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Catawba Nuclear Station
4800 Concord Road
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DUKE POWER

May 24, 1995

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

Subject: Catawba Nuclear Station
Docket No. 50-414
LER 414/95-005

Gentlemen:

Attached is Licensee Event Report 414/95-005 concerning MANUAL REACTOR TRIP DUE TO LOSS OF MAIN FEEDWATER.

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

Very truly yours,

A handwritten signature in dark ink, appearing to read 'D. L. Rehn'.

D. L. Rehn

kas

Attachments

xc: Mr. S. D. Ebnetter
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
101 Marietta Street, NW, Suite 2900
Atlanta, GA 30323

Marsh & McLennan Nuclear
1166 Avenue of the Americas
New York, NY 10036-2774

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

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

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

JE221

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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 4

TITLE (4)

Manual Reactor Trip Due to Loss of Main Feedwater

EVENT DATE (5)

MONTH	DAY	YEAR
05	01	95

LER NUMBER (6)

YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
95	-- 005 --	00

REPORT NUMBER (7)

MONTH	DAY	YEAR
05	24	95

OTHER FACILITIES INVOLVED (8)

FACILITY NAME

N/A

DOCKET NUMBER
05000

FACILITY NAME

DOCKET NUMBER
05000OPERATING
MODE (9)

1

POWER
LEVEL (10)

14

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more) (11)

20.402(b)

20.405(c)

X

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

20.405(a)(1)(iii)

50.73(a)(2)(i)

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

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

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)

NAME

D.P. Kimball, Safety Review Group Manager

LICENSEE CONTACT FOR THIS LER (12)

TELEPHONE NUMBER (include Area Code)

(803)831-3743

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)

YES

(If yes, complete EXPECTED SUBMISSION DATE)

X

NO

EXPECTED
SUBMISSION
DATE (15)

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

ABSTRACT

On May 1, 1995, at 1603 hours, Unit 2 was in Mode 1, Power Operation at 14%, when the Main Turbine tripped due to loss of both Main Feedwater (CF) System Pumps. Following the Turbine trip, the Reactor was manually tripped due to loss of Main Feedwater. A CF System isolation signal was generated as a result of a Reactor Trip with low Reactor Coolant (NC) System Average Temperature (T-ave). The Auxiliary Feedwater (CA) System motor driven pumps autostarted as expected due to loss of Main Feedwater. The CA System autostart caused NC System T-ave to cooldown below 553 degrees Fahrenheit which resulted in the Steam Dump System to isolate on a P-12 permissive (Lo-Lo T-ave) to prevent excessive cooldown of the NC System. The root cause of this event is attributed to work practices, system alignment not properly verified by the Non-Licensed Operator (NLO) when aligning the Condensate System. Corrective Actions included communication by Operations Management of management expectations for human performance improvement to all Operations work groups and appropriate corrective action was taken with the NLO involved in this incident.

REQUIRED NUMBER OF DIGITS/CHARACTERS
FOR EACH BLOCK

BLOCK NUMBER	NUMBER OF DIGITS/CHARACTERS	TITLE
1	UP TO 46	FACILITY NAME
2	8 TOTAL 3 IN ADDITION TO 05000	DOCKET NUMBER
3	VARIES	PAGE NUMBER
4	UP TO 76	TITLE
5	6 TOTAL 2 PER BLOCK	EVENT DATE
6	7 TOTAL 2 FOR YEAR 3 FOR SEQUENTIAL NUMBER 2 FOR REVISION NUMBER	LER NUMBER
7	6 TOTAL 2 PER BLOCK	REPORT DATE
8	UP TO 18 -- FACILITY NAME 8 TOTAL -- DOCKET NUMBER 3 IN ADDITION TO 05000	OTHER FACILITIES INVOLVED
9	1	OPERATING MODE
10	3	POWER LEVEL
11	1 CHECK BOX THAT APPLIES	REQUIREMENTS OF 10 CFR
12	UP TO 50 FOR NAME 14 FOR TELEPHONE	LICENSEE CONTACT
13	CAUSE VARIES 2 FOR SYSTEM 4 FOR COMPONENT 4 FOR MANUFACTURER NPRDS VARIES	EACH COMPONENT FAILURE
14	1 CHECK BOX THAT APPLIES	SUPPLEMENTAL REPORT EXPECTED
15	6 TOTAL 2 PER BLOCK	EXPECTED SUBMISSION DATE

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.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Catawba Nuclear Station, Unit 2	05000 414	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		95	- 005 -	00	

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

BACKGROUND

The Condensate [EIIS:KA] (CM) System cleans and heats condensed steam from the main condenser [EIIS:COND] hotwell to improve cycle efficiency before delivering the water to the feedwater system for delivery to the Steam Generators [EIIS:SG] (S/Gs). Hotwell pumps [EIIS:P] take suction from the condenser hotwell and discharge flow through various components to the suction of the condensate booster pumps. Condensate booster pumps discharge flow through various components to the suction of the Main Feedwater Pumps.

