



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

Hope Creek Generating Station

November 15, 1992

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 91-010-01

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. 92-079

C Distribution

230051

The Energy People

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PDR ADOCK 05000354
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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 5		
TITLE (4): Engineered Safety Feature Actuation - Automatic closure of Reactor Core Isolation Cooling Torus Vacuum Breaker inboard isolation valve during functional testing due to undetermined causes.																				
EVENT DATE (5)				LER NUMBER (6)						REPORT DATE (7)				OTHER FACILITIES INVOLVED (8)						
MONTH	DAY	YEAR		YEAR	*	NUMBER		*	RE	MONTH	DAY	YEAR		FACILITY NAME(S)				DOCKET NUMBER(S)		
0	5	1	5	9	1	-	0	1	0	-	0	1	1	1	1	5	9	2		
OPERATING (9) MODE				THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR: (CHECK ONE OR MORE BELOW) (11)																
POWER LEVEL % 1 0 0				<div style="display: flex; justify-content: space-between;"> <div> 20.402(b) 20.405(a)(1)(i) 20.405(a)(1)(ii) 20.405(a)(1)(iii) 20.405(a)(1)(iv) 20.405(a)(1)(v) </div> <div> 20.405(c) 50.36(c)(1) 50.36(c)(2) 50.73(a)(2)(i) 50.73(a)(2)(ii) 50.73(a)(2)(iii) </div> <div> xx 50.73(a)(2)(iv) 50.73(a)(2)(v) 50.73(a)(2)(vii) 50.73(a)(2)(viii)(A) 50.73(a)(2)(viii)(B) 50.73(a)(2)(x) </div> <div> 73.71(b) 73.71(c) OTHER (Specify in Abstract below and in Text) </div> </div>																
LICENSEE CONTACT FOR THIS LER (12)																				
NAME Louis Aversa, Senior Staff Engineer - Technical												TELEPHONE NUMBER 6 0 9 3 3 9 3 3 8 6								
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE NOTED IN THIS REPORT (13)																				
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS?	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS?											
				////					////											
SUPPLEMENTAL REPORT EXPECTED? (14) YES					NO	x	DATE EXPECTED (15)				MONTH	DAY	YEAR	//////////						
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ABSTRACT (16)

On May 15, 1990, during the performance of a monthly functional test on Division 2 Drywell Pressure instrumentation, an automatic closure of the inboard Reactor Core Isolation Cooling (RCIC) torus vacuum breaker isolation valve (FC-HV-F062) occurred. After verifying that the isolation had not occurred from a valid condition, the Senior Nuclear Shift Supervisor (SNSS, SRO licensed) directed that the isolation be reset and the valve reopened. The monthly functional test was then performed again successfully. The results of investigation of the event have been inconclusive in determining a cause of the isolation; further testing and inspection of the valve logic control circuitry will be conducted at the next forced or planned unit outage. This additional testing has verified proper operation of the valve and circuitry.

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PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor (BWR/4)
 Nuclear Boiler Instrumentation (EIIS Designation: JG)
 Reactor Core Isolation Cooling System (EIIS Designation: BN)

IDENTIFICATION OF OCCURRENCE

Engineered Safety Features Actuation - Automatic Closure of Reactor Core Isolation Cooling Torus Vacuum Breaker Inboard Isolation Valve During Functional Testing Due to Undetermined Causes

Event Date: 05-15-91

Event Time: 1647

This LER was initiated by Incident Report No. 91-071

CONDITIONS PRIOR TO OCCURRENCE

Plant in OPERATIONAL CONDITION 1 (Power Operation), Reactor Power 100%, Unit Load 1090MWe.

DESCRIPTION OF OCCURRENCE

On 5/15/91 at 1647, control room personnel received indication of automatic closure of the Reactor Core Isolation Cooling (RCIC) system torus vacuum breaker inboard isolation valve (FC-HV-F062). After verifying that the isolation had not occurred from a valid condition, the Senior Nuclear Shift Supervisor (SNSS) directed that the isolation be reset and F062 be reopened. An investigation into the cause of this event was initiated, as was a four hour non-emergency phone report in accordance with 10CFR50.72 due to this event being classified as an Engineered Safety Features actuation.

ANALYSIS OF OCCURRENCE

This event occurred during the performance of a monthly Maintenance Department (Controls) functional test on Division 2 Drywell Pressure instrumentation. Refer to the instrumentation schematic and logic arrangement for F062, shown on Attachment 1.

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ANALYSIS OF OCCURRENCE, CONT'D

Extensive investigation and analysis by Technical and Maintenance Departments determined the following:

The logic which initiates auto closure of F062 is a one out of two taken twice logic arrangement. A Division 1 or Division 2 Low RCIC Steam Supply Pressure signal and a Division 1 or Division 2 High Drywell Pressure signal are required to satisfy the F062 auto-closure logic.

As part of the functional test, a Division 2 High Drywell Pressure signal was manually inputted to the logic through trip unit N694F. This signal energized E51-K19B, and closed contact T1-M1. Two minutes after input of the signal, the isolation occurred. In order for isolation of F062 to have occurred, the circuit through the T2-M2 contacts of either E51-K16B or E51-K17B would have to be completed concurrent with the E51-K19B

T1-M1 contact being closed. The ensuing investigation focused on all scenarios that would have completed the logic.

Two potential scenarios were developed that could have resulted in completion of the valve control logic.

