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**DUKE POWER**

February 3, 1997

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

Subject: Catawba Nuclear Station  
Docket No. 50-414  
LER 414/97-001

Gentlemen:

Attached is Licensee Event Report **Hydrogen Supply To Two Main Steam Power  
Operated Relief Valves Was Isolated.**

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. L.A. Reyes  
Administrator, Region II  
U.S. Nuclear Regulatory Commission  
101 Marietta St., NW, Suite 2900  
Atlanta, GA 30323

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

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

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

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PDR ADDCK 05000414  
S PDR

**LICENSEE EVENT REPORT (LER)**

FACILITY NAME (1)

Catawba Nuclear Station, Unit 2

DOCKET NUMBER (2)

05000414

PAGE (3)

1 of 5

TITLE (4)

Nitrogen Supply To Two Main Steam Power Operated Relief Valves Was Isolated

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)
01	03	97	97	001	000	02	03	97	N/A	

OPERATING

1

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

MODE (9)	POWER	LEVEL (10)	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)(ix)	73.71(b)	73.71(c)	OTHER (Specify in Abstract below and in Text, NRC Form 506A)
	100%																						

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, 100% power.

Event Description: On January 3, 1997, during routine maintenance to replace a low nitrogen cylinder, maintenance found the nitrogen supply isolation valves for power operated relief valve (PORV) 2SV-1 closed. Operations instructed maintenance to open the nitrogen supply isolation valves to 2SV-1 and check the remaining three unit two and all four unit one PORVs. The nitrogen supply isolation valves for 2SV-13 were found closed, and opened according to Operations' instructions. The remaining PORV nitrogen supply isolation valves were found open.

Root Cause: The root cause of this event is poor work practices in that the test procedure was not followed correctly. A contributing factor is performance of multiple actions in a test procedure step.

Corrective Action: Nitrogen isolation valves for 2SV-1 and 2SV-13 were opened. The remaining unit 2 and all four Unit 1 PORV nitrogen isolation valves were verified open. The individuals involved in this event were counseled. PT/1(2)/A/4200/31A, SG PORV and block valve D/P stroke test, will be revised to include separate actions for each valve manipulation. To prevent recurrence Engineering will review test procedures for steps requiring multiple actions separated by time or distance and make changes as necessary.

**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 (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

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BACKGROUND

A safety related power-operated relief valve (PORV) [EIIS:RV] is provided in the safety grade portion of each main steam (SM) [EIIS:SB] line upstream of the main steam isolation valve [EIIS:ISV].

The PORVs are normally controlled by instrument air (VI) [EIIS:LD]. If VI is lost a safety grade mode of operation is provided by the use of a nitrogen control system to open the PORVs in the event of a tube rupture concurrently with the loss of offsite power. There are four PORVs one per S/G, two in each vital area, that have independent nitrogen supplies with solenoids and controllers powered from independent essential electrical trains.

Technical specification (T/S) 3.7.1.6 requires three SG PORVs and associated remote manual controls, including the safety-related gas supply systems, to be operable in modes 1, 2, 3, and 4 (when SGs are being used for decay heat removal).

With one less than the required SG PORVs operable, T/S require the inoperable SG PORV to be restored to operable status within 7 days; or be in at least hot standby within the next 6 hours and in hot shutdown within the following 6 hours and place the required ND loop in operation for decay heat removal.

EVENT DESCRIPTION

December 22, 1996

The test coordinator and assistant test coordinator performed PT/2/A/4200/31A, SG PORV and Block Valve D/P stroke test, used to demonstrate the ability of the SG PORVs to open under manual control with nitrogen as the safety related supply.

January 3, 1997

The control room received a low nitrogen cylinder alarm on 2SV-1 and dispatched maintenance to replace the nitrogen cylinder.

When replacing the nitrogen cylinder, IP/2/A/3030/13, Procedure for Checking and replacing SG PORV Nitrogen Cylinders, has the maintenance technician close the nitrogen bottle isolation valve. When the technician prepared to isolate the nitrogen cylinder he found the isolation valve already closed. He checked the second cylinder and found the nitrogen isolation valve closed.

