

OPENING STATEMENT OF  
DR. A.J. EGGENBERGER, CHAIRMAN  
MARCH 22, 2007, INCORPORATION OF SAFETY  
INTO DESIGN AND CONSTRUCTION - HEARING AND MEETING III

MY NAME IS (DR.) A.J. EGGENBERGER. I AM THE CHAIRMAN OF THE DEFENSE NUCLEAR FACILITIES SAFETY BOARD, AND I WILL PRESIDE OVER THIS PUBLIC MEETING AND HEARING. I WOULD LIKE TO INTRODUCE THE MEMBERS OF THE SAFETY BOARD WHO ARE PRESENT HERE TODAY. ON MY IMMEDIATE RIGHT IS DR. JOHN MANSFIELD, AND TO HIS RIGHT IS MR. LARRY BROWN. TO MY IMMEDIATE LEFT IS MR. JOSEPH BADER, AND TO HIS LEFT IS DR. PETER WINOKUR. WE FIVE CONSTITUTE THE BOARD.

THE BOARD'S GENERAL COUNSEL, RICHARD AZZARO, AND THE BOARD'S GENERAL MANAGER, BRIAN GROSNER, ARE TO MY LEFT. THE BOARD'S TECHNICAL DIRECTOR, KENT FORTENBERRY, AND THE BOARD'S GROUP LEAD FOR NUCLEAR FACILITY DESIGN AND INFRASTRUCTURE, ROY KASDORF, ARE ALSO PRESENT AT THE TABLE TO MY RIGHT. MEMBERS OF OUR STAFF CLOSELY INVOLVED WITH SAFETY OVERSIGHT OF THE DEPARTMENT OF ENERGY'S DESIGN AND CONSTRUCTION OF DEFENSE NUCLEAR FACILITIES ARE ALSO HERE TO RESPOND TO ANY QUESTIONS THE BOARD MAY HAVE RELEVANT TO THE SUBJECT OF THIS MEETING AND HEARING.

TODAY'S MEETING AND HEARING WERE PUBLICLY NOTICED IN THE FEDERAL

REGISTER ON JANUARY 29, 2007. THE MEETING AND HEARING ARE HELD OPEN TO THE PUBLIC IN ACCORDANCE WITH THE PROVISIONS OF THE GOVERNMENT IN THE SUNSHINE ACT. TO PROVIDE TIMELY AND ACCURATE INFORMATION CONCERNING THE BOARD'S PUBLIC AND WORKER HEALTH AND SAFETY MISSION THROUGHOUT THE DEPARTMENT OF ENERGY'S DEFENSE NUCLEAR COMPLEX, THE BOARD IS RECORDING THIS PROCEEDING THROUGH A VERBATIM TRANSCRIPT AND VIDEOTAPE. AS A PART OF THE BOARD'S E-GOVERNMENT INITIATIVE, THE MEETING AND HEARING IS ALSO BEING MADE AVAILABLE OVER THE INTERNET THROUGH VIDEO STREAMING. THE TRANSCRIPT, ASSOCIATED DOCUMENTS, PUBLIC NOTICE, AND VIDEOTAPE WILL BE AVAILABLE FOR VIEWING IN OUR PUBLIC READING ROOM ON THE SEVENTH FLOOR OF THIS BUILDING. IN ADDITION, AN ARCHIVED COPY OF THE VIDEO STREAMING WILL BE AVAILABLE THROUGH OUR WEB PAGE FOR AT LEAST 60 DAYS.

THIS PUBLIC MEETING AND HEARING IS THE THIRD IN A SERIES CONCERNING THE DEPARTMENT OF ENERGY'S AND THE NATIONAL NUCLEAR SECURITY ADMINISTRATION'S INCORPORATION OF SAFETY EARLY INTO THE DESIGN AND CONSTRUCTION OF DEFENSE NUCLEAR FACILITIES. THE BOARD IS RESPONSIBLE, PURSUANT TO ITS STATUTORY CHARTER UNDER THE ATOMIC ENERGY ACT OF 1954, AS AMENDED, TO REVIEW AND EVALUATE THE CONTENT AND IMPLEMENTATION OF STANDARDS RELATING TO THE DESIGN AND CONSTRUCTION OF SUCH FACILITIES, AND TO REVIEW FACILITY DESIGN BEFORE

