AmerenUE
Callaway Plant

PO Box 620
Fulton, MO 65251

April 23, 2004

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop P1-137
Washington, DC 20555-0001

ULNRC04984

Ladies and Gentlemen:

**DOCKET NUMBER 50-483**
**CALLAWAY PLANT UNIT 1**
**UNION ELECTRIC CO.**
**FACILITY OPERATING LICENSE NPF-30**
**LICENSEE EVENT REPORT 2003-007-01**

**Engineering Evaluations incorrectly approved leaving Health Physics Access doors open**

On September 11, 2003 Callaway Plant submitted LER 2003-006-00 in accordance with 10CFR50.73(a)(2)(i)(B), 10CFR50.73(a)(2)(ii)(B), 10CFR50.73(a)(2)(v)(D), and 10CFR50.73(a)(2)(vii) to report an event in which engineering evaluations incorrectly approved leaving access doors to the Health Physics area open.

Further evaluations have determined this event did not represent a safety system functional failure, thereby removing the 10CFR50.73(a)(2)(v)(D) reporting criteria. LER Revision 2003-007-01 is being submitted to document this change.

This letter contains no new commitments.

Sincerely,

Warren A. Witt

Warren A. Witt
Manager, Callaway Plant

WAW/MAR/slk

Enclosure

IE22

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NRC FORM 366 (7-2001) U.S. NUCLEAR REGULATORY COMMISSION

# LICENSEE EVENT REPORT (LER)

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



| 1. FACILITY NAME | 2. DOCKET NUMBER | 3. PAGE |
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4. TITLE
Engineering Evaluations incorrectly approved leaving Health Physics Access doors open.

| 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 05000 |
| 7 | 17 | 2003 | 2003 | - 007 - | 01 | 4 | 23 | 2004 | FACILITY NAME | DOCKET NUMBER 05000 |

| 9. OPERATING MODE | 1 | 11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 10. POWER LEVEL | 100 | | 20.2201(b) | | 20.2203(a)(3)(ii) | X | 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 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) | X | 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) |
|---|---|
| Mark A. Reidmeyer | (573) 676-4306 |

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 |
|---|---|---|---|---|---|---|---|---|---|
| X | | DR | P388 | 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)

This revision of LER 2003-007-00 is being submitted to delete the reporting criteria for an event or condition that could have prevented fulfillment of a safety function. Other previously identified reporting criteria remain applicable.

On 7/17/03, with Callaway Plant at 100 percent power, an error was found in Engineering Evaluations that approved having the Health Physics (HP) Access doors 32201 and Hot Lab door 32282 open. These doors are pressure boundary doors between the Control Building and Communication Corridor and are required to be closed during accident conditions. With the doors open, HP Access Control fan coil unit SGK03 would cause air from outside the Control Building to enter the HP Access area and mix with Control Building atmosphere. The Control Building atmosphere is credited in post-accident Control Room radiological consequence analysis and an outside air source has potential for impacting dose received by Control Room staff. An evaluation determined 25 minutes to close these doors in an emergency, which could result in an exposure of approximately 31.5 REM to Control Room staff. This dose was above regulatory limits and the event was classified as reportable as an unanalyzed event and a violation of Technical Specifications. When the door issue was identified, the doors were closed and a plant bulletin was issued indicating the doors were to remain closed except during normal use. Although the Regulatory Guide 1.195 dose limit and ICRP 30 Dose Conversion Factors are not currently part of Callaway's Licensing bases, they do demonstrate the limited safety implications of this event.

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

I. DESCRIPTION OF THE REPORTABLE EVENT

A. REPORTABLE EVENT CLASSIFICATION

This event is being reported under multiple criteria. It is being reported under:

- 10CFR50.73(a)(2)(i)(B), a condition prohibited by Technical Specifications
- 10CFR50.73(a)(2)(ii)(B), an unanalyzed condition
- 10CFR50.73(a)(2)(vii), common-cause Inoperability where a single condition caused two independent trains to become inoperable in a single system designed to mitigate the consequences of an accident.

Initially this event was also classified as reportable per 10CFR50.73(a)(2)(v)(D), as an event or condition that could have prevented fulfillment of a safety function to mitigate the consequences of an accident. Subsequent evaluations have determined the dose to Control Room personnel would not have exceeded the FSAR reported value. The ability to maintain dose levels to Control Room personnel below the FSAR and regulatory limits demonstrates that this event did not represent a safety system functional failure.

