



U.S. Department of Energy
Office of Inspector General
Office of Audits and Inspections

AUDIT REPORT

Integrated Safety Management at the Idaho
National Laboratory

OAS-L-14-10

August 2014



Department of Energy
Washington, DC 20585

August 18, 2014

MEMORANDUM FOR THE MANAGER, IDAHO OPERATIONS OFFICE

A handwritten signature in black ink, appearing to read "David Sedillo".

FROM: David Sedillo
Western Division Director
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on "Integrated Safety Management at the Idaho National Laboratory"

BACKGROUND

The Department of Energy's (Department) Idaho National Laboratory (INL) employs three main contractors to perform the majority of its work. Much of this work involves hazards that pose risk to employees and the environment. For example, Battelle Energy Alliance, LLC (BEA) performs a wide range of activities in managing the Department's nuclear energy research; CH2M WG Idaho, LLC (CWI) performs environmental cleanup of contaminated facilities under the Idaho Cleanup Project; and the Idaho Treatment Group, LLC operates the Advanced Mixed Waste Treatment Facility for packaging transuranic waste.

In September 2013, the Secretary of Energy reaffirmed the Department's commitment to protect the health and safety of employees, those residing in communities where the Department operates, and any others affected by the Department's work. The Secretary emphasized the need to extend safe work practices and responsibility throughout all levels of work activities and operations to enable the Department to create an effective safety culture. Department Policy 450.4A, *Integrated Safety Management Policy*, also requires the Department to systematically integrate safety into management and work practices at all levels. Given the Department's emphasis on safety, we conducted this audit to determine whether the Department had fully implemented Integrated Safety Management (ISM) at the INL.

RESULTS OF AUDIT

In response to significant safety events in recent years, the Idaho Operations Office (Idaho) and its contractors have taken a number of steps to fully implement ISM into site work processes. In particular, between Fiscal Years (FY) 2011 and 2013, a number of events, some of which were serious, occurred at all three contractors that pointed to weaknesses in certain ISM core functions. We noted that Idaho and its contractors made notable improvements to ISM core functions and emphasized the responsibility of all employees for safety. In fact, recent Department data indicates improvements in safety trends since the safety events occurred. In

addition to actions already taken by management, we identified opportunities to further enhance safety at INL. Specifically, we noted certain weaknesses with safety analyses, supervision and safety controls that could benefit from increased management attention.

Safety Events

We reviewed 59 safety incidents that occurred between FYs 2011 and 2013 and found recurring weaknesses in the core functions of ISM at each of the three contractors' work sites. In particular, in approximately 50 percent of the incidents we found that the hazards were not adequately analyzed before work started or controls were not developed and implemented to address the hazards that were known to exist. We also found a similarly high percentage of incidents where employees failed to perform work within established controls. The following examples are indicative of the weaknesses we observed:

- Contractors did not always adequately identify and analyze the hazards associated with their work. For example, after discovering unusual labeling and packaging of plutonium fuel plates at the Zero Power Physics Reactor, a BEA Nuclear Facility Manager failed to halt work to fully identify and analyze the hazards, resulting in the release of plutonium material, 16 employees being contaminated and the facility being shut down for 9 months.
- Contractors did not always establish adequate controls to mitigate hazards and prevent incidents from occurring. For example, BEA did not incorporate sufficient controls for monitoring beta radiation and stopping work when equipment registered high levels of radiation at the Hot Fuel Examination Facility. As a result, a worker was exposed to high levels of beta radiation.
- Contractors did not always perform work within established controls. For example, CWI subcontract workers attempting to lift and move a 7, 800 pound radiation shield door at the Integrated Waste Treatment Unit did not follow operating instructions for the new lifting equipment. As a consequence, both the lifting equipment and door toppled.

While many of the safety events were of a less serious nature, they pointed to ISM weaknesses that, if not addressed, could have serious implications for the INL. During our review, however, we noted that contractor and Idaho management were well aware of these problems and had taken steps to strengthen work processes that contributed to the events.

Actions to Improve Safety

In response to the events above, Idaho and its contractors took steps to strengthen procedures, training and oversight. We found significant efforts in place to ensure employee involvement and overall accountability for safety. We also noted that safety trends appeared to be improving since the events occurred. Examples of steps taken to improve ISM include:

- Contractors communicated and reiterated employee responsibility through written policy, safety posters and other visual reminders, continuous learning opportunities, stop work authorities and individual performance goals. Each of the contractors included safety elements in their employees' performance plans and considered performance to those standards in their appraisals. In some cases, management took further action to reassign or terminate individuals with questionable safety judgment.
- Idaho involved itself in the contractors' high consequence incidents as soon as the incidents occurred. Idaho reviewed and approved event reports, causal analyses and the corrective actions designed to improve safety. Facility Representatives and other Subject Matter Experts reviewed corrective actions and oversaw their implementation as well as observed daily operations at the site.
- Idaho held its contractors accountable with fee adjustments in response to certain safety weaknesses.
- Idaho received monthly and/or quarterly performance reports from all three contractors and in FY 2013 initiated changes to the quarterly report to improve identification of safety issues. Strategic and functional performance areas, such as nuclear safety, were rated on a quarterly basis. Contractors also reported monthly on various safety criteria. Our review of the trends in these reports indicated that, generally, ISM implementation was improving.

