Callaway Plant
Post Office Box 620
Fulton, Missouri 65251

UNION ELECTRIC

May 31, 1996

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

ULNRC- 3379

Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
FACILITY OPERATING LICENSE NPF-30
ONE TRAIN OF ESSENTIAL SERVICE WATER
INOPERABLE DUE TO REVISED ACCURACY OF THE
BUTTERFLY VALVE ANALYSIS AND REVIEW TEST SYSTEM

The enclosed licensee event report is submitted pursuant to 10CFR50.73(a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications.

R. D. Affolter
Manager, Callaway

RDA/HDB/MNF/tdf

Enclosure

050024

IE22
1/1

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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) **'B' Train of Essential Service Water Inoperable Due to Revised Accuracy of the Butterfly (Valve) Analysis and Review Test Systems**

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
1 1	1 2	9 3	9 6	- 0 0 2	- 0 0	0 5	3 1	9 6		0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: *(Check one or more of the following)* (11)			
4		20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
0		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER *(Specify in Abstract below and in Text, NRC Form 366A)*
		20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
H. D. Bono, Supervising Engineer, Site Licensing	5 7 3 6 7 6 - 4 4 2 8

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS

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)

On 4/17/96, ITI MOVATS, Inc. notified this utility via MOVATS Users Technical Notice, MUTN 96-01 of a potential problem with the accuracy of the Butterfly (Valve) Analysis and Review Test (BART™) system. The original testing criteria supplied by the vendor was based on calculations with an assumed error. As a result, the utility engineers set up applicable Motor Operated Valves (MOV) utilizing this calibration error. However, the vendor has recently performed validation testing under field conditions and has published higher error values. Licensee Engineering personnel evaluated these changes in error on MOV setup and preliminarily determined on 4/23/96 that, if all errors were applied in a negative direction, EFHV0025 "Service Water (SW) to Essential Service Water (ESW) Isolation Valve" could not be proven to close under all design bases scenarios.

On 4/23/96 at 1415, EFHV0025 was placed in its safety related closed position. On 4/24/96 at 1412, a modification was completed which jumpered around the close torque switch to provide the full capability of the actuator to close the valve. This modification assured valve operability.

On 5/17/96 EFHV0025 was tested and confirmed to have been operable without the modification due to valve wear-in resulting in decreased bearing coefficient of friction.

On 5/21/96, utility engineers determined EFHV0025, as originally set up and with the calibration errors totalled conservatively, would not have been able to close against the differential pressure during a worst case design basis event.

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) **'B' Train of Essential Service Water Inoperable Due to Revised Accuracy of the Butterfly (Valve) Analysis and Review Test Systems**

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
1 1	1 2	9 3	9 6	- 0 0 2	- 0 0	0 5	3 1	9 6		0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (Check one or more of the following) (11)			
4		20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
0		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
H. D. Bono, Supervising Engineer, Site Licensing	5 7 3 6 7 6 - 4 4 2 8

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS

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)

On 4/17/96, ITI MOVATS, Inc. notified this utility via MOVATS Users Technical Notice, MUTN 96-01 of a potential problem with the accuracy of the Butterfly (Valve) Analysis and Review Test (BART™) system. The original testing criteria supplied by the vendor was based on calculations with an assumed error. As a result, the utility engineers set up applicable Motor Operated Valves (MOV) utilizing this calibration error. However, the vendor has recently performed validation testing under field conditions and has published higher error values. Licensee Engineering personnel evaluated these changes in error on MOV setup and preliminarily determined on 4/23/96 that, if all errors were applied in a negative direction, EFHV0025 "Service Water (SW) to Essential Service Water (ESW) Isolation Valve" could not be proven to close under all design bases scenarios.

On 4/23/96 at 1415, EFHV0025 was placed in its safety related closed position. On 4/24/96 at 1412, a modification was completed which jumpered around the close torque switch to provide the full capability of the actuator to close the valve. This modification assured valve operability.

On 5/17/96 EFHV0025 was tested and confirmed to have been operable without the modification due to valve wear-in resulting in decreased bearing coefficient of friction.

On 5/21/96, utility engineers determined EFHV0025, as originally set up and with the calibration errors totalled conservatively, would not have been able to close against the differential pressure during a worst case design basis event.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REV NO	
Callaway Plant Unit 1	0 5 0 0 0 4 8 3	9 6	- 0 0 2	- 0 0	0 2 OF 0 4

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

BASIS FOR REPORTABILITY:

Due to the uncertainty as to whether or not EFHV0025 would have been able to fully close, it was conservatively determined to have been inoperable since original set up.

This event is reportable under 10CFR50.73(a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications (T/S).