CONSTRUCTION OF SUCH FACILITIES BEGINS, MAKING SUCH RECOMMENDATIONS FOR MODIFICATION OF THE DESIGN NECESSARY TO ENSURE ADEQUATE PROTECTION OF PUBLIC HEALTH AND SAFETY. AT THE BOARD'S INITIAL PUBLIC MEETING AND HEARING ON THIS SUBJECT, HELD ON DECEMBER 7, 2005, THE BOARD FOCUSED ON THE ADEQUACY OF THE DEPARTMENT OF ENERGY'S EXISTING DIRECTIVES RELATED TO THE DESIGN OF NEW FACILITIES. IN PREPARATION FOR THAT HEARING, THE DEPARTMENT OF ENERGY OUTLINED ITS EXPECTATIONS FOR INTEGRATING SAFETY INTO DESIGN AND ESTABLISHED A FRAMEWORK FOR ACHIEVING NEEDED IMPROVEMENTS. DURING THE SECOND PUBLIC MEETING AND HEARING ON JULY 19, 2006, THE BOARD FURTHER EXPLORED INTEGRATION OF SAFETY INTO DESIGN AND THE PROGRESS BEING MADE IN IMPLEMENTING THE DEPARTMENT'S SAFETY DESIGN INITIATIVES. THESE PUBLIC HEARINGS IN 2005 AND 2006 RESULTED IN TANGIBLE ACTION BY THE DEPARTMENT OF ENERGY TO IMPROVE THE EARLY INTEGRATION OF SAFETY INTO THE DESIGN OF DOE DEFENSE NUCLEAR FACILITIES.

IN THIS THIRD PUBLIC MEETING AND HEARING ON SAFETY IN DESIGN, THE BOARD WILL FOCUS ON EARLY IDENTIFICATION OF SAFETY RELATED DESIGN AND CONSTRUCTION ISSUES, COMMUNICATION OF THOSE ISSUES TO DOE AND NNSA, ISSUE MANAGEMENT, AND EARLY RESOLUTION AND CLOSURE OF ISSUES. THE BOARD WILL ALSO ADDRESS THE IMPLEMENTATION STATUS OF DOE ORDER 413.3, DOE STANDARD 1189, AND THE REVISION OF DOE MANUAL 413.3-1. THE BOARD EXPECTS THAT TODAY'S PROCEEDINGS

WILL FURTHER FACILITATE AND ASSIST THE BOARD, THE DEPARTMENT OF ENERGY, AND THE NATIONAL NUCLEAR SECURITY ADMINISTRATION IN THEIR COLLECTIVE EFFORTS TO EVALUATE ANY NEEDED IMPROVEMENTS IN THE TIMELY RESOLUTION OF SAFETY ISSUES RELATED TO THE DESIGN AND CONSTRUCTION OF DOE DEFENSE NUCLEAR FACILITIES.

SIGNIFICANTLY, SINCE OUR LAST PUBLIC MEETING ON THIS SUBJECT, CONGRESS HAS INDICATED CONCERN REGARDING UNTIMELY RESOLUTION BY THE DEPARTMENT OF ENERGY OF TECHNICAL SAFETY ISSUES IDENTIFIED BY THE BOARD RELATING TO SAFETY IN THE DESIGN AND CONSTRUCTION OF DEFENSE NUCLEAR FACILITIES. THESE CONCERNS ARE SET FORTH IN SECTION 3201 OF THE HOUSE CONFERENCE REPORT ACCOMPANYING THE NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 2007. AS POINTED OUT BY THE CONFEREES IN THAT REPORT, THERE MAY BE CLEAR BENEFITS, TO BOTH THE BOARD AND THE DEPARTMENT OF ENERGY, FROM A MORE STRUCTURED PROCESS FOR RESOLUTION OF SAFETY RELATED DESIGN AND CONSTRUCTION ISSUES. THE BOARD RECOGNIZES THAT SUCH A PROCESS SHOULD ALLOW SAFETY RELATED ISSUES TO BE IDENTIFIED, QUICKLY EVALUATED, AND RESOLVED AT LOGICAL POINTS IN THE DESIGN AND CONSTRUCTION PROCESS. TO THAT END, THE BOARD INTENDS TO CONTINUE ITS DISCUSSIONS WITH THE DEPARTMENT OF ENERGY AND THE NATIONAL NUCLEAR SECURITY ADMINISTRATION TO ENSURE A MORE TIMELY PROCESS FOR IDENTIFICATION AND RESOLUTION OF SUCH SAFETY ISSUES.

