

DIRECTORY
— OF —
AMERICAN
RESEARCH
— AND —
TECHNOLOGY
1 • 9 • 8 • 8

Organizations Active in
Product Development for Business

22nd Edition

**R. R. Bowker Company
New York and London**

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PREFACE

This 22nd edition of the *Directory of American Research and Technology: Organizations Active in Product Development for Business* (published prior to the 20th edition under the title *Industrial Research Laboratories of the United States*) continues a distinguished series of publications printed since the 1920s profiling research and product development capabilities of public and private enterprises in the United States. Issued in its first eleven editions by the National Academy of Sciences/National Research Council, the directory has been published by the R.R. Bowker Company since 1965. It has been updated annually since 1984 to reflect the increasing rate of change in organizational research and development functions resulting from mergers and acquisitions and the emergence of new technologies.

As in previous editions, the listings in the 1988 volume include all known non-government facilities currently active in any commercially-applicable basic and applied research, including development of products and processes. Most of the entities included in this edition are owned and operated by corporations, but some university, foundation and cooperative organizations that do research for industry are also listed. All areas of research and development that have commercial applications can be found in the directory, as evidenced by the presence in the Classification Index of subjects ranging from acoustics to zinc products. Research programs used exclusively by universities and/or the government, as well as activities devoted entirely to quality control and testing, are excluded from the directory.

A total of 11,642 organizations are listed in this 22nd edition; of these, 10,192 are currently active in research and development. 977 of the entries describe companies and facilities never before listed in the directory. A breakout of the total 11,642 entries reveals that 6,697 of the listings are "parent" organizations, which, by our own definition, are either corporate headquarters, holding companies, university administrative offices or the main offices of a not-for-profit association. The other 4,945 listings appear as "subsidiaries" in our directory under those "parents," even though these "subsidiaries" may operate legally as divisions, departments, laboratories or branch offices of the "parent." In only a few cases are known subsidiaries *not* listed under their parent firms; these exceptions result from specific requests to list subsidiaries as separate companies, from the

editors' decision not to include information on a foreign parent or from the occasional reluctance of firms to clarify their corporate structure. Please refer to page IX for further details concerning the format of this directory's entries.

Information for the 22nd edition of the *Directory of American Research and Technology* was acquired through a questionnairing process. We are grateful to the thousands of research directors, corporate communications officers and other administrative personnel from the facilities listed herein who took the time to provide detailed updating information to us on their facilities. Organizations which did not return revised questionnaires were updated over the telephone if two years had passed without contact or if substantive organizational or personnel changes were known to the editors to have occurred in the company in the past year. For those companies not reached by phone this edition, information was obtained from secondary sources, and these listings display an asterisk to the right of the organization's name.

The *Directory of American Research and Technology* is available for online searching through the subscription services of Pergamon Infoline. Specific elements of each company's entry, including R&D activities, subject codes, locations and personnel, are accessible by key word. For subscription information, contact Pergamon Infoline, 800 Westpark Drive, McLean, VA 22102, telephone (800) 336-7575 or (703) 442-0900. Mailing lists of the directory's entries can be requested from the Mailing List Department, R. R. Bowker Company, 245 West 17th Street, New York, NY 10011, telephone (212) 645-9700.

Comments and suggestions, as well as notes of changes year-round as they occur, are welcomed and should be directed to The Editors, *Directory of American Research and Technology*, at the above address.

Special thanks to Beverley McDonough, Erica Timm, Ada Gomez and David Caffry for sharing their experience and expertise in the preparation of this edition.

Basil Daley
Senior Editor
Judy Regel
Managing Editor

December, 1987

ARRANGEMENT OF THE DIRECTORY

The Main Section: Companies and Their Subsidiaries

The main section of this directory presents an alphabetical listing of parent organizations and the reporting structure for their subsidiaries which do research. The parent organization is included even if it itself does not perform research or development. Information on the parent is followed by a central research and development center, if any, and then an alphabetical listing of all divisions and subsidiaries. Foreign R&D facilities are listed last within the corporate group unless otherwise directed by the owning company. Subdivisions are alphabetized under the division or subsidiary to which they report. Entries for divisions and subsidiaries reporting to the parent company are preceded with one dash; entries for subdivisions and/or laboratories by two or more dashes to convey reportage.

An asterisk appearing after the name in an entry indicates that updating information did not come from the facility itself but was obtained from secondary sources.

For a detailed listing of the contents of the entries see the sample on the following page.

The Indexes: Geographic, Personnel and R&D Classification

The main, alphabetically-arranged section of the directory is followed by three indexes. In the Geographic Index, all facilities, including parent companies and all of their listed divisions, are indexed by their location. The index is arranged alphabetically by state, then within state by city, and within city alphabetically by company name. The Personnel Index contains an alphabetical listing of all individuals included in the entries. The Classification Index is an important key to the general R&D activities at each installation. It consists of 34 broad subject headings, each of which is subdivided into more specific subheadings corresponding to research identified by each facility listed in the main section.

References appearing in each of the three indexes are code numbers, not page numbers. The code numbers consist of an alphabetical character corresponding to the letter of the alphabet that the company referenced can be found under in the main section of the directory. The alphabetical character is followed by a one-to-three digit number corresponding to the company's numeric location within the alphabetical letter of the main section. A decimal number indicates that the reference is to a specific facility within a company, since the facilities listed under a parent company are numerically coded with these decimals.

SAMPLE ENTRY

¹C351 ²COMMUNICATIONS SYSTEMS CORPORATION,

³107 L'Enfant Plaza SW, Washington, DC 20023.

⁴Tel: 202-864-5000; WATS: 800-303-7030

⁵*Chmn & Chief Exec Officer* Jerry Goldin; *Pres & Chief Operating Officer* Laurence Lawson

6.1 ⁷—⁸CSC Laboratories, 2000 Brooks Dr, Forestville, MD 20747. ⁹(pi)

Tel: 305-427-4000; Telex: 77-9667

VPres & Dir of Lab Dr John James

¹⁰Professional Staff: 408 (Doctorates:56) - ¹¹Computer science, electrical engineering, mathematics, physics. ¹²Technicians & Auxiliaries: 174

¹³Fields of R&D: Research in satellite communications, spacecraft technology and network technology

.2 — — Environmental Division, 696 N Wayne St, Arlington, VA (pg)

22201. Tel: 703-369-8910

Dir Vernon Sampson

Fields of R&D: Air quality modeling research for basic and applied technology

1. This code consists of the letter under which the company is alphabetized and a number indicating its position within the letter grouping. This identifying code is used in the Geographic, Personnel and Classification Indexes to refer the user to the appropriate text entry in the main section.
2. Name of the parent organization.
3. Address.
4. Telephone numbers.
5. Personnel. Personnel listed for the parent company consist of officers of the company, while divisional listings include major research personnel.
6. Decimal number identifying each facility's sequential location in the company's listing. The decimal number is used in the three indexes following the parent company's code to refer to specific facility listings in the main section.
7. Reportage - each dash indicates what division of the parent company the facility reports to. One dash indicates reportage to the parent company. A facility preceded by two dashes reports to the division with one dash found above it in the entry, etc.
8. Name of the division, laboratory, or subdivision.
9. R&D services codes. These letter codes appear in each R&D facility's entry to indicate for whom research work is performed. The following codes are used:
(p) for parent (own) organization
(g) on contract for government
(i) on contract for industry
(c) consultation for others
10. Number of professional staff. Included in parentheses is the number of staff possessing doctoral degrees.
11. Scientific disciplines represented by doctorates.
12. Number of laboratory and technical support staff working at the facility.
13. Statement of chief R&D activity. Detailed information does not appear in every entry since all organizations are not structured identically and some have policies which restrict publication of certain research activities.

RESEARCH ACTIVITY CODES USED IN THE TEXT

p—R&D for parent organization
g—On contract for government

i—On contract for industry
c—Consultation for others

ABBREVIATIONS USED IN THE TEXT

Admin—Administration,
Administrative
Asst—Assistant
Assoc—Associate
Ave—Avenue
Blvd—Boulevard
Bldg—Building
Chmn—Chairman
Dept—Department,
Departmental
Dir—Director
Div—Division
Dr—Doctor, Drive
E—East
Exec—Executive
Gen—General
Hwy—Highway
Info—Information
Jr—Junior
Lab(s)—Laboratories,
Laboratory

Librn—Librarian
Mgr—Manager
N—North
Pl—Place
Pres—President
Pub—Public
R&D—Research and
Development
Rd—Road
Res—Research
Rte—Route
Secy—Secretary
Serv(s)—Service(s)
Sr—Senior
S—South
St(s)—Street(s)
Supt—Superintendent
Supvr—Supervisor
Treas—Treasurer
VChmn—Vice Chairman
VPres—Vice President
W—West

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COMPANIES AND THEIR SUBSIDIARIES

A

- A1 DON AADLAND ENGINEERING,* 8420 E Crestwood Way, (i)**
Scottsdale, AZ 85253. Tel: 602-946-5165
Chmn & Chief Exec Officer Donald I Aadland; *Engineering Technician* Ronald I Bacon
Professional Staff: 2—Building acoustics, electrical engineering, engineering physics, mechanical engineering. **Technicians & Auxiliaries:** 1
Fields of R&D: Solar heating, ventilating, and air conditioning systems and components; ultrasonic devices; building acoustics

AAI CORPORATION See United Industrial Corp

- A2 AAK CORPORATION, 747 River St, Haverhill, MA 01830. (i)**
Tel: 617-373-3769
Pres J DiPrimo; *VPres of Energy* N DiPrimo; *Special Projects Mgr* D Hilliard; *Librn* T Fitzgerald
Professional Staff: 3. **Technicians & Auxiliaries:** 2
Fields of R&D: Magnetics in power source; DC converter interest in higher efficiency through use of MOS/FETs as power switchers in the 50 to 100kHz range

- A3 A&L AGRICULTURAL LABS OF MEMPHIS, INC,* 411 N (gic)**
Third Ave, Memphis, TN 38105. Tel: 901-527-2780; Telex: 53-0645
Pres Gene Coleman; *Lab Supvr* Dan Moffett; *VPres & Mgr of Technical Info Servs* Dr Richard Large
Professional Staff: 7 (Doctorates: 3). **Technicians & Auxiliaries:** 22
Fields of R&D: Applied and product-oriented research on fertilizer use, foliar sprays, animal nutrition, industrial waste materials on agricultural soils, use of animal waste for fertilizer and feeding value

- .1 -A&L Great Lakes Agricultural Laboratories, Inc, 5011 (lc)**
Decatur Rd, Fort Wayne, IN 46806. Tel: 219-456-3545
Pres & Mgr Dr Gerald N Hohla; *Lab Supvr* James Loughran
Professional Staff: 4 (Doctorates: 1)—Agronomy, chemistry, residue analysis, soil physics. **Technicians & Auxiliaries:** 20
Fields of R&D: Applied and product-oriented research on fertilizer use, foliar sprays, animal nutrition, industrial waste materials on agricultural soils, use of animal waste for fertilizer and feeding value

- .2 -A&L Midwest Laboratories Inc, 13611 B St, Omaha, NE (gic)**
68144. Tel: 402-334-7770
Managing Dir Kennard Pohlman; *Technical Dir* Dr Gerald Provendner
Professional Staff: 11 (Doctorates: 1)—Oceanography. **Technicians & Auxiliaries:** 30
Fields of R&D: Applied and product-oriented research on fertilizer use, foliar sprays, animal nutrition, industrial waste materials on agricultural soils, use of animal waste for fertilizer and feeding value; methodolodization for chemical and microbiological assays

