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

Salem Generating Station

October 7, 1993

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

Dear Sir:

SALEM GENERATING STATION
LICENSE NO. DPR-70
DOCKET NO. 50-272
UNIT NO. 1

SUPPLEMENTAL LICENSEE EVENT REPORT 92-026-02

This supplemental Licensee Event Report is being submitted pursuant to Code of Federal Regulations 10CFR 50.73. The report has been modified based upon investigation results and identifies the current status of corrective actions.

Sincerely yours,

C. A. Vondra
General Manager -
Salem Operations

MJPJ:pc

Distribution

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The power is in your hands.

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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| FACILITY NAME (1) Salem Generating Station - Unit 1 | DOCKET NUMBER (2) 0 5 0 0 0 2 7 2 | PAGE (3) 1 OF 0 5 |
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TITLE (4)
ESF Actuations Initiated From The Radiation Monitoring System.

| 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) | | | | | | | | | | | | | |
| 1 | 2 | 13 | 9 | 2 | 9 | 2 | 0 | 2 | 6 | 0 | 2 | 1 | 0 | 0 | 7 | 9 | 3 | | 0 | 5 | 0 | 0 | 0 |

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|-------------------------------|--|--|------------------|-----------------|--|----------------|----------------------|--|--|--|--|--|
| OPERATING MODE (8) 1 | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11) | | | | | | | | | | | |
| POWER LEVEL (10) 1 0 0 | 20.402(b) | | | 20.405(c) | | | 50.73(a)(2)(iv) | | | 73.71(b) | | |
| | 20.405(a)(1)(i) | | | 50.38(c)(1) | | | 50.73(a)(2)(v) | | | 73.71(c) | | |
| | 20.405(a)(1)(ii) | | | 50.38(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) | | | | | | |

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| LICENSEE CONTACT FOR THIS LER (12) | | | | | | | | | |
| NAME M. J. Pollack - LER Coordinator | | | | | | | TELEPHONE NUMBER 6 0 9 3 3 9 1 5 1 6 3 | | |

| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) | | | | | | | | | | | |
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| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | |
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| SUPPLEMENTAL REPORT EXPECTED (14) | | | | | | | EXPECTED SUBMISSION DATE (15) | | MONTH | DAY | YEAR |
| <input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO | | | | | | | | | | | |

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

This supplemental LER addresses investigation results and identifies the current status of corrective actions associated with 4 Engineered Safety Feature (ESF) actuations initiated by the 1R11A Radiation Monitoring System (RMS) channel. The 1R11A RMS Channel monitors the Containment atmosphere for particulate activity. The ESF signals were for Containment Purge/Pressure-Vacuum Relief (CP/P-VR) System isolation. At the time of the events, the associated valves were closed and did not change position. Two of the events occurred on 12/13/92, one on 12/30/92, and one on 1/25/93. Investigation determined that the 1R11A RMS channel was responding to actual increases in containment airborne radioactivity; i.e., Rb-88 activity (half life of 17.8 minutes) which is a decay product of Kr-88, a fission product. Contributing leakage sources included: 1) 1PS1 Pressurizer Spray air operated valve bonnet leak; 2) pipe flange leakage, immediately upstream of the Reactor head vent manual isolation valve, 1RC900; 3) Pressurizer manway leakage past its gasket seal; and 4) Pressurizer Relief Tank rupture disk pinhole leakage.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

| Salem Generating Station | DOCKET NUMBER | LER NUMBER | PAGE |
|--------------------------|---------------|------------|--------|
| Unit 1 | 5000272 | 92-026-02 | 2 of 5 |

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 actuations initiated from the Radiation Monitoring System

Event Dates: 12/13/92, 12/30/92 and 1/25/93

Report Date: 10/7/93

This supplemental LER addresses investigation results and identifies the current status of corrective actions. The prior LER supplement and original LER addressed events were initiated based on Incident Reports 92-819, 92-865 and 93-067.

CONDITIONS PRIOR TO OCCURRENCE:

12/13/92 - Mode 1 Reactor Power 100% - Unit Load 1151 MWe
On 12/12/92, at 0914 hours, power was reduced to 90% due to Circulating Water System high delta T. At 1812 hours (that day), a power increase to full power commenced and was reached on 12/13/92 at 0650 hours.

