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ULNRC-05996

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

10 CFR 50.73(a)(2)(i)(B)

Ladies and Gentlemen:

**DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
UNION ELECTRIC CO.
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 2013-004-00
VIOLATION OF TS 3.7.10 DUE TO
CONTROL BUILDING ENVELOPE (CBE) BOUNDARY DOOR OPEN
DURING MOVEMENT OF IRRADIATED FUEL ASSEMBLIES**

The enclosed licensee event report is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B) to report a condition prohibited by Technical Specification 3.7.10 due to an inoperable Control Building Envelope (CBE) boundary during the movement of irradiated fuel assemblies.

This letter does not contain new commitments.

Sincerely,

A handwritten signature in black ink, appearing to read "Fadi M. Diya", written over a light gray circular stamp.

Fadi M Diya
Vice President Nuclear Operations

Enclosure

cc: Mr. Arthur T. Howell
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
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Arlington, TX 76011-4511

Senior Resident Inspector
Callaway Resident Office
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Index and send hardcopy to QA File A160.0761

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LICENSEE EVENT REPORT (LER)

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Callaway Plant Unit 1

2. DOCKET NUMBER

05000483

3. PAGE

1 OF 5

4. TITLE

Control Building Envelope (CBE) Boundary Door Open During Movement Of Irradiated Fuel Assemblies

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
04	18	2013	2013	- 004	- 00	06	17	2013	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

6

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

0%

- | | | | |
|---|---|---|---|
| <input type="checkbox"/> 20.2201(b) | <input type="checkbox"/> 20.2203(a)(3)(i) | <input type="checkbox"/> 50.73(a)(2)(i)(C) | <input type="checkbox"/> 50.73(a)(2)(vii) |
| <input type="checkbox"/> 20.2201(d) | <input type="checkbox"/> 20.2203(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) |
| <input type="checkbox"/> 20.2203(a)(1) | <input type="checkbox"/> 20.2203(a)(4) | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) |
| <input type="checkbox"/> 20.2203(a)(2)(i) | <input type="checkbox"/> 50.36(c)(1)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(ix)(A) |
| <input type="checkbox"/> 20.2203(a)(2)(ii) | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x) |
| <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2) | <input type="checkbox"/> 50.73(a)(2)(v)(A) | <input type="checkbox"/> 73.71(a)(4) |
| <input type="checkbox"/> 20.2203(a)(2)(iv) | <input type="checkbox"/> 50.46(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(v)(B) | <input type="checkbox"/> 73.71(a)(5) |
| <input type="checkbox"/> 20.2203(a)(2)(v) | <input type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> OTHER |
| <input type="checkbox"/> 20.2203(a)(2)(vi) | <input checked="" type="checkbox"/> 50.73(a)(2)(i)(B) | <input type="checkbox"/> 50.73(a)(2)(v)(D) | Specify in Abstract below or in NRC Form 366A |

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

T.B. Elwood, Supervising Engineer, Regulatory Affairs and Licensing

TELEPHONE NUMBER (Include Area Code)

314-225-1905

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

14. SUPPLEMENTAL REPORT EXPECTED☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO**15. EXPECTED SUBMISSION DATE**

MONTH DAY YEAR

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

On 04/18/2013, a small fire occurred at the Unit Auxiliary Transformer which caused a loss of all non-vital power to the plant during core offload. At this point in the core offload, a fuel assembly was suspended in the spent fuel pool due to a torn grid strap. The assembly was considered to be in movement since the assembly was not in a "safe" or approved storage location. As a result of the loss of power, it was desired to restore temporary power to the 'B' train battery chargers to prevent loss (discharge) of the NK02 and/or NK04 batteries. Temporary power cables were routed through three doors in the Control Building, one of which was a Control Building Envelope (CBE) pressure boundary door. With cables running through the CBE door, mitigating actions were taken to seal the opening. Such mitigating actions are allowed in Modes 1-4 per Technical Specification (TS) 3.7.10, when Condition B applies for an inoperable CBE boundary. However, allowances for mitigating actions are not permitted for an inoperable boundary during the movement of irradiated fuel assemblies. For this situation, TS 3.7.10 Condition E applies, and its Required Actions are to immediately suspend CORE ALTERATIONS (E.1) and movement of irradiated fuel assemblies (E.2). The Control Room did not immediately recognize that Required Action E.2 was in effect; therefore, there was a delay in beginning this Action of approximately 2 hours and 24 minutes. Required Action E.2 was not met since the Action was not taken without delay.

