

2000 ANNUAL REPORT



Introduction: Letter from the Chairman and President

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Introduction

Dear Governor Huckabee
& Distinguished Legislators:

The Board of Directors and staff of the Arkansas Science & Technology Authority are pleased to submit to you the Authority's "Fiscal Year 2000 Annual Report." The report summarizes the scientific and technological projects by which the Authority carries out its statutory mission to bring the benefits of science and advanced technology to the people and State of Arkansas.

The Authority has broad and flexible statutory authority, which allows the Board to keep abreast of changes in science and technology. Reliance on the private-sector dominated Board for decision making gives the Authority credibility in delivering economic benefits from thoughtful, long-term investments in research, development, and commercialization of technology. The Authority's mission is a continuous one, because of the nature and pace of scientific discovery, and is essential to the state's continued economic well being.

This is illustrated by the inclusion of the Authority on a variety of boards, task forces and commissions, including the following organizations:

- Arkansas Capital Corporation,
- Arkansas School for Mathematics and Sciences,
- Information Network of Arkansas.
- Commission on Information Age Communities,
- Information Technology Task Force,
- Statewide Radio System Work Group, and
- Public Education Technology Advisory Board.

The Board reviewed and adopted five goals for Fiscal Year 2000 (FY00) and the Authority carried out these corresponding activities during the fiscal year.

Goal 1 - Continue to offer the Authority's existing products and services. The Authority has continued to do this. In summary, the Authority approved investments of \$7,868,630.14 in 290 research, development, and commercialization projects, as shown in the following table. For the second consecutive year, the Applied Research Grant Program provided the largest amount of state match to private sector investment since the program's inception in 1986. The details of meeting this goal are contained in the body of this report

Table. Summary of Board Actions on Projects and Investment Board Meetings During FY00

Projects	9/17	11/19	1/21	3/17	5/6	Total	Total Funds
Applied Research	4		1			5	\$371,644.64
Basic Research	3	3			10		\$626,814.00
ARMF	8				13	21	\$4,686,622.00
ASGC	1						\$93,750.00
TDP	2	1				3	\$150,000.00
TTAG	10	5	1	9		25	\$88,332.00
General Revenue Total							\$6,017,162.64
Network					1	1	\$1,180,000.00
Network TTAG	16	6	4	15	20	61	\$171,467.50
Seed Capital					1	1	\$500,000.00
						TOTAL	\$7,868,630.14

ARMF: Arkansas Research Matching Fund
ASGC: Arkansas Space Grant Consortium
TDP: Technology Development Program
TTAG: Technology Transfer Assistance Grant
EPSCoR: Experimental Program to Stimulate Competitive Research

We point out that the report's emphasis on a single fiscal year may understate the Authority's large-scale, multi-year initiatives with federal partners, such as the National Institute of Standards and Technology's (NIST) Manufacturing Extension Partnership. The Authority is the managing partner of the Arkansas Manufacturing Extension Network (Network) six-year initiative designed to support the state's small and medium-sized manufacturing enterprises. The Authority's Network staff continues to assist Arkansas manufacturers in improving product and process technologies. Network clients reported a \$13.2 million increase in sales from August 1998 to March 1999, as well as a \$1.04 million in cost savings, according to a Census Bureau report.

Goal 2 - Become more of an information organization. The Authority continues its effort to improve the management of information and development of its Web site: <http://www.state.ar.us/asta/>. During the year, the Authority improved the design and use of both the project database and the Network's database. Much of the content for this annual report was generated by the project database, which rose to 1,312 items in fiscal year 2000. Computerized mapping applications for the database have been developed and a composite project map is part of this annual report. This is the result of implementing a Geographic Information System (GIS) mapping program to process and map all agency programs on a statewide basis. The Authority is now represented in the Arkansas GIS Users Forum.

Goal 3 - Find interesting technologies, nurture them, move them to the marketplace, and create new businesses and jobs in the process. Last year the Authority helped Arkansas firms apply to the federally funded Small Business Innovation Research (SBIR) Program through a "virtual" SBIR program at the state level. Two of these firms, both tenants in the Genesis business incubator at the University of Arkansas, Fayetteville, attracted \$1.4 million in SBIR Phase II contracts. The Ballistic Missile Defense Organization awarded \$632,000 to Arkansas Microelectronics Development Corp. and the U.S. Air Force awarded \$750,000 to Space Photonics.

