DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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October 30, 2008

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:

As part of a series of reviews on the reinvigoration of activity-level Integrated Safety Management at Department of Energy (DOE) sites, the staff of the Defense Nuclear Facilities Safety Board (Board) reviewed work planning and control processes and their implementation by Washington Closure Hanford, LLC (WCH). The Board's staff found that WCH has an acceptable process for the planning and control of activity-level work. In several cases, however, the staff identified the need for process enhancements and areas in which implementation could be improved.

For example, the method for analyzing hazards could be improved in several ways: (1) it could be made less dependent on a subjective evaluation of the complexity and the difficulty of the work to be planned, and the associated hazard categorization; (2) the hazard analyses for radiological and other hazards could be better integrated; and (3) controls for each hazard could be more explicitly identified in the hazard analysis and then directly carried forward into the final work instructions. The Board's staff also found that WCH has three processes used to plan and conduct work, and that they employ varying degrees of rigor. The first process is used to plan and control most mission-related work through the use of an integrated work control process (IWCP) and includes most highly hazardous operations. The other two processes, which are used to plan and control preventive maintenance and environmental restoration disposal facility operations, are not as rigorous or as well thought out as the IWCP process.

Personnel from the Richland Operations Office were aware of the desired improvements in the contractor's work planning and control processes. However, the effectiveness of the Richland Operations Office would be strengthened if DOE had a clear set of directives establishing the standards for work planning and control. Further, the criteria and review approach documents that are purported to be a part of the guide supporting DOE Order 226.1, *Implementation of Department of Energy Oversight Policy*, would further strengthen the effectiveness of the site office assessments.

The enclosed report, prepared by the Board's staff, provides additional observations from the staff's review and is provided for your use in improving work planning and control at the River Corridor Closure Project.

Sincerely,

A. J. Eggenberger
Chairman

Enclosure

c: Mr. Glenn S. Podonsky
Mr. David A. Brockman
Mr. Mark B. Whitaker, Jr.

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

August 28, 2008

MEMORANDUM FOR: T. J. Dwyer, Technical Director

COPIES: Board Members

FROM: D. Burnfield

SUBJECT: Activity-Level Work Planning for the River Corridor Closure Project, Hanford Site

This report documents a review of the activity-level work planning and control processes at several defense nuclear facilities within the River Corridor Closure (RCC) Project at the Hanford Site. Washington Closure Hanford, LLC (WCH) manages the RCC Project for the Department of Energy (DOE)-Richland Operations Office (DOE-RL). This review examined how Integrated Safety Management (ISM) is used to protect the workers from activity-level work hazards. The review was conducted by members of the staff of the Defense Nuclear Facilities Safety Board (Board) D. Burnfield, W. Linzau, J. Troan, R. Verhaagen, and P. Maginot, assisted by outside expert D. Volgenau.

Background. WCH manages the RCC Project using three major field projects to complete their mission: (1) Deactivation, Decontamination, Decommissioning, and Demolition/ Reactor Interim Safe Storage (D4/ISS); (2) Waste Operations; and (3) Field Remediation Closure. These projects include demolition of numerous facilities; placement of four reactors into safe long-term storage conditions; remediation and closure of waste storage sites; and treatment, transportation, and disposal of waste. WCH is supported by a tier of subcontractors.

There are few formal requirements and limited guidance for planning and controlling work; they are scattered among the following DOE documents:

- 10 Code of Federal Regulations (CFR) Part 851, *Worker Safety and Health Programs*
- DOE Guide 440.1-8, *Implementation Guide for Use with 10 CFR Part 851, Worker Safety and Health Programs*

- The National Nuclear Security Administration (NNSA) document *Activity Level Work Planning and Control Processes: Attributes, Best Practices, and Guidance for Effective Incorporation of Integrated Safety Management and Quality Assurance* (link on website http://www.hss.energy.gov/HealthSafety/ism/NNSA-WorkPlanning.pdf).

