



# SEEDS OF COMMERCE

HELPING OTHERS FOSTER ECONOMIC GROWTH

**EVAN BARRETT,  
BUTTE LOCAL  
DEVELOPMENT  
CORPORATION**

"The Port has several major impacts (due to EDA grants). A number of trucking firms moved in here... We are now a staging facility for overseas container facilities."

**JEFF BLODGETT,  
DEPARTMENT OF  
ECONOMIC AND  
COMMUNITY  
DEVELOPMENT**

"We used a lot of census data...to answer questions: 'are there enough suppliers?' 'who are the competitors...?' These were critical parts."

**MIKE CUEVAS,  
HEWLETT-PACKARD**  
"Nancy (in NTIA) was key in organizing the telecom summit... good feel for what will work in the interest of all the companies."



**BARRY JOHNSON,  
OPTICAL E.T.C.**  
"We have a near seamless team approach with NIST and collaborate on electronic design, optics design, and systems."

**SANDRA  
ATHERTON, GLOBAL  
PACIFIC TRADING**  
"We can call on ITA staff... (to) save us from costly mistakes in foreign markets."

**LARRY HOVE,  
ENTWISTLE  
COMPANY**  
"The value for me is that I have someone [at EXA with]...a global view of what's happening in the defense export world."

# Table of Contents

---

- [Message From The Secretary](#)
- [Introduction](#)
- [Case Reviews - Part I](#)
  - "They Have Always Delivered"
  - " I Ask For Miss Dee Dee"
  - " The Key Individuals Is Jim"
  - " It Beats Taking The Redeye To Washington"
  - " Provided Critical Start-up Funds"
  - " It Was Helpful In Developing The Plan"
  - " They're Like A Central Home Base"
  - " They Put A Fire Under Your Chair"
  - " A Market Would Materialize"
  - " Under His Wing"
  - " Nailed Down What I Needed"
  - " Reflected In Rates Across The Whole State"
  - " Ability To Help Local Decision Makers"
  - " Allowed Us To Be Very Proactive"
  - " It's Hard To Put A Value On That"
  - " A Resolution Of The Dispute"
  - " We Used A Lot Of Census Data"
- [Case Reviews - Part II](#)
  - "Absolutely Necessary For Establishing Contacts"
  - "All Of These Things Are Beginning To Trigger"
  - "Someone To Go To Bat For Us"
  - "Taught Me How"
  - "Everything Comes Together"
  - "People Walk Away With A Good Idea"
  - "In Accordance With International Standards"
  - "A Better Growth Opportunity"
  - "Just come Of The Impact"
  - "Congruent To Our Interests"
  - "Out In The Street Asking Questions"
  - "Looking For New Markets"
  - "Wouldn't Have Happened Without The Data"
  - "Given A Tiny Company Like Ours The Capability"
  - "\$1,200 In The Bank"

"Time-Efficient Function That Saves Costs"

"Quick Education"

"There's A Lot Of Risk In That Technology"

"An Authoritative Source"

"We're Looking For Wholesalers"

"A Lot of Other Businesses Expanded"

- Case Reviews - Part III

"Clear Proprietary Value"

"Logical Evolution"

"The Market For This Tool is Very Broad"

"Bridging Technical Gap"

"Number One Several Times Running"

"Evidence of Their Contributions"

- Case Reviews - Part IV

"Our Primary Attractions"

"Better Prices"

"Meet Our Clients' Changing Needs"

"A Major Discovery"

"Outlook For Our DMA"

"Significant Technology Transfer"

"Potentially Doubling Our Employment"

"We Think That's Achievable"

"A Very Handy Tool"

"'Feels Like' Isn't A Sound Basis For Inventory"

"When This Company Was Only An Idea"

- Case Reviews - Part V

"We Had To Go Through Some Change Here"

"They Don't Pre-judge"

"More Unjustified Claims Would Be Paid"

"Expertise In Propagation Analysis"

"Strictly Dependent On The Weather"

"Helps Us Solve Problems"

"In the Interest Of All The Companies"

"We Adhere To Certain Quality Standards"

"An Important First Contact"

"We Were Going After Relationships"

"Trying To Figure Out What The Market Wants"

"A Value-Added Cooperative"

- Case Reviews - Part VI

"An Exact Match In Properties"

"You Have To Know What Aspect Of The Weather Is Important"

"Supporting An Objective Decision"

"Everything Just Popped"

"Dates When Facts Had To Be Known"

"Experimenting With Advanced Predictions"

"A Little Bit Of An Edge"

"Looked For Other Opportunities"

"Speed Is What Makes Us Competitive"

"Delay Can Kill A Promising Technology"

"Customers Ask For NIST Traceability"

"A \$5 to \$10 Million Market"

"Using Statistics Of Weather"

- [Case Reviews - Part VII](#)

"Nobody Wants To Come To A Dirty Laundromat"

"Converting Basic Research Into Operational Products"

"So They Can Get Into An Office"

"Advice On Potential Ventures"

"We Needed To Create Enough Jobs"

"Good Insight Into The Science"

"We have A Deal With The Borrower"

"Our Biggest Need Internationally"

"A Virtual Look Ahead"

"Helped Us In Many Ways"

"The Mechanics of Owning A Company"

"Phenomenal Advantage For Us"

"Slowly Getting Customers Back"

"Now People Are Coming To Us"

- [Case Reviews - Part VIII](#)

"Headed Toward Fifty Percent"

"Quite A Few Repeat Customers"

"About My Profit Margin"

"Marketing And Negotiations"

"Leads Every Week"

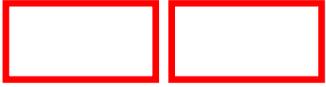
"Improvements As A Result Of The Feedback"

"Operating At Capacity"

"Largest Employer In The Area"

- [Overview of the U.S. Department of Commerce](#)

- [For Further Reading](#)



# MESSAGE FROM THE SECRETARY

*"We hope to develop new fields of profitable trade and foster old ones. We hope to facilitate industrial development and promote commerce at home and abroad."*

*Congressman Charles F. Cochran, 1903*

These words describe what the creators of the Department of Commerce had in mind. The stories on the pages that follow give full service to these hopes.

The public, those who hold us in their trust, for counsel, for data, for research identifying promising new endeavors, for assistance in many forms, explain the value that the Department of Commerce has given to them in their efforts.

They speak without reservation to the merits of every part of this Department. They describe how the benefits they are bringing to our Nation have been aided, in small and large measures, by the people and services that the U.S. Department of Commerce was created to provide.

These are their own words, spoken and weighed in their own experience, and a salute to the wisdom of Congress and efforts of 35,000 individual Americans in the Department of Commerce who join together in promoting the Nation's general welfare through commerce.

This project, to ask our customers how they believe the Department has helped them contribute to the American economy was conceived under the leadership of our late Secretary Ron Brown. I am sure, having touched the lives of so many, that he already knew the answer.

In June 1995, he said: "There is nothing more important than economic growth, economic opportunity, and job creation. If you are going to take a set of priorities, this has got to be among the top priorities of the government of any country."

Please join me in this salute to the work we perform for our Nation.

Michael Kantor



# INTRODUCTION

When this project was conceived, we intended to use brief case studies describing how the U.S. Department of Commerce supports those who drive our economy. We envisioned a corporate report, consistent in format and presentation, illustrating the nature of help which each of the eleven bureaus in the Department provides. Our aim was to place the focus of each review on an external organization -- for-profit, non-profit, association, professional organization, educational institution, charitable organization -- and describe that organization and how it contributes to the economy.

To emphasize that the Department's mission is to facilitate others in promoting economic growth and job creation, each review carries a similar tagline: "

How The U.S. Department Of Commerce Has Helped.

Our customers told us more than we anticipated. In many cases, we were challenged to prepare a description which did not exceed our one-page limitation. In some cases, we did not succeed. For example, the enthusiasm of Mr. Douglas M. Moore, President of Petrotech, Inc., in Belle Chasse, Louisiana, was more extensive that we could accommodate.

What he said, beyond what you will read on page three, is:

"The man I work with [in the Commerce Department] makes me work. He refers other exporters to me for information about markets where we have experience, and in return connects us to other exporters when we need information. His database about area exporters is astonishing, and he provides a networking catalyst not available elsewhere. The entire New Orleans ITA staff gets a lot of leverage on their time by 'encouraging' exporters to participate in exporting seminars and to help each other increase exports."

Douglas W. Moore  
June 10, 1996.

These stories occur numerous times everyday by the actions of 35,000 Commerce employees. Our contributions, oftentimes diffuse and difficult to track directly, add bit by bit to aid the efforts of others who are promoting the Nation's economic strength. Though the benefits of many of our programs preclude direct measurement, each supports economic growth. As some examples:

- Economic Development Administration grants supported the development and later expansion of the Port of Montana, an inter-modal transportation facility, which in turn has created 300 jobs directly tied to the facility and related transportation services; drawn new firms into the area; and saved Montana farmers millions of dollars every year in reduced transportation rates.
- Bureau of Economic Analysis data and a model were used by the Northern Kentucky Chamber of

Commerce in helping the region develop incentive packages to firms which are adding several thousand high-paying jobs to the region.

- The National Oceanic and Atmospheric Administration supported basic research on how oysters form shells. Commercial adaptation of the research led to the formation of the Donlar Corporation in Illinois, with current sales of \$10 million and expectations to triple that in the next two to three years.
- The National Institute of Standards and Technology awarded an Advanced Technology Program grant to Accuwave to research wavelength multiplexing which, at the time of award, was only a concept being discussed in technical circles. Accuwave, a California high tech start-up in fiber optic telecommunications, believes it is in a good position to capture a major share of an emerging market which has been dominated by an alternative Japanese technology.
- The Minority Business Development Agency funded a Minneapolis-based Minority Business Development Center which in turn aided Robodyne Corporation in developing its business. This minority-owned robotics manufacturer recently become a supplier for Honeywell, Sun Microsystems, Digital, and other well known corporations. Robodyne estimates that sales will increase by 800-to-1000 percent over the next three years.

We heard more than just that the Department provides support for economic growth. Customer service was a major theme running through many stories.

So was teaming of effort in temporary partnerships. In referring to assistance provided by one Commerce employee, Mr. Cuevas of Hewlett-Packard said: "Catherine Houghton, for example, was exceptional; at times, I thought she was an HP employee." Tom Zinn, economist with the Northern Kentucky Chamber of Commerce, in referring to use of a regional economic analysis model available through the Bureau of Economic Analysis, said: "It's very significant; we couldn't conduct our impact assessments without it. The economists at BEA are always willing to help in resolving problems in using the data."

These stories were created through the dedication and good efforts of 35,000 members of the Commerce Department. Day-in, day-out, these employees come to work -- just like members of the organizations in our case reviews -- to help produce tangible and effective results that improve life for each of us. These are not exaggerated accounts. Each description has been reviewed and signed by the organizations involved -- with exactly the wording presented in this report.

I invite you to read these studies.

Raymond G. Kammer, Jr.  
Acting Chief Financial Officer  
and Assistant Secretary for Administration

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# CASE REVIEWS

## **"They Have Always Delivered"**

PETROTECH, INC., Belle Chasse, Louisiana

Petrotech, founded in 1978, designs and manufactures microprocessor controls for turbomachinery and high pressure controls to keep wells from burning (as in Kuwait), and highly engineered modular natural gas processing and regulation controls that are used by the oil, gas, petrochemical, and electric power industries. Petrotech's primary operations are based near New Orleans; the company also has plants in Houston, New York, The Netherlands, and Indonesia.

Mr. Douglas W. Moore, President of Petrotech, reports that the company has five area overseas sales managers and exports over \$15 million a year. The company's U.S. exports account for 120 jobs in New Orleans and \$48 million in export-related wages. "A large part of our exports," said Mr. Moore, "includes countries with whom the U.S. Government has problems."

## How the U.S. Department of Commerce Has Helped

Mr. Moore has worked with the International Trade Administration (ITA) for ten years and says the agency offers functions that "nobody else in government cares to offer," such as advice about what's legal and what's not, or at least where to get the right information, and resolving problems and obtaining help from the appropriate U. S. agencies."

"We needed information about the legality of selling in Vietnam. The ITA had the facts available, gave other advice including names and phone numbers of experienced exporters, and we won an order for \$250,000 of hydraulic safety equipment. Other orders are in the pipeline."

"We needed information about business practices in Nigeria. The ITA introduced us to Embassy personnel who were visiting, referred us to other successful local exporters, and sent us several leads about projects. Last year, we did over \$2 million in Nigeria."

"We battle in practically every sale against the customer, the customer's government, the competitors, and the competitor's government," Mr. Moore said. "Sometimes we have to battle our own government, whose actions and changing policies often make exporting difficult. ITA helps us get the answers to questions on the legality of sales, sending proposals, and making quotes. In one case, we were making a quote to a European company that was dealing with Iran. We checked, and found there were no prohibitions about making this sale. Midway through the job, we heard that President Clinton was going to punish Iran. I called ITA; they quickly found exactly how long I had to ship, what restrictions applied, and which didn't. We were able to accelerate delivery, at great cost, and completed the export before the legal deadline."

"Everytime there's a difficult country, where there are policy changes, we need the ITA's help. They have always delivered."

## **"I Ask For Miss Dee Dee"**

B&B ORGANIC COMPOST & SOILS, INC., Durham, North Carolina

B&B Organic Compost & Soils has a patented dry method for converting stumps, limbs, and any wood waste into organic topsoil -- without heat, turning, chemicals, fertilizer, water, grinding, and without producing methane gas. B&B's customers are primarily homeowners, but also include landscapers and government. The company delivers within a 50-to-100-mile radius, depending on loadsize ordered. Beyond this distance, B&B licenses other companies wishing to purchase a franchise and open their own processing sites. Licenses are sold by county; rates are determined by the county's population. Licenses for counties with less than 50,000 persons are a flat fee of \$5,000 plus royalties. Above this level, rates are 10¢ per capita, plus royalties.

Bill Andrews, founder and Vice President of B&B Organic Compost & Soils, was a mechanic. In 1976, he bought 27 acres of land, intending to build a big garage. After logging the land, recalls daughter Billie Ann Dees, "people wanted the soil. He started selling it to people and got to the point where he quit the mechanic business. One person just told the next person and then he didn't have time for anything else."

Bill Andrews recalls "... people asking questions about where to get the soil.... In six months, I had to forget about the garage." He explored ways of producing topsoil from yard waste (stumps, brush, and the like) and gradually also began investigating ways of developing organic topsoil from industrial wastes. "I work closely with North Carolina State University on research and with the North Carolina Department of Agriculture," he said. "They do all the soil testing for me." His process, he reports, reduced initial formaldehyde levels in test material from 140 parts per billion to less 5.0 parts per billion (below 5.0 parts is not-detectable) after 75 days.

Bill Andrews founded and operates two other, related companies: B&B Solid Waste Solutions, Inc and B&B Topsoil Mine, Inc. His first patent was awarded in July of 1995; two additional patents have been allowed, and a fourth is pending. After receiving his first patent, Bill Andrews began promoting his organic topsoil. An advertisement run in Bio-Cycle magazine, in February of 1996, has drawn interest from around the country. He's recently been visited by a prospective licensee from Australia and had several overseas callers expressing interest. This is in addition to what had already been a brisk word-of-mouth business with licenses in North Carolina, Alabama, West Virginia and emerging interest through New England, New York, and Tennessee.

## How the U.S. Department of Commerce Has Helped

Bill Andrews relies on 1990 census county population data to determine the amount to charge for licenses. "Miss Dee Dee, she's super," he said, referring to Dee Dee Hager, Information Assistant in the Census Bureau's Charlotte Regional Office. "If I need it in a hurry, she'll fax it to me. I mean in 10 minutes. It's the only part of government that hasn't cost me any money, so far. You've got some super nice people. I got her name wrote; I ask for Miss Dee Dee."

## "The Key Individual Is Jim"

ROBODYNE CORPORATION, Minneapolis, Minnesota and Rugby, North Dakota

Robodyne is a U.S.-based robotics private company that manufactures precision robots, tooling, feeders, conveyers, and electronic assembly systems. "I assemble the computer mother boards for Motorola, Digital, and Sun Microsystems," said Mr. Joe Alvit,, company President and founder. "My robots pick up the connectors and integrated circuits and place them in the circuit boards."

Mr. Alvit, founded Robodyne in 1989 with two employees working in a two-room space in Minneapolis. Employment expanded to 54 by June of 1996, and Mr. Alvit, expects to reach 65 by end of the calendar year. The company grew from \$1« million in sales in 1994 (with a loss of \$« million) to \$2« million in 1995 (with a small profit), to projected sales of \$6 million in 1996. In the past six years, Robodyne secured funding from several sources, including the states of Minnesota and North Dakota. North Dakota offered \$2 million in association with city and other resources, provided that Mr. Alvit, secure \$« million in additional financing. This led to Robodyne's opening of a manufacturing plant in Rugby, North Dakota.

"We didn't go to market until 1993," Mr. Alvit, said. "From 1989 to 1993 we were heavy on designing equipment that we are marketing today." During this period, Robodyne broadened from feeders to robot gantries for placing or inserting electronic parts (basically automated cranes allowing robots to move across the top of the assembly area), which increased flexibility. Motorola became interested in 1993 and made a purchase. U.S. Robotics followed with an \$11.5 million order in early 1996 for equipment to be delivered during the first ten months of 1996 for use in 18 of U.S. Robotics' manufacturing lines. This order was followed by orders from Jabil Circuit Incorporated, Sun Microsystems, Honeywell, and Digital. "We make capital equipment," Mr. Alvit, said. "We don't have a lot of customers, maybe 20, with some overseas sales. We've had a lot of interest from other countries. Right now, we're at capacity. Our limitation is not sales or distribution; it's finding additional qualified personnel. If we advertize, we'll be buried with orders. According to our business plan," said Mr. Alvit,, "we are going to double this year and, in three years be over 200 people with sales of \$50-to-\$60 million or more -- providing we do the right hiring and cash management."

### How the U.S. Department of Commerce Has Helped

"We relied heavily on the Metropolitan Economic Development Association [MEDA] since the inception of this company," Mr. Alvit, said, "because I don't have all the answers. The key individual is Jim [referring to Jim Faricy, Senior Business Analyst at MEDA] who arranged for accounting services, helped us with our business plan and financial projections and securing financial assistance."

MEDA is a non-profit organization assisting minority businesses; one of its programs, the Minority Business Development Center, is funded by the Commerce Department's Minority Business Development Agency (MBDA).

## **"It Beats Taking The Redeye To Washington"**

SUNNYVALE CENTER FOR INNOVATION, INVENTION, AND IDEAS, Sunnyvale, Cal.

The Sunnyvale Center for Innovation, Invention, and Ideas (SCI3) makes patent and trademark services more accessible for eleven western states and the Pacific Rim. The Center, which opened in November of 1994, is in Santa Clara county, an area that files more patent applications than any other region of the country and more than several states combined. SCI3, through a partnership with the U.S. Patent and Trademark Office, offers:

Videoconferencing -- in lieu of traveling to Washington -- for a formal interview early in the patent application process.

Full text searching of U.S. patents filed from 1971; images of all U.S. patents since 1790; and English language abstracts of original Japanese patents issued since 1980. The Center also provides copies of other foreign patents with one-day turnaround.

Lecturing by local scientists and technologists to the patent corps on state-of-the-art developments and by the patent corps to local attorneys on procedures.

This partnership, said Mary Clare Sprott, SCI3's Administrative Librarian, "raised the visibility of Silicon Valley and California as a center of creativity and technological innovation and increased the confidence of the local intellectual property community. It promotes the image of Sunnyvale as a good place to do business, a point made by our local economic development officer."

"The videoconference," Ms. Sprott said, "allows the patent applicants to have a broader discussion, including the attorney, the inventor, and several other technologists connected with the applicant. While some matters can be handled by mail or phone," she added, "our users find it helpful to watch patent examiners' body language to see when they might be puzzled or have a question." The call, for which SCI3 bills the applicant \$300 an hour, can save upwards of \$3,000 in travel and hotel costs, plus time. "It beats taking the redeye to Washington," noted Vern Norviel of Townsend and Townsend and Crew, one of SCI3's clients in Palo Alto.

The World Intellectual Property Forum, the Peninsula Intellectual Property Law Association, the Intellectual Property Section of the State Bar of California, and the San Francisco Intellectual Property Law Association have contributed support for the Center.

### **How the U.S. Department of Commerce Has Helped**

The Patent and Trademark Office held customer focus sessions in Santa Clara county to identify needs and plan for new services; funded \$250,000 in new technology to introduce the new services; installed a state-of-the-art secured video conference facility; set-up electronic access to patents on date-of-issue; assisted Sunnyvale on its marketing strategy; and sponsored grand opening events. "This has given us a more active and aggressive program," Ms. Sprott said, "and enhanced our ability to give people the information they need."

## **"Provided Critical Start-up Funds"**

NATIONAL TECHNOLOGICAL UNIVERSITY, Fort Collins, Colorado

National Technological University (NTU) is a private, non-profit, accredited institution that provides master's degrees in 14 engineering disciplines, using the faculty of 47 U.S. universities. The campuses are linked by satellite telecommunications and compressed digital video (CDV) technology to more than 900 locations nationwide and by videotape to more than 100 other sites in North America and abroad. The University also offers advanced technology and management programs designed to help small manufacturers adopt new technology.

NTU was formed in 1984, as a consortium of six universities, to help engineers keep abreast of new developments without stopping work to go back to school. In 1985, NTU became the first university in the world to operate a regular education service on a telecommunications satellite. It also pioneered split-transponder analog TV transmission (i.e., squeezing in two broadcast channels in place of one) which became the educational standard. In 1991, NTU was the first to adopt a high quality, CDV transmission system. "We were the first to get alliances of schools," recalls Dr. Lionel Baldwin, President of NTU. "The schools originate the programs; we do all the scheduling and promotion. Students draw courses direct, live from what ultimately became 47 schools." Through February of 1996, NTU has awarded 878 M.S. degrees. As receiving sites multiplied, NTU added more uplinks to increase the number of channels. "We have 160 or more employers using NTU," said Dr. Baldwin. "Our best customers are IBM, Hewlett-Packard, AT&T, Motorola, Eastman Kodak, NCR and the U.S. Navy."

NTU received the 1985 Annual Congressional Science and Technology Award, the Institute of Electrical and Electronic Engineers 1990 "Major Education Innovator" award; the American Society of Engineering Education 1993 "Hall of Fame" award; the 1994 Society of Manufacturing Engineers "Education" award; and the 1996 American Association of Engineering Societies "Founders" award.

### How the U.S. Department of Commerce Has Helped

"Commerce has been the only part of the Federal government that has participated in any significant way," said Dr. Baldwin. "When we started, two things made it possible. The first was the NTIA [National Telecommunications and Information Administration] equipment matching fund; the other was a one-year deferral of costs for GTE Spacenet. NTIA provided critical start-up funds for equipment to launch NTU and continued this support during the initial, very rapid growth period. NTIA matching funds in later years," Dr. Baldwin added, "helped us with transmission equipment."

"The Economic Development Administration awarded us a series of grants from 1989 through 1993 to sponsor seminars for very small, technology-based start-up firms. The National Institute of Standards and Technology awarded us a grant [in 1994] to develop programs encouraging small and medium-sized manufacturers to adopt new technology. This outreach required funding for reception equipment and programming during the start-up."

## **"It Was Helpful In Developing The Plan"**

## COEUR D'ALENE TRIBAL BINGO/CASINO, Worley, Idaho

The Coeur d'Alene Tribal Bingo/Casino employs 98 people. In conjunction with related business activity, the Bingo/Casino reduced unemployment on the Coeur d'Alene Indian Reservation by 15 percent -- from 55 percent in 1992 to 40 percent in mid-1996.

The Bingo/Casino is a 36,200 square foot facility. It includes an 1100-person bingo seating capacity and over 300 video pull-tab machines (an electronic extension of a pull-tab that is similar to a slot machine). The casino operates 24 hours a day. Bingo operates only on weekends; one session per day. "We have a full service restaurant," says Laura Stensgar, Marketing Director for the Bingo/Casino. "We have free bus shuttles from Spokane, Coeur d'Alene, and Lewiston" -- all within a two-hour drive.

In the late 1980's, the tribe faced cuts in most of their funding sources and programs and began investigating options for generating income. The Coeur d'Alene Tribal Council authorized a marketing feasibility study in 1989 for a bingo parlor to be located on the reservation. Tribal representatives conducted research on the pros and cons of Indian gaming. A business plan was completed in 1991 to justify the costs and need for the facility. "We approached several banks for funding but were turned down because the facility was to be located on trust territory and because they were not familiar with Indian gaming. We ultimately took out a 15-year guaranteed loan through the BIA [Bureau of Indian Affairs]. We surpassed our expectations and paid it back in three years." The Bingo/Casino, which was expanded in October of 1995, is operating at capacity. "We are out of space right now. We are currently considering a second expansion that will include a restaurant, motel, and an entertainment plaza."

The tribe allocates five percent of revenues toward education. More than \$175,000 has been given to two local schools -- the Coeur d'Alene Tribal School and the Plummer-Worley School District -- both are open to non-Indians and Indians. The monies have been used for Coeur d'Alene Indian language classes, for updating computer labs, and providing Internet access. Other profits from the facility are directed toward long-term investment in land, economic development, and social programs for the 1,450-member tribe.

### How the U.S. Department of Commerce Has Helped

The tribe used Bureau of the Census 1990 population data and housing reports for the Coeur d'Alene Reservation, the cities of Coeur d'Alene, Lewiston, and Spokane, and other surrounding local communities. Income and age bracket data were used for the feasibility study and the business plan. "We looked at the demographic data," explained Laura Stensgar. "It was helpful in developing the plan and justified the performance statements -- primarily the amount of money we expected because of the population base on which we could draw. They made the project look feasible. I think they justified the project."

### **"They're Like A Central Home Base"**

PAVION COSMETICS, Nyack-on-Hudson, New York

Pavion Cosmetics, founded in 1980, is a medium-sized manufacturer of color cosmetics for women. Most noted for their brands -- wet and wild, black radiance, and solo para ti -- the company manufactures lipsticks, nail polish, face and eye make-up, and recently branched out into fragrances. With 500 employees, Pavion is a major employer in Rockland County. Exports account for 10-to-15 percent of revenues. Recently, the international group at Pavion has been charged with doubling their exports -- and have been given all the resources and freedom to do so.

Ms. Karen Acker has been President of Pavion's International Operations since 1990. "Pavion exported right from the beginning," she said "to Canada because we had a relationship there." Also in its early stages, Pavion exported to the Middle East, South America, Europe, and Asia. "We've sold to over 125 countries and we're currently active in about 60-to-65 countries. We operate primarily through exclusive distributorships." India intrigues her because it is one of the big emerging markets where Pavion currently does not export. Ms. Acker does a lot of travel, and a lot of trade shows, to ensure that the company's export goals are met.

Ms. Acker serves on the New York State Council of World Trade Associations. In 1995, she founded the International Business Network of Rockland County, which she currently serves as President "We are bringing in a lot of manufacturers and companies interested in international business," she said. "I get a lot of calls from all types of businesses on legal matters, payment problems and other obstacles that are a part of doing business internationally."

Pavion has received several awards for exporting, including the 1996 Hudson Valley Award and the 1994 World Trade Award for New York State.

### How the U.S. Department of Commerce Has Helped

Pavion has worked with Commerce's International Trade Administration (ITA) for over 10 years. Michael DeBenedetto, International Trade Specialist in ITA's Westchester District office, recalls that in Pavion's early years, the company had been a big user of specialized services for finding distributors and identifying prospective overseas customers. Ms. Acker credits ITA with "actively being in place to support us in terms of education, contacts, and networking us with other organizations that can help us expand -- Ex-Im Bank, export management companies, people who can get us answers to the more technical problems we've faced. They're [ITA] like a central home-base for us. I can go to them for anything." Some examples she cites are dealing with Mexico's devaluation; resolving a problem with labeling one day before a product was to be exported; and getting feedback on exporting strategies Pavion planned to implement. "Michael is always at our [International Business Network] meetings. Anytime anyone has an important question, he is there with an answer."

### **"They Put A Fire Under Your Chair"**

DESIGN USA, Washington, Michigan

Design USA is an export management company specializing in the export of high end furniture to the Philippines.

Mr. Leonard Xerri, president and owner, started Design USA in 1993, as a career change from architectural design. "I started training myself," said Mr. Xerri, "and went to some Department of Commerce seminars on 'How to Get Started in Exporting.' They were very good, they put a fire under your chair telling you how good an opportunity it is." That was in 1993.

"I did my homework," Mr. Xerri said, "and then spent six months in the Philippines. I worked hand-in-hand with the embassy; they advised me on how to do business appropriately in the territory. It was a lot of work; I set up appointments, acted as my own secretary, and met with numerous businessmen." These contacts were helpful in launching Design USA. As a result of his time in Manila, Mr. Xerri sold several hundred thousand dollars worth of furniture and developed a relationship with Mejore Woodworks -- a locally based, Chinese-owned, distributor.

Mr. Xerri returned to Washington, Michigan (about 1« hours drive north and west of Detroit) to continue developing his export management business. Design USA represents three high end furniture companies: Bernhardt Furniture (Lenoir, North Carolina), Hickory White (Highpoint, North Carolina), and Pompeii Industries (Miami, Florida). The company also represents AMS Industries, an upstate New York company which manufactures cleaners and solvents.

"The market in the Philippines," Mr. Xerri said, "is fantastic. Hotels, major businesses, and resorts are opening all over the place. My major need became to showcase our products. This past January, the U.S. Embassy in Manila sponsored a promotion describing us as 'the finest U.S. furniture collection in the world.' We invited presidents and chairmen of multinational corporations and leading politicians; it was a major event in Manila, with 1200 invitations. In Manila," Mr. Xerri explained, "it's a real honor to receive an Ambassador's invitation.

The results, Mr. Xerri added, "were more than helpful" in building the business. In three years, Mr. Xerri's business has sold close to \$2 million in furniture, all of it in the Philippines. "I expect this will double every year for the next several years."

#### How the U.S. Department of Commerce Has Helped

"It's an enormous amount of work to take a product into a new country," Mr. Xerri said. "I got a lot of help, a lot of information for free or at low cost." This included "logistical advice in the marketing and promotional areas." International Trade Administration staff in Detroit and in Manila counseled Mr. Xerri on options for marketing Design USA's products and assisted him in selecting an appropriate vehicle for introducing the company's products, including advice on how the U.S. embassy could help him in orchestrating the overall event. These services were, Mr. Xerri said, "invaluable to Design USA and our Manila representative."

#### **"A Market Would Materialize"**

##### ACCUWAVE, Santa Monica, California

Accuwave is a high tech start-up in fiber optic telecommunications founded in 1990. The company makes very accurate filters of narrow bandwidth to support multiplexing a number of messages over lines normally carrying only one.

In 1992, Accuwave had demonstrated techniques that, in principle, could do ten or more times better than existing commercial multiplexing. Accuwave uses holograms "written" in the interior of thick, photorefractive crystals to separate a mixed beam of light into separate wavelengths. Multiwavelength light entering one end of an Accuwave "volume holography" crystal would encounter a series of holographic gratings, each tuned to reflect a specific wavelength while passing all others with minimal loss.

Accuwave didn't have the resources to develop its technology so the company could enter the communications market. The company also wanted to extend Accuwave's technology, which had been developed for visible light, to the infrared wavelengths more commonly used for long-distance telecommunications.

In 1992, Accuwave received a \$2 million Advanced Technology Program (ATP) award which funded research that led to a prototype. Accuwave wanted to ensure that wavelength division multiplexing using its approach would be suitable for telecommunications use. In July of 1994, Accuwave unveiled three early spinoff products at a conference on optical networks: an optical network monitor, a wavelength standard, and a wavelength "locker" to allow tighter control of laser wavelengths on optical networks. Accuwave's units were much smaller and less expensive than comparable equipment. In 1995, Accuwave introduced an electronic wavelength controller using its wavelength locker. Accuwave is currently selling these products to major telecommunications companies in the U.S., Japan, and Europe. Since then, Accuwave has been developing a wavelength multiplexing system based on the core results of the ATP project.

#### How the U.S. Department of Commerce Has Helped

"We're still basically a small company," said Dr. Karlovac, President and CEO, "but with growing product revenues." At the time of the grant, he explained, "the wavelength multiplexing market did not exist; it was a concept being discussed in technical circles. We believed a market would materialize in the near future, a couple of years later."

"By some estimates," Dr. Karlovac said, "the market in 1995 was \$50 million a year; it's forecasted to grow to \$2 billion by the year 2000." Accuwave recently introduced some products for that market and is developing additional products -- spinoffs from its funded research. "We're in a good position to capture a major share of this growing market. Without the funding, Accuwave certainly wouldn't have gone forward and there would have been one less technology in the market with some impact on the ability of industry."

#### **"Under His Wing"**

#### PRECISION COMPONENTS CORPORATION, York, Pennsylvania

Precision Components Corporation (PCC), a manufacturer of high quality heavy equipment, has been a supplier to the U.S. Navy, with 90 percent of its sales in the defense market. The 1992 curtailment of the Sea Wolf Submarine program led to cutbacks at Precision Components -- company employment dropped from 650 to about 400.

"I became aware of an opportunity to bid on a contract in Japan," said Mr. John DeFelice, Chairman, President, and CEO of Precision Components. The contract involved "the same type of technology as we used in defense."

"The Japanese government is building a large nuclear reprocessing plant in northern Japan." "The contract," Mr. DeFelice said, "is for containers to store and transport nuclear fuel," for a number of Japanese nuclear power companies. "There's a lot of reusable uranium in spent fuel rods. The material must be stored, transported, and reprocessed. The containers must be very, very high quality."

Precision Components Corporation was one of a number of firms evaluated by the Japanese. Ultimately, the company competed against, and won a contract over a British company. PCC will build the containers and deliver them to Baltimore, where Nuclear Fuel Transport, a consortium of Japanese nuclear utilities, will take ownership. "I've been quoted," Mr. DeFelice said, "as saying it's opened the doors of the world to us." "We're bidding on another contract with the Japanese," he added, "and looking in other countries."

The contract runs for 2« years and is valued at \$24 million. "Without the contract," Mr. DeFelice said, "we would have had to reduce employment more." Precision Components Corporation was honored by Pennsylvania at the 1995 Governor's Export Excellence Awards Dinner.