In 1991, the Authority made a \$200,000 seed capital investment in Law Office Information Systems of Fort Smith. Two recent articles illustrate the important outcomes that result from such investments. An article in the July 24-27 issue of *Arkansas Business* lists Kyle Parker, founder of Law Office Information Systems (today known as LoisLaw), among the "Wealthiest Arkansans" as a result of the success of his business, tucked away in the outskirts of Fort Smith/Van Buren.

The other article, published in the July 21 issue of *Arkansas Times*, traces the history of LoisLaw, an information-age business that is rewriting the way in which lawyers conduct legal research. Part of the story is Kyle Parker getting started with the personal law books of then Arkansas Supreme Court Chief Justice Jack Holt using the \$200,000 investment from the Authority. LoisLaw, according to the *Times*, currently has 500 employees.

LoisLaw went public in 1999, and with other recipients of Authority support, attracted \$0.72 of every venture capital dollar invested in Arkansas last year. Over \$22 million was invested. To help position Arkansas for more of this kind of success, the Authority co-sponsored the National Association of State Venture Funds workshop titled, "Seed Investing as a Team Sport."

Goal 4 - Help build the education infrastructure for the future. The Authority does this primarily through its research programs. The Authority is also represented, in an ex officio capacity, on the Board of Trustees of the Arkansas School for Mathematics and Sciences, the state supported residential math and science high school in Hot Springs. The Board has a continuing interest in the health of the educational infrastructure because it has such an important role in supporting the innovation and human resource development that is necessary to realize fully the benefits of the new information-age economy.

Goal 5 - Contribute to the preparation of a coherent research and development road map. The Authority began using the Arkansas Research Matching Fund (ARMF) in FY00. ARMF was created during the 1999 legislative session, in close cooperation with the Arkansas Department of Economic Development, to help the state's colleges and universities compete for federal funds. The availability of the fund, according to administrators at the University of Arkansas, Fayetteville, has helped that campus increase its total research funding for FY00 by at least 10 percent. This kind of success shows that Arkansas scientists are able to compete nationally for large federal research grants. ARMF funds have been targeted to the research and support areas identified in the 1996 Arkansas R&D Plan. The areas that are important to the state's economic future include (1) Advanced Materials, (2) Agriculture and Biology, (3) Biotechnology, (4) Environment, (5) Manufacturing, and (6) Transportation and Logistics and the two support areas of (1) Human Resources and Communications and (2) Information

Technology.

As you can see from the five goals and the associated activities, the Authority explored significant opportunities for Arkansas during fiscal year 2000. The remainder of this report highlights specific investments and shows how researchers, universities and enterprises are able to strengthen Arkansas' scientific and technological infrastructure through basic and applied research grants, technology development, technology transfer assistance grants, and seed capital investment programs.

With your ongoing support, the Authority will continue to meet the challenges of the new economy and efficiently and effectively carry out its mission. We are proud of our achievements and thank you for the opportunity to serve our state. We appreciate your support of the Arkansas Science & Technology Authority.

Sincerely,

Merlin Augustine, Ed.D.
Chair, Board of Directors

John W. Ahlen, Ph.D.
President

About the Authority

The Arkansas Science & Technology Authority (the Authority) was created by statute in 1983 with the mission to bring the benefits of science and advanced technology to the people and State of Arkansas. This mission is addressed by strategies to promote scientific research, technology development, business innovation, and math, science and engineering education.

The Authority is comprised of a Board of Directors, Advisory Committees and staff. The 14-member Board is appointed by the Governor to staggered four-year terms. The Board has three directors who are scientists or engineers, two directors who are representatives of academic institutions, five directors who represent the private sector, three directors who represent the private sector and have knowledge and experience in the field of manufacturing, and the Director of the Department of Higher Education (or the Director's designee).

The Authority's staff is led by the President, the chief executive officer, who is responsible for the agency's programs, services and support functions.

The Authority's activities are divided into three programmatic areas that include research, development and technology transfer. This report details each programmatic area and reports action taken during FY00.

