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DUKE POWER

September 29, 1992

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

Subject: Catawba Nuclear Station
Docket No. 50-413
LER 413/92-011

Gentlemen:

Attached is Licensee Event Report 413/92-011 concerning ENGINEERED SAFETY FEATURE SYSTEM ACTUATION DUE TO A DEFECTIVE PROCEDURE.

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

Very truly yours,

M. S. Tuckman

xc: Mr. S. D. Ebnetter
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
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Washington, D.C. 20555

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Mr. W. T. Orders
NRC Resident Inspector
Catawba Nuclear Station

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LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH
INFORMATION COLLECTION REQUIREMENT 50.8 HRS. PER
COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION
AND RECORDS MANAGEMENT BRANCH (ANRB 7114), U.S. NUCLEAR
REGULATORY COMMISSION, WASHINGTON, DC 20545-0001, AND TO
THE PAPERWORK REDUCTION PROJECT, 3150-0104, OFFICE OF
MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Catawba Nuclear Station, Unit 1

DOCKET NUMBER (2)

05000413

PAGE (3)

1 OF 05

TITLE (4)

Engineered Safety Feature System Actuation Due To A Defective Procedure

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
08	30	92	92	011	00	08	29	92	N/A	05000
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 1. (Check one or more) (11)							
6			20.402(b)			20.405(c)			50.73(a)(2)(iv) X 73.71(b)	
POWER LEVEL (10)			20.405(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(iv) 73.71(c)	
0			20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(iv) OTHER	
			20.405(a)(1)(iii)			50.73(a)(2)(ii)			50.73(a)(2)(vii)(A)	
			20.405(a)(1)(iv)			50.73(a)(2)(iii)			50.73(a)(2)(vii)(B)	
			20.405(a)(1)(v)			50.73(a)(2)(iv)			50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME

R. C. Futrell, Compliance Manager

TELEPHONE NUMBER (Include Area Code)

(803)831-3663

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14)

YES	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X					

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On August 30, 1992, at 2108 hours, during Unit 1 Refueling Outage, an unexpected Engineered Safety Feature (ESF) Actuation occurred on Unit 1 while in Mode 6, Refueling. The ESF Actuation, Auxiliary Feedwater (CA) System autostart, occurred when the Diesel Generator (D/G) Load Sequencer 1B was reset during the performance of TT/1/A/9200/67, Retest of CE-2486. The Loss of Main Feedwater (CF) pumps relay was identified as the initiating relay that caused the ESF actuation. The loss of CF pumps relay is de-energized when the sequencer relays are actuated; therefore, the loss of CF pumps relay is re-energized when the sequencer is reset if both CF pumps are in a tripped condition. Both CF pumps were in a tripped condition thus causing the loss of CF pumps relay to be re-energized resulting in a CA autostart. The appropriate personnel, including the Nuclear Regulatory Commission (NRC) were notified of this event. This incident is attributed to a Defective Procedure. Corrective action included resetting Train B CA; securing CA Motor Driven Pump 1B, realigning Steam Generator Blowdown (BB) and Nuclear Sampling (NM) System valves, and revising procedure TT/1/A/9200/67.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 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)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Catawba Nuclear Station, Unit 1	05000 413	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	02 OF 05
		92	011	00	

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

BACKGROUND

The Auxiliary Feedwater [EIS:BA] (CA) System provides an assured source of emergency feedwater to the Steam Generators (S/Gs) [EIS:HX] during plant conditions where the Main Feedwater [EIS:SJ] (CF) System is not available. The CA System for each unit includes two motor driven pumps [EIS:P] (MDP A and B), powered by separate and redundant safety related power supplies, and a steam powered turbine driven pump (TDP).

The CA MDP autostart signal is initiated from any one of the following conditions:

- 1) safety injection
- 2) loss of emergency bus power
- 3) low-low level in any S/G
- 4) both main feedwater pumps tripped
- 5) start signal from the anticipated transients without scram (ATWS) mitigation system actuation circuitry (AMSAC)

During a CA autostart, the CA MDPs start, the CA discharge valves [EIS:V] for each train fully open, the S/G Blowdown [EIS:WI] (BB) System, and the Nuclear Sampling [EIS:KN] (NM) System isolates from the S/Gs.

The load sequencer functions to automatically energize the necessary blackout and/or Loss of Coolant Accident (LOCA) required loads in a definite progressive sequence in such a manner that the Diesel Generator (D/G) [EIS:GEN] or the Auxiliary Transformer [EIS:XFMR] is not momentarily overloaded. A loss of voltage at the 4.16 KV essential switchgear or a Safety Injection Actuation Signal (Ss) from the Solid State Protection System (SSPS) [EIS:JC] will actuate the sequencer for each train.

TT/1/A/9200/67, Retest of CE-2486, is a temporary test to verify the proper operation of the circuitry on 1ETA2 (Alternate Feeder to 4160V Blackout Switchgear 1FTA) and 1ETB2 (Alternate Feeder to 4160V Blackout Switchgear 1FTB) after the completion of modification CE-2486. When the sequencer is not actuated, tripping of 1FTA(B) 1 should cause 1ETA(B) 2 to trip. When the sequencer is actuated, 1ETA(B) 2 will not trip if 1FTA(B) 1 is open; however, 1FTA(B) 1 must be closed in order for 1ETA(B) 2 to close.

Catawba Technical Specification (T/S) 3.7.1.2 states that at least three independent steam generator auxiliary feedwater pumps and associated flowpaths shall be operable while in Modes 1, 2, and 3.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MMRB 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)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Catawba Nuclear Station, Unit 1	05000 413	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	03CF05
		92	011	00	

TEXT (if more space is required, use additional copies of NRC Form 366A, (11))

Catawba T/E 3.3.2 states that the Engineered Safety Features Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be operable per the requirements below.

