



AUG 26 1999

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

LER 272/99-006-00  
SALEM GENERATING STATION - UNIT 1  
FACILITY OPERATING LICENSE NO. DPR-70  
DOCKET NO. 50-272

Gentlemen:

This Licensee Event Report entitled "Non-Conservative Setpoint for Steam Generator Blowdown Monitor" is being submitted pursuant to the requirements of the Code of Federal Regulations 10 CFR 50.73(a)(2)(i)(B), any operation or condition prohibited by the plant's Technical Specifications.

Sincerely,

A handwritten signature in black ink that reads "M. B. Bezilla".

M. B. Bezilla  
Vice President - Operations

Attachment

PJD/

C Distribution  
LER File 3.7

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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 collection.

**LICENSEE EVENT REPORT (LER)**

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

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TITLE (4)  
**Non-Conservative Setpoint for Steam Generator Blowdown Radiation Monitor**

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
07	29	99	99	-006	- 00	08	26	99	<b>Salem Unit 2</b>	<b>05000311</b>
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9) <b>1</b>	<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR II: (Check one or more) (11)</b>										
	20.2201(b)			20.2203(a)(2)(v)			<input checked="" type="checkbox"/>	50.73(a)(2)(i)		50.73(a)(2)(viii)	
POWER LEVEL (10) <b>100</b>	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 <b>Brian J. Thomas, Licensing Engineer</b>	TELEPHONE NUMBER (Include Area Code) <b>(856) 339-2022</b>
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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

<b>SUPPLEMENTAL REPORT EXPECTED (14)</b>				<b>EXPECTED SUBMISSION DATE (15)</b>		
YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/>	NO		MONTH	DAY	YEAR

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

A safety evaluation in support of a calorimetric calculation change determined the SG blowdown radiation monitors' setpoint was non-conservative. The set point was based on a blowdown flow of approximately 60,000 lbm/hr. The plant has been operated at flows in excess of 60,000 lbm/hr. Upon discovery, SG blowdown flow was restricted to a maximum of 35,000 lbm/hr. Technical Specifications (TS) require, with non-conservative setpoints, discharge of liquid effluents via this pathway be suspended.

The cause of occurrence is inadequate administrative controls for incorporating original plant licensing data and plant testing data into plant procedures. Offsite Dose Calculation Manual (ODCM) effluent radiation monitor assumptions will be reviewed to verify consistency with actual plant operation.

Past operation with increased blowdown flow did not exceed 10CFR20 limits. Therefore, the health and safety of the public was not affected.

This event is reportable in accordance with 10CFR50.73(a)(2)(i)(B), any condition 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)

**PLANT AND SYSTEM IDENTIFICATION**

Westinghouse – Pressurized Water Reactor

Steam Generator Blowdown System/Radiation Monitoring System{WI/IL}\*

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

**CONDITIONS PRIOR TO OCCURRENCE**

At the time of discovery, Salem Unit 1 and Unit 2 were in Mode 1. (Power Operation) at approximately 100% Power.

**DESCRIPTION OF OCCURRENCE**

A review of the Salem Updated Final Safety Analysis Report (UFSAR) was being performed July 29, 1999, for the development of a 10CFR50.59 safety evaluation to use a Steam Generator (SG) blowdown flow of approximately 110,000 lbm/hr in the calorimetric calculation. This review identified that section 10.4.8.3 of the Salem UFSAR states, "...it was further assumed that the blowdown rate was 35,000 lbm/hr (maximum rate) at the time the accident occurred." Radiation levels above the SG blowdown radiation monitors' setpoint initiate blowdown line isolation valve closure. The setpoint for the SG blowdown radiation monitors are set in accordance with the Offsite Dose Calculation Manual (ODCM). One of the assumptions in determining the SG blowdown radiation monitor setpoints is the amount of blowdown flow from the steam generators. The ODCM currently uses a value of 120 gallons per minute (~60,000 lbm/hr) in determining the radiation monitor setpoints. Operating the plant with a blowdown flow in excess of the value used in the ODCM leads to a non-conservative setpoint of the radiation monitor. Technical Specification 3.3.3.8 action a. states:

"with a radioactive liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above specification, without delay suspend the release of radioactive liquid effluents monitored by the affected channel or declare the channel inoperable or change the setpoint so it is acceptably conservative."

The above actions of TS 3.3.3.8.a were not complied with when SG blowdown flow was increased to above 120 gallons per minute (~ 60,000 lbm/hr). SG blowdown has been operated above the 120 gpm value since the early 1980's. Upon discovery of this issue, SG blowdown flow was restricted to a maximum of 35,000 lbm/hr.

Based on the above, this event is reportable under 10CFR50.73(a)(2)(i)(B), any condition prohibited by the plant's Technical Specifications.

