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**DEFENSE NUCLEAR FACILITIES  
SAFETY BOARD**

Washington, DC 20004-2901



May 10, 2017

The Honorable James Richard Perry  
Secretary of Energy  
U. S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585-1000

Dear Secretary Perry:

In January 2017, the Department of Energy (DOE) approved DOE Order 232.2A, *Occurrence Reporting and Processing of Operations Information*. DOE Order 232.2A includes certain changes that the Defense Nuclear Facilities Safety Board (Board) considers significantly weaken occurrence reporting, negatively affect safety oversight, and reduce opportunities for organizational learning at defense nuclear facilities. The changes of concern are described in the enclosed report.

Of particular concern, deletion of the requirement to report a Potential Inadequacy of the Safety Analysis may impede line and independent oversight organizations' awareness and ability to effectively oversee the immediate actions taken and the follow-on Unreviewed Safety Question Determination. Furthermore, deletion of requirements for timely notification and comprehensive final reports for certain events of safety significance may impede safety oversight and organizational learning at defense nuclear facilities. The Board supports supplemental efforts by DOE to address these concerns for defense nuclear facilities, such as the efforts noted in the enclosure. Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests that DOE provide a report to the Board regarding any supplemental actions planned by line management to ensure safety oversight is not degraded at defense nuclear facilities prior to implementing DOE Order 232.2A.

Sincerely,

A handwritten signature in black ink, appearing to read "Sean Sullivan", with a long horizontal flourish extending to the right.

Sean Sullivan  
Chairman

Enclosure

c: The Honorable Frank G. Klotz  
Ms. Sue Cange  
Mr. Joe Olencz

# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

## Staff Issue Report

March 23, 2017

**MEMORANDUM FOR:** S. A. Stokes, Technical Director

**COPIES:** Board Members

**FROM:** D. Owen, D. Minnema

**SUBJECT:** Review of Revised DOE Order 232.2A, *Occurrence Reporting and Processing of Operations Information*

Members of the Defense Nuclear Facilities Safety Board's (Board) staff reviewed the changes in Department of Energy (DOE) Order 232.2A [1] made in January 2017 from the prior revision, DOE Order 232.2, *Occurrence Reporting and Processing of Operations Information* [2]. The review team identified safety concerns regarding the deletion of certain occurrence reporting requirements from DOE Order 232.2. The Board's staff members consider the changes to occurrence reporting resulting from these deleted requirements will likely negatively affect safety oversight and organizational learning at defense nuclear facilities.

**Background.** DOE issued DOE Order 232.2 in 2011 to replace DOE Manual 231.1-2, *Occurrence Reporting and Processing of Operations Information* [3]. Since 2011, DOE Order 232.2 has provided requirements for occurrence reporting at DOE sites. As with DOE Order 232.2 and DOE Manual 231.1-2, revised DOE Order 232.2A applies to a wide range of DOE sites and DOE elements, including defense nuclear facilities.

The requirements of DOE Order 232.2 and DOE Manual 231.1-2 provided for a robust system of occurrence reporting. This system included timely written notification reports (within two business days of discovery) for occurrences with safety significance followed by written final reports with requirements to comprehensively report on causal analysis, corrective actions, and any lessons learned. For the final report, DOE Order 232.2 and DOE Manual 231.1-2 allowed substantial time (up to 45 days) for completion and documentation of causal analysis, development of corrective actions, and addressing any lessons learned. This comprehensive reporting timeline encourages organizational learning at individual sites and across the complex.

From September to December 2016, a DOE Integrated Project Team conducted an effort to revise DOE Order 232.2. Members of the Board's staff provided comments on draft Order revisions to DOE in December 2016 that were not incorporated. On January 17, 2017, the Deputy Secretary of Energy approved revised DOE Order 232.2A.

Revisions in DOE Order 232.2A include changing the established six-tier system for categorizing occurrence reporting criteria (Operational Emergency, Significance Categories 1-4,

and Significance Category R [recurring]) to a three-tier system (High Level, Low Level, and Informational Level Reports) and several changes to protocols for reporting and occurrence reporting criteria.

In early February 2017, the DOE Office of Environment, Health, Safety and Security (DOE-AU) provided implementation guidance regarding DOE Order 232.2A. The guidance indicated that the revised Order would not be implemented until DOE-AU certifies that required software changes to DOE's occurrence reporting database, including pilot testing of the changes, are completed. DOE-AU estimates that the software changes and testing, as well as necessary site contract modifications, will not allow for complex-wide implementation of the revised Order until summer 2017. In the interim, the DOE-AU guidance states that DOE Order 232.2 will continue to be used for occurrence reporting at DOE sites.

**Occurrence Reporting Changes of Concern.** Certain changes in protocols for occurrence reporting and reporting criteria in revised DOE Order 232.2A, resulting from deletion of requirements in DOE Order 232.2, will impact the robust system of occurrence reporting afforded by DOE Order 232.2 and DOE Manual 231.1-2. These changes are discussed below. The impacts of these changes to safety oversight and organizational learning at defense nuclear facilities will be discussed in the follow-on section.

