

## LICENSEE EVENT REPORT (LER)

|  |  |                      |
|--|--|----------------------|
| FACILITY NAME (1)<br>Catawba Nuclear Station, Unit 1 | DOCKET NUMBER (2)<br>0 5 0 0 0 4 1 1 3 1 | PAGE (3)<br>1 OF 0 4 |
|--|--|----------------------|

TITLE (4)

Nuclear Service Water ESF Actuation Due to Breaker Trip

| 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  | 0 9 | 8 5              | 8 5               | 0 3 0             | 0 0             | 0 6             | 0 7                                 | 8 5  | Catawba - Unit 2              | 0 5 0 0 0 4 1 1 4 |  |  |
| THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11) |     |                  |                   |                   |                 |                 |                                     |      |                               |                   |  |  |
| OPERATING MODE (9)<br>5<br><br>POWER LEVEL (10)<br>01010   |     |                  | 20.402(b)         |                   | 20.408(c)       |                 | <input checked="" type="checkbox"/> |      | 50.73(a)(2)(iv)               |                   | 73.71(b)   |  |
|  |     |                  | 20.408(a)(1)(i)   |                   | 50.36(c)(1)     |                 |                                     |      | 50.73(a)(2)(v)                |                   | 73.71(c)   |  |
|  |     |                  | 20.408(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) |  |
|  |     |                  | 20.408(a)(1)(iii) |                   | 50.73(a)(2)(i)  |                 |                                     |      | 50.73(a)(2)(viii)(A)          |                   | 50.72(b)(2)(ii)  |  |
|  |     |                  | 20.408(a)(1)(iv)  |                   | 50.73(a)(2)(ii) |                 |                                     |      | 50.73(a)(2)(viii)(B)          |                   |  |  |
| 20.408(a)(1)(v)  |     | 50.73(a)(2)(iii) |                   |                   |                 | 50.73(a)(2)(x)  |                                     |      |                               |                   |  |  |

LICENSEE CONTACT FOR THIS LER (12)

|  |   |
|--|---|
| NAME<br>Roger W. Ouellette, Assistant Engineer - Licensing | TELEPHONE NUMBER<br>710 14 317 131-17 15 1310 |
|--|---|

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPDs | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPDs |
|-------|--------|-----------|--------------|--------------------|-------|--------|-----------|--------------|--------------------|
|       |        |           |              |                    |       |        |           |              |                    |
|       |        |           |              |                    |       |        |           |              |                    |
|       |        |           |              |                    |       |        |           |              |                    |

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 9, 1985, at 1547:31 hours, the Nuclear Service Water System (RN) automatically aligned to the Standby Nuclear Service Water Pond (SNSWP) and all idle RN Pumps started due to a false Low-Low Level signal in RN Pumphouse Pit B. The false Low-Low Level was caused by a loss of voltage on one of the RN Swapover Circuits. A technician accidentally actuated relay AE52S which caused the trip of the tie breaker on 6900V Switchgear 2TC. Since the B Train feeder on 2TC was racked out, the B Train side of 2TC lost voltage. The RN Pit B Low-Low Level swapover circuitry was one load that was ultimately being fed from the B Train side of 2TC. At the time of the incident, Unit 1 was in Mode 5 (Cold Shutdown). Unit 2 is in the construction phase. Because of the accidental actuation of relay AE52S, this incident has been classified as a personnel error.

Recovery from the incident began immediately when the automatic swapping of a motor control center to its alternate power source restored normal voltage to the RN swapover circuitry. The RN Pumps not needed to support plant operation were subsequently shutdown and the RN suction and discharge were realigned to Lake Wylie.

This incident is reportable pursuant to 10 CFR 50.73, Section (a)(3)(iv) and 10 CFR 50.72, Section (b)(2)(ii).

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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)

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 lake and aligned to take suction 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 supply 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.

The Unit 1 (Unit 2) RN pit low-low level circuitry is fed from 120VAC Vital Instrument and Control Panelboards. These are 1(2)ERPA for RN Pit A low-low level and 1(2)ERPD for RN Pit B low-low level. The vital panel boards are normally supplied from their associated inverter. In the event there is a problem with an associated inverter, a panelboard may be supplied 120VAC power from regulated distribution center 1(2)VRD. Loadcenter 1(2)LXG supplies power to motor control center 1(2)MXM, which in turn supplies power to 1(2)VRD. In the event of a loss of voltage to 1(2)LXG, 1(2)MXM will automatically swap to its alternate power supply 1(2)LXB.

