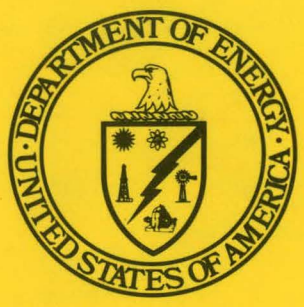
DOE/ER-0092

Capsule Review of the DOE Research and Development and Field Facilities

September 1980

U.S. Department of Energy
Office of Energy Research
Office of Field Operations Management



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U.S. Department of Energy
Office of Energy Research
Office of Field Operations Management
Washington D.C. 20585

FOREWORD

The Department of Energy's extensive scientific, engineering, technology and production facilities, and related administrative units, are dispersed nationwide. They consist of field and project offices, Government-operated laboratories, and contractor-operated laboratory, engineering and production facilities throughout the United States. The Office of Energy Research provides an overall coordination function for the Under Secretary in managing these resources to carry out important research and development missions of the Department of Energy (DOE).

This document, therefore, has been prepared by the Office of Field Operations Management in Energy Research to provide comprehensive information on these diverse field resources. More detailed information on these facilities can be found in DOE/ER-0029, "DOE Research and Development and Field Facilities," dated June 1979, and its subsequent revisions.

Antionette Grayson Joseph
Associate Director
for Field Operations Management
Office of Energy Research

September 1980

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* Name change pending approval by the University of California Board of Regents; formerly, the Radiobiology Laboratory.

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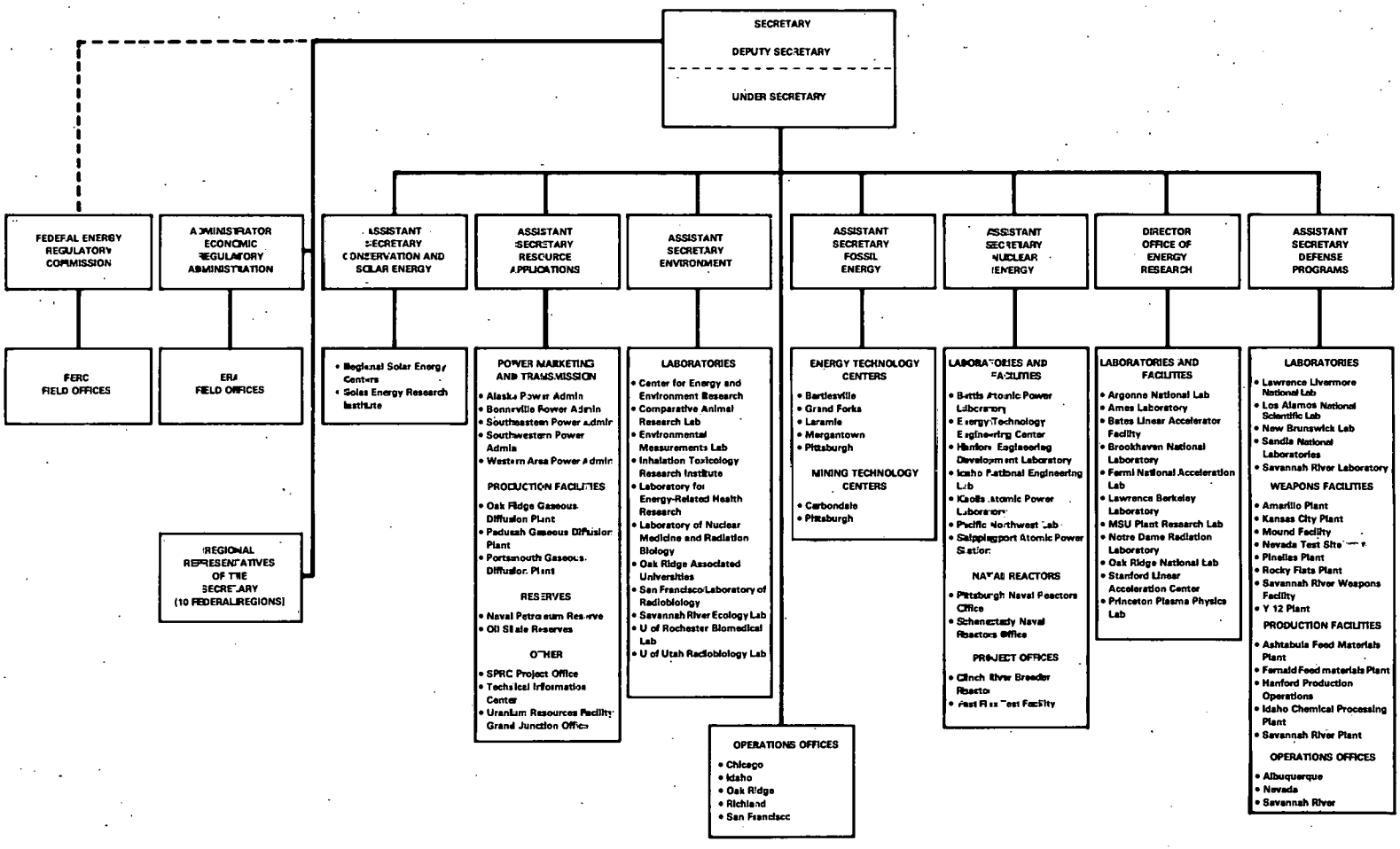


INTRODUCTION

The Department of Energy was established by Public Law 95-91, dated August 4, 1977, and was activated on October 1, 1977. The Department has three main purposes: (1) to utilize efficiently all available energy supplies; (2) to augment available energy supplies by the substitution of coal for petroleum products and by the development of new or more efficient sources of supply; and (3) to encourage domestic energy production so that United States dependency on energy imports will be reduced.

To accomplish its mission, DOE has a staff of about 20,000 people and a budget of over $12 billion in fiscal year 1980. Approximately one-half of DOE's employees are located at headquarters in the Washington, D.C. area. The remainder are located in various offices and installations around the country.

This report describes the roles of DOE's headquarters, field offices, major multiprogram laboratories, Energy Technology and Mining Technology Centers, and other government-owned, contractor-operated (GOCO) facilities, which are located in all regions of the United States as shown on the map and the listing of facilities on subsequent pages. The laboratories and field offices currently report as shown on the organization chart on the preceding page.

DOE R&D MANAGEMENT APPROACH

Headquarters Functions

DOE headquarters in Washington, D.C., concentrates on program management, planning, budgeting, and allocating resources, maintaining relations with other Federal agencies and the United States Congress, and providing management direction, broad policy overview and coordination of DOE's programs.

Field Organization Functions

The elements of the field organizations that are related primarily to research and development are the field and project offices, multiprogram laboratories and program-dedicated facilities. In addition, this report briefly describes production, testing and fabrication facilities. The field organization carries out both important administrative management and project execution functions.

The field and project offices consist of operations offices, which are more general in their scope of activities, and others which are dedicated to specific programs or projects. Responsibilities of these offices include project management and program implementation; contracting with industry, universities, state and local governments, and others as needed to plan and carry out DOE projects; negotiating, executing, and administering contracts to operate DOE contractor-operated facilities and contractor appraisal. The range of support services provided by these offices typically includes budgetary, procurement, and legal services, and enforcement of health and safety regulations. They also provide contract support services to the program divisions at headquarters for research and development contracts placed with university and industrial contractors within their assigned areas of responsibility.

The multiprogram laboratories are government-owned and contractor-operated. Headquarters overview is provided by an agency-level Institutional Planning Process. In general, the multiprogram laboratories support two or more programs and are large multidisciplinary facilities with broad capabilities in physical, chemical, nuclear and life sciences as well as nuclear, electrical, mechanical, and other branches of engineering. Program-dedicated research and development facilities, on the other hand, provide services primarily to a single program. These facilities are all government-owned, and some are contractor-operated.

Decentralization Policy

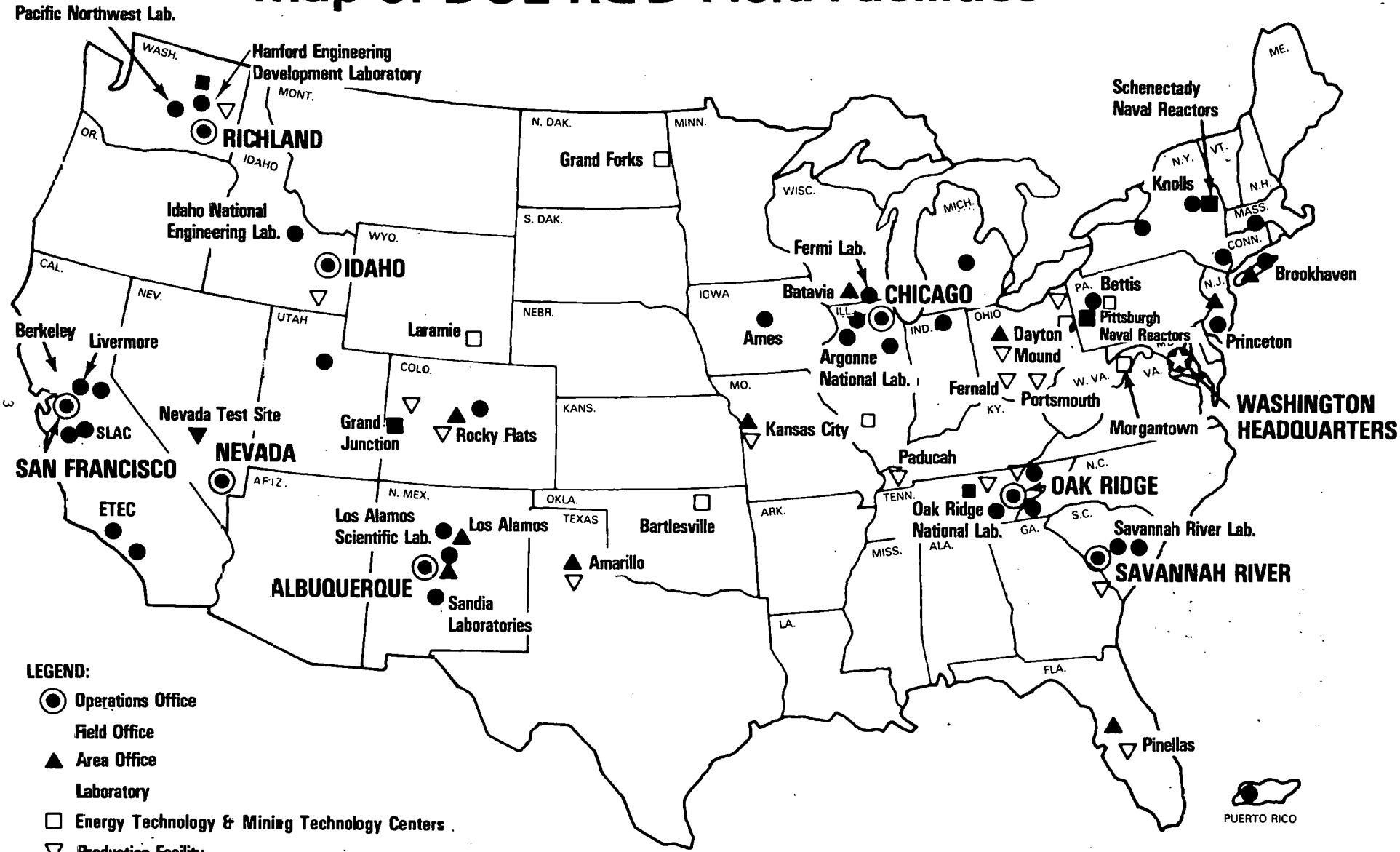
It is DOE policy to decentralize project management and program implementation activities outside of Washington, D.C., and to assign execution of energy R&D projects and programs to an office located near the work, such as a special site project office or one of the eight operations offices. Under this policy, headquarters responsibilities continue to include setting goals and objectives in accordance with national energy policy, overall program planning and management, including scheduling and budgeting and broad policy overview and coordination of DOE's programs. When they are assigned an implementation role, the operations offices and the laboratories are responsible for executing

assigned portions of the program. This includes managing the resources, advising Headquarters on significant problems and on the status of the work.

Field Capabilities

Because of the diversity of resources, activities and capabilities across the field and project offices, plants and laboratories, the remainder of this report is devoted to discussing each facility. For convenience in presentation, all field and project offices are grouped together, all the laboratories are grouped together, and all plants are grouped together. Appendices included in this report list the field activities, their current managers or directors, and operating contractors, when appropriate.