#### How the U.S. Department of Commerce Has Helped

Precision Components had not actively exported before its Japanese contract. "We needed a lot of hand holding," Mr. DeFelice said. "The International Trade Specialist took us under his wing and explained where to get information. There was a lot of education." "One of the most useful things," he added, "was Commerce's advocacy of Precision Components to the Ex-Im Bank."

"For Ex-Im Bank," Mr. DeFelice explained, "18 months is generally their upper limit. We were asking for 30-to-32 months. We needed to make a substantial investment throughout the life of the contract; we needed a loan to pay people and buy materials. Our creditors in York were willing to finance the working capital only if we obtained a guarantee. They told us 'you have to get a guarantee.' I believe people in the Department of Commerce were our advocate. If I had not received that guarantee," Mr. DeFelice said, "I would perhaps have had to refuse that order."

#### **"Nailed Down What I Needed"**

##### AUDIO COMMUNICATIONS, INC., Olathe, Kansas

Audio Communications, Inc. was founded in 1995 by John Boucard. The company plans to manufacture electronic components for voice technology. The initial product will be an AudioCARD.

"This product," said Mr. Boucard, "will allow, for example, a doctor to leave instructions for a patient. The doctor can plug in a small credit card into a unit and leave instructions, pull the credit card out and give it to the patient. There's a playback module which allows the patient to listen to the doctor's message -- a thousand times, if needed -- about taking pills, therapy, or how to treat a wound. We plan to target a couple of markets first -- the

medical industry, the gift industry, and the business-to-business industry. It's a specialty item."

In April of 1995, Mr. Boucard made an eleventh hour decision to participate in the Duncan Aviation International Business Plan competition in Nebraska, where he demonstrated the AudioCARD. A couple of weeks before the competition, Mr. Boucard had no prototype. "I was under a time constraint and needed a casing to house the printed circuit board," he explained. "I approached Russ Mills [at the Mid-America Manufacturing Technology Center's Center for Design, Development, and Production] and gave him the specs and a dimension drawing. I didn't win the competition, but I showed well and did pick up quite a bit of interest."

"I made a wooden pattern," Mr. Mills recalled, "that was used as a mold for a plastic vacuum form part. The wood sits in a vacuum form piece of equipment as a solid entity. Heated plastic is dropped over the part, and the air is drawn out to allow the plastic to set." Mr. Mills used a computer numerical controlled (CNC) router to produce the prototype. Information can be stored on the computer allowing a prototype become a production run. Mr. Mills completed the molds in ten days.

The following April, Mr. Boucard exhibited the AudioCARD in Duncan Aviation's 1996 competition where he took first place. Audio Communications, Inc. recently found two investors and may shortly be joined by a third financial backer. The company plans to launch production of the AudioCARD by the end of 1996.

#### How the U.S. Department of Commerce Has Helped

"I didn't care how much it cost," Mr. Boucard said, "time was critical. I had design deficiencies, there was a huge error with the dimension I missed that Russ caught. Some of the tolerances were too thin; they would have broken under pressure. He nailed down what I needed. There were no flaws, no burrs, no miscalculated dimensions."

MAMTC is a Manufacturing Extension Partnership Center established with support from the National Institute of Standards and Technology.

#### **"Reflected In Rates Across The Whole State"**

##### PORT OF MONTANA, Butte, Montana

The original Port of Montana was ten miles southeast of Butte at the junction of the Burlington Northern (BN) and the Milwaukee Road. The port's primary customer was the Anaconda Copper Mining Company. In the early 1980's, Anaconda ceased its underground mining operations, causing the loss of 2,600 jobs. The Milwaukee Road went out of business about the same time. Both closures led to additional layoffs by other major employers around Butte (population 35,000). The port became increasingly isolated and uneconomical -- switching tracks to make the seven mile run to meet other transportation connections, added \$300 per car.

The new port opened in 1988, six miles west of Butte, at the intersection of two interstates (I-90 and I-15) and

two class-1 railroads (Burlington Northern and Union Pacific). This port provides intermodal transportation services for Montana's forest products, mining, and agriculture. The port expanded its storage facilities in 1994. Because of this expansion, "we've had an additional 300-to-350 rail cars a year," said Bill Fogarty, Traffic Manager at the port, "mostly forest products that we couldn't handle due to lack of warehousing and storage space."

The new port and its expansion created 300 jobs directly tied to the facility and transportation services. Better access led to lower shipment rates and increased competitiveness. "One of the lumber companies," Mr. Fogarty said, in describing economic benefits that the port has brought to the area, "saved over \$1 million in freight bills, helping to ensure its survivability and profits. Advanced Silicon Materials" he added, "is building a \$500 million facility just south of the port. They're projecting employment of 300-plus jobs by 1999. The port is not the sole factor, but transportation was an important consideration; 80 percent of what they do, they export."

"The port has several major impacts," said Evan Barrett, Director of the Butte Local Development Corporation. "A number of trucking firms moved in here. The port solidified and increased traffic on the Union Pacific, taking a shaky spur line and giving it greater use. Previously we were controlled by a single carrier. The grain terminal created competition for grain and other products. Burlington Northern changed its tariff schedules once we started shipping. It's reflected in rates across the whole state, saving farmers millions of dollars every year. We have gotten more and more into the container business. We have the most up-to-date intermodal forms of transportation. We are now a staging facility for overseas container companies. It facilitates transportation scheduling which leads to increased traffic."

#### How the U.S. Department of Commerce Has Helped

The Economic Development Administration (EDA) provided \$600,000 (9« percent) of the cost for constructing the new port. Butte/Silver Bow (i.e., the combined town and county government) provided 13« percent of the funds; the remaining 77 percent were provided by the state of Montana, using a one-time resource -- the State's portion of Exxon overcharge funds.

EDA also provided 60 percent of the cost for the port's 1994 expansion.

#### **"Ability To Help Local Decision Makers"**

##### ASSOCIATION FOR UNIVERSITY BUSINESS AND ECONOMIC RESEARCH Boulder, Colorado

AUBER is a professional association which furthers basic and applied research in business, economic, and related public policy areas. The association comprises business and economic research organizations which regularly produce state and local economic abstracts, forecasts, and analyses that are used by local business communities, state planning offices and legislatures. In some states, growth in the state budget is linked to the AUBER forecasts of economic growth. AUBER members often serve as economic consultants to their governors and legislatures.

There was a big move after World War II to improve state income numbers. The effort was taken up in

universities, each using a different methodology. AUBER was founded in 1947 to help states "improve the quality and comparability of statistical data from income, gross state products [the state-level equivalent of the gross national product] and related information which would provide a basis for states and counties to develop budgets."

"AUBER units receive substantial data," said Dr. Wobbekind, AUBER's 1996 President, "from the BEA [Bureau of Economic Analysis]. BEA takes data mostly from federal sources -- the Internal Revenue Service, the Bureau of Labor Statistics, the Census Bureau, the National Agricultural Statistical Service, and the Office of Personnel Management -- and puts together data on wages, salaries, employment, interest payments, transfer payments, and rental payments -- all the components of personal income. They take the data down to state and county level. They adjust the numbers for commuting flows to show the income received by individuals [by residence, not place of employment]. The value added is that these are consistent time series of personal income and gross state products."

"AUBER has about 130 members," Dr. Wobbekind said, "principally in the U.S. The actual activities vary. Some units are extremely dependent on the Department of Commerce; they repackage data for use in a newsletter and act as an information conduit for government. Many larger institutions do forecasting and projections on regional employment and personal income."

#### How the U.S. Department of Commerce Has Helped

"Commerce has been extremely helpful," Dr. Wobbekind said. "BEA reports are very critical to us. In areas where there's not much change in employment, the per capita income may be improving, and decision makers learn they're more healthy than they would otherwise know. This is particularly helpful for small and rural areas. In the absence of these data, understanding the economic health and vitality of these areas would be extremely difficult. The BEA time series data are a core part of our projections. The Regional Impacts Multiplier Series gives us the ability to help local decision makers evaluate business relocation and attraction decisions, to determine what kinds of impacts make fiscal sense, for example whether or not it makes sense to give a tax incentive."

#### **"Allowed Us To Be Very Proactive"**

##### LATINO INSTITUTE, Chicago, Illinois

The Latino Institute is a not-for-profit organization that conducts public policy analysis, and advocacy and leadership development on issues affecting the metropolitan Chicago Latino community, and provides training and management assistance to individuals and groups serving the community. The Institute was established in 1974 to increase the quality of life for the Latino community. The Latino Institute, which is a member of the United Way of Chicago, collaborates with the Chicago Urban League, Northern Illinois University, and local Latino policy centers in other major U.S. cities on many research projects.

The Institute produces data profiles and analyses on voting, education and employment trends, immigration,

housing and other topics of interest to the Latino community. "We've done 225 profiles of the Latino and non-Latino population," said Sylvia Puente, the Institute's Director for Public Policy and Advocacy. "We share these with local public policy officials and community-based organizations and social service providers in the Latino communities. The profiles and census data are the foundation of most of the 30 or more policy analyses that we've published. They're used for planning and grant writing, and for advocacy to show the inequality and gaps that exist between Latino and other communities in Chicago."

"We do most of our research with secondary analysis of Census Bureau publications and data sets. We re-manipulate the data so we can look at the demographics by income, poverty, and housing levels by neighborhood and by different community areas in the city of Chicago and the region. We have a good relationship with our local Census Bureau office and Northern Illinois University, which is a depository for all census data," said Ms. Puente. "The Institute's technical staff person has almost memorized the Census Bureau's documentation."

"The results of their research are felt throughout the City of Chicago," said Al Castillo, Information Services Specialist in the Census Bureau's Chicago Regional Office. "The Institute has a lot to say about bringing issues to the forefront, pointing out deficiencies in local, state, and national policy concerning Hispanics. A lot of Hispanic papers pick up their stories. It doesn't hit home until I go to my parents' house and see them reading the paper, getting the same information I have available to me in the office. It's a very powerful organization in terms of influence in the city of Chicago." Ms. Puente agrees. "At the Institute's annual dinner last November," she said, "an Illinois state senator stated that 'Legislation starts and stops based on Latino Institute analyses.' We are quoted in both the Hispanic and mainstream media."

#### How the U.S. Department of Commerce Has Helped

"The census data," Ms. Puente said, "are an important tool to learn about ourselves and to learn about the status of the Latino community across the country. Census data have provided us baseline information and are the basis for our analyses. They've allowed us to be very proactive in improving the quality of life of Latinos in the area. Without these data we would have to seek alternative kinds of research and research methodologies."

#### **"It's Hard To Put A Value On That"**

#### METROPOLITAN ECONOMIC DEVELOPMENT ASSOCIATION, Minneapolis, Minnesota

The Metropolitan Economic Development Association (MEDA) is a nonprofit organization that provides small business consulting services to businesses owned and managed by ethnic minority residents of Minnesota. The Association was established in 1971 by several "corporate leaders to be a free enterprise solution to poverty and unemployment," said George Jacobson, Project Director for the Minority Business Development Center at MEDA. MEDA, which has since grown to include 150 large corporations, provides mentoring services and assistance in developing business plans, raising capital and in making contract proposals. Among MEDA's corporate sponsors are Dayton Hudson Corporation, General Mills, Pillsbury, Cargill, First Bank System, 3M, American Express Financial Advisers, and Norwest Foundation.

The Association directs its services toward new or existing businesses whose owners are committed to generating

long-term profitable growth and employment opportunities. In 1995, MEDA-assisted businesses provided 2,618 jobs, \$12 million in profits and \$325 million in annual revenues. In 1995, the Association initiated a \$5.3 million loan program in cooperation with the McKnight Foundation, the state of Minnesota, and six regional banks. MEDA's Mentor Program, which provides the Association's minority clients with management and leadership skills through relationships with Twin Cities' CEOs and corporate officers, was the first of its kind in the nation and has served as a national model. In 1995, there were 25 active relationships in the program and 60 mentors, including Honeywell, Pillsbury, and Cargill.

MEDA administers the Minneapolis/St. Paul Minority Business Development Center (MBDC), under a competitively bid contractual arrangement with the Minority Business Development Agency. In 1995, the Association's MBDC consulted with 358 prospective clients, assisted 21 clients in securing \$6.0 million in loans and contacts, and helped in the start-up of 11 new minority businesses.

Two MEDA clients, one in 1991 and the second in 1995, were selected as national minority entrepreneur winners. In 1995, MEDA received the "Business Assistance Organization of the Year" award from the Small and Disadvantaged Business Opportunity Committee of the Twin Cities Federal Executive Board.

#### How the U.S. Department of Commerce Has Helped

"The MBDC," said Warren McLean, President and CEO of MEDA, "expanded the amount of resources that we can direct toward minority business development. It's allowed us to offer some services that we didn't have, like the Dodge Data Line" [an on-line data base on construction projects]. "In 1995," he added, "we served 545 clients; of those, 358 were handled by the MBDC. The Center has done financing packages for a Denny's restaurant, a Mobil gas station, and others. We arranged a million dollar financing package for a client that had come in with not a whole lot of resources. It's hard to put a value on that."

#### **"A Resolution Of The Dispute"**

##### COMMUNITY BOARD 6, Brooklyn, New York

The Red Hook neighborhood in Brooklyn is isolated. It is surrounded by water on three sides and, on the fourth side, by a major highway interchange. Red Hook is also "one of the poorest areas in New York City with a 93 percent minority population. About 7,500 people live in Red Hook Houses [a public housing development]; the remaining 3,000 residents, live in mixed income housing," said Bruce Mesh, President of Bamaware Corporation (a software company specializing in census data analysis) and a member of Community Board 6.

"In New York," Mr. Mesh explained, "community boards are established under the city charter to allow communities to have advisory input into various types of government issues -- land use, siting of facilities, and planning for future development. Red Hook," he added, "is a constituent neighborhood of Community Board 6." In 1992, the board "began to develop a comprehensive plan for Red Hook. Eventually, the plan included proposals for zoning and land use, housing development, economic revitalization, transportation improvement and numerous quality of life issues. The process brought together representatives from the many racial, social,

and economic groups in the community." This widespread participation, Mr. Mesh said "was ultimately a positive and important ingredient in the formation of a balanced and representative plan, but during the early design stages, we faced conflict over the details of the plan."

"The median income for Red Hook in 1989," Mr. Mesh said, "was \$9,500 per household -- one-third of the city's average, where overall median household income was about \$30,000. Red Hook's commercial sector had died because of loss of population and the low economic level in the community. One of the proposals that the Board's task force put forth was to develop a mix of housing to bring in people with higher household incomes and thus drive the local economy."

"One of the issues we faced," Mr. Mesh said, "was a widespread belief that, unless all new housing was designed for the lowest possible economic tier, the people in Red Hook Houses would not have an opportunity to live in the new housing." The conflict, he added, "was exacerbated by a long-standing competition and distrust between those who lived in Red Hook Houses" and those who lived in the surrounding area.

### How the U.S. Department of Commerce Has Helped

"I turned to census data for a resolution of the dispute," Mr. Mesh explained. "I looked at the decennial census files from both the long and the short form covering housing, income, education, poverty analysis, social conditions, and ancestry."

"I found that there were as many people in Red Hook Houses that fell within the middle income range as those that lived in the rest of Red Hook." Since selection for the housing would be made by lottery, these findings "reassured people of the plan's fairness: that they weren't being shut out. The Census data worked wonderfully. The plan was adopted by the Community Board and presented to the City Planning Commission."

### **"We Used A Lot Of Census Data"**

#### DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT, Rocky Hill, Connecticut

The State of Connecticut experienced an economic downturn in 1989. Based on the statistics, there was a weak, technical recovery in the second half of 1992. The tempo picked up in 1995. In 1993, the Swiss Bank, which was exploring options for relocating its North American headquarters, approached the State of Connecticut. In September of 1994, Connecticut Governor Weicker and the Swiss Bank Corporation announced that the bank would build a 930,000 square foot state-of-the-art headquarters complex in Stamford, Connecticut, planned for occupancy in late 1997.

The agreement provided a 50 percent annual state corporate income tax credit over 10 years, capped at \$120 million. An analysis by the Connecticut Department of Economic and Community Development indicated that the bank's relocation would produce \$500 million in new revenue to the state in corporate, personal income, and sales taxes during the same 10-year period, resulting in a net gain to the state of \$380 million. This agreement was predicated on Swiss Bank opening with an initial employment level of 2,000. The agreement afforded an additional five-year, 25 percent corporate income tax credit, capped at \$25 million, if after 10 years the bank's

employment had grown to a minimum of 3,000 people -- yielding a maximum tax credit over 15 years that could total \$145 million -- without any out-of-pocket state financial incentives.

Governor Weicker announced the agreement would provide half a billion dollars in direct new revenue and hundreds of millions of dollars in indirect revenues. State Economic Development Commissioner Joseph McGee said that Swiss Bank was the largest business that Connecticut had recruited and added that the state's business climate had turned. Since these negotiations, Swiss Bank announced some delays, stating that the bank would open with 1,200 employees and not reach the 2,000 employees until the following year.

### How the U.S. Department of Commerce Has Helped

"One aspect of the negotiations, " said Jeff Blodgett, Director of Research at Connecticut's Department of Economic and Community Development, "was an ongoing study of the economic impact of the relocation." The state used an economic model. "If you look at the data pieces in the model," Mr. Blodgett explained, "roughly three-quarters of it are BEA [Bureau of Economic Analysis] and Census data. We used a lot of census data to analyze population size, education, and occupational characteristics within a fixed radius. We looked at income and at the economic census to determine the types of industries in the region and to answer questions: 'are there enough suppliers?' 'who are the competitors for labor and market share?' These were critical parts. We also looked at commutational [commuter] data from Census."



## "Absolutely Necessary For Establishing Contacts"

G.A. PAPER INTERNATIONAL. INC., Tampa, Florida

G.A. Paper is an export broker of paper and board. The company, with headquarters in Toronto, was established in the United States in 1987.

"Our customer base," said Osama Ramadan, company Vice President, "are corrugators, companies which manufacture cardboard boxes, companies which make cement sacks that hold cement powder -- anything in the packaging industry, anyone who produces cardboard. We represent a number of American producers and we do a lot of U.S. Government work, especially for the Agency for International Development. The Middle East is our area of specialization."

"We are export brokers who represent manufacturers in the U.S., Canada, and other countries, and sell their products overseas, like a manufacturer's representative. Sometimes we buy on our own account and sometimes we sell on a commission basis. We handle the export paperwork and make arrangements for the shipping, and handle the finances.

"This is a commodity," Mr. Ramadan said. "if we don't follow world trends, we'll basically be out of the game. We have to keep in touch with the customers and with suppliers in the U.S. and know what the other world producers are offering. We do this by talking with our customers and the local representatives who are following the market. We also review quarterly publications, but they are not as current as local markets."

"A couple of years ago," Mr. Ramadan said, " I recognized there was potential with Mexico and when NAFTA began, I just decided Mexico would be a good alternative for us. I went to Mexico in March of 1994, using a service provided by the International Trade Administration. Persons in Mexico arranged the meetings for me; they talked to business owners and told them that someone was coming from the U.S. They provided a translator where we needed one, and provided background of the current economic and business situation before I went ahead with the meetings. Since then, we've made three or four multi-hundred thousand dollar shipments to Mexico."

How the U.S. Department of Commerce Has Helped

"I think it has been very useful," said Mr. Ramadan, referring to the International Trade Administration's [ITA] help in arranging for his Mexico visit.

"I think there are countries where it would be a good idea to go through the ITA. On a first time basis, I think it's absolutely necessary for establishing contacts. Foreign business people take the U.S. commercial sector much more seriously than just an export company calling upon them. One transaction paid off what we paid for the service."

## **"All Of These Things Are Beginning To Trigger"**

ACOSTA SHEET METAL MANUFACTURING, INC., San Jose, California

Acosta Sheet Metal is a small manufacturer of sheet metal products for residential, commercial, and architectural metal applications. Sal Acosta founded the company in February, 1972.

"Our first interest in exporting," said Tony Morales, Acosta's General Sales Manager, "was in October of 1993 -- sparked when we received a flyer from the Chamber of Commerce describing an upcoming Commerce Department trade delegation to Mexico City. We thought this would be an excellent opportunity, but we missed the deadline and were not selected. But we were told about an upcoming delegation in April of 1994 to Monterrey, Mexico. This gave us six months lead time and worked out better. It gave us time to plan the program and find out what sells in Mexico -- what are their needs, not what's here in the U.S. In California, the esthetics are very different."

"In advance of the trip, we sent information and samples and were extremely surprised that on the mission all of the people we wanted to talk to were there, plus others that we hadn't expected. We met with numerous manufacturers. It took us about a year to get to know the people, how they worked, what commercial and building codes existed. We found there really weren't any. A lot of educating had to be done and it generated a bit more work for us. It takes a lot of time in the planning process, selecting one or two companies to do business with. It was helpful for us because we are bi-cultural and speak Spanish."

"We made 23 contacts and ended up with five that are very viable -- ones who have the resources to manufacture what we do here, and the technology."

"We exported some products prior to the devaluation of the peso. Then the Mexican economy slowed and we looked in terms of manufacturing products there -- where it would be price competitive. We used some materials from Chile, which were less expensive because Mexico and Chile have a free trade agreement."

"We're expecting growth to be about 35 percent. We grew ten percent during our first six months in Mexico. If we do a good job it could be endless. We've been visited by a Mexican firm which produces steel. They're interested in us; it may be an excellent opportunity in promoting metal roofs. We're scheduled to do a trip in late summer that will lead to a joint venture. A manufacturer of sealants in the U.S. approached us because we are in Mexico, about manufacturing and selling products in Mexico. All of these things are beginning to trigger."

How the U.S. Department of Commerce Has Helped

"Raj," said Mr. Morales, referring to Raj Shea, the Director of the International Trade Administration's Oakland Office, "was very instrumental in getting us started. Beyond that, he gets information for us or refers us to the right people. The help we received offered us the opportunity to begin to expand. We're no longer overwhelmed by Mexico."

**"Someone To Go To Bat For Us"**

## ENTWISTLE COMPANY, Hudson, Massachusetts & Fort Worth, Texas

The Entwistle Company, founded in 1917, has three major lines of business: the design and manufacture of support equipment, shipboard equipment, and ordnance parts. Over the years, the company acquired and sold other companies. In 1987, Entwistle acquired Larry Hove's military support equipment business.

"The products we were making," said Larry Hove, now Vice President at Entwistle, "were very unique to the U. S. military. They were generally not anything that the international market needed. We got involved in the support equipment business and spent the first few years in the mode where the last thing we needed to bring about was international business."

"In 1993 and 1994 we had a number of programs coming on-line -- programs that had actual or potential international market prospects. At one point, I received a call from a woman in the U.S. embassy in Paris who was putting together a U.S. exhibit for Eurosatory [a defense show in Paris, June of 1994]. At \$2,000, this was a very inexpensive option to participate in the catalog show. It seemed a good way to get our feet wet. The timing was right, so I signed up."

"Through a chain of events," Mr. Hove said, "we sold a few million dollars worth of products that we wouldn't have sold if we hadn't participated. There wasn't anything real direct and it took almost two years. It started with a guy in Oman who was at Eurosatory. He saw our brochures, contacted us, and bought a forklift which he used in trials in Oman. This was a sale of one."

"It was getting close to IDEX [an international defense exhibition in Abu Dhabi, in March of 1995]. We borrowed the forklift from the guy in Oman. When the show closed, we turned it over to a company we signed up as our United Arab Emirates (UAE) distributor, who got it into the hands of the UAE land force. They tested the forklift for a month before it went back to Oman. A couple of months later, the UAE Air Force wanted to look at it and they tested it for a week. We received an order in March for 47 forklifts -- a little over \$3 million."

"As a result [of Eurosatory], we now have distributors in Oman and in the UAE and the events have certainly resulted in us quoting on a number of things. I believe we'll see results from this, but it takes time. The forklift was very straightforward; some of the other expressions of interest aren't."

### How the U.S. Department of Commerce Has Helped

"The value for me," said Mr. Hove, speaking about his contacts at the Bureau of Export Administration, "is that I have someone who I can talk to who has a global view of what's happening in the defense export world. We don't have people on the ground in any place. They have contact with commercial officers and the Offices of Defense Cooperation. It gives us the potential for getting someone to go to bat for us."

### **"Taught Me How"**

FINNE & ASSOCIATES, Atlanta, Georgia

Finne & Associates conducts feasibility studies for new or expanding public assembly facilities -- convention centers, sports arenas, civic centers, museums, and arts centers -- and for other types of public and private projects. The firm provides economic and market research to support decisions. Finne & Associates specializes in developing computer models, data base design and maintenance, and demographic analysis and designing surveys.

Some of the clients recently served by Finne & Associates include: the Cumberland County Civic Center in Portland, Maine; the Outer Banks Convention Center and Auditorium in Dare County, North Carolina; the Owensboro Sports Center in Owensboro, Kentucky; and the James H. Gray Civic Center in Albany, Georgia.

Ms. Bonnie Finne is a consultant who started her business in February of 1993 after twenty years with Hammer, Siler, George (HSG) an economic consulting firm which includes audience support facilities among its scope of business. "When I was with HSG," Ms. Finne said, "we used data from the Census Bureau and also from some private firms that sell forecasts that were really regurgitated census data. We had to put in complicated codes [for the private data] and it was very expensive. I was not always happy with the numbers. When I decided to start my own firm," Ms. Finne recalled, "I couldn't afford the private firms; I didn't want to rely on them because they were very expensive."

Ms. Finne, who employs no staff, prefers to subcontract when she needs assistance. "Being a consultant," she explained, "is a relatively small investment. I operate out of my home and have expenses for a fax, modem, computer, et cetera, and letting people know you exist."

Lately, Ms. Finne has been doing a lot of research for TV market areas, for concerts and sports, to determine which TV markets are stagnant and to identify markets that are growing. "I need population data to do the statistics I do," she said. "I'm very enthusiastic about a lot more stuff being available on-line, and enthusiastic about CD-ROM where I can drop it on my spreadsheet, and the resources available on-line. I just downloaded the whole 50 states, the '94 population estimates by county. I'm going to code each with their TV market areas."

### How the U.S. Department of Commerce Has Helped

Ms. Finne has used Census Bureau demographic and economic data to conduct her analyses. "Mary," she said referring to Mary Vetter, Information Assistant with the Census Bureau's Atlanta Regional Office, "taught me how to get the latest county data which I can now do for myself. She's even faxed me data on occasion, some of the same data available at Georgia State and at the Atlanta Public Library. Lots of time when you go, the volume isn't there."

### **"Everything Comes Together"**

### MISSISSIPPI RIVER REGIONAL PLANNING COMMISSION, La Crosse, Wisconsin

The Mississippi River Regional Planning Commission (MRRPC), established in the mid-1960s, provides land use planning and economic development services for nine counties. "We're always disseminating data," said Greg

Flogstad, MRRPC Executive Director, "to businesses, developers, community organizations, appraisers, and others to assist in their economic analyses. Until several years ago, the data on our communities had gaps and was often outdated and usually covered different times, which limited their usefulness for comparative analyses."

MRRPC and two adjacent Regional Planning Commissions (RPCs) cover 21 counties in western Wisconsin -- comprising more than 40 percent of the state. These 21 counties, Mr. Flogstad said, "are mostly rural with many areas having lower income levels and higher unemployment rates than elsewhere in the state or the nation as a whole."

In 1991, the three RPCs collaborated in developing the Western Wisconsin Economic Database that they launched in January of 1993. "It's computer-driven," said Mr. Flogstad. "It includes database and geographic information system software so we can produce community profiles, building and site forms, and high quality geographic maps identifying various economic attributes across the region. We've standardized the sources of information and we're collecting the same data from the same sources at the same time. Our database," he added, referring to MRRPC's coverage, "contains every community with a population of 750 or more that's incorporated. It includes population, housing, real estate, income, unemployment, wages, education, transportation, utility and other data from federal, state, and local sources."

"Everything comes together in one concise report to help decisionmakers. We can now generate standardized community economic profiles. We update and mail out our report to all the communities in our nine counties. We believe we have improved western Wisconsin's economic advantage. We are now able to respond more quickly to development information requests. We provide information to local governments, real estate companies, utility companies, hospitals, churches, economic development organizations, and nonprofit housing corporations to help with their statistical economic research, whether it's housing, public service, or business-related. The database reduces a lot of personnel time and research for businesses and other organizations trying to make a decision. The database helps the MRRPC in its day-to-day work involving preparation of comprehensive plans for communities and updating zoning or subdivision ordinances and in grant and business loan packaging to help communities with the economic development projects."

#### How the U.S. Department of Commerce Has Helped

"The Economic Development Administration awarded a 75 percent matching grant as seed money to establish the database. The remaining 25 percent was provided by the three Regional Planning Commissions. Within the database," Mr. Flogstad added, "four of eleven categories comprise information derived from Census and the Bureau of Economic Analysis."

#### **"People Walk Away With A Good Idea"**

LATIN AMERICAN ECONOMIC DEVELOPMENT ASSOCIATION, Camden, New Jersey

The Latin American Economic Development Association (LAEDA) is a nonprofit corporation founded in 1987. The Association promotes the economic progress of minorities in the city and county of Camden by helping minority and disadvantaged individuals with the creation of small businesses, redevelopment of commercial real

estate, and job creation.

"We have an entrepreneurial program on how to write a business plan, and how to start a business" said Alfonso Castillo, LAEDA's Director of Training and Technical Assistance. "It runs nine weeks; there are 27 classes. We expect the students to write 70-to-80 percent of the business plan during the course. The business plan is used later to obtain financing. Participants," he explained, "must qualify for the program by having a trade, skill, profession, or job that can be converted into a business."

"Our first class is motivation; the second is an introduction to what a business plan is; the third introduces the U. S. Census Bureau and use of census data in generating the plan. We have the students identify themselves by SIC [Standard Industrial Classification] code. The description of that SIC code is given to them so they understand how they fit into the industry. They use the SIC code as a guide to do their research. We give six classes in business planning, four in marketing, and have the students write the marketing portion of their plan after that session. We have six classes on accounting and financial issues and several classes on the involvement of family, time management on working the business, and conflict resolution. We also give classes on licensing and safety, business law, insurance, and on how to hire and manage personnel. The last class deals with banking and lending institutions."

"We've been offering the course for five years. There used to be two classes a year. Because of increased demand, we added a third class two years ago. We get about 70 inquires to participate for each class; about two-thirds come for interviews. We accept 15 or 16 for each class and, on average, we have 10 or 12 graduates. Students come mostly from Camden City. Of the 144 graduates, 103 are Hispanic, 36 are African-American, 2 are Asian, and 3 are Caucasian. We get volunteers from all over for the classes; small business owners, former graduates, law firms, banks and lending institutions. Census is the only class dealing with a federal government entity."

#### How the U.S. Department of Commerce Has Helped

"We have volunteers," Mr. Castillo said, "from the Census Bureau who come in and give the class. They bring data related to the area and examples of a census tract map. The class goes into depth on what kind of information is available by census tract, block groups and so on. It's an excellent presentation. People walk away with a good idea of what data are available, how it can be used, and how it will help their business. It has worked very well. Not everyone goes into business. Some found that perhaps it wasn't a good idea because a market wasn't there."

#### **"In Accordance With International Standards"**

PAREXEL INTERNATIONAL CORPORATION, Waltham, Massachusetts

PAREXEL, formed in 1982, is a publicly-held Contract Research Organization. "PAREXEL specializes in the product development side of research and development," said Alberto Grignolo, Ph.D., Vice President and General Manager of Worldwide Regulatory Affairs Services at the firm. "We are contracted by the major pharmaceutical, biotechnology and medical device companies to manage clinical trials mandated by the Food and Drug Administration and analogous Regulatory Agencies around the world."

"Clinical trials are conducted to support the approval of a new product," Dr. Grignolo explained. "Many of the large trials involve hundreds or thousands of patients and can last from six months to two or three years, depending on the disease. GCP [Good Clinical Practice] is rapidly becoming the international standard for conducting clinical trials. It is a good investment. Pharmaceutical companies realize that GCP-compliant clinical trials generate more reliable data and are more likely to reduce time-to-market, thus increasing their global competitiveness."

PAREXEL recently participated in GCP-training in Israel. The company prepared a course for medical researchers, industrial companies, and government officials, which it presented in cooperation with the U.S. Food and Drug Administration (FDA) in November of 1995 and May of 1996. "By providing this training," Dr. Grignolo said, "we are enabling doctors in Israel to conduct studies in accordance with international standards, including FDA standards, and potentially at lower cost."

"Israel is an attractive environment for clinical trials," said Lee Bailey of the United States-Israel Science and Technology Commission, "because the Israeli health care industry is centralized. It's a small country and able to track participants, unlike the U.S. where people move from health plan to health plan. In the U.S., at the extreme, you may lose up to 80 percent of the participants at the end of five years. In Israel, you may lose only 20 percent."

#### How the U.S. Department of Commerce Has Helped

"The Commission enlisted officials from FDA and PAREXEL to design and offer a GCP training course in Israel," said Dr. Grignolo. "Commerce was the total initiator of the project," said Mary Doug Tyson, an FDA Associate Administrator who participated in the training. "FDA and PAREXEL would never have been doing this work in Israel, if it were not for the Commission, which funded the expenses for FDA participation and training and harmonization."

The Commission's U.S. Secretariat resides with the Commerce Department's Technology Administration.

#### **"A Better Growth Opportunity"**

DATA MEDICAL ASSOCIATES, Arlington, Texas

Data Medical Associates (DMA) is a privately held manufacturer of blood chemistry diagnostic kits for hospital laboratories. The company's product line includes chemistry reagents, calibrators/controls, and linearity materials which are used to measure blood chemistry components and are used in the diagnosis of diseases ranging from kidney infections to heart attacks.

"DMA was founded in 1972," said Jerry Graham, DMA's President. "We started exporting in 1979 in response to an inquiry from overseas. We had a contract with a Japanese company. We still export to that same company."

"We're very serious about exporting," said Mr. Graham, "and now export to 42 countries. NAFTA has been very helpful in opening up Mexico, which is now our number one market, followed by Korea, Greece, and Turkey. Exports are 20 percent of sales and our fastest growing market area. Exports will be at 40 percent in three years, up from eight percent five years ago."

