April 23, 2004

U.S. Nuclear Regulatory Commission 10 CFR 50.73
ATTN: Document Control Desk
Mail Stop OWFN, P1-35
Washington, D. C. 20555-0001

Dear Sir:

**TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT (BFN) - UNIT 3 - DOCKET 50-296 - FACILITY OPERATING LICENSE DPR - 68 - LICENSEE EVENT REPORT (LER) 50-296/2004-001-00**

The enclosed report provides details of a failure to meet the requirements of a Technical Specifications Limiting Condition for Operation due to inoperability of Diesel Generator 3D.

In accordance with 10 CFR 50.73(a)(2)(i)(B), TVA is reporting this event as any operation or condition prohibited by the plant's Technical Specifications. There are no commitments contained in this letter.

Sincerely,

Original signed by

Ashok S. Bhatnagar

cc: See page 2

Enclosure
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| NRC FORM 366 (7-2001) | U.S. NUCLEAR REGULATORY COMMISSION | APPROVED BY OMB NO. 3150-0104 | EXPIRES 7-31-2004 |
|---|---|---|---|

# LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)



| 1. FACILITY NAME | 2. DOCKET NUMBER | 3. PAGE |
|---|---|---|
| Browns Ferry Nuclear Plant Unit 3 | 05000296 | 1 OF 5 |

**4. TITLE**
Inoperability of Diesel Generator 3D Beyond TS Allowable Outage Time

| 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 |
| | | | | | | | | | BFN Unit 1 | 05000259 |
| 02 | 16 | 2004 | 2004 | - 001 - | 00 | 04 | 23 | 2004 | FACILITY NAME BFN Unit 2 | DOCKET NUMBER 05000260 |

| 9. OPERATING MODE | 1 |
|---|---|
| 10. POWER LEVEL | 88 |

**11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:** (Check all that apply)

| | | | | | |
|---|---|---|---|---|---|
| | 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 |
| | 20.2203(a)(2)(iii) | | 50.46(a)(3)(ii) | | 50.73(a)(2)(v)(C) | | specify in Abstract below or in |
| | 20.2203(a)(2)(iv) | | 50.73(a)(2)(i)(A) | | 50.73(a)(2)(v)(D) | | NRC Form 366A |
| | 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**

| NAME | TELEPHONE NUMBER (Include Area Code) |
|---|---|
| Paul S. Heck, Nuclear Engineer, Licensing and Industry Affairs | 256-729-3624 |

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

| CAUSE | SYSTEM | COMPONENT | MANU-FACTURER | REPORTABLE TO EPIX | | CAUSE | SYSTEM | COMPONENT | MANU-FACTURER | REPORTABLE TO EPIX |
|---|---|---|---|---|---|---|---|---|---|---|
| B | EB | 57 | S125 | Y | | | | | | |

| 14. SUPPLEMENTAL REPORT EXPECTED | | | 15. EXPECTED SUBMISSION DATE | MONTH | DAY | YEAR |
|---|---|---|---|---|---|---|
| | YES (if yes, complete EXPECTED SUBMISSION DATE) | X NO | | | | |

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

On February 2, 2004, Diesel Generator (DG) 3D was declared inoperable and taken out of service for planned maintenance. On February 9, 2004, following successful completion of post-maintenance testing, the DG was returned to service and declared operable. On February 25, 2004, during performance of surveillance testing, the common accident portion of the DG output breaker control circuitry was found to be incapable of accomplishing its design function of tripping the breaker. Investigation determined that the problem with this circuit had been created during reinstallation of the breaker into its shutdown board compartment on February 9, 2004; therefore, the DG had been inoperable dating back to February 2, 2004. This period of approximately 23 days exceeded the 14 days out-of service time allowed by the Technical Specifications (TS). In summary, a violation of the TS requirements commenced on February 16, 2004, when the allowable 14 day interval elapsed, and this condition was discovered on February 25, 2004.

The breaker was found misaligned in its compartment due to interference by a grounding device. The grounding devices will be inspected and those showing damage will be replaced with a more rugged design.

