UNION ELECTRIC

Callaway Plant

August 8, 1989

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

ULNRC-2058

Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
FACILITY OPERATING LICENSE NPF-30
LICENSEE EVENT REPORT 89-009-00
A CONTAINMENT ISOLATION VALVE FAILED TO FULLY CLOSE
AGAINST THE SYSTEM DIFFERENTIAL PRESSURE WHEN TESTED

The enclosed Licensee Event Report is submitted pursuant to 10CFR50.73(a)(2)(i) to report the operation of the Callaway Plant with a condition prohibited by the plant's Technical Specifications.

Blosser

J. D. Blosser
Manager, Callaway Plant

TPS/JKB:jew

Enclosure

cc: Distribution attached

IE22
1/1

Mailing Address: P.O. Box 620, Fulton, MO 65251

cc distribution for ULNRC-2058

Mr. A. Bert Davis
Regional Administrator
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

American Nuclear Insurers
c/o Dottie Sherman, Library
The Exchange Suite 245
270 Farmington Avenue
Farmington, CT 06032

Manager, Electric Department
Missouri Public Service Commission
P. O. Box 360
Jefferson City, MO 65102

Records Center
Institute of Nuclear Power Operations
Suite 1500
1100 Circle 75 Parkway
Atlanta, GA 30339

NRC Resident Inspector

Mr. Thomas Alexion (2 copies)
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Stop 13-E-21
Washington, D.C. 20555

Mr. O. Maynard
Wolf Creek Nuclear Operating Corp.
P. O. Box 411
Burlington, KS 66839

Mr. Merlin Williams
Supt. of Regulatory Quality &
Administrative Services
Wolf Creek Nuclear Operating Corp.
P. O. Box 411
Burlington, KS 66839

Mr. R. W. DeFayette
Chief, Project Section 3A
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

D. F. Schnell (400)
G. L. Randolph
R. P. Wendling (470)
J. V. Laux
A. C. Passwater/D. E. Shafer/D. J. Walker (470)
G. A. Hughes
Z170.03 (QA Record)
Z40LER (Z170.09 Commercial Record)
M. S. Evans
D. E. Young
H. Wuertenbaecher, Jr. (100)
S. J. Bellers/D. R. Oelrichs
S. L. Auston (470)(NSRB)
N. Date (Sandra Auston) (470) E210.01
Z40ULNRC
A160.761

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

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 6

TITLE (4) A Containment Isolation Valve Failed to Fully Close Against the System Differential Pressure When Tested

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
0 5	1 1	8 9	8 9	0 0 9	0 0	0 8	0 8	8 9		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		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
R. D. Affolter - Superintendent, Systems Engineering	AREA CODE 3 1 4 6 7 6 - 8 2 4 0

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	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)

At 1900 CDT on 5/11/89, containment isolation valve, EG-HV-0060, failed to close completely against the system differential pressure (DP) when tested as part of the Motor-Operated Valve (MOV) testing program. The close torque switch deenergized the motor with the valve approximately 22% from its full closed position. The torque switch setting (TSS) was increased and the valve was satisfactorily retested on 5/12/89. The plant was in Mode 3 at 0% reactor power. On 7/21/89 it was determined that EG-HV-0060 had been inoperable since 3/6/86 when the valve was repacked.

The root cause of this event was the additional packing loads developed on 3/6/86. The repacking caused increased stem friction which prevented the full closure of the valve. On 3/6/86 there were no requirements to verify valve operability under DP conditions. The required retests, stroke time test and local leak rate test, had been performed with satisfactory results. The procedure which administratively controls the TSS's has been revised to reflect the new TSS for EG-HV-0060. The utility's response to Generic Letter 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance", issued 6/28/89 will address additional actions to be taken to prevent recurrence of this type of event. The utility had previously expanded the MOV testing scope prior to issuance of the Generic Letter and as a result detected this deficiency.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Callaway Plant Unit 1	0 5 0 0 0 4 8 3	8 9	— 0 0 9	— 0 0	0 2 OF 0 6