The NNSA document provides excellent guidance for implementing a best-in-class activity-level work planning program and assessment tools for evaluating field implementation. This guidance was derived from the ISM core functions and guiding principles; the ten criteria of DOE Order 414.1C, *Quality Assurance*; and DOE Order 433.1A, *Maintenance Management Program for DOE Nuclear Facilities*. This guidance document has not yet been published in the DOE directives system. DOE-RL and WCH would benefit by applying it to the RCC.

Observations and Comments. In general, WCH has an adequate work planning and control process, and DOE-RL is providing adequate oversight of the contractor and the subcontractors. The documents cited above, as well as the local manuals and codes of practice used by WCH to implement the above requirements and guidance, were used to assess WCH's processes and actual work practices used in the field where practicable. The following observations and comments are meant to assist DOE-RL and WCH in making improvements to the activity-level work planning and control process.

General Work Planning and Control—Discussions with managers, supervisors, and workers, as well as the observation of work planning and actual work-related activities, substantiated that WCH management has worked hard to establish a safety-conscious culture. In general, it appears that management and supervisors solicit and carefully consider input from WCH workers as well as their subcontractors; in one observed instance, however, workers stated that there was still a need to improve their communications with management. WCH is pursuing Voluntary Protection Program (VPP) Star status and has begun efforts to implement a human performance improvement (HPI) initiative. As part of these efforts, WCH is working to improve its safety culture. Pursuit of the VPP Star status and expansion of the HPI initiative to include more of the tenets of HPI is commendable. Consistent with this effort, the staff suggests that consideration be given to the development of a formalized behavior analysis process and a more complete lessons-learned program that addresses both local and complex-wide lessons learned.

For most mission-related work, WCH maintains a well-documented work planning and control process that meets the general work planning and control attributes set forth in the NNSA guide. However, the documents for planning and control of preventive maintenance and waste operations are not fully consistent with the WCH integrated work control process (IWCP). These documents lack (1) the expected level of rigor governing the preparation of Job Hazards Analyses (JHAs), (2) a process for evaluating the degree of complexity and difficulty associated with the work to be planned and the hazard categorization of the work, and (3) adequate provisions for feedback and improvement.

WCH's ISM system description contains two additional core functions and four additional guiding principles. These additions were made "to provide additional emphasis on key attributes that are important to DOE-RL and WCH management." While these additions

were approved by DOE-RL during the ISM system verification process, they have not been approved as additions to the DOE Policy 450.4, *Safety Management System Policy*, or DOE Manual 450.4-1, *Integrated Safety Management System Manual*. Such additions detract from the areas that require DOE-wide emphasis at this time. Site system descriptions should not add core functions or guiding principles to those in the approved DOE policy and manual directives. Furthermore, the WCH ISM system description does not address maintaining the ISM system as required by DOE Manual 450.4-1.

Although WCH improved the training and qualification processes since the ISM Phase I verification for key individuals in the work planning and control process, there are further opportunities for improvement. The process would be strengthened by improving the tools and data available to the work supervisors to allow them to verify more effectively that workers have adequate training and qualifications to complete the planned work.

Define the Scope of Work—The WCH IWCP for identifying the need for work, defining its scope, ensuring a graded approach, and prioritizing and scheduling the work is adequate and effectively meets the intent of ISM. In a number of cases, an iterative process is used to refine and detail the work scope for work that is being planned. These iterations include team discussions, meetings, and walkdowns. Subcontractor work is required to be accomplished under the tenets of the WCH IWCP directive, although some flexibility is permitted to allow the subcontractors to modify their existing work preparation procedures.

The WCH procedure for the conduct of skill-of-the-craft work is adequate to ensure that this work can be conducted safely. However, the procedure does not contain a list of the type of work activities to be considered skill-of-the-craft. A compiled list was provided during the staff's review. WCH could significantly reduce the likelihood of incorrectly planning work by including this information in the work planning and control directives.

