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Center for the Utilization of
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U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

Directory of FEDERAL TECHNOLOGY RESOURCES 1984

Expertise, Services, and Facilities
Available To Engineers, Scientists, and
Technology Oriented Businesses

Directory of FEDERAL TECHNOLOGY RESOURCES

Prepared by the
Center for the Utilization of Federal Technology
U. S. DEPARTMENT OF COMMERCE
National Technical Information Service
1984

U.S. Department of Commerce
Malcolm Baldrige, Secretary
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Director, National Technical Information Service

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About This Directory

The Government employs thousands of engineers and scientists to conduct research and engineering activities. They are located at hundreds of Federal laboratory and engineering facilities around the United States. The expertise and equipment available at these facilities represent a valuable Government resource. Realizing this value, agencies are attempting to increase the use of these Government resources to help the academic and business sectors in their research and engineering efforts.

Often this expertise and equipment is not fully used simply because of a lack of awareness of its availability. This directory offers a convenient Government-wide reference tool that an engineer, scientist, or decision maker can use to locate these resources. Past publications have either contained thousands of references, including non-technical activities, or have been limited to specific agencies or topics. Usually, they have not been concerned with the overall Federal scientific and engineering effort.

Federal agencies, laboratories, and engineering centers were surveyed to locate those Government laboratories, services, and facilities which have the equipment or resources to directly assist the academic and business communities. The results were then reviewed and compiled to produce this directory. The organizations listed were selected for their ability to offer technological assistance whether through the sharing of expertise, equipment, and facilities, or as a reference for information. The more than 800 resources listed offer a variety of know-how and services. Although there may be restrictions on use or availability in some instances, the source agencies have shown a desire to offer their resources to increase the use of Federal technology "know-how".

Consideration should be exercised in contacting the resources listed. The contacts are often working scientists and engineers; and while they would like to interact with their scientific and technical counterparts, they prefer to be contacted only when an appropriate information service or library cannot provide the required assistance.

The services, facilities, or expertise cited in this directory are not intended as competition to private firms. References have been chosen because of their uniqueness or their interest in sharing information.

Resource Summaries

This section presents full resource summaries arranged into at least one of the following subject areas. Within each subject area, summaries are arranged by title.

Aeronautics & Aerodynamics
Agriculture & Food
  Agricultural Operations
  Agronomy & Horticulture
  Animal Husbandry & Veterinary Medicine
  Food Products
  Insect & Weed Control
Atmospheric & Astronomical Sciences
Biological Sciences
Building Technology
Combustion & Engines
Computer Technology
Earth Resources
Electrotechnology
Energy
Engineering
Environmental Sciences
Fisheries
Manufacturing
Materials
Medicine & Health
Mining & Minerology
Manufacturing
Nuclear Technology
  Isotopes
  Particle Research
  Radiation Sources
  Reactors
Ocean Sciences & Technology
Physical Sciences
Research Centers: Miscellaneous
Transportation

RESOURCE SUMMARIES

AERONAUTICS & AERODYNAMICS

Aerospace Structures Information and Analysis Center (ASIAC), Air Force Wright Aeronautical Laboratories, Department of the Air Force
See 0334

Ames Research Center, National Aeronautics and Space Administration
See 0785

0001 Anechoic Flow Facility
David Taylor Naval Ship Research & Development Center, Department of the Navy
Bethesda, MD 20084
Contact: Dr. Basil V. Nakonechny (202) 227-1037
FACILITY: The facility combines a very quite, low turbulence air-flow facility with an anechoic chamber in which to make acoustic measurements. The combination provides a unique capability in the study of flow generated noise associated with submarines, ships, torpedoes, and large appendages, as well as in the study of the mechanism of structure-borne noise radiation. The facility has two areas in which measurements can be made: a nine foot long closed jet test section of eight feet square cross section, and a 21 foot long open-jet test section surrounded by an anechoic chamber of 21 foot square cross section. The maximum air speed in the facility is 200 feet per second. Noise generated at full speed is less than that of conversational speech. Models up to 20 feet may be mounted in the facility.

0002 Applied Technology Laboratory
Department of the Army
Ft. Eustis, VA 23604
Contact: Mr. John Shipley (804) 878-2000
EXPERTISE: The laboratory conducts dynamic and fatigue testing on helicopter advanced structural materials and components such as rotor blades. Research is conducted in the development of fabrication techniques and manufacturing processes for the use of composite materials. Studies are conducted in the development of nondestructive testing techniques for composite materials and structures. Research is also carried out in subsonic aeronautics as it relates to helicopters and other V/STOL aircraft.
Facilities: The Structures Test Facility is equipped with a rotor blade fatigue test machine utilizing an electrohydraulic control system and a real time strain monitoring system for testing advanced full-scale rotor blades. A torsion test machine is capable of testing full-scale components for fatigue life. The research vibration system includes two shaker tables and an environmental chamber. The Ballistic Range is a combined indoor-outdoor firing facility with either 0.30 or 0.50 caliber ball, AP or AP-1 projectiles being fired on the indoor portion of the range or projectiles through 23 MM HEI being fired on the outdoor portion. Investigations include helicopter vulnerability tests on (components or dynamic systems to establish design criteria and explore advanced concepts for helicopter vulnerability reduction.)

0003 Balloon Design and Flight Analysis Branch
Air Force Geophysics Laboratory, Department of the Air Force
Aerospace Instrumentation Div., Hanscom Air Force Base, Bedford, MA 01731
Contact: Mr. Arthur Korn (617) 861-3006
FACILITY: The objectives are to provide balloon flight test support for research and development payloads and to extend the capabilities and vesatility of balloons as atmospheric platforms. Research and development also is conducted in the following areas: balloon materials and design, flight trajectories, position locating, command and control and telemetering equipment, high altitude recovery systems, and ground handling equipment.

Engine Test Facility, Arnold Engineering Development Center, Department of the Air Force
See 0224

Federal Aviation Administration Technical Center, Federal Aviation Administration, Department of Transportation
See 0808

0004 Flight Simulators
Naval Training Equipment Center, Department of the Navy
Orlando, FL 32813
Contact: Dr. R. Breaux (305) 646-5529
FACILITY: The Visual Technology Research Simulator program has been created to support the research objectives of two groups: the engineers concerned with improving visual system technology and the psychologists, concerned with evaluating that technology from the standpoint of training effectiveness. The facility provides a means for determining the image generation techniques, scene content, and cockpit motion characteristics that are necessary to meet current and future pilot training requirements. This facility uses the latest related technologies, such as light valve projectors, wide angle optics, wide bandwidth television, computer image generation, digital computer flight simulation, G-seats, and up to six-degree-of-freedom motion systems. The VTRS CTOL (Coneventional Takeoff and Landing) simulator, and a VTOL (Vertical Takeoff and Landing) simulator are currently operational.

0005 Fluid Flow Measurement
National Bureau of Standards, Department of Commerce
Washington, DC 20234
Contact: Mr. F. W. Ruegg (301) 921-3681
FACILITY: Laboratory techniques provide precise measurement of the flux of fluid in a closed system, to permit calibration of meters for fluid quantity and flowrate, using air, water, and certain liquid hydrocarbons. A liquid flowmeter calibrator is used for flow measurement of filtered and dried air supplied from a compressor at rates up to 2700 scfm (cu ft/min at 14.69 psia and 70F). Air is fed through sonic nozzles in 2, 3, 4 or 6-inch meter runs at pressures up to 110 psig. The mass rate of flow is computed from measurements. Applications include: calibration of flowmeters of either fixed restriction or moving element types, at rate from 0.03 to 10,000 gallons per minute for water, and from 0.03 to 1000 gallons per minute for liquids such as aircraft fuels. Calibration has been made of critical-flow nozzles and other types of meters for gaseous flow, over the range from 50 cu cm/min to 2700 scfm.

Goddard Space Flight Center, National Aeronautics and Space Administration
See 0792

0006 Hypersonic Wind Tunnel
Ames Research Center, National Aeronautics and Space Administration
Moffett Field, CA 94035

0011 Subsonic Wind Tunnels
Langley Research Center, National Aeronautics and Space Administration
Hampton, VA 23665
Contact: Mr. Charlie Schilling (804) 865-4501
FACILITIES: The first of five tunnels is used for two dimensional airfoil models which usually span the 3-foot wide test section with a chord of about 3 feet. Three dimensional models can be tested with spans of about 2 feet. Another tunnel is equipped for free-flight model tests. The tunnel has shielded struts for the 6-component scale balance use for large-scale model tests. There are a variety of smaller model mounts for use with small models having internal balances. A spin tunnel is used to investigate spin characteristics of airplanes by testing free spinning dynamically scaled models. Spin recovery characteristics are studied by remotely actuating the aerodynamic controls of models to predetermine positions. Force and moment testing is performed using a gooseneck rotary arm model support which permits angles of attack and sideslip from 0 degrees to 360 degrees. Motion picture records are used to record the spinning and recovery characteristics in the spin tunnel tests. A fourth facility is used for static and dynamic studies of aerodynamic characteristics of aircraft and spacecraft models. Model mounting consists of a low to moderate angle-of-attack performance sting system, a low to high angle-of-attack combined pich-roll stability sting system, a side-wall turntable, forced oscillation apparatus, and other specialized systems. A fifth tunnel is utilized for force, moment and pressure studies of full-span and semi-span powered and unpowered advanced fighter. For ground effect tests a moving-belt groundboard with boundary-layer suction and variable-speed capabilities for operation at test section flow velocities can be installed. A universal model support systems utilizes a three-joint rotary sting. This system is mounted on a horizontal turntable with plus or minus 165 degrees of rotation. Models can be powered with either high pressure air or variable frequency electric systems. The tunnel can be operated as a closed tunnel with slotted walls or as one or more open configurations by removing the side walls and ceiling. This tunnel has a contraction ration of 9 to 1.

0012 Subsonic Wind Tunnels
Lewis Research Center, National Aeronautics and Space Administration
21000 Brookpark Road, Cleveland, OH 44135
Contact: Mr. Art Gnecco (216) 443-5579
FACILITIES: Three tunnels are used for the following: (1) Performance measurements, aeroelasticity, cooling, and systems integration work on new and advanced propulsion systems are possible in a unique, variable altitude propulsion facility. Modification of the AWT will make a major contribution to NASA's propulsion research programs, and in particular to the programs on Advanced High Speed Propellers and All Weather Helicopters. (2) Another tunnel is used for low subsonic testing of propulsion system components at high angles of attack. Heavy emphasis is placed on the testing of components used in VTOL propulsion systems. The tunnel is used extensively for testing the noise characteristics of inlets. (3) A 6 x 9 IRT is used to study the effects of icing on aircraft components, such as air foils, engine inlets, and helicopter rotor blades. Detailed studies of basic icing phenomena and icing instrumentation are also performed. Instrumentation is available for measuring cloud parameters and for determining drag characteristics of air foils. Equipment for testing oscillating air foils is also available.

0013 Supersonic Wind Tunnels
Ames Research Center, National Aeronautics and Space Administration
Moffett Field, CA 94035
Contact: Mr. Lado Muhlstiein (415) 965-5852
Three tunnels are available: (1) a 6 x 9 tunnel is used for conventional force and moment testing of aircraft and missiles. In addition, an extensive amount of laser velocimeter development has been conducted in the facility. (2) The 8 X 7-foot tunnel is used for force, moment and pressure tests of aircraft configurations or specific aircraft components. Limited aero-acoustic and nonsteady aerodynamic tests are conducted. (3) A 9 X 9-foot tunnel is used for force, moment, pressure tests of aircraft configurations or specific strain-gage balances are used for measuring forces and moments.

0014 Supersonic Wind Tunnels
Langley Research Center, National Aeronautics and Space Administration
Hampton, VA 23665
Contact: Mr. Charlie Schilling (804) 865-4501
FACILITIES: Three supersonic wind tunnels are available. Two tunnels are used for internal flow, pressure, force testing of propulsion systems and propulsion components as well as related airframe interaction tests. Internal strain-gage balances are used for measuring force and moments. Propulsion cycle (open circuit) is used for testing burning propulsion systems generating combusion products. Aerodynamic cycle (closed circuit) is used for other tests. Facilities for measuring multiple steady or fluctuating pressures are available. A third tunnel is a 1 X 1-Foot tunnel used for detailed fundamental investigations of supersonic flow and boundary layer tests derived from the internal fluid dynamics of propulsion system components. The data are used for computer code verification. Pressure, temperature and flow visualization tests are performed. Laser systems are used for velocity measurements and flow visualizations. Facilities for measuring multiple steady or flucuating pressures are available.

0015 Supersonic Wind Tunnels
Lewis Research Center, National Aeronautics and Space Administration
21000 Brookpark Road, Cleveland, OH 44135
Contact: Mr. Art Gnecco (216) 443-5579
FACILITIES: A 1 x 1-foot tunnel is used for detailed fundamental investigations of supersonic flow and boundary layer tests derived from the internal fluid dynamics of propulsion system components. The data are used for computer code verification. Pressure, temperature and flow visualization tests are performed. Another tunnel is used for internal flow, pressure, force testing of propulsion systems and propulsion components as well as related airframe interaction tests. Internal strain-gage balances are used for measuring force and moments. Propulsion cycle (open circuit) is used for testing burning propulsion systems generating combustion products. Aerodynamic cycle (closed circuit) is used for other tests. Facilities for measuring multiple steady or fluctuating pressures are available. A third tunnel is used for transonic testing of internal flow, pressure, force testing of propulsion systems and propulsion system components as well as related airframe interaction tests. Internal strain-

sonic wind tunnel has a test section which is 6 feet long and 28 inches x 40 inches in cross section. Wind velocities between 15 and 160 mph can be obtained. the settling chamber has been expanded to provide a second test section for wind velocities of 2 mph to 20 mph. Models can be mounted for making force and moment measurements in both of the test sections. A modified pyramidal, six-component, strain-gauge balance system is permanently mounted beneath the high speed test section. (3) Supersonic Wind Tunnel: This is a blow down supersonic wind tunnel with a 6 inch x 6 inch test section which exhausts to the atmosphere. It has a Mach number range of 1.5 to 3.8 and can be operated at any fixed Mach number in this range, or it can be varied continuously throughout this range during a run. The latter mode makes it possible to subject a model to the aerodynamics of accelerating and decelerating through available supersonic Mach nubers. There is a single pass schlieren system available using 6 inch diameter mirrors. Three balance systems are currently available for use in the wind tunnel. (4) Transonic Wind Tunnel: The tunnel is a blow down type which exhausts to the atmosphere. It has a 20 inch x 20 inch test section which has been expanded to a length of 6 feet to accommodate parachute as well as more conventional hard models. It operates in a Mach number range from .46 to approximately 1.3. Over much of this range, it can simulate transonic flight at slightly greater than atmospheric pressures. The test section walls are perforated and there are an assortment of windows for viewing the models. There are presently two strain-gauge balance systems available for use in this tunnel. (5) Vertical Wind Tunnel: This is a continuous flow subsonic wind tunnel with two test sections mounted in tandem oriented vertically. The test sections have octagonal cross sections. One is 36 inches across the flats and 96 inches long; the other is 20 inches across the flats and 48 inches long. Velocities up to 140 ft/sec can be obtained in the large test section and over 400 ft/sec can be achieved in the smaller test section. Associated equipment includes a model spin-up and injection system for placing spinning moels in the test section where they are suspended on the vertical airstream.

0021 Wind Tunnel of Unsteady Flows

National Bureau of Standards, Department of Commerce
Washington, DC 20234
Contact: Mr. Philip S. Klebanoff (301) 921-3684
FACILITY: This facility is designed for the study of unsteady conditions in low-speed aerodynamics. In two test sections, 4.5 feet square by 16 feet in length, each fitted with a set of continuously rotating shutters, oscillatory flows of air can be generated at mean speeds from nearly zero up to 45 feet per second. Provision is also made for simulating gusts and lulls of adjustable amplitude and frontal duration and for varying the intensity and scale of the free-stream turbulence. The flow can be oscillated sinusoidally at frequencies from 0.1 Hz to 25 Hz. The amplitude is limited to about 5 fps at 10 Hz but can be increased to 45 fps at 0.1 Hz. Such important problems in unsteady aerodynamics as the dynamic response of various types of wind-speed instruments, the effect of wind loading on buildings and other structures under the action of a variable wind, unsteady heat transfer phenomena, and unsteady boundary layers may be investigated in this facility.

AGRICULTURE & FOOD: Agricultural Operations

0022 Animal Biomaterials Laboratory

Eastern Regional Research Center, Agricultural Research Service, Department of Agriculture
600 E. Mermaid Lane, Philadelphia, PA 19118
Contact: Mr. Robert L. Miller (215) 233-6623
EXPERTISE: A diversified program of basic and applied research is carried out on a variety of normally inedible materials of agricultural origin. The major objective of this program is the conversion of these materials into useful products for consumers as well as agricultural and industrial users, both domestic and foreign. The research program impacts on reduction of trade deficits, enhancing the viability of small business, solving environmental problems, improving worker and consumer safety, and lowering our dependence on petrochemicals and should help provide a degree of economic stability to the agricultural community by improving the utilization of materials and by products produced in quantities which bear no relation to their actual and potential uses. The major part of the program embraces two products of the meat industry, hides and tallow. In addition, the laboratory has initiated a new research program on the chemical modification of soil to reduce erosion, retard evaporation of moisture, and to reduce weed seed germination while improving crop seed germination. Sections of this laboratory include: Hide processing; Chemical modification of animal products; and Renewable Resources research.

0023 Appalachian Soil and Water Conservation Research Laboratory

Agricultural Research Service, Department of Agriculture
P.O. Box 867, Beckley, WV 25801
Contact: Dr. O. L. Bennett (304) 252-6426
EXPERTISE: The laboratory is chartered to conduct basic and applied research in soil, water, air, and plant management for the Appalachian Region. The problems recognized in this region focus mainly on hill land agriculture and the development of management practices on prime agricultural soils as well as the problem of an increasing amount of disturbed soils from surface mining and the extensive marginal hill land for effective crop and animal production. Research areas include soil chemistry, soil fertility, soil physics, agronomy, plant physiology, soil microbiology, hydrology, microclimatology, agricultural engineering, chemistry, biochemistry, and plant selection and breeding for problem environments.

0024 Biomaterials Conversion Laboratory

Northern Regional Research Center, Agricultural Research Service, Department of Agriculture
1815 N. University Street, Peoria, IL 61604
Contact: Dr. A.M. Cowan (309) 685-4011
EXPERTISE: Research is conducted on whole plants and selected plant components for use as food and feed and as a source of renewable raw material to reduce our dependence on petroleum. The physics and chemistry of associative forces existing among components in plants are studied to enhance means of their separation. Current processing methods of cereal and oilseed crops are analyzed and new techniques are developed to improve yield and quality, reduce costs, and conserve energy. Researchers establish structure-property relationships of selected com-

flotation; soil dynamics; tillage and traction machinery; and controlled traffic.

0032 New England Plant, Soil, and Water Laboratory
Agricultural Research Service, Department of Agriculture
University of Maine, Orono, ME 04469
Contact: (207) 581-3266
EXPERTISE: Research is conducted in the broad area of soil-water-plant-climate interactions, with emphasis on the effect of plant water stress on crop growth, yield, and quality. Plant stress resulting from both too much and too little water is considered. The objective is to determine plant water levels optimum for crop growth and to develop soil and water management systems that will most nearly maintain an optimum plant water regime. Specific research topics include: Alfalfa response to irrigation and drainage of clay soils; Cover crop effects on Erosion control; Plant disease of potato and small grains; and Small grain management.

0033 North Central Soil Conservation Research Laboratory
Agricultural Research Service, Department of Agriculture
Morris, MN 56267
Contact: Dr. George R. Benoit (612) 589-3411
EXPERTISE: Areas of interest include erosion and sedimentation; nonirrigated crop and grass lands; runoff and erosion; soil compaction-root growth; soil-plant-air continuum; soil structure; tillage; water quality and nutrient losses; water utilization; tillage residue-water quality relations; crop residue-nitrogen interactions; nitrification; denitrification, plant water stress; photosynthesis; evapotranspiration; and soil and sediment available nitrogen and other nutrients.

Northern Agricultural Energy Center, Northern Regional Research Center, Agricultural Research Service, Department of Agriculture
See 0315

0034 Northern Great Plains Research Laboratory
Agricultural Research Service, Department of Agriculture
P. O. Box 459, Mandan, ND 58554
Contact: Dr. Alfred L. Black (701) 663-6445
EXPERTISE: Research is undertaken to devise more efficient methods of managing, conserving and utilizing water for croplands (irrigated and dryland) and rangelands in a limited rainfall region; determine plant growth and physiological responses of spring wheat, other cultivated crops, and range grasses to environmental parameters; develop efficient tillage, crop residue and nutrient management systems; devise efficient methods of managing precipitation and naturally occurring nutrients, including biological N-production, to increase forage and crop production of rangeland, cultivated dryland, and irrigated soils without environmental degradation; identify germplasm and develop superior cultivars of grass, legume and tree species; develop cost-efficient intensive grazing management systems; develop efficient drainage and water management criteria for irrigated and potentially irrigable soils of the region; and develop the criteria needed to manage, reclaim and/or restore productivity of saline, sodic, and severely disturbed lands.

0035 Ohio Agricultural Research and Development Center
Agricultural Research Service, Department of Agriculture
Wooster, OH 44691
Contact: Mr. Keith Remy (216) 263-3776
EXPERTISE: The center is a multidisciplinary research and development organization of the Ohio State University located at Wooster, Ohio, with nine outlying branch locations throughout Ohio. Its mission is to conduct basic and applied research in agriculture, natural resources, home economics, and related areas. Research areas include agricultural engineering, agronomy, animal science, dairy science, entomology, fisheries and wildlife, food science and nutrition, forestry, home economics, horticulture, parks and recreation, plant pathology, poultry science, rural sociology, and veterinary science. In addition to production agriculture, research related to marketing, environmental quality, energy utilization and conservation, new sources of energy, biotechnology, and waste utilization is conducted by approximately 260 scientists. Research conducted deals with all crops and livestock produced within the state, including those of direct interest to urban consumers (turfgrasses, landscape ornamentals, floral crops).

0036 Roman L. Hruska U. S. Meat Animal Research Center
Agricultural Research Service, Department of Agriculture
P.O. Box 166, State Spur 18D, Clay Center, NE 68933
Contact: Dr. Robert R. Oltjen (402) 762-3241
EXPERTISE: Scientists and engineers at the center develop new technology for the meat animal industries to increase their production of high-quality red meat, thereby benefitting the consumer as well as the producer of livestock products. About one-half of the research program is devoted to beef cattle, one-fourth to sheep and one-fourth to swine. Studies investigate major biological, physical and managerial influences on the production efficiency in all segments of the production cycle for beef cattle, sheep and swine. The comprehensive, multidisciplinary program includes research on genetics and breeding, nutrition, reproduction, agricultural engineering, meats science and life cycle production systems.

0037 Snake River Conservation Research Center
Agriculture Research Service, Department of Agriculture
Box 186, Rt 1, Kimberly, ID 83341
Contact: Mr. W. D. Kemper (208) 423-5582
EXPERTISE: Research is conducted on soil and water management problems on irrigated lands and associated dry-lands, farms, and rangelands in thhe Snake River Valley and similar agricultural areas in the region. Rising energy costs have resulted in a strong emphasis on research to help irrigation farmers reduce energy input to their productive systems. Many of the products of Snake River Conservation Research Center research are new irrigation systems and components thereof which are ready for commercial development, production and marketing.

0038 Soil and Water Conservation Research Unit
Agricultural Research Service, Department of Agriculture
P.O. Box 3039, Florence, SC 29502
Contact: Dr. Patrick G. Hunt (803) 669-5203
EXPERTISE: Efforts are carried out on management systems; drainage; irrigation; tillage; nutrients; and improved production of soybeans, corn, and horticultural crops.

0039 South Central Poultry Research Laboratory
Agricultural Research Service, Department of Agriculture
P.O. Box 5367, Mississippi State, MS 39762
Contact: Dr. James W. Deaton (601) 323-2230

ciency of developing and identifying improved breeding lines and commercial varieties. Virology, mycology and vectar relationships as they apply to epidemiology, distribution and relationships of the pathogens are a major area of research.

0047 Tobacco Safety - Harvesting and Processing Research
Agricultural Research Service, Department of Agriculture
University of Kentucky, Agricultural Engineering Dept., Lexington, KY 40546
Contact: Dr. Wiley H. Henson (606) 257-4706
EXPERTISE: Methods and equipment for harvesting, handling, and curing are developed.

0048 U. S. Plant, Soil, and Nutrition Laboratory
Agricultural Research Service, Department of Agriculture
Tower Road, Cornell University, Ithaca, NY 14853
Contact: Dr. D. R. Van Campen (607) 256-5480
EXPERTISE: The laboratory's objective is to improve the nutritional quality of food though a better understanding of the relationships among soils, plants, animals, and man. The research program includes investigations of: geochemical and biochemical processes involved in the cycling of nutritionally important substances in rocks, soils, plants, and animals; the factors controlling the distribution and availability to plants of various elements in soils; the structure, synthesis and metabolism of biologically important substances, and their role in the growth, development, and behavior of plants, animals, and man; and the identification and characterization of geographic areas where the nutritional status of man or animals is adversely affected by the composition of the plants produced.

0049 U. S. Regional Pasture Research Laboratory
Agricultural Research Service, Department of Agriculture
Curtin Road, Pennsylvania State University, University Park, PA 16802
Contact: Dr. J. B. Wilson (814) 237-7683
EXPERTISE: Basic and applied research is conducted to improve grasslands and forage crops for the northeastern United States. Research areas include biochemistry, chemistry, near infrared reflectance spectroscopy genetics, plant breeding, entomology, plant pathology, plant management, plant physiology, and soil fertility of forage plants. By developing germplasm and management practices that maximize production of protein and available energy in forages, it is hoped to increase the use of forage in livestock and dairy. Also located in the laboratory is the Center for Cereals Research (CCR). It conducts basic and applied experiments concerned with the technology of small grains production and use in Pennsylvania and the Northeast Region.

0050 U. S. Salinity Laboratory
Agricultural Research Service, Department of Agriculture
4500 Glenwood Drive, Riverside, CA 92501
Contact: Dr. Jan van Schilfgaarde (714) 683-0170
EXPERTISE: The main objective of the laboratory is to investigate the basic principles of crop production under conditions where excess soluble salts are a hazard. This includes work on the salinity aspects of irrigation, drainage, soil management, water quality, soil chemistry and plant physiology. More specifically, the research program is designed to obtain basic information with respect to: the characteristics of salt-affected soils in relation to their productivity; the management of salt-affected soils; the reclamation of salt-affected soils; the response and tolerance of economic plants to salts; the suitability of water for irrigation; and the effect of irrigation practices on ground-water and stream water quality.

0051 U. S. Sugarcane Field Laboratory
Agricultural Research Service, Department of Agriculture
P. O. Box 470, Houma, LA 70361
Contact: Dr. James E. Irvine (504) 872-6326
EXPERTISE: Research is conducted on host plant resistance; basic genetic stocks; cultivar development; weed control; crop systems; and disease and insect control.

0052 U.S. Cotton Ginning Laboratory
Agricultural Research Service, Department of Agriculture
P.O. Box 256, Stoneville, MS 38776
Contact: Mr. Anselm C. Griffin (601) 686-2385
EXPERTISE: The laboratory is involved with machinery design and sequences; cotton quality; dust and noise control; energy conservation, and interfaces with cotton production and harvesting research.

U.S. Water Conservation Laboratory, Agricultural Research Service, Department of Agriculture
See 0265

AGRICULTURE & FOOD: Agronomy & Horticulture

0053 Appalachian Fruit Research Station
Agricultural Research Service, Department of Agriculture
Route 2, Box 45, Kearneysville, WV 25430
Contact: Mr. B. A. Butt (304) 725-3451
EXPERTISE: The station develops the technology needed to increase yields, improve quality, reduce cost of production, reduce losses, improve production systems, and improve marketing efficiency for fruit crops. Research and engineering topics include: Equipment and methods for preharvest and harvest practices; pest management, fruit horticulture; plant genetics and breeding; soil research; plant physiology; nematology; weed management; and tree fruit and vaccinium diseases.

0054 Cereal Products Research Llaboratory
Western Regional Research Center, Agricultural Research Service, Department of Agriculture
800 Buchanan Street, Berkely, CA 94710
Contact: Dr. Robin M. Saunders (415) 486-3296
EXPERTISE: Projects within the unit fall into four interrelated categories: fundamental studies into composition and dietary availability of nutrients in raw and processed grains, legumes, and forages and their byproducts; development of new or improved cereal grain-based foods for domestic and export use; development of stress tolerant crops including desert agriculture; provision of basic information needed to decrease losses in cereal grain systems; and transfer of U.S. grain technology to Third World countries.

0055 Cotton Physiology and Genetics Research Laboratory
Agricultural Research Service, Department of Agriculture
Delta States Research Center, P.O. Box 225, Stoneville, MS 38776
Contact: Dr. William R. Meredith (601) 686-2311 x241
EXPERTISE: Research is carried out on genetics; host plant resistance; seed quality and treatment; growth regulators; and basic physiology of plant growth.

tissue culture. Scientists also monitor the chemical effects of plant breeding.

0065 Horticultural Crops Research Laboratory
Agricultural Research Service, Department of Agriculture
P. O. Box 8143, Fresno, CA 93747
Contact: (209) 487-5334
EXPERTISE: The laboratory is organized into the following research units having multidisciplinary interests: Quality Maintenance and Transportation, Protection and Quarantine, Fruit Genetics and Breeding and Ecology and Biological Control Research. Disciplines include plant breeding and genetics, plant physiology, horticulture, plant and insect pathology, packaging and transportation research, postharvest insect control, insect biology, ecology and microbial control. Research projects are involved in protection and preservation of the qualtiy of fresh fruits and vegetables and dried nuts and fruits as well as the development of quarantine treatments to increase export potential of these products. Plant genetics and breeding research programs are aimed at developing new varieties that have more desirable marketing qualities.

0066 Horticultural Science Institute
Beltsville Agricultural Research Center, Agricultural Research Service, Department of Agriculture
Beltsville, MD 20705
Contact: Dr. A.A. Piringer (301) 344-3338
EXPERTISE: The Institute seeks optimum ways to originate, grow, protect, harvest, store, and deliver superior fruit, vegetable, and ornamental plants and products to consumers at minimum cost. Engineers and scientists cooperate to develop desirable new pest-resistant cultivars and new efficient production and postharvest handling practices that decrease energy use and assure the safety and health of workers and users. Studies on the fundamental biology of horticultural crops and their pests lead to these improvements and new techniques. New varieties of strawberries, blackberries, blueberries, and grapes bred here combine disease resistance with superior characteristics. Researcher work to identify, measure, and protect desirable qualities in fruits, vegetables, and flowers from harvest to consumer use. Instruments and techniques are developed to measure the chemical and physical properties of a wide range of agricultural products. Scientists carry out breeding programs and related research on the major vegetable crops.

Michigan State University - DOE Plant Research Laboratory, Department of Energy
See 0202

0067 National Clonal Plant Germplasm Repository-Corvallis
Agricultural Research Service, Department of Agriculture
33447 Peoria Road, Corvallis, OR 97330
Contact: Dr. H. B. Lagerstedt Director (503) 757-4448
SERVICES: The mission of the repository is to maintain clonal stocks of potentially useful genetic material of fruit and nut plants. The parent and related species of current and obsolete varieties, breeding lines, and other genetic sources are being collected. Once collected, these plants are identified and checked for insect pests and diseases. Where feasible, pests are eradicated by fumigation, heat treatment, or other procedures. The primary stocks of useful varieties are grown in pots in enclosed greenhouses to keep them clean and are rechecked periodically. These stock plants are propagated to provide plants needed for further testing and distribution. Small numbers of plants will be available for distribution to plant breeders and other scientists. Other laboratories are encouraged in the further evaluation and use of the germplasm collections and in expanding research on alternate methods of storing clonal genetic stocks.

0068 National Peanut Research Laboratory
Agricultural Research Service, Department of Agriculture
600 Forrester Drive, Dawson, GA 31742
Contact: Dr. Richard J. Cole (912) 995-4441
EXPERTISE: Areas of interest include quality characteristics for grading and inspecting peanuts; flavor and texture of peanuts and peanut products; mycotoxin in peanuts, forage, corn, and other products; biochemical characterization of fungal metabolites; mechanism of fungal deterioration affecting quality of peanuts; and analytical methods. Engineering expertise include development of new concepts, principles, and systems for growing, harvesting, cleaning, drying, handling, storing, marketing and shelling of peanuts.

0069 National Plant Materials Data System (NPMDS)
Department of Agriculture
Soil Conservation Service, P.O. Box 6567, Ft. Worth, TX 76115
Contact: Mr. Arnold G. Davis
INFORMATION SERVICES: This is a computer based system designed to store and retrieve information on plant accessions at the Department's Plant Materials Centers. The data base provides information on plant accessions, evaluations of woody and herbaceous plants for such things as erosion control, wildlife, grazing, and forage. Records contain data on location, name of soil, genus, species, cultivar, planting dates, blooming dates, maturity dates, survival rate, vigor ratings, foliage height, and resistance to disease, insects, cold, heat, and drought.

0070 National Seed Storage Laboratory
Agricultural Research Service, Department of Agriculture
Colorado State University, Ft. Collins, CO 80523
Contact: Dr. Louis N. Bass (303) 484-0402
EXPERTISE: The laboratory has a two-fold function: preserve for posterity valuable plant germplasm, and conduct research on ways to keep seeds viable longer. For germplasm preservation, any seeds of present or potential value are accepted for storage. Documentation for the seeds is entered into an automatic data retrieval system. Seeds are accepted from all public agencies, seed companies, and individuals involved in plant breeding or seed research. At present, more than 184,000 accessions are in storage. Research is conducted on long-term seed storage and related seed germination problems.

0071 Northeastern Regional Plant Introduction Station
Agricultural Research Service, Department of Agriculture
New York State Agriculture Experimental Station, Geneva, NY 14456
Contact: Dr. D.D. Dolan (315) 787-2244
EXPERTISE: The station is one of four regional stations in the National Germplasm System. Its primary assignment is the evaluation, seed multiplication, preservation, and distribution of germplasm from plant introductions obtained from both foreign and domestic explorations. Crops receiving high priority are (a) vegetables: pea, broccoli, cauliflower, onion, celery, squash, brussels sprout, and groundcherry; (b) forage legumes; perennial clovers and birdsfoot trefoil; and (c) forage grasses: timothy and tall oatgrass.

EXPERTISE: The mission of this Institute is to develop basic information on plant function and reaction to environment which will provide a foundation for cultural and genetic improvement of crop yield and quality. Soil, air, light, water, temperature, and related environmental conditions as well as hormones affecting plant growth are studied in seven laboratories. Engineering specialists study systems and develop equipment for crop production. Researchers develop techniques to modify the genes of the plant cells and reconstruct an improved plant from a single cell or group of cells. Scientist test methodologies such as mathematical modeling and remote sensing to predict runoff and water yield. Plants are grown in controlled and natural environments to study the processes influenced by major environmental factors. Scientists study basic physiology and biochemistry of plant hormones and related metabolic events. Researchers subject plants to pollutants and toxic materials, extremes in temperature, and deficiencies in water, oxygen, or nutrients to determine their limits. Hydrology research data from over 200 watersheds around the country are cataloged, evaluated, and stored in a computerized system.

0080 Plant Physiology Research Unit
Richard B. Russell Agricultural Research Center, Agricultural Research Service, Department of Agriculture
P. O. Box 5677, Athens, GA 30613
Contact: Dr. Horace G. Cutler (404) 546-3378
EXPERTISE: Research is involved with bioregulation; natural products; photosynthesis; wide crosses; enzymology; and post-harvest physiology.

0081 Plant Protection Institute
Beltsville Agricultural Research Center, Agricultural Research Service, Department of Agriculture
Beltsville, MD 20705
Contact: Dr. B.Y. Endo (301) 344-3848
EXPERTISE: Institute research is aimed at controlling pests and diseases of plants and bees. Fundamental and practical studies encompass the insects, nematodes, and microorganisms that cause losses to crop production and the environmental factors that affect pollination of crops and production of honey and beeswax. The causes and effects of diseases in soybeans (in relation to nitrogen fixation) other oilseed crops, snapbeans, and lima beans are studied. Scientists study the best means of controlling diseases and pests of the honey bee and provide a diagnostic service for beekeepers. Micro-organisms--bacteria, protozoa, viruses, and mycoplasma--which cause diseases in insect pests are identified and studied. Scientist search for, isolate, identify, and synthesize chemicals from insects, plants, and other natural sources. These are tested for potential use in controlling pests. The staff makes information available from data collections on practically everything known about fungi--including mushrooms, yeasts, and molds that are beneficial or harmful to plants, animals and man. Basic and applied research is directed to the study and control of plant and insect parasitic nematodes.

0082 Plant Science and Water Conservation Research Laboratory
Agricultural Research Service, Department of Agriculture
Plant Science Research Lab., P. O. Box 1029, Stillwater, OK 74076
Contact: Dr. Francis J. Gough (405) 624-4126
EXPERTISE: Studies are involved in hydraulic engineering research including conservation structures for water control and measurement; peanut and forage research including alfalfa and grass seed production, bioecology and control of seed pests, and peanut breeding for pest resistance; and wheat and other cereal crops research including breeding for pest and growth stress resistance and bioecology of pathogens and insects of small grains and sorghum.

0083 Plant Science Laboratory
Eastern Regional Research Center, Agricultural Research Service, Department of Agriculture
600 E. Mermaid Lane, Philadelphia, PA 19118
Contact: Mr. Robert L. Miller (215) 233-6623
EXPERTISE: The laboratory conducts basic and applied research on fruits and vegetables and their products and on other selected plants and plant-derived materials. The objective of this research is to assure an adequate supply of high-quality products with maximum benefits to the famer, processor, and consumer. Investigations of composition: chemical, biochemical and physical properties: nutritional value: safety: processing methods; and factors that contribute to the resistance of plants to diseases and insects provide a scientific basis for developing or recommending improved means of producing, storing, processing, and distributing commodities while minimizing losses, pollution, and energy consumption. Sections of this Laboratory include: Plant biochemistry and growth regulation: Phytochemistry and plant resistance mechanisms: and Quality technology of horticultural crops.

0084 Plant Structure and Composition Research Unit
Richard B. Russell Agricultural Research Center, Agricultural Research Service, Department of Agriculture
P. O. Box 5677, Athens, GA 30613
Contact: Dr. Franklin E. Barton (404) 546-3497
EXPERTISE: The unit is involved with the effect of structure on plant quality; forages, fruits, vegetables, and horticultural crops; rumen microbiology; and near-infrared reflectance and NMR spectroscopy.

0085 Poisonous Plant Research Laboratory
Agricultural Research Service, Department of Agriculture
1150 E. 14th N., Logan, UT 84321
Contact: Dr. Lynn F. James (801) 752-2941
EXPERTISE: The investigation of poisonous plants, their toxins, and their mode of action is carried out. Also developed are methods to prevent livestock losses due to these plants (losses are caused by deaths, abortions, photosensitization, birth defects, chronic illness, debilitation).

0086 Rice Research Unit
Agricultural Research Service, Department of Agriculture
Route 7, P. O. Box 999, Beaumont, TX 77706
Contact: Dr. Charles N. Bollich (713) 752-2741
EXPERTISE: Breeding, disease and storage-insect control, and drying and storing research is conducted.

0087 Southeastern Fruit and Tree Nut Research Laboratory
Agricultural Research Service, Department of Agriculture
P. O. Box 87, Byron, GA 31008
Contact: Dr. J. Wendell Snow (912) 956-5656
EXPERTISE: The breeding, protection, and production of peaches, nectarines, plums, and apples is studied.

0088 Soybean and Nitrogen Fixation Research Unit
Agricultural Research Service, Department of Agriculture
North Carolina State Univ., P.O. Box 5120, Raleigh, NC 27650

subtropical fruits and vegetables during storage, transit, and marketing; decay control of fruits and vegetables; fungicidal and wax coatings; measurement of maturity; and controlled-atmosphere storage.

0096 U.S. Vegetable Laboratory
Agricultural Research Service, Department of Agriculture
2875 Savannah Highway, Charleston, SC 29407
Contact: Dr. Elbert V. Wann (803) 556-0840
EXPERTISE: New breeding stocks and varieties are developed with emphasis on those characteristics that are essential for efficient production. Examples of breedings objectives include development of disease-resistant tomatoes and snap beans suited to mechanical harvesting. In sweetpotato research, efforts are being made to develop varieties that are resistant to the numerous soil insects that attack the roots and that have improve nutritional value and consumer acceptabiligy. Research is also underway to improve the initial quality and the keeping quality of fresh vegetables. Plant pathology research is designed to identify the organisms that cause diseases, to determine how and under what conditions they infect their host plants, and to develop alternative methods for controlling the diseases. Nematode research is conducted to search for and develop new sources of vegetable germplasm with resistance to plant-parasitic nematodes.

0097 Western Cotton Research Laboratory
Agricultural Research Service, Department of Agriculture
4135 East Broadway, Phoenix, AZ 85040
Contact: Dr. T.J. Henneberry (602) 261-3524
EXPERTISE: Research is conducted in four areas: (1) Searching of cotton germ plasm for insect resistant characteristics and plant breeding research to incorporate these characters into acceptable agronomic types. (2) Conducting studies to develop effective, efficient use of cultural control methods such as plant growth regulator, water and fertilizer management, clean cultural practices, crop rotation, and crop management techniques for cotton insect control. (3) Studying cotton insect migration, behavior, pheromones, beneficial insects, population ecology and population dynamic. (4) Researching the effects of environmental and genetic interactions on growth, fruiting and abscission of cotton fruiting forms.

AGRICULTURE & FOOD: Animal Husbandry & Veterinary Medicine

0098 Animal Parasite Research Unit
Agricultural Research Service, Department of Agriculture
Regional Parasite Research Lab, P.O. 952, Auburn, AL 36830
Contact: Dr. Phillip H. Klesius (205) 826-4382
EXPERTISE: Areas of interest include biology and control of parasites of livestock, especially helminth parasites; host-parasite interactions; parasite control in livestock raised in production units; and testing of biological agents for parasite control.

0099 Animal Parasitology Institute
Beltsville Agricultural Research Center, Agricultural Research Service, Department of Agricultural Research Center
Beltsville, MD 20705
Contact: Dr. R. Fayer (301) 344-2201
EXPERTISE: The prime objective of this national center is to develop ways to prevent, control, or eradicate parasitic infections in livestock and poultry. Personnel carry out taxonomic research and maintain the National Parasite Collection--one of the world's largest collections of animal parasites--and the Index Catalog of Medical and Veterinary Zoology, an index of the world's literature on parasitology. Controlling parasitic diseases which affect swine and other nonruminant animals also is researched. Scientists study all aspects of poultry parasitic diseases, especially coccidiosis of chickens and turkeys, to obtain a better understanding of host-parasite systems. Basic bilogical research on parasites causing sarcocystosis, coccidiosis, and helminthiasis in cattle, sheep, and goats is aimed at developing biological and chemical control of these diseases.

0100 Animal Physiology Research Unit
Richard B. Russell Agricultural Research Center,
Agricultural Research Service, Department of Agriculture
P.O. Box 5677, Athens, GA 30613
Contact: Dr. Robert R. Kraeling (404) 546-3584
EXPERTISE: Research is carried out on reproduction, growth, and development of agricultural animals especially swine.

0101 Animal Science Institute
Beltsville Agricultural Research Center, Agricultural Research Service, Department of Agriculture
Beltsville, MD 20705
Contact: Dr. L. W. Smith (301) 344-3431
EXPERTISE: Institute scientists conduct a wide variety of research projects to increase livestock production efficiency and to improve the quality of animal products. While emphasis is on basic research, applied testing is also done to solve production problems in dairy and beef cattle, sheep, swine, turkeys, and other farm animals. Scientists investigate advanced methods for genetic improvement of economically important traits in dairy cattle. The physiological and endocrinal factors that control reproduction in poultry (primarily turkeys) is studied. The safety of meat and meat products, particularly in the areas of microbial and harmful chemical contamination, is of prime consideration. Scientists also develop data bases for meat grading and quality. Researchers study all aspects of the lactation process in milk cows. Scientists work to improve the efficiency of nonruminant livestock production by developing basic information on the nutritional and genetic factors which affect growth. Work is also conducted on better reproduction in farm animals. Nutrition studies are aimed at improving the efficiency of beef and dairy cattle and sheep in converting feeds into meat, milk, and wool.

