

LICENSEE EVENT REPORT (LER)

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

TITLE (4) **Intermediate Range Monitor Spike Due To Welding Near IRM Cabinet Causes Full Actuation Of Reactor Protection System While In The Non-coincident Mode**

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	3	2	1	8	8	8	8	8	0	0	6	0	0	4	2	0	8	8	0	5	0	0	0	0

OPERATING MODE (9) **5**

POWER LEVEL (10) **0 1 0 1 0**

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 20.406(a)(1)(vi)	<input type="checkbox"/> 20.406(a)(1)(vii)	<input type="checkbox"/> 20.406(a)(1)(viii)	<input type="checkbox"/> 20.406(a)(1)(ix)	<input type="checkbox"/> 20.406(a)(1)(x)	<input type="checkbox"/> 20.406(a)(2)(i)	<input type="checkbox"/> 20.406(a)(2)(ii)	<input type="checkbox"/> 20.406(a)(2)(iii)	<input type="checkbox"/> 20.406(a)(2)(iv)	<input type="checkbox"/> 20.406(a)(2)(v)	<input type="checkbox"/> 20.406(a)(2)(vi)	<input type="checkbox"/> 20.406(a)(2)(vii)	<input type="checkbox"/> 20.406(a)(2)(viii)	<input type="checkbox"/> 20.406(a)(2)(ix)	<input type="checkbox"/> 20.406(a)(2)(x)	<input type="checkbox"/> 73.71(b)	<input type="checkbox"/> 73.71(c)	<input type="checkbox"/> OTHER (Specify in Abstract Below and in Text NRC Form 366A)
																<input checked="" type="checkbox"/>							

LICENSEE CONTACT FOR THIS LER (12)

NAME **R. B. Cowles, Lead Engineer - Technical** TELEPHONE NUMBER **610 19 313 19 F 1512 6 H**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14) YES NO

EXPECTED SUBMISSION DATE (15)

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

While in Operational Condition 5 (refueling), with the Reactor Protection system (RPS) in the non-coincident mode (shorting links removed), a momentary upscale spike on "A" Intermediate Range Monitor (IRM) resulted in a full RPS actuation (scram signal). The upscale spike on "A" IRM was caused by electronic noise generated when tig welding in the vicinity of the "A" IRM pre-amp cabinet. In the non-coincident mode of RPS, a trip signal from any single IRM will result in a full RPS actuation. No control rod movement occurred, as all rods were full-in at the time of occurrence, and no core alterations were in progress. Root cause analysis determined that a variety of factors contributed to this event, all related to the lack of awareness by the welders that they were welding in an electronically sensitive area. As corrective actions, the station will evaluate current methods of controlling undervessel work during outage situations, and determine where improvements can be made. This evaluation will include a review of methods used in notifying personnel performing undervessel work that, when in the RPS non-coincident mode, extreme caution during work is required. Additionally, Reactor Engineering is evaluating the need for removing shorting links during future refueling outages.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Hope Creek Generating Station	DOCKET NUMBER (2) 0 5 0 0 0 3 5 4 8 8	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 8	- 0 0 6	-- 0 0 0	2	OF 0 4

TEXT (If more space is required, use additional NRC Form 266A's (17))

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor (BWR/4)
 Reactor Protection System (EIIIS Designation: JC)
 Neutron Monitoring System (EIIIS Designation: IG)
 Intermediate Range Monitor (EIIIS Designation: MON)

IDENTIFICATION OF OCCURRENCE

Intermediate Range Monitor (IRM) Spike Due To Welding Near IRM Cabinet Causes Full Actuation of Reactor Protection System (RPS) While In The Non-Coincident Mode.
 Event Date: 03/21/88
 Event Time: 0305
 This LER was initiated by Incident Report 88-052

CONDITIONS PRIOR TO OCCURRENCE

Plant in OPERATIONAL CONDITION 5 (Refueling)

DESCRIPTION OF OCCURRENCE

On March 21, 1988 at 0305, with the RPS in the non-coincident mode (shorting links removed), a momentary upscale spike on "A" IRM resulted in a full RPS actuation (scram signal). RPS channel A and B reactor scram trip logics, Neutron Monitoring System trouble, and Manual Scram annunciators alarmed in the control room. No control rod movement occurred, (all rods were fully inserted) and no core alterations were in progress at the time of occurrence. An equipment operator (EO, non-licensed) was dispatched to determine the cause of the "A" IRM upscale spike, and reported that tig welding was taking place in the vicinity of the "A" IRM pre-amp cabinet. Following the EOs report, the scram signal was reset.

