



231 W Michigan, RD. Box 2045, Milwaukee, WI 53201

(414) 221-2345

VPNPD-92-338

NRC-92-123

November 2, 1992

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

Gentlemen:

DOCKETS 50-266
LICENSEE EVENT REPORT 92-008-00
REACTOR TRIP FOLLOWING CLOSURE OF
MAIN STEAM ISOLATION VALVE 1MS-2018
POINT BEACH NUCLEAR PLANT, UNIT 1

Enclosed is Licensee Event Report 92-008-00 for Point Beach Nuclear Plant, Unit 1. This report is being submitted in accordance with the requirements of 10 CFR 50.73(a)(2)(iv), "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 reactor trip that was caused by the inadvertent closure of 1MS-2018, the Unit 1 "A" steam generator main steam isolation valve, during the performance of quarterly surveillance testing.

Please contact us if there are any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Bob Link', is written over the typed name.

Bob Link
Vice President
Nuclear Power

FDP/jg

Enclosure

cc: NRC Regional Administrator, Region III
NRC Resident Inspector

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PDR ADDCK 05000200
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LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 800 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-830) U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON, DC 20555 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104) OFFICE OF MANAGEMENT AND BUDGET WASHINGTON, DC 20503

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TEXT IF MORE SPACE IS REQUIRED, USE ADDITIONAL NRC Form 2662 (1/7)

EVENT DESCRIPTION:

On October 5, 1992, with Unit 1 operating at 100% reactor power, Periodic Check (PC)-11, Part 2, "MSIV Solenoid Valve Trip Test (Quarterly)," was being performed. This periodic check tests the solenoid-operated instrument air supply and vent valves for both Unit 1 main steam isolation valves (1MS-2017 and 1MS-2018). Operations personnel had successfully performed the portion of the procedure that tested both trains of solenoid-operated valves for 1MS-2017, the "B" steam generator MSIV. They then commenced the portion of the procedure that tests the solenoid valves for 1MS-2018, the "A" steam generator MSIV. The Auxiliary Operator, under the direct supervision of a Duty Shift Superintendent, physically verified that all four solenoid valves were latched. This is one of the initial conditions required by procedure. The "A" train vent line isolation valve was subsequently shut per the procedure. While the operations personnel were recording the completion of this step in the procedure, the "B" train solenoid vent valve, 1MS-2018D-S, opened, causing 1MS-2018 to shut. The other three solenoid valves remained in their normal positions. The closure of 1MS-2018 resulted in an automatic turbine trip and a reactor trip at 3:34 a.m. on October 5, 1992.

Following the reactor trip, plant protective systems functioned as designed and the plant responded as expected. There were, however, three occurrences noted following the reactor trip. The "F" main feed pump suction relief valve lifted. Rod "F8" rod bottom light did not energize, although control board rod position indication and indication at the associated instrument rack verified that the rod was fully inserted. Also, the "A" main steam line flow indication (red channel) read high.

A post-trip review was conducted at 7:15 a.m. on October 5, 1992, by members of the Manager's Supervisory Staff. They determined the corrective actions that would be taken in response to the event. The actions that were required to be performed prior to reactor criticality were:

1. Investigate the problem with the F8 rod bottom indication on the main control board.
2. Investigate the problem with the "A" main steam line steam flow indication.
3. Perform the required Instrumentation and Control startup testing.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F&E), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, D.C. 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, D.C. 20503.

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TEXT IF MORE SPACE IS REQUIRED, SEE ADDITIONAL NRC FORM 366A 2/117

The actions associated with this event that were required to be performed, but not required to be completed prior to reactor criticality were:

1. Check adequacy of PC-11, Part 2 and revise, if necessary.
2. Replace 1MS-2018D-S, the faulty solenoid valve, prior to power operation and perform applicable post-replacement testing.
3. Complete PC-11, Part 2.

The items required to be performed prior to criticality were completed, and the approach to criticality was commenced at 3:39 p.m. on October 5, 1992. 1MS-2018D-S was replaced and the post-replacement testing was completed satisfactorily. Additionally, PC-11, Part 2 was successfully completed at 4:00 p.m. on October 5, 1992. Unit 1 reactor criticality was reached at 4:56 p.m. on October 5, 1992. During the startup, stroke testing of both Unit 1 main steam isolation valves was successfully completed at 9:00 p.m. on October 5, 1992. The Unit 1 turbine generator was placed on the grid at 1:59 a.m. on October 6, 1992.

COMPONENT AND SYSTEM DESCRIPTION:

The Main Steam Isolation Valves are thirty-inch, pneumatically-operated swing check valves manufactured by Atwood Morrill. These valves are held open, against spring pressure, by a piston operator supplied with air from the instrument air system. The valves are tripped closed by an electrically initiated trip signal which will shut two series connected solenoid valves to isolate the air supply to the valve operator. This trip signal will also open two parallel solenoid valves to vent air from the valve operator. Once the valve operator is vented, spring pressure and gravity will force the associated MSIV shut.

