

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Catawba Nuclear Station, Un't 1	DOCKET NUMBER (2) 0 5 0 0 0 4 1 3	PAGE (3) 1 OF 0 3
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TITLE (4)  
Incore Thermocouple Tube Leakage

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 NAMES		DOCKET NUMBER(S)																																																
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<table border="1" style="width:100%"> <tr> <td>OPERATING MODE (9)</td> <td>3</td> <td colspan="10">THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)</td> </tr> <tr> <td>POWER LEVEL (10)</td> <td>0 0 0</td> <td>20.402(b)</td> <td>20.405(c)</td> <td>50.73(a)(2)(iv)</td> <td>73.71(b)</td> </tr> <tr> <td></td> <td></td> <td>20.405(a)(1)(i)</td> <td>50.36(c)(1)</td> <td>50.73(a)(2)(v)</td> <td>73.71(c)</td> </tr> <tr> <td></td> <td></td> <td>20.405(a)(1)(ii)</td> <td>50.36(c)(2)</td> <td>50.73(a)(2)(vii)</td> <td>OTHER (Specify in Abstract below and in Text, NRC Form 366A)</td> </tr> <tr> <td></td> <td></td> <td>20.405(a)(1)(iii)</td> <td>50.73(a)(2)(i)</td> <td>50.73(a)(2)(viii)(A)</td> <td></td> </tr> <tr> <td></td> <td></td> <td>20.405(a)(1)(iv)</td> <td>X 50.73(a)(2)(ii)</td> <td>50.73(a)(2)(viii)(B)</td> <td></td> </tr> <tr> <td></td> <td></td> <td>20.405(a)(1)(v)</td> <td>50.73(a)(2)(iii)</td> <td>50.73(a)(2)(ix)</td> <td></td> </tr> </table>												OPERATING MODE (9)	3	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)										POWER LEVEL (10)	0 0 0	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 Abstract below and in Text, NRC Form 366A)			20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)				20.405(a)(1)(iv)	X 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)(ix)	
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LICENSEE CONTACT FOR THIS LER (12)

NAME Roger W. Ouellette, Assistant Engineer - Licensing	TELEPHONE NUMBER AREA CODE: 7 0 4 3 7 1 3 - 1 7 5 3 1 0
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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
B	x x	x x x x	W11 210	No					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On October 23, 1984, at 2040 hours, an unisolatable Reactor Coolant Leak of approximately 5 gallons per minute was discovered on the Unit 1 Reactor Vessel Head. The Action Statement of Technical Specification 3.4.6.2.a required the unit to be placed in Mode 5 (Cold Shutdown) within 30 hours. At the time of the incident, the unit was in Mode 3 (Hot Standby), The Reactor Coolant System temperature was 440°F., and the pressure was 1500 psig.

The leakage occurred because the stainless steel conduit containing incore thermocouple LENTE9030 separated from a "Swagelok" tube fitting. After the unit was placed in Mode 5, 3/4 inch of the conduit was cut off to provide a clean seating surface. The thermocouple was replaced, and the conduit was refitted with a new "Swagelok" tube fitting.

This event is classified as a Construction/Installation Deficiency. The tube fitting was connected by a vendor during the construction phase of Unit 1. The fitting had not been disconnected by Duke Power personnel since it was installed.

This incident is reportable pursuant to 10CFR50.73 Section (a) (2) (ii).

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Catawba Nuclear Station, Unit 1	DOCKET NUMBER (2)  0   5   0   0   0   4   1   3							LER NUMBER (6)			PAGE (3)		
								YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
	8   4	-   0   1   8	-   0   0	0   2	OF	0   3							

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

The sixty-five incore thermocouples on the Unit 1 Reactor Vessel are supplied by Westinghouse. These thermocouples monitor the Reactor Coolant temperature leaving the fuel assemblies. The thermocouples are 1/4 inch in diameter, stainless steel sheathed, and aluminum oxide insulated. The thermocouples exit the reactor internals through five instrument columns (13 thermocouples per column) which are located on the outer periphery of the control rods on the head. A 5/16 to 1/4 inch reducing "Swagelok" tube fitting provides a seal at the thermocouple and on the conduit. If the "Swagelok" fitting is properly installed, the ferrule makes two distinct indentions where it grips the tube, the upper indention being 3/16 inch from the end of the tube. One and one-fourth turns of the "Swagelok" fitting is required to properly seat the ferrule and seal the tube.

Description of Incident

On October 23, 1984, at 0802 hours, it was realized that makeup to the Volume Control Tank (VCT) was having to be done more frequently than expected. The Volume Control Tank provides surge and makeup capacity for part of the Reactor Coolant not accomodated by the pressurizer after a load transient.

