NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

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EXPIRES 04/30/98

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND 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.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
SALEM GENERATING STATION, UNIT 1	05000272	1 OF 8

TITLE (4)
Surveillance for Turbine-Driven Auxiliary Feedwater Pumps Not Performed Prior to Entry Into Mode 3 as Required by Technical Specifications

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
03	25	96	96	- 005 -	05	10	17	96	Salem Unit 2	05000311
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N	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	TELEPHONE NUMBER (Include Area Code)
Brian J. Thomas, Licensing Engineer	609-339-2022

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

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

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

In December 1995, a Technical Specification Surveillance Improvement Project (TSSIP) was initiated for Salem Units 1 and 2. The scope and content of the TSSIP program was described previously in LER 311/95-008-00. This project is expected to be completed by December 31, 1997. As a result of this effort, Technical Specifications (TS) non-compliances have been identified by the review team. Most of these non-compliances have been found in the area of surveillance requirement implementation deficiencies and will be (are being) reported as supplements to this LER - 272/96-005.

This LER documents a failure to perform surveillance testing in accordance with Technical Specification (TS) 4.7.1.2.c.2 for the 13(23) turbine-driven auxiliary feedwater (TDAFW) pumps prior to entry into Mode 3. This LER also identifies that the surveillance procedures to ensure that each actuation signal starts the TDAFW pump as required by TS 4.7.1.2.c.2 do not open the steam supply valve on receipt of each actuation signal. This constitutes a violation of TS 4.0.4 and 4.7.1.2.c.2.

The apparent cause of this occurrence is attributed to a lack of adequate controls and understanding of the development and maintenance of TS surveillance procedures. The Corrective action for this occurrence is the issuance of a License Change Request for exemption to 4.0.4 and a procedure revision to ensure TS compliance.

These events are reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), any condition prohibited by the plant's Technical Specifications.

PLANT AND SYSTEM IDENTIFICATION

Westinghouse - Pressurized Water Reactor

Tavg Instrumentation (RCP) {AB/-}*
Sustained Degraded Voltage Instrumentation (4KV) {EB/-}
Auxiliary Building Ventilation System (AB) {VF/-}
Fuel Handling Building (FHB) Ventilation System {VG/-}
Containment Fan Coolers {BK/CLR}
Containment Sump {NH/-}
Control Area Ventilation {VI/-}
Auxiliary/Emergency Feedwater System (AFW) {BA}

* Energy Industry Identification System (EIIS) codes and component function identifier codes appear in the text as (SS/CCC).

CONDITIONS PRIOR TO OCCURRENCE

At the time of identification, Salem Units 1 and 2 were shutdown and defueled.

DESCRIPTION OF OCCURRENCE

As a Corrective Action from LER 311/95-006 a Technical Specification (TS) Surveillance Improvement Project (TSSIP) has been initiated. Additional deficiencies found during the TSSIP will be documented in supplements to this LER.

LER 272/96-005-00 described an event that occurred due to the identification of a Technical Specification (TS) surveillance test inadequacy. This supplement describes additional occurrences of a Technical Specification surveillance implementation deficiencies identified during the Technical Specification Surveillance Improvement Project (TSSIP) review.

On March 25, 1996, during a review of the implementation of Technical Specification Surveillance Requirement 4.3.2.1.1, the TSSIP team identified a Technical Specification violation regarding Channel Checks. Surveillance Requirement 4.3.2.1.1 requires a Channel Check on the instrument channels listed in Table 4.3-2. Items 1.f and 4.d of Table 4.3-2 list Engineered Safety Feature Actuations which occur on Steam Flow in Two Steam Lines--HIGH coincident with Tavg--LOW-LOW or Steam Line Pressure--LOW. The Channel Check requirements apply such that a comparison of the Steam Line Flow {SB/-}indications is to be made once per shift in Modes 1, 2 and 3, as are comparisons of the Tavg instruments, and the Steam Line Pressure instruments. A further review determined that Channel Checks were not being performed on the Tavg instruments since at least November 23, 1979 as required in Modes 1, 2 and 3.

