BIBLIOGRAPHY

Abernathy, William J. and Utterback, James M. "Patterns of Industrial Innovation". Technology Review, Volume 80, Number 7, June/July 1978.

Block, Richard B., Proposed Policy Options for Technological Innovation. Foster City, CA, August 8, 1978.

Frosch, Robert A., Administrator, National Aeronautics and Space Administration, Washington, D.C., Speech. 27 November 1978.

Moshman Associates, Inc. An Evaluation of the Small Business Administration Innovation Loan Program. Washington, D.C., April, 1976.

Norris, William C., Recommendations For Creating Jobs Through the Success of Small Innovative Businesses, A Report to the Assistant Secretary of Commerce for Science and Technology. Washington, D.C., Control Data Inc., December, 1978.

U.S. Congress. House of Representatives. Committee on Small Business. Future of Small Business in America, A Report of the Subcommittee on Antitrust, Consumers and Employment. Washington, D.C.: Government Printing Office, 1978.

U.S. Congress. Office of Technology Assessment. Government Involvement in the Innovation Process. Washington, D.C.: Government Printing Office.

U.S. Department of Commerce. Draft Reports of the Subcommittees of the Advisory Committee on Industrial Innovation established as part of the Domestic Policy Review, Washington, D.C., December 20, 1978.

U.S. Department of Commerce. Technological Innovation: Its Environment and Management. Washington, D.C., January 1976.

U.S. Office of Management and Budget. Office of Federal Procurement Policy. Small Firms and Federal Research and Development. Washington, D.C., February 24, 1977.

Duane D. Pearsall:

B.S. from University of Denver, Commercial Engineering. General Motors Institute. Founder and President of the Small Business Development Corporation. Previously founded and was President of the Pearsall Company (1955-1966) and of Statitrol Corporation (1964-1977). Member of several professional societies. Member of Executive Committee and Board of Directors of Denver Chamber of Commerce and Council of Small Business of the Chamber of Commerce of the U.S., Regional Vice Chairman for Small Business, N.W. Region. Serves on S.B.A. Colorado District Advisory Council and M.F.I.B. Action Council Committee. Has published several technical papers. Colorado Small Business Person of the Year - 1976. National Small Business Person of the Year - 1976. Outstanding Citizen Award Mile High Sertoma Club - 1978. Serves on the Board of Directors of several companies and organizations.

SMALL BUSINESS DEVELOPMENT CORPORATION:

This was formed to support three activities - as consultant to small businesses, as an investor in small business and to organize a stronger voice for small business in Federal legislation.

Eric P. Schellin:

A.B. Columbia University, J.D., George Washington University. Lecturer, Patent, Trademark & Copyright Law, Georgetwon University, 1974-present. Executive Vice President of the National Patent Council, Inc., Chairman of the Board of Trustees of the National Small Business Assoc., 1979. President, Erdo Co., Member of various legal & scientific associations and the bar of V.A., D.C., Supreme Court and Court of Customs and Patent Appeals.

BIOGRAPHIES

MEMBERS OF COMMERCE INNOVATION
SMALL BUSINESS "TASK FORCE"

Mr. Wayne Coloney:

Texas A&M, Summa Cum Laude Graduate - Georgia Institute of Technology, 1950. Serves as Chairman of the Board & Chief Executive Officer of the Wayne H. Coloney Co., Tallahassee, Florida. Formerly associated with Barrett, Daffin & Coloney, and J.E. Greiner & Co., Tampa. A professional engineer certified in Florida, Georgia, Alabama, and North Carolina. Member of American Society of Civil Engineers, National Society of Professional Engineers and numerous other organizations, both professional & philanthropic. Listed in Who's Who in the World and in the South and Southwest. Mr. Coloney holds several patents and has published articles related to his extensive interest in knowledge of land planning, transportation facilities, drainage and air pollution and historical renovation.

WAYNE H. COLONEY COMPANY:

Founded in 1970 as a broad-based engineering firm dealing with structural, mechanical and legal engineering in the areas of land planning, pollution control and design. Grew from three employees in 1970 to presently 200. Awarded in 1972 - Pollution Control Citation, 1975, SBA Regional Prime Contractor of the Year, placed in top 500 design firms chosen by McGraw-Hill magazine.

Eugene M. Lang:

B.A. from Swarthmore College, M.S. from Columbia University, mechanical engineering studies at Brooklyn Polytechnic Institute. Currently, President of REFAC Technology Development Corporation of New York City. Chairman of Scriptomatic, Inc., Philadelphia, Pa., Chairman of J.D.S., Inc., a West Palm Beach, Florida real estate company, Chairman, Electronic Research Associates Inc., Moonachie, New Jersey, a manufacturer of power supplies and loudspeakers. Chairman of REFAC

Harry D. Richardson:

SCMP - Harvard University, 1976; MS - Engineering, University of Alabama, 1950; BS - Mechanical-Electrical Engineering, Louisiana Polytechnic Institute, 1941. Chairman and President of Nuclear Systems, Inc. since 1971. Currently consulting Professor to Louisiana State University. Member of the Board of Directors of several companies and member of numerous professional societies.

NUCLEAR SYSTEMS, INC.:

Is a small technology company. Primarily it is engaged in (1) developing, manufacturing, and marketing equipment using radioisotopes, (2) environmental and quality control testing electronic components, and (3) developing, manufacturing, and marketing products for management and conservation of energy in homes and small commerical buildings. In 1979, the sales volume is estimated to exceed $6 million. There are 250 employees located in six U.S. locations and one manufacturing plant in Mexico. NSI is a public company with nearly 500 stockholders.

Walter D. Syniuta:

Sc.D - M.I.T., Mechanical Engineering, M.Sc, Queens University, B.Sc, Queens University. President, Advanced Mechanical Technology, Inc. Formerly with Scientific Energy Systems Corp., Assistant & Associate Professor of Mechanical Engineering, M.I.T., Engineering Consultant, Development Engineer & Vibration Engineer. Member of various professional societies & author of several publications relating to his expertise in the field of electron microscopy.

ADVANCED MECHANICAL TECHNOLOGY, INC.:

A Massachusetts corporation engaged in R & D, and manufacturing of instrumentation. Engaged in R&D in the field of energy conversion systems, with current development programs in gas-fired hot water heaters, gas-fired residential space heating, waste-heat recovery systems, a novel heat-actuated heat-pump based on the Stirling cycle, use of ceramics in heat engines, and heat engine combustion research. AMTI is currently engaged in several commercial engineering projects.

George W. Murphy:

B.S., Fordham, 1960. From 1958 to 1970 employed by IBM in various marketing and management positions. Since 1970 President and Chief Executive Officer of Educational Computer Corporation.

EDUCATIONAL COMPUTER CORPORATION:

Is the industry leader in research, development, and production of low cost computer controlled simulation devices that are used in advanced training programs. ECC blends computer technology with modern task oriented instructional methods to produce fully integrated technical training programs.

Dr. Arthur S. Obeymayer:

B.A. with High Honors, Swarthmore College, 1952. Ph.D. in Chemistry, M.I.T., 1956. Recipient of NST fellowships. President and founder of Moleculon Research Corporation. Founder and first Chairman of the Research Management Association. Currently, Vice President of the American Association of Small Research Companies. Has served in various capacities in the Association of Technical Professionals, Boston Industrial Mission, Federation of American Scientists and the Small Business Association of New England. Is frequently called upon by the Federal and Massachusetts state governments to serve in an advisory capacity.

MOLECULON RESEARCH CORPORATION:

Specializes in research, development and consulting in chemistry and allied fields. These services range from feasibility studies and product development to problem solving, chemical engineering investigations, and process development. Moleculon makes Poroplastic R film and powder. Product applications include controlled release materials, dermatological preparations, membrane separations for hydro-metallurgy and impurity removal from waste water, and color change monitoring of toxic vapors.

MASSACHUSETTS TECHNOLOGY DEVELOPMENT CORPORATION:

A public-purpose development finance mechanism established by an act of the Massachusetts State Legislature in July 1978. Has the dual capability to provide management and direct financial assistance to early-stage, technology-based small businesses in Massachusetts. The MTDC can provide seed capital to commercialize new technologies which will foster primary job creation and increase tax revenues and exports.

Gilbert V. Levin:

B.E., The Johns Hopkins University, 1947, M.S.,1948, Ph.D., 1963, Environmental Engineering. President and Founder, Chairman of the Board of Directors, Biospherics Inc., Rockville, Md. Formerly Director, Life Systems Division. Member, Board of Directors, Hazelton Labs, Inc., Falls Church, Va. Holds more than 33 patents in biological treatment of wastewater and in microbiology. Member of several honorary science associations & author of approximately 100 technical publications.

BIOSPHERICS INCORPORATED:

Organized into three major operating divisions: The Environmental Instrumentation Division which develops, manufactures, and markets sophisticated innovative instruments in the fields of pollution control and health; the Laboratory Division which performs contract research and development on environmental and health problems, develops Biospherics proprietary products in these areas and offers commercial analytical services in chemistry, biochemistry, microbiology, pesticides, and toxic substances; the Science Writing Division which writes, edits, produces and disseminates information in these areas of interest.

Roger Hill:

B.S. Physics, Brown University, M.S. Elec. Engr., Northwestern University, Doctorate studies at Northwestern University. Small Business person of the Year in State of Wisconsin, 1978. Member of Independent Business Association of Wisconsin, Special Committee on Small Business of Wisconsin Legislative Council, First National Bank Board of Directors, International Trade Subcommittee of the Chamber of Commerce of the U.S., Institute of Elec. & Electronic Engrs.

GETTYS MANUFACTURING CO.:

Founded in 1959 by Roger Gettys Hill, as a three-person engineering and consulting firm and later dynamically expanded into an international, multi-million dollar enterprise with subsidiaries in England, Germany and Italy. Today, Gettys and its licensee supply over 50% of the world DC servo drive market. In 1965 introduced world's first all-electronic three-dimensional tracer.

Robert Hillas:

B.A. Dartmouth, MBA - Stanford University. Seven years as a Venture Capital Investment Specialist with E.M. Warburg, Pincus and Company. Serves on two Boards of Directors and one Advisory Committee of Investee Companies.

E. M. WARBURG, PINCUS, & CO.:

Specialists in financial services. One of the larger private venture capital pools in the country. Deal with start-up money particularly in large publicly held companies.

Clyde R. Goodheart:

B.S. in Biology, Northwestern University, MD - Northwestern Medical School, MS - Northwestern Graduate School. Three years at California Institute of Technology in Post-Doctoral Fellowship. Assistant Professor and Associate Professor, Department of Pediatrics, University of Southern California Medical School, Children's Hospital of Los Angeles. Well known for his work in cancer research, Dr. Goodheart has been involved in bio-medical studies and has written many scientific articles.

BIO LABS, INC.:

Founded in July, 1970 by Dr. Clyde R. Goodheart, it serves government and industry through contract research, product development programs, quality control testing, industrial microbiology. Current research areas include tissue culture work, immunology, biochemical and biophysical work with viruses.

Sidney Green:

B.S. University of Missouri in Mechanical Engineering, M.S. University of Pittsburgh, attended University of Pennsylvania Graduate School & received the degree of Engineer in Engineering Mechanics from Stanford University Formerly with Westinghouse Electric Company Research Labs, General Motors Defense Research Labs, & GM Technical Center. President & Chief Executive Officer of Terra Tek, he is active on many government committees & professional societies. Published over 40 open literature papers and reports, holds several patents.

TERRA TEK:

Founded in 1970 as a for-profit company, a springoff venture pursuing application of ideas primarily initiated at the University of Utah. Recognized as a leader in problem-solving applications involving rock mechanics, the geosciences and associated technology, and for its practical application of material sciences. Main lines of business include R&D, manufacture of sophisticated servocontrolled computer interfaced test systems, full-scale testing of drilling, mining and exploitation of new ventures.

Dan Cronin:

B.A. Harvard, Economics, Cum Laude, 1950, Advanced Management Course, Harvard. Vice President, Small Business Association of New England. Formerly salesman, manager and then President of small hospital supply co., which merged in 1968 with a large company with 150 employees and 5 million in business. In 1974 served as Assistant to the then Secretary of Commerce, Elliot Richardson, 1977 joined Ampersand Associates, a venture capital firm. Also served on SBA Regional Advisory Council.

AMPERSAND ASSOCIATES:

Venture Capital firm with investments ranging from 1-1/2 million to 100 million. One client is #2 in the electronic cash register business.

Alfred C. W. Daniels:

E.E. Graduate of Arizona State University, Harvard Law School, also served as an Assistant Dean at Harvard. Vice President, New England, HH Aerospace Design Co., Inc. An officer and rated airline transport pilot, he has served in both command and staff R&D positions in the U.S. Air Force where he also earned four Air Medals with 200 missions in Viet Nam. Received the 1,000 Hour Sabreliner Flight Award. President, Black Corporation Presidents of New England, Inc., and a member of the Board of Directors, Smaller Business Association of New England, Inc.

HH AEROSPACE DESIGN CO., INC.:

A consulting firm established in 1974, incorporated in the State of New York. A 100% minority-owned corporation, serving the Eastern Seaboard. HHA's capabilities include R&D studies, economic analysis, design and engineering services in aerospace, electronics and transportation planning, including surface systems, tests and evaluation.

"I am troubled by the glaring de-emphasis that (capital formation) has received. Access to capital-specifically, a proper mix of debt and equity capital that is consistent with a given firm's cash-flow generating capability - is the single most critical factor concerning the formation and development of technology based, small businesses. I believe that the "bill" devoted too much attention to the patents issue without considering the fact that patents will remain as patents and not products unless technical entrepreneurs and small companies have sufficient access to start-up and expansion capital."

"Just a pro forma comment on the definition of 'small business'. I feel that it should be limited to companies with 100 employees or less."

"You may recall that (I) questioned the validity and objected to the priority given by our Advisory Committee to the reduction of the capital gains tax as a means for stimulating innovation."

In Section 5(a)(5) "with respect to $2 million of gross revenues and products employing patented items, some recognitions should be made of the value of the patented items in relation to the whole. For instance, the invention may be a $20 value, which is part of a $300,000 jet aircraft engine, and the $2 million test should certainly relate more closely to the quantity of $20 parts sold than to the quantity of aircraft engines incorporating the part sold."

"Also, I repeat my reservations about the elitism implicit in the use of the term 'innovative small businesses.' All small businesses should be deemed to have innovative potential - i.e., ability to improve productivity and create more jobs."

"Government should respect proprietary information submitted as part of proposals for contracts and unless information can be shown to be in the public domain, shall not divulge or use such information except for the evaluation of the submitted proposal. Under no circumstances shall this information be used as the basis of another RFP."

"Government shall not take proprietary ideas 'in house' after initial funding unless the contractors performance shall be deemed poor."

"In Section 7(d) - cannot agree that companies should be allowed to include up to 100 investors. Too many."

DISSENTING OPINIONS

As noted earlier, the SBA Advocacy Task Force Bill is the product of a nearly unanimous consensus of opinion. However, some individual members of the Task Force did express reservations about various sections of the bill. The following are excerpts from their comments on the bill.

PATENT RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
Section 5(a)(1)-(9) (cont'd)	equal to the amount of the R&D award under which the invention occurred. Likewise, with inventions made in national laboratories, the government should preferentially license small business concerns. (INN-SBTF)
Section 5(d)	Small businesses should be able to obtain (with appropriate restrictions) compulsory licenses through suitable proceedings in cases where uncommercialized patents block entry into new markets. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	The Justice Department should be required to undertake competitive impact studies for taking anti-trust action against small business when a small business is attempting to exploit the full property rights afforded by its patent. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	Treat licenae royalties as capital gains instead of ordinary income. (INN-SBTF)

PROCUREMENT RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
Section 6 (a) 7	Every federal agency should study policies and procedures that discriminate against small businesses, and to institute changes that will equalize opportunity without harming the public interest. (INN - STBF)
COLUMN NOTE: These two sections of Task Force Bill have no direct parallels in JC - WG or INN - SBTF Reports.	The Departments of Defense and Energy and the National Aeronautics and Space Administration shall take additional steps to conduct regular break-out reviews of all proposed large scale systems contracts for research and development, and to seek means of making more of this effort available to small business. (ADVOCACY TASK FORCE BILL - Section 6 (a) (5))
	All Federal agencies involved with research and development funding will develop, with the Small Business Administration, specific programs to inform their staffs and consultants of the need to provide a fair and equal opportunity to small women-owned and minority business firms to be considered for Federally funded research and development; and of the requirement to guide, counsel, and assist small firms to strengthen their capability to compete and insure that they receive a fair share of all Federal research and development contracts as described in the Small Business Act. Evaluations of procurement personnel performance shall include appraisals of achievement and attitude in expanding small and minority business participation. (ADVOCACY TASK FORCE BILL Section 6 (a) (6))

CAPITAL AND INVESTMENT RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
Section 6(a)7	Modify ERISA to allow up to five percent of pension fund portfolios to be invested in small businesses. (INN-SBTF) We recommend (1) that ERISA's prudent man standard be restated so that it is clearly applicable to the total portfolio of pension fund investments rather than individual investments, and (2) that pension fund managers explicitly be permitted to invest up to five percent of pension fund assets in small firms. (JC-WG)
No parallel section in Advocacy Task Force Bill	Encourage state investment pools to invest a larger percentage of their holdings in small innovative businesses. (INN-SBTF)
Section 6(b)3	Exempt from SEC registration offerings of equity securities for innovative businesses outlined in Recommendation #1 of less than two million dollars. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	Change the charter of the Securities and Exchange Commission to specify the encouragement of the flow of capital into small innovative enterprises as well as to protect the public investor. (INN-SBTF)

REGULATORY PROCEDURES

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
No parallel section in Advocacy Task Force Bill	A thorough revision of the regulations and operating procedures of OSHA as they relate to small innovative business to include -- A general exemption from OSHA, except where the accident history of a particular industry or firm is substantially greater than average, and in such cases, the burden should be upon OSHA to justify action; and -- The prohibition of first instance citations except in extreme cases. (INN-SBTF)
Section 6(b)1	In all regulatory activities, the burden should be placed upon each regulatory agency to establish a cause of concern before requiring regulatory compliance by a small business. Minimum levels of impact should be statutorily defined thereby exempting small businesses in all but extreme and justifiable cases. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	Substantial strengthening of the Regulatory Council to include: -- participation by the Small Business Administration; -- requiring all regulatory agencies to balance the risks of a hazard against the economic costs, with thorough consideration of specific impacts of proposed regulations upon small business creative processes; -- the use of "performance standards" and not "method standards" in those cases where regulatory standards are clearly justified; (JC-WG)

RESEARCH AND DEVELOPMENT RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
No parallel section in Advocacy Task Force Bill	The decline in R&D expenditures as a percentage of Gross National Product must be arrested and redirected upwards towards the goal of three precent by 1985. (INN-SBTF)
Section 4	Each year, starting in 1980, each agency with a budget of over $100 million for R&D should allocate at least one percent of its R&D budget to the small business program using the same format as that of the National Science Foundation but with their own research topics, and review and awards procedures. This program should be coordinated by an Inter-Agency Small Business R&D Committee chaired by the Small Business Administration. (INN-SBTF) We recommend that private sector individual or corporate owners of technology be rewarded, through appropriate changes in the tax code, for selling, leasing, or licensing their technology to small business firms in the United States. In addition, we recommend the establishment of a voluntary national policy to encourage companies to make their technologies available for noncompetitive uses by others. The Work Group believes the National Science Foundation's program called "Small Business Innovation Applied to National Needs" has great potential for increasing technological innovation in the private sector and is worthy of emulation or even adoption by other federal agencies. (JC-WG)

TAX RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
No parallel section in Advocacy Task Force Bill	Treat license royalties as capital gains instead of ordinary income. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	Eliminate the existing tax liabilities for overseas joint ventures in which the small business investment consists of a contribution of know how and technical information. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	We recommend that private sector individual or corporate owners of technology be rewarded, through appropriate changes in the tax code, for selling, leasing, or licensing their technology to small business firms in the United States. In addition, we recommend the establishment of a voluntary national policy to encourage companies to make their technologies available for uses by others. (JC-WG)
COLUMN NOTE: These two sections of Task Force Bill have no direct paralles in JC-WG or INN-SBTF Reports.	For tax purposes, specialized equipment and instrumentation for research, development or testing may be written off at any time and specialized research, development or testing facilities may be depreciated over a minimum of five years by such small business firms. (ADVOCACY TASK FORCE BILL - Section 7b) The period of exercising stock options in small business science and technology based firms is extended from a maximum of five to a maximum of ten years. (ADVOCACY TASK FORCE BILL - Section 7(a)(5))

TAX RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
Section 7(a)(3) (cont'd)	Allow small science and technology firms to carry forward losses for a period of ten years instead of five years. (INN-SBTF)
Section 7(a)(6)	We recommend restoration of the Qualified Stock Option Plan for Key Employees of small businesses. (JC-WG) Restore the Qualified Stock Option Plan for Key Employees in small science and technology firms, and establish the period for exercising stock options at ten years. (INN-SBTF)
Section 8	We recommend that the creation of Small Business Export Trade Corporations be encouraged by a double deduction for these corporations of up to $100,000 of annual expenses associated with the exporting activities of each client, with a loss carry-forward of ten years. In addition, we recommend that small businesses be allowed a double deduction of special expenses of serving export markets up to $100,000 annually. (JC-WG) Permit small businesses to take double deductions of expenses directly related to export market development. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	We recommend that small businesses be allowed to deduct twice their payments for regulatory advisory services related to compliance with federal, state, and local regulation. (JC-WG)
No parallel section in Advocacy Task	Provide for a twenty-five percent tax credit for research and development related expenditures by small businesses (as currently allowed in Canada). (INN-SBTF)

COMPARISON TABLE

SBA ADVOCACY
TASK FORCE BILL

COMMERCE JOB CREATION
WORK GROUP (JC-WG)

COMMERCE INNOVATION
SMALL BUSINESS TASK FORCE (INN-SBTF)

7. The Department of Labor and the Internal Revenue Service should devise regulations jointly that encourage, stimulate and otherwise provide incentive for, and eliminate obstacles to, increasing significantly the amount of pension fund assets that are invested in small businesses so as to maximize their capacity to be innovative. The Internal Revenue Service also should establish regulations and reporting procedures that improve the ability of small businesses to retain money and thus enables them to cope better with cash flow pressures.

(b) For tax purposes, specialized equipment and instrumentation for research, development or testing may be written off at any time and specialized research, development or testing facilities may be depreciated over a minimum of five years by such small business firms;

(c) Small business concerns may establish and maintain a "Reserve for Research and Development" for tax purposes in profitable years to use in periods of business stress up to the level of ten percent of gross revenues of $1 million, to the extent that contributions to the reserve are equalled by at least that amount of expenditure in that year for research and development.

1. Contributions to the "Research and Development Reserve" shall be considered as income when removed from the reserve unless used for research and development purposes.

2. When a firm ceases to be a small business, it may utilize any existing reserve for the same purpose but may not replenish it;

3. If a small business is acquired by a large firm, any existing reserve shall be considered taxable income.

(d) Subchapter S companies should be allowed to include up to 100 investors and corporations should be allowed to be stockholders of Subchapter S companies.

SECTION 8: IMPROVING SMALL BUSINESS EXPORT PERFORMANCE: THE CREATION of Small Business Export Trade Corporations should be encouraged by a double deduction for these corporations of up to $100,000 of annual expenses associated with the exporting activities of each client, with a loss carryforward of ten years. In addition, small businesses should be allowed a double deduction of special expenses of serving export markets up to $100,000 annually. Also, export procedures for technical products should be simplified.

merit, and small business should have equal opportunity to receive sole source awards;

4. Independent research and development (IR&D) and bid and proposal (B&P) costs of small business firms shall be considered as expenses for the fiscal year in which they occur instead of being averaged-back over the past two years;

5. The Departments of Defense and Energy and the National Aeronautics and Space Administration shall take additional steps to conduct regular break-out reviews of all proposed large scale systems contracts for research and development, and to seek means of making more of this effort available to small business.

6. All Federal agencies involved with research and development funding will develop, with the Small Business Administration, specific programs to inform their staffs and consultants of the need to provide a fair and equal opportunity to small women-owned and minority business firms to be considered for Federally funded research and development; and of the requirement to guide, counsel and assist small firms to strengthen their capability to compete and insure that they receive a fair share of all Federal research and development contracts as described in the Small Business Act. Evaluations of procurement personnel performance shall include appraisals of achievement and attitude in expanding small and minority business participation;

7. All Federal agencies have a responsibility to identify and study those problems of their procurement system that, in effect, discriminate against small business and a responsibility to make changes or eliminate these practices to the extent possible through administrative action.

(b) Regulatory Flexibility:

1. All Federal agencies which issue regulations affecting small business shall, insofar as practicable, issue them so as to relate regulatory burdens to the relative size of the firms regulated.

3. Each funding agreement shall contain provisions to: (1) insure the right of the Federal Government to receive title to any subject invention not reported to it within a reasonable time; (2) insure the government's right to receive title to inventions when the inventor does not intend to file for patent rights; (3) guarantee that the agency shall have a nonexclusive, nontransferable paid-up license to use the invention; and (4) insure the right of the funding agency to require periodic reports on the utilization or efforts at obtaining utilization of the subject invention.

4. The Federal agency has the right to require the subject inventor of his assignee to grant additional licenses if the agency feels that sufficient steps are not being taken to achieve commercialization. Additional licensing may also be required to alleviate health and safety needs, or under provisions for public use as specified by Federal regulations.

5. If the patent holder receives $250,000 in after-tax profits from licensing any subject invention during a ten-year period, or receives in excess of $2,000,000 on the sale of products embodying or manufactured by a process employing the subject invention within the ten-year period, then the government shall be entitled to collect up to 50 percent (50%) of all net income above these figures until such time as the amount of government research money has been repaid.

6. Any title holder to a subject invention or his assignee shall not grant to any person the exclusive right to use or sell any subject invention in the United States unless that person agrees that any products embodying the subject invention or produced through its use shall be manufactured substantially within the U.S. unless this provision is waived by the funding agency.

7. Federal agencies are authorized to grant exclusive, partially exclusive, or non-exclusive licenses on government owned patents to achieve commercialization.

8. After public notification of the government patents available for licensing the agency will then require that potential licensees submit plans outlining how the invention will be developed and marketed. If the agency determines that the granting of an exclusive or partially exclusive license will not lessen competition it will give first preference in its licensing to qualified small businesses.

