PSE&G

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

Salem Generating Station

May 15, 1990

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

Dear Sir:

SALEM GENERATING STATION
LICENSE NO. DPR-75
DOCKET NO. 50-311
UNIT NO. 2
LICENSEE EVENT REPORT 90-015-00

This Licensee Event Report is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR 50.73(a)(2)(iv). This report is required within thirty (30) days of discovery.

Sincerely yours,

L. K. Miller
General Manager -
Salem Operations

MJP:pc

Distribution

IE22

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Salem Generating Station-Unit 2	0 5 0 0 0 3 1 1	1 OF 0 5

TITLE (4)

ESF Signal Actuation: Containment Ventilation Isolation

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 NAMES	DOCKET NUMBER(S)
0 4	1 5	9 0	9 0	0 1 5	0 0	0 5	1 5	9 0		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	6	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0 0	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
M. J. Pollack - LER Coordinator	6 0 9 3 3 9 - 2 0 2 2

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 fifteen single space typewritten lines) (16)

On 4/15/90 at 0300 hours, the 2R12A (Containment Radioactive Noble Gas Monitor) Radiation Monitoring System (RMS) channel alarmed. This resulted in an Engineered Safety Feature (ESF) signal actuation for Containment Purge/Pressure-Vacuum Relief System (CP/P-VRS) isolation. After resetting the alarm, fifty-six (56) minutes later, the 2R12A channel alarmed again, resulting in another CP/P-VRS isolation signal. The root cause of the detector response, which resulted in ESF actuation signals, has been attributed to procedural inadequacy. The Tech. Specs. require the 2R12A channel setpoint be set at $\leq$ 2 times background (when in Mode 6). The setpoint adjustment procedure did not address periodic background increases due to detector response or changing radiological conditions in Containment. Since the initial 2R12A ESF actuation signals, an additional signal occurred on April 17, 1990 at 0458 hours. Also, due to detector response to fluctuating background conditions, two (2) 2R11A (Containment Radioactive Particulate Monitor) CP/P-VRS isolation signals occurred. The first occurred on April 15, 1990 at 2259 hours and the second occurred on April 20, 1990 at 1250 hours. Review of the 2R12A and 2R11A setting of the alarm setpoints has been completed. The setpoint is now defined using the average background radiation levels from the past two (2) Unit 2 refueling outages. The appropriate procedural modifications have been completed. Also, the detector time constant has been extended from 20 to 40 seconds. This will "smooth" out the count rate since a larger population of data will be averaged.

PLANT AND SYSTEM IDENTIFICATION:

Westinghouse - Pressurized Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as [xx]

IDENTIFICATION OF OCCURRENCE:

Engineered Safety Feature Actuation: Containment Purge/Pressure-Vacuum Relief System isolation signals due to detector response on the 2R12A and 2R11A channels

Event Date: 4/15/90, 4/17/90, and 4/20/90

Report Date: 5/15/90

This report was initiated by Incident Report Nos. 90-256, 90-260, 90-265, and 90-272.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 6 (Refueling) - 5th Refueling Outage; Mode 6 had been entered at 0045 hours on April 15, 1990

DESCRIPTION OF OCCURRENCE:

On April 15, 1990 at 0300 hours, the 2R12A (Containment Radioactive Noble Gas Monitor) Radiation Monitoring System (RMS) [IL] channel alarmed. This resulted in an Engineered Safety Feature (ESF) signal actuation for Containment Purge/Pressure-Vacuum Relief System (CP/P-VRS) [BF] isolation. The channel was not declared inoperable since the cause of the alarm was due to a low setting of its setpoint combined with fluctuating background levels. Fifty-six (56) minutes later, the 2R12A channel alarmed again, resulting in another CP/P-VRS isolation signal. Subsequently, the 2R12A channel was declared inoperable and Technical Specification Table 3.3-6 Action 26 was entered. Action 26 was exited at 2030 hours on April 18, 1990 upon completion of resetting the alarm setpoint (as per procedure 2IC-4.4004, "Channel Setpoint Adjustment for Containment Background Compensation 2R11A, 2R12A"). The setpoint was adjusted on April 15, 1990; however, the Action Statement was not exited until it was determined that the channel was functioning correctly based upon an extended period of observation.

At the time of the 2R12A actuations, the reactor vessel head was not fully tensioned. However, no abnormal increases in activity were identified by the various Containment area radiation monitors.

Technical Specification Table 3.3-6 Action 26 states:

> "With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirements, initiate the preplanned

DESCRIPTION OF OCCURRENCE: (cont'd)

alternate method of monitoring the appropriate parameter(s), within 72 hours, and:

1) either restore the inoperable Channel(s) to OPERABLE status within 7 days of the event, or

2) prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status."