0102 Arthropod-Borne Animal Diseases Research Laboratory
Agricultural Research Service, Department of Agriculture
P.O. Box 25327, Denver, CO 80225
Contact: Dr. Thomas Walton (303) 234-2474
EXPERTISE: Research is conducted on arthropod-borne virus diseases of domestic animals, especially the various types of equine encephalitides including VEE, EEE, and WEE. Also under study are bluetongue disease and epizootic hemorrhagic disease in sheep and cattle with attention given to natural reservoirs of this disease in wild animals such as deer and antelope and the vectors. Included in the research complex is a special laboratory building totally dedicated to and designed for studying equine encephalo-

prove the disease resistance of chickens by identifying genetic loci that influence a general resistance to virus-induced tumors. Reticuloendotheliosis virus infection in commercial chicken and turkey flocks, infectious bursal disease of chickens, and hemorrhagic enteritis of turkeys are other viral diseases under current study.

0109 Southeast Poultry Research Laboratory
Agricultural Research Service, Department of Agriculture
934 College Station Road, Athens, GA 30605
Contact: Mr. C. W. Beard (404) 546-3434
EXPERTISE: Research is conducted on poultry diseases (characterization, definition, detection, prevention); genetic and physiologic bases of poultry disease control; mycoplasma infections; avian influenza; infectious bronchitis; Newcastle disease; salmonellosis; influence on poultry disease development of environmental factors (temperature, humidity); biotelemetry research for monitoring chickens; solar energy for poultry brooding; and housing for disease-free poultry. No diagnostic services are provided.

0110 Toxicology and Biological Constituents Research Unit
Richard B. Russell Agricultural Research Center,
Agricultural Research Service, Department of Agriculture
P. O. Box 5677, Athens, GA 30613
Contact: Dr. William P. Norred (404) 546-3424
EXPERTISE: Research is conducted on naturally occurring toxins and mycotoxins in food and feeds.

0111 Veterinary Toxicology and Entomology Research Laboratory
Agricultural Research Service, Department of Agriculture
P. O. Drawer GE, College Station, TX 77841
Contact: Dr. Donald A. Witzel (409) 260-9372
EXPERTISE: Basic and applied research are conducted in two major areas: (1) Veterinary toxicology and (2) livestock entomology. The veterinary toxicology research encompasses three integrated Research Units: Veterinary Toxicology, Chemistry & Metabolism, and Cellular Toxicology. The toxicological research is directed toward agricultural chemicals and natural toxicants affecting livestock and poultry. The entomology research encompasses two Research Units, Biological Control and Insect Physiology and Biochemistry. The biological control is directed toward control of filth breeding flies. The insect physiology and biochemistry conducts basic research in neuropeptide hormones and other physiological regulators that control the insect life cycles, the latter goal being to develop better methods of insect control through new insecticides.

AGRICULTURE & FOOD: Food Products

0112 Cereal and Food Biochemistry Research
Northern Regional Research Center, Agricultural Research Service, Department of Agriculture
1815 N. University Street, Peoria, IL 61604
Contact: Dr. A. M. Cowan (309) 685-4011
EXPERTISE: This laboratory conducts basic food science research on cereal grains, their components, and products. Carbohydrate chemistry, cereal and food biochemistry, and seed protein research are applied to studies related to food safety, compositional changes, quality, nutritional value (including mineral bioavailability), fiber, enzymes, component interactions, functional properties, and biosynthesis in cereals, and to conserving energy during food processing.

0113 Citrus and Subtropical Products Laboratory
Agricultural Research Service, Department of Agriculture
Agricultural Research Service, P.O. Box 1909, Winter Haven, FL 33883
Contact: Mr. Robert E. Berry
EXPERTISE: The following research is conducted: Studies on frozen concentrated orange juice; citrus dehydration processes, including freeze-drying, vacuum foam drying, and foam-mat drying processes; development of canned single-strength citrus juices; systems for recovering materials from waste streams and easing problems of waste disposal at citrus processing plants; fundamental aspects of flavor, quality and nutrients in natural food crops and applied aspects of new processes, products and by-products.

0114 Engineering and Food Sciences Research Unit
Western Regional Research Center, Agricultural Research Service, Department of Agriculture
800 Buchanan Street, Berkely, CA 94710
Contact: Mr. Richard Edwards (415) 486-3252
EXPERTISE: The Engineering and Food Science Research Unit acts as the primary research resource at the Center in support of U.S.D.A. regulatory agencies, and also provides engineering expertise and support to other Research Units within the Center. As such, the Unit conducts basic studies (a) on the occurrence, detection, and control of microorganisms and their toxic or deleterious by-products in foods, feeds and the environment, (b) to develop fundamental mathematical algorithms and image processing methods for detection and selection of agricultural objects, (c) to elucidate safety/nutritional quality consequences of contact between food and/or recycled water streams with sanitizing agents, chemical preservatives or fumigants. This is new Research Unit for CY 1983 and replaces the Engineering Research Unit and Food Technology Research Unit from previous years.

0115 Food and Nutrition Information Center
Department of Agriculture
National Agricultural Library, 10301 Baltimore Blvd.,
Beltsville, MD 20705
Contact: (301) 344-3719
INFORMATION SERVICES: Information is available on current developments in human nutrition, food, and related disciplines including food and nutrition programs; food service management, consumer economics, nutrition and health education, food consumption, food storage, physiology of human nutrition, diet and diet-related diseases, home economics, and management.

0116 Food Engineering Laboratory
Army Natick Research and Development Laboratories, Department of the Army
Natick, MA 01760
Contact: Dr. Decareau (617) 651-5188
EXPERTISE: Through effective planning, analysis, design, development and testing, the laboratory provides food products, processes, packaging, food service equipment and feeding systems in support of existing and future combat service support concepts. Recent advances in food packaging technology make possible the consideration of new food service techniques which are responsive to future combat food service ration requirements. Items developed using these advanced techniques include: Tray Packs -

Southern Regional Research Center, Agricultural Research Service, Department of Agriculture
See 0042

Stored-Product Insects Research and Development Laboratory, Agricultural Research Service, Department of Agriculture
See 0145

0123 Taste and Odor Evaluation Laboratory
Northern Regional Research Center, Agricultural Research Service, Department of Agriculture
1815 N. University Street, Peoria, IL 61604
Contact: Dr. A. M. Cowan (309) 685-4011
EXPERTISE: Research is conducted on the taste and odor of food. Its efforts include measurement techniques, quality control, sensory tests, and food acceptance studies. A carefully designed facility for presentation of tastes and odors to a trained panel serves as a principle research tool.

Toxicology and Biological Constituents Research Unit, Richard B. Russell Agricultural Research Center, Agricultural Research Service, Department of Agriculture
See 0110

0124 Toxicology and Biological Evaluation Research Unit
Western Regional Research Center, Agricultural Research Service, Department of Agriculture
800 Buchanan Street, Berkely, CA 94710
Contact: Dr. John C. Smith (415) 486-3753
EXPERTISE: Research is conducted on toxicological and nutritional studies on products of interest to agriculture. This includes problems related to food safety in production, processing, and distribution; natural toxicants in foods and feeds; and new sources of protein and other nutrients. The staff provides professional expertise to conduct fundamental biochemical, toxicological, and microbiological studies concerning the unit's mission. A central core of technicians carry out the wide range of nutritional and toxicological assays in laboratory animals in support of the various research projects.

Toxicology Information Response Center, Oak Ridge National Laboratory, National Institutes of Health, Department of Health and Human Services
See 0596

0125 U.S. Grain Marketing Research Laboratory
Agricultural Research Service, Department of Agriculture
1515 College Ave., Manhattan, KS 66502
Contact: Mr. Y. Pomeranz (913) 539-9141
EXPERTISE: Grain is studied from harvest to storage to processing. Research emphasizes maximizing nutritional value, consumer acceptance, and technological versatility while minimizing energy requirements and maintaining soundness and overall quality during handling, conditioning, and storage. Major research concerns wheat, sorghum, and corn; other investigations include rice, barley, oats, soybeans, and triticale. Scientists conduct investigations to determine composition and structure of cereal grains in relation to nutritional value, storage, handling, and utilization; use of enzymes and enzymatic activity to determine composition, storability, and damage during handling of cereal grains; and methods to determine molds and mycotoxins in cereal grains. Scientists are also concerned with fundamental and applied biology of insects and microorganisms that infest stored grains and cereal products. Other work involves minimizing fuel energy required for grain drying; measuring and controlling dust from grain handling to minimize health hazards and dust explosions; and reducing damage to grain from handling. Research is also conducted on chemical, biochemical, physical, and physicochemical methods for determining the quality of cereal grains.

0126 Urban Food Marketing Center
Agricultural Research Service, Department of Agriculture
Plant Pathology Department, Rutgers University, New Brunswick, NJ 08903
Contact: Dr. J. M. Wells (201) 932-9881
EXPERTISE: Research is conducted to maintain quality and reduce postharvest losses in fresh fruits and vegetables marketed for the consumer. Improved marketing procedures are developed for exporting high-quality produce to foreign markets. Domestic shipping tests are received and storage tests conducted to evaluate the response of fresh fruits and vegetables to experimental conditions.
Information Services: Data on the arrival condition of tens of thousands of truck and rail shipments of fresh produce on the New York market from 1972 to date are being collected, collated, and stored in a computer for instant retrievability. This information is of inestimable value to research scientists, academic institutions, regulatory federal agencies, and the fresh produce industry.

AGRICULTURE & FOOD: Insect & Weed Control

0127 Agriculture Environmental Quality Institute
Beltsville Agricultural Research Center, Agricultural Research Service, Department of Agriculture
Beltsville, MD 20705
Contact: Dr. J. L. Hilton (301) 344-3030
EXPERTISE: The Institute is searching for ways to increase food and fiber production to meet the needs of a rapidly expanding world population. Emphasis is placed on developing practices that avoid or minimize hazards to the environment. Personnel collect data on more than 30,000 insect-control chemicals. Chemists develop new or improved analytical techniques for detecting and analyzing pesticide chemicals in air, soil, water, and agricultural products. Researchers isolate, identify, and finally synthesize naturally occurring compounds which can be used in the war against harmful insects in lieu of conventional pesticides. A team of scientists develop principles and practices that will ensure the economical, beneficial, and safe use of agricultural, municipal, and industrial organic wastes. Scientists examine the physiological and biochemical processes involved in insect reproduction and maturation to find methods or chemicals which will interfere with these processes. To control arthropod pests of livestock, scientists investigate feed additives, fumigants, antifeedants, toxicants, and juvenoids. Researchers identify and synthesize organic compounds useful as insect control agents such as pheromones, attractants, repellents, egg-laying stimulants, and juvenile hormone mimics. The fate of pesticides in soils, plants, and aquatic and animal systems is examined. Fundamental research is done on the nitrogen cycle in soils, including nitrogen fixation and impacts of soil moisture and tillage practices. Scientists work to improve the safety and efficiency of weed control technology through basic and applied studies of herbicide activity.

ficacy of the mass-reared insects and the virus for laboratory tests.

Horticultural Crops Research Laboratory, Agricultural Research Service, Department of Agriculture
See 0065

0135 Insect Attractants, Behavior, and Basic Biology Research Laboratory
Agricultural Research Service, Department of Agriculture
P.O. Box 14565, Gainsville, FL 32604
Contact: Dr. Derrell L. Chambers (904) 373-6701
EXPERTISE: Basic and developmental research is conducted to provide alternatives to and improved use patterns for pesticides in insect control. Studies are carried out on behavioral and developmental manipulation, insect attractants, hormones, pheromones, kairomones, insect olfaction and reception.

0136 Insect Identification and Beneficial Insect Introduction Institute
Beltsville Agricultural Research Center, Agricultural Research Service, Department of Agriculture
Beltsville, MD 20705
Contact: Dr. L. Knutson (301) 344-3182
EXPERTISE: The Institute is deveoted mainly to developing new and improved classification and principles for insect and mite identification and to discovering and studying foreign insect species that show promise for use in biological control of domestic insect pests and weeds. Although about 1 million species of insects and mites have been scientifically described, this may represent only one-tenth of the world's species. The institute's continuing program on insect and mite classification provides basic support for a wide range of research in agriculture and related sciences. This taxonomic information is essential for the effective conduct of many programs, such as pest control, integrated pest management, and quarantine. Research is conducted on the use of natural enemies in controlling pest insects and weeds. An extensive documentation system is maintained to help coordinate U.S. and overseas research on importation, colonization, and evaluation of beneficial foreigh insects and mites. Scientists develop systems to classify insects and mites and furnish taxonomic services to public and private organizations and individuals.

0137 Insects Affecting Man and Animals Research Laboratory
Agricultural Research Service, Department of Agriculture
P.O. Box 14565, Gainesville, FL 32604
Contact: Dr. Donald E. Weidhaas (904) 373-6701
EXPERTISE: The mission of the laboratory is to conduct both applied and basic research on a variety of insects and arthropods that annoy or transmit diseases to people and animals and direct that research toward the improvement of existing methods and the development of new methods of control, protection, and pest population management. Currently the program includes both basic and applied research on pesticides, equipment, attractants, repellents, pheromones, biological control, insect growth regulators, genetics, and sterilization. The laboratory conducts research on the biology and control of a variety of insects and arthropods including mosquitoes, biting midges, house flies, stable flies, ants, cockroaches, ticks, chiggers, fleas, black flies, and bed bugs. The laboratory serves as an International Reference Center for the World Health Organization of the United Nations.

0138 Metabolism and Radiation Research Laboratory
Agricultural Research Service, Department of Agriculture
P. O. Box 5674, Fargo, ND 58105
Contact: Dr. Claude H. Schmidt (701) 237-5771 x5401
EXPERTISE: Scientists conduct research contributing directly to the safe use of pesticides and other agricultural chemicals. They also develop new or improved insect-control techniques that minimize the need for relying on broad-spectrum pesticides. One goal is to apply genetic principles to develop methods of controlling insects that destroy crops and threaten animal health. Studies are conducted on several types of insects including flies, bugs, beetles, and moths. Scientists also study unique biochemical and physiological processes of insects that, if interfered with, might be used to control pest populations. Other studies determine the metabolic fate of agricultural chemicals in farm animals. The rates and routes of excretion and body distribution of a particular chemical and its metabolites are measured. Plant physiologists, biochemists, agronomists and organic chemists work together as a research team: to investigate differences in the ability of plants to degrade agricultural chemicals; to study the effects of agricultural chemicals and their degradation products on basic physiological processes necessary for normal plant growth and development; to examine interactions betweeen different agricultural chemicals; to determine weak points in the development and growth of weeds.

0139 Natural Products Chemistry Research Unit
Western Regional Research Center, Agricultural Research Service, Department of Agriculture
800 Buchanan Street, Berkely, CA 94710
Contact: Dr. Leonard Jurd (415) 486-3205
EXPERTISE: Missions of the unit are to identify and evaluate natural phytotoxins (allelopathic agents) from aquatic and terrestrial plants which may be used as herbicides, identify protective constituents of plants resistant to terrestrial and marine organisms and determine whether these substances are models for development of new, and safer types of pest control agents, develop methods for the analysis of toxic constituents of poisonous range plants and to use this data to decrease livestock losses, investigate commonly used herbs for the presence of toxic constituents.

0140 Nematodes and Weeds Research Unit
Agricultural Research Service, Department of Agriculture
Georgia Coastal Plain Experimental Station, Tifton, GA 31793
Contact: Dr. Alva W. Johnson (912) 386-3372
EXPERTISE: Integrated control of nematodes and weeds in vegetables, field crops, forage, and turf is studied.

Northern Grain Insects Research Laboratory, Agricultural Research Service, Department of Agriculture
See 0072

Plant Protection Institute, Beltsville Agricultural Research Center, Agricultural Research Service, Department of Agriculture
See 0081

0141 Plant Protection Phytochemistry Research Unit
Western Regional Research Center, Agricultural Research Service, Department of Agriculture
800 Buchanan Street, Berkeley, CA 94710
Contact: Dr. Bock Chan (415) 486-3408
EXPERTISE: One objective is to determine the chemical and physiological bases of crop plants' natural resistance

Western Cotton Research Laboratory, Agricultural Research Service, Department of Agriculture
See 0097

0148 Yakima Agricultural Research Laboratory
Agricultural Research Service, Department of Agriculture
3706 W. Nob Hill Blvd., Yakima, WA 98902
Contact: Dr. A.K. Burditt (509) 575-5956
EXPERTISE: The studies carried out at this research laboratory concentrate on: biology, ecology, and control of insect and mite pests of deciduous fruits, vegetables, field crops, and man; Determination of pesticide residues; development of analytical methods; isolation, identification, and synthesis of insect attractants; Development and improvement of techniques and equipment for applying agricultural materials and sterile insects from aircraft; and Development and improvement of packaging and unitized shipments to reduce costs and losses and improve quality of agricultural products throughout the distribution system.

ATMOSPHERIC & ASTRONOMICAL SCIENCES

0149 Advanced Systems Laboratory
National Oceanic and Atmospheric Administration, Department of Commerce
National Weather Service, Room 1220, Gramax Building, Silver Spring, MD 20910
Contact: Mr. Louis Boezi (301) 427-7468
EXPERTISE: The laboratory develops new and/or improved systems suitable for implementation three or more years in the future; provides comprehensive solutions to systems problems of NWS; considers the entire scope of NWS requirements and examines system interfaces with other elements of NOAA, other Federal agencies, corresponding agencies in other countries and the World Meteorological Organization; performs systems planning and development in support of all NWS functions, including observations and data acquisition; communications; data analysis and interpretation; preparation of forecasts, warnings and other weather-related information products; and dissemination to users; maintains a continual awareness of the current and anticipated state-of-the-art in relevant technologies; devises alternative solutions to satisfy NWS requirements and analyzes advantages, disadvantages and costs. Manages specific development programs to develop and acquire new systems, utilizing contractors whenever appropriate; and incorporates substantial involvement of the private sector, through specialized and multidisciplinary contracts, in the analysis, definition, development and execution of advanced systems programs.

0150 Aeronomy Laboratory
National Oceanographic and Atmospheric Administration, Department of Commerce
NOAA Environmental Research Laboratories, 325 Broadway, Boulder, CO 80303
Contact: Dr. Eldon E. Ferguson (303) 497-3218
EXPERTISE: The chemical and physical processes of the Earth's atmosphere are studied to advance the capability of monitoring, predicting, and controlling the quality of the atmosphere. The research concentrates on the stratospheric and tropospheric regions of the atmosphere but also involves the ionosphere as well as the atmospheres of other planets. Research methods involve both in situ and remote measurement of critical atmospheric parameters, including chemical composition and dynamic properties such as wind velocities, turbulence, and wave motions. Theoretical programs in atmospheric photochemical modeling and in atmospheric dynamics and transport support the observation programs. An experimental laboratory chemical kinetics program supports the theoretical photochemical modeling program and also supplies input for the development of new atmospheric monitoring and measurement technology. The research of the laboratory is accomplished by six programs that have substantial interaction: atmospheric chemical kinetics, atmospheric dynamics, atmospheric sampling, atmospheric wave and turbulence theory, optical aeronomy, and theoretical aeronomy.

0151 Air Resources Laboratory
National Ocean and Atmospheric Administration, Department of Commerce
NOAA Environmental Research Laboratories, Room 826A, 6010 Executive Blvd. Rockville, MD 20852
Contact: Dr. Lester Machta (301) 443-8276
EXPERTISE: The laboratory includes a headquarters group in Rockville, Md.; the Field Research Division in Idaho Falls, Idaho; the Atmospheric Turbulence and Diffusion Division in Oak Ridge, Tenn.; the Meteorology Division in Research Triangle Park, N. C.; and the Solar Radiation Facility, the Sun-Climate Staff, the Air Quality Division, and the Geophysical Monitoring for Climatic Change Division (GMCC) in Boulder, Colo., with GMCC observatories at Mauna Loa (Hawaii), Barrow (Alaska), the South Pole, and American Samoa. Most ARL research deals with the use of meteorology to understand and predict human influence on the environment, especially with regard to the atmospheric transport and diffusion of toxic effluents. General areas of study include turbulence and diffusion in the atmosphere, atmospheric trajectories from microscales to global scales, meteorology of air pollution, CO sub 2 and climate, acid rain, and monitoring of atmospheric constituents for climatic change.

0152 Arecibo Observatory
National Science Foundation
NAIC (for Arechibo Observatory), Cornell University, Ithaca, NY 14853
FACILITY: In response to a need for more understanding of global-scale thermospheric and ionospheric problems, this facility is a part of a chain extending from the polar cap to the magnetic equator. The major goal of the program is to promote basic research on the structure and dynamics of the earth's upper atmosphere by supporting the operation and scientific research of the longitudinal chain of incoherent-scatter radars. At Arecibo's latitude at Puerto Rico, scientists have obtained evidence for particle precipitation into the atmosphere, composition changes in the atmosphere, composition changes in the atmosphere, composition changes in the atmosphere after magnetic storms, gravity waves propagating from the auroral region, and the penetration of magnetospheric electric fields.

0153 Assessment and Information Services Center
National Oceanic and Atmospheric Administration, Department of Commerce
National Environmental Satellite, Data and Information Service, Room 290, 3300 Whitehaven Street, Washington, DC 20235
Contact: Dr. Joan Hock (202) 634-7324

dissemination of current climate data and information on a national and global basis.

0160 Climate and Earth Sciences Laboratory
National Oceanic and Atmospheric Adminstration, Department of Commerce
National Environmental Satellite, Data and Information Service, Suitland Professional Center, Suitland, MD 20233
Contact: Dr. Paul McClain (301) 763-4248
EXPERTISE: The application of remotely sensed environmental data to solutions of problems in atmospheric, oceanic, and terrostrial sciences is investigated. In particular, the methodology for the improved or expanded application of current operational satellite data, and for increased understanding of processes and phenomena in these fields is developed. The laboratory supports such research activities at universities and private research organizations.

Environmental Center for Research on Toxic Aerosols,
Pacific Northwest Laboratory, Department of Energy
See 0387

0161 Environmental Sciences Group
Environmental Research Laboratories, National Oceanic and Atmospheric Administration, Department of Commerce
325 Broadway, Boulder, CO 80303
Contact: Dr. Vernon E. Derr (303) 497-6000
EXPERTISE: The group plans, develops, and conducts programs of research and technology transfer that cut across NOAA laboratory or program area missions. Its four components are the Climate Research Project, the Weather Research Program, the Program for Regional Observing and Forecasting Service, and the Weather Modification Program. The principal activities of the Climate Research Project are the construction of a global data set describing the fluctuations of climate over the oceans and the continents during the past 130 years; interpretive diagnostic studies of the climatic fluctuations during that period; and modeling studies of polar ice sheets to clarify their evolution and their responses to climatic change. The Weather Research Program conducts research to improve short-range weather predictions and warnings, and to provide a scientific basis for weather modification. Emphasis is on precipitation, with research interest extending from microphysical processes to structure and behavior of large mesoscale precipitation systems. The program actively transfers promising techniques and technologies to National Weather Service (NWS) and other user groups. The program for Regional Observing and Forecasting Services (PROFS) works to improve local weather services through the introduction of new technologies into weather service operations. Although PROFS is an Environmental Research Laboratories (ERL) program, it receives applications guidance and review from NWS and the National Environmental Satellite, Data, and Information Service (NESDIS). Through this liaison, PROFS maintains a balance between research and operations. The Weather Modification Program is developing, solely through the Federal-State Cooperative Program, criteria for the effective evolution of operational cloud seeding.

Environmental Sciences Research Laboratory,
Environmental Protection Agency
See 0398

0162 Geophysical Fluid Dynamics Laboratory
National Oceanic and Atmospheric Administration, Department of Commerce
NOAA Environmental Research Laboratories, P.O. Box 308, Princeton, NJ 08540
Contact: Dr. Isidoro Orlanski (609) 452-6502
EXPERTISE: The laboratory is engaged in comprehensive long-lead-time research in the primary areas of NOAA mission, such as the weather and climate prediction and ocean services. Its goal is to expand the scientific understanding of those physical processes that govern the behavior of the atmosphere and the oceans as complex fluid systems. These fluids can then be modeled mathematically, and their phenomenology can be studied by computer simulation methods. In particular, research is conducted toward understanding the following: predictability of weather, large and small scale; structure, variability, predictability, stability, and sensitivity of climate, global and regional; structure, variability, and dynamics of the ocean over its many space and time scales; and interaction of the atmosphere and oceans, and how they influence and are influenced by various trace constituents; and particular nature of the Earth's atmospheric general circulation within the context of the family of planetary atmospheric types. The scientific work encompasses a variety of discipline: meteorology, oceanography, hydrology,m classical physics, fluid dynamics, chemistry, applied mathematics and experimental design and analysis, and utilizes a sixth generation computer system.

0163 Heavy Methane Atmospheric Tracer System
Los Alamos National Laboratory, Department of Energy
Los Alamos, NM 87545
Contact: Mr. Paul R. Guthals (505) 667-4039
FACILITY: This system employs the use of small quantities of methane-20 (12CD4) and methane-21 (13CD4) to study atmospheric transport and diffusion over ranges of a few kilometers to a few thousand kilometers. Air samples are gathered from which a methane fraction (masses 16, 20, 21) is separated. The resultant methane fractions are mass spectrometrically analyzed to derive a tracer (mass 20 and/or 21) to methane-16 ratios and hence tracer to air ratios. This provides a quantitative tracer number and a mechanism to study atmospheric transport and diffusion of natural or man-made tracer constituents in air. The sensitivity of tracer detectability (-1 x 10 to the -17th in one part of air) makes this technique suitable for a wide range of atmospheric physics and chemistry problems.

0164 High Altitude Instrument Platform (Aircraft)
Los Alamos National Laboratory, Department of Energy
Los Alomos, NM 87545
Contact: Mr. Paul R. Guthals (505) 667-4039
FACILITY: The platform has been utilized by a number of non-DOE users. Measurements can be made on the platform (remote or in situ) or on samples gathered during routine or special experimental missions. The aircraft can be flown at altitudes of 50,000+ feet (MSL) for periods of 5-6 hours. The routine flights are part of DOE's High Altitude Sampling Program (HASP) called Project Airstream. Aircraft is based at Ellington AFB, TX with routine lower stratospheric and upper tropospheric flights currently scheduled in April, July, and October each year. Special flights may be flown.

It is part of a system of four large incoherent-scatter radar facilities located along a longitudinal chain from Greenland to Peru. In response to a need for more understanding of global-scale thermospheric and ionospheric problems, these facilities have been upgraded and realigned into a chain extending from the polar cap to the magnetic equator.

0172 Mirror Coating and Diffraction Grating Ruling Services
Kitt Peak National Observatory, National Science Fondation
P. O. Box 26732, Tucson, AZ 85726
Contact: Dr. Dale Schrage (602) 327-8300
FACILITY: In conducting its astronomical research, the observatory has developed the unique capability of coating large optical mirrors (2-4 meters) and ruling large diffraction gratings.

0173 National Astronomy and Ionosphere Center
National Science Foundation
Cornell University, Ithaca, NY 14853
FACILITIES: The center is devoted to scientific investigations in radio and radar astronomy and atmospheric sciences. Its principal observing facilities are located south of the city of Arecibo, Puerto Rico. NAIC provides telescope users with a wide range of research and observing instrumentation, including receivers, transmitters, movable line feeds, and digital data acquisition and processing equipment. The Center has a permanent staff of scientists, engineers, and technicians who are available to help visiting investigators with their observing programs. The principal research instrument is a 305-meter (1,000-foot), fixed spherical radio-radar telescope--the world's largest single radio reflector. The frequency capabilities range from 50 megahertz to 5 gigahertz. Transmitters include an S-band (2,380-megahertz) radar for planetary studies and a 430-megahertz radar system for aeronomy studies. A second observing site, located 9.6 kilometers (6 miles) from the main site, has a 30.5 meter (100-foot) steerable parabolic antenna; it is paired with the main antenna to provide an effective interferometric S-band radar mapping system. This antenna pair is also available for radio astronomy interferometry at a wavelength of 12 centimeters. The S-Band Planetary Radar System is now available for high spatial resolution studies of stratospheric dynamics. A high-power ionospheric heating facility (HF) provides a unique capability to investigate nonlinear plasma phenomena in the ionosphere. The data-processing capabilities of the Observatory include a Harris computer system and an array processor.

0174 National Center for Atmospheric Research
National Science Foundation
P.O. Box 3000, 1850 Table Mesa Drive, Boulder, CO 80307
Contact: Dr. Harold W. Baynton (303) 494-5151
EXPERTISE: The major laboratories of the center are in Boulder, Colorado. The Center is operated by the University Corporation for Atmospheric Research (UCAR), a nonprofit corporation of 49 North American universities with graduate programs in atmospheric sciences, under a contract between the Foundation and UCAR. NCAR does research in the atmospheric sciences, collaborates in large multiinstitution research programs, and develops and provides facilities to support research programs in the UCAR universities and at the Center itself. The research programs are chosen for their scientific merit, potential for progress, responsiveness to and fit with university activities, and relevance to society's needs. Research programs are in the following areas: The dynamical and physical processes that govern the behavior and climatology of the oceans and atmosphere; the chemical composition of the atmosphere on regional to global scales; solar processes and solar terrestrial physics; the physics of convection, thunderstorms, and precipitation formation; and impact-assessment analyses to show the important links between atmospheric and societal activities. NCAR's facilities serve the entire atmospheric sciences community and part of the ocean sciences community. NCAR operates research aircraft, radars, ground-based observing systems, large-scale computers, and mass store devices. It also carries out some instrument-development activities.

0175 National Climatic Data Center
National Oceanic and Atmospheric Adminstration, Department of Commerce
National Environmental Satellite, Data and Information Service, Federal Building, Asheville, NC 28801
Contact: Climatic Data Services (704) 259-0682, Satellite products (301) 763-8111
INFORMATION SERVICES: The center acquires, manages, archives and distributes meteorological and climatological data collected for operational purposes by the National Weather Service, the weather services of the Air Force and Navy, the Federal Aviation Administration, and the Coast Guard. It also serves as World Data Center-A for Meteorology. While the primary mission of NCDC is to document the climate of the United States, data holdings include the global surface and upper air meteorological observations collected by the National Meteorological Center through the Global Telecommunications System of the World Meteorological Organization. Climatic information available includes: hourly surface observations from land stations; three hourly and six-hourly surface observations from land stations, ocean weather stations, and moving ships; daily climatological observations from cooperative observing stations; upper air observations; radar observations; satellite data; hourly and daily solar radiation data; selected maps and charts; and derived and summary data. Data and information are available on several media including subscription publications, paper copies, film hoops, microfilm, microfiche, and magnetic tape. The publication 'Selective Guide to Climatic Data Sources' lists most products and services available at the NCDC.

National Environmental Data Referral Service, National Oceanic and Atmospheric Administration, Department of Commerce
See 0443

National Geophysical Data Center, National Oceanic and Atmospheric Adminstration, Department of Commerce
See 0248

0176 National Radio Astronomy Observatory
National Science Foundation
Edgemont Road, Charlottesville, VA 22901
FACILITIES: The observatory makes radio astronomy facilities available to qualified scientists. The NRAO staff assists visiting scientists with the large radio antennas, receivers, and other equipment needed to detect, measure, and identify radio waves from astronomical objects. Headquarters for NRAO are in Charlottesville, Virginia. The three observing sites are located in Green Bank, West Virginia; Kitt Peak near Tucson, Arizona; and 80 kilometers west of Socorro, New Mexico. Two telescope systems are operated at

obtaining high-quality solar observations in support of their research. The observatory not only supports basic research, but also provides data to other governmental agencies for use in their programs, such as geophysical-disturbance prediction and support of satellite and space-flight operations. It provides the scientific community with the world's largest collection of modern optical solar telescopes and auxiliary instrumentation designed to observe the solar photosphere, chromosphere, and corona. The principal instruments are a 109-meter-high Solar Vacuum Tower telescope with an echelle spectrograph, digital diode array, and tunable filters, and an 8-meter spar in the Big Dome complex equipped with a 40-centimeter aperture coronagraph, a magnetograph, and a polarimeter. Other insrumentation includes a full complement of spectrographs, birefringent filters, and photographic video, and digital data acquistion and processing equipment.

0182 Satellite Applications Laboratory
National Oceanic and Atmospheric Administration, Department of Commerce
National Environmental Satellite, Data and Information Service, Room 601, WWB, Suitland, MD 20233
Contact: Dr. P. K. Rao (301) 763-8282
EXPERTISE: The laboratory provides an interface to the research community, internal and external, to insure that research results are carried smoothly into operational use. As part of this interface, it develops and specifies new products, services, and techniques; develops test and pilot operations, trains operational users of the products, and turns over systems or components to the NESDIS Office of Satellite Operations. In order to carry out these responsibilities, it maintains a staff of project managers and task leaders. The laboratory conducts training and consultation in the application of environmental satellite data, provides consultation in data processing systems, and serves as a focal point to the research community for satellite data support.

Satellite Data Services Division, National Oceanic and Atmospheric Administration, Department of Commerce
See 0261

0183 Satellite Development Laboratory
National Oceanic and Atmospheric Administration, Department of Commerce
National Environmental Satellite, Data and Information Service, 1225 West Dayton Street, Madison, WI 53706
Contact: Dr. William Smith (608) 264-5325
EXPERTISE: The laboratory conducts cooperative research at university institutes emphasizing the application of remote measurements of the earth/atmosphere radiation to problems of meteorology and oceanography. Its mission includes: the design and development of spaceborne measuring devices; formulation of data reduction techniques; and program development for the application of data by operational and other research groups. A major goal is close cooperation with outside users to promote evaluation of new measurements and methods and to facilitate technology transfer to the operational users.

0184 Satellite Experiment Laboratory
National Oceanic and Atmospheric Administration, Department of Commerce
National Environmental Satellite, Data and Information Service, Room 0135, FB4, Suitland, MD 20233
Contact: Dr. Warren Hovis (301) 763-1847
EXPERTISE: The laboratory carries out experiments which are intended to either improve the products which NOAA derives from operational satellite data, or are intended to demonstrate initiatives for new operational products. Laboratory investigations are concerned both with the measurement of physical constants relevant to operational data reduction and with the design, construction, and calibration of specialized equipment for laboratory and field use. Analysis of satellite data and other instrument data in a research mode is a necessary part of the laboratory effort, and this is accomplished with general purpose minicomputer systems. Field experiments are conducted to demostrate the utility of new measurement techniques, new results or new technology. They are carried out at appropriate sites and times throughout the world and use a variety of platforms (aircraft, balloons, ships, fixed ground based sites, etc.). Data from field experiments may be reduced either with laboratory minicomputers or through the facilities of the principal investigator if the investigation is initiated outside of the laboratory. Areas of experimentation include atmospheric, oceanographic, hydrologic, and earth resources investigations.

0185 Sondrestrom Radar Facility
National Science Foundation
Radio Physics Laboratory, SRI International, Menlo Park, CA 94025
FACILITY: The radar, located in Greenland, allows observations of the polar cap, the cusp (a region of easy access for solar wind energy), and the northern part of the auroral oval. It is part of an effort in response to a need for more understanding of global-scale thermospheric and ionospheric problems.

0186 Space Environment Laboratory
National Oceanic and Atmospheric Administration, Department of Commerce
NOAA Environmental Research Laboratories, 325 Broadway, Boulder, CO 80303
Contact: Dr. Harold Leinbach (303) 497-3311
EXPERTISE: The laboratory, through the Space Environment Services Center (SESC), provides Federal agencies and a wide range of public users with real-time space environment data, forecasts of the time of terrestrial impact of significant solar energy output, and warnings of solar events threatening to human life or to continued effective and/or economic operation of modern technological systems. In order to fulfill this role, the laboratory collects data in real-time form NOAA satellites, the Air Weather Service global network of optical and radio solar telescopes and from cooperating observatories. Additional data are acquired in near real-time through the International Ursigram and World Days Service (IUWDS). The SESC operates 24 hours per day, 7 days per week, in cooperation with the Air Weather Service to provide forecasts, and warnings of solar-terrestrial disturbances. The laboratory conducts supporting research to improve capabilities to forecast and issue warnings of solar disturbances, and to improve the operational data base. Efforts within SEL address improvements in quantitative forecasts and warnings, testing the results of such research using available real-time data, and on transferring the resulting models and algorithms to operational status. Some of the current research projects are: produce and analyze synoptic maps of solar activity; investigate the problems of predicting erupting filaments; develop simple models for the origin of the structure of the solar wind close to the sun; develop empirical forecasting techniques of geomagnetic activity, based on use of real-time

0192 Biological-Materials Growth Center
Argonne National Laboratory, Department of Energy
9700 South Cass Ave., Argonne, IL 60439
Contact: Dr. H. L. Crespi (312) 972-3562
FACILITY: Plant micro-organisms are used to produce deuterated and other isotopically labeled compounds for use in magnetic-resonance, infra-red and Raman spectroscopy and in neutron-scattering analysis. Use of the facility is restricted to the production of materials not available commercially. Fully deuterated green and blue-green algae, photosynthetic bacteria, and Halobacterium halobium are cuultured on a multi-liter scale. Organisms substituted with 13C and 15N are cultured on a more modest scale.

0193 Biomedical Research and Clinical Medicine Program
National Institute on Aging, National Institutes of Health, Department of Health and Human Services
Building 31, Room 5C11A, 9000 Rockville Pike, Bethesda, MD 20205
Contact: Dr. Edward Schneider (301) 496-4996
EXPERTISE: The program implements, and supports fundamental molecular and genetic research on the mechanisms of aging at the cellular level, at the comparative level with invertebrate organisms and plants, through theoretical or abstract modeling and computer simulation, and on skin. Major areas of research interest and expertise include genetics and cellular aging, genetics and comparative aging, theoretical gerontology, genetic and cellular resources, dermatology, immunology, pharmacology and aging, intermediary metabolism, diabetes and aging, nutrition and metabolism, endocrinology and physiology, neurosciences, and animal models and pathobiology. Program staff are available to provide information, consultation, and referral services to intramural scientists, extramural grantees, and members of the private sector.

Biotechnology Resources Program, National Institutes of Health, Department of Health and Human Services
See 0504

Boll Weevil Research Laboratory, Agricultural Research Service, Department of Agriculture
See 0132

0194 Carl Hayden Bee Research Center
Agricultural Research Service, Department of Agriculture
2000 E. Allen Road, Tucson, AZ 85719
Contact: Dr. M. D. Levin (602) 629-6329
EXPERTISE: The center houses facilities for the investigation of several areas of bee behavior and biology and crop pollination requirements. Scientists are working to make bees more helpful in growing food, feed, fiber, and seed crops. Researchers study the influence of such factors as flower, color, and aroma; nectar volume and sugar concentration; and environmental conditions on the pollination and fertilization of crop plants. Development of practical colony management systems undertaken to enhance crop pollination depends on a basic understanding of bees and the factors affecting their foraging behavior. Equipment is now available for the rapid analysis of nectars for sugar content and flower aroma chemistry. Research is conducted to improve artificial foods that may be complete replacements for pollen. Information is obtained about the significance of vibrations and other physical and chemical stimuli to honey bee behavior. Researchers are studying the role that bacteria, fungi, and yeast play in converting certain substances into complete foods acceptable to honey bees.

Cereal and Food Biochemistry Research, Northern Regional Research Center, Agricultural Research Service, Department of Agriculture
See 0112

Cooperative Fishery and Wildlife Research Units, U.S. Fish and Wildlife Service, Department of the Interior
See 0419

Cotton Physiology and Genetics Research Laboratory, Agricultural Research Service, Department of Agriculture
See 0055

Defense Pest Management Information Analysis Center, Department of the Army
See 0133

0195 Denver Wildlife Research Center
U.S. Fish and Wildlife Service, Department of the Interior
U.S. Fish and Wildlife Service, Bldg. 16, Federal Center, Denver, CO 80225
Contact: Dr. Richard D. Curnow (303) 234-2283
EXPERTISE: The center conducts research on the following: animal damage control including damage assessment, laboratory and field studies of behavior and ecology of the damaging species, and the development and testing of chemical, physical, or cultural methods for minimizing or eliminating the problem situation; developing methods for reducing severe agricultural damage by a variety of rodents, birds, and vampire bats in Latin America, Africa, and Asia; pharmacology, application of biochemical techniques and methods to wildlife management, electronic development for wildlife research and management, applications of physiological and behavioral biology to wildlife management, chemical research and analytical services, and chemosensory applications in animal damage control; acquisition, care, permanent preservation and systematic study of wildlife species, carrying out biological surveys and related studies of geographic and ecological distribution of wildlife, conducting life history studies, and providing indentification of wildlife; determining the ecological effects on marine wildlife and ecosystems of man's activities related to development and exploitation of the marine environment; and studies relating to wildlife population biology and the relationships between land uses and natural resource management and wildlife.

0196 Ecosystems Research Center
Environmental Protection Agency
Cornell University, Ithaca, NY 14953
Contact: Mr. Gerald Rausa (202) 382-7667
EXPERTISE: The goals of the center are: the identification of fundamental principles and concepts of ecosystems science and the determination of their importance in understanding and predicting the responses of ecosystems to stress; the description of the basic mechanisms that operated within ecosystems, and the stability of ecosystems in the face of stress; and the testing of the applicability of these theoretical concepts to problems of concern to EPA through a consideration of retrospective and other case studies.

Environmental Physiology Research Unit, Agricultural Research Service, Department of Agriculture
See 0059

Environmental Research Laboratory (Corvallis), Environmental Protection Agency
See 0394

0201 Los Alamos National Research Park
Los Alamos National Laboratory, Department of Energy
Los Alamos, NM 87545
Contact: Mr. Kenneth V. Bostick (505) 667-2050
FACILITY: The park consists of 111 sq km containing the Laboratory and adjacent lands. This area has been set aside to study the impact of man's activities on his environment; that is, the interaction between man-altered systems and adjacent natural ecosystems. Park resources can be made available to individuals and organizations outside the laboratory to facilitate self-supported environmental research on appropriate subjects that are compatible with the laboratory's programmatic mission. Detailed information on the geology, hydrology, meteorology, ecology, soils, and archeology are available.

Marine Research Laboratory, Pacific Northwest Laboratory, Department of Energy
See 0717

Metabolism and Radiation Research Laboratory, Agricultural Research Service, Department of Agriculture
See 0138

0202 Michigan State University - DOE Plant Research Laboratory
Department of Energy
Michigan State University, East Lansing, MI 48824
Contact: Mr. Gary W. Watson (517) 353-2270
EXPERTISE: The laboratory is a center for modern experimental plant biology. It is engaged in a comprehensive, interdisciplinary research and realted training program in the plant sciences that attempts to identify the underlying biological mechanisms which control the quality and quantity of plant (biomass) productivity. These efforts include: analysis of the synthesis, transport and mechanism of action of indigenous plant growth regulators which function as key controls of growth and development; characterization of the regulation of biochemical and physiological activities by environmental factors; and determination of the underlying mechanisms of regulation of genome expression and methods by which these can be manipulated to improve heritable physiological properties.

0203 Microbiological Test Facility
Army Materials Test & Evaluation Command, Department of the Army
STEWS-TE-AE, White Sands Missle Range, NM 88002
Contact: (505) 678-4515
EXPERTISE: The facility is responsible for assessing the extent to which material will support fungal growth or how the fungal growth may affect performance or use of the test item. Microbiologists serve as specialists and advisors to project engineers regarding microbial environments and testing philosophies to be considered during the development tests. They maintain a microbial bank for microorganisms isolated from exposed US material from around the world.
Facility: The microbiology laboratory maintains three test chambers. One chamber is portable and can test both live and inert small missiles and components; the second can be employed for testing nonhazardous components and materials; while, the third chamber is employed to simulate any tropical environment in the world. Both hazardous and nonhazardous equipment can be tested in this chamber. A greenhouse is available for tropic exposure tests and for test methodology studies.

0204 National Coastal Ecosystems Team
U.S. Fish and Wildlife Service, Department of the Interior
1010 Gause Blvd. Sidell, LA 70458
Contact: Dr. Robert Stewart (504) 255-6511
EXPERTISE: The research group operates for the purpose of improving the information-gathering, environmental assessment, ecological planning and decisionmaking capability of the Fish and Wildlife Service in relation to activities in the coastal zone. Team interests are national in scope and include problems created by altering coastal habitats and by accelerating development of energy resources. Continuing studies are being made in the following areas: coastal and marine bird atlases; distribution, abundance and life histories of marine mammals, birds, and turtles; avian environmental problems; fish and invertebrate species profiles; community and estuarine profiles that concise analysis of specific ecosystems; ecological inventories of areas that may be environmentally sensitive to the siting of oil and gas facilities; development of Habitat Suitability Indexes for various species as part of the Habitat Evaluation Procedures; contaminant effects; automation by geographical information systems of applied habitat, community and ecosystem information for resource management and planning; and development of applied models of species/habitat interrelationships.

