

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555-0001

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NRC INFORMATION NOTICE 2007-11: RECENT OPERATOR PERFORMANCE ISSUES
AT NUCLEAR POWER PLANTS

ADDRESSEES

All holders of operating licenses for nuclear power reactors, except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

PURPOSE

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) to alert addressees of recent operator performance issues such as examples of misalignments that rendered plant safety systems inoperable and instances in which operators did not control reactivity as specified in plant procedures. The NRC expects that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to prevent similar occurrences. However, suggestions contained in this IN are not NRC requirements; therefore, no specific action or written response to this notice is required.

DESCRIPTION OF CIRCUMSTANCES

Palisades Nuclear Plant, Unit 1

On November 3, 2006, while in Mode 3 during a reactor startup, an NRC inspector discovered that control switches associated with both trains of the auxiliary feedwater (AFW) system were not aligned as required for automatic system actuation. In the as-found control switch configuration, an AFW actuation signal (AFAS) would not have automatically actuated the AFW system. The AFW system is designed to automatically supply feedwater to the steam generators upon receipt of an AFAS for decay heat removal.

This improper alignment of the AFW system was due to an operator positioning the AFW motor-driven pump control switches from automatic to manual on November 1, 2006. Operators performing subsequent control room panel walk-downs also failed to identify the control switches in their incorrect positions until the time of discovery by the NRC inspector. The AFW control switches are required to be in automatic for the AFW system to be considered operable. In order to fulfill its designed safety function, technical specifications require that AFW be operable prior to and during plant startup and operation while in Mode 4 and above.

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Throughout the 2-day period during which the switches were not aligned for automatic actuation, one train of AFW was in operation providing the heat removal function. However, with the switches not properly aligned, if a postulated AFAS and loss of off site power event had occurred, the motor-driven AFW pump in the operating train would not have been automatically re-powered by the associated emergency diesel generator as it re-energized loads.

Additional information is available in NRC Special Inspection Report 50-255/2006-014, dated December 29, 2006, and can be found on the NRC's public website in the Agencywide Documents Access and Management System (ADAMS), under Accession No. ML070030064.

River Bend Station, Unit 1

On October 19, 2006, as a result of an operator attempting to adjust a chart recorder, an automatic reactor scram occurred in response to a low water level signal in the reactor vessel. When the operator pulled the chart recorder out of its chassis during the adjustment, the recorder's paper roller mechanism fell out and struck the "close" pushbuttons for the feedwater header outboard containment isolation valves that isolate all feedwater flow. The operator did not observe any immediate adverse effects and continued to complete the adjustment and reassembly of the chart recorder. A reactor low water level alarm sounded within 2 minutes after the roller mechanism fell onto the control switches, and the operator observed that reactor vessel water level was decreasing. Just prior to the operator initiating a manual reactor scram, an automatic reactor scram occurred on reactor low water level.

Following the scram, the operator did not take the reactor mode switch to the shutdown position as required. This misstep caused an inadvertent isolation of the main steam lines, due to low main steam line pressure coincident with the mode switch remaining in the run position. Reactor pressure was subsequently controlled by manual operation of the main steam safety relief valves until the main steam lines were later restored.

Additional information is available in River Bend Licensee Event Report (LER) 50-458/2006-007, dated December 18, 2006 (ADAMS Accession No. ML063600173).

R. E. Ginna Nuclear Power Plant

On October 16, 2006, during reactor refueling, an operator discovered that the required automatic actuation signal was disabled for the containment isolation system, rendering the system inoperable. The operator identified the condition after observing a control room annunciator, which indicated a problem with the isolation logic. The licensee had performed fuel movement for at least 13 hours while this condition existed, and this condition was not identified during at least one shift turnover. Upon discovery, fuel movements were suspended until the licensee completed an investigation.

The cause of this event was the removal of isolation logic from service by a senior reactor operator (SRO) on October 13, 2006, in order to support other maintenance work before commencing fuel movement. The other maintenance work experienced delays and fuel moves proceeded without operator re-verification of isolation logic operability. The licensee implemented corrective actions that included validating and revising the refueling checklists,

developing a specific checklist for interruptions to fuel moves, re-verifying the minimum equipment for refueling, and adding an additional level of SRO review to coordinate changes to plant and equipment conditions in support of work activities.

Additional information is available in R.E. Ginna LER 50-244/2006-006, dated December 15, 2006 (ADAMS Accession No. ML063560060).

Additional Operator Performance Issues

Other examples of operator performance issues are documented in the following LERs and NRC inspection reports:

- Surry Power Station, Unit 1 - Operators failed to maintain reactor power between 1 percent and 5 percent as specified in the operating procedure (NRC Inspection Report 50-280, 50-281/2005-002, dated April 19, 2005, ADAMS Accession No. ML051090591).
- Kewaunee Power Station - During a plant startup, operators demonstrated weaknesses in procedural use and adherence when they failed to follow operating procedures and failed to address procedure inadequacies involving establishing the specified reactor coolant system boron concentration prior to withdrawing the shutdown bank of control rods (NRC Special Inspection Report 50-305/2006-011, dated August 2, 2006, ADAMS Accession No. ML062190469).
- Watts Bar Nuclear Plant, Unit 1 - After four control rods dropped into the core due to a failure in the rod control system, approximately 3½ minutes passed before operators manually tripped the reactor (NRC Inspection Report 50-390, 50-391/2004-004, dated October 22, 2004, ADAMS Accession No. ML042960002)
- R. E. Ginna Nuclear Power Plant - While at 100 percent power, the licensee found that during the 9-day period since entering Mode 3, the flow transmitters remained isolated in both trains of the standby AFW system. NRC inspectors identified, and the licensee subsequently agreed, that the isolated flow transmitters rendered both trains of the standby AFW system inoperable. (NRC Inspection Report 50-244/2006-006, dated October 15, 2006, ADAMS Accession No. ML062890061).

DISCUSSION

This IN provides examples of recent operator performance issues which often involved the failure of operators to follow plant procedures as required plant technical specifications. One of the most important responsibilities of an on-duty licensed reactor operator is to monitor and control reactivity in accordance with plant procedures. Another important operator responsibility is to ensure systems are aligned as specified in plant procedures. Misaligned systems can result in unnecessary operational challenges and can significantly reduce a plant's ability to mitigate accidents.

CONTACT

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

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