AmerenUE
Callaway Plant

PO Box 620
Fulton, MO 65251

June 9, 2003

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

ULNRC04862

Ladies and Gentlemen:

DOCKET NUMBER 50-483
Callaway PLANT UNIT 1
UNION ELECTRIC CO.
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 2003-004-00
Boron Dilution Mitigation System blocked in Mode 3.

The enclosed licensee event report is submitted in accordance with 10CFR50.73(a)(2)(ii)(B) and 10CFR50.73(a)(2)(v)(D), to report events where the Boron Dilution Mitigation System was blocked while in Mode 3. This action is inconsistent with Final Safety Analysis Report accident analysis.

Very truly yours,

Warren A. Witt

Warren A. Witt
Manager, Callaway Plant

WAW/ewh

Enclosure

IE22

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

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
CALLAWAY PLANT UNIT 1	05000 483	1 OF 4

4. TITLE
Boron dilution mitigation system blocked in Mode 3 which not consistent with FSAR accident analysis.

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
4	11	2003	2003	- 004 -	00	6	9	2003	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE	1
10. POWER LEVEL	100

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

20.2201(b)	20.2203(a)(3)(ii)	X 50.73(a)(2)(i)(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)	X 50.73(a)(2)(i)(A)	X 50.73(a)(2)(v)(D)	
20.2203(a)(2)(v)	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)
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

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 4/11/03, while at 100 percent power, it was discovered that a note contained in Technical Specification (T/S) 3.3.9 for the Boron Dilution Mitigation System (BDMS), had been inappropriately applied during past reactor startups. This had been interpreted to allow blocking BDMS while withdrawing Shutdown (S/D) Bank rods in Mode 3. This action is not allowed in Mode 3 per Final Safety Analysis Report (FSAR) accident analysis Section 15.4.6.2 where BDMS is credited for automatically terminating a dilution event while in Mode 3.

Wording of T/S 3.3.9 and T/S 3.3.9 Bases did not provide clear guidance as to what constitutes "reactor startup". The Bases indicate BDMS could be blocked prior to withdrawing "rods" for startup. These words do not delineate between control banks and shutdown banks. Based on this unclear guidance, procedure OTG-ZZ-0001A was incorrectly revised allowing the blocking of BDMS prior to withdrawing shutdown banks. The discovery of the unclear T/S wording was the result of requested procedure enhancements to clarify when it was allowable to block BDMS.

A review of reactor startups within the last 3 years indicated that BDMS was inappropriately blocked on three separate startups. The first occurred on 11/24/02, the second on 12/17/02, and the third on 4/2/03. Plant procedures governing reactor startup were revised to remove statements allowing blocking BDMS while withdrawing S/D Bank rods in Mode 3.

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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 has been determined to be reportable per 10CFR50.73(a)(2)(ii)(B), as an unanalyzed condition, and 10CFR50.73(a)(2)(v)(D), as a condition that could have prevented the fulfillment of a safety function to mitigate the consequences of an accident.

B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

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

There were no components inoperable that contributed to this event.

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

On 4/11/03, while at 100 percent power, it was discovered that a note contained in Technical Specification (T/S) 3.3.9 for the Boron Dilution Mitigation System (BDMS), had been inappropriately applied during past reactor startups. This note states: "The boron dilution flux multiplication signal may be blocked in Modes 2 (below P-6 (Intermediate Range Neutron Flux) interlock) and 3 during reactor startup." This had been interpreted to allow blocking BDMS while withdrawing the Shutdown Banks in Mode 3. This action is not allowed in Mode 3 per Final Safety Analysis Report (FSAR) accident analysis.

The Callaway Mode 3 Accident Of Record (AOR) is discussed in FSAR Section 15.4.6.2. The acceptance criterion for a Mode 3 boron dilution event is that there is sufficient time available for automatic mitigation prior to the complete loss of shutdown margin. The BDMS generates a neutron flux-multiplication alarm that indicates an inadvertent boron dilution is in progress. The BDMS also initiates signals to automatically open valves BN-LCV-112D/E (Centrifugal Charging Pump Suction from Refueling Water Storage Tank) to initiate boration and then to close valves BG-LCV-112B/C (Volume Control Tank outlet isolation valve) to terminate the dilution. Re-boration occurs within 3.14 minutes after reaching the flux-multiplication condition. This occurs prior to the loss of shutdown margin at 6.22 minutes after reaching the flux-multiplication condition, had the condition gone unmitigated.