0205 National Environmental Research Park
Oak Ridge National Laboratory, Department of Energy
Oak Ridge Operations Office, Oak Ridge, TN 37830
Contact: Ms. Helga B. Gerstner (615) 574-4334
FACILITY: The park was established for the purpose of providing protected land areas for research and education in the environmental sciences and demonstration of the environmental compatibility of energy technology developments. The park lies in the heart of an Eastern deciduous forest area of streams and reservoirs, mesic hardwood forests, and extensive upland mixed forests. Elaborate monitoring systems enable users to measure environmental factors precisely and accurately for extended periods. Various sites in the park offer opportunities for aquatic and terrestrial ecosystem analysis, such as biogeochemical cycling of pollutants resulting from energy-producing facilities, landscape alterations, and forest and wildlife management. Current research programs which take advantage of the Oak Ridge NERP include a study of the effects of acid deposition on vegetaion, a study of the effects of whole-tree harvesting on biomass production and soil nutrients, and evaluation of the U.S. Fish and Wildlife Services Habitat Suitability Index models.

National Flow Cytometry and Sorting Research Resource, Los Alamos National Laboratory, Department of Energy
See 0559

National Genetic Sequence Data Bank, Los Alamos National Laboratory, Department of Energy
See 0560

National Tritium Labeling Facility, Lawrence Berkeley Laboratory, Department of Energy
See 0623

Natural Products Chemistry Research Unit, Western Regional Research Center, Agricultural Research Service, Department of Agriculture
See 0139

BUILDING TECHNOLOGY

0210 Asbestos Technical Assistance Program (Asbestos-Tap)
Office of Toxic Substances, Environmental Protection Agency
Washington, DC 20460
Contact: Mr. David Mayer (202) 382-3952
EXPERTISE: Ten regional offices respond to questions from local governments concerning the inspection for and health effects of friable asbestos-containing material. Training is offered on inspection and clean-up techniques.

0211 Buildings Energy Use
Pacific Northwest Laboratory, Department of Energy
P.O. Box 999, Richland, WA 99352
Contact: Dr. R. W. Reilly (509) 376-4359, or Dr. L. Schmid (509) 375-2559
EXPERTISE: A computer analysis capability and staff expertise is available for evaluating of commercial and industrial buildings energy use. Energy performance monitors which use low-cost data-logging instruments are available for determining actual energy use and air quality to help predict the effectiveness of building changes and potential for air quality problems that may result when air exchange rates are reduced. The computer analyses and performance monitors assist in developing new and retrofit building plans, developing building standards, and evaluating the impact of standards and regulations.

0212 Center for Building Technology
National Bureau of Standards, Department of Commerce
Washington, DC 20234
Contact: Dr. Richard N. Wright (301) 921-3377
EXPERTISE: The center performs analytical, laboratory, and field research in the areas of engineering and science pertinent to the usefulness, safety, and economy of buildings. The center produces performance criteria and methods of evaluation, test, and measurement for use by the building industry, State and local governments, and Federal agencies with building-related programs. Areas of studies include: develops characterization of normal and extreme loads on buildings occurring during construction and in service; develops methods for evaluating the performance and durability of building materials and components; studies chemical, physical, microstructural and mechanical characterization procedures for building materials; identifies the mechanisms of degradation of building materials; conducts failure analyses and non-destructive evaluation of materials in service; studies building environmental systems as affected by the building envelope and building systems; characterizes factors affecting building thermal, acoustical, and lighting performance and predicts the thermal, lighting, and acoustical performance of the building; develops measurement methods and modeling techniques for air leakage, insulation system performance, energy conservation measures, thermal performance of solar systems, sound absorption and isolation systems, and natural and artificial lighting systems; develops testing and measurement methods for determining the performance and efficiency of heating, ventilating, and air-conditioning equipment; and evaluates the hydraulic performance of fixtures, supply and waste systems to conserve water and materials.

0213 Center for Fire Research
National Bureau of Standards, Department of Commerce
Washington, DC 20234
Contact: Dr. Jack E. Snell (301) 921-3143
EXPERTISE: All aspects of fire are studied. This includes basic and applied research on the fundamental processes at work in fires, research into the factors affecting fire risk and human victims of fire, and operational tests, demonstration projects and fire investigations in support of such activities. The center develops engineering data, methods, and practices, measurement and test methods, and the scientific and technical basis for fire safety design and technology practices for use by commerce and industry, state and local governments, Federal agencies, and the general public. Programs are conducted to evaluate technologies for suppression and extinguishment, mitigate the effects of smoke and toxic gases and reduce their impacts, develop physical and scientific models to predict fire growth processes involving buildings, facilities and vehicles, and translate these findings into design data and performance criteria and into practical fire safety systems. Means are developed to identify potentially harmful combustion products and measures their effects on living organisms.

Concrete Technology Information Analysis Center (CTIAC), Army Engineer Waterways Experiment Station, Department of the Army
See 0341

Energy-Related Inventions Program, National Bureau of Standards, Department of Commerce
See 0303

0214 Fire Research Laboratory
National Bureau of Standards, Department of Commerce
Washington , DC 20234
Contact: Mr. A. J. Benjamin (301) 921-3255
FACILITY: A special laboratory building for large scale fire experiments has been completed. A major feature of the building is a 60 ft X 120 ft test floor with a 32 ft ceiling height. The test floor is equipped with smoke abatement equipment to meet air pollution regulations, water supplies and floor drains, making it suitable for a variety of fire experiments. The only permanent experimental facility on the test floor is the Fire Research Test Furnance. Other test structures and apparatus are erected as needed for specific programs, providing maximum flexibility in space utilization. The facilities are: A room and corridor facility. Provisions are made for varying the wall and ceiling spacings and controlling draft conditions. A burn room and smoke movement facility. This is a two story masonry structure with controlled ventilation and communication between floors. It can be used to conduct studies of the burning of room furnishings or to study the spread of smoke, gas, and fire through a multi-compartment structure. A rate of heat release calorimeter. This instrument measures the rate of heat release and the total heat release from a large sample of material when exposed to a controlled energy flux. A research test furnace provides conformity with the temperature-time exposure specification of ASTM E119, plus extension to 150%. The furnace can be used for fire endurance tests on structural components such as ducts, dampers, doors, and plumbing systems, on innovative constructions such as double modular walls, and on joints in wall-floor assemblies.

Forest Products Laboratory, Forest Service, Department of Agriculture
See 0463

Contact: (609) 896-5652
FACILITIES: The center facilities are used to conduct research, development, test, and evaluation of air breathing propulsion systems, their accessories, components, fuels, and lubricants. The test plant facilities can simulate altitudes from sea level to 100,000 feet, flight speeds from 0 to Mach 3.0, temperatures from -65F to 650F, and airflows from 0 to 700 pounds per second. The individual test areas are described as follows: (1) The large engine test area contains three altitude and two sea level test cells for large turbojet and turbofan engines. (2) The small engine test area contains four small sea level/altitude test cells for small gas turbine engines.(3) Auxiliary Test Area is used to test ram air turbines and air breathing engine components. (4) The transmission test facility is the nation's only facility capable of testing complete helicopter power drive systems under simulated flight loads. (5) The accessory test area is used to test auxiliary power units and engine starting systems. (6) The rotor spin facility is used to evaluate gas turbine engine rotor structural integrity, durability, and burst protection as well as support development, evaluation, and optimization of rotor designs. (7) The outdoor test site consists of a turntable test stand, used for free air stream performance evaluations, smoke and pollution measurements, noise measurements, infrared measurements, and humidity effects investigations and the Gyroscopic Test Rig, the only facility in the nation capable of testing full-scale, operating engines under gyroscopic loads. (8) The fuels and lubricants laboratory is used to support development of propulsion system fuels and lubricants, preparation of specifications, and solution of service problems and to conduct fluid systems investigations, measure air pollution, and determine life- and load-bearing characteristics of gear and bearing materials.

Center for Fire Research, National Bureau of Standards, Department of Commerce
See 0213

Coal Utilization Program, Pittsburgh Energy Technology Center, Department of Energy
See 0299

0222 Combustion Research Facility
Environmental Protection Agency
Jefferson, AR
Contact: Mr. Richard A. Carnes (501) 541-4355
FACILITY: Designed for the study of the incineration of hazardous industrial wastes, the facility is a highly instrumented and controlled pilot scale incinerator. When a waste has been selected for study, the on-site project officer will provide background information on its particular chemical and physical characteristics. A small quantity (about 500 grams) of the candidate waste will be obtained and subjected to a number of chemical and physical tests in laboratories which are part of the facility. These preliminary tests have the following goals: determine the suitability of the waste for incineration, determine those chemicals present that cause the waste to be classified as hazardous and establish the appropriate safety measures for handling these materials, identify those chemicals that will challenge the incinerators destruction capability in order to establish the necessary operating parameters, and determine the physical state of the waste in order to establish appropriate feeding mechanisms to the incinerator.

0223 Combustion Research Facility
Sandia National Laboratories, Department of Energy
Livermore, CA 94550
Contact: Dr. D. L. Hartley (415) 422-2747
FACILITY: Research is promoted in combustion sciences emphasizing the development and application of new diagnostic techniques to the study of basic flame processes, as well as research in fundamental chemistry important in combustion. Complete facilities for resident and visiting researchers are available. This includes special laser systems; a dedicated VAX computer; access to a Cray 1 computer; combustors; low, atmospheric, and high-pressure flames; coal combustion flow reactors, multifuel flow reactors; internal combustion engines; spectroscopy laboratories and kinetics laboratories.

Dynamic Hot Corrosion Test Facility, Army Materials and Mechanics Research Center, Department of the Army
See 0462

Energy-Related Inventions Program, National Bureau of Standards, Department of Commerce
See 0303

0224 Engine Test Facility
Arnold Engineering Development Center, Department of the Air Force
Arnold AFB, TN 37389
Contact: Directorate of Propulsion Test (615) 455-2611 x5588
FACILITY: Test cells in the facility are used for research, development and testing and evaluation of propulsion systems for advanced aircraft, missiles, satellites and space vehicles. These include rocket motors as well as ramjet, turbofan and turbojet engines. While the facility was originally designed for testing only the airbreathers, modifications of the plant and development of new testing equipment and techniques have made it possible to test both solid and liquid propellant rocket motors at conditions simulating flight at various altitudes. During tests of an airbreathing engine, air conditioned to simulate flight at various selected altitudes and temperatures is supplied to an engine installed in a test cell at a velocity which permits operating the engine power settings for various Mach numbers in an aircraft's performance range. Both airframes and propulsion systems can be tested under simulated low-altitude, high-temperature conditions.

Federal Aviation Administration Technical Center, Federal Aviation Administration, Department of Transportation
See 0808

Fire Research Laboratory, National Bureau of Standards, Department of Commerce
See 0214

0225 Fluidized Bed Combustion Process Development Facility
Argonne National Laboratory, Department of Energy
9700 South Cass Avenue, Argonne, IL 60439
Contact: Dr. K. M. Majles (312) 972-4329
FACILITY: Optimization studies are made on the effect of combustion process variables on S02 retention in the fluidized bed, N0x suppression in the flue gas, particulate solids level in the flue gas and combustion efficiency. In the process coal is combusted in a fluidized-bed of limestone at bed temperatures up to 950C at system pressures of up to 1000 kPa. Also studied are assess behavior of biologically

for a facility to serve as a centralized source for current, readily usable data and information concerning software technology. The major functions of the DACS are to (1) develop and maintain a computer database of empirical data collected on the development and maintenance of computer software, (2) produce and distribute subsets of the database, (3) maintain a software technology information base of technical documents, project status information, and evaluation data, (5) analyze the data and information and produce technical reports, (4) maintain a current awareness program which will include dissemination of technical information (analysis reports, technical monographs, etc.), assessments of technological developments, and publication of the monthly newsletter, (6) develop and maintain a glossary of software engineering terms, and (7) provide rapid response to inquiries for technical information and assistance.

Engineering Computer Program Library, Waterways Experiment Station, Department of the Army
See 0345

0231 Mathematics and Computer Sciences Division
Argonne National Laboratory, Department of Energy
9700 South Cass Avenue, Argonne, IL 60439
Contact: Dr. E. Lusk (312) 972-7852
EXPERTISE: Offers advice on the use of mathematical software packages, in particular EISPACK (a family of programs to calculate the eigensystems of many kinds of matrices), LINPACK (a package of programs for analyzing and solving various systems of simultaneous linear algebraic and linear least squares problems), and MINPACK (a package of programs for the numerical solution of systems of non-linear equations and non-linear least-squares problems). Other areas of expertise include: Advice in automated reasoning technology and its applications (Information on the AURA and LMA automated reasoning systems); Source program transformation and abstract programming; and Mathematical modeling of analysis of scientific and engineering problems, for example in fluid and gas dynamics, combustion, neutron transport, and radiative transfer.

National Energy Software Center, Argonne National Laboratory, Department of Energy
See 0442

0232 Navy Center for Applied Research in Artificial Intelligence
Naval Research Laboratory, Department of the Navy
ORTA Code 1405, 4555 Overlook Avenue., Washington, DC 20375
Contact: Mr. Richard Fulper (202) 767-3744
EXPERTISE: The center is dedicated to applying artificial intelligence techniques to solve difficult and complex military problems such as command and control, and decision aids, multisensor integration, message automation, equipment maintenance, mission planning and adaptive control. Some of these problems are solved by expert systems that program a computer to use an expert's techniques to infer, represent knowledge, and make decisions. Future plans call for research in robotics and high level understanding.

Nondestructive Engineering Unit, Idaho National Engineering Laboratory, Department of Energy
See 0367

Office of Data Base Services, National Technical Information Service, Department of Commerce
See 0448

0233 Statistical Analysis Center
Pacific Northwest Laboratory, Department of Energy
P.O. Box 999, Richland, WA 99352
Contact: Ms. Judith A. Mahaffey (509) 376-4402, or Dr. L. Schmid (509) 375-2559
EXPERTISE: The major resource of the Center is an Analysis of Large Data Sets (ALDS) capability which is a multidisciplinary research and implementation effort of statisticians and computer scientists. The purposes of ALDS are (1) to develop a statistical analysis capability which includes the hardware and software for efficient, thorough analysis and display of large amounts of information, and to use this laboratory for the analysis of specific large data sets to understand strengths and weaknesses of the data analysis process; and (2) to research and implement statistical algorithms that overcome difficulties and capitalize on advantages of large data sets by enhancing and understanding of information in data; to research and implement computer science software, especially data management and graphic display software; and to enhance the statistical analysis of large data sets. The ALDS system has been used successfully for data sets in excess of 72 million values.

EARTH RESOURCES

0234 Aquifer Properties Test Facility
Pacific Northwest Laboratory, Department of Energy
P.O. Box 999, Richland, WA 99352
Contact: Dr. James A. Stottlemyre (509) 376-5067, or Dr. L. Schmid (509) 375-2559
FACILITY: Apparatus for testing aquifer materials at elevated pressures and temperatures is available. This facility can provide confining pressure up to 1 kbar and pore fluid pressure in the range of 0-1 kbar to samples as large as 2-1/8 in. in diameter and 4-1/4 in. long. Elevated temperature to 200C can be imposed on the sample over the complete range of confining and pore fluid pressures. The system can also provide axial load to 2 kbar; continuous measurement of volumetric strain; reversal of flow direction through the sample; sampling of pore fluid at both inlet and outlet of the sample chamber.

Arctic and Offshore Technology Program, Morgantown Energy Technology Center, Department of Energy
See 0289

Center for Water Quality Modeling, Environmental Research Laboratory (Athens), Environmental Protection Agency
See 0386

0235 Charting and Geodetic Service
National Oceanographic and Atmospheric Adminstration, Department of Commerce
NOAA, National Ocean Service, Rm 1006, 6001 Rockville Pike, Rockville, MD 20852
Contact: Dr. Bernard H. Chovitz (301) 443-8385
SERVICES: The mission of the organization is to collect, maintain, publish, and distribute geodetic and cartographic information pertaining to the National Geodetic Networks. Geodetic data consist of descriptive, positional (latitude, longitude, elevation), and cartographic information for more than a million control points that compose the National Geodetic Reference System. Related data are also provided, such as gravity values, astronomic positions, preliminary adjusted positions, horizontal and vertical crustal movement

Geographic Information Retrieval and Analysis System, U.S. Geological Survey, Department of the Interior
See 0431

Geographic Names Information System, U.S. Geological Survey, Department of the Interior
See 0432

Goddard Space Flight Center, National Aeronautics and Space Administration
See 0792

0241 Great Lakes Environmental Research Laboratory
National Oceanic and Atmospheric Administration, Department of Commerce
NOAA Environmental Research Laboratories, 2300 Washtenaw Ave., Ann Arbor, MI 48104
Contact: Dr. Eugene J. Aubert (313) 668-2244
EXPERTISE: The laboratory conducts integrated, interdisciplinary environmental research in support of resource management and environmental services in coastal and estuarine waters. Special emphasis is on the Great Lakes. It performs field, analytical, and laboratory investigations to improve understanding and prediction of coastal and estuarine processes and interdependencies with the atmosphere, land, and sediments; places special emphasis on a systems approach to problem-oriented environmental research to develop environmental service tools; and provides assistance to resource managers and others in obtaining and applying the information and services developed. The environmental information is provided to government and private organizations to facilitate planning and decision making in water resource management. The program includes both background and applied studies and combines experimental, theoretical, and empirical approaches. Research is carried out through four groups; synthetic organic and particle dynamics, ecosystem and nutrient dynamics, lake hydrology, and physical limnology and meteorology. Their disciplines and activities include meteorology, geology, hydrology, physical oceanography, aquatic chemistry, aquatic biology, applied mathematics, systems engineering, computer systems applications, instrument design and development, and experimental design and analysis.

Hydraulic Laboratory, Waterways Experiment Station, Department of the Army
See 0356

0242 Hydrologic Research Laboratory
National Ocean and Atmospheric Adminstration, Department of Commerce
National Weather Service, Room 530, 8060 13th St., Silver Spring, MD 20910
Contact: Dr. Michael Hudlow (301) 427-7904
EXPERTISE: The laboratory considers the interactions between meteorology and hydrology in an attempt to better understand and predict water quantities and their movement in the components of the hydrologic cycle. Specifically, HRL develops and assists in the operational implementation of hydrologic and hydrometeorological models and procedures in direct support of the NOAA River and Flood Forecast and Warning Service. Research and development activities fall into two broad categories: development of versatile and comprehensive hydrologic forecast models and systems of models that are compatible with operational implementation and, development of hydrometeorological data assimilation, management, and analysis systems and procedures that will provide optimal input information for use with the hydrologic forecast models.

0243 Intermountain Forest and Range Experiment Station
Forest Service, Department of Agriculture
507 25th Street, Ogden, UT 84401
Contact: Mr. Keith E. Evans (801) 625-8441
EXPERTISE: Research is conducted on timber and watershed management; forest fires; forest insects, diseases, engineering, recreation, and economics; forest surveys; forest products utilization and marketing; wildlife management; and range management. Most studies are related to conditions in western areas.

0244 Magnetic-Declination Information
U.S. Geological Survey, Department of the Interior
MS 964, Box 25046, Federal Center, Denver, CO 80225
Contact: Ms. Jill Caldwell (303) 234-5505
INFORMATION SERVICES: Current and historical magnetic-declination information is available. Users include pilots, surveyors, and earth scientists.

Map and Chart Information System, U.S. Geological Survey, Department of the Interior
See 0435

Materials Resources Data System, U.S. Geological Survey, Department of the Interior
See 0608

National Center for Groundwater Research, Environmental Protection Agency
See 0408

0245 National Center for the Thermodynamic Data of Minerals
U.S. Geological Survey, Department of the Interior
National Center, Stop 959, Reston, VA 22092
Contact: Mr. John Haas (703) 860-6911
INFORMATION SERVICES: The data center critically evaluates all published literature on the physical and thermodyamic properties of naturally-occurring phases in the ranges in temperature, pressure, and composition as found in the geological environment. It provides reference services; distributes publications; and makes referrals to other sources of information. It interacts closely with the Standard Reference Data Centers of the National Bureau of Standards.

0246 National Coal Resources Data System
U.S. Geological Survey, Department of the Interior
Stop 6, 956 National Center, Reston, VA 22092
Contact: Mr. Devereux Carter (703) 860-7464
INFORMATION SERVICES: The system (NCRDS) is a computerized storage, retrieval, and display system developed by the Branch of Coal Resources. NCRDS correlates and standardizes coal data from Federal and State agencies, universities, and the private sector. The system is constantly updated and expanded to serve current and future needs in U.S. coal resource inventory and analysis. Eight files of geologic and geographic information are currently available. The files cover the following: published coal resource estimates for coal-bearing States listed by State, county, coal-field, geologic age and formation, rank, thickness of coal, thickness of overburden; standard USBM chemical analysis (proximate, ultimate, BTU, ash softening temperature, free swelling index, and Hargrove grindability index) by State, county, bed code and name, and mine and nearest town codes; major-, minor-, and trace element analyses by USGS laboratories; stratigraphic data from drill holes, outcrops, and mines; petrographic analyses of se-

Foundation, the National Oceanic and Atmospheric Administration, the U.S. Geological Survey, and the Corps of Engineers. Information is furnished in response to requests from individuals and organizations. Additional activities carried out by the Center include: Assisting other groups to prepare workshops, symposia, and meetings dealing with natural hazards issues; Providing references to natural hazards literature, recommendations of authors or speakers dealing with specific hazards issues, and contacts in governmental agencies and private organizations concerned with hazards; Supporting research on a modest scale in the natural hazards field; and Maintaining one of the most extensive collections of hazards literature in the country.

0252 North Central Forest Experimental Station
Forest Service, Department of Agriculture
1992 Folwell Ave., St. Paul, MN 55108
Contact: Mr. Roger Leonard (612) 642-5252
EXPERTISE: Ecology and culture of aspen, birch, and conifer forests; Silviculture plantations for biomass and energy production; Culture, genetics, and protection of black walnut, white ash, and white oak; Establishment and early growth of northern forest species; Physiology of wood formation; Genetics of northern forest trees; Water quality management in northern Lake States forests; Land use impacts on wildlife habitats of the central oak-hickory forest ecosystem; Wildlife habitat management in the Lake States; River recreation management research; Enhancing urban forest recreation opportunities; Fire management planning for the northeastern United States; Insects affecting forest ecosystems in the North Central States; Canker, foliar, and root diseases of nurseries, forests, plantations, and Christmas tree plantings; New and improved systems, methods and techniques for processing hardwoods; Engineering technology for managing northern forest stands; Resource evaluation in the North Central Region; Regional economics of forest resources; Multiple use evaluation and modeling of forest ecosystems in the North Central Region; and Methods for evaluating forestry research.

North Central Soil Conservation Research Laboratory,
Agricultural Research Service, Department of Agriculture
See 0033

0253 Northeast Watershed Research Laboratory
Agricultural Research Service, Department of Agriculture
111 Research Bldg. A, University Park, PA 16802
Contact: Dr. Harry B. Pionke (814) 238-4976
EXPERTISE: To evaluate options for alternative land use, it is necessary to be able to predict movement of water and associated chemicals through soil and underlying geological strata. Of particular interest to the center are hydrology water quality and erosion/sediment transport as they relate to varying land use. Mathematical simulation or modeling is a means to predict how water, associated chemicals and eroded soil move, provided the model can be field-tested. Current research emphasizes development, adaptation, and testing of simulation models to estimate the impact of alternative land uses or management techniques on the quality and quantity of streamflow from watersheds in the northeastern United States. The program is divided into two research activities: predicting runoff, streamflow and water quality of outflow from agricultural watersheds, with emphasis on groundwater and subsurface return flow, and predicting erosion productivity relationships at the field and small watershed scale.

0254 Northeastern Forest Experimental Station
Forest Service, Department of Agriculture
370 Reed Rd., Broomall, PA 19008
Contact: Dr. Anne S. Fege (215) 461-3013
EXPERTISE: The station conducts research on the ecology and management of beech-birch-maple types in the Northeast, culture of northeastern spruce-fir forests and central Appalachian hardwoods, ecology and management of cherry-maple and oak forests in the Alleghenies, genetic improvement of northeastern trees, management of urban forest ecosystems, forest inventory and analysis, environmental stress and tree growth, and discoloration and decay in forest trees. In addition, the station supports research on wildlife habitat associations, surface-mined area reclamation, dispersed forest recreation in backcountry areas, indicators of outdoor recreation, impact of forest management and acid precipitation on nutrients in soil and water, water resource protection in central Appalachian forests, and management of municipal watersheds. Station scientists conduct research on Dutch elm disease and other problems of urban trees, effects of air pollution on trees and forests in the Eastern United States, ecology and management of northeastern forest insect pests, silvacultual options for control of the gypsy moth, insects affecting oak regeneration, insect pathology and microbial control, and host-pest interactions. There are also research projects directed toward hardwood timber harvesting systems and utilization of low-grade hardwoods. Economics and marketing research efforts include foreign trade barriers for eastern hardwoods, economic opportunities for improving productivity of forest industry, regional forest resource economics, wood energy, and maple products marketing.

0255 Office of Charting and Geodetic Services
National Oceanic and Atmospheric Administration, Department of Commerce
National Ocean Service, 6001 Executive Blvd., Rockville, MD 20852
Contact: Dr. John D. Bossler (301) 443-8204
SERVICES: The office provides a wide range of geodetic products and services, produces nautical charts of U. S. waters, and produces aeronautical charts for the National Airspace System. Geodesy: The office establishes and maintains the national networks of geodetic control and conducts field surveys and research and development activities to improve the methods of collecting and disseminating geodetic data. The office provides leadership at the Federal level to develop specifications, standards, and instrumentation for geodetic surveys and assists State, county, and municipal agencies with geodetic-related work through a variety of cooperative programs. The National Geodetic Information Center, maintained by the office, collects, maintains, and distributes a complete range of information pertaining to the National Geodetic Reference System, including data on vertical and horizontal geodetic survey stations, geodetic control diagrams for the conterminous U.S., Alaska, and Hawaii, gravity values for over 1 million points, calibration base line data, astronomic and Doppler satellite data, computer programs for geodetic applications, and geodetic publications and historical records. Nautical charting: The office produces nautical charts for navigation on U.S. coastal and estuarine waters, navigable inland waterways, and the Great Lakes, as well as a number of special purpose maps and charts of the U.S. coastal zone. Aeronautical charting: The office produces in-

among uses, develop ways to protect and restore habitats while maintaining other resource values, and develop improved methods of measuring the economic and social values of wildlife. Research also is seeking ways to improve the survival and growth of seedling trees, improve forest growth and wood yield potential, and integrate timber management with other forest resource values. Efforts are underway to develop planning tools for determining the effect of fires on wildland resources, improved procedures for using fire under prescribed conditions as a forest management tool, integrated pest management systems to prevent and/or reduce damage from insect and disease pests, and trees resistant to pests.

0261 Satellite Data Services Division
National Oceanic and Atmospheric Administration, Department of Commerce
National Climatic Center, WWB, Room 100, Washington, DC 20233
Contact: Mr. Gregory Hunolt (301) 763-8111
INFORMATION SERVICES: The division is a source of information gathered by a series of Earthwatching spacecraft that began in 1960. Images in a variety of forms (negatives, film loops, digital data on magnetic tape) received for quality control and archiving are available for retrospective use. Over 8 million separate images, 50,000 computer compatible tapes, and 800 mass storage tapes from 30 satellites are now archived. Satellite data files contain imagery from the early TIROS series of experimenting spacecraft and the operational ESSA and NOAA series of spacecraft. Imagery gathered by NASA's experimental geostationary Applications and Technology Satellites (ATS), Synchronous Meteorological Satellites (SMS), and the current NOAA operational Geostationary Operational Environmental Satellite (GOES) is also available. The division maintains magnetic tapes containing digital data from many of these satellites, that can be used quantitatively in computerized research and analysis programs. The digital data from the newest satellites are the fastest growing portion of the division's holdings.

Snake River Conservation Research Center, Agriculture Research Service, Department of Agriculture
See 0037

Soil and Water Conservation Research Unit, Agricultural Research Service, Department of Agriculture
See 0038

Soil Mechanics Information Analysis Center (SMIAC), Army Engineer Waterways Experiment Station, Department of the Army
See 0378

0262 Southeast Watershed Research Laboratory
Agricultural Research Service, Department of Agriculture
P.O. Box 946, Tifton, GA 31793
Contact: Dr. Loris E. Asmussen (912) 386-3462
EXPERTISE: The laboratory was established as one of six regional watershed hydrology research centers across the nation, each located to best serve the needs of a particular land resource area. The objective of the center is to identify and characterize the elements that control the flow and quality of water from agricultural watersheds in the Southeast, with emphasis on the Coastal Plain land resource area.

0263 Southeastern Forest Experimental Station
Forest Service, Department of Agriculture
200 Weaver Blvd., Asheville, NC 28804
Contact: Dr. Gordon D. Lewis (704) 258-2850 x637
EXPERTISE: The station's products are knowledge and technology in forms suitable for use in management of forest resources. The purpose is to provide a sound scientific basis for forest policies and practices. Current research includes: Population genetics of forest trees; Loblolly pine management; forest soil productivity in the Southeast; stand development, composition, and growth of Southern Appalachian hardwoods; silvicultural guidelines for managing Piedmont hardwoods; endangered and threatened wildlife in Southern forests; detection, evaluation, and control of damaging Southeastern forest insects; insecticides for control of bark beetles in Southern pines; processing hardwood trees, logs, and lumber; silviculture and trree improvement of Eucalyptus in Florida; combustion processes in wildland fuels; Forestry weather data systems and biology, ecology, and control of cone and seed insects of Southern forests.

0264 Southern Forest Experiment Station
Forest Service, Department of Agriculture
Room T-10210 USPSB, 701 Loyola Ave., New Orleans, LA 70113
Contact: Mr. John W. Henley (504) 589-6712
EXPERTISE: Research is conducted in the following areas--Statistical methods for research and application; Control of undesirable vegetation in southern pine forests; Engineering systems for intensive forest management; Genetics of southern pines; Control of wood biodeterioration; Diseases of southern pines; Evaluation of legal, tax, and economic influences on forest resource management; Tropical American forest management; Integrated resource management in the Cumberland Plateau region; Hydrologic evaluation of forest management alternatives for the southern coastal plain pinery and Ozark Ouachita highlands; Technology of eastern forest tree seed; Forest inventory and analysis for midsouth states; Regeneration and management of Southern hardwoods; Southern hardwood insects and diseases; Integrated research, development and application program for bark beetles of southern pines; Silviculture and intensive culture of southern pines in the west gulf coastal plain; Range management for Longleaf-Slash Pine-Bluestem and Loblolly-Shortleaf pine ecosystems; Southern pine bark beetles; Processing southern wood; Timber Management alternatives for small forest properties; and Integrated management of wildlife habitat and timber resources.

Southwest Rangeland Watershed Research Center, Agricultural Research Service, Department of Agriculture
See 0043

0265 U.S. Water Conservation Laboratory
Agricultural Research Service, Department of Agriculture
4331 East Broadway, Phoenix, AZ 85040
Contact: Dr. Herman Bouwer (602) 261-4356
EXPERTISE: The laboratory is one of the few Agricultural Department facilities wholly devoted to water research. The studies are aimed at finding better ways to increase water supplies, to use water more efficiently, and to reduce water losses in soil-plant-atmosphere systems. The research is national in scope and deals with both present and potential problems. Research is concentrated on runoff farming and hydrology; water measurement; irrigation management; hydraulics; soil-plant-atmosphere systems; soil environment;

Cable Winding Facility, Brookhaven National Laboratory, Department of Energy
See 0292

0272 Center for Electronics and Electrical Engineering
National Bureau of Standards, Department of Commerce
Washington, DC 20234
Contact: Mr. Judson C. French (301) 921-3357
EXPERTISE: Research and development is carried out in the field of electronic and electrical materials, devices, instruments, and systems. The Center develops engineering data, measurement methods, theory, physical standards, and associated technology. Some of its activities include: develops and evaluates measurement methods and services to support electrical materials, components, instruments, and systems used for the generation, transmission, and detection of conducted electrical signals; develops and evaluates systems, devices, and techniques to measure and analyze free electromagnetic fields interaction with antennas, conductive or dielectric bodies, and receivers; develops, evaluates, and applies systems, devices, and techniques to measure and analyze electromagnetic signals (both pulsed and continuous) confined in waveguide structures or laser beams, and the transmission characteristics of such structures; and studies the characterization of semiconductor materials, fabrication processes, and equipment, as required for equitable marketplace exchange.

0273 Electrical Engineering and Instrumentation Unit
Idaho National Engineering Laboratory, Department of Energy
P.O. Box 1645, Idaho Falls, ID 83415
Contact: Mr. Clyde R. Toole (208) 526-6316
EXPERTISE: Research is conducted on systems engineering; design, analysis, prototype, fabrication, and application of electrical systems; and instrument and control systems used in the measurement and control of physical, chemical, and nuclear processes. The application of modern control theory has been carried out through optimal estimation techniques for a wide range of nuclear systems applications including fuel pin gap conductance and heat flux determination, calorimetric error analysis, and on-line minicomputer-based digital plant protection and control systems. Specialized sensor design for application in extreme environments utilizes capability in ultrasonics, eddy currents, electro-optics, refractory materials, and in-depth radiation hardened design experience. A strong design capability supports both analog and digital design requirements. Within the analog disciplines, personnel are skilled in areas of low-level signal conditioning design up to high-level, high-frequency function generation design. Electrical power distribution, switchgear and motor control expertise, and field engineering and installation support are supported. In addition to nuclear system modeling, experience is maintained in modeling mechanical, electrical, chemical, thermal-hydraulic, heat transfer, and physiological processes. Optical and electro-optical expertise is presently focused on development of instrumentation to observe and characterize the internal functions of nuclear reactors and reactor simulation facilities under very severe environmental conditions. The technology involved development of fiber optic based sensors, laser doppler velocimetry, holography, image analysis, infrared radiometry, noncontact temperature measurement, high-speed photography, and special television techniques.

0274 Electro-Optical High Voltage Field Mapping Systems
National Bureau of Standards, Department of Commerce
Washington, DC 20234
Contact: Dr. Oskars Petersons (301) 921-3121
FACILITY: State-of-the-art electrical and electro-optical measurement techniques are employed for measurement of high voltages, and for observation and probeless fringe-pattern mapping of high-intensity electric fields in insulating dielectrics. Apparatus allows operation under microsecond pulsed, and either steady-state direct or alternating voltages. Unique advantages include their freedom from electromagnetic interference errors and their provision for direct visual observations (analogous to those used conventionally in photoelastic studies of mechanical stress) of electrical stress distributions. Applications include calibration of HV pulse-measuring devices; design studies with visualization of both steady-state and dynamic electrical stress distribution in selected insulating dielectrics; visualization of the effects of space charge, suspended particles, dissolved ionic impurities and electrode composition, polish and geometry on electrical conduction in selected insulating liquids; mapping of electric field distribution around immersed solid insulator models; measurement of Kerr electro-optical coefficients of liquids; and dynamic and steady-state electrical breakdown studies in selected dielectrics.

0275 Electromagnetic Interference Enclosure
Materiel Testing Directorate, Department of the Army
STEAP-MT-G, Aberdeen Proving Ground, MD 21005
Contact: Mr. Rowland G. Byerly (301) 278-3274
FACILITY: The shielded enclosure is 94'L X 60'W X 28 inches H. It has solid panel design, reinforced floors, and large access doors (16'W x16'H). An air intake and exhaust system with a 12,000 cfm capcacity permits operation of equipment including engines within the enclosure during EMI tests. All electrical power and communication lines entering the enclosure are equipped with 100 db in-line filters. An instrumentation room, 12'L X 12'W X 8'H solid shielded enclosure, is used to house the EMI measuring and recording instrumentation. Instrumentation is available for controlling, measuring, displaying, and recording EMI in accordance with the triservice Military Standard 461A, 462, and 463 series on EMI testing.

0276 Electromagnetic Pulse Simulator Facilities
Harry Diamond Laboratories, Department of the Army
ATTN: DELHD-NW-EE, 2800 Powder Mill Rd., Adelphi, MD 20783
Contact: Mr. William A. Petty (703) 490-2505
FACILITY: The laboratory has developed a variety of electromagnetic pulse (EMP) simulators and support facilities to test sensitive electronic systems devices and components. In addition to performing EMP tests on various equipment, transportable simulators have been used to conduct tests on complex communication and radar installations at numerous locations.

0277 Electromagnetics Radiation Effects Test Facility
Army Materials Test and Evaluation Command, Department of the Army
STEWS-TE-AR, White Sands Missle Range, NM 88002
Contact: (505 678-6107
FACILITY: Testing is accomplished in an outdoor environment, thus resulting in no limitations as to the size of tested items. There are four testing areas (two of which are pro-

strument can be used at either the NBS or a commercially available high voltage laboratory. Primarily power loss measurements can be made of large capacitors and inductors such as energy storage and power factor correction capacitors, high voltage shunt reactors (inductors). Impedance measurements can also be conducted.

Rehabilitation Research and Development Center, Veterans Administration
See 0583

0285 Reliability Analysis Center (RAC)
Rome Air Development Center, Department of the Air Force
Griffiss AFB, NY 13441
Contact: Mr. Steve Flint (315) 330-4151
INFORMATION SERVICES: RAC functions as a focal point for the recovery of reliability test data and experience information on microcircuit and related component parts. It collects, analyzes, formats and disseminates reliability information on microcircuit, discrete semiconductor, and certain electrical/electromechanical components and the equipments/systems in which these components are used. Critically analyzed and evaluated reliability experience information is disseminated through reliability data compilations, handbooks and appropriate special publications to upgrade and support defense systems reliability.

0286 Spatial Resolution Facility
Army Electronic Proving Ground, Department of the Army
STEEP-MT-T, Ft. Huachuca, AZ 85613
Contact: Mr. Silvestri (602) 538-6417
FACILITY: The measurement of spatial resolution and spatial distortion of photographic, television, and infrared equipment can be accomplished. The facility consists of a flat concrete surface forming three wedges 678 feet long by 200 feet wide. One wedge is painted with aluminum horizontal and vertical bar for infrared measurements; another with white bars on black background for photographic measurements; the third is painted with two shade of gray paint. Another part of the facility consists of an infrared target array and radiation measurement instrumentation required to evaluate the thermal sensitivity and geometric resolution of a broad class of airborne infrared (IR) surveillance systems. The target array consists of a series of active targets for short wave length IR systems and a series of passive targets for mid- to long wave length IR systems. Target controllers provide for setting temperature differentials of 1 degree to 40 degrees centigrade. The canvas passive array consists of a 100-foot edge target for edge analysis and a series of six 40 foot by 40 foot panels providing a grey scale in the infrared spectrum. The emulsion-coated canvas panels have been calibrated by NBS.

ENERGY

Mechanical Engineering Unit, Idaho National Engineering Laboratory, Department Engineering Unit, Idaho National Engineering Laboratory
See 0331

0287 Advanced Coal Science and Technology
Pittsburgh Energy Technology Center, Department of Energy
P.O. Box 10940, Pittsburgh, PA 15236
Contact: Mr. Robert Oltmanns (412) 675-6128
EXPERTISE: Advanced coal science and technology development is a major activity at the center. Fundamental knowledge and generic research data are sought to expand the understanding of the complex structure and characteristics of coal. PETC currently manages the Department of Energy's R and D program in magnetohydrodynamics (MHD), an advanced technique of coal combustion. By incorporating MHD into an existing coal-fired electric generating system, the efficiency and energy output of the plant can be substantially increased.

0288 Alternative Fuels Data Bank
National Institute for Petroleum and Energy Research, Department of Energy
P. O. Box 1398, Bartlesville, OK 74005
Contact: Mr. Jerry Allsup (918) 336-2400
INFORMATION SERVICES: To aid researchers working in the area of alternative transportation fuels, the data bank was established as a primary source of technical information. It has been designed primarily to reflect the cuurrent state-of-the-art of the utilization of alternative transportation fuels. The emphasis is on utilization characteristics of liquid fuels produced from non-petroleum sources. Information related to the utilization of alternative fuels in engine tests programs and vehicle test fleet studies is receiving the most attention at present. Comprehensive coverage of the utilization of alcohol fuels is now provided, and limited coverage is provided on ethers, hydrogen, emulsions, and synthetic fuels from shale, coal and biomass.

0289 Arctic and Offshore Technology Program
Morgantown Energy Technology Center, Department of Energy
P.O. Box 880, Collins Ferry Road, Morgantown, WV 26505
Contact: Ms. Claire H. Sink (304) 291-4620
EXPERTISE: This program is advancing the technology needed to recover Alaskan Arctic oil and natural gas resources in an economically and environmentally acceptable manner. A scientific and engineering knowledge base for Arctic ice and permafrost characteristics, as well as deepwater, seafloor, and onshore conditions, has been developed.

0290 Biomass Gasification Process Research Units
Pacific Northwest Laboratory, Department of Energy
P.O. Box 999, Richland, WA 99352
Contact: Dr. L. K. Mudge (509) 375-2268, or Dr. L. Schmid (509) 375-2559
FACILITY: Biomass processing and fuels development work is being conducted. Analytical and R and D equipment in this facility includes gasification reactor systems, gas chromatographs, wet test meters, gas sampling equipment, instrumentation for control of experimental variables, element analyzer, fractional distillation apparatus, atomic absorption spectrophotometer, and general purpose wet chemistry equipment. Other systems consist off a 1-ft diameter by 7-ft high fixed-bed gasifier, a 3-ft diameter by 12-ft high fixed-bed gasifier, and a 7-in. diameter by 10-ft high fluid bed gasifier capable of operation at 100 psia. Additional equipment can be used for drying, shredding, and grinding feed materials as necessary. This facility is equipped with several ball mills, a hammer mill, and intensive mixer, an automated screening system, and a rotary dryer.

Biomaterials Conversion Laboratory, Northern Regional Research Center, Agricultural Research Service, Department of Agriculture
See 0024

and evaluation of solids flow meters, radiometers, alkali, sensors, particulate monitors, and optical ports.

0299 Coal Utilization Program
Pittsburgh Energy Technology Center, Department of Energy
P.O. Box 10940, Pittsburgh, PA 15236
Contact: Mr. Sun W. Chun (412) 675-6128
EXPERTISE: The increased use of coal can help to reduce oil consumption in utility and industrial applications. The center has taken an active role in demonstrating the technical feasibility of burning coal-oil, coal-water, and coal-methanol mixtures in boilers, furnaces, and process heaters originally designed to burn oil. Additionally, the combustion process to improve efficiency and boiler performance, and identify the effects of coal combustion on plant equipment is being investigated. New and innovative techniques are under study for removing pollutants from the emissions of coal-burning facilities. Additional research has enhanced the development of the baghouse filter, spray dryer flue gas desulfurization, and the copper-oxide process for simultaneous removal or sulfuroxide and nitrogen oxide.

Combustion Research Facility, Sandia National Laboratories, Department of Energy
See 0223

0300 Crude Oil Property Data Base
National Institute for Petroleum and Energy Research, Department of Energy
P.O. Box 1398, Bartlesville, OK 74003
Contact: Mr. Marvin Whisman (918) 336-2400
INFORMATION SERVICES: Crude oils, as produced, have widely different properties because of their variation in composition. This makes some petroleum much more adaptable to a given refining process and thus more suitable for a specific use. Consequently, there is much interest in the properties of a crude oil produced from a specific deposit. The center has the largest collection of such information on crude oils available. A data bank contains approximately 9,000 analyses. An analysis contains the general properties: gravity, sulfur content, nitrogen content, viscosity, color, and pour point as well as a location description of the source of the oil. Properties of oil fractions are obtained where appropriate.

Eastern Low-Grade Oil Shales, Morgantown Energy Technology Center, Department of Energy
See 0605

0301 Energy Technology Engineering Center (ETEC)
Department of Energy
P. O. Box 1449, Canoga Park, CA 91304
Contact: Mr. Guy Ervin (213) 700-5532
EXPERTISE: ETEC is primarily an engineering organization - not a research or commercial products group - specializing in managing the design and construction of test facilities, and in managing and conducting test programs. ETEC was originally established to support the Liquid Metal Fast Breeder Reactor (LMFBR) program by providing facilities for development of liquid sodium components and instrumentation. ETEC heat transfer engineering activities have been expanded to include many other energy program areas including solar, fossil, geothermal, conservation, light-water fission and fusion power development. Off-site management and monitoring of non-LMFBR energy system design, construction and testing is an ETEC specialty.

