

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Trojan Nuclear Plant										DOCKET NUMBER (2) 0 5 0 0 0 3 4 4				PAGE (3) 1 OF 0 1 3									
TITLE (4) Reactor Trip from Personnel Error Causing Loss of Main Feedwater Pump Suction																							
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 N/A				DOCKET NUMBER(S) 0 5 0 0 0										
0	9	2	4	8	5	8	5	0	1	2	0	0	1	0	2	1	8	5	0	5	0	0	0
OPERATING MODE (9) 1		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)																					
POWER LEVEL (10) 0 6 5		20.402(b)				20.406(c)				<input checked="" type="checkbox"/> 60.73(a)(2)(iv)				73.71(b)									
		20.406(a)(1)(i)				60.36(c)(1)				60.73(a)(2)(v)				73.71(c)									
		20.406(a)(1)(ii)				60.36(c)(2)				60.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)									
		20.406(a)(1)(iii)				60.73(a)(2)(i)				60.73(a)(2)(vii)(A)													
		20.406(a)(1)(iv)				60.73(a)(2)(ii)				60.73(a)(2)(viii)(B)													
		20.406(a)(1)(v)				60.73(a)(2)(iii)				60.73(a)(2)(ix)													
LICENSEE CONTACT FOR THIS LER (12)																							
NAME Scott A. Bauer, Onsite Regulation Engineer										TELEPHONE NUMBER 5 0 3 5 5 6 1 - 3 7 1 1 3													
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																							
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS													
X	S	F	P	S	V	M	0	3	1	Yes													
x	S	F	P	D	I	S	I	2	0	4	Yes												
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR							
YES (If yes, complete EXPECTED SUBMISSION DATE)												<input checked="" type="checkbox"/> NO											

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

ABSTRACT

At 0838 PDT on September 24, 1985, a reactor trip occurred from 65% power due to low-low water level in the 'D' steam generator. The event was initiated when personnel performing maintenance on the Condensate Demineralizer System inadvertently caused system flow oscillations. This system disturbance caused the south main feedwater pump to trip on low suction pressure. Reactor power could not be reduced rapidly enough to prevent a low-low level in the 'D' steam generator.

The maintenance on the Condensate Demineralizer System involved troubleshooting a stuck valve. The individuals involved did not understand how the system would respond before they placed the controller for the inoperable valve in automatic.

The personnel error caused a high differential pressure across the system which should have caused bypass valves to open which could have prevented the low suction pressure trip of the main feedwater pump. The bypass valves did not open due to a failed differential pressure switch.

Immediate corrective action was taken in accordance with EI-0, "Reactor Trip, Safety Injection and Diagnosis", and EI-0.1, "Reactor Trip Recovery", to ensure the reactor was shutdown and all safety systems were operating as required. Permanent corrective action was taken to return the inoperable demineralizer outlet valve to service. A training information bulletin is being prepared to ensure all Operations and Maintenance personnel understand the cause of this event.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
	0 5 0 0 0					OF

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

DESCRIPTION OF EVENT

During the night shift on September 24, 1985, while bringing the 'E' demineralizer vessel in the Condensate Demineralizer System on line, the demineralizer outlet valve failed to respond to a manual signal to open. The valve was in manual control to allow a controlled initiation of flow through the 'E' demineralizer vessel. A Maintenance Request was initiated to investigate the demineralizer outlet valve. At approximately 0800 PDT an I&C Technician was directed to investigate the problem with the outlet valve. During the investigation the operator assigned to work with the technician contacted the Control Room and received permission to place the demineralizer outlet valve controller in automatic in an effort to determine the location of the problem.

Upon placing the valve in automatic the demineralizer system master controller sensed a maximum open signal to the valve and a low flow through the 'E' demineralizer. The master controller uses the highest valve opening signal as a reference and matches the flows through the other demineralizer vessels to the flow through the vessel with the highest signal. In this case the 'E' demineralizer had the highest valve opening signal and a flow of about 2000 gpm. Prior to the 'E' demineralizer being placed in automatic the flow through each of the other six demineralizers was 3000-4000 gpm. When the 'E' demineralizer outlet valve was placed in automatic the master controller acted to match all the flows to the 2000 gpm flow through the 'E' demineralizer. This action resulted in the partial closing of the outlet valves for the other demineralizers causing a low suction pressure trip of the south main feedwater pump at 0836 PDT.

The partial closing of the demineralizer outlet valves increased the differential pressure across the demineralizer system. A failed differential pressure switch prevented the bypass valves from opening at 60 psid as designed. If the bypass valves had opened the low suction pressure trip of the south main feedwater pump could have been prevented.

An automatic turbine runback initiated on the main feedwater pump trip, but did not prevent a 'D' steam generator low-low water level (15%) signal which initiated a reactor trip from 65% power at 0838 PDT. The reactor had been operating at 100% power with a Reactor Coolant System temperature and pressure of 585°F and 2235 psig, respectively, but reactor power had decreased to 65% during the turbine runback.

CAUSE OF OCCURRENCE

The cause of the reactor trip was personnel error and equipment failure. The personnel investigating the 'E' demineralizer outlet valve did not understand how the Condensate Demineralizer System would respond when placing the valve control in automatic. A failure of the differential pressure switch prevented a bypass of the demineralizers which could have prevented the low suction pressure trip of the south main feedwater pump and, therefore, the reactor trip.

The demineralizer outlet valve was subsequently determined to be inoperable as a result of a failed air supply solenoid valve. The solenoid valve was stuck in the closed position preventing operating air from reaching the demineralizer outlet valve.

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CORRECTIVE ACTION

Immediate corrective action was taken in accordance with EI-0, "Reactor Trip, Safety Injection and Diagnosis" and EI-0.1, "Reactor Trip Recovery", to stabilize the plant in a shutdown condition. Subsequent corrective action was taken to replace the defective solenoid valve and the failed differential pressure switch. The 'E' demineralizer outlet valve was then tested satisfactorily.

A Training Information Bulletin is being prepared to ensure all Operations and Maintenance personnel understand the control circuits for the Condensate Demineralizer System. The lesson plans for the Condensate Demineralizer System training will be reviewed to determine their adequacy with regard to this event.

SIGNIFICANCE OF OCCURRENCE

This event did not effect the health and safety of the public since protective functions performed as required.



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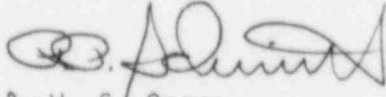
October 21, 1985
WSO-628-85

US Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

Licensee Event Report No. 85-12 is attached.

Sincerely,



for W. S. Orser
General Manager

WSO/RPS/DRK/SAB:bb
Attachment

c: Distribution
File 93.24a

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