Union Electric
Callaway Plant

PO Box 620
Fulton, MO 65251

June 30, 2000

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

ULNRC-4276

Ameren UE

Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
UNION ELECTRIC CO.
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 2000-004-00
Design Error Results in Containment Isolation Valve Inoperability in Excess of Technical Specification Limitations

The enclosed licensee event report is submitted in accordance with 10CFR50.73(a)(2)(ii) to report a condition that resulted in degradation of a principal safety barrier. This report is also submitted in accordance with 10CFR50.73(a)(2)(i)(B) to report a condition which was prohibited by the plant's Technical Specifications.

Warren A. Witt for
R. D. Affolter
Manager, Callaway Plant

RDA/jer

Enclosure

IE22

cc: Mr. Ellis W. Merschoff
Regional Administrator
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

Senior Resident Inspector
Callaway Resident Office
U.S. Nuclear Regulatory Commission
8201 NRC Road
Steedman, MO 65077

Mr. Jack N. Donohew (2 copies)
Licensing Project Manager, Callaway Plant
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Mail Stop 7E1
Washington, DC 20555-2738

Manager, Electric Department
Missouri Public Service Commission
PO Box 360
Jefferson City, MO 65102

Records Center
Institute of Nuclear Power Operations
700 Galleria Parkway
Atlanta, GA 30339

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Callaway Plant Unit 1	0 5 0 0 0 4 8 3	1 OF 0 4

TITLE (4) **Design Error Results In Containment Isolation Valve Inoperability In Excess Of Technical Specification Limitations**

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	Rev No.	MONTH	DAY	YEAR
0 4	0 6	2 0 0 0	2 0 0 0	- 0 0 4 -	0 0	0 6	3 0	2 0 0 0

OTHER FACILITIES INVOLVED (8)

FACILITY NAMES	DOCKET NUMBER(S)
	0 5 0 0 0
	0 5 0 0 0

OPERATING MODE (9)	1
POWER LEVEL (10)	1 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR : (*Check one or more of the following*) (11)

[ ] 20.2201(b)	[ ] 20.2203(a)(2)(v)	[X] 50.73(a)(2)(i)	[ ] 50.73(a)(2)(viii)
[ ] 20.2203(a)(1)	[ ] 20.2203(a)(3)(i)	[X] 50.73(a)(2)(ii)	[ ] 50.73(a)(2)(x)
[ ] 20.2203(a)(2)(i)	[ ] 20.2203(a)(3)(ii)	[ ] 50.73(a)(2)(iii)	[ ] 73.71
[ ] 20.2203(a)(2)(ii)	[ ] 20.2203(a)(4)	[ ] 50.73(a)(2)(iv)	[ ] OTHER (*Specify in Abstract below or in Text, NRC Form 366A)*
[ ] 20.2203(a)(2)(iii)	[ ] 50.36(c)(1)	[ ] 50.73(a)(2)(v)	
[ ] 20.2203(a)(2)(iv)	[ ] 50.36(c)(2)	[ ] 50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (AREA CODE)
J. D. Schnack, Supervising Engineer, QA Corrective Action	573 676-4319

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO EPIX
B	C C	I S V		Y					

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
[ ] YES (If yes, complete EXPECTED SUBMISSION DATE)	[X] NO				

ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines)(16)

From 04-06-2000 to 06-02-2000, valve EGHV0061 (Component Cooling Water from Reactor Coolant Pump Thermal Barrier Outer Containment Isolation Valve) was not able to automatically close upon receipt of a Phase B containment isolation signal (CISB).

On 06-02-2000 Instrument and Control Technicians were performing surveillance testing on phase B slave relays. During this surveillance, it was determined that the automatic control circuit for valve EGHV0061 was not properly terminated to allow the valve to close on a CISB signal. This termination had been modified on 04-06-2000 to resolve NRC Information Notice 92-18 concerns for fire induced shorts within motor operated valve control circuits. The termination error was attributed to a design error by the utility design engineer, a failure to discover the error by the utility reviewing engineer and inadequate post modification testing.

The design for valve EGHV0061 was reviewed and corrected to restore the automatic control function. The valve was retested appropriately and returned to service. The circuits for all valves with similar modifications were reviewed with no other discrepancies identified. Future modifications to resolve NRC IN 92-18 concerns will be evaluated for post modification retest adequacy. Additional evaluations are being performed to identify opportunities to enhance the design and retest programs.