0302 Energy-Related Education/Training Opportunities
Oak Ridge Associated Universities, Department of Energy
P.O. Box 117, Oak Ridge, TN 37831
Contact: Ms. Connie Lewis (615) 576-3146
SERVICES: Education and training is provided in energy-related fields. The programs are administered for the U.S. Department of Energy by ORAU and are open to various groups, including researchers, faculty, postgraduates, graduates, undergraduates, and underemployed or unemployed persons. Various programs are held at ORAU, colleges and universities, DOE contractor facilities, and national laboratories and DOE research facilities throughout the country. Following is a list of the educational and training programs: Applied Health Physics Training Course, Faculty Research Participation, Fossil Energy Interrships, Fossil Energy--Part-Time Faculty Research Participation, Laboratory Graduate Participation, Magnetic Fusion Energy Technology Fellowship Program, Minority Institution Research Travel, Nuclear Power and the Energy Crisis, Nuclear Power and the Energy Crisis II, Nuclear Science and Engineering and Health Physics Fellowship Program, Project SHARE, Radioisotope Techniques in Research and Development, Research Travel Program, Student Research Participation, Training and Technology, Training Resources and Data Exchange (TRADE), and Traveling Lecture Program. This service is available for any U.S. organization. Access to this service or program is not restricted, except by focus of the particular program.

0303 Energy-Related Inventions Program
National Bureau of Standards, Department of Commerce
Bldg. 225, A46, Washington, DC 20234
Contact: Mr. George P. Lewett (301) 921-3694
SERVICES: Evaluates inventions for technical validity, potential energy impact, and commercial feasibility and recommends to the Department of Energy those deemed worthy of support. It also conducts activities aimed at stimulating technological innovation by independent inventors and small business.

Enhanced Oil Recovery, Morgantown Energy Technology Center, Department of Energy
See 0606

Fluidized Bed Combustion, Morgantown Energy Technology Center, Department of Energy
See 0226

Fossil Energy Users Laboratory (FEUL), Argonne National Laboratory, Department of Energy
See 0227

0304 Fuel Cell Research
Morgantown Energy Technology Center, Department of Energy
P.O. Box 880, Collins Ferry Road, Morgantown, WV 26505
Contact: Ms. Claire H. Sink (304) 291-4620
EXPERTISE: The center is responsible for implementing DOE's fuel cell research program. Phosphoric acid, molten carbonate, and solid oxide fuel cells are being studied to reduce the technical risk of commercial-scale fuel cell applications. This research is generating a technology base for high risk fuel cell subsystems and components.

Gasification and Pyrolysis Facility, Solar Energy Research Institute, Department of Energy
See 0748

combustion and gasification processes. Coal preparation techniques, including cleaning and slurry preparation, are investigated. The combustion properties of low-rank coal in both conventional and fluidized-bed combustors are also being studied, as well coal gasification and liquefaction processes.

0311 Mid-Temperature Collector Research Facility (MTCRF)
Solar Energy Research Institute, Department of Energy
1617 Cole Blvd., Golden, CO 80401
Contact: Mr. Dana Moran (415) 231-7115
FACILITY: MTCRF is designed to investigate a variety of technical issues relating to the thermal performance of solar collectors. Its test loop can be connected to up to three collector work stations, permitting the evaluation of the performance of individual collections as well hybrid systems. A variety of sensors allow precise measurements of operating and environmental characteristics. MTCRF has been used to evaluate parabolic and flat-plate collectors, seasonally-adjusted and tracking systems, and a number of innovative designs.

Mining Research Facilities, Pittsburgh Energy Technology Center, Department of Energy
See 0610

Mobile Cable X-Ray Facility, Brookhaven National Laboratory, Department of Energy
See 0668

Mobile Wind Acoustic Noise Characterization Laboratory, Solar Energy Research Institute, Department of Energy
See 0761

0312 National Battery Test Laboratory (NBTL)
Argonne National Laboratory, Department of Energy
9700 South Cass Ave., Argonne, IL 60439
Contact: DR. N. P. Yao (312)972-4507
FACILITY: This facility is a national, central facility for testing, evaluating, and performing special studies on new and improved (or existing) batteries. The laboratory is fully automatic, operating unattended around the clock. It has space for the simultaneous and independent testing of about 50 batteries under various environmental and test conditions over a wide range of voltages and currents. Batteries can be performance characterized under constant current, constant power and variable power conditions. Power profiles can be programmed to simulate electric vehicle, utility load leveling, solar and wind, and other dynamic or static loads. Designated test stations are equipped with unique instrumentation and controls to perform special charge studies to optimize battery performance. Special discharge studies are also conducted to evaluate battery behavior under pulsed conditions that synthesize solid-state switching controllers that are often used in battery applications. The availability of prompt post-test analysis of batteries removed from testing offers an insight into battery component failure or degradation mechanisms related to the test program. Fundamental chemical and physical analytical techniques are aided by an array of modern instruments such as SEM, X-ray diffraction, and laser interferometry. Battery off-gas measurement and analysis in real-time is also available.

0313 National Energy Information Center (NEIC)
Department of Energy
Forrestal Building, Washington, DC 20585
Contact: (202) 252-8800
INFORMATION SERVICES: Provides statistical and analytical energy data, information, and referral assistance to the Government and private sectors, as well as the general public. Provides location assistance for sources of energy information outside EIA programs. Distributes EIA publications and single information copies of blank data survey forms. The Division provides search assistance for the Data Resources Directory (DRD), a metadata base of all EIA survey forms, files, tables, models, and data systems, and the Public Use Energy Statistics Data Base (PUESDB).

National Energy Software Center, Argonne National Laboratory, Department of Energy
See 0442

0314 National Institute for Petroleum and Energy Research
Department of Energy
P.O. Box 1398, Bartlesville, OK 74003
Contact: Mr. Riley Wright (918) 336-2400
EXPERTISE: The primary mission is improvement of technology in petroleum and natural gas exploration, production, refining, and utilization. This includes basic research as well as investigation of materials which may substitute or supplement petroleum and natural gas. Petroleum production programs include enhanced oil and gas recovery, heavy oil recovery, improved drilling methods, and determination of residual oil. Thermodynamics research includes determination of properties needed in coal conversion processes as well as on the properties of pure hydrocarbons or other compounds found in fuels. The center maintains a data bank of information on crude oil properties and marketed fuel properties, determines composition of crude and its refining properties, applies similar methods to syncrudes for advance information on problems likely to be encountered in their use, and is developing technology for re-refining waste lubricating oil. Engine/fuels-related research includes testing of fuels from synthetic sources in current and prototype engines, studies of use of diesel engines in underground mining, and assessment of current technology with respect to fuel economy and emissions.

0315 Northern Agricultural Energy Center
Northern Regional Research Center, Agricultural Research Service, Department of Agriculture
1815 N. University Street, Peoria, IL 61604
Contact: Mr. Marvin O. Bagby (309) 685-4011
EXPERTISE: The mission of the Center is to discover, develop, and demonstrate technology that will permit agriculture to be energy self-sufficient on a net basis under conditions that sustain productivity. Research is carried out on innovative fermentations using not only yeasts but also bacteria and molds for alcohol production, and research into a variety of fermentor designs; on conversion of lignocellulosic agricultural residues to sugars and alcohols using chemical, physical, and microbiological processes; on evaluation and characterization of the food and feed value of both the solid and the liquid residues from alcohol fermentation; and on evaluation of plants from which hydrocarbon materials can be obtained. It is also responsible for programs at other locations dealing with studies on production of energy-related crops.

Office of Oceanography and Marine Services, National Oceanic and Atmospheric Administration, Department of Commerce
See 0727

these tests and projects are made available to manufacturers, researchers and consumers interested in wind energy.

Sodium Components Test Installation(SCTI), Energy Technology Engineering Center, Department of Energy
See 0376

0323 Solar Collector Laboratory
Brookhaven National Laboratory, Department of Energy
Department of Applied Science, Building 120, Upton, NY 11973
Contact: Mr. Tom O'Hare (516) 282-3428
EXPERTISE: Experience and facilities are available for the fabrication, testing, and repairing of solar collectors, heat storage subsystems, and other components. Using the facilities, novel low-cost thin film polymer solid collectors and storage devices have been developed and tested. Laboratory programs in solar collector development have a capability to perform steady state or transient component testing using a sophisticated interactive data losser-computer based system capable of acquiring, analyzing, storing and acting on data taken on-line. Long term tests can be conducted unattended.

0324 Solar Collector Test Facility
Argonne National Laboratory, Department of Energy
9700 South Cass Ave., Argonne, IL 60439
Contact: Dr. W. W. Schertz (312) 972-6230
FACILITY: The facility is a fully instrumented collector test facility that can test collectors at temperatures from ambient to 450F. The facility has complete data acquisition equipment and solar insolation measurement equipment.

0325 Solar Energy Research Institute
Department of Energy
1671 Cole Blvd., Golden, CO 80401
Contact: Mr. Dana Moran (303) 231-7115
EXPERTISE: SERI serves as the nation's primary laboratory for solar energy research. It's current mission is to conduct long-term, high-risk research and development on high-payoff renewable energy technologies, which the private sector cannot reasonably be expected to undertake. Present research and development efforts focus upon four primary areas: (1) solar-electric conversion, primarily advanced photovoltaic research and development, and also including photoelectrochemistry; (2) the direct production of solar-derived fuels and chemicals, encompassing studies in the fields of potochemistry, photobiology, biotechnology, and thermochemistry; (3) low- and intermediate-temperature thermal processes, including thermoelectric conersion, ocean thermal energy, energy storage, low-cost collectors, solar ponds, wind energy, and active and passive building components and systems; and (4) supporting research, including materials, systems engineering, testing and measurement, and renewable energy assessment.

Solar Furnace, Army Materials Test and Evaluation Command, Department of the Army
See 0774

0326 Southern Agricultural Energy Center
Agricultural Research Service, Department of Agriculture
P.O. Box 748, Tifton, GA 31793
Contact: James L. Butler (912) 386-3585
EXPERTISE: This center focuses on the on-farm collection, storage and utilization of solar and wind energy and the production, harvesting, handling/storage/converting of biomass into more useful forms of energy.

0327 Surfaces and Interfaces Laboratory
Solar Energy Research Institute, Department of Energy
1617 Cole Blvd., Golden, CO 80401
Contact: Mr. Dana Moran (303) 231-7115
FACILITY: Exacting studies are undertaken of surface and interface characteristics, with particular attention on the degradation of materials under environmental stress. Current studies are concerned with the effects of environment, including sunlight, on glass and glass-metal interfaces, and on development of reflector systems resistant to such degradation. Equipment includes: Smooth surface profilometers - used for measuring 20 micron or smaller step heights or pit depths; Physical electronics 545C surface analysis system - contains Scanning Auger Microscopy (SAM) and Secondary Ion Mass Spectroscopy (SIMS) subsystems as well as a two-chamber fast-entry system with a reaction chamber and a UHV analysis chamber; and a Leybold-Heraeus, LHS-10, surface analysis system - contains X-ray Photo-electron Spectroscopy (XPS), Ion Scattering Spectroscopy (ISS), SIMS, SAM, and Residual Gas Analysis (RGA) subsystems as well as data storage and manipulation using an HP-1000 computer.

0328 Tar Sands Program
Morgantown Energy Technology Center, Department of Energy
P.O. Box 880, Collins Ferry Road, Morgantown, WV 26505
Contact: Ms. Claire H. Sink (304) 291-4620
EXPERTISE: The tar sands research program investigates reservoir characteristics, in-situ recovery techniques, fuel upgrading processes, and environmental effects of tar sand recovery. Researchers are quantifying the potential of this energy resource and determining the characteristics of the fuel produced. Laboratory-scale simulations are being used to evaluate recovery techniques and upgrading processes.

0329 Test House
Brookhaven National Laboratory, Department of Energy
Department of Applied Science, Building 120, Upton, NY 11973
Contact: Mr. Tom O'Hare (516) 282-3428
FACILITY: The test house is an 100 square foot well-insulated building, currently outfitted with a ground coupled heat pump space conditioning system and a solar hot water system. It is suitable for realistic testing of solar space conditioning or domestic hot water systems, heat pumps, or of other space conditioning systems. A data logger-computer based data acquisition system is available.

Unconventional Gas Recovery, Morgantown Energy Technology Center, Department of Energy
See 0617

Underground Coal Gasification, Morgantown Energy Technology Center, Department of Energy
See 0618

0330 University of North Dakota Energy Research Center
Department of Energy
University of North Dakota, P.O. Box 8213, University Station, Grand Forks, ND 58202
Contact: Mr. David M. White (701) 777-5128
EXPERTISE: Major areas of research include ash fouling and fundamental combustion studies; atmospheric fluidized bed combustion; control of SOx, NOx, and particulate emissions; characterization of trace organic and inorganic species from coal combustion; disposal of coal-related solid

ture-humidity, temperature-altitude, rain, sunshine, dust, fungus, and explosive atmosphere testing. Various chambers are capable of providing temperatures from -100F to +350F, simulate altitude to 250,000 feet, humidity from 20% to 96%, light intensity of 100 to 190 watts/sq feet, rainfall of 1 to 20 inches/hour with or without wind (up to 60 mph), and dust densities of 0 through 1 gm/cu ft. Facilities are also available for immersion tests. Structural tests include sine wave vibration, shock, loose cargo bounce, vehicular bounce, ballistic shock, drop and bench handling. The vibration system includes a 4,000 force-lb. shaker with a range of 2 - 5,000 Hz. The shock machines are capable of producing half sine, sawtooth and square wave pulses up to 500 g's with a 200-lb. test item, and up to 100 g's with a 600-lb. load. Shelter tests performed include vehicular transportation, watertightness, drop, fording, and rail impact.

0347 Flow and Heat Transfer Test Facility (MCTF)
Argonne National Laboratory, Department of Energy
9700 South Cass Avenue, Argonne, IL 60439
Contact: Dr. Kenneth E. Kasza (312) 972-5920
FACILITY: The facility is a large multipurpose, multiprogram facility capable of performing both fundamental phenomenological and system orientated flow and heat transfer studies of single and multiphase flows. The test facility can perform both steady and transient simulations under programmed control of a dedicated computer system. Flowrate capability ranges from 1 to 2200 gpm and temperature variations from 50 to 240F can be used. A dedicated computer system is used for facility control, data acquisition, data storage, data processing and graphing of results. State-of-the-art instrumentation is available including: two channel hot film and laser doppler anemometry systems, laser flow visualization employing fluorescing dyes and small particle and various other high accuracy flowmeters, thermocouples and pressure transducers. Various test sections are also available, including: heat exchanger, steam generator, large piping systems, large reservoirs and thermal mixers. A machine shop is available for fabrication of test sections.

Fluid Flow Measurement, National Bureau of Standards, Department of Commerce
See 0005

0348 Fluidics Research
Harry Diamond Laboratories, Department of the Army
2800 Powder Mill Rd., Adelphi, MD 20783
Contact: Mr. James W. Joyce (301) 394-3080
EXPERTISE: The Harry Diamond Laboratories (HDL) is the U.S. Army Development and Readiness Command's Lead Laboratory for fluidics. In carrying out this responsibility, HDL conducts and technically manages both a research and an exploratory development program to create the technology base necessary so that low-cost, reliable fluid control systems will be available. As a result, HDL possesses the strongest single body of expertise in fluidics within the government. Another function of the Lead Laboratory is to participate in technology transfer. In this capacity, HDL staff members assist numerous government agencies with fluidic system development. They also transfer fluidic technology to industry as needed or requested. The event that spearheaded fluidic development in recent years was the introduction of laminar-flow sensors and amplifiers. These quiet, high-dynamic-range components can detect extremely small signals and amplify them to useful output levels. Hence, fluidic technology as it exists today has significantly more ability to perform sophisticated control functions than it had in the past. The main building block of laminar-flow fluidics is the laminar proportional amplifier (LPA). The LPA, with its pressure gain of about 5-10 per stage, can amplify extremely small pressure signals to much higher levels by cascading numerous LPA's in series, much as one would build up gain in an electronic circuit. Of particular interest has been the ability of the LPA to take low-level pressure output signals from fluidic sensors and amplify them to levels that are more easily and economically transduced. This in turn has increased the number of fluidic sensors that can be successfully used. Among such sensors are those to detect angular rate of rotation, temperature, volume flow rate, and gas concentration. Detailed information on the LPA and sensors cited can be obtained from HDL. In addition, HDL staff members will, where possible, provide information on other fluidic components and circuits.

0349 Geotechnical Laboratory
Waterways Experiment Station, Department of the Army
P.O. Box 631, Vicksburg, MS 39180
Contact: Mr. Joseph V. Dawsey (601) 634-2767
EXPERTISE: The laboratory is actively engaged in research, investigations, and testing services in soil mechanics, structural foundation design, embankment design and slope stability, seepage analysis, military pavements, engineering geology, rock mechanics, engineering geophysics, expedient surfacing, dust control, earthquake engineering, and mobility and trafficability. Its technical activities are extremely broad in scope, comprising nearly 200 technical projects, many of which are of national and international importance. The laboratory is comprised of five divisions. These include the pavement systems division, soil mechanics division, mobility systems division, earthquake engineering and geophysics division, and the engineering geology and rock mechanics division.

Government-Industry Data Exchange Program (GIDEP), Department of the Navy
See 0433

0350 Hanford Thermal Hydraulics Laboratory
Pacific Northwest Laboratory, Department of Energy
P.O. Box 999, Richland, WA 99352
Contact: Dr. Walt Laity (509) 375-2780, or Dr. L. Schmid (509) 375-2559
FACILITY: Loops with large pumping facilities capable of flow up to 250,000 gpm are available for special heat transfer and fluid flow tests of prototype power and utility system components. Typical investigations include critical heat flux, boiling studies, two-phase pressure drop, hydraulic instability, corrosion, blocked flow, and loss of coolant accident simulation.

0351 Harsh Environment Simulation Facility
Harry Diamond Laboratories, Department of the Army
DELHD-IT-RT, 2800 Powder Mill Road, Adelphi, MD 20783
Contact: Mr. Herbert J. Curchack (301) 394-2804
FACILITY: The Environmental Technology and Test Branch provides a unique capability to test electronic equipment in extreme environments of shock and vibration (particularly simulations of gun launch) as well as temperature, humidity, and altitude. The facility includes the nation's most sophisticated air gun for simulating gun launch or high speed impact. In addition a large 3 dimensional shake table soon will be operational.

characteristics of moored bodies, as examples. The testing tank is 100 feet long, 35 feet wide, and 75 feet deep. It contains 1.75 million gallons of water and has more than 157 observation ports. Other research conducted here included cable dynamics and mooring studies. The Facility also houses a fulltime staff of scientists who conduct fundamental research, analyze model test data, and recommend new missile configurations based on available facility test data. They are consulted frequently by members of the scientific community to devise innovative solutions to difficult hydrodynamic problems.

Hydrodynamic Facilities, David Taylor Naval Ship Research and Development Center, Department of the Navy
See 0716

0360 Hydrostatic and Cyclic Pressure Tanks
David Taylor Naval Ship Research and Development Center, Department of the Navy
Bethesda, MD 20084
Contact: Dr. Basil V. Nakonechny (202) 227-1037
FACILITY: To verify the structural adequacy of new submarine designs, accurately scaled models of various sizes are subjected to hydrostatic and cyclic loading patterns in pressure tanks. The Center's major pressure tanks range in size from 17 1/2 inches in diameter to 13 feet in diameter; and range in operating pressure capability from 25,000 psi to 3,000 psi. Each of the pressure tanks has the highest operating pressure for its diameter of any quick opening tank in the United States. Using a pressurized system developed and patented by Center engineers, cyclic experiments may be conducted by varying the pressure within the model and keeping the tank pressure constant. The large tanks have a static capacity of 12,000 psi.

0361 Industrial Radiography
Materiel Testing Directorate, Department of the Army
STEAP-MT-G, Aberdeen Proving Ground, MD 21005
Contact: Mr. Kersey A. Jones (301) 278-3409
FACILITY: The facility has X-ray units which span the range of 20KV to 4 MeV. The equivalent material penetration capability is from light plastics to 12 inches of steel. The penetrameter sensitivity routinely provided for all testing is better than 1%. All the units, except the 4 million volt machine, are portable or mobile for field operations. Two workrooms in the building allow for two independent X-ray operations to be performed concurrently. Relatively large items can be radiographed and manipulated by overhead cranes of 1-, 5-, and 20-ton capacity. A 1-1/2-ton truck can be easily driven inside each room. Both manual and automatic film processing are available. A viewing room for evaluation of X-ray film is furnished with hi-intensity film illuminators and film densitometer. Explosive items can be handled by the facility.

0362 Laboratory Vibration Facility
Materiel Testing Directorate, Department of the Army
ATTN: STEAP-MT-G, Aberdeen Proving Ground, MD 21005
Contact: Mr. Rowland G. Byerly (301) 278-3274
FACILITY: Three electrodynamic vibrators, three power amplifiers, and all ancillary equipment for remote control operation make up the facility. Transportation Environment and Rough Handling tests over the range of 5 to 3000 Hz up to 15,000 force lbs. and 2 to 2000 Hz up to 40,000 force lbs. are performed at this facility. Twenty-four data channels and closed circuit television are available for monitoring test item response. Oscillographs are available for recording data channels. Both sine and random vibration can be programmed in addition to shock pulse. Test items can be vibrated in vertical, transverse, and longitudinal planes. Temperature conditioning from -65F to +165F is available in all three test cells. Barricades and intraline distances are adequate to permit testing up to 1000 lbs. of class 7 explosives without waivers.

0363 Large Leak Test Rig (LLTR)
Energy Technology Engineering Center, Department of Energy
P. O. Box 1449, Canoga Park, CA 91304
Contact: Mr. K. T. Stafford (213) 700-5326
FACILITY: LLTR is a sodium-water reaction test facility, containing a modified steam generator and reaction product vent relief system. Water-steam can be injected into the sodium side of the steam generator from an intentionally faulted tube. Pressurized water-steam is provided to the remaining steam generator tubes to evaluate consequential secondary failures and the effects of multiple tube failures. High-speed recording equipment monitors all parameters during testing. LLTR has been used for sodium-water reaction tests on a modular steam generator, and for a variety of large and small leak tests on a simulated full-scale CRBR steam generator. LLTR can also be used to investigate tube leakage failure phenomena in light-water-reactor steam generator tubes.

0364 Large Scale Fire Test Facility
Naval Research Laboratory, Department of the Navy
ORTA Code 1405, 4555 Overlook Ave., Washington, DC 20375
Contact: Mr. Richard Fulper (202) 767-3744
FACILITY: A large scale fire test facility is in operation for conducting simulated shipboard fires such as diesel engine and bilge fires on submarines and running fuel and debris pile fires on aircraft carrier flight decks. In addition, all of the qualification testing required by the Military Specification for Aqueous Film Forming Foam, including the 6 foot diameter pan fire test, is performed at this location. Also, the facility has a 10 x 10 x 28 foot smoke chamber which is being used to evaluate the smoke knockdown characteristics of fine water mists containing surfactant solutions.

Liquid Metal Corrosion Laboratory, Argonne National Laboratory, Department of Energy
See 0466

0365 Liquid Metal Technology
Hanford Engineering Development Laboratory, Department of Energy
P.O. Box 1970, Richland, WA 99352
Contact: Mr. J. M. Atwood (509) 376-3437
EXPERTISE: Design and evaluation of large scale systems employing liquid metals is studied. Special competence is provided in electromagnetic pump design and alkali metal chemistry, (including component cleaning, purification, analysis) and safety evaluations (e.g. fires and materials interactions).

Materials Sciences Unit, Idaho National Engineering Laboratory, Department of Energy
See 0468

National Small Flows Clearinghouse, Environmental Protection Agency
See 0410

types and sizes of petroleum pumps (600 to 3000 gpm), collapsible storage containers (10,000 gallons to 25,000 barrel capacity), and other associated fuel handling equipment.

Reactor Seismic & Elevated Temperature Structural Design, Hanford Engineering Development Laboratory, Department of Energy
See 0711

Rehabilitation Research and Development Center, Veterans Administration
See 0583

0371 Road Load Simulator
Argonne National Laboratory, Department of Energy
9700 South Cass Avenue, Argonne, IL 60439
Contact: Dr. N. P. Yao (312) 972-4507
FACILITY: A valuable tool in developing the propulsion systems is the Road Load Simulator (RLS). It allows the testing of propulsion systems and vehicles under controlled, repeatable conditions. This reduces testing time and testing cost, and provides more accurate test results than can be obtained by testing in vehicles on the track or road. The road load simulator consists of an absorber, inertia wheels, a drive motor, a battery simulator and computerized controls and instrumentation. The inertia wheels, essential for acceleration and braking tests, can simulate vehicle weights of 1000 to 7500 lbs. The battery simulator can substitute for a battery in many tests, allowing longer more controlled testing. The facility can be controlled and operated by computer and most of the data is recorded and processed by another computer.

0372 Rock Mechanics: Large Volume and High Pressure Creep Equipment
Los Alamos National Laboratory, Department of Energy
Los Alamos, NM 87545
Contact: Mr. Robert Riecker (505) 667-2631
FACILITY: One available apparatus consists of a 5000 ton press capable of deforming meter-size cubes of rock. This facility provides a substitute for in situ testing and offers the ability to determine the scale-dependent properties of rock and the validity of small-scale tests and instrumentation. Also available is 10 kbar creep apparatus with pore pressure control. Capacity is to 10 kbar P(p) and P(c) and 500C temperature. Samples are accepted to 3cm diameter and 12cm length.

0373 Rough Handling Facility
Materiel Testing Directorate, Department of the Army
STEAP-MT-G, Aberdeen Proving Ground, MD 21005
Contact: Mr. Rowland G. Byerly (301) 278-3274
FACILITY: The facility, consisting of two package testers and a drop tower, is situated at a remote location to allow the testing of hazardous items. One package tester has a load capacity of 8000 pounds and a load-mounting surface of 8' X 6'. A temperature enclosure, 13'L X 8'W X 8'H, with a range of -100F is mounted over the tester. The second package tester has the same size load-mounting surface, but a load capacity of 3000 pounds. The drop tower, providing drops up to 40 feet, utilizes an electric motor-operated winch with remote-control and quick-release drop hooks. The 8000-pound package tester is used primarily for ammunition and components, and the 3000-pound machine for nonhazardous items. Because of the facility location, the amount of explosives being tested is limited only to the load capacity of the equipment.

0374 Shock and Vibration Information Center
Naval Research Laboratory, Department of the Navy
Code 5804, Washington, DC 20375
Contact: Mr. Ruldolph Volin (202) 767-3744
INFORMATION SERVICES: The Center is one of the official Department of Defense Centers for the Analysis of Scientific and Technical Information. Its mission is threefold: (1) It collects, evaluates, and files information on current and past studies of mechanical shock and vibration technology. This includes shock or vibration effects on structures, equipment or humans that may be generated by acoustic, mechanical, or other physical phenomena. (2) It reviews, analyzes and disseminates this information to the user. (3) It encourages the solution of shock and vibration problems. Some of its products and services include: the S and V Symposia, the S and V Bulletin, state-of-the-art Monographs, the S and V Digest, special technology survey, and direct response to inquiries and consultative services.

0375 Small Components Test Loop(SCTL)
Energy Technology Engineering Center, Department of Energy
P. O. Box 1449, Canoga Park, CA 91304
Contact: Mr. K. T. Stafford (213) 700-5326
FACILITY: The component testing capabilities include thermal transients, isothermal flow, and immersion testing. Severe transients are absorbed by a large thermal capacitor, which protects the balance of the sodium loop from excessive shock. SCTL has a 10-inch pipe diameter loop for pump and valve testing, and separate 4 and 8 inch loops for transient tests. SCTL can also test cold traps, in-vessel reactor mechanisms, and a variety of sodium instrumentation. Typical features of a sodium valve test include throttling characteristics, computer-controlled mechanical cycling, seat load measurements, static leakage in both flow directions, and thermal transients.

0376 Sodium Components Test Installation(SCTI)
Energy Technology Engineering Center, Department of Energy
P. O. Box 91304, Canoga Park, CA 91304
Contact: Mr. K. T. Stafford (213) 700-5326
FACILITY: SCTI is the world's largest test facility for evaluating thermal and hydraulic characteristics of sodium steam generators and heat exchangers under both steady-state and upset conditions. The facility has 70 MWt of fossil-fired sodium heaters and a complete steam and feedwater system with precise water purity controls. In-line components such as valves, expansion joints, and pressure, level, flow and leak detection instrumentation can also be tested in either the sodium or steam and feedwater system. A full-size CRBR prototype steam generator is currently being tested and other large plant prototypes are scheduled. Installation of a turbine-generator set is planned to produce electric power which will offset facility operating costs.

0377 Sodium Pump Test Facility(SPTF)
Energy Technology Engineering Center, Department of Energy
P. O. Box 1449, Canoga Park, CA 91304
Contact: Mr. K. T. Stafford (213) 700-5326
FACILITY: Pumps and other large sodium components such as flowmeters, valves, coolers, cold traps and piping are tested in this facility which is the largest of its type in the world. Thermal transients are performed by a feed-and-

FACILITY: This hydraulically operated machine of 12-million pounds-force capacity, believed to be the largest in the world, was designed to test large structural components and to apply the forces needed to calibrate force measuring devices of large capacity. The machine can apply axial force of 12,000,000 lbf in compression 6,000,000 lbf in tension, and a transverse force of 4,000,000 lbf to a flexural member. Working space between the screw columns is 8 feet 4 inches, and the working surface of the main platen is 8 feet 4 inches by 15 feet. Axial forces of 12,000,000 lbf can be applied to column sections or fabricated members with lengths up to 58 feet, or to elastic devices such as the load cells used to measure rocket thrust or rolling mill forces. To apply the full 6,000,000 lbf tension to eye bars, drill rod for undersea operations, large diameter wire rope, and the like, both threaded couplings and clevis fixtures are provided to take specimens up to 53 feet long. Transverse or flexural tests under 4,000,000 lbf load can be made on beams and similar structures with lengths up to 90 feet.

ENVIRONMENTAL SCIENCES

0385 Advanced Environmental Control Technology Center
Environmental Protection Agency
University of Illinois, Urbana, IL 61801
Contact: Mr. Morris Altschuler (202) 382-7667
EXPERTISE: The center conducts research which addresses relevant problems associated with the technology of environmental quality control, including air, land, and water. The research effort may be described, in one sense, as problem-oriented fundamental research, and in another as exploratory research which, in turn, will provide a coupling between fundamental and applied research as it impacts control technology. Specifically, the research focuses on separation technology, plus contaminant detoxification and destruction as related to remedial or add-on technology associated with the control of air and water pollution and solid wastes.

Air Resources Laboratory, National Ocean and Atmospheric Administration, Department of Commerce
See 0151

Aquatic Research Laboratory, Savannah River Laboratory, Department of Energy
See 0189

Arctic and Offshore Technology Program, Morgantown Energy Technology Center, Department of Energy
See 0289

Asbestos Technical Assistance Program (Asbestos-Tap), Office of Toxic Substances, Environmental Protection Agency
See 0210

Atmospheric Sampling Aircraft, Pacific Northwest Laboratory, Department of Energy
See 0156

0386 Center for Water Quality Modeling
Environmental Research Laboratory (Athens), Environmental Protection Agency
Athens, GA 30613
Contact: Mr. Thomas Barnwell (404) 546-3175
EXPERTISE: The center develops a variety of water quality models. These models cover topics as: stream water quality, urban runoff, agricultural runoff, hydrologic simulation, path of pollutants, and water quality assessment.

Chemurgy Research Unit, Western Regional Research Center, Agricultural Research Service, Department of Agriculture
See 0025

Combustion Research Facility, Environmental Protection Agency
See 0222

Eastern Energy and Land Use Team, U.S. Fish and Wildlife Service, Department of the Interior
See 0239

Ecosystems Research Center, Environmental Protection Agency
See 0196

0387 Environmental Center for Research on Toxic Aerosols
Pacific Northwest Laboratory, Department of Energy
P.O. Box 999, Richland, WA 99352
Contact: Dr. B. E. Vaughan (509) 376-3602, or Dr. L. Schmid (509) 375-2559
EXPERTISE: Specialized facilities and an experienced staff are available for studies on toxic substances ranging from heavy metals to radiological, carcinogenic and gaseous pollutants. Facilities include a wind tunnel and a system of instruments and equipment for particle generation characterization, and analysis. Aerosol transport and deposition can be simulated at variable conditions of wind velocity, turbulence, temperature, pressure, humidity, and particle size. Supporting the center is a major aerosol physics laboratory where basic research related to sampling and generation of experimental aerosol is carried out.

0388 Environmental Laboratory
Waterways Experiment Station, Department of the Army
P.O. Box 631, Lexington, KY 39180
Contact: Mr. Joseph V. Dawsey (601) 634-2767
EXPERTISE: The basic missions of the laboratory are to predict the effects of man's activities on the environment and to develop methods to minimize or mitigate effects when necessary. It also develops methods to determine and control the interaction between military activities and materiel and the environment in which they operate. Particular emphasis is placed on biological and chemical effects, but all aspects of research pertinent to environmental policy, legislation, and regulation also are covered. Areas of study include water resource management, water supply and waste management, reservoir and waterway research, dredging and dredged material disposal research, environmental procedures and planning research, plant community and habitat research, and aquatic plant control.

0389 Environmental Measurements Laboratory
Department of Energy
376 Hudson Street, New York, NY 10014
Contact: Dr. Herbert L. Volchok and Dr. Gail de Planque (212) 620-3619
EXPERTISE: Research and development are conducted in the field of environmental contamination from energy-related sources. The goal is to evaluate the exposure of man to environmental radiation, radioactivity, and other toxic materials. This includes establishing background levels and global baselines and estimating manmade contributions, which are accomplished by in situ measurements or by the collection and analysis of samples from global networks and selected regional sites. Techniques developed for

ants. Meteorological studies quantify the relationships between emissions, air quality and atmospheric effect. The results of these studies are used to develop air pollution control strategies. An on-going development program provides techniques and instrumentation to increase the effectiveness of monitoring efforts. In a Stationary Source Simulation Facility, which generates a variety of test atmospheres, the accuracy and capability of sampling methods and equipment are established. Aerosol research, conducted in smog chambers and field studies, characterize urban, natural, primary, and secondary aerosols. A meteorological research program provides fast response to questions on pollutant dispersal from stacks and from automobiles. This program to examine pollutant flow situations is conducted at the unique Fluid Modeling Facility.

0399 Environmental Technical Information System (ETIS)
Army Engineer Construction Engineering Research Laboratory, Department of the Army
ETIS Support Center, 907 W. Nevada St., Urbana, IL 61801
Contact: Ms. Lynn Engelman (217) 333-1369
INFORMATION SERVICES: ETIS is a computer-based information bank developed to assist either in the development of environmental impact statements (EIS) and environmental assessments (EA) or environmental management activities. It consists of three subsystems: the Environmental Impact Computer System (EICS), the Economic Impact Forecast System (EIFS), and the Computer-Aided Environmental Legislative Data System (CELDS). EICS allows the user to identify the potential consequences of activities and guides the discussion of these consequences in an EA/EIS. Using data supplied by the planner, EICS builds a 'need to consider' matrix of likely environmental problems associated with the proposed activity. EICS allow planners to assess the magnitude of impacts on the local economy caused by a proposed change in an activity. The legislative system is an information bank of abstracted federal and state environmental regulations and standards. This legislative information, written in a straight-forward, narrative style, provides quick access to current regulations that relate to the environment.

Epidemiology Research Center, Environmental Protection Agency
See 0525

Fluidized Bed Combustion Process Development Facility, Argonne National Laboratory, Department of Energy
See 0225

Fluidized Bed Combustion, Morgantown Energy Technology Center, Department of Energy
See 0226

Food Chain Transport (Large Animals), Oak Ridge Associated Universities, Department of Energy
See 0198

0400 Gas Stream Cleanup
Morgantown Energy Technology Center, Department of Energy
P.O. Box 880, Collins Ferry Road, Morgantown, WV 26505
Contact: Ms. Claire H. Sink (304) 291-4620
EXPERTISE: The center conducts research in the control of potentially harmful substances and pollutants from both gasification product gas and combustion flue gas. The purpose of this work is to develop economically acceptable technology to control pollutants and to lessen the impact of coal conversion contaminants on downstram equipment. The work in this highly specialized field has resulted in dramatic improvements in cleanup technologies for pressurized fluidized-beds, molten carbonate fuel cells, high gradient magnetic separators, and low level alkali and sulfur detection instrumentation.
Facility: These activities are backed by a molten carbonate fuel cell sorbent test facility and an advanced gasification test facility for fluid- and entrained-bed research.

Geophysical Fluid Dynamics Laboratory, National Oceanic and Atmospheric Administration, Department of Commerce
See 0162

Great Lakes Environmental Research Laboratory, National Oceanic and Atmospheric Administration, Department of Commerce
See 0241

0401 Grosse Ile Field Station
Environmental Protection Agency
Grosse Ile, MI 48318
Contact: Mr. Morris Altschuler (202) 382-7667
EXPERTISE: The station studies the sources and effects of air and water pollutants entering the Great Lakes and develops mathematical models for evaluating the impacts of toxic pollutants on large lake ecosystems.

0402 Hazardous Waste Research Center
Environmental Protection Agency
Louisiana State University, Baton Rouge, LA 70804
Contact: Mr. Gerald Rausa (202) 382-7667
EXPERTISE: Research projects for this center include: the effects of physical and thermodynamic properties on the combustion of liquid hazardous wastes; destructibility of pure hazardous waste compounds in a laboratory flame environment; incinerability characteristics of selected hazardous waste materials; novel treatment techniques for soils contaminated with hazardous substances; supercritical extraction of organics from solid hazardous wastes; destruction of hazardous organic leachates by photolytic ozonation; leachate effects on structural stability and hydraulic conductivity of clay liners; factors affecting attenuation of hazardous materials in landfills; an assessment of the technical feasibility of stabilization of hazardous organic liquid wastes and sludges.

Health Effects Research Laboratory, Environmental Protection Agency
See 0531

0403 Industrial Environmental Research Laboratory
Environmental Protection Agency
Research Triangle Park, NC 27711
Contact: Dr. Si Duk Lee (919) 541-2266
EXPERTISE: The laboratory conducts fundamental and applied research to determine the multimedia environmental impacts of energy and industrial processes; ensures the development of control technologies and process modifications needed to establish and meet standards for air, water, and solid wastes in a timely and cost-effective manner; and supports the EPA's Enforcement and Regulatory programs. The Laboratory's research and development programs are focused in four main areas: (1) Energy assessment and control, which includes development of advanced combustion modification methods for controlling nitrogen oxide emissions from energy, industrial, commercial, and residential sources; and development of a thorough understanding

0412 Oil and Hazardous Materials Simulated Environmental Test Tank
Municipal Environmental Research Laboratory,
Environmental Protection Agency
Edison, NJ 08837
Contact: Mr. Richard A. Griffiths (201) 340-6629
FACILITY: The facility provides an environmentally safe place to conduct testing and development of devices and techniques for the control and clean-up of oil and hazardous material spills. The primary feature of the facility is a pile-supported, concrete tank with a water surface 203 metres (667 feet) long by 20 metres (65 feet) wide and with a water depth of 2.4 metres (8 feet). The tank can be filled with fresh or salt water.

0413 Oil and Hazardous Materials Spills Branch
Environmental Protection Agency
Edison, NJ 08837
Contact: Mr. Gerald Rausa (202) 382-7667
EXPERTISE: This office develops clean-up technology for oil and hazardous materials spills.

Pacific Marine Environmental Research Laboratory, National Oceanic and Atmospheric Administration, Department of Commerce
See 0728

0414 Pesticides Standards Distribution Program
Environmental Monitoring Systems Laboratory,
Environmental Protection Agency
P.O. Box 15027, Las Vegas, NV 89114
Contact: Mr. G. Wayne Sovocool (702) 798-2212
SERVICES: The program was originally created as a central source of high-purity pesticide reference standards. Now included are selected industrial organic chemicals. Most of the high-purity analytical standard compounds are difficult and expensive to prepare, and are therefore in short supply. Because of the great demand and limited supplies, the amount of each standard is restricted to no more than 100 milligrams (200 mg for the industrial chemicals). The program staff handles preparation of the samples, including weighing and bottling, labeling, storing, and shipping them.

Pittsburgh Research Center, Bureau of Mines, Department of the Interior
See 0611

0415 Radioactivity Standards Distribution and Testing Program
Environmental Monitoring Systems Laboratory,
Environmental Protection Agency
P.O. Box 15027, Las Vegas, NV 89114
Contact: Mr. Arthur N. Jarvis (702) 798-2134
SERVICES: Environmental measurements of radiation are made daily by many Federal, State, local, and private agencies. The data from these measurements are used for a wide variety of purposes including assessment of health effects, the establishment of standards and guides, and enforcement activities. It is imperative that the precision and accuracy of the data be assured so that decisions concerning environmental quality or impact are based on data of known reliability. Simulated environmental samples, containing known amounts of one or more radionuclides, are prepared and periodically distributed to laboratories upon request. These laboratories perform the required analyses and return their data to the Quality Assurance Division for statistical analysis and comparison with known values as well as analytical values obtained by other participating laboratories. A report is returned to each participant. The program thus enables each/laboratory to document the precision and accuracy of its radiation data, identify instrument and procedural problems, and to compare its performance with that of other laboratories.

Salt Lake City Research Center, Bureau of Mines, Department of the Interior
See 0613

Savannah River Ecology Laboratory, Department of Energy
See 0208

0416 Test and Evaluation Facility
Municipal Environmental Research Laboratory,
Environmental Protection Agency
Cincinnati, OH 45268
Contact: Mr. Morris Altschuler (202) 382-7667
FACILITY: The facility provides pilot plant scale evaluation of pollution control technology using wastewater flows from a sewage treatment plant. New equipment and processes can be tried out on an operational scale.

Toxicology Information Response Center, Oak Ridge National Laboratory, National Institutes of Health, Department of Health and Human Services
See 0596

0417 Vint Hill Field Station, EPA
Environmental Protection Agency
Warrenton, VA 22186
Contact: Mr. Frances Duttkin (202) 382-7667
EXPERTISE: The mission of this group is the interpretation of aerial photographs and related monitoring data.

Water Quality and Watershed Research Laboratory, Agricultural Research Service, Department of Agriculture
See 0268

Western Energy and Land Use Team, U.S. Fish and Wildlife Service, Department of the Interior
See 0269

FISHERIES

0418 Columbia National Fisheries Research Laboratory
U.S. Fish and Wildlife Service, Department of the Interior
Route 1, Columbia, MO 65201
Contact: Dr. Richard J. Graham (314) 875-5399
EXPERTISE: Current research is directed toward toxicology and analysis of chemical contaminants in fish and fish food organisms; contaminants from energy developments; acid rain; sediment/contaminant interaction in northern prairie wetlands; development of biological indicators of contaminant stress on fish; and contaminant impacts on striped bass.

0419 Cooperative Fishery and Wildlife Research Units
U.S. Fish and Wildlife Service, Department of the Interior
18th and C Streets, NW, Washington, DC 20240
Contact: Dr. John Rodgers (202) 653-8766
EXPERTISE: The Fish and Wildlife Service and predecessor agencies have participated in the Cooperative Unit Program since 1935. A Coordinating Committee, made up of representatives of the cooperating university, the state fish and game agency, and the Fish and Wildlife Service, has the responsibility for approving the research direction and long-term general plans for each unit. Because it is a cooperative program, the Fish and Wildlife Service does not

search focusing on Sashin Creek pink salmon; for shellfish research; and for research on sockeye salmon. The Newport Aquaculture Laboratory is located at Newport, Oregon adjacent to Yaquina Bay and within the Oregon State University Marine Science Center. Research programs involve: 1) the culture of anadromous and marine fishes, mollusks, and crustaceans; and 2) the determination of the technical and economic feasibility of culturing.

