

Commonwealth Edison

Zion Generating Station 101 Shiloh Blvd. Zion, Illinois 60099 Telephone 708 / 746-2084

May 9, 1994

U. S. Nuclear Regulatory Commission Document Control Desk Washington, DC 20555

Dear Sir:

The enclosed Licensee Event Report number 94-004-00. Docket No. 50-304/DPR-48 from Zion Generating Station is being transmitted to you in accordance with the requirements of 10CFR50.73(a)(2)(i)(b), which requires a 30 day written report when any operation or condition occurs that is prohibited by the plant's Technical Specification.

Very truly yours.

DBWoznick for/

E. A. Broccolo Station Manager Zion Generating Station

EAB/sks

Enclosure: Licensee Event Report

cc: NRC Region III Administrator NRC Resident Inspector INPO Record Center CECo distribution List

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On D4/01/94, the 2A Auxiliary Feedwater Pump (AFW)[BA] pump was declared inoperable after it tripped on overspeed. This placed the Unit 2 on a 7 day Limiting Condition for Operation (LCO) per Technical Specification 3.7.2 d. On D4/07/94, while testing the 28 AFW pump, 2MOV-FW005D failed to close electrically. Since 2MOV-FW005D is a containment isolation valve as defined by Technical Specification 3.9.3A, Unit 2 was placed on a 4 hour LCO clock requiring the valve be manually closed and deenergized. At 1541, the valve was manually closed, deenergized and the LCO clock for containment isolation was terminated. The combination of the inoperable 2A AFW pump and the inoperable 2MOV-FW005D placed Unit 2 in Technical Specification 3.7.2 e requiring the unit to be in not shutdown within 26 hours and also Technical Specification 3.0.3 requiring the unit to be in cold shutdown in 48 hours. At 1622 hours, 2MOV-FW0053, "2C S/G Isolation Valve for the 2C AFW pump system", could not be throttled open to indicate 115-120 gpm per the requirements. It was reasoned that the problem was with the valve internals and the decision was made to take Unit 2 to cold shutdown

The cause of the failure of 2MOV-FW0050 to close was attributed to component failure with sticky auxiliary contacts. The cause of the 2MOV-FW0053 valve failing to indicate 115 gpm flow rate was component failure with a square root extractor in the flow indication. Corrective actions include revising a maintenance precedure, reviewing the event with the electricians, and replacing the square root extractor.

	LICENSEE EVENT REPORT (LER) TE	XT CONTI	NUATI	ION				m Rev	3.0	
FACILITY NAME (1)	DOCKET NUMBER (2) LER NUMBER (6)						Page (3)			
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XT Energy Industry Identification System (EIIS) codes are identified in the taxt as [XX]

CONDITION PRIOR TO EVENT

MCOE 3 Hot Shutdown RX Power 0 1 RCS [AB] Temperature/ Pressure 547°F/ 2250 psig

DESCRIPTION OF EVENT

On 04/01/94, the 2A Auxiliary Feedwater Pump (AFW) [BA] pump was declared inoperable after it tripped on overspeed. This placed the Unit 2 on a 7 day Limiting Condition for Operation (LCO) per Technical Specification 3.7.2.d.

On 04/07/94, Periodic Test (PT)-782, "Auxiliary Feedwater Pumps 8 and C System Tests (Split Header Alignment)" was being reperformed on the 28 and 2C AFW pumps to confirm questionable vibration data. At 1412, with the 28 AFW Pump running per PT-782, an attempt to set the flowrate to the 28 steam generator (S/G)[SB] with 2MOV FW0050, "28 S/G Isolation valve from the 24 AFW pump system" failed. The feed flow could not be reduced to the ruquired flowrate. Repeated attempts to cycle the valve electrically indicated the valve would open incrementally upon demand, but would not close. This was confirmed by both light indicated the pump. Since 2MOV FW0050 is a containment isolation valve as defined by the Technical Specification 3.9 3A, Unit 2 was placed on a 4 hour LCO clock requiring the valve to be manually closed and deenergized. Operating personnal were sent to the vertical pipe chase to manually close the valve. During the process of closing the valve, no abnormal resistance was noted. At 1541, the valve was manually closed, deenergized, and the LCO clock for containment isolation was terminated.

with the 2MOV-FW0050 closed and deenergized, the 2B Steam Generator AFW header was declared inoperable. Due to the 2A turbing driven AFW pump being inoperable and the discharge flowpath of the 2B steam generator being inoperable. Unit 2 entered Technical Specification 3.7.2 E, requiring the unit to be in hot shutdown (mode 4) within 20 hours and also Technical Specification 3.0.3 requiring the unit to be in cold shutdown (mode 5) within 46 hours.

