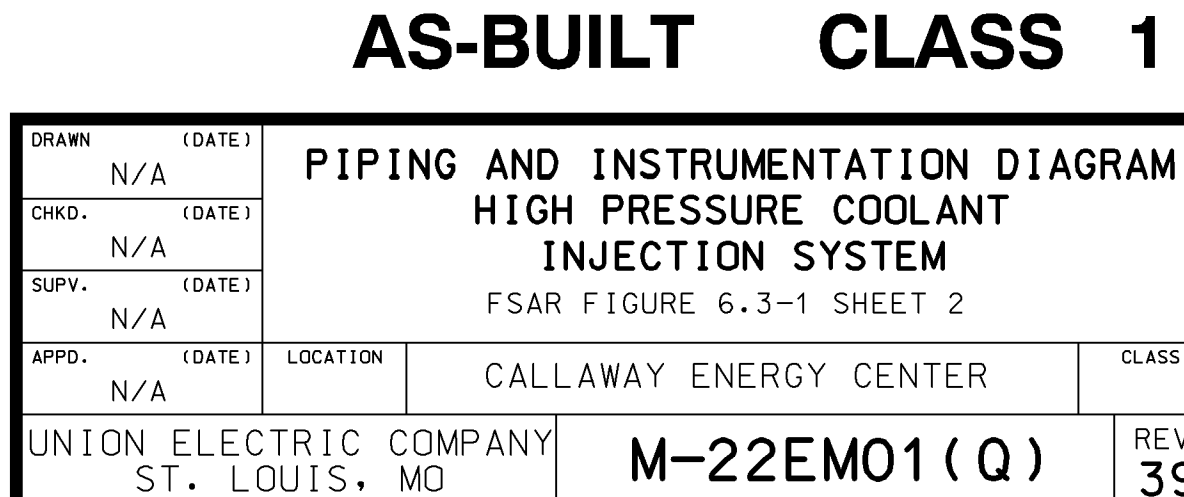


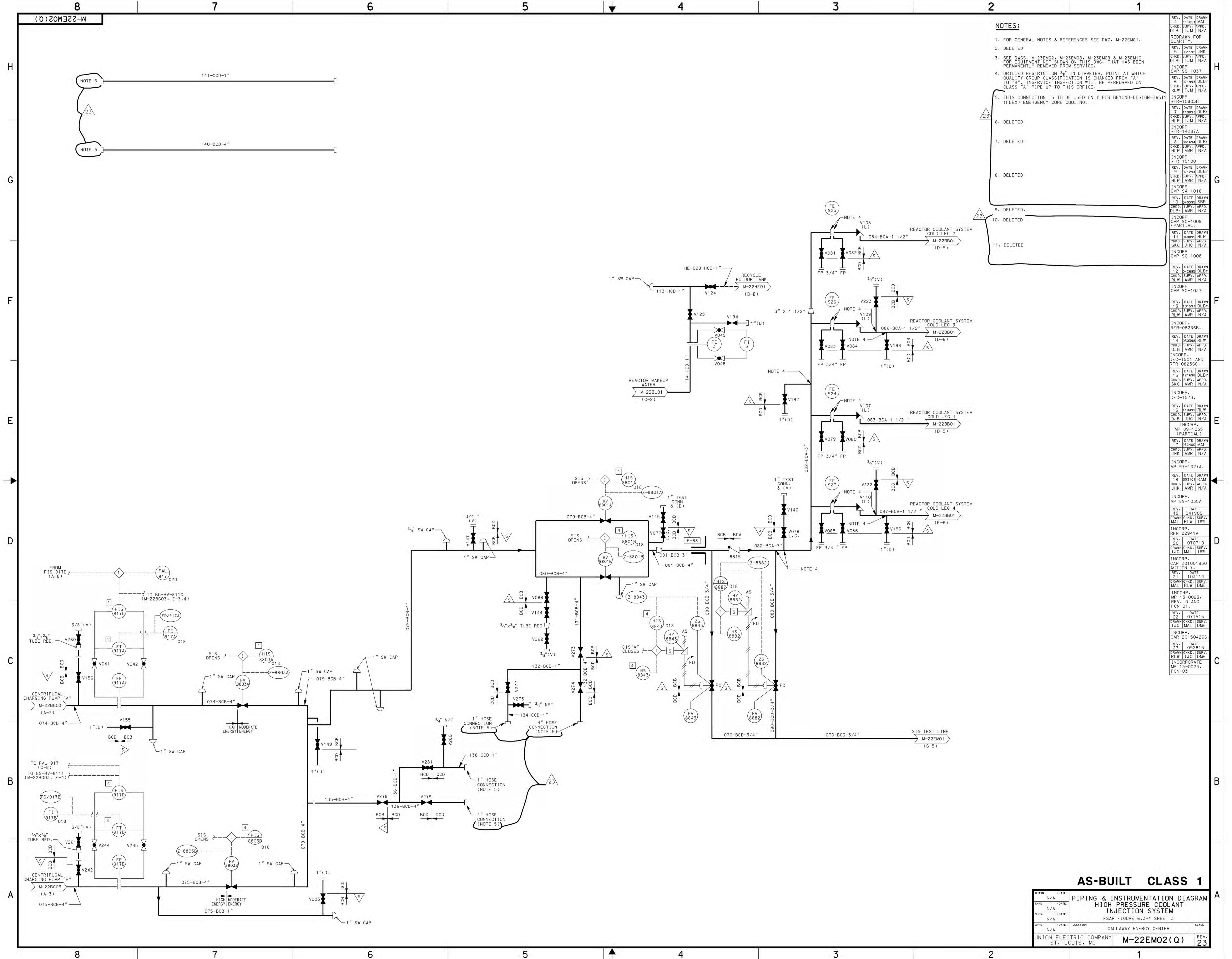
- NOTES:**
1. LOCATE CONNECTION ABOVE NORMAL WATER LEVEL.
 2. HEATING COIL AND STEAM SUPPLY AND RETURN LINES ARE NOT LISTED.
 3. REFERENCED WESTINGHOUSE DRAWINGS: 1145E02 SHT.3, 1145E03, 1145E04 SHEETS 1 THRU 3.
 4. DELETED.
 5. REMOVABLE SPOOL PIPE REQUIRED FOR HYDROTESTING.
 6. ISOLATION SWITCH PROVIDED IN THE CONTROL ROOM FOR POWER LOCKOUT OF VALVE HV-8813.
 7. THE THERMOWELL FOR TE-6 WILL BE IN ACCORDANCE WITH SPEC. J-5631(Q).
 8. TEST INDICATING SWITCH TO VERIFY CIRCUIT OPERABILITY.
 9. LEVEL SWITCH NOT USED ON THIS INSTRUMENT.
 10. TEMPORARY COOLING SUPPLIED THROUGH BONNET OF BNVO016 AND BNVO036.
 11. DELETED.
 12. PIPE CAP MAY BE REPLACED BY QUICK-DISCONNECT ASSEMBLY. PER RFR-17192B.

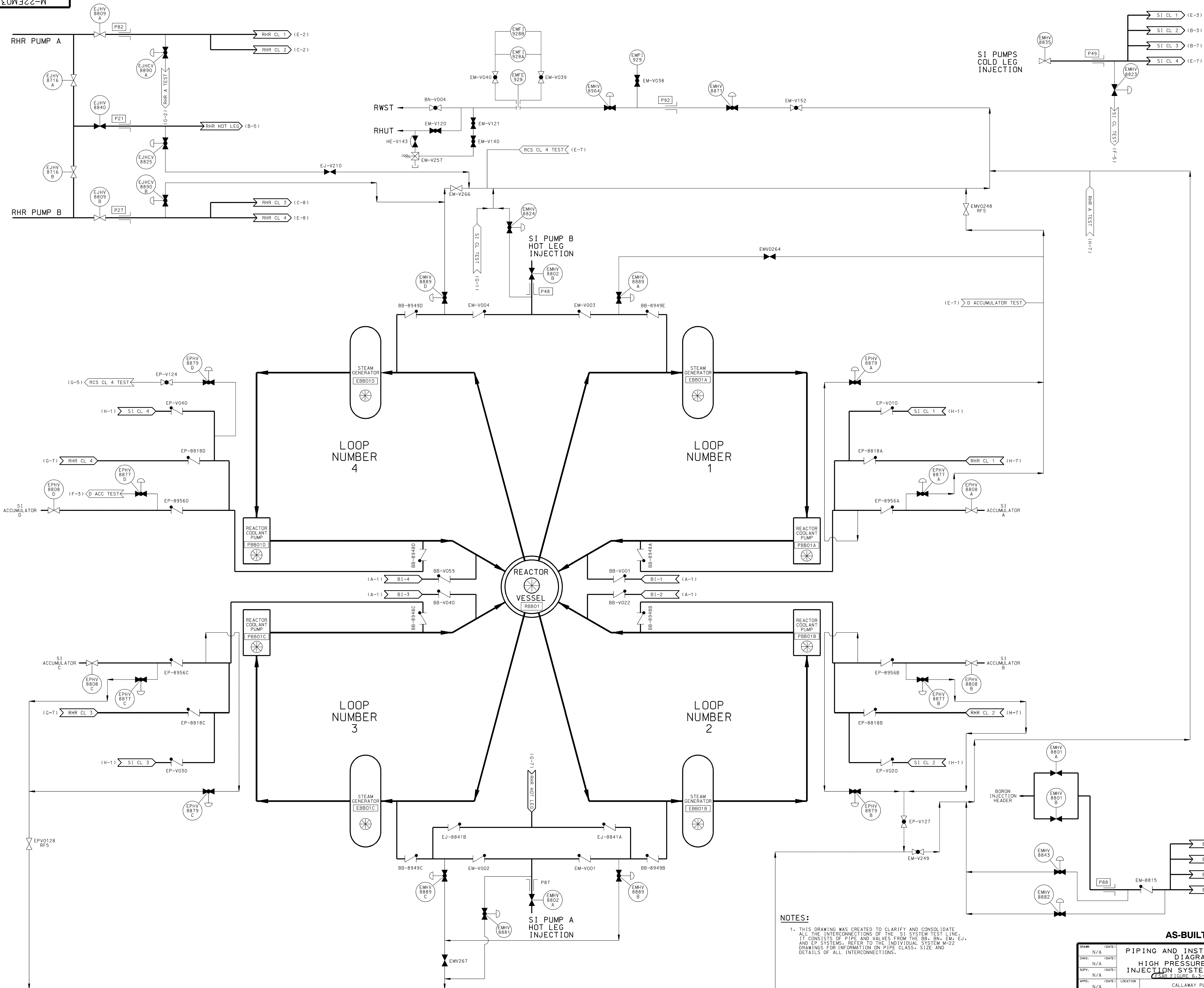
AS-BUILT CLASS 1

| | | | |
|------------------------|---------------|-------------|----------------------------------------|
| Drawn | N/A | (DATE) | PIPING AND INSTRUMENTATION DIAGRAM |
| Checked | N/A | (DATE) | BORATED REFUELING WATER STORAGE SYSTEM |
| Supv. | N/A | (DATE) | FSAR FIGURE 6.3-1 SHEET 1 |
| App'd. | N/A | (DATE) | CALLAWAY ENERGY CENTER |
| UNION ELECTRIC COMPANY | ST. LOUIS, MO | M-22BN01(Q) | REV. 26 |

| | | | | | | | |
|---------|------|---------|-------|-------|--------|-----|-----|
| REV. | DATE | DRAWN | CHKD. | SUPV. | APP'D. | AMR | N/A |
| INCORP. | 18 | 062994 | JHK | | | | |
| REV. | DATE | DRAWN | CHKD. | SUPV. | APP'D. | AMR | N/A |
| INCORP. | 19 | 111994 | RLW | | | | |
| REV. | DATE | DRAWN | CHKD. | SUPV. | APP'D. | AMR | N/A |
| INCORP. | 20 | 102994 | RLW | | | | |
| REV. | DATE | DRAWN | CHKD. | SUPV. | APP'D. | AMR | N/A |
| INCORP. | 21 | 111102 | | | | | |
| REV. | DATE | DRAWN | CHKD. | SUPV. | APP'D. | AMR | N/A |
| INCORP. | 22 | 082003 | | | | | |
| REV. | DATE | DRAWN | CHKD. | SUPV. | APP'D. | AMR | N/A |
| INCORP. | 23 | 091003 | | | | | |
| REV. | DATE | DRAWN | CHKD. | SUPV. | APP'D. | AMR | N/A |
| INCORP. | 24 | 110904 | | | | | |
| REV. | DATE | DRAWN | CHKD. | SUPV. | APP'D. | AMR | N/A |
| INCORP. | 25 | 082007 | | | | | |
| REV. | DATE | DRAWN | CHKD. | SUPV. | APP'D. | AMR | N/A |
| INCORP. | 26 | 102914 | | | | | |
| REV. | DATE | DRAWN | CHKD. | SUPV. | APP'D. | AMR | N/A |
| INCORP. | 27 | 13-0028 | | | | | |
| REV. | DATE | DRAWN | CHKD. | SUPV. | APP'D. | AMR | N/A |
| INCORP. | 28 | 13-0028 | | | | | |



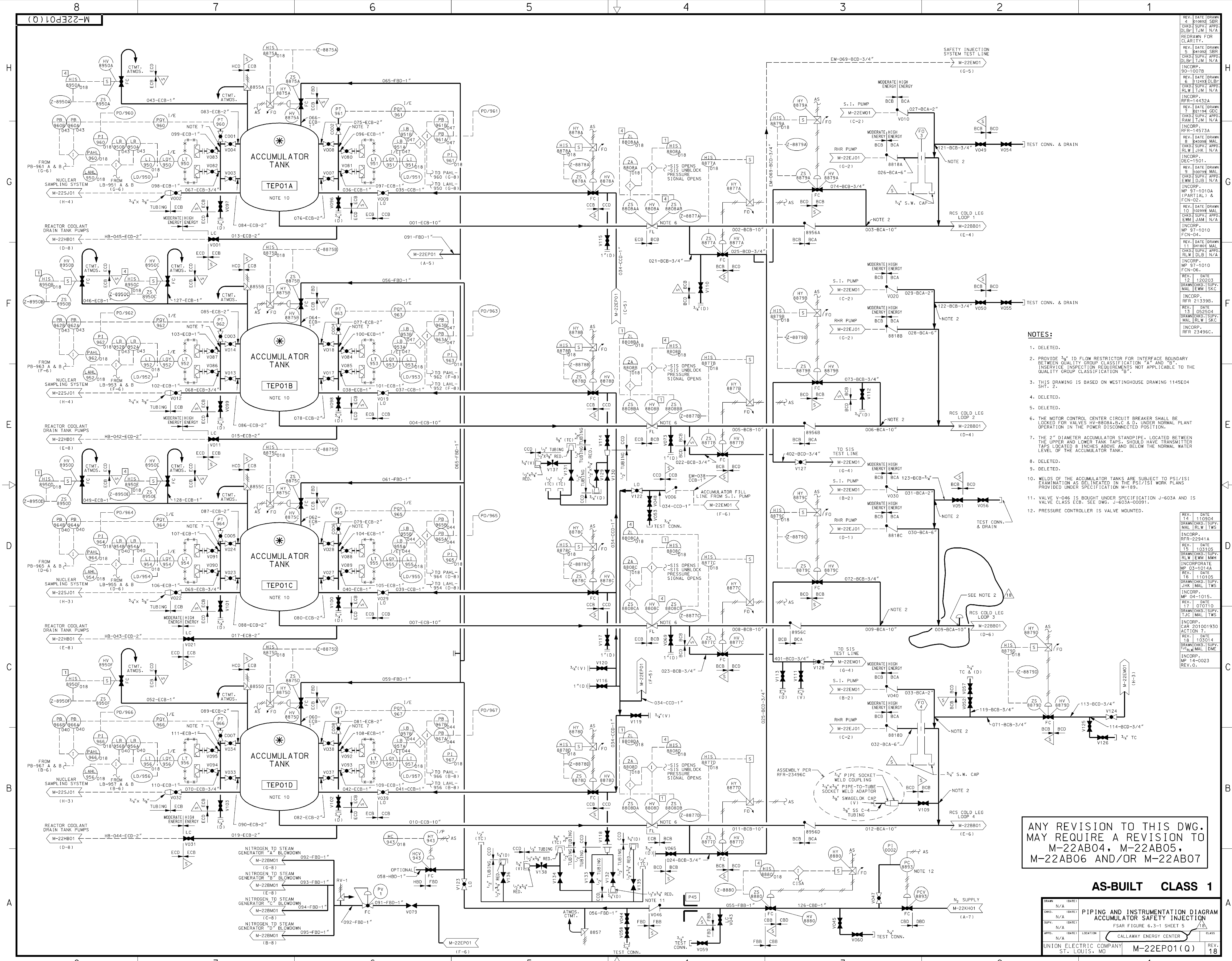


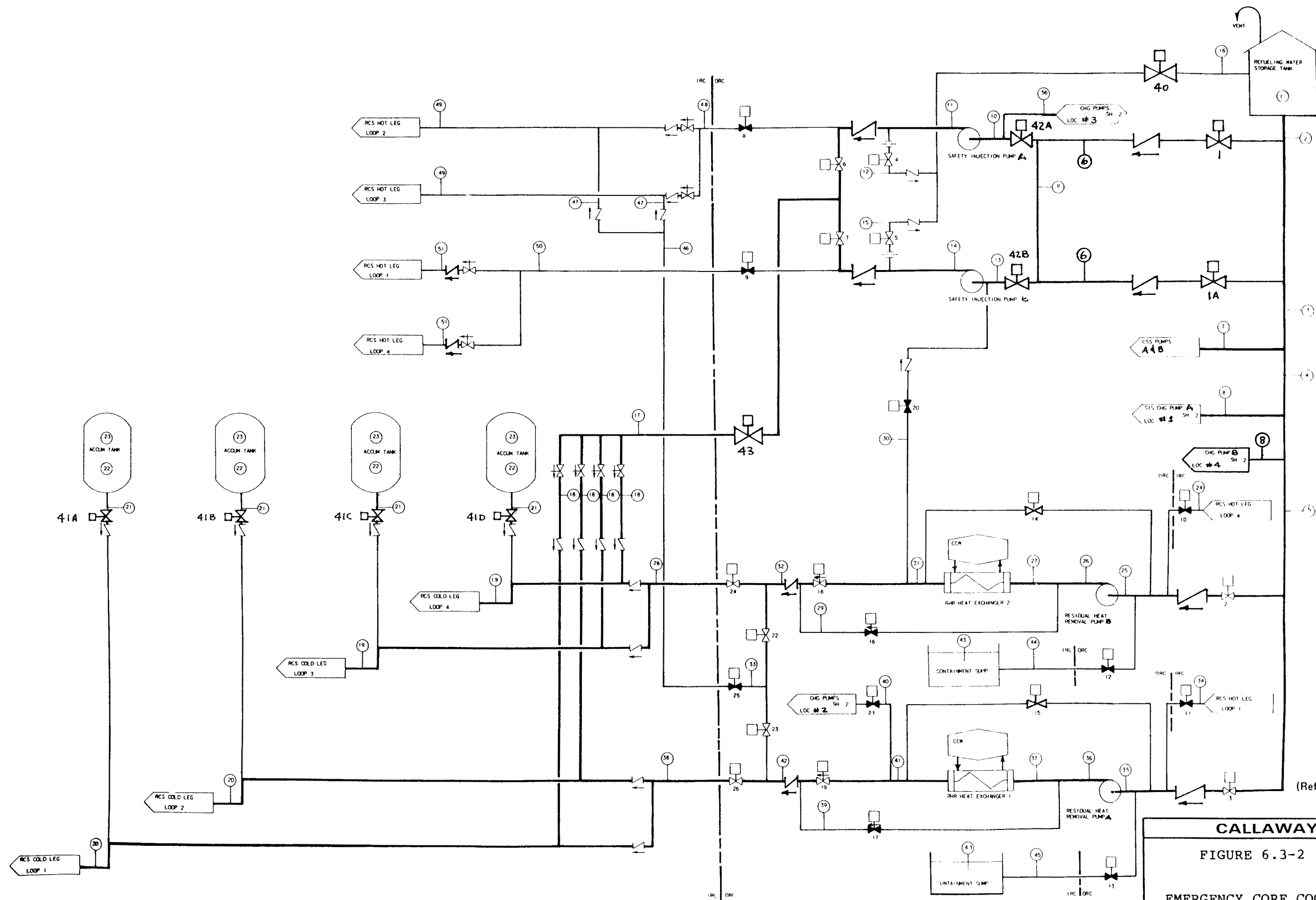


| | | |
|--------------------------|--------|-------|
| REV. | DATE | DRAWN |
| 0 | 050791 | SBR |
| CHKD. | SUPV. | APPD. |
| DLBT | JTM | N/A |
| INITIAL | | |
| RFR=8869A | | |
| | | |
| REV. | DATE | DRAWN |
| 1 | 072391 | JHK |
| CHKD. | SUPV. | APPD. |
| DLBT | JTM | N/A |
| INCORP. | | |
| COP-911007. | | |
| REV. | DATE | DRAWN |
| 2 | 113131 | NAL |
| CHKD. | SUPV. | APPD. |
| RAM | JTM | N/A |
| INCORP. | | |
| DEC-0770. | | |
| REV. | DATE | DRAWN |
| 3 | 080583 | CDB |
| CHKD. | SUPV. | APPD. |
| RAM | JTM | N/A |
| INCORP. | | |
| DEC-0883. | | |
| REV. | DATE | DRAWN |
| 4 | 011593 | DLB |
| CHKD. | SUPV. | APPD. |
| RLW | JTM | N/A |
| INCORP. | | |
| DEC-0877. | | |
| REV. | DATE | DRAWN |
| 5 | 080395 | DLB |
| CHKD. | SUPV. | APPD. |
| RAM | JTM | N/A |
| INCORP. | | |
| DEC-1267 | | |
| REV. | DATE | DRAWN |
| 6 | 041097 | HLP |
| CHKD. | SUPV. | APPD. |
| SKC | AMR | N/A |
| INCORP. | | |
| DEC-1339A | | |
| REV. | DATE | DRAWN |
| 7 | 041260 | ML |
| CHKD. | SUPV. | APPD. |
| SKC | JHC | N/A |
| INCORP. | | |
| MP 00-1003A. | | |
| REV. | DATE | DRAWN |
| 8 | 041260 | ML |
| CHKD. | SUPV. | APPD. |
| SKC | JHC | N/A |
| INCORP. | | |
| MP 00-1012A. | | |
| REV. | DATE | DRAWN |
| 9 | 042001 | RLW |
| CHKD. | SUPV. | APPD. |
| MAL | DTW | N/A |
| INCORP. | | |
| MAL 00-1015 (PARTIAL) | | |
| REV. | DATE | DRAWN |
| 10 | 042010 | RLW |
| CHKD. | SUPV. | APPD. |
| MAL | DTW | N/A |
| INCORP. | | |
| MAL 00-1015A | | |
| REV. | DATE | DRAWN |
| 11 | 110402 | DLB |
| CHKD. | SUPV. | APPD. |
| MT | DTW | N/A |
| INCORPORATE | | |
| MP 01-1019A | | |
| REV. | DATE | DRAWN |
| 13 | 041905 | TWS |
| CHKD. | SUPV. | APPD. |
| RFR | RLW | N/A |
| INCORP. | | |
| RFR 22941A | | |

NOTES:

1. THIS DRAWING WAS CREATED TO CLARIFY AND CONSOLIDATE ALL THE INTERCONNECTIONS OF THE S1 SYSTEM TEST LINE. IT CONSISTS OF PIPE AND VALVES FROM THE BB, BN, EN, EJ, AND EP SYSTEMS. REFER TO THE INDIVIDUAL SYSTEM M-22 DRAWINGS FOR INFORMATION ON PIPE CLASS, SIZE AND DETAILS OF ALL INTERCONNECTIONS.

