

March 19, 2002

The Honorable Jessie Hill Roberson
Assistant Secretary for Environmental Management
Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0113

Dear Ms. Roberson:

In a letter to the Secretary of Energy dated November 8, 2001, the Defense Nuclear Facilities Safety Board (Board) noted that the Department of Energy's Rocky Flats Field Office (DOE-RFFO) had performed a rigorous annual Integrated Safety Management (ISM) update review in early 2001. The review identified issues whose resolution would help improve the ISM System at the Rocky Flats Environmental Technology Site (RFETS). Two issues identified in this review addressed improvements needed in activity-level work planning and conduct of DOE-RFFO line oversight. The observations of the Board's staff provided in the enclosed report indicate that DOE-RFFO's progress in responding to the annual ISM update review in these areas has been slow. Based on review of these issues during a visit to RFETS in late February 2002, the Board believes that prompt, comprehensive actions in these areas are needed.

Progress toward improving the ISM System at RFETS will take on added importance with the planned increased reliance on subcontractors at the site. As noted in the enclosed report and indicated by DOE-RFFO during the Board's visit, actions to address some of the observations were still being developed at RFETS. The Board requests that DOE inform the Board of actions that address the observations in the enclosed report, as well as any actions aimed at improving the response to annual ISM update reviews at RFETS.

Sincerely,

John T. Conway
Chairman

c: Ms. Barbara A. Mazurowski
Mr. Mark B. Whitaker, Jr.

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

February 12, 2002

MEMORANDUM FOR: J. K. Fortenberry, Technical Director

COPIES: Board Members

FROM: D. F. Owen

SUBJECT: Activity-Level Work Planning and Feedback and Improvement at Rocky Flats Environmental Technology Site

This report documents observations made by the staff of the Defense Nuclear Facilities Safety Board (Board) with regard to actions being taken at the Rocky Flats Environmental Technology Site (RFETS) to (1) improve activity-level work planning and (2) better identify the causes and corrective actions for operational events as part of the feedback and improvement function of Integrated Safety Management (ISM).

Background. The majority of the high-hazard nuclear activities at RFETS involve facility decommissioning work performed by Kaiser-Hill in the site's major nuclear facilities. The variety of individual decommissioning activities at RFETS necessitates numerous activity-level work planning efforts identifying the specific scope of work, hazards, controls, and work procedures involved. As a result, sound activity-level work planning and effective Department of Energy (DOE) oversight of Kaiser-Hill's work planning efforts have particular importance for the safety of decommissioning activities at RFETS.

A memorandum from the Deputy Secretary of Energy to DOE's line management, dated September 28, 2000, noted that strengthening activity-level work planning, conducting effective line management oversight, and improving the use of feedback and improvement mechanisms are necessary to sustain and improve ISM across the defense nuclear complex. The memorandum also noted the need to make good use of annual ISM updates, as outlined in DOE G 450.4, *Integrated Safety Management Guide*. As pointed out in the Board's letter of November 8, 2001, DOE's Rocky Flats Field Office (DOE-RFFO) performed a rigorous annual ISM update in accordance with DOE G 450.4 in February 2001. This review identified the need to improve Kaiser-Hill's activity-level work planning, as well as the oversight provided by DOE-RFFO in this area.

Activity-Level Work Planning at RFETS. A number of occurrences during the past year indicate the continuing need for improvements in implementing the activity-level work planning requirements developed as part of the ISM System at RFETS. The following are some examples of such occurrences:

- ! A work crew in Building 374 was attempting to remove the actuator from a large valve in a utility steam system in December 2001. The work crew removed the wrong fasteners, breaching the steam system and allowing steam into the work area. This could have been a serious problem had it not been for an on-scene decision to proactively shut adjacent isolation valves; this precaution had not been specified in the work planning. The scope of the work had not been defined with sufficient detail to allow for the analysis of hazards and development of controls. Electrical and mechanical hazards and controls for the actuator had also not been identified during the hazard analysis for this activity. The work procedure provided insufficient detail to enable the work to be performed safely.
- ! During cleanout and equipment removal in a contamination-cell (C-cell) enclosure in Building 776 in August 2001, high airborne contamination levels occurred. The work activity was included in the broad range of cleanout activities; however, neither activity-specific hazards and safety controls nor work steps specific to the C-cell had been identified for this activity.
- ! A safety system in Building 707 (reference leg piping for the ventilation system) was inadvertently severed during removal of a wall in August 2001. The location of the ventilation system piping in the wall had not been identified by engineering personnel during work planning for the wall removal even though personnel had noted an adjacent pressure sensor.
- ! Unusual pressure fluctuations occurred in a glovebox during thermal stabilization of oily residues in Building 707 in February 2001. Work planning personnel had not incorporated into the activity Job Hazard Analysis or work instructions a Technical Safety Requirement (TSR) to sample and characterize feed material, as required by RFETS work planning requirements.

