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Resources, Community, and Economic Development Division

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Energy Reports and Testimony: 1991

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ENNEAT

Foreword

World events significantly shaped the energy issue area work in 1991. The Iraqi war and oil disruption brought our oil pricing, national energy strategy, conservation, electricity supply, and alternative motor fuels work to the forefront. The collapse of Communism also stimulated greater congressional interest in how best to manage our nuclear weapons complex. This effort led the debate on the future needs and technology of weapons facilities, while also providing thoughtful insights on the $200 billion environmental cleanup effort.

This annual index includes information on these and other U.S. General Accounting Office (GAO) documents directly related to energy that were issued between January and December 1991. This index should be useful for general information and research purposes and for understanding energy issues that GAO is addressing.

Highlights of this index include:

Nuclear Waste

Despite its plans, the Department of Energy is not likely to have a monitored retrievable storage facility for the mounting radioactive wastes from nuclear utilities by a 1998 deadline. As a result, DOE's funding requests, legal obligations, and contingency plans should be addressed now. (See p. 7.)

Electricity Supply

Utility-sponsored programs that encourage consumers to use less electricity—called demand-side management—can help meet rapidly increasing electricity demands. However, incentives may be needed to encourage such programs because utilities' profits are generally linked to increased energy use. (See p. 24.)

Nuclear Science

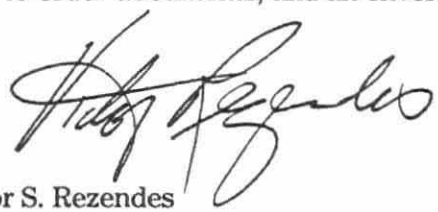
DOE's Energy Research Advisory Board did not consider smaller accelerators in its 1987 feasibility study on using accelerators to produce tritium. Yet, smaller accelerators would use less electricity and may better meet the projected decreases in future needs for tritium. Cost estimates remain uncertain. This technology deserves more balanced consideration. (See p. 40.)

Nuclear Safety and Health

Seventy-two of the 113 nuclear utilities in the United States have either installed or are suspected of having received nonconforming parts; that is,

counterfeit or substandard parts. Such parts are also showing up governmentwide in weapons systems, aircraft, submarines, and the space shuttle. Centralized information is critical to help to abate this problem. (See p. 45.)

Questions may be directed to me at the U.S. General Accounting Office, Room 1842, 441 G Street, N.W., Washington, D.C. 20548, or by telephone on (202) 275-1441. Readers interested in ordering documents or in requesting bibliographic searches on a specific topic should call the Document Handling and Information Service, (202) 275-6241, or fax a request to (301) 258-4066. The form in the back of the index can also be used to order documents, and an envelope is included for that purpose.



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Energy and the Environment

Energy and the Environment

Nuclear Power Safety: Chernobyl Accident Prompted Worldwide Actions but Further Efforts Needed

GAO/NSIAD-92-28, 11/4/91

Since the Chernobyl nuclear plant accident in 1986, over 70 of the International Atomic Energy Agency's 112 member states have adopted two conventions to enhance international cooperation by providing (1) timely notification of an accident and (2) emergency assistance. The Agency and other international organizations also developed programs to improve nuclear power plant safety and minimize dangers from radioactive contamination. Despite meaningful improvements, some of the measures have limitations, and serious nuclear safety problems remain in the design and operation of the older, Soviet-designed nuclear power plants. The Agency's ability to select reactors under its operational safety review program is limited. Also, information on the extent and seriousness of safety-related incidents at reactors in foreign countries is not publicly available. No agreement exists among nuclear power countries to make compliance with any nuclear safety standards or principles mandatory. Currently, adherence to international safety standards or principles is voluntary and nonbinding. Some states support the concept of mandatory compliance, but others, including the United States, believe that mandatory compliance infringes on national sovereignty and that the responsibility for nuclear power reactor safety remains with each nation.

Fossil Fuels: Improvements Needed in DOE's Clean Coal Technology Program

GAO/RCED-92-17, 10/30/91

Coal provides about one quarter of the nation's energy needs, but emissions from coal combustion have contributed to air pollution, including acid rain. Under a program to provide more advanced, efficient, and environmentally acceptable coal utilization technologies, the Department of Energy (DOE) funds up to 50 percent of the costs of industry-sponsored projects to demonstrate commercial-scale applications of innovative clean coal technologies. As of September 1991, about half of the 32 ongoing funded projects were progressing on schedule and within cost estimates. Equipment failures, additional equipment requirements, and problems in scheduling tests were contributing factors to projects that were behind schedule or over budget. GAO believes that DOE's selection of some projects, while meeting selection criteria, may not be the most

effective use of federal funds. For example, some projects are demonstrating technologies that might have been commercialized without federal assistance. GAO also identifies projects with potentially limited applications and projects that have proven economically unviable. GAO questions whether DOE has done all that it could to ensure that its investment is adequately protected. For example, DOE continued to fund some projects that it knew were experiencing financing problems and that were eventually withdrawn from the program; DOE has since improved controls over project costs.

Nuclear Health and Safety: Problems Continue for Rocky Flats Solar Pond Cleanup Program

GAO/RCED-92-18, 10/17/91

In an earlier report (GAO/RCED-91-31, Jan. 3, 1991), GAO discussed the Department of Energy's (DOE) efforts to clean up the solar evaporation ponds at its Rocky Flats Plant in Colorado. DOE is trying to excavate the ponds used for storing and evaporating low-level radioactive and hazardous waste and stabilize the material by mixing it with concrete. DOE issued a press release in March 1991 stating that it has imposed strict cost control measures in managing the project. Yet DOE's most recent cost data show that total cleanup costs have soared to an estimated $169 million through completion in 2009—$50 million more than the amount GAO reported nine months ago. Delays have plagued the completion and approval of the managing plans for conducting and monitoring the program. Cleanup activities that DOE expected to resume by December 1990 have not yet begun. DOE will not meet the first major milestone of the solar ponds program—cleaning up the ponds and moving all the "pondcrete" off site by October 1991. Further, unless DOE provides enough project funding or resolves concerns over pondcrete disposal in Nevada, it will not finish pondcrete processing before Rocky Flats' interim status permit for pondcrete operations expires in November 1992.

Nuclear Waste: Operation of Monitored Retrievable Storage Facility Is Unlikely by 1998

GAO/RCED-91-194, 9/24/91

Radioactive waste at U.S. nuclear power plants is mounting at a rate of more than 2,000 metric tons a year. Yet the Department of Energy (DOE) does not expect a geologic repository to be available before 2010. In

response to concerns about how best to store the waste until a repository is available, GAO reviewed the alternatives of continued storage at utilities' reactor sites or transferring waste to a monitored retrievable storage facility. This report assesses the (1) likelihood of a monitored retrievable storage facility operation by 1998, (2) legal implications if DOE is unable to take delivery of wastes in 1998, (3) propriety of using the Nuclear Waste Fund—from which DOE's waste program costs are paid—to pay utilities for on-site storage capacity added after 1998, (4) the ability of utilities to store their waste on-site until a repository is operating, and (5) relative costs and safety of the two storage alternatives.

Nuclear Waste: Hanford Single-Shell Tank Leaks Greater Than Estimated

GAO/RCED-91-177, 8/5/91

In a 1989 report (GAO/RCED-89-157, July 10, 1989) on DOE's management of the single-shell tanks at its Hanford Site in Washington state, GAO reported—on the basis of estimates supplied by DOE contractor staff—that about 750,000 gallons of liquid waste had leaked from 66 single-shell tanks. A later leak from one of these tanks was substantially higher than the volume cited in GAO's 1989 report. GAO revisited this issue and found that the actual volume of waste that may have leaked from the single-shell tanks is unknown. The estimate of 750,000 gallons mentioned in the 1989 report did not include the volume of water added to tanks to cool the waste and that may have eventually leaked into the soil. Although DOE now estimates that 50,000 to 800,000 gallons of this water may have leaked from one tank alone, the total leak volume for all tanks will be unavailable until the contractor—Westinghouse—completes its ongoing review of historical tank records.

Oil Reserve: Impact of NPR-1 Operations on Wildlife and Water Is Uncertain

GAO/RCED-91-129, 8/1/91

Argonne National Laboratory—a facility run for the Department of Energy—prepared supplemental environmental impact statements for Naval Petroleum Reserve No. 1 (NPR-1) near Bakersfield, California. This document concluded that NPR-1 might contribute to the decline of an endangered species—the San Joaquin kit fox—and contaminate nearby ground water. However, DOE disagreed with Argonne about the impact of

NPR-1 operations on the endangered fox and nearby ground water. Because these disagreements were unresolved when DOE took over the preparation of the supplemental environmental impact statement—the official draft of which is not yet completed—it is unclear how Argonne's views will be reflected in the document when it is published for comment. DOE has not taken sufficient action to ensure that NPR-1 operations have complied with environmental laws and regulations governing endangered species, historic preservation, and wastewater sumping. Noncompliance with these requirements could result in legal action, fines, and even a possible shutdown of NPR-1 operations until compliance is achieved. The Department of Interior is investigating to see if prosecution is warranted for possible endangered species violations. Although DOE is trying to address possible problems, similar problems may occur at NPR-1 in the future unless DOE management controls are improved.

