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

July 22, 2010

NRC INFORMATION NOTICE 2010-13: FAILURE TO ENSURE THAT POST-FIRE SHUTDOWN PROCEDURES CAN BE PERFORMED

ADDRESSEES

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

All holders of or applicants for an early site permit, standard design certification, standard design approval, manufacturing license, or combined license issued 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 about recent NRC inspection findings on post-fire procedures and the need to ensure that required steps can be implemented as directed. The NRC expects that recipients will review the information for applicability to their facilities and consider taking action, as appropriate, to avoid similar issues. However, no specific action or written response is required.

BACKGROUND

Operating nuclear power plants licensed to operate before January 1, 1979, are required to implement Section III.G, "Fire Protection of Safe Shutdown Capability," of Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," to 10 CFR Part 50. In Section III.G.1, the NRC requires that one train of systems necessary to achieve and maintain safe shutdown from either the control room or the emergency control stations is free of fire damage. Appendix R requires that, if a licensee cannot meet the separation criteria specified in Section III.G.2, and if redundant trains of safe-shutdown cables or equipment are in the same fire area, the licensee must implement the alternative shutdown requirements of Section III.G.3. A Federal court[1] has held that, if a licensee implements the requirements of Section III.G.3, the licensee must also comply with Section III.L, "Alternative and Dedicated Shutdown Capability," of Appendix R to 10 CFR Part 50. In Section III.L.3, the NRC requires that procedures be in effect to implement the alternate or dedicated shutdown

[1] *Connecticut Light and Power, et al., v. NRC*, 673 F.2nd, 525 (D.C. Cir. 1982).

capability. Plants licensed to operate after January 1, 1979, had similar requirements incorporated into their operating license.

In addition, many licensee technical specifications include a requirement in the administrative controls section to establish, implement, and maintain the procedures for fire protection program implementation and the procedures specified in Appendix A, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors," of Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Revision 2, issued February 1978 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML003739995). Two procedures specified in Section 6, "Procedures for Combating Emergencies and Other Significant Events," of Appendix A to Regulatory Guide 1.33 are "Fire in Control Room or Forced Evacuation of Control Room" and "Plant Fires."

DESCRIPTION OF CIRCUMSTANCES

Browns Ferry Nuclear Plant, Units 1, 2, and 3

On December 23, 2008, the licensee at Browns Ferry Nuclear Plant revised the post-fire safe-shutdown procedure to add an entry condition that would have prevented or delayed the operators from entering the post-fire safe-shutdown procedure during an Appendix R fire event if reactor water level stayed at or above +2 inches. As long as operators could maintain reactor water level during a fire event, they would continue to use the Emergency Operating Instructions in lieu of the post-fire safe-shutdown instructions. The additional entry condition could prevent or delay entry into the safe shutdown procedures such that the timing of operator actions, needed to ensure reactor core and containment cooling functions are met, could be inconsistent with the timeline assumed in the safe-shutdown analysis. Additional information is available in Browns Ferry Nuclear Plant - NRC Integrated Inspection Report 05000259/2009002, 05000260/2009002 and 05000296/2009002, and Annual Assessment Meeting Summary, dated April 30, 2009 (ADAMS Accession No. ML091210243).

Brunswick Steam Electric Plant, Units 1 and 2

On August 18, 2008, a surveillance test failure at the Brunswick Steam Electric Plant revealed that the emergency diesel generators (EDGs) would not operate with the alternate safe-shutdown (ASSD) key switch in the local position. The cause of the failure was a wiring error that occurred during the installation of a circuit modification to the diesel control system in June 2007. The wire segment number on either side of the ASSD local-normal key switch was the same. The individual selecting the point for the wiring change chose the correct wire number but the wrong locations on the ASSD local-normal key switches. This had the unintended effect of removing control power from the circuitry whenever control of the associated emergency diesel was transferred from the control room to the local panel. An extent of condition review determined that the remaining EDGs were also affected. Licensee corrective actions included rewiring and testing each affected EDG. This event illustrates the importance of required quality assurance design control measures for verifying or checking the adequacy of design changes, particularly for design changes on risk-significant systems. Additional information is available in Brunswick Steam Electric Plant—NRC Special Inspection Report 05000325/2008010 and 05000324/2008010, dated December 12, 2008 (ADAMS Accession No. ML083470550).

