

**Statement by the Acting Director, Office of Engineering and Construction
Management, U. S. Department of Energy
To the Defense Nuclear Facilities Safety Board
December 7, 2005**

Mr. Chairman and Members of the Defense Nuclear Facilities Safety Board, good morning. For the record, I am Bob McMullan, the Acting Director of the Office of Engineering and Construction Management. I am here today to provide a statement and answer questions on the Department's policy for integrating safety into design and construction. I would like to submit my statement for the record.

I would first like to describe the Department's project management process, including how safety assessments are integrated into that process; then discuss how effective we are in using our process; and finally provide ideas and actions for improvement.

The Department's project management process, including where safety assessments are integrated into that process

Department of Energy Order 413.3, Program and Project Management for the Acquisition of Capital Assets, prescribes our project management process. The Department requires five major Critical Decisions for all capital asset projects above \$5 million. They are: Critical Decision – 0, Mission Need; Critical Decision – 1, Alternative Selection and Cost Range; Critical Decision – 2, Performance Baseline; Critical Decision – 3, Start Construction; and Critical Decision – 4, Start of Operations or Project Closeout. The approval authority, or Acquisition Executive thresholds are: the Deputy Secretary for Projects above \$400 million, the Under Secretaries for projects from \$100 million to \$400 million, and Program Assistant Secretaries for projects up to \$100 million.

The Department's Energy Systems Acquisition Advisory Board (commonly referred to as the ESAAB), which is chaired by the Deputy Secretary, advises the Deputy Secretary on all projects above \$400 million. The Assistant Secretary for Environmental Safety and Health, the Secretary's principal advisor on safety and health related issues, is a required and standing member of the Board. The Board acts corporately, in the best interests of the Department and the taxpayer. Critical Decisions are thoroughly discussed and vetted by the Board, and are not automatically approved.

For projects below \$400 million, the Program Offices are required to establish equivalent boards with similar membership for projects at the thresholds I just mentioned. Likewise an Integrated Project Team is required for all projects. At a minimum the team must include the certified federal project director, contracting officer, technical professionals, counsel, and safety and quality personnel.

When the Order was signed into effect in October 2000, it also incorporated several checks within the process intended to ensure that safety issues have been properly

considered and addressed before a Critical Decision is approved by the Acquisition Executive.

After the Mission Need has been approved at Critical Decision – 0, the project moves into the conceptual design phase, which is quite possibly the most crucial phase of the project management process. During this phase design alternatives are evaluated to include the identification of hazards, potential accident scenarios, and systems, structures, and components needed to mitigate the various accidents. In order to determine the best design approach, it is essential to analyze the safety aspects of each alternative being considered, along with the other technical, operational and cost considerations that impact the decision. It is of paramount importance that this occurs prior to Critical Decision – 1 which, in addition to approving the alternative selection and cost range, authorizes the start of preliminary design. The hazard analysis conducted prior to Critical Decision – 1 also identifies project risks, from a safety perspective, which will need to be addressed during preliminary design.

The nuclear safety requirements identified during conceptual design, including the hazard classification and performance category, are then part of the “design-to” inputs for the preliminary design. The preliminary design is also subject to a complete hazard analysis resulting in further refinement of the systems, structures and components needed to ensure worker and public safety. As potential nuclear safety issues are identified and addressed during preliminary design, project safety risks are mitigated and reduced.

Prior to Critical Decision – 2, when the Performance Baseline is established, the Office of Engineering and Construction Management, conducts an External Independent Review. OECEM has contracted with several professional firms to perform the External Independent Reviews, using an established scope of work. Based on the results of the Review, OECEM validates the project’s performance baseline for inclusion in the Department’s budget or, declines to validate and establishes findings which the Program’s project team must adequately address in order to attain a validated baseline. Included in the standard scope of work is a review of safety. However, while safety is a specifically identified part of the review scope, our general emphasis has been on ensuring that the project’s cost and schedule baseline is achievable. While safety issues can have a direct impact on cost and schedule, the reviews conducted by OECEM have not been focused on whether all elements of the hazards analysis have been properly addressed in the design.

