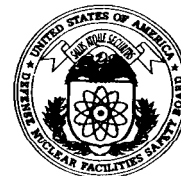


A.J. Eggenberger, Chairman  
Joseph F. Bader  
John E. Mansfield

# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700 Washington, D.C. 20004-2901  
(202) 694-7000



April 24, 2006

The Honorable James A. Rispoli  
Assistant Secretary for Environmental Management  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585-0113

Dear Mr. Rispoli:

The staff of the Defense Nuclear Facilities Safety Board (Board) reviewed the implementation of activity-level work planning and control by Fluor Hanford, Inc. (Fluor). Fluor has developed a formal and disciplined program for the planning and control of activity-level work in its assigned projects. This program is fundamentally sound; however, some issues remain with regard to its implementation. Work management directives appeared to comply with local requirements, and workers played an active role in the development of work packages. Areas for improvement include analysis and integration of hazards, especially radiological hazards; identification of controls; additional training for key personnel; and feedback and improvement mechanisms.

In addition, the Board notes that the National Nuclear Security Administration, with the assistance of several Department of Energy site contractors, including representatives from Environmental Management sites, has recently developed a comprehensive document setting forth attributes, best practices, and guidance for the incorporation of Integrated Safety Management and quality assurance into work planning. The Board encourages the Office of Environmental Management to consider adopting this document and strive to strengthen each of the work planning and control programs at the sites under its purview.

The enclosed report prepared by the Board's staff provides observations resulting from a recent review of Fluor's work planning and control, and is provided for your use as you continue to upgrade work planning and control at the Hanford Site.

Sincerely,

A handwritten signature in black ink that reads "A. J. Eggenberger". The signature is written in a cursive style and is positioned above the printed name of the signatory.

A. J. Eggenberger  
Chairman

c: The Honorable Linton Brooks  
Mr. Keith A. Kline  
Mr. Mark B. Whitaker, Jr.

Enclosure

# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

## Staff Issue Report

April 4, 2006

**MEMORANDUM FOR:** J. K. Fortenberry, Technical Director

**COPIES:** Board Members

**FROM:** D. Burnfield

**SUBJECT:** Review of Activity Level Work Planning and Control by Fluor Hanford, Inc.

This report documents a review of work planning and control processes in projects conducted by Fluor Hanford, Inc. (Fluor). This review was conducted by members of the staff of the Defense Nuclear Facilities Safety Board (Board) D. Burnfield and L. Zull, along with outside expert D. Volgenau. Subsequent discussions, including a telephone conference among the Board's staff, the Department of Energy (DOE), and Fluor during February 2006, supplemented the information gathered during this review.

**Background.** Work on the Plutonium Finishing Plant and the K-Basin Closure project, as well as that on other projects under the Central Plateau Project, is controlled by DOE's Richland Operations Office (DOE-RL). These projects involve long-term deactivation and decommissioning activities. During calendar year 2005, Fluor made significant revisions to its work planning and control directives and documentation requirements. Commitments made in response to the Board's Recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*, appear to have been a main stimulus for these revisions. One purpose of these revisions was to improve processes and mandate the use of consistent work planning and control procedures by each of the projects assigned to Fluor. However, some flexibility in the implementation of the revisions was permitted to account for the unique features of particular projects. Fluor uses a computer-based automated job hazards analysis (AJHA) tool to assist in the planning of work. Recently, this tool was upgraded, purportedly to make the tool more useful and efficient. At the time of the staff's visit, the required training for the use of the new tool was being formulated. Unlike other sites that have adapted this tool, Fluor requires that its use be based on a team approach, thus benefiting from the expertise of identified subject matter experts (SMEs). Pertinent hazard controls are required to be transferred from the AJHA tool to work instructions.

The staff's review revealed that Fluor's procedures do require formal and disciplined processes for the planning and control of work in the contractor's assigned projects. A review of actual work packages and discussion with those who prepared them revealed that work management directives appear to comply with local requirements, although greater rigor could have been exercised in performing the hazard analyses and defining controls, especially radiological controls. Workers played an active role in developing work packages and in

providing feedback. A number of areas for improvement were noted, but in most cases Fluor was aware of these areas and was taking actions to improve the system for work planning and control.

**Observations and Comments.** Specific observations and comments resulting from the staff's review are presented below, organized according to the basic functions of Integrated Safety Management.

*Define the Scope of Work*—The staff observed that formal and disciplined processes were being used to plan and control work. Project work control was governed by a work management procedure (HNF-PRO-12115) and a work planning guide (HNF-GD-12116). The radiological controls organization had been fully integrated procedurally into the work planning process. Use of the procedure was mandatory, while use of the guide was encouraged. Discussions revealed that both were commonly used during work planning. The procedure required that each organization formally designate individuals who would be responsible for performing key work management functions (validation, work release, and work acceptance). Fluor had identified a weakness in the indoctrination and training in the planning process for key individuals, including work planners and fieldwork supervisors. This weakness is significant since the success of the work planning and control process is heavily dependent on the skills of these personnel. A review of training plans and records confirmed this weakness.

