PSE&G

Public Service Electric and Gas Company P.O. Box 236 Hancocks Bridge, New Jersey 08038-0236

Nuclear Business Unit

FEB 16 1999

LR-N990035

Regional Administrator
U.S. Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406-1415

Gentlemen:

LICENSEE EVENT REPORT 311/98-015-00
SALEM GENERATING STATION – UNIT 2
FACILITY OPERATING LICENSE NO DPR 75
DOCKET NO. 50-311

Although this event is not required to be reported in accordance with the criteria of 10CFR50.73, this Licensee Event Report entitled "INADVERTENT DISCHARGE THROUGH RHR RELIEF VALVE DURING STARTUP" is being submitted voluntarily due to the significance of the event.

Sincerely,

A.C. Bakken, III
General Manager-
Salem Operations

Attachment

/JCN

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

Distribution:
LER File 3.7

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION
(6-1998)

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

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.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
SALEM UNIT 2	05000311	1 OF 4

TITLE (4)
INADVERTENT DISCHARGE THROUGH RHR RELIEF VALVE DURING STARTUP

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
12	08	98	98	- 015	- 00	2	16	99	FACILITY NAME	DOCKET NUMBER

		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
OPERATING	4	20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
POWER LEVEL (10)	000%	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)	X 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)
John C. Nagle , Salem Licensing Engineer	(609) 339-3171

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	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)**

On December 8, 1998, Salem Unit 2 was being prepared for a return to power following a planned shutdown to address leakage on 21 Reactor Coolant Pump Seal. Reactor Coolant System temperature and pressure were being raised to normal operating levels. As systems were being aligned from shutdown to normal operating conditions, RCS pressure was allowed to rise to the relief valve setpoint. This was within the normal operating band established by plant procedures.

At 1701, the operating crew in the Salem Unit 2 Control Room was notified by operators in the Unit 2 Containment of the presence of steam in the building. At the same time, the operating crew noticed Reactor Coolant System water level decreasing. The operating crew entered the appropriate Abnormal Operating Procedure, and the cause of the Reactor Coolant System leak was terminated at 1706. An Unusual Event was declared at 1738 as directed by Emergency Plan procedures. This was later upgraded to an Alert "after-the-fact". Following the event, a containment inspection found no system or component damage. However, there were indications that the 2RH3, a decay heat removal system relief valve, had lifted. Subsequent calculations indicated that approximately 1,200 gallons of water had been discharged to the plant waste collection system. The plant was stabilized at a Reactor Coolant System temperature of 330 Degrees Fahrenheit and a pressure of 330 PSIG.

The cause of this event has been attributed to the operator performing too many tasks simultaneously. Contributing factors include less than adequate Control Room command and control, procedure inadequacy, and less than adequate implementation of plant design changes. Corrective actions include operator accountability, Lessons Learned rollout to crews, revisions to startup procedures, incorporation of lessons learned into Licensed Operator Requalification, and a review of RHR alarm setpoints for necessary plant & simulator modifications. This voluntary report is being made pursuant to the guidance contained in NUREG 1022 Rev 1.

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
SALEM UNIT 2	05000311	98	0 1 5	00	2 OF 4

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

PLANT AND SYSTEM IDENTIFICATION

Westinghouse – Pressurized Water Reactor

Residual Heat Removal {BP/RV}*
* Energy Industry Identification System {EIIS} codes and component function identifier codes appear as (SS/CCC)

CONDITIONS PRIOR TO OCCURRENCE

Prior to this event Salem Unit 2 was in Operating Mode 4, Hot Shutdown, with RCS pressure being slowly increased from 321 to 365 PSIG. RCS temperature was being maintained at 330 Degrees Fahrenheit. RCS temperature was being controlled using the Main Steam Dump system. Pressurizer Pressure and Level Control were in manual mode per department procedures.

Salem Unit 1 was operating at 100% power.

DESCRIPTION OF OCCURRENCE

On December 8, 1998, Salem Unit 2 was being prepared for a return to power following a planned shutdown to address leakage on 21 Reactor Coolant Pump Seal. Reactor Coolant System temperature and pressure were being raised to normal operating levels.

As systems were being aligned from shutdown to normal operating conditions, RCS pressure was allowed to rise to the RHR Suction Relief Valve limit, which was set at 375 PSIG. This was within the normal operating band established by plant procedures. The relief valve opened as designed, discharging Reactor Coolant to an open trench which drains to the Containment Sump. The open relief valve resulted in a rapid decrease in Reactor Coolant System Pressure and Pressurizer Level. The decreasing level resulted in Letdown Isolation and de-energized the Pressurizer Heaters.

