



Brunswick Nuclear Plant
P.O. Box 10429
Southport, NC 28461-0429
NOV 22 1994

SERIAL: BSEP-94-0472
10CFR50.73

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

BRUNSWICK NUCLEAR PLANT UNIT 1
DOCKET NO. 50-325/LICENSE NO. DRP-71
LICENSEE EVENT REPORT 1-94-013

Gentlemen:

In accordance with the Code of Federal Regulations, Title 10, Part 50.73, Carolina Power & Light Company submits the enclosed Licensee Event Report. This report fulfills the requirement for a written report within thirty (30) days of a reportable occurrence and is submitted in accordance with the format set forth in NUREG-1022, September 1983.

Please refer any questions regarding this submittal to Mr. M. A. Turkal at (910) 457-3066.

Very truly yours,

J. Cowan, Director-Site Operations
Brunswick Nuclear Plant

SFT/

Enclosures

1. Licensee Event Report
2. Summary of Commitments

cc: Mr. S. D. Ebnetter, Regional Administrator, Region II
Mr. P. D. Milano, NRR Project Manager - Brunswick Units 1 and 2
Mr. C. A. Patterson, Brunswick NRC Senior Resident Inspector
The Honorable H. Wells, Chairman - North Carolina Utilities Commission

9411300400 941118
PDR ADDCK 05000325
S PDR

EXPIRES: 5/31/95

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Brunswick Steam Electric Plant, Unit 1

DOCKET NUMBER (2)

05000325

PAGE (3)

1 of 3

TITLE (4)

Control Building Emergency Air Filtration Isolation Due To Chlorine Gas Release
Following Chlorinator Isolation Due To Evaporator Low Water Level

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 NAME	DOCKET NUMBER
10	23	94	94	- 13 -	00	11	18	94	Brunswick Unit 2	05000324
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following)(11)							
POWER LEVEL (10)	100	20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	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)(vi)	OTHER			
		20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	(Specify in Abstract and Text)			
		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

Steve F. Tabor, Regulatory Affairs Specialist

TELEPHONE NUMBER

(910) 457-2178

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)

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

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

On October 23, 1994, Units 1 and 2 were operating at 100% power. Chlorination had been placed in service to the Unit 1 Circulating Water system at 0610 hours. At 0715 hours, the CHLORINE BLDG HI CHLORINE annunciator sounded in the Main Control Room, and an operator was dispatched to the Chlorine Building to investigate. Investigation revealed that a chlorinator isolation had occurred as a result of a low water level condition in the associated chlorine evaporator tank. At 0724 hours, the Control Building Emergency Air Filtration System isolated due to high chlorine levels at the Chlorine Loading Area. The plant declared an Unusual Event at 0740 hours. After surveying the area and determining the hazard no longer existed, the Unusual Event was terminated at 0926 hours. The control building ventilation system was returned to normal operation by 0931 hours. This event resulted from inadequate verification of chlorine evaporator water level while placing the chlorination system in service at 0610 hours. Insufficient chlorine evaporator water level resulted in an evaporator low water temperature condition which caused an automatic isolation of the associated chlorinator as designed. Pressure in the isolated chlorinator increased due to evaporation at ambient temperatures until the installed pressure relief assembly actuated, resulting in the release of chlorine gas. This event is of minimal safety significance in that all systems and components operated as designed. Corrective actions included procedure revisions to clarify water level checks, training on the system operating characteristics that resulted in the release, and coaching the involved operator who placed the system in service. The causes of this event per the criteria of NUREG-1022 are personnel error and procedure inadequacy.

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LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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Brunswick Steam Electric Plant Unit 1	05000325	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 of 3
		94	- 13 -	00	

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

TITLE

Control Building Emergency Air Filtration Isolation Due To Chlorine Gas Release Following Chlorinator Isolation Due To Evaporator Low Water Level

INITIAL CONDITIONS

On October 23, 1994, Units 1 and 2 were operating at 100% power. Chlorination had been placed in service to the Unit 1 Circulating Water system at 0610 hours.

EVENT NARRATIVE

On 10/23/94, at 0610 hours, a Radwaste Control Operator (RWCO) placed the #2 and #4 chlorinators in service in accordance with plant operating procedure. During this activity, the RWCO checked the water level of the #2 and #4 chlorine evaporator tanks. When the operator did not observe a level in the middle of the #4 chlorine evaporator tank level sightglass, the operator believed the water level to be high and did not realize that the level was actually below the level of the sightglass.