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CONTINUATION SHEET

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NARRATIVE

1. DESCRIPTION OF STRUCTURE(S), SYSTEM(S) AND COMPONENT(S):

The Control Room Emergency Ventilation System (CREVS) provides a protected environment from which operators can control the unit following an uncontrolled release of radioactivity. The CREVS consists of two independent, redundant trains that pressurize, recirculate, and filter the control room air. Each CREVS train consists of a filtration system train and a pressurization system train. By operation of the control room pressurization trains and the control room filtration units, the CREVS pressurizes, recirculates and filters air within the Control Room envelope (CRE) as well as the Control Building envelope (CBE) that generally surrounds the CRE.

The CRE contains the spaces that CRE occupants inhabit to control the unit during normal and accident conditions. This area encompasses the control room and may encompass other non-critical areas to which frequent personnel access or continuous occupancy is not necessary in the event of an accident. The CRE boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the CRE. The CRE boundary must be maintained to ensure that the inleakage of unfiltered air into the CRE will not exceed the inleakage assumed in the licensing basis analysis of design basis accident (DBA) consequences to CRE occupants.

The CBE is an area that largely surrounds the CRE. Occupancy of the CBE is not required to control the unit during normal and accident conditions. The CBE boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the CBE. The Licensing Bases analysis of record credits the integrity of the CBE in order to maintain Control Room habitability.

Outside air is drawn through the Pressurization Filter and distributed to four levels of the CBE. Distribution of the filtered outside air throughout the four levels of the CBE allows for dilution and holdup of radionuclides that may be present in the post-accident outside air. The Control Room Filtration Fan draws air from the CBE through the Control Room Filtration Filter and provides this as makeup air to maintain the Control Room at a positive pressure during post-accident operation. The Pressurization and Filtration filters include HEPA and charcoal filtration components. The Licensing Bases analysis of record credits integrity of both the Control Room and Control Building boundaries. Degraded or breached boundaries would have the potential to result in unfiltered inleakage beyond the values addressed in the Licensing Bases analysis of record.

2. INITIAL PLANT CONDITIONS:

On 04/18/2013, the plant was in a refueling outage and at the time of the event, was in Mode 6, Refueling. Apart from the CREVS CBE boundary that was identified to be inoperable per the condition described in this LER, no other significant equipment was concurrently inoperable.

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3. EVENT DESCRIPTION:

On 04/18/2013, a small fire at the unit auxiliary transformer (UAT) caused a loss of the PA02 bus and all non-vital power to the plant. The plant was in a refueling outage, and at that time of the fire, the core was being offloaded. A fuel assembly was suspended in the spent fuel pool due to a torn grid strap that was discovered after removing the assembly from the core. The assembly had been located at the transfer canal gate earlier in the shift but had been moved out into the pool about mid-shift. With the noted fuel assembly in this condition, it was not in a "safe" location and was still considered to be in "movement".

In response to the loss of the PA02 bus, it was desired to restore temporary power to the 'B' Train battery chargers to prevent loss (discharge) of the NK02 and/or NK04 batteries. In order to do this, temporary power cables were routed through three doors in the Control Building, one of which is a Control Building Envelope (CBE) pressure boundary door. A Fire Protection Impairment Permit (FPIP) was developed and sent to the Control Room. Operations determined that the CBE boundary door would not be able to be closed in a timely manner, so mitigating actions were taken to seal the opening (per the FPIP).

Operations understood that such mitigating actions are allowed in Modes 1-4 per Technical Specification (TS) 3.7.10, when Condition B applies for an inoperable CBE boundary. (In particular, Required Actions B.1 and B.2 require immediately implementing mitigating actions, and (within 24 hours) verifying the mitigating actions to ensure that radiological exposure will not exceed limits for control room envelope occupants, and that the occupants are protected from chemical and smoke hazards, respectively. In addition, Required Action B.3 requires the CBE boundary to be restored in 90 days.) However, sometime after implementing the mitigating actions to seal the door opening, it was realized that the allowances for implementing mitigating actions do not exist for an inoperable CBE boundary during the movement of irradiated fuel assemblies. For this situation, Condition E applies (under TS 3.7.10), and its Required Actions are to immediately suspend CORE ALTERATIONS and movement of irradiated fuel assemblies per Required Actions E.1 and E.2, respectively.