9. All contractors not covered under this proposal will continue to operate under the existing agency programs.

available. (It had before it the Report of the Commerce Work Group on Job Creation (Appendix II) and knew that the second report (Appendix I) was in preparation.) It therefore concluded that it could best spend its time concentrating on the content of a specific legislative proposal.

What follows then is the text of proposed legislation. It is cast in layman's language and is not in the Congressionally approved form. Its purpose is to reflect recommendations rather than actual statutory language. (Versions of two parts of it have already been introduced in the U.S. Senate: S. 3496 pending before the Senate Judiciary Committee and S. 1074 before the Senate Small Business Committee.) It is followed by a schematic comparison of the recommendations of all three groups. The full texts of the reports of the Commerce Work Group of Job Creation and the Commerce Innovation Small Business Task Force are attached as appendices.

To students of the innovation process many of the recommendations will have a familiar ring. They have figured in other citizen group studies extending from the Charpie Commerce Department report almost twelve years ago, to the SBA Casey report of two years ago.

These forty-seven men and women have given generously of their time and talents. They have done so in the hope that they can communicate to their country's leaders the sense of urgency which they feel about this subject. It is rare that a single general prescription--enhancing the environment for small business technology innovation--appears to contribute to so many high priority Federal goals: stabilizing inflation through new products and new processes; speeding the replacement of non-renewable energy and material resources; strengthening domestic producers' competitive ability and the balance of payments; enlarging the most job productive part of our economy; and enhancing our ability to control undesirable consequences of our industry.

If these forty-seven citizens are right--and we believe they are--our country will gain much or lose much, depending on how quickly it accepts the advice they have given it.

Milton D. Stewart
Chief Counsel for Advocacy
May 23, 1979

SECTION 1. PURPOSE: TO ESTABLISH a Federal program to bolster innovative small businesses by strengthening their role in Federally funded research and development and by fostering their formation and growth in the economy.

This Act may be cited as the "Small Business Innovation Act of 1979."

SECTION 2: FINDINGS: THE CONGRESS hereby finds that

1. Technological innovation is a most important contributor to job creation, increased productivity, competition and economic growth in the United States as well as a valuable counterforce to inflation and our balance of payments deficit;

2. Small business is a principal source of major innovations in the Nation when compared with large business, universities and government laboratories;

3. Yet the vast majority of Federally funded research and development is conducted in large business, in universities and in government laboratories with small business receiving less than four percent of these funds;

4. While private U.S. technology expenditures are highly concentrated with just six industries accounting for over 85 percent of all industrial research and development spending and just 31 companies, many of them multi-national, accounting for 60 percent of total U.S. R&D;

5. Moreover, the Internal Revenue Code, in its present form insufficiently supports the formation, growth and long-term independent operation of innovative small businesses; THEREFORE

6. It is in the national interest to strengthen the ability of small businesses to be innovative, to increase private sector commercialization of innovations derived from Federal research and development, to increase the proportion of Federal research and development expenditures which go to small firms, to assure small firms of the opportunity to compete for Federal research and development contracts and to stimulate technological innovation by all possible means.

INTRODUCTION

This is a report of an unusual consensus among three citizen study groups on a matter of national urgency. The three groups were named for similar, but slightly different purposes.

First, the Commerce Department named fourteen leading citizens to a "work group" on "Job Creation through the Success of Small, Innovative Businesses." (JC-WG, hereafter).

Second, as part of a Domestic Policy Review of industrial innovation the Commerce Department included six small business people on advisory subgroups. They filed joint views on small business in industrial innovation, in effect becoming an additional subgroup of the Review. (INN-SBTF, hereafter).

And finally, we named twenty executives of small science-based firms and seven venture capital managers to serve as a "task force" on how to strengthen innovative small businesses themselves.

What is remarkable is that these forty-seven citizen leaders whose backgrounds, skills and outlooks are richly diverse arrived at roughly the same set of conclusions. Whether their purpose was creating jobs, shoring-up our sagging industrial innovation rate or expanding small science-based business--where they dealt with the same Federal policies, they reflect substantial consensus.

"Consensus" here does not mean that the views of the three groups are identical or that they cover exactly the same ground. Nor does consensus mean that any individual member of any of the groups would necessarily put his own views in precisely the terms used in the group's report. Every member of each group does not necessarily subscribe to every recommendation, although, of course, by his signature each member concurs generally in the group's consensus.

FOREWORD

P.L. 94-305 charges the Chief Counsel for Advocacy with the responsibilities to: examine the role of small business in the American economy and the contribution which small business can make in . . . stimulating innovation (Section 202(1)); develop proposals for changes in policies and activities of any agency of the Federal Government which will better fulfill the purposes of the Small Business Act and communicate such proposals to the appropriate Federal agencies (Sec. 203(3)); and, recommend specific measures for creating an environment in which all businesses will have an opportunity to compete effectively and expand to their full potential, and to ascertain the common reasons, if any, for small business successes and failures (Sec. 202(9)).

The Chief Counsel is authorized to hold hearings with the approval of the SBA Administrator. From time to time, he may prepare and publish such reports as he deems appropriate to carry out the functions of his office.

Pursuant to this authority, and with the approval of the Administrator, Honorable A. Vernon Weaver, hearings were held on January 4th and 5th and February 22nd and 23rd of this year in Washington, D.C., on the subject of Innovation and Small Business. This report and the draft copy of the "Small Business Innovation Act" are the products of those hearings.

Small Business & Innovation

A Report of an SBA Office of Advocacy Task Force

Office of the Chief Counsel for Advocacy
U.S. Small Business Administration

May 1979 FINAL VERSION
JULY 1979

(b) In selecting and evaluating rules or regulations, the agency shall consider factors such as—

(1) the continued need for the rule or regulation;

(2) the type and number of complaints or suggestions received concerning the rule or regulation;

(3) the burdens imposed on persons directly or indirectly affected by the rule or regulation, especially the burdens placed on individuals, small businesses, small organizations, and small governmental jurisdictions;

(4) the need to simplify or clarify language of the rule or regulation;

(5) the need to eliminate overlapping and duplicative rules or regulations;

(6) the need to resolve conflicts between the rules or regulations of the agency and the rules, regulations, or laws administered by other agencies; and

(7) the length of time since the rule or regulation has been evaluated or the degree to which technology, economic conditions, or other factors have changed in the area affected by the rule or regulation.

(c) Each year, each agency shall publish in the Federal Register a list of rules or regulations which it expects to issue during the following twelve months and a list of rules or regulations to be reviewed during the following twelve

tions, and governmental jurisdictions subject to regulation without significant loss of regulatory efficiency;

(6) Government information collection has not adequately weighed the privacy rights of individuals and enterprises against the need of the Government for information because the design of the regulatory process has encouraged regulators to treat information as a free good; and

(7) deep public dissatisfaction with the regulatory process has stemmed in large part from a public perception that burdensome rules or regulations fail to correct key national problems.

(b) It is the purpose of this title to establish as a principle of regulatory issuance that regulatory and informational requirements fit the scale of the individuals, businesses, organizations, and governmental jurisdictions subject to a rule and that fewer and simpler requirements be made of individuals, small organizations, small businesses, and small governmental jurisdictions. To achieve such principle, agencies are empowered and encouraged to issue rules or regulations which apply differently to different segments of the regulated population and are required to solicit and consider alternative regulatory proposals from the public prior to the adoption of final rules.

When rules are required by statute to be made on the record after opportunity for an agency hearing, sections 556 and 557 of this title apply instead of this subsection.".

(c) Section 553 of such title is amended by adding at the end thereof the following new subsection:

"(f) For the purposes of this section, the term—

"(1) 'individual' does not include any individual who is affected by a rule primarily in his capacity as an officer or employee of a business, organization, or governmental jurisdiction;

"(2) 'small business' has the same meaning as the term 'small business concern' in section 3 of the Small Business Act (15 U.S.C. 632), and includes such additional businesses as the agency shall establish by rule;

"(3) 'small organization' includes unincorporated businesses, sheltered workshops, not-for-profit enterprises which are not dominant in their fields, and such other groups or enterprises as the agency shall establish by rule;

"(4) 'small governmental jurisdiction' includes—

"(A) governments of cities, counties, towns, villages, school districts, water districts, or special assessment districts, with a population of less than one hundred thousand; and

"(B) an exemption from coverage of the proposed rule, or any part thereof, for such individuals, businesses, organizations, and governmental jurisdictions whose activities are of a nature which makes the inclusion of such individuals, businesses, organizations, and governmental jurisdictions of minimal value to the realization of the goals and purposes of the proposed rule;

"(C) the clarification, consolidation, or simplification of requirements of the proposed rule; or

"(D) other suitable means, including performance standards and differing timetables for compliance for such individuals, businesses, organizations, and governmental jurisdictions; and

"(7) with regard to any reporting or recordkeeping requirement which the agency anticipates requiring of ten or more members of the public pursuant to the proposed rule—

"(A) a statement of the purpose of the requirement, its form, its length, and the type of professional skills necessary for its completion;

"(B) an estimate of the number of persons who would be required to submit or maintain reports or records;

and cash items) at cost consist of securities which were—

"(A) acquired directly from the issuer thereof in a transaction or transactions not involving the registration of the securities under the Securities Act of 1933 or pursuant to the exercise of options, warrants, or rights acquired in such transactions;

"(B) received in a reorganization or in an exchange offer in exchange for securities acquired pursuant to subparagraph (A) of this paragraph; or

"(C) distributed on or with respect to any securities referred to in subparagraph (A) or subparagraph (B) of this paragraph.".

(d) The amendments made by this section shall apply to taxable years beginning after December 31, 1979.

TITLE IV—REGULATORY FLEXIBILITY

SHORT TITLE

SEC. 401. This title may be cited as the "Regulatory Flexibility Act".

FINDINGS AND PURPOSES

SEC. 402. (a) The Congress finds that—

(1) in numerous instances compliance with Federal regulatory and reporting requirements imposes in-

"(b) QUALIFIED STOCK OPTIONS.—For purposes of this part, the term 'qualified stock option' means an option granted to an individual—

"(A) after December 31, 1963 (other than a restricted stock option granted pursuant to a contract described in section 424(c)(3)(A)), and before May 21, 1976 (or, if it meets the requirements of subsection (c)(7), granted to an individual after May 20, 1976, and before January 1, 1980), or

"(B) after December 31, 1979 (other than such a restricted stock option),

for any reason connected with his employment by a corporation, if granted by the employer corporation or its parent or subsidiary corporation, to purchase stock of any of such corporations, but only if—".

(2) Paragraph (7) of section 422(c) (relating to special rules) is amended by inserting "and before January 1, 1980" after "May 20, 1976" each place it appears.

(b) Paragraph (3) of such section 422(b) is amended by striking out "5" and inserting "10".

(c) The amendments made by this section shall apply to options granted after December 31, 1979, in taxable years ending after such date.

bution other than cash is made shall not he taken into account under this section.

"(2) TREATMENT OF RESERVE WHERE TAXPAYER CEASES TO BE A SMALL BUSINESS CONCERN.—

"(A) IN GENERAL.—In the case of a small business concern which ceases to be a small business concern (other than by reason of the acquisition of stock or assets of such concern by other person), the reserve for research and development of such concern shall continue to be treated as such a reserve for a small business concern, except that no further contributions may be made to such reserve beginning with the taxable year in which such concern ceases to be a small business concern.

"(B) INCLUSION IN INCOME WHERE SMALL BUSINESS CONCERN ACQUIRED BY OTHER BUSINESS.—In the case of a small business concern which ceases to be a small business concern by reason of the acquisition of the stock or assets of such concern by any other person, 150 percent of the amount of the reserve for research and development of such concern as of the date of such ac-

EXCLUSION FOR AMOUNTS DEPOSITED IN RESERVE FOR RESEARCH AND DEVELOPMENT

SEC. 305. (a) Subpart B of part II of subchapter E of chapter 1 of the Internal Revenue Code of 1954 (relating to taxable year in which items of gross income included) is amended by adding at the end thereof the following new section:

"SEC. 459. RESERVE FOR RESEARCH AND DEVELOPMENT.

"(a) EXCLUSION OF CERTAIN DEPOSITS INTO RESERVE FOR RESEARCH AND DEVELOPMENT.—

"(1) IN GENERAL.—In the case of a small business concern engaged in a trade or business other than real estate, the gross income of the taxpayer shall not include the amount of any income received by the taxpayer during the taxable year which is deposited into a reserve for research and development.

"(2) LIMITATION ON EXCLUSION.—Paragraph (1) shall not apply to the amount of income which is deposited in a reserve for research and development during the taxable year to the extent that the amount of such income exceeds the least of the following amounts:

"(A) 10 percent of the gross revenues of the taxpayer for the taxable year from such trade or business,

ryover to each of the 10 taxable years following the year of such loss.".

(b) Section 172 is amended by adding at the end thereof the following new subsection:

"(j) QUALIFIED SMALL BUSINESS CONCERN.—For purposes of this section, the term 'qualified small business concern' means a small business concern (within the meaning of section 1041(b)(2)) which during the 3 taxable years preceding the taxable year, or if the concern has not been in existence for 3 taxable years, during all taxable years of the concern (including the taxable year), had research and experimental expenditures (within the meaning of section 174)—

"(1) the average of which was 3 percent or more of gross revenues during such taxable years, or

"(2) which exceeded 6 percent or more of gross revenues during any one of such taxable years.".

(c)(1) Subparagraph (A) of section 172(b)(1) is amended by striking out "and (H)" and inserting "(H) and (J)".

(2) Subparagraph (B) of section 172(b)(1) is amended by striking out "and (F)" and inserting ", (F), and (J)".

(d) The amendments made by this section shall apply to taxable years beginning after December 31, 1979.

gain was not recognized had been held, and the period such replacement small business stock was held as of the date of such sale or exchange.".

(3) The table of sections for part III of subchapter O of chapter 1 of such Code is amended by adding at the end thereof the following new item:

"Sec. 1041. Sales of small business stock.".

(b) Section 1202 (relating to deduction for capital gains) is amended by redesignating subsection (c) as (d) and by adding after subsection (b) the following:

"(c) SMALL BUSINESS DEDUCTION.—

"(1) IN GENERAL.—If for any taxable year a taxpayer other than a corporation has a net small business capital gain, 80 percent of the amount of such gain shall be a deduction from gross income.

"(2) NET SMALL BUSINESS CAPITAL GAIN.—

"(A) IN GENERAL.—The term 'net small business capital gain' means the excess of—

"(i) an amount equal to the excess of (I) the gain from the sale or exchange of any small business stock held for more than 5 years, over (II) any loss from the sale or exchange of any small business stock held more than 1 year, over

term is used in title III of the Small Business Investment Company Act of 1958 (15 U.S.C 681 et seq.), except that such term shall not include an electing small business corporation (as defined in section 1371(b)).

"(c) LIMITATION.—Subsection (a) shall only apply to gain attributable to sale of small business stock with respect to which the taxpayer's holding period is more than 12 months.

"(d) BASIS OF SMALL BUSINESS STOCK.—The basis of small business stock purchased by the taxpayer during the 18-month period shall be reduced by the amount of gain not recognized solely by reason of the application of subsection (a). If more than one share of small business stock is purchased, such reduction in basis shall be applied to each such share in chronological order of purchase. The amount of the reduction applicable to each share shall be determined by multiplying the maximum gain not to be recognized pursuant to subsection (a) by a fraction the numerator of which is the cost of such share and the denominator of which is the total cost of all such shares.

"(e) STATUTE OF LIMITATIONS.—If during a taxable year a taxpayer sells small business stock at a gain, then—

"(1) the statutory period for the assessment of any deficiency attributable to any part of such gain

reference shall be considered to be made to a section or other provision of the Internal Revenue Code of 1954.

RECOGNITION OF GAIN ON SALE OF SMALL BUSINESS STOCK

SEC. 302. (a)(1) Part III of subchapter O of chapter 1 (relating to nontaxable exchanges) is amended by adding at the end thereof the following new section:

"SEC. 1041. SALES OF SMALL BUSINESS STOCK.

"(a) NONRECOGNITION OF GAIN.—If small business stock is sold, gain (if any) from such sale shall, at the election of the taxpayer, be recognized only to the extent that the taxpayer's sale price exceeds the cost of small business stock purchased by the taxpayer within 18 months after the date of such sale.

"(b) DEFINITIONS; SPECIAL RULES.—For purposes of this section—

"(1) SMALL BUSINESS STOCK.—The term 'small business stock' means common or preferred stock issued by a small business concern.

"(2) SMALL BUSINESS CONCERN.—

"(A) IN GENERAL.—The term 'small business concern' means a domestic corporation or small business investment company (other than an electing small business corporation as defined in section 1371(b))—

tion in the light of such patent or publication if such patent or publication was cited and such request was filed in the Office within the period of a stay ordered by the court in accordance with section 310 of this chapter.

"§ 310. Stay of court proceedings to permit Office review

"(a) Any party to a civil action against whom a pleading presents a claim for infringement or for adjudication of the validity of a patent shall have the right, by motion brought before any responsive pleading, to secure a stay of all proceedings in the action by order of the court for a period, not less than four months, sufficient to enable such party to search for and cite patents or publications considered pertinent to the patent and to request reexamination of the patent in view of such prior art according to sections 302 and 303 of this chapter. If such party files a request for such reexamination in the Office and serves and files a copy of it in the action within the period of the stay provided by such order, the stay shall be extended by further order of the court until at least twenty days after the final determination of the request for reexamination.

"(b) The court, on motion and upon such terms as are just, may at any time stay the proceedings in a civil action in which the validity of a patent is in issue for a period sufficient to enable the moving party to cite to the Office newly discovered additional prior art in the nature of patents or (printed)

reexamination. The patentee shall serve a copy of such statement on any person who has requested examination according to section 303 of this chapter and such person shall have the right, within a period of two months from such service, to submit a reply to the patentees statement. Any reexamination proceeding under this section shall be conducted with special dispatch within the Office.

"§ 306. Response or amendment by patent owner

"The patent owner shall be provided an opportunity in any reexamination proceeding under this chapter to amend any claim of his patent in order to distinguish the claim from prior art cited according to section 302 of this chapter, or in response to a decision adverse to the patentability of the claim, but no amendment enlarging the scope of a claim shall be permitted in a reexamination proceeding under this chapter.

"§ 307. Appeals

"The owner of a patent involved in a reexamination proceeding under this chapter may appeal from a final decision in such proceeding adverse to the patentability of any claim, or amended claim, of the patent.

"§ 308. Certificate of patentability; unpatentability and claim cancellation

"When in a reexamination proceeding under this chapter the time for appeal has expired or any appeal proceeding

applying the same shall become a part of the official file of the patent. The identity of the person citing the prior art will be excluded from such file upon his request to remain anonymous.

"§ 303. Request for examination

"Any person may, at any time within the period of enforceability of a patent, request reexamination of the patent as to the patentability of any claim thereof in the light of any prior art cited under the provisions of section 302 of this chapter, by filing in the Office a written request for such reexamination accompanied by a reexamination fee prescribed according to this title and by a statement of the relation of such prior art to the patentability of the claim or claims involved. Unless the requesting person is the patentee, the Commissioner shall promptly send a copy of such request and statement to the owner of the patent appearing from the records of the Office at the time of the filing of the request.

"§ 304. Determination of issue by Commissioner of Patents

"(a) Within ninety days following the filing of a request for reexamination under section 303 of this chapter, the Commissioner shall make a determination as to whether a substantial new question of patentability affecting any claim of the patent concerned, not previously considered in examination or reexamination of such claim, is raised by the con-

agencies to agree to allow such persons to retain ownership of such inventions.

"§ 212. Relationship to Antitrust Laws

"Nothing in this chapter shall be deemed to convey to any person immunity from civil or criminal liability, or to create any defenses to actions, under any antitrust law.".

AMENDMENTS TO OTHER ACTS

SEC. 202. The following Acts are amended as follows:

(a) Section 156 of the Atomic Energy Act of 1954 (42 U.S.C. 2186; 68 Stat. 947) is amended by deleting the words "held by the Commission or".

(b) The National Aeronautics and Space Act of 1958 is amended by repealing paragraph (g) of section 305 (42 U.S.C. 2457(g); 72 Stat. 436).

(c) The Federal Nonnuclear Energy Research and Development Act of 1974 is amended by repealing paragraphs (g), (h), and (i) of section 9 (42 U.S.C. 5908 (g), (h), and (i); 88 Stat. 1889–1891).

EFFECTIVE DATE

SEC. 203. This title shall take effect one hundred and eighty days after the date of its enactment, except that the regulations referred to in section 201, or other implementing regulations, may be issued prior to that time.

"(13) section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901; 88 Stat. 1878);

"(14) section 3 of the Act of June 22, 1976 (42 U.S.C. 1959d, note; 90 Stat. 694);

"(15) subsection (d) of section 6 of the Saline Water Conversion Act of 1971 (42 U.S.C. 1959(d); 85 Stat. 161);

"(16) section 303 of the Water Resources Research Act of 1964 (42 U.S.C. 1961c–3; 78 Stat. 332);

"(17) section 5(d) of the Consumer Product Safety Act (15 U.S.C. 2054(d); 88 Stat. 1211);

"(18) section 3 of the Act of April 5, 1944 (30 U.S.C. 323; 58 Stat. 191);

"(19) section 8001 of the Solid Waste Disposal Act (42 U.S.C. 6981; 90 Stat. 2829);

"(20) section 306(d) of the Surface Mining and Reclamation Act of 1977 (30 U.S.C. 1226(d); 91 Stat. 455);

"(21) section 21(d) of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2218(d); 88 Stat. 1548);

Agency that it has taken or can be expected to take within a reasonable time, effective steps to achieve practical application of the invention;

"(3) the right of the Federal agency to terminate such license in whole or in part if the licensee is in breach of an agreement obtained pursuant to paragraph (b) of this section; and

"(4) the right of the Federal agency to terminate the license in whole or in part if the agency determines that such action is necessary to meet requirements for public use specified by Federal regulations issued after the date of the license and such requirements are not reasonably satisfied by the licensee.

"§ 211. Precedence of chapter

"(a) This chapter shall take precedence over any other Act which would require a disposition of rights in subject inventions of small business firms or nonprofit organization contractors in a manner that is inconsistent with this chapter, including but not necessarily limited to the following:

"(1) section 10(a) of the Act of June 29, 1935, as added by title 1 of the Act of August 14, 1946 (7 U.S.C. 427i(a); 60 Stat. 1085);

"(2) section 205(a) of the Act of August 14, 1946 (7 U.S.C. 1624(a); 60 Stat. 1090);

plication or otherwise promote the invention's utilization by the public.

"(2) A Federal agency shall not grant such exclusive or partially exclusive license under paragraph (1) of this subsection if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the country in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with the antitrust laws.

"(3) First preference in the exclusive or partially exclusive licensing of federally owned inventions shall go to small business firms submitting plans that are determined by the agency to be within the capabilities of the firms and as likely, if executed, to bring the invention to practical application as any plans submitted by applicants that are not small business firms.

"(d) After consideration of whether the interests of the Federal Government or United States industry in foreign commerce will be enhanced, any Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a foreign patent application or patent, after public notice and opportunity for filing written objections, except that a Federal agency shall not grant such exclusive or partially exclusive license if it determines that the grant of such

"(3) undertake all other suitable and necessary steps to protect and administer rights to federally owned inventions on behalf of the Federal Government either directly or through contract; and

"(4) transfer custody and administration, in whole or in part, to another Federal agency, of the right, title, or interest in any federally owned invention.

"§ 209. Regulations governing Federal licensing

"The Administrator of General Services is authorized to promulgate regulations specifying the terms and conditions upon which any federally owned invention may be licensed on a nonexclusive, partially exclusive, or exclusive basis.

"§ 210. Restrictions on licensing of federally owned inventions

"(a) No Federal agency shall grant any license under a patent or patent application on a federally owned invention unless the person requesting the license has supplied the agency with a plan for development and/or marketing of the invention: *Provided,* That any plan may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under the Freedom of Information Act.

"(b) A Federal agency shall normally grant the right to use or sell any federally owned invention in the United States only to a licensee that agrees that any products embodying

"§ 205. Preference for United States industry

"Notwithstanding any other provision of this chapter, no small business firm or nonprofit organization which receives title to any subject invention and no assignee of any such nonprofit organization shall grant to any person the exclusive right to use or sell any subject invention in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will he manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the Federal agency under whose funding agreement the invention was made upon a showing by the small business firm, nonprofit organization, or assignee either that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States, or that under the circumstances domestic manufacture is not commercially feasible.

"§ 206. Confidentiality

"Federal agencies are authorized to withhold from disclosure to the public information disclosing any invention in which the Federal Government owns or may own a right, title, or interest (including a nonexclusive license) for a reasonable time in order for a patent application to be filed. Furthermore, Federal agencies shall not be required to release copies of any document which is part of an application

"(c) that such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the contractor, assignee, or licensees; or

"(d) that such action is necessary because the agreement required by section 205 has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of its agreement obtained pursuant to section 205.

"§ 204. Return of Government investment

"(a) If after the first United States patent application is filed on a subject invention, a nonprofit organization, a small business firm, or an organization to whom such invention was assigned for licensing purposes receives $70,000 in gross income for any one calendar year from the licensing of a subject invention or several related subject inventions, the United States shall be entitled to 15 per centum of all additional such income for that year other than any such additional income received under nonexclusive licenses (except where the nonexclusive licensee previously held an exclusive or partially exclusive license).

"(b) If after the first United States patent application is filed on a subject invention, a nonprofit organization, a small business firm, or an assignee of a subject invention of such an

assign whatever rights it may acquire in the subject invention from its employee to the contractor subject to the conditions set forth in this chapter.

"(f)(1) No funding agreement with a small business firm or nonprofit organization shall contain a provision allowing a Federal agency to require the licensing to third parties of inventions owned by the contractor that are not subject inventions unless such provision has been approved by the head of the agency and a written justification has been signed by the head of the agency. Any such provision shall clearly state whether licensing may be required in connection with the practice of a subject invention and/or specifically identified work objects. The head of the agency may not delegate the authority to approve provisions or sign justifications required by this subparagraph.

"(2) A Federal agency shall not require the licensing of third parties under any such provision unless the head of the agency determines that the use of the invention by others is necessary for the practice of a subject invention or for the use of a work object of the funding agreement and that such action is necessary to achieve the practical application of the subject invention or work object. Any such determination shall be on the record after an opportunity for a hearing. Any action commenced for the judicial review of such determina-

support and that the Government has certain rights in the invention.

