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10CFR50.73

United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-001

Hope Creek Generating Station Unit 1
Facility Operating License No. NPF-57
Docket No. 50-354

Subject: Licensee Event Report 2008-002

In accordance with 50.73(a)(2)(i)(B) and 50.73(a)(2)(v)(D), PSEG Nuclear LLC, is submitting Licensee Event Report (LER) Number 2008-002. This LER is being submitted beyond the 60-day due date. This issue has been entered into the PSEG corrective action program.

Should you have any questions concerning this letter, please contact Mr. Francis D. Possessky at (856) 339-1160.

No Regulatory commitments are contained in the LER.

Sincerely,

A handwritten signature in cursive script that reads "John F. Perry".

John F. Perry
Plant Manager
Hope Creek Generating Station

Attachment: Licensee Event Report

IE22
NR

cc: Mr. S. Collins, Administrator - Region 1
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. R. Ennis, Licensing Project Manager - Hope Creek
U.S. Nuclear Regulatory Commission
Mail Stop 08B3
Washington, DC 20555-0001

USNRC Resident Inspector office - Hope Creek (X24)

Mr. P. Mulligan, Manager IV
Bureau of Nuclear Engineering
PO Box 415
Trenton, New Jersey 08625

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: 80 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 4

4. TITLE

BLOWN 1E INVERTER MAIN FUSE WITH ONE EMERGENCY DIESEL GENERATOR INOPERABLE CAUSES LOSS OF CONTROL ROOM EMERGENCY FILTRATION LOSS OF SAFETY FUNCTION

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
04	22	2008	2008	- 002 -	000	10	17	2008	N/A	
9. OPERATING MODE			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)							
1			<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)	
10. POWER LEVEL			<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 checked="" type="checkbox"/> 50.73(a)(2)(i)(B)		<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)		Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

Francis D. Possessky, Compliance Engineer

TELEPHONE NUMBER (Include Area Code)

856-339-1160

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
X	EB	FU	S156	N					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE)☒ NO

15. EXPECTED SUBMISSION DATE

MONTH

DAY

YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On April 22, 2008, the CD481 1E Safety Related Inverter Main Power input fuse failed. This failure combined with the 'D' Emergency Diesel Generator being in a maintenance outage caused both trains of the Control Room Emergency Filtration (CREF) system to be INOPERABLE. This constituted an entry into Technical Specification (TS) 3.0.3. and a loss of the control room emergency filtration function in the event of a Loss of Offsite Power (LOOP).

An eight-hour notification was made for this event under the provisions of 10CFR50.72(b)(3)(v)(D).

A prompt investigation and an equipment apparent cause evaluation were conducted. The apparent cause of this event was a spurious misfire of Silicon Controlled Rectifiers (SCR's) in the inverter or static switch section. This caused a ½ cycle (or less) short circuit failure of the main input 600-amp DC fuse.

Corrective actions included replacing the blown fuse in CD-481 and checking the voltage output for stability before restoring to normal power.

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NARRATIVE

PLANT AND SYSTEM IDENTIFICATION

General Electric – Boiling Water Reactor (BWR/4)
Control Room Emergency Filtration System – {VI}
Inverter – {INVT}

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

IDENTIFICATION OF OCCURRENCE

Event Date/Time: April 22, 2008 / 0841
Discovery Date/Time: April 22, 2008 / 0841

CONDITIONS PRIOR TO OCCURRENCE

Hope Creek was in Operational Condition 1 with reactor power at 100%. The 'D' Emergency Diesel Generator (EDG) was INOPERABLE due to being in a planned maintenance outage. No other structures, systems, or components were inoperable that contributed to the event.

DESCRIPTION OF OCCURRENCE

On April 22, 2008 at 0841 Main Control Room operators received overhead alarm "120VAC UPS Trouble". Equipment operators found the 1CD481 inverter with a blown main fuse in the inverter input. This resulted in a short duration Limiting Condition for Operation (LCO) IAW Technical Specification (TS) section 3.0.3. due to two trains of CREF inoperable, "B" Control Room Emergency Filtration (CREF) from the "D" EDG outage and "A" CREF from the "C" inverter failure.

The 120 VAC distribution panels have multiple power supplies. These supplies are an inverter normally powered by a Class 1E 480 VAC Motor Control Center (MCC) with a secondary power source from a Class 1E 125 VDC Bus and with the loss of output from the inverter, a static switch automatically switches to a backup power supply from another Class 1E 480 VAC MCC

Unavailability of a Class 1E inverter due to random failure or a scheduled maintenance outage does not fail power to the 120 VAC distribution panel itself. If a loss of inverter output is indicated, a static switch automatically shifts to a backup power supply that is supplied by a Class 1E 480 VAC MCC different than the one normally supplying power to the inverter, but in the same Class 1E channel.