PLANT CONDITION AT TIME OF EVENT DISCOVERY:

Mode 1, Power Operation - 100% power

DESCRIPTION OF EVENT:

On 4/17/96, ITI MOVATS, Inc. notified this utility via MOVATS Users Technical Notice, MUTN 96-01 of a potential problem with the accuracy of the Butterfly (valve) Analysis and Review Test (BART™) system. The original testing criteria supplied by the vendor was based on calculations with an assumed error. As a result, the utility engineers set up applicable Motor Operated Valves (MOV) utilizing this calibration error. However, the vendor has recently performed validation testing under field conditions and has published higher error values. Licensee Engineering personnel evaluated these changes in error on MOV setup and preliminarily determined on 4/23/96 that, if all errors were applied in a negative direction, EFHV0025 "Service Water (SW) to Essential Service Water (ESW) Isolation Valve"(1) could not be proven to close under all design bases scenarios.

On 4/23/96 at 1415, EFHV0025 was placed in its safety related closed position. On 4/24/96 at 1412, a modification was completed which jumpered around the close torque switch to provide the full capability of the actuator to close the valve. This modification assured valve operability.

On 5/17/96 EFHV0025 was tested and confirmed to have been operable without the modification due to valve wear-in resulting in decreased bearing coefficient of friction. Valve EFHV0025 was set up with the original error data supplied by ITI MOVATS, Inc. on 10/17/93. It is indeterminate when the bearing coefficient of friction decreased enough to assure valve operability.

On 5/21/96, utility engineers determined EFHV0025, as originally set up and with the calibration errors totalled conservatively, would not have been able to close against the differential pressure during a worst case design basis event.

ROOT CAUSE:

The original published accuracy data for the BART system was found to be nonconservative after completion of validation testing by ITI MOVATS, Inc. Reanalysis of valve setup utilizing the new accuracy data determined that EFHV0025 could not be proven to close in all design bases events.

CORRECTIVE ACTIONS:

Utility engineers evaluated the performance of applicable butterfly valves (40 in all) in accordance with the new accuracy data supplied by ITI MOVATS Inc. Only EFHV0025 could not be proven to fully close in response to all design basis event scenarios and was subsequently modified. When tested on 5/17/96 the valve was determined to be operable without need for the modification.

SAFETY SIGNIFICANCE:

EFHV0023 and EFHV0025 are butterfly isolation valves powered from opposite trains ('A' and 'B' respectively) which serve to provide redundancy to isolate the 'A' Train ESW System from the nonsafety-related SW system on a Safety Injection (SI), Auxiliary Feedwater Low Suction Pressure (LSP), or Loss of Offsite Power (LOOP). This prevents inadvertent pump down of the Ultimate Heat Sink (UHS) to SW and assures ESW supply to safety related components.

In response to one of the above events, the valves receive a close signal approximately 20 seconds prior to the ESW pumps receiving a start signal. However, the pumps reach full discharge pressure approximately 2-6 seconds prior to the valves reaching full closure. During an event in which SW is lost the valves are exposed to full ESW system pressure. The resultant differential pressure across the valves is calculated to be approximately 139 PSID. Given the new accuracy data from ITI MOVATS and assuming that all errors were to occur in the negative direction, EFHV0025 was determined to be able to close against 129 PSID without the torque switch actuating and stopping valve closure. Assuming a single failure of EFHV0023, EFHV0025 would close until torque switch actuation. At that point the main control board indication would show the valve's partial close status. Actions could then be taken to close the valve. Until this occurred, UHS inventory would be lost from ESW flow through the partially closed valve into the SW system.

The UHS provides a common water supply to both ESW trains. The UHS Technical Specification minimum level for operability of 13.25 feet is sized for thirty days of operation with a 50% margin. The UHS has low level alarms set at 15.67 feet and is normally maintained at 17 feet (resulting in margins of 65% and 106% respectively). These levels provide sufficient margin for operators to take corrective action with minimal impact on UHS operability.

Only one train of ESW is required to respond to Design Basis events. The 'A' ESW Train and valve EFHV0023 were unaffected by the MOVATS MUTN, and remained operable. The 'B' ESW Train was capable of supplying full flow from the UHS to its supported safety system components.

No events occurred during the time frame covered by this LER which required the actuation of ESW and closure of EFHV0025. It should be noted that application of all errors in the negative direction is conservative and the valve as set up would likely have closed. In addition, decreased bearing coefficient of friction ensured valve operability at some point after the original setup date.

This event did not affect public health and safety.

PREVIOUS OCCURRENCES:

None

FOOTNOTES:

The system and component codes listed below are from the IEEE Standard 805-1985 and 803A-1984

(1) System - BI, Component - ISV