Overall, we concluded that Department and contractor officials were dedicated to ensuring safe operations at the INL.

Issues Yet to be Fully Resolved

Despite the positive steps taken by Idaho and its contractors, certain weaknesses, in our judgment, warrant continued management attention, such as:

- Weaknesses in Documented Safety Analyses (DSAs) were cited as contributing to a substantial number of the safety events. DSAs are required for nuclear facilities and describe facility hazards and the measures to mitigate them. As such, DSAs must be up-to-date to adequately protect workers. Although the Department and its contractors generally conducted annual reviews of the DSAs as required, these reviews failed to sufficiently identify existing hazards such as plutonium fuel plates at the Zero Power Physics Reactor and multiple unreviewed safety questions at various facilities that contributed to safety events. Even though we understand the annual reviews cannot identify every hazard that might result in a safety event, these hazards can lead to catastrophic consequences. As such, Idaho and its contractors could benefit from revisiting the effectiveness of the annual review process to ensure it is capable of identifying significant weaknesses in existing DSAs.

- A December 2010 common cause analysis conducted by BEA found that supervision had been less than adequate and that workers were being placed in "near hit" situations. This weakness continued to contribute to safety events with all contractors that occurred through FY 2013.
- Prior reviews have identified that insufficient engineered controls have contributed to safety events. Engineered controls place a barrier between the hazard and the worker and include radiation shielding and physical barriers such as glove boxes and hoods. Essentially, engineered controls reduce or eliminate the need for human decisions about protective measures. Both Department and contractor reviews of safety events identified the need for improvements in engineered controls.

SUGGESTED ACTIONS

Management at the Idaho Operations Office is well aware of the problems, and is taking or has begun to take appropriate actions. Therefore, we are not making formal recommendations in this report. However, we suggest that the Manager, Idaho Operations Office continue to improve the annual DSA review process, ensure adequate supervision and reinforce the need for engineered controls.

Attachment

cc: Deputy Secretary
Chief of Staff

OBJECTIVE, SCOPE AND METHODOLOGY

OBJECTIVE

The objective of this audit was to determine whether the Department of Energy (Department) has fully implemented Integrated Safety Management (ISM) at the Idaho National Laboratory (INL).

SCOPE

This audit was conducted between October 2013 and August 2014, at the Idaho Operations Office (Idaho), Idaho Falls, Idaho and the INL, Idaho Falls, Idaho. The scope included the implementation of the ISM System by Idaho and its three main contractors during Fiscal Years 2011 through 2014. The audit was conducted under Office of Inspector General Project Number A14ID002.

METHODOLOGY

To accomplish our audit objective, we:

- Reviewed applicable laws and regulations pertaining to the implementation of ISM.
- Examined prior reports issued by the Office of Inspector General, the Government Accountability Office, and the Department.
- Interviewed officials at Idaho and the three contractors at the INL to gain an understanding of their roles and responsibilities as well as procedures for managing the ISM.
- Judgmentally selected a sample of 59 Occurrence Reporting and Processing System (ORPS) events from a universe of 207 events at the INL. This selection was based on apparent trends, recurring events, significant issues, and/or an overall representation of contractor responsibilities. Because a judgmental sample of reports was used, results are limited to the events selected.
- Selected a judgmental sample of performance plans and appraisals to verify that safety was integrated at all levels of the contractors' organizations. Our sample included the review of 17 people associated with 9 ORPS events in order to evaluate contractors' implementation of the ISM principle for line management responsibility. Because a judgment sample was used, results are limited to the events selected.
- Reviewed reporting significance categories Operational Emergency and Significance Category 2 of the ORPS events to verify the recurrence of insufficient Documented Safety Analysis as event causes.
- Analyzed safety trends gathered and reported by Idaho and the contractors.

- Reviewed Idaho's determination of contractors' fee related to safety.

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 objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. In particular, we assessed compliance with the *GPR Modernization Act of 2010* and found that performance measures had been established for the ISM. 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 did not rely on computer-processed information to achieve our audit objective.

Management waived an exit conference.

FEEDBACK

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