

GAO

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NUCLEAR WEAPONS COMPLEX

GAO's Views on DOE's Reconfiguration  
Study

*Statement of*  
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*Before the*  
Committee on Governmental Affairs  
United States Senate



Mr. Chairman and Members of the Subcommittee:

We are pleased to be here today to provide our views on the Department of Energy's (DOE) January 1991 "Nuclear Weapons Complex Reconfiguration Study." About 4 years ago, in testimony before this Committee, we outlined numerous safety and environmental problems facing an aging nuclear weapons complex. We pointed out that DOE did not have an adequate plan for addressing its problems and called for the development of a comprehensive strategic plan to address environmental and safety problems of the complex as well as modernize it. This reconfiguration study is DOE's latest effort to develop a long-term plan.

Since we called for a comprehensive plan, a number of important events occurred. After initially not recognizing that serious problems existed within the complex, DOE has come to realize the scope and magnitude of its safety and environmental problems as well as the need to modernize. Many key facilities have been shut down for safety reasons and DOE has begun a multi-billion dollar program to clean up environmental contamination. To get a perspective on the size of the problems, the Congress mandated that DOE develop a detailed modernization plan. In response, DOE issued the "2010 modernization plan," in December 1988 which recommended a major rebuilding of the complex.<sup>1</sup>

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<sup>1</sup>United States Department of Energy Nuclear Weapons Complex Modernization Report (Report to the Congress by the President, Dec. 1988).

Further, the Congress, as we have long advocated, established the Defense Nuclear Facilities Safety Board to provide outside independent oversight of DOE operations. Finally, recent world events, which have lessened cold-war tensions, led to a reassessment of the nation's nuclear defense capabilities. Currently, it appears that our nuclear weapons stockpile will be substantially less than envisioned a few years ago. It is against this backdrop of changing times that we evaluated DOE's recently issued reconfiguration study.

While recognizing the importance of this DOE study as a tool to develop well-conceived detailed plans, I have a number of general observations.

- The study is only the first step in developing the detailed plan I called for in 1987. It is a framework for further study which will include an environmental impact statement on reconfiguring the complex. The statement is scheduled to be completed in late 1993.
  
- Although the study recommends a smaller complex in the future, it does not clearly specify what the complex will look like in 2015--a fundamental question that must be addressed.

- Many key decisions about how the nation will meet its future tritium requirements and manage its plutonium inventory need to be made in the next few years. The study provides only a limited discussion of these issues.
  
- The cost associated with reconfiguring and modernizing the complex will likely be much greater than the \$6.7 billion to \$15.2 billion specified in the study. The cost of critical components for the future complex, such as new tritium production capability, are not included.
  
- Finally, long-standing management issues, such as reliance on contractors and lack of technical expertise, could have a detrimental impact on any reconfiguration of the complex.

The remainder of my testimony discusses these observations in more detail.

THE STUDY IS NOT A DETAILED PLAN

DOE's recently issued reconfiguration study updates its modernization plan of December 1988. However, the reconfiguration study is not a plan per se but rather a framework for developing a long-term plan. It provides general information on various options for reconfiguring the complex by 2015. It also provides broad objectives for the new complex, including consolidating various

sites within the complex, relocating Colorado's Rocky Flats Plant, privatizing nonnuclear facilities in the complex, and reducing the amount of nuclear weapons in the nuclear weapons stockpile.<sup>2</sup> This study represents the first phase of a longer term effort to develop a more detailed plan. In this regard, the study will lead to a programmatic environmental impact statement on various alternatives for reconfiguring the complex which DOE expects to complete in late 1993. In the near future, DOE will issue a reconfiguration 5-year plan which should provide more detailed information on current activities within the complex.

We recognize the difficulties in developing a well-conceived plan to address the problems of the complex. Many interrelated problems must be addressed, each of which could be individually difficult and costly to resolve. For example, numerous issues have to be addressed in making decisions on restarting key nuclear facilities that have been shut down. Decisions must also be made regarding which new facilities should be built and which should be upgraded. Cleanup of environmental contamination is just beginning. Finally, recent changes in the world situation indicate our nuclear weapons stockpile may be substantially less than it was in the 1980s, which adds a new dimension to the national debate about the future of the complex.

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<sup>2</sup>The nuclear weapons stockpile consists of all nuclear weapons in the U.S. arsenal, including both active weapons and those kept by the Department of Defense in inactive reserve.

STABILIZING THE SIZE  
OF THE COMPLEX

The next issue I want to discuss is probably the most fundamental question associated with developing a long-term strategic plan for the complex--determining its size and capabilities. The uncertainties inherent with predicting events 20 years from now make the sizing question difficult. Yet, I believe the question is extremely critical if we are to avoid past mistakes.

