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LETTER OF TRANSMITTAL

ALL MEMBERS,
Committee on Small Business,
U.S. House of Representatives,
Washington, D.C.

DEAR COLLEAGUE: Public Law 94–305 established in SBA the position of Chief Counsel for Advocacy.

The Chief Counsel for Advocacy is not in the SBA chain of command; he is a Presidentially appointed official with Senate confirmation. His mandate is to represent the views of small business and in carrying out this mission he is expected to present and fight for the views of the small business sector of the economy; however, these views will not always be the same as those expressed by the SBA on behalf of the administration. He is much like an attorney representing a client and just as the attorney presents his client's position, the Chief Counsel for Advocacy presents his client's position which is that of the small business community.

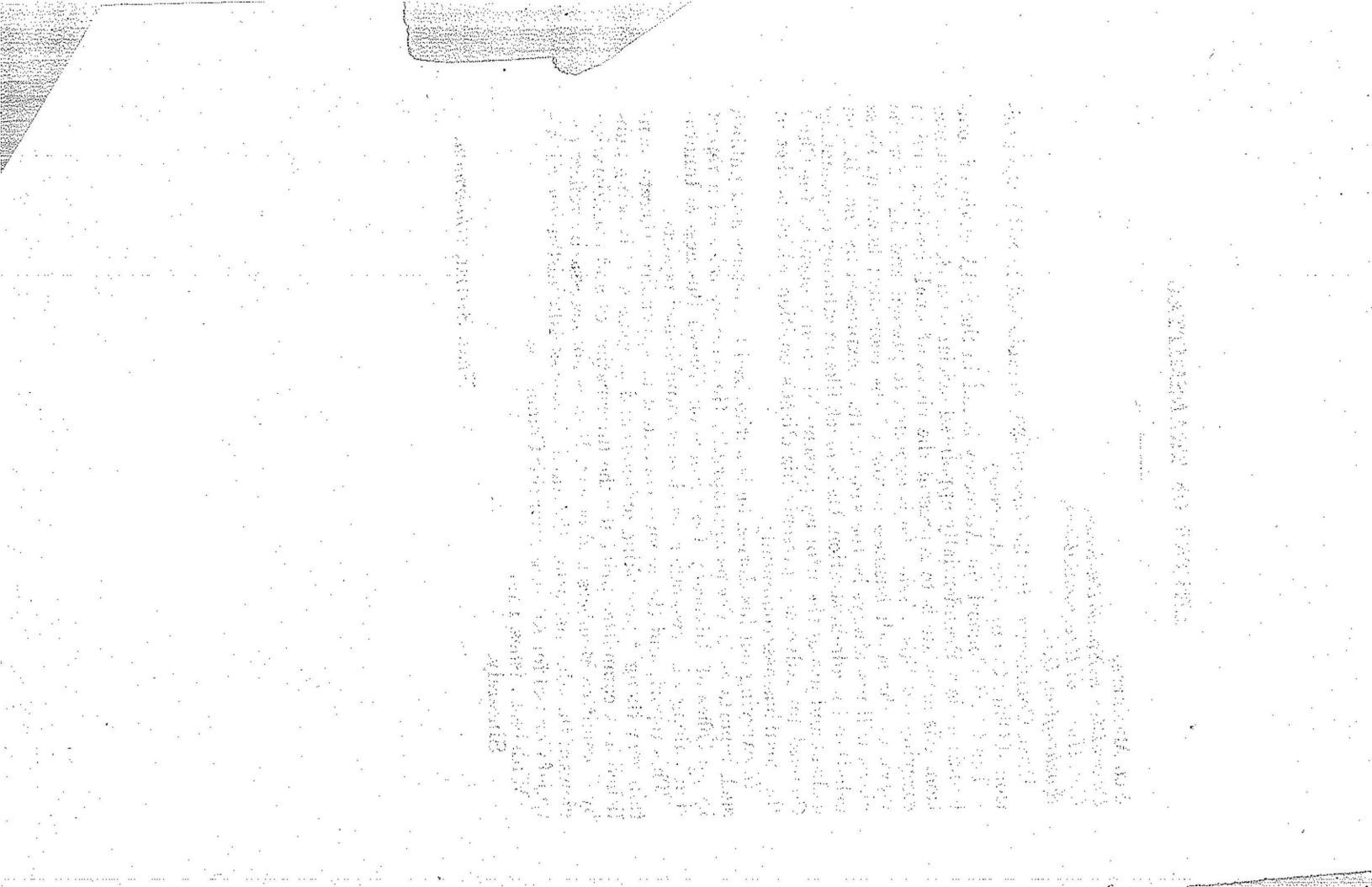
In carrying out his duties, he is authorized to prepare and publish such reports as he deems appropriate. He recently released a report by an Office of Advocacy Task Force on "Small Business & Innovation", along with two other previously unpublished reports.

This report, and the reports contained in appendices thereto, contain very thought provoking opinions and proposals. It is being published as a committee print for the information of and consideration by Committee Members and others. It does not necessarily reflect the views of the administration, the Small Business Administration, SBA's Chief Counsel for Advocacy nor this Committee.

With best wishes, I am

Sincerely,

NEAL SMITH, *Chairman.*



SMALL BUSINESS

AND

INNOVATION

". . . there is a lot that can be done to channel research and development funds to the small business entities of America. We've done an analysis that shows the Government gets a much better return on its investment with a small business with eagerness and growth as a major commitment, a tiny bureaucracy where the superb leadership is very close to the actual working conditions, than we do with an equal amount of research and development money put into very large corporations which might consider research and development projects as one of the tiny portions of its total commitment."

-President Jimmy Carter

"Anything that won't sell, I don't want to invent. Its sale is proof of utility, and utility is success."

-Thomas Alva Edison

Prepared by:

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

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.

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I. "The Effects of Domestic Policies of the Federal Government Upon Innovation By Small Businesses" - A Report of the Small Business Members Who Served on the Industrial Innovation Advisory Committee That Was Established as Part of the Domestic Review. (May, 1979)

II. "Recommendations For Creating Jobs Through the Success of Small, Innovative Businesses" - A Report to the Assistant Secretary of Commerce for Science and Technology by the Commerce Work Group on Job Creation. (December, 1978)

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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.

All three groups seem generally to agree that:

1. The critical need is for an entrepreneurial environment far more favorable to innovation and risk-taking than we have had for the past ten years;

2. Primary reliance for innovation can and should be placed on the private sector;

3. The unsatisfactory environment for innovation and risk-taking results from the cumulative impact of a number of Federal policies;

4. Small business is the most underutilized participant in the Nation's innovation process;

5. There is a compelling national stake in closing the gap between small business' potential contribution to innovation and its present utilization;

6. General Federal policy changes, important as they are, will not help small business enough: the changes needed must be specifically targeted to it;

7. Two typical yet central deficiencies cited among many are: (a) inadequate Federal targeting of Federal R&D procurement to small business; and (b) inadequate incentive for converting Federal R&D results to market sector civil technology innovation.

8. To meet those deficiencies a gradual build up to a 10% set-aside for small business research and development procurement is recommended. That would almost triple small business' share in a few years. Transfer to the private sector would be further stimulated by using 1% to follow a model program developed by the National Science Foundation.

9. Those Federal policy changes necessary for creating a favorable environment are practicable and achievable in the near term.

The SBA Advocacy Task Force met for four days. It was the judgment of the group that documentation and argumentation in support of its viewpoint was generally

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

A Report of the SBA Advocacy Task Force:

"Small Business Innovation Act of 1979"

A Legislative Proposal

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.

SECTION 3: RESEARCH AND DEVELOPMENT PROCUREMENT SET-ASIDES FOR SMALL BUSINESS: EACH FEDERAL Department or Agency shall target an increase by set-aside for small business of prime research and development contracts of at least one percent (1%) per year of its total research and development budget, beginning in fiscal year 1980, from fiscal year 1979 levels, until small business is receiving a prime contract dollar volume equal to at least ten percent (10%) of that Department's or Agency's total research and development budget.

SECTION 4: SMALL BUSINESS INNOVATION RESEARCH PROGRAMS: EACH DEPARTMENT or Agency with a research and development budget of $100 million or more will initiate a small business innovation research competitive solicitation program modeled after the National Science Foundation's Small Business Innovation research program, but introducing their own topics, making their own solicitation, evaluations and awards, the latter from their own budget. Funding of this program will be at a level equal to at least one percent (1%) of each agency's research and development budget, starting in fiscal year 1980. Each agency program shall be designed to be a direct attempt to stimulate technological innovation in the private sector from Federally funded research and development in agency program objectives.