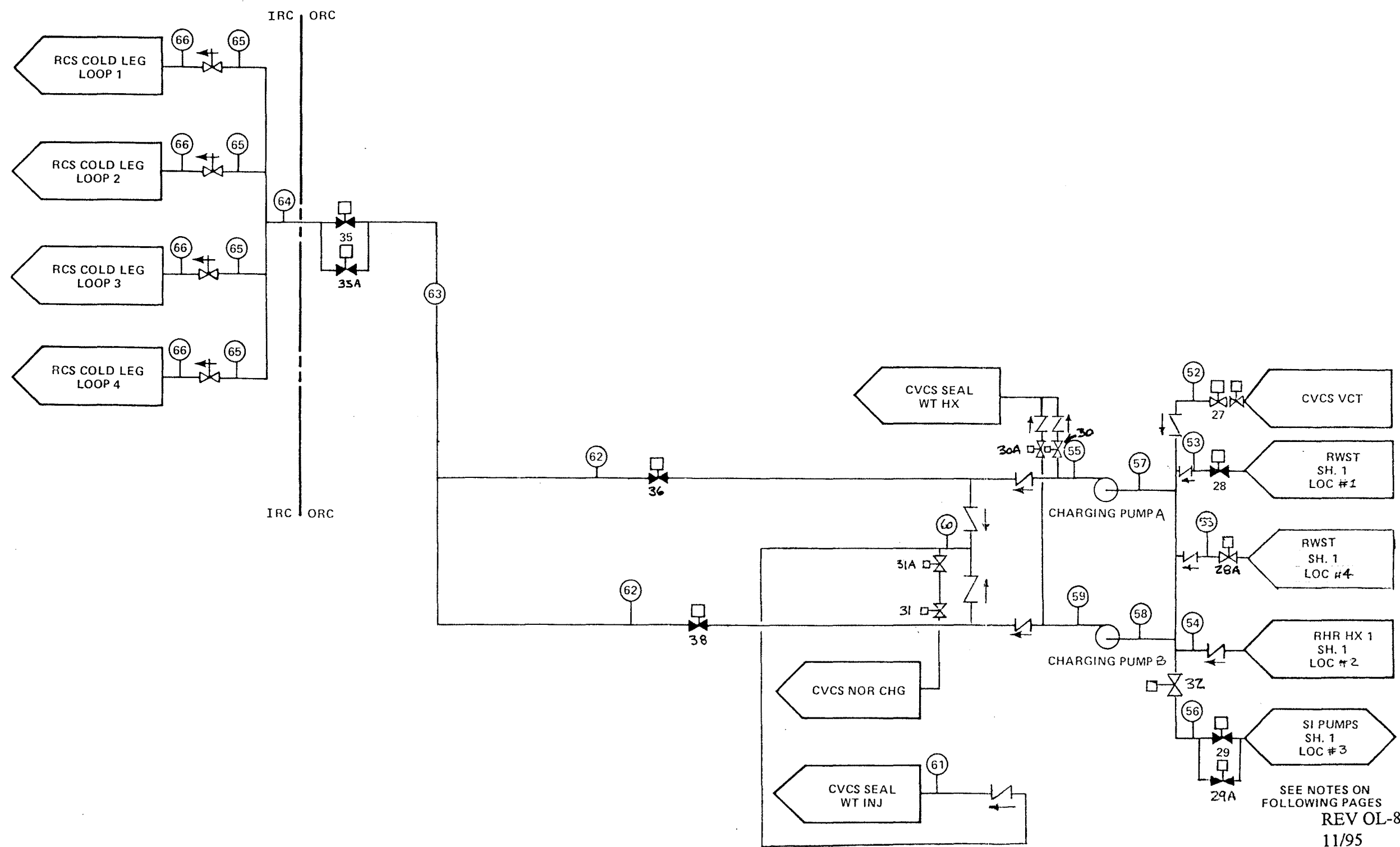




(Refer to following notes)

REV. OL-5
6/91

CALLAWAY PLANT
FIGURE 6.3-2 (SHEET 1)
EMERGENCY CORE COOLING SYSTEM
PROCESS FLOW DIAGRAM



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. | <u>Operational Modes</u> | | |
|--------------------|--------------------------|----------|----------|
| | <u>A</u> | <u>B</u> | <u>C</u> |
| 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 | C |
| 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.

CALLAWAY - SP

NOTES TO FIGURE 6.3-2 (Sheet 3)

MODE A - INJECTION PHASE(CONDITIONS FOLLOWING ACCUMULATOR DELIVERY)

| <u>Location</u> | <u>Fluid</u> | <u>Pressure (psig)</u> | <u>Temperature (F)</u> | <u>(gpm)</u> | <u>Flow (lb/sec)</u> | <u>Volume (gal)</u> |
|-----------------|--------------------|----------------------------|----------------------------|--------------|--------------------------|-------------------------|
| 1 | Refueling water | Atm tank | 100 | - | - | 394,000 |
| 2 | " | (a) | 100 | 16,905 | 2,333 | - |
| 3 | " | 13 psia | 100 | 16,025 | 12,211 | - |
| 4 | " | - | 100 | 9,695 | 1,338 | - |
| 5 | " | - | 100 | 8,856 | 1,222 | - |
| 6 | " | 11 psia | 100 | 440 | 61.5 | - |
| 7 | " | - | 100 | 3,165 | 437 | - |
| 8 | " | >10 psia | 100 | 419 | 58 | - |
| 9 | " | >10 psia | 100 | 440 | 61.5 | - |
| 10 | " | 10 psia | 100 | 440 | 61.5 | - |
| 11 | " | 1165 | 100 | 440 | 61.5 | - |
| 12 | " | <25 | 100 | 39 | 5 | - |
| 13 | " | 10 psia | 100 | 440 | 61.5 | - |
| 14 | " | 1165 | 100 | 440 | 61.5 | - |
| 15 | " | <25 | 100 | 39 | 5 | - |
| 16 | " | - | 100 | 78 | 11 | - |
| 17 | " | 1050 | 100 | 802 | 111 | - |
| 18 | " | 73 | 100 | 200.5 | 28 | - |
| 19 | " | Low pressure | 100 | 2,414.5 | 333 | - |
| 20 | " | Low pressure | 100 | 2,414.5 | 333 | - |
| 21 | Borated Water | 0 | 100 | 0 | 0 | - |
| 22 | Borated Water | 0 | 100 | 0 | 0 | 6358 ^(b) |

CALLAWAY - SP

NOTES TO FIGURE 6.3-2 (Sheet 4)

| <u>Location</u> | <u>Fluid</u> | <u>Pressure (psig)</u> | <u>Temperature (F)</u> | <u>(gpm)</u> | <u>Flow (lb/sec)</u> | <u>Volume (gal)</u> 500(ft ³) |
|-----------------|--------------------|----------------------------|----------------------------|--------------|--------------------------|--------------------------------------------------|
| 23 | Nitrogen | 0 | 100 | 0 | 0 | 500(ft ³) |
| 24 | Reactor coolant | - | 100 | 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 | - |

CALLAWAY - SP

NOTES TO FIGURE 6.3-2 (Sheet 5)

| <u>Location</u> | <u>Fluid</u> | <u>Pressure (psig)</u> | <u>Temperature (F)</u> | <u>(gpm)</u> | <u>Flow (lb/sec)</u> | <u>Volume (gal)</u> |
|-----------------|--------------------|----------------------------|----------------------------|--------------|--------------------------|-------------------------|
| 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

CALLAWAY - SP

NOTES TO FIGURE 6.3-2 (Sheet 6)

MODE B - COLD LEG RECIRCULATION (PUMP B OPERATING)

| <u>Location</u> | <u>Fluid</u> | <u>Pressure (psig)</u> | <u>Temperature (F)</u> | <u>(gpm)</u> | <u>Flow (lb/sec)</u> | <u>Volume (gal)</u> |
|-----------------|--------------------|----------------------------|----------------------------|--------------|--------------------------|-------------------------|
| 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 | - |

CALLAWAY - SP

NOTES TO FIGURE 6.3-2 (Sheet 7)

| <u>Location</u> | <u>Fluid</u> | <u>Pressure (psig)</u> | <u>Temperature (F)</u> | <u>(gpm)</u> | <u>Flow (lb/sec)</u> | <u>Volume (gal)</u> |
|-----------------|--------------------|----------------------------|----------------------------|--------------|--------------------------|-------------------------|
| 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 | - |

CALLAWAY - SP

NOTES TO FIGURE 6.3-2 (Sheet 8)

| <u>Location</u> | <u>Fluid</u> | <u>Pressure (psig)</u> | <u>Temperature (F)</u> | <u>(gpm)</u> | <u>Flow (lb/sec)</u> | <u>Volume (gal)</u> |
|-----------------|--------------------|----------------------------|----------------------------|--------------|--------------------------|-------------------------|
| 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.

CALLAWAY - SP

NOTES TO FIGURE 6.3-2 (Sheet 9)

MODE C - HOT LEG RECIRCULATION (PUMP A OPERATING)

| <u>Location</u> | <u>Fluid</u> | <u>Pressure (psig)</u> | <u>Temperature (F)</u> | <u>(gpm)</u> | <u>Flow (lb/sec)</u> | <u>Volume (gal)</u> |
|-----------------|--------------------|----------------------------|----------------------------|--------------|--------------------------|-------------------------|
| 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 | - |
| 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 | - |

CALLAWAY - SP

NOTES TO FIGURE 6.3-2 (Sheet 10)

| <u>Location</u> | <u>Fluid</u> | <u>Pressure (psig)</u> | <u>Temperature (F)</u> | <u>(gpm)</u> | <u>Flow (lb/sec)</u> | <u>Volume (gal)</u> |
|-----------------|--------------------|----------------------------|----------------------------|--------------|--------------------------|-------------------------|
| 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 | - |

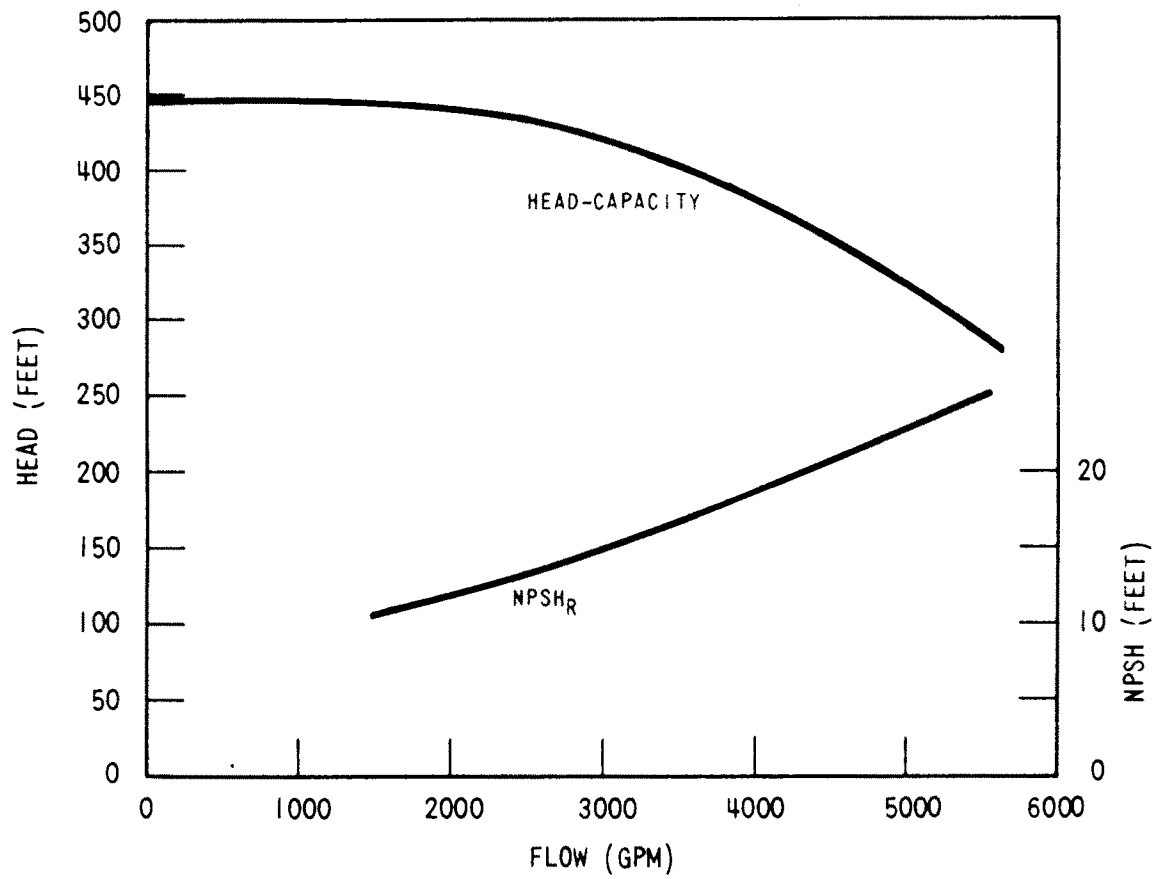
CALLAWAY - SP

NOTES TO FIGURE 6.3-2 (Sheet 11)

| <u>Location</u> | <u>Fluid</u> | <u>Pressure (psig)</u> | <u>Temperature (F)</u> | <u>(gpm)</u> | <u>Flow (lb/sec)</u> | <u>Volume (gal)</u> |
|-----------------|--------------------|----------------------------|----------------------------|--------------|--------------------------|-------------------------|
| 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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FIGURE 6.3-3

