M-22BN01(Q)

REFUELING WATER STORAGE TANK
TBN01

EBN01A
EBN01B
EBN01C

DETAIL A

NOTES:

1. LOCATE CONNECTION ABOVE NORMAL WATER LEVEL.
2. HEATING COIL AND STEAM SUPPLY AND RETURN LINES ARE NOT Q-LISTED.
3. REFERENCED WESTINGHOUSE DRAWINGS: 1145E02 SHT.3. 1145E03. 1145E04 SHEETS 1 THRU 3.
4. DELETED.
5. REMOVABLE SPOOL PIPE REQUIRED FOR HYDROTESTING.
6. ISOLATION SWITCH PROVIDED IN THE CONTROL ROOM FOR POWER LOCKOUT OF VALVE HV-8813.
7. THE THERMOWELL FOR TE-6 WILL BE IN ACCORDANCE WITH SPEC. J-563(Q).
8. TEST INDICATING SWITCH TO VERIFY CIRCUIT OPERABILITY.
9. LEVEL SWITCH NOT USED ON THIS INSTRUMENT.
10. TEMPORARY COOLING SUPPLIED THROUGH BONNET OF BNV0016 AND BNV0036.
11. DELETED.
12. PIPE CAP MAY BE REPLACED BY QUICK-DISCONNECT ASSEMBLY. PER RFR-17192B.

REV.	DATE	DRAWN
18	062598	JHK
CHKD.	SUPV.	APPD.
MAL	AMR	N/A

INCORP. RFR-18497A.

REV.	DATE	DRAWN
19	111998	RLW
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INCORP. MP 89-1035 (PARTIAL)

REV.	DATE	DRAWN
20	102598	RLW
CHKD.	SUPV.	APPD.
DJB	AMR	N/A

INCORP. MP 89-1035 (PARTIAL)

REV.	DATE
21	111102
DRAWN	CHKD.	SUPV.
---	---	---
RLW	MAL	DLB

INCORPORATE MP 89-1035A (PARTIAL)

REV.	DATE
22	082003
DRAWN	CHKD.	SUPV.
---	---	---
RLW	MAL	TWS

INCORPORATE MINOR CHANGE CAR 2003051155

REV.	DATE
23	091003
DRAWN	CHKD.	SUPV.
---	---	---
MAL	EWM	TWS

INCORP. MP 89-1035A (PARTIAL).

REV.	DATE
24	110904
DRAWN	CHKD.	SUPV.
---	---	---
MAL	RLW	TWS

INCORP. RFR-22941A

REV.	DATE
25	082007
DRAWN	CHKD.	SUPV.
---	---	---
RLW	EWM	TWS

INCORPORATE MP 89-1035A

REV.	DATE
26	102914
DRAWN	CHKD.	SUPV.
---	---	---
MAL	RLW	LMP

INCORP. MP 13-0028. REV. 0.

AS-BUILT CLASS 1

DRAWN	(DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM BORATED REFUELING WATER STORAGE SYSTEM	
CHKD.	(DATE) N/A		
SUPV.	(DATE) N/A	FSAR FIGURE 6.3-1 SHEET 1	
APPD.	(DATE) N/A	LOCATION: CALLAWAY ENERGY CENTER	CLASS: 2
UNION ELECTRIC COMPANY ST. LOUIS, MO		M-22BN01(Q)	REV. 26

M-22EM01

NOTES:

1. DELETED.
2. DRILLED RESTRICTION 3/8" IN DIAMETER. POINT AT WHICH QUALITY GROUP CLASSIFICATION IS CHANGED FROM "A" TO "B". INSERVICE INSPECTION WILL BE PERFORMED ON CLASS "A" PIPE UP TO THIS ORIFICE.
3. SEE WESTINGHOUSE DRAWINGS 1145E04 SHT. 1.2 & 3.
4. DELETED.
5. DELETED.
6. PIPING CONTAINING 12 PER CENT BORIC ACID WILL HAVE TEES WITH A CLEANOUT TO PERMIT CLEANING OF SYSTEM AS REQUIRED.
7. FOR P & ID LEGEND AND SYMBOLS SEE DRAWINGS M-220101 THRU M-220104.
8. MINI FLOW ORFICE SUPPLIED BY SI PUMP VENDOR.
9. HEAT TRACING NON-CLASS 1E.
10. ISOLATION SWITCH PROVIDED IN THE CONTROL ROOM FOR POWER LOCKOUT OF VALVES 8802A,B AND 8835.
11. SG-AR-6, PEAK RECORDING ACCELEREOMETER. TO BE MOUNTED ON SURFACE OF HORIZONTAL PIPE SECTION.
12. DELETED.
13. DELETED.
14. VALVE HANDWHEEL AND BREAKER LOCKED IN OPEN POSITION DURING NORMAL POWER OPERATION.
15. DELETED
16. EMV0257 SENSES UPSTREAM PRESSURE AND PROVIDES BACKPRESSURE ON THE S1 TEST HEADER AS DESIGNATED BY ENGINEERING.
17. CAPPED SWAGELOK ADAPTER.

REV.	DATE	DRAWN
24	030801	MAL
CHKD.	SUPV.	APPD.
SKC	JHC	N/A

INCORP.
RFR 21102A.

REV.	DATE	DRAWN
25	041806	MAL
CHKD.	SUPV.	APPD.
RLW	DLB	N/A

INCORP.
MP 97-1010
FCN-06.

REV.	DATE	DRAWN
26	042001	RLW
CHKD.	SUPV.	APPD.
MAL	DTW	N/A

INCORP.
MP 00-1015
(PARTIAL)

REV.	DATE	DRAWN
27	042106	RLW
CHKD.	SUPV.	APPD.
MAL	DTW	N/A

INCORP.
MP 00-1015A.

REV.	DATE	DRAWN
28	090602	MAL
CHKD.	SUPV.	APPD.
JHK	TWS	N/A

INCORP.
RFR 21810A.

REV.	DATE
29	110402
DRAWN	CHKD.	SUPV.
RLW	MAL	DLB

INCORPORATE
MP 01-1019A

REV.	DATE
30	111102
DRAWN	CHKD.	SUPV.
RLW	MAL	DLB

INCORPORATE
MP 89-1035A

REV.	DATE
31	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP.
RFR 22941A

REV.	DATE
32	101305
DRAWN	CHKD.	SUPV.
EWM	TJC	MAM

INCORPORATE
MP 05-1004A

REV.	DATE
33	060707
DRAWN	CHKD.	SUPV.
MAL	TJC	MWH

INCORP.
MP 07-0016.
REV. 0.

REV.	DATE
34	111308
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE
MP 07-0121

REV.	DATE
35	020909
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORPORATE CR
CAR 09-000010.
CAR 200508848

REV.	DATE
36	060110
DRAWN	CHKD.	SUPV.
MAL	TJC	LMP

INCORP.
MP 08-0016.
FCN-05.

REV.	DATE
37	080311
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

INCORP.
CAR 201101335.

REV.	DATE
38	110414
DRAWN	CHKD.	SUPV.
TJC	MAL	LMP

INCORP.
MP 14-0024.

LUBE OIL PIPING FOR PUMPS
PEM01A AND PEM01B
N.T.S.

AS-BUILT CLASS 1

DRAWN	N/A	PIPING AND INSTRUMENTATION DIAGRAM HIGH PRESSURE COOLANT INJECTION SYSTEM	
CHKD.	N/A	FSAR FIGURE 6.3-1 SHEET 2	
SUPV.	N/A		
APPD.	N/A	LOCATION: CALLAWAY ENERGY CENTER	CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO		M-22EM01(Q)	REV. 38

M-22EM02(Q)

NOTES:

1. FOR GENERAL NOTES & REFERENCES SEE DWG. M-22EM01.
2. DELETED
3. SEE DWGS. M-23EM02, M-23EM08, M-23EM09 & M-23EM10 FOR EQUIPMENT NOT SHOWN ON THIS DWG. THAT HAS BEEN PERMANENTLY REMOVED FROM SERVICE.
4. DRILLED RESTRICTION 3/8" IN DIAMETER. POINT AT WHICH QUALITY GROUP CLASSIFICATION IS CHANGED FROM "A" TO "B". INSERVICE INSPECTION WILL BE PERFORMED ON CLASS "A" PIPE UP TO THIS ORFICE.
5. THIS CONNECTION IS TO BE USED ONLY FOR BEYOND-DESIGN-BASIS (FLEX) EMERGENCY CORE COOLING.
6. DELETED
7. DELETED
8. DELETED
9. DELETED.
10. DELETED
11. DELETED

REV.	DATE	DRAWN	DESCRIPTION
4	111888	MAL	REDRAWN FOR CLARITY.
5	081192	JHK	INCORP CMP 90-1037.
6	071993	DLB*	INCORP RFR-10805B
7	110893	DLB*	INCORP RFR-14287A
8	061694	DLB*	INCORP RFR-15100
9	071294	DLB*	INCORP CMP 94-1018
10	040595	SBR	INCORP CMP 90-1008 (PARTIAL)
11	040895	HLP	INCORP CMP 90-1008
12	042695	DLB*	INCORP CMP 90-1037
13	101597	DLB*	INCORP, RFR-08236B.
14	030398	RLW	INCORP, DEC-1501 AND RFR-08236C.
15	121698	DLB*	INCORP, DEC-1573.
16	110499	RLW	INCORP, MP 89-1035 (PARTIAL)
17	032406	MAL	INCORP, MP 97-1027A.
18	053101	RAM	INCORP, MP 89-1035A
19	041905	MAL RLW TWS	INCORP, RFR-22941A
20	070710	TJC MAL TWS	INCORP, CAR 201001930 ACTION 7.
21	103114	MAL RLW DME	INCORP, MP 13-0023, REV. 0 AND FCN-01.
22	071515	TJC MAL DME	INCORP, CAR 201504266.
23	092815	RLW TJC DME	INCORPORATE MP 13-0023, FCN-03

AS-BUILT CLASS 1

DRAWN N/A		PIPING & INSTRUMENTATION DIAGRAM HIGH PRESSURE COOLANT INJECTION SYSTEM FSAR FIGURE 6.3-1 SHEET 3	
CHKD. N/A			
SUPV. N/A			
APPD. N/A	LOCATION: CALLAWAY ENERGY CENTER		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22EM02(Q)		REV. 23

M-22EM03

RHR PUMP A
RHR PUMP B
EJHV 8809 A
EJHV 8716 A
EJHV 8840
EJHV 8716 B
EJHV 8809 B
EJHCV 8890 A
EJHCV 8825
EJHCV 8890 B
P82
P21
P27
RHR CL 1 (E-2)
RHR CL 2 (C-2)
RHR HOT LEG (B-5)
RHR CL 3 (C-8)
RHR CL 4 (E-8)
(G-2) RHR A TEST

RWST
RHUT
BN-V004
EM-V120
EM-V121
EM-V140
HE-V143
EM-V257
EMF 328B
EMF 328A
EMFE 928
EM-V040
EM-V039
EMPI 929
EM-V038
EMHV 8964
EMHV 8871
P92
EM-V152
RCS CL 4 TEST (E-7)
EJ-V210
EM-V266

SI PUMPS COLD LEG INJECTION
EMHV 8835
P49
EMHV 8823
SI CL 1 (E-3)
SI CL 2 (B-3)
SI CL 3 (B-7)
SI CL 4 (E-7)
SI CL TEST (F-5)
RHR A TEST (H-7)
EMV0248 RF5

SI PUMP B HOT LEG INJECTION
EMHV 8824
SI CL TEST (G-1)
EMHV 8802 B
P48
EMV0264
EMHV 8889 D
EMHV 8889 A
BB-8949D
EM-V004
EM-V003
BB-8949E
(E-7) D ACCUMULATOR TEST

STEAM GENERATOR EBB01D
STEAM GENERATOR EBB01A
LOOP NUMBER 4
LOOP NUMBER 1

EPHV 8879 D
EP-V124
(G-5) RCS CL 4 TEST
EP-V040
(H-1) SI CL 4
EP-8818D
(G-7) RHR CL 4
EPHV 8877 D
EPHV 8808 D
(F-3) D ACC TEST
SI ACCUMULATOR D
EP-8956D

EPHV 8879 A
EP-V010
SI CL 1 (H-1)
EP-8818A
RHR CL 1 (H-7)
EPHV 8877 A
EPHV 8808 A
EP-8956A
SI ACCUMULATOR A

REACTOR COOLANT PUMP PBB01D
REACTOR COOLANT PUMP PBB01A
BB-8948D
BB-8948A
(A-1) BI-4
BB-V059
(A-1) BI-3
BB-V040
BB-V001
(A-1) BI-1
BB-V022
(A-1) BI-2
REACTOR VESSEL RBB01

REACTOR COOLANT PUMP PBB01C
REACTOR COOLANT PUMP PBB01B
BB-8948C
BB-8948B
SI ACCUMULATOR C
EPHV 8808 C
EP-8956C
EPHV 8877 C
(G-7) RHR CL 3
EP-8818C
(H-1) SI CL 3
EP-V030
EPHV 8879 C
EPV0128 RF5

LOOP NUMBER 3
LOOP NUMBER 2
STEAM GENERATOR EBB01C
STEAM GENERATOR EBB01B
(G-7) RHR HOT LEG
EJ-8841B
EJ-8841A
BB-8949C
EM-V002
EM-V001
BB-8949B
EMHV 8889 C
EMHV 8889 B
P87
EMHV 8802 A
EMHV 8881
SI PUMP A HOT LEG INJECTION
EMV267

EPHV 8879 B
EP-V127
EM-V249
EMHV 8801 A
EMHV 8801 B
BORON INJECTION HEADER
EMHV 8843
EMHV 8882
P88
EM-8815
BI-1 (D-4)
BI-2 (D-4)
BI-3 (D-6)
BI-4 (D-6)

SI ACCUMULATOR B
EP-8956B
EPHV 8808 B
EPHV 8877 B
RHR CL 2 (H-7)
EP-8818B
SI CL 2 (H-1)
EP-V020

NOTES:

1. THIS DRAWING WAS CREATED TO CLARIFY AND CONSOLIDATE ALL THE INTERCONNECTIONS OF THE SI SYSTEM TEST LINE. IT CONSISTS OF PIPE AND VALVES FROM THE BB, BN, EM, EJ, AND EP SYSTEMS. REFER TO THE INDIVIDUAL SYSTEM M-22 DRAWINGS FOR INFORMATION ON PIPE CLASS, SIZE AND DETAILS OF ALL INTERCONNECTIONS.

REV.	DATE	DRAWN
0	050791	SBR
CHKD.	SUPV.	APPD.
DLBr	TJM	N/A

INITIAL ISSUE PER RFR-8869A

REV.	DATE	DRAWN
1	072991	JHK
CHKD.	SUPV.	APPD.
DLBr	TJM	N/A

INCORP. CMP 90-1007.

REV.	DATE	DRAWN
2	111391	MAL
CHKD.	SUPV.	APPD.
DLBr	TJM	N/A

INCORP. DEC-0770.

REV.	DATE	DRAWN
3	071692	GDC
CHKD.	SUPV.	APPD.
RAM	TJM	N/A

INCORP. DEC-0883.

REV.	DATE	DRAWN
4	011593	DLBr
CHKD.	SUPV.	APPD.
RLW	TJM	N/A

INCORP. DEC-0927.

REV.	DATE	DRAWN
5	080395	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. DEC-1267

REV.	DATE	DRAWN
6	043096	DLBr
CHKD.	SUPV.	APPD.
RLW	AMR	N/A

INCORP. DEC-1331

REV.	DATE	DRAWN
7	041097	HLP
CHKD.	SUPV.	APPD.
SKC	AMR	N/A

INCORP. RFR-17539A

REV.	DATE	DRAWN
8	041200	MAL
CHKD.	SUPV.	APPD.
JHK	AMR	N/A

INCORP. MP 00-1003A.

REV.	DATE	DRAWN
9	030801	MAL
CHKD.	SUPV.	APPD.
SKC	JHC	N/A

INCORP. RFR 21102A.

REV.	DATE	DRAWN
10	042001	RLW
CHKD.	SUPV.	APPD.
MAL	DTW	N/A

INCORP. MP 00-1015 (PARTIAL)

REV.	DATE	DRAWN
11	042101	RLW
CHKD.	SUPV.	APPD.
MAL	DTW	N/A

INCORP. MP 00-1015A

REV.	DATE
12	110402
DRAWN	CHKD.	SUPV.
RLW	MAL	DLB

INCORPORATE MP 01-1019A

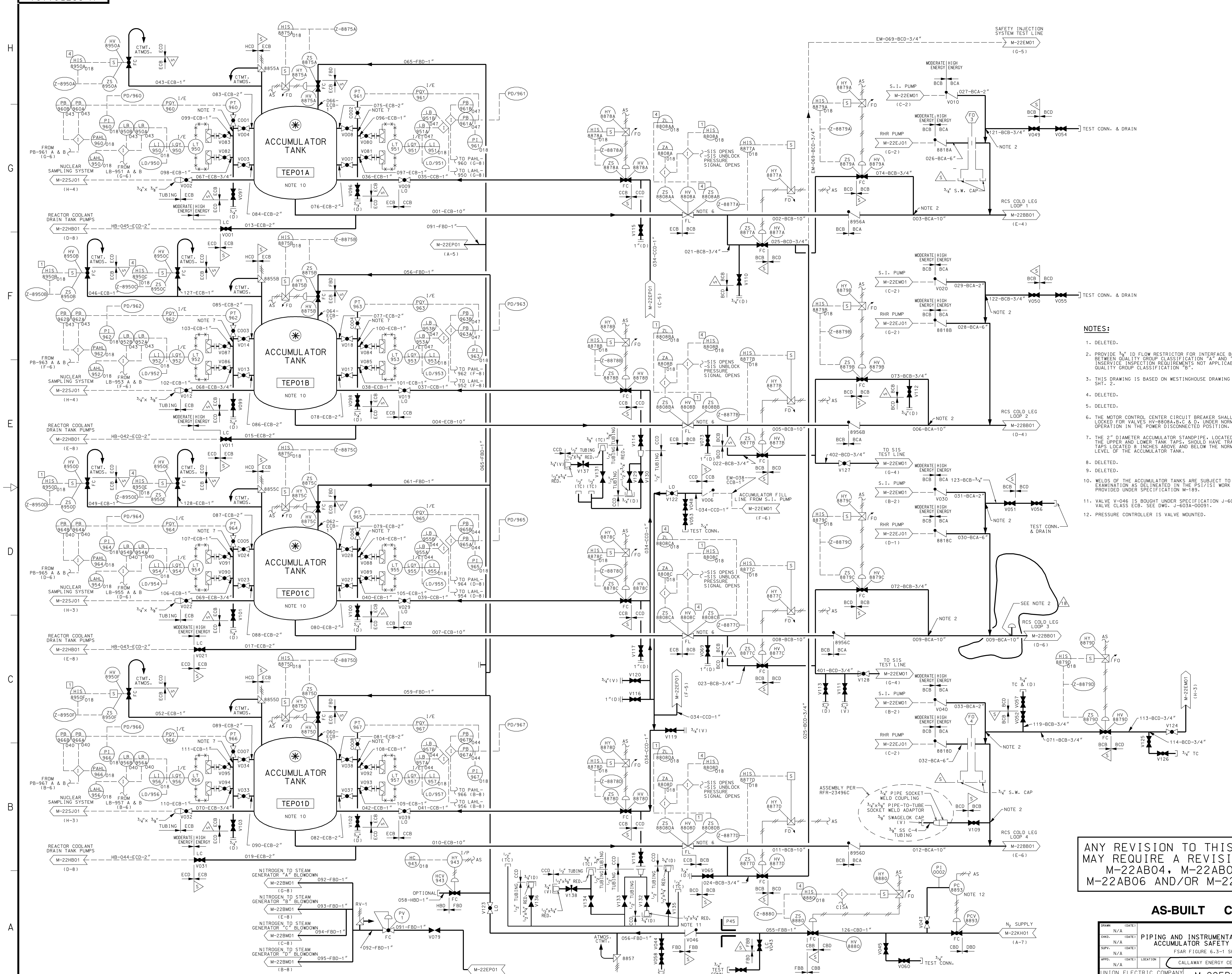
REV.	DATE
13	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

INCORP. RFR 22941A

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM HIGH PRESSURE COOLANT INJECTION SYSTEM TEST LINE		
CHKD. (DATE) N/A			
SUPV. (DATE) N/A	(FSAR FIGURE 6.3-1 SHEET 4)		
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT		CLASS: 1
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22EM03		REV. 13

M-22EP01(Q)



REV.	DATE	DRAWN
4	010892	SBR
CHKD. DLBr	SUPV. TJM	APPD. N/A
REDRAWN FOR CLARITY.		
5	041092	SBR
CHKD. DLBr	SUPV. TJM	APPD. N/A
INCORP. 90-1007B		
6	112493	DLBr
CHKD. RLW	SUPV. TJM	APPD. N/A
INCORP. RFR-14432A		
7	021194	GDC
CHKD. RAM	SUPV. TJM	APPD. N/A
INCORP. RFR-14573A		
8	043098	MAL
CHKD. RLW	SUPV. JHK	APPD. N/A
INCORP. DEC-1501.		
9	100799	MAL
CHKD. EWM	SUPV. DJB	APPD. N/A
INCORP. MP 97-1010A (PARTIAL) & FCN-02.		
10	102999	MAL
CHKD. EWM	SUPV. JAM	APPD. N/A
INCORP. MP 97-1010 FCN-04.		
11	041801	MAL
CHKD. RLW	SUPV. DLB	APPD. N/A
INCORP. MP 97-1010 FCN-06.		

REV.	DATE	
12	120203	
DRAWN MAL	CHKD. EWM	SUPV. SKC
INCORP. RFR 21339B.		
13	052504	
DRAWN MAL	CHKD. RLW	SUPV. SKC
INCORP. RFR 23496C.		

NOTES:

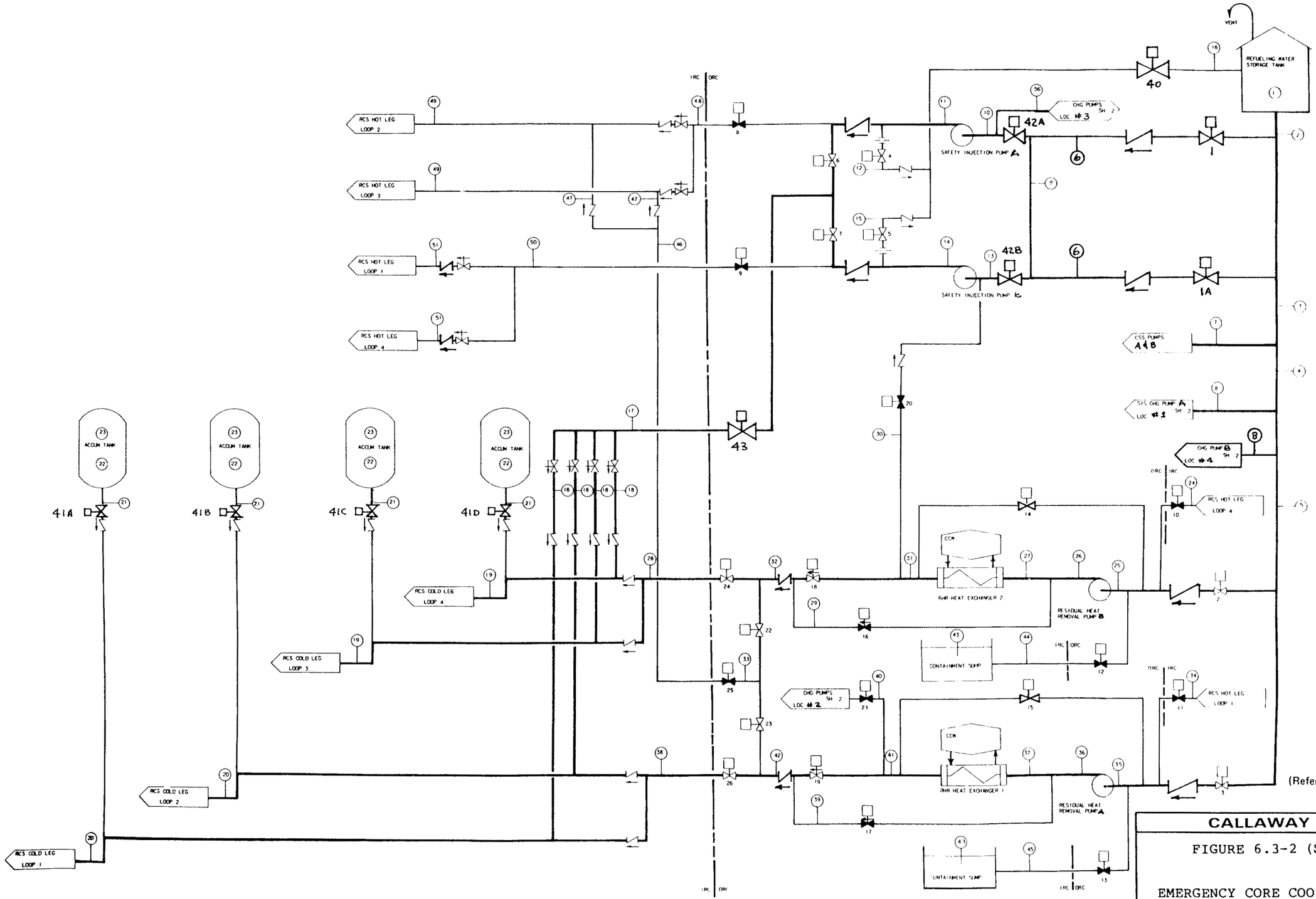
1. DELETED.
2. PROVIDE 3/8" ID FLOW RESTRICTOR FOR INTERFACE BOUNDARY BETWEEN QUALITY GROUP CLASSIFICATION "A" AND "B". INSERVICE INSPECTION REQUIREMENTS NOT APPLICABLE TO THE QUALITY GROUP CLASSIFICATION "B".
3. THIS DRAWING IS BASED ON WESTINGHOUSE DRAWING 1145E04 SHT. 2.
4. DELETED.
5. DELETED.
6. THE MOTOR CONTROL CENTER CIRCUIT BREAKER SHALL BE LOCKED FOR VALVES HV-8808A,B,C & D, UNDER NORMAL PLANT OPERATION IN THE POWER DISCONNECTED POSITION.
7. THE 2" DIAMETER ACCUMULATOR STANDPIPE, LOCATED BETWEEN THE UPPER AND LOWER TANK TAPS, SHOULD HAVE TRANSMITTER TAPS LOCATED 8 INCHES ABOVE AND BELOW THE NORMAL WATER LEVEL OF THE ACCUMULATOR TANK.
8. DELETED.
9. DELETED.
10. WELDS OF THE ACCUMULATOR TANKS ARE SUBJECT TO PSI/ISI EXAMINATION AS DELINEATED IN THE PSI/ISI WORK PLANS PROVIDED UNDER SPECIFICATION M-189.
11. VALVE V-046 IS BOUGHT UNDER SPECIFICATION J-603A AND IS VALVE CLASS ECB. SEE DWG. J-603A-00091.
12. PRESSURE CONTROLLER IS VALVE MOUNTED.

REV.	DATE	
14	110904	
DRAWN MAL	CHKD. RLW	SUPV. TWS
INCORP. RFR-22941A		
15	103105	
DRAWN RLW	CHKD. EWM	SUPV. MWH
INCORPORATE MP 03-1014A		
16	110105	
DRAWN JHK	CHKD. MAL	SUPV. TWS
INCORP. MP 04-1015.		
17	070710	
DRAWN TJC	CHKD. MAL	SUPV. TWS
INCORP. CAR 201001930 ACTION 7.		
18	103014	
DRAWN TJC RLW	CHKD. MAL	SUPV. DME
INCORP. MP 14-0023 REV.0.		

ANY REVISION TO THIS DWG. MAY REQUIRE A REVISION TO M-22AB04, M-22AB05, M-22AB06 AND/OR M-22AB07

AS-BUILT CLASS 1

DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM ACCUMULATOR SAFETY INJECTION
CHKD. (DATE) N/A	FSAR FIGURE 6.3-1 SHEET 5
SUPV. (DATE) N/A	
APPD. (DATE) N/A	LOCATION: CALLAWAY ENERGY CENTER — CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22EP01(Q) — REV. 18



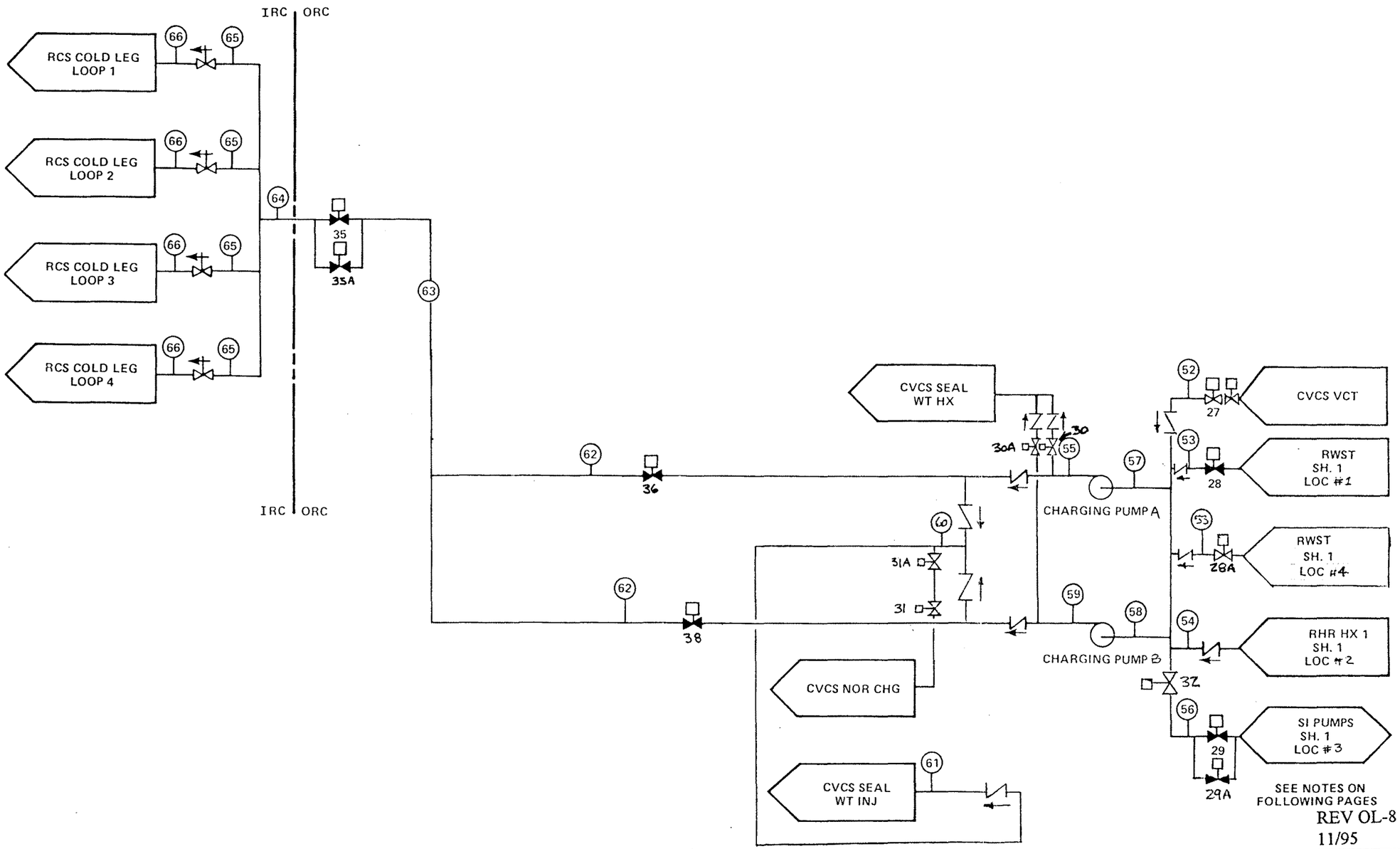
(Refer to following notes)

REV. OL-5
6/91

CALLAWAY PLANT

FIGURE 6.3-2 (SHEET 1)

EMERGENCY CORE COOLING SYSTEM
PROCESS FLOW DIAGRAM



REV OL-8
11/95

CALLAWAY PLANT

FIGURE 6.3-2 (SHEET 2)

EMERGENCY CORE COOLING SYSTEM
PROCESS FLOW DIAGRAM

NOTES TO FIGURE 6.3-2

MODES OF OPERATION

Mode A - Injection

This mode presents the process conditions for the case of maximum safeguards, i.e., all pumps operating, following accumulator delivery. Two residual heat removal (RHR) pumps, two safety injection (SI) pumps, and two centrifugal charging (CC) pumps operate, taking suction from the RWST and delivering to the reactor through the cold leg connections. EJ-HV-8716A and B and EJ-HV-8809A and B are maintained open during operating modes 1-3 in order that either RHR pump is able to inject to all four RCS cold legs. Note that the flow from each pump is less than its maximum runout since the pump discharge piping is shared by the two pumps of each subsystem. Note also that the SI pump branch connections to the RHR lines are assumed very close to their discharge into the accumulator lines, thereby eliminating any increase in RHR branch line head loss due to the combined flows of the RHR and SI pumps. The RHR line resistance was assumed to be the minimum of the allowable bank presented in the limiting pressure drop and elevation head design requirements, allowing maximum RHR injection flow.

Mode B - Cold Leg Recirculation

This mode presents the process conditions for the case of cold leg recirculation, assuming RHR pump A out of service and RHR pump B operating, SI pumps A and B operating, and CC pumps A and B operating.

In this mode, the ECCS pumps operate in series, with only the RHR pump capable of taking suction from the containment sump. The recirculation coolant is then delivered by the RHR pump to both of the SI pumps, which deliver to the reactor through their cold leg connections, and to both of the CC pumps. The CC pumps deliver to the reactor through their cold leg connections. The RHR pump also delivers flow directly to the reactor through two cold legs since the RHR discharge cross-connect valves are closed when making the transfer from injection to recirculation.

Mode C - Hot Leg Recirculation

This mode presents the process conditions for the case of hot leg recirculation, assuming RHR pump B out of service and RHR pump A operating, CC pumps A and B operating, and SI pumps A and B operating.

In this mode, the ECCS pumps again operate in series with only the RHR pump taking suction from the containment sump. The recirculated coolant is then delivered by the RHR pump to both of the SI and to both of the CC pumps. The CC pumps continue to deliver to the reactor through their cold leg connections and the SI pumps deliver to the reactor through their hot leg connections. The RHR pump also delivers directly to the reactor through two hot leg connections.

NOTES TO FIGURE 6.3-2 (Sheet 2)

VALVE ALIGNMENT CHART

Valve NO.		Operational Modes A	B	C
1	(BN-HV-8806A)	O	C	C
1A	(BN-HV-8806B)	O	C	C
2	(BN-HV-8812B)	O	C	C
3	(BN-HV-8812A)	O	C	C
4	(EM-HV-8814A)	O	C	C
5	(EM-HV-8814B)	O	C	C
6	(EM-HV-8821A)	O	O	C
7	(EM-HV-8821B)	O	O	C
8	(EM-HV-8802A)	C	C	O
9	(EM-HV-8802B)	C	C	O
10	(EJ-HV-8701B)	C	C	C
11	(EJ-HV-8701A)	C	C	C
12	(EJ-HV-8811B)	C	O	O
13	(EJ-HV-8811A)	C	O	O
14	(EJ-FCV-0611)	C	C	O
15	(EJ-FCV-0610)	C	O	C
16	(EJ-FCV-0619)	C	C	C
17	(EJ-FCV-0618)	C	C	C
18	(EJ-HCV-0607)	O	O	O
19	(EJ-HCV-0606)	O	O	O
20	(EJ-HV-8804B)	C	O	O
21	(EJ-HV-8804A)	C	O	O
22	(EJ-HV-8716B)	O*	C	C**
23	(EJ-HV-8716A)	O*	C	O
24	(EJ-HV-8809B)	O*	O	C
25	(EJ-HV-8840)	C	C	O
26	(EJ-HV-8809A)	O*	O	C
27	(BG-LCV-0112B)	C	C	C
27A	(BG-LCV-0112C)	C	C	C
28	(BN-LCV-0112D)	O	C	C
28A	(BN-LCV-0112E)	O	C	C
29	(EM-HV-8807A)	C	O	O
29A	(EM-HV-8807B)	C	O	O
30	(BG-HV-8110)	C	C	C
30A	(BG-HV-8111)	C	C	C
31	(BG-HV-8105)	C	C	C
31A	(BG-HV-8106)	C	C	C
32	(EM-HV-8924)	O	O	O
35	(EM-HV-8801A)	O	O	O
35A	(EM-HV-8801B)	O	O	O
36	(EM-HV-8803A)	O	O	O
38	(EM-HV-8803B)	O	O	O
40	(BN-HV-8813)	O	C	C
41A	(EP-HV-8808A)	O	O	O
41B	(EP-HV-8808B)	O	O	O
41C	(EP-HV-8808C)	O	O	O
41D	(EP-HV-8808D)	O	O	O
42A	(EM-HV-8923A)	O	O	O
42B	(EM-HV-8923B)	O	O	O
43	(EM-HV-8835)	O	O	C

O = open
C = closed
* EJ-HV-8716A and B and EJ-HV-8809A and B are maintained open during operating modes 1-3 in order that either RHR pump is able to inject to all four RCS cold legs.
** Assuming that only RHR pump A is operating.

NOTES TO FIGURE 6.3-2 (Sheet 3)

MODE A - INJECTION PHASE(CONDITIONS FOLLOWING ACCUMULATOR DELIVERY)

Location	Fluid	Pressure (psig)	Temperature (F)	(gpm)	Flow (lb/sec)	Volume (gal)
l	Refueling water	Atm tank	l00	-	-	394,000
2	"	(a)	l00	l6,905	2,333	-
3	"	l3 psia	l00	l6,025	l2,2ll	-
4	"	-	l00	9,695	l,338	-
5	"	-	l00	8,856	l,222	-
6	"	ll psia	l00	440	6l.5	-
7	"	-	l00	3,165	437	-
8	"	>l0 psia	l00	419	58	-
9	"	>l0 psia	l00	440	6l.5	-
l0	"	l0 psia	l00	440	6l.5	-
ll	"	ll65	l00	440	6l.5	-
l2	"	<25	l00	39	5	-
l3	"	l0 psia	l00	440	6l.5	-
l4	"	ll65	l00	440	6l.5	-
l5	"	<25	l00	39	5	-
l6	"	-	l00	78	ll	-
l7	"	l050	l00	802	lll	-
l8	"	73	l00	200.5	28	-
l9	"	Low pressure	l00	2,4l4.5	333	-
20	"	Low pressure	l00	2,4l4.5	333	-
2l	Borated Water	0	l00	0	0	-
22	Borated Water	0	l00	0	0	6358[(b)]

NOTES TO FIGURE 6.3-2 (Sheet 4)

Location	Fluid	Pressure (psig)	Temperature (F)	Flow (gpm)	Flow (lb/sec)	Volume (gal)
23	Nitrogen	0	l00	0	0	500(ft^3)
24	Reactor coolant	-	l00	0	0	-
25	Refueling water	0	100	4,428	611	-
26	"	138	100	4,428	611	-
27	"	-	100	4,428	611	-
28	"	47	100	4,428	611	-
29	"	86	100	0	0	-
30	"	-	100	0	0	-
31	"	-	100	4,428	611	-
32	"	86	100	4,428	611	-
33	"	86	100	0	0	-
34	Reactor coolant	-	100	0	0	-
35	Refueling water	0	100	4,428	611	-
36	"	138	100	4,428	611	-
37	"	-	100	4,428	611	-
38	"	47	100	4,428	611	-
39	"	86	100	0	0	-
40	"	-	100	0	0	-
41	"	-	100	4,428	611	-
42	"	86	100	4,428	611	-
43	Recirc. coolant	Containment pressure	120	0	0	-
44	"	"	120	0	0	-
45	"	"	120	0	0	-

NOTES TO FIGURE 6.3-2 (Sheet 5)

Location	Fluid	Pressure (psig)	Temperature (F)	(gpm)	Flow (lb/sec)	Volume (gal)
46	Refueling water	Low pressure	100	0	0	-
47	"	"	100	0	0	-
48	"	"	100	0	0	-
49	"	"	100	0	0	-
50	"	"	100	0	0	-
51	Refueling water	Low pressure	100	0	0	-
52	"	"	100	0	0	-
53	"	>10 psia	100	419	58	-
54	"	-	100	0	0	-
55	"	1,519	100	419	58	-
56	"	-	100	0	0	-
57	"	10 psia	100	419	58	-
58	"	10 psia	100	419	58	-
59	"	1,519	100	419	58	-
60	"	1,516	100	124	17	-
61	"	~0	100	124	17	-
62	"	1,456	100	357	49.3	-
63	"	-	100	714	99	-
64	"	1,396	100	714	99	-
65	"	1,008	100	178.5		24.6
66	"	388	100	178.5		24.6

NOTES:
(a) At reference conditions, 100°F and 0 psig
(b) Minimum allowable volume at normal operating conditions

NOTES TO FIGURE 6.3-2 (Sheet 6)

MODE B - COLD LEG RECIRCULATION (PUMP B OPERATING)

Location	Fluid	Pressure (psig)	Temperature (F)	(gpm)	Flow (lb/sec)	Volume (gal)
1	Refueling water	Atm tank	100	-	-	<5000
2	"	-	100	0	0	-
3	"	-	100	0	0	-
4	"	-	100	0	0	-
5	"	-	100	0	0	-
6	Recirc. coolant	-	186	0	0	-
7	Refueling water	-	100	0	0	-
8	"	-	100	0	0	-
9	Recirc. coolant	~35	186	1,278	170	-
10	"	~35	186	440	59	-
11	"	~1,165	186	~440	59	-
12	Refueling water	-	100	0	0	-
13	Recirc. coolant	~35	186	440	59	-
14	"	~1,165	186	~440	59	-
15	Refueling water	-	100	0	0	-
16	"	-	100	0	0	-
17	Recirc. coolant	1,050	186	880	117	-
18	"	73	186	220	29	-
19	"	Low pressure	186	1,761	235	-
20	"	Low pressure	186	220	29	-

NOTES TO FIGURE 6.3-2 (Sheet 7)

Location	Fluid	Pressure (psig)	Temperature (F)	Flow (gpm)	Flow (lb/sec)	Volume (gal)
21	Nitrogen	0	Ambient	0	0	-
22	Nitrogen	0	Ambient	0	0	6358[(b)]
23	"	0	Ambient	0	0	500 (ft^3)
24	Recirc. coolant	-	212	0	0	-
25	"	~12	212	4,800	640	-
26	"	113	212	4,800	640	-
27	"	-	212	4,800	640	-
28	"	29	186	3,082	411	-
29	"	56	186	0	0	-
30	"	60	186	1,718	229	-
31	"	65	186	4,800	640	-
32	"	55	186	3,082	411	-
33	"	0	186	0	0	-
34	"	-	212	0	0	-
35	Refueling water	-	100	0	0	-
36	"	-	100	0	0	-
37	"	-	100	0	0	-
38	"	-	100	0	0	-
39	"	-	100	0	0	-
40	"	-	100	0	0	-
41	"	-	100	0	0	-
42	"	-	100	0	0	-
43	Recirc. coolant	Containment pressure	212	-	-	~350,000
44	"	"	212	4,800	640	-
45	"	"	212	0	0	-

NOTES TO FIGURE 6.3-2 (Sheet 8)

Location	Fluid	Pressure (psig)	Temperature (F)	(gpm)	Flow (lb/sec)	Volume (gal)
46	Refueling water	Low pressure	100	0	0	-
47	"	"	100	0	0	-
48	"	"	100	0	0	-
49	"	"	100	0	0	-
50	"	"	100	0	0	-
51	Refueling water	Low pressure	100	0	0	-
52	Recirc. coolant	-	186	0	0	-
53	"	-	186	0	0	-
54	"	-	186	0	0	-
55	"	~1519	186	419	56	-
56	"	~30	186	838	111	-
57	"	~30	186	419	56	-
58	"	~30	186	419	56	-
59	"	~1,519	186	419	56	-
60	"	1,516	186	124	16	-
61	"	0	186	124	16	-
62	"	1,456	186	357	47.6	-
63	"	-	186	714	95	-
64	Recirc. coolant	1,396	186	714	95	-
65	"	1,008	186	178.5	24	-
66	"	388	186	178.5	24	

NOTES:
(a) At reference conditions, 212°F and 0 psig
(b) Minimum water volume at operating conditions.

NOTES TO FIGURE 6.3-2 (Sheet 9)

MODE C - HOT LEG RECIRCULATION (PUMP A OPERATING)

Location	Fluid	Pressure (psig)	Temperature (F)	(gpm)	Flow (lb/sec)	Volume (gal)
1	Refueling water	Atm tank	100	-	-	<5000
2	"	-	100	0	0	-
3	"	-	100	0	0	-
4	"	-	100	0	0	-
5	"	-	100	0	0	-
6	Recirc. coolant	-	182	0	0	-
7	Refueling water	-	100	0	0	-
8	"	-	100	0	0	-
9	Recirc. coolant	~25	<186	660	88	-
			<186	660	88	-
10	"	~25	<186	660	88	-
11	"	~715	100	0	0	-
12	Refueling water	-	<186	660	88	-
13	Recirc. coolant	~25	<186	660	88	-
14		~715	100	0	0	-
15	Refueling water	-	100	0	0	-
16	"	-	<186	0	0	-
17	Recirc. coolant	0	<186	0	0	-
18	"	-	186	0	0	-
19	"	Low pressure	186	0	0	-
20	"	Low pressure	<186	660	88	-

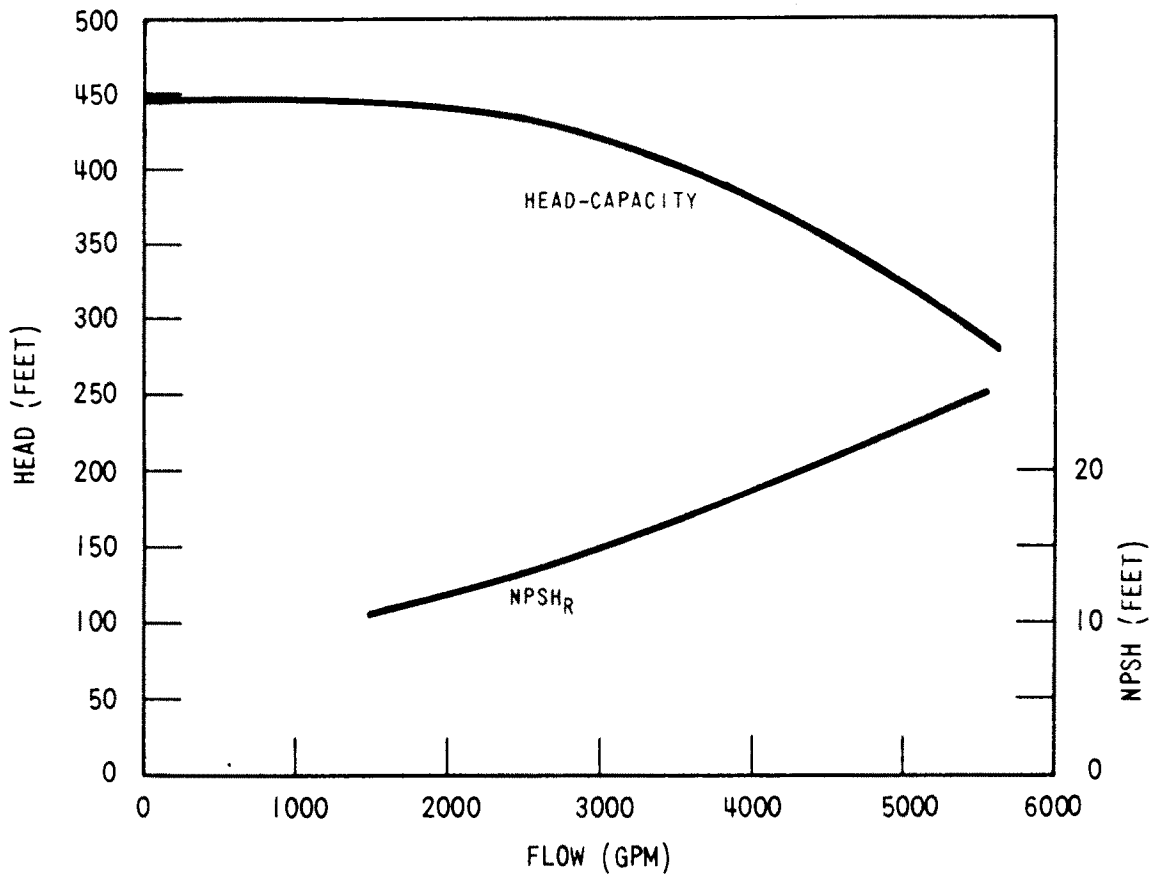
NOTES TO FIGURE 6.3-2 (Sheet 10)

Location	Fluid	Pressure (psig)	Temperature (F)	Flow (gpm)	Flow (lb/sec)	Volume (gal)
21	Nitrogen	-	Ambient	0	0	-
22	Nitrogen	0	Ambient	0	0	6358 (b)
23	"	0	Ambient	0	0	500(ft^3)
24	Recirc. coolant	-	212	0	0	-
25	"	-	<212	0	0	-
26	"	-	<212	0	0	-
27	"	-	<212	0	0	-
28	"	-	<186	0	0	-
29	"	-	<186	0	0	-
30	"	-	<186	0	0	-
31	"	-	<186	0	0	-
32	"	-	<186	0	0	-
33	"	50	<186	2,642	352	-
34	"	-	212	0	0	-
35	"	12	212	4,800	640	-
36	"	113	212	4,800	640	-
37	"	-	212	4,800	640	-
38	"	-	<186	0	0	-
39	"	55	<186	0	0	-
40	"	60	<186	2,158	288	-
41	"	65	<186	4,800	640	-
42	"	55	<186	2,642	352	-
43	Recirc. coolant	Containment pressure	212	-	-	-
44	"	"	212	0	0	-
45	"	"	212	4,800	640	-
46	"	7	<186	2,642	352	-
47	"	5	<186	1,321	176	-

NOTES TO FIGURE 6.3-2 (Sheet 11)

Location	Fluid	Pressure (psig)	Temperature (F)	(gpm)	Flow (lb/sec)	Volume (gal)
48	"	645	<186	660	88	-
49	“	-	<186	1,651	220	-
50	“	645	<186	660	88	-
51	"	-	<186	330	44	-
52	"	-	<186	0	0	-
53	"	-	<186	0	0	-
54	"	-	<186	2,158	288	-
55	"	~1,519	<186	419	56	-
56	"	<35	<186	1,320	180	-
57	"	~35	<186	419	56	-
58	"	~35	<186	419	56	-
59	"	~1,519	<186	419	56	-
60	"	1,516	<186	124	16	-
61	"	~0	<186	124	16	-
62	"	1,456	<186	357	47.6	-
63	-	-	<186	714	95	-
64	Recirc. coolant	1,396	<186	714	95	-
65	"	1,008	<186	178.5	24	-
66	"	388	<186	178.5	24	-

NOTES:
(a) At reference conditions, 212°F and 0 psig.
(b) Minimum water volume at operating conditions



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CALLAWAY PLANT

FIGURE 6.3-3

TYPICAL RESIDUAL HEAT REMOVAL PUMP PERFORMANCE CURVE

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FIGURE 6.3-4

CENTRIFUGAL CHARGING PUMP
PERFORMANCE CURVE
INJECTION PHASE

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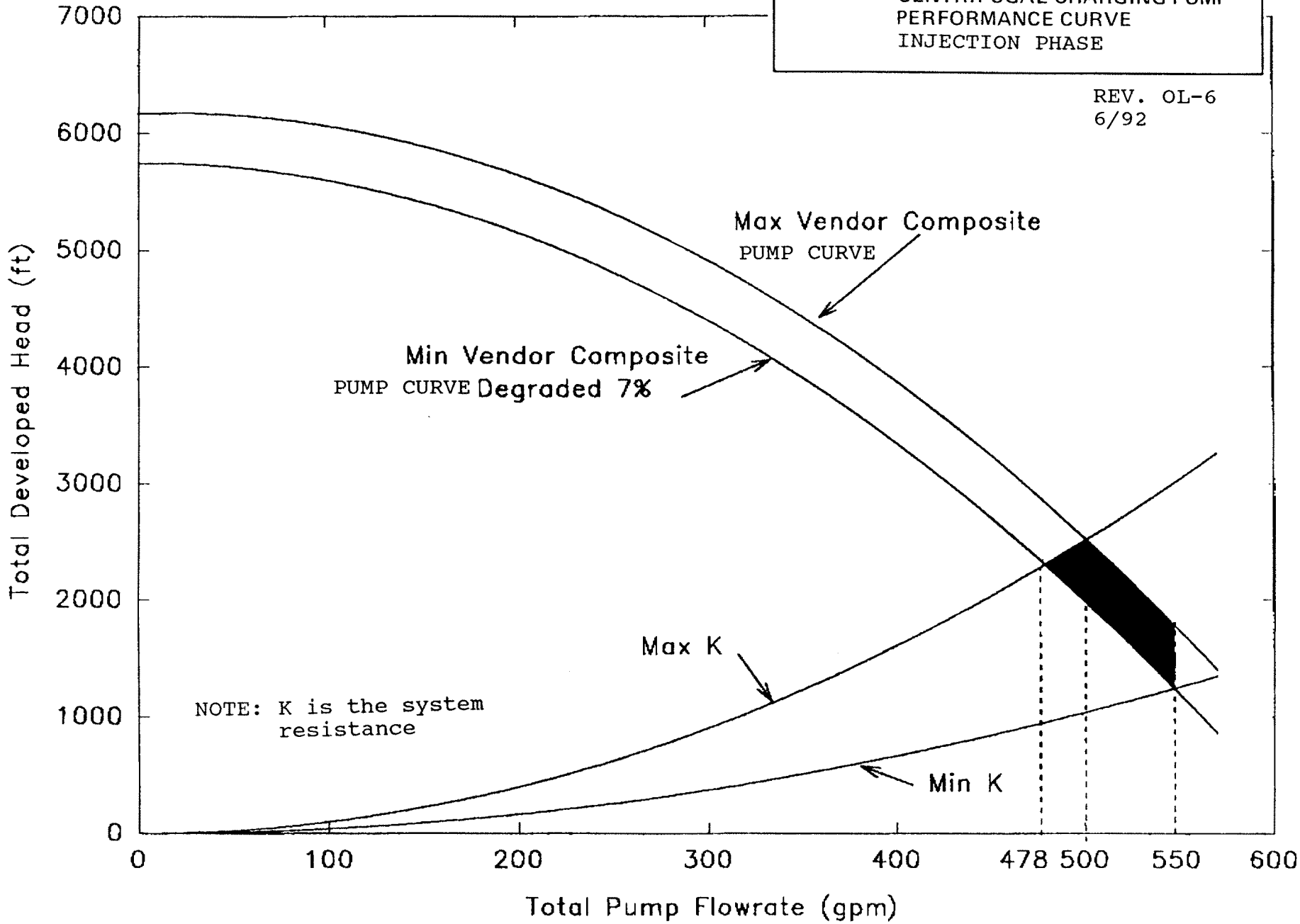

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FIGURE 6.3-5

SAFETY INJECTION PUMP
PERFORMANCE CURVE
INJECTION PHASE

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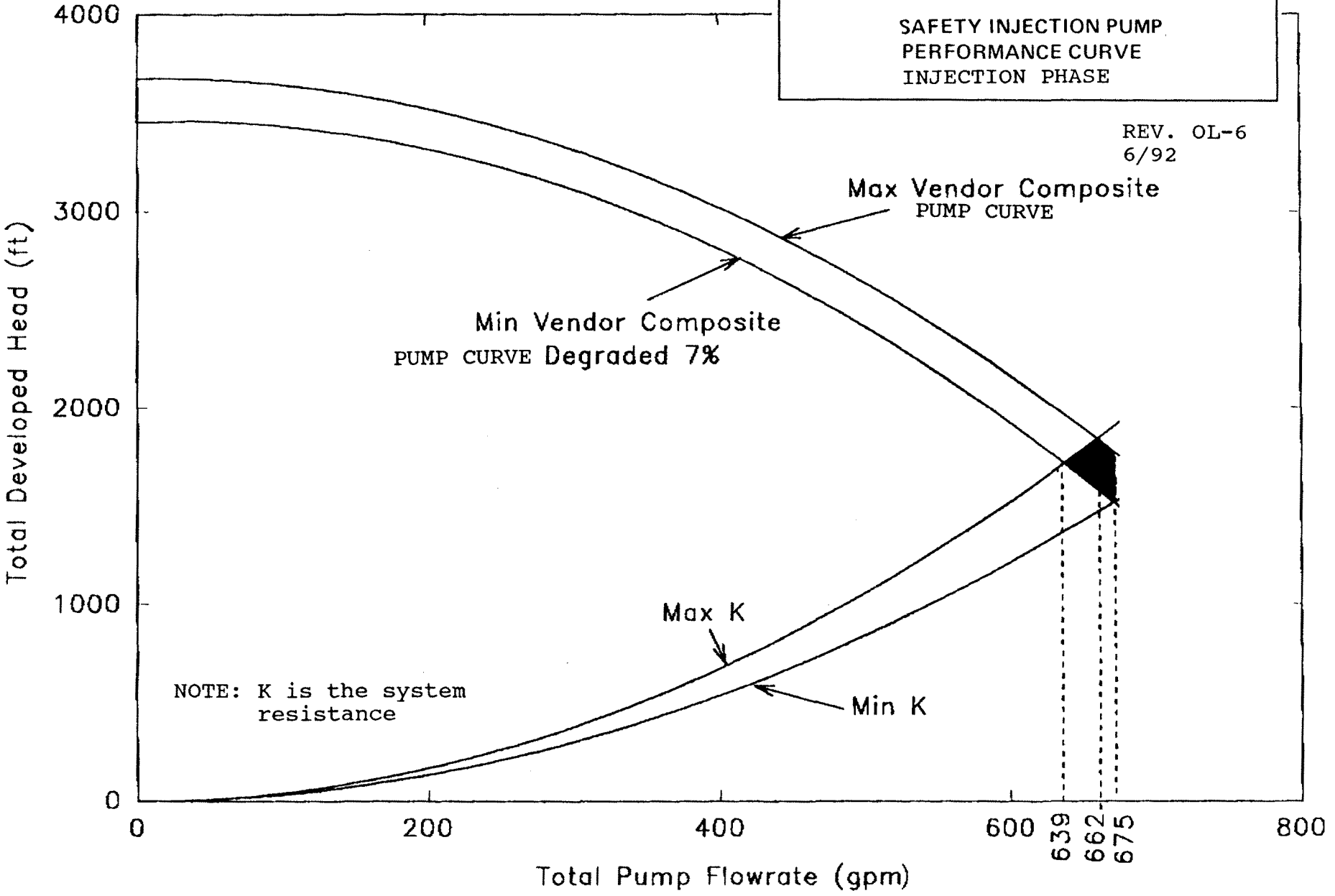

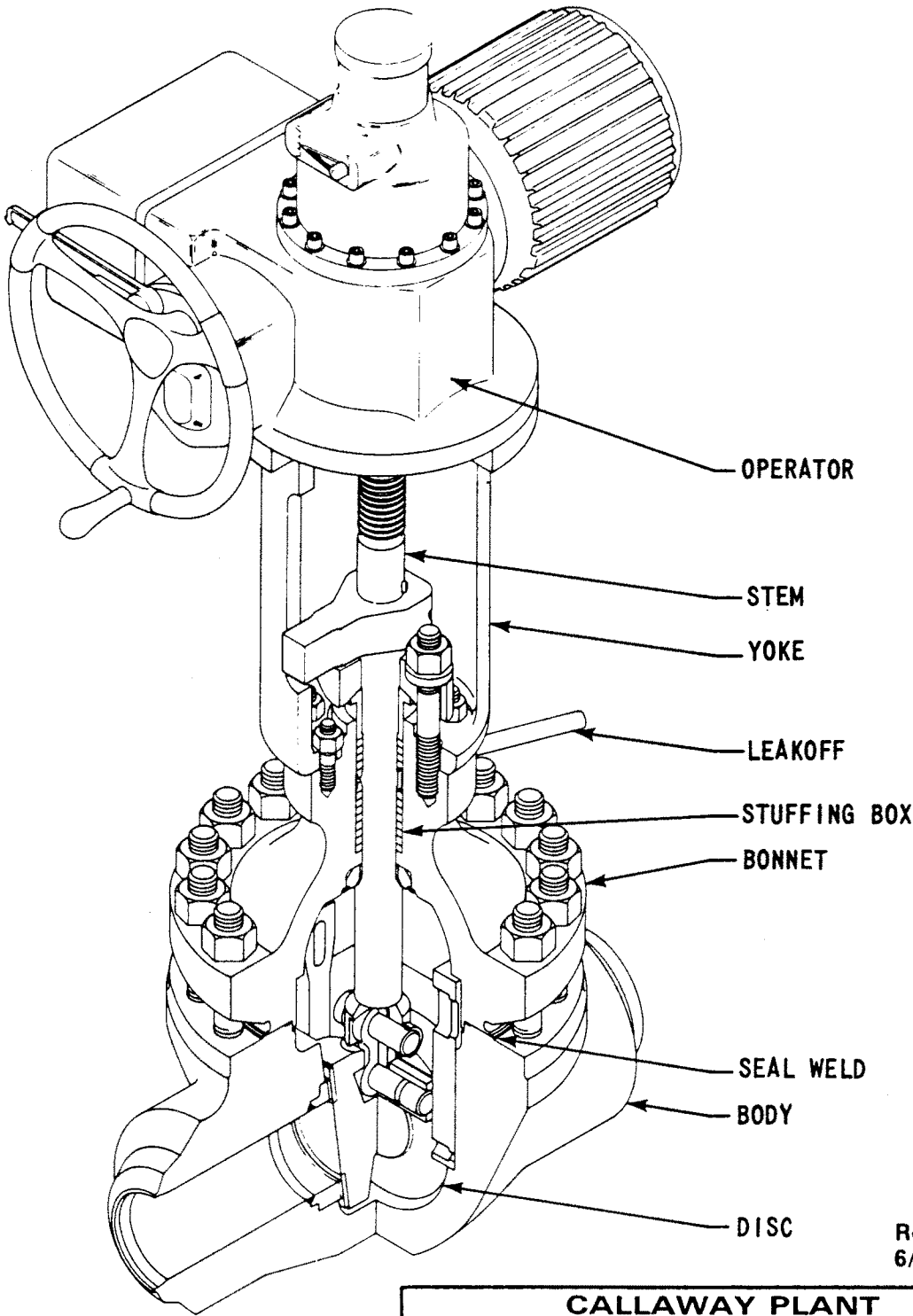

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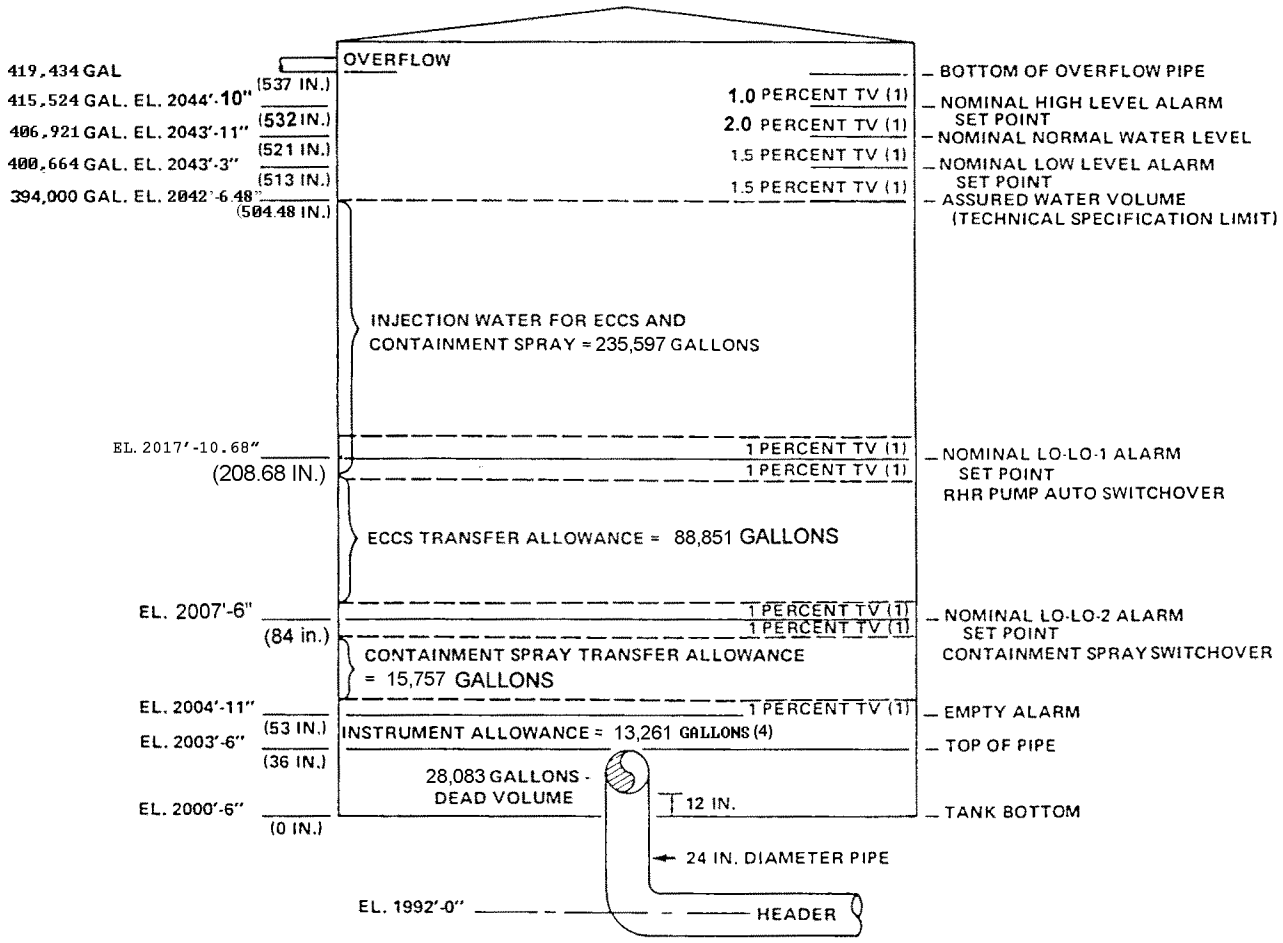
FIGURE 6.3-6

GATE VALVE ASSEMBLY

RWST VOLUMES AND SET POINTS INFORMATION



NOTES:

1) TANK VOLUME (TV) PERCENTS ARE BASED ON TOTAL STORED VOLUME TO OVERFLOW (0 IN. TO 537 IN.).
2) INSTRUMENT SPAN AND ACCURACY ARE BASED ON THE AVAILABLE VOLUME FROM THE LOWER INSTRUMENT TAP ZERO REFERENCE TO THE OVERFLOW (24 IN. TO 537 IN.).
3) TANK VOLUME (GAL./FT.) can be found in calculation M-FL-18.
4) Instrument allowance includes level required to preclude air ingestion due to vortexing. See Calculation BN-24.

