

TECHNOLOGY AND MANAGEMENT ASSISTANCE
PROGRAMS OF THE SMALL BUSINESS ADMINISTRATION

176602497

HEARINGS
BEFORE THE
SELECT COMMITTEE ON SMALL BUSINESS
UNITED STATES SENATE
NINETY-FOURTH CONGRESS
SECOND SESSION
ON
TECHNOLOGY AND MANAGEMENT ASSISTANCE PROGRAMS OF
THE SMALL BUSINESS ADMINISTRATION

APRIL 1 AND 7, 1976



Printed for the use of the Select Committee on Small Business

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1976

72-434 O

2413518

SELECT COMMITTEE ON SMALL BUSINESS

[Created pursuant to S. Res. 58, 81st Cong.]

GAYLORD NELSON, Wisconsin, *Chairman*

JOHN SPARKMAN, Alabama

THOMAS J. McINTYRE, New Hampshire

SAM NUNN, Georgia

J. BENNETT JOHNSTON, Louisiana

WILLIAM D. HATHAWAY, Maine

JAMES ABOUREZK, South Dakota

FLOYD K. HASKELL, Colorado

WALTER F. MONDALE, Minnesota

JOHN C. CULVER, Iowa

JACOB K. JAVITS, New York

J. GLENN BEALL, Jr., Maryland

BILL BROCK, Tennessee

LOWELL P. WEICKER, Jr., Connecticut

DEWEY F. BARTLETT, Oklahoma

PAUL LAXALT, Nevada

BOB PACKWOOD, Oregon

WILLIAM B. CHERKASKY, *Executive Director*

KAY KLATT, *Professional Staff Member*

JUDAH C. SOMMER, *Minority Counsel*

CONTENTS

Statement of—

	Page
Babione, Dale R., Deputy Assistant Secretary for Procurement, Office of Assistant Secretary, Department of Defense, accompanied by Leonard Weisberg, Assistant Director of Electronics and Physical Sciences in the Office of Director of Defense Research and Engineering; and Stanley Tesko, Deputy Director, Small Business Office-----	175
Bay, Dr. John W., Dean, School of Business and Economics, University of Maine, Portland, Maine-----	15
Cardon, Dr. Samuel Z., President, American Association of Small Research Companies, and Secretary-Treasurer, General Technical Services, Inc., Upper Darby, Pa-----	75
Commins, James A., President, JACA Corp., Fort Washington, Pa---	54
Eggers, Dr. Alfred J., Jr., Assistant Director for Research Applications, National Science Foundation, Washington, D.C., accompanied by William Wetmore, Director of the Division of Inter-governmental Science and Technology; and Roland Tibbets, Special Assistant for Small Business Affairs-----	460
Kobelinski, Hon. Mitchell P., Administrator, Small Business Administration; accompanied by Henry Warren, Assistant Administrator for Management Assistance; and Harold Fletcher, Associate Administrator for Procurement Assistance-----	135
McGillicuddy, Thomas A., District Director, Small Business Administration, Augusta, Maine-----	2
O'Rourke, Walter P., Chairman, National SCORE Council Legislative Committee, accompanied by Julius Davidson, Member, National SCORE Council Legislative Committee; and Stuart C. Ferris, Chairman, Penobscot SCORE Chapter No. 244, Camden, Maine-----	34
Smith, Farwell, Director, Office of Industry, State and Local Relations, U.S. Energy Research and Development Administration; accompanied by Robert Older, Acting Director of Procurement, U.S. Energy Research and Development Administration-----	480
Wanzenberg, Fritz W., Great Sea Corp., Larchmont, N.Y-----	97
Woodfin, Admiral Kenneth L., Assistant Administrator for Procurement, National Aeronautics and Space Administration, accompanied by Clare F. Farley, Deputy Administrator for Technology Utilization; and Kenneth J. Kier, Small Business Advisor, NASA---	201

EXHIBITS

Fact sheet of the Service Corps of Retired Executives (SCORE)-----	11
Organizational chart of the Service Corps of Retired Executives (SCORE).-----	36
Chart, metals and energy from carbonaceous ore: Products: Metals, energy, gypsum, ecological upgrading, Great Sea Corp-----	103
Chart, oil from shale, by-products: Energy, metals, gypsum, ecological upgrading, Great Sea Corp-----	104
Chart, hybrid system, inputs, carbonaceous ore, oil shale; outputs, oil, metals, energy, chemicals, gypsum, Great Sea Corp-----	105
Table, Department of Defense awards to all business firms, fiscal years 1972 through 1975-----	190
Table, Department of Defense small business performance awards to small businesses, fiscal years 1953 through 1975-----	191
Table, Department of Defense interim and final small business goals and accomplishments, fiscal years 1972 through 1975-----	192
Table, Department of Defense small business subcontracting program, fiscal years 1972 through 1975-----	193

IV

Table, Department of Defense research and development awards to all business firms, fiscal years 1972 through 1975.....	Page 194
Table, Department of Defense RDTE contract awards to small business, by millions, fiscal years 1970 through 1975.....	195
National Aeronautics and Space Administration Procurement Regulation 1.702, General Policies.....	215
Table, National Aeronautics and Space Administration small business program, prime contract awards to small business, fiscal year 1975.....	216
Table, National Aeronautics and Space Administration small business program, summary of small business and minority business prime and sub-contract awards, fiscal years 1974, 1975.....	217
Table, National Aeronautics and Space Administration R&D study and hardware contracts for basic, applied and developmental research, fiscal years 1975, 1976.....	218
Table, National Aeronautics and Space Administration new research contract awards resulting from unsolicited proposals, fiscal years 1975, 1976.....	219
National Aeronautics and Space Administration Management Instruction 8310.2A, dated August 4, 1974.....	220
National Aeronautics and Space Administration publication, "Research and Technology Operating Plan Summary," fiscal year 1976.....	223
National Aeronautics and Space Administration handbook, "Selling to NASA," NHB 5100.1B, July 1975.....	400
Chart, energy-related independent inventor and small R&D business program, Energy Research and Development Administration and the National Bureau of Standards.....	494

APPENDIX

Letter dated May 12, 1976, to Senator William D. Hathaway, Select Committee on Small Business, U.S. Senate, from Farwell Smith, Director, Office of Industry, State and Local Relations, Energy Research and Development Administration.....	498
Letter dated May 28, 1976, to Senator William D. Hathaway, Select Committee on Small Business, U.S. Senate, from Mitchell P. Kobelinski, Administrator, Small Business Administration.....	547

HEARING DATES

April 1, 1976: Morning session.....	1
April 7, 1976: Morning session.....	135

TECHNOLOGY AND MANAGEMENT ASSISTANCE PROGRAMS OF THE SMALL BUSINESS ADMINISTRATION

THURSDAY, APRIL 1, 1976

U.S. SENATE,
SELECT COMMITTEE ON SMALL BUSINESS,
Washington, D.C.

The select committee met, pursuant to notice, at 9:35 a.m. in room 318, Russell Senate Office Building, Hon. William D. Hathaway presiding.

Present: Senators Hathaway and Javits.

Also present: Kay Klatt, professional staff member; Judah C. Sommer, minority counsel; Christopher Brescia, legislative assistant, Office of Senator Hathaway; and Dorothy Olson, staff assistant.

Senator HATHAWAY. The committee will come to order.

I am very happy to have all of you here. I would like to make a brief opening statement.

Section 8 of the Small Business Act charges the Small Business Administration with providing technical and managerial aids to small businesses by advising them on matters of Government procurement and on policies and practices of good management.

Section 9 of the act sets forth the duties of the agency to help small firms obtain Government contracts for research and development and to assist them in obtaining the benefits of research and development performed at the expense of the Federal Government.

This morning, the Small Business Committee's continuation of oversight hearings on the SBA will deal with these two sections of the Small Business Act. Our witnesses today are from Government and the academic and business communities. We will hear from them their views on the quantity and quality of the efforts being made by the Small Business Administration to implement these two sections of the act.

On April 7, the hearings will continue with testimony from the Small Business Administration and from the departments and agencies of the Federal Government that are major purchasers of research and development.

On our first panel of witnesses is: Thomas McGillicuddy, district director, Maine, Small Business Administration; Dr. John Bay, dean, College of Business Administration, University of Maine at Portland; Walter P. O'Rourke, chairman, National SCORE Council Legislative Committee, Washington, D.C., accompanied by Julius Davidson, member, National SCORE Council, and Stuart C. Ferris, chairman, SCORE Chapter 244, Camden, Maine.

We are glad to have all of you with us. Tom, would you like to start?

**STATEMENT OF THOMAS A. McGILLICUDDY, DISTRICT DIRECTOR,
SMALL BUSINESS ADMINISTRATION, AUGUSTA, MAINE**

Mr. McGILLICUDDY. It is a pleasure to appear before the full Senate Select Committee on Small Business. Previously, I gave testimony before your subcommittee on problems facing small businesspeople in Maine and SBA's role in helping to overcome those problems. I have also given testimony on what the SBA has done to help Maine's fishermen, loggers, and farmers.

Today, I have been asked to testify on SBA's management assistance program with particular emphasis on how it is working in Maine. Let me start with a brief history of management assistance officers; special projects they conduct and extra efforts to help veterans, women, and minorities. I will conclude with an example of how our many programs interface and a description of a proposed new Agency program.

In 1954, the Agency's management assistance activities were begun with two management courses and publication of the first management aid. Since then, many new programs have been added and expanded to meet the needs of small business.

Management assistance programs and procurement assistance programs were operated within a single division until 3 years ago. In 1973, management assistance was established as a separate division and was staffed nationwide with some 400 employees.

SBA recognized that it is not enough to provide financial assistance, procurement assistance, and surety bonding. Dun and Bradstreet states that over 90 percent of all business closings are due to "management failures." SBA has adopted a positive approach by offering management assistance to any small businessperson or prospective small businessperson who desires help, whether or not the small businessperson is an SBA borrower.

Management assistance takes many forms which include, but are not limited to: (a) Prebusiness workshops; (b) management seminars covering 21 subjects; (c) specialized courses in recordkeeping, taxes, marketing or any other subject for which a demand exists; (d) counseling on an individual basis by volunteers from SCORE (Service Corps of Retired Executives) ACE (Active Corps of Executives); (e) contracts with professional consultants through the 406 program; (f) counseling through the Small Business Institute program; (g) publication and distribution of management aids; and (h) consulting with the Management Assistance Officers (MAO's) who have had special training to help the small businessperson.

Because of the high failure rate among new businesses and the evident need for training before going into business, the prebusiness workshop program was introduced in 1963. Designed for persons seriously intending to go into business or those in business 1 year or less, the workshops provide an orientation to the principal factors important in small business management, stressing the need for adequate preparation and indicating sources of information and help.

One of the greatest benefits of the prebusiness workshops has been the realization of unqualified people that they should not go into business at that time. We believe that discouraging people who lack the

necessary experience, ambition or capital from starting a business results in keeping many of them from becoming a D. & B. failure statistic.

In fiscal 1975, the Agency conducted 953 prebusiness workshops for 34,524 small businesspeople. During this fiscal year the Augusta district office will hold 15 prebusiness workshops in seven Maine communities with some 525 fledgling businesspeople in attendance. Written comments from participants attest to the fact that prebusiness workshops are providing vital guidance to new business owners.

We also conduct specialized courses throughout Maine that run from 1 to 3 days. Some 700 to 800 Maine business owners are expected to attend specialized courses this fiscal year.

Last month we cosponsored with the Portland SCORE chapter and the Portland Rotary Club a very successful 3 day marketing and advertising seminar. A unique feature of this seminar was that all speakers except one were Rotarians.

Management seminars typically run 7 weeks with 3 semesters required to cover 21 core subjects. Subjects include: Sources of capital funds, recordkeeping, business law, key success and failure factors, advertising and marketing.

These courses are designed to provide small businesspeople with practical information and ideas that can be readily applied to their businesses. Instructors include lawyers, accountants, bankers and successful small business owners who talk the language of the participants.

The Agency has been successful in obtaining cosponsorships from colleges, universities, Chambers of Commerce, trade and professional organizations, local business groups and other Government agencies.

Last year, SBA conducted 1,336 management courses for 34,710 attendees. The Augusta district office expects approximately 2,000 small businesspeople will attend these seminars at 10 to 12 locations during this fiscal year.

Recognizing that a few SBA personnel could not possibly provide all the management counseling required by small businesspeople, SBA established SCORE in 1964. Present nationwide membership including ACE is over 7,000 and growing. Maine's membership has grown from 65 in 1973 to 152 today.

The typical SCORE volunteer is a person who successfully ran his own business or who comes from middle and upper levels of management in business or Government. He, or she, is usually a person who feels that this country has been good to him and he wants to help others to be successful.

Senator HATHAWAY. Do you think that the number of SCORE people you have is enough?

Mr. MCGILLICUDDY. I am very happy that we have as many volunteers as we do; but there are parts of the State where we need better coverage, particularly in the northern part of Maine.

Senator HATHAWAY. What efforts do you plan to make to recruit new members?

Mr. MCGILLICUDDY. I talked to the city manager of Caribou, recently. We laid out some strategy for putting on a recruitment campaign in central Aroostook County.

Recruitment is a rather time-consuming chore, talking to civic clubs, face-to-face buttonholing. It requires a fair amount of expenditure of man-hours on the part of me and members of my staff to recruit successfully. Even so, we will be doing some recruiting up in Aroostook.

Senator HATHAWAY. Good.

Mr. MCGILLICUDDY. I am pleased to report that a growing number of SCORE volunteers are committing themselves to long term in-depth counseling with our clients. For example, one of our Portland volunteers who was a zone manager for General Motors for many years has made 10 visits to a local automotive parts manufacturer. He has helped management to create a new organization structure, write job descriptions, and design an inventory control system.

In 1969, ACE was established as a companion organization to SCORE. This group consists of executives who are still working, but are willing to spend some time in small business assistance.

Nationwide, SCORE/ACE volunteers are expected to counsel 70,000 business concerns in fiscal year 1976. In Maine, we expect to counsel 675 to 700 businesses this year.

As Stu Ferris, chairman of the Penobscot Bay SCORE chapter, will point out, SCORE/ACE volunteers are also actively engaged in many other management assistance programs.

SBA augments the SCORE/ACE volunteer counseling with professional consultants under section 406 of the Equal Opportunity Act. The Augusta office uses this program when a special expertise involving some 8 to 12 man-days of work is required. We have used professional consultants 26 times during the last year for minority and disadvantaged business concerns.

The 406 program provided specialized management assistance last year to 2,843 small businesses that could not otherwise afford it.

The Small Business Institute is one of the Agency's most innovative and productive programs. From a pilot project in 1972, the SBA program has grown to encompass some 20,000 counselors in 385 schools.

The Augusta district office has contracts with the four fully accredited business colleges in Maine. Student counselors will provide consulting services to 65 Maine businesses this fiscal year.

The typical SBI student in Maine is a senior business major, a high grader an overachiever who has a strong desire to gain "hands-on" business experience. In addition to helping many standard type small businesses, Maine SBI students have provided counseling services for such diverse entities as a regional blood bank, a Goodwill Industries plant and an Indian-owned furniture factory.

A key factor in the success of the SBI program has been the volunteer cooperation of more experienced advisors. For example, students in Dr. John Bay's SBI at the University of Maine at Portland-Gorham receive guidance from SCORE volunteers, many faculty members, associates of the Center for Research and Advanced Study and SBA personnel.

An attestation to the success of the program is that several students have obtained full-time employment as a direct result of their SBI involvement. The highest starting salary for a Portland-Gorham business graduate last year went to an SBI student who was hired by the firm which he counseled.

SBI has some 300 titles in publication including booklets and leaflets under the following series: "Management Aids for Small Manufacturers," "Small Marketers Aids," "Small Business Management Series," and "Starting and Management Series." These are practical guides on how to apply the best modern management techniques to small businesses.

With a distribution of over 5 million per year, these publications make a positive impact on the small business sector. Currently we are working with the National Federation of Independent Business to provide our publications to their membership of 436,000 businesses.

All of Maine's management assistance activities are handled by only two professionals and one clerk. Fortunately, they are exceptional people.

Perhaps it would be meaningful to give the backgrounds of our MA professionals. Assistant District Director Bill Clifford started with IRS in 1934, and was financial analyst for the SEC. He later was an area chief for SBA's SBIC program. Mr. Clifford is a CPA who was managing partner of an accounting firm and was chairman of the board and president of a truck body manufacturing business employing 250 people. SBA and the Maine small business community are fortunate to have a man of Bill's exceptional abilities.

That is why the program works in Maine, Senator, because we have some very exceptional people.

Management Assistance Officer Harvey Bryant has a background as a small business manager and bank branch manager. Mr. Bryant was a loan officer in the community economic development division for 2 years and a portfolio management loan officer for 3 years before transferring to management assistance 2 years ago.

Even with these credentials, we believe that continued training is required to stay current with modern management practices. Since transferring to management assistance, Mr. Bryant has attended courses on advanced analysis of financial statements, personnel supervision, Federal productivity, marketing, advanced technical writing, and management by objectives.

In addition to the responsibilities described above, I frequently assign special projects to Messrs. Clifford and Bryant. During the last year they have coordinated Maine's involvement with a multi-agency conference in Springfield, Mass.; planned a most successful procurement assistance conference sponsored by Senator Hathaway; given many civic club speeches on SBA activities; participated in bank and congressional aides seminars, and made many field visits for portfolio management.

We continue to make special efforts to help groups who need extra assistance. For example, over 300 veterans have attended our workshops so far this fiscal year.

An increasing number of women participate in our workshops. We expect to enroll over 200 women by the end of this fiscal year. On April 22, we will hold a special prebusiness workshop for women only. Most of the speakers will be women.

As a percentage of the total State population, 10 times as many minorities attend our workshops compared to majorities.

By combining our programs, we have been able to achieve a synergistic effect whereby the combined result is more beneficial than the individual efforts.

For example, we have worked closely for several years with a minority contractor. He is an 8A contractor who has had two SBA loans and several surety bond guarantees. He has also received 406 consulting and currently is receiving SCORE counseling. His business has grown and prospered as a direct result of our association. Next year we expect that this contractor will graduate from the 8A program.

Let me comment on a new management assistance program. It is the University Business Development Center (UBDC). A UBDC will provide a comprehensive program for the expansion of existing businesses and the establishment of new enterprises.

The UBDC concept would correlate the efforts of several Government agencies now conducting programs on university campuses throughout the country. Mutually supportive, sometimes overlapping, existing Federal and State programs would be gathered together into a cohesive master plan for increased efficiency and greater leveraging of resources. At the same time, agencies such as HEW, SBA, NSF, Commerce—EDA and OMBE—the Bureau of Standards, and others would maintain their separate identities and independence of administration.

Through a UBDC, a business owner or potential entrepreneur would find the opportunity for analysis and understanding of his or her abilities, business skills, and an opportunity to develop them. Facilities for complete analysis of a business plan, product or idea would be available. The UBDC would provide technology utilization services, assist in capital formation; and it would provide entrepreneurs with knowledgeable on-the-job student and volunteer help to implement center findings while the business owner or manager developed his or her skills through center training.

SBA also proposed that existing resources, such as the SBI program on nearly 400 campuses, the more than 7,800 volunteer SCORE and ACE counselors, and the many short courses in small business management for active entrepreneurs already being offered by many schools, be expanded and intensified so the functions and services envisioned for the UBDC can be successfully implemented.

None of the resources discussed are new. Each of them exists somewhere. But, UBDC, by combining the existing multiple resources of academia, Federal and State agencies, and volunteer organizations into a university-coordinated delivery system, is the best means for promoting broad-scale business growth in our country today.

I would like to conclude my remarks by stating that management assistance is the single most important form of assistance that the agency provides to small businesspeople. Throughout my testimony, attention is called to the great success SBA has enjoyed in leveraging our resources through the aid of others, many of them unpaid volunteers. One of my greatest satisfactions as a district director has been to witness the unstinting commitment of volunteers to help struggling small businesspeople.

Thank you, Senator.

Senator HATHAWAY. How much time would you say that the ACE people put in? They are the ones working full time on their own jobs.

Mr. MCGILLICUDDY. We get much more input from the SCORE

members than we do from the ACE members. The SCORE members are retired. They tend to put in many more hours than the ACE members.

The ACE members are very helpful in certain ways. They are usually leaders in the community, the top people from the banking community, the publishing community. They are people who can open some doors for us sometimes, people who help us as speakers at our workshops and seminars. They have been very helpful in certain places in helping us to recruit SCORE volunteers, Senator. However, the bulk of the work is done by the SCORE volunteers.

Senator HATHAWAY. Do you think the university business development centers are going to work out well? The concept sounds good.

Mr. MCGILLICUDDY. It is a good concept. It makes sense to coordinate the efforts of the dozen or so Federal agencies who fund universities for the purpose of helping businesspeople to see if we can match up the right mix of Government programs to suit the resources of a particular university and the needs of the larger community around the university.

Senator HATHAWAY. Thank you. I will get back to you.

[The prepared statement of Mr. McGillicuddy follows:]

STATEMENT BY THOMAS A. MCGILLICUDDY, DISTRICT DIRECTOR, SMALL BUSINESS ADMINISTRATION, AUGUSTA, MAINE

Senator Hathaway, it is a pleasure to appear before the full Senate Select Committee on Small Business. Previously, I gave testimony before your subcommittee on problems facing small businesspeople in Maine and SBA's role in helping to overcome those problems. I have also given testimony on what the SBA has done to help Maine's fishermen, loggers and farmers.

Today, I have been asked to testify on SBA's Management Assistance program with particular emphasis on how it is working in Maine. Let me start with a brief history of Management Assistance within SBA. I will then list and describe the array of MA programs. I would then like to tell you something about our Management Assistance Officers; special projects they conduct and extra efforts to help veterans, women and minorities. I will conclude with an example of how our many programs interface and a description of a proposed new Agency program.

In 1954, the Agency's management assistance activities were begun with two management courses and publication of the first management aid. Since then, many new programs have been added and expanded to meet the needs of small business.

Management Assistance programs and Procurement Assistance programs were operated within a single division until three years ago. In 1973 Management Assistance was established as a separate division and was staffed nationwide with some 400 employees.

SBA recognized that it is not enough to provide financial assistance, procurement assistance and surety bonding. Dun and Bradstreet states that over 90% of all business closing are due to "management failures." SBA has adopted a positive approach by offering Management Assistance to any small businessperson or prospective small businessperson who desires help, whether or not the small businessperson is an SBA borrower. Management Assistance takes many form which include but are not limited to: (a) pre-business workshops; (b) management seminars covering 21 subjects; (c) specialized courses in record-keeping, taxes, marketing or any other subject for which a demand exists; (d) counseling on an individual basis by volunteers from SCORE (Service Corps of Retired Executives)/ACE (Active Corps of Executives); (e) contracts with professional consultants through the 406 Program; (f) counseling through the Small Business Institute Program; (g) publication and distribution of Management Aids and (h) consulting with the management Assistance Officers (MAO's) who have had special training to help the small businessperson.

Because of the high failure rate among new businesses and the evident need for training before going into business, the pre-business workshop program was

introduced in 1963. Designed for persons seriously intending to go into business or those in business for a year or less, the workshops provide an orientation to the principal factors important in small business management, stressing the need for adequate preparation and indicating sources of information and help.

One of the greatest benefits of the pre-business workshops has been the realization of unqualified people that they should not go into business at that time. We believe that discouraging people who lack the necessary experience, ambition or capital from starting a business results in keeping many of them from becoming a D&B failure statistic.

In fiscal 1975, the Agency conducted 953 pre-business workshops for 34,524 small businesspeople. During this fiscal year the Augusta District Office will hold 15 pre-business workshops in 7 Maine communities with some 525 fledgling businesspeople in attendance. Written comments from participants attest to the fact that pre-business workshops are providing vital guidance to new business owners.

We also conduct specialized courses throughout Maine that run from one to three days. Some 700 to 800 Maine business owners are expected to attend specialized courses this fiscal year.

Last month we cosponsored with the Portland SCORE Chapter and the Portland Rotary Club a very successful three day marketing and advertising seminar. A unique feature of this seminar was that all speakers except one were Rotarians.

Management seminars typically run seven weeks with three semesters required to cover 21 core subjects. Subjects include; sources of capital funds, recordkeeping, business law, key success and failure factors, advertising and marketing. These courses are designed to provide small businesspeople with practical information and ideas that can be readily applied to their businesses. Instructors include lawyers, accountants, bankers and successful small business owners who talk the language of the participants.

The Agency has been successful in obtaining cosponsorships from colleges, universities, Chambers of Commerce, trade and professional organizations, local business groups and other government agencies.

Last year, SBA conducted 1,336 management courses for 34,710 attendees. The Augusta District Office expects approximately 2,000 small businesspeople will attend these seminars at 10 to 12 locations during this fiscal year.

Recognizing that a few SBA personnel could not possibly provide all the management counseling required by small businesspeople, SBA established SCORE in 1954. Present nationwide membership including ACE is over 7,000 and growing. Maine's membership has grown from 65 in 1973 to 152 today.

The typical SCORE volunteer is a person who successfully ran his own business or who comes from middle and upper levels of management in business or government. He (or she) is usually a person who feels that this country has been good to him and he wants to help others to be successful.

SCORE counseling is often conducted at Chambers of Commerce and consists of advising people who wish to go into business and discussing specific problem areas with existing small business owners.

I am pleased to report that a growing number of SCORE volunteers are committing themselves to long term in depth counseling with our clients. For example, one of our Portland volunteers who was a Zone Manager for General Motors for many years has made ten visits to a local automotive parts manufacturer. He has helped management to create a new organization structure, write job descriptions and design an inventory control system.

In 1969, ACE was established as a companion organization to SCORE. This group consists of executives who are still working, but are willing to spend some time in small business assistance.

Nationwide, SCORE/ACE volunteers are expected to counsel 70,000 business concerns in FY 1976. In Maine, we expect to counsel 675 to 700 businesses this year.

As Stu Ferris, Chairman of the Penobscot Bay SCORE Chapter, will point out, SCORE/ACE volunteers are also actively engaged in many other Management Assistance programs.

SBA augments the SCORE/ACE volunteer counseling with professional consultants under Section 406 of the Equal Opportunity Act. The Augusta Office uses this program when a special expertise involving some 8 to 12 man days of

work is required. We have used professional consultants 26 times during the last year for minority and disadvantaged business concerns. The 406 program provided specialized management assistance last year to 2,843 small businesses that could not otherwise afford it.

The Small Business Institute is one of the Agency's most innovative and productive programs. From a pilot project in 1972, the SBA program has grown to encompass some 20,000 counselors in 385 schools.

The Augusta District Office has contracts with the four fully accredited business colleges in Maine. Student counselors will provide consulting services to 65 Maine businesses this fiscal year.

The typical SBI student in Maine is a senior business major, a high grader, an overachiever who has a strong desire to gain "hands-on" business experience. In addition to helping many standard type small businesses, Maine SBI students have provided counseling services for such diverse entities as a regional blood bank, a Goodwill Industries plant and an Indian owned furniture factory.

A key factor in the success of the SBI program has been the volunteer cooperation of more experienced advisors. For example, students in Dr. John Bay's SBI at the University of Maine at Portland-Gorham receive guidance from SCORE volunteers, many faculty members, associates of the Center for Research and Advanced Study and SBA personnel.

An attestation to the success of the program is that several students have obtained full time employment as a direct result of their SBI involvement. The highest starting salary for a Portland-Gorham business graduate last year went to an SBI student who was hired by the firm which he counseled.

SBA has some 300 titles in publication including booklets and leaflets under the following series; Management Aids for Small Manufacturers, Small Marketers Aids, Small Business Management Series and Starting and Management Series. These are practical guides on how to apply the best modern management techniques to small businesses.

With a distribution of over 5,000,000 per year, these publications make a positive impact on the small business sectors. Currently we are working with the National Federation of Independent Business to provide our publications to their membership of 436,000 businesses.

All of Maine's Management Assistance activities are handled by only two professionals and one clerk. Fortunately, they are exceptional people.

Perhaps it would be meaningful to give the backgrounds of our MA professionals. Assistant District Director Bill Clifford started with IRS in 1934 and was a financial analyst for the S.E.C. He later was an Area Chief for SBA's SBIC program. Mr. Clifford is a CPA who was managing partner of an accounting firm and was Chairman of the Board and President of a truck body manufacturing business employing 250 people. SBA and the Maine small business community are fortunate to have a man of Bill's exceptional abilities.

Management Assistance Officer Harvey Bryant has a background as a small business manager and bank branch manager. Mr. Bryant was a loan officer in the Community Economic Development Division for two years and a Portfolio Management loan officer for three years before transferring to Management Assistance two years ago.

Even with these credentials, we believe that continued training is required to stay current with modern management practices. Since transferring to Management Assistance Mr. Bryant has attended courses on Advanced Analysis of Financial Statements, Personnel Supervision, Federal Productivity, Marketing, Advanced Technical Writing and Management by Objectives.

In addition to the responsibilities described above, I frequently assign special projects to Messrs. Clifford and Bryant. During the last year they have; coordinated Maine's involvement with a Multi-Agency Conference in Springfield, Mass.; planned a most successful Procurement Assistance Conference sponsored by Senator Hathaway; given many civic club speeches on SBA activities; participated in bank and congressional aides seminars and made many field visits for Portfolio Management.

We continue to make special efforts to help groups who need extra assistance. For example, over 300 veterans have attended our workshops so far this fiscal year.

An increasing number of women participate in our workshops. We expect to enroll over 200 women by the end of this fiscal year. On April 22, we will hold

a special pre-business workshop for women only. Most of the speakers will be women.

As a percentage of the total state population, ten times as many minorities attend our workshops compared to majorities.

By combining our programs, we have been able to achieve a synergistic effect whereby the combined result is more beneficial than the individual efforts. For example, we have worked closely for several years with a minority general contractor. He is an 8A contractor who has had two SBA loans and several surety bond guarantees. He has also received 406 consulting and currently is receiving SCORE counseling. His business has grown and prospered as a direct result of our association. Next year we expect that this contractor will graduate from the 8A program.

Let me comment on a new Management Assistance Program. It is the University Business Development Center (UBDC). A UBDC will provide a comprehensive program for the expansion of existing businesses and the establishment of new enterprises.

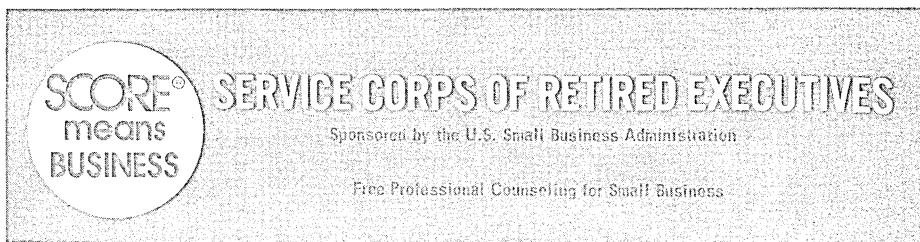
The concept would correlate the efforts of several Government agencies now conducting programs on university campuses throughout the country. Mutually supportive, sometimes overlapping, existing Federal and state programs would be gathered together into a cohesive master plan for increased efficiency and greater leveraging of resources. At the same time, agencies such as HEW, SBA, NSF, Commerce (EDA and OMBE), the Bureau of Standards, and others would maintain their separate identities and independence of administration.

Through a UBDC, a business owner or potential entrepreneur would find the opportunity for analysis and understanding of his or her abilities, business skills, and an opportunity to develop them. Facilities for complete analysis of a business plan, product or idea would be available. The UBDC would provide technology utilization services, assist in capital formation; and it would provide entrepreneurs with knowledgeable on-the-job student and volunteer help to implement center findings while the business owner or manager developed his or her skills through center training.

SBA also proposes that existing resources, such as the SBI Program on nearly 400 campuses, the more than 7,800 volunteers SCORE and ACE counselors, and the many short courses in small business management for active entrepreneurs already being offered by many schools, be expanded and intensified so the functions and services envisioned for the C/BED can be successfully implemented.

None of the resources discussed are new. Each of them exists somewhere. But, UBDC, by combining the existing multiple resources of academia, Federal and State agencies, and volunteer organizations into a university-coordinated delivery system, is the best means for promoting broad scale business growth in our country today.

I would like to conclude my remarks by stating that Management Assistance is the single most important form of assistance that the Agency provides to small businesspeople. Throughout my testimony, attention is called to the great success SBA has enjoyed in leveraging our resources through the aid of others, many of them unpaid volunteers. One of my greatest satisfactions as a District Director has been to witness the unstinting commitment of volunteers to help struggling small businesspeople.



FACT SHEET

The Program:

The Service Corps of Retired Executives (SCORE) is a volunteer program linking retired business people who have management expertise with the owners/managers of small businesses and community organizations that need management counseling. Since SCORE began in 1964, it has responded to more than 300,000 requests for assistance. It is sponsored by the U.S. Small Business Administration.

The Volunteers:

There are now over 5800 SCORE volunteers serving in all 50 states, the District of Columbia and Puerto Rico. SCORE volunteer growth has resulted in the formation of nearly 300 chapters across the country.

Eligibility:

The Service Corps of Retired Executives (SCORE) needs retired people with the required expertise to counsel on business-related problems. Specific qualifications depend on local needs.

Service:

SCORE volunteers work in their home communities or in nearby communities. There are very few forms of private enterprise that have not received their assistance. To name a few: grocery and drug stores, restaurants, hardware stores, fast food franchises, repair shops, dry cleaners, clothing stores, truckers, landlords, and a wide variety of small manufacturers. SCORE counseling is especially helpful to persons considering going into business.

Volunteers in this program provide their services without charge, but are reimbursed for out-of-pocket expenses.

More Information:

Additional information may be obtained by contacting the Small Business Administration Field Offices, listed on page 4 of this Fact Sheet and in the telephone directory under U.S. Government.

Write SCORE, [®] U.S. Small Business Administration, 1441 L St., N.W., Washington, D.C. 20416

SCORE CHAPTER LOCATION BY CITY AND STATE

ALABAMA
Birmingham
Huntsville
Mobile

ARIZONA
Phoenix
Tucson

ARKANSAS
Ft. Smith
Little Rock

CALIFORNIA
Los Angeles
Palm Springs
Pomona
Sacramento
San Diego
San Francisco
Santa Ana
Santa Barbara
Van Nuys
Ventura County

COLORADO
Colorado Springs
Denver
Durango
Ft. Morgan
Grand Junction
Lamar
Loveland
Pueblo

CONNECTICUT
Hartford
New Haven
New London
Stamford
Waterbury

DELAWARE
Wilmington

DISTRICT OF COLUMBIA
Washington

FLORIDA
Brooksville
Daytona Beach
DeLand

Fort Lauderdale
Fort Meyers
Hollywood
Jacksonville
Melbourne
Miami
Orlando
Palm Beach
Panama City
Pensacola
Pompano Beach
Port Charlotte
Sarasota
St. Petersburg
Tallahassee
Tampa
Winter Haven

GEORGIA
Albany
Atlanta
Augusta
Brunswick
Columbus
Macon
Savannah

HAWAII
Honolulu

IDAHO
Idaho Falls
Boise
Pocatello

ILLINOIS
Aurora
Chicago
Peoria
Southern Illinois
Springfield

INDIANA
Ft. Wayne
Hammond
Evansville
Indianapolis
Kokomo
South Bend
Terre Haute

IOWA
Burlington
Cedar Rapids
Council Bluffs
Davenport
Des Moines
Dubuque
Ft. Dodge
Mason City
Spencer
Sioux City
Waterloo

KANSAS
Emporia
Garden City
Hays
Hutchinson
La Crosse
Salina
Topeka
Wellington
Wichita

KENTUCKY
Bowling Green
Covington
Lexington
Louisville
Paducah

LOUISIANA
Baton Rouge
Alexandria
New Orleans
Shreveport
West Monroe
Lake Charles
Lafayette

MAINE
Augusta
Bangor
Calais
Houlton
Lewiston
Penobscot Bay
Portland
Presque Isle

MARYLAND
Annapolis
Baltimore
Salisbury

MASSACHUSETTS
Boston
Cape Cod
Fitchburg
New Bedford
Springfield
Worcester

MICHIGAN
Detroit
Marquette

MINNESOTA
Duluth
Mankato
Minneapolis

MISSISSIPPI
Gulfport
Jackson
Laurel
Tupelo

MISSOURI
Branson
Cape Girardeau
Columbia
Joplin
Kansas City
Mexico
Springfield
St. Louis

MONTANA
Billings
Bozeman
Butte
Great Falls
Harve
Helena
Kalispell
Missoula

NEBRASKA
Chadron
Columbus
Grand Island
Lincoln
Norfolk
North Platte
Omaha
Scottsbluff

NEVADA

Las Vegas

NEW HAMPSHIRENorth Conway
Lebanon
Laconia
Manchester
Portsmouth**NEW JERSEY**Atlantic City
Bergen County
Boundbrook
Camden
Lakewood
Monmouth County
Montclair
Newark
Trenton**NEW MEXICO**Albuquerque
Roswell**NEW YORK**Albany
Auburn
Batavia
Binghamton
Buffalo
Chautauqua
Elmira
Mt. Vernon
Nassau County
New York City
Poughkeepsie
Rochester
Smithtown
Syracuse
Utica
Watertown**NORTH CAROLINA**Asheville
Charlotte
Durham
Fayetteville
Greensboro
Hendersonville
Hickory
High Point
Raleigh
Southern Pines
Wilmington
Winston-Salem**NORTH DAKOTA**Bismark
Fargo
Minot
Grand Forks
Santa Fe**OHIO**Akron
Athens
Cincinnati
Cleveland
Columbus
Dayton
Springfield
Toledo
Youngstown**OKLAHOMA**Lawton
Oklahoma City
Tulsa**OREGON**Medford
Portland**PENNSYLVANIA**Bethlehem
Erie
Greensburg
Harrisburg
Johnstown
Lancaster
Meadville
Philadelphia
Pittsburgh
Reading
Scranton
Warren
Wilkes-Barre
Williamsport**RHODE ISLAND**

Providence

SOUTH CAROLINACharleston
Columbia
Greenville**SOUTH DAKOTA**Aberdeen
Rapid City
Sioux Falls**TENNESSEE**Chattanooga
Greenville
Memphis
Nashville**TEXAS**Amarillo
Arlington
Austin
Corpus Christi
Dallas
El Paso
Fort Worth
Galveston
Harlingen
Houston
Longview
Lubbock
McAllenMt. Pleasant
Odessa
San Antonio
Texarkana
Tyler
Waco**UTAH**Ogden
Salt Lake City**VERMONT**Burlington
Montpelier
Rutland**VIRGINIA**Bristol
Front Royal
Newport News
Norfolk
Richmond
Roanoke**WASHINGTON**Bellingham
Everett
Seattle
Spokane**WEST VIRGINIA**Charleston
Clarksburg
Elkins
Huntington
Princeton**WISCONSIN**Eau Claire
Madison
Milwaukee
Rhineland**WYOMING**Casper
Cheyenne
Sheridan
Wheatland
Worland**PUERTO RICO**

San Juan

SBA Field Offices

Agana, Guam	Knoxville, Tenn.
Albany, N. Y.	Las Vegas, Nevada
Albuquerque, N. Mex.	Little Rock, Ark.
Anchorage, Alaska	Los Angeles, Calif.
Atlanta, Ga.	Louisville, Ky.
Augusta, Me.	Lower Rio Grande Valley, Tex.
Baltimore, Md.	Lubbock, Tex.
Biloxi, Miss.	Madison, Wisc.
Birmingham, Ala.	Marquette, Mich.
Boise, Idaho	Marshall, Tex.
Boston, Mass.	Memphis, Tenn.
Buffalo, N. Y.	Milwaukee, Wisc.
Casper, Wyo.	Minneapolis, Minn.
Charleston, W. Va.	Montpelier, Vt.
Charlotte, N. C.	Nashville, Tenn.
Chicago, Ill.	Newark, N. J.
Cincinnati, Ohio	New Orleans, La.
Clarksburg, W. Va.	New York, N. Y.
Cleveland, Ohio	Oklahoma City, Okla.
Columbia, S. C.	Omaha, Nebr.
Columbus, Ohio	Philadelphia, Pa.
Concord, N. H.	Phoenix, Ariz.
Coral Gables, Fla.	Pittsburgh, Pa.
Corpus Christi, Tex.	Portland, Ore.
Dallas, Tex.	Providence, R. I.
Denver, Colo.	Rapid City, S. Dak.
Des Moines, Iowa	Richmond, Va.
Detroit, Mich.	Rochester, N. Y.
Eau Claire, Wisc.	St. Louis, Mo.
Elmira, N. Y.	Sacramento, Calif.
El Paso, Tex.	Salt Lake City, Utah
Fairbanks, Alaska	San Antonio, Tex.
Fargo, N. Dak.	San Diego, Calif.
Fresno, Calif.	San Francisco, Calif.
Greenville, N. C.	Seattle, Wash.
Harrisburg, Pa.	Sioux Falls, S. D.
Hartford, Conn.	Spokane, Wash.
Hato Rey, P. R.	Springfield, Ill.
Helena, Mont.	Syracuse, N. Y.
Holyoke, Mass.	Tampa, Fla.
Honolulu, Hawaii	Washington, D. C.
Houston, Tex.	West Palm Beach, Fla.
Indianapolis, Ind.	Wichita, Kan.
Jackson, Miss.	Wilkes-Barre, Pa.
Jacksonville, Fla.	Wilmington, Del.
Kansas City, Mo.	

Senator HATHAWAY. The next witness is Dr. Bay. By the way, all of your statements will be placed in the record. If you would like to summarize, you may.

STATEMENT OF DR. JOHN W. BAY, DEAN, SCHOOL OF BUSINESS AND ECONOMICS, UNIVERSITY OF MAINE, PORTLAND, MAINE

Dr. BAY. It is a pleasure to be here today and have this opportunity to attest to the effectiveness of the Small Business Institute, a management assistance program sponsored by the Small Business Administration at the University of Maine at Portland-Gorham.

Small business represents a vital and significant force in the American economy. In 1776 all businesses were small by present standards. In 1876, there were approximately 300,000 businesses in the United States, most of them being small firms.

Even though the 20th century has recorded a substantial growth in large firms, small business is still a very important part of our economy. Of the more than 9 million businesses in the United States 95 percent are small concerns. In a State such as Maine, nearly all firms in the entire State are classified as small businesses.

As a source of employment, small businesses provide jobs for about one-half of the American work force. They account for over 40 percent of gross national product. They contribute nearly 20 percent of all business taxes paid. In summary, it is clear that small businesses have been and are currently a vital and significant factor in our economy.

The philosophy of small business is a factor to consider as well as the economics. Our 200-year history reflects this. It is traditional in America to associate certain emotional aspects with small business. Small business provides the vehicle for fulfilling the entrepreneurs aspirations and objectives.

Concern for small business is not a recent phenomenon. The Sherman and Clayton Acts were designed to prevent undue concentration of economic power. Judge Learned Hand wrote in the *United States v. Aluminum Co. of America*:

It is possible, because of its indirect social or moral effect, to prefer a system of small producers, each dependent for his success upon his own skill and character, to one in which the great mass of those engaged must accept direction of a few.