The Main Feedwater [EIIS:SJ] (CF) system consists of two steam driven feedwater pumps, two stages of high pressure feedwater heaters [EIIS:HTR] (A and B), piping [EIIS:PSP], valves [EIIS:V] and instrumentation. Normally, both feedwater pumps will be operating with each pump handling half the feedwater flow. Downstream of the feedwater pumps, the feedwater passes through two stages of high pressure heaters to a final header where the temperature is equalized. The feedwater is then admitted to the steam generators through four steam generator feedwater lines, each of which contains a control valve and a flow nozzle [EIIS:NZL].

EVENT DESCRIPTION

April 28, 1995

"F" and "G" Feedwater heaters had automatically isolated due to a heater level transient as a result of the Unit 2 Reactor [EIIS:RCT] Trip that occurred on April 27, 1995. The inlet and outlet valves for the heaters were closed with the bypass valve open.

May 1, 1995

- | | |
|------|---|
| 1500 | Unit 2 was in Mode 1, Power Operation at 14%, with Reactor Coolant [EIIS:AB] System average temperature (T-ave) at 560 degrees Fahrenheit. |
| 1530 | A Non-Licensed Operator (NLO) was dispatched to place "F" and "G" Feedwater heaters back in service and then close the valve that bypasses flow around the feedwater heaters. |
| 1600 | The NLO arrived at the "F" and "G" Feedwater heater control panel [EIIS:PL]. The NLO opened the heater outlet valves to the intermediate position. The NLO then |

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Catawba Nuclear Station, Unit 2	05000 414	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 4
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positioned the heater bypass valve to the intermediate position. The bypass valve indicated the intermediate position but the valve was actually almost closed, isolating Condensate system flow.

- 1602:35 Condensate Booster Pumps "B" and "C" started on low Feedwater Pump suction pressure.
- 1602:54 Condensate Booster Pumps tripped on low suction pressure.
- 1603:10 Feedwater Pumps tripped on loss of suction pressure.
- 1603:11 Main Turbine [EIS:TRB] tripped on loss of Feedwater Pumps. Auxiliary Feedwater [EIS:BA] (CA) System Motor [EIS:MO] Driven Pumps autostarted due to loss of Main Feedwater.
- 1603:18 Control Room Operator manually tripped the Reactor due to loss of Main Feedwater. Feedwater System isolation signal was generated due to Reactor Trip with low T-ave (below 564 degrees Fahrenheit).
- 1605 T-ave had decreased to 553 degrees Fahrenheit due to cooldown caused by CA System, resulting in the Steam Dump [EIS:JI] System isolating as a result of Lo-Lo T-ave (P-12 Permissive).
- 1630 Plant stabilized at no load conditions with Unit 2 in Mode 3, Hot Standby.

CONCLUSION

The Control Room Operators manually tripped the Reactor on loss of Main Feedwater. The root cause of the loss of Main Feedwater is attributed to work practices, system alignment was not properly verified by the NLO when aligning the Condensate System. The NLO closed the bypass valve for "F" and "G" Feedwater heaters prior to opening the inlet valves causing the Condensate System to be isolated. Appropriate corrective action was taken with the NLO involved.

Due to this event, as well as other recent events that involved less than adequate Work Practices, Station and Operations Management met with all Operations Shift Managers on May 8, 1995. During this meeting, these events were reviewed and specific expectations for human performance improvements were discussed. Following this meeting, the Operations Superintendent held group "time outs" with all Operations work groups to reinforce expectations for human performance improvements.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Catawba Nuclear Station, Unit 2	05000 414	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 4
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

A review of the reportable events which have occurred during the 24 months prior to this event indicated that less than adequate work practices involving verification of system alignment by Operations is a recurring problem. LER 414/93-003 involved failure to adequately evaluate the impact of unusual steam alignments resulting in a P-12 actuation. LER 413/94-008 involved failure to verify proper return position of a valve in the Nuclear Service Water [EIS:BI] System.

CORRECTIVE ACTIONS

IMMEDIATE

- 1) Control Room Operators manually tripped the Reactor due to loss of Main Feedwater.

SUBSEQUENT

- 1) Appropriate corrective action was taken with the NLO involved in this event.
- 2) The Operations Superintendent has held "time out" sessions with all Operations work groups to reinforce management expectations for human performance improvement.
- 3) Management expectations for human performance improvement was communicated to all OSMs.

SAFETY ANALYSIS

Unit 2 was in Mode 1 at 14% power when the Control Room Operators manually tripped the Reactor due to loss of Main Feedwater. All control rods [EIS:ROD] inserted normally in the core. No primary or secondary Power Operated Relief Valves [EIS:RV] or Safety Valves lifted during the transient. Control Room Operators responded properly to stabilize primary and secondary systems. All safety systems responded as expected during this event. The Reactor Trip that occurred from Rated Thermal Power on loss of feedwater flow is bounded by the analysis for Turbine Trip as described in Chapter 15 of the FSAR.

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