



**ARKANSAS
SCIENCE &
TECHNOLOGY
AUTHORITY**

**FISCAL YEAR
1 9 9 6**

**ANNUAL
REPORT**

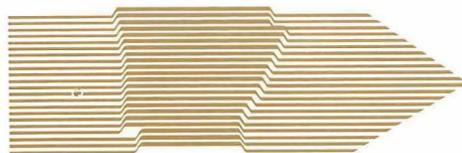


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The Statutory Mission of the
Arkansas Science & Technology
Authority is to bring the
Benefits of Science and
Advanced Technology to the
People and State of Arkansas.

CHAIRMAN'S & PRESIDENT'S LETTER

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 '96 Annual Report. The report summarizes the scientific and technological products and services by which the Authority carries out its mission to bring the benefits of science and advanced technology to the people and State of Arkansas.

In Fiscal Year '96 the Authority continued to invest in opportunities for Arkansas to move forward in its scientific and technological endeavors, as highlighted in this report. Researchers, enterprises and industries were able to strengthen Arkansas' scientific and technological infrastructure through basic and applied research grants, technology development, technology transfer services, technology transfer assistance grants, and seed capital investment programs. In short, the Authority is engaged in science and technology advancements from laboratory concept to practical application. The progress is realized in Arkansas, for Arkansas, through the Authority.

The Authority continues to work in the challenging areas of telecommunications, telemedicine, distance learning, math and science education, and manufacturing extension. The diversification of the Authority's Board, through the addition of three directors specifically from the manufacturing sector, has helped Arkansas obtain federal support for a statewide manufacturing extension network.

Administratively, the Authority made a significant advance with its installation of new information technology tools in 1996. The new local area network and the connection to the World Wide Web are transforming the way the Authority does business.

With your foresight and ongoing support, the Authority will continue to meet the challenges of efficiently and effectively carrying out its mission.

Please take pride in our Annual Report. It is because of your support that Arkansas and its people are well positioned to benefit from scientific and technological developments.

Thank you for your support of the Arkansas Science & Technology Authority.

Yours in Service to the State of Arkansas,

Phillip L. Rayford, Ph.D.
Chair, Board of Directors

John W. Ahlen, Ph.D.
President

BASIC & APPLIED RESEARCH

The Basic and Applied Research Grant Programs remain the mainstay of the Authority. As with all Authority products and services, these products remain within the borders of the state, funding original investigations for the discovery and application of scientific and engineering knowledge.

In Fiscal Year '96, \$755,177 in public funds was awarded to 28 projects, nine in Applied Research and 19 in Basic Research.

Applied Research

Through this program, the Authority supports

science and engineering research programs in Arkansas. Utilizing a 50:50 cash-matching program, the Authority stimulates the transfer of science and technology by enhancing opportunities for research partnerships between state higher education institutions and private industries.

Applied Research is considered crucial to technological advancements within the state of Arkansas.

In Applied Research, \$462,722 was realized in match funding from industry.

APPLIED RESEARCH GRANTS AWARDED

PROPOSAL	INST. ⁽¹⁾	P.I. ⁽²⁾	PROJECT TITLE	COSPONSOR	MATCH	AMOUNT
96-A-02	UAF	Balda	Cost-Effective Solutions to Particular Difficulties Associated with Adjustable Speed Drives.	Baldor Electric Company	\$30,000	\$30,200
96-A-03	UALR	Li	Evaluation of a Methodology for the Transition From Structured to Object-Oriented Software Development.	Acxiom Corporation	\$165,070	\$200
96-A-04	UAF	Kasilingam	Virtual Warehousing: Prototype Development and Evaluation.	AT&T	\$30,000	\$16,822
96-A-05	UAF	Siebenmorgen	Quantifying the Causes of Residual Breakage in Milled Rice.	Producers Rice Mill, Inc.	\$10,000	\$10,200
96-A-07	UAF	Malshe	Synthesis and Polishing of CVD Diamond Coating for Drilling Application.	Rogers Tool Works, Inc.	\$30,000	\$30,200
96-A-08	UALR	McLeod	A High Speed Optical Spectrometer.	Remington Arms	\$114,028	\$200
97-A-02	UAF	Marks	Incorporating Quality Factors into a Coupled Heat and Mass Transfer Model for Cooking Poultry Products.	Tyson Foods, Inc.	\$10,000	\$10,200
97-A-03	UALR	Braithwaite	Optimizing Refrigeration.	FMC, Inc.	\$54,518	\$54,710
97-A-04	UAM	Yeiser	Underplanting Beneath a Partial Overstory to Establish Cherrybark Oak Regeneration in a Minor Bottom of Southwestern Arkansas.	Ross Foundation	\$19,106	\$10,200
					TOTAL:	\$162,932
					TOTAL:	\$462,722

⁽¹⁾ Institution

⁽²⁾ Principal Investigator

Footnote:

The following universities and colleges received funding during Fiscal Year '96 for Applied Research: the University of Arkansas, Fayetteville; the University of Arkansas at Little Rock; the University of Arkansas at Monticello.