Two Nuclear Equipment Operators (NEO) were briefed about the problem in order that they could enter containment to search for the leak. However, before the NEO's entered containment (approximately 1845 hours), a Health Physics Supervisor reported to the Shift Supervisor that boron had accumulated on some duct work in lower containment. The two NEO's then entered containment to look at the problem. After shift change (approximately 1945 hours), the HP Supervisor reported back to the Shift Supervisor that he had found the leak in the area of the Reactor Vessel Head.

At 2040 hours, the Shift Supervisor arrived at the Reactor Vessel Head and confirmed that water was spraying from an incore thermocouple tube. Since the leak was unisolatable, the Action Statement of Tech Spec 3.4.6.2.a was entered. At 2100 hours, cooldown to Mode 5 (Cold Shutdown) was initiated. After the unit was cooled down to Mode 5, and the Reactor Vessel water level and pressure was lowered, the leak ceased at approximately 1700 hours on October 24, 1984. The leak was estimated to be close to 5 gpm or 12,000 total gallons by determining the changes in the containment floor and equipment sump levels from 0644 hours on 10-23-84 to 1700 hours on 10-24-84.

The 5/16 inch end of the "Swagelok" tube fitting, which is used as the high pressure seal for LENTE9030 (Reactor Coolant Temperature Monitor for Fuel Assembly N-14), had separated from the conduit. After 3/4 inch of the conduit was cut off to provide a new seating surface for the ferrule, a new thermocouple and reducing union were installed. This was done in accordance with procedure IP/1/A/3230/11 (Repair and Reinstallation of Incore Thermocouple N-14). The 3/4 inch piece of conduit was sent to Crawford Fitting Company of Cleveland, Ohio to be tested in order that the cause of failure could be determined.

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The report from Crawford Fitting Company revealed that the conduit was not fitted properly with the "Swagelok" fitting. The ferrule indentions on the tube proved that the conduit was not inserted fully into the fitting. Also, analysis showed that the fitting was only tightened 13/20 turns instead of the required one and one fourth turns.

After the cause of the failure was determined, the other 64 thermocouple tube fittings were loosened and then re-tightened to check ferrule tightness and proper placement and to ensure that the fittings were tightened one and one fourth turns. The results of this investigation revealed that the ferrule was loose and improperly placed on incore thermocouple LENTE9029 which is used to monitor temperature of nuclear fuel at location N-12. This thermocouple was also repaired and replaced in the same manner as the thermocouple for location N-14.

CORRECTIVE ACTION

The unit was cooled down to Mode 5 per the Action Statement of Tech Spec 3.4.6.2.a. and the following actions were taken:

- 1) Replaced thermocouple LENTE9030 and the "Swagelok" tube fitting.
- 2) Sent 3/4 inch section of conduit to Crawford Fitting Company for analysis.
- 3) Checked all other Unit 1 incore thermocouples for proper "Swagelok" fitting installation.
- 4) Replaced thermocouple LENTE9029 and "Swagelok" tube fitting.

VERIFICATION

The immediate action terminated the leakage in order that its cause could be repaired. The subsequent action ensured that thermocouple LENTE9030 was properly replaced. Also, the analysis of the conduit indentified the cause of the problem so that other thermocouples could be inspected for similar defects. Thermocouple LENTE9029 was identified with a similar tubing problem and repaired.

SAFETY ANALYSIS

The Operator at the Controls was aware of the occurring Reactor Coolant leakage and continued to makeup to the Volume Control Tank to replace the lost inventory. No contamination was spread by the leak since the unit was in the pre-initial criticality condition.

The heath and safety of the public were unaffected by this incident.

DUKE POWER COMPANY

P.O. BOX 33189  
CHARLOTTE, N.C. 28242

HAL B. TUCKER  
VICE PRESIDENT  
NUCLEAR PRODUCTION

TELEPHONE  
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November 21, 1984

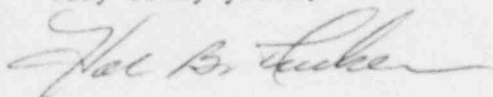
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U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Subject: Catawba Nuclear Station, Unit 1  
Docket No. 50-413

Gentlemen:

Pursuant to 10 CFR 50.73 Section (a) (1) and (d), attached is Licensee Event Report 413/84-18 concerning incore thermocouple tube leakage. This event was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,



Hal B. Tucker

RWO:mjf

Attachment

cc: Mr. James P. O'Reilly, Regional Administrator  
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1100 Circle 75 Parkway  
Atlanta, Georgia 30339

NRC Resident Inspector  
Catawba Nuclear Station

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IE22

11

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November 21, 1984  
Page Two

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IE22  
11