

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR SECURITY AND INCIDENT RESPONSE  
OFFICE OF NUCLEAR REACTOR REGULATION  
OFFICE OF NEW REACTORS  
OFFICE OF FEDERAL AND STATE MATERIALS AND  
ENVIRONMENTAL MANAGEMENT PROGRAMS

WASHINGTON, DC 20555-0001

February 13, 2013

NRC INFORMATION NOTICE 2013-01: EMERGENCY ACTION LEVEL THRESHOLDS  
OUTSIDE THE RANGE OF RADIATION  
MONITORS

**ADDRESSEES**

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

All holders of and applicants for a power reactor early site permit, combined license, standard design certification, standard design approval, or manufacturing license under 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants."

**PURPOSE**

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) to inform addressees of inspection findings related to licensees' failures to properly evaluate the effect of site equipment changes on the emergency plan. The agency intends this IN to inform licensees of the importance of having adequate procedures to properly evaluate changes to site procedures, equipment, and facilities for potential impact on the licensee's ability to maintain an effective emergency plan. Specifically, this IN informs licensees of issues that arose when radiation monitors were not properly evaluated in conjunction with changes made to emergency action level (EAL) thresholds for emergency classifications. The NRC previously alerted licensees to similar issues in IN 2005-19, "Effect of Plant Configuration Changes on the Emergency Plan," dated July 18, 2005.

The NRC expects that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

**DESCRIPTION OF CIRCUMSTANCES**

At the plants cited below, effluent radiation monitor indications are used as EAL thresholds for emergency classifications. Any site configuration or procedural changes that have the potential

**ML12325A326**

to affect the emergency plan, may benefit from being systematically evaluated by the licensee for their impact on the effectiveness of the emergency plan.

#### EAL Thresholds Outside the Range of Radiation Monitors at Kewaunee

Kewaunee Power Station submitted a revision to its EAL scheme to the NRC for approval in 2005. The revision specified ALERT EAL thresholds for multiple instruments that were beyond the display capabilities of those instruments by a decade or more. Both the waste effluent liquid monitor and gaseous effluent radiation monitor were incapable of displaying values high enough to trigger an ALERT declaration. According to the licensee such deficiencies would have prevented timely and accurate emergency classification and response. The licensee staff that developed revisions to the EAL scheme did not identify that the monitors could not display the calculated values. The plant operated for approximately 2 years with inaccurate emergency classifications or EAL thresholds, a condition that could have led to the failure of the licensee to declare an ALERT emergency in a timely manner.

The NRC determined that a violation of 10 CFR 50.54(q) occurred because of the licensee's failure to follow and maintain in-effect emergency plans that meet the standards in 10 CFR 50.47(b)—in particular, 10 CFR 50.47( b)(4). Additional information appears in Kewaunee Power Station, NRC Emergency Preparedness Inspection Report 05000305/2008503, dated September 23, 2008, available on the NRC's public Web site in the Agencywide Documents Access and Management System (ADAMS) under Accession No. ML082670904.

#### EAL Thresholds Outside the Range of Radiation Monitors at Prairie Island

Prairie Island Nuclear Generating Plant submitted a revision to its EAL scheme to the NRC for approval in 2005. The revision specified ALERT EAL thresholds for multiple instruments that were beyond the display capabilities of those instruments by a decade or more. Both the waste effluent liquid monitor and spent fuel pool vent radiation monitor were incapable of displaying values high enough to trigger an ALERT declaration based on the licensee's revised EAL scheme. These deficiencies would have prevented timely and accurate emergency classification and response. The licensee staff that developed revisions to the EAL scheme did not identify that the monitors could not display the calculated values.

The NRC determined that a violation of 10 CFR Part 50.54(q) occurred because of the licensee's failure to follow and maintain in-effect emergency plans that meet the standards in 10 CFR 50.47(b), in particular, 10 CFR 50.47( b)(4). Additional information appears in Prairie Island Nuclear Generating Plant, NRC Inspection Report 05000282/2010503, dated April 09, 2010, on the NRC's public Web site in ADAMS under Accession No. ML100990307.

