



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

DATE October 9, 1991

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

Dear Sir:

HOPE CREEK GENERATING STATION
DOCKET NO. 50-354
UNIT NO. 1
LICENSEE EVENT REPORT 91-018

This Licensee Event Report is being submitted pursuant to the requirements of 10CFR.73(a)(2)(iv).

Sincerely,

J.J. Hagan
General Manager -
Hope Creek Operations

LLA/

Attachment
SORC Mtg. 91-093
C Distribution

9110220150 911009
PDR ADOCK 05000354
S PDR

The Energy People
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LICENSEE EVENT REPORT

FACILITY NAME (1) HOPE CREEK GENERATING STATION										DOCKET NUMBER (2) 0 5 0 0 0 3 5 4				PAGE (3) 1 OF 4	
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TITLE (4): Engineered Safety System Action - "F" Filtration Recirculation Ventilation System Fan start.

EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	*	NUMBER	*	REV	MONTH	DAY	YEAR	FACILITY NAME(S)	DOCKET NUMBER(S)
0	9	14	9	1	- 0 1 8	- 3	0	1	0	09		

OPERATING (9) MODE 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR: (CHECK ONE OR MORE BELOW) (11)										
POWER LEVEL % 1 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)							
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)							
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text)							
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)								
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)								
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)									

LICENSEE CONTACT FOR THIS LER (12)											
NAME Louis Aversa, Senior Staff Engineer - Technical								TELEPHONE NUMBER 6 0 9 3 3 9 3 3 8 6			

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE NOTED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS?	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS?
				////					////
				////					////

SUPPLEMENTAL REPORT EXPECTED? (14) YES	NO	<input checked="" type="checkbox"/>	DATE EXPECTED (15)	MONTH	DAY	YEAR	//////////
//////////							//////////

ABSTRACT (16)

On 9/14/91 at 0640 hours, during shift turnover, Control Room Operators (RO licensed) discovered that the "F" Filtration Recirculation Ventilation (FRVS) fan was running. After verifying no valid start signals were present the fan was secured. Operators could not determine the cause of the fan start and requested Instrument and Control Technicians to investigate. A review of the alarm chronolog did indicate a pressure perturbation in reactor building pressure at 0607 indicative of the fan starting. The I&C technician found water accumulated in the low flow switch associated with the out of service "C" FRVS recirculation fan. This switch provides an auto start signal to the standby fan in the event the running fan trips or develops a low flow condition. The technician drained the instrument tubing and the F FRVS recirculation fan was returned to a standby lineup.

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		YEAR	*	NUMBER	*	REV									
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PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor (BWR/4)
 Filtration Recirculation Ventilation System (FRVS) (EIIIS Designation: BH)

IDENTIFICATION OF OCCURRENCE

Engineered Safety Feature Actuation - Unplanned start of standby Filtration Recirculation System Recirculation Fan F from non-ESF signal.

Event Date: 9/14/91

Event Time: 0640

This LER was initiated by Incident Report No. 91-136

CONDITIONS PRIOR TO OCCURRENCE

Plant in OPERATIONAL CONDITION 1 (Power Operation)
 Reactor Power 100%, Unit load 1097 MWe.

DESCRIPTION OF OCCURRENCE

On 9/14/91 at 0640 hours, during shift turnover, Control Room Operators (RO licensed) discovered that the "F" Filtration Recirculation Ventilation (FRVS) fan was running. After verifying no valid start signals were present the fan was secured. Operators could not determine the cause of the fan start and requested Instrument and Control Technicians to investigate. A review of the alarm chronolog did indicate a pressure perturbation in reactor building pressure at 0607 indicative of the fan starting.