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FIGURE 6.3-7

RWST LEVELS AND VOLUMES

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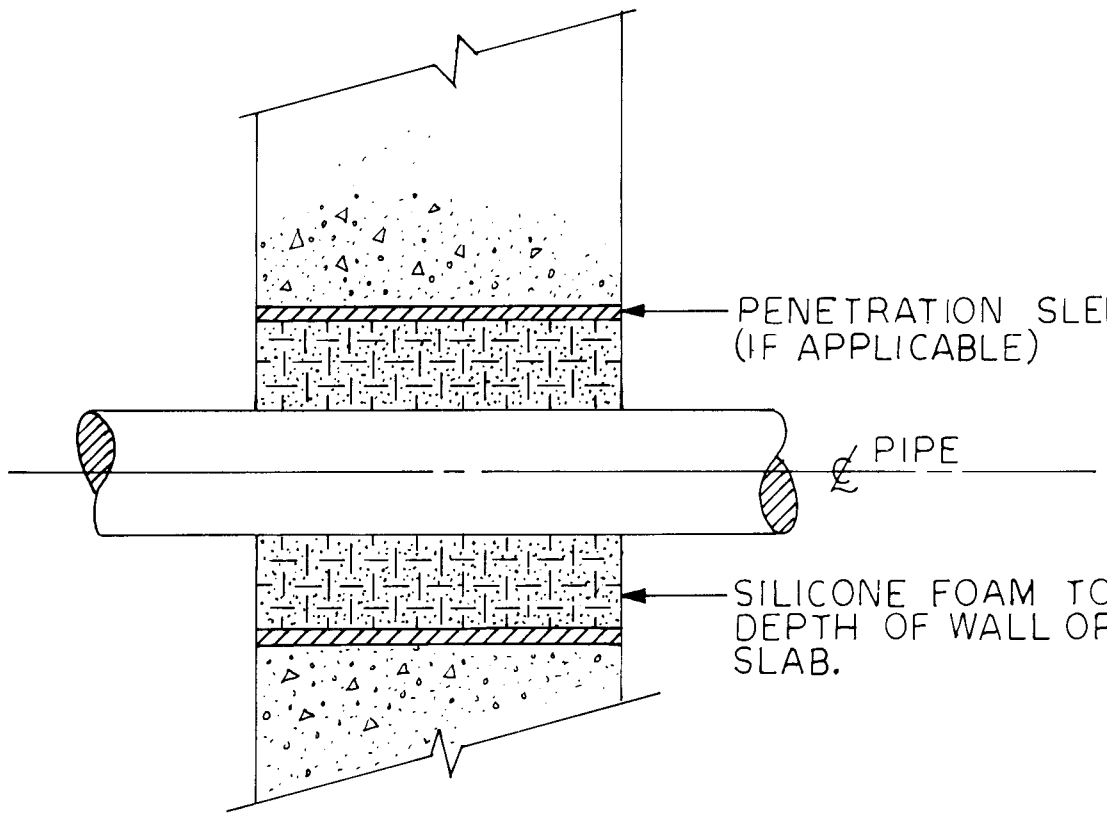

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FIGURE 6.4-1
SHEET 1
TYPICAL DETAIL
SEALING OF PIPING PENETRATION
THROUGH CONT. RM. FL. OR WALL

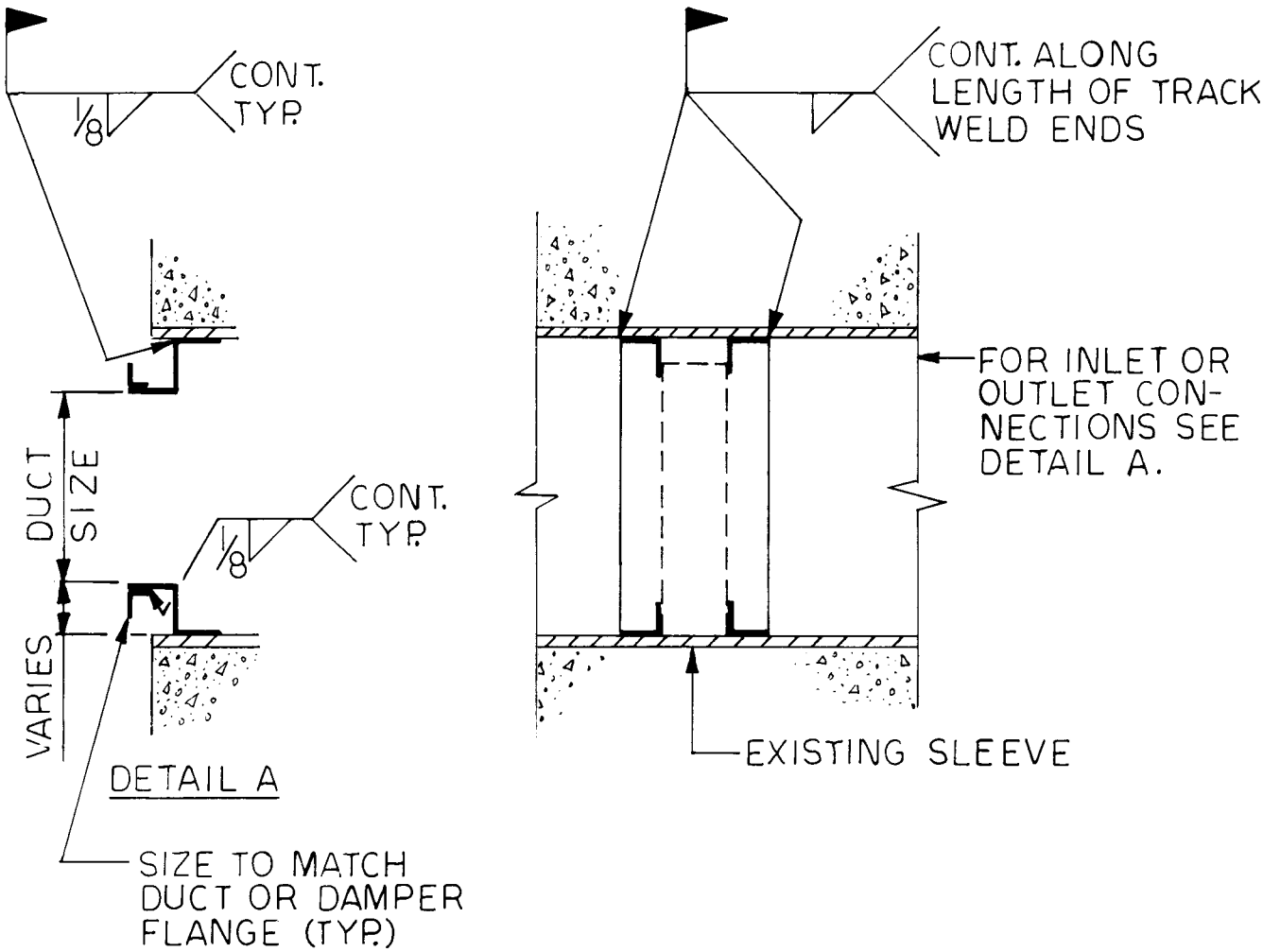

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FIGURE 6.4-1
SHEET 2
TYPICAL DETAIL
SEALING OF DUCTWORK PENET.
THROUGH CONT. RM. FL. OR WALL

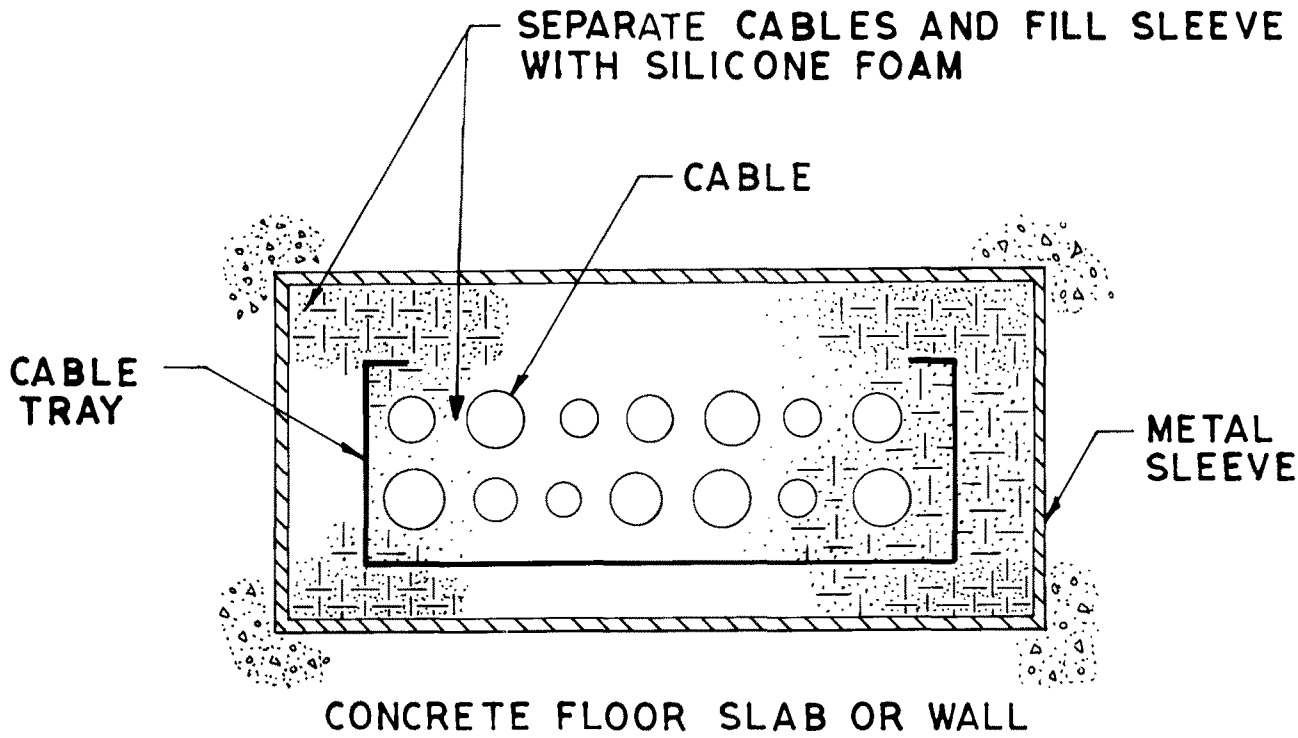

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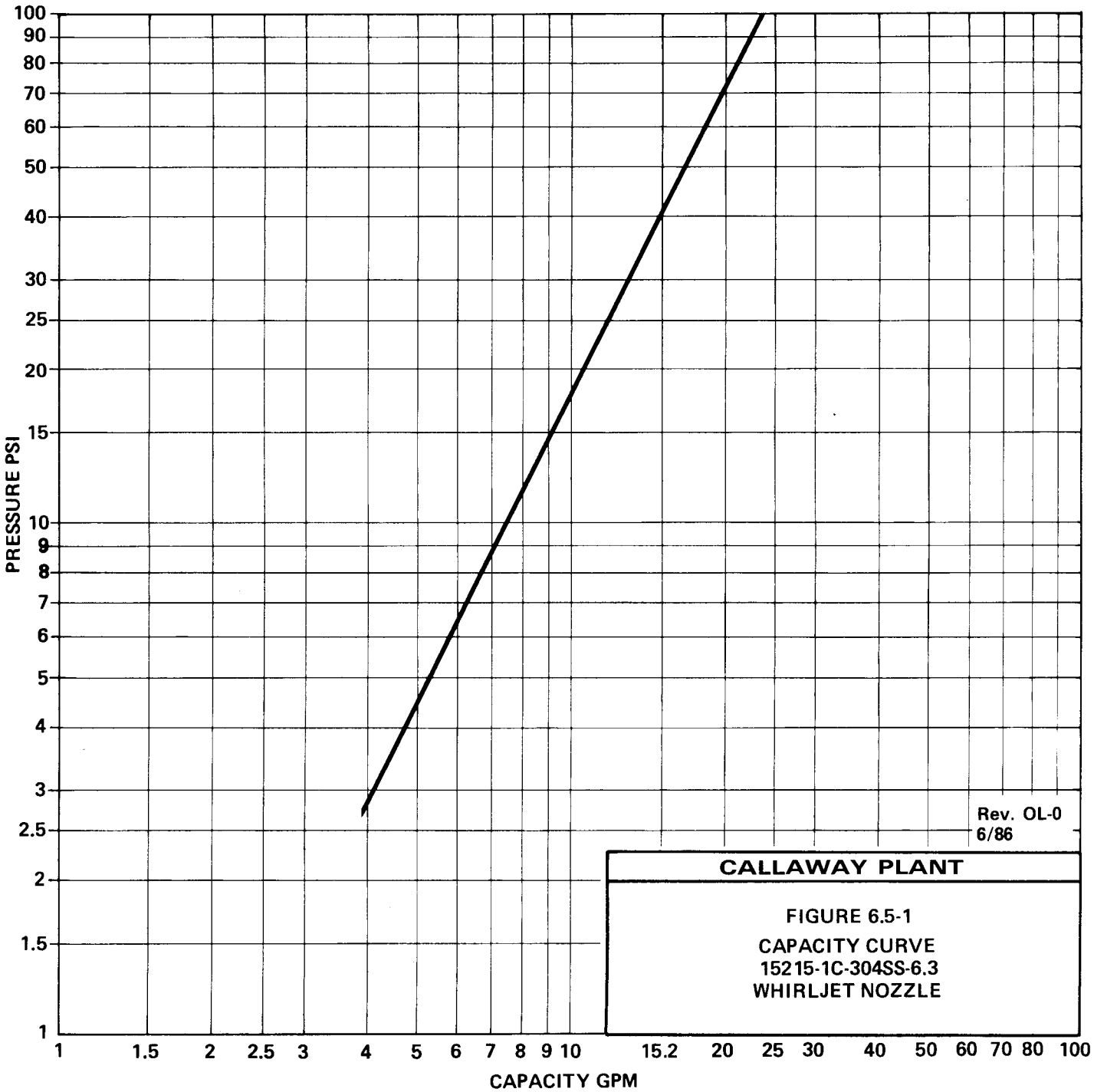
FIGURE 6.4-1
SHEET 3
TYPICAL DETAIL
SEALING OF CABLE TRAY PENET.
THROUGH CONT. RM. FL. OR WALL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80
70
60
50
40
30
25
20
15
10
9
8
7
6
5
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3
2.5
2
1.5
1
1
1.5
2
2.5
3
4
5
6
7
8
9
10
15.2
20
25
30
40
50
60
70
80
100
CAPACITY GPM
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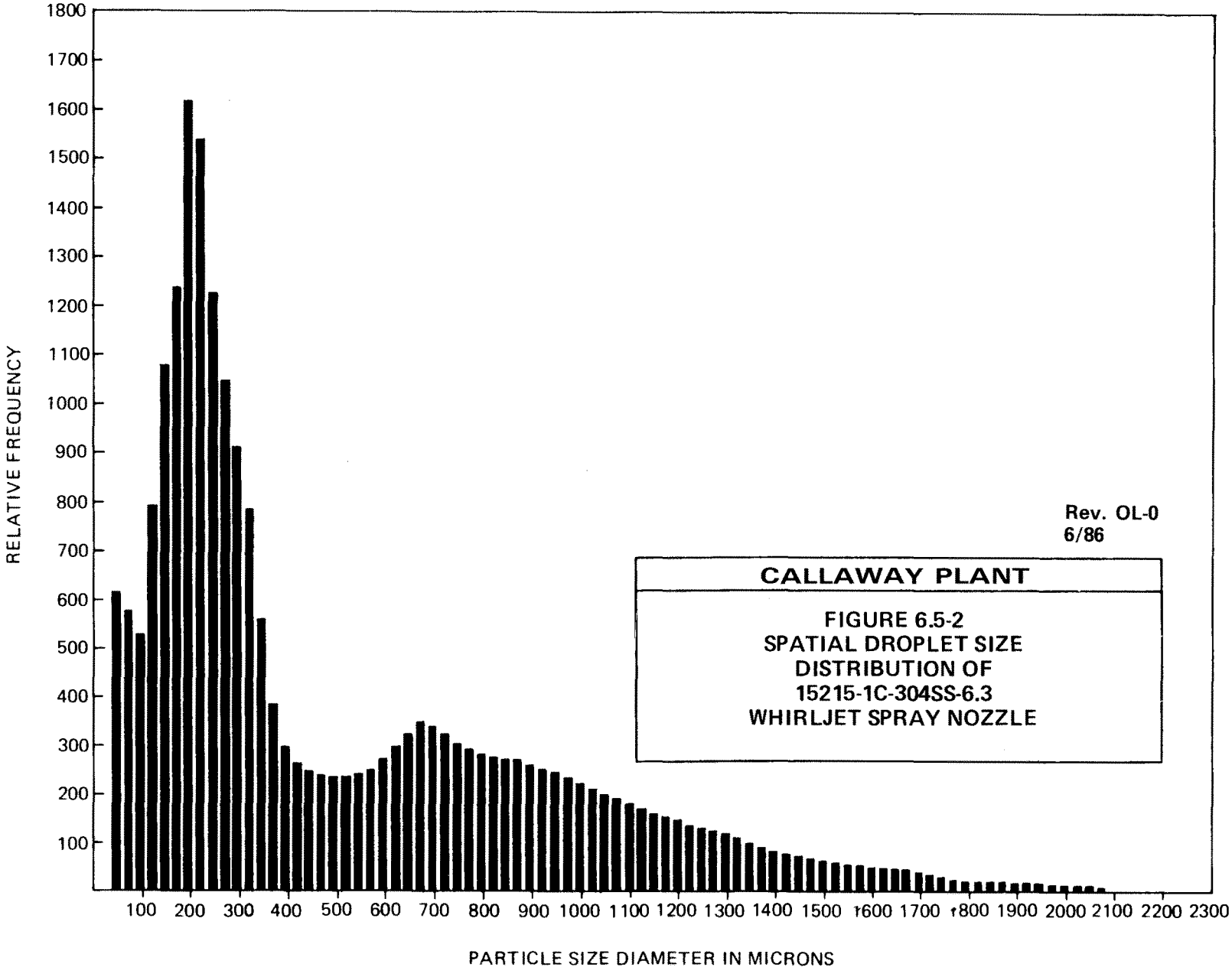
FIGURE 6.5-1
CAPACITY CURVE
15215-1C-304SS-6.3
WHIRLJET NOZZLE


RELATIVE FREQUENCY
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300
PARTICLE SIZE DIAMETER IN MICRONS
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CALLAWAY PLANT
FIGURE 6.5-2
SPATIAL DROPLET SIZE
DISTRIBUTION OF
15215-1C-304SS-6.3
WHIRLJET SPRAY NOZZLE

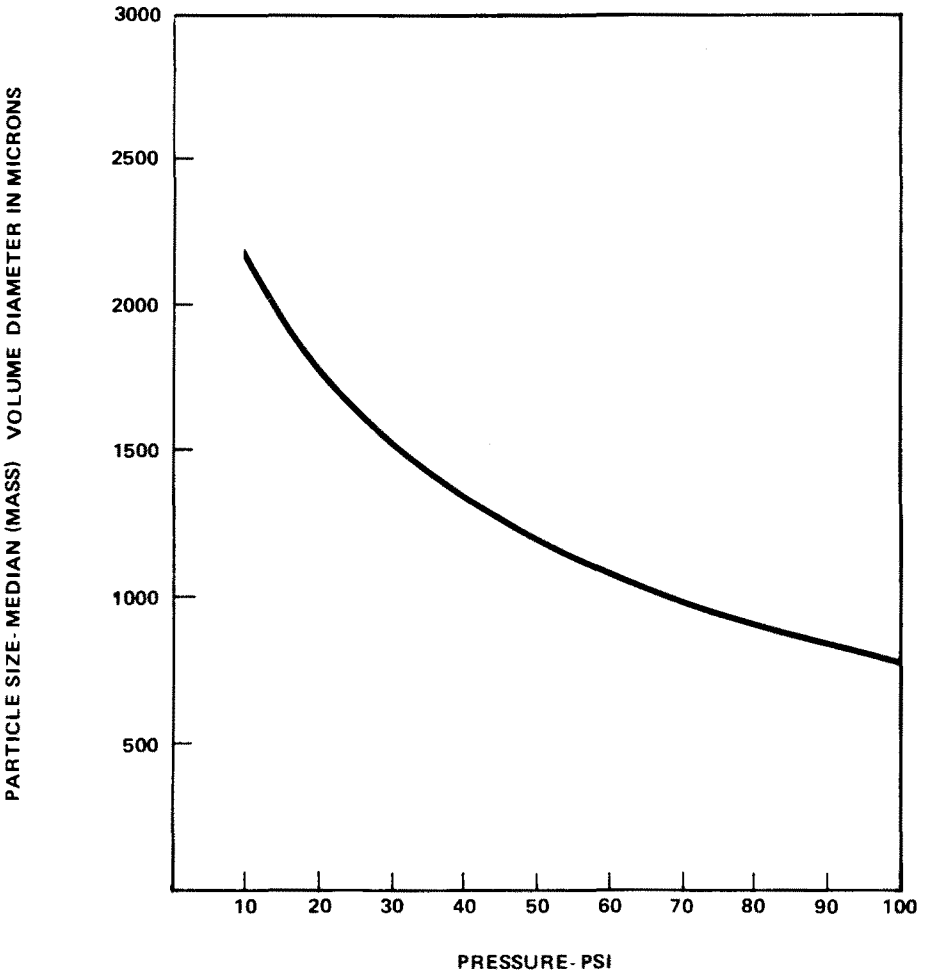

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FIGURE 6.5-3
PARTICLE SIZE
VS.
PRESSURE
15215-1C-304-SS-6.3
WHIRLJET SPRAY NOZZLE

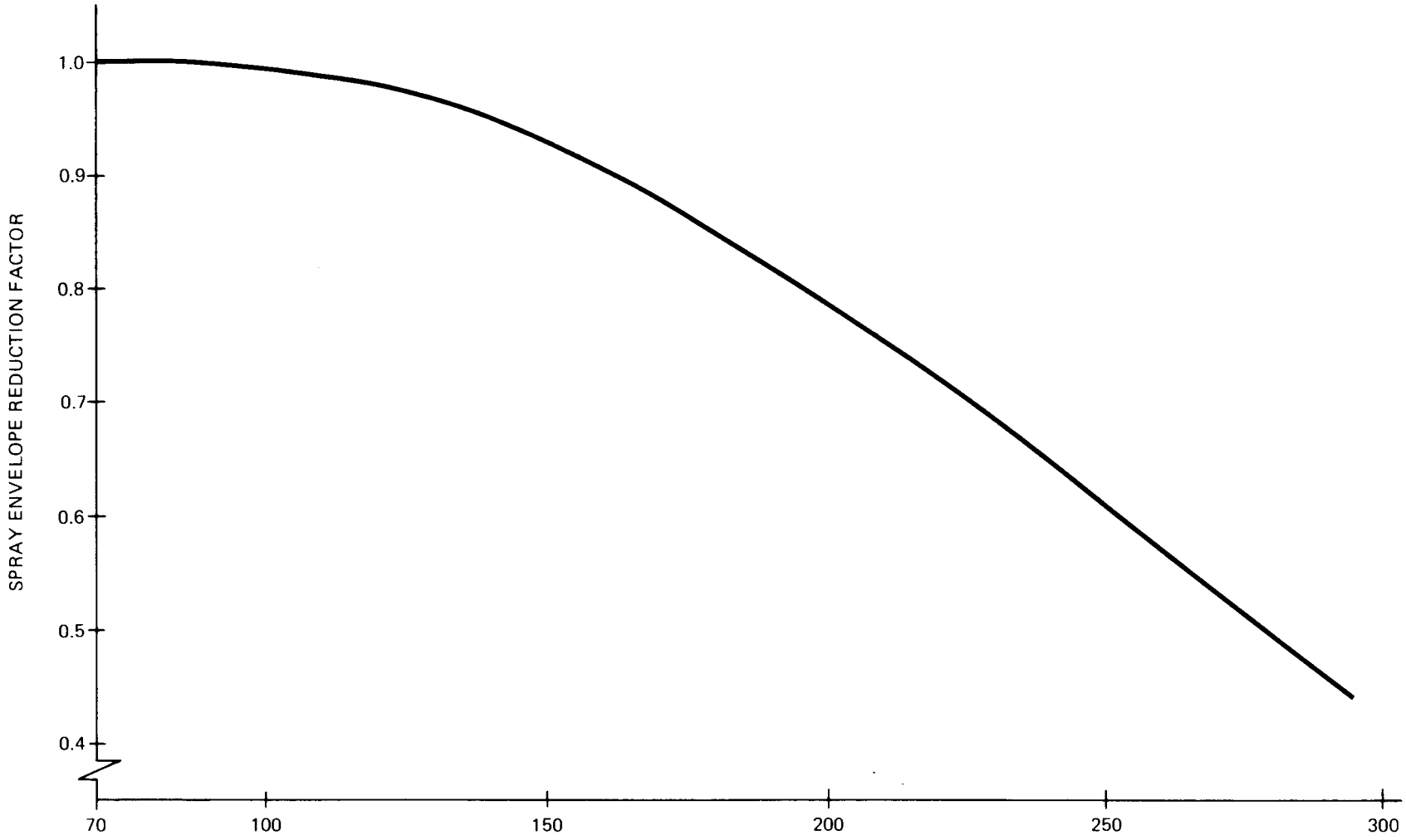

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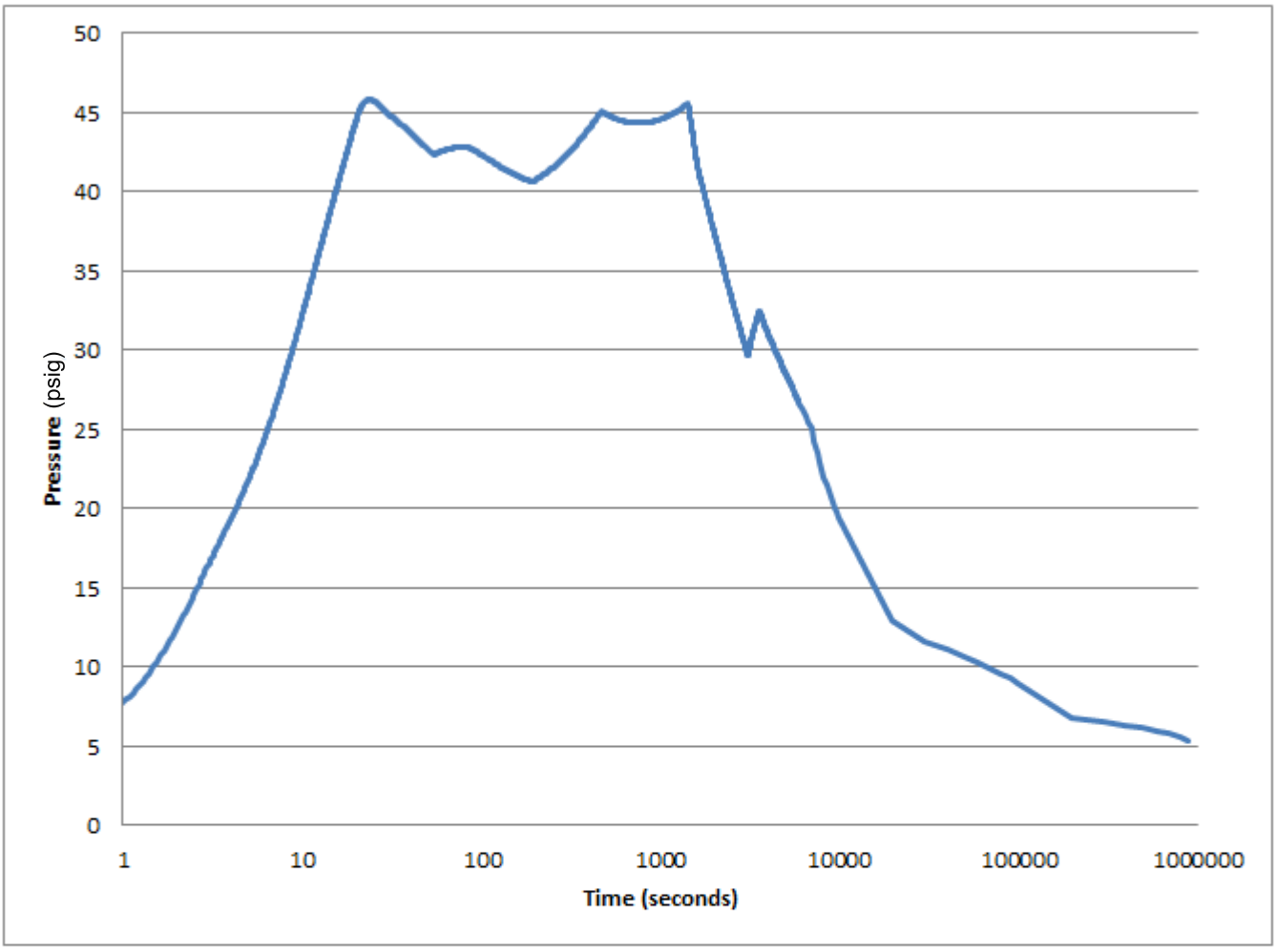
FIGURE 6.5-4
SPRAY ENVELOPE
REDUCTION FACTOR

FIGURE 6.5-5 HAS BEEN DELETED



CALLAWAY PLANT

FIGURE 6.2.1-1

DOUBLE-ENDED PUMP SUCTION GUILLOTINE BREAK
MINIMUM SAFEGUARDS
CONTAINMENT PRESSURE VS. TIME
REV. 17 10/13

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FIGURE 6.2.1-2

DOUBLE-ENDED PUMP SUCTION GUILLOTINE BREAK
MAXIMUM SAFEGUARDS
CONTAINMENT PRESSURE VS. TIME

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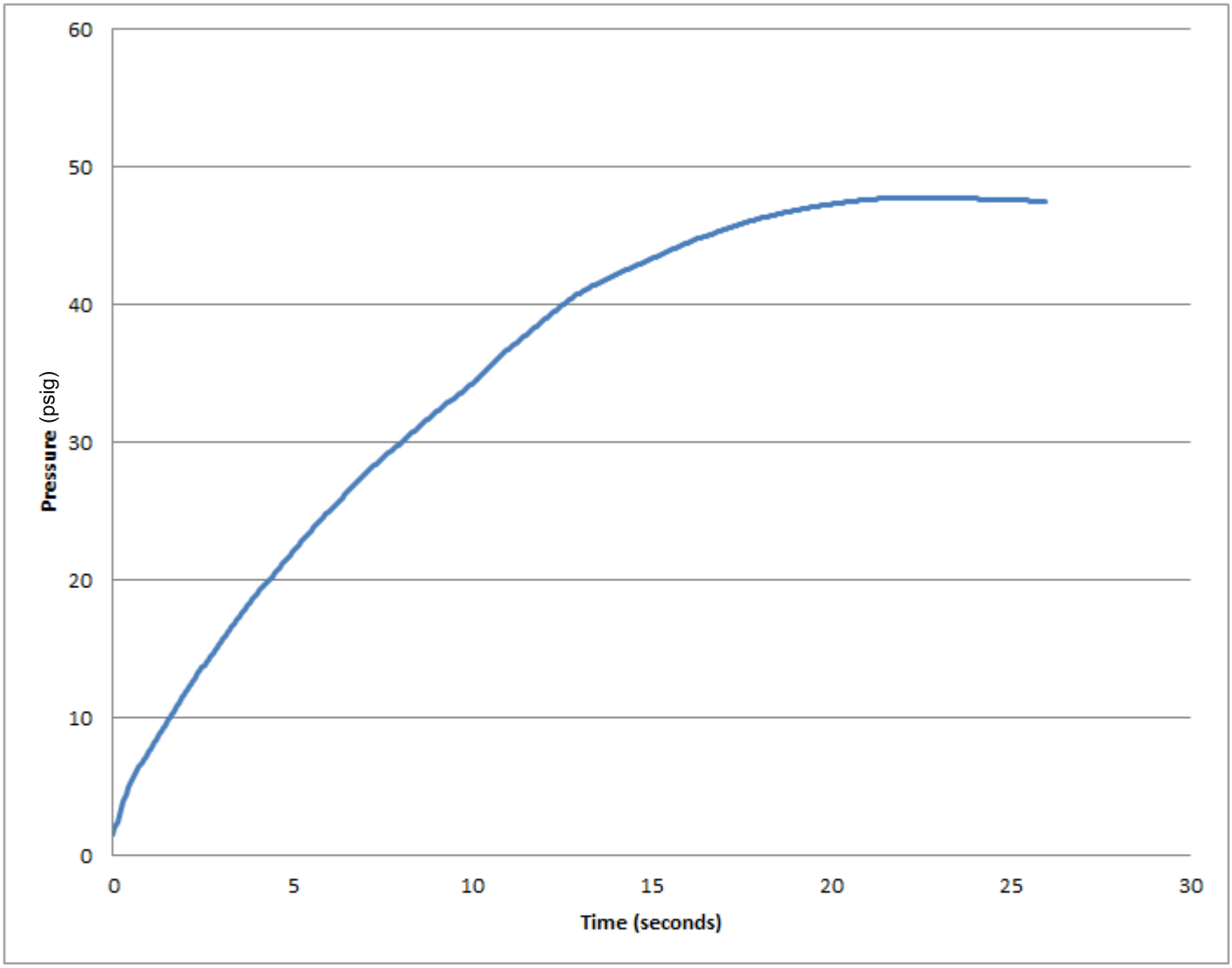

CALLAWAY PLANT

FIGURE 6.2.1-3

DOUBLE-ENDED HOT LEG GUILLOTINE BREAK
CONTAINMENT PRESSURE VS. TIME

REV. 17 10/13

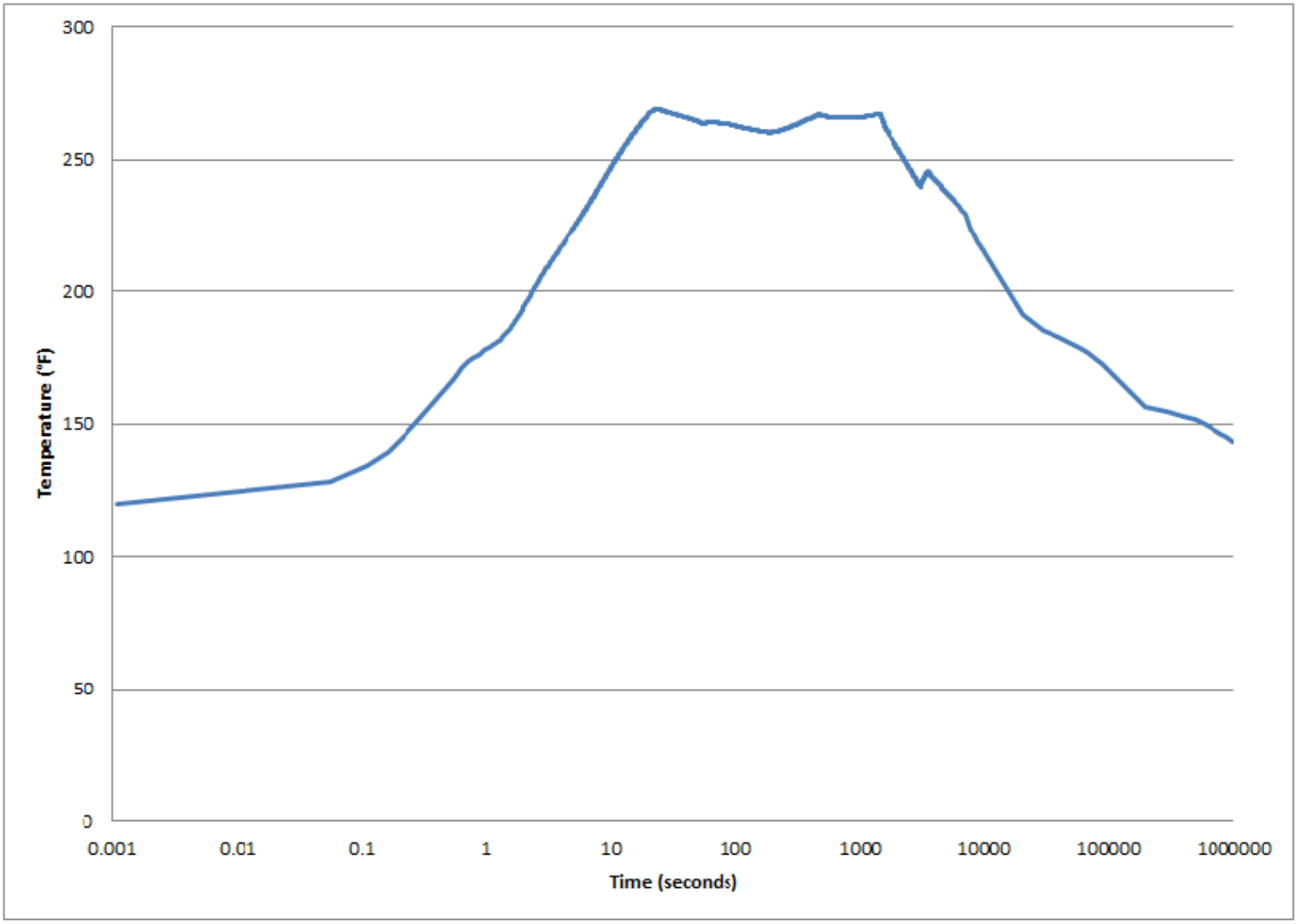

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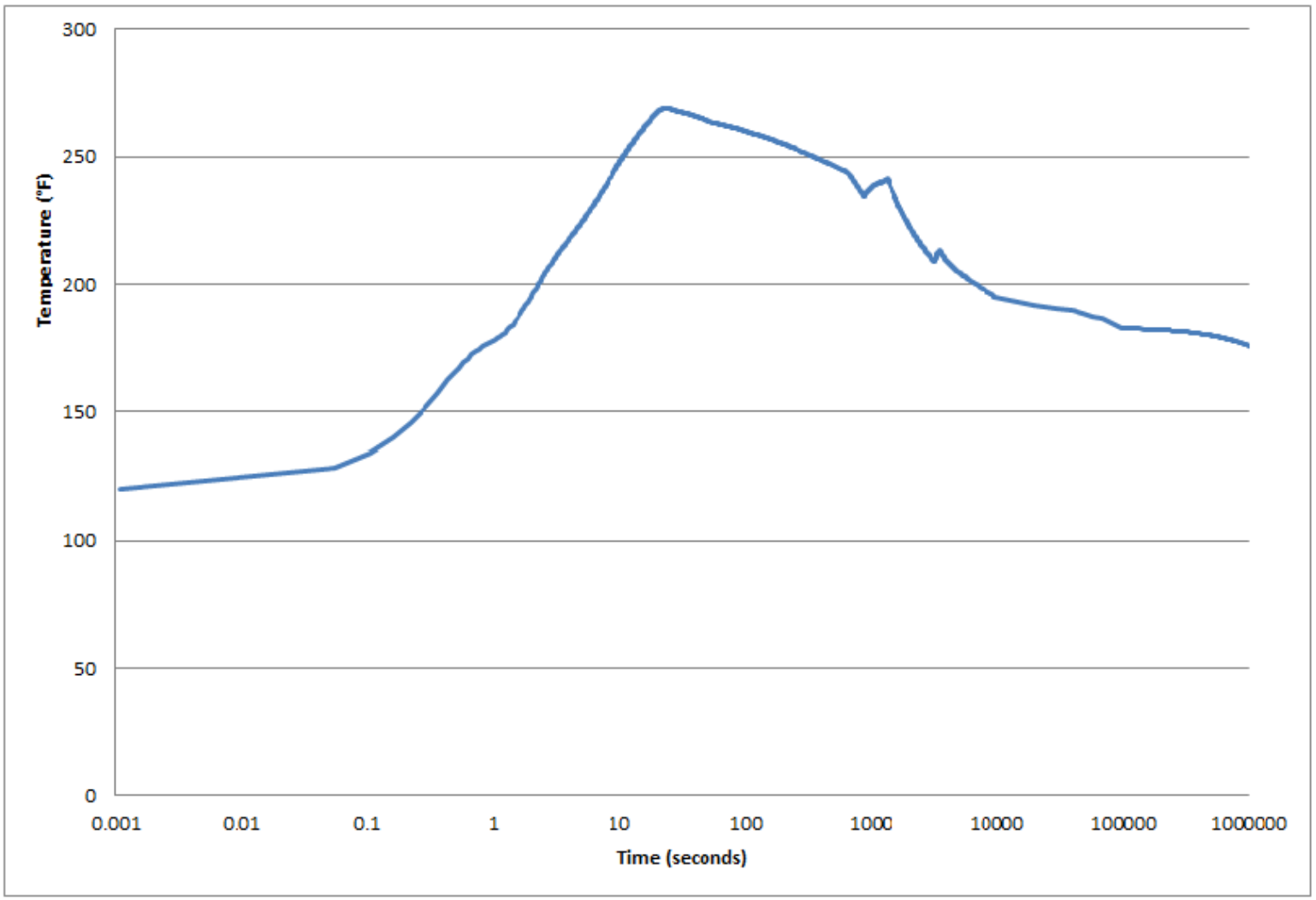
FIGURE 6.2.1-4

DOUBLE-ENDED PUMP SUCTION GUILLOTINE BREAK
MINIMUM SAFEGUARDS
CONTAINMENT TEMPERTURE VS. TIME

REV. 17 10/13

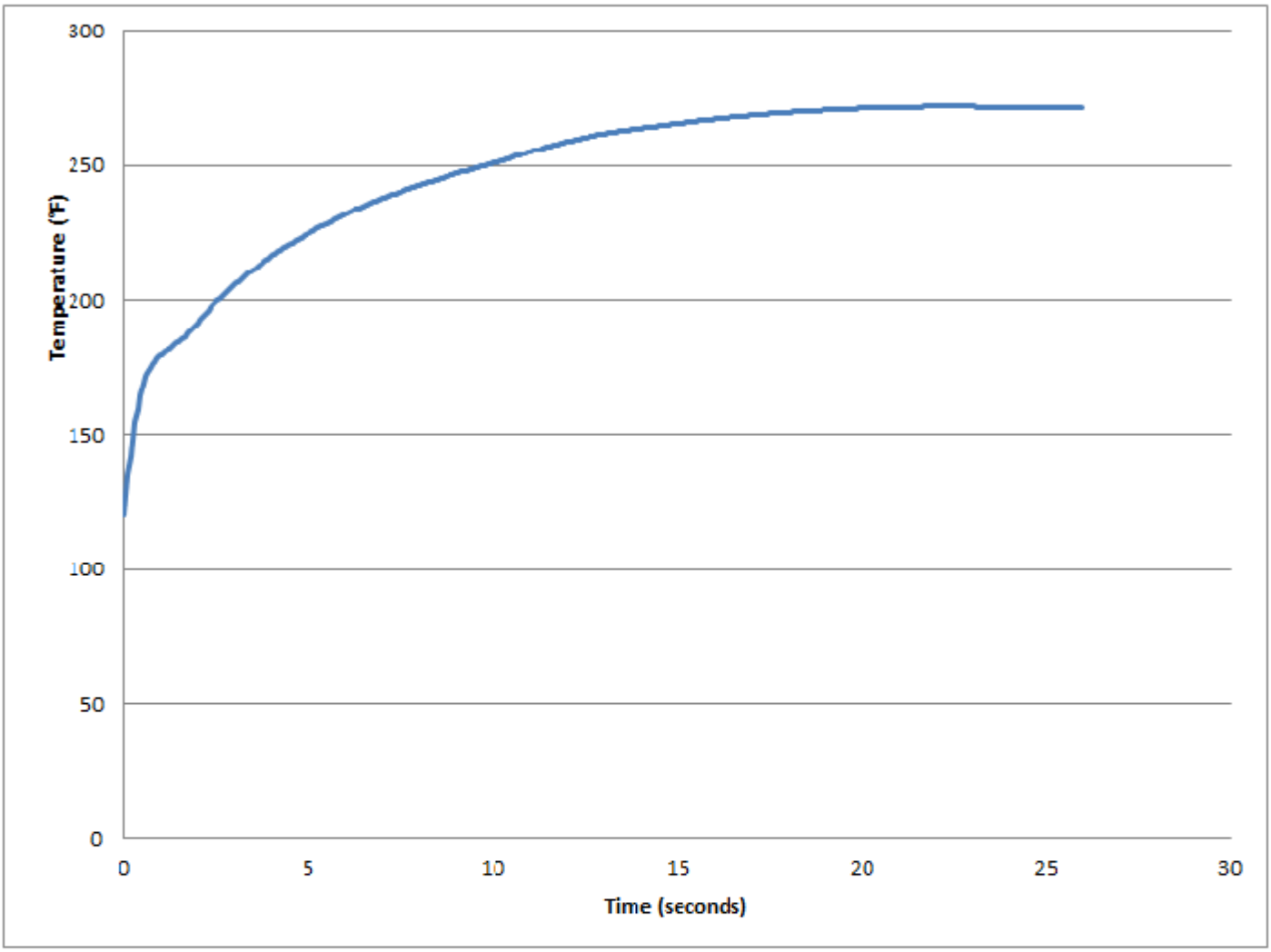


CALLAWAY PLANT

FIGURE 6.2.1-5

DOUBLE-ENDED PUMP SUCTION GUILLOTINE BREAK
MAXIMUM SAFEGUARDS
CONTAINMENT TEMPERTURE VS. TIME

REV. 17 10/13

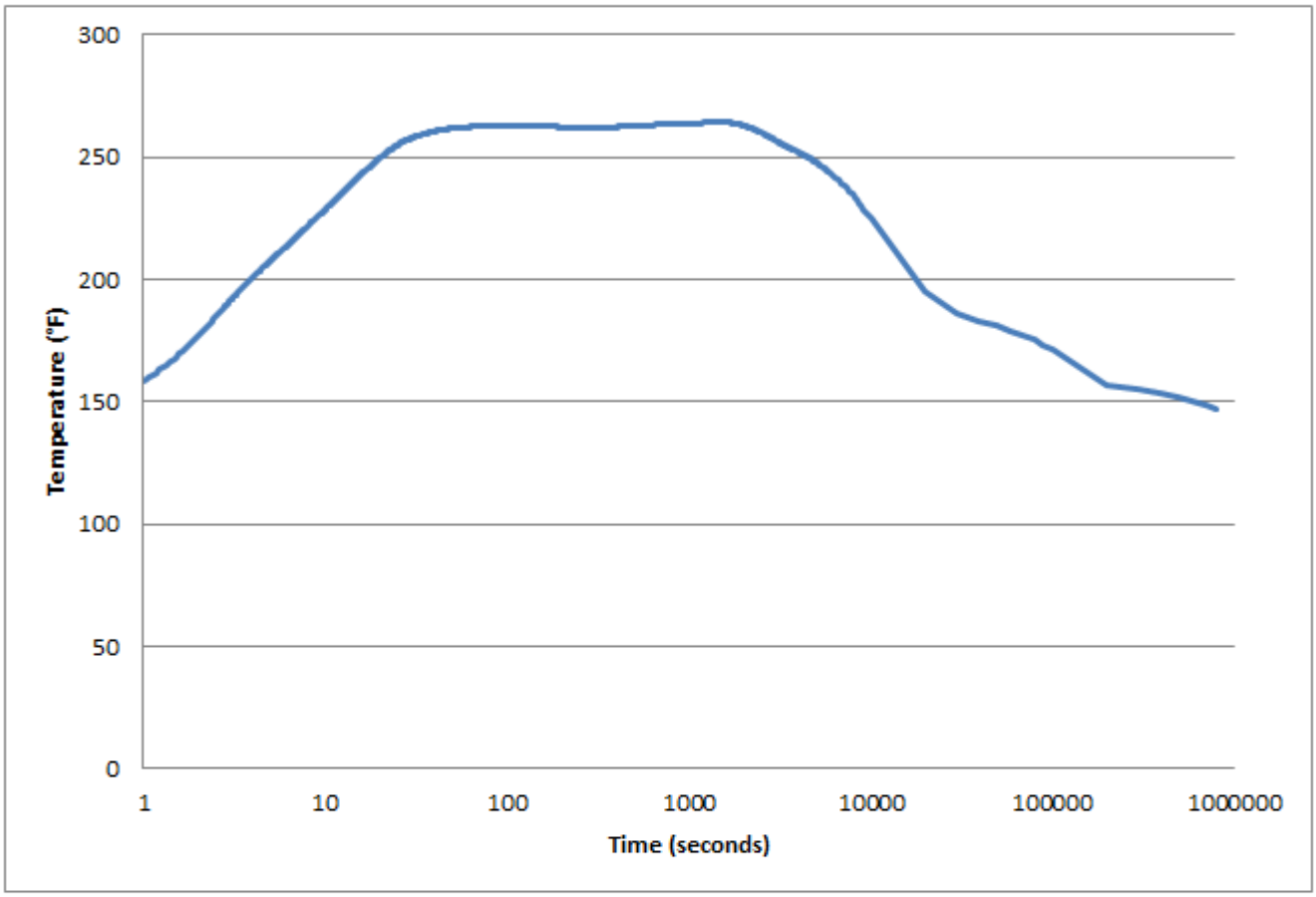


CALLAWAY PLANT

FIGURE 6.2.1-6

DOUBLE-ENDED HOT LEG GUILLOTINE BREAK CONTAINMENT TEMPERTURE VS. TIME

REV. 17 10/13

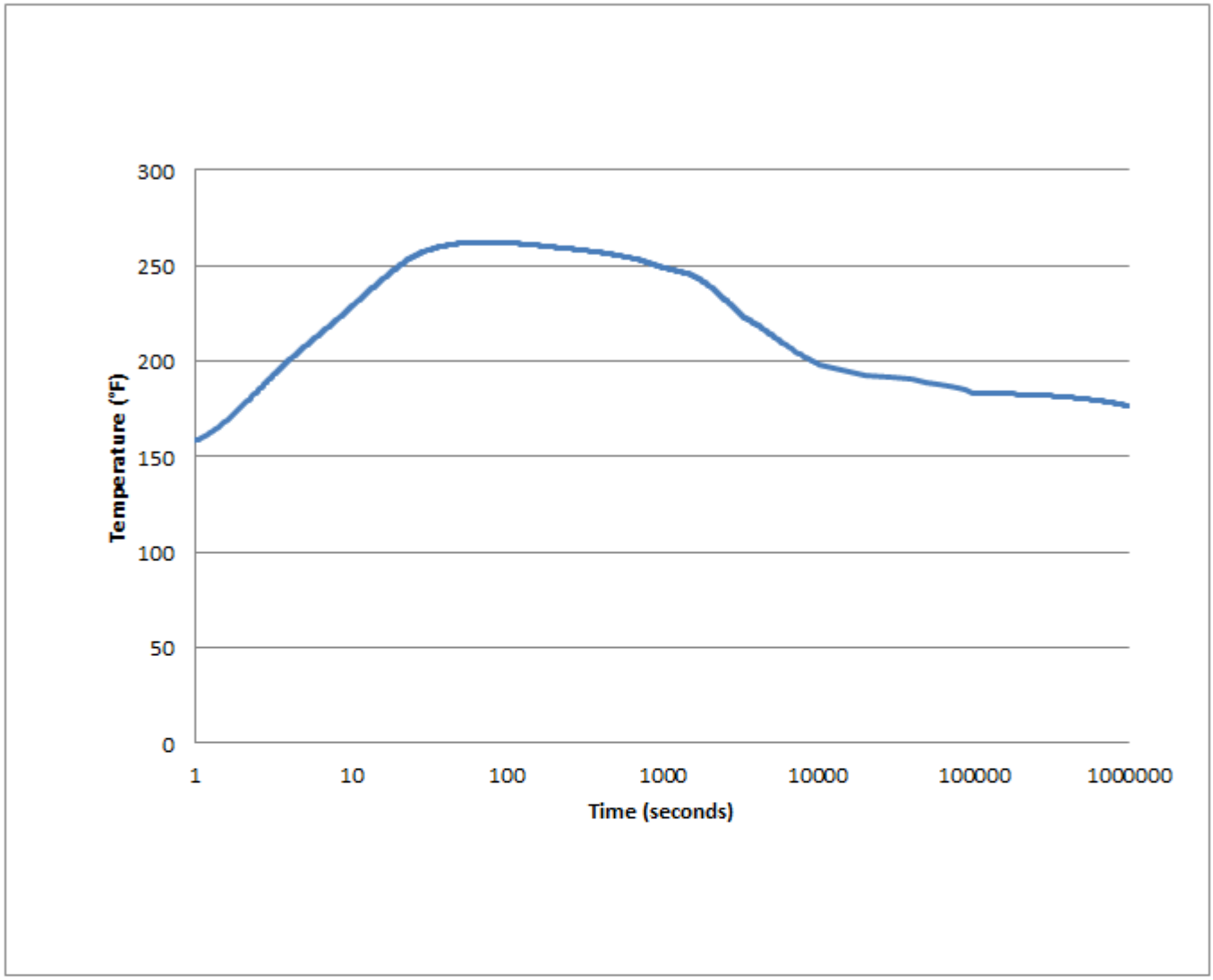


CALLAWAY PLANT

FIGURE 6.2.1-7

DOUBLE-ENDED PUMP SUCTION GUILLOTINE BREAK
MINIMUM SAFEGUARDS
CONTAINMENT SUMP TEMPERTURE VS. TIME

REV. 17 10/13



CALLAWAY PLANT

FIGURE 6.2.1-8

DOUBLE-ENDED PUMP SUCTION GUILLOTINE BREAK
MAXIMUM SAFEGUARDS
CONTAINMENT SUMP TEMPERTURE VS. TIME

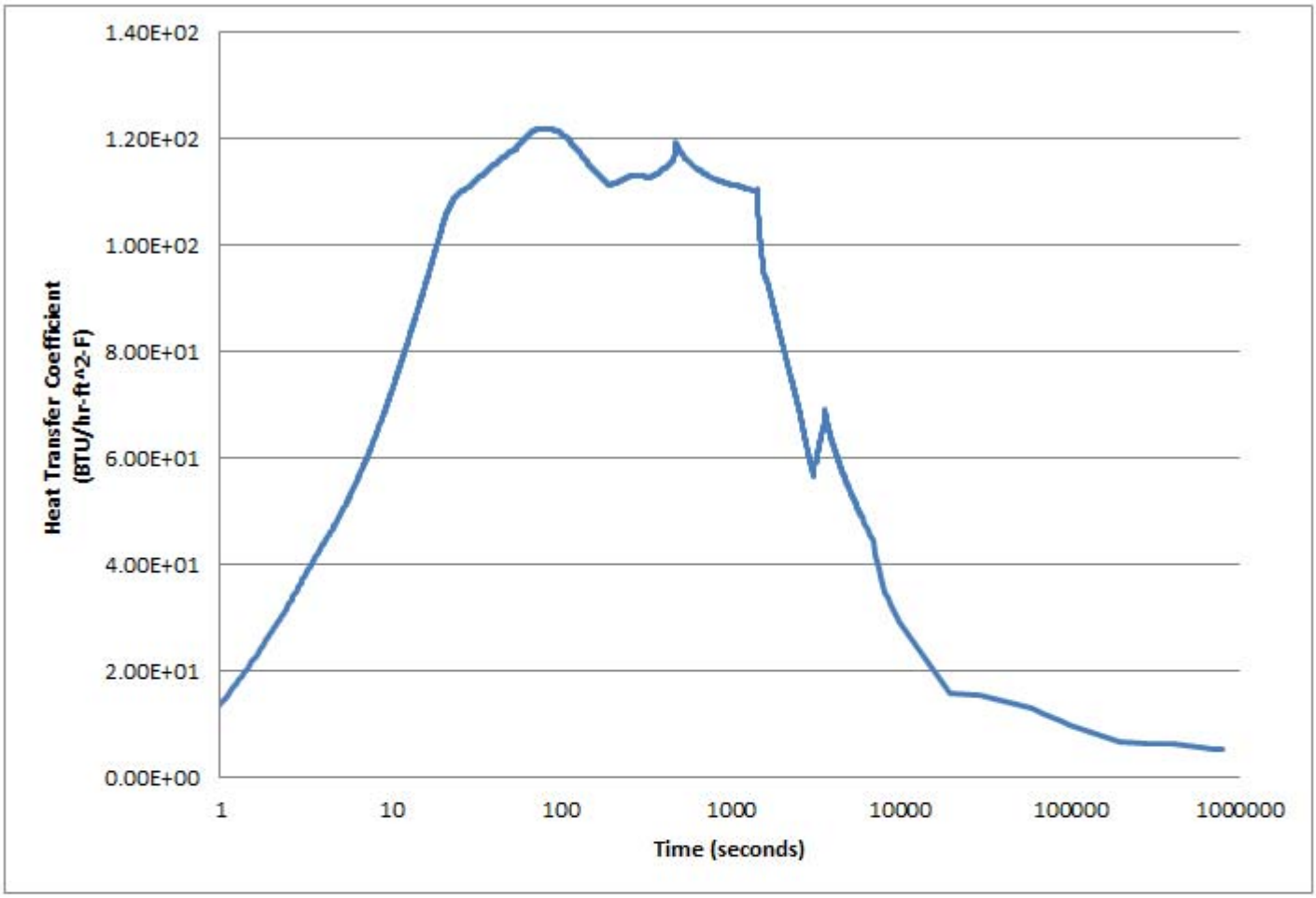
REV. 17 10/13

Figure 6.2.1-9 Deleted

Figure 6.2.1-10 Deleted

Figure 6.2.1-11 Deleted

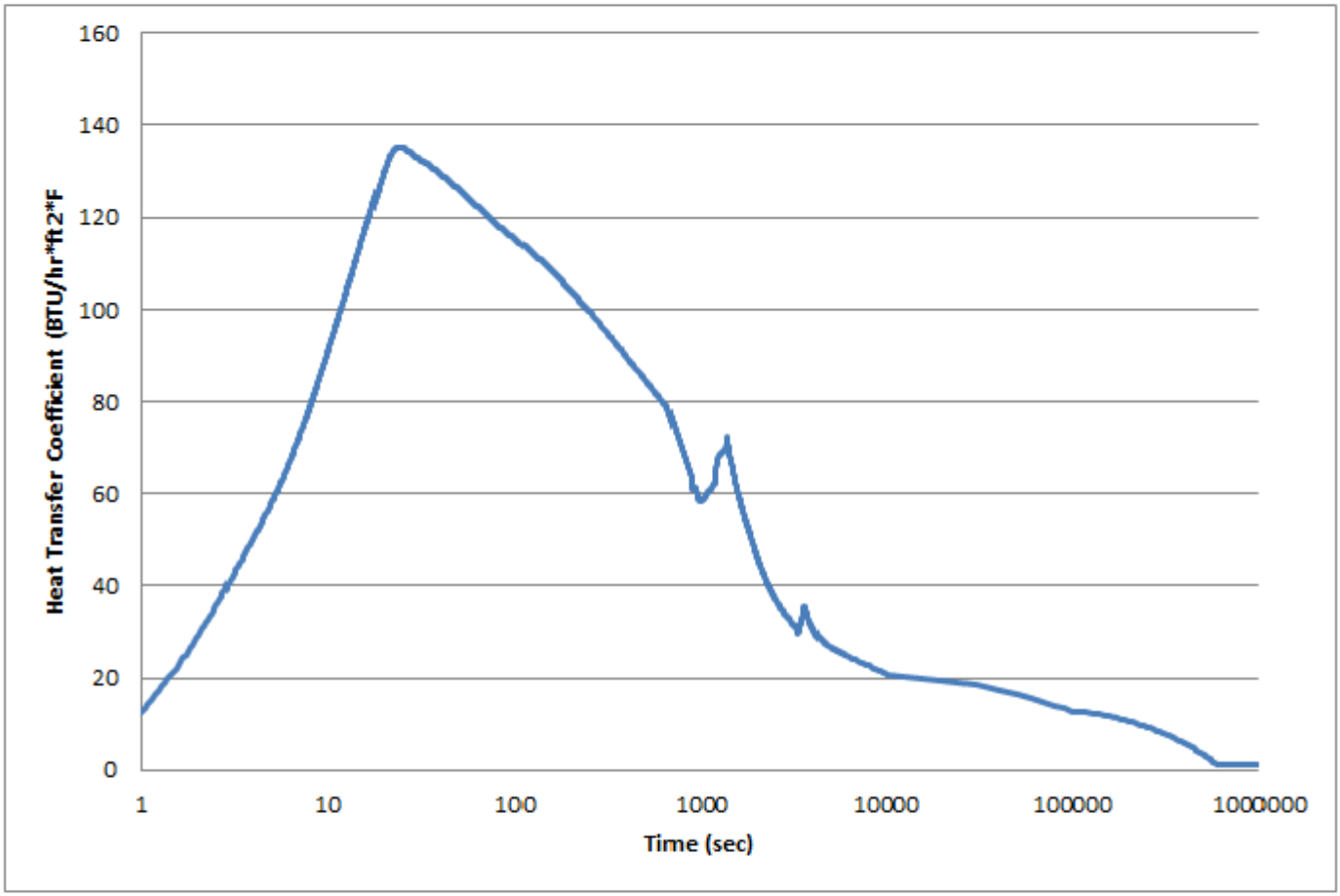
Figure 6.2.1-12 Deleted



CALLAWAY PLANT

FIGURE 6.2.1-13

Double-Ended Pump Suction Guillotine Break
Minimum Safeguards
Condensing Heat Transfer Coefficient vs. Time
REV. 16 10/13

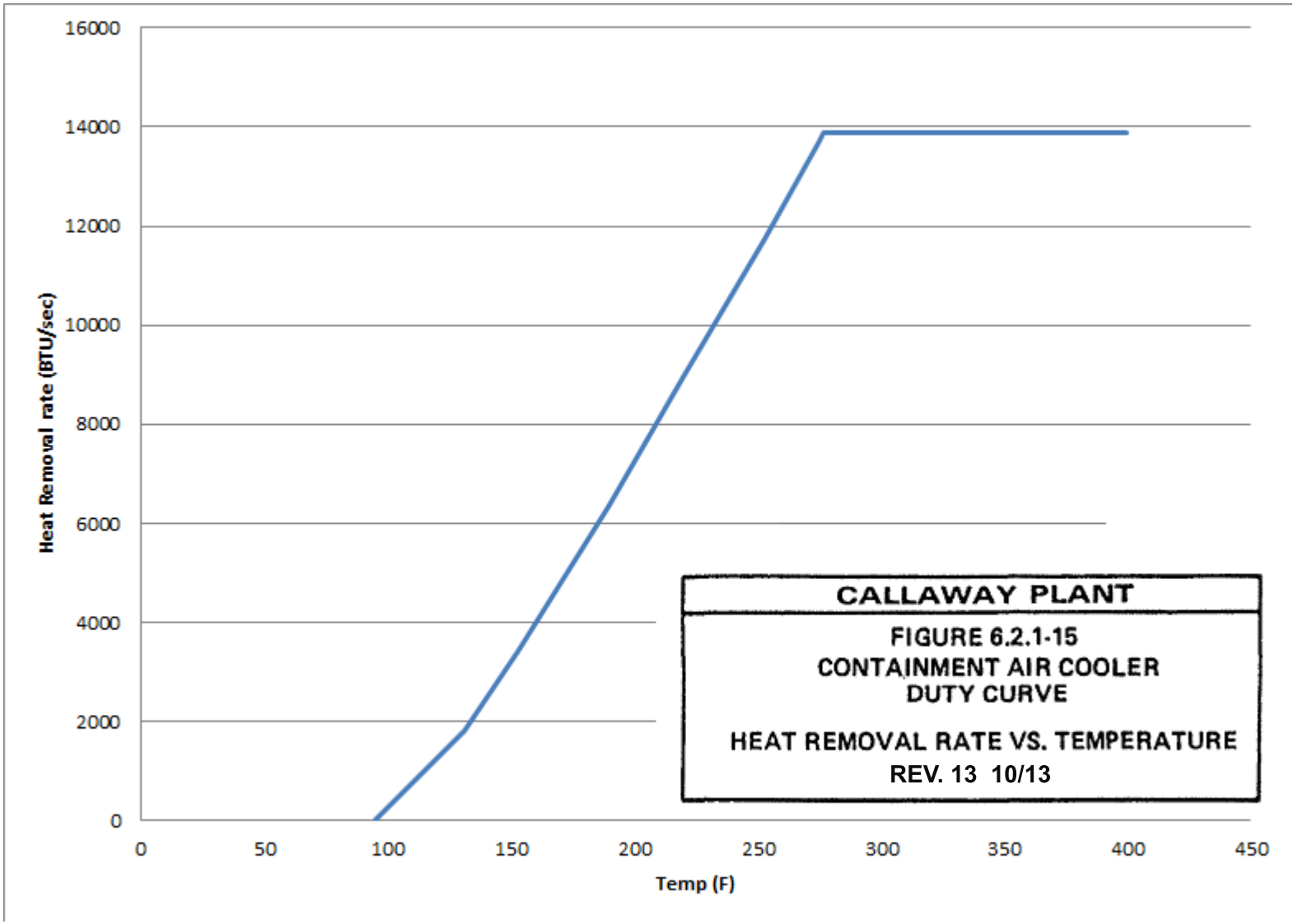


CALLAWAY PLANT

FIGURE 6.2.1-14

Double-Ended Pump Suction Guillotine Break
Maximum Safeguards
Condensing Heat Transfer Coefficient vs. Time

REV. 16 10/13


16000
14000
12000
10000
8000
6000
4000
2000
0
Heat Removal rate (BTU/sec)
0
50
100
150
200
250
300
350
400
450
Temp (F)
CALLAWAY PLANT
FIGURE 6.2.1-15
CONTAINMENT AIR COOLER
DUTY CURVE
HEAT REMOVAL RATE VS. TEMPERATURE
REV. 13 10/13

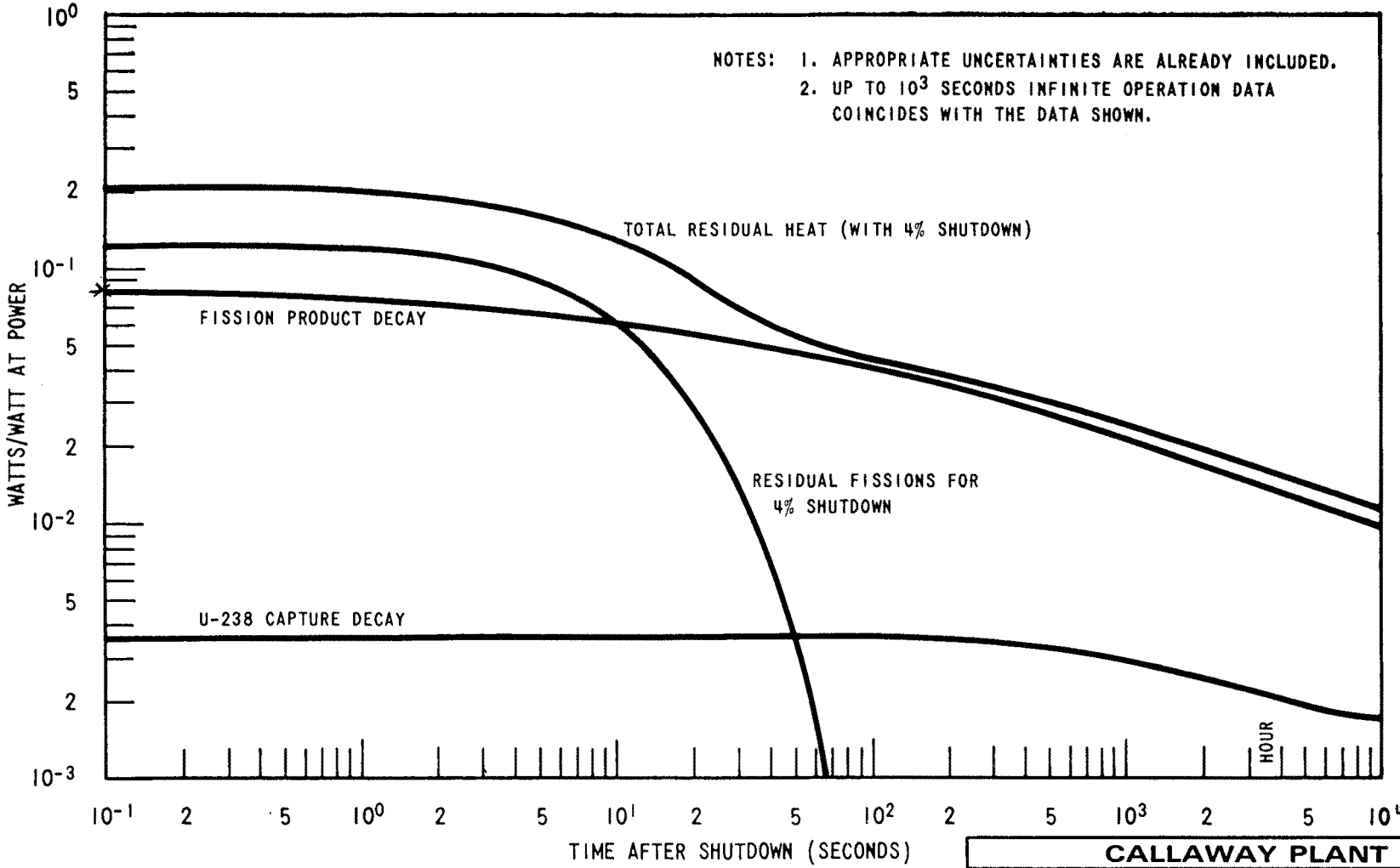


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FIGURE 6.2.1-16

REACTOR DECAY POWER

SHEET 1

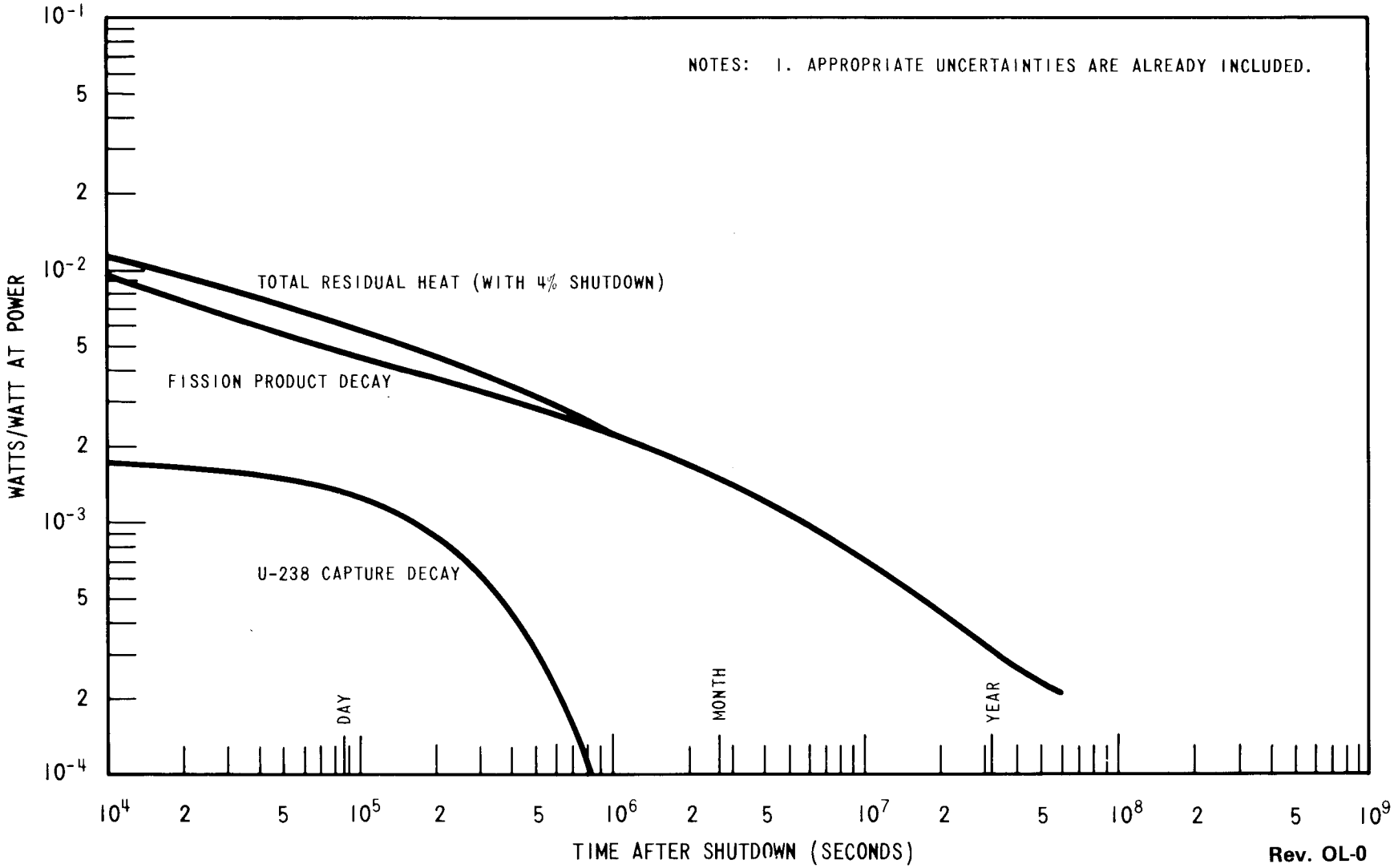

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FIGURE 6.2.1-16

REACTOR DECAY POWER

SHEET 2

Figure 6.2.1-17 Deleted

Figure 6.2.1-18 Deleted

Figure 6.2.1-19 Deleted

Figure 6.2.1-20 Deleted

Figure 6.2.1-21 Deleted

Figure 6.2.1-22 Deleted

Figure 6.2.1-23 Deleted

Figure 6.2.1-24 Deleted

Figure 6.2.1-25 Deleted

Figure 6.2.1-26 Deleted

Figures 6.2.1-27 thru 6.2.1-42
have been deleted.

Figures 6.2.1-27 thru 6.2.1-42
have been deleted.

Figures 6.2.1-27 thru 6.2.1-42
have been deleted.

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have been deleted.

Figures 6.2.1-27 thru 6.2.1-42
have been deleted.

Figures 6.2.1-27 thru 6.2.1-42
have been deleted.

Figures 6.2.1-27 thru 6.2.1-42
have been deleted.

Figures 6.2.1-27 thru 6.2.1-42
have been deleted.

Figures 6.2.1-27 thru 6.2.1-42
have been deleted.

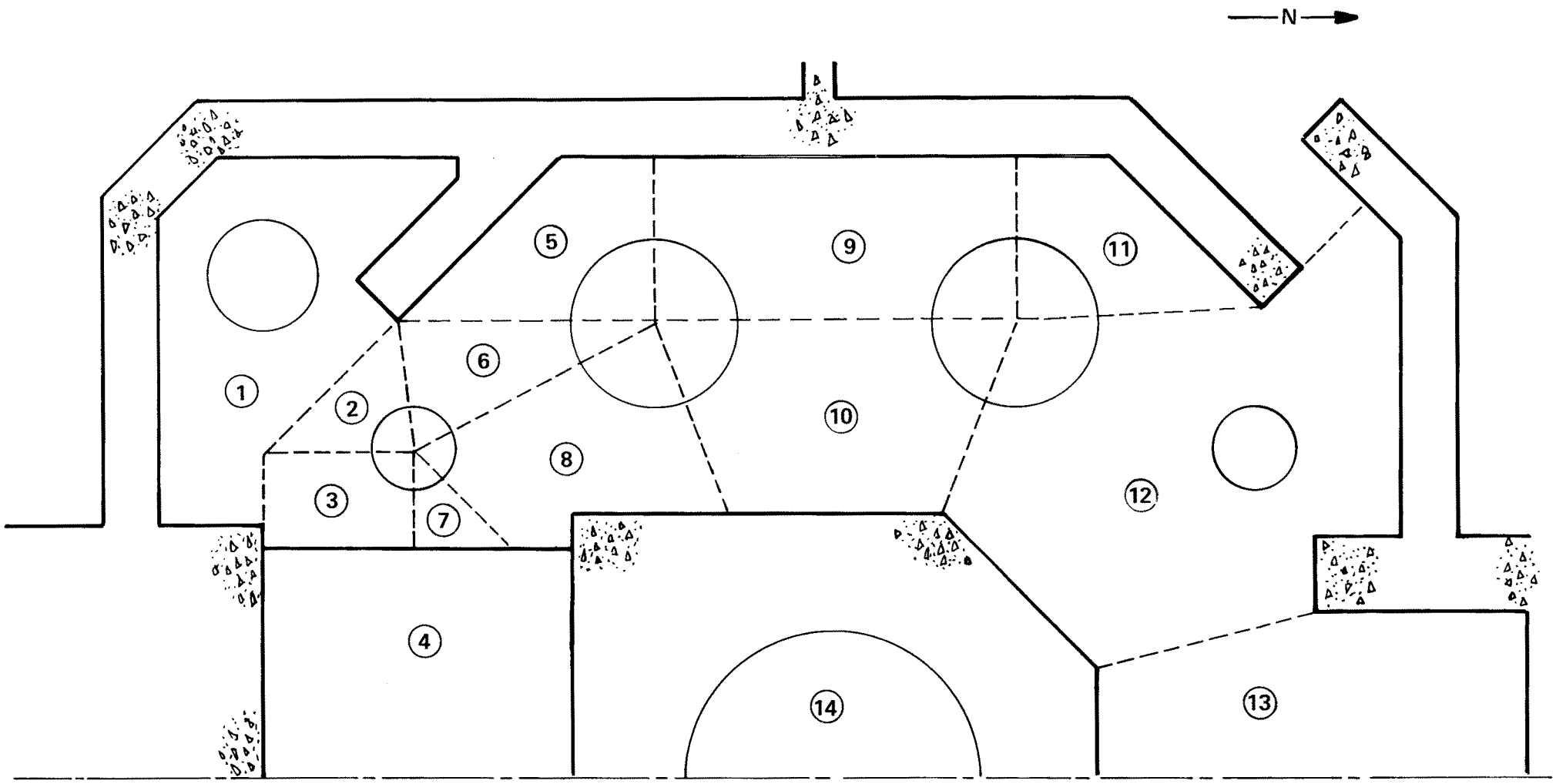
Figures 6.2.1-27 thru 6.2.1-42
have been deleted.

Figures 6.2.1-27 thru 6.2.1-42
have been deleted.

Figures 6.2.1-27 thru 6.2.1-42
have been deleted.

Figures 6.2.1-27 thru 6.2.1-42
have been deleted.

Figures 6.2.1-27 thru 6.2.1-42
have been deleted.



