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**DUKE POWER**

August 27, 1996

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

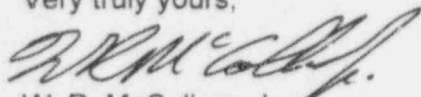
Subject: Catawba Nuclear Station  
Docket No. 50-414  
LER 414/96-004

Gentlemen:

Attached is Licensee Event Report: **Containment Floor and Equipment  
Sump Level Alarm Inoperability due to an Operator Aid Computer Error.**

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. Ebner  
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. R. E. Martin  
U.S. Nuclear Regulatory Commission  
Office of Nuclear Reactor Regulation  
Washington, D.C. 20555

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

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

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PDR ADDCK 05000414  
S PDR

## 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 (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.

FACILITY NAME (1)

Catawba Nuclear Station Unit 2

DOCKET NUMBER (2)

05000414

PAGE (3)

1 of 6

TITLE (4)

Containment Floor and Equipment Sump Level Alarm Inoperability due to an Operator Aid Computer Error

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(S)	
08	06	96	96	004	000	08	27	96			
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)			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
			20.405(a)(1)(iii)		x	50.73(a)(2)(i)			50.73(a)(2)(viii)(A)		Abstract below and
			20.405(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(viii)(B)		in Text, NRC Form
			20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(x)		366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME

D. P. Kimball, Safety Review Group Manager

TELEPHONE NUMBER

AREA CODE

(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 2 - Mode 1, Power Operation, at 100% Power

**Event Description:** On May 23, 1996, Operations personnel discovered that the Containment Floor and Equipment Sump Level alarm function of the Operator Aid Computer (OAC) was not providing an alarm when it should have been in alarm. Analysis of historical data indicated that this condition had existed long enough for Technical Specification 3.4.6.1 to have been violated.

**Root Cause:** The root cause of this event was a randomly occurring Operator Aid Computer memory error.

**Corrective Actions:** The OAC error was corrected and the alarm was returned to service. The OAC is being replaced with a more modern computer which will not be subject to this type problem. The replacement for Unit 1 is taking place during the current outage. Until the next refueling outage on Unit 2, a check will be made periodically to ensure that alarms for important computer points are working properly.

**LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION**

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Catawba Nuclear Station, Unit 2	05000414	96	006	0	2 OF 6

**BACKGROUND**

Catawba Nuclear Station Technical Specification (TS) 3.4.6.1 requires the following Reactor Coolant [EIIS:AB] Leakage Detection Systems to be operable:

- a. Containment [EIIS:NH] Atmosphere Gaseous Radioactivity Monitoring System. (This function is fulfilled by Radiation Monitor [EIIS:IL] EMF 39).
- b. Containment Floor and Equipment Sump Level and Flow Monitoring Subsystem.
- c. Either the Containment Ventilation Unit Condensate Drain Tank [EIIS:TK] Level Monitoring Subsystem or the Containment Atmosphere Particulate Radioactivity Monitoring System. (This function is fulfilled by Catawba Radiation Monitor EMF 38).

With one of the systems inoperable operation may continue for up to thirty days if grab samples of the containment atmosphere are taken and analyzed once per 24 hours (when the gaseous or particulate radioactivity monitoring system is inoperable). With two or more of these systems inoperable the unit must be placed in Hot Standby within the next six hours and in Cold Shutdown within the following 30 hours.

The Containment Floor and Equipment Sump Level and Flow Monitoring System is used to satisfy TS 3.4.6.1 part b. It consists of two stainless steel lined sumps in each Reactor Building. The sumps have an approximate capacity of 400 gallons and each sump is equipped with two sump pumps [EIIS:P]. instrumentation for control of the sump pumps and instrumentation to determine the water level in the sump.

The Containment Floor and Equipment Sump Level Instrumentation inputs to an Operator Aid Computer (OAC) [EIIS:CPU] program designed to detect unidentified leakage inside containment in excess of one gallon per minute in less than one hour as recommended in Regulatory Guide 1.45, position C5. In conjunction with the OAC, sump level instrumentation monitors water level and calculates a rate of change.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Catawba Nuclear Station, Unit 2	05000414	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
		96	006	0	3 OF 6

These values are totaled and provide a computer alarm if the sum is greater than one gallon per minute. A contingency plan is available if a loss of OAC occurs.

