

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
OFFICE OF NEW REACTORS  
WASHINGTON, DC 20555-0001

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**NRC DRAFT REGULATORY ISSUE SUMMARY 2017-XX  
IDENTIFYING AND REPORTING HUMAN PERFORMANCE INCIDENTS**

**ADDRESSEES**

All holders of an operating license or construction permit for a nuclear power reactor under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," except those that have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

All holders of a power reactor combined license under 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants."

**INTENT**

The U.S. Nuclear Regulatory Commission (NRC) is issuing this regulatory issue summary (RIS) to remind licensees of the requirements regarding reporting human performance incidents under 10 CFR 50.73, "Licensee event report system," and how to properly report those matters. This RIS specifically focuses on 10 CFR 50.73(b)(2)(ii)(J), which requires a narrative description for each human performance related root cause discussing the causes and circumstances. Paragraph 50.73(b)(2)(i) of 10 CFR requires a clear, specific, narrative description of what occurred so that knowledgeable readers conversant with the design of commercial nuclear power plants, but not familiar with the details of a particular plant, can understand the complete event. No specific action or written response is required by this RIS.

**BACKGROUND INFORMATION**

Humans are integral to the safe operation of a nuclear power plant. In the late 1970s, the NRC began to focus on ensuring adequate training of plant staff to perform their assigned tasks. The NRC studied the effects of shift work on health and whether control room simulators would improve training, both factors affecting performance. The NRC uses the Human Factors Information System to store and track information about how various human contributions affect safety-related events. The agency uses information reported pursuant to 10 CFR 50.73(b)(2)(ii)(J), as a means to monitor and track human performance by highlighting concerns in the areas of training, procedures, fitness for duty, oversight, problem identification and resolution, communication, human system interface environments, and work planning and practices. This information is used to assist in programmatic oversight of training, procedures, safety culture, human system interface, communication, and inspections. Specifically, the information is used to support the Reactor Oversight Process (ROP) by tracking and trending various levels of human performance-related causes of safety-significant events, identifying

precursors, and providing either plant-specific or generic insights into ROP cross cutting areas, which include human performance, problem identification and resolution, and a safety-conscious work environment.

## **SUMMARY OF ISSUE**

### Relevant Regulations and Guidance for Reporting of Incidents

The information in NUREG-1022, "Event Report Guidelines 10 CFR 50.72 and 50.73,"<sup>1</sup> provides guidance on the reporting requirements of 10 CFR 50.72, "Immediate notification requirements for operating nuclear power reactors," and 10 CFR 50.73, "Licensee event report system." The regulations in 10 CFR 50.73(b)(2)(i) require a licensee to provide a clear, specific, narrative description of what occurred so that knowledgeable readers conversant with the design of commercial nuclear power plants, but not familiar with the details of a particular plant, can understand the complete event. Paragraph 50.73(b)(2)(ii)(J) of 10 CFR requires that event descriptions provide a discussion of the cause(s) and circumstances for each human performance-related root cause.

### Appropriate Level of Information in Licensee Event Reports

A review conducted by the NRC of Licensee Event Reports (LERs) submitted in 2014 and 2015 indicates that more detailed descriptions of the cause(s) and circumstances for each identified human performance root cause are needed to provide complete and comprehensible information for the NRC staff to appropriately analyze and improve oversight of power plant human performance.

### Example One

Licensee Event Report 317/2016-004 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML16204A377) identifies the apparent cause as an engineer failing to provide adequate change management for the implementation of a barrier control procedure. Therefore, maintenance planners did not include the proper barrier controls in the work order instructions generated to open a high energy line break barrier. A corrective action was implemented to brief affected groups regarding the barrier control procedure. Corrective actions to address the human performance issue were completed through the licensee's performance management system. The cause of this event is human performance related. The work order that provided direction for the movement of the service water (SRW) motor into and out of the SRW pump room did not contain the required barrier impairment permit as required by procedure. The work order did not contain the barrier impairment permit because implementation of the barrier control procedure was not effectively communicated to maintenance planners by the engineer responsible for implementation of the procedure. As a result, the maintenance planners were not aware that a barrier impairment permit was needed for the work order. Use of the barrier impairment permit process would have resulted in different actions being taken to perform this maintenance task.

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<sup>1</sup> NUREG-1022, "Event Report Guidelines 10 CFR 50.72 and 50.73," Revision 3, dated January 2013 (ADAMS Accession No. ML13032A220).