AAR See Association of American Railroads

- A4 AAR BROOKS & PERKINS CORP (AAR Brooks & Perkins (pg)**
Corp). (Formerly Brooks & Perkins, Incorporated). (Division of AAR Corp). 12633 Inkster Rd, 17515 W Nine Mile Rd, Livonia, MI 48150. Tel: 313-522-2000; TWX: 810-242-2979; Cable: BROOKPERK
Pres A C Richards; *Chief Research Exec* Leslie Mollon; *Dir of Advertising & Public Relations* Lee Dinsmoors
Professional Staff: 10 (Doctorates: 4). **Technicians & Auxiliaries:** 9
Fields of R&D: Engineering and design as applied to aerospace products and components; also commercial air cargo equipment and nuclear products

- A5 AAR CORPORATION,* 2100 Touhy Ave, Elk Grove Village, (pi)**
IL 60007. Tel: 312-437-9300
Pres Ira A Eichner
Fields of R&D: Product-oriented research on electronics, instrumentation and fueling

- A6 ABACUS CONTROLS INC,* 93 Readington Rd, PO Box 893, (pi)**
Somerville, NJ 08876. Tel: 201-526-6010; Telex: 88-8186
Pres & Chief Exec Officer George A O'Sullivan
Fields of R&D: Research on deep submergence motor controllers using digital control techniques, including constant voltage transformers, ferroresonant transformers, uninterruptible power supplies, alternating current supplies, frequency converters, and direct current to alternating current inverters; computer programming and analysis; conversion of solar cell energy to alternating current power that is fed back into utility lines

A BAR IPSEN See ALCO Standard Corporation

- A7 ABARIS CORPORATION,* 2218 13th St, Encinitas, CA (pic)**
92024. Tel: 619-436-0061
Pres Lewis E Massie; *Sr Scientist* Dr Robert Conger; *Pub Relations Officer* J Warren; *Recruiting Contact* Dave Lamber; *Security Officer* L B Massie
Professional Staff: 21 (Doctorates: 3)—Aeronautics, computer engineering, electromagnetics, mathematics, physics, systems analysis. **Technicians & Auxiliaries:** 47
Fields of R&D: Systems analysis; technological forecasting; patent processing

- A8 ABART GEAR* (Division of Cleveland Gear, Ohio), 1805-S (i)**
55th Ave, Chicago, IL 60650. Tel: 312-242-2524
VPres & Gen Mgr R E Bergmann; *Mgr R&D* G E Olson
Professional Staff: 3. **Technicians & Auxiliaries:** 3
Fields of R&D: Product-oriented research in speed increasers, more efficient gearmotors and zero backlash reducers

- A9 ABATRON INCORPORATED, 33 Center Dr, Gilbert, IL (pgic)**
60136. Tel: 312-426-2200; TWX: 499-7675
Pres John J P Caporaso
Professional Staff: 3 (Doctorates: 1)—Chemical engineering. **Technicians & Auxiliaries:** 3
Fields of R&D: Epoxies; chemical specialties including polyamides, polyurethanes, acrylic, latex based products

- A10 ABBOTT LABORATORIES, 14th St Sheridan Rd, North (pi)**
Chicago, IL 60064. Tel: 312-937-6100
Chmn & Chief Exec Officer Robert A Schoellhorn; *VPres for Pharmaceutical Products R&D* Dr Robert S Janicki; *VPres for Hospital Products R&D* John G Krieger; *VPres for Diagnostics R&D* David Milligan; *Dir of Chemical Agricultural R&D* John C Kanc
Professional Staff: 1200—Health care
Fields of R&D: Basic and applied pharmaceutical research with primary emphasis on cardiovascular, infectious, and connective tissue diseases; basic research in molecular biology; applied research in other areas such as diagnostics, hospital products and industrial chemicals. Research and development is conducted at eight locations in the United States and at one facility in the United Kingdom

- A11 ABBOTT TRANSISTOR LABORATORIES,* 3200 W**
Jefferson Blvd, Los Angeles, CA 90016. Tel: 213-936-8185
Pres John Batte

2 A B C DIGITAL ELECTRONICS

- 1** -Abbott Transistor Laboratories,* 520 Main St, Ste 300, Fort Lee, NJ 07024. Tel: 201-461-4411 (pgi)
Dir R&D Michael Brown
Fields of R&D: Standardized power supplies, including direct current to alternating current inverters, alternating current to direct current converters, direct current to sine wave inverters and standard and customized power transformers

- A12 A B C DIGITAL ELECTRONICS,*** 51 Prospect Pl, Hillsdale, NJ 07642. Tel: 201-666-6888 (p)
Chief Exec Officer Benjamin K Cheng; *Pres & Technical Dir* Chi H Wu; *Pub Relations Officer* Richard A Wood
Professional Staff: 15 (Doctorates: 1). Technicians & Auxiliaries: 15
Fields of R&D: Automatic test systems; electromagnetic devices

- 1** -Automation Dynamics Division, 51 Prospect Pl, Hillsdale, NJ 07642. Tel: 201-666-6888 (ic)
Chief Exec Officer Benjamin K Cheng; *Pres & Technical Dir* Chi H Wu
Professional Staff: 12 (Doctorates: 1)—Digital electronics, electronic engineering, mini-microcomputer. Technicians & Auxiliaries: 28
Fields of R&D: Digital electronics production test systems and method devices

ABC RESEARCH CORPORATION - EAST

See American Bacteriological & Chemical Research Corporation

- A13 IRVING ABEND ASSOCIATES,*** 17 Clinton Pl, Bergenfield, NJ 07621. Tel: 201-384-7589 (i)
Pres & Chief Operating Officer I J Abend
Professional Staff: 3—Electronics, digital computers
Fields of R&D: Applied research on industrial test and control equipment; sound equipment; speech processing; product-oriented development from breadboards through production prototypes; low quantity production of special equipment

- A14 R G ABERNETHY INDUSTRIES, INC.,*** PO Box 11733, Winston-Salem, NC 27104. Tel: 919-722-5723; WATS: 800-334-0128 (pg)
Pres Dr R G Abernethy
Professional Staff: 2 (Doctorates: 1)
Fields of R&D: Product-oriented research in custom shoes, shoe boots, leather, rubber

- 1** -R G Abernethy Industries, Inc.,* Rte One, PO Box 21, Croydon, NC 28615. Tel: 919-385-7112 (pg)
Pres & Dir R&D Dr R G Abernethy
Professional Staff: 2 (Doctorates: 1)
Fields of R&D: Product-oriented research in custom shoes, shoe boots, leather, rubber

ABI ANALYTICAL

See Applied Biosystems, Inc

- A15 ABM COMPUTER SYSTEMS,*** Three Whitney, Irvine, CA 92718. Tel: 714-859-6531 (p)
Pres G W Shipman; *VPres of Engineering* K Woog
Fields of R&D: Product-oriented research in the development of communications adaptors and subsystems

- A16 ABRAMS AERIAL SURVEY CORPORATION,*** 124 N Larch St, Lansing, MI (Mailing add: PO Box 15008, Lansing, MI 48901). Tel: 517-372-8100; Cable: ABRAMSAIR (pgic)
Chmn Talbert Abrams; *Pres* Thomas Schafer; *VPres of Operations* Silvano Tombelli
Professional Staff: 4—Photogrammetry. Technicians & Auxiliaries: 30
Fields of R&D: Aerial photogrammetry

- A17 ABRAMS INSTRUMENT COMPANY,*** 2859 W Jolly, Okemos, MI 48864. Tel: 517-332-6405 (p)
Pres Richard L Belding; *VPres* Marilyn Gates
Professional Staff: 4—Electronics, mechanics, miniature mechanisms. Technicians & Auxiliaries: 3
Fields of R&D: Electronic and electromechanical timing and counting devices, digital motors, photogrammetric instrumentation

- A18 ABT ASSOCIATES INC,** 55 Wheeler St, Cambridge, MA 02138. Tel: 617-492-7100; TWX: 710-320-1382 (pgic)
Pres Dr Clark C Abt; *Librn* Judy Foster; *Sr Analyst* Larry C Kerpelman; *Sr Analyst* Philip Tobias
Professional Staff: 346 (Doctorates: 88)—Anthropology, architecture, economics, engineering, law, mathematics, medical and biological science, psychology, public administration, sociology, statistics, urban planning. Technicians & Auxiliaries: 330
Fields of R&D: Research, evaluation and analysis of social problems, programs and policies under contract to federal, state and local government agencies, including the Department of Defense, private industry and educational institutions in the U.S. and Europe.

- A19 ACADEMY FOR EDUCATIONAL DEVELOPMENT, INC.,** 680 Fifth Ave, New York, NY 10019. Tel: 212-397-0040; Cable: ACADENY NEW YORK (ic)
Chief Exec Officer & Pres Dr Alvin C Eurich; *Exec VPres & Dir International Div* Stephen F Moseley
Professional Staff: 25 (Doctorates: 7)—Agriculture, communications, education, health, psychology, system analysis. Technicians & Auxiliaries: 135
Fields of R&D: Studies in international and communications technology, often involving identifying crucial issues on which research

is required; evaluating the usefulness and cost effectiveness of available hardware and software systems; outlining the best ways of adapting new knowledge systems to the special problems of countries caught up in rapid social and economic change; general management studies for various types of institutions; the management of educational institutions; the educational and economic development in developing countries; health; population; corporate training and development; information and learning technology

- A20 ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA,** 19th & Benjamin Franklin Pkwy, Philadelphia, PA 19103. Tel: 215-299-1000 (pgic)

Pres Keith S Thomson; *VPres Environmental Research* Dr Louis E Sage
Professional Staff: 37 (Doctorates: 39)—Aquatic science, aquatic toxicology, biology, botany, ecology, estuarine and marine ecology, nutrient dynamics, zoology. Technicians & Auxiliaries: 87
Fields of R&D: Research in aquatic toxicology; biology; botany; ecology; estuarine and marine ecology; nutrient dynamics; zoology

- 1** -Stroud Water Research Center, RD One Box 512, Avondale, PA 19311. Tel: 215-365-3405 (pgic)

Pres, Chief Research Officer & Recruiting Contact Dr Robin L Vannote; *Invertebrate Zoologist* Dr Bernard Sweeney; *Microbial Ecologist* Dr Thomas Bott; *Systems Analyst* Dr Dennis Newbold; *Nutrient Cycling* Dr Louis Kaplan

Professional Staff: 7 (Doctorates: 5)—Aquatic entomology, bioenergetics, geomorphology, invertebrate zoology, microbiology, organic chemistry. Technicians & Auxiliaries: 10
Fields of R&D: Basic Research in community structure, production and utilization of energy as affected by land use and geomorphic processes; community succession and recovery rate following physical disturbance; biological control of nuisance organisms and toxic wastes; agricultural runoff; channel modification and water diversion

- 2** -Division of Environmental Research, Philadelphia Laboratory, 19th St & Parkway, Philadelphia, PA 19103. Tel: 215-299-1080 (i)

Dir & Marine Biologist Dr Kenneth L Heck Jr; *Project Coordr & Marine Biologist* Steven Eckman; *Argologist* Dr John Sherman; *Sr Chemist* Dr Stephen Friant; *Fisheries Ecologist & Biometrics* Dr Richard Horwitz; *Marine Biologist* Dr Sybil Seitzinger; *Stream Ecologist* Dr David Hart; *Invertebrate Zoologist* Dr Clyde Goulden; *Limnologist* Dr Ruth Patrick; *Population Biologist* Dr Alan Tessier; *Dir of Development* Louis Sage