Map of DOE R&D Field Facilities



DOE FIELD AND PROJECT OFFICES/R&D FIELD FACILITIES BY STATE/TERRITORY, CITY AND COUNTY/TERRITORY

State/Territory	City	County/ Territory
CALIFORNIA		
San Francisco Operations Office	Oakland	Alameda
Energy Technology Engineering Center	Santa Susana	Ventura
Laboratory for Energy-Related Health Research	Davis	Solano
Laboratory of Nuclear Medicine and Radiation Biology, University of California	Los Angeles	Los Angeles
Laboratory of Radiobiology, University of California	San Francisco	San Francisco
Lawrence Berkeley Laboratory	Berkeley	Alameda
Lawrence Livermore National Laboratory	Livermore	Alameda
Sandia National Laboratories	Livermore	Alameda
Stanford Linear Accelerator Center	Menlo Park	San Mateo
COLORADO		
Grand Junction Office	Grand Junction	Mesa
Rocky Flats Plant	Golden	Jefferson
Solar Energy Research Institute	Golden	Jefferson
FLORIDA		
Pinellas Plant	Clearwater	Pinellas
GEORGIA		
Southern Solar Energy Center	Atlanta	Dekalb
IDAHO		
Idaho Operations Office	Idaho Falls	Bonneville
Idaho Chemical Processing Plant	Idaho Falls	Butte
Idaho National Engineering Laboratory	Idaho Falls	Butte/Jefferson/ Bingham
ILLINOIS		
Chicago Operations and Regional Office	Argonne	DuPage
Argonne National Laboratory	Argonne	DuPage
Carbondale Mining Technology Center	Centerville	Williamson
Fermi National Accelerator Laboratory	Batavia	DuPage/Kane
New Brunswick Laboratory	Darien	DuPage

State/Territory	City	County/ Territory
INDIANA		
Notre Dame Radiation Laboratory	South Bend	St. Joseph
IOWA		
Ames Laboratory	Ames	Story
KENTUCKY		
Paducah Gaseous Diffusion Plant	Paducah	McCracken
MASSACHUSETTS		
Bates Linear Accelerator Facility	Middleton	Essex
Northeast Solar Energy Center	Boston	Suffolk
MICHIGAN		
MSU-DOE Plant Research Laboratory	East Lansing	Ingham
MINNESOTA		
Mid-American Solar Energy Complex	Minneapolis	Hennepin
MISSOURI		
Kansas City Plant	Kansas City	Jackson
NEVADA		
Nevada Operations Office	Las Vegas	Clark
Nevada Test Site	Mercury	Nye
NEW JERSEY		
Princeton Plasma Physics Laboratory	Plainsboro	Middlesex
NEW MEXICO		
Albuquerque Operations Office	Albuquerque	Bernalillo
Inhalation Toxicology Research Institute	Albuquerque	Bernalillo
Los Alamos National Scientific Laboratory	Los Alamos	Los Alamos
Sandia National Laboratories	Albuquerque	Bernalillo

DOE FIELD AND PROJECT OFFICES/R&D FIELD FACILITIES BY STATE/TERRITORY, CITY AND COUNTY/TERRITORY

State/Territory	City	County/ Territory
NEW YORK		
Brookhaven National Laboratory	Islip	Suffolk
Environmental Measurements Laboratory	New York	New York
Knolls Atomic Power Laboratory	Schenectady	Schenectady
Schenectady Naval Reactors Office	Schenectady	Schenectady
University of Rochester Biomedical Laboratory	Rochester	Monroe
NORTH DAKOTA		
Grand Forks Energy Technology Center	Grand Forks	Grand Forks
OHIO		
Ashtabula Extrusion Plant	Ashtabula	Ashtabula
Feed Materials Production Center	Fernald	Hamilton
Mound Facility	Miamisburg	Montgomery
Portsmouth Gaseous Diffusion Plant	Piketon	Pike
OKLAHOMA		
Bartlesville Energy Technology Center	Bartlesville	Washington
OREGON		
Western Solar Utilization Network	Portland	Multnomah
PENNSYLVANIA		
Bettis Atomic Power Laboratory	West Mifflin	Allegheny
Pittsburgh Energy Technology Center	Pittsburgh	Allegheny
Pittsburgh Mining Technology Center	Bruceton	Allegheny
Pittsburgh Naval Reactors Office	West Mifflin	Allegheny
Shippingport Atomic Power Station	West Mifflin	Allegheny
PUERTO RICO		
Center for Energy and Environment Research	San Juan	Puerto Rico
SOUTH CAROLINA		
Savannah River Operations Office	Aiken	Aiken/Barnwell/ Allendale
Savannah River Ecology Laboratory	Aiken	Aiken/Barnwell/ Allendale
Savannah River Laboratory	Aiken	Aiken/Barnwell/ Allendale
Savannah River Plant	Aiken	Aiken/Barnwell/ Allendale
TENNESSEE		
Oak Ridge Operations Office	Oak Ridge	Anderson
Comparative Animal Research Laboratory	Oak Ridge	Anderson
Clinch River Breeder Reactor Plant Project Office	Oak Ridge	Anderson
Oak Ridge Associated University	Oak Ridge	Anderson
Oak Ridge Gaseous Diffusion Plant	Oak Ridge	Roane
Oak Ridge National Laboratory	Oak Ridge	Roane
Y-12 Plant	Oak Ridge	Anderson
TEXAS		
Pantex Plant	Amarillo	Potter
UTAH		
Radiobiology Laboratory, University of Utah	Salt Lake City	Salt Lake
WASHINGTON		
Richland Operations Office	Richland	Benton
Fast Flux Test Facility Project Office	Richland	Benton
Hanford Engineering Development Laboratory	Richland	Benton
Hanford Production Operations	Richland	Benton
Pacific Northwest Laboratory	Richland	Benton
WEST VIRGINIA		
Morgantown Energy Technology Center	Morgantown	Monogalia
WYOMING		
Laramie Energy Technology Center	Laramie	Albany

1. DOE HEADQUARTERS OFFICES WITH ASSIGNED FIELD FACILITIES

CONSERVATION AND SOLAR ENERGY. The Assistant Secretary for Conservation and Solar Energy is charged with a dual responsibility to urge efficient use of the Nation's energy supplies and to encourage the widespread use of solar energy. The primary objective of this organization is to moderate the Nation's growing demand for petroleum-based energy. Conservation and Solar programs cover a broad spectrum of energy users: from research, development and demonstration of advanced technologies, to financial and technical assistance for conservation-related activities, to support for regulatory programs and technology transfer activities.

To achieve its mission, various Conservation and Solar Energy programs simultaneously stimulate the development and application of improved energy-efficient technology, and speed the introduction of programs, entailing higher risks and more potential for conservation than otherwise would be feasible, into the private sector. They also provide necessary research, development and demonstration to develop and commercialize renewable energy systems. Other programs enable selected public and private energy users, such as schools, hospitals and low-income persons to institute energy conservation improvements which would not be undertaken without Federal assistance. The Solar Energy Research Institute and the Regional Solar Energy Centers, described in section 3, are the responsibility of the Assistant Secretary for Conservation and Solar Energy.

DEFENSE PROGRAMS. The Assistant Secretary for Defense Programs manages Department of Energy programs for nuclear weapons research, development, testing and production, and surveillance; laser, heavy ion, and electron beam fusion; safeguards and security programs; international security program; and classification. In addition, the responsibility for the nuclear materials production program and overview responsibility for the DOE weapons complex also falls under the Assistant Secretary for Defense Programs. The field facilities assigned to Defense Programs include the following: three Operations Offices (Albuquerque, Nevada, and Savannah River); five laboratories: Lawrence Livermore National, Los Alamos National Scientific, Sandia National, Savannah River, and New Brunswick Laboratories; and 13 weapons and production facilities: Amarillo, Kansas City, Pinellas, Rocky Plats, Savannah River; Y-12 Plant, Idaho Chemical Processing, Savannah River Weapons Facility, Mound Facility, Hanford, Ashtabula and Fernald; and the Nevada Test Site. More detail on these facilities can be found in sections 2 and 3 of this publication.

ENERGY RESEARCH. The Director of Energy Research advises the Secretary of Energy on the Department's physical research programs, its overall energy research and development programs, university-based education and training activities, grants and other forms of financial assistance. The Director also carries out additional duties assigned to the office related to basic and advanced research. It is the Director's responsibility to advise the Secretary with respect to the well-being and management of the multiprogram laboratories under the jurisdiction of the Department, excluding laboratories that constitute part of the nuclear weapons complex. He coordinates the Department's Institutional Planning Process and the development of policy for the utilization of the multiprogram laboratories. Five multiprogram and six single-purpose laboratories are administratively assigned to the Office of Energy Research. Each of the five multiprogram laboratories (Argonne National, Ames, Brookhaven National, Lawrence Berkeley, and Oak Ridge National Laboratories) and six single-purpose laboratories (Bates Linear Accelerator Facility, Fermi National Accelerator Laboratory, Notre Dame Radiation Laboratory, Princeton Plasma Physics Laboratory, Michigan State University-DOE Plant Research Laboratory and the Stanford Linear Accelerator Center) are described in section 3 of this publication.

ENVIRONMENT. The Assistant Secretary for Environment is the principal environmental officer of the Department of Energy and is committed to implementing environmental policies that permit the Nation to search out options for solving its energy problems with minimal environmental impact. The Office of Environment supports the energy program offices in identifying environmental health and safety issues and in fulfilling environmental responsibilities. It conducts comprehensive health and environmental health and safety requirements including the National Environmental Policy Act. To achieve its mission, the Office of Environment establishes and maintains active communication and liaison with organizations concerned with environmental and health and safety matters within the Department and its field organizations; with other Federal, state and local agencies, and with other national and international organizations. The environmental mission is a joint responsibility of both the energy program offices and the Office of Environment. The program offices conduct research and development to resolve issues and prepare National

Environmental Policy Act documents, whereas the Office of Environment identifies environmental health and safety issues and conducts comprehensive health and environmental effects research and development. The Office of Environment has cognizance over 11 radiological and biomedical facilities: Center for Energy and Environmental Research, Comparative Animal Research Laboratory, Environmental Measurements Laboratory, Inhalation Toxicology Research Institute, Laboratory for Energy-Related Health Research, Laboratory for Nuclear Medicine and Radiation Biology, Oak Ridge Associated Universities, Laboratory of Radiobiology, Savannah River Ecology Laboratory, University of Rochester Biomedical Laboratory, and the Radiobiology Laboratory. These facilities are described in section 3 of this publication.

FOSSIL ENERGY. The Assistant Secretary for Fossil Energy has the responsibility to develop technologies that will increase domestic production of oil and gas or that will permit the Nation to shift from oil or gas to more abundant coal. Specifically, the Fossil Energy role is to develop technologies to support the following objectives: Provide a capability to convert coal to liquid and gaseous fuels; increase domestic production of coal, oil and gas; ensure that current and new facilities that burn coal can do so in an economically viable and environmentally acceptable manner; and allow more efficient and more economically attractive utilization of fossil energy resources. Project execution and technical monitoring are administered in five Energy Technology Centers (Bartlesville, Grand Forks, Laramie, Morgantown, and Pittsburgh) and two Mining Technology Centers (Carbondale and Pittsburgh). More detail on these facilities can be found in section 3 of this publication.

NUCLEAR ENERGY. The Assistant Secretary for Nuclear Energy is responsible for the administration of nuclear fission power generation and fuel technology, including breeder reactors; the evaluation of alternative reactor fuel cycle concepts, including nonproliferation considerations; development of space nuclear generator systems; and development of naval nuclear propulsion plants and reactor cores. This organization also provides direction for the planning, development and execution of the Department of Energy programs for civilian and defense nuclear waste processing and isolation, spent fuel storage and transfer, transportation of nuclear waste materials, and decommissioning and decontamination of the Department's nuclear facilities. The field facilities for which the Assistant Secretary for Nuclear Energy has administrative responsibility include: three multiprogram laboratories (Hanford Engineering Development Laboratory, Idaho National Engineering Laboratory, Pacific Northwest Laboratory); four single-purpose facilities (Bettis Atomic Power Laboratory, Energy Technology Engineering Center, Knolls Atomic Power Laboratory, and Shippingport Atomic Power Station); and four project offices (Pittsburgh Naval Reactors Office, Schenectady Naval Reactors Office, Clinch River Breeder Reactor Plant Project Office and the Fast Flux Test Facility Project Office). More detail on these facilities can be found in section 3 of this publication.

RESOURCE APPLICATIONS. The Assistant Secretary for Resource Applications is responsible for managing and coordinating an array of programs that affect the production or the supply of national energy sources, such as uranium, oil shale and geothermal. This organization is the Department of Energy focal point for introducing into the marketplace proven technologies that are environmentally acceptable and economically viable. The industrialization effort is conducted through the activities of several resource managers responsible for specific technologies which the Department has determined to have reached commercial readiness. Field organizations administratively assigned to Resource Applications include three Gaseous Diffusion Plants (Oak Ridge, Paducah, and Portsmouth); five Power Administrations (Alaska, Bonneville, Southeastern, Southwestern, and Western); Grand Junction Uranium Resources Facility; Naval Petroleum and Oil Shale Reserves; and the Technical Information Center. Detailed information on the Power Administrations and the Naval and Oil Shale Reserves can be found in DOE/ER-0029, dated June 1979. The Gaseous Diffusion Plants are described in more detail in section 3 of this publication.

2. THE DOE FIELD OPERATIONS AND PROJECT OFFICES

	DOE staff (authorized)	Total FY 80 operating costs ($M)	Total FY 80 administered funding ($M)[1/]
ALBUQUERQUE OPERATIONS OFFICE (AL) Albuquerque, NM	1,327[2/]	$1,340.0[3/]	$1,806.1

Established 1943; operates extensive weapons laboratory and production complex extending from Florida to California; has 7 area offices; administers 2 major multiprogram laboratories, the contract work done by the Lovelace Biomedical and Environmental Research Institute at the DOE-Owned Inhalation Toxicology Research Institute (ITRI), on Kirtland AFB-East at Albuquerque, and some 200 contracts for energy-related work; operates the National Atomic Museum on Kirtland AFB-East. Major assignments are (1) field program management of government-owned, contractor-operated nuclear weapon laboratory and production plants; (2) organization and operation of a system for safe-secure domestic transport of all government-owned DOE-controlled special nuclear material in strategic amounts; (3) development and fabrication of plutonium 238-fueled heat sources for use in radioisotopic thermoelectric generators (RTG's), which power spacecraft; (4) operational management of the 5 Megawatt Solar Thermal Test Facility, to be the world's largest solar installation and an integral part of DOE's 10 Megawatt pilot plant program; (5) establishment of working relationships with many state and regional energy organizations.

AL Facilities

Inhalation Toxicology Research Institute
Kansas City Plant
Los Alamos National Scientific Laboratory
Mound Facility
Pantex (Amarillo) Plant
Pinellas Plant
Rocky Flats Plant
Sandia National Laboratories
Waste Isolation Pilot Plant

CHICAGO OPERATIONS AND REGIONAL OFFICE (CORO) Argonne, IL	481[4/]	$1,036.6	$1,308.1

Established 1947, CORO[5/] was intimately involved in design, engineering, and construction of nuclear power facilities in 1950's and 1960's and in developing new energy technologies; is now characterized by contract, procurement project, and program management activities in all of DOE's major program areas; maintains 9 offices through the Midwest and Northeast; has initiated activities to support commercial and public acceptance of energy alternatives; administers more than 1,800 contracts in 40 states and 10 foreign countries; provides management support to the Pittsburgh Energy Technology Center. Major government-owned facilities include multiprogram laboratories, specialized physical research facilities, and specialized biomedical research laboratories. Major assignments cover a range of research, development, and demonstration projects as broad as DOE's mission: the Tokamak Fusion Test Reactor; liquefaction, gasification, demonstration coal pilot plants; Safety Research Experiment Facilities; breeder reactor component development; breeder reactor technology;

1/ Administered Funding - Includes Construction and Equipment and other Federal Agency Reimbursables.

2/ 638 at Albuquerque; 689 at the seven area offices.

3/ DOE funding only (includes laboratories at $751.0M; excludes reimbursables at $177.5M).

4/ Includes 60 employees at the New Brunswick Laboratory.

5/ The Chicago Operations Office and Region V Office were consolidated on January 25, 1979.