Analyze the Hazards—The WCH IWCP identifies and analyzes hazards using a JHA process, typically performed by a work planning team. The IWCP directive, however, does not provide guidance for how a JHA is to be performed; nor does it provide guidance for the "what if" analysis required for medium- and high-risk work. Further, the directive indicates that a walkdown should be conducted during a JHA, but allows for the responsible manager to conduct a tabletop discussion when the risk from work site hazards outweighs the benefit of the team's walking down the site. Contrary to this requirement, the staff's review revealed several instances in which JHAs were conducted as tabletop discussions when there was little risk associated with performing a walkdown.

The level of hazards review is dependent on a process for evaluating the degree of complexity and difficulty associated with the work to be planned and on the work's "risk ranking," which uses a highly subjective numerical scoring system. In practice, this process would seldom result in a definition of high-risk work and therefore implementation of the most detailed work planning process. Further, radiological hazards and the associated controls frequently are not analyzed by the team in the JHA process; rather, the analyses are completed by radiological controls personnel and placed in a radiological work permit.

Develop and Implement Controls—The IWCP adequately provides for the specification of proper controls associated with the hazards identified by the JHA. A review of work packages revealed that not all of the controls identified in JHAs were incorporated into the task instructions as required by the IWCP. This was particularly the case for controls associated with radiological hazards. For example, one work document did not contain hold points associated with a work task requirement for an evaluation of radiological hazards. In some cases, work documents did not specify the appropriate warnings and caution statements. The staff noted cases in which new potential hazards had been identified in pre-evolution briefings, and controls had been discussed without the work being stopped to ensure that the work planning hazards analysis had been properly conducted. One work document required an electrician and a pipe fitter to verify electrical and fluid isolations by signature, but it was not clear what was expected of the workers; no specific tagout or lockout document was cited in this step.

Perform Work—The IWCP directive contains detailed requirements for the formal review and approval of work documents. Staff discussions and staff review of work packages substantiated that these requirements are effective and have been followed. Although formal procedures governing how to make changes to approved work documents are in place, two work packages contained significant changes that had been entered inappropriately as minor changes. This was not questioned by either the workers or the work supervisor. WCH appears to adequately prebrief and formally release work for accomplishment. Staff observations of pre-evolution briefings and field work activities revealed a strong and active line management presence.

Feedback and Continuous Improvement—The WCH processes for gathering and evaluating lessons learned is weak and fails to provide the planning process with useful information. For some individual work activities, feedback, particularly from the workers, appears to have been used actively to improve work planning and execution. However, these lessons did not appear to have been captured permanently and distributed widely to other work activities.

Work packages were sometimes written to encompass several jobs. By breaking these large work packages into smaller packages, post-job feedback and improvement could be accomplished more readily. A more formal process for obtaining post-job feedback and converting it to workable improvements is necessary to ensure that work process improvements are accomplished across all of the WCH projects. In most cases, the processes for capturing lessons learned and using them to improve work packages are not effective. Job debriefs are optional, limiting the effectiveness of the feedback system.

During the ISM Phase II system verification, WCH conducted several detailed internal assessments of the work planning and control process. Since then, however, assessments have been less formal and not conducted in accordance with predefined criteria or review approaches. Tools for performing such assessments were to be included in the guide that was to accompany the suite of oversight directives including DOE Policy 226.1A, *Department of Energy Oversight Policy*, and DOE Order 226.1A, *Implementation of Department of Energy Oversight Policy.* The delay in issuing this guide appears to be hindering the field in performing oversight effectively.

DOE Oversight—DOE oversight of the contractor's work planning and control processes appears to be effective. The staff reviewed several detailed assessments of the processes and found that, in general, DOE-RL personnel were familiar with the deficiencies in the contractor's system. However, the standards for work planning and control, as well as the criteria and review approach documents, are to be provided as part of the guide supporting DOE Order 226.1. Thus, the delay in issuing this guide also appears to be hindering DOE in improving its process for oversight of work planning and control at the activity level.