The Board determines the allocation of funds to all projects supported by the Authority. Three Board standing committees, comprised exclusively of members of the Board, make recommendations to the full Board. Advisory Committees, comprised of Board and non-Board members, offer additional inputs to the Authority. Annual reports for the EPSCoR Advisory Committee, the Manufacturing Resource Advisory Committee and the newly created Client Advisory Committee are available. All of the Authority's activities are audited annually to ensure compliance with state and federal guidelines.

The Authority can be reached at:

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Phone: (501) 324-9006

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www.state.ar.us/asta/

Research

Basic Research Grant Program

Purpose: The Program encourages, establishes and supports basic research in science and engineering at Arkansas colleges and universities.

Program Description: The Arkansas Science & Technology Authority's Basic Research Grant Program is a competitive, (60 percent state: 40 percent institution) matching grant effort to support basic research in science and engineering. The goals of the Basic Research Grant Program are to promote and support the growth and development of Arkansas scientists and to enhance the status of science and engineering in Arkansas colleges and universities.

Awards:

The Board approved 16 projects for FY00, representing a total investment of \$626,814.

<u>Proposal</u>	<u>Institution,¹ Principal Investigator</u>	<u>Project Description</u>	<u>Amount</u>
00-B-02	UAF, Cordes	New Inorganic Materials Synthesized in Supercritical Solvents	\$50,000.00
00-B-03	UAMS, Chang	Neuroendocrine control of microglial nitric oxide production	\$42,000.00
00-B-08	UAF, Mantooth	Electrothermal Modeling of Mixed-Signal Circuits	\$29,637.00
00-B-12	UAF, Davis/Thoma/ Vendrell	Bacterial Tracing in Karst Terrane	\$56,902.00
00-B-13	ASU, Russ	Can Biological Residues from Past lichen Activity Provide Information On Climate Change?	\$31,686.00
00-B-14	ASU, Li	Theoretical Study of Ultra-Relativistic Heavy-Ion Collisions	\$34,296.00
00-B-20	UAF, Rhoads	Molecular Markers for Mapping a Gene Affecting Fertility in the Chicken	\$41,510.00
00-B-22	UAF, Ziegler	Effects of increased nutrient concentrations on the cycling of dissolved organic matter in stream ecosystems	\$64,490.00
00-B-23	UAF, Petris	Modern Statistical Methods in Dendroclimatology	\$20,691.00
00-B-25	UAF, Ferrari	Rho Gtpases and Muscle Development	\$22,851.00
00-B-26	UAF, Ding	Design, growth, and characterization of quantum-well dots for their applications Toward far-IR and Thz emitters	\$50,937.00
00-B-29	UAF, Korth	Characterization of plant responses to an insect herbivore oral elicitor	\$60,222.00

00-B-30	UAF, Davis	Cloning and Expression of the CuA-Cytochrome c Domain of the Cytochrome c (caa3) Oxidase of Bacillus subtilis	\$20,765.00
00-B-34	UAMS, Drew	Female Sex Steroids: Relevance in Multiple Sclerosis	\$40,130.00
00-B-38	UALR, Al-Shukri	Paleoseismology in Eastern Arkansas	\$39,690.00
00-B-40	HC, Moran	Top-down and bottom-up Interactions in Grasslands	\$21,007.00
TOTAL:			\$626,814.00

¹ *Institutions: UAF, University of Arkansas, Fayetteville; UALR, University of Arkansas at Little Rock; UAMS, University of Arkansas for Medical Sciences; ASU, Arkansas State University; and HC, Hendrix College.*

Applied Research Grant Program

Purpose: The Program provides incentives to Arkansas industry to participate in applied research. A goal is to encourage investment by industry in the transfer of science and technology from Arkansas colleges and universities.

Program Description: The Arkansas Science & Technology Authority's Applied Research Grant Program is a (50:50) cash-matching effort to support applied research in science and engineering. (A match of \$2 from the state is available for every \$1 from an Arkansas business with 50 or fewer employees.) The goal of the Applied Research Grant Program is to stimulate the transfer of science and technology in Arkansas by enhancing opportunities for research partnerships between Arkansas colleges and universities and private industries.

Awards: The Board approved five projects for FY00, representing a total investment of \$371,644.64. Private industry match totaled \$219,475.32.