Applicability: As shown in Table 3.3-3 (A portion of the table is shown)

Functional Unit	Total No. of Channels	Channels To Trip	Minimum Channels Operable	Applicable Modes	Action
8. Auxiliary Feedwater					
F. Trip of All Main Feedwater Pumps Start Motor Driven Pumps	2/pump	1/pump	1/pump	1,2#	25

Trip function may be blocked in this Mode below the P-11 (Pressurizer Pressure Interlock) setpoint.

Action 25 - With the number of operable channels one less than the minimum channels operable requirement, be in at least Hot Standby within six hours.

EVENT DESCRIPTION

On August 30, at 1200 hours, Unit 1 was in Mode 6, Refueling, with both CF and CA MDPs isolated for maintenance work.

At 1645 hours, breaker (1ETB-13) for CA MDP 1B was racked in to perform American Society of Mechanical Engineers (ASME) Section XI pump test. The pump was aligned to recirculate flow to the Upper Surge Tank during the test.

At 1730 hours, CA MDP 1B was started.

At 2000 hours, CA MDP 1B was secured due to completion of the pump test.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 60.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNRB T114) 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)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
Catawba Nuclear Station, Unit 1		05000 413		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	04 OF 05
				92	011	00	

TEXT If more space is required, use additional copies of NRC Form 366A. (17)

At 2030 hours, the System Engineer began performing TT/1/A/9200/67.

At 21:08:53 hours, an unexpected Train B CA Autostart occurred coincident with the reset of 1B D/G sequencer per TT/1/A/9200/67, Section 12.2.17. CA MDP 1B was still aligned to recirculate flow to the Upper Surge Tank.

At 2130 hours, Train B portion of TT/1/A/9200/67 was completed.

At 2245 hours, NCO was attempting to open valve 1BB-17B to perform an evolution in progress. Valve 1BB-17B automatically returned closed. While investigating the reason valve 1BB-17B automatically closed, the NCO noticed that CA MDP 1B was running and the CA Valve Control Reset Light was extinguished. NCO pulled OAC printouts and determined the CA Autostart had occurred at 2108 hours. Operations determined the CA autostart had occurred during the performance of TT/1/A/9200/67. Operations contacted the System Engineer that had performed TT/1/A/9200/67 and the System Engineer determined that the resetting of Sequencer B caused the CA autostart. The loss of CF pumps relay was identified as the initiating relay that caused the CA autostart. The loss of CF pump relay is de-energized when the sequencer relays are actuated; therefore, the loss of CF pump relay is re-energized when the sequencer is reset if both CF pumps are in a tripped condition.

At 2300 hours, Train B CA was reset, CA MDP 1B was secured, and BB and NM valves were realigned.

CONCLUSION

This incident is attributed to a Defective Procedure due to procedure TT/1/A/9200/67 not addressing that the Loss of CF pumps relay would re-energize when the sequencer was reset, thus causing a CA autostart if both CF pumps were tripped. Procedure TT/1/A/9200/67 has been revised to include a step to hold "CA System Valve Control Train A" reset as the sequencer is being reset. Depressing the CA reset, when resetting the sequencer, will prevent a CA autostart if both CF pumps are tripped. The procedure change only addresses Train A portion of the test because the Train B part of the test has been completed and Train A part is yet to be completed. Procedure TT/1/A/9200/67 is a temporary test written to retest CE-2486. After this test is completed, it will not be performed again.

A review of the Operating Experience Program (OEP) database for the past 24 months prior to this event did not identify any other ESF actuations that were attributed to a Defective Procedure. Therefore, this incident is considered not to be a recurring event.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		92	011	00	

TEXT (if more space is required, use additional copies of NRC Form 366A) (17)

CORRECTIVE ACTION

IMMEDIATE

- 1) Train B CA was reset.
- 2) CA MDP 1B was secured.
- 3) BB and NM were realigned.

SUBSEQUENT

- 1) Revised procedure TT/1/A/9200/67 to prevent CA autostart while resetting the sequencer.

SAFETY ANALYSIS

The CA autostart ESF actuation is to provide a safety related source of feedwater to the S/Gs when Main Feedwater is not available. During these conditions, the CA System removes energy from the Reactor Coolant System [EHS:AB] (NC) to prevent overpressurization of the NC System. The CA System is only required operable during Modes 1, 2, and 3 per T/S 3.7.1.2. During this event the S/Gs were not being used to remove energy from the NC System since the unit was in Mode 6 Refueling. The Residual Heat Removal [EHS:BP] (ND) System was being used to remove energy from the Reactor Coolant System.

While in Mode 6, the breaker for the CA MDP is normally racked out because of maintenance work being performed on the CA System. The breaker for the CA MDP had been racked in and system was aligned to recirculate flow to the Upper Surge Tank during the performance of an ASME XI pump test. When the CA autostart occurred, the system was still aligned to deliver flow to the Upper Surge Tank. The CA autostart would not have occurred if the ASME XI pump test had not been performed because the breaker for the CA MDP would have been racked out. Operations verifies a flow path is provided for the CA MDP prior to racking in the breaker for the pump. This is done to prevent damage to the pump. During this event, no damage was done to the pump because a flow path was verified before the breaker for the CA MDP was racked in the ASME XI pump testing.

The performance of TT/1/A/9200/67 caused "B" Train CA autostart due to reinitiation of the loss of CF pumps relay when the D/G 1B sequencer was reset. The "B" Train components responded as designed to the Train B autostart signal. The health and safety of the public were not affected by this event.