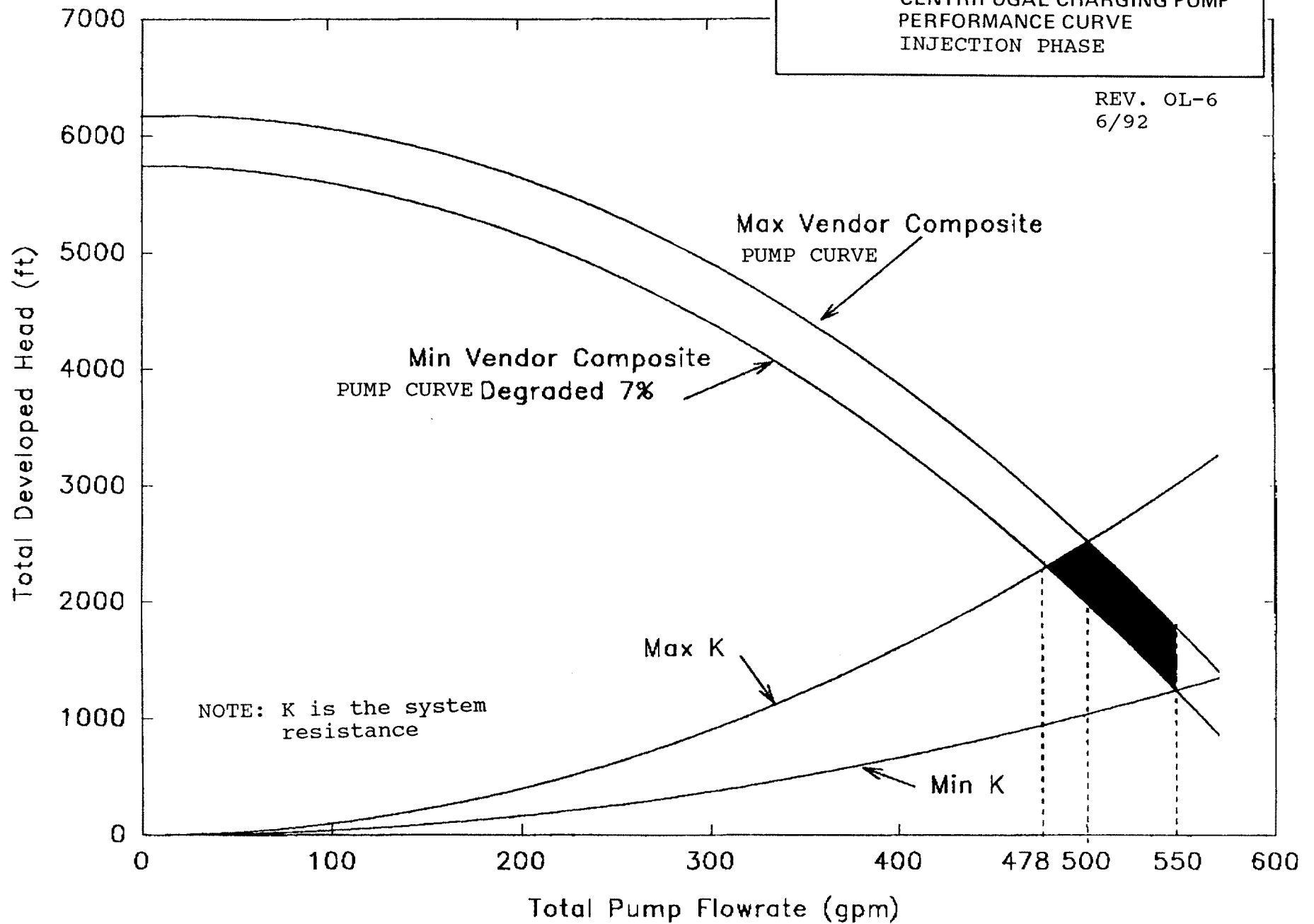
**TYPICAL RESIDUAL HEAT REMOVAL PUMP
PERFORMANCE CURVE**

CALLAWAY PLANT

FIGURE 6.3-4

CENTRIFUGAL CHARGING PUMP
PERFORMANCE CURVE
INJECTION PHASE

REV. OL-6
6/92

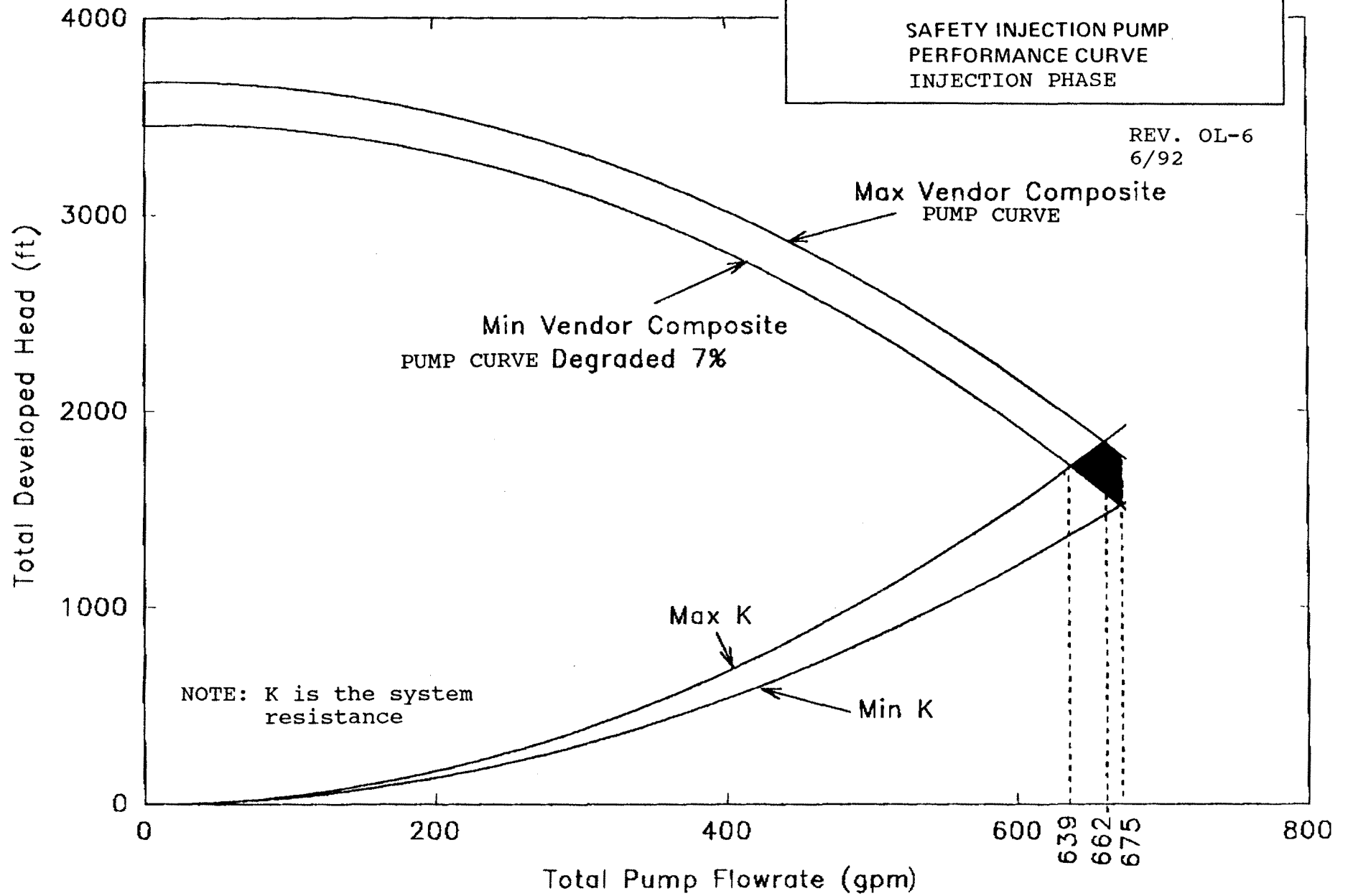


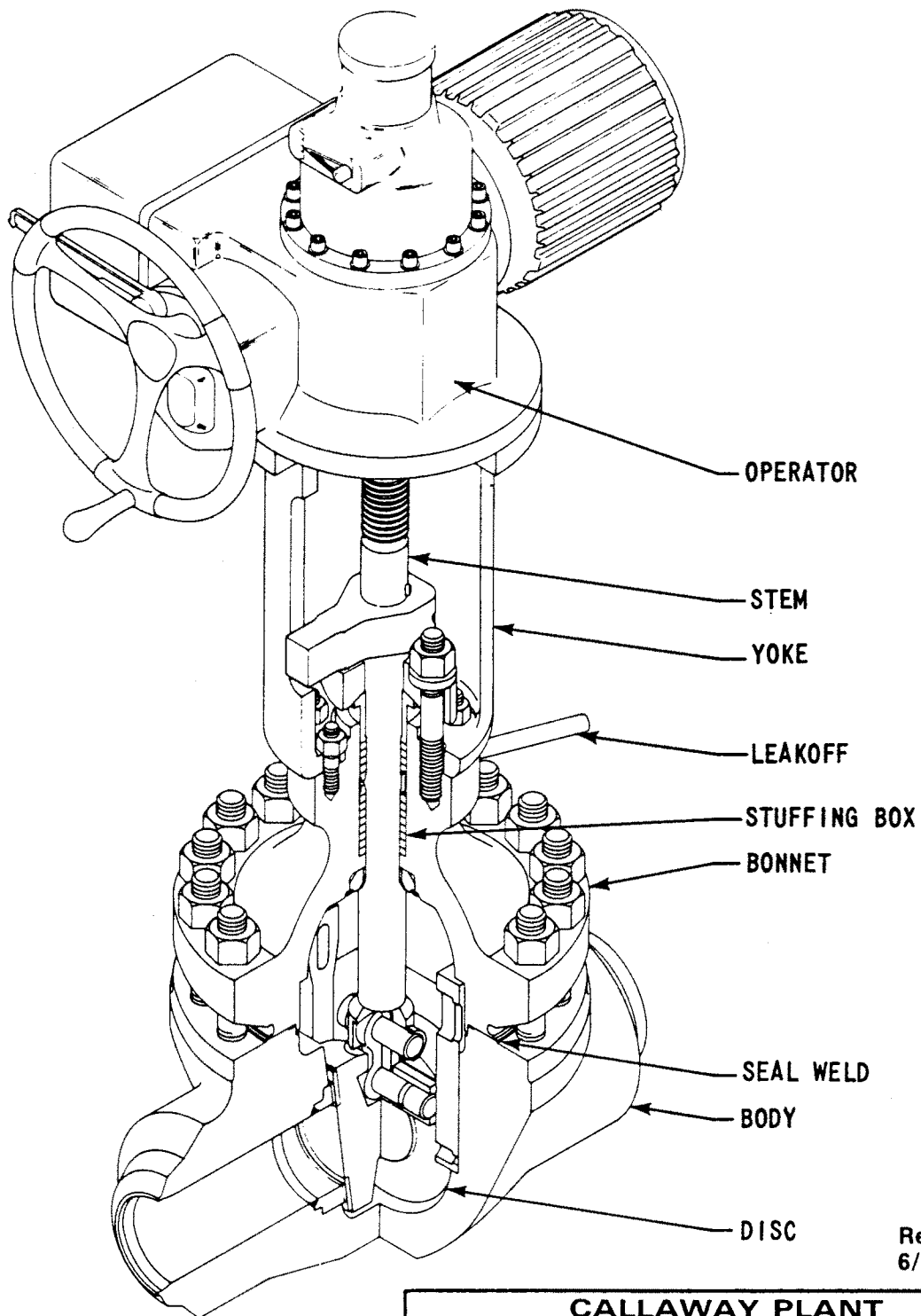
CALLAWAY PLANT

FIGURE 6.3-5

SAFETY INJECTION PUMP
PERFORMANCE CURVE
INJECTION PHASE

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6/92



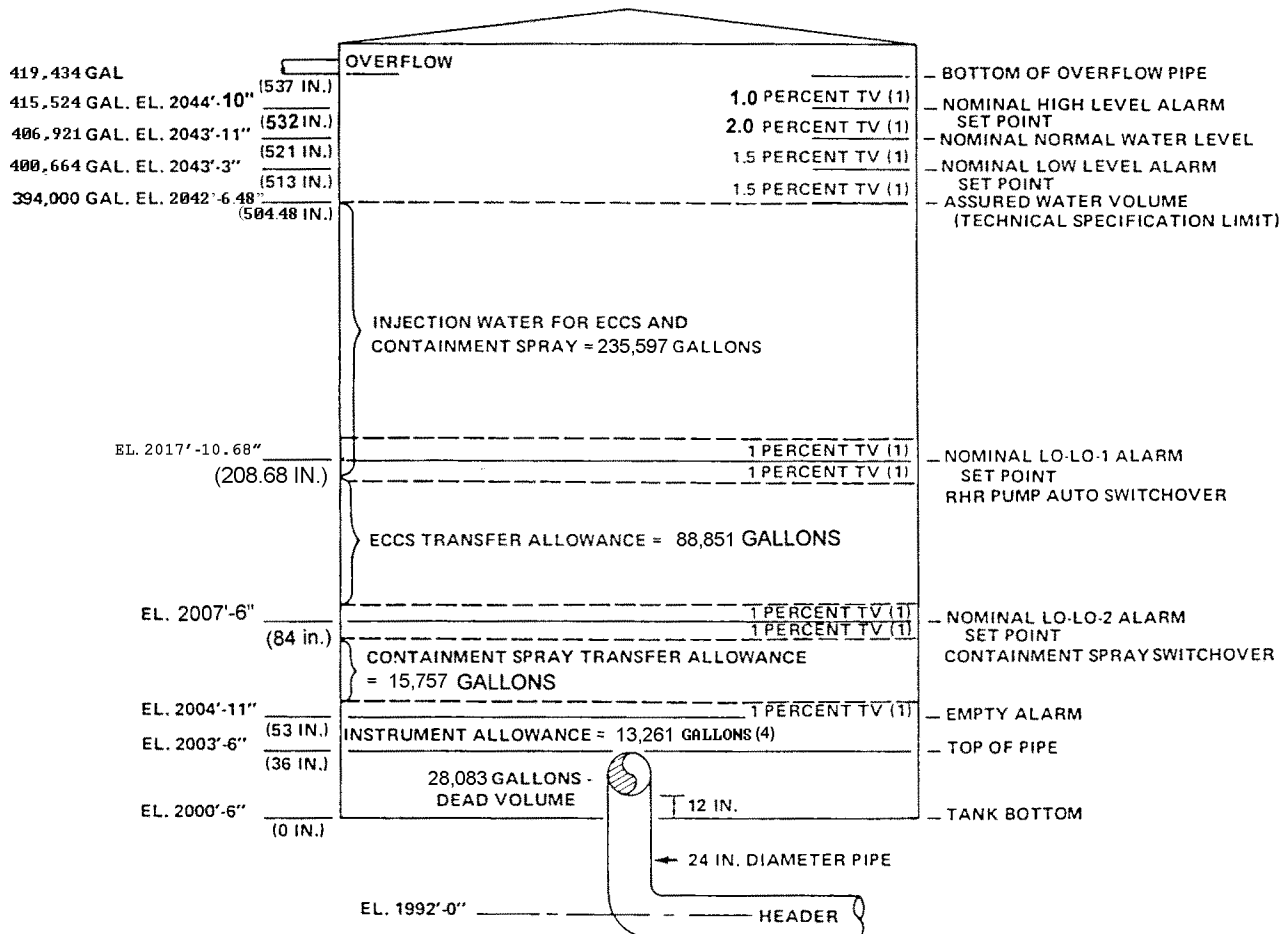


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CALLAWAY PLANT

FIGURE 6.3-6
GATE VALVE ASSEMBLY

RWST VOLUMES AND SET POINTS INFORMATION



NOTES:

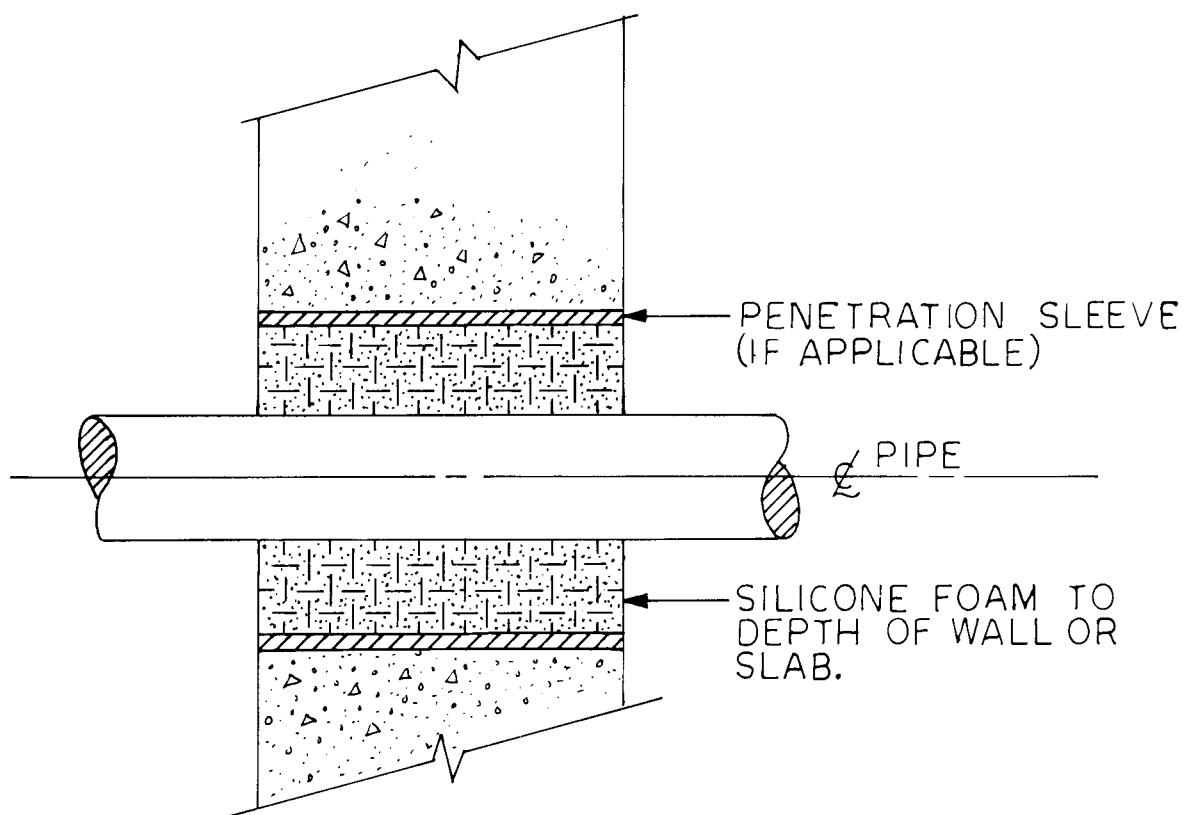
- 1) TANK VOLUME (TV) PERCENTS ARE BASED ON TOTAL STORED VOLUME TO OVERFLOW (0 IN. TO 537 IN.).
- 2) INSTRUMENT SPAN AND ACCURACY ARE BASED ON THE AVAILABLE VOLUME FROM THE LOWER INSTRUMENT TAP ZERO REFERENCE TO THE OVERFLOW (24 IN. TO 537 IN.).
- 3) TANK VOLUME (GAL./FT.) can be found in calculation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

CALLAWAY PLANT

FIGURE 6.3-7

RWST LEVELS
AND VOLUMES

REV. 13 9/07



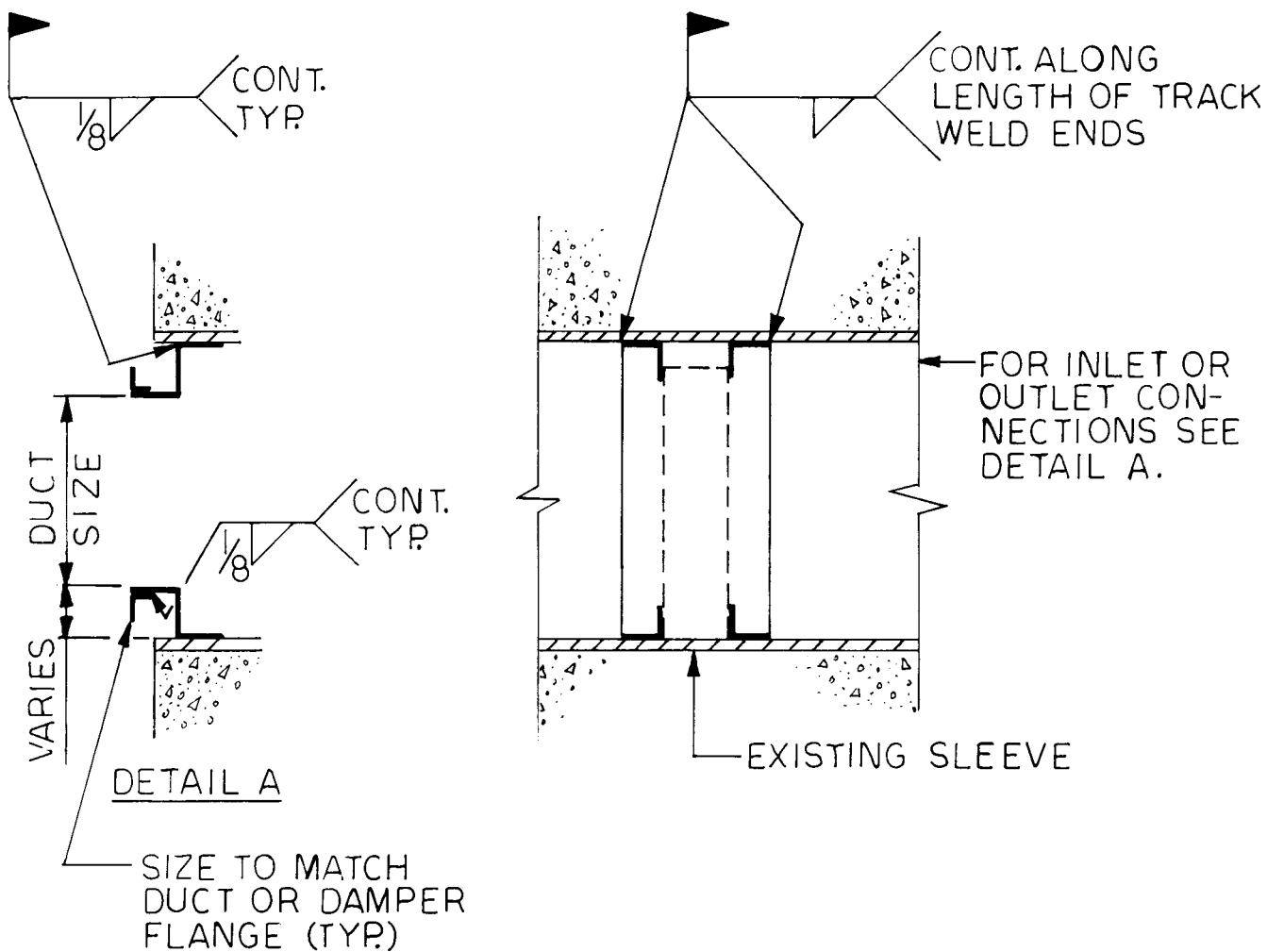
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FIGURE 6.4-1

