



Duke Power Company

A Duke Energy Company

Catawba Nuclear Station

4800 Concord Road

York, SC 29745

Gary R. Peterson

Vice President

(803) 831-4251 OFFICE

(803) 831-3426 FAX

July 23, 1997

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

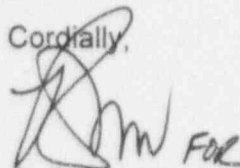
Subject: Catawba Nuclear Station
Docket No. 50-413
LER 413/97-005

Gentlemen:

Attached is Licensee Event Report 413/97-005 concerning Violation of Technical Specification 4.0.5 Due To Inadequate Surveillance Procedure.

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

Cordially,



G. R. Peterson

Attachment

cc: Mr. L.A. Reyes
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

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

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

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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)
Catawba Nuclear Station, Unit 1

DOCKET NUMBER (2)
05000413

PAGE (3)
1 of 6

TITLE (4)
Violation of Technical Specification 4.0.5 Due To Inadequate Surveillance Procedure

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)
06	23	97	97	005	00	07	23	97	Catawba Nuclear Station, Unit 2	05000414
										05000

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	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)						
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> OTHER (Specify in						
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	Abstract below and						
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	in Text, NRC Form						
	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	366A)						

LICENSEE CONTACT FOR THIS LER (12)

NAME M. L. Birch, Safety Assurance Group Manager	TELEPHONE NUMBER AREA CODE (803)	831-3310
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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)

EVENT DESCRIPTION: On June 23, 1997, both units were in mode 1. During a site review of the residual heat removal system it was determined that an Emergency Core Cooling System check valve surveillance procedure was inadequate. The surveillance procedure, performed each refueling outage, to ensure adequate forward flow through the valves, did not check for reverse flow prevention. Prevention of reverse flow for certain check valves is a requirement of the Inservice Test Program referred to in technical specification (T/S) 4.0.5.

ROOT CAUSE: The root cause of this event is an inadequate procedure. The procedure adequately tested each valve for flow, but system alignments were inadequate to demonstrate reverse flow prevention. In addition, the procedure did not indicate that one of the purposes was to test for reverse flow prevention, nor did it contain acceptance criteria, against which check valve performance could be evaluated.

CORRECTIVE ACTIONS: Corrective actions included successful testing of the affected check valves for reverse flow prevention, initiation of a comprehensive evaluation of the Inservice Test Program to identify and correct any additional immediate testing concerns, and a planned corrective action to revise the test procedures for these valves under the Inservice Test Program.

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FOR HARD 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

Each of the two independent Emergency Core Cooling Systems (ECCS) subsystems are comprised of:

- One centrifugal charging [EIIS:CB] (NV) pump [EIIS:P],
- One Safety Injection [EIIS:BQ] (NI) pump,
- One residual heat removal [EIIS:BP] (ND) heat exchanger[EIIS:HX],
- One residual heat removal (ND) pump, and
- A flow path capable of taking suction from the refueling water storage tank (FWST) on a Safety Injection signal and automatically transferring suction to the containment sump during the recirculation phase of operation.

During the injection phase of a Loss Of Coolant Accident (LOCA), as reactor coolant [EIIS:AB] system pressure decreases, borated water is injected into the core, first by the high head NV pumps, then by the intermediate head NI pumps, and finally by the low head ND pumps. During the injection phase, the (FWST) provides the necessary borated water volume for accident mitigation at the required net positive suction head for the ECCS pumps. The two NV pumps take suction through a common suction line, the two NI pumps take suction through a common suction line, and the two ND pumps each take suction through their own train related suction line.

Upon depletion of the FWST contents, suction is automatically transferred to the containment sump during the recirculation phase. During this phase of operation, each ND pump takes a suction on the containment sump through its own train related suction line. Each ND pump's discharge then passes through its ND heat exchanger. A significantly large portion of the cooled discharge of the ND pumps is then delivered directly to the reactor coolant loops, while the remainder is supplied separately to the suction of the NI and NV pumps. Check valve NI-342 in the line between ND Train B discharge and the NI pumps' suction and check valve NV-813 in the line between ND Train A discharge and the NV pumps' suction are required to prevent excessive ND pump flow in the reverse direction, in the event of an ND train failure after cold leg recirculation has been established. Excessive reverse flow could possibly cause the running ND pump to approach runout conditions.

Technical Specification (T/S) 4.0.5 requires that ASME Code Class 1, 2, and 3 pumps and valves be tested in accordance with ASME/ANSI Code Section XI. During each refueling outage or cold shutdown, valves 1(2)NV-813 and

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1(2)NI-342 should be tested in both the forward flow direction and, to ensure no diversion of flow, the reverse flow direction.

Periodic test procedure PT/1(2)/A/4200/13H, NI and NV Check Valve Test, is performed each refueling outage to ensure that the check valves listed in the procedure are tested as required for forward flow and, if so designated, for reverse flow prevention. Periodic test procedures PT/1(2)/A/4200/08D, NV-813 Check Valve Partial Stroke Test and PT/1(2)/A/4200/08J, NI-342 Flow Verification Test, are also used to test for forward flow during Cold Shutdown. None of the three tests described above provide for the reverse flow testing of 1(2)NV-813 or 1(2)NI-342.