SECTION 5: PATENTS AND INVENTIONS: (a) SMALL BUSINESSES should be allowed to retain patent rights on inventions made under Federally-supported research according to the following provisions:

1. Each small business shall have a reasonable amount of time to elect to retain title to subject inventions. The Federal agency may retain title if the invention is made under a contract for operation of a government owned research or production facility, or in exceptional circumstances when it is determined that restriction or elimination of the right of the contractor to retain title to a subject invention would better promote the policy and objectives of this bill.

2. Whenever the funding agency determines that it should retain title to a subject invention a copy of this decision shall be sent to the Comptroller General. The Comptroller General will then review this decision and inform the head of the agency of his determination as to whether or not this retention of title is justified. The Comptroller General will also submit an annual report to the House and Senate Committees on the Judiciary on agency implementation of this bill.

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.

(b) The Patent Office shall develop a practical, effective and low-cost per use computer-based search and retrieval system for its own use and public access with particular concern for its usefulness to small business firms. The system shall include appropriate classifications for and require the submission of supplemental information to make accessing easier, more complete and to provide more information concerning a patent's use and potential application.

(c) The Patent Office and the Small Business Administration shall jointly and urgently conduct a study of the feasibility of devising a modified version of the patent law and regulations for use by small businesses, and individual inventors. The goal of such a modified version shall be to reduce the time and cost of securing and defending the patent rights of small businesses and individual inventors to reduce the present inequity resulting from the greater ability of large business to make effective use of the patent laws and regulations.

(d) The Patent Office shall conduct a study regarding the feasibility of initiating a compulsory licensing requirement for patents which are not being adequately exploited and shall report back its findings to the Congress within one year.

SECTION 6: REGULATIONS, POLICIES AND PROCEDURES. (a) Procurement: The Office of Federal Procurement Policy in cooperation with the Small Business Administration shall develop and issue a simplified set of regulations for research and development awards to small business designed from the users' point of view.

1. Cost-sharing requirements for research and development awards to small business shall be eliminated and negotiated fees shall be allowed on all such contracts;

2. No Federal agency or organizational unit within an agency shall exclude small business from a fair and equitable opportunity to compete on a merit basis on the same terms as other participants;

3. Every Federal agency shall seek unsolicited proposals from small business and shall give such proposals a fair and prompt review based upon their

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.

2. In cases where government regulations provide for an agency to make a decision involving a matter initiated by a small business within a certain time period and that decision is not forthcoming by said deadline, it shall be assumed with legal force that the decision is affirmative, i.e., that permission, if not denied within a specified period, is granted an extension, if not denied within a specified period, is approved.

3. Offerings of less than $2 million involving one hundred or less investors shall be exempt from SEC registration requirements.

SECTION 7: CAPITAL FORMATION AND INVESTMENT: (a) In recognition of the risks of small-scale research and development, the potential economic benefit of research and development and the potential importance of small science and technology based firms to the Nation, for any small business which maintains an average investment over three-years of three percent or, in a single year spends six percent of gross revenue in research and development as defined by GAAP over the relevant period:

1. Investors in such firms may defer paying the tax on gains on equity investments provided they are reinvested in another small business (which maintains the same three or six percent R&D investment rate within two years);

2. Gains from capital investment in such firms, if held for a minimum of five years, shall be taxed at half of whatever rate would be applied by the IRS without this provision.

3. Losses from investment in such firms may be carried forward for ten years instead of five years due to the length of time often required for research and development to result in profitable new products, processes or services;

4. The period of exercising stock options in such firms is extended from a maximum of five to a maximum of ten years;

5. Start-up losses from such firms which would otherwise be barred may flow through to individual funding investors for tax purposes under Section 1244 of the Internal Revenue Code.

6. The Qualified Stock Option Plan for key employees is restored for these firms.

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.

SECTION 9: GOVERNMENT COMPETITION WITH AND DUPLICATION OF SMALL BUSINESS ENTREPRENEURIAL ACTIVITY: FEDERAL AGENCIES should be prohibited from engaging in and supporting research and development projects that are competitive with or duplicatory of private sector technological developments, or in other ways might prevent the establishment by small business of exclusive technological or intellectual properties in a new area of non-defense technological advancement.

SECTION 10: DEFINITIONS: As used in this Act -

(a) The Term "Federal agency" means an "executive agency" as defined in 5USC and in the military departments as defined by 5 USC 102.

(b) The term "contract" means any contract, grant, or cooperative agreement entered into between any Federal agency or any organization of person for the performance of experiments, developmental or research work funded in whole or in part by the Federal government. Such term includes any assignment, substitution of parties, or subcontract of any type entered into for the performance of experimental, developmental, or research work under the contract.

(c) The term "invention" means any invention or discovery and includes any art, method, process, machine, manufacture, design or composition of matter, or any new and useful improvement thereof, or any variety of plant, which is or may be patentable or otherwise protectable under the laws of the United States.

(d) The term "small business" firm means a concern as defined by Section 2 of Public Law 85-536 (15USC 632) and implementing regulations of the Administrator of the Small Business Administration.

(e) The term "research and development" when considered for tax purposes, means any activity defined as "research and development" according to Generally Accepted Accounting Principles.

(f) The term "research and development" when considered for Federal budget purposes, i.e., "research and development expenditures", means any activity defined as "research and development" according to the National Science Foundation.

TAX RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
Section 7(a)(2)	We recommend that the capital gains tax rate be reduced to 25 percent (the pre-1969 rate) on the capital gains realized from the sales of stock of small businesses (less than 500 employees at date of purchase) whenever such stocks have been held for more than three years, with a rate of 10 percent for the capital gains of investors in the smallest businesses (less than 100 employees at date of purchase). The reduced rates would not apply to capital gains realized from the sale of real estate. (JC-WG) Reduce the federal tax on gains from capital investments in small science and technology firms to a level of fifty percent of the otherwise applicable capital gains rate, if the investment is held for a minimum of five years. (INN-SBTF)
Section 7(a)(2)	We recommend deferral of capital gains taxes on the sales of stock if the proceeds are reinvested within one year in small businesses, except those whose principal activities are real estate transactions. (JC-WG) Allow investors in small science and technology based firms to defer paying capital gains taxes on equity investments, provided the gains are reinvested in other small science and technology based firms within two years. (INN-SBTF)
Section 7(a)(3)	We recommend that the threshold for application of the full corporate tax rate of 46% be raised for small businesses from $100,000 to $200,000 of annual net income; and for annual net income below $200,000 a progressive rate schedule beginning at 10% on the first $50,000, and increasing in 10% incrementa to $200,000 on each additional $50,000. In addition we recommend that the carry-forward provisions for start-up losses of small businesses be extended from five to ten years. (JC-WG)

COMPARISON TABLE

SBA ADVOCACY TASK FORCE BILL

COMMERCE JOB CREATION WORK GROUP (JC-WG)

COMMERCE INNOVATION SMALL BUSINESS TASK FORCE (INN-SBTF)

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)

TAX RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
No parallel section in Advocacy Task Force Bill	Revise the corporate income tax rate to provide greater retention of earnings during the initial start-up and growth phases for small science and technology firms. (INN-SBTF)
Section 7(d), Section 7(a)(5), and Section 7(b)	A new class of equity security be created for start-up innovative businesses that would couple the benefits of limited partnerships with the benefits of Sub-chapter "S" Corporations. This new equity class would possess the following features: -- limited liability protection, -- include up to one hundred investors, -- allow incorporated investors, -- allow the use of cash basis accounting for tax determinations, -- allow operating losses and investment tax credits to flow through to individual funding investors in the year occurred, -- allow specialized equipment and instrumentation for research, development or testing to be expensed in the year purchased. This new class of stock and its benefits should be available to small businesses that spend in excess of five percent of their gross sales revenues and development as determined by Generally Accepted Accounting Principals (GAAP) (INN-SBTF) (Note: As referred to hereinafter INN-SBTF Recommendation 1)

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))

RESEARCH AND DEVELOPMENT RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
Section 3	We recommend that each federal agency receiving R&D funds by appropriation from the Congress be required to allocate at least 10 percent of all such funds (excluding those for basic research) to small businesses and that this objective be achieved in annual one percent increments beginning in FY 1980. (JC-WG) Each federal agency should be directed to allocate at least ten percent of its R&D budgets to small business and increase current levels by one percent of its budget each year until the ten percent minimum is established, starting in 1980. (INN-SBTF) This increase should be heavily directed towards basic research at universities and applied research and development in the private sector, with strong incentives for commercialization. (INN-SBTF)
Section 7(c)	We recommend that small business firms be allowed to establish and maintain a reserve for R&D for use in times of financial stress. (JC-WG) Allow small business concerns to establish and retain a "reserve for research and development in profitable years to be used in periods of business stress, with the maximum level of this reserve being ten percent of gross revenues. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	We recommend that each federal agency allocate five percent of its R&D funds for technology transfer. These funds should be used to establish well defined and organized programs of technology transfer in which there are incentives to individual researchers to contribute their time and skills to the identification of commercial applications. Such incentives should be related to the benefits realized from technology transfer. (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)

