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U.S. Regulatory Commission
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Washington, DC 20555

LER 354/04-006-00
HOPE CREEK GENERATING STATION – UNIT 1
FACILITY OPERATING LICENSE NO. NPF-57
DOCKET NO. 50-354

This Licensee Event Report entitled, High Pressure Coolant Injection Design System Requirements Not Demonstrated, submitted pursuant to the requirements of 10CFR50.73(a)(2)(v)(D).

This event was reported to the NRC (Event Report 40876). Subsequent engineering review determined that the diesel was not inoperable, therefore the notification made to report the Plant Shutdown in accordance with technical specifications 50.72(b)(2)(i) is hereby retracted.

Sincerely,

A handwritten signature in black ink, appearing to read "James Hutton".

James Hutton
Plant Manager – Hope Creek

Attachment

RFY

C Distribution
LER File 3.7

Handwritten initials "JE22" in black ink.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose 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 collection.

1. FACILITY NAME Hope Creek Generating Station	2. DOCKET NUMBER 05000 354	3. PAGE 1 OF 3
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4. TITLE
High Pressure Coolant Injection Design System Requirements Not Demonstrated

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONT H	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
7	16	2004	2004	- 006 -	00	9	13	2004	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)
10. POWER LEVEL 95	<input type="checkbox"/> 20.2201(b) <input type="checkbox"/> 20.2203(a)(3)(i) <input type="checkbox"/> 50.73(a)(2)(i)(C) <input type="checkbox"/> 50.73(a)(2)(vii) <input type="checkbox"/> 20.2201(d) <input type="checkbox"/> 20.2203(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(viii)(A) <input type="checkbox"/> 20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(4) <input type="checkbox"/> 50.73(a)(2)(ii)(B) <input type="checkbox"/> 50.73(a)(2)(viii)(B) <input type="checkbox"/> 20.2203(a)(2)(i) <input type="checkbox"/> 50.36(c)(1)(i)(A) <input type="checkbox"/> 50.73(a)(2)(iii) <input type="checkbox"/> 50.73(a)(2)(ix)(A) <input type="checkbox"/> 20.2203(a)(2)(ii) <input type="checkbox"/> 50.36(c)(1)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(iv)(A) <input type="checkbox"/> 50.73(a)(2)(x) <input type="checkbox"/> 20.2203(a)(2)(iii) <input type="checkbox"/> 50.36(c)(2) <input type="checkbox"/> 50.73(a)(2)(v)(A) <input type="checkbox"/> 73.71(a)(4) <input type="checkbox"/> 20.2203(a)(2)(iv) <input type="checkbox"/> 50.46(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(v)(B) <input type="checkbox"/> 73.71(a)(5) <input type="checkbox"/> 20.2203(a)(2)(v) <input type="checkbox"/> 50.73(a)(2)(i)(A) <input type="checkbox"/> 50.73(a)(2)(v)(C) <input type="checkbox"/> OTHER <input type="checkbox"/> 20.2203(a)(2)(vi) <input type="checkbox"/> 50.73(a)(2)(i)(B) <input checked="" type="checkbox"/> 50.73(a)(2)(v)(D) <input type="checkbox"/> OTHER <div style="font-size: small; text-align: right;">Specify in Abstract below or in NRC Form 366A</div>

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME R. Yewdall, Licensing Engineer	TELEPHONE NUMBER (Include Area Code) 856-339-2469
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE MONTH: DAY: YEAR:
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On July 16, 2004 the Hope Creek High Pressure Coolant Injection System (HPCI) was declared inoperable due to the inability to demonstrate via calculation or test data that the system could perform at the level assumed in the design basis accident analyses. Upon discovery, the station entered Technical Specification (TS) 3.5.1.c, a 14 day Limiting Condition of Operation (LCO) for HPCI inoperability. At this time the D Emergency Diesel Generator (EDG) was considered inoperable due to surveillance testing being conducted. As a result, the plant entered TS 3.0.3 and initiated a plant shutdown. This event was reported to the NRC (Event Report 40876). Subsequent engineering review determined that the diesel was not inoperable, therefore the notification made to report the Plant Shutdown required by technical specifications 50.72(b)(2)(i) is hereby retracted.

An original design document that recommended that the 2 HPCI injection line restrictor orifices be rebored to a larger size had not been acted upon. The actual HPCI flow rate was determined by calculation and surveillance test results to be less than the design requirements of 5600 gpm at 1156 psia. This is a long-standing design issue. Corrective actions include: reboring the orifices, performing testing to document adequate flow, revising design calculations, performing design document reviews of other systems and initiating an analysis to determine if HPCI was capable of meeting functional requirements in the as-found conditions.

