



231 W. Michigan, P.O. Box 2046, Milwaukee, WI 53201

(414) 221-2345

VPNPD-91- 368
NRC-91- 122

10CFR50.73

October 22, 1991

Document Control Desk
J. S. NRC REGULATORY COMMISSION
Mail Stop 7
Washington, D.C. 20545

Gentlemen:

DOCKET 50-41
LICENSEE EVENT 91-012-00
NUCLEAR INSTRUMENT TURBINE RUNBACK
POINT BEACH NUCLEAR PLANT, UNIT 1

Enclosed is Licensee Event Report 91-012-00 for Point Beach Nuclear Plant, Unit 1. This report is provided in accordance with 10CFR50.73(a)(2)(iv), "The licensee shall report. . .any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)."

This report describes a runback of the Unit 1 turbine generator due to an instrument bus voltage transient initiated during inverter maintenance. This voltage transient activated the dropped rod turbine runback circuitry on power range nuclear instrument channel N44.

If any further information is required, please contact us.

Very truly yours,

A handwritten signature in cursive script, appearing to read 'James J. Zach'.

James J. Zach
Vice President
Nuclear Power

Enclosures

Copy to: NRC Resident Inspector
NRC Regional Administrator

9110300130 911022
PDR ADDOCK 05000266
S PDR

IF22
11

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.6 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

| | | | | | | | | | | | | | | | |
|---|--------|---|----------------|-------------------|-----------------|------------------|-----------------|--------------|-------------------|---|--------|---|------------------|----------------------|--|
| FACILITY NAME (1) Point Beach Nuclear Plant, Unit 1 | | | | | | | | | | DOCKET NUMBER (2) 0 5 0 0 0 2 6 6 | | | | PAGE (3) 1 OF 0 5 | |
| TITLE (4) Nuclear Instrumentation Turbine Runback | | | | | | | | | | | | | | | |
| 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 NAMES | | | | DOCKET NUMBER(S) | | |
| 0 9 | 2 4 | 9 1 | 0 1 | 0 1 2 | 0 0 | 1 0 | 2 2 | 9 1 | | | | | 0 5 0 0 0 | | |
| OPERATING MODE (9) | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11) | | | | | | | | | | | | | |
| N | | 20.402(b) | | | | 20.406(c) | | | | <input checked="" type="checkbox"/> 50.73(a)(2)(iv) | | 73.71(b) | | | |
| POWER LEVEL (10) | | 20.406(a)(1)(i) | | | | 50.38(c)(1) | | | | 50.73(a)(2)(v) | | 73.71(c) | | | |
| 1 1 0 1 0 | | 20.406(a)(1)(ii) | | | | 50.38(c)(2) | | | | 50.73(a)(2)(vi) | | OTHER (Specify in Attachment and in Text NRC Form 366A) | | | |
| | | 20.406(a)(1)(iii) | | | | 50.73(a)(2)(ii) | | | | 50.73(a)(2)(vii)(A) | | | | | |
| | | 20.406(a)(1)(iv) | | | | 50.73(a)(2)(iii) | | | | 50.73(a)(2)(vii)(B) | | | | | |
| | | 20.406(a)(1)(v) | | | | 50.73(a)(2)(iii) | | | | 50.73(a)(2)(ix) | | | | | |
| LICENSEE CONTACT FOR THIS LER (12) | | | | | | | | | | | | | | | |
| NAME J. G. Schweitzer, Manager-Maintenance | | | | | | | | | | TELEPHONE NUMBER AREA CODE 4 1 4 7 5 5 - 2 3 2 1 | | | | | |
| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) | | | | | | | | | | | | | | | |
| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NRC | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NRC | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NRC | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| SUPPLEMENTAL REPORT EXPECTED (14) | | | | | | | | | | EXPECTED SUBMISSION DATE (15) | | MONTH | DAY | YEAR | |
| <input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) | | | | | | | | | | <input type="checkbox"/> NO | | 1 | 2 | 0 2 9 1 | |

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

ABSTRACT

At 1027 on September 24, 1991 Unit 1 experienced a turbine runback from 100% to approximately 80% power during maintenance on inverter DY0D. The runback was caused by a voltage loss on instrument buses 1Y04 and 1Y104 when the supply breaker from DC bus D04 to inverter DY0D was closed. Prior to this event, swing inverter DY0D (Elgar Model 253-1-103) had been taken out of service for maintenance. The turbine runback occurred when the D04 to DY0D supply breaker was closed while bringing the inverter back into service. The input circuit breaker filter capacitors to inverter DY0D had not been charged prior to attempted closure. The uncharged capacitors caused a voltage spike to occur on the DC supply bus to inverter 1DY04 (bus D04). This voltage spike scrambled the inverter's logic, blowing a fuse and shutting down inverter 1DY04. Also, the uncharged capacitor created an excessive current draw on inverter DY0D, causing the DC supply breaker to trip on overcurrent. Power to yellow instrument buses 1Y04 and 1Y104, which was being supplied by inverter 1DY04, was subsequently lost. Because power range nuclear instrument channel N44 is powered by the yellow instrument bus, this loss of power produced a negative voltage spike on N44, activating the dropped rod turbine runback circuitry. All instrumentation and control systems operated as designed. Unit 1 was returned to full power at 1257. This event is an actuation of a reactor protection system. Therefore, a four-hour notification to the NRC was made in accordance with 10CFR50.72(b)(2)(ii).