RESEARCH AND DEVELOPMENT RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
Section 9	A clear federal policy should be established and enforced to prohibit federal funds from being used to finance projects that are competitive with or duplicatory of private sector technological developments, or in any other ways might prevent the establishment by small business of exclusive technological or intellectual properties in new areas of non-defense technological advancement. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	There should be decreased emphasis on applied research in universities, federal laboratories and non-profit institutions, particularly where such applied work might pre-empt private initiative or is duplicatory or competitive with private sector activities. (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)
No parallel section in Advocacy Task Force Bill	We recommend that there be some re-direction of federally-supported agricultural research to the development of technology for improving the efficiency of small family farms and food processors and for making food production, transportation, and preservation less capital and fossil-fuel intensive. (JC-WG)
Section 7(a)(5) Depreciation Allowance	Provide for a twenty-five percent tax credit for research and development related expenditures by small businesses (as currently allowed in Canada). (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)

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
No parallel section in Advocacy Task Force Bill (cont'd)	-- wherever possible, return to reliance upon standards associations with federally mandated standards being the last resort, and -- improved congressional oversight of the regulatory process as it relates to small innovative businesses. (INN-SBTF)
No parallel section in Advocacy Task Force Bill	Provide product liability and recall insurance at reasonable costs for small businesses, with exemptions from recalls except in the most extreme cases; and the establishment of statutory limits of liability for product failures similar to Workman's Compensation Insurance. (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. (INN-SBTF)
COLUMN NOTE: These two sections of Task Force Bill have no direct paralles in JC-WG or INN-SBTF Reports.	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. (ADVOCACY TASK FORCE BILL - Section 6(b)) In cases where government regulations provide for an agency to make a decision involving a matter initiated by a small business within a certain time period and that decision is not forthcoming by said deadline, it shall be assumed with legal force that the decision is affirmative i.e., that permission, if not denied within a specified period, is granted and an extension, if not denied within a specified period, is approved. (ADVOCACY TASK FORCE BILL - Section 6(b)(2))

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)

PROCUREMENT RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
Section 6 (a) 1	Cost sharing requirements for research and development awards for small business shall be eliminated and negotiated fees shall be allowed on all contracts. (INN - SBTF)
Section 6 (a) (2)	No federal agency shall exclude small business from a fair and equitable opportunity to compete on a merit basis on the same terms as other participants. (INN - SBTF)
Section 6 (a) 4	No agency shall restrict opportunities for small businesses to submit unsolicited proposals and shall give such proposals a fair review based upon their merit. Each agency shall provide small firms opportunities to receive sole source awards. (INN - SBTF)
No parallel section in Advocacy Task Force Bill	A separate set of simplified Federal Acquisition Regulations should be developed to apply to small business firms. (INN - SBTF)
No parallel section in Advocacy Task Force Bill	All proposals submitted by small business must be awarded or declined within four months of submission. (INN - SBTF)
No parallel section in Advocacy Task Force Bill	Proposal evaluations shall consider total costs relative to the work proposed, and not consider overhead or indirect cost rates due to variations in institutional and company accounting practices. (INN - SBTF)
No parallel section in Advocacy Task Force Bill	Fee negotiations shall take into consideration the level of interest rates and shall be higher in times of high interest rates than in times of low interest rates. All debt service costs shall be allowable costs for small business and procedures should be instituted for prompt payments to small businesses, with late payment penalties. (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))

PATENT RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
Section 5 (b)	The Patent and Trademark Office should develop a practical and effective computer based search and retrieval system for its own use and public access, with particular concern for its usefulness for small business firms. (INN - SBTF)
Section 5 (c)	A new mandatory re-examination procedure should be instituted in the Patent and Trademark Office whereby a litigant who raises a defense of invalidity of a patent based on new found heretofore unconsidered art should first test the assertion of invalidity in the patent office where the most expert opinions exist at a much reduced costs. (INN - SBTF)
No parallel section in Advocacy Task Force Bill	The budget of the patent office should be increased sufficiently to allow for more thorough searching of prior art using the most modern search technology. (INN - SBTF)
Section 5 (c)	The patent laws should be amended to recognize that the reliability of patents is a keystone in the commitment of funds to carry out commercialization of patented inventions, and incontestibility should be mandated after a period of time so as to result in absolute reliability, except in cases of fraud.(INN - SBTF)
Section 5 (a)(1)(9)	Legislation should be passed to give small businesses title to inventions made under government contracts, with the provision that commercialization be undertaken in a reasonable time. If such commercialization is not undertaken title should revert to the government and the government should license small businesses. Aa an alternative, small business should be able to obtain title to inventions developed under government awards if they invest an amount of capital at least

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 license royalties as capital gains instead of ordinary income. (INN-SBTF)

EXPORT AND TRADE RECOMMENDATIONS

ADVOCACY TASK FORCE BILL SECTION	JC-WG AND/OR INN-SBTF RECOMMENDATIONS
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)
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)

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.

"Section 9 (Government Competition with and Duplication of Small Business Entrepreneurial Activity) is rather broad. Conceivably, a venture could be privately funded on the west coast, and unbeknownst to either the government or west coast venture, there might be an east coast university project being funded by the government with the aim of solving the same problem. Furthermore, the relative success for either project might be uncertain, and the two efforts may be using different technological approaches. In this instance, I would not be in favor of automatically forcing termination of the government sponsored research."

"I do feel strongly that the tax provisions are too complicated and in some cases conflicting. . . . I would prefer to see us go for something fairly simple such as (1) restoration of the stock option, and (2) relief in the area of graduated corporate taxes for the benefit of small businesses."

"It is my feeling that far too much emphasis has been placed on technical aspects of patent reform and special small business concessions. In my view, this area is a quagmire which could swallow the rest of the legislation, while adoption of these provisions is (at best) of secondary importance."

"Section 5(a)(5) seems to me to be unwieldy, virtually impossible to administer, and an accounting nightmare. I suggest that a substitute proposition might be for GSA to make a one time determination after (X) years if repayment of original funding should be required. A concept basically similar to a contract subject to renegotiation."

"In Section 7(a)(1) (deferment of equity investments) I would like to attach some limitations to the roll-over provisions. First, I think it should apply only to individuals, not corporations. Second, I think there should be ceilings, i.e., the roll-over amount for any single investment should be limited to $100,000 or three times the amount of the original investment, whichever figure is greater. Beyond that, ordinary capital gains rates can apply."

"Section 5(a)8 - strike if possible."

"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."

[illegible]

BIOGRAPHIES

MEMBERS OF
SBA ADVOCACY TASK FORCE

Milton Bevington:

B.S. in Chemical Engineering, M.I.T., MBA - Harvard Business School. President and CEO of Servidyne, Inc.; former Executive Vice President of The Trane Co.

SERVIDYNE:

Founded in Atlanta in 1966. Supplies total energy management services to industrial, commercial, and institutional services. Clients are nationwide and in over 20 foreign countries. Headquartered in Atlanta, the company has 13 offices located throughout the country.

N. Paul Bosted:

M.S. in Physics, Sr. Fellow - Mellon Institute, Pittsburgh, Pa. Nine years - International Rectifier Corp., as President. Five years as an International Technical Consultant. Joined Sun Systems in 1976. Serves as President Expert in the field of electronics.

SUN SYSTEMS:

Founded in 1971, specializes in sophisticated digital electronic instruments for government installations, NASA and several Nuclear Energy plants. Clients include GE, International Harvester, Westinghouse. Presently have 12 employees. Size of business - $500,000 gross.

William Chandler:

Oregon State University, American Graduate School of International Management. Founder and President of Bay Venture Management, San Francisco, Calif. Formerly associated with Federal Reserve Bank, Raytheon, Veriflo Corp., and Western Growth Fund.

BAY VENTURE MANAGEMENT:

Organized in late 1975 as a venture development firm dealing with start-up companies in the bay area.

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.

Dr. Orrie Friedman:

Ph.D. Chemistry - McGill University, 1944. Former Professor of Chemistry - Brandeis University. Left to organize Collaborative Research, Inc., in 1962. Has served as President & Science Director since its inception. His contributions to bio-medical research are included in over 90 science publications. Well known for basic discoveries in cancer chemo-therapy. Served on a number of Advisory Ctes at NIH. Member, Office and Director of several corporate, philanthropist and professional organizations.

