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July 12, 1989

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

Subject: Catawba Nuclear Station, Unit 1/2
Docket No. 50-413
LER 413/89-15

Gentlemen:

Attached is Licensee Event Report 413/89-15 submitted concerning automatic alignment of the Nuclear Service Water System from the lake to the Standby Nuclear Service Water Pond due to unknown cause.

This event was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

Tony B. Owen
Station Manager

KEB\LER-NRC.TBO

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NRC Resident Inspector
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IE22
1/1

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
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TITLE (4) Automatic Alignment of the Nuclear Service Water System From the Lake to the Standby Nuclear Service Water Pond Due to Unknown Cause

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)
0 6	1 5	8 9	8 9	0 1 5	0 0	0 7	1 2 8 9		Catawba, Unit 2	0 5 0 0 0 4 1 4
										0 5 0 0 0

OPERATING MODE (9)	3	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0 0	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 (Specify in Abstract below and in Text, NRC Form 366A)
		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)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
R.M. Glover, Compliance Manager	8 0 3 8 3 1 - 3 2 3 6

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	B I	F U	X 9 9 9	N							

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On June 16, 1989 at 1439 hours, an emergency low level signal for Nuclear Service Water (RN) System Pit A initiated an automatic RN swap to the Standby Nuclear Service Water Pond (SNSWP). The idle RN pumps started automatically and the system swapped suction and discharge to the SNSWP. The signal was caused by a blown fuse, AA-2, in the 1EATC9A electrical cabinet. A Construction and Maintenance Department (CMD) electrical crew was in the process of replacing Bussman type FNA fuses with Littelfuse type FLQ fuses per a Nuclear Station Modification. To accomplish the fuse changeout, a jumper had been connected across the fuse to be changed. The AA-1 fuse, located directly above the AA-2 fuse, had been changed and the jumper was removed. Following this action, the AA-2 fuse was discovered to have blown. The blown fuse was replaced with the Littlefuse type FLQ fuse. By 1639 hours, the Control Room Operator (CRO) had realigned the RN System to the lake. The investigation has been unable to determine the exact cause of the blown fuse. Therefore, this event has been classified as unknown, possibly due to equipment failure or possible inappropriate action. Unit 1 was in Mode 3, Hot Standby, and Unit 2 was in Mode 1, Power Operation, immediately before and during this incident.

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

BACKGROUND

The Nuclear Service Water [EIIS:BI] (RN) System delivers raw water to provide the ultimate heat sink for essential and non-essential heat loads in the Auxiliary Building [EIIS:NF] and Reactor Buildings [EIIS:NH] for both Units. The station is supplied by four RN Pumps [EIIS:P]. During normal operation, both Units are supplied by one RN Pump. During emergency conditions, one RN Pump per Unit is required to supply the essential heat loads for each Unit.

The Standby Nuclear Service Water Pond [EIIS:BS] (SNSWP) is bounded by a Class 1 seismically qualified dam that impounds a sufficient volume of water to attain safe shutdown conditions on both Units during normal and accident conditions during a seismic event that exceeds the design basis of the Lake Wylie Dam. The RN System is normally aligned to take suction and discharge to Lake Wylie. RN Pump Structure Pit level instrumentation is provided to automatically align the suction and discharge of the RN System to the SNSWP on an emergency low level signal from either RN pump pit. The following automatic actions are initiated on an emergency low level in either RN Pump Structure Pit [EIIS:NO]:

1) RN Pumps 1A, 1B, 2A and 2B start.

2) The RN Pumphouse Intake Pits are isolated from the lake and are aligned to take suction from the SNSWP.

3) The normal RN discharge through the Low Pressure Service Water [EIIS:KI] (RL) System is isolated and RN is aligned to discharge to the SNSWP.

4) The Diesel Generator [EIIS:QE] Cooling Water returns to the lake are closed and the discharges to the SNSWP are opened.

5) The RN Discharge Headers A and B are isolated into separate headers.