Northwest Ocean Service Center, National Oceanic and Atmospheric Administration, Department of Commerce
See 0725

0426 Seattle National Fishery Research Center
U.S. Fish and Wildlife Service, Department of the Interior
Bldg. 204, Naval Station, Seattle, WA 98115
Contact: Dr. Alfred C. Fox (206) 527-6282
EXPERTISE: Research is conducted to identify and quantitate environmental factors limiting the distribution and abundance of fish populations of the Western U.S., including Alaska, and to develop new and improved methods for increasing efficiency in the use of artificially propagated juveniles for anadromous fisheries enhancement programs. Its program is aimed at (1) fish health research including development of new and improved fish disease control methods; (2) fishery ecology research including development of new and improved methods, concepts and standards for predicting the environmental impact of proposed development projects. To accomplish this, studies involving physiological ecology, lift histories, population dynamics, smoltification physiology, diagnostic and control methods for infectious diseases, and fish cultural methods are carried out with the emphasis on anadromous fishes. A major goal is to provide relevant biological information in a form resource managers can use to enhance consideration of fish and wildlife values in resolving land and water use conflicts.

0427 Southeast Fisheries Center and Associated Labaratories
National Oceanic and Atmospheric Administration, Department of Commerce
National Marine Fisheries Service, 75 Virginia Beach Drive, Miami, FL 33149
Contact: Dr. Richard Berry (305) 361-4286
EXPERTISE: The marine facility consists of the Southeast Fisheries Center and the Miami Laboratory. Facility programs include: monitoring of fishery management council programs and reviewing of management plans, regulations, regulatory impact reviews, and environmental impact statements; study of ocean pelagics, primarily bluefin tuna; survey of reef resources; monitoring of endangered species, Kemp's ridley sea turtle in particular; Southeast Marine Mammal Stranding and Salvage Operation; and data collection, entry, and management of regional fishery statistics. The Mississippi Laboratories, located at Bay St. Louis and Pascagoula, Mississippi, are organized into three tasks: resource surveys emphasizing data collection from the fishery stocks of the southeast; harvesting systems and surveys with emphasis on efficient assessment techniques for a wide variety of fishery independent data; survey technology development using satellite remote sensing for surveys, tracking of endangered species, and forecast models for commercial fisheries. The Panama City Laboratory, Panama City, Florida, conducts research on the age structure, growth rates, migration, and reproduction of fish stocks with an emphasis on coastal pelagic species; and predator/prey research and the dynamics of predator/prey relationships. Laboratory, Galveston, Texas conducts research on the Gulf shrimp fishery with emphasis on management analysis of the Texas and the Tortugas sanctuary. A second area of research is on the impact to the ecosystem of bottomfish by catch discarded from the more than 5,000 shrimp vessels in the Gulf. The Beaufort Laboratory, located on Pivers Island in Bequfort, North Carolina, conducts research on menhaden stocks to answer questions on size and location of stocks, effects of fishing effort, annual yield prediction, and economies of the fisheries; conducts research on age structure, growth rates, and recruitment of menhaden stocks; and conducts research on the dependence of fishery species on the estuarine environment and the effects of man-induced changes on fishery production. The Charleston Laboratory conducts research on species that have not been fully exploited by southeast fisherman. In addition, research is conducted on the safety and quality of species for human consumption.

0428 Southwest Fisheries Center and Associated Laboratories
National Oceanic and Atmospheric Administration, Department of Commerce
National Marine Fisheries Service, Box 271, La Jolla, CA 92038
Contact: Mr. John Carr (714) 453-2820
EXPERTISE: Largest of the center's laboratories and site of headquarters for the Southwest Fisheries Center, research efforts at the La Jolla Laboratory are conducted on the tuna/porpoise; coastal marine mammals; high seas ecosystem; and Pacific tuna conservation and management programs. Also studied are biological assessment of marine fish stocks important to California fisheries; management including economic analysis of regulatory schemes and fishery models; recruitment mechanisms of coastal pelagic fishes of California; and distribution, availability and migratory pattern of albacore. The Honolulu Laboratory has four research groups: the Insular Resources Investigation, composed of the Insular Ecosystem Program and Resource Assessment Investigation of the Mariana Archipelago Program; the Pelagic Resource Investigation, composed of the Experimental Ecology of Tunas Program, the Pelagic Ecosystem Program, and the Pelagic Stock Assessment Program; the Fishery Management Research Program; and the Marine Mammals and Endangered Species Program. The Tiburon Laboratory is composed of three programs: underutilized fisheries resources: fish communities, and physiological ecology. The research programs deal with recreational and commercial fishes and their fisheries and predator/prey studies. The Pacific Environmental Groups mission is to provide environmental information in support of biological and fisheries programs at the National Marine Fisheries Service research centers. The work concerns ocean climatology, monitoring, modeling, and forecasting with emphasis on large scale events and ocean variability.

INFORMATION CENTERS

0429 Aerospace Research Applications Center
National Aeronautics and Space Administration
Indianopolis Center for Advanced Research, 611 N. Capitol Ave., Indianapolis, IN 46204
Contact: (317) 264-4644
INFORMATION SERVICES: The center's goal is to make existing scientific and technical know-how more useful to

for rapid retrieval of information on over 30,000 U. S. voluntary standards. A reference collection is maintained of engineering and related standards including over 240,000 standards specifications, test methods, codes, and recommended practices. Sources for these documents are: U. S. technical societies, professional organizations, and trade associations, State purchasing offices, U. S. Government agencies, and Major foreign national and international standardizing bodies. NCSCI and maintains information on proposed foreign regulations that may effect U. S trade opportunities with countries that are signatories to the Agreement on Technical Barriers to Trade (Standards Code). A referral service is being established for certification rules since they are an integral part of the standards system.

National Center for the Thermodynamic Data of Minerals, U.S. Geological Survey, Department of the Interior
See 0245

National Clearinghouse for Alcohol Information, National Institutes on Alcohol Abuse and Alcoholism, Alcohol, Drug Abuse, and Mental Health Administration, Department of Health and Human Services
See 0555

National Clearinghouse for Drug Abuse Information, Alcohol, Drug Abuse, and Mental Health Administration, Department of Health and Human Services
See 0556

National Climatic Data Center, National Oceanic and Atmospheric Adminstration, Department of Commerce
See 0175

National Coal Resources Data System, U.S. Geological Survey, Department of the Interior
See 0246

National Diabetes Information Clearinghouse, National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases, National Institutes of Health, Department of Health and Human Services
See 0557

National Digestive Diseases Education and Information Clearinghouse, National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases, National Institutes of Health, Department of Health and Human Services
See 0558

National Earthquake Information Service (NEIS), U.S. Geological Survey, Department of the Interior
See 0247

National Energy Information Center (NEIC), Department of Energy
See 0313

0442 National Energy Software Center
Argonne National Laboratory, Department of Energy
9700 South Cass Ave., Argonne, IL 60439
Contact: (312) 972-7250
SERVICES: The Center serves as a computer software information and resource center for management and sharing of scientific and technical computer software developed under DOE funding. To achieve its objectives, it collects, packages, maintains, and distributes computer software: checks library software for transportabiliey and executes test problems to verify successful implementation; prepares and publishes abstracts describing the packages in the NESC collection; advises users of library packages of corrections, modifications, and replacement packages as they are processed; assists users in implementing and using library software.

0443 National Environmental Data Referral Service
National Oceanic and Atmospheric Administration, Department of Commerce
National Environmental, Data, Referral Service; 3300 Whitehaven Street, NW, Washington, DC 20235
Contact: Mr. Robert Freeman (202) 634-7722
INFORMATION SERVICES: The service is designed to provide convenient, economical, and efficient access to widely scattered environmental data. It is a publicly available service which identifies the existence, location, characteristics, and availability conditions of environmental data sets. The NEDRES database is a computer searchable catalog and index of environmental data. It contains descriptions of environmental data files, published data sources, data file documentation references, and organizations that make environmental data available. In development since 1980, the database consists of two files with more than 13,000 descriptions of data sources (as of mid-1983). The smaller file contains newly updated records, while the larger one contains records of data files extant between 1974 and 1980.

National Fisheries Information Center, National Fisheries Center, U.S. Fish and Wildlife Service, Department of the Interior
See 0423

National Geophysical Data Center, National Oceanic and Atmospheric Adminstration, Department of Commerce
See 0248

National Nuclear Data Center, Brookhaven National Laboratory, Department of Energy
See 0633

National Oceanographic Data Center, National Oceanic and Atmospheric Adminstration, Department of Commerce
See 0719

National Plant Materials Data System (NPMDS), Department of Agriculture
See 0069

National Sea Grant College Program, National Oceanographic and Atmospheric Administration, Department of Commerce
See 0720

National Small Flows Clearinghouse, Environmental Protection Agency
See 0410

National Space Science Data Center (NSSDC), Goddard Space Flight Center, National Aeronautics and Space Administration
See 0178

0444 National Technical Information Service
Department of Commerce
5285 Port Royal Road, Springfield, VA 22161
INFORMATION SERVICES: As a cornerstone of the technological publishing structure in the United States, the National Technical Information Service (NTIS) is a key participant in the development of advanced information products and services. It is the central source for the public sale of Government-sponsored research, development, and engineering reports as well as computer software and data files. The NTIS collection exceeds a million titles with 70,000 new reports being announced yearly. There are

agencies have been made available to the public. A wide variety of software and data files pertinent to business and scientific interests are available for sale or lease. The present collection contains over 1,500 data files and computer programs from more than 100 Federal agencies, covering a vast array of subject fields; labor statistics, economics, education, demography and population, health statistics, building technology, energy sources, environmental pollution and control, and much more. The statistical services program provides users with two types of services: Statistical Data Reference Service (SDRS) and Statistical Data Tabulation Service (SDTS). The SDRS locates and directs users to Federal statistical sources. The subject areas covered by the SDRS are based on the principal social, economic, and environmental statistical programs of the U.S. Government. The SDTS provides tabulations of selected Federal statistical files customized to meet user needs at a relatively low cost.

Office of Oceanography and Marine Services, National Oceanic and Atmospheric Administration, Department of Commerce
See 0727

Pavements and Soil Trafficability Information Analysis Center., Army Engineer Waterways Experiment Station, Department of the Army
See 0369

Plastics Technical Evaluation Center (PLASTEC), Department of the Army
See 0476

Radiopharmaceutical Internal Dosimetry Information Center, Oak Ridge Associated Universities, Department of Energy
See 0579

Reliability Analysis Center (RAC), Rome Air Development Center, Department of the Air Force
See 0285

Remote Sensing Information, Technology Application Center (TAC), National Aeronautics and Space Administration
See 0259

Satellite Data Services Division, National Oceanic and Atmospheric Administration, Department of Commerce
See 0261

Shock and Vibration Information Center, Naval Research Laboratory, Department of the Navy
See 0374

Soil Mechanics Information Analysis Center (SMIAC), Army Engineer Waterways Experiment Station, Department of the Army
See 0378

Standard Reference Data Centers, National Bureau of Standards, Department of Commerce
See 0775

Thermophysical and Electronic Properties Information Analysis Center, Department of the Army
See 0486

Toxicology Information Response Center, Oak Ridge National Laboratory, National Institutes of Health, Department of Health and Human Services
See 0596

Water Data Storage and Retrieval System (WATSTORE), U.S. Geological Survey, Department of the Interior
See 0267

MANUFACTURING

0449 Army Industrial Base Engineering Activity
Department of the Army
Attn: DRXIB-MM, Rock Island Arsenal, IL 61299
Contact: (309) 794-5010
EXPERTISE: The Industrial Base Engineering Activity (IBEA) provides consultant engineering services to the Army on industrial processes such as metal removal, metal forming, production of chemicals, fabrication of electronic components, computer aided maufacturing, assembly, use of robots, test and inspection, etc. The services include evaluation of new technology and how that technology can be adapted to manufacturing. IBEA serves as the Army focal point for inquiries on where manufacturing knowledge resides within the Army. IBEA also disseminates literature and reports on manufacturing technology being developed by the Army.

Automated Control Systems Unit, Idaho National Engineering Laboratory, Department of Energy
See 0335

0450 Center for Manufacturing Engineering
National Bureau of Standards, Department of Commerce
Washington, DC 20234
Contact: Dr. John A. Simpson (301) 921-3421
EXPERTISE: The center provides competence and develops technical data, findings, and standards in manufacturing engineering, mechanical metrology, automation and control technology, and industrial and mechanical engineering to support the discrete parts manufacturing industries. Its activities include: maintaining competence in CAD/CAM automated process planning, and shop management systems; develops competence in engineering measurements and sensors (both static and dynamic) of dimensions, force, mass, sound, vibration, and other parameters needed for inspection, quality control,and process control and monitoring in the discrete parts industry; studies machine tool dynamics and robotics. Incorporates metrology into the precision metal working processes, including the standards necessary for integration of equipment up to the manufacturing cell level; and develops control systems, software, interface standards, sensors, measurement techniques, and information processing related to advanced industrial robots, computer-aided-manufacturing, and automatic factories.

Decontamination Technology Development & Demonstration Fac., Pacific Northwest Laboratory, Department of Energy
See 0693

Electrical Engineering and Instrumentation Unit, Idaho National Engineering Laboratory, Department of Energy
See 0273

0451 Materials Preparation Center
Ames Laboratory, Department of Energy
Iowa State University, Ames, IA 50011
Contact: Mr. F. A. Schmidt (515) 294-5236
EXPERTISE: The center consists of the Materials Preparation Section, the Analytical Section and the Materials Referral System and Hotline (MRSH). Through the Center, re-

Animal Biomaterials Laboratory, Eastern Regional Research Center, Agricultural Research Service, Department of Agriculture
See 0022

Army Industrial Base Engineering Activity, Department of the Army
See 0449

0457 Avondale Research Center
Bureau of Mines, Department of the Interior
U.S. Bureau of Mines, Avondale, MD 20782
Contact: Director (301) 436-7501
EXPERTISE: Areas of research include the identification and analysis of mineral particulates, especially asbestiform minerals, derived from mining and mineral processing operations, treatment and recycling of municipal refuse, electrodeposition of refractory metals and compounds from molten salt baths, and materials for use in severe metallurgical process environments.
Facilities: Two pilot plants serve as models for full-size facilities being built or planned by local governments for treating raw or incinerated refuse.

CAMECA Ion Microscope, Naval Research Laboratory, Department of the Navy
See 0734

Center for Electronics and Electrical Engineering, National Bureau of Standards, Department of Commerce
See 0272

0458 Center for Materials Science
National Bureau of Standards, Department of Commerce
Washington, DC 20234
Contact: Dr. Robert Mehrabian (301) 921-2891
EXPERTISE: The center carries out the following: conducts basic and applied research on the chemistry of ceramics, glasses, and other non-metallic materials related to their processing and durability in service environments; investigates mechanisms of mechanical failure of brittle materials and improved methods for prediction of service lifetimes; determines basic mechanisms and develops measurement methods to control annd minimize adverse environmental impacts of processing and use of inorganic materials; studies the mechanical behavoir of metals to provide data, standards, and measurement methods to insure the safe, reliable, and efficient utilization of materials; conducts research including fundamental and applied studies of materials phenomena such as fracture, creep, elasticity, plasticity, and fatigue; conducts basic and applied polymer research in areas of mechanical and electrical properties, chemical stability and lifetime prediction, molecular and solid state characterization, and in dental and medical materials; conducts research including basic and applied studies of phenomena such as corrosion and wear of metals; theoretical and experimental studies of phase transformations and kinetic processes in alloys; methods of characterization of microstructures and imperfections in metals; studies of phase equilibria and properties of alloys and intermetallic compounds; and studies of the electro-deposition of metals and alloys.

0459 Center For Wood Anatomy Research
Forest Products Laboratory, Forest Service, Department of Agriculture
P.O. Box 5130, Madison, WI 53705
Contact: Mr. Robert Steidemann (608) 264-5600
SERVICES: The center maintains the worlds' largest research wood collection and is the national source of information on wood characteristics. The following activities are maintained: development and implementation of an international computerized wood identification system; development of authoritative information on anatomical features of domestic and foreign species of wood; expert wood identification services to industry, Government and other groups; evaluation of acceptability of foreign woods as substitutes for domestic species; development of improved, economical processing techniques for tropical woods.

0460 Corrosion Research and Engineering Facility
Pacific Northwest Laboratory, Department of Energy
P.O. Box 999, Richland, WA 99352
Contact: Dr. R. A. Clark (509) 376-0174, or Dr. L. Schmid (509) 375-2559
EXPERTISE: Studies range from corrosion and scale build-up on components caused by brines, steam condensate, and cooling waters, to content analyses of mill and mine tailing leachates. The work includes analyzing multicomponent highly alkaline slurries for major anion content and alkalinity.FACILITIES: Specialized analytical chemistry equipment includes inductively coupled plasma optical emission spectrometer, ion chromatography, atomic absorption spectrometer, gas chromatograph, ultraviolet-visible spectrometer, gas chromatograph/mass spectrometer, nuclear magnetic resonance spectrometer, and volatile species high-resolution mass spectrometer. Sampling techniques and analysis methodology allows parts-per-billion detection limits for most important inorganic species in aqueous solutions.

0461 Crystal Growth Facility
Naval Research Laboratory, Department of the Navy
ORTA Code 1405, 4555 Overlook Ave., Washington, DC 20375
Contact: Mr. Richard Fulper (202) 767-3744
FACILITY: This site features two crystal pulling stations for semiconductor materials such as GaAs and InP. There is also a zone leveling apparatus for preparing alloys of semiconductor materials and a computer control vapor epitaxial system.

0462 Dynamic Hot Corrosion Test Facility
Army Materials and Mechanics Research Center, Department of the Army
Arsenal Street, Watertown, MA 02172
Contact: Mr. David W. Seitz (617) 923-5527
FACILITY: The facility is used to simulate complex hot corrosion environments comparable to that experienced in aircraft gas turbine engines. Istallation of the AMMRC-modfied Pratt and Whitney dynamic hot corrosion burner test rig with auxiliary controls represents the first such facility to be located at an Army research center. Effects of combined hot oxidation and sulfidation on experimental material systems can be realistically evaluated only after exposure to complex dynamic test conditions. This test rig consists of a source of combusted fuels into which a sea-salt corrodent is introduced, impinging on the surface of test specimens. Combustion conditions are maintained on the oxidizing side of stoichiometry and the specimen may or may not be cycled thermally out of the flowing gas stream. The velocity of gases impinging on the blade specimen ranges between 300 and 400 feet per second. The direct flame impingement generates specimen temperatures between 1650 and

copy, optical metallography, Fourier transform infrared, spectrophotometer, and UV-VIS-NIR spectrophotometer.

Materials Preparation Center, Ames Laboratory, Department of Energy
See 0451

0468 Materials Sciences Unit
Idaho National Engineering Laboratory, Department of Energy
P.O. Box 1645, Idaho Falls, ID 83415
Contact: Mr. Clyde R. Toole (208) 526-6316
EXPERTISE: Materials science and engineering activities extend from basic research to field applications and include metallurgy, surface science, hydrothermal science, ceramics technology, nuclear fuels development, materials joining, fracture analysis, and irradiation effects on mechanical properties of structural materials. Materials joining efforts are aimed at developing processes for consistently producing high quality welds which will exhibit properties equivalent to those of the base metal, even under severe conditions.

0469 Mechanical Testing Facility
Army Materials and Mechanics Research Center, Department of the Army
Arsenal Street, Watertown, MA 02172
Contact: Mr. David W. Seitz (617) 923-5527
FACILITY: The facility was established to provide a means of determining mechanical properties of materials under dynamic loading conditions. The primary objective is to study the strain rate effect on the mechanical properties of materials. The range of strain rate covers from .00001/sec to 10/sec. At the same time, a laboratory computer was incorporated with the mechanical testing machine to form an automated closed-loop servo-controlled testing system. In summary, this facility consists of a biaxial medium strain rate mechanical test machine, a mechanical impactor (split Hopkinson bar apparatus), a high-temperature furnace system, and an automated recording, analyzing and feedback system (laboratory computer). The range of high temperature is from room temperature to 4000F.

0470 Metal Matrix Composites Information Analysis Center (MMCIAC)
Department of the Navy
Kaman-TEMPO, P.O. Drawer QQ, Santa Barbara, CA 93102
Contact: Mr. William E. Rogers (805) 963-6497
INFORMATION SERVICES: The service provides scientific and technical information analysis in the area of metal matrix composite materials. It provides the facilities and capabilities to: (1) identify, collect, process, store, and disseminate authoritative information; (2) prepare or sponsor the preparation of the necessary products and services to communicate this information to researchers, practicing specialists, manufacturers, and other users with interests and concerns in metal matrix composites; and (3) coordinate and augment existing information activities to improve the transmittal of this information to interested organizations and individuals in the government, military, and private sector. The subject matter coverage is the technology related to metal matrix composite materials. This includes continuous fibers, wires, discontinuous whiskers with L/D 10, directionally solidified eutectics; boron, graphite, silicon carbide, nitride, alumina, boron carbide, and titanium diboride fibers, stainless steel, tungsten, molybdenum, beryllium, and titanium, niobium alloy wires; alumina, silicon carbide, and silicon nitride whiskers.

0471 Metals and Ceramics Information Center (MCIC)
Department of the Army
Battelle-Columbus Laboratories, 505 King Ave., Columbus, OH 43201
Contact: (614) 424-6376
INFORMATION SERVICES: The center's primary function is to provide timely, authoritative technical information on the characteristics and utilization of the advanced metals and ceramics. Materials in the center's scope include: Titanium and titanium-base alloys, beryllium and beryllium-base alloys, high-strength aluminum alloys, magnesium, superalloys, refractory metals, coatings for these metals, other metals and alloys used in critical structural applications, single crystal and polycrystalline metals oxides, sulfides, carbides, borides, nitrides, silicides, intermetallics, metalloid elements, glasses, carbons, graphites, and coatings for these materials. To accomplish its purposes, the following four basic functions are conducted: maintenance of a comprehensive, up-to-date, authoritative technical information base, response to requests for technical advise and assistance, issuance of a monthly bulletin to inform the user of new technical developments and related activities, and publication of technical reports, handbooks, and related documents apprising the state of the art of metal, ceramics, and processes.

Microbiological Test Facility, Army Materials Test & Evaluation Command, Department of the Army
See 0203

National Center for Electron Microscopy, Lawrence Berkeley Laboratory, Department of Energy
See 0762

0472 Navy Clothing and Textile Research Facility
Department of the Navy
21 Strathmore Road, Natick, MA 01760
Contact: Mr. John Mylotte (617) 651-4680
EXPERTISE: The facility designs and develops all protective clothing, dress uniforms and utility garments worn by most Navy personnel. Consequently, it conducts research on fabricsand materials which it develops into clothing items that it tests and evaluates before introduction. Fire-preventive clothing, cold-weather garments, women's wear, deep-sea swimsuit materials, boots and shoes, insignia, buoyant-ballistic vests, decompression-chamber clothing, handwear, and dress and work uniforms are only some of the clothing products developed. Research is carried out on fibers, yarns, fabrics, coatings, films, laminates, dyes, and finishes used in all types of general- and special-purpose protective clothing and textiles. Colorfastness, breaking strength, tear resistance, abrasion resistance, aging, weather resistance, water repellency, air permeability, adhesion, stiffness and crease resistance are many of the physical properties tested. The effects of laundering on fabrics and clothing are studied to determine dimensional stability, colorfastness, appearance, and durability of fabrics and fabric finishes with such properties as water repellency, soil release, flame retardance, anti-stats, and softeners.
Facilities: Special facilities include the Environmental Test Chamber that reproduces temperature and relative humidity extremes ranging from -40 to 200F at 5 to 100% RH, the Hydro-Environment Simulator that reproduces air-sea surface temperature conditions existing anywhere on earth;

0480 Radiographic Facility
Naval Surface Weapons Center, Department of the Navy
Code D21, White Oak, Silver Spring, MD 20910
Contact: Mr. Ramsey D. Johnson (301) 394-1505
FACILITY: The facility's capabilities extend over a broad range from 10 KeV microfocus to 10 MeV. With highly specialized personnel and equipment, the facility has the capacity to evaluate very thin plastics and aluminum; and on the other end of the scale, the facility is capable of generating x-rays that can penetrate up to 12 inches of steel. Highly trained radiographic personnel can report interpretive results ranging from minute discontinuities in very thin materials to flaws in the steel welds of submarines. NSWC's Radiographic Facility is known both nationally and internationally as one of the leaders in radiographic R and D efforts. In this facility, numerous radiographic standards have been developed and are maintaned for welds associated with various metals. This Navy facility is known worldwide for R and D efforts in penetrameters or Image Quality Indicator studies. This Radiographic Facility has provided the American Society for Testing and Materials(ASTM) with a significant contribution through experiments aimed at developing a method for evaluating and classifying x-ray films; and personnel at this facility, working as a team effort, have assisted other NSWC personnel in establishing a technique for curing explosive binders with high energy x-rays.

Reno Research Center, Bureau of Mines, Department of the Interior
See 0612

0481 Rolla Research Center
Bureau of Mines, Department of the Interior
U.S. Bureau of Mines, P.O. Box 280, Rolla, MO 65401
Contact: Director (314) 364-3169
EXPERTISE: Sphalerite concentrate is being leached with strong sulfuric acid at atmospheric pressure to produce zinc sulfate and elemental sulfur. A process research unit is being completed to validate bench-scale experiments. Environmentally acceptable techniques are being developed to recover accessory and other metal values from lead and zinc milling and smelter wastes. Hydro-metallurgical techniques are being applied to recover the preponderant and accessory metals, such as toxic cadmium, from milling and smelting wastes generated in primary lead and zinc production. Research is striving to devise soldering systems which reduce toxic lead emissions, brazing alloy systems which reduce toxic cadmium emissions, and nonpolluting fluxing technology. An industrial-scale process research unit using diaphragm cells is being operated to regenerate chromic acid etchants for recycle. Technology involving pelletizing and smelting is being developed to recover Cr, Ni, Mo, and Fe from specialty steelmaking (flue dusts, mill scale, etc.) and other Cr-bearing wastes.

SHARE Microanalysis Facility, Oak Ridge National Laboratory, Department of Energy
See 0773

Standard Reference Data Centers, National Bureau of Standards, Department of Commerce
See 0775

0482 Standard Reference Materials
National Bureau of Standards, Department of Commerce
Washington, DC 20234
Contact: Mr. George A. Uriano (301) 921-2045
SERVICES: Standard Reference Materials (SRM's), play a major role in increasing and ensuring the accuracy of measurements. SRM's are well characterized, homogeneous materials with specific properties measured and certified by NBS. SRM's are used widely throughout the United States and the world to help develop test methods of proven accuracy, to calibrate instruments and measurement systems used to maintain quality control of the production of materials and goods, to help assure equity in buyer-seller transactions, and to assure the long-term reliability and integrity of the measurement process. NBS issues SRM's in 70 major categories, and over 1,000 different SRM's are presently available from NBS. SRM's serve major segments of industry including those specializing in ferrous and nonferrous metals, mining, glass, rubber, plastics, primary chemicals, nuclear power, electronics, automotive and computer instrumentation. Types of SRM's include: Steels, Steelmaking alloys, Cast irons, Cast steels, Nonferrous alloys, Gases in metals, High-purity metals, Electron probe microanalytical, Primary chemicals, Clinicals, Biologicals, Botanicals, Environmentals, Industrial hygiene, Metallo-organic compounds, Fertilizers, Ores, Minerals, Refractories, Carbides, Glasses, Cements, Trace elements, Nuclear materials, Radioactivity, X-ray diffraction, Isotopics, Ion activity, Mechanical and metrology, Superconducting, Freezing points, Melting points, Calorimetric, Vapor pressure, Thermal conductivity, Thermal expansion, Thermal resistance, Thermocouple materials, Magnetic, Optical, Gas transmission, Permittivity, Reference fuels, Resistivity, Rubber Materials, Computer tapes, Sizing standas, Color, Photographic, Surface flammability, Smoke density, and Water vapor permeance.

0483 Surface Analytical Facilities
Naval Research Laboratory, Department of the Navy
ORTA Code 1405, 4555 Overlook Ave., Washington, DC 20375
Contact: Mr. Richard Fulper (202) 767-3744
EXPERTISE: Research is directed in part to improving existing or developing new techniques that will provide more powerful analytical tools for characterizing surfaces and studying surface reactions. The surface analytical instrumentations constitute an outstanding surface analytical facility for the study of a wide range of material surface problems. The facility is currently being used to study such Navy problems as corrosion, tribology (friction and wear), electronic, and engineering materials.

0484 Surface Evaluation Facility
Naval Surface Weapons Center, Department of the Navy
Code D21, White Oak, Silver Spring, MD 20910
Contact: Mr. Ramsey Johnson (301) 394-1505
EXPERTISE: The center has equipped and staffed the facility to provide a unique Navy capability for determining surface properties. The facility engages in a full-spectrum approach to the Navy's materials problems through three major functions. Development of new materials and devices is supported through programmatic studies of surface-related problems in collaboration with the scientists and engineers working on the primary development project. Research on the fundamental properties of solid surfaces maintains a forefront expertise in surface science. Analytical Services are provided for short-term trouble-shooting of materials problems. High-technology areas in which surface evaluation is necessary are addressed within the center under one or more of the following categories: materials

dB(A) are required to measure very quiet items. It is also used for psychoacoustic tests such as measurement of hearing protector attenuation. Basically, it simulates the freefield of the outdoor environment in a quiet area. The reverberant room consists of highly-reflective nonparallel walls and is used to produce shaped noise levels of high intensity.

0492 Anesthesiology Center Program
National Institute of General Medical Sciences, National Institutes of Health, Department of Health and Human Services
Westwood Building, Room 925, 5333 Westbard Avenue, Bethesda, MD 20205
Contact: Dr. Emilie Black (301) 496-7373
EXPERTISE: Anesthesiology Research Centers conduct both laboratory and clinical research is conducted on the uptake, distribution, and mode of action of anesthetic agents; relief of pain; and the management of respiratory failure. They foster closer collaboration among pharmacologists, physiologists, and anesthesiologists and they seek to broaden the scientific base for anesthesiology practice.

0493 Animal Models Development Program
National Institute on Aging, National Institutes of Health, Department of Health and Human Services
National Institutes of Health, Bldg. 31, Room 5C19, Bethesda, MD 20205
Contact: Dr. Richard L. Sprott (301) 496-6402
SERVICES: The program is sponsored through a contract with Charles River Breeding Laboratories (CRBL) of Kingston, NY and Wilmington, MA. The objectives of this program are to develop pathobiologically characterized and defined aged animal colonies; make available necessary numbers of healthy, defined, aged animals of known quality and biological characterization; develop effective and efficient methods and approaches for distributing resource animals and biological materials; develop and supply information and criteria for the selection, development, and maintenance of appropriate and relevant vertebrate species for use as animal models in the study of aging; provide guidelines on the special characteristics and requirements for use of a particular strain or species to study the aging process; broaden the scope and variety of relevant animal models; establish methods for exchange and cooperative use of species; and establish exchange banks for biological materials derived from resource animal models. Aged animals that currently are available to investigators engaged in research on aging include Fischer 344 rats and 12 strains of mice (C57B1/6N; DBA/2N; B6D2F1/Crl; BALB/c An NNIA; CBA/Ca HN; CBA/Ca HN-T6; B10.129; B6C3F1/Crl; CRI: Nu/Nu (BALB/C); CBF NNIA/Crl; CRL: COBS CRW (SW); and A/HeN).

0494 Animal Models for Trisomy 21
National Institute of Child Health and Human Development, National Institutes of Health, Department of Health and Human Services
Landow Building, Room 7C16, 7910 Woodmont Avenue, Bethesda, MD 20014
Contact: Dr. Flix de la Cruz (301) 496-1383
SERVICES: To promote research in mental retardation and developmental disabilities (especially Down syndrome), the development and maintenance of trisomic mice as models for human Down syndrome is supported. These animals are available for distribution to qualified investigators for use in studies of the biochemical, developmental, and phenotypic consequences of trisomy.

0495 Animal Resources Program
Research Resources Information Center, National Institutes of Health, Department of Health and Human Services
1776 E. Jefferson Street, Rockville, MD 20852
Contact: Mr. Gregory Freiherr (301) 881-4150
SERVICES: The program meets the need of biomedical researchers for high-quality, disease-free animals and specialized animal research facilities. The program supports primate research centers and their field stations, primate breeding and supply projects, specialized animal models and colonies, and a variety of other animal research projects. The program also supports the improvement of animal quality and availability through projects that study the diseases and environmental requirements of research animals, development of specific animal models and colonies with special characteristics, upgrading of laboratory animal facilities, and provision of post-doctoral training in laboratory animal medicine. Examples of services and facilities available at resource sites are modern analytical laboratory equipment; surgery, X-ray, and clinical pathology units; improved animal cages and holding facilities; materials and techniques for diagnosis of animal diseases; reference reagents and antisera; animal breeding stations, notably those for nonhuman primates; germfree animals; and selected invertebrate and vertebrate species, including specific genetic strains and models in development. Animal resources supported by the program are available to scientists with qualified projects, and scientists interested in using or obtaining information about these resources may wish to obtain a copy of Animal Resources: A Research Resources Directory from the Research Resources Information Center.

0496 Animals with Inherited Retinal Degenerations
National Eye Institute, National Institutes of Health, Department of Health and Human Services
Building 31, Room 6A51, 9000 Rockville Pike, Bethesda, MD 20205
Contact: Dr. Jack A. McLaughlin (301) 496-5983
SERVICES: To encourage research directed toward finding the causes of and prevention for human heredoretinal degenerations, NEI supports the development of strains of dogs with progressive retinal atrophy and the breeding and distribution of these animals for research. Irish setters exhibiting rod-cone dysplasia and miniature poodles with progressive rod-cone degeneration are available, and interested investigators are encouraged to contact NEI. A brief research protocol will be requested and competitively reviewed for scientific merit by a selection committee. Shipping and other research-related costs are the responsibility of the recipient, but there is no charge for the animals.

0497 Army Aeromedical Research Laboratory
Department of the Army
P. O. Box 577, Fort Rucker, AL 36362
Contact: Ms. Sybil H. Bullock (205) 255-6907
EXPERTISE: Research efforts have two objectives: enhancement of the individual soldier's combat performance and efficiency, and the prevention of injury in the operational environment or combat. The laboratory's research and development efforts are channeled toward the safety, efficiency, and efffectiveness of the healthy soldier while training or working at his high-risk occupation - training for war and combat. Investigators are studying the effects various

0502 Aviation Toxicology Laboratory
Department of Transportation
FAA Aeronautical Center, P. O. Box 25082. Oklahoma City, OK 72125
Contact: Dr. J. Robert Dille (405) 686-4806
EXPERTISE: The laboratory is subdivided into five units, each of which conducts research in a specialized area of toxicology as it relates to aviation safety. Efforts include analyzing body fluids or tissues from victims of fatal aircraft accidents to detect the presence of drugs or chemical which may have contributed to the accident; investigating the effects of ionizing radiations and other forms of radiant energy on living tissue and assesses the potential hazard of such radiations in a variety of aviation activities including high altitude flight; assisting the investigation of aircraft accidents and supplies pathology consultation and services to studies involving toxicological or traumatic injury; studying the effects of drugs and toxic chemicals on the central nervous system; and investigating the biological effects of drugs and toxic chemicals such as the pesticides to which agricultural pilots are exposed, substances which may be hazardous during transport, and fumes or gas agents produced by burning vehicular materials.

0503 Beltsville Human Nutrition Research Center
Beltsville Agricultural Research Center, Agricultural Research Service, Department of Agriculture
Beltsville, MD 20705
Contact: Dr. W. Mertz (301) 344-2157
EXPERTISE: The center conducts basic and applied research to more completely define human requirements for essential nutrients, and identify foods that meet the nutritional requirements through nutrient composition research. This research includes the quantitative requirements for known nutrients, the search for yet unidentified essential dietary factors, the understanding of interactions among nutrients and definition of their biological availability. Through studies with both human subjects and animals, requirements for protein, fats, carbohydrates, and vitamins and minerals are defined, and the forms in which these nutrients are most useful in meeting human needs are identified. As an integral part of its research program, the center also develops new and highly sophisticated analytical instruments and techniques for sampling and analyzing foods and for determining the roles of and requirements for various nutrients.

Biomedical Research and Clinical Medicine Program, National Institute on Aging, National Institutes of Health, Department of Health and Human Services
See 0193

0504 Biotechnology Resources Program
National Institutes of Health, Department of Health and Human Services
Division of Research Resources, 1776 East Jefferson Street, Rockville, MD 20852
Contact: Mr. Gregory Freiherr
FACILITIES: The Biotechnology Resources Program concentrates on the application of the physical sciences, mathematics, and engineering to biology and medicine. Ultrasophisticated instruments, state-of-the-art methods, and expert support personnel provided by the program help life scientists in investigation of fundamental biological processes of the human body. The program's capabilities include large-scale and minicomputer systems; biochemical and biophysical instruments (mass spectrometers, nuclear magnetic resonance spectrometers, electron spin resonance spectrometers); million-volt electron microscopes; electron microphobes; biomedical engineering technologies; and production of biochemical research materials. The Biotechnology Resources Program works with biomedical scientists toward the development of new research technologies or new applications of existing technologies. In addition, the program provides training for the research community in the use of all biotechnological tools and procedures. The biotechnology resources supported by the program are available for use by scientists with qualified projects. Scientists interested in using or obtaining information about these resources may obtain a copy of a special resources directory.

0505 Brain Tissue Resource for Neuropsychiatric Research
National Institute of Neurological and Communicative Disorders and Stroke, National Institutes of Health, Department of Health and Human Services
Federal Building, Room 714, 7550 Wisconsin Avenue, Bethesda, MD 20205
Contact: Dr. Emanuel M. Stadian (301) 496-1431
SERVICES: The National Institute of Neurological and Communicative Disorders and Stroke, together with the National Institute of Mental Health, the Hereditary Disease Foundation, and the Wills Foundation supports the Brain Tissue Bank at the McLean Hospital, Belmont, Massachusetts. This tissue banking resource collects brain tissues obtained at autopsy, stores them cryogenically and in formalin, and distributes these materials to research scientists. Specimens are available from individuals with various neurological and psychiatric disorders, including Alzheimer's disease, Huntington's disease, and schizophrenia; control specimens from non-neurologically impaired persons are also available. The clinical diagnosis is verified whenever possbile by neuropathological examination. Clinical information regarding the patient, including medication history, is also collected. Carefully dissected specimens are available to organizations and individuals engaged in biomedical research to assist in the understanding, early diagnosis, prevention, and treatment of many neuropsychiatric conditions.

Brookhaven Medical Research Reactor, Brookhaven National Laboratory, Department of Energy
See 0646

0506 Cancer Center Program
National Cancer Institute, National Institutes of Health, Department of Health and Human Services
Blair Building, Room 732, 8300 Colesville Road, Silver Spring, MD 20910
Contact: Dr. Jerome Yates (201) 427-8636
EXPERTISE: The objective of the program is to promote and support the development of both specialized and multidisciplinary programs in laboratory and clinical cancer research and applied research in prevention and treatment. In FY 1982, 62 centers were supported. Of these, 16 were Laboratory Cancer Research Centers and the remaining 46 centers had clinical components or basic and clinical research components. Twenty of these were designated Comprehensive Cancer Centers, serving as focal points for community involvement, for continuing education of health professionals in cancer, for research training, and for the sharing of information with private-sector organizations.

gative findings, and continuing medical education for practicing physicians.

0514 Children's Nutrition Research Center
Agricultural Research Service, Department of Agriculture
6608 Fannin Street, Suite 601, Houston, TX 77030
Contact: Dr. Buford L. Nichols (713) 799-6006
EXPERTISE: The center conducts research to quantitate the nutritional needs and the attainment of optimal nutritional status in the pregnant and nursing woman, and in the child from conception through adolescence, with a major emphasis on the development of new methods for investigating nutrient requirements in infants, and for studying the relationship between nutrition and growth and development. This comprehensive mission which focuses on the nutrient needs of nearly half the population of the United States with numerous international implications is carried out in three research programs by scientists who collaborate on multi-disciplinary investigations to provide answers to such questions as: what effects does the diet (nutritional intake) of a pregnant women have on the health of the child she delivers; how does nutrition of the mother affect lactation and the nutrient content of her milk; what is the relationship between nutrient intake and physical and mental development of infants and children; and what are the nutritional needs for optimal growth and development in children from conception through adolescence.

0515 Clinical Nutrition Research Units
National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases, National Institutes of Health, Department of Health and Human Services
Westwood Building, Room 606, 5333 Westbard Avenue, Bethesda, MD 20205
Contact: Dr. Gerald Combs (301) 496-7823
EXPERTISE: In a joint effort with the National Cancer Institute and the National Institute on Aging, NIADDK has fostered the development and operation of clinical nutrition research units to encourage multidisciplinary approaches to clinical nutrition opportunities and problems. A CNRU is an integrated array of research, educational, and service activities oriented toward human nutrition in health and disease in areas such as nutritional health maintenance, improved nutritional support of the acutely and chronically ill, nutritional support of the hospitalized patient, assessment of nutritional status, effectsof disease states on nutritional needs, and effects of changes in nutritional status on disease. Each unit has seven components: research with human subjects and populations; laboratory investigation; research training; shared facilities and research services (all relating to ongoing nutrition research); education programs for medical students, house staff, practicing physicians, and paramedical personnel; nutritional support services; and public information activities.

0516 Collaborating Center for Defined Laboratory Animals
National Institutes of Health, Department of Health and Human Services
Building 14G, Room 12, 9000 Rockville Pike, Bethesda, MD 20205
Contact: Dr. Robert A. Whitney (301) 496-2527
SERVICES: The Veterinary Resources Branch of the Division of Research Services maintains one of the world's largest collections of small laboratory animals in the NIH Genetic Resource (NIHGR). Species maintained include mice, rats, guinea pigs, hamsters, and rabbits as well as less commonly used animals such as mastomys and cotton rats. There are more than 200 strains, stocks, hybrids, mutants, congenics, and recombinant inbred animals in the NIHGR. A number of strains and stocks that were in danger of becoming lost, through either lack of support or facilities, are maintained because of their potential in biomedical research. The Veterinary Resources Branch has been designated as a Collarborating Centre for Defined Laboratory Animals by the World Health Organization and as a Nude Mouse Reference Center by the International Council on Laboratory Animal Science. The primary function of the Veterinary Resources Branch colonies is to support NIH research programs but, as a service to the biomedical research community, a small number of animals in each strain or stock are available to other biomedical institutions at no cost for establishing breeding colonies. Animals are not available, however, for use in research protocols.

0517 Community Cancer Care Programs
National Cancer Institute, National Institutes of Health, Department of Health and Human Services
Blair Building, Room 732, 8300 Colesville Road, Silver Spring, MD 20910
Contact: Dr. Jerome Yates (201) 427-8636
EXPERTISE: The Community Clinical Oncology Program (CCOP) involves practicing community oncologists in NCI clinical trials programs. Combining the expertise of oncologic specialists in community practice with ongoing clinical research projects results in the exchange of the newest clinical treatment research findings at the community level. The long-term goal is to reduce national mortality by speeding the transfer of new treatment technology to wide-spread community application.

0518 Comprehensive Sickle Cell Centers Program
National Heart, Lung, and Blood Institute, National Institutes of Health, Department of Health and Human Services
Federal Building, Room 504D, 7550 Wisconsin Avenue, Bethesda, MD 20205
Contact: Dr. Clarice Reid (301) 496-6931
EXPERTISE: The Program provides an integrative mechanism for the translation and application of the results of basic and clinical research on sickle cell disease to improved health care at the community level. These centers combine fundamental and clinical research, clinical trials, training, and community service in an approach designed to concentrate resources, facilities, and manpower in a focused drive for solutions to the problems posed by sickle cell disease. They bridge the gap between scientific investigations and service efforts and bring findings in one area into practical use in others. In this manner, new knowledge is made available for incorporation into the health care system in the most efficient manner. Specific research projects include those related to molecular, cellular, tissue, and organ studies in sickle cell disease as well as clinical trials, traaining, and education. Community service activities include demonstration projects in education, screening, counseling, and rehabilitation.

0519 Culture Collection Bank
Northern Regional Research Center, Agricultural Research Service, Department of Agriculture
1815 N. University Street, Peoria, IL 61604
Contact: Dr. Cletus Kurtzman (309) 685-4011

EXPERTISE: The center is designed to respond to the needs of both the nation and the community in determining the health effects of various environmental factors. Its research addresses the long-term and evolving needs of the Agency in the field of environmental epidemiology.

