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DEC 21 2006

10CFR50.73

LR-N06-0480

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington DC 20555-001

LER 311/06-005
Salem Nuclear Generating Station Unit 2
Facility Operating License No. DPR-75
NRC Docket No. 50-311

SUBJECT: Automatic Start of Auxiliary Feedwater Pumps in Mode 4

This Licensee Event Report, "Automatic Start of Auxiliary Feedwater Pumps in Mode 4" is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR50.73(a)(2)(iv)(A).

The attached LER contains no commitments. Should you have any questions or comments regarding this submittal, please contact Mr. Howard Berrick at 856-339-1862.

Sincerely,

Carl J. Fricker
Salem Plant Manager

Attachments (1)

IE22

C Mr. Samuel Collins, Administrator - Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

U. S. Nuclear Regulatory Commission
Attn: Mr. S. Bailey, Licensing Project Manager – Salem
Mail Stop 08B1
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USNRC Senior Resident Inspector - Salem (X24)

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NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory 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 and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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 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 collection.

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4. TITLE

Automatic Start of Auxiliary Feedwater Pumps in Mode 4

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	29	2006	2006	005	00	12	21	2006	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

4

10. POWER LEVEL

000

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☒ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Howard G. Berrick, Senior Licensing Engineer	856-339-1862

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
A	-	-	-	No					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On October 29, 2006, with Unit 2 in Mode 5 and starting up from its fifteenth refueling outage, Main Turbine surveillance testing (ST) was in progress with the turbine governor and stop valves open. The ST procedure allows testing with the plant to in Mode 5, Mode 6, or Mode 4 with the main steam isolated from the main turbine. Later in the day, the plant transitioned into Mode 4. This mode change procedurally required that the Main Steam Isolation Valves (MSIVs) and bypass valves be closed; however, not all members of the operating shift realized the requirement.

During the performance of the turbine testing, post maintenance testing activities on the 22 loop MSIV were requested. Some of the shift Operations personnel were briefed on the opening of the MSIV for retest, but failed to recognize that the Main Turbine stop and governor valves were open. As the MSIV stroked opened, the 22 Steam Generator (S/G) narrow range indicated level decreased, generating an Engineered Safety Features automatic start signal for the 21 and 22 motor driven Auxiliary Feedwater pumps. Operators promptly restored indicated feedwater level to 22 S/G. The cause of this event is attributed to inadequate oversight of plant activities and is reportable in accordance with 10CFR50.73 (a)(2)(iv)(A), "any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section."

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

PLANT AND SYSTEM IDENTIFICATION

Westinghouse – Pressurized Water Reactor (PWR/4)
Auxiliary Feedwater System {BA/--}*
Feedwater/Steam Generator Water Level Control System {JB/--}*

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

IDENTIFICATION OF OCCURRENCE

Event Date: October 29, 2006

Discovery Date: October 29, 2006

CONDITIONS PRIOR TO OCCURRENCE

Salem Unit 2 was in Operational Mode 4 at 0% reactor power.

No structures, systems or components were inoperable at the time of the discovery that contributed to the event.

DESCRIPTION OF OCCURRENCE

On October 29, 2006, with Unit 2 in Mode 5 and starting up from its fifteenth refueling outage, the Main Turbine surveillance testing was in progress with the turbine latched and the turbine governor valves open. The Main Turbine ST procedure allows testing with the plant in Mode 5, Mode 6, or Mode 4 with the main steam isolated from the main turbine by having all MSIVs and their associated bypass valves closed. Later in the day, operators transitioned the plant into Mode 4. This mode change procedurally required that the MSIVs and bypass valves be closed; however, not all members of the operating shift realized the requirement.

The on-coming shift's Nuclear Control Operator (NCO) that was dedicated to performing the turbine ST was aware that the Unit had changed operational modes, which required the MSIVs and associated bypass valves to remain closed as a conditional step in the procedure. However, he was using an alternate main turbine EHC display located behind the control board console, which removed him from being able to observe other activities that were being performed.