"Exporting is more difficult than selling domestically, but exports offer a better growth opportunity -- especially to developing markets. The growth in the domestic medical diagnostic market is in new technology. The mainstay of the market is stable, and in a stable market growth opportunities come at the expense of a competitor. In the emerging markets of the Pacific Rim, the Middle East, and Latin America, there are abundant opportunities for new business as these countries bring their health care systems up to modern standards. We recently participated in the SINOMED exhibition in Beijing, China. Our exhibit produced a great deal of interest, and we view China as a country with great opportunity."

In four of the last five years (1991-1995), DMA was honored by the Fort Worth Star Telegram and Arthur Andersen & Company as one of the Top 40 Exporters for export growth. DMA was also selected as the 1993 Dallas/Forth Worth Exporter of the Year by the Small Business Administration.

#### How the U.S. Department of Commerce Has Helped

"The Department of Commerce has always encouraged us in our export activities," said Mr. Graham. "We have used the services of the International Trade Administration in gathering information on potential markets, establishing contacts with potential distributors, receiving advice and assistance on doing business in a foreign country, and in participating in catalog shows and hiring interpreters. They are very helpful and we use their services quite a bit."

#### **"Just Some Of The Impact"**

##### GRAPHIC ARTS TECHNOLOGY CENTER OF IOWA, Clinton, Iowa

The Graphic Arts Technology Center of Iowa (GACTI) is a 21,600 square foot facility which includes an electronic pre-press lab, a press lab, fiber optics and satellite capabilities. "We're a fee-based, non-profit entity" said John Ward, the Center's Director. GACTI originated with the Eastern Iowa Community College District, located in Davenport, and is targeted to the printing and graphic arts industry as a way to spur economic growth in Iowa.

"We provide customized training to companies involved in the graphic communications business," said Mr. Ward. Through May of 1996, the center provided 60 customized training courses and served 154 companies. "We use their process to customize the training using their product as an example. We also work partnerships with manufacturers that showcase their technology for the industry. This provides an opportunity for companies to test and train employees before they purchase or take delivery. There has been close to \$1 million in consigned equipment over the past two years."

"There are 1,000 plus printing companies in Iowa," said Mr. Ward. "Graphic communications is Iowa's top manufacturing industry and the top employer in Illinois, Wisconsin, and Minnesota." The industry -- ranging from large multinationals to labeling and t-shirts -- grew 36.9 percent nationally over the past 10 years. "The workforce," Mr. Ward explained, "is experienced but typically has had only on-the-job training. In many cases that training is based on technology that is 20 to 30 years old. Inks and paper have changed; color has replaced black and white. And the technology has a higher quality level than that of the past."

The Center is attributable in part to growth or relocation of printing companies to the area. "Molded Fiber Technology, a company producing packaging of the computer and electronics industry, is expanding in Clinton," said Mr. Ward, "They will bring in 40 new jobs initially with an additional 40 jobs to be created over the next two years." Mark Kapfer, Executive Director of Economic Development and Marketing of the Eastern Iowa Community College District agrees. "The Center's grand opening was in September of 1994. Since then, Midland Press in Davenport expanded by 80 jobs; Bawden Printing in Elkridge added about 115 jobs, and they're adding another 80; Service Press in Davenport added 10 jobs; Maquoketa Web in Maquoketa is adding 13 employees; Brandt Printing Company in Davenport added about 15; Times Mirror in Dubuque added several hundred people. They're good jobs, well-paying jobs, and a growing industry. That's just some of the impact on local industry."

#### How the U.S. Department of Commerce Has Helped

The Economic Development Administration (EDA) provided \$801,808 (40 percent) of the total cost for constructing the facility. International Paper company, Waldorf Corporation, Iowa's Wallace Technology Transfer Foundation, the Eastern Iowa Community College District, and various state and local graphic arts-related companies provided the remaining funds. "We would not have been able to do this," Mr. Kapfer said, "without the assistance of EDA."

#### **"Congruent To Our Interests"**

#### AMERICAN SEED TRADE ASSOCIATION, Washington, D.C

The American Seed Trade Association (ASTA) promotes the development, marketing, and free movement of seed and related products in world trade. The Association supports improved intellectual property rights (IPR) protection for those devoting considerable resources to bring new and improved seed varieties to market because better protection leads to increased revenues which, in turn, support continuing and increased research on new and improved varieties.

"U.S. seed exports," said Mark Condon, ASTA's Vice President for International Marketing, "for the 1995 marketing year [July 1, 1994 - June 30, 1995] reached an all-time high of \$665 million. U.S. seed exports have been increasing on average at nine percent per year for the last 20 years. We estimate the world seed market at about \$60 billion. If we can achieve substantial IPR protection, we have the opportunity for increased trade and increased profitability in terms of margins on seeds that are sold overseas."

"The existing framework for plant variety protection," Mr. Condon said, "is the UPOV Convention on plant breeders' rights. More substantial protection will be forthcoming from the 1991 UPOV Convention -- an English

acronym for the French: Union for Protection of New Plant Varieties. The revised Convention clarified a lot of gray areas in the earlier convention and improved plant breeders' rights." ASTA estimates the 1991 Convention may come into force in 1997.

## How the U.S. Department of Commerce Has Helped

"PTO [the Patent and Trademark Office] negotiated the terms of the 1991 Convention for the United States," said Mr. Condon. "It was critical that it is congruent to our interests and that it set the appropriate standards for plant breeders' rights worldwide. A lot of things were coming up that we found objectionable. The European Union, for example, wanted a vote for each country, plus a vote for the Union itself. They also wanted a no farm-save seed policy or the payment of royalties. In the U.S., it's a law that farmers have the right to save the amount of seed for their own holdings. The 1991 Convention made it clear that farmers have this right, but couldn't sell the seed. The Convention refers to the concept of essentially-derived -- what differentiates one variety from another -- which is a scientific, technical issue still being studied. The mention of that concept allows for more research and discussion as to what constitutes a distinct variety."

"A number of government officials," Mr. Condon said, "were responsible for negotiating the Convention. The PTO provided very strong negotiators who kept us from being de-railed. These were very dynamic personnel with exemplary negotiating skills."

## "Out In The Street Asking Questions"

### ADVENT HILL INTERNATIONAL DEVELOPMENT GROUP, INC., Hartland, Vermont

Advent Hill, established in 1991, is a privately held exporter of gasoline station equipment. "I export gasoline dispensers, computer point of sales displays, underground piping, hoses and nozzles, fleet key systems for Smart card purchases by truckers, level gauge tank displays for measuring leaks, and C-store equipment which has to do with security, safes, bullet proof glass, displays, and racks," said Arthur Boroff, President of Advent Hill.

"I have an exclusive contract," Mr. Boroff explained, "with the manufacturers for a geographic area covering Central and Eastern Europe, Russia, and the CIS [Commonwealth of Independent States]. I primarily handle sales and allow the factories to do the shipping. I purchase from the company and give them the shipping instructions. I collect my own receivables. I do mostly letters of credit and cash in advance."

"This past year, I've exported well over a million dollars. Following manufacturer modifications of vapor recovery systems, I expect our exports to increase by at least 25 percent per year for the next several years. This estimate is based partly on data showing that car sales in Eastern Europe are increasing at 30 percent per year and are expected to continue at that rate well past the year 2,000. We export a lot to Hungary, the Czech Republic, and Slovakia. We're exporting smaller amounts to Russia and the Ukraine. I expect to make our first sales to Lithuania and Bulgaria this year and to begin selling to Albania next year. My long term plans are to cover all of our geographic markets. This is a gradual process. I'm a small company. The companies I represent are hundred million dollar companies; we don't have the budget or ability to take risks and no credit to extend."

"My biggest need," Mr. Boroff said, "is to secure distributors for people who service gasoline stations in the old communist countries. I don't speak the languages. They don't have yellow pages. A lot of these industries were owned by the government and it's very difficult to find where the fledgling companies split off. I'm doing scud work. Once I find a customer, it's repeat business. There's constant changing and updating in equipment."

## How the U.S. Department of Commerce Has Helped

"The International Trade Administration are very helpful in supplying me with economic marketing data. They provide me with help in identifying potential customers where it is very difficult to find out who your customers can be. Their biggest help is their ability to go out in the street asking questions for me. In Hungary, I was doing business with a distributor who got ill and closed the business. The Commercial Attach,'s assistant set up eight meetings for me and a translator. I flew over. At the end of a week I had met with all 8 and I had a new distributor -- sales continued. In Romania, we couldn't ferret out information. A young lady on the staff went to a gas station and started asking questions: 'who owns you?' 'where do you buy gas?' 'who delivers it?' 'where do you buy equipment?' 'who fixes it?' 'do you own the station?' We ended up with a report filling in all the pieces."

## "Looking For New Markets"

### TRACER RESEARCH CORPORATION, Tucson, Arizona

Tracer Research, formed in 1983, is a privately held company and the originator and developer of soil gas sampling and analysis technology for environmental applications. The company assesses soil and groundwater contamination, conducts leak detection on above- and below-ground storage tanks and pipelines, and designs and uses mobil vans to conduct on-site site assessments. The company currently has about 85 employees in Arizona, Colorado, New Jersey, the United Kingdom, and Italy.

"Seven years ago we were working out of a client's office in Copenhagen and the following year we decided to set up an office in Brussels," said Doug Mann, Vice President, Sales and Marketing. "That was the beginning of our formal presence in Europe. We moved to Florence because most of our work was in southern Europe. We've been in Italy for about four years and in the United Kingdom for 3« years."

"In 1994, international business accounted for about four percent of sales and it had been at that level for the previous several years. In 1995, our international activity grew to 10« percent of sales and it will probably double in 1996 to about 18 or 20 percent. The increase in our overseas business," Mr. Mann said, "is the result of our intentionally expressing a commitment to be there. We stepped up our sales activities. We didn't have a concerted sales approach before that."

"I inherited responsibility for international activities," Mr. Mann said, "in November of 1994, when my predecessor left the company. He had started searching for licensees and distributors in Spain, Argentina, and some other countries. I continued the approach he had started. We're now selling in the European Community, Korea, Argentina, Japan, Thailand, Canada, and Mexico -- and looking for new markets. We are focusing on countries with tank testing requirements or other favorable aspects to their business climate."

## How the U.S. Department of Commerce Has Helped

"The biggest help for me," said Mr. Mann, referring to assistance from the International Trade Administration (ITA), "is that they're a resource for any questions I might have. I have lots of issues regarding importation; different countries have different requirements. They have been very responsive."

"Also, working through their overseas staff in all these foreign lands, I can pre-screen who I deal with. I can initiate conversations through ITA and, when I go overseas, I can spend a week meeting with quality people, rather than spending a week just trying to find a suitable candidate. By the end of July," Mr. Mann said, "we expect to license distributors in Spain and Argentina. These are two distributors who are entering our affiliate network that we wouldn't have had without ITA services."

## **"Wouldn't Have Happened Without The Data"**

### HOPE FOR KIDS, Kansas City, Kansas

"Our church started a benevolent arm, Helping Other People Everywhere (HOPE) -- a leper colony in India, an AIDS clinic in Africa, several different things like that," said Mike Septer, a mortgage banker and the Technical Support Coordinator for the Kansas City chapter of HOPE For Kids. "One of the things we started was an adoption agency, which has grown to HOPE For Kids and spread from city to city: Atlanta, Orlando, New York, Boston, Dallas."

"HOPE For Kids," said Michelle Septer, a nurse and Assistant Medical Coordinator for the Kansas City chapter of HOPE For Kids, "is an immunization awareness campaign that was conducted in 32 cities in 14 states during National Immunization Week [April 20-27, 1996]. Twenty-eight percent of children in the U.S.," she explained, "are not properly immunized. Children under two are especially vulnerable. Kansas City started this year, with the assistance of a national grant from Johnson & Johnson. We had a rally at Indian Springs, the local mall, before everybody went out and we kept a unit at the mall all day, so volunteers could tell the people they met that they could go to the mall and get free immunizations that day."

"The national goal," Mr. Septer said, "was to meet a million kids and publicize the need for immunization and the availability of free immunizations. Our goal in Kansas City was to meet 20,000 children. We were serving as a prototype, to determine whether offering immunizations on the street, or some other approach, makes sense in smaller cities."

"We targeted Wyandotte county in Kansas and portions of Jackson county, Missouri. Overall immunization rates in Missouri were 32 percent, which is very low, but in the metro area, the rate was close to 80 percent. In the metro area of Wyandotte county, it was 38 percent."

"We used census data to identify where we wanted to go. I bought some mapping software to make sure the whole of Wyandotte county would be saturated and that we were allocating enough people. We were interested in children age 13 and under. The census data break at age 12 and age 14, so I calculated population densities for

children 14 and under. Based on the number of children in the different census tracts, we'd decide how to allocate our teams -- two teams over here, three teams over there -- to saturate the area. If we were sending four teams to a tract, we'd call up the software and draw boundaries around each segment of the tract. If it were a rural community, the team would do a lot of walking. We covered every census tract in Wyandotte county and about 10 in Jackson county. That's roughly 60 to 70 tracts that we covered with about 300 teams of two person each."

## How the U.S. Department of Commerce Has Helped

"The census data," Michelle Septer said, "helped us in identifying the areas with the most kids. April 20th was National Immunization Day, we had volunteers for four to five hours and needed to make the best use of them." Added Mike Septer, "It was a success. We met families representing over 22,000 children; it wouldn't have happened without the data available."

## **"Given A Tiny Company Like Ours The Capability"**

### OPTICAL E.T.C., Huntsville, Alabama

Optical E.T.C. (OETC), conducts research in developing infrared technologies for military and commercial applications. The firm, founded in 1990 and currently at 12 employees, conducts its research in two main areas: silicon micromachining (an area in which it collaborates with the National Institute of Standards and Technology), and optics and electro-optics.

"On the infrared side," said company president Barry Johnson, "we are developing test-set technology where night vision systems have to be tested and evaluated in the field. The testing is currently done by bulky equipment that fills several racks in a lab. We're developing a test-set that is man-portable and provides real-time pictures of complex targets. The existing technology for field use is limited to very simple targets like points and triangles. We're producing an initial prototype that we hope to have ready in August for several months of field evaluation by both the Army and Navy. Our Navy sponsor just made a presentation to NATO. NATO expressed strong interest in evaluating the testset."

"There's a potential for commercial sales," Johnson said. "Infrared cameras can be used in forest fire detection and in thermal auditing by electric companies to examine their power lines. The OETC test set can be used to test and evaluate such cameras; however, the bulk of sales will likely be to the military because of cost. Our system will probably be 10 to 15 percent of the current price of comparable equipment which runs millions of dollars. We're preparing a proposal for the French, to build them an infrared test facility based on our micro-machined thermal pixel array technology. We're working with Santa Barbara Infrared. We'll provide SBIR the standard system and they will do some value-added modification. Our intent is to start commercializing the initial portable infrared test-set around the beginning of calendar year 1997."

## How the U.S. Department of Commerce Has Helped

"We're not in product development yet," said Johnson. "Over the early years of our collaboration with NIST [National Institute of Standards and Technology], we've been conducting applied research. We're currently

funded under a 6.3 [advanced research] program sponsored by the Office of Naval Research. We're taking the technology and developing a proof of concept system. At that point, NIST will bow out because the Navy will want us to transfer to 6.4 [production] money and produce a product. A lot of our research progress has to do with the technology that OETC and NIST have been jointly developing. Under a cooperative research and development arrangement with NIST, we have access to certain of their facilities and personnel. For example, NIST has a very expensive software package that they use for many different LSI (integrated circuits) devices applications. We access it remotely to design our thermal pixel arrays for the test set. We've had a person stationed at NIST with full access to lab equipment. We have a near seamless team approach with NIST and collaborate on electronic design, optics design, and systems. It's given a tiny company like ours the capability to do what the larger companies do."

## **"\$1,200 In The Bank"**

THE WEST VIRGINIA WOOD TECHNOLOGY CENTER, Elkins, West Virginia

"In the mid-1980s," said Denver Barnett, Executive Director of the West Virginia Wood Technology Center, "this area produced huge amounts of lumber which we shipped south where value was added. The Board of Education, trying to promote economic development, initiated a seminar program aimed at optimizing the value of our lumber products before shipping. They leased space and began teaching people in the wood mills about new processes, technology, and products. In 1989, the school lost its lease and we were without a training center. The school system had fiscal problems and no resources to pursue another site. The county development authority stepped in and counseled at state, regional, and federal levels. We ultimately assembled a financial package that allowed us to construct a new center."

The West Virginia Wood Technology Center, completed in July of 1993, is a 25,625 square foot facility comprising a Wood Training Institute and a small business incubator. The Institute provides training on log and lumber grading and inspection, profile knife grinding, moulder operations, and kiln drying. The incubator comprises three 5,000 square foot areas that are suitable for manufacturing and that are available for lease at graduated rates over a three year maximum stay. "Our training program is regional in scope, Mr. Barnett said. "We've trained nearly 500 workers from West Virginia, Virginia, Ohio, Pennsylvania, and Maryland. The three incubator spaces are occupied. One occupant, a heavy electrical contractor employing 90 people, will vacate two spaces in September to occupy purchased space in our industrial park. Seven firms are interested in those spaces."

Unemployment in Randolph County, which includes the town of Elkins, was 22 percent in 1989. In mid-1996, the rate had dropped to 7.5 percent. "Some of the decrease," said Mr. Barnett, "can be associated with the Center's training and incubator programs. Based on a labor market study, it appears that [Randolph county] employment in the wood industry increased about 23 percent over what it was in 1989. Seven companies expanded into secondary [value-added] market activities. The L.J. Gallo Company is moving here from New Orleans because of the training. They will be employing 50 people. Six other out-of-state companies are considering relocation and will be making decisions over the next 6-to-12 months."

How The U.S. Department of Commerce Has Helped

"EDA provided a grant of \$765,000 out of a total of \$1,020,000 for constructing the Center," said Mr. Barnett. "We wouldn't have been able to do the project or at least at this level without their participation. We had all these grandiose plans and \$1,200 in the bank."

### **"Time-Efficient Function That Saves Costs"**

FOGARTY RESEARCH AND DEVELOPMENT, Portola Valley, California

Fogarty Research and Development designs and develops medical devices. "As a physician," said Thomas Fogarty, M.D., company president and founder, "I know what's needed in the operating room. Trying to communicate these needs to large companies becomes very cumbersome. As design and development is an iterative process, there is often difficulty in obtaining consistency and focus when dealing with large medical device companies. As a result, I started my own firm to develop the intellectual property."

"My first patented medical device," said Dr. Fogarty, "was the balloon catheter which I developed in 1961." Since then, Dr. Fogarty has acquired close to 60 patents, including an entire line of vascular clips and clamps and the "industry standard" Fogarty balloon embolectomy catheter."

The staff at Fogarty Research and Development, founded in 1981, are primarily mechanical engineers and product designers. "The number of engineers varies," said George Hermann, director of engineering. "We like to keep the total number under 10, for efficiency. Often, engineers key to the project will leave the Fogarty group and work with the start-up company. Some return to the Fogarty group, others remain with the new company. We have spun off a handful of medical device companies within the last five years. Five went public in the last six months. Once the company is formed, pertinent patents and patent applications from Fogarty R&D are assigned to it. These assignments make the start-up more valuable, more capable of securing venture capital funding, and more likely to succeed. Total employment from these starts exceed 500 people. They are growing; in a few years, their employment may double."

### **How the U.S. Department of Commerce Has Helped**

"The value that the PTO [Patent and Trademark Office] brings to the inventor," said Dr. Fogarty, "is their assistive attitude and availability. They bring time value that is very, very significant. If we have a patent on file, that brings tremendous value. Obtaining Patent Office opinion on patent elements that may be protected is critical. It's a time-efficient function that saves costs. For example, we may be working on a concept and begin to develop the appropriate technology. If we've already had an initial filing with the PTO, we will have the benefit of them pointing out areas where what we're doing may already have been done. By our interaction with the PTO, we can learn ways that we can change the design or the claim and make it protectable. If we can't do that, we may be able to identify someone who holds a protected property with whom we can work out a cross license. We could be wasting both time and money. I could potentially have 2 or 3 engineers working on a project accumulating bills at the rate of as high as \$30,000 a month."

"Some large companies are considering licensing patents that I have held for five, six and seven years," said Dr.

Fogarty. "As a small entity, we receive a fifty-percent subsidy on the application fee and later payments that are needed for maintaining the validity of the patents. With the number of patents we hold, that can amount to \$20,000 or more a year."

## **"Quick Education"**

ROCKET MAN, INC., LaGrange, Kentucky

"The best way to describe our products," said Mark Haertzen, President, "is as mobile drink systems. The backpack drink dispenser, our signature product, is used by walking vendors at stadiums to serve hot or cold drinks: beer, sodas, or hot chocolate. Our other major product is the beverage cart with an umbrella, which is used at many festivals and amusement parks. Our products are designed for selling more drinks to more people in more places through mobility."

"I was in banking up to the Spring of 1993," Mr. Haertzen said, "and I had a drive-through coffee shop as a sideline business. I wanted to find a way to sell coffee to my customers without leaving the office. As I did a patent search, I found the concept [of a backpack] was over 100 years old. I took today's technology to design an improved, lighter weight backpack. It's 34 pounds, totally full; 12 pounds, when empty."

"We are a privately held company established in 1992," Mr. Haertzen said. "We have 16 full-time employees and 150 part-time who work with us at stadiums and special events. Our growth rate was 300 percent between 1993 and 1994, and 225 percent the following year. Seventy percent of our sales are exports; we ship our products to over 40 countries. In the U.S., we sell to the major beverage dealers, such as Coca Cola and Miller Brewing Company. Overseas, our strategy is to sell through stocking distributors, people who inventory our products to have on hand for end users."

## **How the U.S. Department of Commerce Has Helped**

"I first encountered the International Trade Administration in 1993," said Mr. Haertzen. "I received a call from a foreign customer. I knew nothing about exporting. I went to the Chamber of Commerce to search where to find help. When we started, Bob [referring to International Trade Specialist Bob Cooper] advised us on how to locate and use government programs. Bob helped us get started with finding distributors in Mexico and Canada. He worked with us to refine our export strategy: how to set the price from one country to another; what language needs to be in our contract; finding someone who can speak the language; identifying what type of information we need from prospective distributors and evaluating whether we are dealing with the right prospects. In the U.K, for example, we had one guy who was willing to place an initial order and wanted exclusivity in the country. If left to ourselves, we would have agreed. We had two other, better long-term prospects, who were not in a position to buy right then. We signed with one of those."

"There's so many areas he's consulted with us that it's difficult to zero in on any one area: letters of credit, what the terminology should look like, what to insure. Everytime we come across a new concept that we've never had experience with, we can call Bob and get a quick education. It's invaluable, instead of having to make the mistakes on my own. When you have someone you can call, it can bring up companies like ours with little or no

experience, where otherwise it would take years."

### **"There's A Lot Of Risk In That Technology"**

COMPOSITE HIGH PRESSURE TECHNOLOGY, INC., Lewes, Delaware

Composite High Pressure Technology, Inc. (CHPT) is a privately held company that commercialized the DELBUOY and the DELPUMP. "The DELBUOY," said Doug Hicks, CHPT's president, "uses ocean wave energy to force seawater through a reverse-osmosis (RO) filter to convert seawater into potable water. Conventional RO type desalinators rely on diesel, electric motors, or other non-renewable sources to drive the pump and they are subject to corrosion. I've used polymers and composites in the design of the DELBUOY, in the pump, the valves, and the terminations -- in all the plumbing fittings."

"Commercialization of the DELBUOY has been on hold since interest in wave power 'went out of fashion' 10 years ago. A lot of patents on wave power have been issued but they aren't making anybody any money. There's a lot of risk in that technology but wave energy seems to be coming back. I'm working with a group of investors and we will probably end up in a consortium of several wave power developers putting together a system that's economically viable. Our pumps and hardware will probably be a part of it. Several years ago, I decided that it was probably a quicker return on investment to work on conventional motor driven pumps and then get back into wavepower. The DELBUOY is the springboard that allowed me to engineer the DELPUMP. I used composites and polymers and engineering developments from DELBUOY to construct a lighter and more compact pump for use in land-based, motor-driven desalinators. The pump is lubricated by water rather than oil. For example, conventional pumps produce 30 gallons per minute at a pressure of 1,000 pounds per square inch (psi) and weigh 500 pounds. The DELPUMP is 50 pounds and is comparable in terms of efficiency."

"I've been selling DELPUMPS since 1991. Our customers include commercial users as well as the military which has some fairly strict size and weight requirements because of their need for mobility. In 1994, I licensed off a portion of our technology to FMC Corporation. It's their's to market through the life of the patent -- 2,008. They are hoping to do at least \$1 million a year -- and more in the vein of \$3 or \$4 million. We've retained rights to the small pumps, those under 10 gallons a minute, and we are tooling up to mass produce the pumps by injection molding. One of our customers orders 1,000 pumps a year. We're specially engineering a pump for them to replace a conventional pump that they've been purchasing from a Japanese corporation that operates elsewhere in Asia."

### **How the U.S. Department of Commerce Has Helped**

"The central point of my graduate work in ocean engineering," Dr. Hicks explained, "was partly funded by the National Oceanic and Atmospheric Administration (NOAA). In the absence of this funding, the DELBUOY or its descendent, the DELPUMP, never would have come into existence. I was looking at its design: how do you make this thing work? conducting basic and applied research, wave tank tests, numerical models, engineering prototypes for testing in the waters off Puerto Rico and North Carolina. I received a lot of in-kind support through NOAA's links with the University of Puerto Rico: including the use of their facilities, divers, and boats."

## **"An Authoritative Source"**

ROCK TOOLS, INC., Salt Lake City, Utah

"I sell a mining tool -- a scaling bar that I call the SLABBER ," said Marian O'Leary, president and founder of Rock Tools. The SLABBER is a yellow fiber glass bar with threaded ends that allow attachment of hardened steel or beryllium copper chisel, pick or digging points for different applications.

"This tool," Ms. O'Leary explained, "is used for scaling in underground mining or tunneling, in hazardous banks in pit or quarry; for trenching in underground utility construction; for kiln-brick removal in refractory or cement silos; or right-of-way maintenance along railways. In mining, for example, after miners blast to loosen ore, there will be quite a bit that didn't fall down, but is loose. SLABBERS are used to pry it free. This particular mining task is one of the toughest underground mining jobs, but essential to lessening the threat of tragic roof fall accidents for the underground miner. The SLABBER offers superior strength and minimum weight, which lightens the task of scaling the back, face, and ribs in the mine."

"I bought the patent rights for this tool in 1969, while it was still a drawing" said Ms. O'Leary. "I exhibited prototype SLABBERS at the September 1969 meeting of the Society of Mining Engineers, in Salt Lake City. I had a few prototype bars out for testing, and was able to borrow them back for the show. A week after the show, Canadian engineers called to place an order."

"I consider the export part of my business very important. Over 27 years, exports have ranged from 25 to 40 percent of sales and provided stability during labor strikes and downturns in the U.S. mining industry. Some of my exports come through word of mouth, from engineers moving from project to project. I'll get requests for quotes from countries I had never dealt with before, frequently generated by the recommendation of someone who's used the SLABBER on a previous project. Over the years, I've exported these tools to 35 countries. Eight or 10 of these are very active; others are occasional customers."

How the U.S. Department of Commerce Has Helped

"I went to the Salt Lake City office of the International Trade Administration [ITA]," Marian O'Leary said, "for help in getting started. I attended numerous seminars and was soon participating in state and regional meetings where exporting was a central focus. I think the important thing for me over the years has been to know that they're there. I see Steve [referring to Stephen Smoot, Director of ITA's Salt Lake City office] frequently. I feel perfectly free to call and ask 'what do you have on this country?' or 'what's it like to do business in this area?' For instance, when I was asked to quote delivery of SLABBERS to a large gold mine in Ghana -- my first order from Ghana -- ITA area specialists provided extensive, helpful information, including details of the Ghana government requirement for pre-shipment inspection. This information helped make me aware of procedures I need to include in my quotation. They [ITA] are an authoritative source for this kind of help, and have enabled my small business to explore new market opportunities with confidence that guidance and answers are available."

**"We're Looking For Wholesalers"**

## POWELL'S BOOKS, Portland, Oregon

Powell's Books, established in 1971, carries both new and used books in the same store. "The mixture," said owner Michael Powell, "has been very successful. Our flagship store occupies a full city block with more than a million volumes. We have six specialty stores, over 300 employees, a multilingual staff, and ship worldwide."

"We began exporting in 1986," said Mr. Powell. "We exported books to the Philippines for use in English-language training programs and libraries. Our exports limped along until I gained confidence that there was overseas interest in English language materials. We began to sell what we wouldn't sell here -- second-hand Readers' Digest condensed books, technical books an edition or two old -- materials that had low value here or no American audience. We moved materials into a variety of economies. It was an interesting experiment for me. We had no in-house expertise; I had interest but no time for competent follow-up. I hired an export manager five years ago."

"My first contact with the International Trade Administration," said Jin Lan, Powell's export manager, "was in 1991, looking for a list of companies in the Philippines that sell used books so we could send them letters introducing Powell's. We're still doing business with a company we found on that list and the Philippines continues as a regular market for us. We're exporting regularly to Korea, which has become our largest market, to China, and to Vietnam; we have good clients in Guangzhou and Shanghai. We export small amounts to Singapore and Japan and anticipate making sales in Malaysia soon. We also export small shipments to Brazil and to Eastern Europe: Bulgaria, Hungary, Poland, Estonia, and the Czech Republic."

"There are some pretty hefty barriers to joint ventures in my business," said Mr. Powell. "We're looking for wholesalers. Books are inexpensive, shipping is expensive -- that's the dynamics. We do about half a million in export sales. It's a small part of our business, which we are going to aggressively pursue. We do a lot with the internet and we'll be visiting our overseas customers two times a year. If our exports grow by 20-to-25 percent a year, I would be pretty happy."

## How the U.S. Department of Commerce Has Helped

"The International Trade Administration (ITA) helped us find buyers overseas," said Mr. Lan. "Each country is different, I can call them for answers to any questions I have. We were the first American company to ship to Vietnam; ITA helped us obtain a license, citing exemptions for printed matter. ITA helped accelerate us in establishing our credibility in Asia, particularly in China and Vietnam where only government agencies are allowed to import books. The local trade specialists are always keeping their eyes open for exporting opportunities for us. I'll be meeting with Tom [referring to Tom McGinty, Portland Office Trade Specialist] this afternoon to discuss possibilities in Chile and South Africa."

## **"A Lot Of Other Businesses Expanded"**

## THE TOWN OF PITTSFIELD, MAINE and EDWARD SYSTEMS TECHNOLOGY

"Pittsfield is quite rural," said Clyde Dyar, Economic and Community Development Director for the town. "We have some farms. The Sebasticook River runs through town. We're unique in having a mill pond downtown and a nesting set of loons in the center of town. We're in central Maine. Edwards [referring to Edward Systems Technology] first came here in 1957. They were a start up company in the area, which later became affiliated with General Signal. In 1957, the town floated a local bond issue to construct the building that housed the company. In 1987, on April 1, we had the great flood here. All the townspeople were pulling together, piling sandbags to salvage the company, which was located in a floodplain."

"We make fire alarm systems," said Walter Varney, Quality Engineer at Edward Systems Technology, "for commercial buildings and skyscrapers, hospitals, restaurants, hotels. We make smoke detectors, pull stations, door holdings -- all the signalling devices. In early 1992, we were outgrowing our space. We were facing pressures from foreign manufacturers and trying to become leading edge in emerging surface mount technology. We couldn't expand our original building by the river. The town didn't respond to our interest in a nearby vacant 17,000 square foot grocery building. No effort was being made to help us. We were getting offers from out of state. We began to think we could do better elsewhere."

"We didn't know about Edward's leaving until the Fall of 1993," said Mr. Dyar. "That meant losing 437 jobs; it would have been devastating. We jumped through a lot of hoops, legislative delegations, Governor's office, economic development groups. We assembled a team and succeeded in keeping the manufacturing facility here and adding 100+ jobs. We acquired the grocery building and retrofitted it as a state-of-the-art electronics test facility which Edwards is leasing for twenty years. We built a 96,000 square foot international warehouse, which employs about 80 people. They're shipping a caravan of UPS out of here every day. We offered tax increment financing -- about 25 percent of the state income tax of all additional [the 100+] employees is reimbursed back to the company for hiring them and we've provided job training money. Edwards is the largest employer in Pittsfield and one of the largest in Somerset County. Our unemployment rate was 15 percent in 1994; it's about 10 percent now. Edwards played a major role in the drop. A lot of other businesses expanded because of their growth: plumbing, drugstore, doctors' offices, the hospital are some examples."

"The community stepped in, helping to keep stability in the area," said Mr. Varney. "They purchased the vacant building and helped put in the warehouse. The company purchased the warehouse. We would not have remained here without the community effort."

#### How the U.S. Department of Commerce Has Helped

The Economic Development Administration provided a grant of \$680,000 of a total package of \$1,391,700 that Pittsfield assembled. "Edwards," Mr. Dyar said, "put in another \$10 million. EDA was a key part of our team; without them, we could not have kept Edwards here."



## "Clear Proprietary Value"

VENTURE ALLIANCE, LLC. Knoxville, Tennessee

Venture Alliance, established in January of 1995, is a venture development firm that works with start-ups in the conceptual, pre-launch phase and with embryonic businesses which have been launched but lack the funding and diversity of talent needed to reach the business' potential.

"We find our ideas largely by word of mouth," said Robert Lundgren, a Managing Partner. "Two partners are extremely well-wired in the political and financial communities. Investment bankers call us. We have relationships with the Oak Ridge National Lab, the University of Tennessee, Innovation Venture Corporation, SAIC [Scientific Applications International Corporation], and the TVA. People come to us with new business products or technology."

"We'll determine if the idea meets a set of standard criteria: does it make sense? - can we understand how to use it? - is it big enough; will it have \$30+ million in value within the next 3-to-5 years? - does it provide something of real value? - will we have management control of the company; 51 percent of the votes? - is it within certain industries of interest to us? The partners meet every Monday morning. If an idea has potential, we will spend 90 days on expanded due diligence. We assign a team; there's at least four of us working on every business that we start. We get assistance from the staff or hire experts to help us ferret through, for example, medical or vibration analysis data."

"We're looking to answer questions like, is there a market? Can we price the product to achieve a significant return? Is there a potential exit partner for us? Anywhere along the 90-day trail, we may decide an idea doesn't work. If we find it viable, we present a proposal to the board of our funding mechanism. They may, or may not, agree to put up seed capital. In some cases, the seed capital is sufficient to carry the start-up through or we may need to look for supplemental support from external sources."