Professional Staff: 25 (Doctorates: 12)—Algalogy-botany, aquatic biology, geology, freshwater and estuarine ecology, nutrient chemistry, paleobiology, toxicology, chemistry. Technicians & Auxiliaries: 14
Fields of R&D: Basic and applied research and consulting related to fresh and estuarine waters, including short and long term biological, chemical and physical studies to assess and monitor water quality, productivity and ability to assimilate waste; bioassays on physiologic effects of sublethal contaminants; environmental inventories; taxonomic studies; literature surveys; systematics and ecology of aquatic organisms; bioenergetics of aquatic ecosystems; effects of chemical, mechanical and thermal stresses from industry on the aquatic environment; watershed management; project alternatives; mathematical modelling; acidification studies

- 3** -Benedict Estuarine Research Laboratory, Benedict, MD 20612. Tel: 301-274-3134 (pgic)

Dir & Aquatic Toxicologist Dr James G Sanders; *Benthic-Sediment Ecologist* Dr Richard Osman; *Plankton Ecologist* Dr Kevin Selmer; *Plankton Ecologist* Dr David Brownlee; *Fisheries Ecologist* Dr Denise Breitburg; *Bio-Geochemist* Dr G F Riedel

Professional Staff: 28 (Doctorates: 6)—Aquatic biology, biogeochemistry, estuarine ecology, fishery biology, invertebrate biology, physiology, toxicology. Technicians & Auxiliaries: 17
Fields of R&D: Research and consulting on dynamics of estuarine ecosystems, carbon and trace element transport through coastal zones; effects of power plant operations (thermal discharge, residual biocides, entrainment of plankton) on ecosystem; abundance and distribution of organisms in the estuary relative to power plants; commercially important species

- A21 ACCESS CORPORATION,** 1811 Losantville Ave, Cincinnati, OH 45237. Tel: 513-396-9600 (c)

VPres Engineering Fred Ratterman
Fields of R&D: Product-oriented research in computer storage and retrieval modules

- A22 ACCO BABCOCK INC*** (Wholly owned subsidiary of Babcock International, Ltd, London, England), 425 Post Rd, Fairfield, CT 06430. Tel: 203-255-7100 (p)
Pres & Chief Exec Officer Dennis F Flint

- 1** -Aeco Controls Group, 1022 Michigan St, PO Box 608, Adrian, MI 49221. Tel: 517-265-4800 (pgi)

Chief Exec Officer & Pres Wilnot Wheeler; *Dir of Engineering* Warren Anderson

Professional Staff: 2 (Doctorates: 2). Technicians & Auxiliaries: 10
Fields of R&D: Applied research on design and manufacture of cable control assemblies for automotive, aircraft, marine and other specialized applications

- 2** -Bristol Babcock Division,* 40 Bristol St, Waterbury, CT 06720. Tel: 203-575-3000; Telex: 96-2417 (p)

Pres J R Jones; *VPres Systems Engineering* Joe Provenzano; *Dir of Development Engineering* Eric Schrumm; *Mgr Instrumentation Development* B Gabrielson; *Mgr Advertising Control & Commercial*

- Product Development J Pettit*
Professional Staff: 47. Technicians & Auxiliaries: 33
Fields of R&D: Applied and product-oriented research on instrumentation systems, particularly for process control, including measurement and recording of pressures, flows, pH, temperature, amperage, voltage, relative humidity and other variables
- 3 -Material Handling Group,* Engineering & Development (p)
Center, 12755 E Nine Mile Rd, Warren, MI 48089. Tel: 313-755-7500;
Telex: 23-5362; Cable: ACCOCHCON WARN
Gen Mgr Edward J Carney; Product Engineering Mgr Harbans L Mediratta
Fields of R&D: Research and development relating to equipment for same manufacturing industry, principally conveyors and automation devices
- A23 ACCU-LABS RESEARCH INC, 11485 W 48th Ave, Wheat Ridge, CO 80033. Tel: 303-423-2766 (gic)
Pres William R Gilgren
Professional Staff: 5. Technicians & Auxiliaries: 30
Fields of R&D: Applied research in coal quality analysis and trace metals in biologicals; environmental requirements; water quality, radionuclides, elemental analysis, spark source mass spectrometry, trace elements, gas chromatography/mass spectrometry
- A24 ACCURACY SYSTEMS, INC (Division of Security Industries), (pgic)
15205 N Cave Creek Rd, Phoenix, AZ 85032. Tel: 602-971-1991;
Cable: STARFIASH
Pres & Chief Operating Officer Charles M Byers; Librarian Pat Watson;
Pub Relations Officer Shirley Byers
Professional Staff: 4—Electronic systems, ordnance engineering.
Technicians & Auxiliaries: 8
Fields of R&D: Specializes in the design, development and production of a wide variety of advanced small arms, ammunition, explosives, pyrotechnics and specialty ordnance devices; advanced high technology electronic access control and intrusion detection security systems
- ACCU RAY CORPORATION
See Combustion Engineering, Inc
- A25 ACCURIDE CORPORATION, PO Box 40, Henderson, KY (p)
42420. Tel: 502-826-5000
Pres G T O'Neill; Mgr Engineering T C Dillingham
Professional Staff: 18. Technicians & Auxiliaries: 14
Fields of R&D: Product design, process and materials engineering
- A26 A C D CORP, 1336 Stanley Ave, Dayton, OH 45404. Tel: 513-222-2600 (pl)
Gen Mgr W F Sommer
Fields of R&D: Product-oriented research on custom electronic controls and digital communications
- ACE ELECTRIC CO, INC
See Echlin, Inc
- A27 ACE GLASS INCORPORATED, 1430 Northwest Blvd, PO Box 688, Vineland, NJ 08360. Tel: 609-692-3333 (pc)
Chmn Paul Kramme; Research Dir Charles M DeWoody
Professional Staff: 3—Chemical engineering, electronic engineering.
Technicians & Auxiliaries: 2
Fields of R&D: Applied research in glass and apparatus design
- A-C ENERGY & MINERALS SYSTEMS
See Allis-Chalmers Corporation
- A28 ACF INDUSTRIES INCORPORATED* (Subsidiary of I C Holding Company, Inc), 3301 Rider Trail S, Earth City, MO 63045. Tel: 314-344-4500
Chmn & Chief Exec Officer Carl Icahn; VChmn Dr Joseph Carr
- 1 -St Charles Technical Center,* 3301 Rider Trail S, Earth City, MO 63045-1393. Tel: 314-344-4500 (p)
Chief Engineer Dr Sutliff
Professional Staff: 5—Engineering. Technicians & Auxiliaries: 17
Fields of R&D: Design and development of railroad freight and tank cars and associated products; theoretical analysis of dynamic structures; instrumentation for static and dynamic testing of large structures; experimental methods for product evaluation; development and testing of materials systems, components and subsystems related to rail freight transportation
- A29 ACG INCORPORATED,* 232 Front Ave, West Haven, CT (pgic)
06516. Tel: 203-776-6990, 933-8000; TWX: 710-465-6352
Pres & Dir of Research Andrew C Grimaldi; Pub Relations Officer C B Grimaldi; Safety Officer T Pawluk
Professional Staff: 5. Technicians & Auxiliaries: 2
Fields of R&D: Applied and/or product-oriented in vibration technology, in particular vibration test equipment and vibration isolation devices and noise control devices
- A30 ACHESON INDUSTRIES INC, 1600 Washington Ave, PO Box 8, Port Huron, MI 48060. Tel: 313-984-5583 (p)
Chmn James A Acheson; Pres & Chief Exec Officer Herbert A Hoover; VPres Research Dr J Brian Peace; VPres Operations R L Wine
Professional Staff: Electrical engineering, organic chemistry, physical chemistry
Fields of R&D: Chemical research
- 1 -Acheson Colloids Co,* PO Box 611747, Port Huron, MI 48061-1741. Tel: 313-984-5581; TWX: 810-231-5265 (l)
Pres Acheson Industries Herbert A Hoover; VPres North American Operations R L Wine; VPres North American Operations J B Peace; Technical Dept Mgr G F Paulus; Technical Dept Mgr A W Cooper; Sr Scientist Dr John Hickman
Professional Staff: (Doctorates: 2)—Chemical engineering, chemistry. Technicians & Auxiliaries: 10
Fields of R&D: Applied and product-oriented research in electrical conducting coatings; dry film lubricants; solid lubricant additives; metalworking compounds
- A31 ACI, CONSULTANTS IN ACOUSTICS & VIBRATION, (gic)
Suite 1580, Four Embarcadero Center, San Francisco, CA 94111. Tel: 415-421-1164
Pres D M Glumac
Professional Staff: 3. Technicians & Auxiliaries: 3
Fields of R&D: Acoustical and vibration on-site analysis, resolution of noise and vibration problems, environmental municipal sound survey research, analysis of machinery sound and vibration aspects, architectural acoustics, sound systems
- A32 ACKERBAUER LABORATORIES, INC, One Matthew St, Johnstown, NY 12095. Tel: 518-762-7625 (c)
Head of Lab & Recruiting Contact David Ackerbauer
Professional Staff: 1—Analytical chemistry. Technicians & Auxiliaries: 2
Fields of R&D: Product-oriented research on analytical chemical analyses in the area of water pollution and control, leather testing and quality control
- ACL-FILCO CORPORATION
Now ACL-Tec Corporation
- A33 ACL-TEC CORPORATION, (Formerly ACL-Filco Corporation), 1505 E Warner Ave, Santa Ana, CA 92705. Tel: 714-979-5500; Telex: 18-2298 (l)
Pres Edward Ravin; Chief Engineer Greg Ward; VPres of Operations Brian Ellerman; Personnel Mgr West Schuery
Fields of R&D: Aerospace ground support equipment; automated test equipment; fluid conditioning equipment; vapor recovery equipment; nuclear energy thermal conditioning; instrumentation and control systems
- A34 ACME ELECTRIC CORPORATION, 125 S Union St, Olean, NY 14760. Tel: 716-373-3254; Fax: 716-373-3395 (p)
Pres G Wayne Hawk; Dir Corporate Technology Ctr Ronald Randall; Technical Dir Ronald Randall
Professional Staff: 2. Technicians & Auxiliaries: 1
Fields of R&D: Applied research in the field of electrical and electronic control and power conversion equipment
- 1 -Power Products Group, 20 Water St, Cuba, NY 14727. Tel: 716-968-2400; Fax: 716-968-3948 (p)
Gen Mgr Thomas Sullivan; Mgr Engineering Ken Piper
Professional Staff: 20 (Doctorates: 1)—Electrical engineering. Technicians & Auxiliaries: 11
Fields of R&D: Applied and product-oriented research in electronic power conversion equipment for custom power supplies and automotive battery chargers
- 2 -Acme Transformer Division, I-95 & NC 74, Lumberton, NC (p)
(Mailing add: Rte 4, PO Box 54, 28358). Tel: 919-738-4251; FAX: 919-739-0024
VPres & Gen Mgr Thomas G Long; Mgr Engineering David Bernard
Professional Staff: 5. Technicians & Auxiliaries: 2
Fields of R&D: Applied and product-oriented research in the field of dry-type distribution and machine-tool transformers
- 3 -Power Products Group, 5416 W Amelia Earhart Dr, Salt Lake City, UT 84116. Tel: 801-539-0227; Fax: 801-539-1237 (p)
VPres & Gen Mgr John Gleason; Mgr Engineering Bill Reilly
Professional Staff: 5. Technicians & Auxiliaries: 3
Fields of R&D: Applied and product-oriented research in the field of transformers and magnetic power conversion equipment
- A35 ACME GENERAL CORP,* 300 E Arrow Hwy, San Dimas, CA 91773. Tel: 714-599-6881
- 1 -Plastics Division,* 200 E Railroad, Monrovia, CA 91016. Tel: 213-359-4562 (p)
Pres Frank Gill
Fields of R&D: Product-oriented research in plastic injection molding
- ACME RESIN COMPANY
See Borden, Inc
- A36 ACME UNITED CORPORATION, 425 Post Rd, Fairfield, CT (p)
06430. Tel: 203-255-2744
Pres & Chief Exec Officer H C Wheeler; Materials Mgr Frank Skoda; Dir of Personnel Charles Rizzo
Fields of R&D: Feeding supplies, antiseptic products, wound closure products, wound dressing
- A37 ACORN STRUCTURES, INC,* PO Box 250, Concord, MA (p)
01742. Tel: 617-369-4111
Pres Arthur Milliken; Energy Systems Engineer Mark E Kelley; Pub Relation Officer Rosemary Waugh
Professional Staff: 3
Fields of R&D: Development of active solar space heating systems