0526 Epidemiology, Demography, and Biometry Program
National Institute on Aging, National Institutes of Health, Department of Health and Human Services
Federal Building, Room 612, 7550 Wisconsin Avenue, Bethesda, MD 20205
Contact: Dr. Jacob A. Brody (301) 496-1178
EXPERTISE: This is the focal point for quantitative population-based research on health and disease in the aged. The program comprises the disciplines of medicine, biostatistics, epidemiology, economics, sociology, and demography. The program's three major areas of interest include research data bases and methodologies, population-based research, and clinical epidemiology. From the program, survey instruments, data tapes, and models are available to interested investigators, including Surveys of Health and Chronic Conditions of the Elderly-Established Populations for Epidemiologic studies of the Elderly (EPESE), Surveys of Health and Chronic Conditions of the Elderly-National Health and Nutrition Examination Survey (NHANES); data tapes of the Household Survey of Wealth and Income; and NIA Macroeconomic-Demographic model.

Food and Nutrition Information Center, Department of Agriculture
See 0115

0527 Frederick Cancer Research Facility
National Institutes of Health, Department of Health and Human Services
National Cancer Institute, National Institutes of Health, Frederick, MD 21701
Contact: Dr. H. J. Hearn (301) 695-1108
EXPERTISE: NCI-supported investigators are studying viruses and chemicals that cause cancer in animals and developing drugs that may be useful in treating cancer. Research projects in immunobiology, cancer metastases, molecular genetics, and cell biology are also conducted. In addition, the facility houses the NCI intramural research programs of the Division of Cancer Cause and Prevention and the Biological Response Modifiers Program of the Division of Cancer Treatment. Qualified researchers and clinicians are encouraged to contact the FCRF regarding equipment or facility sharing or participation in FCRF research projects.

0528 General Clinical Research Centers
National Institutes of Health, Department of Health and Human Services
Research Resources Information Center, 1776 E. Jefferson St., Rockville, MD 20852
Contact: Mr. Gregory Freiherr (301) 881-4150
EXPERTISE: The program establishes and makes available to medical scientists the specialized environment necessary to conduct high-quality clinical research. Each center is a miniature hospital-within-a-hospital, with the sophisticated equipment and expert personnel to provide a multidisciplinary, controlled research environment. There are 75 centers throughout the country where scientists study the entire spectrum of bio-medicine from genetics to organ transplants. These research projects are funded by NIH and other agencies of the Department of Health and Human Services, by research foundations and societies, and by industry. Investigators interested in obtaining more information about this program may wish to obtain a copy of General Clinical Research Centers: A Research Resources Directory from the Research Resources Information Center. This directory is a guide to the clinical research projects, inpatient and outpatient facilities, and special assay services, tests, and instruments available at the general clinical research centers.

Genetic and Cellular Resources Program, Gerontology Research Center, National Institute on Aging, National Institutes of Health, Department of Health and Human Services
See 0199

0529 Genetics Center Program
National Institute of General Medical Sciences, National Institutes of Health, Department of Health and Human Services
Westwood Building, Room 925, 5333 Westbard Avenue, Bethesda, MD 20205
Contact: Dr. Emilie Black (301) 496-7373
EXPERTISE: Genetics research centers facilitate broadly based research on a variety of inherited human diseases. New ideas and progress are stimulated by familiarizing basic research scientists with specific human genetic disorders and by conducting basic laboratory and clinical genetics investigations.

0530 Gerontology Research Center
National Institute on Aging, National Institutes of Health, Department of Health and Human Services
Baltimore City Hospital, Room 1E07, Baltimore, MD 21224
Contact: Dr. Richard Greulich (301) 496-9419
EXPERTISE: Investigations are conducted in a wide range of areas including clinical physiology, behavioral sciences, cellular and molecular biology, molecular aging, neurosciences, and comparative nutrition. In addition, the Baltimore Longitudinal Study of Aging, conducted at the center, is a primary and unique resource for aging-related studies. In this study, over 650 volunteer men, ranging in age from 20 to 96 years, come to the center every 1 to 2 years and undergo 2-1/2 days of extensive clinical, biochemical, and psychological testing. A women's program, initiated in 1978, will eventually include an equal number of females, allowing scientists to make important comparisons of sex differences throughout the lifespan. In this study, scientists from the center are collecting important clinical data for all investigators involved in aging research.

0531 Health Effects Research Laboratory
Environmental Protection Agency
Research Triangle Park, NC 27711
Contact: Dr. Si Duk Lee (919) 541-2266
EXPERTISE: The laboratory identifies and evaluates the effects of pollutants on human health. Epidemiological and clinical studies assess the effects of gaseous pollutants, pesticides, toxic industrial chemicals, and nonionizing radiation on man, animals, cellular and organ model systems, and subcellular and genetic systems. The laboratory also develops and improves methods and instrumentation used for health effects monitoring and analysis.

Health Physics Research Reactor(HPRR), Oak Ridge National Laboratory, Department of Energy
See 0658

0538 Huntington's Disease Cell Repository
National Institute of Neurological and Communicative Disorders and Stroke, National Institutes of Health, Department of Health and Human Services
Federal Building, Room 714, 7550 Wisconsin Avenue, Bethesda, MD 20205
Contact: Dr. Emanuel M. Stadlan (301) 496-1431
SERVICES: The National Institute of General Medical Sciences and the National Institute on Aging sponsor the Human Genetic Mutant Cell Repository and the Aging Cell Repository at the Institute for Medical Research in Camden, NJ. The repository establishes, characterizes, stores, and distributes highly characterized, viable, and contaminant-free cultures from patients with biochemical genetic disorders and chromosome aberrations. In the repository, fibroblast and lymphoid cultures derived from patients with various disorders including those of the nervous system are maintained with support from the National Institute of Neurological and Communicative Disorder and Stroke (NINCDS). The NINCDS has supported the collection and contribution of specimens from a large pedigree of Huntington's disease families. These specimens are useful for studying Huntington's disease and also serve as an excellent resource pedigree for general gene mapping. Other available cultures include those from patients with Alzheimer's disease, Canavan's disease, dysautonomia, Fahr's disease, Friedreich's ataxia, Tourette's syndrome, congenital sensory neuropathy, and olivopontocerebellar atrophy. The Repository contains low passage cell cultures which are stored in liquid nitrogen; tested; assured to be free from contamination; and verified as to species of origin, karyotype, viability, and expression of the particular biochemical or chromosomal defect. Cell cultures are available to organizations or individuals engaged in biomedical research or health care to assist in the early diagnosis, prevention, understanding, and treatment of many inherited diseases.

0539 Huntington's Disease Research Roster
National Institute of Neurological and Communicative Disorders and Stroke, National Institutes of Health, Department of Health and Human Services
Federal Building, Room 714, 7550 Wisconsin Avenue, Bethesda, MD 20205
Contact: Dr. Emanuel M. Stadlan (301) 496-1431
SERVICES: The National Institute of Neurological and Communicative Disorders and Stroke supports a research roster for Huntington's disease patients and families based at the Indiana University Medical Center, Indianapolis. The roster is national in scope and its primary purpose is to facilitate research in Huntington's disease. The roster contains pedigree records and family history information on over 630 families and comprises almost 30,000 individuals from 48 states, Venezuela, Canada, Guam, and Greece. Statistical and demographic data can be provided to research scientists from the roster and it can also be use d as an intermediary between investigators with approved projects who are seeking research subjects and Huntington's disesase and families willing to participate in research.

0540 In Vivo Bone Lead Assessment Facility
Brookhaven National Laboratory, Department of Energy
Upton, NJ 11973
Contact: Mr. K. J. Ellis (516) 282-3574
FACILITY: The facility is used for the noninvasive measurement of Pb in bone using X-ray fluorescence analysis. The facility uses a Si(Li) detector and 109Cd source, and is computer controlled. The apparatus is compact which allows for complete portability. Sensitive and dose requirements allow for measurement in children.

Individual Protection Laboratory, Army Natick Research and Development Laboratories, Department of the Army
See 0465

0541 Inhalation Toxicology Research Institute
Department of Energy
P.O. Box 5890, Albuquerque, NM 87115
Contact: Mr. Robert Jones (505) 844-2502
EXPERTISE: The institute has as its primary mission the assessment of potential adverse human health effects that might be associated with widespread commercial use of various energy technologies. Of primary concern is the degree to which the inhalation of by-products of energy technologies such as fugitive emissions or operating emissions might be harmful to the health of operators or the general public. Research on health effects associated with nuclear technologies represents 40% of the institute's research program with the rest addressing other important energy technologies, especially combustion and gasification of coal and use of diesel-powered vehicles.

0542 Institute to Surgical Research
Department of the Army
Fort Sam Houston, TX 78234
Contact: Dr. Basil A. Pruitt (512) 221-2720
EXPERTISE: The Institute provides care for approximately 250 severely burned patients each year and conducts biomedical research in the fields of burn injury, hypovolemic shock, and surgical infection. Specific research projects are conducted in the fields of hemodynamics, fluid resuscitation, pulmonary effects of injury, infection, disturbances of host resistance, post-injury alteration of gastrointestinal function, wound care, the neurohormonal response to injury, surgical metabolism, and post-injury nutrition.

0543 Interregional Registry of Cytogenetic Disorders and Phenylketonuria
National Institute of Child Health and Human Development, National Institutes of Health, Department of Health and Human Services
Landow Building, Room 7C16, 7910 Woodmont Avenue, Bethesda, MD 20014
Contact: Dr. Flix de la Cruz (301) 496-1383
SERVICES: Records are maintained of genetic and clinical information to help provide better health care services for these types of disorders and to provide a data base for research and epidemiologic studies. Data have been collected from over 40,000 patients from collaborating laboratories in Memphis, Tennessee; Albany, New York;Indianapolis, Indiana; New Haven, Connecticut; and Portland, Oregon. Data are recorded in each of the participating laboratories and sent to the data coordinating center in Portland. A microcomputer data entry system has also been developed and documented.

JSW168 Small Cyclotron, Brookhaven National Laboratory, Department of Energy
See 0622

0544 Laboratory for Energy-Related Health Research
Department of Energy
UC Davis, University of California, Davis, CA 95616
Contact: Dr. Marvin Goldman (916) 752-1341
EXPERTISE: The laboratory is associated with the School of Veterinary Medicine at the University of California in

search programs are investigations of several hemorrhagic fever viruses, including the etiologic agents of Ebola fever, Congo-Crimean, Argentine and Bolivian hemorrhagic fevers, Rift Valley fever (RVF), Korean hemorrhagic fever (KHF), and Lassa fever. Pathogenesis studies in progress focus on development of animal models for human disease, and the use of these models for testing experimental vaccines, immunotherapy and chemotherapy procedures. Antiviral drug testing is emphasized and is supported by a broad program for studies of mechanism of action, pharmacodynamics, formulation, and safety in animal models, and in man.

0550 Medical Research Institute of Chemical Defense
Department of the Army
ATTN: SGRD-UV-AO, Aberdeen Proving Ground, MD 21010
Contact: Mrs. Susan K. Luckan (301) 671-3653
EXPERTISE: Research, development, test, and evaluation is carried out as it relates to medical defense against chemical warfare. This mission includes basic research and mechanisms of action of chemical warfare agents and prophylactic and therapeutic drugs in order to devise improved prevention and treatment of casualties; development and evaluation of drugs and other methods for the prevention and treatment of chemical casualties; development and evaluation of compounds for skin and wound decontamination; integration of new developments into a system for combat casualty care in a chemical environment; and training of both medical and non-medical personnel in the prevention and management of chemical casualties.

0551 Mental Retardation Research Centers
National Institute of Child Health and Human Development, National Institutes of Health, Department of Health and Human Development
Landow Building, Room 7C16, 7910 Woodmont Avenue, Bethesda, MD 20014
Contact: Dr. Peter Vietze (301) 496-1383
EXPERTISE: The mission of these centers is to conduct research relating to human development, whether biological, medical, social, or behavioral, to assist in finding the causes and means of prevention of mental retardation or in finding means of ameliorating the effects of mental retardation. The centers provide broadly based programs of individual and collaborative research projects relevant to mental retardation and related aspects of human development. Many of the centers also include in their research programs the development of close working relationships with clinical resources, residential care facilities, and community programs for the mentally retarded.

0552 Molecular Pathology Center Program
National Institute of General Medical Sciences, National Institutes of Health, Department of Health and Human Services
Westwood Building, Room 925, 5333 Westbard Avenue, Bethesda, MD 20205
Contact: Dr. Emilie Black (301) 496-7373
EXPERTISE: Focused on a general pathological problem, Molecular Pathology Centers bring together investigators from several medical science disciplines and foster multidisciplinary approaches to the study of disease. They seek to promote increased collaboration among pathologists, biochemists, biophysicists, electron microscopists, and other scientists investigating related subcellular phenomena in quantitative molecular terms.

0553 Multipurpose Arthritis Centers Program
National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases, National Institutes of Health, Department of Health and Human Services
Westwood Building, Room 403, 5333 Westbard Avenue, Bethesda, MD 20205
Contact: Dr. Steven Hausman (301) 496-7495
EXPERTISE: The Multipurpose Arthritis Centers consist of three components: education and training, research, and community programs. The centers support educators who develop programs in arthritis education for primary care physicians concerned with providing care for patients with arthritis, for patients whose lack of knowledge may prevent them from seeking the best possible care, and for allied health specialists. Limited support is provided to attract investigators to arthritis research or to advance highly promising areas of research. In relation to the community programs component, the special role of the centers is to determine the mechanisms by which communities can provide the best care to patients with arthritis at the least cost and to acquaint communities with these mechanisms through demonstration projects.

0554 National Center for Toxicological Research
Environmental Protection Agency
Jefferson, AR 71601
Contact: Mr. Douglas Kreis (405) 332-8800
EXPERTISE: Research is conducted concerning technology of environmental quality control, including air, land, and water. It focuses on separation technology, plus contaminant detoxification and destruction as related to remedial or add-on technology associated with the control of air and water pollution and solid wastes.

0555 National Clearinghouse for Alcohol Information, National Institutes on Alcohol Abuse and Alcoholism
Alcohol, Drug Abuse, and Mental Health Administration, Department of Health and Human Services
5600 Fishers Lane, Rockville, MD 20857
Contact: (301) 468-2600
INFORMATION SERVICES: The Clearinghouse collects information on studies and programs pertaining to prevention, training, treatment, and research aspects of alcohol abuse and alcoholism, and shares this knowledge with interested professional audiences as well as with the general public. Clearinghouse staff respond to individual inquiries of a personal, professional, or technical nature. They provide referrals to other agencies when appropriate. Clearinghouse specialists perform searches of computerized files containing citations and abstracts for scientific, technical, and programmatic documents in areas such as physiology, biochemistry, medicine, public health, psychology, animal research, treatment and therapies, mental health, legislation and criminal justice, safety, sociology, prevention and education, statistics, and special population groups.

0556 National Clearinghouse for Drug Abuse Information
Alcohol, Drug Abuse, and Mental Health Administration, Department of Health and Human Services
P.O. Box 416, Kensington, MD 20795
Contact: Ms. Leona Ferguson (301) 443-6500
INFORMATION SERVICES: The clearinghouse (1) classifies, processes, stores, and retrieves drug abuse information for dissemination to diverse groups with varying information needs: (2) disseminates current factual drug abuse

and Communicative Disorders and Stroke supports the National Neurological Research Bank, at the VA West Los Angeles Medical Center, Wadsworth Division. This bank collects donated brain tissues, other organs, blood, and cerebrospinal fluids obtained at autopsy, stores them cryogenically, and distributes them to research scientists. Specimens are collected from normal individuals and those having various neurological and psychiatric disorders, including multiple sclerosis, amyotrophic lateral sclerosis, Alzheimer's disease, Huntington's disease, Parkinson's disease, schizophrenia, depressive disorders, and alcoholism. The clinical diagnosis is verified whenever possible by neuropathological examination. Clinical information regarding the patient, including medication history, is also collected. Carefully dissected specimens are available to organizations and individuals engaged in biomedical research to assist in the early diagnosis, prevention, understanding, and treatment of many neuropsychiatric disorders.

0563 National Institute for Occupational Safety and Health
Department of Health and Human Services
4676 Columbia Parkway, Cincinnati, OH 45226
Contact: Mr. T. F. Schoeborn (513) 684-8326
EXPERTISE: Research is conducted on occupational stress and on the behavioral aspects of occupational safety and health. Analytical methods are developed for chemical agents found in occupational exposures. Studies are carried out on recognition, evaluation, and control of occupational safety and health hazards and development of criteria for workplace safety and health standards. Safety research and the development of control measures and devices for application to industrial and other work sites are established. The laboratory also conducts research on industrial process modifications and design; modification, and maintenance of industrial equipment and develops control technology for health and safety hazards in industrial and other work-places. In the medical sciences research is conducted on occupational safety and health including toxicology; occupational carcinogens; epidemiology of occupational diseases, respiratory diseases, ergonomics, stress physiology, and behavioral factors; and develops recommended programs for delivery of occupational safety and health services.

0564 National Institute of Mental Health
Alcohol, Drug Abuse, and Mental Health Administration,
Department of Health and Human Services
Parklawn Bldg., Room 15-102, 5600 Fishers Lane,
Rockville, MD 20857
Contact: Ms. Merle Kahn (301) 443-4536
EXPERTISE: The Institute is the leading Federal agency conducting and supporting research on all aspects of the diagnosis, prevention, and treatment of mental illness, including relevant research technology and methodology development and assessment. Extensive scientific, professional, and public education and information activities based on this research are conducted. Assistance is provided in sharing the results of this research with scientists and professionals.

0565 National Stable Isotopes Resource
Los Alamos National Laboratory, Department of Energy
Los Alamos, NM 87545
Contact: Dr. R. E. London (505) 667-5324
FACILITY: As part of the overall laboratory function, this program encompasses: the production of large quantities of isotopes separated by the low temperature distillation of carbon monoxide and nitric oxide; the development of efficient sysnthetic methods for the incorporation of the isotopes into complex molecules; the improvement of techniques - especially nuclear magnetic resonance (NMR) and mass spectroscopy - for the analysis of isotpically-labeled compounds; and participation with extramural investigators in cooperative research and development programs to develop the utility of stable isotopes in the biosciences and in enviromental studies.

0566 Naval Blood Research Laboratory
Department of the Navy
Boston University, 615 Albany Avenue, Boston, MA 02118
Contact: (617) 247-6700
EXPERTISE: Areas of interest cover hematology; research, development, testing, and evaluating methods for the preservation of blood and blood products; human red cells, platelets, and plasma proteins in Naval hospitals and combat areas on land and at sea; human red blood cells, platelets, granulocytes, plasma protein, clotting factors, and plasma protein with oncotic properties.
Services: The laboratory provides rare and hold-for-donor frozen bloods that are available for both military and civilian use the world over.

0567 Naval Dental Research Institute
Department of the Navy
Naval Base, Bldg. 1-H, Great Lakes, IL 60088
Contact: Ms. Judy Benny (312) 688-5647
EXPERTISE: The institute conducts research (development, test, evaluation) in dental and allied science, with particular emphasis on problems of dental and oral health in Navy and Marine Corps populations and on problems of fleet and field dentistry. Areas of research cover dental caries; periodontal disease; oral microbiology; oral surgery and physiology; equipment development and evaulation; and preventive dentistry.

0568 Naval Medical Data Services Center (NMDSC)
Department of the Navy
Code 04, Bldg 11, Room 44, Bethesda, MD 20814
Contact: Mr. F. Sandquist (301) 295-0561
EXPERTISE: Because of the need by the Navy of acquiring automated medical information systems, detailed experience has been gained for the justification, installation operation and evaluation of commercially available automated medical information systems throughout the world. Systems have included those for pharmacy, radiology, ECG analysis, cardiac cathetorization laboratories, hospital information systems, hypertension, diabetes managment, patient appointment and scheduling, patient administration, and logistics in Naval hospitals.

0569 Neuroepidemiology Program
National Institute of Neurological and Communicative Disorders and Stroke, National Institutes of Health,
Department of Health and Human Services
Federal Building, Room 804, 7550 Wisconsin Avenue,
Bethesda, MD 20205
Contact: Dr. Bruce Schoenberg (301) 496-1714
EXPERTISE: Epidemiologic investigation of neurologic disorders requires thorough knowledge of both clinical neurology and epidemiologic methods; unfortunately, only a few individuals in the United States have training in both disciplines. To foster studies in neuroepidemiology, NINCDS focuses on three areas--research, education, and consulta-

sessment from chemical toxicants in the industrial or general environment, and to conduct reseach in radiation pathology, especially in the area of high-dose tissue injury. REAC/TS is commited to be available and ready to assist U. S. government nuclear facilities and private nuclear power and nuclear fuel reprocessing plants in the event of nuclear emergencies. REAC/TS also maintains a registry of victims of radiation accidents. Presently the system contains data on more than 5,500 individuals involved in 488 different events.

0576 Radiobiology Laboratory
Department of Energy
University of Utah, Bldg. 351, Salt Lake City, UT 84112
Contact: Mr. McDonald E. Wrenn (901) 581-6600
EXPERTISE: The research goals of the laboratory include a general study of the toxicity of internally deposited bone-seeking, alpha particle emitting actinide elements in beagles and a determination of the 'natural' levels of these elements in humans and their environment. The primary biological effects from these elements are cancers of bone and liver. The goal of much of the research has been to gain an understanding of the biological mechanisms responsible for the retention of these elements by the skeleton and other organs and the pathological sequelae which result from this association. To reach these goals, research is conducted in the following areas: the metabolism and toxicity (carcinogenesis) of heavy radioactive elements in bone and liver; the macro- and micro-anatomical radiation dosimetry in bone; the use of the beagle as a model for radiation toxicity studies; the evaluation of the relative carcinogenicity of radium, plutonium and other radioactive elements in the beagle; the radiobiological dose-response relationships; the extrapolation of the dose-response relationships from the beagle and other species to man; and, finally, the assessment of the risk for man posed by internal contamination with these actinide elements. A thermoluminescent dosimetry and ceramic materials processing laboratoy is capable of making measurements of gamma dose to include quartz in brick, tiles, or fired ceramics at doses as low as 2 rads to study accident dosimetry, environmental exposures from nuclear weapons testing. A low level whole body counter is capable of measuring low levels of internally deposited gamma-emitting radionuclides in man. A dog kennel capable of handling 1300 beagles from a closed breeding colony is utilized to 60 percent of capacity. There are on-site veterinary, clinical histology and animal hospital facilities, as well as facilities to house several thousand rodents. A shielded facility permits preparation of high levels of alpha and beta emitting isotopes for injection in experimental animals. A low level radiochemical laboratory permits measurement of naturally-occurring alpha-emitting radionuclides in human tissues, primarily isotopes U, Pu, Po, Am and Th, to 10 fCi/sample, and for fissile nuclides to 0.1 fCi/sample.

0577 Radioimmunoassay Kits for Rat Androgen Binding Protein and Monkey Luteinizing Hormone
National Institute of Child Health and Human Development, National Institutes of Health, Department of Health and Human Services
Landow Building, Room 7A04, 7910 Woodmont Avenue, Bethesda, Md. 20014
Contact: Dr. D.J. Patavelli (301) 496-1661
SERVICES: Several studies suggest that androgen binding protein may be useful market for seminiferous tubule function under a variety of normal and pathological conditions. The fact that follicle-stimulating hormone and androgen requirements for the normal synthesis, secretion, and transport of androgen finding protein are similar to those necessary for the completion of spermatogenesis has provided a strong impetus for the study of this protein, yet it has not been feasible for many individual investigators studying male fertility to obtain radioimmunoassay kits for its quantification. Therefore, NICHD has provided support for the production of radioimmunoassay kits for the quantification of rat androgen binding protein. Upon application from qualified investigators in the field, these kits are available from the National Hormone and Pituitary Program for a nominal handling and shipping fee. Likewise, radioimmunoassay kits for monkey luteinizing hormone are also available. These kits contain purified cynomolgus luteinizing hormone for iodination, antiserum, and standard rhesus luteinizing hormone. Applications for these materials may be made to the National Hormone and Pituitary Program, 210 West Lafayette Street, Suite 201-9, Baltimore, MD. 21201.

0578 Radiopharmaceutical Development
Oak Ridge Associated Universities, Department of Energy Medical and Health Sciences Division. P.O. Box 117, Oak Ridge, TN 37831
Contact: Dr. R. L. Hayes (615) 576-3102
EXPERTISE: The radiopharmaceuticals development program aims at developing radiopharmaceuticals for use in the clinical investigation of disease. Early work led to the use of gallium-67 for imaging soft tissue tumors and abscesses. Current work involves the use of an ECAT scanner and carbon-11 cyclic amino acids for imaging tumors and other carbon-11 amino acids for imaging the brain and the pancreas. One of the significant contributions in the preparation of radiopharmaceuticals has been a modification of the Bucherer-Strecker amino acid synthesis. The standard technique requires hours or days to complete, but the ORAU modification requires only about 20 minutes because of the use of high temperature and high pressure. The faster time is essential because of the short half-life of carbon-11. More recently, the researchers succeeded in developing a technique for the preparative high-performance liquid chromatographic resolution of racemic mixtures of carbon-11-labeled amino acids. This is significant because it is the L-isomer that is necessary for physiological studies.

0579 Radiopharmaceutical Internal Dosimetry Information Center
Oak Ridge Associated Universities, Department of Energy Medical and Health Sciences Division., P. O. Box 117. Oak Ridge, TN 37831
Contact: Ms. Evelyn Watson (615) 576-3448
INFORMATION SERVICES: The purpose of the center is to calculate the radiation dose from administered radiopharmaceuticals and to collect, interpret, and correlate information about internal dosimetry of radioactive compounds. Because the radiation dose from an internal emitter depends on a variety of factors, such as the amount of nuclide administered, mode of decay, chemical and physical form, route of administration, and metabolic pathways, the center's staff must critically evaluate these data. The primary aim of the center is to improve radiation dose estimation through the development of new and better mathematical models, assumptions used for estimating the dose, and the refinement of radiation dose equations. The center also maintains a computer data bank of bibliographic references

0584 Research Materials and Assistance for Studies of Language Development in Children
National Institute of Child Health and Human Development, National Institutes of Health, Department of Health and Human Services
Landow Building, Room 7C03, 7910 Woodmont Avenue, Bethesda, MD 20014
Contact: Dr. James Kavanagh (301) 496-5097
EXPERTISE: Under contract with the National Institute of Child Health and Human Development, Hoskins Laboratories (New Haven, CT) provides expert assistance and specialized facilities are provided to research scientists at other institutions who are engaged in studies relevant to the understanding of the development of spoken language and reading in children. Types of assistance available from Hoskins Laboratories include: research materials such as stimulus tapes for a variety of experiments; specialized assistance to user groups from the professional and technical staff; and on-site education in speech research.

0585 Resources for Population Research
National Institute of Child Health and Human Development, National Institute of Health, Department of Health and Human Services
Landow Building, Room 7C25, 7910 Woodmont Avenue, Bethesda, MD 20014
Contact: Dr. V. Jeffrey Evans (301) 496-1174
EXPERTISE: The Social and Behavioral Sciences Branch supports studies on social, psychological, economic, and environmental factors governing population growth and the impact of population changes on individuals, families, and society. Technical assistance is available for creating specialized data resources for selected areas in population research such as fertility, mortality, and family/household structure.

Southern Forest Experiment Station, Forest Service, Department of Agriculture
See 0264

0586 Specialized Centers of Research on Adult Respiratory Failure
National Heart, Lung, and Blood Institute, National Institutes of Health, Department of Health and Human Services
Westwood Building, Room 6A16, 5333 Westbard Avenue, Bethesda, MD 20205
Contact: Dr. Suzanne J. Hurd (301) 496-7208
EXPERTISE: Specialized Centers of Research (SCOR's) on Adult Respiratory Failure focus resources, facilities, and manpower on research problems related to biochemical, immunologic, and physiologic mechanisms of acute lung injury and repair to improve diagnosis, management, and prevention of adult respiratory distress syndrome.

0587 Specialized Centers of Research on Arteriosclerosis
National Heart, Lung, and Blood Institute, National Institutes of Health, Department of Health and Human Services
Federal Building, Room 4C12, 7550 Wisconsin Avenue, Bethesda, MD 20205
Contact: Dr. Gardner C. McMillan (301) 496-1613
EXPERTISE: The centers focus resources, facilities, and manpower on basic and clinical research problems related to hyperlipidemia and vascular diseases, including animal and tissue studies and other basic laboratory investigations. The goal of activities conducted through the SCOR's is to expedite the development and application of new knowledge essential to improved diagnosis, treatment, and prevention of these disorders.

0588 Specialized Centers of Research on Chronic Airway Diseases
National Heart, Lung, and Blood Institute, National Institutes of Health, Department of Health and Human Services
Westwood Building, Room 6A16, 5333 Westbard Avenue, Bethesda, MD 20205
Contact: Dr. Suzanne J. Hurd (301) 496-7208
EXPERTISE: These centers focus resources, facilities, and manpower on basic and clinical research problems related to emphysema, chronic bronchitis, and asthma. The goal of activities is to expedite the development and application of new knowledge essential for improved diagnosis, treatment, and prevention of these diseases.

0589 Specialized Centers of Research on Fibrotic and Immunologic Interstitial Lung Diseases
National Heart, Lung, and Blood Institute, National Institutes of Health, Department of Health and Human Services
Westwood Building, Room 6A16, 5333 Westbard Avenue, Bethesda, MD 20205
Contact: Dr. Suzanne J. Hurd (301) 496-7208
EXPERTISE: These centers focus resources, facilities, and manpower on basic and clinical research problems related to hypersensitivity pneumonitis, pulmonary fibrosis, and noninfectious granulomatosis (especially sarcoidosis). The goal of activities is to expedite the development and application of new knowledge essential or improved diagnosis, treatment, and prevention of these diseases.

0590 Specialized Centers of Research on Hypertension
National Heart, Lung, and Blood Institute, National Institutes of Health, Department of Health and Human Services
Federal Building, Room 4C12, 7550 Wisconsin Avenue, Bethesda, MD 20205
Contact: Dr. Gardner C. McMillan (301) 496-1613
EXPERTISE: These specialized centers focus resources, facilities, and manpower on research problems related to the role of hormones, peptides, and other substances in blood pressure regulation; genetic and behavioral factors in essential hypertension; hypertension secondary to kidney disease, toxemia of pregnancy, or various endocrine disturbances; the role of the kidney and of fluid and electrolyte disturbances in essential and secondary hypertension; and the development of a primate animal model of essential hypertension. The goal of activities conducted through the SCOR's is to expedite the development and application of new knowledge essential for improved diagnosis, treatment, and prevention.

0591 Specialized Centers of Research on Ischemic Heart Disease
National Heart, Lung, and Blood Institute, National Institutes of Health, Deparment of Health and Human Services
Federal Building, Room 3C02, 7550 Wisconsin Avenue, Bethesda, MD 20205
Contact: Dr. Eugene R. Passamani (301) 496-5421
EXPERTISE: These Specialized Centers of Research (SCOR's) focus resources, facilities, and manpower on research related to myocardial infarction, angina pectoris,

support provides for clinical studies that share a common conceptual framework relative to the etiology, pathogenesis, diagnosis, and treatment of human visual disorders and that share common practical requirements, such as a unique cohort of patients and special facilities dedicated to clinical research.

0599 Walter Reed Army Institute of Research
Department of the Army
ATTN: SGRD-UWZ-I, Washington, DC 20307
Contact: Mr. Peyton R. Williams (202) 576-3814
EXPERTISE: The following topics comprise the major areas of research at the institute: virology, bacteriology, and nicketsiology of tropical diseases; parasite diseases such as schistosomiasis, leshmaniaisis, malaria; preventive medicine; monoclonal antibodies for vaccines and rapid identification and detection; serotyping of disease strains; microwave effects on biological systems; drug and vaccine development; human stress studies; effects of transient overpressure on respiratory systems; control of insects important as human disease vectors; laboratory animal care; and pathology research.

0600 Western Human Nutritional Research Center
Agricultural Research Service, Department of Agriculture
P.O. Box 29997, Presidio of San Francisco, San Francisco, CA 94129
Contact: Dr. James M. Iacono (415) 556-9699
EXPERTISE: The mission of this research center is to study human nutritional requirements and nutritional status, surveillance, intervention and monitoring. The Center serves to assist in establishing nutritional needs of the American population as well as to develop methods to monitor nutritional status and effectiveness of nutrition/food programs. This includes research that pertains to: nutritional requirement, nutritional status evaluation methodology, nutrient intake methodology, coordination of survey and nutrition status methodologies, methodologies to assess the impact of nutritional intervention programs and the conduct of field operations in nutrition status monitoring. The Center focuses on: identification of factors, forces, and trends resulting in malnutrition; development of reliable, efficient, and inexpensive methods for defining nutritional status; studies on human nutritional requirements; and development of nutritional criteria and methodologies to assist in the design and evaluation of action programs.

0601 Whole Body Prompt-Gamma Activation Facility
Brookhaven National Laboratory, Department of Energy
Upton, NJ 11973
Contact: Mr. S. H. Cohn (516) 282-3591
FACILITY: The facility is used to measure in vivo the total body content of nitrogen, hydrogen, and fat by measuring the induced activation using prompt-gamma neutron activation analysis. The technique uses two(6' x 6') NaI detectors and a scanning geometry. It is nonivasive and uses a dose within the range of routine diagnostic procedures.

0602 Whole-Body Gamma Spectrometer Facility
Brookhaven National Laboratory, Department of Energy
Upton, NY 11973
Contact: Dr. S. H. Cohn (516) 282-3591
FACILITY: This facility is used to measure the total body content of gamma ray emitting nuclides and the induced radioactivity produced by an in vivo neutron activation technique. The system includes 54 NaI detection and is computer controlled. Total body data for potassium, calcium, sodium, chlorine and phosphorous are obtained.

MINING & MINEROLOGY

Albany Research Center, Bureau of Mines, Department of the Interior
See 0455

Avondale Research Center, Bureau of Mines, Department of the Interior
See 0457

Coal Preparation and Characterization Facility, Ames Laboratory, Department of Energy
See 0296

Coal Preparation Program, Pittsburgh Energy Technology Center, Department of Energy
See 0297

0603 Coal Processing Component Facilities
Morgantown Energy Technology Center, Department of Energy
P.O. Box 880, Collins Ferry Road, Morgantown, WV 26505
Contact: Ms. Claire H. Sink (304) 291-4620
FACILITY: The experience, knowledge, and research facilities available are unsurpassed in the components field. Support provided by the center resulted in the evaluation of coal feeders and prototype lockhopper valves. A unique state-of-the-art valve testing facility, the materials testing facility (corrosion/erosion), and the fully integrated fixed-bed gasifier and cleanup train provides necessary support. Because many plant shutdowns have been caused by component failures, these activities are vital to the success of coal conversion processes.

0604 Denver Research Center
Bureau of Mines, Department of the Interior
U.S. Bureau of Mines, Bldg. 20, Denver Federal Center., Denver, CO 80225
Contact: Director (303) 234-3754
EXPERTISE: Instrumentation and methods for measuring exposure to radiation hazards in underground mining are being developed and tested. Fundamental studies are being made in the behavior of radioactive particulates in mine atmospheres and the transport of radon in host rock. Microseismic equipment is being used to monitor many potentially dangerous areas to determine whether its data can signal and warn of impending danger. The areas include rock bursts, slope failures, potential inundation hazards, abandoned workings, cased and uncased oil wells, and roof failure. Research is in various stages of completion involving systems for the reclamation of mined lands. An underground research facility was developed in the oil shale deposits of northwestern Colorado where research is underway to develop the geotechnical, hydrological, waste disposal, and health and safety data needed for environmentally safe oil shale mining.

0605 Eastern Low-Grade Oil Shales
Morgantown Energy Technology Center, Department of Energy
P.O. Box 880, Collins Ferry Road, Morgantown, WV 26505
Contact: Ms. Claire H. Sink (304) 291-4620
EXPERTISE: Research is being conducted to characterize oil shale physical and geochemical properties, to determine the total gas-in-place, and to identify methods to locate areas with high gas production potential. The results of these studies are integrated into production potential studies. These studies are extremely valuable to the oil shales

borehole probes with TV capability. Also studied are techniques for abating or controlling acid mine drainages and improving the environment in mined land areas.

0612 Reno Research Center
Bureau of Mines, Department of the Interior
U.S. Bureau of Mines, 1605 Evans Avenue, Reno, NV 89502
Contact: Director (702) 784-5391
EXPERTISE: Among the areas being investigated to improve tailings pond effectiveness are sealing techniques to minimize pond seepage, evaporation of liquid wastes, and activated carbon absorption of dissolved organics. A process has been developed to recover lead from galena by ferric chloride leaching of their concentrates, followed by the electrolysis of lead chloride in a fused-salt bath. Methods are being devised for economically recovering silver and gold from low-grade ore deposits that contain excessive amounts of clayey material. Techniques are also studied for developing and evaluating construction materials containing elemental sulfur such as sulfur-extended asphalt paving materials.

Rolla Research Center, Bureau of Mines, Department of the Interior
See 0481

0613 Salt Lake City Research Center
Bureau of Mines, Department of the Interior
U.S. Bureau of Mines, 1600 East 1st Street, Salt Lake City, UT 84112
Contact: Director (801) 524-5350
EXPERTISE: Research is conducted on removing SO2 from stack gases by the citrate process from nonferrous smelter and coal-fired powerplants. A water elutriation process was devised to recover mixed nonferrous metals from the nonmagnetic residues resulting from automobile shredding. Heavy media processing is being used to separate aluminum from the rest of the nonferrous metals recovered by water elutriation and to recover plastics and other combustibles from shredder residues for recycle. Application of hydrometallurgical techniques is studied for the recovery of cobalt, lithium, tungsten, uranium, and vanadium from ores and brines.

0614 Spokane Research Center
Bureau of Mines, Department of the Interior
U.S. Bureau of Mines, East 315 Montgomery Ave., Spokane, WA 99207
Contact: Director (509) 439-1610
EXPERTISE: Work is continuing on identifying and evaluating superior substitutes for coal mine roof support components such as crossbars, posts, and crib blocks. Tailings waste disposal practices are being investigated to produce an impervious base layer that would prevent ground-water seepage that could pollute the aquafers and surface waters. Grading equipment with various blade lengths and design has been developed by the Bureau for reclaiming strip-mined lands and recontouring spoil areas by restoring the land to its approximate original or more satisfactory contour. Another effort is protecting against radiation exposure.

Tar Sands Program, Morgantown Energy Technology Center, Department of Energy
See 0328

0615 Tuscaloosa Research Center
Bureau of Mines, Department of the Interior
U.S. Bureau of Mines, P.O. Box L, University, AL 35486
Contact: Director (205) 758-0491
EXPERTISE: Technology is being devised to reduce the adverse impact of waste clay slimes on the environment and to increase the reusable water available from these slimes. The main thrust of the ceramic research program is to conserve critical raw materials and energy by improving the performance of ceramic products for metallurgical applications. Beneficiation techniques are being devised for recovering or processing nonmetallics from complex or low-grade domestic resources.

0616 Twin Cities Research Center
Bureau of Mines, Department of the Interior
U.S. Bureau of Mines, 5629 Minnehaha Ave., South Minneapolis, MN 55417
Contact: Director (612) 725-4610
EXPERTISE: A cooperative research program is in progress to determine the feasibility of utilizing low Btu gas for high temperature induration of iron oxide pellets. Automatic fire protection systems for mobile mining equipment is being developed. Another area being studied is improved mine production blasting techniques for surface mining. The Bureau has developed several alternative technologies for processing oxidized taconite resources, including the selective flocculation/flotation process. In situ mining technology is also studied along with mechanical fragmentation of rock and coal.

0617 Unconventional Gas Recovery
Morgantown Energy Technology Center, Department of Energy
P.O. Box 880, Collins Ferry Road, Morgantown, WV 26505
Contact: Ms. Claire H. Sink (304) 291-4620
EXPERTISE: A unique team of geoscientists has been assembled who specialize in developing technologies to locate and recover natural gas from unconventional sources. Research in tight sandstones, Devonian-age shale, and coalbed methane has produced encouraging results. A new program to explore two exotic gases, methane hydrates and deep source gas, has also been started. Each of these vast, untapped unconventional gases represent potential cost-effective additions to the earth's recoverable energy resources.

0618 Underground Coal Gasification
Morgantown Energy Technology Center, Department of Energy
P.O. Box 880, Collins Ferry Road, Morgantown, WV 26505
Contact: Ms. Claire H. Sink (304) 291-4620
EXPERTISE: Research had developed unique capabilities in the field of underground coal gasification. Chemists and engineers experienced in all phases of surface coal gasification work with geoscientists to develop underground processes. Together, this team has made significant contributions to underground coal gasification technology.

University of North Dakota Energy Research Center, Department of Energy
See 0330

NUCLEAR TECHNOLOGY: Particle Research

0625 Bubble Chamber Facility
Fermilab, Department of Energy
N0 Beamline, Batavia, IL 60510
Contact: Dr. Wes Smart (312) 840-3355
FACILITY: The 15' chamber consists of a cryogenic bubble chamber within a 3T magnetic field, an External Muon Identifier (EMI) and an Internal Picket Fence (IPF). Sufficient volumes of bubble chamber grade hydrogen, deuterium and neon to fill the chamber are stored at Fermilab.

Center for Radiation Research, National Bureau of Standards, Department of Commerce
See 0738

0626 Gamma Ray Measurement Spectrometer
Idaho National Engineering Laboratory, Department of Energy
P. O. Box 1625, Idaho Falls, ID 83415
Contact: Mr. R. E. Tiller (208) 526-1439
FACILITY: Two Ge semiconductor detectors provide a capability for precise gamma-ray energy and emission-rate measurements. The efficiencies of these detectors have been calibrated for gamma-ray energies from 30 to 2800 keV. The estimated uncertainties in the intensity data for point sources varies from 2% below 85 keV to 0.5% from 400 to 1400 keV.

0627 Hybrid Bubble Chamber Facility
Stanford Linear Accelerator Center, Department of Energy
2575 Sand Hill Rd., Menlo Park, CA 94025
Contact: Dr. L. P. Keller (415) 854-3300
FACILITY: The facility offers a system of multiwire proportional chambers, Cerenkov and scintillation counters and an on-line computer which in 2-3 msec can make a decision whether to trigger the lights in the 40 inch hydrogen/deuterium bubble chamber.

0628 Iron-Free Magnetic Electron Spectrometer
Idaho National Engineering Laboratory, Department of Energy
P. O. Box 1625, Idaho Falls, ID 83415
Contact: Mr. R. E. Tiller (208) 526-1439
FACILITY: This is an electron spectrometer of the Chalk River design with an optic circle radius of 35 cm. It is capable of measuring electron and positron spectra up to 3.3 MeV with a resolution of from 1 to 0.01%. The spectrometer uses a computer to automatically operate and monitor the system. The instrument is housed in a specially constructed iron-free facility which has a heating/cooling system and coils to cancel the earth's magnetic field.

0629 Low Energy Multiply-Charged Ion Beam Program
Oak Ridge National Laboratory, Department of Energy
Bldg. 6003, Oak Ridge, TN 37830
Contact: Dr. R. A. Phaneuf (615) 574-4707
FACILITY: Principal use is for low energy atomic collisions of multicharged ions with gases and electrons. An intensive program of experimental collisions studies for magnetic fusion interests is ongoing but beam time can be, and has been, made available to users. Ion beams are extracted at energies from 1 to 20 keV times ion charge q. Most ions are available. Common gases are simplest but Al, Ti, Fe, Zr, and Ta beams have been employed. Currents vary from micro Amp (C(3+), N(4+), Ar(5+)) to nAmps (Ti(3+), O(6+), Ar(7+), Xe(10+)). A new ECR type source is under construction which will produce beams in a similar energy range but perhaps 100 times greater intensities or higher charges. High bay with easy access. One beam lime - 69 in. high. Several other low energy ion sources and appropriate pumps, detectors, and electronics are available in the single large experiment area.

0630 Meson, Neutrino, and Proton Experimental Areas
Fermilab, Department of Energy
Batavia, IL 60510
Contact: Dr. Roy Rubinstein (312) 840-4108
FACILITY: Individual beams available in this area are: a general purpose charged hadron beam; a charged hadron beam (diffracted prns); a natural beam; a charged hadron beam (with emphasis on e-) Mid-energy (<200 GeV) Test Beam; test beam of low energy charged particles; and a charged hadron beam. The neutrino area provides particle beams and research facilities for the 400 GeV program. The individual beams available in this area are: a Neutrino beam; a muon/hadron beam; a 30-in. Bubble Chamber Charged Hadron Beam; and a 15-ft Bubble Chamber Charged Hadron Beam; Calibration Beam for Lab C and Lab E. The proton area provides particle beams and research facilities currently available for the 400 GeV program at Fermilab. The beams available at this area are: a proton-east neutral beam (photons and neutrons); a proton-east electron beam for tagged photons; a proton-west charged hadron beam; and a proton-center charged hyperon beam or neutron/neutral hyperon beam.

