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NUCLEAR WEAPONS COMPLEX

Reconfiguring DOE's Weapons Complex

Statement of
J. Dexter Peach
Assistant Comptroller General
Resources, Community, and Economic
Development Division

Before the
Department of Energy Defense Nuclear Facilities Panel
Committee on Armed Services
House of Representatives



Mr. Chairman and Members of the Panel:

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, we outlined numerous safety and environmental problems facing DOE's aging nuclear weapons complex. We pointed out that DOE did not have an adequate plan for addressing its problems, and we 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.

Over the last few years, while DOE has been developing this study, actions have been taken to better deal with these problems. The agency increased its oversight of operations; undertook initiatives to change the attitude of DOE employees toward environmental, safety, and health matters; and restructured the management of its operations. Nevertheless, many key DOE facilities remain shut down, and problems may continue to surface. We hope that the present study marks a turning point and that DOE will now embark on the serious and costly business of restarting operations and rebuilding the complex.

With this in mind, I have several general observations about this study.

- The study is only the first step in developing the detailed plan we called for in 1987. It is a framework for a more detailed study to follow, 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 provide tritium for nuclear weapons 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 costs of reconfiguring and modernizing the complex will likely be much greater than the \$6.7 billion to \$15.2 billion specified in the study. The costs 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 1988.¹ 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.² 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

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

²The 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.

for reconfiguring the complex, which DOE expects to complete in late 1993. In the near future, DOE will issue a 5-year reconfiguration 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. The cleanup of environmental contamination is just beginning. Finally, recent changes in the world situation indicate that our nuclear weapons stockpile may be substantially smaller than it was in the 1980s, which adds a new dimension to the national debate about the future of the complex.

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 in 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 weapons 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 anticipates a smaller nuclear weapons stockpile in the future and describes four possible scenarios ranging from 15 percent to 70 percent of the

nuclear weapons stockpile in fiscal year 1990. In discussing these scenarios, the study recognizes the necessity of stabilizing the amount of materials needed for nuclear weapons 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.³ 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, the future nuclear weapons stockpile would have to be based on the production capabilities of the complex.

IMPORTANT DECISIONS FOR THE NEAR FUTURE

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

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

DOE has been working to restart some of the reactors and is planning to build new tritium production capacity. This fiscal year and the next, the Congress will be making key decisions regarding the resolution of safety issues associated with these reactors, the timing of the restart, and the number of reactors that will be restarted. Furthermore, the Congress will soon be called on to fund the building of new tritium production capacity.

In a report recently issued,⁴ we summarized our evaluation of a recent DOE analysis indicating that significantly less tritium may be needed than formerly thought to service existing and projected nuclear weapons. We concluded, on the basis of that analysis, that additional time was available, if needed, for DOE to evaluate outstanding safety and environmental issues before restarting the Savannah River reactors and to carefully consider the choice of technology and the size of new tritium production capacity necessary. Projections of reduced amounts of tritium needed to service nuclear weapons could alter the attractiveness of different technologies for tritium production reactors and of other potential tritium production technologies, such as particle accelerators. Our evaluation was based on DOE information comparing tritium inventories and planned weapons retirements with existing and projected weapons-servicing requirements, which indicated that a tritium supply of several years' duration already

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

exists. This trend toward reduced tritium needs is further supported by the four scenarios included in DOE's reconfiguration study. These scenarios assume that the future nuclear weapons stockpile will be reduced to 15 to 70 percent of the fiscal year 1990 level.

One thing our analysis did not consider--as disclosed in our report--was a recently established requirement for a sizable tritium reserve as a contingency against unforeseen events. In our view, both the size of the reserve and the length of time it will be needed have significant implications for congressional decisions about the complex and deserve careful scrutiny. I should also emphasize that our observations are not intended to imply a GAO position against restarting the Savannah River reactors at an appropriate time or the need to build additional tritium production capacity to meet long-term needs.

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, however, 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 under way that will examine many of these questions in detail.

COSTS UNCERTAIN

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

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

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 study's preliminary cost estimate for reconfiguration ranges from a low of \$6.7 billion to a high of \$15.2 billion, with a relative error of plus or minus 50 percent.⁶ These costs, however, pertain only 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 costs for rebuilding the complex will be substantially higher.

The study's estimate does not include a wide variety of upgrades and modernization projects that DOE will likely need in moving 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 include the billions of dollars needed to handle safety, health, and environmental deficiencies throughout the complex. Finally, the estimate does not include closing costs associated with many of the facilities DOE plans to relocate either to another

⁶All costs in the DOE study are in fiscal year 1992 dollars.

site or to the private sector.⁷

We foresee other potential problems. First, DOE's construction of facilities with new technologies--such as those that may be used in the reconfigured complex--have been prone to cost overruns. Second, DOE envisions applying stricter environmental, safety, and health regulations in the new complex but does not estimate any costs for implementing these regulations. And third, 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 it applies these standards, the complex could require further safety upgrades. Finally, downsizing the nuclear weapons complex may require additional storage facilities or other facilities for processing the large 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. Long-standing DOE management problems have included an overreliance on contractors

⁷The study does estimate that cleanup costs for three facilities can range from an additional \$4.9 billion to \$7.4 billion. However, this estimate was not included in the cost range of \$6.7 billion to \$15.2 billion for reconfiguration.

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 restart the P reactor at the Savannah River site was, in part, traced to DOE's overreliance 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's restart. The restart failure also raised numerous questions about the safety of the reactors at Savannah River. DOE's overreliance 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 overreliance 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 in the process is "primarily administrative," 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--a

situation that raises 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 16 high-risk areas in the government for fraud, waste, and abuse. 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 level 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 is 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 to use for new tritium production, and what to do with excess plutonium. The total costs

for reconfiguring and modernizing the complex are 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 cost of the war in the Persian Gulf.

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

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