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

## I. PLANT CONDITION(S)

At the time of the event, Unit 3 was operating at approximately 88 percent reactor power (approximately 3050 megawatts thermal) in the end-of-cycle coast down period preceding its spring 2004 refueling outage. Unit 2 was in Mode 1 at 100 percent reactor power (approximately 3458 megawatts thermal), and it was not affected by this event. Unit 1 was shutdown and defueled, and it also was not affected by this event.

## II. DESCRIPTION OF EVENT

### A. Event:

On February 2, 2004, Diesel Generator (DG)[EK] 3D was declared inoperable and taken out of service for planned maintenance at 1713 hours CST. On February 9, 2004, following successful completion of post-maintenance testing, the DG was returned to service and declared operable at 1500 hours CST. On February 25, 2004, during performance of surveillance 3-SR-3.8.1.9(3D OL), "Diesel Generator 3D Emergency Load Acceptance Test With Unit 3 Operating", the common accident portion of the DG output breaker control circuitry was found to be incapable of accomplishing its design function of tripping the breaker. Investigation determined that the problem with this circuit had been created during reinstallation of the breaker into its shutdown board [EB] compartment on February 9, 2004; therefore, the DG had been inoperable dating back to February 2, 2004. This period of approximately 23 days exceeded the 14 days out-of service (OOS) time allowed by the Technical Specifications (TS). In summary, a violation of the TS requirements commenced at 1713 hours CST on February 16, 2004, when the allowable 14 day interval elapsed, and this condition was discovered on February 25, 2004.

In accordance with 10 CFR 50.73(a)(2)(i)(B), TVA is reporting this event as any operation or condition prohibited by the plant's Technical Specifications

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

None

### C. Dates and Approximate Times of Major Occurrences:

| | | |
|---|---|---|
| February 2, 2004 | 1713 hours | DG 3D declared inoperable and removed from service for performance of planned preventive maintenance activities |
| February 9, 2004 | 1500 hours | DG 3D declared operable and returned to service following completion of the preventive maintenance work and the associated post-maintenance testing |
| February 16, 2004 | 1713 hours | 14 day allowable outage time dating back to February 2, 2004 elapsed for DG 3D |
| February 25, 2004 | 1350 hours | Problem with DG 3D output breaker 1836 control circuitry identified during performance of surveillance testing activities |

**D. Other Systems or Secondary Functions Affected**

None

**E. Method of Discovery**

The operational problem with DG 3D output breaker 1836 was discovered on February 25, 2004, during performance of surveillance procedure 3-SR-3.8.1.9(3D OL) when the breaker did not respond as required by the test. Subsequent troubleshooting of the breaker and its control circuitry determined that a misalignment between breaker 1836 and its compartment on 4 kV Shutdown Board 3ED had caused the malfunction. This misalignment had occurred on February 9, 2004, when the breaker was reinstalled into the board compartment following completion of a planned maintenance outage on DG 3D. Therefore a latent problem had existed between the discovery time of 1350 hours on February 25, 2004 and the time at which DG 3D had been declared operable following maintenance at 1500 hours on February 9, 2004. It was then recognized that the actual period of DG 3D inoperability had extended beyond the 14 day interval allowed by the TS.

**F. Operator Actions**

At the time of the discovery, DG 3D was out of service and in a TS inoperable condition for the performance of surveillance testing. The circuit breaker operation problem, as identified by the surveillance testing, did not result in any plant equipment actuation, and no specific operator response was required beyond administrative actions taken to address the DG inoperability issue. The administrative operator actions taken were appropriate.

**G. Safety System Responses**

As stated in Section E. above, the problem with the DG 3D output breaker was discovered during the performance of surveillance testing. No equipment actuation occurred as a result of the breaker problem itself. The event being reported by this LER, the violation of TS requirements regarding DG allowed outage time, did not require the operation of any BFN safety system.

## III. CAUSE OF THE EVENT

**A. Immediate Cause**

The immediate cause of this event was the discovery of the inoperability of DG 3D beyond the 14 day interval allowed by the TS.