SHEET 1

TYPICAL DETAIL
SEALING OF PIPING PENETRATION
THROUGH CONT. RM. FL. OR WALL

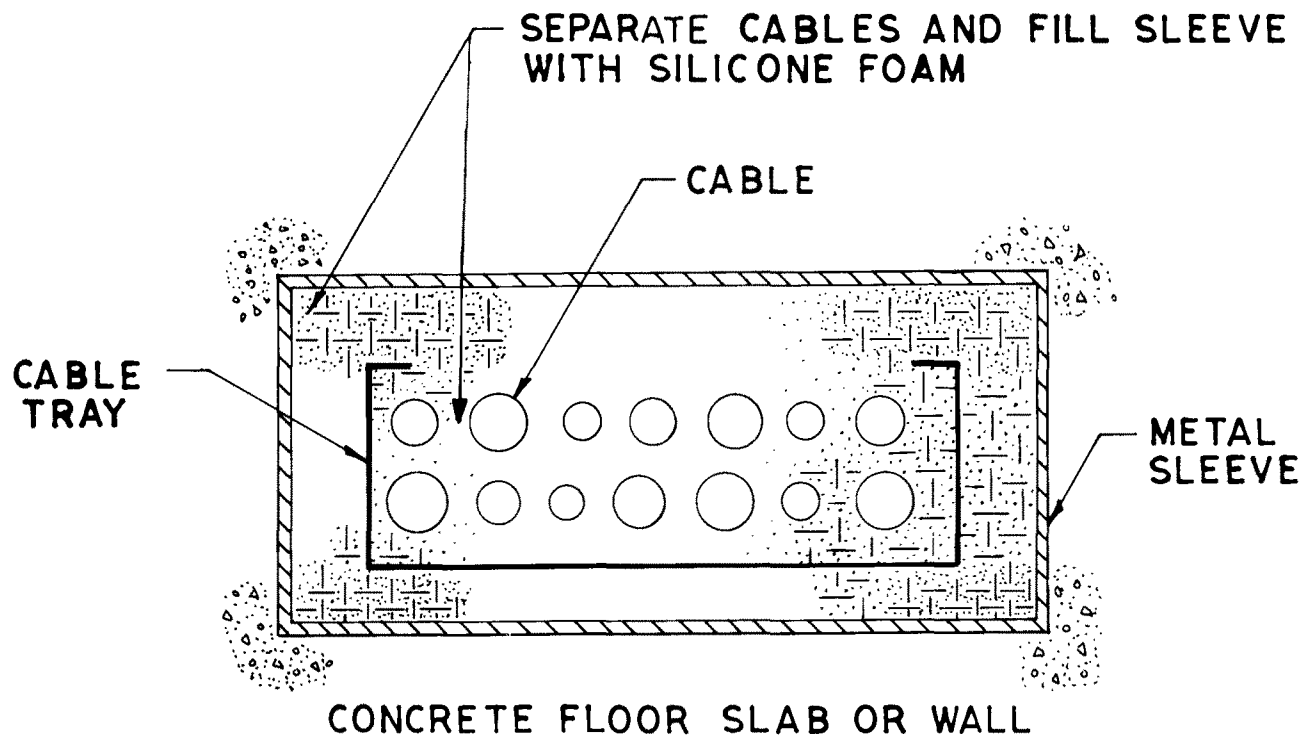


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FIGURE 6.4-1
SHEET 2

TYPICAL DETAIL
SEALING OF DUCTWORK PENET.
THROUGH CONT. RM. FL. OR WALL

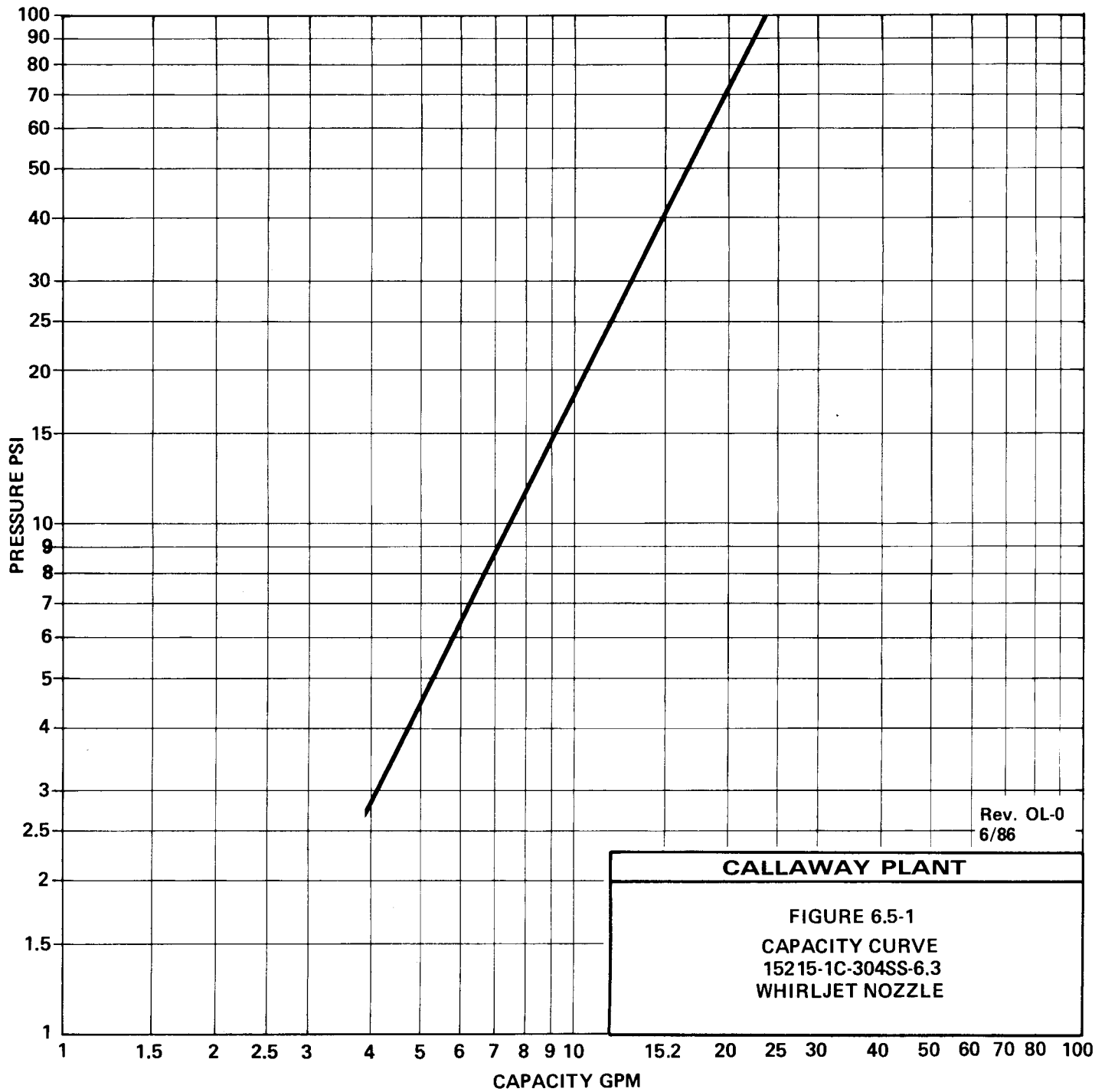


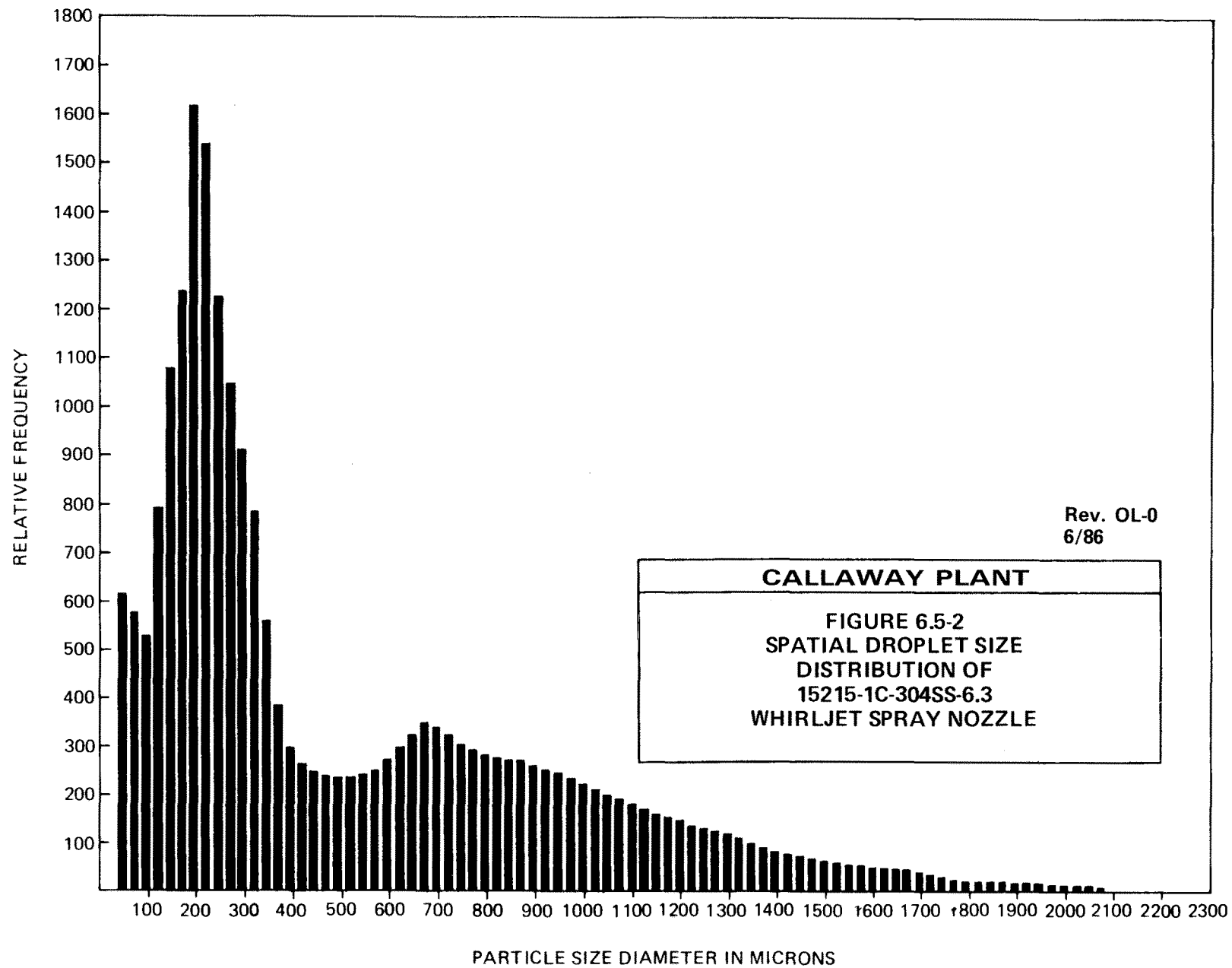
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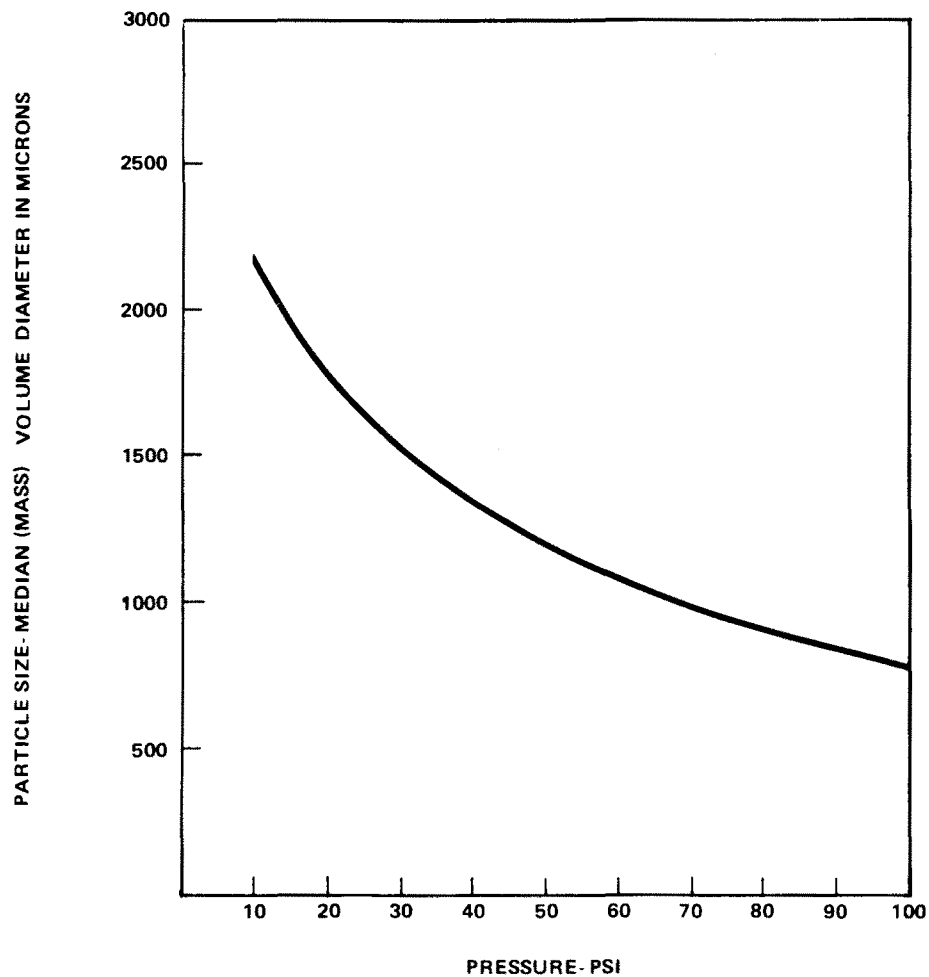
CALLAWAY PLANT

FIGURE 6.4-1
SHEET 3

TYPICAL DETAIL
SEALING OF CABLE TRAY PENET.
THROUGH CONT. RM. FL. OR WALL



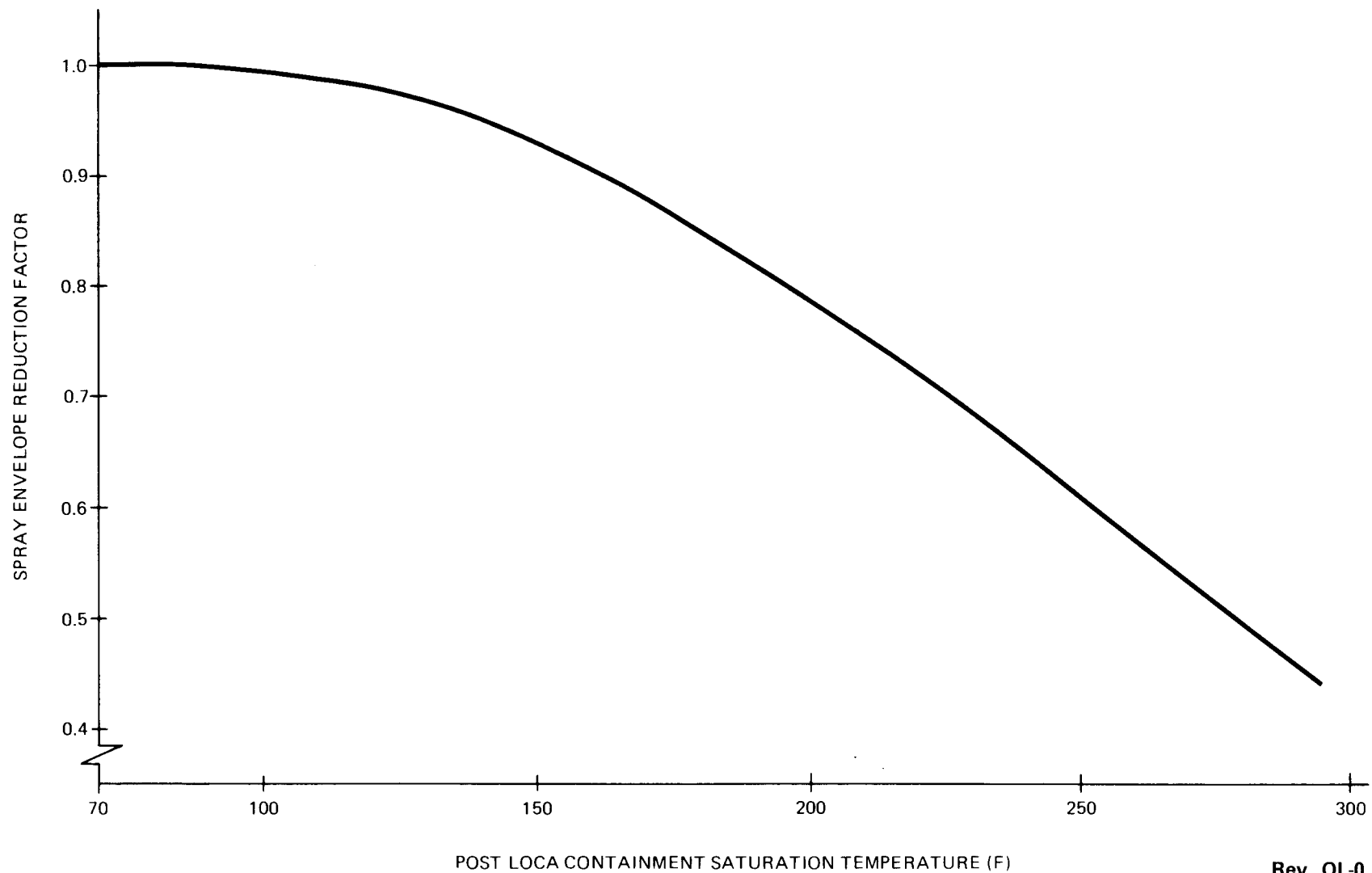




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**FIGURE 6.5-3
PARTICLE SIZE
VS.
PRESSURE
15215-1C-304-SS-6.3
WHIRLJET SPRAY NOZZLE**



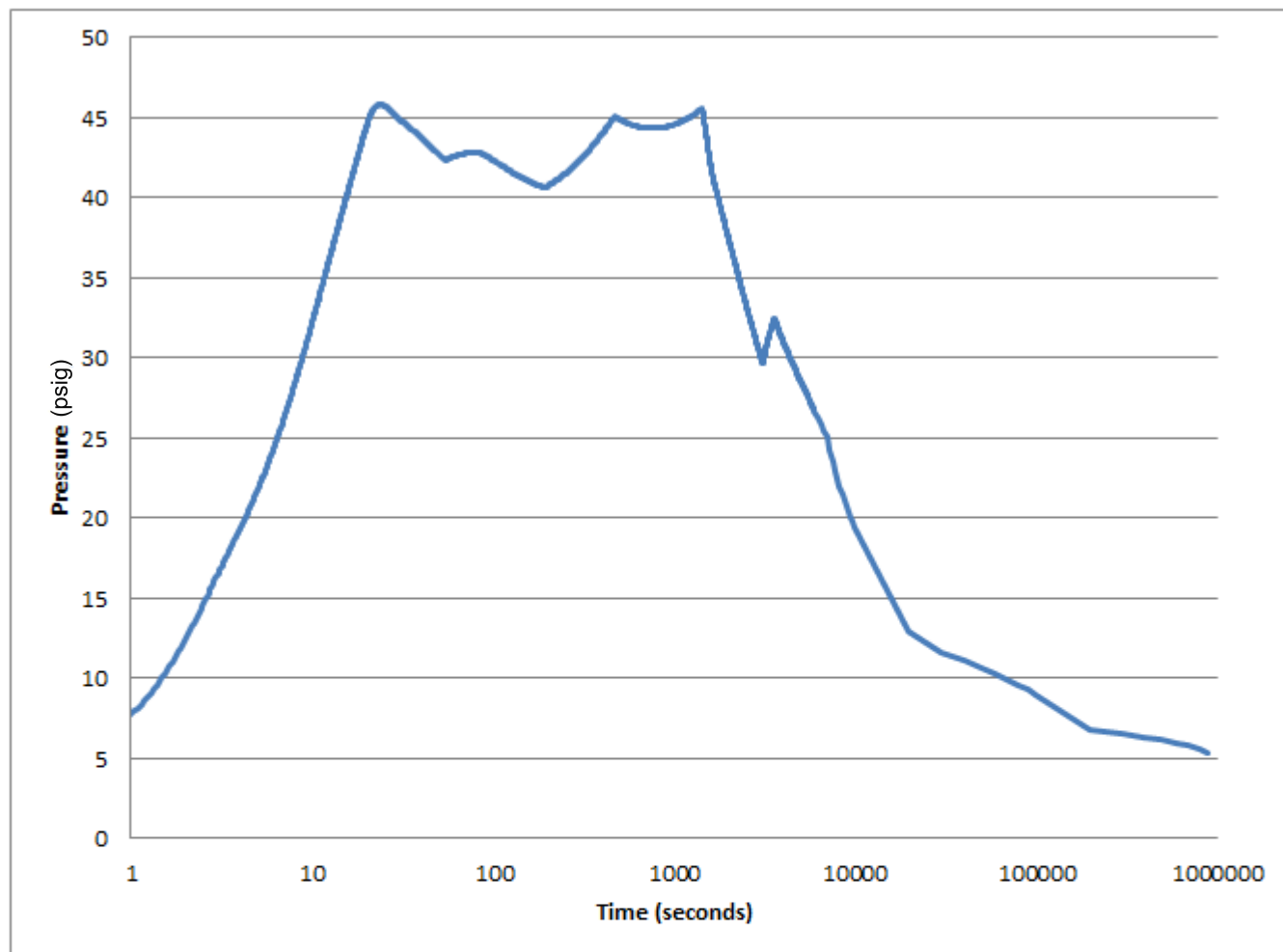
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**FIGURE 6.5-4
SPRAY ENVELOPE
REDUCTION FACTOR**

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FIGURE 6.5-5 HAS BEEN DELETED



