

Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

William R. Lagergren, Jr.  
Site Vice President, Watts Bar Nuclear Plant

DEC 22 2003

10 CFR 50.73

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

Gentlemen:

In the Matter of )  
Tennessee Valley Authority )

Docket No. 50-390

WATTS BAR NUCLEAR PLANT (WBN) - UNIT 1 - FACILITY OPERATING  
LICENSE NPF-90 - LICENSEE EVENT REPORT (LER) 50-390/2003-006

This submittal provides Licensee Event Report 390/2003-006. This LER addresses an event that occurred on October 21, 2003, and resulted from a failure to properly restore the power supply to Containment Spray Pump 1B-B. This event is being reported under 10 CFR 50.73(a)(2)(i)(B).

There are no regulatory commitments associated with this letter. Should there be questions regarding this submittal, please contact Paul L. Pace at (423) 365-1824.

Sincerely,

  
W. R. Lagergren

Enclosure:  
LER 390/2003-006

cc: See page 2

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cc (Enclosure):

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|   |                                     |                          |
|---|-------------------------------------|--------------------------|
| <b>1. FACILITY NAME</b><br>Watts Bar Nuclear Plant - Unit 1 | <b>2. DOCKET NUMBER</b><br>05000390 | <b>3. PAGE</b><br>1 OF 6 |
|---|-------------------------------------|--------------------------|

**4. TITLE**  
Containment Spray Pump Inoperable due to Open Breaker

| 5. EVENT DATE |     |      | 6. LER NUMBER |                   |        | 7. REPORT DATE |     |      | 8. OTHER FACILITIES INVOLVED |               |
|---------------|-----|------|---------------|-------------------|--------|----------------|-----|------|------------------------------|---------------|
| MO            | DAY | YEAR | YEAR          | SEQUENTIAL NUMBER | REV NO | MO             | DAY | YEAR | FACILITY NAME                | DOCKET NUMBER |
| 10            | 21  | 03   | 2003          | -- 006 --         | 00     | 12             | 22  | 03   | FACILITY NAME                | DOCKET NUMBER |
|               |     |      |               |                   |        |                |     |      |                              | 05000         |
|               |     |      |               |                   |        |                |     |      |                              | 05000         |

|                          |     |  |                    |  |                    |                      |  |                    |                  |  |
|--------------------------|-----|--|--------------------|--|--------------------|----------------------|--|--------------------|------------------|--|
| <b>9. OPERATING MODE</b> | 1   | <b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b> |                    |  |                    |                      |  |                    |                  |  |
| <b>10. POWER LEVEL</b>   | 36% | 20.2201(b)   |                    |  | 20.2203(a)(3)(ii)  |                      |  | 50.73(a)(2)(ii)(B) |                  | 50.73(a)(2)(ix)(A)                                     |
|                          |     | 20.2201(d)   |                    |  | 20.2203(a)(4)      |                      |  | 50.73(a)(2)(iii)   |                  | 50.73(a)(2)(x)   |
|                          |     | 20.2203(a)(1)  |                    |  | 50.36(c)(1)(i)(A)  |                      |  | 50.73(a)(2)(iv)(A) |                  | 73.71(a)(4)  |
|                          |     | 20.2203(a)(2)(i)   |                    |  | 50.36(c)(1)(ii)(A) |                      |  | 50.73(a)(2)(v)(A)  |                  | 73.71(a)(5)  |
|                          |     | 20.2203(a)(2)(ii)  |                    |  | 50.36(c)(2)        |                      |  | 50.73(a)(2)(v)(B)  |                  | OTHER<br>Specify in Abstract below or in NRC Form 366A |
|                          |     | 20.2203(a)(2)(iii)   |                    |  | 50.46(a)(3)(ii)    |                      |  | 50.73(a)(2)(v)(C)  |                  |  |
|                          |     | 20.2203(a)(2)(iv)  |                    |  | 50.73(a)(2)(i)(A)  |                      |  | 50.73(a)(2)(v)(D)  |                  |  |
|                          |     | 20.2203(a)(2)(v)   |                    |  | X                  | 50.73(a)(2)(i)(B)    |  |                    | 50.73(a)(2)(vii) |  |
| 20.2203(a)(2)(vi)        |     |  | 50.73(a)(2)(i)(C)  |  |                    | 50.73(a)(2)(viii)(A) |  |                    |                  |  |
| 20.2203(a)(3)(i)         |     |  | 50.73(a)(2)(ii)(A) |  |                    | 50.73(a)(2)(viii)(B) |  |                    |                  |  |

**12. LICENSEE CONTACT FOR THIS LER**

|   |   |
|---|---|
| <b>NAME</b><br>Jerry Bushnell, Licensing Engineer | <b>TELEPHONE NUMBER (Include Area Code)</b><br>(423)-365-8048 |
|---|---|