Nuclear Health and Safety: Environmental, Health, and Safety Precautions at Naval Reactors Facilities

GAO/RCED-91-157, 8/1/91

GAO's review of environmental and safety programs at facilities in the Naval Reactors Program shows no basis for allegations that unsafe conditions exist there or that the environment is being harmed by activities conducted there. The prototype reactor design provides safety measures that are consistent with commercial nuclear power plants. Minor incidents affecting safety and the environment have occurred, however, and as with other nuclear facilities, past activities have caused environmental problems that require ongoing monitoring and vigilance. While the program has historically been exempt from most oversight, some federal and state environmental oversight agencies have recently been permitted access to Naval Reactors facilities for oversight purposes. The program voluntarily cooperates with the Nuclear Regulatory Commission regarding reactor modifications, safety improvements, and component reliability. In addition, the program and its contractors have established an extensive internal oversight program that is geared toward reporting the slightest deviations from requirements or procedures. Given the program's classification policies and requirements, it does not appear that the program routinely overclassifies information to prevent its release to the public or to avoid embarrassment. However, GAO did note some instances in which documents were improperly classified.

Nuclear Waste: Extensive Process to Site Low-Level Waste Disposal Facility in Nebraska

GAO/RCED-91-149, 7/5/91

States are required, either separately or in compacts of two or more, to dispose of commercial and certain federal low-level radioactive waste within their borders. Nebraska, as the host state for a compact of five states, underwent a site selection process that led to the choice of a site in Boyd County. U.S. Ecology, a company experienced in low-level radioactive waste management and disposal, conducted an extensive site selection process to identify three candidate sites and select a preferred site. The process combined scientific assessments and judgments, subjective public involvement, and land availability. On the basis of its review, GAO concludes that (1) the site-screening and site-selection process was an extensive effort to comply with state law and policy in screening for such a facility, (2) the geologic and hydrologic assessments done at the three candidate sites appear to have been conducted in a technically correct way, and (3) the selection of the Boyd County site was supported by the information assembled from existing records and gathered during the on-site characterization of the three candidate sites. The site in Boyd County was preferable to the other two sites and the only candidate site with good potential to meet the state's licensing requirements. If licensing problems are encountered at the Boyd County site, however, no technically strong substitute site is readily available. In such a case, some reevaluation of potential areas would be necessary to find new candidate sites.

Natural Gas: Factors Affecting the Time It Takes to Approve Construction of Natural Gas Pipelines

GAO/T-RCED-91-73, 6/27/91

Testimony presented by Victor S. Rezendes, Director of Energy Issues, before the Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations.

GAO testified on the Federal Energy Regulatory Commission's certification, or approval process, for natural gas pipeline construction. GAO discussed (1) the time it takes FERC to process pipeline construction applications; (2) the factors affecting the time it takes to process the applications; (3) the potential impact of FERC's actions and proposed regulations, as well as

currently proposed legislation, to expedite FERC's processing of natural gas pipeline construction applications; and (4) the need for improvements in FERC's management information system.

Nuclear Waste: Delays in Addressing Environmental Requirements and New Safety Concerns Affect DOE's Waste Isolation Pilot Plant

GAO/T-RCED-91-67, 6/13/91

Testimony presented by Victor S. Rezendes, Director of Energy Issues, before the Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations.

The Department of Energy's Waste Isolation Pilot Plant near Carlsbad, New Mexico, was built for underground disposal of transuranic waste generated and currently stored at facilities in DOE's defense complex. GAO testified, however, that DOE will be unable to use the facility for underground disposal until (1) the facility meets environmental requirements for repositories and (2) DOE has resolved certain safety concerns. Because of delays and technical requirements in addressing these issues, DOE will not be ready to dispose of wastes for several more years.

Nuclear Waste: Pretreatment Modifications at DOE Hanford's B Plant Should Be Stopped

GAO/RCED-91-165, 6/12/91

Plans are underway to modify the 46-year-old B Plant at the Department of Energy's Hanford Site to pretreat mixed high-level radioactive waste from the double-shelled tanks before vitrification—a process that immobilizes the high-level waste by turning it into glass. While DOE has been aware since at least 1987 that the B Plant did not meet specific federal and DOE regulations, the agency did not discuss the matter with Washington State until January 1991. In March 1991, state officials recommended to Congress that DOE abandon the B Plant as a pretreatment facility. Moreover, the new process that DOE is developing to pretreat about 75 percent of the high-level waste requiring pretreatment is incompatible with the B Plant's waste pipes; chemicals used in the process could cause extensive corrosion, and no technology exists to correct this problem. A recent DOE study suggests that because of the absence of double containment for pipes, tanks, and other processing facilities, the B Plant

will not meet the requirements imposed by federal environmental law. Despite these serious concerns, DOE continues to modify the B Plant. Even though DOE has placed modification projects totaling more than $400 million on hold, five pretreatment projects totaling about $43 million are still underway.

Fossil Fuels: DOE's Effort to Provide Clean Coal Technology to Poland

GAO/RCED-91-155, 5/22/91

The Department of Energy is working with Polish officials to retrofit a coal-fired power plant in Poland with advanced clean coal technology that has been used successfully in the United States. Legislation requires that the retrofit be done by U.S. companies and using U.S. technology and equipment manufactured in this country. In response to comments it received from coal industry representatives before bids were solicited, DOE revised its original definition of a U.S. firm to eliminate the requirement that at least 50 percent of the firms's voting stock be owned by U.S. citizens. The reasoning was that this would enable more companies to compete for the contract. GAO concludes that DOE has discretion in defining what constitutes a U.S. company and agrees with DOE's Office of General Counsel that DOE's revised definition—a corporation incorporated under the laws of the United States—is consistent with the Support for East European Democracy Act of 1989. DOE also lowered the emission reduction level from 70 percent to 65 percent of So^2 emitted because of concerns about inadequate competition for the contract. DOE estimates that as a result of these changes an additional 10 companies would be eligible to compete for the project. DOE plans to award the contract in the fall of 1991.

Nuclear Regulation: NRC's Relationship With the Institute of Nuclear Power Operations

GAO/RCED-91-122, 5/16/91

GAO reviewed the Nuclear Regulatory Commission's relationship with the Institute of Nuclear Power Operations, an industry organization that periodically evaluates nuclear power plant performance and operating safety. Although NRC has access to the Institute's evaluation reports, GAO found no evidence that it now relies on Institute evaluations in lieu of conducting its own inspections. NRC does not routinely use Institute

evaluation reports as a basis for regulatory action or for its decisions to license nuclear power plant operations. However, in order to avoid duplication of effort, NRC has occasionally not issued an information notice after the Institute has already alerted industry to a potential safety problem. While NRC's information notices are available to the public, Institute reports are not. Therefore, NRC decisions not to issue notices on the same matters reported on by the Institute reduce the amount of nuclear power plant safety information available to the public.

Nuclear Waste: Changes Needed in DOE User-Fee Assessments

GAO/T-RCED-91-52, 5/8/91

Testimony presented by Judy A. England-Joseph, Associate Director for Energy Issues, before the Subcommittee on Energy and Power, House Committee on Energy and Commerce.

GAO testified on the Department of Energy's procedures for annually assessing the adequacy of the fee that utilities pay for disposal of spent, or used, nuclear fuel. In a June 1990 report, GAO recommended that Congress authorize DOE to automatically adjust the fee to the rate of inflation. While DOE favored fee indexing at that time, it later reversed its position, and GAO now believes that Congress should require the indexing of the fee to the inflation rate. GAO also discussed DOE's expenditures on the Yucca Mountain, Nevada, repository project.

Nuclear Waste: Problems and Delays With Characterizing Hanford's Single-Shell Tank Waste

GAO/RCED-91-118, 4/23/91

Does the Department of Energy know enough about the high-level radioactive wastes stored in 149 underground single-storage tanks at its Hanford site to determine appropriate disposal options or to develop technologies for retrieving the wastes from the tanks and treating them? Characterization, the first major step in disposing of single-shell tank wastes, involves determining through sampling and analysis the physical, chemical, and radiological contents of the wastes in each tank. This report examines the status of DOE's efforts to characterize the single-shell tank wastes and discusses any impediments, such as technological limitations and safety considerations.

Nuclear Waste: DOE Expenditures on the Yucca Mountain Project

GAO/T-RCED-91-37, 4/18/91

Testimony presented by Judy A. England-Joseph, Associate Director for Energy Issues, before the Subcommittee on Nuclear Regulation, Senate Committee on Environment and Public Works.

GAO testified on the Department of Energy's use of funds appropriated for the scientific investigation of Yucca Mountain, Nevada. These investigations are necessary if DOE is to obtain a Nuclear Regulatory Commission license to construct and operate the site as a nuclear waste repository. According to GAO, DOE was not ready to start on-site investigations needed for licensing until 1991 because it (1) took longer than expected to complete its site investigation plan and (2) was slow to finish its program for ensuring that the investigation met NRC's quality standards. Further, DOE still cannot start investigations needed for licensing because Nevada has yet to issue essential environmental permits. DOE spent about $48 million on the earlier drilling and core management activities, but that effort is still largely unusable for future repository licensing purposes. In addition, how much of the original design of the exploratory shaft facility will be useful in designing the new facility is still unclear. GAO's limited review of Yucca Mountain costs suggests that more detailed planning, coupled with independent technical review, could have avoided the need to repeat significant pieces of work at additional expense and delay to the project.

Nuclear Waste: Issues Affecting Land Withdrawal of DOE's Waste Isolation Pilot Project

GAO/T-RCED-91-38, 4/16/91

Testimony presented by Victor S. Rezendes, Director of Energy Issues, before the Subcommittee on Energy and the Environment, House Committee on Interior and Insular Affairs.

The Department of Energy plans to store limited amounts of nuclear waste at its Waste Isolation Pilot Plant, which is located on federal land near Carlsbad, New Mexico. As a result, DOE is seeking legislation that would allow it to permanently withdraw this site from public use. In the past, GAO has supported congressional, rather than administrative, action on land withdrawal because of the national significance of this policy decision.

