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VPNPD-94-055
NRC-94-039

May 25, 1994

Document Control Desk
U.S. NUCLEAR REGULATORY COMMISSION
Mail Station P1-137
Washington, DC 20555

Ladies/Gentlemen:

DOCKET 50-266
LICENSEE EVENT REPORT 94-004-00
UNEXPECTED AUTOMATIC REACTOR TRIP
DURING HOT CONTROL ROD DROP TESTING
POINT BEACH NUCLEAR PLANT, UNIT 1

Enclosed is Licensee Event Report 94-004-00 for Point Beach Nuclear Plant, Unit 1. This report is provided in accordance with 10 CFR 50.73(a)(2)(iv), "The licensee shall report...any event or condition that resulted in a manual or automatic actuation of any engineered safety feature (ESF), including the reactor protection system (RPS)."

This report describes the unexpected automatic reactor trip initiated during hot control rod drop testing during the Unit 1 refueling outage, resulting in the shutdown bank A control rods dropping from 20 steps.

Please contact us if any further information is required.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Bob Link', is written over a faint circular stamp.

Bob Link
Vice President
Nuclear Power

DAW/jg

Enclosure

cc: NRC Regional Administrator
NRC Resident Inspector

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

(See reverse for required number of digits/characters for each block)

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TITLE (4)
Unexpected Automatic Reactor Trip During Hot Control Rod Drop Testing

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
04	27	94	94	-- 004 --	00	05	25	94	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9) N	POWER LEVEL (10) 000	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
		20.402(b)	20.405(c)	X	50.73(a)(2)(iv)	73.71(b)				
		20.405(a)(1)(i)	50.36(c)(1)		50.73(a)(2)(v)	73.71(c)				
		20.405(a)(1)(ii)	50.36(c)(2)		50.73(a)(2)(vii)	OTHER				
		20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)				
		20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)					
		20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)					

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER (Include Area Code)
NAME David A. Weaver, Senior Engineer - Licensing		(414) 221-3418

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO					

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

At 1214 hours CDT on April 27, 1994, while Point Beach Nuclear Plant (PBNP) Unit 1 was shut down during its annual refueling outage, an unexpected reactor trip occurred during hot control rod drop testing. Reactor protection analog testing was being performed concurrently with hot control rod drop testing. Due to a degraded steam flow transmitter, the Duty Shift Superintendent (DSS) and Instrumentation and Control (I&C) technician expected to receive a Unit 1 reactor trip signal from low steam generator level concurrent with feed flow/steam flow mismatch when the low steam generator level switch was placed in trip. However, they did not expect the reactor trip breakers to be shut or any control rods to be withdrawn at that time. The trip signal caused shutdown control rod bank A to drop from 20 steps. All other rods were fully inserted in the core. The event was caused by inadequate coordination of activities in the control room. A 4-hour ENS notification was made in accordance with 10 CFR 50.72(b)(2)(ii). The NRC Resident Inspector was also notified.

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TEXT CONTINUATION

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

EVENT DESCRIPTION

At 1214 hours CDT on April 27, 1994, while Point Beach Nuclear Plant (PBNP) Unit 1 was shut down during its annual refueling outage, an unexpected reactor trip occurred during hot control rod drop testing. The trip caused shutdown bank A control rods to drop from 20 steps. All other rods were fully inserted in the core. The trip signal was generated during reactor protection analog testing which was being performed concurrently with hot control rod drop testing.

During an outage planning meeting on the morning of April 25, 1994, several evolutions were identified as having to be performed in a deliberate sequence to prevent conflicts. The following test sequence was agreed upon:

- 1) Pressurizer Test
- 2) Instrumentation and Control (I&C) testing
- 3) Hot Control Rod Drop Test

On the morning of April 27, 1994, Reactor Engineering (RE) performed pressurizer testing in accordance with Reactor Engineering Surveillance Procedure (RESP) 3.1, "Primary System Tests." Following completion of the pressurizer testing, I&C testing was commenced. The Unit 1 control operator agreed to notify RE when I&C testing was complete and hot control rod drop testing could begin. Neither the Unit 1 control operator nor the RE Test/Evolution Coordinator (TEC) were aware of the scope of the I&C testing. They understood that I&C planned to perform Procedure ICP 2.17, "Periodic Test--Reactor Protection System Logic (Post Refueling)," but did not know I&C would also perform Procedure ICP 2.20, "Post-Refueling, Pre-Startup Test Reactor Protection and Safeguards Analog Channels I Through IV, Unit 1." When I&C completed ICP 2.17, the Unit 1 control operator notified RE to report to the control room for hot control rod drop testing because he thought I&C had completed their work. After the TEC reported to the control room, the Duty Shift Superintendent (DSS) granted the TEC permission to commence hot control rod drop testing. After a pre-job brief involving OPS and RE, the TEC commenced the hot control rod drop portion of RESP 3.1.