	DOE staff (authorized)	Total FY 80 operating costs ($M)	Total FY 80 administered funding ($M)

magnetohydrodynamics system development; ocean thermal energy conversion; the Argonne National Laboratory Energy Efficient Management Center; grid-connected integrated community energy system, refuse conversion to methane (ReCOM) facility; solar heating and cooling demonstrations; energy storage programs; regional activities to improve communication and interaction with public, government, and citizens' groups.

CORO Facilities

Ames Laboratory
Argonne National Laboratory
Bates Linear Accelerator Facility
Brookhaven National Laboratory
Fermi National Accelerator Laboratory
Michigan State University (MSU)-
DOE Plant Research Laboratory
New Brunswick Laboratory
Notre Dame Radiation Laboratory
Princeton Plasma Physics Laboratory
Radiobiology Laboratory
Solar Energy Research Institute
University of Rochester Medical Laboratory

CLINCH RIVER BREEDER REACTOR PLANT PROJECT OFFICE (CRBRPPO)
Oak Ridge, TN

36	$182.4	$180.7

Established in 1972 with an overall objective to design, license, build and test the Nation's first large-scale liquid sodium-cooled breeder reactor power plant and operate the plant as part of a utility system. The Administration has now proposed the cancellation of CRBRP construction, licensing and commercialization efforts except for systems design and selected components. Implementation of the proposed redirection is pending final resolution by the Administration and Congress. Pending this resolution, project activities are continuing on a prudent and reasonable basis. The project was under dual managership of the U.S. Atomic Energy Commission (AEC) and Project Management Corporation (PMC) from 1972 to 1974 when it was decided that Government should have a larger management role in the undertaking. This occurred shortly after the U.S. Energy Research and Development Administration was formed and assumed AEC's role in the project. Public Law 94-187 amended the basic legislation (PL 91-273) to allow a single integrated management unit known as CRBRP Project Office. The principal objectives of the CRBRP project are: (1) to attempt to successfully demonstrate the liquid metal fast breeder reactor; and (2) to help (a) confirm and demonstrate the potential value and environmental desirability of the concept as a practical and economic future option for generating electric power; (b) confirm the value of this concept for conserving important nonrenewable natural resources; (c) develop for benefit of government, industry and the public important technological and economic data; (d) provide a broad base of experience and information important for commercial and industrial application of the breeder reactor concept; and (e) verify certain key characteristics and capabilities of breeder power plants for operation on utility systems.

FAST FLUX TEST FACILITY PROJECT OFFICE (FFTFPO)
Richland, WA

65	$132.3	$237.4

Established 1974; has full on-site authority to manage and direct the completion of the design, construction, and startup of a sodium-cooled fast flux reactor, Fast Flux Test Facility (FFTF), for irradiation testing of fuels and materials; is a key element in the Nation's breeder reactor program, and, as a test reactor, is the largest test reactor of its kind in the world; provides information and base technology in plant systems, component design and fabrication, prototype testing, construction, and acceptance testing; administers general breeder reactor research and development programs; administers 8 prime contracts including that for operation of the Hanford Engineering Development Laboratory (HEDL). Major assignments are (1) completion of the FFTF Project; (2) management of reactor fuels and materials program at HEDL to achieve development of safe, economically viable and proliferation-resistant breeder reactor power plant fuel system; (3) management of specific breeder

	DOE staff (authorized)	Total FY 80 operating costs ($M)	Total FY 80 administered funding ($M)

reactor R&D programs directly supporting the FFTF project; (4) management of supporting projects, including the Fuel Storage Facility (FSF) and the Maintenance and Storage Facility (MSF), and a Security Improvements Project and (5) management of procurement for equipment to be utilized in support of the expanded fuel handling and process system for the Fuels and Material Examination Facility (FMEF), and the Fusion Materials Irradiation Test Facility (FMITF).

GRAND JUNCTION OFFICE (GJO)
Grand Junction, CO

94	$ 61.8	$ 61.5

Established 1947; has established the National Uranium Resource Evaluation (NURE), part of the GJ Uranium Resource Assessment program to make increasingly reliable estimates of the nation's uranium resources and to determine areas favorable to uranium deposits; has field offices in 7 states, develops and evaluates uranium exploration assessment and production technology; administers leasing of mineral lands under DOE control; makes estimates of uranium ore reserves, potential resources and production capability; and carries out activities relating to environmental effects of uranium mining and milling operations, including corrective programs. Major assignments are (1) completion of NURE to permit the development of nuclear power within the constraints of the uranium supply; which includes aerial radiometric survey, hydrogeochemical and stream sediment reconnaissance, and geologic studies; (2) calculation of uranium ore reserves; (3) analysis of the relationship between uranium supply and nuclear energy requirements; (4) the uranium land leasing program; and (5) the Remedial Action Program coadministered by DOE and the Colorado State Health Department to limit exposure of individuals to radiation from use of uranium mill tailings.

IDAHO OPERATIONS OFFICE (ID)
Idaho Falls, ID

375	$91.0	$311.0

Established 1949 as the National Reactor Testing Station (NRTS) as an isolated site for testing of various nuclear reactors and for associated support facilities. Its principal mission was to support the demonstration of safe and efficient power generation by using nuclear reactors. The site was renamed Idaho National Engineering Laboratory (INEL) in 1974 to better reflect the engineering and development role of water reactor safety program and expanding operations of the non-nuclear energy programs. ID administers operations at INEL; operates satellite offices at Butte, Montana, as a construction-management office for the construction phase of the Magnetohydrodynamic Component Development and Integration Facility; and at Burley, Idaho, as a management office for the Raft River Geothermal Project; responsible for operating the Radiological and Environmental Sciences Laboratory, which provides chemistry, dosimetry and environmental monitoring for all on-site activities; supports the Nuclear Regulatory Commission's Region IV Office of Inspection and Enforcement Division; administers the National Environmental Research Park; responsible for spent nuclear fuel reprocessing and recovery of nuclear fuel for several test reactors, the nuclear naval fleets, and other non-commercial type fuels, as well as processing of liquid waste into a calcine form for intermediate storage; a radioactive waste management complex is operated for storage and disposal of low-level wastes; supports all DOE program areas; administers over 362 active contracts; has extensive experience in project management and in paticipating with all levels of government and academe in support of DOE's objectives. Major assignments are (1) investigating the safety of watercooled reactors; (2) technological resolution of problems associated with using geothermal water either to produce electric power for food processing or for other nonelectric uses; (3) developing components for generating electricity direct from hot coal-fired gases (the magnetohydrodynamic (MHD) technology); (4) the low-head hydroelectric bulb turbine program; and (5) the Alcohol Loan Guarantee Program.

	DOE staff (authorized)	Total FY 80 operating costs ($M)	Total FY 80 administered funding ($M)

ID Facilities

Idaho National Engineering Laboratory
Idaho Chemical Processing Plant
Raft River Geothermal Project Management Office
MHD-Component Development Integration Facility

NEVADA OPERATIONS OFFICE (NV)
Las Vegas, NV

248	$386.2	$223.7

Established 1962; responsible for nuclear weapons testing at Nevada Test Site (NTS); independently manages NTS; administers some 281 contracts and agreements; conducts work at NTS, on several islands in the Pacific, and at Andrews Air Force Base, Md.; is responsible for operational and logistic support of weapons development testing, including nuclear and chemical high-explosive detonations; directs extensive safety and environmental programs in support of these studies; monitors peaceful nuclear explosions in the Soviet Union; has developed drilling and tunneling experience rivaling the best of industry; has demonstrated capability to assist industry in energy-related R&D programs. Major assignments: underground nuclear test operations, radioactive waste management, gas recovery investigation of geothermal reservoirs, and Pacific Area programs including the resettlement of the people of Enewetak.

NV Facility

Nevada Test Site

OAK RIDGE OPERATIONS OFFICE (ORO)
Oak Ridge, TN

691	$1,598.0	$2,235.0

Established under the Manhattan Project during World War II, then later reoriented to developing beneficial applications of atomic energy and was expanded into non-nuclear energy areas. ORO, one of DOE's most diversified field offices, is responsible for a broad range of production, research, education and training activities associated with energy development, demonstration and applications. ORO is responsible for a major part of design and construction of new and improved production and research functions and facilities for the ORO complex and also provides administrative assistance to the DOE Technical Information Center and to the Morgantown Energy Technology Center. Established research, development and demonstration and production facilities are now located mainly in Tennessee, Kentucky, Ohio, California and Puerto Rico. Major assignments include: (1) the uranium enrichment service including large-scale development and construction for gas centrifuge technology; (2) support to the national defense effort through manufacture of weapons components and refinement and reduction of uranium to metal form for use in plutonium production reactors; (3) research and development in energy generation concepts and energy conservation; (4) wideranging research and development effort in education and environment with related training and public information programs; (5) national lead assignments for fuel reprocessing, nuclear standards, waste technology, fossil energy materials, load management, high voltage technology and nuclear materials and structures technology; and (6) responsibility for construction and administration of coal liquefaction demonstration plants.

ORO Facilities

Extrusion Plant (Ashtabula)
Comparative Animal Research Laboratory
Center for Energy and Environment Research
Fernald Feed Materials Plant
Oak Ridge Associated Universities
Oak Ridge Gaseous Diffusion Plant
Oak Ridge National Laboratory
Paducah Gaseous Diffusion Plant
Portsmouth Gaseous Diffuision Plant
Y-12 Plant

	DOE staff (authorized)	Total FY 80 operating costs ($M)	Total FY 80 administered funding ($M)
PITTSBURGH NAVAL REACTORS OFFICE (PNR) Bettis Atomic Power Laboratory West Mifflin, PA	74	$2.5	$271.1

Established 1958; administers the operations of the Bettis Atomic Power Laboratory and Shippingport Reactor Test Facility.

PNR Facilities

Bettis Atomic Power Laboratory

RICHLAND OPERATIONS OFFICE (RL) Richland, WA	257	$ 535.0	$842.0

Established in 1942 as the Manhattan Project Plutonium Production Facility; responsible for: (1) management of the 570-square mile Hanford site at which a broad range of nuclear and non-nuclear energy programs are conducted under all DOE program Secretarial Officers; (2) continuing operation of nuclear production, chemical processing, and waste management programs, including interim storage and ultimate disposition of high-level radioactive wastes; (3) providing program management and overview, budgetary direction, contract management, and administrative and policy guidance to eight operating and support services contractors; management of facilities and site services. In addition to the key assignments in nuclear production and waste management, major assignments include: (1) project management for construction of (a) the Fuels and Materials Examination Facility, which will provide for controlled handling and examination of materials and assemblies irradiated in the Fast Flux Test Facility; (b) the Fusion Materials Irradiation Test Facility, which will test the behavior of materials in a simulated fusion reactor environment; and (c) the Basalt Waste Isolation Project, which will evaluate the suitability of basalt as a geologic storage medium for the ultimate disposal of nuclear waste; (2) biomedical and environmental research related to the effects of plutonium and other radionuclides, and to a number of other aspects of nuclear and non-nuclear energy technologies; (3) a broad spectrum of nuclear and non-nuclear energy R&D with particular emphasis on systems analysis and materials technology; and (4) the DOE-wide Surplus Facilities Management program for the management and decommissioning of retired DOE nuclear facilities. The Hanford Site is designated as a National Environmental Research Park and offers opportunities for energy-related environmental and ecological research in a natural environment protected from outside intrusion.

RL Facilities

Hanford Production Operations
Pacific Northwest Laboratory
Chemical Processing and Waste Management Facilities
Office of Nuclear Waste Isolation

SAN FRANCISCO OPERATIONS OFFICE (SAN) Oakland, CA	313	$800.0	$600.0

Established 1952; responsible for management, coordination and support of programs and projects involving all energy technologies, national defense, and basic research; has developed (1) diverse program and project management expertise, (2) direct ties to a broad technology resource base, (3) working relations with governmental, commercial, financial, academic, and public institutions; and (4) procurement expertise; has district office in Los Angeles, project offices in

	DOE staff (authorized)	Total FY 80 operating costs ($M)	Total FY 80 administered funding ($M)

Denver, Colorado, and Albuquerque, New Mexico, information offices in Honolulu and San Diego; provides administrative support to the Laramie, Grand Forks, and Bartlesville Energy Technology Centers; administers some 1,322 contracts; major contracts are with multiprogram laboratories. Major assignments: (1) lead field office for the management of the Solar Central Power Systems Program; (2) field management responsibility of (a) the 10 Megawatt Solar Central Receiver Power Plant to be the nation's first solar-powered electric generating station and (b) the Mirror Fusion Test Facility designed to test components for a fusion reactor; (3) decentralized project responsibility for the construction of the Geothermal Demonstration Power Plant, a 50 Megawatt geothermal electricity plant; (4) lead office for the Geothermal Loan Guaranty Program, a national financial incentive plan to encourage commercial development of geothermal energy to foster normal banking support; (5) lead responsibility to construct the NOVA Project, a large laser to demonstrate scientific feasibility of producing future power through Inertial Confinement Fusion; (6) lead responsibility to construct a 50 megawatt geothermal demonstration project that will use binary conversion technology to generate electricity from a moderate temperature geothermal resource; and (7) project management of in situ coal gasification program in the western United States.

SAN Facilities

Energy Technology Engineering Center
Lawrence Berkeley Laboratory
Lawrence Livermore National Laboratory
Stanford Linear Accelerator Center
Laboratory for Energy-Related Health Research
Laboratory for Nuclear Medicine and Radiation Biology
Laboratory of Radiobiology

SAVANNAH RIVER OPERATIONS OFFICE (SR)
Aiken, SC

215	$ 333.0	$ 386.0

Established 1952; one of the key installations in the special nuclear materials production and research program under DOE; responsible for energy research and development, production of nuclear materials for national defense, and related environmental research activities; responsible for (1) design, construction, operation, and maintenance of a multi-billion dollar industrial facility, (2) the program for the full-range evaluation of alternative fuel-cycle techniques, (3) high-level radioactive waste management, (4) nuclear reactor operation and safety, (5) chemical reprocessing technology; and studies of the environmental effects of nuclear and industrial operations. SR administers 325 contracts in addition to those with E. I. DuPont de Nemours and Company (the prime contract) and the University of Georgia's Institute of Ecology; conducts an extensive public affairs program. In 1972 the entire site was designated as the Nation's first National Environmental Research Park. Major assignments: (1) isotope production, fuel and target fabrication, and chemical separation; (2) management of liquid, solid, and gaseous radioactive wastes; (3) lead office for national high-level waste management program; (4) management responsibility for the Spent Fuel Storage Program; (5) evaluation of the national uranium resource in a hydrogeochemical survey in 25 of the eastern United States and 7 in the west; (6) joint studies with the U.S. Forest Service on forest management at the SR site; (7) comprehensive program of environmental monitoring; and (8) environmental research related to the effects of different forms of energy utilization on the environment.