12/30/92 - Mode 1 Reactor Power 90% - Unit Load 1010 MWe
On 12/30/92, prior to the ESF event, power was being increased from 90% to full power. The Unit had previously been removed from service due to Circulating Water System problems.

1/25/93 - Mode 1 Reactor Power 99% - Unit Load 1100 MWe
On 1/25/93, prior to the ESF event, power was being increased from 88% to full power. The Unit had been removed from service for planned maintenance and experienced a manual reactor trip (LER 272/93-002-00) during shutdown on 1/16/93. Power ascension had begun on 1/23/93.

DESCRIPTION OF OCCURRENCE:

This LER addresses four (4) Engineered Safety Feature (ESF) actuations initiated through the Radiation Monitoring System (RMS) {IL}. The signals were for Containment Purge/Pressure-Vacuum Relief (CP/P-VR) System {BF} isolation. The associated isolation valves were closed prior to each event, and therefore, did not change

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

| Salem Generating Station | DOCKET NUMBER | LER NUMBER | PAGE |
|--------------------------|---------------|------------|--------|
| Unit 1 | 5000272 | 92-026-02 | 3 of 5 |

DESCRIPTION OF OCCURRENCE: (cont'd)

position. Per Code of Federal Regulations 10CFR 50.72(b)(2)(ii), the Nuclear Regulatory Commission (NRC) was notified of the four (4) events.

On December 13, 1992, at 0535 hours, following a power increase from 99% to 100%, the 1R11A RMS channel alarmed actuating a CP/P-VR System isolation. It was initially assessed to be the result of a channel instrumentation spike; however, further investigation showed it was due to increased Containment airborne activity. Following the actuation, the alarm was cleared and the channel was left in service. At 0658 hours, that day, the 1R11A RMS channel increased from 35,000 cpm to the alarm setpoint (60,000 cpm) resulting in another CP/P-VR System isolation signal. After this alarm actuation the count level trended back to 35,000 cpm.

The 1R11A RMS channel monitors the Containment atmosphere for particulate activity by filtering a sample of Containment air. Investigation determined that the 1R11A RMS channel was functioning in accordance with its design. Analysis of the sample filter paper showed that the alarm signal was due to Rb-88 activity. Rb-88 has a half life of 17.8 minutes. It is a decay product of Kr-88 which is a fission product. Investigation to identify the source of the activity was initiated.

On December 30, 1992, at 1452 hours, during power ascension from 90% to full power, the 1R11A RMS channel indication increased from 35,000 cpm to the alarm setpoint resulting in a CP/P-VR System isolation signal. Following the alarm the channel count rate trended back to 35,000 cpm. The alarm was again shown to be due to Rb-88.

On January 25, 1993, at 1300 hours, during power ascension from 88% to full power, the 1R11A RMS channel indication increased from 35,000 cpm to the alarm setpoint resulting in a CP/P-VR System isolation signal. Following the alarm, the Containment Fan coil Units were put in low speed reducing containment airborne particulate activity. The channel count rate trended back to 25,000 cpm. The alarm was again shown to be due to Rb-88.

APPARENT CAUSE OF OCCURRENCE:

The root cause of the ESF events is equipment failure. Small leaks from various components had led to increased Containment airborne activity.

Investigation of the first three (3) ESF actuations indicated that a previously identified bonnet leak on the 1PS1 Pressurizer Spray air operated valve was the probable source of the increased activity. The maintenance valves upstream and downstream of the 1PS1 valve had been closed isolating the 1PS1 valve. Also, the 1PS1 valve was leak repaired. Investigation of the fourth ESF actuation identified pipe

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

| | | | |
|--------------------------|---------------|------------|--------|
| Salem Generating Station | DOCKET NUMBER | LER NUMBER | PAGE |
| Unit 1 | 5000272 | 92-026-02 | 4 of 5 |

APPARENT CAUSE OF OCCURRENCE: (cont'd)

flange leakage immediately upstream of the Reactor head vent manual isolation valve 1RC900 {AB}. The flange leak was stopped with a temporary modification (leak repair clamp).