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

BASIS FOR REPORTABILITY

On 7/21/89, utility engineers determined that EG-HV-0060, a Component Cooling Water (CCW) containment isolation valve[1], had been inoperable since 3/6/86. It had been demonstrated incapable of closing against system differential pressure (DP) on 5/11/89. This is a condition prohibited by Technical Specification (T/S) 3.6.3. This report is submitted pursuant to 10CFR50.73(a)(2)(i) to report the operation of the Callaway Plant with a condition prohibited by the plant's T/S.

CONDITIONS AT THE TIME OF DISCOVERY

Mode 5 - Cold Shutdown, 0% Reactor Power

BACKGROUND INFORMATION

On 5/11/89, several CCW system isolation valves[2] were tested in order to determine the actuator thrusts required to overcome design DP conditions. These valves were tested as part of the Motor-Operated Valve (MOV) testing program which had been expanded beyond the scope of NRC Bulletin No. 85-03, dated 11/15/85 to include all safety-related MOVs. The original design specifications stated that valve, EG-HV-0060, would see a maximum DP of 50 psid and listed a close torque switch setting (TSS) of 1-1/4. During surveillance testing on 7/29/84, the valve failed to close against system DP. The valve packing was loosened and the close TSS was increased from 1-1/4 to 2-1/4. The valve was then retested satisfactorily against actual system DP.

DESCRIPTION OF THE EVENT

On 3/6/86, EG-HV-0060 was repacked. The valve passed the retest, which was a stroke time test and Local Leak Rate Test (LLRT) per T/S 4.6.3.1 and ASME Section XI. However, the retest was not required to be performed under system DP.

During diagnostic testing of EG-HV-0060 under static conditions on 5/4/89, it was determined that the target thrust specified could not be satisfied, i.e. sufficient thrust was not available to stroke against DP. The target thrust was based on actual DP tests of similar valves. Due to conservative assumptions utilized in determining the target thrust, the actual thrust was believed to be lower than the target thrust. Therefore a DP test of EG-HV-0060 was planned to determine the actual thrust required.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Callaway Plant Unit 1	0 5 0 0 0 4 8 3	8 9	— 0 0 9	— 0 0	0 3 OF 0 6

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

During performance of the DP test, on 5/11/89, at 1900 CDT, EG-HV-0060 opened satisfactorily but then failed to close completely against the system DP. The close torque switch contacts opened and deenergized the motor (5) with the valve approximately 22% from its full closed position at a TSS of 2-1/4 and an actuator thrust of 8320 lbs. Through the use of diagnostic test equipment, it was determined that 9840 lbs. thrust was required to fully close the valve against the actual system DP. A subsequent evaluation resulted in an increase of the TSS to 3-1/8 to allow the valve to close completely. The valve was retested satisfactorily on 5/12/89.

An extensive review of EG-HV-60's maintenance history, between the date of discovery, 5/11/89, and the date of reportability determination, 7/21/89, revealed the valve was repacked on 3/6/86. Therefore, it is assumed that the packing was tightened such that the valve would not stroke against system DP and the valve was inoperable until the condition was identified on 5/11/89 and corrected on 5/12/89. The plant had operated in all Modes between 3/6/86 and 5/11/89.

ROOT CAUSE

The root cause of this event is the additional packing loads developed on 3/6/86. The repacking caused increased stem friction which prevented the full closure of the valve. It is noted that on 3/6/86 there were no requirements to verify valve operability under DP conditions. The required retests, stroke time test and LLRT, had been performed with satisfactory results.

CORRECTIVE ACTIONS

1. The close TSS was adjusted to a setting of 3-1/8 which provided 12,920 lbs. of actuator output thrust. This exceeds the 9840 lbs. required to close the valve against actual system DP and also remains below the valve manufacturer's maximum allowable thrust value of 14,000 lbs. The procedure which administratively controls torque switch settings has been revised to reflect this new setting for EG-HV-0060.