BASIC & APPLIED RESEARCH

Basic Research

The Authority is charged with encouraging, establishing and supporting Basic Research in science and engineering at Arkansas colleges and universities. Basic Research is the theoretical and experimental investigation to advance scientific knowledge -- often motivated by efforts to solve

practical problems.

Basic Research has supported projects in a myriad of studies, including: genetics, biology, molecular biology, nonlinear dynamics, plant pathology, chemistry, paleontology, agricultural engineering, computer science and environmental science.

BASIC RESEARCH GRANTS AWARDED

PROPOSAL	INST.	P.I.	PROJECT TITLE	AMOUNT
96-B-21	UAF	Nutter	Improving the Transient Boiling Processes Within the Accumulator and Compressor During Start-up and Defrost of Heat Pumps.	\$30,346
96-B-22	UAMS	Cannon	Pathogenesis of Respiratory Syncytial Virus Infection in HLA-transgenic Mice.	\$32,969
96-B-24	UAMS	Bannon	Allergens Involved in Peanut Hypersensitivity.	\$35,550
96-B-26	UAMS	Kelly/ Anderson	Pharmaceutical Production in Transgenic Tobacco.	\$43,500
96-B-37	UAMS	Gilbert	A Novel System of Immune Intervention.	\$33,050
96-B-40	UAMS	Jin	Infection of Burn Wounds by Pseudomonas aeruginosa.	\$32,625
96-B-44	UALR	Ford	Optimizing Data Acquisition and Analysis in Relativistic Nuclear Collisions.	\$30,550
96-B-45	UALR	Lanza	The Role of Nectar-borne Amino Acids in the Nutrition of Cabbage White Butterflies, an Agricultural Pest.	\$38,683
96-B-46	UALR	Bush	The Role of the Rab 11 GTPase in the Biogenesis and Function of the Contractile Vacuolar Complex in Dictyostelium discoideum.	\$35,550
97-B-01	UAMS	Komoroski	Functional MRI of Rat Brain Using Echo Planar Imaging.	\$20,520
97-B-02	ASU	Johnson	Genetic Distance and Evolution of the Micropterids as Determined by Mitochondrial DNA Analysis.	\$20,100
97-B-03	ASU	Reeve	High Resolution Infrared Laser Spectroscopy.	\$28,713
97-B-04	UAF	Goodman- Strauss	Substitution Tilings and Address Structures.	\$15,145
97-B-05	UAF	Henry	Enhancement of Forward Four Wave Mixing by Optical Feedback in Dye Doped Organics.	\$53,788
97-B-06	UAF	Beaupre	Physiological Ecology of Native Arkansas Snakes.	\$41,559
97-B-07	UAMS	Raney	Investigation of the Mechanism of Telomerase.	\$37,497
97-B-08	UAMS	Ponnapan	Role of Transcription Factor NFkB During Aging.	\$31,200
97-B-10	UAMS	Cherny	Use of OctreoScan as a Sensitive Diagnostic Tool for Meningiomas.	\$7,200
97-B-11	Lyon	Gregerson	Nodule Gene Isolation by Promoter Trapping in Lotus corniculatus.	<u>\$23,700</u>
TOTAL:				\$592,245

Footnote:

The following universities and colleges received Basic Research funds in Fiscal Year '96 included: the University of Arkansas, Fayetteville; the University of Arkansas at Little Rock; the University of Arkansas for Medical Sciences; Arkansas State University; and Lyon College.

EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH

The Experimental Program to Stimulate Competitive Research (EPSCoR) promotes competitive research in Arkansas by funding scientists' individual projects, thereby enhancing the scientific climate in Arkansas. Since its inception in 1979, state-based scientists have obtained National Science Foundation (NSF)-EPSCoR funding and funding similar to EPSCoR from a number of federal agencies.

The Department of Defense (DoD) EPSCoR awarded a total of \$1,868,079 to five Arkansas investigators in Fiscal Year '96. These awards will be matched by the investigators' respective institutions. The investigators and their projects are listed in the table provided on this page.