The feeder to 1(2)LXG is the B train portion of 6900V switchgear 1(2)TC. Switchgear 1(2)TC has three operating conditions; Auto, Manual A and Tie, and Manual B and Tie. In Auto, a protective or undervoltage relay actuation on an associated bus section will trip the incoming breaker and close the tie breaker. If an operator desires to return the 6900V switchgear to normal alignment, the appropriate manual operating sequence is performed. In "Manual A and Tie" the closing of the A train incoming breaker will automatically trip the tie breaker. In "Manual B and Tie", the closing of the B train incoming breaker will automatically trip the tie breaker.

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

DESCRIPTION OF INCIDENT

On February 5, 1985, at 1047 hours, 2TC switchgear was being returned to normal alignment after various work had been performed on the Unit 2 B train electrical systems. However, when a Nuclear Control Operator (NCO) placed the switchgear's selector switch in "Manual B and Tie" and closed 2TC incoming feeder from B Train (2TC-9), 2TC tie breaker (2TC-7) failed to trip. 2TC-9 was then immediately tripped by the NCO. A work request was written to investigate and repair the problem.

On April 7, 1984, at 0600 hours, a Nuclear Equipment Operator (NEO) on rounds noticed that inverter 2EID's low output voltage light was actuated. After obtaining clearance from the Shift Supervisor, the NEO swapped panelboard 2ERPD to feed from regulated distribution center 2VRD.

On May 9, 1985, a technician began to investigate and repair the problem with 2TC switchgear per the Work Request. This work request was not performed until this time because of the lower priority placed on Unit 2 work. The technician requested that breaker 2TC-9 be racked out so that work could begin. The 2TC selector switch was placed in "Manual A and Tie" so that breaker 2TC-9 could not be closed while the technician was working on the breaker. Breaker 2TC-9 was then racked out.

The technician found that the mechanical linkage that actuates relay AE52S when 2TC-9 is closed, was out of adjustment. Therefore, when 2TC-9 was closed, the linkage would not actuate relay AE52S. When the technician began adjusting the linkage, he inadvertently actuated relay AE52S at 1547:29 hours. When this happened, breaker 2TC-7 received a signal that 2TC-9 was closed, when in fact 2TC-9 was not closed. When the signal was received by 2TC-7, it immediately tripped, thereby de-energizing the B train side of 2TC. Loadcenter 2SLXC swapped to its alternate source. Also, the motor control centers fed from loadcenters 2LXE and 2LXG swapped to their alternate sources. However, before motor control center 2MXM swapped to its alternate source, all loads downstream of the motor control center sensed undervoltage (see Enclosure).

RN Pit B low-low level circuit, fed from 2ERPD, falsely sensed a low-low pit B level due to the undervoltage. This caused all idle RN Pumps to start, and the suction and discharge of the RN System to align to the SNSWP. All other valves affected by the swapover circuitry also realigned.

The technician was informed as to what happened shortly thereafter. Recovery from the incident began at 1606:40 hours when RN Pumps 1B, 2A and 2B were shutdown. From 1607:51 to 1610:03 hours, the RN valves affected by the swapover were manually realigned to Lake Wylie.

At 1722:35 hours, the technician completed the adjustment of the 2TC-9 relay AE52S mechanical linkage. 2TC-7 was then closed to re-energize the B Train side of 2TC. Between 1724:08 and 1724:26 hours, 2SLXC was returned to its normal source via hot bus transfer. At 1731:44 hours,

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

the NCO closed 2TC-9, and 2TC-7 automatically tripped as designed.

This incident has been classified as a Personnel Error, due to the technician accidentally actuating relay AE52S while adjusting the mechanical linkage. It must be noted, however, that this incident would not have occurred had 2ERPD been fed from its normal source. Since the adjustment of the mechanical linkage for relay AE52S on any breaker is not a routine occurrence, and because the electrical alignment was in an abnormal status, this is an isolated case.

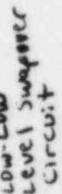
#### CORRECTIVE ACTION

- 1) Motor control center 2MXM swapped automatically to 2LXB to restore power to the RN Pit B low-low level circuitry.
- 2) RN Pumps not needed to support plant operation were shutdown.
- 3) All valves affected by the swapover from the lake to the SNSWP were realigned.
- 4) 6900V switchgear 2TC was returned to normal alignment.
- 5) 2SLXC and motor control centers fed from 2LXE and 2LXG were returned to normal alignment.

#### 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 the swap of the pumps suction to the SNSWP.

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





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June 7, 1985

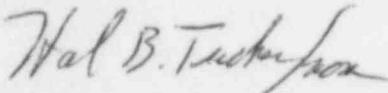
Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

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 413/85-30 concerning a swapper of nuclear service water to the standby pond due to a breaker trip. 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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