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MISSION STATEMENT

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.

2 CHAIRMAN & PRESIDENT'S LETTER

Dear Governor Tucker and Distinguished Legislators:

The Board of Directors and staff of the Arkansas Science & Technology Authority proudly submit to you the Authority's Fiscal Year 1995 Annual Report. The report summarizes the wide range of scientific and technological programs and projects in which the Authority has been involved, providing the benefits of today's science and advanced technology to the people and State of Arkansas. As a result of the action of the Arkansas General Assembly in FY95, this report also offers insights to the new challenges ahead for the Authority, as well as future opportunities for Arkansas and its citizens.

In FY95 the Authority's programs continued to support opportunities for Arkansas researchers and enterprises to move forward in their scientific and technological endeavors. Researchers, enterprises and industries were able to strengthen Arkansas' scientific and technological infrastructure last year through **basic and applied research grants, technology development, technology transfer services, technology transfer assistance** grants and **seed capital investment** programs. In short, from concept to practical application, science and technology advancements have been tangibly realized in Arkansas, for Arkansas, through the Authority.

As noted on the facing page, action by the 1995 General Assembly has provided for new and challenging opportunities at the Authority in the areas of **telecommunications, telemedicine, distance learning, math and science education, and manufacturing extension**. To address these challenges, you have allowed more Board diversification through the addition of three directors from the manufacturing sector, created a staffing position for a senior telecommunications executive, and endorsed development of a full-fledged manufacturing extension network.

Coupled with the Authority's core programs, these new goals will continue to challenge the Authority to move Arkansas into the scientific and technological world of the 21st Century, transforming challenges into opportunities throughout the state. With your foresight and ongoing support, the Authority will continue to meet these challenges and the needs of the citizens of Arkansas.

Please review our Annual Report with pride, for without your support, Arkansas would not be so well positioned to benefit greatly from the latest in scientific and technological breakthroughs.

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

Sincerely,

Donald O. Pederson, Ph.D.
Chair, Authority Board of Directors

John W. Ahlen, Ph.D.
President, Authority

Arkansas General Assembly Acts

Arkansas Science & Technology Authority

- ACT 65 Increases membership with stronger representation of the manufacturing sector through the addition of three manufacturing-related directors to the Authority's Board.
- ACT 386 Appropriates funds for Authority.
- ACT 456 Authorizes the Authority to carry out programs to assist public education in preparing a more qualified work force.
- ACT 586 To provide for scientific, medical and technological jobs and infrastructure enhancements.
- ACT 676 Appropriates Authority General Improvement funding.

Arkansas School for Mathematics & Science

- ACT 558 & 559 Establishes a Board of Trustees.

Telecommunications

- ACT 737 Creates a joint committee on advanced communications and information technology, and establishes the Governor's Telecommunications and Information Technology Advisory Board.
- ACT 1052 Provides appropriations for the development of a strategic plan for the establishment of a statewide Distance Learning and Telemedicine Network.
- ACT 1069 Appropriates grant funds for the development of a statewide Distance Learning and Telemedicine Network.
- ACT 1070 Appropriates grant funds for the development of a statewide Distance Learning and Telemedicine Network.
- ACT 1139 Establishes the Information Network of Arkansas.

Other Related Actions

Manufacturing Extension Network

- The Arkansas Manufacturing Extension Network receives a \$200,000 grant from AIDC's State Energy Office to establish the Network Project Office or clearinghouse.
- The Arkansas Manufacturing Extension Network receives its first Arkansas General Improvement Fund appropriation for network operations.

What could be considered the foundation of the Authority's design, Basic and Applied Research Grant Programs competitively fund original

investigations in Arkansas for the discovery and application of scientific and engineering knowledge.

