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U.S. SPENT BILLIONS ON ATOM PROJECTS THAT HAVE FAILED

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WASHINGTON, Dec. 11 — The United States spent billions of dollars in the last two decades on complex military and civilian energy projects that failed to work as promised.

The flawed record has led to uneasiness in Congress with the Energy Department's proposals to build five new reactors and other nuclear plants to modernize the nation's atomic weapons industry.

In all, the Energy Department and its predecessor agencies have spent more than \$15 billion since 1970 on troubled projects, a figure confirmed by the department and the General Accounting Office, the investigative arm of Congress. **Capabilities Questioned**

"These plants failed for different reasons," said Representative John D. Dingell, the Michigan Democrat who is chairman of the influential House Energy and Commerce Committee, which has investigated Energy Department programs. "Some should never have been undertaken, and some failed for what appears to be incompetence that borders on wrongdoing." [A list of failed projects is on page B12.] J. Dexter Peach, Assistant Comptroller General of the General Accounting Office, added: "The shortcomings we've seen raise questions about the technical capabilities of the Department of Energy. The Energy Department is aware of this record."

He said department officials "are telling us it's going to be a real challenge" technically to undertake the large-scale construction projects being discussed. **Built and Abandoned**

Processing plants, nuclear waste sites and other projects that cost hundreds of millions of dollars were built and abandoned without ever operating. Several other projects, including an experimental reactor in Tennessee, were delayed for years because of technical problems that led to billions of dollars in extra costs. In other instances, plants once regarded as vital turned out to be unnecessary, including an en-richment plant in Ohio that cost \$3.5 billion before construction was stopped. [A list of failed projects is on page B12.] The huge cost of modernizing the nuclear weapons industry and cleaning up decades of accumulated toxic and radioactive nuclear wastes is shown in a study completed by the Energy Department and delivered to the White House last week. The Washington Post reported today that the study calls for \$50 billion to be spent over the next 20 years to close old weapons plants in Colorado and Utah, build new military nuclear reactors and clean up the worst of the environmental damage caused by producing atomic weapons since the start of the Manhattan Project in 1942. **A Failed Project**

One striking example of a construction project that turned out to be a failure was a \$225 million plutonium processing building at the Rocky Flats Plant near Golden, Colo. The processing plant, Building 371, was started in 1973, completed in 1981 and operated for a month in 1982 before being shut because the new processing technology did not work. The Energy Department has estimated that it will cost nearly \$400 million and take eight years to make the equipment in the building work.

"The fact of the matter is that Building 371 is a fiasco," said Joseph F. Salgado, the Deputy Secretary of Energy. "It's a horror story. It's unacceptable."

Building 371 was intended to replace another, much older processing plant, Building 771. On Oct. 8 The Energy Department shut Building 771 on Oct. 8 after three employees were exposed to plutonium dust, which can be extremely dangerous if it is inhaled. The closing of Building 771 was, the nation's sole source of reprocessed plutonium, which is used in triggers for thermonuclear bombs. The closing has brought most of the plant's operations at the Rocky Flats Plant to a halt. Reprocessed plutonium is used in triggers for thermonuclear bombs.

"Building 371 is one of a long list of horrors," said Representative David E. Skaggs, Democrat of Colorado, whose district includes the Rocky Flats Plant. "We need independent oversight of this agency. We're past the point where the Department of Energy has the credibility to oversee itself on any of its programs." **Department's Dual Mission**

Mr. Salgado was one of many a number of top executives who said the Energy Department cannot be entirely faulted for problems with construction. They noted that the agency has a dual mission of building nuclear weapons and developing advanced nuclear and nonnuclear sources of energy. As a result, they said, the department oversees the design and construction of one-of-a-kind plants with technologies that have not been proven in full-scale industrial applications.

At least one of the Energy Department's more complex projects has been built on time and within budget. But virtually every other important project has faced serious financial and technical difficulties.

At the Savannah River Plant, near Aiken, S.C., The department has nearly completed a \$1 billion plant at the Savannah River Plant near Aiken, S.C., to turn high-level liquid radioactive wastes into glass logs. The plant, which is expected to be completed on time, is designed to turn unstable liquids into stable solids, which the department hopes eventually to permanently entomb permanently in a waste repository yet to be built in Nevada. But some materials scientists have criticized the project, saying the type of glass used, borosilicate, will allow radioactivity to seep out over time. The department, though, disagrees with that assessment.

Only the Defense Department spends more than the Energy Department on high-technology construction projects, the officials asserted.
Nuclear Technology's Bounds

Experts inside and outside Government asserted that the Energy Department and its predecessor agencies, particularly the Atomic Energy Commission, favored enormous, risky projects to test the bounds of nuclear technology. From 1954 to 1961, the Atomic Energy Commission and the Air Force spent \$1 billion trying to develop a nuclear-powered airplane at the Idaho National Engineering Laboratory near Idaho Falls. President Kennedy canceled the project after it became clear such an airplane, even if it could fly, would pose great risks in the event of a mishap.

Mr. Salgado, though, agrees with the agency's critics, however, that the failure of Building 371 at the Rocky Flats Plant was not by no means an isolated incident.

"There are some legitimate concerns" about the agency's capability to plan and execute technically sophisticated projects, he said.

Each one of the 17 principal laboratories and weapons plants in the 12-state nuclear weapons industry has spent large sums to build or modernize projects only to discover equipment does not function properly or technological processes collapse. In some cases, the building is no longer deemed necessary and is canceled.