"(7) In the case of a nonprofit organization, (a) a prohibition upon the assignment of rights to a subject invention in the United States without the approval of the Federal agency, except where such assignment is made to an organization which has as one of its primary functions the management of inventions and which is not, itself, engaged in or does not hold a substantial interest in other organizations engaged in the manufacture or sale of products or the use of processes that might utilize the invention or be in competition with embodiments of the invention (provided that such assignee shall be subject to the same provisions as the contractor) (b) a prohibition against the granting of exclusive licenses under United States patents or patent applications in a subject invention by the contractor to persons other than small business firms for a period in excess of the earlier of five years from first commercial sale or use of the invention or eight years from the date of the exclusive license excepting that time before regulatory agencies necessary to obtain premarket clearance unless, on a case-by-case basis, the Federal agency approves a longer exclusive license. If exclusive field of use licenses are granted, commercial sale

"(3) At least once each year, the Comptroller General shall transmit a report to the Committees on the Judiciary of the Senate and House of Representatives on the manner in which this chapter is being implemented by the agencies and on such other aspects of Government patent policies and practices with respect to federally funded inventions as the Comptroller General believes appropriate.

"(c) Each funding agreement with a small business firm or nonprofit organization shall contain appropriate provisions to effectuate the following:

"(1) A requirement that the contractor disclose each subject invention to the Federal agency within a reasonable time after it is made and that the Federal Government may receive title to any subject invention not reported to it within such time.

"(2) A requirement that the contractor make an election to retain title to any subject invention within a reasonable time after disclosure and that the Federal Government may receive title to any subject invention in which the contractor does not elect to retain rights or fails to elect rights within such time.

"(3) A requirement that a contractor electing rights file patent applications within reasonable times and that the Federal Government may receive title to any subject inventions in the United States or other

extent permitted by law or Government regulations available to the public on reasonable terms.

"(g) The term 'made' when used in relation to any invention means the conception or first actual reduction to practice of such invention.

"(h) The term 'small business firm' means a small business concern as defined at section 2 of Public Law 85–536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration.

"(i) The term 'nonprofit organization' means universities and other institutions of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)).

"§ 202. Disposition of rights

"(a) Each nonprofit organization or small business firm may, within a reasonable time after disclosure as required by paragraph (c)(1) of this section, elect to retain title to any subject invention: *Provided, however,* That a funding agreement may provide otherwise (i) when the subject invention is made under a contract for the operation of a Government-owned research or production facility, or (ii) in exceptional

"208. Domestic and foreign protection of federally owned inventions.
"209. Regulations governing Federal licensing.
"210. Restrictions on licensing of federally owned inventions.
"211. Precedence of chapter.
"212. Relationship to antitrust laws.

"§ 200. Policy and objective

"It is the policy and objective of the Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development; to encourage maximum participation of small business firms in federally supported research and development efforts; to promote collaboration between commercial concerns and nonprofit organizations, including universities; to ensure that inventions made by nonprofit organizations and small business firms are used in a manner to promote free competition and enterprise; to promote the commercialization and public availability of inventions made in the United States by United States industry and labor; to ensure that the Government obtains sufficient rights in federally supported inventions to meet the needs of the Government and protect the public against nonuse or unreasonable use of inventions; and to minimize the costs of administering policies in this area.

"§ 201. Definitions

"As used in this chapter—

"(a) The term 'Federal agency' means any executive agency as defined in section 105 of title 5, United States Code, and the military departments as defined by section 102 of title 5, United States Code.

cerns and to take such action as may be necessary to change or eliminate such discriminatory procedures.

DEFINITIONS

SEC. 104. For purposes of this title—

(1) the term "Federal agency" means an executive agency as defined in section 105 of title 5, United States Code, or a military department as defined in section 102 of such title;

(2) the term "contract" means any contract, grant, or cooperative agreement entered into between any Federal agency and any organization or person for the performance of experiments, developmental or research work and includes the assignment of any such contract, the substitution of parties to any such contract, and the letting of any subcontract to any such contract;

(3) the term "small business concern" has the same meaning as in section 3 of the Small Business Act;

(4) the term "small business innovation research program" or "SBIR" means a program under which a portion of a Federal agency's research or research and development effort is reserved for award to small business concerns through a simplified, standardized acquisition process having a phase for determining, insofar

(2) prohibit each Federal agency and each office or component thereof from excluding any small business concern from competition for any research and development contract on the same terms and conditions as any other business concern;

(3) require each Federal agency to consider unsolicited research and development proposals from small business concerns and to promptly and fairly review such proposals based upon their merits;

(4) require each Federal agency to consider small business concerns on an equal basis with any other business concern in the award of sole source research and development contracts;

(5) require that, for purposes of determining expenses of a research and development contract, the independent research and development costs and the bid and proposal costs incurred by small business concerns shall be attributable to expenses of the contract in the fiscal year in which such expenses are incurred;

(6) require each Federal agency to evaluate the feasibility of dividing all proposed large scale research and development contracts into smaller segments in order to facilitate the participation of small business concerns in such contracts;

of that research to technological innovation in the private sector or for technological innovation in products intended for Government use; and

"(3) the terms 'research' and 'research and development' have the meanings given to such terms by the Cost Accounting Standards Board.".

REGULATIONS FOR THE SBIR PROGRAM

SEC. 102. (a) The Administrator for Federal Procurement Policy, in conjunction with the Small Business Administration and the National Science Foundation, is authorized and directed to promulgate and issue appropriate regulations, in accordance with the provisions of this Act and within one hundred and twenty days of its enactment, for conduct by Federal agencies of small business innovation research programs established pursuant to section 9A of the Small Business Act. Such regulations shall—

(1) provide for simplified standardized and timely SBIR solicitations, proposals, and evaluation processes;

(2) require Federal agencies to coordinate SBIR solicitation release schedules with the Small Business Administration; and

(3) include uniform requirements for patent rights and rights in data that are commensurate with the intent of this Act.

SBIR program shall not be counted as meeting any portion of the percentage requirements of this section.

"(d) Each Federal agency required by subsection (c) to establish an SBIR program shall, in accordance with this Act and regulations issued under this Act—

"(1) determine categories of projects to be in its SBIR program;

"(2) issue SBIR solicitations in accordance with a schedule determined cooperatively with the Administration;

"(3) receive and evaluate proposals resulting from SBIR proposals;

"(4) select awardees for its SBIR contracts;

"(5) administer its own SBIR contracts (or delegate such administration to another agency);

"(6) make payments to SBIR contractors on the basis of progress toward or completion of the contract requirements; and

"(7) make quarterly reports on the SBIR program to the Administration.

"(e) Each Federal agency subject to the requirements of subsection (b) or (c) of this section shall report quarterly to the Administration the number of research and development contract awards to small business concerns under this section (for contracts over $10,000 in amount) and the dollar value

ested small business concern the opportunity to participate in Federal agency small business innovation research (SBIR) programs;

"(3) coordinate the development of a schedule for release of SBIR solicitations with participating agencies, and prepare a master release schedule to preclude several Federal agencies from releasing such solicitations at one time and thereby limiting the opportunities of small business concerns to respond to some solicitations;

"(4) independently survey and monitor the operation of SBIR programs within participating Federal agencies; and

"(5) report annually to the Select Committee on Small Business of the Senate and the Committee on Small Business of the House of Representatives on the activities of Federal agencies in meeting the small business research and development set-asides required under subsection (b), the SBIR programs of the Federal agencies, and the information and monitoring efforts of the Administration related to the SBIR programs.

"(b) For fiscal year 1980, each Federal agency shall set-aside for award to small business concerns a percentage of the total dollar amount of its budget for prime research and

STATEMENT OF FINDINGS

SEC. 2. The Congress finds and declares that—

(1) technological innovation creates jobs, increases productivity, competition, and economic growth, and is a valuable counterforce to inflation and to the United States balance-of-payments deficit;

(2) small business is a principal source of the Nation's major innovations;

(3) small businesses receive less than 4 per centum of Federal funds for research and development;

(4) private technology expenditures in the United States are highly concentrated in certain fields and industries, as only six industries account for over 85 per centum of all industrial research and development spending and only thirty-one companies, many of them multinational companies, account for 60 per centum of total United States research and development;

(5) the tax structure of the Internal Revenue Code of 1954 provides insufficient support for the formation, growth, and long-term independent operation of small businesses; and

(6) it is in the national interest—

(A) to strengthen the ability of small businesses to be innovative;

Senator STEWART. I appreciate your comments, because that is the concern I was addressing.

To give you some examples of what I mean by research and development, we have had some hearings on saving the small farmer in the Agriculture Committee. It is a very important and vital issue in this country.

During the entire time we had those hearings, we did not hear once about agricultural innovation.

Many of the people who came and testified were connected in one way or another with large-sized concerns. They did not talk about the technology that is available, such as the new kinds of tillage equipment and other things available. All of this type of information came from small companies. Some of those smaller firms obtained their first research money from the Government. They had begun to develop some innovative kinds of things, but if they had had what you are talking about—my ear and the ear of Government policymakers—imagine what could have been done.

Solar technologies is another example. Nobody said a word about the development of small-scale systems. But yet smaller companies are marketing energy-efficient products.

That tells the tale to me of what research and development money can do for those smaller companies and the country. I think you have something here that you probably should share with the Senators concerned with energy legislation.

Mr. GREEN. Senator, I know others would be interested, too. We are doing a demonstration in Utah and New Mexico on growing plants that grow oil, and this indeed is crude oil that comes from the milkweed species in Utah, and we are monitoring how many barrels per acre per year we can grow.

It is not really a new area, in fact this has been talked up around the world, and we are actually doing it.

Here is a tube of crude oil, the first we extracted from milkweed in Utah, and our goal is to monitor how many barrels.

Senator STEWART. I deeply appreciate your coming hear today. I want to say to you all that this is a beginning of a series of hearing, and hopefully, the development of a consensus in the Senate and in the House. You all have a lot of answers to a lot of the problems of this country of ours.

Somebody told me the other day that not since Harry Truman, have we had folks in Washington that have been concerned with small business people and the small business community. I would disagree with that.

There are a lot of people I serve with in the Senate that are very much concerned about the small business sector. A lot of us are new to this business, but we plan to stay with the program and the issue until we get some meaningful results.

Before closing, I want to mention that we will include in the hearing record a copy of the iunovation report prepared by the Chief Counsel for Advocacy, Milton Stewart. Excerpts from various subcommittee reports prepared for the Advisory Committee on Industrial Innovation, which was established as part of the President's Domestic Policy Review, will be included as well.

Thanks to all of you.

We stand adjourned.

[Whereupon, the committee was adjourned at 12 noon.]

I used to always criticize our Government people for coming out with a 17-man preaward team to a company like ours which had 4 people to talk to. It is kind of difficult to talk about the bid requirement if we do not have experience in that particular field, we might never convince them. There are many Government checkpoints, there is the preliminary award, postaward, and with everything else being monitored, contractors having problems should be recognized. I think the mechanisms are there, and unfortunately you have an instance where the surveillance system did not work.

Senator SCHMITT. There was one more mechanism, it was a common decision that awards go to small business. I had no problem with it at the time, but there were concerns.

Senator STEWART. I think you can point out many events in large sized projects that turned out to be just as much a problem.

Senator SCHMITT. I agree. I think I will leave it at this point, but if you have any further thoughts on this problem, of deciding on this 10 percent. It is a problem, but it is one that can get you or the Government in trouble.

Mr. DANIELS. As I indicated, some 3 percent goes to small business. We really have two recommendations, one that this 3.4 percent begin to grow at 1 percent a year in the R. & D. area.

We have a second recommendation, where we have an agency that has $100 million in R. & D. budget, that they be tabbed to put 1 percent of this into small business.

The procedure for small business set-aside would permit a small business set-aside to proceed with at least two qualified sources if found available.

Somewhere in NASA you may interject that you had two qualified sources, and you were wrong, but you are going to be wrong sometimes, and if you are going to go down this route, obviously you will have situations where you will be sorry you made the small business set-aside.

Senator SCHMITT. But you think on balance that is still a good type of procedure?

Mr. DANIELS. The reason I feel that way, because of the subject you really have to talk about mainly competition, and I think one of the reasons why the Government——

Senator STEWART. I was trying to talk about that a minute ago. I think there is some competition from public policy.

I think research money sets that policy, and you gentlemen are not getting enough of the research money to provide competition in some areas.

It is my understanding all business and industrial firms receive some 46 percent of the basic and applied research moneys expended by the Government.

Is that a correct figure?

Dr. SPRINGBORN. I believe I gave you basic research.

Mr. DANIELS. But if you take that and go to the whole field, it quickly drops back into 3½ percent.

Senator STEWART. That would sound about right.

I also wanted to ask you about procurement. How much of the procurement dollars are involved?

Mr. DANIELS. Roughly 20 percent of the procurement dollars.

Senator STEWART. Goes to small business?

Mr. DANIELS. Yes.

could be implemented, it was the right philosophy. I am very, very excited to hear you are making some progress in the industry.

Mr. GULLER. This is the industry, not the Bureau of Mines.

Senator SCHMITT. I understand.

Senator STEWART. It took you 1 year to solve that one problem?

Senator SCHMITT. It is one of the reasons why we have to do what these gentlemen are requesting us to do. Innovation is in a crisis, and for small business, it is innovation that says the independent exploring companies and producers are to discover energy supplies.

You all have the same kind of mentality about risk taking, the need to turn over capital so it further stimulates innovation. I think that we have to do something, and I do not think we are nearly doing enough. It is my hope that this committee will become the champion on the good news side. The 95th Congress did take some steps as you described in tax policy and there is an effort under way now with S. 1597 which provides R. & D. incentives, depreciation incentives, and also savings, investor savings incentives.

We would also call your attention to the progress that the chairman has already mentioned is being made, in trying to get legislative control over the major rulemaking activity of the Federal Government. The suggestion now is to decide how do we pull these things together, so this list of recommendations that has been made can be implemented. If we do not do it these opportunities may pass.

All you have to do is look at the record of small business formation versus small business formations of years ago, and obviously there are a lot of things wrong because things are not happening as they should.

Mr. ABRAHAMSON. May I sort of summarize this by explaining that whereas none of our recommendations requires increase in any Federal appropriations—not a nickel—one of them would require some adjustment in the portion of R. & D. funds going to small businesses. At present only 3 percent of the R. & D. funding is going to small business.

What we are calling for is that each Federal agency receiving R. & D. funds be required to direct some percentage of those funds, let us say 1 percent for the first year, and increasing by 1 percent increments annually, so that at the end of 10 years, 10 percent of that agency's R. & D. funding goes to small business.

I do not think there is an agency in town that could make a credible argument that that is impossible.

I do not think 1 percent per year over a 10-year period is going to be a hardship on any agency receiving R. & D. moneys, so I would urge you to consider very seriously that recommendation.

I think it is extremely well founded; it has been carefully researched and discussed widely.

Thank you.

Senator HUDDLESTON. I want to express my personal appreciation to all of you for appearing before us today. Senator Nelson hoped to be able to get here, but unfortunately was unable to do so. I know he is very interested in this subject and the whole range of recommendations you have made. He will give his energy and considerable talent to this cause.

You are making a very good record. I appreciate the frankness with which you are presenting your views. Thank you.

Similarly there is a concentration of U.S. industrial R. & D., into a few industries and into a few companies.

According to the numbers in a Government publication, in 1976, six industries account for 85 percent of total U.S. industrial R. & D.

Ten companies do 36 percent and 31 do over 60 percent.

Greater than 80 percent administrative R. & D. is carried out by only 200 firms.

Senator SCHMITT. Is that large size firms or small size firms?

Mr. CRONIN. Those are large. McDonnell Douglas——

Senator SCHMITT. Do you see the benefit of subcontracts, are they generally exchanged?

Mr. CRONIN. No; I see no benefit.

Dr. GOODHEART. The majority of that does go to large firms. We are not in the aerospace business, so I am not aware of that from a personal standpoint; however, we used to be eligible for contracts through the NCI. Technically, I suppose we still are; however, the NCI has recently changed policy, so that it specifically does not award as many contracts anymore. They have shifted to a grant mechanism; the great majority of the work for basic research through the National Cancer Institute is to be awarded by grant rather than contract.

The implication is that companies such as ours are not eligible to work in the cancer program because we are not eligible to receive grants, so that cuts out work that we have been doing over the last 8 or 9 years. No longer is it fundable by the contract mechanism.

We dropped more than 50 percent in size when that happened. We had 26 employees before the termination of the contract, and we now have 10 people.

Dr. SPRINGBORN. The Federal basic research funds, by performance, the latest data I have, and this goes to 1960 to 1977, the source is National Patterns of R. & D. Resources, National Science Foundation, I can leave a copy of this if you would like. In 1977, $3.5 billion was spent, the Federal Government laboratories received $750 million, or 21 percent, industry received $175 million or 5 percent, and the large universities and colleges received 55 percent. The associated Government laboratories received 10 percent, and nonprofits 8, and some of the industry, that includes large industry, only 5 percent, and some small innovative businesses received a small percentage of 5 percent, that may be a little more precise answer to your question.

This is from the National Science Foundation. That is basic research. I also have the data for applied research, but these data are all available.

Senator HUDDLESTON. In regard to development of your fresh air mechanism, how extensive is that in use now?

Mr. GULLER. Senator, it is being used in Gary, W. Va., quite extensively in several of the mines that are run by United States Steel.

It has been in use now for a couple of years, sir.

Senator HUDDLESTON. Did your company develop this?

Mr. GULLER. Yes, sir.

Senator HUDDLESTON. Were you under contract?

Mr. GULLER. No. We took it—the development costs—out of our earnings.

State, all very fine people and working very hard, but they are all competition.

Dr. SPRINGBORN. I do think the innovative approach should be on the broad front also, I am sure it has been expressed to you by others, the thought that relates to the regulatory process. I believe our great country was founded on the principle of innocent until proven guilty, but in the regulatory field we are guilty until proven innocent. There can be a tremendous financial and negative manpower impact to the small business just trying to defend ourselves against the regulatory processes.

I know George Lockwood deals with 42 agencies, and any one of them could destroy his business, and he is guilty until proven innocent, and I wish we could get back to the fundamental concept of innocent until proven guilty, and the burden of proof should be on the Government, not the burden of proof on us, so either that or provide a tax credit for all costs incurred in defending ourselves against the regulators.

Senator HUDDLESTON. I will not disagree with that. There are some efforts being made to require congressional review of some agency regulations. There is another measure pending that would reimburse a litigant for his legal fees if he prevails when challenging regulations.

Senator STEWART. That has just been passed.

Senator SCHMITT. It has passed the Senate.

Senator HUDDLESTON. I think passage of that measure indicates there is more interest now in equalizing the situation and not putting all of the burden on the business person.

Many times we forget that regulation is sometimes more difficult to deal with than law.

I would much rather go to court on a matter of law than have to confront a regulatory problem.

I think your chances of prevailing are better and it is usually less expensive.

Senator STEWART. I want to interject one comment. Since I have been here 7 or 8 months, I have had a number of visits from some large-sized concerns in the country. They are not urging deregulation. Instead they are talking about regulating certain aspects of a given industry. I am not trying to point the blame, certainly not at this group, because you are talking about a very real problem, but it might be that the patent laws, procurement policies or other policies are done the way they are, because of business. They have been established by business. Milton talks about the large-sized institutions. I think we have to recognize that as a practical matter business sometimes is as much to blame as the Government for regulation. You people are going to have to help us in dealing with that problem.

I understand that small business concerns are independent; that is the reason they are small businesses; that is the reason they are innovators. But I find sometimes when I sit down with a group of them and talk to them about getting their act together and helping to establish a broad consensus of opinion that legislators can deal with, that this intangible problem exists. I think we need to talk about it, to address it because it is a reality, and it is a problem.

I have seen lobbyists for large-sized concerns, probably one or two a day, and they are certainly not talking to me about lessening Government regulations. They do not seem to want to be regulated

Today Mr. Norris is still concerned about unemployment, but additionally about the declining productivity in our country, which runs right to the heart of our inflation situation. We know that there is technology being developed today, we know it can be improved and we know it can be stimulated. But we also know that it is not moving from the Government laboratories, from the universities, into the business community at the proper rate, and that technology unused is social waste.

We cannot afford the social waste, so we have to improve the climate to foster its use. You have heard a number of specific recommendations here, and the Norris work group made 12 recommendations, many of which deal with changes in the tax laws and in Federal policies. I should like to emphasize the point that none of those recommendations require an increase in Federal appropriations.

We endorse what Mr. Springborn just said. In many areas we need less Government; not more. Therefore, gentlemen, we commend your interest in this issue, and we are pleased to be here. Now, in representing the Norris work group, I am reay to answer any questions you may have.

Senator HUDDLESTON. Thank you very much.

I wish to thank all of you gentlemen for a very excellent presentation that rounds out the material we have in the prepared report. Your comments will be very helpful to us in gaining a better perspective.

I can certainly understand the concerns and some frustrations that have been expressed, particularly by Mr. Springborn, because this area has been examined before. The problems have been apparent, but you have not seen much activity to correct them.

As a matter of fact, this committee held a joint hearing with the House 1 year ago this August on the subject of innovation. One of my former fellow Kentuckians, Congressman Breckinridge of Kentucky, expressed his frustration in that we develop facts about the importance of small businesses, the contribution they make to employment, development, and innovation—they are responsible for half of American innovation—but small businesses do not receive one-half of the Federal Government's research and development funds.

It is the hope of this committee that we will be able to move more aggressively now. I believe that there is a better sentiment in the Congress for addressing such problems as capital formation, taxation, and certainly regulation.

These are issues still on the front burner and I hope we can keep the interest and the pressure there through this kind of hearing to implement some corrections that need to be made either through the regulatory process or legislative process.

You mentioned tax laws Mr. Cronin. That was very interesting information you gave us about capital formation which came about as a result of the capital gains reduction enacted last year.

It was my judgment at the time that there would be great benefit from such a reduction, but I have not seen any specific figures yet indicating how rapidly investors have responded to the legislation. You indicate a very impressive record whereby much more capital has been made available.

Before we get into specific questions dealing with your proposed innovation legislation, I wanted to ask whether we should try to accomplish virtually everything in one bill?

Mr. CRONIN. We will now hear from Bob Springborn, president of Springborn Labs.

STATEMENT OF DR. ROBERT SPRINGBORN, PRESIDENT, SPRINGBORN LABS, INC., ENFIELD, CONN.

Dr. SPRINGBORN. Thank you very much.

To try to save time, I would like to briefly present our credentials as requested by the chairman.

I have had 15 years experience in directing large corporation R. & D. and new venture companies, 5 years in venture capital activities, and I have been involved in helping develop 22 companies including start-ups, either as chief executive officer or as an active director.

For the past 6 years I have been developing a company called Springborn Laboratories, Inc., an international R. & D. testing and consulting company which employs about 150 people.

We have special expertise in safety, health, and in environmental issues as well as materials science and technology, testing and marketing.

We do very little Government work, less than 15 percent.

We do almost 20 percent of our work with overseas corporations.

I have been very interested in the innovation process in the United States for a number of years, and my primary reason for being involved in this national assessment of innovation is I think at this moment, we have a window which is going to last maybe a year at the most to help the small innovative business.

For many of you that have been involved with these issues for many years, you may recall that in 1967, Bob Sharpy—president of Cabot Corp.—put together an excellent report on innovation in the United States and what should be done to encourage innovation. His report states many of the same problems our ad hoc SBA committee report states. Also, Prof. Richard Morrison published a report on innovation about 10 years ago and recently reported to Congress on what had been done to date on the recommendations his committee made, his answer was "nothing!"

When reviewing the recommendations of our ad hoc SBA committee, one finds our recommendations are not much different from those of the reports and recommendations of a decade ago. We simply cannot allow another decade to elapse with no activity because the small innovative company may not survive that long.

My own concern about the lack of Government concern about the small innovative company developed during the Department of Commerce Industrial Innovation Advisory Committee hearings. As one of the six small innovative company representatives on the committee, I became very concerned about the lack of understanding of the needs of the small innovative company. Frankly, I think that small business was treated with benign neglect.

I wrote to President Carter's staff, Mr. Eisenstatt, and he did not even have the courtesy of answering the letter.

I then asked Members of the Senate to be involved in helping small business including Senator Weicker from my home State of Connecticut with no enthusiasm. The only person that responded was Milt Stewart. As a result of Mr. Stewart's efforts we got together our own ad hoc group to make recommendations to the legislative branches of Government regarding what is needed to rekindle the spirit of tbe

One of the sayings I often use, I say you do not have a company without sales, and, second, I say go get a Government contract in the related area for activities that are in the very early stage, where we have not even found a product yet, that are really high risk areas, and it is because of this ability to support the right cohesion, that I think Government spending, it really plays a significant role in small business development, in the innovative process.

I do think when this happens, that we accomplish two things, we accomplish performing the research and advancement of the state-of-the-art, which is usually the main product of the Government contract, we also end up in many cases in developing, in nurturing small business endeavor.

The role of Government R. & D. spending has come up over and over again in our task force deliberations, it is in this report, it is one of the recommendations that the Government takes certain action regarding spending R. & D. funds, and it came up in another report as I mentioned.

I personally believe this is a very high priority item. If I could leave one message at this hearing, it would be that I think in the early stages of innovation, the really early stages in forming the company, the scientists and the engineers have not even yet defined their product very clearly, that people are struggling awfully hard to get these basic resources, and the best talent, you are tying up the brightest engineers, scientists, the best managers, to try to get their early resources to keep your venture going.

That talent can show you a lot more toward innovating, if they could spend a little less time in seeking out these baxic resources.

I think this business is in a stage where a little bit of Government action would have a very big impact 10 to 15 years from now, that may not be the case though.

It may be that a lot of Government action has little impact, but I believe a small Government action can have a very large impact.

Thank you.

Mr. CRONIN. We will now hear from Mr. Alfred Daniels.

STATEMENT OF ALFRED C. W. DANIELS, H. H. AEROSPACE DESIGN CO., CIVIL AIR TERMINAL, BEDFORD, MASS.

Mr. DANIELS. Thank you.

The company I come from is a technology intense company, we like to think we are an aerospace company, but we found that in the transportation field there is lots more money in railroads and in surface transportation and in automobiles, so we spend a good bit of our time in applying the aerospace knowledge to new uses.