This testimony discusses (1) DOE's progress toward making final determinations that disposal of waste in the Waste Isolation Pilot Plant will comply with federal disposal regulations; (2) the reasons why Congress, rather than the Department of the Interior, should decide on land withdrawal; (3) information that Congress needs in deciding whether DOE should be allowed to store waste in the Waste Isolation Pilot Plant before the facility has met all requirements for use as a repository.

Hydroelectric Dams: Costs and Alternatives for Restoring Fisheries in the Elwha River

GAO/RCED-91-104, 3/27/91

GAO looked at the effects of the Elwha and Glines Canyon dams on fisheries in the Elwha River in Washington state. This report discusses (1) the potential costs of removing the dams to restore the fisheries, (2) the potential costs of restoring the fisheries without removing the dams, and (3) the effectiveness of both dam removal and dam retention coupled with mitigation measures in restoring fish to the Elwha River. GAO concludes that dam removal offers the best prospect for fish restoration. However, the costs involved are higher—up to $124.6 million if sediment behind the dams has to be removed—and a pulp and paper mill in the vicinity would be forced to purchase replacement power from another source. While the construction of fish passageways would be cheaper, it would also be less effective than dam removal in restoring fish to areas of the river above the dam. Given that the costs and benefits of various alternatives could not be fully quantified, GAO believes that the selection of one alternative over another is essentially a public policy decision in which value judgments must be made about the costs, benefits, and any trade-offs.

Nuclear Waste: Quarterly Report as of March 31, 1990

GAO/RCED-91-55, 2/15/91

This is GAO's final quarterly report on DOE's implementation of the Nuclear Waste Policy Act of 1982. It discusses (1) public comments received by DOE on the Secretary of Energy's November 1989 report to Congress, which assessed the civilian nuclear waste program; (2) uncertainties about the criteria DOE would use to identify the presence of unsuitable site conditions early in the investigation of Yucca Mountain; and (3) the way in which DOE's near-term site investigation plans could be affected by the state of Nevada's refusal to allow DOE access to the Yucca Mountain site.

Nuclear Health and Safety: Environmental Problems at DOE's Idaho National Engineering Laboratory

GAO/RCED-91-56, 2/12/91

This report looks at environmental problems at the Department of Energy's Idaho National Engineering Laboratory, which has been conducting nuclear research and materials production for over 40 years. During that time, radioactive and mixed wastes generated by the Laboratory's activities were disposed of at the 890-square-mile desert site in southeast Idaho. The Laboratory has many serious environmental problems, some of which have affected DOE operations and/or the environment and many of which will be costly and time-consuming to resolve. Although DOE is trying to more effectively address many of the environmental issues at the Laboratory, it is too early to determine their effectiveness. To date, little physical cleanup has begun on the more than 200 inactive waste sites at the Laboratory. The extent of the site's environmental problems is still being studied and remedies being determined, and compliance negotiations with the Environmental Protection Agency and the state of Idaho are continuing. GAO concludes that the success of the cleanup, which will likely cost billions of dollars, and the Laboratory's management efforts will ultimately depend on a continued environmental commitment by DOE over many years.

Nuclear Waste: Quality Assurance Auditors Need Access to Employee Records

GAO/RCED-91-7, 1/18/91

The Privacy Act of 1974 restricts both the type of information on private individuals that federal agencies may maintain in their records and the conditions under which such information may be disclosed. The Nuclear Regulatory Commission, which must approve DOE plans to build a nuclear waste repository at the Yucca Mountain site in Nevada, requires a quality assurance program to guarantee that studies of the site are done by qualified employees. Under such a program, the training and qualifications of DOE and contractor employees would be verified. This report reviews (1) DOE's efforts to identify and resolve the implications of the Privacy Act for DOE's quality assurance program and (2) how the delay in resolving Privacy Act issues may have affected preliminary work on the Yucca Mountain project.

Nuclear Safety and Health: Problems With Cleaning Up the Solar Ponds at Rocky Flats

GAO/RCED-91-31, 1/3/91

The Rocky Flats Plant, a key facility for plutonium production, has been plagued with environmental problems. One of the highest priority cleanups has involved Rocky Flats' solar evaporation ponds, which were used to store and evaporate low-level radioactive and hazardous liquid waste. Because the ponds are suspected of leaking and contaminating ground water, DOE has been removing the sludge from the bottom of the ponds, mixing it with concrete, casting the mixture into large blocks, and removing the blocks for disposal elsewhere. DOE puts total cleanup cost at more than $100 million. However, significant problems have slowed the removal of the waste from the ponds and completion of the project. Soon after the project began, DOE discovered that the waste from the pond actually contained low concentrations of hazardous rather than low-level waste. Further, because the contractor improperly mixed the concrete and the sludge, the resulting blocks began to break apart. The Rocky Flats contractor has tried to correct these problems, and DOE has begun to improve program control, including the development of a detailed program plan. However, substantial work on the solar ponds remains, including remixing and repackaging more than 8,000 blocks. In addition, DOE estimates that up to 20,0000 more blocks may be produced during the cleanup.

Nuclear Regulation: NRC's Efforts to Ensure Effective Plant Maintenance Are Incomplete

GAO/RCED-91-36, 12/17/90

In the wake of the 1979 accident at the Three Mile Island nuclear plant, Nuclear Regulatory Commission officials became increasingly worried about the adequacy of maintenance programs at utilities. Over 10 years later, GAO found that while both NRC and the nuclear industry view maintenance as crucial to safe, efficient, and reliable nuclear power plant operations, they have been unable to agree on the best way to ensure continuing improvements in maintenance. The debate hinges on (1) whether NRC needs to establish more comprehensive maintenance regulations or whether NRC should endorse the industry's program and (2) the specific plant areas and systems that would be included. Regardless of the decision on the need for additional comprehensive regulations, GAO

believes that NRC must have a mechanism to ensure effective maintenance at nuclear power plants in the future. To do so, NRC could integrate performance indicators into its regular inspection program or periodically inspect maintenance at nuclear plants; however, NRC has no plans to take either action.

Energy Research and Development

Nuclear R&D: Research Efforts Under Way to Support Nuclear Power Plant License Renewal

GAO/RCED-91-207, 9/25/91

Within the next 20 years, licenses will expire for 42 of the 113 nuclear power plants licensed by the Nuclear Regulatory Commission (NRC). At NRC's request, the National Research Council of the National Academy of Sciences examined the future role of NRC's regulatory research, including research on the aging of nuclear power reactors and the possibility of extending their operating licenses for 20 years beyond the normal 40-year term. The Council issued a report in 1986 containing many recommendations on revitalizing nuclear safety research; only four of these recommendations were directed at research related to license renewal. GAO discusses the (1) actions NRC has taken to implement the Council's recommendations on the need for NRC research on reactor aging to support its license renewal efforts; (2) the research on reactor aging completed by the Department of Energy and the industry in response to the Council's recommendation that research be done to prove that license conditions set by NRC can be met, and whether the results have been provided to NRC; and (3) NRC's plan to refine the estimates of risks (or the probability of accidents) created by extending the life of the present generation of reactors.

Grant Management: Improvements Needed in Federal Oversight of NSF Grants

GAO/T-RCED-91-92, 9/24/91

Testimony by Judy A. England-Joseph, Associate Director for Energy Issues, before the Senate Committee on Governmental Affairs.

GAO testified on grant administration at the National Science Foundation. To date, GAO has visited three of NSF's largest grantee institutions—the University of Michigan, the University of Chicago, and Harvard University. GAO indicated that NSF does not have a system in place to provide for adequate federal oversight of its grants. While large institutions are required to have independent auditors examine their controls over grant funds, in many cases these audits have not been done or accepted. NSF has also done little to ensure that these institutions have established controls safeguarding NSF grant funds. The Office of Management and Budget's issuance of a new circular that strengthens the audit requirement provides

an opportunity to improve federal oversight of grants. However, attention is needed to ensure that the requirements in the new circular are properly implemented. Furthermore, the fact that NSF's Office of Inspector General has also recognized the need to focus its attention on the larger grantees should help to improve oversight.

Federal Research: Concerns About Developing and Producing Magnets for the Superconducting Super Collider

GAO/T-RCED-91-51, 5/9/91

Testimony presented by Judy A. England-Joseph, Associate Director for Energy Issues, before the Subcommittee on Investigations and Oversight, House Committee on Science, Space, and Technology.

Of the uncertainties and risks associated with the construction of the superconducting super collider, the major technical risk concerns the collider dipole magnets. Although Germany has demonstrated that superconducting magnets can be industrially produced, their magnets were made for a substantially smaller accelerator and involved different management approaches. Whether the superconducting super collider's magnets will work as intended is uncertain because no full-size magnet of the current design has been built and tested. Although the Department of Energy has tried to reduce the risk by, among other things, delaying the start of magnet production, uncertainties and risks remain. The schedule for developing the magnets is still compressed and the overall risks for the magnets are high because little time will be available to resolve any problems that may be encountered. A critical test in determining whether the magnets will work as intended is the aboveground string test scheduled for the fourth quarter of fiscal year 1992. Tunnel construction is also scheduled to start in the fourth quarter of that fiscal year. In April 1991, GAO suggested that Congress could limit the government's financial risk by not funding tunnel construction until the string tests have shown that the magnets work as intended.

Balanced Approach and Improved R&D Management Needed to Achieve Energy Efficiency Objectives

GAO/T-RCED-91-36, 4/17/91

Testimony presented by Judy A. England-Joseph, Associate Director for Energy Issues, before the Subcommittee on Environment, House Committee on Science, Space, and Technology.