Since the Callaway Mode 3 Boron Dilution Event AOR has insufficient time available to credit operator actions to terminate this event prior to the loss of shutdown margin, the BDMS must be credited to mitigate the consequences of an inadvertent dilution in Mode 3. Therefore, the T/S 3.3.9 note which allows blocking the boron dilution flux multiplication signal in Mode 3 only applies to blocking BDMS just prior to withdrawing Control Bank rods. BDMS cannot be blocked while withdrawing Shutdown (S/D) Bank rods without blocking all potential dilution sources within 4 hours specified by T/S 3.3.9. Withdrawing shutdown banks with BDMS blocked is not consistent with FSAR Section 15.4.6.2 Mode 3 analysis.

This problem was discovered while researching a revision for plant operating procedure OTG-ZZ-0001A, SHUTDOWN BANK WITHDRAWAL. While researching the requested procedure revision, it was identified that T/S 3.3.9 and T/S 3.3.9 Bases were not explicit in providing guidance for implementing the FSAR Accident Analysis for a boron dilution event. Safety Analysis engineers reviewed the wording and concluded that BDMS could not be blocked while withdrawing Shutdown Bank rods in Mode 3.

A historical review of reactor startups within the last 3 years indicated that BDMS was inappropriately blocked while withdrawing S/D Bank rods in Mode 3, on three separate startups. The first occurred on 11/24/02, the second on 12/17/03, and the third on 4/2/03.

An immediate corrective action was to issue OTG-ZZ-0001A revision 6. This revision removed a step which stated that BDMS could be blocked.

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

This problem was discovered while researching a revision for plant operating procedure OTG-ZZ-0001A, SHUTDOWN BANK WITHDRAWAL.

II. EVENT DRIVEN INFORMATION

A. SAFETY SYSTEMS THAT RESPONDED

Not applicable at the time of discovery on 4/11/03.

B. DURATION OF SAFETY SYSTEM INOPERABILITY

Not applicable.

C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT.

The source range or intermediate range reactor trip functions are available in Modes 2 and 3. Licensed operators are trained to immediately enter Emergency Operating Procedures (EOP) following any indication of a reactor trip. "Subcriticality" is one of the critical safety functions continuously monitored throughout the EOPs to ensure reactor power does not exceed 5 percent. These procedures require the licensed operators to immediately borate the reactor coolant system if neutron flux is not decreasing. These procedural controls would ensure that there is no resulting fuel damage or radiological release from the plant. Therefore, this concern had low safety significance with minimal impact on the health and safety of the public.

III. CAUSE OF THE EVENT

Wording of T/S 3.3.9 and T/S 3.3.9 Bases did not provide clear guidance as to what constitutes "reactor startup". The Bases indicate BDMS could be blocked prior to withdrawing "rods" for startup. These words do not delineate between control banks and shutdown banks. Based on this unclear guidance, procedure OTG-ZZ-0001A was incorrectly revised allowing the blocking of BDMS prior to withdrawing shutdown banks.

IV. CORRECTIVE ACTIONS

T/S 3.3.9 Bases will be revised to clearly specify that BDMS can be blocked prior to withdrawing control rods for reactor startup.

An immediate corrective action was to issue OTG-ZZ-0001A revision 6. This revision removed a step, which stated that BDMS could be blocked, plus added steps to monitor source range counts and halt S/D Bank withdrawal if approaching a BDMS setpoint.

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

V. PREVIOUS SIMILAR EVENTS

This event is documented in Corrective Action Request (CAR) 200302704. A 3-year historical review of the CAR system identified no other related events beyond the three events reported in this LER.

A review of Callaway LERs from 2000 to present confirmed that there were no past LERs involving BDMS.

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.

Component: Not applicable.