LEVEL 1

EL. 2001'-4" TO 2018'-4"

○ - NODE NUMBER

– – – – – – – NODE BOUNDARY

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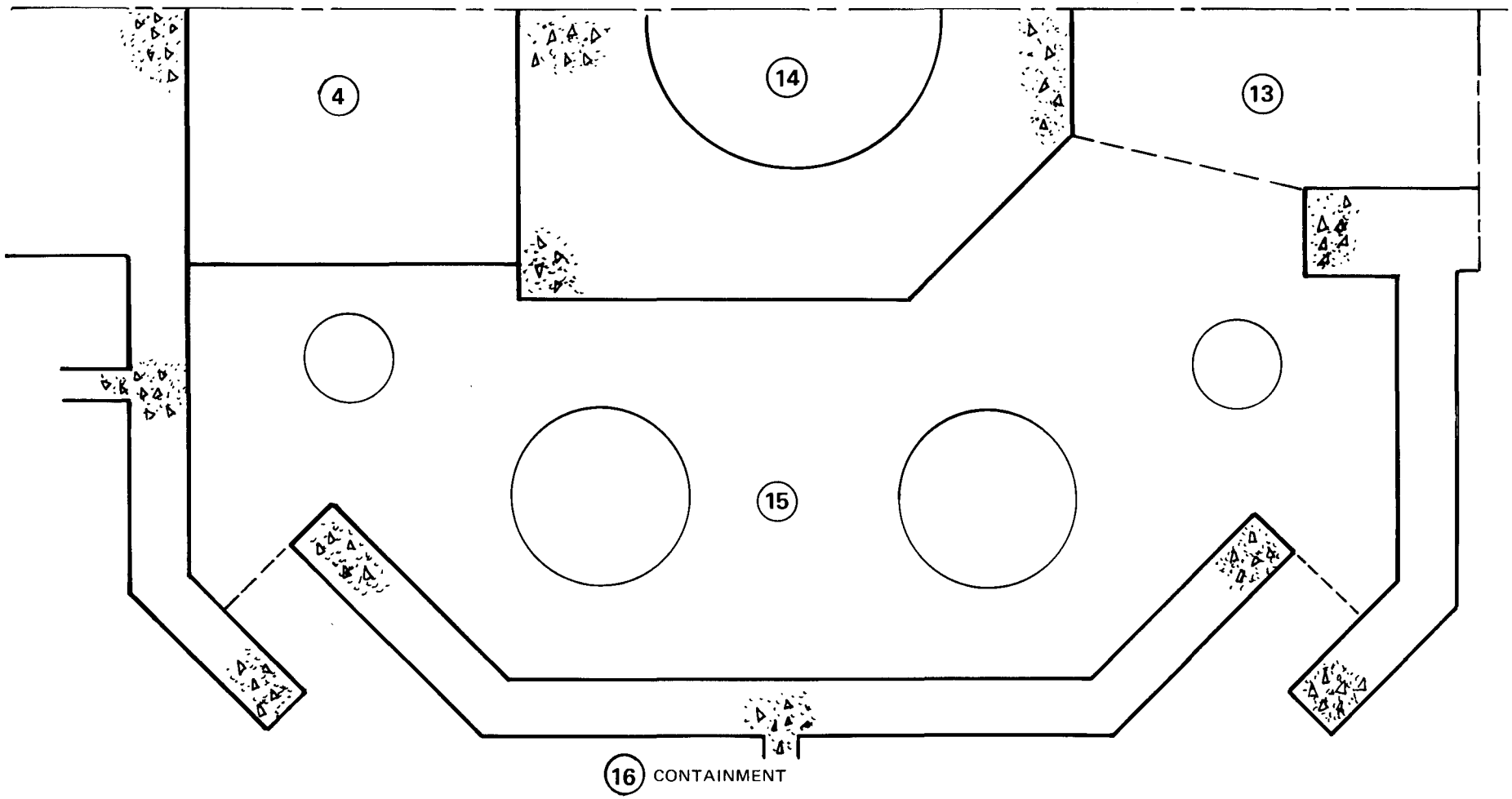
FIGURE 6.2.1-43

STEAM GENERATOR LOOP COMPARTMENT ANALYSIS

NODALIZATION SCHEME - LEVEL 1



LEVEL 1

EL. 2001'-4" TO 2018'-4"

NODE NUMBER

NODE BOUNDARY

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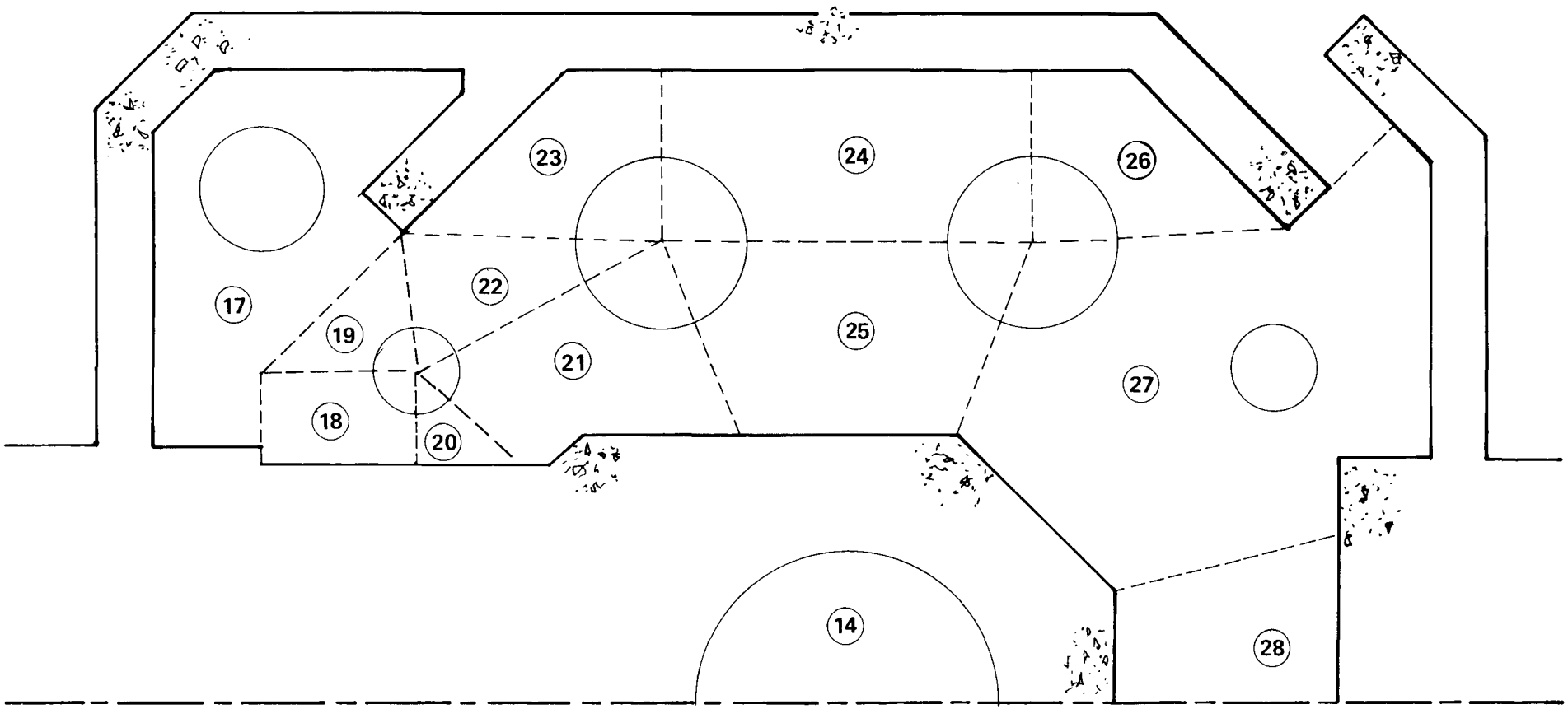
FIGURE 6.2.1-44

STEAM GENERATOR LOOP COMPARTMENT ANALYSIS

NODALIZATION SCHEME - LEVEL 1



LEVEL 2
EL. 2018'-4" TO 2025'-0"

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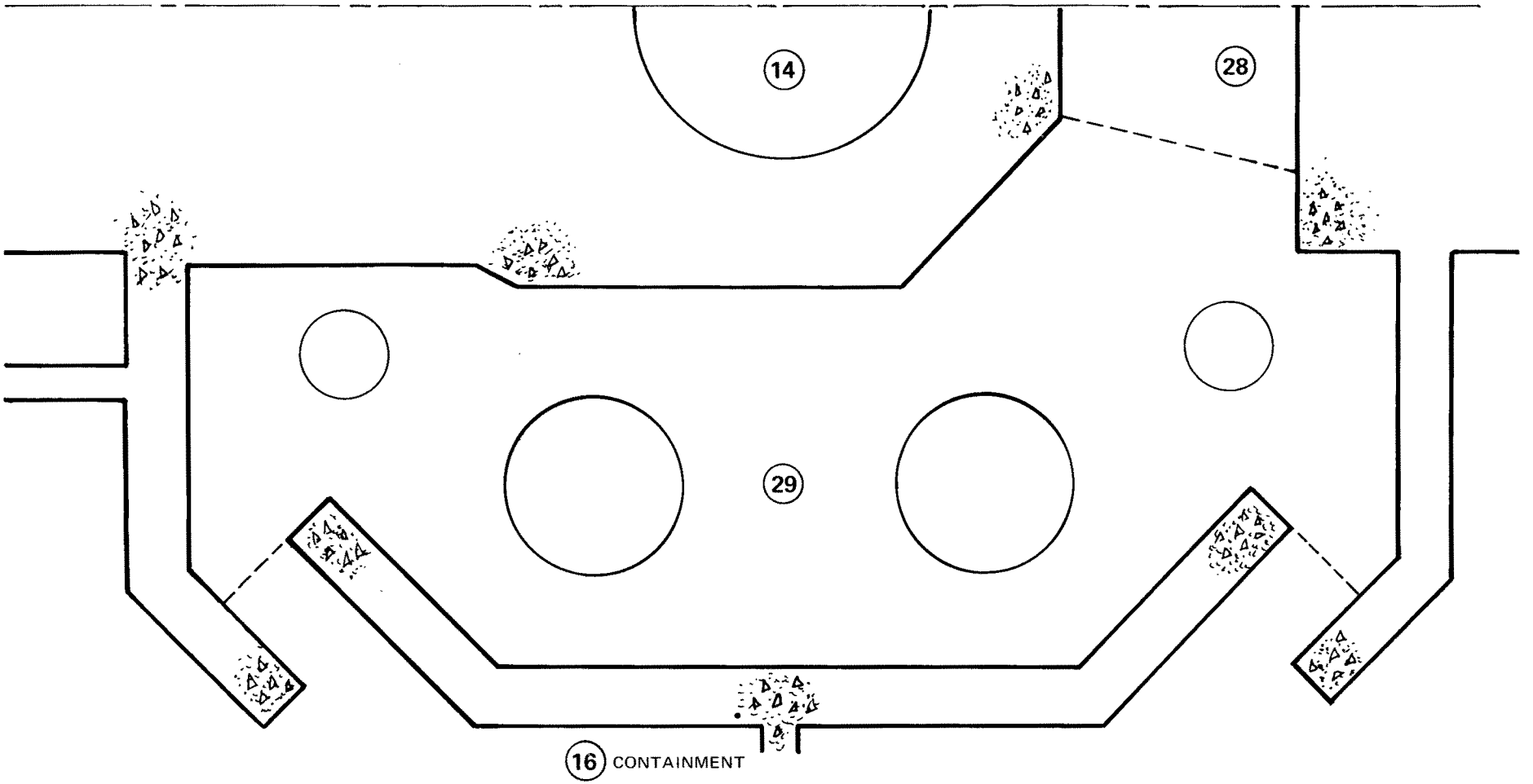
FIGURE 6.2.1-45

STEAM GENERATOR LOOP COMPARTMENT ANALYSIS

NODALIZATION SCHEME - LEVEL 2



LEVEL 2

EL. 2018'-4" TO 2025'-0"

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FIGURE 6.2.1-46

STEAM GENERATOR LOOP COMPARTMENT ANALYSIS

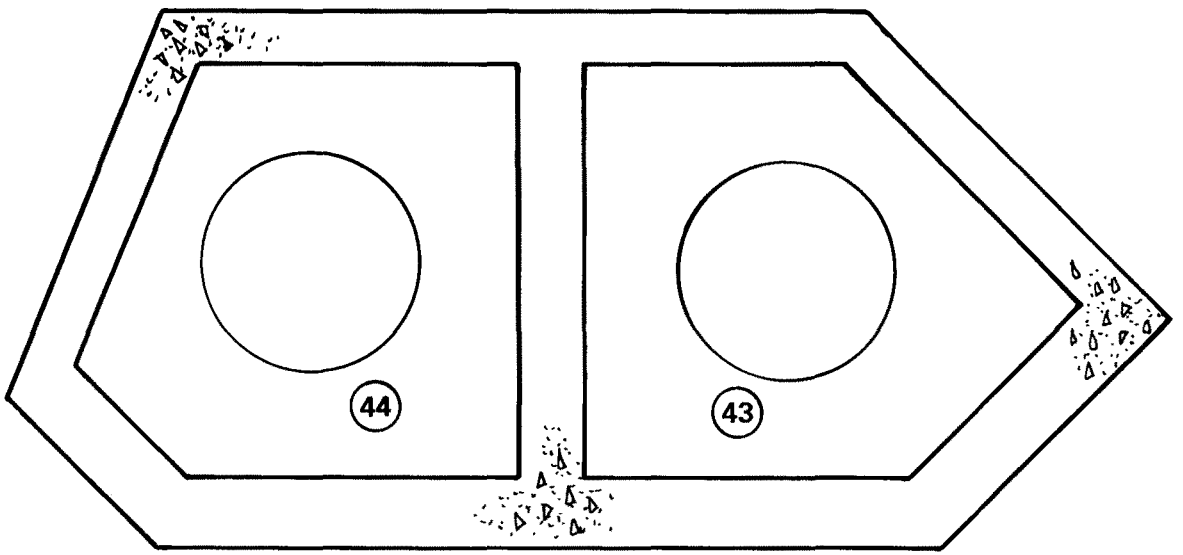
NODALIZATION SCHEME - LEVEL 2

Figure 6.2.1-47 Deleted

Figure 6.2.1-48 Deleted

Figure 6.2.1-49 Deleted

Figure 6.2.1-50 Deleted



LEVEL 4

EL. 2045'-6" TO 2060'-0"

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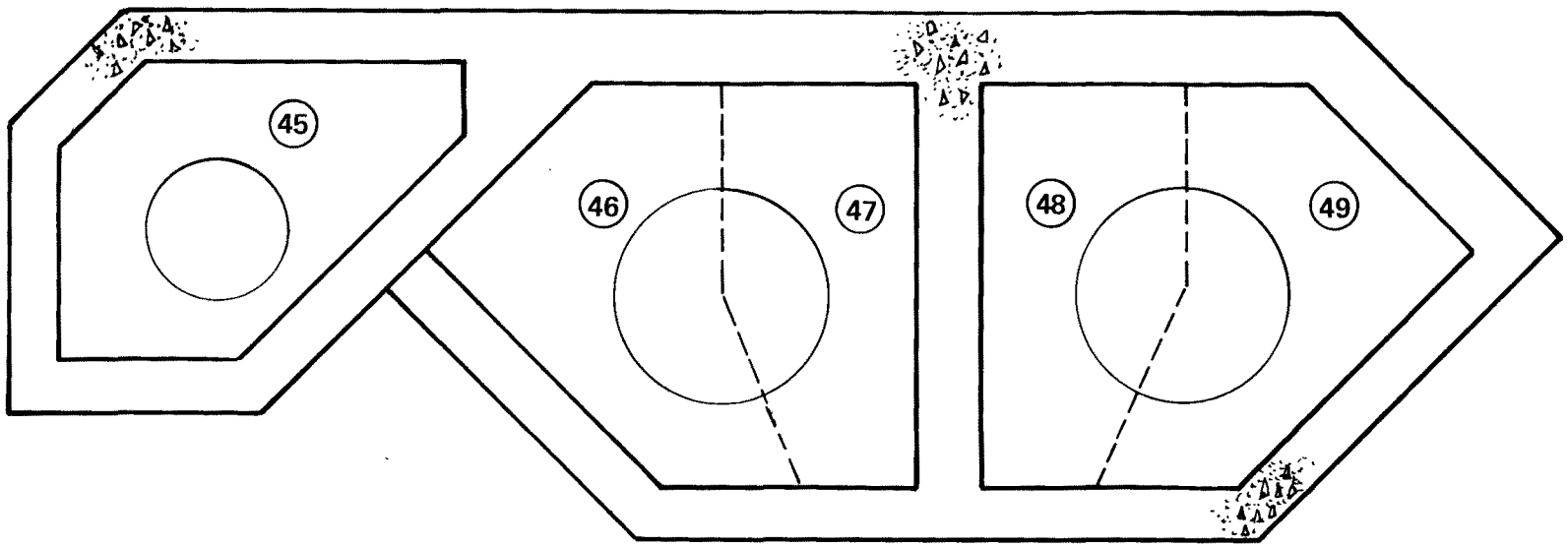
FIGURE 6.2.1-51

STEAM GENERATOR LOOP COMPARTMENT ANALYSIS

NODALIZATION SCHEME - LEVEL 4



LEVEL 5

EL. 2060'-0" TO 2068'-8"

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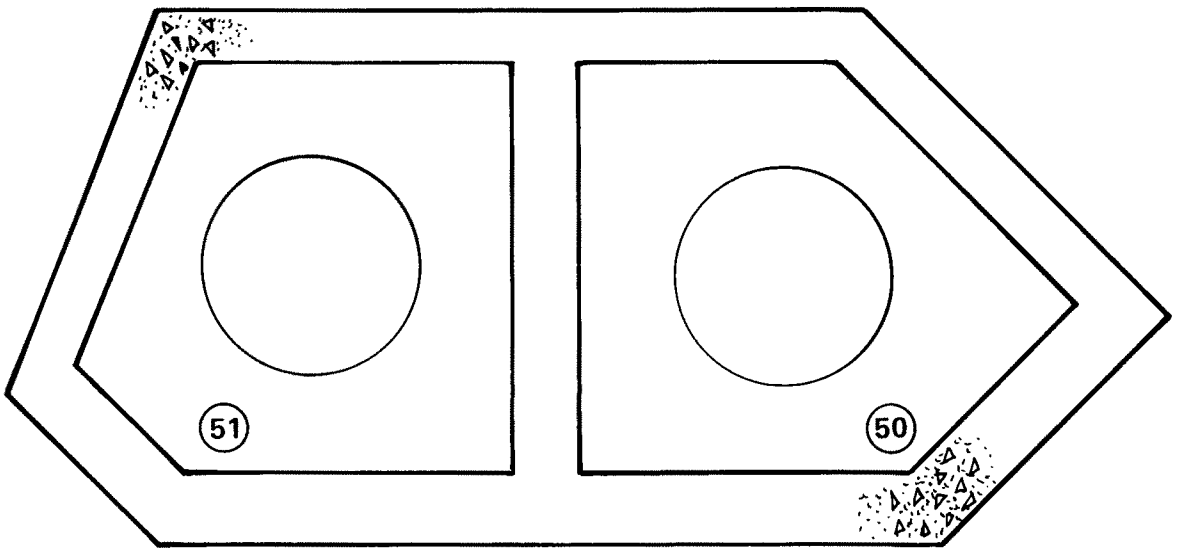
FIGURE 6.2.1-52

STEAM GENERATOR LOOP COMPARTMENT ANALYSIS

NODALIZATION SCHEME - LEVEL 5



LEVEL 5

EL. 2060'-0" TO 2068'-8"

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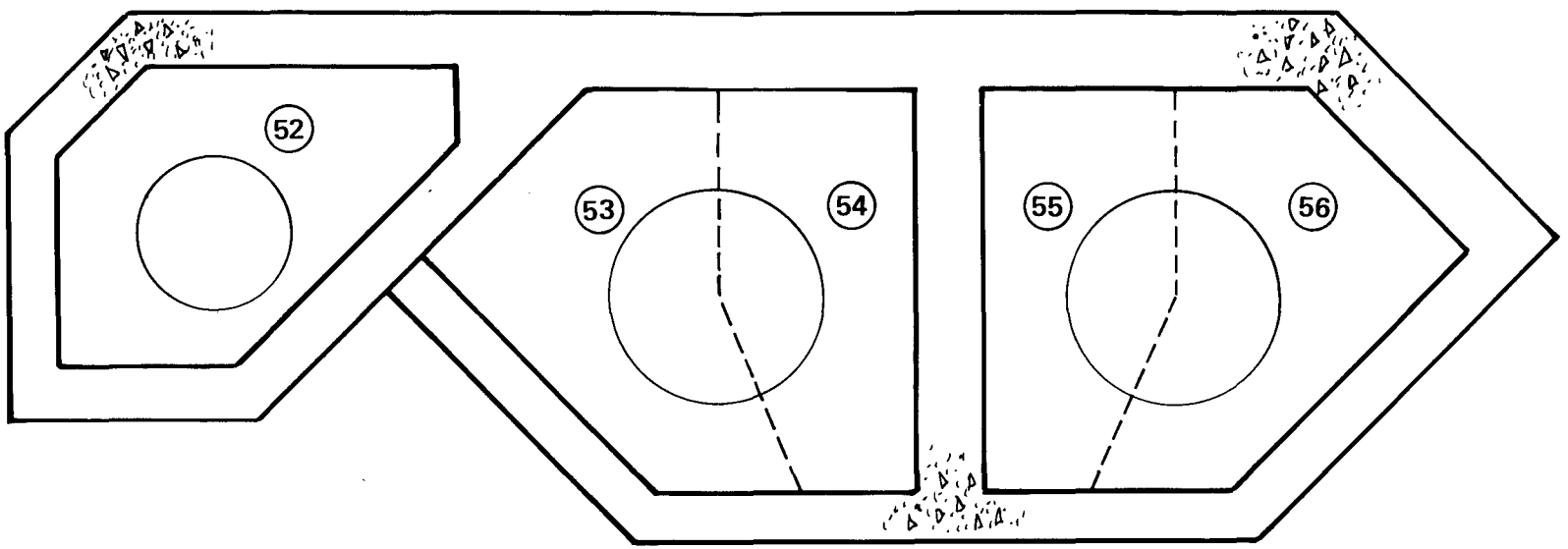
CALLAWAY PLANT

FIGURE 6.2.1-53

STEAM GENERATOR LOOP COMPARTMENT ANALYSIS

NODALIZATION SCHEME - LEVEL 5



LEVEL 6

EL. 2068'-8" TO 2086'-0 3/4"

(EL. 2068'8" TO 2090'4" IN PRESSURIZER COMPT.)

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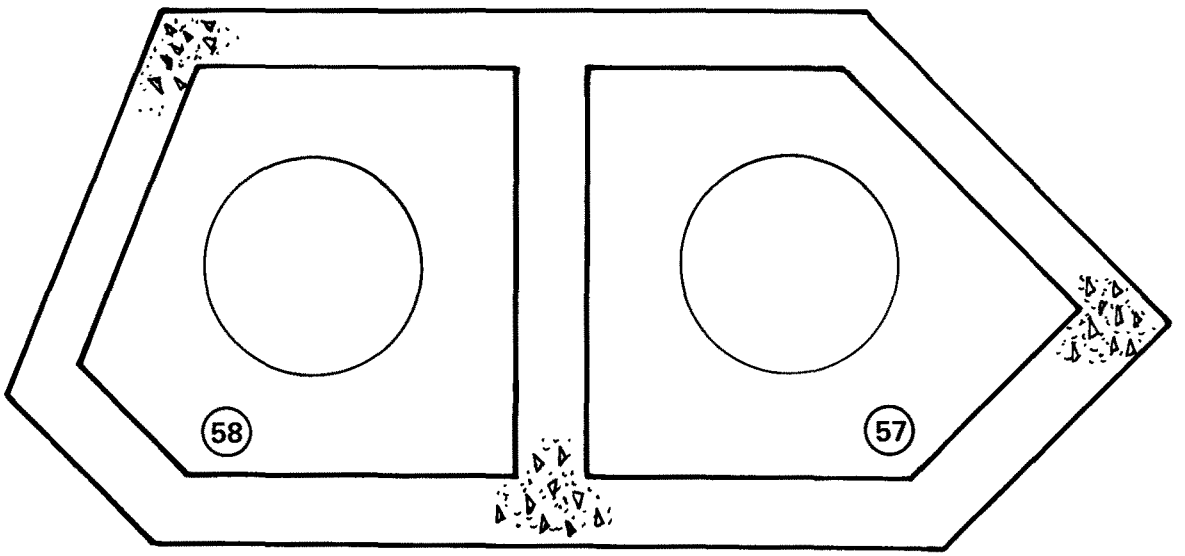
FIGURE 6.2.1-54

STEAM GENERATOR LOOP COMPARTMENT ANALYSIS

NODALIZATION SCHEME - LEVEL 6



LEVEL 6

EL. 2068'-8" TO 2086'-0 3/4"

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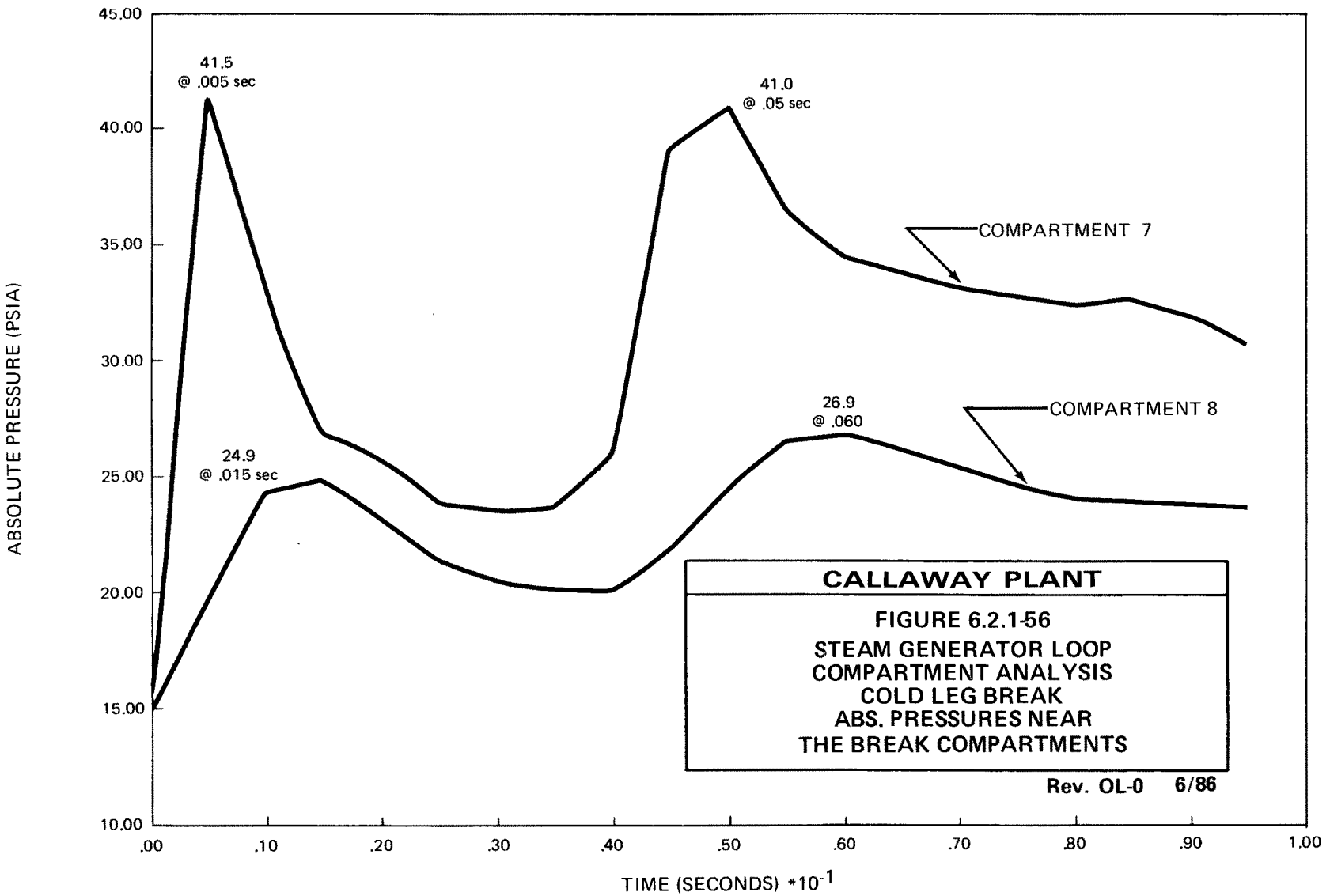
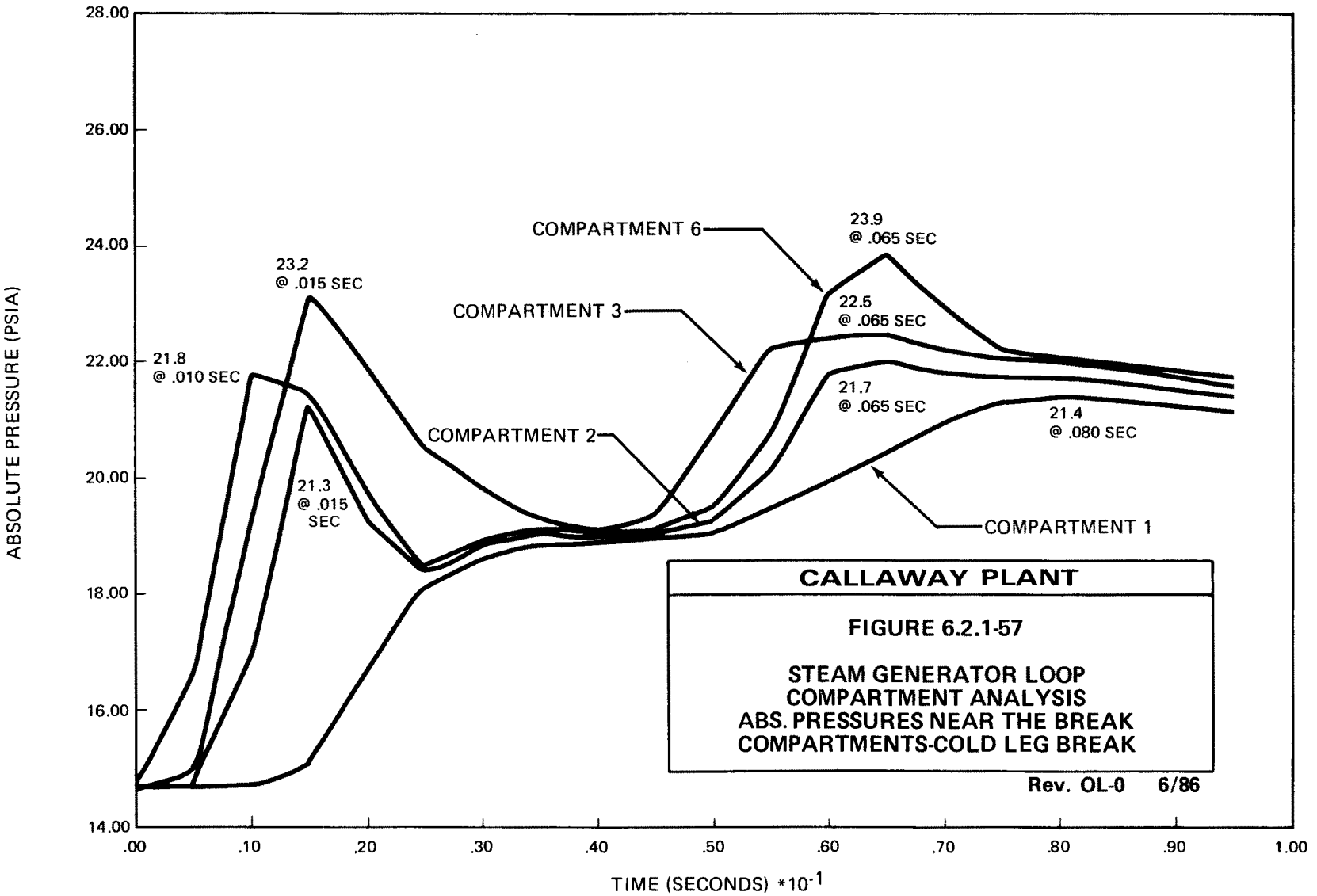
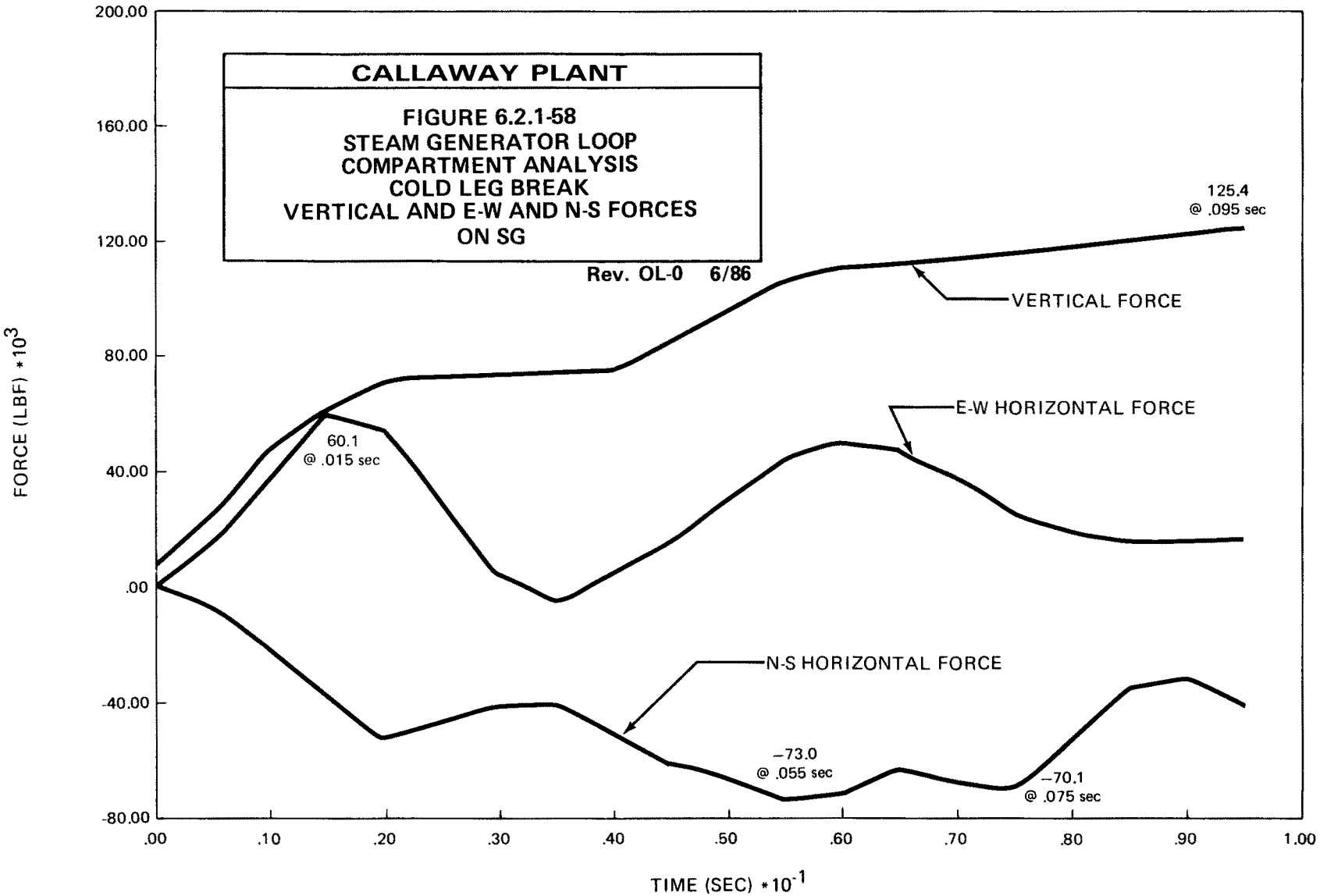
FIGURE 6.2.1-55

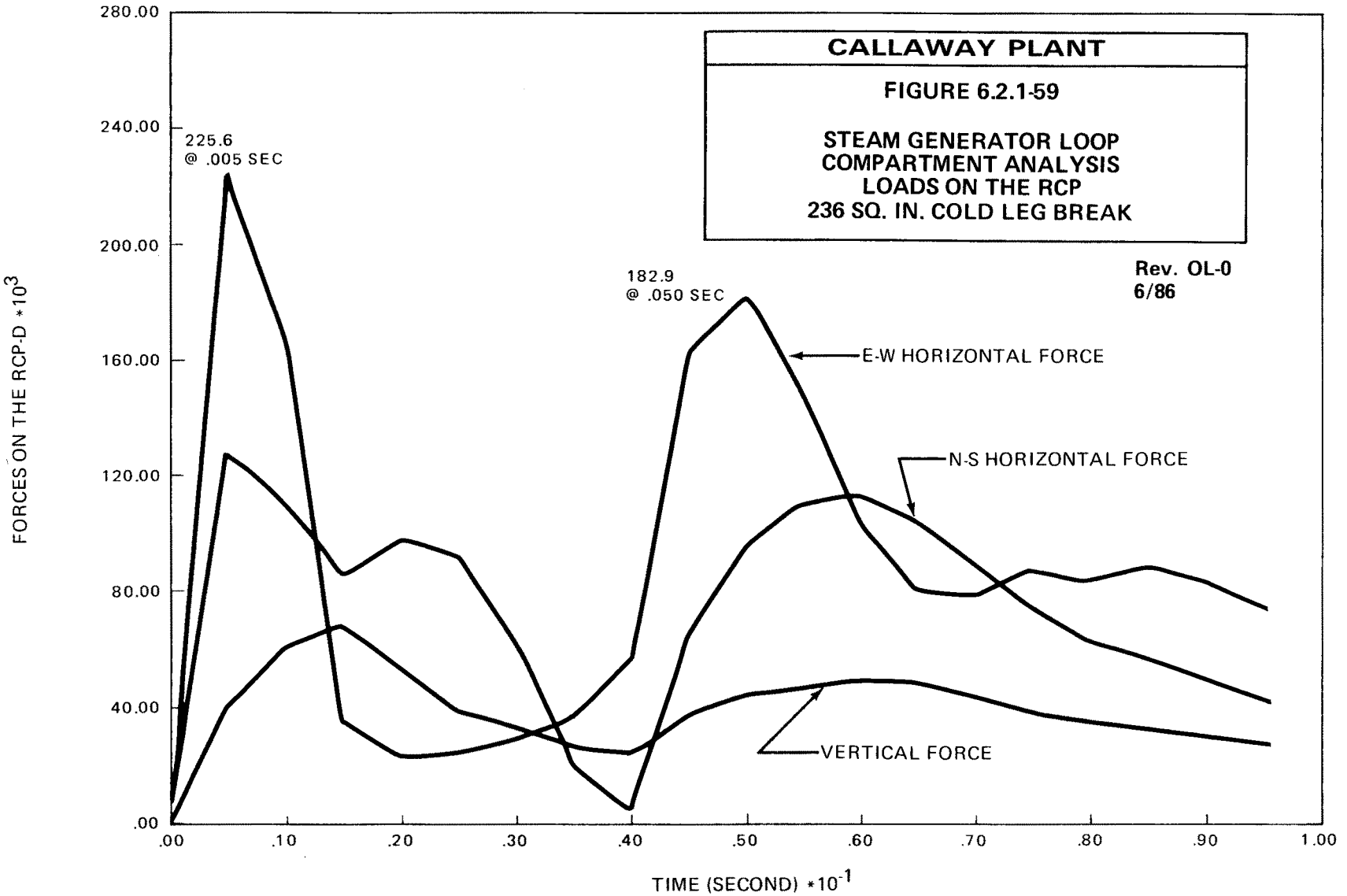
STEAM GENERATOR LOOP COMPARTMENT ANALYSIS

NODALIZATION SCHEME - LEVEL 6


45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
ABSOLUTE PRESSURE (PSIA)
41.5
@ .005 sec
41.0
@ .05 sec
COMPARTMENT 7
26.9
@ .060
COMPARTMENT 8
24.9
@ .015 sec
.00
.10
.20
.30
.40
.50
.60
.70
.80
.90
1.00
TIME (SECONDS) *10-1
CALLAWAY PLANT
FIGURE 6.2.1-56
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
COLD LEG BREAK
ABS. PRESSURES NEAR
THE BREAK COMPARTMENTS
Rev. OL-0 6/86


28.00
26.00
24.00
22.00
20.00
18.00
16.00
14.00
.00
.10
.20
.30
.40
.50
.60
.70
.80
.90
1.00
ABSOLUTE PRESSURE (PSIA)
TIME (SECONDS) *10-1
COMPARTMENT 6
COMPARTMENT 3
COMPARTMENT 2
COMPARTMENT 1
23.9
@ .065 SEC
23.2
@ .015 SEC
22.5
@ .065 SEC
21.8
@ .010 SEC
21.7
@ .065 SEC
21.4
@ .080 SEC
21.3
@ .015
SEC
CALLAWAY PLANT
FIGURE 6.2.1-57
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
ABS. PRESSURES NEAR THE BREAK
COMPARTMENTS-COLD LEG BREAK
Rev. OL-0 6/86


CALLAWAY PLANT
FIGURE 6.2.1-58
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
COLD LEG BREAK
VERTICAL AND E-W AND N-S FORCES
ON SG
Rev. OL-0 6/86
200.00
160.00
120.00
80.00
40.00
.00
-40.00
-80.00
FORCE (LBF) *10^3
.00
.10
.20
.30
.40
.50
.60
.70
.80
.90
1.00
TIME (SEC) *10^-1
125.4
@ .095 sec
VERTICAL FORCE
E-W HORIZONTAL FORCE
60.1
@ .015 sec
N-S HORIZONTAL FORCE
-73.0
@ .055 sec
-70.1
@ .075 sec


CALLAWAY PLANT
FIGURE 6.2.1-59
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
LOADS ON THE RCP
236 SQ. IN. COLD LEG BREAK
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225.6
@ .005 SEC
182.9
@ .050 SEC
E-W HORIZONTAL FORCE
N-S HORIZONTAL FORCE
VERTICAL FORCE
FORCES ON THE RCP-D *10^3
TIME (SECOND) *10^-1
280.00
240.00
200.00
160.00
120.00
80.00
40.00
.00
.00
.10
.20
.30
.40
.50
.60
.70
.80
.90
1.00

CALLAWAY PLANT

FIGURE 6.2.1-60

STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
236 IN^2 COLD LEG BREAK
DIRECTION OF PEAK HORIZONTAL
FORCES ON REACTOR COOLANT
PUMP AND STEAM GENERATOR

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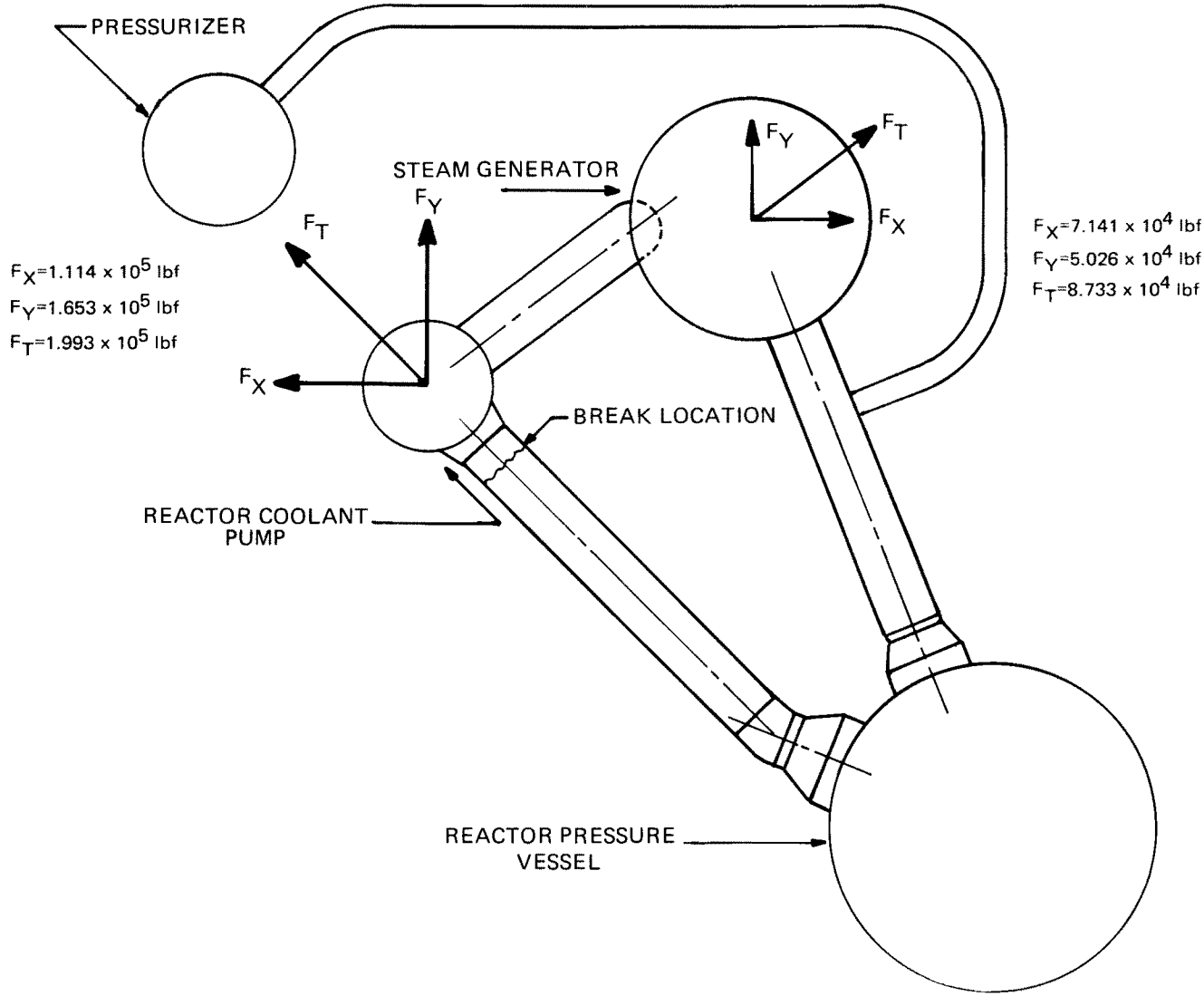

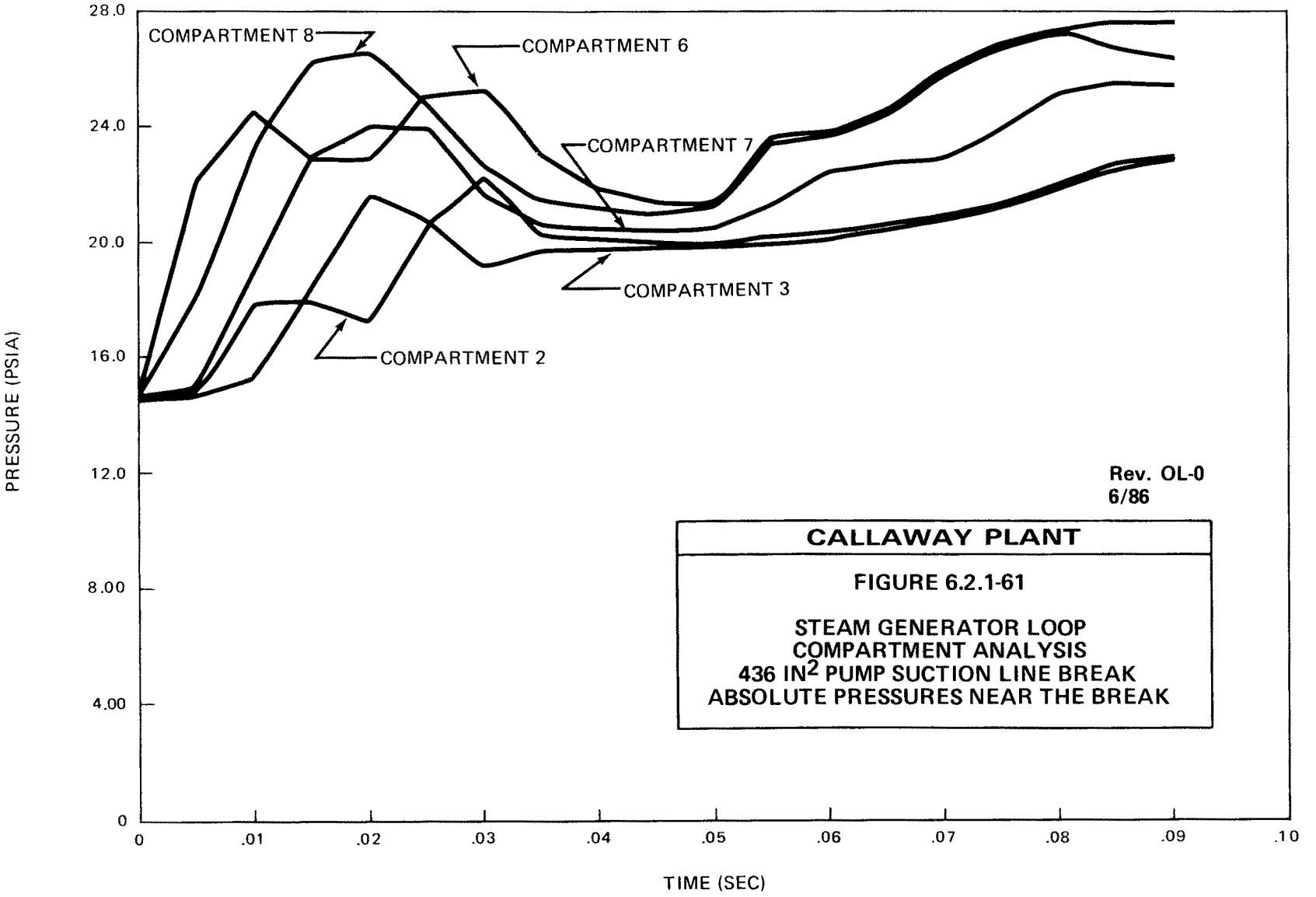
28.0
24.0
20.0
16.0
12.0
8.00
4.00
0
PRESSURE (PSIA)
COMPARTMENT 8
COMPARTMENT 6
COMPARTMENT 7
COMPARTMENT 3
COMPARTMENT 2
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.10
TIME (SEC)
Rev. OL-0
6/86
CALLAWAY PLANT
FIGURE 6.2.1-61
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
436 IN2 PUMP SUCTION LINE BREAK
ABSOLUTE PRESSURES NEAR THE BREAK

CALLAWAY PLANT

FIGURE 6.2.1-62
STEAM GENERATOR LOOP COMPARTMENT ANALYSIS
436 IN^2 PUMP SUCTION LINE BREAK
N-S COMPONENT OF HORIZONTAL FORCE ON SG

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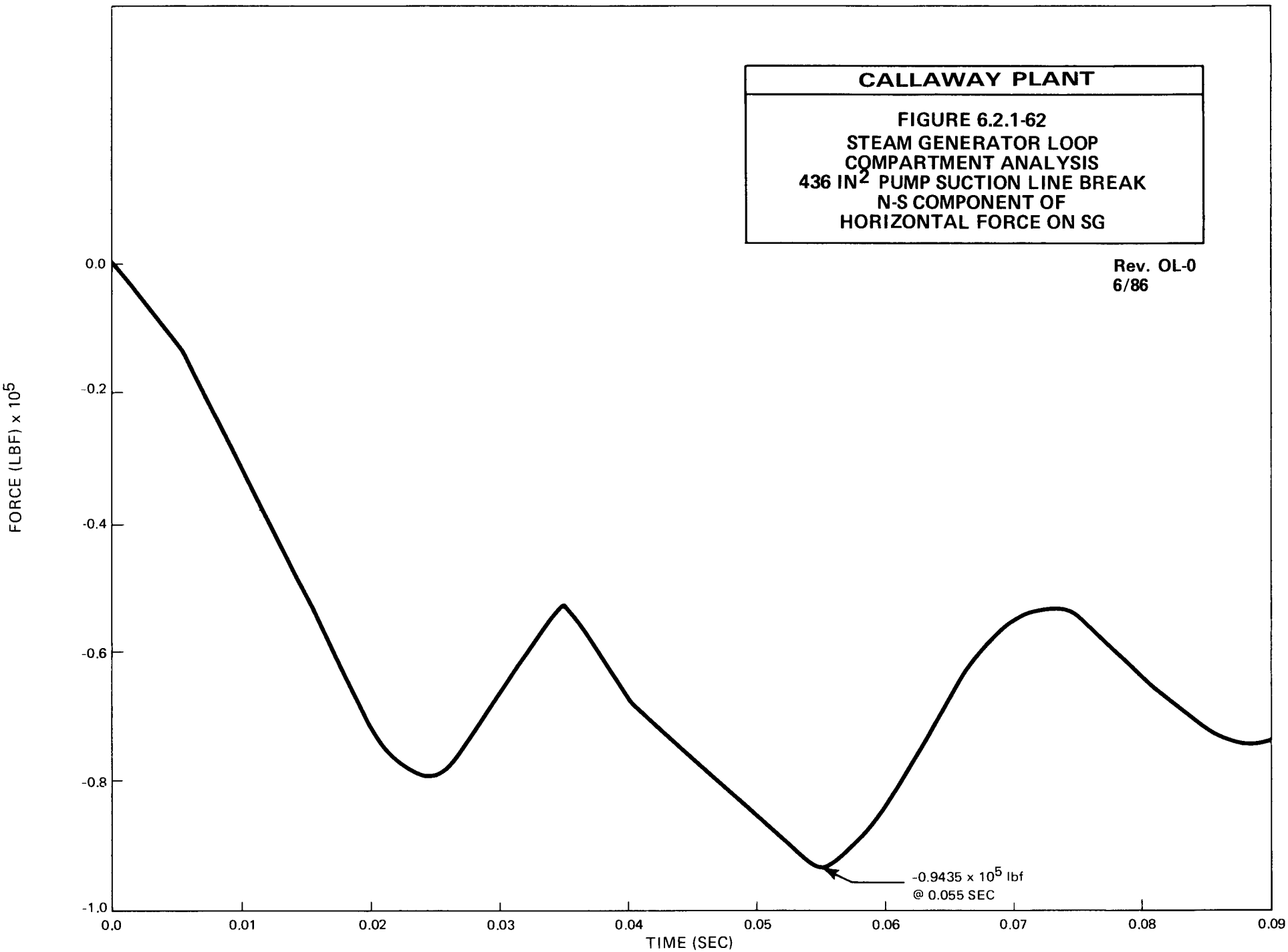

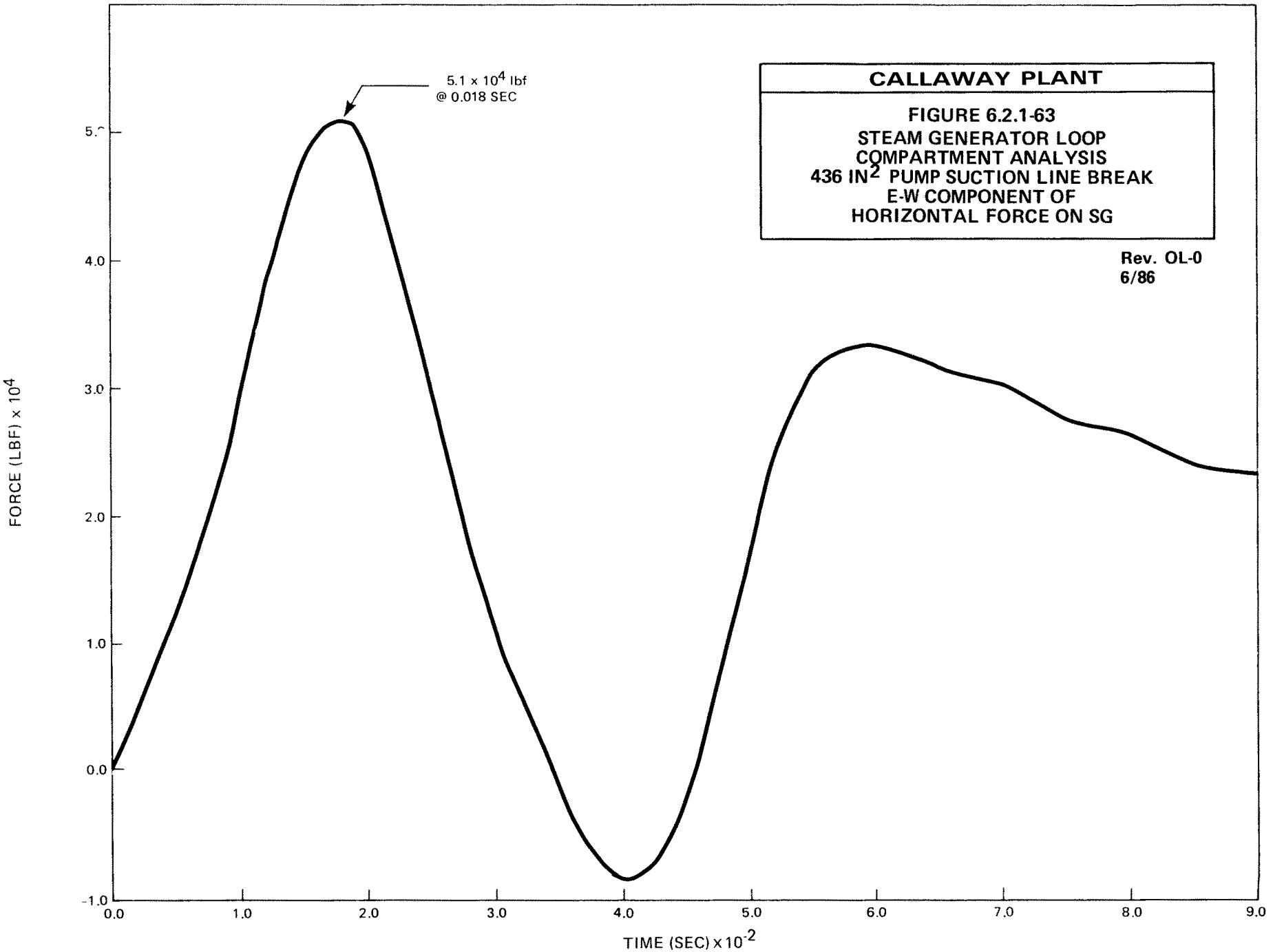

CALLAWAY PLANT

FIGURE 6.2.1-63
STEAM GENERATOR LOOP COMPARTMENT ANALYSIS
436 IN^2 PUMP SUCTION LINE BREAK
E-W COMPONENT OF HORIZONTAL FORCE ON SG

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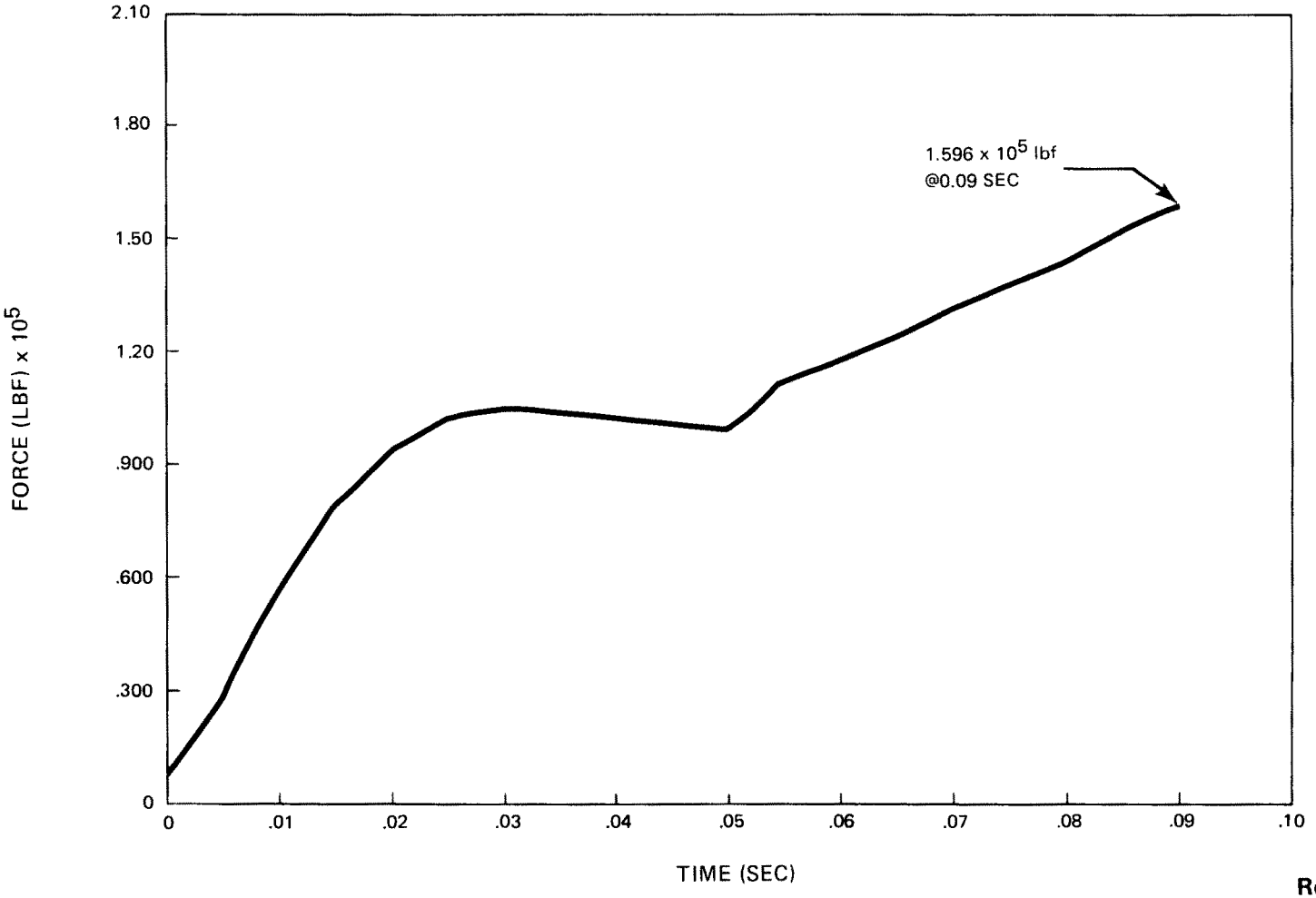

Rev. OL-0
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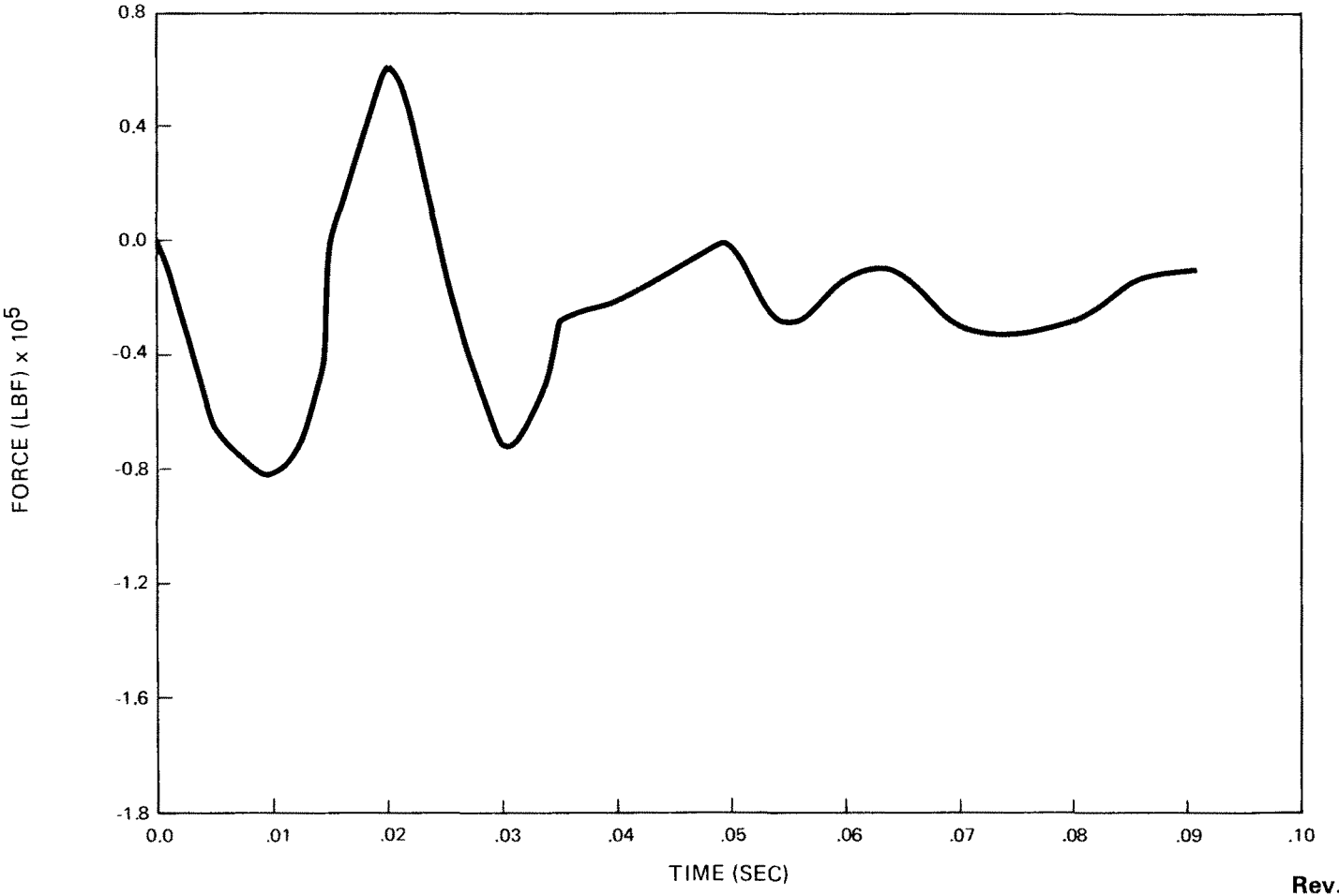
CALLAWAY PLANT

FIGURE 6.2.1-64
STEAM GENERATOR LOOP COMPARTMENT ANALYSIS
436 IN^2 PUMP SUCTION LINE BREAK
VERTICAL FORCE ON SG



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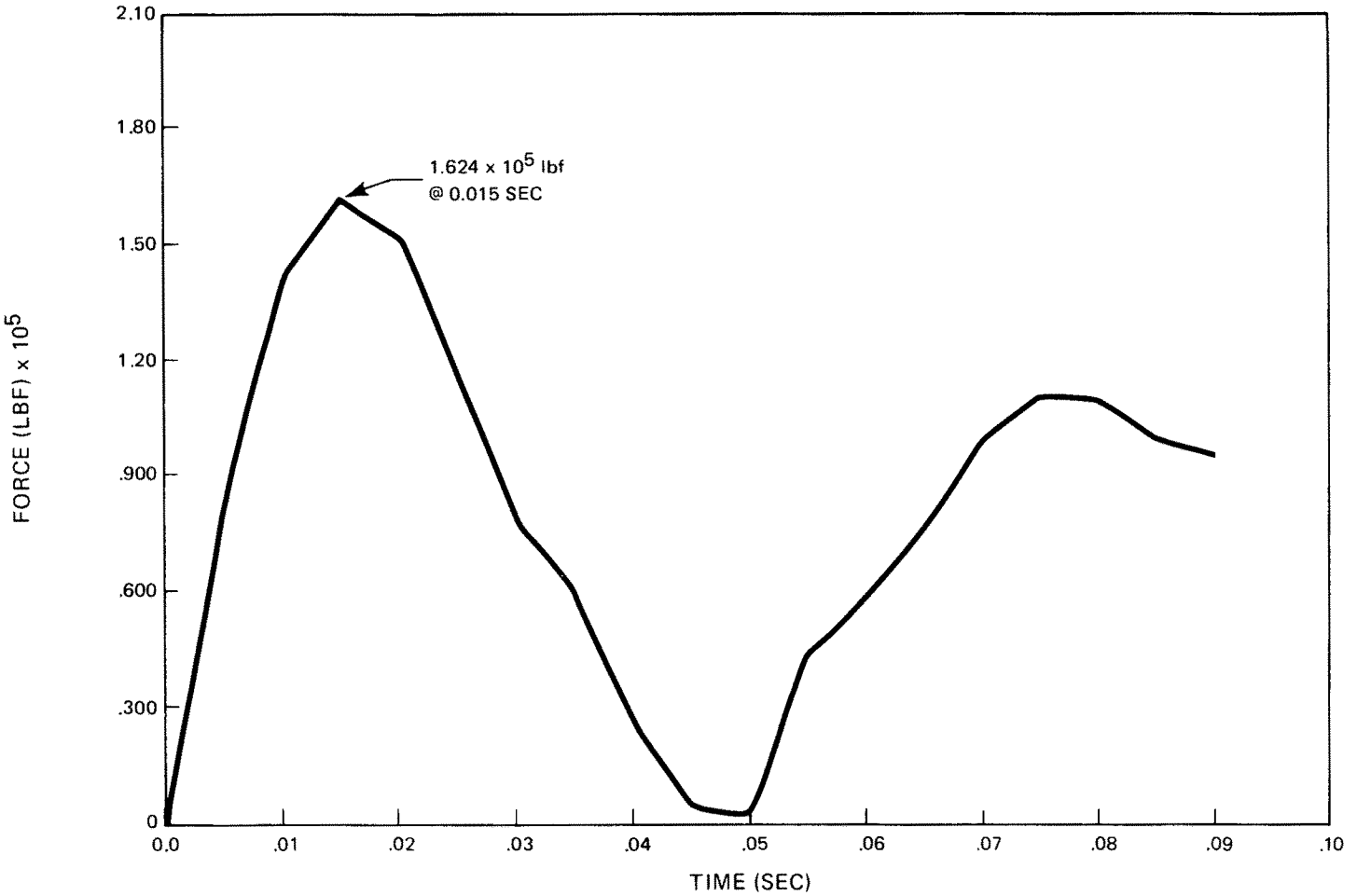
CALLAWAY PLANT

FIGURE 6.2.1-65
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
436 IN^2 PUMP SUCTION LINE BREAK
N-S COMPONENT OF HORIZONTAL FORCE
ON RCP



CALLAWAY PLANT

FIGURE 6.2.1-66
STEAM GENERATOR LOOP COMPARTMENT ANALYSIS
436 IN^2 PUMP SUCTION LINE BREAK
E-W COMPONENT OF HORIZONTAL FORCE ON RCP

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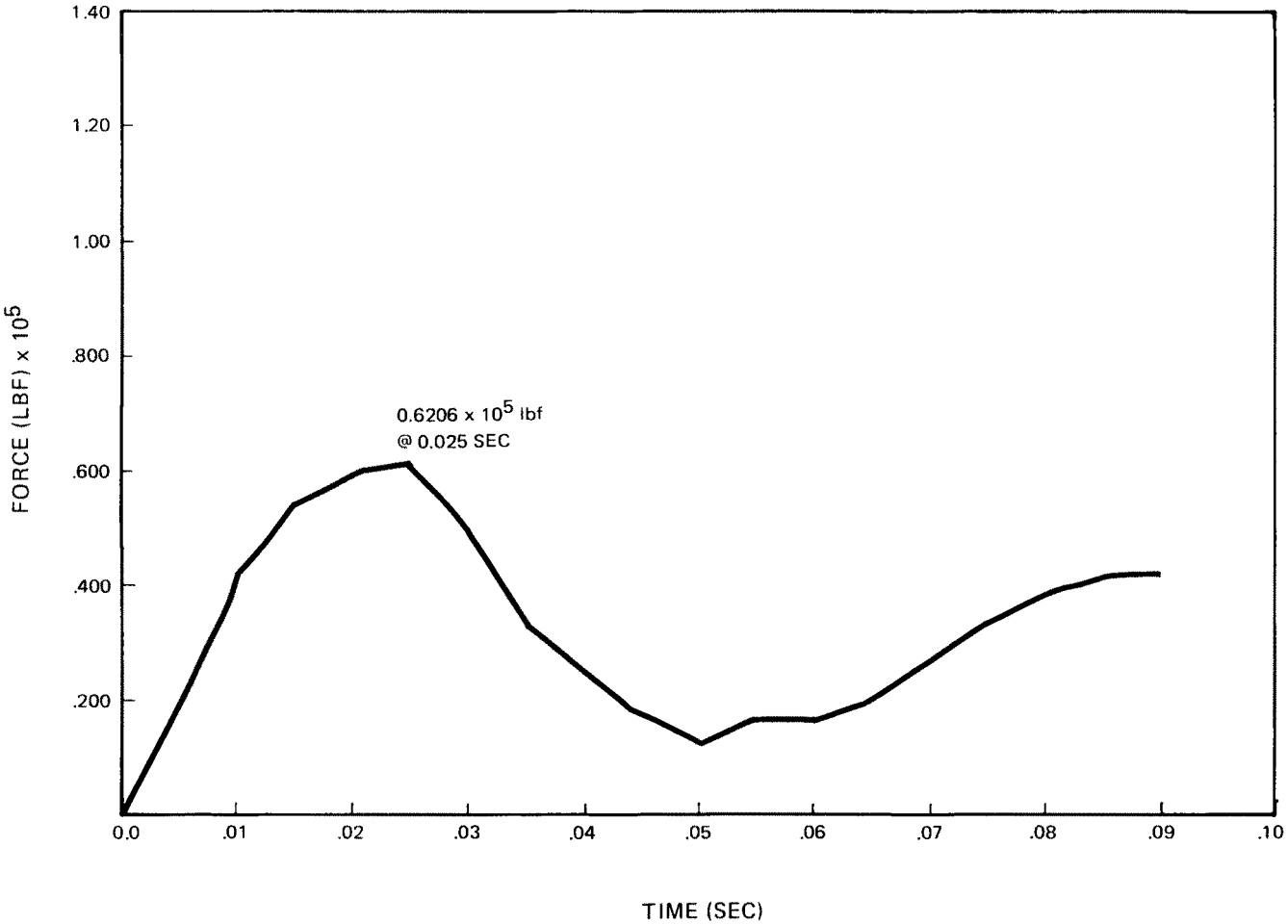

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CALLAWAY PLANT

FIGURE 6.2.1-67
STEAM GENERATOR LOOP COMPARTMENT ANALYSIS
436 IN^2 PUMP SUCTION LINE BREAK
VERTICAL FORCE ON RCP

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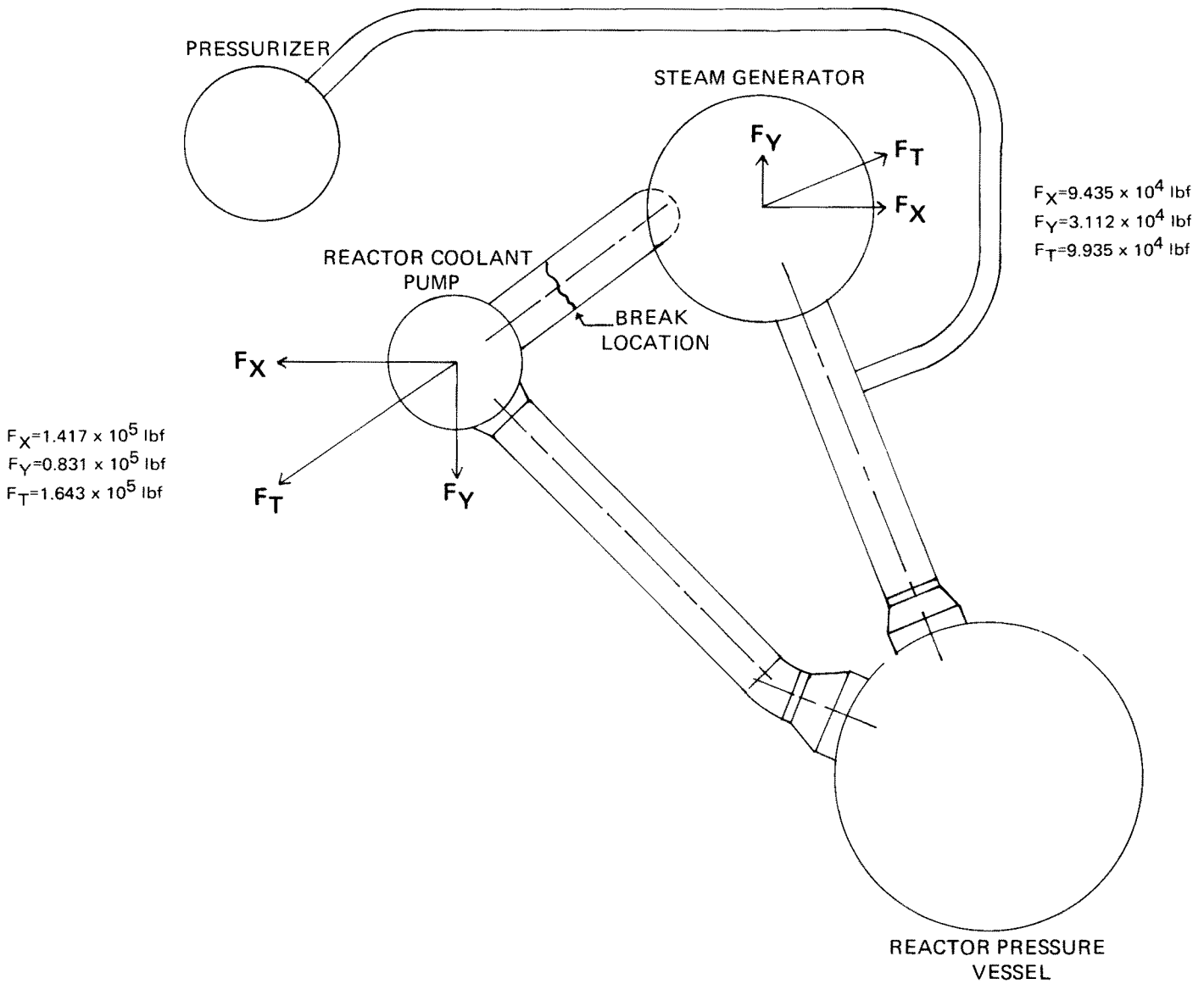
CALLAWAY PLANT

FIGURE 6.2.1-68
STEAM GENERATOR LOOP COMPARTMENT ANALYSIS
436 IN^2 PUMP SUCTION LINE BREAK
DIRECTION OF PEAK HORIZONTAL FORCES ON REACTOR COOLANT PUMP AND STEAM GENERATOR



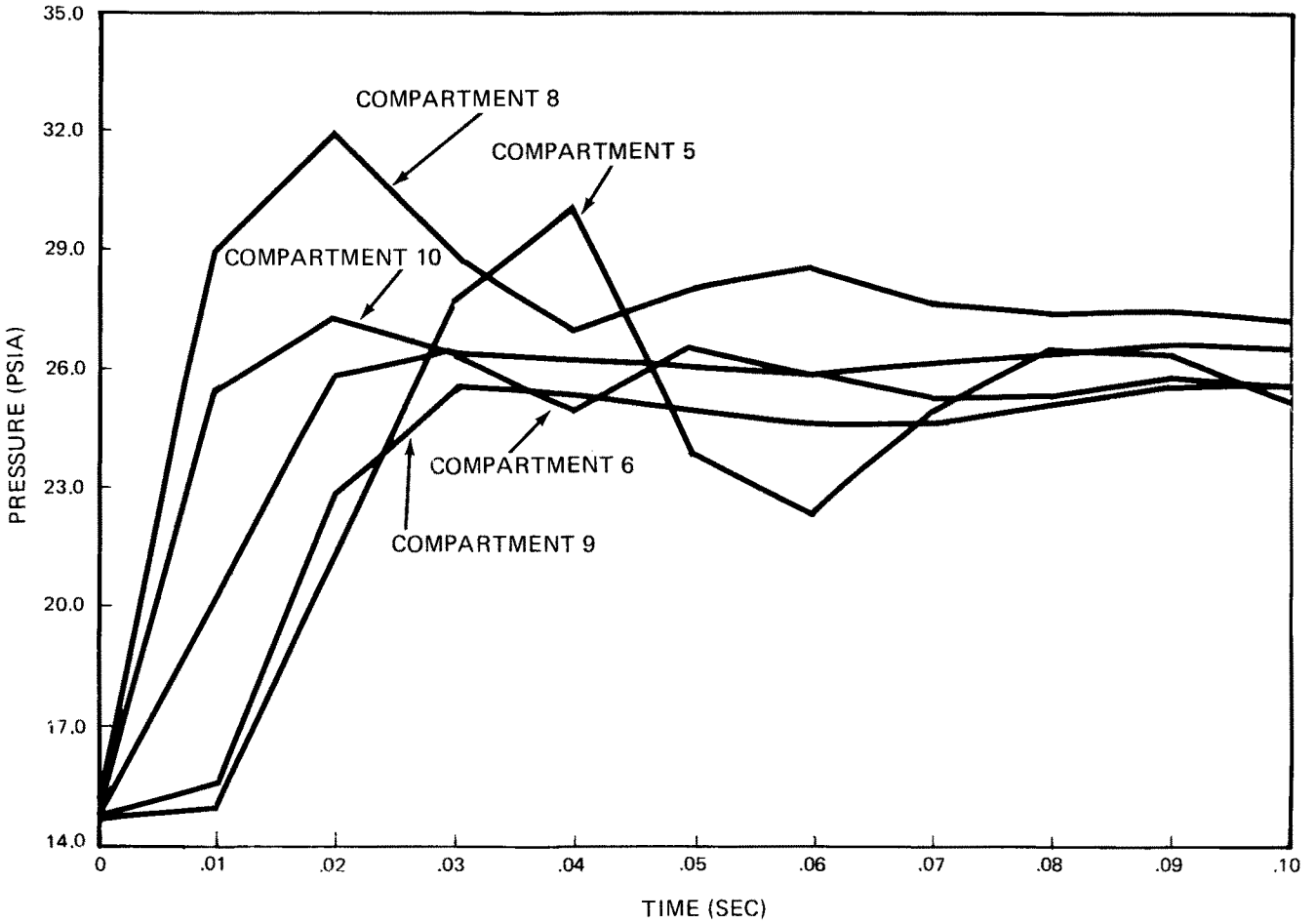


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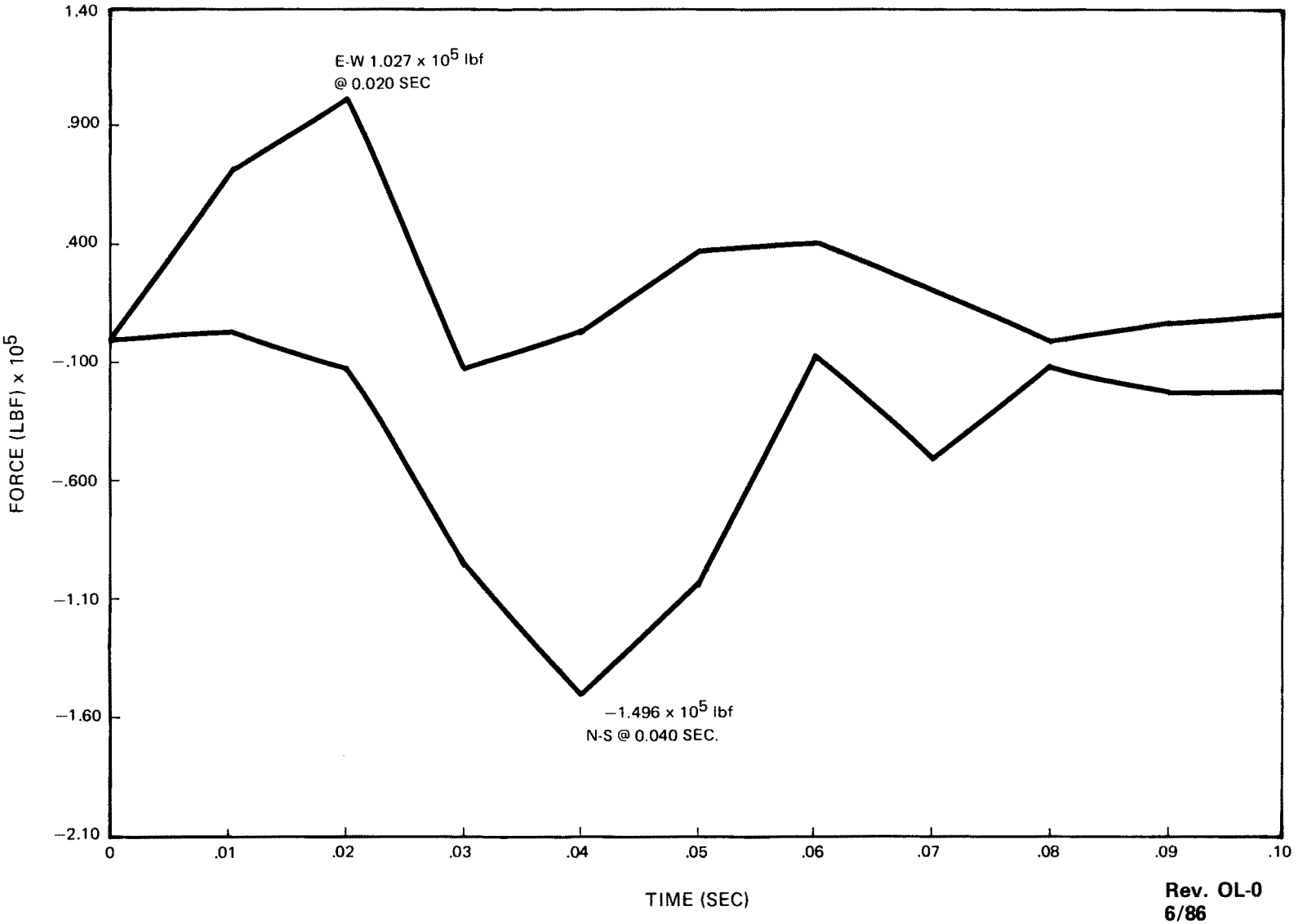
FIGURE 6.2.1-69
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
763 IN ^{2} HOT LEG BREAK
ABSOLUTE PRESSURE NEAR THE BREAK



