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DUKE POWER

October 25, 1996

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

Subject: Catawba Nuclear Station
Docket No. 50-413
LER 413/96-009

Gentlemen:

Attached is Licensee Event Report **Inadequate Reactor Coolant Controlled Leakage Test.**

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

Very truly yours,

W. R. McCollum, Jr.

Attachment

cc: Mr. S.D. Ebneter
Administrator, Region II
U.S. Nuclear Regulatory Commission
101 Marietta St., NW, Suite 2900
Atlanta, GA 30323

INPO Records Center
700 Galleria Place
Atlanta, GA 30339-5957

Mr. P. S. Tam
U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D.C. 20555

John Hoffman
Marsh & McLennan, Inc.(Nuclear)
301 Tresser Blvd.
Stamford, CT 06904

Mr. R. J. Freudenberger
NRC Resident Inspector
Catawba Nuclear Station

IE22/1

NRC FORM 366
(4-95)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMD NO. 3150-0104
EXPIRES: 04/30/98
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 (MNBB 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.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Catawba Nuclear Station, Unit 1	05000413	1 of 5

TITLE (4)
Inadequate Reactor Coolant Controlled Leakage Test

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER 000	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER(S)
09	30	96	96	- 009	- 000	10	25	96	Catawba Unit 2	05000414

OPERATING MODE (9): 3
POWER LEVEL (10): 0%

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (*Check one or more of the following*) (11)

	20.402(b)		20.405(c)		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)	X	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	
D. P. Kimball, Safety Review Group Manager	(803)	831-3743

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

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)

Unit Status: Unit 1 - Mode 3, Hot Standby, at 0% power
Unit 2 - Mode 1, Power Operation, at 100% Power

Event Description: On September 26, 1996, Engineering determined that the test method used to verify reactor coolant system controlled leakage did not measure reactor coolant pump seal injection with the flow control valve in the fully open position. Testing with the flow control valve fully open ensures that total flow supplied to the reactor coolant pump seals does not exceed forty gallons per minute (GPM).

Root Cause: The root cause of this event is omission of relevant technical specification bases information during the original development of the reactor coolant system controlled leakage test procedures.

Corrective Action: Unit 1 and 2 procedures for performing the reactor coolant system controlled leakage test were revised to include verification that the flow control valves are fully open. Reactor coolant controlled leakage testing was successfully completed using the revised procedures.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Catawba Nuclear Station, Unit 1	05000413	96	009	00	2 OF 5

BACKGROUND

Catawba Nuclear Station technical specification (TS) 3.4.6.2 requires controlled leakage to the reactor coolant pump [EIIS: P] seals [EIIS: SEAL] be measured once per thirty-one days when the reactor coolant [EIIS: AB] system (NC) pressure is 2235 +/- 20 pounds per square inch gauge (PSIG). Reactor coolant system leakage shall be limited to forty GPM controlled leakage.

The bases for TS 3.4.6.2 explains that controlled leakage limitation restricts operation when the total flow supplied to the reactor coolant pump seals exceeds forty GPM with the flow control valve [EIIS: FCV] in the supply line fully open at a nominal reactor coolant system pressure of 2235 PSIG. This limitation ensures that in the event of a Loss of Coolant Accident (LOCA), the high head safety injection (Centrifugal charging pump) flow from the Chemical & Volume Control[EIIS: CB] system (NV) will not be less than assumed in the safety analyses.

PT/1(2)/A/4150/01C, "NC System Controlled Leakage Verification", is performed monthly, at power, or prior to entry to Modes 1(power operation) & 2(startup), as required. However, from initial unit startup until its revision on September 27, 1996, this procedure was not performed as implied in the bases section of the TS, since it did not "place the modulating valve in the supply line fully open".

EVENT DESCRIPTION

September 26, 1996

Engineering discovered that PT/1,2/A/4150/01C, NC system controlled leakage verification, for Unit 1 and 2 were not performed with the flow control valve fully open. Engineering determined the NC system controlled leakage verification procedure was incorrect and notified operations.

2320 hours — Operations declared unit 1 and 2 reactor coolant system controlled leakage inoperable per TS 3.4.6.2.e.

September 27, 1996

Operations revised PT/1,2/A/4150/01C to require that the flow control valve be placed in the full open position.

1535 hours — Operations completed the controlled leakage test using the revised test method and determined controlled leakage was within the acceptance criteria. Operations declared the unit one reactor coolant controlled leakage operable.

1739 hours — Operations completed the controlled leakage test using the revised test method and determined controlled leakage was within the acceptance criteria. Operations declared the unit two reactor coolant controlled leakage operable.

CONCLUSION

This problem was reportable because the reactor coolant controlled leakage monthly verification test was performed without ensuring that 1(2)NV-294, NV pumps A&B Discharge Flow Control Valves, were in the full open position. TS bases specifies that the surveillance test method must include fully opening the modulating flow control valve. This limitation ensures that in the event of a LOCA, the NV system flow will not be less than assumed in the safety analyses.