Abnormal Operating Procedure, "Shutdown LOCA" was entered by the operating crew at 1705 and exited at 1716. An Unusual Event was declared at 1738. A subsequent review of the event by the operating crew determined that an Alert should have been declared based on Emergency Action Level (EAL) 3.2.2.a "One Centrifugal Charging Pump **CANNOT** maintain Pressurizer Level greater than 17% (as a result of RCS leakage)." An "after-the-fact" Alert was declared at 2101.

Calculations performed after the event determined that between 1000 and 1200 gallons of Reactor Coolant had been released through the relief valve and transferred to the plant wastewater storage system.

CAUSE OF OCCURRENCE

The cause of this event has been attributed to the operator performing too many tasks simultaneously. Contributing factors include less than adequate Control Room command and control, procedure inadequacy, and less than adequate implementation of plant design changes.

The operator had established a self-imposed pressure limit of 365 PSIG, which was intended to prevent the RCS pressure from exceeding the stated procedural limitation of 375 PSIG. The operator was performing several concurrent operations related to the unit startup, which caused him to lose sight of the slowly increasing RCS pressure allowing the RHR system relief valve setpoint to be reached. These other activities included, manual pressure control, manual level control, termination of RHR letdown, alignment of RHR for ECCS operation, and stroke time testing of the 2RH1 and the 2RH2 RHR suction isolation valves. The Control Room Supervisor was not aware that the operator was raising RCS pressure to a value close to the procedure limit and failed to establish appropriate operating limits. The Operations Superintendent was focused on stabilizing the plant and failed to make an event declaration within the time frame required by Emergency Plan Procedures. Previous changes to plant startup procedures were made in accordance with established guidelines. However, the reviews performed prior to procedure approval failed to identify a conflict between the procedure limits and the relief valve setpoint. In 1985, a design change was incorporated on Salem Unit 2 to address RCS Low Temperature Overpressure (LTOP) concerns. In 1990, a design change was incorporated in Salem Unit 2, which deleted the RHR Automatic Closure Interlock (ACI). Both design changes were narrowly focused on resolving the issues surrounding the stated purpose of the changes, but failed to maintain an overall perspective of the RHR design. These changes resulted in a reduction of the 2RH3 setpoint and the RHR Suction Valve Open Permissive Interlock (OPI) setpoint but failed to consider the effect that these reduced setpoints would have on the normal operation of the RHR system.

PRIOR SIMILAR OCCURRENCES

Salem Station Inspection Reports and LERs for 1997 and 1998 were reviewed in order to identify events with similar causes. LER 272/98-006-00 reported an event in which 11 and 12 Auxiliary Feedwater Pumps automatically started on Lo-Lo Steam Generator level in 14 Steam Generator during Mode 4 operation as a result of the operators not adequately monitoring steam generator water levels nor anticipating increased steaming rates. No events were identified which were related to inadequate training on plant modifications.

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
SALEM UNIT 2	05000311	98	0 1 5	00	4 OF 4

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

SAFETY CONSEQUENCES AND IMPLICATIONS

The safety consequences of this event are minimal. All equipment operated properly and performed as designed. The transient was short in duration and only minor pressure and temperature changes were imposed on the systems and reactor coolant pressure boundary. The water was discharged to the containment sump, as designed, where it was collected for processing by the plant radwaste system. The volume of water discharged was approximately 1,200 gallons and was well within the normal processing capabilities of the plant systems. The activity of the discharged water was very low and no personnel contamination or unplanned radioactive releases resulted.

CORRECTIVE ACTIONS:

1. Personnel have been held accountable and appropriate actions have been taken in accordance with PSE&G policies and procedures.

2. Detailed shift briefings have been conducted which include a review of this event and of similar INPO Operating Experiences, a review of Temporary Modifications, and reinforcement of expectations for both operators and control room supervisors regarding procedure usage, roles and responsibilities.

3. Start-Up procedures will be revised to limit RCS pressure to a value below the RH3 setpoint. These changes will be made prior to the next scheduled outages for Salem Units 1 & 2.

4. Lessons Learned from this event are being incorporated into the current licensed operator training cycle.

5. The operation of the simulator has been reviewed in order to assure that the simulator will accurately model this event.

6. The RHR alarm setpoints will be reviewed and changes to the various RHR System setpoints will be made as necessary. Any necessary changes will be made prior to restart from the next scheduled outages for Salem Units 1 & 2.

7. Actions to address the untimely event classification are being addressed in the root cause evaluation and will be tracked in the Corrective Action Program.