Proposal	Inst.,¹ P.I.²	Co-Sponsor	Project Title	Amount, Match
00-A-02	UAF, Waldroup		Commercialization of CPC for use in the Poultry Industry	\$75,005.00
		Safe Foods		\$37,447.00
00-A-05	UALR, Wright		Data Acquisition System for High Speed Waterjet Propulsion System	\$26,000.00
		North American Marine Jet		\$13,000.00
00-A-06	ASU, Engelken		Vacuum System for Depositing Thin Film Materials on Laser Sensing Surfaces	\$67,415.00
		InvoTek Incorporated		\$67,416.00
00-A-09	UAF, Parkerson		Spaceworthy 2.488 Gbps IEEE 1393 Fiber Optic Transceiver	\$95,224.64
		Space Photonics		\$47,612.32
00-AE0-01*	UAF, Barlow		High Performance On-Chip Decoupling Capacitors	\$108,000.00
		AMDC		\$54,000.00
			SUBTOTALS:	\$371,644.64 \$219,475.32
			TOTAL:	\$591,119.96

* Funds provided from another source.

¹Institutions: UAF, University of Arkansas, Fayetteville; UALR, University of Arkansas at Little Rock; and ASU, Arkansas State University.

²P.I.: Principal Investigator

Arkansas Research Matching Fund

Purpose:

To raise the national ranking of Arkansas' research performance and to be competitive in our economic and educational endeavors by investing in research and research infrastructure.

Program Description:

The Arkansas Science & Technology Authority's Arkansas Research Matching Fund provides state funds to match federal awards for research and research equipment. The goal of the Arkansas Research Matching Fund is to improve the state's federal research and development ranking by investing in research infrastructure. The Arkansas Research Matching Fund administers the state's cost sharing match responsibilities that were previously made through the EPSCoR program.

Awards:

The Board approved 21 projects for FY00, representing a total investment of \$4,686,622.

<u>Proposal</u>	<u>Inst.,¹ P.I.²</u>	<u>Co-Sponsor</u>	<u>Project Title</u>	<u>Amount, Match</u>
00-ARMF-01	UAMS, Owens		Molecular and Biological Engineering of Plant-derived Antibodies	\$487,858.00
		NSF		\$487,858.00
00-ARMF-02	UAF, Hehr		Arkansas EPSCoR Cooperative Agreement	\$1,000,000.00
		NSF Coop Agree		\$1,000,000.00
00-ARMF-03	UAF, Schaper		IGERT Formal Proposal: A New Era in Electronics Education	\$280,465.00
		NSF IGERT		\$1,260,531.00
00-ARMF-04	UALR, Hudson		The Arkansas Plan for Enhancement of Aerospace Research and Economic Development	\$168,724.00
		NASA		\$625,000.00
00-ARMF-05	UAMS, Kennedy		Developing Competitive Environmental Research in Arkansas	\$500,000.00
		EPA		\$500,000.00
00-ARMF-06	UAF, Wilkins		Establishment of a Center for Advanced Sensing Technology	\$499,993.00

		NSF		\$499,993.00
00-ARMF-07	UAF, Salamo/Xiao		Development of an Optical Microscope to Investigate the Nonlinear Optical Properties of Single Quantum Dots and to Train Students	\$182,500.00
		NSF		\$182,500.00
00-ARMF-08	UAF, Malshe		Science and Engineering Research Center (SERC) for Durable Miniaturized Systems	\$254,043.00
		NSF		\$749,302.00
00-ARMF-09*	UAF, Rossetti		Analysis of Intermodal Choice Combinations for Military Supplies and Material	\$50,000.00
		DLA		\$50,000.00
00-ARMF-10*	UAF, Collins		Design of Information Technology Architecture to Enhance a Systems Level Logistics Management	\$50,000.00
		DLA		\$50,000.00
00-ARMF-13	UAF, Salamo		Nanostructures for Normal Incident Uncooled Infrared Detectors	\$159,178.00
		DOAr		\$318,356.00
00-ARMF-14	UAF, Vyas		Coherence and Noise Properties of Microcavity Lasers	\$57,377.00
		ONR		\$114,754.00
00-ARMF-15	ASU, Vanderpool		Implementing Problem Based Learning in the Introductory Biology Laboratory	\$85,187.00
		NSF		\$85,187.00
00-ARMF-16	UALR, Hudson		Arkansas Space Grant Consortium	\$93,750.00
		NASA		\$256,250.00
00-ARMF-17	UAF, Balda		Enhancing Prototyping Capabilities for Electric Propulsion Research at the University of Arkansas	\$90,000.00
		ONR		\$90,000.00
00-ARMF-18	UAF, Havens		Scientific Support for the DOE HAZMAT Spills Centers	\$138,141.00
		DOE		\$276,282.00