SR Facilities

Savannah River Ecology Laboratory
Savannah River Forest Station
Savannah River Plant
Savannah River Laboratory

	DOE staff (authorized)	Total FY 80 operating costs ($M)	Total FY 80 administered funding ($M)
SCHENECTADY NAVAL REACTORS OFFICE (SNRO) Nisakayuna, NY	70	$ 2.2	$ 235.0

Established 1946; administers the operation of the Knolls Atomic Power Laboratory, which is operated for DOE by the General Electric Company.

SNRO Facilities

Knolls Atomic Power Laboratory

3. THE DOE FACILITIES

A. MULTIPROGRAM LABORATORIES

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital investment and equipment ($M)
AMES LABORATORY Ames, IA Chicago Operations and Regional Office	539	$ 14.3	$ 30.1

Operated by the Iowa State University, the laboratory's major program is in the materials sciences. This program centers on the preparation, purification, chemical characterization, and structure identification of new materials, followed by evaluation and interpretation of their chemical, physical, and mechanical properties. Other programs in chemistry emphasize trace-elements and organic compound analysis, photochemistry, and coal chemistry; coal benefication; characterization and nuclear spectroscopy of short-lived fission products; high-energy physics; solar materials and conservation.

ARGONNE NATIONAL LABORATORY (ANL) Argonne, IL Chicago Operations and Regional Office	5,315	$ 257.0	$ 526.0

ANL is operated for DOE by The University of Chicago in cooperation with the Argonne Universities Association (a consortium of 30 midwest universities). In addition to the Illinois site, a second site (Argonne West) is maintained at the Idaho National Engineering Laboratory near Idaho Falls, Idaho. The largest single program effort at ANL is concerned with reactor development. The Laboratory also has major efforts in pressurized fluidized bed combustion of coal, the development of magnetohydrodynamics for more efficient generation of electricity from coal, and development of a high-capacity lithium-sulfur battery. There are growing programs in the development of magnetic fusion and solar energy and increasing management responsibilities for cooperative programs with other laboratories, universities, and industries. ANL also has major responsibilities for assessing the biomedical and environmental effects of energy-related activities. In addition, a large fraction of the Laboratory's resources are committed to fundamental research in the physical and biological sciences, centered around the Laboratory's energy missions. Major facilities include the Zero-Gradient Synchrotron, a 12.5 billion electron volts (polarized) proton accelerator; JANUS, a reactor for fast neutron radiation biology; and two zero-power reactors, ZPR-6 and ZPR-9; Liquid Metal/Water Components Testing Facilities and a Fast Neutron Generator Facility. Argonne West has such major facilities as EBR-II, a 62.5 Megawatt experimental breeder reactor; Hot Fuel Examination Facilities (HFEF); Transient Reactor Test Facility (TREAT); Zero Power Plutonium Reactor (ZPPR); and a Sodium Loop Safety Facility (SLSF).

BROOKHAVEN NATIONAL LABORATORY (BNL) Upton (Long Island), NY Chicago Operations and Regional Office	3,821	$ 105.9	$ 363.9

BNL is operated by Associated Universities, Inc. Major research programs include the exploration of the fundamental constituents of matter, properties, and interactions. The physical, chemical, and biological effects of radiation and of chemical substances involved in the production and use of energy are also studied. Other research programs include combustion processes and emissions, physical and chemical cleanup of combustion gas, meteorological dispersion, atmospheric chemistry, pulmonary physiology, and inhalation toxicology. Major facilities include the 33 billion electron volts Alternating Gradient Synchroton (AGS), the High Flux Beam Reactor (HFBR), and the Tandem Van de Graaff Facility. In addition, there are several smaller accelerators, mass spectrometers, electron microscopes, a scanning transmission electron microscope, and a research hospital. The Central Scientific Computing Facility (CSCF) provides direct access and remote terminal capability for a CDC Cyber 70/76 and two CDC 6600 computers.

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)
HANFORD ENGINEERING DEVELOPMENT LABORATORY (HEDL) Richland, WA Fast Flux Test Facility Project Office	2,962	$ 149.2	$ 879.5

HEDL is operated by Westinghouse Hanford Company and is a national leader in breeder reactor fuels and materials development, including fuel fabrication technology, determination of radiation effects on structural materials, sodium technology and chemical engineering. A major responsibility is design, construction, and operation of the Fast Flux Test Facility (FFTF), a 400 Megawatt (thermal) sodium-cooled reactor, which is the primary test bed for fast breeder reactor fuels, materials, and components. Major facilities include the FFTF, a computerized mockup of the FFTF control room for operator training, the high-temperature sodium facility, sodium technology facilities, nuclear fuel facilities, and a 1-million electron volt electron microscope. Major facilities being planned for HEDL include the Fuel Storage Facility (FSF), the Fuels and Materials Examination Facility (FMEF), the Fusion Materials Irradiation Test Facility (FMITF), and the Maintenance and Storage Facility (MSF).

IDAHO NATIONAL ENGINEERING LABORATORY (INEL) Idaho Falls, ID Idaho Operations Office	3,903	$ 220.0	$ 612.0

INEL is operated by EG&G Idaho, Inc. and Exxon Nuclear Idaho, Inc. Major programs include water reactor safety testing, materials and fuels reprocessing, geothermal research and development, breeder reactor research, waste management, gas reactor safety, naval propulsion reactors, and health services. In addition to the Idaho Chemical Processing Plant and the Radioactive Waste Management Complex, major facilities include the Advanced Test Reactor, the Engineering Test Reactor, the Power Burst Facility, the Loss-of-Fluid Test Facility, the MHD-Component Development and Testing Facility, the Fluorinel Dissolution Process Facility, the New Waste Calcining Facility, Raft River Thermal Loop Facility, Rover Fuel Processing Facilities, and Protection and Support Facilities.

LAWRENCE BERKELEY LABORATORY (LBL) Berkeley, CA San Francisco Operations Office	2,761	$ 98.6	$ 175.4

LBL is operated by the University of California. It is a multi-purpose, multidisciplinary research laboratory, with major research programs in high-energy physics, nuclear physics, basic energy sciences, conservation and solar energy, coal research, geothermal application; inertial confinement fusion, geochemistry, computer science and mathematics. Major facilities include the SuperHILAC (heavy-ion linear accelerator); the Bevatron; 88-in. cyclotron; 184-in. synchrocyclotron; the Bevalac (combination of SuperHILAC acting as an injector for the Bevatron); the high intensity uranium beams project which will allow acceleration of intense beams of all ions, including uranium at both the SuperHILAC and Bevalac (currently under construction); and the Donner scanning pavilion.

LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL) Livermore, CA San Francisco Operations Office	7,042	$ 317.8	$ 368.7

LLNL is operated by the University of California. Major programs include nuclear weapons design, laser fusion, laser isotope separation, magnetic fusion energy, and biomedical and environmental

Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)

research. Other programs include an in situ coal gasification and oil shale retorting, a shallow solar pond technology and energy conservation program including an aluminum-air battery, and flywheel development. Major facilities include the 2XII-B neutral beam injection system, the Mirror Fusion Test Facility (MFTF), a rotating target neutron source, a high-voltage test stand, the 0.4 terrawatt Janus and 4 terrawatt Argus. The 20-30 terrawatt Shiva is completed and work on the 80-120 terrawatt Nova I Laser System is underway. Other major facilities include a 7,000-acre chemical explosives test site, one of the largest research computer centers in the world, and extensive and diversified engineering and machine-shop facilities.

LOS ALAMOS NATIONAL SCIENTIFIC LABORATORY (LANSL)
Los Alamos, NM
Albuquerque Operations Office

6,940	$ 320.6[1/]	$ 569.6

LANSL is operated by the University of California. Major programs include developing nuclear warheads, designing and testing advanced technology concepts, and maintaining an innovative weapons design program. In nuclear fission, programs include surveying for uranium, separating isotopes of uranium by laser induction, testing advanced reactor fuel elements, modeling reactor accident results for the Nuclear Regulatory Commission, evaluating biomedical consequences of nuclear energy production, and developing effective nuclear waste disposal methods. In nuclear fusion, programs include magnetically confined plasma devices (especially high-beta devices), laser-induced fusion, and safe handling techniques for large quantities of tritium. Other programs include non-nuclear energy, basic energy science, and technology utilization. Major facilities include an 800-million electron volt linear proton accelerator (LAMPF), a Weapons Neutron Research Facility, a stable isotopes production facility, a short-pulse 27-MeV X-ray machine, a computer center, a 20-terrawatt CO_2 gas laser facility, an 8 Megawatt nuclear reactor, a plutonium research facility, a plutonium heat source fuel production facility, and a National Security Resources and Studies Center.

OAK RIDGE NATIONAL LABORATORY (ORNL)
Oak Ridge, TN
Oak Ridge Operations Office

5,019	$ 302.0	$ 540.0

ORNL is operated by the Union Carbide Corporation. Major programs include developing nuclear power as a safe, economic industry; demonstrating the feasibility of magnetic fusion; understanding and controlling the health and environmental effects of energy production and use; conducting programs in coal processing and use; energy conservation; and investigating solar and geothermal energy, as well as research in base physical and biological sciences to support these programs. Major facilities include the High-Flux Isotope Reactor (HFIR), Oak Ridge Research Reactor (ORR), the Oak Ridge Electron Linear Accelerator (ORELA), the Oak Ridge Isochronous Cyclotron (ORIC), the Transuranium Processing Plant, the Thorium-Uranium Fuel Recycle Facility, the ISX-B Tokamak, and the ELMO Bumpy Torus, a biological laboratory complex, the Environmental Sciences Laboratory, the Holifield Heavy-Ion Research Facility and the Superconducting Magnet Test Facility (under construction).

[1/] DOE funding only; excludes reimbursable work at $70.5M

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)
PACIFIC NORTHWEST LABORATORY (PNL) Richland, WA Richland Operations Office	2,700	$ 120.0	$ 62.6

PNL is operated by Battelle Memorial Institute. Major programs include radionuclide inhalation studies, airborne remote sensing of surface temperature conditions, nuclear fuel cycle research, magnetic fusion development, removal of sulphur compounds from hot fuel gases, developing electrode materials for MHD systems, solar energy investigations, geothermal and conservation investigations. PNL serves as DOE's lead laboratory for the wind-energy site assessment program and for the seasonal thermal energy storage program. Major facilities include 2 life sciences laboratories, aquatic laboratory facilities, an extensive meteorological tower-grid system, a laboratory for criticality experiments, high-level radiochemistry laboratories, ultra-sensitive radiation counting facilities, high-rate sputtering equipment; electropolishing decontamination facilities; and high-voltage electric field exposure facilities. PNL manages and conducts research in the Hanford National Environmental Research Park.

SANDIA NATIONAL LABORATORIES (SNL) Albuquerque, NM; Livermore, CA; Tonopah, NV Albuquerque Operations Office	7,650	$ 242.8[1/]	$ 422.5

SNL is operated by the Western Electric Company. Major programs at SNL are those of national security. They include weapons design (exploratory development, weapons development, and product engineering), and weapons management (stockpile management, security safeguards, and weapons detection). Major facilities include a 5 Megawatt Solar Central Power Facility; E-beam Fusion Facility; Nuclear Safeguards and Security Laboratory; a Combustion Research Facility; intense relativistic electron-beam accelerators; Van de Graaff and Cockroft-Walton accelerators; pulse reactors; a neodymiumglass laser; testing facilities for environment and radiation simulation; computation facilities; a primary standards laboratory; and a laboratory for studying hybrid microcircuitry and semiconductor processing techniques.

SAVANNAH RIVER LABORATORY (SRL) Aiken, SC Savannah River Operations Office	995	$ 65.7	$ 98.0

SRL is operated by E. I. duPont de Nemours and Company. It provides developmental and technical assistance in all areas of the nuclear fuel cycle; uranium resource evaluation, fuel fabrication, isotope production, reactor physics and engineering, fuel reprocessing, waste management, environmental monitoring and heavy waste production. Major programs include RD&D of selective removal of isotopes from irradiated fuels, radioactive waste storage, testing of reactor mockups, fuel fabrication and target elements, operational techniques and protective systems for safe reactor operation, evaluation of reactor fuel assemblies and lattices, support of production and encapsulation of plutonium-238 for radioisotopic-thermal generators, preparation of californium-252 neutron sources, development and verification of models to predict and determine total population exposure from radioactive and nonradioactive releases to the atmosphere and water. Major facilities include zero-power test reactors, heat transfer laboratory with 3 Megawatts of electrical power, hydraulics test facility with 8 Megawatt steam supply, limnology laboratory, flowing streams laboratory, weather center analysis laboratory, activation analysis facilities, facilities for handling both small or large amounts of radioactive material, computer center, analytical chemistry laboratories, and semiworks laboratories for small, intermediate, and full-scale testing of plant equipment and processes.

[1/] DOE funding only; excludes reimbursable work at $99.6M

B. PROGRAM–DEDICATED FACILITIES

Biomedical and Environmental Facilities

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)
CENTER FOR ENERGY AND ENVIRONMENT RESEARCH (CEER) San Juan, Puerto Rico Oak Ridge Operations Office	50	$ 102.1	$ 11.0

The Center for Energy and Environment Research (CEER) is operated for the Department of Energy by the University of Puerto Rico (UPR). Its principal objectives are to: serve as the focal point for energy research in Puerto Rico to help the Island achieve energy independence while contributing to DOE's effort to enable the entire nation to achieve the same goal; to help Puerto Rico develop the scientific engineering and other trained personnel needed for the future in the energy environmental and related fields; continue research and training programs in environmental sciences and technologies; and serve as a center for international cooperation in the energy and environmental fields, particularly for scientists and technicians from tropical and subtropical areas, especially in the Caribbean and Latin America. CEER's research is aimed at developing alternative sources of energy for Puerto Rico through use of its most abundant natural resources which are the sun, the wind and the sea. In the environmental area, it has Terrestrial Marine and Human Ecology Divisions; in energy research, programs include solar technology, conservation, materials, fossil fuels, ocean thermal energy conversion (OTEC) and terrestrial and marine biomass and bioconversion technologies. CEER facilities are at four separate sites in the island. In addition to offices and well-equipped laboratories located in a building adjacent to the UPR School of Medicine, CEER has a major well-equipped research laboratory and associated nuclear engineering training facilities, marine biology research laboratories and sea water aquarium laboratory and terrestrial ecology laboratories.