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**ANALYSIS OF OCCURRENCE**

In response to an NRC question during plant licensing, PSE&G assumed a maximum blowdown flow value of 35,000 pounds per hour in determining the radiological environmental significance of one of the steam generator (SG) blowdown flow pathways. During plant startup testing, the maximum individual steam generator blowdown flow rate was found to be greater than 40,000 pounds per hour. The response to the NRC question was not revised based on the measured value. Additionally, the maximum value was not incorporated into plant operating procedures.

In 1980, a design change was performed to install the SG blowdown recovery system at Salem Unit 1. This design change routed the blowdown flow to the main condenser instead of the SG blowdown tanks. The Unit 2 SG blowdown recovery system was installed in 1983. The maximum blowdown flowrate via this pathway was not measured until post installation testing was conducted in April 1998 on another steam generator blowdown system design change. The measured value was slightly less than 110,000 pounds per hour.

This measured value was not incorporated into the Offsite Dose Calculation Manual (ODCM) nor was the SG blowdown radiation monitor setpoint revised.

**CAUSE OF OCCURRENCE**

The cause of occurrence is inadequate administrative controls for incorporating original plant licensing data and plant testing data into plant documents. The process for development of calculations and documenting/validating assumptions has changed significantly since the initial licensing of Salem Station. Procedures currently require that assumptions that need to be further evaluated are identified in calculations and that actions are undertaken to validate the assumptions used.

**PRIOR SIMILAR OCCURRENCES**

A review of LERs for Salem Units 1 and 2 back to 1990, and Hope Creek LERs for 1997, 1998 and 1999 identified the following LERs as similar occurrences:

LER 272/90-032-00 identified that the 1R13A and 1R13B (CFCU service water radiation monitors) alarm setpoints were not correct. In the 1984/1985 time frame a design change was performed that replaced 1R13A & B detector crystals. When the design change was implemented, the program did not ensure adequate verification that new design parameters would be incorporated into applicable configuration control documents. Although the calibration and functional procedures were revised to reflect the new alarm setpoint, the Offsite Dose Calculation Manual (ODCM) was not revised to reflect the change in the 1R13A and B setpoint. Subsequently the procedures were revised to agree with the

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**PRIOR SIMILAR OCCURRENCES**

values of the ODCM which contained the incorrect setpoint. One of the corrective actions consisted of performing an audit of the ODCM to verify the validity of the information and setpoints for the RMS channels identified in the ODCM.

As a result of the ODCM review, LER 311/91-011-00 was generated to identify that the Non Radioactive Liquid Waste Discharge Radiation Monitor (2R37) setpoint was not correct. The 2R37 channel alarm and warning setpoints incorporate the maximum Clearwell Pump flowrate. In 1985, a design modification replaced these pumps with higher capacity pumps. The corresponding 2R37 setpoint was not revised to reflect the increased flowrate. As a result of this LER, the design change process administrative procedure was revised to require the assessment of the impact of a design change on the ODCM.

Although the ODCM review identified that the 2R37 setpoint was incorrect, this review did not identify the incorrect assumption for the SG blowdown radiation monitors.

**SAFETY CONSEQUENCES AND IMPLICATIONS**

Upon determination that Steam Generator (SG) blowdown flow was being operated at a value above the assumed value of 35,000 lbm/hr stated in the UFSAR, SG blowdown was restricted to a maximum of 35,000 lbm/hr.

A review of past operation of Salem Units 1 and 2 during periods of steam generator primary to secondary leakage was performed to determine if the non-conservative setpoint for the SG blowdown radiation monitors allowed a release of radioactive material greater than the 10CFR20 requirements. Based on a review of the semi-annual effluent release reports, previous evaluations, plant chemistry database, radiochemistry logs, plant control room logs and other pertinent information, there are no indications that liquid releases to the environment via the steam generator blowdown system exceeded the MPC values in 10CFR20. Therefore, the non-conservative steam generator blowdown radiation monitor setpoint was not safety significant.

UFSAR section 15.4.4.5 discusses the environmental consequences of a steam generator tube rupture. This discussion assumes steam is released through the steam generator safety relief valves. The activity in the steam generators is assumed to be released directly to the environment via the safety relief valves. For a steam generator tube rupture event, the amount of steam generator blowdown flow does not alter the consequences.

Therefore, the health and safety of the public was not affected.

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**CORRECTIVE ACTIONS**

1. Until completion of the evaluation to justify an increase of Steam Generator Blowdown flow above 35,000 lbm/hr, blowdown is being restricted to a maximum of 35,000 lbm/hr.
2. An evaluation is being performed to properly assess operation of the plant with SG blowdown flow up to 120,000 lbm/hr. Appropriate changes to the ODCM, radiation monitor setpoints and the UFSAR will be performed. Changes are expected to be complete by October 15, 1999.
3. A review of the assumptions of the remaining effluent radiation monitors contained in the ODCM will be performed. Actual plant process parameters will be reviewed to ensure they are consistent with the assumptions in the ODCM. This review will be completed by February 29, 2000.