00-ARMF-19	UAF, Pulay		Efficient Modeling of Large Molecules: Geometry Optimization, Dynamics, and Correlation Energies	\$177,161.00
		AFOSR		\$354,322.00
00-ARMF-20	UAF, Selvam		Adaptive Navier-Stokes Flow Solvers for Aerospace Structures	\$92,373.00
		AFOSR		\$184,746.00
00-ARMF-21	UAF, Yedave		A Novel Technology for the Synthesis and Fabrication of Solid Lubricant and Hard Material Composite Coatings	\$78,608.00
		AFOSR		\$157,217.00
00-ARMF-22	UALR, Hudson		NASA/EPSCoR Preparatory Grant Proposal	\$113,895.00
		NASA		\$225,000.00
00-ARMF-23	UAF, Ang		A Micromachined Microject Array Impingement Cooling Device for High Power Electronics	\$127,369.00
		AFOSR		\$254,739.00
			SUBTOTALS:	\$4,686,622.00
				\$7,722,037.00
			TOTAL:	\$12,408,659.00

* Withdrawn by the university.

¹ *Institutions:* UAF, University of Arkansas, Fayetteville; UALR, University of Arkansas at little Rock; UAMS, University of Arkansas for Medical Sciences; and ASU, Arkansas State University.

² *P.I.:* Principal Investigator.

³ *Federal Agency:* AFOSR, Air Force Office of Scientific Research; DLA, Defense Logistics Agency; DOAr, Department of the Army; DOE, Department of Energy; EPA, Environmental Protection Agency; NASA, National Aeronautics and Space Agency; NSF, National Science Foundation; NSF IGERT, National Science Foundation Integrated Graduate Education and Research Training; and, ONR, Office of Naval Research.

Arkansas Space Grant Consortium

Purpose:

The Arkansas Space Grant Consortium educates faculty, undergraduates, and graduate students with aerospace fundamentals and research programs offered by NASA and the aerospace industry.

Program Description:

The Arkansas Space Grant Consortium (ASGC) is comprised of 14 four-year universities and colleges in Arkansas. The ASGC conducts five programs. The Research Infrastructure Grants allow faculty the opportunity to visit NASA as well as educate and mentor students. Undergraduate Scholarships and Graduate Fellowships provide funds for students to visit NASA. In addition, students are allowed to participate in NASA related research projects under the supervision of a faculty mentor. The General Public Grants allow guest lecturers to visit university and college campuses and provide seminars about NASA related topics. The K-12 (Outreach) Grants provide funds for K-12 student programs. Undergraduate and graduate students, as well as faculty, are responsible for performing K-12 outreach. The Higher Education Grant provides funds for universities and colleges to expand current science programs. The Arkansas Science & Technology Authority provides matching support to ASGC.

Awards:

The Board approved one project for FY00, representing a total investment of \$93,750.

<u>Proposal</u>	<u>Institution,¹ Principal Investigator</u>	<u>Project Description</u>	<u>Amount</u>
00-NSGC-01	UALR, Hudson	Arkansas Space Grant Consortium	\$93,750
TOTAL:			\$93,750

¹*Institution: University of Arkansas at Little Rock*

Technology

Technology Transfer Assistance
Grant Program

Arkansas Manufacturing
Extension Network

Technology Transfer Assistance Grant Program

Purpose:

The Technology Transfer Assistance Grant Program (TTAG) assists Arkansas' enterprises in developing or improving products or processes through the transfer of technical solutions to technology-based, industry-driven problems, thus enhancing that enterprise's market competitiveness.