COLLABORATIVE RESEARCH, INC.:

A high technology company with interests primarily in bio-medics and research and development. Organized in 1962 to undertake sponsored research, the company consists of two closely integrated operating divisions: Research and Pharmaceutical Products, and a central Research Division. Company has expertise in a number of areas as the cutting edge of new cell and molecular biological technology.

Edward Gaffney:

Michigan Technology University, Mechanical Engineering. Developed and patented the cushion lift chair. Awarded U.S. Small Business Person of the Year in 1978, and Small Business Man of Wisconsin in 1977. President and Founder of Ortho-Kinetics. Currently Vice President of Independent Business Association of Wisconsin. Member of Wisconsin Legislative Council, Subcommittee on Small Business.

ORTHO-KINETICS:

Founded in 1963, small high technology based firm, specializing in research and development and manufacture of the cushion lift seat and childrens care seats. Currently employs 50 people.

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.

Harold Guller:

Washington University School of Engineering, President and Chairman of the Board of Essex Cryogenics Industries, Inc., and President of its wholly owned subsidiaries: Essex Cryogenics of Missouri, Inc., Higgs Screw Products, Propellex Corp., and Essex Precision Controls, Inc. Serves as Chairman of the St. Louis District Advisory Council of the Small Business Administration. Member of various local and regional advisory and technical committees and several civic organizations.

ESSEX CRYOGENICS INDUSTRIES, INC.

Designs and produces hydraulic, pneumatic fuel, electronic and electromechanical components and subsystems for aircraft applications. Selected as the Small Business Prime Contractor of 1971 for Region VII, Small Business Subcontractor of 1972 for Region VII; Small Business Subcontractor of 1973 for Region VII and National Small Business Subcontractor of the Year 1973.

Dr. Eugene Haddad:

B.S. Engineering Physics, Alabama Polytechnic Institute of Technology, M.S. in Physics, University of California, Ph.D., University of Utah. Formerly staff member of Los Alamos Scientific Laboratory and AEC Research Division. 1966-1967 Visiting Professor of Physics, Catholic University. 1968-1969 Assistant to Deputy Director of Science and Technology, U.S. Defense Atomic Support Agency. 1969-1975 Executive Vice President, Columbia Scientific Industries Corp., Austin, Texas. Since 1976, President, Chief Executive Officer and Director of Columbia Scientific Industries Corp. Member of several professional and honorary societies. Has published numerous papers in scientific journals.

COLUMBIA SCIENTIFIC CORPORATION:

The main thrust of the company is in the design and manufacture of high quality environmental and safety equipment. The company also conducts research for federal, state and local governments, as well as the private sector. Located in Austin, Texas, the company employs 85 people and has an annual sales volume of approximately $4.5 million.

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.

Patrick Iannotta

Majored in Economics, Queens College, Member, Treasury Advisory Council; New York State Governors High Technology Task Force; President of Ecolotrol for past ten years.

ECOLOTROL, INC.:

Founded in 1969, developed a standardized treatment system for industrial waste water and municipal sewage. Number of plants in design & construction throughout the world. Currently commercializing sophisticated instruments and control devices in the energy area. Ecolotrol holds several patents.

Charles G. James:

B.S. in Business Administration - Bowling Green State University. Treasurer and member of Board of Directors, The Sea Pines Company, Hilton Head, South Carolina. Staff person, Laurance S. Rockefeller, New York. Group Vice President of Heizer Corporation, Chicago, Illinois, a venture capital firm, currently with Battelle Memorial Institute, Columbus, Ohio, as President of Scientific Advances, Inc., a wholly-owned subsidiary of Batelle.

SCIENTIFIC ADVANCES INC.:

Provides financial, management, and technical support for companies or projects originating within or without Battelle; a whollyowned subsidiary of Battelle Memorial Institute, Columbus, Ohio. SAI was conceived as a source for short run production, marketing and eventual disposition of unique Battelle developed products, SAI has shifted to the formation and growth of new ventures to introduce innovative technology.

Paul Kelley:

Harvard, MBA, Northeastern University. Is a doctoral candidate at Boston University. Is responsible for implementing the Massachusetts Technology Development Corporation Revolving Loan Fund program. Has been personally involved in several turn-around situations and technology-based start-ups. He was instrumental in putting together the financial packages for over 40 successful start-up, technology-based companies. President of SUN Community Development Corp. and is the Senior Lecturer in the Venture Development Program at Boston State College.

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.

Harold K. Lonsdale:

B.S. Chemistry, Rutgers University, 1953. Ph.D in Physical Chemistry, Pennsylvania State University, 1957. Formerly, Nuclear Research Officer, U.S. Air Force, staff member, Research and Development Laboratory, General Atomic Co., Principal Scientist, ALZA Corp., and Visiting scientist, Max Planck Institute of Biophysics, Frankfurt, West Germany, and the Weizmann Institute of Science, Rehovot, Israel. Since 1974, President of Bend Research Inc., Bend, Oregon. Member of the American Chemical Society, Editorial Board of Desalination Journal and Editor of the Journal of Membrance Science. Adjunct Professor, Oregon State University. Author of many publications.

BEND RESEARCH, INC:

Is a young firm engaged in contract research and development for industry and government. Their field of expertise is membrance science and technology.

David T. Morgenthaler:

Massachusetts Institute of Technology, B.S., M.S. (mechanical engineering), Licensed Professional Engineer. Presently, Senior Partner, Morgenthaler Associates since 1969. Formerly with Foseco, Inc., as President and Vice President of Delavan Manufacturing Co. Chairman, National Venture Capital Association. Holds directorships with numerous companies throughout the country and member of several civic and regional organizations.

MORGENTHALER ASSOCIATES:

A private venture capital firm founded in 1968 by David Morgenthaler. The company's objective is to obtain substantial long term gains by investing in companies which offer some kind of proprietary product or service. It invests throughout North America and is interested in all types of business. The firm's normal investment size ranges from $100,000 to $300,000 in a given investment.

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.

Dr. Judith H. Obeymeyer:

B.S., mathematics, Carnegie - Mellon University, 1956. Ph.D. in Mathematics, Harvard University, 1963. Assistant Professor, 1960-1966 Wellesley College. In 1978 taught mathematics at the University of Massachusetts. Recipient of four NSF Fellowships. Since 1968 Trustee and Manager of Technology Really Trust. Has served in a number of capacities with Moleculon Research Corporation for the last fifteen years. Has served as officer and on the board of numerous civic and charitable organizations and is a member of several honorary and professional societies.

MOLECULON RESERACH 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 Foroplastic 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.

Tom Perkins:

Degree in Electrical Engineering, Massachusetts Institute of Technology, M.B.A., Harvard Graduate School of Business Administration. Venture Capitalist with Kleiner, Perkins, Caufield, & Byers, San Francisco. Director, National Venture Capital Association, past President, Western Association of Venture Capitalists. Co-founder of Optics Technology and founded University Laboratories which became the leading producer of inexpensive gas lasers.

KLEINER, PERKINS, CAUFIELD & BYERS:

An active venture capital partnership with a capitalization of $15 million. Investments typically range from a minimum of $200,000 to a maximum of $1 million. They seek opportunities with the potential to achieve significant shares of high growth markets. Examples: computers & computer peripherals, office equipment, medical products and instruments, microbiology, genetic engineering, telecommunications, semiconductors, laser & optics, and pollution control.

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 .

Bruno O. Weinschel:

Dr. Engineering degree from the Technische Hochschule, Munich, Germany. Since 1952, President of the Weinschel Engineering Co., Inc. He is known for his work in the state of the art of insertion-loss microwave measurement. Serves as Director of the Precision Measurements Association. A Fellow in the Institution of Electrical Engineers. Editorial review boards of The Microwave Journal and Microwave Systems News. Author or co-author of forty journal articles and inventor or co-inventor of twenty patents.

WEINSCHEL ENGINEERING COMPANY, INC.:

A leader in the design and manufacture of high quality instruments and components for use throughout the microwave industry. Known worldwide for their precision and quality. Contributor to the advancement of microwave technology. Complete in-house, totally integrated engineering, machining and assembly, with inspection and test procedures in Gaithersburg, Md.

Robert F. Zicarelli:

B.S. and MBA - Northwestern University. Has been with Northwest Growth Fund, Inc. for 18 years, having joined NWGF as Vice President and Director in 1961. His investments in venture capital experiences span 30 years. A member of the Board of Governors of National Association of Small Business Investment Co.'s. (NASBIC) and Board of Directors, National Venture Capital Association. Past President of Regional SBIC Association and member of SBA National Advisory Council.

