

Problem Statement:

Under the Radiation Protection, Occupational, and Emergency Preparedness cornerstones, inspection findings are being cited that have no adverse consequences. These are being characterized as having greater than minor significance (i.e., Green) using what appears to be a vague justification from a "catch all" criterion (Question 1, MC 0612, Appendix B, Section 3, "Minor Questions.")

Discussion:

By comparison to other cornerstones, the findings typified by the examples (see attachment) are of much lower significance than findings of the same significance ranking in other cornerstones. As such, they should be characterized as minor.

Conducted a review of Manual Chapter 0612 Appendix E minor examples (see table). The review concluded:

- For most of the examples, the descriptions of what made the example "more than minor" included an actual degraded condition or condition of tangible/measurable consequence.
- Using only Questions 2-5 (excluding Question 1), from Inspection Manual Chapter 0612, Appendix B, Section 3, "Minor Question," virtually all of the greater than minor examples would have been answered "yes" and the finding classified as greater-than-minor without resorting to the "catch all" question 1.
- In some instances, the description of condition for the examples in Appendix E is unclear and the reasoning for characterization as "Minor" or "More than Minor" is hard to follow. Some of the examples appear to pre-date ROP.

The NRC Enforcement Policy uses the following criteria to assess the significance of a noncompliance:

- (1) actual safety consequences;
- (2) potential safety consequences, including the consideration of risk information;
- (3) potential for impacting the NRC's ability to perform its regulatory function; and
- (4) any willful aspects of the violation.

Recommendations:

- (1) **Conduct a complete review/revision of Manual Chapter 0612, Appendix E. Ensure that the description of the condition for each example clearly elucidates the performance deficiency.**

- (2) **Revise Manual Chapter 0612, Appendix B to more closely follow the significance criteria used in the Enforcement Policy or otherwise establish clear criteria on which to base the Minor Questions:**

Section 3. Minor Questions

*Is the finding **associated with** one of the cornerstone attributes listed at the end of this attachment and does the finding **adversely affect** the associated cornerstone objective?*

If so, then the finding is more than minor if the answer to any of the questions below is "yes."

(1) Could the finding be reasonably viewed as a precursor to a significant event or did the finding actually result in a plant transient? (actual safety consequences or potential safety consequences, including the consideration of risk information)

(2) If left uncorrected would the finding become a significant safety concern or more-than-marginally degrade the ability to mitigate a design basis event? (potential safety consequences, including the consideration of risk information)

(3) Does the finding relate to a performance indicator (PI) that would have caused the PI to exceed a threshold? (actual safety consequences)

(4) Does the finding relate to any of the following maintenance risk assessment and risk management issues?... (potential safety consequences, including the consideration of risk information)

Attachment 1 Inspection Guidance

From Manual Chapter 0612

Performance Deficiency: *An issue that is the result of a licensee **not meeting a requirement or standard** where the cause was reasonably within the licensee's ability to foresee and correct, and that should have been prevented. A performance deficiency can exist if a licensee fails to meet a self-imposed standard or a standard required by regulation.*

Issue: *A well-defined observation or collection of observations **that is of concern** and may or may not result in a finding.*

Manual Chapter 0612, Section 05.03 Screen for Greater than Minor

- a. *Review the list of sample minor findings listed in Appendix E.*
- b. *If the finding is similar to the samples listed as being minor, then the finding should not be documented. If the finding is similar to the samples as being greater than minor, then describe the set of conditions that make the finding greater than minor (e.g., the associated cornerstone attribute and how the objective was affected).*
- c. *If the examples in Appendix E are not applicable, **then answer the minor questions in Appendix B, Section 3.***

If the answer to any of the minor questions is "Yes," then go to section 05.04 of this chapter to determine its safety significance. Also, describe the set of conditions that make the finding greater than minor (e.g., the associated cornerstone attribute and how the objective was affected).