Added to the stable of Authority

Basic Research Grants Awarded

<p><u>Proposal:</u> 95-B-21 <u>Institution/P.I.:</u> UAF/Evans <u>Title:</u> Plant Assimilation of Nitrate in Ground Water <u>Amount:</u> \$38,924</p>	<p><u>Proposal:</u> 95-B-54 <u>Institution/P.I.:</u> UAMS/Wall <u>Title:</u> Peripheral and Central Modulation of Respiratory, Locomotor, and Cardiovascular Control <u>Amount:</u> \$32,880</p>	<p><u>Proposal:</u> 96-B-11 <u>Institution/P.I.:</u> UAF/Fillpkowski <u>Title:</u> Pulsed Laser Deposition of Layered Magnetic Materials <u>Amount:</u> \$69,565</p>
<p><u>Proposal:</u> 95-B-25 <u>Institution/P.I.:</u> UAF/Conrad <u>Title:</u> Parallel Constraint Satisfaction for Multi-chip Module Packaging <u>Amount:</u> \$36,946</p>	<p><u>Proposal:</u> 95-B-56 <u>Institution/P.I.:</u> UAF/Thoma <u>Title:</u> Relative Humidity Fluctuation Effects on the Transport of Volatile Organic Chemicals in Dry Soils <u>Amount:</u> \$29,557</p>	<p><u>Proposal:</u> 96-B-12 <u>Institution/P.I.:</u> UAF/Adams <u>Title:</u> Generalized Model of Compression Loads in Screw Compressor Mechanisms <u>Amount:</u> \$22,479</p>
<p><u>Proposal:</u> 95-B-28 <u>Institution/P.I.:</u> UAMS/Igietseme <u>Title:</u> Immunity and Immunopathogenesis of Chlamydial Disease <u>Amount:</u> \$37,975</p>	<p><u>Proposal:</u> 95-B-60 <u>Institution/P.I.:</u> UAF/Gordon <u>Title:</u> Laser Drilling of Diamond for Application to Multi-chip Modules <u>Amount:</u> \$22,274</p>	<p><u>Proposal:</u> 96-B-13 <u>Institution/P.I.:</u> UAF/Kreider <u>Title:</u> Effects of Oxytocin on LH Release from the Bovine Anterior Pituitary <u>Amount:</u> \$30,718</p>
<p><u>Proposal:</u> 95-B-30 <u>Institution/P.I.:</u> UAF/Stewart <u>Title:</u> Heat and Mass Transfer in Capillary Porous Materials with Fully Coupled Transport Mechanisms <u>Amount:</u> \$26,806</p>	<p><u>Proposal:</u> 96-B-01 <u>Institution/P.I.:</u> UAMS/Krishn <u>Title:</u> Somatostatin's Inhibition of the Proliferation of Brain Tumor Cells by Manipulation of Insulin-like Growth Factor or Insulin-like Growth Factor Binding Proteins <u>Amount:</u> \$34,300</p>	<p><u>Proposal:</u> 96-B-15 <u>Institution/P.I.:</u> ASU/Johnson <u>Title:</u> Development of Tin Sulfide Thin-Film Photo Conductors <u>Amount:</u> \$30,244</p>
<p><u>Proposal:</u> 95-B-45 <u>Institution/P.I.:</u> UAMS/Smeltzer <u>Title:</u> Adhesins as Targets for the Prevention of Staphylococcal Osteomyelitis <u>Amount:</u> \$35,222</p>	<p><u>Proposal:</u> 96-B-04 <u>Institution/P.I.:</u> UAF/Ivey <u>Title:</u> Characterization of a Cytochrome b/c1 (b6f) Complex from Bacillus Alcalophilus, a Gram positive Bacterium <u>Amount:</u> \$30,320</p>	<p><u>Proposal:</u> 96-B-16 <u>Institution/P.I.:</u> UALR/Shaiikh <u>Title:</u> Amino Acid Sequencing of Proteins and Peptides by Mass Spectrometry <u>Amount:</u> \$37,700</p>
<p><u>Proposal:</u> 95-B-46 <u>Institution/P.I.:</u> UALR/Mundfrom <u>Title:</u> A Statistical Analysis of Heart Disease Data for Reducing the Cost of Rural Health Care <u>Amount:</u> \$21,616</p>	<p><u>Proposal:</u> 96-B-05 <u>Institution/P.I.:</u> UAMS/Ramaprasad <u>Title:</u> NMR Methods to Monitor Intracellular Blood Lithium Levels-- Studies in an Animal Model <u>Amount:</u> \$42,192</p>	<p><u>Proposal:</u> 96-B-17 <u>Institution/P.I.:</u> UAF/Erf <u>Title:</u> Autoimmune Vitiligo in Smyth Line Chickens: In Vitro Characterization of Melanocyte-Immune Interactions <u>Amount:</u> \$38,640</p>
<p><u>Proposal:</u> 95-B-48 <u>Institution/P.I.:</u> UAMS/Chowdhury <u>Title:</u> Molecular Mechanisms of Nicotine Induced Exocrine Pancreatic Injury <u>Amount:</u> \$31,500</p>	<p><u>Proposal:</u> 96-B-07 <u>Institution/P.I.:</u> UAF/Marks <u>Title:</u> Rapid Endpoint Measurement of the Previous Thermal Treatment of Cooked Poultry Meat <u>Amount:</u> \$39,982</p>	<p><u>Proposal:</u> 96-B-18 <u>Institution/P.I.:</u> Hendrix/Bandyopadhyay <u>Title:</u> Study of Alkali Halide Phosphors as Imaging Plates in X-ray Digital Radiography <u>Amount:</u> \$33,995</p>
<p><u>Proposal:</u> 95-B-49 <u>Institution/P.I.:</u> ASU/Suslich <u>Title:</u> Imaging of Solar Flare Gamma Rays <u>Amount:</u> \$29,955</p>	<p><u>Proposal:</u> 96-B-09 <u>Institution/P.I.:</u> UAMS/Gray <u>Title:</u> Channel Catfish Virus Gene Regulation <u>Amount:</u> \$34,200</p>	<p><u>Proposal:</u> 96-SBP-01 <u>Institution/P.I.:</u> UAF/Xiao <u>Title:</u> Atomic Spectroscopy with Quantum States of Light and Novel Effects Due to Quantum Coherence in Multi-Level Media <u>Amount:</u> \$27,700</p>
<p><u>Proposal:</u> 95-B-50 <u>Institution/P.I.:</u> Lyon/Lichtl <u>Title:</u> A New Method for Preparation of Enantiomerically Enriched 5-Alkyl 2-cyclohexene-1-ones <u>Amount:</u> \$18,400</p>		<p><u>Total:</u> \$834,089</p>