Historically, the complex has been driven by nuclear weapon demands initiated by the Department of Defense. The high demand for nuclear material for weapons in the 1980s created an atmosphere within the complex that emphasized production over safety, health, and environmental considerations. For example, during the 1970s, the government considered closing the Fernald Plant in Ohio because of reduced demand for its products. As a result, technological improvements were not made. In the early 1980s, the demand for Fernald's product increased dramatically and put a strain on the plant and its management. The plant consequently emphasized production, making environmental, worker safety, and health concerns secondary. A similar situation existed at other facilities, such as the Rocky Flats Plant in Colorado and the Savannah River reactors in South Carolina. All of these facilities were shut down for environmental, safety, and health

concerns after the problems of the complex became public knowledge.

To avoid dramatic fluctuations in demand for nuclear material, a consensus must be developed about the approximate future size of the complex. DOE's recent reconfiguration study, while anticipating a smaller nuclear weapons stockpile in the future, provides information on four possible scenarios ranging from 15 percent to 70 percent of the fiscal year 1990 nuclear weapons stockpile. In providing these scenarios, the study recognizes the need to stabilize nuclear weapons requirements and concludes that DOE should request that the Nuclear Weapons Council select, by the end of fiscal year 1991, specific sizing level(s) upon which the future complex should be based.<sup>3</sup> We believe a decision by the Nuclear Weapons Council, placing reasonable parameters around the future production capabilities of a modernized complex, is critical. Once the parameters are established, future nuclear weapons requirements would have to be based on the production capabilities of the complex.

#### IMPORTANT NEAR-TERM DECISIONS

The next point I want to briefly discuss is the important decisions that the Congress will face in the next few years. These

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<sup>3</sup>The Nuclear Weapons Council is composed of representatives from the Department of Defense and DOE and makes determinations on the nation's nuclear weapons needs.

decisions will be critical in meeting our tritium demands and managing our plutonium inventory. The reconfiguration study provides only a limited discussion of these issues.

As you know, tritium is perishable radioactive material used in nuclear weapons that must be periodically replenished. DOE has not produced tritium since 1988 because its Savannah River nuclear production reactors are shut down. To restore tritium production, DOE has been working to restart some of the reactors and is planning to build new tritium production capacity. Recent DOE analysis of expected tritium requirements indicates that significantly less tritium will be needed than formerly thought.

In a report recently issued to your committee,<sup>4</sup> we pointed out that decreased tritium requirements provide additional time for DOE to evaluate outstanding safety and environmental issues before restarting the Savannah River reactors and to decide whether plans for future reactor capacity are still appropriate. Key decisions regarding the resolution of safety issues associated with these reactors, the timing of restart, and the number of reactors to restart will be before the Congress this fiscal year and next. Furthermore, the Congress will soon be called on to fund the building of new tritium production capacity. Reduced tritium requirements, as well as increased flexibility due to its modular

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<sup>4</sup>Nuclear Materials: Decreasing Tritium Requirements and Their Effect on DOE Programs (GAO/RCED-91-100, Feb. 8, 1991).

nature, can make one alternative to nuclear reactors--particle accelerators--more attractive than originally believed. The decision regarding the type of tritium production capacity to build will have to be carefully considered.

Plutonium will also be needed for nuclear weapons. The reconfiguration study's analyses of smaller stockpile levels suggest that no new plutonium produced in reactors will be required. According to the study there is sufficient plutonium available from returning weapons that can be recycled to meet future weapons needs. Complicating the plutonium issue is a large inventory of plutonium residue from past weapons manufacturing operations that can be processed into plutonium for weapons.

DOE has many important decisions to make in managing its plutonium inventory. These include determining (1) the extent to which plutonium residues should be processed and the plutonium that is recovered stockpiled, (2) whether some of the plutonium residues can be processed more cost effectively as waste, (3) the additional facilities that are needed to process plutonium residues, (4) where to stockpile this plutonium, and (5) the proliferation implications of stockpiling plutonium. All of these issues must be addressed over the next few years before DOE decides how to reconfigure the nuclear weapons complex. We currently have work underway for your Committee that will examine many of these questions in detail.