I think I would like to comment for the record that I also am president of other companies, and that I have a board position with the National Association of Black Manufacturers, I likewise am a member of the Procurement Task Force for the Small Business White House Conference.

Dan would frequently tell you I like to think of myself as better versed in procurement than in almost all of the other subjects you have talked about.

I have tried to figure out how to synopsize some thoughts for you.

air by controlling emissions. When the administration sought to find other ways to take care of some of the budget funds, the efforts to clean up the air seems to have taken a back seat, yet in many utilities around the country, where liquid natural gas is used, for storage of liquid form of energy, the some 200 utilities who store liquid natural gas can use that fuel in their fleet of cars, trucks, meter vans, and so forth.

In the liquefaction of natural gas, a byproduct is propane, and now with the gasoline shortage, propane and its conversion systems, is being used as a fuel, as a dual fuel. You can drive your car with gasoline and when that supply runs low, or the red flags go up at the gas pumps, if you had propane or liquid natural gas, all you would need do is turn off the gasoline supply and ride on either propane or natural gas.

The economy of that type of move is well known. I think propane runs approximately 27–40 cents a gallon.

Liquefaction of liquid natural gas would cost something less than 20 cents a gallon, and each gallon of this fuel is comparable in its efficiency, and in its energy to about 95 percent of gasoline. There are some examples of innovative ideas that can be developed from existing technology.

In the past month our small company has been besieged by a number of requests for the propane and natural gas conversion systems. There is a growing industry in alternate fuels for vehicles which would take more funding, and more financing than our earnings can justify. The recommendations of the small business innovative task force would go well to help in these respective areas.

I would just like to add one thing more about the possibility that small business would have with regard to exports. There are a number of countries today supplying oil to the United States and these countries are burning off the natural gas which may be a byproduct of their oil exploration, to the extent that their skies look like the aurora-borealis. It seems some of these countries that may have asked for some assistance from the United States to find a market for the natural gas, and/or the propane, have not yet met with favorable response, and it may be that perhaps the action of one such country to reduce its support of oil may be a ploy on their part to get attention to the fact that they have all of this energy that is being burned. Our efforts now with regards to the propoane, and the liquid natural gas systems have caught the attention of people in that area, and perhaps we as small business will have an opportunity to find an export market in that field.

I would like to just close with the comment that in our applied research, we have been able to accomplish a great deal with our earnings, but I wish that other organizations such as ours would have or could have the opportunities that may be possible if the recommendation in this task force study are accepted.

I think the innovation process which our administration has noted as declining at this time as opposed to that in the fifties and the sixties, may be accelerated by the administration similar to the goal set by President Kennedy when he said we will put a man on the Moon. Now that President Carter has said that we will develop synthetic fuels, and work on the energy program, perhaps we have here again an area whereby our country's industrial efforts can be galvanized, and all of the companies, small and large, can enter into that developed field with regard to research.

STATEMENT OF HAROLD GULLER, ESSEX CRYOGENICS INDUSTRIES, ST. LOUIS, MO.

Mr. GULLER. Thank you.

I guess our first opportunity to be innovative was to begin in a defunct funeral parlor, where to progress, did not take much, everything had to look up from that point on.

Senator SCHMITT. You started out with a few skeletons.

Mr. GULLER. I had not thought about that, but that is absolutely true.

Part of my task in payment of rent was to assist the other organization in moving some of the caskets around, some of which did rattle.

Our office was parlor A, our engineering department was in parlor B, and we kept our spare parts in a little room in back of the chapel.

Senator SCHMITT. Spare parts room?

Mr. GULLER. Right.

It has been a little while since then, and we are now a small family of companies; 5 small companies together, which employ about 300 people.

It was 30 years ago we started in the defunct funeral parlor, and in between we were blessed to find as we expanded a defunct bank in which to grow. Our machine shop had the only marble floor and marble columns in that particular area of town, and we were able to use the vault for our spare parts.

Our efforts are primarily in the field of aerospace products, and each of our companies has a definite direction or discipline.

For example: Our cryogenics company deals with many components in the low temperature liquid gas field. Our subsidiary Propellex produces products in the pyrotechnic field, items that function in the ejection systems of aircraft, that permit a pilot and his crew to be ejected from the aircraft in a time-delayed sequence to avoid the rocket blast from the forward seat.

We also have the capability and have demonstrated the possibilities of delivering ordnance from aircraft today. Many of our existing military aircraft carrying ordnance are not like the ones in the World War II movies, where the bomb bay doors open and the 500-pound bombs drop out. Some of these aircraft fly so fast that they have to gently kick the ordnance away from the aircraft airstream. Propeller engineered products assist in that area.

We have a screw machine subsidiary that fabricates a lot of the detailed machined work. We recently acquired an organization that manufactured and designed special valves and controls that are used in general aviation industry, business industry as well, and our parent company handles most of the designs in other fields, such as electromechanical items, hydraulic, jet fuel, pneumatic, and so forth.

An example of our products is the pilot's grip assembly—the grip stick with which the pilot flies his aircraft. Our design is being used on McDonnell's F-4, and the McDonnell's F-15, on the Rockwell B-1, and on the F-18 aircraft.

INNOVATION THROUGH APPLIED RESEARCH

There are engineers in our small company who are capable of good ideas, just as well as good engineers from many large organizations. With borrowed funds, and the earnings of our companies, we are able

4. The last item I would like to mention is a new idea we have for growing cells in culture. In this new method, we would grow the cells in a flowing stream of nutrients, rather than using individual test tubes, bottles, or flasks. The output of cells, and cell products, would be greatly increased, and the cost would be much lower than with the present methods. Machines using this new concept could readily be controlled with small computers. The low cost production of large quantities of cells would make the innovations described in preceding paragraphs much more feasible. It would also permit the development of new products that now would get only a brief consideration because of untenably high costs.

The above examples have been chosen to illustrate some of the innovative concepts that could be worked on by a small company. It should be clear that not all of them originated at BioLabs; the concept of a new method of cell growth, however, did originate with BioLabs, and that idea, if it can be brought to commercial realization—thus qualifying it to be called an innovation—will permit the others to be undertaken at much higher probability of success and at much lower cost.

OBSTACLES TO INNOVATION

Many problems stand in BioLabs' way in bringing these, and other, products to the benefit of the people. During the ten years of BioLabs' existence, I have frequently had to cope with these problems. I would like now to discuss some of them, including those we have encountered while attempting to work on other potential innovative concepts we have had, but which we have been forced to abandon.

The biggest problem of a company such as ours is obtaining capital with which to work. The last ten years have been particularly lean in this respect, largely due to the removal of the favorable tax treatment of long-term capital gains that occurred in the late 1960's. The tax change that eased that burden has had some effect in again making capital available. The report of the Small Business Administration Office of Advocacy Task Force on Innovation has many recommendations for creating a more favorable environment for small companies to obtain capital, and I will not go into more detail here. Suffice it to say that adequate capital markets are essential to a healthy climate for business in general, and for small business in particular. The capital needs of small businesses, especially small, innovative, high-technology businesses such as BioLabs, are very different from the needs of giant corporations. This fact needs to be understood and faced in any legislative proceedings. We hope our report makes this clear.

BioLabs has submitted a proposal for a Phase I grant for funds under the Small Business Innovation Research solicitation of the National Science Foundation. This would be a study of the feasibility of growing cells, as described in a preceding paragraph. If the grant is awarded, the value of that program of the NSF will be illustrated graphically. The merits of the program are so great that our task force felt it should be extended to other agencies of government, as indicated in our report.

Another problem area concerns patents. Of the examples of potentially innovative products BioLabs could develop, as discussed above, the only one that I believe to be patentable is the new way of growing cells, and apparatus we would design based on that concept. We have made disclosure of the concept, thus establishing a date and priority. Because of probable nonpatentability of the other items, we may have to drop further development. Acquisition of capital is difficult even under the best of conditions; if a new product is not subject to patent protection, the risks become impossibly large for investors who might otherwise provide capital. A large company with impressive marketing strength does not face this problem. If BioLabs were to develop a new product on which there was not any patent protection, that is successful enough to appeal to a large company, that company could very quickly take the market away from us. Thus, there would be more concentration of power in the large company and less competition. Contrary to some popular belief, strong patent laws help create a healthy innovative climate and increase competition, as was foreseen by the writers of the Constitution.

You may be interested in an incident that occurred a few years ago concerning patents. I was discussing a proposed project with a National Science Foundation official. BioLabs proposed to work with Armour Pharmaceutical Company to develop a way to utilize waste blood from packing houses as a new protein source. We were told that Armour had so many patents in this area that the government would not be able to obtain a controlling patent, and therefore the NSF was not interested in the project. Yet only a few of the government-controlled patents ever get used for the good of the people.

could, but I know somebody who can do it a lot cheaper. We cannot compete on price, and in good consciousness, I must tell you about it." Then I give them the name of the University. Naturally, they have not had us do their testing.

This is one area of competition that is unfair: Universities are tax exempt, and that seems to me an abuse of the tax-exempt status.

We also have had problems with patent protection—I am sure others here this morning will speak about this also.

We found that if we come up with an idea for a new product or a process that is not patentable, it is virtually impossible to get it funded. The capital risk involved is too large, and that virtually kills it. We do need stronger patent protection.

A few years ago, I was talking to officials at the National Science Foundation about a project.

We proposed to go in with a large pharmaceutical company to develop some better uses of certain blood products.

The National Science Foundation officials pointed out that the other company had many patents in this area, and therefore, it would be impossible for the Government to get a controlling patent. They said that if the Government cannot get a controlling patent, they would not he interested, so that idea was dropped.

What I am trying to stress is that ideas for new products often get killed in the idea stage before anything else is pursued on them, and there is an unknown and immeasurable loss. Sure, a few ideas get through, and we hear of examples. But how much more could be done, that is the important thing, really so much more could be done is the climate were better, so that the ideas would not have to get killed.

I have a prepared statement covering the above remarks in more detail which I would like to ask be made a part of the record.

Senator HUDDLESTON. Without objection, so ordered. Thank you very much.

[The prepared statement of Dr. Goodheart follows:]

STATEMENT OF CLYDE R. GOODHEART, M.D., PRESIDENT, BIO LABS, INC., NORTHBROOK, ILL.

INTRODUCTION

Mr. Chairman and Members of the Committee, my name is Dr. Clyde R. Goodheart. I am founder and President of BioLabs, Inc., located in Northbrook, Illinois, one of the northern suburbs of Chicago.

Briefly, my background is as follows. After finishing medical school and my internship, I took a three-year fellowship at the California Institute of Technology in cancer virology and tissue culture. My director was Dr. Renato Dulbecco, recently a Nobel Laureate. Then I did basic research in virology at Childrens Hospital of Los Angeles for four years. When the American Medical Association-Education and Research Foundation opened its Institute for Biomedical Research at its Chicago headquarters, I started and directed the laboratory for cancer virology. Our work was devoted to basic research in understanding the cancerization process. Five years later, in 1970, the AMA discontinued the Institute, and I founded BioLabs. Now, in addition to being President of BioLabs, I hold the rank of Professor, Department of Microbiology, Rush Medical College. Recently, it has been a great pleasure for me to work with Mr. Milton Stewart, Chief Counsel for Advocacy, Small Business Administration, on the Task Force for Innovation by Small Business.

BioLabs is a small, independent laboratory providing services in research. product development, quality control and sterility testing, and sterile bottling, We also make and distribute products for laboratories doing tissue culture. Our work is therefore primarily in microbiology and tissue culture. This is the first

of the year, $50 million is pension fund money has been invested in venture funds, so I think the Congress ought to be commended for the positive steps it took in producing positive results by reducing the capital gains tax.

In our review, three of the recommendations applied to encouraging capital formation, one of those is to defer the tax so that the capital is reinvested in other qualified small companies during a certain period of time.

Second: Another important recommendation is the restoration of qualified stock option, this is particularly important I would say for innovative companies, because they are a long time in becoming successful.

Enhancement of subchapter S provisions permitting up to 100 investors, including corporations to be stockholders in subchapter S corporations is important.

Other recommendations are targeted more specifically at special kinds of small companies. The young innovative companies on the threshold of new technology, these are the very high risk stocks, they are not ready yet for investment by venture funds under the current rules of the game.

They can be capitalized by leaning on management capacity, they are the ultimate ventures. These are the kinds of companies that usually absorb far more funds for their venture products.

Venture capitalists are risk takers, and their careers can be short-lived.

It follows that in the companies for which the task force is concerned are classified as long shots, and the odds for venture capitalists have frequently invested in the unknown.

The recommendation is to tax capital gains from investment in firms held for a minimum of 5 years, and one-half the regular rates, 14 percent maximum.

What we are trying to do is improve the odds on long shots.

Second: Allowing losses of such companies to flow through to individual investments. This would lighten the loss on the losers, and then finally extend the period of exercising stock options, for a maximum of 10 years, and this is to encourage the employees to stay with the company.

I think this is a critical thing. We are getting a better deal in business, but still the raising of capital is phase 1, and then you have to make the investments and the trick is to have people take the risk.

I think the point is to encourage people to quit the good job with the nice pension, and all of the benefits, to take the risk in forming a new company, and to help the company itself preserve cash, we made these recommendations, to extend the period for loss carryover from 5 to 10 years, second, allow the company to write off specialized equipment, instrumentation, for developing testing, over the period of 5 years; and third, allow the company to set up a research and development program for use in periods of distress.

I think these are critical and important recommendations for these unique companies, companies that frankly are not being supported vigorously by the venture capital community.

We have a fiduciary responsibility for our investors, and you will find if you look at the average venture capital portfolio, about 1 out of every 10 is what you would call a long shot.

innovation in America had declined during the past decade and ordered the Secretary of Commerce conduct a review of matters affecting innovation.

The Secretary of Commerce put together an Advisory Committee of some 150 executives of a broad range of American enterprise, some 6 or 7 of us where from small businesses interested in innovation.

There were seven subcommittees that we were assigned to, having to do with economic policy, regulatory policies, Federal procurement, Federal R. & D., patents, concentration, industrial concentration, and an information exchange.

After the completion of the reports of these task forces, it was decided by those of us from the small business community that we might possibly wish to prepare our own report, having learned from their larger experience, but directing it more toward the peculiarities of small businesses in the innovative process, so that is why this report was prepared for the Secretary of Commerce, Mr. Stewart has included it in his particular document, and it is interesting that many of the conclusions we have reached, and many of the recommendations we have made are the same that keep emerging from other studies, even though the genesis of our work was in the domestic policy review.

We make recommendations in basically five areas. We have concluded that a major impact is being made on innovation by small independent firms because of the tax policies of our country.

Also the policies that have to do with flow of retirement savings, and the policies of the Securities and Exchange Commission.

These are having a major impact on the flow of capital which is an essential tool for small business innovation.

Second: In the area of innovation, it is quite clear to us that regulations that are intended to affect all other areas of business and to apply equally to all areas of business, when they apply to small business are disproportionately discriminatory, that small innovative businesses are having a very difficult time complying with and meeting the regulatory standards that are coming out from the Congress, and from our regulatory agencies.

In the area of Federal procurement, the small innovative firm basically has been excluded from this area of this huge and important market.

In the area of Federal R. & D., there has been a very disastrous trend over the years to have more and more of our applied research done out of the private sector, and done in universities, and yet small innovative firms have an enormous potential to contribute in this area.

In the area of patents, we have seen a disastrous trend occur, again in the past 10 years, where the value of patent protection for small firms particularly has declined substantially.

Patent litigation is very expensive, and for a small firm to be faced with a $250,000 suit in order to defend their patent rights simply means that many small firms cannot properly enforce the patent they have, and on top of that, the quality of patents has substantially declined, something like 50 percent of the patents contested in court are now found to be invalid, so there is again the small businessman and small businesswoman who simply cannot pursue technology with the same degree of protection as can large companies.

national problems and their relationship to small science-based companies. In turn George Lockwood played the lead part for the six members of the Domestic Policy Review Group, which is the second document reported here.

The final group limited its considerations. The six members of the Commerce Group were co-opted for discussion purposes, but joined in approving the document. What in effect they decided they would do is actually draft a layman's version of what kind of law they would like to see on the books.

The central question they were trying to answer is most simply put this way: What do we as innovative entrepreneurs need from the Federal Government, affirmatively and negatively? What shoud they do and stop doing, to bring back to the economy the kind of entrepreneurial environment we had in the late fifties and early sixties, when men and women felt very freely they could leave Government, or major corporations, academic campuses, and go on their own, and start the kinds of businesses these people run?

There has been a generally noted decline in that activity, and we raised the question of what kinds of changes do we need to make or what contribution to Government policy are needed to bring back that entrepreneurial climate for all of the reasons set forth in these studies.

There are some dissents noted, These, like all small business prople, are very stiff-necked people. They would put things in their own very special way. You will find trouble in getting them to agree or disagree but with reference to their shyness, they are all very articulate people.

Not all of the people involved are here today. Sherman Abrahamson represents a task force of 14 people; George Lockwood and Robert Springborn, a task force of 6 people; Dan Cronin, 7 venture capital managers, all of whom have financed innovative businesses. The other five fellows are heads of small innovative businesses. They are not here today, but they are represented in the conclusions.

For your convenience, we have included a comparative table of the recommendations and comments of all three groups. They are under five or six headings, tax recommendations, research and development recommendations, regulatory procedures, capital investment recommendations, procurement recommendations and patent recommendations.

By way of conclusion, my contribution to this process is summarized in three brief pages at the beginning of the document. In summary I have tried to explain something about the nature of the consensus. With your permission, I would like to read these 9 sentences which summarized what seems to be the heart of the agreement among the 14 people involved in this project.

One: The critical need is for an entrepreneurial environment far more favorable to innovation and risktaking than we have had for the past 10 years;

Two: Primary reliance for innovation can and should be placed on the private sector;

Three: The unsatisfactory environment for innovation and risktaking results from the cumulative impact of a number of Federal policies;

Four: Small business is the most underutilized particpiant in the Nation's innovation process;

special assistant to the chief executive officer, Control Data Corp.; Mr. Dan Cronin, Ampersand Associates, Boston, Mass.; Mr. Alfred C. W. Daniels, H. H. Aerospace Design Co., Bedford, Mass.; Dr. Clyde R. Goodheart, president, Bio Labs, Inc., Northbrook, Ill.; Mr. Sid Green, Terra Tek, Inc., Salt Lake City, Utah; Mr. Harold Guller, Essex Cryogenics Industries, St. Louis, Mo.; Mr. George Lockwood, Monterey Abalone Farm, Monterey, Calif.; and Dr. Robert Springborn, president, Springborn Labs, Enfield, Conn.

Mr. Stewart, you may proceed with your statement and with the panel.

STATEMENT OF MILTON STEWART, MODERATOR OF PANEL DISCUSSION, CHIEF COUNSEL FOR ADVOCACY, U.S. SMALL BUSINESS ADMINISTRATION

Mr. STEWART. Mr. Chairman, Senators, I would just like to take the time to state that I appeared before this committee which recommended my confirmation to the Senate just about 1 year ago.

One of the things I said then was that a great void in the Federal Government was the absence of a point of spokesmanship for the small businessman, particularly the innovative entrepreneur, which Senator Hayakawa has been pleased to call attention to, and while innovation and entrepreneurship are not unique, there are innovative entrepreneurs even in the executive branch of the Government, as well as in both Houses of Congress, the innovator has a particularly hard role to play in a society particularly dominated by large-scale institutions.

I would like to mention that the men who are innovators, who are entrepreneurs, are the kind of men who have put together the document that is before you. They are all listed in that document, so you can make easy reference as they talk to you today.

There are three reports contained in this document. In one of those Mr. Sherman Abrahamson, directly to my right, represents 14 people who prepared a study for the Assistant Secretary for Commerce for Science and Technology on the Significance of Small Innovative Businesses for Job Creation.

That is chronologically the first of the reports, and in that document 12 recommendations are cited. There are biographies of the 14 people involved at the tail end of the document.

George Lockwood and Bob Springborn, over to the left here, represent six members of the Domestic Policy Review Layman's Group which the Commerce Department set up as part of the President's Domestic Policy Review Study.

The other five people represent the SBA Advocacy Task Force on Innovative Small Business People in general.

They are all included in the document's biographies of these gentlemen and I will let them tell you about themselves, as we proceed during the morning.

What I would like to make a matter of record is how these groups came to be pulled together for this purpose.

First of all, the Administrator for the SBA designated me to represent the agency in the Domestic Policy Review, and as a part of that process, it became clear to me we needed some input directly from

relatives are asked to invest in their new idea, do so out of kindness rather than out of any real belief in his project, but these are the glowing points of culture. The real conservative forces, Mr. Gilder says, are the conservative types of big business, the big labor unions and big Government, as opposed to the free independent-minded individuals, whether in Government, or in academia, for that matter, as in the area of my experience, or in business, who are threading new paths.

My father was a small businessman, but my own academic experience is fascinating to me in light of what people are doing—like your "crazy abalone farm."

You know, when I became interested in semantics, back there in the late 1930's, the professor under whom I earned my Ph. D., a professor I respected highly, told me not to mess around with semantics.

You are establishing a reputation as a literary scholar, so do not please mess around with semantics, it will ruin your career, so I should have listened to him.

Senator HUDDLESTON. And look where you are.

Senator HAYAKAWA. Right. [Laughter.]

So I should have listened to my professor. Anyhow, you see how I have sympathy for those with the wiser heads, not with those who say do not mess around with the abalone farm, or do not mess around with trying to develop a new type of motorcycle engine, whatever, for these are creative to the culture, and in a police state as in the Soviet Union, there is no creativity, absolutely none, and this is why we are ahead of them and will remain ahead of them indefinitely. This is why I am glad to be a member of this committee, I am glad to take part in your deliberations.

Mr. Chairman, thank you.

Senator HUDDLESTON. Thank you very much, Senator.

For the record, all prepared statements submitted by members of the committee, including that of the chairman, Senator Nelson, will be made a part of the record at this point.

[Additional prepared statements follow:]

STATEMENT OF HON. GAYLORD NELSON, A U.S. SENATOR FROM THE STATE OF WISCONSIN, AND CHAIRMAN, SENATE SMALL BUSINESS COMMITTEE

Today's hearing is a first in a series of comprehensive hearings which will explore the role of small and independent enterprises in our economy and our quality of life and how they can contribute in solving many of our most pressing national problems.

In the next three months we intend to examine how federal agencies and departments assist or hinder small businesses in stimulating real economic growth, increasing productivity, expanding job opportunities, arresting inflation, expanding exports and providing alternative energy sources.

At the conclusion of these hearings, the Committee will foward to all delegates to the White House Conference on Small Business a summary of its findings together with recommended legislative and administrative solutions in the areas of taxes, capital and credit needs, technology transfer and innovation, procurement, economic concentration and anti-trust, regulatory and paperwork reduction, energy, rural assistance, international trade, and small business advocacy within the Federal Government.

Today we will hear from witnesses who served on one or more of three task forces which concluded that federal policies have systematically excluded small firms from fully participating in government sponsored or initiated research and development. The Office of Management and Budget has found that independent entrepreneurs have accounted for half of major innovations between 1953 and

It is this type of creative factfinding which will produce beneficial results.

While a great deal of blame can be attributed to the Federal Government for failing to devise policies whicb benefit small businesses, I will be striving to stay away from a "finger pointing" approach during these hearings.

Our goal should be, not to lay blame for present inadequacies, but to focus on what positive steps can and should be taken to utilize the vast creative potenital of the American small businessman.

I believe that constructive criticism and cooperation should be the keynote of these hearings, if we are to arrive at a final consensus on the type of economic atmosphere which is most beneficial to small businesses.

I mentioned Senator Stewart has been a leader in organizing this series of hearings and in prevailing upon the other members of the committee to undertake this rather large undertaking. Senator Stewart, we would appricate having your comments at this time.

STATEMENT OF HON. DONALD W. STEWART, A U.S. SENATOR FROM THE STATE OF ALABAMA

Senator STEWART. I have a written statement which I will ask be made a part of the record. It somewhat reiterates the statements you made about the thrust of these hearings. Not just the hearing this morning, but the others the committee plans to hold to examine the role of Federal department and agency programs and policies and how they affect small businesses in this country. We plan to examine what the Government can do, and what it perhaps ought not do in some instances. There might be a better way of operating, as far as small businesses are concerned.

I am glad to be a part of these hearings, and I look forward to working with you, Senator Gaylord Nelson, and with other members of this committee in making these hearings a successful venture.

Hopefully, we can have ready for the delegates to the White House Conference on Small Business, as well as others, some kind of game plan that we can follow at the national level to assure that government will do what it ought to do in the area of small business.

I want to say a special word of thanks, Senator Huddleston, to the members of this committee's staff, who have worked very hard to try to get these hearings underway.

A lot of times we hear criticism leveled at members of congressional staff. I think these folks have done an excellent job and I want to thank them publicly for their help.

I particularly want to commend Milton Stewart with SBA for the work he has done, not only in preparation of the innovation report, but for his counsel in connection with the planning of these hearings. His assistance has been invaluable. Frankly, I think it is an example of the kind of work that the Small Business Administration ought to be doing. I want to tell you that publicly, Milton, and I commend you for it. I am hopeful that one of the fruits of this hearing will be to get that agency in more of these kinds of activities.

I will end my remarks by saying I know we have some people here who are rather shy. [Laughter.]

Seriously, I will not take any more of your time. We look forward to hearing from you. You have all done an excellent job on this report. Our job this morning is to hear from you.

CONTENTS

Page

SELECT COMMITTEE ON SMALL BUSINESS

GAYLORD NELSON, Wisconsin, *Chairman*

SAM NUNN, Georgia
JOHN C. CULVER, Iowa
WALTER D. HUDDLESTON, Kentucky
DALE BUMPERS, Arkansas
ROBERT MORGAN, North Carolina
JAMES R. SASSER, Tennessee
DONALD W. STEWART, Alabama
MAX BAUCUS, Montana
CARL LEVIN, Michigan

LOWELL P. WEICKER, JR., Connecticut
BOB PACKWOOD, Oregon
ORRIN G. HATCH, Utah
S. I. HAYAKAWA, California
HARRISON H. SCHMITT, New Mexico
RUDY BOSCHWITZ, Minnesota
LARRY PRESSLER, South Dakota

WILLIAM B. CHERKASKY, *Executive Director*
ALLEN W. NEECE, JR., *Legislative Counsel*
ROBERT J. DOTCHIN, *Minority Staff Director*

BIBLIOGRAPHY

Abernathy, William J. and Utterback, James M. "Patterns of Industrial Innovation". Technology Review, Volume 80, Number 7, June/July 1978.