Congress, aware of and concerned about bigness and the future of small business, in 1953, created the Small Business Administration. The Small Business Administration, through its affiliates—SCORE, ACE and EBI, provides managerial assistance programs to small business.

The requirements for success call for balanced managerial skills. The small business entrepreneur is a generalist but has to make decisions in all the specialized areas of business, ranging from accounting, production, selling, financing, et cetera.

In most cases their exposure to all these required functions is limited. In most instances their resources are limited and this precludes the hiring of staff specialists or outside consultants. Ninety-three percent of small business failures are management failures.

This revealing statistic reaffirms the need for managerial assistance in upgrading the skills of the small business entrepreneur.

Our experience at the University of Maine at Portland-Gorham with the Small Business Institute indicates that this program of the Small Business Administration can provide much needed managerial assistance to small businesses.

Our association with the Small Business Institute commenced in the spring semester 1974. At the conclusion of the 1976 spring semester, we will have had six semesters in the program, including the summer session 1975. We will have counseled 56 clients, utilizing 98 student counselors.

Students, primarily seniors, are selected for the program by a faculty screening committee. Good academic standing, maturity, and experience such as work, military hobbies, et cetera are the selection criterion. Although not a prerequisite, many of the students have had a course in "The Problems of Small Business."

Students receive three credit hours for their work in this program. Students are required to devote about 9 hours a week to the SBI program, approximately the amount of time required of an advanced business course. Our experience to date shows that the average amount of time per student per week is 14 hours. This attests to the enthusiasm, interest and appreciation that students have for this valuable experience.

An excellent orientation to counseling, for the students, is provided on campus by SBA personnel from Augusta. In addition, the School of Business and Economics provides each counselor with a handbook, "A Guide and Aid to Management Counseling—Strengthening Small Business Management."

The SBI program is directed by a faculty member and is set up as a field experience free from formal class requirements. It is felt that this provides the greatest benefits to all parties, especially the clients. Students present a weekly progress report to the faculty director and a final summary report at the end of the semester. During the semester a steering committee of SBA personnel and certain UMPG faculty meet with the students to review the problems and progress in the cases and to make suggestions for the dealing with the various problems encountered.

Cases are assigned to the university by the SBA. The faculty project director reviews the cases with SBA endeavoring to match students' major interests, for example, accounting, marketing, et cetera, with what appears to be clients' major problems. This has worked well.

A prime ingredient for success in the program are the cases both as to quality and mix. Many people, even natives, think of the Maine economy as being based on fishing and tourism. However, manufacturing, in 1973 contributed 28 percent to the gross State product. Of the six major manufacturing communities in the State, three are in the Greater Portland area.

We are fortunate to get a share of these manufacturing companies where the management problems are more diversified and often more complex. This gives the SBA greater flexibility in assigning cases to us, for example, more sophisticated cases.

Another major ingredient for success in the program is the willingness of faculty to work with the students on their cases. Five School of Business and Economics faculty members are active participants, serving as consultants to the students on various problems they encounter. On one case, an entire marketing class was used where the timeframe was critical for the client in identifying a seasonal market.

Other resources at the university have been brought in to deal with a client's problems. Personnel from the Center for Research and Advanced Study have been very helpful to students. The center, through Project New Enterprise, has a common interest in strengthening management in small businesses.

An excellent working relationship has been established this year with the Greater Portland SCORE Chapter. The exchange of case data and counseling has added another valuable dimension to our program.

How the program actually functions might best be illustrated by presenting a case study.

Company A was founded in the 1850's and was family owned and operated until sold in the late 1960's upon the owner's death. During the last 10 years of family operations, sales volume and profits were deteriorating. In 1967, the business was sold, and in mid-1968 it failed. New owners purchased the business in 1969 but could not operate it profitably and the firm once again was sold in 1975. Thus there were three changes in ownership within 8 years.

In September 1975, this company was one of the SBI cases assigned to the university by the Small Business Administration. An SBA management assistance officer and the university SBI director met with the new owner and discussed in depth the role of the SBI program. At this meeting, an attempt was made to define the main and most urgent problem areas. It was resolved that concentration in the accounting field, especially cost accounting was paramount.

Two senior accounting majors, who had been through the SBA counseling orientation, were briefed and assigned to the case.

The company employs 13 full-time people. Gross sales for the 6-month fiscal period ended September 30, 1975 were \$131,000. Estimated gross sales for the fiscal year ending September 30, 1976 are \$360,000. The firm's objectives, to realize this goal, are to specialize in gears, sprockets, and heat exchanges. About 75 percent of total gross sales is anticipated to come from job orders and the balance from production to stock. The paper industry in Maine is the prime target market.

Problem areas observed by counselors in an orientation to the business with the owner were: Absence of adequate records with no cost-accounting system; no separation of fixed and variable expenses—hence, breakeven point unknown; no method for allocation of factory burden or for general administration and selling expenses; no realistic pricing policy; inventory-purchasing controls all done by the engineer. No accurate beginning or ending inventory figures available.

Production problems were: Shop is primarily a job shop. Excessive idle time a prime factor in slack periods. Labor costs excessive in materials handling. Main shop has a wooden floor which cannot support heavy equipment, for example, forklifts. Indirect costs are high

because labor is needed to move heavy articles over this area. The heavy permanent gear machinery, et cetera, sets on cement pads which are poured right into the floor.

In reviewing the above problem areas, the owners and counselors agreed on the priority need of developing a cost system for pricing.

Counselors with assistance from company employees prepared a flow-chart for a job order system. They then examined the accounting records in detail, breaking out overhead, selling and administration expenses and direct and indirect labor costs including all fringes.

The next step was to prepare schedules that would consolidate total costs for pricing. Working with a cost accounting faculty member, they devised 10 simple schedules that the bookkeeper could understand and record on a monthly basis. This was approved by the owner.

In early December a recommended cost system, which had been tried for a month and provided solutions to costing was presented to the owner and his outside accountant. The system was accepted and implemented on December 15, without modifications.

During the cost analysis, it was found that one-third of the job orders classified as small orders, were underpriced and losing money. These orders were being charged \$12 per hour, a flat rate, someone's guess. The actual charge should have been in excess of \$14. The big orders were actually carrying an inordinately high proportion of the costs—distorting the overall profit picture.

The firm now has a sound method for determining the price for each job that heretofore did not exist. The owner now knows his breakeven points and how to competitively and profitably price small and large jobs.

Although the students are not currently enrolled in the SBI program, they continue to visit the company and check on the system and recommend modifications as needed. Last reports were that the system is functioning well.

The preceding case illustrates some of the problems SBI counselors have encountered and how they have dealt with them. An analysis of our overall counseling reports reveals that clients have benefited in the following areas: Improved recordkeeping that has provided greater control over assets, for example, accounts receivable; inventories; implementation of credit policies; establishing breakeven points; costing for pricing; market surveys and measuring advertising effectiveness; developing job descriptions and job specifications; flow charting production operations.

In many instances the above tasks have required extensive research that the business could not devote the time to or could not afford a paid consultant.

Of the 56 clients we have counseled, 20 have requested further counseling. Each semester we get an increasing number of inquiries from non-SBA clients as to how they can qualify for the benefits of the program.

The student benefits are highly visible. It provides an opportunity to apply academic theory to real-world business problems. It builds confidence. They find that they can transfer theory to practice—properly tailored to fit the small business problems and situations. It is a relevant experience. It has focused direction to careers in

small business that might not otherwise have developed. In fact, a number of students have taken employment in small firms.

Below are two unsolicited student testimonials taken from their final reports.

My work with the client and with the Small Business Institute has been the most rewarding experience in my college career. Not only have I gained valuable experience, but have profited from the personal relationships, knowledge and confidence only actual field experience can provide. I can express nothing but praise for the program and for the invaluable help from the SBE faculty members, without whom the program could not be as successful as it is.

I wish I could have participated for another semester in the SBI program. The past semester has made me seriously consider a career in consulting in the small business sector.

The SBI program is a natural program for a State university. The program provides a viable and tangible way for the university to meet part of its public service obligations. In our case, we have served clients throughout southern Maine.

The program also enables the Small Business Administration to expand services that are sorely needed in Maine at an excellent cost/benefit ratio. It offers an expanded base for career personnel for SBA.

The key to success in this program is commitment on the part of the university and the SBA. We are fortunate to have had an excellent working relationship between the faculty at UMPG and the SBA, and thereby, providing excellent managerial assistance to small businesses.

Thank you.

[The prepared statement of Dr. Bay follows:]

Statement By

DR. JOHN W. BAY, DEAN

School of Business & Economics
University of Maine at Portland Gorham
96 Falmouth Street
Portland, Maine

Before Subcommittee -- Select Committee
On Small Business

April 1, 1976

It is a pleasure to be here today and have this opportunity to attest to the effectiveness of the Small Business Institute, a management assistance program sponsored by the Small Business Administration at the University of Maine at Portland-Gorham.

Background

Small business represents a vital and significant force in the American economy. In 1776 all businesses were small by present standards. In 1876 there were approximately 300,000 businesses in the United States, most of them being small firms.¹ Even though the twentieth century has recorded a substantial growth in large firms, small business is still a very important part of our economy. Of the more than nine million businesses in the United States, almost ninety-five percent are small concerns. In a state such as Maine, nearly all firms in the entire state are classified as small businesses. As a source of employment, small businesses provide jobs for about one-half of the American work force. They account for over forty percent of gross national product.² They contribute nearly twenty percent of all business taxes paid.³ In summary, it is clear that small businesses have been and are currently a vital and significant factor in our economy.

The philosophy of small business is a factor to consider as well as the economics. Our two hundred year history reflects this. It is traditional in America to associate certain emotional aspects with small business. Small business

provides the vehicle for fulfilling the entrepreneurs aspirations and objectives.

Concern for small business is not a recent phenomenon. The Sherman and Clayton Acts were designed to prevent undue concentration of economic power. Judge Learned Hand wrote in the United States vs. Aluminum Company of America, "It is possible, because of its indirect social or moral effect, to prefer a system of SMALL producers, each dependent for his success upon his own skill and character, to one in which the great mass of those engaged must accept direction of a few."

Congress, aware of and concerned about bigness and the future of small business, in 1953, created the Small Business Administration. The Small Business Administration, through its affiliates - SCORE, ACE, and SBI, provides managerial assistance programs to small business.

The requirements for success call for balanced managerial skills. The small business entrepreneur is a generalist but has to make decisions in all the specialized areas of business, ranging from accounting, production, selling, financing, etc. In most cases their exposure to all these required functions is limited. In most instances their resources are limited and this precludes the hiring of staff specialists or outside consultants. Ninety-three percent of small business failures are management failures.⁴ This revealing statistic reaffirms the need for managerial assistance in upgrading the skills of the small business entrepreneur.

The SBI Program at UMPG

Our experience at the University of Maine at Portland-Gorham with the Small Business Institute indicates that this program of the Small Business Administration can provide much needed managerial assistance to small businesses.

Our association with the Small Business Institute commenced in the spring semester 1974. At the conclusion of the 1976 spring semester, we will have had six semesters in the program (including the summer session 1975). We will have counseled fifty-six clients, utilizing ninety-eight student counselors.

Students, primarily seniors, are selected for the program by a faculty screening committee. Good academic standing, maturity, and experience such as work, military, hobbies, etc. are the selection criterion. Although not a prerequisite, many of the students have had a course in "The Problems of Small Business". Students receive three credit hours for their work in this program. Students are required to devote about nine hours a week to the SBI program, approximately the amount of time required of an advanced business course. Our experience to date shows that the average amount of time per student per week is fourteen hours. This attests to the enthusiasm, interest, and appreciation that students have for this valuable experience.

An excellent orientation to counseling, for the students, is provided on campus by SBA personnel from Augusta. In

addition, the School of Business and Economics provides each counselor with a handbook, "A Guide and Aid to Management Counseling--Strengthening Small Business Management."

The SBI program is directed by a faculty member and is set up as a field experience free from formal class requirements. It is felt that this provides the greatest benefits to all parties, especially the clients. Students present a weekly progress report to the faculty director and a final summary report at the end of the semester. During the semester, a steering committee of SBA personnel and certain UMPG faculty meet with the students to review the problems and progress in the cases and to make suggestions for the dealing with the various problems encountered.

Cases are assigned to the University by the SBA. The faculty project director reviews the cases with SBA endeavoring to match students' major interests, e.g. accounting, marketing, etc., with what appears to be clients' major problems. This has worked well.

A prime ingredient for success in the program are the cases both as to quality and mix. Many people, even natives, think of the Maine economy as being based on fishing and tourism. However, manufacturing, in 1973 contributed twenty-eight percent to the gross state product. Of the six major manufacturing communities in the state, three are in the Greater Portland area.⁵ We are fortunate to get a share of these manufacturing companies where the management problems

are more diversified and often more complex. This gives the SBA greater flexibility in assigning cases to us, e.g. more sophisticated cases.

Another major ingredient for success in the program is the willingness of faculty to work with the students on their cases. Five School of Business and Economics faculty members are active participants, serving as consultants to the students on various problems they encounter. On one case, an entire marketing class was used where the time frame was critical for the client in identifying a seasonal market.

Other resources at the University have been brought in to deal with a client's problems. On occasion our computer facilities have been used to deal with inventory problems. Personnel from the Center for Research and Advanced Study have been very helpful to students. The Center, through Project New Enterprise, has a common interest in strengthening management in small businesses.

An excellent working relationship has been established this year with the Greater Portland SCORE Chapter. The exchange of case data and counseling has added another valuable dimension to our program.

How the program actually functions might best be illustrated by presenting a case study.

Company A was founded in the 1850s and was family owned and operated until sold in the late 1960s upon the owner's death. During the last ten years of family operations, sales

volume and profits were deteriorating. In 1967 the business was sold and in mid 1968 it failed. New owners purchased the business in 1969 but could not operate it profitably and the firm once again was sold in 1975. Thus there were three changes in ownership within eight years.

In September 1975, this company was one of the SBI cases assigned to the University by the Small Business Administration. An SBA management assistance officer and the University SBI Director met with the new owner and discussed in depth the role of the SBI program. At this meeting an attempt was made to define the main and most urgent problem areas. It was resolved that concentration in the accounting field, especially cost accounting was paramount.

Two senior accounting majors, who had been through the SBA counseling orientation, were briefed and assigned to the case.

The company employs thirteen full time people. Gross sales for the six month fiscal period ended September 30, 1975 were \$131,000. Estimated gross sales for the fiscal year ending September 30, 1976 are \$360,000. The firms objectives, to realize this goal, are to specialize in gears, sprockets, and heat exchanges. About seventy-five percent of total gross sales is anticipated to come from job orders and the balance from production to stock. The paper industry in Maine is the prime target market.

Problem areas observed by counselors in an orientation to the business with the owner were:

1. Absence of adequate records

- (a) No cost accounting system
- (b) No separation of fixed and variable expenses--
hence - breakeven point unknown.
- (c) No method for allocation of factory burden or for
general administration and selling expenses.
- (d) No realistic pricing policy
- (e) Inventory-purchasing controls all done by the
engineer. No accurate beginning or ending in-
ventory figures available.

2. Production problems:

- (a) Shop is primarily a job shop. Excessive idle time
a prime factor in slack periods.
- (b) Labor costs excessive in materials handling. Main
shop has a wooden floor which cannot support heavy
equipment, e.g. fork-lifts. Indirect Costs are
high because labor is needed to move heavy articles
over this area. The heavy permanent gear machinery,
etc., sets on cement pads which are poured right
into the floor.

In reviewing the above problem areas, the owners and counselors agreed on the priority need of developing a cost system for pricing.

Recommendations

Counselors with assistance from company employees prepared a flow chart for a job order system. They then examined the accounting records in detail, breaking out overhead, selling and administration expenses and direct and indirect labor costs including all fringes.

The next step was to prepare schedules that would consolidate total costs for pricing. Working with a cost accounting faculty member, they devised ten simple schedules that the bookkeeper could understand and record on a monthly basis. This was approved by the owner.

In early December a recommended cost system, which had been tried for a month, and provided solutions to costing, was presented to the owner and his outside accountant. The system was accepted and implemented on December 15, without modifications.

During the cost analysis, it was found that one third of the job orders classified as small orders, were under priced and losing money. These orders were being charged \$12.00 per hour, a flat rate, (someone's guess). The actual charge should have been in excess of \$14.00. The big orders were actually carrying an inordinately high proportion of the costs--distorting the overall profit picture.

The firm now has a sound method for determining the price for each job that heretofore did not exist. The owner now knows his breakeven points and how to competitively and profitably price small and large jobs.

Although the students are not currently enrolled in the SBI program, they continue to visit the company and check on the system and recommend modifications as needed. Last reports were that the system is functioning well.

The preceding case illustrates some of the problems SBI counselors have encountered and how they have dealt with them. An analysis of our overall counseling reports reveals that clients have benefited in the following areas:

1. Improved record keeping that has provided greater control over assets, e.g. accounts receivable, inventories.
2. Implementation of credit policies.
3. Establishing breakeven points.
4. Costing for pricing.
5. Market surveys and measuring advertising effectiveness.
6. Developing job descriptions and job specifications.
7. Flow charting production operations.

In many instances the above tasks have required extensive research that the business could not devote the time to or could not afford a paid consultant.

Of the fifty-six clients we have counseled, twenty have requested further counseling. Each semester we get an increasing number of inquiries from non SBA clients as to how they can qualify for the benefits of the program.

The student benefits are highly visible. It provides an opportunity to apply academic theory to real-world business problems. It builds confidence. They find that they can transfer theory to practice--properly tailored to fit the small business problems and situations. It is a relevant experience. It has focused direction to careers in small business that might not otherwise have developed. In fact, a number of students have taken employment in small firms.

Below are two unsolicited student testimonials taken from their final reports.

"My work with the client and with the Small Business Institute has been the most rewarding experience in my college career. Not only have I gained valuable experience, but have profited from the personal relationships, knowledge and confidence only actual field experience can provide. I can express nothing but praise for the program and for the invaluable help from the SBE faculty members, without whom the program could not be as successful as it is."

"I wish I could have participated for another semester in the SBI program. The past semester has made me seriously consider a career in consulting in the small business sector."

The SBI program is a natural program for a state university. The program provides a viable and tangible way for the University to meet part of its public service obligations. In our case we have served clients throughout southern Maine.

The program also enables the Small Business Administration to expand services that are sorely needed in Maine at

an excellent cost/benefit ratio. It offers an expanded base for recruitment for career personnel for SBA.

The key to success in this program is commitment on the part of the University and the SBA. We are fortunate to have had an excellent working relationship between the faculty at UMPG and the SBA, and thereby, providing excellent managerial assistance to small businesses.

Footnotes

¹"Small Business Management", Wadsworth Publishing Company, Inc., Belmont, California, 1973, p.1.

²Small Business Administration Annual Report, Vol. 1, 1973, p.3.

³U.S. Bureau of the Census. Statistical Abstract of the United States, 1974, 95th edition, Washington, D.C.

⁴The Business Failure Record, 1973, Dun & Bradstreet, Inc., N.Y., p. 12.

⁵Facts About Industrial Maine, Maine State Development Office, State Capital, Augusta, Me. 301-10/75.

Senator HATHAWAY. Do you have a followup of the different cases? Do you keep track of what happens?

Dr. BAY. Many of the cases continue beyond the semester. In addition, we are doing a survey this semester of those that we engaged in counseling prior to see what kind of results occurred from implementing our recommendations. We are at the point now where we are going to get a pretty good handle on how much over these 2 years what, in fact, will take place.

We have had, about 20 of them have extended beyond a semester. You cannot get it all done in the traditional semester. We do not cut them off; we continue on with that experience.

Senator HATHAWAY. How much time would you say is spent on each case?

Dr. BAY. If you took an average student counselor, 14 hours a week, since he is normally assigned two per case, you are talking about 28 to 30 hours of manpower per week for that particular company. Usually we try to assign two different kinds of students, an accounting major and a marketing major, two areas.

If you take about a 30-hour week, that is quite a bit of help for a small business.

Senator HATHAWAY. How many weeks do you spend on a case?

Dr. BAY. A minimum of 15 weeks, the length of the semester.

Senator HATHAWAY. On one case?

Dr. BAY. One case. Sometimes we will finish the case sooner, then we will switch the students over to some other case that may need other help. We handle 10 cases each semester so that we have some flexibility in dealing with that.

Most of them take a full semester, at least. Part of the problem is, when our SBI director meets with the SBA people and the company to talk about the initial problems, quite often when we get into it, we find out what they think are the problems at the beginning are not the problems after all.

The other thing, it takes a little bit of time, sometimes, for these companies to open up. On the whole, we have just had excellent support from the companies. They have really participated and given the students information.

At the beginning, we thought maybe they would hold back, they would worry about confidentiality, worry about whether students could help them. On the whole, we have had excellent luck with students having access to information to help in making recommendations.

Senator HATHAWAY. Have you been able to gather any data as to what the shortcomings of the businesses are? Do you know of any surveys?

Dr. BAY. The general shortcomings are in two areas, in the accounting area and in the marketing area.

Senator HATHAWAY. Which indicates we ought to have more courses in high school in those areas?

Dr. BAY. Part of what Tom is doing in terms of these programs, basic kinds of seminars for accounting, marketing, things of that sort. You need them beyond high school. Many of these people who go into a smaller business are not likely to return to a high school setting.

Senator HATHAWAY. I mean to avoid these problems in the future, we ought to be teaching these courses now?

Dr. BAY. Yes, I think it would help; I really do.

Senator HATHAWAY. Any recommendations you have along that line will be helpful for the committee. Senator Javits and I also serve on Labor and Public Welfare Committee, which includes education.

Let me ask you one last question. Is there any input that you could give to this new program, the university program, as a result of your experience?

Dr. BAY. In our particular case, where we have now the Center for Research and Advanced Study with Halsey Smith's new project, it would probably be a very logical coordinating mechanism for us to be a part of that.

I can see some real merit.

Senator HATHAWAY. Do you see any shortcomings?

Dr. BAY. The shortcoming is, if you are trying to coordinate a whole series of different programs and different agencies, I can see that as being a problem, just how that works. If you have the Labor Department involved and SBA, how is that going to work? How is that going to be coordinated?

I hate to see us spending so much time clearing a proposal through labor, having to clear it through SBA also, going that whole route. That is the only impediment offhand that I could see.

Senator HATHAWAY. Thank you, Dr. Bay. Mr. O'Rourke?

STATEMENT OF WALTER P. O'ROURKE, CHAIRMAN, NATIONAL SCORE COUNCIL LEGISLATIVE COMMITTEE, ACCOMPANIED BY JULIUS DAVIDSON, MEMBER, NATIONAL SCORE COUNCIL LEGISLATIVE COMMITTEE; AND STUART C. FERRIS, CHAIRMAN, PENOBSCOT SCORE CHAPTER NO. 244, CAMDEN, MAINE

Mr. O'ROURKE. Mr. Chairman, I am Walter P. O'Rourke, chairman, National SCORE Council, I appreciate this opportunity to appear before your committee.

May I first introduce the other two gentlemen who are sharing the table with me. On my right is Mr. Julius Davidson, member of the National SCORE Council Legislative Committee and Mr. Stuart C. Ferris, chairman, Penobscot SCORE Chapter No. 244, who resides in Camden, Maine.

The Service Corps of Retired Executives (SCORE) is sponsored by the Small Business Administration (SBA) and is a voluntary, nonprofit group of retired businessmen and women who offer the benefit of their skills, knowledge and experience free of charge to assist small business concerns and those proposing to enter the business world in solving their problems.

SCORE was established in 1964 and presently has over 5,600 men and 175 women from business and now working out of 292 chapters.

The Active Corps of Executives (ACE) is a volunteer group of persons who, while still actively engaged in business, constitute a pool of talent available to SCORE. This organization is also sponsored by SBA and has approximately 2,600 members.

The National SCORE Council (NSC) consists of one SCORE representative from each of the 10 Small Business Administration regions, plus a chairman who is elected by the members of the NSC. Through this council, major policy and procedural matters are coordinated with the Small Business Administration staff in Washington, D.C.

There is no discrimination in the membership of SCORE or ACE or those they counsel on account of race, creed, national origin, or sex.

Reorganization Plan No. 1 of 1971 transferred certain functions of the SCORE/ACE program from SBA to the ACTION Agency. After about 4 years under the joint sponsorship of SBA and the ACTION Agency, it became apparent that this arrangement was not practical and pursuant to Executive Order 11871, dated July 18, 1975, all functions, powers and duties vested in the ACTION Agency were transferred back to SBA.

Since the return of the SCORE/ACE program to the sole sponsorship of SBA, continually increasing efforts have been made and actually accomplished in developing a close cooperation between SCORE/ACE and other very important elements of the SBA program.

For example, throughout the country, SCORE volunteers have acted in an advisory capacity to groups of students, many of them at the graduate level, organized in a program called the Small Business Institute (SBI) in which the students counsel small business owners particularly those who have SBA loans.

I was advised yesterday that we have about 1,000 SCORE and ACE volunteers involved in that program.

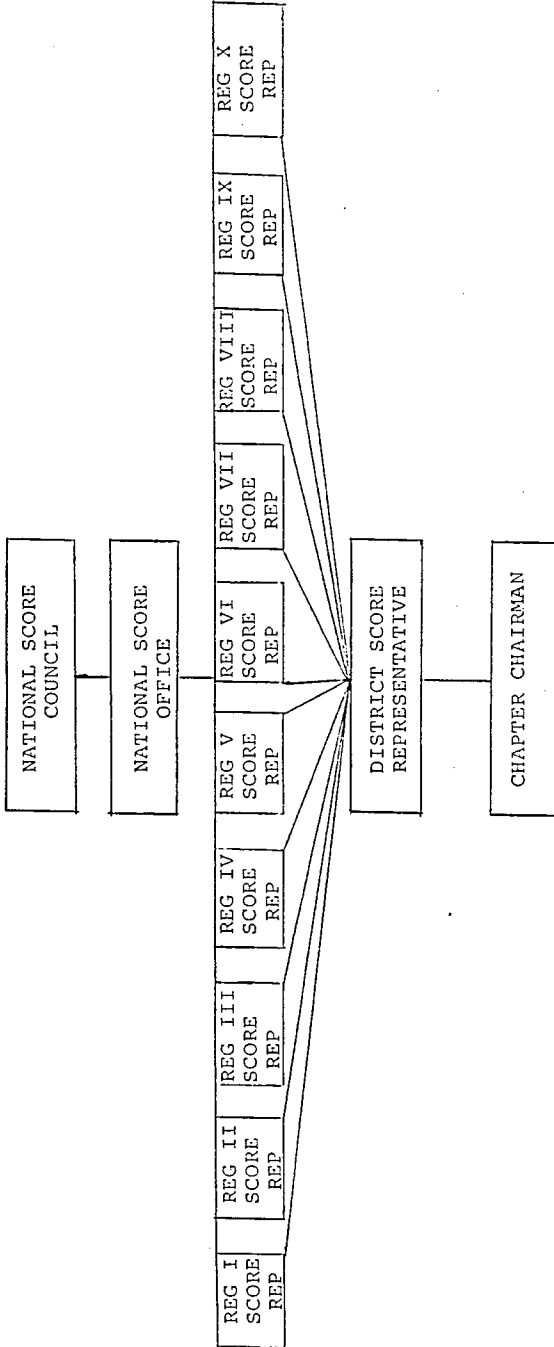
The success of recently initiated programs also based at colleges and universities, called the university business development centers (UBDC) hinges in good part on advice and assistance from SCORE counselors.

I have a chart that I would like to have inserted in the record. I think it would be helpful to you in understanding this program.

Senator HATHAWAY. We will place it in the record.

[The chart referred to follows:]

SCORE ORGANIZATIONAL CHART



Mr. O'ROURKE. Another recent innovation on the part of SBA relates to the various business advisory councils at the national, regional and district levels in which SCORE is expected to play a vital role.

Increasing emphasis in the management assistance program is being directed toward the loan portfolio and statistics show a three-fold increase in the involvement of SCORE volunteers in portfolio cases in recent months as a result of such cooperation. Similarly, SCORE counseling is expected to play an important part in converting so-called 8A contractors—socially or economically disadvantaged enterprises that receive Government contracts on a preferential basis—into viable enterprises.

SCORE will be making every effort to add women counselors to the SCORE roster. I might say that the woman counselors we have in SCORE are excellent. They do a terrific job.

Our experience has demonstrated that women possess skills and competence in a variety of fields equal to men. It is also our desire to promote successful business operations on the part of women business owners. It is our intention to watch closely the increasing role of women in our counseling efforts and in our efforts to promote successful business ownerships by women.

Shortly, after the return of the SCORE/ACE program to the sole sponsorship of SBA, further goals have been developed on a cooperative basis between SBA and the National SCORE Council. Such goals call not only for an enlarged program in terms of a greatly increased SCORE/ACE roster as well as a greatly increased caseload, but also in an enlarged scope of operations in terms of a variety of expertise to augment the current SCORE/ACE efforts.

Let me cite a few examples of the directions in which we expect to move. First, the matter of technology utilization and transfer. Small business generally cannot afford to keep up with all technological advances. We hope in this area to recruit engineers, scientists and technicians who will be available to counsel small businesses in the application of advances in technology. In this connection, the university business development centers which I mentioned before will play a role.

That program will take some time to develop and it can go in a lot of different directions.

Engineers, technicians, and similar experts will also be needed for the SCORE roster for advice to small business in how to meet the challenges of the OSHA program (Occupational Safety and Health Act).

That has been a problem of great concern to the small business community. We are going to pitch in to see if we cannot help them out.

Energy conservation in which small business will be expected to play a part likewise calls for more specialized expertise.

It is our understanding as it is SBA's understanding, that because of a continuing international balance of payments threat, it is desirable to promote exports. A recent analysis of the SCORE/ACE roster indicates that approximately 500 volunteers have had some experience in international trade.

I think we can lend a good hand there.

Another area in which the small business community needs sound guidance and advice is that of crime-related loss prevention. Negotiations are now underway for cooperation with a unit within the American Association of Retired Persons (AARP) to develop a program which will serve to train SCORE/ACE volunteers in this important area.

I might add, the Small Business Administration has a number of pamphlets directed in this area of operation.

In closing, I quote the statement of Mr. Louis Laun, Deputy Administrator, SBA, made before your committee on February 24, 1976, that "SCORE, the Service Corps of Retired Executives, and ACE, the Active Corps of Executives, are the fundamental volunteer groups in SBA's management assistance work."

With permission of the Chairman, I will now call on Mr. Davidson for any supplementary remarks, and following Mr. Davidson's remarks, I wish to call on Mr. Ferris for a statement of SCORE's activity at the local level.

Senator HATHAWAY. Thank you, Mr. O'Rourke.

[The prepared statement of Mr. O'Rourke follows:]

STATEMENT OF WALTER P. O'ROURKE, CHAIRMAN, NATIONAL SCORE COUNCIL
LEGISLATIVE COMMITTEE ACCOMPANIED BY JULIUS DAVIDSON, MEMBER,
NATIONAL SCORE COUNCIL LEGISLATIVE COMMITTEE AND STUART C. FERRIS,
CHAIRMAN, PENOBSCOT SCORE CHAPTER #244 CAMDEN, MAINE, BEFORE THE
SELECT COMMITTEE ON SMALL BUSINESS UNITED STATES SENATE -
APRIL 1, 1976

Mr. Chairman, and members of the committee, I appreciate this opportunity to appear before your committee, May I first introduce the other two gentlemen who are sharing the table with me. On my right is Mr. Julius Davidson, Member of the National SCORE Council Legislative Committee and Mr. Stuart C. Ferris, Chairman, Penobscot SCORE Chapter #244, who resides in Camden, Maine.

The Service Corps of Retired Executives (SCORE) is sponsored by the Small Business Administration (SBA) and is a voluntary, nonprofit group of retired businessmen and women who offer the benefit of their skills, knowledge and experience free of charge to assist small business concerns and those proposing to enter the business world in solving their problems. SCORE was established in 1964 and presently has over 5,600 men and 175 women retired from business and now working out of 292 chapters.

The Active Corps of Executives (ACE) is a volunteer group of persons who while still actively engaged in business, constitute a pool of talent available to SCORE. This organization is also sponsored by the Small Business Administration.

The National SCORE Council (NSC) consists of one SCORE representative from each of the ten Small Business Administration regions, plus a chairman who is elected by the members of the NSC. Through this council, major policy and procedural matters are coordinated with the Small Business Administration staff in Washington, D. C.

There is no discrimination in the membership of SCORE or ACE or those they counsel on account of race, creed, national origin or sex.

Reorganization Plan No. 1 of 1971 transferred certain functions of the SCORE/ACE program from SBA to the ACTION Agency. After about four years under the joint sponsorship of SBA and the ACTION Agency, it became apparent that this arrangement was not practical and pursuant to Executive Order 11871, dated July 18, 1975, all functions, powers and duties vested in the ACTION Agency were transferred back to SBA.

Since the return of the SCORE/ACE Program to the sole sponsorship of SBA, continually increasing efforts have been made and actually accomplished in developing a close cooperation between SCORE/ACE and other very important elements of the SBA Program. For example, throughout the country SCORE volunteers have acted in an advisory capacity to groups of students, many of them at the graduate level, organized in a program called the Small Business Institute (SBI) in which the students counsel small business owner particularly those who have SBA loans.

The success of recently initiated program also based at colleges and universities, called the University Business Development Centers, (UBDC) hinges in good part on advice and assistance from SCORE counselors.

Another recent innovation on the part of SBA relates to the various business advisory councils at the national, regional and district levels in which SCORE is expected to play a vital role.

Increasing emphasis in the Management Assistance Program is being directed towards the loan portfolio and statistics show a three-fold increase in the involvement of SCORE volunteers in portfolio cases in recent months as a result of such cooperation. Similarly, SCORE counseling is expected to play an important part in converting so called 8(a) contractors, (socially or economically disadvantaged enterprises that receive Government contracts on a preferential basis), into viable enterprises.

SCORE will be making every effort to add women counselors to the SCORE roster. Our experience has demonstrated that women possess skills and competence in a variety of fields equal to men. It is also our desire to promote successful business operations on the part of women business owners. It is our intention to watch closely the increasing role of women in our counseling efforts and in our efforts to promote successful business ownerships by women.

Shortly, after the return of the SCORE/ACE Program to the sole

sponsorship of SBA, future goals have been developed on a cooperative basis between SBA and the National SCORE Council. Such goals call not only for an enlarged program in terms of a greatly increased SCORE/ACE roster as well as a greatly increased case load, but also in an enlarged scope of operations in terms of a variety of expertise to augment the current SCORE/ACE efforts. Let me site a few examples of the directions in which we expect to move. First, the matter of technology utilization and transfer. Small business generally cannot afford to keep up with all technological advances. We hope in this area to recruit engineers, scientists and technicians who will be available to counsel small businesses in the application of advances in technology. In this connection the University Business Development Centers which I mentioned before will play a role.

Engineers, technicians, and similar experts will also be needed for the SCORE roster for advice to small business in how to meet the challenges of the OSHA Program (Occupational Safety and Health Act).

Energy conservation in which small business will be expected to play a part likewise calls for more specialized expertise.

It is our understanding as it is SBA's understanding that, because of a continuing international balance of payments threat, it is desirable to promote exports. A recent analysis of the SCORE/ACE roster indicates that approximately 500 volunteers have had some experience in international trade.

Another area in which the small business community need sound guidance and advice is that of crime related loss prevention. Negotiations are now under way for cooperation with a unit within the American Association of Retired Persons (AARP) to develop a program which will serve to train SCORE/ACE volunteers in this important area.

In closing, I quote the statement of Mr. Louis Laun made before your Committee on February 24, 1976, that "SCORE, the Service Corps of Retired Executives, and ACE, the Active Corps of Executives are the fundamental volunteer groups in SBA's management assistance work."

With permission of the Chariman, I will now call on Mr. Davidson for any supplementary remarks and following Mr. Davidson remarks, I wish to call on Mr. Ferris for a statement of SCORE's activity at the local level.

Walter P. O'Rourke
Member
National SCORE Council

Walter P. O'Rourke--Born, Selma, Alabama, October 2, 1906; son of Daniel Patrick O'Rourke and Gertrude Ida Pollock O'Rourke; married Miss Mary Eagar of Montgomery, Alabama, (now deceased) April 1, 1929; two sons, Walter and Daniel, and one daughter, Mary Gertrude; seven grandchildren.

Attended parochial and public elementary and High School in Selma and St. Bernard College, Cullman, Alabama; Alabama Polytechnic Inst., Auburn, Ala.; National University Law School, Washington, D. C., LL.B and M.P.L.: Wharton School of Finance, University of Penna.

Admitted to the bar of the Supreme Court of the District of Columbia, and the Court of Appeals thereof; admitted to practice as a registered Patent Attorney.

Government Attorney: Federal Emergency Administration of Public Works (FPA); United States Housing Authority (USHA); Public Housing Authority (PHA); Reconstruction Finance Corporation (RFC); War Assets Administration (WAA); General Services Administration (GSA) and Housing and Home Finance Agency (HHFA), Community Facilities Administration (CFA).

Engaged in the practice of both public and private corporate law; Patent, Trade-Mark and Copyright law and unfair competition cases.

Veteran of Foreign Wars; Elks Lodge; Toastmasters International.

Accredited member of SCORE Chapter #1 of Washington, D. C., February 1968; Secretary 1971; Vice-Chairman, 1972; Chairman, 1973; Legislative Counsel NSC 1971; elected NSC 1973 Region III; Counsel and Chairman Legislative Committee 1973; Re-elected NSC Region III Representative term 1975-1976.

SCORE delegate to White House Conference on Aging 1971; SCORE Rep. Steering Committee National Voluntary Organizations 1971 to date.

Awarded Special "SCORE AWARD" 1970
Acclaimed SCORE Volunteer of the Year 1972
Awarded Special "SCORE AWARD" 1973
Awarded Special "SCORE AWARD" 1974

BIOGRAPHY

JULIUS DAVIDSON

MEMBER OF LEGISLATIVE COMMITTEE

SERVICE CORPS OF RETIRED EXECUTIVES (SCORE)

Julius Davidson, a native of New York City, but since 1936, a resident of Washington, D. C., graduated from Harvard College with an A.B. cum laude, and spent several years pursuing graduate studies at Columbia University's School of Business, Law School and Graduate School.

His business career includes five years of public accounting work in New York City and Minneapolis, Minnesota, and twelve years as a member of a women's wear manufacturing firm in New York City.

The last thirty years of his working career were spent in the Federal Government, including seven years as a price controller with OPA and OPS where he directed a nation-wide program in the retail and wholesale food distribution fields, and seventeen years as the chief fiscal officer of the Library of Congress.

A dedicated member of SCORE since early in 1966, he is a past chairman of SCORE Chapter One (Washington, D. C.), the recipient of the award for SCORE Man of the Year in this area, and a Presidential SCORE Citation, past-member and a co-founder of the National SCORE Council and currently a member of the Legislative and Budget Committees of the National SCORE Council

He is a member of the American Economic Association, American Statistical Association, Society for Advancement of Management, American Society for Public Administration, and American Library Association.

Senator HATHAWAY. Senator Javits has to leave. I would like to give him an opportunity to ask any questions he might have at this time.

Senator JAVITS. I thank the Chair.

I am very interested in the technology assessment represented here. I am especially interested in the fact that small business has not taken advantage of the combination of small businesses into R. & D. companies, which I contemplated years ago when I authored that amendment. I am very interested in how that can be stimulated and encouraged, especially when high technology is probably one of the great outlets for small business and one where it can compete with large business.

I thank you gentlemen very much for your cooperation and interest in this subject. Thank you.

Senator HATHAWAY. Thank you, Senator Javits. I am glad you could make at least part of the hearing.

Mr. Davidson?

Mr. DAVIDSON. Mr. Chairman and members of the committee, I have no prepared statement. It will be brief and simply by way of supplementing what Mr. O'Rourke has stated.

First, you may well ask the question, what motivates a SCORE volunteer? To the SCORE volunteers themselves, it is very simple, and it is simple to SBA.

Retired executives want to have a sense of usefulness to the community, wants to have a sense of usefulness in the field of his own expertise. It makes him feel not only useful, it creates a feeling of dignity. He keeps usefully occupied. This is very important; it is a two-way street. While serving others, we also get an internal satisfaction to ourselves.

Now, what kind of activities do the SCORE volunteers engage in? A variety of activities already mentioned. Take 1-to-1 counseling; in fiscal 1975, there were approximately 54,000 counseling actions for which SCORE and ACE were responsible. Now, of those, in 1975, some 9 percent were directed at the loan portfolio.

So far, in 1976, we have already exceeded—that is a 9 month period—the number of cases handled in 1975. We expect, at the end of the fiscal year, to have some 80,000 counseling activities for which SCORE and ACE are responsible. Currently, over 25 percent of our cases relate to the SBA loan portfolio.

According to our estimates, the average counseling session for each case is roughly 2 hours, which means roughly 160,000 man-hours.

This fiscal year, another important activity already mentioned is our participation in workshops, seminars, problem clinics and the like.

According to the figures that I have seen, in 1975, one quarter of the trained units, that is in workshops, seminars, and so forth, had SCORE participants as moderators and lecturers. So far, in 1976, the figure is around 35 percent.

We figure that this year, at least 50,000 students will be exposed to the workshops, and so forth, in which SCORE and ACE counselors participate.

There are a number of other activities in which we are involved. These cooperative activities already mentioned, the SBI program,

the University Business Development Center—we participate in many areas in very substantial ways in these activities as senior advisors.

Now, there are other things in which SCORE and ACE are involved by way of support activities to SBA. We handle the assignments in most areas. We also handle thousands of telephone calls in the course of the year. We look for space and all of that sort of thing, relieving SBA of quite a task.

There are other things that we are involved in on the receiving end; you know it is simple to say that a retired businessman has all the expertise necessary to be a counselor. This is not always true. He may be an expert in his own field, but he does need training, orientation, refresher courses, and I am sure the SBA people will bear me out.

Now, for all of these things, funding is of vital importance. We need funding, not only for space where we cannot get space for free—in most cases we succeed, some cases we cannot—we need clerical assistance, we need support for our public relations activity. Public relations are very important. We have not achieved anywhere near our potential in counseling activities, either on an individual basis or on a group counseling basis. We only have achieved a very small fraction of our potential. Public relations are essential to develop our role.

There is a lot of potential ahead of us, and we are working very closely with SBA in setting up goals which we hope to reach.

Funding is of vital importance, not only to these support things, but also for the out-of-pocket expenses which SCORE counselors are entitled to, small out-of-pocket expenses for mileage, parking fees, and that is about all. We get no fees for our services, and we would have it no other way.

It stands to reason that, with a program like that, the cost/benefit ratio of the SCORE and ACE program is very, very high.

Now, let me close by saying that one of our goals is to convert taxeaters into taxpayers. We would like to build up profit in small business enterprise so they can pay income taxes. We would like to improve the employment picture on the part of small business. That also increases the number of taxpayers.

Finally, through our service to the loan portfolio, we try to prevent some of the taxpayer's money from going down the drain, and I think that we have achieved a substantial result in that effort. Thank you.

Senator HATHAWAY. Thank you.