1MS-2018C-S and 1MS-2018D-S, the two parallel solenoid valves that open to vent the operator, are 1-inch pilot-operated solenoid valves manufactured by the Automatic Switch Company. The solenoids are supplied by 125 volt D.C. The valves have a design pressure of 125 psig. 1MS-2018A-S and 1MS-2018B-S, the two series solenoid valves that shut to isolate instrument air to the operator, are similar in design, except that they are .75-inch pilot-operated valves.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F&E30), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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TEXT OF REPORT APPLICABLE TO REGULATORY AND SUPPORTING NRC FORM 266A 2/1/97

CAUSE AND CORRECTIVE ACTION:

Following the reactor trip, an investigation was conducted. It revealed that 1MS-2018D-S, the "B" train solenoid vent valve had opened. This vented air from the valve operator for 1MS-2018, which allowed spring pressure and gravity to shut the MSIV. The inspection also revealed that the three remaining solenoid valves were still in their proper positions.

A post-trip review was conducted by members of the Manager's Supervisory Staff at 7:15 a.m. on October 5, 1992. Several corrective actions were directed to be performed as a result of this review. The corrective actions and results are as follows:

1. An inspection of the PB rod bottom control board indication was performed. This inspection revealed a loose connection in the associated light socket. This deficiency was repaired by Instrumentation and Control personnel.
2. A calibration check of "A" main steam line steam flow transmitter 1FT-00464 was performed. This calibration check revealed a zero shift in the calibration of the transmitter. This zero shift would not have been obvious when operating at or near 100% steam flow, but it was observed at the low steam flow conditions following the turbine and reactor trips. Instrumentation and Control personnel subsequently recalibrated the transmitter.
3. The "B" main feed pump suction relief valve was reseated by isolating the "B" main feed pump suction line. It was determined that the valve lifted because of the transient pressure conditions experienced during the turbine and reactor trips. This has occurred on previous occasions during similar plant transients, and is not an unexpected occurrence.
4. A thorough review of PC-11, Part 2 was performed. It was determined that the existing procedure is adequate, and that it did not contribute to the event.
5. 1MS-2018D-S, the faulty solenoid valve was replaced and post-replacement testing was successfully completed. This valve replacement and testing was performed under Maintenance Work Request 925178.
6. PC-11, Part 2, was successfully completed at 4:00 p.m. on October 5, 1992.

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 (F&D), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20543, AND TO THE PAPERWORK REDUCTION PROJECT (31500104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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TEXT OF MORE SPACE IS REQUIRED, USE ADDITIONAL NRC Form 306A's (17)

In addition to the actions taken as a result of the post-trip review, an inspection of the faulty solenoid valve was also performed. This inspection revealed that the electrical portion of the valve was functioning properly. Additionally, the valve did not exhibit any leakage that could have caused inadvertent venting of the operator. The individual performing the inspection of the faulty solenoid valve also relatched the latching mechanism several times and on one occasion, although the valve visually appeared to be latched, the valve latching mechanism disengaged. This seems to indicate that the problem with the valve exists within the latching mechanism. The individual, however, was unable to obtain this response again. The valve was disassembled to try to determine the failure mechanism for the latching mechanism. The valve disassembly did not reveal any worn parts or the presence of any foreign material that could have affected valve performance. It should be noted that this valve did open, as required, when the solenoid was energized, during the numerous tests conducted during the inspection.

REPORTABILITY:

This Licensee Event Report is being submitted in accordance with the requirements of 10 CFR 50.73(a)(2)(iv), "Any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)." The four-hour NRC notification was made at 4:21 a.m. on October 5, 1992, in accordance with the requirements of 10 CFR 50.72(a)(2)(ii). The NRC Resident Inspector was also informed of the event at 4:26 a.m. on October 5, 1992.

SAFETY ASSESSMENT:

The existing design configuration of the supply and vent paths for each main steam isolation valve operator ensures that the valve will trip shut when required. The instrument air supply line to the valve operator has two solenoid valves connected in series which ensures that a single failure will not preclude the isolation of the air supply to the operator. Similarly, the vent path from the valve operator has two solenoid valves connected in parallel which ensures that a single failure will not preclude the operator from being vented. Additionally, following the closure of the main steam isolation valve, the plant protective systems functioned and responded as designed. Therefore, this event did not endanger the health and safety of plant personnel or the public.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 900 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F&SD), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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TEXT (if more space is required, use additional NRC Form 266A 2/117)

SIMILAR OCCURRENCES:

Earlier in the operating history of both units, the solenoid vent valves, as originally installed, exhibited problems with inadvertent unlatching during MSIV operability testing. To prevent future occurrences of this type, the valves were replaced with the current design of solenoid valves. A review of Licensee Event Reports reveals that there have been no reports submitted concerning the current design of solenoid vent valves.