COMPARATIVE ANIMAL RESEARCH LABORATORY (CARL) Oak Ridge, TN Oak Ridge Operations Office	92	$169.6 [1/]	$6.3

The Comparative Animal Research Laboratory is operated for DOE by the University of Tennessee. The principal research programs at CARL involve studies of controlled exposures of a variety of experimental animals to toxic materials associated with energy production, with emphasis on gastrointestinal physiology, toxicology, and mutagenesis. A major program of research is also conducted with plants to better understand the mechanisms of radiation and chemical mutagenesis and plant breeding to facilitate development of improved strains of economically important plants. Equipment and facilities at CARL are suitable for conducting sophisticated laboratory experimentation and maintaining and utilizing large domestic animals and small laboratory animals.

ENVIRONMENTAL MEASUREMENTS LABORATORY (EML) New York, NY	95	$5.389	$ 2.5

The Environmental Measurements Laboratory is staffed by personnel attached to DOE Headquarters. The EML mission is largely research and development 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

[1/] Primarily Environmental Protection Agency Funds

Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)

baselines and estimating man-made contributions, which are accomplished by in situ measurements or by the collection and analysis of samples from global networks and selected regional sites. EML develops and improves techniques for studying pathways of contaminants from source to man and applies new technological developments to the detection and analysis of ionizing radiation, trace metals, and other pollutants. Aside from its ordinary laboratory facilities, EML has specialized equipment for measuring pollutants from nuclear and non-nuclear sources, measuring aerosols, and developing experimental equipment and instruments.

INHALATION TOXICOLOGY RESEARCH INSTITUTE (ITRI)
Albuquerque, NM
Albuquerque Operations Office

212	$7.6[1/]	$8.2

The Inhalation Toxicology Research Institute is operated by the Lovelace Biomedical and Environmental Research Institute to research potential human health effects associated with the inhalation of fission product radionuclides, and airborne noxious particles and gases, particularly those materials that might be produced in meeting man's energy needs. Current research focuses on the health risks associated with the commercialization of expanded use of: nuclear power technology utilizing uranium, mixed oxides of uranium, and plutonium or plutonium as basic fuel, and fossil fuel technology utilizing conventional coal combustion, fluidized bed combustion, and coal gasification. The results of these comparative studies will provide data on technology-associated health costs necessary for the establishment of a rational national energy policy.

LABORATORY FOR ENERGY-RELATED HEALTH RESEARCH[2/]
University of California
Davis, CA
San Francisco Operations Office

40	$ 1.9	$ .1

The Laboratory is associated with the School of Veterinary Medicine at the University of California in Davis. Since its founding in 1951, its main research focus has been upon long term, low-level biomedical and environmental level effects of internally deposited radionuclides, external irradiation and fossil fuel energy-related effluents on living systems. Current research includes early diagnosis and methods of preventing cancer of bone, bone marrow and other organs, as well as mechanisms of injury and repair of target organs and integrated assessment of exposure risks. The main objective of the laboratory is to determine, study and quantify the biomedical effects of long-term, low-level exposures to nuclear and fossil fuel-related effluents from energy production. Primary areas of interest include toxicology, immunobiology, experimental hematology, tumor biology, cytogenetics, bone pathology, aerosol physics, lung physiology and pathology, radiation dosimetry and comparative assessments. The laboratory complex houses animals, whole-body counters, aerosol generating and exposure chambers, minicomputer and gamma ray field, as well as, analytical tissue culture and pathology laboratories. A new toxic pollutant laboratory is presently under construction.

[1/] DOE funding only; excludes reimbursable work of $2.9M.

[2/] Name change pending approval by the University of California Board of Regents; formerly, the Radiobiology Laboratory.

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)
LABORATORY OF NUCLEAR MEDICINE AND RADIATION BIOLOGY University of California Los Angeles, CA San Francisco Operations Office	141	$ 4.8	$ 3.9

The Laboratory of Nuclear Medicine and Radiation Biology (LNMRB) research programs focus on problems of national significance in energy-related medical, biomedical and environmental fields. Scientists are involved in studies on the mechanism of damage to cellular constituents and processes by ionizing radiation, heavy metal contaminants and atmospheric gaseous pollutants. Research is also conducted on the mechanism of action of certain hormones and neurotransmitters, control of metabolic reactions, regulation of gene expression and of carcinogenesis, and on the formation and properties of cellular membranes. Other research is concerned with the environmental effects of various energy technologies on desert and agricultural systems. Special emphasis is at present centered on the effects of solar thermal, geothermal and fossil fuel power systems. Basic research on desert ecosystem biology is carried out in support of the applied studies. Another laboratory objective is the introduction of new atraumatic diagnostic procedures for earlier detection of disease. Progress is dependent on the development of new instrumentation, radiopharmaceuticals and diagnostic strategies, first applied to animals and then directly to man. Emphasis is being placed on computed tomography techniques for studying physiological processes in the heart, brain and lungs. Laboratory resources include space for the laboratory's cyclotron and nuclear medicine research in the UCLA Center for Health Sciences.

LABORATORY OF RADIOBIOLOGY University of California San Francisco, CA San Francisco Operations Office	40	$ 2.0	$ .2

The Laboratory of Radiobiology is an organized research unit of the University of California School of Medicine. It interacts with various academic departments through faculty appointments and research associateships, and thus has both basic science and clinical ties for its research activities. The laboratory's program revolves around the development of methods and the identification of principles for evaluation of multiresource health hazards in man. It consists of environmental and basic science components oriented to the understanding of injury and repair mechanisms at various levels of biological organization. Major activities are focused on deoxyribonucleic acid (DNA) replication and repair, chromosome structure and behavior, mammalian embryo development, regulation of blood formation, modulation of the extracellular environment, and modification of tissue sensitivity to radiations and chemical agents. The existing laboratory is available for research activities, including the development of methods for teratogenic and mutagenic assessment of physical and chemical agents associated with various technologies. Since its inception, the laboratory has pioneered in areas relating to genetic repair, radiation protection and sensitization, and cell population growth and development.

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)
MICHIGAN STATE UNIVERSITY (MSU) - DOE PLANT RESEARCH LABORATORY East Lansing, MI Chicago Operations and Regional Office	50	$ 1.5	$ 1.1

Established in 1964, the Plant Research Laboratory is a center for modern experimental plant biology and is operated for the Department of Energy by Michigan State University. The laboratory is engaged in an intensive, interdisciplinary research program in plant science with related education and training functions. The research program is broadly based, including studies at all levels of organization from the molecular to the organismal one, drawing on plant physiology, biochemistry, biophysics, cytology (ultrastructure) and other disciplines. Current problems under investigation are exchange of water, gas and energy between plant and environment; control of plant function and development by various factors of the physical environment including stress conditions; energy transfer in biomolecules and biological systems; regulation of enzyme activity; action and function of plant hormones; structure, composition, formation and function of cell organelles (membranes, microtubules, cell wall); nitrogen fixation and development in blue-green algae; flower induction; and effects of sulfur dioxide on plants and the basis of SO_2 tolerance. Nitrogen fixation, stress physiology and the effect of sulfur dioxide are the research areas directly concerned with the role of plants in energy production, consumption and conservation. The Plant Research Laboratory is equipped to perform sophisticated research at the biochemical, biophysical and ultrastructural levels. In terms of special equipment, the laboratory has specially designed equipment to measure gas exchange between the plant and its environment, including instrumentation to determine the resistance to the flow of gases and water vapor in the leaves and a computerized spectrophotometer to conduct research on light responses.

OAK RIDGE ASSOCIATED UNIVERSITIES (ORAU) Oak Ridge, TN Oak Ridge Operations Office	398	$ 9.8	$ 11.6

Oak Ridge Associated Universities is a not-for-profit corporation sponsored by 50 colleges and universities. As a prime contractor, ORAU conducts a diverse program of scientific research, education, training, and public information programs for DOE. As examples, its Medical and Health Sciences Division conducts a large biomedical research program directed toward the needs of occupational medicine related to energy production, and operates a special facility for treatment of radiation injury; the Institute for Energy Analysis, which examines energy problems from social, political, economic, and technological points of view and provides analysis to governmental policy-making groups; ORAU operates the American Museum of Science and Energy and DOE's national travelling exhibits program; and ORAU conducts a Training and Technology Program at the Y-12 Plant to provide vocational and technical training for unemployed, underemployed, and minority persons, including migrant farm workers.

RADIOBIOLOGY LABORATORY University of Utah Salt Lake City, UT Chicago Operations and Regional Office	54	$ 1.7	$ 1.7

Operated by the University of Utah for the Department of Energy, the primary objective of the Radiobiology Laboratory's activities is to conduct studies on the deposition, translocation, excretion, retention, and acute and late toxic effects of radionuclides, particularly the alpha-emitting isotopes

Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)

entering the body. This effort includes studies of the comparative metabolic effects of these isotopes using total body and partial body counting in vivo and radiochemical analysis of tissues. Specialized facilities include housing for more than 800 dogs and 3,000 mice. Specialized equipment exists for the quantitative measurement of low levels of plutonium and other alpha-emitting radionuclides, particularly with respect to bone microdosimetry; and the JEOL 100-S Electron Microscope and its computer-operated QTM-720 analyzer in the Bone-Autoradiography Laboratory.

SAVANNAH RIVER ECOLOGY LABORATORY (SREL)
Aiken, SC
Savannah River Operations Office

67	$ 1.5	$ 3.8

The Savannah River Ecology Laboratory is a research facility operated by the University of Georgia. Its main programs are in: thermal ecology, where the goal is to study the environmental effects of the release of cooling water from the Savannah River Plant's production reactors; mineral cycling, where the goal is to produce information on movement of heavy metals, radioisotopes, and other toxic materials and stable elements through natural communities in the coastal plain area; the radioecology of transuranics, where the general principles of mineral cycling are used to evaluate environmental movement of plutonium and other transuranic elements under the humid climatic conditions of the southeastern United States; and in studies of basic and theoretical ecology, where specific studies often suggest broader generalities which can be defined by basic research.

UNIVERSITY OF ROCHESTER BIOMEDICAL LABORATORY
Rochester, NY
Chicago Operations and Regional Office

110	$ 2.4	$ 6.5

The University of Rochester Biomedical Research Laboratory is operated by the University of Rochester. The laboratory which is an integral part of the University's Medical Center was established initially in 1943 as part of the Manhattan Project to carry out research and to provide monitoring services and consultation on the health hazards expected to arise at installations working on the development of the atomic bomb. Currently, principal research programs involve studies of the effects of toxic materials associated with energy production. Equipment and facilities at the laboratory are suitable for conducting sophisticated laboratory experiments, as well as short and long-term studies involving common laboratory animals.

Fossil Energy Facilities

BARTLESVILLE ENERGY TECHNOLOGY CENTER (BETC)
Bartlesville, OK
San Francisco Operations Office

172	$ 23.8	$ 9.2

BETC was established by the Bureau of Mines in 1918 and is a federally operated facility. It is devoted primarily to research and engineering on petroleum and natural gas. The primary research program is concerned with near-term, high-priority goals of enhanced oil and gas recovery and conservation of transportation fuels. Other programs include the refining and use of substitutes for petroleum made from synthetic crude oils from coal, tar sands, and oil shale.

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)
GRAND FORKS ENERGY TECHNOLOGY CENTER (GFETC) Grand Forks, ND San Francisco Operations Office	68	$ 8.99	$ 5.3

GFETC is a federally operated facility. GFETC specializes in research on combustion, gasification, and liquefaction of western United States coals. The Center is recognized as the principal center of expertise in the United States in the technology and use of lignite and other low-rank (geographically young) western coals. Major facilities include a 25-ton per day gasifier pilot plant, a 75-pound per hour furnace to evaluate ash fouling, a wet scrubber pilot plant, a 6-inch diameter atmospheric fluidized-bed combustor, and coal liquefaction equipment for studying the carbon monoxide-steam process. Major analytical facilities include a high- and low-resolution mass spectrometer, scanning and analyzing electron microscope, inductively coupled argon plasma spectrometer, and an atomic absorption spectrophotometer.

LARAMIE ENERGY TECHNOLOGY CENTER (LETC) Laramie, WY San Francisco Operations Office	148	$ 35.45	$ 11.3

LETC is a federally operated facility. It is a oil shale coal and petroleum research center, primarily concerned with developing technology for in situ recovery of energy resources. At LETC's North Site, the 10-ton and 150-ton retorts were used to demonstrate that large blocks of oil shale could be retorted in situ. Major facilities include in-house research laboratories, offices, and auxiliary buildings on the northwest corner of the University of Wyoming campus, two pilot plants 1 mile north of Laramie, and the Rock Springs, Wyoming in situ oil shale retorting field site.

MORGANTOWN ENERGY TECHNOLOGY CENTER (METC) Morgantown, WV Oak Ridge Operations Office	249	$ 94.5	$ 5.7

METC is a federally operated facility. Major programs include research to improve processing and using coal and for extracting petroleum and natural gas. This includes in situ gasification of eastern U.S. coals. Solid sorbents are being developed to remove particulates and sulfur from hot coal-derived gas. Other programs include evaluation of valves for coal conversion plants, analysis of byproducts of coal gasification and liquefaction, investigation of fluidized-bed combustion of coal for electric power generation, location of gas in Devonian shales, and utilization of natural and induced fracture systems in oil- and gas-bearing rock and methods to stimulate and complete wells. Specialized facilities include a 42-in. diameter, stirred-bed, pressurized coal gasifier; a 100,000 standard cubic feet per hour benchscale, iron oxide, hot-coal, gas desulfurization facility; and facilities for testing and developing valves for coal conversion plants.

PITTSBURGH ENERGY TECHNOLOGY CENTER (PETC) Pittsburgh, PA Chicago Operations and Regional Office	352	$ 43.9	$ 55.8

PETC is a federally operated facility. Major programs include synthoil (low-sulfur liquid fuel from coal), synthane (high-btu pipeline gas from coal), dilute phase hydrogasification, hydroliquefaction process of coal using inexpensive disposal catalysts, and development of a two-stage coal gasifier-combustor for powering a magnetohydrodynamic power plant. Other programs include removal of sulfur

Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)

from coal, improved catalysts, reactor modeling, and environmental impact and conservation techniques. Major facilities include the synthane pilot plant, liquefaction process development unit, hydrogasification facilities, 700-horsepower coal slurry facility, 5 Megawatt gasifier combustor, and analytic and spectrometric facilities.