PROGRESS HAS ALREADY BEEN MADE. THE BOARD HAS MET WITH DEPARTMENT OF ENERGY HEADQUARTERS PERSONNEL, FEDERAL PROJECT PERSONNEL, AND CONTRACTOR PERSONNEL TO DISCUSS SEVERAL KEY PROJECTS. THE AIM OF THESE MEETINGS HAS BEEN TO DEVELOP A BETTER MUTUAL UNDERSTANDING OF THE SAFETY REQUIREMENTS NEEDED FOR THESE NEW FACILITIES AND ESTABLISH COMMON EXPECTATIONS FOR EARLY DESIGN MATURITY AND EARLY IDENTIFICATION AND RESOLUTION OF SAFETY ISSUES. THE BOARD HAS ALSO PROVIDED CONGRESS THE FIRST OF ITS QUARTERLY REPORTS ON THE STATUS OF SIGNIFICANT UNRESOLVED TECHNICAL ISSUES RELATING TO DESIGN AND CONSTRUCTION OF DOE DEFENSE NUCLEAR FACILITIES.

AS STATED IN MY OPENING REMARKS FROM THE LAST PUBLIC HEARING CONCERNING SAFETY IN DESIGN, THE BOARD IS CHARGED WITH OVERSIGHT COUPLED WITH ACTION-FORCING AUTHORITY. THIS AUTHORITY EXTENDS WELL BEYOND PROVIDING ADVICE AND CONSULTATION. THE CONTOURS OF WHAT WE ARE TO DO AND HOW WE ARE TO DO IT ARE CAREFULLY AND FORCEFULLY LAID OUT BY CONGRESS. WHILE WE MAY NOT AGREE WITH EVERYTHING THE DOE AND NNSA SAYS OR DOES, I WOULD LIKE TO SAY, AGAIN, THAT THE BOARD IS NOT THE DEPARTMENT'S ADVERSARY. OUR MUTUAL SERVICE TO OUR COUNTRY WILL NOT ALLOW EITHER THE BOARD, THE DEPARTMENT OF ENERGY, OR THE NATIONAL NUCLEAR SECURITY ADMINISTRATION TO BE ADVERSARIES OR TO FOLLOW ADVERSARIAL PRACTICES OR PROCEDURES. IT IS IN THIS SPIRIT THAT THE BOARD ENTERS

DISCUSSIONS BEFORE US TODAY AND REASSURES ALL OF ITS COMMITMENT TO ENSURE ADEQUATE PROTECTION OF THE PUBLIC HEALTH AND SAFETY.

IN ACCORDANCE WITH THE BOARD'S PRACTICE, AND AS STATED IN THE FEDERAL REGISTER NOTICE, WE WILL WELCOME COMMENTS FROM INTERESTED MEMBERS OF THE PUBLIC AT THE CONCLUSION OF TESTIMONY. A LIST OF THOSE SPEAKERS WHO HAVE CONTACTED THE BOARD IS POSTED AT THE ENTRANCE TO THIS MEETING ROOM. WE HAVE LISTED THE PEOPLE IN THE ORDER IN WHICH THEY CONTACTED US, OR IF POSSIBLE, WHEN THEY WISHED TO SPEAK. I WILL CALL THE SPEAKERS IN THIS ORDER. THERE IS ALSO A TABLE AT THE ENTRANCE TO THIS ROOM WITH A SIGN-UP SHEET FOR MEMBERS OF THE PUBLIC WHO WISH TO MAKE A PRESENTATION BUT DID NOT HAVE AN OPPORTUNITY TO NOTIFY US AHEAD OF TIME. THEY WILL FOLLOW THOSE WHO HAVE ALREADY REGISTERED WITH US IN THE ORDER IN WHICH THEY HAVE SIGNED UP.