The Nuclear Regulatory Commission was notified of the actuation of the CP/P-VRS isolation signal in accordance with Code of Federal Regulations 10CFR 50.72(b)(2)(ii).

APPARENT CAUSE OF OCCURRENCE:

The root cause of the detector response, which resulted in ESF actuation signals, has been attributed to procedural inadequacy. The Technical Specifications require the 2R12A channel setpoint be set at $\leq$ 2 times background (when in Mode 6). Procedure 2IC-4.4.004, "Channel Setpoint Adjustment for Containment Background Compensation 2R11A, 2R12A", required the recording of background readings over a ten (10) minute period. This requirement did not address periodic increases due to detector response or changing radiological conditions in Containment.

The 2R12A channel background had been varying between 40 and 80 counts per minute (cpm). At this low background, it is not uncommon for detector response signals to exceed the nominally set setpoint of 120 cpm. Also, during the course of a refueling outage various plant activities will cause increases in Containment background radiation levels (e.g., reactor vessel head removal, Steam Generator manway removal, and other various work activities).

Due to detector response and the changing plant conditions additional CP/P-VRS actuations occurred despite frequent periodic review of background levels by Maintenance-I&C personnel. In addition to the April 15, 1990 2R12A actuation signals, one occurred on April 17, 1990 at 0458 hours. Also, due to detector response to fluctuating background conditions, two (2) 2R11A (Containment Radioactive Particulate Monitor) CP/P-VRS isolation signals occurred. The first actuation occurred on April 15, 1990 at 2259 hours and the second occurred on April 20, 1990 at 1250 hours. The 2R11A RMS channel background had been varying between 1000 and 1600 cpm. Its alarm setpoint in Mode 6 is also $\leq$ 2 times background.

After each ESF signal actuation the NRC was notified in accordance with Code of Federal Regulations 10CFR 50.72 (b)(2)(ii). None of these additional actuations occurred during Containment purge or pressure-vacuum relief activities. The associated valves remained in their closed position.

ANALYSIS OF OCCURRENCE:

The 2R12A RMS channel monitor's the radioactive noble gas content of the Containment atmosphere. An alarm signal will cause the automatic isolation of the CP/P-VR System. The channel is used in Modes 1 through 5 in the identification of Reactor Coolant System [AB] leakage in conjunction with the containment sump level monitoring system, the containment fan cooler condensate flow rate monitors, and the containment radioactive particulate (2R11A) radiation monitoring system. In Mode 6, the 2R11A and 2R12A radiation monitors are used as indication of a fuel handling accident to provide early isolation of the Containment in the event of an accident.

Air samples are pulled from the Containment atmosphere through a filter paper which continuously moves past the 2R11A detector. The air sample then passes through a charcoal cartridge (monitored by the 2R12B monitor) and is then mixed into a fixed shielded volume where it is viewed by the 2R12A monitor. The air sample is then returned to the Containment.

Several area radiation monitors, are used to corroborate the 2R11A and 2R12A channels indications. The corroborating area radiation monitors do not have isolation capabilities; they only have alarm capability. None of these channels indicated any abnormal activity during this event.

The 2R41C Plant Vent Radioactive Noble Gas monitor is the Technical Specification accepted alternate method of monitoring Containment activity. It corroborates the 2R12A channel indications when CP/P-VR valves are open. This monitor also has the capability of automatic isolation of the CP/P-VR System (as well as closure of the WG41 valve, "Gas Decay Tank Vent Control Valve"). It remained operable during the course of this event and did not indicate any abnormal Plant Vent activity.

The ESF actuations addressed by this LER were the result of the inappropriate setting of the 2R12A and 2R11A channels' alarm setpoints. They were not the result of abnormal Containment activity as indicated by the corroborating RMS channels. Therefore, the events discussed in this LER did not affect the health or safety of the public. However, due to the automatic actuation of an ESF system, this event is reportable in accordance with Code of Federal Regulations 10CFR 50.73(a)(2)(iv).

CORRECTIVE ACTION:

Review of the 2R12A and 2R11A setting of the alarm setpoints has been completed. The setpoint is now defined using the average background radiation levels, in Containment, from the past two (2) Unit 2 refueling outages. The setpoint for the 2R12A channel is now 240 cpm and 6000 cpm for the 2R11A channel. The appropriate procedural modifications have been completed.

CORRECTIVE ACTION: (cont'd)

In addition to modification of the setpoint setting, the detector time constant has been extended from 20 to 40 seconds. This will "smooth" out the count rate since a larger population of data will be averaged.

General Manager -
Salem Operations

MJP:pc

SORC Mtg. 90-052