Mr. Ferris?

Mr. FERRIS. Thank you, Senator, and good morning.

My name is Stuart Ferris, a retired insurance man residing in the small town of Camden, Maine on Penobscot Bay. I am chairman of the Penobscot Bay Chapter of SCORE. My entire business career of 33 years was spent in the life, health, pension, and group insurance sales management field except for 5 years spent in the field artillery as an officer in World War II.

I consider it an honor to appear before you on behalf of a most worthy organization, SCORE/ACE and by association, an organiza-

tion I have grown to admire greatly, the Small Business Administration.

I have been asked to discuss SCORE/ACE in Maine and to give you a brief picture of our chapter's operation.

Gentlemen, I can assure you SCORE/ACE is alive and well in Maine. From two chapters in 1972 we have grown to eight; from 65 counselors in 1972, we have grown to 152, of whom 65 are ACE; in consulting cases we have gone from 162 to 572 and this is ever-increasing.

But counseling is only one part of our activities. Our efforts in the educational field are noteworthy. Prebusiness workshops for those contemplating or newly in business for themselves are held frequently throughout the State. Seminars on marketing, financial controls, accounting and bookkeeping are held statewide.

The continuing education programs of the SBA, usually sponsored by colleges and universities is a most vigorous endeavor. We in SCORE often cosponsor these and participate as guest lecturers. For instance, last week I lectured to 55 businessmen and women at Thomas College in Waterville, Maine on the subject, "Why customers buy or don't buy."

In 1972, 203 businessmen or women attended educational courses in the State. By contrast, in 1975 over 1,700 attended.

Things are popping all the time.

I want to stress that these impressive increases in numbers and activity could not have come about were it not for the great backing SCORE has received from SBA. When Tom McGillicuddy, our district director, came on the scene in September 1973, the change was from night to day. He really got behind the management assistance program, among other things, doubling its staff from one to two management assistance officers plus a full-time secretary. He gives the MAO's and SCORE 100 percent backing. He is interested, knowledgeable, concerned, and involved, and best of all has created a "sense of urgency." "Let's get it done," is the theme.

I think it important to realize that Maine, like Vermont and New Hampshire, is populated by small business and distances are great. Thus it is not uncommon for an MAO to drive 4 hours to visit a chapter chairman or university extension. Frankly, the MAO's are straightout running hard all the time and honestly overworked.

As for SCORE chapters, with the exception of the Portland, Lewiston, and Bangor chapters, the rest of us are pretty rural and our membership spread among numerous small towns.

We do not have centers to go to. As you will see in a moment, our headquarters is usually the chapter chairman's home.

My chapter of 19 members is spread from Searsport south to Wiscasset, a distance of 65 miles. Our largest town is Rockland with a population of 8,300. So our challenges or problems are different than those of the big city chapters.

Most of our counseling is done at our client's place of business, over a table in a coffeeshop or at our homes. About 50 percent of our counseling cases come from SBA, either because people have asked for help, are applying for loans, or are borrowers.

The other 50 percent are "home generated" by publicity, word of mouth, references from bankers, lawyers or accountants, and from the cocktail circuit. They run the gamut of small businesses.

For instance, I happen to have a case right now of a blind Vietnam war veteran who is making furniture, if you can believe that, with power tools. Last year, I had a case up in Mount Mizert of a bunch of weavers. They were merely making something like 5,000 or 8,000 scarves or stoles a month with no marketing plan, no sales organization.

I personally took four dozen scarves and stoles, put them in the trunk of my car and went out and sold them in the next 5 days. I found out where the market was and thus was able to establish a sales and marketing plan for them.

One thing that is not in the prepared statement is crime prevention, another activity of ours. I personally run five crime clinics on shoplifting, which is a big problem in our area, as it is around the country. We do not need, in a rural-type operation like ours, a central office or full-time secretarial help. If we need things typed or reproduced, I mail it to the SBA in Augusta, or in an emergency, have a local business service help out.

Each chapter has a small kitty as the result of prebusiness workshops and we just take care of things. For instance, week before last we ran a 1 day prebusiness workshop in Rockland attended by 30 businessmen and women. After expenses, including lunches, we still netted something over \$100.

We receive wonderful cooperation from the various Chambers of Commerce in cosponsoring events, doing mailings and providing a center for telephone calls when needed.

Similarly, when we need to advertise workshops, et cetera, the banks are happy to sponsor—pay for—these to help the business community. People like to help people who are contributing to the well-being of their communities.

Sure we need funds provided by the SBA. We need, and receive, reimbursement for travel expenses. It is rare that a simple visit to a client entails less than 20 or 30 miles round trip, and often more. Those of us who are retired, and we are the majority, in most cases we live on fixed incomes whose purchasing power is being badly eroded by inflation.

SCORE also needs the funds which enable it to have national and regional workshops. These are terribly important for communication, instruction, and inspiration. I have attended three national workshops and benefited greatly from association with so many dedicated men and women. One of man's greatest needs is a sense of belonging—besides the worthwhile training, this need for being part of something worthwhile is provided at these workshops. Don't let them go by the boards.

And now a special plea for funds. To expect chairmen who attend national or regional workshops to return, gather their chapter together and train and inspire them—well, it doesn't work in smaller, rural type chapters. The individual members need to attend a workshop where they get training firsthand—get a sense of belonging—find out how the other guy is doing it.

Tom McGillicuddy told me last night we were going to have a State training session in the State of Maine and the funds were available. I could not help but cheer.

Thus, in Maine, and probably in Vermont, New Hampshire, Idaho, the Dakotas, et cetera, we need at minimum a yearly statewide get together of 2 or 3 days so that the majority can participate, be involved, get inspired by association. They can't afford the travel and lodging expense. Please make sure SBA has the funds to carry out this type of function.

SCORE/ACE is alive and well in Maine and in the Penobscot region.

Thank you for listening.

Senator HATHAWAY. Thank you, Mr. Ferris.

[The prepared statement of Mr. Ferris follows:]

STATEMENT BY:

Stuart C. Ferris, Chairman, Penobscot Bay SCORE Chapter 244
Box 236, Camden, Maine, 04843

BEFORE COMMITTEE ON:

Senate Small Business Committee
April 1, 1976

Good morning, my name is Stuart Ferris, a retired insurance man residing in the small town of Camden, Maine on Penobscot Bay. I am Chairman of the Penobscot Bay Chapter of SCORE. My entire business career of thirty-three (33) years was spent in the life, health, pension and group insurance sales management field except for five years spend in the Field Artillery as an officer in WWII.

I consider it an honor to appear before you on behalf of a most worthy organization, SCORE/ACE and by association, an organization I have grown to admire greatly, the Small Business Administration.

I have been asked to discuss SCORE/ACE in Maine and to give you a brief picture of our Chapter's operation.

Gentlemen, I can assure you SCORE/ACE is alive and well in Maine. From two chapters in 1972 we have grown to eight; from 65 counselors in 1972, we have grown to 152, of whom 65 are ACE; in consulting cases we have gone from 162 to 572 and this is ever increasing.

But counseling is only one part of our activities. Our efforts in the educational field are noteworthy. Pre-business workshops for those contemplating or newly in business for themselves are held frequently throughout the state. Seminars on marketing, financial controls, accounting and bookkeeping are held statewide.

The continuing education programs of the SBA, usually sponsored by colleges and universities is a most vigorous endeavor. We in SCORE often co-sponsor these and participate as guest lecturers. For instance, last week I lectured to 55 businessmen and women at Thomas College in Waterville, Maine on the subject, "Why customers buy or don't buy".

In 1972, 203 businessmen or women attended educational courses in the state. By contrast, in 1975 over 1700 attended.

Things are popping all the time.

I want to stress that these impressive increases in numbers and activity could not have come about were it not for the great backing SCORE has received from SBA. When Tom McGillicuddy, our District Director, came on the scene in September 1973, the change was from night to day. He really got behind the Management Assistance Program (among other things), doubling its staff from one to two

2

Management Assistance Officers plus a full time secretary. He gives the MAO's and SCORE 100% backing. He is interested, knowledgeable, concerned and involved and best of all has created a "sense of urgency". "Let's get it done" is the theme.

I think it important to realize that Maine, like Vermont and New Hampshire, is populated primarily by small business and distances are great. Thus it is not uncommon for an MAO to drive four hours to visit a Chapter Chairman or University Extension. Frankly, the MAO's are "straight out" running hard all the time and honestly overworked. As for SCORE Chapters, with the exception of the Portland, Lewiston and Bangor Chapters, the rest of us are pretty rural and our membership spread among numerous small towns.

My Chapter of 19 members is spread from Searsport south to Wasscasset, a distance of 65 miles. Our largest town is Rockland with a population of 8,300. So our challenges or problems are different than those of the big city chapters.

Most of our counseling is done at our client's place of business, over a table in a coffeeshop or at our homes. About 50% of our counseling cases come from SBA, either because people have asked for help, are applying for loans or are borrowers. The other 50% are "home generated" by publicity, word of mouth, references from bankers, lawyers or accountants and from the cocktail circuit.

We have no need for a central office or fulltime secretarial help. If we need things typed or reproduced, I mail it to the SBA in Augusta, or in an emergency, have a local business service help out. Each chapter has a small kitty as the result of pre-business workshops and we just take care of things. For instance, week before last we ran a one day pre-business workshop in Rockland attended by 30 businessmen and women. After expenses, including lunches, we still netted something over \$100.00.

We receive wonderful cooperation from the various Chambers of Commerce in co-sponsoring events, doing mailings and providing a center for telephone calls when needed. Similarly, when we need to advertise workshops (etc) the banks are happy to sponsor (pay for) these to help the business community. People like to help people who are contributing to the well-being of their communities.

Sure we need funds provided by the SBA. We need (and receive) reimbursement for travel expenses. It is rare that a simple visit to a client entails less than twenty or thirty miles round-trip, and often more. Those of us who are retired and we are the majority, in most cases live on fixed incomes, incomes whose purchasing power is being badly eroded by inflation.

SCORE also needs the funds which enable it to have National and Regional Workshops. These are terribly important for communication, instruction and inspiration. I have attended three National Workshops and benefitted greatly from association with so many dedicated men and women. One of man's greatest needs is a sense of belonging -

3

besides the worthwhile training, this need for being part of something worthwhile is provided at these workshops. Don't let them go by the boards.

And now a special plea for funds. To expect chairman who attend National or Regional Workshops to return, gather their chapter together and train and inspire them - well it just doesn't work in smaller, rural type chapters. The individual members need to attend a workshop where they get training firsthand - get a sense of belonging - find out how the other guy is doing it.

Thus, in Maine, (and probably in Vermont, New Hampshire, Idaho, the Dakotas, etc) we need at minimum a yearly statewide get together of two or three days so that the majority can participate, be involved, get inspired by association. They can't afford the travel and lodging expense. Please make sure SBA has the funds to carry out this type of function.

SCORE/ACE is alive and well in Maine and in the Penobscot region.

Thank you for listening.

Senator HATHAWAY. How many hours a week do you give to SCORE counseling?

Mr. FERRIS. At the present time I am personally handling about 10 cases. I would guess that I average, not including travel, 6 hours, 7 hours a week, something like that. I have to limit myself because of disability to a certain number of hours, and in the total chapter, we are handling 26 cases at the present time.

We will handle something like over 100 cases in a year in our area.

Senator HATHAWAY. What regional workshops do you attend? Are they in Boston?

Mr. FERRIS. The regional workshop we are going to, it is Hartford this year in early May. We need a State one. Tom has told me we are going to have one.

Senator HATHAWAY. You need what?

Mr. FERRIS. A State workshop in Portland.

Mr. MCGILLICUDDY. There will be a statewide SCORE training center for the SCORE/ACE volunteers in the State of Maine. The regional meetings, usually chairmen go to the regional meetings and they are expected to come back and transmit to the members what they learned at regional meetings.

That, in practice, has not worked very well. We want the counselor, the man or woman, to come down and participate in 2 or 3 days of intensive training on how to counsel.

Senator HATHAWAY. Once a year?

Mr. MCGILLICUDDY. Once a year, Senator.

Senator HATHAWAY. What additions do you think we could make to help in this particular area? What else can we do legislatively to help you, besides getting more money for travel to these courses?

Is there anything additional, conceptually, that we can do to improve the training and business expertise of small businessmen?

Mr. MCGILLICUDDY. I think our programs are quite well-structured now, Senator. It is simply a question of magnitude.

What we are doing, we are doing it effectively. The problem is, as Mr. Davidson pointed out, we have not realized our potential yet and we are not enrolling enough people in our counseling and our training sessions. It is just a matter, I think, of continuing to do what we are doing, but expand it.

Senator HATHAWAY. I see.

I thank all of you for coming here today. We appreciate your contribution and hope that you will continue to make a contribution, that you will continue to stay in touch with us so we will have the benefit of your ideas.

Thank you very much.

The next witness is James A. Commins, president, JACA Corp., Fort Washington, Pa.

Mr. Commins?

**STATEMENT OF JAMES A. COMMINS, PRESIDENT, JACA CORP.,
FORT WASHINGTON, PA.**

Mr. COMMINS. My name is James Commins and I am president of JACA Corp., an environmental consulting and engineering firm of Fort Washington, Pa.

This company was founded in 1970 to provide management consulting and engineering assistance for small companies who were just then coming under Government environmental regulations. Much of my testimony on SBA management and technical assistance is based on consulting experience with small businesses in this professional practice and with Government research and service contracts often directed specifically to small business environmental matters.

I shall also refer to experience with SBA programs as an executive in a small electronics business—250 employees—which covered 11 years previous to my present work.

This 20-year span of experience with SBA involved mostly SBA assistance in marketing; in small business set-asides, certificates of competency, assistance from small business officers at procurement agencies, and in surety guarantees.

All of this SBA related experience over the 20-year span, I would say, has been satisfactory. In my prepared testimony, I cite a number of instances where I had requested help, or rather my company had requested help, and we generally received prompt and efficient service.

Although I am not personally experienced with the SCORE program, the 8A or 406, I have a number of business associates who have received these SBA programs and usually have expressed their satisfaction.

Now, the experience that I have had in the regulatory matters, the management assistance and technical assistance area, has been in sharp contrast with the satisfactory experiences I have had over the previous years. In this area of environmental and regulatory matters, there are significant management, technical, and loan-help problems.

Let me very briefly cite why this occurs.

First of all, much of the technology involved is completely foreign to the companies that are required to put in the particular control equipment. The procurement of the necessary control equipment or process change is quite expensive. It is not unusual in a small industrial plant to find control equipment running anywhere from one-fifth to one-third plant replacement costs.

These costs are generally disparate from large businesses. If installation and operational cost per production unit is compared, results are in favor of large businesses. If one looks at the cost of capital to acquire the equipment and the ability of the large business to pass these costs on to their customers, it will be apparent that in most instances the larger plants come out ahead.

Another problem is that the businesses are faced with a capital buy that must satisfy a third party. They are not buying plant equipment on which a price compromise with the vendor might be a satisfactory solution if the equipment is not quite satisfactory. This piece of equipment must meet specific regulations imposed by a State or Federal inspector.

SBA activities in relation to such regulatory matters falls short of the need. I do not think they are involved in the formulation of new regulations as much as they should be. They are not sufficiently involved in management help, and they are not sufficiently involved in the granting of pollution control loans.

The symptoms that indicate this in the loan program are that large businesses have made considerable use of the tax-free revenue bond situation. In 1974, for example, these were 114 issues totaling \$1.673 billion. In 1975, there were 193 at \$2.134 billion. By contrast from January 1974 to January 1976, there were only 89 loans to small business under Public Law 93-237.

We might ask why the small businessman who could avail himself of these loans which would help him overcome the impact of the regulations does not do so. There are two acts that are supposed to provide such loans to small businesses. They are the Federal Water Pollution Control Act and the Disaster Loan Act, and both of these are supposed to provide longer term loans on the order of 30 years and, if a direct loan, at the cost of borrowing to the Federal Government plus some small amount for SBA for their administration, generally less than 1 percent.

The symptoms regarding SBA loan assistance and management help on regulatory matters are not based on strong statistical research. They are for the most part experiences I have encountered.

In a recent study conducted in Boston, of the number of respondents queried, 85 percent of these knew about SBA, but 85 percent of them did not know anything about the details of the SBA loans.

One of my researchers in connection with a study project had to talk to 17 loan officers in banks in Pennsylvania regarding pollution control loans. Only one of them knew of SBA involvement in these loans and none knew of the program details.

We also had occasion to call four SBA regional offices on such loans. Three of the four offices called knew nothing of the pollution loans set up by the Federal Water Pollution Control Act or Public Law 93-237.

We also encountered another situation where the EPA had placed a small business under compliance action. We investigated this business and found they could not purchase replacement air pollution control equipment from internal cash flow—they needed debt or equity funding. They were told about the SBA loan and it was suggested that they apply to SBA. They did, and they were advised by the SBA regional office that there was no such program.

Again, I would like to stress that this is in sharp contrast to my previous experience with SBA. I have tried to postulate reasons why this would be so on these particular loan programs and in management in relationship to problems that occur by virtue of compliance with regulatory measures.

The only reasons that suggest themselves would be a concern by SBA that they would displace management and technical advisory services and services by loan institutions by advertising the programs and hence purposely refrained from advertising the program even to their own staff. Another explanation might be that SBA had insufficient staff and funds.

The symptoms that I have encountered if true on a national scale indicate that, except for the applicable portions of the 406 program and perhaps SCORE and the 8A program, SBA's management and technical assistance to small business needs resulting from environmental regulations are inadequate.

With your permission, I would now like to turn from management and loan assistance and present some brief comments on the means by which SBA intends to carry out its recently revitalized efforts in technology transfer.

There are a number of definitions of technology transfer. The one I want to talk about today in respect to the SBA role involves the transfer of technology developed for one purpose to small businesses where it will be used for a different purpose.

The problem involves the matching of 12.5 million small business with billions and billions of dollars in technology inventory which is growing at the rate of about \$15 billion a year. There is a document that shows the extent of technology transfer in the Government. It indicates that there are 50 agencies in technology transfer covering 18 use categories. The agencies know their technology best, but SBA knows the small business best. Its years of experience and extensive field network serves to gather or distribute data to small businesses.

A good example of this, noted in detail in my prepared testimony, is the research that SBA was able to conduct in furtherance of legislation on the Wholesome Meat Act, which was one of the earliest regulatory impacts on small business. In this research they were able to poll a respondent field of 2,699 establishments, getting 2,175 replies.

This is just a fantastic data collection result, which I do not think could be duplicated by private industry. I also doubt whether another Government agency could do it.

It seems to me that SBA has this great field organization, I think, 10 regions, and some 90 field offices at present. They are in contact with tens of thousands of small businesses. I think that they should have a very vigorous and vital role in technology utilization.

There are a couple of examples of SBA's role in technology utilization that I would like to cite. They happened in the Philadelphia regional office and indicate the matching role SBA can play.

The first involves a company making rubber boots with a fluffy inside lining. A powered wire brush was used to fluff up this lining. In fluffing up the lining, a few tiny slivers from the brush got caught in the lining. The businessman was receiving all sorts of complaints from the field. He now had about 4,000 pairs of these boots on the shelf and was afraid to ship them. There was no foolproof way known to him to inspect the lining. He went to the local technology utilization officer at SBA who put him in touch with the proper Government people who had a metal detector with the sensitivity required that could be utilized with only slight modifications. It was utilized by the small businessman. He quickly quality controlled his entire inventory and set up the unit on his production line. I think that is a marvelous example of what SBA can do.

Another example. There was a fireplace manufacturer selling pre-cast fireplaces. He had a high incidence of breakage in shipment. The SBA technical utilization officer put him in touch with people who knew packaging and metallurgy. He obtained better packaging strength with stronger metal and a significant decrease in failures occurred.

These cannot be isolated situations, where the program is handled by three or four people in SBA doing this part-time. SBA is splen-

didly equipped to be able to discern technological needs for small businesses and report those to the proper technology agencies within Government.

SBA has had an on-again, off-again technology transfer commitment. It sometimes lacked the critical mass to make it successful. In those instances where it had program continuity and funds, it did well. The people I know within SBA, practically to the man, have been capable and dedicated. They have a high enthusiasm for their work.

When programs have fallen short, it was because the system or program had only lukewarm support, not because of a lack or capability of zeal on the part of the SBA personnel.

SBA can meet a vital need to provide management and technical assistance in environmental regulatory matters if they receive a clear mandate from Congress and the funds to support the appropriate program. Funds must be available to support adequate staff and meet expanded loan needs.

SBA should be more involved in regulatory promulgation than it has in the past. While other agencies are charged with developing the regulations, SBA could serve an important consulting role, and provide data on small business characteristics.

It must also let the small businessman know more about its programs. We cannot continue to have loan programs, for example, designed to help small businesses when the small businessmen, banks, and even some parts of SBA do not know of their existence or the details of the programs.

Lastly, SBA should have a strong viable technology transfer program, or as SBA calls it, a technology utilization program. A few people on a national level doing this as only a part of their job is certainly not enough. SBA appears to me to provide the knowledge, contacts, and organization critically needed to determine and collate important small business needs.

This role could be instrumental in providing data to the other 49 agencies who are much more knowledgeable of the technology than they are of small businesses. This activity could result in new products, better productivity, and more jobs all of which is worth hundreds of times the amount SBA would have to expand.

Thank you for allowing me to present my testimony at this important hearing. As a small businessman working with other small businesses, I hope these remarks prove helpful to this committee.

Senator HATHAWAY. Thank you very much, Mr. Commins. You made some very good points.

The State of Pennsylvania does cooperate with the Small Business Administration to a greater extent than other States, as I understand it.

We had someone in from Pennsylvania last year. They had a Government procurement specialist who was on the State payroll. At least he is in a position to distribute various data to small businessmen, something that most States do not have. Perhaps the States will have to cooperate a little bit more than they have because of the funding difficulty we have here.

I know most States have departments of economic development. Why they have not informed the small businesspeople that the

Small Business Administration exists and what it can do, I do not know. It seems to me that is a serious shortcoming. It is not really a Federal shortcoming as much as it is a State shortcoming. Do you not agree? The State of Pennsylvania, for example, do they have a Department of Economic Development, something along that line?

Mr. COMMINS. I am not familiar with all the assistance the State has. I am only reporting on the lack of SBA involvement in environmental regulation areas and in technology utilization.

Senator HATHAWAY. Municipalities do, I am sure, for instance Philadelphia, Pittsburgh, because they have them in the State of Maine. Many of the towns have their own economic development agencies. Certainly, they ought to know that the Small Business Administration exists.

Mr. COMMINS. Apparently many people know that Small Business Administration exists. What the people do not know, who are involved in these regulatory matters, are the details of the help that is available and the potential benefits to them.

There is no SBA management help available in regulatory matters that I know of. Perhaps if one approached SCORE he could at least get aimed to the proper source of information.

Senator HATHAWAY. What they testified to this morning.

Mr. COMMINS. As I understand it from earlier testimony this morning, most of their activity is in the area of marketing and accounting. The regulatory problems are transient problems. They are very, very expensive and there is an extremely high incidence of people getting into contractual problems—buying equipment they do not need or will not meet the regulations.

Just in my personal knowledge, I know of 15 or 20 of these situations in the mid-Atlantic region—there may be hundreds in the country.

Senator HATHAWAY. Buying what they do not need to comply with the regulations?

Mr. COMMINS. They sometimes buy equipment for a regulation they do not need. Here is the problem. The equipment performance must meet the approval of a third party—the Government inspector. The person buying the equipment generally knows little about it technically. His business is making, say, boots, and he has to put in an electrostatic precipitator. He may not even know what that is.

He puts it in but it has to meet some State or Federal requirement. That is where the problem comes up. He does not know enough about his operation to describe his plant's uncorrected lining—the input to the control device. Therefore, the company who sells him the control device does not want to guarantee it. He frequently winds up in the middle of a lawsuit or a severe management problem associated with obtaining the proper control.

Small businesses frequently don't have the proper management assistance and they simply do not know about the loan programs that are designed specifically to bring them on par with the large companies.

Senator HATHAWAY. It seems to me that the regulatory agency itself should be more cooperative in this regard. If it is imposing certain restrictions, it ought to be informing the small businessman of what he can do to comply with them.

For example, I have had a lot of complaints from small businessmen concerning OSHA. You have to be a Philadelphia lawyer to understand some of the regulations.

Most of the small businessmen cannot afford a Philadelphia lawyer or any other lawyer, and it seems to me that the Labor Department ought to be in a position—I think they have improved in this regard—to put out interpretive bulletins of what their regulations mean and show the small businessman what he can do to comply with them.

That is probably true of the others as well.

I think you put quite a burden on SBA to do all of that for the small businessman when you have the existing agency that has the expertise in that area to do it.

Mr. COMMINS. Maybe it is a problem of interagency coordination, but SBA is not doing their job under the two loan programs where they definitely have the role.

Senator HATHAWAY. I recognize the problem. The small businessman is not getting all of the information he needs to comply.

Mr. COMMINS. That is my position. Thank you.

Senator HATHAWAY. Thank you very much for your testimony. I appreciate it.

[The prepared statement of Mr. Commins follows:]

STATEMENT BY:

James A. Commins, President, JACA Corp.
506 Bethlehem Pike
Fort Washington, Pennsylvania 19054

BEFORE SUBCOMMITTEE ON:

Technology and Management Assistance Programs

SENATE SMALL BUSINESS COMMITTEE

APRIL 1, 1976

My name is James Commins and I am President of JACA Corporation, an environmental consulting and engineering firm of Fort Washington, Pennsylvania. This company was founded in 1970 to provide management consulting and engineering assistance for small companies who were just then coming under government environmental regulations. Much of my testimony on SBA management and technical assistance is based on consulting experience with small businesses in this professional practice and with government research and service contracts often directed specifically to small business environmental matters. I shall also refer to experience with SBA programs as an executive in a small electronics business (250 employees) which covered eleven years previous to my present work.

I have had direct experience with a number of SBA activities over the past twenty years. Generally this experience was related to SBA management assistance in procurement matters. The assistance provided to small R&D contractors at various government laboratories and procurement agencies was experienced first-hand as Vice President-Marketing in the electronics firm previously noted. I can tell this committee that the assistance our company received in matching its highly creative technical capabilities with the proper government programs was entirely satisfactory. In the same position on two occasions I requested a Certificate of Competency after being turned down for production contracts, one on the basis of alleged financial incapability and the other on the inability to meet production schedules because of what DOD expected to be tight vendor deliveries. A Certificate of Competency was granted by SBA in both cases and our company delivered acceptable products on time. In the tight delivery project, SBA not only provided the Certificate of Competency after thoroughly evaluating our production plan, but also assisted us in

obtaining a transformer which had very tough performance specifications, and which was critical to the job.

In my present company we were preparing a bid for a particular turn-key type environmental job which required a performance bond. This bond was not attainable from a surety, but I learned through one of our clients in the construction industry that SBA had a surety guarantee program which was designed to help small companies that had good technical and administrative capabilities, but could not obtain the required bond through conventional channels. The assistance our company received on this program was highly satisfactory.

There are other SBA programs such as the 406 program which provides management assistance on broad lines to disadvantaged firms who are already SBA clients in which I have not been personally involved, but about which I have heard good comments from other small companies. I am also aware of some of the very worthwhile services offered via the Technology Utilization program especially in the Philadelphia area. The activity of SBA in the Wholesome Meat Act has also been characterized as good from several business associates.

Thus the preponderance of my personal experience and that which I am aware of from other small businessmen indicates that SBA has generally performed satisfactorily in its ordinary management and technical assistance programs.

The situation in respect to SBA management and technical assistance to meet problems caused by regulations appears to be different however. I base this on certain symptoms that I have observed over the past few years in dealing with small business problems arising from regulatory matters. Before turning to some specific symptoms I should like to briefly review why such assistance was, and continues to be needed.

Need for Assistance in Environmental Regulatory Matters

The small business need for SBA assistance stems from the significant economic and management impact of government regulations on small businesses. The regulations to which I refer are those that deal with environmental matters with which I am intimately familiar.

The costs experienced in meeting these regulations are generally non-productive. Infrequently costs to control pollution are partially offset by product recovery, but it is extremely rare for total cost recovery to be realized. Therefore while benefits ensue to the general public, the costs to the business generally carry no return.

The impact on small businesses arises because the costs are generally non-productive, and because:

- The costs are high relative to plant worth
- There is a disparity in financing costs, the cost per unit of production, and cost pass-through potential between large and small firms
- The special technology and management problems are foreign to normal activities.

Costs of control may be quite high; in small industrial businesses it is not unusual for example to find air pollution control costs equivalent to 1/5 to 1/3 of the net of plant replacement costs. Furthermore it has been shown that, for some industries, costs to control air pollution per unit of production are somewhat greater for the small operator than for the larger company, and considerably greater in those instances where the pollution stems to a marked degree from what is referred to as fugitive emission sources.

In addition to the frequently encountered capital cost differentials between small and large firms, there is also a disparity in financing costs due to differences in bank rates because of risk and administrative factors, and the fact that some preferred types of financing with lower rates, longer terms, and attractive principal pay-back schedules are not available to small borrowers to the extent available to the larger companies.

The ability of smaller companies to absorb the costs and/or pass them through to their customers is also disparate from those of the larger or more profitable firms. Many of the EPA-sponsored studies of the economic effects on industry of air and water pollution echoed these statements. Their conclusions often found that smaller or marginal firms were more likely to fail under the impact of such controls. In a number of instances, failures of small marginal firms were predicted.

For firms engrossed in obtaining adequate controls, the scope of the management problem is unprecedented. They are buying a capital installation with which they are often totally unfamiliar, which must meet not only their own acceptance, but more importantly the acceptance of a government inspector who would subject the equipment to an involved test carried out by specially trained crews. Contractual problems between vendor and small business purchaser are frequent because vendors refuse to give performance guarantees or give vague ones since the customer can often not provide reliable process data on which to guarantee a design.

Small businesses facing the acknowledged and possibly fatal impact of such regulations because of the disparate loan costs and pass-through capabilities and unprecedented technical, financial and management problems have a pronounced need for assistance from SBA in management and technical advice which had helped small business so much in the past, and which was going forward under other programs such as 406, COC, surety guarantee, etc. Unfortunately symptoms which I have observed and shall now describe suggest that such assistance is not presently being extended to businesses required by federal regulations to make significant investments.

Symptoms of Inadequate Assistance

Many of the recent problems confronting small businesses have come about with unaccustomed swiftness by way of governmental regulations. A recent article shows that regulatory law has increased dramatically in recent years so that in 1974 there were an average of 187 regulations for every law passed by Congress. My impression is that SBA has not been adequately consulted in the formulation of environmental regulations which account for a larger number of the many new ones being promulgated. Any SBA involvement post-dates the final regulation and therefore tends to be too little and too late.

This witness made innumerable visits to SBA in 1970 attempting to demonstrate the vital need for a program of advice and consulting to meet these unique problems. During this period however the management and technical counseling of SBA was at a low ebb so that such urgings apparently fell outside the funding and staff commitments of SBA. To my knowledge SBA's activity was limited to the distribution of a Management Aide (a short pamphlet) on air pollution control authored by me, and to the backing of a small business joint-financing program that this witness and other researchers independently had developed and recommended.

While SBA was largely inactive, other government organizations were doing more. The National Industrial Pollution Control Council held a number of industry meetings, and developed a number of brochures on environmental subjects. The Environmental Protection Agency exerted considerable effort in its Technology Transfer Series. These were carefully conceived and developed two-day seminars which were held across the country and covered financial and technical aspects of water pollution control, designed especially for a number of heavily impacted industries including the seafood, metals processing, dairy processing, poultry processing, textile, and fruits and vegetables industries. These seminars conveyed technology for the best control methods at the current state-of-the art for the particular industry sector being addressed. Specially prepared

manuals were distributed, and the oral presentations were made by industry experts in the applicable field of control. The EPA presently has under preparation a general seminar for small businesses in the machinery and mechanical manufacturing industry covering 173 four digit SIC's, which typically have hydrocarbon air emissions and suspended solids, oil and grease, and metals water problems. Both air and water pollution control will be covered as well as detailed information on financing, methods of administering the work, and contracting. This should be ready by fall.

Many of the seminars held for particular industry groups and the proposed more general seminar now being prepared have large complements of small businessmen as their audience but SBA representatives had a small or non existing role in these activities, not even encouraging publicity for their programs.

It must be appreciated by this committee that SBA had no special mandated role in these technology transfer activities, and therefore the lack of action was probably attributable to the necessity of concentrating their limited resources to more conventional activities related to general small business loans, small business set-asides, surety bond guarantees, 406 program, Certificates of Competency, etc. There are however specific roles for the Small Business Administration set forth in the environmental legislation where SBA activity also appears inadequate. I would at this time like to refer to two Acts that set forth specific roles for SBA.

The Federal Water Pollution Control Act Amendments of 1972 include an \$800 million loan program to be conducted by the SBA for small businesses which would otherwise suffer substantial economic injury. The program contemplates low interest for terms of up to 30 years. The program has been operating since August 1974.

In January 1974 the President approved a second piece of legislation (PL 93-237) which permits SBA to make loans to any small business concern which will face economic disaster in the course of meeting "requirements imposed on such a concern pursuant to any Federal law," or any state law enacted in conformity with the Federal law. This legislation unified several earlier enactments (except for water pollution control) each of which had established specific loan programs for the separate regulatory programs.

An outline comparison of the loan provisions of the water and economic disaster loan coverages with the normal type of SBA loan activity is shown in Table 1 below.

Table 1
SBA LOAN COMPARISONS

Effective Date		Guaranteed			Direct	
		Term	Interest		Term	Interest
NA	Normal Small Business Loan	to 10 yrs	Normal Bank	} to 10 3/4% maximum	to 10 yrs	Govt. Borrowing Rate
8/74	Water Pollution Loan	to 30 yrs	Normal Bank		to 30 yrs	Govt. Borrowing Rate
1/74	Regulatory Economic Disaster Loans	to 30 yrs	Normal Bank		to 30 yrs	Govt. Borrowing Rate

The intent of the economic disaster loans, quoting from page 118 of the Twenty-Fifth Annual Report of the Select Committee on Small Business of the United States Senate, was that:

The authority contained in the Bible (Senator Alan Bible, Nevada, Chairman) provision reflects the considered judgment of Congress that smaller firms be assisted over the hurdles created by federal action by the ability to obtain loans at the cost-of money to the Federal Government, plus a fraction of 1 percent to cover administrative costs; and to have such loans over long enough terms so that the loan can be paid back out of the earnings of business.

The implementation of this loan system however does not appear to match the lofty purposes for which it was designed. Normal small business direct loans are very scarce, so most loans are guaranteed at bank rates with no longer than 10 years payback. For example of the 25,219 loans made in 1973 only a small part, about 5%, were direct loans. By using bank guarantees rather than their limited direct funds, the SBA can serve many more clients than otherwise would be possible. In the case of Regulatory Economic Disaster Loans or the Water Pollution loans, the main advantage to the small business borrower is the possibility of longer payback provided by the Acts and the lower interest rates associated with a direct loan. Payback and term factors exert a pronounced effect on the real costs of control as measured by Net Present Value, and Cash Flow. Similar rates and terms are available on the open financial market to larger firms with dramatic effects as noted in a Business Week article (July 29, 1972, pp. 50-51) which upon calculating the cost savings that tax-exempt pollution control revenue bonds can provide concluded that, "over the life of a 20-year, \$10-million issue,

the typical interest saving is about \$5.6 million". Activity in such financing by large firms has been sizeable as can be seen from Table 2.

Table 2
TAX FREE POLLUTION CONTROL REVENUE BONUS

<u>Year</u>	<u># of Issues</u>	<u>Amount of Issues</u> <u>(\$Billion)</u>
1972	Not Available	\$.565
1973	Not Available	\$1.778
1974	114	\$1.673
1975	193*	\$2.134*

It could be anticipated therefore that prudent small businessmen, thousands of whom made expenditures for air and water pollution controls during this period, would have availed themselves of the opportunity offered them by the Acts, which promised to lift them to financing parity with the larger firms. What happened was that thousands of financing actions occurred but relatively few were granted by SBA under the provisions of the Federal Water Pollution Control Act Amendments of 1972, (8/74) and Public Law 93-257 (1/74). Since the effective dates, only 32 water and 57 air loans were granted.

Why should America's small businessmen fail to grasp a financing aid with such important cost savings? Two reasons suggest themselves from any experience:

- Unawareness of program benefits
- A belief by industry that they could not qualify because of an impossibly tight screening process.

Although having far short of a statistically valid base, our company has had occasion to talk to well over a hundred small businesses concerning pollution control problems. Several indicated that they had received SBA loans which they had used for purchases of pollution control, but these were

* This figure contains both private and public placements. Private placement figures are not readily available for prior years.

regular guaranteed bank loans under the general SBA program, carrying bank rates and repayable in ten years or less.

A study conducted by SBA in 1971 reported that while 95% of the firms queried knew of SBA, only 28% had any familiarity with its programs. More recently, part of a 1975 study in the Boston area indicates that small firms are aware of SBA's existence but are only vaguely aware of the various loan programs, what they are, why they are desirable, and how qualification is determined. The brief study showed that 84% of the respondents knew of SBA's existence, but a like amount, 85%, knew nothing about the special pollution loans.

Not only doesn't the business community know about SBA's programs, but there appears to be a parallel paucity of information available to the financial community and SBA itself. Recently one of our researchers discussed SBA programs with seventeen banks, and found that only one loan officer in these banks had heard of the FWPCA loans or the economic disaster loan program. None of the loan officers knew any details of the programs. Another informal poll was conducted by one of our researchers who called three SBA regional headquarters to inquire about the economic disaster loans. Only one of three officers to whom he was directed for loan information knew the program existed, or any of the program specifics. We have also had an example where it was suggested to a business under compliance action by the state and EPA that they contact the local SBA office and initiate action under the economic disaster loan program; they promptly did, only to be told that no such program existed.

These are admittedly not statistically based findings but they suggest that one reason loan activity under these programs is so small in respect to the number of loans small businesses must make in the environmental field is that there has been inadequate management counseling to small businesses, banks and SBA loan offices to the effect that the program exists, is beneficial, and operates in a prescribed manner. SBA perhaps doesn't advertise its programs because of a concern about displacing normal lending and management assistance channels, or because it lacks the funds and staff for follow-up.

The other factor causing limited use of the financing benefits provided by these programs might be that those companies that are aware of the program and its potential benefits feel they cannot qualify under the substantial injury requirement. The qualifications we have seen applied by SBA for a direct economic disaster loan is that the applicant must receive two levels of turn-down from conventional loan sources: he must show that he cannot obtain a

direct loan from at least two conventional sources and next that even an SBA guaranteed loan would not be financed by the bank. At the same time the loan must be safe enough to merit SBA financing. Thus to get the low interest, long pay-back loan terms which would put a small business on par with the financing capabilities of tax free revenue bonds available to large businesses, a small businessman must be within a narrow financial spectrum. In practice, the two level turn-down test actually may be more of a test of a bank's loan opportunities than one of the ability of a small borrower to repay the loan. The bank's turn-down criteria is closely correlated with tightness of money and its loanable reserve of funds and these may be controlling factors in whether or not the loan is granted.

The symptoms I have described if true on a national scale indicates that, except for the applicable portions of the 406 program, SBA's management and technical assistance to small business needs resulting from environmental regulations are inadequate. This is in sharp contrast to other SBA programs, and may be attributable to deficiencies in budgets and staff resulting from insufficient appropriations. With your permission I would like now to present some brief comments on the means by which SBA intends to carry out its recently revitalized efforts in technology transfer.

SBA and Technology Transfer

The 1975 report of the Federal Council for Science and Technology Committee on Domestic Technology Transfer describes technology transfer as "the process of employing a technology for purposes other than that for which it was developed." While a succinct definition, it fails to describe many of the active technology transfer projects of EPA in the environmental field and ERDA, FEA, GSA, and EPA in the energy field. Here the technology being transferred was often developed expressly for the purpose for which it is being transferred. It merits transfer because the problems which the technology can serve are acute, often new to the industry, and often under mandatory response.

I would thus like to broaden the definition as follows. This is the sense it will be used in further comments.

Technology transfer is the process of employing a technology for purposes other than that for which it was developed or the process of transferring technology to a segment of business which has current critical need and little experience with the technology that can meet the need.

The committee report previously mentioned has a fold out chart at the end of the report which lists 50 federal government agencies and shows their technology to analyse programs in 18 major use categories. The programs are in various stages of implementation, and can conveniently be divided into three categories.

1. Technology programs based on regulations promulgated by the same agency that undertakes the technology transfer.

The outstanding example of such programs is the technology transfer program of EPA. In accordance with the legislated mandate, EPA enacted regulations calling for industry compliance with the best practical technology (BPT) in water effluents and then developed and presented seminars on the subject to the specific industries being regulated. In essence the government agency created the need, knows most of the questions business will have, and provides the technology required.

2. Technology programs that fill a need recognized as new and vital by the government.

ERDA and FEA technology transfer programs are examples of the deep current concern over energy, and the need to tell consumers and industry about energy saving technologies. As new regulations are enacted, such as the law concerning voluntary industrial programs to conserve energy and the pending legislation on energy conservation in new housing, the need for such technology transfer will increase and a movement toward the first category described above will be seen.

3. Technology programs that seek to apply technology developed for one purpose to other national needs.

This category is typified by technologies developed by NASA and DOD which might find application in a host of other uses if only the prospective user and the technology could be brought together in an effective way.

Category 3 is the one which my few remaining remarks concern because my impression is that the others are somewhat better covered by other agencies - especially category 1 in which I see SBA's role as a consultant in regulation formation and as a management advisor during implementation. In category 2, I visualize SBA again primarily in a management consulting role informing small businesses of various programs and putting them in touch with the proper technical authorities.

It is in category 3 where SBA's expertise, experience, and extensive industrial contacts can most efficiently be utilized. The federal government has a

vast backlog of research and development results in the form of hardware, methodologies, manufacturing techniques and other technical know-how, and is adding to this annually at the rate of over \$15 billion. How can this great source of technology be transferred, and more specifically how can it be transferred to small businesses?

The problem of matching technological needs to research and technology availability is a highly involved one. On the basis of 25 years as a project engineer, product manager, and vice president of marketing, and now president always at the interface between R&D and marketing in high technology firms, I can testify to the difficulty in transferring technology even within a single company. The transfer is most often within a single individual's experience span or at most at the project engineer's level. It is especially rare when the technology transfer is manifest in a direct product transfer. Despite these problems, such types of technology transfer happen without any programs. There are hundreds of successful product transfers, and countless lower level transfers. To do this by means of government programs on an intercompany and even interindustry basis as contemplated in category 3 previously described is a herculean undertaking, and yet the potential good merits the effort.

The direction SBA's Technical Utilization Program has taken involves preparation and dissemination of publications, the publishing of descriptive literature to make small businessmen aware that the program exists and a response to Reader Service Card inquiries by assisting the reader in locating and applying available technology. It can be characterized as a referral system. It is thinly manned by personnel who do this as a part of their overall job. SBA however, has the experience, contacts, and understanding of small businesses to efficiently do much more with high potential national pay-offs if they were granted the charter and had adequate staff and funds to carry out these responsibilities.