*Deleting the Requirement to Report a Potential Inadequacy of the Safety Analysis (PISA)*—DOE deleted the requirement to report PISAs in DOE Order 232.2A. The PISA occurrence report has provided for formal, timely, and comprehensive notification to the site office, DOE headquarters line management, and DOE's independent oversight organizations on the situation arising from the PISA.<sup>1</sup> Such occurrence reports include the immediate actions taken (e.g., compensatory measures, operational restrictions) to place or maintain the facility in a safe condition while the PISA is being addressed through the unreviewed safety question (USQ) process. Without occurrence reporting of PISAs, DOE will need to establish another mechanism to meet the notification requirement contained in 10 CFR Part 830.

*Deleting the Requirements to Issue Separate Notification and Final Reports for Occurrences Designated as Low Level Reports*—DOE deleted requirements to issue separate written notification and final reports for occurrences designated as Low Level Reports that largely correspond to Significance Category 3 occurrences in DOE Order 232.2 (note: separate reports are required for occurrences designated as High Level Reports). With this change DOE also deleted requirements to report on causal analysis and corrective actions for occurrences designated as Low Level Reports. Examples of such occurrences include certain criticality safety deficiencies; violations of certain credited hazard controls in the documented safety analysis; performance degradation of safety structures, systems, and components (SSCs); actuation of safety SSCs resulting from an unsafe condition; and discovery of suspect/counterfeit items installed in safety SSCs.

With this change, only one report ("Written Notification/Final Report") is required to be issued within 10 business days. In DOE Order 232.2, the Written Notification Report was

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<sup>1</sup> 10 Code of Federal Regulations (CFR) Part 830, *Nuclear Safety Management*, requires a DOE contractor to notify DOE of the situation upon discovery or being made aware of a PISA.

required within 2 business days, and up to 45 days was allowed for the Final Report to provide for reporting of comprehensive investigative information including causal analysis, corrective actions, and lessons learned. This change therefore negatively impacts the required timeliness of initial reporting (10 business days could be more than 2 weeks at some defense nuclear facilities). Furthermore, the allowance of only 10 days for the single report greatly restricts the time allowed for developing and reporting on any investigative information for these occurrences, including causal analysis, corrective actions, and lessons learned.

*Downgrade of Positive USQ Reporting*—Positive USQs generally identify safety issues with nuclear facility safety bases, including issues arising from incomplete or deficient accident analysis and identification of controls. The DOE Order 232.2 reporting criterion for reporting of a positive USQ is a Significance Category 2 occurrence, which largely corresponds to a High Level Report in DOE Order 232.2A. However, DOE downgraded reporting of a positive USQ to a Low Level Report in DOE Order 232.2A. As noted above for Low Level Reports, this change will impact the required timeliness of initial reporting of the USQ and restrict the time allowed for reporting of any follow-up investigative or other information regarding response to the positive USQ.

This downgrade also eliminates the formal approval of the Final Report by the DOE Facility Representative as required by DOE Order 232.2A for a High Level Report (and DOE Order 232.2 for a Significance Category 2 report). The DOE Facility Representative’s approval is a warranted check that the Final Report complies with the Order, including proper causal analysis and establishment of effective corrective actions.

*Deletion of Requirement and Expectation for Categorizing Near Miss and Management Concern Occurrences*—Reporting criteria for near miss and management concern occurrences cover events that do not meet other specific reporting criteria, and can include events with consequences or implications ranging from very low to highly serious or severe. DOE Order 232.2 contains a requirement and expectation for near miss and management concern occurrences to be categorized as Significance Category 1, 2, 3, or 4, corresponding to High Level, Low Level or Informational Level Reports in DOE Order 232.2A, as warranted by evaluation of risk and impact. DOE deleted this requirement and expectation in DOE Order 232.2A, which stipulates that these occurrences can only be designated as Informational Level Reports. As with Low Level Reports, Informational Level Reports do not require separate notification and final reports.

*Deletion of Requirement on Depth of Causal Analysis Included in Final Reports*—DOE Order 232.2 contains a key requirement regarding the depth of causal analysis that must be reported in Final Reports; specifically, “In order to achieve the ISM [integrated safety management] goal, organizations must learn from occurrences and near misses by going beyond surface level causal analysis to understand how the underlying sources of operational vulnerability combined to produce unintended results. An occurrence analysis must explain how failure(s) emerged from a normally safe and reliable system to provide the understanding required to improve systems and processes and prevent future accidents.” Rather than specify this expected level of reporting, DOE Order 232.2A deletes this requirement and calls for reporting of identified causes based on locally approved procedures. Such procedures may be

inconsistent and not result in reporting of causal analysis at the level of depth and rigor required by DOE Order 232.2

*Deletion of Requirement on Addressing Need for Extent-of-Condition Review in Final Reports*—DOE Order 232.2 contains a requirement to address the need for an extent-of-condition review in Final Reports. DOE Order 232.2A deletes this requirement and only calls for Final Reports to include results of any extent-of-condition review, if performed. This change eliminates reporting of an important decision by facility line management following an occurrence—whether an extent-of-condition review is warranted.