IN ORDER TO GIVE EVERYONE WISHING TO SPEAK AN EQUAL OPPORTUNITY, WE ASK PRESENTERS TO LIMIT THEIR STATEMENTS TO FIVE MINUTES. THE CHAIR WILL GIVE CONSIDERATION TO ADDITIONAL COMMENTS SHOULD TIME PERMIT. PRESENTATIONS SHOULD BE LIMITED TO COMMENTS, TECHNICAL INFORMATION, OR DATA CONCERNING THE SUBJECTS OF THIS MEETING. THE BOARD MEMBERS MAY QUESTION ANYONE MAKING PRESENTATIONS TO THE EXTENT DEEMED APPROPRIATE.

THE RECORD OF THIS PROCEEDING WILL REMAIN OPEN UNTIL APRIL 22, 2007. I WOULD LIKE TO REITERATE THAT THE BOARD RESERVES ITS RIGHT TO FURTHER SCHEDULE AND OTHERWISE REGULATE THE COURSE OF THIS MEETING AND HEARING, TO RECESS, RECONVENE, POSTPONE, OR ADJOURN THIS MEETING AND HEARING, AND EXERCISE ITS AUTHORITY UNDER THE ATOMIC ENERGY ACT OF 1954, AS AMENDED.

THIS CONCLUDES MY OPENING REMARKS.

Opening Statement of  
Mr. Roy Kasdorf  
Lead, Nuclear Facilities and Design Infrastructure Group  
Incorporation of Safety into Design and Construction - Hearing and Meeting III  
March 22, 2007

Good morning Mr. Chairman and Members of the Board. My name is Roy Kasdorf, I am the Lead for the Nuclear Facilities Design and Infrastructure Group of the Board's technical staff. In this role, I am responsible for ensuring that Board's staff reviews of Department of Energy (DOE) design and construction of defense nuclear projects are completed consistent with the Board's mission.

On December 7, 2005, the Board held its initial public meeting focusing on the integration of safety into the design process. During this meeting DOE, through the initiative of the Deputy Secretary, committed to address fundamental concerns with the integration of safety into the design process.

On July 19, 2006, the Board held a second meeting focusing on the progress DOE had made in implementing the Deputy Secretary's safety-in-design initiative. Since this public meeting, DOE has completed its revision of DOE Order 413.3, *Program and Project Management for the Acquisition of Capital Assets*. However, the new Order will not be implemented until DOE has completed the accompanying standard, DOE-STD-1189, *Integration of Safety into the Design Process*. This standard is being developed to address the Order's safety-in-design objectives. DOE is also in the process of developing supplemental guides in support of DOE Order 413.3. These guides replace the existing DOE manual, DOE M 413.3-1, *Project Management for the Acquisition of Capital Assets*. The content of each guide is under development.

Issuing the new Standard 1189 and implementation of the new DOE Order 413.3A is important to the achieving DOE's safety-in-design objectives outlined in the December 7, 2005, public meeting. At this time, DOE has not fully developed this standard nor has DOE developed its implementation strategy.

Today's hearing is intended to focus on management of Board issues. That is, early identification of issues, communication of those issues to DOE, issue management and timely resolution of those issues.



Board issues arise due to many different causes. Some issues are the result of poor implementation of clear safety requirements. Identifying these issues earlier in the design through increased rigor in design reviews and critical decisions, and imposing federal project evaluations early in the design process will help minimize the impact of these issues. Other issues have resulted from:

- the lack of clear design requirements,
- the lack of agreement on the analytical approach, and
- the lack of clear expectations as to when in the design phase a specific design requirement must be met.

DOE Order 413.3A and the new Standard 1189 go a long way toward developing many of the design expectations that should help minimize these type of issues. However, the staff understands that there is significant resistance within DOE to critical elements within the new Standard. There appears to be a persistent belief that the current requirements are adequate. This is contrary to the spirit of the Deputy Secretary's December 5, 2005, initiative and recent experience. The status quo has not been effective in consistently achieving the desired goal of integrating safety early into the design of new facilities.