The DoD's Advanced Research Projects Agency (ARPA) funded the projects of Drs. Chan, Malshe, and Schaper because they are involved in packaging and construction of multi-chip modules. In addition to defense applications for electronic transfer of data and information, the general public will benefit from this research because of faster information transfer.

The Office of Naval Research's Systems Biology and Cell Biology Program funded Dr. Liu's project on tissue damage. The research relates to the trauma associated with lack of oxygen that causes cardiac muscle insult or damage.

The DoD's Army Research Office funded Dr. Salamo's project on nonlinear laser optics to develop new techniques for the generation of coherent light. This research will be a cooperative effort with researchers at the Army Night-Vision Laboratories at Fort Belvoir, VA.

Dr. Edwin F. Abbott and Mr. James B. Hoehn, NSF/EPSCoR program directors, visited Arkansas, participating in open meetings with interested researchers at Fayetteville and Little Rock to discuss what would be acceptable in a proposal from the

Arkansas EPSCoR Advisory Committee. After the open meeting in Little Rock, the visitors met with the EPSCoR Committee to discuss proposal development.

The EPSCoR Advisory Committee submitted the Arkansas Strategic Improvement Program proposal to the NSF. This \$9 million, three-year program proposal included the following science and technology enhancement projects:

1. *Electronic and Photonic Materials and Devices at the University of Arkansas, Fayetteville with Dr. Gregory J. Salamo as the Principal Investigator; and*
2. *Structure and Function of Biological Membrane Transport Processes at the University of Arkansas for Medical Sciences with Dr. Michael Jennings as the Principal Investigator.*

The Arkansas Research and Development Plan, "A Strategic Plan to Guide Arkansas into the 21st Century," was developed by a gubernatorial task force and funded by the NSF EPSCoR grant. The Plan identified the following six priority areas for research investment:

1. Advanced Materials;
2. Agriculture, Food and Life Sciences;
3. Biotechnology and Bioengineering;
4. Environment;
5. Manufacturing Systems; and
6. Transportation and Logistics.

The Plan also emphasized human resource development and the need for databases, information sharing and a telecommunications infrastructure to support research and development activities in Arkansas.

The final draft of the Plan was presented to the Authority's Board of Directors at its May 1996 meeting.

Research Funded During Fiscal Year '96

Investigator	Inst.	Title	Budget	DoD Agency
Chan, F. T.	UAF	Superconducting Multi-chip Modules: A New Approach	\$263,985	Advanced Research Projects Agency
Liu, Shi	UAMS	Cytokine-activated Signal Transduction Pathways in the Cardiac Sequelae of Ischemia	571,585	Office of Naval Research
Malshe, Ajay P.	UAF	Design and Fabrication of Thermally and Electrically Integrated Flexible Substrates for Novel 3-D MCMs	451,974	Advanced Research Projects Agency
Salamo, Greg. J.	UAF	Quasi-Phase Matched Optical Parametric Generation at 1.54 m	283,601	Army Research Office
Schaper, Leo. W.	UAF	3-D Cryo-Cooled Multi-chip Modules Via Optical Interconnects	296,934	Advanced Research Projects Agency
Total			\$1,868,079	

TECHNOLOGY PROGRAMS

Technology Development Program

The Technology Development Program (TDP) assists in development and commercialization of new technology-based products and processes through innovative technology development projects.

The Program provides monies for qualified projects possessing a well-defined, comprehensive project plan. Favored plans utilize the benefits of science and technology to provide economic and employment growth potential in Arkansas.

The Technology Development Program invested in one project during Fiscal Year '96: \$50,000 to Twenty-First Century Engineering Inc. of Fayetteville. The Authority's funding generated an additional \$30,932 in matching funds. (This project employs five Arkansans.)

Arkansas' TDP results are measured through new technologies, jobs and royalties.

Royalty agreements will enable the Authority to collect up to five percent of net sales revenue for up to 10 years in the event that these technologies are successfully commercialized.

This Program currently funds eight projects or enterprises either paying or positioned to pay royalties on the Authority's investments, totaling \$356,628 since 1993.

Technology Transfer Assistance Grant Program

The Technology Transfer Assistance Grant Program (TTAG) assists, through limited financial support not to exceed \$3,750, 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.

In Fiscal Year '96, this Program invested \$77,179 in 23 transfers statewide.

Twenty-five requests for assistance were received and reviewed during Fiscal Year '96; of those, 23 received assistance. The categories funded are listed in the box located at the bottom of this page.