Technology transfer has two sides. One requires an in-depth knowledge of process, products and technology, while the other requires a knowledge of industry problems, needs, and limitations. It seems to me that the technology oriented government agencies are splendidly equipped to deal with the technology side of the problem. Where they are weak is in the business side. Here is where SBA has 22 years experience, a solid field organization, tens of thousands of contacts with small businesses, and a real empathy and understanding of how small businessmen think and react.

A good example of how SBA's business contacts and organization can work to provide outstanding results can be found in their research work on the

effects of the Wholesome Meat Act of 1967. Permit me to briefly review one facet of this study which indicates how thoroughly SBA can develop data on small businesses.

The universe to be studied included 21,180 establishments. Survey statisticians so stratified the sample that a sampling of 2,699 establishments would yield a 95% confidence factor in the results. SBA's Office of Administrative Services mailed questions to 2,699 establishments in May 9, 1970. The Administrator at the same time sent personal letters to 350 business leaders in this industry. A second mailing was sent in June 13, 1970. A third in July 1970 with another letter from the Administrator. As a result 1424 of the 2699 queried responded. On July 24th the names of the 1275 non-responding establishments were sent to the 63 SBA offices for follow-up where the offices were asked to get the necessary information either by telephone or by personal visit to the respondents place of business. This brought in another 751 reports. Of the remaining 524 non-respondents, 53 were telephoned for a non-respondent quality check and found to possess characteristics of the respondent universe. The response then was 2175 out of 2699, a truly remarkable response rate that would be impossible of duplication by another government agency or private company. This placed a very high confidence on the results, and would permit Congress to enact legislation with all the proper data on hand. This shows how SBA can use its organization and industry experience in gathering, or for that matter transferring data to small businesses. This is precisely the problem involved in trying to match hundreds of billions of dollars worth of government R&D with the needs of 12.5 million small businesses. The government technical agencies know their "product" and the individual small business has unsatisfied technical needs, but it is difficult to get them together.

SBA now contributes to solving this matching problem by acting as technology brokers between small businesses and the proper government technical agency. This brokerage method can be best described by citing two examples of help that I am personally aware of that was accomplished by the SBA office in Philadelphia.

In the first case a small manufacturer of rubber products, including rubber boots, fluffed up the wooly lining of the boots by a rotating wire brush. He had received several complaints that his boots contained very small wire pieces that had been pulled off in the fluffing process. He now had some several thousand pairs of boots in inventory and had no ready means of inspecting them or his current production for any small metal particles. Commercial metal detectors were not sensitive enough to detect the tiny slivers. The SBA Technology

Representative put him in touch with a particular part of a government agency that had an inexpensive and accurate device to detect such small splinters. It only required minor modifications to meet the testing needs. The businessman quickly quality controlled all his inventory and set up the unit on his production line to eliminate future problems.

In the second case a small business employing 50 people making cast fireplaces was experiencing considerable breakage in shipment of their large pieces. The SBA man tracked down a government expert who knew packaging technology and another expert skilled in metallurgy and put the businessman in touch with the technology. As a result the new packaging was better, the metal stronger, and the breakage virtually eliminated.

I would like to see this referral role continued and strengthened. In addition I would recommend that another very important role be added. SBA should at least seek to identify other categories of small business might have a need for a small metal sliver detector or how many more businesses need packaging and metallurgical help, etc. The SBA portion of the report of the Committee on Domestic Technology Transfer cites examples where ultrasonic sewing machines were used and where technology for efficiency improvements in hole drilling could be effectively used. Findings such as these call for extrapolation of individual problem solutions to a more general industrial need and should be done by SBA.

SBA can do a very efficient job of analyzing small business for common technology needs. SBA should examine a number of small industries to develop a list of technological needs for each industry. These should be collated across industry lines as much as feasible and then presented to a suitable body, perhaps the Committee on Domestic Technology Transfer, which could process the data, spending some direct to agencies with the necessary type of technology, and recommending studies on significant common needs for which appropriate technology sources are not available without considerably more engineering or product design.

SBA has had an on-and-off-again technology transfer commitment. It sometimes lacked the critical mass to make it successful. In those instances where it had program continuity and funds, it did well. The people I know within SBA, practically to the man, have been capable and dedicated. They have a high enthusiasm for their work. When programs have fallen short it was because the system or program had only lukewarm support, not because of a lack of capability or zeal on the part of the SBA personnel.

Recommendations

SBA can meet a vital need to provide management and technical assistance in environmental regulatory matters if they receive a clear mandate from Congress and the funds to support the appropriate program. Funds must be available to support adequate staff and meet expanded loan needs.

SBA should be more involved in regulatory promulgation than it has in the past. While other agencies are charged with developing the regulations, SBA could serve an important consulting role, and provide data on small business characteristics.

It must also let the small businessman know more about its programs. We cannot continue to have loan programs for example designed to help small businesses when the small businessmen, banks, and even some parts of SBA do not know of their existence or the details of the programs.

Lastly SBA should have a strong viable technology transfer program, or as SBA calls it a Technology Utilization program. A few people on a national level doing this as only a part of their job is certainly not enough. SBA appears to me to provide the knowledge, contacts, and organization critically needed to determine and collate important small business needs. This role could be instrumental in providing data to the other 49 agencies who are much more knowledgeable of the technology than they are of small businesses. This activity could result in new products, better productivity, and more jobs all of which is worth hundreds of times the amount SBA would have to expend.

Thank you for allowing me to present my testimony at this important hearing. As a small businessman working with other small businesses, I hope these remarks prove helpful to this committee.

Senator HATHAWAY. Dr. Samuel Z. Cardon, president of the American Association of Small Research Companies.

STATEMENT OF DR. SAMUEL Z. CARDON, PRESIDENT, AMERICAN ASSOCIATION OF SMALL RESEARCH COMPANIES, AND SECRETARY-TREASURER, GENERAL TECHNICAL SERVICES, INC., UPPER DARBY, PA.

Dr. CARDON. Gentlemen, I would like to make one observation at the start which is not directly related to SBA and the subject of this hearing. I was aware that members of this committee have been protesting against the large paperwork requirements in Government procurement, regulation, and taxes which put such a tremendous burden on individuals and companies who would deal or must deal with Government agencies.

I was accordingly greatly surprised when my invitation to testify at this hearing included the requirement that I submit 30 copies of my statement before the hearing and 25 copies at the hearing.

Evidently, it depends largely on whose ox is being gored. I was reminded of President Coolidge's question to the 1920's Air Force, "Why can't they use one airplane and take turns flying it?"

Senator HATHAWAY. We have various members of various organizations that want copies of these statements. Most of the statements go to the press and the press is not one person. That is the reason you have to bring 30 copies.

I think it is a very valuable service, because you get your case presented to a large number of people. The more people who know about your case, the better you are going to be, because you will get a lot more people interested in it.

Dr. CARDON. I just wanted to bring this up, because we submit proposals to the National Science Foundation, about 90 out of 100 are turned down. They ask for 25 copies. The packages get to be of a huge size and small companies find this is a burden. Even the Xerox copies cost a few pennies each.

I wanted to point it out, not in particular about this committee's activities, but the general problem of paperwork. If you could cut down on some of the paperwork at each level, it would be helpful.

The members of the American Association of Small Research Companies are almost all officers of small R. & D. and high technology companies. All the officers and directors are officers and principals in small technically based companies. I am an officer of General Technical Services, Inc., in Upper Darby, Pa. Before that, I worked for two other small technically based companies for a total of 12 years. What I say today will be my views but they reflect opinions and comments made by my associates in General Technical Services, Inc. and the American Association of Small Research Companies.

My experiences with SBA in general have not been good. I have got the feeling that John May could get a lot more support if he had backing from headquarters in Washington.

The following will illustrate some of my problems.

Though my casual contacts with the Small Business Administration and small business advisors in other agencies go back many years, a more direct and more frequent dialogue with the SBA pro-

curement division started some 4 years ago which led to the founding of the AASRC and since then to many discussions and workshops sponsored by SHA, NSF, and the Commerce Department on problems of the small technically based companies, especially in their attempts to deal with the Government.

With your indulgence, I would like briefly to narrate the series of events that led to this more active interaction with SBA. A little over 4 years ago, our company received a questionnaire from Midwest Research Institute which had a contract from SBA for a study to determine if it would be useful to small R. & D. companies if there were a data system that would make available to such companies future procurement plans of Government agencies.

Since we small R. & D. companies normally consider the non-profits to have an unfair advantage over us in Government and non-Government business, instead of filling out the questionnaire, I came to Washington and protested loudly to SBA that letting such a contract showed a lack of understanding of the problems of the small R. & D. company. I was told that SBA never could decide what the problems of our kinds of companies are because every small R. & D. businessman gives them a different set of grievances. I suggested that we form an association and the association would develop a consensus of common problems. At first, I was told this was a great idea but later that SBA couldn't help form an association because it was illegal.

I then proposed holding a conference with SBA support, to discuss problems of survival and growth of small R. & D. companies, and I would make it my business to determine as a side issue at that conference whether there was, in fact, enough potential support from the industry to warrant the formation of our association.

Again, great enthusiasm from the SBA Procurement Division, at that time headed by Marshall Parker and his assistant Clyde Bothmer. I prepared a proposal to run a conference which was promptly rejected by SBA, because it was pointed out that I worked for a for-profit company and could not, therefore, be given a sole source award.

Since SBA wanted to hold the conference shortly, they circulated the proposal among members of their interagency committee for small R. & D. procurement. The National Science Foundation, spurred on by the then assistant director, Dr. Ray Bisplinghoff, volunteered to take responsibility for running the conference, adding to SBA's funds.

Senator HATHAWAY. I have to leave for a hearing I have to attend and counsel will continue with this. The statement will be made a part of the record, anyway. I want to ask you a couple of questions before I have to go.

On page 5 of your statement, you said that many R. & D. companies do not bid on requests for proposals. Why is this so?

Dr. CARDON. I do not know if you will make your next meeting if I go into all of the details. For one thing, various studies have shown that most RFP's in the R. & D. area are wired. The person who puts out an RFP from the Government has been talking to technical people of a particular company for a long time. After maybe a year or two, they have convinced him that this particular idea fits in with his program and that he should buy it.

He tries to get through an unsolicited proposal, perhaps, or does not even try, but proceeds to put out an RFP because he has to satisfy the procurement people.

The RFP goes out and no mention is made of the fact that he already has one company that is doing a special favor to him. By the time the request for the proposal reaches the Commerce Business Daily, the company that has done all of the work on it has first call on that contract. By the time we see it in the Commerce Business Daily, all of the large companies, or all of the companies that have representation of their own in the Washington area have gone over this thing in great detail. They have all of the advance information. They know the technical man.

Though there is a procurement man interposed between the technical man and the contractors, it is really the technical man who makes the decision and he has decided long before he puts out an RFP that one company, or maybe one or two companies, are preferred.

A study made some years ago, in a book called "The R. & D. Game," by a Professor at Harvard or MIT had one chapter on Government R. & D. business. He did a study of 10 or 20 procurements in the R. & D. area. He found that 90 percent of them went to the one company that the technical man had in mind in the first place. Of the rest, maybe half a dozen went to two or three companies that he was interested in, that the total free competition in the area was probably restricted to a few percent of the total.

In my experience, close to 25 years, in various small R. & D. companies and my own small company, we bid on about a dozen RFP's. That does not mean that every small R. & D. company is in this boat, but if you actually went out and tried to find the consensus among small R. & D. companies you would find that most of us stay away from RFP's.

The one RFP we won was one which was written specifically for us, based on work we had done previously, and I had something of a guilty conscience, because I knew that any other fool who bid on that RFP did not have a chance of getting it.

Under those circumstances, small companies, and even large companies, I think, to some extent in the R. & D. area, are not too interested in going after RFP's.

The other thing that leads to the unsolicited proposal sole source award fight is, that procurement people tell us they have to be competitive. If you give a sole source award, you will not be competitive.

It neglects the fact that in the case of an unsolicited proposal we have probably talked to the technical people for a heck of a long time, briefing them over and over again before we got them to the stage where they understood our proposal and were willing to do something about it.

During that period, we were in competition with all other companies who were competing for this man's money in this area.

So it is really very competitive. It just does not come out as sharp as you would in the RFP situation.

Senator HATHAWAY. Thank you very much.

Dr. CARDON. We have not been able to convince the SBA that this is a fact of life.

Senator HATHAWAY. Maybe we can now.

I am going to have to leave for the hearing, but counsel for the minority will continue with the hearing. He will welcome the other witnesses as well.

[Senator Hathaway left the hearing room.]

Dr. CARDON. The specific topics that I was asked to address before this committee were: What is being done and what could be done; (1) to increase the number of contracts awarded to small firms for research and development; and (2) to make new knowledge resulting from Government-financed research and development available to small R. & D. and manufacturing firms.

In answer to (1), I would say that very little is being done that is effective on the executive side to increase the number of contracts awarded to small firms for research and development. We see competitive bidding and small business set-asides being pushed by SBA and small business representatives in other agencies and in the Congress. This method has worked to some extent for purchase of materials and procurement people continue to think that this would also be a great boon for small R. & D. companies. Yet I and my associates in the small R. & D. community have tried over and over again to get the point across that many of us do not bid on RFP's even small business set-asides.

In my 24 years of experience in small R. & D. companies, I have bid on perhaps a dozen RFP's. I remember we got one contract in an area that no one else could really perform since it was for refinements on work we had already done.

Our association's vice president, Arthur Obermayer and I have been invited guests at one of the annual meetings run by SBA for procurement people throughout the Government to push them into contracting more with small companies. The effects of our presentations—mine in 1972 was shortened to a few minutes because it was feared I would be too abrasive, which I had every intention of being. I was told that SBA was trying to persuade, not intimidate, and it had about that much effect.

I would rather not sweat on what is being done, most of it ineffectual, except for the initiatives the Congress has taken in the last year, which I would suggest are the most promising and potent for increasing business for the small R. & D. company.

I refer to the imposition of mandatory set aside of funds to be used for small R. & D. company contracts which was started last year in the National Science Foundation applied research moneys. This year the House Science and Technology Committee is proposing to raise the percentage for small R. & D. companies.

Also this year, the Mottl bill introduced in the House and the McIntyre bill in the Senate call for mandatory set-asides of funds for small companies in ERDA's programs. This is a far cry from the hat-in-hand timid requests by SBA of earlier years and as of now looks to me to be the only real workable approach. Requesting hasn't worked; therefore, you must order it.

I can only urge that the Congress extend this concept to all other Government agencies as soon as possible. In fact, the authorization for funds for water resources research and development which has been passed by its committee in the House of Representatives and remains to be introduced in the Senate may provide an opportunity for the concepts introduction in the Interior Department.

Mr. SOMMER. Has the consternation that you noted on behalf of the academic institutions taken the form of any lobbying in the efforts underway in the House?

Dr. CARDON. I did not mean the institutions. I mean the people at NSF, academically inclined. I did not have contacts with their academic sponsors and reporters.

I do understand that the people of NSF themselves—I do not know if they have done anything about it yet, since the bill only came out a week or two ago—are upset about it.

Mr. SOMMER. Thank you.

Dr. CARDON. I have been told that the Department of Defense has discussed a percentage figure for its R. & D. funding with small R. & D. companies.

I would like to add a couple of pages to my prepared statement—incidentally, the American Association of Small Research Companies ran a conference last week for the Energy, Research and Development Administration. Approximately 450 small businessmen attended that conference at a cost to them of probably in the neighborhood of several hundred thousand dollars total.

Over 100 Government and large company representatives also attended. Results indicate that ERDA's management is willing to have more small companies participate in their programs.

I would especially single out C. Branson Smith, Richard Sutz, Dr. Robert Tucker, and Glenn Ellis in the Office of Interstate and Local Affairs, and Norman Vinson and Paul Turbin in the Office of the Small Business Advisors of ERDA. Dr. Fri, Deputy Administrator, and several assistant administrators participated.

We are grateful to them. We hope that the dialogue at the conference is only a first step, and it will continue at other meetings of our association, in our association's newsletter, and ultimately the real test will be if there are many more contracts with small R. & D. and other technically based companies.

Mr. Laun, Deputy Administrator of SBA, spoke at that meeting and told us that ERDA and SBA are about ready to formally agree to cooperate to get more ERDA business for small companies by such methods as jointly working to disseminate pertinent information to the small R. & D. community through appropriate trade newsletters, through use of SBA regional offices, joint meetings, and so on.

We welcome this increasing effort by SBA and ERDA to reach the small R. & D. and technically based companies, and our Association will obviously cooperate in any way possible.

Senator McIntyre of this committee did us the honor of also speaking at our meeting last week. He suggested that, although ERDA has shown an increasing willingness to work with small companies, he still thought that they could still use some congressional guidance. To this, we can only say, amen.

In addition to the approach of mandatory set-asides for small companies, I would propose that the Congress take action on some of the recommendations of our earlier conferences if they want to see us get more business.

For example, the following recommendations were made:

One: Eliminate the resistance to the awarding of sole source contracts in response to unsolicited proposals from small R. & D. firms.

Two: Permit the awarding of grants to small R. & D. firms es-

sententially equating not-for-profits, universities, and in-house labs with small R. & D. firms operating for profit;

Three: Eliminate the requirements for cost-sharing where there is no mutuality of interests.

Four: Revise the review system for research proposals to eliminate conflict of interest and place the responsibility for R. & D. squarely on the Government technical program manager since he is the only one you can hold directly accountable for the quality of the R. & D.

Five: As a follow on to this, provide career incentives and recognition to the Government technical program manager when he increases his use of small companies in his R. & D. program.

Six: Encourage the breaking up of large R. & D. programs to smaller ones that can be performed by small technically based firms.

Seven: Provide incentives for prime contractors of large R. & D. programs to subcontract substantially to small technically based firms.

Eight: Provide incentives in the private sector for companies, large and small, to make greater use of small R. & D. firms and consultants.

One comment at the 1972 conference by an anonymous investment banker in the audience deserves repetition. He noted that "for companies which are profitable or demonstrate that they will be profitable, there is venture capital available." He therefore suggested that large fee allowances be permitted small firms and that legislative or executive action should be sought to encourage ongoing contracts.

On item No. 2, how to make new knowledge resulting from Government financed research and development available to small R. & D. and manufacturing firms.

What is being done? There are various Government publications that give the titles and authors and brief abstracts of reports produced by Government agencies. NASA puts out the Scientific and Technical Aerospace Reports (STAR).

The National Technical Information Service is an outgrowth, I believe, of a DOD library operation, although now run by the Commerce Department. The National Bureau of Standards has a technical journal. Various agencies have technology transfer operations which put out descriptive literature on new technology.

In addition, there is also the publication in scientific and trade journals, at the discretion of the authors. Various private companies summarize new technology and potentially useful patents in newsletters. The entire field is a hodgepodge with inadequate in-depth total coverage.

What can be done? First and foremost, develop a central Government institution devoted to all aspects of science and engineering for industry and commerce. My partner, Art Iberall, who was with the National Bureau of Standards for 15 years up to the early 1950's, tried to get NBS and the Commerce Department to assume the function, but he was unsuccessful.

The National Science Foundation, with its very myopic attention only to the academic needs in research and currently completely under the thumb of the National Science Advisory Board could not be trusted with this task.

Thus, a new organization is likely needed. A major function of such an organization would be the collection of Government sponsored, as well as other available research and development information and

disseminating it in useful form to all potential users. In such an organization there would be an office responsible for satisfying the particular needs of small R. & D. and manufacturing firms.

In addition to the library functions, such an institution might usefully pay attention to encouragement and support of industrial science and engineering in those areas which are not currently supported by private industry and existing Government agencies. It would effectively expand on the current applied research program of the National Science Foundation. It would encourage and support independent inventors, a community of individuals that receives large amounts of verbal adulation and practically no real support in our society.

For the moment in the absence of a central responsible institution or agency I would suggest the following additional steps that would help disseminate new knowledge resulting from Government financed research and development to small R. & D. and manufacturing firms:

One, develop a network of technical representatives in areas with large concentrations of small R. & D. and manufacturing firms. These technical representatives would call on or otherwise contact the small industries in their area on a regular basis to apprise the operators of these industries of new technical developments which could be useful to them.

The operation thus would be similar to the county agent setup of the Agriculture Department. A central processing organization would provide the area technical representative with pertinent information. Further, he would refer to the central organization any questions submitted to him by one of his industrial contacts.

The central organization could be a new technical assistance division in the Small Business Administration. However, please don't allow such an office to develop under a procurement based or a banker based division. Its best chances for success would be in a special agency or institution for industrial science and technology as described above or in a Department of Science and Technology but again, please, not under the overbearing aggrandizing control of academia, in-house Government laboratories and nonprofits or big business.

Under current conditions I would recommend a greater use of trade journals and other association publications.

Mr. SOMMER. Thank you.

[The prepared statement of Dr. Cardon follows:]

STATEMENT BY: DR. SAMUEL Z. CARDON
President: American Association of Small Research Co's. (AASRC)
Secretary-Treasurer: General Technical Services, Inc. (GTS)
8794 West Chester Pike, Upper Darby, Pa. 19082
Before Subcommittee On:
Senate Small Business Committee
April 2, 1972

Gentlemen:

I would like to make one observation at the start which is not directly related to SBA and the subject of this hearing. I was aware that members of this committee have been protesting against the large paperwork requirements in government procurement, regulation, and taxes which put such a tremendous burden on individuals and companies who would deal or must deal with government agencies. I was accordingly greatly surprised when my invitation to testify at this hearing included the requirement that I submit 30 copies of my statement before the hearing and 25 copies at the hearing. Evidently it depends largely on whose ox is being gored. I was reminded of President Coolidge's question to the 1920's Air Force, "Why can't they use one airplane and take turns flying it?"

The members of the American Association of Small Research Companies (AASRC) are almost all officers of small R & D and high technology companies. All the officers and directors are officers and principals in small technically based companies. I am an officer of General Technical Services, Inc., in Upper Darby, Pa. Before that, I worked for two other small technically based companies, for a total of 12 years. What I say today will be my views but they reflect opinions and comments made by my associates in General Technical Services, Inc. and the American Association of Small Research Companies.

Though my casual contacts with the Small Business Administration and small business advisors in other agencies go back many years, a more direct and more frequent dialogue with the SBA Procurement Division started some four years ago which led to the founding of the AASRC and since then to many discussions and workshops sponsored by SEA, NSF, and the Commerce Department on problems of the small technically based companies, especially in their attempts to deal with the government.

With your indulgence I would like briefly to narrate the series of events that led to this more active interaction with SBA. A little over four years ago, our company received a questionnaire from Midwest Research Institute which had a contract from SBA for a study to determine if it would be useful to small R & D companies if there were a data system that would make available to such companies future procurement plans of government agencies. Since we small R & D companies normally consider the nonprofits to have an unfair advantage over us in government and non-government business, instead of filling out the questionnaire, I came to Washington and protested loudly to SBA that letting such a contract showed a lack of understanding of the problems of the small R & D company. I was told that SBA never could decide what the problems of our kinds of companies are because every small R & D businessman gives them a different set of grievances. I suggested that we form an association and the association would develop a concensus of common problems. At first I was told this was a great idea but later that SBA couldn't help form an association because it was illegal. I then proposed holding a conference with SBA support, to discuss problems of survival and growth of small

R & D companies, and I would make it my business to determine as a side issue at that conference whether there was in fact enough potential support from the industry to warrant the formation of our association. Again, great enthusiasm from the SBA Procurement Division, at that time headed by Marshall Parker and his assistant Clyde Bothmer. I prepared a proposal to run a conference which was promptly rejected by SBA, because it was pointed out that I worked for a for-profit company and could not therefore be given a sole source award. Since SBA wanted to hold the conference shortly, they circulated the proposal among members of their interagency committee for small R & D procurement. The National Science Foundation, spurred on by the then assistant director, Dr. Ray Bisplinghoff, volunteered to take responsibility for running the conference, adding to SBA's funds. The NSF procurement people came up with the same objection, that a proposal from a for-profit company must be put out on bids, and that since I hadn't run any conferences before, they wouldn't give it to me in any case. In desperation, the National Science Foundation gave a grant of \$40,000 - later augmented to \$60,000 by a further contribution from the Commerce Department - to American University to run the conference. I was the Chairman of the Steering Committee and received \$2,000 in per diem costs for being responsible for the program. That experience was a perfect example of many difficulties encountered by small technically based companies in their dealings with the government.

For your purposes, gentlemen, it is noteworthy that SBA at that time had little competence to help small technically based companies, but I considered it promising that that conference and a subsequent one in

Los Angeles in 1972, was partially supported by SBA. Both conferences came up with Proceedings and Recommendations, but it didn't appear to me that responsible people in government in the small business areas were reading them or taking them seriously. I had thought and suggested this many times in the last four years in discussions with SBA personnel that SBA should be a model to all other agencies in their business dealings with small companies. I must confess that, if anything, they were tougher and more nit-picking than most other agencies. Now this committee is asking about how SBA could help in small company procurement problems. I suggest for step #1, repeating again, that SBA attempt to be a model as to how all agencies should do business with small companies, reducing paper work and unnecessary reporting requirements, and in general, look for ways to make life a trifle easier for us. For example, I was told by a middle management SBA official that he could not contract with our association because it was non-profit, despite the fact that it is an association of small companies. To whom should we then turn for support, to HEW or to the agencies which do business mostly with large business and non profits?

The specific topics what I was asked to address before this committee were "what is being done and what could be done (1) to increase the number of contracts awarded to small firms for research and development; and (2) to make new knowledge resulting from government financed research and development available to small R & D and manufacturing firms.

In answer to (1), I would say that:

Very little is being done that is effective on the executive side to increase the number of contracts awarded to small firms for research and

development. We see competitive bidding and small business set asides being pushed by SBA and small business representatives in other agencies and in the Congress. This method has worked to some extent for purchase of materials and procurement people continue to think that this would also be a great boon for small R & D companies. Yet I and my associates in the small R & D community have tried over and over again to get the point across that many of us do not bid on RFP's even small business set-asides. In my 24 years of experience in small R & D companies, I have bid on perhaps a dozen RFP's. I remember we got one contract in an area that no one else could really perform since it was for refinements on work we had already done.

Our association's vice president, Arthur Obermayer and I each have been invited guests at one of the annual meetings run by SBA for procurement people throughout the government to push them into contracting more with small companies. The effects of our presentations (mine in 1972 was shortened to a few minutes because it was feared I would be too abrasive, which I had every intention of being). I was told that SBA was trying to persuade - not intimidate and it had about that much effect.

I would rather not sweat on what is being done, most of it ineffectual, except for the initiatives the Congress has taken in the last year, which I would suggest are the most promising and potent for increasing business for the small R & D company. I refer to the imposition of mandatory set aside of funds to be used for small R & D company contracts which was started last year in the National Science Foundation applied research moneys. This year, the House Science and Technology Committee is proposing

to raise the percentage for small R&D companies. Also this year the Mott'l bill introduced in the House and the McIntyre bill in the Senate call for mandatory set asides of funds for small companies in ERDA's programs. This is a far cry from the hat-in-hand timid requests by SBA of earlier years and as of now looks to me to be the only real workable approach. Requesting hasn't worked; therefore you must order it.

I can only urge that the Congress extend this concept to all other government agencies as soon as possible. In fact, the authorization for funds for water resources research and development which has been passed by its committee in the House of Representatives and remains to be introduced in the Senate may provide an opportunity for the concepts introduction in the Interior Department. I have been told that the Department of Defense has discussed a percentage figure for its R&D funding with small R&D companies.

In addition to this approach, I would propose that the Congress take action on some of the recommendations of our earlier conferences. For example;

- (1) eliminate the resistance to the awarding of sole source contracts in response to unsolicited proposals from small R & D firms.
- (2) permit the awarding of grants to small R & D firms, essentially equating not-for-profits, universities, and in-house labs with small R & D firms operating for profit;
- (3) eliminate the requirements for cost sharing where there is no mutuality of interests.
- (4) revise the review system for research proposals to eliminate conflict of interest and place the responsibility for R & D squarely on

the government technical program manager since he is the only one you can hold directly accountable for the quality of the R & D;

(5) as a follow on to this, provide career incentives and, recognition to the government technical program manager when he increases his use of small companies in his R & D program;

(6) encourage the breaking up of large R & D programs to smaller ones that can be performed by small technically based firms;

(7) provide incentives for prime contractors of large R & D programs to subcontract substantially to small technically based companies;

(8) provide incentives in the private sector for companies, large and small, to make greater use of small R & D firms and consultants;

One comment at the 1972 conference by an anonymous investment banker in the audience deserves repetition. He noted that "for companies which are profitable or demonstrate that they will be profitable, there is venture capital available". He therefore suggested that larger fee allowances be permitted small firms and that legislative or executive action should be sought to encourage on going contracts.

On item #2, how to make new knowledge resulting from government financed research and development available to small R&D and manufacturing firms.

What is being done? There are various government publications that give the titles and authors and brief abstracts of reports produced by government agencies. NASA puts out the Scientific and Technical Aerospace Reports (STAR).

The National Technical Information Service is an outgrowth, I believe, of a DOD library operation, although now run by the Commerce Department. The National Bureau of Standards has a technical journal. Various of the agencies have technology transfer operations which put out descriptive literature on new technology. In addition, there is also the publication in scientific and trade journals, at the discretion of the authors. Various private companies summarize new technology and potentially useful patents in newsletters. The entire field is a hodge podge with inadequate in-depth total coverage.

What can be done? First and foremost, develop a central government institution devoted to all aspects of science and engineering for industry and commerce. My partner, Art Iberall, who was with the National Bureau of Standards for fifteen years up to the early 50's, tried to get NBS and the Commerce Department to assume the function, but it was unsuccessful. The National Science Foundation, with its very myopic attention only to academic needs and research and currently completely under the thumb of the National Science Advisory Board could not be trusted with this task. Thus, a new organization is likely needed. A major function of such an organization would be the collection of government sponsored, as well as other available research and development information and disseminating it in useful form to all potential users. In such an organization there would be an office responsible for satisfying the particular needs of small R&D and manufacturing firms.

In addition to the library functions, such an institution might usefully pay attention to encouragement and support of industrial science

and engineering in those areas which are not currently supported by private industry and existing government agencies. It would effectively expand on the current applied research program of the National Science Foundation. It would encourage and support independent inventors, a community of individuals that receives large amounts of verbal adulation and practically no real support in our society.

For the moment in the absence of a central responsible institution or agency I would suggest the following additional steps that would help dissemination of new knowledge resulting from government financed research and development available to small R & D and manufacturing firms:

(1) develop a network of technical representatives in areas with large concentrations of small R & D and manufacturing firms. These technical representatives would call on or otherwise contact the small industries in their area on a regular basis to appraise the operators of these industries of new technical developments which could be useful to them. The operation thus would be similar to the County Agent setup of the Agricultural Department. A central processing organization would provide the Area Technical Representative with pertinent information. Further, he would refer back to the central organization any questions submitted to him by one of his industrial contacts.

The central organization could be a new technical assistance division in the Small Business Administration. However, please don't allow such an office to develop under a procurement based or a banker based division. Its best chances for success would be in a special agency or institution for industrial science and technology as described above or in a Department

of Science and Technology but again, please, not under the overbearing aggrandizing control of academia, in-house Government laboratories, and non-profits or big business

Under current conditions I would recommend a greater use of trade journals and other association publications.

Mr. SOMMER. In the last part of your testimony when you talk about the creation of a new agency should it perhaps be SBA but not under the loan operations—

Dr. CARDON. Even procurement. They are not the best people for this kind of activity. This kind of operation should be under technical people.

Mr. SOMMER. Do you think SBA is the proper depository for such an institution, assuming that it were not under procurement or a loan-type operation over there since they do play a central role and they do have the contacts in the Agency, if they were to indeed operate such a program?

Dr. CARDON. Temporarily, I think it is a good place for it to be.

Ultimately, I personally would rather see a central science organization. The people, 30 years ago, who started the legislation for NSF, had that in mind.

NSF was quickly captured by academics and made into a grant organization just for universities and nonprofits. It does not really consider that it has the central scientific function of the U.S. Government, for the people of the United States.

Either you transform the National Science Foundation into what it was meant to be in the first place, or you have to go with another institution which will do the job.

Now, SBA really was not set up for the business of handling technical information, and it has never been encouraged to any great extent in this activity. The technology utilization or the management activities, even the management assistance part of their program has never been emphasized. SBA primarily has been a banking institution.

Mr. SOMMER. We understand that they are gearing up to implement section 9, which is the technology-sharing section of the Small Business Act, to implement a very small office. It really will be an informational type office right now. It is a subject that Senator Javits is very interested in—utilization by an organization such as yours, taking advantage of the section 9 technology-sharing and the exemption in the antitrust laws in the Justice Department for any kind of cooperation between two or more firms.

Do you find, in your organization, utilization at all of this section 9?

Dr. CARDON. There have been several loose, informal alliances within our organizations. If I know the section that you are talking about—I did discuss it with people at SBA—one man, in particular, I said perhaps they could use our organization as one central place to do something with that.

I was told that the way the thing is organized now, you cannot form (they cannot encourage) an alliance to bid on a particular RFP or particular procurement. It takes a year or more to get the antitrust thing out of the way. You also have to do it within the region in which it occurs, you know.

Mr. SOMMER. It is.

Dr. CARDON. There are two or three consortia around the country right now. I brought this up late last year with these people at SBA who shall remain nameless, and they pointed out to me that the way they were organized, the consortium has to be within an SBA region.

Our association is national, so that it is unlikely that I would deliberately go to a man in Philadelphia for a joint effort, it is just as easy for me to go to a man in Boston, or in California, but SBA is not geared to that.

Mr. SOMMER. That was a prohibition by their own regulation?

Dr. CARDON. That is the regulation; it must be regional. Unless you change that, you have eliminated the national aspects of that kind of consortium.

Mr. SOMMER. Do you think it would be helpful to tell us whose view this is at SBA? I think we would really like to follow this up, if you would like us to.

Dr. CARDON. I would prefer not to.

That was one part of our conversation. The same gentleman told me he could not deal with my association because we were nonprofit.

Mr. SOMMER. Which leads me to another question.

On page 2 of your statement, you objected to SBA's awarding of research contracts to the Midwest Research Institute because the Institute is nonprofit. Then you say that a proposal you made to SBA to run an R. & D. conference was rejected because you worked for a profitmaking company and the services would have to be purchased competitively.

On page 3 of your statement, later you were told by the SBA that they could not contract with your association because it was nonprofit. In other words, SBA could contract to MRI, a nonprofit, on a sole source basis, and not to your association, because it is nonprofit.

How do you explain that?

Dr. CARDON. It was a question of time. The Midwest Research thing was in 1971. I understand that they have since admitted that this was a gross mistake on their part.

Mr. SOMMER. SBA?

Dr. CARDON. SBA.

The people we were talking to about the contract for a conference, we did not have our association yet, would not deal with my company, which was a private company. As a private company, the SBA procurement people said they would have to go out on bids. They could not allow me a sole source award for an unsolicited proposal, even though it was my idea and I had proposed the whole thing and spent months briefing them on it.

The third one came up really as a result of this consortium business.

I wrote a letter in which I said, section 9 calls for the SBA administrator to encourage consortia, and I suggested this could be done through our association. At that time I was under the impression that SBA was going to get some money from the Experimental Technology Incentives program of the Bureau of Standards.

I suggested if SBA got this money, they should use part of it for this purpose.

Then I said, thinking of the Midwest Research Institute incident back 2 or 3 years ago, I hope you will not use any of the money with nonprofits, and this must have stirred this fellow up to where he came back and said, I definitely will not use any of the money from my office even for working with a nonprofit group.

Then I go in and see him about the consortia thing, and he says, I can't deal with you, because you are a nonprofit.

The fact that we were an association of small companies did not cut any ice with him.

Mr. SOMMER. Would you be willing to supply to the committee names of small R. & D. firms that would be interested in going this consortia route under section 9 but who are in more than one region and therefore prohibited by SBA from help.

Is that possible?

Is there anything in the boiler now that we could look to?

Dr. CARDON. No, I do not know of anything like that.

It is my understanding that the consortia thing is being looked at by various people as more of a permanent kind of thing.

For example, some of the other rules and regulations would be barriers. For example, we have to open up our books, every small company who has to join this consortia has to open his books. We have to designate a president who effectively will run the whole show for all of us. I do not think we are about to do that.

We are not about to open our books, except where we have to, and especially in the case of a consortia that only offers hope that we might get a contract.

We are expected to do that even before we have a contract in hand. The consortium thing, it looks to me, was really designed for a consortium of shoe manufacturers who wanted to increase their purchasing ability, sales ability, perhaps to get Government contracts for shoes.

In the R. & D. area, we generally have at most 3 months to answer a published procurement.

If I want to form a loose association with other companies, to bid on a procurement, I can do that without forming a formal consortium, and in fact, that is what I did on an SBA RFP a few months ago.

The idea of getting involved in this whole business of antitrust and making a strong consortium effort in this R. & D. field, is not reasonable. You have to have ways of doing it, so that the whole operation can be done in a few days if we are to answer a proposal on time. We cannot take 3 months just to form the consortium.

Ms. KLATT. Can you give us any suggestions on how to do that, how it could be done in a matter of days in order for a response to be made to an RFP?

Dr. CARDON. If you can eliminate the antitrust thing automatically in advance, although I really do not think it applies that much. I think somebody at SBA who is knowledgeable in the technical field and maybe has shown some inclination to work with associations like ours to keep track of the small businesses in the field, he could make a few telephone calls and get all the redtape out of the way fast and also effect a loose association of appropriate small companies. I think it could perhaps be done, but it must be done very fast.

It did not take me very long to answer the SBA proposal using one company in the Philadelphia area and another company in the New York area, and we did manage to answer on time.

I think a capable man, or two, in the SBA regional office, could do that, even a capable man in the Washington office who has the charge and the time and the inclination to do it.

Mr. SOMMER. You indicated also a natural reluctance on the part of the small businessman—we have heard similar testimony to this subject before here at the committee—a natural reluctance on the part of the small businessman to open their books in front of one another; people who may be in competition in other areas.

Dr. CARDON. I would be very much against it in the case of my own company. I do not know why they need the rule in the first place. I do not know why you cannot, in the case of small companies like ours get the antitrust thing changed. We certainly are no threat to the free enterprise system.

So I do not see the reason for it. Like I say, in this particular proposal that I wanted to bid on, I contacted a company in the Philadelphia area. He happened to be a member of our association, and he had experience in the area.

I called another company, actually it was an old retired man from SBA, Clyde Bothmer, who told me about another company in the New York area that had experience in another part of this proposal package, and we got together two or three times and prepared a proposal.

I do not think we violated the antitrust laws. If a dedicated man like Clyde Bothmer were still at SBA, he could easily do this kind of a thing on a regular basis.

Ms. KLATT. Only one of you submitted a proposal.

Dr. CARDON. One was the prime contractor and the others were participants, or subcontractors. This is a common approach. I have done it a few times, I know other people have done it. It has not helped, particularly, when it came to RFP's, but we have done it.

Mr. SOMMER. On page 5 of your statement, you say "Many small R. & D. companies do not bid on RFP's." Why is that, generally?

Dr. CARDON. I mentioned that to Senator Hathaway. The one major thing is that by the time the RFP comes into the Commerce Business Daily, it is already generally wired for somebody. Even if it is not wired, by the time it gets to the Commerce Business Daily, the old-timers in this area who have been talking to the technical monitor have known all about it long before it appeared in the Commerce Business Daily.

If I see it and say, this is in my area, I ought to do something about it, by that time my odds have gone down from 1 in 100 to 1 in 1,000, so I do not touch it.

Ms. KLATT. Can you give the committee any specific and concrete cases that you know of where this has happened?

Dr. CARDON. I mentioned what happened to us. Quite awhile ago, it was in an area where we had done work, and we convinced the people that we could do some more refined work in the area. Normally they would have given us a sole source award to do it, but for their particular procurement, they couldn't. Maybe they had objection from their procurement people who insisted they put out an RFP. I do not know how many people answered that RFP.

The RFP said, you will perform in accordance with a previous report, 5 years old, which was prepared by our company. Right away, any small guy who looks at that says, this company has the inside track? You do not have a chance to win.

I am sure some people will go out and bid anyway. It costs the Government money to prepare the RFP and do all the other things that go along with it. Then we answered with a proposal that the sponsoring technical people were very familiar with in advance, because they knew what we had said in our previous report, and to no one's surprise, we got the contract.

I cannot cite other personal experiences, because I have never tampered with the RFP thing that much. But as I say, there is this book, "The R. & D. Game" put out by no less than a Harvard or MIT professor. In a chapter on Government R. & D., this fellow pointed out that in a study he did he found that most of the contracts went to the company that the technical man wanted in the first place.

It is particularly true in R. & D. and I sympathize with the technical people. The only reason for pushing this RFP thing in the R. & D. area, is, it makes work for the procurement people.

One other comment. I once mentioned this to a procurement man. He said, we must maintain the integrity of the procurement system, and my question was, do you have any evidence that this results in more research or better research for the dollar to the Government?

His answer was: "You cannot evaluate research." I said, "Listen to how foolish you sound. You are telling me you evaluate the proposal, but you do not evaluate the product, that you cannot evaluate the product. If you cannot evaluate the product, I cannot for the life of me see how you can justify trying to evaluate the proposal."

Throw them up the stairs and take the one that reaches the top stair. That is the only way. It will be much cheaper for everyone concerned.

That was the point that Peter Payne made in our meeting last week. The Government puts out bids for contracts for \$100,000 and by the time it is all over, the Government and the community of companies that answer spend \$500,000 or \$1 million for that \$100,000 job. You would not stand for that kind of nonsense in a private business.

Mr. SOMMER. Thank you. I have no further questions. We appreciate your testimony.

Ms. KLATT. I have one question.

I just want to point out one thing to you. On page 6 of your statement, your first recommendation is that Congress take action to eliminate the resistance to the awarding of the sole source contracts in response to unsolicited proposals.

I was wondering how you account for this resistance in view of the fact that in fiscal year 1975 the Department of Defense awarded 60 percent of its procurement on a noncompetitive, sole source basis. It is being done.

Dr. CARDON. DOD has always understood this problem. We have never had serious problems with them. We have never had serious problems with NASA, although they all go through the formality of justification of the sole source award.

They encourage unsolicited proposals. They encourage sole source awards, because that is the way they get ideas.

I talked to an Assistant Administrator for Administration in the Department of Transportation once and told him, "if you do not allow us sole source awards for our ideas presented in unsolicited proposals, where are you going to get your ideas?"

He said, we have more than enough ideas ourselves. You can judge for yourself what the Department of Transportation has come up with in the way of R. & D. results.

It is not a question of DOD and not a question of NASA so much—I have never had trouble with either one of them. When they wanted to buy, there was no problem with the sole source award.

Ms. KLATT. What other agencies besides DOT?

Dr. CARDON. ERDA, the newer agencies especially, are having more problems, as far as I can tell.

Ms. KLATT. Thank you.

Mr. SOMMER. Thank you, Dr. Cardon.

Again, I ask you, if you have the time, to stay in the room and hear the testimony of the next witness. I do not know if you know, but I think it is very much a part of many things you said.

