

Declaration of Roger E. Snyder

Attachment 4

America's Strategic Posture

*The Final Report of the
Congressional Commission
on the Strategic Posture
of the United States*

Advance Copy

William J. Perry, Chairman
James R. Schlesinger, Vice-Chairman

Harry Cartland

Fred Ikle

John Foster

Keith Payne

John Glenn

Bruce Tarter

Morton Halperin

Ellen Williams

Lee Hamilton

James Woolsey

6

On The Nuclear Weapons Complex

Per the request of the Congress, the Commission has reviewed carefully the state of the weapons complex that supports the U.S. nuclear deterrent. This review has generated three primary concerns, each addressed in turn below. First, the physical infrastructure is in serious need of transformation and the National Nuclear Security Administration (NNSA) has a reasonable plan to do so but it lacks the needed funding. Second, the intellectual infrastructure is in more serious trouble and significant steps must be taken to remedy the situation. Third, the governance structure of the NNSA is not delivering the needed results and should be changed.

The Physical Infrastructure

The weapons complex includes the following:

- The three laboratories: Los Alamos, Lawrence Livermore, and Sandia
- Four production plants
- The Nevada test site

All of these facilities are owned by the government and operated by various contractors.

The three laboratories are often called national laboratories or weapons laboratories (in the latter case to distinguish them from other DOE national laboratories). They are each multi-purpose, multi-disciplinary facilities with strong general science and engineering components. Each laboratory houses major supercomputing facilities and has unique, large and expensive research tools. These capabilities are utilized to support the stockpile efforts described in the previous chapter. They are also utilized by the Department of Defense, Department of Homeland Security, and intelligence agencies in support of various other national priorities. (Note that Sandia operates two facilities, one in New Mexico and one in California.)

Each of the four production plants has a distinct function. Weapons are disassembled and reassembled at the Pantex Plant in Amarillo, Texas. Retired weapons are dismantled and uranium components remanufactured at the Y-12 National Security Complex in Oak Ridge, Tennessee. This facility also stores highly enriched uranium, for both the weapons program and for naval reactors. Non-nuclear weapons components are manufactured at the Kansas City Plant in Kansas City, Missouri. Tritium is produced at the Savannah River Site, in Aiken, South Carolina.

The Nevada test site is maintained in accordance with U.S. policy to have the capacity to resume nuclear testing as a condition of sustaining the nuclear test moratorium and possible entry into force of the CTBT. The policy reflects an assessment that the prohibition of testing carries some risks, however slight. Although it is unlikely that a problem will arise requiring nuclear testing, the emergence of such a problem with the deterrent would be a matter

[T]he production complex suffered a significant period of neglect in basic maintenance. Most of the sites and many of the facilities date back to the Manhattan Project over sixty years ago [and] ... requires significant modernization and refurbishment.

of major significance. The NNSA says it can resume testing in 24 months. But test readiness tends to be a low priority for both NNSA and the laboratories

The Commission's Interim Report noted that "The Stockpile Stewardship Program has been a remarkable success, much more than originally expected." This is true but incomplete. The program has enabled the weapons laboratories to develop some of the capabilities needed to ensure the long-term technical health

of the stockpile, including some important new research tools enabling an understanding of the fundamental physical phenomena involving nuclear weapons. But it has generated no comparable improvements in the production complex. Indeed, the production complex suffered a significant period of neglect in basic maintenance. Most of the sites and many of the facilities date back to the Manhattan Project over sixty years ago. The production complex requires significant modernization and refurbishment.

In considering options for addressing this concern, the Commission believes it is necessary to take a long view. Physical infrastructure is unique in the long time scale involved in making changes to it. Although nuclear policy can be altered overnight and force levels can be decreased or increased (to a limited extent) in months or a few years, decisions on infrastructure can take years if not a decade or more to reach fruition.

The Commission considered arguments about establishing an analogue of the Base Realignment and Closure Commission (BRAC) utilized by the Department of Defense to consolidate the complex of aging military bases. The Commission sees such an approach as unwise. There is a simple reason:

NNSA sites are all one of a kind. Accordingly, any consolidation would require reconstituting existing capability in some new place and this would add cost, not reduce it. The specific recommendation has been made by some to close either Los Alamos or Livermore and fold needed capabilities into the remaining facility. The Commission rejects this suggestion, and not just for the reason that it would be prohibitively expensive. The preservation of two laboratories provides competitive peer review in the one area—the physics package—that cannot be tested as a matter of national policy and where theoretical understanding remains incomplete.

The preservation of two laboratories provides competitive peer review in the one area—the physics package—that cannot be tested as a matter of national policy and where theoretical understanding remains incomplete.

The Commission considered a variety of studies from recent years about how to update the complex. It is apparent that, for various reasons, none of these has achieved sustained political support.

