

## 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 13		
TITLE (4) Failure of Units 1 and 2 Common Chlorine Detection System to Meet FSAR/Technical Specifications Design Criteria																	
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	1	9	8	4	0	3	3	0	1	0	3	1	4	8	5	Brunswick Unit 2	0 5 0 0 0 3 2 4
OPERATING MODE (9) 4			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 8: (Check one or more of the following) (11)														
POWER LEVEL (10) 0 0 0			20.402(b)				20.408(c)				50.73(a)(2)(iv)				73.71(b)		
			20.408(a)(1)(i)				50.38(e)(1)				X 50.73(a)(2)(v)				73.71(e)		
			20.408(a)(1)(ii)				50.38(e)(2)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 388A)		
			20.408(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)						
			20.408(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)						
			20.408(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)						
LICENSEE CONTACT FOR THIS LER (12)																	
NAME R. M. Poulk, Senior Specialist - Regulatory Compliance										TELEPHONE NUMBER 9 1 9 4 5 7 - 2 3 1 4							
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																	
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs							
SUPPLEMENTAL REPORT EXPECTED (14)																	
YES (If yes, complete EXPECTED SUBMISSION DATE)										X NO			EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR

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

While performing a design review of the Control Building Emergency Ventilation System (CB HVAC) following discussions with the Resident NRC Inspector's office, it was determined that the chlorine isolation portion of the system did not satisfy the design criteria established in the FSAR or the basis to technical specifications. The basis to Technical Specification 3/4 3.5.5 (Chlorine Detection System) states that the Chlorine Detection System is consistent with Regulatory Guide 1.95. Regulatory Guide 1.95 and the FSAR (Section 6.4.2.2) both indicate that the CB HVAC will be isolated by either a high chlorine signal at the Control Building air intake plenum or by a high chlorine signal at the chlorine storage location. Contrary to these requirements, the CB HVAC will only isolate on a high chlorine signal in the Control Building air intake plenum.

To correct this problem, a plant modification will be implemented to bring the Chlorine Detection System into conformance with the required design criteria. Until the plant modification is completed and made operational, additional surveillance requirements have been imposed on the existing system by the Plant Nuclear Safety Committee (PNSC) to assure adequate chlorine protection for the Operations personnel in the Control Room.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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	05000325	84	033	01	02	OF	03

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

While performing a design review of the Control Building Emergency Ventilation System (CB HVAC) following discussions with the Resident NRC Inspector's office, it was determined that the chlorine isolation portion of the system did not satisfy the design criteria established in the FSAR or the basis to technical specifications. The basis to Technical Specification 3/4 3.5.5 (Chlorine Detection System) states that the Chlorine Detection System is consistent with Regulatory Guide 1.95. Regulatory Guide 1.95 and the FSAR (Section 6.4.2.2) both indicate that the CB HVAC will be isolated by either a high chlorine signal at the Control Building air intake plenum or by a high chlorine signal at the chlorine storage location. Contrary to these requirements, the CB HVAC will only isolate on a high chlorine signal in the Control Building air intake plenum.

Upon realization that the Chlorine Detection System did not meet the design criteria of the FSAR or the basis of technical specifications, a detailed review into the history of the Chlorine Isolation System was conducted. The following is a synopsis of that review:

1. March 1973: Response to FSAR Comment M14.5 commits Brunswick to install local and remote detectors having the capability of isolating the CB HVAC.
2. June 1974: Plant Piping & Instrument Diagram (P&ID) drawings are revised showing logic for detectors 1(2)-X-AT-2979 (at the chlorine storage location) having isolation capability for the CB HVAC.
3. July 1974: Chlorine detectors 1(2)-X-AT-2977 (CB air intake plenum) are added to plant P&ID drawings. Logic shows that the 1(2)-X-AT-2977 and the 1(2)-X-AT-2979 detectors have isolation capabilities.
4. August 1976: Preoperational test of the CB HVAC System approved. Isolation capability of the 1(2)-X-AT-2977 and the 1(2)-X-AT-2979 detectors was not verified. No design deficiencies were identified.
5. February 1982: A routine system review identifies a design deficiency with the Chlorine Isolation System--the system will not isolate if the Emergency Filtration System control switch is in the ON position. No other design deficiencies identified (LER 2-82-24).
6. August 1982: A design deficiency is identified in the Chlorine Isolation System which prevents both makeup dampers from closing on a high chlorine signal. The architect/engineer determined that this was a design inadequacy during initial design (LER 2-82-84).

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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Brunswick Steam Electric Plant Unit 1	0 5 0 0 0 3 2 5 8 4 -	0	3 3	- 0 1	0 3	OF	0 3

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

During the course of this investigation, it could not be determined if the isolation logic from the 1(2)-X-AT-2979 detectors had ever been installed; although, as noted, the logic does appear on some plant drawings. The architect/engineer for Brunswick, United Engineers & Constructors (UE&C), is being requested to investigate their in-house documentation in an attempt to determine the cause for the isolation design omission.

To correct this problem, Carolina Power & Light Company is undertaking the following actions:

1. As indicated above, UE&C is being requested to investigate the cause of the design omission.
2. A plant modification will be written and implemented to bring the Chlorine Detection System into compliance with design commitments. This modification will assure that the isolation time from detection of chlorine to damper isolation is less than the air transport time from the chlorine detector to the damper in accordance with the criteria of Regulatory Guide 1.95. Final engineering, scheduling, and budgeting of this modification is currently in progress.
3. A thorough design review of the Chlorine Detection System and its associated isolation logic is being performed and any required action taken. During this review, it was determined that the suction line was located such that it was susceptible to partial clogging by sand, small gravel, etc. In addition, the vendor recommended that the suction line piping material be changed from copper to PCV or stainless steel. A plant modification has been completed which changed the piping to stainless steel, relocated the suction point to make it less susceptible to clogging, and relocated the air inlet plenum detectors closer to the suction point to provide a quicker isolation response time.
4. Until the Chlorine Detection System can be restored to the design commitments by a plant modification(s), the following actions have been or will be implemented to assure adequate chlorine protection for Operations personnel in the Control Room:
  - a. Surveillance on the Control Building air intake plenum detectors' drip rate (1(2)-X-AT-2977) will be performed weekly to assure detector operability.
  - b. Standing instructions have been established to require the isolation of the CB HVAC upon the receipt of a high chlorine annunciation from the 1(2)-X-AT-2978 chlorine detectors. These detectors are located in an area adjacent to the 1(2)-X-AT-2979 detectors and have an alarm function only. This isolation will be maintained until the alarm clears and the integrity of the Chlorine System is verified. In addition, the weekly surveillance identified in 4.a above will also be performed on the 1(2)-X-AT-2978 detectors.



Carolina Power & Light Company

Brunswick Steam Electric Plant  
P. O. Box 10429  
Southport, NC 28461-0429  
March 14, 1985

FILE: B09-13510C  
SERIAL: BSEP/85-0418

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  
SUPPLEMENT TO LICENSEE EVENT REPORT 1-84-33

Gentlemen:

In accordance with Title 10 to 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. R. Dietz, General Manager  
Brunswick Steam Electric Plant

MJP/mcg/LETSDL

Enclosure

cc: Dr. J. N. Grace

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