

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) 1 OF 0 4
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TITLE (4)
Spurious Swaps of Nuclear Service Water From Lake to Standby Pond

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)																																									
0 5	1 1	8 5	8 5	0 3	1 0	0 6	1 1	8 5	Catawba, Unit 2		0 5 0 0 0 4 1 1 4																																									
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:15%;">OPERATING MODE (9) 5</td> <td colspan="11">THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)</td> </tr> <tr> <td rowspan="6">POWER LEVEL (10) 0 1 0 1 0</td> <td>20.402(b)</td> <td>20.406(e)</td> <td><input checked="" type="checkbox"/></td> <td>50.73(a)(2)(iv)</td> <td>73.71(b)</td> </tr> <tr> <td>20.406(a)(1)(i)</td> <td>50.36(c)(1)</td> <td></td> <td>50.73(a)(2)(v)</td> <td>73.71(c)</td> </tr> <tr> <td>20.406(a)(1)(ii)</td> <td>50.36(c)(2)</td> <td></td> <td>50.73(a)(2)(vii)</td> <td><input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 366A)</td> </tr> <tr> <td>20.406(a)(1)(iii)</td> <td>50.73(a)(2)(i)</td> <td></td> <td>50.73(a)(2)(viii)(A)</td> <td rowspan="3">50.72(b)(2)(ii)</td> </tr> <tr> <td>20.406(a)(1)(iv)</td> <td>50.73(a)(2)(ii)</td> <td></td> <td>50.73(a)(2)(viii)(B)</td> </tr> <tr> <td>20.406(a)(1)(v)</td> <td>50.73(a)(2)(iii)</td> <td></td> <td>50.73(a)(2)(x)</td> </tr> </table>												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 1 0	20.402(b)	20.406(e)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)	20.406(a)(1)(i)	50.36(c)(1)		50.73(a)(2)(v)	73.71(c)	20.406(a)(1)(ii)	50.36(c)(2)		50.73(a)(2)(vii)	<input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 366A)	20.406(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	50.72(b)(2)(ii)	20.406(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)	20.406(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)
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LICENSEE CONTACT FOR THIS LER (12)

NAME Roger W. Ouellette, Assistant Engineer - Licensing	TELEPHONE NUMBER 7 1 0 4 3 1 7 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 NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

On May 11, 1985, at 0710:56 hours and 1358:21 hours, and on May 15, 1985, at 1442:56 hours, the Nuclear Service Water System (RN) automatically swapped to the Standby Nuclear Service Water Pond (SNSWP) and all idle RN pumps started due to false low-low level signals in RN pumphouse pit B. Since the origin of the spurious signals that caused the RN auto swaps could not be determined, these incidents have been classified as Cause Unknown. At the time of the incidents, Unit 1 was in Mode 5 (Cold Shutdown), and Unit 2 was in the construction phase.

Recovery from each incident began when the RN pumps not needed to support plant operation were shutdown. Suction and discharge of the RN pumps were subsequently realigned to Lake Wylie.

These incidents are reportable pursuant to 10 CFR 50.73, Section (a)(2)(iv), and 10 CFR 50.72, Section (b)(2)(ii).

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

The Nuclear Service Water (RN) System is a raw water cooling system which serves as the ultimate heat sink for essential and non-essential primary loads, as assured source of suction for the Auxiliary Feedwater System, and as assured source of cooling for heat loads served by the Containment Chilled Water System. The RN Pumps normally take suction from Lake Wylie via the RN pumphouse pits and discharge back to the lake via the Low Pressure Service Water (RL) System. In the pumphouse, there are two separate suction pits from which the two independent and redundant trains of RN are supplied. Each train includes two RN pumps, with one pump being capable of supplying Unit 1 and Unit 2 with ample cooling during normal operation, and with one pump per unit required to supply ample cooling in emergency conditions.

When a low-low level signal is initiated in either pit A or B, the following functions will automatically occur:

- 1) All idle RN pumps start.
- 2) RN pump seal injection water crossover closes (to provide channel isolation).
- 3) The RN pumphouse intake pits are isolated from the Standby Nuclear Service Water Pond (SNSWP).
- 4) The normal RN discharge through the RL System is isolated and the RN System is aligned to discharge to the SNSWP.
- 5) RN supply headers A and B are isolated into two separate headers, and the RN non-essential discharge header is isolated.
- 6) RN discharge headers A and B are isolated into two separate headers, and the RN non-essential discharge header is isolated.
- 7) The diesel generator cooling water returns to the lake are closed, and the returns to the SNSWP are opened.