On April 3, 1996, during a review of the implementation of Technical Specification Surveillance Requirement 4.3.2.1.1, the team identified a Technical Specification violation regarding Channel Checks. Surveillance Requirement 4.3.2.1.1 requires a Channel Check on the instrument channels listed in Table 4.3-2. Item 7.b of Table 4.3-2 lists Engineered Safety Feature Actuations which occur upon a Vital Bus Sustained Degraded Voltage. The three (3) Vital Bus Sustained Degraded Voltage instruments on each 4KV bus require Channel Checks once per shift in Modes 1, 2 and 3. The TSSIP determined that the

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

DESCRIPTION OF OCCURRENCE (cont'd)

Vital Bus Sustained Degraded Voltage instruments were not adequately Channel Checked in Modes 1, 2 and 3 as required by Technical Specification 4.3.2.1.1.

The Sustained Degraded Voltage instrumentation was added to Salem Unit 1 and 2 vital 4KV buses in April of 1982 and June of 1983, respectively. The Technical Specifications for both units were revised to reflect the Sustained Degraded Voltage instrumentation effective July 23, 1982 by Amendments 45 (Unit 1) and 10 (Unit 2). A review of historical documentation concluded that the Channel Check requirements specified in the revised Technical Specifications were not implemented.

The review also identified that the Channel Check requirements for 4KV Vital Bus Undervoltage instruments were apparently not satisfied from initial plant operation of either unit until 1989. These checks were required in Modes 1, 2 and 3 by Item 7 of Table 4.3-2 in the original issue of Unit 1 and 2 Technical Specifications, which became Item 7.a when the Sustained Degraded Voltage instruments were installed. This conclusion is based on the oldest record found which was a Unit 1 log taken for Modes 1 through 4, dated November 23, 1979, and review of subsequent revisions to the same log.

In January of 1988, the Unit 1 Sustained Degraded Voltage instrumentation was changed from a 2 out of 3 bus logic to a 2 out of 3 per bus logic in response to the Salem Unit 2 event of August 26, 1986, which resulted in the Unit 2 vital buses transferring back and forth between Station Power Transformers 21 and 22 until they finally separated from offsite power. Salem Unit 2 was similarly modified in March of 1990. The Technical Specifications for both units were revised by Amendments 102 (Unit 1) and 79 (Unit 2), effective September 25, 1989, to address the modifications.

The review of available documentation concluded that the Channel Check requirements specified in the revised Technical Specifications were not implemented. As described above, a Channel Check of the 4KV Vital Buses was added to the Operating Logs for Modes 1-4 in 1989.

On May 6, 1996, the TSSIP Team identified an inadequacy in the bypass testing of the Auxiliary Building (AB) {NF} and Fuel Handling Building (FHB) {ND} ventilation systems. Salem Units 1 and 2 Technical Specification surveillances for the AB exhaust air leakage filtration systems, TS 4.7.7.1.b.1 (TS 4.7.7.b.1) for units 1 and 2 respectively, and FHB area ventilation system (TS 4.9.12.b.1) were not adequately met. Specifically, the surveillance did not demonstrate that the total bypass flow of ventilation system to the facility plant vent, including leakage through the ventilation system diverting valves, is less than or equal to 1% when the system is tested by admitting cold Dioctyl Phthalate (DOP) at the system intake.

During the FHB ventilation testing, the test gas is injected at a common point upstream of the normal and emergency filter units. The downstream sample, however, is only taken inside the emergency filter unit. While this test setup satisfied the requirement for the HEPA filter in-place efficiency test required by TS 4.7.7.1.B.3 (TS 4.7.7.1.B.2), it does not adequately measure the bypass flow leakage through the normal filtration unit as required by TS, which isolates during an accident or a high radiation signal. Similar test setup conditions existed during the AB ventilation system testing.

DESCRIPTION OF OCCURRENCE (cont'd)

On May 8, 1996, the TSSIP Team also identified a testing inadequacy with respect to maintaining a negative pressure in the spent fuel pool area. TS surveillance 4.9.12.d.4 (4.9.12.d.3) requires that a negative pressure be maintained between the spent fuel pool area and the outside atmosphere during system operations. Procedure SC.RP-TI.ZZ-1140, Fuel Handling Building Ventilation System Negative Pressure Test, which is used to perform this test, does not adequately demonstrate compliance with the TS requirement. The procedure verifies that a negative pressure is maintained using the normal operation (HEPA filter bank only) system lineup. The intent of the surveillance is to demonstrate that a negative pressure can be maintained with the system in its accident mode lineup (HEPA plus Charcoal).

