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

Gentlemen:

LER 272/01-001-00
SALEM GENERATING STATION - UNIT 1
FACILITY OPERATING LICENSE NO. DPR-70
DOCKET NO. 50-272

This Licensee Event Report "Auxiliary Building Ventilation System Fire Damper Found Out of Position Limiting the Ability of The System To Perform Its Safety Function" is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR50.73(a)(2)(v). The attached LER contains no commitments.

Sincerely,

D. F. Gatchow
Vice President -
Operations

Attachment

/EHV

C Distribution
LER File 3.7

IE22

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
SALEM UNIT 1	05000272	1 OF 6

TITLE (4)
Auxiliary Building Ventilation System Fire Damper Found Out of Position Limiting The Ability of The System To Perform Its Safety Function

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
01	06	01	01	-001	- 00	01	26	01	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR ▯: (Check one or more) (11)							
			20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)
POWER LEVEL (10)	100		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)	X	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)
E. H. Villar, Licensing Engineer	(856) 339-5456

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 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)

On January 6, 2001, at 1410 hours, the number 12 auxiliary building exhaust fan {FAN} was removed from service to perform preventive and corrective maintenance. Upon completion of the work on January 6, during the operability retest of the exhaust fan, utility non-licensed operators noted that the emergency flow rate (air flow being discharged through the HEPA-Charcoal adsorber {FLT}) was less than the 21,400 SCFM ± 10% required by Technical Specifications. Investigation into this flow shortage revealed that the 1ABS-8 and 1ABF-13 dampers {DMP} were closed. The apparent cause for the 1ABF-13 damper being closed is attributed to the manual arm lever attached to the shaft, which holds the damper in the desired position, was found with the locking wing nut loose. The apparent cause for the closure of the 1ABS-8 damper is attributed to the closure of the 1ABF-13 damper, which caused the flow set point of the 1ABS-8 damper to be exceeded, thereby closing the damper as designed. Corrective actions taken were: (1) Fire Protection personnel walked down all accessible dampers to ensure that the wing nuts were tight, (2) 1ABF-13 was opened and the wing nut was re-tightened. The Technical Specification required flow test was completed satisfactorily, thus assuring proper position of the ABV system's dampers, (3) The PSEG Fire Department is presently checking all accessible dampers, similar to the ABF-13, once per week. The position of the dampers is being verified locally and the wing nuts tightened, as necessary.

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

PLANT AND SYSTEM IDENTIFICATION

Westinghouse – Pressurized Water Reactor

Auxiliary Building Ventilation System {VF} (ABV)

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

CONDITIONS PRIOR TO OCCURRENCE

Salem Unit 1 was in Mode 1 at 100% power.

No structures, systems, or components were inoperable at the time of the occurrence that contributed to the event.

DESCRIPTION OF OCCURRENCE

On January 6, 2001, at 1410 hours, the number 12 auxiliary building exhaust fan {FAN} was removed from service to perform preventive and corrective maintenance. Upon completion of the work on January 6, during the operability retest of the exhaust fan, utility non-licensed operators noted that the emergency flow rate (air flow being discharged through the HEPA-Charcoal adsorber {FLT}) was less than the 21,400 SCFM ± 10% required by Technical Specifications. The observed flow rate was 13,718 SCFM.

At this point the licensed control room operators entered Technical Specification (TS) 3.7.7.1 for Salem Unit 1. Specifically, TS 3.7.7.1 requires that at least one Auxiliary Building exhaust air HEPA filter train associated with the charcoal adsorber bank shall be OPERABLE. TS 3.7.7.1 Actions a and b state:

a) With the above required HEPA filter train inoperable, restore the HEPA filter train to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b) With the charcoal adsorber bank inoperable, restore the charcoal adsorber bank to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Operability of the filter train is determined by measuring a flow rate of 21,400 SCFM ± 10%.

ANALYSIS OF OCCURRENCE

On January 6, 2001, at 1410 hours, the number 12 auxiliary building exhaust fan was removed from service to perform preventive and corrective maintenance. Upon completion of the work on January 6, during the operability retest of the exhaust fan, utility non-licensed operators noted that the emergency flow rate (air flow being discharged through the HEPA-Charcoal adsorber {FLT}) was less than the 21,400 SCFM ± 10% required by Technical Specifications. The observed flow rate was 13,718 SCFM. Investigation into this flow shortage revealed that the 1ABS-8 damper {DMP} was closed. This damper (ABS-8) is an excess flow damper in the exhaust ductwork from the Salem Unit 1 mechanical penetration area to the ABV exhaust plenum. The damper is designed to close on high flow during a high-energy line break (HELB) in the penetration area. 1ABS-8 damper closure during a HELB would prevent steam intake into the ABV exhaust plenum and steam transfer to other adjacent areas via exhaust ductwork.

The damper was manually opened, however it would not remain fully open when released. Utility maintenance personnel replaced one of the damper's springs. The damper was reopened, and flow through HEPA-Charcoal was measured to be approximately 18,000 SCFM, however the damper would not remain open. The 18,000SCFM flow is still below the required minimum TS flow of 21,400 SCFM ± 10%.

Further investigation into the flow shortage and why the 1ABS-8 damper would not remain open revealed that fire damper 1ABF-13 was also closed. Closure of this damper had caused the flow through the 1ABS-8 damper to increase to its closure set point thereby closing the 1ABS-8 damper, as designed.

