



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

SEP 09 1994

SERIAL: BSEP-94-0357
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 1-94-011

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

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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)

PRIMARY CONTAINMENT ISOLATION SYSTEM CONTROL LOGIC RELAY FAILURE RESULTS IN UNPLANNED ESF ACTUATION

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
08	20	94	94	- 11 -	00	09	09	94	FACILITY NAME	DOCKET NUMBER
										05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following)(11)							
POWER LEVEL (10)	100	20.402(b)	20.405(c)	X	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)(vii)	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)(ix)				

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
X	JM	RLY	G080	Y					

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)

On August 20, 1994, at approximately 0008 hours, while Unit 1 was operating at 100% power, an unplanned isolation of the Containment Atmospheric Control system and Drywell Floor and Equipment Drain system isolation valves occurred. At 0047 hours, after verifying that the isolation was due to an invalid isolation signal and the appropriate isolation valves had closed, the isolation signals were reset and the affected systems were restored to service to support plant operation. Further investigation into the cause of the event determined that a primary containment isolation system logic control relay had experienced an intermittent and indeterminate failure. The relay is a normally energized, General Electric model CR120A, 115 vac relay. The suspected relay has been replaced. This event is of minimal safety significance in that the involved systems failed to the condition required to fulfill their safety function. Previous CR-120 relay failures which resulted in the unplanned isolation of Engineered Safety Feature systems have been reported in LERs 2-89-020, 1-90-023, 1-90-029, and 1-91-028.

The cause classification for this event per the criteria of NUREG-1022 is Other.

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LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Brunswick Steam Electric Plant Unit 1	05000325	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	of 3
		94	- 11 -	00	

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

TITLE

PRIMARY CONTAINMENT ISOLATION SYSTEM CONTROL LOGIC RELAY FAILURE RESULTS IN UNPLANNED PSF ACTUATION

INITIAL CONDITIONS

On August 20, 1994, Unit 1 was operating at 100% power.

EVENT NARRATIVE

On August 20, 1994, at 0008 hours, control room annunciator 1-UA-25-1-8, "Containment Atmosphere Radiation Downscale/Inop", actuated. Concurrent with the annunciation, the Drywell Floor and Equipment Drain isolation valves, 1-G16-SV-F004 and F020, and the Containment Atmospheric Control (CAC) system division "B" isolation valves closed.

In an attempt to identify the source of the isolation signal Operations and Environmental and Radiation Control personnel were dispatched to check the status of the CAC system radiation monitoring instrumentation and the power supplies feeding the affected isolation system logic. No problems were identified during this phase of the investigation. At 0047 hours, after verifying that the appropriate isolation valves had closed and that the valve closures resulted from an invalid isolation signal, the isolation signals were reset and the affected systems were restored to service to support plant operation.

CAUSE OF EVENT

An investigation into the cause of the spurious isolation signal revealed that the 1-A71-K18, primary containment isolation control logic relay contacts must have momentarily opened. The opening of the relay contacts caused the actuation of the CAC system and the Drywell/Equipment Drain system isolation valve logic. A detailed review of the primary containment isolation system logic was performed. Based on the results of this review, no other component could have caused the equipment actuations that occurred in this event.

After the isolation was reset, the relay remained energized for approximately 34 hours until it was replaced. No additional spurious relay actuations occurred prior to relay replacement.

The relay is a normally energized, General Electric model CR120A, 115 vac relay. To determine the cause of the failure, the relay was bench tested numerous times using slow rise/fall and instantaneous changes in supply voltage. The relay performed normally in each case. A visual examination of the relay components was also performed after disassembly which revealed no unusual evidence to explain the event. Additionally, no fluctuations in the relay's power supply are known to have occurred during the event. Based on the testing performed, the actual cause of the momentary failure of the relay is considered indeterminate.

A review of the Automated Maintenance Management System (AMMS) historical corrective maintenance database identified seven previous CR120A failures. A review of the Nuclear Plant Reliability Data System (NPRDS) database revealed approximately 171 CR120A relay failures since 1974. The majority of the CR120A relay failures identified in both

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

databases resulted from end of life coil failures, relay contact failures, and age related wear of relay components. No events similar to this one were found in either database. Based on the results of these reviews the failure of the 1-A71-K18 relay is considered an isolated case.

CORRECTIVE ACTIONS

The relay was replaced and post maintenance testing satisfactorily performed.

The failure mechanism associated with this event is not considered to be repetitive based on a review of industry and Brunswick Nuclear Plant CR120A relay historical data. Consequently, no design changes or periodic replacements are considered necessary. Appropriate corrective actions will be implemented by the repetitive failure program should an increase in the number of similar CR120A relay failures occur. No further corrective actions are currently planned.

SAFETY ASSESSMENT

This event is of minimal safety significance. The affected systems functioned properly in fulfilling their safety function.

PREVIOUS SIMILAR EVENTS

A review of similar Licensee Event Reports (LERs) identified the following failures of GE CR120A relays:

LER 2-89-020 involved a failure of relay contacts in the Reactor Protection System B Motor Generator Set control panel.

LERs 1-90-023 reported a failed relay coil in the CAC system logic which resulted in a partial Primary Containment Isolation System isolation.

LER 1-90-029 involved the failure of a coil in the Area Radiation Monitoring system logic due to aging which resulted in an automatic actuation of the Control Building Emergency Air Filtration system.

LER 1-91-028 reported a failed relay coil which resulted in the isolation of the Reactor Water Cleanup system.

EIIS COMPONENT IDENTIFICATIONSystem/Component

Containment Atmospheric Control
Containment Isolation Control System/Relay
1-G16-SV-F004/F020
1-UA-25-1-8

EIIS Code

IK
JM/RLY
WK/ISV
IJ/BB/ANN

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
NONE	N/A