A38 ACOUSTIC EMISSION TECHNOLOGY CORPORATION (pgic)
(AET Corporation). (Owned by AET Corporation), 1824J Tribute Rd, Sacramento, CA 95815. Tel: 916-927-3861; Telex: 171-356
Technical Dir Allen Green; *Chief Engineer* James Rehburg; *Sr Engineer* James Lehaird; *Engineer* Steve Hamilton
Professional Staff: 15. *Technicians & Auxiliaries*: 6
Fields of R&D: Applied and product-oriented research into practical applications of acoustic emission

A39 ACRA ELECTRIC CORP., 3801 N 25th Ave, Schiller Park, IL (p)
60176. Tel: 312-678-8870
Pres D W Browne; *Chief Engineer* Robert A Ritt
Professional Staff: 3—Electrical engineering. *Technicians & Auxiliaries*: 2
Fields of R&D: Electrochemical development of inorganic, dielectric materials and high temperature, class H, resistance type, electrical heat elements in low temperature environments

A40 ACR ELECTRONICS, INC., PO Box 5247, Fort Lauderdale, (pg)
FL 33310. Tel: 305-981-3333
Chief Exec Officer David H Rush; *Chief Operating Officer* Paul M Frank; *VPres Engineering* John F Flood; *Librn* Colleen Brunjes; *Test Program Mgr* Richard Swanson
Professional Staff: 22 (Doctorates: 1)—Physics. *Technicians & Auxiliaries*: 25
Fields of R&D: Product-oriented research in the design and manufacturing of electronic safety, survival equipment and special battery applications

A41 ACRIAN,* 490 Race St, San Jose, CA 95126. Tel: 408-294-4200 (p)
Pres J R Harris; *Research Mgr* B L Bersom
Fields of R&D: Research in power transistors and amplifiers

A42 THE ACROMARK CO, INC.*, 60 Locust Ave, Berkeley (pc)
Heights, NJ 07922. Tel: 201-464-6474; WATS: 800-227-6675
Pres Fred Heine; *Plant Mgr & Chief Engineer* William Surman
Professional Staff: 2—Electrical engineering, mechanical engineering. *Technicians & Auxiliaries*: 1
Fields of R&D: Research on marking of plastics and plastic products; development of inks and color transfer media

A43 ACRO PLASTICS, 8638 Airport Hwy, Holland, OH 43528. (pic)
Tel: 419-865-0258
Pres William J Lowry; *Pub Relations Officer* Dorothy M Lowry
Professional Staff: 2—Plastic engineering
Fields of R&D: Product-oriented research on plastic containers

ACS MEDICOM New ACS Telecom

A44 ACS TELECOM, (Formerly ACS Medicom), 25825 Eshelman (pgc)
Ave, Lenita, CA 95717. Tel: 213-325-3055; Telex: 35-0213
Chief Exec Officer Mark Hays; *Chief Operating Officer* Todd Hays; *Corporate Research Officer* Dale Hays; *Pub Relations Officer* Debbie Simpson
Professional Staff: 6
Fields of R&D: Applied research in computer network technology

ACT See The American College Testing Program

ACTI See Distributor Network of America

A45 ACTION INSTRUMENTS CO, INC., 8601 Aero Dr, San (p)
Diego, CA 92123. Tel: 619-279-5726
Pres Jim Pinto
Professional Staff: 15 (Doctorates: 5). *Technicians & Auxiliaries*: 20
Fields of R&D: Product-oriented research in electronics

A46 ACTION PRODUCTS, INC.*, 22 N Mulberry St, Hagerstown, (p)
MD 21740. Tel: 301-797-1414, 797-1416; Telex: 32-2619; WATS: 800-228-7763
Pres Dr W R McElroy; *Mgr & Recruiting Contact* Benedict R McElroy
Professional Staff: 3 (Doctorates: 1)—Chemical engineering, plastics, polyurethanes. *Technicians & Auxiliaries*: 2
Fields of R&D: Applied and product-oriented research in products for medicine, sports and industry, including recoil pads for guns, shock absorbing insoles for shoes, exercise mats, pads to seal sewers from chemical spills, medical pads to prevent bed sores, hand exercisers and radiation bolus for cancer treatment specialty in very soft elastomers in 00 shore range 10-65

A47 ACTIVISION, INC., 2350 Bayshore Frontage Rd, Mountain (p)
View, CA 94039. Tel: 415-960-0410
Dir R&D Richard Lehnert
Fields of R&D: Product-oriented research in home computer software

A48 ACTON RESEARCH CORPORATION, 525 Main St, PO Box (p)
215, Acton, MA 01720. Tel: 617-263-3584
Chmn & Chief Exec Officer Bruce K Flint; *Librarian* Vera Kallinowski; *Pub Relations Officer & Research Engineer* Michael Case; *Mgr of Optical Instrumentation* Robert D Fancy
Professional Staff: 5. *Technicians & Auxiliaries*: 10

Fields of R&D: Development of ultraviolet optical coatings, laser mirrors and instrumentation; precise optical measurements and calibration at vacuum ultraviolet wavelengths; basic and applied research on ultraviolet laser materials properties; product-oriented research on UV spectral instrumentation development

ACTUARIAL COMPUTER TECHNOLOGY, INC See Distributor Network of America

A49 ACTUARIAL RESEARCH CORPORATION,* 6928 Little (p)
River Turnpike, Suite E, Annandale, VA 22003. Tel: 703-941-7400
Pres Gordon R Trapnell
Professional Staff: 9 (Doctorates: 2)—Aeronautical engineering, computer science, economics, mathematics, operations research, political science, psychology. *Technicians & Auxiliaries*: 2
Fields of R&D: National health insurance economics analysis; actuarial research, systems analysis-engineering for aeronautical systems; behavioral sciences, evaluations, natural surveys

A50 ACUREX CORPORATION, 555 Clyde Ave, PO Box 7555, (pgl)
Mountain View, CA 94039. Tel: 415-964-3200
Pres & Chief Exec Officer William E Dean; *Chief Librarian* Lee Stocks; *Pub Affairs Officer* Carolyn Sherby
Professional Staff: 220 (Doctorates: 35)—Aeronautical engineering, chemical engineering, electrical engineering, mechanical engineering, metallurgical engineering, systems analysis. *Technicians & Auxiliaries*: 135
Fields of R&D: Basic and applied research in composite materials and structures, high-speed, high-temperature aero/thermodynamics, combustion and alternate fuels technology, solar energy, environmental chemistry; product development in aircraft refrigeration, microelectronics for wireless data couplers, hazardous wastes destruction, high-temperature filtration materials, distributed data acquisition equipment, environmental monitoring

1 -Aerotherm Division, 520 Clyde Ave, PO Box 7040, Mountain (gl)
View, CA 94039. Tel: 415-961-6100; Telex: 32-2245; FAX: 415-964-8349
VPres & Gen Mgr Duane Baker; *Chief Librn* Lee Stocks
Fields of R&D: Aerospace: strategic and tactical missile weapon systems, strategic penetration aid systems, aerospace structures and materials, strategic system survivability engineering services, defense electronics, EW and C3T engineering services and aircraft refrigeration equipment

2 -Environmental System Division, 485 Clyde Ave, PO Box (c)
7044, Mountain View, CA 94039. Tel: 415-961-5700; Telex: 32-5961; Telecopier: 415-964-5145
VPres & Gen Mgr Dr Joseph John; *Technical Operations Mgr* Howard Morse; *Energy Engineering Mgr* Dr Howard Mason; *Recruiting Contact* Don Brauns
Professional Staff: 130 (Doctorates: 16)—Chemical engineering, electrical engineering, fluid mechanics, mechanical engineering, metallurgical engineering, solid mechanics. *Technicians & Auxiliaries*: 39
Fields of R&D: Engineering services, including research, design and construction for fuels and combustion, high-temperature filtration, environmental measurements, chemical analysis and environmental control of hazardous materials, hazardous waste incineration solar thermal engineering and photovoltaics engineering

A51 ACUSON INC., 1220 Charleston Rd, Mountain View, CA (p)
94043. Tel: 415-969-9112
Pres & Chief Exec Officer Sam Maslik
Fields of R&D: Product-oriented research and development of ultrasound equipment

ACUSTAR See Chrysler Corporation

A52 ADAC LABORATORIES,* 4747 Hellyer Ave, San Jose, CA (p)
95138. Tel: 408-365-2000; TWX: 910-339-9393
Chief Exec Officer Michael Preletz; *Chmn* Q P Wiles; *Human Resources & Personnel Dir* Robert A Starr
Professional Staff: 32 (Doctorates: 6)—Bioengineering, electronic engineering, mathematics, medicine, physiology, systems analysis. *Technicians & Auxiliaries*: 22
Fields of R&D: Computers in nuclear medicine, numerical radiography, image processing and analysis; digital radiography

A53 ADAGE, INC., One Fortune Dr, Billerica, MA 01821. Tel: 617-667-7070; TWX: 710-347-1594 (p)
Pres R Spann; *Exec VPres, Product Development & Engineering* B Prasad; *Pub Relations* John H Ricciardone
Fields of R&D: Applied research and development in interactive computer graphics systems and peripherals

1 -Lexidata Corporation,* One Fortune Dr, Billerica, MA 01821. (p)
Tel: 617-667-8550
Pres & Chief Exec Officer Richard Spann; *VPres Engineering* Robert Daley
Fields of R&D: Product-oriented research in computer hardware

ADALET DIVISION See Berkshire Hathaway Inc

ADAMAS CARBIDE CORPORATION

See Panatech Research & Development Corp

A54 JOSEPH ADAMS CORP, 5740 Grafton Rd, Vailey City, OH (pc)
44280. Tel: 216-225-9135
Pres Joseph Adams; *Librn* Margarite Kitchen; *Safety Officer* Clay Edgeston
Professional Staff: 5—Bacteriology, biochemistry, organic chemistry. Technicians & Auxiliaries: 2
Fields of R&D: Plant material and natural products isolation

A55 ADAMS-RUSSELL CO, INC, 1380 Main St, Waltham, MA (gi)
02154. Tel: 617-894-8540
Chmn Bd Gerald J Adams; *Pres* John J Lynch

