

Memorandum

DATE: July 21, 2010

Report No. OAS-L-10-07

REPLY TO

ATTN OF: IG-34 (A10RL006)

SUBJECT: Report on "Integrated Safety Management at the Office of River Protection"

TO: Manager, Office of River Protection

INTRODUCTION AND OBJECTIVE

The Department of Energy (Department) regulates and inspects the safety of its own facilities and operations, many of which involve radioactive or hazardous materials. On October 15, 1996, the Department issued DOE Policy 450.4, *Safety Management System Policy*, which recognizes that Safety Management Systems provide a formal, organized process whereby people can plan, perform, assess, and improve the safe conduct of work. The Safety Management System process is institutionalized through Department directives and is incorporated into contracts to establish Department-wide safety management objectives, guiding principles, and functions. Department policy requires that safety be systematically integrated into management and work practices at all levels, thus enabling mission accomplishment as well as protection of the public, worker, and environment.

The Department's Office of River Protection (ORP) has responsibility for the storage, treatment, and disposal of over 53 million gallons of highly radioactive and hazardous waste generated during four decades of plutonium production. This waste is currently stored in 177 large underground tanks while it awaits construction of the Waste Treatment Plant; a facility that will treat and immobilize the waste. Due to the dangerous nature of these operations, it is imperative that ORP develop and implement an effective safety management system. Aware of the risks involved in safely managing this waste, in February 2009, ORP officials suggested that the Office of Inspector General review compliance with high radiation area requirements. In light of this request, we initiated this audit to determine whether the ORP has maintained an effective Integrated Safety Management (ISM) system at its contractors.

CONCLUSION AND OBSERVATIONS

We found that ORP had not always ensured that effective ISM systems were maintained by its contractor. Even though its own reviews and those performed by external oversight organizations revealed a number of problems with contractor safety systems, ORP had not always ensured that corrective actions were effective and that predictive analyses such as trending of findings were performed.

Safety Related Deficiencies

A review of ORP's contractor, Washington River Protection Solutions (WRPS), identified numerous deficiencies within the contractor's Radiation Control and Emergency Response Programs since taking over the tank operations contract on October 1, 2008. During that time four major reviews, performed by both Departmental officials and external oversight organizations, have revealed deficiencies with the contractor's ISM system. Examples of these findings include the following:

- In April 2009, the Richland Operations Office, in conjunction with ORP, performed an assessment of WRPS' Emergency Management Program. The assessment determined that the contractor's performance was marginal in 4 of the 10 program elements, including program administration, training and drills, emergency response organization, and emergency facilities and equipment, and provided an overall rating of marginal.
- In a January 2010 review, the Defense Nuclear Facilities Safety Board identified four deficiencies in the contractor's ISM system related to work planning and execution, including: (1) work planning directives were unnecessarily complex and confusing; (2) the hazard analysis process was not well defined or executed; (3) a team approach to walk-downs, verifications, and hazard analysis was not adequately employed; and, (4) the workforce modified work procedures ad hoc when the procedures could not be performed as written. These deficiencies resulted in work instructions that could not be followed as written and incomplete controls for authorized work.
- In a February 2010 review, ORP officials evaluated 26 separate functions within WRPS' Radiological Program based on the results of previously performed assessments and surveillances. Examples of functions evaluated included management, work planning, emergency preparation, and radiation control operations. Using a "stoplight" approach to evaluate each function, ORP officials found only four functions were considered sound (green); two functions already had corrective actions in progress (orange); and, 12 functions were rated marginal (yellow). Eight functions were considered to warrant attention (red), including corrective action, assessment program, contamination control, scene response, and field practices.
- In response to the February 2010 review, ORP conducted a formal assessment of WRPS's Radiation Control Program from February through April 2010. This latest assessment identified 16 findings. Significant findings cited in the assessment included:
 - ✓ Implementation of the Corrective Action Management System did not provide objective evidence of a process that resulted in management/quality improvement in the Radiation Control Safety Program;

- ✓ Implementing procedures were not sufficiently robust to insure that radiological work was performed consistently to regulatory standards;
- ✓ Radiation control work observed by the assessment team was not performed to acceptable standards; and,
- ✓ The WRPS Emergency Management Program did not integrate planning, preparedness, response and recovery activities, resulting in emergency responders not being able to ensure that they could effectively respond to and mitigate the consequences of radiological anomalies.

Furthermore, several of the deficiencies identified in areas such as high radiation area control, availability of decontamination stations, posting of radiological areas, and radiological safety training, had occurred previously, indicating that contractor corrective actions were not fully effective in preventing their reoccurrence. For example, the Defense Nuclear Facilities Safety Board's January 2010 review noted that tank farm employees were performing waste transfer operations at night without sufficient lighting. One of the significant lessons learned from a prior spill in 2007 was that waste transfers should not be conducted at night without adequate lighting. Additionally, an assessment performed in April 2008 found problems with high radiation area key controls. Similar findings were identified in a 2006 assessment, which noted that problems identified in a 2004 assessment had not been corrected.