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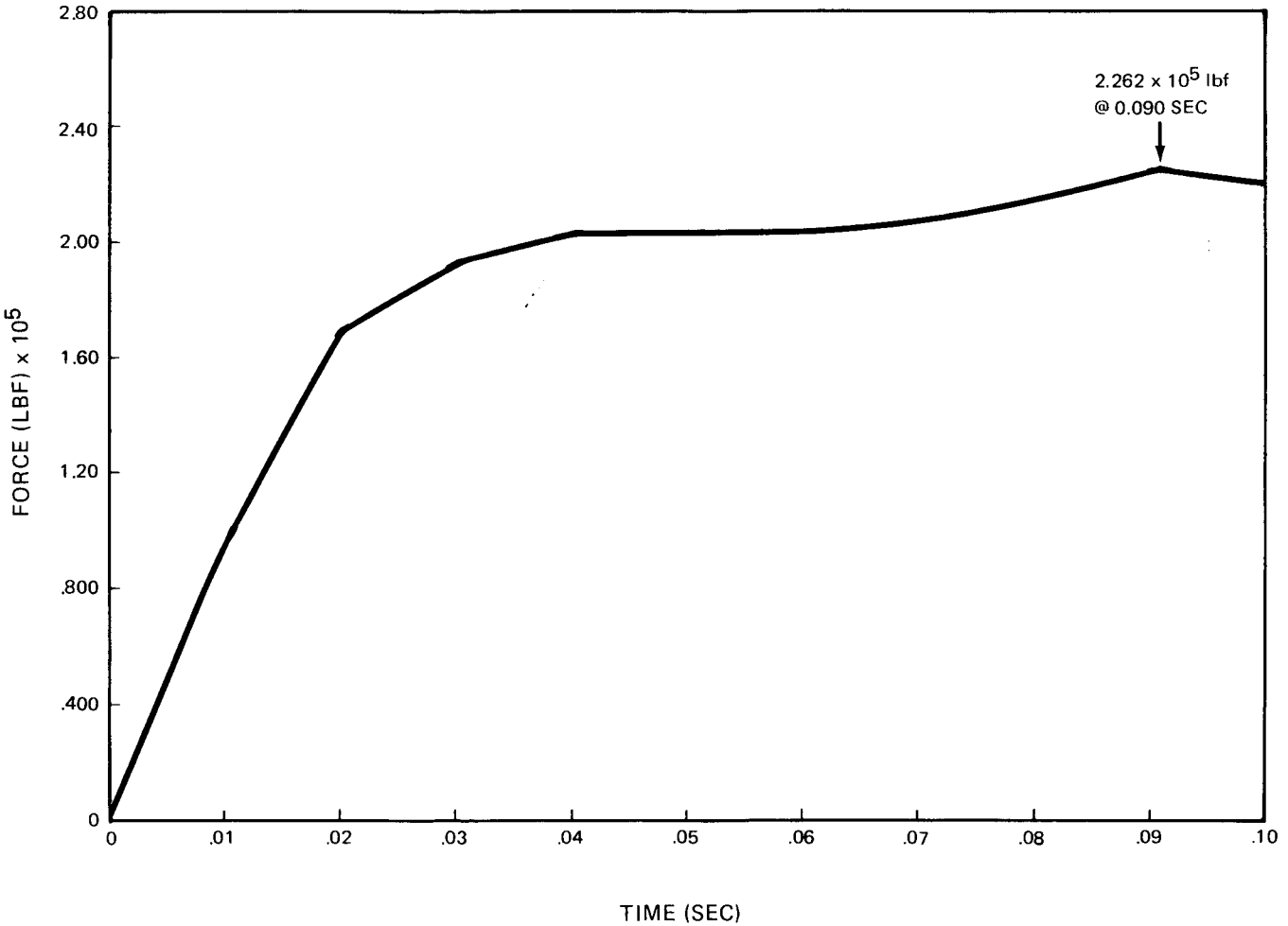
CALLAWAY PLANT

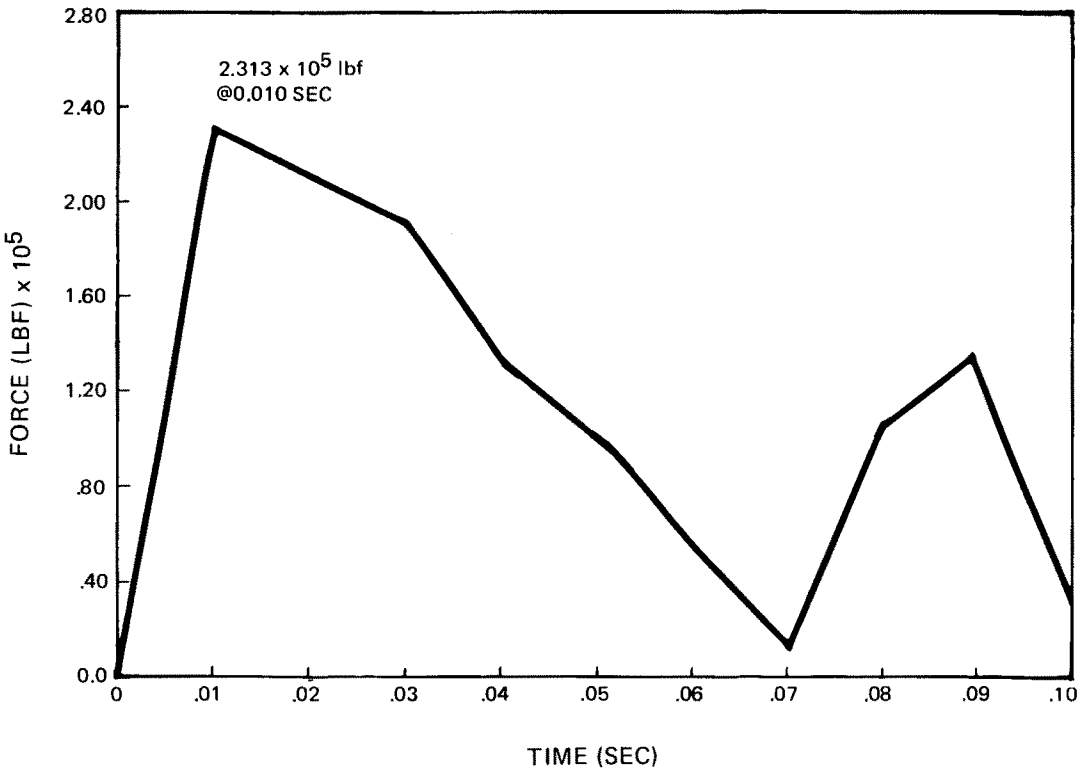
FIGURE 6.2.1-70
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
763 IN^2 HOT LEG BREAK
HORIZONTAL FORCES ON SG



Rev. OL-0
6/86

CALLAWAY PLANT

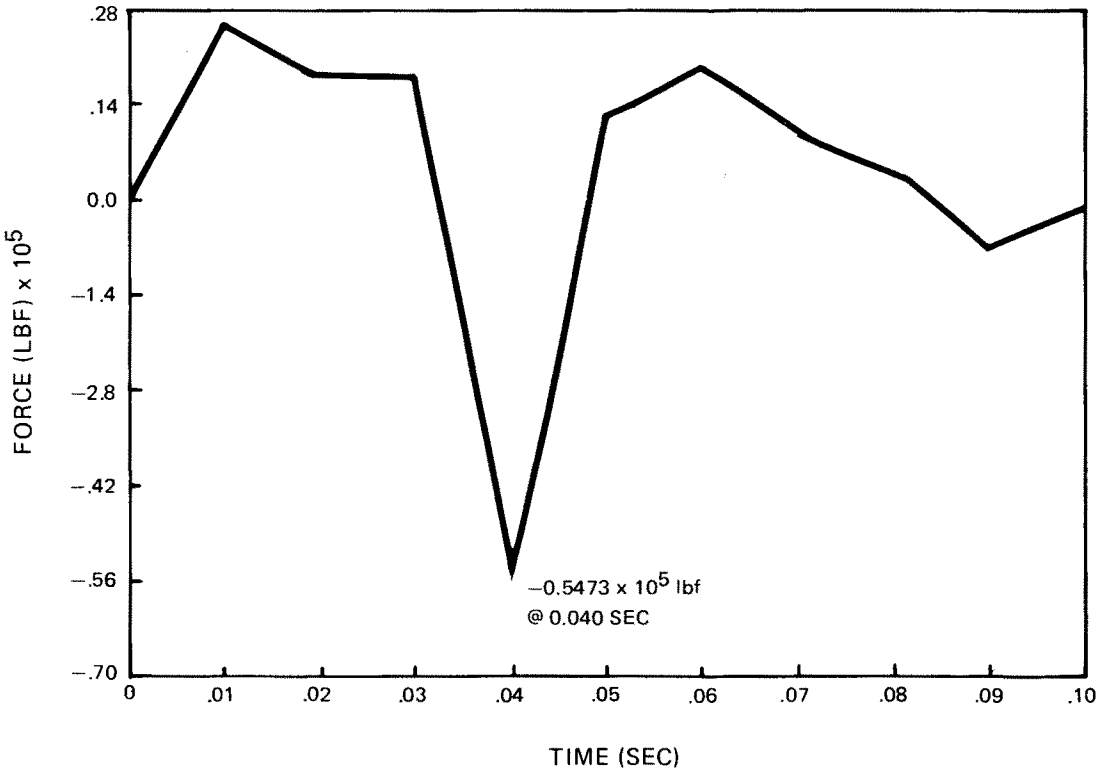
FIGURE 6.2.1-71
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
763 IN^2 HOT LEG BREAK
VERTICAL FORCE ON SG



Rev. OL-0
6/86

CALLAWAY PLANT

FIGURE 6.2.1-72
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
763 IN^2 HOT LEG BREAK
N-S COMPONENT OF
HORIZONTAL FORCE ON RCP



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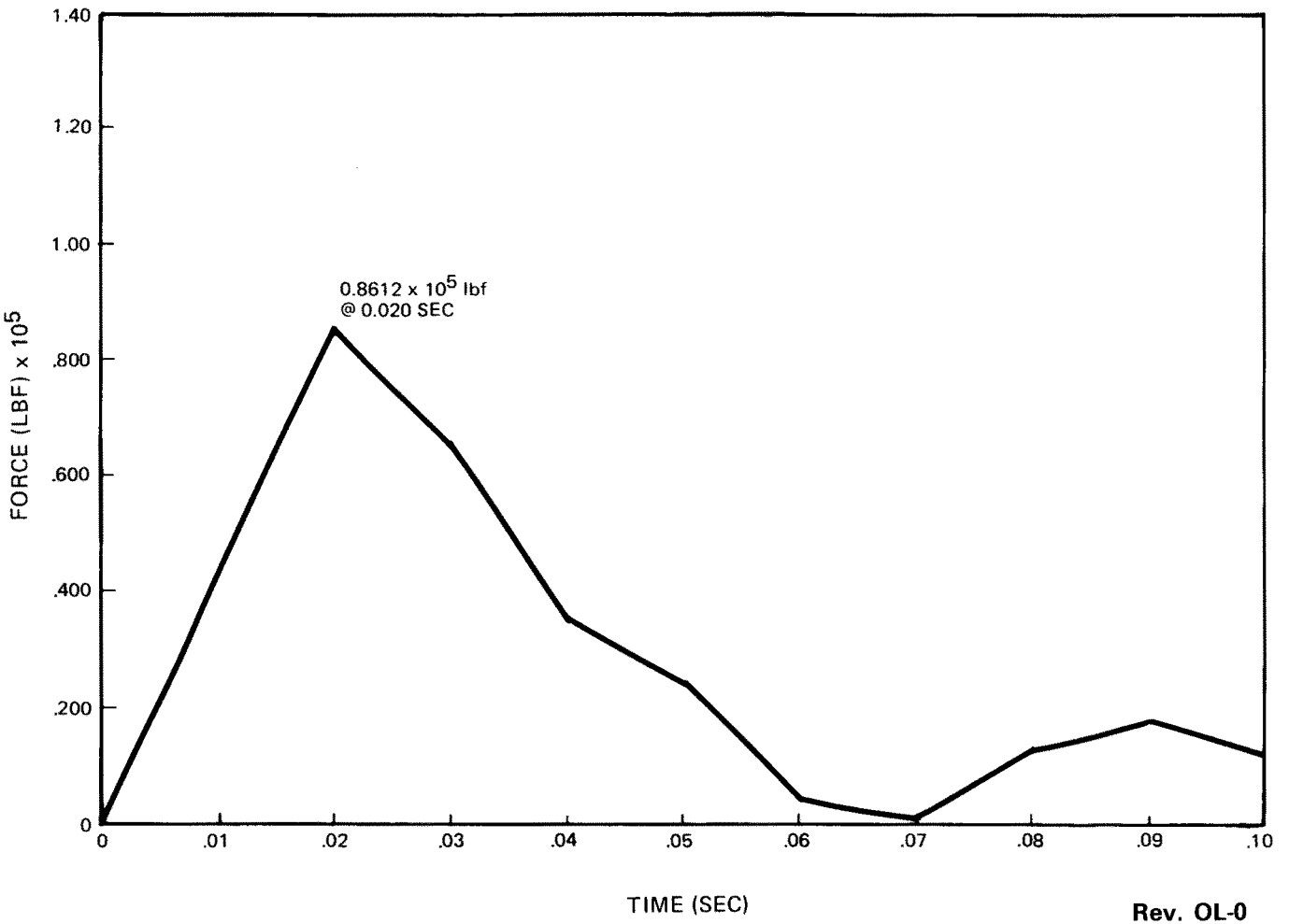
CALLAWAY PLANT

FIGURE 6.2.1-73
STEAM GENERATOR LOOP COMPARTMENT ANALYSIS
763 IN ^{2} HOT LEG BREAK
E-W COMPONENT OF HORIZONTAL FORCE ON RCP



Rev. OL-0
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CALLAWAY PLANT

FIGURE 6.2.1-74
STEAM GENERATOR LOOP COMPARTMENT ANALYSIS
763 IN^2 HOT LEG BREAK
VERTICAL FORCE ON RCP

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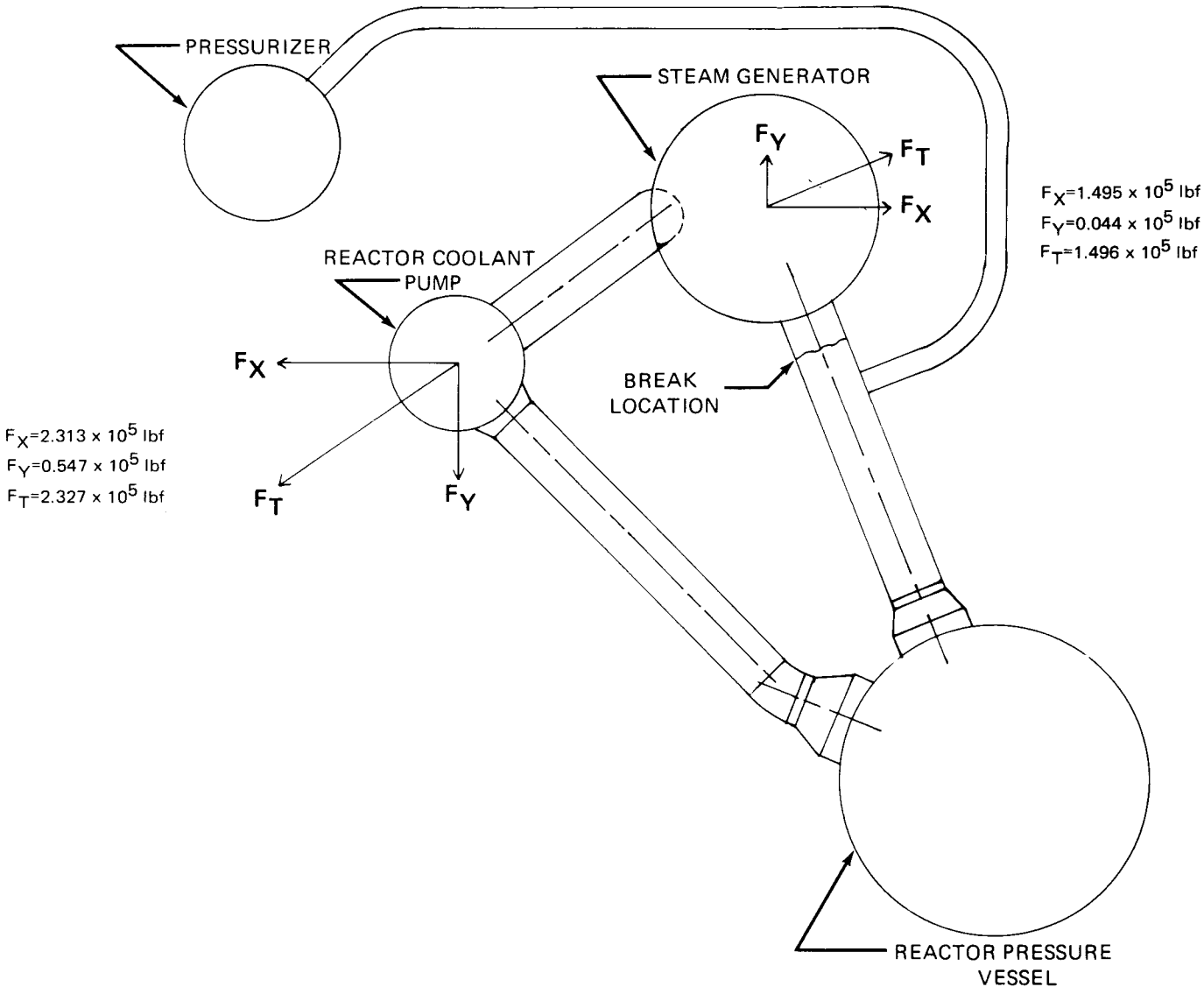
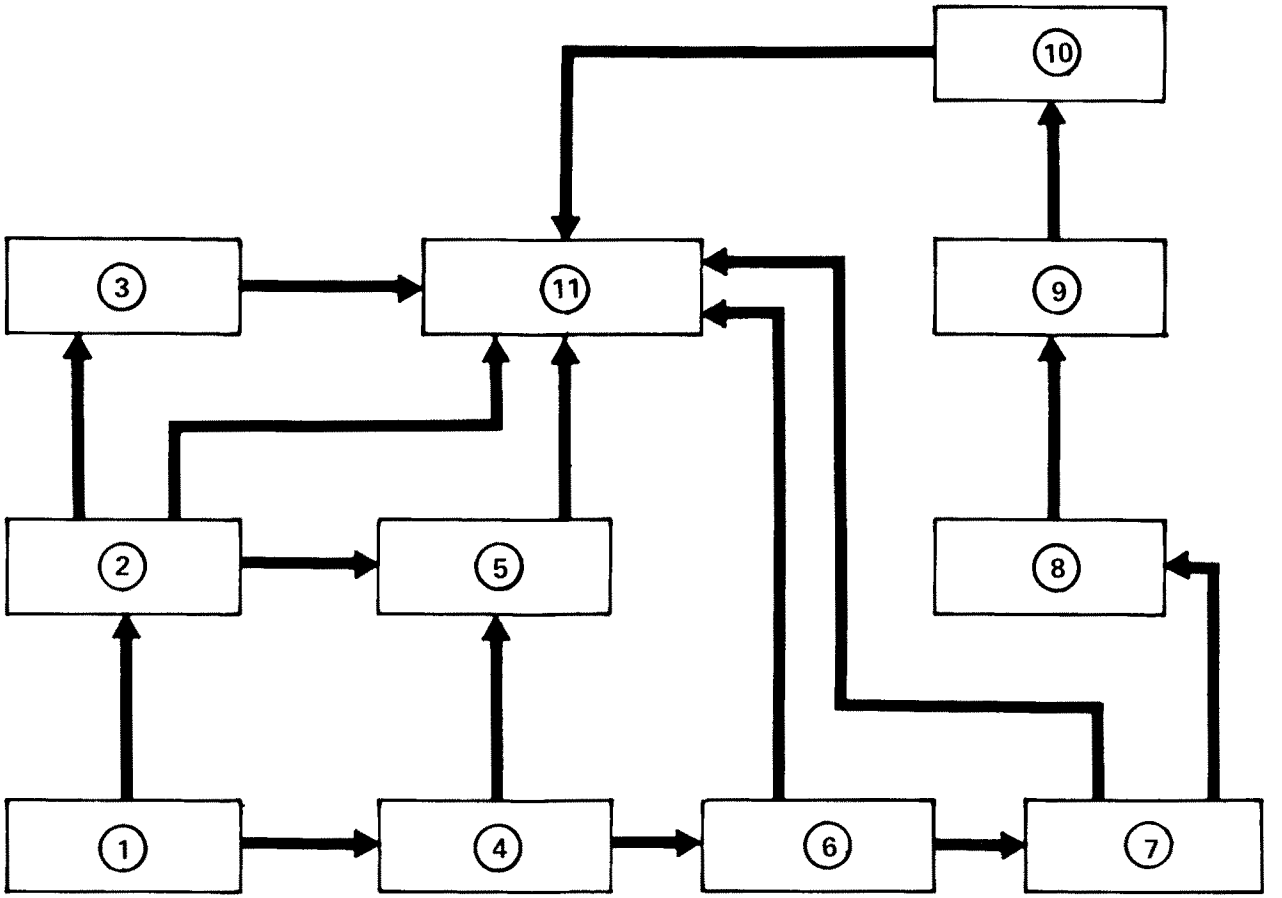
CALLAWAY PLANT

FIGURE 6.2.1-75
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
763 IN^2 HOT LEG BREAK
DIRECTION OF PEAK HORIZONTAL FORCES
ON REACTOR COOLANT PUMP
AND STEAM GENERATOR





FOR NODE VOLUMES AND VENT PATH AREAS, FLOW COEFFICENTS AND l/a's, REFER TO TABLES 6.2.1-26 AND 6.2.1-27

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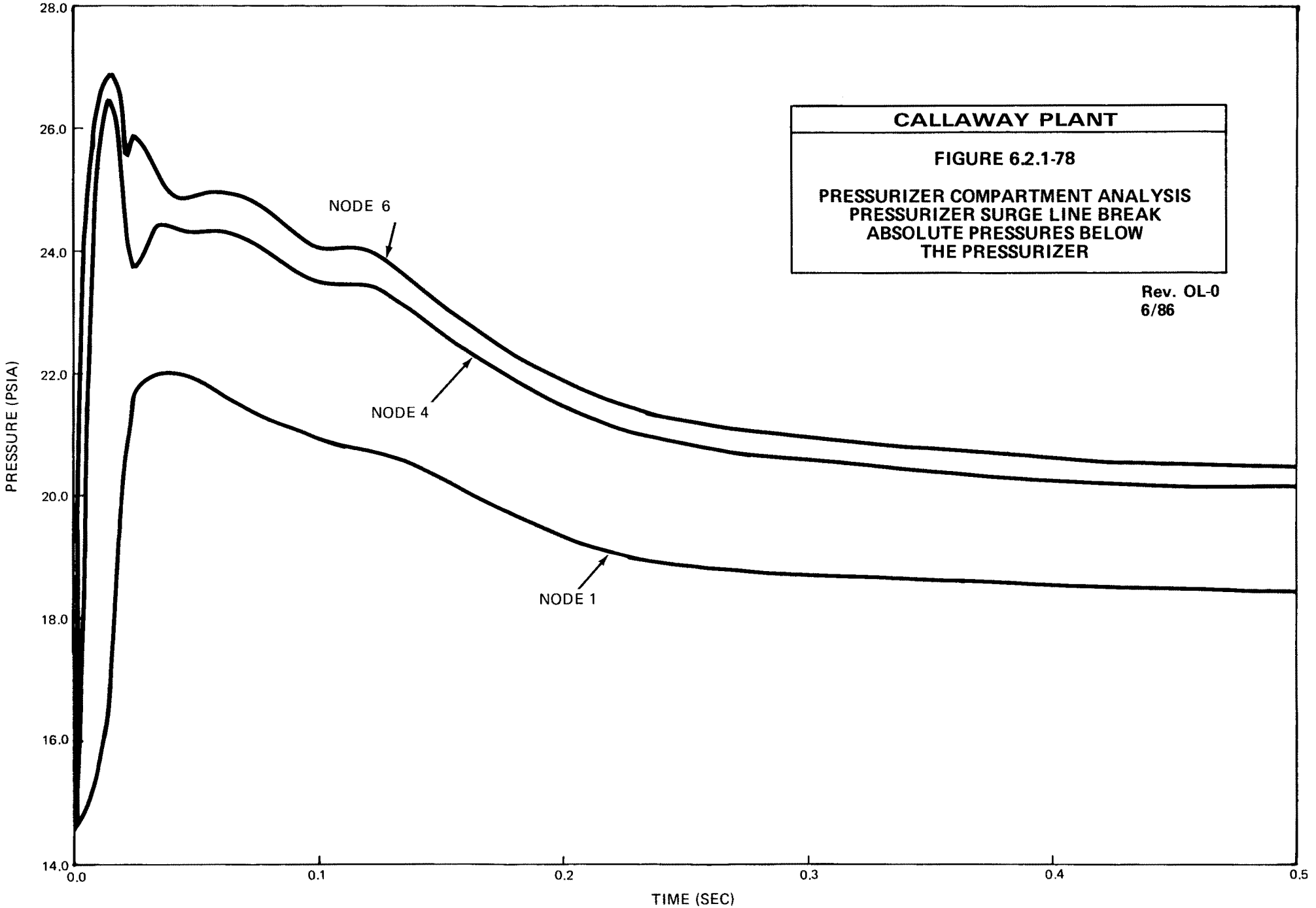
CALLAWAY PLANT

FIGURE 6.2.1-77

FLOW DIAGRAM PRESSURIZER COMPARTMENT ANALYSIS


28.0
26.0
24.0
22.0
20.0
18.0
16.0
14.0
PRESSURE (PSIA)
0.0
0.1
0.2
0.3
0.4
0.5
TIME (SEC)
NODE 6
NODE 4
NODE 1
CALLAWAY PLANT
FIGURE 6.2.1-78
PRESSURIZER COMPARTMENT ANALYSIS
PRESSURIZER SURGE LINE BREAK
ABSOLUTE PRESSURES BELOW
THE PRESSURIZER
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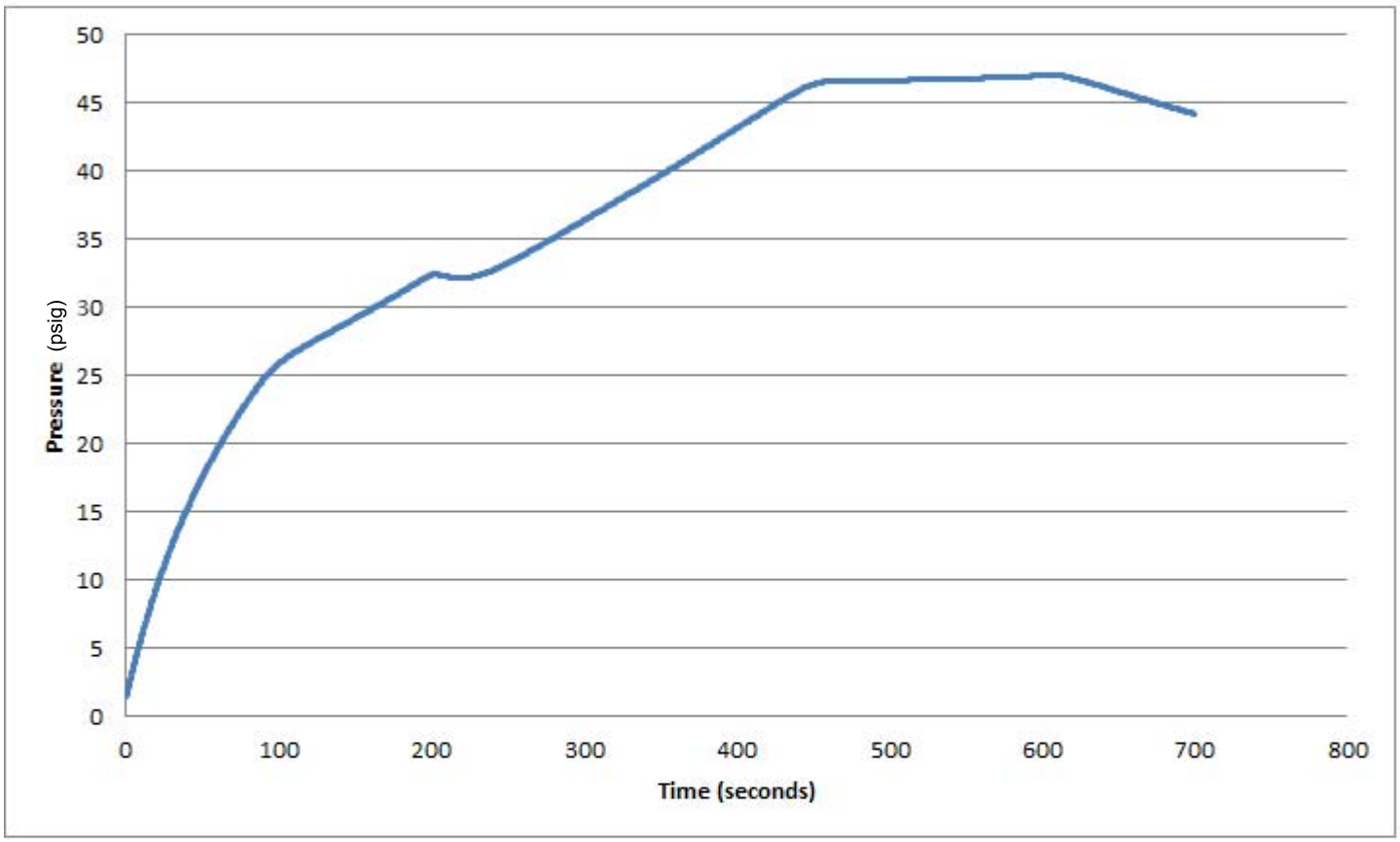
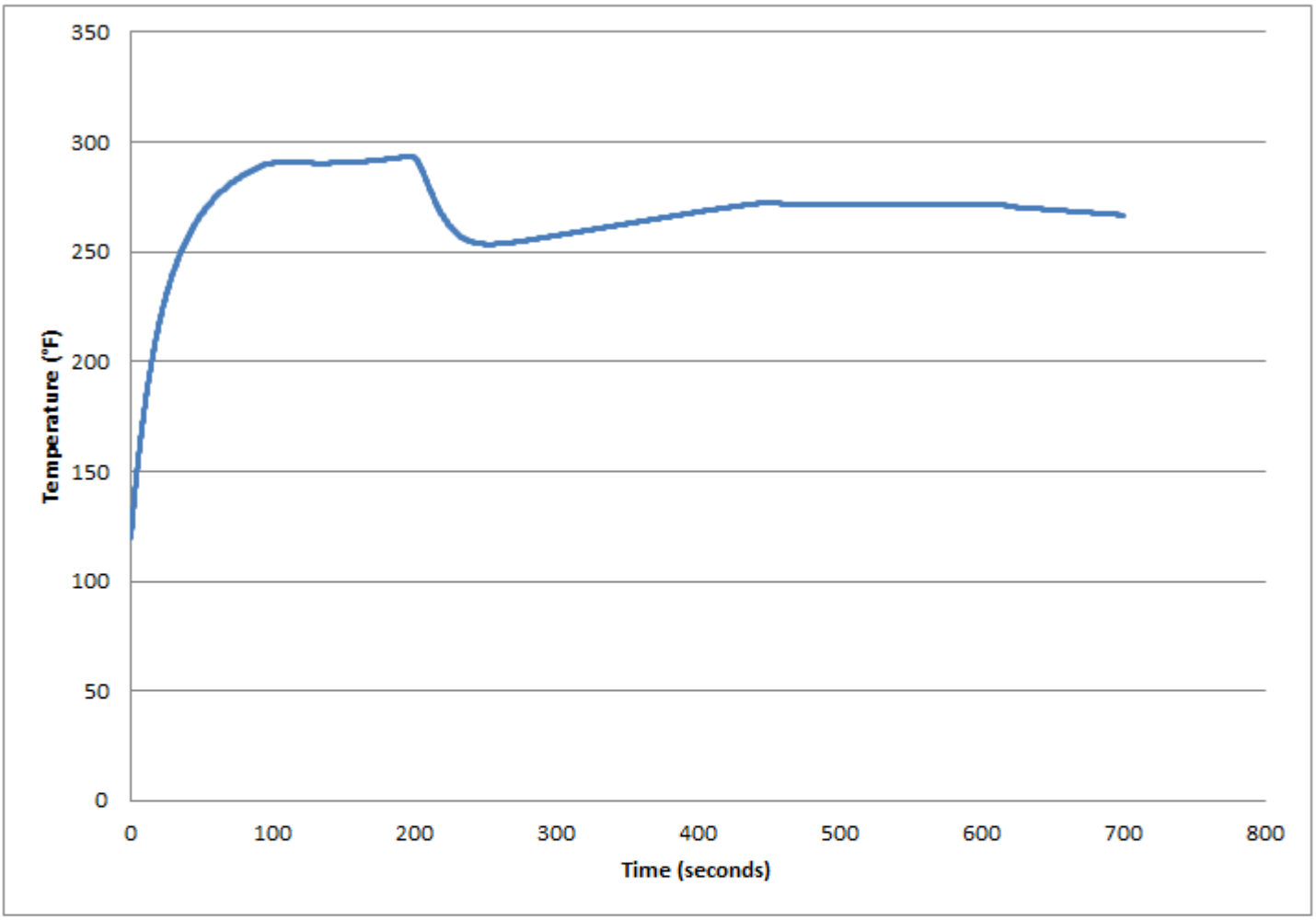


CALLAWAY PLANT

FIGURE 6.2.1-79

MAIN STEAM LINE BREAK ANALYSIS
CASE 24
CONTAINMENT PRESSURE (PSIG)

REV. 17 10/13

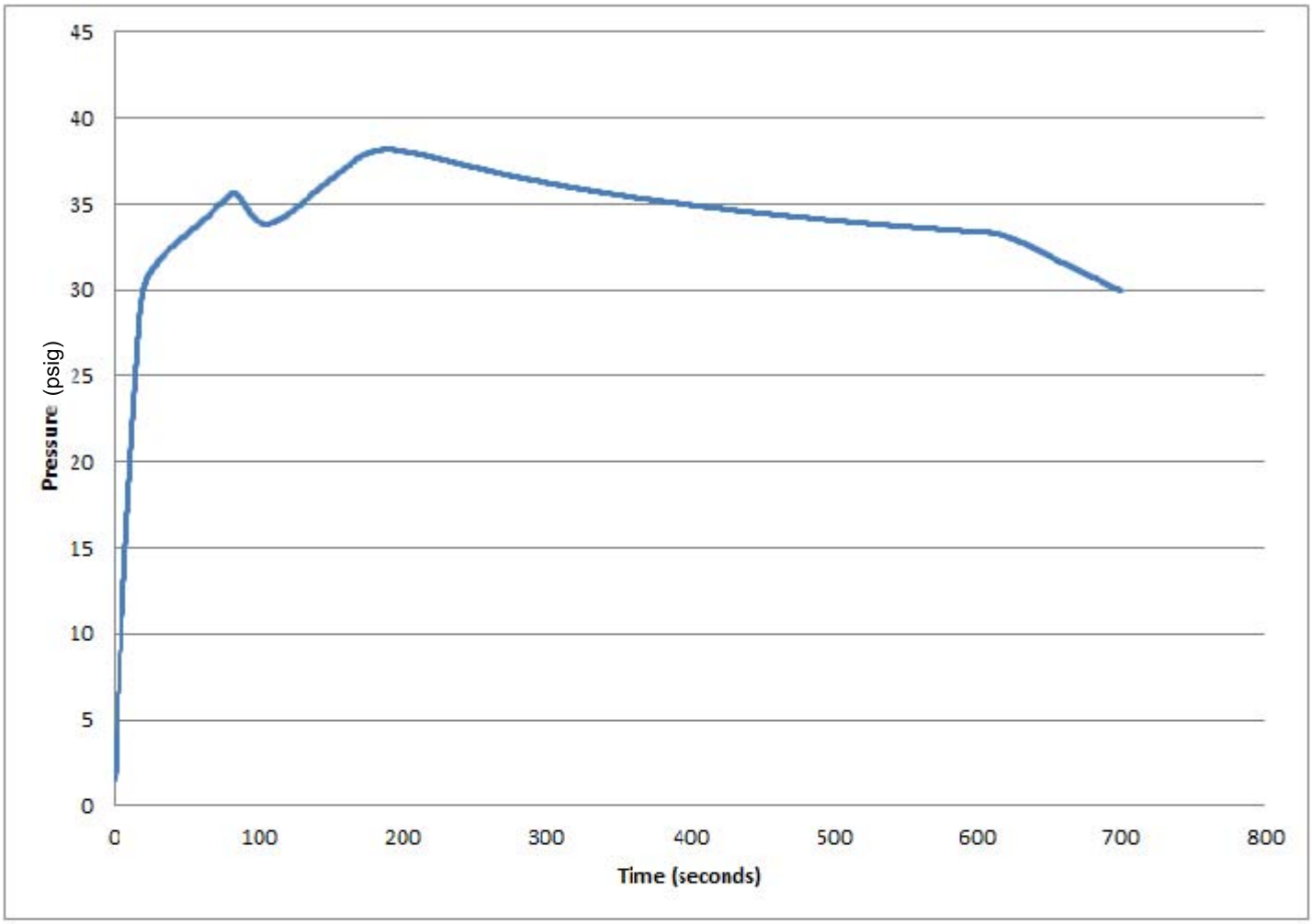


CALLAWAY PLANT

FIGURE 6.2.1-80

MAIN STEAM LINE BREAK ANALYSIS
CASE 24
CONTAINMENT TEMPERATURE (DEGREES F)

REV. 17 10/13

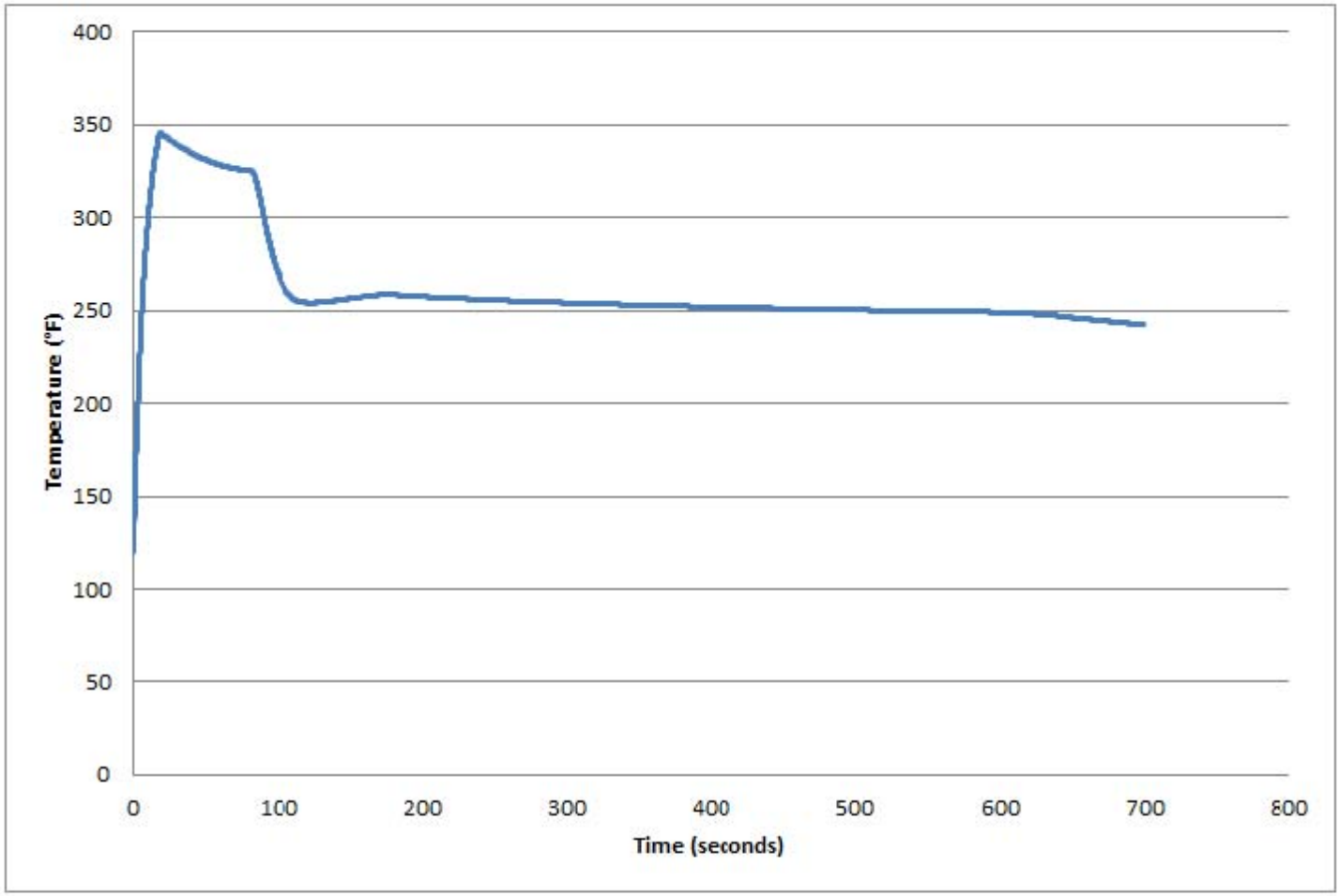


CALLAWAY PLANT

FIGURE 6.2.1-81

MAIN STEAM LINE BREAK ANALYSIS
CASE 1
CONTAINMENT PRESSURE (PSIG)

REV. 18 10/13

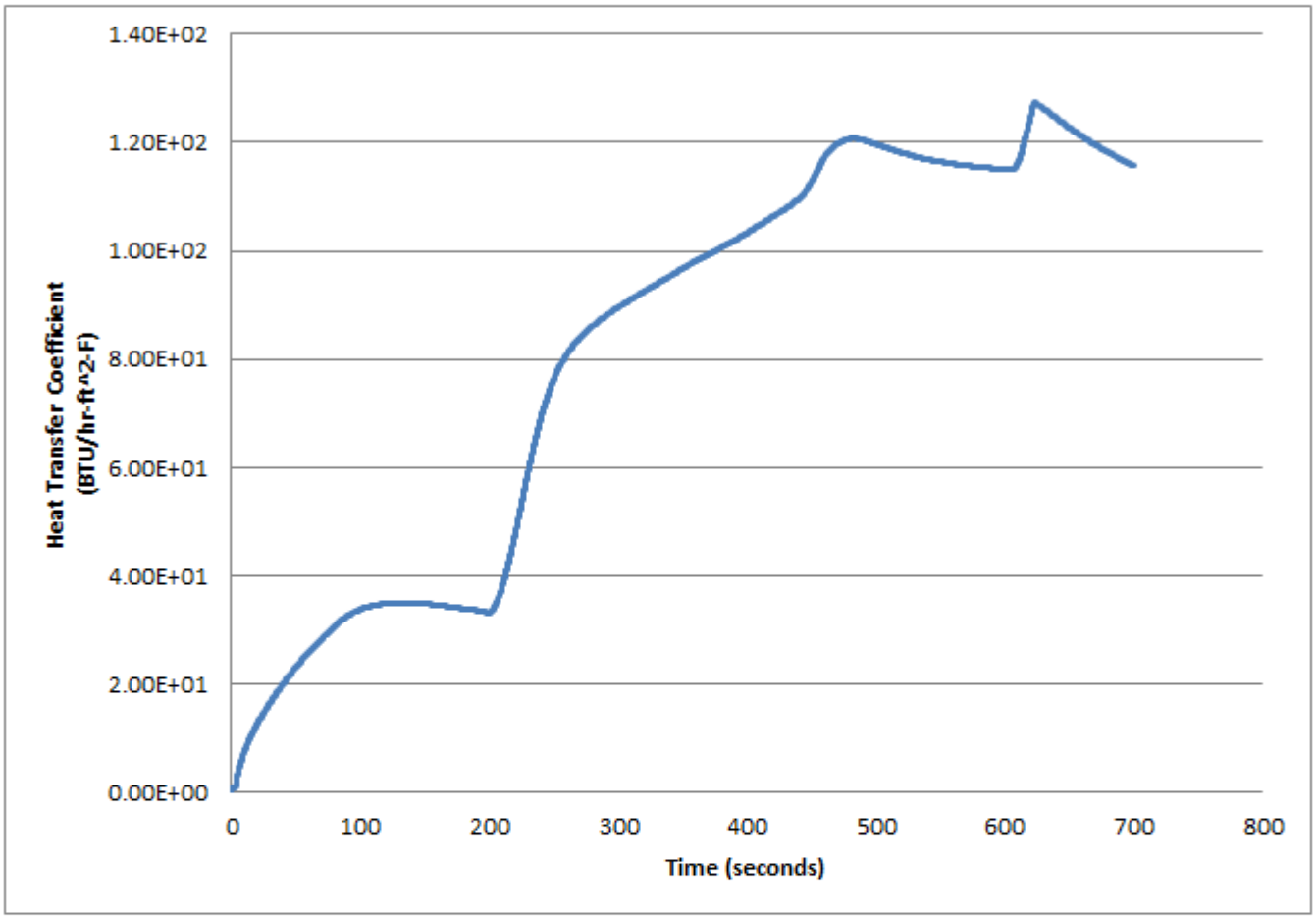


CALLAWAY PLANT

FIGURE 6.2.1-82

MAIN STEAM LINE BREAK ANALYSES
CASE 1
CONTAINMENT TEMPERTURE (DEGREES F)

REV. 18 10/13

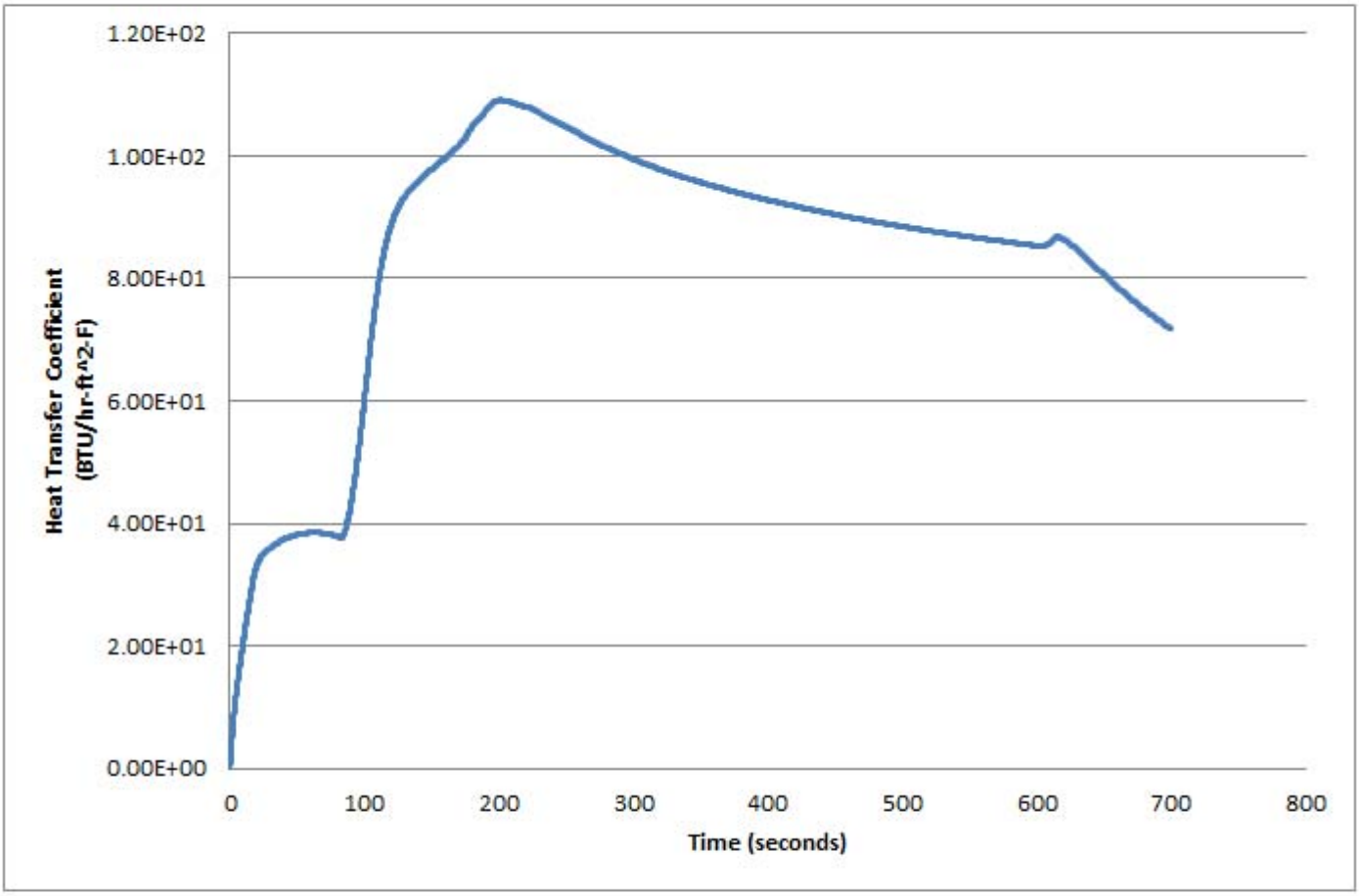


CALLAWAY PLANT

FIGURE 6.2.1-83

MAIN STEAM LINE BREAK ANALYSIS
CASE 24
UCHIDA CONDENSING HEAT TRANSFER COEFFICIENT

REV. 17 10/13

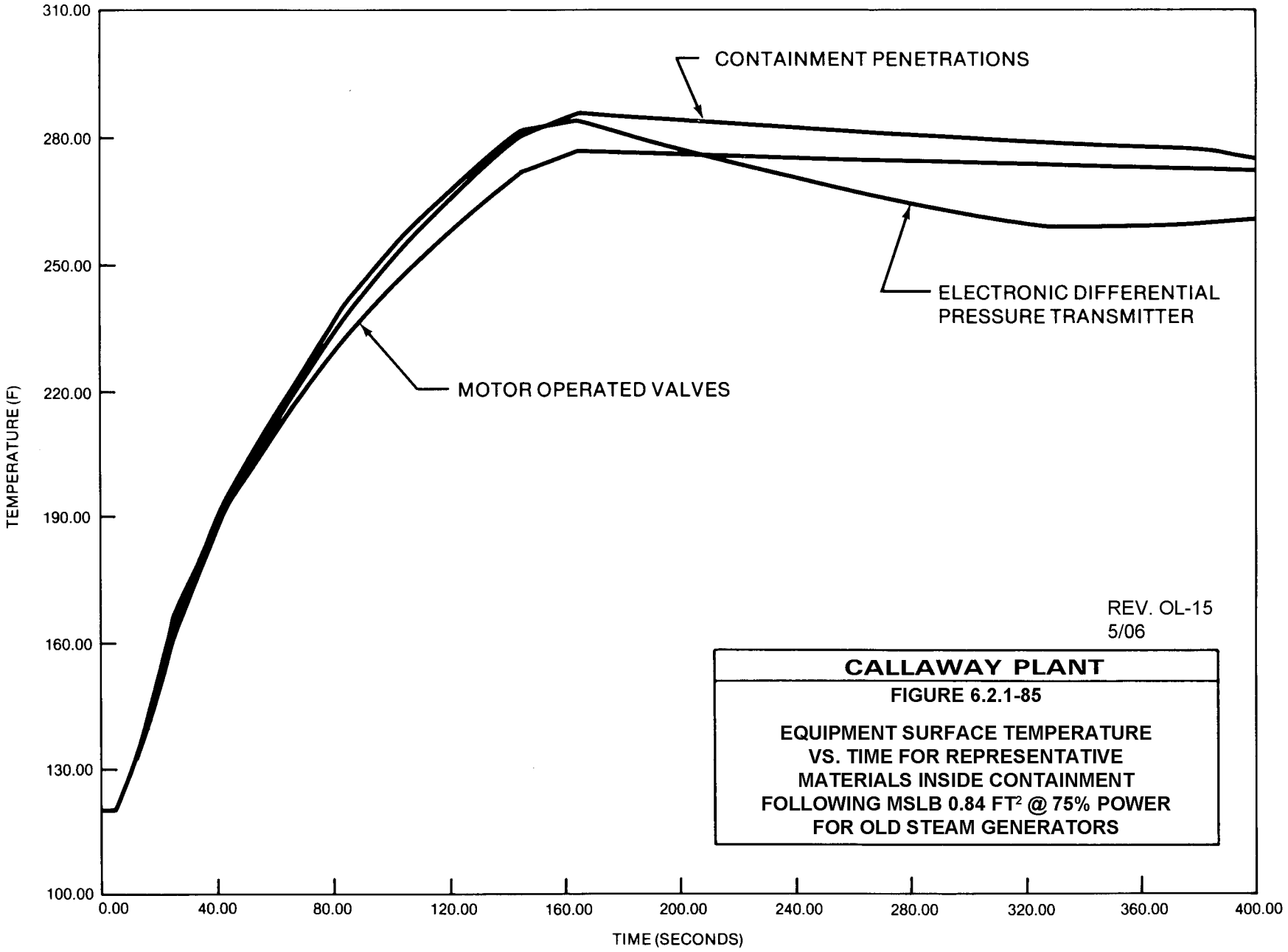


CALLAWAY PLANT

FIGURE 6.2.1-84

MAIN STEAM LINE BREAK ANALYSIS
CASE 1
UCHIDA CONDENSING HEAT TRANSFER COEFFICIENT

REV. 18 10/13

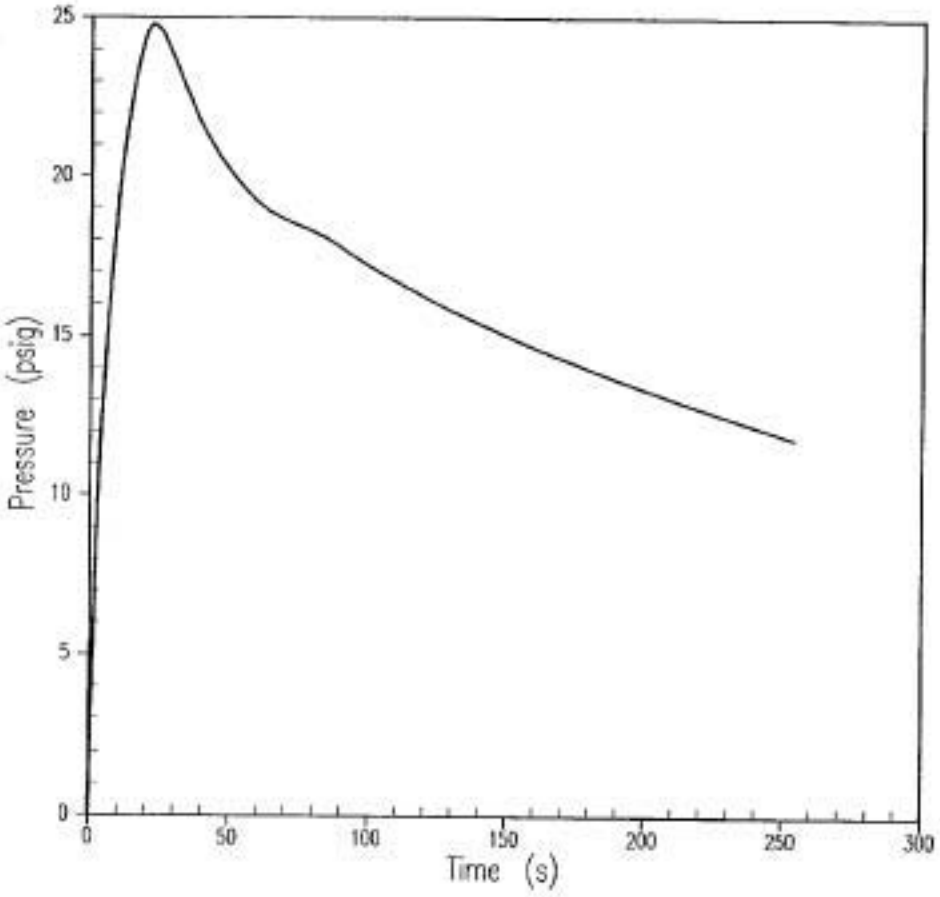


REV. OL-15
5/06

CALLAWAY PLANT

FIGURE 6.2.1-85

EQUIPMENT SURFACE TEMPERATURE VS. TIME FOR REPRESENTATIVE MATERIALS INSIDE CONTAINMENT FOLLOWING MSLB 0.84 FT^2 @ 75% POWER FOR OLD STEAM GENERATORS

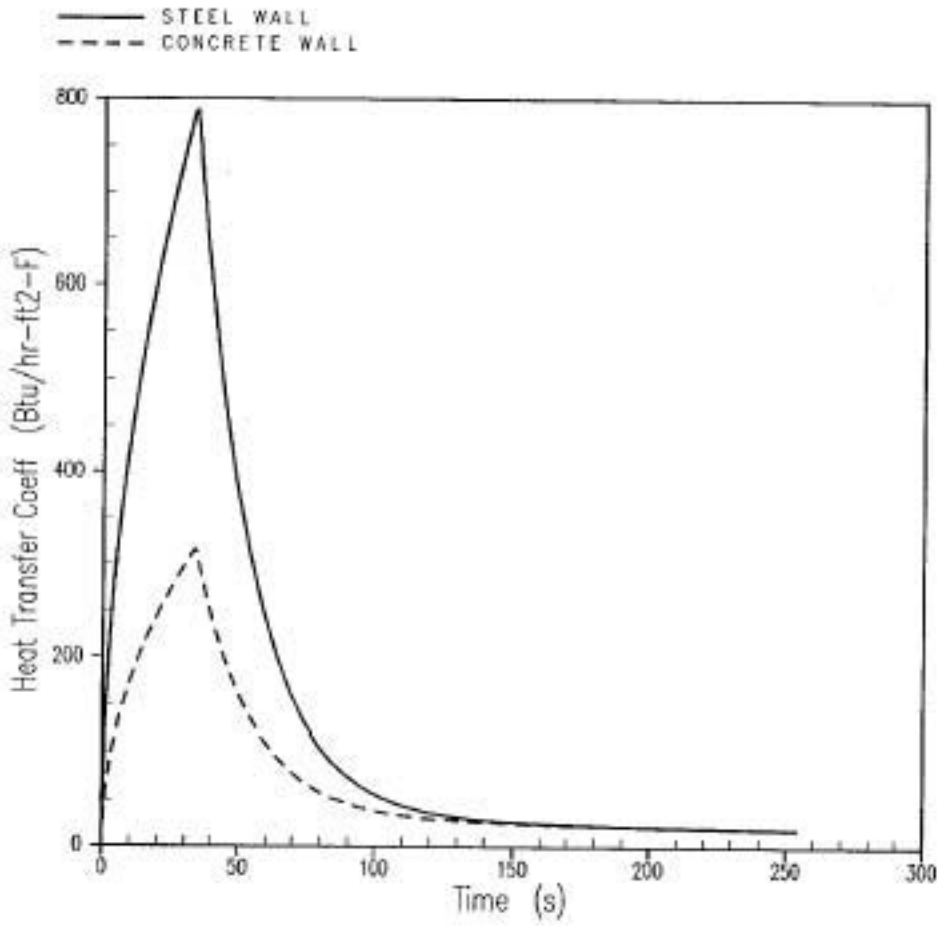


REV. OL-16
5/96

CALLAWAY PLANT

FIGURE 6.2.1-96

CONTAINMENT BACKPRESSURE
DECLG (C_D=0.6)
HIGH T_{AVG} MINIMUM SI

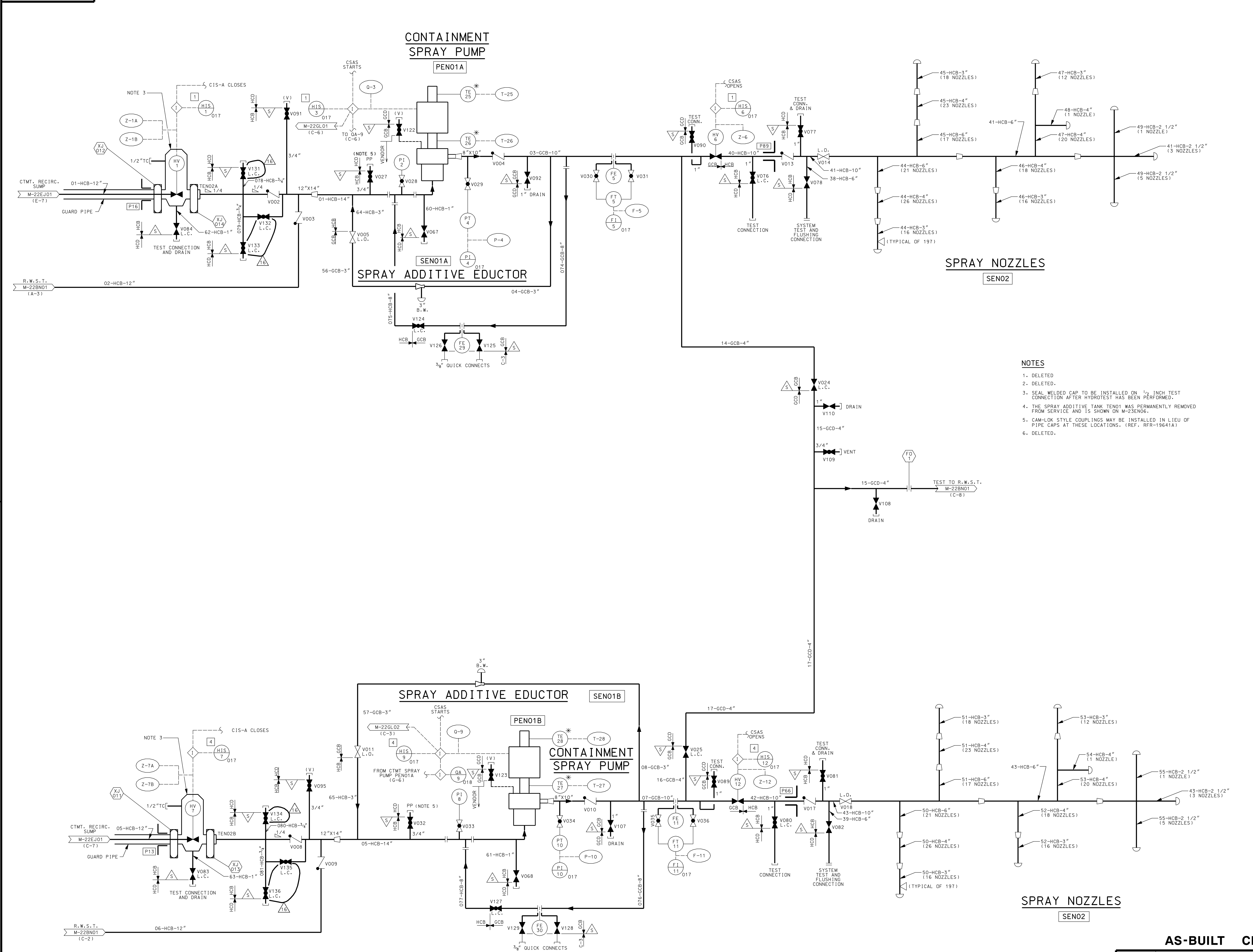


REV. 16
10/06

CALLAWAY PLANT

FIGURE 6.2.1-87

CONDENSING WALL HEAT TRANSFER COEFFICIENT
decig (C_p=0.6)
HIGH T_{AVG}, MINIMUM SI



NOTES

1. DELETED.
2. DELETED.
3. SEAL WELDED CAP TO BE INSTALLED ON 1/2 INCH TEST CONNECTION AFTER HYDROTEST HAS BEEN PERFORMED.
4. THE SPRAY ADDITIVE TANK TEN01 WAS PERMANENTLY REMOVED FROM SERVICE AND IS SHOWN ON M-23EN06.
5. CAM-LOK STYLE COUPLINGS MAY BE INSTALLED IN LIEU OF PIPE CAPS AT THESE LOCATIONS. (REF. RFR-19641A)
6. DELETED.

REV.	DATE	DRAWN	CHKD.	SUPV.	APPD.	DESCRIPTION
2	9/11/91	RLW	DLBr	TJM	N/A	REDRAWN FOR CLARITY
3	040495	HLP	SKC	AMR	N/A	INCORP. CMP 92-1053
4	101195	JHK	EWM	AMR	N/A	INCORP. CMP 92-1053 FCN-05.
5	052098	RLW	DJB	JAM	N/A	INCORP. MP89-1035.
6	042699	DLBr	SKC	JHC	N/A	INCORP. RFR-19641A
7	010604	MAL	EWM	TWS		INCORP. CARS 200307568 & RFR-22936A (PARTIAL).
8	012704	JHK	RLW	TWS		INCORP. RFR-22936A.
9	110904	MAL	RLW	TWS		INCORP. RFR-22941A
10	022008	MAL	TJC	LMR		INCORP. CHANGE REQUEST MP 05-1001 P01.
11	022708	MAL	TJC	TWS		INCORP. CHANGE REQUEST MP 05-1001 P02.
12	031808	RLW	TJC	SKC		INCORPORATE MP 05-1001 P03
13	032508	EWM	RLW	LMR		INCORPORATE MP 05-1001 FCN01 FINAL
14	102508	MAL	TJC	LMR		INCORP. CHANGE REQUEST MP 08-0016 P01
15	102808	EWM	RLW	LMR		INCORPORATE MP 08-0016 FCN01 FINAL
16	010611	RLW	EWM	TWS		INCORPORATE CR CAR 10-000309; CAR 201009292.

