

Statement of Ambassador C. Paul Robinson, President Emeritus of Sandia Corporation
and former Laboratories Director, Sandia National Laboratories

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Strategic Forces Subcommittee

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Introduction

I am C. Paul Robinson. I have testified before this Committee many times in the past: (1) in the 1980's when I led the nuclear weapons and national security efforts at Los Alamos, (2) in the late 1980's when I served as Ambassador and Head of the United States Delegation to the Nuclear Testing Talks between the U.S. and the USSR in Geneva, Switzerland, and (3) at Sandia, when I served as President and Laboratories Director from 1995 to 2005. I retired from full-time work in January of 2006, but continue to serve the country on a number of government advisory committees and boards.

I agreed to testify at this hearing in order to discuss perspectives I gained in these past posts and in my current roles. I will focus on what I believe are the most important problems plaguing the U.S. nuclear deterrent force, and which are causing its current malaise. I will stress the three issues you have requested be given priority in this hearing. My bottom line is: Since the end of the Cold War, the purpose of our nuclear deterrent has grown more and more confused. Now, the U.S. appears to be drifting, on what ought to be our most important defense issue.

Discussion of the Stockpile Stewardship Program (SSP)

The program was formulated in the early 1990's as an attempt of the Clinton administration to support a Comprehensive Test Ban. The SSP seeks to devise an alternative means to certify the performance of U.S. nuclear weapons rather than relying on underground nuclear tests. It uses large supercomputer models to better model the physical processes of all parts of a nuclear weapons device—from command through explosion—rather than relying only on data obtained from underground nuclear explosives testing. Such tests had formed the basis for certifying weapon functioning and reliability from the Trinity test, in 1945, to the last U.S. underground test in 1992.

I will repeat only a few of the words that most of us with responsibilities for U.S. warheads said at the time—e.g. that “there is no precedent for such complex technological devices to be depended on unless they were periodically tested” and that

“fielding of first-of-a-kind new devices without testing would be the most stressful challenge.”

I also said in my October 7, 1999 testimony to the SASC (in hearings prior to the ratification votes on the proposed CTBT) that: “For a device as highly consequential as a nuclear weapon, testing of the complete system, both when it is first developed and periodically throughout its lifetime ... is the preferred methodology ... To forego that validation through testing is, in short, to live with uncertainty.”

Although all of the weapons labs, including my own laboratory —Sandia, agreed that we would support the concept of the “science-based” Stockpile Stewardship Program to the best of our abilities, I noted that I could not offer a proof that it could succeed as a substitute for nuclear testing. Now, here we are —nearly a decade later— and I cannot (nor —I believe—can anyone else) offer such a proof. Thus, we must continue to live with uncertainty as we also labor to sustain the U.S. stockpile and continue to develop the SSP, all without nuclear testing.

Some areas of the SSP program have admittedly worked better than I anticipated, as have the developments of far more powerful supercomputers that were deemed critical in order to undertake even more complex and detailed calculations of weapons phenomenology.

But in other areas we are just as uncertain today. My belief is that most weapons designers have less confidence about making changes to their designs than they had in the past. I particularly found the recent colloquy between the JASON group and the lab designers most curious —as they each speculated over the difficulties of fielding designs under the contemplated Reliable Replacement Weapon (RRW) effort. Although you will doubtless find a spectrum of views at the labs, my take is that uncertainties will necessarily (and quite naturally) grow over time for several of our systems.

I should add here that I was quite disappointed with the reception given the RRW here on the Hill. I was present for the meeting at LLNL where the idea of the RRW was born. It emerged from a question which Gen. Larry Welch, the Chairman of the Strategic Command SAG, asked “Will every future President have to be placed in a position where you Labs might suddenly come in and say ‘Mr. President, there are sufficiently serious problems in key portions of our nuclear stockpile that we believe we must forsake the moratorium and conduct nuclear tests to adequately fix the problems.’?” General Welch challenged the labs by asking the follow-up question: “What could you be doing now that could significantly reduce the probability of that ever having to occur?”

