



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

December 31, 1990

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 90-031-00

This Licensee Event Report is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(v).

Sincerely,

J.J. Hagan  
General Manager -  
Hope Creek Operations

RBC/

Attachment  
SORC Mtg. 90-122

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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): HIGH PRESSURE COOLANT INJECTION (HPCI) SYSTEM DECLARED INOPERABLE DUE TO VIBRATION DURING INSERVICE TESTING - EQUIPMENT MALFUNCTION

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)	
1	1	2   9   9   0	9   0	-	0   3   1	-	0   0	1   2   3	1   9   0				

OPERATING MODE (9)	1	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)						
POWER LEVEL	1   0   0	20.405(a)(1)(i)	50.36(c)(1)	XX 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)	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	Richard Cowles, Senior Staff Engineer - Technical	TELEPHONE NUMBER	6   0   9   3   3   9   3   4   3   1
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE NOTED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS?	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS?

SUPPLEMENTAL REPORT EXPECTED? (14)	YES	NO	DATE EXPECTED (15)	MONTH	DAY	YEAR

ABSTRACT (16)

On 11/29/90 at 1517, the HPCI system was declared inoperable due to high vibration readings on the HPCI booster pump speed reducing gearbox during an ASME Section XI Inservice Testing (IST) run of the HPCI pump. Vibration readings for the high speed input shaft exceeded the IST required action value (2.0 mils) for the input shaft. Subsequent inspection of the gearbox determined that misalignment of the input shaft, combined with a worn shaft bearing, were the cause of the out-of-tolerance vibration. The bearing was restored to acceptable tolerances, the input shaft was re-aligned, and the IST surveillance was successfully completed. The HPCI system was declared operable on 12/1/90 at 1759.

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PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor (BWR/4)  
 High Pressure Coolant Injection System (EIIS Designation: BJ)

IDENTIFICATION OF OCCURRENCE

High Pressure Coolant Injection (HPCI) System Declared Inoperable Due to Excessive Vibration During Inservice Testing-Equipment Malfunction

Event Date: 11/29/90

Event Time: 1517

This LER was initiated by Incident Report No. 90-162

CONDITIONS PRIOR TO OCCURRENCE

Plant in OPERATIONAL CONDITION 1 (Power Operation), Reactor Power 100%, Unit Load 1100MWe.

DESCRIPTION OF OCCURRENCE

On 11/29/90 at 1517, the Nuclear Shift Supervisor (NSS, SRO licensed) was informed that results of quarterly ASME Section XI Inservice Testing (IST) of the HPCI pump had determined that the HPCI booster pump speed reducing gearbox was experiencing excessive vibration on the input and output shafts. The HPCI system was declared inoperable, the appropriate Technical Specification Action Statement was entered, and a four hour non-emergency report was made to the NRC Operations Center in accordance with 10CFR50.72.

APPARENT CAUSE OF OCCURRENCE

Failure analysis by Systems Engineering and consultation with the HPCI pump vendor determined that a minor shaft alignment, combined with wear of one of the high speed input shaft bearings, resulted in excessive shaft vibration.

The cause of the low speed output shaft vibration was determined to be rubbing between the shaft and its bearing retainer.

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ANALYSIS OF OCCURRENCE

During performance of the IST surveillance, vibration readings for the high speed input shaft were .53 mils and 2.88 mils, which exceeds the 2.0 mil ASME Section XI required action value for the input shaft. Followup inspection found the high speed input shaft out of alignment, and an examination of the shaft bearings revealed evidence of vibration induced cracking of the bearing babbitt and heat induced wear due to the shaft misalignment.

Vibration readings on the low speed output shaft were 3.0 mils and 1.78 mils, exceeding the 2.5 mils ASME Section XI required action value. Followup inspection determined that the low speed output shaft was out of alignment, and that the bearing housing cover was rubbing on the shaft.

Both shafts required realignment in both the vertical and horizontal direction. The shafts were last aligned in October of 1989 during the course of 18 month preventive maintenance on the gearbox. Results of previous IST surveillances had indicated that the pump was in the "alert" range due to vibration.

PREVIOUS OCCURRENCES

No previous occurrences of HPCI inoperability due to booster pump speed reducing gearbox vibration being in excess of IST allowable parameters have occurred at Hope Creek. Since 1989, HPCI has been declared inoperable due to equipment problems on three occasions (Ref: LERs 89-012, 90-009, and 90-026). In all cases, problems were resolved prior to expiration of the Technical Specification allowable timeframe (14 days) for HPCI inoperability.

SAFETY SIGNIFICANCE

This incident had minimal safety significance. During the course of the HPCI system inoperability, all other Emergency Core Cooling Systems (ECCS) remained operable. Technical Specifications allow continued operation for up to 14 days with the HPCI system inoperable, provided all other ECCS are operable.

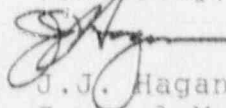
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CORRECTIVE ACTIONS

1. The input and output shafts were realigned in accordance with Maintenance Department procedures.
2. The worn input shaft bearing was restored to acceptable tolerances and reinstalled. All other bearings were examined, and no problems were noted.
3. The speed reducing gearbox was drained and flushed.
4. The quarterly IST surveillance was completed successfully.

Sincerely,



J.J. Hagan  
 General Manager -  
 Hope Creek Operations

RBC/

SORC Mtg. 90-122