2. Generic Letter 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance", was issued on 6/28/89. This Generic Letter extends the scope of NRC Bulletin 85-03 to all safety-related MOVs as well as all position-changeable MOVs. The utility had previously expanded the MOV testing scope prior to issuance of the Generic Letter and as a result detected this deficiency. The utility's response to Generic Letter 89-10 will address additional actions to be taken to prevent recurrence of this type of incident.

SAFETY SIGNIFICANCE

EG-HV-0060 provides isolation of the CCW return line from Containment Building loads. Included in these loads are the Reactor Coolant Drain Tank Heat Exchanger(4), the Excess Letdown Heat Exchanger(5), and the Reactor Coolant Pump(6) upper and lower bearing coolers and motor air coolers(7). It also provides containment isolation per T/S 3.6.3. This valve is normally open to provide cooling for the loads described above. EG-HV-0060 is isolated on a Containment Isolation Signal 'B' (CISB), which is initiated when containment pressure reaches 27 psig.

The inner and outer containment isolation valves for this CCW penetration are EG-HV-0060 and EG-HV-0059, respectively. These valves have bypass valves, EG-HV-0130 and EG-HV-0131,(8) which are normally closed. EG-HV-0058 is the containment isolation valve in the CCW supply line to the Containment Building loads. (Reference Figure 1)

Failure of EG-HV-0060 to fully close on a CISB would not have created a significant threat to plant operation or the public safety based on the following:

Assuming a single active failure coincident with the failure of EG-HV-0060, two possible situations exist:

a. If EG-HV-0058 is assumed to be the single active failure, then the failure of EG-HV-0060 is not a significant concern because automatic isolation valves EG-HV-0059 and EG-HV-0071 and check valve EG-V-0204 would isolate the CCW supply and return lines.

b. If EG-HV-0059 is assumed to be the single active failure, it is probable that EG-HV-0060 would have been capable of closing due to the reduced DP resulting from the closing of EG-HV-0058. EG-HV-0058 receives a CISB signal simultaneous with EG-HV-0060. Since EG-HV-0058 is isolating flow through the CCW line, the flow and DP experienced by EG-HV-0060 (which is downstream of EG-HV-0058) will be lower than that experienced during DP testing.

Additionally, the CCW return line from the Containment Building loads is provided with containment isolation valves to satisfy General Design Criterion (GDC) 56 of 10CFR50, Appendix A. GDC 56 applies to lines that are connected directly to the containment atmosphere and penetrate the primary reactor containment. It is noted that during an accident which initiates a CISB signal, a failure of the CCW line would have to occur coincident with the failure of EG-HV-0060 and EG-HV-0059 in order to provide a release path for radioactive material. Per the Callaway Plant Final Safety Analysis Report, a pipe break in the CCW line is not postulated during the short time period following an accident.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Callaway Plant Unit 1	0 5 0 0 0 4 8 3	8 9	— 0 0 9	— 0 0	0 5 OF 0 6

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

PREVIOUS OCCURRENCES

None.

FOOTNOTES

The system and component codes listed below are from IEEE Standards 805-1984 and 803A-1983, respectively.