Program Description:

The Arkansas Science & Technology Authority provides limited financial support for the transfer and deployment of innovative technology. The Authority will fund up to \$3,750 of costs associated with transferring new or existing technology from a qualified applicant -- such as a public or private enterprise, laboratory, college or university -- to an enterprise based in Arkansas. Up to \$5,000 of total project costs will be considered, with the first \$2,500 funded by the Authority; the remaining \$2,500 is cost-shared equally (50:50) between the Authority and the enterprise. Each enterprise is eligible to receive assistance for two technology transfer projects per year. Projects are evaluated on a competitive basis.

Awards:

The Arkansas Science & Technology Authority's Board of Directors authorized projects totaling \$81,679 through TTAG to help clients solve technical problems. The private sector invested an additional \$23,281 in these solutions. These investments assisted 20 separate companies, located in 9 counties representing the following Standard Industrial Classification (SIC) groups:

<u>SIC Grouping</u>	<u>Number of Investments</u>
Industrial and Commercial Machinery	2
Electronic and Other Electrical Equipment	4
Measuring, Analyzing and Controlling Instruments; Photographic, Medical and Optical Goods; Watches and Clocks	2
Services: Engineering, Accounting, Research, Management	7
Services: Agricultural	3
Fabricated Metal Products	2
Printing, Publishing and Allied Products	2
Food and Kindred Products	1
Textile Mill Products	1
Apparel and Other Textile Products	1

TOTAL: 25

Client Company Profile

Average Number of Employees	23
Average Year Corporation Founded	1997
Most Active Counties	Washington (8), Pulaski (4)
Average Authority Investment	\$3,143.59
Average Client Investment	\$850.36

Services Rendered

SBIR Assistance	15
Product Development and Design	6
Software Assistance	2
Environmental	2

TOTAL: 25

Arkansas Manufacturing Extension Network

Purpose:

The Arkansas Manufacturing Extension Network (Network) is designed to improve Arkansas' manufacturing and industrial competitiveness through the delivery of comprehensive technical and business assistance services.

Network Description:

The Network is an affiliate of the National Institute of Standards and Technology Manufacturing Extension Partnership and is in year three of a six-year effort. It strives to improve the quality, productivity and global competitiveness of Arkansas' small and medium-sized manufacturers by providing technical and business management assistance services.

The Network's primary partners are: the Arkansas Department of Economic Development; the Arkansas Center for Technology Transfer at the University of Arkansas, Fayetteville; the Center for Competitive Manufacturing at Southern Arkansas University Tech, Camden; the Center for Economic Development at Arkansas State University, Jonesboro; the College of Science and Engineering Technology at the University of Arkansas at Little Rock; the Center for Economic Development at Henderson State University, Arkadelphia; and Winrock International, Morrilton.

Ten field engineers deliver services to manufacturers. Typical services include engineering and environmental assessments, as well as quality management systems implementation, cost/benefit analysis, information transfer and resource partnering.

Awards:

The Arkansas Science & Technology Authority's Board of Directors authorized 62 projects totaling \$198,220.00 through Network TTAGs to help clients solve technical problems. The private sector invested an additional \$57,900.00 in these solutions. These investments assisted 48 separate companies, located in 20 counties representing the following 19 Standard Industrial Classification (SIC) groups:

<u>SIC Grouping</u>	<u>Number of Investments</u>
Lumber and Wood Products, Except Furniture	17
Furniture and Fixtures	8
Rubber and Misc. Plastic Products	6
Primary Metal Industries	5
Electronic and Other Electrical Equipment	4
Chemicals and Allied Products	3
Fabricated Metal Products	3
Industrial and Commercial Machinery	3

Wholesale Trade-durable Goods	2
Wholesale Trade-durable Goods	2
Food and Kindred Products	1
Paper and Allied Products	1
Miscellaneous Manufacturing Industries	1
Automotive Dealers and Gasoline Service Stations	1
Home Furniture, Furnishings, and Equipment Stores	1
Insurance Agents, Brokers, And Service	1
Business Services	1
Automotive Repair, Services, And Parking	1
Services: Engineering, Accounting, Research, Management	1
TOTAL	62

Client Company Profile

Average Number of Employees	211
Average Year Corporation Founded	1978
Most Active Counties	Sebastian (21), Pulaski (10)
Average Authority Investment	\$3,284.33
Average Client Investment	\$944.17

Services Rendered

Number of Investments

Quality	18
Business Management	15
Process Improvement	10
Environmental	8
Human Resources	3
Plant Layout	3
Market Development	2

Product Development

1

TOTAL

62

Awards:

The Board approved funding in the amount of \$1,180,000.00 to support 10 field engineers: four at the University of Arkansas, Fayetteville; two at the University of Arkansas at Little Rock; one at Arkansas State University; one at Southern Arkansas University Tech; one at Henderson State University; and one at Winrock International.