After some discussion, the key idea of the RRW then emerged —that if we incorporated designs of “different genetic diversity” in each leg of the TRIAD, there would be a much lowered likelihood that all would fail at the same time from a common problem. Yet from what I’ve read, the Congressional support for the idea has been less than lukewarm —as evidenced by your canceling of the RRW funding, with some suggesting that the labs might be trying to “create new designs that would necessitate underground testing” in order to field the RRW. I assure you that this suggestion is just not true. RRW was

conceived to lessen the likelihood that testing would be needed. At the very least I must conclude that “there has been a significant failure to communicate”, and I believe we must not let such misunderstandings perpetuate, when there is so much at stake.

Comments on the NNSA Complex Transformation Plan (SPEIS)

The second issue you requested was my opinion about the NNSA plan released this past year. My reactions are mixed. While the plan is doubtless much improved over the previous version (Complex 2030), it still does not present a compelling solution to the many problems facing the nuclear weapons complex. I do believe the NNSA (SPEIS) plan meets the admonition of “Do no harm.” The suggestion to reduce the overall size from the complex whose capacity created a Cold War arsenal numbering in the tens of thousands just has to be in the right direction. But little attention is given to the new complex’s ability to rapidly fix problems that are more likely than ever to arise as the current stockpile, which has the oldest components in history, develops failures.

I do have concerns that in drafting this SPEIS, the NNSA received too little guidance from the Defense Department about what stockpile size and weapons characteristics the transformed complex should produce and maintain (including the need to rapidly fix problems.) I assure you that these issues are vitally important ones, and that having to guess at what the answers may be, is not a wise course. Nor is configuring a production complex only for generic (vice specific) designs, without knowing likely production rates. But, in light of the current state of confusion in our policy, it is a small miracle that NNSA was able to produce a Preferred Alternative for Complex Transformation at all.

The DoD has not yet been able to sufficiently develop its own long-range plans for future nuclear delivery systems, even though many carrier systems for the TRIAD are rapidly reaching obsolescence and must soon be taken out of service (e.g. both air- and sea-launched cruise missiles). Similarly the Minuteman ICBMs and the Trident submarines and missiles will soon need to be replaced. More attention must be given to determining the future U.S. needs for nuclear delivery systems.

The top-level guidance from the last Nuclear Posture Review (NPR) of 2001 was the basis used in drafting the SPEIS, but it hardly fits the world of today, much less what we are likely to face in the future. Some key assumptions of the NPR are today in question, while other parts have simply been overcome by world events. The NPR declared that the U.S. should put behind us the “threat-based approach of the Cold War” in favor of a “capabilities-based approach.” Arguments given for that choice was the belief that the future security environment was going to be sufficiently uncertain that precise nuclear force levels could not be predicted with any degree of certainty. But, reliance on “virtual capabilities” with nascent warheads, rather than real forces to deter, will not work.

The NPR had introduced a new Global Strike philosophy where conventional forces were to be coordinated within attack plans to hold at risk some strategic targets that previously would have been candidates only for nuclear strikes. [It was believed that such an approach would give flexibility in attack plans on rogue states that had Weapons of Mass

Destruction.] Unfortunately, these ideas have not proven nearly as useful as their originators thought they would be, because this approach would have required us to blur what had always been a clear separation between nuclear forces and conventional forces. The primary purpose for nuclear weapons must be for deterring conflicts, while the purpose of conventional forces is war fighting. It is important that we not confuse the two. Our policy should be revised to make clear that we would only consider the use of nuclear weapons if deterrence should fail, and then —only as a matter of last resort.

The most critical need, in my view, is the need for national leaders to directly engage these issues and to help articulate the national purpose(s) of our nuclear weapons and the currency of deterrence in international relations. That engagement needs to be deep and frequent and must demand and achieve the integration of the DoD, DOE, all supporting elements of the US deterrent, and of course the U.S. Congress.

My Concerns and Priorities for Complex Transformation

I shift now to the last topic that you requested —to identify any concerns I foresee for securing the continuing effective execution of the science-based SSP and the priorities I would set for the Preferred Alternative. I do have two suggestions that I think could improve the resultant plan.