The National Energy Strategy is the administration's long-term blueprint for a more efficient, secure, and environmentally safe energy future for the United States and its allies. The President is required to submit such a plan to Congress every two years. GAO testified that a well-conceived and properly executed National Energy Strategy has important economic, environmental, and national security implications for the United States. GAO questions, however, whether the strategy will succeed for several reasons. First, the current strategy does not consider the possibility that energy prices may remain low in the future, thereby reducing the urgency for developing and using energy-efficient technologies. Yet the strategy relies heavily on development and adoption of energy-efficient technologies to reduce energy consumption. Second, current energy prices do not cover all the costs to society of obtaining and using energy, such as harmful environmental effects. Higher energy prices that cut energy consumption would correspondingly reduce environmental pollution. Third, it has been reported that the strategy's energy policy was hampered by difficulties in forecasting technological change and by relatively poor data quality on energy demand. This raises questions about the validity of DOE's projections on the effects of implementing the strategy. In addition, GAO believes that DOE's energy conservation research and development management and planning need to be strengthened.

Federal Research: Status of DOE's Superconducting Super Collider

GAO/RCED-91-116, 4/15/91

The Department of Energy's Superconducting Super Collider, to be built on a site 30 miles south of Dallas, Texas, will be the world's largest high-energy particle accelerator—a research tool used by physicists to investigate energy and matter. This report discusses instability in the tenure of DOE and the Superconducting Super Collider Laboratory project management, uncertainties concerning the site geology, uncertainties and risks associated with magnet development and production, and Texas' proposed contribution to project costs.

Uranium Enrichment: GAO's Views on DOE's New Laser Enrichment Technology—AVLIS

GAO/T-RCED-91-23, 4/10/91

Testimony presented by Victor S. Rezendes, Director of Energy Issues, before the Subcommittee on Energy Research and Development, House Committee on Science, Space, and Technology.

GAO testified that completion of the Department of Energy's program for developing a new uranium enrichment technology—the atomic vapor laser isotope separation process (AVLIS)—would provide important information about the technical viability and cost of the plant and would keep future AVLIS deployment options open. Completion of the project would also reduce construction delays and would increase the probability of private financing. Further, if the private sector supports the plant, it is more likely that DOE will realize a return on its investment in AVLIS. Congress should recognize, however, that DOE may be unable to address all technical issues by the end of 1992 and that a new government corporation—if formed—would have to complete program activities before building a plant. Also, the future of AVLIS is intrinsically linked to legislative efforts to restructure DOE's uranium enrichment program as a government corporation. GAO supports such a move, as well as efforts to transfer AVLIS to a government corporation.

Better DOE Controls Needed Over Contractors' Discretionary R&D Funds

GAO/T-RCED-91-25, 3/19/91

Testimony presented by Victor S. Rezendes, Director of Energy Issues, before the Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations.

See abstract for GAO/RCED-91-18, 12/5/90

Federal Research: Super Collider Estimates and Germany's Industrially Produced Magnets

GAO/RCED-91-94FS, 2/12/91

This fact sheet provides information on the growth of the Department of Energy's cost estimate for its Superconducting Super Collider and on Germany's experience with industrially produced superconducting magnets for its Hadron Electron Ring Accelerator. GAO presents a chronological history of the Super Collider cost estimates and discusses scientific activities at a high energy physics facility in Hamburg, Germany, which suggest that superconducting magnets can be industrially produced.

Energy Management: Better DOE Controls Needed Over Contractors' Discretionary R&D Funds

GAO/RCED-91-18, 12/5/90

Nine multiprogram laboratories at the Department of Energy spent about $123 million on discretionary research and development during fiscal year 1989. In light of past instances of uncontrolled use of certain R&D funds by the laboratories, GAO examined the authority, need for, use of, and controls over the use of discretionary R&D funds at DOE's Lawrence Livermore, Sandia, and Los Alamos National Laboratories. GAO believes that the absence of any formal DOE studies aimed at assessing the benefits resulting from the multiprogram laboratories' discretionary R&D activities leaves open to question DOE's plans to significantly increase the funding levels for these activities. The vague wording of DOE's existing criteria for the use of discretionary R&D funds makes judgments about appropriate and inappropriate uses of funds difficult at best. GAO found that DOE's management controls are weak over the administration and use of discretionary R&D funds at the three laboratories visited. Further, DOE has not formally reviewed, nor set a funding ceiling applicable to, the Basic Research Component of Los Alamos' program. DOE acknowledges these weaknesses and has recently developed draft guidance to correct them. GAO summarized this report in testimony before Congress; see GAO/T-RCED-91-25, 3/19/91.

Energy Supply and Demand

Energy Supply and Demand

Electricity Supply: Utility Demand-Side Management Programs Can Reduce Electricity Use

GAO/RCED-92-13, 10/31/91

According to Department of Energy projections, to meet electricity demand in 2000, the nation may need more than 100 new large power plants. Utility-sponsored programs promoting more efficient electricity use—called demand-side management programs—can help avoid the costs and environmental concerns associated with power plants. This report examines (1) the potential for utility sponsored demand-side management programs to cut future electricity demand; (2) impediments to the effectiveness of such programs; and (3) efforts by utilities, states, and federal power-marketing agencies to encourage efficient electricity use.

Electricity Supply: Regulation of the Changing Electric Utility Industry Under the Public Utility Holding Company Act

GAO/T-RCED-92-2, 10/3/91

Testimony presented by Victor S. Rezendes, Director of Energy Issues, before the Subcommittee on Telecommunications and Finance, House Committee on Energy and Commerce.

This testimony focuses on the Securities and Exchange Commission's (SEC) administration of the Public Utility Holding Company Act of 1935, intended to protect the public, investors, and consumers from abuses associated with the control of electric and gas utility companies through the holding company structure. These abuses include subjecting subsidiary utilities to excessive charges for services, construction work, and materials; frustrating effective state regulation through the holding company structure; and overloading subsidiary utilities with debt to prevent voluntary rate reductions. GAO discusses (1) industry changes during the past decade involving electric utility holding companies; (2) SEC's regulatory response to such changes; and (3) the relationship between SEC, the Federal Energy Regulatory Commission, and states in protecting consumer and investor interests in light of these changes.

Alternative Fuels: Experience of Countries Using Alternative Motor Fuels

GAO/T-RCED-91-85, 7/29/91

Testimony presented by Victor S. Rezendes, Director of Energy Issues, before the Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations.

In reviewing programs in Brazil, Canada, and New Zealand to encourage the use of alternative fuels, GAO found that each country was able, to some extent, to get motorists to use alternative fuels, although not without problems and setbacks. GAO also found remarkable consistency in the experiences and lessons reported. GAO testified that the experiences of these three countries provide useful insights that Congress could consider as it deliberates legislation encouraging the use of alternative fuels. In addition, GAO's review of Department of Energy efforts to implement the Motor Fuels Act of 1988 revealed several related issues that Congress could consider, including (1) the extent to which federal purchases of alternative-fueled vehicles should be accelerated before data are collected on how such vehicles perform and (2) resolving problems in placing federal vehicles, given the limited number of fueling and repair stations and the lack of incentives to build such vehicles. In the final analysis, GAO testified, the extent to which alternative fuels are competitively priced with gasoline will determine their use.

Full Disclosure of National Energy Strategy Analyses Needed to Enhance Strategy's Credibility

GAO/T-RCED-91-76, 7/8/91

Testimony presented by Judy A. England-Joseph, Associate Director for Energy issues, before the Subcommittee on Regulation, Business Opportunities, and Energy, House Committee on Small Business.

GAO testified on the process the administration used to develop its National Energy Strategy, the analytical support for the policy proposals it sets forth, and factors that will influence its potential success. The administration has not published analyses of alternative packages of policy options that it examined in developing the strategy, such as those analyzed at the request of the Economic Policy Council. Publication of these analyses could enhance the strategy's credibility and provide

Congress with information needed to consider the merits of various energy policy proposals, including the National Energy Strategy.

Gasoline Marketing: Consumers May Not Be Receiving the Octane They Are Paying for or May Be Unnecessarily Buying Premium Gasoline

GAO/T-RCED-91-65, 6/12/91

Testimony presented by Judy A. England-Joseph, Associate Director for Energy Issues, before the Subcommittee on Energy and Power, House Committee on Energy and Commerce.

Consumers may be unknowingly buying gasoline with lower octane than needed because octane ratings are mislabeled on gas pumps. At the same time, other consumers, believing that they may be getting better performance, may be buying higher priced premium gasoline when regular gas would meet their vehicles' needs. These practices could be costing consumers hundreds of millions of dollars each year. However, there have been developments in preventing octane mislabeling and premium gasoline overbuying: more states are instituting octane testing programs, the Federal Trade Commission is enforcing octane labeling and working with states to ensure octane labeling, legislation has been introduced in Congress that responds to GAO's recommendations for providing greater assurances that posted octane ratings are accurate, and the Federal Trade Commission has recently started to notify consumers of the octane needs of their vehicles.

Alternative Fuels: Increasing Federal Procurement of Alternative-Fueled Vehicles

GAO/RCED-91-169, 5/24/91

The Alternative Motor Fuels Act of 1988 encourages the development and widespread use of methanol, ethanol, and natural gas fuels as alternatives to gasolines, and the production of vehicles to use these fuels. DOE's progress in implementing the legislation has been slower than expected since funding was first provided in October 1989, and this report discusses the reasons why. GAO agrees that federal leadership in the procurement of alternative-fueled vehicles is desirable. In GAO's view, however, a gradual approach, coupled with performance and emissions data collection and incentives for developing a fueling infrastructure, might provide a more

balanced and less risky strategy. In the final analysis, the extent to which alternative fuels are competitively priced with gasoline will determine their use.