Mentoring of work planning personnel (those who develop hazard analyses, safety controls, and work procedures) was recommended as a result of DOE-RFFO's annual ISM update review to improve activity-level work planning at RFETS. In response, the development of a mentoring program was included in Kaiser-Hill's Site Safety Improvement Plan, issued in April 2001. Mentoring of RFETS work planning personnel had also been suggested in a staff report forwarded by the Board to DOE in April 2000. The staff considers mentoring to be an important improvement tool with the key attribute of knowledgeable personnel actively engaging with work planning teams during individual work planning efforts on (1) proper definition of work scope to support hazard analysis, (2) identification of hazards and safety controls during hazard analysis, and (3) proper incorporation of the identified controls into work instructions.

Following limited training of a single person in each major project in September 2001, Kaiser-Hill reported the commitment to institute a mentoring program as complete in early October.

Expectations or guidance for such a mentoring program, however, had not been developed, and meaningful mentoring during the course of work planning was not occurring to any appreciable extent across the major nuclear facilities. Following inquiries by the Board's staff in November and December 2001, broad expectations for mentoring of work planning personnel were issued by senior Kaiser-Hill management in mid-January 2002. Most of the examples of mentoring provided in these expectations were not focused on active engagement by mentors with work planning teams during specific work planning efforts. Specific actions for mentoring of work planning personnel were left undefined and were to be developed in the major RFETS projects. DOE-RFFO is reviewing the actions now being taken by Kaiser-Hill management to establish a mentoring program.

DOE's Oversight of Activity-Level Work Planning. DOE-RFFO's annual ISM update review resulted in a call for DOE-RFFO to enhance its oversight of activity-level work planning. It was noted that such oversight should target key points in the work planning process and should avoid overreliance on DOE's Facility Representatives to identify issues after work planning has been completed. In this regard, the Board's staff has the following observations:

- ! DOE-RFFO does not systematically review a reasonable sampling of activity-level work planning at RFETS.
- ! A focused assessment of activity-level work planning has not been conducted by DOE-RFFO in about 2 years.
- ! DOE-RFFO's assessment plans for 2002, provided to the Board's staff in early January 2002, do not include any specific assessment of activity-level work planning.
- ! DOE-RFFO's oversight of activity-level work planning is generally limited to evaluation of occurrences by relatively few individuals.

DOE-RFFO management indicated in discussions with the staff that actions to address these oversight issues are still under development, and no explicit plans are in place.

Feedback and Improvement. There have been several instances in which the cause of an occurrence has not been sufficiently explored and identified to support the development of sound corrective actions that can preclude recurrence. Causes are sometimes not linked to underlying deficiencies in work planning or to the failure to incorporate feedback from prior occurrences. Examples include the following:

- ! There were a number of occurrences throughout the year in which RFETS workers were moving or packaging nuclear material and did not ensure that they were meeting nuclear criticality mass limits in postings and procedures. Lessons learned from such events in early 2001 in Building 707 included the need for improvements in training and procedures to emphasize the responsibility of workers to comply with criticality mass limits before moving individual items. Following an inquiry by the Board's staff regarding similar events later in

the year in Building 371, it was determined that these lessons learned had not been effectively implemented in the Building 371 operations.

- ! In two of the examples discussed above (the C-cell occurrence and the oily residue occurrence), RFETS personnel did not explore and identify deficiencies in work planning applicable to these activities prior to inquiry by the Board's staff.
- ! In the case of the inadvertent severing of a safety system during wall removal in Building 707 (discussed above), RFETS did not identify and address a contributing cause until the staff inquired about the site's evaluation. Specifically, there was a lack of site guidance calling for engineering personnel to determine whether safety systems could potentially be compromised during decommissioning activities.

- ! A radiological control technician (RCT) in Building 771 received skin contamination in November 2001 after assisting a worker in minimizing a spill of oil from a component being disassembled. The RCT, assigned to monitor the evolution, was not required to be in the same chemical-resistant clothing as the worker. While action was taken in Building 771 to ensure that RCTs who may respond to an upset condition have the same level of personal protective equipment as the workers, the issue was not being addressed on a site-wide basis until an inquiry was made by the Board's staff.

- ! A required action to suspend operations upon identification of a failed TSR surveillance of ventilation system equipment in Building 707 was not taken for several days in June 2001. The investigation by RFETS did not determine a contributing cause until an inquiry was made by the Board's staff. A RFETS conduct-of-operations requirement—to immediately notify the on-duty shift manager upon identification of a TSR surveillance failure—was not clearly implemented in the TSR surveillance procedure.

DOE-RFFO has also noted problems with Kaiser-Hill's determination of cause. For example, DOE-RFFO identified a cause determination issue in early January 2002 for a chemical release event in Building 776. In discussions with the Board's staff, DOE-RFFO management noted that activities aimed at developing and tracking performance indicators aligned with the functions of ISM have recently been started at RFETS and may help improve cause determination in the future. Other actions to improve cause determination, however, are not defined.