PSEG

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

Hope Creek Generating Station

DATE February 26, 1992

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 92-002-00

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

Sincerely,

J.J. Hagan
General Manager -
Hope Creek Operations

LLA/

Attachment
SORC Mtg. 92-016
C Distribution

LICENSEE EVENT REPORT

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
HOPE CREEK GENERATING STATION	0 5 0 0 0 3 5 4	1 OF 5

TITLE (4): Operation of the Plant Prohibited by Technical Specifications - Entry into Technical Specification 3.0.3 due to concurrent inoperability of Control Room Ventilation Systems.

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 1	2 8	9 2	9 2	- 0 0 2	- 0 0	0 2	2 6	9 2		

OPERATING MODE (9): [ ]

POWER LEVEL %: 1 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR: (CHECK ONE OR MORE BELOW) (11)

[ ] 20.402(b)	[ ] 20.405(c)	[ ] 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)
[ ] 20.405(a)(1)(iii)	[XX] 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
Louis Aversa, Senior Staff Engineer - Technical	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	X	DATE EXPECTED (15)	MONTH	DAY	YEAR

ABSTRACT (16)

On January 28, 1992 at 2100 hours, control room personnel were performing a monthly surveillance test on the "B" Control Room Ventilation Train (CRV). At 2007 the "B" CRV train tripped due to a low evaporator pressure trip on the "B" Chiller. The "B" Chiller was restarted and tripped again at 2011. As the "B" CRV train would not remain in service it was decided to return the "A" CRV train to service until the cause of the "B" CRV train malfunction could be determined and corrected. The "A" CRV train was started at 2035 and tripped at 2038. With both Control Room Ventilation trains inoperable, Technical Specification 3.0.3 was entered at 2038. Equipment Operators (EO - non licensed) monitoring the start locally noticed that chiller freon level dropped to an abnormal low level during the start cycle resulting in the chiller tripping on low evaporator pressure. The chiller was secured and approximately 3 bottles of freon were added to the chiller to restore the freon level to a normal prestart value. The "A" CRV train was restarted and remained in service for 30 minutes before declaring the unit operable, clearing Technical Specification 3.0.3. Subsequent investigation revealed the trips were caused by a combination of pressure switch setpoint drift and marginal freon level in the evaporator. Additional freon has been added to the "B" chiller to allow greater margin for level fluctuation during the start cycle. Additional corrective actions include revising the acceptable level range upward to ensure adequate freon is available during start cycles, revising the frequency of the switch calibration and ensuring freon is added expeditiously when freon level approaches a low level.

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor (BWR/4)
SYSTEM - Control Room Ventilation (EIIS System designation: VI)

IDENTIFICATION OF OCCURRENCE

TITLE Operation of the Plant Prohibited by Technical Specifications - Entry into Technical Specification 3.0.3 due to concurrent inoperability of Control Room Ventilation Systems.

Event Date: 1/28/92
Event Time: 2133
This LER was initiated by Incident Report No. 92-022

CONDITIONS PRIOR TO OCCURRENCE

Plant in OPERATIONAL CONDITION 1 (Power Operation)
Reactor Power 100% Unit Load 1115 MWe.

DESCRIPTION OF OCCURRENCE

On January 28, 1992 at 2100 hours, control room personnel were preparing to perform a monthly surveillance test on the "B" Control Room Ventilation Train (CRV). In order to perform the test, the in service "A" Train Ventilation System was taken out of service. The Control Room Operator (NCO - RO Licensed) started the "B" CRV train IAW the surveillance test at 2004. At 2007 the "B" CRV train tripped due to a low evaporator pressure trip on the "B" Chiller. The "B" Chiller was restarted and tripped again at 2011. As the "B" CRV train would not remain in service it was decided to return the "A" CRV train to service until the cause of the "B" CRV train malfunction could be determined and corrected. The "A" CRV train was started at 2035 and tripped at 2038. With both Control Room Ventilation trains inoperable, Technical Specification 3.0.3 was entered at 2038. Equipment Operators (EO - non licensed) were dispatched to monitor the "A" chiller parameters locally as another start was attempted. The EO noticed that chiller freon level dropped to an abnormal low level during the start cycle resulting in the chiller tripping on low evaporator pressure. The chiller was secured and approximately 3 bottles of freon were added to the chiller to restore the freon level to a normal prestart value. The "A" CRV train was restarted and remained in service for 30 minutes before declaring the unit operable, clearing Technical Specification 3.0.3, and terminating the power decrease at 2252. During troubleshooting the "B" chiller low evaporator pressure switch was also found out of calibration. The switch was recalibrated and the unit was returned to operable status.