Management of Corrective Actions

Weaknesses within WRPS may not have been effectively corrected because ORP had not implemented a comprehensive system of controls for corrective action oversight and management. DOE Guide 414.1-5, *Corrective Action Program Guide*, identifies a feedback and improvement process that begins with identification of issues through assessments and events, progresses through corrective action planning and implementation, and culminates with evaluation of the effectiveness of corrective actions. This process requires involvement by senior management in corrective action oversight, verification that corrective actions have been taken and are effective, and the use of trending to identify potential problem areas. However, ORP had not incorporated all of these aspects into an effective corrective action program.

Specifically, ORP senior management's oversight was focused on issue identification rather than on the entire corrective action management process. ORP had established the Assessment Program Committee, consisting of representatives of senior ORP management, whose primary purpose was to review planned and ongoing assessments. However, this approach did not provide sufficient focus on reviewing corrective actions, trending, or verification of the effectiveness of corrective actions taken. These responsibilities were assigned to individual managers and, as demonstrated by the various reviews outlined in this report, whatever actions they may have taken did not prevent reoccurrences. Although ORP did perform additional assessments, key activities that are part of an effective corrective action management program such as evaluation of

corrective action plans, effectiveness reviews, and trending were not effective in ensuring that deficiencies were corrected and prevented from reoccurring.

ORP also lacked an effective process for determining if corrective actions were effective. The responsibility for determining if a verification assessment was needed was assigned to the individual managers over each program. However, ORP policies and procedures did not require managers to provide a justification or reason why they did not perform an effectiveness assessment. Furthermore, there was no requirement for a group external to line management, such as the Assessment Program Committee, to review decisions on corrective action effectiveness assessments.

Additionally, ORP did not have a centralized system for monitoring contractor performance. Although ORP and its contractors managed several database systems that reported safety issues, it lacked a comprehensive corrective action program database to report, track, and close all ORP and contractor identified issues in a consistent manner.

Moreover, ORP did not have an effective program for trending in place. Individual managers were assigned the responsibility for performing trending. In fact, an internal assessment found that managers were not performing trending, as required by ORP guidance. Also, ORP's data tracking system for monitoring corrective actions did not have the functions needed to perform trending analysis. The database was designed to be able to perform these functions; however, the specific programming necessary to permit the performance of these tasks was never completed. There were also inconsistencies in data inputs into the database, including some data not being entered for certain fields or data being entered in nonstandard formats that made trending analysis difficult. Finally, ORP did not track issues and findings identified by its contractors. Although ORP had access to the contractor's corrective action management databases, it did not incorporate that information into its own tracking system for trending purposes. Instead, ORP required its contractors to perform trending analysis on those issues and findings they had identified and to provide the resulting information to ORP on a quarterly basis for review by the Assessment Program Committee.

Worker and Environmental Safety

Although none of the findings identified resulted in any significant contamination, injury of workers, or contamination of the environment, the number and types of findings are indicative of an overall weakness in WRPS's ISM system. A number of ORP officials indicated that, if left uncorrected, these deficiencies could eventually result in worker contamination and injury.

During the course of our audit we learned that ORP was aware of these issues and was developing corrective actions to address the previously described deficiencies. Several key actions being considered include the following:

- Suggesting a peer review of assessments of corrective action performed by ORP officials;

- Establishing a single point of contact under the Assessment Program Manager for data input into the ORP tracking system;
- Developing trending analysis tools and metrics based on those used by the Nuclear Regulatory Commission;
- Establishing a guideline for determining when verification assessments of corrective actions should be performed for findings of non-compliance that could affect quality, worker health, or safety; and,
- Developing modifications to its database software to allow for trending analysis.

SUGGESTED ACTIONS

To help ensure the development of an effective system of controls for oversight and corrective action management, we suggest that the Manager, ORP:

1. Evaluate and implement, as appropriate, the proposed corrective actions being developed; and,
2. Take necessary actions to ensure that senior ORP management is actively involved in all phases of the corrective action management process, including corrective action plan review and verification and trending of data.

Since no formal recommendations are being made in this report, a formal response is not required.

We appreciate the cooperation of your staff during this audit.

Daniel M. Weeber

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Attachments

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SCOPE AND METHODOLOGY

This review was performed between December 8, 2009, and May 5, 2010, at the Department of Energy's (Department) Office of River Protection (ORP) in Richland, Washington. The scope of our audit included a review of ORP's oversight of Integrated Safety Management (ISM) at its contractors. To accomplish the objective of this audit, we:

- Obtained and reviewed Departmental directives and guidance concerning ISM and Corrective Action Management;
- Obtained and reviewed ORP implementing procedures concerning assessment program and corrective action management;
- Reviewed the results of assessments and surveillances of contractor performance related to ISM;
- Held discussions with current and former ORP officials concerning oversight activities of contractor ISM performance; and,
- Reviewed proposed changes to ORP's integrated assessment program.

We conducted this performance audit in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We also assessed performance measures in accordance with the Government Performance and Results Act of 1993. We found that the Department had established a performance measure for Washington River Protection Solutions to successfully complete its Phase I and Phase II verification of ISM System implementation. We did not assess the reliability of computer-processed data, since we did not rely on it to accomplish our audit objective. An exit conference was held on June 29, 2010.