

GAO

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NUCLEAR WEAPONS
COMPLEX

GAO's Views on
Reconfiguring
the Complex

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Mr. Chairman and Members of the Panel:

We are pleased to participate in this hearing on the Department of Energy's (DOE) efforts to reconfigure the nuclear weapons complex. As you know, DOE faces a monumental task in addressing the legacy of safety and environmental problems created by nearly half a century of nuclear weapons production. At the same time, DOE must now address important issues about the future size and structure of the complex.

This last year has brought a fundamental shift in our nuclear deterrence policy. The resulting planned reductions in our nuclear weapons arsenal will change the size and capability of the complex needed to support the arsenal in the 21st century. Further, these reductions highlight a number of issues DOE needs to address as it reconfigures the complex. These issues include questions about DOE's ability to dismantle the large number of retired weapons and how to dispose, store, or use the plutonium and other materials from these weapons. DOE must also make key decisions on which facilities and/or operations it must upgrade, close, or rebuild. All of these decisions will be difficult and possibly very costly to implement.

In my testimony today, I would like to discuss, in more detail, (1) the future size and capability of the complex, (2) the key issues DOE faces in reconfiguring the complex in light of

weapons reductions, and (3) uncertainties about the cost of reconfiguring the complex.

SIZING OF THE FUTURE COMPLEX

Probably the most fundamental question associated with developing a long-term strategic plan for reconfiguring the nuclear weapons complex is determining its future size and capabilities. Over the last several years world events have greatly impacted on our nuclear deterrence policy. Recognizing this, DOE, in early 1991, issued a reconfiguration study which laid out a framework for a smaller, more consolidated complex. Since then, the President has announced two major reductions in our nuclear weapons stockpile. Although it is apparent the nuclear weapons complex in the future will be smaller, it is not clear what the complex will look like. DOE's reconfiguration study concluded that the Nuclear Weapons Council should select specific sizing level(s) on which the future complex should be based.¹ As of March 1992, the Council had not determined the appropriate size for the complex.

The selection of the complex's size and capabilities is a critical baseline for nearly all reconfiguration planning. Historically, the complex has been driven by nuclear weapons demands initiated by the Department of Defense. The high demand

¹The Nuclear Weapons Council is composed of representatives from the Department of Defense and DOE and makes determinations on the nation's nuclear weapons needs.

for nuclear weapons material in the 1980s created an atmosphere within the complex that emphasized production over safety, health, and environmental considerations. Currently, weapons reductions announcements have overtaken planning within DOE. For example, in November 1991, shortly after the President's September announcement on weapon reductions, DOE decided not to make a decision on a new production reactor in 1991. Rather, DOE will now address the selection of new production capacity in mid-1993 when a programmatic environmental impact statement on the overall complex is completed. Major changes in the size of new production capacity are likely to be made when DOE completes its reevaluation.

In our view, before a modernized, reconfigured nuclear weapons complex can be seriously considered, a consensus must be reached on what capability the complex must have to produce and maintain nuclear weapons. Once parameters are placed on the future production capability of the complex, planning for a modernized complex with that capability can go forward. Future nuclear weapons requirements would then be more in line with the production capacity of the complex.

KEY RECONFIGURATION ISSUES

Next, I would like to discuss some key reconfiguration issues. DOE has been studying reconfiguration, or modernization, of the complex for about 3 years. Since that time, many of the key issues

have changed somewhat because of planned reductions in the nuclear weapons arsenal. However, if the nation is to move toward a more consolidated complex, several key issues must be addressed.

- Which facilities and/or operations within the complex should be restarted and which facilities should be closed?
- What new tritium production capacity (both technology and size) is needed?
- Does DOE have sufficient capabilities to dismantle large numbers of nuclear weapons?
- How will DOE dispose of, store, or use plutonium and other material from disassembled weapons?