NORTHWEST GROWTH FUND:

Founded in 1961, it is an SBIC headquartered in Minneapolis with offices in Denver and Portand. It is a wholly-owned subsidiary of Northwest Ban Corporation. It has assets in excess of $40 million and investments in more than 50 small businesses, employing over 15,000 people. NWGF has invested in a broad range of apparel and personal products, electronics, basic manufacturing, communications, industrial and consumer services. One of the largest SBIC's in the country actively dedicated to venture capital funding.

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

Electronics Corp., Barkhamsted, Conn., manufacturer of microminiature display devices and switches. Serves on Department of Commerce, Advisory Committee on Science and Innovation.

REFAC TECHNOLOGY DEVELOPMENT CORPORATION:

Since 1952, this company's principal business has been international technology transfer -- the creation of manufacturing licenses and joint ventures as a means for client manufacturers to enter export markets. Most REFAC clients are smaller companies that have specialized industrial products or manufacturing processes.

George Lockwood:

B.S. in Civil Engineering, Northwestern University M.B.A. - Harvard University, Currently President & Founder of Monterey Abalone Farm; Founder of Monterey Kelp Corporation which was acquired by Merck & Co., Inc. Formerly with Global Marine, a pioneer firm in off-shore oil well drilling. Mr. Lockwood holds several patents in his varied background including electronics & electronics manufacturing, oceanography & oceanography engineering, civil engineering, heavy construction & chemical processes.

MONTEREY ABALONE FARM:

Founded in 1972, specializes in domesticating the abalone species of the marine snail in California. In the first part of its history the company did extensive research in biological, environmental & nutritional factors relative to commercialization. Currently undergoing a major expansion of its operations.

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.

Robert C. Springborn:

B.S. University of Illinois, 1954, Ph.d. Organic chemistry Cornell University, 1954. Since 1972 Chairman and President of Springborn Laboratories, Inc. Formerly, Chairman and President of General Economic Corporation; Vice President, Chemical Group and General Manager of New Ventures Division, W.R. Grace; General Manager, Food and Chemicals Division, Ionics, Inc.; and Vice President, Technical Director, Ohio Rubber Division of Eagle-Picher Industries, Inc. Hold several patents in the field of high polymers. Several papers on entrepreneurship. Member of numerous professional, civic honorary societies. Chairman of the Coalition of Small Technical Businesses.

SPRINGBORN LABORATORIES, INC.:

Is an internationally oriented, employee-owned company. Serving the chemical and allied products industry with special expertise in high polymers offices in the U.S., Europe and Asia.

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APPENDIX I

A Report of Small Business Members Who Served on the Industrial Innovation Advisory Committee That Was Established as Part of the Domestic Policy Review

ZONING

Urban Agriculture Zone

Purpose: To provide land for urban agriculture and associated uses, to protect urban agriculture from incompatible land uses, and to maintain the character of the area.

THE EFFECTS OF DOMESTIC POLICIES OF THE FEDERAL GOVERNMENT UPON INNOVATION BY SMALL BUSINESSES

A Report of Small Business Members
Who Served on the Industrial Innovation Advisory Committee
That Was Established as Part of the Domestic Policy Review.

May 1, 1979

NOTICE: This report represents the views of the several members from small business who served on the Advisory Committee on Industrial Innovation, an advisory committee that was convened by and reported to the Secretary of Commerce. This report of the committee members from small businesses does not necessarily represent the views of the Department of Commerce, the Small Business Administration, or any other agency of the Federal Government.

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INTRODUCTION

In mid-1978 President Carter ordered a review of the impact of federal policies upon industrial innovation. The President directed Secretary of Commerce Juanita Krepps to supervise this study, and she appointed an Industrial Advisory Committee to work under the direction of Dr. Jordan Baruch, Assistant Secretary for Science and Technology to advise her on this project. This Industrial Advisory Committee was composed of approximately one hundred and fifty business executives who were divided into seven subcommittees to analyse specific areas of federal policy and their impact upon private decision making relative to innovation.

While most members of the several subcommittees were from large corporations, each group included one executive from small business who participated in the work of the Committee and made contributions to the draft reports that were produced. Because the small business representation was limited in comparison to the much larger representation of large corporations, one would expect that the subcommittee draft reports would not analyse the small business situation in appreciable depth. There is however, almost universal recognition by the seven subcommittees that small businesses make a large contribution to innovation, and that the policies, laws, regulations and procedures of the Federal Government impose a very heavy burden upon small business innovation.

Upon completion of the draft reports of the seven subcommittees, the small business representatives decided that an additional report should be prepared on the specific impact of federal policies upon innovation in small businesses, and how federal policies might be revised to again stimulate innovation in this important sector of the economy. We wish to emphasize that our report is not a minority report expressing disagreements with the subcommittees, but a supplement to address the importance, and the unique role and problems of small innovative enterprises in America. We wish to place emphasis upon certain areas of the draft reports and make additional recommendations of our own.

Without detracting from the strong vigor of our recommendations, it must be noted that there are diverse opinions amongst our Committee members with respect to emphasis, priority, and details of our recommendations.

THE AD-HOC COMMITTEE OF SMALL BUSINESS MEMBERS*

George S. Lockwood, Acting Chairman
President
Monterey Abalone Farms
Monterey, California
(Member--Subcommittee on Environment, Health and Safety Regulations)

Wayne H. Coloney
Chairman and Chief Executive Officer
Wayne H. Coloney Company
Tallahassee, Florida
(Member--Subcommittee on Procurement and Direct Support of Research and Development)

Eugene M. Lang
President
REFAC Technological Development Corporation
New York, New York
(Member--Subcommittee on Economic and Trade Policy)

Duane Pearsall
President
Small Business Development Corporation
Littleton, Colorado
(Member--Subcommittee on Industry Structure and Competition)

Eric Schellin, Esq.
Attorney at Law
Arlington, Virginia
(Member--Subcommittee on Patents and Information)

Dr. Robert C. Springborn
President
Springborn Laboratories
Enfield, Connecticut
(Member--Subcommittee on Procurement and Direct Support of Research and Development)

*The membership listed after each name indicates the Subcommittee of the Industrial Innovation Advisory Committee upon which the individual served.

SUMMARY OF CONCLUSIONS

. Innovation is an essential ingredient for creating jobs, controlling inflation, and for economic and social growth.

. Small businesses make a disproportionately large contribution to innovation. There is something fundamental about this unusual ability of small firms to innovate that must be preserved for the sake of healthy economic and social growth.

. If the U.S. desires to bring inflation under control, to create new and better jobs, and to continue to enjoy the economic and social benefits of innovation, individual entrepreneurs and their small companies must be free to innovate. Unfortunately, the environment for small business innovation has greatly deteriorated during the past decade.

. The creative processes in small businesses are pronouncedly different from large corporations and institutions. There is a lack of awareness within government of how small independent innovators create and how federal policies determine the climate for small business innovation.

. A wide array of federal policies adversely impact upon small innovative businesses, including:

--Federal tax, pension fund and security policies that have virtually eliminated all forms of capital from small innovative business ventures;

--Government regulations that treat large and small firms equally that are, in fact, discriminatory against small firms;

--Federal funding for research and development where the most innovative sector of the American economy, small science and technology based enterprises, are virtually excluded from effective participation;

--Federal procurement policies that similarly exclude small innovative firms;

--Patent policies that have resulted in the diminution of the value of patent protection for independent inventors and small businesses.

. With sufficient amendments to Domestic Policies to provide relief for small creative enterprises, a major renaissance in anti-inflationary innovation will emerge with concomitant social and economic growth. Such amendments will require a major departure from current policies affecting small businesses in capital acquisition, regulation, R & D funding, procurement and patents.

SUMMARY OF RECOMMENDATIONS

1. Changes in the federal tax code to again encourage the flow of capital into small innovative businesses.

2. Changes in ERISA policies to return a portion of our national flow of savings to high-risk innovation.

3. Changes in security laws and regulations to remove obstacles for innovative enterprises to acquire seed, start-up and expansion capital.

4. Changes in regulatory policies to remove adverse discrimination against the small innovator.

5. Changes in federal R & D funding policies to produce substantially greater results by awarding a larger share to small businesses.

6. Changes in federal procurement policies to allow greater participation by small businesses on a more equitable basis.

7. Strengthening our weakened patent system, and making changes in federal policies to recognize and protect initial exclusivitiy as an essential requirement for successful innovation.

Specific details for these recommendations are included at the end of this report.

THE EFFECTS OF DOMESTIC POLICIES OF THE FEDERAL GOVERNMENT UPON INNOVATION BY SMALL BUSINESSES.