- d. *If the answer to all of the minor questions is "No," then do not document the finding. See exception in text box noted below.*

Manual Chapter 0612, Appendix B

Section 3. Minor Questions *(A finding should be compared to Appendix E examples to determine if it matches a minor example. If not, then answer the following questions to determine if the finding is more than minor.)*

- (1) *Could the finding be reasonably viewed as a precursor to a significant event?*

(2) *If left uncorrected would the finding become a more significant safety concern?*

(3) *Does the finding relate to a performance indicator (PI) that would have caused the PI to exceed a threshold?*

(4) *Is the finding **associated with** one of the cornerstone attributes listed at the end of this attachment and does the finding **affect** the associated cornerstone objective?*

(5) *Does the finding relate to any of the following maintenance risk assessment and risk management issues?*

Manual Chapter 0612 Appendix B, CORNERSTONE OBJECTIVES AND ATTRIBUTES

Cornerstone: *RADIATION SAFETY / Occupational Radiation Safety*

Objective: to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation.

Attribute: *Plant Facilities/Equipment Plant Equipment, and Instrumentation*

Examples: *ARM Cals & Availability, Source Term Control; Procedures (Radiation and Maintenance)*

Attribute: *Program & Process*

Examples: *Procedures (HPT, Rad Worker, ALARA); Exposure/Contamination Control and Monitoring (Monitoring and RP Controls); ALARA Planning (Management Goals, Measures - Projected Dose)*

Attribute: *Human Performance*

Examples: *Training (Contractor HPT Quals, Radiation Worker Training, Proficiency)*

Attachment 2 Examples

Example 1:

Description. On December 3, 2006, a worker received an electronic dosimeter alarm on dose rate when the worker entered a radiation field of 226 mrem/hr. The electronic dosimeter was set to alarm at 200 mrem/hr. The worker had not been informed on the dose rates for the area entered because the worker had not notified radiation protection technicians that the area would be entered. This action was contrary to licensee procedures and REP instructions. **Although the worker was authorized to enter high radiation areas on the REP**, the worker was instructed by the REP to contact radiation protection prior to entering any high radiation area in which a briefing had not been received. This event was entered in the licensee corrective action program.

Analysis. The failure to follow procedures is a performance deficiency. The finding is greater than minor because it is **associated with** the Occupational Radiation Safety Cornerstone attribute of human performance, and the failure to follow written radiological safety instructions **affects** the cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation from radioactive materials during routine civilian nuclear reactor operation.

The finding was processed through the Occupational Radiation Safety Significance Determination Process and determined to be of very low safety significance (Green) because it was not an ALARA finding, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. Additionally, this finding had a human performance crosscutting aspect associated with work practices because the worker failed to use human error prevention techniques such as self- and peer checking to ensure that work activities were performed safely.

Example 2:

Description. On March 28, 2007, the licensee **conducted radiography on the 161-foot elevation of the containment building**. The radiography was scheduled during the morning shift change when fewer workers were present in the area. ...

The radiation protection supervisor conducted a pre-job briefing, and radiation protection personnel went to their respective assigned locations to barricade and post entrances to the area in which radiography was to be performed. Some radiation protection technicians assigned to the 208-foot elevation expressed

concerns that there were not enough resources to guard each entrance on that elevation and make dose readings during radiography. However, before this issue could be resolved and before each entrance was barricaded and posted, an announcement on the plant paging system stated that radiography operations were commencing. An attempt was made by other radiation protection supervisors to page or call the radiographer and appropriate radiation protection personnel to inform them to halt radiography, but contact was made too late, and the radiographic exposure was completed without confirmation that all entrances were barricaded and posted. Consequently, some entrances were not controlled as required.

All additional radiography was canceled, and radiation protection personnel conducted a search and determined that **workers had not entered the radiography area through unbarricaded and unposted entrances**. The licensee interviewed the radiographers and the radiation protection personnel that supported radiography and determined **the high radiation area on the 161-foot elevation of the containment building was barricaded, posted, and guarded**. Additionally, radiation protection personnel determined that **no one had received an electronic dosimeter alarm during the time of radiography**. Based on this information, the inspector concluded **no one had entered the area or received unplanned dose**. The licensee documented this occurrence in the corrective action program, initiated fact-finding with the help of the radiation protection manager, and subsequently concluded that a root cause analysis was necessary before long-term corrective actions were developed.