**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

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

|   |  |  |  |   |                                     |  |       |     |      |
|---|--|--|--|---|-------------------------------------|--|-------|-----|------|
| <b>14. SUPPLEMENTAL REPORT EXPECTED</b>         |  |  |  |   | <b>15. EXPECTED SUBMISSION DATE</b> |  |       |     |      |
| YES (If yes, complete EXPECTED SUBMISSION DATE) |  |  |  | X | NO                                  |  | MONTH | DAY | YEAR |
|   |  |  |  |   |                                     |  |       |     |      |

**16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)**

On October 21, 2003, WBN Unit 1 was returning to service after completion of the Cycle 5 refueling outage. The unit was in Mode 1 at approximately 36% reactor power, when it was established that 6.9KV Shutdown Board breaker, 1-BKR-72-10, was not connected and was not capable of supplying power to the Containment Spray System (CSS) Pump 1B-B. In accordance with LCO 3.6.6, "CSS," Pump 1B-B is required to be operable in Mode 4. The restoration of the breaker should have been performed in accordance with Section 5.2.8 of General Operating (GO) Instruction 1, "Unit Startup from Cold Shutdown to Hot Standby," and verified in accordance with Step 6 of Appendix B, "Mode 5-to-Mode 4 Review and Approval," of GO-1. Due to the CSS pump not being operable as the unit transitioned from Mode 5 to Mode 1, the mode change restrictions of LCO 3.0.4 were not met. The total time CSS Pump 1B-B was inoperable was approximately 113.6 hours. Considering this, Action A of LCO 3.6.6, "CSS," requires that an inoperable CSS train be restored within 72 hours. When this action is not met, Action C.1 requires that the Unit be in Mode 3 in 6 hours. Neither of these actions were met. The failure to comply with the requirements of LCO 3.0.4 and LCO 3.6.6 is being reported as a violation of the Technical Specifications in accordance with 10 CFR 50.73 (a)(2)(i)(B).

**LICENSEE EVENT REPORT (LER)**

|                                 |           |               |                   |                 |         |
|---------------------------------|-----------|---------------|-------------------|-----------------|---------|
| 1. FACILITY NAME                | 2. DOCKET | 6. LER NUMBER |                   |                 | 3. PAGE |
| Watts Bar Nuclear Plant, Unit 1 | 05000390  | YEAR          | SEQUENTIAL NUMBER | REVISION NUMBER | 2 OF 6  |
|                                 |           | 2003          | --- 006           | ---- 00         |         |

17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

I. PLANT CONDITIONS:

Watts Bar Nuclear Plant Unit 1 was in Mode 1 at approximately 36% reactor power and was returning to service following the completion of the Cycle 5 refueling outage.

II. DESCRIPTION OF EVENT

A. Event

In preparation for the WBN Unit 1 Cycle 5 refueling outage, 6.9KV Shutdown Board breaker, 1-BKR-72-10 (EIS Code BKR), for Containment Spray System (CSS) Pump (EIS Codes BE/P) 1B-B was disconnected in accordance with Step 3 of Appendix C, "Mode 4-to-Mode 5 Activities," of General Operating (GO) Instruction 6, "Unit Shutdown from Hot Standby to Cold Shutdown." On October 21, 2003, WBN Unit 1 was returning to service after completion of the outage and the unit was in Mode 1 at approximately 36% reactor power, when it was established that 1-BKR-72-10 was not connected and was not available to supply power to CSS Pump 1B-B. In accordance with LCO 3.6.6, "CSS," Pump 1B-B is required to be operable in Mode 4. The restoration of the breaker should have been performed in accordance with Section 5.2.8 of General Operating (GO) Instruction 1, "Unit Startup from Cold Shutdown to Hot Standby," and verified in accordance with Step 6 of Appendix B, "Mode 5-to-Mode 4 Review and Approval," of GO-1. Due to the CSS pump not being operable as the unit transitioned from Mode 5 to 1, the mode change restrictions of LCO 3.0.4 were not met. The total time CSS Pump 1B-B was inoperable was approximately 113.6 hours. Considering this, Action A of LCO 3.6.6, "CSS," requires that an inoperable CSS train be restored within 72 hours. When this action is not met, Action C.1 requires that the Unit be in Mode 3 in 6 hours. Neither of these actions were met. The failure to comply with the requirements of LCO 3.0.4 and LCO 3.6.6 is being reported as a violation of the Technical Specifications in accordance with 10 CFR 50.73 (a)(2)(i)(B).

Problem Evaluation Report (PER) 03-018343-000 was initiated to document this event in the TVA Corrective Action Program.

B. Inoperable Structures, Components, or Systems that Contributed to the Event

Except for the breaker (1-BKR-72-10) feeding CSS Pump 1B-B, there were no structures, components or systems inoperable at the start of the event that contributed to the event.