The level of work planning required was identified through the use of a formal screening and validation process that included evaluating the urgency of the requested work task and its characteristics. Basically, the Fluor directives provided for three categories of work: (1) minor work (e.g., skill-of-craft), which met certain screening criteria; (2) work that required no additional planning (e.g., routine maintenance covered by another procedure); and (3) work requiring planned work instructions. Determining the scope of the work and its proper category typically could involve a preliminary walkdown of the work site by planners, supervisors, SMEs, and workers. The product of this screening process was validated by a “responsible” person, and the work was then planned to the degree identified during the screening. The staff's review of project work packages indicated that this process was being used and that work was being appropriately screened into the correct categories. The third of the above work category types required the most extensive planning.

Each project was required to establish priorities for work accomplishment, taking into consideration site-wide resource limitations and project needs. Guidance provided by Fluor directives appeared to be adequate, and project work appeared to be properly prioritized.

*Analyze the Hazards*—Typically for new work, a work planner constructed a draft work procedure and completed a preliminary hazards analysis using the AJHA tool after examining the results of the work screening process, reviewing similar work packages, and consulting with appropriate SMEs and workers. The Enhanced Work Planning (EWP) process, involving a multidisciplinary team of workers, supervisors, and SMEs, was then used to identify and analyze the hazards associated with the work. The AJHA tool was used to facilitate these hazard

analysis tasks. If the work was deemed to involve radiological risk, a radiological work planner reviewed the draft package. Controls for significant radiological hazards were integrated into the work package; however, many of the less significant radiological controls were contained only in the radiological work permit. Typically, full identification of the hazards and appropriate controls for complex work would require an iterative process.

Once work had been screened and determined to be minor, the process did not always clearly articulate adequate criteria for considering potential hazards associated with the environment in which the work was to be conducted.

The staff's review of completed work packages for both the Plutonium Finishing Plant and the K-Basin Closure project and observation of an AJHA/EWP planning meeting indicated that the process had been effective in identifying and analyzing hazards associated with the planned work. Discussion during the review of a work package for the K-Basin Closure project revealed that some opportunities for mitigating hazards to workers through engineered preventive measures, such as reducing radiation exposure, had been missed. A more integrated approach to radiological work planning would be appropriate.

*Develop and Implement Controls*—Work controls for the identified hazards resulted from the AJHA/EWP planning meetings and from analysis of other hazards through the permit preparation processes associated with the planned work. Controls were then incorporated at the appropriate point in the work instructions, retained in the permit documentation as appropriate, or determined to be within the skills of the workers. When radiological controls were required, the local As Low As Reasonably Achievable (ALARA) Center was available to provide assistance. The staff's review of completed work packages and discussions revealed that this process had been carried out successfully. Yet while radiological controls had been integrated into the work instructions, the process could be enhanced by developing these controls during the AJHA/EWP meeting(s), rather than independently using the Radiological Work Permit, and through a more rigorous process of design and engineering to eliminate, reduce, or mitigate the hazards.

*Perform Work*—Fluor had a formal process for the review and approval of work packages. Generally, on the day prior to commencement of work, the package was checked for adequacy, and readiness for accomplishing the work was confirmed. The release authority—the shift manager or equivalent—was responsible for confirming the field conditions required for the work to start. A pre-job briefing was conducted, facilitated by the field work supervisor; SMEs attended, as appropriate, to assist in the brief and to answer questions. The work team then confirmed the conditions in the field by conducting a walkdown. Work was supervised by the field work supervisor, who was responsible for monitoring work activities and conditions in the work area. Workers understood their right and responsibility to stop work should conditions warrant doing so. A formal system existed for changing the work instructions when required by field conditions. The work instructions reviewed by the staff contained a statement that the instructions were "...intended to be followed in sequence" yet "...at the discretion of the field work supervisor certain steps may be performed out-of-sequence." Among the procedures

reviewed by the staff, no work steps had been designated to have this flexibility, and the statement appeared to be a contradiction. When the staff questioned this, Fluor management indicated that such flexibility was not required for the work being completed.

*Provide Feedback and Continuous Improvement*—Fluor’s work management directives contained provisions for post-job reviews, and in particular, established criteria for reviewing work performance following nonroutine radiological work. In practice, it appeared that any lessons learned from the previous day’s work were generally discussed during the following day’s pre-job briefing. For work that covered an extended period, it appeared that little effort had been made to capture formally lessons learned as the work progressed. Following work completion, project support personnel were assigned responsibility for capturing formal lessons learned. This appeared to be a weakness since these staff had not been involved in either the planning or the work. Fluor personnel acknowledged the need for improvement in promptly and formally capturing lessons learned during the conduct of work.

*DOE Oversight*—Oversight of Fluor by DOE-RL appeared to have been generally effective and to be improving. DOE-RL has implemented an oversight program that includes among other things:

- A project-oriented organizational structure mirroring the major Hanford work projects.
- The ability of federal project directors to establish multidisciplined teams to assess project progress or problems.
- The use of well-qualified Facilities Representatives.
- The establishment of a cooperative but arms-length relationship with site contractors.

These actions appeared to have improved the ability of DOE-RL to carry out its oversight responsibilities more effectively. Of particular pertinence to this review, it was noted that the project Facilities Representatives had conducted a number of surveillances during the past year focused on the Fluor’s work planning and control processes. Many of these surveillances appear to have been driven by commitments in the Implementation Plan for the Board’s Recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*.