

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-305/84-23(DPRP)

Docket No. 50-305

License No. DPR-43

Licensee: Wisconsin Public Service Corporation  
P. O. Box 19002  
Green Bay, WI 54307-9002

Facility Name: Kewaunee Nuclear Power Plant

Inspection Conducted: December 19, 1984 through January 15, 1985

Enforcement Conference Conducted: January 7, 1985

Inspector: R. L. Nelson  
Senior Resident Inspector

Approved By: *T. N. Jackiw*  
T. N. Jackiw, Chief  
Reactor Projects Section 2B

1-30-85  
Date

Inspection and Enforcement Conference Summary

Inspection on December 19, 1984, through January 15, 1985, and Enforcement Conference on January 7, 1985 (Report No. 50-305/84-23(DRP))

Areas Inspected: Special, announced inspection by resident inspector of circumstances which resulted in the disabling of automatic features provided to ensure the net positive suction head for the safety injection pumps is maintained during the injection phase of an accident. An enforcement conference was also conducted to discuss potential escalated enforcement action by the NRC. The inspection and conference involved a total of 30 inspector-hours by ten NRC personnel including five inspector-hours onsite during off-shifts.

Results: Three items of noncompliance were identified (exceeding a limiting condition for operation - Paragraph 2.d; inadequate procedures - Paragraph 3; and exceeding the reporting requirements - Paragraph 4).

8502210189 850131  
PDR ADOCK 05000305  
G PDR

## DETAILS

### 1. Persons Contacted

- +P. D. Ziemer, President and Chief Executive Officer
- +E. R. Mathews, Senior Vice President, Power Supply and Engineering
- +C. W. Giesler, Vice President, Power Production
- +D. C. Hintz, Manager, Nuclear Power
- \*+C. R. Steinhardt, Manager, Kewaunee Nuclear Power Plant
- +C. A. Schrock, Nuclear Licensing and Systems Superintendent
- \*+K. H. Evers, Plant Operations Superintendent
- +M. L. Marchi, Plant Technical and Services Superintendent
- \*+R. P. Pulec, Plant Technical Supervisor
  - D. M. MacSwain, Assistant Superintendent, Instrument and Control
  - P. P. Brantmeier, Instrument and Control Leadman
  - W. A. Kaczmarek, Instrument and Control Technician
  - G. I. Harrington, Reactor Control Operator
  - S. M. Buraczewski, Reactor Control Operator

\*Denotes those attending one or more exit interviews.

+Denotes those attending the enforcement conference on January 7, 1985.

### 2. Mispositioned Boric Acid Storage Tank Selector Switch

#### a. Method of Discovery and Immediate Corrective Action

On December 18, 1984, at about 10:30 p.m. the Control Room Supervisor, while preparing for shift turnover, noted that the "Boric Acid Tank Out of Service" monitor light appeared to be "Bright". The "Bright" indication is an indication of disagreement between the tank physically aligned for Safety Injection (SI) pump suction and the tank selected by the Boric Acid Storage Tank (BAST) selector switch. When the physical alignment and selector switch position are in agreement, the monitor light is a "Dim" indication. Immediate corrective actions were:

1. The BAST selector switch was placed in its correct position to properly align the system for normal operation.
2. The Shift Technical Advisor (STA) was notified.
3. The plant SI Ready Status Panel and the surveillance procedures performed on the day shift were reviewed to ensure that all safeguards equipment had been returned to normal.

4. A review of logs was conducted to determine cause of switch mispositioning. The review indicated that the mispositioning had occurred during the 7:00 a.m.-3:00 p.m. Operations Shift while Instrument and Control (I&C) personnel were performing Surveillance Procedure (SP) 35-147 "Boric Acid Tank Level Instrument Test".
5. The safety significance of the switch mispositioning was discussed amongst the off-going and on-coming shifts and the STA. Following a review of 10 CFR 50.72 reporting requirements it was determined that the event need not be reported. An attempt was made to notify the Senior Resident Inspector.
6. A plant incident report was completed by the Shift Supervisor.

b. Components Affected

Components which had partial or complete disablement of their automatic functions during this event were as follows:

<u>Component</u>	<u>Purpose and Automatic Function</u>
SI-2A and SI-2B	Redundant Motor Operated Valves (MOV's) for SI pump suction from the aligned BAST. Normally closed MOV's which automatically open on receipt of a SI signal and close on a Lo-Lo level in the aligned BAST. During this event partial loss of automatic functions occurred, that is, the valves would have automatically opened, but not closed.
SI-4A and 4B	Redundant MOV's for SI pump suction from the Refueling Water Storage Tank (RWST). Normally closed MOV's which automatically open on Lo-Lo level in the aligned BAST. During the event this automatic function was disabled.

The above valves remained operable by manual manipulation of their control switches in the Control Room.

c. Cause

On December 18, 1984, at 12:40 p.m., the Shift Supervisor authorized I&C personnel to start the performance of SP 35-147 "Boric Acid Tank Level Test". The purpose of the test is to check the setpoints of the level instruments on each of the two BAST's. During the test the BAST selector switch is positioned to the tank not under test. This prevents opening SI-4A and SI-4B when the tested tanks level Lo-Lo bistables are tripped. At the beginning of the test BAST 1B was aligned for SI pump suction, therefore the level tests were

first performed on BAST 1A instruments. At the completion of the tests on BAST 1A, the BAST selector switch was switched to the BAST 1A position to facilitate testing of BAST 1B instruments. This resulted in BAST 1B being physically aligned for SI pump suction, and the automatic functions of the SI MOV's being disabled as indicated in Paragraph 2.b. This condition existed for a period of approximately nine hours.