C. Dates and Approximate Times of Major Occurrences

| Date & Time              | Occurrences  |
|--------------------------|--|
| October 16, 2003 - 16:01 | The clearance for the CSS was released. The system should have been placed in "Standby Readiness," with the breaker connected in accordance with the System Operating Instruction. |
| October 16, 2003 - 23:48 | Entered Mode 4.  |
| October 17, 2003 - 18:50 | Entered Mode 3.  |
| October 19, 2003 - 23:18 | Entered Mode 2   |

LICENSEE EVENT REPORT (LER)

|                                 |           |               |                   |                 |         |
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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

II. DESCRIPTION OF EVENT (continued)

C. Dates and Approximate Times of Major Occurrences (continued)

| Date & Time              | Occurrences   |
|--------------------------|---|
| October 20, 2003 - 13:30 | Entered Mode 1  |
| October 21, 2003 - 09:20 | LCO 3.6.6 is entered when Operations finds that the breaker feeding CSS Pump 1B-B is not connected. |
| October 21, 2003 - 09:35 | CSS Pump 1B-B is declared operable and LCO 3.6.6 is exited.   |

D. Other Systems or Secondary Functions Affected

No other systems or secondary functions were affected by this event.

E. Method of Discovery

The disconnected breaker was identified by System Engineering personnel monitoring the Bypassed and Inoperable System Indication (BISI) function of the Integrate Computer System (ICS).

F. Operator Actions

Once it was identified that CSS Pump 1B-B was inoperable, the Operations staff acted appropriately and entered Action A of LCO 3.6.6 for one train of the CSS being inoperable. Subsequent to this, action was taken to connect breaker 1-BKR-72-10 and return CSS Pump 1B-B to service. The alignment of both trains of the CSS was verified to establish that the system was in "standby readiness." Once these actions were completed, LCO 3.6.6 was exited.

G. Safety System Responses

There were no automatic or manual safety system responses and none were necessary.

III. CAUSE OF EVENT

A. Human Performance Cause and Circumstances - 10 CFR 50.73(b)(2)(ii)(J):

Revision 28 of GO-1 was issued on June 7, 2002. This revision allowed the use of a Caution Order (CO) instead of a Hold Order (HO) when the CSS was made inoperable and removed from service. This portion of the GO had not been used until the Cycle 5 refueling outage and during the outage; the CSS was placed in service several times for various outage activities. The CO was used to reduce administrative burden associated with the temporary lift of hold orders. The CO did not require the removal of the control power fuses from the circuit.

LER 390/2003-06 resulted from the following two principal errors. The individuals involved in these activities are licensed operators:

1. The inappropriate approval of Step 5.2.8 of GO-1. This step was intended to ensure the CO had been removed and the CSS was in "standby readiness" in accordance with System Operating Instruction (SOI) 72.01, "Containment Spray System."

LICENSEE EVENT REPORT (LER)

|                                 |           |               |                   |                 |         |
|---------------------------------|-----------|---------------|-------------------|-----------------|---------|
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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

III. CAUSE OF EVENT (continued)

- The inadequate verification that the CO had been removed. This verification is required by Step 6 of Appendix B, "Mode 5-to-Mode 4 Review and Approval," of GO-1.

TVA's assessment of the first error found that the individual who approved Step 5.2.8 assumed the CSS was operable because he was aware it had been used during outage evolutions. For the second error, the assessment found that verification was performed by a walkdown of the Main Control Boards to verify the CO had been removed. In addition a clearance report was reviewed to establish that required approvals had been made.

The following factors contributed to this issue:

- The Main Control Room (MCR) handswitch indicating lights were illuminated because the control power fuses were not removed. Thus the Operator could not use the lights as a means to determine that the breaker was disconnected.
- The Integrated Computer System (ICS) Bypassed and Inoperable Status Indication (BISI) system was used to determine that the breaker was disconnected. This system is available to the Operations staff on the ICS. However, there was no requirement for it to be used to verify the configuration of a system.
- SOI-72.01 requires that the proper liquid level in the header be verified. However, the instruction only addressed placing the pump in service if the line was required to be filled.

Considering the above, the root cause of this event was determined to be:

An erroneous assumption that the Containment Spray system was configured normal due to the presence of control power lights on the MCR handswitch, use of the system during the outage for various activities, and the verification of the standby alignment via the removal of the CO.

