



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

Hope Creek Generating Station

July 24, 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 91-015-00

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

Sincerely,

J.J. Hagan  
General Manager -  
Hope Creek Operations

RBC/

Attachment  
SORC Mtg. 91-075

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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													
TITLE (4): ENGINEERED SAFETY FEATURES (ESF) ACTUATION (REACTOR WATER CLEANUP ISOLATION) DUE TO TRIPPING OF REACTOR PROTECTION SYSTEM CHANNEL "A" ELECTRICAL PROTECTION ASSEMBLY																															
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	6	2	6	9	1	9	1	-	0	1	5	-	0	0	0	2	4														
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR: (CHECK ONE OR MORE BELOW) (11)																													
		20.402(b)					20.405(c)					XX 50.73(a) (2) (iv)					73.71(b)														
POWER LEVEL		20.405(a) (1) (i)					50.36(c) (1)					50.73(a) (2) (v)					73.71(c)														
1   0   0		20.405(a) (1) (ii)					50.36(c) (2)					50.73(a) (2) (vii)					OTHER (Specify in														
		20.405(a) (1) (iii)					50.73(a) (2) (i)					50.73(a) (2) (viii) (A)					Abstract below														
//////////		20.405(a) (1) (iv)					50.73(a) (2) (ii)					50.73(a) (2) (viii) (B)					and in Text)														
//////////		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																			
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE NOTED IN THIS REPORT (13)																															
CAUSE	SYSTEM	COMPONENT	MANUFAC- Turer	REPORTABLE TO NRCDS?	//////////	CAUSE	SYSTEM	COMPONENT	MANUFAC- Turer	REPORTABLE TO NRCDS?	//////////	CAUSE	SYSTEM	COMPONENT	MANUFAC- Turer	REPORTABLE TO NRCDS?	//////////	CAUSE	SYSTEM	COMPONENT	MANUFAC- Turer	REPORTABLE TO NRCDS?	//////////								
B	JC	BKR	GOBO	Y	//////////						//////////						//////////						//////////								
SUPPLEMENTAL REPORT EXPECTED? (14)												YES		NO		XX		DATE EXPECTED (15)				MONTH		DAY		YEAR		//////////			

#### ABSTRACT (16)

On 6/26/91 at 0921, the control room received indication of a half scram, and isolations of the inboard Reactor Water Cleanup (RWCU) isolation valve, Reactor Recirculation Sample Valve, and Main Steam Line Inboard Drain valve. The above actions occurred as a result of a loss of the power supply to the Channel "A" Reactor Protection System (RPS) electrical bus when the alternate power supply Electrical Protection Assembly (EPA) experienced a spurious trip (the bus was being fed by its alternate power supply due to a preventive maintenance outage of the Channel "A" RPS motor generator set). The Channel "A" RPS bus was re-powered from its normal power source, and the half scram and RWCU isolation were reset. Followup troubleshooting by the Maintenance Department and Systems Engineering could not determine a definitive reason for the trip of the EPA, however, it is suspected that the trip resulted from an EPA performance problem similar to those noted in General Electric Service Information Letter (SIL) 496. Immediate corrective actions consisted of troubleshooting the subject EPA, performing a functional test of the EPA, and adjusting the RPS bus alternate power supply transformer voltage to a higher value. Longer term corrective actions consist of implementing a modification to all RPS EPAs, as described in SIL-496, when EPA logic card upgrade kits are received from the vendor.

EPA Manufacturer: General Electric  
 Type: TFI  
 Part Number: 184C449P001

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### PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor (BWR/4)  
 Reactor Protection System (EIIIS Designation: JC)  
 Reactor Water Cleanup System (EIIIS Designation: CE)  
 Reactor Recirculation Sample System (EIIIS Designation: AD)  
 Main Steam System (EIIIS Designation: SB)

### IDENTIFICATION OF OCCURRENCE

Engineered Safety Features (ESF) Actuation (Reactor Water Cleanup Isolation) Due to Tripping Of Reactor Protection System Channel "A" Electrical Protection Assembly

Event Date: 6/26/91

Event Time: 0921

This LER was initiated by Incident Report No. 91-094

### CONDITIONS PRIOR TO OCCURRENCE

Plant in OPERATIONAL CONDITION 1 (Power Operation), reactor power 100%, unit load 1110Mwe.