d. Applicable Technical Specification

Technical Specification (T.S.) 3.3.a sets forth the operability requirements of the Safety Injection and Residual Heat Removal systems when the reactor is critical. T.S. 3.3.a.1.G states, "Automatic valves, instrumentation, piping, and interlocks associated with the above components and required to function during accident and/or post-accident conditions are operable". The automatic features of motor operated valves SI-2A, SI-2B, SI-4A and SI-4B were disabled for a period of approximately nine hours with the plant at power operation on December 18, 1984. This is a violation of Technical Specification 3.3.a.1.G (305/84-23-01).

e. Event Evaluation

Positioning the BAST selector switch to the BAST not physically aligned for SI pump suction disabled the automatic transfer of SI pump suction from the aligned BAST to the RWST. This automatic transfer occurs on a Lo-Lo level signal from the BAST level transmitters (10% of calibrated span) which closes SI-2A and SI-2B and opens SI-4A and 4B.

Failure to make either a manual or automatic transfer to the RWST upon depletion of the BAST inventory would reduce the SI suction supply to a rate limited by the two inch line which bypasses SI-4A and SI-4B. Since this line is not sized to provide full SI flow requirements, the consequence of this event is that for certain small break loss of coolant accidents, with no operator action, the assumption of the UFSAR would not have been maintained.

The licensee was requested to provide, at the enforcement conference held on January 7, 1985, an evaluation of the safety significance of the event. The evaluation indicated that had the Emergency Core Cooling System (ECCS) been required to actuate, that following the injection of the BAST, the SI pumps injection rate would have been limited to approximately 200 GPM, the RHR pumps and SI accumulators injection rate would have remained at design values. In the unlikely event that no operator action was taken to place the affected SI MOV(s) in the required positions, the "as-found" ECCS would have maintained UFSAR assumptions for certain small Loss-of-Coolant-Accidents (LOCA(s)) and steam generator tube ruptures which are higher probability accidents. There would be a limited scope of LOCA(s) for which UFSAR assumptions would not have

been maintained (break sizes smaller than those which would depressurize the primary system to the accumulator pressure, but large enough to cause partial depressurization of the Reactor Coolant System). The probability of a break occurring in this range was considered to be extremely remote.

The licensee felt that because of training, procedures, control room indications, and the time available for action, the operator would have taken corrective action in the event of an ECCS actuation to manually transfer suction to the RWST, or to reposition the BAST selector switch, allowing the transfer to occur automatically.

In addition, the licensee addressed the consequences of no operator action during the extremely low probability events for which the degraded ECCS would not maintain the assumptions of the UFSAR. Information was provided which indicated that training had been conducted for recognition and mitigation of inadequate core cooling events in accordance with the requirements of NUREG 0737, Item II.B.4, "Training for Mitigating Core Damage". Additionally, the Appendix to Emergency Procedure E-0-10, "Loss of Reactor Coolant" provides instructions to restore core cooling during a small break LOCA. The instructions are consistent with WCAP-9754 (Westinghouse Proprietary), "Inadequate Core Cooling Studies of Scenarios With Feedwater Available, using the NOTRUMP Computer Code".

The consensus of the NRC attendees at the enforcement meeting was that the licensee had conducted a thorough evaluation of the event, and they agreed with the licensee's finding. The Resident Inspector concluded from his review of the event, that the most significant causal factor contributing to the event was inadequate procedures.

### 3. Inadequate Procedures

SP-35-147, Rev. J, "Boric Acid Tank Level Instrument Test" was inadequate in that specific steps were not included which would insure that the BAST selector switch was at all times positioned to the BAST physically aligned for SI pump suction. Procedural steps requiring operator action did not require the operator to initial the step, thereby attesting that the action had been completed, the practice had been for the I&C person performing the test to initial those steps. These inadequacies resulted in an inoperable BAST being selected by the BAST selector switch during the performance of the test procedure, and failed to establish positive communications between the I & C person and on-shift reactor operators that the test had been completed and the final step of the procedure, which would place the selector switch in the desired positions, performed. Administrative Control Directive 4.5, Ref. J, "Shift Operation and Turnover" was inadequate in that the turnover checklist did not specify an unambiguous indication to be used for determining which BAST was properly aligned for the ECCS. This inadequacy contributed to the inordinate time period required to identify the BAST misalignment.

10 CFR 50, Appendix B, Criterion V, states, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, or a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or quantitative acceptance criteria for determining that important activities have been satisfactorily accomplished." Sp 35-147 and ACD 4.5 were not appropriate to the circumstances in that adequate, definitive requirements were not delineated which would preclude initiation of a limiting condition for operation violation (SP 35-147) or identify the limiting condition for operations (ACD 4.5). This is a violation of 10 CFR 50, Appendix B, Criterion V requirement (305/84-23-02).

4. Reporting Requirements

10 CFR 50.72(b)(2) states, in part, "---the licensee shall notify the NRC as soon as practical and in all cases, within four hours of the occurrence of any of the following: (iii) Any event or condition that alone could have prevented the fulfillment of the safety functions of structures or systems that are needed to: (d) Mitigate the consequences of an accident. Disabling of the automatic transfer of SI pump suction from the BAST(s) to the RWST could, by this single failure, have prevented the fulfillment of the SI pumps safety function. This condition was identified on December 18, 1984, at 10:30 p.m., this condition was reported on December 19, 1984, at 3:32 p.m., a time period of approximately 17 hours. This is a violation of 10 CFR 50.72(b)(2), (305/84-23-03).

5. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) during the period of December 19, 1984-January 9, 1985, and on January 15, 1985, and summarized the scope and findings of the inspection activities. The licensee acknowledged the statement by the inspector with respect to the items of noncompliance.