



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

Hope Creek Operations

July 17, 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 91-014-00

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. 91-070

C Distribution

240037

The Energy People

9107240203 910717
PDR ADOCK 05000354
S PDR

TEC 3.1
5-2173 (Rev. 1-88)

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 ACTUATION: VARIOUS CHANNEL "B" EMERGENCY CORE COOLING SYSTEM ACTUATIONS/ INITIATIONS DURING DESIGN CHANGE IMPLEMENTATION DUE TO RELAY CABINET DESIGN INADEQUACIES																			
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	1 9 9 1	9	1	- 0 1 4	- 0	0	0	7	1 7 9 1									
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)				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) (vi)				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 NPDG?	CAUSE	SYSTEM	COMPONENT	MANUFAC- Turer	REPORTABLE TO NPDG?	CAUSE	SYSTEM	COMPONENT	MANUFAC- Turer	REPORTABLE TO NPDG?	CAUSE	SYSTEM	COMPONENT	MANUFAC- Turer	REPORTABLE TO NPDG?
SUPPLEMENTAL REPORT EXPECTED? (14) YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>										DATE EXPECTED (15)									
										MONTH DAY YEAR									
										//////////									

ABSTRACT (16)

On 6/19/91 at 2025, during implementation of a design change in a Emergency Core Cooling System (ECCS) relay cabinet by Controls Department technicians, while loosening a termination screw, a wire retaining ring attached to the screw was inadvertently rotated such that it came in contact with an adjacent terminal post. The resultant short circuit caused a momentary loss of power to trip units in the relay cabinet, actuating various channel "B" Loss of Coolant Accident (LOCA) systems and components. After confirming the cause of the event and verifying all system responses had occurred as expected, the Senior Nuclear Shift Supervisor directed that the channel "B" ECCS actuation signals be reset, and all systems and components were returned to a normal (standby) status. No ECCS injection to the reactor vessel occurred. The primary cause of this occurrence was a design deficiency in the subject ECCS relay cabinet, in that limited internal cabinet accessibility inhibits testability and maintenance of components inside the cabinet. The subject design change was being implemented to prevent occurrences such as noted in this report. Corrective actions consist of completing the design change in the relay cabinet, reviewing the event with all Controls Department technicians involved in the continuing implementation of the subject design change, and incorporating lessons learned from this event into Controls Department technician training.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION														
FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)								PAGE (3)				
		YEAR	**	NUMBER			**	REN						
HOPE CREEK GENERATING STATION	05000354	91	-	0	1	4	-	0	0	0	2	OF	0	4

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor (BWR/4)
 EIIIS Designators are listed in the text and denoted as (XX)

IDENTIFICATION OF OCCURRENCE

Engineered Safety Features Actuation: Various Channel "B" Emergency Core Cooling System (ECCS) Actuations / Initiations During Design Change Implementation Due To Relay Cabinet Design Inadequacies

Event Date: 6/19/91

Event Time: 2025

This LER was initiated by Incident Report No. 91-090

CONDITIONS PRIOR TO OCCURRENCE

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

DESCRIPTION OF OCCURRENCE

On 6/19/91 at 2025, control room personnel received indication of a channel "B" Loss of Coolant Accident (LOCA) signal initiation. The following system responses and indications were observed:

- o LOCA level 1 signal to the "B" channel load sequencer
- o Level 2 and Level 8 (-38" and +54") signals to the Reactor Core Isolation Cooling System (RCIC) (BN).
- o Trip of the "B" Reactor Feedpump Turbine (RFPT) (SJ) on low oil pressure when its main oil pump tripped due to loss of power supply on the LOCA load shed.
- o Reactor Recirculation System (AD) intermediate runback due to a valid reactor vessel Level 4 (+30") signal concurrent with the "B" RFPT trip.
- o Automatic starts of the following systems / components:
 - "B" Residual Heat Removal (RHR) (BO) pump
 - "B" Core Spray Pump (BM)
 - "B" Service Water Pump (BI)
 - "B" Safety and Turbine Auxiliaries Cooling System (STACS) (CC) pump
 - "B" Filtration, Recirculation, and Ventilation System (FRVS) (VA) Vent and Recirculation Fans
 - "F" FRVS Recirculation Fan
 - "B" Emergency Diesel Generator (EK)

