



**MAR 11 2002**

**LR-N02-0064**

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

**LER 311/02-001-00**  
**SALEM GENERATING STATION - UNIT 2**  
**FACILITY OPERATING LICENSE NO. DPR-75**  
**DOCKET NO. 50-311**

Gentlemen:

This Licensee Event Report entitled "Technical Specification Shutdown Due to 2A Diesel Generator Being Inoperable" is being submitted pursuant to the requirements of 10CFR50.73 (a)(2)(i)(A).

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*

## LICENSEE EVENT REPORT (LER)

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

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose 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 collection.

1. FACILITY NAME  
SALEM GENERATING STATION UNIT 22. DOCKET NUMBER  
050003113. PAGE  
1 OF 54. TITLE  
TECHNICAL SPECIFICATION SHUTDOWN DUE TO 2A DIESEL GENERATOR BEING INOPERABLE

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
01	11	02	02	- 001 - 00		03	11	02		05000
9. OPERATING MODE			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)							
1			20.2201(b)			20.2203(a)(3)(ii)			50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
10. POWER LEVEL			20.2201(d)			20.2203(a)(4)			50.73(a)(2)(iii)	50.73(a)(2)(x)
100			20.2203(a)(1)			50.36(c)(1)(i)(A)			50.73(a)(2)(iv)(A)	73.71(a)(4)
			20.2203(a)(2)(i)			50.36(c)(1)(ii)(A)			50.73(a)(2)(v)(A)	73.71(a)(5)
			20.2203(a)(2)(ii)			50.36(c)(2)			50.73(a)(2)(v)(B)	OTHER
			20.2203(a)(2)(iii)			50.46(a)(3)(ii)			50.73(a)(2)(v)(C)	Specify in Abstract below or in
			20.2203(a)(2)(iv)		X	50.73(a)(2)(i)(A)			50.73(a)(2)(v)(D)	NRC Form 366A
			20.2203(a)(2)(v)			50.73(a)(2)(i)(B)			50.73(a)(2)(vii)	
			20.2203(a)(2)(vi)			50.73(a)(2)(i)(C)			50.73(a)(2)(viii)(A)	
			20.2203(a)(3)(i)			50.73(a)(2)(ii)(A)			50.73(a)(2)(viii)(B)	

## 12. LICENSEE CONTACT FOR THIS LER

NAME  
Brian J. Thomas, Licensing EngineerTELEPHONE NUMBER (Include Area Code)  
856-339-2022

## 13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	EK	EC	B093	Y	A	EK	BKR	G080	N

## 14. SUPPLEMENTAL REPORT EXPECTED

YES (If yes, complete EXPECTED SUBMISSION DATE) X NO

## 15. EXPECTED SUBMISSION DATE

MONTH DAY YEAR

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

At 0303 on January 11, a plant shutdown in accordance with Technical Specifications was commenced. Limited Condition for Operation (LCO) action 3.8.1.1.b states, "...with one diesel generator...inoperable,... restore the inoperable diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours." The 2A emergency diesel generator (EDG) had been taken out of service on January 8, 2002 at 0303 hours for a scheduled maintenance window to last 44 hours. On January 9, the 2A EDG experienced erratic speed and voltage control during post-maintenance testing and could not be repaired prior to exceeding the 72 hour LCO. At 0836 on January 11, Salem Unit 2 entered Mode 3. On January 12 at 1242 hours, the 2A EDG was returned to operable status and the cool down to Mode 5 was halted.

The cause of the shutdown of Salem Unit 2 was attributed to a failure to diagnose and repair the cause of the EDG oscillations within the remaining LCO time following planned maintenance. Corrective actions associated with this event include replacement of the voltage regulator, procedure changes, preventive maintenance reviews and lesson learned discussions.

This event is reportable in accordance with 10CFR50.73(a)(2)(i)(A), "The completion of any nuclear plant shutdown required by the plant's Technical Specifications..."

**LICENSEE EVENT REPORT (LER)**  
**TEXT CONTINUATION**

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SALEM UNIT 2	05000311	02	0 0 1	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

Emergency Diesel Generator (EDG) {EK/-}

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

**CONDITIONS PRIOR TO OCCURRENCE**

Salem Unit 2 was in Mode 1 at 100% power prior to the Technical Specification required shutdown. Mode 3 (Hot Standby) was entered at 0836 on January 11, 2002. The 2A EDG was declared operable at 1242 hours on January 12 and the cool down to Mode 5 was halted.

No structures, systems or components were inoperable beyond the 2A EDG at the time of the occurrence that contributed to this event.

**DESCRIPTION OF OCCURRENCE**

On January 8, 2002, at 0303 hours, the 2A emergency diesel generator (EDG) {EK/-} was taken out of service for a scheduled maintenance window to last 44 hours. Limited Condition for Operation (LCO) action 3.8.1.1.b was entered which states, "...with one diesel generator...inoperable,... restore the inoperable diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours."

On January 9, at approximately 2244 hours, the 2A EDG displayed erratic speed and voltage control when attempting to perform post maintenance surveillance testing. A team was then assembled to assist in the troubleshooting of the EDG.

On January 10, at 1821 hours and 1950 hours the 2B and 2C EDGs, respectively, were started and loaded to comply with TS action 3.8.1.1.b which states, "...determine the two remaining OPERABLE diesel generators are not inoperable due to a common cause failure or perform Surveillance Requirement 4.8.1.1.2.a.2 within 24 hours...".