For the past several months, the staff has been involved with the DOE's efforts to develop DOE-STD-1189, and with a recent DOE and Board effort intended to develop a mutual understanding of the safety requirements for new facilities and establishing common expectations for early design maturity and early identification of safety issues. This recent effort considered two current projects—the Uranium Processing Facility at Oak Ridge, and the Integrated Waste Treatment Unit at Idaho. Based on this involvement, the staff has made several observations that fall into four categories.

- *Design maturity.*

The maturity of a design must support sound safety-related decision making. The Board and DOE are being tasked by Congress to identify safety-related issues early, essentially at the end of conceptual design. To evaluate the adequacy of safety systems at this point in the design process, fundamental elements of the design must be completed. For example, to select safety-related systems in a nuclear chemical processing facility, the process design must be sufficiently well

developed to complete a meaningful preliminary hazards analysis. This requires definition of the process flow sheet and an adequate understanding of material at risk on a process-by-process basis. Completion of the hazards analysis will allow development of a sound safety strategy that reliably identifies safety-class and safety-significant systems, structures, and components. The staff believes that the current draft of Standard 1189 will achieve this level of maturity if implemented properly.

However, to achieve this degree of maturity by the end of conceptual design requires the availability of funding consistent with these objectives. It is not clear that DOE's current critical decision process provides sufficient funding for this purpose. Therefore, to meet safety-in-design objectives, DOE should consider modifying its project management process to ensure that funding is provided to develop the design detail consistent with the stated desire to identify safety-related equipment and systems and safety-related issues earlier. It appears that DOE Order 413.3A will likely require additional revisions to increase the number of critical decisions during the design process that will accommodate early alternative selection and development for a sufficiently mature conceptual design. Other needed changes in the directives system that support meeting safety-in-design objectives will likely become apparent as projects strive to meet the safety goals in the new Order and Standard.

- *Rigorous implementation of directives.*

DOE needs to consistently and rigorously implement its directives. Project personnel routinely tailor the project management process to suit a variety of needs and on some occasions have chosen to not follow the formal DOE Order 413.3 critical decision process. For example, it is common for projects to combine critical decisions. The reality of this decision, from a design perspective, is that decisions are made using incomplete design information. For projects to consistently develop designs that support sound decision making, the processes outlined in DOE Order 413.3 should be followed rigorously.

- *Technically strong integrated project teams.*

The integrated project teams must be technically strong with appropriate capability consistent with the technical complexity of the respective project. Integrated project teams must be formed earlier in a project's life in order to ensure that the project is managed well from the outset and that adequate oversight, from within the project, is provided.

- *Sound design process.*

The design process must be technically sound. The staff has frequently observed that critical aspects of the design are not developed properly during the early stages of design. The best examples are the consistent problems encountered in developing the seismic design criteria. Further, the geotechnical studies needed to support early design decisions have not been completed or have been performed improperly. These problems have led to considerable cost and schedule impacts on the Salt Waste Processing Facility and Waste Treatment Plant designs.

It is recognized that in some projects the level of desired maturity can not be achieved due to technical uncertainties, unknown conditions or new process development, these technical areas need to be highlighted in the risk management plan with a clear plan for their timely resolution.

As I noted earlier, the staff believes that issuing the new Standard 1189, implementing new Order 413.3A requirements and its guides, should help minimize many of the issues with design of defense nuclear facilities. However, some of the issues frequently noted will not necessarily be eliminated by these directives. The staff believes that DOE should consider an additional approach to its design of nuclear facilities to help ensure the safety-in-design initiative is successful. A nuclear facility design guide that outlines acceptable approaches and further elaborates on design expectations for new defense nuclear facilities should be considered. This design guide would delineate standard design practices common to all defense nuclear facility design projects such as siting standards, standards for geotechnical investigations, structural design practices, expectations for design descriptions of safety-related systems and components. DOE should take an aggressive approach to act on what is working and what is not in the design process; a design guide would be a good place to capture these lessons learned.

This ends my prepared remarks. I would be happy to answer any questions.