During a Loss of Offsite Power (LOOP) all 1E vital busses would be de-energized and then re-energized by the associated EDG. The 'D' bus would not have been re-energized due to the 'D' EDG being in a maintenance outage. The 'C' EDG would start and power the 'C' 1E vital bus, but due to the sequence of events and relay states, the exact condition and response of the emergency sequencer that controls the starting of the emergency loads would be unknown. Therefore, the 'A' CREF unit's potential inability to automatically start would result in it being declared INOPERABLE.

The Maintenance department replaced the fuse and Operations restored the inverter to normal alignment at 1036.

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SAFETY CONSEQUENCES

The potential impact of this condition is minimal. The time that this condition existed was 2 hours, 5 minutes and no Loss of Offsite Power (LOOP) occurred. With the 1CD481 inverter inoperable, a loss of power caused by a (LOOP) or a Loss of Offsite Power with a concurrent Loss of Coolant Accident (LOOP/LOCA) results in de-energization of the associated 120 VAC distribution panel supplying the channel emergency load sequencer. The associated EDG would start and the backup Class 1E power supply to the 120 VAC distribution panel would be re-energized. If the sequencer did not respond properly when re-powered, operations personnel have procedural guidance for manual actions required to ensure the associated channel loads are started. In the event that CREF was needed, the operators could have started the unit to return its function to operation.

A review of this event determined that a Safety System Functional Failure (SSFF) occurred as defined in Nuclear Energy Institute (NEI) 99-02.

CAUSE OF OCCURRENCE

An apparent cause evaluation was conducted.

The apparent cause of the event was determined to be a blown DC fuse, (a fast acting 600 amp semiconductor fuse) in the inverter section input. This is suspected to be a random failure based on previous plant history and operating experience review. A spurious misfire of SCR's in the inverter or static switch section can cause a 1/2 cycle (or less) short circuit blowing the main input fuse. This would clear (open) the main input fuse and since the fuse is designed to clear before damage to the SCR's can occur, the inverter could be restarted normally, no physical damage will be found. There was no evidence found of any long term overcurrent conditions or problems with 120VAC loads connected to the UPS output. Fuse F101 failure analysis supports a fast overcurrent condition. There is plant experience and utility information that supports spurious fuse clearing with no externally generated apparent causes.

PREVIOUS OCCURRENCES

A review of LERs at Hope Creek for the previous two years was performed to determine if similar events have occurred. Neither of these events was caused by an electrical issue.

06/28/2005 – Hope Creek, LER 2005-005-000, 'A' Control Room Emergency Filtration (CREF) Train Inoperable For Greater Than Allowed Outage Time. The cause of the inoperability of the 'A' CREF train was the entrainment of air in the chilled water train following maintenance on the evaporator. The entrainment of air in the system was due to inadequate filling and venting of the chilled water train. Procedure HC.OP-SO.GJ-0001, "Control Area Chilled Water System Operation," was revised on April 1, 2005 to improve the venting process for the control room chilled water system and the 'A' CREF train was returned to a fully operable status on June 3, 2005.

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05/09/2005 – Hope Creek, LER 2005-004-000, 'A' Control Room Emergency Filtration (CREF) Train Inoperable with B CREF Out Of Service. On May 12, 2005, at approximately 1020 hours, plant personnel reported that the guide vane pivot arm for the 1AK400 chiller appeared to have slipped. At that time, the 1BK400 chiller was removed from service for maintenance. A follow up operability assessment performed several weeks later concluded that with the guide vane pivot arm slippage, the 1AK400 chiller was not capable of performing its design function of maintaining temperatures in the control room envelope. A review of plant data determined that the guide vane slippage for the 1AK400 chiller most likely started at approximately 0950 hours on May 9, 2005. Therefore, the 'A' CREF train was inoperable from May 9 to May 12. With the 'B' CREF train inoperable during this same time period, Technical Specification (TS) 3.0.3 would have been applicable for having both trains of CREF inoperable.

The slippage of the 1AK400 guide vane actuator arm was the result of loose set screws on the drive arm and vane-actuating arm. Corrective actions include corrective maintenance completed to restore the 'A' CREF chiller, maintenance procedure revision, lesson learned communication, and assessment of maintenance technician training changes.

CORRECTIVE ACTIONS

The Maintenance department replaced the fuse and Operations restored the inverter to normal alignment.

The failed fuse was sent to the manufacturer Ferraz-Shawmut for analysis. An x-ray examination showed a "large" gap in the open fuse element. This is indicative of a large over current condition. Mechanical fatigue or prolonged current slightly above rated current would have left a much smaller gap.

COMMITMENTS

This LER contains no commitments.