Innovation is an essential ingredient for economic and social growth. It is the driving force that increases productivity and that results in new products, processes and services. Innovations create new and better jobs, reduces production costs and prices, increases foreign sales, and increases real personal income so that our citizens can finance major advancements in the qualities of life such as better education, improved health care, increased longevity, and more leisure and recreation.

Without innovation, economic stagnation occurs resulting in rising prices, decreased employment, and increased foreign competition--all symptoms of stagnation induced inflation. Inflation, our nation's major problem is, in our opinion, a direct result of a large decline in private sector innovation over the past decade.

To a large extent, the madates of the United States electorate to fulfill basic social and human needs of our citizens requires a rapid rate of economic growth. Such social and economic growth can only occur with vigorous private sector innovation.

SMALL BUSINESSES MAKE A DISPROPORTIONATELY LARGE CONTRIBUTION TO INNOVATION.

The economic history of the United States is replete with examples of small innovators making major contributions. From the late 1700's through the 1970's a major source of technological advancement was the result of individual inventors and entrepreneurs working independently of our large industrial corporations, universities, and government laboratories. This is particularly true in situations where radically new concepts have been introduced.

In our early history we had Eli Whitney in 1793 with his cotton gin and Robert Fulton with the steamboat in the 1840's. These two innovations had an enormous impact on young America. Later came the railroads. Next, in telecommunications, we had Morse and Bell, whose contributions greatly accelerated the growth of our economy. Similarly, Edison, Westinghouse, McCormack, the Wright Brothers, Ford and DeForest made introductions that laid the foundation for further economic advancements. This is only a partial list. All of these innovators were small guys.

The same trend continued after World War II with the success stories of Land at Polaroid and Watson at International Business Machines. During the 1960's we saw the emergence of companies such as Xerox, Digital Equipment and Hewlett-Packard, each beginning as individuals with their small companies who were free and able to innovate. In addition to these better known names, there were thousands of small high-technology companies spawned during the 1950's that have created major growth in our economy and have increased the quantity and quality of employment.

A recent study by the National Science Foundation concluded that in the post World War II period, firms with less than one thousand employees were responsible for half of the "most significant new industrial products and processes." Firms with one-hundred or fewer employees produced twenty-four percent of such innovations. In addition, the cost per innovation in a small firm was found to be less than in a large firm since small firms produced twenty-four times more major innovations per research and development dollar expended as did large firms. Yet small firms conduct only three percent of United States research and development. While there is much innovation that can only occur in large resourceful companies, small firms are often more adventuresome and have a greater propensity for risk taking, and accordingly are able to move faster and use resources more efficiently than large companies. We believe that there is something fundamental about the unusual ability of small firms to innovate that must be preserved for the sake of healthy economic and social growth in the United States.

SMALL INNOVATIVE BUSINESSES CREATE JOBS AND TAX REVENUES AT A RAPID RATE.

The role of small innovative businesses in stimulating economic growth can be seen from two recent studies. The first, by the Massachussets Institute of Technology Development Foundation, shows compounded average annual growth from 1969 to 1974 for the following three groups of companies:

	Sales	Jobs
Mature Companies	11.4%	0.6%
Innovative Companies	13.2%	4.3%
Young High-technology Companies	42.5%	40.7%

In this study, Mature Companies were Bethlehem Steel, DuPont, General Electric, General Foods, International Paper and Proctor & Gamble. Innovative Companies were Polaroid, Minnesota Mining and Manufacturing, International Business Machines, Xerox, and Texas Instruments. Young High-technology Companies included Data General, National Semiconductor, Compugraphics, Digital Equipment, and Marion Laboratories. The companies selected in each group were, in every case, leaders in their particular industry.

The M.I.T. report states:

> "It is worth noting that during the five year period, the six mature companies with combined sales of $36 billion in 1974 experienced a net gain of only 25,000 jobs, whereas the five young, high-technology companies with combined sales of only $857 million had a net increase in employment of almost 35,000 jobs. The five innovative companies with combined sales of $21 billion during the same period created 106,000 jobs."

This study also observed that the Innovative Companies produced three times the level of tax revenues as a percentage of sales as did the mature firms.

Conclusions similar to those mentioned above emerged from a study of 269 firms by the American Electronic Association. In February 1978, Dr. Edwin V. Zschau of the A.E.A. presented the results of that study to the Senate Select Committee on Small Business. The report showed the following growth of employment for new established firms as contrasted to more mature companies:

Years Since Founding	Stage of Development	Employment Growth Rates in 1976
20+	Mature	0.5%
10-20	Teenage	17.4%
5-10	Developing	27.4%
1-5	Start-up	57.7%

Dr. Zschau also reported that annual benefits to the economy realized in 1976 for each $100 of equity captial that had been invested in Start-up companies founded between 1971 and 1975 were:

. foreign sales	$70 per year
. personal income taxes	$15 per year
. federal corporate taxes	$15 per year
. state and local taxes	$5 per year
. total taxes	$35 per year

This data shows that the benefits of investment in small innovative ventures are large (e.g., jobs are created and these jobs are kept at home--exports are created instead of imports--a new $35 per year flow in tax revenues is realised for each $100 initial investment). This large and powerful flow of benefits starts soon after the investment is made, and the benefits are substantially greater than those of large corporations.

The huge benefits derived from a favorable climate for small business innovation is apparent from this review of the contributions to economic growth made by individual entrepreneurs and their small companies. If the U.S. desires to bring inflation under control and to continue to enjoy the economic and social benefits of innovation, individual entrepreneurs and their small companies must be free to engage in innovation.

THE ENVIRONMENT FOR SMALL BUSINESS INNOVATION IS NOT HEALTHY.

It is clear to us that innovation is the keystone of economic and social growth, and that individual entrepreneurs and their small innovative businesses have contributed a disproportionately large share of innovation. It is also clear that the climate for the formation and nurturing of small innovative enterprises in America has suffered a major deterioration over the past ten years and as a result innovation has withered.

There are no concise indices for innovation, although productivity is one measureable result. From the close of World War II until the mid-1960's, the average annual productivity increase for each manufacturing worker was approximately 4.1 percent. From the late 1960's through the mid 1970's, it averaged 1.6 percent per year. In 1978 it was 1.0 percent, and some economists are predicting a rate of 0.4 percent for 1979. This is a ten fold decline that has occurred steadily over the past fifteen years.

Similar trends of a substantial downward nature can be observed in the flow of capital to small firms. In the seven years from 1969 through 1975, the amount of capital acquired by small firms with less than $5 million in net worth from public markets declined from approximately $1,500 million to approximately $15 million--a 100 fold decrease. No significant improvement has occurred in the past three years. However, during this period of catastrophic decline, capital raised by all corporations in the public security markets increased from $28 billion in 1972 to over $41 billion in 1975, or an increase of approximately 50 percent. This 100 fold decline in capital flow to small innovative enterprises is indicative of the decline in small business innovation because risk-capital is an essential ingredient of innovation.

Without precise indices for small business innovation, it is impossible for us to quantify this key factor accurately. It is our observation as experienced entrepreneurs in our respective industries however, that the vigor in small business innovation has substantially declined. We would estimate that this decline amounts to a level of 10 percent (or less) of the average innovation from 1950 to 1970--or at least a ten fold decline. We regret that we cannot be more precise in estimating this important factor, but we believe that this estimate, based upon our personal observations, is realistic.

In our opinion, a renaissance in innovation in America is possible, but a basic systemic change must first occur in governmental policies affecting small innovative businesses. The needs of innovators, their incentives to innovate, and obstacles to their creativity are often substantially different for small firms than for large mature corporations. In most cases government policy-makers and administrators fail to recognize this critical difference between large and small businesses. As a result, major constraints to innovation unintentionally imposed by government must be modified if a rebirth of vigorous innovation is to occur in the United States.

THE DISTINCTIVE CHARACTERISTICS OF THE CREATIVE PROCESS IN SMALL BUSINESS.

Creative processes in small businesses have some pronounced differences from the creative processes in large corporations. In both cases, however, the processes usually have the following steps in common:

. Conception--the use of scientific, market or other knowledge to conceive a new product, process or service to fill a need.

. Reduction to practice--taking this concept from an idea into a practical reality, such as a first-model prototype.

. Start-up--adapting the first-model prototype for production and sales.

. Expansion--with successful early production, expansion of production and sales.

With success, a concept moves laboriously through these stages until the firm and its markets mature. Signficant employment and tax revenues are generated during the later stages of this process.