.1 -Antenna-Microwave Division, Haverhill Rd, Amesbury, MA (pgi)
01913. Tel: 617-388-5210; TWX: 710-347-6360
Gen Mgr Ronald E Guimond
Professional Staff: 26 (Doctorates: 2)—Electrical engineering. Technicians & Auxiliaries: 8
Fields of R&D: Engineering design and development of airborne electronic countermeasure antennas and cable assemblies

.2 -Brazonics Division, Haverhill Rd, Amesbury, MA 01913. Tel: (p)
617-388-2280
Pres & Gen Mgr Francis April
Fields of R&D: Machine shop fabrication of specialized electronic hardware, including brazing of assemblies

.3 -Cable Services Division, 280 Bear Hill Rd, Waltham, MA (p)
02154. Tel: 617-891-4700
Pres William C Henchy; *Gen Mgr* John J Brockman
Fields of R&D: Build and operate community antenna television systems throughout the United States

.4 -Electronics & Instruments Group, 80 Cambridge St, (pgi)
Burlington, MA 01803. Tel: 617-273-3333
Group VPres James J Connolly; *Gen Mgr* Vito J Parato; *R&D Program Dir* Robert Moody
Professional Staff: 15 (Doctorates: 1)—Electrical engineering. Technicians & Auxiliaries: 20
Fields of R&D: Miniature amplifiers, mixers, power dividers, hybrids, directional couplers and transformers; electronic reconnaissance systems analysis, design and fabrication

.5 -Communications Programs Division, 1370 Main St, Waltham, MA (g)
02154. Tel: 617-891-4700
Gen Mgr Louis J Gargasz; *Dir of Engineering* Peter Dunham
Professional Staff: 40 (Doctorates: 2). Technicians & Auxiliaries: 16
Fields of R&D: Digital signal processing systems, both hardware and software

.6 -Semiconductor Center, 80 Cambridge Street, Burlington, MA (p)
01803. Tel: 617-273-5830
Dir & Recruiting Contact Dr Richard B Gold
Professional Staff: 8 (Doctorates: 2)—Electrical engineering, physics
Fields of R&D: Microwave semiconductor components

.7 -Micro-Tel Corporation, 10713 Gilroy Rd, Hunt Valley, MD (p)
21030. Tel: 301-771-0077; Telex: 87-442
VPres & Gen Mgr W R Trussell; *Dir Technology & Product Development* Dr Earl N Powers
Professional Staff: 8 (Doctorates: 1). Technicians & Auxiliaries: 11
Fields of R&D: Microwave electronic research, development and manufacturing attenuation calibration devices; surveillance receivers and allied spectrum analyzer

.8 -RHG Electronics Laboratory Inc, 161 E Industry Court, Deer (pc)
Park, NY 11729. Tel: 516-242-1100
Pres R B Hirsch; *Gen Mgr* R Vetter; *Chief Engineer* H Lamagna; *Chief Engineer* D Neuf
Fields of R&D: Design, develop and manufacture electronic components and subsystems for communications, radar and telemetry with special expertise in hybrid integrated circuits and intermediate frequency amplifiers, hybrid integrated circuit limiting amplifiers, logarithmic intermediate frequency amplifiers; amplifier test sets

A56 ADAPTIVE SYSTEMS CORPORATION, PO Box 3068, San (c)
Mateo, CA 94403-0068. Tel: 415-573-6114
Pres Dr Joseph F Melichar
Professional Staff: 2 (Doctorates: 2)—Biomechanical engineering, computer science, education, gerontology, health care, social science. Technicians & Auxiliaries: 1
Fields of R&D: Basic and applied research for health care, adult development and atypical child development; computer and information science applications in schools, health care and private business; longitudinal studies on human development and aging

A57 ADB-ALNACO, INC, 977 Gahanna Pkwy, PO Box 30829, (pic)
Columbus, OH 43230. Tel: 614-861-1304; Telex: 24-6646
Pres G P Weillich
Professional Staff: 5. Technicians & Auxiliaries: 3
Fields of R&D: Aviation ground lighting

A58 ADCOLE CORPORATION, 669 Forest St, Marlborough, MA (pi)
01752. Tel: 617-890-3400; TWX: 710-324-1706
Pres A D Cole; *Dir of Research* Dr George E James
Professional Staff: 24 (Doctorates: 4)—Electrical engineering, optics. Technicians & Auxiliaries: 85

Fields of R&D: Research on sun sensing systems, scientific instruments for rockets and satellites, linear and radial electrooptical measuring techniques, computer-controlled cylindrical coordinate gaging equipment

A59 ADC-TELECOMMUNICATIONS, INC.* 4900 West 78th St, (p)
PO Box NW 9653, Minneapolis, MN 55435. Tel: 612-835-6800
Chmn C M Denny; Pres F R Boswell; *VPres & Chief Technical Officer* W C Hamer
Professional Staff: 50 (Doctorates: 2)—Computer science. Technicians & Auxiliaries: 60
Fields of R&D: Design and manufacturing of telecommunications equipment, specifically telephone access and telephone test equipment; transformers, filters and other magnetic products for aerospace, aviation and data processing

.1 -ADC-Fiber Optics Corporation, 5503 Green Valley Dr, (i)
Bloomington, MN 55437. Tel: 612-835-6000
VPres Engineering Art Nelson
Fields of R&D: Product-oriented research in fiber optic couplers

A60 ADDITIVE TECHNOLOGY CORP, 210 Tyngsboro Rd, (ic)
North Chelmsford, MA 01863. Tel: 617-251-4931
Pres Raymond C DesMarais
Fields of R&D: Product-oriented research in printed circuit board technology

ADDS
See NCR Corporation

A61 A D G O, INC, 3988 McMann Rd, Cincinnati, OH 45245. Tel: (p)
513-752-6880
Pres D A Westerkamp; *Chief Engineer* L J Beerman
Professional Staff: 3—Electrical apparatus
Fields of R&D: Product-oriented research on electrical and electronic apparatus

A62 ADHESIVE PRODUCTS CORPORATION, 1660 Boone (p)
Ave, Bronx, NY 10460. Tel: 212-542-4600
Research Dir M S Peters
Fields of R&D: Applied and product-oriented research on resins, coatings and urethanes

A63 ADHESIVES RESEARCH, INC.* PO Box 100, Glen Rock, (p)
PA 17327. Tel: 717-235-7979; Telex: 84-0454; Cable: ADSEKCH
Pres E W Huber; *VPres & Technical Dir* Charles R Fox; *Special Projects Mgr* Rick Glackin; *Lab Mgr* Donald H Zang
Professional Staff: 8. Technicians & Auxiliaries: 6
Fields of R&D: Pressure sensitive and heat seal adhesives relative to tape and label application

A64 ADI ELECTRONICS, INC, 101 Trade Zone Dr, Ronkonkoma, (p)
NY 11779. Tel: 516-737-1800
Pres Peter Tumolo
Fields of R&D: Research in D-subminiature connectors

A D ISAACS ASSOCIATES, INC
Now The Issacs Group

ADPI
See Analog & Digital Peripherals, Inc

ADP MANUFACTURING, INC
See Analog & Digital Peripherals, Inc

A65 ADRIA LABORATORIES, INC.* (Subsidiary of Erbamon N (pi)
V), 5000 Post Rd, Dublin, OH (Mailing add: PO Box 16529, Columbus, OH 43216). Tel: 614-764-8100; Telex: 246-620 Warren-Teed
Pres & Chief Operating Officer David Robinson; *VPres of Medical Affairs* James A Page MD; *Librn* Frances Lanzisera; *Dir of Preclinical Research* Anthony P Imondi; *Dir of Pharmaceutical Development* Eric Benjamin; *VPres & General Counsel* B A Beck JD
Professional Staff: 64 (Doctorates: 26)—Biology, chemistry, medicine, pharmacology, statistics. Technicians & Auxiliaries: 56
Fields of R&D: Antineoplastic agents, cardiovascular drugs, gastrointestinal agents, and diagnostic agents

.1 -Adria Laboratories.* PO Box 16529, Columbus, OH 43216. (p)
Tel: 614-764-8100
Dir of Preclinical Research Dr Anthony R Imondi; *Dir Project Coordination* Dr R L Wolgemuth; *Dir Biological Sciences* Dr L Wong; *Dir of Pharmaceutical Sciences* Dr E Benjamin; *Librn* Frances Lanzisera; *Recruiting Contact* Gerald Brown
Professional Staff: 48 (Doctorates: 16)—Analytical chemistry, biochemistry, chemistry, medicinal chemistry, metabolism, pharmaceutical development, pharmacology, toxicology. Technicians & Auxiliaries: 24
Fields of R&D: Antineoplastic agents, cardiovascular drugs, and metabolic agents

A66 ADTECH, INC, 1814 Algaroba St, Honolulu, HI 96826. Tel: (pi)
808-941-0708
Chief Operating Officer Michael Gouveia; *Chief Research Exec & Dir of Engineering* Dr E J Weldon Jr; *Researcher* E J Weldon; *Researcher* Michael Gouveia; *Researcher* Carl Uyehara
Professional Staff: 5 (Doctorates: 3)—Communication systems, electrical engineering, electronic engineering. Technicians & Auxiliaries: 7
Fields of R&D: Communication theory, error correcting codes, and data communications; development of special purpose electronic systems