Investigation to identify additional source(s) of Containment gaseous activity has been completed. Those other sources identified include leakage past the Pressurizer manway's gasket seal and several pinhole leaks on the Pressurizer Relief Tank (PRT) rupture disk.

Temporary leak repair of the Pressurizer manway was completed. This reduced the Containment Rb-88 activity to below the 1R11A RMS channel warning setpoint. Permanent repairs will include gasket and diaphragm replacement and repair of any identified damage during the Unit 1 eleventh refueling outage (which began on October 2, 1993).

System Engineering completed a Deficiency Report (930217211) which included a safety evaluation. The evaluation concludes that the pinholes do not inhibit the rupture disk from performing its intended function. Based on this assessment, the PRT rupture disk will be replaced during the Unit 1 eleventh refueling outage.

ANALYSIS OF OCCURRENCE:

The 1R11A Containment Particulate Monitor, (a NaI scintillation type detector, model LFE MD5B) monitors air particulate gamma radioactivity in the Containment atmosphere. In Modes 1 through 4, it is used to identify Reactor Coolant System (RCS) {AB} leakage in conjunction with the containment sump level monitoring system, and either the containment fan cooler condensate flow rate or the containment atmosphere gaseous (1R12A) radioactivity monitoring system. In Mode 6, it is used to provide indication of a fuel handling accident and early Containment isolation in the event of an accident.

At the time of these ESF actuations, the 1R11A RMS channel provided an alarm signal which caused automatic isolation of the CP/P-VR System. Isolation of the CP/P-VR System is designed to mitigate the release of radioactive material to the environment after a design basis accident. Since the occurrence of these ESF actuations, an engineering review was conducted to determine the necessity for the 1R11A RMS channel to have this function. It was concluded that in Modes 1 - 5 the 1R11A channel does not require this function. Therefore, the ESF function has been disabled during plant operation in Modes 1 - 5. This eliminates unnecessary challenges of the CP/PV-R ESF System.

A review of 1R11A RMS channel data show the alarms were not the result of spurious channel spiking. Routine containment airborne radioactivity monitoring, by Radiation Protection, confirms the presence of sufficient Rb-88 to cause the alarm. Unidentified leak

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

| | | | |
|--------------------------|---------------|------------|--------|
| Salem Generating Station | DOCKET NUMBER | LER NUMBER | PAGE |
| Unit 1 | 5000272 | 92-026-02 | 5 of 5 |

ANALYSIS OF OCCURRENCE: (cont'd)

rate calculations (conducted by Operations) show a leak rate of 0.2 gpm. The Technical Specification limitation on unidentified leakage is 1 gpm.

The 1R11A RMS channel functioned per design. It has identified higher than normal airborne particulate activity in Containment. The channel ESF isolation capability was functional. Therefore, this event did not affect the health or safety of the public; however, due to the automatic actuation signal of an ESF system, it is reportable in accordance with Code of Federal Regulations 10CFR 50.73(a)(2)(iv).

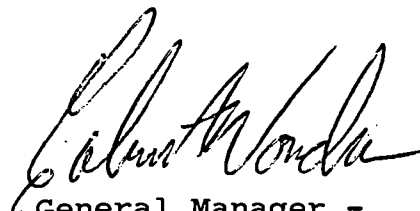
CORRECTIVE ACTION:

Maintenance testing of the 1R11A RMS channel was completed. No channel failure mechanisms were identified.

The 1PS1 valve leak was stopped via closure of the maintenance valves upstream and downstream of the 1PS1 valve and insertion of temporary sealant. The 1PS1 valve will be repaired during the Unit 1 eleventh refueling outage.

The flange leak upstream of the 1RC900 valve was stopped through installation of a leak repair clamp in accordance with temporary modification procedures. Permanent repair will be completed during the Unit 1 eleventh refueling outage.

Permanent repair of the Pressurizer manway gasket seal and replacement of the PRT rupture disk will be completed during the Unit 1 eleventh refueling outage.


General Manager -
Salem Operations

MJP:pc

SORC Mtg. 93-089