

OE-3: 2024-01



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Effectively Managing Safety Issues Across the Complex: Challenges, Successes, and Recommendations

PURPOSE

Everyone's active participation in the identification and resolution of issues before they result in negative consequences provides the best outcomes for safety and mission accomplishment. This Operating Experience Level 3 (OE-3) document provides information to more proactively and effectively resolve safety issues across the Department of Energy (DOE) complex. More specifically, this OE-3 raises awareness of significant and extensive weaknesses identified in the management of safety issues in DOE. It also provides recommendations to improve the management of safety issues based on highly successful practices used by some DOE contractors and other Federal agencies.

BACKGROUND

The Department sets expectations for the safe conduct of work and general requirements for managing issues and correcting their causes through DOE Policy 450.4A, *Integrated Safety Management Policy*, DOE Order 414.1D, *Quality Assurance*, and 10 CFR 830, *Nuclear Safety Management*.

The Department's policy is "that work be conducted safely and efficiently and in a manner that ensures protection of workers, the public, and the environment...The Department's ultimate safety goal is zero accidents, work-related injuries and illnesses, regulatory violations, and reportable environmental releases." The Department expects that "safe performance of work and involvement of workers in all aspects of work performance are core values that are deeply, strongly, and consistently held by managers and workers." (See DOE Policy 450.4A.) Per DOE Order 414.1D, DOE contractors "[u]se appropriate national or international consensus standards consistent with contractual and regulatory requirements, and Secretarial Officer direction" along with requirements in the order to establish their procedures and practices for managing issues. These requirements are implemented via a graded approach, "ensuring that the levels of analyses, documentation, and actions used to comply with requirements are commensurate with" relevant DOE-approved riskbased factors.

The DOE Office of Enterprise Assessments (EA) Independent Assessment of U.S. Department of Energy Contractors' Management of Safety Issues (April 2024) assessed the implementation of these requirements and the resolution of safety issues from fiscal year 2019 to 2023. This included assessing the management of nearly 4,000 safety issues by 9 contractors managing nuclear facilities for four different program offices.

OPERATIONAL HISTORY

In its assessment, EA identified that the assessed contractors adequately managed approximately three of every four issues but less than two thirds of the hazardous energy control and conduct of operations issues. Issues that were inadequately managed tended to be more complex or led to near misses to significant consequences. Additionally, EA identified significant and extensive weaknesses in the management of safety issues that allowed, in many cases, compromises in hazard controls for worker and/or nuclear safety, and the defense-in-depth approach for nuclear safety to develop and persist for extended periods of time.



The significant and extensive weaknesses in the management of safety issues are:

- Inadequate Involvement in Issue Identification: Working-level (nonsupervisory) personnel of five contractors identified no or only a small portion of the issues, and most functional area experts of six contractors were not looking for adverse trends in issues.
- Infrequent Identification and Correction of the Causes of Issues: Eight contractors determined the causes of only 1 to 23% of their reviewed issues. Most contractors rarely used their most rigorous and effective tools to resolve issues.
- Untimely Issue Resolution: Six contractors did not resolve up to 14% of their safety issues in a timely manner. Issues with fire protection systems at two sites were not resolved for over 10 years.

Several other weaknesses also impeded the resolution of safety issues, including:

- Contractor and DOE personnel commonly misunderstanding DOE requirements.
- Contractor personnel identifying hundreds of noncompliances as optional opportunities for improvement, lessons learned, or suggestions, instead of issues requiring resolution.
- Contractors typically documenting apparent cause and root cause analyses months to more than a year after the issues were identified, delaying corrective actions.
- Five contractors inadequately monitoring the age of open issues.

Unresolved, the weaknesses increase the likelihood of safety issues with more significant consequences including mission impacts and fatalities.

The EA report also identified many practices of DOE contractors and other Federal agencies that can be the basis for improving the management of safety issues, and other issues, across the Department.

Based on the highly successful practices of some DOE contractors and other Federal agencies, more significant improvements in the management of safety issues within DOE may be attained by:

- Lowering the Threshold for Entries into Issues Management Systems: This substantially increases the number of issues identified, corrected, and trended.
- Training all Personnel on the Basic Steps and Expectations for Managing Issues: This gets more workers involved in identifying and correcting safety issues; key aspects of safe work performance. This also results in resolving more precursors before events with significant consequences occur.
- Determining the Causes of More Issues and in a Timely Manner: A few DOE contractors and other Federal agencies determine causes of more issues (e.g., for 30 – 50% of their issues, including issues that did not result in significant consequences but could have) and improved their processes and/or trained personnel to determine causes typically within two days or at most within two months of issue identification. These practices resulted in more effective and timely corrective actions, precluding recurrence and reducing the consequences of subsequent safety issues because more barriers, or layers of defense, providing safety remain.
- Increasing Managers Engagement and Oversight of Issues to Ensure Timely Resolutions: A few DOE contractors' and other Federal agencies drive the resolution of issues to be within six months of identification. Due date extensions are escalated to higher levels of management for approval to ensure delays are justified.

RECOMMENDATIONS

 Periodically train all personnel on the basic steps and expectations for identifying and resolving issues, including correcting and trending less significant issues to identify and resolve more precursors.

- Annually train personnel responsible for managing issues on:
 - simple techniques for determining causes (e.g., the five-why method),
 - when to use other issues management tools and resources (e.g., effectiveness reviews and qualified causal analysts, respectively), and
 - actions that provide enduring effects to correct the causes of more issues before significant consequences occur due to recurring performance weaknesses and/or degrading controls.
- Identify to senior onsite management each issue over two years old, the barrier(s) preventing the resolution of each, and proposed actions to overcome these barriers to ensure these issues are being resolved in a timely manner.
- Increase the oversight of the management of safety issues associated with the conduct of operations and hazardous energy control.
- Evaluate the applicability of the strengths, weaknesses, and detailed recommendations in the EA report and establish, as warranted, performance objectives for achieving yearly improvements over the next five years in the timely identification and correction of issues, adverse trends, and their causes.
- Monitor safety performance and performance to agreed-upon yearly objectives, and take action as warranted to ensure effective and timely resolution of the causes of safety issues per the DOE-approved graded approach.
- Send questions on DOE requirements for managing issues to <u>qualityassurance@hq.doe.gov</u>.

SUMMARY

Although the assessed contractors adequately managed three of every four reviewed issues, they demonstrated significant weaknesses in the management of safety issues, especially of more complex issues or near misses to significant safety consequences. Given the broad extent of these weaknesses amongst the assessed contractors, as well as common misunderstandings of DOE requirements that contributed to these weaknesses, contractors that were not assessed may also be susceptible to these weaknesses. Unresolved, the weaknesses increase the likelihood of safety issues with consequences exceeding the Department's ultimate safety goal and impacting its missions.

This OE-3 and the EA report provide recommendations to resolve the likely causes of the observed weaknesses. Many of these recommendations would also help to correct the causes of issues in other areas to prevent rework and delays due to recurring issues that can impact the Department's missions.

REFERENCES

DOE Policy 450.4A Chg 1 (MinChg), Integrated Safety Management System Policy

DOE Order 414.1D, Quality Assurance

10 CFR part 830, Nuclear Safety Management

Independent Assessment of U.S. Department of Energy Contractors' Management of Safety Issues (April 2024)

Questions regarding this OE-3 document can be directed to <u>DOE-EA-30-Inquiry@hq.doe.gov</u>.

This OE-3 document requires no follow-up report or written response.

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