



Carolina Power & Light Company

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

May 28, 1993

FILE: B09-13510C
SERIAL: BSEP-93-0080

10CFR50.73

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

BRUNSWICK STEAM ELECTRIC PLANT UNIT 2
DOCKET NO. 50-324
LICENSE NO. DRP-62
SUPPLEMENTAL LICENSEE EVENT REPORT 2-91-015-01

Gentlemen:

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

Very truly yours,

C. S. Hinnant

C. S. Hinnant, Director Site Operations
Brunswick Nuclear Plant

TMJ/

Enclosure

c: Mr. S. D. Ebner
Mr. P. D. Milano
BSEP NRC Resident Office

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EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION
COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING
BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH
(P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555,
AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF
MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Brunswick Steam Electric Plant Unit 2								DOCKET NUMBER (2) 05000324			PAGE (3) 1		
TITLE (4) UNPLANNED ESF ACTUATION WHILE REMOVING REACTOR LOW LEVEL INSTRUMENTATION FROM SERVICE FOR LOWERING OF REACTOR VESSEL LEVEL FOR INVESSEL INSPECTIONS AND DECONTAMINATION.													
EVENT DATE (5)			LER NUMBER (6)					REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR		SEQ. NO.		REV. NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
10	02	91	91	-	15	-	01	05	28	93			
OPERATING MODE (9)		5		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)									
POWER LEVEL (10)		000		20.402(b)		20.405(c)		X		50.73(a)(2)(iv)		73.71(b)	
				20.405(a)(1)(i)		50.38(c)(1)				50.73(a)(2)(v)		73.71(c)	
				20.405(a)(1)(ii)		50.38(c)(2)				50.73(a)(2)(vi)		OTHER (Specify in Abstract and Text)	
				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)(vii)(B)			
				20.405(a)(1)(v)		50.73(a)(2)(iii)				50.73(a)(2)(x)			
LICENSEE CONTACT FOR THIS LER (12)													
NAME Theresa M. Jones, Regulatory Compliance Sr. Specialist										TELEPHONE NUMBER (919) 457-2039			
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	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)						X	NO		DATE (15)				

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

On October 2, 1991, the reactor was defueled. A special procedure (SP) to coordinate the lowering of the vessel level for invessel inspections and chemical decontamination was in progress. Prerequisite steps which disable and place a clearance on the ECCS/PCIS and RPS automatic initiations on low reactor water level components were in progress. At 0216, a spurious low level (LL) trip signal was generated that resulted in closure of isolation valves to the drywell, automatic starting of the DG's and partial actuation of ECCS logic. This event was caused by lack of a caution requiring actions to be performed in the order specified in the SP. Typically, pre-requisites do not require actions and can be verified in any order; as opposed to procedure steps which must be performed sequentially. The SP was revised to incorporate the required caution statement and approved on 10/15/91. Subsequently, the SP has been revised to place the actions required by the prerequisite steps and the caution within the body of the procedure. Personnel involved with initiating, approving, hanging and pulling of clearances received real time training on this event. This was an isolated event and no generic implications regarding the interface between procedures and clearances were found. This event would not have been more severe under reasonable and credible alternative situations.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)	
Brunswick Steam Electric Plant Unit 2	05000324	YEAR		SEQ NO.		REV NO.	2
		91		015		01	

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

INITIAL CONDITIONS

On October 2, 1991, the Unit 2 reactor was defueled and a special procedure (SP) to provide instructions to coordinate the activities and procedures to lower the reactor water level for invessel inspections and chemical decontamination was in progress. Portions of the High Pressure Coolant Injection (HPCI) system, Automatic Depressurization System (ADS), Residual Heat Removal/Low Pressure Coolant Injection (RHR/LPCI) system and Core Spray (CS) system actuation logics were disabled to prevent automatic injection with the reactor defueled and water level lowered. Diesel Generator #3 was removed from service for scheduled maintenance.

EVENT NARRATIVE

The prerequisite steps 5.1, 5.2 and 5.3 of the SP, Reactor Vessel Water Level Control For Chemical Decontamination Of Recirculation Piping, Vessel Annulus And Vessel Inspections, were being performed. Step 5.1 disables the Emergency Core Cooling Systems (ECCS) and Primary Containment Isolation System (PCIS) automatic initiations on reactor low water level. Step 5.2 disables the Reactor Protection System (RPS) automatic initiations on low reactor water level. Step 5.3 places a clearance on the trip unit cards and jumpers which were removed from service to accomplish steps 5.1 and 5.2. The SP and clearance were reviewed by the Unit 2 senior reactor operator (SRO). Two reactor operators (RO's) were directed to place the clearance. Two instrumentation and control (I&C) technicians were assigned to assist the RO's. The RO's and the I&C technicians proceeded with the clearance and, at 0216, a reactor low level (LL) trip signal was generated. The LL trip signal resulted in closure of the Divisions I and II Non-interruptible Air Isolation Valves to the drywell, automatic starting of DG's 1, 2 and 4, and actuation of portions of the HPCI, ADS, LPCI and CS logics.

The initial investigation into the event revealed that the clearance required the master trip unit for each of the four trip channels be removed from service sequentially (ie; N031A-1, N031B-1 then N031C-1). When the master unit is removed prior to the slave unit, the slave unit trips; therefore, a spurious LL signal was generated when a slave unit from division I and II tripped. The event would not have occurred had the slave units been removed prior to the master units or had an entire logic channel (ie; master and slaves) been removed from service prior to beginning another channel.

