

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Brunswick Steam Electric Plant Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 3 2 5					PAGE (3) 1 OF 0 3									
TITLE (4) Automatic Reactor Scrams Due to Spurious Upscale Trips of Intermediate Range E and H Monitors																								
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)											
1	2	0	7	8	4	8	4	-	0	3	4	-	0	0	0	1	0	4	8	5	0 5 0 0 0			
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																						
2		20.402(b)				20.405(c)				<input checked="" type="checkbox"/> 50.73(a)(2)(iv)				73.71(b)										
POWER LEVEL (10)		20.405(a)(1)(i)				50.36(e)(1)				50.73(a)(2)(v)				73.71(e)										
0 0 1		20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vi)				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)(vii)(A)														
		20.405(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(vii)(B)														
		20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(x)														
LICENSEE CONTACT FOR THIS LER (12)																								
NAME M. J. Pastva, Jr., Regulatory Technician										TELEPHONE NUMBER AREA CODE 9 1 1 9 4 5 7 1 - 1 9 5 2 1 1														
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																								
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS														
X	J D	M O N G O 8 2		Yes																				
X	J D	M O N G O 8 2		Yes																				
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)			MONTH	DAY	YEAR									
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)										<input checked="" type="checkbox"/> NO														

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

On 12-7-84, at 1913 and approximately one minute later, a Unit 1 automatic reactor scram and Reactor Protection System automatic actuation trip, respectively, occurred due to spurious instrument upscale spikes of the unit reactor power intermediate range monitors (IRMs) E and H. On 12-8-84, at 0409, a Unit 1 automatic reactor scram occurred due to spurious instrument upscale spikes on IRMs E and H. At the time of these events, Unit 1 was in reactor startup. During each unit scram recovery, normal plant operating parameters were maintained.

The root cause of both events is attributed to a defective input signal cable to IRM E and insufficient contact tension on the signal lead connectors of IRM H. The first event was initiated by water hammer in the unit main steam lines which resulted in instrumentation oscillations and signal noise being induced into the reactor nuclear instrumentation. The second event was initiated by noise signals caused by energizing the Reactor Manual Control System. The result of each initiating event was instrument upscale spikes in IRMs E and H due to problems affecting both monitors.

Following the second event when the root cause of both events was identified, appropriate repairs were made to the subject IRMs and they were returned to service.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Brunswick Steam Electric Plant Unit 1	0 5 0 0 0 3 2 5 8 4 -	0	3	4	-	0	0 0 2 OF 0 3

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

On December 7, 1984, at 1913 and approximately one minute later, a Unit 1 automatic reactor scram and a Reactor Protection System actuation trip signal, respectively, occurred during a reactor startup of the unit which followed an IGSCC inspection outage. During this outage, reactor main condenser shutdown cooling had been utilized twice to supplement reactor core heat removal and reactor vessel water level control. Following closure of the reactor head vents, reactor recirculation loop temperatures increased to approximately 220°F. At the time, it was unknown to the Unit 1 Control operators that residual reactor water from main condenser cooling still remained within the reactor main steam lines. As a result of the water in the main steam lines, oscillations occurred, as steam flow was initiated, on the following reactor instrumentation:

- reactor steam flow
- reactor vessel level
- main steam line radiation monitoring
- reactor core delta pressure
- reactor core flow
- source range period indication

The oscillations caused signal noise spikes to be induced into reactor power level intermediate range monitors (IRMs) and resultant instrument spiking on IRMs E and H which caused a reactor scram on 120 percent of instrument scale trip.

A unit reactor scram recovery was carried out in accordance with procedure, and normal plant operating parameters were maintained.

Following the unit scram recovery, an investigation determined that no single electrical malfunction could have caused the reactor instrumentation oscillations observed immediately prior to the reactor scram. Immediately prior to the scram, noises indicative of water hammer were heard emanating from the unit Reactor Building main steam line pit area. Approximately 3,000 gallons of water were drained from the main steam lines. Plant auxiliary operators were then dispatched to visually inspect the main steam lines for possible damage resulting from the incurred water hammer. This inspection did not reveal any visual damage to the main steam lines or their respective pipe supports and pipe hangers. At the time it was determined the scram resulted solely from the water in the reactor main steam lines and the resultant noise spikes. A review of the applicable operating procedure showed it was inadequate to ensure complete draining of the main steam lines following main condenser cooling. An appropriate revision was made to the subject procedure and actions begun to recommence startup of the unit.

During the subsequent unit reactor startup on December 8, 1984, at 0409, while at approximately 150 psig reactor pressure and approximately 4 percent reactor power, an automatic reactor scram occurred due to a spurious instrument upscale trip of IRMs E and H. At the time of the scram, an operability test of the unit High Pressure Coolant Injection System was in progress. Reactor

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

steam pressure was decreasing due to the subject testing and, in an effort to increase reactor pressure, the Reactor Manual Control System (RMCS) was energized in order to withdraw appropriate reactor control rods. Following the scram, a unit reactor scram recovery was carried out in accordance with plant procedures and normal plant operating parameters were maintained.

An investigation determined spurious noise signals generated when the RMCS was energized had been picked up by IRMs E and H. The root cause of both IRMs E and H spurious instrument upscale trips and resultant reactor scrams is attributed to a defective signal cable on IRM E and insufficiently tensioned signal cable connections on IRM H which allowed spurious signal noises to be induced into their circuitry. The investigation also revealed various problems involving signal cable connectors, power supplies, and signal cables on the other IRMs.

The problems affecting the unit IRMs, General Electric Company Part No. 194X672G8, were appropriately resolved and the IRMs were returned to service. Following the second event, plant Engineering group personnel performed a walkdown of the unit reactor main steam lines and no problems were identified.



Carolina Power & Light Company

Brunswick Steam Electric Plant
P. O. Box 10429
Southport, NC 28461-0429

January 4, 1985

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NRC Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT UNIT 1
DOCKET NO. 50-325
LICENSE NO. DPR-71
LICENSEE EVENT REPORT 1-84-34

Gentlemen:

In accordance with Title 10 to the Code of Federal Regulations, the enclosed Licensee Event Report is submitted. This report fulfills the requirement for a written report within thirty (30) days of a reportable occurrence and is in accordance with the format set forth in NUREG-1022, September 1983.

Very truly yours,

C. R. Dietz, General Manager
Brunswick Steam Electric Plant

MJP/vt/LETDR1

Enclosure

cc: Mr. R. C. DeYoung
Mr. J. P. O'Reilly

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