Block, Richard B., Proposed Policy Options for Technological Innovation. Foster City, CA, August 8, 1978.

Frosch, Robert A., Administrator, National Aeronautics and Space Administration, Washington, D.C., Speech. 27 November 1978.

Moshman Associates, Inc. An Evaluation of the Small Business Administration Innovation Loan Program. Washington, D.C., April, 1976.

Norris, William C., Recommendations For Creating Jobs Through the Success of Small Innovative Businesses, A Report to the Assistant Secretary of Commerce for Science and Technology. Washington, D.C., Control Data Inc., December, 1978.

U.S. Congress. House of Representatives. Committee on Small Business. Future of Small Business in America, A Report of the Subcommittee on Antitrust, Consumers and Employment. Washington, D.C.: Government Printing Office, 1978.

U.S. Congress. Office of Technology Assessment. Government Involvement in the Innovation Process. Washington, D.C.: Government Printing Office.

U.S. Department of Commerce. Draft Reports of the Subcommittees of the Advisory Committee on Industrial Innovation established as part of the Domestic Policy Review, Washington, D.C., December 20, 1978.

U.S. Department of Commerce. Technological Innovation: Its Environment and Management. Washington, D.C., January 1976.

U.S. Office of Management and Budget. Office of Federal Procurement Policy. Small Firms and Federal Research and Development. Washington, D.C., February 24, 1977.

Duane D. Pearsall:

B.S. from University of Denver, Commercial Engineering. General Motors Institute. Founder and President of the Small Business Development Corporation. Previously founded and was President of the Pearsall Company (1955-1966) and of Statitrol Corporation (1964-1977). Member of several professional societies. Member of Executive Committee and Board of Directors of Denver Chamber of Commerce and Council of Small Business of the Chamber of Commerce of the U.S., Regional Vice Chairman for Small Business, N.W. Region. Serves on S.B.A. Colorado District Advisory Council and M.F.I.B. Action Council Committee. Has published several technical papers. Colorado Small Business Person of the Year - 1976. National Small Business Person of the Year - 1976. Outstanding Citizen Award Mile High Sertoma Club - 1978. Serves on the Board of Directors of several companies and organizations.

SMALL BUSINESS DEVELOPMENT CORPORATION:

This was formed to support three activities - as consultant to small businesses, as an investor in small business and to organize a stronger voice for small business in Federal legislation.

Eric P. Schellin:

A.B. Columbia University, J.D., George Washington University. Lecturer, Patent, Trademark & Copyright Law, Georgetwon University, 1974-present. Executive Vice President of the National Patent Council, Inc., Chairman of the Board of Trustees of the National Small Business Assoc., 1979. President, Erdo Co., Member of various legal & scientific associations and the bar of V.A., D.C., Supreme Court and Court of Customs and Patent Appeals.

BIOGRAPHIES

MEMBERS OF COMMERCE INNOVATION
SMALL BUSINESS "TASK FORCE"

Mr. Wayne Coloney:

Texas A&M, Summa Cum Laude Graduate - Georgia Institute of Technology, 1950. Serves as Chairman of the Board & Chief Executive Officer of the Wayne H. Coloney Co., Tallahassee, Florida. Formerly associated with Barrett, Daffin & Coloney, and J.E. Greiner & Co., Tampa. A professional engineer certified in Florida, Georgia, Alabama, and North Carolina. Member of American Society of Civil Engineers, National Society of Professional Engineers and numerous other organizations, both professional & philanthropic. Listed in Who's Who in the World and in the South and Southwest. Mr. Coloney holds several patents and has published articles related to his extensive interest in knowledge of land planning, transportation facilities, drainage and air pollution and historical renovation.

WAYNE H. COLONEY COMPANY:

Founded in 1970 as a broad-based engineering firm dealing with structural, mechanical and legal engineering in the areas of land planning, pollution control and design. Grew from three employees in 1970 to presently 200. Awarded in 1972 - Pollution Control Citation, 1975, SBA Regional Prime Contractor of the Year, placed in top 500 design firms chosen by McGraw-Hill magazine.

Eugene M. Lang:

B.A. from Swarthmore College, M.S. from Columbia University, mechanical engineering studies at Brooklyn Polytechnic Institute. Currently, President of REFAC Technology Development Corporation of New York City. Chairman of Scriptomatic, Inc., Philadelphia, Pa., Chairman of J.D.S., Inc., a West Palm Beach, Florida real estate company, Chairman, Electronic Research Associates Inc., Moonachie, New Jersey, a manufacturer of power supplies and loudspeakers. Chairman of REFAC

Harry D. Richardson:

SCMP - Harvard University, 1976; MS - Engineering, University of Alabama, 1950; BS - Mechanical-Electrical Engineering, Louisiana Polytechnic Institute, 1941. Chairman and President of Nuclear Systems, Inc. since 1971. Currently consulting Professor to Louisiana State University. Member of the Board of Directors of several companies and member of numerous professional societies.

NUCLEAR SYSTEMS, INC.:

Is a small technology company. Primarily it is engaged in (1) developing, manufacturing, and marketing equipment using radioisotopes, (2) environmental and quality control testing electronic components, and (3) developing, manufacturing, and marketing products for management and conservation of energy in homes and small commerical buildings. In 1979, the sales volume is estimated to exceed $6 million. There are 250 employees located in six U.S. locations and one manufacturing plant in Mexico. NSI is a public company with nearly 500 stockholders.

Walter D. Syniuta:

Sc.D - M.I.T., Mechanical Engineering, M.Sc, Queens University, B.Sc, Queens University. President, Advanced Mechanical Technology, Inc. Formerly with Scientific Energy Systems Corp., Assistant & Associate Professor of Mechanical Engineering, M.I.T., Engineering Consultant, Development Engineer & Vibration Engineer. Member of various professional societies & author of several publications relating to his expertise in the field of electron microscopy.

ADVANCED MECHANICAL TECHNOLOGY, INC.:

A Massachusetts corporation engaged in R & D, and manufacturing of instrumentation. Engaged in R&D in the field of energy conversion systems, with current development programs in gas-fired hot water heaters, gas-fired residential space heating, waste-heat recovery systems, a novel heat-actuated heat-pump based on the Stirling cycle, use of ceramics in heat engines, and heat engine combustion research. AMTI is currently engaged in several commercial engineering projects.

George W. Murphy:

B.S., Fordham, 1960. From 1958 to 1970 employed by IBM in various marketing and management positions. Since 1970 President and Chief Executive Officer of Educational Computer Corporation.

EDUCATIONAL COMPUTER CORPORATION:

Is the industry leader in research, development, and production of low cost computer controlled simulation devices that are used in advanced training programs. ECC blends computer technology with modern task oriented instructional methods to produce fully integrated technical training programs.

Dr. Arthur S. Obeymayer:

B.A. with High Honors, Swarthmore College, 1952. Ph.D. in Chemistry, M.I.T., 1956. Recipient of NST fellowships. President and founder of Moleculon Research Corporation. Founder and first Chairman of the Research Management Association. Currently, Vice President of the American Association of Small Research Companies. Has served in various capacities in the Association of Technical Professionals, Boston Industrial Mission, Federation of American Scientists and the Small Business Association of New England. Is frequently called upon by the Federal and Massachusetts state governments to serve in an advisory capacity.

MOLECULON RESEARCH CORPORATION:

Specializes in research, development and consulting in chemistry and allied fields. These services range from feasibility studies and product development to problem solving, chemical engineering investigations, and process development. Moleculon makes Poroplastic R film and powder. Product applications include controlled release materials, dermatological preparations, membrane separations for hydro-metallurgy and impurity removal from waste water, and color change monitoring of toxic vapors.

MASSACHUSETTS TECHNOLOGY DEVELOPMENT CORPORATION:

A public-purpose development finance mechanism established by an act of the Massachusetts State Legislature in July 1978. Has the dual capability to provide management and direct financial assistance to early-stage, technology-based small businesses in Massachusetts. The MTDC can provide seed capital to commercialize new technologies which will foster primary job creation and increase tax revenues and exports.

Gilbert V. Levin:

B.E., The Johns Hopkins University, 1947, M.S.,1948, Ph.D., 1963, Environmental Engineering. President and Founder, Chairman of the Board of Directors, Biospherics Inc., Rockville, Md. Formerly Director, Life Systems Division. Member, Board of Directors, Hazelton Labs, Inc., Falls Church, Va. Holds more than 33 patents in biological treatment of wastewater and in microbiology. Member of several honorary science associations & author of approximately 100 technical publications.

BIOSPHERICS INCORPORATED:

Organized into three major operating divisions: The Environmental Instrumentation Division which develops, manufactures, and markets sophisticated innovative instruments in the fields of pollution control and health; the Laboratory Division which performs contract research and development on environmental and health problems, develops Biospherics proprietary products in these areas and offers commercial analytical services in chemistry, biochemistry, microbiology, pesticides, and toxic substances; the Science Writing Division which writes, edits, produces and disseminates information in these areas of interest.

Roger Hill:

B.S. Physics, Brown University, M.S. Elec. Engr., Northwestern University, Doctorate studies at Northwestern University. Small Business person of the Year in State of Wisconsin, 1978. Member of Independent Business Association of Wisconsin, Special Committee on Small Business of Wisconsin Legislative Council, First National Bank Board of Directors, International Trade Subcommittee of the Chamber of Commerce of the U.S., Institute of Elec. & Electronic Engrs.

GETTYS MANUFACTURING CO.:

Founded in 1959 by Roger Gettys Hill, as a three-person engineering and consulting firm and later dynamically expanded into an international, multi-million dollar enterprise with subsidiaries in England, Germany and Italy. Today, Gettys and its licensee supply over 50% of the world DC servo drive market. In 1965 introduced world's first all-electronic three-dimensional tracer.

Robert Hillas:

B.A. Dartmouth, MBA - Stanford University. Seven years as a Venture Capital Investment Specialist with E.M. Warburg, Pincus and Company. Serves on two Boards of Directors and one Advisory Committee of Investee Companies.

E. M. WARBURG, PINCUS, & CO.:

Specialists in financial services. One of the larger private venture capital pools in the country. Deal with start-up money particularly in large publicly held companies.

Clyde R. Goodheart:

B.S. in Biology, Northwestern University, MD - Northwestern Medical School, MS - Northwestern Graduate School. Three years at California Institute of Technology in Post-Doctoral Fellowship. Assistant Professor and Associate Professor, Department of Pediatrics, University of Southern California Medical School, Children's Hospital of Los Angeles. Well known for his work in cancer research, Dr. Goodheart has been involved in bio-medical studies and has written many scientific articles.

BIO LABS, INC.:

Founded in July, 1970 by Dr. Clyde R. Goodheart, it serves government and industry through contract research, product development programs, quality control testing, industrial microbiology. Current research areas include tissue culture work, immmunology, biochemical and biophysical work with viruses.

Sidney Green:

B.S. University of Missouri in Mechanical Engineering, M.S. University of Pittsburgh, attended University of Pennsylvania Graduate School & received the degree of Engineer in Engineering Mechanics from Stanford University Formerly with Westinghouse Electric Company Research Labs, General Motors Defense Research Labs, & GM Technical Center. President & Chief Executive Officer of Terra Tek, he is active on many government committees & professional societies. Published over 40 open literature papers and reports, holds several patents.

TERRA TEK:

Founded in 1970 as a for-profit company, a springoff venture pursuing application of ideas primarily initiated at the University of Utah. Recognized as a leader in problem-solving applications involving rock mechanics, the geosciences and associated technology, and for its practical application of material sciences. Main lines of business include R&D, manufacture of sophisticated servocontrolled computer interfaced test systems, full-scale testing of drilling, mining and exploitation of new ventures.

Dan Cronin:

B.A. Harvard, Economics, Cum Laude, 1950, Advanced Management Course, Harvard. Vice President, Small Business Association of New England. Formerly salesman, manager and then President of small hospital supply co., which merged in 1968 with a large company with 150 employees and 5 million in business. In 1974 served as Assistant to the then Secretary of Commerce, Elliot Richardson, 1977 joined Ampersand Associates, a venture capital firm. Also served on SBA Regional Advisory Council.

AMPERSAND ASSOCIATES:

Venture Capital firm with investments ranging from 1-1/2 million to 100 million. One client is #2 in the electronic cash register business.

Alfred C. W. Daniels:

E.E. Graduate of Arizona State University, Harvard Law School, also served as an Assistant Dean at Harvard. Vice President, New England, HH Aerospace Design Co., Inc. An officer and rated airline transport pilot, he has served in both command and staff R&D positions in the U.S. Air Force where he also earned four Air Medals with 200 missions in Viet Nam. Received the 1,000 Hour Sabreliner Flight Award. President, Black Corporation Presidents of New England, Inc., and a member of the Board of Directors, Smaller Business Association of New England, Inc.

HH AEROSPACE DESIGN CO., INC.:

A consulting firm established in 1974, incorporated in the State of New York. A 100% minority-owned corporation, serving the Eastern Seaboard. HHA's capabilities include R&D studies, economic analysis, design and engineering services in aerospace, electronics and transportation planning, including surface systems, tests and evaluation.

"I am troubled by the glaring de-emphasis that (capital formation) has received. Access to capital-specifically, a proper mix of debt and equity capital that is consistent with a given firm's cash-flow generating capability - is the single most critical factor concerning the formation and development of technology based, small businesses. . . . I believe that the "bill" devoted too much attention to the patents issue without considering the fact that patents will remain as patents and not products unless technical entrepreneurs and small companies have sufficient access to start-up and expansion capital."

"Just a pro forma comment on the definition of 'small business'. I feel that it should be limited to companies with 100 employees or less."

"You may recall that (I) questioned the validity and objected to the priority given by our Advisory Committee to the reduction of the capital gains tax as a means for stimulating innovation."

In Section 5(a)(5) "with respect to $2 million of gross revenues and products employing patented items, some recognitions should be made of the value of the patented items in relation to the whole. For instance, the invention may be a $20 value, which is part of a $300,000 jet aircraft engine, and the $2 million test should certainly relate more closely to the quantity of $20 parts sold than to the quantity of aircraft engines incorporating the part sold."

"Also, I repeat my reservations about the elitism implicit in the use of the term 'innovative small businesses.' All small businesses should be deemed to have innovative potential - i.e., ability to improve productivity and create more jobs."

"Government should respect proprietary information submitted as part of proposals for contracts and unless information can be shown to be in the public domain, shall not divulge or use such information except for the evaluation of the submitted proposal. Under no circumstances shall this information be used as the basis of another RFP."

"Government shall not take proprietary ideas 'in house' after initial funding unless the contractors performance shall be deemed poor."

"In Section 7(d) - cannot agree that companies should be allowed to include up to 100 investors. Too many."

DISSENTING OPINIONS

As noted earlier, the SBA Advocacy Task Force Bill is the product of a nearly unanimous consensus of opinion. However, some individual members of the Task Force did express reservations about various sections of the bill. The following are excerpts from their comments on the bill.

PATENT RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
Section 5(a)(1)-(9) (cont'd)	equal to the amount of the R&D award under which the invention occurred. Likewise, with inventions made in national laboratories, the government should preferentially license small business concerns. (INN-SBTF)
Section 5(d)	Small businesses should be able to obtain (with appropriate restrictions) compulsory licenses through suitable proceedings in cases where uncommercialized patents block entry into new markets. (INN-SBTF)
No parallel section in Advocacy Tssk Force Bill	The Justice Department should be required to undertake competitive impact studies for taking anti-trust action against small business when a small business is attempting to exploit the full property rights afforded by its patent. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	Treat license royalties as capital gains instead of ordinary income. (INN-SBTF)

PROCUREMENT RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
Section 6 (a) 7	Every federal agency should study policies and procedures that discriminate against small businesses, and to institute changes that will equalize opportunity without harming the public interest. (INN - STBF)
COLUMN NOTE: These two sections of Task Force Bill have no direct parallels in JC - WG or INN - SBTF Reports.	The Departments of Defense and Energy and the National Aeronautics and Space Administration shall take additional steps to conduct regular break-out reviews of all proposed large scale systems contracts for research and development. and to seek means of making more of this effort available to small business. (ADVOCACY TASK FORCE BILL - Section 6 (a) (5))
	All Federal agencies involved with research and development funding will develop, with the Small Business Administration, specific programs to inform their staffs and consultants of the need to provide a fair and equal opportunity to small women-owned and minority business firms to be considered for Federally funded research and development; and of the requirement to guide, counsel, and assist small firms to strengthen their capability to compete and insure that they receive a fair share of all Federal research and development contracts as described in the Small Business Act. Evaluations of procurement personnel performance shall include appraisals of achievement and attitude in expanding small and minority business participation. (ADVOCACY TASK FORCE BILL Section 6 (a) (6))

CAPITAL AND INVESTMENT RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
Section 6(a)7	Modify ERISA to allow up to five percent of pension fund portfolios to be invested in small businesses. (INN-SBTF) We recommend (1) that ERISA's prudent man standard be restated so that it is clearly applicable to the total portfolio of pension fund investments rather than individual investments, and (2) that pension fund managers explicitly be permitted to invest up to five percent of pension fund assets in small firms. (JC-WG)
No parallel section in Advocacy Task Force Bill	Encourage state investment pools to invest a larger percentage of their holdings in small innovative businesses. (INN-SBTF)
Section 6(b)3	Exempt from SEC registration offerings of equity securities for innovative businesses outlined in Recommendation #1 of less than two million dollars. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	Change the charter of the Securities and Exchange Commission to specify the encouragement of the flow of capital into small innovative enterprises as well as to protect the public investor. (INN-SBTF)

REGULATORY PROCEDURES

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
No parallel section in Advocacy Task Force Bill	A thorough revision of the regulations and operating procedures of OSHA as they relate to small innovative business to include -- A general exemption from OSHA, except where the accident history of a particular industry or firm is substantially greater than average, and in such cases, the burden should be upon OSHA to justify action; and -- The prohibition of first instance citations except in extreme cases. (INN-SBTF)
Section 6(b)1	In all regulatory activities, the burden should be placed upon each regulatory agency to establish a cause of concern before requiring regulatory compliance by a small business. Minimum levels of impact should be statutorily defined thereby exempting small businesses in all but extreme and justifiable cases. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	Substantial strengthening of the Regulatory Council to include: -- participation by the Small Business Administration; -- requiring all regulatory agencies to balance the risks of a hazard against the economic costs, with thorough consideration of specific impacts of proposed regulations upon small business creative processes; -- the use of "performance standards" and not "method standards" in those cases where regulatory standards are clearly justified; (JC-WG)

RESEARCH AND DEVELOPMENT RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
No parallel section in Advocacy Task Force Bill	The decline in R&D expenditures as a percentage of Gross National Product must be arrested and redirected upwards towards the goal of three precent by 1985. (INN-SBTF)
Section 4	Each year, starting in 1980, each agency with a budget of over $100 million for R&D should allocate at least one percent of its R&D budget to the small business program using the same format as that of the National Science Foundation but with their own research topics, and review and awards procedures. This program should be coordinated by an Inter-Agency Small Business R&D Committee chaired by the Small Business Administration. (INN-SBTF) We recommend that private sector individual or corporate owners of technology be rewarded, through appropriate changes in the tax code, for selling, leasing, or licensing their technology to small business firms in the United States. In addition, we recommend the establishment of a voluntary national policy to encourage companies to make their technologies available for noncompetitive uses by others. . . . . The Work Group believes the National Science Foundation's program called "Small Business Innovation Applied to National Needs" has great potential for increasing technological innovation in the private sector and is worthy of emulation or even adoption by other federal agencies. . . (JC-WG)

TAX RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
No parallel section in Advocacy Task Force Bill	Treat license royalties as capital gains instead of ordinary income. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	Eliminate the existing tax liabilities for overseas joint ventures in which the small business investment consists of a contribution of know how and technical information. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	We recommend that private sector individual or corporate owners of technology be rewarded, through appropriate changes in the tax code, for selling, leasing, or licensing their technology to small business firms in the United States. In addition, we recommend the establishment of a voluntary national policy to encourage companies to make their technologies available for uses by others. (JC-WG)
COLUMN NOTE: These two sections of Task Force Bill have no direct paralles in JC-WG or INN-SBTF Reports.	For tax purposes, specialized equipment and instrumentation for research, development or testing may be written off at any time and specialized research, development or testing facilities may be depreciated over a minimum of five years by such small business firms. (ADVOCACY TASK FORCE BILL - Section 7b) The period of exercising stock options in small business science and technology based firms is extended from a maximum of five to a maximum of ten years. (ADVOCACY TASK FORCE BILL - Section 7(a)(5))

TAX RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
Section 7(a)(3) (cont'd)	Allow small science and technology firms to carry forward losses for a period of ten years instead of five years. (INN-SBTF)
Section 7(a)(6)	We recommend restoration of the Qualified Stock Option Plan for Key Employees of small businesses. (JC-WG) Restore the Qualified Stock Option Plan for Key Employees in small science and technology firms, and establish the period for exercising stock options at ten years. (INN-SBTF)
Section 8	We recommend that the creation of Small Business Export Trade Corporations be encouraged by a double deduction for these corporations of up to $100,000 of annual expenses associated with the exporting activities of each client, with a loss carry-forward of ten years. In addition, we recommend that small businesses be allowed a double deduction of special expenses of serving export markets up to $100,000 annually. (JC-WG) Permit small businesses to take double deductions of expenses directly related to export market development. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	We recommend that small businesses be allowed to deduct twice their payments for regulatory advisory services related to compliance with federal, state, and local regulation. (JC-WG)
No parallel section in Advocacy Task	Provide for a twenty-five percent tax credit for research and development related expenditures by small businesses (as currently allowed in Canada). (INN-SBTF)

COMPARISON TABLE

SBA ADVOCACY
TASK FORCE BILL

COMMERCE JOB CREATION
WORK GROUP (JC-WG)

COMMERCE INNOVATION
SMALL BUSINESS TASK FORCE (INN-SBTF)

7. The Department of Labor and the Internal Revenue Service should devise regulations jointly that encourage, stimulate and otherwise provide incentive for, and eliminate obstacles to, increasing significantly the amount of pension fund assets that are invested in small businesses so as to maximize their capacity to be innovative. The Internal Revenue Service also should establish regulations and reporting procedures that improve the ability of small businesses to retain money and thus enables them to cope better with cash flow pressures.

(b) For tax purposes, specialized equipment and instrumentation for research, development or testing may be written off at any time and specialized research, development or testing facilities may be depreciated over a minimum of five years by such small business firms;

(c) Small business concerns may establish and maintain a "Reserve for Research and Development" for tax purposes in profitable years to use in periods of business stress up to the level of ten percent of gross revenues of $1 million, to the extent that contributions to the reserve are equalled by at least that amount of expenditure in that year for research and development.

1. Contributions to the "Research and Development Reserve" shall be considered as income when removed from the reserve unless used for research and development purposes.

2. When a firm ceases to be a small business, it may utilize any existing reserve for the same purpose but may not replenish it;

3. If a small business is acquired by a large firm, any existing reserve shall be considered taxable income.

(d) Subchapter S companies should be allowed to include up to 100 investors and corporations should be allowed to be stockholders of Subchapter S companies.

SECTION 8: IMPROVING SMALL BUSINESS EXPORT PERFORMANCE: THE CREATION of Small Business Export Trade Corporations should be encouraged by a double deduction for these corporations of up to $100,000 of annual expenses associated with the exporting activities of each client, with a loss carryforward of ten years. In addition, small businesses should be allowed a double deduction of special expenses of serving export markets up to $100,000 annually. Also, export procedures for technical products should be simplified.

merit, and small business should have equal opportunity to receive sole source awards;

4. Independent research and development (IR&D) and bid and proposal (B&P) costs of small business firms shall be considered as expenses for the fiscal year in which they occur instead of being averaged-back over the past two years;

5. The Departments of Defense and Energy and the National Aeronautics and Space Administration shall take additional steps to conduct regular break-out reviews of all proposed large scale systems contracts for research and development, and to seek means of making more of this effort available to small business.

6. All Federal agencies involved with research and development funding will develop, with the Small Business Administration, specific programs to inform their staffs and consultants of the need to provide a fair and equal opportunity to small women-owned and minority business firms to be considered for Federally funded research and development; and of the requirement to guide, counsel and assist small firms to strengthen their capability to compete and insure that they receive a fair share of all Federal research and development contracts as described in the Small Business Act. Evaluations of procurement personnel performance shall include appraisals of achievement and attitude in expanding small and minority business participation;

7. All Federal agencies have a responsibility to identify and study those problems of their procurement system that, in effect, discriminate against small business and a responsibility to make changes or eliminate these practices to the extent possible through administrative action.

(b) Regulatory Flexibility:

1. All Federal agencies which issue regulations affecting small business shall, insofar as practicable, issue them so as to relate regulatory burdens to the relative size of the firms regulated.

3. Each funding agreement shall contain provisions to: (1) insure the right of the Federal Government to receive title to any subject invention not reported to it within a reasonable time; (2) insure the government's right to receive title to inventions when the inventor does not intend to file for patent rights; (3) guarantee that the agency shall have a nonexclusive, nontransferable paid-up license to use the invention; and (4) insure the right of the funding agency to require periodic reports on the utilization or efforts at obtaining utilization of the subject invention.

4. The Federal agency has the right to require the subject inventor of his assignee to grant additional licenses if the agency feels that sufficient steps are not being taken to achieve commercialization. Additional licensing may also be required to alleviate health and safety needs, or under provisions for public use as specified by Federal regulations.

5. If the patent holder receives $250,000 in after-tax profits from licensing any subject invention during a ten-year period, or receives in excess of $2,000,000 on the sale of products embodying or manufactured by a process employing the subject invention within the ten-year period, then the government shall be entitled to collect up to 50 percent (50%) of all net income above these figures until such time as the amount of government research money has been repaid.

6. Any title holder to a subject invention or his assignee shall not grant to any person the exclusive right to use or sell any subject invention in the United States unless that person agrees that any products embodying the subject invention or produced through its use shall be manufactured substantially within the U.S. unless this provision is waived by the funding agency.

7. Federal agencies are authorized to grant exclusive, partially exclusive, or non-exclusive licenses on government owned patents to achieve commercialization.

8. After public notification of the government patents available for licensing the agency will then require that potential licensees submit plans outlining how the invention will be developed and marketed. If the agency determines that the granting of an exclusive or partially exclusive license will not lessen competition it will give first preference in its licensing to qualified small businesses.