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION														
FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)							PAGE (3)					
		YEAR	\\	NUMBER			\\	REV						
HOPE CREEK GENERATING STATION	05000354	91	-	0	1	4	-	0	0	0	3	OF	0	4

DESCRIPTION OF OCCURRENCE, CONT'D

- o "B" Reactor Auxiliaries Cooling Pump (CC)
- o Channel "B" Primary Containment Isolation System (PCIS)
[JM] isolations

Following initiation of the channel "B" LOCA signal, a Controls Department technician informed the Senior Nuclear Shift Supervisor (SNSS, SRO licensed) that, while loosening a termination screw on a terminal board in an ECCS relay cabinet during implementation of a design change, a wire retaining ring attached to the screw had inadvertently rotated such that it came in contact with an adjacent terminal. After ascertaining the cause of the initiation and verifying that all expected system responses occurred, the SNSS directed that affected systems and components be reset and returned to a normal configuration.

APPARENT CAUSE OF OCCURRENCE

The primary cause of this occurrence is a design deficiency associated with the ECCS relay cabinet. A design change was being implemented at the time of this occurrence to correct this condition. The limited access afforded for work inside the cabinet, lighting, and other human factors concerns resulted in this cabinet being included in a station wide design change affecting many similar cabinets. The purpose of the design change is to install testing jacks external to the cabinets to enhance the testability a. maintainability of control components internal to the cabinet.

ANALYSIS OF OCCURRENCE

On the evening of 6/19/91, Controls Department technicians received permission to conduct a monthly functional test of a Core Spray system reactor pressure permissive. Concurrent with this test, the technicians were to complete implementation of a design change in the associated ECCS relay cabinet. Completion of the design change required landing leads which, during the stations 3rd refueling outage, were run from a newly installed external cabinet test box to internal cabinet termination points.

In the process of loosening a termination screw on the terminal block, a wire retaining ring attached to the screw inadvertently rotated such that it came in contact with an adjacent terminal post. This resulted in a momentary loss of power to the channel "B" ECCS trip units in the cabinet, and the previously discussed system responses occurred.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION												
FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)								PAGE (3)		
		YEAR	\\		NUMBER		\\		REV			
HOPE CREEK GENERATING STATION	05000354	91	-	0	1	4	-	0	0	0	4	OF 0 4

PREVIOUS OCCURRENCES

Five previous occasions of ESF/ECCS actuations have occurred at Hope Creek due to accessibility and human factors problems in various relay cabinets (Ref: LERs 86-057, 86-089, 87-003, 87-010, 91-003). The first four events resulted in development of a design change to enhance the testability of all similar cabinets by installing test boxes external to selected high risk cabinets. A portion of this design change was being completed when the event described in this report occurred. The purpose of the design change is to prevent incidents such as this following installation.

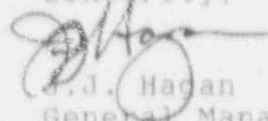
SAFETY SIGNIFICANCE

This incident posed no threat to the health and safety of the general public. The channel "B" ECCS systems which initiated and isolated functioned as designed. No injection to the reactor vessel occurred. Additionally, redundant ECCS channels were unaffected and available for service if needed.

CORRECTIVE ACTIONS

1. The portion of the design change being implemented at the time of this event was completed and tested satisfactorily. The full design change is scheduled for completion during the stations 4th refueling outage.
2. Maintenance Department Management has reviewed this event with all Controls Department technicians involved in the continuing implementation of the design change, and discussed methods for preventing movement of similarly configured wire retaining rings. Additionally, lessons learned from this event will be discussed in departmental continuing training.
3. This report will be forwarded to the Nuclear Training Department for incorporation into Controls Technician training programs.

Sincerely,



J.J. Hagan
General Manager -
Hope Creek Operations