1. A spike or fault on one of the six components in the "RCIC Steam Pressure Below Setpoint" instrumentation (PT-N058B / MTU N658B / RELAY K16B; PT-N058F / MTU N658F / RELAY K17B) could account for completion of the F062 isolation logic. All components in this circuit will be tested and inspected at the next forced or planned unit outage, as RCIC must be declared inoperable to perform this testing. The subject surveillance test has been performed subsequent to this event, with no problems being noted.
2. After tripping the channel, the surveillance procedure requires the technician to verify 13 indicators, annunciators, computer points, and relay contact closures to ensure the channel functioned as required. Step 12 requires verifying contact closure of E51-K19B, contact T1-M1, at the external test box of panel P621. Step 13 requires the technician to check contact closure on relay E11-K16B (containment spray permissive) contact T3-M3 in panel P618. It is possible that the technician instead connected a digital multi-meter (DMM) across E51-K16B, contact T2-M2, which is on the same test box as the contacts verified in step 12. It should be noted that in post-event interviews, the technician involved could not recall any errors he may have made during the performance of the surveillance test. Additionally, these steps were independently verified, although not required by procedure.

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ANALYSIS OF OCCURRENCE, CONT'D

Additional testing of the control logic circuitry was accomplished through three different and separate 18 month tests: Division 2 Channel B21-N694F Drywell Pressure time response, Division 2 Channel B21-N694F Drywell Pressure channel calibration, and PCIS/RCIC isolation functional test which strokes the valve by inputting a containment isolation signal to the subject logic. All of the tests were completed satisfactorily with no problems found in either the control or valve circuitry.

APPARENT CAUSE

The root cause of this event is inconclusive; however, the corrective actions stated in this LER will address the most likely cause as either personnel error or equipment malfunction.

PREVIOUS OCCURRENCES

No previous problems have occurred during the performance of the subject surveillance procedure or with valve F062.

SAFETY SIGNIFICANCE

The purpose of F062 is to isolate the torus atmosphere from the RCIC turbine exhaust line following a breach of the RCIC steam piping concurrent with high drywell pressure. The valve was reopened 27 minutes following isolation. During the time that the valve was closed, the outboard isolation valve (F084) was open and operable. In the event that a condition requiring closure of F062 had occurred, the valve was already closed. Additionally, torus vacuum breaker capability was not required, as the RCIC turbine was not in service at the time of this event. For these reasons, it can be concluded that this event posed minimal safety significance.

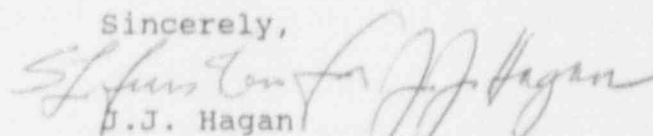
CORRECTIVE ACTIONS

1. The subject functional test procedure has been reviewed for potential human factors enhancements.
2. Extensive post event testing and analysis was conducted by the Technical and Maintenance departments. Additional testing to verify proper operation of the logic circuit and valve operation has been performed.

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3. As a conservative measure, because of a recent unrelated personnel error by the lead technician involved in this event, the technician had been disqualified from performing surveillance testing, pending remedial training. Remedial training has since been completed satisfactorily.

Sincerely,

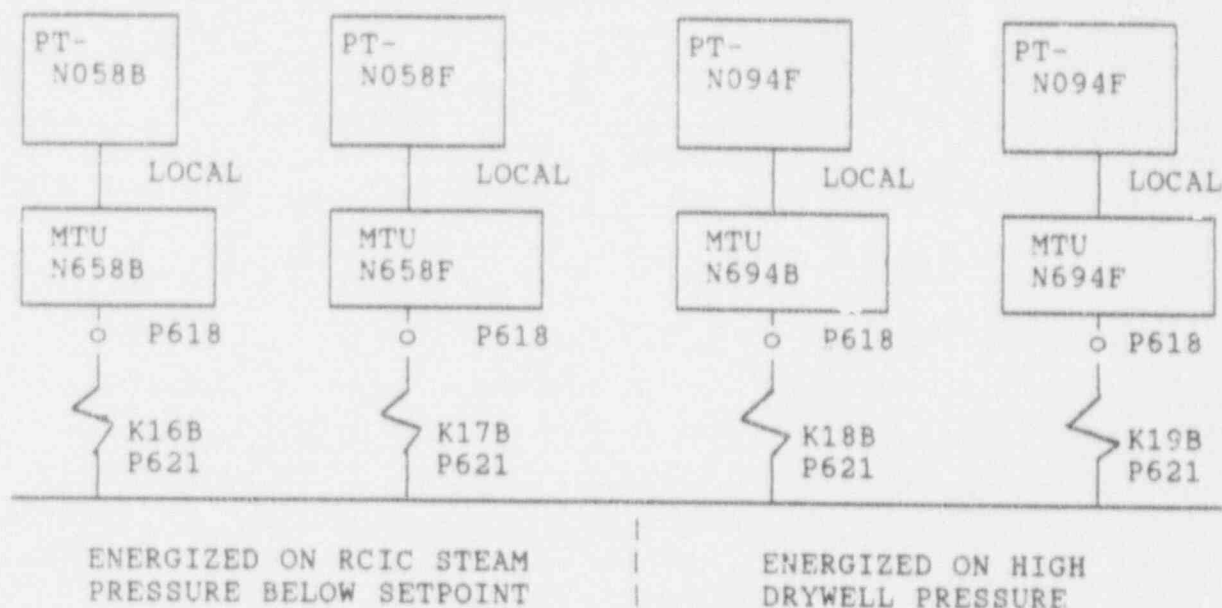

 J.J. Hagan
 General Manager
 Hope Creek Operations

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ATTACHMENT 1

INSTRUMENTATION SCHEMATIC, F052



AUTO ISOLATION LOGIC, F062