### Example Analysis

This example identifies the overall human performance related root causes of work planning and practices and communication. The licensee describes and provides a breakdown of events that support the outcome of the human performance event. In the example, the licensee identifies that an engineer failed to provide adequate change management for the implementation of the barrier procedure, which resulted in the maintenance planners not including the proper barrier controls in the work order. For causes and circumstances, the licensee indicates that the root cause was incomplete work orders because the procedure implementation was not effectively communicated to plant personnel.

The detailed description not only identifies the causes and circumstances, but also gives a comprehensible explanation of why and how this human performance error occurred.

### Example Two

Licensee Event Report 325/2014-002 (ADAMS Accession Number ML14135A050) identified that a contributing cause to the event in question was a related procedure (OSMP-DMP002, "Tie-In of Unit 1 Temporary Power Loads During Division 1 and Division 2 Bus Outages"). This procedure did not contain sufficient information regarding temporary power requirements. In this event, temporary power was applied to the secondary containment isolation dampers to maintain their functionality. However, the use of temporary power did not meet the requirements for operability, and the plant was placed in a condition prohibited by the plant's technical specifications.

### Example Analysis

This example identifies the cause relating to a specific procedural deficiency, but lacks a supporting discussion of why and how this procedure was a contributing cause. The facility's written procedure either missing information or the procedure not being updated to reflect changes in the task, may have been a possible root cause of this event.

The information provided to the NRC staff could have been improved with additional facts to appropriately categorize or assess this event. This additional information would have allowed the NRC staff to track, monitor, and provide plant-specific or generic insights into the ROP and the Human Factors Information System.

### NRC Need for More Information in LERs

Receiving a more detailed level of information regarding human performance related causes and circumstances of reportable events allows the NRC to achieve two main objectives:

- Improve the quality of the NRC staff's oversight and evaluation of human factors related events at power plant utilities and NRC's human reliability analysis models. This contributes to NRC and industry efforts to ensure the accuracy of risk-informed decisions and maintaining standards for nuclear safety and radiation protection.
- Contribute to the efficient use of the NRC's resources and limit the need for assistance from contractors. Currently, all declared LERs are systematically reviewed by the NRC staff and contractors in order to identify the human factors

categories under which the declared events can be considered. Increasing the quality and consistency of licensee reporting to meet the regulatory standard will allow the agency to reduce its expenditures on staff and contractor support categorizing the events.

### **BACKFITTING AND ISSUE FINALITY**

This RIS informs licensees of the requirements of identifying and reporting incidents related to human performance under 10 CFR 50.73, how to report those matters, and makes recipients aware of a database used to improve human factors understanding and analysis. This RIS requires no action or written response beyond that already required by the NRC regulations. Therefore, this RIS does not represent backfitting as defined in 10 CFR 72.62(a) or 50.109(a)(1), nor is it otherwise inconsistent with any issue finality provision in 10 CFR Part 52. Consequently, for this RIS, the NRC staff did not perform a backfit analysis or further address the issue finality criteria.

### **FEDERAL REGISTER NOTIFICATION**

The NRC will publish a notice of opportunity for public comment on this draft RIS in the *Federal Register*.

### **CONGRESSIONAL REVIEW ACT**

[Discussion to be provided in final RIS]

### **PAPERWORK REDUCTION ACT**

This RIS contains mandatory information collections covered by 10 CFR Part 50 that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et. seq.). These information collections were approved by the Office of Management and Budget (OMB), under control number 3150-0104. Send comments regarding this information collection to the Information Services Branch, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [Infocollects.Resource@nrc.gov](mailto:Infocollects.Resource@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104) Office of Management and Budget, Washington, DC 20503.

### **Public Protection Notification**

The NRC may not conduct or sponsor, and a person is not required to respond to a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

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Note: NRC generic communications may be found on the NRC public Web site <http://www.nrc.gov>, under NRC Library/Document Collections.

**DRAFT REGULATORY ISSUE SUMMARY 2017-XX, "IDENTIFYING AND REPORTING HUMAN PERFORMANCE INCIDENTS," DATE: \_\_\_\_\_**

**ADAMS Accession No.: ML16029A010**

**\*via e-mail**

**TAC No. MF7230**

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<b>DATE</b>	04/21/2017	06/15/2017	07/07/2017	06/16/2017	06/16/2017	08/01/2017
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