

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Catawba Nuclear Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 1 3	PAGE (3) 1 OF 0 4
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TITLE (4) Potential Control Room Area Ventilation And Chilled Water System And Nuclear Service Water Pump Inoperability During D/G Load Sequencer Testing Due To A Procedural Deficiency

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 8	1 0	8 7	8 7	0 3	5	0 1	0 2	0 2	Catawba, Unit 2		0 5 0 0 0 4 1 3
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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) 1 1 0 1 0	20.402(b)			20.405(c)			50.73(a)(2)(iv)			73.71(b)	
	20.405(a)(1)(i)			50.36(e)(1)			50.73(a)(2)(v)			73.71(c)	
	20.405(a)(1)(ii)			50.38(e)(2)			50.73(a)(2)(vi)			<input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 365A)	
	20.405(a)(1)(iii)			50.73(a)(2)(i)			50.73(a)(2)(viii)(A)			Voluntary	
	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 Julio G. Torre, Associate Engineer - Licensing							TELEPHONE NUMBER		
							AREA CODE		
							7 1 0 4	3 1 7 3 1 - 1 8 0 1 2 9	

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)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)			<input checked="" type="checkbox"/> NO				

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

On August 10, 1987, at 1000 hours while preparing a test procedure for retype, it was discovered that placing a Diesel Generator (D/G) Load Sequencer in TEST on one Unit would prevent actuation of the Control Room Area Ventilation (VC) Chilled Water (YC) System on that train if a Loss of Coolant Accident (LOCA) signal was received on the other Unit. On October 21, 1987, the Performance Staff Engineer was performing additional investigation for similar problems and also discovered that placing a D/G Load Sequencer in TEST on one Unit would prevent the start of that train's Nuclear Service Water (RN) System pump if a LOCA or Blackout was received on the other Unit, or during a low RN pit level swapover to the Standby Nuclear Service Water Pond (SNSWP). Both Units had operated in all modes prior to discovery of the event. Although the event is not reportable, on August 26, 1987, Duke Power decided to submit this report as a voluntary LER for information purposes. This incident is attributed to a defective procedure. Various station procedures that placed the D/G Load Sequencers in TEST did not ensure that the corresponding VC/YC or RN pump was declared inoperable. Appropriate procedures will be revised to ensure that the applicable train of VC/YC and RN pump are declared inoperable when required. Review of previously completed procedures did not reveal any instance when Technical Specifications were violated as a result of this problem. Discussion with station personnel indicated that the possibility exists where one train's D/G Load Sequencer was in TEST with the other train of VC/YC or another RN pump simultaneously inoperable. The health and safety of the public were unaffected by this event.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Catawba Nuclear Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 1 3	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 7	- 0 3 5	- 0 1 0	2	OF 0 4

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

BACKGROUND:

The Control Room Area Ventilation (VC) and Chilled Water (EIIS:KM) (YC) Systems combine to form one system which is designed to maintain the environment in the Control, Equipment, and Cable Rooms within acceptable limits for the operation, maintenance, and testing of Unit controls and for uninterrupted safe occupancy during post-accident shutdown. The VC/YC System is shared between both Units. Two 100% redundant trains of VC/YC equipment are provided. Each train is powered by a separate diesel generator (EIIS:DG) (D/G) during emergency conditions.

The Nuclear Service Water (EIIS:BI) (RN) System is a raw water cooling system which serves as the ultimate heat sink for essential and nonessential primary loads, as an assured source of suction for the Auxiliary Feedwater System (EIIS:BA), and an assured source of cooling for heat loads served by the Containment Chilled Water System. The RN System contains two independent and redundant loops. Each loop includes a RN Pumphouse Intake Pit and two RN pumps (EIIS:P). One RN pump is capable of supplying both Unit 1 and Unit 2 with ample cooling during normal operation. One pump per unit is required to supply ample cooling in emergency conditions. One pump has also been proven to have sufficient capacity to maintain one unit indefinitely in Cold Shutdown while supplying the post-LOCA loads on the other unit (see LER 413/87-36).

The D/G Load Sequencing System (sequencer) functions to automatically energize the necessary blackout and/or Loss of Coolant Accident (LOCA) required loads in a definite progressive sequence and in such a manner that the D/G or auxiliary transformer is not momentarily overloaded. A loss of voltage sensed at the 4.16 KV essential switchgear bus or a safety injection actuation signal from the Solid State Protective System (EIIS:JC) will actuate the sequencer.

DESCRIPTION OF INCIDENT:

On August 10, 1987, a Duke Power Performance Staff Engineer was preparing procedure PT/1/A/4200/03, Engineered Safety Features Actuation Periodic Test, for retype. At 1000 hours, the Performance Staff Engineer discovered that placing a D/G Load Sequencer into TEST on one Unit will prevent actuation of the Control Room Area Ventilation (VC) Chilled Water (YC) System on that train if a LOCA signal is received on the other Unit. The Performance Staff Engineer submitted a Problem Investigation Report (PIR) to notify other station groups. On August 18, 1987, Duke Power Design Engineering confirmed that placing either Unit's D/G Load Sequencer in TEST for a particular train renders that train of VC/YC inoperable during emergency conditions. Design Engineering recommended that appropriate station procedures be reviewed to ensure that the applicable train of VC/YC is declared inoperable whenever that train's D/G Load Sequencer for either Unit is placed in TEST.