IV. ASSESSMENT OF SAFETY CONSEQUENCES

The breakers feeding the two trains of the Containment Spray System (CSS) pumps were disconnected in preparation for the Unit 1 Cycle 5 refueling outage. This action was performed in accordance with Step 3 of Appendix C, "Mode 4-to-Mode 5 Activities," of General Operating (GO) Instruction 6, "Unit Shutdown from Hot Standby to Cold Shutdown." However, during the startup process after the outage and subsequent re-entry into Mode 4, the breaker for CSS Pump 1B-B was not reconnected. The restoration of the breaker should have been performed in accordance with Section 5.2.8 of General Operating (GO) Instruction 1, "Unit Startup from Cold Shutdown to Hot Standby," and verified in accordance with Step 6 of Appendix B, "Mode 5-to-Mode 4 Review and Approval," of GO-1.

Two CSS trains are required to be operable in Modes 1, 2, 3, and 4. However, only one train is required to operate following a design basis event for the CSS to perform its design basis accident mitigation function. The Operation's Logs were reviewed to assure that the opposite train, CSS Pump 1A-A, was available for accident mitigation during the time period when the breaker for the 1B-B pump was disconnected. This review also included Train A of the Emergency Raw Cooling Water (ERCW - EIS Code BI) system and Train A of the Emergency Diesel Generators (EDGs - EIS EK), as these systems would be required to support operation of CSS Pump 1A-A. The review of the log was performed to determine if the following Technical Specification (TS) Limiting Conditions for Operations (LCOs) were entered during the time period between Mode 4 re-entry on October 16, 2003, at 23:48 and October 21, 2003, at 09:35 when CSS Pump 1B-B was returned to operable status:

**LICENSEE EVENT REPORT (LER)**

|                                 |           |               |                   |                 |         |      |
|---------------------------------|-----------|---------------|-------------------|-----------------|---------|------|
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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

IV. ASSESSMENT OF SAFETY CONSEQUENCES (continued)

LCO 3.6.6, "CSS," for Train A of the CSS.

LCO 3.7.8, "ERCW," for Train A of the ERCW.

LCO 3.8.1, "AC Sources - Operating," for Train A of the EDGs.

The review determined that there were no entries into the three LCOs and based on this, it was concluded that Train A of the CSS was operable and available for the system to perform its design basis accident mitigation function. Therefore, the safety consequences of this event were not significant.

V. CORRECTIVE ACTIONS

A. Immediate Corrective Actions

1. Breaker, 1-BKR-72-10, was reconnected to return CSS Pump 1B-B to service.
2. The alignment of both trains of the CSS was verified in accordance with Section 5.0, "Standby Readiness," of System Operating Instruction (SOI) 72.01, "Containment Spray System."

B. Corrective Actions to Prevent Recurrence - (TVA does not consider these items to constitute regulatory commitments. TVA's corrective action program tracks completion of these actions.)

1. The Operator involved in the event was counseled for not verifying assumptions.
2. The event was covered with all Operations' crews stressing the need to verify configuration versus assuming that it is in the correct configuration.
3. The Unit Supervisor involved in the event was counseled to ensure computer generated alarms are responded to as appropriate.
4. The Operations staff will receive additional training on the use of the ICS BISI computer function and its practical uses.
5. Operations has revised the general operating procedure to strengthen the requirements to verify the CSS is configured correctly following release of a Caution Order.

VI. ADDITIONAL INFORMATION

A. Failed Components

There were no failed components involved in this LER.

LICENSEE EVENT REPORT (LER)

|                                 |           |               |                   |                 |         |
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17. (If more space is required, use additional copies of NRC Form 366A)

B. Previous LERs on Similar Events

The following is a listing of the LERs which have been initiated for Watts Bar due to violations of the Technical Specifications:

|    | LER Number  | Cause of Event  |
|----|-------------|---|
| 1. | 390/1996-02 | The instruments relied on by the operators to verify Surveillance Requirement 3.5.1.2 were inaccurate.  |
| 2. | 390/1996-24 | The detail contained in the Maintenance configuration log of a Work Order was inadequate to ensure the component was restored to the proper configuration.  |
| 3. | 390/1997-16 | This LER documented a situation where the handswitches for both fuel oil transfer pumps for the 2B-B Emergency Diesel Generator were mispositioned. After a thorough review the specific cause of the mispositioned switches could not be determined. |
| 4. | 390/2000-02 | This LER resulted from a change in the scope of a Problem Evaluation Report which was implemented without appropriate reviews and approvals.  |

As indicated in Section III, "Cause of Event," LER 390/2003-06 resulted from an erroneous assumption that the CSS was operable prior to the planned mode changes. Based on the above comparison of the causes of previous events, the recurrence controls established for the listed LERs would not have prevented the Technical Specification violation documented by LER 390/2003-06.

C. Additional Information:

None.

D. Safety System Functional Failure

This event did not involve a safety system functional failure as defined in NEI-99-02, Revision 0.

E. Loss of Normal Heat Removal Consideration

This event is not considered a scram with loss of normal heat removal.

VII. COMMITMENTS

None