NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Hope Creek Generating Station	0 5 0 0 0 3 5 4	1 OF 0 4

TITLE (4) Automatic Reactor Scram on Low Reactor Water Level Signal - Design Deficiency

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
										0 5 0 0 0
0 5	0 5	8 8	8 8	— 0 1 3	— 0 0	0 6	0 6	8 8		0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
A. M. Ervin - Lead Engineer - Technical	6 0 9 3 3 9 - 5 2 3 9

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On May 5, 1988 at 0917 hours, The Plant was in OPERATIONAL CONDITION 1 (Power Operation) at 100% power generating 1090 MWe. On May 5, 1988 at 0917 hours, the performance of preventive maintenance on the "A" Secondary Condensate Pump Auxiliary Oil Pump Circuit Breaker was approved. When the breaker was opened, the "A" Secondary Condensate Pump tripped. The reactor water level began to decrease. As a result, the "B" and "C" Reactor Feedwater Pump Turbines (the "A" turbine was out of service) increased in speed to compensate for the reduction in flow. The "B" turbine tripped on overspeed, resulting in a reactor water level decrease to level 3, initiating an automatic scram. The root cause of this occurrence was determined to be the unusual design interface between the Secondary Condensate Pump Auxiliary Oil Pump Breaker and the Auxiliary Oil Pump and the difficulty in tracking this design through several tiers of engineering drawings. Corrective actions include operator training, caution statements in work orders, caution tags on breakers, a review of breaker logic and verification of the Reactor Feedwater Pump Turbine overspeed trip setpoints.

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NRC (9-83)

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor (BWR/4)
Condensate System (EIIS Designator:SD)

IDENTIFICATION OF OCCURRENCE

Automatic Reactor Scram On Low Reactor Water Level Signal - Design Deficiency

Event Date: May 5, 1988
Event Time 0917 Hours
This LER was initiated by Incident Report No. 88-086

CONDITIONS PRIOR TO OCCURRENCE

The Plant was in OPERATIONAL CONDITION 1 (Power Operation) at 100% power generating 1090 MWe.

DESCRIPTION OF OCCURRENCE

On May 5, 1988 at 0917 hours, the performance of preventive maintenance on the "A" Secondary Condensate Pump Auxiliary Oil Pump Circuit Breaker was approved. When the breaker was opened, the "A" Secondary Condensate Pump tripped. The reactor water level began to decrease. As a result, the "B" and "C" Reactor Feedwater Pump Turbines (the "A" turbine was out of service) increased in speed to compensate for the reduction in flow. The "B" turbine tripped on overspeed, resulting in a reactor water level decrease to level 3, initiating an automatic scram.

APPARENT CAUSE OF OCCURRENCE

The root cause of this occurrence was determined to be the unusual design interface between the Secondary Condensate Pump Auxiliary Oil Pump Breaker and the Auxiliary Oil Pump and the difficulty in tracking this design through several tiers of engineering drawings. This design interface is unusual in that the breaker supplying power to the Auxiliary Feedwater Pump is also the breaker that supplies power to the main Feedwater Pump pressure switch low trip. De-energizing the breaker not only removes power from the Auxiliary Feedwater Pump but also trips the main Feedwater Pump.

ANALYSIS OF OCCURRENCE

The Reactor Recirculation Pumps were manually runback in an attempt to reduce power and maintain level. One automatic runback was not armed because the "A" Feedwater Pump was out of service. When reactor level dropped to 30 inches, an automatic

ANALYSIS OF OCCURRENCE (CONTINUED)

runback occurred. The "B" Reactor Feedwater Pump Turbine tripped at approximately 5500 rpm rather than its design trip point of 6100 rpm. Had the "B" turbine not tripped below its intended setpoint, this scram might not have occurred.

With the "A" RFP out of service and the reduced suction pressure to the "B" and "C" RFPs, the "B" and "C" Reactor Feedwater Pump Turbine (RFPT) speeds increased to maintain feedwater flow. The "B" RFPT tripped prematurely on high RPM and Reactor Pressure Vessel (RPV) water level decreased to level 3, initiating a Reactor Protection System (RPS) low level scram.

All RPS functions performed as designed and the plant was stabilized with the Feedwater System returned to service to maintain reactor vessel level at +35 inches.

PREVIOUS OCCURRENCES

Preventive maintenance on a Secondary Condensate Pump Auxiliary Oil Pump circuit had not been done previously with the Secondary Condensate Pump in service.

SAFETY ASSESSMENT

All safety systems performed their design functions as required to scram the plant and maintain it in a safe condition, therefore the health and safety of the public was not compromised by this event.

REPORTABILITY

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

CORRECTIVE ACTIONS

1. The Nuclear Training Department will review this event for inclusion in future operator training.

2. A caution statement will be added to all preventive maintenance work orders for the Secondary Condensate Auxiliary Oil Pump, warning that preventive maintenance activities could trip the pump.

3. Evaluate the need for a design change to eliminate the Secondary Condensate Pump trip which is caused by the opening of the Auxiliary Oil Pump breaker.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

CORRECTIVE ACTIONS (CONTINUED)

4. Caution tags have been installed on the Secondary Condensate Auxiliary Oil Pump breakers, warning that a pump trip will result whenever a breaker is opened.

5. A review of the logic for all associated subtier breakers will be completed prior to the approval of preventive maintenance on non-Q 480 VAC breakers.

6. The Reactor Feedwater Pump Turbines overspeed trip setpoints will be re-verified and reset at the next outage of adequate duration.

Sincerely,

S. LaBruna/SHA

S. LaBruna
General Manager -
Hope Creek Operations

AME:

SORC Mtg. 88-082

PSE&G

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

Hope Creek Operations

June 6, 1988

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 88-013-00

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

Sincerely,

S. LaBruna
General Manager -
Hope Creek Operations

AME:

Attachment
SORC Mtg. 88-082

C Distribution

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