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DUKE POWER

August 15, 1996

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

Subject: Catawba Nuclear Station
Docket No. 50-413
LER 413/96-007

Gentlemen:

Attached is Licensee Event Report **Main Steam Safety Valves Outside Setpoint Acceptance Criteria.**

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. Ebnetter
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

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)

Catawba Nuclear Station, Unit 1

DOCKET NUMBER (2)

05000413

PAGE (3)

1 of 3

TITLE (4)

Main Steam Safety Valves Outside Setpoint Acceptance Criteria

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)
07	18	96	96	007	000	08	15	96	N/A	

OPERATING

MODE (9)

1

POWER

94%

LEVEL (10)

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

20.402(b)

20.405(a)(1)(i)

20.405(a)(1)(ii)

20.405(a)(1)(iii)

20.405(a)(1)(iv)

20.405(a)(1)(v)

20.405(c)

50.36(c)(1)

50.36(c)(2)

50.73(a)(2)(i)

50.73(a)(2)(ii)

50.73(a)(2)(iii)

50.73(a)(2)(iv)

50.73(a)(2)(v)

50.73(a)(2)(vii)

50.73(a)(2)(viii)(A)

50.73(a)(2)(viii)(B)

50.73(a)(2)(x)

73.71(b)

73.71(c)

OTHER (Specify in
Abstract below and
in Text, NRC Form
366A)

NAME

LICENSEE CONTACT FOR THIS LER (12)

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
B6	SV	SVRV009	D243	YES					
B6	SV	SVRV0015	D243	YES					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (if yes, complete EXPECTED SUBMISSION DATE)

X

NO

EXPECTED
SUBMISSION
DATE (15)

MONTH	DAY	YEAR

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

Unit Status: Unit 1--mode 1, power operation, 94% power.

Event Description: On June 11, 1996, during surveillance tests to verify the Main Steam Safety Valve (MSSV) lift set points, nine of the twenty MSSVs exceeded the "as found" lift setpoint tolerance of plus or minus 1%.

Root Cause: The cause of MSSV lift setpoint drift is unanticipated interaction of component parts. It is believed that the lift setpoint drift is caused by microscopic adhesion of the disc and nozzle seating surfaces. This phenomena occurs with greater magnitude and with a high degree of repeatability following maintenance that included lapping of the seat. The surface finish between the two seating faces and the metallurgical properties of each material in combination with thermal transients are the primary contributors to the adhesion. MSSV lift setpoint drift is an industry wide problem and Catawba is involved with other utilities, original equipment manufacturer, and test labs in confirming and resolving the cause of the lift setpoint drift phenomena.

Corrective Action: The nine valves that exceeded the "as found" lift setpoint acceptance criteria were satisfactorily tested. An application to change the Technical Specifications has been approved by the NRC to change the tolerance range to plus or minus three percent.

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

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 (MN88 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)
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Catawba Nuclear Station, Unit 1	05000413	96	007	00	2 OF 3

BACKGROUND

Overpressure protection for the Main Steam System [EIIS:SM] (SM) is provided by the Main Steam Safety valves [EIIS:RV] (MSSVs). The MSSVs are set for progressive relief at increasing pressures within the code allowed range. The valves are located in the main steam dog-house structure and discharge to open stacks. The safety related function of the MSSVs is to prevent steam pressure from exceeding 110 percent of the SM System design pressure following a design basis event.

Technical Specification (T/S) 3.7.1.1 stated that all main steam line code safety valves associated with each steam generator shall be operable with lift settings as specified in table 3.7-2 during Modes 1 (Power Operation), 2 (Startup), and 3 (Hot Standby). Table 3.7-2 provided an allowable lift setpoint tolerance of plus or minus 1%.

EVENT DESCRIPTION

June 11, 1996

Testing of the Unit 1 MSSVs occurred during the shutdown for a scheduled refueling outage.

During "as found" testing, nine of the twenty MSSVs exceeded the Technical Specification (T/S) lift setpoint tolerance. Five MSSV's that exceeded the lift setpoint required adjustment and the other four did not. All MSSVs were satisfactorily retested.

CONCLUSION

The cause of MSSV lift setpoint drift is unanticipated interaction of component parts. It is believed that the lift setpoint drift is caused by microscopic adhesion of the disc and nozzle seating surfaces. This phenomena occurs with greater magnitude and with a high degree of repeatability following maintenance that includes lapping of the seat. The surface finish between the two seating faces and the metallurgical properties of each material in combination with thermal transients are the primary contributors to the adhesion. MSSV lift setpoint drift is an industry wide problem and Catawba is involved with other utilities, original equipment manufacturer, and test labs in confirming and resolving the cause of the lift setpoint drift phenomena.

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

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Two of the MSSV's that exceeded the T/S lift setpoint tolerance also exceeded the 3% tolerance for Nuclear Plant Reliability Data System (NPRDS) reportability.

A review of the Operating Experience Database (OEDB) for the past 36 months revealed no reportable events due to MSSV's failing to meet the operability requirements. There were earlier tests where MSSVs had exceeded the allowable tolerance, but those failures were not reported based on the applicability of the "time of discovery" surveillance philosophy to this situation. MSSV's lift setpoints exceeding allowable tolerances is considered recurring, and appropriate efforts to correct the problem are taking place.

CORRECTIVE ACTIONSSUBSEQUENT

- 1) Five of the nine valves that exceeded the "as found" acceptance criteria were adjusted and satisfactorily retested.
- 2) Four of the nine valves exceeding the "as found" acceptance criteria required no adjustment and were satisfactorily retested.
- 3) An application to change the Technical Specifications had been submitted to the NRC and approved prior to this event to change the tolerance to plus or minus three percent. Implementation of the amendment occurred after the Unit 1 MSSV testing was completed.

PLANNED

- 1) Catawba Engineering will continue to work with other utilities, original equipment manufacturer, and test labs to determine the ultimate resolution to prevent lift setpoint drift.

SAFETY ANALYSIS

MSSV "as found" lift setpoints found outside the T/S tolerance are bound by a previously completed safety analysis (CNC-1552.08-00-238). That safety analysis evaluated all relevant accidents using the as-found MSSV drift and defined generic screening criteria for assessing acceptable valve setpoints. Examination of the as-found test data for this test shows that the screening criteria was satisfied.

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