In December 2008, the NNSA issued its own plan for complex transformation. More specifically, it issued a formal record of decision adopting plans to modify the weapons complex according to a “preferred alternative” which has been subject to extensive review and public comment. This plan would maintain all of the existing sites but would consolidate certain functions, especially at the weapons laboratories, to avoid duplication. Both Los Alamos and Livermore would retain nuclear design and engineering responsibilities in order to provide for competitive peer review. The production complex would be modernized in place, with significant consolidation within sites, especially at the Y-12 facility in Tennessee. Two major replacement facilities would be built. One at Los Alamos would replace a plutonium research and diagnostics facility that is already well past the end of its planned life; this new facility would be called the Chemistry and Metallurgy Research Replacement (CMRR). The other would replace the Uranium Processing Facility (UPF) at Y-12. The current facility was constructed as part of the Manhattan Project in World War II and the many problems and high cost of keeping it running are a testimonial to the failure over the years to make needed investments in the production complex.

The NNSA’s plan has merit and should be seriously considered by the Congress. The Congress should not, however, expect that implementation of the complex transformation plan will result in major cost savings. This is unrealistic. Indeed, there may be no significant costs savings. The NNSA proposes to pay for modernization in part with management improvements. But efficiencies may not materialize. Indeed, most projected savings are relatively small in dollar terms. It hopes also to generate increasing income from external customers. But this too will not solve the problem. Moreover, the

costs of transformation will almost certainly rise. The history of nuclear facility construction shows major cost growth. These are sometimes aggravated by Congressional funding decisions that create unpredictability.

In the past, rising facility costs have been borne by taking funds from other activities of the laboratories, usually from the scientific base. As argued further below, this has had a very deleterious impact on the labs and the practice should cease.

The two planned replacement facilities will be very expensive at well over \$1 billion each. Given the NNSA's historical problems in cost and schedule management of nuclear facility construction, any current cost estimates should be considered extremely uncertain. Even at currently estimated costs, these two projects would be among the largest construction projects attempted by the nuclear weapons program in the past 25 years.

This raises an obvious question about whether these two replacement programs might proceed in sequence rather than concurrently. There are strong arguments for moving forward concurrently. Existing facilities are genuinely decrepit and are maintained in a safe and secure manner only at high cost. Moreover, the improved production capabilities they promise are integral to the program of refurbishment and modernization described in the preceding chapter. If funding can be found for both, this would best serve the national interest in maintaining a safe, secure, and reliable stockpile of weapons in the most effective and efficient manner.

But if funding cannot be found, what choice should be made? Four factors should be considered:

- There are safety issues with both existing facilities, primarily due to their age. The safety concerns at the Los Alamos plutonium facility are at least as serious as those at the Y-12 uranium facility. But a short-term loss of plutonium capabilities may hurt the weapon program more than a short-term loss of enriched uranium capabilities.
- The Los Alamos plutonium facility makes a direct contribution to maintaining intellectual infrastructure that is in immediate danger of attrition (as argued further below). It assures that there is a complete long-term capability for Los Alamos and Livermore to conduct plutonium research.
- Because the future size of the stockpile is uncertain, projects that are relatively independent of stockpile size should take priority. The uranium production facility's size is influenced by stockpile size (the greater the stockpile size, the larger the needed production capacity). The Los Alamos plutonium facility is required independent of stockpile size.
- The Los Alamos facility has the more mature design.

These considerations lead the commission to the conclusion that, if priority must be given, the Los Alamos plutonium facility should receive it. A delay in construction of the Y-12 uranium processing facility may also allow some redesign to tailor the plan to new arms control agreements and their implications for long-term stockpile requirements. The time might also be used to find ways to minimize the facility's size and cost, and to learn more about secondary reuse.

A critical question in the overall plan is how much capacity should be in place to produce new weapons pits. The original pit-production facility at Rocky Flats was closed more than a decade ago. A capability to produce pits has been reestablished at Los Alamos in the TA-55/PF-4 facility. The facility has demonstrated that it can produce certifiable pits and the NNSA plans that it will be the permanent pit production facility with production of 20 pits per year and surge capabilities up to 50 and 80 pits per year. Given the new understanding of pit lifetimes, these rates ought to be sufficient to support the present stockpile or a reduced stockpile if arms control produces such a result.

The Commission notes also a chronic unwillingness of the Congress to support the programs needed to maintain test readiness. This is an essential safeguard of the no-test policy and should be supported. The Commission has also received evidence that some allies interpret the apparent lack of test readiness as a symptom of reduced U.S. commitment to extended deterrence. The Commission supports the principle of maintaining readiness to resume underground nuclear testing and recommends that the program be funded to maintain the 24-month timeline.

The Intellectual Infrastructure

The Commission's second main concern about the nuclear weapons complex is that the intellectual infrastructure there is in serious trouble—perhaps more so than the physical complex itself. It strongly recommends that significant steps be taken to remedy the situation.

It is important to understand the weapons laboratories are more than a complex of facilities and instruments. The foundation of their work in support of the national deterrent is a unique

scientific and engineering capability. Although nuclear weapons have existed for over sixty years, weapons science was largely an empirical science for much of that period. Nuclear weapons are exceptionally complex, involving temperatures as high as the sun and times measured in nanoseconds. Understanding these weapons from first principles requires a broad, diverse and deep set of scientific skills, along with complex experimental tools and some

The Commission's second main concern about the nuclear weapons complex is that the intellectual infrastructure there is in serious trouble....