At 1622 hours, PT-782 was started for the 2C AFW pump. 2MOV-FW0053, "2C S76 Isolation Valve for the 2C AFW pump" could not be throttled open to indicate 115-120 gpm per the requirements stated in PT-782 With 2MOV-FW0053 indicating full open the remaining header MOV's (2MOV-FW0051, 56, 57) were sequentially throttled closed to determine if flow would increase through 2MOV-FW0053. Flow did increase through 2MOV-FW0053 to approximately 125 gpm. With the valve indicating full open the 2C AFW pump was shut off. Because flow indication is common for both of the headers to each S76 and flow indication had been normal for the header while the 28 AFW pump was running, problems with flow indication were prematurely ruled out as the cause for the low flow condition. The valve was stroked closed electrically to prove containment isolation capability. After closing and reopening valve, the valve was retested at approximately 1830 and the required flowrate was obtained. Since flow indication had been previously eliminated as the cause, the decision was made to go to cold shutdown (CSD) remove the valve bonnet on 2MOV-FW0053, and inspect the valve and upstream piping for foreign material. No foreign material was found. 2MOV-FW0053 was then reassembled and successfully re-tested for flow.

On 04/12/94 at 2330. 24 AFW pump was repaired prior to plant heatup. On 04/17/94 during the startup of Unit 2, a similar flow perturbation occurred on 2MOV-FW0053. On this occasion, feedwater flow indicated low independent of the AFW pump that was running. The common flow instrument loop was investigated. Subsequent calibration of the instrumentation loop found an intermittently failing square root extractor.

APPARENT CAUSE OF EVENT

The cause of the failure of 2MOV-FWODSD to close was component failure. Although the failure could not be repeated, it is being attributed to a sticky auxiliary contact on the open coil that prevented the closed circuit from being energized.

A contributing cause of 2MOV-FW0050 failing to stoke was procedural deficiency. Maintenance Procedure E016-1. "Motor Control Center Inspection and Repair", allowed the electrician to omit the step to lubricate the auxiliary contact based on Inspection, When E016-1 was last performed (12/10/93) on 2MOV-FW0050, this step was not performed.

A continuity check of the control circuit was performed with no problems found. The MCC was visually inspected with no problems identified. A strip chart was hooked up and 2MOV-FW0050 was electrically stroked open and closed several times successfully. Based upon the above, it was concluded that the failure of 2MOV-FW0050 to electrically close during PT-7B2 was not due to an obstruction preventing closure of the valve but due to a failure of the control circuitry signal failing to close the MOV.

The cause of the 2MOV-FW0053 valve failing to achieve 115 gpm flow rate was component failure. The indicated degraded flow to the 2C S/G was attributed to an intermittent failure on the square root extractor for instrumentation loop 2FT-FW04, "AFW discharge flow to 2C S/G".

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D. SAFETY ANALYSIS OF EVENT

The design basis of the AFW System requires that flow to each steam generator at 1085 psig be greater than 77 gpm. During the 2MOV-FW0050 event. Flow to the affected 28 S/G was greater than 77 gpm while being supplied from the other 28 S/G AFW header. Since the containment isolation function of 2MOV-FW0050 could not be met electrically, it was manually closed and deenergized within 4 hours as required by Tech Spec 3 9 3A.

During the 2MOV-FW0053 event, the flow to the 2C S/G was always greater than the design basis requirements. The AFW System was capable of fulfilling the system requirements.

The safety significance of this event was minimal and the health and safety of the public were not affected.

CORRECTIVE ACTIONS

A continuity check was performed on the control circuit of 2MOV-FW0050. The Motor Control Center (MCC) was visually inspected and cleaned. The limit switch compartment was visually inspected, and a continuity check was performed on the control room handswitch. No problems were identified.

- ED16-1 will be changed to require the auxiliary contacts to be cleaned and lubricated every time the procedure is performed per the Preventive Maintenance (PM) schedule (304-180-94-00401)
 - This event will be reviewed with the Electrical Maintenance Department to heighten their awareness on the importance of PM activities on MCC breaker inspection/maintenance. (304-180-94-00402)
 - The square root extractor card for 2MOV-FW0053 was replaced on the 2FT-FW04 instrument loop.

PREVIOUS EVENTS

A review of the NPROS database indicates that Zion Station's failure rate for square root extractors is typical of the industry.

Zion Station has a history of problems with sticky auxiliary contacts. The corrective actions from these previous events could have possibly prevented the 2MOV-FW0050 event if they had been performed.

COMPONENT FAILURE DATA

None