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U. S. Nuclear Regulatory Commission
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Washington, DC 20555

LER 272/01-004-00
SALEM GENERATING STATION - UNIT 1
FACILITY OPERATING LICENSE NO. DPR-70
DOCKET NO. 50-272

Gentlemen:

This Licensee Event Report entitled "Core Alterations Performed While Boration Flow Path was Inoperable" is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(i)(B).

Sincerely,

A handwritten signature in black ink, appearing to read "D. F. Garchow".

D. F. Garchow
Vice President -
Operations

Attachment

BJT

C Distribution
LER File 3.7

IE22

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1) SALEM UNIT 1	DOCKET NUMBER (2) 05000272	PAGE (3) 1 OF 5
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TITLE (4)
Core Alterations Performed While Boration Flow Path was Inoperable

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 NAME	DOCKET NUMBER
04	13	01	01	004	00	06	01	01		

OPERATING MODE (9) 6	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR ̳: (Check one or more) (11)									
POWER LEVEL (10) 0	20.2201(b)	20.2203(a)(2)(v)	X	50.73(a)(2)(i)	50.73(a)(2)(viii)					
	20.2203(a)(1)	20.2203(a)(3)(i)		50.73(a)(2)(ii)	50.73(a)(2)(x)					
	20.2203(a)(2)(i)	20.2203(a)(3)(ii)		50.73(a)(2)(iii)	73.71					
	20.2203(a)(2)(ii)	20.2203(a)(4)		50.73(a)(2)(iv)	OTHER					
	20.2203(a)(2)(iii)	50.36(c)(1)		50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A					
	20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)						

LICENSEE CONTACT FOR THIS LER (12)

NAME Brian J. Thomas, Licensing Engineer	TELEPHONE NUMBER (Include Area Code) (856) 339-2022
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)		
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO		MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On April 13, 2001, at 2315, removal of the upper internals from the reactor vessel (a core alteration) commenced and continued until the upper internals were placed in their stand at 0052 on April 14. At 2335 on April 13, the 1B emergency diesel generator (EDG) {EK/DG} was rendered inoperable when the equipment hatch for the EDG was removed. At the time that core alterations were being performed, the 11 Charging Pump {CB/P} was being relied upon as the only OPERABLE boron injection flow path to meet the requirements of Technical Specification (TS) 3.1.2.3. When the 1B EDG was rendered inoperable, the 11 Charging Pump could no longer be considered OPERABLE per the Technical Specifications due to a lack of emergency power source.

The apparent cause for the performance of core alterations with no operable boration flow path is attributed to a human error in not properly linking in the outage schedule that the removal of the EDG equipment hatch impacted the operable boration flow path. A contributing cause of this event is also a human error; the SRO approving the work activity to remove the EDG equipment hatch did not recognize that removal of the equipment hatch rendered the EDG inoperable thereby rendering the 11 Charging Pump inoperable. Immediate corrective actions consisted of restoring the EDG to operable status and reviewing the outage schedule to ensure the Technical Specifications are complied with.

This event is being reported in accordance with the requirements of 10CFR50.73(a)(2)(i)(B).

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SALEM UNIT 1	05000272	01	0 0	4 00	2 OF 5

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

PLANT AND SYSTEM IDENTIFICATION

Westinghouse – Pressurized Water Reactor

Chemical and Volume Control System (CVCS) {CB/-}
Emergency Diesel Generator (EDG) {EK/-}

* Energy Industry Identification System {EIS} codes and component function identifier codes appear as (SS/CCC)

CONDITIONS PRIOR TO OCCURRENCE

Salem Unit 1 was in Mode 6, refueling, at the time of the event.

DESCRIPTION OF OCCURRENCE

On April 13, 2001, at 2315, removal of the upper internals from the reactor vessel (a core alteration) commenced and continued until the upper internals were placed in their stand at 0052 on April 14. At 2335 on April 13, the 1B emergency diesel generator (EDG) {EK/DG} was rendered inoperable when the equipment hatch for the EDG was removed.

At the time that core alterations were being performed, the 11 Charging Pump {CB/P} was being relied upon as the only OPERABLE boron injection flow path to meet the requirements of Technical Specification (TS) 3.1.2.3. The 11 Charging Pump receives power from the 1B 4KV bus. When the 1B EDG was rendered inoperable, the 11 Charging Pump could no longer be considered OPERABLE per the Technical Specifications due to a lack of emergency power source. In accordance with TS 3.1.2.3, with no charging pump OPERABLE, all operations involving CORE ALTERATIONS are to be suspended until one charging pump is restored to OPERABLE status.

As a result, core alterations were not suspended when the 1B EDG and the 11 Charging Pump were rendered inoperable. This event is reportable pursuant to the requirements of the Code of Federal Regulations 10CFR50.73(a)(2)(i)(B), "...any operation or condition which was prohibited by the plant's Technical Specifications."

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

ANALYSIS OF OCCURRENCE

Salem Unit 1 was in the midst of the 14th Refueling outage preparing the plant to offload the fuel from the reactor vessel to the spent fuel pool when the event occurred. In accordance with the outage schedule, the activity to remove the equipment hatch was slated to be performed. The Senior Reactor Operator (SRO) assigned to the outage approved the work order to remove the EDG equipment hatch without recognizing that this would render the EDG inoperable and that the 1B EDG was being relied upon to support the operable boration flow path for core alterations. In accordance with the original outage schedule, the 12 Charging Pump was to have been returned to service and used as the boration flow path for core alterations, however, delays occurred in restoring the service water flow to the 12 Charging Pump. The activity to remove the EDG equipment hatch was not linked in the outage schedule to rendering the EDG inoperable or rendering the boration flowpath via the 11 Charging Pump inoperable.