At 0303 on January 11, the 72-hour action statement time expired and preparations were made to take the unit offline. At 0400 hours, power reduction was commenced to comply with the Technical Specifications. Troubleshooting of the 2A EDG continued through the power reduction. At 0836,

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

**DESCRIPTION OF OCCURRENCE (cont'd)**

Salem Unit 2 entered Mode 3 in accordance with the requirements of the Technical Specifications. Plant cool down to Mode 5 (COLD SHUTDOWN) was commenced.

During the day shift on January 11, the voltage regulator board for the 2A EDG was replaced. At 2138 hours, the EDG was run unloaded and all parameters were determined to be satisfactory. The EDG was stopped at 2212 and preparations for voltage regulator and governor tuning commenced. At 0355 on January 12, the 2A EDG was started to complete the tuning. Prior to reaching the last step of the tuning process, the 2-hour unloaded run limit was reached. Per procedure, the EDG either needs to be loaded or shutdown. An attempt was made to load the EDG, however, the output breaker {EK/BKR} tripped on reverse power and the EDG was stopped at 0612. Troubleshooting was conducted and identified that there were no mechanical failures that caused the reverse power. The 2A EDG was started at 0847 with no problems noted. The operability run of the EDG commenced at 1019. The plant cool down reached 210°F reactor coolant temperature (lower end of Mode 4) at 1032. At 1242, the 2A EDG was declared operable and the shutdown to cold shutdown was stopped.

**ANALYSIS OF OCCURRENCE**

A team was assembled to assist in the troubleshooting of the 2A EDG upon the failure of the EDG to satisfactorily run following planned maintenance. At the time the 2A EDG failed the post maintenance operability run there were only 27 hours remaining in the action statement time. Investigation into the oscillations of the EDG began immediately, however, a formal 'Technical Issues' process evaluation (a detailed comprehensive issue assessment methodology) was not performed in parallel with the initial troubleshooting activities. Upon failure of the initial troubleshooting activities to correct the EDG oscillations the technical issues process was formally started approximately 15 hours after the original oscillation problem was reported. Upon implementing the Technical Issues process, a plan was developed which lead to the repair (replacement of the voltage regulator board) of the 2A EDG and restoring the 2A EDG to operable status on January 12, 2002 at 1242 hours.

**CAUSE OF OCCURRENCE**

The cause of the shutdown of Salem Unit 2 was attributed to a failure to diagnose and repair the cause of the EDG oscillations within the remaining LCO time following planned maintenance.

The oscillations of the EDG appear to have been from a failed voltage regulator board, further evaluation of the failed regulator board is ongoing. Upon replacement of the voltage regulator board, the oscillations were corrected. A review of maintenance records for the EDG voltage regulators identified that no preventive maintenance is performed on this component.

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

**CAUSE OF OCCURRENCE (cont'd)**

The cause of the EDG breaker to trip on reverse power is attributed to personnel error. The equipment operator did not immediately increase load on the EDG following closure of the breaker as stated in the procedure. The procedure contains a caution to alert the operator that not immediately increasing load may cause tripping of the breaker on reverse power. The equipment operator was not aware that the reverse power trip timer for the breaker was only set for nine seconds following closure of the breaker.

**PRIOR SIMILAR OCCURRENCES**

A review of LERs for Salem Unit 1, Salem Unit 2 and Hope Creek over the past three years identified no other instances of a Technical Specification (TS) shutdown due to failure to diagnose an equipment failure prior to exceeding the TS action statement time. The only other TS required shutdown in the past three years occurred at Hope Creek as reported in LER 354/01-001-00 when both trains of main steam isolation valve sealing steam were inoperable at the same time due to excessive leakage in one train and an emergent equipment failure in the other train.

**SAFETY CONSEQUENCES AND IMPLICATIONS**

Although the 2A EDG was inoperable for greater than allowed action statement time specified in the Salem Unit 2 Technical Specifications, there was no impact to the ability to either safely shutdown the plant or respond to a design basis accident. In the event that a design basis accident occurred during the time the 2A EDG was inoperable, the two sources of offsite power to the safety related busses remained operable. In the event of an accident, the required mitigation equipment would have been supplied power from the offsite power source and therefore the entire complement of accident mitigation equipment remained available. However, in the case of a design basis accident with a loss of offsite power, the two remaining EDGs were operable and capable of supplying emergency power to their respective busses. As stated in the Salem UFSAR section 8.3.1.5, any two diesel generators and their respective busses can supply sufficient power for operation of the required accident mitigation equipment. Based on the above, there was no impact to the health and safety of the public.

A review of this condition determined that a Safety System Functional Failure (SSFF) has not occurred as defined in Nuclear Energy Institute (NEI) 99-02.

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		02	0 0 1	00	

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

**CORRECTIVE ACTIONS:**

1. The voltage regulator card on the 2A EDG was replaced and the EDG was returned to an operable status. A review will be performed of the preventive maintenance program for the EDGs to determine if changes to the preventive maintenance being performed are necessary. Completion of this action is being tracked in accordance with PSEG Nuclear's Corrective Action Program.
2. This event will be reviewed by the Operations Training Review Group to evaluate appropriate changes to the Equipment Operator Training Program. This action is being tracked in accordance with PSEG Nuclear's Corrective Action Program.
3. Improvements are being made to procedure SH.OP-AP.ZZ-0101, "Post-Transient Response Requirements", covering TARP team responsibilities to address the implementation and integration of the Technical Issues process and field troubleshooting. Completion of this action is being tracked in accordance with PSEG Nuclear's corrective action program.
4. Lessons learned from this event will be discussed with TARP team leaders and line managers. Completion of this action is being tracked in accordance with PSEG Nuclear's corrective action program.

**COMMITMENTS**

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