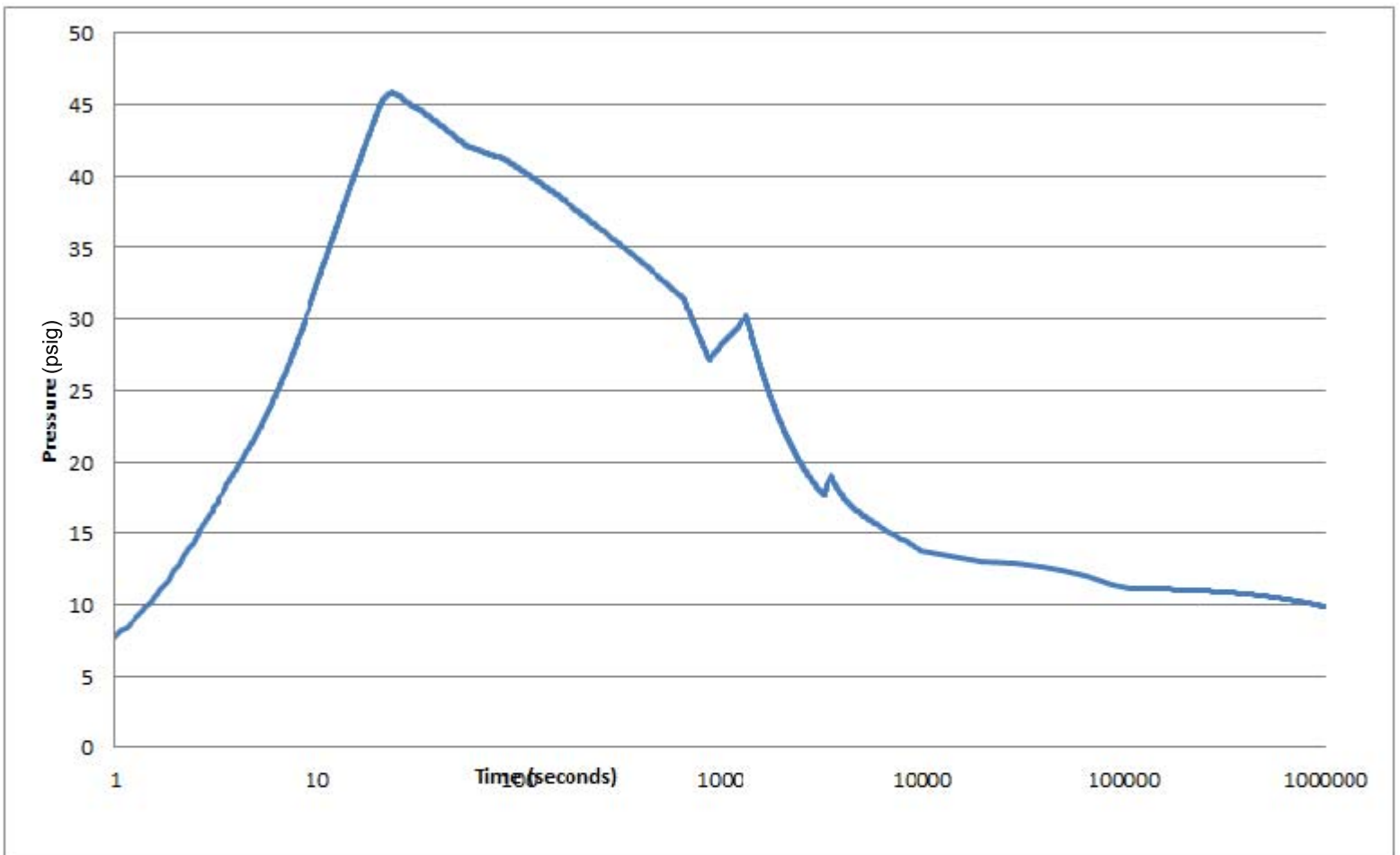
CALLAWAY PLANT

FIGURE 6.2.1-1

DOUBLE-ENDED PUMP SUCTION GUILLOTINE BREAK
MINIMUM SAFEGUARDS

CONTAINMENT PRESSURE VS. TIME

REV. 17 10/13

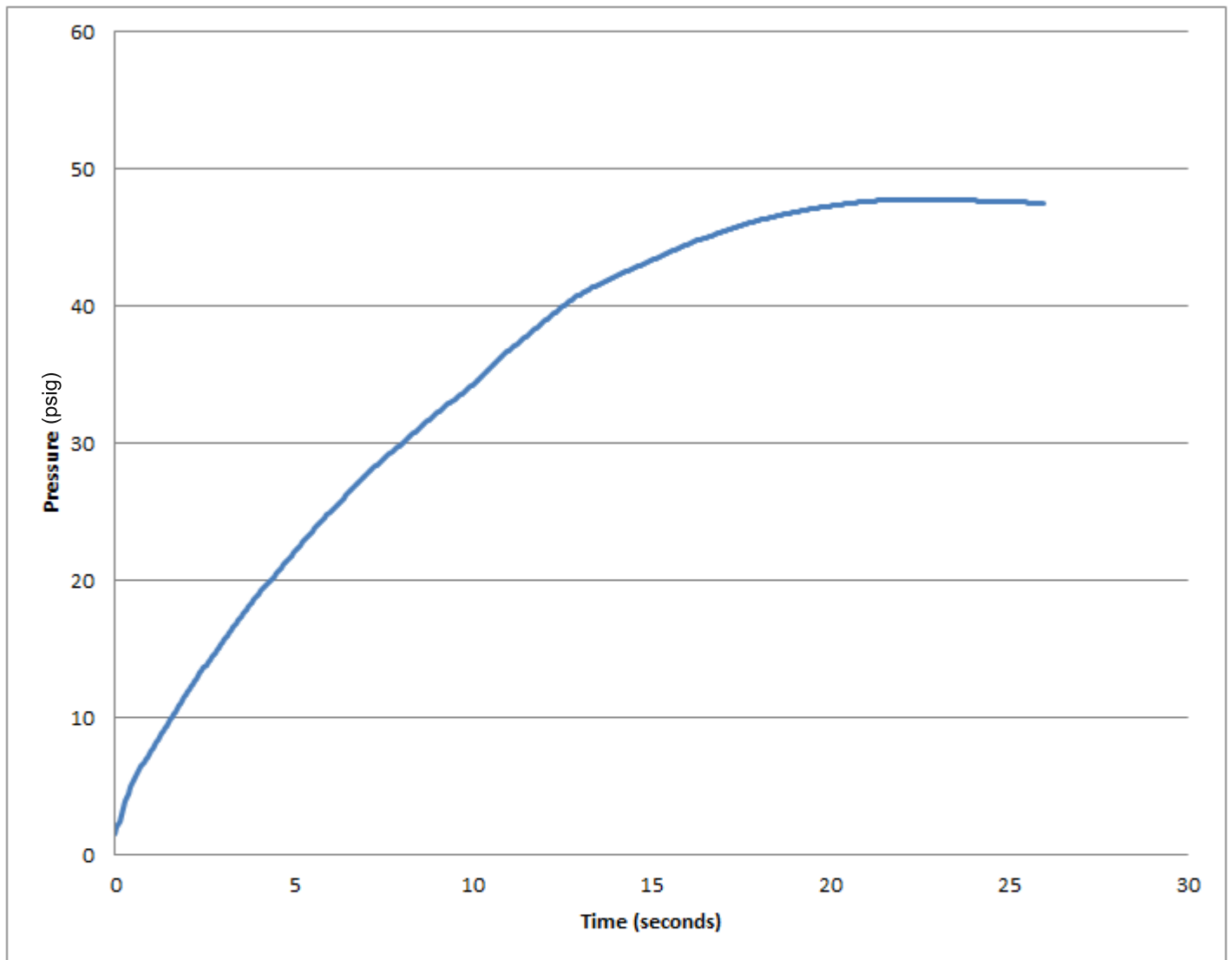


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FIGURE 6.2.1-2

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

REV. 17 10/13

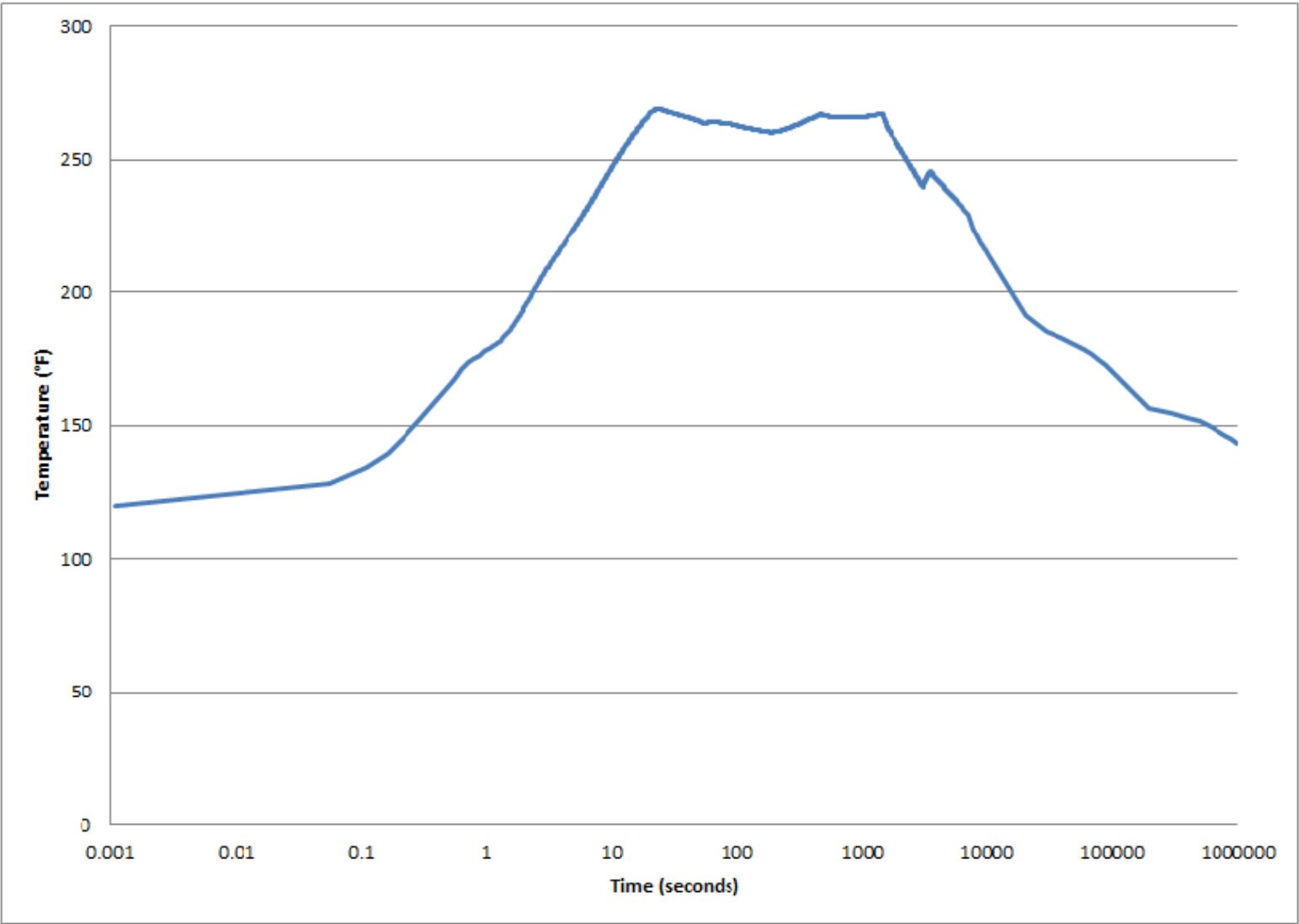


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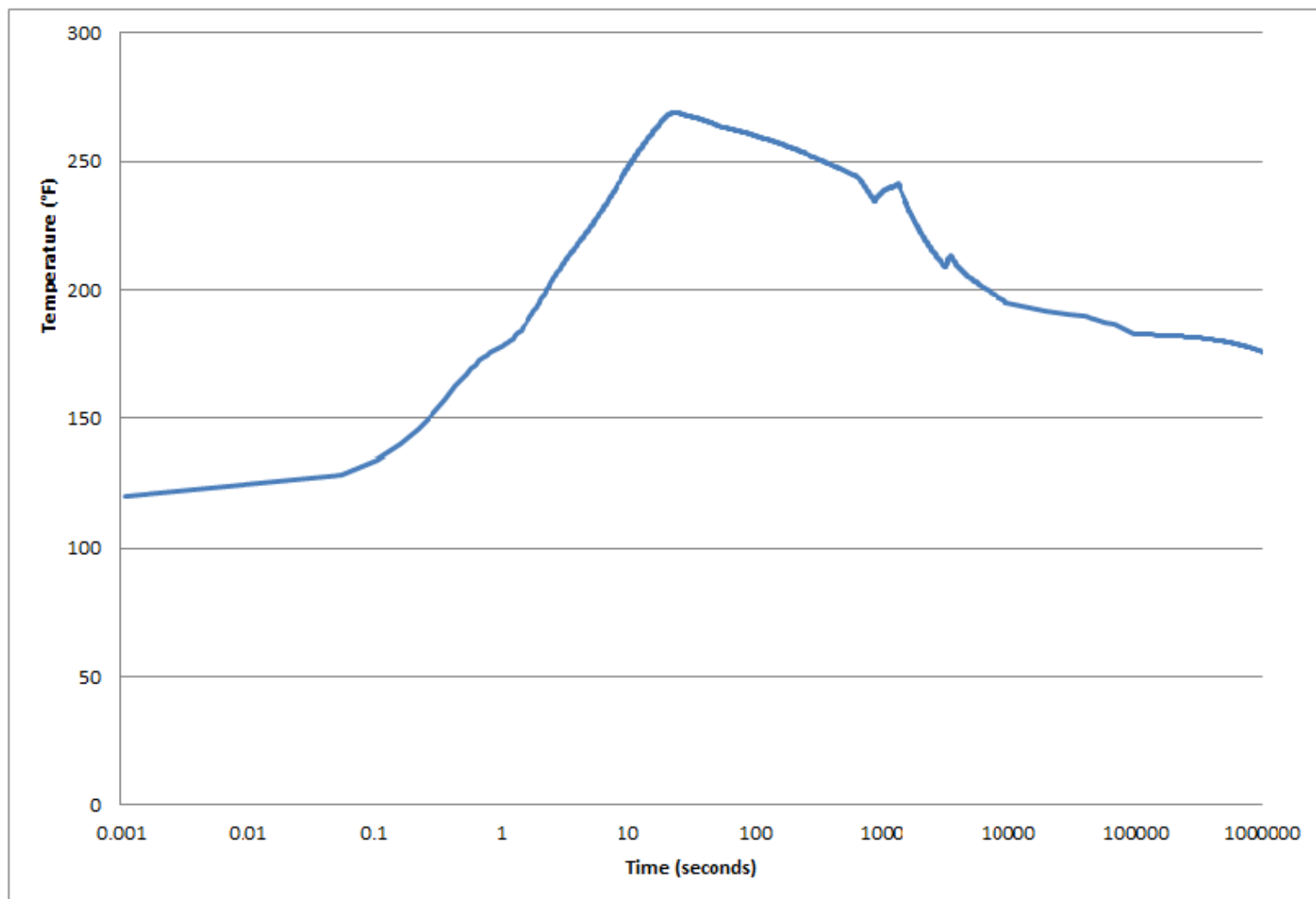
FIGURE 6.2.1-3

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

REV. 17 10/13



CALLAWAY PLANT
FIGURE 6.2.1-4
DOUBLE-ENDED PUMP SUCTION GUILLOTINE BREAK
MINIMUM SAFEGUARDS
CONTAINMENT TEMPERTURE VS. TIME
REV. 17 10/13