Maybe even after the hearing you may speak with Mr. Wanzenberg about some of his problems in ERDA, based on your experience, and maybe it will be helpful.

Thank you again.

The next witness is Mr. Fritz Wanzenberg, Great Sea Corp., Larchmont, N. Y.

**STATEMENT OF FRITZ W. WANZENBERG, GREAT SEA CORP.,
LARCHMONT, N. Y.**

Mr. WANZENBERG. My experiences are in thorough agreement with the earlier statements concerning the difficulties of obtaining Government support. We recently spent a morning with ERDA and heard them say, "Well, we have our minds made up. If you submit a proposal, we will reject it out of hand." We ran into that situation, on a front-end collision basis.

I understand that we are very short of time and I will probably do more reading than I intended to. I do not like to read a speech, but I think we have all of the information here. I will ad lib where it is necessary.

Mr. Sommer, Ms. Klatt, Ms. Olson, ladies and gentlemen, my family and I appreciate this opportunity of presenting my area of endeavor before this informed and interested special committee. We are indeed delighted to be here.

Only through this opportunity can we share our scientific findings of 33 years, to help America in a small way to make our bicentennial year also a year of technological rededication.

It is not common knowledge, and perhaps not immediately traumatic, but according to the National Science Foundation, the United States has retrogressed from 1st to 17th place among the top 20 leading Western nations in terms of technological growth.

The progressive decay of research and development efforts which greatly helped to shape our Nation's influence and domestic well-being be explained by insufficient attention to creative science, a very serious problem.

I hope to expound on this, because we can now begin to redirect, to rededicate, this creative flow. The rewards are tremendous.

We will examine the valuable oil shale and carbonaceous resources of the United States and how they can be developed. I first became acquainted with carbonaceous ore in 1943. Since then, with extremely

limited funding from friends, relatives and foreign investment, our small company has developed metals and energy recovery processes for shale and carbonaceous ore which make these vast resources extremely attractive, especially in the light of our Nation's shortages.

We can make America independent of all foreign oil in 10 years, independent of most foreign metals in 7 years. I say this in all sincerity and most thoughtfully, supported by personal experience and historical precedent.

We hacked the first pilot plant out of the deserts of Pakistan in less than 6 months, built with scrap from the bazaars of Karachi, Multan and Lahore, and we made workable machinery.

In World War II, this Nation, in a production sense, had won in just 2 years. Production for peace is now more important than production for war, but from time to time requires the same national effort. Full employment, standard of living, national defense and happiness, all rest tenuously on adequate resources and technology.

Creative technology makes jobs and goes far to supply the progressive impetus and confidence our Nation grew great on.

Much creative science evolves from the mixing and combining of technologies into new areas of multiple, not additive, excellence. We, for instance, have merged the disciplines of space science with metallurgy and energy sciences into rapid oxidation processes for the extraction of energy, oil and metals from carbonaceous ores, oil shale or a hybrid combination of the two.

The United States has billions of tons of this carbonaceous ore containing gold, silver, copper and 15 or so other important metals, as well as energy, a neglected aspect.

America's petroleum reserves, including the Gulf and Continental Shelf, are painfully finite. But the vast oil shale reserves in the United States are estimated to exceed, in barrels of oil, the combined Middle Eastern oil reserves.

Now let's discuss the nature of carbonaceous ore. We have some samples here, one from an outcropping with 8.35 ounces of gold per ton—this is over 41 times the world's best recovery from noncarbonaceous ores—and 40.2 ounces of silver per ton in it. Although values vary widely, the best grade ores are still waiting to be utilized.

Of course, we are not just talking gold, a wide range of metals are found in carbonaceous ore—carbore.

Carbore is found throughout the world. Live carbonaceous ores, which are actively in the process of metallogenesis, or generation, exist in sea basins such as Lake Maracaibo, Venezuela. Now, what is carbonaceous ore?

To quote from "Ore Deposits by Park and MacDiarmid," "Some metals are enriched in black, carbonaceous marine shales, several elements are enriched more than a thousandfold."

We have found that land ore deriving from the sea is enriched more than 300,000-fold.

Konrad Krauskopf, an early authority on the subject, said, "Carbonaceous material concentrates such elements as uranium, vanadium"—we import almost all of our vanadium—"molybdenum, germanium, nickel, titanium, gold, silver, lead and zinc."

Mason, in "Principles of Geochemistry," adds tin to the list. I understand that the Carlin, Nev. deposit, mainly gold, has traces of 18

other useful metals. The deposits will vary, but virtually all metals are represented, as they were in the original sea ore.

Carbonaceous ores contain carbon in chelated and simple form—a chelate is an amorphous, crablike molecule of carbon and hydrogen with a nucleus of metal.

Carbore behaves in formation analogously to vast ion-exchange resins which reduce metals from ions in sea solutions. The sea is the largest but lowest grade ore body known.

Let me explain that.

A water softener is an ion-exchange unit. You are exchanging sodium ions for calcium ions. That is how simple this whole thing is.

The sea does this over time. The ion-exchange resin is not the sodium. The ion-exchange resin happens to be carbonaceous formation. I will explain that in a little more detail later on.

The experts do not entirely agree on the specific chemical method of deposition, and frankly, although we have known of it for 33 years, we have been less concerned with how it got there than with how to get it out, so I won't stray into the fine points of sedimentary geochemistry unless there are questions.

There are many types of ancient organic deposits: Coal, shale, oil, natural gas and carbonaceous ore. All began to form in the carboniferous period of the Paleozoic era, 305 million years ago.

At that time, large areas of America were covered by changing but persistent, immense shallow seas. These spawned vast carbonaceous and shale deposits. In 1970, for instance, the Bureau of Mines pointed to a major carbonaceous deposit of over 8,000 square miles in north-eastern Nevada.

Core chips indicate that lower Alberta may be paved with a continuous underlayment of hundreds of feet of carbonaceous ore, extending into Idaho and Oregon. I cited Lake Maracaibo as one generation source of carbonaceous ore still copiously in progress. There are many live and relict deposits; many still undimensioned, most still undiscovered.

Our oil shale reserves are better known and quite large but even less developed than the carbonaceous ore deposits which I will briefly describe.

Primitive gold recovery methods are used, or have been used at Carlin, Cortez, Getchell, Gold Acres, Mercur, Bald Mountain, Deadwood and other sites. Gold has been the focus of carbonaceous deposit development for obvious reasons. To quote from "United States Mineral Resources: Gold" by Simons and Prinz. "The future importance of this type of deposit is difficult to assess on a worldwide basis, but for the United States it is likely to be great. Because of the very fine-grained nature of their gold, these deposits went largely unrecognized during the great wave of prospecting in the last half of the 19th century and the early 20th century. Deposits of disseminated gold—the so-called Carlin-type deposits—probably contain the second largest domestic resources of gold and almost certainly the largest undiscovered resources of grade high enough to be mined."

In other words, the best deposits are probably waiting still, largely because adequate recovery methods have only recently become available. I will describe these methods shortly.

Of course, as we saw earlier, gold is not the only metal in carbonaceous ore. Again, from Mason, "A linear increase of uranium with increasing carbon content has been demonstrated in some of these shales." And a final example, from Goldschmidt's "Geochemistry," "Cooper is very strongly absorbed by organic matter." I have found gold, silver, and copper in commercially attractive quantities, and significant quantities of many other metals. Again, virtually all metals are represented in the ore.

This ore contains carbon in graphitic or activated form and is largely refractory to conventional mining processes, in other words, the ore is hard to work. Its high metal content has made the search for a process very worthwhile, however.

We have obtained even higher values of gold and silver than 8.35 by 40.2, in Idaho and California, but these were alluvial or moraine ores. It is probably safe to say that on the average, carbonaceous ores are far richer in gold than the world's best noncarbonaceous ores. And carbonaceous ore bodies are generally big, whatever their grade—because primordial oceans were big.

To reiterate, all metals contained in the sea, the largest, lowest-grade ore body known, are found in carbonaceous ore, though carbonaceous ore has been vastly enriched over sea water by an ion-exchange process that is still going on today in saltwater estuaries throughout the world, where oil seepage, animal or plant carbon serves as the ion-exchange resin.

Lake Maracaibo is a good example. It covers an area of almost 1,000 square miles. It continues to remove metals daily from the seawater by this ion-exchange mechanism. If the metal is not recovered it will eventually oxidize back into sea solution or rise from the sea to become a land ore body.

Now oil shale. What is the value of oil shale to the United States? Oil shale contains about 20 to 33 gallons of oil per ton, or between 8 and 14 percent. Because of the interchange between salt and fresh oceans over geologic time, oil shale also contains some carbore and metals. We have processed Saskatchewan and Colorado oil shales and recovered 0.0336 and 0.0276 ounces of gold alone per ton, respectively. Since our processes can recover both metals and energy or oil, energy, and metals, these two shales have economic metal sweeteners of about \$5 and \$4 respectively. Assuming a two-third barrel of oil per ton at a world price of \$10 per barrel, the per ton value in oil and metals is about \$10 or \$11 per ton. Our total cost is not expected to exceed \$2 or \$3, producing a profit which is competitive with drilled oil. If carbore is used as the oxidizing fuel, oil can be produced at nothing per barrel—it will have earned its way as a recovery vehicle for metal oxide vapors.

In 1943 I discovered the genetics of carbonaceous ore by sheer accident on the day the U.S. Pacific Fleet first steamed into Nandi waters on the Fiji Islands. My command had just completed construction of the harbor, and the last task was the removal of a black mud bar.

Just before the fleet came to anchor, we ran Hindu cane rakes over the mud bar, loosening the mud and allowing the tide to wash it out to sea.

Fortunately, although I didn't think so at the time, the mud cloud passed over our magnetic indicator loop, giving a signature identical to that produced by a midget submarine and sending the fleet to red alert status.

So the incident became a matter of naval record and I began to wonder. It could only have been deposited by nature: By ion-exchange, electrolysis in nature's sea plating tank, solvent extraction due to remote oil seepage, et cetera. I burned samples of this black Fiji mud and found that it was organic. Many years later, working with Global Marine on similar black mud in Florida, we found the sea mud can be rich in all metals, notably gold at up to 2 ounces per ton and copper at 4 pounds per ton.

From 1943 until 1963, I collected the tools of my trade: Capabilities in electrolytic plants, missiles, high-rate weapons, propellants, rocket fuels, the design of automatic propellant plants, nuclear equipment, underground and surface mining operations, pyrometallurgical operations, et cetera.

This background was needed to develop complex multidiscipline patent systems. Supporting talents were developed in corporate areas, in lab work, patents, construction of plants, operations, finance, mineral economics, et cetera. I gradually involved my brother and family in my sciences until in early 1968 I was no longer alone, and I formed Great Sea Corp.

Between 1963 and today, our technology has evolved intensively. First we studied the early chlorine and salt-volatilization processes which were never seriously commercial and were of course ineffective on carbonaceous fractions. We paved our own way and finally reversed conventional reducing chemistry to form a new, multidiscipline oxidative pyrometallurgy. In 1965, we applied for patents in a basic electrolytic process which could recover metals in hypochlorite solution, our autogenous electrolyte. The metals could be deposited selectively on a series of cathodes at different potentials.

In 1965, I met with the U.S. Bureau of Mines to discuss possible joint effort. BuMines asked for and was given copies of notes and the patent application itself. I will go into this shortly.

We worked with Global Marine in 1967-69 in improving the process on live carbonaceous ores from the west and east coasts of Florida. The process started with a 2-hour retention time for quantitative recovery and, with the subsequent development of our electrolytic arc, we reduced retention time to a little over a minute.

The work with Global was moderately successful, including the processing of Mines' relict ores from Nevada, wherein our gold recovery invariably exceeded Mines' by 100 percent because we could destroy the interfering carbon.

In February 1970, I inadvertently left arc power on after a demonstration and found that the dried ore had fulminated at the electrodes, filling our house with clouds of metal oxide vapor. We found that the chemical reaction of organometals and the now plentiful electrolytically formed oxygen carriers was responsible for the metal vapor transport. I was ecstatic. With further development, our metals recovery process came to be based on synthesizing a useful fuel from

the ore, then burning the fuel to recover the contained metals. This is the ore that had been called "refractory."

In February 1970, GSC prepared the first patent application including the autogenous fulminization of carbonaceous ore—or inorganic ore with hydrocarbon addition—with oxygen or oxygen carrier, producing a reaction from the inside of the particle out, thereby volatilizing the sought metal compounds into vapor phase to affect complete separation and recovery of vapor, ash or both.

Now, we could completely separate the metal component from the ore component, in 3 seconds or less—fantastic, using space technology, not mining technology.

Later in 1970, at the invitation of the prominent and progressive Sheikh family, Great Sea surveyed the west coast of Pakistan for carbonaceous sea and land ore bodies. Cores showed gold values of 0.4 to 1.14 ounces per ton, so Great Sea built a 20-ton-per-day sub-modular testing plant in Ismailabad, Multan.

The plant was designed and built from local material. The blowers, cyclones, impact mills, kiln, chlorine system, controls, and all, were fabricated by hand. The plant was built, redesigned and rebuilt until it worked satisfactorily. As we hand-fashioned cupels from local bone ash and clay, we often wished for the wider resources of the United States.

In 1971, we left Pakistan for the last time, forced out after only 2 weeks of production by the Pakistan-India war. Though disappointed, we had come a long way with our production parameters and perfected the techniques.

Now let's discuss these techniques which are shown in the diagrams. Again, you will find immediately that they embody multidisciplined capabilities.

There are four basic modes to the most advanced particulate plasma process. First, we can recover all metals from the most refractory carbonaceous ores, as well as some useful energy.

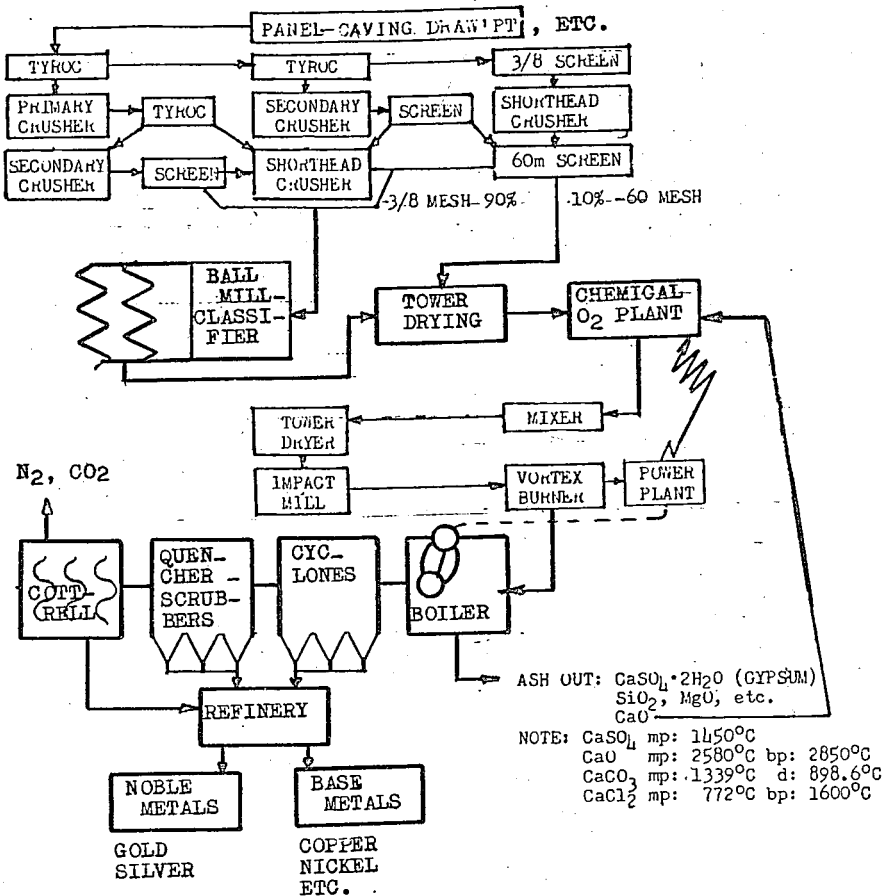
[The information follows:]

Great Sea Corporation
Feb. 3, 1976.

VALUE: \$40 to \$800 per input ton

COST: \$3 to \$6 per input ton

METALS AND ENERGY FROM CARBON-
ACEOUS ORE: PRODUCTS:
METALS
ENERGY
GYPSUM
ECOLOGICAL UPGRADING
NO HARMFUL EFFLUENTS

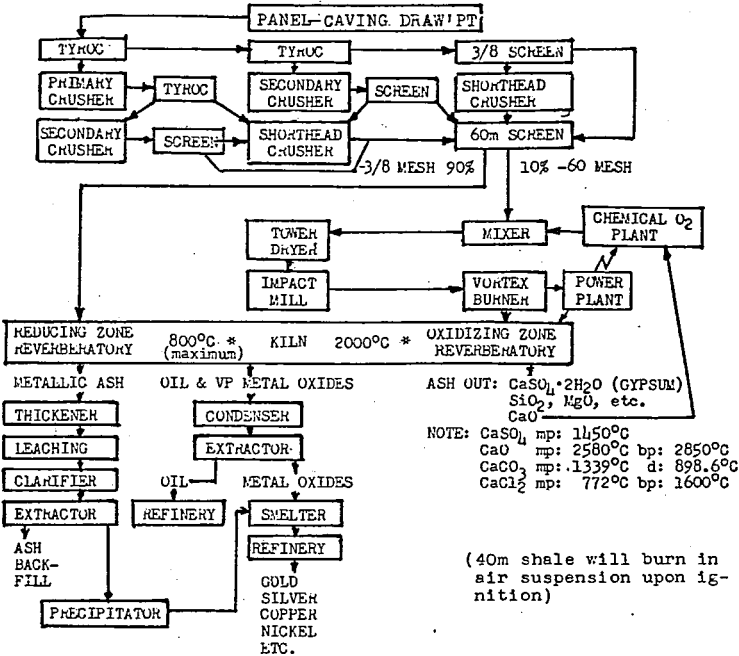


Mr. WANZENBERG. Second, we can recover 90 percent of the oil from shale, using the remaining 10 percent as fuel while recovering some metal byproducts. Incidentally, in this mode all metals can be extracted with additional, conventional leaching.

[The information follows:]

Great Sea Corporation
February 3, 1976
oil: 28/BBL
W/P: \$10/BBL

OIL FROM SHALE; BY-PRODUCTS:
ENERGY
METALS
GYPSUM
ECOLOGICAL UPGRADING
NO HARMFUL EFFLUENTS



- (1) $C_xH_y + xO_2 \rightarrow xCO_2 + \frac{y}{2}H_2O + \text{HEAT (2000}^\circ\text{C)}$
- (2) $CaCO_3 + \text{HEAT} \rightarrow CaO + CO_2 \text{ (at } 898.6^\circ\text{C)}$
- (3) $O_2 + 2SO_2 + 2CaO \rightarrow 2CaSO_4 + 2H_2O + CaSO_4 \rightarrow CaSO_4 \cdot 2H_2O$
- (4) Other formulae in patents, reports.

* Oxidizing zone flame envelope temperature adjustable from 500°C to 2500°C by a slight decrease or increase in autogenous oxygen carrier. Reducing zone envelope temperature according to test should not exceed 530°C. This can be done by (1) reducing oxidizing zone temperature and rate of combustion, (2) oxidizing zone feed rate, (3) reducing zone feed rate, (4) kiln speed of either or both oxidizing and/or reducing zone ends. (Pyrolysis temperature: 800 to 1000°F, equal to 421 to 531°C.)
F. Wanzenberg

Mr. WANZENBERG. Third, we can treat the shale and burn it like coal for energy. With this approach, all the contained metals are easily extracted without additional leaching. We, of course, favor the recovery of shale oil, but if energy is needed at the mine site the proportions of oil and energy out can be changed to suit any purpose.

Fourth, we can use a hybrid system of carbonaceous ore and shale, where the carbonaceous ore is used as fuel to heat the shale and distill the oil out, as well as releasing all its metals at the same time. The shale releases 100 percent of its oil for recovery. Moreover, on its way out, the oil collects the metals from the carbonaceous ore.

[The information follows:]

Great Sea Corporation
Feb. 3, 1976

VALUE: \$40 to \$800 per input ton
of carbonaceous ore.

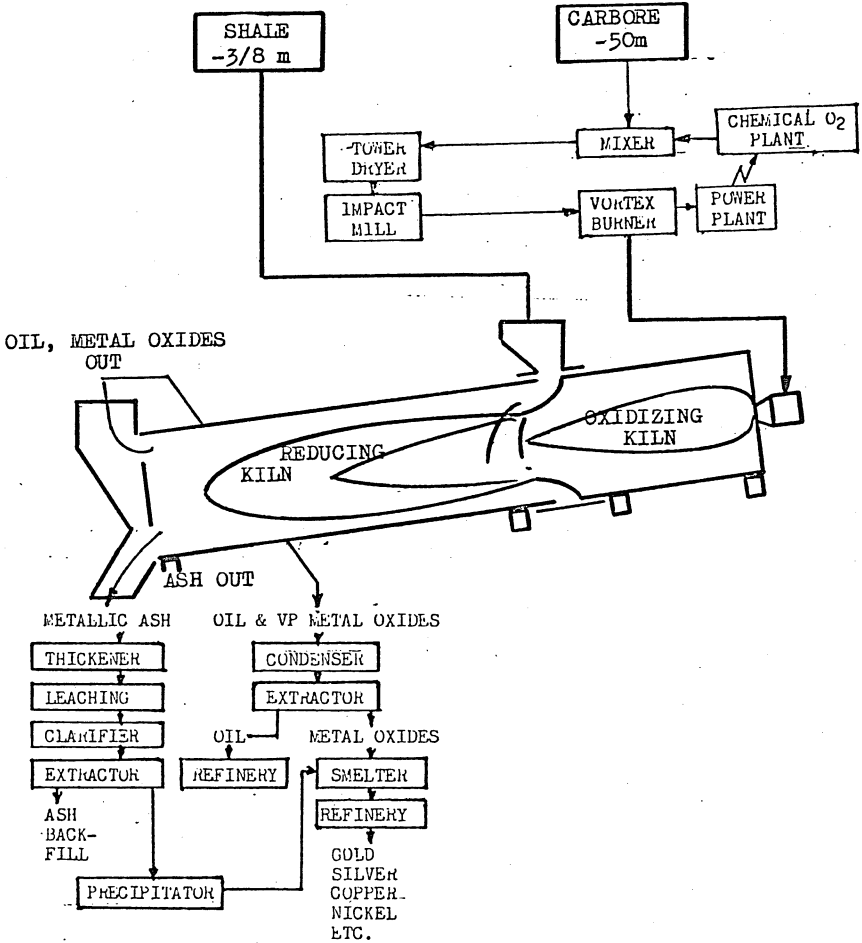
COST: Sale of oil pays all costs.

HYBRID SYSTEM:

- INPUTS:
(1) CARBONACEOUS ORE, -50 m
(2) OIL SHALE -3/8 m

OUTPUTS:
OIL
METALS
ENERGY
CHEMICALS
GYPSUM

ECOLOGICAL UPGRADING
NO HARMFUL EFFLUENTS



Mr. WANZENBERG. An extremely efficient reaction is possible because of intimately balanced mixtures of chemical starter, the oxidizer, and shale or carbonaceous ore, acting as the reducing agent. It may be simple, but it isn't crude. The particulate plasma process embodies the principles of rocket technology in this respect.

The process is this simple. The ore is crushed and ground conventionally. It is then mixed with a starter, a chemical compound containing oxygen in wet solution so it soaks into each particle, leaving a small amount of oxygen inside the particle in chemical form upon drying. The treated particles are then burned like powdered coal in a kiln or boiler. They burn with exceedingly high heat and rapidity.

The heat produced as the particle burns from the inside out drives the contained metals into vapor phase, mostly as oxides. The vaporized metal oxides and oil vapors, in the case of oil shale, are recovered in cyclones and scrubbers. The recovered metals and oil are then further refined conventionally for sale. The waste ash can be used for neutral backfill.

Waste heat is used to distill the shale and to produce electricity to operate the plant or sell. All chemicals may be produced from the ore autogenously, using process chemical output and electricity produced from waste heat. All processes are completely closed systems, requiring only ore and minimum water input.

The difficulties with marketing our processes for carbonaceous ore and oil shale have run the gamut. First the problems were how to impress new technology into established patterns of thought.

Graphite or activated carbon was thought to be incombustible by many managers and scientists, who perhaps never saw the erosion on graphite rocket nozzles or graphite rods in an arc furnace. Next we heard that carbon won't collect or hold metals, carbonaceous ore does not exist, and more.

These problems have diminished somewhat with more companies discovering carbonaceous ore, and gold being produced at Carlin, Gold Acres and other sites.

Of a more serious nature has been our difficulty with the Bureau of Mines. We first met with them several times in 1965 in the hope of help, since industry could not respond and since they seemed the logical choice to Martin Hoffman at Senator Percy's office and to myself.

At first our relations were good. They were very interested so we gave them our observations, data and patent applications. They gave us the spectrographic analysis of carbonaceous ore from Cuddeback Dry Lake in the Mojave Desert which matched the live sea ore from Florida, indicating a common origin. Remember, this was years before the tectonic movements of the continents became scientifically established. Discoveries such as this were both thrilling and encouraging.

Unfortunately, Mines could not help us for budgetary reasons. They were working with Newmont Mining Corp. at Carlin, Nev., since Newmont could support part of the research. In R. & D., money talks.

I had ideas and patents pending, but no money for research efforts. Finding, gradually, that the Bureau of Mines is not equipped to assist the little guy, I built a test facility in the garage of my home and, as I said, worked my way through hypochlorite, plasma arc and

finally particulate plasma with financial help from friends and family.

The Bureau of Mines meanwhile took out a patent in the hypochlorite technique. They were granted 3 claims of no real consequence, against our 81 claims, in 3 patents, applied for 27 months prior to Mines'. Their writeup borrowed heavily from our patent application without giving credit to us.

They then helped Newmont set up a production plant in Carlin, Nev., excluding the original inventor from all consideration, a direct infringement. Mines has since worked with other companies besides Newmont, claiming hypochlorite is theirs. It is like inventing a coupling device for a train, then licensing the patent rights of the whole railroad.

Mr. SOMMER. Is this a common practice, for the Bureau of Mines to take out their own patents?

Mr. WANZENBERG. They do if they do not have enough funds to work with promising outside people, and we have been told this by the Bureau of Mines.

We once submitted a tremendous computer program for extrapolating metal demand and supply for the next 50 years, and this is to Dr. Tom Howard at Mines, many years ago. He said his people said, "Frankly, this is the best thing we have seen coming down the pike; a complete program." We had worked very hard to give it to them.

His people concluded, "We do not have funds, consequently, we will take this and do it in-house."

This is how in-house projects get started, through lack of funds.

Returning to our mining processes, we sent information to Mines for years, until quite recently in fact. First, we did not know that they could not and would not help us. Second, we didn't know the whole story about the Newmont-Mines Carlin infringement until very recently.

Now we are primarily interested in pushing forward with our particulate plasma process. It is infinitely superior: 4,000 times faster than hypochlorite, much more efficient in terms of metals out, energy producing rather than consuming, and much more adaptable. Of course there is a money problem. We spent all our funds on development and patents; Mines and Newmont have relatively inexhaustible funds. We are fighting a giant combination, but learning.

Mr. SOMMER. Does Mines have any kind of history of utilizing the small firms, such as yourselves?

Mr. WANZENBERG. I don't know. But in my recent experience, with Mines and ERDA, regardless of the quality of the idea, unless you can match funds, forget it. ERDA said no at the door, Mines just picked my brains and used my patents.

Mr. SOMMER. They have no history of a small business set-aside?

Mr. WANZENBERG. You must understand, when you bring a good idea to the Bureau of Mines and you have limited funds and Mines is stimulated technologically and they want to move ahead, they say, frankly, we do not have the money. They have enough people sitting on their hands so they can do it in-house.

The point is, invariably it evolves into this thing, they say this is the case, we do not have any funds, so there are excuses beyond belief.

We really cannot argue with them very much. If they do not have the money; how can you squeeze it out of them? You cannot.

Patent law is a bit of a jungle here, not to be recommended to anyone with faith in democratic principles, human nature, or those who haven't got 4 years for court and a half a million dollars for fees, this according to attorneys I have approached on the matter.

I feel the Bureau of Mines has abrogated my rights, but I know suing would bankrupt me at this point, moreover, I could then lose my patents by default. A clear case of insult to injury.

In patent law there is such a thing as a declaratory judgment. If a small inventor confronts a major company, the major company can ask for a declaratory judgment against him. That means you have to show cause why you have precedence over his patent.

If this happens and you do not have, say, a quarter of a million dollars to fight the issue in court, which convenes in Nevada or Omaha or some remote places like that and is very expensive, you must say, "I cannot fight this suit."

Then, consequently, by default, the big company walks over the small company's patents, categorically, no question about it.

So we have been very careful not to confront anyone by saying, look, fellows, you are infringing. They were introduced to the thing by the Bureau of Mines. They feel they are justified in using it. But they aren't, and Mines had no right to appropriate it.

By the way, I would like to make one point which I think is very important concerning this bill on patents just passed by the Senate without debate.

The bill seeks to discourage stalling by granting an inventor 20 years' protection dating from his application of the patent. You know, some of our patents have been in application for 9 years? When you are dealing with a multimillion dollar patent, such as we are, you have to sell it with the patent in hand. You cannot say, well, it is pending, you see.

That type of legislation would knock us down to 11 years or less. We have 11 years' use, then we just begin to start off—but statistically most patents do not mature into commercial viability until the last few years anyway, meaning 16 or so. This will kill the small inventor. In my case, 9 and 16 is well over 20, so why invent? A safety pin, great, but something big, no, it cannot work.

Second, this bill would also require patent holders to pay maintenance fees at intervals during the lifetime of the patent. That is laughable. I, for instance, have 20 patents in the public files. If I must pay maintenance fees on patents I must avoid them.

Patents were originally intended to encourage inventors and to make new ideas publicly available. Remember, most of the macro-patents that helped shape this country came from small inventors.

Invention is what I have. It is my capability. I cannot go down and design a safety pin or paper clip, but in order to sell big ideas I must have the support of Government, and I hope to get it. I dearly hope to get it, because that is my only recourse at this point.

In my view the real loss has not been to Great Sea's royalties, though I have earned them and they would solve the financing problems for some of our other inventions. The loss is not just to the Na-

tion, though the Nation's problems continue while solutions are denied. Nor is it a question only of civil rights; or the constitutional guarantees to inventors; or undemocratic practices of the Federal Government.

The sadness I see is the subjugation of creative invention by uncaring bureaucracy and disreputable business practice. The Constitution does not unconditionally guarantee our rights, only our right to fight for them. This is the proper forum for exposing a sore, I hope the cure follows.

When we are told by the Government, "This is good, but we'll do it in-house," or, equally disheartening, the familiar, "we do not work with anyone who cannot match funds," we can only say, again, that money talks. Ideas should talk. Concepts should talk. Technology should talk. If the Government does not respect patents and inventors' rights, the Nation is in serious trouble.

When you need ideas and expertise, all the cash you pour away won't solve any problems. We are talking about Federal research programs which bypass the small businessman-inventor who has an idea which will permit meeting objectives much sooner, easier and at less cost.

Here we are talking about, do we have a future? Do we have oil, do we have metals? Our posture abroad internationally is ridiculous. They say, "Who are you, you are buying oil abroad. You have no metals. Your production relies on imports. How are you in a position to tell us anything?"

We are talking about trying to do something for this country that will keep it a great country. This year, the 200th year of our existence, is a year for rededication to a vital democratic system. We are talking about the creation of jobs, the satisfaction of new and continuing needs and desires, genuine human and national needs.

Approaching private industry involves other problems. We are frequently told, forthrightly, by industry, that there are no funds for new projects, that all budgeted funds must be used for maintenance R. & D. and quick payout projects within the state of the art. A friend, an executive in a large mining company, once told me, "We can move the biggest mountains and crush the biggest rocks, but we cannot change our habits."

How do we get out of our way? These big companies are trapped by their own security.

The February 16 Business Week reached the following conclusions:

A careful analysis of U.S. business today suggests that bigness itself may tend to discourage new thinking and new ventures.

The bigger a company gets, the more management broods about the stakes it is playing for, and the more it tries to eliminate risk. This makes it wary of innovation, which is always risky. But in playing safe, management passes up its opportunities and shuts out the possibility of great successes in an effort to avoid small failures. The U.S. economy cannot grow and prosper just by exploiting the tried and true. It needs new ideas, new products, and some new thinking on the part of management.

Executives are still pushing new ideas away from their doors. They are saying in effect that their research staffs are composed of people who have inbred the traditional qualities of their jobs and may not be able to effectively or productively communicate with ideas from outside the company gates.

Shortsighted profits are deceptive, false security, if not for the secure manager, certainly for the country which has come to expect technological innovation and production as provision for comfort and needs. The doors to new ventures, new ideas, have largely remained closed since the mid-1960's. The harmful effects will accumulate gradually and exponentially.

Within companies, sales produce instant profits and research and development generate immediate certain costs. Management often looks best on the bottom line by suppressing R. & D. and pushing advertising, marketing and sales. This is serious, short term and retrogressive.

In 1958, Senator Percy, then president of Bell & Howell, and I were talking at the University of Chicago. He said we once could put quality products on foreign docks at a profit. Not anymore.

Today, other countries are putting quality products on our docks at a profit, including energy products and metals which irks me particularly. I am sure we would all like to see the United States independent in these two vital resources areas, metals and energy.

Let's start the next 200 years by closing the ranks of our proven capabilities. Our man on the moon can indeed ring our economic cash registers if we part company with technological pidgeonholing. The engineer who has 1 year's experience 20 times is in just such a prison.

The essence of change is always with us, but now the world is passing through a critical era into the possibility of insufficient fuel and other modern necessities, there are time limits. Now is the time to redirect our efforts toward solutions. Energy and metals are a good place to start, since so much of our culture is built on the now-threatened foundation of these abundant resources.

We are talking about 2,000 years of adequate fuels and metals both, just to begin with.

I have discussed creative science. There are still creative scientists hidden here and there, a minority's minority. One way to maximize this diminishing resource, and creativity is a resource, might be to include a science consultation committee in Government planning. As others have pointed out before, there should be a link between those who investigate the implications of scientific discoveries on our economy and security and those who decide our national policies. We cannot just call science in from grazing when the crisis is upon us, technological miracles take time and preparation.

A select and diverse committee of widely experienced, multidisciplined scientists, rather than the typical case of 1 year's experience 20 times, could screen ideas of national interest. All patented ideas, or patent pending, could be assigned a Government liaison and helped through the legal and political morass which awaits the unwary or financially struggling inventor.

At this point, finances should be available for ideas of merit, perhaps through loans as Vice President Rockefeller has suggested, perhaps grants or outright Government participation. The purpose of this committee could be to interface between inventors and sponsors, at present a deadly no man's land; to encourage development of technology through grants or loans; to monitor industry's use or misuse of breakthroughs thus possibly avoiding such events as the energy crisis.

I wish my small company had this sort of guidance even now. In trying to interest Government and industry in our ideas, we have run across bureaucratic ignorance, stubbornness, rudeness, and mismanagement which, in my view, more than negates the public trust in America's farsighted support of technology. Our persistent efforts to acquaint the mining industry with our early metals recovery methods resulted in an infringement issue with both Government and industrial interests which we cannot fight for lack of funds.

A recent New York Times article, March 14, pointed out that the international predominance of the United States in science and technology has suffered erosion in the last 15 years. This is according to the National Science Foundation, which is in a position to know. I don't have all the answers to the problems of progress, but many of the problems have become clearer to me through my own difficulties.

I think that the particulate plasma process is good, good enough to merit 33 years of my life and thought, and lately the welfare of my family. I had the chance to become a secure manager of the mining status quo, but instead I chose innovation with all its trials and tribulations.

I have no regrets, just hosts of strange memories. Lack of financial help here drove me to Pakistan, funded by rupees for a hellish plant building operation where I missed American tools and equipment more than I can say. I came back 25 pounds lighter, with many of the technical difficulties worked out, only to face the joint problems of convincing honest but convention-ruled corporations that oxidation pyrometallurgy works, and trying to prevent others from infringing. So far, it has all been uphill. But for every 10 who would not listen, there have been a few sympathetic ears, and I guess we will make it the hard way with these energy ideas if we must, when the need is finally recognized.

My family and I appreciate the sympathy and support of Senators Javits, Percy, and Buckley, the offices of Vice President Rockefeller and Defense Secretary Rumsfeld, and Representative Ottinger. These gentlemen understand the need for, and even the technology of, our rapid oxidation processes to a gratifying extent.

It is unfortunate that the normal channels such as the Bureau of Mines have not operated for us, but behind closed doors there is sometimes no air to breathe. A very few in private industry have also listened, and one company may act one day, but probably not while conventional production means work, if only half as well and twice as wastefully.

Our difficulties are one example of a disturbing generality in terms of the creative scientific potential of this Nation. We have been walking a racing horse and denying what made this Nation great. There will be nowhere to run when the bottom drops out, so now is the time to push for progress.

Thank you.

Mr. SOMMER. Thank you, Mr. Wanzenberg.

[The prepared statement of Mr. Wanzenberg follows:]

STATEMENT OF FRITZ W. WANZENBERG, GREAT SEA CORP., LARCHMONT, N.Y.

Senator Hathaway, Senator Javits, Senators, Members of Congress, ladies and gentlemen:

My family and I appreciate this opportunity of discussing my area of endeavor before this informed and interested special committee. Only through

this opportunity can we share our scientific findings of 33 years, to help America in a small way to make our bicentennial year also a year of technological rededication.

It is not common knowledge, and perhaps not immediately traumatic, but according to the National Science Foundation, the United States has retrogressed from first to 17th of the top 20 leading Western nations in terms of technological growth. The progressive decay of research and development efforts which greatly helped to shape our nation's influence and domestic well-being, may be explained by insufficient attention to creative science. I hope to expound on this, because we can now begin to redirect—to rededicate—this creative flow. The rewards are tremendous.

We will examine the valuable oil shale and carbonaceous ore resources of the United States and how they can be developed. I first became acquainted with carbonaceous ore while stationed with the U.S. Navy at Nandi Bay, Fiji, in 1943. With extremely limited funding from friends, relatives and foreign investment, our small company has developed metals and energy recovery processes for shale and carbonaceous ore which make these vast resources extremely attractive, especially in the light of our nation's shortages.

We can make America independent of all foreign oil in 10 years, independent of most foreign metals in 7 years. I say this in all sincerity and most thoughtfully, supported by personal experience and historical precedent.

We hacked our first pilot plant out of the deserts of Pakistan in less than 6 months, built with scrap from the bazaars of Karachi, Multan and Lahore, and we made workable machinery.

In World War II, this nation, in a production sense, had won in just two years. Production for peace is now more important than production for war, but from time to time requires the same national effort. Full employment, standard of living, national defense and happiness, all rest tenuously on adequate resources and technology.

The United States has carbonaceous ore containing gold, silver, copper and fifteen or so other important metals. And Energy. America's oil reserves, including the Gulf and Continental Shelf, are painfully finite, oil shale reserves in the United States are estimated to exceed, in barrels of oil, the combined Middle Eastern oil reserves.

Much creative science evolves from the mixing and combining of technologies into new areas of multiple not additive, excellence. In a nutshell, we have merged the disciplines of space science with metallurgy and energy sciences into rapid oxidation processes for the extraction of energy, oil and metals from carbonaceous ores, oil shale or a hybrid combination of the two.

THE NATURE OF CARBONACEOUS ORE AND OIL SHALE

Carbonaceous ores exist in the U.S., Canada, South America, Africa and Australia. Live carbonaceous ores, which are actively in the process of metallogenesis (or metals deposition), exist throughout the world, primarily in sea basins such as Lake Maracaibo, Venezuela. What is carbonaceous ore?

To quote from *Ore Deposits* by Park and MacDiarmid, "Some metals are enriched in black, carbonaceous marine shales, several elements are enriched more than a thousandfold." . . . And Konrad Krauskopf, an early authority on the subject, "carbonaceous material concentrates such elements as uranium, vanadium, molybdenum, germanium, nickel, titanium, gold, silver, lead and zinc." Mason, in *Principles of Geochemistry*, adds tin to the list. I understand the Carlin, Nevada deposit, mainly gold, has traces of 18 other useful metals. The deposits will vary, but virtually all metals are represented.

Carbonaceous ores contain carbon in chelated and simple form, and behave in formation analogously to vast ion-exchange resins which reduce metals from ions in sea solution. The sea is the largest but lowest grade ore body known.

The experts do not agree on the chemical method of deposition, and frankly, we have been less concerned with how it got there than with how to get it out, so I won't stray into the fine points of sedimentary geochemistry unless there are questions.

There are many types of ancient organic deposits: coal, shale, oil, natural gas and carbonaceous ore. All began to form in the Carboniferous period of the Paleozoic era. At that time, large areas of America were covered by changing but persistent, immense shallow seas. These spawned vast carbonaceous and shale deposits, in 1970, for instance the Bureau of Mines pointed to a major

carbonaceous deposit of over 8,000 square miles in northeastern Nevada. Core chips indicate that lower Alberta may be paved with a continuous underlayment of hundreds of feet of carbonaceous ore, extending into Idaho and Oregon. Our oil shale reserves are better known and quite large but even less developed than the carbonaceous ore deposits which I will briefly describe.

Primitive gold recovery methods are used, or have been used at Carlin, Cortez, Getchell, Gold Acres, Mercur, Bald Mountain, Deadwood and other sites. Gold has been the focus of carbonaceous deposit development for obvious reasons. To quote from United States Mineral Resources: Gold by Simons and Prinz, "The future importance of this type of deposit is difficult to assess on a worldwide basis, but for the United States it is likely to be great. Because of the very fine-grained nature of their gold, these deposits went largely unrecognized during the great wave of prospecting in the last half of the 19th century and the early 20th century. Deposits of disseminated gold—the so-called Carlin-type deposits—probably contain the second largest domestic resources of gold and almost certainly the largest undiscovered resources of grade high enough to be mined."

In other words, the best deposits are probably waiting still, largely because adequate recovery methods have only recently become available. I will describe these methods shortly.

Of course, as we saw earlier, gold is not the only metal in carbonaceous ore. Again, from Mason, "A linear increase of uranium with increasing carbon content has been demonstrated in some of these shales." And a final example, from Goldschmidt's *Geochemistry*, "Copper is very strongly absorbed by organic matter." I have found gold, silver, and copper in commercially attractive quantities, and significant quantities of many other metals. Again, virtually all metals are represented in the ore.

This ore contains carbon in graphitic or activated form and is largely refractory to conventional mining processes, in other words, the ore is hard to work. Its high metal content has made the search for a process very worthwhile, however.

We have found samples with gold content up to 8.35 ounces per ton, this is over 41 times the world's best recovery from non-carbonaceous ore, and 40.2 ounces of silver per ton. (Here is some of that.)