Companies participating in the Program during Fiscal Year '96 year included: **Superior Industries** of Rogers, **Davidson Manufacturing Corp.** of Van Buren, **Today's Kids** of Booneville, **Industrial Machining Corp.** of Arkansas in Fort Smith, **D.J. Associates** of Fort Smith, **Baldor Electric** of Clarksville, **Baldwin Specialty Products Inc.** of Fayetteville, **C&J Forms and Label Co.** of Fort Smith, **Mid-West Enamellers, Inc.** of Fort Smith, **TSW Corp. of Texarkana**, **Barker Sales & Service Co.** of El Dorado, **Coors/ACI** of

Benton, **Myers Environmental** of Malvern, **BECO Corp.** of Benton, **Hot Metal Moldings, Inc.** of Arkadelphia, **Alumax-Magnolia** of Magnolia, **North American Marine Jet** of Benton, **Hughes Missile Systems Co.** of Camden, **TSW Corp.** of Texarkana, **Gladwin-Arkansas** of Byltheville, **Camden Wire** of Pine Bluff, **Capstan Inland** of Hazen and **Baird Manufacturing** of Clarendon.

A listing of Fiscal Year '96 projects, funds awarded through the Program, and geographical sites is provided on pages 8 and 9 of this report.

Technology Transfer Services Program

The Technology Transfer Services Program provides a link between the technological resources of Arkansas universities and federal labs and private enterprises. The Program's primary goal is to help Arkansas industries become better prepared for competition in a technology-driven economy.

Twenty-First Century Engineering, Inc. was founded in 1990 to provide engineering consulting services to northwest Arkansas and to research and develop products for potential manufacture.

The company's "Electro-Optic Force Sensing System and Load Cell" project is the development of an electro-optic force sensing system whose performance will be immune to electromagnetic interference and relatively unaffected by high levels of moisture, thereby reducing or removing the potential for corrosion.

The initial market for this new technology is the food processing industries based or operating in northwest Arkansas.

TTAG Projects Reviewed & Funded

Quality Management	18 projects reviewed 16 projects funded
Mfg. & Info. Tech.	3 projects reviewed 3 projects funded
Operations Mgmt.	1 project reviewed 1 project funded
Environmental	3 projects reviewed 3 projects funded

SEED CAPITAL INVESTMENT PROGRAM

The Seed Capital Investment Program (SCIP) promotes economic development through the commercialization or improvement of science- and technology-related products and services of Arkansas-based firms.

Program funds provide working capital to support the initial capitalization or expansion of technology-based companies in Arkansas.

Applications are evaluated based on the following factors:

- the competence of the company's management;
- the soundness of its business operations;
- the marketing potential of its products or services; and
- the benefits that the enterprise would bring or brings to science and technology in Arkansas.

Proposals are thoroughly investigated by the Authority's staff and may receive technical evaluation.

The Seed Capital Investment Program's portfolio is currently valued at \$2,849,586 and

Who: *Law Office Information Systems*

What: *\$200,000 loan at 10 percent with a three-year maturity.*

Where: *Van Buren, Arkansas*

When: *July 21, 1995.*

How: *Law Office Information Systems developed an innovative CD ROM software package for conducting legal research named CaseBase. It is a comprehensive database of state and federal legal opinions and judgments on CD ROM with each product being equivalent to an entire wall of printed law books. The company's mission is to revolutionize legal research by providing high quality computer assisted research products. Our investment was for the continued development of CaseBase and a marketing program for such.*

Who: *Comfort Diagnostics & Solutions*

What: *\$ 25,000 loan at 10 percent with a four-year maturity.*

Where: *Sherwood, Arkansas*

When: *August 16, 1995.*

How: *Comfort Diagnostics & Solutions is bringing new technology and knowledge to the marketplace and educating people about the true potential for energy comfort, savings, and safety. They provide commercial and residential energy inspections that include a number of innovative tools and techniques. Our investment was to provide working capital for a marketing plan and training facilities. Comfort Diagnostics is an innovative company that has combined energy comfort and safety issues into one comprehensive audit and provides the needed skills and expertise to deliver the needed improvements to property owners at a cost effective price.*

is currently 29 percent invested in eight loan agreements and two royalty-based agreements. Twelve million one hundred and sixty-four thousand dollars in matching funds have been provided by small- and medium-sized applicant firms, other financing sources or both. The Program seeks at least a three-to-one match on any Seed Capital Investment Program funds provided. The Authority on average has invested \$135,378.75 out of a project's average cost of \$895,628.75.

In Fiscal Year '96 SCIP invested \$225,000 in two firms that in total raised \$1,265,000 in financing. The firms are highlighted on this page.