On October 21, 1987, after further review, the Performance Staff Engineer also discovered that placing a D/G Load Sequencer in TEST on one Unit would prevent the start of that train's RN pump, for the Unit in test, if a LOCA or Blackout signal was received on the other Unit, or during a low RN pit level swapover to the Standby Nuclear Service Water Pond (SNSWP). The Performance Staff Engineer

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Catawba Nuclear Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 1 3	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 7	- 0 3 5	- 0 1	0 3	OF 0 4

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

submitted a PIR to notify other station groups. On November 4, 1987, Design Engineering confirmed that placing a D/G Load Sequencer in TEST for a particular train renders that train's RN pump inoperable during emergency conditions. Design Engineering recommended that appropriate station procedures be revised to declare the appropriate RN pump inoperable.

CONCLUSION:

This incident has been attributed to a defective procedure. While preparing procedure PT/1/A/4200/09 for retype, the Performance Staff Engineer discovered the effect that placing a D/G Load Sequencer in TEST on either Unit had on the VC/YC System. Although the above procedure did not place a D/G Load Sequencer in TEST during its performance the Engineer became concerned as to what effect this might have on other station procedures and submitted a PIR. After further review, the Performance Staff Engineer also discovered the effect that placing a D/G Load Sequencer in TEST had on the RN pumps and submitted another PIR.

Evaluation by Duke Power Design Engineering confirmed that placing a D/G Load Sequencer in TEST for a particular train renders that train of VC/YC and associated RN pump inoperable on both units during emergency conditions. Design Engineering recommended that appropriate station procedures be reviewed to ensure that the train of VC/YC and RN pump associated with the D/G Load Sequencer under test is declared inoperable on both Units. Review of various station procedures that place the D/G Load Sequencers in TEST revealed that these procedures did not ensure this.

A review of completed procedures was inconclusive as to whether any Technical Specifications were violated as a result of this discovery. The completed procedures indicated the date on which a D/G Load Sequencer was placed in TEST, but did not indicate the specific time.

Discussion with station personnel determined that it is not required to declare a D/G inoperable when placing its Load Sequencer in TEST due to emergency test reset circuitry. Therefore, the possibility exists that one train's D/G Load Sequencer was in TEST while the other train of VC/YC and/or an additional RN pump were simultaneously inoperable.

Both Units had operated in all Modes prior to discovery of this event.

There have been no previous incidents involving D/G Load Sequencer control testing.

CORRECTIVE ACTION:

SUBSEQUENT

- (1) Performance Staff Engineer initiated PIR to inform station groups of a potential problem.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 7	- 0 3 5	- 0 1	0 4	OF 0 4

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

- (2) Design Engineering evaluated the PIRs and confirmed that the potential problem existed.
- (3) Instrumentation and Electrical (IAE) personnel revised their appropriate procedures to ensure that the appropriate train of VC/YC is declared inoperable whenever placing that train's D/G Load Sequencer on either Unit in TEST and to verify that the opposite train of VC/YC is fully operable prior to placing a D/G Load Sequencer in TEST.

PLANNED

- (1) Duke Power personnel will revise appropriate test procedures for both Units to ensure that the appropriate train of VC/YC and RN pump are declared inoperable whenever placing that train's D/G Load Sequencer in TEST and to verify that the opposite train of VC/YC and the remaining RN pumps are fully operable prior to placing a D/G Load Sequencer in TEST.
- (2) Duke Power personnel will revise appropriate procedures for both Units to ensure that the appropriate RN pump is declared inoperable whenever placing that train's D/G Load Sequencer in TEST and to verify that the remaining RN pumps are fully operable prior to placing a D/G Load Sequencer in TEST.

SAFETY ANALYSIS:

A review of completed procedures was inconclusive as to whether both trains of VC/YC and more than one RN pump were simultaneously inoperable due to this discovery. In the event that VC/YC failed to start during emergency conditions, available instrumentation in the Control Room would alert personnel to manually start the system. Either train of VC/YC could be started manually in the event that it did not start on a LOCA signal.

Plant operating procedures for loss of RN adequately address loss of more than one RN pump. Also, adequate time is available for Control Room personnel to take necessary corrective action.

In the unlikely event of a Station Blackout and loss of normal RN suction coincident with a LOCA on one Unit and a D/G Load Sequencer on the non-LOCA Unit in TEST and the LOCA Unit RN pump on the same train inoperable, then a failure of the opposite train RN pit suction valve could result in a loss of all RN pumps. RN flow could be re-established by either manually starting the RN pump associated with the D/G Load Sequencer which was in TEST or by opening the pit isolation valve.

The health and safety of the public were unaffected by this incident.

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February 2, 1988

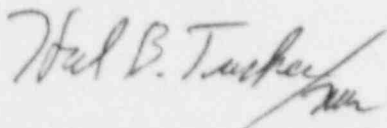
Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Catawba Nuclear Station, Units 1 and 2
Docket Nos. 50-413 and 50-414
LER 413/87-35, Revision 1

Gentlemen:

Pursuant to 10 CFR 50.73 Section (a) (1) and (d), attached is Revision 1 to Licensee Event Report 413/87-35 concerning the potential inoperability of the Control Room area Ventilation and Chilled Water System and Nuclear Service Water Pump during Diesel Generator load sequencer testing due to a procedural deficiency. This event was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,



Hal B. Tucker

JGT/1303/sbn

Attachment

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16