Several of DOE's key facilities, such as the Savannah River nuclear reactors and the Rocky Flats Plant, were shut down in the late 1980s for safety reasons. DOE has spent billions of dollars in upgrading these facilities but has experienced delays in restarting them. Restart plans have also been changing as a result of reductions in our nuclear weapons arsenal. For example, originally DOE planned to restart three reactors at Savannah River to make nuclear material, now it plans to restart only one. In addition, DOE must decide if it needs to continue operations at many of its other facilities in light of weapons reduction. This

may involve the actual closing of plants or, at a minimum, specific operations at a plant. Currently, future operations at many DOE facilities such as the Rocky Flats Plant are uncertain.

At the same time DOE faces these important decisions, decisions will be needed regarding new tritium production capacity. Tritium is a perishable radioactive material used in nuclear weapons that must be periodically replenished. DOE has not produced tritium since 1988, and will eventually have to if this country maintains a nuclear weapons arsenal in the 21st century. The timing of when the new capacity is needed, what new technology is best, and how large a capability is needed have important cost implications. DOE expects to make decisions on new tritium production capacity in the summer of 1993.

Another important issue stemming from weapons reductions is dismantling. Over the next several years, DOE must take custody of and dismantle thousands of nuclear weapons that the Department of Defense will retire. The capability of DOE to safely dismantle so many weapons could present a problem and tax the capabilities of DOE resources at the Pantex Plant in Texas. Storage of weapon components at the plant, the projected workload to accomplish this work, and transportation of weapons to the plant are important issues that need to be examined carefully.

The end result of the retirement process will be a relatively

large inventory of weapons-grade plutonium and enriched uranium. These materials must be carefully safeguarded to prevent proliferation and must be stored in an environmentally safe manner until used or disposed. Criticality concerns may prohibit any simple disposal method. The enriched uranium material can be remanufactured into commercial nuclear fuel, but this could impact the nuclear fuel industry by reducing the demand for natural uranium and processing. Plutonium is not used in making commercial fuel in the United States. Its use may present additional problems in safeguarding and processing. DOE is currently studying this important issue.

All of these issues must be addressed in the reconfiguration process DOE laid out in its reconfiguration study. The process will lead to a programmatic environmental impact statement on various alternatives by mid-1993. We recognize the difficulties in developing a well-conceived plan to address the reconfiguration of the complex. Many interrelated problems must be addressed, each of which could be individually difficult and costly to resolve.

COST UNCERTAIN

Finally, I want to briefly discuss uncertainties about costs associated with reconfiguring the nuclear weapons complex. Over the last several years, we have examined the possible costs of modernizing the complex in order 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 modernize the complex as it existed in the late 1980s.

DOE's reconfiguration study envisions a smaller, more consolidated complex. Reducing the size of the complex will be achieved primarily by relocating 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.² 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.³ 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 of today to the one envisioned for 2015 and beyond. The estimate does not include, for example, billions of dollars DOE expects to spend for new tritium production capacity or the nearly \$2 billion DOE has spent to upgrade the Savannah River production reactors. It also does not include the billions of

²All costs in the DOE study are in fiscal year 1992 dollars.

³The complex consists of approximately 16 major sites around the nation.

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 may relocate.⁴

We foresee other potential problems. First, DOE's construction of facilities with new technologies such as the Defense Waste Processing Facility 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 not applied a detailed safety policy with accompanying standards throughout the complex. Once it applies these standards, the complex would likely require further safety upgrades. Finally, reducing the size of 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.

SUMMARY

⁴The study estimates 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.

In summary, Mr. Chairman, DOE now faces a major challenge--how to reconfigure the weapons complex to meet the nation's defense needs in the 21st century. Key decisions still need to be made about the size of the complex; where, if necessary, to relocate various operations; what technologies should be used for new tritium production; and what should be done with excess weapons-grade material. DOE and the Congress will face a difficult task in making these decisions, given the conflicting demands for limited resources.

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Mr. Chairman, this concludes my prepared remarks. We will be happy to respond to any questions you may have.

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