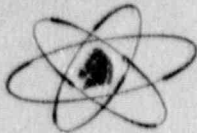


FGE



Portland General Electric Company
Trojan Nuclear Plant
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Rainier, Oregon 97048
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March 12, 1990
CPY-090-90

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

Gentlemen:

Licensee Event Report No. 90-03, Revision 1, is attached. This report updates an event in which both Centrifugal Charging Pumps could have been inoperable in Mode 3 during surveillance testing due to procedural inadequacy.

Sincerely,

C. P. Yundt
General Manager
Trojan Nuclear Plant

c: Mr. John B. Martin
Regional Administrator, Region V
U.S. Nuclear Regulatory Commission

Mr. David Stewart-Smith
State of Oregon
Department of Energy

Mr. R. C. Barr
USNRC Resident Inspector
Trojan Nuclear Plant

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Trojan Nuclear Plant										DOCKET NUMBER (2) 0 5 0 0 0 3 4 4 1 OF 0 5										PAGE (3) 0 5	
TITLE (4) Both Centrifugal Charging Pumps Could Have Been Inoperable During Mode 3 Due To A Procedural Inadequacy																					
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	1	1	9	0	0	0	0	3	0	1	0	3	1	2	9	0	0	5	0	0	0
OPERATING MODE (9) 1		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 8. (Check one or more of the following: (11))																			
POWER LEVEL (10) 1 10 10		20.402(b)			20.406(a)			80.73(a)(2)(v)			73.71(b)										
		20.406(a)(1)(i)			80.36(e)(1)			X 80.73(a)(2)(v)			73.71(c)										
		20.406(a)(1)(ii)			80.38(e)(2)			80.73(a)(2)(vi)			OTHER (Specify in Abstract below and in Text, NRC Form 350a)										
		20.406(a)(1)(iii)			X 80.73(a)(2)(i)			80.73(a)(2)(vii)(A)													
		20.406(a)(1)(iv)			80.73(a)(2)(ii)			80.73(a)(2)(vii)(B)													
		20.406(a)(1)(v)			80.73(a)(2)(iii)			80.73(a)(2)(viii)													
LICENSEE CONTACT FOR THIS LER (12)																					
NAME S. Stephen Howze, Compliance Engineer										TELEPHONE NUMBER 5 0 3 5 5 6 1 7 5 5 7 7											
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																					
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs		
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)											
YES (If yes, complete EXPECTED SUBMISSION DATE:)										X NO											
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines): (16)																					
<p>On January 19, 1990, the Plant was in Mode 1 (Power Operation) with the Reactor Coolant System (RCS) at 583°F, and 2240 psig. During a Design Basis Document review it was determined that because of procedural inadequacy, both Boron Injection Tank (BIT) Inlet Isolation Valves, MO-8803A and B could have been closed during surveillance testing in Mode 3 which would have made both Centrifugal Charging Pumps (CCPs) inoperable. This condition would have violated Trojan Technical Specification (TTS) 3.5.2, Emergency Core Cooling System (ECCS) Subsystem - Tavg ≥ 350°F, and constitute an unintentional entry into TTS 3.0.3. An investigation traced the procedural inadequacy to an inadequately implemented design change. A design change removed portions of the BIT subsystem, and made MO-8803A and B into normally open valves. These valves were no longer considered active components and surveillance testing of the valves was discontinued. With these valves closed, both CCPs (which share a common discharge through the BIT) would have been inoperable because valve opening on a valid Safety Injection (SI) signal could not be assured. A surveillance test procedure which <u>could</u> have been performed in Mode 3 contained steps which directed closure of these valves. The cause of this occurrence was procedural inadequacy and inadequate technical review. Contributing causes included details of the design change which created operational complexities, and insufficient administrative controls to prevent valve closure in Mode 3. Corrective actions include placing the valves under clearance, procedure revision, and providing for wider technical review of procedure revisions. A Human Performance Evaluation System (HPES) analysis is being performed on a similar event in order to identify root causes and appropriate corrective action.</p> <p>This event had no impact on the health and safety of the public. The inadequate test procedure was not performed during Mode 3, and did not actually render both CCPs inoperable.</p>																					

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

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

DESCRIPTION OF OCCURRENCE

At 1100 hours on January 19, 1990, the Plant was in Mode 1 (Power Operation) with the Reactor Coolant System (RCS) at 583°F, and 2240 psig. During a Design Basis Document review, it was determined that, by surveillance procedure, both Boron Injection Tank (BIT) Inlet Isolation Valves, MO-8803A and B, could have been closed during surveillance testing while in Mode 3, Hot Standby. This condition would render both Centrifugal Charging Pumps (CCPs) inoperable and would have been a violation of Trojan Technical Specification (TTS) 3.5.2, Emergency Core Cooling System (ECCS) Subsystem - $T_{avg} \geq 350^\circ\text{F}$, constituting an unintentional entry into TTS 3.0.3. Both CCPs [which share a common discharge through the BIT upon Safety Injection (SI)] would have been inoperable if MO-8803A and B were closed, because MO-8803A and B were no longer tested to demonstrate operability, as active Emergency Safeguards Feature (ESF) components, and valve opening upon a valid β signal could not be assured. The surveillance testing of the valves was discontinued following a design change which removed part of the BIT subsystem.