CARBONDALE MINING TECHNOLOGY CENTER
Carbondale, IL
Pittsburgh Energy Technology Center

26	$ 4.8	$ 2.3

The Carbondale Mining Technology Center is a federally-owned and operated research facility. The Center's advanced mining research and development activities were transferred to the Department of Energy from the Department of Interior, Bureau of Mines. It is the lead center for surface coal mining.

PITTSBURGH MINING TECHNOLOGY CENTER
Bruceton, PA
Pittsburgh Energy Technology Center

70	$ 22.5	$ 35.0

The Pittsburgh Mining Technology Center (PMTC) is a federally-owned and federally/contractor operated technology development center. The Center's mission is to conduct research required to more efficiently mine and prepare the coal supply needed to meet the Nation's current and projected demand. PMTC's facilities constitute the most advanced coal mining and test facilities preparation in the world. It is the lead center for underground mining, coal preparation and surface test facilities.

Fusion Energy Facility

PRINCETON PLASMA PHYSICS LABORATORY (PPPL)
Princeton, NJ
Chicago Operations and Regional Office

1,406	$ 51.9	$ 50.2

The Princeton Plasma Physics Laboratory, operated by Princeton University at their James Forrestal Research Campus, is one of four major controlled thermonuclear research facilities supported by DOE. Its mission is to produce and control thermonuclear fusion for the purpose of developing an electrical energy source that would be economic, inexhaustible, and environmentally attractive. PPPL is able to conduct experimental, theoretical, and computer investigations into all branches of plasma physics. Currently, the low-density torroidal research at PPPL is leading the world effort in advanced heating methods, attainment of high electron and ion temperatures, and development of detailed diagnostics for high-temperature toroidal plasmas.

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)
BETTIS ATOMIC POWER LABORATORY (BAPL) West Mifflin, PA and Idaho Falls, ID Pittsburgh Naval Reactors Office	3,358	$121.4	$321.9

The Bettis Atomic Power Laboratory is operated by the Westinghouse Electric Corporation at 2 sites: The Bettis site near Pittsburgh, Pa., and the Naval Reactors Facility at the Idaho National Engineering Laboratory. BAPL performs research and development of naval nuclear propulsion plants and the Shippingport light-water breeder reactor projects. In addition to DOE funding, BAPL received approximately $63.7 million in FY 80 from other federal agencies.

ENERGY TECHNOLOGY ENGINEERING CENTER (ETEC) Canoga Park, CA San Francisco Operations Office	330	$ 26.9	$ 71.7

The ETEC is operated for DOE by the Energy Systems Group of the Rockwell International Corporation. Its primary purpose is to aid the Liquid Metal Fast Breeder Reactor Program in developing American industry's capability to produce reliable and economic power from fast-breeder reactor systems. ETEC's work scope has been expanded to provide engineering, testing and consultation services for all DOE programs. Formerly known as the Liquid Metal Engineering Center, the facility was renamed in May 1978 to better reflect the expanded scope of activities. The ETEC is composed of a complex of liquid-sodium facilities for testing and evaluating components and instruments such as heat exchangers, steam generators, valves, piping, pumps, and mechanical elements for breeder reactors and other energy conversion systems employing high-temperature liquid-metal systems. Principal component test facilities are: 70 Megawatt Thermal Sodium Components Test Installation; Sodium Pump Test Facility; Small Components Test Loop; Component Handling and Cleaning Facility; Thermal Transient Facility; Large Leak Test Rig; Static Sodium Test Facilities and the Hydraulic Test Facility. In addition to the testing program, ETEC provides engineering support in the areas of technical management and review to DOE solar, geothermal and fossil energy programs.

KNOLLS ATOMIC POWER LABORATORY (KAPL) Schenectady, NY Schenectady Naval Reactors Office	2,913	$107.0	$374.0

The Knolls Atomic Power Laboratory, operated by the General Electric Company at three sites (main site in Schenectady; others in West Milton, New York and Windsor, Connecticut), has the mission of designing and developing improved naval nuclear propulsion plants and reactor cores in a wide range of power ratings to meet the military requirements of the Navy. Particular emphasis is on developing improved, longer-lifed cores and increasing the reliability and maintainability of reactor plant components. KAPL has the responsibility of developing the reactor plant required for the Trident ballistic missile submarines. In addition to DOE funding, KAPL also received approximately $55.8 million in FY 80 from other federal agencies.

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)
BATES LINEAR ACCELERATOR FACILITY Cambridge, MA Chicago Operations and Regional Office	248	$ 10.0	$ 28.9

The Bates Linear Accelerator Facility is operated by the Massachusetts Institute of Technology (MIT). A vigorous experimental program using the 400 million electron volt accelerator is closely coordinated with a major theory program at MIT. The accelerator provides research with a high-intensity beam of electrons spread over a very narrow band of energy, which makes possible very accurate measurements of the fine structure of the loss spectrometer. A second experimental area is under construction which will provide photons used to induce nuclear reactions of interest.

FERMI NATIONAL ACCELERATOR LABORATORY (FERMILAB) Batavia, IL Chicago Operations and Regional Office	1,982	$ 70.9	$378.4

The Fermi National Accelerator Laboratory is operated by the Universities Research Association, Inc. (URA), a consortium of 53 universities throughout the United States and Canada. Its central purpose is to explore the field of elementary particle physics so that the understanding of the basic structure of matter may be broadened. Related to this purpose is the improvement of accelerator design, which has resulted in technological spin-offs such as the development of a superconducting magnet. Additionally, Fermilab's linear accelerator is used in cancer therapy, so that the laboratory has become deeply involved in a project outside high-energy physics: a medical radiation therapy facility. The principal scientific instrument is a particle accelerator system, consisting of a series of four accelerators, capable of terminal energies up to 500 billion electron volts (GeV).

NOTRE DAME RADIATION LABORATORY Notre Dame, IN Chicago Operations and Regional Office	71	$ 2.1	$ 4.4

The Notre Dame Radiation Laboratory is operated by Notre Dame University for DOE. Its objective is to study radiation effects--to obtain, through theoretical and experimental research, detailed descriptions of the mechanisms leading to chemical change following the absorption of high-energy radiation and light; and to construct predictive models that will be useful in experimental and technological applications where reactions are initiated by radiation chemical and photochemical methods. The laboratory maintains an outstanding complement of equipment such as linear and Van de Graaff accelerators, cobalt-60 gamma-ray sources, lasers, and photochemical sources. Unique facilities include a coupled Van de Graaff-ESR spectrometer for studying radiation-produced intermediates, laser apparatus for similar studies of intermediates produced by visible and ultraviolet light, and computer-controlled apparatus for acquisition and processing of optical data.

STANFORD LINEAR ACCELERATOR CENTER (SLAC) Stanford, CA San Francisco Operations Office	1,402	$ 49.1	$200.9

The Stanford Linear Accelerator Center is operated by Stanford University to carry out experimental and theoretical research in high-energy physics, and also developmental work in new techniques for

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)

particle acceleration and for experimental instrumentation. SLAC's main research instrument is a two mile-long linear electron accelerator, largest of its kind in the world. This is complemented by some large experimental detection devices used in particle physics experiments, including bubble and streamer chambers and several magnetic spectrometers of different design; a "triplex" computation facility consisting of two IBM 370/168 and one 360/91 computers; and an electron-positron colliding-beam storage ring (SPEAR) having a maximum single-beam energy of 4 billion electron volts (GeV). The Positron-Electron-Proton (PEP) was completed in 1980. The project consists of an electron-positron colliding beam storage ring that uses the linear accelerator as an injector. PEP will have maximum single beam energy of 18 GeV, more than four times greater than SPEAR and will greatly expand experimental opportunities.

Safeguards Facility

NEW BRUNSWICK LABORATORY (NBL) Argonne, IL Chicago Operations and Regional Office	60	$ 1.9	$ 5.0

The New Brunswick Laboratory (NBL) serves as the U.S. Government Nuclear Materials Measurements Laboratory and is DOE's only laboratory specializing in the measurement science, analytical chemistry of materials, related to U.S. non-proliferation and nuclear energy programs. The laboratory is operated directly by DOE employees. It develops and disseminates improved measurement technology for nuclear materials; prepares, characterizes, and distributes reference and calibration material standards; evaluates the ongoing level of measurement performance through extensive interlaboratory comparison of government and private laboratories engaged in handling nuclear materials; and provides highly accurate and precise measurements on samples of a broad variety of nuclear material types taken by field inspectors for inventory verification. In addition, NBL provides training for inspectors for the U.S. and the International Atomic Energy Agency.

Solar Facilities

REGIONAL SOLAR ENERGY CENTERS			
- Northeast Boston, MA	91	$ 6.3	$ .085
- Mid American Minneapolis, MN	70	$ 5.9	$ 0
- Western Portland, OR	83[1/]	$ 5.1	$ 0
- Southern Atlanta, GA	68	$ 5.7	$ 0

With the announcement of the selection of the contractor for the Solar Energy Research Institute (SERI) in March of 1977, the U.S. Energy Research and Development Administration (ERDA) also announced its intent to establish Regional Solar Energy Centers to encourage widespread use of solar energy on a regionally diversified effort. Four organizations, representing the Northeast, Mid American, Western and Southern regions of the United States were subsequently awarded planning grants to promote widespread solar energy utilization. The Northeast region is represented by the Northeast Solar

1/ Includes 28 State solar offices located in 13 States.

Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)

Energy Center; the Mid American region is represented by Mid American Solar Energy Complex; the Western region by the Western Solar Utilization Network; and the Southern region is represented by the Southern Solar Energy Center. The primary missions of the Centers are commercialization of solar technologies and conservation activities integral to solar applications. In concert with their primary mission in support of the Assistant Secretary for Conservation and Solar Energy, the centers undertake a variety of solar commercialization and related activities assigned by DOE. These include: consumer assurance; technical assistance, training and education, and information dissemination; State coordination support; and market and resource assessment. Emphasis is placed on active solar systems, especially solar water heating, passive solar design, wood burning, small wind systems, and industrial process heat as the technologies most suitable for commercialization. The Regional Solar Energy Centers interact with federal, state and local governments, the industrial sector, business and individual consumers and others (lenders, appraisers, unions, professional societies, etc.).

SOLAR ENERGY RESEARCH INSTITUTE
Golden, CO
Chicago Operations and Regional Office

725	$112.5	$ 16.9

The Solar Energy Research Institute (SERI) is operated under contract by the Midwest Research Institute. It was established by the Solar Energy Research, Development and Demonstration Act of 1974 and began operations in April, 1977. Its primary mission is to serve as the Department of Energy's lead center for solar energy research, development and demonstration (RD&D). Its mission is to undertake research and development activities necessary to insure the timely development of solar technologies that are economical, reliable, environmentally acceptable, socially attractive, and effectively matched with the Nation's end-use requirements; to develop and disseminate materials to educate consumers about solar applications; to communicate with business and professional communities to explain state-of-the-art technologies, discuss solar-related public policies and programs, and provide such other assistance as is needed to promote a mature solar industry; and to assist Federal agencies in the formulation and implementation of national and international programs to encourage efficient energy use and to foster the solar transition. Within the range of solar technologies being addressed at SERI, the major programs currently are: photovoltaics research and development, clean fuels from biomass, dispersed wind energy systems, ocean systems, active heating and cooling, advanced solar research, solar energy storage, solar industrial processed heat, and passive solar technologies. SERI also fosters a number of supporting programs, including: solar program planning and analysis, solar energy information systems, international solar technology programs, university solar energy research, basic and applied solar energy research, solar energy economics and social science research, program management, education and training, and reliability and standards development. A Solar Energy Information Data Bank has been developed and incorporates information and data to serve the research community, legislative bodies, commercial and industrial groups and the general public.

C. PRODUCTION, TESTING AND FABRICATION FACILITIES

Nuclear Materials Production Facilities

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)
EXTRUSION PLANT Ashtabula, OH Oak Ridge Operations Office	50	$ 1.9	$ 0

Two DOE-owned extrusion presses are housed in a private facility, the RMI Company. These presses take depleted and slightly enriched uranium ingots from the Feed Materials Production Center (FMPC) in Fernald, Ohio, extrude them into tubes, and return them to the FMPC for "finishing." The presses also take slightly enriched uranium tubes and fabricate them into billets. These billets are shipped to the Hanford Production Operations at Richland, Washington where they are co-extruded to form fuel elements for the N-Reactor. Significant equipment located at this site consists of a large, 3,850-ton, horizontal extrusion press, and supporting heating, handling, and processing equipment designed to handle production levels of metal extrusion. A small 360-ton extrusion press and limited metallurgical laboratory facilities exist in support of the production effort.

FEED MATERIALS PRODUCTION CENTER (FMPC) Fernald, OH Oak Ridge Operations Office	580	$ 21.0	$ 118.0

The Feed Materials Production Center is operated by National Lead Company of Ohio. The plant is a large-scale, fully integrated facility with the capability of converting uranium feed into finished uranium-metal target and fuel elements for DOE production reactors. In its current activities it converts field materials and recycle materials to refined uranium trioxide (UO_3--this is converted at another plant and fed into the gaseous diffusion-plant cascades). Some of the UO_3 may be used for production of green salt (UF_4), reduction to metal, and fabrication into billets or fuel-element cores for plutonium production reactors. The FMPC facilities total 73 buildings covering about 19 acres. Special facilities include a rolling mill, refinery, and boiler plant.

GASEOUS DIFFUSION PLANTS Oak Ridge, TN; Paducah, KY; and Portsmouth, OH Oak Ridge Operations Office	11,000	$ 76.9	$2,169.0

The three DOE gaseous diffusion plants represent the major part of the Free World's capacity to produce enriched uranium. Two of the plants, located in Oak Ridge, Tennessee and Paducah, Kentucky, are operated by the Nuclear Division of Union Carbide Corporation. The third, located near Portsmouth, Ohio, is operated by Goodyear Atomic Corporation. The three plants operate as an integrated complex to enrich uranium, in the isotope U-235, for use in nuclear power and propulsion reactors. Some of the specialized capabilities and facilities that exist at the plants also contribute directly to the solution of energy and pollution problems including highly complex and automatic welding techniques; facilities for working with very high vacuums; the fabrication of parts from exotic metals; control of highly corrosive chemicals; the adoption of the most advanced process control systems that utilize computers and numerical control systems; and the capability to make accurate dimensional measurements that are ordinarily made in the laboratory. The enrichment of uranium is carried out in 10 major process buildings at the 3 sites; there is a Computer Technology Center located at Oak Ridge that serves all 3 plants and other DOE facilities as a consulting and problem-solving facility.