programs in 1985, Research has steadily grown. In fiscal years 1986 and 1987, the Authority awarded a total of \$868,229 for research grants. Ten years later, in FY95, the programs awarded \$863,127 in funding, matched by \$818,491 for a total of \$1,681,618.

Considering the long-term impact on the state's economy through Basic and Applied Research, Arkansas is realizing tangible results with opportunities for more technology development and the introduction of new business.

Basic Research. The Authority is charged with encouraging, establishing and supporting Basic Research in science and engineering at Arkansas colleges and universities. Basic

nonlinear dynamics, plant pathology, chemistry, paleontology, agricultural engineering, computer science and environmental science.

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; it puts into practical use the scientific knowledge

obtained in Basic Research.

Applied Research Grants Awarded

<u>Proposal</u>	<u>Institution</u>	<u>P.I.*</u>	<u>Project Title</u>	<u>Amount</u>	<u>Co-Sponsor</u>	<u>Match</u>
95-A-01	UALR	Talburf	A Bayesian Approach to Identification of Postal Address Components Utilizing Word Frequencies Derived from Expert Coders Corpora	\$200.00	Axiom Corp.	\$202,484.00
95-A-02	UAF	Berghel	Determination of Optimal Meta Level Key Construction Techniques for VLDB Applications	\$200.00	Axiom Corp.	\$31,687.00
95-A-03	UAF	Anderson	Regeneration, Evaluation and Commercialization of Spinach with Genetically Engineered Virus Resistance	\$13,500.00	Allen Canning Co.	\$13,302.37
96-A-01	UAF	Rhoads	Molecular Mapping of Genes Affecting Pulmonary Hypertension Syndrome (Ascites) in the Chicken	\$15,000.00	Hubbard Farms	\$15,000.00
Total:				\$28,900.00	Total:	\$262,473.37

* Primary Investigator

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,

Fayetteville;

- University of Arkansas at Little Rock;
- University of Arkansas for Medical Sciences;
- Arkansas State University;
- Lyon College; and
- Hendrix College.

Arkansas colleges and universities participating in the Basic and Applied Research Grants programs during Fiscal Year 1995 included:
• University of Arkansas,

EPSCoR. Arkansas' EPSCoR Committee is responsible for the EPSCoR Program and is an advisory body to the Authority's Board of Directors.

The current National Science Foundation (NSF) grant award, the three year, \$3,000,000 Advanced Development Program, is in its last year. In 1995, Governor Tucker released \$450,000 from general improvement funds to provide a portion of the dollar-per-dollar cash match from the state.

There are three research centers funded through this award:

1. The Center for Neurobiology Research at the University of Arkansas for Medical Sciences (UAMS); P.I. — Dr. Edgar Garcia-Rill. This center has shown continued productivity. Four new faculty members have been recruited, and recent studies have provided new information about neural transmission.