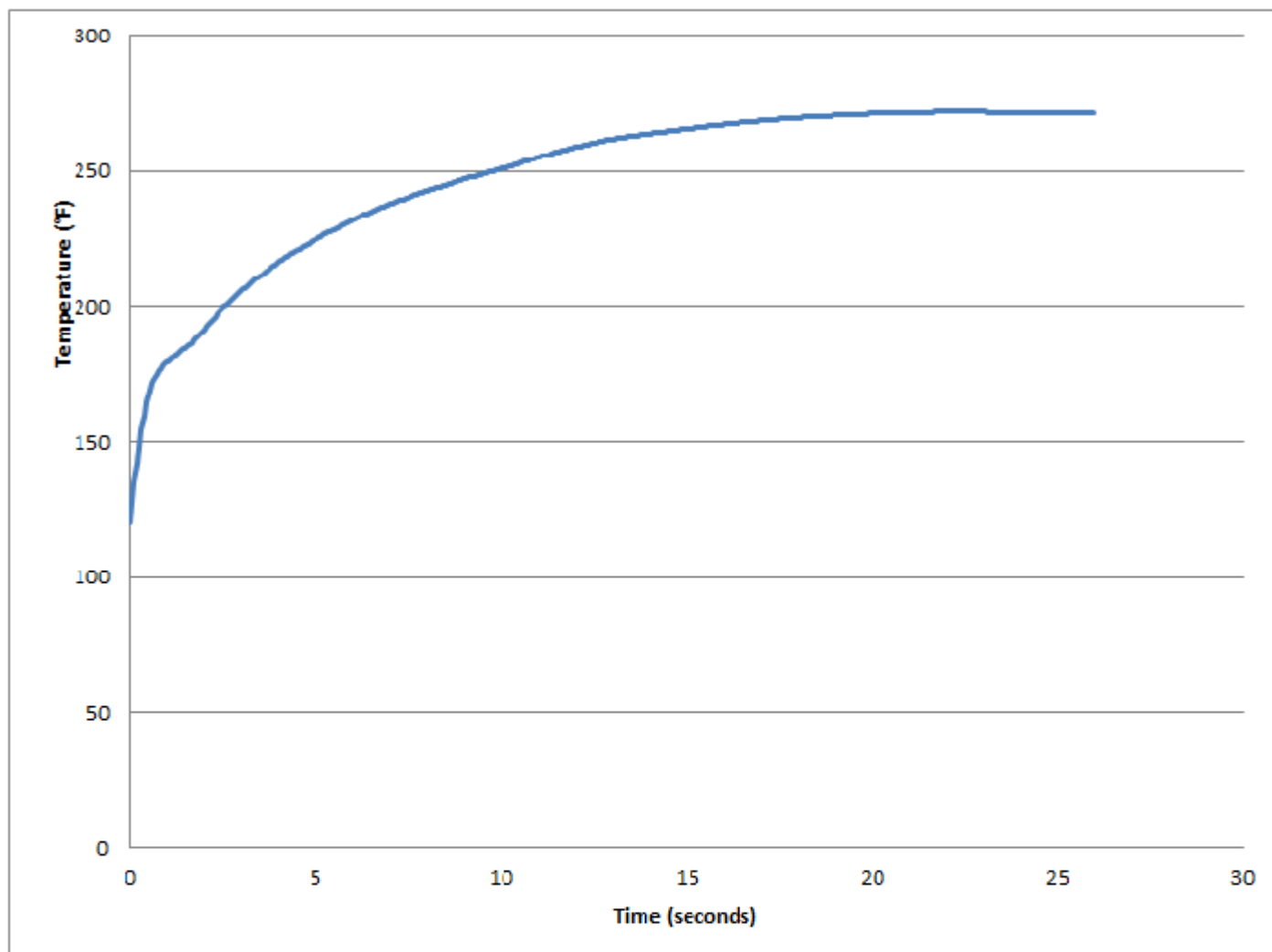


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FIGURE 6.2.1-5

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

REV. 17 10/13

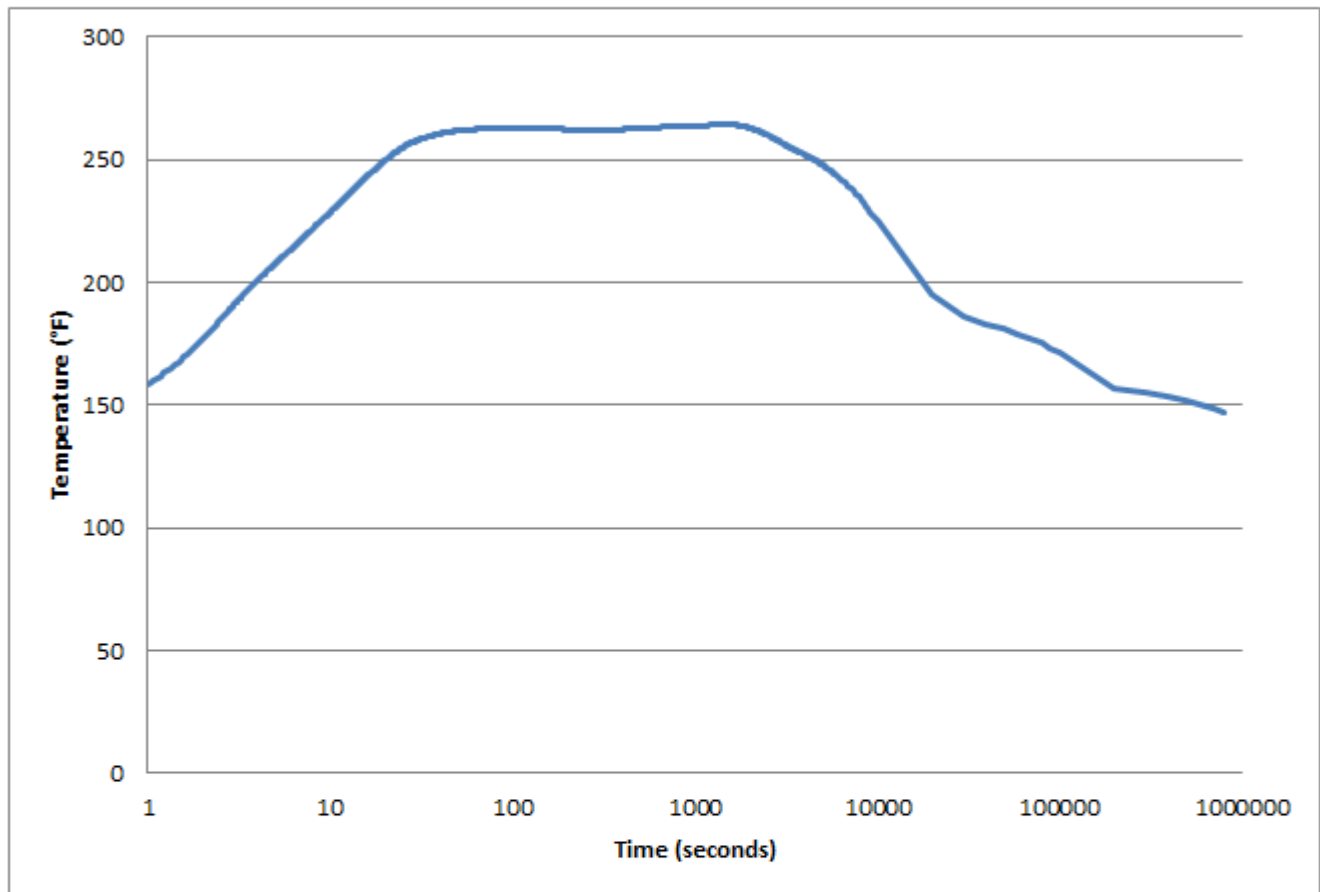


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FIGURE 6.2.1-6

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

REV. 17 10/13

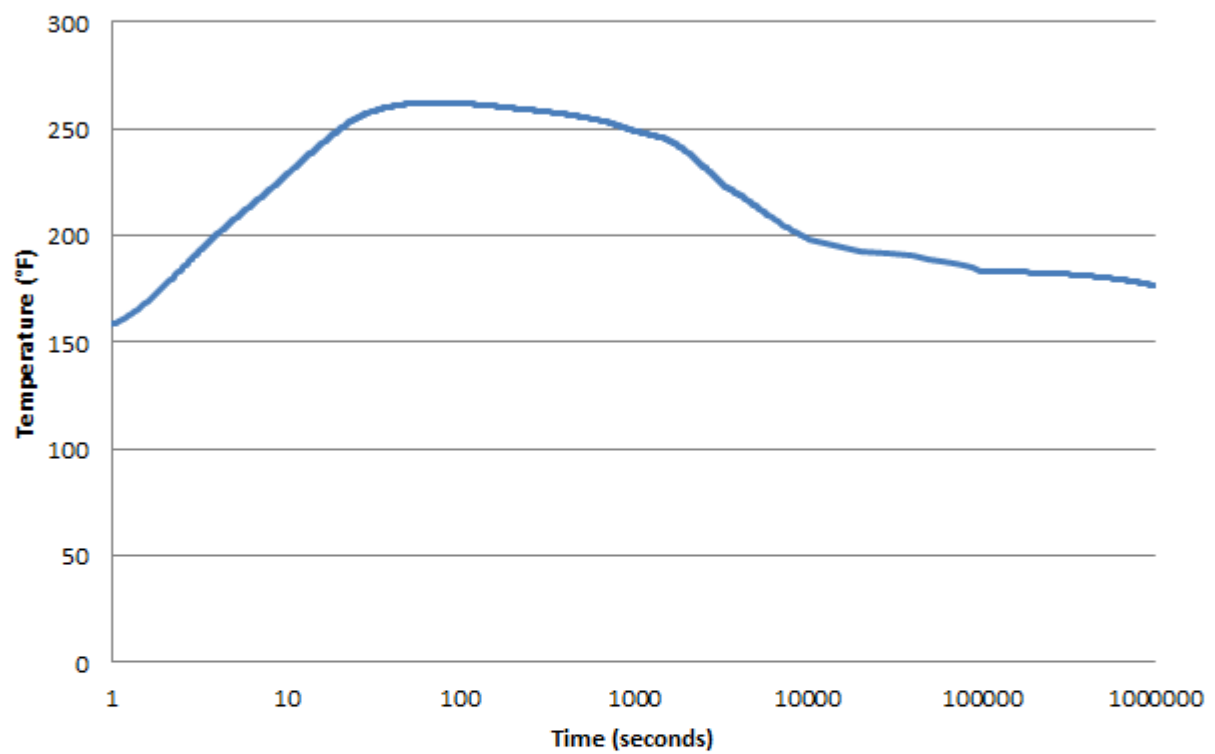


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FIGURE 6.2.1-7

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

REV. 17 10/13



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FIGURE 6.2.1-8

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

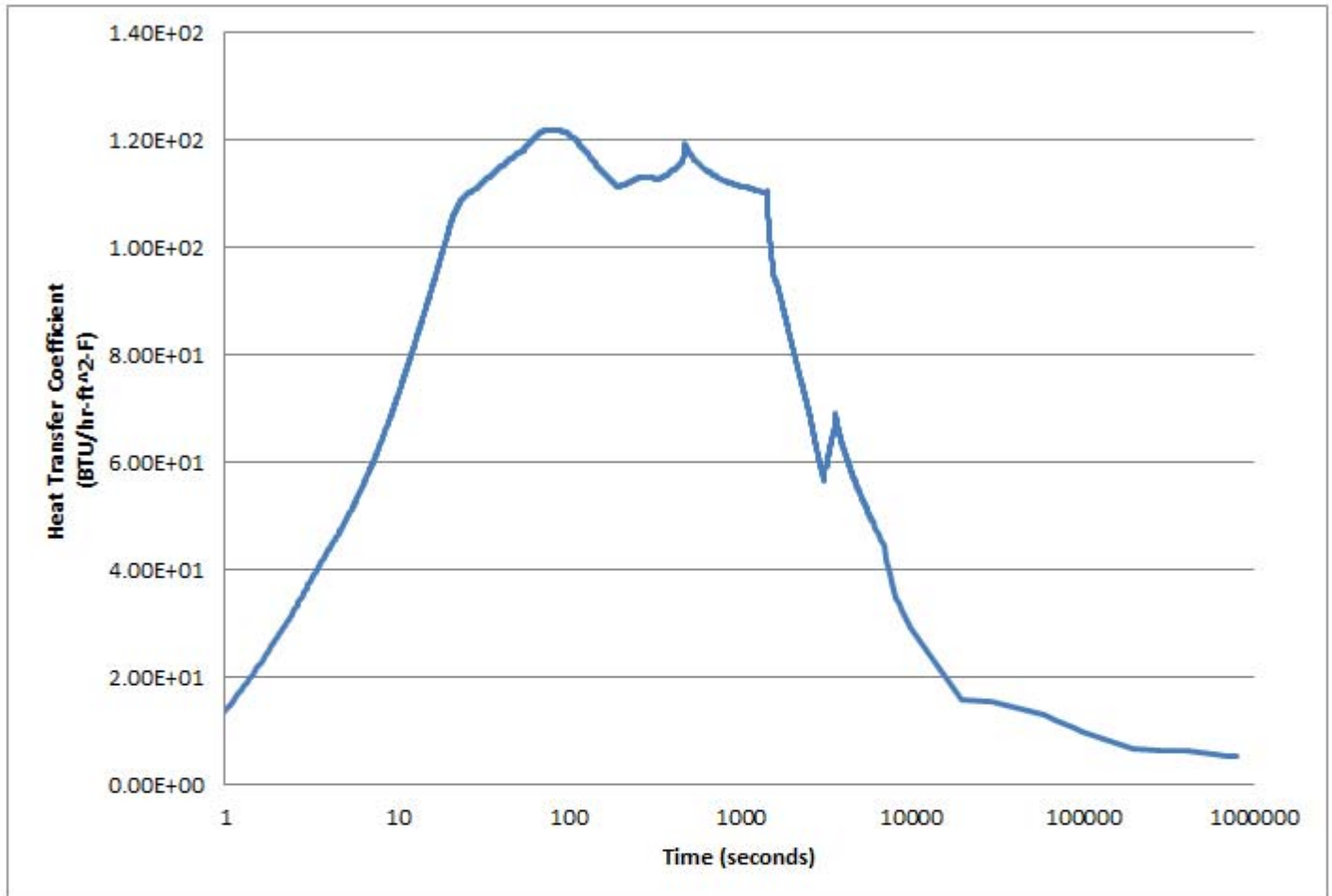
REV. 17 10/13

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Figure 6.2.1-10 Deleted

Figure 6.2.1-11 Deleted

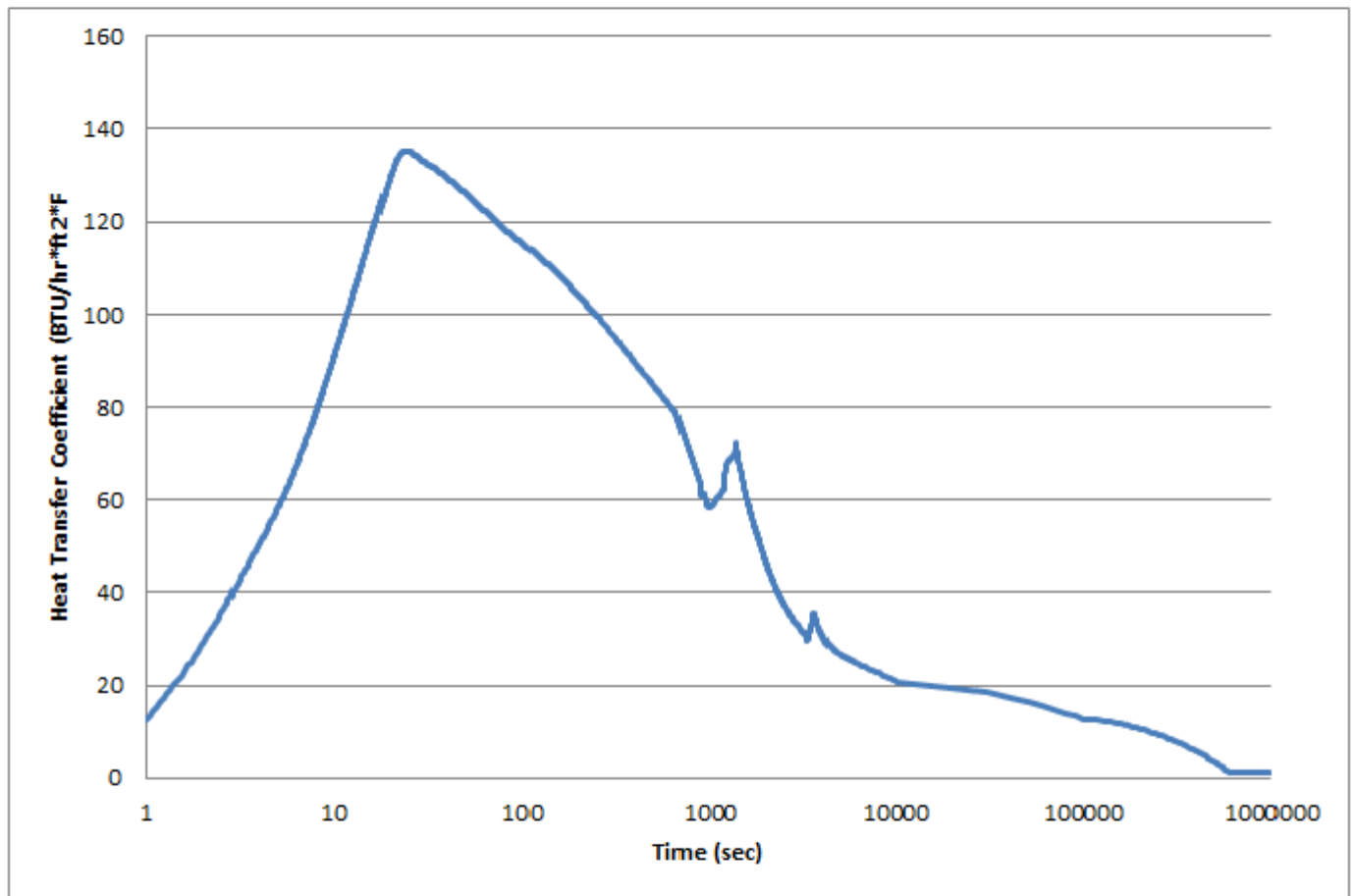
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FIGURE 6.2.1-13

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

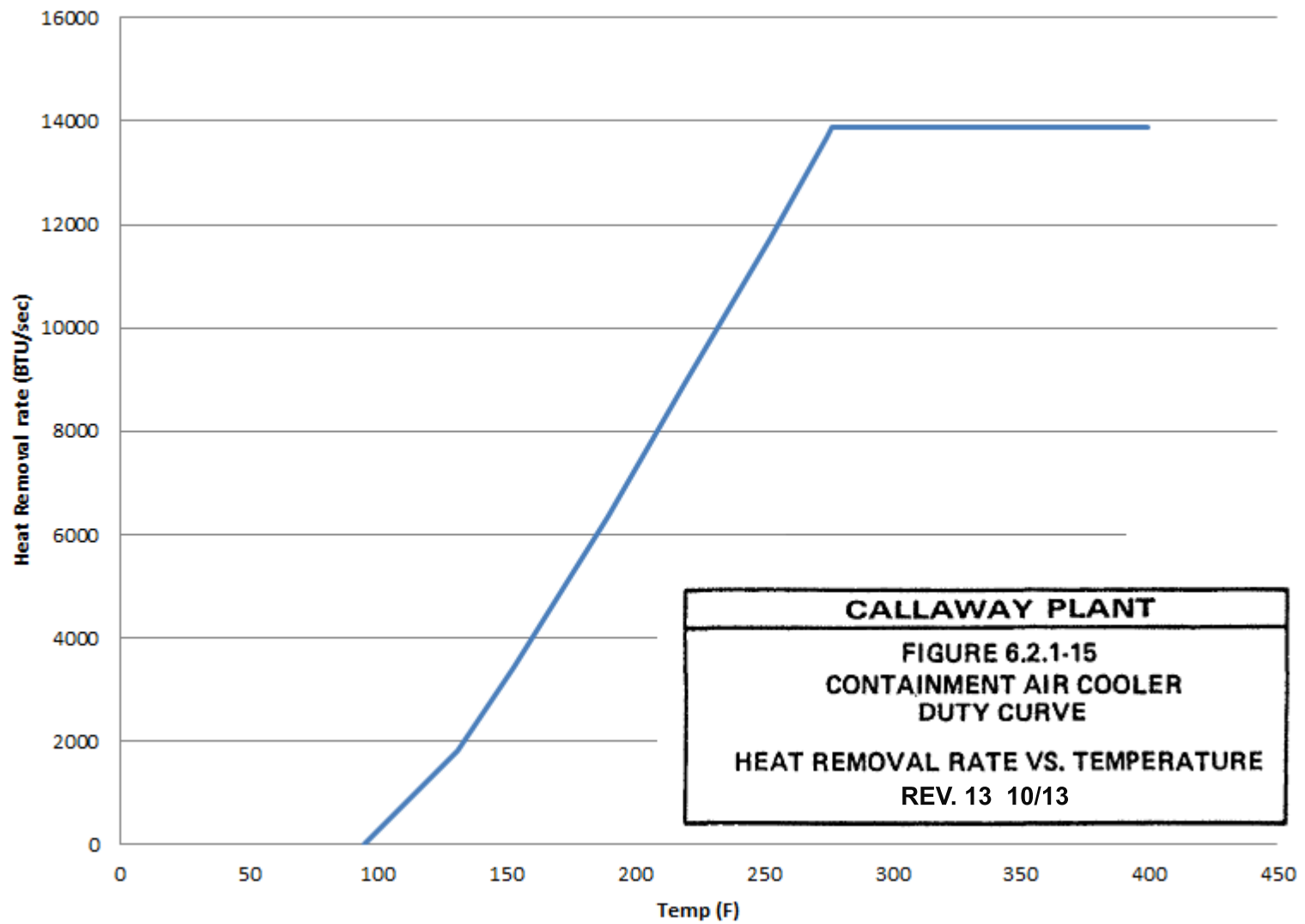


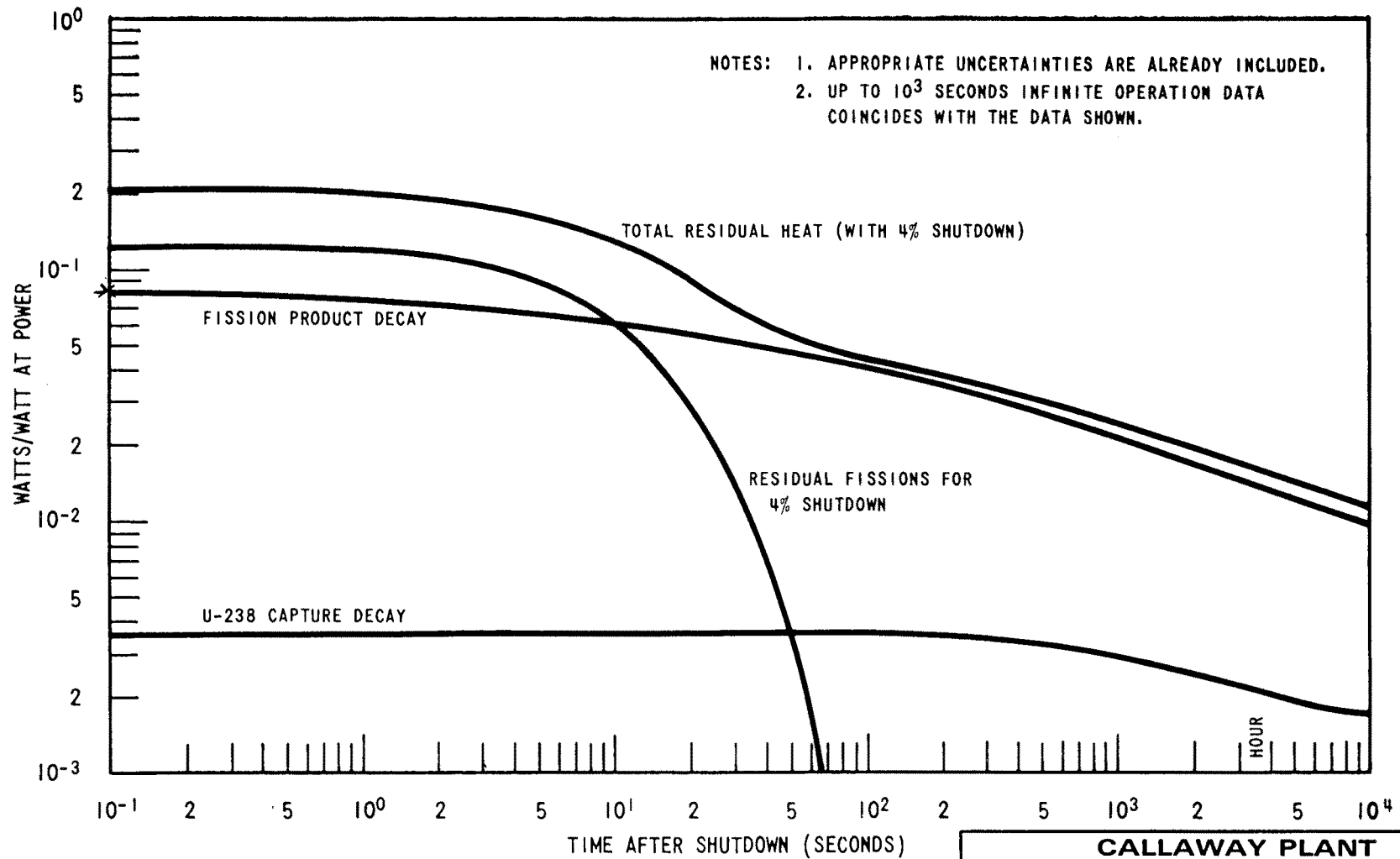
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FIGURE 6.2.1-14

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

REV. 16 10/13





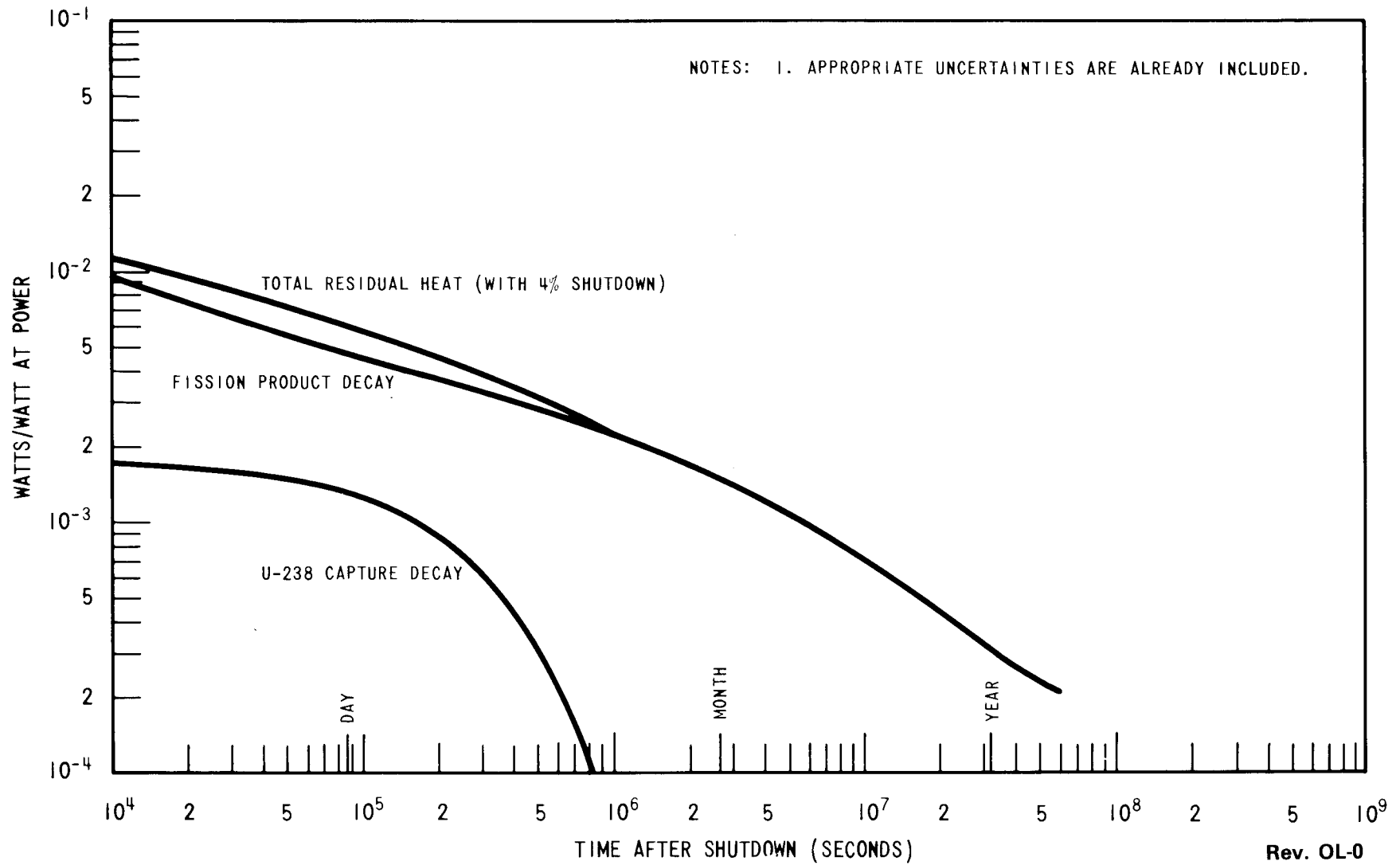
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FIGURE 6.2.1-16

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

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have been deleted.