At the Idaho National Engineering Laboratory, for example, the Energy Department in 1985 completed a \$200 million reprocessing plant that did not work. It spent an additional \$20 million to redesign and reconstruct the equipment. Officials at the Idaho weapons plant, where spent fuel from naval nuclear ships is dissolved chemically to recover uranium, said the repairs were needed because of "errors in design."

Similar problems occurred at the \$176 million naval fuel fabrication plant completed two years ago at the Savannah River Plant. The fabrication plant, which turns uranium into fuel for naval ships, "experienced startup problems with equipment, procedures and the experience level of personnel for this highly complex operation," according to a written statement by the Energy Department. The department refused to say what was spent on repairs. Uneasy About Record

Representative Skaggs said he is one of a growing number of lawmakers who are uneasy about the Energy Department's record on construction and its planning and forecasting abilities. Mr. Skaggs said Congress should take a more thoughtful look next year than it has in the past at requests for billions of dollars for new weapons projects.

Representative Dingell said hearings on the department's record will be held next year.

As part of the most ambitious program of military nuclear construction since the Government built the nationwide weapon complex in the 1940's and early 1950's, the Energy Department has proposed a \$3.6 billion military production reactor for the Savannah River Plant in South Carolina, and four new advanced reactors for the Idaho National Engineering Laboratory.

"We're going to need to set some priorities," Mr. Skaggs said. "Congress is tired of looking over to the Energy Department and finding the left hand doesn't know what the right hand is doing."

The Energy Department's record on building giant projects, lawmakers have said, could also influence Congressional debate about the department's plan to build a \$5 billion giant atom smasher superconducting super collider in Texas. Enriched Uranium Project

Yet civilian energy and research programs have also been plagued by technical failures and soaring costs. One example is a Federal program to sell enriched uranium to utilities. In 1969 the Atomic Energy Commission began to sell enriched uranium from three enormous Government plants in Tennessee, Kentucky, and Ohio for use in fuel for commercial nuclear power plants in the United States and overseas.

In 1977, armed with studies predicting the demand for enriched uranium would soar as more nuclear plants were put into operation, the newly formed Energy Department started building a \$9 billion enrichment plant in Portsmouth, Ohio, that used advanced gas centrifuge technology to separate and enrich uranium. A \$1.5 billion modernization program also began at the three plants to gain more production capacity.

But the fortunes of the nuclear power industry tumbled after March 28, 1979, when the reactor core melted at the Three Mile Island nuclear power plant in Pennsylvania in the nation's worst civilian nuclear accident. Yet Congress and the Energy Department took years to acknowledge that the need for the enrichment program had declined.

In June 1985, Energy Secretary John S. Herrington halted construction on the new Ohio enrichment plant after \$3.5 billion had been spent. Mr. Herrington also ordered the closing of the enrichment plant at the Oak Ridge Reservation in Tennessee after more than \$400 million had been spent on modernization.

About \$1.1 billion have been spent since 1979 on equipment to increase the production at enrichment plants in Paducah, Ky., and Portsmouth, Ohio. Those plants have been operating at about half their capacity. Energy Projects That Failed Clinch River Breeder Reactor Oak Ridge Reservation, Tennessee Project Build reactor to use plutonium instead of uranium as fuel. Estimated cost when begun in 1970 \$700 million. Amount spent \$1.5 billion. Problem Project canceled in 1984 after debate in Congress and the White House about the usefulness of the technology and the cost of completion, then estimated at nearly \$4 billion. Fast Flux Test Facility Hanford Reservation, Richland, Wash. Project Build reactor to provide nuclear materials for the Clinch River Breeder Reactor. Estimated cost when begun in 1971 \$75 million. Amount spent \$540 million at completion in 1982. Problem Cancellation of breeder reactor program left fast flux reactor without a primary mission. xhrr Plutonium Processing Building 371 Rocky Flats Plant, Golden, Colo. Project Replace contaminated

plutonium processing building. Estimated cost when begun in 1973 \$63 million. Amount spent at completion in 1981 \$225 million. Problem Never operated; "severe design, materials and mechanical problems" would cost nearly \$400 million to fix. Gas Centrifuge Uranium Enrichment Plant Portsmouth Uranium Enrichment Complex, Piketon, Ohio Project Construct new uranium enrichment plant. Estimated cost when begun in 1977 \$9 billion. Amount spent \$3.5 billion. Problem Construction halted in 1985 with the plant 20 percent complete after Energy Department determined another technology would be less expensive and more reliable. High Energy Physics Atomic Particle Accelerator Brookhaven National Laboratory, Long Island Project Build an atomic particle accelerator for high-energy physics research to consist of a 2.5 mile circular tunnel, a particle accelerator and support buildings. Estimated cost when begun in 1979 \$275 million. Amount spent \$172 million. Problem Though tunnel was completed, other aspects were hampered by failure to develop superconducting magnets. Project canceled in 1983. The department said it would be wiser to invest the \$400 million needed to finish the accelerator on a planned \$5 billion superconducting super collider. Great Plains Coal Gasification Plant Beulah, N.D. Project Guarantee loan to build plant turning coal into synthetic natural gas. Estimated cost when begun in 1981 No cost to Government. Amount spent \$1.6 billion to cover defaulted loan. Problem Plant owners, a consortium of five American energy companies, defaulted on a guaranteed \$1.6 billion loan. The Government operated the \$2.1 billion plant for three years then sold it for \$85 million to a utility. N Reactor Hanford Reservation, Richland, Wash. Project Upgrade equipment and improve safety of a plutonium-production reactor with graphite core. Estimated cost when begun in 1987 \$34 million. Amount spent \$110 million. Problem Department decided in midst of upgrade that reactor was not needed.

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