At 0715 hours, the Main Control Room received the CHLORINE BLDG HI CHLORINE annunciator. Consequently, a RWCO was dispatched to investigate the cause of the annunciator. The RWCO was unable to confirm the presence of chlorine by smell and entered the Chlorine Building to acknowledge and silence the alarm. No leaks were observed at this time; however, the RWCO noted that a rotameter and some of the piping associated with the #4 chlorinator were covered in ice. Further investigation revealed that the chlorinator tank had isolated on low temperature. The RWCO reported the condition to the Radwaste Control Room and refilled the chlorine evaporator water tank. Upon exiting the Chlorine Building, the RWCO detected a strong odor of chlorine and immediately moved away from the area. After informing the Unit 1 Senior Reactor Operator of the chlorine odor, the RWCO was directed to isolate the chlorine tank car as a precautionary measure.

At 0724 hours, The Control Building Emergency Air Filtration system isolated following the actuation of chlorine detectors installed at the chlorine loading area. The Control Room entered the abnormal operating procedure for chlorine and toxic gas emergencies and directed the evacuation of nearby areas. At 0740 hours, an Unusual Event was declared due to a release of toxic gas that endangers personnel. The Chemical Emergency Response Team (CERT) was activated at 0757 hours to determine the severity of the toxic gas condition. After the CERT verified that the hazardous condition no longer existed, the Unusual Event was terminated at 0926 hours. The control building ventilation system was returned to normal operation by 0931 hours.

This event is being reported pursuant to the requirements of 10 CFR 50.73 (a) (2) (iv), in that the release of chlorine gas resulted in the automatic isolation of the Control Building Emergency Air Filtration System.

CAUSE OF EVENT

The cause of this event was less than adequate procedures, in conjunction with personnel error. Because the governing plant procedures did not direct that evaporator water levels be verified as visible in the sightglass, the sole barrier became the work practices of the RWCO. The RWCO checked the sightglass, but did not observe a level

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

in the sightglass. He assumed the level was high and took no additional actions to verify actual water level. Failure to maintain adequate chlorine evaporator water level allowed the evaporator heater to become uncovered, resulting in a low water temperature condition in the evaporator and a subsequent automatic isolation of the associated chlorinator. Liquid chlorine trapped in the chlorinator continued to evaporate, pressurized the isolated chlorinator, and actuated the installed pressure relief assembly which resulted in the release of a small amount of chlorine to the atmosphere.

CORRECTIVE ACTIONS

1. The Chlorinator System operating procedure was revised to include additional checks of the water level in the chlorine evaporator tanks.
2. The RWCO Daily Checksheet will be revised to include routine verification of chlorine evaporator water tank levels. These checks are being performed under Shift Supervisor direction until the revision can be completed.
3. Appropriate Operations personnel were briefed on the event and given additional guidance regarding careful observation of chlorine evaporator tank water level.
4. The involved RWCO was coached concerning the expectations regarding pre-startup checks of system components.

SAFETY ASSESSMENT

This event had no nuclear safety impact. The design basis chlorine release is based on a complete rupture of a 55-ton chlorine tank car. The quantity of chlorine released in this event is estimated to be less than 10 pounds and is considered insignificant with respect to the bounding analysis. Additionally, the affected safety systems functioned as designed to ensure control room habitability.

PREVIOUS SIMILAR EVENTS

Reportable events involving the release of chlorine gas were reported in LERs 1-90-004 and 1-89-010. In both of these events the release of chlorine gas resulted from equipment malfunction.

EIIS COMPONENT IDENTIFICATIONSystem/ComponentEIIS Code

Heat Rejection Chemical Treatment System
Control Building Control Complex Environmental
Control System

KF

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Enclosure
List of Regulatory Commitments

The following table identifies those actions committed to by Carolina Power & Light Company in this document. Any other actions discussed in the submittal represent intended or planned actions by Carolina Power & Light Company. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Manager-Regulatory Affairs at the Brunswick Nuclear Plant of any questions regarding this document or any associated regulatory commitments.

Commitment	Committed date or outage
The RWCO Daily Checksheet will be revised to include routine verification of chlorine evaporator water tank levels.	12/15/94