



DEPARTMENT OF DEFENSE
AND
DEPARTMENT OF ENERGY
NUCLEAR WEAPONS COUNCIL
WASHINGTON, DC 20301-3050



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MEMORANDUM FOR MEMBERS OF THE NUCLEAR WEAPONS COUNCIL

SUBJECT: Improved Understanding of Nuclear Weapon Risks and Uncertainties

The Nuclear Posture Review recognizes the changing world and the continued need for nuclear weapons as part of the new Triad. Maintaining confidence in our nuclear deterrence capabilities remains a supreme national interest. I see major challenges, however, facing both NNSA and DoD in meeting this responsibility over the coming decades. We will need to refurbish several aging weapon systems but the limitations of the nuclear weapon complex will not permit us to perfectly replicate the original designs. We must also be prepared to respond to new nuclear weapon requirements in the future.

These challenges are magnified by the uncertainties in our knowledge about nuclear components and their performance. We are significantly improving our tools for inspecting and assessing these components, but ironically, new findings suggest that we may previously have been overconfident. Experience has shown that problems have not been always initially assessed correctly and that we have not clearly differentiated between the risks inherent in weapon assessments with those associated with performing assessments without the aid of nuclear tests. In light of this, how do we accurately assess the current stockpile or a modified stockpile in the future?

I believe we should take immediate steps to review our current approach to managing the risks inherent in the Stockpile Stewardship Program and then to strengthen our processes for assessing these risks. There are undoubtedly a number of ways to do this. Although my thinking is still evolving on these issues, there are three steps which I feel could be taken. If you agree with my assessment and approach I would then ask that Ambassador Brooks task the NNSA Laboratory Directors to accomplish the actions identified below.

- **Assess Technical Limitations and Risks in Annual Certification.** An annual discussion of the technical limitations and, where possible, quantification of the resulting risks associated with the nuclear weapon annual assessments would provide better understanding and confidence in the process than is provided today. It would also be desirable to assess the potential benefits that could be obtained from a return to nuclear testing with regard to weapon safety, security and reliability. This could be included as part of the annual assessment letters or done separately from that process.
- **Assess Risks in the Current Nuclear Stockpile.** In 1987, the design laboratories compiled a "Report to Congress on the Stockpile Reliability, Weapon Remanufacture, and the Role of Nuclear Testing." For its time, this study provided a comprehensive understanding of the technical risks associated with nuclear weapons assessments. NNSA could update this study and extend the discussion of stockpile problems and post-

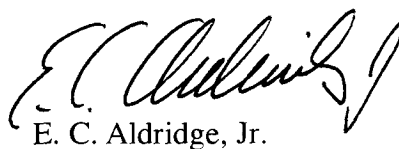
deployment testing to 1992, when testing stopped. Maintaining confidence without testing could then be discussed for stockpile changes made since 1992 or planned in the future. Concurrent with this NNSA effort, I will task DoD to assess the confidence in aging and/or refurbished nuclear delivery platforms.

- **Review Approaches for Managing Risk in the Stockpile Stewardship Program.** Drawing on our years of operating under the test moratorium, the Nuclear Weapons Council should review the current risk management strategy of the Stockpile Stewardship Program. As a possible first step, I intend to request that the intelligence community, with NNSA support, conduct an appraisal of foreign stockpile stewardship practices. We might gain new insights for our program from an understanding of others.

In 1995, a Stockpile Confidence Conference provided a joint forum for discussing Stockpile Stewardship issues. A second such conference should be convened to review the confidence in today's nuclear deterrent to include the status of assessment capabilities, alternative approaches for reducing risks and the limits on the extent to which improved understanding of weapon physics can be used as a basis for confidence. For my part, I intend to ask ADM Ellis to again host this conference.

A last suggestion is for the laboratories to readdress the value of a low yield testing program. During the late 1980s and 1990s considerable effort, including several nuclear tests, were expended to study the possibility of maintaining the nuclear stockpile under very restricted testing conditions. How might such a program increase confidence now?

In closing, I recognize that assessing and reducing risk is extremely difficult, and that there might be other approaches to addressing these issues. It is of great interest to all of us to have the highest possible confidence in the stockpile and to understand the risks in the absence of testing. I welcome your thoughts on this very important matter.



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Chairman