ANALYSIS OF OCCURRENCE

The Control Room Ventilation System consists of two independent and redundant systems each capable of maintaining proper environmental conditions in the main control room, and vital control equipment rooms, under normal and accident conditions. Each train contains a chiller, chilled water pump, emergency filter unit, and several equipment area ventilation fans. Failure of any component in one train will initiate a shutdown of that train and an auto start of the standby train. The chiller units receive automatic trip signals on high vibration, high motor temperature, high oil temperature, high gas temperature, condenser refrigerant high pressure, evaporator pressure low, low chilled water flow and compressor low oil pressure.

The evaporator pressure low trip signal is generated via a low pressure switch which monitors suction pressure to the chiller compressor. The compressor takes a suction from the evaporator which acts as a freon reservoir. During the start cycle, it is common for freon level to decrease below the normal shutdown level, but freon will stabilize at an operating level sufficient to prevent a low evaporator pressure trip. This level transient will be greater when the chiller is restarted with elevated chilled water temperatures following an event where both chilled water systems were secured. During the restart attempt on the "A" chiller, it was noted that the level decreased below the minimum operating level. Subsequent investigation revealed that the low evaporator pressure switch setpoint had drifted and that a marginal freon level existed. Individually these conditions would not have prevented the chiller from starting, but the combined effects of marginal freon level and instrument drift resulted in a failure to start. The low evaporator pressure switches drifted 3.2 psig on the "A" chiller and 3.6 psig on the "B" chiller. The three bottles of freon which were added to the "A" Chiller, would account for approximately 20% of the total capacity of the unit. It was also noted that seasonal temperature effects may have contributed to the start cycle failure. As the cooling water temperature for the chiller drops, it reduces the pressure to which the compressor discharges. This results in more freon being removed from the evaporator to the condenser during the start cycle amplifying the effect of the marginal freon level.

The three bottles of freon which was added to the "A" chiller allowed immediate restart capability of the "A" chiller. Subsequently each of the chiller low evaporator pressure switches were recalibrated and the units returned to operable status. Freon was added to the "B" chiller to provide greater margin during start evolutions.

APPARENT CAUSE OF OCCURRENCE

The apparent causes of this event are the combination of marginal freon level, and instrument drift. Seasonal temperature changes on the cooling medium for the chiller may have been a secondary contributor to this event. Design limits for instrument drift and freon levels alone would not have prevented a successful start, but the combination of all factors contributed to the failure.

PREVIOUS OCCURRENCES

Three previous occurrences of entry into Technical Specification 3.0.3 due to inoperability of both control room ventilation systems have occurred (ref: LERs 88-028-00, 89-007-00 and 91-011-00). The 1988 report was due to mechanical failure on the B unit at the same time maintenance was being performed on the A unit. The second involved two unrelated mechanical failures on the A and B units. The third was due to a mechanical failure on the A unit and an indeterminate failure on the B unit. Corrective actions for all three events consisted of repairing the equipment failures.

SAFETY SIGNIFICANCE

This event posed minimal safety significance due to the short duration of the equipment being unavailable. Had it been necessary to operate the Control Room Emergency Filtration (CREF) system in the event of an accident, requiring CREF for protection of Control Room personnel, required equipment could have been placed in a manual mode of operation to allow CREF operation. This mode would provide for filtration and circulation of the control room atmosphere, with only minimal cooling being provided by ambient air intake.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION																		
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		YEAR		*	NUMBER			*	REV									
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CORRECTIVE ACTIONS

1. The "A" Chiller freon level was restored to within the normal level range.

2. The evaporator pressure low trip switches were recalibrated to their correct values.

3. System Engineering will initiate a frequency change for the calibration of the pressure switches from 18 months to 12 months.

4. System Engineering will evaluate the need to establish higher minimum freon levels for the chillers.

5. Operations Department will review this event with personnel.

6. An ongoing evaluation of control room chiller performance will review the need for winter/summer settings.

Sincerely,

J.J. Hagan
General Manager -
Hope Creek Operations

LLA/

SORC Mtg. 92-016