On May 8, 1996, the TSSIP Team also identified a deficiency in the implementation of TS 3.3.2.1, Engineered Safety Feature Actuation Signal (ESFAS) Table 3.3-5, item 2H. Specifically, TS 3.3.2.1 Table 3.3-5, item 2H, Containment Fan Coolers {BK}, for both Salem units, requires a total instrument channel response time of less than or equal to 40 seconds in Modes 1 - 3, when the initiation signal is generated by the containment high pressure sensors. Procedure S1(2).IC-TR.ZZ-0002, Unit 1(2) Master Time Response, calculates the total instrumentation channel response time by adding the inputs from a series of implementing response time procedures. The result for each instrumentation channel is then compared to the TS Table 3.3-5 acceptance criteria. When reviewing the calculation results for Item 2H, it was noted that the response time for containment high - high was utilized instead of containment high. A review and recalculation of past completed surveillances for item 2H indicates that the TS required time response was not exceeded.

On May 22, 1996, the Salem Technical Specification Surveillance Improvement Project (TSSIP) identified that the control and implementation of procedure SC.RP-TI.ZZ-1102, Containment Entries At Power, was not adequate to meet the visual inspection or mode applicability requirements of the Technical Specification Surveillance 4.5.2.c.2. Surveillance 4.5.2.c.2 requires a daily visual inspection of the areas affected within the containment by containment entry when Containment Integrity is established. The daily visual inspection is only required if Containment entry has occurred since the last visual inspection. Technical Specification 4.5.2 is applicable in Modes 1 through 4, and Containment Integrity is a prerequisite to entry into Mode 4.

Investigation determined that responsibility for Technical Specification Surveillance 4.5.2.c.2 was transferred from the Operations Department to the Radiation Protection Department in late 1983. The transfer of responsibility was not sufficiently controlled to assure compliance with the mode applicability and visual inspection requirements of Technical Specification Surveillance 4.5.2.c.2. Since 1983, the Radiation Protection procedure implementing Technical Specification 4.5.2.c.2 was revised numerous times. This provided opportunities to identify that the mode applicability and visual inspection requirements were not being properly implemented.

On July 11, 1996 a review determined the testing of the Auxiliary Building Ventilation, Control Area Ventilation and the Fuel Handling Ventilation systems charcoal canisters did not meet the Salem Unit 2 Technical Specifications surveillance requirements. The Salem Unit 2 Technical Specifications 4.7.6.1.b.2, 4.7.6.1.c, 4.7.7.b.3, 4.7.7.c, 4.9.12.b.3 and 4.9.12.c require analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, 1978. The Regulatory Guide references ANSI N509-1976 which defines the method of filling the test canisters and requirements for leak and resistance testing of the test canisters.

DESCRIPTION OF OCCURRENCE (cont'd)

The charcoal trays were sent offsite to a vendor and filled, packed and tested in accordance with Technical Specification requirements. However the test canisters were refilled onsite by the Maintenance Department personnel. The work orders and procedures for replacing the canisters and refilling did not contain the ANSI N509 requirements for filling, and leak and resistance testing the canisters. Because these requirements were not performed for the test canisters, this constitutes a missed surveillance.

On September 25, 1996, a review determined that Technical Specification (TS) Surveillance Requirement 4.7.1.2.c.2 for Units 1 and Units 2 was not being performed prior to entry into Mode 3 for the 13(23) turbine-driven AFW pumps. Surveillance 4.7.1.2.c.2 requires that at least once per 18 months during shutdown that each auxiliary feedwater pump starts as designed automatically upon receipt of each auxiliary feedwater actuation test signal. This technical specification is applicable in Modes 1, 2 and 3. Since January 1994, Salem Units 1 and 2 have each made two operational mode changes from Mode 4 to Mode 3 without testing the start of the turbine-driven AFW pumps prior to entry into Mode 3 constituting a violation of TS 4.0.4.