APPARENT CAUSE OF OCCURRENCE

The following factors contributed to this event:

1. The workers who were welding in the vicinity of the "A" IRM pre-amp cabinets may not have been aware of the extra caution required in the area of the cabinets.
2. Several jobs were ongoing at one time in the vicinity of the pre-amp cabinet and the undervessel area in general. When in the non-coincident mode of RPS, every job in these areas increases the risk of a full RPS actuation.
3. There is no specific guidance given to undervessel area workers with respect to the sensitive nature of Neutron Monitoring System cabling.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Hope Creek Generating Station	DOCKET NUMBER (2) 0 5 0 0 0 3 5 4 8 8	LER NUMBER (3)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 8	- 0 0 6	- 0 0	0 3	OF 0 4

TEXT (If more space is required, use additional NRC Form 366A (1/77))

ANALYSIS OF OCCURRENCE

As previously noted, the station was in a refueling outage at the time of this occurrence. Prior to the outage, Reactor Engineering had determined that certain activities associated with Control Rod Drive (CRD) testing and timing would place the reactor in a condition such that shutdown margin could not be demonstrated. Tech Spec 3/4.3.1 requires that the RPS shorting links be removed in Operational Condition 5 when shutdown margin cannot be demonstrated. Removal of the shorting links places RPS in the non-coincident mode, which means that an upscale trip from any single IRM will satisfy both RPS channel logics, and result in a full scram signal.

During a period of time between 3/16/88 and 3/21/88, CRD friction tests were being conducted. In support of this testing, the RPS shorting links were removed at 1640 on 3/16/88 per Reactor Engineering's previous determination. During the midnight shift on 3/21/88, contract welders were performing tig welding near "A" IRM pre-amp cabinet. Electronic noise from the welding induced a spike in the pre-amp cabinet circuitry, causing an upscale spike on "A" IRM. This spike resulted in the subject full scram signal because RPS was in the non-coincident mode.

This incident was researched for previous occurrences, and it was determined that, during the stations initial power ascension test program in 1986, three similar incidents occurred with RPS in the non-coincident mode. Two of the incidents were as a result of station technicians bumping sensitive IRM cabling and components. One was as the result of a Nuclear Control Operator inappropriately down-ranging an IRM. In both cases, permanent station personnel were involved, and training/counseling have precluded reoccurrence of similar events. This incident resulted from contractors apparently being unaware of the sensitivity of the IRM circuitry.

SAFETY IMPACT

This incident posed no threat to the health and safety of the public or maintaining safe shutdown of the reactor. As previously noted, no rods were withdrawn, no CRD testing was in progress, and the RPS system functioned as expected. It should be noted that RPS was not required to be in the non-coincident mode at the time of this occurrence, as no rods were withdrawn, and no testing was in progress.

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FACILITY NAME (1) Hope Creek Generating Station	DOCKET NUMBER (2) 0 5 0 0 0 3 5 4	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 8	- 0 0 6	- 0 0	0 4	OF 0 4

TEXT (If more space is required, use additional NRC Form 386A (1) (17))

CORRECTIVE ACTIONS

1. Planning Department will evaluate current methods of controlling undervessel work during outage situations, and determine where improvements can be made. This evaluation will take place as part of the post-outage critique.
2. Planning Department and Systems Engineering will review methods used in notifying personnel performing undervessel work that, when in the RPS non-coincident mode, extreme caution during work is required. Contacts with other facilities have indicated that warning signs and barriers in the undervessel area are effective.
3. Reactor Engineering is evaluating the need for removing shorting links during future refueling outages.
4. The above evaluations and resultant corrective actions will be implemented and in place prior to the 1989 mid-cycle outage, currently scheduled for January, 1989.

Sincerely,

S. LaBruna
S. LaBruna
General Manager-
Hope Creek Operations

RBC/
SORC Mtg. 88-064



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

April 20, 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 88-006-00

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

Sincerely,

A handwritten signature in cursive script, appearing to read "S. LaBruna".

S. LaBruna
General Manager -
Hope Creek Operations

RBC/

Attachment
SORC Mtg. 88-064

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