

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Catawba Nuclear Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 1 1 3 1	PAGE (3) OF 1
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TITLE (4)  
Both Trains of Residual Heat Removal Inoperable Due to Personnel Error

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)
08	15	86	86	044	0	10	09	86	N/A		0 5 0 0 0

OPERATING MODE (9) 5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																	
	POWER LEVEL (10) 0 1 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 20.406(e)	<input type="checkbox"/> 50.38(e)(1)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	<input type="checkbox"/> 50.73(a)(2)(ix)	<input type="checkbox"/> 73.71(b)	<input type="checkbox"/> 73.71(c)
50.72(b)(2)(iii)																		

LICENSEE CONTACT FOR THIS LER (12)

NAME Roger W. Ouellette, Associate Engineer - Licensing	TELEPHONE NUMBER AREA CODE: 7 1 0 4   3 1 7 1 3 1 - 7 1 5 1 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

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH   DAY   YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On August 15, 1986, technicians were replacing a relay in the Train A Solid State Protection System (SSPS) Cabinet when a lug on the relay shorted to cabinet ground and caused the output relay fuse in the SSPS cabinet to blow. When the fuse blew, power was lost to the relays that control the position of the A and B Train Suction valves for the Residual Heat Removal (ND) Pumps. Subsequently, these relays changed state and the valves closed. The ND System was inoperable for approximately 15 minutes before a new fuse was installed in the SSPS Cabinet. The unit was in Mode 5, Cold Shutdown, at the time of this incident.

This incident is assigned Cause Code A, Personnel Error. While inserting a relay mounting screw, the technician's hand slipped, causing a short and blowing a fuse in the 120 VAC Power Supply of the SSPS Output Bay.

This incident is reportable pursuant to 10 CFR 50.73, Section (a)(2)(v)(B) and 10 CFR 50.72, Section (b)(2)(iii).

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104  
EXPIRES 8/31/85

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

BACKGROUND

The primary purpose of the Residual Heat Removal (ND) System (EIIS:BP) is to remove thermal energy from the Reactor Coolant (NC) System (EIIS:AB) during plant cooldown and refueling operations. During Shutdown, the ND System is placed in service with NC temperature less than 350 degrees F and pressure less than 400 psig.

ND valves INDO02A, ND Pump 1A Suction from Loop B, and INDO37A, ND Pump 1B Suction from Loop C, are normally closed, motor-operated gate valves, and provide isolation between the NC System and ND pump suction lines. Electrical interlocks are used to prevent opening these valves until NC pressure has been reduced to a pressure below approximately 400 psig and provide autoclosure when NC pressure increases to above approximately 600 psig.

Various interlocks are required for the valves to stay in the open position. If one of the required interlocks are lost due to an external cause, such as a loss of power, the valves will move to the CLOSED position.

DESCRIPTION OF INCIDENT

On March 3, 1986, a Work Request was issued to replace relay K643 for Solid State Protection System (SSPS)(EIIS:JC) Trains A and B so that the old relay could be placed in the warehouse as spare parts. The old relay was no longer being manufactured as a qualified part, so the need for some spare relay parts was the reason for changing out the relay. The unit entered Mode 5, Cold Shutdown at 0511 hours, on August 10, 1986. On August 15, 1986 relay K643 for Train A SSPS was being replaced. As the replacement of the relay was almost completed, the bottom mounting screw was being inserted and the screw driver shorted the relay coil terminal lug to cabinet ground. The output relay fuse in SSPS blew when the coil shorted to ground. At 1818:04 hours, valve INDO02A started to close automatically due to the fuse blowing. Valve INDO37A started closing automatically at 1818:05 hours. ND flow started decreasing and the ND Train A to NC Cold Legs Loops C-D Lo Flow annunciator was received. At 1818:54 hours valves INDO002A and INDO37A had closed. At 1819:10 hours, valve INDO002A could not be reopened, so ND Pump 1A was secured. Immediately, Incore Thermocouple temperatures were trended. The blown fuse was replaced and valve INDO002A was opened at 1831:55 hours. Valve INDO37A was opened at 1832:50 hours. The Maximum Incore Thermocouple temperature was 120 degrees F at 1835 hours. On August 16, 1986, the Functional Verification for relay K643 in Train A SSPS was performed satisfactorily.