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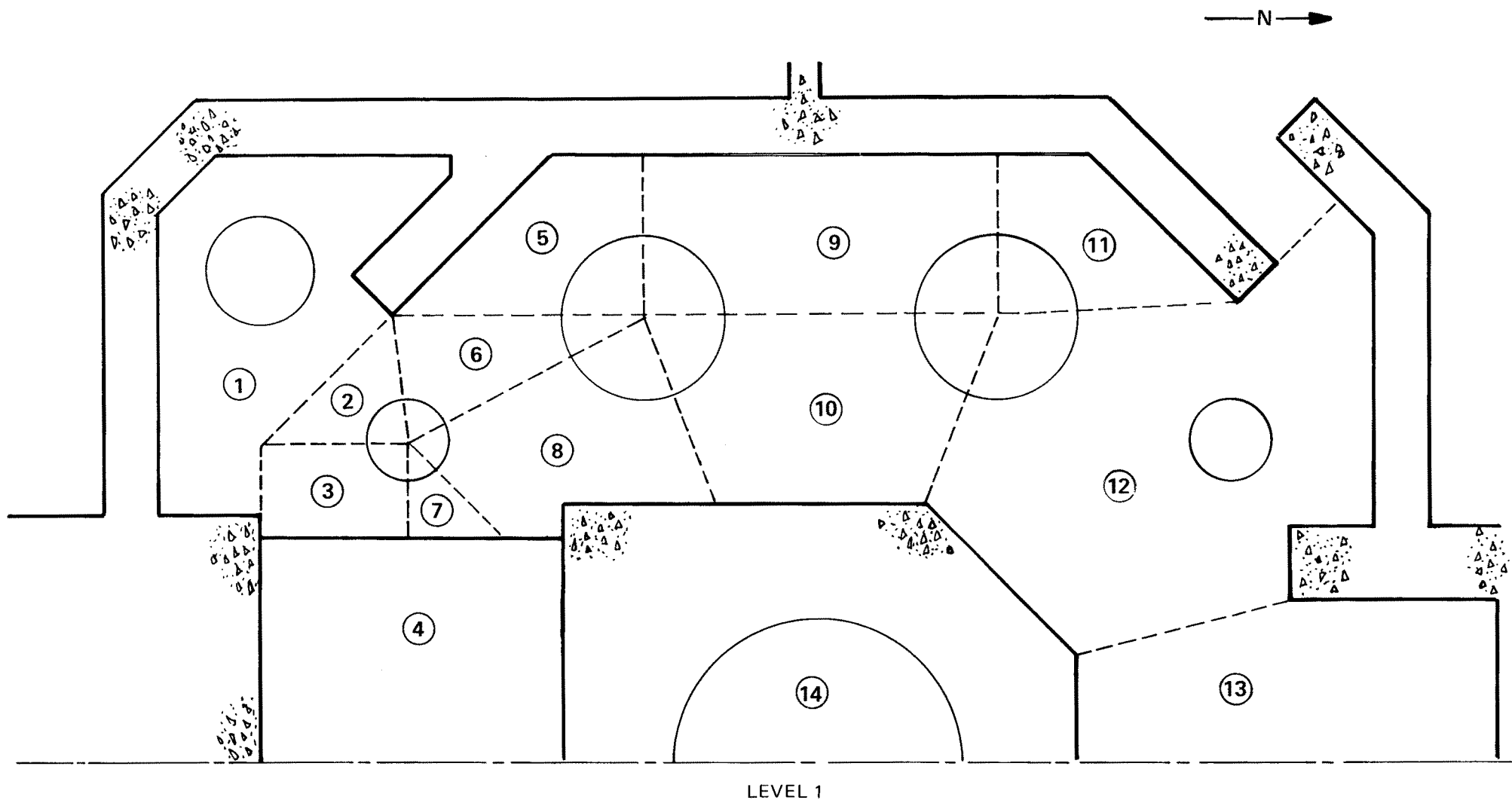
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Figures 6.2.1-27 thru 6.2.1-42
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EL. 2001'-4" TO 2018'-4"

○ - NODE NUMBER
 ----- NODE BOUNDARY

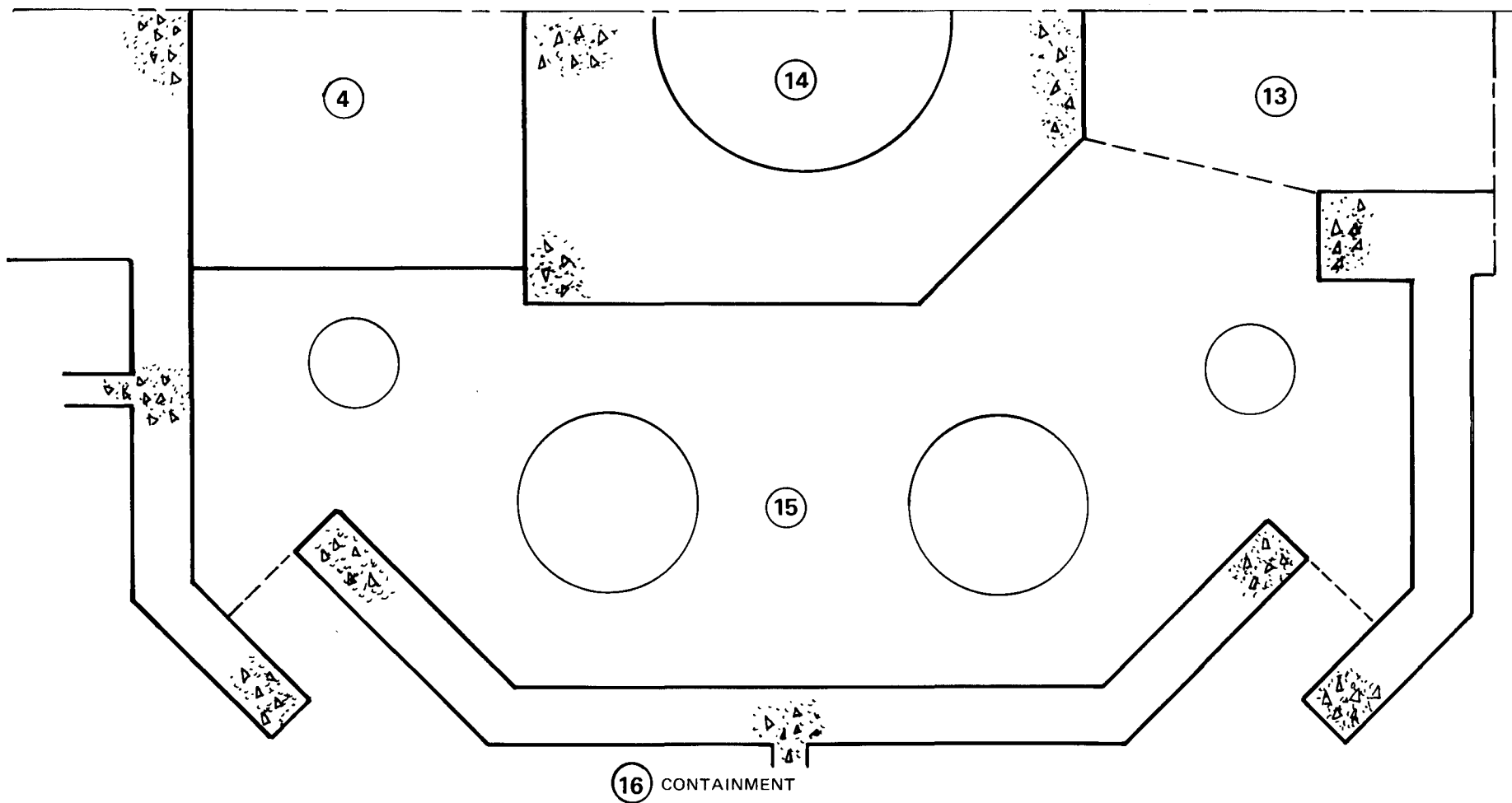
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FIGURE 6.2.1-43

**STEAM GENERATOR LOOP
 COMPARTMENT ANALYSIS**

NODALIZATION SCHEME - LEVEL 1



LEVEL 1

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

○ NODE NUMBER
 --- NODE BOUNDARY

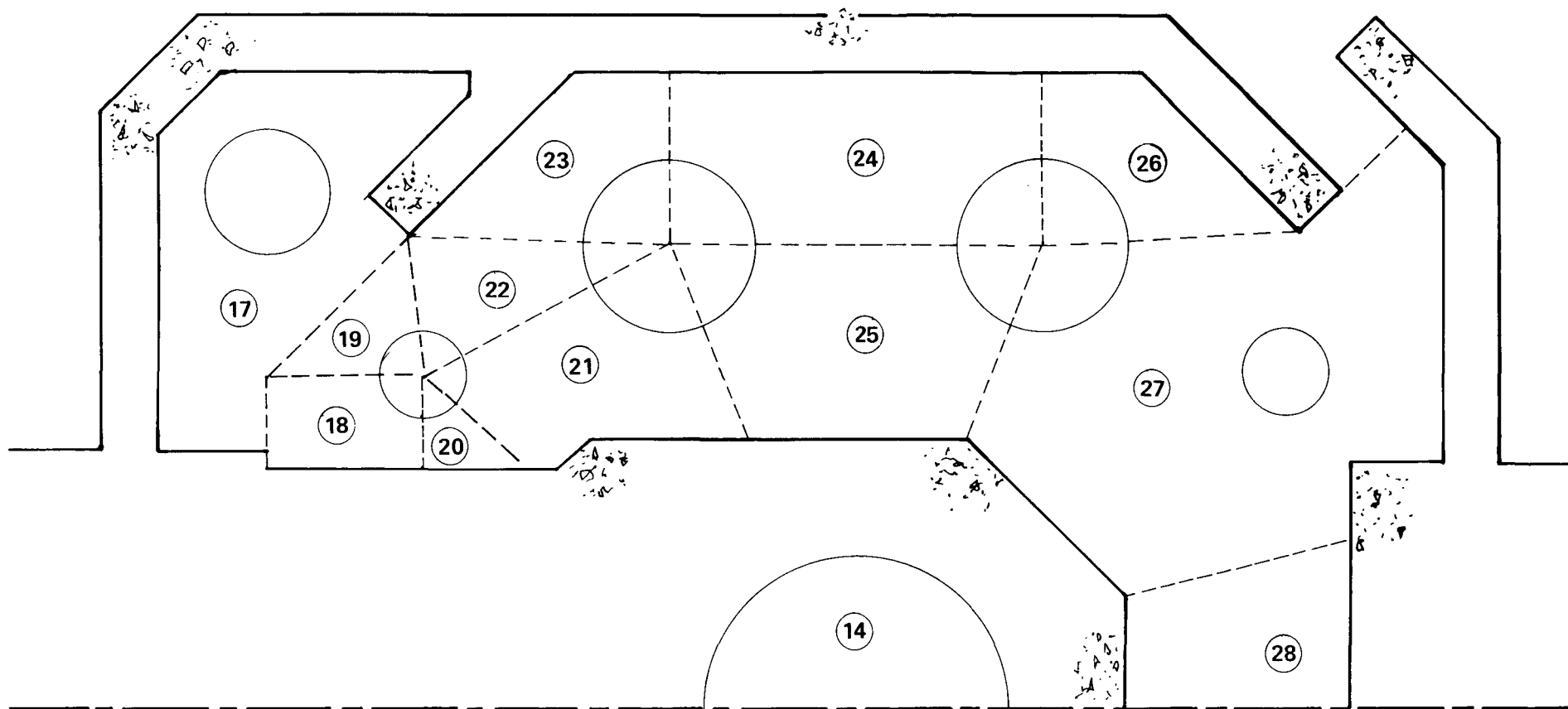
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FIGURE 6.2.1-44

**STEAM GENERATOR LOOP
 COMPARTMENT ANALYSIS**

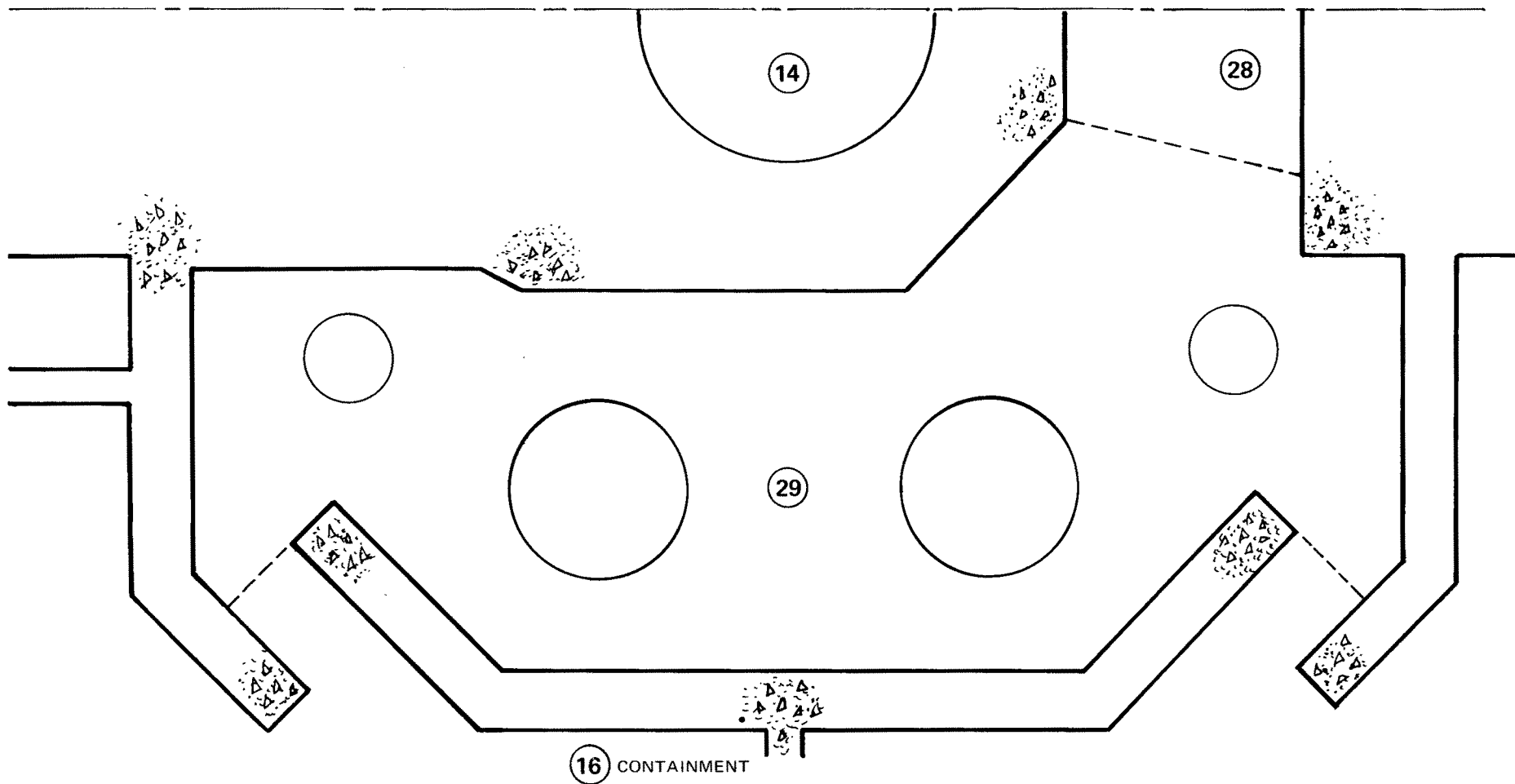
NODALIZATION SCHEME - LEVEL 1



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

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| CALLAWAY PLANT |
|----------------------------------------------|
| 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**

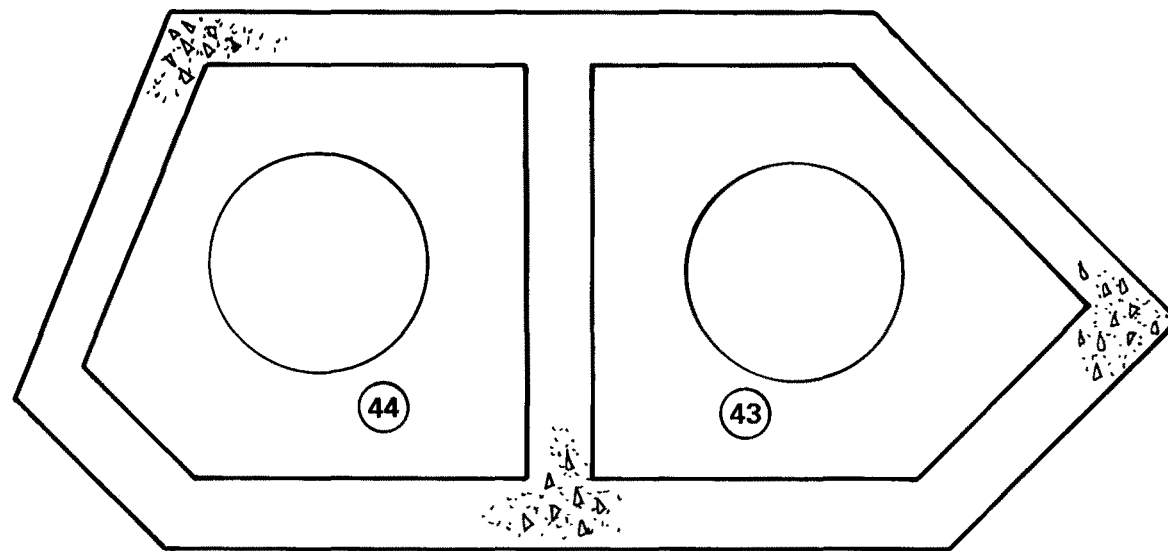
NODALIZATION SCHEME - LEVEL 2

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"

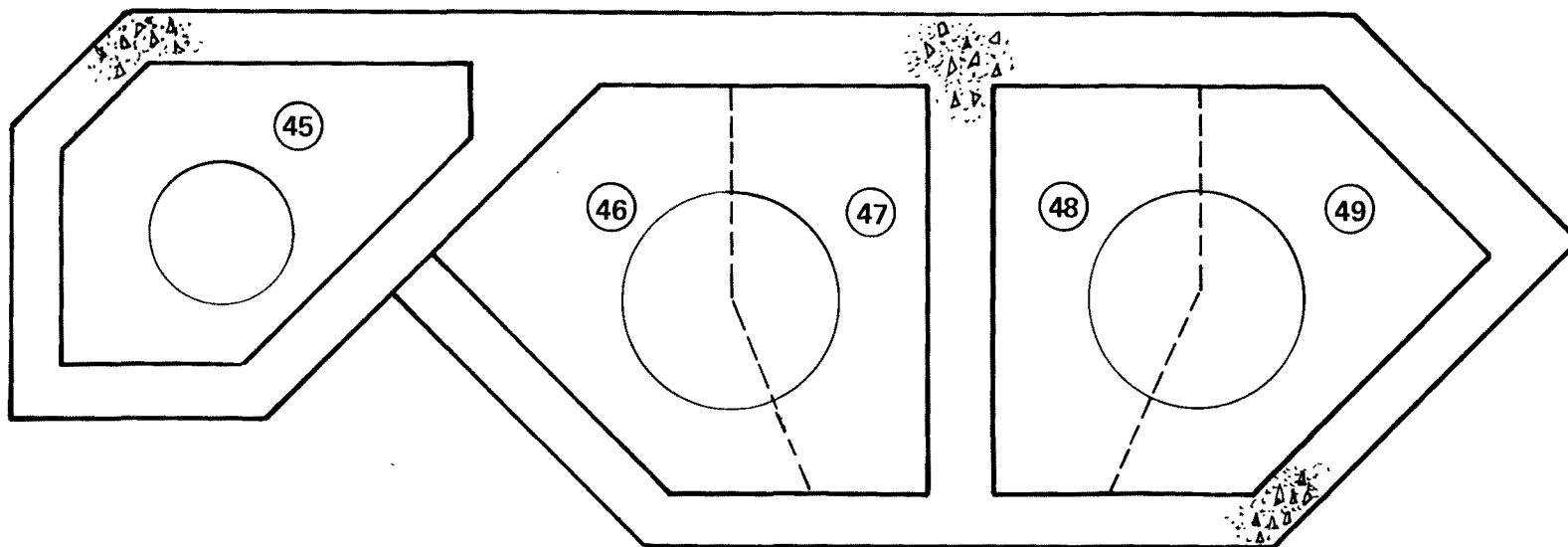
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FIGURE 6.2.1-51

**STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS**

NODALIZATION SCHEME - LEVEL 4

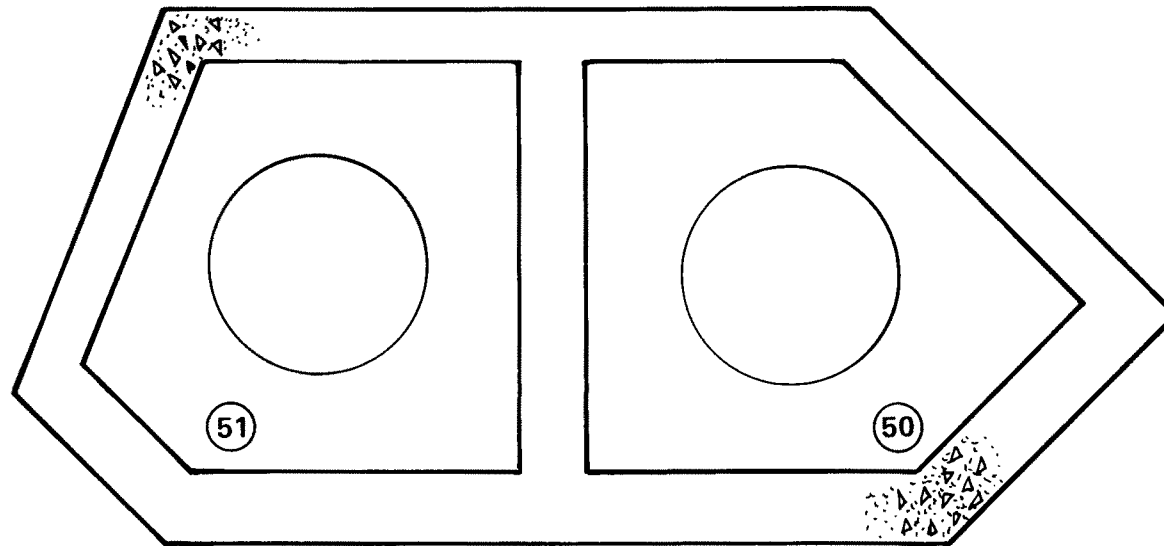


LEVEL 5

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

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| CALLAWAY PLANT |
|----------------------------------------------|
| FIGURE 6.2.1-52 |
| STEAM GENERATOR LOOP COMPARTMENT ANALYSIS |
| NODALIZATION SCHEME - LEVEL 5 |