We have obtained even higher values of gold and silver in Idaho and California, but these are *alluvial* or *moraine* carbonaceous ores. It is probably safe to say that on the average, carbonaceous ores are far richer in gold than the world's best non-carbonaceous ores. And carbonaceous ore bodies are generally big, whatever their grade—because primordial oceans were big.

To reiterate, all metals contained in the sea, the largest, lowest-grade ore body known, are found in carbonaceous ore, though carbonaceous ore has been vastly enriched over sea water by an ion-exchange process that is still going on today in saltwater estuaries throughout the world, where oil seepage, animal or plant carbon serves as the ion-exchange resin.

Lake Maracaibo is a good example. It covers an area of almost 1,000 square miles. It continues to remove metals daily from the seawater by this ion-exchange mechanism. If the metal is not recovered it will eventually oxidize back into sea solution or rise from the sea to become a land ore body.

And, what is the value of oil shale to the U.S.? Oil shale contains about 20 to 33 gallons of oil per ton, or between 8 and 14%. Because of the interchange between salt and fresh seas over geologic time, oil shale also contains some carbore . . . and metals. We have processed Saskatchewan and Colorado oil shales and recovered .0336 and .0276 ounces of gold alone per ton, respectively. Since our processes can recover both energy and metals; or oil, energy and metals; these two shales have economic metal sweeteners of about \$5 and \$4 respectively. Assuming $\frac{2}{3}$ barrel of oil per ton at a world price of \$10 per barrel, the per ton value in oil and metals is about \$12 per ton. Our total cost is not expected to exceed \$2 or \$3, producing a profit which is competitive with drilled oil. If carbore is used as the oxidizing fuel oil can be produced at nothing per barrel—it will have earned its way as a recovery vehicle for metal oxide vapor. Remember, there is more oil in our shale than in the entire Middle East.

CHRONOLOGY

I have been asked to briefly describe how the particulate plasma processes came into being.

In 1943 I discovered the genetics of carbonaceous ore by sheer accident on the day that the U.S. Pacific fleet first steamed into Nandi Waters on the Fiji Islands. My command had just completed construction of the harbor, and the last task was the removal of a black mud bar. Just before the fleet came to anchor, we ran Hindu cane arkes over the mud bar, loosening the mud and allowing the tide to wash it out to sea.

Fortunately, though I didn't think so that week, the mud cloud passed over our magnetic indicator loop, giving a signature identical to that produced by a midget submarine and sending the fleet to red alert status.

So the incident became a matter of naval record and I began to wonder about the mud. It could only have been deposited by nature: by ion-exchange, electrolysis in nature's set plating tank, solvent extraction due to remote oil seepage, etc. In my second experiment I burned a sample of the black Fiji mud and found that it was organic. Many years later, working with Global Marine on similar black mud in Florida, we found the mud was indeed rich in all metals, notably gold at up to 2 ounces per ton and copper at 4 pounds per ton.

From 1943 till 1963 I collected the tools of my trade: capabilities in Electrolytic Plants, Missiles, High-rate Weapons, Propellants, Rocket Fuels, Designed Automatic Propellant Plants, Nuclear Equipment, Mining Underground and Surface Operations, Pyrometallurgical Operations, etc. This background was needed to develop complex multidiscipline patent systems. Supporting talents were developed in corporate areas, in lab work, patents, construction of plants operations, finance, mineral economics, etc. I gradually involved my brother and family in my sciences until in early 1968 I was no longer alone, and I formed Great Sea Corporation.

Between 1963 and now, Great Sea Corp. technology evolved intensively. First we studied the early chlorine and salt-volatilization processes which were never seriously commercial and were of course ineffective on carbonaceous fractions. In 1965 we applied for patents in a basic electrolytic process which could recover metals in hydrochlorite solution, our autogenous electrolyte. The metals could be deposited selectively on a series of cathodes at differing potentials. Provided only that the electrolyte contained carbon.

In 1965, I met with the U.S. Bureau of Mines to discuss possible joint effort. BuMines asked for and was given, copies of notes and the patent application itself. I will go into this shortly.

We worked with Global Marine in 1967-9 in improving the process on live carbonaceous ores from the west and east coasts of Florida. The process started with a 2-hour retention time for quantitative recovery and, with the subsequent development of our electrolytic arc, we reduced retention time to a little over a minute. The work with Global was moderately successful, including the processing of Mine's relict ores from Nevada, wherein our gold recovery invariably exceeded Mines' by 100%.

PARTICULAR PLASMA

In February of 1970, I inadvertently left arc power on after a demonstration and found that the dried ore had fulminated at the electrodes, filling our house with clouds of metals as vapor oxides. We found that the chemical reaction of organometals and the now plentiful electrolytically formed oxygen chlorates was responsible for the metal vapor transport. This development was not fully tested in production quantities until 1971, in Pakistan.

We found that "strengthening" the arc approach to its exceptional limit gave us the means for completely removing all sought metals from raw pulp by fulminization (particulate "plasma"). This essentially split the valuable metals, usually as oxides, from the alkali, alkaline earths and silicates, the first two of the latter serving to form chlorates, the oxidizing components in the reaction; all of the latter, as oxides, becoming the ash.

In February, 1970, GSC prepared the first patent application including the autogenous fulminization of carbonaceous ore (or inorganic ore with hydrocarbon addition) with oxygen or oxygen carrier, producing a reaction from the inside of the particle out, thereby volatilizing the sought metal compounds into vapor phase to affect to complete separation and recovery of vapor, ash or both.

PAKISTAN

Later in 1970, at the invitation of Sheik Family, Great Sea surveyed the west coast of Pakistan for carbonaceous sea and land ore bodies. Cores showed gold values of .4 to 1.14 opt but only 5 commercial years of ore. This

was enough for proving out the process and returning the investment with some profit. GSC built a 20 ton-per-day sub-modular testing plant in Ismailabad Multan.

The plant was designed from local material. The blowers, cyclones, impact mills, kiln, chlorine system, controls, and all, were fabricated by hand. The plant was built, redesigned and rebuilt. Finally it worked satisfactorily (although some days only a section at a time, as chlorine leaked through our epoxy-coated pipes, our Chinese pvc valves burst, packing glands ruptured spraying high pressure pulp everywhere. the only rain of the past two years fell just after our pulp had dried in trays in an open field). As we hand-fashioned cupels from local boneashair clay, we often wished for the wider resources of the United States—even the local hardware store would have been a blessing.

In developing the production mode in Pakistan, we focused upon exceptions, because of policy and limitations in funds and time, because of war pressures with India. We sought reasons for both high and low yield shifts. Steady-state shift data were recorded and metric limits of temperature, pressure, chemical balance, particle size, critical mass of dried pulp into the kiln, etc. We determined those ore fractions which served as catalysts or inhibitors. The causes for a good shift were implemented, a lot of corners were cut.

In the processes of scaling-up the test plant into pilot plant at Ismailabad-Multan, Pakistan, both equipment and rume limitations imposed expedient simplifications which still produced quantitative, exceedingly inexpensive recovery compared to the per ton cost of conventional means including our earlier hypochlorite process and the Mines-Newmont leaching method at Carlin, Nevada.

In November, 1971, we left Pakistan for the last time, forced out after only 2 weeks of production by the Pakistan-India war. We had come a long way with our production parameters and perfected the techniques.

THE PROCESSES

There are four basic modes to the most advanced particulate plasma process:

First, we can recover all metals from the most refractory carbonaceous ores, as well as some useful energy.

Secondly, we can recover 90% of the oil from shale, using the remaining 10% as fuel while recovering some metal by-products. Incidentally, in this mode all metals can be extracted with additional, conventional leaching.

Thirdly, we can treat the shale and burn it like coal for energy. With this approach, all the contained metals are easily extracted without additional leaching. We of course favor the recovery of shale oil, but if energy is needed at the mine site the proportions of oil and energy *out* can be changed to suit any purpose.

Fourthly, we can use a hybrid system of carbonaceous ore and shale, where the carbonaceous ore is used as fuel to heat the shale and distill the oil out, as well as releasing all its metals at the same time. The shale releases 100% of its oil for recovery. Moreover, on its way out, the oil collects the metals from the carbonaceous ore and we also recover 100% of shale and carbonaceous metals.

An extremely efficient reaction is possible because of intimately balanced mixtures of chemical starter, the oxidizer, and shale or carbonaceous ore, acting as the reducing agent. It may be simple, but it isn't crude. The particulate plasma process embodies the principles of rocket technology in this respect.

The process is this simple. The ore is crushed and ground conventionally. It is then mixed with a starter, a chemical compound containing oxygen in wet solution so it soaks into each particle, leaving a small amount of oxygen inside the particle in chemical form upon drying. The treated particles are then burned like powdered coal in a kiln or boiler. They burn with exceedingly high heat and rapidity.

The heat produced as the particle burns from the inside out, drives contained metals into vapor phase as oxides. The vaporized metal oxides are recovered in cyclones, scrubbers and and/or oil vapor. The metals and oil are then refined conventional for sale. The waste ash can be used for neutral back-fill.

The waste heat is used to distill the shale, produce electricity to operate the plant and for sale. All chemicals are produced from the ore autogenously, using process chemical output and electricity produced from waste heat. All processes are supported only by the ore. They comprise completely closed systems except for minimum water input, operations, manpower and management personnel.

THE WANZENBERG PROCESS

The Wanzenberg process premises efficient recovery of oil from shale after conventional mining and crushing.—The shale is crushed to $\frac{3}{8}$ inch particle size; ten percent will be fines (-60 mesh). The powdered shale is separated for treatment and use as fuel while the larger particles are brought directly to the kiln for oil distillation.

A tenth of the shale supplies all the energy required to capture the remaining 90% of the oil.—The 10% fines are intimately mixed with a small amount of chemical starter plus a wetting agent. This mixture is dried, impact-milled and burned like powdered coal in a high volume kiln.

Fast, hot reaction is the key to high production.—Burning shale with atmospheric oxygen is greatly speeded by a small amount of chemical starter. Several inexpensive chemicals are suitable, and very little starter is needed since over 95% of the reacting mixture is shale and air. The chemically treated fines burn completely in less than 2 seconds, releasing useful heat which may be regulated between 500°C. and 2500°C. for optimum production performance.

The fat out of the fire.—The $\frac{3}{8}$ inch particles are then poured through the kiln's heat so that all the oil is vaporized. This vapor condenses as it cools, and is collected for transport to refineries.

Metals are a bonus.—Shale normally contains valuable metals including gold, silver and copper (\$4 to \$7 per ton). The fuel portion of the shale vaporizes the metals it contains as it burns. These metals are collected by the oil vapor and may be separated by conventional means. The metals in the $\frac{3}{8}$ inch distilled particles remain and may later be leached conventionally.

Ecological safety is an important aspect.—Sulfur occurs in some ores, but in the Wanzenberg process it combines with steam and calcium oxide in the ash to form gypsum. The only waste product is a neutral granular ash. There are no harmful effluents.

Autogenous chemical production.—Waste products may be combined with energy generated by the process to form the starter chemicals. Also, chemicals for conventionally leaching metals out of the waste ash may be formed on-site.

Economics.—90% of the shale oil is quickly recovered. No fuel other than a tenth of the shale is needed. Necessary chemicals can be formed on-site from waste materials, or purchased for less than 70¢ per input ton. Ten percent of the metals in the shale are recovered with the oil, the remainder may be leached from the ash.

The advantage of the Wanzenberg process: rapid oil recovery and metal by-products.

Difficulties with marketing our processes for carbonaceous ore and oil shale have run the gamut. First the problems were how to impress new technology into established patterns of thought.

Graphite or activated carbon was thought to be incombustible by the many managers and scientists who never saw the erosion on graphite rocket nozzles or graphite rods in an arc furnace. Next we heard that carbon won't collect or hold metals, carbonaceous ore does not exist, and more. These problems have diminished somewhat with more companies discovering carbonaceous ore, and gold being produced at Carlin, Gold Acres and other sites.

Of a more serious nature, has been our difficulty with the Bureau of Mines. We first met with them several times in 1965 in the hope of help, since industry could not respond and since they seemed the logical choice to Martin Hoffman at Senator Percy's office and to myself.

At first our relations were good. They were very interested so we gave them our observations, data and patent applications. They gave us the spectrographic analysis of carbonaceous ore from Cuddeback Dry Lake in the Mojave Desert, which matched the live sea ore from Florida, indicating a common origin. Remember, this was years before the *tectonic* movements of the continents became scientifically established. Discoveries such as this were both thrilling and encouraging.

Unfortunately, Mines could not help us for budgetary reasons. They were working with Newmont Mining Corporation at Carlin, Nevada, since Newmont could support part of the research. I had ideas and patents pending, but no money for research efforts. Finding, gradually, that the Bureau of Mines is not equipped to assist the little guy, I built a test facility in the garage of my home and worked my way through hypochlorite, plasma arc and finally particulate plasma with financial help from friends and family.

The Bureau of Mines meanwhile took out a patent in the hypochlorite technique. They were granted 3 claims of no great consequence, but their write-up borrowed heavily from our patent application without giving credit to us. It is like inventing a coupling device for a train, then licensing the patent rights of the whole railroad. They then helped Newmont set up a production plant in Carlin, Nevada, excluding the original inventor from all consideration. Mines has since worked with other companies beside Newmont, claiming hypochlorite is theirs. In research and development, money talks.

We sent information to Mines, for years, until quite recently in fact. Firstly, we did not know that they could not and would not help us. Secondly, we didn't know the whole story about the Newmont-Mines Carlin operation until very recently.

Now we are primarily interested in pushing forward with the particulate plasma process. It is infinitely superior: faster, much more efficient, much more adaptable.

When we are told by the government, "this is good, but we'll do it in-house," or, equally disheartening, the familiar, "we do not work with anyone who cannot match funds," we can only say, again, that money talks. You need ideas and expertise or all the cash you pour away won't solve any problems. We're talking about Federal research programs which by-pass the small business man-inventor who has an idea which will permit meeting objectives much sooner, easier and at less cost.

Approaching private industry involves other problems. We are frequently told, forthrightly, by industry that there are no funds for new projects, that all budgeted funds must be used for maintenance R&D and quick payout projects within the state of the art. A friend, an executive in a large mining company, once told me, "We can move the biggest mountains and crush the biggest rocks, but we cannot change our habits."

How do we get out of our own way? These big companies are trapped by their own security.

The February 13th Business Week reached the following conclusions: I quote, "A careful analysis of U.S. business today suggests that bigness itself may tend to discourage new thinking and new ventures.

"The bigger a company gets, the more management broods about the stakes it is playing for, and the more it tries to eliminate risk. This makes it wary of innovation, which is always risky. But in playing safe, management passes up its opportunities and shuts out the possibility of great successes in an effort to avoid small failures. . . . The U.S. economy cannot grow and prosper just by exploiting the tried and true. It needs new ideas, new products, and some new thinking on the part of management."

Executives are still pushing new ideas away from their doors. They are saying in effect that their research staffs are composed of people who have inbred the traditional qualities of their jobs and may not be able to effectively or productively communicate with ideas from outside the company gates.

Short sighted profits are deceptive, false security, if not for the 'secure' manager, certainly for the country which has come to expect technological innovation and production as provision for comfort and needs. The doors to new ventures, new ideas, have largely remained closed since the mid-1960's. The harmful effects will accumulate gradually.

Even within companies, sales produce instant profits and research and development generate immediate certain costs. Management often looks best on the bottom line by suppressing R&D and pushing advertising, marketing, and sales.

We were once putting new quality products on foreign docks at a profit. Today, other countries are putting quality products on our docks at a profit, including energy products and metals which irks me particularly. I'm sure we would all like to see the United States independent in these two vital resource areas.

Let's start the next 200 years by closing the ranks of our proven capabilities. Our man on the moon can indeed ring our economic cash registers if we part company with technological pidgeon-holing. The engineer who has one year's experience 20 times is in just such a prison.

In Aesop, the tiny mouse removed painful thorn from the paw of the mighty lion. Consider the impact of Edison, Ford, Carlson, the inventor of xerography, on America's growth and comfort.

Unlike Aesop's fable, however, the fault I often see is not a lion's pride but blindness to the innovation of technologies which make life easier, and some-

times *make the future possible*. The essence of change is always with us, but now the world is passing through a critical era into the possibility of insufficient fuel and other modern necessities. Now is the time to redirect our efforts toward solutions. Energy and metals are a good place to start, since so much of our culture is built on the now-threatened foundation of these abundant resources.

I have discussed creative science. There are still creative scientists hidden here and there, a minority's minority. One way to maximize this resource, and creativity is a resource, might be to include a science consultation committee in government planning. As others have pointed out before now, there should be a link between those who investigate the implications of scientific discoveries on our economy and *security*, and those who decide our national policies. We can't just call science in from grazing when the crisis is upon us, technological miracles take time and preparation.

A select and diverse committee of widely experienced, multi-disciplined scientists, rather than the typical case of one year's experience 20 times, could screen ideas of national interest. All patented ideas, or patent pending, could be assigned a government liaison and helped through the legal and political morass which awaits the unwary or financially struggling inventor.

At this point, finances should be available for ideas of merit, perhaps through loans as Vice President Rockefeller has suggested, perhaps grants or outright government participation. The purpose of this committee could be to interface between inventors and sponsors at present a deadly no-man's land; to encourage development of technology through grants or loans; to monitor industry's use or misuse of breakthroughs, thus possibly avoiding such events as the energy *crisis*.

I wish we had this sort of guidance even now. In trying to interest government and industry in our ideas, we have run across bureaucratic ignorance, stubbornness, rudeness and mismanagement which, in my view, more than negates the public trust in America's far-sighted support of technology. Our persistent efforts to acquaint the mining industry with our first early metals recovery methods ended in an infringement issue with both government and industrial interests which we cannot fight for lack of funds.

A recent New York Times article, March 14, pointed out that the international predominance of the U.S. in science and technology has suffered erosion in the last 15 years", this is according to the National Science Foundation which is in a position to know. I don't have all the answers to the problems of progress, but many of the problems have become clearer to me through my own difficulties.

I think that the "particulate plasma" process is good, good enough to merit 33 years of my life and thought, and lately the welfare of my family. I had the chance to become a secure manager of the mining status quo, but instead I chose innovation with all its trials and tribulations.

I have no regrets, just hosts of strange memories. Lack of financial help here drove me to Pakistan, funded by rupees for a hellish plant building operation where I missed American tools and equipment more than the English language. I came back 25 pounds lighter, with many of the technical difficulties worked out, only to face the joint problems of convincing convention-ruled corporations that oxidation prpyrometallurgy works, and trying to prevent others from infringing. So far, it has been all uphill. But for every ten who would not listen, there have been a few sympathetic ears, and I guess we will make it the hard way with these energy ideas if we must, when the need is finally recognized.

My family and I appreciate the sympathy and support of Senators Javits, Percy and Buckley, the officers of Vice President Rockefeller and Defense Secretary Rumsfeld, and Representative Ottinger. These gentlemen understand the need for, and even the technology of our rapid oxidation process to a gratifying extent.

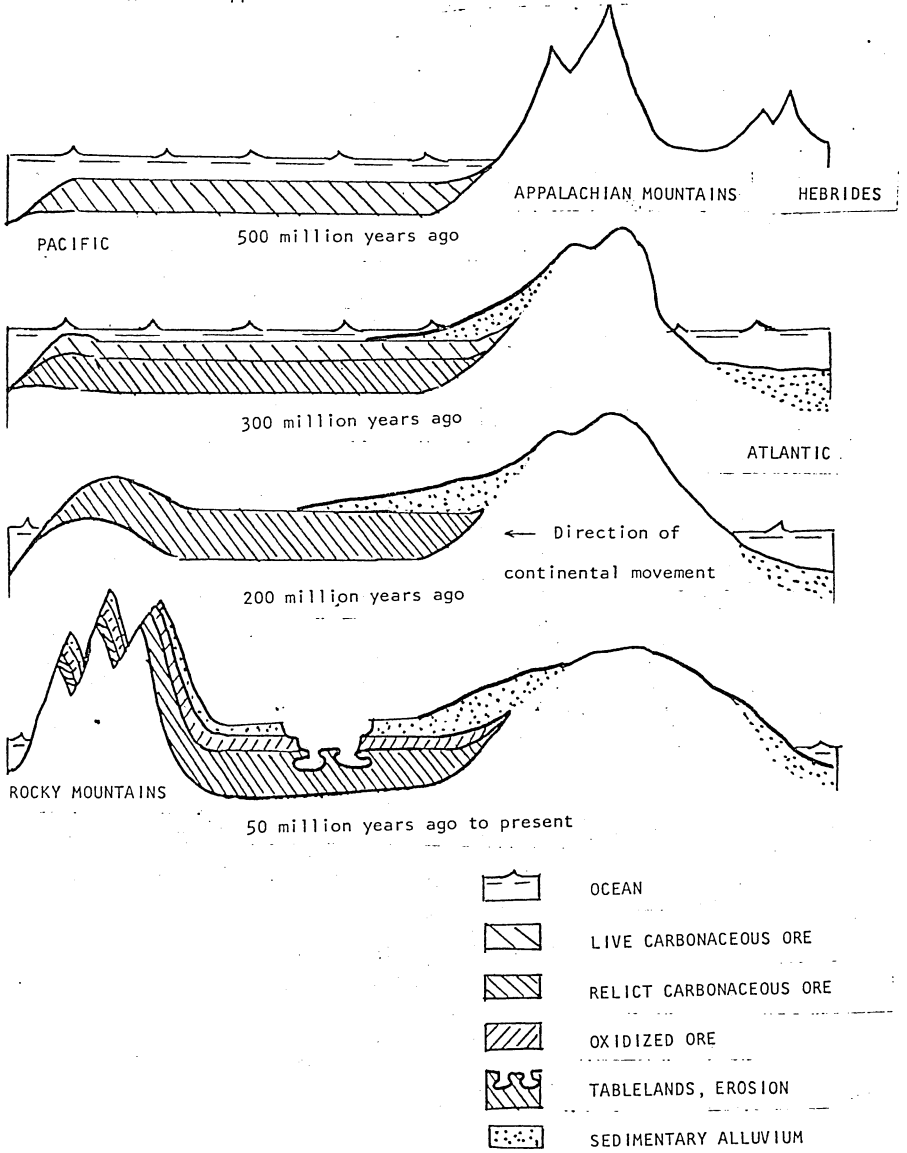
It is unfortunate that the normal channels have not operated for us, but behind closed doors there is sometimes no air to breathe. A very few in private industry have also listened, and one company may act one day but probably not while conventional production means work, if only half as well and twice as wastefully.

Our difficulties are one example of a disturbing generality in terms of the creative scientific potentialities of this nation. We have been walking a racing horse and denying what made this nation the greatest in history. There will be nowhere to run when the bottom drops out, so now is the time to push for progress.

Thank you.

MORPHOSIS OF CARBONACEOUS ORE

The following diagram illustrates the formation of carbonaceous ore into its present refractory, relict (still reduced) form — underlying the oxidized upper strata.



Great Sea Corporation (NY)
9 Campbell Lane, Larchmont, N.Y.

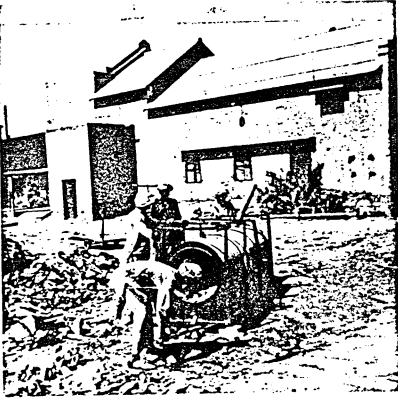
CARBONE OXIDIZED ON CANYON WALLS AND CHIMNEY ROCK IS NOT BLACK BUT HAS OXIDIZED FROM BLACK TO GRAY-RED-BROWN-YELLOW....AS IS THE SURFACE-OXIDIZED CARBONE AT CARLIN, CORTEZ NEVADA. (BLACK TABLELANDS, BLACKROCK IN NW NEVADA, BLACK CANYON WALLS AND BLACK ALLUVIUM ARE RELATIVELY RECENT EXPOSURES OF CARBONE, WHERE THE OXIDATION PROCESS HAS NOT HAD THE THOUSANDS OF YEARS NEEDED TO COMPLETE THIS COLOR CHANGE (AND LOSS OF BLACK CARBONFORMS TO THE ATMOSPHERE AS CO₂, CARBON DIOXIDE).



Newmont's operations at Carlin Nevada. The oxidized carbore recovered from the two pits, lower center and left comprise sub-microscopic gold and silver which are recovered by cyanide dissolution (gold is soluble as a simple cyanide, silver is insoluble as a simple cyanide but forms a soluble complex cyanide and is therefore recovered also). The unoxidized carbore, gray-to-black, is stockpiled for lengthy and tedious recovery using hypochlorite (GSC early 1966 application, patent). GSC Particulate Plasma processes can recover both metals and energy from carbore at a fraction of the above process costs and is safe, ecologically. P. 673 Vol. 133 No. 5, May 1968, National Geographic.



GREAT SEA CORPORATION
9 CAMPBELL LANE LARCHMONT, N.Y. 10538
TELEPHONE - (914) 834-8044



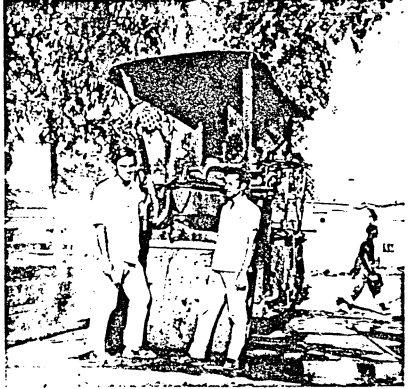
FIRST PRODUCTION KILN
SCRAPPED, REBUILT



HAND CRUSHING



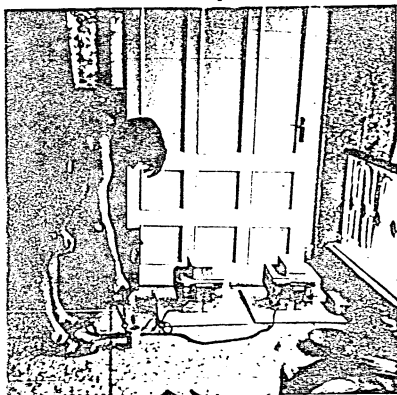
SLAG CLEANING



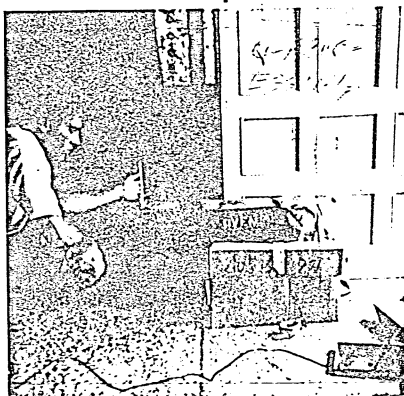
STEAM CRUSHER CIRCA 1903



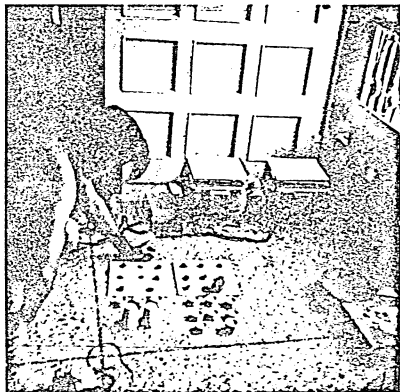
GREAT SEA CORPORATION
9 CAMPBELL LANE LARCHMONT, N.Y. 10538
TELEPHONE - (914) 834-8044



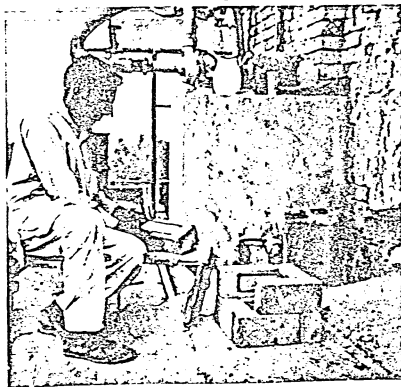
KARACHI TEST KILNS



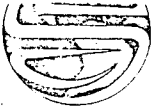
Q-PROCESSING



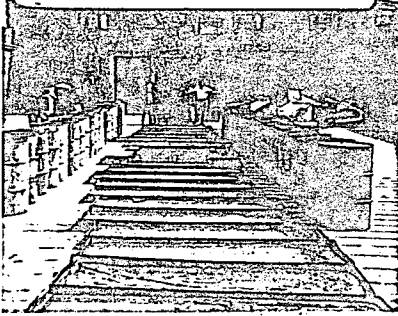
CORE TEST CUPELS



MULTAN BUILDING TEST KILNS



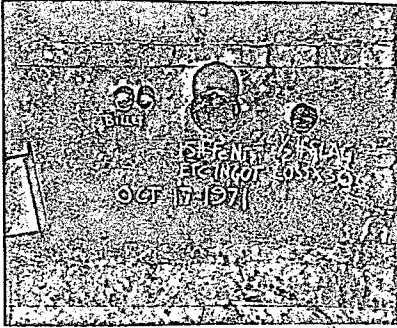
GREAT SEA CORPORATION
9 CAMPBELL LANE LARCHMONT, N.Y. 10538
TELEPHONE - (914) 834-8044



CHEMICAL PULP DRYING



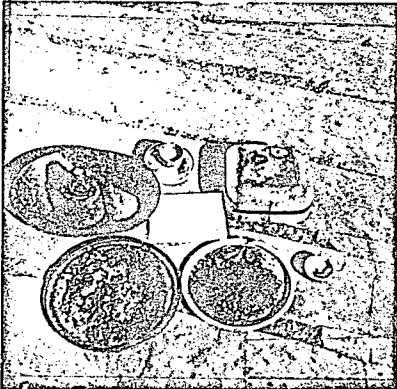
CHEMICAL PREPARATION



INGOTS OUT



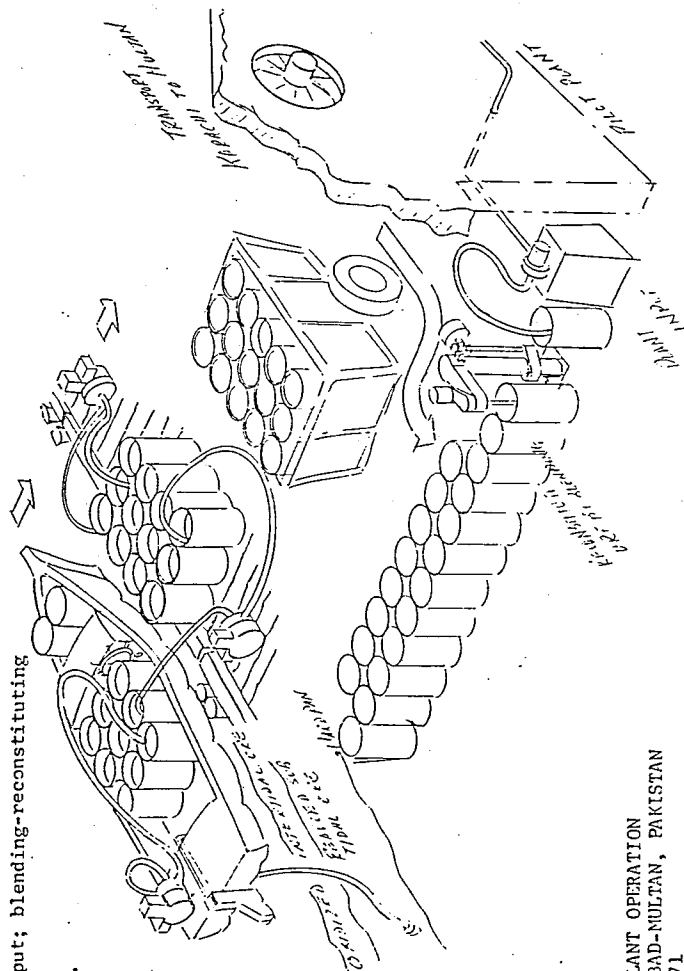
CHEMICAL PREPARATION



FINE INGOTS



SCRUBBER OUTPUTS



1. Raw input; blending-reconstituting

PILLOT PLANT OPERATION
ISMAILABAD-MULTAN, PAKISTAN
1970-1971
GREAT SEA CORPORATION

SAN FRANCISCO, CA 94107
(415) 282-8600

GREAT SEA CORPORATION
9 Campbell Lane
Larchmont, NY 10538

ASSAY REPORT

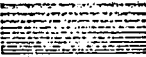
No. 2244

Date July 26, 1964

No.	Mark	GOLD, per ton of 2,000 lbs.	SILVER, per ton of 2,000 lbs.	Other	
		Troy Ounces	Troy Ounces	Percent of Sample	
85 #1 $\frac{02.6}{22.5}$	Hardy	26.22 (32.7)	71.27 (90)	PLATINUM (Pt) None Detected	
		<u>CONTENT OF MATERIAL RECEIVED</u>			
#2 $\frac{39.8}{25.8}$	La Cholla	90.80 Milligrams 0.00292 troy oz	246.80 Milligrams 0.0079 troy oz	None Detected <i>Colored Dellin El Centro all gold falling</i>	
		<u>CONTENT OF MATERIAL RECEIVED</u>			
#3 $\frac{39.7}{27}$	Ox Canyon	0.03 Milligrams 0.0000096 troy oz	0.37 Milligrams 0.0000119 troy oz	None Detected	
		<u>CONTENT OF MATERIAL RECEIVED</u>			
#4 $\frac{76.2}{26}$	Steve	0.0075	0.59	None Detected	
		<u>CONTENT OF MATERIAL RECEIVED</u>			
		0.01 Milligrams 0.000003215 troy oz	0.83 Milligrams 0.0000267 troy oz	0.057 troy Oz/Ton	
		<u>CONTENT OF MATERIAL RECEIVED</u>			
		0.0038	0.795	0.15 Milligrams 0.0000048 troy oz	
		<u>CONTENT OF MATERIAL RECEIVED</u>			
		0.01 Milligrams 0.0000003215 troy oz	2.10 Milligrams 0.0000675 troy oz		

ctm
Copies: (2)

ABBOT A. HANKS
TESTING LABORATORIES
Clifford V. Hunslow
CLIFFORD V. HUNSLow, ASSAYE



SAN FRANCISCO, CA 94107
(415) 282-8600

Done
11 Oct 72

GREAT SEA CORPORATION
9 Campbell Lane
Larchmont, NY 10538

ASSAY REPORT

No. 1167

ATTN: FRITZ W. WANZENBERG, PRESIDENT

Date Oct. 9, 1972

Lab No.	Mark	GOLD, per ton of 2,000-lbs.	SILVER, per ton of 2,000-lbs.	Other			
		Troy Ounces	Troy Ounces	Percent of Sample			
		Content of Samples Received, in Troy ounces per sample		Platinum Group			
				GRG	OZ. / T.	AS	
				P.W.T.	AU.	AG.	
7274-1	MQ N-1 SM/BM	0.0003932	0.001888	42.6	Nil	8.35	40.
7274-2	MQ NEV IR3	0.00001334	0.0002675	30.0	Nil	0.404	8.
7274-3	MQ U1a JMA	0.00001193	0.0003479	30.4	Nil	0.356	10.
7274-4	WMP 8172A	0.00000997	0.0001919	33.0	Nil	.27	5.2
7274-5	WMP 8172C	0.000005144	0.0002103	34.1	Nil	.137	5.6
7274-6	WMP 8172D	0.000003697	0.0003080	37.6	Nil	.089	7.4
7274-7	WMP 8172E	0.000003633	0.0002813	35.5	Nil	.117	7.1
7274-8	CR 8132T	0.000005144	0.0005369	24.8	Nil	.134	14.4
7274-9	CR 8142A	0.000006109	0.0002490	47.4	Nil	.117	4.
7274-10	CR 8162-A	0.000004533	0.0002996	34.4	Nil	.119	7.
7274-11	OCPC	0.000009645	0.0003344	37.7	Nil	.232	8.2
7274-12	OCPE	0.000005144	0.0002410	45.0	Nil	.104	4.

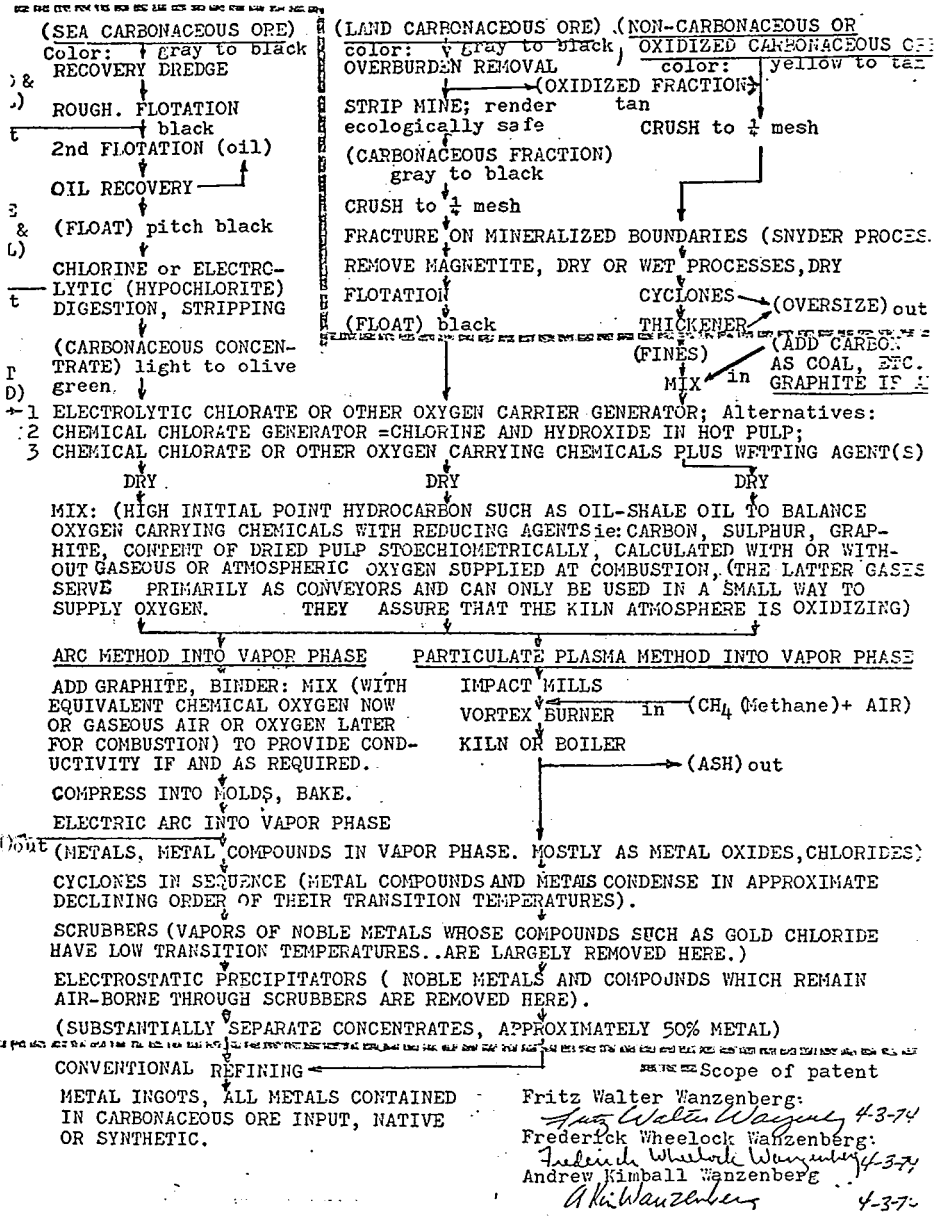
100 st (2,000 lb) = 907,200 grams.

wt. Au in sample in oz. / T. X 907,200 = Au content of heap in oz. / T. / wt. of sample in g

Copies: (2) slide rule calculations by:
Arthur F. Daily (1)
Oakland CA
12 Oct 72

ABBOT A. HANKS
TESTING LABORATORIES

[Signature]
CLIFFORD V. MUNSLOW, ASSA



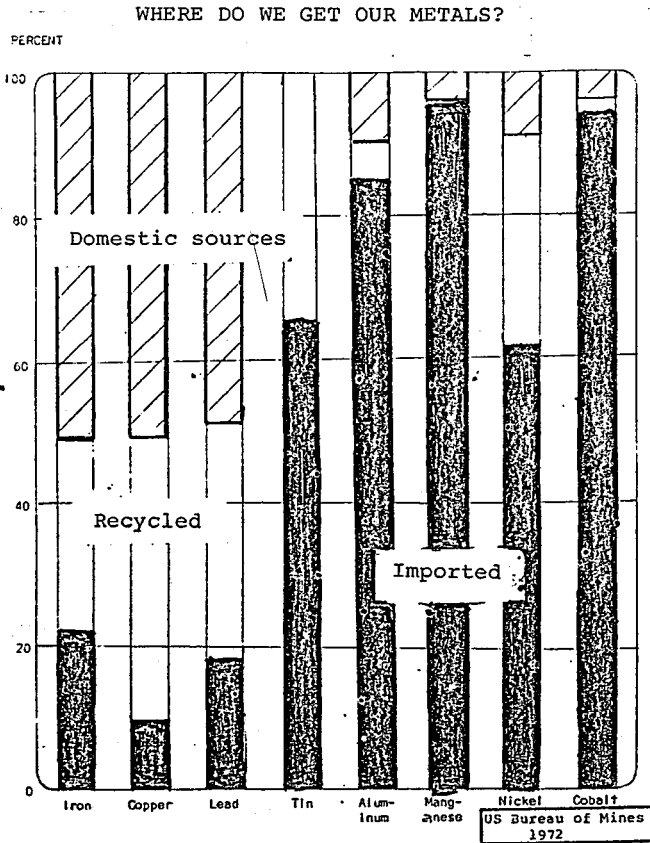
Fritz Walter Wanzenberg:
Fritz Walter Wanzenberg 4-3-74
 Frederick Wheelock Wanzenberg:
Frederick Wheelock Wanzenberg 4-3-74
 Andrew Kimball Wanzenberg
A. K. Wanzenberg 4-3-74

40 PERCENT OF AMERICA'S METALS COME FROM ABROAD

Despite our relative wealth, the United States has imported vast quantities of metals, in ever-increasing amounts, since World War II. In 1970, America's metal industry met less than 60 percent of the primary demand with domestically mined ores. See Figure 3, below.

In February, 1975, the National Academy of Sciences warned that there is no movement in the United States to find substitutes for the following critical materials: gold, mercury, tin, antimony, silver, tungsten, vanadium and zinc -- all of which originate in economically or politically "volatile" countries; and all of which are found in carbonate ore, which is now easy to process with our methods.

FIGURE 3



Mr. SOMMER. A question I have, in your file, which I have, which is larger than your testimony in terms of correspondence that our office and Senator Javits' office has had with you, have you ever gone to the Small Business Administration as a central locus point to help ERDA or the Bureau of Mines move off the dime in responding to your needs?

Mr. WANZENBERG. We had relatively poor response earlier in our career, perhaps 10 years ago. I did talk to the Small Business Administration's SBIC. I think to qualify then I had to have a going plant, which we had in Pakistan.