An engineering analysis determined that the BIT function of supplying high concentration (20,000 ppm) boron solution was not required for design basis accident mitigation. A design change was developed and implemented in the 1985 and 1986 time frame which removed the BIT as a functional subsystem of Centrifugal Charging Pump (CCP) safety injection. The design change specified removal of the associated boron solution mixing tank, recirculation pumps, piping, instrumentation, and heat tracing. The BIT itself was left in place. The design change did not remove or alter the MO-8803A and B motor operators or valve bodies. Prior to the design change the normal position for each valve was closed, isolating the BIT from charging system pressure, and allowing for recirculation and heating of the boron solution. MO-8803A and B were required to open upon receiving a Safety Injection Signal (SIS), and were periodically tested to demonstrate their operability. After the design change, the position of MO-8803A and B became normally open, and surveillance testing of the auto open feature was discontinued as specified in the design change package. It should be noted that although the design change revised the applicable Piping and Instrument Drawing (P&ID) to show MO-8803A and B as normally open valves, it shows these valves still receive a SIS actuation. Additionally, the design change did not consider all the uses of these valves.

Design changes are required to be reviewed for their impact on procedures. This design change required a number of revisions to system Operating Instructions (OIs) and Periodic Operating Tests (POTs), which were made. These revisions were adequate with respect to initial conditions and system lineups in accordance with accepted writers guidance, but they were not adequate to prevent this event.

On July 1, 1985 POT 25-2c, "Safeguards Test Panel Actuating Test Switch S824-K604 Trains A and B (SIS)", was revised to implement the design change (Revision 8). In this revision MO-8803A and B remained in the normal open position, and testing of the SI actuation was deleted.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO 3150-0104
EXPIRES: 8/31/88

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

After the design change an operational problem developed with the BIT Pressure Relief Valve PSV-8852, which was passing excessive amounts of water to the floor drain system in the Auxiliary Building. On June 29, 1987, POT 25-2c was revised to close MO-8803A and B instead of the BIT Outlet Isolation Valves MO-8801A and B. This change still prevented RCS injection and piping thermal cycles during the test and it also minimized the risk of lifting the BIT Pressure Relief Valve, PSV-8852. However, this revision resulted in the procedural inadequacy which could have caused both CCPs to be inoperable in Mode 3. This problem was related to the design change. Prior to the design change the BIT was normally isolated and in low pressure recirculation. After the design change the BIT was maintained at charging system header pressure, and PSV-8852 began leaking.

On September 28, 1987, a Nonconformance Report (NCR) was initiated due to concerns about PSV-8852 as a source of post-accident airborne activity and the design filtration capacity of the Control Room Ventilation System. The interim disposition of the NCR included replacing the relief valve with a blind flange. Since the BIT requires overpressure protection, it was necessary to apply a danger tag to the BIT Inlet Valves MO-8803A and B to prevent BIT isolation when RCS pressure was greater than 135 psig. However, the clearance contributed to the misunderstanding about the status of the MO-8803A and B.

In summary there were a number of different operational concerns which had to be considered when POT 25-2c was revised, which included:

- Preventing injection into the RCS loops in order to minimize the number of thermal cycles to the piping, which is a reason for closing the valves.
- Preventing BIT Pressure Relief, PSV-8852 from lifting in order to minimize the amount of water processed by radwaste, which is a reason for closing the valves.
- Since surveillance testing was no longer performed to demonstrate operability, the MO-8803A and B should not be closed in Modes 1 through 4.

Therefore, there were increased operational complexities following the design change. The procedure was revised to address the most visible and immediate concerns which was the PSV-8852 problem. The fact that MO-8803A and B were no longer active ESF components and the implications of closing these valves was relatively obscure.

CAUSE OF OCCURRENCE

The causes of this event were an inadequate procedure and inadequate technical and safety review of the POT 25-2c revision which could have allowed closure of MO-8803A and B valves in Mode 3.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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DOCKET NUMBER (2)

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

CONTRIBUTING CAUSES

The design change abandoned some of the BIT components in place increasing operational complexities, which required special treatment in affected procedures. The design change resulted in an unusual situation; i.e., motor-operated valves in an ECCS injection line that were not active ESF components. This situation is different from the usual design practice. Following the design change the applicable P&ID still represented MO-8803A and B as active ESF valves which receive a SI signal. The fact that the MO-8803A and B were no longer surveillance tested was relatively obscure. Finally, PSV-8852 was also an operational issue.

Appropriate administrative controls specifically addressing the status of the MO-8803A and B were not written into the appropriate procedures. Generally, the procedures were only revised and reviewed to ensure steps and initial conditions were correct. Therefore, the status of MO-8803A and B was not readily available during subsequent revisions.

CORRECTIVE ACTIONS

1. The BIT Inlet Isolation Valves MO-8803A and B were placed under a clearance to administratively control the valves.
2. POT 25-2C will be revised so that TTS 3.0.3 is not entered. This action will be completed by March 30, 1990.
3. Since the POT 25-2C revision of June 29, 1987 was made, AO 2-4, "Cross-Disciplinary Review", was issued to provide for a wider technical review of procedure revisions by other knowledgeable individuals. Also, AO 4-4 includes provisions for procedure verification and validation at the the discretion of the procedure supervisor.
4. A modification will be evaluated to either remove MO-8803A and B or restore the valves to operability as active ESF components, if they are required to be used for system testing. This evaluation will be completed by November 21, 1990.
5. A Human Performance Evaluation System (HPES) analysis is being performed on a similar event in order to identify root causes and appropriate corrective action. The HPES analysis will be completed by April 15, 1990.
6. The P&ID will be revised to provide information that MO-8803A/B are not active ESF components. This action will be completed by June 1, 1990.

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

SIGNIFICANCE OF OCCURRENCE

This event had no effect on the health and safety of the public. The subject POT was not actually performed in Mode 3. Therefore, both trains of CCPs were not rendered inoperable when they were required for safety.

This event was reportable as an Emergency Notification System Red Phone Report under Title 10 of the Code of Federal Regulation, Part 50.72(b)(2)(iii)(D) (10 CFR 50.72) and as a Licensee Event Report under 10 CFR 50.73(a)(2)(v) and 50.73(a)(2)(i).

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