2. The Center for Cellular and Molecular Studies on Biological Aging at UAMS; P.I. — Dr. David Lipschitz; Dr. Samuel Goldstein (the original P.I., passed away last summer). This research program explores the basis of biological aging. Major accomplishments in FY95 included: a) establishing the Center on Aging at UAMS; b) funding of four postdoctoral fellows and four graduate students by EPSCoR monies; c) naming of Dr. Barger as the first Inglewood Scholar for Alzheimer's Disease; and d) the publishing of 20 articles in peer-reviewed journals by center investigators.

3. The Center for Protein Dynamics at

UAF; P.I. — Dr. Roger E. Keoppe II. Seven new faculty members were recruited. Accomplishments for FY95 included: a) the publishing of 44 articles in peer-reviewed journals by center members; b) center relocation to laboratories in the new \$9.2-million wing for chemistry and biochemistry research; c) awarding of a patent to Professor Donald Bobbitt; and d) collaboration of assistant professors Stites and Pranata on a publication on the theory of protein folding.

Other EPSCoR activities included:

- Selection of Dr. Greg Salamo of UAF by the committee to submit his proposal to the NSF Experimental Systemic Initiative (ESI) Project grant program in January, 1995. This proposal has been funded at \$500,000 from NSF with a required one-to-one state match making it a \$1,000,000 project;
- Submission of the preproposal for the 1996 EPSCoR Grant, formerly the ESI, will be by Dr. Kim Smith of UAF and Dr. Joe Nix of the Ross Foundation. Title: "Establishment of the Arkansas Center for Environmental Research";
- Final draft review of the Arkansas research and development plan, "A Strategic Plan to Guide Arkansas into the 21st Century";
- Submission of the Arkansas Implementation Program to the Department of Energy January 24, 1995; and
- Twenty-one preproposals received for the 1995 Department of Defense EPSCoR solicitation. Up to 15 proposals with a total request of \$5 million over three years will be submitted September 15, 1995.

Technology Development Program Projects

Company	Project Description	Funds Awarded
Vector inc. Fayetteville	Low Cost, Open Architecture Machine Tool Controller Prototype Development	\$50,000
Hale Engineering* Pea Ridge	Optimized Self-Supercharging Internal Combustion Engine Development	\$46,765
Southern Innovations Batesville	Development of Portable Electronic Commode Facility	\$50,000

* Funding for this project was made available through a grant awarded to the Authority from Petroleum Violation Escrow Funds of the State Energy Office, Arkansas Industrial Development Commission.

TDP. Assisting in development and commercialization of new technology-based products and processes through innovative technology development projects, the Technology Development Program invested a total of \$146,765 to three Arkansas-based businesses for the prototype development and testing of innovative technologies.

Proposal submissions demonstrated sound technical feasibility as well as economic growth potential for Arkansas. Royalty agreements will enable the Arkansas Science & Technology Authority to collect up to five percent of net sales revenue for

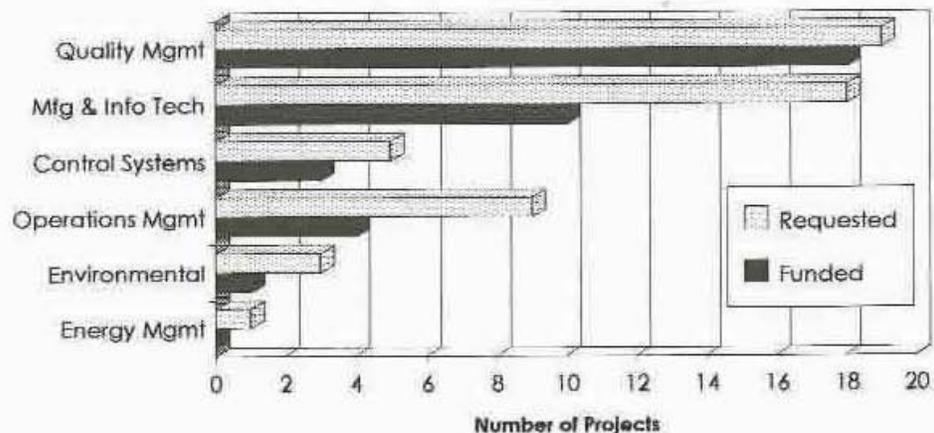
up to 10 years in the event that these technologies are successfully commercialized. The chart at left provides information for all three projects funded during the year.