### DESCRIPTION OF OCCURRENCE

On 6/26/91 at 0921, control room personnel received indication of a half scram and isolations of the inboard Reactor Water Cleanup (RWCU) isolation valve (EV-F001), Main Steam Line Inboard Drain valve (HV-F016), and Reactor Recirculation Sample Valve (SV-4310). The Nuclear Control Operator (NCO, RO licensed) noted that an electrical protection assembly (EPA) for the Channel "A" Reactor Protection System (RPS) alternate power supply had tripped. When attempting to restore the channel from the alternate EPA, another trip of the EPA occurred approximately 20 minutes later. The Channel "A" RPS was re-energized from its normal power source (motor generator set) at 1037, the half scram was reset, and all affected components were restored to a normal configuration.

The Senior Nuclear Shift Supervisor (SNSS, SRO licensed) initiated a 4 hour non-emergency report per 10CFR50.72 due to the ESF isolations experienced during this event.

### APPARENT CAUSE OF OCCURRENCE

This occurrence was caused by a spurious trip of a Channel "A" RPS bus EPA.

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### ANALYSIS OF OCCURRENCE

On 6/25/91, the Channel "A" RPS motor generator set had been removed from service for a scheduled bearing replacement outage. In support of this outage, Channel "A" RPS power was shifted to the alternate power source, and at on 6/26/91 at 0921, the previously described trip of the alternate source EPA occurred.

Followup troubleshooting by the Maintenance Department and Systems Engineering could not determine a cause for the trip of the EPA. Over voltage, under voltage, and under frequency trip setpoints were verified to be within tolerance. No fluctuations of the respective alternate power supply transformer were noted with the bus unloaded. The output voltage of the transformer was within an acceptable range, (approximately 120VAC), however, following this event, the secondary voltage was adjusted to approximately 123VAC with the RPS bus unloaded.

Systems Engineering reviewed the event, and determined that the EPA trip was similar to a trip experienced in 1990 (Ref: LER 90-007). In both cases, the EPA exhibited characteristics of performance problems similar to those identified in GE SIL-496, which was issued in August, 1989. In response to SIL-496, Systems Engineering initiated a design change to replace existing logic cards in all EPA's at Hope Creek with upgraded logic cards as recommended by GE. This design change will be implemented as soon as the upgraded logic cards are received from the vendor.

### PREVIOUS OCCURRENCES

There have been 5 previous reportable occurrences initiated by tripping of RPS electrical protection assemblies. LERs 86-007, 87-021, and 89-022 report EPA trips due to either undervoltage setpoint problems or valid undervoltage conditions on the alternate power supplies.

A spurious EPA trip was reported in LER 90-007 that was similar to EPA performance problems noted in GE SIL-496, Revision 1. In response to LER LER 90-007 and SIL-496, Revision 1, Systems Engineering initiated a design change to enhance EPA logic card performance by installing an upgrade kit.

LER 90-033 reports an EPA trip that was caused by a faulty logic card.

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### SAFETY SIGNIFICANCE

This incident had minimal potential safety significance. RPS channel "A" was re-energized from its alternate power supply. Technical Specifications permit operation in any operating condition for up to 72 hours with one RPS channel inoperable. Had RPS channel "B" been inoperable at the time of this occurrence, a reactor scram would have occurred, and a reactor scram is bounded by UFSAR analysis.

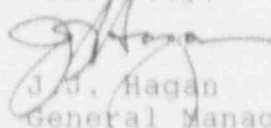
### EQUIPMENT / MANUFACTURER DATA

EPA Manufacturer: General Electric  
 EPA Type: TFJ  
 Part Number: 184C449P001

### CORRECTIVE ACTIONS

1. In response to SIL-496, Revision 1, Systems Engineering initiated a design change to modify existing logic cards in all EPA's at Hope Creek with upgrade kits, as recommended by GE. This design change is scheduled to be implemented when the logic card upgrade kits are received, currently scheduled prior to the end of 1991.
2. A functional test of the subject EPA was conducted during troubleshooting efforts following this event. No apparent problems were discovered with the EPA, the EPA passed the required functional test, and was restored to operability.
3. The output voltage of the Channel "A" RPS bus alternate power supply transformer was adjusted to approximately 123VAC (unloaded). Additionally, transformer performance will be evaluated under loaded conditions at the first available opportunity.

Sincerely,



J. J. Hagan  
 General Manager -  
 Hope Creek Operations

RBC/

SORC Mtg. 91-075