Mr. SOMMER. I am not talking about money. I am talking about SBA's role as one that we are examining here in part this morning of trying to use their leverage, whatever that might be in a given case, in the procurement area, in the technological assistance area, with an agency like the Bureau of Mines or ERDA, SBA using their good offices.

Mr. WANZENBERG. Very good, tremendous.

Mr. SOMMER. You have not approached them on that?

Mr. WANZENBERG. No.

Mr. SOMMER. I think the whole Procurement Office of SBA is one headed by Mr. Fletcher, that may be of some assistance to you, and we will subsequently follow up.

Mr. WANZENBERG. I need some introductions.

Mr. SOMMER. The concept of fund matching that you talk about in the Bureau of Mines is something that I am unaware of. How does that work?

Mr. WANZENBERG. Well, for instance, Newmont approaches Mines with a problem concerning some of their carbonaceous ore properties. Mines is interested. So Newmont and Mines match funds and Mines' lab facilities in Reno. They work hand in hand, exchanging information.

Any patentable ideas become public property. Newmont and Mines actually share credit for the infringing hypochlorite coupling patent I mentioned earlier. Since this patent is public property, anyone can use it if they pay \$1. Of course, I don't have to because I invented and patented the hypochlorite process over 2 years before Mines-Newmont. There is a good example of inadequate compensation.

I don't know the details of the exchange. I am as curious as you are, but Mines isn't talking to us these days.

ERDA and Mines, I believe, have no provisions for unilateral funding, which is what our small company would require. On the other hand, I believe that matching funds with big business is a common procedure.

ERDA said, do not bother to send in a proposal. We will reject it out of hand. I think your office has a copy of the notes on that meeting.

Mr. SOMMER. We have a copy of the letter saying we will reject it out of hand because it does not primarily deal with our energy needs, more of a metallurgical proposal.

Mr. WANZENBERG. It is both, and hence has all the problems of cross discipline. Fundamentally, we can recover all of the energy from oil shale and carbonaceous ore, as well as metals. If Mines

doesn't want the energy and ERDA doesn't want the metals, does that mean that the United States doesn't want the process? We did not give them a partial package. We told them we can do the whole bit, and we seriously can.

Mr. SOMMER. You were asking ERDA for matching funds, is that correct?

Mr. WANZENBERG. No, we had no funds to match. We just asked them if they would receive an unsolicited proposal. They said no.

They said, besides, they had their mind made up. They were going to use another approach, which I am convinced would be ecologically unsafe and wasteful of our resources, because the best you could get would be 50 percent of the oil shale.

Mr. SOMMER. This hearing is continuing next week and one of the Assistant Administrators from ERDA will be present, I think, and we will pursue some of this, and we will also, I think, when the hearing record is printed, have the chairman of the committee send a copy of the relevant portions of it to the Bureau of Mines asking them for comment on your statements and what we have developed in dialog here.

Mr. WANZENBERG. With the objective of getting something moving, not with the objective of pinning people's ears to the wall. I do not want to do that. We do not want to fight. It is too energy-consuming.

Mr. SOMMER. Often, to move people in the Federal Government, one has to pin their ears to the wall.

Mr. WANZENBERG. That is what they said in Chuck Percy's office. You may be right. We are willing to go that way.

Mr. SOMMER. I personally appreciate your being here. We will pursue this after the hearing.

There being no further business, the committee stands in recess, subject to the call of the Chair.

Thank you.

[Whereupon, at 12:35 p.m. the committee recessed to reconvene at the call of the Chair.]

TECHNOLOGY AND MANAGEMENT ASSISTANCE PROGRAMS OF THE SMALL BUSINESS ADMINISTRATION

WEDNESDAY, APRIL 7, 1976

U.S. SENATE,
SELECT COMMITTEE ON SMALL BUSINESS,
Washington, D.C.

The select committee met, pursuant to recess, at 10 a.m. in room 318, Russell Senate Office Building, Hon. William D. Hathaway presiding.

Present: Senator Hathaway.

Also present: Kay Klatt, professional staff member; Christopher Brescia, legislative assistant, Office of Senator Hathaway; and Dorothy Olson, staff assistant.

Senator HATHAWAY. The committee will come to order.

This morning we are continuing the hearings that we started last week on the technology and management assistance programs of the Small Business Administration.

Our first witness is Hon. Mitchell P. Kobelinski, the Small Business Administrator. We welcome you to the hearing and you may proceed with your statement. You are accompanied by whom?

Mr. KOBELINSKI. Good morning. I am accompanied by Mr. Henry Warren, Assistant Administrator for Management Assistance and Mr. Harold Fletcher, Associate Administrator for Procurement Assistance.

Senator HATHAWAY. All right.

STATEMENT OF HON. MITCHELL P. KOBELINSKI, ADMINISTRATOR, SMALL BUSINESS ADMINISTRATION, ACCOMPANIED BY HENRY WARREN, ASSISTANT ADMINISTRATOR FOR MANAGEMENT ASSISTANCE; AND HAROLD FLETCHER, ASSOCIATE ADMINISTRATOR FOR PROCUREMENT ASSISTANCE

Mr. KOBELINSKI. I will merely summarize my statement at this point, and have my statement appear in the record.

I appreciate the opportunity to appear before you this morning and talk about our management and technology assistance programs.

Starting with the management assistance program, the SBA reached over one million small businesses last year with its management assistance efforts. Of these, more than 256,000 have received in-depth help through training and counseling. Our distribution of management publications exceeded 5 million copies of 300 titles.

First, I will cover our basic ongoing programs which consist of 1-to-1 counseling, group training and publications. Then I will sketch some new initiatives we are working on.

We have four primary resources to provide 1-to-1 help. They are: Volunteers, call contractors, small business institute, and staff management assistance officers.

As you will note as we briefly discuss these resources, only the volunteer and Small Business Institute programs are readily expandable.

In the volunteer category, we include SCORE—Service Corps of Retired Executives; ACE—Active Corps of Executives and members of professional associations that have agreed to work with us.

Within the SCORE/ACE organization we have over 8,000 of the Nation's most talented executives who give time freely to help build the small business community which they regard as the foundation of the free enterprise system. This organization blankets the country with 293 chapters that reach nearly every city, town and hamlet of the United States and its possessions.

SCORE volunteers do basic counseling, conduct prebusiness workshops for prospective small businesspeople, and actually man desks in our field offices to help our walk-in clients. Our ACE volunteers are full-time employed individuals who give generously of their time but typically are used as backup for SCORE and to provide unique expertise in counseling and training small business owners.

Members of professional associations such as the National Association of Accountants, the American Institute of Industrial Engineers, the National Association of Minority CPA Firms, and the National Federation of Business and Professional Women's Club, Inc., function much as ACE except that they are not individually registered by SBA as are SCORE and ACE volunteers. They bring a depth of knowledge in specialized fields at no charge to small businessmen and women.

SCORE requires a substantial amount of management and administration if it is to perform effectively. During the initial years of SCORE, SBA personnel did much of this administrative work. Now SCORE has grown, and if the needs of small business are to be served, its membership and outreach must be multiplied during the next few years. The SBA does not have the personnel to enlarge and manage the SCORE of 1977, 1978 and beyond.

Now, if you were looking for management talent, where would you look but SCORE? This thought led us to planning an administrative arm of the SCORE organization. This arm will consist of three to five volunteers located in Washington who will work hand-in-hand with the SBA to develop and administer the overall SCORE/ACE organization.

These volunteers will serve on a rotating basis and provide the national management of SCORE. The national SCORE/ACE office will direct a regional and district organization roughly paralleling the SBA organization down to the field office and chapter level. In this way, SCORE will become self-administering and can provide a much greater service to the small business community without the necessity of enlarging the SBA staff.

We have plans to expand SCORE into new areas of assistance to small business. For example, occupational safety and health program, OSHA, has created many hardships unique to small business. The problems arise in meeting the safety standards. We plan to recruit SCORE volunteers with appropriate backgrounds that will enable the Department of Labor to train them to advise small businesses on OSHA matters. This cadre of volunteers with OSHA expertise will provide seminars on OSHA standards and they will make onsite, no report, reviews of small business operations to counsel and advise of possible OSHA violations.

We believe this will do much to relieve the Federal Government of its present highly unfavorable image in the eyes of most small business owners, and it will help thousands of small businesses avoid disastrous shutdowns, fines and sudden, large, correctional expenditures.

The shocking impact of shoplifting, pilferage and related crimes on small businesses has led us to recruit special volunteers to advise small businesses on preventing losses from crime. The extent of the crime problem is indicated by the following: There were \$20.3 billion losses nationally in 1974—a 31 percent increase over 1971. Special assistance to the small business community is required in both counseling and training.

It is vital to our balance of payments and the health of our economy that thousands of small businesses understand and develop their export trade potential. In order to make that a reality, the SBA plans a much expanded international trade program.

We anticipate a heavy participation of SCORE/ACE in this program. The assignment of a national SCORE international coordinator within the SCORE national office who will, along with appropriate central office personnel, recruit several hundred more volunteers with extensive international trade expertise is planned. We are planning training for these as well as current SCORE/ACE volunteers who have international trade experience so that SBA field offices will have an up-to-date adequate capability to provide the quantity and quality international trade counseling that is needed to meet our Nation's needs for more exports.

A concentrated effort will be made to recruit volunteer marketing specialists in all SCORE/ACE chapters. If our small business community is to survive and grow, virtually all small businesses must have the benefit of modern marketing techniques. These SCORE specialists will be working shoulder to shoulder with members of the American Marketing Association, our call contractors, university students and our SBA staff to help small business owners identify markets and promote sales.

Soaring energy costs and shortages of materials and fuels have imposed significant hardships on the 9.4 million small businesses in the United States.

Lacking the sophistication and financial resources of larger companies, the small businessman frequently finds it difficult to make the adjustments necessary for survival. We are recruiting volunteers to counsel small businesses on their energy problems. The Federal Energy Administration has joined hand with the SBA in this en-

deavor. FEA will provide the programmatic and training elements and SBA will provide the delivery system through SCORE.

Under our call contracting program, we contract with professional consultants throughout the country to provide highly specialized and timely individual help to eligible socially and economically disadvantaged clients. In fiscal year 1975, almost 3,000 small businesses received help from professional consultants under contract. Without this consulting help, many of these struggling small business owners would have failed with a devastating economic and social loss, and many jobs would have disappeared.

A recent external study establishes the success rate of this SBA program to be well above the national average for professional consultants.

The Small Business Institute program is a three-way cooperative between collegiate schools of business administration, members of the Nation's small business community and the Small Business Administration. Under the supervision of university faculty and SBA staff, a team of two to four senior and graduate students of business administration work directly with owners of small firms for an entire semester providing management counseling at no cost to the business person. During the semester the students made an in-depth analysis of the problems and opportunities available to the small business owner. Often a SCORE volunteer serves as an advisor to the students.

At the end of the semester, a report is written in language the small businessperson can understand. This is thoroughly reviewed with the business owner. The SCORE person then follows up in the ensuing months to help the business owner to implement the recommendations.

Participating schools receive modest contracts from SBA to pay roughly half the cost of the programs. Presently the SBA has 383 universities with 2,000 faculty members and an army of 20,000 students working in the SBI program; 87 percent of the small businesses involved rate the program "good" to "excellent."

There has been an exciting added benefit or outfall of the SBA Small Business Institute program. Less than a decade ago, only eight universities in the country offered courses in entrepreneurship and new business venture formation. With the development of the SBI program, tens of thousands of outstanding students have become interested in the potential of the free enterprise system.

That, Mr. Chairman, I submit, is one of the great secondary benefits from our SBI program, the fact that we do have a real school of entrepreneurship going on finally. You are just as conscious as so many of us are of what is happening to our student attitudes toward our free enterprise system. So many of them would like to see us introduce a new system in this country.

The incidental benefits of having the free enterprise system strengthened through a real appreciation of it by the student because of his meaningful contact with the small businessman in the field, I think this is a very important secondary benefit.

The professional field staff of the SBA manage and leverage the volunteer Call Contract and Small Business Institute resources as

well as provide direct counseling to small businesses when the other resources are not available.

When the training program was initiated with two courses over 20 years ago, there was little or no business training tailored to meet the needs of small businesses offered at any of the Nation's colleges or universities.

As the popularity of the management course program increased, in 1961 a program of small business management conferences was implemented to accommodate large groups in sessions running from 4 to 5 hours to several days.

Responding to the need for short sessions on specialized problems, in 1968 problem clinics were added as another training vehicle. The clinics are small groups of businesspersons with a common problem who meet for 2 or 3 hours with a resource person to discuss and arrive at solutions to that problem.

Small business owners and managers and operators will receive about 2 million man-hours of training this year. Last year we held 4,579 training sessions with 154,829 attendees.

SBA's management assistance publications provide a vehicle for reaching out to the small business community with reliable management information that is understandable and timely.

The publications vary from four-page leaflets to booklets that vary in length from 18 pages to 270 pages. The larger publications are sold at cost. Most are provided without charge. The 300 titles provide practical suggestions from subject matter experts. About 5 million copies are distributed annually. Of the 44 million printed during the last decade, it is estimated that 12 to 14 million are still in use—about 1½ for every small business in the United States.

A vigorous and highly aggressive export program is being developed in concert with the Department of Commerce for fiscal year 1977.

With my own personal background with the Export-Import Bank, I think it would be a gross neglect on my part if we did not develop a new international trade program for the small businessman. It has been something that has been sorely needed in light of our 1974 trade legislation that is going to lower trade barriers and invite more imports into our country.

Somewhere in this Government, we have to be working hard on a program for exports so our people will not be clamoring for the raising of the trade barriers and the duties again, but instead, will be looking at the world as their marketplace. I would like to see a lot of our small- and medium-sized businesses recognized in today's small world era. They have to look at the entire world as their marketplace and not just the United States.

Senator HATHAWAY. Do you think the tax reforms enacted by the House will inhibit this growth? They modified and changed some of the loss breaks they got, country by country, and so forth.

Mr. KOBELINSKI. Frankly, I regret some of the changes I have seen there. I think this is a very healthy program. Some of the restrictions affecting the benefits only to new additional exports make a lot of sense, because suggesting that this helps Caterpillar Corp. which has been exporting for many years, or gives them an incentive to export more, is kind of tenuous.

When we go into the area of medium businesses who have never exported before or hardly have gone across the border to Canada. They need some incentive, something to make them move out into the world market. I think we are really going to need those exporters when our balance of trade and balance of payments start running in deficit. I suspect that our trade will balance and balance of payments turn around, very seriously, to a negative position in the next year or two. We will be clamoring for the exports of the small- to medium-sized businesses.

Senator HATHAWAY. How about our restrictions on trade to Soviet Russia and other Communist countries?

Mr. KOBELINSKI. I think that is a horror. I know from my experience in the Eximbank and from some of the inputs we received at SBA that we have probably lost several thousands of jobs in America because of the restrictions on trade with Eastern Europe. Our Western European friends and the Japanese are just as pleased as can be with the amendments to the trade bill that restrict us. They are very very happy because they are benefiting from trade with this sector.

They have extended \$8 billion in new credits to the Soviets alone. We forget, it is not just the Soviet Union we are talking about, but some very healthy markets there; East Germany, Czechoslovakia, Hungary, Bulgaria, and so on. All these potential markets that we have put off limits. For a country that espouses free enterprise, free competition, and freedom of trade, we have placed ourselves in a very incongruous position. We are telling our businessmen that they cannot go out there and trade where the rest of the world is trading in spades. These are very regrettable restrictions.

Senator HATHAWAY. Do you think it is a good opportunity for small business? Are they going to be crowded out by the already giant corporations that are dominating foreign markets?

Mr. KOBELINSKI. As a matter of fact, I had a very interesting discussion on this very topic with a delegation of high trade representatives, including the Deputy Minister for Foreign Trade from Poland on Monday of this week.

One of the facts of life that we discussed was the fact that trade has taken place, for instance, with that country—it is also true, I know, with many other East European countries—on a very high technical level, and with major corporations like International Harvester, General Motors, Caterpillar, et cetera.

At the other end of the spectrum, are knick-knacks in the way of folklore, handicrafts and so on. But there is a huge spectrum in between, medium-sized things, things for households, things that are needed for the building industry, things that are needed for the agricultural industries of these countries, all kinds of things that we produce and have not yet been exporting and have not yet been developed. There is a very real possibility in this area of exchange.

Something is needed to develop a link, to develop a channel of contact between the medium-sized American businesses and foreign markets. Those businesses we have had a chance to speak to have not been sophisticated enough to even talk about how they could do it. They could not even understand how they could trade internationally.

There is an educational process that is needed to bring the small- and medium-sized businessman into the international markets.

That is just one example of one country saying, yes, we would like to deal with the medium- and small-sized businessman, but he does not seem to want to contact us. Actually, the businessman does not know how to contact his prospective clients abroad.

I think that there are all kinds of possibilities in this area of trade.

Senator HATHAWAY. Good.

Mr. KOBELINSKI. We are reviewing our own resources with the hope of expanding our central office international trade staff from 2½ persons to 5 and putting in place at least 14 professionals in selected cities of high export potential.

Admittedly, that is an awfully small number of people to try to stimulate international trade for this country of 220 million. It is a beginning.

I think we can maintain additional leverage with our SCORE people. We are going to be out there. Mr. Warren is going to put on a program trying to ferret out those retired executives who have had international trade experience, to bring them into our SCORE program, to utilize their years of expertise in that program, and help their people realize the existing potential markets.

There is another new thrust: The university business development centers. The university business development center concept joins the efforts of several federally sponsored programs which aid small business and students on university campuses throughout the country. Mutually supportive and sometimes overlapping, these existing Federal and State programs will be linked up under a cohesive master plan to increase their efficiency and to provide greater leverage of the resources.

At the same time, agencies such as HEW, SBA, NSF, Commerce—EDA and OMBE—the Bureau of Standards and others will maintain their separate identities and independence of administration. The linkup and implementation will take place at the university level.

At a university business development center, a small business owner or one who desires to launch a new enterprise will find a full service agency capable of providing: A thorough analysis of business skills and aptitudes; training to develop or enhance business skills; a facility to provide feasibility studies and a resource for complete business planning; an analysis center to completely review all of the functions and operations of a present or planned business, an analysis center to completely review all of the functions and operations of a present or planned business including management, financial, marketing, production; a technology utilization center to enable small business to utilize the \$345 billion of Federal Government-sponsored research and development; a center for idea and product development.

These university business development centers will provide an exciting new outlet. All of these functions and others are now being formed at widely scattered universities throughout the country; but nowhere have these federally-sponsored programs been linked up to provide the full service envisioned in the university business development center concept.

Senator HATHAWAY. What is the timetable on this new concept?

Mr. KOBELINSKI. We are at work on it now. There is a pilot going on at the California Polytechnical University in Pomona.

Senator HATHAWAY. How long will it be before you are identifying other universities to participate?

Mr. KOBELINSKI. Within the next 6 months. Mr. Warren perhaps can give you something specific.

Senator HATHAWAY. Before the end of the year?

Mr. WARREN. We will have three of them in operation in 90 days, Senator.

Senator HATHAWAY. What?

Mr. WARREN. Three in operation within 90 days; we expect within 6 months for five or six to be in operation.

Senator HATHAWAY. Fine.

Mr. KOBELINSKI. We are also thinking of some new training plans. Preliminary plans are being developed which will draw on the resources of continuing education programs in community colleges to implement and conduct more small business management courses. As these become self-sustaining, SBA can act as a catalyst between the small businesspersons working and needing training and the community colleges offering the training. SBA cosponsorship efforts can then be concentrated on filling in the gaps where no training is available.

A contract will be let this fiscal year for module-form, learner-oriented course material on managing for profits.

Some of the new materials will be particularly useful in several self-learning centers we plan to pilot in 1977. These centers will make management information available at the convenience of the small businessperson.

As you know, Mr. Chairman, in many of the major cities throughout the country, community colleges are becoming more and more important elements in our educational system. We now must relate also and get into the community colleges where we can bring our programs right into the communities. If we can duplicate some of the SBI activity and some of the other outreach kinds of things with the junior college students, I think we will be doing a great service to the small business community and a great service to the student, introducing him to the entrepreneurial system in the country.

Senator HATHAWAY. Do you think this could be done at the high school level? We are trying to get legislation on career education through the Labor Committee. We have pilot programs across the country. I am familiar with the program in South Portland, Maine, where from kindergarten up, the orientation of every subject taught is toward career, so that students learn how to tie in arithmetic with paying their grocery bill and so forth, right from the beginning.

It seems to me that some of these programs could be started earlier in life. Statistics show that 80 percent of high school students graduate without any real ability to hold down any kind of job at all, mostly resulting from the fact that they do not get any career-oriented education during 12 years of school.

Mr. KOBELINSKI. I totally agree with you, Mr. Chairman. I think we should bring it down to the high school area as well. There is no reason in the world why these youngsters leaving school should not be prepared to do something.

We are off on a mistaken tangent in the concept that every student leaving high school should be thinking in terms of going on to higher education. That is not the total answer; we know that now. When he leaves high school, he should be prepared to do something useful in society and bringing the whole entrepreneurship idea into the high schools is by all means the next logical step for us.

I do not think we have focused on it.

Senator HATHAWAY. This type of training bridges the gap between traditional vocational education and professional education. Many young people still feel that vocational education is for somebody else who cannot go on to college, but we have gotten partially, at least, over that stigma.

This Small Business Administration program probably would be helpful in that regard.

Mr. KOBELINSKI. I think so. Contrary to popular belief, I think the era of opportunity is with us now as much as ever before, and maybe far greater than ever before for young people to go off into business on their own.

I heard a very interesting Horatio Alger story of a youngster down in Texas who borrowed his cousin's vacuum cleaner and went door to door to see if he could do some housecleaning. Inside of 3 years he had a janitorial service going with 20 people, making \$50,000, \$60,000 a year for himself.

That is all with a borrowed vacuum cleaner; a zero investment start.

Senator HATHAWAY. Quite a lot of leverage.

Mr. KOBELINSKI. A lot of leverage. It can be done. A lot of these young people should also be encouraged to look at the possibility of going to work for themselves as well as going to get a job from someone else. I think that is an interesting next step for us, once we get our community college program moving.

We also have the technology assistance program. Let me turn to that now, if I may, Mr. Chairman.

We began the development of the SBA technology assistance program in its present form in August 1975, with the establishment of a central office technology assistance division within the office of procurement assistance. The SBA technology assistance program includes three subprograms: Technology assistance, research and development assistance and our joint efforts with the National Bureau of Standards under their experimental technology incentives program.

The technology assistance portion of the program is intended to carry out our responsibility to assist small business concerns to obtain the benefits of research and development performed under Government contracts or at Government expense.

In effect, our field personnel serve as information brokers by assisting small businessmen to define their technology need or problem, searching available data on existing technology, and providing the data located to the small businessman.

The R. & D. assistance program is intended to carry out our responsibility to assist small business concerns to obtain Government contracts for research and development. We do this by providing small R. & D. sources to other SBA programs, that is, prime contracting and subcontracting assistance, by publishing regional directories of R. & D. firms for use by Government agencies involved in

procuring research and development and by assisting small R. & D. firms with proposal and contract problems.

In the central office, we are actively engaged in a variety of cooperative efforts with other agencies to promote increased contracting with small research and development and high technology firms. I will elaborate on these efforts in a moment. First, I would like to describe the ETIP efforts and our joint programs with NASA to promote NASA-developed technology among small businessmen.

In cooperation with National Bureau of Standards/ETIP we are experimenting with ways to increase the number of Government contracts awarded to small R. & D. and high-technology companies. In cooperation with Bureau of Standards, we have launched a 2-year experiment to see if we can develop a system for matching Government R. & D. and high-technology requirements to small firms' capabilities and predict with an acceptable degree of accuracy the likelihood of a given firm successfully performing, if it were awarded the contract. The object is to be able to provide procuring agencies with credible sources for procurements and thereby increase the number of contracts set-aside for small business in the R. & D. and high-technology areas.

In the area of technology assistance, NASA and SBA have established a joint publications program which will provide the small business community with information on available NASA-developed technology. We will mail our first joint publication to approximately 7,000 small firms in the area of electrical and electronic devices and components on April 8.

The second publication in the area of analytical and testing equipment will be mailed to 8,000 firms on approximately April 20. Beginning in May, we will mail flyers to about 25,000 small business firms each month on NASA developed technology in various fields. Each of these publications will invite the small businessman to send for NASA tech briefs in the areas of his choice. When the tech briefs are mailed to firms in regions where we have a technology assistance officer, information on available SBA services will be enclosed.

We are also involved with NASA in a trial report at the Western Research Application Center at the University of Southern California. In this project, we are using a computer terminal to search computer readable technology data bank for solutions to the technology needs of small business firms. The method is to have the WESRAC information specialist, the SBA/TAO and the small businessman work with the computer in an interactive mode to search for the best possible solution to the technology problem.

Once the technology is located, the SBA/TAO will obtain the data, provide it to the small businessman, and follow up with additional assistance as required.

This project has been underway for several months and unfortunately the results have, thus far, been inconclusive. There is no doubt that the interactive search is a workable tool in technology assistance. The problem has been generating an interest within the small business community in the Los Angeles area.

We have experienced some delays in obtaining materials necessary to undertake a direct mailing campaign to make this service known to small businessmen. In Los Angeles, Orange and Ventura Counties of California mailings have now begun and we expect sufficient ac-

tivity over the next few months to determine the value of this service for continued and even expanded use in computers in an interactive mode to solve small business technology problems.

If the computer interactive system proves satisfactory, SBA productivity in terms of the number of cases it can handle per TAO will improve significantly.

I mentioned earlier our central office efforts to increase opportunities in R. & D. and high technology areas for small business to obtain Government contracts. We are undertaking several efforts in this regard. Throughout fiscal year 1976, the SBA technology assistance division will be working closely with the National Science Foundation to help it meet a congressional mandate that at least 7½ percent of its research applied to national needs [RANN] prime contract dollars be expended to small business. We anticipate that this will lead to about \$5.3 million in NSF R. & D. prime contracts going to small firms.

Research areas under this program will include energy, environment, and productivity. The RANN small business program will also attempt to develop incentives to enlarge small business opportunities beyond those to be gained from direct awards, such as teaming small firms with universities or nonprofit organizations and using small firms as first-tier subcontractors.

SBA has, as you are aware, a unique relationship with the Energy Research and Development Administration in that the Energy Reorganization Act of 1974, which established ERDA specifically directed the Administrator of ERDA to consult with the Administrator of SBA in carrying out ERDA's responsibilities to assure:

That small business concerns be given a reasonable opportunity to participate fairly and equitably in grants, contracts, purchases and other Federal activities relating to research, development and demonstration of sources of energy, efficiency and utilization and conservation of energy.

Both ERDA and SBA are actively carrying out these responsibilities. Within the next few days, Mr. Seamans, Administrator of ERDA and I will be signing a memorandum of understanding to establish a formal working relationship between the two agencies.

This agreement will be general in nature and specific cooperative projects will be developed within its framework. We are not, of course, waiting for this formal agreement to begin our mutual efforts. Good working relationships have already been established and cooperative efforts have begun. SBA and ERDA personnel hold weekly coordination meetings dealing with possible joint programs and individual case problems of small businesses.

Possible projects currently being considered include a joint ERDA/SBA effort to develop a computerized centralized source system by small business R. & D. and high-technology firms. This complex task is, we believe, vital to providing small business maximum opportunity to participate in energy related procurement opportunities and will greatly assist in promoting such opportunities in all R. & D. and high-technology areas.

SBA is planning to develop such a source system for all of its programs and welcomes ERDA's participation in such efforts. ERDA and SBA are exploring means of promoting the transfer of ERDA developed technology and possible support of the American Associa-

tion of Small Research Companies. We will continue to expand our joint efforts to provide small business maximum opportunities in energy fields.

At the recommendation of SBA, the Office of Federal Procurement Policy, OMB, recently established a committee of high-level representatives of major Federal agencies involved in procurement of research and development to explore several areas of policy relating to small business participation in contracting for Government research and development. SBA's Office of Procurement Assistance has full membership in this committee and is actively participating in its activities.

We are also continuing our coordination efforts with the Federal Energy Administration regarding the small business aspects of the solar energy Government buildings project including set-asides, adequacy of procurement regulations and impact of such regulations on small businesses in the solar energy area.

Within SBA, we are undertaking a number of initiatives to increase our technology and R. & D. assistance efforts. For the first time in nearly 3 years, we are actively publicizing our technology assistance efforts through a direct mailing of approximately 20,000 brochures a month to firms in selected Standard Industrial Classifications. We are mailing brochures only to those regions where we have a technology assistance officer actively engaged in carrying out the technology assistance function.

At present we have five such active technology assistance officers with two vacancies for which we are currently recruiting. As mentioned earlier, we are moving ahead with a centralized computerized source program. We are attempting to develop a "source of sources" for technology assistance.

In the Federal Government alone, there are over 100 sources of technology data. There are also numerous technical experts upon whom we can call to assist small businessmen with technology problems. In order to assist our field TAOs in knowing of and using these technology sources, we plan to develop a centralized index of such sources and technical expertise.

We do not plan to duplicate existing data banks but rather to be able to direct our field people to the best possible sources of data or expert assistance for any technology problem.

In order to establish this "source of sources" file, we will have to search out all available data sources and technical expertise available. We anticipate the need to establish a series of interagency agreements with agencies having the data and/or the technical experts so that we know what can and will be made available to SBA for assisting the small business community.

Currently, we have 2,061 firms listed in our regional R. & D. directories. In the 1976 edition to be published in September, we are striving to increase the listings to approximately 3,000 small scientific, engineering, or research and development firms.

Mr. Chairman, this concludes my prepared statement. I would be pleased to answer any questions the committee may have.

Senator HATHAWAY. Thank you, very much.

[The prepared statement of Mr. Kobelinski follows:]



SMALL BUSINESS ADMINISTRATION

***** Washington, D.C. *****

STATEMENT OF
 MITCHELL P. KOBELINSKI, ADMINISTRATOR
 SMALL BUSINESS ADMINISTRATION
 BEFORE THE
 SELECT COMMITTEE ON SMALL BUSINESS
 UNITED STATES SENATE

April 7, 1976

Mr. Chairman, I very much appreciate the opportunity to appear before this Committee to discuss the management and technology assistance programs of the Small Business Administration.

THE MANAGEMENT ASSISTANCE PROGRAM

The Small Business Administration reached over one million small businesses last year with its management assistance efforts. Of these, more than 256,000 have received in-depth help through training and counseling. Our distribution in management publications exceeded 5,000,000 copies of 300 titles.

2

First, I will cover our basic ongoing programs which consist of one-to-one counseling, group training and publications. Then, I will sketch some new initiatives we are working on.

Counseling

We have four primary resources to provide one-to-one help. They are:

- , Volunteers
- Call Contractors
- Small Business Institute (SBI)
- Staff Management Assistance Officers

As you will note as we briefly discuss these resources, only the volunteer and Small Business Institute programs are readily expandable.

Volunteers

In the volunteer category, we include SCORE (Service Corps of Retired Executives), ACE (Active Corps of Executives) and members of professional associations that have agreed to work with us.

Within the SCORE/ACE organization we have over 8,000 of the Nation's most talented executives who give their time freely to help build the small

3

business community which they regard as the foundation of the free enterprise system. This organization blankets the country with 293 chapters that reach every city, town, and hamlet of the United States and its possessions.

SCORE volunteers do basic counseling, conduct pre-business workshops for prospective small business people, and actually man desks in our field offices to help our walk-in clients. Our ACE volunteers are full-time employed individuals who give generously of their time but typically are used as back-up for SCORE and to provide unique expertise in counseling and training small business owners. Members of professional associations such as the National Association of Accountants, the American Institute of Industrial Engineers, the National Association of Minority CPA Firms and the National Federal and Business and Professional Women's Club, Inc., function much as ACE except that they are not individually registered by SBA as are SCORE and ACE volunteers. They bring a depth of knowledge in specialized fields at no charge to small businessmen and women.

Expanded SCORE

SCORE requires a substantial amount of management and administration if it is to perform effectively. During the initial years of

4

SCORE, SBA personnel did much of this administrative work. Now SCORE has grown, and if the needs of small business are to be served, its membership and outreach must be multiplied during the next few years. The SBA does not have the personnel to enlarge and manage the SCORE of 1977, 1978 and beyond.

Now, if you were looking for management talent, where would you look but SCORE? This thought led us to planning an administrative arm of the SCORE organization. This arm will consist of three to five volunteers located in Washington who will work hand in hand with the SBA to develop and administer the overall SCORE/ACE organization. These volunteers will serve on a rotating basis and provide the national management of SCORE. The national SCORE/ACE office will direct a regional and district organization roughly paralleling the SBA organization down to the field office and chapter level. In this way SCORE will become self-administering and can provide a much greater service to the small business community without the necessity of enlarging the SBA staff.

We have plans to expand SCORE into new areas of assistance to small business. For example, Occupational Safety & Health Program, OSHA,

5

has created many hardships unique to small business. The problems arise in meeting the safety standards. We plan to recruit SCORE volunteers with appropriate backgrounds that will enable the Department of Labor to train them to advise small businesses on OSHA matters. This cadre of volunteers with OSHA expertise will provide seminars on OSHA standards and they will make on-site (no report) reviews of small business operations to counsel and advise of possible OSHA violations. We believe this will do much to relieve the Federal Government of its present highly unfavorable image in the eyes of most small business owners, and it will help thousands of small businesses avoid disastrous shut-downs, fines and sudden, large correctional expenditures.

The shocking impact of shoplifting, pilferage and related crimes on small businesses has led us to recruit special volunteers to advise small businesses on preventing losses from crime. The extent of the crime problem is indicated by the following: There were \$20.3 billion losses nationally in 1974 -- a 31% increase over 1971. The remaining third is generally caused through shoplifting. Special assistance to the small business community is required in both counseling and training.

6

It is vital to our balance of payments and the health of our economy that thousands of small businesses understand and develop their export trade potential. In order to make that a reality, the SBA plans a much expanded international trade program.

We anticipate a heavy participation of SCORE/ACE in this program. The assignment of a national SCORE international coordinator within the SCORE National Office who will, along with appropriate Central Office personnel, recruit several hundred more volunteers with extensive international trade expertise is planned. We are planning training for these as well as current SCORE/ACE volunteers who have international trade experience so that SBA field offices will have an up-to-date adequate capability to provide the quantity and quality international trade counseling that is needed to meet our Nation's needs for more exports.

A concentrated effort will be made to recruit volunteer marketing specialists in all SCORE/ACE chapters. If our small business community is to survive and grow, virtually all small businesses must have the benefit of modern marketing techniques. These SCORE specialists will be working shoulder to shoulder with members of the American Marketing Association, our Call Contractors, university students and our SBA staff to help small business owners identify markets and promote sales.

7

Soaring energy costs and shortages of materials and fuels have imposed significant hardships on the 9.4 million small businesses in the United States. Lacking the sophistication and financial resources of larger companies, the small businessman frequently finds it difficult to make the adjustments necessary for survival. We are recruiting volunteers to counsel small businesses on their energy problems. The Federal Energy Administration has joined hands with the SBA in this endeavor. FEA will provide the programmatic and training elements and SBA will provide the delivery system through SCORE.

Call Contractors

Under our Call Contracting Program we contract with professional consultants throughout the country to provide highly specialized and timely individual help to eligible socially and economically disadvantaged clients. In FY 1975, almost 3,000 small businesses received help from professional consultants under contract. Without this consulting help, many of these struggling small business owners would have failed with a devastating economic and social loss, and many jobs would have disappeared. A recent external study establishes the success rate of this SBA program to be well above the national average for professional consultants.

Small Business Institute

The Small Business Institute Program is a three-way cooperative between collegiate schools of business administration, members of the Nation's small business community and the Small Business Administration. Under the supervision of university faculty and SBA staff, a team of two to four senior and graduate students of business administration work directly with owners of small firms for an entire semester providing management counseling at no cost to the business person. During the semester the students make an in-depth analysis of the problems and opportunities available to the small business owner. Often a SCORE volunteer serves as an advisor to the students. At the end of the semester, a report is written in language the small business person can understand. This is thoroughly reviewed with the business owner. The SCORE person then follows up in the ensuing months to help the business owner to implement the recommendations. Participating schools receive modest contracts from SBA which pay roughly half the cost of the programs. Presently the SBA has 385 universities with 2,000 faculty members and an army of 20,000 students working in the SBI program. Eighty-seven percent of the small businesses involved rate the program "good" to "excellent."

There has been an exciting added benefit or outfall of the SBA Small Business Institute Program. Less than a decade ago only eight universities in the country offered courses in entrepreneurship and new business venture limitation. With the development of the SBI program, tens of thousands of outstanding students have become interested in the potential of the free enterprise system. Coincidental with this new found interest in our Nation's system of business and economics, a groundswell of demand developed among these students for courses in entrepreneurship and new enterprise development. The result of this has been that almost one hundred of our leading universities are now offering these courses. Within two years of graduation, several universities have reported that 10 to 12 percent of these students have launched new business enterprises. Thus, the SBI program not only deals with the problems of established small businesses, but it also has a major influence in developing entrepreneurs for the years ahead.

Staff Management Assistance Officers

The professional field staff of the SBA manage and leverage the Volunteer, Call Contract and Small Business Institute resources as well as provide direct counseling to small businesses when the other resources are not available.

10

Training

When the training program was initiated with two courses over 20 years ago, there was little or no business training tailored to meet the needs of small business offered at any of the Nation's colleges or universities.

As the popularity of the management course program increased, in 1961 a program of small business management conferences was implemented to accommodate large groups in sessions running from four to five hours to several days.

Responding to the need for short sessions on specialized problems, in 1968 problem clinics were added as another training vehicle. The clinics are small groups of business persons with a common problem who meet for two or three hours with a resource person to discuss and arrive at solutions to that problem.

Small business owners and managers and operators will receive about 2 million man hours of training this year. Last year we held 4,579 training sessions with 154,829 attendees.

11

Publications

SBA's management assistance publications provide a vehicle for reaching out to the small business community with reliable management information that is understandable and timely.

The publications vary from 4-page leaflets to booklets that vary in length from 18 pages to 270 pages. The larger publications are sold at cost. Most are provided without charge. The 300 titles provide practical suggestions from subject matter experts. About five million copies are distributed annually. Of the 44 million printed during the last decade, it is estimated that 12-14 million are still in use -- about 1-1/2 for every small business in the United States.

New InitiativesInternational Trade

A vigorous and highly aggressive export program is being developed in concert with the Department of Commerce for FY 1977.

From a pilot operation we have found:

12

(1) Small firms, primarily manufacturers, have not realized their export potential; (2) firms within the areas of greatest undeveloped export potential are predominantly small; (3) extensive and valuable export information and assistance are available, but the small business community does not know of its existence; (4) given the proper assistance small business firms can successfully export; and (5) the SBA program will make it possible to provide export assistance to the majority of prospective small business exporters.

We are reviewing our resources with the hope of expanding our Central Office international trade staff from 2-1/2 persons to 5 and putting in place at least 14 professionals in selected cities of high export potential. We plan to assign within each SBA field office as collateral duty of a management assistance specialist, the responsibility for the office's international trade program targets and objectives.

University Business Development Centers

The University Business Development Center (UBDC) concept joins the efforts of several federally-sponsored programs which aid small business and students on university campuses throughout the country. Mutually

13

supportive and sometimes overlapping, these existing Federal and state programs will be linked up under a cohesive master plan to increase their efficiency and to provide greater leverage of the resources. At the same time, agencies such as HEW, SBA, NSF, Commerce (EDA and OMBE), the Bureau of Standards and others will maintain their separate identities and independence of administration. The link-up and implementation will take place at the university level.

At a University Business Development Center, a small business owner or one who desires to launch a new enterprise will find a "full service" agency capable of providing:

1. A thorough analysis of business skills and aptitudes.
2. Training to develop or enhance business skills.
3. A facility to provide feasibility studies and a resource for complete business planning.
4. An analysis center to completely review all of the functions and operations of a present or planned business including management, financial, marketing, production.
5. A technology utilization center to enable small business to utilize the \$345 billion of Federal Government-sponsored research and development.
6. A center for idea and product development.

14

All of these functions and others are now being performed at widely scattered universities throughout the country; but nowhere have these federally-sponsored programs been linked up to provide the full service envisioned in the University Business Development Center concept.

Students participating in the program would have a greatly expanded opportunity to learn by doing in an interdisciplinary relationship. Practical application of academic learning would make education more relevant and better prepare students for the work-a-day world.

SBA proposes to identify programs and funding paths for universities and colleges and help them add the elements necessary to create their own Development Centers. These may differ from school to school, depending upon their orientation and size, and the needs of the communities in which they are located, but each would foster the growth of present local businesses, and help establish new enterprises in a systematic way.

None of the resources discussed are new. Each of them exists somewhere. But UBDC, by combining the existing multiple resources of academia, Federal and State agencies, and volunteer organizations into

15

a university-coordinated delivery system, is the best means for promoting broad scale business growth in our country today.

New Training Plans

Preliminary plans are being developed which will draw on the resources of continuing education programs in community colleges to implement and conduct more small business management courses. As these become self-sustaining, SBA can act as a catalyst between the small business persons working and needing training and the community colleges offering the training. SBA co-sponsorship efforts can then be concentrated on filling in the gaps where no training is available.

A contract will be let this fiscal year for module-form, learner-oriented course material on Managing for Profits.

Some of the new materials will be particularly useful in several self-learning centers we plan to pilot in FY 1977. These centers will make management information available at the convenience of the small business person.

THE TECHNOLOGY ASSISTANCE PROGRAM

We began the development of the SBA Technology Assistance Program in its present form in August 1975, with the establishment of a Central Office Technology Assistance Division within the Office of Procurement Assistance. The SBA Technology Assistance Program includes three subprograms: Technology Assistance, Research & Development Assistance and our joint efforts with the National Bureau of Standards under their Experimental Technology Incentives Program (ETIP).

The technology assistance portion of the program is intended to carry out our responsibility to assist small business concerns to obtain the benefits of research and development performed under Government contracts or at Government expense. In effect, our field personnel serve as information brokers by assisting small businessmen to define their technology need or problem, searching available data on existing technology, and providing the data located to the small businessman.

The R&D Assistance Program is intended to carry out our responsibility to assist small business concerns to obtain Government contracts for research and development. We do this by providing small R&D

17

sources to other SBA programs, i. e., Prime Contracting and Subcontracting Assistance, and publishing Regional Directories of R&D firms for use by Government agencies involved in procuring research and development and by assisting small R&D firms with proposal and contract problems. In the Central Office, we are actively engaged in a variety of cooperative efforts with other agencies to promote increased contracting with small research and development and high technology firms. I will elaborate on these efforts in a moment. First, I would like to describe the ETIP efforts and our joint programs with NASA to promote NASA developed technology among small businessmen.

In cooperation with National Bureau of Standards/ETIP, we are experimenting with ways to increase the number of Government contracts awarded to small R&D and high-technology companies. In cooperation with the Bureau of Standards, we have launched a two-year experiment to see if we can develop a system for matching Government R&D and high-technology requirements to small firms' capabilities and predict with an acceptable degree of accuracy the likelihood of a given firm successfully performing, if it were awarded the contract. The object is to be able to provide procuring agencies with credible sources for

18

procurements and thereby increase the number of contracts set aside for small business in the R&D and high-technology areas.