0631 Multiparticle Spectrometer (MPS)
Fermilab, Department of Energy
M6-West Beamline, Batavia, IL 60510
Contact: Dr. Dan Green (312) 840-3104
FACILITY: The MPS is a spectrometer facility consisting of proportional wire chambers, spectrometer magnet, multicell Cerenkov counters, drift chambers, and calorimeters. To date five experiments have been run at the MPS, E-110, E-260, E-557, E-580, E-623.

0632 National Center for Small-Angle Scattering Research (NCSASR)
Oak Ridge National Laboratory, National Science Foundation, Department of Energy
Oak Ridge, TN 37830
Contact: Dr. W.C. Koehler (615) 574-5232
FACILITY: Two main instruments are available to users. These are the NSF-constructed 30-m small-angle neutron scattering facility (SANS) and the DOE-constructed 10-m small-angle x-ray scattering camera (SAXS). These instruments are intended to provide state-of-the-art capability for investigating structures of condensed matter on a global scale, e.g., from a few tens to several hundreds of angstroms. They are intended to serve the needs of scientists in the areas of biology, polymer science, chemistry, metallurgy and materials science, and solid state physics.

0633 National Nuclear Data Center
Brookhaven National Laboratory, Department of Energy
Upton, NY 11973
Contact: (516) 282-2103
INFORMATION SERVICES: Services are provided to the entire low energy nuclear science community. The services include information on neutron physics, charged-particle reactions, nuclear structure, and decay data. The Evaluated Nuclear Structure Data file (ENSDF) and the Nuclear Data Sheets(NDS) are prepared by the center. The Nuclear

ondary beams ranging from 400 MeV/c antiprotons and kaons to 30 GeV/c protons and is operated in either the slow extracted beam mode of 10 to the 13th protons extracted for 1.0 second every 2.5 seconds or the fast extracted beam where 10 to the 13th protons are extracted over 2.3 micro sec every 1.3 seconds. The Multiparticle Spectrometer Facility is the laboratory's major electronic particle detector facility which consists of a large aperture 700 ton C-magnet with a large assortment of drift chambers, proportional wire chambers, Cerenkov and scintillation counters, etc. The online data facility consists of a complex of KLIO and VAX processors to provide realtime collection and analysis of experimental data.

0641 Argonne Tandem/LINAC Accelerator Facility
Argonne National Laboratory, Department of Energy
9700 Cass Ave., Argonne, IL 60439
Contact: Dr. D. G. Kovar (312) 972-4031
FACILITY: The facility consists of three components, each with its own associated experimental areas. Common to all components is the Model FN Tandem Van De Graaff (9.0 million volt terminal potential), which has the capability of accelerating light and heavy ions. The second component is a prototype heavy ion superconducting linac with 20 million volt equivalent potential drop. The third component is the ATLAS superconducting linac. It will raise the accelerating power of the tandem-linac system for heavy ions to the equivalent of a 50 million volt (terminal) tandem. Heavy ion beams are used for studies of high-spin states, heavy ion induced resonances, fission and fusion reactions, quasi-eleastic and deep inelastic reactions, and mass spectrometry.

0642 Army Pulse Radiation Facility
Materiel Testing Directorate, Department of the Army
STEAP-MT-R, Aberdeen Proving Ground, MD 21005
Contact: Dr. H. P. Yockey (301) 278-4881
FACILITY: Neutron and gamma effects of nuclear weapons are simulated. The facility is unique in its capability of simulating an air burst as well as providing a large in-core irradiation cavity for high-level exposures. The reactor is highly mobile, both indoors and outdoors. On-site support includes data acquisition and handling, dosimetry, health physics, technical support, and normal laboratory services. Tests are performed in conjunction with blast, prompt gamma spike, low and high energy x-ray, and electromagnetic pulse effects. Test and research coordination and consultation is available in the areas of electronics, explosives, lasers, vehicle shielding and dosimetry. It is planned to augment the test capability of the reactor with the addition of a high energy pulse X-ray machine which can be operated separately or in combination with the reactor to provide a complete and unique initial nuclear radiation test environment.

0643 AURORA Radiation Facility
Harry Diamond Laboratories, Department of the Army
2800 Powder Mill Road, Adelphi, MD 20783
Contact: Dr. Forrest J. Agee (202) 394-2290
FACILITY: Laboratory radiation simulators are tools that can be effectively utilized in the development of radiation-hardened systems. Typical effects of interest are thermo-mechanical response, SGEMP, IEMP, and TREE. Material response studies can also be conducted using low-energy X-rays and high-energy electron beams. The facility offers a large-area electron beam of 8.5 MeV, a high-fluence electron beam of 8 MeV, and high intensity beamsstrahlung (8 MeV) with a dose maximum of 500 krad (si).

0644 Bevalac Accelerator
Lawrence Berkeley Laboratory, Department of Energy
University of California, Berkeley, CA 94720
Contact: Dr. Jose Alonso (415) 486-5575
FACILITY: The Bevalac is the combination of the Bevatron synchrotron and one of its injectors, the SuperHILAC, which effect acceleration of nuclei of elements from hydrogen through uranium to relativistic energies. It is operated as a national research facility for studies in nuclear and atomic physics, biophysics, nuclear chemistry, biomedicine, and astrophysics. Ions of hydrogen (1 AMU) through uranium (238 AMU) can be accelerated to energies of up to 960 MEV/AMU (uranium) or 4.9 GEV/AMU (hydrogen) for nuclear physics research work including peripheral and central collisions, production mechanisms of sub-nuclear particles, and creation of new forms of nuclear matter. One third of the Bevalac's research time is devoted to radiobiomedical research.

0645 BNL 60-inch Cyclotron
Brookhaven National Laboratory, Department of Energy
Upton, NY 11973
Contact: Dr. Alfred P. Wolf (516) 282-4301
FACILITY: The machine is capable of accelerating four particles: 10-36 MeV protons, 17-23 MeV deuterons, 34-46 MeV Alphas, and 30-64 MeV 3He.

0646 Brookhaven Medical Research Reactor
Brookhaven National Laboratory, Department of Energy
Upton, NY 11973
Contact: Dr. D. C. Rorer (516) 282-4056
FACILITY: This is a tank type, heterogeneous, light water moderated and cooled, graphite reflected, 3 MW reactor used to provide beams of thermal neutrons with low contamination from fast neutrons and gamma rays. In addition, several irradiation thimbles are available for irradiation of small samples in fluxes up to 4.5 x 10 to the 13th neutrons/sq cm -sec. The reactor has been used for activation analysis, X-ray radiography, neutron radiography, non-destructive materials testing, material defect analysis and radiation damage studies.

0647 Clinton P. Anderson Meson Physics Facility (LAMPF)
Los Alamos National Laboratory, Department of Energy
Los Alamos, NM 87545
Contact: Mr. James N. Bradbury (505) 667-5051
FACILITY: The LAMPF accelerator is a high-current, 800 million electron volt (MeV), proton linear accelerator about one-half mile in length. The primary proton beam intensity exceeds the sum of intensities of all other proton medium energy and high energy accelerators in the world. It is a source of up to 12 simultaneously operting secondary beams including neutrons, pions, muons, and neutrinos. Polarized and unpolarized beams of protons of variable energy are also available. Major, permanent experimental facilities include high resolution proton and (charged and neutral) pion spectrometers. In construction is a large NaI detector array to study rare decay modes of the muon, a time-projection chamber to study normal muon decays, experimental area building additions, and accelerator improvements. Other facilities include capability for isotope production and radiation effects studies.

0648 Cyclotron - 60 inch
Argonne National Laboratory, Department of Energy
9700 South Cass Ave., Argonne, IL 60439

metry measurements; isomer activation; electron channeling in solids; bremsstrahlung production studies; characteristic radiation production; nuclear activation; photofission experiments; radiation simulation measurements; radiation damage and failure studies.

Exotic Radioisotopes for Physical Science Research, Los Alamos National Laboratory, Department of Energy
See 0619

0656 Fermilab High Energy Accelerator
Fermilab, Department of Energy
Batavia, IL 60510
Contact: Dr. Rich Orr (312) 840-3245
FACILITY: The principal scientific instrument is a system of four accelerators working in sequence to accelerate protons. These protons are accelerated to an energy of 200-500 GeV and are available for experimental use.

0657 Filtered Neutron Beams
National Bureau of Standards, Department of Commerce
Washington, DC 20234
Contact: Dr. Charles D. Bowman (301) 921-2234
FACILITY: Nearly monoenergetic neutrons with energies above 100 keV can be readily produced with adequate yields in positive-ion accelerators, but there are no convenient accelerator sources of monoenergetic neutrons with energies below 100 keV. Much of the neutron dose, however, comes from neutrons in this energy range, and dosimetry development is severely hampered by the lack of test facilities. Thick scandium, iron, or silicon filters placed in a through tube of the NBS reactor result in monoenergetic neutron beams of 2 keV, 25 keV, or 144 keV, respectively. This facility functions as the point of reference for the development and maintenance of secondary source capabilities at satellite locations, as well as providing means for the evaluation and calibration of new types of dosimeters. The filtered beams will also be used for cross section measurements, and fission physics measurements, which require a high intensity, monoenergetic, 'clean', continuous neutron beam.

0658 Health Physics Research Reactor(HPRR)
Oak Ridge National Laboratory, Department of Energy
Oak Ridge, TN 37830
Contact: Dr. C.S. Sims (615) 574-5851
FACILITY: The HPRR is a small, unmoderated fast reactor which can be operated in the steady-state or pulse mode. The reactor core is a right circular cylinder (20-cm diameter and 23-cm height) containing enriched 235U fuel alloyed with molybdenum. During steady-state operation, power levels between 0.1 to 10,000 W can be maintained for time periods as long as several hours. The maximum allowed nominal yield during pulse operation is a peak power of about 50,000 megawatts and a pulse half-width of 60 micros. Neutron dose rates can be varied over 15 orders of magnitude depending on the location of the experiment relative to the core, the type of operation, and reactor power levels. The physical facilities can accomodate large or small scale experiments in such diverse areas as laser technology, materials testing, radiobiological research, and neutron dosimetry.

0659 Heavy Charged-Particle Treatment Facility
Lawrence Berkeley Laboratory, Department of Energy
University of California, Berkeley, CA 94720
Contact: Dr. Joseph R. Castro (415) 486-6325
FACILITY: The facility is used to benefit certain cancer patients who have been referred to LBL by individual physicians and groups of physicians. The medical staff at LBL reviews each case with the patient's physician to determine whether or not this type of radio-therapy could be of help to the patient. If the treatment seems to be appropriate, the therapy is planned and carried out by the specialized LBL medical staff. Both the 184-Inch Cyclotron and the Bevalac are used in these treatments.

0660 High Energy Particle Test Beams
Stanford Linear Accelerator Center, Department of Energy
2575 Sand Hill Rd., Menlo Park, Ca 94025
Contact: Dr. L. P. Keller (415) 854-3300
FACILITY: The center has several unique beams of high energy particles which are available to scientists from universities/industry throughout the U.S. and other countries. The high energy particles are used primarily to test apparatus such as hadron calorimeters, electromagnetic shower counters, drift chambers, etc. This facility has also produced particles for use in cosmic ray ballon experiments and other space applications.

0661 High Flux Beam Reactor
Brookhaven National Laboratory, Department of Energy
Upton, NY 11973
Contact: Dr. Roger Klaffky (516) 282-4974
FACILITY: The reactor operates at a power of 60 megawatts and provides an intense source of thermal neutrons. The HFBR was designed to provide particularly pure beams of thermal neutrons uncontaminated by fast neutrons and by gamma rays. A cold source (liquid hydrogen moderator) provides enhanced flux at long wavelengths. A polarized beam spectrometer, triple-axis spectrometers and small-angle scattering facilities are among the available instruments. Special equipment for experiments at high and low temperatures, high magnetic fields, and high pressure are also available. The emphasis of the research efforts at the HFBR has been on the study of fundamental problems in the fields of solid state and nuclear physics and in structural chemistry and biology.

0662 Holifield Heavy Ion Research Facility
Oak Ridge National Laboratory, Department of Energy
Oak Ridge, TN 37830
Contact: Dr. R. L. Robinson (615) 574-4113
FACILITY: The facility operates two accelerators: the new 25 MV tandem electrostatic accelerator and the Oak Ridge Isochronous Cyclotron. The two accelerators operate either independently or in combined mode with the cyclotron having been modified to serve as an energy booster for the tandem. The facility also boasts a number of unique state-of-the-art experimental devices and a powerful data acquisition computer system. This facility is operated to support the national program of accelerator based research with heavy ions. Among the major experimental devices available are the on-line electromagnetic isotope separator UNISOR, the spin-spectrometer, two magnetic spectrometers, two in-beam gamma-ray facilities, a time-of-flight facility, velocity filter, and two general purpose scattering chambers.

0663 Intense Pulsed Neutron Source (IPNS)
Argonne National Laboratory, Department of Energy
9700 South Cass Ave., Argonne, Il 60439
Contact: Dr. B. S. Brown (312) 972-6485

Contact: Dr. Klaus Berkner (415) 486-5502
FACILITY: In its work on neutral beam injectors, LBL has developed the positive ion sources and beam lines for the TFTR (120 kV) and Doublet III (80 kV) fusion experiments both of which require 0.5-sec pulses. The emphasis is now on longer pulse lengths, specifically an 80-kV, 40-A, 30-sec source for MFTF-B, and a 120-kV, 40-A, 30-sec source for the TFTR upgrade. This development of long-pulse sources requires advanced test facilities. This testing facility is capable of providing power, beam stops, and diagnostics for beams up to 120 kV, 65 A, 30 sec with a 10% duty cycle.

0671 Neutron Radiography Facility
Hanford Engineering Development Laboratory, Department of Energy
P. O. Box 1970, Richland, WA 99352
Contact: Mr. R. L. Tomlinson (509) 376-0452
FACILITY: Used primarily for neutron radiography of Fast Flux Test Facility fuel pins and test assemblies, the facility also affords excellent capabilities for nondestructive examination and neutron activation of a wide variety of materials. A 250-KW TRIGA research reactor is being used. Its thermal flux > 10 to the 13th n/sq cm/sec. In addition to the collimated thermal neutron beam, the TRIGA reactor has a rotary specimen rack surrounding the reactor core, and a loading tube with a pneumatic transfer system that allows rapid removal of short-lived radioisotopes from the reactor core.

Neutron Radiography Facility, National Bureau of Standards, Department of Commerce
See 0366

0672 Neutron Research Facility
Los Alamos National Laboratory, Department of Energy
Los Alamos, NM 87545
Contact: Dr. Paul W. Lisowski (505) 667-4746
FACILITY: A pulsed spallation neron source to study neutron interactions both in materials science and nuclear physics disciplines. A portion of the 800-MeV proton beam from the Clinton P. Anderson Meson Physics Facility is used to bombard a target and produce an intense white neutron source. By choosing different target and moderator configurations and by varying the proton pulse structure, the WNR can provide neutrons with energies spanning the range from a few MeV to several hundred MeV. The nuclear physics facilities presently consist of four flight paths for neutron time of flight (TOF) studies. These flight paths may have experiments located at distances from 5 to several hundred meters to optimize the experimental resolution and counting rate. The Proton Storage Ring facility is a superior source of epithermal neutrons compared to conventional research reactors.

0673 Neutron Scattering Facility
Oak Ridge National Laboratory, Department of Energy
Oak Ridge, TN 37830
Contact: Dr. H. A. Mook (615) 574-5242
FACILITY: The neutron scattering facilities at the High Flux Isotope Reactor (HFIR) are used for long-range basic research on the structure and dynamics of condensed matter. Active programs exist on the magnetic properties of matter, lattice dynamics, defect-phonon interactions, fluxoid lattices in superconductors, liquid structures, and crystal structures. The HFIR is a 100 MW, lightwater moderated reactor with an unsurpassed record of operating time (better than 90%). The central flux is 5 x 10 to the 15th neutrons/sq cm sec and the flux at the inner end of the beam tubes is slightly greater than 10 to the 15th neutrons/sq cm sec. A wide variety of neutron scattering instruments has been constructed. Three of these are unique within this country: the triple-axis polarized-beam spectrometer, the double crystal small-angle diffractometer, and the correlation chopper.

0674 Neutron Sources
Argonne National Laboratory, Department of Energy
9700 South Cass Avenue, Argonne, IL 60439
Contact: Dr. A. B. Smith (312) 972-6084
FACILITY: The principal use involves the determination of fast neutron cross sections and microscopic nuclear properties of fissile, fertile, structural and other materials requisite to economical and safe design of LMFBR systems. The FNG facility is located in a special purpose building adjacent to the ZPR-6 critical cell with provision for providing positive ion beams in the FNG target area for nuclear data studies and within the ZPR cell for studies of fast critical assemblies. Basic characteristics, capability and major components of the FNG facility are: A high-intensity tandem positive ion accelerator operating on the Dynamitron principle; Either protons or deuterons are accelerated to energies up to 8 MeV; Five neutron-producing targets are in routine operation; An extensive complement of digital computing equipment is employed in data acquistion and treatment and in experimental control.

0675 Nuclear Irradiation Facilities
National Bureau of Standards, Department of Commerce
Washington, DC 20234
Contact: Mr. Tawfik M. Raby (301) 921-2523
FACILITY: An extensive number of well-characterized irradiation facilities offer a wide range of neutron and/or gamma environments to levels exceeding 10 to the 14th neutrons per square centimeter per second. These include five distinct pneumatic facilities, eleven in-core vertical thimbles with inside diameters up to 3 1/2 inches, and seven vertical reflector thimbles with 4 1/2 inch openings. These facilities are used simultaneously and can accommodate tens of thousands of samples a year. Most common use is in neutron activation analysis for detection of trace elements in parts per million, billion, or trillion. Other uses include preparation of isotopes for tracer work, preparation of isotopes for medicine, production of gamma and positron sources, studies of radiation damage, and the characterization of standard reference materials.

0676 Omega West Reactor
Los Alamos National Laboratory, Department of Energy
Los Alamos, NM 87545
Contact: Mr. Merle E. Bunker (505) 667-4151
FACILITY: The SMW reactor provides high-intensity fluxes of thermal and epithermal neutrons and is used for isotope production, in-core irradiation of instrucmented capsules, neutron radiography, neutron-capture gamma-ray studies, cross-section measurements, and neutron-activation analysis measurements.

0677 Positive-Ion Van de Graaff Accelerator, 3 MeV
National Bureau of Standards, Department of Commerce
Washington, DC 20234
Contact: Dr. A. D. Carlson (301) 921-2677
FACILITY: The positive-ion 3 MeV Van de Graaff facility has been designed primarily for experiments involving keV and MeV energy neutrons. It includes a HVEC model KN-3000 Van de Graaff accelerator and two target rooms. The accelerator is capable of operation in dc mode as well as in

FACILITY: The 2 MeV Van de Graaff Accelerator is capable of accelerating electrons between 0.5 to 2.5 MeV energies exponentialy. The peak beam current is 250 uA and a typical electron fluence is 8 x 10 to the 12th sec. This accelerator has been used to simulate the Van Allen radiation to test solar cells and electronic components.

0687 Van de Graaff Facility (2.5 MeV)
Lawrence Berkeley Laboratory, Department of Energy
University of California, Berkeley, CA 94720
Contact: Dr. Joseph Jaklevic (415) 486-5647
FACILITY: This facility is available to outside users for applications that involve a variety of positive ions at accelerated energies from 300 kev. The machine is currently configured for acceleration of protons, alphas, and He ions, although other heavier gaseous sources can be accomodated for specific projects. A complete facility for Rutherford backscattering spectroscopy (RBS) is available for surface analysis and channeling studies. The system can be modified to perform proton-induced x-ray fluorescence analysis (PIXE),if necessary. Activities include the study of ion-implanted layers in semiconductor materials and the characterization of semiconductor surfaces under various fabrication processes.

Variable-Dose-Rate Irradiation Facility, Oak Ridge Associated Universities, Department of Energy
See 0209

0688 William H. Bates Linear Accelerator Facility
Department of Energy
P. O. Box 95, Middleton, MA 01949
Contact: Dr. W. Wade Sapp (617) 245-6600
FACILITY: This facility offers an experimental program in medium energy nuclear physics using the 400 million electron volt accelerator. This program emphasizes experimental investigations of: the electromagnetic properties of nuclei, the mechanisms by which mesons interact with nuclei, properties of nuclei which can be learned from meson and lepton probes, and the fundamental weak and strong interactions.

NUCLEAR TECHNOLOGY: Reactors

Mechanical Engineering Unit, Idaho National Engineering Laboratory, Department Engineering Unit, Idaho National Engineering Laboratory
See 0331

0689 Absorber and Ceramics Development
Hanford Engineering Development Laboratory, Department of Energy
P. O. Box 1970, Richland, WA 99352
Contact: Dr. E. T. Weber (509) 376-0077
FACILITY: The capability is offered for hot-pressing ceramic materials in moderate amounts and both preirradiation and postirradiation examination of ceramic pellets with moderate levels of radioactivity. Typically, boron carbide is evaluated in terms of irradiation effects on material properties, i.e., dimensions, specific heat, thermal conductivity, thermal expansion, etc. Ceramics for fusion reactor applications are evaluated in inert gas gloveboxes.

0690 Advanced Reactivity Measurement Facility (ARMF)
Idaho National Engineering Laboratory, Department of Energy
P.O. Box 1625, Idaho Falls, ID 83415
Contact: Mr. R.E. Tiller (208) 526-1439
FACILITY: The ARMF is a critical facility designed to do precise reactivity measurements. The core is 18 inches x 18 inches x 24 inches and composed of highly enriched uranium with aluminum clad fuel plates. It is located in a light water canal and cooled by natural convection. It is licensed to operate up to 10 kW thermal power. Test positions are available inside fuel assemblies and in water holes up to a maximum of 6 inches x 6 inches in cross-sectional areas.

0691 Advanced Test Reactor (ATR)
Idaho National Engineering Laboratory, Department of Energy
P.O. Box 1625, Idaho Falls, ID 83415
Contact: Mr. R.E. Tiller (208) 526-1439
FACILITY: The ATR is a highly-enriched, thermal pressurized water reactor rated at 250 MW. The clover-leaf design provides 'flux traps'. Facilities include nine pressurized water loops, two pneumatic transport capsule systems and a gamma irradiation dry tube. The loops are instrumented to assure accurate flow, temperature and pressure control and data acquisition. One loop includes a boration system capable of maintaining a wide range of desired boron concentrations. One loop is designed to operate at extremely high temperature and pressure (710F, 3800 psig). Two of the loops have 'cycler' capability, able to subject specimens to extremely fast transients while maintaining reactor power constraint.

0692 Coupled Fast Reactivity Measurement Facility (CFRMF)
Idaho National Engineering Laboratory, Department of Energy
P.O. Box 1625, Idaho Falls, ID 83415
Contact: Mr. R.E. Tiller (208) 526-1439
FACILITY: The CFRMF is a zoned-core low-power reactor. The central zone is made of highly depleted U-238. The neutron spectrum in the central zone is typical for a generic fast reactor and has been well characterized. The CFRMF is a benchmark neutron field for testing fast neutron cross-section data for dosimetry materials, fission product, and actinides. In addition irradiation positions are available in the outer thermal zone and a high-resolution neutron radiography facility is connected to the CFRMF. It is licensed to operate at 100 kW producing in-core flux levels up to 10 to the 12th n/sq cm sec.

0693 Decontamination Technology Development & Demonstration Fac.
Pacific Northwest Laboratory, Department of Energy
P. O. Box 999, Richland, WA 99352
Contact: Dr. R. A. Clark (509) 376-0174, or Dr. L. Schmid (509) 375-2559
FACILITY: Decontamination technologies are developed and demonstrated for special situations involving highly contaminated metal components using techniques of immersion electropolishing, in situ electropolishing, vibratory finishing, in addition to more conventional techniques. Techniques such as prepolishing are also available which can limit the amount of contamination components pick up and facilitate decontamination with conventional cleaning methods.

Electrical Engineering and Instrumentation Unit, Idaho National Engineering Laboratory, Department of Energy
See 0273

test assemblies containing irradiated fuel pins or structural material samples; chemical and radiochemical analysis of irradiated fuels, components, dosimeters and waste forms and shipping and receiving radioactive materials.

0701 Hot Cell Facilities
Idaho National Engineering Laboratory, Department of Energy
P.O. Box 1625, Idaho Falls, ID 83415
Contact: Mr. R.E. Tiller (208) 526-1439
FACILITY: Several large shielded hot cells are available with extensive capabilities for handling, testing, and examination of highly radioactive materials. Large Hot Shop permits work on large experiments, e.g. spent LWR fuel assemblies, large radioactive components. Other capabilities include remote machining, NDE, mechanical testing, gamma scanning, dimensioning, optical metallography, and scanning electron microscopy. Unique capabilities have been used by industry for characterization and failure analysis.

0702 Hot Fuel Examination Facility (HFEF) Complex
Argronne National Laboratory - West, Department of Energy
Idaho National Engineering Lab, P. O. Box 2528, Idaho Falls, ID 83401
Contact: Mr. J. P. Bacca (208) 526-7148
FACILITY: The complex comprises two adjacent hot-cell facilities. Each facility contains two heavily shielded hot cells, one with inert-gas atmosphere (argon gas), the other with air atmosphere. Each facility also includes unshielded repair areas, laboratories, equipment rooms, storage areas, and offices. HFEF/North provides highly reliable alpha-gamma containment and protection; it can accommodate casks weighing up to 50 tons and irradiated experiments up to 24 in. diameter and 30 ft long. HFEF/South provides complementary facilities and capabilities for handling smaller components and assembles that do not expose transuranic elements. The HFEF facilities offer a broad range of services for highly radioactive and contaminated nuclear fuel assemblies and reactor components. HFEF services include pretest and posttest handling and examination of irradiation experiments, Handling operations include remote assembly, disassembly, and reassembly of the irradiation experiments. Examinations include neutron radiography and tomography, precision gamma-scanning, profilometry and other dimensional measurements, weight determinations, photographic and visual observations, eddy-current nondestructive testing, gas sampling, and metallography (including optical and electron microscope examinations).

Hydraulic Test Facility(HTF), Energy Technology Engineering Center, Department of Energy
See 0357

Large Leak Test Rig (LLTR), Energy Technology Engineering Center, Department of Energy
See 0363

0703 Loss-of-Fluid Test (LOFT) Facility
Idaho National Engineering Laboratory, Department of Energy
P.O. Box 1625, Idaho Falls, ID 83415
Contact: Mr. R.E. Tiller (201) 526-1439
FACILITY: This is a 50 MW pressurized water reactor designed to simulate the major behavioral aspects of generic 3000MW(t) pressurized water reactors through carefully conducted thermal-hydraulic experiments. The experimental assembly is comprised of five major subsystems which have been instrumented such that important system variables can be measured and recorded during simulated accident or transient situations. The subsystems include: the reactor vessel, the intact loop, the broken loop, the blowdown suppression system, and the emergency core cooling system (ECCS). The LOFT reactor vessel simulates the reactor vessel of a commercial PWR. Experimentation in the LOFT Facility also provides excellent test conditions for the evaluation of instrumentation and material performance and survivability when operated in a typical PWR radiation environment.

0704 Materials Characterization Center
Pacific Northwest Laboratory, Department of Energy
P. O. Box 999, Richland, WA 99352
Contact: Mr. J. E. Mendel (509) 375-2905, or Dr. L. Schmid (509) 375-2559
EXPERTISE: The center assesses the performance of nuclear waste materials in candidate waste systems required for the delivery of qualified waste materials for all repository concepts under consideration. Certified analytical and testing methods and waste materials data are being provided for use in the evaluation, design, licensing, and safety analysis of waste treatment process and in the interim storage transportation and repository disposal of treated wastes. A set of shielded research quality analytical instruments are available for measurements on full-level short-cooled high-level waste materials to the same high degree of precision and accuracy previously only attainable on simulated nonradioactive waste materials. The instruments include a shielded X-ray diffraction (XRD) unit, an inductively coupled plasma emission spectrometer (ICP), and a scanning electron microscope (SEM).

Neutron Radiography Facility, Hanford Engineering Development Laboratory, Department of Energy
See 0671

0705 Nuclear Fuel Properties
Hanford Engineering Development Laboratory, Department of Energy
P. O. Box 1970, Richland, WA 99352
Contact: Dr. E. T. Weber (509) 376-0081
EXPERTISE: Specialized equipment and specimen preparation procedures and data analysis systems are dedicated to the development of fuel rod cladding mechanical properties. These possibilities exist for testing both irradiated and unirradiated fuel rod cladding pressures to 20,000 PSI and heating rates to 500C/s. The test results are used for design and safety analysis of reactor fuel systems under transient conditions. The properties of nuclear fuel materials can be determined to 3,000C. Properties include thermal diffusivity, oxygen potential, viscosity, hot pressing, sintering, creep. These measurements may be performed under both steady-state temperature and transient temperature conditions. The physical behavior of irradiated fuel can be observed by heating irradiated fuel samples in a hot cell. The macroscopic behavior of samples can be observed by real time radiography techniques and fission gas release rates are monitored. A number of specialized computer programs are available for complex analysis of fuel rod and core assembly performance under steady-state and transient conditions. These codes have been calibrated against a large data base of in- and out-of-reactor tests.

testing and calibration, as well as for heat transfer conditions. The system simulates typical conditions encountered in loss-of-coolant experiments (LOCE). The major Blowdown Loop Components include a pressure vessel, a test section, and a coolant injection system. Remotely controlled valves are installed in the system to allow flexibility in flow path selection. The Blowdown Loop operates at a steady-state pressure of 15.5 MPa and a temperature of 556K, and has a volume of 0.322 cu m pressure-vessel and has a quick opening blowdown valve (QOBV) that is capable of opening in 20 ms.

Thermal Transient Facility(TTF), Energy Technology Engineering Center, Department of Energy
See 0382

0713 Ultrasonic Fuel Scanner
Idaho National Engineering Laboratory, Department of Energy
P.O. Box 1625, Idaho Falls, ID 83415
Contact: Mr. R.E. Tiller (208) 526-1439
FACILITY: An ultrasonic scanning system has been developed for inspecting fuel plates for experimental nuclear reactors. The ultrasonic inspection is performed to ascertain whether the cladding over the fuel is of the proper thickness. Able to detect fuel particles as small as 0.002 inch, the scanning system is a one-of-a-kind in the industry. It employs two transducers which emit ultrasonic signals to collect some four million data points for each fuel plate inspected. For a single plate, this is accomplished in about five minutes. One of the unusual aspects of the scanner is the six-ton granite tank used to provide the extreme stability needed for the scanning mechanism.

OCEAN SCIENCES & TECHNOLOGY

Arctic and Offshore Technology Program, Morgantown Energy Technology Center, Department of Energy
See 0289

Assessment and Information Services Center, National Oceanic and Atmospheric Administration, Department of Commerce
See 0153

Atlantic Oceanographic and Meteorological Laboratory, National Oceanographic and Atmospheric Adminstration, Department of Commerce
See 0154

0714 Coastal Engineering Information Analysis Center (CEIAC)
Army Engineer Waterways Experiment Station, Department of the Army
P.O. Box 631, Vicksburg, MS 39180
Contact: Mr. Andre Szwalski (601) 634-2017
INFORMATION SERVICES: The center was established with the objectives of collecting, analyzing, and disseminating information on coastal engineering research and technology. It deals primarily with the following coastal engineering subjects: wave action in coastal waters, coastal processes, tides, surges, and long period waves, inlet and estuary dynamics, coastal works evaluation, functional and structural design of coastal works, coastal construction techniques, coastal environmental data collection, and coastal harbors and channels.

Coastal Engineering Research Center (CERC), Waterways Experiment Station, Department of the Army
See 0340

David Taylor Naval Ship Research and Development Center, Department of the Navy
See 0342

Environmental Research Laboratory (Gulf Breeze), Environmental Protection Agency
See 0396

Environmental Research Laboratory (Narragansett), Environmental Protection Agency
See 0397

Geophysical Fluid Dynamics Laboratory, National Oceanic and Atmospheric Administration, Department of Commerce
See 0162

Goddard Space Flight Center, National Aeronautics and Space Administration
See 0792

0715 Hydroacoustics Facility
Naval Weapons Support Center, Department of the Navy
Crane, IN 47522
Contact: Mr. Terry W. Weaver (812) 854-1162
FACILITIES: A complex of seven acoustic facilities and two static pressure facilities are involved in simulating ocean environments and evaluating acoustic receive and transmit characteristics and pressure effects. These facilities cover the range of pressure from atomspheric to 10,000 psi, temperature from 0C to 50C, and frequency from 10 Hz to 350 kHz.

0716 Hydrodynamic Facilities
David Taylor Naval Ship Research and Development Center, Department of the Navy
Bethesda, MD 20084
Contact: Dr. Basil V. Nakonechny (202) 227-1037
FACILITIES: A large complex of model basins and towing carriages are available which satisfy a wide variety of hydrodynamic requirements. The center has three variable pressure water tunnels, used primarily for propeller research. The tunnels are particularly for propeller research. The tunnels are particularly useful for studies in operating ranges where cavitation occurs. The Circulating Water Channel is used for studies on hulls and underwater bodies. The David Taylor Model Basin contains a deepwater basin; a shallow-water and turning basin; and a high-speed basin which runs parallel to the other two. Two of the basins have wavemakers. Head-on and following waves of uniform length and height can be produced in high speed and deep water basins. The equipment allows engineers to determine the seakeeping qualities and propulsion characteristics of models in waves. The Maneuvering and Seakeeping Basin is used for model tests concerned with loss of speed; improvement of seakeeping characteristics of surface ships, platforms and mooring systems; and predictions of ship motions in rough water. Information also may be obtained on the maneuverability and control of surface ships and submarines in smooth and rough water; and the performance of submarines running near the surface in waves.

Hydrostatic and Cyclic Pressure Tanks, David Taylor Naval Ship Research and Development Center, Department of the Navy
See 0360

emphasized technology improvement in specific issues peculiar to data buoys and the conversion of developments in other fields toward data buoy applications. Program scope includes component and subsystem development and testing and total system development, integration, and demonstration.

0723 NOAA Diving Program
National Oceanic and Atmospheric Administration, Department of Commerce
National Ocean Service, 6001 Executive Blvd., Rockville, MD 20852
Contact: Dr. J. Morgan Wells (301) 443-8007
EXPERTISE: The Program, administered by the National Ocean Service's Office of Marine Operations, primarily provides training to in-house personnel, but does provide training to other Federal, State, and local agencies on a space-available basis. The program provides scientists with diver training ranging from basic scuba and operational diving to specialized capabilities such as mixed gas diving and surface-supplied diving. The program also provides training to diving support personnel, including emergency medical technicians and recompression chamber operators. It plays a key role in a national program to provide physicians with training in diving and hyperbaric medicine and is researching the problems face by divers working in contaminated waters.

0724 NOAA Wave Propagation Laboratory
National Oceanographic and Atmospheric Administration, Department of Commerce
NOAA Environmental Research Laboratories, R E WP, 325 Broadway, Boulder, CO 80303
Contact: Dr. Gordon Little (303) 497-6261
EXPERTISE: Research is conducted to improve geophysical research and services, through the development and application of remote measurement systems. In general, the denser the observational data set in space and time, the more complete and accurate the research and services can be. Experience has shown that in situ measurement methods, which require that a sensor be located at each measurement location, are too expensive to be practical for anything but the largest scale phenomena. Therefore, the laboratory was established to explore the possibility that remote sensors might provide the several-orders-of-magnitude improvement in space/time density of observations required to predict or warn of events in all scales of atmospheric and oceanic phenomena, from micro and boundary layer to global scale. To achieve this goal it performs the following functions: theoretical and experimental studies of the interactions of acoustic and electromagnetic waves with the atmosphere or ocean, with particular reference to the use of such interactions for remote-sensing purposes; development and experimental evaluation of new geophysical remote-sensing concepts; application of the unique advantages of newly developed remote-sensing techniques to geophysical research; and improvement of the Nation's geophysical research, and operational forecasting and warning services, through transfer of the newly developed remote-sensing technology to others.

0725 Northwest Ocean Service Center
National Oceanic and Atmospheric Administration, Department of Commerce
National Ocean Service, 7600 Sand Point Way, NE, Bin C15700, Seattle, WA 98115
Contact: Capt. Phillip Johnson (206) 527-6725
EXPERTISE: This is a new facility that provides the general marine community in the Pacific Northwest with a single focal point for all NOAA marine products and services, including technology transfer, for the region. All NOAA components are represented at the center: the National Ocean Service, the National Weather Service, the National Marine Fisheries Service, the National Environmental Satellite, Data, and Information Service, and the Office of Oceanic and Atmospheric Research. The center is a place where members of the marine community can go to obtain detailed information about NOAA products and services, suggest new products and services, and recommend ways of improving existing NOAA products and services. The center has a marine forecast and warning unit that operates 24 hours a day and provides computer access to guidance products generated by the National Meteorological Center and the U.S. Navy's Fleet Numerical Oceanography Center. The center also provides access to NOAA scientist and technical reports, conducts inventory searches, offers advice on oceanic and atmospheric data management, provides regional climate information, and assists the private sector in developing, implementing, and evaluating regionally oriented oceanic and atmospheric research.

0726 NRL Scientific Communications Network (SCICOMNET)
Naval Research Laboratory, Department of the Navy
ORTA Code 1405, 4555 Overlook Ave., Washington, DC 20375
Contact: Mr. Richard Fulper (202) 767-3744
SERVICES: The Ocean Systems Applications Group maintains a Scientific Communications Network that provides a reliable communications system between the laboratory and ships at sea and other shore stations. The network consists of single sideband equipment which permits long range communication and monitoring during scientific operations at sea. A recent acquisition that has become a significant component of the network is a MARISAT system which employs satellites in synchronous orbit to relay telephone and teletype messages between the stations.

Ocean Systems Applications Group Chart Facility, Naval Research Laboratory, Department of the Navy
See 0447

Office of Charting and Geodetic Services, National Oceanic and Atmospheric Administration, Department of Commerce
See 0255

0727 Office of Oceanography and Marine Services
National Oceanic and Atmospheric Administration, Department of Commerce
National Ocean Service. 6001 Executive Blvd., Rockville, MD 20852
Contact: Dr. John G. Hayes (301) 443-8487
INFORMATION SERVICES: The office collects, analyzes, and disseminates a wide range of data and information that describe the physical properties of the oceans, U.S. coastal waters, estuarine waterways, and the Great Lakes. These data and information, in the form of observations, analyses, assessments, and predictions, are developed to describe the physical features of the natural environment and trends in environment processes due to human activities. It also coordinates ocean products and services available at the National Oceanic and Atmospheric Administration's Northwest Ocean Service Center in Seattle, Wash. Tide and cur-

and 27 kelvins on the NBS P2-20 scale. The instrument employes highly reproducible germarium resistance thermometers for indicating the constancy and reproducibility of temperatures. Isotherms of the speed of sound versus the pressure of 4He fas have indicated a reproducibility of data points that is within 2 millikelvins. The facility has operated at temperatures between 2.3 k and 27 K. A laser interferometer has been installed to permit the measurement of acoustical wavelengths. Auxiliary equipment permits the potentiometric measurement and calibration of the resistance of germanium resistance thermometers.

Aeronomy Laboratory, National Oceanographic and Atmospheric Administration, Department of Commerce
See 0150

0732 Analytical Chemistry Laboratory

Argonne National Laboratory, Department of Energy
9700 South Cass Avenue, Argonne, IL 60439
Contact: Mr. David W. Green (312) 972-4473
EXPERTISE: The laboratory handles a wide range of analytical problems, from very routine standard analyses to unique problems that require significant development of methods and techniques. The majority of the samples submitted are non-routine, one-of-a-kind samples for which standard analyses are unavailable. Many of the problems submitted involve standardization and calibration to ensure the accuracy required. A Chemical Analysis Group performs wet-chemical analyses and instrumental analyses, and does spectrochemical analyses, coal analyses, and sample preparation. The Instrumental Analysis Group uses nuclear decay counting techniques, performs mass spectrometric and gas chromatographic analyses of gases, analyzes solids with X-ray techniques, and does remote analysis of radioactive samples, dosimetry, neutron activation, inert gas fusion, and isotope analysis. The Organic Analysis Group uses a number of complementary techniques to separate and analyze complex organic mistures and compounds, including synthetic fuels, toxic substances, fossil fuel residues and emissions, pollutants, biologically active compounds, pesticides, and drugs.

0733 Automated Mass Spectrometer for Isotopic Nitrogen Analysis

Los Alamos National Laboratory, Department of Energy
Los Alamos, NM 87545
Contact: Mr. B. B. McInteer (505) 667-4761
FACILITY: Nitrogen isotopes are widely used for field studies in agricultural and other sciences to obtain balances of the nitrogen cycle. Previously the mass spectrometric analysis of the thousands of samples generated by these studies were performed using manual operations. A single instrument could handle about 2000 samples annually. In 1980 Los Alamos developed an automated mass spectrometer capable of analyzing 40,000 samples annually. During the test and demonstration period, the equipment has displayed high accuracy of analyses combined with a far smaller sample size requirement than previously. Analyses are performed in duplicate with about 150 seconds required for each aliquot. Samples are loaded into disposable trays with 96 sample wells and the machine is programmed to change trays automatically.

Biological-Materials Growth Center, Argonne National Laboratory, Department of Energy
See 0192

Biomass Gasification Process Research Units, Pacific Northwest Laboratory, Department of Energy
See 0290

0734 CAMECA Ion Microscope

Naval Research Laboratory, Department of the Navy
ORTA Code 1405, 4555 Overlook Ave., Washington, DC 20375
Contact: Mr. Richard Fulper (202) 767-3744
FACILITY: The CAMECA ion microscope employs an energetic (low KeV) primary ion beam (typically O2(+), Ar(+), O(-)) to bombard solid materials. Ion bombardment results in the sputter emission of atomic and polyatomic (molecular) species from the surface. A magnified ion image can be observed visually or recorded on electron sensitive film with a depth-of-field of 250 microns and spatial resolution of 1 micron. The ion microscope can also provide a 3-dimensional characterization of solids by depth-profile analysis where the ion intensity of up to 20 elements can be monitored with a computer as a function of sputter depth. The technique can detect all elements and isotopes in the periodic table, some having detection limits in the low parts-per-million range. Current basic research includes mechanistic studies to elucidate the ion formation/emission processes, the identification of molecular absorbates on particulate matter formed during combustion, and quantitative analysis of engineering and electronic materials including those materials formed or modified by ion implantation or chemical treatments.

0735 Center for Absolute Physical Quantities

National Bureau of Standards, Department of Commerce
Washington, DC 20234
Contact: Dr. Karl G. Kessler (301) 921-2001
EXPERTISE: The Center develops and maintains the scientific competence and laboratory facilities necessary to preseve and continue to refine the base physical quantities upon which the Nation's measurement system is constructed. It performs research, both experimental and theoretical, at the frontiers of physics in order to improve our measurement capability and our quantative understanding of basic physical processes that underlie measurement science. It also contributes to new determinations of the fundamental physical constants, extension and refinement of the electromagnetic scale and devises tests of basic symmetries and invariances; seeks to explore the outer conceptual limits of those measuremnts areas where scientific and technical opportunties arise. Efforts are maintained in serveral discipline areas including x-ray spectroscopy of atoms, molecules and simple solids, spectra of laboratory and astrophsical plasmas, laser physics and application of precision laser spectroscopy to the study of calculable spectra of basic scientific interest. Instrumentation is developed for precise electrical measurements directly referenced to the natinal standards; implements techniques for their use and puts them into practical applications. Evaluations and descriptions of temperature and pressure measurement processes. It develops and uses the competence necessary to implement a more accurate system for supplying the U.S. with a measurement base for the quantities length and mass. Research is carried out in areas of importance to the further fundamental improvement of time frequency standards and their applications. This research focuses on microwave and laser divices, atomic and molecular resonances, and the measurment of fundamental physical pheonomena

Combustion Research Facility, Sandia National Laboratories, Department of Energy
See 0223

Corrosion Research and Engineering Facility, Pacific Northwest Laboratory, Department of Energy
See 0460

0742 Cryogenic Dilution Refrigerator
Naval Research Laboratory, Department of the Navy
ORTA Code 1405, 4555 Overlook Ave., Washington, DC 20375
Contact: Mr. Richard Fulper (202) 767-3744
FACILITY: An operating dilution refrigerator is available for producing steady temperatures to 0.02K. The refrigerator is instrumented for making routine resistivity and ac or dc magnetization measurements. Magnetic fields to 2.5 Tesla are applied with a superconducting magnet. A diamond anvil pressure cell for pressure investigations and a SQUID magnetometer for experiments requiring ultra sensition detection can all be incorporated in the refrigerator. Recent experimental investigations have involved: superconducting granular NbN films where 2-dimensional phase transformations have been studied, and organic superconducting materials where critical magnetic field anisotropy has been studied.