Electricity Regulation: Issues Concerning the Hydroelectric Project Licensing Process

GAO/RCED-91-120, 5/10/91

The Federal Energy Regulatory Commission's general methodology for analyzing the economic and financial feasibility of proposed hydroelectric projects employs standard techniques for analyzing investment projects. FERC's analysis is not intended to guarantee that a project, if licensed, will prove to be economically or financially feasible. FERC's estimates of feasibility incorporate estimates of project construction costs, future operating costs, and alternative energy costs. FERC does not automatically deny licenses to all projects that appear uneconomic. License applicants are given the opportunity to demonstrate that their project can be financed in the future. Because some licensed projects eventually fail to secure financing, they are not constructed. Determining the extent of speculation in hydropower development is hard because there is no single accepted definition of the practice and because legitimate reasons exist, such as changing economic conditions, for the potential failure of licensed projects. FERC data show that for hydroelectric licenses issued in fiscal year 1980 through 1985, about 93 percent of the 430 licensees began construction of their projects within four years of receiving the license. Therefore, amending the law to allow licensees more time to begin construction seems unnecessary.

Progress Made in Implementing the Alternative Motor Fuels Act of 1988

GAO/T-RCED-91-44, 4/25/91

Testimony presented by Judy A. England-Joseph, Associate Director for Energy Issues, before the Subcommittee on Energy and Power, House Committee on Energy and Commerce.

The Department of Energy's progress in implementing the Alternative Motor Fuels Act of 1988 has been slower than anticipated since program funding began in October 1989, GAO testified. GAO discusses the status of implementing four major provisions of the 1988 legislation: (1) the federal

light-duty vehicle demonstration program, (2) the corporate average fuel economy credits for the manufacture of alternative-fueled vehicles, (3) the commercial application program to study the use of alternative fuels in heavy-duty trucks, and (4) the program for testing alternative-fueled buses.

Federal Electric Power: Effects of Delaying Colorado River Storage Project Irrigation Units

GAO/RCED-91-62, 3/22/91

In the 1950s, the U.S. Bureau of Reclamation began to develop the water resources of the Upper Colorado River Basin. A large portion of the federal investment in this project is repaid through revenues from the sale of electricity generated by the Colorado River Storage Project's hydroelectric facilities. The price of this electricity, which is marketed by DOE's Western Area Power Administration, normally generates enough repayment revenue and is periodically recalculated to reflect updated cost information. Since 1983 the Bureau and the Western Area Power Administration have excluded from the power rate the estimated irrigation construction costs of some authorized participating projects that have not been built and are not currently planned for construction. This report looks at the effect of this exclusion on power rates and electricity revenues, repayments to the U.S. Treasury, and the ultimate development of the Upper Colorado River Basin as envisioned by Congress.

Federal Responses to December 1989 Heating Fuel Shortages Were Limited

GAO/T-RCED-91-7, 3/13/91

Testimony presented by Judy A. England-Joseph, Associate Director for Energy Issues, before the Senate Committee on Governmental Affairs.

See abstract for GAO/RCED-91-78, 2/20/91.

Gasoline Marketing: Premium Gasoline Overbuying May Be Occurring, but Extent Unknown

GAO/RCED-91-58, 2/26/91

Are consumers needlessly buying higher priced premium unleaded gasoline for their cars when regular unleaded gasoline would meet their

needs? Although not conclusive, indications are that consumers may be overbuying premium gasoline. For example, both government and industry studies show that premium gasoline sales, as a percentage of gasoline sales, exceed the percentage of vehicles on the road that require premium gasoline. In analyzing nationwide averages of gas sales along with retail and refiners' prices, GAO found that the price difference between premium and regular gasoline established at the refinery was about the same as the price difference between the two grades of gasoline set at the retail pump. Two factors that contribute to the higher price of premium over regular gasoline are the costs of additional processing to increase the octane level and the cost of more or better additives that may be included in premium gasoline.

Energy Policy: Evolution of DOE's Process for Developing a National Energy Strategy

GAO/RCED-91-76, 2/21/91

Recognizing the need for a comprehensive U.S. energy policy, the President and the Secretary of Energy began developing such a plan in 1989. Recent energy trends and the war in the Persian Gulf have again underscored this need. This report provides information on the process DOE has used in developing the National Energy Strategy. GAO discusses the original plans DOE had for developing the National Energy Strategy and obtaining public review of it, and the subsequent revisions to these plans.

Energy Security: Federal Responses to December 1989 Heating Fuel Shortages Were Limited

GAO/RCED-91-78, 2/20/91

The severe and unanticipated cold spell in December 1989 led to fuel shortages in this country. While fuel demand increased as a result of the extremely cold temperatures, the distribution systems were unable to move heating fuel from refineries and storage terminals to areas with shortages. GAO notes that delays in processing Jones Act waivers, which would have allowed the use of foreign-flagged vessels to ship heating fuels between U.S. ports, contributed to supply problems. In addition, limitations in the data that DOE's Energy Information Administration collected on heating oil supplies reduced its ability to predict or respond to supply shortages. Finally, utilities and commercial and industrial customers with interruptible natural gas contracts had gas services

discontinued and entered distillate and propane markets, thus reducing the availability of these fuels to residential consumers. GAO summarized this report in testimony before Congress; see GAO/T-RCED-91-7, 3/13/91.

Oil Reserve: Some Concerns Remain About SPR Drawdown and Distribution

GAO/RCED-91-16, 11/28/90

The crisis in the Persian Gulf has renewed interest in the ability of the Department of Energy's Strategic Petroleum Reserve to counter disruptions in the supply of oil to the United States. To provide this protection, DOE must be able to offset the supplies lost by quickly drawing down reserve oil from its storage sites and distributing it to purchasers. This report (1) reviews DOE's current and planned capability for removing oil from reserve sites and getting it to users via oil distribution networks, (2) examines the Strategic Petroleum Reserve's compliance with pipeline safety requirements, and (3) discusses DOE's efforts to correct problems that GAO previously reported. GAO concludes that a major distribution could be hampered because buyers of Strategic Petroleum Reserve oil are required to use U.S.-flag tankers to ship the oil between U.S. ports. DOE and industry officials doubt whether enough U.S.-flag vessels are available to do the job, and questions remain about the efficiency of procedures to authorize the use of foreign vessels.

Managing the Department of Energy

Managing the Department of Energy

Energy Management: DOE Has an Opportunity to Improve Its University of California Contracts

GAO/RCED-92-75, 12/26/91

The Department of Energy (DOE) is negotiating extensions of its management and operating contracts with the University of California for the Lawrence Livermore National Laboratory, the Lawrence Berkeley Laboratory, and the Los Alamos National Laboratory. GAO believes that these contract renegotiations afford DOE an opportunity to institute changes that will help ensure that the three laboratories are run effectively and efficiently. Under its current contracts with the University, DOE lacks the authority to direct changes to the laboratories' procurement and property management policies and procedures. The nonstandard procurement and property management clauses in the current contracts have precluded timely corrective action in these areas and have permitted costly procurement actions that do not comply with DOE's policies and procedures. In addition, the University's contracts include a number of other nonstandard clauses that can further limit DOE's effective oversight of the contracts, such as the nonstandard allowable costs clause. GAO strongly supports DOE's (1) goal of including as many standard clauses in the contracts as possible and (2) decision to have any deviations fully justified and approved by DOE's top management.

Energy Management: Tightening Fee Process and Contractor Accountability Will Challenge DOE

GAO/RCED-92-9, 10/30/91

The Department of Energy's (DOE) contracting practices is 1 of 16 areas in the federal government GAO has identified as highly vulnerable to waste, fraud, abuse, and mismanagement. As part of a broader GAO effort to examine DOE's process for formally reviewing and assessing the performance of management and operating contractors, this report focuses on those contractors operating under cost-plus-award-fee contracts with DOE's Albuquerque Field Office. GAO selected this office because it administers contractors for four large defense materials production plants—Kansas City, Mound, Pantex, and Pinellas—as well as the contract for the Waste Isolation Pilot Plant, in which DOE plans to store radioactive waste. GAO discusses (1) the effectiveness of DOE's use of performance objectives to set expectations and evaluate contractor performance, (2) the effectiveness of DOE's use of data from on-site

reviews to evaluate contractor performance for award fee purposes, and (3) the effect of DOE's new award fee regulations on the performance evaluation and award determination process.

Comments on Proposed Legislation to Restructure DOE's Uranium Enrichment Program

GAO/T-RCED-92-14, 10/29/91

Testimony presented by Judy A. England-Joseph, Associate Director for Energy Issues, before the Subcommittee on Energy and the Environment, House Committee on Interior and Insular Affairs.

GAO testified on legislative proposals that address the future of DOE's uranium enrichment program, established to promote national energy security goals while recovering the government's costs. Each of the three bills and a proposal by Representative Sharp would help establish clear objectives for the enrichment program and allow the new corporation to operate more efficiently than does DOE's current program. The proposals would also help resolve several long-term issues that challenge the programs' future, including the need to pay billions of dollars for environmental cleanup and decommissioning at the same time that competition is expected to increase. In addition, GAO believes that all the proposals would be strengthened by including a $3 billion cost recovery goal, rather than forgiving all past recovered costs or relying on unspecified dividends, uncertain stock sales, or undefined rent or royalty payments that may not materialize.