TSs normally require completion of the specified surveillance test within the stated periodicity to prove operability of a safety system or component before entry into a Mode or operational condition that requires the system or component to be operable and capable of performing its required function. However, some components can not be adequately tested in a lower Mode or operating condition. Because of this, special provisions that allow entry into the applicable Mode (provided surveillances are promptly performed to verify operability) are included in TS. This is accomplished by a specific exemption to TS 4.0.4 in the applicable TS.

TDAFW pump operability testing at Salem is a specific example of the need for a provision to exempt compliance with TS 4.0.4. The steam pressure needed to properly test the pumps is not available in Mode 4, but the pumps are required to be operable in Modes 1, 2 and 3. Past practice at Salem has been to perform the test when in Mode 3 when adequate steam pressure is available.

The review of TS 4.7.1.2.c.2 also identified that the procedures used to test that each actuation signal starts the TDAFW pump do not ensure that each actuation signal opens the steam supply valve to the TDAFW pump. This condition has existed since the initial startup of Salem Units 1 and 2 and constitutes a violation of TS 4.7.1.2.c.2.

CAUSE OF OCCURRENCE

The cause of these occurrences has been attributed to a lack of adequate controls and understanding of the development and maintenance of Technical Specification surveillance procedures. This weakness was previously identified in LER 311/95-008.

PRIOR SIMILAR OCCURRENCES

A review of LERs for Salem Units 1 and 2 issued in the last two years identified seventeen LERs(272/94-008, 272/95-004, 272/95-019, 272/95-024, 272/95-028, 272/96-004, 272/96-006, 272/96-008, 272/96-016, 272/96-023, 272/96-024, 311/95-006, 311/95-008, 311/96-003, 311/96-005, 311/96-007, and 311/96-010) that were a result of missed surveillances due to inadequate implementation of Technical Specification requirements. The identification of these programmatic issues resulted in the initiation of the Technical Specification Surveillance Improvement Program (TSSIP) described in LER 311/95-008. The TSSIP should ensure that Technical Specification surveillance requirements are adequately implemented.

SAFETY CONSEQUENCES AND IMPLICATIONS

Tavg Channel Checks:

There were no safety consequences for this occurrence since plant operators monitor Tavg readings for each loop once every eight (8) hours in Modes 1 and 2, and every 30 minutes if the reactor is critical and Tavg is below 551°F with the Tavg-Tref in alarm. In addition, the RC Loops Tavg Deviation alarm provides a continuous monitor of the deviation between all Tavg channels - alarming at a preset value. While not a Technical Specification required function, this alarm would readily alert operators to any significant deviation between Tavg indications. The alarm response requires monitoring Tavg readings and initiating repairs to restore faulty instrumentation. Based on the above, the health and safety of the public were not affected.

Undervoltage Instrument Channel Checks:

There were no safety consequences for this occurrence since plant operators monitor the vital 4KV bus voltages and the 13KV bus voltages every shift in Modes 1, 2 and 3 with minimum and maximum acceptable values specified. Channel Functional Tests of the Sustained Degraded Voltage instruments are performed on a monthly basis in Modes 1, 2 and 3 and verify operability of the instruments. Based on the above, the health and safety of the public were not affected.

Filtration systems

The operation of the filtration systems has a direct impact on the off-site dose calculation. There were no consequences associated with the deficient implementation of the FHB and AB TS surveillances. The potential consequences of a design basis event, a LOCA with bypass flows in excess of 1% or a fuel handling accident without adequate negative pressure, could have resulted in 10CFR100 and GDC-19 limits being exceeded. However, using a more realistic source term value given the present extended shutdown condition of the Salem units, similar potential events would yield acceptable results even without filtration. Therefore, delaying the performance of the surveillances has no impact on the health and safety of the public.

SAFETY CONSEQUENCES AND IMPLICATIONS (cont'd)

Containment Fan Coolers

As demonstrated by the satisfactory results of the recalculation of the TS surveillances, the ability of the Containment Fan Cooler Units to perform their intended safety function was maintained. Therefore, the health and safety of the public was not affected.