"We've looked at more than 200 ideas and started seven companies in our first year and a half. We expect to start another 3 companies in the next 12 months. One of our new starts will be Optical Biopsy, a limited liability company, which uses laser technology to identify cancer cells. This is a non-invasive test, developed by scientists at Oak Ridge National Lab and Thompson Cancer Survival Center. We'll take the company through the whole process: clinical trials and marketing in the U.S. and Europe."

How the U.S. Department of Commerce Has Helped

"Patent data are invaluable," said Mr. Lundgren. "We won't engage unless there is clear proprietary value and an immanently defensible patent. For a relatively small company, a defensible patent is the only protection from being overwhelmed later by a larger company. If a patented idea comes in, we'll engage outside counsel to look at the quality of its protection. We also use a lot of BEA [Bureau of Economic Analysis] and Census data for industry background in our analyses."

## **"Logical Evolution"**

APPLIED SCIENCE ASSOCIATES, INC., Narragansett, Rhode Island

Applied Science Associates, Inc. (ASA) is a privately-held, multidisciplinary environmental consulting firm, specializing in the development and application of computerized tools to investigate complex environmental and engineering issues in fresh and marine waters. ASA, founded in 1979, develops computer models to predict where spilled hazardous materials, especially oil and chemicals, will travel and to assess damages, hydrodynamics, water quality impacts from discharge, and related environmental problems.

"ASA's doing business in 30 countries overseas," said Malcolm Spaulding, founder, former president, and current adviser to the firm. "We just sold a model to the National Institute of Ocean Technology in Madras, India which is looking at the water quality impacts of port and harbor development. We're working with the Omanis at the moment on coastal circulation. We've provided oil spill modeling assistance in the South China Sea and for Vietnam. Australia has adopted one of our models as its national standard for oil spill modeling. We're assisting Indonesia and Thailand on water quality problems resulting from rapid development."

"The competition in this business," Dr. Spaulding said, "is incredibly fierce. It's a global competition now, rather than a local one. There was a time when you could be dominant, and well-known, in the local market. Much of our international competition today is from the large European government labs that have been privatized and are still subsidized. Each European country developed a lab to do this kind of work. There's modest demand in Europe now; the principal growth and problems are in the developing countries. If you don't keep growing and changing, you'll die. Revenues are about \$1.3 million a year. They've been as high as \$2.4 million."

One of the new products ASA is developing is COAST MAP -- an "integration of modeling and monitoring," said Dr. Spaulding. "We're through preliminary design and we've sold a version to New Jersey for use as a road monitoring system on a couple of major highways. We developed it in a teaming arrangement with an equipment manufacturer that didn't want to develop the software. ASA had no interest in developing the hardware. The arrangement allowed us to get together and develop a product that, alone, neither of us would have been able to do. It's a logical evolution of our work."

How the U.S. Department of Commerce Has Helped

"If it were not for Sea Grant [a program of the National Oceanic and Atmospheric Administration] said Dr. Spaulding, "we would not be in this business. Sea Grant funding over 20 years created an environment in which research work could proceed in developing coastal circulation and pollutant transport modeling. One example was developing a 3-D boundary fitted circulation model for application in the Providence River. We transferred the model to ASA, improved the user interface, added a water quality component, and marketed it worldwide."

## **"The Market For This Tool Is Very Broad"**

BIOTECHTRONIX, INC., Pendleton, South Carolina

"Biotechtronix is a development stage company," said Andy Mount, founder and president. "We're developing a new chemical instrument for the marketplace: a colorimetric autotitrator. Titrators are instruments used to measure the quantity of an unknown chemical in a solution."

"Titrations," Mr. Mount explained, "can be done either manually or automatically. Most autotitrators are invasive -- they rely on electrodes -- and may cause contamination. Titrations that rely on color change, generally require a technician to perform the procedure and visually check the solution for change which may lead to operator error. The product that we are developing is fully automated; it's easier to use."

"For example, if you want to know how much of a contaminant, such as zinc, is in a sample, you place a few drops of an indicator into the sample solution and then an exact amount of a reactant, what we call a titrant, bit by bit. When the reaction is complete the indicator changes color, which is called the endpoint of the titration. If you know the volume of titrant added to reach the endpoint, then by a simple calculation the quantity of zinc in the sample can be ascertained. Currently, manual color titration is monitored by a technician's eyeball. The technician adds titrant, records the volume added, swirls the solution, then watches for a change in color and finally stops to perform the calculations. Our technology brings all these steps under computer control and eliminates the need for a technician. The methods for performing titrations are every exact; the steps are specified and adopted by regulatory agencies and chemical societies. If the procedures are followed to the letter, the results can be used in court. The standard methods can be adopted to our machine without violating procedures."

"Biotechtronix received a notice of allowance for a patent on this technology in June of 1996 and we are going to market in 1997. The market for this tool is very broad. It has applications throughout the chemical, environmental, and food industries and niches in other industries such as pulp and paper and textiles. We sold our first titrator recently -- to a large American chemical company that had been beta testing a prototype. They are using it to support quality and process control in inorganic chemical production."

## How the U.S. Department of Commerce Has Helped

"The formation of Biotechtronix," Mr. Mount said, "is indirectly the result of research funded by the National Oceanic and Atmospheric Administration. In the early 1990s, I participated in a project in the laboratory of Dr. A. P. Wheeler at Clemson University aimed at developing new biodegradable materials. As part of that research, I developed a rudimentary sensor that when fitted to a titrator enabled the lab to conduct dissolved oxygen titrations on the basis of color. This sensor, which became the intellectual property of Clemson, was limited to a single type of application and not automated. The staff at Biotechtronix designed a more sophisticated titrator, using different technology, which became the basis of our patent."

## **"Bridging Technical Gaps"**

### THE ECO GROUP, Parrish, Florida

"Horticultural Systems, Inc. [HSI] was incorporated in Florida in 1974," said President and CEO Otto M. Bundy. "Our mission as a native plant nursery was to develop native plants for the four major environmental habitats: beaches, uplands, saline aquatics, and freshwater aquatics. We wanted to provide the environmental industry with

native plants in sufficient volume and at economical prices, without taxing environmental sources."

"HSI grew from less than an acre in 1974 to a 63-acre environmental nursery in 1996. In 1993, we started a micropropagation laboratory to develop native plant sources on-site. The lab contributes to HSI's ability to supply over 136 native plant species and to maintain inventories of 1 to 2 million plants. It also reduces our reliance on field harvesting of bare-root plant materials. To support the operation, our work force of scientific, operational, data support, and nursery employment has grown to 75 employees."

"Our lab has just begun to provide plant materials of economic importance: sea oats, pickerelweed, beach sunflower, duck potato, arrowheads, bulrushes, cordgrasses, and vetiver. The latter is a grass being used in World Bank erosion control efforts. Our lab will contribute to the development of new cultivars that improve genetic reproducibility and increased take-up of pollutants or biological pest resistance."

"In 1989, Nautilus Environmental Services [NES] was incorporated to bid on habitat restoration projects, beach, saline estuarine, freshwater aquatics (detention and retention ponds and lakes), wetland design and restoration, long-term maintenance, and sustainable development."

"In 1996, Ecological Technologies & Management, Inc. (Ecotech) was organized, adding a third section under the umbrella: the ECO Group. Ecotech is our technical group that offers site-specific environmental designs. From here, we will continue to expand into international environmental involvement. Our plants and services have been marketed throughout the world. Native plants have been distributed to some of the Caribbean islands. Thailand has interest in the management of mangrove forests to preserve habitat and to provide a sustainable commercial source of wood."

#### How the U.S. Department of Commerce Has Helped

"The micropropagation lab started as a concept in 1988, when we became involved in some R&D at the University of Florida that was funded by the National Oceanic and Atmospheric Administration," said Mr. Bundy. "This research was instrumental in bridging technical gaps for us. It was not a monetary thing; it was our interest in tissue culture. NOAA was the research and technical group with whom we wanted active and continuing communication."

#### **"Number One Several Times Running"**

#### GOVERNOR'S OFFICE OF PLANNING AND BUDGET, Salt Lake City, Utah

The Governor's Office of Planning and Budget (GOPB) prepares the Governor's budget and provides Utah's executive and legislative branches with technical information on planning issues, including economic development efforts. "The Governor," explained Brad Barber, GOPB's Deputy Director and State Planning Coordinator, "uses five criteria to support Utah's negotiations on incentives for economic development activities. The project must make a substantial capital improvement, be a source of new dollars to the state, and pay wages higher than average in the area. The same incentives offered to an out-of-state business must be available to in-

state businesses. The project must provide a positive return on investment."

"We use a fiscal impact model to understand the benefits and costs and in determining appropriate incentives. The model looks at expected revenues, such as direct, indirect, and induced employment, from the economic activity and it looks at state and local expenditures, including incentives. We develop ratios and net present value data covering several years. Unless the revenue/expenditure ratio is greater than one, the state won't discuss incentives. We've had ratios as high as 3 and as low as .6. If we have five companies concurrently asking for incentives, such as loans from the Industrial Assistance Fund, we evaluate the projects against one another and are more likely to support those with higher ratios."

"In five years, we've used the model several hundred times, looking at every anticipated major project: the 2002 summer Olympic games, timber cutting scenarios in the national forest, and company expansions and relocations. We've used the model to support negotiations with: McDonald-Douglas, which built a facility in Salt Lake City and brought in 600 jobs; with Parker Hennifen, an aerospace defense contractor, which brought 200 jobs to Ogden; with O'Sullivan Industries, a furniture company, which opened an additional facility in Cedar City, adding 425 new jobs; and with Morton International, which expanded its airbag operations and added 1,000 jobs in Brigham City. We evaluated a huge prospect -- 6,000 jobs -- with Ziff-Davis; they didn't come. Sometime our incentive package may not be big enough; but one intent in using the model is to ensure that the state is not giving away the farm."

"Each analysis has unique complexities," Mr. Barber said. "Our original model was state-wide. We later developed regional versions to distinguish between urban and rural areas. We are planning to develop urban sprawl capabilities that will differentiate between central downtown and undeveloped areas 30 miles out, where costs and revenues are very different. This and other economic modeling helps us understand where we are going. The state's economy is doing very well. Financial World has rated us number one several times running."

#### How the U.S. Department of Commerce Has Helped

In 1990, the Economic Development Administration awarded \$120,000 (80 percent of the total cost) to develop the initial model and \$35,000 in 1994 to support the development of urban and rural components. The models use extensive Census and Bureau of Economic Analysis data.

#### **"Evidence Of Their Contributions"**

##### NORTHERN KENTUCKY CHAMBER OF COMMERCE, Covington, Kentucky

The Northern Kentucky Chamber of Commerce is a private business organization with 1,800 members. "One of our major aims is to promote economic growth in Northern Kentucky. Our focus includes transportation, infrastructure, taxation, and other public policy issues that help create a better business climate," said Steve Stevens, the Chamber's Vice President of Public Affairs. "We're a tri-state area and are in competition with southeast Indiana and southwest Ohio. We need very hard facts to monitor whether we're making the grade."

"We conduct economic analyses continually," said Tom Zinn, the Chamber's economist. "We develop data that

assess the impact on new jobs, on earnings, and on business sales of companies moving into Northern Kentucky. When a new industry moves in and plans to create 100 new jobs and to spend \$100 million on a new building, we can estimate what this will do for the regional economy. For example, each \$1 million in new construction may create two new temporary construction jobs. After the facility is built, we can estimate the impact of hiring of new employees. They will spend most of their wages in the area, creating other new jobs. We can even track how many new cars would be sold."

"We provide results to individual companies, which use our data in a variety of ways, including to support their requests for infrastructure modifications. The data provide evidence of their contributions -- increased retail sales, jobs, and additional tax revenues. Local governments use our data to support additional spending in their budgets, based on our estimates of new taxes resulting from company relocations. Planning agencies use our data in calculating economic benefits the state will receive from relocations and determining incentives the state can offer."

"Our data," Dr. Zinn added, "were used to support several relocations, including Fidelity Investments which moved its national district headquarters to Covington, adding 1,900 jobs. Toyota moved its national headquarters to the area, adding about 500 jobs. Their average salary is over \$60,000. This has had a tremendous impact on the region, as the average wage in manufacturing in Northern Kentucky is \$32,000. Citicorp is moving in."

"The data," added Mr. Stevens, "are also used to effect policy change. For example, when there was the proposal to eliminate the exemption on aviation fuels tax, we asked Tom to run model for us to gauge the effects if the tax went back on and its impact on our airport, the nation's 27th busiest. He was able to evaluate it down to the smallest service business and tell us how many jobs would be lost. We put a paper together and forwarded it to our representative."

### How the U.S. Department of Commerce Has Helped

"We use a model provided by the Bureau of Economic Analysis," said Dr. Zinn. "It's very significant; we couldn't conduct our impact assessments without it. We buy regional economic data from BEA as well. The economists at BEA are always willing to help in resolving problems in using the model."



## "Our Primary Attraction"

### KEY LARGO CHAMBER OF COMMERCE, Key Largo, Florida

The Key Largo Chamber of Commerce serves Key Largo and Plantation Key, with a total year-round population of 11,360. The Chamber has 400 members. "Approximately 95 percent of our economy is based on tourism," said Ginna Thomas, the Chamber's president. "It's the only thing that creates money down here -- diving, snorkeling, fishing boats, motel and hotel rooms, boat rentals, RV parks, marinas, camping, t-shirt manufacturing, sailing charters and cruises."

"We have a lot of fishing tournaments, including a ladies invitational sailfish tournament. The sail have been running pretty good this year. There's Sportsman Day: a Wednesday/Thursday event every year in which visitors can dive for lobster two days before the commercial lobster traps go in. We have the Island Jubilee the second weekend in November, with a cooking contest, mostly seafood, in which we choose the best professional and amateur cooks. We're hosting the annual Nikonos shootout -- an underwater photography competition which brings contestants from all over the world in September every year. The prizes, presented by Nikon are fantastic. The photos are judged by professional underwater photographers and others related to the industry. There's a big awards dinner. We had over 1,000 entries last year."

"Practically every visitor who comes down here comes for the water. We get a lot of divers and it's our number one source of revenue. In fiscal year 1997, starting this October, we are expecting that diving will bring in \$4,140,000 -- that's just on direct expenditures. The top 14 of Key Largo's 31 hotels, the ones with the highest average daily rates, brought in over \$32,000,000 last year."

"The Key Largo reefs are our primary attraction; they attract fish. There are more varieties of tropical fish off Key Largo than anyplace in the Caribbean. We sank two Coast Guard cutters in 1986; they are absolutely beautiful. They take a lot of divers, over 20,000, off our reefs and reduce stress and strain. If we don't take care of our reefs, we won't have any economy to worry about. In November, we will be sinking a 510 foot Navy transport vessel. It will take about 34,500 divers off the reefs every year. We needed over \$400,000 to do this. A lot of the money is coming from the community. We all get together and work very hard. I put a notice out on the web; we're selling raffle tickets and t-shirts and have the backing of the Tourist Development Council. We'd like to get a few more ships to reduce the stress on our reefs."

### How the U.S. Department of Commerce Has Helped

The Key Largo National Marine Sanctuary, covering a 100-square mile area of reefs off Key Largo, was established in 1975. The Sanctuary, administered by the National Oceanic and Atmospheric Administration, was the first site in the world to develop and use modified mooring buoys which eliminated anchor damage to reefs. The Sanctuary eliminated spearfishing and tropical fish collecting with the result that fish behavior is more natural and accepting of divers' presence. "The Sanctuary," Ms. Thomas said, "put Key Largo on the map as far as tourism is concerned and preserved our reefs."

## **"Better Prices"**

YANKEE FISHERMEN'S COOPERATIVE, Seabrook, New Hampshire

The Yankee Coop, formed in May of 1991, includes a main building, with an ice house to the south side and a 10,000 gallon capacity diesel fuel tank, all on a dock, with steel pilings driven into bottom mud and filled in with gravel. In 1995, the Coop handled a quarter million pounds of Maine (popcorn) shrimp, over 100,000 pounds of lobster, over 300,000 pounds of groundfish (flounder, cod, pollock, hake, haddock, and catfish), and about 50,000 pounds of bluefin tuna.

"We have 55 members, all commercial fishermen," said Clint Felch, Manager of the Coop. "The fishermen own the Coop; they paid a one-time fee. There are no annual dues and no dividends because the members opted to keep it growing. In winter, we have 12 regulars; in summer, we have well over 100 boats. We buy from everyone, member or non-member."

"When tuna fishing is on, it's busy as all hell. We're selling ice, bait, and fuel. We unload the tuna, cut off the head and tail, gut and weigh them, and slush them -- pack them in ice and salt water in a fiberglass tank. We do that to get the temperature down for sushi. When caught, tuna heat up to 26 or 30 degrees Celsius. We try to get them as close to zero as possible. Sometimes it takes a day and a half. We sell 99.9 percent of our tuna to Japan. We had 150 bluefin tuna last year, averaging 350-to-400 pounds a fish. We paid the best price, averaging \$21.56 per pound. We have 12 to 15 buyers bidding on one fish. In past years, before we started the Coop and our auctions, we had one guy asking for it and paying \$4 to \$6 a pound."

"We sell most of our lobster retail. We pay \$4.00 per pound straight boat price. Other dealers pay \$3.00 for soft shell. Maine shrimp run 40 to 50 a pound fresh off the boat; or 125/175 count per pound, after they're cooked and peeled. There are only two buyers who process the shrimp. We've been offered \$4.00 a pound for the 125/175 count; we have the facilities to hold on to them and we're seeking \$4.30. We gut and weigh the groundfish and sort them by size, species, and quality. We own a couple of trucks and make our own deliveries to Boston. New York is our is other groundfish market. We keep an eye on who pays the better prices."

"With the Coop, the fishermen are better off financially. We give them better prices and they, instead of the buyers, are in control of what they catch. They get home earlier because they don't wait for a truck from Newburyport or have to truck their catch to Portsmouth. It frees time to work on their boats and nets and gives them more days at sea and more time with family."

### How the U.S. Department of Commerce Has Helped

The Coop's site, originally a beach, was developed to unload equipment during construction of a power plant. Under the construction agreement, the state required the owner, New Hampshire Yankee, to restore the site to its original condition after the plant was built. Sea Grant staff from the National Oceanic and Atmospheric Administration organized the fishermen into a Cooperative, negotiated arrangements with New Hampshire Yankee to convert the space (a lower cost alternative to the owner), and with New Hampshire to provide a subsidized lease.

## **"Meet Our Clients' Changing Needs"**

OMAHA BUSINESS AND TECHNOLOGY CENTER, Omaha, Nebraska

"We provide resources for small businesses, which include an incubator, technical assistance, entrepreneurial training, and gap financing," said Kevin Clingman, president of the Omaha Business and Technology Center. "We provide support to create financially viable companies which create new jobs."

The Center is a 51,000 square foot facility, located in a predominantly minority area of north Omaha. Half the Center's space is designed for industrial use: wide open, high ceilings, configured to individual company needs, with loading docks. The rest is office space, ranging from single offices to suites of four offices with a reception area. "Our rental terms are flexible," said Mr. Clingman; "they are intended to meet our clients' changing needs for more space as they grow or to allow them to leave if they outgrow our facility."

"We have 32 clients currently renting space, including: heavy construction, financial planning and accounting, a first-aid supplier, a beauty school, a textile screen printer, an attorney, and a banner manufacturer (as in signs for grand openings). We provide help with financial statements, business plans, marketing plans, general management issues, and guidance on where to go for resources. We also provide gap financing, to make up the difference between what our clients need and what they have been able to put together from personal resources and bank loans. Our loan limits are generally \$250,000 and no more than 40 percent of total funds needed. Our income includes rental fees, management fees from loan funds that we administer, both from our clients and from external borrowers, and corporate contributions, most notably Norwest Bank and U.S. West. Over the past 3« years that I've been here, 15 firms have graduated. Typically, our graduates became financially stable, they moved beyond the services that we provide, and they were able to secure more traditional financing. Our current clients have created 187 technical jobs and generated more than \$10 million in revenues in 1995."

"Our next project," Mr. Clingman said, "is to establish a kitchen incubator in the Center. This will be a licensed commercial food facility that we will rent in blocks of two to four hours. It will be capable of accommodating four different food processors simultaneously. We're located in north Omaha, a low and moderate income area. People want to make food related products. They don't have the facilities, the equipment is expensive, and we can provide the technical expertise they need."

The Omaha Business and Technology Center received the 1996 Incubator of the Year Award, in the microenterprise category, from the National Business Incubation Association.

## **How the U.S. Department of Commerce Has Helped**

The Economic Development Administration (EDA) awarded a grant in 1989 of \$336,425 out of a total package of \$866,201, to expand and modify a vacant building for the Center. The previous year, EDA provided a 75 percent match to explore the feasibility of this project.

## **"A Major Discovery"**

## DONLAR CORPORATION, Bedford Park, Illinois

The Donlar Corporation, incorporated in January of 1990, is a privately-held company which manufactures polyaspartates. This product is a derivative of polyaspartic acid, which is a polymer that was isolated from sea shells. "Our initial application," said Bernardo Rico, Donlar's Executive Vice President, "was in industrial water treatment, to control the formation of calcium carbonate in pipes used for industrial steam, heating, and cooling. Billions of gallons are used, still containing mineral impurities. This was the basis for our first patent. We have since filed a total of 30 patents."

"Polyaspartic acid is now used in many industrial applications: preparing superabsorbents, as in baby diapers, formulating cosmetics and hair sprays, as a dispersant in paints and pigments, in adhesives, and as a dispersant in detergents. Every box of detergent includes four to six percent of this polymer to prevent dirt particles from reattaching themselves to clothing. Polyaspartates are bio-degradable, non-hazardous, and non-toxic. Aspartic acid, one of the two amino acids in Nutrasweet, is a key raw material in making polyaspartates."

"A couple of years ago, we made a major discovery in the field of agriculture that polyaspartic acid could be used to increase the area occupied by plant roots and thereby enhance the uptake of nutrients -- nitrogen, phosphorous, and potassium -- resulting in increased yields. Our agricultural applications will be several times larger than our industrial applications and we divided Donlar into two divisions."

"Our sales," said Larry Koskan, Donlar's President, "are currently 90 percent domestic and 10 percent international. Our first customer was Germany which used our product in deep coal mines. The United Kingdom is using our products in secondary oil recovery in the North Sea, where environmental contamination has become critical. The Europeans lead the U.S. by about five years on environmental protection and are requiring the replacement of existing toxic and non-biodegradable products with environmentally friendly alternatives. We expect to significantly increase our industrial sales in Europe over the next five years and we anticipate exponential sales growth in our agricultural products. This year our sales will be \$10 million. We expect to triple that in the next two to three years. We have 45 employees. We will be hiring 30 more employees for a new plant we are building in Peru, Illinois."

Donlar Corporation received the President's Green Challenge Chemistry Award in July of 1996 in recognition of the company's environmentally safe chemistry.

### How the U.S. Department of Commerce Has Helped

"Research on how oysters form their shells and on synthetic analogs to this process were very important in forming Donlar. I saw that this research, funded by the National Oceanic and Atmospheric Administration, could be translated to a viable commercial process producing a polymer that would inhibit the formation of calcium carbonate in a pipe."

### **"Outlook For Our DMA"**

## KASA-TV, Albuquerque and Santa Fe, New Mexico

KASA-TV is a commercial VHF television station that provides 24-hour, full service broadcasting. The station's designated market area (DMA), the area in which its broadcast signal can be received, includes most of New Mexico, southern Colorado, and a portion of Arizona. The station became affiliated with Fox Broadcasting Company in 1986.

"We broadcast Fox programming around 25 hours a week," said Al Reynolds, KASA's Research Director, "including the Fox Children's Hour and Fox sports. The feeds come down in the afternoon, via satellite. We tape the feeds and run them -- such as the X-Files, Beverly Hills 90201, Married With Children -- in prime, from 7:00 to 9:00 p.m. Fox's children's network allows more leeway in scheduling. Fox airs football, which we carry on Sunday afternoons. Fox is adding more programming: specials, a morning show beginning in August, and a late night show starting in January. The rest is our programming. We air talk shows, children's programming, half-hour syndicated sitcoms, and first-run reality programming. We also run our own in-house movies on weekends."

"The population of our DMA is about 1.5 million. Our market is ranked 48th in the nation. This is strictly outlined according to Nielsen, which provides TV survey market data throughout the country. Every station subscribes and pays a fee for their data. Nielsen sends out booklets to people to record what they watch. In our DMA's case, it's 650-to-700 diaries; which, in turn, projects to the 550,000 TV households in our DMA. You're looking at a very small number of diaries in a survey that represents the entire population of the DMA. The rating and share data from these diaries dictate billions of dollars in the country, based on how well people answer. Four times a year -- February, May, July, and November -- people fill out the diaries and send them to Nielsen. Nielsen tabulates the returns and provides them back to each market."

"Advertising is our major source of revenue. We have two types of clients: national and local. With national clients, such as Pepsi, we're represented by Telerep, which acts as a sales liaison between the advertizing agencies and the stations around the country. Nielsen's results help determine our advertizing revenue. Every book is the latest record of how well the station has done -- a good book shows improvement since the last sweep, a bad book shows a drop."

## How the U.S. Department of Commerce Has Helped

"We rely primarily on the Nielsen books. Census demographic data are very helpful because they represent another survey we can use to encourage increased or targeted advertizing. For example, we have the 10th largest hispanic market. It can be a viable statistic for anyone buying time. Unlike New York or Washington, D.C. which use one signal source, our audience is spread over a very large geographic area and we must use translators [mini-transmitters] to boost our signal. We use Census data to expand our signal and place our translators according to where people live. We also use Census data in making periodic corporate presentations to our parent company, the Providence Journal, on the estimated economic outlook for our DMA."

## **"Significant Technology Transfer"**

AIR-CONDITIONING AND REFRIGERATION INSTITUTE, Arlington, Virginia

The Air-Conditioning and Refrigeration Institute (ARI) is a national trade association representing manufacturers of more than 90 percent of U.S. produced central air-conditioning and commercial refrigeration equipment. The Association establishes product standards, principally performance ratings, and administers voluntary performance certification programs for industry products. ARI represents its members on legislative and regulatory matters and provides international trade assistance, such as: disseminating trade statistics, preparing foreign market information, participating in international standards and conformity assessment activities, and facilitating contacts between member companies and international buyers.

"The value of U.S. shipments of ARI member companies, which represents most of the U.S. industry, is approximately \$16 billion this year," said Mark Menzer, ARI's Vice President of Research and Technology. "That's about 40 percent of the worldwide market. We estimate the world market will grow to \$50 billion by 2,005. Our goal is to hold on to that 40 percent. This is an aggressive, goal. For many years, U.S. manufacturers were the only players. Japan and the southeast Asian countries are coming on strong, getting into these products big time."

#### How the U.S. Department of Commerce Has Helped

"NIST [the National Institute of Standards and Technology] has been helping the industry in the area of energy efficiency for many years. Their work has helped us understand ways of improving energy efficiency and they have provided significant technology transfer."

"In recent years," explained Mr. Menzer, "we've been trying to identify new refrigerants to replace CFCs [chlorofluorocarbons] and HCFCs [hydrochlorofluorocarbons] which have been shown to damage the ozone layer. NIST was conducting research in this area before industry's involvement. Their work, though not directed toward ozone protection, involved identifying and quantifying lots of information on the thermophysical properties of alternative refrigerants. They had conducted a lot of experimental work on heat transfer, ways of improving heat transfer characteristics of refrigerant systems, and other characteristics and behavior. This helped point us in the right direction."

"One of the main benefits for us of NIST's research was savings in both time and money. When industry identified the first CFCs earlier this century, it took several decades to fully implement efficient operational systems. NIST provided all the basic information we needed to analyze potential new refrigerants, with the result that decisions were made in months, rather than years. This saved a lot of work that chemical companies would have had to perform, each of them individually. They would have been replicating each other's work and arriving at different choices. Industry-wide, the savings amounted to millions of dollars. The components for refrigerants are not yet designed. Manufacturers were, are, and will continue to benefit from NIST's work that supports design decisions."

#### **"Potentially Doubling Our Employment"**

DAKOTA WESTERN CORPORATION, Sisseton, South Dakota

Dakota Western Corporation (DWC), established in 1989, is a manufacturer of plastic trash bags and lineal film on-a-roll ("roll stock"), which is sold to other manufacturers which produce plastic trash bags. DWC, owned and operated by the Sisseton-Wahpeton Sioux Tribe, is on the Lake Traverse Reservation in northeast South Dakota, near North Dakota and Minnesota.

"The company began manufacturing in a 40 x 60 foot concrete block building once used by the Tribe as a canning center" said Tim Azure, DWC's General Manager. "DWC started out with a small contract for 10,000 pounds of plastic garbage bags for the General Services Administration (GSA). "Our orders increased to 750,000 pounds a couple of years later. We ran out of space and constructed a new 25,000 square foot pre-cast concrete facility. Our current major customers are federal government agencies for the plastic trash bags and the Wichita Industries & Services for the Blind which purchases film and converts it into plastic bags at two plants in Kansas. We also sell small amounts to schools, casinos, and tribal governments."

"Last year, we ran nearly 5 million pounds of plastic and expect to run 5« million in 1996. We're running out of space again. This Fall, we will begin constructing a 25,000 square foot expansion that will allow us to diversify by manufacturing film used in construction trades and agricultural applications. With the added capacity, we expect to run 8 million pounds of plastic in 1997. With our new line of film, we will have the capacity to become more aggressive in pursuing business in our region: North and South Dakota, Minnesota, Wisconsin, Iowa, Montana, and Manitoba."

"Dakota Western has added industrial capacity and is helping to diversify our economy, which is primarily agricultural and, to a lesser extent, service-oriented: gaming facilities, the court system, housing, convenience stores, and grocery stores. The company has added quality, stable jobs. Our wages run from \$7.50 to \$8.00; the community average is \$5.50 to \$6.50. DWC has a \$50,000 a month payroll; that's a big contribution to our economy, where unemployment is over 40 percent. We currently have 40 employees and we'll be potentially doubling our employment with the expansion. We also have 401(k) and full health. The plant has given people responsibility for making decisions and seeing the results of those decisions."

#### How the U.S. Department of Commerce Has Helped

The Economic Development Administration (EDA) awarded a grant of \$657,216 in March of 1991, for construction of Dakota Western's new building. This was 70 percent of the total package of \$938,880. Dakota Western has an application pending for an award of \$500,000 (representing 33 percent of a total package of \$1,475,000) for an expansion of this facility. "DWC could eventually finance the whole building," Mr. Azure said, "but we'd have to wait at least three-to-four years before we could float the equipment. With the help of EDA, we'll be able to do a great deal of expansion this year. When you've got 250 applications on files, it's critical to get these people to work as soon as possible."

#### **"We Think That's Achievable"**

#### INDIANA CASH DRAWER, Shelbyville, Indiana

Indiana Cash Drawer, founded in 1921, is a privately held company that for 75 years has manufactured cash

drawers either in wood or steel. They can serve in a variety of applications: manual, electronic interface for electronic point-of-sales systems, and pc-based systems. The drawers are used in a variety of markets: general retail, hospitality and fine dining, banking, convenience stores, and pharmacies. "About five years ago," said Robert Benavides, Vice President of Sales and Marketing, "we started distributing and selling other companies' point-of-sales peripherals: receipt printers, bar code scanners, point-of-sales keyboards, customer displays, and monitors. The point-of-sale peripherals now comprise about one-third of our sales."

"For years, we had a limited number of inquiries from overseas buyers. As competition in our industry grew fierce, we explored other worldwide markets and made a strategic decision to pursue them. At that time, exports accounted for less than one percent of our revenue. Today, exports account for almost ten percent. We are also establishing a worldwide presence by having distributors in Luxembourg and in Croatia; and we inaugurated our new plant in Mexico in April of this year. We have increased our staff in Indiana from 65 to 100 employees. In two years, we expect exports to reach 30 percent of our revenues. We think that's achievable. In fact, if Mexico had not experienced its recent economic crisis, we would already have obtained that number."

### How The U.S. Department of Commerce Has Helped

"We have had several face-to-face meetings with the International Trade Administration staff on export markets and exports in general and have begun to use their services. In early 1994, we utilized their Gold Key program in Mexico and as a direct result, found a distributor. In the first year, sales in Mexico were a half a million dollars. By our second year, sales had increased by 33 percent. Later in 1994, we used the ITA's Gold Key service again in Hong Kong, Singapore, and Taipei. Through these efforts, we now have a dealer in Hong Kong who buys our products. The most valuable information, for a minimal investment, of our Asian search was the indication that we were further behind in our ability to meet the needs of those markets than we had thought. We have also used ITA's overseas offices to distribute literature and other materials, resulting in additional sales around the globe."

"ITA has been invaluable to us," Mr. Benavides said. "They have contacts all over the world; I don't have to go out and search on my own. I have an office to go to, help from people who are bilingual and who understand our business. They've assembled market research and arrange pre-set appointments for me which is a tremendous savings in time and money. All I have to do is show up, attend a briefing, and begin meeting with pre-qualified contacts. In Mexico, for example, we met with a pre-qualified distribution partner and basically signed an agreement within three days. Without this kind of assistance, it would be difficult to know where to start."

### "A Very Handy Tool"

LOREN C. SCOTT AND ASSOCIATES, INC., Baton Rouge, Louisiana

Loren C. Scott and Associates, Inc. (LCSI), established in 1979, is an economic consulting firm. "Our clients," said Loren Scott, LCSI president, "include state agencies and a variety of private sector companies, such as: Placid Oil Refinery, Shell Chemical, Cajun Power Cooperative, Louisiana Chemical Association, Mid Continent Oil & Gas Association, Waste Management of North America, and John H. Carter, a multi-state valve dealer."

"Many of our clients want economic profiles of their parish, showing changes over time in income, sources of income, and employment. In some cases, companies use these profiles in negotiations with the state, to counter arguments that their taxes be increased, by documenting how they contributed to household earnings in the state, the number of jobs created, and which segments of the state's economy benefited. We analyze data and develop reports showing the impact that a particular industry has had on the parish; how it acts as a multiplier and contributes to retail sales, services, health care, real estate -- all the feeder sectors of the economy. In our work with the state, one example is that the Attorney General asked us to analyze a Texaco proposal to settle a suit, to determine the impact of the proposal on sales, number of firms affected, and other economic benefits accruing in the state."