The investments from the Program in these two highlighted companies is projected to create 108 new jobs for Arkansas. Since SCIP first began in 1985, a projected total of 340 new jobs have been created for Arkansas. SCIP has invested in 16 startup firms in Arkansas; 14 are currently operating.

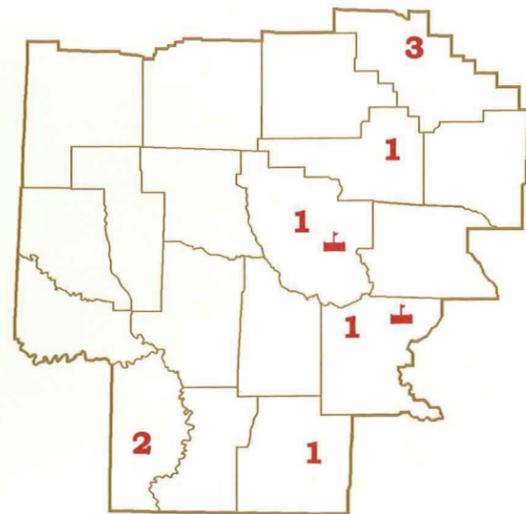
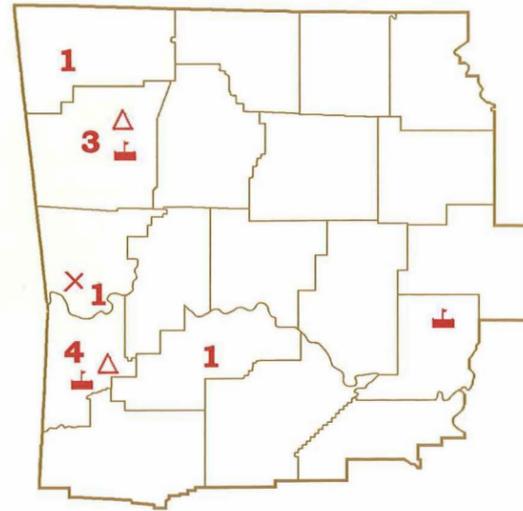
SCIP has invested in a wide range of exciting technologies (including lasers, fertilizers, computer software, plastics, and the Internet) to help keep Arkansas on the frontier of new technology commercialization.

INVESTING IN ARKANSAS

NORTHWEST ARKANSAS

Program	Proj. No.	Location	Funding
SCIP	9509	Van Buren	\$200,000
TTAG	9605	Rogers	3,750
TTAG	9610	Van Buren	3,750
TTAG	9612	Booneville	3,750
TTAG	9613	Fort Smith	3,750
TTAG	9614	Fort Smith	2,500
TTAG	9619	Fayetteville	3,750
TTAG	9622	Fort Smith	3,750
TTAG	9623	Fort Smith	3,750
TTAG	9624	Fayetteville	2,500
TDP	NA	Fayetteville	50,000

Subtotal: \$281,250



SOUTHWEST ARKANSAS

Program	Proj. No.	Location	Funding
TTAG	9654	Texarkana	\$564
TTAG	9602	Benton	3,750
TTAG	9603	Malvern	2,500
TTAG	9607	Benton	3,750
TTAG	9611	Arkadelphia	3,750
TTAG	9617	Magnolia	3,750
TTAG	9618	Benton	2,550
TTAG	9621	Texarkana	3,750

Subtotal: \$24,314

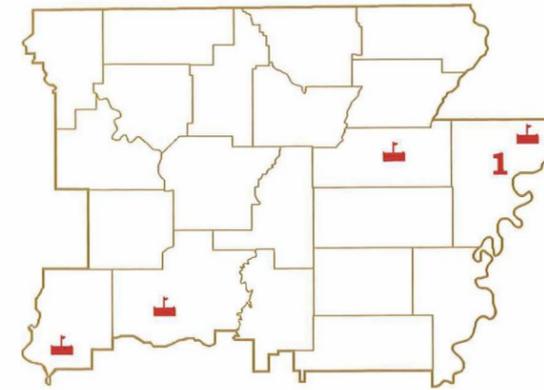
▬ - Location of Manufacturing Extension Network Partners (refer to page 10)
 X - Seed Capital Investment Program recipients (refer to page 7)
 Δ - Location of Manufacturing Extension Network Field Engineers (refer to page 10)