B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

Callaway Plant was in Mode 1 at 100 percent power.

C. STATUS OF STRUCTURES, SYSTEMS OR COMPONENTS THAT WERE INOPERABLE AT THE START OF THE EVENT AND THAT CONTRIBUTED TO THE EVENT

Not applicable for this event.

D. NARRATIVE SUMMARY OF THE EVENT, INCLUDING DATES AND APPROXIMATE TIMES

On July 17, 2003 with Callaway Plant operating at 100 percent power, an error was discovered in Request For Resolutions (RFR) 14826 and 16672 that had approved leaving the Health Physics (HP) Access entrance doors 32201 and Hot Lab Door 32282 open.

These doors are pressure boundary doors between the Control Building and the Communication Corridor and are required to be closed during a Control Room Ventilation Isolation. Following a Control Room Ventilation Isolation, the HP Access Control fan coil unit SGK03 would cause air in the HP Access Control area to commingle with portions of the Control Building that are credited in the Control Room radiological consequences analysis of record. With the doors open, air from the HP Access Control area must be considered to be outside air in the radiological consequences analysis.

The entrance to HP Access is a high traffic area and the entrance doors are a set of large missile doors that serve as a fire and pressure boundary. Revision A of RFR 14826 was performed in 1994 and approved leaving the HP Access area doors open to reduce repeat door maintenance and the chance for personnel injury from these heavy doors. Radiological Engineering and the HVAC System Engineer had performed a review and concluded that leaving the doors to HP Access open would not affect the Licensing Bases analysis. These reviews did not identify that SGK03 continues to operate after a Control Room Ventilation Isolation Signal (CRVIS) and that operation of SGK03 following a CRVIS would cause air from the HP Access Control area to commingle with portions of the Control Building credited in the Licensing Bases radiological consequences analysis of record for the Control Room. It was identified that having these doors open would impact the Fire Protection plan and required a Fire Barrier Integrity Record to be generated. This record documented the requirement for a continuous fire watch with these doors propped open. One additional action required by RFR 14826, was to establish controls that required the HP Access doors to be closed upon declaration of a plant emergency. At that time, Key Issue was located within the HP Access

area and the requirements to close the HP Access doors and act as fire watch, were assigned to the Security individuals manning Key Issue. Unfortunately, during the RFR review process neither engineering group identified the disallowed air flow path associated with SGK03.

In 1998, Revision B of RFR 14826 was issued. Key Issue had been relocated outside of HP Access and Revision B addressed re-assignment of fire watch and door closure responsibilities. In Revision B it was determined that propping the doors open did not require a compensatory fire watch per current plant procedures, but that the doors would still require closure during plant emergencies. Thus, Security personnel still retained the requirement to close the HP Access doors during plant emergencies. In Revision B, the errors in air flow pathways from Revision A were not identified and were carried forward into Revision B. Additionally, in both Revisions A and B, accurate response times for closing the HP Access doors were not determined.

In 1996, RFR 16672 performed a similar evaluation which allowed Hot Lab door 32282 to remain open.

On 7/17/03, when it was identified that leaving the doors at HP Access open created a pathway for outside air to commingle with portions of the Control Building credited in the analysis of record, the doors were closed and a plant bulletin was issued notifying plant staff that these doors were to remain closed except during normal entrance and egress. Additionally, instructions were issued to Health Physics and Security personnel to maintain the doors closed.

An evaluation was performed to quantify the impact of the open doors on post-accident consequences to Control Room personnel. The responsibility to close the doors post-accident was assigned to a Security Officer. Emergency declarations occur within 15 minutes of an event, and it was determined that upon declaration of an emergency, a Security Officer would close the doors within 10 minutes. The evaluation conducted was therefore performed assuming that a pathway for outside air to commingle with Control Building air was available for the first 25 minutes of the event, with the 25 minutes being comprised of:

- time from event initiation to emergency declaration – 15 minutes
- time from emergency declaration to door closure – 10 minutes

Utilizing licensing basis assumptions determined post-LOCA thyroid dose to Control Room personnel would be approximately 31.5 REM. This represents a more than minimal increase of accident consequences above the Final Safety Analysis Report (FSAR) reported value of 25.55 REM. Additionally, this exceeds the GDC 19 regulatory limit of 30 REM. These results were determined on 8/8/03, and this event was reported as 8-hour Event Notification #40053 for an Unanalyzed Condition per 10CFR50.72(b)(3)(ii)(B) at 1254 CDT, 8/8/03.