"As Freeport McMoRan Chair of Economics and Director of the Division of Economic Development at Louisiana State University in Baton Rouge, I also conduct econometric analyses, including issuance of the annual Louisiana Economic Outlook, which includes time series data on income, per capita income, and population, among other data. This is the only statewide forecast available for the state and is heavily used by government and business, such as bond companies that are thinking about making investments in Louisiana. In the case of England Air Force Base, which closed in 1991, we used time series data to show people the impact the closure would have. The town, Alexandria, got fired up and worked with DOD to get control of the air base. They've brought in J.B. Hunt Trucking, with a driving school and a warehouse facility; California Lutheran Homes, which built a large retirement community around the golf course; moved the old city airport out there; and brought in several other companies. Alexandria is now growing faster than it ever was; it's been featured on CBS."

#### How the U.S. Department of Commerce Has Helped

"We use BEA [Bureau of Economic Analysis] input/output tables to measure the ripple effects of an economic activity on a particular parish or set of parishes, such as Cajun Power Cooperative on Pointe Coupee Parish. It's a very hand tool. We use BEA data on income by parish and at the state level. BEA publishes estimates of these data every year. In econometric work, we must have a lot of years of observations, and all the years in between, because that's the way mathematical models work. Without those data, you can't trace what going on from year to year. For example, sources of income are available only every ten years from decennial census data; but there's a lot of growth and change in between. BEA provides estimates of what's occurring in those interim years."

#### **''Feels Like' Isn't A Sound Basis For Inventory''**

LAKE ERIE MARINE TRADES ASSOCIATION, Cleveland, Ohio

The Lake Erie Marine Trades Association (LEMMA) covers the Lake Erie basin, approximately the northern third of Ohio and about 45 percent of all economic activity related to recreational boating in the state. Established in 1957, LEMMA currently has 125 members, including both retail boat dealers and marina operators.

"In the late 1980s," said Norm Schultz, LEMMA's president, "the Ohio boating industry, as with the industry nationally, had experienced six consecutive years of unprecedented growth. Recreational boating was a \$1.1 billion industry in Ohio, with \$550,000 in direct sales of boats, marina docks, and services. The industry was flying at that point and we were ordering and carrying and selling more boats at dealers in Ohio than ever."

"In 1989, we were still believing that the market was expanding and dealers ordered a lot of boats for 1990 accordingly. We always order our boats at dealer meetings in July through September for the next year. What we didn't know then, and later found out, was that in 1989 the market was not expanding but actually shrinking. We began to be faced with the problem that all the orders had been placed for boats in 1990. These boats had come in and before we really knew what was happening, our dealers were knee deep in inventories. Between 1990 and 1992, 36 dealers in northern Ohio alone were forced into bankruptcy or out of business because of the weight of debt service on those inventories. Some of those dealers had been operating for 52 years; they were third generation. We also lost more than 500 jobs."

"If my dealers had known in advance that the market was shrinking instead of expanding in 1989 and 1990, we would have been better able to plan and order inventory. I came up with several ideas on reporting systems where we could start to track retail boat sales in Ohio. None of these ideas seemed to fit the bill. Ohio is a titling state; all boats are titled, like automobiles. Until three or four years ago, the titling data were six months behind, done manually and accessing data was virtually impossible. The state began to convert to a computer system."

#### How the U.S. Department of Commerce Has Helped

"I turned to Sea Grant [in the National Oceanic and Atmospheric Administration] for help in getting us useful information. They could access data that we either didn't know about or never could access. After some development, Sea Grant assembled the data in a way that made it usable for local retail dealers. We started publishing our newsletter called the Ohio Boat Sales Reporter, which contains easy to understand blocks of information a boat dealer can understand: sales, by size of boat, for three regions in the state: north, central, and south. We distribute the newsletter to all 400 dealers in the Ohio, members and non-members alike. We are the first state in the nation that I know of that is able to produce as detailed a sales report as we have. I've begun to receive inquiries from my counterparts in other states. 'Feels like' isn't a sound basis for inventory; factual data is! When the next downturn comes, our dealers will have the data to make intelligent decisions."

#### **"When This Company Was Only An Idea"**

##### GLOBAL PACIFIC TRADING, Maui, Hawaii

Global Pacific Trading, established in October of 1994, is a privately-held Export Marketing Company. "We hold exclusive distribution and export marketing contracts for the Asia Pacific region for four U.S. manufacturers of polyethylene pipe, pipeline fittings, and polyethylene heat fusion equipment," said Sandra Atherton, company founder, president, and CEO. "We promote these companies' products at trade shows and set up a sales and distribution network in each country -- all the company has to do is give a quote F.O.B. their doorstep."

"Before Global Pacific, I spent eight years running a design and supply corporation involved in high-end resort construction. We were delivering container loads of building materials across the Pacific to Hawaii. I looked at the southeast Asian infrastructure market. Polyethylene pipe has been around the U.S. for forty years, where it's a \$1 billion+ industry. In most Asian countries, polyethylene pipe is a relatively new product; they've been using steel pipe, concrete, or fiberglass."

"We spent the last three months of 1994 and all of 1995 on marketing Global Pacific and developing our overseas distribution network. We have agents in Pakistan, Indonesia, India, Singapore, Japan, and Hong Kong and are targeting another eight countries. Our competition is clearly European -- we face significant competition from Europe, where their governments heavily subsidize export efforts, trade shows, and missions into Asia. The European governments, particularly the Germans and the British, have provided technical consultants to Asian governments to write specifications for the Gas companies on what equipment to use. At times, this had led to introducing ISO specifications that U.S. companies don't have, which our European competitors use as a trade barrier. This can be a major setback to U.S. exports."

"We've received two orders, amounting to nearly \$600,000, from Indonesia on a water treatment plant and a natural gas pipeline project. This project has three parts; we are expecting a third order of almost \$300,000 in September. One of the first things we did, in October 1994, was participate in a catalog show in Pakistan. It costs \$450 for the show, which led to our first two sales in Pakistan for nearly \$300,000 for steel to polyethylene transition fittings for Sui Southern Gas of Pakistan. Those orders will be ongoing; annually repeated at the same or higher levels for the next five to ten years. I believe we can achieve a minimum 50 percent annual sales growth rate throughout Asia and Southeast Asian over the next five years."

#### How the U.S. Department of Commerce Has Helped

"We wouldn't have started Global Pacific," Ms. Atherton said, "without the assistance of George [referring to George Dolan, with the International Trade Administration, ITA, in Hawaii]. "We flew to Honolulu for advice when this company was only an idea. ITA helped us find agents and distributors and provided us with encouragement and logistical support to participate in trade shows. We can call on ITA staff in Honolulu and at the foreign posts for advice and for commercial intelligence that saves us from costly business mistakes in foreign markets."



## **"We Had To Go Through Some Change Here"**

CLAY AND BAILEY MANUFACTURING COMPANY, Kansas City, Missouri

Clay and Bailey Manufacturing Company is a ferrous and non-ferrous foundry and sheet metal fabricator, with a CNC-machine shop. "We have three product lines," said Ron Borst, president. "Our construction product line includes all our street and sewer products, such as manhole covers. Our jobbing line includes housings, doors for fireplaces, a full gamut of products from auto parts to trinkets. Oil equipment is our third line and runs around fifty percent of sales. We sell vents, valves, hatches, overfill limiter valves, corrosion prevention devices, and other products to mobil and storage tank manufacturers, for above and underground tanks."

"We used to do a lot of military work, including emergency vents and hatch covers for diesel supply trucks. We lost 15 percent of our business when some DOD programs were eliminated. We had an out of control safety program, with lots of soft tissue injuries. Our insurance premiums increased from \$125,000 to over \$450,000 in four years, more than exceeding our profits. We had to go self-insured. Our medical expenses continued to climb; we had no program for follow-up with injured employees. Beyond this, for 70 of our 80 years in business, we made the same products day in and day out. Our long-term employees were not willing to change. We were taking lots of hits from foreign competition. India, for example, could make grey iron manhole covers and deliver them cheaper to my backyard than I could make them."

"We had to go through some change here. We developed a business plan and implemented continuous improvement teams. We prepared a quality control manual and system -- similar to ISO 9000, but about \$50,000 less expensive. We don't have the ISO certification. We chose overall plant safety as our first team project to work on. At that time, our experience modification was 2.89 -- nearly triple the national average of 1.00. Peer group pressure was very effective in putting pressure on malingerers and our experience modification dropped to 1.56 by October of last year, resulting in cost savings of nearly \$850,000. We set up a new product committee to focus on design, concept and procedures. We received both the 1994 Missouri Governor's New Product Award for small business, for our overflow limiter for aboveground storage tanks and the American Foundry Society's 1995 award for small business for our safety program. We're starting to do a benchmarking program now."

How the U.S. Department of Commerce Has Helped

"We started working with MAMTC in January of 1993," said Mr. Borst. "They're very good; they helped us set up continuous improvement teams, resulting in a total change in culture. We went through a lot of training on what it means to be a team member and a team leader. They've been in once a month, identifying areas that needed improvement and staying until the recommended changes were successfully implemented."

MAMTC, the Mid-America Manufacturing Technology Center, was established with support from the National Institute of Standards and Technology.

**"They Don't Pre-judge"**

## SPATIAL DATA INTEGRATIONS, INC., Louisville, Kentucky

Spatial Data Integrations is a consulting firm which provides mapping and digital data conversion services to government, utility, and private sector businesses. "We produce GIS [geographic information system] digital data and work with GIS technology to make maps," said Audwin Helton, president. "Our niche is computer map making."

"Before starting this firm, I was Director of the Defense Mapping Agency's Louisville Office. Due to downsizing, the office was closed in September of 1994. Rather than transfer to another office, I decided to establish my own mapping firm, which I did in October."

"Most of our work to date has been with the Department of Defense, both as a prime contractor and as a subcontractor. We produce topographic maps for the Army, Air Force and Marines and hydrographic maps for the Navy. Our capabilities include data automation, data conversion, data integration, data topology, and data attribution. Data topology involves building relationships between various features that are found on a map, such as buildings and roads and providing descriptions, such as 2 lane, 4 lane, hard or soft surface. Data attribution includes the basic description of a particular feature on a map; for example, in the case of a tree: its height, crown cover, and stem diameter."

"In our subcontractor capacity, we are partnering with one of the leading GIS software companies in the nation -- Environmental Systems Research Institute. It's one of the ways in which I've chosen to grow my company. They produce ARC/INFO GIS language, perhaps the most widely used computer mapping software. We have state-of-the-art hardware and software to support our data collection and processing efforts."

"Recently, I began marketing our services in the local metro area. I've met with directors from the transit authority and the utility companies to explain our technology and capabilities. We have several outstanding bids and expect to receive an award on one shortly. Our other area of growth will be Defense work. I expect downsizing to continue in the mapping sector, with a consequent increase for mapping services by contractors. I started with four employees, we are now at 13. Two of our staff are now in California being trained on hydrographic charts."

### How the U.S. Department of Commerce Has Helped

"Staff at the Louisville Minority Business Development Center [LEMDC] helped me develop a business plan and a financial plan that I could take to a bank. They also identified local funds that were set aside for Afro-American business start-ups. They've helped me with proposal writing and basic business advice which I still seek out regularly. They treat everyone with respect; they don't pre-judge whether a customer's business will make it. That's very unique."

LEMDC is a non-profit Minority Business Development Center funded by the Minority Business Development Agency.

### **"More Unjustified Claims Would Be Paid"**

## SEIDEL CLAIMS SERVICE, Glen Falls, New York

Seidel Claims Service, established in 1981, is a privately held company that serves as an out-source vendor to insurance companies. "There are two aspects to our business," said Michael Seidel, owner, "insurance claims adjusting and policy holder defense investigations. The mix is 70 percent first party claims adjustment and 30 percent defense investigations."

"We respond when an insured has suffered a loss -- the house burned, the roof leaked, something was stolen. We meet with the insured and determine the amount of loss, the applicability of coverage, and then recommend to the insurance company as to how much to pay the insured. We also negotiate settlement of the claim with the insured."

"On the other side -- policy holder defense -- when you buy insurance coverage, you also buy legal liability coverage. When someone claims to be injured, they make a claim against the policy holder. I investigate that occurrence to evaluate issues of legal liability, exposure, insurance coverage, and damages. I make recommendations to the insurance company as to whether and how large a negotiated settlement to make with the claimant and/or claimant's attorney. If it can't be settled, I help in the defense of the lawsuit."

## How the U.S. Department of Commerce Has Helped

"We're in the foothills of the Adirondacks. We're under snow and ice several months of the year. People routinely fall on ice or snow and claim it's the fault of people who own the property, such as homeowners, shopping centers or drugstores. NOAA weather reports and records are absolutely vital for a defense investigation of "slip and fall" claims against the owner of the property. The records allow us to determine whether the insured had used due diligence to abate hazards arising from naturally occurring weather conditions. For example, we may find that snow and ice had been on the ground for two days and the insured had been too lazy or negligent to plow and that it's better to pay the claim. The weather reports may show that an ice storm had begun in the afternoon and continued all evening, and the injured person had assumed the risk of walking on freezing rain. As another example, an insured party was operating a snowblower and a claim was brought that the insured created conditions which limited visibility, allowing a serious accident to occur. The scene was an area known to be subject to whiteouts and blowing snow. Weather records verify moisture, how much snow was on the ground, and which way the wind was blowing, allowing us to determine whether the motorist's visibility loss arose due to natural forces or the insured's snow blowing activities."

"The records -- particularly temperature, snow, rain, and wind speed -- are an important investigation tool to insurance companies and to the people who are insured. I subscribe to NOAA's National Climatic Data Center for these data. Once a month I receive reports on 25 cities in this region. Without these records, we'd be paying many more claims and doing fewer investigations. Insurance costs would soar more because more unjustified claims would be paid."

## **"Expertise In Propagation Analysis"**

## DU TREIL, LUNDIN, & RACKLEY, INC., Sarasota, Florida

The privately held firm of du Treil, Lundin, and Rackley provides technical services to the broadcast industry in the continental United States, border areas, Alaska, Hawaii, and Puerto Rico. The company, employing engineers and support staff, conducts about 200 client projects a month, with a gross between one and two million dollars a year. "We do a small amount of work with the Voice of America," said Robert du Treil, engineer, but 99 percent of our revenues are generated from work with the private sector. Our customers range from mom and pop owners of radio stations to the major networks like CBS, Park Broadcasting, and Capital Cities/ABC."

"We evaluate allocation situations, identifying deficient coverage in a section of market and developing solutions that will increase reception in that market area. We conduct allocation studies, which involve looking at use of the spectrum to determine the impact of putting an additional station into a particular area. We examine what coverage it will have, what interferences it will create and what approaches are permissible under FCC [Federal Communications Commission] rules. We use the FCC rules in determining where a client can move and what facilities they will have. We conduct coverage analyses to assess how much of any given market a client serves. We look at facility improvements and, in the AM broadcast field, we provide antenna design and field adjustment services, which involves designing the arrangement of towers and electrical specifications and adjusting the array in the field to modify the coverage pattern to reach the desired geographic coverage."

## How the U.S. Department of Commerce Has Helped

"The NTIA," Mr. du Treil said, "provides the TA Services [Telecommunications Analysis Services] which we use regularly, including propagation analyses as well as terrain, or topographic, analyses. We remotely access and run several NTIA software programs."

"If we're interested in the reach of an antenna from an optical perspective, we run a program called Shadow. The program tells you how far you can receive the signal whether the line of sight is 360 degrees or if it is blocked by mountains. NTIA produces the Shadow output map data. We put it in usable form on a map which we use specifically for clients in determining their coverage. We use Shadow in FM a little, but this application is most useful in the higher frequencies, primarily UHF and wireless cable. We use CSPM [Communication Systems Performance Model] for propagation analyses, to estimate the coverage area of a particular transmitting facility. Occasionally, we'll use RAPIT for calculations of a single point, for transmission and reception. We also receive support from NTIS staff on questions regarding propagation analysis and Shadow analysis. The staff have been very supportive over the years. We'll occasionally come up with a propagation anomaly and they'll look at it and review their code -- the program, the way it calculates, the theory -- to see if the data are spitting out correctly. They have expertise in propagation analysis that is invaluable."

## **"Strictly Dependent On The Weather"**

## SOUTHWEST AIRLINES, Dallas, Texas

"We started in 1971 with four aircraft," said Dale Foster, Manager, Dispatch Training and Standards, "flying in a

triangle between Dallas, Houston, and San Antonio. Today, we serve 49 airports, all within the continental United States. We run 2,200 flights a day, with 232 Boeing 737-200s, -300s, and -500s."

"Fuel costs are our largest expense; our system-wide average is 65 cents a gallon. Our older planes, the 737-200's, consume 6,000 pounds of fuel an hour; the -300's and -500's, 5,000 pounds. The total fuel you carry on an aircraft is strictly dependent on the weather. As you increase the fuel load, you increase the weight of the aircraft, and increase the fuel burn. For each 1,000 pounds of fuel, you blow 30 pounds through the pipes carrying that fuel."

"From Chicago to St. Louis on a clear day is 6,000 pounds of fuel in a 737-200, plus the standard 45 minutes, or 3,800 pounds, of FAR [Federal Aviation Regulations] fuel -- for 9,800 pounds of fuel. On a marginal day, Chicago to St. Louis is 6,000 and the holding delay of 4,000, for a subtotal of 10,000. In addition, there's 5,000 pounds to Kansas City, the alternate airport, and the 3,800 pounds of FAR fuel, for a total of 18,800 pounds. For the extra 9,000 pounds, you burned 270 pounds just carrying it. There's 6.7 pounds of jet fuel to the gallon; at our system wide average of 65 cents a gallon, that's \$175.50. Run that across a portion of 2,200 flights a day, and you start hitting significant dollars."

"In addition to planning for fuel load, we may delay or divert flights, if weather conditions are below the legal limit. We re-route flights away from thunderstorms that may contain hail. Hail dents the aluminum and we may have to tear the skin off, which may run a couple of weeks and hundreds of thousands of dollars in labor and parts."

#### How the U.S. Department of Commerce Has Helped

"We have no meteorological department, we are completely dependent on the National Weather Service. We chose to use technology and teach our dispatchers to monitor weather conditions at departure, destination, and alternate airports along with enroute weather and to keep the pilot in command fully informed. Each dispatcher is constantly receiving weather data on screen and disseminating within seconds of receipt."

"We continuously receive the National Weather Service's "family of services" data: observations from points across the country, severe storm warnings, significant weather forecasts, forecasts for each airport, and "winds aloft" forecasts. We receive satellite pictures every 30 minutes, which gives us an overall view of the weather. We put it in a loop to see how a storm is moving and spreading out. We receive NEXRAD [Next Generation Weather Radar] data for a closer view: every six minutes during a storm, every 10 minutes in clear air mode. We pay for the satellite imagery and the NEXRAD data. The family of services data is free and we pick it up from a vendor who charges for their format."

#### **"Helps Us Solve Problems"**

GOLD TALON, INC., Pine Bluffs, Wyoming

Gold Talon, Inc. manufactures a tribach, a device that mounts to optical survey instruments and aligns the sighting device vertically over a ground marker or ceiling marker. Gold Talon's tribach is unique: it uses a laser

beam to provide precision alignment and its aerospace materials allow for subsurface applications.

Gold Talon developed the idea of the laser in 1993. Sonny Porter, Gold Talon's President, wanted a tool that would work in mines. "I'm a surveyor of 15 years," said Sonny Porter, Gold Talon's President, explaining how the company started, "and my partner is an aerospace engineer of 15 years. We were asked to fix a couple of units that some surveyors had busted. We got together to make a better one."

"For underground mining," said Aarne Haas, a Field Engineer with the Mid-America Manufacturing Technology Center, "you traditionally put reference points on the ceiling of the mine. This causes difficulty in making precise alignments." With the tribach, the laser beam goes both ways, up and down, for centering. It's a specialized piece of equipment."

"Aarne started out helping with suppliers," said Sonny Porter, "in order to use the best hue and wavelength of laser that would be suited for our purpose. He did background checks on several companies, identifying those at the high end and those with high and low percentages of failure. He also provided us with literature for our future development. He also helped us with the description and specs on coatings and filters as well as lenses. My expertise is in use of lasers, not in their design and construction. We get feedback from our clients. He'll look at it and make mock-ups to see if the ideas are cost effective and feasible."

"I helped in selecting laser," Aarne Haas said, "in getting the light to be more visible, with less power consumption, and designing a circuit to make adjustable brightness. Previously, if you used it in a dark place, the light was too bright. I helped them in designing the circuitry in getting savings. They were using \$70 of components per unit; it's down now, cut in about half."

"Our sales began November 19, 1995," said Sonny Porter. "The initial reaction way exceeded our expectations. We're currently working in 12 countries and working with several large companies that we're keeping quiet about right now."

How the U.S. Department of Commerce Has Helped

"Aarne Hass," said Kathy Porter, "was invaluable in our laser application." Added Sonny Porter, "he just basically instructs and help us solve problems."

MAMTC is a Manufacturing Extension Partnership Center established with support from the National Institute of Standards and Technology.

### **"In The Interest Of All The Companies"**

HEWLETT-PACKARD, Test & Measurement Organization, Santa Clara, California

The Test and Measurement Organization (TMO) is one of three principal sectors in Hewlett-Packard (HP). It produces products such as spectrum analyzers, signal generators, oscilloscopes, voltmeters, and complex systems with the ability to combine computers and instruments, such as systems to test satellites and systems to

automatically monitor a telephone network. "TMO has four marketing Centers: Europe, Japan, Hong Kong, which covers the Far East, and Latin America," said Mike Cuevas, Latin America Marketing Center Manager.

"Latin America is one of the fastest-growing markets for telecommunications equipment. HP has been selling in Latin America for over 30 years. We established the Latin America marketing center five years ago to increase TMO sales in the region. In communications, for example, we provide Network Operators with products such as Conformance Test sets to increase productivity, Monitoring Systems to provide network-wide visibility from a single location, and Client-Server Computer Systems for network management and to automate various processes."

#### How the U.S. Department of Commerce Has Helped

"NTIA [The National Telecommunications and Information Administration] first ran a Latin America Telecommunications Summit in Venezuela in 1993. I went to that summit primarily to learn and network. The Summit involved high-level people: Ministers and the heads of telephone companies who discussed their objectives, strategies, challenges, and concerns. I learned what their business needs were and had a better sense of what we need to do to help them achieve those objectives. I attended the second Summit, in Chile in 1995, and will be going to the third, next month, in Cancun."

"The key from my point of view is that the [ITA] U.S. Commercial Officers from each participating country also attend. I am able to renew relationships or develop new ones -- they change all the time. If you don't have a close relationship with the U.S. Commercial Service, they can't really champion your cause. They open doors for me. The Commercial Officers guide me in the right direction. They tell me who has influence. They provide unofficial briefings at a personal level and let me know what are the hot buttons. They increase the visibility of HP in the eyes of the decision makers in these countries. Catherine Houghton, for example, was exceptional; at times, I thought she was an HP employee. We got an \$18 million dollar spectrum management deal in Colombia, from our participation in the Santiago Summit. That was the only direct cause and effect. There were other deals, but the connections, are not as specific."

"Nancy," referring to Nancy Eskenazi, Telecommunications Policy Analyst of NTIA, "was key in organizing the telecom summit. She listens to our inputs and tries very hard to incorporate the inputs of all the companies for the agenda and format. If you go to a planning meeting, you wonder if she'll ever be able to accommodate it. She has a pretty good feel for what will work in the interest of all the companies."

#### **"We Adhere To Certain Quality Standards"**

FLUKE CORPORATION, Everett, Washington

Fluke Corporation, founded in 1948, is a supplier of electronic test tools that are used by technicians and engineers to install, service, and maintain equipment that contains electrical and electronic components. Company revenues exceeded \$413 million in fiscal year 1996; 60 percent of sales were outside the U.S. "We manufacture precision electrical equipment and calibration equipment," said Ray Kletke, Corporate Metrology Manager in Fluke's Standards Laboratory. "I'm in the calibration division; we ensure that our equipment

conforms to precision standards for many electrical parameters, such as voltage, resistance, current, things of that nature. That's our role as a calibration standards lab, and has been ever since I've been here, which is over 30 years."

"The international nature of calibration labs is relatively new, within the last decade or so. While some of our calibration is accepted worldwide, Europe is not accepting precision calibrations on American products not performed by labs certified and accredited to perform those calibrations. The result is that equipment we export to Europe must be re-calibrated by a European lab. This raises the cost to our customers and acts as a trade barrier."

### How the U.S. Department of Commerce Has Helped

"We regularly send standards into NIST [the National Institute of Standards and Technology]; they perform calibrations which allow us to document legal traceability back to national standards. NIST staff also help and advise us on how to make measurements."

"We invited NVLAP [NIST's National Voluntary Laboratory Accreditation Program] to conduct an accreditation review of our laboratory. For the initial accreditation, which we received in July of 1995, we had two NVLAP people in for a week. They looked at our personnel and their qualifications, our procedures, our documentation -- everything associated with achieving traceability. They certified that we do our work in a particular way, that we adhere to certain quality standards, and that the calibration services we claim are identical to those we employ."

"Auditors from our customers regularly come through our lab to document how we perform. These audits require a lot of time and effort on both our part and that of our customers. One of our motivations in seeking NVLAP accreditation was to encourage our customers to accept those results and reduce or eliminate the efforts involved in their audits. This has been partly true; but our expectations of what accreditation can do have not been met -- it's still new in the U.S. and has not yet been fully accepted. However, the NVLAP are all technical people and their attitude is to assist. Their review led to improvements in our documentation on uncertainty analyses. The accreditation set up a relationship between us and NIST. As new metrology challenges arise on a day-to-day basis, we have a line into NIST. Our other motivation in seeking NVLAP accreditation was to help us gain acceptance of our precision calibrations in Europe by virtue of gaining NVLAP certification. We haven't achieved this yet, but NVLAP is participating in discussions aimed at gaining European acceptance."

### **"An Important First Contact"**

#### LAKE SHORE CRYOTRONICS, INC., Westerville, Ohio

Lake Shore Cryotronics is a privately held company which produces measurement and control instrumentation. "We produce sensors and instruments," said Jeff Bergen, Vice President for New Business Development, "that provide cryogenic [extremely low, within a few thousands of a degree of absolute zero] temperature measurement and control; magnet power supplies and magnetic field measurement instruments and systems for the study of magnetic properties of materials; and magneto resistive encoders/tachometers for original equipment manufacturers (OEM) customers serving the process control field."

"In 1987, we were looking for opportunities to expand from temperature sensors and instruments to materials characterization systems. At that time, there was rapidly growing interest in superconductors and, consequently, a need to evaluate the magnetic properties of different materials under cryogenic conditions. One method for making such measurements involves the use of ac susceptibility, a techniques that was first employed in the 1930s with laboratory-built "homemade" apparatus. No one was producing a commercial product. We then developed an instrument, an a.c. susceptometer, based on a prototype at NIST [the National Institute of Standards and Technology]. The system we initially developed allows a technician to insert a sample material into a cold environment, apply a magnetic field, and measure changes in flux under the influence of the magnetic field. The resulting data provide very good information about the material itself. We designed and developed a commercial product, adding a d.c. measurement element, and obtained a patent. Lake Shore sells the system worldwide to universities, government labs, and larger industrial companies that need to characterize magnetic properties of materials in production or development, such as Ford Motor, Kodak, IBM, AT&T Bell Labs, and aerospace companies. The price varies from \$60,000 to \$120,000 depending upon system configuration; an individual laboratory couldn't produce a susceptometer with similar capabilities at that price."

"Our pursuit of this system led to the company initiating a program that has put us squarely in the semiconductor, permanent magnet and automotive/motor industries. The magnetics area is the fastest growing part of our company. We also now have a series of products for character- izing properties of devices in the superconducting field. Employment, now at 120, increased nearly 300 percent over the past ten years, while revenues have quadrupled. Exports are currently 40 percent of revenues; we expect to increase that to fifty percent in next three years."

#### How the U.S. Department of Commerce Has Helped

"The prototype at NIST was in the public domain, available to anyone who expressed interest. We happened to visit them, looked at what they were doing and reviewed some of their technical papers. It was an important first contact. At the encouragement of Ron Goldfarb, a NIST magnetics researcher, we decided to make a commercial version of NIST's prototype susceptometer. During the development process, we called upon NIST staff with questions about various aspects about both design and calibration. We still communicate with this group."

#### **"We Were Going After Relationships"**

##### SMITH AND NEPHEW ORTHOPAEDICS, Memphis, Tennessee

"Smith and Nephew Orthopaedics," said Dr. Russell Jamieson, Senior Vice President for Research and Development, "designs and manufactures total orthopaedic implants that are used for total joint replacement of knees, hips, and shoulders. We also design and manufacture trauma products -- pins, rods, screws, plants -- that are used for trauma applications. Our third area includes the design and manufacture of products for treatment of spine conditions, for example, degenerated spinal discs, which are also implants. We have 1,500 employees at our headquarters and manufacturing facilities in Memphis and regional sales offices throughout the country. In the orthopaedics industry, 50 percent of sales are in the United States and the remaining 50 percent are all over the world. Japan is our largest export market."

## How the U.S. Department of Commerce Has Helped

"In 1991," said Dr. Jamieson, "I wanted to visit Japan for the first time and meet with researchers in the private sector or government who could help me find people who would be working in areas of interest to us. I approached staff in the Technology Administration who helped me identify several academic researchers and some officials in Japan's Ministry of International Trade and Industry. I corresponded and, when I went over, I had the opportunity to meet with all of them. I also visited the International Trade Administration's commercial office in Japan. The Foreign Commercial Officers had contacts in the medical industry which were quite helpful. Once on the ground, several other meetings were set up and I developed a sense as to how to proceed. I've returned to Japan every year and have developed strong relationships with academic researchers at Kyoto University and several high-tech bio-med companies in Japan."

"As a result of my contacts with the Technology Administration, I gained access to other Washington agencies, primarily the State Department and the National Academy of Sciences, which resulted in further involvement in areas of interest to us. I represent small- and medium-sized businesses on the Joint High-Level Advisory Panel, a bi-lateral advisory committee administered out of Commerce, which promotes the exchange of technical ideas at a high level between Japan and the United States. The National Technical Information Service (NTIS), which publishes federal technical data, collaborates with its counterpart in Japan, the JICST, and annually sponsors a conference on the exchange of information. NTIS invited me to deliver a paper one year and to chair a panel the following year. These meetings put me in contact with technology information managers. I became familiar with this community and how they work, with the result that I have better access to technical developments in Japan."

"We started from ground zero, without any knowledge. If we had not been successful at Commerce, we probably would not have proceeded. We now have contacts we can go to when we become aware of developments. We can ask about what the technology is, who the developer is, and is it important? We were going after relationships, which Commerce helped us to do because they know people."

### **"Trying To Figure Out What The Market Wants"**

PEOPLE'S BANK & TRUST COMPANY, Tupelo, Mississippi

The Peoples Bank & Trust Company, chartered in 1904, has 42 offices in 26 towns spread across the northern third of Mississippi. The bank is the sixth largest in the state, with current assets of \$850 million.

"One of the functions of our marketing department," said Don Wilson, First Vice President and Director of Marketing, "is to analyze our system-wide market to determine where to locate new branches, and to identify areas that need promotional help in increasing market share. We run sales promotions an average of once or twice a year. Promotions are fairly large and become expensive if mounted system-wide. Our first step in considering a promotion is to analyze our market to determine what segments we will target. We analyze our competition to see what they are offering and we try to meet or beat their offer. We'll comb through data and decide on what media -- direct mail, newspaper, radio -- to use and to estimate production costs, such as postage, for the promotion and any merchandise that may be part of our offer."

"We segment the market as much as possible. It's no longer prudent for companies to broadcast messages through the media without targeting the market and trying to figure out what the market wants. In a current sales promotion, we took our analyses and turned to a direct mail firm. They did the mailing for us -- 31,000 pieces, to three towns -- using the criteria we specified. Three weeks after mailing out 31,000 pieces, we have an 11.8 percent response so far. On a direct mail, a three percent response is regarded as good. We mailed out 13,948 pieces to Southaven and have 1,144 responses, or 8.2 percent -- that's very high. In Hernando, we received 7.8 percent and in Grenada, we received 22.1 percent, which is phenomenal."

"We also use data to monitor our compliance with the Community Reinvestment Act (CRA). We use mapping software we bought from vendors and we "geo-code" loans and deposits with eleven-digit indicators so that we can track our activity within the assessment areas. We are able to produce charts and data by assessment area that show income levels in three ranges: upper, middle, and low-to-moderate, racial percentages, and loan volumes. We provide monthly reports to our Board of Directors and the bank's CRA Committee meets quarterly to review our loan activity in the assessment areas and to decide on any necessary adjustments."

### How the U.S. Department of Commerce Has Helped

"We buy much of our data from vendors that obtain Census information -- geographic data and demographics on income, age, race, gender, home ownership, education -- and make it available in usable form. We use these data in determining the specifics of our sales promotions. Once or twice a year we gather Census data directly for use in looking at economic viability and opportunity markets in which to locate branches. Census information is just one part of our sales promotion data package, but it's an important part. In conducting our CRA compliance analyses, all of the data, except loan volume, is Census data."

### **"A Value-Added Cooperative"**

#### DAKOTA GROWERS PASTA COMPANY, Carrington, North Dakota

The Dakota Growers Pasta Company has 1,080 members throughout North Dakota, the western border of Minnesota, and the eastern border of Montana. The company, located in an 84-acre industrial park on the outskirts of Carrington, operates around the clock, seven days a week. It has two long goods and two short goods presses which produce over 400,000 pounds of pasta a day. "We buy durum wheat," said Tom Friezen, Vice President for Finance, "mill it into semolina flour which we process into over 50 shapes of pasta that we package and deliver to customers. We sell to retail, food service, and food ingredient customers, who take our product and further process it into frozen pasta dinners, a salad, or a boxed dry dinner."

"We began producing pasta in November of 1993. November and December were our shakeout period. We currently run 3 million bushels of durum wheat a year. The idea for the cooperative was advanced in 1991 by a group of North Dakota farmers. They wanted an opportunity to add value, rather than sell their produce and have the value go on to the processors. We are in the process of expanding and will approximately double our capacity to 6 or 7 million bushels a year. We conducted a stock drive this spring to raise funds for our expansion, and sold additional equity shares."