The licensee had not completed the root cause analysis by the end of the inspection.

However, licensee representatives stated they had determined the responsible radiation protection supervisor had not walked down the area with the radiographer, but had relied upon the radiographer to ensure no unauthorized personnel were in the radiography area and boundaries were barricaded and posted. The inspector noted that the pre-job planning documentation did not require the use of radios. However, the licensee's Procedure stated, "If several radiological boundaries have been established where radiographer and radiation protection personnel will perform monitoring, then provide for communication during radiography testing such as radios."

Analysis. The failure to barricade and post the entrances to the area in which radiography was conducted was a performance deficiency. This finding is greater than minor because it is associated with the occupational radiation safety program attribute of exposure control and affected the cornerstone objective, in that the failure to control access to areas in which radiography is conducted could result in unplanned personnel dose. The occurrence involved the potential for unplanned, unintended dose resulting from actions contrary to licensee procedures and a radiation work permit which could have been significantly

greater as a result of a single minor, reasonable alteration of the circumstances; therefore, the finding was evaluated using the Occupational Radiation Safety Significance Determination Process. The finding was determined to be of very low safety significance because (1) it was not an ALARA finding, (2) there was no overexposure, (3) there was no substantial potential for an overexposure because no one entered the area in which high doses were possible, and (4) the ability to assess dose was not compromised. Additionally, this finding has a crosscutting aspect in the area of human performance associated with work control because the licensee did not coordinate work activities by incorporating actions to address the need to keep personnel apprised of work status.

The finding was self-revealing because, when the announcement was made that radiography was commencing, the lack of barricading and posting was readily apparent and the problem was not discovered through a licensee program or process.

Example 3

Introduction. A Green NRC-identified NCV of 10 CFR 50.47(b)(8) was identified for failure to conduct semiannual surveillances of the Service Building high pressure compressor used to fill SCBA tanks utilized for emergency preparedness activities. Specifically, the inspectors noted that between October 2004 and April 2006, the licensee failed to conduct semiannual Grade D air quality surveillance tests for this compressor. 10 CFR 50.47 (b)(8) requires that adequate equipment to support emergency response activities be provided and maintained.

Description. From review of licensee procedures and discussion with cognizant licensee personnel, the inspectors noted that SCBA tanks staged for emergency preparedness activities were filled from the high pressure compressor. Procedure RCI-107, Respiratory Protection Equipment Inspection, Maintenance, Issuance and Accountability, specifies semiannual surveillances to verify Grade D air quality of compressor systems used to provide breathing air. From review and discussion of surveillance records required by RCI-107, the inspectors noted that between October 2004 and April 2006, the licensee failed to complete the semiannual Grade D air quality surveillances for the high pressure compressor. Further, the inspector noted that during the subject period when the surveillances were missed, numerous SCBA tanks were filled using the subject system.

Licensee representatives noted that **no maintenance activities were performed on the subject compressor system** during this time period. In addition, **air quality analysis for an April 2006 sample taken in response to the NRC inspection met the Grade D requirements.**

Analysis. The inspectors determined that the failure to conduct the required surveillances to assure Grade D quality for the high pressure system used to supply air for filling the SCBA tanks was a **performance deficiency**. The failure to conduct the surveillances could impair licensee actions to support emergency plan response activities. This finding **is associated with** the facilities and equipment attribute of the

Emergency Preparedness Cornerstone and **adversely affects** the cornerstone objective to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of radiological emergency and is, therefore, more than minor. This finding was evaluated using the Emergency Preparedness SDP and determined to be of very low safety significance (Green). **The fact that the supplied air met the Grade D quality requirements once tested in April 2006 was the basis** for the finding not being a planning standard problem and, therefore, a Green significance determination.