CONCLUSIONS

This incident is assigned Cause Code A, Personnel Error. The technician was mounting a relay in the Train A SSPS Output Cabinet when he accidentally shorted the relay coil to cabinet ground with a screwdriver. Prior to starting the job, the technician told his supervisor that he would be working on energized equipment. The supervisor suggested that the equipment be de-energized but the technician told his supervisor that de-energizing the equipment was not possible because power to the relay's latching coils would be lost and the relays, if needed, could not be immediately reset.

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

The decision was made by the technician and supervisor to replace the relay with the circuit energized using 600 volt protective gloves and insulated tools. The relay is located at the bottom of the cabinet and was awkward to work on. The use of the gloves and the fact that the relay was in an awkward position contributed to the reduced dexterity that the technician was forced to work with. The technician insulated the screwdriver with electrical tape but the tip could not be insulated because the screw had to be fastened to the screwdriver. There was enough exposed metal with the screw and the screwdriver to allow for a conductive path between a terminal on the relay's coil and the relays mounting bracket.

There have been two other incidents where both trains on ND were inoperable at the same time due to personnel error at Catawba. These incidents are described in LERs 413/85-28 and 413/84-12.

Methods to prevent ND inoperability in the future are to be discussed among responsible personnel. Some of the possibilities are disabling the control circuit through the use of jumpers and/or sliding links or de-energizing the valves in the appropriate position through the use of Red Tags.

CORRECTIVE ACTION

- (1) The 1A ND Pump was secured.
- (2) The blown fuse in the SSPS cabinet was replaced.
- (3) Valves IND002A and IND037A were reopened.
- (4) ND Pump 1A was started.
- (5) This incident will be reviewed with appropriate personnel.
- (6) A method will be developed to assure that ND does not become inoperable under similar circumstances in the future.
- (7) The need for additional training to provide guidance in the use of insulated tools as related to equipment safety will be investigated.

SAFETY ANALYSIS

The ND System was not providing cooling for the NC System for approximately 15 minutes during this incident. NC Incore Thermocouple temperature rose 10 degrees F to a final temperature of 120 degrees F during this time. With the amount of decay heat present at the time of this incident, a 10 degree F rise is not abnormally high. Therefore, the 10 degree F rise provided no undesirable effects on the primary system or fuel assemblies.

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

This incident would not have occurred at power since a Train of SSPS may not be inoperable for more than 2 hours in Mode 1, Power Operations, through Mode 4, Hot Shutdown, and there would not have been enough time to perform the job. Additionally, the ND System would not be inservice in Modes 1, 2 (Startup), or 3 (Hot Standby).

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

DUKE POWER COMPANY  
P.O. BOX 33189  
CHARLOTTE, N.C. 28242

TELEPHONE  
(704) 373-4531

HAL B. TUCKER  
VICE PRESIDENT  
NUCLEAR PRODUCTION

September 29, 1986

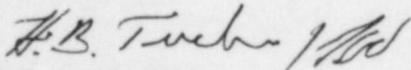
Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

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

Gentlemen:

Pursuant to 10 CFR 50.73 Section (a) (1) and (d), attached is Revision 1 to Licensee Event Report 413/86-44 concerning both trains of Residual Heat Removal being inoperable due to a personnel error. 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/44/slb

Attachment

xc: Dr. J. Nelson Grace, Regional Administrator  
U. S. Nuclear Regulatory Commission  
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Atlanta, Georgia 30323

American Nuclear Insurers  
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M&M Nuclear Consultants  
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NRC Resident Inspector  
Catawba Nuclear Station

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