- A67 AD-TECH MICROWAVE, INC.*** 7755 E Redfield Rd, (pgc)
Scottsdale, AZ 85260. Tel: 602-998-1584
Pres Richard C Havens; VPres Gilbert A Herlich
Professional Staff: 3 (Doctorates: 1)—Electrical engineering.
Technicians & Auxiliaries: 4
Fields of R&D: Product-oriented research in fields of impact ionization avalanche transit time, Gunn, GaAs FET microwave CW and pulse oscillators, filters, amplifiers
- A68 ADT, INC.** 300 Interpace Pkwy, Parsippany, NJ 07054. Tel: (p)
201-316-1000; WATS: 800-ADT-INFO
Chmn & Chief Exec Officer Raymond B Carey Jr; Pres & Chief Operating Officer Ulysses J Brualdi Jr; VPres Engineering Selma T Rossen; Dir R&D David S Terrett; Gen Mgr Materials & Manufacturing William N Moody
Professional Staff: 140 (Doctorates: 12)—Chemical engineering, electrical engineering, electronic data processing, mechanical engineering. Technicians & Auxiliaries: 106
Fields of R&D: Technology in sensing, transmitting and receiving signals; applied science directed toward solid state sensing equipment particularly ultrasonic and microwave, signal transmission via radio and voice grade channels, and in automated signal handling; closed circuit tv, card access controls systems, fire and communication systems, burglary and fire protection systems
- A69 ADVANCE CIRCUITS, INC.*** 6101 Barker Rd, Ste 210, (p)
Minnetonka, MA 55345. Tel: 612-933-8812
Pres of R&D Thomas F Lealey
Fields of R&D: Research in multilayered printed circuit boards
- ADVANCED ACOUSTIC STRUCTURES, INC**
See General Acoustics Corporation
- A70 ADVANCED APPLICATIONS INSTITUTE, INC.*** (p)
1013-1017 Kennedy Blvd, Manville, NJ 08835. Tel: 201-722-8600;
Telex: 685-8083
Pres & Chief Operating Officer Dr J Mirsky; Pub Relations Officer James Lewis
Professional Staff: 16 (Doctorates: 3)—Medicine, polymer chemistry, synthetic organic chemistry. Technicians & Auxiliaries: 5
Fields of R&D: Research on polymers, clinical diagnostics, scintillation
- A71 ADVANCED ASSEMBLY AUTOMATION, INC - DESIGN** (pt)
DIVISION,* 314 Leo St, Dayton, OH 45404-1008. Tel: 513-222-3030
Pres John Logan
Professional Staff: 6—Tool engineering. Technicians & Auxiliaries: 10
Fields of R&D: Tool and die design and engineering; special equipment for production work, assembly automation
- A72 ADVANCED BIOFACTURES CORP.** 35 Wilbur St, (p)
Lynbrook, NY 11563. Tel: 516-593-7000
Pres Edwin Wegman; Lab Dir Angelo Chiulli; Dir Quality Control Dr Judith Hirst; Dir of Research Dr David Yee; Dir of Quality Assurance Bal Parcholi
Professional Staff: 10 (Doctorates: 3)—Biochemistry, enzymology, microbiology. Technicians & Auxiliaries: 20
Fields of R&D: Production of chemicals from biological sources, manufacturing of enzymes to digest collagen, elastin, fibrin, chitin and other proteins and carbohydrates; fermentation of extraction of biochemicals to customer specifications
- A73 ADVANCED CIRCUIT TECHNOLOGY, INC.** 118 NE Blvd, (lc)
PO Box 547X, Nashua, NH 03062. Tel: 603-880-6000
Pres & Chief Exec Officer J A Roberts; Dir of R&D T H Stearns
Professional Staff: 1. Technicians & Auxiliaries: 1
Fields of R&D: Product-oriented electronic components and interconnections devices derived from printed circuit processes, switches, connectors, flexible circuits
- A74 ADVANCED DESIGN CORPORATION.** 5515 Cherokee (pt)
Ave, Alexandria, VA 22312. Tel: 703-354-3990; FAX: 703-354-0460
Chmn, Pres & Chief Exec Officer Dr Stephen L Gaseby; Dir of Engineers & Support Servs Michael W Coleman; Librarian Tina Edwards; VPres & Pub Relations Officer Robert C Ragun; Mgr of Engineering Div Samuel B McDowell; Mgr of Drafting & Graphic Arts Div Larry Ellison; Mgr of ILS Div Michael W Coleman
Professional Staff: 10 (Doctorates: 1). Technicians & Auxiliaries: 20
Fields of R&D: Product-oriented electro-optics; night vision devices both image intensification and thermal imaging
- A75 ADVANCED DIMENSIONAL DISPLAYS, INC.** Suite 102, (pgic)
16742 Stag St, Van Nuys, CA 91406. Tel: 818-785-6563; Telex: 910-333-2519; FAX: 818-785-7656
Chief Exec Officer Chris S Outwater; Chief Operating Officer C Steve Booth; Corporate Res Officer Craig Newsinger; Librn & Pub Relations Officer Fran Weinberg
Professional Staff: 4. Technicians & Auxiliaries: 3
Fields of R&D: Research on holographic systems, large and small displays, rear projection screens, heads up displays (HUD), machine vision, holographic optical elements
- A76 ADVANCED ELECTRONICS DESIGN, INC.** 440 Potrero (p)
Ave, Sunnyvale, CA 94086. Tel: 408-733-3555; Telex: 35-7498; Cable: DISKSYSTEM
Pres Michael J Long; Corporate Research Officer Don D Stecker; Pub Relations Officer Carol Zidak; Product Mgr Bob Deisher
Professional Staff: 6—Computer programming. Technicians & Auxiliaries: 9
Fields of R&D: Product-oriented research in computer graphics
- ADVANCED ENVIRONMENTAL CONTROL TECHNOLOGY RESEARCH CENTER**
See University of Illinois
- A77 ADVANCED ENVIRONMENTAL RESEARCH GROUP** (pgic)
INC, 100 Memorial Dr, Suite 8-2A, Cambridge, MA 02142. Tel: 617-864-4982
Pres Elizabeth King; Res Dir Richard Jan-Fraser; Chief Scientist Hendrik Geirksen; Holographic Engineer & Mathematician Donald Thoratun; Holographic Scientist Sally Weber
Professional Staff: 2 (Doctorates: 1)—Physics. Technicians & Auxiliaries: 5
Fields of R&D: Basic, applied and product-oriented research in holographic engineering and solar architecture
- A78 ADVANCED GENETIC SCIENCES, INC.*** 6701 San Pablo (pgl)
Ave, Oakland, CA 94608. Tel: 415-547-2395
Pres & Chief Exec Officer Joseph Bouckaert
Fields of R&D: Product-oriented research and development of agricultural products
- ADVANCED GENETICS RESEARCH INSTITUTE**
See Agrion Corporation
- A79 ADVANCED INDUSTRIES, INC.** 301 N E Railroad St, PO (p)
Box 250, Odessa, MO 64076. Tel: 816-633-4064
Pres Richard L Kelly
Fields of R&D: Design and develop equipment to semi-automatically process poultry and hams; development of automated equipment for plastic bottle producers' assembly line
- A80 ADVANCED KINETICS, INC.*** 1231 Victoria St, Costa Mesa, (pt)
CA 92627. Tel: 714-446-7165; Telex: 18-2714; Cable: ADKINUSA
Pres Bruce Tatarian; Technical Dir Dr Anthony L S Smith
Professional Staff: 14 (Doctorates: 5). Technicians & Auxiliaries: 35
Fields of R&D: Research in laser physics and applications; IR sources (Black bodies)
- A81 ADVANCED MARINE ENTERPRISES, INC.** 1725 Jefferson (ptc)
Davis Hwy, Arlington, VA 22202. Tel: 703-979-9200
VPres Operations John T Drewry
Professional Staff: 120. Technicians & Auxiliaries: 40
Fields of R&D: Technical, planning, management and analysis services to government and industry in areas such as naval architecture, marine engineering, combat engineering, operations research and systems analysis, management sciences and computer sciences
- A82 ADVANCED MECHANICAL TECHNOLOGY, INC.** 151 (pgic)
California St, Newton, MA 02158. Tel: 617-964-2042; TWX: 710-335-0406
Chmn & Chief Exec Officer Dr Walter D Syniuta; VPres & Corporate Research Officer Dr Joseph Gerstmann
Professional Staff: 6 (Doctorates: 2)—Dynamics, heat transfer, lubrication, materials, mechanical engineering, thermodynamics. Technicians & Auxiliaries: 5
Fields of R&D: Applied research directed to the development of new residential and commercial heating, ventilation and air conditioning products, development of extremely sensitive force and torque instruments for machine tools and biomechanics areas; combustion research; motion and position instrumentation and testing
- ADVANCED MEDICAL SYSTEMS, INC**
See Fidelity Medical
- A83 ADVANCED MICRO DEVICES, INC.*** 901 Thompson Pl, (p)
Sunnyvale, CA 94086. Tel: 408-732-2400; Telex: 34-6306; TWX: 910-339-9280
Chief Exec Officer & Pres W J Sanders III; Librn Pam McCoy; Pub Relations Officer Elliott Sopkin
Professional Staff: 478 (Doctorates: 61)—Chemical engineering, chemistry, computer science, electrical engineering, mathematics, mechanical engineering, physics, systems analysis. Technicians & Auxiliaries: 205
Fields of R&D: Electronic circuit design, development and manufacturing including circuit design, chemistry, device physics and equipment
- A84 ADVANCED MICRO SYSTEMS, INC.** 31 Flagstone Dr, (ptc)
Hudson, NH 03051. Tel: 603-882-1497
Chief Exec Officer Roger F Floyd; Chief Operating Officer & Public Relations Officer Lucille Power; Corporate Research Officer Albert Venti; Librn Danielle Simonos; Sr Engineer Joseph Keaney
Professional Staff: 2. Technicians & Auxiliaries: 2
Fields of R&D: Product-oriented microstepping interest research