Containment Loose Debris Inspection

There were no safety consequences for this occurrence. The implications of not performing a visual inspection is loose fibrous material that could become dislodged during an event and be transported to and block the Containment sump. However, housekeeping procedures, routine monitoring of work activities by job supervision and Radiation Protection technicians, and tracking of materials left in Containment provided reasonable assurance that loose material capable of being transported to the Containment sump was not present. Therefore, the health and safety of the public was not affected by this occurrence.

Charcoal Test Canisters

There were no safety consequences associated with the deficient implementation of these surveillances. The charcoal trays which perform the safety function and adsorption were not affected by this occurrence. There is no indication that the charcoal trays would not have performed their function. The health and safety of the public were not affected.

Turbine-Driven AFW Pump

The surveillance testing performed to demonstrate that TDAFW pump starts upon receipt of each actuation signal does not verify that the steam supply valve opens on receipt of each signal as required by TS 4.7.1.2.c.2. However, the logic (actuation circuitry) testing and the manual start of the TDAFW pump provides sufficient overlap testing to ensure that the TDAFW pump will perform its design functions.

Although the start of the TDAFW pump was not tested prior to Mode 3 in accordance with TS 4.0.4, the surveillance procedures performed in Modes 1 through 4 demonstrated the operability of the TDAFW pump as discussed above. Based on the above, the health and safety of the public were not impacted.

CORRECTIVE ACTIONS

1. A Technical Specification Surveillance Improvement Project (TSSIP) has been initiated for Salem Units 1 and 2. The scope and content of the TSSIP program was described previously in LER 311/95-008-00. The TSSIP review is expected to be completed by December 31, 1997.

2. Channel Checks of Tavg instruments will be incorporated into the operating logs for Modes 1 through 4 prior to each Unit restart.

3. Channel Checks of the Sustained Degraded Voltage instruments will be incorporated into the operating logs for Modes 1 through 4 prior to each Unit restart.

4. The appropriate procedures were reviewed and the FHB testing procedure was revised to incorporate additional guidance to ensure adequate bypass flow and negative pressure testing.

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CORRECTIVE ACTIONS (cont'd)

5. An in-depth review of the Technical Specifications regarding ventilation system testing was performed by Radiation Protection personnel with no additional deficiencies identified.

6. The total bypass flow and negative pressure testing for the Units 1 and 2 FHB will be demonstrated acceptable prior to fuel movement, as appropriate.

7. The total bypass flow for the Units 1 and 2 AB ventilation systems will be demonstrated acceptable prior to the respective Unit entering Mode 4.

8. The CFCU time responses for Units 1 and 2 were recalculated using the appropriate inputs from containment pressure high, with satisfactory results.

9. A station implementing procedure for Salem Units 1 and 2 will be revised and/or developed to assure compliance with Technical Specification 4.5.2.c.2 prior to establishing Containment Integrity for Salem Unit 2.

10. The Charcoal trays and test canisters are being replaced in the Auxiliary Building Ventilation, Control Area Ventilation and the Fuel Handling Ventilation systems. Both the trays and canisters are being sent to a vendor for replacement. This will be completed by Mode 6 for the Control Area and Fuel Handling Ventilation systems, and Mode 4 for the Auxiliary Building Ventilation system.

11. A consultant with experience in nuclear ventilation systems design and testing is in the process of conducting a review to verify that ventilation systems testing is in compliance with the Technical Specifications Surveillance and UFSAR requirements.

12. Ventilation procedures will be revised by Mode 6 for the Control Area and Fuel Handling Ventilation systems, and Mode 4 for the Auxiliary Building Ventilation system.

13. As stated in LER 272/96-016-00, mode transition procedural controls are being evaluated and improved as necessary to ensure that the higher Mode acceptance criteria are used to verify the acceptability of making a Mode transition. This review will be completed prior to Mode 6.

14. A License Change Request to include an exemption to the provisions of Specification 4.0.4 in Technical Specification 4.7.1.2.c.2 will be submitted by October 30, 1996.

15. Procedure changes will be implemented or new procedures will be developed prior to each respective Units entry into Mode 3 to ensure that the TDAFW pumps are tested in accordance with TS 4.7.1.2.c.2.