9. All contractors not covered under this proposal will continue to operate under the existing agency programs.

available. (It had before it the Report of the Commerce Work Group on Job Creation (Appendix II) and knew that the second report (Appendix I) was in preparation.) It therefore concluded that it could best spend its time concentrating on the content of a specific legislative proposal.

What follows then is the text of proposed legislation. It is cast in layman's language and is not in the Congressionally approved form. Its purpose is to reflect recommendations rather than actual statutory language. (Versions of two parts of it have already been introduced in the U.S. Senate: S. 3496 pending before the Senate Judiciary Committee and S. 1074 before the Senate Small Business Committee.) It is followed by a schematic comparison of the recommendations of all three groups. The full texts of the reports of the Commerce Work Group of Job Creation and the Commerce Innovation Small Business Task Force are attached as appendices.

To students of the innovation process many of the recommendations will have a familiar ring. They have figured in other citizen group studies extending from the Charpie Commerce Department report almost twelve years ago, to the SBA Casey report of two years ago.

These forty-seven men and women have given generously of their time and talents. They have done so in the hope that they can communicate to their country's leaders the sense of urgency which they feel about this subject. It is rare that a single general prescription--enhancing the environment for small business technology innovation--appears to contribute to so many high priority Federal goals: stabilizing inflation through new products and new processes; speeding the replacement of non-renewable energy and material resources; strengthening domestic producers' competitive ability and the balance of payments; enlarging the most job productive part of our economy; and enhancing our ability to control undesirable consequences of our industry.

If these forty-seven citizens are right--and we believe they are--our country will gain much or lose much, depending on how quickly it accepts the advice they have given it.

Milton D. Stewart
Chief Counsel for Advocacy
May 23, 1979

SECTION 1. PURPOSE: TO ESTABLISH a Federal program to bolster innovative small businesses by strengthening their role in Federally funded research and development and by fostering their formation and growth in the economy.

This Act may be cited as the "Small Business Innovation Act of 1979."

SECTION 2: FINDINGS: THE CONGRESS hereby finds that

1. Technological innovation is a most important contributor to job creation, increased productivity, competition and economic growth in the United States as well as a valuable counterforce to inflation and our balance of payments deficit;

2. Small business is a principal source of major innovations in the Nation when compared with large business, universities and government laboratories;

3. Yet the vast majority of Federally funded research and development is conducted in large business, in universities and in government laboratories with small business receiving less than four percent of these funds;

4. While private U.S. technology expenditures are highly concentrated with just six industries accounting for over 85 percent of all industrial research and development spending and just 31 companies, many of them multi-national, accounting for 60 percent of total U.S. R&D;

5. Moreover, the Internal Revenue Code, in its present form insufficiently supports the formation, growth and long-term independent operation of innovative small businesses; THEREFORE

6. It is in the national interest to strengthen the ability of small businesses to be innovative, to increase private sector commercialization of innovations derived from Federal research and development, to increase the proportion of Federal research and development expenditures which go to small firms, to assure small firms of the opportunity to compete for Federal research and development contracts and to stimulate technological innovation by all possible means.

INTRODUCTION

This is a report of an unusual consensus among three citizen study groups on a matter of national urgency. The three groups were named for similar, but slightly different purposes.

First, the Commerce Department named fourteen leading citizens to a "work group" on "Job Creation through the Success of Small, Innovative Businesses." (JC-WG, hereafter).

Second, as part of a Domestic Policy Review of industrial innovation the Commerce Department included six small business people on advisory subgroups. They filed joint views on small business in industrial innovation, in effect becoming an additional subgroup of the Review. (INN-SBTF, hereafter).

And finally, we named twenty executives of small science-based firms and seven venture capital managers to serve as a "task force" on how to strengthen innovative small businesses themselves.

What is remarkable is that these forty-seven citizen leaders whose backgrounds, skills and outlooks are richly diverse arrived at roughly the same set of conclusions. Whether their purpose was creating jobs, shoring-up our sagging industrial innovation rate or expanding small science-based business--where they dealt with the same Federal policies, they reflect substantial consensus.

"Consensus" here does not mean that the views of the three groups are identical or that they cover exactly the same ground. Nor does consensus mean that any individual member of any of the groups would necessarily put his own views in precisely the terms used in the group's report. Every member of each group does not necessarily subscribe to every recommendation, although, of course, by his signature each member concurs generally in the group's consensus.

FOREWORD

P.L. 94-305 charges the Chief Counsel for Advocacy with the responsibilities to: examine the role of small business in the American economy and the contribution which small business can make in . . . stimulating innovation (Section 202(1)); develop proposals for changes in policies and activities of any agency of the Federal Government which will better fulfill the purposes of the Small Business Act and communicate such proposals to the appropriate Federal agencies (Sec. 203(3)); and, recommend specific measures for creating an environment in which all businesses will have an opportunity to compete effectively and expand to their full potential, and to ascertain the common reasons, if any, for small business successes and failures (Sec. 202(9)).

The Chief Counsel is authorized to hold hearings with the approval of the SBA Administrator. From time to time, he may prepare and publish such reports as he deems appropriate to carry out the functions of his office.

Pursuant to this authority, and with the approval of the Administrator, Honorable A. Vernon Weaver, hearings were held on January 4th and 5th and February 22nd and 23rd of this year in Washington, D.C., on the subject of Innovation and Small Business. This report and the draft copy of the "Small Business Innovation Act" are the products of those hearings.

Small Business & Innovation

A Report of an SBA Office of Advocacy Task Force

Office of the Chief Counsel for Advocacy
U.S. Small Business Administration

May 1979 FINAL VERSION
JULY 1979

(b) In selecting and evaluating rules or regulations, the agency shall consider factors such as—

(1) the continued need for the rule or regulation;

(2) the type and number of complaints or suggestions received concerning the rule or regulation;

(3) the burdens imposed on persons directly or indirectly affected by the rule or regulation, especially the burdens placed on individuals, small businesses, small organizations, and small governmental jurisdictions;

(4) the need to simplify or clarify language of the rule or regulation;

(5) the need to eliminate overlapping and duplicative rules or regulations;

(6) the need to resolve conflicts between the rules or regulations of the agency and the rules, regulations, or laws administered by other agencies; and

(7) the length of time since the rule or regulation has been evaluated or the degree to which technology, economic conditions, or other factors have changed in the area affected by the rule or regulation.

(c) Each year, each agency shall publish in the Federal Register a list of rules or regulations which it expects to issue during the following twelve months and a list of rules or regulations to be reviewed during the following twelve

tions, and governmental jurisdictions subject to regulation without significant loss of regulatory efficiency;

(6) Government information collection has not adequately weighed the privacy rights of individuals and enterprises against the need of the Government for information because the design of the regulatory process has encouraged regulators to treat information as a free good; and

(7) deep public dissatisfaction with the regulatory process has stemmed in large part from a public perception that burdensome rules or regulations fail to correct key national problems.

(b) It is the purpose of this title to establish as a principle of regulatory issuance that regulatory and informational requirements fit the scale of the individuals, businesses, organizations, and governmental jurisdictions subject to a rule and that fewer and simpler requirements be made of individuals, small organizations, small businesses, and small governmental jurisdictions. To achieve such principle, agencies are empowered and encouraged to issue rules or regulations which apply differently to different segments of the regulated population and are required to solicit and consider alternative regulatory proposals from the public prior to the adoption of final rules.

When rules are required by statute to be made on the record after opportunity for an agency hearing, sections 556 and 557 of this title apply instead of this subsection.".

(c) Section 553 of such title is amended by adding at the end thereof the following new subsection:

"(f) For the purposes of this section, the term—

"(1) 'individual' does not include any individual who is affected by a rule primarily in his capacity as an officer or employee of a business, organization, or governmental jurisdiction;

"(2) 'small business' has the same meaning as the term 'small business concern' in section 3 of the Small Business Act (15 U.S.C. 632), and includes such additional businesses as the agency shall establish by rule;

"(3) 'small organization' includes unincorporated businesses, sheltered workshops, not-for-profit enterprises which are not dominant in their fields, and such other groups or enterprises as the agency shall establish by rule;

"(4) 'small governmental jurisdiction' includes—

"(A) governments of cities, counties, towns, villages, school districts, water districts, or special assessment districts, with a population of less than one hundred thousand; and

"(B) an exemption from coverage of the proposed rule, or any part thereof, for such individuals, businesses, organizations, and governmental jurisdictions whose activities are of a nature which makes the inclusion of such individuals, businesses, organizations, and governmental jurisdictions of minimal value to the realization of the goals and purposes of the proposed rule;

"(C) the clarification, consolidation, or simplification of requirements of the proposed rule; or

"(D) other suitable means, including performance standards and differing timetables for compliance for such individuals, businesses, organizations, and governmental jurisdictions; and

"(7) with regard to any reporting or recordkeeping requirement which the agency anticipates requiring of ten or more members of the public pursuant to the proposed rule—

"(A) a statement of the purpose of the requirement, its form, its length, and the type of professional skills necessary for its completion;

"(B) an estimate of the number of persons who would be required to submit or maintain reports or records;

and cash items) at cost consist of securities which were—

"(A) acquired directly from the issuer thereof in a transaction or transactions not involving the registration of the securities under the Securities Act of 1933 or pursuant to the exercise of options, warrants, or rights acquired in such transactions;

"(B) received in a reorganization or in an exchange offer in exchange for securities acquired pursuant to subparagraph (A) of this paragraph; or

"(C) distributed on or with respect to any securities referred to in subparagraph (A) or subparagraph (B) of this paragraph.".

(d) The amendments made by this section shall apply to taxable years beginning after December 31, 1979.

TITLE IV—REGULATORY FLEXIBILITY

SHORT TITLE

SEC. 401. This title may be cited as the "Regulatory Flexibility Act".

FINDINGS AND PURPOSES

SEC. 402. (a) The Congress finds that—

(1) in numerous instances compliance with Federal regulatory and reporting requirements imposes in-

"(b) QUALIFIED STOCK OPTIONS.—For purposes of this part, the term 'qualified stock option' means an option granted to an individual—

"(A) after December 31, 1963 (other than a restricted stock option granted pursuant to a contract described in section 424(c)(3)(A)), and before May 21, 1976 (or, if it meets the requirements of subsection (c)(7), granted to an individual after May 20, 1976, and before January 1, 1980), or

"(B) after December 31, 1979 (other than such a restricted stock option),

for any reason connected with his employment by a corporation, if granted by the employer corporation or its parent or subsidiary corporation, to purchase stock of any of such corporations, but only if—".

(2) Paragraph (7) of section 422(c) (relating to special rules) is amended by inserting "and before January 1, 1980" after "May 20, 1976" each place it appears.

(b) Paragraph (3) of such section 422(b) is amended by striking out "5" and inserting "10".

(c) The amendments made by this section shall apply to options granted after December 31, 1979, in taxable years ending after such date.

bution other than cash is made shall not be taken into account under this section.

"(2) TREATMENT OF RESERVE WHERE TAXPAYER CEASES TO BE A SMALL BUSINESS CONCERN.—

"(A) IN GENERAL.—In the case of a small business concern which ceases to be a small business concern (other than by reason of the acquisition of stock or assets of such concern by any other person), the reserve for research and development of such concern shall continue to be treated as such a reserve for a small business concern, except that no further contributions may be made to such reserve beginning with the taxable year in which such concern ceases to be a small business concern.

"(B) INCLUSION IN INCOME WHERE SMALL BUSINESS CONCERN ACQUIRED BY OTHER BUSINESS.—In the case of a small business concern which ceases to be a small business concern by reason of the acquisition of the stock or assets of such concern by any other person, 150 percent of the amount of the reserve for research and development of such concern as of the date of such ac-

EXCLUSION FOR AMOUNTS DEPOSITED IN RESERVE FOR RESEARCH AND DEVELOPMENT

SEC. 305. (a) Subpart B of part II of subchapter E of chapter 1 of the Internal Revenue Code of 1954 (relating to taxable year in which items of gross income included) is amended by adding at the end thereof the following new section:

"SEC. 459. RESERVE FOR RESEARCH AND DEVELOPMENT.

"(a) EXCLUSION OF CERTAIN DEPOSITS INTO RESERVE FOR RESEARCH AND DEVELOPMENT.—

"(1) IN GENERAL.—In the case of a small business concern engaged in a trade or business other than real estate, the gross income of the taxpayer shall not include the amount of any income received by the taxpayer during the taxable year which is deposited into a reserve for research and development.

"(2) LIMITATION ON EXCLUSION.—Paragraph (1) shall not apply to the amount of income which is deposited in a reserve for research and development during the taxable year to the extent that the amount of such income exceeds the least of the following amounts:

"(A) 10 percent of the gross revenues of the taxpayer for the taxable year from such trade or business,

ryover to each of the 10 taxable years following the year of such loss.".

(b) Section 172 is amended by adding at the end thereof the following new subsection:

"(j) QUALIFIED SMALL BUSINESS CONCERN.—For purposes of this section, the term 'qualified small business concern' means a small business concern (within the meaning of section 1041(b)(2)) which during the 3 taxable years preceding the taxable year, or if the concern has not been in existence for 3 taxable years, during all taxable years of the concern (including the taxable year), had research and experimental expenditures (within the meaning of section 174)—

"(1) the average of which was 3 percent or more of gross revenues during such taxable years, or

"(2) which exceeded 6 percent or more of gross revenues during any one of such taxable years.".

(c)(1) Subparagraph (A) of section 172(b)(1) is amended by striking out "and (H)" and inserting "(H) and (J)".

(2) Subparagraph (B) of section 172(b)(1) is amended by striking out "and (F)" and inserting ", (F), and (J)".

(d) The amendments made by this section shall apply to taxable years heginning after December 31, 1979.

gain was not recognized had been held, and the period such replacement small business stock was held as of the date of such sale or exchange.".

(3) The table of sections for part III of subchapter O of chapter 1 of such Code is amended by adding at the end thereof the following new item:

"Sec. 1041. Sales of small business stock.".

(b) Section 1202 (relating to deduction for capital gains) is amended by redesignating subsection (c) as (d) and by adding after subsection (b) the following:

"(c) SMALL BUSINESS DEDUCTION.—

"(1) IN GENERAL.—If for any taxable year a taxpayer other than a corporation has a net small business capital gain, 80 percent of the amount of such gain shall be a deduction from gross income.

"(2) NET SMALL BUSINESS CAPITAL GAIN.—

"(A) IN GENERAL.—The term 'net small business capital gain' means the excess of—

"(i) an amount equal to the excess of (I) the gain from the sale or exchange of any small business stock held for more than 5 years, over (II) any loss from the sale or exchange of any small business stock held more than 1 year, over

term is used in title III of the Small Business Investment Company Act of 1958 (15 U.S.C. 681 et seq.), except that such term shall not include an electing small business corporation (as defined in section 1371(b)).

"(c) LIMITATION.—Subsection (a) shall only apply to gain attributable to sale of small business stock with respect to which the taxpayer's holding period is more than 12 months.

"(d) BASIS OF SMALL BUSINESS STOCK.—The basis of small business stock purchased by the taxpayer during the 18-month period shall be reduced by the amount of gain not recognized solely by reason of the application of subsection (a). If more than one share of small business stock is purchased, such reduction in basis shall be applied to each such share in chronological order of purchase. The amount of the reduction applicable to each share shall be determined by multiplying the maximum gain not to be recognized pursuant to subsection (a) by a fraction the numerator of which is the cost of such share and the denominator of which is the total cost of all such shares.

"(e) STATUTE OF LIMITATIONS.—If during a taxable year a taxpayer sells small business stock at a gain, then—

"(1) the statutory period for the assessment of any deficiency attributable to any part of such gain

reference shall be considered to be made to a section or other provision of the Internal Revenue Code of 1954.

RECOGNITION OF GAIN ON SALE OF SMALL BUSINESS STOCK

SEC. 302. (a)(1) Part III of subchapter O of chapter 1 (relating to nontaxable exchanges) is amended by adding at the end thereof the following new section:

"SEC. 1041. SALES OF SMALL BUSINESS STOCK.

"(a) NONRECOGNITION OF GAIN.—If small business stock is sold, gain (if any) from such sale shall, at the election of the taxpayer, be recognized only to the extent that the taxpayer's sale price exceeds the cost of small business stock purchased by the taxpayer within 18 months after the date of such sale.

"(b) DEFINITIONS; SPECIAL RULES.—For purposes of this section—

"(1) SMALL BUSINESS STOCK.—The term 'small business stock' means common or preferred stock issued by a small business concern.

"(2) SMALL BUSINESS CONCERN.—

"(A) IN GENERAL.—The term 'small business concern' means a domestic corporation or small business investment company (other than an electing small business corporation as defined in section 1371(b))—

tion in the light of such patent or publication if such patent or publication was cited and such request was filed in the Office within the period of a stay ordered by the court in accordance with section 310 of this chapter.

"§ 310. Stay of court proceedings to permit Office review

"(a) Any party to a civil action against whom a pleading presents a claim for infringement or for adjudication of the validity of a patent shall have the right, by motion brought before any responsive pleading, to secure a stay of all proceedings in the action by order of the court for a period, not less than four months, sufficient to enable such party to search for and cite patents or publications considered pertinent to the patent and to request reexamination of the patent in view of such prior art according to sections 302 and 303 of this chapter. If such party files a request for such reexamination in the Office and serves and files a copy of it in the action within the period of the stay provided by such order, the stay shall be extended by further order of the court until at least twenty days after the final determination of the request for reexamination.

"(b) The court, on motion and upon such terms as are just, may at any time stay the proceedings in a civil action in which the validity of a patent is in issue for a period sufficient to enable the moving party to cite to the Office newly discovered additional prior art in the nature of patents or (printed)

reexamination. The patentee shall serve a copy of such statement on any person who has requested examination according to section 303 of this chapter and such person shall have the right, within a period of two months from such service, to submit a reply to the patentees statement. Any reexamination proceeding under this section shall be conducted with special dispatch within the Office.

"§ 306. Response or amendment by patent owner

"The patent owner shall be provided an opportunity in any reexamination proceeding under this chapter to amend any claim of his patent in order to distinguish the claim from prior art cited according to section 302 of this chapter, or in response to a decision adverse to the patentability of the claim, but no amendment enlarging the scope of a claim shall be permitted in a reexamination proceeding under this chapter.

"§ 307. Appeals

"The owner of a patent involved in a reexamination proceeding under this chapter may appeal from a final decision in such proceeding adverse to the patentability of any claim, or amended claim, of the patent.

"§ 308. Certificate of patentability; unpatentability and claim cancellation

"When in a reexamination proceeding under this chapter the time for appeal has expired or any appeal proceeding

applying the same shall become a part of the official file of the patent. The identity of the person citing the prior art will be excluded from such file upon his request to remain anonymous.

"§ 303. Request for examination

"Any person may, at any time within the period of enforceability of a patent, request reexamination of the patent as to the patentability of any claim thereof in the light of any prior art cited under the provisions of section 302 of this chapter, by filing in the Office a written request for such reexamination accompanied by a reexamination fee prescribed according to this title and by a statement of the relation of such prior art to the patentability of the claim or claims involved. Unless the requesting person is the patentee, the Commissioner shall promptly send a copy of such request and statement to the owner of the patent appearing from the records of the Office at the time of the filing of the request.

"§ 304. Determination of issue by Commissioner of Patents

"(a) Within ninety days following the filing of a request for reexamination under section 303 of this chapter, the Commissioner shall make a determination as to whether a substantial new question of patentability affecting any claim of the patent concerned, not previously considered in examination or reexamination of such claim, is raised by the con-

agencies to agree to allow such persons to retain ownership of such inventions.

"§ 212. Relationship to Antitrust Laws

"Nothing in this chapter shall be deemed to convey to any person immunity from civil or criminal liability, or to create any defenses to actions, under any antitrust law.".

AMENDMENTS TO OTHER ACTS

SEC. 202. The following Acts are amended as follows:

(a) Section 156 of the Atomic Energy Act of 1954 (42 U.S.C. 2186; 68 Stat. 947) is amended by deleting the words "held by the Commission or".

(b) The National Aeronautics and Space Act of 1958 is amended by repealing paragraph (g) of section 305 (42 U.S.C. 2457(g); 72 Stat. 436).

(c) The Federal Nonnuclear Energy Research and Development Act of 1974 is amended by repealing paragraphs (g), (h), and (i) of section 9 (42 U.S.C. 5908 (g), (h), and (i); 88 Stat. 1889–1891).

EFFECTIVE DATE

SEC. 203. This title shall take effect one hundred and eighty days after the date of its enactment, except that the regulations referred to in section 201, or other implementing regulations, may be issued prior to that time.

"(13) section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901; 88 Stat. 1878);

"(14) section 3 of the Act of June 22, 1976 (42 U.S.C. 1959d, note; 90 Stat. 694);

"(15) subsection (d) of section 6 of the Saline Water Conversion Act of 1971 (42 U.S.C. 1959(d); 85 Stat. 161);

"(16) section 303 of the Water Resources Research Act of 1964 (42 U.S.C. 1961c–3; 78 Stat. 332);

"(17) section 5(d) of the Consumer Product Safety Act (15 U.S.C. 2054(d); 88 Stat. 1211);

"(18) section 3 of the Act of April 5, 1944 (30 U.S.C. 323; 58 Stat. 191);

"(19) section 8001 of the Solid Waste Disposal Act (42 U.S.C. 6981; 90 Stat. 2829);

"(20) section 306(d) of the Surface Mining and Reclamation Act of 1977 (30 U.S.C. 1226(d); 91 Stat. 455);

"(21) section 21(d) of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2218(d); 88 Stat. 1548);

Agency that it has taken or can be expected to take within a reasonable time, effective steps to achieve practical application of the invention;

"(3) the right of the Federal agency to terminate such license in whole or in part if the licensee is in breach of an agreement obtained pursuant to paragraph (b) of this section; and

"(4) the right of the Federal agency to terminate the license in whole or in part if the agency determines that such action is necessary to meet requirements for public use specified by Federal regulations issued after the date of the license and such requirements are not reasonably satisfied by the licensee.

"§ 211. Precedence of chapter

"(a) This chapter shall take precedence over any other Act which would require a disposition of rights in subject inventions of small business firms or nonprofit organization contractors in a manner that is inconsistent with this chapter, including but not necessarily limited to the following:

"(1) section 10(a) of the Act of June 29, 1935, as added by title 1 of the Act of August 14, 1946 (7 U.S.C. 427i(a); 60 Stat. 1085);

"(2) section 205(a) of the Act of August 14, 1946 (7 U.S.C. 1624(a); 60 Stat. 1090);

plication or otherwise promote the invention's utilization by the public.

"(2) A Federal agency shall not grant such exclusive or partially exclusive license under paragraph (1) of this subsection if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the country in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with the antitrust laws.

"(3) First preference in the exclusive or partially exclusive licensing of federally owned inventions shall go to small business firms submitting plans that are determined by the agency to be within the capabilities of the firms and as likely, if executed, to bring the invention to practical application as any plans submitted by applicants that are not small business firms.

"(d) After consideration of whether the interests of the Federal Government or United States industry in foreign commerce will be enhanced, any Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a foreign patent application or patent, after public notice and opportunity for filing written objections, except that a Federal agency shall not grant such exclusive or partially exclusive license if it determines that the grant of such

"(3) undertake all other suitable and necessary steps to protect and administer rights to federally owned inventions on behalf of the Federal Government either directly or through contract; and

"(4) transfer custody and administration, in whole or in part, to another Federal agency, of the right, title, or interest in any federally owned invention.

"§ 209. Regulations governing Federal licensing

"The Administrator of General Services is authorized to promulgate regulations specifying the terms and conditions upon which any federally owned invention may be licensed on a nonexclusive, partially exclusive, or exclusive basis.

"§ 210. Restrictions on licensing of federally owned inventions

"(a) No Federal agency shall grant any license under a patent or patent application on a federally owned invention unless the person requesting the license has supplied the agency with a plan for development and/or marketing of the invention: *Provided,* That any plan may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under the Freedom of Information Act.

"(b) A Federal agency shall normally grant the right to use or sell any federally owned invention in the United States only to a licensee that agrees that any products embodying

"§ 205. Preference for United States industry

"Notwithstanding any other provision of this chapter, no small business firm or nonprofit organization which receives title to any subject invention and no assignee of any such nonprofit organization shall grant to any person the exclusive right to use or sell any subject invention in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the Federal agency under whose funding agreement the invention was made upon a showing by the small business firm, nonprofit organization, or assignee either that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States, or that under the circumstances domestic manufacture is not commercially feasible.

"§ 206. Confidentiality

"Federal agencies are authorized to withhold from disclosure to the public information disclosing any invention in which the Federal Government owns or may own a right, title, or interest (including a nonexclusive license) for a reasonable time in order for a patent application to be filed. Furthermore, Federal agencies shall not be required to release copies of any document which is part of an application

"(c) that such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the contractor, assignee, or licensees; or

"(d) that such action is necessary because the agreement required by section 205 has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of its agreement obtained pursuant to section 205.

"§ 204. Return of Government investment

"(a) If after the first United States patent application is filed on a subject invention, a nonprofit organization, a small business firm, or an organization to whom such invention was assigned for licensing purposes receives $70,000 in gross income for any one calendar year from the licensing of a subject invention or several related subject inventions, the United States shall be entitled to 15 per centum of all additional such income for that year other than any such additional income received under nonexclusive licenses (except where the nonexclusive licensee previously held an exclusive or partially exclusive license).

"(b) If after the first United States patent application is filed on a subject invention, a nonprofit organization, a small business firm, or an assignee of a subject invention of such an

assign whatever rights it may acquire in the subject invention from its employee to the contractor subject to the conditions set forth in this chapter.

"(f)(1) No funding agreement with a small business firm or nonprofit organization shall contain a provision allowing a Federal agency to require the licensing to third parties of inventions owned by the contractor that are not subject inventions unless such provision has been approved by the head of the agency and a written justification has been signed by the head of the agency. Any such provision shall clearly state whether licensing may be required in connection with the practice of a subject invention and/or specifically identified work objects. The head of the agency may not delegate the authority to approve provisions or sign justifications required by this subparagraph.

"(2) A Federal agency shall not require the licensing of third parties under any such provision unless the head of the agency determines that the use of the invention by others is necessary for the practice of a subject invention or for the use of a work object of the funding agreement and that such action is necessary to achieve the practical application of the subject invention or work object. Any such determination shall be on the record after an opportunity for a hearing. Any action commenced for the judicial review of such determina-

support and that the Government has certain rights in the invention.