Further investigation revealed that had the trip units been removed from service as listed in the SP the spurious actuation would not have occurred. The SP was developed based on past SP's which successfully removed the trip units from service to allow for lowering vessel level. The current and past SP 5.1, 5.2 and 5.3 prerequisite steps remove the trip units from service, install the jumpers and place the clearance, respectively. Each of the steps refers the person verifying the prerequisites to Attachment A, Disabling of ECCS/RPS Analog Trip Units Associated With Reactor Vessel Level. It is now apparent that the SP intended for the trip units to be removed from service and the jumpers to be installed in the order listed in Attachment A. This would not have caused an actuation.

The reason for the clearance "order to be hung" being different from the order listed in Attachment A was researched. Initially, only the trip units were entered into the Automated Clearance Management System (ACMS) and they were listed in the same order as that of Attachment A. Given that the SP did not specify that the trip units had to be removed from service in the order listed, the draft clearance was generated without listing an "order to be hung". Whenever an order to be hung is not applicable, ACMS automatically re-orders the components alpha-numerically. This was not perceived as a problem because the RO generating the draft clearance expected that the prerequisite steps 5.1 and 5.2 would be accomplished prior to hanging the clearance. During the subsequent SRO review of the draft clearance, it was determined that the jumpers also needed to be added to the clearance. The jumpers were added and the SRO listed the "order to be hung" sequentially (ie; from tag 1 to tag 34 the

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)
		YEAR	SEQ NO.		REV NO.	
Brunswick Steam Electric Plant Unit 2	05000324	91	015		01	3

TEXT (If more space is required, use additional NRC Form 306A's) (17)

order to be hung was first to thirty-fourth) to prevent mixing up the analog trip units and jumpers because of the alpha-numeric ordering. The clearance center approved the clearance on September 29, 1991.

At 0152, on October 2, 1991, the clearance and SP were reviewed by the Unit 2 SRO. Given that the SP did not specifically require that the involved components be removed from service in the order listed on Attachment A, the SRO authorized the hanging of the clearance as indicated. The two RO's and the I&C technicians proceeded with the clearance utilizing the required communication techniques. At 0216 the spurious low level (LL) trip signal was generated.

CAUSE OF EVENT

The primary cause of this event is the lack of a caution on Attachment A to the SP stating that the analog trip units removal from service and jumper installation are to be performed in the order listed in the attachment to prevent an actuation.

A factor contributing to this event was the expectation that the pre-requisite steps 5.1 and 5.2 would be performed prior to 5.3. Typically, pre-requisites do not require actions and can be verified in any order; as opposed to procedure steps which must be performed sequentially. Neither the SP nor the clearance warned that the actions must be performed in the order specified to prevent a spurious actuation and the unit SRO directed the RO's to hang the clearance as written.

It should be noted that ACMS was a contributor to this event. In the past, the clearances were hand written in accordance with the attachment and it was of no consequence whether the pre-requisite steps were performed prior to placing the clearance or in accordance with the clearance. In this case, the tag sheet was initially typed into ACMS in the order listed on the attachment but the ACMS system automatically listed the components in the alpha-numeric order because the clearance "order to be hung" was not considered to be applicable. The ACMS is designed to arrange items alpha-numerically when an order is not designated. Removal of this function would result in a random listing of components entered on the clearance tag sheet without a specified order to be hung.

CORRECTIVE ACTIONS

The SP will be revised to add a caution statement on the attachment. The SP pre-requisites will be reviewed to determine if some steps would be more appropriately placed in the "procedure". Additionally, this event will be evaluated for potential generic implications regarding the interface between procedures and clearances. Personnel involved with initiating, approving, hanging and pulling of clearances will receive real time training on this event. The training will include a review of the ACMS automatic alpha-numeric function and the need to remove the slave trip units prior to the master trip units.

SAFETY ASSESSMENT

This event would not have been more severe under reasonable and credible alternative situations. Equipment operated as designed and preparations for lowering the reactor vessel level would not occur prior to the fuel being removed from the vessel with the fuel pool gates installed.

PREVIOUS SIMILAR EVENTS

This is an isolated event.

EXPIRES: 4/30/92

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)
Brunswick Steam Electric Plant Unit 2	05000324	YEAR	SEQ NO	REV NO	4	
		91	015	01		

TEXT (If more space is required, use additional NRC Form 305A's) (17)

EIIS COMPONENT IDENTIFICATION

System/Component

ESF
HPCI
ADS
RHR/LPCI
CS
PCIS
RPS
Non-interruptible Air Isolation
DG's

EIIS Code

JE
BJ
**
BO
BM
JM
JD
JM/LE/ISV
EK

(**) EIIS component identifier not found.

LER 2-91-15-01 SUPPLEMENTARY INFORMATION

The SP involved in this event was revised to incorporate the required caution statement on Attachment A and approved on 10/15/91. Subsequently, the SP has been revised to place the actions required by the prerequisite steps and the caution within the body of the procedure.

Personnel involved with initiating, approving, hanging, and pulling of clearances received real time training on this event in Phase 8 of the 1991 Licensed Operator Re-qualification training program and in the fourth quarter of the 1991 Maintenance Training program.

This was an isolated event and no generic implications regarding the interface between procedures and clearances were found.