In FY00, Network engineers completed 146 informal engagements that included initial contact and consultation, and 158 service agreements in the following 23 Standard Industrial Classification (SIC) groups.

<u>SIC Grouping</u>	<u>Number of Service Agreements</u>
Industrial and Commercial Machinery and Computer Equipment	35
Electronic and Other Electrical Equipment	19
Fabricated Metal Products	18
Food and Kindred Products	12
Paper and Allied Products	9
Transportation Equipment	8
Engineering, Accounting, Research, Management, and Related Services	8
Rubber and Miscellaneous Plastic Products	7
Primary Metal Industries	7
Lumber and Wood Products	6
Stone, Clay, Glass, and Concrete Products	6
Measuring and Controlling Devices	5
Chemical and Allied Products	4
Apparel and Fabric Production	3
Furniture and Fixtures	2
Miscellaneous Manufacturing Industries	2
Business Services	1
Personal Services	1
General Merchandise Stores	1
Automotive Dealers and Gasoline Service Stations	1
Printing, Publishing and Allied Industries	1

Petroleum Refining and Related Industries	1
Leather and Leather Products	1
TOTAL:	158

The same 158 Service Agreements provided Services in the following 6 areas.

<u>Services Rendered</u>	<u>Number of Service Agreements</u>
Process Improvement	90
Quality	29
Environmental	22
Plant Layout	9
Business Management	5
Product Development	3
TOTAL:	158

The figures reported in this Annual Report represent a period of time from August 1998- March 1999. Network clients reported the following improvements attributed to these projects: increased sales of \$13.2 million, cost reductions (labor and material) of \$1.04 million. In addition, they reported 896 jobs created or retained and \$239,000 in saved investments, resulting in an additional \$9.7 million to the economic growth of Arkansas.

The Census Bureau usually surveyed each of the Network's clients about 10 months after project completion. NIST has however cancelled its contract with the Census Bureau and conducted a Pilot Study which covered the period Aug 1998- Dec 1998 for clients who had closed projects during that period. NIST has now hired a new firm to conduct surveys quarterly with a new procedure.

Development

Seed Capital Investment Program

Technology Development Program

Seed Capital Investment Program

Purpose:

The Seed Capital Investment Program (SCIP) fosters the development of innovative technology-based businesses and projects that will stimulate economic growth and industrial competitiveness in Arkansas.

Program Description:

The Program assists in the initial capitalization or expansion of Arkansas-based businesses undertaking projects that are science or technology based and have a commercial or job creation potential. Each dollar invested by SCIP is leveraged by three dollars in matching funds from other sources. SCIP is limited to working capital and does not finance fixed assets.

Investment:

The Board approved one investment in FY00 for a total of \$500,000.

Proposal	Company	Description	Funds Approved	Amount Dispersed
00-SCIP-4	Vision Technology	PlaneView imaging technology project.	\$500,000.00	\$500,000.00
			TOTAL:	\$500,000.00

Technology Development Program

Purpose:

The Technology Development Program provides assistance in the development and commercialization of new technology-based products and processes through innovative technology development projects.

Program Description:

The Program may provide monies to qualified applicants if their proposed project possesses a well-defined and comprehensive project plan and promotes the purpose of the Arkansas Science & Technology Authority. The maximum award is limited by law to \$50,000. Awards are considered investments with terms negotiated on a case-by-case basis with a maximum 5 percent royalty on net sales for a maximum period of 10 years.

Investments:

The Board approved three investments in FY00, representing a total investment of \$150,000.