"(7) In the case of a nonprofit organization, (a) a prohibition upon the assignment of rights to a subject invention in the United States without the approval of the Federal agency, except where such assignment is made to an organization which has as one of its primary functions the management of inventions and which is not, itself, engaged in or does not hold a substantial interest in other organizations engaged in the manufacture or sale of products or the use of processes that might utilize the invention or be in competition with embodiments of the invention (provided that such assignee shall be subject to the same provisions as the contractor) (b) a prohibition against the granting of exclusive licenses under United States patents or patent applications in a subject invention by the contractor to persons other than small business firms for a period in excess of the earlier of five years from first commercial sale or use of the invention or eight years from the date of the exclusive license excepting that time before regulatory agencies necessary to obtain premarket clearance unless, on a case-by-case basis, the Federal agency approves a longer exclusive license. If exclusive field of use licenses are granted, commercial sale

"(3) At least once each year, the Comptroller General shall transmit a report to the Committees on the Judiciary of the Senate and House of Representatives on the manner in which this chapter is being implemented by the agencies and on such other aspects of Government patent policies and practices with respect to federally funded inventions as the Comptroller General believes appropriate.

"(c) Each funding agreement with a small business firm or nonprofit organization shall contain appropriate provisions to effectuate the following:

"(1) A requirement that the contractor disclose each subject invention to the Federal agency within a reasonable time after it is made and that the Federal Government may receive title to any subject invention not reported to it within such time.

"(2) A requirement that the contractor make an election to retain title to any subject invention within a reasonable time after disclosure and that the Federal Government may receive title to any subject invention in which the contractor does not elect to retain rights or fails to elect rights within such time.

"(3) A requirement that a contractor electing rights file patent applications within reasonable times and that the Federal Government may receive title to any subject inventions in the United States or other

extent permitted by law or Government regulations available to the public on reasonable terms.

"(g) The term 'made' when used in relation to any invention means the conception or first actual reduction to practice of such invention.

"(h) The term 'small business firm' means a small business concern as defined at section 2 of Public Law 85–536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration.

"(i) The term 'nonprofit organization' means universities and other institutions of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)).

"§ 202. Disposition of rights

"(a) Each nonprofit organization or small business firm may, within a reasonable time after disclosure as required by paragraph (c)(1) of this section, elect to retain title to any subject invention: *Provided, however,* That a funding agreement may provide otherwise (i) when the subject invention is made under a contract for the operation of a Government-owned research or production facility, or (ii) in exceptional

"208. Domestic and foreign protection of federally owned inventions.
"209. Regulations governing Federal licensing.
"210. Restrictions on licensing of federally owned inventions.
"211. Precedence of chapter.
"212. Relationship to antitrust laws.

"§ 200. Policy and objective

"It is the policy and objective of the Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development; to encourage maximum participation of small business firms in federally supported research and development efforts; to promote collaboration between commercial concerns and nonprofit organizations, including universities; to ensure that inventions made by nonprofit organizations and small business firms are used in a manner to promote free competition and enterprise; to promote the commercialization and public availability of inventions made in the United States by United States industry and labor; to ensure that the Government obtains sufficient rights in federally supported inventions to meet the needs of the Government and protect the public against nonuse or unreasonable use of inventions; and to minimize the costs of administering policies in this area.

"§ 201. Definitions

"As used in this chapter—

"(a) The term 'Federal agency' means any executive agency as defined in section 105 of title 5, United States Code, and the military departments as defined by section 102 of title 5, United States Code.

cerns and to take such action as may be necessary to change or eliminate such discriminatory procedures.

DEFINITIONS

SEC. 104. For purposes of this title—

(1) the term "Federal agency" means an executive agency as defined in section 105 of title 5, United States Code, or a military department as defined in section 102 of such title;

(2) the term "contract" means any contract, grant, or cooperative agreement entered into between any Federal agency and any organization or person for the performance of experiments, developmental or research work and includes the assignment of any such contract, the substitution of parties to any such contract, and the letting of any subcontract to any such contract;

(3) the term "small business concern" has the same meaning as in section 3 of the Small Business Act;

(4) the term "small business innovation research program" or "SBIR" means a program under which a portion of a Federal agency's research or research and development effort is reserved for award to small business concerns through a simplified, standardized acquisition process having a phase for determining, insofar

(2) prohibit each Federal agency and each office or component thereof from excluding any small business concern from competition for any research and development contract on the same terms and conditions as any other business concern;

(3) require each Federal agency to consider unsolicited research and development proposals from small business concerns and to promptly and fairly review such proposals based upon their merits;

(4) require each Federal agency to consider small business concerns on an equal basis with any other business concern in the award of sole source research and development contracts;

(5) require that, for purposes of determining expenses of a research and development contract, the independent research and development costs and the bid and proposal costs incurred by small business concerns shall be attributable to expenses of the contract in the fiscal year in which such expenses are incurred;

(6) require each Federal agency to evaluate the feasibility of dividing all proposed large scale research and development contracts into smaller segments in order to facilitate the participation of small business concerns in such contracts;

of that research to technological innovation in the private sector or for technological innovation in products intended for Government use; and

"(3) the terms 'research' and 'research and development' have the meanings given to such terms by the Cost Accounting Standards Board.".

REGULATIONS FOR THE SBIR PROGRAM

SEC. 102. (a) The Administrator for Federal Procurement Policy, in conjunction with the Small Business Administration and the National Science Foundation, is authorized and directed to promulgate and issue appropriate regulations, in accordance with the provisions of this Act and within one hundred and twenty days of its enactment, for conduct by Federal agencies of small business innovation research programs established pursuant to section 9A of the Small Business Act. Such regulations shall—

(1) provide for simplified standardized and timely SBIR solicitations, proposals, and evaluation processes;

(2) require Federal agencies to coordinate SBIR solicitation release schedules with the Small Business Administration; and

(3) include uniform requirements for patent rights and rights in data that are commensurate with the intent of this Act.

SBIR program shall not be counted as meeting any portion of the percentage requirements of this section.

"(d) Each Federal agency required by subsection (c) to establish an SBIR program shall, in accordance with this Act and regulations issued under this Act—

"(1) determine categories of projects to be in its SBIR program;

"(2) issue SBIR solicitations in accordance with a schedule determined cooperatively with the Administration;

"(3) receive and evaluate proposals resulting from SBIR proposals;

"(4) select awardees for its SBIR contracts;

"(5) administer its own SBIR contracts (or delegate such administration to another agency);

"(6) make payments to SBIR contractors on the basis of progress toward or completion of the contract requirements; and

"(7) make quarterly reports on the SBIR program to the Administration.

"(e) Each Federal agency subject to the requirements of subsection (b) or (c) of this section shall report quarterly to the Administration the number of research and development contract awards to small business concerns under this section (for contracts over $10,000 in amount) and the dollar value

ested small business concern the opportunity to participate in Federal agency small business innovation research (SBIR) programs;

"(3) coordinate the development of a schedule for release of SBIR solicitations with participating agencies, and prepare a master release schedule to preclude several Federal agencies from releasing such solicitations at one time and thereby limiting the opportunities of small business concerns to respond to some solicitations;

"(4) independently survey and monitor the operation of SBIR programs within participating Federal agencies; and

"(5) report annually to the Select Committee on Small Business of the Senate and the Committee on Small Business of the House of Representatives on the activities of Federal agencies in meeting the small business research and development set-asides required under subsection (b), the SBIR programs of the Federal agencies, and the information and monitoring efforts of the Administration related to the SBIR programs.

"(b) For fiscal year 1980, each Federal agency shall set-aside for award to small business concerns a percentage of the total dollar amount of its budget for prime research and

STATEMENT OF FINDINGS

SEC. 2. The Congress finds and declares that—

(1) technological innovation creates jobs, increases productivity, competition, and economic growth, and is a valuable counterforce to inflation and to the United States balance-of-payments deficit;

(2) small business is a principal source of the Nation's major innovations;

(3) small businesses receive less than 4 per centum of Federal funds for research and development;

(4) private technology expenditures in the United States are highly concentrated in certain fields and industries, as only six industries account for over 85 per centum of all industrial research and development spending and only thirty-one companies, many of them multinational companies, account for 60 per centum of total United States research and development;

(5) the tax structure of the Internal Revenue Code of 1954 provides insufficient support for the formation, growth, and long-term independent operation of small businesses; and

(6) it is in the national interest—

(A) to strengthen the ability of small businesses to be innovative;

Senator STEWART. I appreciate your comments, because that is the concern I was addressing.

To give you some examples of what I mean by research and development, we have had some hearings on saving the small farmer in the Agriculture Committee. It is a very important and vital issue in this country.

During the entire time we had those hearings, we did not hear once about agricultural innovation.

Many of the people who came and testified were connected in one way or another with large-sized concerns. They did not talk about the technology that is available, such as the new kinds of tillage equipment and other things available. All of this type of information came from small companies. Some of those smaller firms obtained their first research money from the Government. They had begun to develop some innovative kinds of things, but if they had had what you are talking about—my ear and the ear of Government policymakers—imagine what could have been done.

Solar technologies is another example. Nobody said a word about the development of small-scale systems. But yet smaller companies are marketing energy-efficient products.

That tells the tale to me of what research and development money can do for those smaller companies and the country. I think you have something here that you probably should share with the Senators concerned with energy legislation.

Mr. GREEN. Senator, I know others would be interested, too. We are doing a demonstration in Utah and New Mexico on growing plants that grow oil, and this indeed is crude oil that comes from the milkweed species in Utah, and we are monitoring how many barrels per acre per year we can grow.

It is not really a new area, in fact this has been talked up around the world, and we are actually doing it.

Here is a tube of crude oil, the first we extracted from milkweed in Utah, and our goal is to monitor how many barrels.

Senator STEWART. I deeply appreciate your coming hear today. I want to say to you all that this is a beginning of a series of hearing, and hopefully, the development of a consensus in the Senate and in the House. You all have a lot of answers to a lot of the problems of this country of ours.

Somebody told me the other day that not since Harry Truman, have we had folks in Washington that have been concerned with small business people and the small business community. I would disagree with that.

There are a lot of people I serve with in the Senate that are very much concerned about the small business sector. A lot of us are new to this business, but we plan to stay with the program and the issue until we get some meaningful results.

Before closing, I want to mention that we will include in the hearing record a copy of the innovation report prepared by the Chief Counsel for Advocacy, Milton Stewart. Excerpts from various subcommittee reports prepared for the Advisory Committee on Industrial Innovation, which was established as part of the President's Domestic Policy Review, will be included as well.

Thanks to all of you.

We stand adjourned.

[Whereupon, the committee was adjourned at 12 noon.]

I used to always criticize our Government people for coming out with a 17-man preaward team to a company like ours which had 4 people to talk to. It is kind of difficult to talk about the bid requirement if we do not have experience in that particular field, we might never convince them. There are many Government checkpoints, there is the preliminary award, postaward, and with everything else being monitored, contractors having problems should be recognized. I think the mechanisms are there, and unfortunately you have an instance where the surveillance system did not work.

Senator SCHMITT. There was one more mechanism, it was a common decision that awards go to small business. I had no problem with it at the time, but there were concerns.

Senator STEWART. I think you can point out many events in large sized projects that turned out to be just as much a problem.

Senator SCHMITT. I agree. I think I will leave it at this point, but if you have any further thoughts on this problem, of deciding on this 10 percent. It is a problem, but it is one that can get you or the Government in trouble.

Mr. DANIELS. As I indicated, some 3 percent goes to small business. We really have two recommendations, one that this 3.4 percent begin to grow at 1 percent a year in the R. & D. area.

We have a second recommendation, where we have an agency that has $100 million in R. & D. budget, that they be tabbed to put 1 percent of this into small business.

The procedure for small business set-aside would permit a small business set-aside to proceed with at least two qualified sources if found available.

Somewhere in NASA you may interject that you had two qualified sources, and you were wrong, but you are going to be wrong sometimes, and if you are going to go down this route, obviously you will have situations where you will be sorry you made the small business set-aside.

Senator SCHMITT. But you think on balance that is still a good type of procedure?

Mr. DANIELS. The reason I feel that way, because of the subject you really have to talk about mainly competition, and I think one of the reasons why the Government——

Senator STEWART. I was trying to talk about that a minute ago. I think there is some competition from public policy.

I think research money sets that policy, and you gentlemen are not getting enough of the research money to provide competition in some areas.

It is my understanding all business and industrial firms receive some 46 percent of the basic and applied research moneys expended by the Government.

Is that a correct figure?

Dr. SPRINGBORN. I believe I gave you basic research.

Mr. DANIELS. But if you take that and go to the whole field, it quickly drops back into 3½ percent.

Senator STEWART. That would sound about right.

I also wanted to ask you about procurement. How much of the procurement dollars are involved?

Mr. DANIELS. Roughly 20 percent of the procurement dollars.

Senator STEWART. Goes to small business?

Mr. DANIELS. Yes.

could be implemented, it was the right philosophy. I am very, very excited to hear you are making some progress in the industry.

Mr. GULLER. This is the industry, not the Bureau of Mines.

Senator SCHMITT. I understand.

Senator STEWART. It took you 1 year to solve that one problem?

Senator SCHMITT. It is one of the reasons why we have to do what these gentlemen are requesting us to do. Innovation is in a crisis, and for small business, it is innovation that says the independent exploring companies and producers are to discover energy supplies.

You all have the same kind of mentality about risk taking, the need to turn over capital so it further stimulates innovation. I think that we have to do something, and I do not think we are nearly doing enough. It is my hope that this committee will become the champion on the good news side. The 95th Congress did take some steps as you described in tax policy and there is an effort under way now with S. 1597 which provides R. & D. incentives, depreciation incentives, and also savings, investor savings incentives.

We would also call your attention to the progress that the chairman has already mentioned is being made, in trying to get legislative control over the major rulemaking activity of the Federal Government. The suggestion now is to decide how do we pull these things together, so this list of recommendations that has been made can be implemented. If we do not do it these opportunities may pass.

All you have to do is look at the record of small business formation versus small business formations of years ago, and obviously there are a lot of things wrong because things are not happening as they should.

Mr. ABRAHAMSON. May I sort of summarize this by explaining that whereas none of our recommendations requires increase in any Federal appropriations—not a nickel—one of them would require some adjustment in the portion of R. & D. funds going to small businesses. At present only 3 percent of the R. & D. funding is going to small business.

What we are calling for is that each Federal agency receiving R. & D. funds be required to direct some percentage of those funds, let us say 1 percent for the first year, and increasing by 1 percent increments annually, so that at the end of 10 years, 10 percent of that agency's R. & D. funding goes to small business.

I do not think there is an agency in town that could make a credible argument that that is impossible.

I do not think 1 percent per year over a 10-year period is going to be a hardship on any agency receiving R. & D. moneys, so I would urge you to consider very seriously that recommendation.

I think it is extremely well founded; it has been carefully researched and discussed widely.

Thank you.

Senator HUDDLESTON. I want to express my personal appreciation to all of you for appearing before us today. Senator Nelson hoped to be able to get here, but unfortunately was unable to do so. I know he is very interested in this subject and the whole range of recommendations you have made. He will give his energy and considerable talent to this cause.

You are making a very good record. I appreciate the frankness with which you are presenting your views. Thank you.

Similarly there is a concentration of U.S. industrial R. & D., into a few industries and into a few companies.

According to the numbers in a Government publication, in 1976, six industries account for 85 percent of total U.S. industrial R. & D.

Ten companies do 36 percent and 31 do over 60 percent.

Greater than 80 percent administrative R. & D. is carried out by only 200 firms.

Senator SCHMITT. Is that large size firms or small size firms?

Mr. CRONIN. Those are large. McDonnell Douglas——

Senator SCHMITT. Do you see the benefit of subcontracts, are they generally exchanged?

Mr. CRONIN. No; I see no benefit.

Dr. GOODHEART. The majority of that does go to large firms. We are not in the aerospace business, so I am not aware of that from a personal standpoint; however, we used to be eligible for contracts through the NCI. Technically, I suppose we still are; however, the NCI has recently changed policy, so that it specifically does not award as many contracts anymore. They have shifted to a grant mecbanism; the great majority of the work for basic research tbrough the National Cancer Institute is to be awarded by grant rather tban contract.

The implication is that companies such as ours are not eligible to work in the cancer program because we are not eligible to receive grants, so that cuts out work that we have been doing over the last 8 or 9 years. No longer is it fundable by the contract mechanism.

We dropped more than 50 percent in size when that happened. We had 26 employees before the termination of the contract, and we now have 10 people.

Dr. SPRINGBORN. The Federal basic research funds, by performance, the latest data I have, and this goes to 1960 to 1977, the source is National Patterns of R. & D. Resources, National Science Foundation, I can leave a copy of this if you would like. In 1977, $3.5 billion was spent, the Federal Government laboratories received $750 million, or 21 percent, industry received $175 million or 5 percent, and the large universities and colleges received 55 percent. The associated Government laboratories received 10 percent, and nonprofits 8, and some of the industry, that includes large industry, only 5 percent, and some small innovative businesses received a small percentage of 5 percent, that may be a little more precise answer to your question.

This is from the National Science Foundation. That is basic research. I also have the data for applied research, but these data are all available.

Senator HUDDLESTON. In regard to development of your fresh air mechanism, how extensive is that in use now?

Mr. GULLER. Senator, it is being used in Gary, W. Va., quite extensively in several of the mines that are run by United States Steel.

It has been in use now for a couple of years, sir.

Senator HUDDLESTON. Did your company develop this?

Mr. GULLER. Yes, sir.

Senator HUDDLESTON. Were you under contract?

Mr. GULLER. No. We took it—the development costs—out of our earnings.

State, all very fine people and working very hard, but they are all competition.

Dr. SPRINGBORN. I do think the innovative approach should be on the broad front also, I am sure it has been expressed to you by others, the thought that relates to the regulatory process. I believe our great country was founded on the principle of innocent until proven guilty, but in the regulatory field we are guilty until proven innocent. There can be a tremendous financial and negative manpower impact to the small business just trying to defend ourselves against the regulatory processes.

I know George Lockwood deals with 42 agencies, and any one of them could destroy his business, and he is guilty until proven innocent, and I wish we could get back to the fundamental concept of innocent until proven guilty, and the burden of proof should be on the Government, not the burden of proof on us, so either that or provide a tax credit for all costs incurred in defending ourselves against the regulators.

Senator HUDDLESTON. I will not disagree with that. There are some efforts being made to require congressional review of some agency regulations. There is another measure pending that would reimburse a litigant for his legal fees if he prevails when challenging regulations.

Senator STEWART. That has just been passed.

Senator SCHMITT. It has passed the Senate.

Senator HUDDLESTON. I think passage of that measure indicates there is more interest now in equalizing the situation and not putting all of the hurden on the business person.

Many times we forget that regulation is sometimes more difficult to deal with than law.

I would much rather go to court on a matter of law than have to confront a regulatory problem.

I think your chances of prevailing are better and it is usually less expensive.

Senator STEWART. I want to interject one comment. Since I have been here 7 or 8 months, I have had a number of visits from some large-sized concerns in the country. They are not urging deregulation. Instead they are talking about regulating certain aspects of a given industry. I am not trying to point the blame, certainly not at this group, because you are talking about a very real problem, but it might be that the patent laws, procurement policies or other policies are done the way they are, because of business. They have been established by business. Milton talks about the large-sized institutions. I think we have to recognize that as a practical matter business sometimes is as much to blame as the Government for regulation. You people are going to have to help us in dealing with that problem.

I understand that small business concerns are independent; that is the reason they are small businesses; that is the reason they are innovators. But I find sometimes when I sit down with a group of them and talk to them about getting their act together and helping to establish a broad consensus of opinion that legislators can deal with, that this intangible problem exists. I think we need to talk about it, to address it because it is a reality, and it is a problem.

I have seen lobbyists for large-sized concerns, probably one or two a day, and they are certainly not talking to me about lessening Government regulations. They do not seem to want to be regulated

Today Mr. Norris is still concerned about unemployment, but additionally about the declining productivity in our country, which runs right to the heart of our inflation situation. We know that there is technology being developed today, we know it can be improved and we know it can be stimulated. But we also know that it is not moving from the Government laboratories, from the universities, into the business community at the proper rate, and that technology unused is social waste.

We cannot afford the social waste, so we have to improve the climate to foster its use. You have heard a number of specific recommendations here, and the Norris work group made 12 recommendations, many of which deal with changes in the tax laws and in Federal policies. I should like to emphasize the point that none of those recommendations require an increase in Federal appropriations.

We endorse what Mr. Springborn just said. In many areas we need less Government; not more. Therefore, gentlemen, we commend your interest in this issue, and we are pleased to be here. Now, in representing the Norris work group, I am reay to answer any questions you may have.

Senator HUDDLESTON. Thank you very much.

I wish to thank all of you gentlemen for a very excellent presentation that rounds out the material we have in the prepared report. Your comments will be very helpful to us in gaining a better perspective.

I can certainly understand the concerns and some frustrations that have been expressed, particularly by Mr. Springborn, because this area has been examined before. The problems have been apparent, but you have not seen much activity to correct them.

As a matter of fact, this committee held a joint hearing with the House 1 year ago this August on the subject of innovation. One of my former fellow Kentuckians, Congressman Breckinridge of Kentucky, expressed his frustration in that we develop facts about the importance of small businesses, the contribution they make to employment, development, and innovation—they are responsible for half of American innovation—but small businesses do not receive one-half of the Federal Government's research and development funds.

It is the hope of this committee that we will be able to move more aggressively now. I believe that there is a better sentiment in the Congress for addressing such problems as capital formation, taxation, and certainly regulation.

These are issues still on the front burner and I hope we can keep the interest and the pressure there through this kind of hearing to implement some corrections that need to be made either through the regulatory process or legislative process.

You mentioned tax laws Mr. Cronin. That was very interesting information you gave us about capital formation which came about as a result of the capital gains reduction enacted last year.

It was my judgment at the time that there would be great benefit from such a reduction, but I have not seen any specific figures yet indicating how rapidly investors have responded to the legislation. You indicate a very impressive record whereby much more capital has been made available.

Before we get into specific questions dealing with your proposed innovation legislation, I wanted to ask whether we should try to accomplish virtually everything in one bill?

Mr. CRONIN. We will now hear from Bob Springborn, president of Springborn Labs.

STATEMENT OF DR. ROBERT SPRINGBORN, PRESIDENT, SPRINGBORN LABS, INC., ENFIELD, CONN.

Dr. SPRINGBORN. Thank you very much.

To try to save time, I would like to briefly present our credentials as requested by the chairman.

I have had 15 years experience in directing large corporation R. & D. and new venture companies, 5 years in venture capital activities, and I have been involved in helping develop 22 companies including start-ups, either as chief executive officer or as an active director.

For the past 6 years I have been developing a company called Springborn Laboratories, Inc., an international R. & D. testing and consulting company which employs about 150 people.

We have special expertise in safety, health, and in environmental issues as well as materials science and technology, testing and marketing.

We do very little Government work, less than 15 percent.

We do almost 20 percent of our work with overseas corporations.

I have been very interested in the innovation process in the United States for a number of years, and my primary reason for being involved in this national assessment of innovation is I think at this moment, we have a window which is going to last maybe a year at the most to help the small innovative business.

For many of you that have been involved with these issues for many years, you may recall that in 1967, Bob Sharpy—president of Cabot Corp.—put together an excellent report on innovation in the United States and what should be done to encourage innovation. His report states many of the same problems our ad hoc SBA committee report states. Also, Prof. Richard Morrison published a report on innovation about 10 years ago and recently reported to Congress on what had been done to date on the recommendations his committee made, his answer was "nothing!"

When reviewing the recommendations of our ad hoc SBA committee, one finds our recommendations are not much different from those of the reports and recommendations of a decade ago. We simply cannot allow another decade to elapse with no activity because the small innovative company may not survive that long.

My own concern about the lack of Government concern about the small innovative company developed during the Department of Commerce Industrial Innovation Advisory Committee hearings. As one of the six small innovative company representatives on the committee, I became very concerned about the lack of understanding of the needs of the small innovative company. Frankly, I think that small business was treated with benign neglect.

I wrote to President Carter's staff, Mr. Eisenstatt, and he did not even have the courtesy of answering the letter.

I then asked Members of the Senate to be involved in helping small business including Senator Weicker from my home State of Connecticut with no enthusiasm. The only person that responded was Milt Stewart. As a result of Mr. Stewart's efforts we got together our own ad hoc group to make recommendations to the legislative branches of Government regarding what is needed to rekindle the spirit of the

One of the sayings I often use, I say you do not have a company without sales, and, second, I say go get a Government contract in the related area for activities that are in the very early stage, where we have not even found a product yet, that are really high risk areas, and it is because of this ability to support the right cohesion, that I think Government spending, it really plays a significant role in small business development, in the innovative process.

I do think when this happens, that we accomplish two things, we accomplish performing the research and advancement of the state-of-the-art, which is usually the main product of the Government contract, we also end up in many cases in developing, in nurturing small business endeavor.

The role of Government R. & D. spending has come up over and over again in our task force deliberations, it is in this report, it is one of the recommendations that the Government takes certain action regarding spending R. & D. funds, and it came up in another report as I mentioned.

I personally believe this is a very high priority item. If I could leave one message at this hearing, it would be that I think in the early stages of innovation, the really early stages in forming the company, the scientists and the engineers have not even yet defined their product very clearly, that people are struggling awfully hard to get these basic resources, and the best talent, you are tying up the brightest engineers, scientists, the best managers, to try to get their early resources to keep your venture going.

That talent can show you a lot more toward innovating, if they could spend a little less time in seeking out these baxic resources.

I think this business is in a stage where a little bit of Government action would have a very big impact 10 to 15 years from now, that may not be the case though.

It may be that a lot of Government action has little impact, but I believe a small Government action can have a very large impact.

Thank you.

Mr. CRONIN. We will now hear from Mr. Alfred Daniels.

STATEMENT OF ALFRED C. W. DANIELS, H. H. AEROSPACE DESIGN CO., CIVIL AIR TERMINAL, BEDFORD, MASS.

Mr. DANIELS. Thank you.

The company I come from is a technology intense company, we like to think we are an aerospace company, but we found that in the transportation field there is lots more money in railroads and in surface transportation and in automobiles, so we spend a good bit of our time in applying the aerospace knowledge to new uses.