*Allowance to not Report Informational Level Reports*—DOE Order 232.2A contains a new allowance stating: “Informational Level Reporting can be tailored per Program Office direction to only be captured in local issues management systems. Program Offices have the authority to determine which Informational Level Reports will be submitted to the ORPS [Occurrence Reporting and Processing System] database.” Such allowance, if used for all Informational Level Reports, would delete reporting for occurrences that include certain fires at nuclear facilities, late surveillance testing of SSCs, degradation of certain SSCs, events impacting emergency response capability, discovery of certain suspect/counterfeit or defective items, near miss events, and management concerns.

**Negative Impacts to Safety Oversight and Organizational Learning.** The changes noted above in DOE Order 232.2A to the robust system of reporting called for by DOE Order 232.2 and DOE Manual 231.1-2 will impede awareness of important information regarding events of safety significance by line and independent oversight organizations within DOE. Reduction of comprehensive occurrence reporting can impede safety oversight by upper-level line management and DOE’s independent oversight organizations. Such reduction in reporting can impede communication and oversight of safety performance issues that can be revealed during investigation and causal analysis of an event that is reported under the requirements of DOE Order 232.2.

A stated objective of DOE Order 232.2A is to promote organizational learning consistent with DOE’s Integrated Safety Management System goal of enhancing mission safety and sharing effective practices to support continuous improvement. Organizational learning is a key focus area for a positive safety culture as discussed in DOE Guide 450.4-1C, *Integrated Safety Management System Guide* [4], and the disseminating and reviewing of occurrence information between DOE elements and sites is a foundational element of organizational learning. Reducing the requirements for comprehensive reporting of events of substantial safety significance in DOE Order 232.2A, including many of the events designated Low Level Reports, management concerns, and near miss events, negatively impacts that foundation. An example of information routinely shared between sites through comprehensive occurrence reporting includes observations of failures and/or quality control problems in respirators, anti-contamination clothing, workplace radiological monitoring instruments, and other equipment commonly used within the DOE complex.

Some ways that the reduced level of reporting caused by the changes in DOE Order 232.2A can impede safety oversight and organizational learning include:

- Lack of the requirement to report PISAs may impede line and independent oversight organizations' awareness of the PISA and ability to effectively oversee the immediate actions taken and the follow-on USQ determination. While PISAs that result in a positive USQ will be reported under the positive USQ reporting criterion, lack of any occurrence reporting for PISAs that do not result in a positive USQ will impede other nuclear facilities' ability to benefit from any insights or lessons learned associated with the safety issue(s) of the PISA.
- Lack of requirements for timely notification and comprehensive final reports for certain events of safety significance, such as a positive USQ, SSC degradation, and a higher-level management concern or near miss event, may impede line and independent oversight organizations' safety oversight of these events. Lack of such reporting will impede organizational learning at other nuclear facilities due to lack of comprehensive causal analysis and corrective action information.

**Conclusion and Path Forward.** Members of the Board's staff consider that the aforementioned changes to the occurrence reporting requirements in DOE Order 232.2A substantially impact the robust system of reporting that has been provided by DOE Order 232.2 and its predecessor directive, DOE Manual 231.1-2. Consequently, safety oversight by line and independent oversight organizations, as well as organizational learning, will likely be adversely affected at defense nuclear facilities.

Representatives of the National Nuclear Security Administration (NNSA) and the DOE Office of Environmental Management (DOE-EM) informed Board staff members that NNSA and DOE-EM are considering issuing supplementary requirements for occurrence reporting under DOE Order 232.2A for DOE sites with defense nuclear facilities. These efforts are aimed at determining any supplementary requirements prior to implementing DOE Order 232.2A in the coming months. Such supplementary direction by NNSA and/or DOE-EM may address some or all of the safety concerns noted above. Members of the Board's staff believe these concerns warrant consideration by NNSA and DOE-EM in determining whether to issue any supplementary requirements to DOE Order 232.2A for defense nuclear facilities.

## References

- [1] Department of Energy, *Occurrence Reporting and Processing of Operations Information*, DOE O 232.2A, January 2017.
- [2] Department of Energy, *Occurrence Reporting and Processing of Operations Information*, DOE O 232.2, August 2011.
- [3] Department of Energy, *Occurrence Reporting and Processing of Operations Information*, DOE Manual 231.1-2, August 2003.
- [4] Department of Energy, *Integrated Safety Management System Guide*, DOE Guide 450.4-1C, September 2011.