EVENT DESCRIPTION

On June 16, 1989, Unit 1 was in Mode 3, Hot Standby, and Unit 2 was in Mode 1, Power Operation. A Construction Maintenance Department (CMD) crew was replacing fuses in cabinet 1EATC9A per Nuclear Station Modification (NSM) Work Request 12625 NSM, and implementation procedure TN/1/A/2131/CE/01A, Procedure for Implementation of Exempt Change CE-2131 Work Unit 01. While following the procedural steps, one crew member was holding a jumper across the AA-1 fuse and another crew member replaced the FNA fuse with the FLQ fuse. The AA-1 fuse is located directly above AA-2 fuse in the fuse block. The jumper was removed. At about the same time, a Control Room Operator (CRO) paged the CMD electrical crew. A crew member called the Control Room and was told that the swap of RN to the SNSWP was initiated due to an emergency low level signal for RN Pit A. At

*U.S. GPO: 1988-520-589/00070

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

approximately 1441 hours, the CMD crew recognized that the AA-2 fuse was blown. The blown fuse was the cause for the emergency low level signal. Idle RN pumps started, and RN Trains A and B aligned suction and discharge to the SNSWP as expected. CROs entered Abnormal Procedure AP/0/A/5500/20, Loss of Nuclear Service Water.

The CMD crew notified a Projects Engineer for further directions on the procedure. The Project Engineer told the crew to replace the AA-2 fuse, test the circuit, and continue with the replacement of fuses in the fuse block. The blown fuse was replaced with the Littelfuse type FLQ fuse. No abnormal occurrences took place following the remaining fuse changeouts. By 1600 hours, the appropriate required four hour notification to the NRC was made to report the Engineered Safety Feature [EIIS:JE] (ESF) actuation per RP/0/B/5000/13, NRC Notification Requirements. By 1639 hours, CROs had realigned RN to Lake Wylie, following the fuse replacement.

CONCLUSION

This event has been classified as unknown, possibly due to equipment malfunction or possible inappropriate action, since the investigation could not determine the exact reason for the blown AA-2 fuse in 1EATC9A.

This incident could have possibly been due to an inappropriate action. The two CMD crew members replacing the fuse were working in a very close, cramped area, and it is possible that an inadvertent contact could have been made when the jumper was removed from fuse AA-1. The CMD electricians involved in the fuse changeout did not recall any unusual occurrences during their work activities, and there was no evidence of arcing or burning in the cabinet.

Due to the history of the Bussman FNA fuses, it is also possible that equipment malfunction could have initiated this event. Failure of Bussman FNA fuses has been a recurring problem at Catawba (see LER 414/89-001). The replacement of the Bussman FNA fuses with the Littelfuse FLQ fuses resulted from previous mechanical failures of the Bussman fuse in 1986 at McGuire and Catawba. These failures prompted Design Engineering to identify suitable replacements for all Class 1E applications. Design Engineering and Nuclear Production initially recognized that all FNA fuses should be replaced. Design Study CNDS-064 determined that the acceptable replacement fuse was the Littelfuse type FLQ which was best suited for harsh environments.

There have been six ESF actuations involving an automatic alignment of the RN System to the SNSWP during the last three years (see LERs 413/86-006, 413/86-024, 413/86-027, 413/87-007, 413/88-018, and 413/89-004).

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

During the past twelve months there have been six ESF actuations attributed to unknown causes. One actuation during this time resulted in an automatic swap of RN to the SNSWP (see LER 413/89-004). This incident is considered to be a recurring event due to the involvement of Bussman FNA fuses.

CORRECTIVE ACTION

IMMEDIATE

(1) Operations CRO entered Abnormal Procedure AP/O/A/5500/20.

SUBSEQUENT

(1) CMD Electrical, upon investigation, determined that AA-2 fuse had blown and subsequently replaced the fuse.

(2) CRO realigned the RN System to Lake Wylie approximately two hours after the swap.

(3) Operations made notification of the actuation to the NRC as required.

(4) FNA fuse changeouts previously scheduled on-line have been changed to outage schedule.

SAFETY ANALYSIS

The CROs responded to the Emergency Low Level signal by entering Abnormal Procedure AP/O/A/5500/20, Loss of Nuclear Service Water within the required time. All of the valves [EIIS:V] associated with the automatic swap from the Lake to the SNSWP aligned properly as per design bases and requirements in FSAR Section 7.4.2. In the event an actual low RN pit level occurred, the RN System would have been in the correct alignment. Throughout the incident, sufficient RN flow was maintained to both Units.

The health and safety of the public were not affected by this incident.

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