#### EAL Thresholds Outside the Range of Radiation Monitors at Crystal River

A revision to the licensee's EAL scheme, in 2010, incorporated threshold values for declaring a GENERAL EMERGENCY (GE) based on an effluent release that was well outside the range of the licensee's EAL-specified effluent monitors to report. The threshold for declaration of a GE was above the maximum usable range of the reactor building and auxiliary building effluent radiation monitors on the range specified. Therefore, the licensee had no way of accurately measuring these threshold values or declaring a GE in a timely manner. In evaluating the root cause for this condition, the licensee further identified that the radiation monitor indications were

nonlinear above 2/3 full scale on the mid-range instrument, and that this monitor would enter an automatic purge mode before reaching the EAL threshold. Both of these design features lowered the usable display range even further.

The NRC determined that a violation of 10 CFR Part 50.54(q) occurred because of the licensee's failure to follow and maintain in-effect emergency plans that meet the standards in 10 CFR 50.47(b), in particular, 10 CFR 50.47(b)(4). Additional information appears in Crystal River Unit 3—NRC Emergency Preparedness Inspection Report 05000302/2011501, dated September 23, 2011, on the NRC's public Web site in ADAMS under Accession No. ML112660544.

## **DISCUSSION**

The NRC requires licensees to comply with 10 CFR 50.54(q)(2), which states, in part, that a licensee authorized to possess and operate a nuclear power reactor shall follow and maintain the effectiveness of emergency plans that meet the standards in 10 CFR 50.47(b) and the requirements in Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50. Non-power reactor licensees, while not required to comply with 10 CFR 50.47(b), must also meet the requirements of Appendix E.

Site configuration changes have the potential to adversely impact the licensee's ability to maintain and implement an effective emergency plan as required by 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50, as appropriate. The licensee may consider evaluating all site configuration changes for their impact on the ability of the licensee to implement the site's emergency plan and, if necessary, the need to implement compensatory measures. Changes, such as training, facility modifications, site egress and ingress, etc., can all affect the emergency plan.

In some of the instances discussed above, the licensee's root cause evaluations generally identified inadequate control of the calculations that established the EAL thresholds, and deficiencies in the training of personnel responsible for these activities. Personnel were not knowledgeable about the design and operation of the radiation monitors credited in their EAL scheme.

## CONTACTS

This information notice requires no specific action or written response. Please direct any questions about this matter to the technical contact listed below or the appropriate NRC project manager.

**/RA/**

Mary C. Muessle, Acting Director  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

**/RA/**

Larry W. Camper  
Division of Waste Management and  
Environmental Protection  
Office of Federal and State Materials and  
Environmental Management Programs

**/RA/ JLuehman for**

Laura A. Dudes  
Division of Construction Inspection  
and Operational Programs  
Office of New Reactors

Technical Contact: Jonathan Fiske, NSIR/DPR/DDEP/IRIB  
301-415-6277  
E-mail: [JAF4@nrc.gov](mailto:JAF4@nrc.gov)

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

**CONTACTS**

This information notice requires no specific action or written response. Please direct any questions about this matter to the technical contact listed below or the appropriate NRC project manager.

**/RA/**

Mary C. Muessle, Acting Director  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

**/RA/**

Larry W. Camper  
Division of Waste Management and  
Environmental Protection  
Office of Federal and State Materials and  
Environmental Management Programs

**/RA/ JLuehman for**

Laura A. Dudes  
Division of Construction Inspection  
and Operational Programs  
Office of New Reactors

Technical Contact: Jonathan Fiske, NSIR/DPR/DDEP/IRIB  
301-415-6277  
E-mail: [JAF4@nrc.gov](mailto:JAF4@nrc.gov)

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

ADAMS Accession No.: ML12325A326

TAC ME9258

\*via e-mail

OFFICE	PM:NSIR	Tech Editor*	BC:IRIB:NSIR	DD:EP:NSIR	D:DPR:NSIR	BC:RDB:FSME
NAME	JFiske	CHsu	RKahler	MThaggard	RLewis	BWatson
DATE	11/28/12	10/23/12	11/28/12	1/15/2013	1/24/13	1/29/13
OFFICE	LA:PGCB:NRR	PM:PGCB:NRR	BC:PGCB:NRR	DD:DCIP:NRO	DD:DWMEP:FSME	(A)D:DPR:NRR
NAME	CHawes	MBanic	DPelton	LDudes (JLuehman for)	LCamper	MMuessle
DATE	2/6/13	2/4/13	2/8/13	2/11/13	2/13/13	2/13/13

**OFFICIAL RECORD COPY**