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)
HANFORD PRODUCTION OPERATIONS Richland, WA Richland Operations Office	4,576	$191.0	$ 719.0

Production operations at the Hanford Site are conducted by UNC Nuclear Industries (UNC) and Rockwell Hanford Operations (RHO). UNC is responsible for reactor fuel fabrication for N Reactor operation, maintenance, engineering and development, and for the DOE-wide Surplus Facilities Management Program. RHO is responsible for 3 major technical programs: chemical processing of irradiated production reactor fuel and plutonium-bearing scrap, management of nuclear waste from defense programs, and R&D in the areas of interim storage and ultimate disposal of civilian and defense nuclear wastes. RHO also provides support services for the entire site, including security forces, fire protection, transportation, central stores and electrical distribution. Major facilities include the 3,800 MWT dual-purpose N Reactor, 5 plants for chemical and waste processing, 3 chemical laboratories, and the fuel fabrication facility.

SAVANNAH RIVER PLANT Aiken, SC Savannah River Operations Office	5,519[1/][2/]	$219.0[1/]	$1,355.4[1/]

The Savannah River Plant is operated by E.I. DuPont de Nemours and Company and performs missions in fuel and target fabrication, isotope production in nuclear reactors, chemical separations, waste management, and heavy-water extraction. Although activities at the facility are primarily defense oriented, many of the programs, and radioisotopes produced, have peacetime applications. Major facilities include: nuclear production reactors, 2 chemical separation plants, facilities for separating and handling tritium, a fuel fabrication plant, a heavy-water extraction plant, waste management facilities, extensive research and development facilities; and supporting facilities such as computer systems, a weather analysis laboratory, power plants, library and publication services, and transportation and communication networks.

Weapon Testing and Fabrication Complex

KANSAS CITY PLANT Kansas City, MO Albuquerque Operations Office	6,317	$214.3	$169.3

The Kansas City Plant is operated by the Bendix Corporation to produce nonnuclear weapon components. The plant is a highly diversified, technically oriented operation embracing the full spectrum of work on nonnuclear products--from research on new materials to the production of complex and reliable weapons components. Production activities are directed toward 3 basic areas: electrical and electronics work, mechanical products, and plastic products. To support its primary production mission, the plant develops processes and materials. It also engages indirectly in energy research and development by providing developmental hardware for research programs conducted at DOE laboratories. Plants include controlled environment facilities, metal-working facilities, plastic facilities, and materials and product development laboratories.

1/ Excludes Savannah River Laboratory and Weapons Facility.

2/ Includes direct and indirect support.

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)
MOUND FACILITY Miamisburg, OH Albuquerque Operations Office	1,790	$ 64.1	$116.8

Mound Facility is operated by Monsanto Research Corporation, a wholly-owned subsidiary of Monsanto Company. Mound is an integrated production and laboratory facility that performs a wide variety of weapons production and process development activities and conducts research and development for several other DOE programs. Based on specialized capabilities established during the last 31 years, its missions today emphasize work in explosives technology, tritium technology, plutonium-238 isotopic heat source development, isotope separation, and fossil energy technology. Furthermore, in association with all program activities, Mound conducts multi-disciplinary research and development on materials and instrumentation.

NEVADA TEST SITE (NTS) Mercury, NV Nevada Operations Office	3,603	$ 2.9	$220.0

The Nevada Test Site (NTS) is operated by DOE's Nevada Operations Office (NV), a project management organization that provides for the planning, preparation, execution, and post-execution phases of approved programs and projects at NTS. The primary mission at NTS is to provide a remote, secure facility for the safe conduct of underground nuclear testing in support of national defense programs. Over the years of operations at NTS, NV contractors have developed unique expertise in such fields as drilling, mining, and downhole diagnostics in support of the weapons development laboratories and the Department of Defense. Additionally, use of the site has been expanded to include many other programs and projects, for example: waste management; biological and medical experiments to study plant and animal life in a radiation environment; geologic, hydrologic, and seismic investigations; development of applications of nuclear explosives in science and industry; and development and testing of nuclear rocket engines at the Nuclear Rocket Development station facilities on the test site. In addition to DOE's funding, NTS also received approximately $92 million in FY 80 from other federal agencies.

PANTEX PLANT Amarillo, TX Albuquerque Operations Office	2,166	$ 58.6	$102.9

The Pantex Plant is operated for DOE by Mason & Hanger-Silas Mason Company, Inc. Its principal programs are related to the fabrication of high explosives and other components necessary to assemble, repair, and test nuclear weapons, participate in weapon retirement, and support plant maintenance. More specifically, the mission of the plant is to: fabricate high explosives and other components and, with components provided by other weapons complex plants, perform final assembly of nuclear weapons; with provided components, perform final assembly testing of type units for the Department of Energy and the Department of Defense testing and training programs; perform new material and stockpile laboratory tests, weapon modifications and repair work necessary on all existing weapons within the U.S. nuclear stockpile; retire surplus weapons to stockpile requirements; provide technical support in the field of high explosives; fabricate explosive device components for the design agency laboratories; and maintain active portions of the plant facilities for the above activities.

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)
PINELLAS PLANT St. Petersburg, FL Albuquerque Operations Office	1,486	$ 46.9	$388.0

The Neutron Devices Department (GEND) of the General Electric Company operates the Pinellas Plant. Originally built for developing and producing neutron generators for nuclear weapons initiation, Pinellas' mission now encompasses production of a wide range of weapon components. Its facilities support process development, design laboratory, and production activities. GEND technology and skills focus on the development and manufacture of highly complex, miniaturized, neutron generators and electronic assemblies; medium-power radioisotope thermoelectric generators and thermoelectric converters, electrical connectors that arrest lightening discharges; and specialty neutron generation and neutron measurement devices for nuclear weapons testing. Some interesting state-of-the-art advances in process technology have been made. Pinellas also designs and fabricates sophisticated electronic test systems for use by DOE in product acceptance testing.

ROCKY FLATS PLANT Golden, CO Albuquerque Operations Office	3,347	$116.4	$422.9

The operating contractor for the Rocky Flats Plant is Atomics International, a division of Rockwell International. Rocky Flat's mission is to produce nuclear components along with some nonnuclear assemblies/hardware for weapons. The plant is primarily concerned with metal production and chemical processing with heavy emphasis on production-related research. Production activities include fabrication of plutonium and uranium alloy parts as well as conventional metal components and their assembly, operation of foundries, recovery of plutonium, and research and development support for the weapons design laboratories in assigned mission areas. The plant is also responsible for the recovery of plutonium residues for the weapons complex. Extensive process development programs are carried out to support the weapons design laboratories with development models for concept feasibility studies. The plant is also the site of the National Small Wind Systems Test Center.

SAVANNAH RIVER WEAPONS FACILITY Aiken, SC Savannah River Operations Office	580[1/]	$ 23.4	$ 22.7

The Savannah River Weapons Facility located at the Savannah River Plant site is operated by E.I. DuPont de Nemours and Company. The primary mission is the extraction, separation, and recovery of tritium. To support this mission, the plant has special capabilities for the tritium loading of special components, as well as the unloading and reclamation of such components. Savannah River also provides for surveillance and materials compatibility testing relative to such components.

[1/] Includes direct and indirect support.

	Work force (FY 80)	Total FY 80 DOE operating costs ($M)	Capital Investment and equipment ($M)
Y-12 PLANT Oak Ridge, TN Oak Ridge Operations Office	5,500	$222.0	$671.0

The Oak Ridge Y-12 Plant, operated by the Nuclear Division of Union Carbide Corporation, is a highly sophisticated development, engineering, and manufacturing organization with major responsibilities in the nuclear weapons program. The basic mission of the Y-12 Plant is support of the nuclear weapons program through fabrication and certification of components for the weapons stockpile, development and fabrication of test hardware for the three weapons design laboratories and conduct of related process development activities. Weapons production activities involve chemical processing, metal forming, machining, precision plating, coating, powder metallurgy, ceramic, manufacturing and assembly. Process development activities parallel production missions and cover materials, metal forming, joining, precision machinery and certification techniques. A major portion of the plant's fabrication and certification equipment utilizes numerical control or computer control.

APPENDIX A

DOE FIELD AND PROJECT OFFICES
(Names, Addresses and Telephone Numbers)

ALBUQUERQUE OPERATIONS OFFICE
P.O. Box 5400
Albuquerque, New Mexico 87115
Herman E. Roser, Manager
(505)264-7231

CHICAGO OPERATIONS AND REGIONAL OFFICE
9800 South Cass Avenue
Argonne, Illinois 60439
Robert H. Bauer, Manager/ Regional Representative
(312)972-2110

CLINCH RIVER BREEDER REACTOR PLANT PROJECT OFFICE
P.O. Box U
Oak Ridge, Tennessee 37830
Lochlin W. Caffey, Director
(615)576-6008

FAST FLUX TEST FACILITY PROJECT OFFICE
P.O. Box 550
Richland, Washington 99352
Charles S. Carlisle, Director
(509)942-5481

GRAND JUNCTION OFFICE
P.O. Box 2567
Grand Junction, Colorado 81502
Donald L. Everhart, Manager
(303)242-8621, Ext. 201

IDAHO OPERATIONS OFFICE
550 Second Street
Idaho Falls, Idaho 83401
Charles E. Williams, Manager
(208)526-1322

NEVADA OPERATIONS OFFICE
P. O. Box 14100
Las Vegas, Nevada, 89114
Mahlon E. Gates, Manager
(702)734-3211

OAK RIDGE OPERATIONS OFFICE
P. O. Box E
Oak Ridge, Tennessee 37830
Robert J. Hart, Manager
(615)576-4444

RICHLAND OPERATIONS OFFICE
P.O. Box 550
Richland, Washington 99352
Alex G. Fremling, Manager
(509)942-7395

SAN FRANCISCO OPERATIONS OFFICE
1333 Broadway, Wells Fargo Bldg.
Oakland, California 94612
Joe La Grone, Manager
(415)273-7111

SAVANNAH RIVER OPERATIONS OFFICE
P.O. Box A
Aiken, South Carolina 29801
Robert L. Morgan, Manager
(803)725-2277

APPENDIX B

DOE R&D FIELD FACILITIES

(Locations by State or Territory; Names, Mailing Addresses and Telephone Numbers)

CALIFORNIA

ENERGY TECHNOLOGY ENGINEERING CENTER
P.O. Box 1449
Canoga Park, California 91304
H. C. Weiseneck, Director
(213)341-1000, Ext. 6185

LAWRENCE BERKELEY LABORATORY
University of California
Berkeley, California 94720
D. A. Shirley, Director
(415)486-5111

LAWRENCE LIVERMORE NATIONAL LABORATORY
University of California
P.O. Box 808
Livermore, California 94550
E. Batzel, Director
(415)422-7401

SANDIA NATIONAL LABORATORIES
P.O. Box 969
Livermore, California 94550
T. B. Cook, Jr., Vice President
(415)422-2211

STANFORD LINEAR ACCELERATOR FACILITY
Stanford University
P.O. Box 4349
Stanford, California 94305
W. K. H. Panofsky, Director
(415)854-3300, Ext. 2601

LABORATORY FOR ENERGY-RELATED HEALTH RESEARCH
University of California
Davis, California 95616
Marvin Goldman, Director
(916)752-1341

LABORATORY OF RADIOBIOLOGY--UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
School of Medicine
University of California
San Francisco, California 94143
Harvey M. Patt, Director
(415)666-1636

LABORATORY OF NUCLEAR MEDICINE AND RADIATION BIOLOGY
University of California
900 Veteran Avenue
Los Angeles, California 90024
Owen R. Lunt, Director
(213)825-9431

COLORADO

ROCKY FLATS (ROCKWELL) PLANT
P.O. Box 464
Golden, Colorado 80401
D. Ofte, Vice President and General Manager
(303)497-7000, Ext 2025

SOLAR ENERGY RESEARCH INSTITUTE
1617 Cole Boulevard
Golden, Colorado 80401
Denis Hayes, Director
(303)231-1000, Ext 1310

FLORIDA

PINELLAS (GENERAL ELECTRIC) PLANT
P.O. Box 11508
St. Petersburg, Florida 33733
Prince M. Ramey, General Manager
(813)544-2511, Ext. 173

GEORGIA

SOUTHERN SOLAR ENERGY CENTER
61 Perimeter Park
Atlanta, Georgia 30341
G. Barry Graves, Director
(404)458-8765

IDAHO

IDAHO NATIONAL ENGINEERING LABORATORY
Idaho Falls, Idaho 83401
Charles E. Williams, Director
(208)526-0111

ILLINOIS

ARGONNE NATIONAL LABORATORY
9700 South Cass Avenue
Argonne, Illinois 60439
W. E. Massey, Acting Director
(312)972-5555

CARBONDALE MINING TECHNOLOGY CENTER
P.O. Box 2587
Carbondale, Illinois 62901
Alphonse C. Van Besien, Manager
(618)985-3771, Ext. 221

APPENDIX B (Cont'd)

DOE R&D FIELD FACILITIES

(Locations by State or Territory; Name, Mailing Addresses and Telephone Numbers)

ILLINOIS (cont'd)

FERMI NATIONAL ACCELERATOR LABORATORY
P.O. Box 500
Batavia, Illinois 60510
Leon M. Lederman, Director
(312)840-3000, Ext. 3211

NEW BRUNSWICK LABORATORY
9800 South Cass Avenue
Argonne, Illinois 60439
Carlton D. Bingham, Director
(312)972-2446

INDIANA

NOTRE DAME RADIATION LABORATORY
University of Notre Dame
Notre Dame, Indiana 45556
Robert H. Shuler, Director
(219)283-7502

IOWA

AMES LABORATORY
Iowa State University
Ames, Iowa 50011
Robert S. Hansen, Director
(515)294-2770

KENTUCKY

PADUCAH GASEOUS DIFFUSION PLANT
P.O. Box 1410
Paducah, Kentucky 42001
C. D. Zerby, Plant Manager
(502)444-6311, Ext. 301

MASSACHUSETTS

BATES LINEAR ACCELERATOR FACILITY
Massachusetts Institute of Technology
P.O. Box 95
Middleton, Massachusetts 01949
P. Demos, Director
(617)245-6600

NORTHEAST SOLAR ENERGY CENTER
470 Atlantic Avenue
Boston, Massachusetts 02110
Lawrence Levy, Director
(617)292-9250

MICHIGAN

MICHIGAN STATE UNIVERSITY--DOE PLANT RESEARCH LABORATORY
East Lansing, Michigan 48824
C. Arntzen, Director
(517)353-2770