DESCRIPTION OF EVENT:

From April 6, 2000 to June 2, 2000, valve EGHV0061 (Component Cooling Water from Reactor Coolant Pump Thermal Barrier Outer Containment Isolation Valve) was not able to automatically close upon receipt of a Phase B containment isolation signal (CISB).

On June 2, 2000 at 0415 CDT, Instrument and Control technicians began performing a surveillance procedure to test CISB slave relay K626 and Safety Injection relays K743, K711, and K604. During verification of the initial conditions, it was discovered that Solid State Protection System white light #26 was not lit as required by procedure. Subsequent trouble shooting determined that a connection between a terminal block in the motor control center for valve EGHV0061 (Component Cooling Water from Reactor Coolant Pump Thermal Barrier Outer Containment Isolation Valve) and the Solid State Protection System cabinet SB030A was not installed. This resulted in the inability of this containment isolation valve to automatically close upon receipt of a CISB. Subsequently the valve was declared inoperable and the associated Technical Specification action statement was entered. The valve was closed, with power to the valve operator removed in accordance with Technical Specification 3.6.3.A.

It was determined that the valve had been inoperable since April 6, 2000 when the motor operated valve control circuit had been rewired as part of a modification to resolve concerns for fire induced shorts within motor operated valve (MOV) control circuits (reference NRC Information Notice 92-18: Potential For Loss Of Remote Shutdown Capability During A Control Room Fire). During the design of this modification, the connection between EGHV0061 and SB030A was not established. Subsequent retesting did not identify this design discrepancy and the valve was returned to service. Technical Specification 3.6.3, which specifies that each containment isolation valve be operable, was therefore, not satisfied. The required action is to isolate the affected flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. The four-hour completion time for this action statement was therefore exceeded.

BASIS FOR REPORTABILITY:

This event was determined to be reportable per 10CFR50.72(b)(1)(ii) / 10CFR50.73(a)(2)(ii) as a condition that resulted in a principal safety barrier of the plant being degraded due to the loss of an automatic containment isolation valve function. This event was also determined to be reportable per 10CFR50.73(a)(2)(i)(B) as a condition which was prohibited by the plant's Technical Specifications.

CONDITION AT TIME OF EVENT:

MODE 1, Power Operations – 100% power

ROOT CAUSE:

Loss of the automatic control function of this valve was attributed to a design error which was not identified by the utility design engineer and reviewer. Additionally the specified post modification testing identified by the MOV engineer was not adequate.

CORRECTIVE ACTIONS:

The design for EGHV0061 was reviewed and corrected to restore the automatic control function. The valve was properly retested and returned to service, June 2, 2000 at 1619 CDT.

The circuit design for valves that had been altered by similar modifications were reviewed with no other discrepancies identified.

Future design changes associated with modifications for resolving IN 92-18 concerns will be evaluated for post modification retest adequacy.

Formal Root Cause Evaluation for the personnel error is being completed. Additional corrective actions will be implemented to enhance the design and retest programs to address root causes as identified in the evaluation.

SAFETY SIGNIFICANCE:

A probabilistic risk assessment was conducted for this event and it was estimated that the delta large early release frequency (LERF) was below 1E-07. With the exception of 90 minutes during a functional test on April 28, 2000, the opposite train containment isolation valve for this penetration was capable of performing it's automatic control function during the time frame in which EGHV0061 was inoperable. In addition, EGHV0061 was always capable of being closed remotely by a reactor operator from the main control board. Therefore this event was not significant with respect to public health and safety.

PREVIOUS OCCURRENCES:

No other occurrences have been identified for valves modified to resolve concerns of IN 92-18.
Research of previous LERs dating back to January 1,1998 identified a similar occurrence in which a design error contributed to equipment inoperability. LER 99-009-01 documents a previous event in which a design error contributed to the inability of the containment normal sump level measurement system and the containment air cooler condensate flow rate systems to perform their design functions. This event however was attributed to an initial system design error from initial plant start up and not the station's modification program.

44LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6) YEAR	SEQUENTIAL NUMBER	REV NO.	PAGE (3)
Callaway Plant Unit 1	05000483	2000	- 004 -	00	04 OF 04

TEXT (If more space is required, use additional NRC Form 366A's)(17)

FOOTNOTES:

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

System CC, JE

Component ISV, 2O