Until maturity is achieved and expansion levels out, this creative process is usually a struggle for the innovator and his small firm--

--a struggle to obtain adequate capital (usually in several increments);

--a struggle to make the breakthroughs necessary to overcome the never ending unexpected obstacles;

--a struggle to make the first precious sale (or to get the first proposal accepted), to meet an optomistic delivery schedule, and to keep the first customers happy;

--a struggle to keep development costs and initial production costs within available capital;

--a struggle to collect accounts-receivable and other payments in time to meet the next payroll (a particular struggle when selling to the government);

--a struggle to convince the banker that sales, production cost, and cash flow projections are realistic and that customers will pay on schedule;

--a struggle to acquire and motivate a team of capable scientific, engineering, production and management talent.

There is usually a delicate balance between success and failure in this struggle.

The capital required for this creative process is usually acquired from individual outside sources and not from a flow of earnings as is the case of large corporations; a critical difference between large and small firms.

Entrepreneurs often spend 15 hours per day, seven days a week, to meet this challenge. Time and personal energy are the most precious assets in this process. The intensity of this struggle, requiring the strong personal commitment of the innovator, is usually much greater in a small business than in a large corporation. The willingness of the small business innovator to undertake this intense struggle is one significant reason why small businesses make disproportionately large contributions to innovation. The intensity of this struggle and the vigorous committment with which it is executed by the entrepreneur is a unique component of small business innovation.

WHAT INCENTIVES MOTIVATE THE SMALL INNOVATOR TO MEET THIS STRUGGLE?

New concepts are only generated from individuals, and creative indivudals need an environment that is conducive for creation with rewards, recognition, profits, freedoms, and the availability of capital, basic knowledge and other tools with which to create. There appears to us to be a lack of understanding within government of how individuals create in the private sector, and how they implement their creations--particularly small independent innovators.

The stimulation of setting out on one's own, trying his own ideas, working in an environment with few disapproval levels, that permits and encourages new approaches and even radical ideas, and has a "put your entire personal assets on the line" element of risk, coupled with a chance for a reward of above average wealth for his intense labors, are important motivations for the innovator in small businesses that are different from large corporations.

During the historically innovative 1950's and 1960's, and even into the early 1970's, there was a steady stream of individuals who were motivated to leave large corporations, universities and government to form small scientific and technical businesses. This stream is now a dribble. There was, at that time, a favorable climate where the creative individual had freedom to innovate and had access to capital.

Since then many governmental disapproval levels and obstacles have emerged, risks have gone up, rewards have come down--and at the same time the availability of capital for small American enterprises has declined to an all time low. The entrepreneural climate is now dismal and a substantial portion of the community of the technically creative are dispirited. There are mountains to be climbed that are going unclimbed. There is useful scientific knowledge that has been developed in our universities and elsewhere that is not being used to fill social and economic needs. There are products to be developed and manufactured

that are still only ideas in inventors heads. There are innovative businesses that should be started that are not being started. This inability for creative individuals to undertake is of great concern to this Committee.

FEDERAL POLICIES DETERMINE THE ENTREPRENEURAL CLIMATE

There is a wide array of federal policies that adversely impact upon small business entrepreneurs that have resulted in the arrest of this heretofore highly innovative sector of our society. The federal policies that determine the entrepreneural climate are in the following areas:

. Capital Availability. Unlike large corporations that fund R & D and other innovative investments from cash flows from mature products, a small business innovator must acquire capital from outside sources. Federal tax, pension fund and security policies have virtually eliminated all forms of seed, start-up, and expansion capital from small innovative business ventures.

. Regulation. Two essential requirements for the creative individual are time and freedom to create. Both time and freedom are being consumed with the ever increasing scope of government regulatory activities that have emerged since 1970. Interferences and delays by government compound the entrepreneur's struggle, sap his creative energy, and increase the risk of failure. Many small firms are unable to understand and comply with government regulatory processes and to effectively participate in law and rule-making that have a life or death impact upon their firms. The present system of applying regulations equally to large and small businesses heavily discriminates against small businesses.

. Federal Funding for R & D. In recent years, federal support for R & D has declined as a percentage of GNP and has become highly concentrated in a few large companies, universities and federal laboratories. While direct support for applied research and development at these institutions has grown, the most innovative sector of the American economy, small science and technology based enterprises, are virtually excluded from effective participation in federally funded applied research.

. Federal Procurement. The largest buyer of goods and services in the world is the U.S. government. The process of selling in this market and meeting government specifications chews the small innovative business to bits. There is little room for innovation within federal supply specifications and procurement procedures. The effect of these procedures is to prevent small business participation and deny the government of potential sources of innovation that would lower procurement costs, and provide new and improved products and services. In the interest of innovation and of good procurement, small innovative firms should be provided greater participation in this important market.

. Patents. The historic keystone to inventiveness and information transfer has been our U.S. patent system. Patent grants have provided the small innovator protection against competition by large resourceful firms, and this protection has often provided incentives for capital acquisition. Unfortunately in recent years the value of patents has weakened considerably due to inadequate Patent and Trademark Office procedures resulting in adverse judicial decisions. In addition, substantial uncertainty has emerged as a result of a wide range of interpretations within the federal judiciary of patent law. At the present time, over fifty percent of patents contested at the circuit court level are invalidated, and the cost of defending such suits is prohibitive for a small firm. A return to a strong patent system is essential for a rebirth in innovation.

THESE SAME FEDERAL POLICIES FORCE CONCENTRATION OF INNOVATION INTO FEWER AND FEWER LARGE FIRMS.

Simultaneous with the decline in the formation of new innovative enterprises there has been a concurrent acquisition of existing small innovative companies by large corporations. The unfortunate trends in the above policy areas is forcing concentration:

. Those federal policies affecting capital acquisition, coupled with the U.S. corporate income tax rate structure, force rapidly expanding small businesses to seek big firms with capital resource in order to obtain expansion capital;

. Estate tax considerations force many small innovative firms to sell their companies to large public firms. The highly restrictive security exchange policies accent this problem.

. In some industries the regulatory burden is beyond the ability of small firms to handle, while in others it is a major deterrent to creativity;

. In federal procurement, small firms (even those with outstanding products) cannot compete with large companies that specialize in this market;

. The weakened patent system forces the small patent holder into litigation with expenses so great that the small business cannot protect its rights against larger infringers, including government.

In order to aquire capital to meet expansion needs; to avoid high estate taxes; to obtain federal regulatory permits; to sell a new product to the government; or to defend it's patents, it is frequently necessary for the small innovative firm to sell out to a larger firm with greater resources. When this occurs, the research and development budgets are often soon cut and the innovative entrepreneurs leave the firm. A creative independent organization is changed into a static dependent one.

* * *

SOME GENERAL CONCLUSIONS

1. Technological innovation is essential to control inflation. And, it is essential if we are to fill our pressing social and human needs.

2. Independent entrepreneurs and their small businesses have made a disproportionately large contribution to anti-inflationary innovation. Unfortunately, small business creativity is blocked by a wide array of federal policies.

3. A renaissance in innovation is possible. The removal of unintended government inhibitors would allow small businesses to innovate again.

4. A fundamental reason for the decline in innovation is the failure of federal policy-makers and administrators to recognize the contributions from small firms to technological innovation, and their failure to recognize that small innovative firms cannot accomodate the burdens of government as readily as large companies. The burden of government upon small innovators is disproportionately large and often overwhelming. Government policies and regulations that treat large and small firms equally are, in fact, discriminatory against small firms.

5. When government recognizes the destructive nature of this disproportionate and overwhelming burden upon the small innovator, and when sufficient amendments to domestic policies are accomplished to allow relief, a major renaissance in anti-inflationary innovation will emerge in America with concomitant social and economic growth. For this to occur, a major departure is necessary from current federal policies affecting small businesses in capital acquisition, regulation, R & D funding, procurement, and patents.

Specific recommendations follow for each of these policy areas.

* * *

CAPITAL AVAILABILITY AND RETENTION

An essential ingredient for innovation is capital, and the lack of seed, start-up and expansion capital is probably the major factor throttling innovation by small businesses. Unfortunately, significant changes have occurred in tax laws, security exchange regulations, and federally mandated pension fund management policies during the past decade that have drastically reduced the flow of capital into new innovative businesses.

THE CAPITAL ALLOCATION PROCESS FOR SMALL BUSINESS INNOVATION IS SIGNIFICANTLY DIFFERENT THAN FOR BIG CORPORATIONS.

Innovation in large corporations is largely financed from the flow of earnings from mature products, and in many cases, sophisticated rate-of-return analyses are used to allocate this cash flow into promising areas of research, product development, and facility expansion. In addition, the profitable corporation receives an immediate income-tax benefit of approximately fifty percent for research and innovation related expenses, and a ten percent tax credit for related capital expenditures.