MINNESOTA

MID-AMERICAN SOLAR ENERGY CENTER
8140 26th Avenue, South
Minneapolis, Minnesota 55420
Donald Anderson, Director
(612)853-0400

MISSOURI

KANSAS CITY (BENDIX) PLANT
P.O. Box 1159
Kansas City, Missouri 64141
R. J. Quirk, Vice President and General Manager
(816)997-2000, Ext. 3212

NEVADA

NEVADA TEST SITE
P.O. Box 14400
Las Vegas, Nevada 89114
J. H. Dryden, Manager
(702)986-9060

NEW JERSEY

PRINCETON PLASMA PHYSICS LABORATORY
Princeton University
P.O. Box 451
Princeton, New Jersey 08540
Melvin B. Gottlieb, Director
(609)683-2000, Ext. 2100

DOE R&D FIELD FACILITIES

(Locations by State or Territory; Names, Mailing Addresses and Telephone Numbers)

NEW MEXICO

LOS ALAMOS NATIONAL SCIENTIFIC LABORATORY
University of California
P.O. Box 1663
Los Alamos, New Mexico 87545
Donald M. Kerr, Director
(505)667-5101

SANDIA NATIONAL LABORATORIES
P.O. Box 5800
Albuquerque, New Mexico 87185
Morgan Sparks, President
(505)264-7261

INHALATION TOXICOLOGY RESEARCH INSTITUTE
Lovelace Biomedical and Environmental Research Institute
P.O. Box 5890
Albuquerque, New Mexico 87115
Roger O. McClellan, Director
(505)264-3000, Ext. 3211

NEW YORK

BROOKHAVEN NATIONAL LABORATORY
Upton, Long Island, New York 11973
George H. Vineyard, Director
(516)345-3335

ENVIRONMENTAL MEASUREMENTS LABORATORY
376 Hudson Street
New York, New York 10014
H. L. Volchok, Acting Director
(212)620-3616

KNOLLS ATOMIC POWER LABORATORY
P.O. Box 1072
Schenectady, New York 12301
A. E. Kakretz, General Manager
(518)393-6611, Ext. 4200

SCHENECTADY NAVAL REACTORS OFFICE
P.O. Box 1069
Schenectady, New York 12301
Barry M. Erickson, Manager
(518)393-6611, Ext. 4441

UNIVERSITY OF ROCHESTER BIOMEDICAL LABORATORY
School of Medicine and Dentistry
Rochester, New York 14642
Paul L. LaCelle, Director
(716)275-3723

NORTH DAKOTA

GRAND FORKS ENERGY TECHNOLOGY CENTER
P.O. Box 8213
University Station
Grand Forks, North Dakota 58202
Everett A. Sondreal, Director
(701)795-8131

OHIO

ASHTABULA EXTRUSION PLANT
P.O. Box 579
Ashtabula, Ohio 44004
R. D. Heiser, Manager
(216)997-5141, Ext. 280

FEED MATERIALS PRODUCTION CENTER
P.O. Box 39158
Cincinnati, Ohio 45239
S. F. Audia, Manager
(513)738-1151, Ext. 8444

MOUND FACILITY
P.O. Box 32
Miamisburg, Ohio 45342
J. R. McClain, Director
(513)865-4020, Ext. 3222

PORTSMOUTH GASEOUS DIFFUSION PLANT
P.O. Box 628
Piketon, Ohio 45661
C. D. Tabor, General Manager
(614)289-2331, Ext. 2101

OKLAHOMA

BARTLESVILLE ENERGY TECHNOLOGY CENTER
P.O. Box 1398
Bartlesville, Oklahoma 74003
Harry R. Johnson, Director
(918)336-2400, Ext. 200

APPENDIX B (Cont'd)

DOE R&D FIELD FACILITIES

(Locations by State or Territory; Names, Mailing Addresses and Telephone Numbers)

OREGON

WESTERN SOLAR UTILIZATION NETWORK
Pioneer Park Building, Suite 800
715 S.W. Morrison Street
Portland, Oregon 97205
Donald Aitken, Director
(503)221-2437

PENNSYLVANIA

BETTIS ATOMIC POWER LABORATORY
P.O. Box 79
West Mifflin, Pennsylvania 15122
A. C. Davis, General Manager
(412)462-5000, Ext. 0200

PITTSBURGH ENERGY TECHNOLOGY CENTER
P.O. Box 10940
Pittsburgh, Pennsylvania 15236
Sun W. Chun, Director
(412)675-6122

PITTSBURGH MINING TECHNOLOGY CENTER
P.O. Box 10940
Pittsburgh, Pennsylvania 15236
Eugene R. Palowitch, Director
(412)675-6094

PITTSBURGH NAVAL REACTORS OFFICE
P.O. Box 109
West Mifflin, Pennsylvania 15122
Carl K. Gaddis, Manager
(412)462-5000, Ext. 0240

PUERTO RICO

CENTER FOR ENERGY AND ENVIRONMENT RESEARCH
University of Puerto Rico
Caparra Heights Station
San Juan, Puerto Rico 00935
Juan A. Bonnet, Jr., Director
(809)765-7210

SOUTH CAROLINA

SAVANNAH RIVER ECOLOGY LABORATORY
Drawer E
Aiken, South Carolina 29801
Michael H. Smith, Director
(803)725-2472

SAVANNAH RIVER LABORATORY
Aiken, South Carolina 29801
A. H. Peters, Manager
(803)725-2277

SAVANNAH RIVER PLANT
Aiken, South Carolina 29801
J. T. Granaghan, Manager
(803)725-2701

TENNESSEE

COMPARATIVE ANIMAL RESEARCH LABORATORY
1299 Bethel Valley Road
Oak Ridge, Tennessee 37830
H. E. Walburg, Director
(615)576-4008

OAK RIDGE ASSOCIATED UNIVERSITIES
P.O. Box 117
Oak Ridge, Tennessee 37630
Philip L. Johnson, Executive Director
(615)576-3300

OAK RIDGE GASEOUS DIFFUSION PLANT
P.O. Box P
Oak Ridge, Tennessee 37830
Ken Sommerfeld, Plant Manager
(615)576-7930

OAK RIDGE NATIONAL LABORATORY
P.O. Box X
Oak Ridge, Tennessee 37830
Herman Postma, Director
(615)576-2900

Y-12 PLANT
P.O. Box Y
Oak Ridge, Tennessee 37830
J. M. Case, Plant Manager
(615)576-7474

TEXAS

PANTEX PLANT
P.O. Box 647
Amarillo, Texas 79177
C. R. Poole, Plant Manager
(806)335-1581, Ext. 2111

DOE R&D FIELD FACILITIES

(Locations by State or Territory; Names, Mailing Addresses and Telephone Numbers)

UTAH

RADIOBIOLOGY LABORATORY
University of Utah
Building 351
Salt Lake City, Utah 84112
M. E. Wrenn, Director
(801)581-6600

WASHINGTON

HANFORD ENGINEERING DEVELOPMENT
LABORATORY
P.O. Box 1970
Richland, Washington 99352
J. E. Nolan, Director
(509)376-3993

HANFORD PRODUCTION OPERATIONS
UNITED NUCLEAR INDUSTRIES, INC.
Hanford Operations
P.O. Box 490
Richland, Washington 99352
R. K. Robinson, President
(509)942-7258, 376-7258

ROCKWELL HANFORD OPERATIONS
P.O. Box 800
Richland, Washington 99352
D. K. Cockeram, Vice President
and General Manager
(509) 373-1277

PACIFIC NORTHWEST LABORATORY
P.O. Box 999
Richland, Washington 99352
D. E. Olesen, Director
(509)375-2201

WEST VIRGINIA

MORGANTOWN ENERGY TECHNOLOGY CENTER
P.O. Box 880
Morgantown, West Virginia 26505
Augustine A. Pitrolo, Director
(304)599-7511

WYOMING

LARAMIE ENERGY TECHNOLOGY CENTER
P.O. Box 3395
University Station
Laramie, Wyoming 82071
Andrew W. Decora, Director
(307) 721-2212

APPENDIX C

DOE R&D FIELD FACILITIES

Facility/Organization Name	Contractor Name	Director/Manager
Field and Project Offices		
Albuquerque Operations Ofice	Federal	H. E. Roser
Chicago Operations and Regional Office	Federal	R. H. Bauer
Clinch River Breeder Reactor Plant Project Office	Federal	L. M. Caffey
Fast Flux Test Facility Project Office	Federal	C. S. Carlisle
Grand Junction Office	Federal	D. L. Everhart
Idaho Operations Office	Federal	C. E. Williams
Nevada Operations Office	Federal	M. E. Gates
Oak Ridge Operations Office	Federal	R. J. Hart
Pittsurgh Naval Reactors Office	Federal	C. K. Gaddis
Richland Operations Office	Federal	A. G. Fremling
San Francisco Operations Office	Federal	J. La Grone
Savannah River Operations Office	Federal	R. L. Morgan
Schenectady Naval Reactors Office	Federal	B. M. Erickson
Multiprogram Laboratories		
Ames Laboratory	Iowa State University	R. S. Hansen
Argonne National Laboratory	University of California/Argonne Universities Association	W. E. Massey
Brookhaven National Laboratory	Associated Universities, Inc.	G. H. Vineyard
Energy Technology Engineering Center	Rockwell International Corporation	H. C. Weiseneck
Hanford Engineering Development Laboratory	Westinghouse Hanford Company	J. E. Nolan
Idaho National Engineering Laboratory	Exxon Nuclear Idaho, Inc. and EG&G Idaho, Inc.	R. W. McCullough R. W. Kiehn
Lawrence Berkeley Laboratory	University of California	D. A. Shirley
Lawrence Livermore National Laboratory	University of California	R. E. Batzel
Los Alamos National Scientific Laboratory	University of California	D. M. Kerr
Oak Ridge National Laboratory	Nuclear Division of Union Carbide Corp.	H. Postma
Pacific Northwest Laboratory	Battelle Memorial Institute	D. E. Olesen
Sandia National Laboratories	Western Electric Company	M. Sparks
Savannah River Laboratory	E. I. duPont de Nemours & Co., Inc.	A. H. Peters
Program-Dedicated Facilities		
Bartlesville Energy Technology Center	Federal	H. R. Johnson
Bates Linear Accelerator Facility	Massachusetts Institute of Technology	P. Demos
Bettis Atomic Power Laboratory	Westinghouse Electric Corporation	A. C. Davis
Carbondale Mining Technology Center	Federal	A. C. Van Besien
Center for Energy and Environment Research	University of Puerto Rico	J. A. Bonnet, Jr.
Comparative Animal Research Laboratory	University of Tennessee	H. E. Walburg

DOE R&D FIELD FACILITIES

Facility/Organization Name	Contractor Name	Director/Manager
Environmental Measurements Laboratory	Federal	H. L. Volchok, Acting
Fermi National Accelerator Laboratory	University Research Association, Inc.	L. M. Lederman
Grand Forks Energy Technology Center	Federal	E. A. Sondreal
Inhalation Toxicology Research Institute	Lovelace Biomedical and Environmental Research Institute	R. McClellan
Knolls Atomic Power Laboratory	General Electric Corporation	A. E. Kakretz, Jr.
Laboratory for Energy-Related Health Research	University of California at Davis	M. Goldman
Laboratory of Nuclear Medicine and Radiation Biology	University of California	O. R. Lunt
Laboratory of Radiobiology	University of California at San Francisco	H. M. Patt
Laramie Energy Technology Center	Federal	A. W. Decora
Mid-American Regional Solar Energy Center	Mid-American Solar Energy Complex	D. Anderson
MSU-DOE Plant Research Laboratory	Michigan State University	C. Arntzen
Morganton Energy Technology Center	Federal	A. A. Pitrolo
New Brunswick Laboratory		C. D. Bingham
Northeast Regional Solar Energy Center	Northeast Solar Energy Center	L. Levy
Notre Dame Radiation Laboratory	University of Notre Dame	R. H. Schuler
Oak Ridge Associated Universities	Oak Ridge Associated Universities	P. L. Johnson
Pittsburgh Energy Technology Center	Federal	S. W. Chun
Pittsburgh Mining Technology Center	Federal	E. R. Palowitch
Princeton Plasma Physics Laboratory	Princeton University	M. B. Gottlieb
Radiobiology Laboratory	University of Utah	M. E. Wrenn
Savannah River Ecology Laboratory	University of Georgia	M. H. Smith
Solar Energy Research Institute	Midwest Research Institute	D. Hayes
Southern Regional Solar Energy Center	Southern Solar Energy Center	G. B. Graves
Stanford Linear Accelerator Center	Stanford University	W. K. H. Panofsky
University of Rochester Biomedical Laboratory	University of Rochester	P. L. LaCelle
Western Regional Solar Energy Center	Western Solar Utilization Network	D. Aitken
Nuclear Materials Production Facilities		
Extrusion Plants		
Ashtabula Feed Materials Plant	Reactive Metals, Inc.	R. D. Heiser
Feed Materials Production Center	National Lead Company of Ohio	S. F. Audia

APPENDIX C (Cont'd)

DOE R&D FIELD FACILITIES

Facility/Organization Name	Contractor Name	Director/Manager
Nuclear Materials Production Facilities (cont'd)		
Gaseous Diffusion Plants		
Oak Ridge Gaseous Diffusion Plant	Union Carbide Corporation	K. Sommerfeld
Paducah Gaseous Diffusion Plant	Union Carbide Corporation	C. D. Zerby
Portsmouth Gaseous Diffusion Plant	Goodyear Atomic Corporation	N. H. Hunt, Jr.
Hanford Production Operations	Rockwell Hanford Operations and United Nuclear Industries	D. J. Cockeram R. K. Robinson
Idaho Chemical Processing Plant	Allied Chemical Corporation	F. H. Anderson
Savannah River Plant	E. I. duPont de Nemours & Company, Inc.	J. T. Granaghan
Weapons Testing and Fabrication Complex		
Kansas City Plant	Bendix Corporation	R. J. Quirk
Mound Facility	Monsanto Research Corporation	J. R. McClain
Nevada Test Site	Reynolds Electrical and Engineering Co., Inc.	J. H. Dryden
Pantex Plant	Mason & Hanger-Silas Mason Co., Inc.	C. R. Poole
Pinellas Plant	General Electric Company	P. M. Ramey
Rocky Flats	Rockwell International	D. Ofte
Y-12 Plant	Nuclear Division of Union Carbide Corporation	J. M. Case

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WASHINGTON, D.C. 20585

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