0743 CWTX Superconducting Magnet Facility
Oak Ridge National Laboratory, Department of Energy
Bldg. 9204-1, Oak Ridge, TN 37830
Contact: Dr. W.A. Fietz (617) 574-1455
FACILITY: A new facility to provide a high steady-state field with large bore and radial access. The available field and space is 8 T in a 38-cm bore and 12 T in a 22-cm bore. A radial access of 66 mm is available for either field. A 30-kA, 20-V power supply is available for use with any sample to be tested and a 130-Watt (40 /h) refrigerator/liquifier is also available to supply the required liquid helium.

0744 Digital/Optical Image Processing Facility
Naval Research Laboratory, Department of the Navy
ORTA Code 1405, 4555 Overlook Ave., Washington, DC 20375
Contact: Mr. Richard Fulper (202) 767-3744
FACILITY: The facility was developed for the purpose of performing research in advance techniques aimed at providing improved detection and identification of objects imaged through a degrading machining, and for cyclic crack growth under controlled environmental conditions, both water environment and in vacuum.

Electro-Optical High Voltage Field Mapping Systems, National Bureau of Standards, Department of Commerce
See 0274

0745 Environmental Monitoring and Support Laboratory
Environmental Protection Agency
26 W. Saint Clair, Cincinnati, OH 45268
Contact: Mr. Morris Altschuler (202) 382-7667
EXPERTISE: Methods and manuals are provided for the sampling and analysis of physical, chemical, and biological substances present in water and wastes. Also provided are QC, PE, and repository samples for common inorganic and organice analysis to assist laboratories in their quality assurance program.

Environmental Monitoring Systems Laboratory, Environmental Protection Agency
See 0390

0746 ESCA-Auger Spectrometer
Idaho National Engineering Laboratory, Department of Energy
P.O. Box 1625, Idaho Falls, ID 83415
Contact: Mr. J. P. Hamric (208) 526-1395
FACILITY: The ESCA-Auger Spectrometer can be used to determine and characterize the elements and chemical composition present in the outer few layers of atoms on a material (0.5 - 2.5 nm). Fast, high sensitivity analysis of surface constituents can be prepared. This technique can provide accurate quantitative data as well as chemical bonding information. A scanning Auger Microscope also is available to provide significantly more detailed information on surface composition. This facility interfaces with a complete inorganic analytical laboratory.

0747 Facility for High-Resolution Spectroscopy
Argonne National Laboratory, Department of Energy
9700 South Cass Ave., Argonne, IL 60439
Contact: Dr. Jan P. Hessler (312) 972-3717
FACILITY: The three principal available instruments are: (a) a high-intensity source of tunable, coherent vacuum-ultraviolet radiation, having a resolving power of several million; (b) a five-meter vacuum spectrograph, capable of resolving powers of about one million, equipped with electronic detection and (c) a 30' Paschen-Runge spectrograph with resolving powers of up to 600,000. Typical experiments are (a) for the coherent vuv source: resolution of finer detail in absorption or fluorescence spectroscopy, lifetimes of excited states, Resonance Ionization Spectroscopy and selective molecular fragmentation; (b) and (c) for dispersive spectroscopy: diamagnetic spectroscopy of Rydberg states and survey spectroscopy for laser-based experiments.

Fluidized Bed Combustion Process Development Facility, Argonne National Laboratory, Department of Energy
See 0225

0748 Gasification and Pyrolysis Facility
Solar Energy Research Institute, Department of Energy
Golden, CO 80401
Contact: Mr. Thomas A. Milne (303) 231-1440
FACILITY: The gasification and pyrolysis facility consists presently of two units. A high bay engineering laboratory in the new Field Test Laboratory Building contains (1) a pressurized, 02 or air, one-ton/day downdraft gasifier for synthesis gas production with a variety of feedstocks; (2) a test bench, with associated analytical equipment, for characterizing small downdraft gasifiers; and (3) a one-ton/day entrained flow, ablative pyrolysis gasifier for optimization of olefins, aromatics, and other valuable intermediate pyrolysis products. The second unit is a unique mass spectrometer sampling system for the real time, direct observation of the molecular processes of pyrolysis of carbonaceous materials under realistic heating conditions and environments. At the present itme these systems are used for the study of biomass, peat, and MSW.

Heat and Mass Transfer Research Laboratory, Solar Energy Research Institute, Department of Energy
See 0306

0749 High Pressure Chemistry Laboratory
Northern Regional Research Center, Agricultural Research Service, Department of Agriculture
1815 N. University Street, Peoria, IL 61604
Contact: Dr. A.M. Cowan (309) 685-4011

Contact: Dr. N. A. Wogman (509) 376-3003, or Dr. L. Schmid (509) 375-2559
FACILITY: Radionuclide measurement instruments are available which provide the capability to instrumentally detect and measure radionuclides in complex mixtures and matrices without prior chemical separation. The systems use multiple detectors (generally NaI(T1), Ge(Li), or Intrinsic Germanium or an assortment of these) inside other detectors used as background-reducing shields and is further protected from background interferences by additional shields of borated paraffin and lead. The multiple detectors provide high selectivity through coincidence or anticoincidence operation. High sensitivity is obtained by low-background construction practices and the extensive shielding used. Multichannel analysers and dedicated computers provide immediate data evaluation and presentation. The systems are used on programs from the basic nuclear physics of neutrons to the measurement of ultra-low quantities of radionuclides in waste streams and the environment.

0757 Magnet Laboratory
Oak Ridge National Laboratory, Department of Energy
Bldg. 9201-2, Oak Ridge, TN 37830
Contact: Dr. J.W. Lue (615) 574-1475
FACILITY: The laboratory consists of two large water-cooled copper solenoids powered by MG sets. Steady-state magnet fields up to 8 T and 6 T are generated in usable bores of 15 cm and 28 cm, respectively. Dewars are available for insertion in the solenoids and liquid helium experiments can be performed in either an 8-T field, 12.7 bore or 6-T field, 28-cm bore. A 9-kA power supply is available for samples.

0758 Magnetic Field Facility
Naval Research Laboratory, Department of the Navy
ORTA Code 1405, 4555 Overlook Ave., Washington, DC 20375
Contact: Mr. Richard Fulper (202) 767-3744
FACILITY: Water-cooled and superconducting magnets capable of providing steady (or swept) magnetic fields up to about 19 T maximum are availalbe. A tunable laser is adjacent to the 2.5 inches water-cooled magnet. Current research includes new high Tc superconducting materials, Magneto-optics of semiconductors, NMR in boron-doped amorphous silicon, and new fundamental electrical resistance standard.

Materials Preparation Center, Ames Laboratory, Department of Energy
See 0451

0759 Micro Raman Spectrometer
Idaho National Engineering Laboratory, Department of Energy
P.O. Box 1625, Idaho Falls, ID 83415
Contact: Mr. R. E. Tiller (208) 526-1439
FACILITY: The Micro Raman Spectrometer applies the Raman effect to material investigation on a scale down to one micrometer. As little as a picogram of Raman active material can be identified. The system also has a sample chamber for macro Raman investigation and can be used for liquids, gases or solids encapsulated in salts.

Mineralogical Services, Minerals and Materials Research, Bureau of Mines, Bureau of Mines, Department of the Interior
See 0609

0760 Mobile Activation Facility (Cadmium)
Brookhaven National Laboratory, Department of Energy
Upton, NJ 11973
Contact: Mr. K. J. Ellis (516) 282-3574
FACILITY: The facility is used for the in vivo measurements of cadmium or mercury by the prompt-gamma-ray neutron activation technique. The system is built on a 34 ft. trailer unit which includes space for physical exams and biochemical analyses. The facility is designed for field studies at industrial plants or at environmentally polluted sites, i.e., waste dumps.

0761 Mobile Wind Acoustic Noise Characterization Laboratory
Solar Energy Research Institute, Department of Energy
Golden, CO 80401
Contact: Dr. Roland Hulstrom (303) 231-1220
FACILITY: The laboratory is designed for analysis and data reduction in connection with research and development programs on wind turbines. All data recorded on instrumentation tape for playback from the SERI Mobile Lab, NASA-Lewis Turbine Site tapes are brought here for detailed analysis. One of the major capabilities is the identification of the dominant physical mechanisms responsible for the observed characteristics of both the normally audible and low frequency regions of the radiated acoustic pressure spectrum. Another capability is the identification of the interaction between low-frequency acoustic radiation associated with the operation of large wind turbines and the structural, pneumatic, and acoustic resonances of the interiors of typical residential buildings.

0762 National Center for Electron Microscopy
Lawrence Berkeley Laboratory, Department of Energy
University of California, Berkeley, CA 94720
Contact: Ms. Madeline Moore (415) 486-5006
FACILITY: This is a user-oriented facility designed to make available a wide range of microstructural and microchemical characterization techniques for concentrated application to materials problems. A High-Voltage Electron Microscope (HVEM) is the most powerful and versatile such instrument in the United States. Capable of operation at a beam energy of 1.5 MeV, the HVEM's major advantage is that it can penetrate more deeply into materials than can other electron microscopes, providing images previously thought unattainable. The center has other equipment available such as a variable voltage 400 kV to 1 MeV atomic resolution microscope, two analytical transmission electron microscope instruments with both energy dispersive x-ray and electron energy loss spectrometers, and two experimental transmission electron microscopes for development work and design modification. Specimen preparation facilities include vacuum evaporation, sputtering, and ion-beam milling; an optical diffractometer; and a scannning microdensitometer.

National Center for the Thermodynamic Data of Minerals, U.S. Geological Survey, Department of the Interior
See 0245

0763 National Laser Users Facility
Laboratory for Laser Energetics, Department of Energy
University of Rochester, 250 East River Road, Rochester, NY 14623
Contact: Mr. Thomas C. Bristow (716) 275-2074
FACILITY: The facility is available for user experiments requiring ultrahigh temperatures, intense electric fields, or a

under the pulsing background field. Its essential part is a pulsed superconducting split coil. The inner and outer diameters of the coil are 45.1 cm and 88.3 cm, respectively, with an adjustable gap between the two halves of the coil. At a peak current of 11 kA, the coil will store an energy of 3.5 MJ and produce a magnetic field of 6.4 T. Using a 7-MW pulsed (2.9 MW rms) power supply, the PCTF coil will produce field change of 6T/s. With the addition of a solid state switch to the system, dB/dt values of up to 24T/s can be obtained. Pancake coils, wound with developmental cables, will be placed in the adjustable gap of the PCTF coil and be tested at up to 50 kA furnished by a separate power supply. The PCTF cryogenic facilities include a nonmetattic cryostat and a helium liquefier.

0769 Pulsed Photoelectron Spectroscopy
Naval Research Laboratory, Department of the Navy
ORTA Code 1405, 4555 Overlook Ave., Washington, DC 20375
Contact: Mr. Richard Fulper (202) 767-3744
FACILITY: Electronic states of highly excited surface and near-surface regions of solid materials are studied in this facility, which includes two laboratories housing pulsed lasers and ultrahigh vacuum systems for electron spectroscopy. The laboratory uses picosecond optical pulses to excite photoelectrons by resonance multiphoton processes. Excited states in compound semiconductors are presently being probed with 5-psec time resolution. Recent work has determined the electron temperature during laser annealing of silicon, and has yielded the first measurement of the work function of molten silicon.

Radiation Instrument Calibration, Los Alamos National Laboratory, Department of Energy
See 0680

0770 Radiological Test Facility
Army Electronic Proving Ground, Department of the Army
STEEP-MT-T, Ft. Huachuca, AZ 85613
Contact: Mr. Silvestri (602) 538-6417
FACILITY: Ionizing radiation instruments ranging from simple dosimeters to complex airborne systems can be tested. Tests may include accuracy, meter response time, detector saturation, energy dependence, and/or other electrical and physcial characteristics as required. Calibrated test sources at the facility include four large gamma sources (Co60 and Cs137), a 10 curie PuBe neutron source, a 400 KVCP X-ray system, plus a number of smaller alpha, beta, and gamma sources. A low-level dosrate system enables detection and measurement of radiation from eyepiece or lens systems from optical devices such as binoculars, telescopes, ortoscopes, or night viewing devices.

Radiopharmaceutical Development, Oak Ridge Associated Universities, Department of Energy
See 0578

Remote Radioactive Analytical Facility, Idaho National Engineering Laboratory, Department of Energy
See 0624

0771 Scanning Transmission Electron Microscope (STEM)
Naval Research Laboratory, Department of the Navy
ORTA Code 1405, 4555 Overlook Ave., Washington, DC 20375
Contact: Mr. Richard Fulper (202) 767-3744
FACILITY: STEAM is a modern 200 kV transmission electron microscope capable of a lattice resolution of 2 A and a point-to-point resolution of about 6 A. By the use of a scanning attachment the system can be converted to a scanning type microscope with an electron beam of 15 A. Two additional instruments analyze the x-ray generated by this beam and also the energy lost by the electrons as they pass through the specimen, resulting in a complete microchemical analysis with a spatial resolution as small as 100A. Recently the system has been used to study the nature of electron channelling in ordered solids.

0772 Scanning Transmission Electron Microscopy Facility
Brookhaven National Laboratory, Department of Energy
Upton, NY 11973
Contact: Dr. J.S. Wall (516) 282-3372
FACILITY: Research in this facility has included labeling of biological molecules with heavy atom cluster compounds and determination of molecular weight and mass distribution within single macromolecules and complexes. The electron microscope provides 2.5 A resolution on specimens held at -160C. STEM control and image recording are via on-line computer and a separate interactive computer is available for image analysis.

0773 SHARE Microanalysis Facility
Oak Ridge National Laboratory, Department of Energy
Bldg. 5500, Oak Ridge, TN 37830
Contact: Dr. E.A. Kenik (615) 574-5066
FACILITY: The microanalysis facilities for use in materials science have been made available for collaborative research by members of universities or industry. The facilites include state-of-the-art analytical transmission electron miscroscopy, high voltage electron miscroscopy, surface analysis, and nuclear microanalysis. The electron microscopy capabilities include high resolution, high voltage, and analytical (energy dispersive X-ray spectroscopy and electron energy loss spectroscopy). Surface analysis facilities include four Auger electron spectroscopy (AES) systems; ion backscattering and nuclear reaction techniques using the 0.4 and 5.0 MV Van de Graaff accelerators in the Metals and Ceramics Division.

0774 Solar Furnace
Army Materials Test and Evaluation Command, Department of the Army
STEWS-TE, White Sands Missle Range, NM 88002
Contact: (505) 678-3038
FACILITY: The furnace provides a concentrated solar energy source for energy and materials testing. This is the only known facility of its type in the United States. The power available ranges from 0 to 40 kilowatts in a 4 to 8 inch diameter circle. Modifications made to the facility include capability to automatically track the sun. A three axis sample position table is available. The facility consists of four main components: the heliostat, the attenuator, the concentrator, and the test and control chamber. The heliostat consists of 356 mirrors, each 2 feet by 2 feet, mounted on moveable steel frame 40 feet by 36 feet. The concentrator consists of 180 spherical mirrors, each 2 feet by 2 feet, mounted on a fixed frame 30 feet by 30 feet located 96 feet from the heliostat. Each mirror comprising the concentrator is individually focused to concentrate the solar enegy at the focal plane located inside the test and control chamber.

Graaff-ESR spectrometer is used to study radiation produced intermediates. The combination of the Van de Graaff with the ESR spectrometer allows the ESR spectra of radiation produced transients to be recorded during electron beam irradiation. Spectra of many hydrocarbon and other organic radicals have been reported.

Whole Body Prompt-Gamma Activation Facility,
Brookhaven National Laboratory, Department of Energy
See 0601

0780 X-Ray Diffraction Laboratory
Ames Laboratory, Department of Energy
Iowa State University, Ames, IA 50011
Contact: Dr. R.A. Jacobson (515) 294-1144
FACILITY: The laboratory includes three computer-controlled four-circle single crystal diffractometers, two computer-controlled diffractometers for powder or noncrystalline investigations, an EXAFS spectrometer which is coupled to an Elliott high-intensity rotating anode generator, a microdiffractometer and a variety of film equipment.

RESEARCH CENTERS: Miscellaneous

0781 Aero-Mechanical Engineering Laboratory
Army Natick Research and Development Laboratories, Department of the Army
Natick, MA 01760
Contact: Dr. Decareau (617) 651-5188
EXPERTISE: The Laboratory has the responsibility to improve the Army's capabilities in the air delivery of personnel and supplies, to provide temporary shelters for protecting equipment, supplies, and military personnel, and to design and develop organiational equipment that will sustain military personnel in hostile and harsh environments. In addition to its product branches, the laboratory has a shelter prototype shop, a parachute prototype shop and an experimental analysis division which provide the capability to design, fabricate and conduct laboratory testing of prototype components/systems. End items developed encompass an extremely broad spectum including heaters, field hygiene, equipment, field clothing and shoe repair shops, printing plants, air supported and frame supported shelters, rigid wall shelters, survival vests, personnel and cargo parachutes, harnesses, airdrop components and sysstems for delivering vehicles and weapons systems.

0782 Air Force Engineering and Services Laboratory
Air Force Engineering and Services Center, Department of the Air Force
AFESC RDXX, Tyndall AFB, FL 32403
Contact: Capt. Norman D. Fleming (904) 293-6493
EXPERTISE: The laboratory is the lead agency for research, development, test and evaluation in the areas of civil and environmental engineering. Research programs are on going in pollution control, environmental chemistry, advanced pollutant monitoring technology, and environmental assessment methodology. Major emphasis is given to exploratory development of new concepts to eliminate or substantiallyreduce environmental consequences of future Air Force systems. Other areas of study include rapid runway repair, contingency launch and recovery surfaces, roughness of aircraft operational surfaces, aircraft shelters, tactical shelters, aircraft pavements, geotechnical engineering, foundation engineering, site selection, alternate energy sources, aircraft fire/crash rescue equipment, and other airbase civil engineering support facilities and equipment.

0783 Air Force Human Resources Laboratory (AFHRL)
Department of the Air Force
Brooks Air Force Base, TX 78235
Contact: Dr. Joe Hazel (512) 536-3426
EXPERTISE: The laboratory is responsible for planning and coordinating research and development in the areas of personnel management, weapons systems logistics, flight simulation, and technical training. Some of the efforts involve the development of the comprehensive occupational data analysis program; advanced instructional systems (computer-based instruction); assessment of job requirements (aptitude/strength and stamina); flight simulation - pilot training; and computer image generation.

0784 Ames Laboratory
Department of Energy
Office and Lab. Bldg. Room 119, Iowa State University, Ames, IA 50011
Contact: Mr. Daniel E. Williams (515) 294-2635
EXPERTISE: The laboratory conducts basic research in materials, chemical, and environmental sciences relying upon existing capabilities for preparing high purity metals, alloys, compounds and single crystals, and conducts materials related research and development in areas such as microelectronics and nondestructive evaluation. Unique and vigorous capabilities are also maintained in high energy physics, nuclear physics, applied mathematics, engineering sciences, and coal preparation science.

0785 Ames Research Center
National Aeronautics and Space Administration
NANSA, Moffett Field, CA 94034
Contact: Mr. Stan Miller (415) 965-6471
EXPERTISE: The science of fluid mechanics is an important area of research at Ames, research aimed at analyzing and predicting the three-dimensional flow of gases around complex vehicles such as aircraft and spacecraft. The many areas of research include the study of man-machine campatibility to determine how men and women can successfully operate complex machines in stressful environments. Other research includes the study of air transportation systems, the use of airplanes as scientific research platforms, astrophysics, planetary atmospheres, and the origin and evolution of life in the Universe. An important effort at Ames is to apply this new technology to the public sector-particularly the use of space-age information systems to develop ways to solve Earth resources problems, to provide information for agricultural and irrigation planning, and to enhance public safety, particularly in air transportation. Research in aeronautical life sciences seeks to identify and resolve human factors problems in the aeronautical environment, and to develop and validate effective flight simulation techniques for research and training purposes. Areas of study include the interaction among aircraft crew members, between the crew and air-traffic controllers, and between the crew and aircraft's instruments and control system. The primary concern of life sciences research is to understand the effects of spaceflight on humans. These effects include space sickness, fluid loss, decalcification of bones, deconditioning of the cardiovascular system, and the possible effects of cosmic radiation on biological structures. The goal is to understand more fully the mechanisms associated with these changes and to develop protective and preservative procedures and techniques in defense of these and other potential hazards associated with manned spaceflight. At Ames, several unique research

EXPERTISE: The center is heavily involved in aerospace related technology such as propulsion systems, cryogenics, materials and processes, non-destructive testing, structures, systems analysis and dynamics and associated testing. Other areas of research include: atmospheric sciences, magnetospheric physics, solar physics, gravitational physics, astronomy, materials processing in space, large space systems, propulsion technology, materials and processes, electrical electronic systems, and data bases design criteria.

0792 Goddard Space Flight Center
National Aeronautics and Space Administration
Code 702, Greenbelt, MD 20771
Contact: Mr. Donald S. Friedman (301) 344-6242
EXPERTISE: Research is conducted on space/earth science applications. Atmospheric science activities are directed toward the use of space technology in advancing the understanding of the atmosphere, earth and planets, applying that knowledge to the solution of societal problems in the areas of weather, climate, and environmental quality. An oceanic processes program involves the study of physical oceanography, ocean circulation, air-sea interaction, coastal oceanography, marine resources/ocean color, and cryospheric processes, all of which affect such areas as ocean-going shipping, coastal population centers, fisheries, weather, and climate. Field, laboratory, and theoretical investigations are conducted using data acquired from sensors aboard satellites and aircraft. This research focuses on: hydrology, agriculture, land use and forestry, and fundamental studies of radiative transfer of natural and man-made land cover through the atmosphere. Goals of geology/geophysics activities are to develop understanding of the models and mechanisms of crustal motion, understanding of earthquake mechanisms, models of seismically active fault regions and related earth motions, improved models of the global gravity and geomagnetic fields, methods for the use of remote sensing for geobotanical exploration for minerals and petroleum deposits.

0793 Hanford Engineering Development Laboratory
Department of Energy
P. O. Box 1970, Richland, WA 99352
Contact: Dr. Fred J. Leitz (509) 376-3110
EXPERTISE: General areas of research include the following: Electrical and mechanical design and construction is carried out for devices required to perform unique functions especially to operate in hostile environments, such as elevated temperatures, in liquid metals, and in radiation fields; computer codes are developed and applied in areas of reactor safety, decay heat, cross section sensitivity, nuclear activation and transmutation, neutron source strengths and uncertainty analyses; A wide variety of metallurgical tests including optical and electron microscopy, mechanical property testing (tensile, creep, fracture) are conducted; Special competence is available in stainless steels, tribological materials, neutron irradiation effects, microstructural and microchemical analyses, high temperature creep and fracture properties; Dosimeter packages are designed dosimetry standards and services are available for breeder, light water reactor, and fusion programs; identification is conducted of inorganic materials and measurement of chemical isotopic compositions by classical, instrumental and radiometric methods; and large and small scale hydraulic and mechanical tests are performed on structures.

0794 Jet Propulsion Laboratory
National Aeronautics and Space Administration
4800 Oak Grove Drive -180-801, Pasadena, CA 91109
Contact: Mr. Aubrey D. Smith (213) 354-8300
EXPERTISE: This large multidisciplinary laboratory is the project leader for a number of space flight projects. It is also directly involved in the design and development of scientific instruments to be used in these projects. However, much of its research involves a variety of areas. These include the design and operation of science data analysis facilities, optical and infrared detector design for satellite telescopes, planetary chemistry, research, communication network design, radio astronomy research and observations, earthquake mechanisms research, geodesy, oceanographic and climatic modeling, photvoltaic research, solar power production techniques, electric and hybrid vehicle research, integrated circuit design and fabrication, and medical imaging techniques using ultrasound, synthetic aperture radar research, and containerless processing.

0795 John F. Kennedy Space Administration
National Aeronautics and Space Administration
Mail Code PT-TPO, Kennedy Space Center, FL 32899
Contact: Mr. Reed Barnett (305) 867-3017
EXPERTISE: Research is conducted on: aerodynamic/inertial/ballistic technology for devices and system operation; navigation and flight control integration; research and instrumentation expertise in atmospheric gases as applied to ionization absorption and instrumentation anomalies; meteorology; man-machine integration and operation; bionics and artificial intelligence; design, installation, test, maintenance of space and terrestrial equipment and supporting ground tracking radar; microwave RF and carrier bay relay systems: mechanical, electronic, printed, chemical, alphanumeric, plotting, static and dynamic displays design, operation maintenance; image enhancement techniques and analysis; radar and laser instrumentation and systems; radio frequency detection; Design, innovative, fabricate antenna devices and systems; circuit design; and navigation, guidance, and control.

0796 Langley Research Center
National Aeronautics and Space Administration
Mail Stop 139A, Hampton, VA 23665
Contact: Mr. John Samos (804) 865-3281
EXPERTISE: The role of the center is to engage in the basic and applied research necessary for the advancement of aeronautics and space flight, to generate new and advanced concepts for the accomplishment of related goals, and to provided research advice, technological support, and assistance to other sources. Areas of research include: fundamental and applied research in aerothermodynamics, fluid mechanics, propulsion aerodynamics, performance, stability and control, stall/spin, airfoil development, STOL/VTOL, in all flight regimes; configuration development and test of transonic and supersonic decelerators; digital flight controls; active controls technology; aeronomy; dynamic meteorology; application of aerospace instrumentation and materials to biomedicine and bioengineering; basic and synthetic chemistry; analysis, design, and synthesis of manual and automatic stability and control systems; image restoration and enhancement; multispectral image data analysis and spectral reflectance estimation; infrared and ultraviolet detection; tracking transponders; experimental avionics systems; command and power systems and components; advanced solid state electronic device and sensor material

technical proof of measurement uncertainty; and There must be some continuing redundancy in the system so that one is able to sample the quality of measurements being made. This redundancy should be truly indicative of system performance. If a test item is used for routine checking, it should have the characteristics of the regular workload and should be run at intervals sufficiently large to permit a full range of the factors which cause random variations. NBS provides a service by which the offset of one's measurement process relative to the national reference unit can be determined. Usually this involves on-site measurements of an NBS transport standard or suitable artifact so that all elements of the users measurement process are involved.

0801 Naval Civil Engineering Laboratory
Department of the Navy
L03c, Port Hueneme, CA 93043
Contact: Mr. P. E. Tafoya (805) 982-4070
EXPERTISE: The laboratory conducts research in the following areas: engineering (civil, mechanical, electrical, earthquake); experimental stress analysis; explosive effects on structures; structural design and analysis; corrosion control; roof systems; coating systems; concrete; foundations-soil mechanics; pavements; waterfront facilities; solid waste management; water pollution control; air pollution control; amphibious operations; pontoonery; thermal power systems; combustion and incineration; HVAC; electric power conditioning; illumination technology; solar energy technology; wind energy technology; physical security; port systems; expedient construction; wave and current forces; cable mechanics and dynamics; seafloor soil mechanics; anchor/moorings; wave attenuation; undersea energy/power systems; implantment of ocean structures; and diver construction, tools and equipment.

0802 Naval Weapons Support Center
Department of the Navy
Crane, IN 47522
Contact: Mr. Terry W. Weaver (812) 854-1162
EXPERTISE: The center is involved in a wide variety of research and development activities. The research areas include electronic circuits and systems, electronic quality assurance, microwave tube design, corrosion from salt water and weather effects, pyrotechnic chemistry, and testing of primary and secondary batteries.

0803 Navy Personnel Research and Development Center
Department of the Navy
San Diego, CA 92152
Contact: Mr. Hal H. Rosen (619) 225-7450
EXPERTISE: Research and development program is directed toward improving the management, administration, selection, classification, training, performance, and retention of Navy personnel. Success in these efforts will improve manpower management, advance personnel administration, reduce manpower requirements and training costs, increase personnel competence, and promote improvements in the Navy's organization, environment and operational proficiency. To this end, center's research and development program addresses seven more program areas: management systems, personnel and occupational measurement, career development and retention, motivation and productivity, instructional technology, training systems, and command and support systems.

0804 Science and Advanced Technology Laboratory
Army Natick Research and Development Laboratories, Department of the Army
Natrick, MA 01760
Contact: Dr. Decareau (617) 651-5188
EXPERTISE: The laboratory was established to plan, direct and conduct basic and applied research in the behavioral, biological, physical and engineering sciences to generate required military solutions and to seek long term military opportunities in support of all mission assigned commodities and systems dedicated to the survival, sustenance and support of the individual soldier under the hazardous and stressful conditions of the integrated battlefield of the future. Its objectives are: In the behavioral fields, to ensure maximum enhancement of soldier's morale and combat effectiveness through high acceptability of and optimum compatability with all designed products, equipment and systems. In the biological fields, to assure the microbiological safety and/or stability of military subsistence, water and human waste; to protect military materials and material from microbial damage and provide methods, materials, and concepts for vulnerability assessment and safeguarding of all combat feeding, clothing and sheltering systems against agents. In the physical engineering fields, to develop measures for extending and estimating shelf life of operational rations; provide the scientific basis for advanced nutritional sustaining modules under encapsulated an/or isolated conditions, as well as fibers, fabrics, films and other polyner forms for protection against directed energy and other hazards on the integrated battlefield; to advance instrumentation and techniques to provide the analytical capability and support required for determining and predicting characteristics and of complex military unique materials and subsistence, and to advance the technology for microclimate conditioning of the individual protective systems under extreme ambient temperatures and/or encapsulated states.

0805 Weights and Measures Program
National Bureau of Standards, Department of Commerce
Physics A363, Wahington, DC 20234
Contact: Mr. Albert D. Tholen (301) 921-2401
SERVICES: The office can provide consultation on: the National Conference on Weights and Measures programs and policy; State and local weights and measures laws and regulations; technical and legal requirements for commercial weighing and measuring devices (scales, liquid or gas measuring equipment, etc.); State and Federal requirements for consumer and nonconsumer packaged commodities; and services available from State and measures laboratories. In addition, the office will evaluate prototype commercial measuring devices against criteria established under the National Type Evaluation Program of the National Conference on Weights and Measures (NCWM).

TRANSPORTATION

Alternative Fuels Data Bank, National Institute for Petroleum and Energy Research, Department of Energy
See 0288

Aviation Toxicology Laboratory, Department of Transportation
See 0502

optimal ship routing, maneuverability and control analysis, and operational decision making leading to requirements and criteria for training and certification of the ship's officer. Related work allows a better understanding of the ocean wave environment and its prediction. The center offers government and industry and opportunity to carry out special investigations using both the center's and the Academy's resources as well. A special study center is maintained housing collection of reports and papers on research topics of importance to the Center's activities and the industry. The Center is also the custodian of the data gathered during the historic voyages of the SS MANHATTAN into and through the Northwest Passage. Available under license to United States corporations, the data are of great value to designers of arctic marine systems.

Office of Charting and Geodetic Services, National Oceanic and Atmospheric Administration, Department of Commerce
See 0255

Pavements and Soil Trafficability Information Analysis Center., Army Engineer Waterways Experiment Station, Department of the Army
See 0369

0812 Protection and Survival Laboratory
Department of Transportation
FAA Aeronautical Center, P.O. Box 25082, Oklahoma City, OK 73125
Contact: Mr. Richard F. Chandler (405) 686-4851
EXPERTISE: Research is conducted which will reduce injuries and loss of life resulting from civil aircraft emergencies. Units in this laboratory conduct research in the biomedical aspects of smoke and fire protection, aircraft evacuations, oxygen systems, individual and multiple occupancy flotation systems, seating, restraint and aircraft interior crash protection systems, and physical anthropology as applied to aircraft safety.

Road Load Simulator, Argonne National Laboratory, Department of Energy
See 0371

0813 Transportation Test Center
Department of Transportation
American Association of Railroads, P.O. Box 11130, Pueblo, CO 81001
Contact: Mr. J. R. Lundgren (303) 545-5660
FACILITY: The test center operated by Association of American Railroads is equipped for full range of railroad tests and many types of tests for nonrailroad companies. Offers commercial test services, isolation, instrumentation, and measurement capabilities.

0814 U.S. Merchant Marine Academy Facilities
National Maritime Research Center, Maritime Administration, Department of Transportation
Kings Point, NY 11024
Contact: Dr. W. Mclean (516) 482-8200 x377
FACILITIES: Ships and laboratories of the Academy are available for sharing in appropriate cases. They may be used for prototype testing of equipment and materials under controlled conditions prior to full scale, at-sea application.

SUBJECT INDEX

Index entries are selected to indicate important research activities or services available at a particular laboratory or center. When using the subject index, be sure to look under terms that are narrow, broad, or related to a particular topic. The entries are arranged alphabetically by subject term. Individual items listed under subject terms are arranged alphabetically by title.

SAMPLE ENTRY

Subject index term →

ENERGY CONSERVATION
Alternative Fuels Data Bank, Bartlesville, OK Energy Technology Center. *See* 0134

Daylighting Laboratory, Golden CO Solar Energy Research Institute. *See* 0126

Directory reference number locating full resource description →

SUBJECT INDEX

GEOGRAPHIC INDEX

Index entries are arranged by state. Individual items listed under each state are arranged alphabetically by title.

SAMPLE ENTRY

State → **CALIFORNIA**

Resource name →
Geothermal Test Facility, Holtville *See* 0173
Lawrence Berkley Laboratory, Berkeley
Bevalac Accelerator Complex *See* 0038
National Tritium Labeling Facility *See* 0214
Market Quality and Transportation Research Laboratory, Salines *See* 0068
U.S. Salinity Laboratory, Riverside *See* 0456

Directory reference number locating full resource description

GEOGRAPHIC INDEX

RESOURCE NAME INDEX

Index entries are arranged by the laboratory and center name as well as by the program or facility name.

SAMPLE ENTRY

Resource name →

Los Alamos National Laboratory, Los Alamos, NM *See* 0212
Atmospheric Light Detection and Ranging Facility (LIDAR) *See* 0233
Medical Radioisotopes Resource *See* 0235
Omega West Reactor *See* 038

Medical Radioisotopes Resource, Los Alamos National Laboratory, Los Alamos NM *See* 0235

Spokane Research Center, Spokane, WA *See* 0126

Directory reference number locating full resource description ←

RESOURCE LIST

A

Absorber and Ceramics Development. Hanford Engineering Development Laboratory, Richland, WA
See 0689

Accelerator Laboratory. Pacific Northwest Laboratory, Richland, WA
See 0639

Acoustic Anechoic Chamber. National Bureau of Standards, Washington, DC
See 0332

Acoustic Characteristics Facility. Naval Research Laboratory, Washington, DC
See 0729

Acoustic Facility. Naval Surface Weapons Center, Silver Spring, MD
See 0333

Acoustic Reverberation Chamber. National Bureau of Standards, Washington, DC
See 0730

Acoustical Thermometer. National Bureau of Standards, Washington, DC
See 0731

Advanced Coal Science and Technology. Pittsburgh Energy Technology Center, Pittsburgh, PA
See 0287

Advanced Environmental Control Technology Center, Urbana, IL
See 0385

Advanced Reactivity Measurement Facility (ARMF). Idaho National Engineering Laboratory, Idaho Falls, ID
See 0690

Advanced Systems Laboratory, Silver Spring, MD
See 0149

Advanced Test Reactor (ATR). Idaho National Engineering Laboratory, Idaho Falls, ID
See 0691

Aero-Mechanical Engineering Laboratory. Army Natick Research and Development Laboratories, Natick, MA
See 0781

Aeronomy Laboratory, Boulder, CO
See 0150

Aerospace Research Applications Center, Indianapolis, IN
See 0429

Aerospace Structures Information and Analysis Center (ASIAC). Air Force Wright Aeronautical Laboratories, Wright-Patterson AFB, OH
See 0334

Agriculture Environmental Quality Institute. Beltsville Agricultural Research Center, Beltsville, MD
See 0127

Air Force Engineering and Services Center, Tyndall AFB, FL
Air Force Engineering and Services Laboratory
See 0782

Air Force Engineering and Services Laboratory. Air Force Engineering and Services Center, Tyndall AFB, FL
See 0782

Air Force Geophysics Laboratory, Bedford, MA
Balloon Design and Flight Analysis Branch
See 0003

Air Force Human Resources Laboratory (AFHRL), Brooks Air Force Base, TX
See 0783

Air Force Wright Aeronautical Laboratories, Wright-Patterson AFB, OH
Aerospace Structures Information and Analysis Center (ASIAC)
See 0334

Air Resources Laboratory, 6010 Executive Blvd. Rockville, MD
See 0151

Aircraft Propulsion Research and Testing Program. Naval Air Propulsion Center, Trenton, NJ
See 0221

Albany Research Center, Albany, OR
See 0455

ALICE Group. Argonne National Laboratory, Argonne, IL
See 0229

All-Weather Toxic Chamber. Chemical Research and Development Center, Aberdeen Proving Ground, MD
See 0490

Alloy Preparation Laboratory. National Bureau of Standards, Washington, DC
See 0456

Alternating Gradient Synchrotron. Brookhaven National Laboratory, Upton, NY
See 0640

Alternative Fuels Data Bank. National Institute for Petroleum and Energy Research, Bartlesville, OK
See 0288

Ames Laboratory, Ames, IA
See 0784
Coal Preparation and Characterization Facility
See 0296
Materials Preparation Center
See 0451
X-Ray Diffraction Laboratory
See 0780

Ames Research Center, Moffett Field, CA
See 0785
Hypersonic Wind Tunnel
See 0006
Subsonic Wind Tunnels
See 0010
Supersonic Wind Tunnels
See 0013
Transonic Wind Tunnels
See 0017

Analytical Chemistry Laboratory. Argonne National Laboratory, Argonne, IL
See 0732

Anechoic Chamber and Reverberant Room Facility. Human Engineering Laboratory, Aberdeen Proving Ground, MD
See 0491

Anechoic Flow Facility. David Taylor Naval Ship Research & Development Center, Bethesda, MD
See 0001

Anesthesiology Center Program. National Institute of General Medical Sciences, Bethesda, MD
See 0492

Animal Biomaterials Laboratory. Eastern Regional Research Center, Philadelphia, PA
See 0022

Animal Models Development Program. National Institute on Aging, Bethesda, MD
See 0493

Animal Models for Trisomy 21. National Institute of Child Health and Human Development, Bethesda, MD
See 0494

Animal Parasite Research Unit, Auburn, AL
See 0098

Animal Parasitology Institute. Beltsville Agricultural Research Center, Beltsville, MD
See 0099

Animal Physiology Research Unit. Richard B. Russell Agricultural Research Center, Athens, GA
See 0100

Animal Resources Program. Research Resources Information Center, Rockville, MD
See 0495

Animal Science Institute. Beltsville Agricultural Research Center, Beltsville, MD
See 0101

Animals with Inherited Retinal Degenerations. National Eye Institute, Bethesda, MD
See 0496

Antenna Measurement Facilities. National Bureau of Standards, Boulder, CO
See 0270

Appalachian Fruit Research Station, Kearneysville, WV
See 0053

Appalachian Soil and Water Conservation Research Laboratory, Beckley, WV
See 0023

Applied Technology Laboratory, Ft. Eustis, VA
See 0002

Aquatic Plant Management Laboratory, 3205 SW College Ave. Ft. Lauderdale, FL
See 0128

Aquatic Research Laboratory. Savannah River Laboratory, Aiken, SC
See 0189

Aquifer Properties Test Facility. Pacific Northwest Laboratory, Richland, WA
See 0234

Arctic and Offshore Technology Program. Morgantown Energy Technology Center, Morgantown, WV
See 0289

Arecibo Observatory, Ithaca, NY
See 0152

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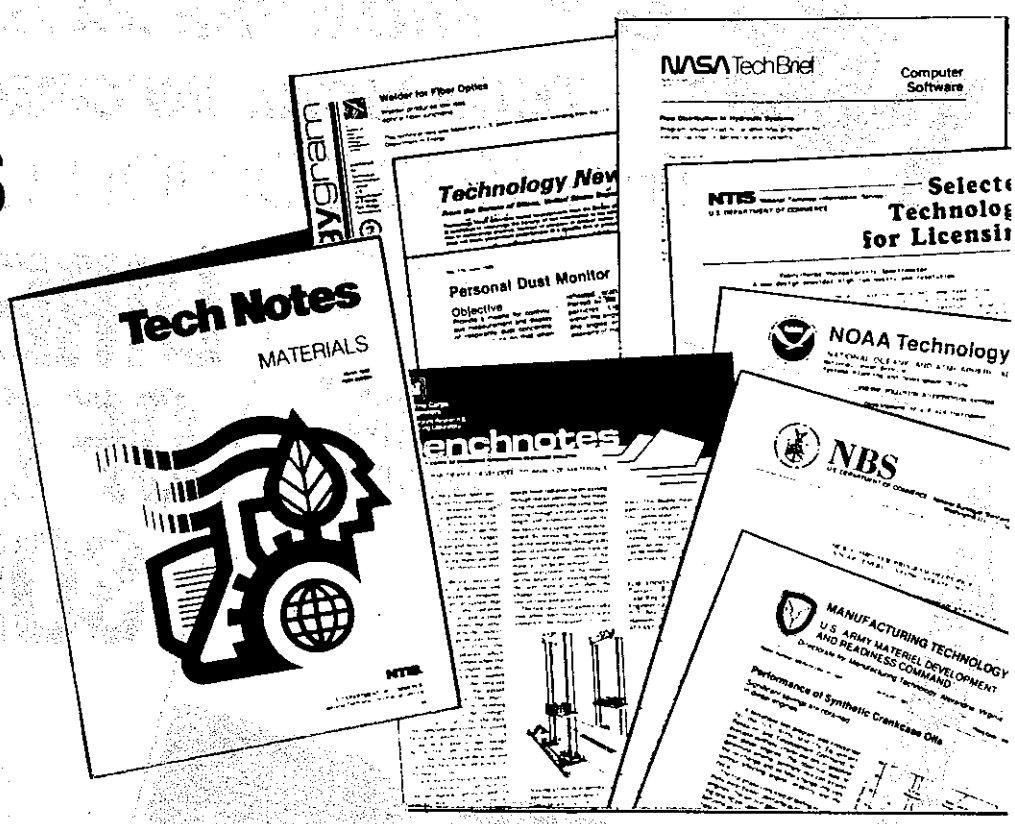

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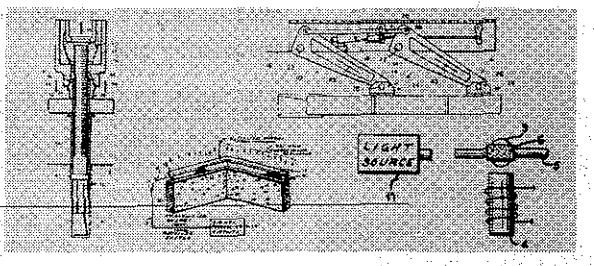

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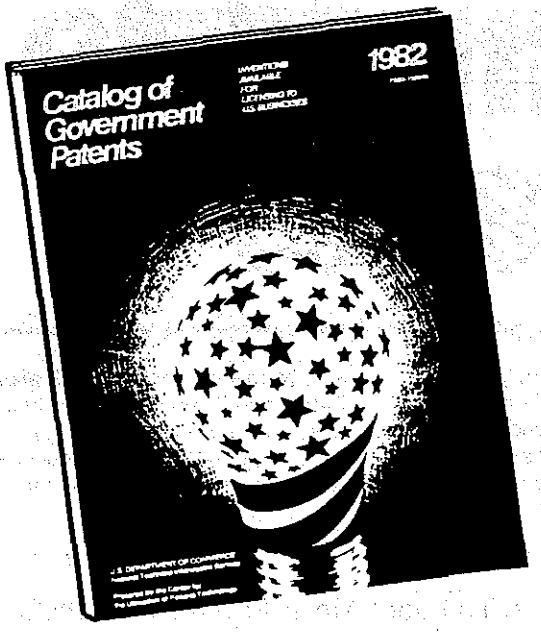

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