AS-BUILT CLASS 1

PIPING AND INSTRUMENTATION DIAGRAM
CONTAINMENT SPRAY SYSTEM
FSAR FIGURE 6.2.2-1

DRAWN N/A; CHKD. N/A; SUPV. N/A; APPD. N/A

LOCATION: CALLAWAY PLANT

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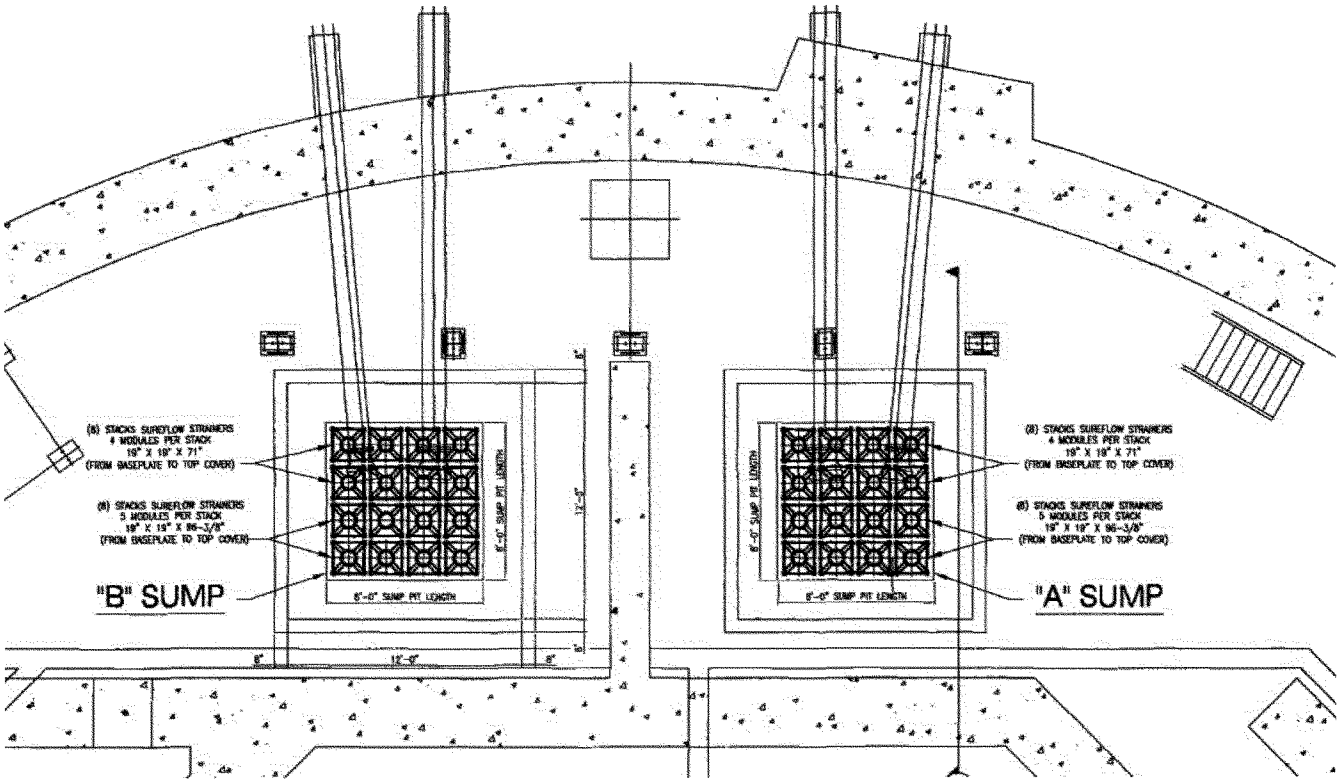
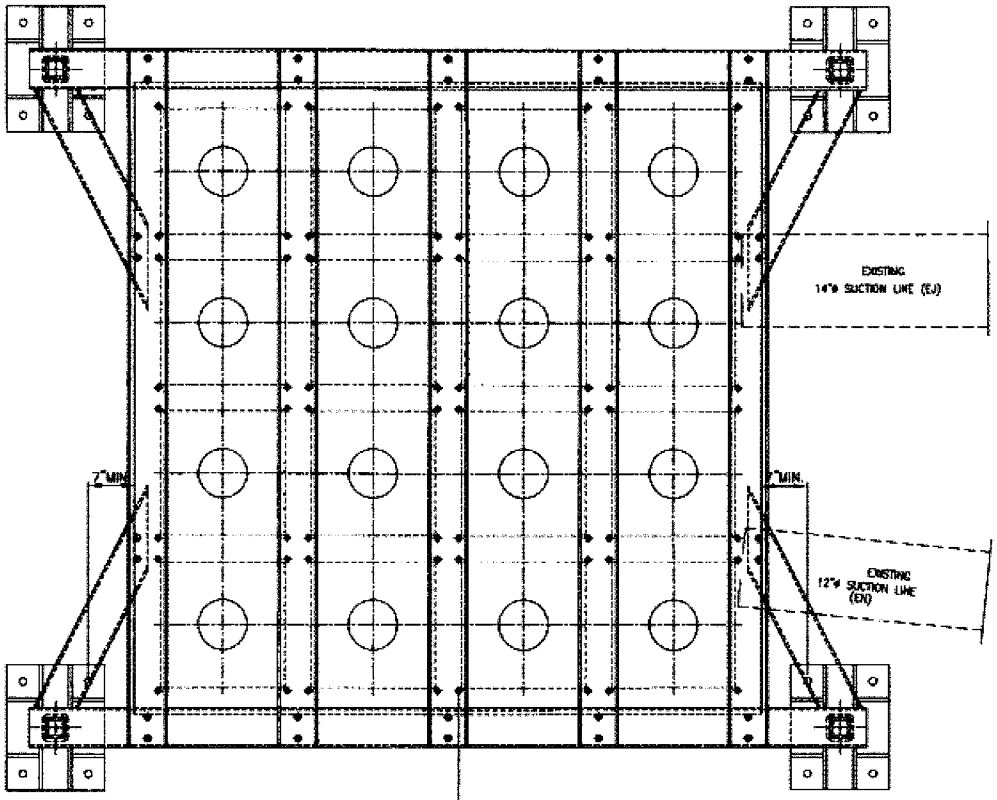
ST. LOUIS, MO

M-22EN01(Q) REV. 16

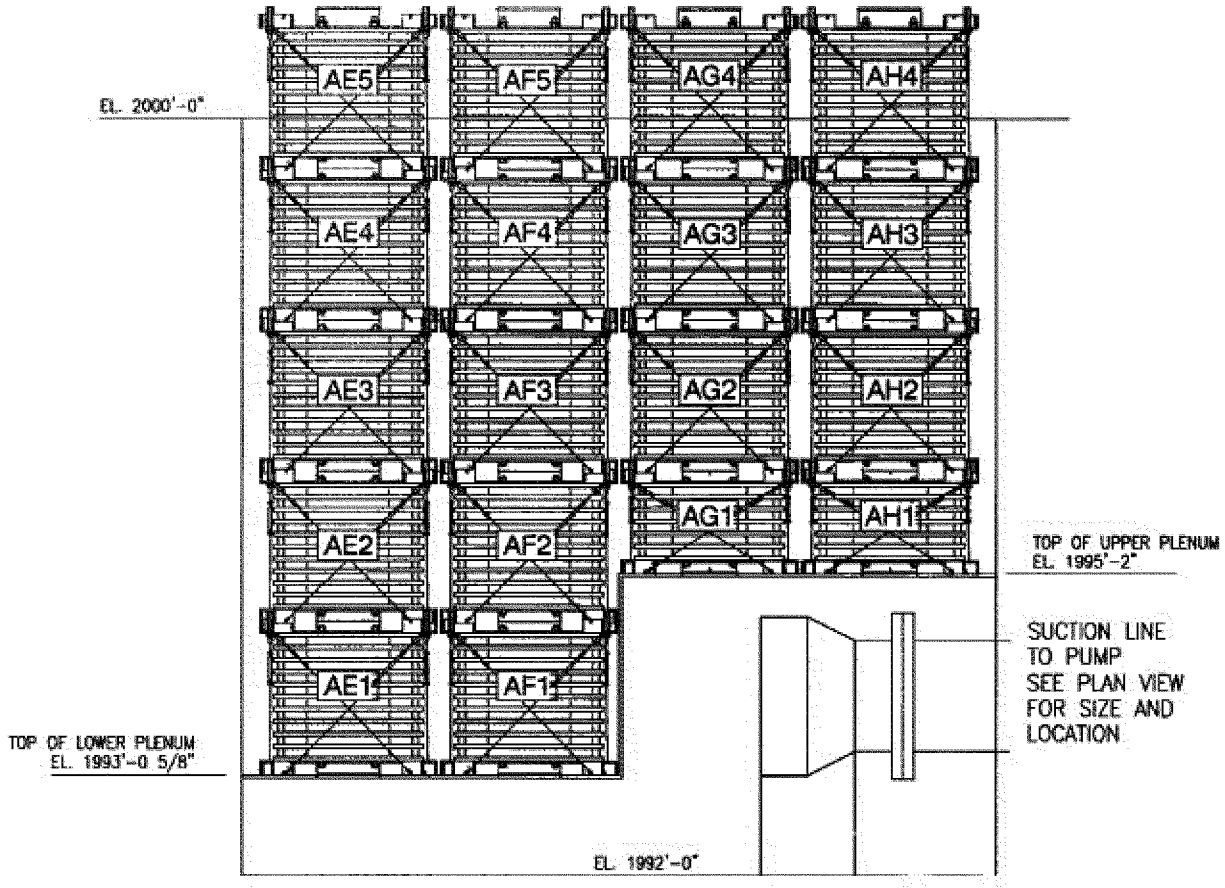


CALLAWAY PLANT
FIGURE 6.2.2-3 SHEET 1 RECIRCULATION SUMP STRAINER ARRANGEMENT REV. 10 10/07

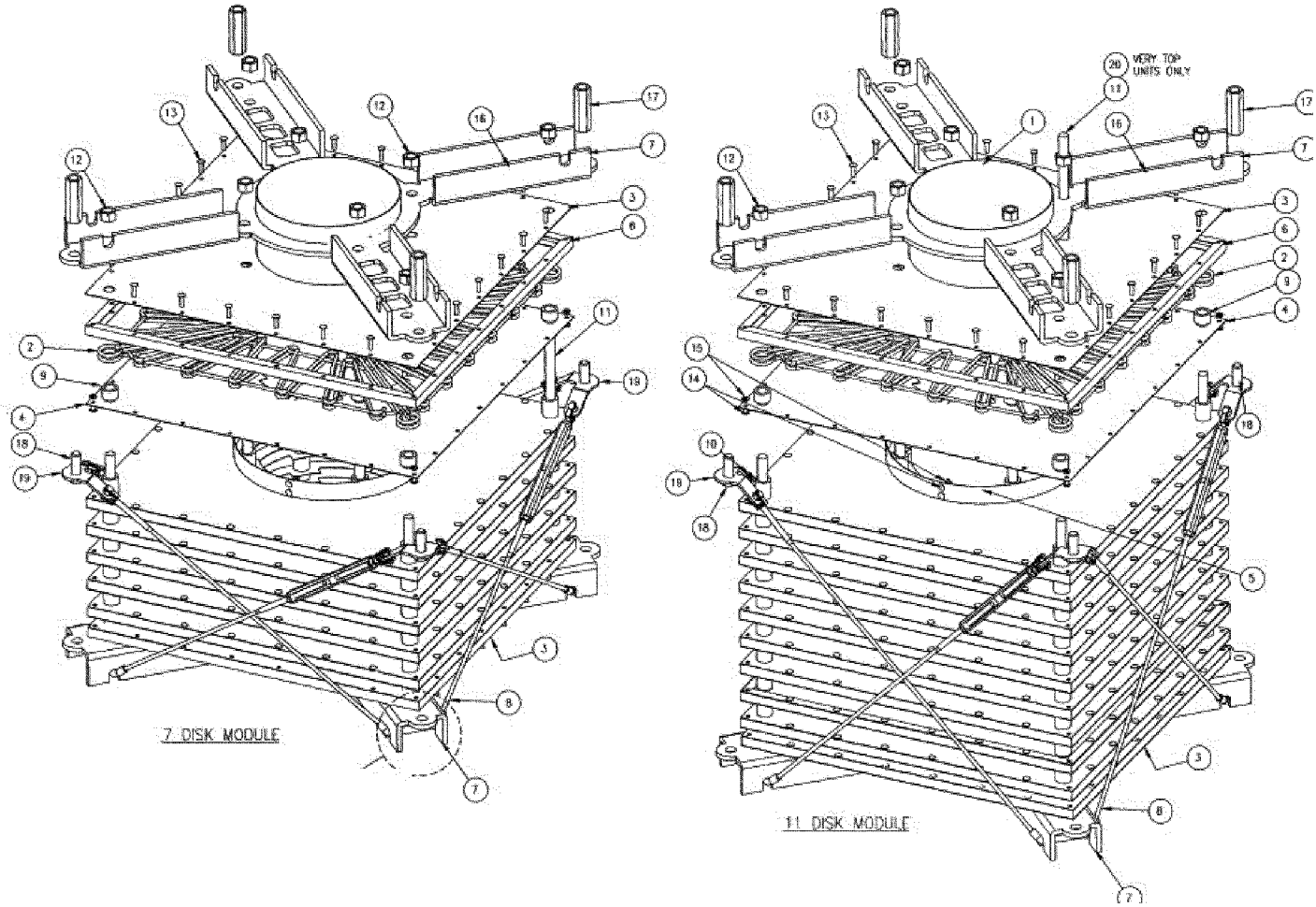


"A-SUMP" PLAN VIEW

CALLAWAY PLANT
FIGURE 6.2.2-3 SHEET 2 RECIRCULATION SUMP STRAINER ARRANGEMENT REV. 1 10/07



CALLAWAY PLANT
FIGURE 6.2.2-3 SHEET 3 RECIRCULATION SUMP STRAINER ARRANGEMENT REV. 1 10/07



CALLAWAY PLANT

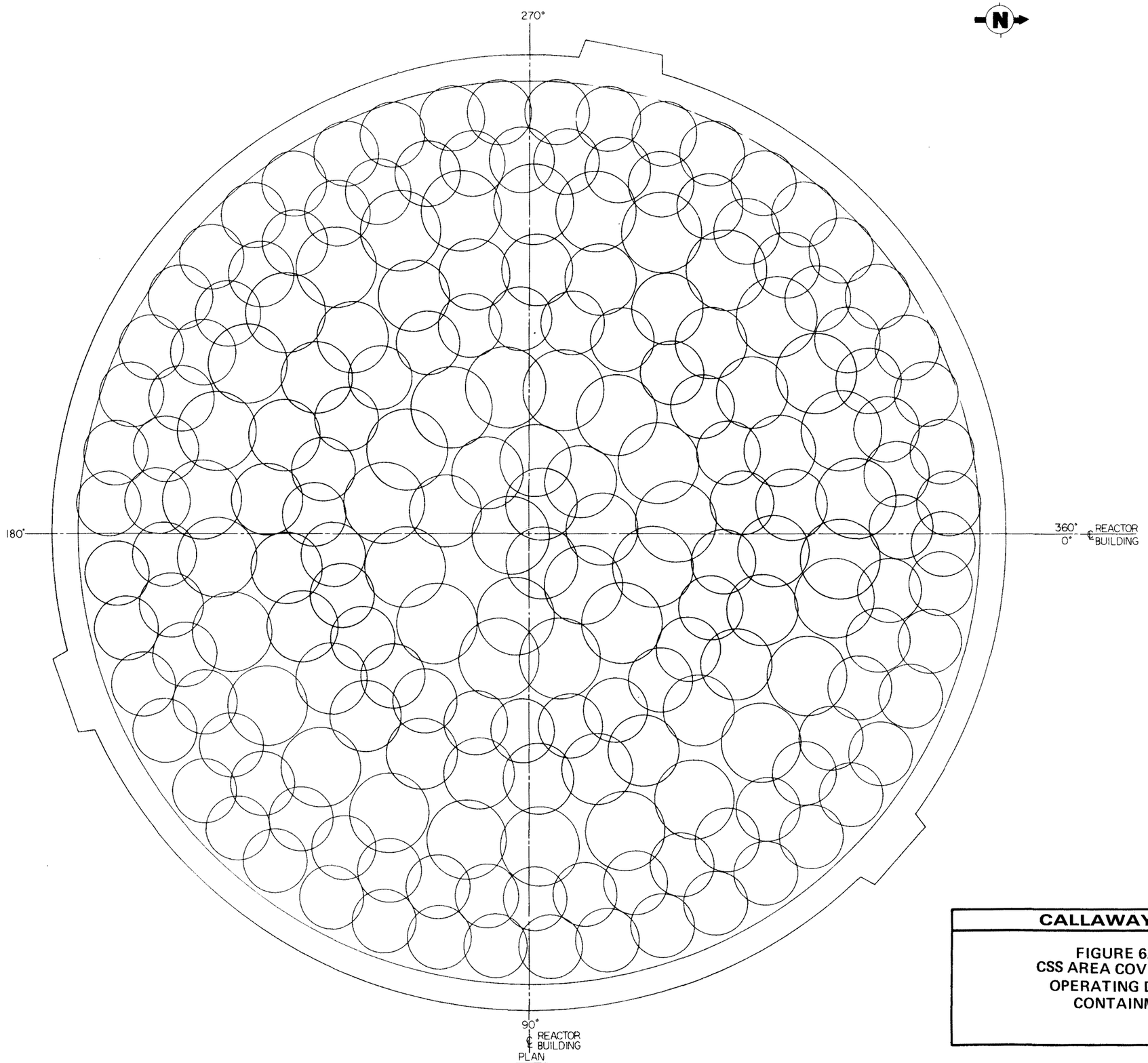
FIGURE 3.2.2-3
SHEET 4

RECIRCULATION SUMP STRAINER ARRANGEMENT

REV. 1 10/07

FIGURE 6.2.2-3
SHEET 5 THROUGH 10

DELETED



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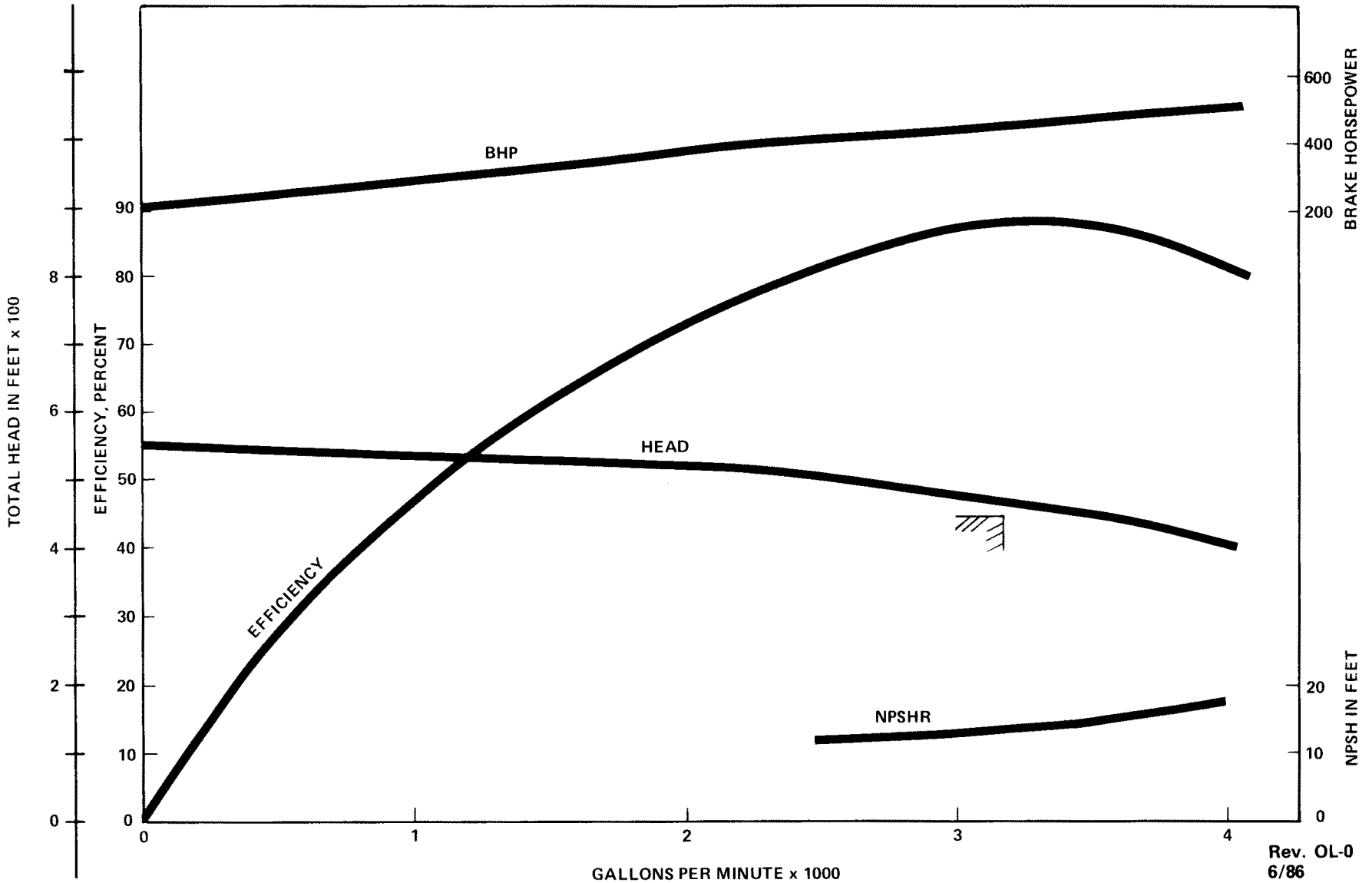
CALLAWAY PLANT

FIGURE 6.2.2-4
CSS AREA COVERAGE AT OPERATING DECK OF CONTAINMENT



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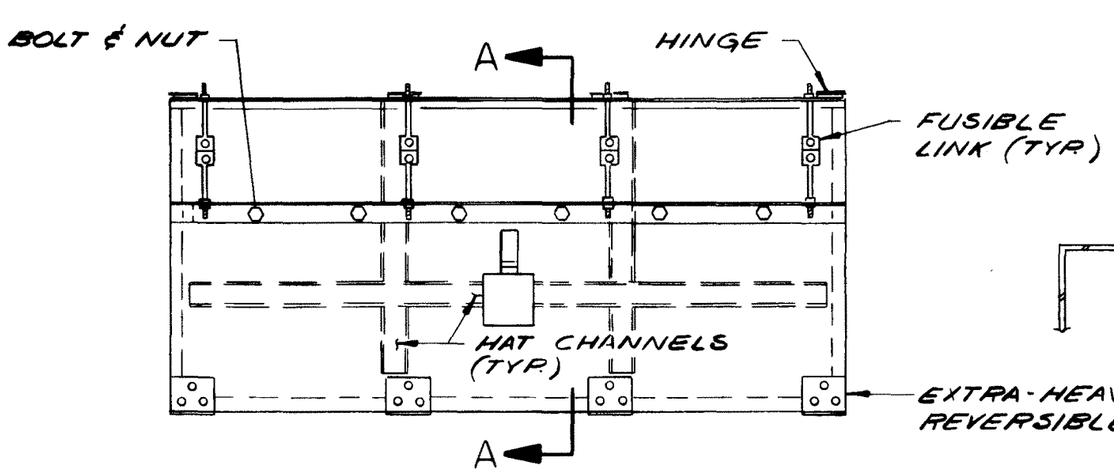
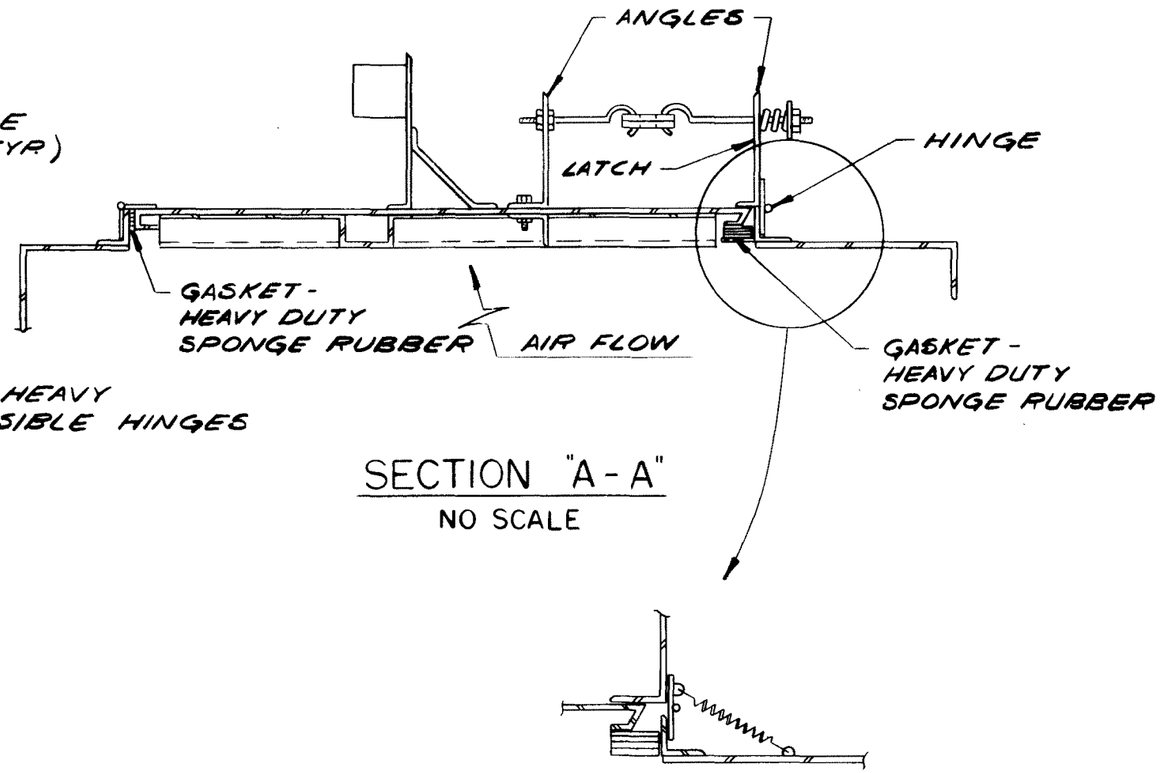
CALLAWAY PLANT

FIGURE 6.2.2-5

CSS PUMP
PERFORMANCE CURVE



ELEVATION
NO SCALE



SECTION "A-A"
NO SCALE

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CALLAWAY PLANT

FIGURE 6.2.2-6
TYPICAL DETAIL OF FUSIBLE LINK PLATES ON CONTAINMENT AIR COOLERS

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 4)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
ABPV0004	10/8	OUTSIDE	OUT	GLOBE	AIR	4	NONE	REM/MAN	20	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
ABHV0011	28/28	OUTSIDE	OUT	GATE	HYDRAULIC (2)	1,4	SLIS	NONE	(3)	OPEN	OPEN	CLOSED	CLOSED	N/A
ABHV0012	2/2	OUTSIDE	OUT	GLOBE	AIR	1,4	SLIS	NONE	15	CLOSED	CLOSED	CLOSED	CLOSED	N/A
ABV0045-49	6/8 X 6	OUTSIDE	OUT	RELIEF	SELF ACT	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	N/A	N/A
ABLV0010	1/2	OUTSIDE	OUT	GLOBE	AIR	1,4	SLIS	NONE	15	OPEN	OPEN	CLOSED	CLOSED	N/A
ABV0050	1/1	OUTSIDE	OUT	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
(VALVES BELOW NOT SHOWN IN SKETCH)														
ABV0726 728,730,732	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
ABV0001	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: STEAM

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 53.2 FT.

APPLICABLE GDC NO. NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

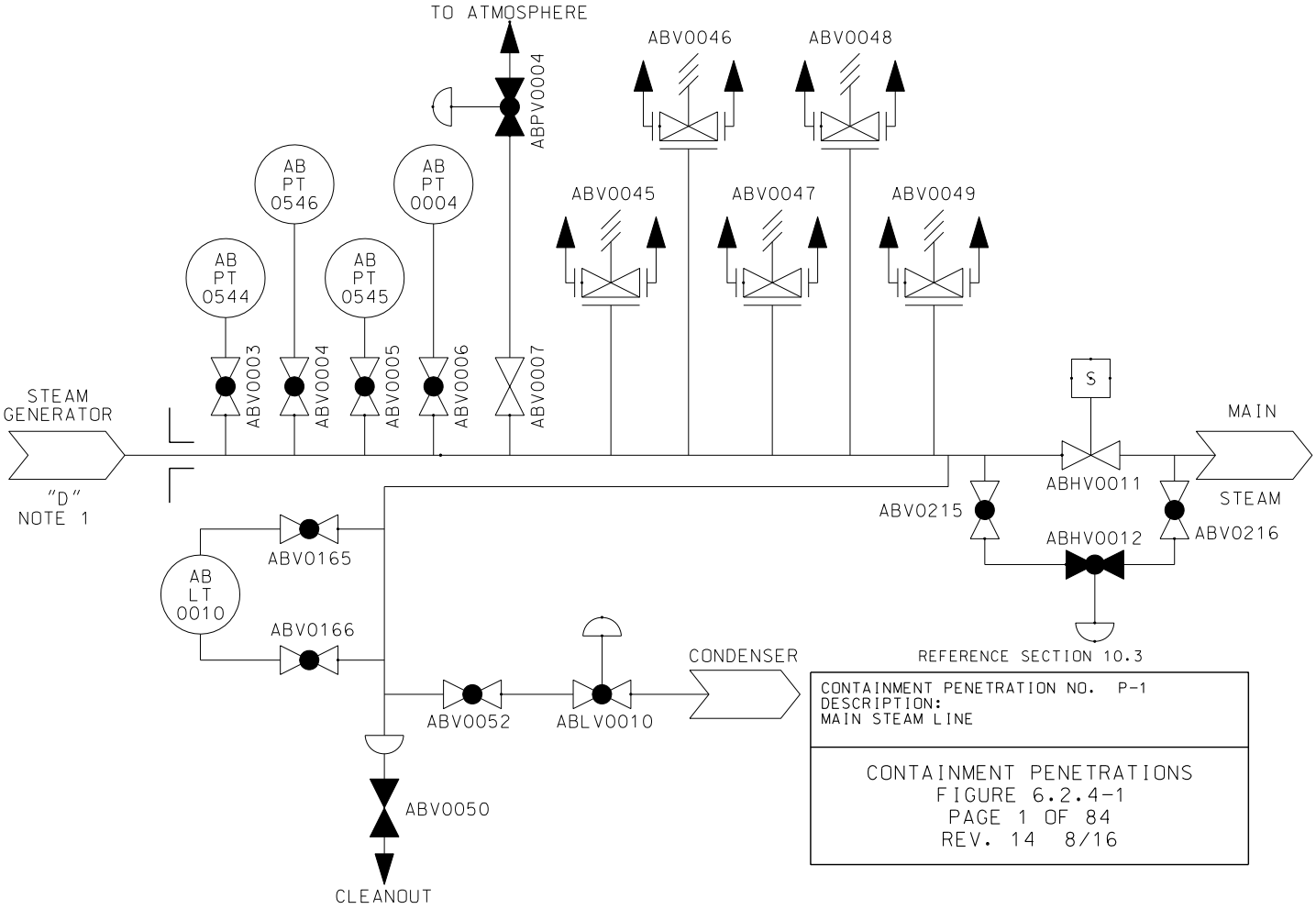
THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMET ISOLATION VALVES.

NOTE 1: AS SHOWN ON FIGURE 10.3-1, THE STEAM GENERATOR SHELL EXTENDS TO THE VENT VALVES ON THE CONDENSATE POTS FOR THE MAIN STEAM FLOW TRANSMITTERS. THE STEAM GENERATOR AND STEAM PIPING/INSTRUMENTATION LINES INSIDE OF CONTAINMENT ARE NOT SHOWN HERE. REFERENCE FIG.10.3-1 FOR DETAILS OF THE PIPING INSTRUMENT-ATION AND VALVE CONFIGURATION / IDENTIFICATION.

NOTE 2: OPERATOR UTILIZES SYSTEM-MEDIUM AS THE PROCCESS FLUID.

NOTE 3: CLOSURE TIME IS SYSTEM PRESSURE DEPENDENT. MAX CLOSURE TIME CURVE IS DEFINED IN THE TECHNICAL SPECIFICATION BASES.

NOTE 4: MAXIMUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL. DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☐
NONE ☒

CONTAINMENT PENETRATION NO. P-1
DESCRIPTION:
MAIN STEAM LINE

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE4)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
ABPV0001	10/8	OUTSIDE	OUT	GLOBE	AIR	1	NONE	REM/MAN	20	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
ABHV0014	28/28	OUTSIDE	OUT	GATE	HYDRAULIC(2)	1,4	SLIS	NONE	(3)	OPEN	OPEN	CLOSED	CLOSED	N/A
ABHV0015	2/2	OUTSIDE	OUT	GLOBE	AIR	1,4	SLIS	NONE	15	CLOSED	CLOSED	CLOSED	CLOSED	N/A
ABV0055-59	6/8 X 6	OUTSIDE	OUT	RELIEF	SELF ACT	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	N/A	N/A
ABLV0009	1/2	OUTSIDE	OUT	GLOBE	AIR	1,4	SLIS	NONE	15	OPEN	OPEN	CLOSED	CLOSED	N/A
ABV0060	1/1	OUTSIDE	OUT	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
(VALVES BELOW NOT SHOWN IN SKETCH)														
ABV0702 704,706,708	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
ABV0012	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☒ NO ☐
FLUID CONTAINED:	STEAM
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	56.6 FT.
APPLICABLE GDC NO.	NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

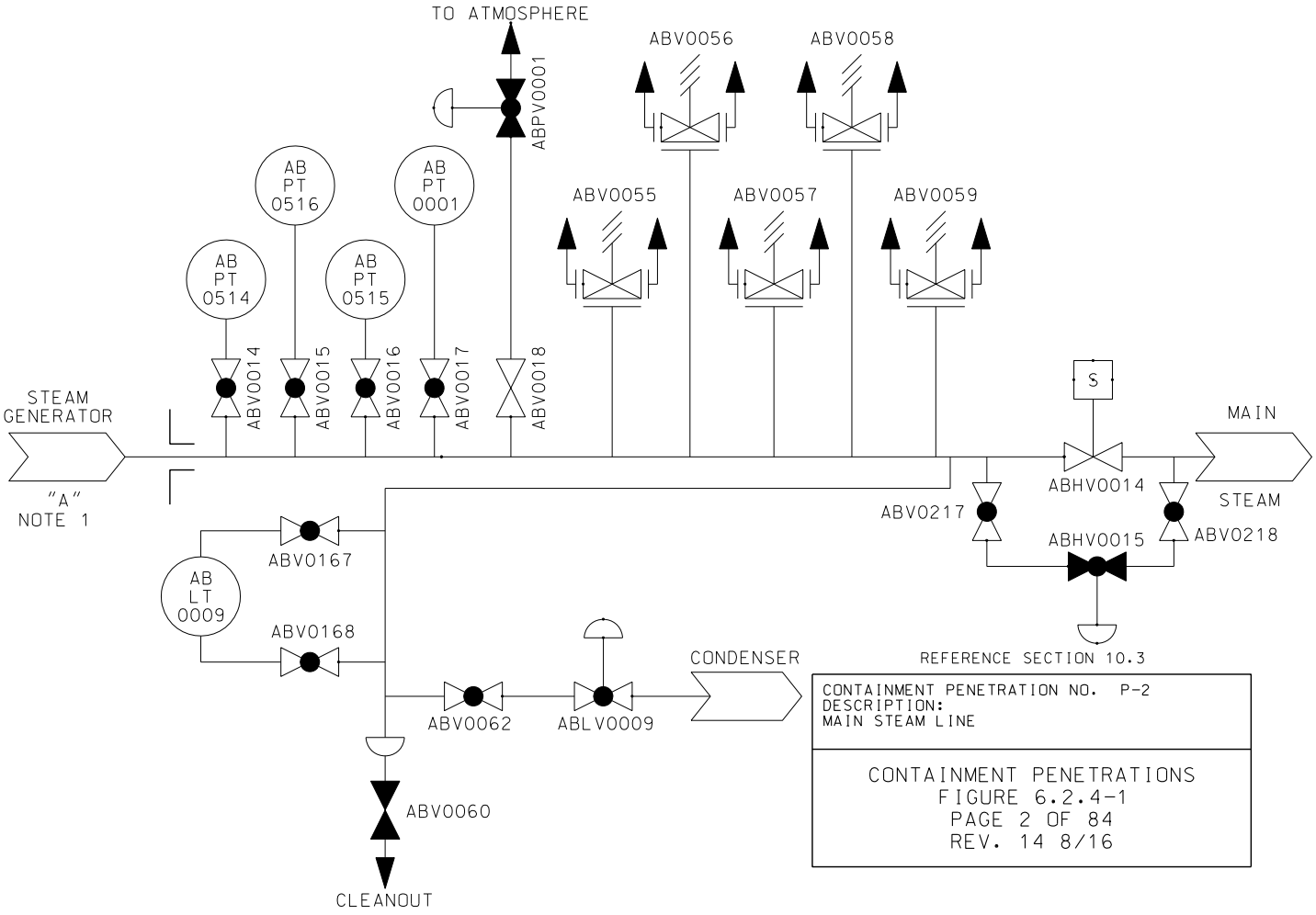
THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMET ISOLATION VALVES.

NOTE 1: AS SHOWN ON FIGURE 10.3-1, THE STEAM GENERATOR SHELL EXTENDS TO THE VENT VALVES ON THE CONDENSATE POTS FOR THE MAIN STEAM FLOW TRANSMITTERS. THE STEAM GENERATOR AND STEAM PIPING/INSTRUMENTATION LINES INSIDE OF CONTAINMENT ARE NOT SHOWN HERE. REFERENCE FIG.10.3-1 FOR DETAILS OF THE PIPING INSTRUMENT-ATION AND VALVE CONFIGURATION / IDENTIFICATION.

NOTE 2: OPERATOR UTILIZES SYSTEM-MEDIUM AS THE PROCCESS FLUID.

NOTE 3: CLOSURE TIME IS SYSTEM PRESSURE DEPENDENT. MAX CLOSURE TIME CURVE IS DEFINED IN THE TECHNICAL SPECIFICATION BASES.

NOTE 4: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL. DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☐
NONE ☒

CONTAINMENT PENETRATION NO. P-2
DESCRIPTION:
MAIN STEAM LINE

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
ABPV0002	10/8	OUTSIDE	OUT	GLOBE	AIR	2	NONE	REM/MAN	20	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
ABHV0017	28/28	OUTSIDE	OUT	GATE	HYDRAULIC (2)	1,4	SLIS	NONE	(3)	OPEN	OPEN	CLOSED	CLOSED	N/A
ABHV0018	2/2	OUTSIDE	OUT	GLOBE	AIR	1,4	SLIS	NONE	15	CLOSED	CLOSED	CLOSED	CLOSED	N/A
ABV0065-69	6/8 X 6	OUTSIDE	OUT	RELIEF	SELF ACT	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	N/A	N/A
ABLV0008	1/2	OUTSIDE	OUT	GLOBE	AIR	1,4	SLIS	NONE	15	OPEN	OPEN	CLOSED	CLOSED	N/A
ABV0070	1/1	OUTSIDE	OUT	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
ABHV0005	4/4	OUTSIDE	OUT	GLOBE	AIR	2	AFAS	NONE	10	CLOSED	CLOSED	OPEN	OPEN	N/A
ABHV0048	1/1	OUTSIDE	OUT	GLOBE	AIR	1	SLIS	NONE	5	OPEN	OPEN	CLOSED	CLOSED	N/A
ABV0710 712,714,716	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
ABV0034	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: STEAM

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 57.9 FT.

APPLICABLE GDC NO. NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

THIS PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.1-4 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

VALVES ABV0710, 712, 714, 716 AND ABV0034 (SHOWN IN THE TABLE ABOUVE) ARE NOT SHOWN IN SKETCH.

NOTE 1: AS SHOWN ON FIGURE 10.3-1, THE STEAM GENERATOR SHELL EXTENDS TO THE VENT VALVES ON THE CONDENSATE POTS FOR THE MAIN STEAM FLOW TRANSMITTERS. THE STEAM GENERATOR AND STEAM PIPING/INSTRUMENTATION LINES INSIDE OF CONTAINMENT ARE NOT SHOWN HERE. REFERENCE FIG.10.3-1 FOR DETAILS OF THE PIPING INSTRUMENTATION AND VALVE CONFIGURATION / IDENTIFICATION.

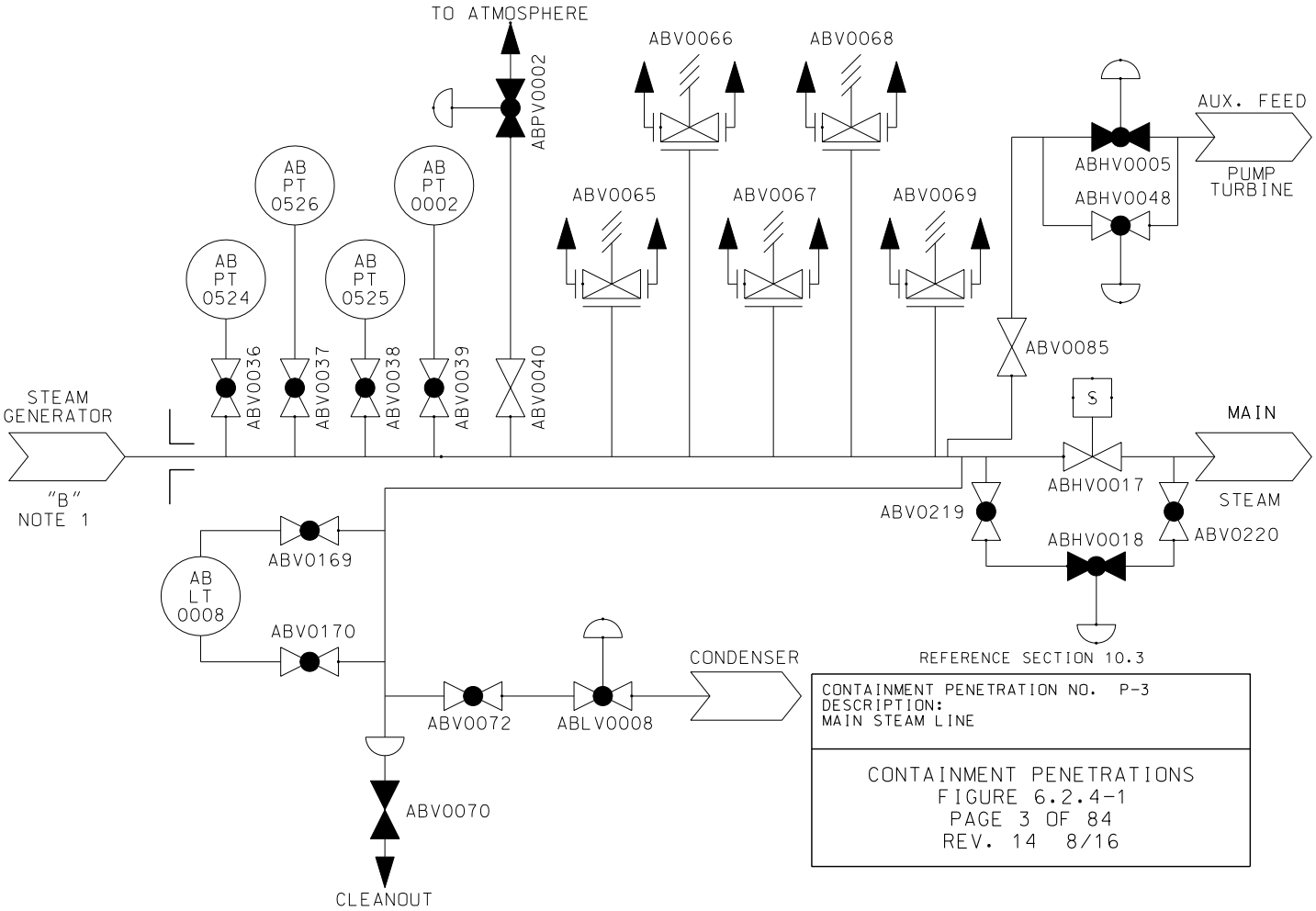
NOTE 2: OPERATOR UTILIZES SYSTEM-MEDIUM AS THE PROCCESS FLUID.

NOTE 3: CLOSURE TIME IS SYSTEM PRESSURE DEPENDENT. MAX CLOSURE TIME CURVE IS DEFINED IN THE TECHNICAL SPECIFICATION BASES.

NOTE 4: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL. DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☐
NONE ☒



CONTAINMENT PENETRATION NO. P-3
DESCRIPTION:
MAIN STEAM LINE

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 4)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT PRIMARY	POST ACCIDENT SECONDARY
ABPV0003	10/8	OUTSIDE	OUT	GLOBE	AIR	3	NONE	REM/MAN	20	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
ABHV0020	28/28	OUTSIDE	OUT	GATE	HYDRAULIC (2)	1,4	SLIS	NONE	(3)	OPEN	OPEN	CLOSED	CLOSED	N/A
ABHV0021	2/2	OUTSIDE	OUT	GLOBE	AIR	1,4	SLIS	NONE	15	CLOSED	CLOSED	CLOSED	CLOSED	N/A
ABV0075-79	6/8 X 6	OUTSIDE	OUT	RELIEF	SELF ACT	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	N/A	N/A
ABLV0007	1/2	OUTSIDE	OUT	GLOBE	AIR	1,4	SLIS	NONE	15	OPEN	OPEN	CLOSED	CLOSED	N/A
ABV0080	1/1	OUTSIDE	OUT	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
ABHV0006	4/4	OUTSIDE	OUT	GLOBE	AIR	2	AFAS	NONE	10	CLOSED	CLOSED	OPEN	OPEN	N/A
ABHV0049	1/1	OUTSIDE	OUT	GLOBE	AIR	1	SLIS	NONE	5	OPEN	OPEN	CLOSED	CLOSED	N/A
ABV0718 720,722,724	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
ABV0023	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: STEAM

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 56.2 FT.

APPLICABLE GDC NO. NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMET ISOLATION VALVES.

VALVES ABV0718, 720, 722, 724 AND ABV0023 (SHOWN IN THE TABLE ABOVE) ARE NOT SHOWN IN THE SKETCH

NOTE 1: AS SHOWN ON FIGURE 10.3-1, THE STEAM GENERATOR SHELL EXTENDS TO THE VENT VALVES ON THE CONDENSATE POTS FOR THE MAIN STEAM FLOW TRANSMITTERS. THE STEAM GENERATOR AND STEAM PIPING/INSTRUMENTATION LINES INSIDE OF CONTAINMENT ARE NOT SHOWN HERE. REFERENCE FIG.10.3-1 FOR DETAILS OF THE PIPING INSTRUMENT-ATION AND VALVE CONFIGURATION / IDENTIFICATION.

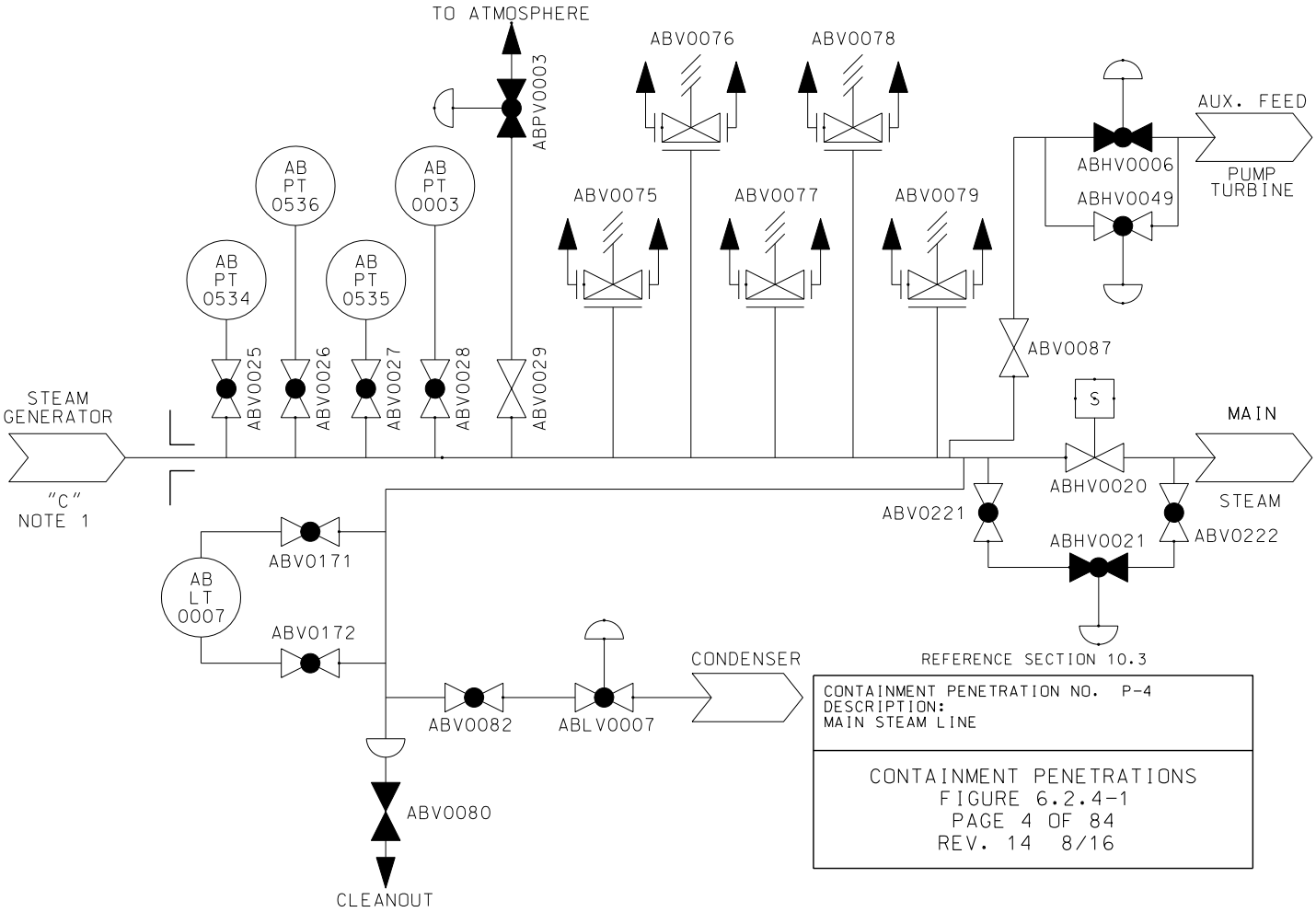
NOTE 2: OPERATOR UTILIZES SYSTEM-MEDIUM AS THE PROCCESS FLUID.

NOTE 3: CLOSURE TIME IS SYSTEM PRESSURE DEPENDENT. MAX CLOSURE TIME CURVE IS DEFINED IN THE TECHNICAL SPECIFICATION BASES.

NOTE 4: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL. DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☐
NONE ☒



CONTAINMENT PENETRATION NO. P-4
DESCRIPTION:
MAIN STEAM LINE

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 4)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
AEFV0042	14/14	OUTSIDE	IN	GATE	HYDRAULIC (2)	1,4	FWIS	NONE	(3)	OPEN	OPEN	CLOSED	CLOSED	N/A
AEV0126	4/4	OUTSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	N/A	N/A	OPEN	N/A
AEFV0046	1/1	OUTSIDE	IN	GLOBE	AIR	4	FWIS	NONE	5	CLOSED	CLOSED	CLOSED	CLOSED	N/A
AEV0307	3/4 / 3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0220	1/1	OUTSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0328	3/3	OUTSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0192	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
VALVES BELOW NOT SHOWN IN SKETCH														
AEV0714	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0716	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 21.8 FT.

APPLICABLE GDC NO. NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMET ISOLATION VALVES.

NOTE 1: AS SHOWN ON FIGURE 10.3-1, THE STEAM GENERATOR SHELL EXTENDS TO THE VENT VALVES ON THE CONDENSATE POTS FOR THE MAIN STEAM FLOW TRANSMITTERS. THE STEAM GENERATOR AND STEAM PIPING/INSTRUMENTATION LINES INSIDE OF CONTAINMENT ARE NOT SHOWN HERE. REFERENCE FIG.10.3-1 FOR DETAILS OF THE PIPING INSTRUMENT-ATION AND VALVE CONFIGURATION / IDENTIFICATION.

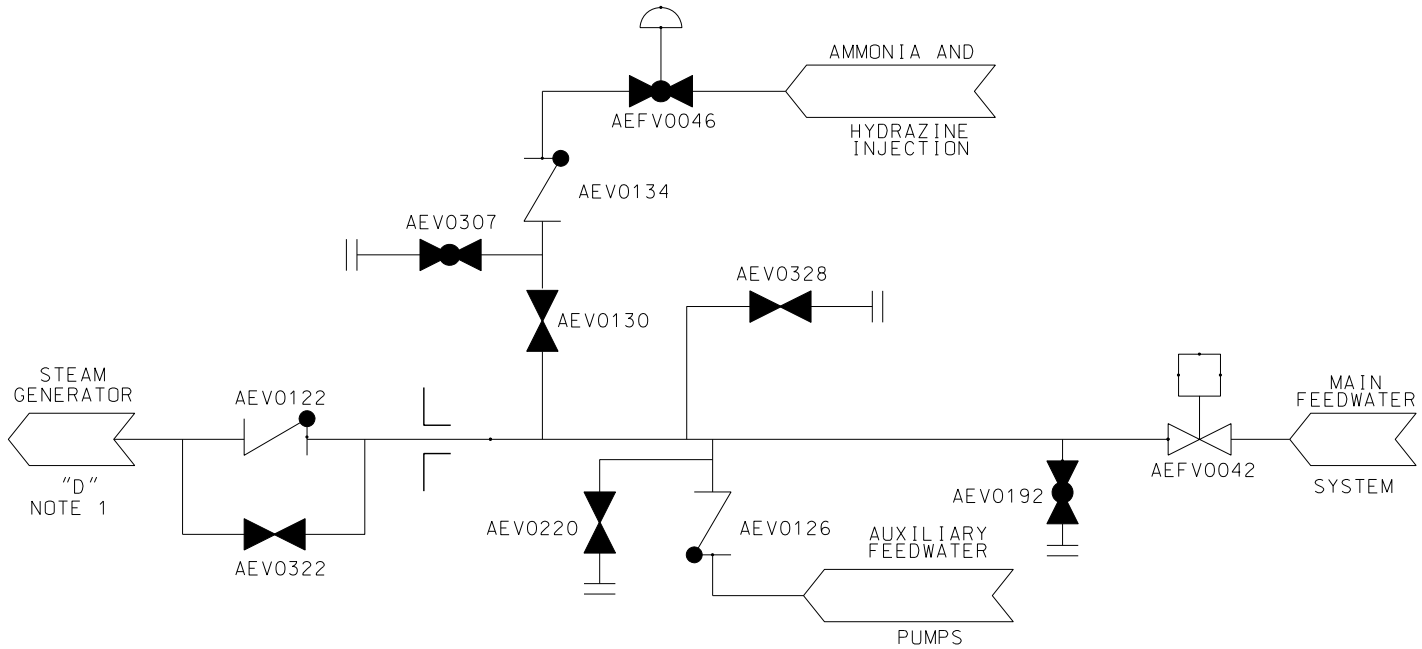
NOTE 2: SYSTEM-MEDIUM UTILIZING PROCCESS FLUID.

NOTE 3: CLOSURE TIME IS SYSTEM PRESSURE DEPENDENT. MAX CLOSURE TIME CURVE IS DEFINED IN THE TECHNICAL SPECIFICATION BASES.

NOTE 4: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☐
NONE ☒



REFERENCE SECTION 10.4.7

CONTAINMENT PENETRATION NO. P-5
DESCRIPTION:
MAIN FEEDWATER LINE

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
AEFV0039	14/14	OUTSIDE	IN	GATE	HYDRAULIC	1,4	FWIS	NONE	5	OPEN	OPEN	CLOSED	CLOSED	N/A
AEV0125	4/4	OUTSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	N/A	N/A	OPEN	N/A
AEFV0043	1/1	OUTSIDE	IN	GLOBE	AIR	1	FWIS	NONE	5	CLOSED	CLOSED	CLOSED	CLOSED	N/A
AEV0223	1/1	OUTSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0325	3/3	OUTSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0189	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0304	3/4 / 3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
VALVES BELOW NOT SHOWN IN SKETCH														
AEV0702	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0704	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 21.1 FT.

APPLICABLE GDC NO. NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

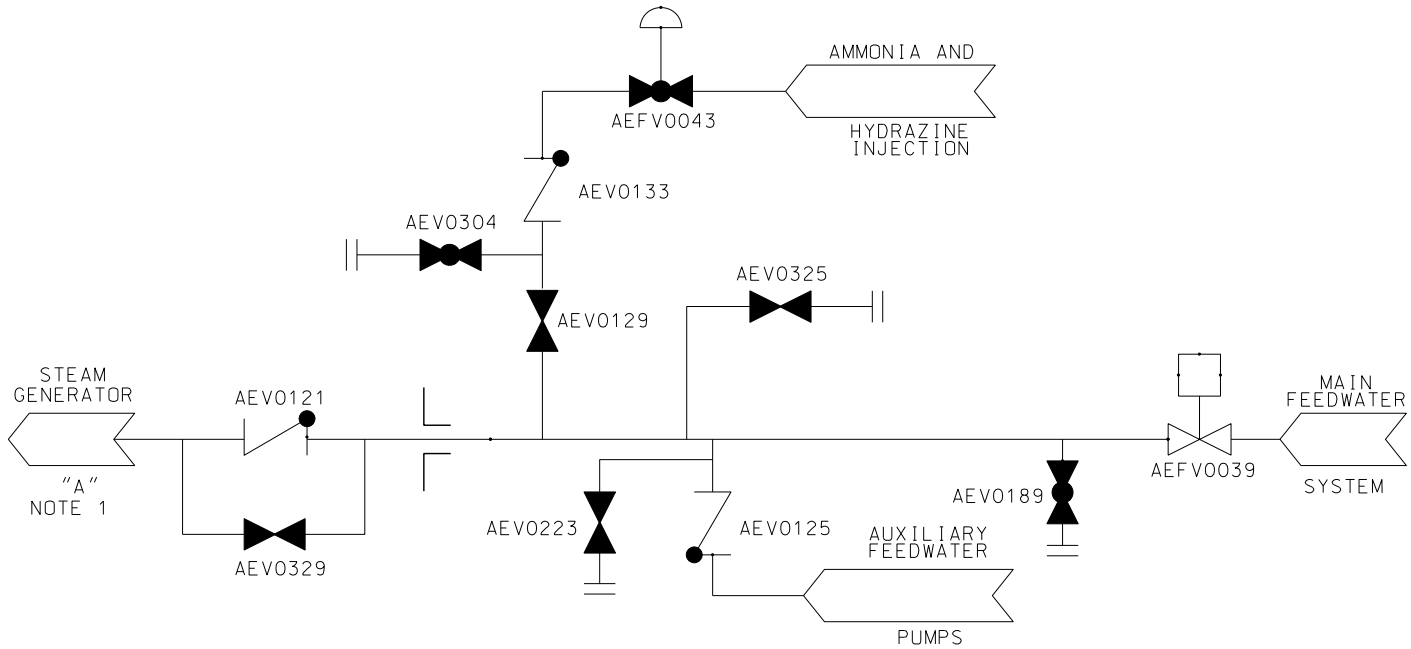
THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

NOTE 1: THE STEAM GENERATOR AND LINES EMANATING FROM THE STEAM GENERATOR SHELL ARE NOT SHOWN HERE. REFERENCE FIG.10.4-6 FOR DETAILS OF THE PIPING, INSTRUMENTATION AND VALVE CONFIGURATION / IDENTIFICATION.

NOTE 2: SYSTEM-MEDIUM UTILIZING PROCCESS FLUID.

NOTE 3: CLOSURE TIME IS SYSTEM PRESSURE DEPENDENT. MAX CLOSURE TIME CURVE IS DEFINED IN THE TECHNICAL SPECIFICATION BASES.

NOTE 4: MAXIMUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 10.4.7

CONTAINMENT PENETRATION NO. P-6
DESCRIPTION:
MAIN FEEDWATER LINE

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☐
NONE ☒

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 4)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
AEFV0040	14/14	OUTSIDE	IN	GATE	HYDRAULIC (2)	1,4	FWIS	NONE	(3)	OPEN	OPEN	CLOSED	CLOSED	N/A
AEV0124	4/4	OUTSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	N/A	N/A	OPEN	N/A
AEFV0044	1/1	OUTSIDE	IN	GLOBE	AIR	4	FWIS	NONE	5	CLOSED	CLOSED	CLOSED	CLOSED	N/A
AEV0305	3/4 / 3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0326	3/3	OUTSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0216	1/1	OUTSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0186	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
VALVES BELOW NOT SHOWN IN SKETCH														
AEV0706	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0708	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 21.1 FT.

APPLICABLE GDC NO. NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

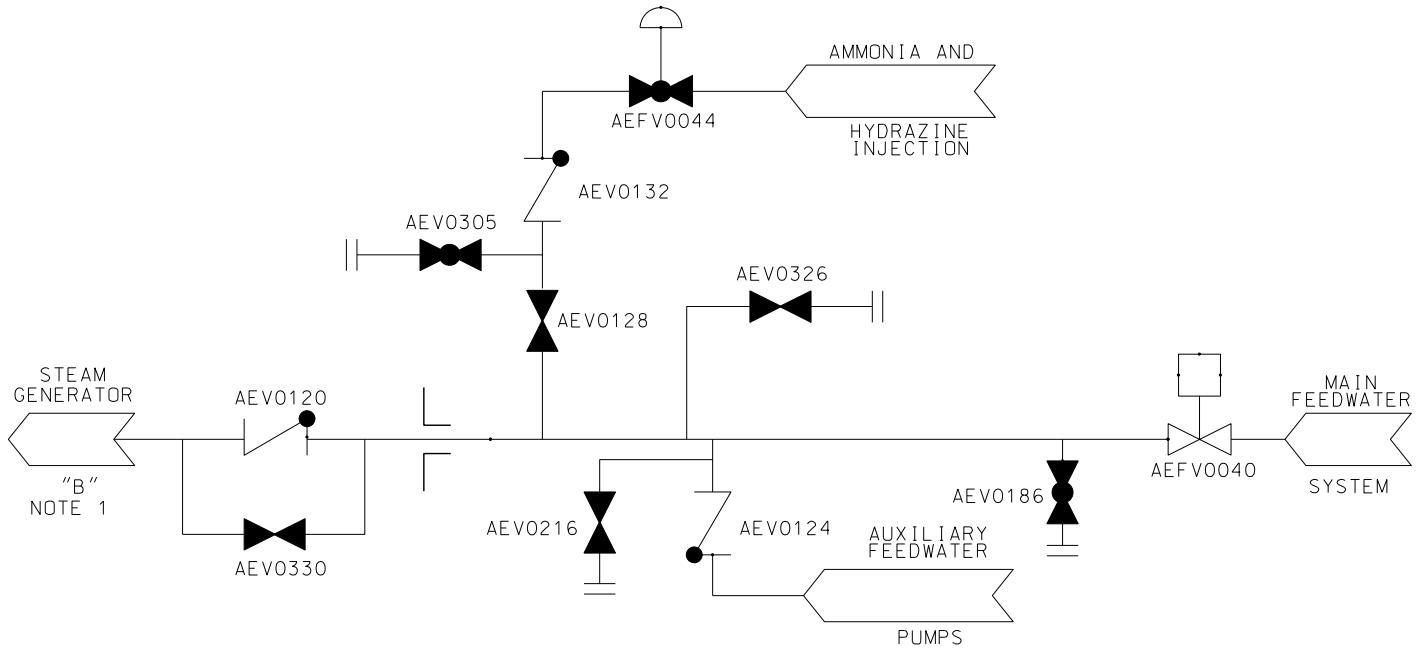
THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

NOTE 1: THE STEAM GENERATOR AND LINES EMANATING FROM THE STEAM GENERATOR SHELL ARE NOT SHOWN HERE. REFERENCE FIG.10.4-6 FOR DETAILS OF THE PIPING, INSTRUMENTATION AND VALVE CONFIGURATION / IDENTIFICATION.

NOTE 2: SYSTEM-MEDIUM UTILIZING PROCCESS FLUID.

NOTE 3: CLOSURE TIME IS SYSTEM PRESSURE DEPENDENT. MAX CLOSURE TIME CURVE IS DEFINED IN THE TECHNICAL SPECIFICATION BASES.

NOTE 4: MAXIMUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 10.4.7

CONTAINMENT PENETRATION NO. P-7
DESCRIPTION:
MAIN FEEDWATER LINE

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☐
NONE ☒

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 4)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
AEFV0041	14/14	OUTSIDE	IN	GATE	HYDRAULIC (2)	1,4	FWIS	NONE	(3)	OPEN	OPEN	CLOSED	CLOSED	N/A
AEV0127	4/4	OUTSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	N/A	N/A	OPEN	N/A
AEFV0045	1/1	OUTSIDE	IN	GLOBE	AIR	1	FWIS	NONE	5	CLOSED	CLOSED	CLOSED	CLOSED	N/A
AEV0306	3/4 / 3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0218	1/1	OUTSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0327	3/3	OUTSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0195	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
VALVES BELOW NOT SHOWN IN SKETCH														
AEV0710	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
AEV0712	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 24.2 FT.

APPLICABLE GDC NO. NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

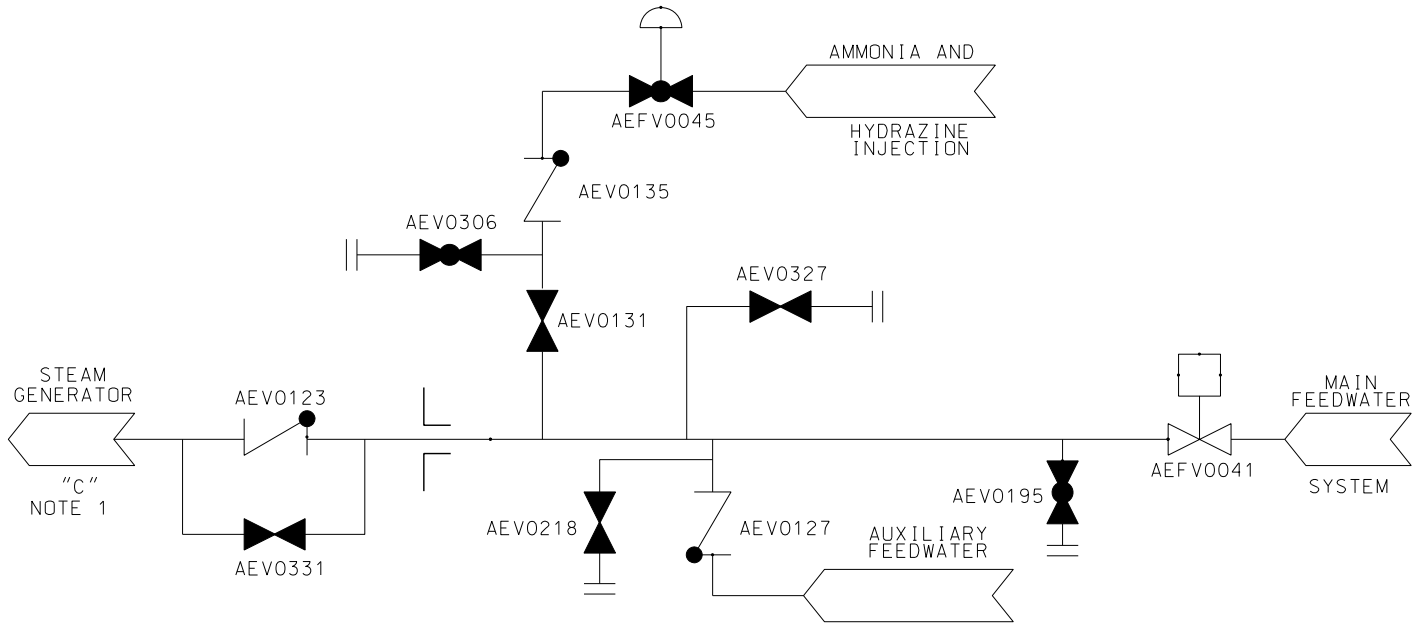
THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

NOTE 1: THE STEAM GENERATOR AND LINES EMANATING FROM THE STEAM GENERATOR SHELL ARE NOT SHOWN HERE. REFERENCE FIG.10.4-6 FOR DETAILS OF THE PIPING, INSTRUMENTATION AND VALVE CONFIGURATION / IDENTIFICATION.

NOTE 2: SYSTEM-MEDIUM UTILIZING PROCCESS FLUID.

NOTE 3: CLOSURE TIME IS SYSTEM PRESSURE DEPENDENT. MAX CLOSURE TIME CURVE IS DEFINED IN THE TECHNICAL SPECIFICATION BASES.

NOTE 4: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 10.4.7

CONTAINMENT PENETRATION NO. P-8
DESCRIPTION:
MAIN FEEDWATER LINE

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 8 OF 84
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☐
NONE ☒

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
BMV0043	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BMV0190	2/2	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BMHV0004	4/4	OUTSIDE	OUT	GLOBE	AIR	1,4	SGBSIS	NONE	10	OPEN	OPEN	CLOSED	CLOSED	N/A
BMV0768	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BMV0769	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 8.3 FT.

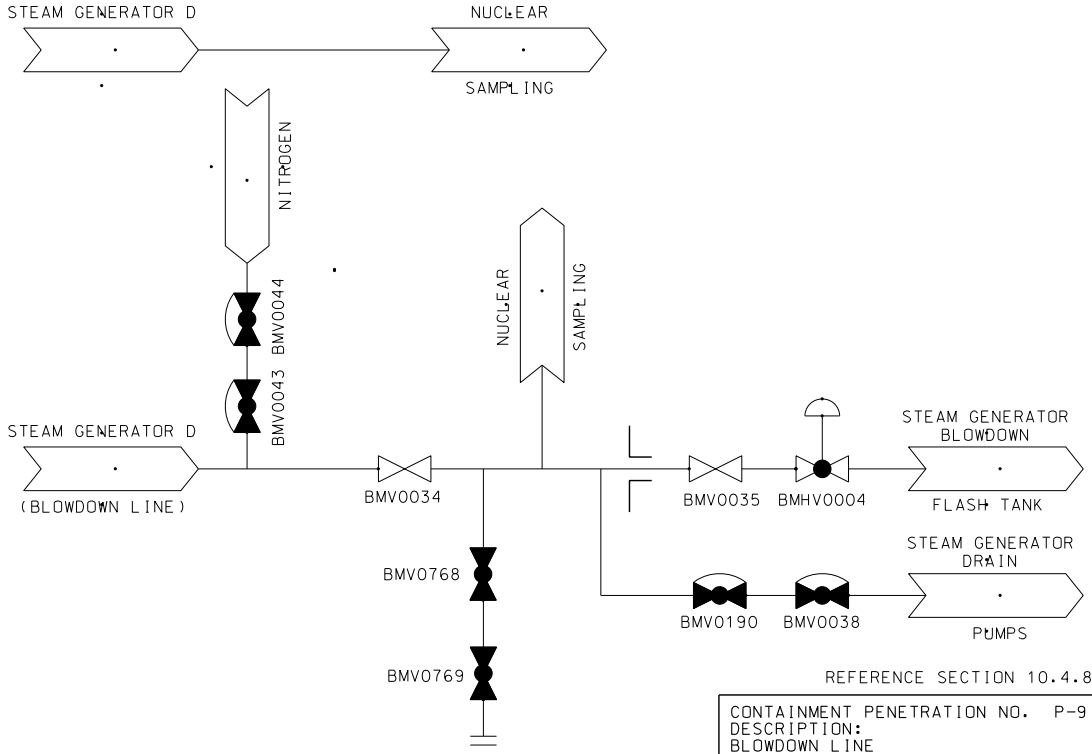
APPLICABLE GDC NO. NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

NOTE 1: MAXIMUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 10.4.8

CONTAINMENT PENETRATION NO. P-9
DESCRIPTION:
BLOWDOWN LINE
STEAM GENERATOR BLOWDOWN SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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REV. 17 8/16

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☐
NONE ☒

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT PRIMARY	POST ACCIDENT SECONDARY
BMV0010	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BMV0193	2/2	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BMHV0001	4/4	OUTSIDE	OUT	GLOBE	AIR	1,4	SGBSIS	NONE	10	OPEN	OPEN	CLOSED	CLOSED	N/A
BMV0762	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BMV0763	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 5.5 FT.

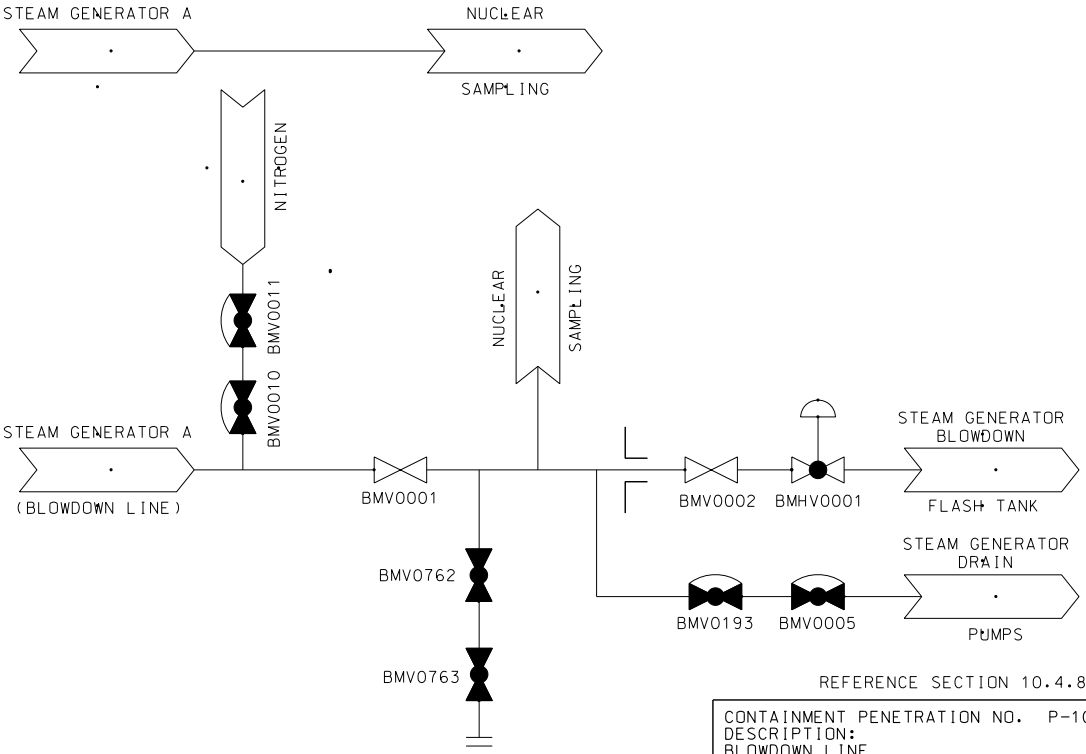
APPLICABLE GDC NO. NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

NOTE 1: MAXIMUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 10.4.8

CONTAINMENT PENETRATION NO. P-10
DESCRIPTION:
BLOWDOWN LINE
STEAM GENERATOR BLOWDOWN SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 10 OF 84
REV. 17 8/16

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☐
NONE ☒

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
BMV0021	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BMV0192	2/2	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BMHV0002	4/4	OUTSIDE	OUT	GLOBE	AIR	1,4	SGBSIS	NONE	10	OPEN	OPEN	CLOSED	CLOSED	N/A
BMV0764	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BMV0765	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 6.0 FT.

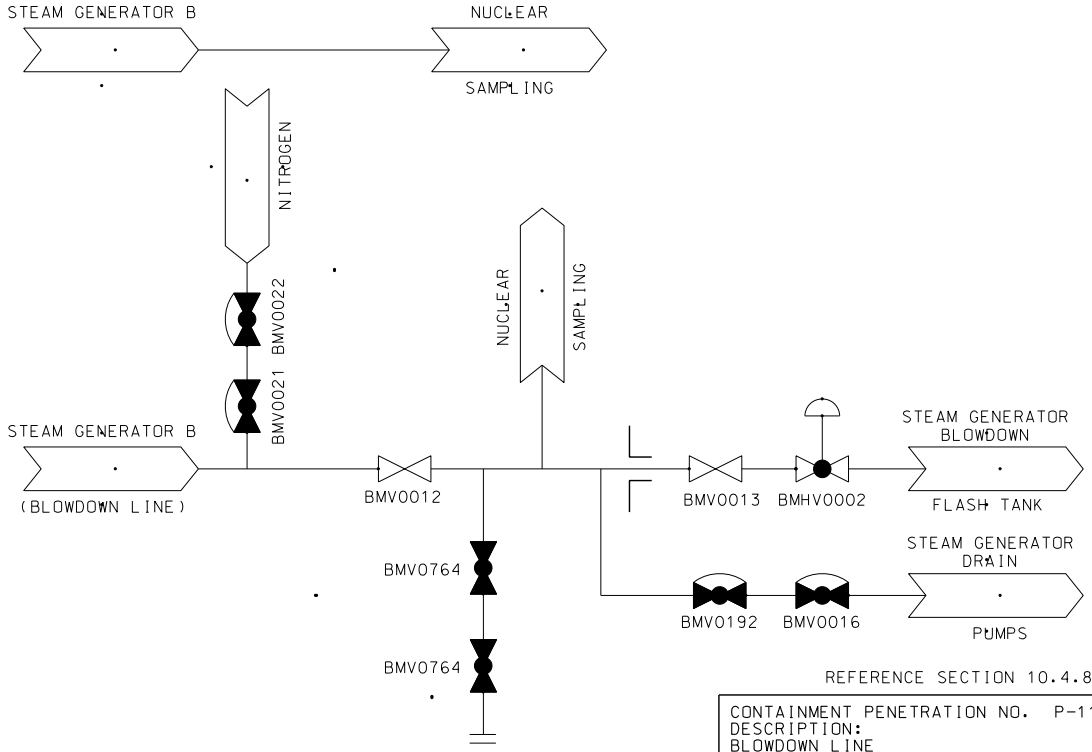
APPLICABLE GDC NO. NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 10.4.8

CONTAINMENT PENETRATION NO. P-11
DESCRIPTION:
BLOWDOWN LINE
STEAM GENERATOR BLOWDOWN SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☐
NONE ☒

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT PRIMARY	POST ACCIDENT SECONDARY
BMV0032	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BMV0191	2/2	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BMHV0003	4/4	OUTSIDE	OUT	GLOBE	AIR	1,4	SGBSIS	NONE	10	OPEN	OPEN	CLOSED	CLOSED	N/A
BMV0766	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BMV0767	3/4 / 3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 6.9 FT.

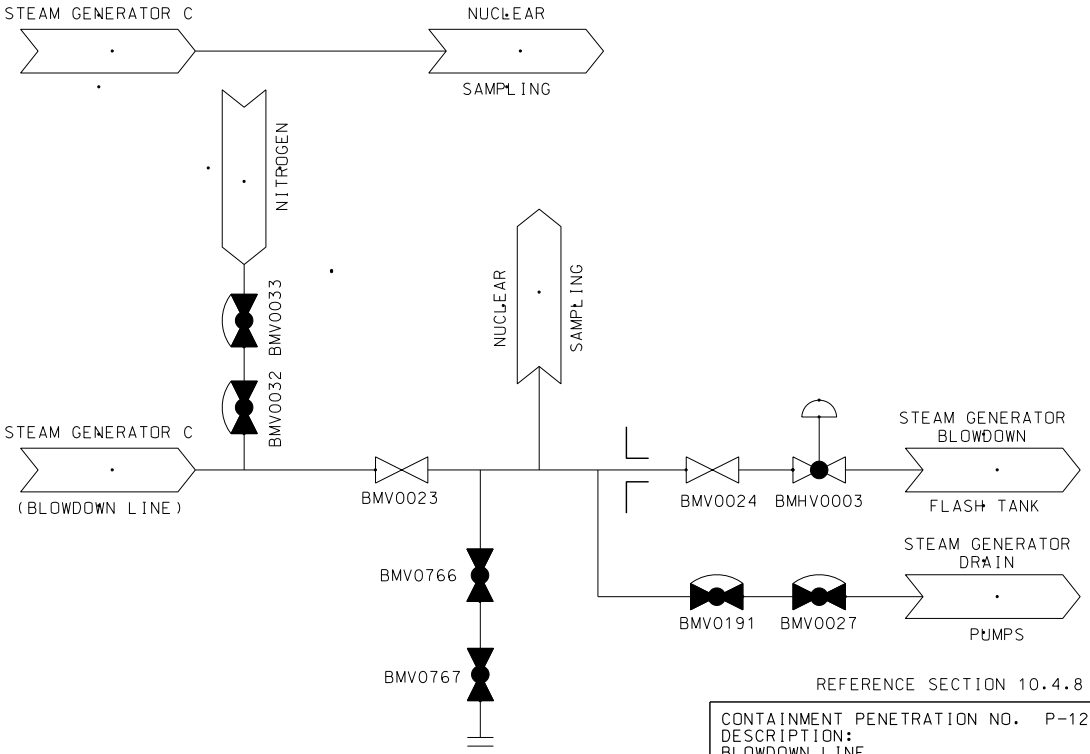
APPLICABLE GDC NO. NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 10.4.8

CONTAINMENT PENETRATION NO. P-12
DESCRIPTION:
BLOWDOWN LINE
STEAM GENERATOR BLOWDOWN SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☐
NONE ☒

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
ENHV0007	12/12	OUTSIDE	OUT	GATE	MOTOR	4	CIS-A	REM/MAN	30	CLOSED	CLOSED	AS IS	CLOSED	OPEN
ENV0083	1/1	OUTSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: N/A

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

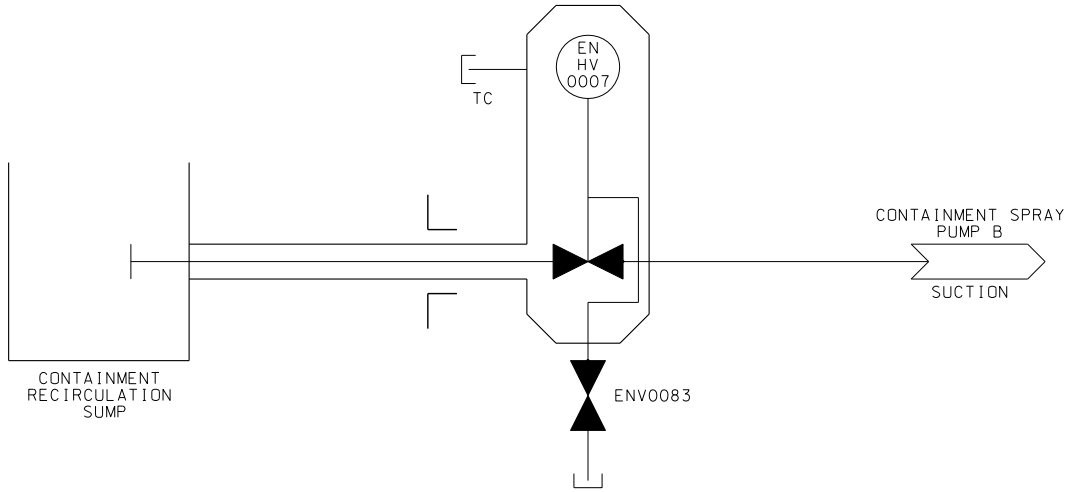
THIS PENETRATION IS ASSOCIATED WITH THE CONTAINMENT SPRAY SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A SINGLE REMOTE-MANUAL ISOLATION IS PROVIDED, LOCATED WITHIN A WATERTIGHT COMPARTMENT OUTSIDE THE CONTAINMENT, FOR GREATER SYSTEM RELIABILITY. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED SINCE THE SYSTEM IS CLOSED OUTSIDE THE CONTAINMENT AND IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT.

LOCAL TESTING OF THE VALVE OR THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐



REFERENCE SECTION (S) 6.2.2

CONTAINMENT PENETRATION NO. P-13
DESCRIPTION:
RECIRCULATION LINE
CONTAINMENT SPRAY SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EJHV8811B	14/14	OUTSIDE	OUT	GATE	MOTOR	4	NONE	SIS WITH RWST-LO	20	CLOSED	CLOSED	AS IS	CLOSED	OPEN
EJHV0022	1/1	OUTSIDE	OUT	GLOBE	SOLENOID	4	NONE	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
EJV0042	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

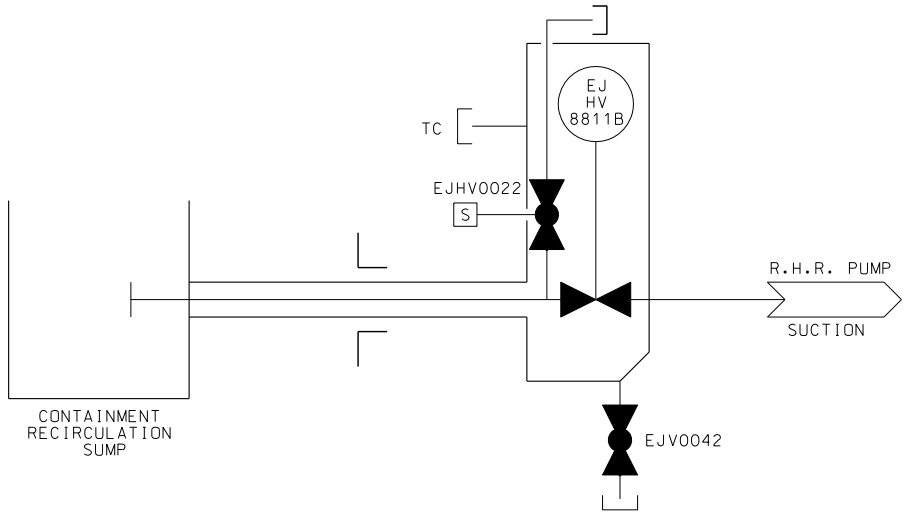
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: N/A

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

THIS PENETRATION IS ASSOCIATED WITH THE RHR SYSTEM. RHR IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A SINGLE REMOTE-MANUAL ISOLATION IS PROVIDED, LOCATED WITHIN A WATERTIGHT COMPARTMENT OUTSIDE THE CONTAINMENT, FOR GREATER SYSTEM RELIABILITY. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED SINCE THE SYSTEM IS CLOSED OUTSIDE THE CONTAINMENT AND IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT.

LOCAL TESTING OF THE RHR VALVE OR THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED. THE END OF THE LINE CONTAINING EJHV0022 IS SEALED USING A WELDED PIPE CAP.