INVESTING IN ARKANSAS

NORTHEAST ARKANSAS

Program	Proj. No.	Location	Funding
TTAG	9606	Blytheville	\$3,750

Subtotal: \$3,750

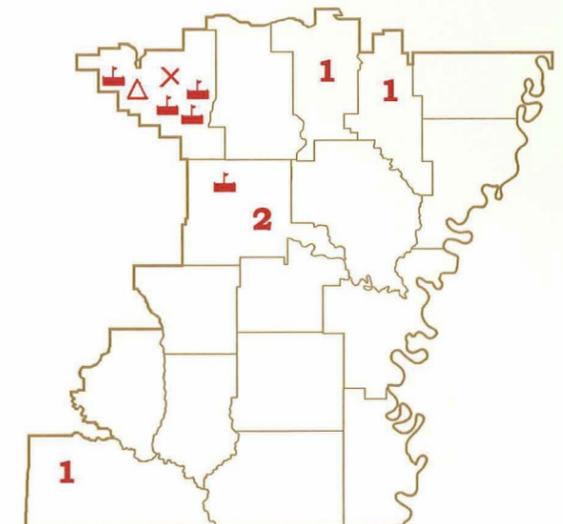


SOUTHEAST ARKANSAS

Program	Proj. No.	Location	Funding
SCIP	9510	Sherwood	\$25,000
TTAG	9604	Pine Bluff	3,750
TTAG	9608	Pine Bluff	3,750
TTAG	9601	El Dorado	3,750
TTAG	9609	Hazen	3,750
TTAG	9615	Clarendon	2,865

Subtotal: \$42,865

Total: \$352,179



SCIP - Seed Capital Investment Program (refer to page 7)
 TDP - Technology Development Program (refer to page 6)
 TTAG - Technology Transfer Assistance Grant Program (refer to page 6)

MANUFACTURING EXTENSION NETWORK

Development of the Arkansas Manufacturing Extension Network began in 1993. The Authority, along with the Network partner organizations (listed in the box at the bottom of this page), agreed to share services to provide increased technical and business management assistance to Arkansas industry, especially the manufacturing sector.

The Network initiated a statewide presence with increased state and federal support. In Fiscal Year '96, the Authority and its partners committed \$2,080,577 in state funds to match an award of \$1,403,465 from the National Institute of Standards and Technology (NIST) Manufacturing Extension Partnership (MEP). The NIST funding marked the beginning of a state-federal partnership, with the potential for \$12.4 million in federal support from federal Fiscal Year '96 through federal Fiscal Year 2001.

The Network supplied Arkansas industries with access to technical and business assistance through a decentralized network of field offices. To maximize efficiency, the field offices were strategically located near the state's highest industry concentrations. Offices were opened in Fayetteville, Fort Smith and Little Rock. Two future field offices will be located in Camden and Jonesboro. Until the Camden and Jonesboro offices are operational, field engineers from each of the established field offices will serve these regions of the state.

Each office had a start-up staff of two field engineers recruited from the private and public sectors and experienced in Arkansas' leading industries. Engineers underwent an orientation period with all of the Network's partner organizations. After orientation, engineers began making initial contacts, providing technical assistance among Arkansas' 3,390 small- and medium-sized manufacturers.

Field engineers offered technical and management assistance in areas of need expressed by Arkansas'

The Manufacturing Extension Network's mission is to improve the quality, productivity and competitiveness of Arkansas' industry by providing comprehensive technical and management assistance.

Network Partner Organizations

Arkansas Science & Technology Authority
Arkansas Industrial Development Commission
Arkansas State University
Arkansas State University - Beebe
Henderson State University
Mississippi County Community College
National Center for Toxicological Research
Small Business Development Center
Southern Arkansas University Tech
University of Arkansas, Fayetteville
University of Arkansas at Little Rock
University of Central Arkansas
Westark Community College
Winrock International

See maps on pages 8 & 9 for partner office sites.

manufacturers. These included, but were not limited to: control systems/integration, product development and design, printing, converting and packaging, market development, pollution prevention, quality/inspection, plant layout, automation, ISO 9000, Computer Aided Design/Computer Aided Manufacturing/Computer Aided Engineering, material engineering, human resources, business systems/management, Electronic Data Interchange/communications/Local Area Networks.

A central office located at the Authority was established to support field operations. The network director was hired in July 1995. In addition to developing and managing the Network, the director provided access to Program support offered by the Authority, the Network partners, and NIST. After becoming fully operational, the central office will: coordinate initial industry contacts; provide fiscal, marketing and information management support to field engineers; measure the quality of information and solutions to guarantee that customers receive timely, objective and cost-effective solutions.

In direct response to industry demands for easy access to services, the central office established a toll free telephone number, 800-400-6934. This service created a "One Stop Shop" where customers can quickly access products and services. This number will be made available to individual

businesses through trade publications, economic development organizations and professional associations.