In the area of technology assistance, NASA and SBA have established a joint publications program which will provide the small business community with information on available NASA developed technology. We will mail our first joint publication to approximately seven thousand small firms in the area of electrical and electronic devices and components on April 8. The second publication in the area of analytical and testing equipment will be mailed to eight thousand firms on approximately April 20. Beginning in May, we will mail flyers to about 25,000 small business firms each month on NASA developed technology in various fields. Each of these publications will invite the small businessman to send for NASA Tech Briefs in the areas of his choice. When the Tech Briefs are mailed to firms in regions where we have a Technology Assistance Officer, information on available SBA services will be enclosed.

We are also involved with NASA in a trial report at the Western Research Application Center at the University of Southern California. In this project, we are using a computer terminal to search computer

19

readable technology data banks for solutions to the technology needs of small business firms. The method is to have the WESRAC Information Specialist, the SBA/TAO and the small businessman work with the computer in an interactive mode to search for the best possible solution to the technology problem. Once the technology is located, the SBA/TAO will obtain the data, provide it to the small businessman, and follow up with additional assistance as required. This project has been under way for several months and unfortunately the results have, thus far, been inconclusive. There is no doubt the interactive search is a workable tool in technology assistance. The problem has been generating an interest within the small business community in the Los Angeles area. We have experienced some delays in obtaining materials necessary to undertake a direct mailing campaign to make this service known to small businessmen. In Los Angeles, Orange and Ventura counties of California mailings have now begun and we expect sufficient activity over the next few months to determine the value of this service for continued and even expanded use in computers in an interactive mode to solve small business technology problems. If the computer interactive system proves satisfactory, SBA productivity in terms of the number of cases it can handle per TAO will improve significantly.

20

I mentioned earlier our Central Office efforts to increase opportunities in R&D and high technology areas for small business to obtain Government contracts. We are undertaking several efforts in this regard. Throughout FY 1976, the SBA Technology Assistance Division will be working closely with the National Science Foundation (NSF) to help it meet a congressional mandate that at least 7-1/2 percent of its Research Applied to National Needs (RANN) prime contract dollars be expended to small business. We anticipate that this will lead to about \$5.3 million in NSF R&D prime contracts going to small firms. Research areas under this program will include energy, environment and productivity. The RANN Small Business Program will also attempt to develop incentives to enlarge small business opportunities beyond those to be gained from direct awards, such as teaming small firms with universities or nonprofit organizations and using small firms as first-tier subcontractors.

SBA has, as you are aware, a unique relationship with the Energy Research and Development Administration (ERDA) in that the Energy Reorganization Act of 1974, which established ERDA, specifically directed the Administrator of ERDA to consult with the Administrator

21

of SBA in carrying out ERDA's responsibilities to assure ". . . that small business concerns be given a reasonable opportunity to participate, . . . fairly and equitably in grants, contracts, purchases and other Federal activities relating to research, development and demonstration of sources of energy, efficiency and utilization and conservation of energy." Both ERDA and SBA are actively carrying out these responsibilities. Within the next few days, Mr. Seamans, Administrator of ERDA, and I will be signing a Memorandum of Understanding a formal working relationship between the two agencies. This agreement will be general in nature and specific cooperative projects will be developed within its framework. We are not, of course, waiting for this formal agreement to begin our mutual efforts. Good working relationships have already been established and cooperative efforts have begun. SBA and ERDA personnel hold weekly coordination meetings dealing with possible joint programs and individual case problems of small businesses. Possible projects currently being considered include a joint ERDA/SBA effort to develop a computerized centralized source system by small business R&D and high technology firms. This complex task is, we believe, vital to providing small business maximum opportunity to participate in energy related procurement opportunities and will greatly assist in promoting such opportunities

22

in all R&D and high technology areas. SBA is planning to develop such a source system for all of its programs and welcomes ERDA's participation in such efforts. ERDA and SBA are exploring means of promoting the transfer of ERDA developed technology and possible support of the American Association of Small Research Companies. We will continue to expand our joint efforts to provide small business maximum opportunities in energy fields.

At the recommendation of SBA, the Office of Federal Procurement Policy (OMB) recently established a committee of high level representatives of major Federal agencies involved in procurement of research and development to explore several areas of policy relating to small business participation in contracting for Government research and development. SBA's Office of Procurement Assistance has full membership in this committee and is actively participating in its activities.

We are also continuing our coordination efforts with the Federal Energy Administration regarding the small business aspects of the Solar Energy Government Buildings Project including set-asides, adequacy of procurement regulations and impact of such regulations on small businesses in the solar energy area.

23

Within SBA, we are undertaking a number of initiatives to increase our technology and R&D assistance efforts. For the first time in nearly 3 years, we are actively publicizing our technology assistance efforts through a direct mailing of approximately 20,000 brochures a month to firms in selected Standard Industrial Classifications. We are mailing brochures only to those regions where we have a Technology Assistance Officer (TAO) actively engaged in carrying out the technology assistance function. At present, we have five such active Technology Assistance Officers with two vacancies for which we are currently recruiting. As mentioned earlier, we are moving ahead with a centralized computerized source program. We are attempting to develop a "source of sources" for technology assistance. In the Federal Government alone, there are over one hundred sources of technology data. There are also numerous technical experts upon whom we can call to assist small businessmen with technology problems. In order to assist our field TAOs in knowing of and using these technology sources, we plan to develop a centralized index of such sources and technical expertise. We do not plan to duplicate existing data banks but rather to be able to direct our field people to the best possible sources of data or expert assistance for any technology problem. In order to establish this "source of sources" file, we will have to search

24

out all available data sources and technical expertise available. We anticipate the need to establish a series of Interagency Agreements with agencies having the data and/or the technical experts so that we know what can and will be made available to SBA for assisting the small business community.

Currently, we have 2061 small firms listed in our regional R&D directories. In the 1976 edition to be published in September, we are striving to increase the listings to approximately 3000 small scientific, engineering, or research and development firms.

Mr. Chairman, this concludes my prepared statement. I would be pleased to answer any questions the Committee may have.

Senator HATHAWAY. What is your budget for the technology assistance program for this year, and, do you think it will be sufficient? Do you think it will be funded, for one thing?

Mr. KOBELINSKI. It looks like a total of \$600,000 and since our proposed budget has been approved on the House side by the Appropriations Committee, I am hopeful that that will come through.

Senator HATHAWAY. Do you think that would be sufficient for the rest of this fiscal year?

Mr. KOBELINSKI. For this year, it will be. I am thinking as this gets geared up, it is perhaps something we will have to look at in a very fresh way and turn to OMB for the following fiscal year and look at some other figures.

To our way of thinking, the amount budgeted for the current year should be sufficient.

Senator HATHAWAY. You will be able to increase your staff?

Mr. KOBELINSKI. Unfortunately, there is not any real increase in staff that has been budgeted. We have 14 people in the technology assistance. What we are hopeful of doing is leveraging these people by bringing in a lot of SCORE people to assist us in this area.

Senator HATHAWAY. The SCORE people will be the field people?

Mr. KOBELINSKI. Help us in the field.

Senator HATHAWAY. Do you think it will be easy to get SCORE people qualified to do this?

Mr. KOBELINSKI. It is a more challenging activity for a person who has had a high-level executive job, particularly in some R. & D. type of firm or a firm that had high technology at his disposal. If you bring him into SCORE and ask him to interview young proposed applicants for a new small business, he might get bored with that after a few months.

On the other hand, if you give him this kind of challenge to help us work in this area, I think there is a way we can deliver this.

Senator HATHAWAY. The SCORE person would be out in the field talking to the small businessman?

Mr. KOBELINSKI. With the small businessman and use the technology that we have and the data banks that we are going to try to use out of the computers and so on.

Actually, we have started this program in Los Angeles right now. It is in effect. Mr. Warren has put that in effect. So we have some assistance going in this area in a pilot program right now.

We have hopes of leveraging this thing to make up for the lack of our own staff.

Senator HATHAWAY. What about the money for the other programs that you talked about in the course of your testimony? Do you have adequate funding?

Mr. KOBELINSKI. Well, I think—

Senator HATHAWAY. For the export program and the university program?

Mr. KOBELINSKI. We will have enough. We have been given an extra \$1 million for the SBI program this year. We expect to be able to transfer about \$1 million to expand that University Business Center and SBI activity. We think our budget will be adequate to handle our needs this year, including putting on at least one top staff person to take charge of our international trade desk, so to speak.

There, again, we have plenty of retired executives in this area, if we just ferret them out. They will be using their special expertise when we put them to work in helping us develop this international trade program.

Senator HATHAWAY. Are you expanding on the international trade program that already exists in the Department of Commerce, or is this a brand new idea?

I know we passed legislation through the Banking Committee, that assigned one person in the Export-Import Bank to deal with small business problems. That did not work out as well as we thought it might.

As you once told me, the person just answered letters and was not much of a promoter, nor was he working full-time in that particular field.

Mr. KOBELINSKI. We are going to see if we can modify the attitudes at the Export-Import Bank by giving them plenty of jobs, plenty of assignments in assisting us in carrying out this program. They may ultimately end up assigning someone who has no other responsibility but that of helping the small businessman. Of course, I think that this objective will be a part of our advocacy role, to see that it does materialize.

Senator HATHAWAY. Doesn't Commerce already have a trade program?

Mr. KOBELINSKI. Commerce does have a trade program. They are moving in that direction. Now it is a question of marrying the efforts of the Commerce Department, and the knowledge that comes from the SBA through the financing vehicles and getting it to our constituency.

We have the direct contact, or more of a direct contact with the small business constituency than the Commerce Department does. It is a question of bringing together all of these efforts so that they are organized and delivered to the small businessman. The failure has been in getting that outreach to the small businessman.

Senator HATHAWAY. At what stage of development is the export program now?

Mr. WARREN. We have met with the Department of Commerce over the last 3 months to scope out this program. We are reaching a new agreement with them. We had an agreement that was signed in 1967 which was perhaps less comprehensive than it should have been.

We are working very closely together; the Administrator and the Secretary of Commerce will be signing a new agreement very shortly.

We will be using SCORE people, as the Administrator has testified. We will start the program with the Department of Commerce by outlining all the small- and medium-sized businesses in the country that we believe have export potential. Because their files are not up-to-date, we will be making a nationwide survey in cooperation with the Department of Commerce. They will be providing training for SCORE people. They will provide, in their offices throughout the country, expertise that is beyond ours and we will be working very closely together to both ferret out and deliver the expert information, training, and counselling that is needed.

Senator HATHAWAY. Do you have any figures indicating what share of the export market small businesses get at the present time?

Mr. WARREN. I am sorry; I do not have those.

Senator HATHAWAY. If you could give us those for the record so we can keep tabs on your program to see how well it works out.

Mr. WARREN. Yes, sir.

[The information referred to follows:]

It should be noted that precise figures are not readily available. However, using the best information available from the Department of Commerce, Department of the Treasury and the Export-Import Bank, it is estimated that only 5 to 10% of our non-farm exports are generated by the small business community.

Senator HATHAWAY. One last question I want to ask you. I think the Small Business Administration has done an excellent job over the years, at least since I have been familiar with it—which is quite a few years now, because I was familiar with it before I came to the Congress 15 years ago—especially considering the amount of money that has been appropriated for your efforts. The only shortcoming I have ever heard from small businessmen is the lack of information about the various programs. It seems it is very difficult for them to get information on the programs.

Small business seminars have been held in Maine to acquaint businessmen with the Government procurement program. Maine and many other States do not participate in that program anywhere near to the extent that they should.

I wonder if you have any suggestions as to what we might do to help you in getting more information out to small businessmen and women.

Some States, like Pennsylvania, I understand, with State funds, have hired a person to disseminate information with respect to Government procurement. Other States are not as well off as that, or have not thought of that idea, so they have not done it.

The last time we had hearings on this matter, I think it was Mr. Kleppe who indicated they did not have the money to carry on the information program that they needed.

Mr. KOBELINSKI. Senator, I really do feel that one of the suggestions you are making is a very viable method and very close to the businessman method of getting this whole program across. That is having State officers that will act as a conduit.

I was just up in Kalamazoo, Mich. yesterday and spoke with the development officer there in Michigan. He described his program. I was very pleased to hear what a very active program they had, trying to match the SBA effort and bring the knowledge of our programs, specific knowledge of our programs, to the small businessman.

After all, in each State, you do have differing small business needs. Some States have their specialties in the area of different types of manufacturing. For us to sit in Washington, even if we have district offices out there to try to tailor this thing, to really know how to bring the information in the hands of business. I think we can do a far better job if we act in cooperation with a State agency.

I would strongly urge every State—and I would like, as a part of our program to energize this so we have more States setting up actual counterparts of our SBA activity on a State level. I think we could give a better delivery service that way.

In the meantime, we are not going to rely on that alone. We have a new public relations effort that we are going to mount. It will be kicked off with our small business week that comes up May 10 through 14, and that will be kind of a kickoff for a strong public affairs type of outreach program that I want to put into place.

I have said to your committee, I believe, Mr. Chairman, and to the committees on the House side—I would like to take these first 90 days in office between February 12 and the first week or so in May to structure our program and the thrust and to identify the priorities for the agency and then come forth and sit down with the committees on both sides and set out a program of action.

I am hoping to be able to do that by the first of May and announce these things during Small Business Week and move ahead. I can tell you ahead of time that one of the things is to have a public relations program which identifies all of our programs and tries to have a much stronger outreach, so we are certain that at least we are making our programs known in a general way to every small businessman in the country.

Senator HATHAWAY. This will be carried on through the media, or through mailings?

Mr. KOBELINSKI. We are going to work with the media. We are energizing a speaker's program utilizing our advisory council members—again, we are leveraging—we will be demanding that each one of our district directors arrange to give some kind of public address somewhere, at least twice to three times a month and arrange to have members of his advisory council doing the same thing in his district, so they are reaching out.

I think we have to utilize the local businessman's associations, the Northwest Cleveland Businessman's Association, if you will, the South Chicago Industrial Association, et cetera, and rely on trying to reach these businessmen on their level where they are active.

They may be members of the national associations. The national associations do a very reputable job in representing the interests here in Washington. You can hardly reach out and establish a close understanding and rapport with the small businessman without going out to the local level and working with him in the local associations.

We want the Rotaries, the Kiwanis, the local trade association, the industrial associations, to hear us. We will be using our advisory council people and our district people to get out there. We are hopeful of being able to reach a substantial number of our small businessmen directly this way.

Senator HATHAWAY. Good.

Thank you very much. I enjoyed your testimony and your answers to our questions. We have some other questions, Mr. Administrator, that we will submit to you in writing, and we would appreciate your answering for the record questions that would require some research.

Thank you very much. It is nice to have you here, Mr. Administrator. Good luck in your new job. I know you will do an excellent job.

Our next witness is Mr. Dale Babione, deputy assistant secretary for procurement, office of the assistant secretary, Department of Defense.

Mr. Babione, it is nice to see you.

Mr. BABIONE. With your permission, I have a short statement. I would like to read it.

Senator HATHAWAY. Would you identify the gentlemen accompanying you?

Mr. BABIONE. Yes, sir, I will identify them in the statement.

Senator HATHAWAY. All right.

STATEMENT OF DALE R. BABIONE, DEPUTY ASSISTANT SECRETARY FOR PROCUREMENT, OFFICE OF ASSISTANT SECRETARY, DEPARTMENT OF DEFENSE, ACCOMPANIED BY LEONARD WEISBERG, ASSISTANT DIRECTOR OF ELECTRONICS AND PHYSICAL SCIENCES IN THE OFFICE OF DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING; AND STANLEY TESKO, DEPUTY DIRECTOR, SMALL BUSINESS OFFICE

Mr. BABIONE. Mr. Chairman and members of the committee, I appreciate the opportunity to appear before your committee today to report on our Small Business program and activities in support of small research and development firms.

I have with me Mr. Leonard Weisberg who is the assistant director of electronics and physical sciences in the office of the director of Defense Research and Engineering. He is responsible for management guidance and technical expertise for Defense contracts concerning electronics and physical sciences R. & D. I also have with me Mr. Stanley Tesko, who is the deputy director of our Small Business Office.

Before discussing our small business performance, I would like to note that the dollar figures I will refer to throughout my presentation include only awards made to domestic U.S. business firms.

In fiscal year 1971, it was evident that the small business share in Defense procurements had been declining since the peak fiscal years of 1966 and 1967. However, this share has now shown a steady increase since the low of 17 percent for prime contractor awards in fiscal year 1971. Last fiscal year, fiscal year 1975, we had an exceptionally good year when we increased small business awards by another \$911 million over fiscal year 1974, attaining a small business share of 20.7 percent. This is the highest rate of small business attainment since fiscal year 1956, except for fiscal year 1966 when it reached a level of 21.8 percent.

In attachments 1, 2, and 3, I have furnished your committee a summation of our accomplishments compared with our prime contract award objectives for the past several years. I call attention to the fact that we have met or exceeded our goals for the past 4 fiscal years.

The subcontracting picture has also improved. In fiscal year 1972, the percentage of subcontracts received by small firms was 34.8 percent, which in fiscal year 1975 increased to 39.3 percent, the highest since 1969. Attachment 4 depicts our experience for fiscal years 1972-75.

Research and development awards to small firms have set a new record. The dollars have climbed significantly each year from \$183 million awarded in fiscal year 1971. For fiscal year 1972, the figure was \$256 million, and for fiscal year 1973, it was \$272 million. In fiscal

year 1974, despite a drop of more than \$500 million in total R. & D. awards compared with fiscal year 1973, small business received \$300 million, which represents 5.8 percent of the total.

In fiscal year 1975, small firms increased their awards to \$316 million although the percentage dropped slightly to 5.6 percent. Nevertheless, our last year's performance represents an all-time high for DOD in R. & D. in the amount of dollar awards to small firms and the highest percentage of awards since fiscal year 1956, except for fiscal year 1974.

In our statistics for R. & D. contracting for awards of \$10,000 or more, we provide for recording four categories of effort, consisting of research, exploratory development, advanced development, and management support. Of the total R. & D. awards with U.S. business firms in fiscal year 1975, 2.1 percent or \$115.6 million was for research, 7.6 percent or \$427 million was for exploratory development, 84.8 percent or \$4.74 billion for other more advanced types of development, and 5.4 percent or \$301.1 million was for management and support. I want to emphasize that these total dollars listed here are for R. & D. awards to business firms only and do not include awards to universities and nonprofit institutions.

Of these awards, small business won an impressive 26.3 percent of the dollars awarded in the research category, and exploratory development, small business is well-equipped to perform, and accordingly they have fared well.

The majority of the dollars are in the advanced developmental category. Programs in this category are generally for major weapon systems such as the B-1 and the F-15 aircraft Safeguard and Poseidon missile systems. As might be expected, such large system contracts are awarded to large companies and accordingly the share of small business here is only 3.2 percent, considerably lower than research and exploratory development. In dollar terms this accounts for \$151 million. In the management/support category the percentage of small business funding climbs to 11.3 percent.

The DOD is participating in an ad hoc panel recently established by the Office of Federal Procurement Policy. The purpose of this panel is to determine what actions are to be taken to enhance the role of small business in innovations in R. & D. and how awards to small R. & D. firms can be increased. Mr. Weisberg is the DOD representative to this panel and is working closely with my office regarding any procurement aspects which must be considered.

We are involved in several other actions in order to assist the small R. & D. firm. We believe that one of the first places to start is to get the "word" out to the small R. & D. businessman as to how to do business with us, which of our activities purchase which kinds of R. & D., and whom can they contact for assistance. The key to increasing awards to small R. & D. firms is the assurance that an increased number of small firms can be expected to bid on our R. & D. procurements. This can be enhanced by getting the word out to as many small firms as possible to make application to be included in the bidder's mailing list of our procuring activities.

On January 21 and 22, 1976, we supported the Research Council for Small Business and the Professions which conducted a 2-day

seminar for the National Science Foundation's "Research Applied to National Needs"—RANN—held for small R. & D. businessmen. We are also actively engaged with the Department of Commerce in supporting the Federal procurement conferences which are sponsored by individual Members of Congress in their local districts or States.

At each of these conferences, we provide the senior small business advisor from one of the military services, the Defense Supply Agency or the Defense Contract Administration Service as well as other DOD representatives from our activities located in the proximity of the congressional member's constituency. These DOD personnel provide information on how to do business with the military.

Businessmen are given copies of the booklet "Selling to the Military," which tells them what products and services each of our activities buys and what procedures must be followed to be placed on our bidders' mailing list.

The updated and expanded version of this publication is now at the Government Printing Office and will include a separate section on research and development listing our R. & D. activities, what they buy, and how to prepare an unsolicited proposal.

I might also mention that we publish a booklet listing each of our approximate 600 small business specialists by their assigned procurement activity and location. These individuals assist businessmen desiring to obtain procurements, but more important, they screen every procurement over \$2,500 to determine if it can be set-aside for exclusive small business participation. Additionally, all of the military services distribute publications which treat their requirements in greater detail.

A specific senior technical individual at each of our laboratories has been assigned as one of his duties to help small businessmen desiring to obtain research and development contracts. Individuals so assigned work with the small business specialists in terms of offering advice on R. & D. matters, such as identifying the particular engineer who is most familiar with a forthcoming R. & D. procurement. This is part of our continuing efforts to involve technical personnel in the small business program.

We synopsise all of our procurement requirements valued in excess of \$10,000 in the Commerce Business Daily. Notices are also published of every award valued in excess of \$25,000 which provides small firms the opportunity to compete for subcontract awards.

Our military services conduct advanced planning briefings for industry to inform them of what we will be looking for in the near future. The Navy has established two Nardie's—Navy R. & D. Information Center—one on each coast which includes Air Force representation. These offices make information regarding R. & D. planning and requirements available to small business.

The Navy has also established a NICRAD—Navy/industry cooperative R. & D. program—which furnishes scientific and technical information on the operational capabilities and requirements of the U.S. Navy to nongovernment activities on a cooperative, no-cost contract basis.

It is DOD policy to utilize the R. & D. sources sought section of the Commerce Business Daily whenever practical to seek additional small

business sources for R. & D. procurements anywhere from 3 to 6 months in advance of the actual procurement. This technique is particularly helpful to small business firms. It gives them an opportunity to respond, by submitting technically qualifying information, to any synopsis in which they have an interest.

Our small business specialists work closely with the SBA R. & D. specialists in identifying additional small R. & D. firms to our contracting officers. The SBA provides us a valuable service by its yearly publication of a sources list of small R. & D. firms. This list is distributed to all of our activities involved in R. & D.

It is the policy of the Department of Defense to promote military-civilian technology transfer and cooperative development. This policy encompasses: (1) The transfer of technology developed by DOD activities for national defense purposes to the civilian sector where such technology can be profitably utilized in nonmilitary applications; and (2) the identification of coming technologies of both military and civilian interest and the exploration of the feasibility for cooperative funding and for development of such technologies.

We accomplish this primarily through our Defense Documentation Center, DDC. DDC assists these Government contractors—and potential Defense contractors—by supplying technical reports of completed R. & D. efforts as well as summaries of ongoing R. & D. projects. These services are available to all U.S. Government activities and to their contractors, subcontractors and grantees—regardless of size.

The systematic and timely availability of these technical reports and current project summaries helps significantly to prevent or reduce unnecessary duplication of R. & D. projects and to accelerate the completion and application of research information in order to shorten the “concept-to-delivery” cycle.

The DDC technical document collection totals more than 1 million different titles, covering all areas of science and technology. Information in these reports could enhance the efforts of aerodynamicists, chemists, mechanical engineers, psychologists, ecologists, or any other person in the Federal R. & D. community.

There are thousands of summaries in the Center’s work unit information system which answer the who, what, when, where, and how concerning ongoing, Defense-sponsored, R. & D. efforts. Included is a narrative description of each effort, its purpose, costs and the activities responsible, with names and telephone numbers of key personnel.

Organizations registered with DDC have access to a variety of products and services. Most of these services are provided free of charge, while very nominal fees are imposed on others.

DDC receives all Defense-related reports with classifications ranging from unclassified to secret and restricted data; however, not all reports are processed at this facility. DDC’s responsibility includes the processing, announcing, storing, and distributing of classified and unclassified/limited reports. By a contractual arrangement, DDC forwards all unclassified/unlimited Defense reports to the National Technical Information Service, NTIS, Department of Commerce, where they are made available for sale to DDC users and the general public.

Unclassified reports of ongoing projects are provided the Smithsonian Science Information Exchange (SSIE), for sale to the public. The Navy is also publicizing patents available for licensing through the use of exhibits.

The Army and the Air Force also conduct similar operations as I have described for the Navy.

In summary, I think we have had a steadily improving record in support of the Small Business R. & D. community and recognize we must persevere to assure that this overall upward performance trend continues. In this regard, we plan on taking the following actions: (1) Publish a booklet listing the individual within each service laboratory who will act as a functional contact regarding small business R. & D. matters; (2) designate an individual in the Office of Director of Defense Research and Engineering to act as a focal point regarding small business R. & D. matters; (3) examine the feasibility of establishing small business R. & D. goals; and (4) implement those recommendations of the Office of Federal Procurement Policy panel which we consider appropriate and feasible of accomplishment.

I will now be happy to answer any questions you may have.

Senator HATHAWAY. Thank you very much.

[The prepared statement of Mr. Babione follows:]

STATEMENT OF
DALE R. BABIONE
DEPUTY ASSISTANT SECRETARY OF DEFENSE (PROCUREMENT)
(INSTALLATIONS AND LOGISTICS)
FOR THE
SELECT COMMITTEE ON SMALL BUSINESS
UNITED STATES SENATE
95th CONGRESS
April 7, 1976

Mr. Chairman and Members of the Committee:

I appreciate the opportunity to appear before your Committee today to report on our Small Business Program and activities in support of small research and development (R&D) firms.

I have with me Mr. Leonard Weisberg who is the Assistant Director of Electronics and Physical Sciences in the Office of the Director of Defense Research and Engineering. He is responsible for management guidance and technical expertise for Defense contracts concerning electronics and physical sciences R&D. I also have with me Mr. Stanley Tesko, who is the Deputy Director of our Small Business Office.

Before discussing our small business performance, I would like to note that the dollar figures I will refer to throughout my presentation include only awards made to domestic U.S. business firms.

Prime Contracting

In FY 1971, it was evident that the small business share in Defense procurements had been declining since the peak fiscal years of 1966 and

1967. However, this share has now shown a steady increase since the low of 17% for prime contract awards in FY 1971. Last fiscal year, FY 1975, we had an exceptionally good year when we increased small business awards by another \$911 million over FY 1974, attaining a small business share of 20.7%. This is the highest rate of small business attainment since FY 1956, except for FY 1966 when it reached a level of 21.8%.

In attachments one, two and three, I have furnished your Committee a summation of our accomplishments compared with our prime contract award objectives for the past several years. I call attention to the fact that we have met or exceeded our goals for the past four fiscal years.

Subcontracting

The subcontracting picture has also improved. In FY 1972, the percentage of subcontracts received by small firms was 34.8%, which in FY 1975 increased to 39.3%, the highest since 1969. Attachment four depicts our experience for Fiscal Years 1972-1975.

Research and Development (R&D)

Research and development awards to small firms have set a new record. The dollars have climbed significantly each year from \$183 million awarded in FY 1971. For FY 1972, the figure was \$256 million, and for FY 1973, it was \$272 million. In FY 1974, despite a drop of

more than \$500 million in total R&D awards compared with FY 1973, small business received \$300 million, which represents 5.8% of the total. In FY 1975, small firms increased their awards to \$316 million although the percentage dropped slightly to 5.6%. Nevertheless, our last year's performance represents an all-time high for DoD in R&D in the amount of dollar awards to small firms and the highest percentage of awards since FY 1956, except for FY 1974. (See attachments 5 & 6.)

In our statistics for R&D contracting for awards of \$10,000 or more, we provide for recording four categories of effort, consisting of Research, Exploratory Development, Advanced Development, and Management Support. Of the total R&D awards with U. S. business firms in FY 1975, 2.1% or \$115.6 million was for research, 7.6% or \$427 million was for exploratory development, 84.8% or \$4.74 billion for other more advanced types of development, and 5.4% or \$301.1 million was for management and support. I want to emphasize that these total dollars listed here are for R&D awards to business firms only and do not include awards to universities and non-profit institutions.

Of these awards, small business won an impressive 26.3% of the dollars awarded in the research category; likewise in the exploratory development category they received a 21.7% share. In areas such as the research category, and exploratory development, small business is well equipped to perform, and accordingly they have fared well.

The majority of the dollars are in the advanced developmental category. Programs in this category are generally for major weapon systems such as the B-1 and F-15 aircraft, Safeguard and Poseidon missile systems. As might be expected, such large system contracts are awarded to large companies, and accordingly the share of small business here is only 3.2%, considerably lower than research and exploratory development. In dollar terms this accounts for \$151 million. In the management/support category the percentage of small business funding climbs to 11.3%.

The DoD is participating in an ad-hoc panel recently established by the Office of Federal Procurement Policy. The purpose of this panel is to determine what actions are to be taken to enhance the role of small business in innovations in R&D, what share of awards have been made to small R&D firms, and how awards to small R&D firms can be increased. Mr. Weisberg is the DoD representative to this panel and is working closely with my office regarding any procurement aspects which must be considered.

We are involved in several other actions in order to assist the small R&D firm. We believe that one of the first places to start is to get the "word" out to the small R&D businessman as to how to do business with us, which of our activities purchase which kinds of R&D, and whom can they contact for assistance. The key to increasing awards

to small R&D firms is the assurance that an increased number of small firms can be expected to bid on our R&D procurements. This can be enhanced by getting the word out to as many small firms as possible to make application to be included in the Bidder's Mailing List of our procuring activities. On January 21st and 22nd, 1976, we supported the Research Council for Small Business and the Professions which conducted a two-day seminar for the National Science Foundation's Research Applied to National Needs (RANN) held for small R&D businessmen. We are also actively engaged with the Department of Commerce in supporting the Federal Procurement Conferences which are sponsored by individual members of Congress in their local districts or states. At each of these conferences, we provide the senior Small Business Advisor from one of the Military Services, the Defense Supply Agency or the Defense Contract Administration Service as well as other DoD representatives from our activities located in the proximity of the Congressional member's constituency. These DoD personnel provide information on how to do business with the military. Businessmen are given copies of the booklet "Selling to the Military" which tells them what products and services each of our activities buys and what procedures must be followed to be placed on our bidders' mailing list. The updated and expanded version of this publication is now at the Government Printing Office and will include a separate section on Research and Development listing our

R&D activities, what they buy, and how to prepare an unsolicited proposal. I might also mention that we publish a booklet listing each of our approximate 600 Small Business Specialists by their assigned procurement activity and location. These individuals assist businessmen desiring to obtain procurements but more important, they screen every procurement over \$2,500 to determine if it can be set-aside for exclusive small business participation. Additionally, all of the Military Services distribute publications which treat their requirements in greater detail.

A specific senior technical individual at each of our laboratories has been assigned as one of his duties to help small business obtain research and development contracts. Individuals so assigned work with the small business specialists in terms of offering advice on R&D matters, such as identifying the particular engineer who is most familiar with a forthcoming R&D procurement. This is part of our continuing efforts to involve technical personnel in the small business program.

We synopsise all of our procurement requirements valued in excess of \$10,000 in the Commerce Business Daily (CBD). Notices are also published of every award valued in excess of \$25,000 which provides small firms the opportunity to compete for subcontract awards.

Our Military Services conduct advanced planning briefings for industry to inform them of what we will be looking for in the near future. The Navy has established two NARDIC's (Navy R&D Information Center),

one on each coast which includes Air Force representation. These offices make information regarding R&D planning and requirements available to small business. The Navy has also established a NICRAD (Navy/Industry Cooperative R&D) Program which furnishes scientific and technical information on the operational capabilities and requirements of the U. S. Navy to non-government activities on a cooperative, no-cost contract basis.

It is DoD policy to utilize the R&D Sources Sought Section of the Commerce Business Daily (CBD), whenever practical, to seek additional small business sources for R&D procurements anywhere from three to six months in advance of the actual procurement. This technique is particularly helpful to small business firms. It gives them an opportunity to respond, by submitting technically qualifying information, to any synopsis in which they have an interest.

Our Small Business Specialists work closely with the SBA R&D Specialists in identifying additional small R&D firms to our contracting officers. The SBA provides us a valuable service by its yearly publication of a source list of small R&D firms. This list is distributed to all of our activities involved in R&D.

It is the policy of the Department of Defense to promote military-civilian technology transfer and cooperative development. This policy encompasses (1) the transfer of technology developed by DoD activities

for national defense purposes to the civilian sector where such technology can be profitably utilized in non-military applications, and (2) the identification of coming technologies of both military and civilian interest and the exploration of the feasibility for cooperative funding and for development of such technologies.

We accomplish this primarily through our Defense Documentation Center (DDC). DDC assists these Government contractors -- and potential Defense contractors -- by supplying technical reports of completed R&D efforts as well as summaries of ongoing R&D projects. These services are available to all U. S. Government activities and to their contractors, subcontractors and grantees -- regardless of size.

The systematic and timely availability of these technical reports and current project summaries helps significantly to prevent or reduce unnecessary duplication of R&D projects and to accelerate the completion and application of research information in order to shorten the "concept-to-delivery" cycle.

The DDC technical document collection totals more than a million different titles, covering all areas of science and technology. Information in these reports could enhance the efforts of aerodynamicists, chemists, mechanical engineers, psychologists, ecologists, or any other person in the Federal R&D community.

There are thousands of summaries in the Center's Work Unit Information System which answer the who, what, when, where and how concerning ongoing, Defense-sponsored, R&D efforts. Included is a narrative description of each effort, its purpose, costs and the activities responsible (with names and telephone numbers of key personnel).

Organizations registered with DDC have access to a variety of products and services. Most of these services are provided free of charge, while very nominal fees are imposed on others.

DDC receives all Defense-related reports with classifications ranging from unclassified to Secret and Restricted Data; however, not all reports are processed at this facility. DDC's responsibility includes the processing, announcing, storing, and distributing of classified and unclassified/limited reports. By a contractual arrangement, DDC forwards all unclassified/unlimited Defense reports to the National Technical Information Service (NTIS), Department of Commerce, where they are made available for sale to DDC users and the general public.

Unclassified reports of on-going projects are provided the Smithsonian Science Information Exchange (SSIE) for sale to the public. The Navy is also publicizing patents available for licensing through the use of exhibits.

The Army and Air Force also conduct similar operations as I have described for the Navy.

In summary, I think we've had a steadily improving record in support of the Small Business R&D community and recognize we must persevere to assure that this overall upward performance trend continues. In this regard, we plan on taking the following actions:

1. Publish a booklet listing the individual within each service laboratory who will act as a functional contact regarding small business R&D matters;
2. Designate an individual in the Office of the Director of Defense Research and Engineering to act as a focal point regarding small business R&D matters;
3. Examine the feasibility of establishing small business R&D goals;
4. Implement those recommendations of the Office of Federal Procurement Policy panel which we consider appropriate and feasible of accomplishment.

I'll now be happy to answer any questions you may have.

DEPARTMENT OF DEFENSE
AWARDS TO ALL BUSINESS FIRMS
[Including Civil Functions]

FISCAL YEARS 1972 THROUGH 1975

(IN MILLIONS)	FY 1972	FY 1973	FY 1974	FY 1975
TOTAL AWARDS TO ALL FIRMS	\$34,046	\$32,478	\$34,518	\$38,213
TOTAL AWARDS TO SMALL FIRMS	\$6,128	\$6,672	\$7,074	7,895
PERCENT TO SMALL FIRMS	18.0%	20.5%	20.5%	20.7%
TOTAL SMALL BUSINESS SET- ASIDE AWARDS	\$1,752	\$1,890	\$1,817	\$ 2,251
PERCENT OF SET-ASIDES TO TOTAL AWARDS TO ALL FIRMS	5.1%	5.8%	5.3%	5.9%

DOD SMALL BUSINESS PERFORMANCE

<u>FISCAL YEAR</u>	<u>TOTAL CONTRACT AWARDS</u>	Awards to Small Business	
		<u>AMOUNT (millions)</u>	<u>% OF TOTAL</u>
1975	\$38,213	\$7,895	20.7
1974	34,518	7,074	20.5
1973	32,479	6,672	20.5
1972	34,047	6,128	18.0
1971	31,063	5,292	17.0
1970	31,777	5,492	17.3
1969	37,986	6,765	17.8
1968	40,304	7,584	18.8
1967	40,609	8,361	20.6
1966	34,878	7,612	21.8
1965	26,113	5,305	20.3
1964	26,920	4,842	18.0
1963	27,793	4,597	16.5
1962	26,147	4,622	17.7
1961	22,992	3,657	15.9
1960	21,302	3,440	16.1
1959	22,744	3,783	16.6
1958	21,827	3,729	17.1
1957	19,133	3,783	19.8
1956	17,750	3,475	19.6
1955	14,930	3,214	21.5
1954	11,448	2,902	25.3
1953	27,822	4,608	16.6

INTERIM AND FINAL SMALL BUSINESS GOALS AND ACCOMPLISHMENTS FY's 1972 - 1975

DEPARTMENT	1972 %	1973 %	1974 %	1975 %
<u>DOD</u>				
<u>INTERIM</u>	17.3	18.4	20.7	20.9
<u>FINAL</u>	17.2	18.2	20.2	20.7
<u>ACTUAL</u>	18.0	20.5	20.5	20.7
<u>ARMY</u>				
<u>INTERIM</u>	18.8	20.2	23.1	24.5
<u>FINAL</u>	18.2 - 18.5	19.8 - 20.0	23.9 - 24.2	25.0
<u>ACTUAL</u>	19.8	23.1	26.0	25.7
<u>NAVY</u>				
<u>INTERIM</u>	12.7	13.5	14.6	14.8
<u>FINAL</u>	10.6 - 12.1	13.2 - 13.5	12.8 - 13.1	14.0
<u>ACTUAL</u>	13.2	14.3	14.1	14.4
<u>AIR FORCE</u>				
<u>INTERIM</u>	10.6	12.1	13.3	12.6
<u>FINAL</u>	10.2 - 11.2	10.3 - 11.0	12.0 - 12.5	12.6
<u>ACTUAL</u>	11.6	13.2	13.1	13.5
<u>DSA</u>				
<u>INTERIM</u>	45.1	45.0	45.7	43.3
<u>FINAL</u>	44.1 - 45.0	44.6 - 44.9	45.1 - 45.4	41.3
<u>ACTUAL</u>	44.6	46.0	39.3	39.6

DEFENSE SMALL BUSINESS SUBCONTRACTING PROGRAM

Fiscal Years 1972 through 1975

(IN MILLIONS)

	FY 1972	FY 1973	FY 1974	FY 1975
1. NUMBER OF LARGE CONTRACTORS REPORTING	\$ 767	\$ 765	\$ 706	695
2. MILITARY SUBCONTRACTS	<u>\$9,925</u>	<u>\$11,094</u>	<u>\$12,039</u>	<u>\$12,731</u>
A. TO SMALL BUSINESS CONCERNS	\$3,457	\$ 3,971	\$ 4,584	5,002
B. TO OTHER BUSINESS CONCERNS	\$6,468	\$ 7,123	\$ 7,455	7,729
3. PERCENT OF TOTAL TO SMALL BUSINESS CONCERNS	34.8%	35.8%	38.1%	39.3%

**RESEARCH AND DEVELOPMENT AWARDS
TO ALL BUSINESS FIRMS**

FISCAL YEARS 1972 THROUGH 1975

(IN MILLIONS)	FY 1972	FY 1973	FY 1974	FY 1975
TOTAL R & D AWARDS TO ALL FIRMS	\$5,168	\$5,656	\$5,148	\$5,601
TOTAL R & D AWARDS TO SMALL FIRMS	\$256	\$272	\$300	316
PERCENT TO SMALL FIRMS	4.9%	4.8%	5.8%	5.6%

RDTE CONTRACT AWARDS TO SMALL BUSINESS

(MILLIONS)

	<u>TOTAL (%)</u>	<u>RES (%)</u>	<u>DEV (%)</u>	<u>MGMT & SPT (%)</u>
1970	\$189.1 (4.0)	\$31.0 (33.3)	\$139.8 (3.2)	\$18.3 (5.3)
1971	183.3 (3.7)	28.2 (31.1)	133.6 (3.0)	21.5 (6.9)
1972	255.6 (4.9)	34.6 (33.7)	193.8 (4.0)	27.2 (11.0)
1973	272.1 (4.8)	42.7 (29.4)	201.0 (3.8)	28.4 (11.1)
1974	300.4 (5.8)	40.7 (26.1)	223.9 (4.7)	35.8 (13.0)
1975	316.4 (5.6)	38.8 (29.8)	243.3 (4.7)	34.3 (11.3)

Senator HATHAWAY. Does the source list that the Small Business Administration provides you give you sufficient information on the capabilities of the various R. & D. firms?

Mr. TESKO. Yes, sir. In that particular regard, before coming to work for Mr. Babione, I worked for the Small Business Administration. One of my responsibilities was to supervise the publication of directories listing small R. & D. firms which is published on a regional basis. It describes the capabilities of the small research firms in each SBA region.

In the months of May and July there are two notices placed in the Commerce Daily soliciting the small business R. & D. community to enroll themselves with the SBA region within which they are located. When the booklet is published in September, SBA distributes copies from the regional level to our procuring activities within each SBA region and also to the Federal offices here in Washington.

In there, they have approximately 2,100 R. & D. firms listed.

Senator HATHAWAY. What percentage do you think that is of all the R. & D. firms in the country?

Mr. TESKO. We just had occasion to be talking to SBA this week to determine how many small firms are in the area of research. It was determined that approximately 2,125 of the 2,200 firms are small. There is a difference between what Dun & Bradstreet and SBA define as a small research firm.

My estimate would be that SBA directories include about 30 percent of this Nation's small R. & D. companies.

Senator HATHAWAY. You think the Small Business Administration should update its list?

Mr. TESKO. They update it annually. It is a case of the small business firm reading the notice in the Commerce Business Daily, saying yes, I want to be listed in your directory, and then contacting the SBA.

When they do, the Small Business Administration sends them a form to fill out listing their areas of expertise and capabilities. The responsibility is on the small business R. & D. firm to contact the SBA.

Senator HATHAWAY. Do you not think we might make a better effort? Many might not see the Commerce Business Daily.

Mr. TESKO. SBA places at least two notices in the CBD. Possibly this could be increased by placing additional notices in the CBD prior to cutoff for publication.

SBA plans to publish its next R. & D. directories in a single national listing instead of on the present regional basis.

Senator HATHAWAY. Does it explain in the ad just what listing in the SBA directory means?

Mr. TESKO. The CBD tells the firm how to apply to SBA. SBA in turn provides the firm with the description of 22 fields of discipline as listed on Department of Defense Form 1630. The directory is arranged for easy identification of the firm, its capabilities and location. This directory assures that the firms who write to SBA are still in business, at least at the time they applied. This is important in view of many small firms entering and leaving the marketplace.

Senator HATHAWAY. Would there not be some advantage to DOD if the District officer supplemented that list with the ones they know