NOTE 1: MAXIMUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

REFERENCE SECTION (S) 5.4.7 AND 6.3

CONTAINMENT PENETRATION NO. P-14
DESCRIPTION:
RECIRCULATION LINE
RESIDUAL HEAT REMOVAL SYSTEM

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EJHV8811A	14/14	OUTSIDE	OUT	GATE	MOTOR	1	NONE	SIS WITH RWST-LO	20	CLOSED	CLOSED	AS IS	CLOSED	OPEN
EJHV0021	1/1	OUTSIDE	OUT	GLOBE	SOLENOID	1	NONE	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
EJV0041	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: N/A

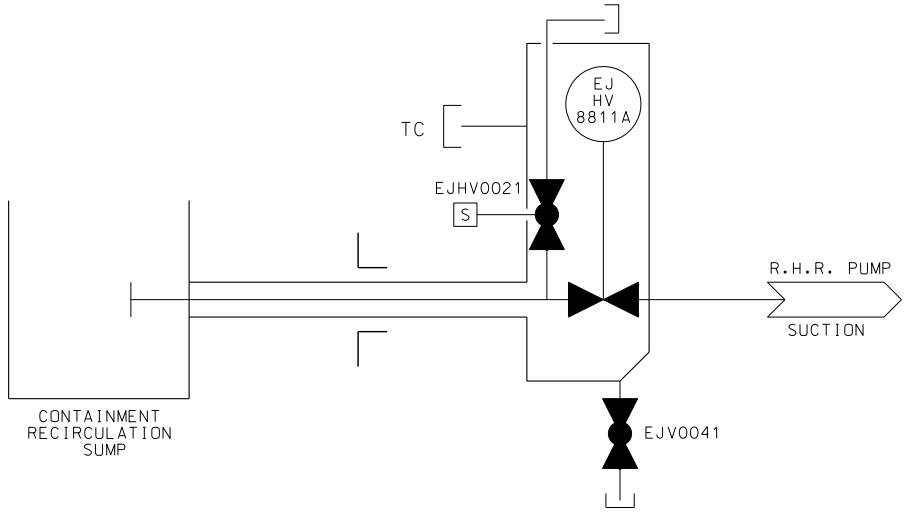
APPLICABLE GDC NO. 56

GENERAL COMMENTS:

THIS PENETRATION IS ASSOCIATED WITH THE RHR.
RHR IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A SINGLE REMOTE-MANUAL ISOLATION IS PROVIDED, LOCATED WITHIN A WATERTIGHT COMPARTMENT OUTSIDE THE CONTAINMENT, FOR GREATER SYSTEM RELIABILITY. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED SINCE THE SYSTEM IS CLOSED OUTSIDE THE CONTAINMENT AND IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT.

LOCAL TESTING OF THE RHR VALVE OR THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED. THE END OF THE LINE CONTAINING EJHV0021 IS SEALED USING A WELDED PIPE CAP.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐

REFERENCE SECTION (S) 5.4.7 AND 6.3

CONTAINMENT PENETRATION NO. P-15
DESCRIPTION:
RECIRCULATION LINE
RESIDUAL HEAT REMOVAL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
ENHV0001	12/12	OUTSIDE	OUT	GATE	MOTOR	1	CIS-A	REM/MAN	30	CLOSED	CLOSED	AS IS	CLOSED	OPEN
ENV0084	1/1	OUTSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

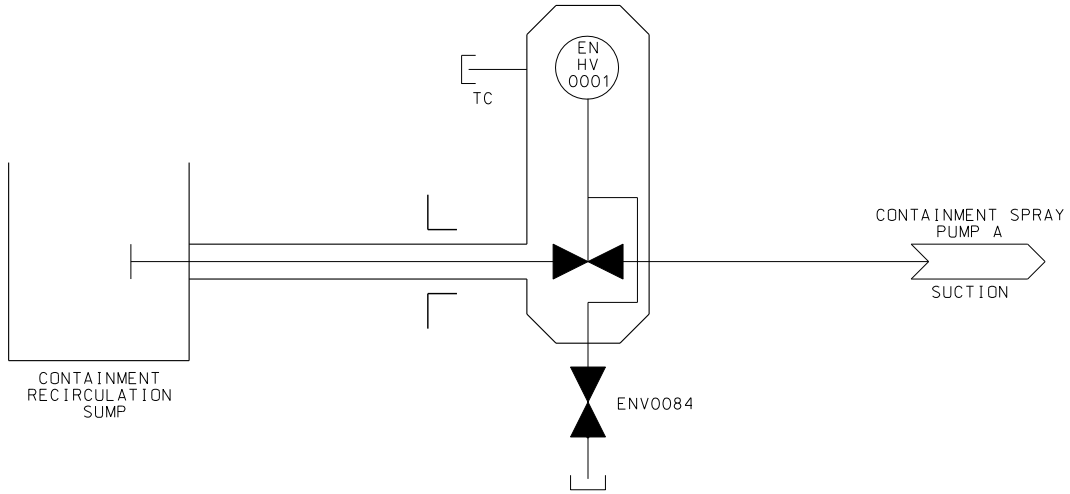
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: N/A

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

THIS PENETRATION IS ASSOCIATED WITH THE CONTAINMENT SPRAY SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A SINGLE REMOTE-MANUAL ISOLATION IS PROVIDED, LOCATED WITHIN A WATERTIGHT COMPARTMENT OUTSIDE THE CONTAINMENT, FOR GREATER SYSTEM RELIABILITY. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED SINCE THE SYSTEM IS CLOSED OUTSIDE THE CONTAINMENT AND IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT.

LOCAL TESTING OF THE VALVE OR THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED.



NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐

REFERENCE SECTION (S) 6.2.2

CONTAINMENT PENETRATION NO. P-16
DESCRIPTION:
RECIRCULATION LINE
CONTAINMENT SPRAY SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT PRIMARY	POST ACCIDENT SECONDARY
EJHCV8825	3/4 /3/4	INSIDE	IN	GLOBE	AIR	1	CIS-A	NONE	10	CLOSED	CLOSED	CLOSED	CLOSED	N/A
EJHV8840	10/10	OUTSIDE	IN	GATE	MOTOR	4	NONE	REM/MAN	15	CLOSED	CLOSED	AS IS	CLOSED	OPEN
EJV0056	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EJV0124	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EJV0122	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EJV0118	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EJV0120	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EJ8841A	6/6	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	OPEN
EJ8841B	6/6	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	OPEN

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 6.9 FT

APPLICABLE GDC NO. 55

GENERAL COMMENTS:

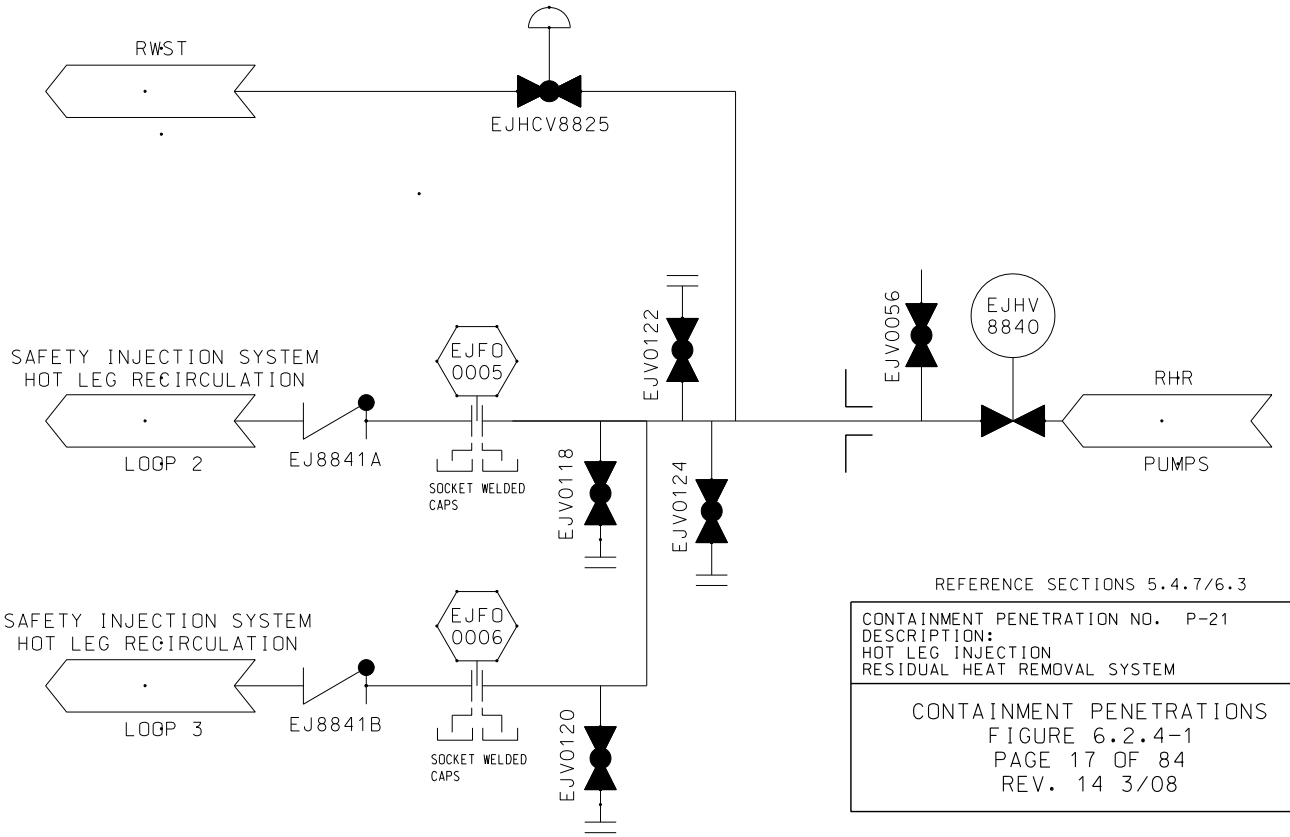
THIS PENETRATION IS ASSOCIATED WITH THE RESIDUAL HEAT REMOVAL SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE IS PROVIDED FOR EACH BRANCH LINE INSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED SINCE THE SYSTEM IS CLOSED OUTSIDE THE CONTAINMENT AND IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT. LEAKAGE DETECTION FROM THIS LINE OUTSIDE THE CONTAINMENT IS PROVIDED, AS DESCRIBED IN SECTION 9.3.3.

LOCAL TESTING OF THE VALVES OR THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED.

NOTE 1: MAXIMUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐



REFERENCE SECTIONS 5.4.7/6.3

CONTAINMENT PENETRATION NO. P-21
DESCRIPTION:
HOT LEG INJECTION
RESIDUAL HEAT REMOVAL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT PRIMARY	POST ACCIDENT SECONDARY
BBHV8351B	2/2	OUTSIDE	IN	GLOBE	MOTOR	4	NONE	REM/MAN	10	OPEN	OPEN	AS IS	OPEN	CLOSED
BBV0354	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BBV0246	3/4 /3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BBV0148	2/2	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	OPEN	OPEN	N/A	OPEN	CLOSED

ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	7.2 FT.
APPLICABLE GDC NO.	55

GENERAL COMMENTS:

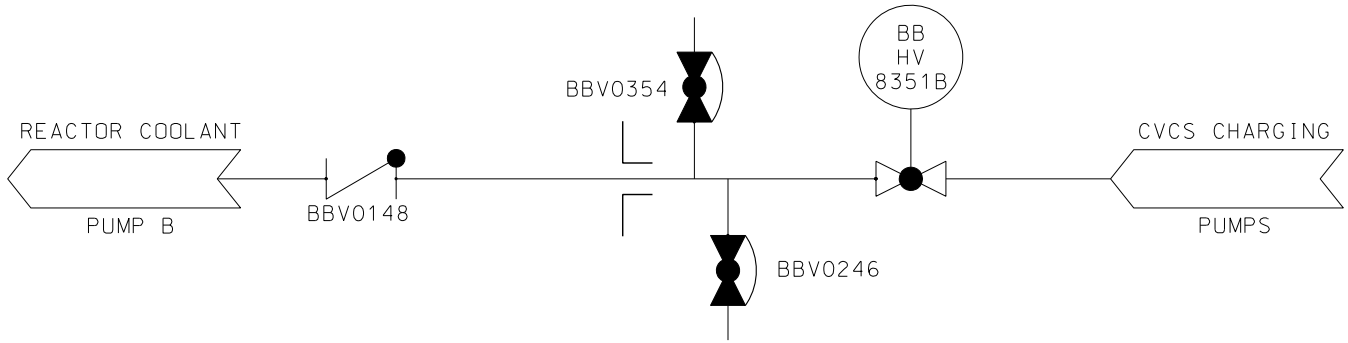
THIS PENETRATION PIPING HAS A HIGH PRESSURE WATER INFLOW WHICH PRECLUDES THE NEED FOR AUTOMATIC ISOLATION OF THIS PENETRATION. THE CVCS CHARGING PUMPS SUPPLY REACTOR COOLANT PUMP SEAL INJECTION WATER, AND THERE IS A POTENTIAL FOR DAMAGE TO THE REACTOR COOLANT PUMP IF UNDESIRED ISOLATION SHOULD OCCUR.

THE ISOLATION CAN BE AFFECTED BY REMOTE-MANUAL CLOSURE OF THE MOTOR-OPERATED VALVE BY THE OPERATOR WHEN REACTOR COOLANT PUMP SEAL WATER FLOW FROM THE CVCS CHARGING PUMPS IS TERMINATED AFTER THE CHARGING PUMPS COMPLETE THEIR SAFTY FUNCTION.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐



REFERENCE SECTION 5.4

CONTAINMENT PENETRATION NO. P-22
DESCRIPTION: RCP - SEAL WATER SUPPLY
REACTOR COOLANT SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
BGHV8160	3/3	INSIDE	OUT	GLOBE	AIR	1	CIS-A	NONE	10	OPEN	OPEN	CLOSED	CLOSED	N/A
BGV0363	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BGHV8152	3/3	OUTSIDE	OUT	GLOBE	AIR	4	CIS-A	NONE	10	OPEN	OPEN	CLOSED	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

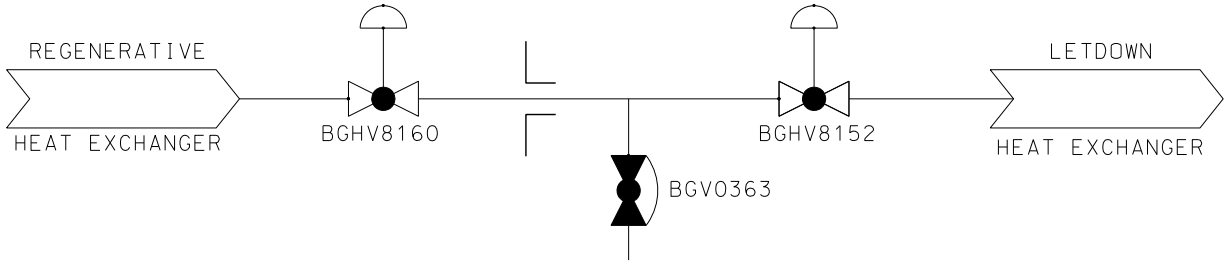
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 6.5 FT.

APPLICABLE GDC NO. 55

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.3.4

CONTAINMENT PENETRATION NO. P-23
DESCRIPTION: NORMAL LETDOWN
CHEMICAL AND VOLUME CONTROL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 19 OF 84
REV. 11 3/08

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
BGHV8112	2/2	INSIDE	OUT	GLOBE	MOTOR	1	CIS-A	NONE	10	OPEN	OPEN	AS IS	CLOSED	N/A
BGV0135	3/4 /3/4	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BGHV8100	2/2	OUTSIDE	OUT	GLOBE	MOTOR	4	CIS-A	NONE	10	OPEN	OPEN	AS IS	CLOSED	N/A
BGV0457	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

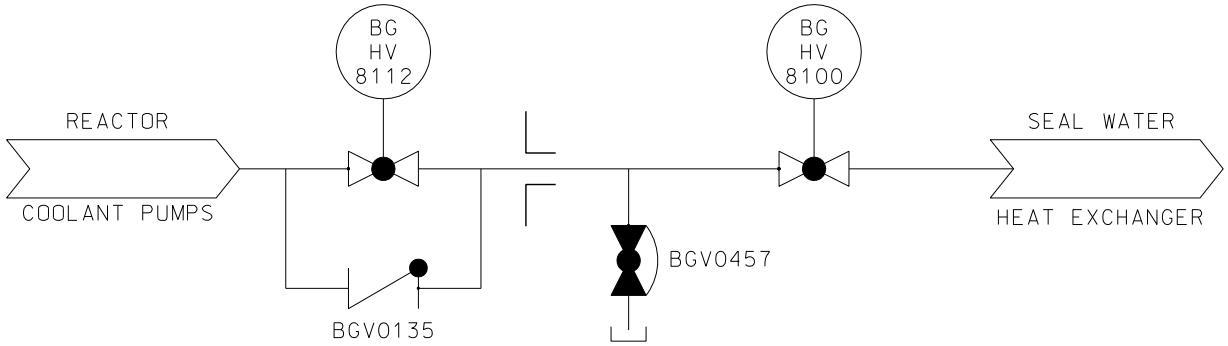
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 7.8 FT.

APPLICABLE GDC NO. 55

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.3.4

CONTAINMENT PENETRATION NO. P-24
DESCRIPTION: RCP - SEAL WATER RETURN CHEMICAL AND VOLUME CONTROL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
BLHV8047	3/3	OUTSIDE	IN	DIAPHRAGM	AIR	4	CIS-A	NONE	10	OPEN	OPEN	CLOSED	CLOSED	N/A
BLV0054	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BL8046	3/3	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	OPEN	OPEN	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

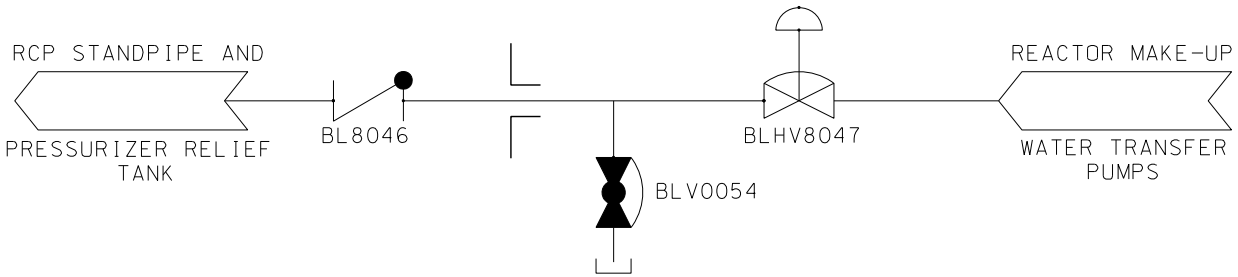
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 7.4 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.2.7

CONTAINMENT PENETRATION NO. P-25
DESCRIPTION: REACTOR MAKEUP WATER
REACTOR MAKEUP WATER SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
HBHV7176	3/3	INSIDE	OUT	DIAPHRAGM	AIR	1	CIS-A	NONE	10	OPEN	OPEN	CLOSED	CLOSED	N/A
HBHV7136	3/3	OUTSIDE	OUT	DIAPHRAGM	AIR	4	CIS-A	NONE	10	OPEN	OPEN	CLOSED	CLOSED	N/A
HBV0419	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

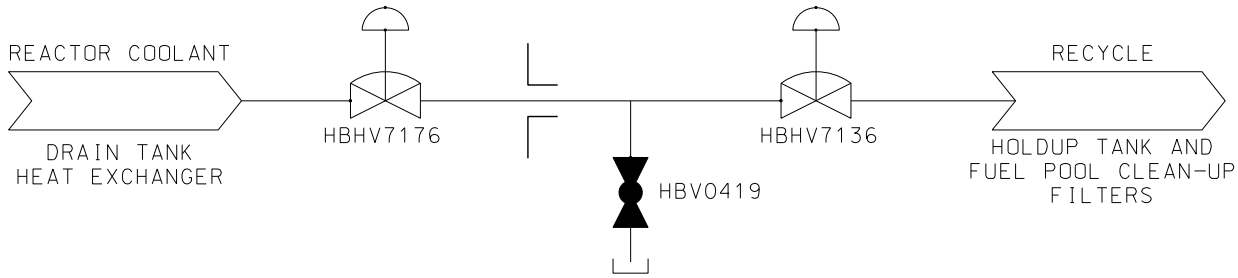
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 11.9 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 11.2

CONTAINMENT PENETRATION NO. P-26
DESCRIPTION: REACTOR COOLANT DRAIN TANK DISCHARGE
LIQUID RADWASTE SYSTEM

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EJHV8809B	10/10	OUTSIDE	IN	GATE	MOTOR	4	NONE	REM/MAN	15	OPEN	OPEN	AS IS	OPEN	CLOSED
EJV0058	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EJHCV8890B	3/4 /3/4	INSIDE	IN	GLOBE	AIR	4	CIS-A	NONE	10	CLOSED	CLOSED	CLOSED	CLOSED	N/A
EJV0086	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EJV0090	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EP8818C	6/6	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	OPEN	N/A	OPEN	CLOSED
EP8818D	6/6	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	OPEN	N/A	OPEN	CLOSED
EJV0166	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	CLOSED	CLOSED	N/A
EJV0213	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	CLOSED

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 13.3 FT

APPLICABLE GDC NO. 55

GENERAL COMMENTS:

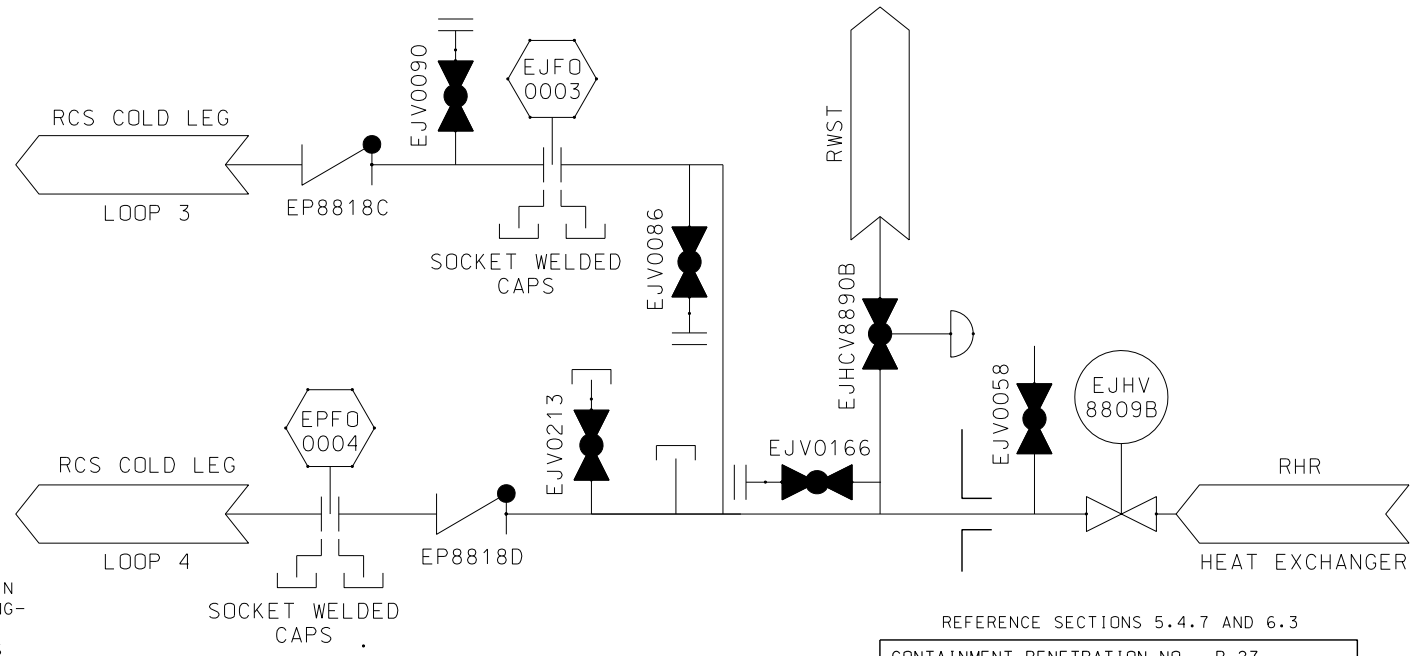
THIS PENETRATION IS ASSOCIATED WITH THE RESIDUAL HEAT REMOVAL SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE IS PROVIDED FOR EACH BRANCH LINE INSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED SINCE THE SYSTEM IS CLOSED OUTSIDE THE CONTAINMENT AND IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT. LEAKAGE DETECTION FROM THIS LINE OUTSIDE THE CONTAINMENT IS PROVIDED, AS DESCRIBED IN SECTION 9.3.3.

LOCAL TESTING OF THE VALVES OR THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED.

NOTE 1: MAXIMUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐



REFERENCE SECTIONS 5.4.7 AND 6.3

CONTAINMENT PENETRATION NO. P-27
DESCRIPTION:
COLD LEG INJECTION
RESIDUAL HEAT REMOVAL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EFHV0032	14/14	OUTSIDE	IN	BUTTERFLY	MOTOR	4	SIS	REM/MAN	40	OPEN	OPEN	AS IS	OPEN	CLOSED
EFHV0034	14/14	INSIDE	IN	BUTTERFLY	MOTOR	4	SIS	REM/MAN	35	OPEN	OPEN	AS IS	OPEN	CLOSED
EFV0278	1/1	INSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 12.8 FT.

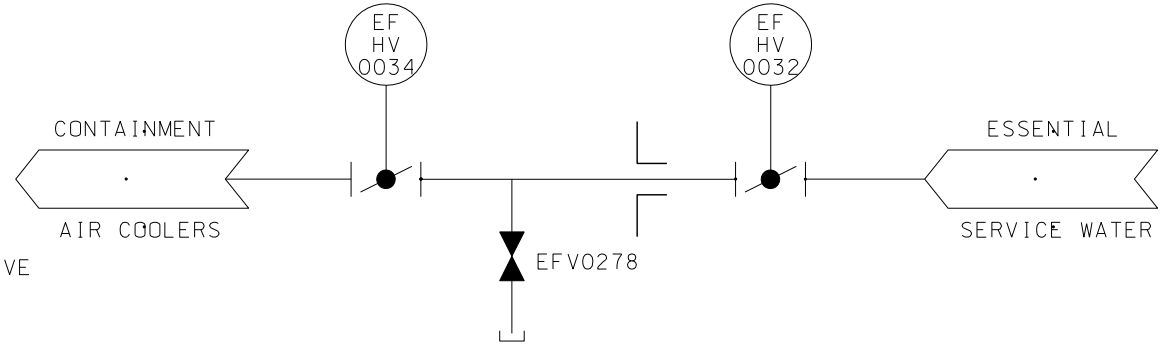
APPLICABLE GDC NO. 56

GENERAL COMMENTS:

THIS PENETRATION IS ASSOCIATED WITH THE ESSENTIAL SERVICE WATER SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A REMOTE-MANUAL POWER-OPERATED VALVE IS LOCATED INSIDE, AND A REMOTE-MANUAL POWER-OPERATED VALVE IS LOCATED OUTSIDE THE CONTAINMENT.

THESE VALVES ARE POWERED FROM THE SAME POWER SOURCE FOR GREATER SYSTEM RELIABILITY. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMODATED SINCE THE SYSTEM IS A CLOSED SYSTEM INSIDE THE CONTAINMENT, WHICH IS DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH ASME SECTION III, CLASS 3 REQUIREMENTS. THE ESSENTIAL SERVICE WATER LINES ARE NOT VENTED OR DRAINED DURING A TYPE A TEST SINCE THE AIR COOLERS MAY BE REQUIRED TO COOL THE CONTAINMENT. A TYPE C TEST IS PERFORMED.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒

NONE ☐

REFERENCE SECTION 9.2.1.2

CONTAINMENT PENETRATION NO. P-28
DESCRIPTION:
ESW TO CONTAINMENT AIR COOLERS
ESSENTIAL SERVICE WATER SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EFHV0046	14/14	INSIDE	OUT	BUTTERFLY	MOTOR	4	SIS	REM/MAN	35	OPEN	OPEN	AS IS	OPEN	CLOSED
EFV0279	1/1	INSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EFHV0050	14/14	OUTSIDE	OUT	BUTTERFLY	MOTOR	4	SIS	REM/MAN	30	CLOSED	CLOSED	AS IS	OPEN	CLOSED
EFHV0222	1/1	OUTSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EFHV0048	10/10	OUTSIDE	OUT	BUTTERFLY	MOTOR	4	NONE	REM/MAN	30	OPEN	OPEN	AS IS	OPEN	CLOSED

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 13.8

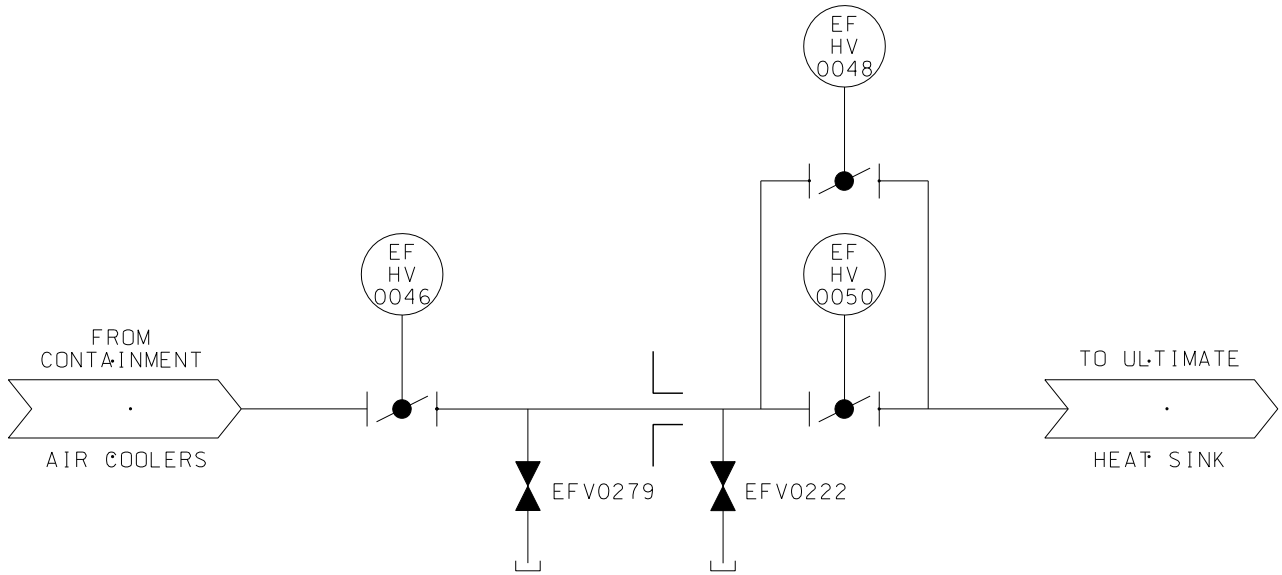
APPLICABLE GDC NO. 56

GENERAL COMMENTS:

THIS PENETRATION IS ASSOCIATED WITH THE ESSENTIAL SERVICE WATER SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A REMOTE-MANUAL POWER-OPERATED VALVE IS LOCATED INSIDE, AND A REMOTE-MANUAL POWER-OPERATED VALVE IS LOCATED OUTSIDE THE CONTAINMENT. THE SECOND ISOLATION VALVE OUTSIDE THE CONTAINMENT IS OPENED IN THE EVENT OF A DBA FOR SYSTEM SAFETY FUNCTIONS.

THESE VALVES ARE POWERED FROM THE SAME POWER SOURCE FOR GREATER SYSTEM RELIABILITY. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMODATED SINCE THE SYSTEM IS A CLOSED SYSTEM INSIDE THE CONTAINMENT, WHICH IS DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH ASME SECTION III, CLASS 3 REQUIREMENTS. THE ESSENTIAL SERVICE WATER LINES ARE NOT VENTED OR DRAINED DURING A TYPE A TEST SINCE THE AIR COOLERS MAY BE REQUIRED TO COOL THE CONTAINMENT. A TYPE C TEST IS PERFORMED.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

REFERENCE SECTION 9.2.1.2

CONTAINMENT PENETRATION NO. P-29
DESCRIPTION:
ESW FROM CONTAINMENT AIR COOLERS
ESSENTIAL SERVICE WATER SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
KAFV0029	1 1/2 /2	OUTSIDE	IN	GLOBE	AIR	1	CIS-A	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
KAV0218	1 1/2 /1 1/2	OUTSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
KAV0204	1 1/2 /1 1/2	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	OPEN	OPEN	N/A	CLOSED	OPEN

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: AIR

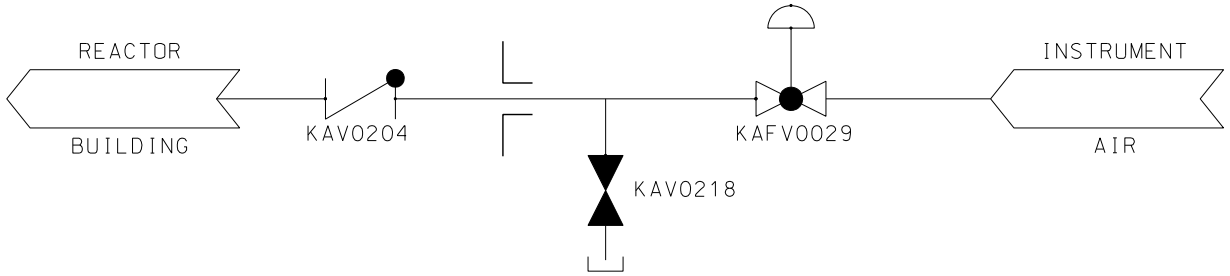
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 2.8 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.3.1

CONTAINMENT PENETRATION NO. P-30
DESCRIPTION: INSTRUMENT AIR AND H_2 CONTROL MAKEUP AIR
COMPRESSED AIR SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒

NONE ☐

VALVE NO.	LINE/ VALVE SIZE,IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
LFFV0095	6/6	INSIDE	OUT	GATE	MOTOR	1	CIS-A	NONE	30	OPEN	OPEN	AS IS	CLOSED	N/A
LFFV0096	6/6	OUTSIDE	OUT	GLOBE	AIR	4	CIS-A	NONE	4	SEE NOTES	SEE NOTES	CLOSED	CLOSED	N/A
LFV0093	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

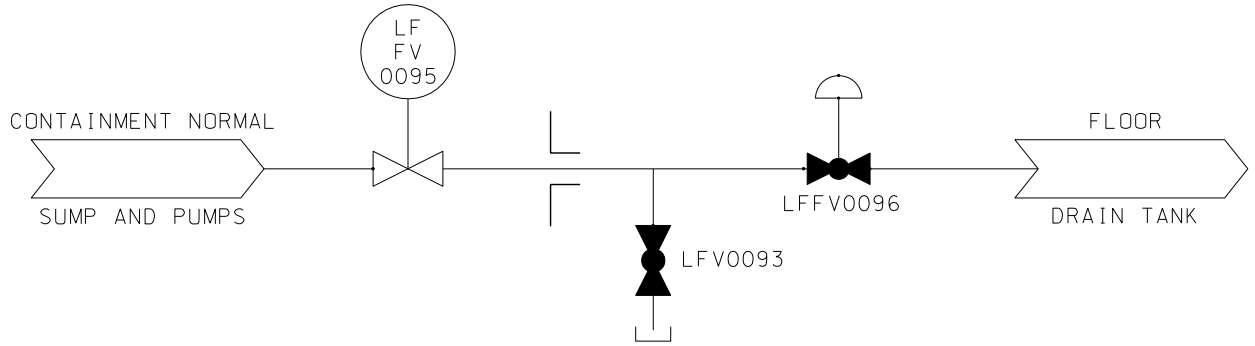
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 13.8 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

VALVE LFFV0096 OPENS ONLY WHEN ONE OF THE CONTAINMENT SUMP PUMPS ARE OPERATING. THE CONTROL GRADE SIGNAL TO OPEN THE VALVE IS NEGATED WHEN A PROTECTION GRADE CIS-A SIGNAL IS RECEIVED.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.3.3

CONTAINMENT PENETRATION NO. P-32
DESCRIPTION: CONTAINMENT NORMAL SUMP AND PUMPS DISCHARGE FLOOR AND EQUIPMENT DRAINAGE SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

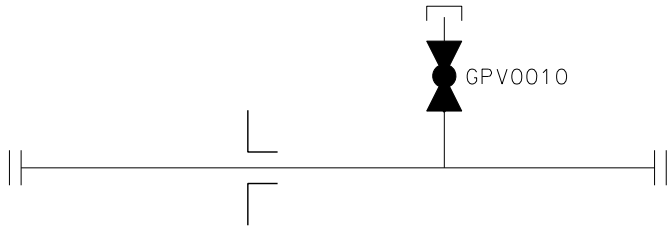
VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
GPV0010	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☒ NO ☐
FLUID CONTAINED:	AIR
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	N/A
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

FLANGES ARE REMOVED ONLY DURING PERFORMANCE OF TYPE A TEST OR TO SUPPORT OTHER REFUELING ACTIVITIES.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☐
B ☒
C ☐
NONE ☐

REFERENCE SECTION 6.2.6

CONTAINMENT PENETRATION NO. P-34
DESCRIPTION: CONTAINMENT PRESSURIZATION LINE
CONTAINMENT ILRT SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
GPV0048	3/4 / 3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: AIR

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: N/A

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

FLANGES ARE REMOVED ONLY DURING MAINTENANCE OPERATIONS IN MODE 5 OR 6 AND CORE ALTERATIONS WITH SPECIAL FLANGES AS REQUIRED WHEN AN AIRTIGHT CONDITION IS NECESSARY.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☐
B ☒
C ☐
NONE ☐

REFERENCE SECTION 6.2.6

CONTAINMENT PENETRATION NO. P-36
DESCRIPTION: MAINTENANCE SPARE AIR AND CABLE ACCESS PENETRATIONS CONTAINMENT ILRT SYSTEM

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT PRIMARY	POST ACCIDENT SECONDARY
BBHV8351C	2/2	OUTSIDE	IN	GLOBE	MOTOR	4	NONE	REM/MAN	10	OPEN	OPEN	AS IS	OPEN	CLOSED
BBV0356	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BBV0247	3/4 /3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BBV0178	2/2	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	OPEN	OPEN	N/A	OPEN	CLOSED

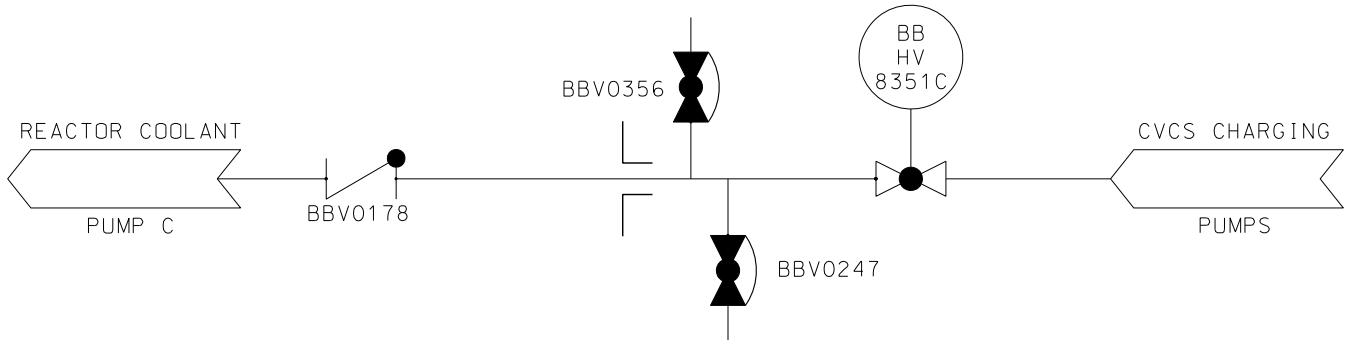
ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	12.2 FT.
APPLICABLE GDC NO.	55

GENERAL COMMENTS:

THIS PENETRATION PIPING HAS A HIGH PRESSURE WATER INFLOW WHICH PRECLUDES THE NEED FOR AUTOMATIC ISOLATION OF THIS PENETRATION. THE CVCS CHARGING PUMPS SUPPLY REACTOR COOLANT PUMP SEAL INJECTION WATER, AND THERE IS A POTENTIAL FOR DAMAGE TO THE REACTOR COOLANT PUMP IF UNDESIRED ISOLATION SHOULD OCCUR.

THE ISOLATION CAN BE AFFECTED BY REMOTE-MANUAL CLOSURE OF THE MOTOR-OPERATED VALVE BY THE OPERATOR WHEN REACTOR COOLANT PUMP SEAL WATER FLOW FROM THE CVCS CHARGING PUMPS IS TERMINATED AFTER THE CHARGING PUMPS COMPLETE THEIR SAFETY FUNCTION.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

REFERENCE SECTION 5.4

CONTAINMENT PENETRATION NO. P-39
DESCRIPTION: RCP - SEAL WATER SUPPLY
REACTOR COOLANT SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT PRIMARY	POST ACCIDENT SECONDARY
BBHV8351D	2/2	OUTSIDE	IN	GLOBE	MOTOR	4	NONE	REM/MAN	10	OPEN	OPEN	AS IS	OPEN	CLOSED
BBV0358	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BBV0248	3/4 /3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BBV0208	2/2	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	OPEN	OPEN	N/A	OPEN	CLOSED

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 17.1 FT.

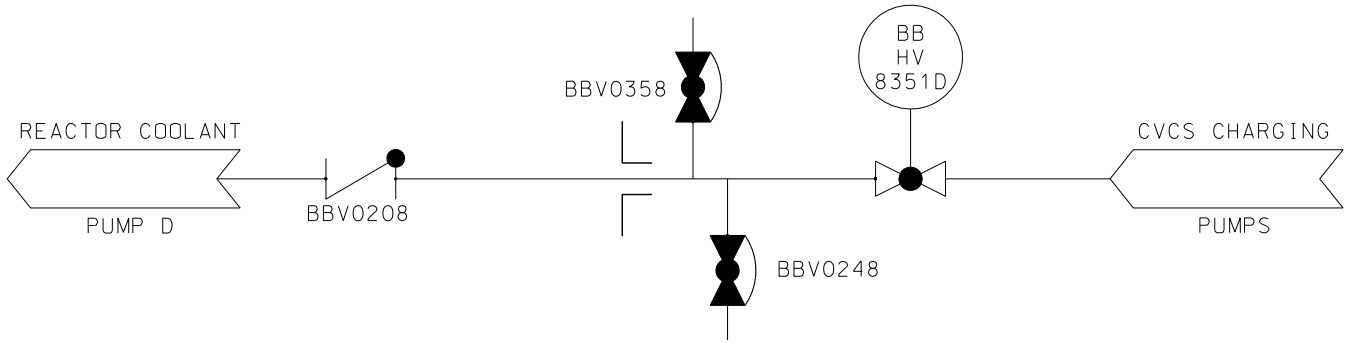
APPLICABLE GDC NO. 55

GENERAL COMMENTS:

THIS PENETRATION PIPING HAS A HIGH PRESSURE WATER INFLOW WHICH PRE-CLUDES THE NEED FOR AUTOMATIC ISOLATION OF THIS PENETRATION. THE CVCS CHARGING PUMPS SUPPLY REACTOR COOLANT PUMP SEAL INJECTION WATER, AND THERE IS A POTENTIAL FOR DAMAGE TO THE REACTOR COOLANT PUMP IF UNDESIRED ISOLATION SHOULD OCCUR.

THE ISOLATION CAN BE AFFECTED BY REMOTE-MANUAL CLOSURE OF THE MOTOR-OPERATED VALVE BY THE OPERATOR WHEN REACTOR COOLANT PUMP SEAL WATER FLOW FROM THE CVCS CHARGING PUMPS IS TERMINATED AFTER THE CHARGING PUMMPS COMPLETE THEIR SAFTY FUNCTION.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

REFERENCE SECTION 5.4

CONTAINMENT PENETRATION NO. P-40
DESCRIPTION: RCP - SEAL WATER SUPPLY
REACTOR COOLANT SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT PRIMARY	POST ACCIDENT SECONDARY
BBHV8351A	2/2	OUTSIDE	IN	GLOBE	MOTOR	4	NONE	REM/MAN	10	OPEN	OPEN	AS IS	OPEN	CLOSED
BBV0352	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BBV0245	3/4 /3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BBV0118	2/2	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	OPEN	OPEN	N/A	OPEN	CLOSED

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 12.2 FT.

APPLICABLE GDC NO. 55

GENERAL COMMENTS:

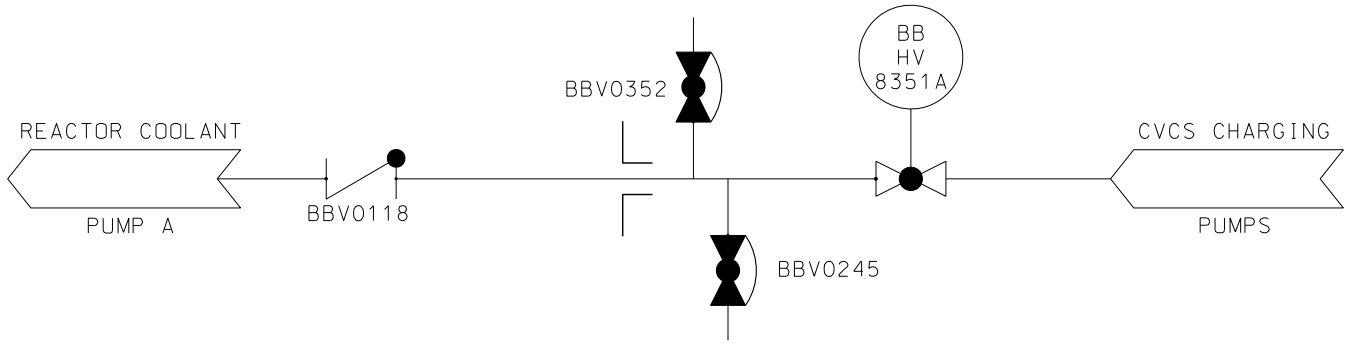
THIS PENETRATION PIPING HAS A HIGH PRESSURE WATER INFLOW WHICH PRECLUDES THE NEED FOR AUTOMATIC ISOLATION OF THIS PENETRATION. THE CVCS CHARGING PUMPS SUPPLY REACTOR COOLANT PUMP SEAL INJECTION WATER, AND THERE IS A POTENTIAL FOR DAMAGE TO THE REACTOR COOLANT PUMP IF UNDESIRED ISOLATION SHOULD OCCUR.

THE ISOLATION CAN BE AFFECTED BY REMOTE-MANUAL CLOSURE OF THE MOTOR-OPERATED VALVE BY THE OPERATOR WHEN REACTOR COOLANT PUMP SEAL WATERFLOW FROM THE CVCS CHARGING PUMPS IS TERMINATED AFTER THE CHARGING PUMPS COMPLETE THEIR SAFETY FUNCTION.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐



REFERENCE SECTION 5.4

CONTAINMENT PENETRATION NO. P-41
DESCRIPTION: RCP - SEAL WATER SUPPLY
REACTOR COOLANT SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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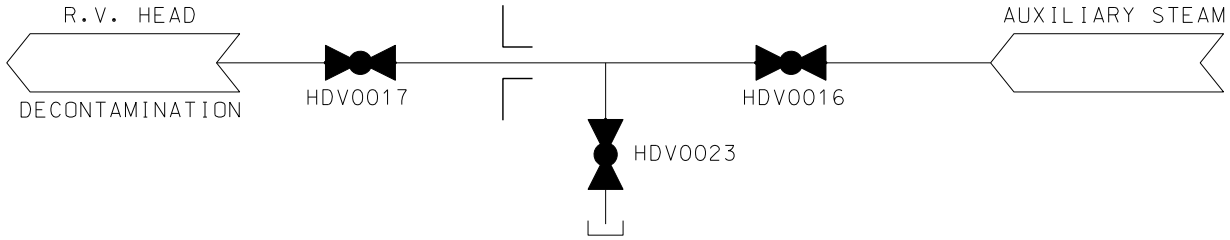
VALVE NO.	LINE/ VALVE SIZE,IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
HDV0016	2/2	OUTSIDE	IN	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
HDV0023	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
HDV0017	2/2	INSIDE	IN	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	STEAM
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	10.9 FT.
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIME SARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 12.3

CONTAINMENT PENETRATION NO. P-43
DESCRIPTION: DECONTAMINATION STEAM DECONTAMINATION SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

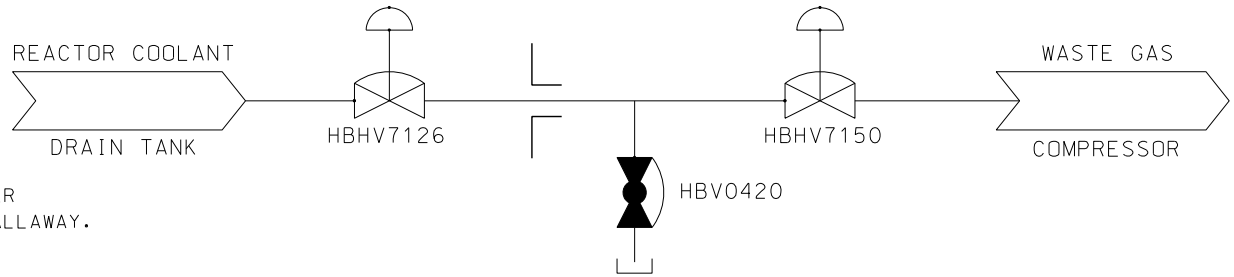
VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
HBHV7126	3/4 / 3/4	INSIDE	OUT	DIAPHRAGM	AIR	1	CIS-A	NONE	10	OPEN	OPEN	CLOSED	CLOSED	N/A
HBHV7150	3/4 / 3/4	OUTSIDE	OUT	DIAPHRAGM	AIR	4	CIS-A	NONE	10	OPEN	OPEN	CLOSED	CLOSED	N/A
HBV0420	3/4 / 3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	GAS
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	8.1 FT.
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 11.2

CONTAINMENT PENETRATION NO. P-44
DESCRIPTION: REACTOR COOLANT DRAIN TANK VENT LINE
LIQUID RADWASTE SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒

NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EPV0046	1/1	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EPV0043	3/4 / 3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EPHV8880	1/1	OUTSIDE	IN	GLOBE	AIR	4	CIS-A	NONE	10	CLOSED	CLOSED	CLOSED	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: GAS

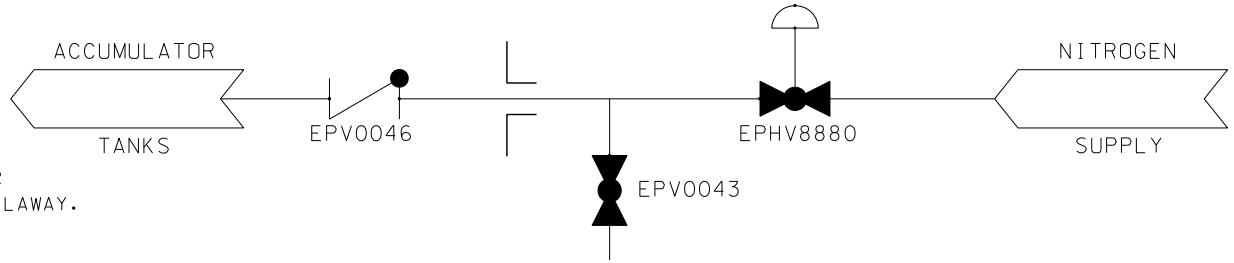
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 13.0 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒

NONE ☐

REFERENCE SECTION 6.3

CONTAINMENT PENETRATION NO. P-45
DESCRIPTION: NITROGEN SUPPLY LINE ACCUMULATOR SAFETY INJECTION SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EMHV8802B	4/4	OUTSIDE	IN	GATE	MOTOR	4	NONE	REM/MAN	10	CLOSED	CLOSED	AS IS	CLOSED	OPEN
EMHV8824	3/4 /3/4	INSIDE	OUT	GLOBE	AIR	1	CIS-A	NONE	NOTE 1	CLOSED	CLOSED	CLOSED	CLOSED	N/A
EMV0003	2/2	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	OPEN
EMV0004	2/2	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	OPEN
EMV0060	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0061	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0063	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0064	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0217	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0169	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0170	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0172	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0059	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 13.7 FT

APPLICABLE GDC NO. 55

NOTES:
1. REFER TO T/S TABLE 16.6-1.

GENERAL COMMENTS:

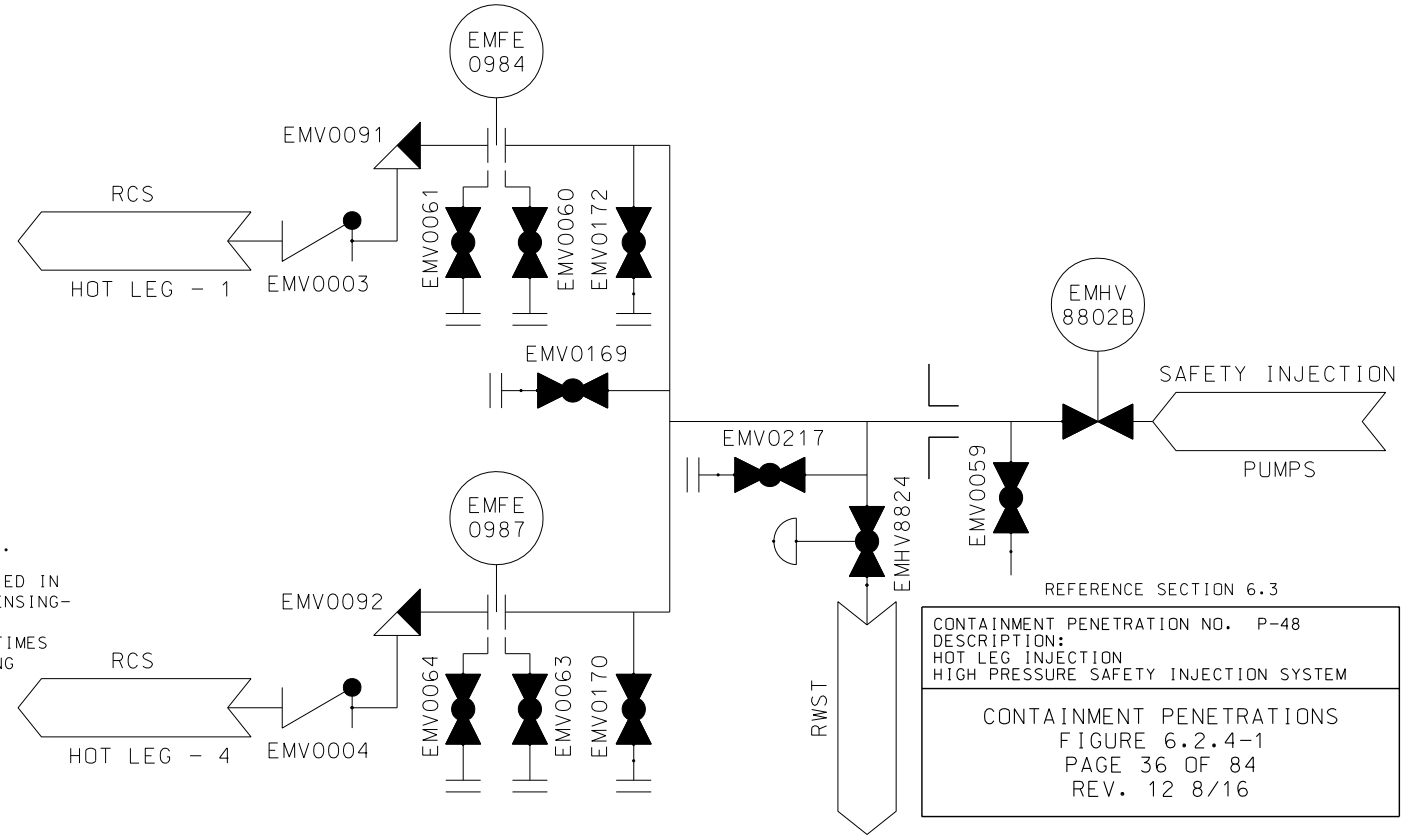
THIS PENETRATION IS ASSOCIATED WITH THE HIGH PRESSURE COOLANT INJECTION SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE IS PROVIDED FOR EACH BRANCH LINE INSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED SINCE THE SYSTEM IS CLOSED OUTSIDE THE CONTAINMENT AND IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT. LEAKAGE DETECTION FROM THIS LINE OUTSIDE THE CONTAINMENT IS PROVIDED, AS DESCRIBED IN SECTION 9.3.3.

LOCAL TESTING OF THE VALVES OR THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐



REFERENCE SECTION 6.3

CONTAINMENT PENETRATION NO. P-48
DESCRIPTION:
HOT LEG INJECTION
HIGH PRESSURE SAFETY INJECTION SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EMHV8835	4/4	OUTSIDE	IN	GATE	MOTOR	4	NONE	REM/MAN	10	OPEN	OPEN	AS IS	OPEN	CLOSED
EMHV8823	3/4 /3/4	INSIDE	OUT	GLOBE	AIR	1	CIS-A	NONE	10	CLOSED	CLOSED	CLOSED	CLOSED	N/A
EPV0020	2/2	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	OPEN	CLOSED
EPV0010	2/2	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	OPEN	CLOSED
EPV0040	2/2	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	OPEN	CLOSED
EPV0030	2/2	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	OPEN	CLOSED
EMV0067	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0068	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
THRU 075														
EMV0218	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0162, 164, 168	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0163, 165, 166, 167	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 12.1 FT

APPLICABLE GDC NO. 55

GENERAL COMMENTS:

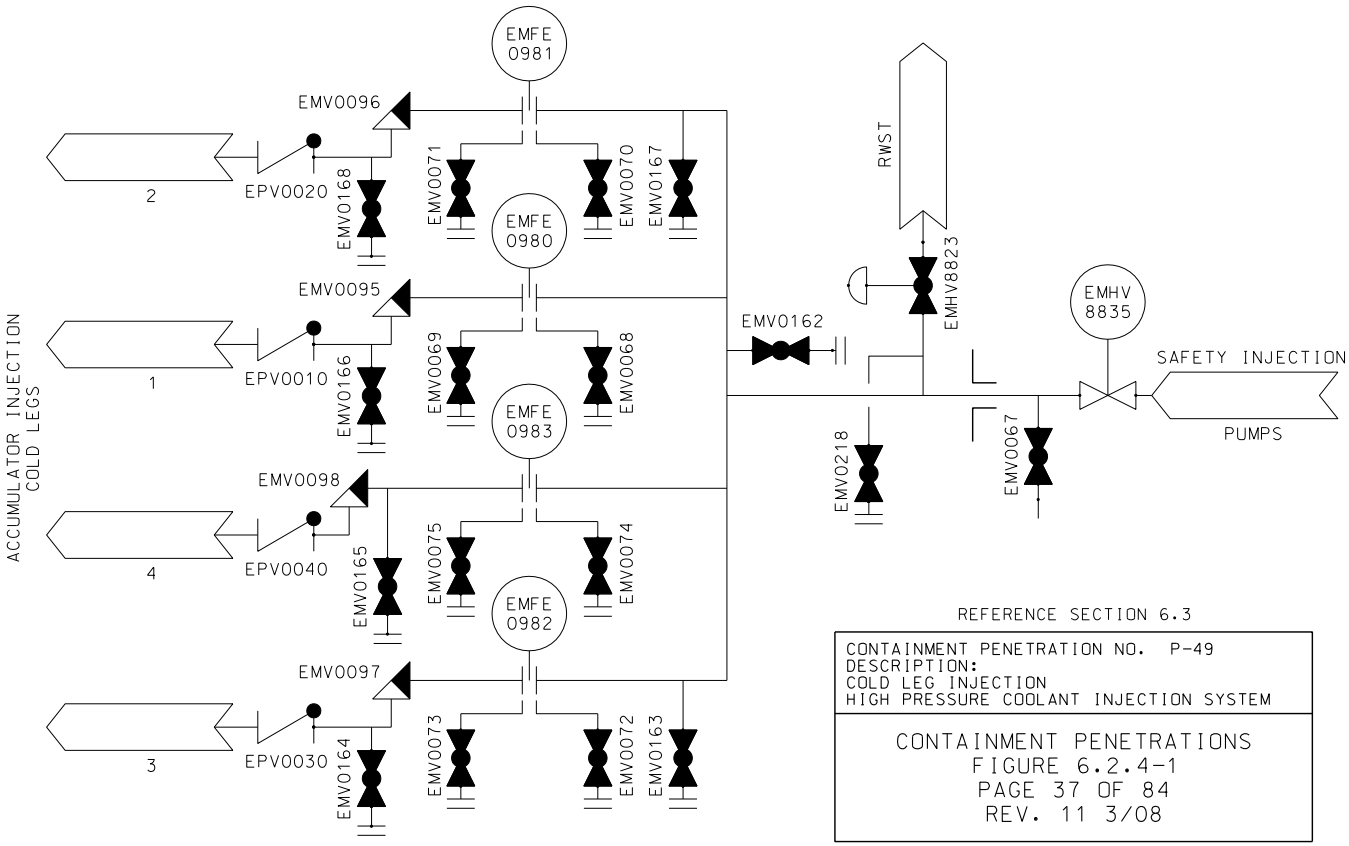
THIS PENETRATION IS ASSOCIATED WITH THE HIGH PRESSURE COOLANT INJECTION SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE IS PROVIDED FOR EACH BRANCH LINE INSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED SINCE THE SYSTEM IS CLOSED OUTSIDE THE CONTAINMENT AND IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT. LEAKAGE DETECTION FROM THIS LINE OUTSIDE THE CONTAINMENT IS PROVIDED, AS DESCRIBED IN SECTION 9.3.3.

LOCAL TESTING OF THE VALVES OR THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED.

NOTE 1: MAXIMUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐



REFERENCE SECTION 6.3

CONTAINMENT PENETRATION NO. P-49
DESCRIPTION:
COLD LEG INJECTION
HIGH PRESSURE COOLANT INJECTION SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
GPV0049	3/4 / 3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☒ NO ☐
FLUID CONTAINED:	AIR
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	N/A
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

FLANGES ARE REMOVED ONLY DURING MAINTENANCE OPERATIONS IN MODE 5 OR 6 AND CORE ALTERATIONS WITH SPECIAL FLANGES AS REQUIRED WHEN AN AIRTIGHT CONDITION IS NECESSARY.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☐
B ☒
C ☐
NONE ☐

REFERENCE SECTION 6.2.6

CONTAINMENT PENETRATION NO. P-50
DESCRIPTION: MAINTENANCE SPARE AIR AND CABLE ACCESS PENETRATIONS CONTAINMENT ILRT SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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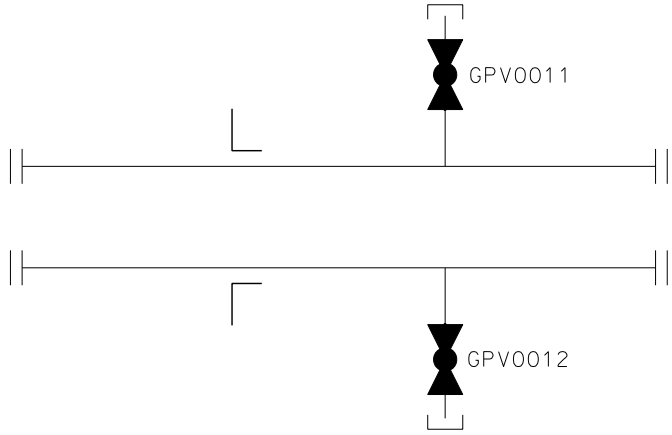
VALVE NO.	LINE/ VALVE SIZE,IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
GPV0011	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
GPV0012	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☒ NO ☐
FLUID CONTAINED:	AIR
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	N/A
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

FLANGES ARE REMOVED ONLY DURING PERFORMANCE OF TYPE A TEST OR TO SUPPORT OTHER REFUELING ACTIVITIES IN MODES 5 AND 6.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 6.2.6

CONTAINMENT PENETRATION NO. P-51
DESCRIPTION: PRESSURE SENSING LINES
CONTAINMENT ILRT SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☒
C ☐
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EJHV8701B	12/12	INSIDE	OUT	GATE	MOTOR	1	REM/MAN	NONE	120	CLOSED	OPEN	AS IS	CLOSED	N/A
EJ8708B	3/3	INSIDE	N/A	RELIEF	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☒ NO ☐
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	N/A
APPLICABLE GDC NO.	55

GENERAL COMMENTS:

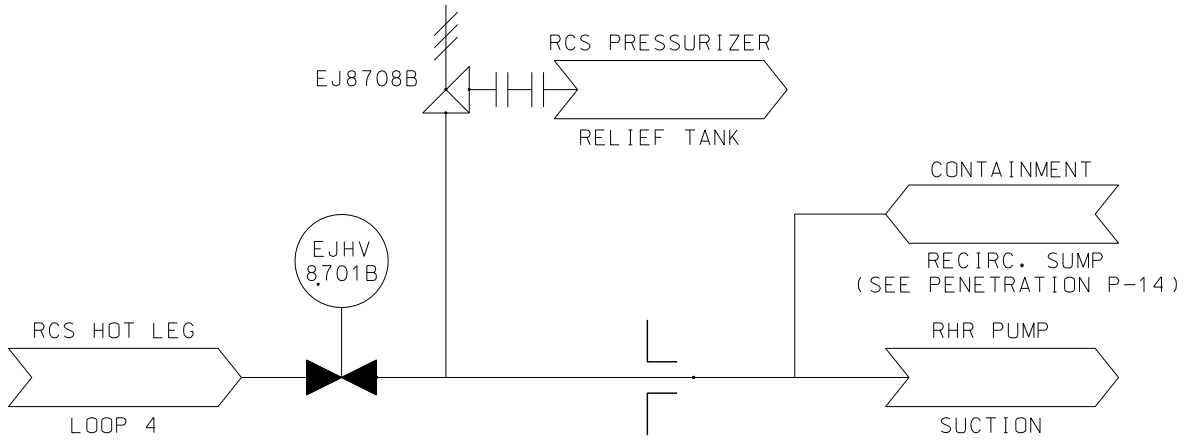
THE RESIDUAL HEAT REMOVAL SYSTEM SUCTION LINE FROM THE REACTOR COOLANT SYSTEM CONTAINS TWO NORMALLY CLOSED, POWER-OPERATED REMOTE MANUAL VALVES IN SERIES INSIDE THE CONTAINMENT (I.E., EJHV8701B AND BBPV8702B). THESE VALVES ARE INTERLOCKED TO PREVENT THEM FROM BEING INADVERTENTLY OPENED. CONTAINMENT ISOLATION IS ASSURED BY SYSTEM ISOLATION VALVES CLOSEST TO THE CONTAINMENT (I.E., EJHV8701B AND EJ8708B) IN CONJUNCTION WITH THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT, WHICH IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT. LEAKAGE DETECTION FROM THIS LINE OUTSIDE THE CONTAINMENT IS PROVIDED, AS DESCRIBED IN SECTION 9.3.3.

LOCAL TESTING OF THE VALVE OR THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐



REFERENCE SECTIONS 5.4.7 AND 6.3

CONTAINMENT PENETRATION NO. P-52
DESCRIPTION:
RHR SHUTDOWN LINES
RESIDUAL HEAT REMOVAL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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VALVE NO.	LINE/ VALVE SIZE,IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
ECV0084	6/6	INSIDE	IN	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	OPEN	N/A	CLOSED	N/A
ECV0085	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
ECV0083	6/6	OUTSIDE	IN	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	OPEN	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

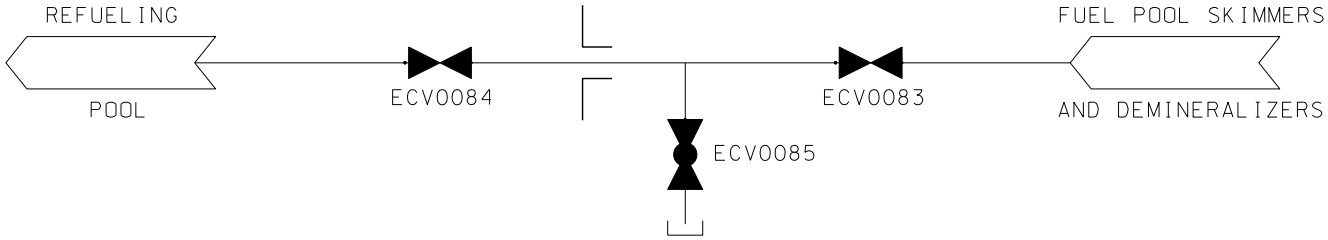
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 3.0 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.1.3

CONTAINMENT PENETRATION NO. P-53
DESCRIPTION: CLEANUP RETURN
FUEL POOL COOLING AND CLEANUP SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

VALVE NO.	LINE/ VALVE SIZE,IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
ECV0087	6/6	INSIDE	OUT	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	OPEN	N/A	CLOSED	N/A
ECV0086	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
ECV0088	6/6	OUTSIDE	OUT	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	OPEN	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

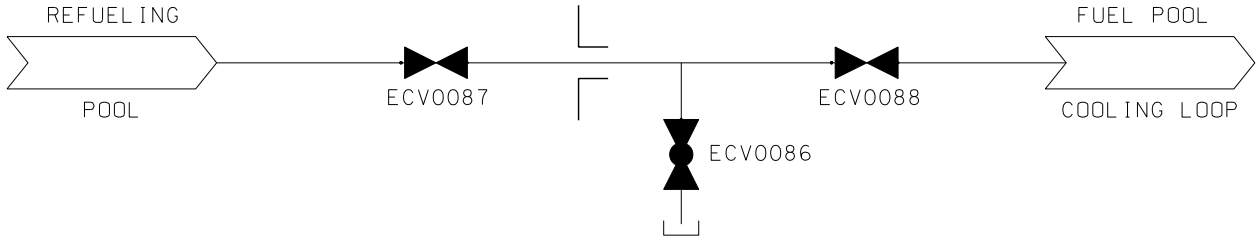
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 3.0 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.1.3

CONTAINMENT PENETRATION NO. P-54
DESCRIPTION: REFUELING POOL CLEANUP LINE
FUEL POOL COOLING AND CLEANUP SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒

NONE ☐

VALVE NO.	LINE/ VALVE SIZE,IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
ECV0095	3/3	INSIDE	OUT	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	OPEN	N/A	CLOSED	N/A
ECV0094	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
ECV0096	3/3	OUTSIDE	OUT	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	OPEN	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

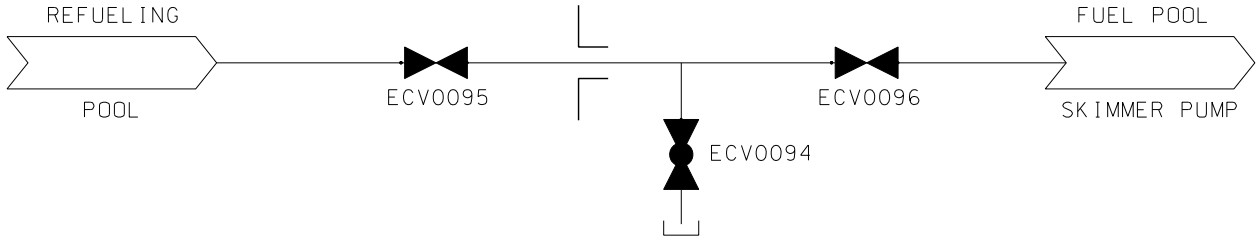
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 2.8 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.1.3

CONTAINMENT PENETRATION NO. P-55
DESCRIPTION: REFUELING POOL SKIMMER LINES FUEL POOL COOLING AND CLEANUP SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒

NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
GSHV0009	1/1	INSIDE	IN	GATE	SOLENOID	4	CIS-A	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
GSHV0008	1/1	OUTSIDE	IN	GATE	SOLENOID	4	CIS-A	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
GSV0032	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
GSHV0038	1/1	OUTSIDE	IN	GATE	SOLENOID	1	CIS-A	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
GSHV0039	1/1	INSIDE	IN	GATE	SOLENOID	4	CIS-A	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
GSV0058	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: AIR

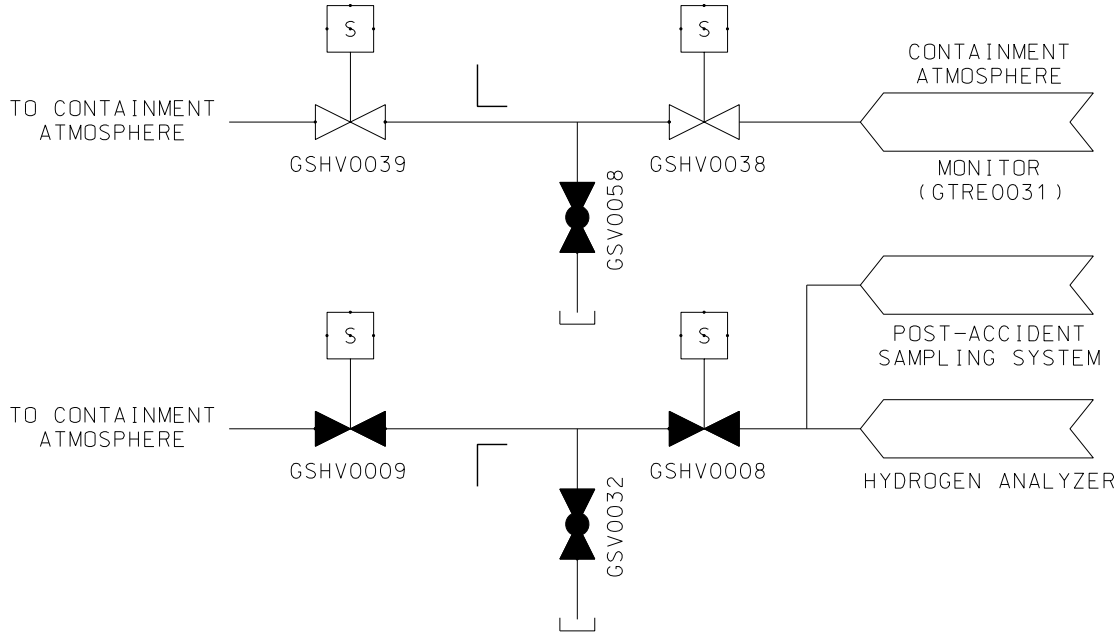
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 3.2 FT

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

THIS PENETRATION IS ASSOCIATED WITH THE CONTAINMENT HYDROGEN CONTROL SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA.
ALTHOUGH THE SOLENOID-OPERATED CONTAINMENT ISOLATION VALVES FOR THE HYDROGEN MONITORING SYSTEM SAMPLING LINES ARE DESIGNED TO AUTOMATICALLY CLOSE IN RESPONSE TO A CIS-A SIGNAL, THEY ARE NORMALLY CLOSED AND DEACTIVATED TO PROVIDE A PASSIVE BARRIER TO THE RELEASEOF CONTAINMENT ATMOSPHERE VIA THE ASSOCIATED CONTAINMENT PENETRATIONS. THE VALVES ARE OPEN ONLY UNDER ADMINISTRATIVE CONTROL. IN ADDITION, AND ALTHOUGH NOT EXPLICITLY CREDITED AS A CONTAINMENT BARRIER, THE SAMPLING SYSTEM (DOWN STREAM OF THE CONTAINMENT ISOLATION VALVES) IS A CLOSED SYSTEM OUTSIDE THE CONTAINMENT AND IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

REFERENCE SECTION 6.2.5

CONTAINMENT PENETRATION NO. P-56
DESCRIPTION:
H_2 SAMPLE RETURN
CONTAINMENT HYDROGEN CONTROL SYSTEM

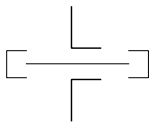
VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY

ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	AIR
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	NA
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

THE END OF THE LINE IS SEALED USING WELDED PIPE CAPS.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 18.2.3

CONTAINMENT PENETRATION NO. P-57
DESCRIPTION:
SPARE

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EMV0006	1/1	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0182	3/4 /3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0123	3/4 /3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMHV8888	1/1	OUTSIDE	IN	GLOBE	AIR	4	CIS-A	NONE	NOTE 1	CLOSED	CLOSED	CLOSED	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

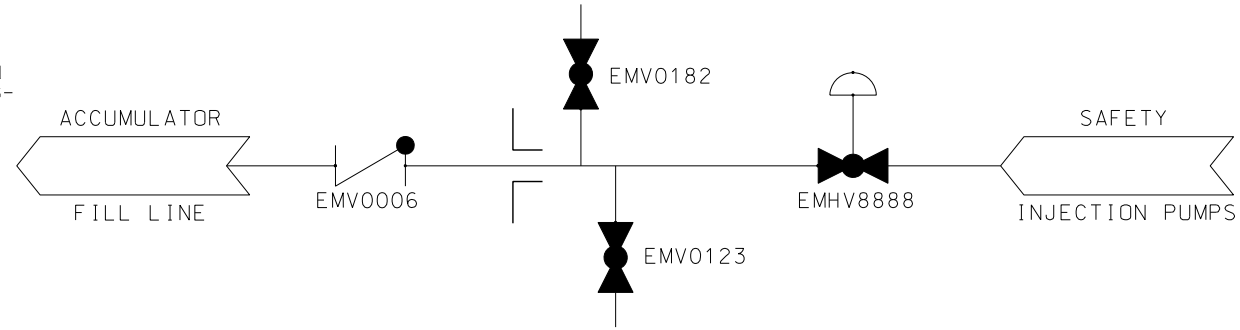
FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 7.6 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒

NONE ☐

REFERENCE SECTION 6.3

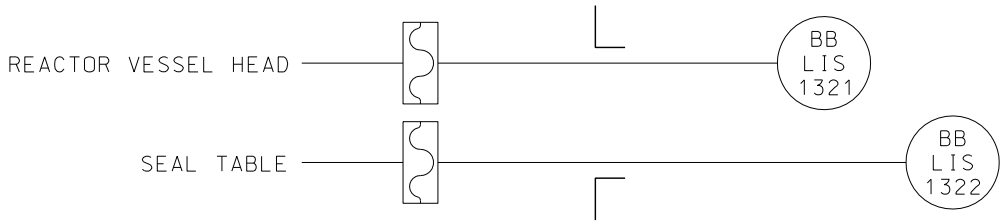
CONTAINMENT PENETRATION NO. P-58
DESCRIPTION: ACCUMULATOR FILL LINE
HIGH PRESSURE COOLANT INJECTION SYSTEM

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
NONE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	N/A
APPLICABLE GDC NO.	55

GENERAL COMMENTS:

HYDRAULIC SENSORS PROVIDE ISOLATION OF RCS FROM THE CAPILLARY TUBING. THE CAPILLARY TUBING AND THE LIS'S SERVE AS THE SECOND BOUNDARY. THIS ARRANGEMENT IS SIMILAR TO THAT PROVIDED FOR THE CONTAINMENT PRESSURE TRANSMITTERS SHOWN ON SHEETS 80, 81, AND 84 OF 84.



NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

REFERENCE SECTION 18.2.13.2

CONTAINMENT PENETRATION NO. P-59
DESCRIPTION:
RVLIS SAMPLE LINE
REACTOR COOLANT SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐

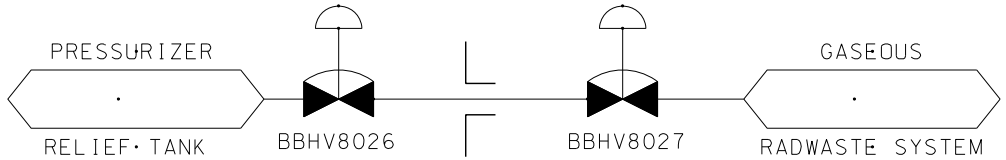
VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
BBHV8026	1/1	INSIDE	BOTH	DIAPHRAGM	AIR	1	CIS-A	NONE	10	CLOSED	OPEN	CLOSED	CLOSED	N/A
BBHV8027	1/1	OUTSIDE	BOTH	DIAPHRAGM	AIR	4	CIS-A	NONE	10	CLOSED	OPEN	CLOSED	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	GAS
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	8.2 FT.
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 5.4

CONTAINMENT PENETRATION NO. P-62
DESCRIPTION:
PRESSURIZER PURGE AND VENT LINE
REACTOR COOLANT SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

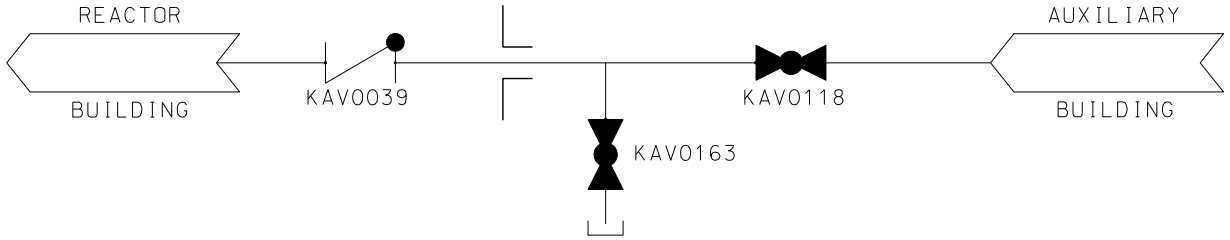
VALVE NO.	LINE/ VALVE SIZE,IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
KAV0118	4/4	OUTSIDE	IN	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
KAV0163	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
KAV0039	4/4	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	AIR
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	4.1 FT.
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.3.1

CONTAINMENT PENETRATION NO. P-63
DESCRIPTION: SERVICE AIR
COMPRESSED AIR SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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REV. 11 3/08

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒

NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
SJHV0128	1/1	INSIDE	OUT	GLOBE	SOLENOID	1	CIS-A	NONE	5	CLOSED	OPEN	CLOSED	CLOSED	N/A
SJHV0129	1/1	OUTSIDE	OUT	GLOBE	SOLENOID	4	CIS-A	NONE	5	CLOSED	OPEN	CLOSED	CLOSED	N/A
SJHV0130	1/1	OUTSIDE	OUT	GLOBE	SOLENOID	1	CIS-A	NONE	5	CLOSED	CLOSED	CLOSED	CLOSED	N/A
SJV0106	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

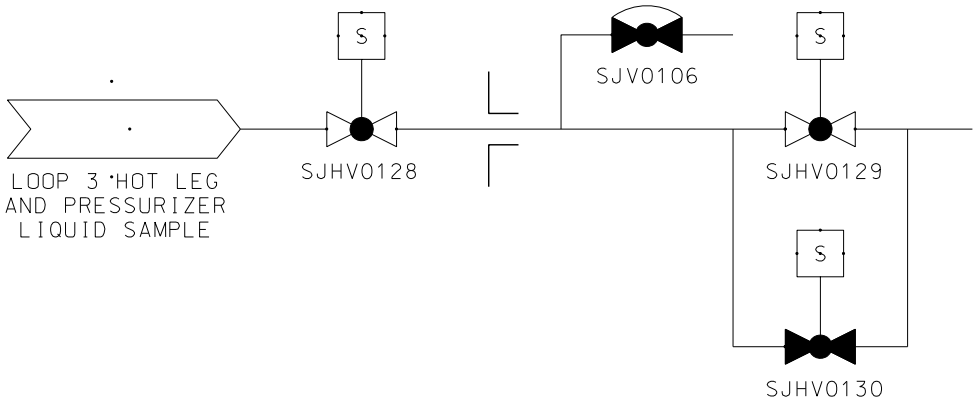
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 10.6 FT.

APPLICABLE GDC NO. 55

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 18.2.3

CONTAINMENT PENETRATION NO. P-64
DESCRIPTION:
SAMPLE LINE
NUCLEAR SAMPLING SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
GSHV0020	6/6	INSIDE	OUT	BUTTERFLY	MOTOR	1	CIS-A	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
GSHV0021	6/6	OUTSIDE	OUT	BUTTERFLY	MOTOR	4	CIS-A	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
GSV0041	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: AIR

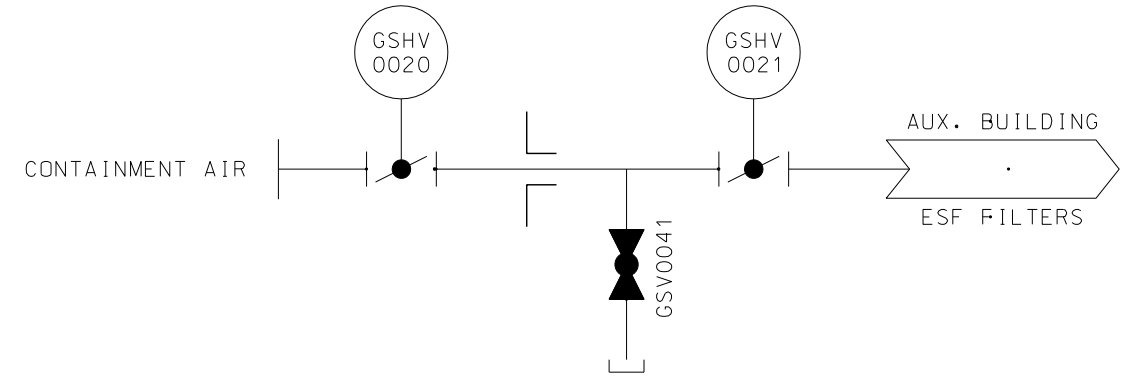
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 1.0 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 6.2.5

CONTAINMENT PENETRATION NO. P-65
DESCRIPTION:
CONTAINMENT H_2 PURGE
CONTAINMENT HYDROGEN CONTROL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒

NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
ENHV0012	10/10	OUTSIDE	IN	GATE	MOTOR	4	CSAS	REM/MAN	15	CLOSED	CLOSED	AS IS	OPEN	CLOSED
ENV0080	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
ENV0017	10/10	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	OPEN	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 16.6 FT

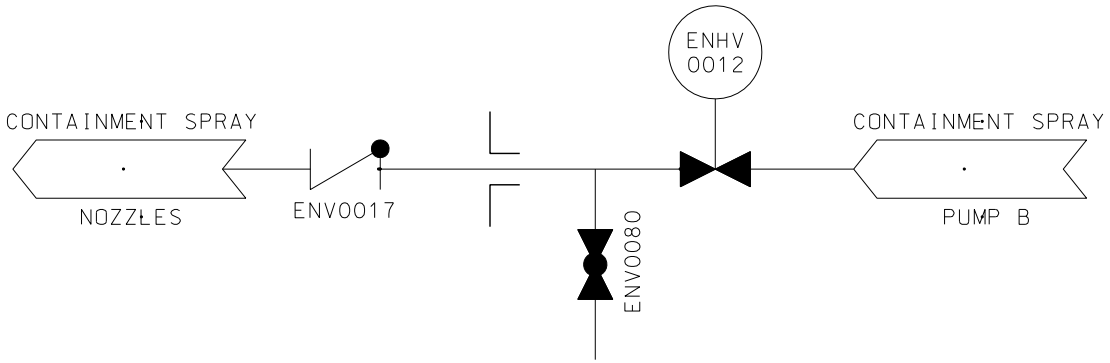
APPLICABLE GDC NO. 56

GENERAL COMMENTS:

THIS PENETRATION IS ASSOCIATED WITH THE CONTAINMENT SPRAY SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSE-QUENCES OF A LOCA. A CHECK VALVE IS PROVIDED INSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VAALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED SINCE THE SYSTEM IS CLOSED OUTSIDE THE CONTAINMENT AND IS DESIGNED AND CONSTRUCTED COMMEN-SURATE WITH THE DESIGN AND CONSTRUC-TION OF THE CONTAINMENT. LEAKAGE DETECTION FROM THIS LINE OUTSIDE THE CONTAINMENT IS PROVIDED, AS DESCRIBED IN SECTION 9.3.3.

LOCAL TESTING OF THE VALVES OR THE CLOSED SYSTEM OUTSIDE THE CONTAIN-MENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐

REFERENCE SECTION 6.2.2

CONTAINMENT PENETRATION NO. P-66
DESCRIPTION:
CONTAINMENT SPRAY
CONTAINMENT SPRAY SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
KCHV0253	4/4	OUTSIDE	IN	GATE	MOTOR	1	CIS-A	NONE	30	CLOSED	CLOSED	AS IS	CLOSED	N/A
KCV0478	4/4	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
KCV0431	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

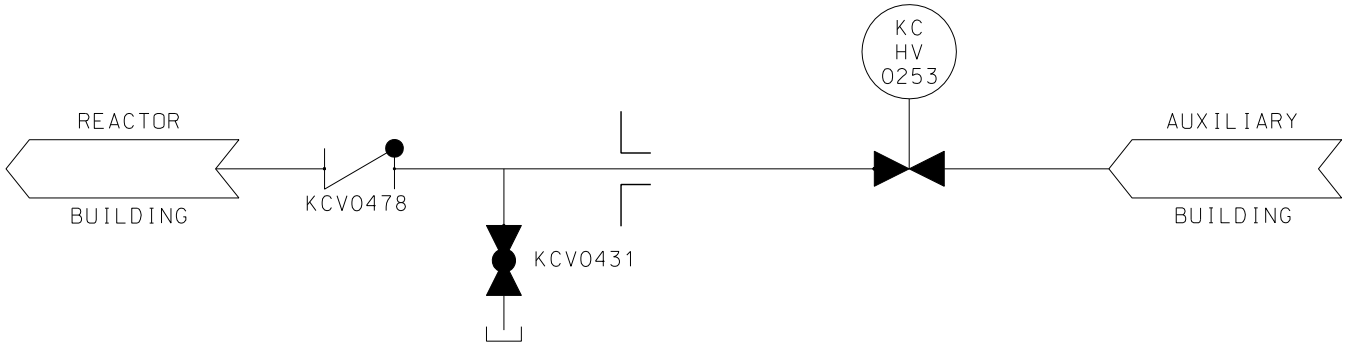
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 12.4 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.5.1

CONTAINMENT PENETRATION NO. P-67
DESCRIPTION: CONTAINMENT FIRE PROTECTION
FIRE PROTECTION SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
GPV0050	3/4 / 3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☒ NO ☐
FLUID CONTAINED:	AIR
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	N/A
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

FLANGES ARE REMOVED ONLY DURING MAINTENANCE OPERATIONS IN MODE 5 OR 6 AND CORE ALTERATIONS WITH SPECIAL FLANGES AS REQUIRED WHEN AN AIRTIGHT CONDITION IS NECESSARY.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☐
B ☒
C ☐
NONE ☐

REFERENCE SECTION 6.2.6

CONTAINMENT PENETRATION NO. P-68
DESCRIPTION: MAINTENANCE SPARE AIR AND CABLE ACCESS PENETRATIONS CONTAINMENT ILRT SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
SJHV0012	1/1	INSIDE	OUT	GLOBE	SOLENOID	4	CIS-A	NONE	5	CLOSED	CLOSED	CLOSED	CLOSED	N/A
SJHV0013	1/1	OUTSIDE	OUT	GLOBE	SOLENOID	1	CIS-A	NONE	5	CLOSED	CLOSED	CLOSED	CLOSED	N/A
SJV0071	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: STEAM

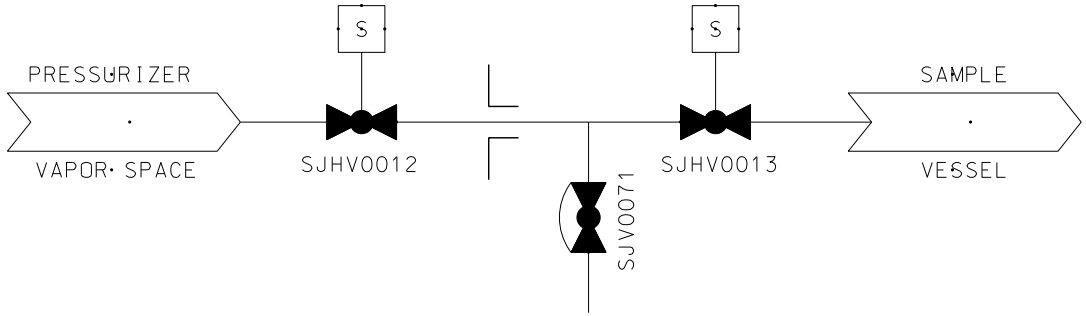
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 10.7 FT.

APPLICABLE GDC NO. 55

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.3.2

CONTAINMENT PENETRATION NO. P-69
DESCRIPTION:
PRESSURIZER VAPOR SAMPLE LINE
NUCLEAR SAMPLING SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EFHV0031	14/14	OUTSIDE	IN	BUTTERFLY	MOTOR	1	SIS	REM/MAN	40	OPEN	OPEN	AS IS	OPEN	CLOSED
EFHV0033	14/14	INSIDE	IN	BUTTERFLY	MOTOR	1	SIS	REM/MAN	40	OPEN	OPEN	AS IS	OPEN	CLOSED
EFV0276	1/1	INSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 11.4 FT.

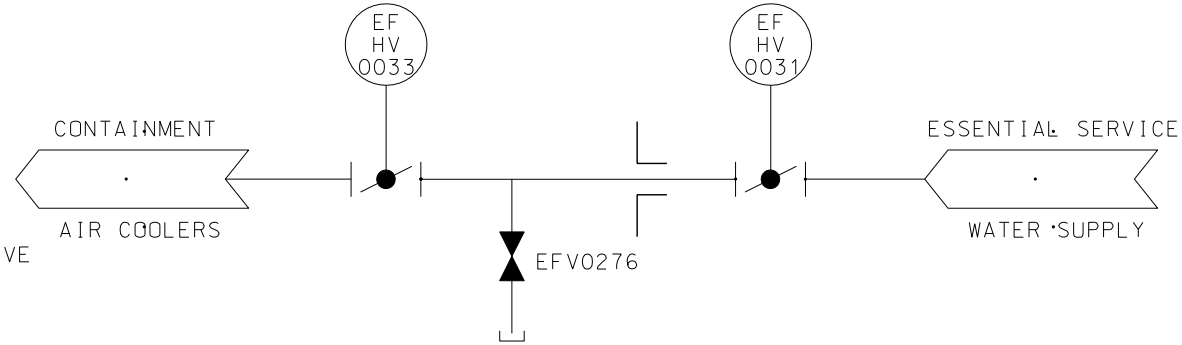
APPLICABLE GDC NO. 56

GENERAL COMMENTS:

THIS PENETRATION IS ASSOCIATED WITH THE ESSENTIAL SERVICE WATER SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A REMOTE-MANUAL POWER-OPERATED VALVE IS LOCATED INSIDE, AND A REMOTE-MANUAL POWER-OPERATED VALVE IS LOCATED OUTSIDE THE CONTAINMENT.

THESE VALVES ARE POWERED FROM THE SAME POWER SOURCE FOR GREATER SYSTEM RELIABILITY. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMODATED SINCE THE SYSTEM IS A CLOSED SYSTEM INSIDE THE CONTAINMENT, WHICH IS DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH ASME SECTION III, CLASS 3 REQUIREMENTS. THE ESSENTIAL SERVICE WATER LINES ARE NOT VENTED OR DRAINED DURING A TYPE A TEST SINCE THE AIR COOLERS MAY BE REQUIRED TO COOL THE CONTAINMENT. A TYPE C TEST IS PERFORMED.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

REFERENCE SECTION 9.2.1.2

CONTAINMENT PENETRATION NO. P-71
DESCRIPTION:
ESW TO CONTAINMENT AIR COOLER
ESSENTIAL SERVICE WATER SYSTEM

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EFHV0045	14/14	INSIDE	OUT	BUTTERFLY	MOTOR	1	SIS	REM/MAN	40	OPEN	OPEN	AS IS	OPEN	CLOSED
EFV0277	1/1	INSIDE	N/A	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EFHV0047	10/10	OUTSIDE	OUT	BUTTERFLY	MOTOR	1	NONE	REM/MAN	30	OPEN	OPEN	AS IS	OPEN	CLOSED
EFHV0049	14/14	OUTSIDE	OUT	BUTTERFLY	MOTOR	1	SIS	REM/MAN	30	CLOSED	CLOSED	AS IS	OPEN	CLOSED

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 13.3 FT

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

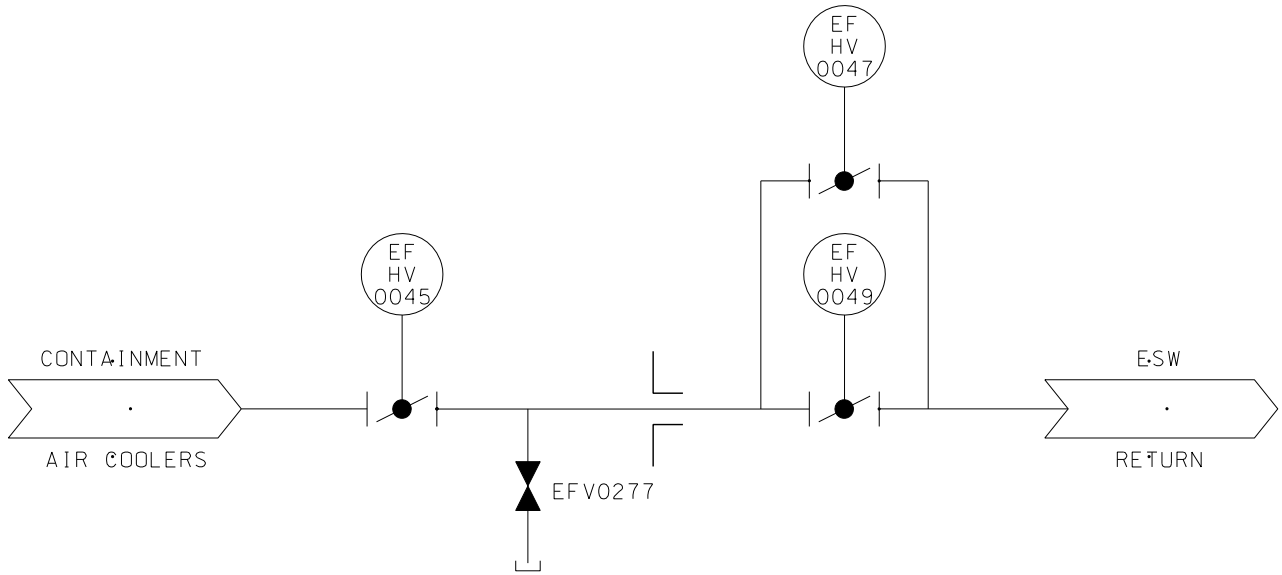
THIS PENETRATION IS ASSOCIATED WITH THE ESSENTIAL SERVICE WATER SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A REMOTE-MANUAL POWER-OPERATED VALVE IS LOCATED INSIDE, AND A REMOTE-MANUAL POWER-OPERATED VALVE IS LOCATED OUTSIDE THE CONTAINMENT. THE SECOND ISOLATION VALVE OUTSIDE THE CONTAINMENT IS OPENED IN THE EVENT OF A DBA FOR SYSTEM SAFETY FUNCTIONS.

THESE VALVES ARE POWERED FROM THE SAME POWER SOURCE FOR GREATER SYSTEM RELIABILITY. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMODATED SINCE THE SYSTEM IS A CLOSED SYSTEM INSIDE THE CONTAINMENT, WHICH IS DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH ASME SECTION III, CLASS 3 REQUIREMENTS. THE ESSENTIAL SERVICE WATER LINES ARE NOT VENTED OR DRAINED DURING A TYPE A TEST SINCE THE AIR COOLERS MAY BE REQUIRED TO COOL THE CONTAINMENT. A TYPE C TEST IS PERFORMED.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐



REFERENCE SECTION 9.2.1.2

CONTAINMENT PENETRATION NO. P-73
DESCRIPTION:
ESW FROM CONTAINMENT AIR COOLERS
ESSENTIAL SERVICE WATER SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

REV. 11 3/08

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EGHV0058	12/12	OUTSIDE	IN	GATE	MOTOR	1	CIS-B	NONE	30	OPEN	OPEN	AS IS	CLOSED	N/A
EGV0090	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EGV0204	12/12	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	OPEN	OPEN	N/A	CLOSED	N/A
EGHV0127	12/12	OUTSIDE	IN	GATE	MOTOR	4	NONE	NONE	60	CLOSED	CLOSED	AS IS	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

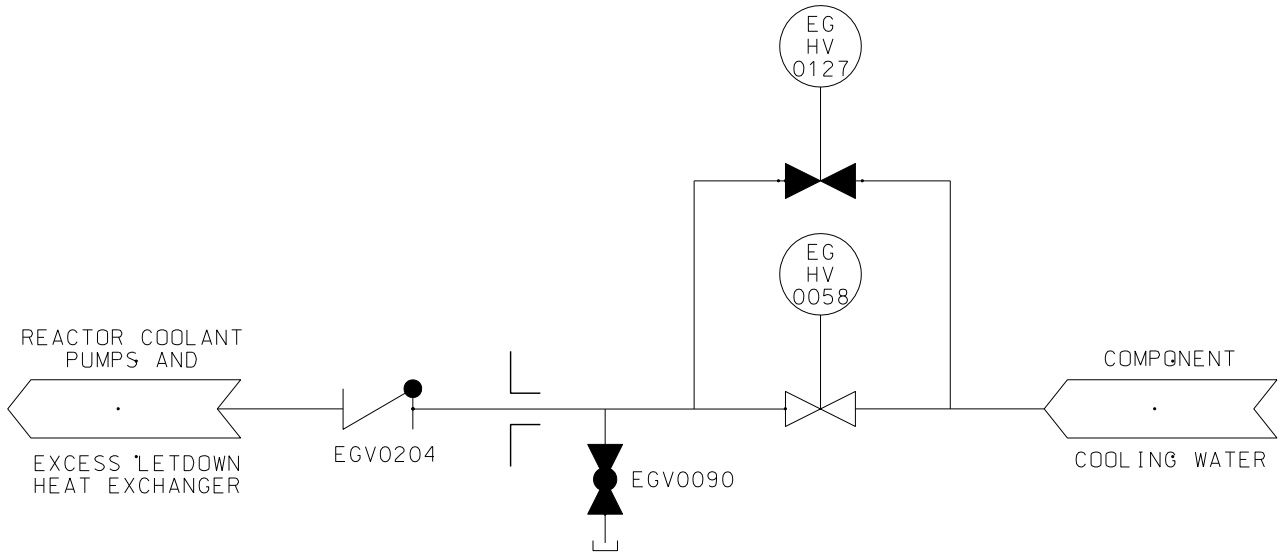
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 14.0 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

ISOLATION SWITCH PROVIDED IN THE CONTROL ROOM FOR POWER LOCKOUT OF VALVE EGHV0127

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

REFERENCE SECTION 9.2.2

CONTAINMENT PENETRATION NO. P-74
DESCRIPTION:
CCW TO REACTOR COOLANT PUMPS
COMPONENT COOLING WATER SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

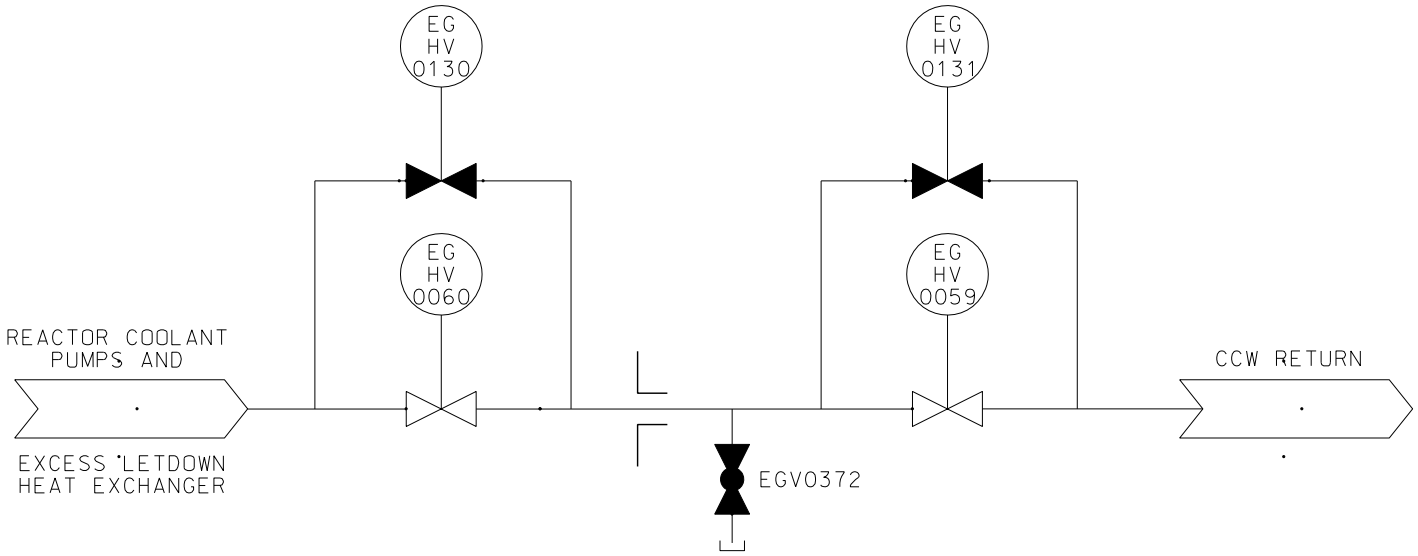
REV. 16 8/16

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EGHV0060	12/12	INSIDE	OUT	GATE	MOTOR	4	CIS-B	NONE	30	OPEN	OPEN	AS IS	CLOSED	N/A
EGV0372	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	NONE	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EGHV0059	12/12	OUTSIDE	OUT	GATE	MOTOR	1	CIS-B	NONE	30	OPEN	OPEN	AS IS	CLOSED	N/A
EGHV0131	12/12	OUTSIDE	OUT	GATE	MOTOR	4	NONE	NONE	60	CLOSED	CLOSED	AS IS	CLOSED	N/A
EGHV0130	12/12	INSIDE	OUT	GATE	MOTOR	1	NONE	NONE	60	CLOSED	CLOSED	AS IS	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	12.9 FT.
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

ISOLATION SWITCH PROVIDED IN THE CONTROL ROOM FOR POWER LOCKOUT OF VALVES EGHV0130 AND EGHV0131.



REFERENCE SECTION 9.2.2

CONTAINMENT PENETRATION NO. P-75
DESCRIPTION:
CCW RETURN
COMPONENT COOLING WATER SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

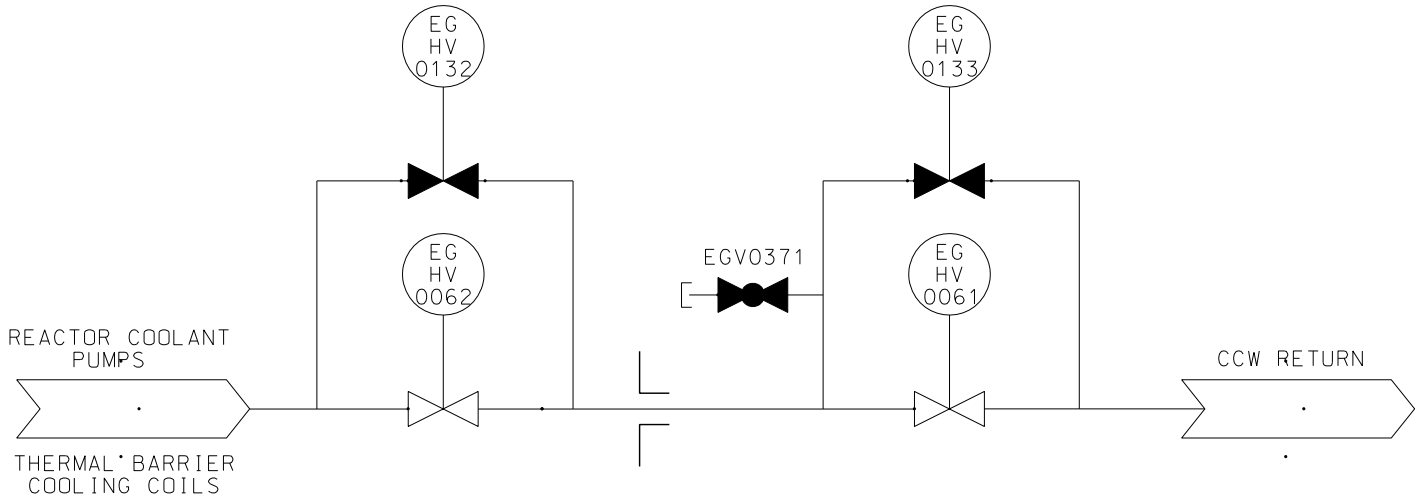
VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EGHV0062	4/4	INSIDE	OUT	GATE	MOTOR	4	CIS-B	NONE	30	OPEN	OPEN	AS IS	CLOSED	N/A
EGV0371	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EGHV0061	4/4	OUTSIDE	OUT	GATE	MOTOR	1	CIS-B	NONE	30	OPEN	OPEN	AS IS	CLOSED	N/A
EGHV0132	4/4	INSIDE	OUT	GATE	MOTOR	1	NONE	NONE	60	CLOSED	CLOSED	AS IS	CLOSED	N/A
EGHV0133	4/4	OUTSIDE	OUT	GATE	MOTOR	4	NONE	NONE	60	CLOSED	CLOSED	AS IS	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	8.8 FT.
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

ISOLATION SWITCH PROVIDED IN THE CONTROL ROOM FOR POWER LOCKOUT OF VALVES EGHV0132 AND EGHV0133.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.2.2

CONTAINMENT PENETRATION NO. P-76
DESCRIPTION:
CCW FROM RCP THERMAL BARRIER COOLING COIL
COMPONENT COOLING WATER SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
BMV0045	3/3	INSIDE	OUT	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BMV0302	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BMV0046	3/3	OUTSIDE	OUT	GATE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

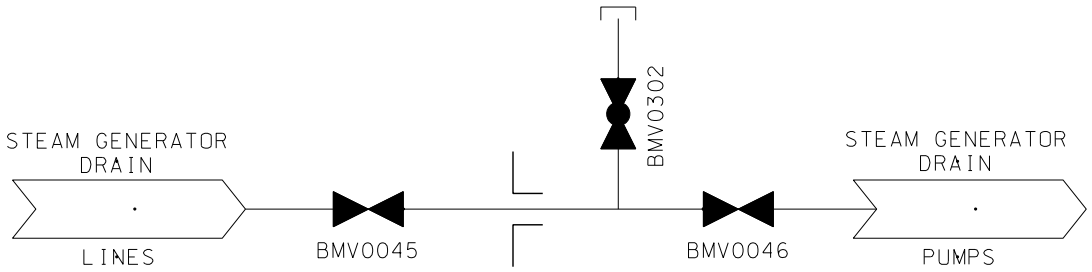
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 8.3 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

ALTHOUGH THE LINE PENETRATING CONTAINMENT VIA P-78 IS CONNECTED TO THE STEAM GENERATORS (AS A COMMON HEADER FOR THE STEAM GENERATOR DRAIN LINES). GDC 56 IS APPLICABLE TO THIS PENETRATION BECAUSE THE PIPING IMMEDIATELY UPSTREAM OF CONTAINMENT ISOLATION VALVE BMV0045 IS NOT ASME CLASS 2 PIPING.

NOTE 1: MAXIMUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 10.4.8

CONTAINMENT PENETRATION NO. P-78
DESCRIPTION:
STEAM GENERATOR DRAIN LINES
STEAM GENERATOR BLOWDOWN SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EJHV8701A	12/12	INSIDE	OUT	GATE	MOTOR	1	REM/MAN	NONE	120	CLOSED	OPEN	AS IS	CLOSED	N/A
EJ8708A	3/3	INSIDE	N/A	RELIEF	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EJV0154	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

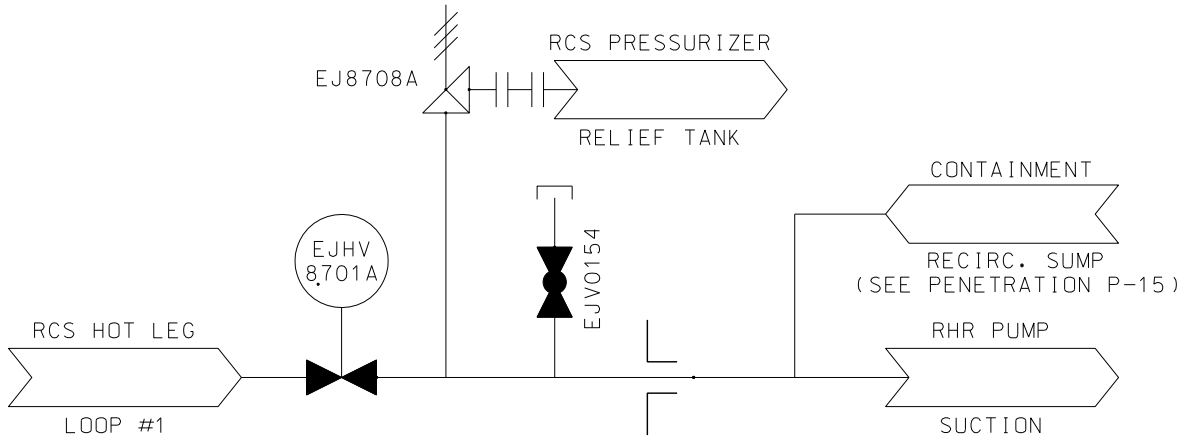
ENGINEERED SAFETY FEATURE SYSTEM	YES ☒ NO ☐
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	N/A
APPLICABLE GDC NO.	55

GENERAL COMMENTS:

THE RESIDUAL HEAT REMOVAL SYSTEM SUCTION LINE FROM THE REACTOR COOLANT SYSTEM CONTAINS TWO NORMALLY CLOSED, POWER-OPERATED REMOTE MANUAL VALVES IN SERIES INSIDE THE CONTAINMENT (I.E., EJHV8701A AND EJ8708A). THESE VALVES ARE INTERLOCKED TO PREVENT THEM FROM BEING INADVERTENTLY OPENED. CONTAINMENT ISOLATION IS ASSURED BY SYSTEM ISOLATION VALVES CLOSEST TO THE CONTAINMENT (I.E., EJHV8701A AND EJ8708) IN CONJUNCTION WITH THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT, WHICH IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT. LEAKAGE DETECTION FROM THIS LINE OUTSIDE THE CONTAINMENT IS PROVIDED, AS DESCRIBED IN SECTION 9.3.3.

LOCAL TESTING OF THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐

REFERENCE SECTIONS 5.4.7 AND 6.3

CONTAINMENT PENETRATION NO. P-79
DESCRIPTION:
RHR SHUTDOWN LINES
RESIDUAL HEAT REMOVAL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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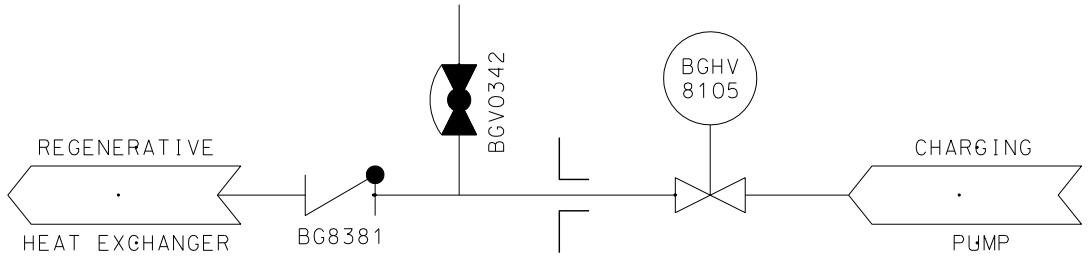
VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
BGHV8105	3/3	OUTSIDE	IN	GATE	MOTOR	4	SIS	NONE	15	OPEN	OPEN	AS IS	CLOSED	N/A
BGV0342	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
BG8381	3/3	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	OPEN	OPEN	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	17.6 FT.
APPLICABLE GDC NO.	55

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒

NONE ☐

REFERENCE SECTION 9.3.4

CONTAINMENT PENETRATION NO. P-80
DESCRIPTION:
CHARGING LINE
CHEMICAL AND VOLUME CONTROL SYSTEM

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EJHV8809A	10/10	OUTSIDE	IN	GATE	MOTOR	1	NONE	REM/MAN	15	OPEN	OPEN	AS IS	OPEN	CLOSED
EJV0054	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EP8818A	6/6	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	OPEN	N/A	OPEN	CLOSED
EP8818B	6/6	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	OPEN	N/A	OPEN	CLOSED
EJHCV8890A	3/4 /3/4	INSIDE	OUT	GLOBE	AIR	1	CIS-A	NONE	13	CLOSED	CLOSED	CLOSED	CLOSED	N/A
EJV0134	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EJV0136	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EJV0132	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☒ NO ☐
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	18.7 FT
APPLICABLE GDC NO.	55

GENERAL COMMENTS:

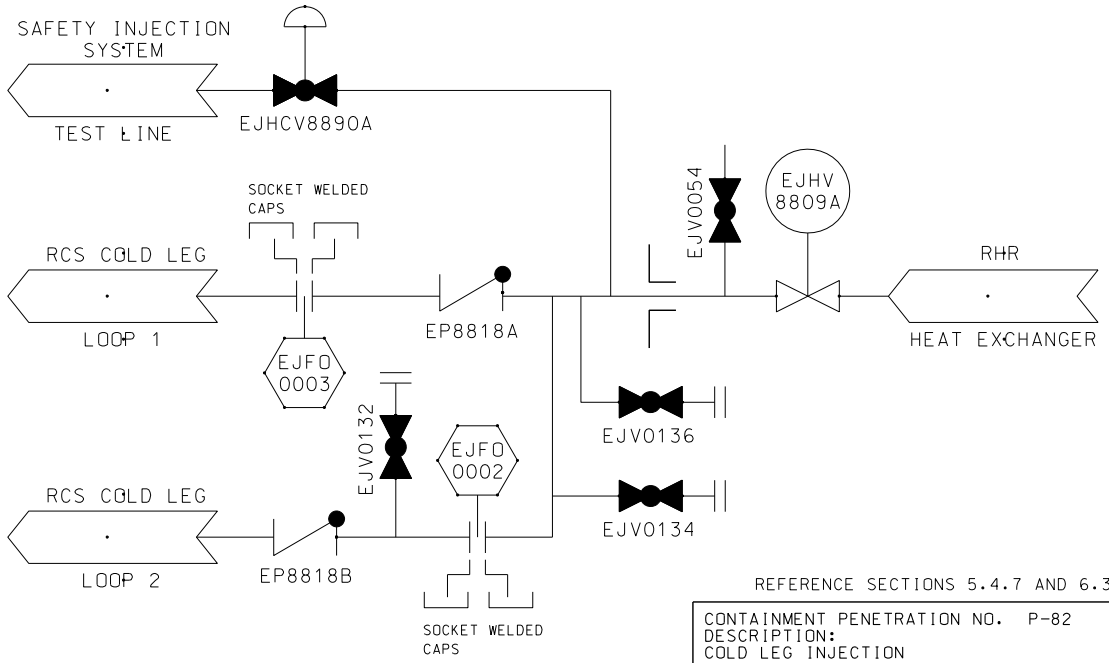
THIS PENETRATION IS ASSOCIATED WITH THE HIGH PRESSURE COOLANT INJECTION SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE IS PROVIDED FOR EACH BRANCH LINE INSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED SINCE THE SYSTEM IS CLOSED OUTSIDE THE CONTAINMENT AND IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT. LEAKAGE DETECTION FROM THIS LINE OUTSIDE THE CONTAINMENT IS PROVIDED, AS DESCRIBED IN SECTION 9.3.3.

LOCAL TESTING OF THE VALVES OR THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED.

NOTE 1: MAXIMUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐



REFERENCE SECTIONS 5.4.7 AND 6.3

CONTAINMENT PENETRATION NO. P-82
DESCRIPTION:
COLD LEG INJECTION
RESIDUAL HEAT REMOVAL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
BMHV0022	3/8 , 3/4 /1	INSIDE	OUT	GLOBE	SOLENOID	4	SGBSIS(AFAS)	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
BMHV0038	3/8 , 3/4 /1	INSIDE	OUT	GLOBE	SOLENOID	4	SGBSIS(AFAS)	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
BMHV0068	3/4 , 1/1	OUTSIDE	OUT	GLOBE	SOLENOID	1	SGBSIS(AFAS)	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
BMV0539	3/4 /3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

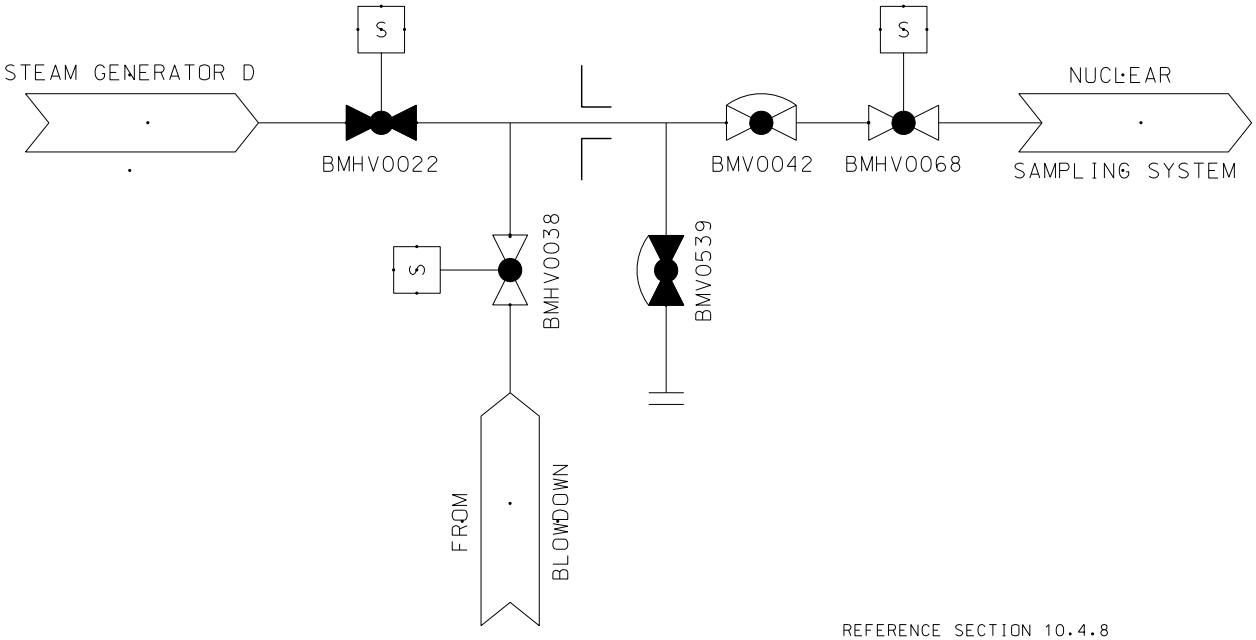
ENGINEERED SAFETY FEATURE SYSTEM	YES ☒ NO ☐
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	15.6 FT
APPLICABLE GDC NO.	NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMET ISOLATION VALVES.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL. DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐

REFERENCE SECTION 10.4.8

CONTAINMENT PENETRATION NO. P-83
DESCRIPTION:
STEAM GENERATOR D SAMPLE LINE
STEAM GENERATOR BLOWDOWN SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

REV. 12 8/16

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
BMHV0019	3/8 ,3/4 /1	INSIDE	OUT	GLOBE	SOLENOID	4	SGBSIS(AFAS)	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
BMHV0035	3/8 ,3/4 /1	INSIDE	OUT	GLOBE	SOLENOID	4	SGBSIS(AFAS)	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
BMHV0065	3/4 , 1/1	OUTSIDE	OUT	GLOBE	SOLENOID	1	SGBSIS(AFAS)	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
BMV0535	3/4 /3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

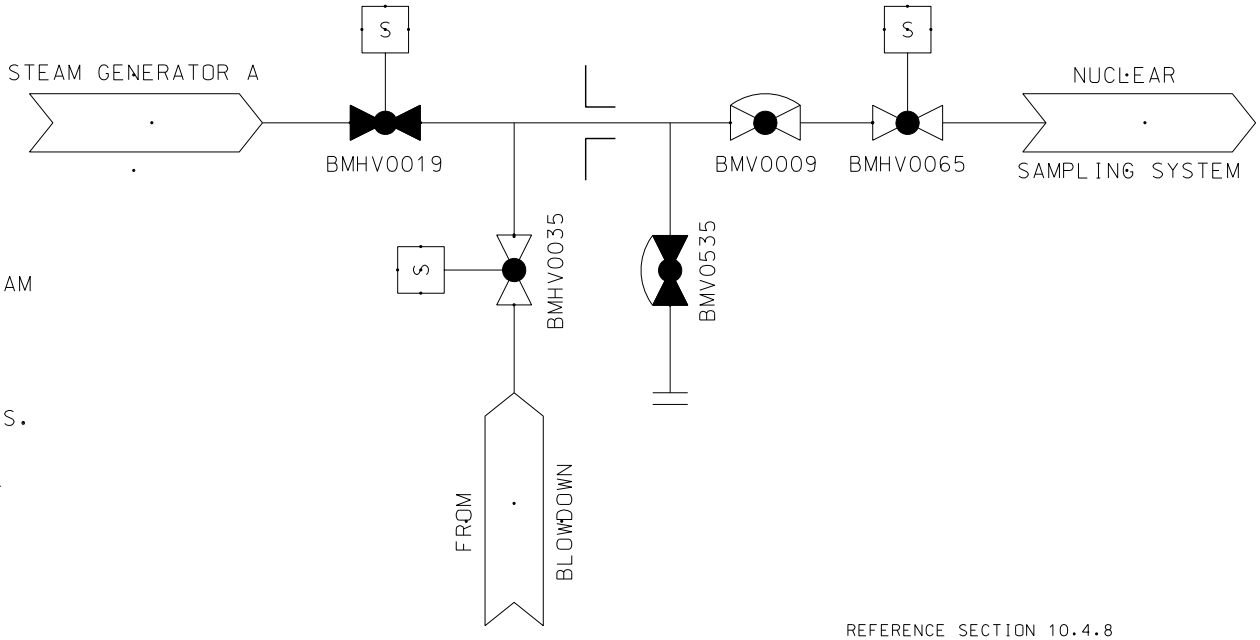
ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐
FLUID CONTAINED: WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 15.9 FT
APPLICABLE GDC NO. NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 10.4.8

CONTAINMENT PENETRATION NO. P-84 DESCRIPTION: STEAM GENERATOR A SAMPLE LINE STEAM GENERATOR BLOWDOWN SYSTEM
CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 66 OF 84 REV. 12 8/16

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
BMHV0020	3/8 , 3/4 /1	INSIDE	OUT	GLOBE	SOLENOID	4	SGBSIS(AFAS)	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
BMHV0036	3/8 , 3/4 /1	INSIDE	OUT	GLOBE	SOLENOID	4	SGBSIS(AFAS)	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
BMHV0066	3/4 , 1/1	OUTSIDE	OUT	GLOBE	SOLENOID	1	SGBSIS(AFAS)	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
BMV0542	3/4 /3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

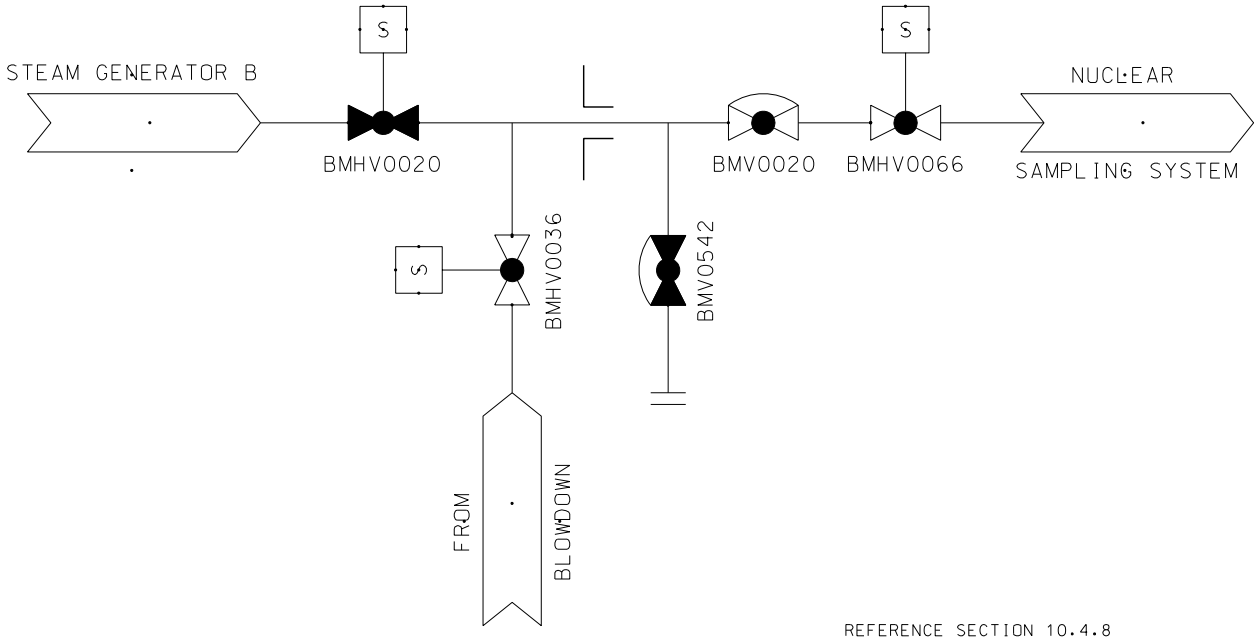
ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐
FLUID CONTAINED: WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 15.9 FT
APPLICABLE GDC NO. NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 10.4.8

CONTAINMENT PENETRATION NO. P-85 DESCRIPTION: STEAM GENERATOR B SAMPLE LINE STEAM GENERATOR BLOWDOWN SYSTEM
CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 67 OF 84 REV. 12 8/16

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT PRIMARY	POST ACCIDENT SECONDARY
BMHV0021	3/8 , 3/4 /1	INSIDE	OUT	GLOBE	SOLENOID	4	SGBSIS(AFAS)	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
BMHV0037	3/8 , 3/4 /1	INSIDE	OUT	GLOBE	SOLENOID	4	SGBSIS(AFAS)	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
BMHV0067	3/4 , 1/1	OUTSIDE	OUT	GLOBE	SOLENOID	1	SGBSIS(AFAS)	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
BMV0537	3/4 /3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

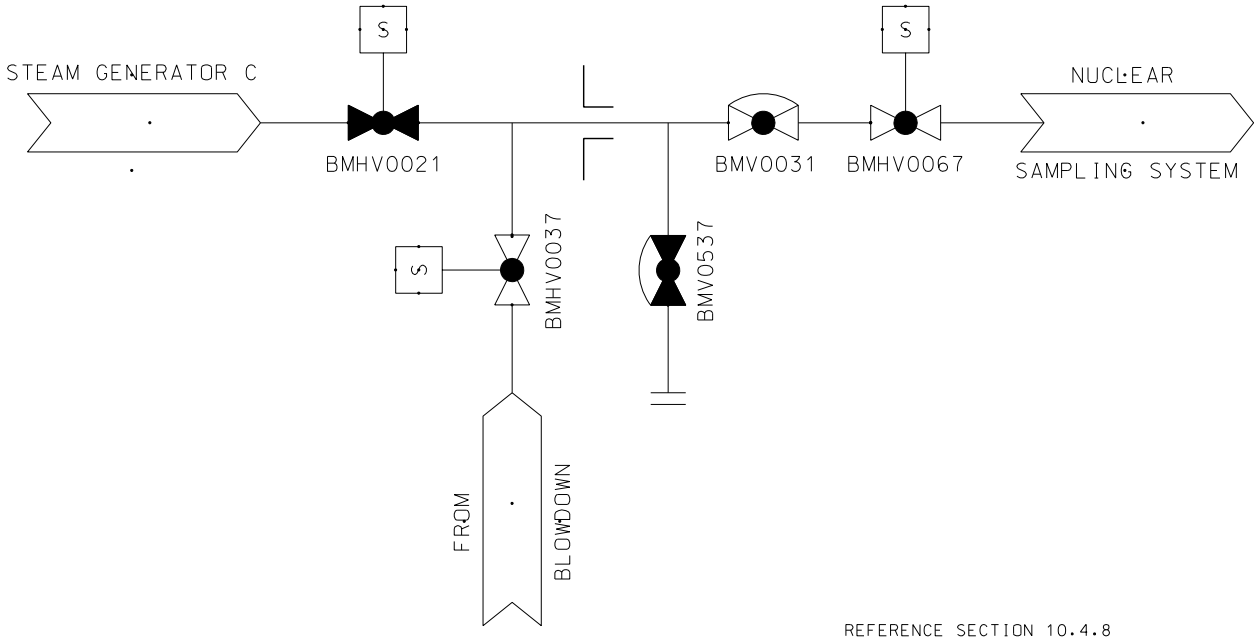
ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐
FLUID CONTAINED: WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 15.9 FT
APPLICABLE GDC NO. NONE

GENERAL COMMENTS:

THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING FROM THE STEAM GENERATOR SHELLS.

THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 10.4.8

CONTAINMENT PENETRATION NO. P-86 DESCRIPTION: STEAM GENERATOR C SAMPLE LINE STEAM GENERATOR BLOWDOWN SYSTEM
CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 68 OF 84 REV. 12 8/16

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EMHV8802A	4/4	OUTSIDE	IN	GATE	MOTOR	1	NONE	REM/MAN	10	CLOSED	CLOSED	AS IS	CLOSED	OPEN
EMHV8881	3/4 /3/4	INSIDE	OUT	GLOBE	AIR	1	CIS-A	NONE	10	CLOSED	CLOSED	CLOSED	CLOSED	N/A
EMV0001	2/2	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	OPEN
EMV0002	2/2	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	OPEN
EMV0052	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0053	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0055	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0056	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0184	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0185	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0051	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0186	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMV0187	1/1	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 12.1 FT

APPLICABLE GDC NO. 55

GENERAL COMMENTS:

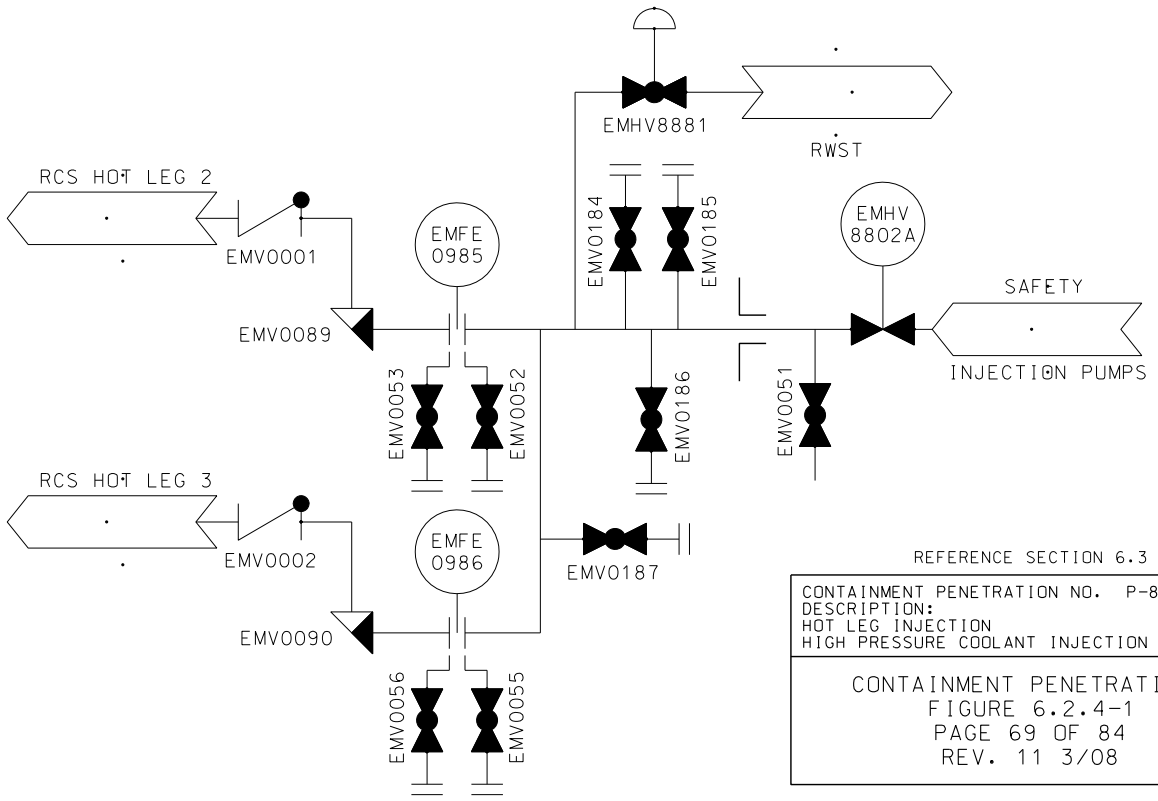
THIS PENETRATION IS ASSOCIATED WITH THE HIGH PRESSURE COOLANT INJECTION SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE IS PROVIDED FOR EACH BRANCH LINE INSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED SINCE THE SYSTEM IS CLOSED OUTSIDE THE CONTAINMENT AND IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT. LEAKAGE DETECTION FROM THIS LINE OUTSIDE THE CONTAINMENT IS PROVIDED, AS DESCRIBED IN SECTION 9.3.3.

LOCAL TESTING OF THE VALVES OR THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐



REFERENCE SECTION 6.3

CONTAINMENT PENETRATION NO. P-87
DESCRIPTION:
HOT LEG INJECTION
HIGH PRESSURE COOLANT INJECTION SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EMHV8801A	4/4	OUTSIDE	IN	GATE	MOTOR	1	SIS	NONE	15	CLOSED	CLOSED	AS IS	OPEN	N/A
EMHV8801B	4/4	OUTSIDE	IN	GATE	MOTOR	4	SIS	NONE	15	CLOSED	CLOSED	AS IS	OPEN	N/A
EMV0077	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMHV8843	3/4 / 3/4	INSIDE	IN	GLOBE	AIR	4	CIS-A	NONE	10	CLOSED	CLOSED	CLOSED	CLOSED	N/A
EM8815	3/3	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	OPEN	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☒ NO ☐
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	N/A
APPLICABLE GDC NO.	55

GENERAL COMMENTS:

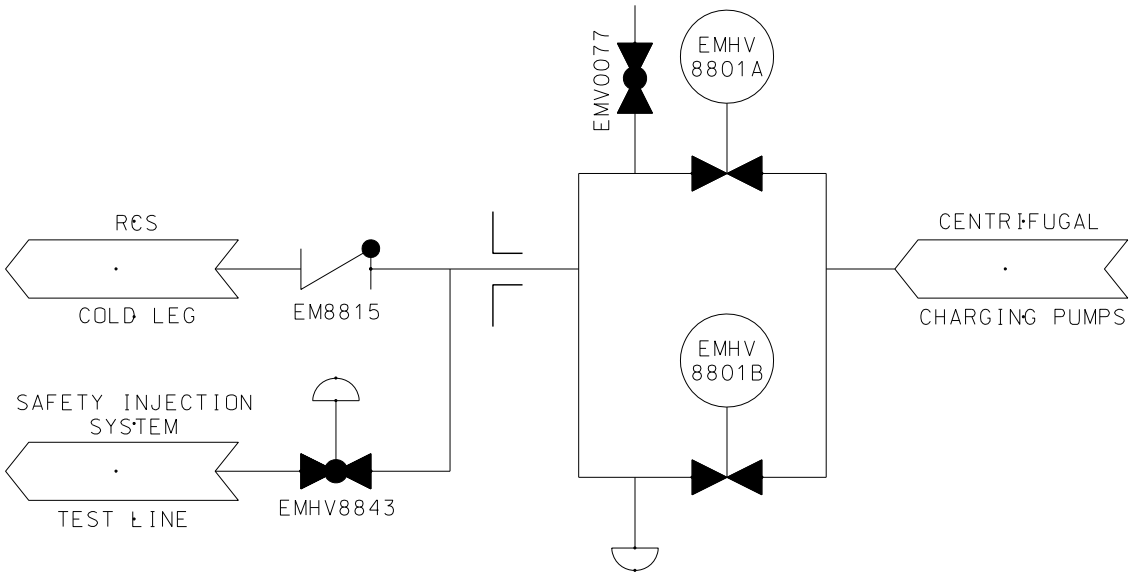
THIS PENETRATION IS ASSOCIATED WITH THE HIGH PRESSURE COOLANT INJECTION SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE AND A REMOTE-MANUAL ISOLATION VALVE ARE PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED SINCE THE SYSTEM IS CLOSED OUTSIDE THE CONTAINMENT AND IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT. LEAKAGE DETECTION FROM THIS LINE OUTSIDE THE CONTAINMENT IS PROVIDED, AS DESCRIBED IN SECTION 9.3.3.

LOCAL TESTING OF THE VALVES OR THE CLOSED SYSTEM OUTSIDE THE CONTAINMENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐



REFERENCE SECTION 6.3

CONTAINMENT PENETRATION NO. P-88
DESCRIPTION:
BORON INJECTION TO COLD LEGS
HIGH PRESSURE COOLANT INJECTION SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
ENHV0006	10/10	OUTSIDE	IN	GATE	MOTOR	1	CSAS	REM/MAN	15	CLOSED	CLOSED	AS IS	OPEN	CLOSED
ENV0076	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
ENV0013	10/10	INSIDE	IN	CHECK	N/A	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	OPEN	CLOSED

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 20.4 FT

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

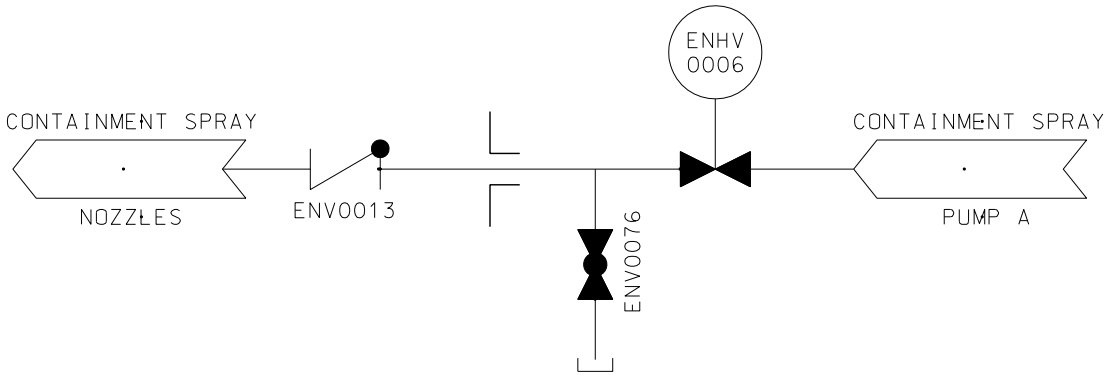
THIS PENETRATION IS ASSOCIATED WITH THE CONTAINMENT SPRAY SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSE-QUENCES OF A LOCA. A CHECK VALVE IS PROVIDED OUTSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED SINCE TWO IN-SERIES VALVES (INSIDE/OUTSIDE) ARE CREDITED FOR THIS PENETRATION. IN ADDITION, THE SYSTEM IS CLOSED OUTSIDE THE CONTAINMENT AND IS DESIGNED AND CONSTRUCTED COMMEN-SURATE WITH THE DESIGN AND CONSTRUC-TION OF THE CONTAINMENT. LEAKAGE DETECTION FROM THIS LINE OUTSIDE THE CONTAINMENT IS PROVIDED, AS DESCRIBED IN SECTION 9.3.3.

LOCAL TESTING OF THE VALVES OR THE CLOSED SYSTEM OUTSIDE THE CONTAIN-MENT IS NOT REQUIRED SINCE THE SYSTEM IS OPERATED AND INSPECTED DURING NORMAL PLANT OPERATION TO ASSURE THAT THE INTEGRITY IS BEING MAINTAINED.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐



REFERENCE SECTION 6.2.2

CONTAINMENT PENETRATION NO. P-89
DESCRIPTION:
CONTAINMENT SPRAY
CONTAINMENT SPRAY SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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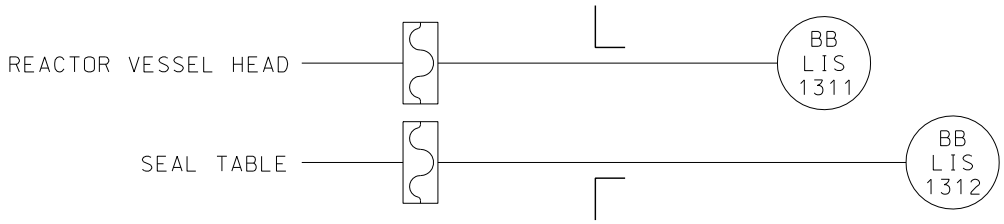
VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
NONE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	N/A
APPLICABLE GDC NO.	55

GENERAL COMMENTS:

HYDRAULIC SENSORS PROVIDE ISOLATION OF RCS FROM THE CAPILLARY TUBING. THE CAPILLARY TUBING AND THE LIS'S SERVE AS THE SECOND BOUNDARY. THIS ARRANGEMENT IS SIMILAR TO THAT PROVIDED FOR THE CONTAINMENT PRESSURE TRANSMITTERS SHOWN ON SHEET 80, 81 AND 84 OF 84.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 18.2.13.2

CONTAINMENT PENETRATION NO. P-91
DESCRIPTION:
RVLIS SAMPLE LINE
REACTOR COOLANT SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 72 OF 84
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APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐

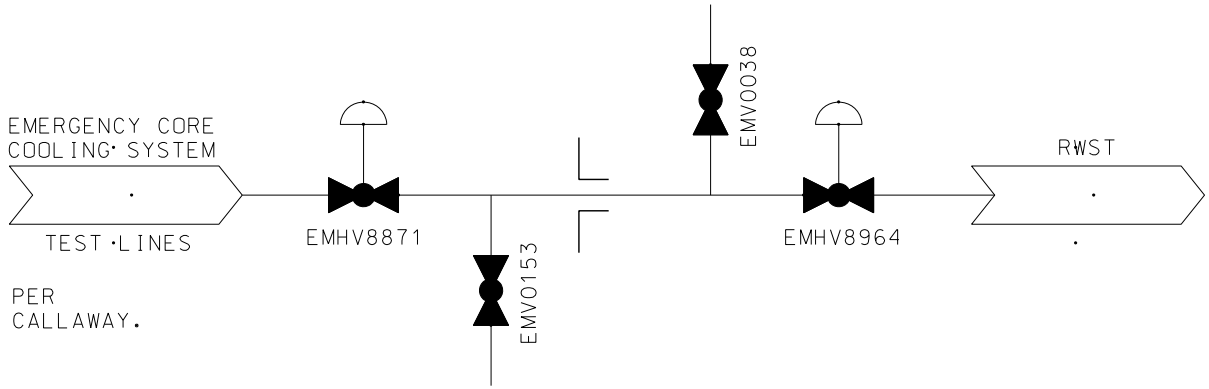
VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
EMHV8964	3/4 /3/4	OUTSIDE	OUT	GLOBE	AIR	1	CIS-A	NONE	10	CLOSED	CLOSED	CLOSED	CLOSED	N/A
EMV0153	3/4 /3/4	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
EMHV8871	3/4 /3/4	INSIDE	OUT	GLOBE	AIR	4	CIS-A	NONE	10	CLOSED	CLOSED	CLOSED	CLOSED	N/A
EMV0038	3/4 /3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	CLOSED	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐
FLUID CONTAINED: WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 8.4 FT.
APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 6.3

CONTAINMENT PENETRATION NO. P-92 DESCRIPTION: ECCS TEST LINE RETURN HIGH PRESSURE COOLANT INJECTION SYSTEM
CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 73 OF 84 REV. 16 3/08

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

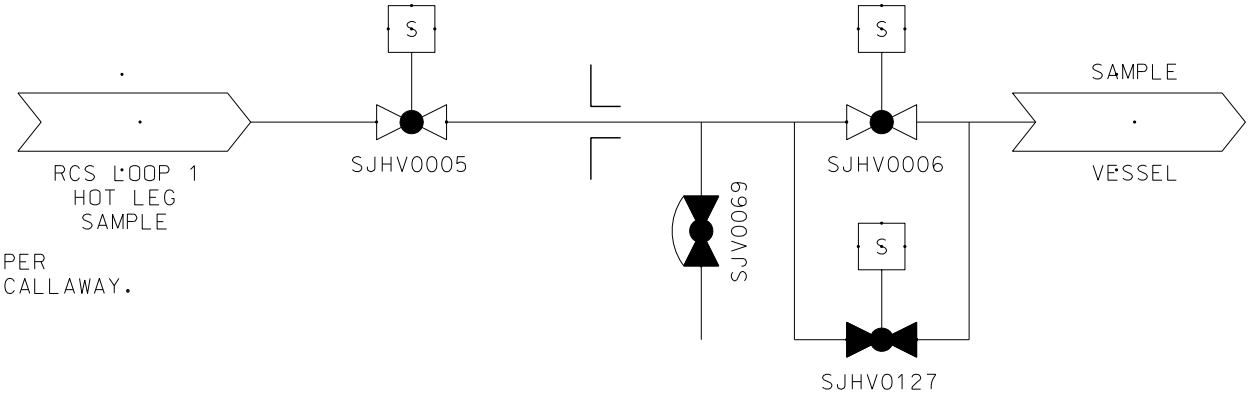
VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
SJHV0005	1/1	INSIDE	OUT	GLOBE	SOLENOID	4	CIS-A	NONE	5	CLOSED	CLOSED	CLOSED	CLOSED	N/A
SJHV0006	1/1	OUTSIDE	OUT	GLOBE	SOLENOID	1	CIS-A	NONE	5	CLOSED	CLOSED	CLOSED	CLOSED	N/A
SJV0069	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
SJHV0127	1/1	OUTSIDE	OUT	GLOBE	SOLENOID	4	CIS-A	NONE	5	CLOSED	CLOSED	CLOSED	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	8.4 FT.
APPLICABLE GDC NO.	55

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.3.2

CONTAINMENT PENETRATION NO. P-93
DESCRIPTION:
RCS LIQUID SAMPLE LINE
NUCLEAR SAMPLING SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

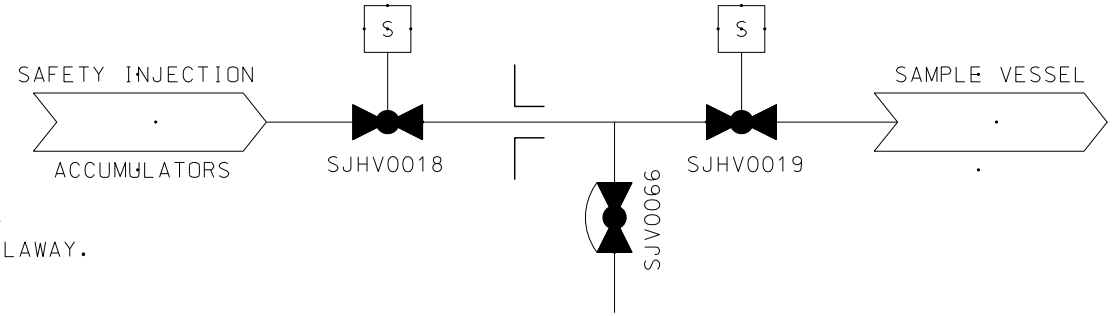
VALVE NO.	LINE/ VALVE SIZE,IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
SJHV0018	1/1	INSIDE	OUT	GLOBE	SOLENOID	4	CIS-A	NONE	5	CLOSED	CLOSED	CLOSED	CLOSED	N/A
SJHV0019	1/1	OUTSIDE	OUT	GLOBE	SOLENOID	1	CIS-A	NONE	5	CLOSED	CLOSED	CLOSED	CLOSED	N/A
SJV0066	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	8.6 FT.
APPLICABLE GDC NO.	55

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.3.2

CONTAINMENT PENETRATION NO. P-95
DESCRIPTION:
ACCUMULATOR SAMPLING
NUCLEAR SAMPLING SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

VALVE NO.	LINE/ VALVE SIZE.IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
GSHV0018	1/1	INSIDE	IN	GATE	SOLENOID	1	CIS-A	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
GSHV0017	1/1	OUTSIDE	IN	GATE	SOLENOID	1	CIS-A	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
GSV0036	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
GSHV0033	1/1	OUTSIDE	IN	GATE	SOLENOID	4	CIS-A	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
GSHV0034	1/1	INSIDE	IN	GATE	SOLENOID	1	CIS-A	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
GSV0052	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: AIR

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 4.3 FT.