In addition to the establishment of three field offices and the central office, the Network utilized the program management support offered through its affiliation with the NIST Manufacturing Extension Partnership. It continued to draw upon the combined financial, technical and business management support offered by the Manufacturing Resource Advisory Committee, an advisory committee to the Authority's Board of Directors.

VENTURES IN EDUCATION

The Arkansas Ventures In Education Project promotes enhancement of mathematics, science and technology instruction, school reform, and improved student performance at selected junior and senior high schools in rural Delta counties. During Fiscal Year '96:

- The Arkansas AdVentures Computer Network provided advanced computer training to 120 teachers at eight Delta schools. This training focused on accessing the Internet and using Internet information to supplement limited library resources;

Participating School Districts

Dumas Public School District

Dumas High School
Dumas Junior High School

Lakeside Public School District

Lakeside High School
Lakeside Middle School

Lee County Public School District

Lee Senior High School
Anna Strong Middle School

South Mississippi Cty. Public School District

Rivercrest High School
Rivercrest Junior High School

- Ongoing teacher training in Problem-Based Learning and other student-centered instructional methods moved the schools closer to the goal of infusing the teaching of problem-solving skills into core content instruction;
- The Winthrop Rockefeller Foundation funded a special series of professional development workshops entitled "The Reading Thinking Connection" for teachers from all participating schools. The teaching techniques included in these workshops are designed to accelerate the reading skills of those students who reach the secondary grades while still reading at elementary levels;
- Rivercrest High School, South Mississippi County Public School District, was added to the participating school districts. Strategic planning sessions were conducted and a summer orientation program, funded locally, was provided for entering ninth graders.

From its implementation in 1992 until 1996, Arkansas Ventures has provided an array of program elements that have produced measurable improvement in college entrance exam (ACT and SAT) scores and in overall achievement test scores in both reading and mathematics. In addition, enrollments in two- and four-year colleges and technical institutes have increased and the number of students from Ventures schools needing remediation in college mathematics has decreased.

The Program includes:

- guidance in strategic planning and goal setting;
- leadership training for administrators and department heads focused on reforming curriculum and raising expectations;
- high quality professional development opportunities for teachers to improve instructional practice;
- Summer orientation programs to prepare entering ninth graders for the more rigorous academic standards of a Ventures high school;
- Tutoring services to accelerate academic improvement in a variety of subject areas;
- Field trips designed to increase students' awareness of career options; and
- Preliminary college entrance exams administered unofficially to identify subject areas needing improvement and to help students overcome test anxiety.

Special Achievements in Lee County

1996 was an especially good year for Ventures at Lee Senior High School in Marianna, Arkansas. Three Ventures seniors were offered a record amount of college scholarship dollars, and the annual amount of scholarships offered to Lee Senior High School graduates grew from \$312,896 in 1993 to \$706,500 in 1996. (Records of scholarship amounts were not kept prior to 1993.) One of Lee Senior High's 1996 Ventures graduates is a National Merit Finalist and another was featured in the Arkansas Times as one of the Outstanding Students of 1996. Three students were invited to attend Governor's School, four students were selected to serve on the Governor's Advisory Board on Drug and Alcohol Abuse Prevention and three students were tapped for the Martin Luther King Commission's Advisory Board. The overall number of students in the school who scored at or above grade level on achievement tests increased by 4 percent.

Funding Sources

1991-Present

National Science Foundation (NSF) - for general operations and evaluation.
The Authority - in kind contributions in the form of office space and services.

1996

Winthrop Rockefeller Foundation - for teachers' professional development.
Arkansas Arts Council - for incorporation of the arts into the core subject areas.

Prior to 1996

Coca Cola Co. Foundation with Arkansas Coca Cola Bottlers Assoc.
Southwestern Bell Telephone Co.
Arkansas Rural Electrical Cooperatives Corp.
Local businesses serving participating Ventures school districts.