TTAG. The Technology Transfer Assistance Grant Program invested

\$125,431 of FY95 funds in 34 Arkansas-based firms to fund product, process, environmental, management and operational improvements. The chart directly below outlines the TTAG funding requests in FY95 and 36 actual funded projects by functional technical area.

TTAG provides funding to support costs associated with the transfer and implementation of technologies to increase Arkansas' global industrial competitiveness.

TTAG Projects Requested vs Projects Funded



Northwest Arkansas •

Prog.	Company	Proj. #	Location	Funds
TTAG	Adam Industries	9415	Springdale	\$2,500
TTAG	Baldwin Specialty Prod. Inc.	9501	Fayetteville	3,750
TTAG	FiberTech Group Inc.	9502	Rogers	3,750
TTAG	Pel Freeze Ltd.	9510	Rogers	2,498
TTAG	PQR Inc.	9513	Fort Smith	2,500
TTAG	Davidson Mfg. Corp.	9521	Van Buren	3,750
TTAG	Oak Mountain Inc.	9522	Pyatt	3,750
TTAG	Mead Container Board	9526	Fort Smith	3,750
TTAG	Kearney Co.	9527	Fayetteville	3,750
TTAG	C&J Forms & Labels Co.	9534	Fort Smith	3,750
TTAG	Front Porch Appraisal Co.	9538	Springdale	3,750
TTAG	Dana Corp.	9539	Russellville	3,750
TTAG	Baldwin Specialty Prod. Inc.	9540	Fayetteville	3,750
TTAG	Maynard Inc.	9543	Fayetteville	3,750
TTAG	Baldor Controls	9548	Fort Smith	2,500
TTAG	Bekaert Corp.	9551	Van Buren	3,750
TTAG	Hiram Walker & Sons Inc.	9552	Fort Smith	3,750
TTAG	Gates Rubber Co.	9553	Siloam Springs	3,750
SCIP	Genesis Foods Inc.	9504	Ozark	100,000
TDP	Vector Inc.	9407	Fayetteville	50,000
TDP	Hale Engineering	9408	Pea Ridge	46,765

Total: \$259,263



Projects & Funding by County

County	Projects	Funds
Benton	Four	\$ 56,763
Franklin	One	\$100,000
Crawford	Two	\$ 7,500
Marion	One	\$ 3,750
Pope	One	\$ 3,750
Sebastian	Three	\$ 16,250
Washington	Nine	\$ 71,250

Southwest Arkansas •

Prog.	Company	Proj. #	Location	Funds
TTAG	Alumax	9502	Magnolia	\$3,750
TTAG	R&D Industries Inc.	9542	Mena	3,750
TTAG	Alumax-Magnolia Div.	9545	Magnolia	3,750
TTAG	N. American Marine Jet	9546	Benton	3,750
TTAG	Briar Gypsum	9517	Nashville	2,450
TTAG	T&W Corp.	9554	Texarkana	3,186
SCIP	Fink & Co. Inc.	9502	Hope	85,000

Total: \$105,636



Projects & Funding by County

County	Projects	Funds
Columbia	Two	\$ 7,500
Hempstead	One	\$85,000
Howard	One	\$ 2,450
Miller	One	\$ 3,186
Polk	One	\$ 3,750
Saline	One	\$ 3,750



• **Northeast Arkansas**

<u>Prog.</u>	<u>Company</u>	<u>Proj. #</u>	<u>Location</u>	<u>Funds</u>
TTAG	Southern Innovations Inc.	9504	Batesville	\$3,547
TTAG	Martin Lumber Co.	9506	Heber Springs	3,750
TTAG	R&W Recycling Co.	9525	Quitman	3,750
TTAG	Baldwin Piano & Organ Co.	9537	Conway	3,750
TDP	Southern Innovations Inc.	9405	Batesville	<u>50,000</u>
Total:				\$64,797

Projects & Funding by County

<u>County</u>	<u>Projects</u>	<u>Funds</u>
Cleburne	Two	\$ 7,500
Faulkner	One	\$ 3,750
Independence	Two	\$ 53,547