ANALYSIS OF OCCURRENCE

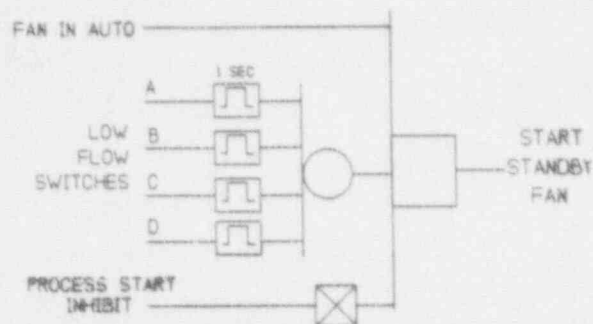
The FRVS system is designed to mitigate the consequences of an accident by removing Iodine from the reactor building atmosphere prior to release and maintaining reactor building pressure negative following a design basis accident or refueling accident. The system consists of six recirculation fan units and two vent fan units. A typical alignment, when the system is placed in service, would consist of four recirculation units and one vent unit running with the remaining units in standby. The standby recirculation units will auto start if a low flow condition were to develop on a running recirculation fan. All fans start on an ESF signal of either Low Reactor Level (-38") or High Drywell pressure (1.68 psig) or Reactor Building/ Refue Floor exhaust high radiation.

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ANALYSIS OF OCCURRENCE

The low flow start signal is generated via flow switches located on the outlet of the recirculation units and is processed through the Bailey Logic panel. When the logic senses low flow on a running fan an auto start signal is generated to start a standby fan. The configuration of the logic will send an auto start signal whenever low flow is sensed; however, the duration of the signal is only one second long. This allows the standby fans to be placed in auto after the running fans have been secured. If the signal is reset by either a valid or spurious flow signal and subsequently low flow is sensed again, a new start signal will be generated to start the standby fan. The I&C Technician troubleshooting the auto start found water in the C FRVS recirc fan low flow switch. The switch has a range of 0 - .15" of water, with the trip setpoint set at .1" of water. The accumulation of water in conjunction with minor fluctuations in system pressure reset the switch momentarily simulating a normal flow condition in the logic. Subsequent pressure perturbation caused the switch to sense low flow and start the standby fan.



The surveillance test procedure for FRVS was revised on 6/28/91 to include a section for draining any accumulated water from the switches at the end of each monthly run; however, the fans had been run earlier in accordance with the system operating procedure while maintenance was being performed on the normal reactor building ventilation system. The system operating procedure does not contain a section for draining the switches.

APPARENT CAUSE OF OCCURRENCE

The cause of this event is the accumulation of water in the low flow switch combined with minor pressure perturbation in the ventilation system causing actuation of the low flow auto start logic for the F Recirc fan. The failure to revise all related FRVS system procedures when the surveillance procedure was revised also contributed to this event.

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PREVIOUS OCCURRENCES

There has been 5 previous occurrences of auto starts of the standby FRVS Recirculation fans as reported in LERS 87-016, 87-033, 90-006, 90 023 and 90-034. The cause of the previous events were attributed to the less than adequate design of the auto start logic. In one of the events (LER 90-034) similar conditions, as stated above, were reported as the cause of that event.

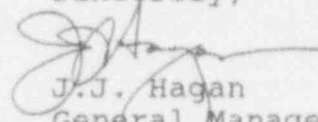
SAFETY SIGNIFICANCE

This event posed minimal safety significance as the system would have operated as designed in an actual emergency. The fan was capable of starting and running if a valid signal had been present. The fans are also designed to be load shed and re-sequenced on the vital bus if an emergency condition arises when the fans are running.

CORRECTIVE ACTIONS

1. The FRVS system operating procedure will be revised to add a section for draining the low flow switches following fan runs.
2. A Design Change has been approved to modify the auto start logic to preclude spurious starts. Planning and System Engineering are reviewing the possibility of performing the design change while the unit is at power; however, due to the location and configuration of the wiring which must be modified there is a risk of rendering vital equipment inoperable and/or possible reactor scram. As the spurious start of the standby FRVS Recirc fan pose minimal safety significance, the design change is currently scheduled for shutdown conditions with implementation no later than the fourth refuel outage.
3. Procedure writers will be advised to consider all relevant system maintenance and operating procedures when improvements are made to one category.
4. System Engineering will review the configuration of the instrument tubing to determine if changes can be made to eliminate the accumulation of water in the flow switches.

Sincerely,



J.J. Hagan
General Manager -
Hope Creek Operations