We are taking action to improve our focus in this key area in several ways. In October, we increased the number of External Independent Review contractors available to us, thereby increasing our capacity for reviews as well as the depth of the reviews conducted. We have recently improved our standard scopes of work used for External Independent Reviews, including the proper incorporation of safety into the design. We have also contracted with the National Academy of Sciences to

conduct an “external independent review” of our External Independent Reviews, to evaluate the effectiveness of the reviews and how we can continue to improve the review process.

We in OECM consider the EIR process to be a major tool in our assessment of the health of a project. We are very sensitive about ensuring that these reviews are truly ‘independent’. The customer, if you will, for our assessment is the Department’s Acquisition Executive, not the individual project team. However, we hope that as a by-product of the review the project team benefits. Finally, to continue to ensure the objectivity and independence of our External Independent Reviews, we are currently working with the Department’s Chief Financial Officer to manage our EIR process in the Department’s Working Capital Fund. Managing the External Independent Review process as a business line within the Working Capital Fund, we believe, will help to ensure their independence and provide increased flexibility to the EIR program.

DOE uses Critical Decision – 3 (Approve Start of Construction) to confirm that a project is ready to start construction. For Major System projects, OECM conducts an External Independent Review prior to the start of construction in order to assess among other items, whether final design functions and requirements, including safety systems, structures, and components are properly reflected in the construction documents.

Prior to Critical Decision – 4, Start of Operations or Project Closeout, testing is conducted to verify safety systems work as designed on actual materials to be processed or treated.

We believe that this systematic approach to project management both promotes the incorporation of safety into the design and adheres to the cost management principles of project management.

How effective are we are in using our process

For most large organizations in government or the private sector, change does not come easy. Issuing DOE Order 413.3 on project management, and perhaps more significantly implementing it, has been a challenge for the Department. However, project management within the Department of Energy has improved since October 2000 when the Order was issued. Although full implementation has been difficult, the principles of the 413.3 Project Management Process are recognized and acknowledged throughout the Department. But as with all processes, there is room for improvement.

An example of our continuous improvement of the implementation of the project management requirements relates to the budget process. Although in the past some projects have been included in the budget without independent validation of performance baselines, the current budget cycle has placed a much greater emphasis on this aspect of the project management process. While exceptions to

any process will occur, this fiscal year any exceptions must be justified by the Program requesting the exception and approved by the Deputy Secretary.

In order to stress the importance of project management, on August 10, 2005, Secretary Bodman issued a memorandum calling for a cultural change within the Department to promote disciplined upfront planning; realistic estimates of cost, schedule and performance; and straightforward communication between the project director and senior management. The fundamental elements needed for this change are in place -- the project management process defined by O413.3 and the enthusiasm and expertise of the Department's human resources.

Ideas and Actions for Improvement

As mentioned by the Deputy Secretary, OECM will update the project management Order 413.3 to strengthen the integration of safety into our projects. The update will improve the coverage of:

- the early integration of safety in the design, and the continued focus on safety during the construction, testing and turnover of projects
- the use of a graded approach, and the expectations for acceptable use of design/build
- clear requirements regarding the safety qualifications for personnel involved in managing projects
- clear references to current safety rules, directives and standards
- the inclusion of tailoring and safety issues at ESAAB meetings
- the role of the Chiefs of Nuclear Safety and the Office of Environment, Safety and Health in safety oversight as part of the project management process, and
- the requirement for after-action reports.

Finally, I have already mentioned the use of OECM conducted External Independent Reviews in support of Critical Decision – 2 and some of the actions we have taken to improve that overall process. We will continue to increase our focus on the safety aspects of these reviews to better ensure the incorporation of safety systems, structures, and components in the preliminary design. We will also emphasize that the review of the start-up testing plans include an assessment of whether safety is adequately addressed in the start-up tests to be performed, as well as whether the Performance Baseline includes sufficient costs and schedule for conducting these tests.

In conclusion, the Department of Energy project management process is well focused on the early identification and incorporation of safety into the Department's projects. We will continue to improve the implementation of the process with a key focus on the importance of early and comprehensive safety planning.

Thank you Mr. Chairman and Members of the Defense Nuclear Facilities Safety Board. I now welcome any questions that you may have.