Statement for the Principal Deputy Administrator of the National Nuclear Security Administration to the Defense Nuclear Facilities Safety Board
December 7, 2005 Public Meeting – Safety in Design

Mr. Chairman and Members of the Defense Nuclear Facilities Safety Board:

Thank you for the opportunity to speak to you this morning about how the National Nuclear Security Administration (NNSA) integrates nuclear safety into our projects. The foci of my discussion will be on the processes NNSA has deployed to integrate nuclear safety and project management and how we intend to undertake some initiatives to improve the integration.

As the Deputy Secretary stated before, let me be clear that we in NNSA are keenly aware of the importance of integrating nuclear safety and project management and we firmly understand that safety is more than a priority—it is a core value of the Department. In particular, we understand the importance of:

- Integrating safety early in the design and the subsequent implementation of the design during the construction and startup of the facility recognizing that safety analysis and design development progress together in an iterative process;

- Defining the correct set of safety requirements early in a project's life cycle and then maintaining configuration control through design, construction, operation, and even ultimately, to decommissioning; and

- Establishing an appropriate safety strategy, which includes identification of safety class and safety significant structures, systems, and components for nuclear projects, early in a project's life.

These understandings demand vigilance to implement. As you are aware, NNSA is committed to abiding by U.S. Department of Energy (DOE) Order 413.3, *Program and Project Management for the Acquisition of Capital Assets*, which spells out how project management will be administered in the Department. With respect to how nuclear safety management relates to project management, we observe that there are some key factors that can and do have a positive impact on the integration of safety into the design and construction of defense nuclear facilities. These factors include:

- Project managers and other key senior federal project officials must have adequate experience and/or training to understand the principles of integrating safety into design and construction. This means that the Federal Project Director or one or more members of the Integrated Project Team (IPT) must have the requisite safety management expertise to execute complicated projects with significant nuclear safety implications effectively. Similarly, our IPTs require access to needed experts in a wide variety of disciplines, including project management, safety basis development, and specific scientific and engineering functions.

- Analysis, design, and procurement specification work must be complete and reviewed for quality early enough to be used as the basis for key decisions. For nuclear projects, the overall safety strategy and preliminary hazard analysis, accepted by the authorization basis manager, should be complete prior to Critical Decision-1 (Alternative Selection and Cost and Schedule Range).

- Controversial, complicated, and/or potentially expensive issues must be resolved in a timely manner. Doing so mitigates project risks, minimizes the need for late design changes and attendant cost growth, and retains options to resolve emergent issues.

- The resources (time, people, and expertise) applied to the evaluation of changes to analysis, design, and procurement specifications and to physical construction deviations are sufficient to identify and resolve issues that can adversely affect the safety of the final facility or activity.

- Lessons learned from prior experience and the experiences of others are reflected in systematic improvements to processes and procedures for designing and constructing defense nuclear facilities.

NNSA has several defense nuclear facility acquisition and modification projects in various stages that will require vigilant oversight to execute them effectively. Some of the major NNSA projects that are or soon may enter into their execution phases include the following examples. We would expect to implement the applicable elements described earlier to increase our confidence that the projects will be successfully executed:

- Uranium Processing Facility (Y12)
- High Enriched Uranium Materials Facility (Y12)
- Chemistry and Metallurgy Research Building Replacement Facility (LANL)
- Radioactive Liquid Waste Treatment Facility (LANL)
- Criticality Experiments Facility (TA-18 Mission Relocation, NTS)
- Tritium Facility Modernization (LLNL)
- Pit Disassembly and Conversion Facility (SRS)
- Production Cell and Bay Upgrades (Pantex)
- Component Evaluation Facility (Pantex)

In addition to these projects, NNSA has several other projects that are not considered defense nuclear facilities. The execution of these NNSA projects, of course, also conforms to DOE Order 413.3:

- The Mixed Oxide Fuel Fabrication Facility (MOX FFF)
- NA-20 Plutonium Production Elimination Programs
- National Ignition Facility

NNSA acknowledges safety has not always been integrated into the design as effectively as it should be. NNSA has demonstrated some success in the integration of safety into design. The

Pit Disassembly and Conversion Facility (PDCF) and the Tritium Extraction Facility (TEF) are recent examples of such success, we believe. However, these successes aside, NNSA has not consistently implemented the key factors above for all of its projects. The Sandia Underground Reactor Facility is a recent example where the integration of nuclear safety into the design was done poorly. The disconnect between nuclear safety and project management was a contributing factor in the demise of that project.

One of NNSA's goals in integrating safety and project management systems is to provide a more uniformly high-quality level of integration, not just for a certain subset of projects, such as PDCF and TEF, but across the suite of NNSA nuclear projects. To this end, we will support the Deputy Secretary's initiatives, as well as undertake the following initiatives for better NNSA integration:

1. Improve and re-energize the Integrated Project Team (IPT). For all nuclear projects, the NNSA Central Technical Authority (CTA), via the Chief of Defense Nuclear Safety, will review and offer counsel on the composition of the IPT that is approved by the Site Manager. The CTA review will validate that the federal personnel assigned to the IPT are appropriately qualified and that the level of effort expected from them is appropriate. We expect that the IPT members will be actively involved with project deliverables as the project proceeds and will work directly with their contractor counterparts to ensure that project deliverables properly integrate safety into design. Improving the integration of safety and design cannot be reviewed in, and, thus, it is critical that we improve our use of the IPT as an early safety management tool.

2. Pilot an effort to improve the implementation of existing guidance by focusing on a document titled "Project Management Practices", and subtitled "Integrated Safety." NNSA will share the results of our pilot project with the other program offices and will use our experience to suggest further improvements in the directives.

3. Ensure that NNSA project managers and IPT members have the appropriate training. In conjunction with initiative 2 above, we will ensure that Federal Project Directors and IPT personnel have adequate training to understand the principle of integrating safety into design. This training should include case studies where nuclear safety issues were not addressed in a timely manner in an effort to ensure that we learn from our past. An existing training module on this topic in the NNSA Project Management Career Development Program will be considered as a prospective template for the content of the requisite training.

In closing, I recognize that these initiatives are not the end game. There can be no substitute for early and continuous vigilance for achieving safety in our projects, and NNSA remains fully committed to applying such vigilance.