APPLICABLE GDC NO. 56

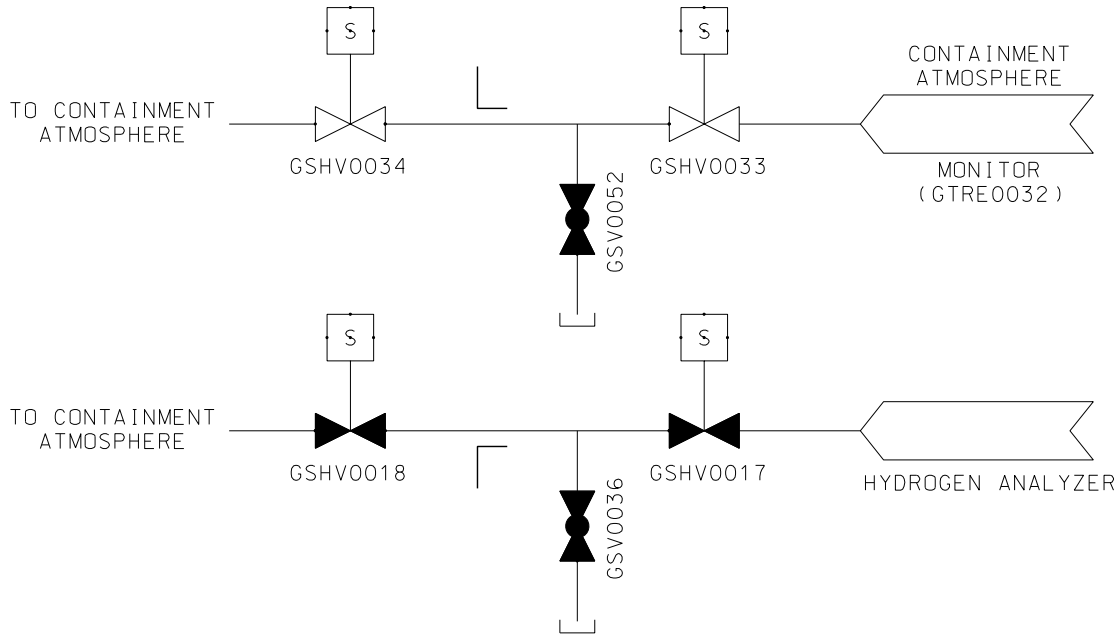
GENERAL COMMENTS:

THIS PENETRATION IS ASSOCIATED WITH THE CONTAINMENT HYDROGEN CONTROL SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. ALTHOUGH THE SOLENOID-OPERATED CONTAINMENT ISOLATION VALVES FOR THE HYDROGEN MONITORING SYSTEM SAMPLING LINES ARE DESIGNED TO AUTOMATICALLY CLOSE IN RESPONSE TO A CIS-A SIGNAL. THEY ARE NORMALLY CLOSED AND DEACTIVATED TO PROVIDE A PASSIVE BARRIER TO RELEASE OF CONTAINMENT ATMOSPHERE VIA THE ASSOCIATED CONTAINMENT PENETRATIONS. THE VALVES ARE OPENED ONLY UNDER ADMINISTRATIVE CONTROL. IN ADDITION, AND ALTHOUGH NOT EXPLICITLY CREDITED AS CONTAINMENT BARRIER, THE SAMPLING SYSTEM (DOWNSTREAM OF THE CONTAINMENT ISOLATION VALVES)IS A CLOSED SYSTEM OUTSIDE CONTAINMENT WHICH IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐



REFERENCE SECTION 6.2.5

CONTAINMENT PENETRATION NO. P-97
DESCRIPTION:
H_2 SAMPLE RETURN
CONTAINMENT HYDROGEN CONTROL SYSTEM

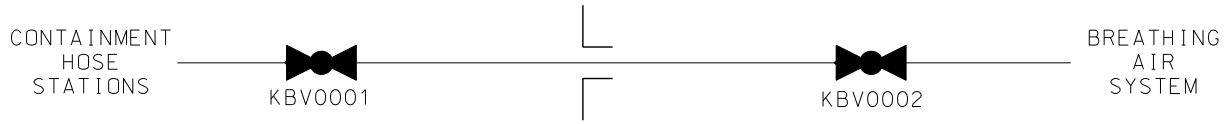
VALVE NO.	LINE/ VALVE SIZE,IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
KBV0001	2/2	INSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
KBV0002	2/2	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☐ NO ☒
FLUID CONTAINED:	AIR
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	2.8 FT.
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

NONE

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.5.1

CONTAINMENT PENETRATION NO. P-98
DESCRIPTION: BREATHING AIR SYSTEM

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
GSHV0003	1/1	OUTSIDE	OUT	GATE	SOLENOID	4	CIS-A	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
GSHV0004	1/1	INSIDE	OUT	GATE	SOLENOID	4	CIS-A	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
GSHV0005	1/1	INSIDE	OUT	GATE	SOLENOID	4	CIS-A	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
GSV0029	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
GSHV0036	1/1	INSIDE	OUT	GATE	SOLENOID	4	CIS-A	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
GSHV0037	1/1	OUTSIDE	OUT	GATE	SOLENOID	1	CIS-A	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
GSV0056	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: AIR

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 4.3 FT

APPLICABLE GDC NO. 56

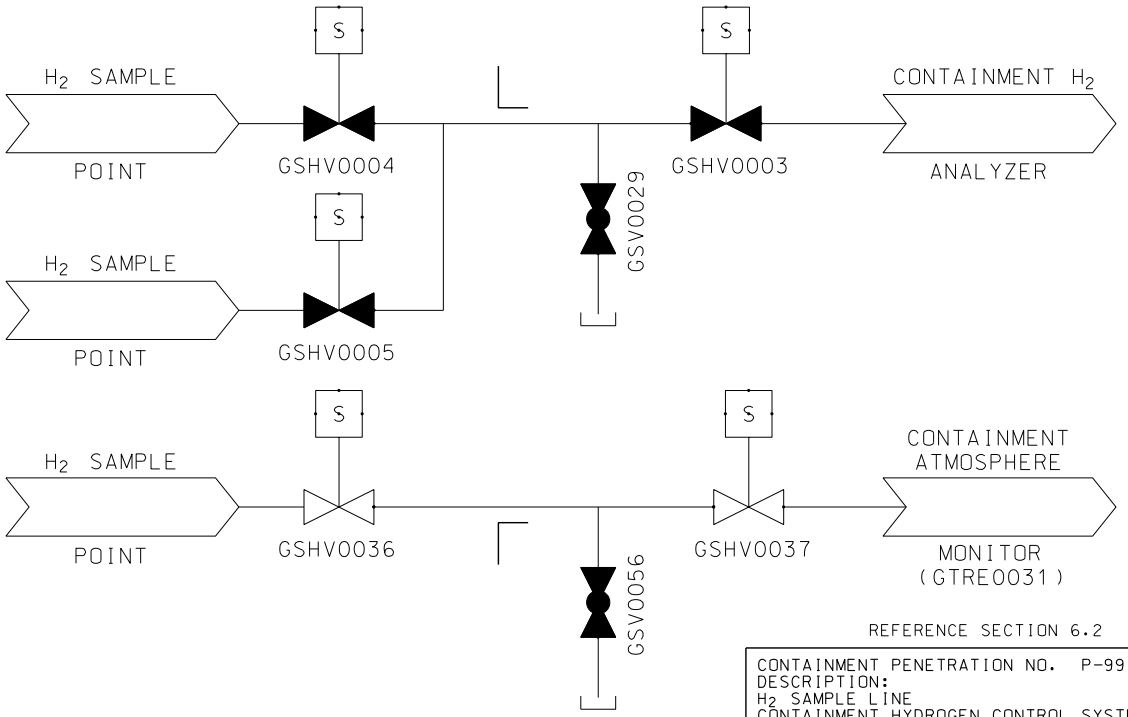
GENERAL COMMENTS:

THIS PENETRATION IS ASSOCIATED WITH THE CONTAINMENT HYDROGEN CONTROL SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. ALTHOUGH THE SOLENOID-OPERATED CONTAINMENT ISOLATION VALVES FOR THE HYDROGEN MONITORING SYSTEM SAMPLING LINES ARE DESIGNED TO AUTOMATICALLY CLOSE IN RESPONSE TO A CIS-A SIGNAL. THEY ARE NORMALLY CLOSED AND DEACTIVATED TO PROVIDE A PASSIVE BARRIER TO RELEASE OF CONTAINMENT ATMOSPHERE VIA THE ASSOCIATED CONTAINMENT PENETRATIONS. THE VALVES ARE OPENED ONLY UNDER ADMINISTRATIVE CONTROL. IN ADDITION, AND ALTHOUGH NOT EXPLICITLY CREDITED AS CONTAINMENT BARRIER, THE SAMPLING SYSTEM (DOWNSTREAM OF THE CONTAINMENT ISOLATION VALVES)IS A CLOSED SYSTEM OUTSIDE CONTAINMENT WHICH IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐



REFERENCE SECTION 6.2

CONTAINMENT PENETRATION NO. P-99
DESCRIPTION:
H_2 SAMPLE LINE
CONTAINMENT HYDROGEN CONTROL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
GSHV0012	1/1	OUTSIDE	OUT	GATE	SOLENOID	1	CIS-A	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
GSHV0013	1/1	INSIDE	OUT	GATE	SOLENOID	1	CIS-A	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
GSHV0014	1/1	INSIDE	OUT	GATE	SOLENOID	1	CIS-A	REM/MAN	5	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
GSV0033	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A
GSHV0031	1/1	INSIDE	OUT	GATE	SOLENOID	1	CIS-A	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
GSHV0032	1/1	OUTSIDE	OUT	GATE	SOLENOID	4	CIS-A	REM/MAN	5	OPEN	OPEN	CLOSED	CLOSED	OPEN
GSV0050	1/1	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: AIR

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 11.9 FT

APPLICABLE GDC NO. 56

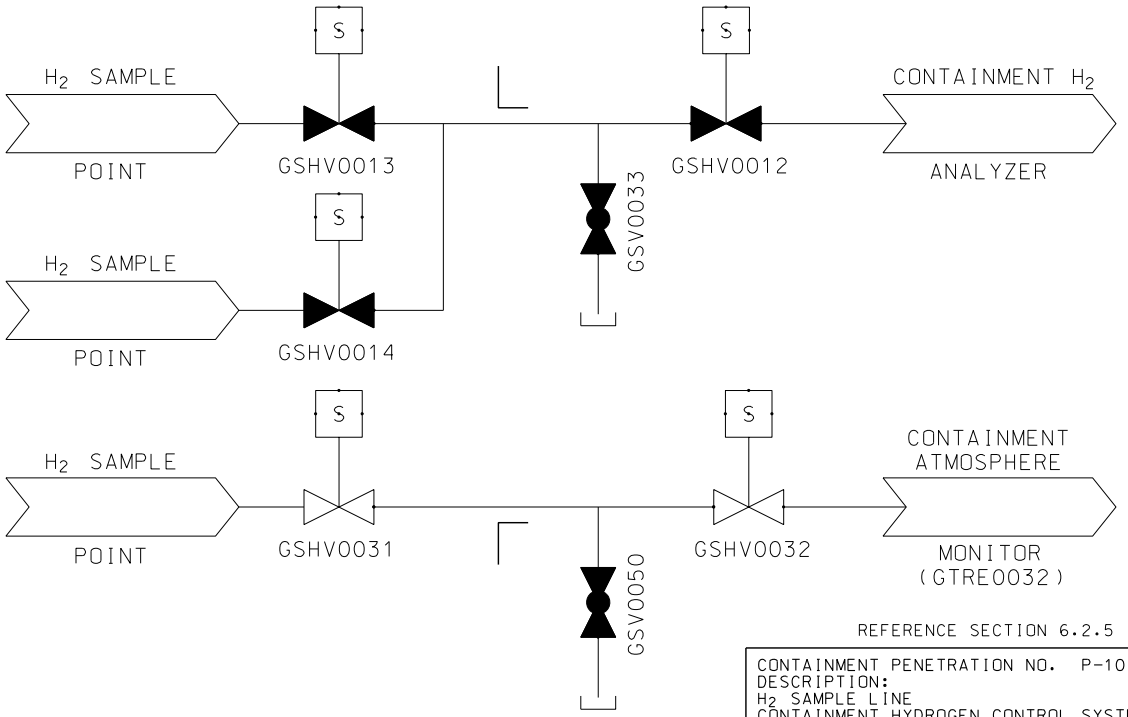
GENERAL COMMENTS:

THIS PENETRATION IS ASSOCIATED WITH THE CONTAINMENT HYDROGEN CONTROL SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. ALTHOUGH THE SOLENOID-OPERATED CONTAINMENT ISOLATION VALVES FOR THE HYDROGEN MONITORING SYSTEM SAMPLING LINES ARE DESIGNED TO AUTOMATICALLY CLOSE IN RESPONSE TO A CIS-A SIGNAL. THEY ARE NORMALLY CLOSED AND DEACTIVATED TO PROVIDE A PASSIVE BARRIER TO RELEASE OF CONTAINMENT ATMOSPHERE VIA THE ASSOCIATED CONTAINMENT PENETRATIONS. THE VALVES ARE OPENED ONLY UNDER ADMINISTRATIVE CONTROL. IN ADDITION, AND ALTHOUGH NOT EXPLICITLY CREDITED AS CONTAINMENT BARRIER, THE SAMPLING SYSTEM (DOWNSTREAM OF THE CONTAINMENT ISOLATION VALVES)IS A CLOSED SYSTEM OUTSIDE CONTAINMENT WHICH IS DESIGNED AND CONSTRUCTED COMMENSURATE WITH THE DESIGN AND CONSTRUCTION OF THE CONTAINMENT.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐



REFERENCE SECTION 6.2.5

CONTAINMENT PENETRATION NO. P-101
DESCRIPTION:
H_2 SAMPLE LINE
CONTAINMENT HYDROGEN CONTROL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

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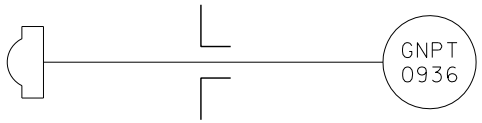
VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME (SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
NONE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☒ NO ☐
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	N/A
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

GNPT0936
THERE ARE FOUR INSTRUMENT LINES WHICH PENETRATE THE CONTAINMENT AND WHICH ARE REQUIRED TO REMAIN FUNCTIONAL FOLLOWING A LOCA OR STEAM BREAK. THESE LINES SENSE THE PRESSURE OF CONTAINMENT ATMOSPHERE ON THE INSIDE AND ARE CONNECTED TO PRESSURE TRANSMITTERS ON THE OUTSIDE. SIGNALS FROM THESE TRANSMITTERS CAN INITIATE SAFETY INJECTION AND CONTAINMENT ISOLATION ON HIGH CONTAINMENT PRESSURE. THEY ALSO, UPON HIGH-3 CONTAINMENT PRESSURE, PRODUCE THE ONLY SIGNAL TO INITIATE CONTAINMENT SPRAY. IN VIEW OF THIS FUNCTION, IT IS ESSENTIAL THAT THE LINE REMAIN OPEN AND NOT BE ISOLATED FOLLOWING AN ACCIDENT. BASED ON THIS REQUIREMENT, A SEALED SENSING LINE, AS DESCRIBED BELOW, IS USED.

THIS CHANNEL HAS A SEPARATE PENETRATION, AND THE PRESSURE TRANSMITTER IS LOCATED IMMEDIATELY ADJACENT TO THE OUTSIDE OF THE CONTAINMENT WALL. IT IS CONNECTED TO A SEALED BELLOWS, LOCATED IMMEDIATELY ADJACENT TO THE INSIDE CONTAINMENT WALL, BY MEANS OF A SEALED FLUID FILLED TUBE. THIS TUBING, ALONG WITH THE TRANSMITTER AND BELLOWS, IS CONSERVATIVELY DESIGNED AND SUBJECT OT STRICT QUALITY CONTROL AND TO REGULAR IN-SERVICE INSPECTIONS TO ASSURE ITS INTEGRITY. THIS ARRANGEMENT PROVIDES A DOUBLE BARRIER (ONE INSIDE AND ONE OUTSIDE) BETWEEN THE CONTAINMENT AND THE OUTSIDE ATMOSPHERE. SHOULD A LEAK OCCUR OUTSIDE THE CONTAINMENT, THE SEALED BELLOWS INSIDE THE CONTAINMENT, WHICH IS DESIGNED TO WITHSTAND FULL CONTAINMENT DESIGN PRESSURE, WILL PREVENT THE ESCAPE OF THE CONTAINMENT ATMOSPHERE. SHOULD A LEAK OCCUR INSIDE THE CONTAINMENT, THE DIAPHRAGM IN THE TRANSMITTER, WHICH IS DESIGNED TO WITHSTAND FULL CONTAINMENT DESIGN PRESSURE, WILL PREVENT ANY ESCAPE FROM THE CONTAINMENT. THIS ARRANGEMENT PROVIDES AUTOMATIC DOUBLE-BARRIER ISOLATION WITHOUT OPERATOR ACTION AND WITHOUT SACRIFICING ANY RELIABILITY. BECAUSE OF THIS SEALED FLUID FILLED SYSTEM, A POSTULATED SEVERANCE OF THE LINE DURING EITHER NORMAL OPERATION OR ACCIDENT CONDITIONS WILL NOT RESULT IN ANY RELEASE FROM THE CONTAINMENT.



NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐

REFERENCE SECTION 6.3, 9.4

CONTAINMENT PENETRATION NO. P-103
DESCRIPTION:
CONTAINMENT PRESSURE TRANSMITTERS
CONTAINMENT COOLING SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
NONE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: N/A

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

GNPT0935 AND GNPT0937
THERE ARE FOUR INSTRUMENT LINES WHICH PENETRATE THE CONTAINMENT AND WHICH ARE REQUIRED TO REMAIN FUNCTIONAL FOLLOWING A LOCA OR STEAM BREAK. THESE LINES SENSE THE PRESSURE OF CONTAINMENT ATMOSPHERE ON THE INSIDE AND ARE CONNECTED TO PRESSURE TRANSMITTERS ON THE OUTSIDE. SIGNALS FROM THESE TRANSMITTERS CAN INITIATE SAFETY INJECTION AND CONTAINMENT ISOLATION ON HIGH CONTAINMENT PRESSURE. THEY ALSO, UPON HIGH-3 CONTAINMENT PRESSURE, PRODUCE THE ONLY SIGNAL TO INITIATE CONTAINMENT SPRAY. IN VIEW OF THIS FUNCTION, IT IS ESSENTIAL THAT THE LINE REMAIN OPEN AND NOT BE ISOLATED FOLLOWING AN ACCIDENT. BASED ON THIS REQUIREMENT, A SEALED SENSING LINE, AS DESCRIBED BELOW, IS USED.

GNPT0938 IS A WIDE RANGE CONTAINMENT PRESSURE TRANSMITTER REQUIRED BY NUREG-0737 AND REGULATORY GUIDE 1.97.

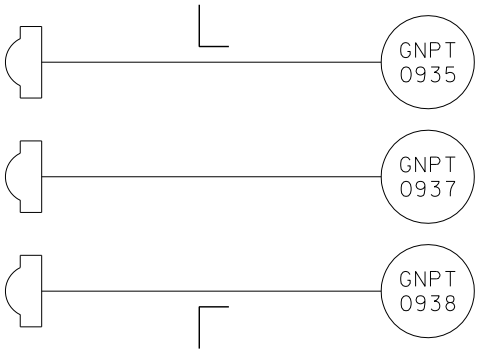
APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐

EACH PRESSURE TRANSMITTER IS LOCATED IMMEDIATELY ADJACENT TO THE OUTSIDE OF THE CONTAINMENT WALL. IT IS CONNECTED TO A SEALED BELLOWS, LOCATED IMMEDIATELY ADJACENT TO THE INSIDE CONTAINMENT WALL, BY MEANS OF A SEALED FLUID FILLED TUBE. THIS TUBING, ALONG WITH THE TRANSMITTER AND BELLOWS, IS CONSERVATIVELY DESIGNED AND SUBJECT OT STRICT QUALITY CONTROL AND TO REGULAR IN-SERVICE INSPECTIONS TO ASSURE ITS INTEGRITY. THIS ARRANGEMENT PROVIDES A DOUBLE BARRIER (ONE INSIDE AND ONE OUTSIDE) BETWEEN THE CONTAINMENT AND THE OUTSIDE ATMOSPHERE. SHOULD A LEAK OCCUR OUTSIDE THE CONTAINMENT, THE SEALED BELLOWS INSIDE THE CONTAINMENT, WHICH IS DESIGNED TO WITHSTAND FULL CONTAINMENT DESIGN PRESSURE, WILL PREVENT THE ESCAPE OF THE CONTAINMENT ATMOSPHERE. SHOULD A LEAK OCCUR INSIDE THE CONTAINMENT, THE DIAPHRAGM IN THE TRANSMITTER, WHICH IS DESIGNED TO WITHSTAND FULL CONTAINMENT DESIGN PRESSURE, WILL PREVENT ANY ESCAPE FROM THE CONTAINMENT. THIS ARRANGEMENT PROVIDES AUTOMATIC DOUBLE-BARRIER ISOLATION WITHOUT OPERATOR ACTION AND WITHOUT SACRIFICING ANY RELIABILITY.

BECAUSE OF THIS SEALED FLUID FILLED SYSTEM, A POSTULATED SEVERANCE OF THE LINE DURING EITHER NORMAL OPERATION OR ACCIDENT CONDITIONS WILL NOT RESULT IN ANY RELEASE FROM THE CONTAINMENT.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 6.3, 9.4

CONTAINMENT PENETRATION NO. P-104
DESCRIPTION:
CONTAINMENT PRESSURE TRANSMITTERS
CONTAINMENT COOLING SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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VALVE NO.	LINE/ VALVE SIZE,IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
GTHZ0009	36/36	OUTSIDE	OUT	BUTTERFLY	AIR	1	CPIS	NONE	10	CLOSED	OPEN	CLOSED	CLOSED	N/A
GTHZ0008	36/36	INSIDE	OUT	BUTTERFLY	AIR	4	CPIS	NONE	10	CLOSED	OPEN	CLOSED	CLOSED	N/A
GTHZ0012	18/18	OUTSIDE	OUT	BUTTERFLY	AIR	1	CPIS	NONE	5	NOTE 1	CLOSED	CLOSED	CLOSED	N/A
GTHZ0011	18/18	INSIDE	OUT	BUTTERFLY	AIR	4	CPIS	NONE	5	NOTE 1	CLOSED	CLOSED	CLOSED	N/A
GTV0236	3/4 / 3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

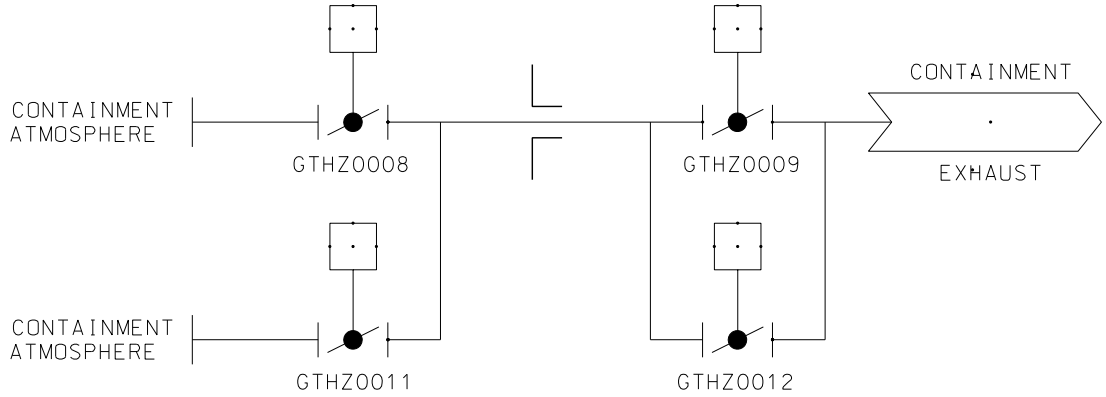
ENGINEERED SAFETY FEATURE SYSTEM	YES ☒ NO ☐
FLUID CONTAINED:	AIR
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	6.3 FT.
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

NOTE 1

THIS VALVE IS INTERMITTENTLY OPENED TO PROVIDE FOR CONTAINMENT MINI-PURGE DURING POWER OPERATION.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.4

CONTAINMENT PENETRATION NO. V-160
DESCRIPTION:
SHUTDOWN PURGE EXHAUST
CONTAINMENT PURGE SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
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APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
GTHZ0007	36/36	INSIDE	IN	BUTTERFLY	AIR	1	CPIS	NONE	10	CLOSED	OPEN	CLOSED	CLOSED	N/A
GTHZ0005	18/18	INSIDE	IN	BUTTERFLY	AIR	1	CPIS	NONE	5	NOTE 1	CLOSED	CLOSED	CLOSED	N/A
GTHZ0004	18/18	OUTSIDE	IN	BUTTERFLY	AIR	4	CPIS	NONE	5	NOTE 1	CLOSED	CLOSED	CLOSED	N/A
GTHZ0006	36/36	OUTSIDE	IN	BUTTERFLY	AIR	4	CPIS	NONE	10	CLOSED	OPEN	CLOSED	CLOSED	N/A
GTV0235	3/4 / 3/4	OUTSIDE	N/A	GLOBE	MANUAL	N/A	N/A	N/A	N/A	CLOSED	CLOSED	N/A	CLOSED	N/A

ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: AIR

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 6.3 FT.

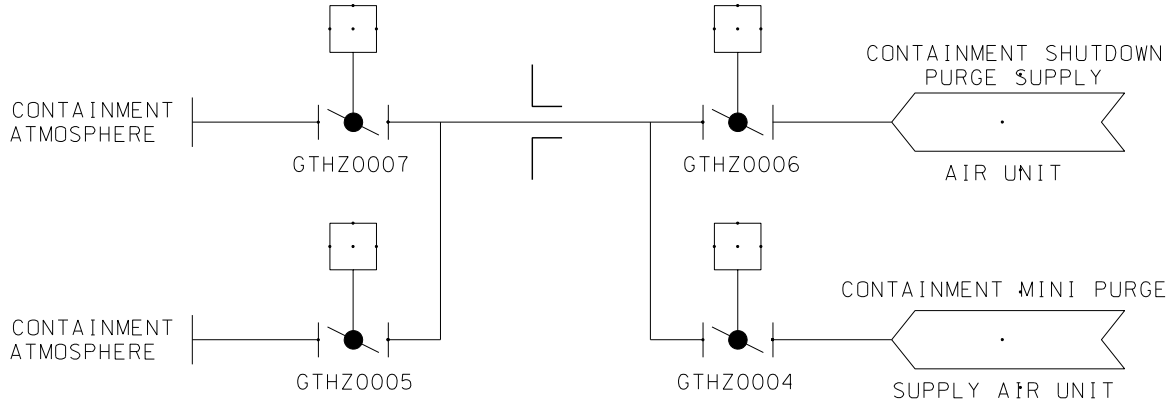
APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NOTE 1

THIS VALVE IS INTERMITTENTLY OPENED TO PROVIDE FOR CONTAINMENT MINI-PURGE DURING POWER OPERATION.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



REFERENCE SECTION 9.4

CONTAINMENT PENETRATION NO. V-161
DESCRIPTION:
SHUTDOWN PURGE SUPPLY
CONTAINMENT PURGE SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 83 OF 84
REV. 14 3/08

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

VALVE NO.	LINE/ VALVE SIZE, IN.	INSIDE/ OUTSIDE CONT.	NORMAL FLOW DIRECTION	VALVE TYPE	VALVE OPERATOR	POWER SOURCE	PRIMARY ACTUATION SIGNAL	SECONDARY ACTUATION SIGNAL	MAXIMUM CLOSURE TIME(SEC.) (NOTE 1)	VALVE POSITION				
										NORMAL	SHUTDOWN	POWER FAILURE	POST ACCIDENT	
													PRIMARY	SECONDARY
NONE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

ENGINEERED SAFETY FEATURE SYSTEM	YES ☒ NO ☐
FLUID CONTAINED:	WATER
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE:	N/A
APPLICABLE GDC NO.	56

GENERAL COMMENTS:

GNPT0934
THERE ARE FOUR INSTRUMENT LINES WHICH PENETRATE THE CONTAINMENT AND WHICH ARE REQUIRED TO REMAIN FUNCTIONAL FOLLOWING A LOCA OR STEAM BREAK. THESE LINES SENSE THE PRESSURE OF CONTAINMENT ATMOSPHERE ON THE INSIDE AND ARE CONNECTED TO PRESSURE TRANSMITTERS ON THE OUTSIDE. SIGNALS FROM THESE TRANSMITTERS CAN INITIATE SAFETY INJECTION AND CONTAINMENT ISOLATION ON HIGH CONTAINMENT PRESSURE. THEY ALSO, UPON HIGH-3 CONTAINMENT PRESSURE, PRODUCE THE ONLY SIGNAL TO INITIATE CONTAINMENT SPRAY. IN VIEW OF THIS FUNCTION, IT IS ESSENTIAL THAT THE LINE REMAIN OPEN AND NOT BE ISOLATED FOLLOWING AN ACCIDENT. BASED ON THIS REQUIREMENT, A SEALED SENSING LINE, AS DESCRIBED BELOW, IS USED.

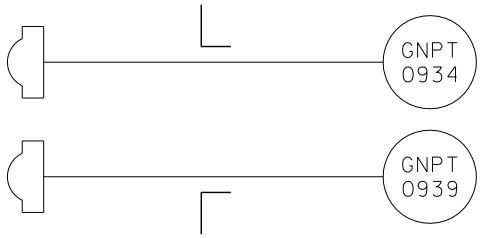
GNPT0939 IS A WIDE RANGE CONTAINMENT PRESSURE TRANSMITTER REQUIRED BY NUREG-0737 AND REGULATORY GUIDE 1.97.

APPENDIX J REQUIREMENT

TYPE A ☒
B ☐
C ☐
NONE ☐

EACH PRESSURE TRANSMITTER IS LOCATED IMMEDIATELY ADJACENT TO THE OUTSIDE OF THE CONTAINMENT WALL. IT IS CONNECTED TO A SEALED BELLOWS, LOCATED IMMEDIATELY ADJACENT TO THE INSIDE CONTAINMENT WALL, BY MEANS OF A SEALED FLUID FILLED TUBE. THIS TUBING, ALONG WITH THE TRANSMITTER AND BELLOWS, IS CONSERVATIVELY DESIGNED AND SUBJECT OT STRICT QUALITY CONTROL AND TO REGULAR IN-SERVICE INSPECTIONS TO ASSURE ITS INTEGRITY. THIS ARRANGEMENT PROVIDES A DOUBLE BARRIER (ONE INSIDE AND ONE OUTSIDE) BETWEEN THE CONTAINMENT AND THE OUTSIDE ATMOSPHERE. SHOULD A LEAK OCCUR OUTSIDE THE CONTAINMENT, THE SEALED BELLOWS INSIDE THE CONTAINMENT, WHICH IS DESIGNED TO WITHSTAND FULL CONTAINMENT DESIGN PRESSURE, WILL PREVENT THE ESCAPE OF THE CONTAINMENT ATMOSPHERE. SHOULD A LEAK OCCUR INSIDE THE CONTAINMENT, THE DIAPHRAGM IN THE TRANSMITTER, WHICH IS DESIGNED TO WITHSTAND FULL CONTAINMENT DESIGN PRESSURE, WILL PREVENT ANY ESCAPE FROM THE CONTAINMENT. THIS ARRANGEMENT PROVIDES AUTOMATIC DOUBLE-BARRIER ISOLATION WITHOUT OPERATOR ACTION AND WITHOUT SACRIFICING ANY RELIABILITY. BECAUSE OF THIS SEALED FLUID FILLED SYSTEM, A POSTULATED SEVERANCE OF THE LINE DURING EITHER NORMAL OPERATION OR ACCIDENT CONDITIONS WILL NOT RESULT IN ANY RELEASE FROM THE CONTAINMENT.

NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.

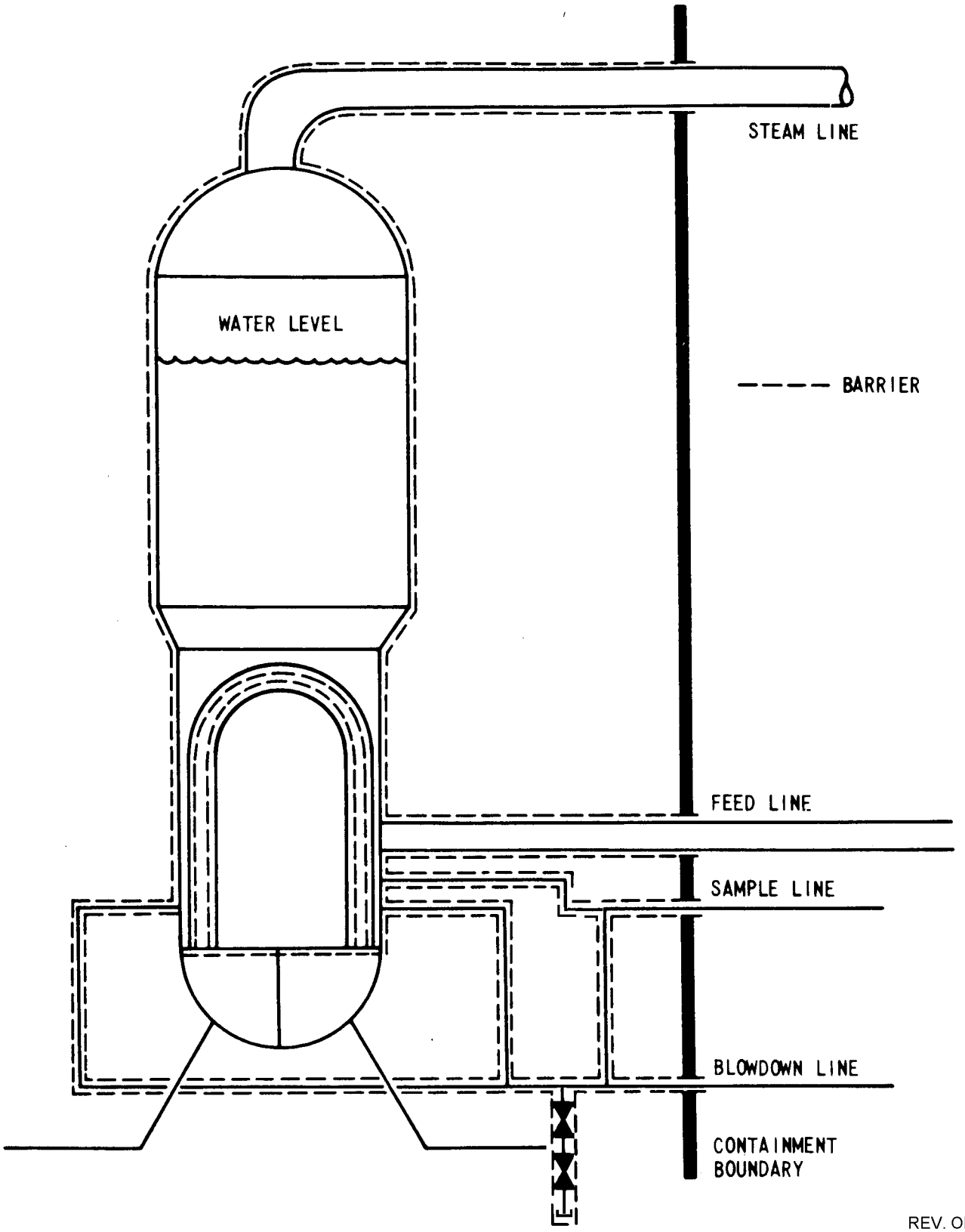


REFERENCE SECTION 6.3.9.4

CONTAINMENT PENETRATION NO. E-256
DESCRIPTION:
CONTAINMENT PRESSURE TRANSMITTERS
CONTAINMENT COOLING SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1

REV. 16 8/16



REV. OL-15
5/06

CALLAWAY PLANT

FIGURE 6.2.4-2

STEAM GENERATOR AND ASSOCIATED SYSTEMS AS A BARRIER TO THE RELEASE OF RADIOACTIVITY POST LOCA

M-22GS01 (Q)

REV.	DATE	DRAWN
1	051792	GDC
CHKD.	SUPV.	APPD.
DJB	TJM	N/A

REDRAWN FOR CLARITY.

REV.	DATE	DRAWN
2	052693	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. DEC-994

REV.	DATE	DRAWN
3	062493	DJB
CHKD.	SUPV.	APPD.
RBF	TJM	N/A

INCORP. DEC-1042

REV.	DATE	DRAWN
4	051708	DJB
CHKD.	SUPV.	APPD.
RAM	AMR	N/A

INCORP. RFR-20001H

REV.	DATE	DRAWN
5	082102	RLW
CHKD.	SUPV.	APPD.
EWM	AMR	N/A

INCORP. MP 01-1002 FCN-02 (PARTIAL)

REV.	DATE	DRAWN
6	082708	RLW
CHKD.	SUPV.	APPD.
EWM	TWS	N/A

INCORP. MP 01-1002 FCN-02 (PARTIAL)

REV.	DATE
7	100202
DRAWN	CHKD.	SUPV.
RLW	EWM	TWS

INCORP. MP 01-1002 FCN-02 (PARTIAL)

REV.	DATE
8	041905
DRAWN	CHKD.	SUPV.
MAL	RLW	TWS

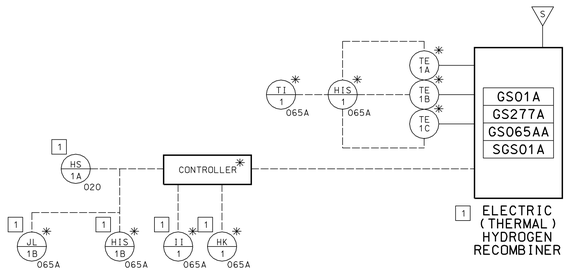
INCORP. RFR 22941A

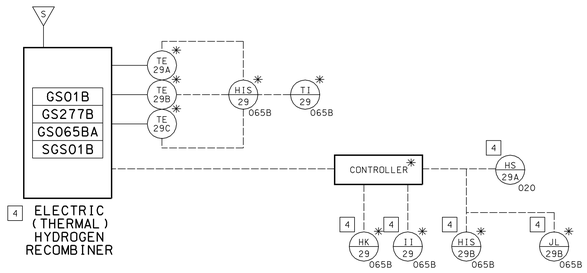
REV.	DATE
9	021010
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

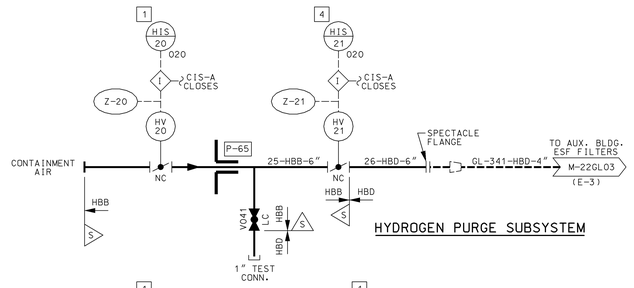
INCORP. CAR 200909829.

REV.	DATE
10	102810
DRAWN	CHKD.	SUPV.
MAL	TJC	TWS

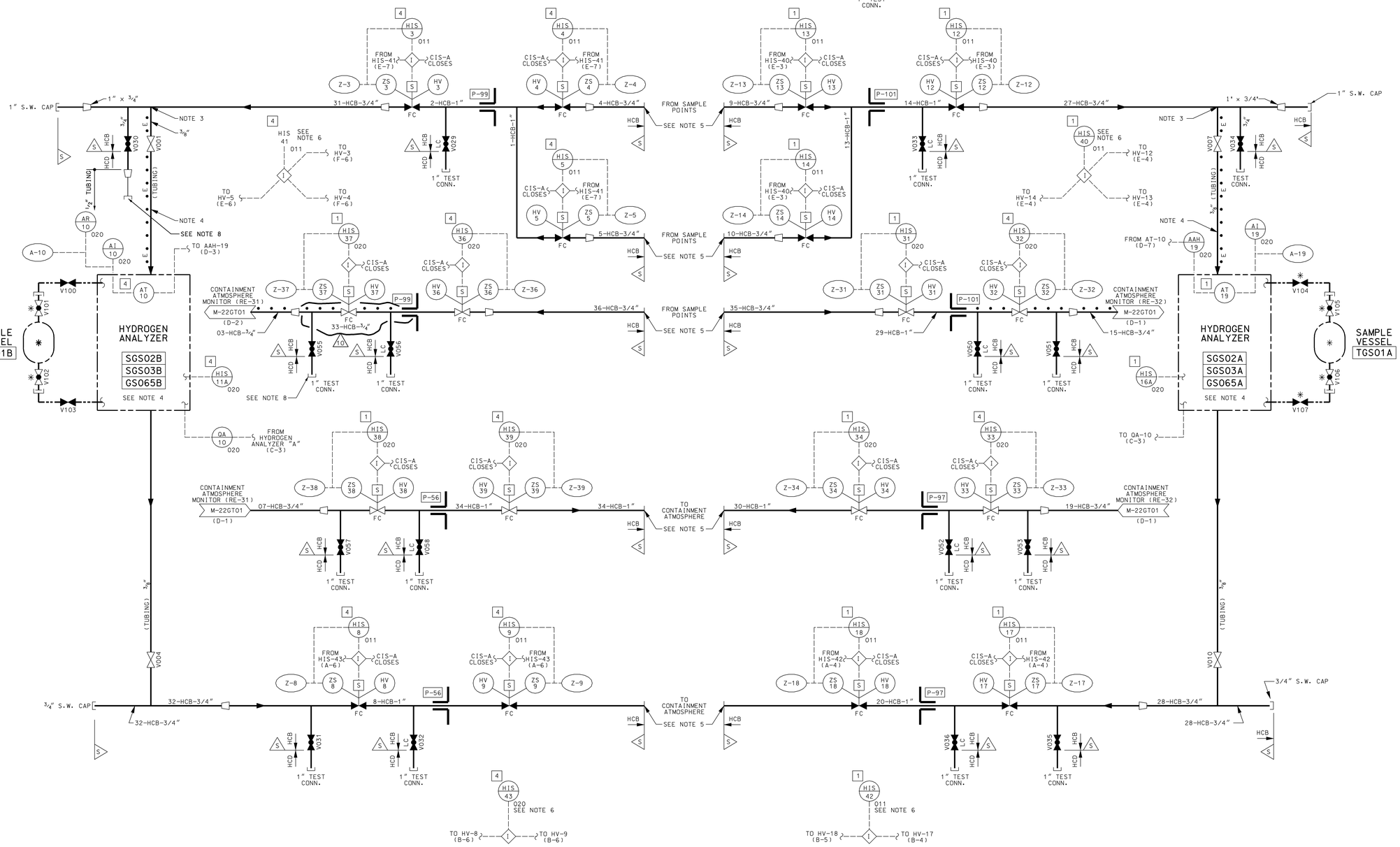
INCORP. CAR 201008998.







HYDROGEN PURGE SUBSYSTEM

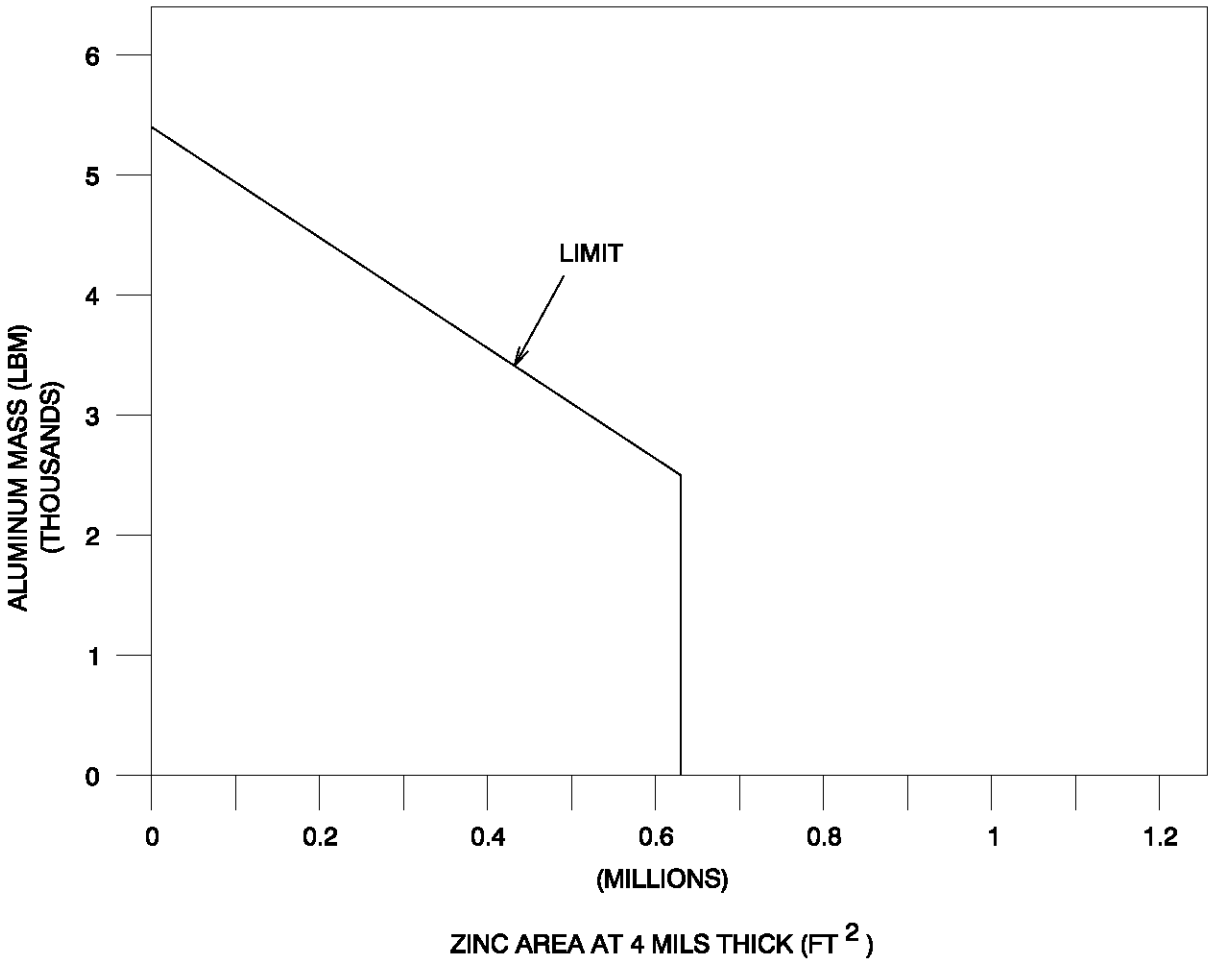


NOTES:

1. THE HYDROGEN PURGE MAKEUP SUPPLY AIR IS SUPPLED BY THE COMPRESSED AIR SYS AND IS SHOWN ON P&ID M-22KA01.
2. THE HYDROGEN MIXING FANS ARE SHOWN ON THE CONTAINMENT COOLING SYS P&ID M-22GN01.
3. THIS CONNECTION WILL BE LOCATED AS CLOSE AS POSSIBLE TO THE CONTAINMENT ISOLATION VALVE.
4. FOR HYDROGEN ANALYZERS AND HEAT TRACING, SEE VENDOR P&ID PRINT NO. J-359-00016.
5. THREADED END FOR USE DURING VALVE LEAK TESTING.
6. FOUR ISOLATION SWITCHES ARE PROVIDED ON THE MAIN CONTROL BOARD FOR POWER LOCKOUT. SWITCH LOCKOUTS ARE AS INDICATED.
7. CONTROL PANELS GSO65A & GSO65B ARE SUPPLIED BY HYDROGEN ANALYZER VENDOR (J-359). HYDROGEN RECOMBINER PANEL INSERTS GSO65AA & GSO65BA ARE SUPPLIED BY THE HYDROGEN RECOMBINER VENDOR (M-637). CONTROL PANEL INSERTS ARE MOUNTED ON HYDROGEN ANALYZER PANELS GSO65A & GSO65B.
8. THESE LOCATIONS MAY BE USED AS GRAB SAMPLE POINTS: SEE HTP-ZZ-03006.

AS-BUILT CLASS 1

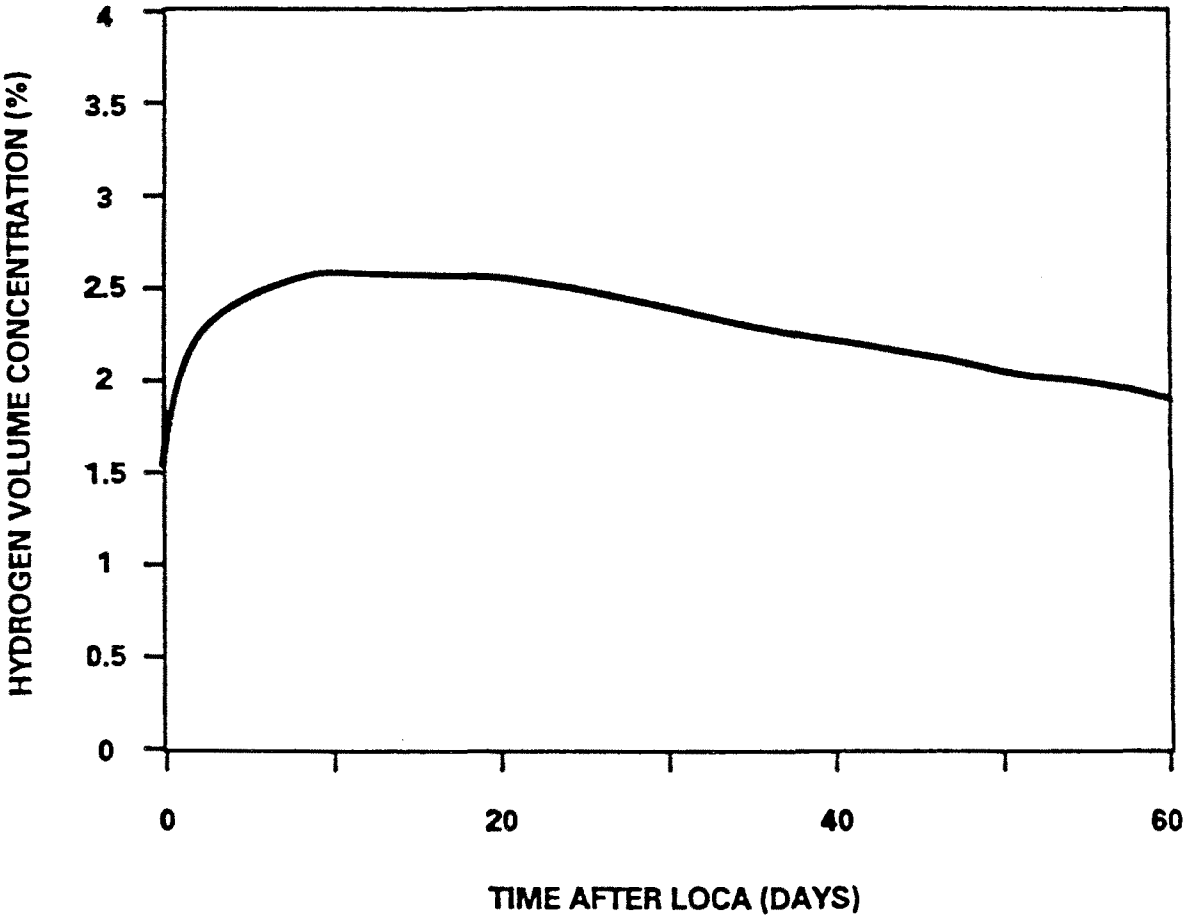
DRAWN (DATE) N/A	PIPING AND INSTRUMENTATION DIAGRAM CONTAINMENT HYDROGEN CONTROL SYSTEM		
CHKD. (DATE) N/A	FSAR FIGURE 6.2.5-1		
SUPV. (DATE) N/A			
APPD. (DATE) N/A	LOCATION: CALLAWAY PLANT		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GS01 (Q)		REV. 10



CALLAWAY PLANT

FIGURE 6.2.5-2
REV OL-8 11/95

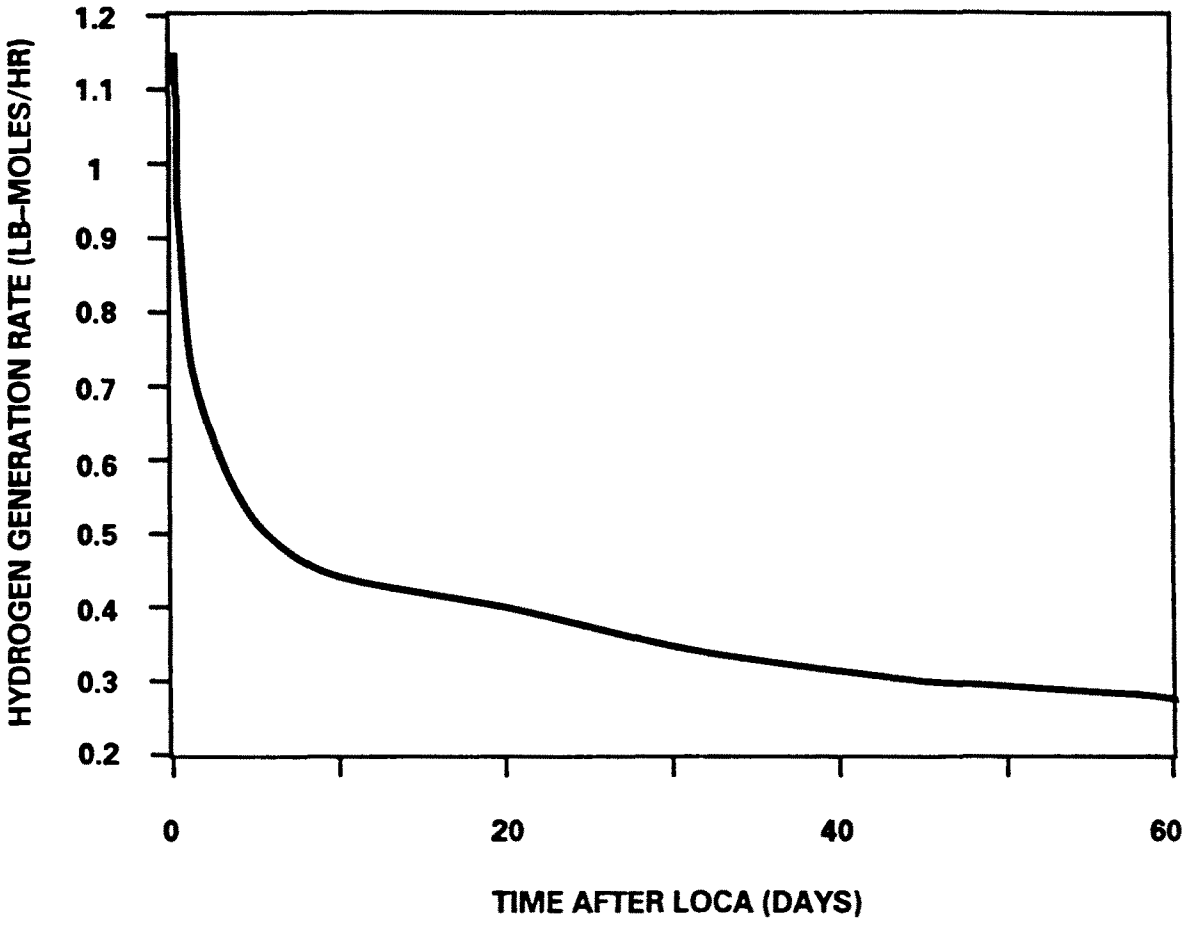
MAXIMUM ALLOWABLE
QUANTITIES OF ALUMINUM
AND ZINC IN CONTAINMENT



CALLAWAY PLANT

FIGURE 6.2.5-3 REV OL-3 6/89

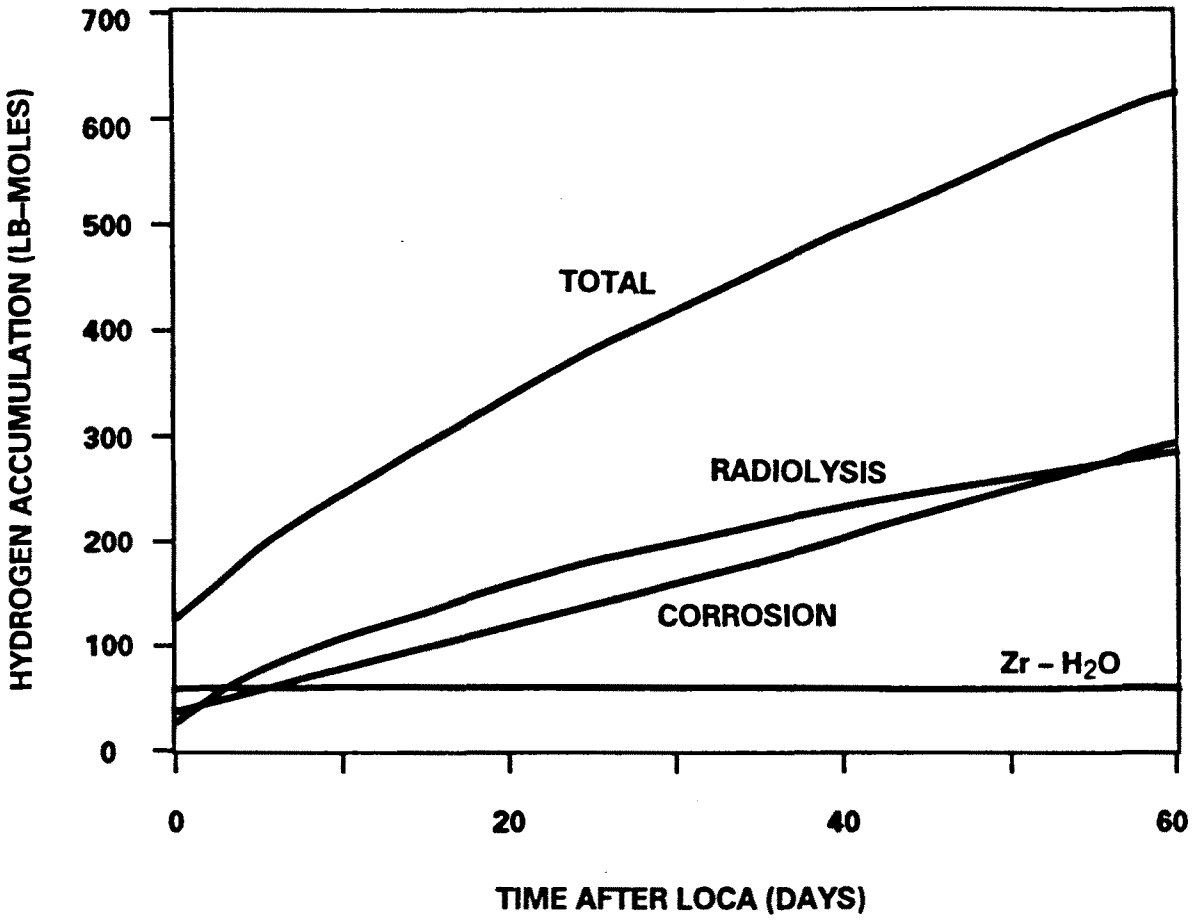
HYDROGEN VOLUME CONCENTRATION IN CONTAINMENT WITH ONE RECOMBINER OPERATING AT 1 DAY



CALLAWAY PLANT

FIGURE 6.2.5-4 REV 0L-3 6/89

HYDROGEN GENERATION IN CONTAINMENT

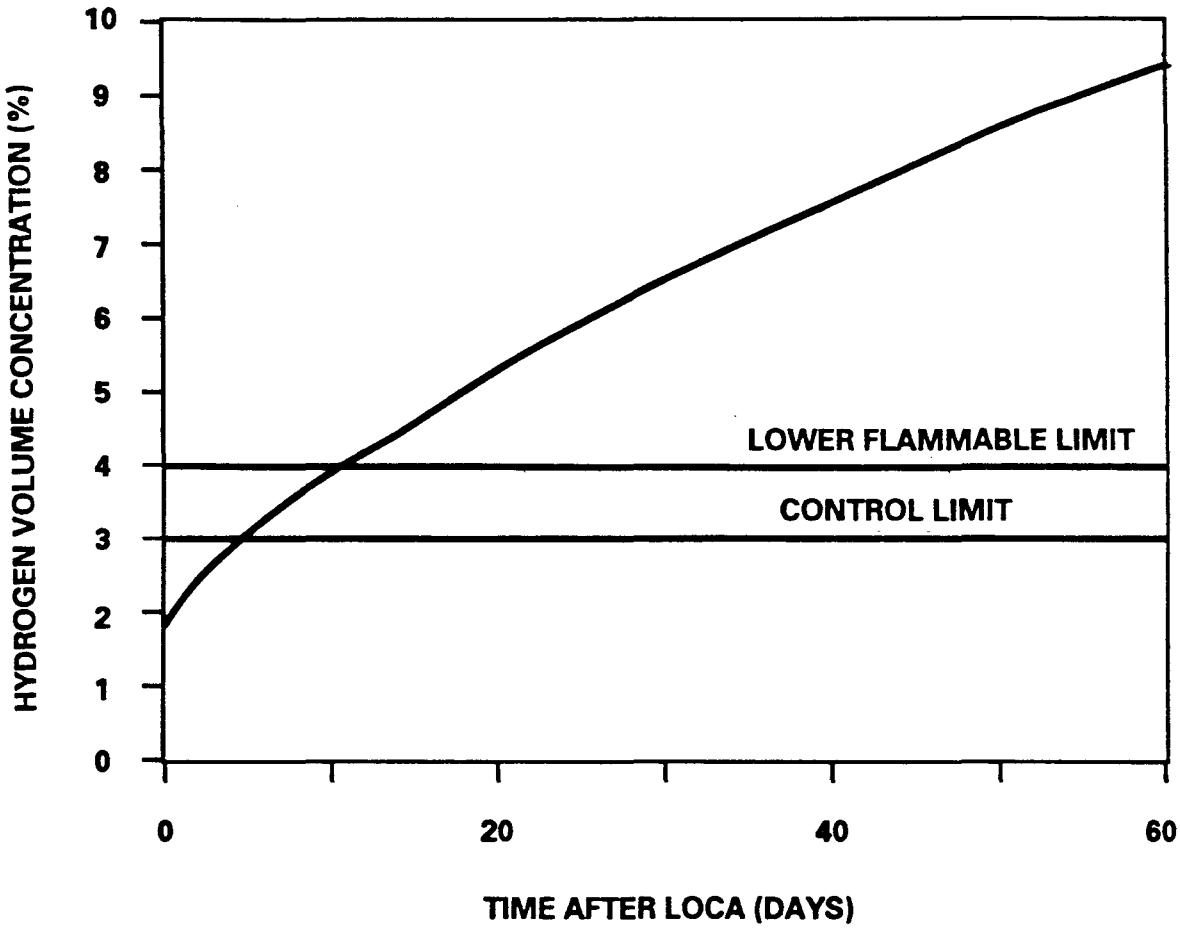


CALLAWAY PLANT

REV 0L-3
6/89

FIGURE 6.2.5-5

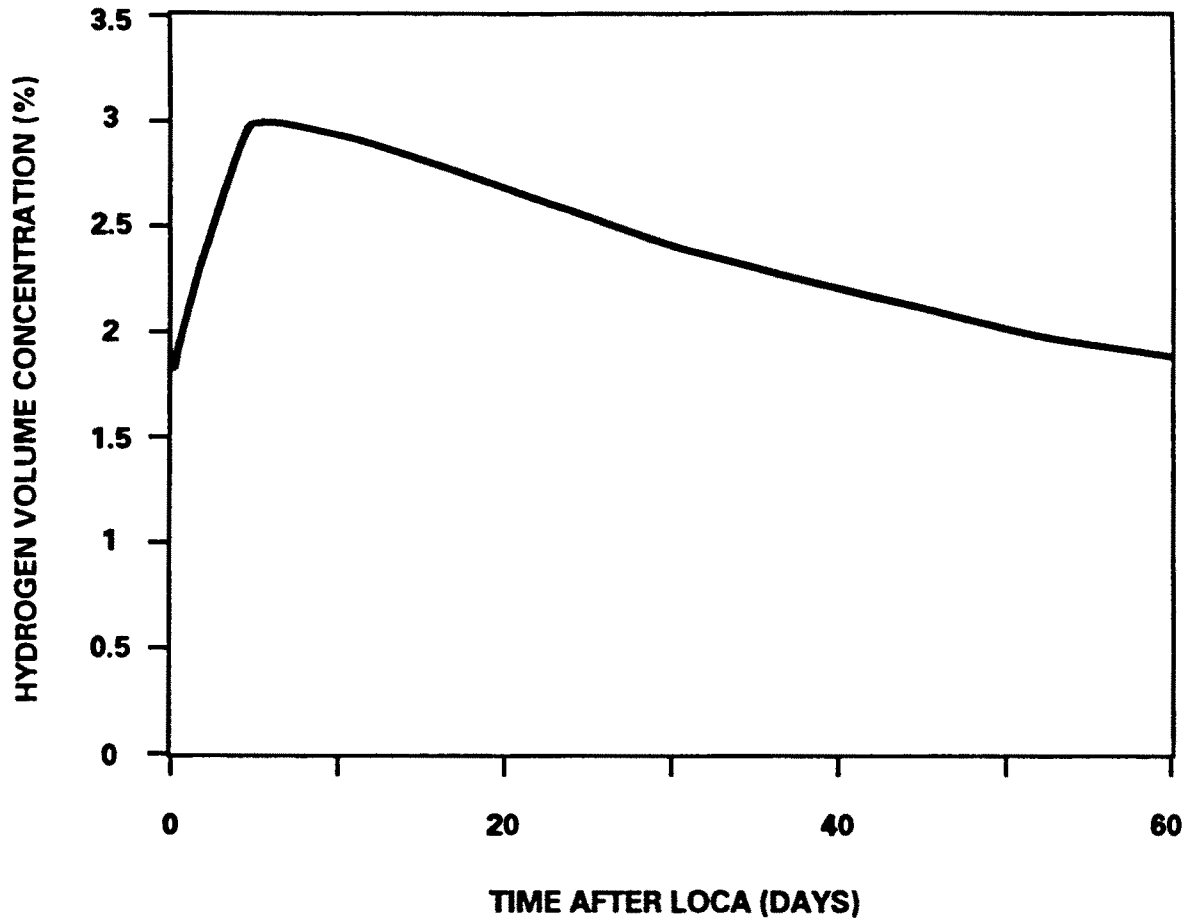
HYDROGEN ACCUMULATION IN CONTAINMENT



CALLAWAY PLANT

FIGURE 6.2.5-6 REV 0L-3 6/89

HYDROGEN VOLUME CONCENTRATION IN CONTAINMENT ASSUMING NO PREVENTIVE ACTION TAKEN



CALLAWAY PLANT

REV 0L-3
6/89

FIGURE 6.2.5–7

HYDROGEN VOLUME CONCENTRATION IN CONTAINMENT WITH PURGING AFTER 5.1 DAYS

M-22GP01(Q)

REV.	DATE	DRAWN
5	9/27/90	SBR
CHKD. HLP	SUPV. TJM	APPD. N/A

REDRAWN FOR CLARITY
INCORP. RFR-08655

REV.	DATE	DRAWN
6	020998	RLW
CHKD. DLB	SUPV. AMR	APPD. N/A

INCORP. RFR-15455A.

REV.	DATE	DRAWN
7	053199	DJB
CHKD. RBF	SUPV. AMR	APPD. N/A

INCORP. RMP 92-2009

REV.	DATE	DRAWN
8	070299	DJB
CHKD. RLW	SUPV. AMR	APPD. N/A

INCORP. RFR-19847A

REV.	DATE	DRAWN
9	032400	MAL
CHKD. JHK	SUPV. AMR	APPD. N/A

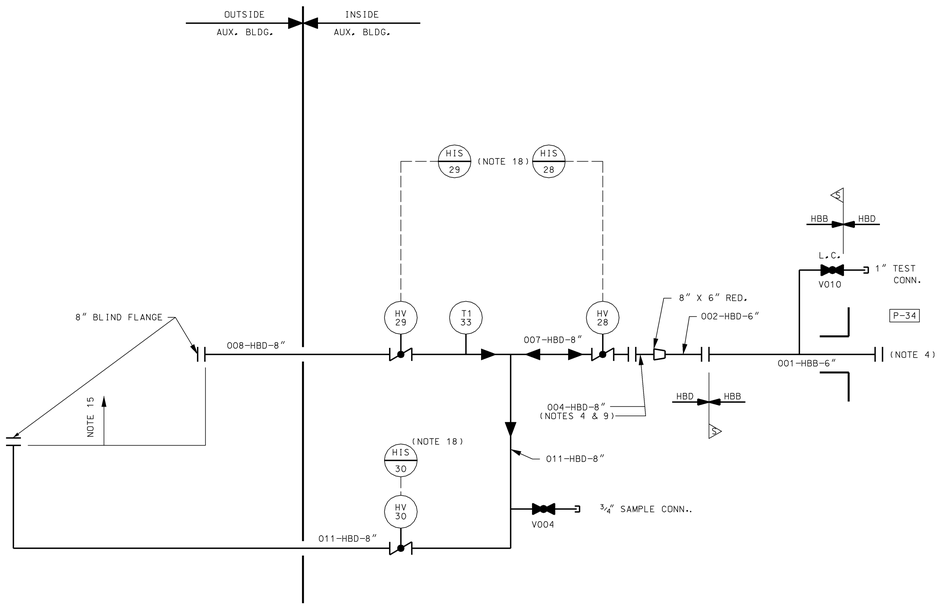
INCORP. RFR-20063A.

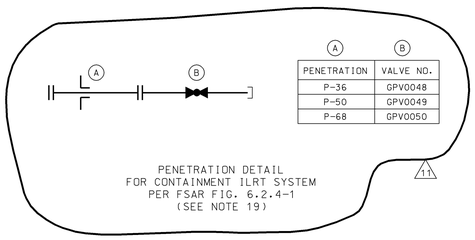
REV.	DATE
10	041905
DRAWN MAL	CHKD. RLW	SUPV. TWS

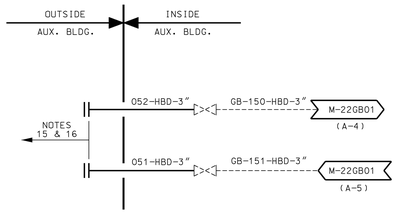
INCORP. RFR 22941A

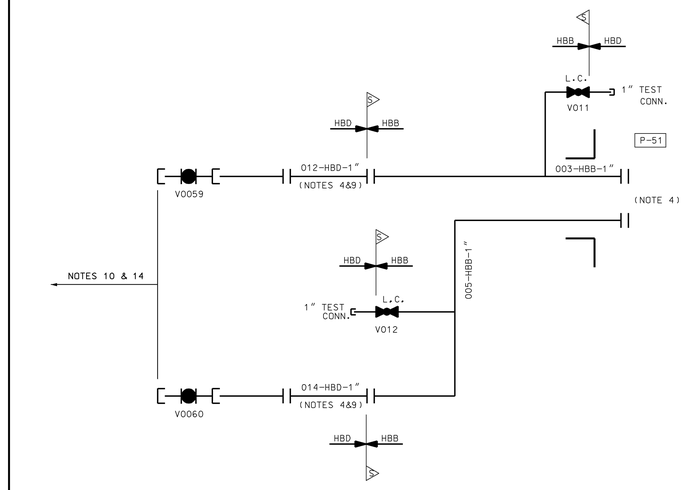
REV.	DATE
11	11015
DRAWN MAL	CHKD. RLW	SUPV. DME

INCORP. CAR 201406781. ACTION 1.

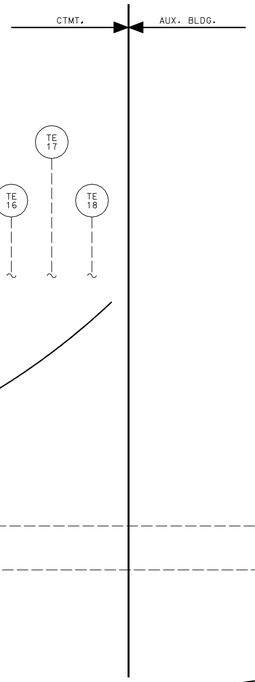


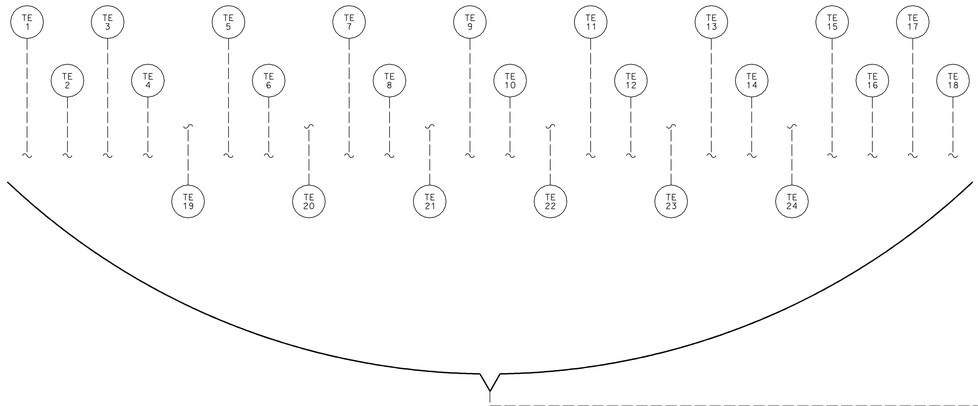


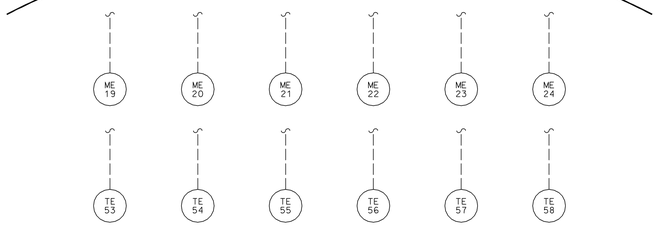




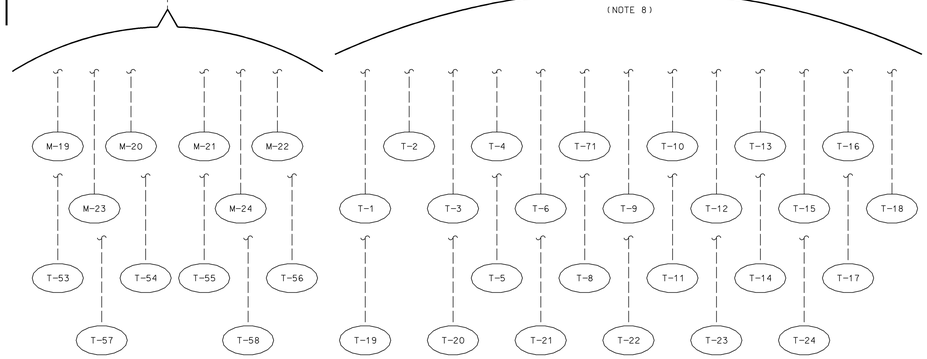
CTMT. TEMPERATURE MONITORS (24) (NOTE 8)







CTMT. DEWPOINT MONITORS (NOTES 7, 8 & 17)



NOTES:

1. DELETED.
2. DELETED.
3. DELETED.
4. BLIND FLANGE TO BE INSTALLED DURING NORMAL OPERATION.
5. DELETED.
6. DELETED.
7. EACH RELATIVE HUMIDITY SENSOR WILL BE PAIRED WITH A TEMPERATURE SENSOR TO PROVIDE DEWPOINT INFORMATION.
8. CTMT TEMP. MONITORS, DEWPOINT MONITORS, PANELS AND ASSOCIATED INSTRUMENTATION (INCLUDING INTER-CONNECTIONS) CAN BE PROVIDED BY THE UTILITY. SEE E-23GP02 AND E-23GP03 FOR INSTRUMENTATION DETAILS. OPTIONAL VENDOR INSTRUMENTATION AND DATA AQUISITION EQUIPMENT CAN USE THE INSTALLED CABLING AS SHOWN ON E-23GP02 AND E-23GP03.
9. SPOOL PIECE INSTALLED ONLY DURING ILRT.
10. FLOW AND PRESSURE INSTRUMENTATION FOR ILRT ACTIVITIES ARE INSTALLED AT THESE CONNECTION POINTS.
11. DELETED.
12. DELETED.
13. DELETED.
14. CAP TO BE INSTALLED FOR NORMAL PLANT OPERATION.
15. BLIND FLANGES INSTALLED DURING NORMAL PLANT OPERATION. AIR COMPRESSORS AND ASSOCIATED SUPPORT EQUIPMENT FOR ILRT ACTIVITIES ARE INSTALLED AT THESE CONNECTION POINTS. THIS EQUIPMENT IS SUPPLIED BY THE UTILITY.
16. BLIND FLANGES REMOVED AND HOSE CONNECTIONS INSTALLED DURING USE FOR RWST COOLING.
17. DATA CAN BE TRANSMITTED IN A DIGITAL FORMAT TO THE PLANT COMPUTER. DIGITAL INTERFACE IS LOCATED IN CABINET GP-348.
18. GPHIS28, GPHIS29 AND GPHIS30 ARE LOCATED ON THE WALL ACROSS FROM THE VALVES AT AUX. BLDG EL. 2000' COL. LINES AN-A13 (GRID LOCATION AF051.

11 19. THIS DETAIL DOES NOT APPLY TO THE PERFORMANCE OF TYPE A TESTS.

AS-BUILT CLASS 1

DRAWN N/A (DATE)	PIPING AND INSTRUMENTATION DIAGRAM CONTAINMENT INTEGRATED LEAK RATE TEST FSAR FIGURE 6.2.6-1 11		
CHKD. N/A (DATE)			
SUPV. N/A (DATE)			
APPD. N/A (DATE)	LOCATION CALLAWAY ENERGY CENTER		CLASS
UNION ELECTRIC COMPANY ST. LOUIS, MO	M-22GP01(Q)		REV. 11

Callaway

Final Safety Analysis Report

Revision OL-22

Chapter 6 drawings

FSAR Figures 6.2.1-76, 6.2.2-2,sheet 1 and 6.2.2-7

are withheld Per

Regulatory Issue Summary 2015-17