Cooper Nuclear Station

During an NRC inspection at Cooper Nuclear Station completed on June 15, 2007, NRC inspectors found that the licensee's post-fire safe-shutdown procedures were inadequate. Licensee post-fire safe-shutdown procedures required operators to stroke many motor-operated valves to the required positions from each motor-operated valve's motor starter. The procedure directed operators to open the motor-operated valve motor starter cabinet, remove the control power fuses, then press an open or closed contactor for a specified amount of time to stroke the valve to the required position. The NRC inspectors found that the operator at the motor starter had no indications to confirm that the valve had stroked to the desired position, and the procedure did not direct the operator to verify the valve's position locally. With the control power fuses removed, valve position indication in the control room was also not available. The NRC inspectors evaluated four 125-volt direct current motor-operated valves that had motor starter cubicles that were atypical in that the motor starters were designed without separate control power fuses. The NRC inspectors found that the valves would not have stroked using the procedure instructions because removing the fuses would remove motive power. With no indications and no procedure step to verify position locally, the operator would be unaware these valves had not stroked.

The licensee's extent of condition review identified that the procedure was inadequate for operating six additional motor-operated valves that had motor starters with separate control power fuses and three or four contactors. The procedure directed operators to depress the open or closed contactor. However, the valves would not have actually stroked to the required positions because additional contactors needed to be operated for the valves to stroke. Additional information is available in NRC Triennial Fire Protection Inspection Report 05000298/2007008, dated February 1, 2008, and NRC Triennial Fire Protection Followup Inspection Report 05000298/2008007, dated March 19, 2008 (ADAMS Accession Nos. ML080350425 and ML080790476, respectively).

DISCUSSION

As discussed in the Background section above, fire protection regulations require that an operating nuclear power plant be able to achieve safe-shutdown conditions following a fire. This IN gives examples of post-fire safe-shutdown procedures that were inadequate to ensure that operators could implement the procedure steps as directed within the assumed timeframe and with the expected plant equipment response in order to achieve and maintain safe shutdown.

CONTACT

This IN requires no specific action or written response. Please direct any questions about this matter to the technical contacts listed below or to the appropriate Office of Nuclear Reactor Regulation project manager.

/RA by TQuay for/

Timothy McGinty, Director
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

/RA by JTappert for/

Glenn Tracy, Director
Division of Construction Inspection and
Operational Programs
Office of New Reactors

Technical Contacts: Phil M. Qualls, NRR
817-276-6550
E-mail: phil.qualls@nrc.gov

John M. Mateychick, RIV
817-275-6560
E-mail: john.mateychick@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.

CONTACT

This IN requires no specific action or written response. Please direct any questions about this matter to the technical contacts listed below or to the appropriate Office of Nuclear Reactor Regulation project manager.

/RA by TQuay for/

Timothy McGinty, Director
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

/RA by JTappert for/

Glenn Tracy, Director
Division of Construction Inspection and
Operational Programs
Office of New Reactors

Technical Contacts: Phil M. Qualls, NRR
817-276-6550
E-mail: phil.qualls@nrc.gov

John M. Mateychick, RIV
817-275-6560
E-mail: john.mateychick@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 Number: ML101120816 ME1663

OFFICE	NRR/DRA/AFPB	TECH EDITOR	NRR/DRA/AFPB	NRR/DRA/AFPB	NRR/DRA
NAME	PQualls	KAKribbs	DFrumkin	AKlein	MCunningham
DATE	5/7/2010 e-mail	5/17/2010 e-mail	06/23/2010	06/28/2010	06/28/2010
OFFICE	NRR/DPR/PGCB	NRR/DPR/PGCB	NRR/DPR/PGCB	NRO/DCIP	NRR/DPR
NAME	CHawes	DBeaulieu	SRosenberg	GTracy JTappert for	TMcGinty TQuay for
DATE	6/30/2010	6/30/2010	7/6/2010	7/7/2010	7/22/2010

OFFICIAL RECORD COPY