EVENT DESCRIPTION

June 23, 1997

1811 hours During a plant review of the residual heat removal system, it was determined that the surveillance test procedure which includes check valves 1NI-342, 1NV-813, 2NI-342, and 2NV-813 was inadequate. The valves had not been properly tested for prevention of reverse flow as required by the facility's ASME Section XI Valve Inservice Test Program referred to in Technical Specification 4.0.5.

1900 hours Engineering determined that 1NV-813 was capable of preventing reverse flow based on having been tested by an acceptable alternate method in July of 1996. It was determined that 1NI-342 had not been tested to ensure that it was capable of preventing reverse flow. Unit 1 was entered into the 72 hour action of T/S 3.5.2, for one ECCS Subsystem being inoperable with reactor coolant average temperature (Tave) greater than or equal to 350 degrees F, pursuant to testing of 1NI-342.

1902 hours Engineering determined that neither 2NI-342 nor 2NV-813 had been adequately tested to ensure that they were capable of preventing reverse flow. Unit 2 entered T/S 4.0.3, which provided 24 hours to successfully test at least one of the two subject valves or enter T/S 3.0.3.

2020 hours A 4 hour notification was made to the NRC under 10CFR50.72(b)(2)(iii) (event or condition that alone could have prevented the fulfillment of safety function of systems or

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structures) and both trains of ECCS were declared inoperable for unit 2, pursuant to testing of 2NI-432 and 2NV-813.

June 24, 1997

1535 hours 2NV-813 was declared operable following successful testing to ensure that it was capable of preventing reverse flow. Unit 2 was entered into the 72 hour action (with ~ 51.5 hours remaining) of T/S 3.5.2, for one ECCS Subsystem being inoperable with Tave greater than or equal to 350 degrees F, pursuant to testing of 2NI-342.

June 26, 1997

0148 hours 2NI-342 was declared operable following successful testing to ensure that it was capable of preventing reverse flow. Both trains of ECCS were declared operable for unit 2.

0607 hours 1NI-342 was declared operable following successful testing to ensure that it was capable of preventing reverse flow. B train of ECCS was declared operable for unit 1.

July 08, 1997

1334 hours The entry of unit 2 into T/S 3.0.3. was retracted based on the successful testing of 2NI-342 and 2NV-813. Without being preconditioned, these valves were found to be functioning properly.

CONCLUSION

The root cause of this event is an inadequate surveillance procedure. The procedure adequately tested each valve for flow, but system alignments were inadequate to demonstrate reverse flow prevention. In addition, the procedure did not indicate that one of the purposes was to test for reverse flow prevention, nor did it contain acceptance criteria, against which check valve performance could be evaluated.

A review of reportable events for the 36 months preceding this event was conducted to determine recurrence. The review revealed 11 reportable events which involve the T/S surveillance program. This LER in addition to two recent reportable events, LER 413/97-004 and LER 414/97-004, indicates that additional causal analysis is warranted. A corrective action in LER 413/97-004 already commits to performing a common cause analysis. The specific nature and cause of the current event are dissimilar to the previous events

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and the corrective actions prescribed for those events would not have prevented the current event.

CORRECTIVE ACTIONS

IMMEDIATE

- 1) Both ECCS subsystems for unit 2 were declared inoperable, pursuant to testing 2NI-342 and 2NV-813.
- 2) The B Train ECCS subsystem for unit 1 was declared inoperable, pursuant to testing 1NI-342.

SUBSEQUENT

- 1) Without preconditioning, 1NI-342, 2NI-342, and 2NV-813 were properly and satisfactorily tested.
- 2) Both ECCS subsystems for unit 2 and the B Train ECCS subsystem for unit 1 were declared operable.
- 3) Engineering began a comprehensive evaluation of the Inservice Testing Program surveillance procedures in order to identify and correct any additional immediate testing concerns.

PLANNED

- 1) Engineering will continue the comprehensive evaluation of the Inservice Testing Program for check valves, beyond the submittal date of Revision 00 of Licensee Event Report 413/97-005.
- 2) Catawba Safety Review Group will review the continuing Engineering evaluation and revise if necessary Licensee Event Report 413/97-005, based on having to declare Technical Specification controlled systems inoperable.
- 3) P1/1(2)/A/4200/13H, NI and NV Check Valve Test, will be revised as necessary to provide for adequate reverse flow prevention testing of 1(2)NI-342 and 1(2)NV-813.

SAFETY ANALYSIS

The four check valves, 1(2)NV-813 and 1(2)NI-342 were tested for reverse flow prevention and performed as expected. Expected performance was based on periodic disassembly, visual inspection, testing for seating surface consistency, and reassembly. During each refueling outage proper ECCS flow through these valves is verified by system testing. The successful testing

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conducted in June 1997 proved that each check valve would have provided adequate resistance to reverse flow, if required, during the recirculation phase of a Loss Of Coolant Accident. Therefore the valves were capable of performing all of their safety functions.

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