The closure of the 1ABF-13 and 1ABS-8 dampers isolated the pipe chase, mechanical penetration and residual heat removal area effluents.

The 1ABF-13 damper was reopened and flow through HEPA-Charcoal was measured to be within the TS acceptable flow range of 21,400 SCFM ± 10%. However, a four hour report was submitted in accordance with 10CFR50.72(b)(2)(iii) on January 7, 2001, because with these two dampers closed air flow through the HEPA-Charcoal adsorber filter train from some of the emergency core cooling system areas could not be demonstrated to be within the assumptions made in the Salem dose analysis calculation.

This report is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR50.73(a)(2)(v).

CAUSE OF OCCURRENCE

The apparent cause for the 1ABF-13 damper being closed is attributed to the locking wing nut being loose. The manual arm lever attached to the shaft, which holds the damper in the desired position, was found with the locking wing nut loose.

This fire damper uses a McCabe Link to perform its fire protection function. This link connects to the shaft and the spring load louver assembly using a pin attached to a bi-metallic strip. When heated, the bimetallic strip will bend causing the pin to release the spring-loaded louver assembly. Upon going closed the damper would make-up to a micro switch causing an alarm in the unit 1 control room area. Although this micro switch had not been working properly, it would not have been expected to annunciate the partial (not fully) closed damper position. The micro switch is designed to annunciate upon the damper being slammed closed by the McCabe linkage.

The closure of the 1ABS-8 damper is attributed to the closure of the 1ABF-13 damper, which caused the flow set point of the 1ABS-8 damper to be exceeded, thereby closing the damper as designed.

PRIOR SIMILAR OCCURRENCES

A review of 1998 and 1999 LERs for both Salem and Hope Creek identified no similar occurrences.

SAFETY CONSEQUENCES AND IMPLICATIONS

There were no safety consequences associated with this event.

The Salem ABV system is a once through ventilation and exhaust filtration system that maintains a slight negative pressure within the building, delivering outside air in sufficient volume to maintain auxiliary building temperatures within design limits.

The supply system consists of two fans, each of 100% capacity, powered from vital buses that deliver outside air via ductwork distribution throughout the building. Supply fan start circuits are administratively controlled to prevent more than one supply fan from operating at any time, avoiding pressurization of the Auxiliary Building.

SAFETY CONSEQUENCES AND IMPLICATIONS(continued)

The exhaust system consists of three fans, each of 50% capacity, taking exhaust from a common plenum, three High Efficiency Particulate Air (HEPA) filters, and one High Efficiency Carbon Adsorber. The HEPA filters receive air from the exhaust system ductwork, and discharge it to the common plenum. The carbon adsorber can be aligned interchangeably between either of two of the three HEPA filters and the common plenum.

The third HEPA filter cannot be aligned to the carbon adsorber. The carbon adsorber is placed in the exhaust stream only during post LOCA conditions to remove radioactive iodine, which may be introduced to the auxiliary building through ECCS equipment. The exhaust fans are powered from vital buses and are designed for continuous operation. The exhaust fans maintain Auxiliary Building pressure slightly negative with respect to ambient atmospheric pressure. The system is normally operated with two exhaust fans and one supply, and in cases were the outside temperature is low enough, only exhaust fan(s) may be in operations.

During accident conditions the equipment room coolers mainly provide cooling of the ECCS equipment environment with the ABV system being mostly a back-up/support system. The room coolers were unaffected by this event.

During normal conditions the charcoal adsorber is not in service and filtration of the effluent is provided by the HEPA filter. Monitoring of the effluent is done by the installed radiation instrumentation {IL} in the plant vent {VL}. Although, the 1ABF-13 damper was found closed, enough leakage past the damper existed to contribute to the measured flows and to help maintain a negative pressure in the auxiliary building. The proper combination of supply and exhaust fans were maintained through this event (including the period when the 1ABF-13 and 1ABS-8 dampers were unsuspectingly closed). Therefore, maintaining a slight negative pressure between the auxiliary building and the outside atmosphere assures that all effluents will be discharged through the plant vent {VL}, filtered by the HEPA filter train, and monitored by the installed instrumentation {IL}.

Although these dampers were found closed, flow through the 1ABF-13 damper existed thereby providing some limited filtration through the HEPA-Charcoal adsorber of the effluents from the pipe chase, mechanical penetration and residual heat removal area during accidents conditions. Because the flow and its impact on the dose analysis and cooling capability could not be quantified, PSEG Nuclear reported this event under 10CFR50.72(b)(2)(iii). However based on the above, PSEG Nuclear believes that this condition did not present a risk to the health and safety of the public or plant personnel.

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

CORRECTIVE ACTIONS

1. Fire Protection personnel walked down all accessible dampers to ensure that the wing nuts were tight.

2. 1ABF-13 was opened and the wing nut was re-tightened. The Technical Specification required flow test was completed satisfactorily, thus assuring proper position of the ABV system's dampers.

3. The PSEG Fire Department is presently checking all accessible dampers, similar to the ABF-13, once per week. The position of the dampers is being verified locally and the wing nuts tightened, as necessary. This weekly verification will continue until completion of the evaluation stated in number 4 below.

4. This condition has been entered into the corrective action program and a level one root cause analysis is being performed. Additional corrective actions may be taken, as necessary, at the completion of the investigation.

COMMITMENTS

The corrective actions cited in this LER are voluntary enhancements and do not constitute commitments.