(1) System - CC; Component - ISV
(2) System - CC; Component - ISV
(3) System - CC; Component - MO
(4) System - WD; Component - HX
(5) System - CB; Component - HX
(6) System - AB; Component - P
(7) System - AB; Component - CLR
(8) System - CC; Component - V

*U.S. GPO: 1988-520-589:00070

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Callaway Plant Unit 1	0 5 0 0 0 4 8 3	8 9	— 0 0 9	— 0 0	0 6 OF 0 6

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

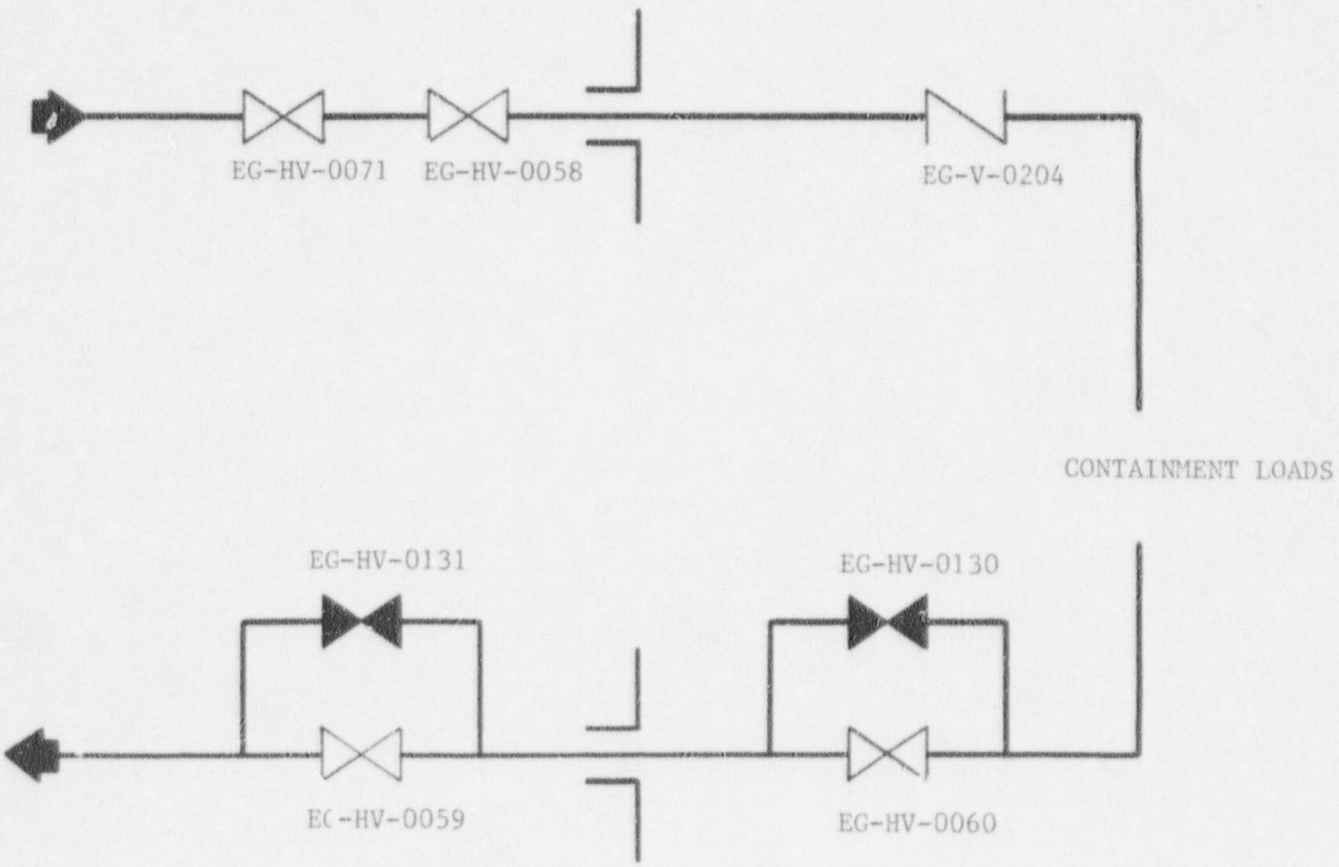

FIGURE 1: SIMPLIFIED PIPING AND INSTRUMENT DIAGRAM OF THE COMPONENT COOLING WATER SYSTEM CONTAINMENT ISOLATION VALVES