Proposal	Awardee	Description	Funds Approved
00-TDP-02	Challenge Technology	OLR-300 On-Line Respirometer	\$50,000.00
00-TDP-04	AMDC	High Performance On-Chip Decoupling Capacitors	\$50,000.00
00-TDP-05	Space Photonics	Spaceworthy 2.488 Gbps IEEE 1393 Fiber Optic Transceiver	\$50,000.00
TOTAL:			\$150,000.00

Fiscal Year 2000

	Gen. Revenue	Appropriation		Y-T-D		Percentage
App/All	Character	Balances	Budget	Expense	Balance	of Budget
678/01	REGULAR SAL	474,935	476,528	469,706.33	6,821.67	98.57
	EXTRA HELP	12,000	4,500	2,466.00	2,034.00	54.80
	M & O	144,204	144,204	134,887.42	9,316.58	93.54
	FRINGE	123,566	121,228	118,080.09	3,147.91	97.40
	RESEARCH	900,000	900,000	885,004.64	14,995.36	98.33
	CONFERENCE	27,223	24,216	15,125.64	9,090.36	62.46
	PROF FEES	16,800	13,816	8,094.58	5,721.42	58.59
	CAPITAL OUTLAY	17,000	9,462	9,259.66	202.34	97.86
	TECH DEV	375,000	227,929	227,929.00	0.00	100.00
	TOTAL ACT271 of 1999.	2,090,728	1,921,883	1,870,553.36	51,329.64	97.33
	Cash	Appropriation		Y-T-D		Percentage
App/All	Character	Balances	Budget	Expense	Balance	of Budget
A87/01	SEED CAPITAL	1,900,000	1,900,000	100,000.00	1,800,000.00	5.26
B16/02	NETWORK/ENERGY	60,366	60,366	43,752.15	16,614	72.48
B16/01	TECH DEV/ENERGY	147,126	147,126	95,996.75	51,129.25	65.25
	MEP Federal	Appropriation		Y-T-D		Percentage
App/All	Character	Balances	Budget	Expense	Balance	of Budget
919/02	REGULAR SAL	251,643	250,847	184,484.40	66,362.60	73.54
	M & O	357,587	95,257	93,102.59	2,154.41	108.12
	FRINGE	63,934	62,022	49,866.09	12,155.91	80.40
	GRANTS	272,502	145,000	0.00	145,000.00	0.00
	CONF FEES	64,383	41,563	26,183.86	15,379.14	63.00
	PROF FEES	4,281	4,281	825.00	3,456.00	19.27
	CAPITAL OUTLAY	40,920	15,000	10,923.01	4,076.99	72.82
	FIELD SERVICES	935,292	935,292	856,157.46	79,134.54	91.54

	MISC FEES	544,770	352,502	320,322.00	32,180.00	90.87
	TOTAL	2,535,312	1,892,614	1,541,864.41	350,749.59	
	Re-Appropriation	Appropriation		Y-T-D		Percentage
App/All	Character	Balances	Budget	Expense	Balance	of Budget
960/46	NETWORK	600,000	600,000	0	600,000.00	0.00
966/04	GRANTS, NASA	0	0	0	0.00	0
964/46	EPSCoR	1,000,000	1,000,000	0	1,000,000.00	0.00
961/46	NETWORK ENHANCEMENT	500,000	500,000	0	500,000.00	0.00
965/04	VIE PILOT PROJECT	35,000	6,893	0	6,893.31	0.00
	TOTAL ACT 155 OF 1999	2,135,000	2,106,893	0	2,106,893	
	Gen. Improvement	Appropriation		Y-T-D		Percentage
App/All	Character	Balances	Budget	Expense	Balance	of Budget
564/46	NETWORK	600,000	0	0	0.00	0
563/04	EPSCoR	1,000,000	0	0	0.00	0
566/46	ADVENTURES EXCELL	500,000	0	0	0.00	0
	TOTAL ACT 821 OF 1999	2,287,500	0	0	0	
	Gen. Improvement	Appropriation		Y-T-D		Percentage
App/All	Character	Balances	Budget	Expense	Balance	of Budget
749/04	FEDERAL RESEARCH	10,000,000	3,316,507	2,395,188	921,319.00	72.22
	TOTAL ACT1207 OF 1999	10,000,000	0	0	0	
3JK/04	ASTA GRANT MATCHING	250,000	250,000	93,750.00	156,250.00	37.50