bill.

In 1978, we amended the law to specifically say that each Government agency dealing with research must not discriminate against small business and must make the opportunity to compete available to small business. This bill now goes further and requires that 1¼ percent be granted to small businesses, regardless of the Government's needs or preferences.

The CHAIRMAN. The time of the gentleman from California (Mr. McCLOSKEY) has again expired.

Mr. McDONALD. Mr. Chairman, I yield 3 additional minutes to the gentleman from California (Mr. McCLOSKEY).

Mr. McCLOSKEY. Mr. Chairman, let me go back to one other thing and take up the impact this has on the universities of this country.

All of us have gone through this painful budget process where we have had to cut back the moneys awarded to the universities for the maintaining of the scientific base in the university system of this country. We are having to cut back student loan guarantees and the administration has asked that we end completely the program for loans to graduate students. With inflation diminishing the amount of money available to the great science programs in universities of this country——

Mr. WEBER of Ohio. Mr. Chairman, will the gentleman yield?

Mr. McCLOSKEY. I yield to the gentleman from Ohio.

Mr. WEBER of Ohio. I thank the gentleman for yielding.

Is it not true that small business produces 39 percent of the GNP of our country but receives only 3½ percent of the Federal R. & D.?

Mr. McCLOSKEY. I would not contest those figures at all. I would say that is probably correct and that the small businesses that are most successful in producing those jobs and that GNP are small businesses that are not dealing with the Federal regulations that will be applied under this program.

Mr. WEBER of Ohio. If the gentleman will yield further, how can it, therefore, be said that small business already is receiving its fair share of R. & D. under the present system where it is not receiving its fair share based on the GNP?

Mr. McCLOSKEY. But there is not the particular instance involved. What we were talking about is that the engineers, the scientific community in the business, big businesses as opposed to small, the figures we have from the National Science Foundation are that 5½ percent of the engineers and scientists who do high technology research are employed today by small business and last year they got more than 5.5 percent of the awards. They got 6.8 percent.

The Defense Department, which deals with the largest of all of these R. & D. programs, under current practices last year gave small businesses 7.4 percent of the R. & D. contracts awarded by the Federal Government. So clearly these small businesses are not receiving less than their fair share.

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