"The company, said Tim Dodd, President and General Manager, "is truly a valued-added cooperative. Members are obligated to provide us with durum wheat and sell that grain through the pasta market based on their equity ownership: one bushel for each share. We are a closed cooperative; once the stock sale is closed nobody gets in unless they purchase stock from an existing member. Owners must be producers of small grains so they have something at risk. We have very little attrition, generally because someone is retiring from farming."

"We pay the market price; that's our agreement with the growers," said Mr. Dodd. "In our first full year of operations, we posted a net profit of 49 cents a bushel per bushel ground. That was 10 percent value-added -- above and beyond the market price. Fiscal year 1996 will be better than last year; with our forecasts we hope to maintain a minimum 15 percent return. The market price may vary from \$3.50 a bushel to \$6.00 a bushel. In our business plan, we hope to stabilize the overall value price for members so that the end value will be consistent."

"Since the company started," said Claire Vigesaa, President of the Carrington Development Corporation, "we've had a lot of activity: growth in our trucking industry, an expanded gas station, a new grocery store, a new motel, and an expanded convenience store -- all in addition to about 200 employees at Dakota Growers. We don't have unemployment problems."

#### How the U.S. Department of Commerce Has Helped

The Economic Development Administration provided a grant of \$358,500 of a total package of \$717,000 that Carrington assembled to develop the infrastructure for the industrial park: sewer, water, and road access.



## **"An Exact Match In Properties"**

EAGLE-PICHER, ENVIRONMENTAL SCIENCE AND TECHNOLOGY, Miami, Oklahoma

Eagle-Picher is a diversified company with 15 divisions. The newly formed Technologies Division (merger of the Specialty Materials Division and the Electronics Division) has 10 departments, including the Environmental Sciences and Technology (ESAT) lab, in Miami, Oklahoma. "Our lab," said Gene Cantwell, Director of Technical Development, "provides high-purity materials and fabricates devices for the electronics industry. Most of our work is for niche markets: something produced with high-technology and low quantities. Since the 1950's, we have been a world supplier of materials for making compounds, semiconductors, satellite dishes, microwaves, and other products."

"Over the past several years, we conducted research to develop high-efficient, long lifetime blue/green lasers and LEDs [light emitting diodes]. There's been a big demand for these colors of LEDs -- for full color display, flat panels, portable printers, and large outdoor screens -- but they haven't been available until recently. In lasers, blue and green colors are the next level up; they operate at a shorter wavelength and can double or quadruple storage capacity in current CDs and other electronic devices. In combination with additional ongoing improvements, such as DVD [digital video display], manufacturers will be able to take density even higher."

"Blue/green lasers are much more difficult to develop than blue and green LEDs. The lasers require much higher current and light intensities, and they decay rapidly. No one has yet made commercial products with blue/green lasers. Most research has focused on an approach in which the substrate and the film that's placed on it are different materials, such as zinc selenide on gallium arsenide. This limits efficiencies. We formed a team with a group from North Carolina State University, led by Jan Schetzina. He had the capabilities to build the device on a substrate we made from single crystals of zinc selenide. We were the only one conducting research on using the same material, zinc selenide, in the substrate and the film. In single crystal substrates, the atoms are all in three-dimensional array. You can grow a film on it epitaxially [one layer at a time] because the atoms are in an orderly arrangement; the atoms in the film will grow in exactly the same way. By using zinc selenide on zinc selenide, we have an exact match in properties, so the film and the substrate expand and contract the same. We are 90 percent there. We have the green LEDs in pilot line production right now. These are "true green," unlike commercially available green which have a strong element of yellow. We expect the blue LEDs to go into pilot line production by the end of the year. We are continuing research on the blue/green lasers and have scheduled an evaluation point next summer."

How the U.S. Department of Commerce Has Helped

"We received a three-year Advanced Technology Program award of \$1,759,014 from NIST [the National Institute of Standards and Technology] in March of 1993. We had previously demonstrated the technology, but rapid development involved a lot of risk and required a breakthrough level of effort. The award allowed us to increase our level of effort and perform on a quick basis."

## **"You Have To Know What Aspect Of The Weather Is Important"**

## WEATHER SERVICES CORPORATION, Lexington, Massachusetts

Weather Services Corporation is a privately held meteorological forecasting firm, with global coverage. The firm, established in 1946, operates 24 hours a day, seven days a week with a staff that includes meteorologists, editors and producers, computer and communications engineers, and multi-lingual graphic artists. "We serve the agribusiness, finance, construction, insurance, recreation, utilities, energy, and other industries as well as individual clients such as America OnLine and USA Today," said Peter Leavitt, Chief Executive Officer.

"We take information from a wide variety of sources and add our meteorological expertise to provide reports to our subscribers. One of our basic tenets is to provide forecasting services which can save them from a loss or can increase their chances of profitability. In many cases, we offer alternative scenarios for weather forecasts, providing details that would be too cumbersome for general dissemination and would be confusing to the general public. For example, the general forecast might predict a 60 percent chance of rain; but there might also be a 30 percent chance of the temperature being extremely warm, with little rain. If both were broadcast, the public might ask 'what are you forecasting?'. We have clients who are sensitive to heat and find the rain of little consequence. For these clients, after assimilating all of the data, we adjust the context of the forecast into a format tailored to their needs. In another case, the forecast may predict 'six to ten inches of snow, with rain along the coast.' Our client, a shopping center for example, may be in one section along the coast. We will provide a report for just that section so the client can judge whether to salt, plow, and sand in one pass or multiple passes and arrange for contractors in advance."

"In agriculture, weather is the single most important variable affecting yield and production that cannot be accurately forecast in advance. Our clients include individual farmers --- say an Ohio wheat farmer, who can receive local reports, but whose crop prices also have a lot to do with the weather elsewhere, as in Kansas or the Dakotas. Commodities market analysts for news organizations such as Futures World News, Dow Jones, Bloomberg, and Reuters use our reports, as do Prudential Securities, Dean Witter, and others. It is not enough just to know the weather; you have to know what aspect of the weather is important and how to communicate it. Rain is sometimes critical; sometimes of no importance -- a market can undergo large movements in anticipation of a drought-breaking rain. The agri institutions use our forecasts in promoting the sale of U.S. crops overseas. For example, the former Soviet Union is having a rather poor growing season this year, and we can anticipate that they will have increased incentives to import agricultural products. However, they may not talk about it, for fear that prices will rise."

### How the U.S. Department of Commerce Has Helped

"Almost 95 percent of the data we use," said Mr. Leavitt, "comes from the National Oceanic and Atmospheric Administration's National Weather Service."

### **"Supporting An Objective Decision"**

## ARKANSAS SYSTEMS, INC., Little Rock, Arkansas

Arkansas Systems, founded in 1975, is a privately held provider of card systems, payment systems and operations solutions through Integrated Transaction Management (ITM), a comprehensive system architecture.

The company, which is employee-owned, has overseas offices in Hungary and Russia and more than 25 overseas distributors.

"We sell software to banks," said Vernon Markham, International Sales Director. "In 1983, we did business in 13 foreign countries; today, we are in 64 and we have 5-to-10 opportunities in new countries. About 60 percent of our contracts are with international customers, which tracks closely with our revenues. Over the next several years, we plan to build on our base in those countries where we've established a presence. We will be promoting additional products and developing the infrastructure to support significant distribution. In Indonesia, which is our largest market, we have more than 20 customers, all banks.

#### How the U.S. Department of Commerce Has Helped

"I've worked with the International Trade Administration for 14 years and used their research information, country-by-country, to identify key opportunities. I've been using their market information on the banking and financial sector for years. In the last 5 to 8 years, they have substantially increased their focus on information technology, and I've been using that as well. We've used their vehicle, Commercial News USA, in announcing a new product and received lots of inquiries. We've also acquired three or four new distributors as a result of that advertising."

"I travel extensively; 40 or 50 percent of my time is spent overseas. I visit with the Foreign Commercial Officers who are available for interviews and provide me with a description of the lay of the land, introductions to bank executives, and general information about the market. In markets where I'm not as familiar with some of the banks, such as Thailand, they will explain the customs and the general structure of the market. The local nationals employed by ITA are extremely familiar with nuances about business relationships. When we participate in trade shows, ITA's Foreign Commercial Officers will visit. We sell internationally through distributors and I've been able to locate some of those through these officers."

"In China, we faced an opportunity to provide a clearinghouse solution, converting a paper-based operations to a high-speed electronic system, for the People's Bank of China (PBC), the Chinese equivalent of the Federal Reserve. Since pursuing this opportunity would require a substantial investment, we had to decide whether it was a wise business decision. We were interested in looking at the number of branches that the PBC controlled, the operation of their check clearing system, and their future strategies. We gathered that American companies had the edge and that there was a sense of urgency shown by the PBC management and top officials. We established a relationship with a local partner, a hardware firm which was the primary private source of information. However, we used ITA reports as a critical alternative source of information, for supporting an objective decision."

#### **"Everything Just Popped"**

#### THE TOWN OF FERNLEY, NEVADA and FERNLEY UTILITIES

The town of Fernley, 29 miles from Reno and unincorporated, is one of the last areas near Reno with any large amount of industrial park space available. The town, population close to 10,000, is served by rail and Interstate 80 and is close to California. Fernley had been run by Lyon County until 1984, when the District Attorney

determined the town was eligible to elect a town board and to operate and maintain Fernley Utilities, which handles water and sewer.

"In July of 1984," said LeRoy Goodman, former town board member and past president of the Western Nevada Development District, "we took over the utility and hired our own manager. We had a small, self-enclosed waste treatment plant on the west side of town. It was built in 1963, when Fernley had 1,200 people. There was no way to expand the plant; we wanted to close it. To do so, we had to have more capacity at our facility on the east side which had been built in 1978 by a developer who had great plans that never materialized. Our manager quickly discovered the east facility was completely out of spec: pipes weren't the correct size, the pond was improperly lined, the aeration pump didn't work correctly, pipes were 20 feet away from where plans showed them to be, and untreated sewage was running into a lagoon. Our manager brought these problems to the attention of state and federal authorities. EPA issued a "cease and desist" order; effectively precluding us from authorizing any new construction until the facility was revamped and upgraded. Meanwhile, in 1984-85, the economy was really booming. People were looking to Fernley for homes, but we had no sewer capacity and the town didn't have any money."

"We discovered the utility had unencumbered money in its fund. We assembled a financial package in 1987 and in 1988; we completed a new 600,000 gallon a day waste water treatment facility, added a lift station, and put in a one million gallon water tank. Five hundred jobs followed; everything just popped. The Truck-Inn, with restaurant, motel, fuel, truck repair shop and truck wash, brought in more than 100 jobs. Edicam, which cleans circuit board waste, came in with nearly 100 jobs. R-Max, a manufacturer of foam insulation, brought in 70 jobs. Small commercial businesses also came in, adding jobs: a hardware store, a fast food restaurant, a couple of bars, a casino/restaurant/motel, and a restaurant expansion. Fernley was hot; we had sewer and water capacity."

"Now, we're running out of capacity again. We started construction this past Spring to double our waste water treatment and to provide other support to the 3,400 acre industrial park, that the old developer never worked. People are lining up with commitments for projects."

#### How the U.S. Department of Commerce Has Helped

The Economic Development Administration (EDA) provided a grant of \$490,200 in December 1987 out of a total package of \$817,00 for the new plant. EDA provided a grant of \$1,304,160 in May of 1995 out of a total package of \$2,173,600 for doubling the capacity of the waste water treatment facility and running a water line to support the industrial park.

#### **"Dates When Facts Had To Be Known"**

#### MOTOROLA INC., CELLULAR INFRASTRUCTURE GROUP, Arlington Heights, Illinois

Motorola Inc.'s Cellular Infrastructure Group (CIG) -- a part of the company's General Systems Sector -- designs, develops, manufactures, and supplies infrastructure equipment for wireless communications. CIG exports to more than 75 countries. "In 1994," said Mike Kotzin, Director of CIG Applied Research, "Motorola was the vendor for Hutchison [Telephone Company Limited] which was seeking a license to install an advanced digital cellular radio telephone service, called CDMA [Code Division Multiple Access], in Hong Kong."

"CDMA was a new system which uses unique digital codes, instead of separate RF frequencies and channels, to differentiate subscribers' phone conversations. CDMA allows more efficient use of the radio spectrum and provides enhanced voice and call quality compared with a traditional analog cellular service. This would be CDMA's first commercial deployment. In order to obtain a license, the Hong Kong Office of Telecommunications Administration (OTA) required Hutchison to demonstrate the capacity performance of the proposed system. Hong Kong is regarded as one of the most difficult radio frequency transmission sites in the world. OTA was concerned that the topography of Hong Kong as well as the presence of tall urban structures, man-made noises from electrical appliances, and other factors might combine to inhibit effective signal transmission. Certain commitments had to be made as to how well the system would work, the number of subscribers that could be accommodated, the promised degree of capacity. There were deadlines, dates when facts had to be known, reports written and submitted."

"We faced a tight schedule in responding to the Hong Kong government's request. OTA met periodically. That was April; if we could not demonstrate by early August that the system had a reasonable chance of working in the Hong Kong environment, the license processing would have been postponed by six months to a year, possibly re-opening the license to competition. Hong Kong is an extremely competitive market for cellular service. At that time, there were four service providers operating seven networks and using four different technologies."

#### How the U.S. Department of Commerce Has Helped

"We asked NTIA [National Telecommunications and Information Administration] to assist us in taking measurements so we could better understand and characterize radio frequency propagation in Hong Kong at 841 MHz. NTIA was uniquely qualified to rapidly make the measurements and do the analyses. They provided us with some of the raw input. Without that data, we wouldn't have been able to do as good a job of predicting and deploying the system."

Hutchison was granted a license in August of 1994 and began the first commercial deployment of CDMA in September of 1995. As of July 1996, they had 40,000 subscribers on the system. Chuck Lynk, CIG's now retired Vice President of Technical Staff and Director of Fort Worth Research Laboratories, had been closely tied in with the project in 1994. At that time, he said NTIA efforts "were central to Motorola efforts to advance U.S. marketing of personal communication systems in Hong Kong."

#### **"Experimenting With Advanced Predictions"**

INSTITUTE OF GLOBAL ENVIRONMENT AND SOCIETY, INC., Calverton, Maryland

The Institute of Global Environment and Society (IGES), established in 1993, is a non-profit research institution dedicated to improving the prediction of seasonal and interannual variations in the earth's climate. "IGES," said Jagadsh Shukla, president, "is part of a worldwide network of research centers and programs that are developing and disseminating climate forecasts with lead time of one year."

"We study the interactions among atmosphere, oceans and land surfaces which are the dominant source of year-

to-year climate fluctuations. A better understanding of these interactions is essential if we want to distinguish between natural variability and changes caused by human activities. IGES helps developing nations establish and strengthen their capacity to make forecasts and train local scientists in the use of our models."

"Several centers produce climate predictions for temperature and precipitation -- above normal, normal, and below normal -- one year in advance. These are not formal forecasts; we are experimenting with advanced predictions which we make available on the internet to various users. Our most precise capabilities to predict are for the tropics, where our forecasts are based on relatively well understood relationships between oceanic and atmospheric processes, such as the El Niño Southern Oscillation cycle in the tropical Pacific. Our tropical forecasts are routinely used by some countries to plan their agricultural programs, revise water resource allocation plans, and reduce disaster-related costs through advanced preparation. Peru, for example, plants cotton if a warm dry season is predicted and rice if heavy rains are predicted."

"One of our current objectives is to improve our predictive capability for extra-tropical areas, such as the continental United States. Our forecasts in the U.S. are better along the west coast and the southeast Gulf states and in Hawaii than in the Mississippi basin or New England because there is a more obvious relationship between the key oceanic and atmospheric processes, such as El Niño, and rainfall and temperature patterns in those regions. Where we have relatively good predictive capability, advance information allows planning for water conservation and management. In the Columbia River system, for example, advance information aids in planning for the supply of electric power, management of economically significant fisheries like salmon, and accommodating traditional native American rights for fishing and hunting. We know there's a relationship between El Niño and mid-west rainfalls, but other factors -- local meteorological conditions, vegetation, soil moisture, Atlantic Ocean conditions, and topography -- also play a role. Different types of vegetation -- trees, grasslands, cropland -- have different affects on local weather and climate conditions."

## How the U.S. Department of Commerce Has Helped

"NOAA established global scale observing systems which provide ocean and atmosphere information critical to our analyses. NOAA also provides a major source of our funding."

## "A Little Bit Of An Edge"

### MARINE SERVICES FACILITY, Sitka, Alaska

The Sitka Marine Services Facility, which became operational in 1990, includes an enclosed loading dock, an office, equipment rooms, and 16,000 square feet of cold storage space, capable of holding 4 to 4« million pounds of fish. Sitka Sounds Seafoods and Seafood Producers Cooperative each lease one half of the cold storage area.

"We have 125 year-round jobs, about 225 in summertime," said Harold Thompson, president of Sitka Sounds Seafood. We sell a frozen product and export about 60 percent of it. We do some value-added processing, smoking for markets in Japan, filleting, portioning, steaking, and vacuum packing. We make small packet products for mail order and started a mail order company, Alaskan Harvest, as one of the spin-offs from the cold storage. We store about 1.8 million pounds of fish in our portion, which allows us to consolidate more products in Sitka before making sales. We no longer have to store in Seattle, so we avoid paying "in and out" charges

which saves about \$50,000 a year. We can ship direct from Sitka and get "through rates." Our sister company in Kodiak developed a new product for pink salmon. We're holding pink salmon in cold storage and will ship this Fall. Our share will be about \$150,000. Without the cold storage, we probably wouldn't be buying pink salmon because we can't ship north regularly. The facility keeps folks on value-added work during the winter, generating five year round equivalent jobs."

"We're a fishermen's cooperative with 400 members," said Jeff Pearson, Warehouse Manager at Seafood Producers Cooperative. We also operate a public cold storage for the city. "Our members can deliver their products to us. We pool all the fish, process them, and market the products. Our members are paid the dock price and any net profits we earn. We had 12-to-14 million pounds of year. We sell all over the world; most of our product is sent to Japan. The cold storage has allowed us to retain more product in Sitka. Sometimes the fish come in faster than we can pack them, faster than the market will take them. We used to move them out of state. The cold storage allows us to retain more bulk in Sitka and we're able to keep our value-added workers on for another month to six weeks. The facility also allows us to make better returns for our fishermen; we can seek opportunities for cheaper shipping by bulk instead of containerizing; that saves about 50 percent, which goes back to our members."

"There's a glut of salmon on the worldwide market and prices are depressed," said Mary McDowell, Special Assistant to the Governor. "The seafood industry is the biggest private sector employer in Alaska; its competitiveness is important to us. Community cold storages are a tool for encouraging the development of new value-added seafood products and new marketing niches. They can give communities a little bit of an edge in diversifying their economies."

### How the U.S. Department of Commerce Has Helped

In 1989, the Economic Development Administration awarded a \$1 million grant to Sitka for construction of the cold storage facility. This grant was matched by \$1.5 million from the state.

### **"Looked For Other Opportunities"**

#### CLEARWATER INSTRUMENTATION, INC., Watertown, Massachusetts

Clearwater Instrumentation, established in 1989, is a privately-held manufacturer of autonomous oceanographic instruments called surface drifters. "Drifters," said Gary Williams, president and founder, "operate unattended while floating on the sea surface and relay environmental information to users via satellite."

"About 60 percent of our sales are for models used in climate studies. Every 90 seconds, these buoys collect water temperature data in the top 15 meters of the ocean surface. The data are transmitted by radio. Overhead satellites collect the temperature data and measure the Doppler shift, which allows users to identify the location of the drifter to within 100 meters to a kilometer. Our climate buoys, designed to be good followers of water, are resistant to the effects of waves and wind. Their design includes a surface sphere on which the electronic instruments are mounted. A tether extends downward from the sphere to a drogue, or sea anchor, made of a cloth cylinder, one meter in diameter and 7 meters long. The drogue is suspended so that its bottom is 18« meters below the surface and its top is 12« meters below the surface. Its large shape tends to resist winds and waves

acting on the surface sphere because they have to drag this large open mass through the water. The cylinder, made of cloth, is like a large hose; it is open at both ends and there are holes cut strategically along its length to catch the water and keep it vertically suspended."

"About 10 percent of our sales are shallower surface drifters. These are used by oceanographers looking at the top meter of the ocean, studying effects close in to shore, such as discharges of rivers into oceans and the patterns of winds blowing across surfaces. Because these drifters are designed to follow the action of waves and winds, they are also capable of mimicking the movement of life rafts. We are in prototype development, under contract with the U.S. Coast Guard, for surface drifters for use in sea and air rescue."

"We recently entered the market for fisheries. The remaining 30 percent of our sales are for fish aggregation devices used to attract fish, particularly albacore tuna. The tether drags a bamboo net, measuring two or three meters on a side, with bait. They are released to drift freely in the ocean. The drifter transmits a remote signal, which is picked up by satellite and transmitted back to the ship's captain who returns in two to three weeks. This is a new product; sales are entirely overseas, primarily to Spain and France."

### How the U.S. Department of Commerce Has Helped

"Our climate drifter was designed by Scripps Institution of Oceanography and several research labs, under funding provided primarily by the National Oceanic and Atmospheric Administration, for use in a large international world ocean surface temperature circulation experiment. My company was one of two which manufactured the initial designs. We built on that and looked for other opportunities."

### **"Speed Is What Makes Us Competitive"**

#### CHICAGO METAL ROLLED PRODUCTS COMPANY, Chicago, Illinois

Chicago Metal, established in 1908, is a family-owned metal fabrication job shop with 70 employees. The company has a major facility in Chicago and a smaller plant in North Carolina. "We sell all over the country," said George Wendt, president, "but our sales are concentrated in the Midwest. We don't export directly, but our products are component parts in many industries and some of our customers, such as Caterpillar and J.I. Case, export."

"We bend metal -- beams, channels, angles, bars, pipe -- to create a radius specified by our customers. We have the ability to bend pipe and tubing to a tight radius. We take straight pieces of metal like I-beams and put them through large metal rollers and put a curve in them or roll them into a ring or a segment of a ring. These can be used, for example, as a backup ring that helps hold the satellite dish on a cellular phone antenna, as a part of a fan housing, or as parts in agricultural equipment. We bend the pipe tubing for playground equipment, roll beams for tunnel supports, make discharge shoots for railroad cars, and fabricate sheet metal cylinders for the M1A1 Abrams tank -- these are the fording kit air intake and exhaust towers that allow the tank to cross rivers almost completely submerged. We've supplied beam for Yucca Mountain tunnels and the custom handrails for the Daytona Speedway Museum."

## How the U.S. Department of Commerce Has Helped

"In 1993, the Chicago Manufacturing Center (CMC) conducted a two-day assessment of my business: operations, marketing, sales, production, shop layout, human resources, finance, suppliers, and customer base. They made a number of suggestions which I followed, such as purchasing more capable and efficient equipment, reducing overtime by increasing our workforce, and searching for customers who were doing what we do, but less efficiently."

"We later participated in workshops aimed at educating our employees about total quality management. We've sent 20 people, over time, in groups of five. That helped accelerate our rate of improvement and our benchmark reports. In 1994, we performed at or above their best practice level in two of 10 areas. In 1995, we performed at best practice level in 5 of 10 areas. We're a pretty good company and getting better. Getting everybody to understand the concepts is a massive learning program. We have a tuition reimbursement program for workshops and technical training, all managed by an organization under contract to CMC. The improvement in basic skills has improved our quality and our communication. We work very much on speed and this calls for a lot of cooperation and a lot of communication in what we are doing. Speed is what makes us competitive. Our work with the CMC has added to our bottom line. Without their guidance, I wouldn't have moved so fast or so aggressively to improve our company."

The CMC is a member of the National Institute of Standards and Technology Manufacturing Extension Center.

## **"Delay Can Kill A Promising Technology"**

COMMUNICATION INTELLIGENCE CORPORATION, Redwood Shores, California

Communication Intelligence Corporation (CIC) develops natural computer interfaces using pen input technology, handwriting recognition, and data security technologies for emerging markets in personal computing, electronic commerce, and telecommunications. Founded in 1981, CIC is a publicly traded company. Revenues for fiscal year 1995 were \$2.3 million; approximately 30 percent were overseas sales. The company has a wholly owned Japanese subsidiary and a 79 percent interest in a joint venture in the People's Republic of China.

"One of our products," said John Ostrem, Vice President of Research and Development, "is the Handwriter for Windows . The Handwriter is an ultra-thin digitizer table bundled with pen-computing software that enables users to enter graphics, text, and computer commands just like writing on a pad of paper. When users move the pen across the digitizer table, they see a trace move across the computer screen just like an ink trace on a piece of paper, except the result goes into the computer. Users can annotate documents, enter information using the handwriting recognition capability, and improve the security of their system with signature verification. Information can also be sent electronically to share with other computer users."

"The People's Republic of China (PRC) is the next big new market for CIC. We expect the PRC to be one of the fastest growing markets in the next 10 years, and are developing input devices that will make it easier for Chinese people to interact with computers in their own language. The Chinese language consists of thousands of complex

ideographic symbols, which makes it inherently difficult for keyboard entry. The handwriting recognition technology we are developing enables users to enter Chinese text in their own handwriting without a keyboard. We plan to begin beta testing at 10-to-15 sites in the PRC towards the end of 1996, and to begin selling products through our PRC joint venture in the second half of 1997."

"Another important area for us is security for computer databases and networks. A critical requirement of the growing area of electronic commerce is security. CIC provides toolkits that developers can use to develop security solutions that combine electronic signature verification for personal authentication and cryptography."

### How the U.S. Department of Commerce Has Helped

"We received a NIST Advanced Technology Program (ATP) grant of approximately \$1.2 million in 1991, which enabled us to develop a significant part of the technology that went into CIC's Handwriter product. We were able to assemble a team and accelerate R&D to reduce time to market. The award added to our credibility, helping us to establish licensing arrangements for our technology. In November of 1993, we received a second ATP award of \$1.5 million which enabled us to proceed with R&D of our input technology for the PRC market. That award enabled us to develop an international team, based in the U.S., to produce the technology. This was critical because we could not fund the research in a timely fashion on our own, and delay can kill a promising technology or leave it to be taken over by foreign competitors."

### **"Customers Ask For NIST Traceability";**

SCOTT SPECIALTY GASES, INC., Plumsteadville, Pennsylvania

Scott Specialty Gases, established in 1960, is a privately held international producer and supplier of specialty gas products and equipment. "Environmental applications," said Dr. Stephen Miller, Director of Research and Development, "are our biggest market; and our other markets include: semiconductors, automobiles, chemical/petrochemical, medical gases, safety and industrial hygiene, and the laboratory market. We provide customers with high accuracy pure and calibration gases, as well as a full line of support equipment such as gas regulators, gas delivery systems, tubing, valves and safety equipment."

"Our primary products are mixtures of gases in high-pressure and disposable cylinders. One of the principle uses for gas mixtures is for instrument calibration. For example, when a car is being tested for air pollutant emissions, local garages use an instrument with a probe that is inserted into the car's exhaust to read the emissions of gases such as carbon dioxide, carbon monoxide, NOx [nitrogen oxides], and hydrocarbons. The instrument that performs the test has to be calibrated. We manufacture calibration gas mixtures (standards) containing accurate concentrations of each of these gases. The garage calibrates the instrument with the standards we provide, then analyzes the car exhaust, and is able to measure the specific concentration of each pollutant and determine whether the car meets emissions regulations or not."

"Another large application is electric utilities which burn coal in large quantities to produce steam to produce electricity. Coal burning results in large scale emissions of sulfur dioxide and NOx, which react with moisture in the air to produce acid rain. Under the Clean Air Act Amendments of 1990, electric utilities are required to monitor exhaust stacks 24 hours a day to measure acid rain pollutants. Instrument companies manufacture the

monitoring devices; and we make the calibration standards for their analyzers."

## How the U.S. Department of Commerce Has Helped

"The total number of possible specialty gas mixtures is innumerable, because hundreds of component gases can be blended in a wide variety of concentrations, in different combinations, and in different types of cylinders. Customers ask for NIST traceability for their mixtures, and in some cases require it because many regulatory-driven programs and quality systems such as ISO 9000 require measurement systems to have traceability back to national standards. NIST fulfills a crucial role by providing SRMs (Standard Reference Materials) and by co-certifying NTRMs (NIST Traceable Reference Materials) for the specialty gas industry."

"When we make gas mixtures, we blend and analyze the individual components to exacting tolerances to provide customers with accurately known concentrations. For many of our mixtures, we perform our product analysis with reference to a NIST standard. By performing a direct comparison of our product to a NIST standard, we can further assure our customers that the blend we produced is accurate and we can claim that our product is traceable to NIST."

## "A \$5 To \$10 Million Market"

### CODAR OCEAN SENSORS, LTD., Los Altos, California

Codar Ocean Sensors, established in 1986, is a privately-held firm that designs and manufactures a radar that maps surface ocean currents. "Our system," said Don Barrick, founder and president, "operates on-shore. Our design goals from the beginning were to get the size, cost, and obtrusiveness down because coastal access is limited and the public is very touchy about what they see out there. Our system can operate from a post along the shore or from the roof of a building, with a whip antenna on the top, like a car. Inside the building, or at a remote location, is a computer, the transmitter, and receiver -- linked by cable to the antenna."

"A single radar sells for \$95,000, with options to add software for combining signals from multiple locations. The system can be operated as a single unit, in pairs, or in groups of three, depending on user needs and preferences. We have two types of users: those who see the data in near real-time, within an hour, such as weather companies, and those who collect the data to be used later in analyses supporting design and research. About 60 percent of our sales are overseas, generally along the Pacific Rim. The Indian government, for example, is using our system to help understand circulation off Bombay. They are building a sewage treatment plant and assessing where to locate outfall system pipes which will carry treated effluents out a certain distance. They're looking at the current, to determine what will happen to the effluents, whether they will go back up the rivers and estuaries or out to sea."

"Our radar measures the top three or four feet of surface ocean current by sending a signal, which scatters from waves on the surface. Waves moves at a well-known speed. Their movement is what we look at to give us information about the current. If there is no current, the Doppler shift, which measures speed, is always the same and always sharp. If there's a current, it will be moving the ocean waves at a different speed, which causes another shift, and that is what we're looking for. If you measure the shift, you can calculate the speed of the current."

"We use HF [high frequency] radar and can measure the current out to a distance of 80 kilometers. Our signals go well beyond the horizon and follow the curvature of the earth. After 50 miles, we bump up against the laws of physics, the signals get very weak and unusable. The alternatives for overcoming this are either to radiate a lot more power or to vastly increase the antenna size -- neither of which is acceptable. During our first decade, there was skepticism in the oceanographic community about this technology. We've now reached the point where oceanographic departments and universities are accepting our technology and we expect this will comfortably become a \$5 to \$10 million market."

## How the U.S. Department of Commerce Has Helped

"We took a remote environmental sensing product that I researched in the National Oceanic and Atmospheric Administration (NOAA). After leaving NOAA in 1983, I spent a couple of years with some engineers on redesigning and patenting various aspects of hardware and software."

## "Using Statistics Of Weather"

### LINCOLN ELECTRIC SYSTEM, Lincoln, Nebraska

The Lincoln Electric System serves a population of 200,000 in the city of Lincoln and a three-mile radius. "Our base load facilities," said Phil Euler, a Chief Engineer in the Power Supply Division, "include hydroelectric power from resources on the Missouri River in North and South Dakota, part ownership of nuclear power station on the Missouri River, and participation or ownership in three coal-fired plants in Wyoming and Nebraska. These facilities are brought on-line and left on-line 24 hours a day. Every one or two years, they are off-line for an overhaul."

"We have two peaking generators in Lincoln, with a third 82,000 kilowatt capacity unit coming on-line next year. These are expensive to run because they use oil or natural gas. But their start-up is very short, we can start the engine and be on line in ten minutes. We use peaking generators very few hours a year -- to meet high loads in summer, to provide replacement power either because a transmission line is down or because of forced outages at a coal-fired plant, or to sell power to another utility that has an emergency."

"Under high peak loads in our city, our typical maximum summer load is 600,000 kilowatts or 600 megawatts. On extreme days, we may have a load of 650,000 kilowatts. Every day, we are looking at forecasted temperatures to decide what plants we need to have on-line. Our dispatchers will also go out on the market to see if they can purchase power cheaper than we can supply it ourselves. They'll schedule the next day or even 2 or 3 days ahead. For the longer term, seasonally and annually, we use a statistical model, based on the probability of highs and lows occurring the next year. Our resource planners use this model in deciding how much "insurance power" to purchase for the coming year. If we don't have sufficient power available for serving the maximum load we expect to occur, plus reserves, we pay a very high penalty, calculated at \$90,000 per megawatt. We use an econometric model, with a forecasting horizon of 20-to-30 years, to determine our needs to construct new facilities -- whether it's cheaper for our rate payers if we purchase power on the market or own a facility. We use this model for scheduling when the next 150,000 kilowatt base load facilities, with total lead times of 6-to-7 years, should be brought on-line. Our participation in a plant of that magnitude is a \$175 million investment, plus

substantial interest expenses."

## How the U.S. Department of Commerce Has Helped

"We have several models, all using statistics of weather provided by the National Oceanic and Atmospheric Administration, to help us determine our customers' electric needs and the most economical ways of meeting them. Our customer accounting group uses weather data in explaining to customers why bills are higher this month than last, or this year versus last year. Our technical assistance group uses weather data to advise on the design of buildings and how big an air conditioner and heating unit are needed. We use weather data in setting budget billing -- 12 equal payments a year -- by normalizing their power consumption and removing the weather extremes. We use Census data in our econometric model to help us determine likely household sizes and how that translates into forecasts of power demand."



## **"Nobody Wants To Come To A Dirty Laundromat"**

GATEWAY LAUNDROMAT, INC., St. Louis, Missouri

Gateway Laundromat operates at two locations in a predominantly black mid-town neighborhood. "In 1951," said Mr. Rudolph Lee, president, "I decided there was no future in farming and moved to St. Louis, where I had several jobs as a grass cutter, truck driver, and handyman. In 1965, I bought a laundromat with nothing down. The building was rundown. There were 8 dryers and maybe 12 washers; over half didn't work. I was on my own, just my wife and I; we repaired all of them. My wife quit her job and worked as a laundromat attendant."