**B. Root Cause**

The breaker grounding device became damaged when the breaker was installed in its compartment after completion of the DG maintenance. This resulted in the breaker becoming misaligned in its compartment. This misalignment caused an incomplete actuation of a set of contacts on a stationary switch which degraded them and resulted in their failure. This contact problem then caused the circuit malfunction.

**C. Contributing Factors**

None

## IV. ANALYSIS OF THE EVENT

Following the failure of breaker 1836 to open in response to the common accident logic trip signal initiation during the surveillance performance, the breaker was removed from the board to allow for inspection of both the breaker and its compartment. Maintenance personnel [utility – non-licensed] identified that the breaker grounding device was damaged in such a way that it interfered with the breaker's proper alignment inside the compartment. The breaker grounding apparatus was found curled upward in a way that would force the right rear section of the breaker upwards as it was inserted into the compartment. Because the breaker stationary switch actuation arm is on the left (opposite) side of the breaker, as the right side of the breaker was raised in a tilting manner, the arm would be lowered to some extent. The lowering of the actuating arm could and most probably did result in the failure of the stationary switch's normally open (NO) contacts to adequately transfer to their closed state when the breaker was closed. The relatively small physical displacement necessary to affect the stationary switch operation (1/8 inch or less) would not be apparent to an observer.

The failure of the 4-4C set of NO contacts to adequately close led to their degradation and ultimate failure when the associated common accident signal logic circuitry was energized via the surveillance test performance.

## V. ASSESSMENT OF SAFETY CONSEQUENCES

The safety consequences of this event were not significant. All aspects of DG 3D operation remained fully functional with the exception of the breaker trip/load resequencing which occurs following the initiation of an accident signal from Unit 2. The probability of such an event sequence is very small, because it would require an accident event on Unit 3, accompanied by a loss of offsite power necessitating DG operation, concurrent with a spurious accident signal generated on Unit 2, and; therefore, the probability of the loss of DG 3D through overloading as a result of this circuit's malfunctioning is very small. In any case, the function of DG 3D and its supplied loads are also accomplished through the operation of redundant DGs 3A, 3B, and 3C and their supplied loads; therefore, no safety function was lost.

## VI. CORRECTIVE ACTIONS

**A. Immediate Corrective Actions**

The damaged breaker grounding device was replaced. The affected stationary switch assembly was replaced, the stationary switch actuating arm was adjusted, the breaker was properly reinstalled into its compartment, and post-maintenance testing necessary to demonstrate correct circuit response was successfully completed. The circuit and the associated DG 3D were declared operable at 2100 hours on 2/25/04; thus, ending the out-of-service interval which had exceeded the allowable length of 14 days.

**B. Corrective Actions to Prevent Recurrence**[1]

Implement actions to inspect ground devices when the breakers are racked out of their compartments and to replace those showing signs of damage with an improved device.

[1] TVA does not consider this corrective action a regulatory commitment. The completion of this action will be tracked in TVA's Corrective Action Program.

## VII. ADDITIONAL INFORMATION

### A. Failed Components

DG 3D output breaker 1836 ground contact device (Wyle/Siemens part 18-760-065-001)

### B. Previous LERs on Similar Events

None

### C. Additional Information

None

### D. Safety System Functional Failure Consideration:

All aspects of DG 3D operation remained fully functional with the exception of the breaker trip/load resequencing which occurs following the initiation of an accident signal from Unit 2. The probability of an accident event on Unit 3, accompanied by a loss of offsite power necessitating DG operation, concurrent with a real or spurious accident on Unit 2 is very small; therefore, the probability of the loss of DG 3D through overloading as a result of this circuit's malfunctioning is very small. In any case, the function of DG 3D and its supplied loads are also accomplished through the operation of redundant DGs 3A, 3B, and 3C and their supplied loads; therefore, no safety function was lost. This condition does not constitute a safety system functional failure as referenced in 10 CFR 50.73(a)(2)(v), and it will not be included in Performance Indicator reporting performed in accordance with NEI 99-02.

### E. Loss of Normal Heat Removal Consideration:

N/A This event did not involve a reactor scram.

## VIII. COMMITMENTS

None