Additional evaluation utilizing as-found values from Callaway's ILRT results determined that post-LOCA thyroid dose to Control Room personnel would be approximately 11.7 REM. This is below the FSAR reported value of 25.55 REM, as well as the GDC 19 regulatory limit of 30 REM, thereby demonstrating the safety function to protect Control Room personnel was maintained for the period in question.

E. METHOD OF DISCOVERY OF EACH COMPONENT, SYSTEM FAILURE, OR PROCEDURAL ERROR

During plant walkdowns and design reviews in preparation for responding to NRC Generic Letter on Control Room habitability, a problem was identified regarding doors 32201 and 32282 at HP Access.

## II. EVENT DRIVEN INFORMATION

A. SAFETY SYSTEMS THAT RESPONDED

Not Applicable for this event.

B. DURATION OF SAFETY SYSTEM INOPERABILITY

Per Technical Specification 3.7.10 Bases, the Control Room Emergency Ventilation System (CRVES) is designed to maintain the control room environment for 30 days of continuous occupancy after a Design Basis Accident (DBA) without exceeding a 5 REM whole body dose to the control room staff. The 30 REM thyroid dose is considered equivalent to the 5 REM whole body dose. With the doors initially open at HP Access, and a door closure response time of 25 minutes, an evaluation performed by Safety Analysis shows that the thyroid dose to control room operators with door 32201 or 32282 open for the initial 25 minutes following a large break LOCA, is approximately 31.5 REM. This represents a more than minimal increase in accident consequences described in Callaway's FSAR and exceeds the GDC 19 regulatory thyroid dose limit of 30 REM.

Due to exceeding the thyroid dose limit stipulated in T/S 3.7.10 Bases, this event rendered the CRVES inoperable and constituted a violation of T/S 3.7.10. NUREG 1022 only requires an evaluation period of 3 years, thus this event represents a violation of T/S 3.7.10 for the 3 year period from 7/17/00 until 7/17/03 when the problem was identified and rectified.

C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT.

As was previously discussed, an evaluation was performed to quantify the impact of the open doors on post-accident radiological consequences. The results indicated that the open doors would result in a more than minimal increase in accident consequences as described in Callaway's FSAR. Additionally, the regulatory limit of GDC 19 would be exceeded. This evaluation was performed using the radiological consequence analysis methodology currently described in Callaway's FSAR.

Additional evaluations were performed using ICRP 30 Dose Conversion Factors (DCF). This evaluation concluded that post-accident consequences would be 22.2 Rem to the thyroid. This value would be bounded by the FSAR reported value and the GDC 19 regulatory limit. Additionally, it was noted that Regulatory Guide 1.195 would allow licensees, with prior NRC approval to use a thyroid dose limit of 50 Rem. Callaway has submitted a License Amendment Request to obtain NRC approval for the use of ICRP 30 DCFs.

Although the Regulatory Guide 1.195 dose limit and ICRP 30 DCFs are not currently part of Callaway's Licensing bases, they do demonstrate the limited safety implications of this event.

## III. CAUSE OF THE EVENT

The cause was an error in an assumption in Engineering Evaluations which concluded that leaving the doors open would not affect the Licensing Bases analyses.

## IV. CORRECTIVE ACTIONS

Corrective actions were to close the doors, plus issue a plant bulletin to maintain the doors closed. Signs were added to the doors indicating the requirement to maintain the doors closed. Specific instructions were provided to Health Physics personnel to maintain the doors closed. Additionally, Security officers have been informed that these doors are to remain closed at all times, and they will check these doors while on patrol.

The Licensing Impact Review (LIR) form used by engineering personnel to screen proposed plant changes has been revised since RFRs 14826 and 16672 were dispositioned. A new section of questions regarding Control Room Habitability has been added to the LIR form.

## V. PREVIOUS SIMILAR EVENTS

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

A review of Callaway LER's from 2000 until present did not reveal any similar events.

A review of the Callaway Action Request System (CARS) was performed covering the last three years. Using key word "HP Access doors" and "blocked doors" text searches, no CARs were identified that revealed potential breaches of the Control Building pressure boundary, and thus potential violations similar to the issue addressed in this LER.

## VI. ADDITIONAL INFORMATION

The system and component codes listed below are from the IEEE Standard 805-1984 and IEEE Standard 803A-1984 respectively.

System: Not applicable for this event.

Component: DR