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (R-330), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

TEXT (If more space is required, use additional NRC Form 3064's) (17)

NR Form 306A (5-89)

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (PA30), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

| | | | | | | | |
|--|--|----------------|-------------------|-----------------|----------|----|-----|
| FACILITY NAME (1) Point Beach Nuclear Plant, Unit 1 | DOCKET NUMBER (2) 0 5 0 0 0 2 6 6 9 1 - | LER NUMBER (6) | | | PAGE (3) | | |
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | | |
| | | | 0 1 2 - | 0 0 | 0 3 | OF | 0 5 |

TEXT (If more space is required, use additional NRC Form 365A's) (17)

operations, resetting the input undervoltage trip coil and enabling breaker closure.

Each Point Beach Nuclear Plant unit has four independent and redundant power range nuclear instrument channels. Each channel has a dual section uncompensated ion chamber to monitor the neutron flux at its respective quadrant of the core. The four channels provide rod drop protection with bistables that respond to a rate-sensitive circuit. If a control rod drops, the nuclear instrumentation system detects a sudden depression of neutron flux in a localized region of the core. If a single channel detects a power decrease of 2½% in a 5-second time period, the dropped rod signal and bistable initiate a turbine runback. The purpose of the rod drop protection is to limit core hot channel effects due to the power redistribution caused by a dropped rod.

CAUSE

The rod drop signal and resulting turbine runback were a result of personnel error during maintenance. However, an inadequate procedure contributed to this event. A Human Performance Enhancement System (HPES) evaluation will be conducted and the results will be reported in a supplemental LER.

CORRECTIVE ACTIONS

Immediate:

1. The rod drop circuitry for power range channel N44 was placed in "bypass".

Short Term:

1. Yellow instrument buses 1Y04 and 1Y104 were reenergized via inverter DY0D after it was examined and declared operable.
2. All loads lost upon the loss of the yellow instrument buses were restored to service.
3. Maintenance Planners and Supervisors were briefed on this event. One of the contributing factors to this event was a work plan that referenced the use of only a portion of a procedure. The appropriate method would have been to perform a temporary change to the procedure to incorporate the scope of work. Had this been done, adequate reviews would have been completed, and the worker would not have had to interpret exactly which steps in the procedure were to be performed.
4. The direct line supervisors were counseled on the need to evaluate appropriate recovery steps when it is discovered that a planned

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555; AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

| | | | | | | |
|--|--|----------------|-------------------|-----------------|----------|--------|
| FACILITY NAME (1) Point Beach Nuclear Plant, Unit 1 | DOCKET NUMBER (2) 0 5 0 0 0 2 6 6 | LER NUMBER (6) | | | PAGE (3) | |
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | |
| | | 9 1 | — 0 1 2 | — 0 0 | 0 4 | OF 0 5 |

TEXT (If more space is required, use additional NRC Form 388A's) (17)

activity will not be performed and it becomes necessary to back out of a procedure and restore the equipment into service.

Long Term:

1. A Human Performance Enhancement System (HPES) evaluation will be conducted to investigate procedure non-compliance and inadequacy. The findings of the HPES evaluation will be reported in supplemental LER 266/91-012-01 by December 2, 1991.
2. Maintenance Work Request 914559 has been issued to perform a test of the DC input breaker undervoltage trip to inverter DY0D, which may have malfunctioned during this event. The results of this test will be reported in supplemental LER 266/91-012-01.
3. Permanent operator aids will be installed at the inverter supply breakers to the DC buses. This will be performed by Operations personnel prior to 1/31/92.
4. Routine Maintenance Procedure RMP 45 will be enhanced to include equipment specific instruction. This will be accomplished prior to 1/31/92 by Maintenance personnel.
5. Modification Requests 84-227 (Unit 1) and 84-228 (Unit 2) have been approved to replace the manual inverter transfer system with an Automatic Bus Transfer (ABT) transfer. Static transfer switches will be installed which will automatically transfer an instrument bus to an alternate source should an inverter failure or trip occur, thus preventing a loss of power to an instrument bus. This will be accomplished by 1/31/93.

Supplemental:

1. The Transient Analysis group will implement the RCCA dropped rod analysis methodology described in WCAP-11394, April 1987, to eliminate the need for turbine load runback and automatic rod withdrawal block as part of the Reactor Protection System. This was previously committed in LER 266/91-009-00 and will be completed by 11/20/92.

REPORTABILITY

This event is being reported under the requirements of 10CFR50.73(a)(2)(iv), "The licensee shall report . . . any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)." A four-hour notification to the NRC was made in accordance with 10CFR50.72(b)(2)(ii). The NRC Resident Inspector was also notified.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

| | | | | | | |
|-----------------------------------|-------------------|----------------|-------------------|-----------------|----------|--------|
| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) | | | PAGE (3) | |
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | |
| Point Beach Nuclear Plant, Unit 1 | 0 5 0 0 0 2 6 6 | 9 1 | 0 1 2 | 0 0 | 0 5 | OF 0 5 |

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

SAFETY ASSESSMENT

All systems functioned as designed during this event. The safety of the plant and the health and safety of the public and plant employees were not jeopardized by this event.

GENERIC IMPLICATIONS

No generic implications were identified.

SIMILAR OCCURRENCES

Since 1989, there have been four events that were the direct result of inadequate procedures. These events were reported in the LERs listed below:

| <u>LER NO.</u> | <u>DATE</u> | <u>TITLE</u> |
|----------------|-------------|--|
| 266/90-002-00 | 03/20/91 | INADVERTENT START OF AUXILIARY FEEDWATER PUMP |
| 266/89-010-00 | 11/20/89 | INADVERTENT ISOLATION OF AUXILIARY FEEDWATER FLOW TRANSMITTERS |
| 301/89-009-00 | 11/15/89 | UNEXPECTED "LEVEL LOW" REACTOR TRIP SIGNAL DURING EMERGENCY DC LIGHTING TEST |
| 301/89-007-00 | 10/27/89 | UNANTICIPATED SAFETY INJECTION SIGNAL |