On May 11, 1985, at 0710:56 hours and 1358:21 hours, and on May 15, 1985, at 1442:56 hours, an RN emergency low pit B level signal was received which automatically started all idle RN pumps and aligned the suction and discharge of the RN System to the SNSWP. (During the third occurrence, the suction and discharge of the RN System was already aligned to the SNSWP.) Other automatic actions described previously also initiated. To recover from the incidents, all RN pumps not needed for plant operation were shutdown, and all valves affected by the swapper circuitry were returned to normal alignment.

The emergency low-low pit level signal originated from level transmitter 2RNLT 7370. This is known because control room personnel saw the Unit 2 pit B level indication peg low and then return to normal. A pit B emergency low level alarm also printed on the Unit 2 alarm typer. There are three known possibilities that could have caused 2RNLT 7370 to initiate an RN swapper from the lake to the SNSWP. These are 1) a power interruption to the level transmitter, 2) a transmitter malfunction, and 3) an actual emergency low pit B level.

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

A power interruption was not believed to have caused the swapover. On May 9, 1985 (LER 413/85-30) and May 12, 1985 (LER 413/85-32), a loss of power to panelboard 2ERPD made 1RNLT 7370 falsely sense a low-low pit B level. During these incidents, a 2ERPD low voltage alarm was received on the computer. However, this alarm was not received in the incidents described in this report. It was also suspected that power could have been interrupted to 1RNLT 7370 by cycling breaker 2ERPD-20, feeder to the swapover circuit, or from opening a sliding link in the control circuitry. However, upon the review of all shutdown requests and work requests in progress at the time of the incidents, this was determined not to be the case. During the incidents on May 11, 1985, the RN swapover circuitry was being supplied through panelboard 2ERPD from regulated distribution center 2VRD. During the incident on May 15, 1985, the RN swapover circuit was being supplied through 2ERPD from inverter 2EID, which has battery 2EBD as the power source. Therefore, a problem with 2VRD failing to regulate voltage properly has been ruled out as a common cause of the incidents since the third incident occurred even after the electrical alignment was changed.

The malfunction of transmitter 2RNLT 7370 was also not believed to have caused the swapover. The connections on 2RNLT 7370 loop were checked. All were tight and corrosion free. The levels indicated on 2RNLT 7370 and 1RNLT 7370 were within two percent of each other. Also, a recorder was placed on 2RNLT 7370 and left overnight. The next morning, no intermittent signals were found to exist from the review of the recording.

An actual low-low pit level was known not to have caused the swapover. When the swapover occurred, only Unit 2 alarms actuated. Unit 1 alarms never actuated. Also, only the Unit 2 pit B level gauge pegged low for a short time. The Unit 1 pit B level gauge continued to read normal level.

Since the causes of the incidents could not be determined, these incidents have been classified as Cause Unknown. To prevent spurious signals from Unit 2 pit B level transmitters from causing a swapover and a reportable violation on Unit 1, a temporary modification was installed to jumper the contact that actuates the swapover circuitry. This modification will be removed after completion of Unit 2 Hot Functional Test. Prior to issuance of an Operating License for Unit 2.

CORRECTIVE ACTION

- 1) RN pumps not needed to support plant operation were shutdown.
- 2) All valves affected by the swapover from the lake to the SNSWP were realigned.
- 3) 2RNLT 7370 was investigated per Work Request 16247 OPS in an attempt to determine why the three RN auto swaps occurred.
- 4) Temporary modification was installed to prevent 2RNLT 7370 from causing an RN swapover.

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

SAFETY ANALYSIS

Upon receipt of the RN pit B low-low level signal, all idle RN Pumps started, and automatic repositioning of valves occurred which allowed the RN pumps to take suction from and discharge to its assured source. The system functioned as designed in this capacity. However, since the low-low pit level signal was spurious, there was never an actual need for the extra cooling capacity supplied by the RN pumps that automatically started, or a need for the swap of the pumps suction to the SNSWP.

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

DUKE POWER COMPANY

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HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

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June 10, 1985

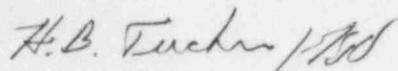
Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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

Gentlemen:

Pursuant to 10 CFR 50.73 Section (a) (1) and (d), attached is Licensee Event Report 413/85-31 concerning spurious swaps of Nuclear-Service Water from the Lake to the standby pond. 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:slb

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator
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NRC Resident Inspector
Catawba Nuclear Station

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