While the turbine testing was in progress, a separate NCO was directed to perform post maintenance test activities on the 22 loop MSIV. The assigned NCO briefed the Unit 2 Control Room Supervisor (CRS) on the stroking open of the MSIV. Neither the assigned NCO nor the Unit CRS recognized that the Main Turbine was latched and the turbine stop and governor valves were open.

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

DESCRIPTION OF OCCURRENCE (contd)

With the turbine governor valves open and the turbine latched for testing, as the 22 loop MSIV was opened, the 22 Steam Generator (S/G) indicated narrow range level rapidly decreased to 7%; below the low-low S/G level {JB} setpoint of 14%. At the S/G low-low level setpoint, the reactor protection system generated a reactor trip signal, which opened the Reactor Trip Breakers. The opening of the Reactor Trip Breakers initiated a Main Turbine trip, closing the open stop and governor valves. The low S/G level also caused the Engineered Safety Features (ESF) to generate an automatic start signal for the 21 and 22 motor driven Auxiliary Feedwater pumps (MDAFPs) {BA/--}.

Feedwater level in the 22 S/G was restored, the 21 and 22 MDAFPs were secured, and the MSIV testing was satisfactorily completed.

An eight-hour notification was made to the NRC in accordance with 10CFR 50.72(b)(3)(iv) on October 30, 2006 at 0110. This report is being submitted in accordance with 10CFR 50.73(a)(2)(iv)(A), required for "any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section."

PREVIOUS OCCURRENCES

A review of LERs at Salem Station dating back to 2002 identified two previous events where Auxiliary Feedwater System ESF actuations had occurred as result of low Steam Generator level:

1. 272/02-005-00, "Unexpected Auto Start of Turbine Driven Auxiliary Feedwater Pump at Start of Refueling Outage" – The cause was attributed to ineffective implementation of the Design Change Package (DCP) for the S/G low-low level setpoint change, and
2. 272/02-004-00, "Manual Reactor Trip and Automatic Auxiliary Feedwater Actuation on Low Steam Generator Level Due to Feedwater Pump Runback" – The cause of this was attributed to inappropriate troubleshooting and design inadequacies.

The cause of these events was principally process related and, therefore, the corrective actions associated with these prior events would not have prevented this more recent event.

CAUSE OF OCCURRENCE

The cause of the event was the lack of broad oversight and coordination of all control room activities that were occurring simultaneously.

Separate supervisory personnel were involved with specific portions of the initiated activities, but a dedicated Senior Reactor Operator was not assigned for providing the broad oversight needed for the multiple activities. Without the necessary broad oversight and coordination, conflicts with the testing activities and changed plant conditions were not appropriately identified and managed.

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

SAFETY CONSEQUENCES AND IMPLICATIONS

There was no actual safety consequences associated with this event; sufficient cooling was always maintained. The low level in the 22 S/G occurred as a result of human error and was not caused by equipment malfunction. The safety systems responded to the low S/G level as designed.

A review of this event determined that a Safety System Functional Failure (SSFF) as defined in NEI 99-02, Regulatory Assessment Performance Indicator Guidelines, did not occur. There was no condition that alone could have prevented the fulfillment of a safety function of a system needed to remove residual heat.

CORRECTIVE ACTIONS

1. All control room activities for the duration of the outage were re-verified to ensure that no operational conflicts existed.
2. The pre-job brief used for performance of MSIV testing was updated to include this event to be used prior to future testing.
3. A lessons-learned briefing to all licensed operators will be performed prior to the next refueling outage. This will reinforce expectations pertaining to roles and responsibilities of the person having command and control of the unit during periods when multiple activities are being performed.
4. A readily available means in the control room to visually identify key operating precautions and limitations in progress during outages, which can be used to recognize potential testing activity conflicts, will be developed.

COMMITMENTS

No commitments are made in this LER.