CAUSE OF OCCURRENCE

The apparent cause for the performance of core alterations with no operable boration flow path is attributed to a human error in not properly linking in the outage schedule that the removal of the EDG equipment hatch impacted the operable boration flow path. A contributing cause of this event is also a human error; the SRO (utility licensed operator) approving the work activity to remove the EDG equipment hatch did not recognize that removal of the equipment hatch rendered the EDG inoperable thereby rendering the 11 Charging Pump inoperable.

PRIOR SIMILAR OCCURRENCES

A review of LERs from 1999 through the present date for both Salem and Hope Creek was performed. LERs 272/99-001, 272/99-002, 272/99-003, 272/99-008, 272/99-009, 272/99-011, 272/00-004, 311/99-003, 311/99-007, 311/00-001, 311/00-003, 354/99-002, 354/99-005, 354/99-006, 354/99-007, 354/00-002, 354/00-004, 354/00-005, 354/00-006, 354/00-007, and 354/00-009 were attributed to various human errors in Operations, Engineering and Maintenance, however the corrective actions associated with these events were specific to the events and would not have prevented this event from occurring.

To address human performance issues, PSEG Nuclear has established a Human Performance Team. This team is providing training to the PSEG Nuclear Organization on human performance fundamentals and techniques to prevent human errors from occurring.

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

SAFETY CONSEQUENCES AND IMPLICATIONS

There were no safety consequences associated with this event. Although the 1B Emergency Diesel Generator (EDG) was technically inoperable due to the removal of the equipment hatch, the EDG was still available to function. No severe weather conditions existed at the time the hatch was removed that would have challenged the operation of the EDG. Therefore, in the event of a loss of offsite power, the EDG would have been capable of starting and supplying power to the charging pump maintaining the ability to inject boron into the reactor vessel.

A review of this event determined that a Safety System Functional Failure (SSFF) as defined in NEI 99-02 did not occur.

CORRECTIVE ACTIONS

1. The equipment hatch for the 1B Emergency Diesel Generator (EDG) was re-installed on April 14, 2001, to return the EDG to full operable status to support the required boration flow path.
2. On April 14, 2001, a 72-hour look ahead review of the Salem Unit 1 outage schedule was performed to ensure that activities were appropriately sequenced in the schedule to ensure compliance with Technical Specification requirements.
3. An action has been generated in PSEG Nuclear's Corrective Action Program to determine an appropriate method to readily identify the required boration flow path during shutdown conditions.
4. An action has been generated in PSEG Nuclear's Corrective Action Program to evaluate the procedural guidance for removing EDGs from service and ensuring redundant equipment required for the particular mode of operation is operable prior to removing the EDG from service.
5. An action has been generated in PSEG Nuclear's Corrective Action Program to evaluate that work activities for future outages are properly sequenced to ensure compliance with Technical Specification requirements.

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

CORRECTIVE ACTIONS (continued)

- 6. An action has been generated in PSEG Nuclear's Corrective Action Program to present this event to the Training Review Group (TRG) to determine the appropriate training to conduct on this event.
- 7. Appropriate personnel will be held accountable for their actions.

COMMITMENTS

The corrective actions cited in this LER are voluntary enhancements and do not constitute commitments.

TO: H. Keiser

FROM: D. F. Garchow

SUBJECT: LER #272/01-004-00



DATE: JUN 01 2001

- Title: "Core Alterations Performed While Boration Flow Path was Inoperable"
- This event is reportable in accordance with 10CFR50.73(a)(2)(i)(B), "as any operation or condition prohibited by the plant's technical specification."
- Root Cause:

The apparent cause for the performance of core alterations with no operable boration flow path is attributed to a human error in not properly linking in the outage schedule that the removal of the EDG equipment hatch impacted the operable boration flow path. A contributing cause of this event is also a human error; the SRO (utility licensed operator) approving the work activity to remove the EDG equipment hatch did not recognize that removal of the equipment hatch rendered the EDG inoperable thereby rendering the 11 Charging Pump inoperable.

- Corrective Actions:

1. The equipment hatch for the 1B Emergency Diesel Generator (EDG) was re-installed on April 14, 2001, to return the EDG to full operable status to support the required boration flow path.
2. On April 14, 2001, a 72-hour look ahead review of the Salem Unit 1 outage schedule was performed to ensure that activities were appropriately sequenced in the schedule to ensure compliance with Technical Specification requirements.
3. An action has been generated in PSEG Nuclear's Corrective Action Program to determine an appropriate method to readily identify the required boration flow path during shutdown conditions.
4. An action has been generated in PSEG Nuclear's Corrective Action Program to evaluate the procedural guidance for removing EDGs from service and ensuring redundant equipment required for the particular mode of operation is operable prior to removing the EDG from service.
5. An action has been generated in PSEG Nuclear's Corrective Action Program to evaluate that work activities for future outages are properly sequenced to ensure compliance with Technical Specification requirements.
6. An action has been generated in PSEG Nuclear's Corrective Action Program to present this event to the Training Review Group (TRG) to determine the appropriate training to conduct on this event.
7. Appropriate personnel will be held accountable for their actions.

C E. Simpson
S. Houston