FINANCIAL STATEMENT

ANALYSIS OF EXPENDITURES/BUDGET

Fiscal Year '96 General Fund
Expenditure Report
June 30, 1996

	Annual Budget	Expenditures	Percentage of Expenditures
Salaries	\$468,224.00	\$442,026.01	94%
Employee Benefits	116,241.00	106,767.39	92%
Postage & Delivery	5,425.00	4,964.25	92%
Telephone Telegraph Teletype	100.00	0.00	0%
Print & Duplicating	8,950.00	6,880.62	77%
Office Equipment Maintenance	2,700.00	2,915.85	108%
Rent Office & Equipment	57,328.00	53,227.55	93%
Travel & Sponsored Meetings	23,450.00	15,493.62	66%
Association Dues & Memberships	14,000.00	22,756.50	163%
Professional Fees	8,800.00	8,450.00	96%
Centrix Services	8,200.00	9,233.52	113%
Conference & Convention Fees	15,044.00	14,990.87	100%
Insurance Premiums	400.00	91.00	23%
Stationery & Office Supplies	7,684.00	5,281.87	69%
Subscriptions & Publications	4,000.00	3,902.61	98%
Purchase DP Software	5,000.00	11,791.62	236%
Capital Outlay	17,000.00	17,000.00	100%
Contract Labor	100.00	0.00	0%
General Fund Total	\$762,646.00	\$725,773.28	95%
Grants	802,880.00	722,878.92	
Technology Development	130,929.00	130,929.00	
General Revenue Total	\$1,696,455.00	\$1,579,581.20	
Appropriation	\$2,046,903.00		
Deferment (-)	350,448.00		
Adjustment Fund (+)	0.00		
Available Allocation	\$1,696,455.00		

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Phillip Rayford
Roberta Bustin
Michael Murphy
(Chairs of Each Committee)

RESEARCH COMMITTEE

Staff Contact: Joe Gentry

Don Pederson, Chair
Roberta Bustin
Charles Hathaway
James Hendren

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Staff Contact: Jim Benham

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Ray Cox, Jr.
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Susan Collins

EPSCoR PROJECT ADMINISTRATOR

Joyce Sadler

FISCAL OFFICER

Ed Sartain

BUSINESS CONTROLLER

Cassie Tavorn

EXECUTIVE SECRETARY

Melissa Adams

SECRETARY/RECEPTIONIST

Mary Moon

AUTHORITY MILESTONES

1983

The 74th General Assembly passes legislation creating the Arkansas Science & Technology Authority (ASTA).

1985

Governor Bill Clinton's Economic Package gives the Authority its programs in Research, Seed Capital and Technology Transfer.

1986

GENESIS, the state's first incubator, opens at the University of Arkansas, Fayetteville.

Arkansas is named outstanding western state for financial programs assisting technology-based small businesses.

1987

The Authority co-sponsors "Winning the Race With Change," a conference on the role of science and technology within Arkansas' economic development efforts.

The Small Business Innovation Research Awareness Program (SBIR) is established.

1988

The Authority assists several of the 11 economically-distressed counties targeted by Governor Clinton's Rural Development Action Program in drafting economic development plans.

The Authority receives Southern Industrial Development Council's Excellence Awards for Annual and Authority reports.

1989

The Centers for Applied Technology Program is established to support the National Science Foundation (NSF) Experimental Program to Stimulate Competitive Research (EPSCoR) Program.

The Authority's Technology Development Program is established.

1990

The Centers for Applied Technology provides matching funds to create the first three centers.

A feasibility study is conducted for an Arkansas School for Mathematics and Science (ASMS).

1991

The Authority creates the Challenge Grants Project, granting qualified industrial networks one dollar for every dollar provided by industrial members to start a network.

The Authority receives Technology Extension Pilot Project grant funds from the National Institute of Standards and Technology (NIST) to transfer technology from federal laboratories to state industries.

1992

The Authority successfully completes a million dollar cost sharing contract with the Food and Drug Administration (FDA) to conduct a feasibility study and master plan for the development of the National Biotechnology Cooperative.

The Ventures In Education (VIE) project is initiated in Arkansas with a summer orientation program for 328 Delta students.

The Technology Development Program receives an energy-related funding grant from the Arkansas Industrial Development Commission's (AIDC) State Energy Office.

The Authority receives a NIST Planning Grant for Technology Extension Planning.

The GENESIS Technology Incubator receives highest national recognition with the Randall M. Whaley Incubator of the Year Award.

1993

Governor Jim Guy Tucker appoints a "Coordinating Council" — composed of

AUTHORITY MILESTONES

technical representatives from state agencies, higher education institutions and a federal lab — to create an environment conducive for the development of a manufacturing extension network.

GENESIS Technology Incubator is named among six “best practice” incubators nationwide by the National Business Incubation Association.

1993

The Technology Development Program receives its first state appropriation funds and finances its first two projects.

1994

The Technology Transfer Assistance Grant Program is created and funds 10 projects.

1995

Authority Board of Directors appointments are increased to include three members to provide representation of manufacturing in Arkansas.

The Authority's staffing expands with the introduction of a Vice President State Director Information Technology.

The Governor's Telecommunications and Information Technology Advisory Board is created.

The National Institute of Standards and Technology Manufacturing Extension Partnership awards \$1,403,465 to the Authority for development of a state-federal Manufacturing Extension Network partnership.