## COSTS UNCERTAIN

I now want to briefly discuss the uncertain cost associated with modernizing or reconfiguring the nuclear weapons complex. Over the last several years, we examined the possible cost of modernizing the complex to provide a perspective on the magnitude of the problems. As recently as September 1990, we issued a report which showed that it could cost approximately \$50 billion to upgrade and modernize the complex if DOE were to implement the recommendations of its 2010 modernization plan.<sup>5</sup>

DOE's new reconfiguration study envisions a smaller, more consolidated complex than the one outlined in the 2010 modernization plan. The downsizing of the complex will be achieved primarily by relocating and privatizing existing operations. The preliminary cost data for reconfiguration contained in this study range from a low of \$6.7 billion to a high of \$15.2 billion, with a relative error of plus or minus 50 percent.<sup>6</sup> These costs, however, only pertain to reconfiguring one or more of the following facilities: the Rocky Flats Plant in Colorado, the Y-12 plant in Tennessee, and the Pantex Plant in Texas. In our view, the total cost for rebuilding the complex will be substantially higher.

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<sup>5</sup>Nuclear Health and Safety: Long-Term Plans to Address Problems of the Weapons Complex Are Evolving (GAO/RCED-90-219, Sept. 28, 1990).

<sup>6</sup>All costs in the DOE study are in fiscal year 1992 dollars.

These costs do not include a wide variety of upgrades and modernization projects that DOE will likely need in transitioning from the complex today to one envisioned for 2015 and beyond. The estimate does not include, for example, over \$3 billion for new tritium production capacity or more than \$3 billion to upgrade the Savannah River production reactors. It also does not address the billions of dollars needed to address safety, health, and environmental deficiencies throughout the complex. Finally, it does not include closing costs associated with many of the facilities DOE plans to relocate either to another site or to the private sector.<sup>7</sup>

Furthermore, new technologies and facilities may be used throughout the reconfigured complex, and DOE's construction of such facilities has been prone to huge cost overruns. Also, DOE envisions stricter environmental, safety, and health regulations to be applied to the new complex, but does not provide any costs for implementing these regulations. Further, we are not sure that all the problems within the complex have surfaced. For example, DOE has still not applied a detailed safety policy with accompanying standards throughout the complex. Once this is accomplished, the complex would likely require further safety upgrades. Finally, downsizing the nuclear weapons complex may require additional storage facilities or other facilities for processing the large

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<sup>7</sup>The study does specify that cleanup costs for three facilities can range from \$1.5 billion to \$5.0 billion.

number of weapons that are planned for retirement. Possible costs for these facilities are not included in the study.

#### UNRESOLVED MANAGEMENT ISSUES

Finally, the last issue I want to discuss is the need to improve the management of the complex. Longstanding DOE management problems have included an over-reliance on contractors and limited technical staff to carry out and oversee DOE's programs. While the study focuses on reconfiguration options to address the deteriorated infrastructure, it does not explore in the same degree of detail improvements needed in managing the complex.

DOE's reliance on contractors, due in part to its lack of expertise, has affected many programs. For example, in 1988, the failure to safely start the P reactor at the Savannah River site was, in part, traced to DOE's over-reliance on contractors. DOE did not verify the contractor's restart analysis and said that it did not have the technical expertise to do so. It turned out that the contractor's analysis was flawed, leading to the cancellation of the reactor restart. The restart failure also raised numerous questions about the safety of the reactors at Savannah River. DOE's over-reliance on contractors has been traced to many of its safety, health, and environmental problems.

While the reconfiguration study addresses some management issues, it does not address the problem of an over-reliance on contractors and limited DOE technical staff. For example, the study proposes a capital assessment process to improve planning and budgeting for reconfiguration projects. However, DOE's role is "primarily administrative" in the process while the contractor takes on the "primarily technical" role of developing the analyses that are the basis for reconfiguration projects. Of the 223 staff proposed for this project, 203 will be contractor employees, thus raising questions about whether DOE will have sufficient technical expertise to oversee this project.

In the next few years, our work on DOE operations will give new emphasis to contracting and management. We have already identified DOE's contracting as one of the fourteen high-risk areas in the government for fraud, waste, and abuse. Further, we recently completed a comprehensive 3-year plan for evaluating DOE's contracting practices. This planned work will examine in detail DOE's extensive use of contractors to carry out its mission. We are also beginning a General Management Review of all DOE operations. This review will address the generic management issues that DOE faces including DOE's overall management structure and lack of technical expertise.

SUMMARY

As we begin this session of the Congress, many problems of the nuclear weapons complex brought to light years ago are still with us and, most likely, will be with us for years to come. 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 do we do with excess plutonium. The total cost for reconfiguring and modernizing is still uncertain and some management issues remain unresolved. The Congress will face a difficult task in making these decisions given the conflicting demands for limited resources necessitated by the budget deficit and the war in the Persian Gulf.

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Thank you, that concludes my testimony. We would be happy to answer any questions.