This event is being reported in accordance with 10CFR50.73 (a) (2) (v) (D), Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
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		2004	006	00	

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

PLANT AND SYSTEM IDENTIFICATION

General Electric – Boiling Water Reactor (BWR/4)

IDENTIFICATION OF OCCURRENCE

Event Date: July 16, 2004
Discovery Date: July 16, 2004

CONDITIONS PRIOR TO OCCURRENCE

Hope Creek was in Operating Condition 1 (Power Operation), at the time of discovery. Concurrent with entering Technical Specification 3.5.1 to declare HPCI inoperable the "D" Emergency Diesel Generator (EDG) was in operation for the conduct of surveillance testing. No other required structures, systems or components were inoperable at the start of this event that contributed to the event.

DESCRIPTION OF OCCURRENCE

On July 16, 2004 the High Pressure Coolant Injection System (HPCI) was declared inoperable due to the inability of the HPCI system to deliver 5600 gpm of flow to the reactor at the pressure of the lowest Safety Relief Valve (SRV) lift point as assumed in the design basis accident analyses. Upon discovery, Technical Specification (TS) action statement 3.5.1.c was entered at 1000 hours, which states, "With the HPCI system inoperable, restore HPCI system to OPERABLE status within 14 days or be in at least HOT SHUTDOWN within the next 12 hours and reduce reactor steam dome pressure to ≤ 200 psig within the following 24 hours." At the time of discovery, the D EDG was being tested. The diesel was considered to be inoperable because improper instrument test leads were being utilized. With the diesel considered inoperable and HPCI inoperable station Operations determined that it would be appropriate to enter TS 3.0.3 and take actions to initiate steps to shutdown the unit in accordance with the TS Action Statement. The diesel testing was secured and TS 3.0.3 was exited. This event was reported to the NRC in accordance with 10CFR50.72(b)(2)(i)/50.72(b)(3)(v)(d) (Event Report 40876). Subsequent engineering review determined that the use of the test leads did not cause the diesel to be inoperable, therefore the notification made to report the Plant Shutdown required by technical specifications 10CFR50.72(b)(2)(i) is hereby retracted.

Hope Creek HPCI system design requirements included the ability to supply 5600 gpm of coolant to the reactor at 1135 psig. A license change to increase the setpoint tolerance for the Safety Relief Valves SRV increased the system design pressure to 1156 psig. This change was not updated in the pump in-service test. The HPCI flow rate was determined by calculation and surveillance test results to be less than 5600 gpm at 1156 psig.

The HPCI system provides coolant to the reactor through one of the core spray spargers and one of the feedwater spargers. Each supply line contains a restricting orifice designed to control the required coolant flow from each pathway. Rebored orifices were replaced in each supply line with approved flow tests confirming adequate flow rates. The HPCI system was returned to operable at 2258 hours on July 28, 2004.

This event is being reported in accordance with 10CFR50.73 (a) (2) (v) (D), Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

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CAUSE OF OCCURRENCE

The cause of this occurrence was the lack of design and configuration control. An original design calculation, calculation, BJ-0018, was identified, which recommended that the existing (original) orifices be rebored to larger sizes, however, the orifices were not rebored. This caused undersized orifices to remain in place since plant startup. The system design flow requirement of the original 5600 gpm at a design pressure of 1135 psia, was subsequently changed to 1156 psia as a result of a 1996 License Change Request (LCR) increasing the tolerance of the (SRV) from 1% to 3%. In addition, design calculation BJ-0023 used incorrect design input pump speed of 4500 rpm which was greater than the 4150 rpm speed limitation of the turbine.

The specific problems are the following:

- The restricting orifices in the core spray and feedwater supply lines were undersized;
- An original design change recommending resizing the orifices was not acted upon;
- A 1996 LCR that changed SRV tolerance from 1% to 3% did not result in appropriate changes to design basis documents;
- The In-Service Test for HPCI did not confirm design basis;
- Design calculation BJ-0023 used incorrect design input pump speed of 4500 rpm vs. 4150 rpm because speed limitations imposed by test and surveillance procedures were not used in the calculation.

PREVIOUS OCCURRENCES

A review of LERs for the two prior years at Hope Creek and Salem did not identify any similar occurrences of this type. No similar occurrences of this type involving the HPCI system were identified.

SAFETY CONSEQUENCES AND IMPLICATIONS

There were no safety consequences associated with this event since other independent reactor protection systems were available at the time of discovery. An analysis to determine that HPCI was capable of meeting functional requirements at the as found condition is being performed.

A review of this event determined that a Safety System Functional Failure (SSFF) as defined in Nuclear Energy Institute (NEI) 99-02 has occurred because the inability to demonstrate via calculation or test data that the system could perform at the level assumed in the design basis accident analyses.

CORRECTIVE ACTION

The corrective actions to address the identified problem are as follows:

- Replaced flow restriction orifices with orifices of the correct size to provide design flow at design pressure;
- Performed a functional test to confirm and document correct HPCI flow;
- Corrected HPCI surveillance and functional test procedures to test HPCI at correct design flow and pressure;
- Revised design calculation BJ-0023 to include design changes;
- Performing design document reviews of other systems to ensure that the extent of the condition is fully evaluated.

COMMITMENTS

This LER contains no Commitments.