In contrast, the small independent innovator without a cash flow from one or more mature products must usually acquire his capital from external sources, often in several increments. No tax credits are available to the independent innovator until his new product becomes profitable. The net effect is that the small guy must raise from outside sources more than twice the amount of capital for the same innovation as a large corporation.

The disparity between the small business and the large corporation is further increased since debt capital is unavailable to the small firm to finance innovation, at least not until first profitability for the new product occurs. While debt is an important source of capital for large corporations, it is less available to small firms.

Furthermore, during the capital intensive stage of early and rapid expansion where initial profitability occurs, the high corporate income tax rate structure prevents the small firm from accumulating sufficient retained earnings to finance the internal expansion of its new product. In order to expand and protect its new market successes, the small enterprise must often turn to outside sources for capital. In contrast, the large corporation with mature business lines is usually able to supply all stages of capital from earnings of existing products.

In acquiring capital for each stage of innovation--seed, start-up and expansion--the federal tax code adversely and substantially discriminates against the small creative business.

FEDERAL SECURITY POLICIES ALSO DISCRIMINATE AGAINST INNOVATION.

The rules of the Security Exchange Commission that are established to prevent investment fraud, act to exclude from capital markets small innovative enterprises that do not have a proven flow of earnings from mature products. The registration and reporting requirements of the SEC are prohibitively costly to the small enterprise. In essence, the SEC is doing its job of preventing fraud by preventing all types of small businesses--both good and bad--from access to public markets.

Large corporations can afford access to public capital markets but small innovative firms are virtually excluded.

FEDERAL TAX LAWS DISCOURAGE INDIVIDUAL INVESTORS FROM MAKING INNOVATIVE INVESTMENTS.

Individual investors in the towns and cities across America in the past have played an important role in providing seed, start-up and expansion capital for innovation. In many (if not most) cases of significant innovation individual investors have been the only source of seed capital for the independent innovator to move from concepts into practical realities.

Unfortunately, changes in tax policies over the past ten years now favor areas for investment for individual investors other than innovation. Retirement funding, real estate, oil and gas drilling, and agriculture receive favorable tax treatment while innovation does not. We do not believe that real estate speculation and cattle feed lots are as important to healthy economic growth as is technological innovation--yet real estate and cattle feeding are favored and innovation is not. Innovation cannot compete for capital with these activities that are favored in the tax code.

Of additional concern to us are federal policies that encourage retirement funding. In 1970, legislation was passed to encourage retirement savings by providing tax-sheltered Individual Retirement Account (IRA) and Keogh plans so that the savings of doctors, lawyers, businessmen, and others with high income would be channeled into professionally managed institutional investment pools. In 1973, pension fund management policy legislation (ERISA) was passed requiring that such pools be managed by a "prudent man rule" that essentially precludes the use of this savings flow for small innovative businesses. Where prior to 1970 a substantial supply of savings throughout America was available for local enterprising inventors and entrepreneurs, this flow of savings is now diverted into tax sheltered centralized institutional investment pools that are precluded by law from investing in local promising ventures.

This combination of IRA-Keogh-ERISA acts like a huge vacuum sweeper moving around the country extracting innovative capital and placing it into large centralized funds where it is invested in the securities of governments, in large corporations, and into real estate. Hundreds of billions of dollars have been removed from local discretionary investments and locked up. In our opinion, this tax code induced removal of local discretionary investment decision making has caused a major disaster for innovation. This shift ininvestment decision making has been particularly disastrous for high-risk seed capital needs where ideas are first reduced to realities by using funds provided by friends, relatives, and personal acquaintances of the inventor on the local scene.

SPECIAL CONSIDERATIONS FOR SMALL INNOVATIVE BUSINESSES ARE NECESSARY.

It is our opinion that large amounts of risk-capital will again flow into small innovative businesses if federal tax laws are changed to put small business innovation at a parity with large corporations--and

at a parity with other investment alternatives for independent individual investors. Without such parity discrimination is occurring where small businesses cannot compete for capital for innovation.

Special considerations are necessary for our highly innovative sector of the economy and an amended tax code, changes in SEC policies, and revised ERISA rules are essential for the stimulation of a badly needed renaissance in anti-inflation innovation. It is the opinion of the members of this Committee that the following recommendations should be undertaken:

RECOMMENDATION # 1--CHANGES IN THE FEDERAL TAX CODE.

. A new class of equity security be created for start-up innovative businesses that would couple the benefits of limited partnerships with the benefits of Sub-chapter "S" Corporations. This new equity class would possess the following features;

--limited liability protection,

--include up to one hundred investors,

--allow corporated investors,

--allow the use of cash basis accounting for tax determinations,

--allow operating losses and investment tax credits to flow through to individual funding investors in the year occurred,

--allow specialized equipment and instrumentation for research, development or testing to be expensed in the year purchased;

This new class of stock and its benefits should be availabe to small businesses that spend in excess of five percent of their gross sales revenues in research and development as determined by Generally Accepted Accounting Principals (GAAP).

. Allow investors in small science and technology based firms to defer paying capital gains taxes on equity investments, provided the gains are reinvested in other small science and technology based firms within two years;

. Reduce the federal tax on gains from capital investments in small science and technology firms to a level of fifty percent of the otherwise applicable capital gains rate, if the investment is held for a minimum of five years;

. Allow small science and technology firms to carry forward losses for a period of ten years instead of five years;

. 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;

. Provide for a twenty-five percent tax credit for research and development related expenditures by small businesses (as currently allowed in Canada);

. Revise the corporate income tax rate to provide greater retention of earnings during the initial start-up and growth phases for small science and technology firms;

. Allow small business concerns to establish and retain a "reserve for research and development" in profitable years to be used in periods of business stress, with the maximum level of this reserve being ten percent of gross revenues;

. Treat license royalites as capital gains instead of ordinary income;

. 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;

. Permit small businesses to take double deductions of expenses directly related to export market development;

RECOMMENDATION # 2--CHANGES IN INVESTMENT MANAGEMENT POLICIES.

. Modify ERISA to allow up to five percent of pension fund portfolios to be invested in small businesses;

. Encourage state investment pools to invest a larger percentage of their holdings in small innovative businesses.

RECOMMENDATION # 3--CHANGES IN SECURITY EXCHANGE LAWS AND REGULATIONS.

. Exempt from SEC registration offerings of equity securities for innovative businesses outlined in Recommendation # 1 of less than two million dollars;

. Change the charter of the Security Exchange Commission to specify the encouragement of the flow of capital into small innovative enterprises as well as to protect the public investor.

The objective of these first three recommendations is to remove unintended obstacles that have arisen and to provide incentives for the allocation of seed, start-up, and expansion capital to promising innovative ventures, by:

. Providing tax parity for small innovative firms equal to that of large corporations;

. Providing tax parity for investments in innovation equal to that provided for alternate investment opportunities for independent investors;

. Allowing greater retention of retained earnings for early expansion;

. Removing SEC discrimination;

. Releasing locked-up capital in retirement funds.

We believe that the loss in tax revenues from these recommendations will be miniscule when compared to increased tax revenues to be received within several years of enacting these changes. The tax umbrella that would be provided for stimulating small business innovation would not be applicable to the large earning flows for large mature corporations nor would they be available for non-innovative individual investments. While we appreciate that our recommendations might result in some compromises in investor protection against fraud and losses, and that there may be some problems of definition and of administrative convenience, we believe that these costs will be minor compared to the overall societal benefits resulting from the rebirth in anti-inflation innovation that would follow.

* * *

REGULATION.

During the past decade, a new regulatory environment has emerged to fulfill a wide variety of social "mandates". This environment includes new agencies such as OSHA, EPA, CPSC, NTSB and EEOC, in addition to expanded jurisdictions of existing agencies such as FDA, SEC, FTC, DOE, DOT, Justice, Corps of Engineers and others involved in the regulation of business in one way or another. We believe that the mission of each of these agencies is well intended and, if only one (or a few) of them were impacting upon small innovative businesses, their impact could be absorbed within the creative process. Unfortunately, for many small businesses there is mandatory involvement with a wide range of agencies and, in some cases, the laws and regulations being enforced were intended for large sources of hazards, or for some other purpose than to control the new field being pioneered by the innovator.

In some new fields, the regulatory environment is so intense and so diverse that the whole of this impact is greater than the sum of the parts. The small guy is overwhelmed by the law-making, rule-making, and enforcement processes of regulation. This intense diverse regulatory environment is contributing to inflation in two ways--by impeding innovation (particularly innovation in small enterprises)--and by adding significantly to business costs.