I think I would like to comment for the record that I also am president of other companies, and that I have a board position with the National Association of Black Manufacturers, I likewise am a member of the Procurement Task Force for the Small Business White House Conference.

Dan would frequently tell you I like to think of myself as better versed in procurement than in almost all of the other subjects you have talked about.

I have tried to figure out how to synopsize some thoughts for you.

air by controlling emissions. When the administration sought to find other ways to take care of some of the budget funds, the efforts to clean up the air seems to have taken a back seat, yet in many utilities around the country, where liquid natural gas is used, for storage of liquid form of energy, the some 200 utilities who store liquid natural gas can use that fuel in their fleet of cars, trucks, meter vans, and so forth.

In the liquefaction of natural gas, a byproduct is propane, and now with the gasoline shortage, propane and its conversion systems, is being used as a fuel, as a dual fuel. You can drive your car with gasoline and when that supply runs low, or the red flags go up at the gas pumps, if you had propane or liquid natural gas, all you would need do is turn off the gasoline supply and ride on either propane or natural gas.

The economy of that type of move is well known. I think propane runs approximately 27–40 cents a gallon.

Liquefaction of liquid natural gas would cost something less than 20 cents a gallon, and each gallon of this fuel is comparable in its efficiency, and in its energy to about 95 percent of gasoline. There are some examples of innovative ideas that can be developed from existing technology.

In the past month our small company has been besieged by a number of requests for the propane and natural gas conversion systems. There is a growing industry in alternate fuels for vehicles which would take more funding, and more financing than our earnings can justify. The recommendations of the small business innovative task force would go well to help in these respective areas.

I would just like to add one thing more about the possibility that small business would have with regard to exports. There are a number of countries today supplying oil to the United States and these countries are burning off the natural gas which may be a byproduct of their oil exploration, to the extent that their skies look like the aurora-borealis. It seems some of these countries that may have asked for some assistance from the United States to find a market for the natural gas, and/or the propane, have not yet met with favorable response, and it may be that perhaps the action of one such country to reduce its support of oil may be a ploy on their part to get attention to the fact that they have all of this energy that is being burned. Our efforts now with regards to the propoane, and the liquid natural gas systems have caught the attention of people in that area, and perhaps we as small business will have an opportunity to find an export market in that field.

I would like to just close with the comment that in our applied research, we have been able to accomplish a great deal with our earnings, but I wish that other organizations such as ours would have or could have the opportunities that may be possible if the recommendation in this task force study are accepted.

I think the innovation process which our administration has noted as declining at this time as opposed to that in the fifties and the sixties, may be accelerated by the administration similar to the goal set by President Kennedy when he said we will put a man on the Moon. Now that President Carter has said that we will develop synthetic fuels, and work on the energy program, perhaps we have here again an area whereby our country's industrial efforts can be galvanized, and all of the companies, small and large, can enter into that developed field with regard to research.

STATEMENT OF HAROLD GULLER, ESSEX CRYOGENICS INDUSTRIES, ST. LOUIS, MO.

Mr. GULLER. Thank you.

I guess our first opportunity to be innovative was to begin in a defunct funeral parlor, where to progress, did not take much, everything had to look up from that point on.

Senator SCHMITT. You started out with a few skeletons.

Mr. GULLER. I had not thought about that, but that is absolutely true.

Part of my task in payment of rent was to assist the other organization in moving some of the caskets around, some of which did rattle.

Our office was parlor A, our engineering department was in parlor B, and we kept our spare parts in a little room in back of the chapel.

Senator SCHMITT. Spare parts room?

Mr. GULLER. Right.

It has been a little while since then, and we are now a small family of companies; 5 small companies together, which employ about 300 people.

It was 30 years ago we started in the defunct funeral parlor, and in between we were blessed to find as we expanded a defunct bank in which to grow. Our machine shop had the only marble floor and marble columns in that particular area of town, and we were able to use the vault for our spare parts.

Our efforts are primarily in the field of aerospace products, and each of our companies has a definite direction or discipline.

For example: Our cryogenics company deals with many components in the low temperature liquid gas field. Our subsidiary Propellex produces products in the pyrotechnic field, items that function in the ejection systems of aircraft, that permit a pilot and his crew to be ejected from the aircraft in a time-delayed sequence to avoid the rocket blast from the forward seat.

We also have the capability and have demonstrated the possibilities of delivering ordnance from aircraft today. Many of our existing military aircraft carrying ordnance are not like the ones in the World War II movies, where the bomb bay doors open and the 500-pound bombs drop out. Some of these aircraft fly so fast that they have to gently kick the ordnance away from the aircraft airstream. Propeller engineered products assist in that area.

We have a screw machine subsidiary that fabricates a lot of the detailed machined work. We recently acquired an organization that manufactured and designed special valves and controls that are used in general aviation industry, business industry as well, and our parent company handles most of the designs in other fields, such as electromechanical items, hydraulic, jet fuel, pneumatic, and so forth.

An example of our products is the pilot's grip assembly—the grip stick with which the pilot flies his aircraft. Our design is being used on McDonnell's F–4, and the McDonnell's F–15, on the Rockwell B–1, and on the F–18 aircraft.

INNOVATION THROUGH APPLIED RESEARCH

There are engineers in our small company who are capable of good ideas, just as well as good engineers from many large organizations. With borrowed funds, and the earnings of our companies, we are able

4. The last item I would like to mention is a new idea we have for growing cells in culture. In this new method, we would grow the cells in a flowing stream of nutrients, rather than using individual test tubes, bottles, or flasks. The output of cells, and cell products, would be greatly increased, and the cost would be much lower than with the present methods. Machines using this new concept could readily be controlled with small computers. The low cost production of large quantities of cells would make the innovations described in preceding paragraphs much more feasible. It would also permit the development of new products that now would get only a brief consideration because of untenably high costs.

The above examples have been chosen to illustrate some of the innovative concepts that could be worked on by a small company. It should be clear that not all of them originated at BioLabs; the concept of a new method of cell growth, however, did originate with BioLabs, and that idea, if it can be brought to commercial realization—thus qualifying it to be called an innovation—will permit the others to be undertaken at much higher probability of success and at much lower cost.

OBSTACLES TO INNOVATION

Many problems stand in BioLabs' way in bringing these, and other, products to the benefit of the people. During the ten years of BioLabs' existence, I have frequently had to cope with these problems. I would like now to discuss some of them, including those we have encountered while attempting to work on other potential innovative concepts we have had, but which we have been forced to abandon.

The biggest problem of a company such as ours is obtaining capital with which to work. The last ten years have been particularly lean in this respect, largely due to the removal of the favorable tax treatment of long-term capital gains that occurred in the late 1960's. The tax change that eased that burden has had some effect in again making capital available. The report of the Small Business Administration Office of Advocacy Task Force on Innovation has many recommendations for creating a more favorable environment for small companies to obtain capital, and I will not go into more detail here. Suffice it to say that adequate capital markets are essential to a healthy climate for business in general, and for small business in particular. The capital needs of small businesses, especially small, innovative, high-technology businesses such as BioLabs, are very different from the needs of giant corporations. This fact needs to be understood and faced in any legislative proceedings. We hope our report makes this clear.

BioLabs has submitted a proposal for a Phase I grant for funds under the Small Business Innovation Research solicitation of the National Science Foundation. This would be a study of the feasibility of growing cells, as described in a preceding paragraph. If the grant is awarded, the value of that program of the NSF will be illustrated graphically. The merits of the program are so great that our task force felt it should be extended to other agencies of government, as indicated in our report.

Another problem area concerns patents. Of the examples of potentially innovative products BioLabs could develop, as discussed above, the only one that I believe to be patentable is the new way of growing cells, and apparatus we would design based on that concept. We have made disclosure of the concept, thus establishing a date and priority. Because of probable nonpatentability of the other items, we may have to drop further development. Acquisition of capital is difficult even under the best of conditions; if a new product is not subject to patent protection, the risks become impossibly large for investors who might otherwise provide capital. A large company with impressive marketing strength does not face this problem. If BioLabs were to develop a new product on which there was not any patent protection, that is successful enough to appeal to a large company, that company could very quickly take the market away from us. Thus, there would be more concentration of power in the large company and less competition. Contrary to some popular belief, strong patent laws help create a healthy innovative climate and increase competition, as was foreseen by the writers of the Constitution.

You may be interested in an incident that occurred a few years ago concerning patents. I was discussing a proposed project with a National Science Foundation official. BioLabs proposed to work with Armour Pharmaceutical Company to develop a way to utilize waste blood from packing houses as a new protein source. We were told that Armour had so many patents in this area that the government would not be able to obtain a controlling patent, and therefore the NSF was not interested in the project. Yet only a few of the government-controlled patents ever get used for the good of the people.

could, but I know somebody who can do it a lot cheaper. We cannot compete on price, and in good consciousness, I must tell you about it." Then I give them the name of the University. Naturally, they have not had us do their testing.

This is one area of competition that is unfair: Universities are tax exempt, and that seems to me an abuse of the tax-exempt status.

We also have had problems with patent protection—I am sure others here this morning will speak about this also.

We found that if we come up with an idea for a new product or a process that is not patentable, it is virtually impossible to get it funded. The capital risk involved is too large, and that virtually kills it. We do need stronger patent protection.

A few years ago, I was talking to officials at the National Science Foundation about a project.

We proposed to go in with a large pharmaceutical company to develop some better uses of certain blood products.

The National Science Foundation officials pointed out that the other company had many patents in this area, and therefore, it would be impossible for the Government to get a controlling patent. They said that if the Government cannot get a controlling patent, they would not be interested, so that idea was dropped.

What I am trying to stress is that ideas for new products often get killed in the idea stage before anything else is pursued on them, and there is an unknown and immeasurable loss. Sure, a few ideas get through, and we hear of examples. But how much more could be done, that is the important thing, really so much more could be done is the climate were better, so that the ideas would not have to get killed.

I have a prepared statement covering the above remarks in more detail which I would like to ask be made a part of the record.

Senator HUDDLESTON. Without objection, so ordered. Thank you very much.

[The prepared statement of Dr. Goodheart follows:]

STATEMENT OF CLYDE R. GOODHEART, M.D., PRESIDENT, BIO LABS, INC., NORTHBROOK, ILL.

INTRODUCTION

Mr. Chairman and Members of the Committee, my name is Dr. Clyde R. Goodheart. I am founder and President of BioLabs, Inc., located in Northbrook, Illinois, one of the northern suburbs of Chicago.

Briefly, my background is as follows. After finishing medical school and my internship, I took a three-year fellowship at the California Institute of Technology in cancer virology and tissue culture. My director was Dr. Renato Dulbecco, recently a Nobel Laureate. Then I did basic research in virology at Childrens Hospital of Los Angeles for four years. When the American Medical Association-Education and Research Foundation opened its Institute for Biomedical Research at its Chicago headquarters, I started and directed the laboratory for cancer virology. Our work was devoted to basic research in understanding the cancerization process. Five years later, in 1970, the AMA discontinued the Institute, and I founded BioLabs. Now, in addition to being President of BioLabs, I hold the rank of Professor, Department of Microbiology, Rush Medical College. Recently, it has been a great pleasure for me to work with Mr. Milton Stewart, Chief Counsel for Advocacy, Small Business Administration, on the Task Force for Innovation by Small Business.

BioLabs is a small, independent laboratory providing services in research, product development, quality control and sterility testing, and sterile bottling. We also make and distribute products for laboratories doing tissue culture. Our work is therefore primarily in microbiology and tissue culture. This is the first

of the year, $50 million is pension fund money has been invested in venture funds, so I think the Congress ought to be commended for the positive steps it took in producing positive results by reducing the capital gains tax.

In our review, three of the recommendations applied to encouraging capital formation, one of those is to defer the tax so that the capital is reinvested in other qualified small companies during a certain period of time.

Second: Another important recommendation is the restoration of qualified stock option, this is particularly important I would say for innovative companies, because they are a long time in becoming successful.

Enhancement of subchapter S provisions permitting up to 100 investors, including corporations to be stockholders in subchapter S corporations is important.

Other recommendations are targeted more specifically at special kinds of small companies. The young innovative companies on the threshold of new technology, these are the very high risk stocks, they are not ready yet for investment by venture funds under the current rules of the game.

They can he capitalized by leaning on management capacity, they are the ultimate ventures. These are the kinds of companies that usually ahsorb far more funds for their venture products.

Venture capitalists are risk takers, and their careers can be short-lived.

It follows that in the companies for which the task force is concerned are classified as long shots, and the odds for venture capitalists have frequently invested in the unknown.

The recommendation is to tax capital gains from investment in firms held for a minimum of 5 years, and one-half the regular rates, 14 percent maximum.

What we are trying to do is improve the odds on long shots.

Second: Allowing losses of such companies to flow through to individual investments. This would lighten the loss on the losers, and then finally extend the period of exercising stock options, for a maximum of 10 years, and this is to encourage the employees to stay with the company.

I think this is a critical thing. We are getting a better deal in business, but still the raising of capital is phase 1, and then you have to make the investments and the trick is to have people take the risk.

I think the point is to encourage people to quit the good job with the nice pension, and all of the benefits, to take the risk in forming a new company, and to help the company itself preserve cash, we made these recommendations, to extend the period for loss carryover from 5 to 10 years, second, allow the company to write off specialized equipment, instrumentation, for developing testing, over the period of 5 years; and third, allow the company to set up a research and development program for use in periods of distress.

I think these are critical and important recommendations for these unique companies, companies that frankly are not being supported vigorously by the venture capital community.

We have a fiduciary responsibility for our investors, and you will find if you look at the average venture capital portfolio, about 1 out of every 10 is what you would call a long shot.

innovation in America had declined during the past decade and ordered the Secretary of Commerce conduct a review of matters affecting innovation.

The Secretary of Commerce put together an Advisory Committee of some 150 executives of a broad range of American enterprise, some 6 or 7 of us where from small businesses interested in innovation.

There were seven subcommittees that we were assigned to, having to do with economic policy, regulatory policies, Federal procurement, Federal R. & D., patents, concentration, industrial concentration, and an information exchange.

After the completion of the reports of these task forces, it was decided by those of us from the small business community that we might possibly wish to prepare our own report, having learned from their larger experience, but directing it more toward the peculiarities of small businesses in the innovative process, so that is why this report was prepared for the Secretary of Commerce, Mr. Stewart has included it in his particular document, and it is interesting that many of the conclusions we have reached, and many of the recommendations we have made are the same that keep emerging from other studies, even though the genesis of our work was in the domestic policy review.

We make recommendations in basically five areas. We have concluded that a major impact is being made on innovation by small independent firms because of the tax policies of our country.

Also the policies that have to do with flow of retirement savings, and the policies of the Securities and Exchange Commission.

These are having a major impact on the flow of capital which is an essential tool for small business innovation.

Second: In the area of innovation, it is quite clear to us that regulations that are intended to affect all other areas of business and to apply equally to all areas of business, when they apply to small business are disproportionately discriminatory, that small innovative businesses are having a very difficult time complying with and meeting the regulatory standards that are coming out from the Congress, and from our regulatory agencies.

In the area of Federal procurement, the small innovative firm basically has been excluded from this area of this huge and important market.

In the area of Federal R. & D., there has been a very disastrous trend over the years to have more and more of our applied research done out of the private sector, and done in universities, and yet small innovative firms have an enormous potential to contribute in this area.

In the area of patents, we have seen a disastrous trend occur, again in the past 10 years, where the value of patent protection for small firms particularly has declined substantially.

Patent litigation is very expensive, and for a small firm to be faced with a $250,000 suit in order to defend their patent rights simply means that many small firms cannot properly enforce the patent they have, and on top of that, the quality of patents has substantially declined, something like 50 percent of the patents contested in court are now found to be invalid, so there is again the small businessman and small businesswoman who simply cannot pursue technology with the same degree of protection as can large companies.

national problems and their relationship to small science-based companies. In turn George Lockwood played the lead part for the six members of the Domestic Policy Review Group, which is the second document reported here.

The final group limited its considerations. The six members of the Commerce Group were co-opted for discussion purposes, but joined in approving the document. What in effect they decided they would do is actually draft a layman's version of what kind of law they would like to see on the books.

The central question they were trying to answer is most simply put this way: What do we as innovative entrepreneurs need from the Federal Government, affirmatively and negatively? What shoud they do and stop doing, to bring back to the economy the kind of entrepreneurial environment we had in the late fifties and early sixties, when men and women felt very freely they could leave Government, or major corporations, academic campuses, and go on their own, and start the kinds of businesses these people run?

There has been a generally noted decline in that activity, and we raised the question of what kinds of changes do we need to make or what contribution to Government policy are needed to bring back that entrepreneurial climate for all of the reasons set forth in these studies.

There are some dissents noted, These, like all small business prople, are very stiff-necked people. They would put things in their own very special way. You will find trouble in getting them to agree or disagree but with reference to their shyness, they are all very articulate people.

Not all of the people involved are here today. Sherman Abrahamson represents a task force of 14 people; George Lockwood and Robert Springborn, a task force of 6 people; Dan Cronin, 7 venture capital managers, all of whom have financed innovative businesses. The other five fellows are heads of small innovative businesses. They are not here today, but they are represented in the conclusions.

For your convenience, we have included a comparative table of the recommendations and comments of all three groups. They are under five or six headings, tax recommendations, research and development recommendations, regulatory procedures, capital investment recommendations, procurement recommendations and patent recommendations.

By way of conclusion, my contribution to this process is summarized in three brief pages at the beginning of the document. In summary I have tried to explain something about the nature of the consensus. With your permission, I would like to read these 9 sentences which summarized what seems to be the heart of the agreement among the 14 people involved in this project.

One: The critical need is for an entrepreneurial environment far more favorable to innovation and risktaking than we have had for the past 10 years;

Two: Primary reliance for innovation can and should be placed on the orivate sector;

Three: The unsatisfactory environment for innovation and risk-taking results from the cumulative impact of a number of Federal policies;

Four: Small business is the most underutilized particpiant in tbe Nation's innovation process;

special assistant to the chief executive officer, Control Data Corp.; Mr. Dan Cronin, Ampersand Associates, Boston, Mass.; Mr. Alfred C. W. Daniels, H. H. Aerospace Design Co., Bedford, Mass.; Dr. Clyde R. Goodheart, president, Bio Labs, Inc., Northbrook, Ill.; Mr. Sid Green, Terra Tek, Inc., Salt Lake City, Utah; Mr. Harold Guller, Essex Cryogenics Industries, St. Louis, Mo.; Mr. George Lockwood, Monterey Abalone Farm, Monterey, Calif.; and Dr. Robert Springborn, president, Springborn Labs, Enfield, Conn.

Mr. Stewart, you may proceed with your statement and with the panel.

STATEMENT OF MILTON STEWART, MODERATOR OF PANEL DISCUSSION, CHIEF COUNSEL FOR ADVOCACY, U.S. SMALL BUSINESS ADMINISTRATION

Mr. STEWART. Mr. Chairman, Senators, I would just like to take the time to state that I appeared before this committee which recommended my confirmation to the Senate just about 1 year ago.

One of the things I said then was that a great void in the Federal Government was the absence of a point of spokesmanship for the small businessman, particularly the innovative entrepreneur, which Senator Hayakawa has been pleased to call attention to, and while innovation and entrepreneurship are not unique, there are innovative entrepreneurs even in the executive branch of the Government, as well as in both Houses of Congress, the innovator has a particularly hard role to play in a society particularly dominated by large-scale institutions.

I would like to mention that the men who are innovators, who are entrepreneurs, are the kind of men who have put together the document that is before you. They are all listed in that document, so you can make easy reference as they talk to you today.

There are three reports contained in this document. In one of those Mr. Sherman Abrahamson, directly to my right, represents 14 people who prepared a study for the Assistant Secretary for Commerce for Science and Technology on the Significance of Small Innovative Businesses for Job Creation.

That is chronologically the first of the reports, and in that document 12 recommendations are cited. There are biographies of the 14 people involved at the tail end of the document.

George Lockwood and Bob Springborn, over to the left here, represent six members of the Domestic Policy Review Layman's Group which the Commerce Department set up as part of the President's Domestic Policy Review Study.

The other five people represent the SBA Advocacy Task Force on Innovative Small Business People in general.

They are all included in the document's biographies of these gentlemen and I will let them tell you about themselves, as we proceed during the morning.

What I would like to make a matter of record is how these groups came to be pulled together for this purpose.

First of all, the Administrator for the SBA designated me to represent the agency in the Domestic Policy Review, and as a part of that process, it became clear to me we needed some input directly from

relatives are asked to invest in their new idea, do so out of kindness rather than out of any real belief in his project, but these are the glowing points of culture. The real conservative forces, Mr. Gilder says, are the conservative types of big business, the big labor unions and big Government, as opposed to the free independent-minded individuals, whether in Government, or in academia, for that matter, as in the area of my experience, or in business, who are threading new paths.

My father was a small businessman, but my own academic experience is fascinating to me in light of what people are doing—like your "crazy abalone farm."

You know, when I became interested in semantics, back there in the late 1930's, the professor under whom I earned my Ph. D., a professor I respected highly, told me not to mess around with semantics.

You are establishing a reputation as a literary scholar, so do not please mess around with semantics, it will ruin your career, so I should have listened to him.

Senator HUDDLESTON. And look where you are.

Senator HAYAKAWA. Right. [Laughter.]

So I should have listened to my professor. Anyhow, you see how I have sympathy for those with the wiser heads, not with those who say do not mess around with the abalone farm, or do not mess around with trying to develop a new type of motorcycle engine, whatever, for these are creative to the culture, and in a police state as in the Soviet Union, there is no creativity, absolutely none, and this is why we are ahead of them and will remain ahead of them indefinitely. This is why I am glad to be a member of this committee, I am glad to take part in your deliberations.

Mr. Chairman, thank you.

Senator HUDDLESTON. Thank you very much, Senator.

For the record, all prepared statements submitted by members of the committee, including that of the chairman, Senator Nelson, will be made a part of the record at this point.

[Additional prepared statements follow:]

STATEMENT OF HON. GAYLORD NELSON, A U.S. SENATOR FROM THE STATE OF WISCONSIN, AND CHAIRMAN, SENATE SMALL BUSINESS COMMITTEE

Today's hearing is a first in a series of comprehensive hearings which will explore the role of small and independent enterprises in our economy and our quality of life and how they can contribute in solving many of our most pressing national problems.

In the next three months we intend to examine how federal agencies and departments assist or hinder small businesses in stimulating real economic growth, increasing productivity, expanding job opportunities, arresting inflation, expanding exports and providing alternative energy sources.

At the conclusion of these hearings, the Committee will foward to all delegates to the White House Conference on Small Business a summary of its findings together with recommended legislative and administrative solutions in the areas of taxes, capital and credit needs, technology transfer and innovation, procurement, economic concentration and anti-trust, regulatory and paperwork reduction, energy, rural assistance, international trade, and small business advocacy within the Federal Government.

Today we will hear from witnesses who served on one or more of three task forces which concluded that federal policies have systematically excluded small firms from fully participating in government sponsored or initiated research and development. The Office of Management and Budget has found that independent entrepreneurs have accounted for half of major innovations between 1953 and

It is this type of creative factfinding which will produce beneficial results.

While a great deal of blame can be attributed to the Federal Government for failing to devise policies which benefit small businesses, I will be striving to stay away from a "finger pointing" approach during these hearings.

Our goal should be, not to lay blame for present inadequacies, but to focus on what positive steps can and should be taken to utilize the vast creative potenital of the American small businessman.

I believe that constructive criticism and cooperation should be the keynote of these hearings, if we are to arrive at a final consensus on the type of economic atmosphere which is most beneficial to small businesses.

I mentioned Senator Stewart has been a leader in organizing this series of hearings and in prevailing upon the other members of the committee to undertake this rather large undertaking. Senator Stewart, we would appricate having your comments at this time.

STATEMENT OF HON. DONALD W. STEWART, A U.S. SENATOR FROM THE STATE OF ALABAMA

Senator STEWART. I have a written statement which I will ask be made a part of the record. It somewhat reiterates the statements you made about the thrust of these hearings. Not just the hearing this morning, but the others the committee plans to hold to examine the role of Federal department and agency programs and policies and how they affect small businesses in this country. We plan to examine what the Government can do, and what it perhaps ought not do in some instances. There might be a better way of operating, as far as small businesses are concerned.

I am glad to be a part of these hearings, and I look forward to working with you, Senator Gaylord Nelson, and with other members of this committee in making these hearings a successful venture.

Hopefully, we can have ready for the delegates to the White House Conference on Small Business, as well as others, some kind of game plan that we can follow at the national level to assure that government will do what it ought to do in the area of small business.

I want to say a special word of thanks, Senator Huddleston, to the members of this committee's staff, who have worked very hard to try to get these hearings underway.

A lot of times we hear criticism leveled at members of congressional staff. I think these folks have done an excellent job and I want to thank them publicly for their help.

I particularly want to commend Milton Stewart with SBA for the work he has done, not only in preparation of the innovation report, but for his counsel in connection with the planning of these hearings. His assistance has been invaluable. Frankly, I think it is an example of the kind of work that the Small Business Administration ought to be doing. I want to tell you that publicly, Milton, and I commend you for it. I am hopeful that one of the fruits of this hearing will be to get that agency in more of these kinds of activities.

I will end my remarks by saying I know we have some people here who are rather shy. [Laughter.]

Seriously, I will not take any more of your time. We look forward to hearing from you. You have all done an excellent job on this report. Our job this morning is to hear from you.

SELECT COMMITTEE ON SMALL BUSINESS

GAYLORD NELSON, Wisconsin, *Chairman*

SAM NUNN, Georgia
JOHN C. CULVER, Iowa
WALTER D. HUDDLESTON, Kentucky
DALE BUMPERS, Arkansas
ROBERT MORGAN, North Carolina
JAMES R. SASSER, Tennessee
DONALD W. STEWART, Alabama
MAX BAUCUS, Montana
CARL LEVIN, Michigan

LOWELL P. WEICKER, JR., Connecticut
BOB PACKWOOD, Oregon
ORRIN G. HATCH, Utah
S. I. HAYAKAWA, California
HARRISON H. SCHMITT, New Mexico
RUDY BOSCHWITZ, Minnesota
LARRY PRESSLER, South Dakota

WILLIAM B. CHERKASKY, *Executive Director*
ALLEN W. NEECE, JR., *Legislative Counsel*
ROBERT J. DOTCHIN, *Minority Staff Director*