The Unit 1 control operator withdrew shutdown control rod bank A to 20 steps as required by RESP 3.1.. However, I&C had not completed ICP 2.20 and was in the process of placing a low steam generator level switch in the trip mode. Due to a degraded steam flow transmitter, the DSS and I&C technician expected to receive a Unit 1 reactor trip signal from low steam generator level concurrent with feed flow/steam flow mismatch when the low steam generator level switch was placed in trip. A reactor trip

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signal was subsequently generated and the bank A control rods dropped. Both evolutions were immediately suspended.

CAUSE

The cause of this event was due to inadequate work control. Contrary to the planned sequence, the DSS granted RE permission to commence hot control rod drop testing before ICP 2.20 was completed. The DSS believed that I&C would complete ICP 2.20 before the control operator would commence pulling rods. The DSS was aware of the conflict between the two tests and was aware that a trip signal would be generated during ICP 2.20. However, the DSS mistakenly granted permission for the two evolutions to occur concurrently, causing the unexpected reactor trip.

Contributing factors:

1. Inadequate communication between RE, I&C, and Operations (OPS). Neither Reactor Engineering nor the Unit 1 control operator was fully aware of the details of the I&C testing to be performed. Although I&C informed both the Unit 1 control operator and RE of their planned evolutions, the scope of the evolutions was not fully understood.
2. Inadequate communication within the shift operating crew. Although the DSS was aware of the scope and status of the evolutions to be performed, he did not pass this information on to the Unit 1 control operator or the Duty Operating Supervisor (DOS). Specifically, they did not know that two separate I&C evolutions were to be performed. They were aware that hot control rod drop testing could not commence until I&C had completed testing. They assumed that the testing pertained only to ICP 2.17. They were not aware that ICP 2.20 was also scheduled to be performed following completion of ICP 2.17. Had the Unit 1 control operator and/or the DOS known that ICP 2.20 would also be performed, RE would not have been notified to report to the control room prematurely.
3. Personnel in the control room failed to question why the reactor trip breakers were being shut while I&C analog testing was still in progress. This could have prevented the control operator from shutting the reactor trip breakers while the I&C testing was still in progress, thus preventing this event from occurring.

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CORRECTIVE ACTIONS

Immediate:

1. Performance of RESP 3.1 and ICP 2.20 was suspended. Following a review of the event, both procedures were sequentially completed without incident.

Short term:

1. Human Performance Root Cause (HPRC) evaluation 94-016 is being conducted on this event.

Long term:

1. Work control-related corrective actions will be implemented in accordance with appropriate corrective actions recommended in HPRC 94-016.
2. This event will be reviewed in a multi-group training session with the operating crews, RE, and I&C to develop better communications and teamwork during multi-group evolutions. This training will be completed by the next Point Beach refueling outage which is presently scheduled to begin on September 24, 1994.
3. The need for training on this event will be assessed by all Nuclear Power Department Training Advisory Committees (TACs) by October 3, 1994.

REPORTABILITY

Because the response to the RPS actuation was not part of the planned procedure, this event is being reported in accordance with 10 CFR 50.73(a)(2)(iv), "The licensee shall report...any event or condition that resulted in a manual or automatic actuation of any engineered safety feature (ESF), including the reactor protection system (RPS)." A 4-hour ENS notification was made in accordance with 10 CFR 50.72(b)(2)(ii). The NRC Resident Inspector was also notified.

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SAFETY ASSESSMENT

This event occurred while the Unit 1 reactor was shut down with all control rods, with the exception of the shutdown bank A control rods, fully inserted in the core. Sufficient shutdown margin was present to allow at least one shutdown bank to be fully withdrawn and maintain the reactor subcritical. In addition, the degree of subcriticality increased upon initiation of the reactor trip. Therefore, this event was not safety significant. All systems functioned as designed during this event.

GENERIC IMPLICATIONS

No generic implications have been identified.

SIMILAR OCCURRENCES

The following LERs report events caused by inadequate coordination of activities:

<u>LER</u>	<u>Title</u>
266/89-001-00	Inoperability of One EDG and Both Trains of Containment Spray
301/89-009-00	Unexpected Steam Generator Level Low Reactor Trip Signal During Emergency DC Lighting Test
301/90-002-01	Inadvertent ESF Actuation/AFW Pump Automatic Start
301/92-004-00	Manual Reactor Trip During Hot Control Rod Drop Testing