• **Southeast Arkansas**

<u>Prog.</u>	<u>Company</u>	<u>Proj. #</u>	<u>Location</u>	<u>Funds</u>
TTAG	Global Manufacturing	9503	Little Rock	\$2,500
TTAG	American Fiber Ind. Inc.	9507	Little Rock	3,750
TTAG	Lomanco Inc.	9515	Jacksonville	2,500
TTAG	Universal Antenna Mfg. Inc.	9516	Ward	3,750
TTAG	Granite Mtn. Quarries	9519	Sweet Home	3,750
TTAG	Camden Wire	9533	Pine Bluff	3,750
TTAG	Shipping Systems Inc.	9549	Crossett	3,750
TTAG	Power Technology Inc.	9547	Mabelvale	3,750
SCIP	The Network Edge	9501	Little Rock	<u>10,500</u>
Total:				\$38,000

Projects & Funding by County

<u>County</u>	<u>Projects</u>	<u>Funds</u>
Ashley	One	\$ 3,750
Jefferson	One	\$ 3,750
Lonoke	One	\$ 3,750
Pulaski	Six	\$26,750

SCIP. In conjunction with other lenders, the Authority provided financing to Arkansas companies to provide innovative technological services to Arkansas. In FY95 the Authority invested in three firms for a total of \$195,500. Two firms are highlighted here.

assists in initial capitalization or expansion of business-based enterprises involved in scientific or technological projects

The program invested \$10,500 of working capital in The Network Edge (TNE and formerly The Cutting Edge) to aid in the initial capitalization of the company. Located in Little Rock, TNE is a full service provider of on-line access to the Internet. TNE began as a local bulletin board system and added additional services as demand for the service soared.

Fink & Company received a SCIP investment of \$85,000 for the continued expansion of its operations. Hope-based Fink & Co. manufactures and distributes jigsaw puzzles, children's educational games and artistic products. The company has exclusive licenses for puzzles using many world-renown artists and institutions, including Norman Rockwell and the Vatican in Rome, Italy. The Authority's investment was leveraged by other financing sources, and allowed Fink & Co. to install automation and advanced design capabilities in its manufacturing and distribution operations.

MExN The Manufacturing Extension Network evolved toward full implementation of a system to

coordinate and provide industry-driven, technical and business assistance services statewide. In

FY95, the Authority:

- Identified Arkansas' manufacturing base by size, need, sector, geographic location and industry concentration;

- Coordinated the state's technology and business assistance service providers to leverage resources and optimize services that address expressed industry needs;
- Developed a decentralized manufacturing extension delivery system, with input from Arkansas' manufacturers, the National Institute of Standards and Technology (NIST) and the Arkansas Partnership for Technology Exchange;
- Realized the addition of three manufacturing sector Board members on the Authority's Board of Directors and the reconstitution of Network partners as members of the Manufacturing Resource Advisory Committee to the Authority's Board;
- Developed a legislative budget request that resulted in the appropriation of \$665,260 for Network operations and \$1.1 million in Network enhancements for the 1995-97 biennium; and
- Received a \$200,000 grant from the Department of Energy's State Energy Conservation Program to establish the Network's central office.

Industry Concentrations



VIE. The Arkansas Ventures In Education Project promotes school reform, enhancement of mathematics and science education and improved student performance at selected junior and senior high schools in rural Delta counties. During FY95:

- The Arkansas AdVentures Computer Network was established, allowing teachers to use e-mail and the Internet to expand their community of professional colleagues and share ideas and information about new instructional strategies;
- Problem-Based Learning Training Teams at each Ventures school engaged in a series of training sessions with their peers, including workshops, demonstrations and team teaching sessions in classrooms;
- Leadership Training sessions at the start of each semester focused on changing the school culture to enhance students' motivation and teachers' job satisfaction, resulting in action plans for follow-up;

Ventures In Education promotes school reform, enhancement of mathematics and science education and improved student performance at selected junior and senior high schools in rural Delta counties.

- Preliminary college entrance exams were administered unofficially to Ventures' 9th and 10th graders in order to identify subject areas needing improvement during the next year and to help students overcome test anxiety;

Special Achievement

Dumas High & Junior High Schools

For the first time ever, the performances of participating Dumas students on the American High School Mathematics Examination (given annually at the University of Arkansas in Fayetteville) were scored among the highest on this nationally normed test. This resulted in Dumas High School being listed among the top 25 high schools statewide.