"About five years later, I bought a lot one block away, tore down an abandoned service station, and built a laundromat. We closed the old laundromat at 11:00 one night, moved the equipment I was going to keep, and opened the new laundromat at 7:00 the next morning, with mostly new equipment. In 1975, I bought a second laundromat, at 1219 North Union, from my closest competitor. He said, 'you've taken all my business, so I want you to have it.' His equipment was actually larger than mine. They were old front loaders that didn't do a very good job. I had GE and Speed Queen and also kept our laundromat clean. My way of doing it is to work hard, keep the machines running, keep the wineheads out, and make sure your laundromat is sparkling clean. Nobody wants to come to a dirty laundromat to wash their clothes. We hired attendants to give change and keep the drunks out. Customers at the others lost money, left a note, and never got their money back. Now all do pretty much as I do. We added a wing at 1219 in 1978 and expanded there again in 1982."

"In 1991, parking was getting short at my older location and I felt we had enough business for more machines. My daughter called me one day, to look at a building at 3316 North Union for their church. It was more than they could afford. I bought that building; it now has around 80 washers and 55-to-60 dryers, and parks about 50 cars. A year ago, we began planning to expand at 1219. We want to put in a larger laundromat in an empty lot behind it and then tear down 1219 for parking. Beyond that, we have plans to do more, to have a chain -- first in St. Louis. We're getting calls from places in other cities, to come and take a look at some property. People are driving 30 miles to look at our laundromat. We do our own repair work. I taught my sons; they're better than I am now because they can read the schematics. I got a letter yesterday, to honor me in the Minority Business Hall of Fame in St. Louis, next month, in October."

How the U.S. Department of Commerce Has Helped

"The St. Louis Minority Business Development Center helped us obtain a loan through the bank. We went to them to put a package together for 3316. They talked to us to find out how our numbers were, put the paperwork together, and recommended that the bank help us. They also did a loan package for the work we want to do on 1219."

The Center is funded by the Minority Business Development Agency.

**"Converting Basic Research Into Operational Products"**

## SCIENTIFIC TECHNOLOGY, INC., Gaithersburg, Maryland

Scientific Technology, ScTi, is a privately-held company that designs and manufactures opto-electronic instruments used for remote sensing of weather and for environmental monitoring. "One of our major products," said Ting-i Wang, founder and president, "is the LEDWI, a Light Emitting Diode Weather Identifier. This instrument detects if there is any precipitation and, if yes, what type of precipitation: rain, snow, a mixture of rain and snow, ice pellets, or hail stones. The LEDWI has been installed in more than 800 U.S. airports, as well as airports overseas. We use stochastic spectrum analysis for optical scintillation induced weather particles. We have an optical source at one end and receiver at the other end. We use a light-emitting diode, which is equivalent to shining an infrared flashlight into rain. When raindrops, or snowflakes, pass through the optical beam, they cause a change, something like a flickering, of the light intensity -- this is called optical scintillation. Based on the types of changes in light intensity, we can tell exactly what form of precipitation is occurring."

"Another product is WIVIS (Weather Identifier - Visibility) which measures both precipitation and visibility -- how far people can see. This instrument, similar to the LEDWI, flashes an infrared beam to a detector a couple of feet away. The light will be scattered if fog or smoke is present. The greater the scatter, the less the visibility. The instrument, operating 24-hours a day, provides updates every minute. The Maryland Department of Transportation has used more than 40 WIVIS systems along Maryland highways and, nationally, we've sold over 350 systems over the past three years. These are permanently installed, usually on a tower, anywhere from two to twenty feet above the ground."

"Just recently, we've introduced the Long Baseline Optical Anemometer, a wind measurement instrument which uses optical scintillation technology to look at atmospheric turbulence and provide warnings. Air consists of hot and cold eddies that have different densities. When they are sliding together, they cause different optical refractions. Our device measures optical turbulence and crosswinds over a long baseline, up to 10 miles. There's a transmitter at one end, a dual receiver at the other, and an infrared signal which passes between them. This device is used to measure crosswinds at airports and to detect pollution movement."

"In 1985, I founded ScTi with two employees; we now employ 43. About 50 percent of our sales are from non-government sources. We hope to increase this percentage by finding different types of applications for our older products. Over the past several years, exports have run 10 percent of sales. We plan to pursue overseas markets more aggressively in the future."

## How the U.S. Department of Commerce Has Helped

"I founded ScTi to develop optical scintillation products. A National Oceanic and Atmospheric Administration research lab was one of the groups developing the technology. Their work was basic research and publicly available. I spent several years converting basic research into operational instruments and hold several patents in the U.S. and foreign countries."

## **"So They Can Get Into An Office"**

## COLE FINANCIAL SERVICES, INC., Detroit, Michigan

Cole Financial Services, established in 1983, is a privately held firm. "We provide contract staffing to national engineering, architectural, and construction companies," said Patricia Cole, founder and president. "For example, when a engineering company comes to Detroit on a contract with the local government, we provide local administrative office personnel to help for the duration of the contract. We subcontract for all the clerical work and administrative positions: document control, document processing, administrative assistants, receptionist, and administrative support manager. We provide employees for invoicing government work, to expedite processing. Every government agency has a different format and, frequently our clients need encouragement and experience to make changes in their software that will allow them to be paid in 30 days instead of 90. Our contracts have run from six weeks to seven years. Most of our work is in Detroit, but we've had projects lasting up to a year in Atlanta, Denver, Cleveland, and Philadelphia based on requests. Our Philadelphia contract, for example, was with a firm we worked with in Detroit. They liked the work we did and hired us when they moved on to another city. We anticipate continuing requests of this nature for repeat work."

"Cole also provides office management and office organization consulting services. For example, we may talk with a businessman who says 'my office is totally disorganized; my secretary can't find anything.' We offer a 30 day program to organize the office that includes helping staff identify a specific improvement each day, questionnaires to be completed by all employees, and facilitating a workshop to develop recommendations for fixing what's wrong. We help the employees solve the problems themselves so that they will take pride in the changes. We also provide training in total quality management and customer service."

"I worked for the city of Detroit for 12 years and then quit to start my own business. I provided consulting services to non-profits on financial planning, accounting, and program development. In 2« years I didn't make a dime. One day, a guy comes in and says I was really well organized and suggested shifting my focus to profit-making firms. I started as a one person operation and have had as many as 65 employees, depending on our contracts. I provide free training to low income women -- teaching them how to be office assistants, so they can get into an office and do basic computer work. I'm on the Board of Directors of the local and national Coalition of 100 Black Women, founded in 1977, with over 7,000 members nationally. Among our recent awards are: the Spirit of Detroit Award, presented in 1995 by the City Council; recognition, also in 1995, by the Franklin Bank in the 10-to-49 employee category; and Michigan's Top 25 Businesswomen, in April of 1996, by the National Association of Women Business Owners."

How the U.S. Department of Commerce Has Helped

"The DMBDC [Detroit Minority Business Development Center, funded by the Minority Business Development Agency] helped us with business plan preparations and provided us marketing assistance. The Center also helped us obtain Small Business Administration 8(a) certification in June of 1995. We had tried twice before by ourselves, in 1992 and 1994, without success."

### **"Advice On Potential Ventures"**

ROSAS VIDEO TYME, Socorro, New Mexico

Rosas Video Tyme is a family-owned business, in the center of Socorro, about 75 miles south of Albuquerque.

"The store," said Leo Rosas, owner, "is operated by myself and my two children, and one lady that works here when we need her. We rent 1,200 videos a week and sell about 20 used videos a month. We also sell a small volume of CDs and cassettes, paperbacks, and t-shirts. We buy movies every week, on Tuesdays, through a distributor whose salesman we deal with by phone. She tells us who starred in it, how it did in the theater, and what kind of action it has. We purchase 5-to-7 movies a week, about 275 a year. We'll buy more than one copy of each, depending on how much money the movie made and what kind of action it has. We don't charge for membership. The only advertizing we do is on the local TV station's advertizing channel; everything else is by word of mouth.

"I started in the video rental business," said Leo Rosas, owner, "in August of 1990, when I purchased an existing video store and took out a loan from the owner. The store, which was 1,800 square feet, had 3,000 videos and 1,000 customers a week. Over the next two years, our business grew to 1,800 customers a week, and in September of 1992, I secured a \$50,000 loan which allowed me to pay off the gentleman and to increase our inventory to 4,000 videos."

"Around that same time, I began to face competition from Furrs, a grocery chain with about 70 stores in New Mexico and Texas. Furrs, which was next to us in the same shopping center, started renting videos for 49 cents. My movies were renting at \$2.11 for regular titles and \$2.75 for new video releases. We lost 20-to-30 percent of our business. We offered weekly specials and regained part of our business, ultimately suffering a loss of about 10 percent."

"A couple of years later, Furrs more than tripled the size of their store, going from 25,000 to 85,000 square feet, and doubled or tripled their video inventory. Competition became stiff. Shortly afterwards, the landlord decided to double my rent. I decided to find my own place. I found an owner of land who happened to be a contractor. I secured a \$230,000 loan which came through in November of 1995 and built a new video store, about one block away from my old location. We increased in size from 1,800 to 4,400 square feet and increased our video inventory to 6,000 titles. I'm all set; I got the money and I'm paying it off on a monthly basis."

#### How the U.S. Department of Commerce Has Helped

"Neda has helped me obtain each of my loans. They prepared the loan packages -- projecting how much I'll make, assessing the feasibility of the proposal, and presenting it to the bank. They charge a very nominal fee. I've gotten to know them well and ask them for advice on potential ventures. I'm considering the purchase of a combination bar and Spanish food restaurant and plan to discuss it with them next Monday."

Neda Business Consultants, Inc., located in Albuquerque, is a Minority Business Development Center, funded by the Minority Business Development Agency.

#### **"We Needed To Create Enough Jobs"**

#### THE STAR CITY INDUSTRIAL PARK, Star City, Arkansas

"Star City," said Gene Yarbrough, Mayor, "has a population of 2,139 and is the seat for Lincoln County. The

Bartholomew Bayou divides the county in half. It's very crooked and the longest bayou in the world, starting above Pine Bluff and running all the way to the Red River in Louisiana. The bayou is great for duck hunting; there's a lot of mosquitoes, some water moccasin snakes, and a few alligators. One half of the county is delta; the other half is timber and chicken farms. We're a low income area. Unemployment for the county is currently 5.7 percent, down from 9.7 percent two years ago. Star City has a 40-acre industrial park that was first set aside in the mid-70's. No one moved in because we didn't have a water supply."

"I was elected Mayor in 1991 and tried to recruit industry, but we faced infrastructure problems. We were under administrative order not to build even one house until we built a new sewer -- which we finished in 1993. In May of 1994, we completed a preliminary engineering report for the industrial park and began looking for companies to make commitments, if we could bring in the water. We didn't know what we were doing, except that we needed to create enough jobs to justify going after a grant. Southern Specialty Company, a papermill related operation, agreed to go in and expand operations. White Manufacturing, a textile related company, also agreed to go in and expand operations. We helped them put their loan package together for the expansion of more than \$1 million. P.R. Harrison, a newly formed construction company, also agreed to go in. In the middle of this, Tyson Food in Pine Bluff was looking for a place to expand. We recruited Tyson hard and heavy, competing with other towns in southeast Arkansas. We secured commitments for 115 new jobs, all above the minimum wage."

"The park is doing so well that we're looking at options to add another 40 acres. Tyson is producing 196,560 chickens per day and expects to double capacity within 12 months. P.R. Harrison has agreed to turn over some acreage if a California company that builds computer boards decides to locate a plant in town. The park did more than add jobs; it added to our economy because of the enthusiasm its success has been generating in our community. Retail establishments are doing a lot more business than they did before. Our tax revenues have almost doubled. The Dollar Store doubled the size of their store. The Circle Inn built a new convenience store on the corner of Highway 425 and State Highway 11, where all the traffic comes by. Star City Bank is putting up a new building. There are plans for a motel; a company's been in here twice to look at property."

## How the U.S. Department of Commerce Has Helped

The Economic Development Administration awarded a grant of \$796,600, out of a total package of \$1,138,000, to support Star City's industrial park through construction of an industrial access road, a 300,000 gallon elevated tank, a 500 gallon per minute supply well, and a ground storage tank. "This is a real poor area," said Mr. Yarbrough; "we're fighting tooth and toenail to come up with the rest of the state. If EDA hadn't come in; we'd be years behind on that project. It was like winning the lottery."

## "Good Insight Into The Science"

E.I. DU PONT DE NEMOURS AND COMPANY, Wilmington, Delaware

"Du Pont is a \$40 billion enterprise," said Tony Vogelsberg, Environmental Manager, Du Pont Fluorochemicals, "that produces textiles such as nylon and orlon, chemicals for the automotive industry, and fluorinated refrigerants and fluorinated polymers. Du Pont Fluoroproducts, with revenues of \$1.5 billion, makes hydrofluoric acid, fluorinated gases and liquids, and fluorinated polymers. Our fluoropolymers includes dozens of products,

under the Du Pont tradename Teflon . These are all fluorine-based materials, converted into products that have thermal and chemical resistance, that are widely used in thousands of industrial applications, such as wiring in aircraft or in sealing a shaft to prevent leakage while running a compressor."

"We make fluorocarbons for five major markets: refrigerants, blowing agents, cleaning agents, propellents, and fire suppressors. The term 'blowing agent' is a misnomer; an 'expanding agent' is more accurate. We foam a liquid up to a big volume; the agents are used in styrofoam trays, insulation, and other products. Propellents are used for medical supplies, like asthma inhalers, and in applications where non-explosive, non-conductive, non-flammable liquid sprays are needed: such as high voltage electrical utility service work. Our fluorinated gases are used as fire suppressant systems in off-shore drilling platforms and gas pumping stations."

"To serve our markets, we used to manufacture CFCs [chlorofluorocarbons] and halons. In the 1970s, as indications grew that the use of CFCs might damage the ozone layer, we started conducting research for alternative compounds. We commercialized new products in 1990. We expended considerable effort to bring in totally new compounds: to discover them, evaluate their performance, learn how to make them, conduct toxicity studies, and examine any potential environmental effects. Du Pont invested « a billion dollars to find alternatives and to build plants to make the alternatives -- we needed good insight into the science of CFCs and their alternatives."

#### How the U.S. Department of Commerce Has Helped

"As a whole, the fluorocarbon producing industry spent about \$60 million over 20+ years in providing research grants to academia, private labs, and government labs to understand toxicity, environmental impacts, upper atmosphere chemistry and dynamics, as well as and ozone depletion. At first, we didn't understand the CFC issue; no one did. A lot of money was first spent to understand the upper atmospheric impact of halons and CFCs; this was followed by toxicity studies, and then by research in helping to define the potential atmospheric effects of fluorocarbons in the upper atmosphere. The National Oceanic and Atmospheric Administration (NOAA) was a very important source of technical knowledge and a recipient of some of the research funding provided by Du Pont and industry. NOAA measured atmospheric concentrations of CFCs and the breakdown products that cause ozone depletion. We had to measure decomposition products to connect CFCs to ozone depletion. NOAA also determined the atmospheric lifetimes of a compound, looking at its infrared properties and measuring its ozone depletion potential. It was important to have parameters like this for any alternative."

#### **"We Have A Deal With The Borrower"**

#### BUSINESS DEVELOPMENT CENTER, INC., Lynchburg, Virginia

"Lynchburg, with a population of 67,000, is the largest city on the East coast without an Interstate," said Lee Cobb, Lynchburg's Director of Economic Development. "In Virginia, city boundaries are fixed; we cannot grow through annexation. We are a manufacturing city, ranging from brick and block formation to design and production of nuclear power systems."

"We set up a 20,000 square foot small business incubator in 1989 as a direct result of the layoff of 750 people by

a major manufacturer just before Christmas 1985. We expanded that facility by another 22,000 square feet in 1992, when we were faced with losing over four hundred, technical, good-paying jobs as a result of downsizing in the Sea Wolf submarine project."

"We've had 48 companies in here, since 1989," said Catherine McFaden, Director of the Business Development Center. "We're looking for people who have start-up businesses or they have been in business for less than three years, and who have something unique, or they can bring in at least 50 percent of their revenues from outside region. One of our clients is a manufacturer of printed circuit boards who started with two people and moved out 3« years later with 30 employees, after constructing a new facility. Another designs tire protection equipment that is used in car washes; it's selling all across the country: Florida, Ohio, California. As of 1994, our firms had generated revenues of \$9,794,000 and created 315 jobs in the area. Our revolving loan fund, started in 1992, has loaned over half a million dollars, as gap financing where lending institutions don't want to cover the whole debt. Our interest rate is fixed at prime, minus one percent at the time of the loan. We have a deal with the borrower: for every \$10,000 we loan, the borrower agrees to create one job over the next three years."

"At that same time," added Mr. Cobb, "we were approached by a contractor that was interested in placing a facility in Lynchburg, to support the U.S. Postal Service in sorting mail that was neither bar-coded nor legible by optical scanner. The company planned to hire several hundred people to read addresses through computers and remotely encode the mail. The contractor agreed that at least 50 percent of the initial hires would be low and moderate income, if we would undertake improvements to a site in a downtown location -- replacing a 100-year-old sewer and undersized waterlines, putting in some parking, and building a part of a new public street. The local industrial development authority owned the site and took out a loan for the building. The facility, now operated directly by the U.S. Postal Service, has grown to 550 employees and pays \$10+ per hour. These are good jobs for Lynchburg."

## How the U.S. Department of Commerce Has Helped

In September of 1987, the Economic Development Administration (EDA) awarded a \$500,000 grant, matched by \$167,000 of local funds, to construct the incubator. In September of 1992, EDA awarded a \$1« million grant, matched by \$500,000 in local funds, to: expand the incubator, improve the infrastructure for the mail sorting facility, establish a revolving loan fund for small businesses, and provide technical assistance to small businesses.

## **"Our Biggest Need Internationally"**

NYNEX CORPORATION, New York, New York

NYNEX, founded in 1984 at the divestiture of AT&T, is a publicly traded telecommunications company with subsidiaries providing telecommunications products and services, directory publishing, information delivery, and other services. Operating revenues in 1995 were \$13.4 billion, including telecommunication services to the northeastern United States and ventures in Asia and Europe. "Overseas," said Cathy Slesinger, Vice President, International Affairs, "we develop telecommunications networks and provide basic telecommunications services. Our first international venture was in the mid-80's -- a 50 percent ownership of Gibraltar-NYNEX Telecommunications, involving the build-out of 12-to-15,000 access lines. Gibraltar was relatively small; we're

now involved in several large development projects overseas. For example, we're developing a 2.6 million line network for Bangkok and a 330,000 line build-out in the Philippines."

"Our biggest need internationally is for global liberalization of telecommunication markets and worldwide regulatory flexibility on the part of foreign telecommunication authorities. The Uruguay Round, completed in December of 1993, included the first agreement in world trade on value added telecommunication services. Following the Round, new negotiations were launched with the aim of reaching agreement on basic telecommunication services. To craft an agreement that actually makes basic telecommunications markets competitive, we need specific language limiting ambiguities so that an agreement in principle reflects common understanding. One can say these markets are open, but they may not really be open. For example, if we speak of agreement by a significant number of countries: how many countries do you need? what do the proposals have to include?"

### How the U.S. Department of Commerce Has Helped

"We interact regularly with both NTIA [the National Telecommunications and Information Administration] and ITA [the International Trade Administration], and several other Federal agencies, on a wide range of policy activities. Perhaps half a dozen times a year, we've provided information on the general nature of our overseas business activities and needs, including confidential information. From time to time, we may point out a specific business issue. Both NTIA and ITA have been very good at participating in advisory fora, such as the U.S. Council for International Business and the U.S. Chamber of Commerce, where they brief industry on progress with multilateral and bilateral negotiations and the progress of major projects."

"In discussions that range across global and regional fora such as the World Trade Organization and APEC [the Asia Pacific Economic Cooperation], both ITA and NTIA have weighed in heavily, with a consistent message to foreign governments that openness in their telecommunications markets will enable their economies to grow. Opening these markets will also provide opportunities for NYNEX and other American companies."

### "A Virtual Look Ahead"

ALLIEDSIGNAL AEROSPACE, CAS, Redmond, Washington

"I'm with AlliedSignal Commercial Avionics Systems (CAS) and, within that, in Flight Safety Products," said Frank Brem, Research Specialist. "Our product line includes voice and data flight safety recorders and the Ground Proximity Warning System (GPWS)."

"We've produced GPWS for over 25 years to mitigate the occurrence of Controlled Flight Into Terrain, which is the most significant risk for death in aviation. We developed a new product, the Enhanced Ground Proximity Warning System (EGPWS), that addresses the problem associated with the reactive nature of the GPWS: inadequate warning times and nuisance warnings. EGPWS includes a world wide terrain database (greater than 80 percent of the world), a runway database (runways greater than 3,500 feet with published coordinates), and aircraft position. The system provides aural alerts and warnings as well as a visual display in a multi-color format

that identifies the aircraft relative to the terrain from 2,000 feet below to 2,000+ feet above the aircraft's current altitude. EGPWS terrain data is tailored to provide higher resolution within 60 miles of the airport and lower resolution in other areas. The EGPWS provides pilots with a virtual look ahead into the terrain and makes the system predictive, rather than reactive -- a significant advance over the earlier GPWS."

"We received a Technical Standards Order approval from the FAA in September and expect Supplemental Type Certificates in the October/November timeframe, which will permit the system to be flown in revenue passenger service. American Air Lines, Alaska Airlines, Gulfstream and Bombardier have purchased the EGPWS. Several other airlines and aircraft manufacturers are evaluating the program. There are roughly 24,000 commercial and military transport aircraft in service that could be fitted with an EGPWS. We have three major product categories: digital for new aircraft, a version for older analog sensor aircraft, and a unit for the commuter and small private business market."

### How the U.S. Department of Commerce Has Helped

"The National Oceanic and Atmospheric Administration (NOAA) produced a digital terrain elevation model, using technical data supplied by the Defense Mapping Agency (DMA). NOAA depopulated this data, making it lower resolution than the source data so that it wouldn't provide militarily significant information. We use NOAA's data as our baseline terrain model and then added data from other sources. AlliedSignal Aerospace purchased data, and multi-user licenses, from countries that had digital data and merged everything into a super model. We cross-correlated the data to determine their compatibility and to provide us a measure of any differences. If data differed, we used the highest elevation and also determined why there was a difference. Differences were reported to NOAA, which coordinates with DMA to resolve these issues. This same process is used with the country of origin data. We then process the data into a format that is utilized onboard the aircraft in the EGPWS. We understand that DMA has agreed to release additional data this year, which NOAA will depopulate and make available for flight safety. We are constantly trying to acquire improved data."

### "Helped Us In Many Ways"

#### PRO LANDSCAPE, Aloha, Oregon

Pro Landscape, established in 1986, is a sole proprietorship that provides landscape and irrigation services to commercial and residential property owners. "We call it new construction," said Manuel Castañeda, owner, "to distinguish ourselves from landscape maintenance. We construct drainage systems, patios, and retaining walls, install new lawns, trees, shrubs, walkways, ponds, waterfalls, streams and other water features. We install sprinkler systems from wells, pumps, lakes, or city water and we restore wetlands for wildlife habitat."

"Fifty percent of our customers are residential property owners; with jobs running from \$1,000 to \$40,000. We do mostly higher-end residential. We just finished a landslide remediation in which the whole backyard had slipped away. We showed up with engineering plans, restored the banks, added retaining walls and pin piles, in which we used a pneumatic post driver to drive 2 inch galvanized pipe 10 to 14 feet into the ground. On top, we added new pathways, a patio, and replaced the irrigation. Once a bank has given away, it's easy to happen again. We're doing quite a bit of this work, following the heavy rains last February and March. People are just getting

around to fixing their properties; most of the bigger projects are coming in now. We have five jobs on-line and we'll begin another seven shortly."

"One of our commercial jobs was to restore wetlands for the Bureau of Environmental Services in Portland. Over a three month contract, we planted approximately 450,000 plants between the Columbia and Willamette Rivers, including grasses to filter pollutants from the ground and native plantings and trees for wildlife habitat. On a one month job for ODOT [Oregon Department of Transportation], we removed himalayan blackberries from the banks of Johnson Creek and installed native plants and trees. Himalayan blackberries aren't native; they choke the native plants and take over. Our biggest commercial job has been with TriMet, a tri-county public transportation district. We just finished a section of its light rail train project in downtown Portland, installing shrubs and trees, and are now working on the Washington Park Zoo train station, where we are installing rooftop gardens. Private companies hire us to do apartment buildings, stores, and office buildings. Often these are one-time jobs that end up as packages for maintenance. Generally, we are more interested in new construction."

### How the U.S. Department of Commerce Has Helped

"The Portland Minority Business Development Center has helped us in many ways. In the beginning, they made sure we knew how to fill out forms for taxes, for workman's comp, and for certified payroll on prevailing wage jobs. They helped us with the paperwork needed for getting pre-qualified on bids for jobs with bigger companies and government. Recently, they helped us with bonding. We've been working out of a shop behind the house and are in the process of building a shop and office. They helped us with our business plan and in negotiations with the bank to obtain funding. We obtain leads on a lot of potential contracts through them." The Center is funded by the Minority Business Development Agency.

### **"The Mechanics Of Owning A Company"**

E.M. CASTILLO CONSTRUCTION, INC., Burien, Washington

E.M. Castillo Construction, established in 1979, is a sole proprietorship, employing 35 to 70 dependent on contract volume. "We are a structural and mechanical company," said Ed Castillo, owner. "We've done seismic upgrades, tilt-up projects, environmental work, demolition, and tenant improvements. We do a tremendous amount of work for sewage and transportation, above ground for busing, waterfront and airport for the Port of Seattle, the Washington National Guard, McChord Air Force Base, Bangor Navy Base, Parks and Recreation, and the University of Washington. Seventy percent of our work is for municipalities and government agencies; 30 percent is private, and our clients have included Boeing, Coca Cola, Microsoft, U.S. West, and Nordstrom. Our revenues average \$7 million a year."

"Our most complex job was a \$1.5 million contract in the steam plant for the University of Washington. We took out two old 75,000 ton chillers and replaced them with two new 200,000 ton chillers that weighed 97,000 pounds each. We had to support the existing slab in order to move the chillers, by block and tackle, 300 feet into the building. We had to work around the existing systems keeping them in operation, because the plant supplied heat to the university and the university hospital. That was a six month job, with 10 people working the whole time."

## How the U.S. Department of Commerce Has Helped

"The Seattle Minority Business Development Center helped us with marketing: both in putting together brochures which give a good understanding of our capabilities and by speaking to companies on our behalf. They helped us understand our financials: what the banks are looking for, what the accountants are telling you about the mechanics of owning a company: your liabilities, taxation, deposits, union program. They also helped us apply for the Small Business Administration 8(a) program, which was quite an extensive application. We had to project 10 years of cash flow and growth. When you're a tradesman and, all of a sudden, have to make 10-year projections, you barely understand what they're asking you, much less prepared to present the answer clearly. In our application, we also had to give all our history and our capabilities, explain why we were in business, and why we think we would be more successful than someone else. The Center coached us, helping us to make an intelligent application."

"The Center has plans for construction projects. All the government agencies, and some of the private companies, send their plans to the Center so minorities can be aware of their projects and bid, if they like. We call the Center; they fax a list of current projects, with dates, amounts, nature of the bid, and other information. We're always looking for new projects. If you go direct to the companies and agencies, you have to deposit \$100 for plans or purchase them with no reimbursement. This is better than spending that kind of money to find I really didn't want to bid on a particular project. If we're interested, we can then purchase the plan."

The Seattle Minority Business Development Center is funded by the Minority Business Development Agency.

### **"Phenomenal Advantage For Us"**

CENOGENICS CORPORATION, Morganville, New Jersey

Cenogenics, established in 1981, is a privately-held manufacturer of medical diagnostic kits and reagents. "Our products," said Michael Katz, president, "include home pregnancy tests, stool blood tests for cancer, and tests for rheumatoid arthritis, infectious diseases, venereal diseases, mononucleosis, strep infections, typhoid fever and related diseases, and other diagnostic kits, using a variety of technical procedures. We also do contract manufacturing. We've worked with Kraft Foods to develop a test for the breakdown point of their deep fried cooking oils. We've worked with Boeing to develop a new test based on our paper chemistry impregnation technology, identifying the precise location of microscopic leaks, within seconds, in the welding seams of aircraft skins. We make the diagnostic indicator paper for the End Tidal CO2 Detector and participated in its development. This device indicates if a patient's breathing tube is properly placed or has slipped from the bronchial passage. All our facilities are in Morganville. We employ 22 and our revenues are over \$4 million annually. We export to 71 countries. Currently, 63 percent of sales are exports -- up from 27 percent in 1987. This increase is largely due to services provided by the International Trade Administration (ITA)."

## How the U.S. Department of Commerce Has Helped

"Our first contact with ITA was in 1982, when we participated in a joint ITA-New Jersey « day training program on documentation for shipping, invoice preparation, and freight forwarding. We were added to ITA's mailing list

and regularly received invitations for workshops. In 1987, I received a notice that New Jersey would pay « the cost for six New Jersey firms to participate in an ITA sponsored one week matchmaker program to Belgium and Amsterdam. This was a significant inducement; we immediately called, and qualified. We were looking for a distributor of medical products and saw 32 potential distributors in Belgium alone. This was a phenomenal advantage for us as we needed only one good distributor. This gave us a wonderful way to see how products were marketed and distributed, who the competition is, and learn about our pricing competition. We collected more marketing data and learned more about how to introduce the product than any amount of homework on this side ever would have given us. We started going to every medical products matchmaker that ITA mounted. Our second was in 1988 to Dusseldorf and Milan, where we signed distributors. We've been to seven or eight matchmakers. Now we're using ITA's Gold Key program, to pursue on our own, more frequent travel schedule, several new market opportunities that are not current matchmaker targets."

"In 1988, ITA organized a medical buying mission to come to the U.S. from Saudi Arabia. We secured first-year sales of \$440,000, and have continued at multi-hundred thousand dollar levels every year since then. Prior to that mission, we had spent four years and thousands of dollars with a consultant to get into Saudi Arabia and not one single thing came out of it. In 1990, ITA helped us overcome problems with the South Korean FDA so that we would not have to reveal our manufacturing formulae and procedures. Beforehand, there had been no confidentiality and we would have left ourselves open to Korean competition using our techniques. South Korea has since become one of our largest markets."

### **"Slowly Getting Customers Back"**

B&C FOODS CORPORATION, Seattle, Washington

"B&C Foods was established in November of 1995," said Mesfen Bekele, president and co-owner. "We have a 28,000 square foot facility in a small shopping center and employ 35 people. B&C is an independent, full-size grocery store. About 50 percent of our customers are Asian, 35-to-40 percent are African-Americans, and the rest is mixed. We stock all the major grocery lines and try to carry a lot of ethnic foods: Chinese, Thai, Vietnamese, Filipino, some selected Indian and Italian items. We carry specific items that customers request: neck bones, ham hocks, Cajun spices, collard greens, mustard greens, chitterlings. We have 17 different types of hot sauce for Mexican American customers and taro roots for our Asian Pacific and Samoan customers. We carry corned beef from Australia, many types of vinegar, and a lot of different kinds of seasonings. One aisle, approximately a 60 foot section, is just for ethnic food."

"We sell stamps and take utility and other bills. We have a copy machine and a fax machine; we charge a small amount and make this service very accessible. We have an ATM machine, sell espresso, and rent rug cleaning machines. We cash anyone's paycheck and take personal checks, but only for the amount of purchase. The first and second week of the month are the heaviest for us; the second half slows down because the spending power is not there."

"We're located in a low-to-moderate income area. There used to be another grocery store here, which the previous owner decided to close because it wasn't working for him and he had family problems. It was closed for 7 months. I worked for the previous owner for eight years and lived in the area for 25 years. I felt there was a market. My partner, Mike Calloway, and I remodeled the store and put in a lot of money. So far it's working, but

it's really tough. Our debt service is high and our lease is higher than what the previous owner paid. Once a store is closed, people tend to establish a routine elsewhere. We're slowly getting customers back. The customer count and gross dollars we're bringing in are the same now as the previous owner had. We expect to hit our breakeven point in December. We're advertizing with weekly mailers to all the homes in our area, with direct mail to 10,000 homes once a week. We try to go a little beyond our immediate area. We're on a busy road, a lot of people pass by; we try to get them in with newspaper ads, billboards, advertizing in local churches, allowing our customers to do fund raising like car washes and bake sales, and supporting community events like health fairs."

### How the U.S. Department of Commerce Has Helped

"The Seattle Minority Business Development Center helped us prepare financial statements, write proposals, and apply for loans. They are working with us temporarily to allow us to only pay interest, so we could survive a cash flow problem. They help us with a lot of small needs that come up while we're busy with day-to-day operations. We talk over our plans with them. Their fees are reasonable; if we had to go elsewhere, the charge would be too expensive for us."

The Center is funded by the Minority Business Development Agency.

### **"Now People Are Coming To Us"**

#### DAWSON COUNTY INDUSTRIAL PARK, Dawson, Georgia

"Dawson," said Don Gordon, Chairman of the Etowah Water and Sewer Authority, "is a rural county, 50 miles north of Atlanta. Most of our local employment was poultry farming and chicken houses; many residents commuted somewhere, generally to Gainsville, in Hall county. We didn't have water and sewer and couldn't attract commercial or industrial development. Our population doubled from 4,700 in 1980 to 9,800 in 1990 and is now around 13,000. We're becoming more and more a part of the suburb of Atlanta."

"Dawson County Industrial Park was built in 1985 on 65 acres fronting Georgia Highway 400, which runs north from Atlanta. The park had three small companies prior to 1991: a louver shop, Southeast Power, which refurbished batteries for hysters, and a small chicken processing plant that's since gone out of business. They were all on septic systems and 90 percent of the park was unused."

"In May of this year, we completed a waste water treatment facility and ran seven miles of sewer main to the industrial park. Now, 61 acres are operating or under construction. In addition to the louver shop and Southeast Power, the park includes: The Fisherman's Net restaurant, employing 25; J&M Laboratories which makes synthetic materials, employing 50; and Chesatee Mineral which mines and processes talc, with 10 employees. Two other businesses are under construction: a 40,000 square foot office warehouse, scheduled for completion by December, which will lease sub-units and a 60-room Holiday Inn Express with restaurant, which will employ 25 or 30. Two 2-acre lots remain available."

