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

July 7, 2009

NRC INFORMATION NOTICE 2009-11: CONFIGURATION CONTROL ERRORS

ADDRESSEES

All holders of operating licensees for nuclear power reactors under the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," except those who have ceased operations and have certified that fuel has been permanently removed from the reactor vessel. All holders of and applicants for nuclear power plant construction permits under the provisions of 10 CFR Part 50.

PURPOSE

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) to inform addresses of recent configuration control errors, particularly those that occurred during an event at Prairie Island Unit 1 in which a turbine-driven auxiliary feedwater (AFW) pump was rendered inoperable by a mispositioned valve. It is expected 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 IN are not NRC requirements; therefore, no specific action or written response is required.

DESCRIPTION OF CIRCUMSTANCES

Prairie Island Nuclear Generating Plant Unit 1 – Loss of Turbine-Driven AFW Pump

On July 31, 2008, following an inadvertent reactor trip of Prairie Island Unit 1, the turbine-driven AFW pump automatically started as designed but tripped 42 seconds later on low discharge pressure. The licensee found the turbine-driven AFW pump trip resulted from a mispositioned (closed) isolation valve for the discharge pressure switch. A time delay in the pump protective circuitry is designed to trip the pump when a continuing low discharge pressure condition exists. Monthly surveillances to test the operability of the turbine-driven AFW pump do not test the low discharge pressure trip function of the pump as the pump is tested in the manual operating mode, which bypasses the low discharge pressure trip. The licensee determined that sometime between March 11, 2008, and July 31, 2008, the isolation valve for the discharge pressure switch was closed rendering the turbine-driven AFW pump inoperable.

The licensee determined that the cause for the improper isolation of the turbine-driven AFW pump discharge pressure switch was the failure to adequately control components that affect safety related equipment. Specifically:

- The mispositioned valve was not labeled, bypassing barriers normally in place to assist in proper component identification.

- The mispositioned valve was not locked in the required position, making mispositioning more likely. The procedure aligning the AFW system does not define which valves shall have locks, blocks or lock wires installed.
- The procedure for component blocking or locking contains a definition of what components should not be controlled, but does not contain a definition of which components should be controlled.

Licensee corrective actions for this event included the following:

- Conduct a review to identify all other components that could affect operability of safety-related systems. Establish that each identified component is included in the equipment database and drawings, has a locking device installed, and is labeled in the field.
- Lock-wired open the suction and discharge pressure switch manifold isolation valves for all four AFW pumps.
- Revise the procedure for component locking and blocking.

Additional information is available in Prairie Island Nuclear Generating Plant – NRC Special Inspection Report 05000282/2008008; 05000306/2008008, dated November 7, 2008, and can be found on the NRC's public website in the Agencywide Documents Access and Management System (ADAMS) under Accession No. ML083120510. This event was also the subject of Prairie Island Licensee Event Report (LER) 50-282/2008-003, dated September 29, 2008 (ADAMS Accession No. ML082730902).

Other Recent Configuration Control Error Events

The NRC Operating Experience Branch reviewed recent mispositioning events that were the subject of NRC inspection findings and LERs. A listing and brief description of each of these NRC inspection findings and LERs is publically available in ADAMS under Accession No. ML091610448.

The recent events show that component mispositionings have occurred or remained undetected due to one or more of the following causal factors:

- Failure to use or establish administrative controls, including: proper component labeling, proper valve locking, use of valve checklists, work and testing procedures use of post-maintenance flow testing confirmation (when necessary)
- Dependence on a single administrative control to prevent valve mispositioning events
- Insufficient training (lack of refresher training) or experience in determination of valve position by individuals, (such as using rising stem position to help confirm valve position)
- Improper independent verification or incorrect valve locking techniques
- Lack of operator awareness of unique valve design or valve operating characteristics
- Unrecognized operator burdens that increase the likelihood of error
- Failure to effectively apply station and industry operating experience

Corrective actions taken by some licensees for preventing configuration control errors include:

- Label components with a unique plant equipment number and name ensuring they are consistent with the designations used in plant procedures, drawings, and labels on the operating controls.
- Provide initial and periodic refresher training of operators, maintenance, and supervisory personnel related to configuration control.
- Use the corrective action program to track and trend configuration control errors.
- Discuss site and industry operating experience and use operating experience feedback mechanisms.
- As procedures are performed, identify incorrect procedural steps or improper valve labeling so that they can be corrected.

BACKGROUND

Previous NRC Generic Communications Involving Configuration Control

NRC IN 97-14, "Assessment of Spent Fuel Pool Cooling," notes that ineffective configuration control was the most frequent cause of spent fuel pool loss-of-inventory events and loss of spent fuel pool cooling events. This IN is available under ADAMS Accession No. ML031050356.

NRC IN 98-34, "Configuration Control Errors," discusses configuration control errors involving the emergency diesel generator system noting that the potential exists for similar problems to occur in other systems. This IN is available under ADAMS Accession No. ML031050070.

NRC IN 2007-11, "Recent Operator Performance Issues at Nuclear Power Plants," provides examples of improper alignment of the AFW system and is available under ADAMS Accession No. ML070440238.

DISCUSSION

Configuration control errors, such as the mispositioning of valves or switches, can result in technical specification required systems being rendered inoperable and can complicate recovery actions following plant transients. Proper configuration control is particularly important for those single components that, if mispositioned, would render the system inoperable. From this group of important single components, proper configuration control is especially important when the mispositioned component would not be readily detected because (a) there is no alarm or other condition to alert the operators of the error, (b) the component is in a flow path that is not testable by surveillance procedures or (c) due to unique conditions the mispositioning may not be detected during routine surveillance testing. This example (c) was illustrated in the Prairie Island event where a mispositioned valve rendered an AFW system train inoperable and was not revealed during monthly surveillance testing. As a corrective action, the licensee established a configuration control measure to lock wire the valves in the correct position.

CONTACT

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

/RA/

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

Technical Contact: Mark King, NRR/DIRS
301-415-1150
E-mail: Mark.King@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 contact listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

/RA/

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

Technical Contact: Mark King, NRR/DIRS
301-415-1150
E-mail: Mark.King@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.

Distribution:
IN r/f

ADAMS Accession Number: ML091700188 TAC ME0460

OFFICE	IOEB	TECH EDITOR	IOEB	BC:SBPB:DSS	ABC:IOEB:DIRS	D:DIRS
NAME	MKing	KAzariah-Kribbs	LFields	SGardocki	EThomas	FBrown
DATE	06/10/09	06/11/09 e-mail	06/11/09	06/11/09	06/11/09	06/22/09
OFFICE	PGCB:DPR	PGCB:DPR	BC:PGCB:DPR	D:DPR		
NAME	DBeaulieu	CHawes	MMurphy	TMcGinty		
DATE	06/19/09	06/22/09	07/01/09	07/07/09		

OFFICIAL RECORD COPY