- Tutoring services were provided to help students accelerate their academic improvement in a variety of subject areas;
- Students participated in field trips designed to increase awareness of a variety of career options, followed by classroom discussions of the education and training needed to pursue specific careers;
- Ventures schools provided Summer Orientation Programs to prepare entering 9th graders for more vigorous academic standards during their high school years -- including academic enrichment activities, science laboratory projects, diagnostic testing, trips and team-building exercises; and
- Teacher training culminated in a week-long Problem Design Seminar, based on the curricular materials currently in use, for teachers who had been trained in problem-based learning.

BIP. FY 1995 marked the close of the Business Incubator Program at the Authority. A final report is being developed that will provide a historical perspective of the program and profile lessons learned from the Authority's perspective. A brief synopsis of the Business Incubator Program follows:

Established in 1985 to foster development of technology-based enterprises in cooperation with colleges and universities, the program made five awards to establish incubator facilities in 1986. This was followed by two additional awards in 1989 and 1990, marking the final maturation of the Incubator Program. The seven incubators that were established under this program include:

1. GENESIS, a Science and Technology Economic Development Project at the University of Arkansas, Fayetteville;
2. The East Arkansas Business Incubator System at Arkansas State University in Jonesboro;
3. The Institute for New Enterprise Formation at Southern Arkansas University in Magnolia;
4. North Arkansas Business Incubator System in Salem, in cooperation with the North Arkansas Community College (in Harrison);
5. The Technical Enterprise Center at the University of Arkansas at Little Rock.
6. The Industrial Renaissance Center at the University of Arkansas at Monticello; and
7. The Institute for Innovative Business Development at the University of Arkansas at Pine Bluff.

Each incubator was unique in its

approach to operating because each was functioning in a unique local economy. It was expected that, after using the initial funding to start operations, each would become self-sustaining through rental income and service fees. This expectation proved to be unrealistic and the Program made sporadic additional grants for operations through FY 1993. Several incubators ceased operations as funds were exhausted.

The Authority continued to have an interest in better serving the needs of small businesses through a comprehensive business innovation system by using resources of the Authority, the Small Business Development Center, the projects funded with the Department of Higher Education's promotional grants, and the Arkansas Industrial Development Commission, and three remaining incubators.

Funds for the proposed business innovation system were requested for FY94 and 95. The funds were approved in the General Improvement Fund, but were not requested as a spending priority. However, \$400,000 was released by the governor in FY95 as a construction match to the award-winning Genesis Incubator in Fayetteville.

Some features of the business innovation system have evolved into services of the Authority's Technology Transfer and Technology Development Programs (TTAG & TDP) and the Arkansas Manufacturing Extension Network.

Expenditure Report June 30, 1995

	<u>Annual Budget</u>	<u>Expenditures</u>	<u>Percentage Exp.</u>
Salaries	\$407,330.00	\$407,324.34	100
Employee Benefits	97,602.00	97,542.11	100
Postage & Delivery	4,925.00	4,725.39	96
T-Phone T-Graph T-Type	100.00	90.82	91
Print & Duplicating	9,084.00	5,894.00	65
Office Equip. Maintenance	2,700.00	2,522.10	93
Rent Office & Equip.	49,138.00	54,621.13	111
Travel & Sponsored Meet	19,733.00	19,201.28	97
Assoc. Duos & Memberships	13,000.00	13,183.25	101
Professional Fees	3,803.00	3,798.70	100
Centrix Services	8,200.00	6,507.27	79
Conf. & Conv. Fees	15,654.00	15,638.20	100
Insurance Premiums	380.00	395.00	104
Stationery & Office Suppl.	4,574.76	3,959.99	87
Subscriptions & Pubs.	3,620.00	3,279.84	91
Purchase DP Software	931.24	931.24	100
Capital Outlay	4,156.00	4,155.47	100
Contract Labor	<u>120.00</u>	<u>0.00</u>	<u>0</u>
 General Fund Total	 \$645,051.00	 \$643,770.58	 100
 Grants	 848,497.00	 848,497.07	
Tech. Development	<u>275,431.00</u>	<u>275,431.00</u>	
 General Revenue Total	 \$1,768,979.00	 \$1,767,698.65	
 Appropriation	 \$2,017,442.00		
Deferment (-)	\$248,463.00		
Adjustment Fund (+)	\$0.00		
Available Allocation	\$1,768,979		

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 Ventures In Education in Arkansas

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 Executive Secretary

Mary Moon
 Secretary/Receptionist

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. Whalcy Incubator of the Year Award.

1993

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

1993-95

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.