"As soon as we completed the sewer, an outlet center opened on 75 acres adjacent to the industrial park. The center has a food court and 70 stores: Saks Fifth Avenue, Barneys of New York, Jones of New York, Brooks

Brothers, Donna Karan, Van Heusen, London Fog, Bose Electronics and others. The Center employs 600, including security, maintenance, and staffing of stores. A 40-store expansion is underway."

"We had a terrible time attracting business before the sewer; now people are coming to us. The Waffle House restaurant opened; the Country Cupboard, with a convenience store, restaurant, gas station, and car wash, is opening this month. Two motel and several fast food restaurants are opening in 1997. Kroger's grocery will be closing on land any day now. We're expecting a third bank. A 269-unit apartment complex is opening in 1997. This has helped reduce Dawson's unemployment from 8.5 percent in 1991 to 4 percent today. We're also hiring from adjoining counties: Forsyth, Hall, and Lumpkin, as well as from Gwinette. Some are beginning to move in, but we don't have enough housing. Several subdivisions are under construction."

### How the U.S. Department of Commerce Has Helped

The Economic Development Administration awarded a \$952,800 grant, out of a total package of \$1,122,800, for construction of a waste water treatment facility and seven miles of sewer main.



## **"Headed Toward Fifty Percent"**

RADIAN INTERNATIONAL, LLC., Austin, Texas

"Radian," said Russ Peterman, Business Unit Manager, "was established in 1969 and operates today as a limited liability company owned by the Dow Chemical Company and the Hartford Steam Boiler Inspection and Company. We provide environmental, engineering, information technology, remediation, and strategic chemical management services to industries and government worldwide."

"One of our technologies is the Lower Atmosphere Profiler (LAP) radar, designed primarily to measure wind speed, wind direction, and temperature as a profile in the atmosphere. The profiler measures from the ground to as high as 50,000 feet in a continuous profile. The radar sends signals thousands of times a second; the returning echoes are used to make measurements. One of the great advantages of this technology is that it can be used continually; whereas a weather balloon is used only once. Some of the uses of our profilers include: identifying cloud boundaries, monitoring cloud layers, predicting aircraft icing hazards, studying the effects of cloud-radiation interactions, and quantifying nowcast precipitation."

"Our clients include the military, universities, research labs, and private industry. State and local governments use our profilers in conducting planning studies on how to deal with air pollution. The Northeast states, California, and Texas have quite a few. The more complex the topography, or the more severe the pollution, the greater the need for networks which are set up around the state to help monitor ozone non-attainment areas. Our radars are used at Cape Kennedy; the Air Force set up a network of five to aid in launching the space shuttle. The military uses them for wind analyses, supporting aviation activity, tracking hazardous chemical pollution, and calculating ballistic trajectories."

"We export throughout the world. The Hong Kong government has used them for wind shear detection. Hong Kong is not a big market, but they're a market leader; if Hong Kong adopts them airports around the world will follow. The Greenland Airport authority uses them for wind shear detection; those aren't big airports, just a lot of them. We're projecting Radian's fiscal year 1996 sales to be \$300 million. The wind profiler generates about \$8 million. Profiler exports run 25 percent of those sales and are headed toward 50 percent."

How the U.S. Department of Commerce Has Helped

"In 1990, one of the National Oceanic and Atmospheric Administration's (NOAA) research labs advertized to license the radar profiler technology to a commercial firm. Radian was awarded the license in 1991. We opened an office near the lab and worked hand-in-hand with their staff to commercialize their profiler research. NOAA brought the basic technology and expertise; Radian brought knowledge of the marketplace. We came out with our first commercial product in 1991. We sell the product commercially and pay NOAA a royalty."

## **"Quite A Few Repeat Customers"**

HATTERAS VILLAGE AQUA FARM, Hatteras, North Carolina

Hatteras Village Aqua Farm, established in 1984, is a privately-held breeder of clams, fronting on Pimlico Sound. "We breed 2-to-5 million clam seed a year," said Kevin Midgett, manager and co-owner. "We do the spawning in April and May and raise the juveniles in the summer in the nursery building. In October, we start planting the seed in beds in the sound and finish in January or February. We set them out in 14 by 20 foot beds and cover them with plastic mesh which we weigh down with rebar or sandbags. We do this to keep out the crabs, which can destroy a bed in a couple of days. About one-third of the clams make it to market; another third die-off; and about a third won't make it to full-size. They need a few more years, but price-wise we can't afford to hang onto them."

"We own three acres of land and lease 17 acres in the sound. Our average depth is two-to-three feet. We harvest by hand, with bull rakes or clam rakes, to preserve the eelgrass. With bull rakes, we can harvest 100-to-125 clams with each pull; about 5,000 clams an hour. Bull rakes have a 10 foot t-handle, with a square wire basket on the front edge and 12 steak knife blades welded as tongs. We walk backwards, working the blades back and forth into the ground, working the clams up and into the basket. It's called a bull rake because it's a 'bull to pull'."

"During our first 10 years we sold clams only to wholesalers. In 1992, we started selling some of our clams to restaurants as a way to increase revenues and capture a little value-added market share. In 1995, we opened a retail seafood store. We get 22 cents a clam wholesale and 28 cents retail. A lot of our customers, seeing we were raising clams, asked us questions about our breeding and harvesting operations. We could see there was a lot of interest in catching their own. This May, we tried letting tourists rake their own clams. We provide clam rakes and a mesh bag, walk them out onto the lease, and show them how to rake. With a clam rake, they can pull a couple of clams at a time. We limit them to 100 clams per day, so they don't need commercial clamming licenses."

"We charge \$3 per person for ages 12 and older, plus 22 cents a clam -- which runs \$25, at 100 clams. We've had quite a few repeat customers -- tourists who came by early in their stay and stopped again at the end of the week for a second rake or to purchase clams from our retail shop. We spray painted some of our clams gold and offered free t-shirts to any customer who dug one up. This helped promote sales to additional members of the group."

## How the U.S. Department of Commerce Has Helped

"The National Oceanic and Atmospheric Administration (NOAA) awarded a grant to North Carolina State University (NCSU) to study our clam farm and determine if our 'dig your own' approach could be extended as nature-based tourism along the coasts. The NCSU research team provided us with 40 clam rakes and 40 mesh bags for tourists and some marketing assistance, including a sign on highway 12. They also paid for a graduate student for the summer, who helped us while doing research on our business and the tourists' reactions."

## **"About My Profit Margin"**

ALS CONSULTING, Indianapolis, Indiana

ALS Consulting, established 1991, is a privately-held firm with four employees. "We provide a corporate lodging

service," said Anita Smith, president, "for personnel visiting Indianapolis on business, such as job transfers or training seminars. As opposed to hotels, we provide more of a home environment: furnished apartments, including rent, utilities, furniture, sheets, dishes, phone service -- everything needed for living on a day-to-day basis. We lease properties all over Indianapolis. Our clients tell us which section of the city they want and gives us their specs, such as family size or infants. We provide them with the address, phone number, and key. We require minimum stays of 30 days and handle over a thousand requests a year. This saves lots of work for our clients, whether they're a small, medium, or large organization -- all they need to do is make one phone call."

"I worked for a company that did corporate relocation and was laid off during a financial downturn. Some of my accounts called and asked me to take on their business. Three months later, my husband was laid off. I decided to start ALS and began working out of a little room in our house. Eli Lily, BMC [Bohringer-Mannheim Corporation], Dow Brands, and Ameritech are among our clients. Our business has grown by word of mouth; real estate agencies have contacted us to help their clients who are relocating and need a place to stay while house hunting. We've done no marketing at all, but I'm in the course of developing a marketing plan."

### How the U.S. Department of Commerce Has Helped

"The Indianapolis Minority Business Development Center helped me in several ways during the past six months. I met their Director in April when I was making a presentation on the needs and opportunities facing my company before a regional committee that supports small and minority businesses and helps them to move to their next stage of development. At that time, the Center introduced us to a private lender who helped us meet some of our immediate needs."

"The Center also helped me to understand cash flow statements. What they did was ask me questions about different expenses we had and the amounts of money we expected to come in during the next month. They wrote the numbers down, started moving them around on the page, and provided me with a 'home-made' cash flow statement. After five years of running ALS, this enhanced my understanding of the financial side of my business. Over the following weekend, I constructed 'worst case,' 'best case', and 'middle case' cash flow projections for the coming year. Based on these, I was able to speak to lenders about my profit margin and how much I could afford to pay for additional money. The Center has also helped me with plans to expand my business into several neighboring states to meet the requests from some of my larger clients who do not want to deal with one person here and another there."

The Center is funded by the Minority Business Development Agency.

### **"Marketing And Negotiations"**

A. T. CONSTRUCTION, Phoenix, Arizona

A.T. Construction, established 1986, is a privately-held general contractor for construction projects, including both high and low voltage electrical work, plumbing, heating, air conditioning, gas and water distribution and fiber optics splicing. "Our employment," said John Melk, founder and president, "varies from seven to sixty,

depending on the jobs we have. I'm a hands-on owner; I started this company with three people, including myself and my spouse, who is vice president and secretary. Early on, I had to sell a \$25,000 welding machine for \$3,000 to meet payroll. We began mostly with welding projects, where there was only myself and a welding assistant. He's moved up and helps me with negotiating the projects and working the jobs. Our largest job was \$6.8 million, involving electrical distribution systems at Yosemite National Park."

"On average, we run between \$2 and \$3 million a year. We've had opportunities to become larger, but I avoid multi-year projects and gracefully bow out because I need to pace myself, due to a kidney transplant in 1983. I like very much what we do and the way of life this offers. We are an autonomous business and pay a lot of taxes. We estimate our projects and then hire people to help us. I like to do different types of projects -- such as: adobe homes with 16 inch walls and power plants and refineries, with stringent criteria -- and I like to stay around Arizona. We're starting an HVAC [heating, ventilation, and air conditioning] job in Calixico, California, about four hours away. We're putting in ventilation systems to 10 guard booths at the border. This is not an off-the-shelf type project; we'll be running through concrete to encased duct work, the air system is going underground, there's bullet-resistant type work."

### How the U.S. Department of Commerce Has Helped

"The National Center helped us with bonding. I had never performed a bonded project in my life. We had zero bonding and no money, but my past work was good and the Center was able to verify that we are a bona fide native American entity and speak to my character and credence, documenting projects we had performed in the past. The company overlooked our financial situation and we were able to negotiate a small job."

"The Center helped us complete the paperwork for the Small Business Administration's 8(a) program. Our application went in at the end of July of 1987 and we were accepted within two months. That's an extraordinarily short time; it normally takes two years or longer. We had our first 8(a) contract January 8, 1988. Our first job was less than \$49,000, but it was all the money in the world. The Center has also helped us with promotion, going out and pressing the flesh. They assisted us with marketing and negotiations that have led to at least 3 or 4 projects. Without them, our level of business would be significantly lower."

The National Center for American Indian Enterprise Development is funded by the Minority Business Development Administration.

### **"Leads Every Week"**

FIELD LINING SYSTEMS, Glendale, Arizona

Field Lining Systems, established 1983, is a privately-held minority enterprise. "We supply and install geomembranes," said Phil Ramos, owner, "for the mining, petroleum, water, power and microchip industries. Geomembranes is a generic term for sheet goods, such as high density polyethylene, PVCs, hypalons, geotxtiles, and rubber linings. We install them in tanks, landfills, ponds, and reservoirs, and as secondary containment to contain contaminated water or chemicals from entering the ground and ground water systems. Basically, they're

plastic lining systems like trash bags or visqueen, except they are a heavier, industrial grade."

"We handle jobs from the Mississippi west, but we try to focus more in the nine western states, including Alaska. Where we work, dictates the level of profit for these kinds of projects. We get leads through the Dodge report, another service in Colorado, and word of mouth through general contractors, whom we've worked for in the past. There's a mix of general contractors. They solicit our proposals; we are typically a subcontractor. Sometimes, we contract directly with the mines, for maintenance and prevention work. The other jobs are all public works. Our jobs run as long as six months and as short as a couple of weeks."

"Our most complex job was one of our six month contracts, in which we were applying the lining product on one-to-one slopes in San Diego county. We had to work off repelling gear, like mountain climbers, on slopes that were 100 feet long. That was about a \$1 million project. We're do \$6-to-\$7 million in revenues annually. We're a seasonal business; employees range from 15 to as high as 100. In three-to-four years, we hope to grow the business into an \$8 million company. Mexico is in our plans. We've been waiting for the markets for our services to develop -- and we held off because of the recent devaluation of the peso. Even at present, we are talking with business folks, and expect to enter the market within in the next year or so. We don't want to grow too fast and get out of control. We had a Chapter 11 in 1991. The reorganization's been approved by the courts and we've been out almost two years. We're on a payback to pay our creditors 100 percent over 15 years."

How the U.S. Department of Commerce Has Helped

"The Phoenix Minority Business Development Center purchases the Dodge service, a source of which sells leads through membership. The Center provides us with dates, owners, amount, stages of permitting, funds available, engineers' estimates, and so forth on different projects. We get leads every week from them; averaging about 60 leads a quarter. We bid on all of them. If we were to purchase the bidding documents directly from owners, we might pay as much as \$200 each. With the Center, however, we pay a standard hourly fee for their reporting services -- and their rates are less than half of what we would pay a regular company. We're too small a company to support that type of fee. The Center also helped us with our Chapter 11. The staff reviewed our finances and helped negotiate a more affordable level of repayment."

The Center is funded by the Minority Business Development Agency.

### **"Improvements As A Result Of The Feedback"**

EASTMAN CHEMICAL COMPANY, Kingsport, Tennessee

Eastman Chemical Company is a publicly traded company which manufactures chemicals, fibers, and plastics. "We were spun off January 1, 1994," said Nancy Ledford, Advanced Corporate Relations Representative, "from Eastman Kodak Company. We have nearly 18,000 employees worldwide. Thirty-seven percent of our fiscal year 1995 revenues of \$5.04 billion were international sales. Our goal for non-USA sales is 50 percent."

"In the late 1970s, we were losing market share of a product we had developed. One of our major customers cited poor quality as a reason for finding a new supplier. We undertook a variety of improvement efforts, with the

result that customer complaints dropped. At the same time, we reduced manufacturing costs and increased productivity. We started a customer service emphasis program in 1982, to create a companywide awareness of customers. Shortly afterwards, we developed our original Quality Policy and, during the mid-1980s, we were heavily involved in training employees and in forming teams to address product and process improvements. We followed up with efforts to integrate all aspects of customer satisfaction and began to use ISO 9000 quality standards in the late 1980s. Through the 1990s, we have continually refined and integrated our efforts."

## How the U.S. Department of Commerce Has Helped

"In 1988," said Calvin Crim, Coordinator for Quality Assessment, "we applied for the Malcolm Baldrige National Quality Award, which is administered by the National Institute of Standards and Technology (NIST). We received a site visit and some feedback. We chose to use the National Quality Assessment Award criteria internally until we applied again in 1993. We received the award in December of 1993. Eastman benefited in several ways. NIST provides criteria, so that there is universal nomenclature which facilitates communication. They sent a team of 8 examiners to visit all our major U.S. plant sites and talk with several hundred people. The examiners looked at our processes and our product quality, financial, production, human resource, and customer satisfaction results. We received feedback reports a month or two after the site visit. We've had projects going on in several of the identified areas for improvements and have made improvements as a result of the feedback."

"We've been working on quality for over 15 years; there were a lot of different initiatives going forward. Baldrige criteria provide linkage among concepts that appear unrelated at first. The process of applying led us to obtain a better understanding of how all the elements within a company need to work together. The criteria," said Mr. Crim, "helped the company see that total quality management is an integral part of all aspects of a business; it's not something separate."

"As a new company being spun off," added Ms. Ledford, "winning the award was a tremendous advantage, bringing with us the recognition of being world-class, quality driven."

## "Operating At Capacity"

### VYTECH INDUSTRIES INCORPORATED, Anderson, South Carolina

Vytech Industries, established in 1989, is a privately-held manufacturer with 165 employees. "We have three major product lines," said Nick Brenchak, National Marketing and Sales Manager, "window coverings, vapor barriers and wallcoverings. Our window coverings, which include 3«-inch vertical shades and roll down shade fabrics, are available in solid colors and prints. In the U.S., Australia, Korea and some other countries, consumers prefer solid white colors facing outside. In Europe and the Middle East, consumers like the same print on both side, to display their choice to passers-by. About 70 percent of our production of this line is sold overseas."

"Our vapor retarders, which contain flame and smoke inhibitors, consist of vinyl films laminated to blanket fiberglass. Our facing is what you see when you look at walls and ceilings of metal buildings and warehouses. Most of this line is sold in the U.S., but we have a large customer in Kuwait, to whom we send one container load

every 6-to-8 weeks. We also ship quantities to Canada and Mexico. Our decorative vinyl overlays line is used in recreational vehicles and manufactured homes. They are used on interior walls in kitchens, bathrooms, hallways, living rooms, and bedrooms. They are laminated to gypsum board or luan board; our products are printed and embossed.

"When we were established, we did zero exporting; today, 12-to-15 percent of our total sales are exports. We're active in more than 20 countries in Europe, Africa, South America, Asia, and the Middle East. Over the next three-to-four years, we expect to double, possibly triple, our international sales. Currently, we are operating at capacity. Over the last five years, we hired at least 20 employees who spend substantial portions of their time on manufacturing responsibilities related to our international markets."

### How the U.S. Department of Commerce Has Helped

"In 1989, our CEO met with International Trade Administration [ITA] staff to seek assistance in developing an export strategy and to find out what kinds of assistance were available. We began by placing a 3-by-3-inch ad in an ITA magazine that's circulated worldwide. That cost us \$195 and is probably the best advertizing medium that I've ever used. We received between 70 and 100 responses which led to key accounts. One of them, who became our U.K. exclusive distributor, is now our number one customer and also purchases our products for customers they have in Singapore, Germany, Holland, and Canada. We continue to place ads three or four times a year. At ITA's recommendation, we exhibited at the Heimtextil industry trade fair in Frankfurt. We got leads from all over the world. We participated in ITA catalog shows in several countries, where all we have to do is send brochures, again resulting in leads and sales. We participated in the America's Outlook Conference in Miami in 1993, where we met with ITA Commercial Officers from Latin America, who talked to us about the prospects for our products. As a result, we've had leads and sales in Argentina, Brazil, Chile, and Colombia."

### **"Largest Employer In The Area"**

#### MIDAMERICA INDUSTRIAL PARK, Pryor Creek, Oklahoma

The MidAmerica Industrial Park is located in Mayes county, 35 miles northeast of Tulsa in the foothills of the Ozarks. "This area," said Larry Williams, General Manager, "is relatively rural. The land is used predominately for cattle ranching and for farming -- soybeans, seed crops for cattle, along with some wheat, oats, and silage. There's a bit of dairy ranching as well. We're 2 miles east of the Grand River and there are six major manmade bodies of water within a 20-minute drive. The population of Pryor Creek is 8,700 and Mayes county is 36,600. What makes us unusual is that we have a 10,000 acre park in the middle of Mayes county."

"We encourage companies to locate here through expansion of current facilities or start-ups. Currently, 55 companies operate in the park, ranging from as few as four to as high 550 employees. Our companies include a foundry for gray and ductile iron, manufacturers of fertilizer, industrial band saws, caulking for industrial and residential uses, bed spreads and draperies, large Class A motor homes, activated carbon used in water filters, gaming supplies, specialty apparel, and liquified carbon dioxide. Some of our companies are divisions of Fortune 500 companies and Global 500 companies: Protein Technologies, which manufactures isolated soy protein used in food supplements and health foods; NGC, formerly known as National Gypsum Company; Georgia Pacific;

and Phillips Driscopipe, an extruded plastic pipe manufacturer. Our park includes a 5,000 foot runway which can accommodate business jets and a 365-acre airpark for aerospace industries. We specifically look for wide diversification, so that if one sector of the economy is down, we don't face widespread losses in our employment base. Current employment in the park is 3,800 and we draw on a 10-or-12 county area, plus three adjacent states: Kansas, Missouri, and Arkansas. At least one of our employees commutes from McAlester roughly 100 miles due south. We are the largest employer in the area."

### How the U.S. Department of Commerce Has Helped

"The Economic Development Administration (EDA) awarded us half a dozen or more grants over the life of the park. Our recent cost-sharing has been 50-50, with the non-EDA share being fully funded with the park's operating funds. We treat and sell water; we can sell a company a piece of land and we lease buildings in the park."

In 1989, EDA awarded a grant of \$237,500 -- out of a total package of \$475,000 --to rehabilitate two water filters at our water treatment facility. As a result, Protein Technologies created 62 new permanent jobs and Atochem Inc, a manufacturer of activated carbon filters, created another 60 new permanent jobs. In 1992, EDA awarded a grant of \$1,1125,00 -- out of a total package of \$2,225,000 -- to build a forced main, a lift station, and a secondary clarifier for our waste water treatment facility and to install a filter backwash recovery system for our drinking water treatment plant. This allowed three of our companies to create 154 new permanent jobs. In 1995, EDA awarded a grant of \$776,000 -- out of a total package of \$1,552,000 -- to construct a 5 million gallon above ground water storage tank. This will allow two companies to create 156 new permanent jobs."



# OVERVIEW OF THE U.S. DEPARTMENT OF COMMERCE

The mission of the U.S. Department of Commerce is to ensure and enhance economic opportunity and a rising standard of living for all Americans. The Department is organized into the following bureaus.

## **Bureau of Export Administration**

The Bureau of Export Administration's (BXA) responsibilities involve national security and nonproliferation, export growth, and high technology. A continuing challenge is combating the proliferation of weapons of mass destruction while furthering the growth of U.S. exports which are critical to maintaining our leadership role in an increasingly competitive global economy.

FY 1996 Actual (dollars in 000's): \$ 39,029 FY 1996 Full-Time Equivalent Employment: 347

## **Economic Development Administration**

The Economic Development Administration's (EDA) economic development assistance programs are carried out through a network of headquarters and regional personnel. EDA provides grants for public works, capacity building, economic and defense adjustment, and other financial assistance that help reduce substantial and persistent unemployment in economically distressed areas.

FY 1996 Actual (dollars in 000's): \$ 351,253 FY 1996 Full-Time Equivalent Employment: 299

## **Economics and Statistics Administration**

The Economics and Statistics Administration (ESA) includes:

- **Bureau of the Census**

The Census Bureau's mission is to collect and provide high quality statistics about the American people and economy. To deliver high value, the Bureau must target measurement on those trends and segments of our population and economy most critical to continue American success and prosperity. The Bureau has organized its work around three activities: conducting the decennial census; providing economic and demographic data for business and government decision making; and collecting data on a reimbursable basis for federal agencies and other users.

FY 1996 Actual (dollars in 000's): \$ 293,717 FY 1996 Full-Time Equivalent Employment: 6,878

- **Bureau of Economic Analysis**

The Bureau of Economic Analysis (BEA) assembles thousands of economic data series -- ranging from construction spending to retail sales -- and combines them into a consistent measure of economic activity called Gross Domestic Product, or GDP. BEA prepares, develops, and interprets sets of economic accounts that include -- in addition to GDP -- national income and wealth accounts, state and regional income and product accounts, and international trade and balance of payments accounts.

FY 1996 Actual (dollars in 000's): \$ 45,900 FY 1996 Full-Time Equivalent Employment: 518

## **International Trade Administration**

The International Trade Administration (ITA) strives to increase the competitiveness of U.S. business in the world economy by promoting U.S. exports, fighting unfair foreign trade barriers, and negotiating and implementing both multilateral and bilateral trade agreements.

FY 1996 Actual (dollars in 000's): \$ 266,912 FY 1996 Full-Time Equivalent Employment: 2,182

## **Minority Business Development Agency**

The Minority Business Development Agency (MBDA) has the lead role in the Federal Government of coordinating all minority business programs. The Agency's mission is to develop minority owned business which is critical to the growth of the national economy.

FY 1996 Actual (dollars in 000's): \$ 32,000 FY 1996 Full-Time Equivalent Employment: 152

## **National Oceanic and Atmospheric Administration**

The National Oceanic and Atmospheric Administration (NOAA) includes:

- the National Ocean Service (NOS), which provides management of ocean and coastal resources, particularly in the 200-mile Exclusive Economic Zone (EEZ), and for improvements in quality, quantity, geographic distribution and timeliness of ocean observations;
- the National Marine Fisheries Service (NMFS), which manages fisheries within the 200-mile EEZ to ensure the health of commercial and recreational fishery stocks;
- the Office of Oceanic and Atmospheric Research (OAR), which provides the research and technology

development necessary to improve NOAA weather services, solar-terrestrial forecasts and marine services;

- the National Weather Service (NWS), which provides weather and flood warnings and forecasts to the general public and other users; and
- the National Environmental Satellite, Data, and Information Service (NESDIS), which provides for the procurement and operation of the polar-orbiting and geostationary environmental observing satellites, the future operation of the landsat 7 remote sensing satellite, as well as management of NOAA's environmental data collections.

FY 1996 Actual (dollars in 000's): \$1,954,442

FY 1996 Full-Time Equivalent Employment: 13,347

## **National Telecommunications and Information Administration**

The National Telecommunications and Information Administration (NTIA) formulates national policy to support the development and deregulation of the telecommunication and information dissemination industries; conducts research to stimulate development and use of telecommunications and information services; manages Federal use of the radio frequency spectrum; and administers three telecommunications-related grant programs.

FY 1996 Actual (dollars in 000's): \$ 56,300 FY 1996 Full-Time Equivalent Employment: 272

## **Patent and Trademark Office**

The Patent and Trademark Office (PTO) is charged with administering the patent and trademark laws of the United States. PTO examines patent applications, grants patent protection to qualified inventions and disseminates technological information disclosed in patents. PTO also examines trademark applications and provides Federal registration to owners of qualified trademarks.

FY 1996 Actual (dollars in 000's): \$ 82,324 FY 1996 Full-Time Equivalent Employment: 5,125

## **Technology Administration**

The Technology Administration's (TA) central mission is to assure that U.S. business and industry's perspective is integrated into an array of public-sector activities influencing private-sector innovation in technology. TA leads the Department's Advanced Civilian Technology Strategy, a coordinated effort to promote more effective government-industry partnerships for technology development and deployment, and to enable a 21st century infrastructure.

The Technology Administration also includes:

- **National Institute of Standards and Technology**

The National Institute of Standards and Technology (NIST) promotes U.S. economic growth by working with industry to develop and apply technology, measurements and standards. NIST carries out this mission through four major programs: the Advanced Technology Program, providing competitive cost-shared grants to industry for development of high-risk, enabling technologies with significant commercial potential; a grassroots Manufacturing Extension Partnership, helping small and medium-sized companies adopt new technologies; a strong laboratory effort, planned and implemented in cooperation with industry and focused on measurements, standards, verified data, and test methods; and a highly visible industrial quality management program, associated with the Malcolm Baldrige National Quality Award.

FY 1996 Actual (dollars in 000's): \$ 544,574 FY 1996 Full-Time Equivalent Employment: 3,137

- **National Technical Information Service**

The National Technical Information Service (NTIS) collects scientific, technical, engineering, and other business-related information from Federal and international sources and disseminates this information to the American business and industrial research community. NTIS is largely a self-supporting agency, with routine operating costs paid out of revenues earned from the sale of information products and services.

FY 1996 Actual (dollars in 000's): \$ 0 FY 1996 Full-Time Equivalent Employment: 409

A more complete description of the U.S. Department of Commerce is given in the Department's fiscal year 1995 Annual Report, Supporting America's Economic Growth. See the following section, "[For Further Reading](#)," for information on obtaining this report.



# FOR FURTHER READING

- The Advanced Technology Program: A Progress Report on the Impacts of an Industry-Government Partnership  
April 1996  
U.S. Department of Commerce  
National Institute of Standards and Technology  
This document provides an overview of the Advanced Technology Program: origins, purpose, funding history, selection criteria, near-term results, failures, and portfolio. Available through:  
National Institute of Standards  
Gaithersburg, Maryland 20899-0001  
Telephone: 301-975-2000  
and  
Boulder, Colorado 800303-3328  
Telephone: 303-497-3000
- Annual Business Assistance Report  
U.S. Department of Commerce  
Minority Business Development Agency  
This document -- the Minority Business Development Agency (MBDA) annual report for fiscal year 1995 -- briefly describes MBDA and provides agency national program performance data. Available through:  
Minority Business Development Agency  
Room 5707  
U.S. Department of Commerce  
Washington, D.C. 20230  
Telephone: 202-482-5122
- A Comprehensive Guide To International Trade Terms  
Second edition, January, 1994  
U.S. Department of Commerce  
Office of the Chief Financial Officer and Assistant Secretary for Administration  
This document contains definitions and acronyms on international trade and development; international finance; federal, multinational, regional, and international organizations; shipping terms; diplomatic language and international agreements; selected statistical and economic terminology; and standards information.  
Available (in printed and electronic formats) through:  
National Technical Information Service  
5285 Port Royal Road  
Springfield, Virginia 22161  
Telephone: 703-487-4650  
Fax: 703-321-8547

- Supporting America's Economic Growth

U.S. Department of Commerce

This document -- the Department of Commerce annual report for fiscal year 1995 -- describes provides an overview of the Department's agencies and accomplishments.

Available through:

Office of Public Affairs

Room 5523

U.S. Department of Commerce

Washington, D.C. 20230

Telephone: 202-482-5151

- Delivering Results: A Progress Report from the National Institute of Standards and Technology

June 1995

U.S. Department of Commerce

National Institute of Standards and Technology

This document describes science and technical support that the National Institute of Standards and Technology (NIST) provides to U.S. industry and the technical community, with descriptions of services provided through the Advanced Technology Program, the Manufacturing Extension Partnership, the NIST laboratories, and the Baldrige National Quality Program.

Available through:

National Institute of Standards

Gaithersburg, Maryland 20899-0001

Telephone: 301-975-2000

and

Boulder, Colorado 800303-3328

Telephone: 303-497-3000

- Economic Development Administration 1994 Annual Report

December 1995

U.S. Department of Commerce

Economic Development Administration

This document describes agency accomplishments in carrying to more than \$500 million i economic development programs in economically distressed communities, including the development of essential infrastructure, building local and regional capacities, responding to chronic economic adjustment needs, and helping communities recover from the adverse effects of base closure and defense industry downsizing and natural disasters.

Available through:

Economic Development Administration

Room 7828

U.S. Department of Commerce

Washington, D.C. 20230

Telephone: 202-482-5112

Export Administration Annual Report 1995 and 1995 Report on Foreign Policy Export Controls

U.S. Department of Commerce

## Bureau of Export Administration

This document describes the activities the Bureau of Export Administration undertakes to carry out the provisions of the Export Administration Act of 1979, as amended. The document also includes a report to Congress on export controls that are maintained for foreign policy purposes.

Available through:

Bureau of Export Administration  
Room 3897  
U.S. Department of Commerce  
Washington, D.C. 20230  
Telephone: 202-482-2721

- Global Leadership In Information

U.S. Department of Commerce

National Technical Information Service

This document -- the National Technical Information Service (NTIS) annual report and financial review for fiscal year 1995 -- briefly describes how NTIS operates as a central point of access within the U.S. government for technical information and presents agency financial information.

Available through:

National Technical Information Service  
Springfield, Virginia 22161  
Telephone: 703-487-4650

- A Guide To Understanding Technology Terms

October 1994

U.S. Department of Commerce

Office of the Chief Financial Officer and Assistant Secretary for Administration

This document contains definitions and acronyms on: (a) health, safety, and food; (b) fundamental science and engineering; (c) information and communications; (d) environment and natural resources; (e) civilian industrial technology; (f) education and training; (g) transportation; (h) national security; (i) international science, engineering, and technology; and (j) standards, measures, quality management, and intellectual property.

Available (in printed and electronic format) through:

National Technical Information Service  
5285 Port Royal Road  
Springfield, Virginia 22161  
Telephone: 703-487-4650  
Fax: 703-321-8547

- A Guide To Environmental and Conservation Terms

October 1995

U.S. Department of Commerce

Office of the Chief Financial Officer and Assistant Secretary for Administration

This document contains definitions and acronyms on environmental stewardship (freshwater and marine, wetlands, forestry, agricultural, and air), pollution and control, indoor air pollution, chemicals, toxicity, biotechnology and genetics, climate, and weather.

Available (in printed and electronic format) through:

National Technical Information Service  
5285 Port Royal Road  
Springfield, Virginia 22161  
Telephone: 703-487-4650  
Fax: 703-321-8547

- NIST Industrial Impacts: A Sampling of Successful Partnerships

February 1996

U.S. Department of Commerce

National Institute of Standards and Technology

This document provides case studies on the impact of the Advanced Technology Program (15 case studies), Manufacturing Extension Partnerships (5 studies), and the laboratories of the National Institute of Standards and Technology (19 case studies).

Available through:

National Institute of Standards

Gaithersburg, Maryland 20899-0001

Telephone: 301-975-2000

and

Boulder, Colorado 800303-3328

Telephone: 303-497-3000

- Setting The Course For Our Future

U.S. Department of Commerce

Patent and Trademark Office

This document -- the Patent and Trademark Office (PTO) annual report and financial review for fiscal year 1995 -- briefly describes PTO operations in patent and trademark protection in the United States and abroad and presents agency financial information.

Available through:

Patent and Trademark Office

Office of Public Affairs

Washington, D.C. 20231

Telephone: 703-305-8341

- Telecommunications and Information Infrastructure Assistance Program

Fiscal Year 1996 Grant Awards

U.S. Department of Commerce

National Telecommunications and Information Administration

This document provides abstracts of the fiscal year grant awards and their focus, including: arts and culture, community networking, economic development, health, higher education, human services, K-12 education library services, public safety, public and government information, and statewide or local information infrastructure planning.

Available through:

National Telecommunications and Information Administration

Room 4069

U.S. Department of Commerce

Washington, D.C. 20230

Telephone: 202-482-5802

- Untitled

July 1996

U.S. Department of Commerce

National Institute of Standards and Technology

This document contains 50+ case studies illustrating how Manufacturing Extension Partnership (MEP) centers provides services which help smaller manufacturers modernize operations, improve quality, and increase profitability. The centers are co-funded by the National Institute of Standards and Technology and state and local organizations.

Available through:

National Institute of Standards and Technology

Telephone: 301-975-5020

E-mail: [mepinfo@micf.nist.gov](mailto:mepinfo@micf.nist.gov)