The first involves a significant organizational problem within the DOE, in the separation of responsibilities and accountability for Safety and Security, which has been in place nearly since the formation of the NNSA. These problems were discussed in the recent DSB study on Nuclear Capabilities, and arose when the program management for these responsibilities were placed outside of the NNSA, with managers who had no direct responsibilities for nuclear weapons nor for meeting production deliveries (and in some cases with managers who had little interest in nuclear weapons.) These represent classic cases of separating risks and costs from being compared and balanced. Instead, both the NNSA, lab, and plant managers (and the workers themselves) have little or no roles in setting criteria for safety and security. Not unexpectedly, the costs for both have sharply grown in an unconstrained manner. The effect on Complex Transformation has been a huge escalation in costs for new facilities. In the case of any facility that has radiation (or explosives) hazards as well as sensitive/classified materials that must be protected, the costs have doubly soared!

The details show that construction costs for NNSA facilities have escalated far above any market comparisons. The enormous growth in costs for construction (and subsequently for operations) is destined to break-the-bank of the weapons budgets —as ever more stringent and unconstrained orders and directives seek to achieve “zero defects” in operations, but with no conscious tradeoffs of these risks against program purpose or needs. As per the old adage about “a divided house”, the enterprise seems destined to surely “fail” based on new budget requirements alone. Not fixing these problems will also continue to produce “frustrated workers” across the complex. Admiral Chiles, who chaired the DSB Task Force on Nuclear Personnel Expertise, in examining these same issues, noted that: “Worker feelings range from anger to resigned despair.”

Of course, you may ask, wouldn't it be better to require better risk management decisions and tradeoffs to undo the outrageous cost growths that have occurred from safety and security rule changes? The answer is: of course! But, I assure you the road to remove excessive requirements is never easy. If reform is to succeed, it will require a willingness by DOE to once again streamline its organizational responsibilities, and for internal and external regulatory bodies (e.g. the Defense Nuclear Facilities Safety Board) to appoint experienced and empowered people to take charge of the risk/tradeoffs process.

One stopgap approach that could be employed, would be to examine other existing facilities within the NNSA (or the larger DOE) complex, which could be more economically reconfigured to meet some program needs, rather than building new facilities now. One example that should be considered, is the relocation of the Plutonium 238 power source work from the valuable floor space within Los Alamos' PF-4 (the major weapons plutonium facility) to other areas within Los Alamos (or, if necessary, by relocation to other sites.) Although this program originally was intended to impact the weapons efforts, decisions were made a number of years ago to no longer consider such power sources for weapons uses. Yet the continuing delivery of such sources for NASA and other customers is taking up much extremely valuable space that could be freed up for more urgently needed tasks in the weapons program today. The costs would be small for moving that work to floor spaces with lower security costs (as neither strict material protection nor classification protection are now required for ²³⁸Pu.)

Summary

Deterrence of major acts of aggression through a force-in-being of nuclear weapons should be restored as the cornerstone of US defense policy, now and for the foreseeable future. Achieving this will insure that we can prevent future wars. It would also assure allies and friends within the free world. Without that, the prospect of world wars looms large. Such wars would be far more destructive than the devastation of World War II, as a result of war fighting with even more destructive nuclear (and WMD) weapons than were available in WW II.

The proven formula of deterrence for preserving the peace remains our best near-term hope. While all human beings can wish for a time in which the threat of nuclear weapons for deterring aggression would no longer be required, or for a time in which nations would no longer stockpile weapons for aggression at all; but to achieve these would require fundamental changes in the nature of mankind. Even then, it is impossible to believe that such changes could occur without the dangers of recidivism always casting a huge shadow over the course of human affairs. I also see little or no chance that the idea of complete elimination of all weapons is likely to occur in any near term, and believe we must therefore continue to invest in other options.

We should all be capable of coming together to take great pride in our nation and its continuing nuclear weapons efforts—not just to keep others from attacking the United States (and our allies and friends)—but in our continuing to be the most powerful force for preserving the peace and freedoms we all value.