OAC Point A0460 monitors water level in the "A" Containment Floor and Equipment (CF&E) Sump. OAC Point A0466 monitors level in the "B" CF&E Sump. OAC Point P0148 uses the change in levels in the A and B Sumps and multiplies that data by a constant which describes the level vs. volume characteristic of the sumps to calculate a leakage rate. Point D4554 receives data from point P0148 and provides an alarm on the OAC Alarm Screen and Alarm Typer if a leakage rate of greater than one gallon per minute is detected. An audible control room alarm is also generated anytime a new OAC alarm is received on the alarm screen.

**EVENT DESCRIPTION**

5-23-96	With Unit 2 in Mode 1, Power Operation at 100% power, Operations (OPS) discovered that the Operator Aid Computer point which monitors Containment Floor and Equipment Sump Leakage was not providing an alarm when an alarm should have been present.
5-23-96 1955	OPS entered the item in the Technical Specification Action Item Log (TSAIL), wrote a work request to have the item repaired and implemented actions per the alarm response. The alarm response provides for logging Containment Floor and Equipment Sump levels hourly.
5-24-96 1441	The Containment Floor and Equipment Sump Leakage alarm function was restored.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Catawba Nuclear Station, Unit 2	05000414	96	006	0	4 OF 6

CONCLUSION

In this event a randomly occurring software/hardware error happened which suppressed the audible alarm function. Although Point D4554 was correctly displaying the appropriate status to indicate if the leakage rate exceeded 1GPM, the visual and audible alarm was not functioning properly for this point. The root cause of this problem was determined to be a working memory error on the OAC. In this case the OAC continued to run satisfactorily and did not provide any indication of trouble.

This type problem has occurred occasionally in the past, but cannot be prevented or predicted. The OAC is being replaced with more modern hardware. This is occurring during the current 1EOC9 Outage and during the upcoming Unit 2 Outage. The new OAC will have error correcting memory that will eliminate this problem. Until the Unit 2 OAC replacement, the Process Local Information Technology (LIT) Group will perform a periodic check to confirm that the alarm function of important computer points is working properly.

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

A review of the operating experience database for the past 24 months indicates that there have been two LERs concerning the Containment Floor and Equipment Sump. LER 413/94-004 described an event in which Reactor Coolant Leakage detection systems were inoperable due to deficient written communications. LER 413/96-006 describes an event in which the CF&E Sump Level Monitoring System was inoperable due to incorrect design analysis. Neither of these events had a similar root cause. Therefore this is not a recurring.



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FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (8)

PAGE (3)

Catawba Nuclear Station, Unit 2

05000414

YEAR

SEQUENTIAL  
NUMBERREVISION  
NUMBER

96

006

0

5 OF 6

CORRECTIVE ACTIONS

## IMMEDIATE

1. Operations began logging Containment Floor and Equipment Sump levels hourly by performing the applicable section of the loss of OAC Procedure.

## SUBSEQUENT

1. The Containment Floor and Equipment Sump Leakage alarm function was restored per Work Request 96022095.
2. OPS reviewed routine surveillance procedures and determined other computer points that would be susceptible to this type problem. This information was furnished to the Process Local Information Technology (LIT) Group for inclusion in planned corrective action 1.

## PLANNED

1. Until the replacement of the Unit 2 OAC, the Process LIT Group will perform a periodic verification to ensure that the alarms for susceptible computer points are functioning properly.

SAFETY ANALYSIS

The intent of the TS 3.4.6.1 Leakage Detection Systems is to provide the operator with an alarm which would alert them of degrading conditions inside containment which could indicate a reactor coolant system leak. With such an alert the operator could check other indicators of reactor coolant system integrity. In this case other indicators of reactor coolant system integrity were available such as those described in TS 3.4.6.1 parts

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Catawba Nuclear Station, Unit 2	05000414	96	006	0	6 OF 6

a and c as well as others such as Volume Control Tank Level and Makeup Frequency. These indicators could be assessed by the operators. However, the FSAR safety analyses address reactor coolant system integrity by assuming that the analyzed failure has already occurred. The analyses conclude that plant design encompasses these accidents without endangering the health and safety of the public.

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