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The control room was notified that the nitrogen isolation valves for 2SV-1 were found closed. Operations instructed maintenance to open 2SV-1 nitrogen valves and check the remaining unit two nitrogen isolation valves and the nitrogen isolation valves for each unit one PORV. Maintenance found the nitrogen supply to 2SV-13 also closed and opened the valves according to Operations' instruction.

CONCLUSION

The root cause of this event is poor work practices in that the test procedure was not followed correctly. The test coordinator and assistant coordinator did not use the tools for flawless human performance to ensure that all actions were performed as each procedure step was completed.

A contributing factor is performance of multiple actions in a test procedure step. To complete procedure steps for opening and closing the air and nitrogen isolation valves the test coordinator and assistant coordinator must perform multiple actions, separated by time and distance, in one procedure step. The non-licensed test coordinator and assistant test coordinator believe that they opened the nitrogen valves at the conclusion of the test. Since the procedure required multiple valve manipulations in two different physical locations it is likely the individuals lost track. There was no willful intent not to follow the procedure. The test procedure will be revised to include specific steps for each valve manipulation. To prevent recurrence Engineering will review procedures for steps requiring multiple actions separated by time or distance and make changes as necessary.

The controlled access log entries from 12/22/96 to 01/03/97 for the PORV vital areas were reviewed to determine the reasons for the entries. No other entries were associated with the PORVs nitrogen supply. Therefore, it was concluded that the valves were most likely left closed after completion of the periodic test on 12/22/96.

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

A review of the operating experience database for the twenty four months preceding this event did not identify any events in which T/S surveillance 5.7.1.6 had been violated. Additionally, this review did not identify any similar events. One Licensee Event Report (LER) (414/96-002) with the same cause was found. The previous event did not involve the same equipment, nor

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would the corrective actions associated with the previous event affected or prevented the current event. This event is not considered recurring.

CORRECTIVE ACTIONS

## Immediate

- 1) The nitrogen isolation valves for PORVs 2SV-1 and 2SV-13 were opened.
- 2) The individuals involved were counseled.

## Planned

- 1) PT/1(2)/A/4250/01C will be revised to included separate actions for each valve manipulations.
- 2) Engineering will review test procedures for steps requiring multiple actions separated by time or distance and make changes as necessary.
- 3) Engineering will review the results of the current re-validation of UFSAR chapter 15 SG tube rupture accident analysis and revise the safety analysis associated with this LER if appropriate.

SAFETY ANALYSIS

During a SG tube rupture event, assuming worst case conditions such as loss of offsite power and no available VI leading to a loss of the atmospheric and condenser dumps, the PORVs (and the attendant assured nitrogen sources) would normally have to be relied upon to cool down the primary side in order to allow primary side depressurization within the subcooled zone. This primary side depressurization is the mechanism by which the primary to secondary leakage is stopped. The termination of leakage is important to prevent radioactive material from escaping through the main steam safety valves (and condenser dump valves if available) and to prevent SG overfilling. During the period in question, two of the four SG PORVs were fully operable, and the other two were available with the exception of their backup nitrogen sources. According to up-dated final safety analysis report (UFSAR) Chapter 15, the worst case single failure for a SG tube rupture accident is a stuck open PORV on the faulted generator. In the event that VI was not available, this worst case scenario would still leave one PORV controlled from the control room to start the primary side depressurization. The other two PORVs would be operated locally by an operator in communication with the control room via emergency sound powered jacks at

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each valve location. This provision is delineated in the SG tube rupture emergency procedure.

Calculations to confirm that the radiological consequences of a SG tube rupture are within the appropriate guidelines are currently being re-validated by the site and general office accident analysis Engineering groups as part of our review of the UFSAR. The results of this re-validation may require a change to this safety analysis. This LER will be revised if appropriate.

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