Energy Management: Contract Audit Problems Create the Potential for Fraud, Waste, and Abuse

GAO/RCED-92-41, 10/11/91

Is the Department of Energy adequately monitoring and overseeing its contracting process by performing contract audits, and what is the impact or potential impact to the government when they are not performed? Even though DOE contracted out about $17.6 billion in fiscal year 1990 for goods and services, no assurance exists that oversight and control of contract expenditures, through contract auditing, will deter and detect potential fraud, waste, and abuse. Beginning in April 1990, DOE's Office of Inspector General (OIG) reported that DOE managers lack adequate OIG assurance that the management and operating contractors are operating economically,

efficiently, and in the government's best interest. The assurance is lacking because the OIG's cyclical audit coverage of DOE's largest management and operating contractors has been incomplete due to staffing and resource limitations. In addition, because nonmanagement and operating contracts can go unaudited for many years, DOE does not know whether it paid a fair and reasonable price for such contracts or whether the costs claimed were accurate and allowable. GAO's review revealed many instances involving millions of dollars in which the government was potentially overbilled, or the amounts paid or claimed were questionable. Unallowable costs claimed included such items as alcoholic beverages, unauthorized spouse travel, and registration for golf tournaments.

Energy Management: DOE Actions to Improve Oversight of Contractors' Subcontracting Practices

GAO/RCED-92-28, 10/7/91

The Department of Energy's Contractor Purchasing System Review Program oversees the extensive subcontracting activities of DOE's management and operating contractors. This report describes the subcontracting deficiencies occurring at DOE, identifies shortcomings in the program, and discusses the corrective actions that DOE has committed to take in response to GAO findings. Management and operating subcontracts, totaling more than $5 billion in 1990, are vulnerable to waste, fraud, and abuse—a fact that is reflected in DOE's own reviews. Poor procurement practices of contractors, coupled with inadequate DOE oversight, have led to excessive subcontract costs for the government. DOE's reviews have shown that management and operating contractors often do not ensure that subcontract prices are fair and reasonable and that contractors are also restricting competition by inappropriately using sole-source purchases.

DOE Management: Improvements Needed in Oversight of Procurement and Property Management Practices at the Lawrence Livermore National Laboratory

GAO/T-RCED-91-88, 8/20/91

Testimony presented by Thomas P. McCormick, Regional Manager of GAO's San Francisco Office, before the Assembly Committee on Higher Education, California Legislature.

The Department of Energy has decided to extend its contract with the University of California for operating the Lawrence Livermore National Laboratory. This testimony summarizes the weaknesses in Laboratory management that GAO has pointed out in three earlier reports. GAO believes that negotiations to extend the contract present an opportunity for DOE to take a firm stance on the need for management improvements, including obtaining a commitment for improved management by the University and obtaining agreement that the new contracts will contain clauses giving DOE clear authority to administer the contracts in a manner that will protect the government's interest.

Energy Management: Using DOE Employees Can Reduce Costs for Some Support Services

GAO/RCED-91-186, 8/16/91

GAO reviewed the Department of Energy's contracting practices for support services. These contracts involve obtaining staff for a wide variety of services related to DOE's management, administrative, and technical activities. This report discusses (1) the overall cost and use of the contracts, (2) the adequacy of controls to ensure that DOE's support service contracts are cost-effective, and (3) whether work done on selected support service contracts could be done less expensively by federal employees. DOE rarely considered the cost of awarding in-house performance in awarding the support service contracts GAO reviewed. In 1990 inadequate attention to cost-effectiveness cost the government at least $5 million more than was necessary to perform activities for which GAO conducted cost comparisons. GAO believes that cost comparisons are an essential management tool in making decisions about whether to contract out.

DOE Management: DOE Needs to Improve Oversight of Subcontracting Practices of Management and Operating Contractors

GAO/T-RCED-91-79, 8/1/91

Testimony presented by Victor S. Rezendes, Director of Energy Issues, before the Senate Committee on Governmental Affairs.

GAO testified that the Department of Energy's management and operating subcontracts, totaling over $5 billion in 1990, are vulnerable to waste,

fraud, and abuse. Poor management of the contractors, coupled with inadequate DOE oversight, have led to contractors incurring excessive subcontract costs. GAO's work at the Lawrence Livermore National Laboratory uncovered problems similar to those identified in DOE reviews of contractors. For example, the Laboratory leased 58 vehicles on a sole-source basis from the University of California—the management and operating contractor—and has paid at least $590,000 more than it would have if the vehicles had been obtained through the General Services Administration. GAO believes that DOE's Contractor Purchasing System Review Program provides a framework for DOE to identify and address procurement deficiencies; however, improvements are needed in program implementation. DOE's proposed actions should help address these problems.

DOE Management: Management Problems at the Three DOE Laboratories Operated by the University of California

GAO/T-RCED-91-86, 7/31/91

Testimony presented by Victor S. Rezendes, Director of Energy Issues, before the Subcommittee on Investigations and Oversight, House Committee on Science, Space, and Technology.

GAO, as well as the Department of Energy's Inspector General, have pointed out the need for major improvement in (1) the University of California's management of three DOE laboratories—Lawrence Livermore, Los Alamos, and Lawrence Berkley—and (2) DOE oversight of that management effort. GAO found problems with University of California controls over laboratory operations, such as managing property, protecting classified documents, and ensuring that subcontractors are not subject to foreign influence, which might lead to transfers of nuclear technology or materials to foreign countries. In addition, clauses in the University of California contracts hamper DOE's ability to effectively manage the laboratories. DOE has addressed many of the specific problems that GAO identified and has tried to improve overall contract management. Negotiations with the University of California to extend the laboratory contracts will present another opportunity for DOE to take a firm stance on the need for management improvements. Having appropriate procedures and resources in place would also help DOE carry out its administration of contracts.

Nuclear Security: DOE Original Classification Authority Has Been Improperly Delegated

GAO/RCED-91-183, 7/5/91

Despite an Executive Order limiting the authority to make original classification decisions to government officials, DOE has delegated this authority to a number of contractor employees. Although the number of original classification decisions made by these contractors is small, this neither negates nor diminishes the significance of the improper delegation of authority. If misclassification were to occur, particularly at the Top Secret level, U.S. national security interests could potentially be seriously affected and threatened. DOE's argument that the delegation of such authority is a long-standing policy and done on a selective basis does not legitimize the practice and does not relieve DOE of its responsibility to meet the requirements of the Executive Order. DOE needs to independently assess all original classification determinations made by contractors; otherwise, it cannot be sure that U.S. national security interests have been or are being adequately protected.

Nuclear Security: Property Control Problems at DOE's Livermore Laboratory Continue

GAO/RCED-91-141, 5/16/91

In April 1990, GAO reported that the Department of Energy's Lawrence Livermore Laboratory was unable to locate 16 percent of its inventory of government-owned equipment. Following the report's release, laboratory officials told the press that most of the inventoried equipment—about 99 percent—has been found. GAO believes that this statement is inaccurate. First, the laboratory excluded from its claim over 20,000 non-capital equipment items that are still missing. Second, the laboratory's reported percentage of located items was based on cost, whereas the percentage of located items GAO reported as missing was based on the number of missing items. Taking these factors into consideration, only about three percent of the inventoried equipment, which cost $26.8 million, has been located. About 13 percent of the inventoried equipment, which cost $18.6 million, is still missing. Although progress has been made in some areas, the property control problems that GAO identified in April continue. A substantial amount of government-owned property is missing; the laboratory lacks adequate controls to ensure that property in its custody is safeguarded

against theft, unauthorized use, or loss; and DOE has not provided adequate oversight of the laboratory's property management system.

Comments on Proposed Legislation to Restructure DOE's Uranium Enrichment Program

GAO/T-RCED-91-33, 4/10/91

Testimony presented by Victor S. Rezendes, Director of Energy Issues, before the Subcommittee on Energy and Power, House Committee on Energy and Commerce.

GAO testified on three pieces of proposed legislation that would restructure DOE's uranium enrichment program as a government corporation with private financing; the ultimate goal would be the sale of the corporation to the private sector. GAO believes that each bill would take needed steps toward establishing clear objectives for the enrichment program and would allow the new corporation to better operate as a business entity. Each bill would also help resolve several long-term issues that, in GAO's view, challenge the future of the program, including a tab for environmental cleanup and decommissioning estimated to cost billions. GAO makes several specific observations on the proposed legislation. In particular, GAO believes that the bills would be strengthened by including a $3 billion cost recovery goal instead of relying on unspecified dividends or stock sales that may not materialize given licensing uncertainties, increased competition, and billions of dollars in liabilities.

Nuclear Nonproliferation: DOE Needs Better Controls to Identify Contractors Having Foreign Interests

GAO/RCED-91-83, 3/25/91

Foreign ownership, control, or influence over a U.S. company that does classified work for the Department of Energy presents a national security threat because of the potential for uncontrolled transfer of nuclear weapons technology or material to foreign interests. Overall, neither DOE nor its government-owned contractor-operated weapons laboratories fully comply with DOE's regulations and procedures for determining whether contractors are subject to foreign interests and for preventing associated risks. In addition, weaknesses exist in the regulations DOE uses to determine whether contractors are subject to foreign ownership, control, or influence. Finally, DOE has several internal control weaknesses that

could cause further problems in safeguarding classified material. For example, all three of DOE's weapons laboratories lack data systems that can accurately identify all classified contracts.