- A85 ADVANCED MINERAL TECHNOLOGIES INC.**, 5920 (pgl)
McIntyre St, Golden, CO 80403. Tel: 303-279-6982
Pres David J Schoonmaker; *Res Dir* Dr James A Brierley; *Res Scientist* Dr Michael S Davidson; *Res Scientist* Dr Stephen R Hutchins; *Assoc Scientist & Geochemist* David B Vance
Professional Staff: 10 (Doctorates: 4)—Chemical engineering, environmental science, extractive metallurgy, geochemistry, microbiology
Fields of R&D: Applied research and product development in microbiological technologies for treating metal-containing waste and process waters applied research related to metal recovery from ores
- A86 ADVANCED NMR SYSTEMS, INC.*** 30 Sonar Dr, Woburn, (p)
MA 02192. Tel: 617-938-6046
Chief Exec Officer Charles M Haar; *Pres* Dr Ian Pyket; *VPres & Research Mgr* Dr Richard Rzedzian
Fields of R&D: Research in magnetic resonance imaging tomography systems
- A87 ADVANCED POLYMER SYSTEMS, INC.*** 3696 C Haven (p)
Ave, Redwood City, CA 94063. Tel: 415-366-2626
Chmn Helen Leone; *Pres* W Gary Whitehouse; *Sr VPres of R&D* Dr Martin Katz
Fields of R&D: Applied and product-oriented research and development of microscopic polymeric delivery systems for the cosmetic and health care industry
- A88 ADVANCED RESEARCH & APPLICATIONS CORP.** (gl)
(ARACOR), 425 Lakeside Ave, Sunnyvale, CA 94086. Tel: 408-733-7780
Pres & Chief Exec Officer R A Armistead; *VPres & Pub Relations Officer* S T Workman
Professional Staff: 55 (Doctorates: 13)—Computer science, electrical engineering, mechanical engineering, physics, solid-state electronics. Technicians & Auxiliaries: 7
Fields of R&D: Research in instruments for process control, nondestructive inspection and radiation testing; applied research on measurements of ionizing radiation and magnetic fields; solid-state physics and electronics; semiconductor device evaluations and processing procedures; x-ray computed tomography and digital radiography systems; development of specialized instrumentation, including computer automated instruments; product-oriented research on radiation diagnostics and monitoring equipment; computer-automated measurement and control systems
- A89 ADVANCED RESEARCH & DEVELOPMENT, INC.** (gic)
807, 245 E Sixth St, Saint Paul, MN 55101. Tel: 612-227-3243
Pres & Chief Exec Officer Dr Gene R Sparrow; *Chemist* Michael R Frost
Professional Staff: 3 (Doctorates: 1)—Physical chemistry. Technicians & Auxiliaries: 2
Fields of R&D: Analytical and research service: surface contamination, SIMS and ISS investigations, ESCA, AUGER, SAM, MS, GC/MS, SEM, hardness, tensile, thermal analysis, bulk char; professional problem solvers: abrasion, adhesion, electronics, catalysis, computer/data recording, polymers, corrosion, custom vacuum design, glass, papers and polymers
- ADVANCED RESEARCH RESOURCES ORGANIZATION**
See Response Analysis Corp
- A90 ADVANCED SAFETY SYSTEMS, INC.*** 141 Summit St. (p)
Peabody, MA 01960. Tel: 617-532-5730
Pres Daniel J Mackay Jr; *VPres & Chief Operating Officer* William D Mackay; *Corporate Research Officer* Charles Howren; *Pub Relations Officer* John Webster III; *Mgr R&D* Chas Tappe; *Design Engineer* Robert Habino
Professional Staff: 3. Technicians & Auxiliaries: 6
Fields of R&D: Product-oriented research in fire suppression, personnel protection and shipboard automatic systems
- A91 ADVANCED SEPARATION TECHNOLOGIES, INC.** 37 (pgl)
Leslie Ct, PO Box 297, Whippany, NJ 07981. Tel: 201-428-9080; FAX: 201-428-0152
Chief Exec Officer & Pres Thomas E Beesley; *Chief Operating Officer* Vicki Cooper; *Research Dir* Dr Fred Rabel
Professional Staff: 3 (Doctorates: 1)—Analytical chemistry. Technicians & Auxiliaries: 2
Fields of R&D: Applied and product-oriented research in separation science - analytical to process
- A92 ADVANCED SYSTEMS CONCEPTS, INC.** 233 N Lake Ave. (pgl)
Altadena, CA 91001. Tel: 818-791-0983; Telex: 70-1215
Chief Exec Officer Dr J MacCalla; *Pres* Dr E MacCalla; *Librarian* J Reddix; *Pub Relations Officer* L Kalnin; *Staff Engineer* M Navanian
Professional Staff: 4 (Doctorates: 2)—Applied math, electrical engineering. Technicians & Auxiliaries: 4
Fields of R&D: Applied and product-oriented research in communications, image processing, pattern recognition and computer interactions
- A93 ADVANCED SYSTEMS LABORATORIES,*** Rte 73, Berlin, (p)
NJ 08009. Tel: 609-767-5300
Pres Mark Horvat
- A94 ADVANCED TECHNOLOGY CORP.**, 101 N Eagle St. (p)
Geneva, OH 44041. Tel: 216-466-4671, Ext 203
Pres Seymour S Stein; *Chief Engineer* Howard Irwin
Professional Staff: 3 (Doctorates: 1). Technicians & Auxiliaries: 5
Fields of R&D: Automotive headlamp assemblies
- ADVANCED TECHNOLOGIES LABORATORIES**
See Westmark International
- A95 ADVANCED TOBACCO PRODUCTS, INC.**, Suite 808, 121 (p)
Interpark Blvd, San Antonio, TX 78216. Tel: 512-496-9994
Pres J Turner
Fields of R&D: Product-oriented research in smokeless tobacco
- A96 ADVANCE MANUFACTURING CORP.*** 6800 Madison Ave. (p)
Cleveland, OH 44102. Tel: 216-961-9190
Pres Herman Bredenbeck
- A97 ADVENTURES, INC.*** 535 N Lennox, Casper, WY 82601. (pic)
Tel: 307-235-6437
Pres & Chief Operating Officer Kenneth O Huff
Professional Staff: 1. Technicians & Auxiliaries: 2
Fields of R&D: Sample recovery devices for energy industry
- A98 AEC-ABLE ENGINEERING CO, INC.**, 5790 Thornwood Dr. (pgic)
Goleta, CA 93117. Tel: 805-964-8707
Pres & Chief Operations Officer Max D Benton; *VPres Operations* W M Robbins; *VPres-Engineering* R F Crawford
Professional Staff: 4—Materials, mechanical engineering. Technicians & Auxiliaries: 4
Fields of R&D: Deployable booms and mechanisms for space applications; special purpose mechanisms
- A99 AEGIS SYSTEMS CORPORATION**, 607 Airport Blvd. (ic)
Doylstown, PA 18901. Tel: 215-348-7662
Pres Alan B Shalleck
Professional Staff: 5. Technicians & Auxiliaries: 3
Fields of R&D: Energy management and control, building monitors, boiler control, powerline carrier systems
- AEL**
See American Electronic Laboratories, Inc
- AEL INDUSTRIES, INC**
See American Electronic Laboratories, Inc
- A100 AEROCOLGY INCORPORATED**, Custom Park, Old (p)
Saybrook, CT 06475. Tel: 203-399-7941; Telex: 64-3325
Pres Earle M Hamilton; *VPres Operations* James Shea; *VPres of Engineering* Leo Avondoglio; *Sec-Treas & Pub Relations Officer* William Cook; *Librn* Gail Hart; *Engineering Mgr* Charles Kargus; *Engineer* Thomas Lupinek
Professional Staff: 4. Technicians & Auxiliaries: 2
Fields of R&D: Product-oriented research in vaneaxial fans for high energy lasers and cooling applications; air pollution control, dust collection; centrifugal separation and electrostatic precipitation
- A101 AEROCOMP, INC.**, 3303 Harbor Blvd, Suite F-5, Costa Mesa. (ic)
CA 02626. Tel: 714-957-6596
Chmn & Chief Exec Officer Joseph A Catalano; *Pub Relations Officer* Anne Heimer
Professional Staff: 6 (Doctorates: 1)—Computer science, meteorology. Technicians & Auxiliaries: 2
Fields of R&D: Engineering services in the areas of meteorology and climatology with emphasis on air pollution research, environmental information management, and hardware/software microprocessor design
- A102 AERODYNE RESEARCH, INC.**, 45 Manning Rd, Billerica. (gl)
MA 01821-3976. Tel: 617-663-9500; FAX: 617-663-4918
Chief Exec Officer & Pres Dr Charles E Kolb; *Librn* Susan Mast; *Pub Relations Officer* Sharon Alessandroni; *Dir Advanced Systems* Dr Herman Scott; *Dir, Center for Chemical & Environmental Physics* Dr Joda Wormhoudt; *Dir, Center for Optical Science* Roger Putman
Professional Staff: 40 (Doctorates: 20)—Aeronautical engineering,

8 AEROGLIDE CORPORATION

electrical engineering, engineering physics, fluid mechanics, mechanical engineering, optics, physical chemistry, physics, systems engineering. Technicians & Auxiliaries: 30
Fields of R&D: Applied and product-oriented research in electro-optical and photo-optical systems; basic and applied combustion; basic and applied atmospheric and environmental science; basic and applied molecular physics; basic and applied laser development; basic and applied spectroscopy; basic, applied and product surface chemistry; basic and applied optical signal processing, optical computing holography, aerospace signatures and backgrounds software

AEROFLEX LABS See ARX, Inc

A103 AEROGLIDE CORPORATION, 965 Chatham St, Cary, NC (pgic)
(Mailing add: PO Box Aeroglide, Raleigh, NC 27626-0505). Tel: 919-851-2000; Telex: 57-9421; Cable: AEROGLIDE RAL
Pres James F Kelly; Chief Engineer Sean Fitz-Simons; Pub Relations Officer Hal E Bland
Professional Staff: 8. Technicians & Auxiliaries: 10
Fields of R&D: Research, development, testing and prototype construction on drying applications using temperatures through 2000 degrees F; any solid or semi-solid products, except spray dried, with emphasis on food and related products; contract testing for use of microwave vacuum equipment on food products, grain, pharmaceuticals, chemicals, etc., to irradiate and/or remove moisture

A104 AEROLAB, 9580 Washington Blvd, Laurel, MD 20707. Tel: 301-776-6585; Telex: 95-5318 (p)
Pres & Chief Operating Officer A Wiley Sherwood; Chief Engineer Dr C M Chen
Professional Staff: 3 (Doctorates: 2)—Aerospace engineering. Technicians & Auxiliaries: 9
Fields of R&D: Manufacturing and development of wind tunnels and associated instrumentation; manufacturing and development of water tunnels and channels and associated instrumentation

A105 AEROMET, INC, Rte 5, Box 414, Riverside Airport, Tulsa, OK 74132. Tel: 918-299-2621 (pgl)
Pres Dr D Ray Booker; Chief Engineer Jim Matheny; Research Engineer Dave Brown; Mechanical Engineer Kenneth Winter
Professional Staff: 25 (Doctorates: 2)—Aeronautics, meteorology, optics. Technicians & Auxiliaries: 38
Fields of R&D: Airborne meteorological measurements; cloud physics observation and analysis, high resolution airborne optics, radar systems, unmanned aircraft

AERONAUTICAL RESEARCH ASSOCIATES OF PRINCETON, INC See Titin & Systems, Inc

A106 AERO NAV LABORATORIES, INC, 14-29 112th St, College Point, NY 11356. Tel: 718-939-4422 (gl)
Pres & Chief Operating Officer Floyd Genauer; Head of Lab & Recruiting Contact Joseph Osburn; Librarian P Rogowitz; Pub Relations Officer Richard J Benanchetti; Safety Officer Angelo Avignone
Professional Staff: 5—Electrical engineering, mechanical engineering. Technicians & Auxiliaries: 17
Fields of R&D: Environmental testing and seismic testing; hydraulic and pneumatic testing

A107 AEROPHYSICS COMPANY, 3500 Connecticut Ave NW, Washington, DC 20008. Tel: 202-244-7502 (gic)
Chmn Dr Gabriel D Boehler; Pres Carl Messinger

A108 AEROPHYSICS COMPANY, 3800 Cedarcroft Pl, Brentwood, MD 20722. Tel: 301-779-2458 (pic)
Chmn Gabriel Boehler; Mgr William Jackson
Professional Staff: 14 (Doctorates: 2)—Acoustics, aeronautical engineering, mechanical engineering, thermodynamics. Technicians & Auxiliaries: 11
Fields of R&D: Theoretical and applied research, development and testing in the fields of mechanical, aeronautical, and electronics engineering; noise reduction, energy management, and accident investigation

AEROQUIP CORPORATION See Trinova Corp

A109 AERO RESEARCH ASSOCIATES, INC, One Sintink Dr E, Port Washington, NY 11050. Tel: 516-883-5972; Telex: 29-1470; FAX: 516-883-5918 (ic)
Pres Deborah A Roaniree; VPres & Chief Engineer William Roaniree
Professional Staff: 6. Technicians & Auxiliaries: 6
Fields of R&D: Design of precision metal reflector systems including infrared collimators; off-axis parabolic systems; ellipsoidal reflectors, hyperbolic reflectors

AEROSCIENTIFIC CORPORATION See Data-Design Laboratories

A109 AEROSONIC, 1212 N Hercules, Clearwater, FL 33518. Tel: 813-461-3000 (p)
Pres Herbert J Frank; Research Mgr David Garringer
Fields of R&D: Research in navigation equipment

AEROSPACE & MARINE SYSTEMS OPERATIONS See The Singer Company

A110 AEROSPACE AVIONICS, INC, 1000 MacArthur Memorial Hwy, Bohemia, NY 11716. Tel: 516-467-5500 (pi)
Pres James P Dunn Jr; Exec VPres Russell H Kittel
Fields of R&D: Electronic black boxes, cables, harnesses, flight and ground support equipment; caution and warning systems, general annunciators, minicomputers with microprocessing applications, power processing equipment including inverters, converters, regulators and power supplies

A111 THE AEROSPACE CORPORATION, 2350 E El Segundo Blvd, Mail Station M1, El Segundo, CA (Mailing add: PO Box 92957, Los Angeles, 90009). Tel: 213-648-5000; Telex: 66-4460; TWX: 910-348-6640 (c)
Chmn J W Plummer; VChmn Gen R E Dougherty; Pres Dr Eberhardt Reichtin; Dir Pub Affairs W G Lamb; Group VPres Development Dr G A Paulikas; Gen Mgr Personnel Div James R Coge
Professional Staff: 2400 (Doctorates: 600)

A112 AEROSPACE GROUP
See Textron, Inc

A112 AEROSPACE LUBRICANTS, INC, 1505 Delashmut Ave, Columbus, OH 43212. Tel: 614-291-3045; Telex: 24-5422 (pi)
Pres John E Gates; VPres R&D John B Christian
Professional Staff: 2. Technicians & Auxiliaries: 1
Fields of R&D: Solving lubrication problems with patented grease lubricant for harsh environments and low/high temperature applications

AEROSPACE RESEARCH APPLICATIONS CENTER See Indianapolis Center for Advanced Research, Inc