The root cause of this event is omission of relevant technical specification bases information during the original development of the NC system controlled leakage test procedure.

There are no NPRDS reportable equipment failures associated with this event.

A review of the Operating Experience Database for the two years preceding this event identified two reportable events which had similarities with respect to the root cause of omission of relevant information:

Licensee Event Report (LER) 414/96-002 details an event which occurred on March 22, 1996, involving two inoperable hydrogen igniters [EIIS:BB] in the same region. This event was attributed to omission of relevant information in that there was less than adequate provision procedurally to contact Operations when Maintenance identified that one ignitor was inoperable.

LER 413/96-002 details an event which occurred on May 3, 1996 where Engineering identified multiple continuity paths in the control circuitry for both trains of the containment sump recirculation isolation valves for both units.

The current event is unique in that it involves omission of relevant TS bases information. The corrective actions to the previous events are not applicable to the current event and would not have prevented this event. This event is not recurring.

CORRECTIVE ACTIONS

SUBSEQUENT

1) PT/1,2/A/4150/01C, NC System Controlled Leakage Verification was revised changing the test method.

2) The revised test procedures with the new test method were used to perform the TS surveillance, all acceptance requirements were met.

PLANNED

None

SAFETY ANALYSIS

The Emergency Core Cooling (ECCS) System, consisting of the Refueling Water [EIIS:DA] System (FW), NV, Safety Injection [EIIS: BQ] (NI), and the Residual Heat Removal [EIIS:BP] System (ND), provide an abundance of emergency cooling water to the reactor core in the event of a break in either the primary (reactor coolant) or secondary (steam) systems. This function is provided in order to limit the fuel temperatures, particularly the cladding temperature, and limit any zirconium-water reaction to an insignificant amount. Operability of the ECCS Systems is assured primarily through compliance with Tech Specs 3.5.2 and 3.5.3. Engineering evaluation has been performed to demonstrate that Catawba has remained in compliance with these ECCS TS, even though NC System controlled leakage surveillance has not been conducted in the manner described in the bases to the TS 3.4.6. Justification and safety significance is provided in the following discussion.

An engineering evaluation of the impact of the current seal injection line pressure drop on the flow expected during conditions corresponding to the design basis accident has been performed, using actual plant data. Data from the Unit 2 LOOP Event of February 7, 1996, indicates that with valves 2NV-294 and 2NV-309 failed open, during conditions as contained in the bases for TS 3/4.4.6.2, seal flow through failed open modulating valves with a reactor coolant system pressure of 2235 psig was 45.4 gpm. The results of this calculation demonstrated that with the current valve setup on Unit 2, assuming the modulating valve in the supply line fully open, ECCS flow in the event of a large break LOCA (LBLOCA) would not be less than assumed in the safety analysis. NV pump runout concerns were also addressed and evaluated. Since strong pump total flow was determined to be less than allowable 560 gpm runout flow at LBLOCA conditions, and since NC pump seal injection flow was determined to be within 80 gpm allowed in the

safety analysis, the Unit 2 ECCS Systems including NV System was determined to be currently Operable per TS 3.5.2 and 3.5.3. However, this evaluation deferred the licensing decision on whether this operability evaluation met the intent of TS. 3.4.6.2.e.

In addition to the evaluation of loss of offsite power (LOOP) data to support present operability per ECCS Tech Specs 3.5.2 and 3.5.3, determination of Units 1 and 2 past operability in terms of maintaining a seal injection flow less than that assumed in the safety analysis has been evaluated based on review of plant operating data and hand calculations. Appropriate charging header pressure history from 1992 to present has been reviewed. It has been determined, based on comparison of this data with controlled NC system pressure of 2235 psig, that in the event of a LOCA, the ECCS flow would not have been less than assumed in the safety analyses, and that allowable NV pump runout conditions would not have been exceeded.

A summary of the issues evaluated and margins identified in the Catawba evaluation follows:

- Catawba specific Safety Analysis allows for 80 gpm to the seals at LBLOCA conditions.
- Calculations based on Unit 2 LOOP Event show that 45.4 gpm at 2235 psig results in less than 80 gpm at LBLOCA conditions.
- Review of Unit 1 and Unit 2 operating history since 1992 indicates that in the event of a LOCA, the ECCS flow would not have been less than assumed in the safety analyses, and allowable NV pump runout conditions would not have been exceeded.
- A large portion of the injection flow to the seals is not really lost from the ECCS System, but rather enters the cold legs and provides additional core cooling inventory via the NC pump seals.
- Catawba's seal injection automatic control valve will continue to throttle to provide 32 gpm to the seals during LOCA events not accompanied by Loss of air / Loss of non-emergency power.
- Catawba has backup safety power supplies from the "Blackout only" bus to both 1(2)NV-294 and 1(2)NV309.

Thus, while the Catawba 31 day surveillance to monitor controlled leakage was not being conducted to demonstrate less than 40 gpm seal injection flow in the manner described in the TS bases, there was no adverse safety significance because a review of operating history has shown that the intent of this TS bases has been met. The health and safety of the public were not affected.