Nuclear Nonproliferation: Controls Over the Commercial Sale and Export of Tritium Can Be Improved

GAO/RCED-91-90, 3/25/91

Tritium is a radioactive isotope of hydrogen that can be used to enhance the explosive power of nuclear weapons. In response to reported losses of tritium gas from the Department of Energy's Oak Ridge National Laboratory, GAO reviewed the adequacy of existing controls by DOE and the Nuclear Regulatory Commission over commercial sales and exports of tritium. GAO found that DOE and the Laboratory had been slow to investigate the major shipper-receiver and internal tritium discrepancies that surfaced in the summer of 1988. Because investigations were done late and records were poor, investigators were able only to guess at possible causes for the tritium losses. While investigators concluded that the probability of tritium theft or diversion was low, they did uncover weaknesses in the Laboratory's management and DOE's oversight of the tritium operation, including a lack of rigorous inventory control practices. DOE has made several changes that it believes will improve its tritium operation, including relocation of the tritium operation to DOE's state-of-the-art facility at Mound Plant in Ohio. GAO concludes that the tritium incidents at Oak Ridge cannot be attributed to weaknesses in NRC's licensing procedures. GAO believes, however, that setting a maximum limit on shipment size and obtaining written agreements for retransfer of tritium may provide additional protection against thefts or diversions. GAO also believes that given the expanding international market for tritium, it may be prudent for the United States to seek written agreements for recipient countries for notifying/approving of the retransfer of U.S. tritium to a third country.

Nuclear Security: Accountability for Livermore's Secret Classified Documents Is Inadequate

GAO/RCED-91-65, 2/8/91

DOE's Lawrence Livermore Laboratory in California generates and controls large amounts of classified documents relating to the research and testing of nuclear weapons. GAO discovered that the laboratory cannot locate a

substantial number of these secret documents, which cover a range of topics including nuclear weapons and laser design. A recent internal inventory of secret documents at the laboratory listed over 12,000 secret documents as missing. In addition, accountability for secret documents in the laboratory's custody is inadequate. About 108 groups manage and control secret documents at the laboratory. As a result, practices vary, and laboratory management cannot ensure that secret documents are being effectively managed or controlled overall. Furthermore, DOE has not provided adequate oversight of the laboratory's secret document control program. Although neither DOE nor laboratory officials believe that the missing documents have been lost or stolen, an assessment of the potential for compromise to the national security has yet to be made.

Energy Management: DOE Needs to Better Implement Conflict-of-Interest Controls

GAO/RCED-91-15, 12/26/90

DOE has 22 federally funded research and development centers that are managed and run by private corporations and universities under contracts with DOE. In fiscal year 1989, DOE paid these contractors almost $8 billion; these contractors, in turn, awarded about $3.2 billion to subcontractors. In response to concerns about subcontractor conflicts of interest, GAO looked into the situation and found that while DOE's written policies and procedures provide guidance on how to spot and avoid conflicts of interest among subcontractors, DOE field offices have not been implementing these internal management controls. Contrary to DOE regulation, the DOE Albuquerque field office abdicated responsibility and allowed the research centers to make conflict-of-interest determinations themselves. Although GAO was unable to determine whether DOE's policies and procedures were, in practice, effective, GAO noted two management control problems. First, Albuquerque has relied extensively on subcontractor self-certification in making conflict-of-interest decisions even though certifications may not always be accurate. Second, Albuquerque's documentation of conflict-of-interest decisions is limited. GAO also found that neither Albuquerque nor DOE headquarters exercised effective oversight to ensure that conflicts of interest were avoided in the subcontracts awarded by the Los Alamos and Sandia National Laboratories.

Producing Nuclear Weapons Safely

Producing Nuclear Weapons Safely

Uranium Enrichment: Analysis of Decontamination and Decommissioning Scenarios

GAO/RCED-92-77BR, 11/15/91

This briefing report analyzes—using four different scenarios—the adequacy of a $500 million annual deposit into a fund to pay for the cost of cleaning up the Department of Energy's (DOE) three aging uranium enrichment plants located in Oak Ridge, Tennessee; Paducah, Kentucky; and Portsmouth, Ohio. GAO found that a fixed annual $500 million deposit made into a cleanup fund would not cover total expected cleanup costs, nor would it cover expected decontamination and decommissioning costs. A $500 million annual deposit indexed to an inflation rate would likely be enough to pay for all expected cleanup costs, including decontamination and decommissioning costs, and depleted uranium costs.

Nuclear Science: Accelerator Technology for Tritium Production Needs Further Study

GAO/RCED-92-1, 10/31/91.

Has the Department of Energy (DOE) given full and fair consideration to using a particle accelerator for tritium production? In a 1987 report, DOE's Energy Research Advisory Board assessed the feasibility of using an accelerator to produce tritium. GAO concludes that the criteria used to assess the accelerator technology did not provide the flexibility necessary to assess and report on the advantages of relatively small-size accelerators. Cost estimates for accelerators to produce tritium are very uncertain because a detailed design has not been done. Further study is needed to develop meaningful cost estimates. Recent decreases in projected tritium needs for servicing existing and planned nuclear weapons, and a new target concept for the accelerator technology may provide significant benefits. The projected decrease in the need for tritium could make the small accelerators more attractive because they may be capable of meeting future tritium needs, thus reducing the amount of electric power needed for the process. In addition, the successful development of the helium-3 target could almost eliminate radioactive waste from the tritium production cycle. While GAO takes no position on constructing an accelerator for the production of tritium, it does believe that it is valid technology that deserves more balanced consideration.

Nuclear Health and Safety: Workers' Compensation Rights Protected at Hanford

GAO/RCED-91-203, 9/10/91

Since 1943 the Washington State Department of Labor and Industries has had a contract with the Department of Energy (DOE) or its predecessor to administer a self-insured workers' compensation/pension program for contractor employees at DOE's Hanford Site near Richland, Washington. This review stemmed from concerns that the contract's implementation could have prevented Hanford employees from filing workers' compensation claims for radiation-related injuries or occupational diseases resulting from their employment at the Hanford Site. GAO found that the procedures since the late 1950s for filing claims contain sufficient checks and balances to ensure they cannot be blocked by DOE. However, this assurance is lacking for claims initiated between 1943, when Hanford was founded, and the late 1950s. Claim-filing procedures in effect at that time required claims to be submitted to that state through the employer. However, no evidence was found that DOE did not forward employee claims to the state before the procedural change, nor were DOE, state officials, or employee union representatives aware of any Hanford employee being denied the right to file a workers' compensation claim.

Uranium Enrichment: DOE Needs to Pursue Alternatives to AVLIS Deployment Options

GAO/RCED-91-88, 8/8/91

In 1990 the Department of Energy began a two-year project to illustrate the technical and economic feasibility of a new uranium enrichment technology—the atomic vapor laser isotope separation (AVLIS) process. GAO believes that completing the AVLIs demonstration project will provide valuable information about the technical viability and cost of building an AVLIS plant and will keep future plant construction options open. However, Congress should be aware that DOE still needs to adequately demonstrate AVLIS with full-scale equipment and develop convincing cost projects. Program activities, such as the plant-licensing process, that must be completed before a plant is built, could take many years. Further, an updated and expanded uranium enrichment analysis will be needed before any decision is made about building an AVLIS plant. GAO, which has long supported legislation that would restructure DOE's uranium enrichment program as a government corporation, encourages DOE's goal of

transferring AVLIS to the corporation. This could reduce the government's financial risk and help ensure that the decision to build an AVLIS plant is based on commercial concerns. DOE, however, has no alternative plans should the government corporation not be formed. Further, by curtailing a planned public access program, which would have given private firms an opportunity to learn about the technology during the demonstration project, DOE may limit its ability to transfer AVLIS to the private sector.

Nuclear Health and Safety: Environmental, Health, and Safety Practices at Naval Reactors Facilities

GAO/T-RCED-91-24, 4/25/91

Testimony presented by Judy A. England-Joseph, Associate Director for Energy Issues, before the Department of Energy Defense Nuclear Facilities Panel, House Committee on Armed Services.

The Naval Reactors Program—a joint Department of Energy/Navy effort—develops the nuclear propulsion plants used in Navy vessels and trains naval personnel to operate reactor plants. GAO testified on the Naval Reactor Program's environmental, health, and safety practices at its research and development facilities: the Knolls Atomic Power Laboratory near Schenectady, New York; the Bettis Atomic Power Laboratory near Pittsburgh, Pennsylvania; and their related reactor sites. Allegations had been raised about employee overexposure to radiation, reactor safety, asbestos problems, and improper management of areas containing radioactive and hazardous waste, and GAO's testimony focuses on these and related concerns.

Nuclear Weapons Complex: Reconfiguring DOE's Weapons Complex

GAO/T-RCED-91-40, 4/18/91

Testimony presented by J. Dexter Peach, Assistant Comptroller General for Resources, Community, and Economic Development Programs, before the Department of Energy Defense Nuclear Facilities Panel, House Committee on Armed Services.

In this testimony, GAO characterizes the Department of Energy's January 1991 "Nuclear Weapons Complex Reconfiguration Study" as a starting point for reaching agreement on solutions to many of the complex's safety and environmental problems. Key decisions still need to be made about

how big the complex should be, where to relocate plutonium operations, what technologies to use for new tritium production, and what to do with excess plutonium. The total cost for reconfiguring and modernizing the complex is still uncertain, and some management issues remain unresolved. Congress faces a difficult task in making these decisions given the conflicting demands for scarce resources in a time of growing budget deficits and war in the Persian Gulf.

