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BBS Ltr. #710-75

Dresden Nuclear Power Station
R. R. #1
Morris, Illinois 60450
October 17, 1975

10-28-75

Mr. James G. Keppler, Regional Director
Directorate of Regulatory Operation-Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

SUBJECT: REPORT OF ABNORMAL OCCURRENCE PER SECTION 6.6.A OF THE TECHNICAL SPECIFICATIONS UNIT-2 LPCI LOOP SELECT FAILURE

References: 1) Regulatory Guide 1.16 Rev. 1 Appendix A

2) Notification of Region III of U. S. Nuclear Regulatory Commission Telephone: Mr. Feierabed, 1608 hours on October 10, 1975

3) Drawing Number 12E2437A & 12E2438A

Report Number: 50-237/75-49

Report Date: October 17, 1975

Occurrence Date: October 9, 1975

Facility: Dresden Nuclear Power Station, Morris, Illinois

IDENTIFICATION OF OCCURRENCE

On October 9, 1975, the LPCI loop selection logic circuitry failed to select the preferred ("B") loop.

CONDITIONS PRIOR TO OCCURRENCE

Unit-2 was in the cold shutdown mode.

DESCRIPTION OF OCCURRENCE

On September 29, 1975, the Unit-2 reactor scrammed on high drywell pressure (see report no. 50-237/75-46). As designed, LPCI automatically initiated when drywell pressure exceeded 2 psi. If both recirculation loops appear to be intact, LPCI

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is designed to inject through the "B" loop. Since it had been determined that the drywell high pressure condition was a result of nitrogen purging rather than a loss of coolant accident, confusion arose when the LPCI logic circuitry selected "A" loop over the preferred "B" loop. The apparent failure of recirculation suction valve MO-202-4A to completely close, and the failure of the "B" recirculation pump to automatically trip, also contributed to confuse the issue.

Immediate investigation failed to reveal the cause of the "A" loop selection. A high-priority verification of the "as built" LPCI circuitry logic sequence was initiated. After completion of the logic diagram verification, a LPCI surveillance was performed at 1500 hours on October 9, 1975. During the surveillance, the LPCI logic circuitry improperly selected "A" loop over "B" loop.

DESIGNATION OF APPARENT CAUSE OF OCCURRENCE (Equipment Failure)

There are four differential pressure switches used in the "one out of two, twice" LPCI loop selection logic. Following the LPCI surveillance, differential pressure switches 261-34A and -34D were found in the closed, or "A" loop position. Further investigation revealed that switch 261-34A was out of calibration, and switch 261-34D was electrically shorted. The failure of both switches is believed to have resulted from excessive cycling due to varying jet pump riser differential pressures. Each oscillation results in some arcing between the switch contacts as associated relays are picked up and dropped out.

ANALYSIS OF OCCURRENCE

This occurrence did not threaten the safety of plant personnel or the public. Had a loss of coolant accident occurred, LPCI would have functioned properly through the "A" recirculation loop. In the event of the loss of the "A" loop in conjunction with such an accident, the core spray system would have adequately protected the core.

CORRECTIVE ACTION

Immediate corrective action was to replace switch 261-34D and to recalibrate switch 261-34A. A modification has been initiated to modify all four of the LPCI loop selection differential pressure switches. The modifications should provide some signal dampening, therefore reducing the cycling of associated relays. The components necessary to modify these pressure switches on both Unit 2 and 3 have already been ordered, and installation will be completed as soon as practicable.

FAILURE DATA

These switches have had a history of similar malfunctions resulting from excessive cycling. The switches are Barton model 288 pressure switches with a range of 0-4 psid.

B. B. Stephenson
Superintendent

BBS:smp

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