The need to satisfy the Required Actions of Condition E was recognized when creating the Equipment Out of Service (EOSL) entry for the door impairment. The Control Room Supervisor (CRS) was notified, temporary power was removed, and the pressure boundary was restored. The refueling SRO placed the suspended assembly in the approved storage location.

4. ASSESSMENT OF SAFETY CONSEQUENCES:

The CREVS boundaries (CRE and CBE boundaries) are important for maintaining post-accident Control Room habitability. Specifically, the CREVS provides airborne radiological protection for the CRE occupants, as demonstrated by the CRE occupant dose analyses for the most limiting design-basis accident fission product release presented in the FSAR (Chapter 15).

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With the CBE door impaired to allow for the routing of temporary power cables following the loss of the Unit Auxiliary Transformer and the PA02 bus, the Control Building pressure boundary was inoperable. In the event of a fuel handling accident, this configuration would allow for a higher level of unfiltered inleakage into the Control Building than is assumed in the safety analysis. To determine the potential impact of this condition, the dose calculation model in the analysis of record was modified to account for a very conservative inleakage value during the two-hour release time associated with a fuel handling accident. The event was found to have no adverse impact on any radiological consequences described in Callaway's FSAR.

The results of this analysis demonstrated that, even with the CBE door open for the duration of the post-accident release, the calculated Control Room doses following a Fuel Building Handling Accident would not have exceeded the limits in General Design Criteria (GDC) 19. Therefore, this condition did not significantly degrade plant safety.

This condition is considered to have low safety significance.

5. REPORTING REQUIREMENTS:

This LER is submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) to report a condition prohibited by the plant's Technical Specifications.

The CREVS is subject to the requirements of Callaway Technical Specification (TS) 3.7.10, "Control Room Emergency Ventilation System (CREVS)." Per the Limiting Condition for Operation (LCO) of this Technical Specification, both trains of CREVS must be Operable during Modes 1, 2, 3, and 4 and during movement of irradiated fuel assemblies. With one or more CREVS trains inoperable due to an inoperable CRE boundary or an inoperable CBE boundary during movement of irradiated fuel assemblies, Condition E applies and associated Required Actions E1 and E2 must be entered, which require immediately suspending CORE ALTERATIONS and the movement of irradiated fuel assemblies, respectively.

For the event addressed by this LER, Required Action E.2 became applicable when the noted CBE boundary door was opened (and then maintained open) while the movement of irradiated fuel assemblies was ongoing. Due to the delay that occurred in recognizing and initiating Required Action E.2, this Action was not "immediately" taken and thus was not met. This was a violation of TS 3.7.10, and consequently, this event is required to be reported as a condition or operation prohibited by the Technical Specifications, pursuant to 10 CFR 50.73(a)(2)(i)(B).

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6. CAUSE OF THE EVENT:

Analysis of this condition identified several contributing causes. Contributing causes of this event identified in the root cause evaluation are as follows:

- Personnel responsible for developing plans to prop open the CBE door (to provide temporary power) did not review TS 3.7.10 for applicability.
- Procedures and written instructions did not direct the user to check for the TS Mode of Applicability, leading to the incorrect TS condition being referenced in the FPIP.
- Operations personnel did not promptly review TS 3.7.10 when it was identified that the CBE door would be propped open.

7. CORRECTIVE ACTIONS:

Corrective actions include adding instructions to the HVAC pressure boundary control procedure (including forms) to require checks for Mode of Applicability when assessing Control Building, Control Room and Fuel Building pressure boundary breaches. Coaching was provided to personnel involved in developing the plan to provide temporary power, and to Operations personnel responsible for reviewing TS 3.7.10 when imminent entry into a condition of the TS was identified. Training for Operations personnel on the differences in the Required Actions of TS 3.7.10 between "Modes 1-4" and "when moving irradiated fuel assemblies" for a pressure boundary breach is planned and tracked under the Corrective Action Program.

8. PREVIOUS SIMILAR EVENTS:

A review of internal Operating Experience was performed, and no previous events in which a CBE boundary was breached during movement of irradiated fuel assemblies were identified.