Nuclear Health and Safety: More Attention to Health and Safety Needed at Pantex

GAO/RCED-91-103, 4/15/91

Located near Amarillo, Texas, the Department of Energy's Pantex Plant is a contractor-operated facility that handles the assembly, stockpile testing, maintenance, modification, and retirement of nuclear weapons. GAO found that even after efforts to strengthen DOE's safety and health activities, Pantex continued to have problems in completing safety analysis reports, implementing an adequate radiation protection program, and complying with Occupational Safety and Health Administration standards. OSHA found 168 violations of worker protection standards at Pantex that could cause death or serious injury. Pantex, however, has completed less than half of its safety analysis reports, GAO concludes that the persistent safety and health problems at Pantex warrant independent, external safety oversight.

Managing the Environmental Cleanup of DOE's Nuclear Weapons Complex

GAO/T-RCED-91-27, 4/11/91

Testimony presented by Victor S. Rezendes, Director of Energy Issues, before the Department of Energy Defense Nuclear Facilities Panel, House Committee on Armed Services.

Even though the cleanup of the nation's nuclear weapons complex is in its earliest stage, the Department of Energy is already encountering formidable problems, GAO testified. Major technical obstacles, like the presence of ferrocyanide in the single-shell tanks at the Hanford facility in Washington state, promise to make the cleanup a long and expensive task. Rising cleanup costs and schedule delays highlight the critical need for effective management. GAO believes that as DOE prepares to entrust the cleanup to a new set of contractors, DOE must embrace new ways of

managing its contractors, including more direct control of subcontracting, more effective oversight to help reduce costs, and incentives for contractors to stay on schedule and on budget.

Nuclear Materials: GAO's Views on Decreasing Tritium Requirements and Their Effect on DOE Programs

GAO/T-RCED-91-21, 3/13/91

Testimony by Victor S. Rezendes, Director of Energy Issues, before the Department of Energy Defense Nuclear Facilities Panel, House Committee on Armed Services.

Due to the shutdown of its nuclear production reactors at Savannah River, South Carolina, DOE has not manufactured tritium—a radioactive material used in nuclear weapons—since 1988. Projected U.S. defense tritium requirements have fallen dramatically as a result of anticipated nuclear weapons retirements. While DOE has recently made changes to its Savannah River restart and new production reactor programs, GAO believes that additional time is now available, if needed, to evaluate (1) outstanding safety and environmental issues before restarting the Savannah River reactor and (2) when the reactors should be restarted. DOE also has additional time to reconsider the capacity and choice of technology of new tritium production.

Nuclear Safety: Status of Reactor Restart Efforts and Safety Culture Changes

GAO/RCED-91-95, 3/13/91

Three nuclear reactors at the Savannah River Site in South Carolina have been shut down since 1988 to make hardware improvements, upgrade operator qualifications, expand staffing and training, increase management involvement, and improve oversight. GAO reviewed efforts by the Department of Energy and the Westinghouse Savannah River Company, the contractor that runs the site, to restart the three reactors. This report describes (1) slippages in the restart schedule, (2) factors causing the latest delays, and (3) safety oversight changes and safety culture concerns.

Nuclear Weapons Complex: Efforts to Improve DOE's Management of the Nuclear Weapons Complex

GAO/T-RCED-91-17, 3/7/91

Testimony presented by Victor S. Rezendes, Director of Energy Issues, before the Subcommittee on Environment, House Committee on Science, Space, and Technology.

The Department of Energy's (DOE) weapons complex is virtually shut down and faces serious environmental, safety, and operational problems. These problems are largely due to DOE's failure to effectively manage the complex. Management weaknesses include an emphasis on production over environmental and safety matters, shortcomings in DOE's oversight and limited technical staff for oversight, and the absence of strategic plans to address the problems of the complex. DOE has initiated a management and oversight restructuring within DOE, strategic plans for reconfiguring the complex and cleaning up the environment at DOE sites, and efforts to make DOE contractors more accountable. Although these initiatives are a step in the right direction, DOE needs to commit to ensuring that its operations are carried out safely and in an environmentally acceptable manner, coordinate and interact among various oversight organizations and program offices, and recruit technically qualified staff.

Nuclear Safety and Health: Nonconforming Products Are a Governmentwide Problem

GAO/T-RCED-91-9, 3/6/91

Testimony by Judy A. England-Joseph, Associate Director for Energy Issues, before the Senate Committee on Governmental Affairs.

The full extent of nonconforming parts usage in the federal government is unknown. However, large and small companies, both foreign and domestic, have sold nonconforming parts—including counterfeit and substandard items—to nuclear power plants, commercial and military aircraft, naval ships, weapons systems, and the space shuttle. Accidents resulting from the failure of nonconforming parts could be devastating, GAO testified. To eliminate this problem, GAO believes that an aggressive, governmentwide approach is needed, one that would ensure that federal agencies cooperate and share information about nonconforming products. While a centralized information system may not stop the proliferation of nonconforming products, it should help federal agencies make informed

decisions about potential suppliers and products. GAO concludes that the Office of Management and Budget is in the best position to develop an effective, appropriate, and cost-beneficial plan to help resolve the problem of nonconforming parts.

Nuclear Weapons Complex: GAO's Views on DOE's Reconfiguration Study

GAO/T-RCED-91-8, 2/25/91

Testimony by J. Dexter Peach, Assistant Comptroller General for Resources, Community, and Economic Development Programs, before the Senate Committee on Governmental Affairs.

In this testimony, GAO provides its views on DOE's January 1991 "Nuclear Weapons Complex Reconfiguration Study." GAO believes that DOE's new reconfiguration study provides a starting point for reaching agreement on solutions to many of the complex's problems. Key decisions still need to be made about the size of the complex, where to relocate plutonium operations, what technologies should be used for new tritium production, and what to do with excess plutonium. The total cost for reconfiguring and modernizing is still uncertain and some management issues remain unresolved. Congress faces a difficult task in making these decisions given the conflicting demands for scarce resources in a time of growing budget deficits and war in the Persian Gulf.

Nuclear Materials: Decreasing Tritium Requirements and Their Effect on DOE Programs

GAO/RCED-91-100, 2/8/91

U.S. defense tritium requirements fell dramatically from 1988 through 1990, and future decreases may occur as a result of upcoming retirements of nuclear weapons. A DOE analysis found that without starting any reactors, enough tritium exists to meet anticipated needs of the nuclear weapons stockpile for the next several years. This situation affords more time to evaluate outstanding issues before restarting the Savannah River reactors, all three of which are capable of producing tritium. The decreasing need for tritium also raises questions about the best way to build adequate capacity to produce tritium. While DOE has recently changed its Savannah River reactor restart and new production reactor programs, GAO believes that DOE needs to spend more time evaluating (1)

outstanding safety and environmental issues before restarting the Savannah River reactors and (2) when the reactors should be restarted. DOE now also has time to reconsider the capacity and choice of technology to meet the lower tritium requirements.

Nuclear Health and Safety: Efforts to Strengthen DOE's Health and Epidemiology Programs

GAO/RCED-91-57, 2/5/91

Given its dual roles of producing nuclear weapons and assessing the potential hazards associated with running its facilities, has DOE effectively managed its health and health effects (epidemiology) research programs? During the 1980s, several external reviews pointed out that DOE had not effectively overseen its health programs, lacked credibility in its health effects research activities because it restricted public involvement and independent assessment of its research data, and did not standardize the collection of pertinent data on the health of its workers. In March 1990, DOE announced several initiatives to address these problems. These measures included the development of an occupational health and epidemiology program; the transfer of long-term health effects' studies to the Department of Health and Human Services; the establishment of an advisory committee to oversee DOE's environmental, safety, and health activities; and the design of a data base to store and retrieve data. GAO concludes that while these initiatives are positive steps, their success will depend on DOE's ability to obtain the necessary resources and to follow through on its commitment to allow an independent assessment of its activities.

Nuclear Safety: The Defense Nuclear Facilities Safety Board's First Year of Operation

GAO/RCED-91-54, 2/5/91

The Department of Energy's nuclear weapons facilities are among the potentially most dangerous industrial operations in the world. To ensure their independent oversight and safe operation, Congress created the Defense Nuclear Facilities Safety Board. This report discusses the Board's recommendations for improving conditions at DOE's defense nuclear facilities, problems the Board has encountered in hiring technical staff, and management problems that could affect the Board's independence and credibility.

Special Publications

Special Publications

Meeting the Energy Challenges of the 1990s: Experts Define the Key Policy Issues

GAO/RCED-91-66, 3/91

The nation's economy, environmental quality, defense, and international strategy are inextricably linked to energy choices. Past GAO work has identified five major issue areas associated with energy policy: energy supply and demand, energy and the environment, management challenges at the Department of Energy, DOE's nuclear weapons complex, and energy research and development. In July 1990, GAO sponsored a conference to examine emerging issues in these five areas. Representatives from government, industry, research institutions, and citizens' groups assessed the challenges facing the federal government, the states, and industry on these topics during the 1990s. This report is a compendium of the presentations made by attendees during five panel discussions.

Energy Reports and Testimony: 1990

GAO/RCED-91-84, 1/91

This annual index provides a listing and summary of GAO documents directly related to energy that were issued between January and December 1990. This was a period in which growing dependence on imported oil, the need to develop new technologies to use energy cleanly and efficiently, and the tremendous problems at the Nation's nuclear weapons complex kept the Department of Energy (DOE) in the public spotlight. Significant reports include (1) a June 1990 energy policy report which addresses such issues as DOE's national energy strategy, energy supply and demand, dependence on foreign oil, electricity production and consumption, and environmental effects of energy consumption and (2) an April 1990 gasoline marketing report which finds that the federal government is doing little to prevent gas stations from selling low-octane fuel at high-octane prices, resulting in cheating more than $150 million annually from motorists.

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