A113 AEROSPACE RESEARCH CENTER, 1725 DeSales St, Washington, DC 20036. Tel: 202-429-4600 (pgi)
Dir Virginia C Lopez; Libr Billie A Perry; Economist Loren Yager; Mgr Economic Data Serv Carl Pascale
Professional Staff: 4. Technicians & Auxiliaries: 3
Fields of R&D: Research related to issues, problems and policies that affect the aerospace industries

A114 AEROSPACE RESEARCH CORPORATION, 5454 JAE Valley Rd SE, Roanoke, VA 24014. Tel: 703-342-2859 (pgi)
Pres Joseph T Hamrick
Professional Staff: 4. Technicians & Auxiliaries: 14
Fields of R&D: Gas generators and combustion mechanisms; centrifugal pump research and development to reduce energy losses due to inefficiency and inefficient usage of centrifugal pumps; secondary oil recovery systems using downhole steam generators; wood burning gas turbine research

A115 AEROSPACE RESEARCH CORPORATION, 5452 JAE Valley Rd SE, Roanoke, VA 24014. Tel: 703-342-2961 (i)
Chmn, Pres & Corporate Research Officer Rebecca C Rose; Consultant Walter F O'Brien
Professional Staff: 3 (Doctorates: 1)—Mechanical engineering. Technicians & Auxiliaries: 8
Fields of R&D: Shock, vibration and immersion media phenomena; high reliability packaging; gas generation; high explosives; rocket propellants; environmental testing

A115 AEROSPACE SYSTEMS, INC, 121 Middlesex Turnpike, Burlington, MA 01803. Tel: 617-272-7517 (pgic)
Pres J Zvara
Professional Staff: 20 (Doctorates: 3)—Aeronautics, astronautics, mathematics
Fields of R&D: Guidance and control systems analysis; flight dynamics, vertical takeoff and landing system analysis, modeling and simulation techniques and preparation of systems specifications - solar, and wind energy and geothermal energy; energy conservation and energy management and control systems

A116 AEROSYSTEMS TECHNOLOGY CORP, Cork Hill Rd, Franklin, NJ 07416. Tel: 201-827-4143 (gi)
Pres Charles Fletcher; Chief Engineer Albert Tatka; Chief Engineer George Matallina
Fields of R&D: Product-oriented research on equipment used in the

application of finishing materials such as conventional spray equipment, air motored agitators and electrostatic paint spray equipment; spray coating systems specialists

A117 AEROTECH, INC., 101 Zeta Dr, Pittsburgh, PA 15238-2897. (pi)
Tel: 412-963-7470; TWX: 710-795-3125

Pres Stephen J Botos

Professional Staff: 12. Technicians & Auxiliaries: 6

Fields of R&D: Product-oriented research in electronic, mechanical, and laser positioning systems

A118 AERO TEC LABORATORIES INC., Spear Rd, Industrial Park, Ramsey, NJ 07446. Tel: 201-825-1400; Telex: 64-2730 (pgi)

Gen Mgr Peter Regna; VPres of R&D Albert S Baris; Technical Mgr Stephen White

Professional Staff: 4—Hydraulics, mechanical design, plastics molding, pneumatics. Technicians & Auxiliaries: 20

Fields of R&D: Explosion suppression, ballistics, armor, elastomers, rotomolding, tanks

AEROTEST OPERATIONS, INC.

See OEA, Inc

AEROTRONIC ASSOC, INC

See General Signal Corporation

A119 AEROVENT INC., One Aerovent Dr, PO Box 602, Piqua, OH 45356. Tel: 513-773-4611 (p)

Pres & Chief Operating Officer Paul L Staley; VPres Engineering & Chief Engineer W B Schumacher; Personnel Mgr A A Good; Asst Chief Engineer James Smith; Lab Technician Louis Marrs

Professional Staff: 2. Technicians & Auxiliaries: 2

Fields of R&D: Product-oriented research in industrial air handling equipment

A120 AEROVIRONMENT, INC., 825 Myrtle Ave, Monrovia, CA 91106-3424. Tel: 818-449-4392 (pgic)

Chmn Bd & Pres Paul B MacCreedy PhD; VPres Environmental Programs Dr Ivar Tombach; VPres Aerosciences Dr Peter Lissaman
Professional Staff: 25 (Doctorates: 7)—Aeronautical engineering, civil engineering, electrical engineering, physics. Technicians & Auxiliaries: 25

Fields of R&D: Hazardous waste material investigations and assessments of waste in air quality; model development effects of aircraft vortex wakes, wind energy, ocean energy, solar energy and environmental aerodynamics; product-oriented research in development of acoustic radar, doppler acoustic radar, and air samplers

A121 AEROVIRONMENT, INC., 8515 Delmar Blvd, Saint Louis, MO 63124-2168. Tel: 314-993-0543 (pgic)

Mgr Midwest Operations William M Vaughan PhD
Professional Staff: 2 (Doctorates: 2)—Biophysics, physical chemistry. Technicians & Auxiliaries: 2

Fields of R&D: Air quality research with emphasis on ambient air, hazardous waste, indoor air and specialized tracer studies; general consulting and environmental audits also occur from this facility

AEROVOX INC

See RTE Corporation

A121 AES CORPORATION, (Americal Electronic Service Corporation), 285 Newbury St, PO Box 2093, Peabody, MA 01960. (pgic)

Tel: 617-535-7310; Telex: 38-7852 AES CORP INTL
Pres M J Sherman; Chief Engineer Stanley P Watts; Chief Electrical Engineer Barry Tuttle

Professional Staff: 6 (Doctorates: 1). Technicians & Auxiliaries: 10

Fields of R&D: Provides industry and government with manufacturing and testing facility and maintains an assembly operation and full digital and analog testing facilities; applied research and design of instruments and processes specializing in acoustics and ultrasonics; designs and manufactures equipment which ranges from simple burglar alarms to sophisticated process control instruments; develop reliable long and short range wireless data links for monitoring, security and process control

A122 AESOP INSTITUTE, PO Box 880, Sebastopol, CA 95472. (p)
Tel: 707-525-1111

Chmn & Pres Mark Goldes

Professional Staff: 1. Technicians & Auxiliaries: 3

Fields of R&D: Magnetics; thermodynamics; energy storage systems; computer keyboard

A123 AESOP INSTITUTE, PO Box 880, Sebastopol, CA 95472. Tel: 707-525-1111 (p)

Chmn & Pres Mark Goldes

Professional Staff: Technicians & Auxiliaries: 6

Fields of R&D: Aerodynamics; hydrogen; solar and wind energy conversion; dual-fuel carburetion; thermoelectrics; stirline engine development; power generators; electric propulsion systems

AET CORPORATION

See Acoustic Emission Technology Corporation

A123 AET, INC. (Applied Electro Technology), (A subsidiary of Scientific Technology, Inc), 2220 S Anne St, Santa Ana, CA 92704. (p)

Tel: 714-556-6570; TWX: 910-595-1797

Pres A R Lazzara; Gen Mgr P Rodriguez; Engineering Mgr G T Culbertson

Professional Staff: 3 (Doctorates: 1). Technicians & Auxiliaries: 3
Fields of R&D: Design and manufacture of electronic components and systems and thin film circuits; solid state relays, hybrid thin film timers, digital timers, digital clocks, flashers, phase sequence relays and frequency sensors;

A124 AETNA, INC. & CASUA-TV, 151 Farmington Ave, Hartford, CT 06156. Tel: 203-273-0123; Telex: C9-9241 (i)

Chmn James T Lynn; Pres William O Bailey; Librn Kathryn W Porter

A125 AETNA, INC. & CASUA-TV, 151 Farmington Ave, Hartford, CT 06156. Tel: 203-273-0123 (pi)

Dir John H Cheffer

Professional Staff: 20. Technicians & Auxiliaries: 2

Fields of R&D: Field and laboratory services for health and safety aspects of occupational health, civil, chemical, electrical and structural engineering disciplines and quality control; literature research in the areas of construction methods and techniques, environmental exposures and controls, product integrity, industrial, employee and public safety

AETNA-STANDARD ENGINEERING CO

See Blaw-Knox Corporation

A125 AFAB SYSTEMS, 13607 Julian Ave, Lakeside, CA 92040. (i)
Tel: 619-561-1571

Managing Dir G E Blackman

Professional Staff: 3

Fields of R&D: Data communications; computer interface; software applications

AFFILIATED MANUFACTURERS, INC

See AMI

AFFINITY MINING COMPANY

Now Eastern Gas & Fuel Associates

A126 AFG INDUSTRIES, INC., 1400 Lincoln St, PO Box 929, Kingsport, TN 37662. Tel: 615-229-7200; Telex: 55-3411 (i)

Chmn Bd & Chief Exec Officer R D Hubbard; Pres Wayne Basler; Corporate Research Dir J Litzinger; Pub Relations Officer E Harris

Professional Staff: 14. Technicians & Auxiliaries: 6

A127 AFG INDUSTRIES, INC., PO Box 929, Kingsport, TN 37662. (p)
Tel: 615-357-6121

Mgr of Lab T C Carson; Librn Dawn Dean; Sr Technologist William H Beazell; Lab Admin Ken Boyd; Ceramic Engineer Marc Sullivan; Ceramic Engineer Kelley Busch; Ceramic Engineer Timothy Jones

Professional Staff: 12 (Doctorates: 3)—Ceramic engineering, mathematics, physics. Technicians & Auxiliaries: 6

Fields of R&D: Applied research in solar conversion, glass technology, environmental (insulating) glazing, properties measurement fuel use

AFL-CIO

See American Federation of Labor and Congress of Industrial Organizations

A127 A F P IMAGING CORP., 250 Clearbrook Rd, Elmsford, NY 10523. Tel: 914-592-6100 (p)

Pres Donald Rabinovich; Research Mgr D Vozick

Fields of R&D: Research in the development of dental processors, image intensifiers and video processors

A128 AG ASSOCIATES, 1325 Borregas Ave, Sunnyvale, CA 94089. (pi)
Tel: 408-745-1790; Telex: 3719511 AGA

Pres Arnon Gat; Technology Mgr Jaim Nulman

Professional Staff: 3 (Doctorates: 3)—Electrical engineering, material science, physics. Technicians & Auxiliaries: 1

Fields of R&D: Product-oriented research in the areas of implant annealing, contact alloying, oxidation-nitridation, silicide formation, reflow, donor annihilation and other applications for silicon and Gallium Arsenide VSLI manufacturing

A129 AGES LABORATORIES, 1151 S Trooper Rd, Norristown, PA 19403. Tel: 215-666-7404 (pgic)

Pres & Chief Operating Officer A A Fungaroli

Professional Staff: 11 (Doctorates: 3)—Biological engineering, environmental engineering, geotechnical engineering. Technicians & Auxiliaries: 10

Fields of R&D: Development of systems for recovery of methane gas and co-generation from solid waste landfills; hazardous waste disposal; mass burn incineration systems

A130 AG PROCESSING, INC., 11235 Davenport St, Omaha, NE 68154. Tel: 402-334-8010 (p)

Chmn & Pres Urban Knobbe; Chief Exec Officer & Gen Mgr James W Lindsay; Dir James Rainey

Fields of R&D: Product-oriented research in salad oil, degummed and refined soybean oil, salad oil, soybeans, soybean meal and flour, crude

AGRATECH SEED INC

See Gold Kist Inc

A131 AGRI-COMP, INC., 1423 Eastern Ave, Saint Cloud, FL 32769. Tel: 305-892-6931 (p)

Pres K Bruce Ray Jr