LEVEL 5
EL. 2060'-0" TO 2068'-8"

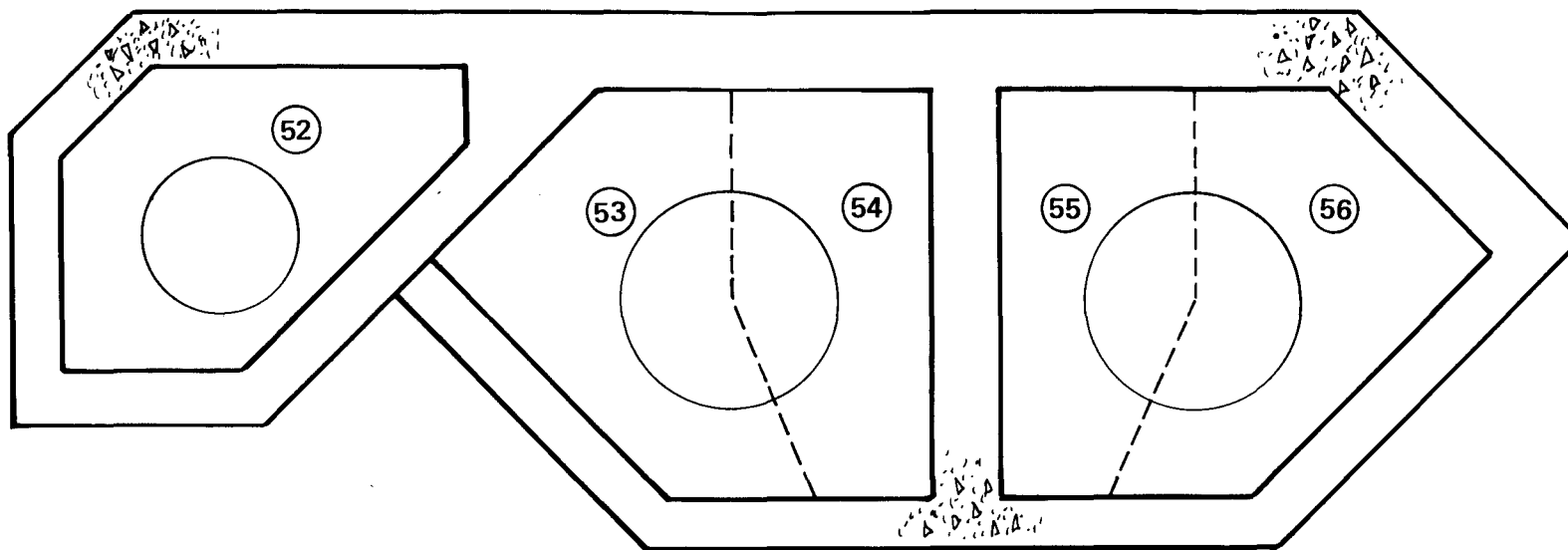
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FIGURE 6.2.1-53

**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.)

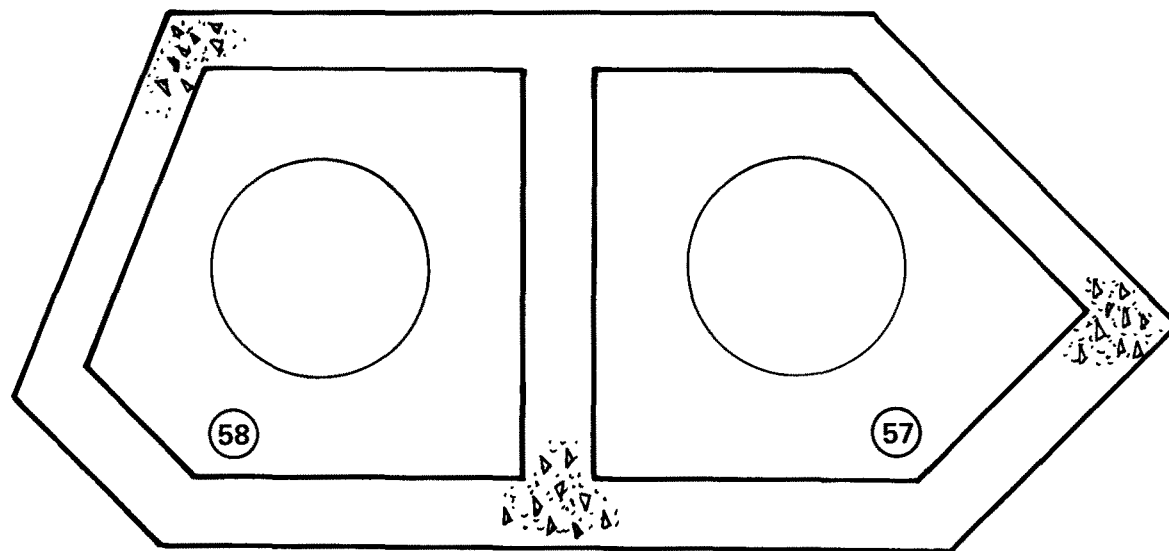
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FIGURE 6.2.1-54

**STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS**

NODALIZATION SCHEME - LEVEL 6

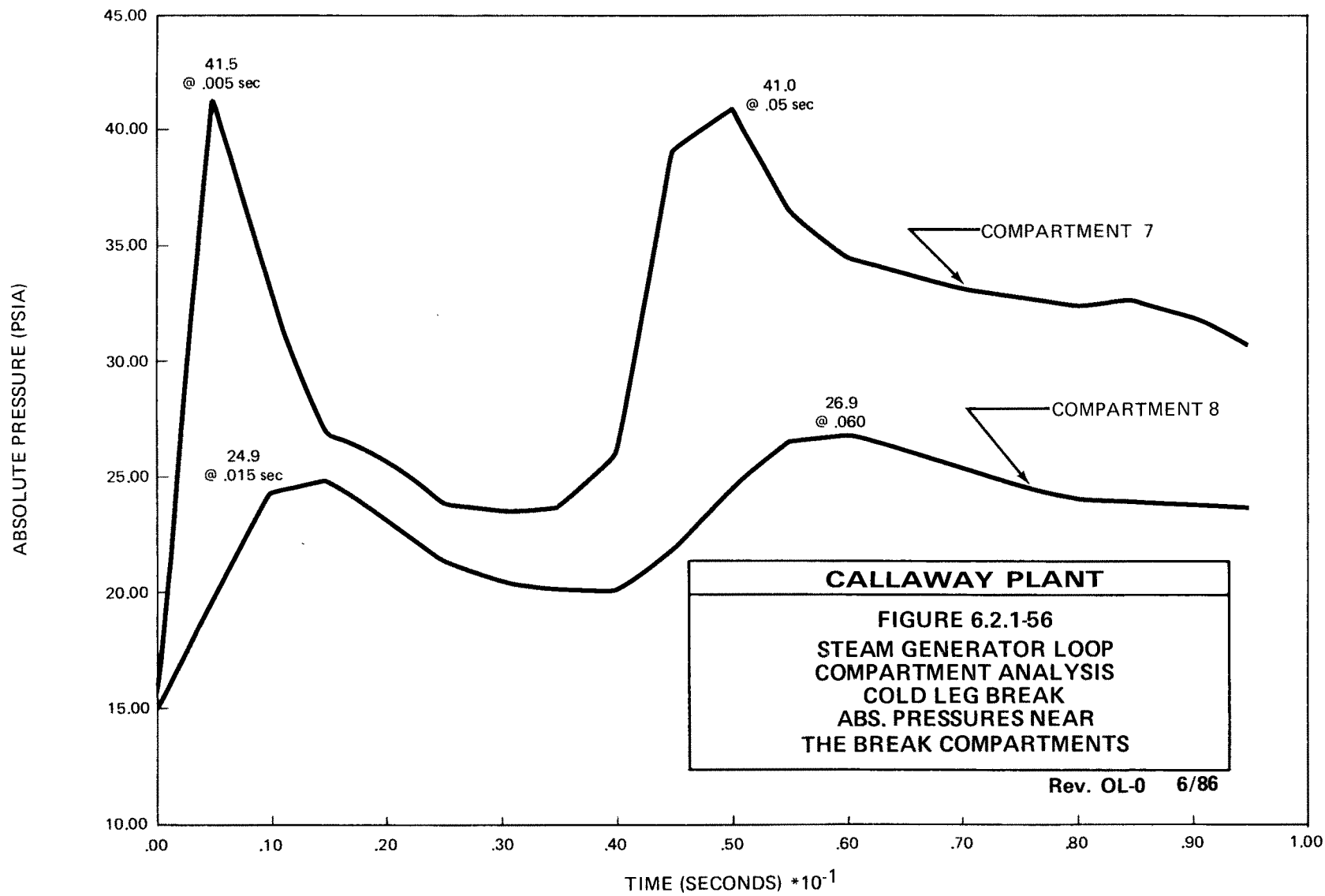


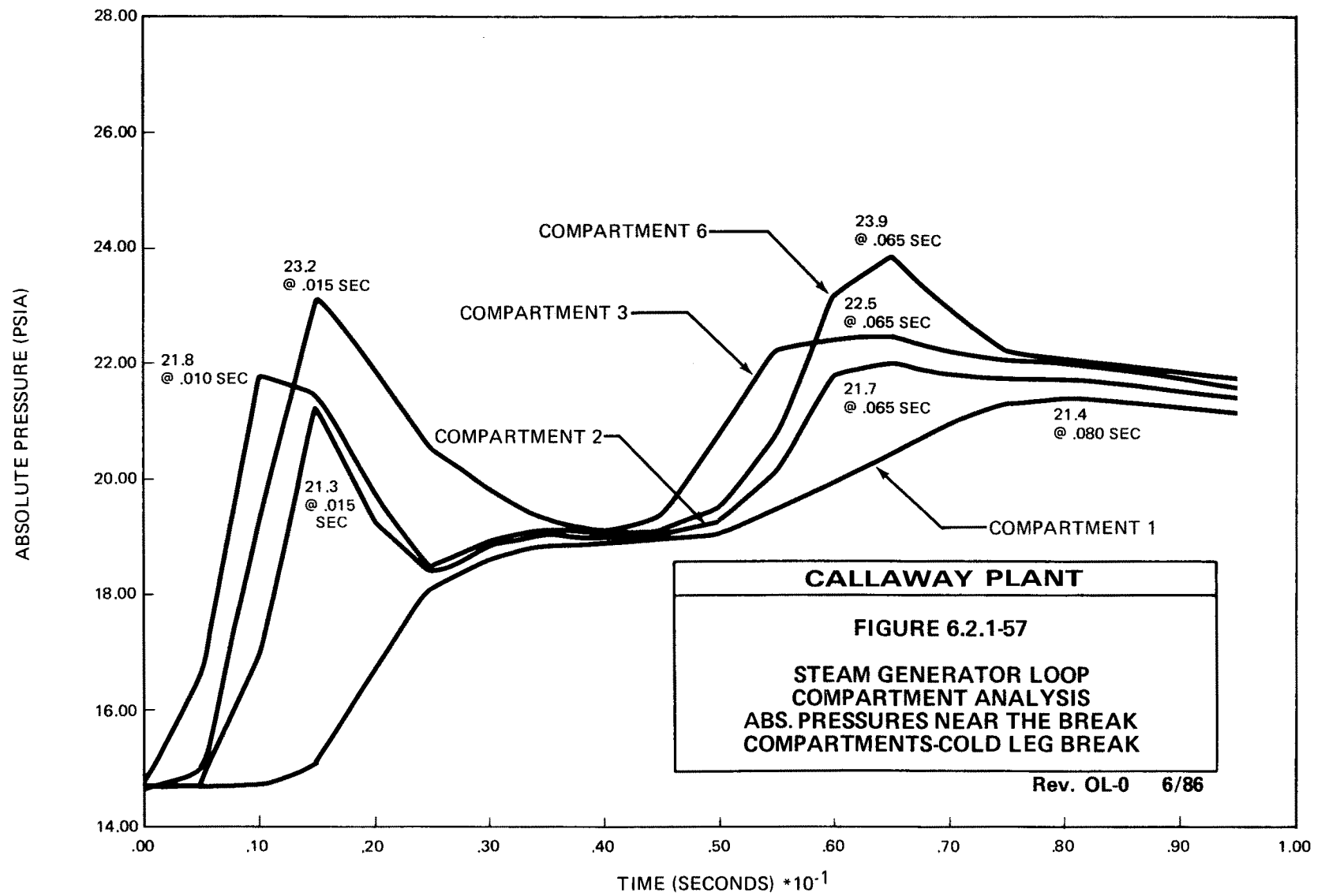
LEVEL 6

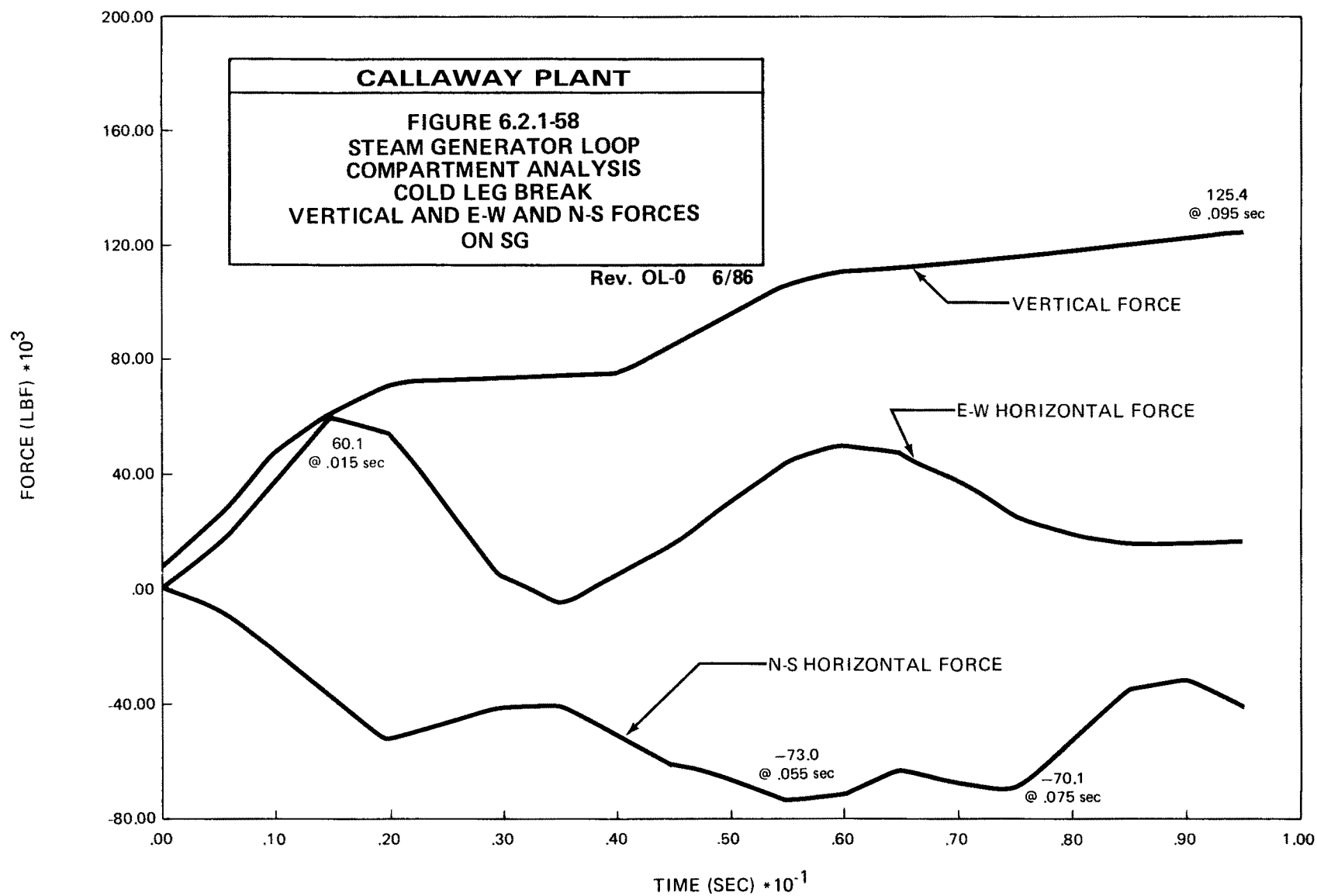
EL. 2068'-8" TO 2086'-0 3/4"

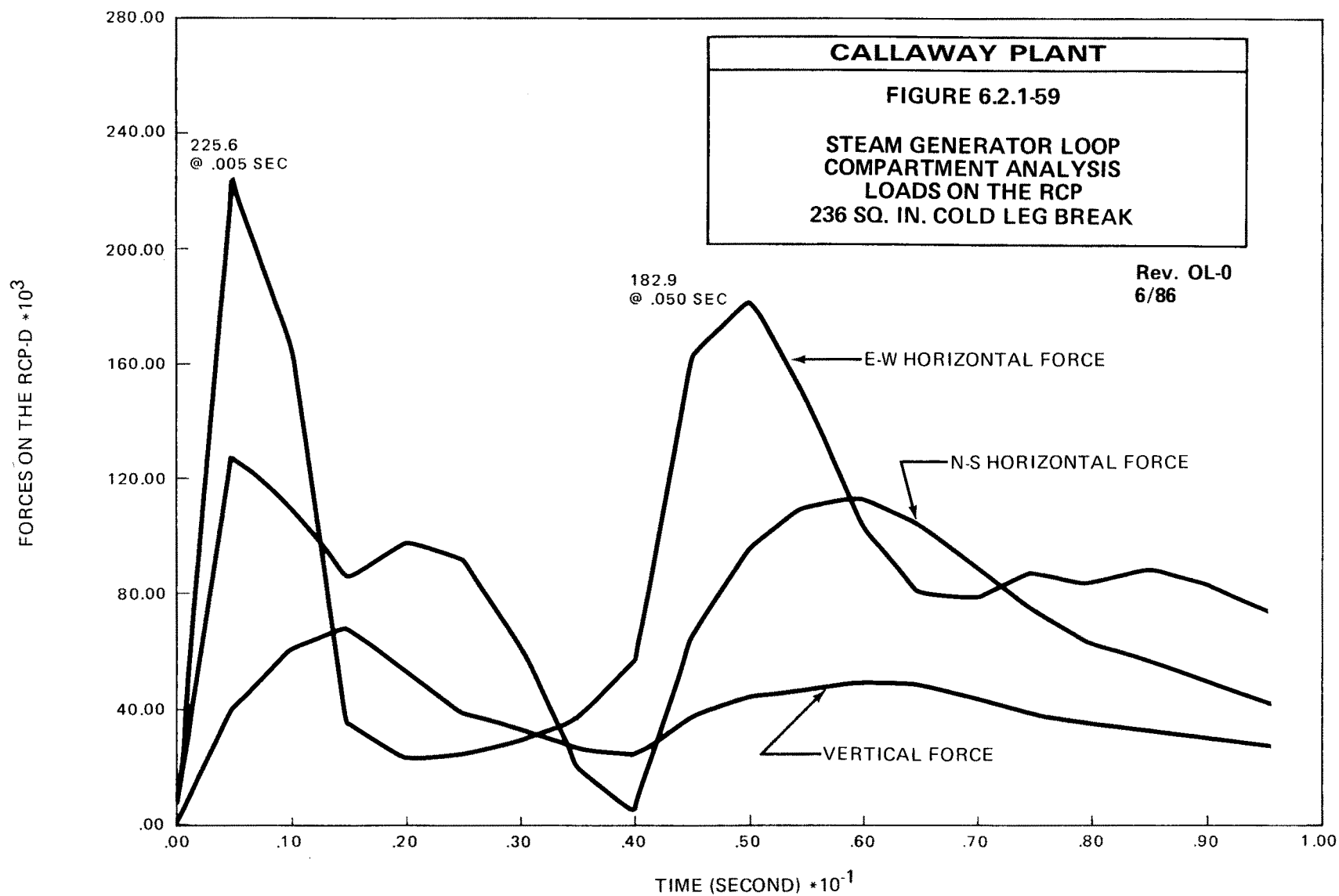
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| CALLAWAY PLANT |
|----------------------------------------------|
| FIGURE 6.2.1-55 |
| STEAM GENERATOR LOOP COMPARTMENT ANALYSIS |
| NODALIZATION SCHEME - LEVEL 6 |







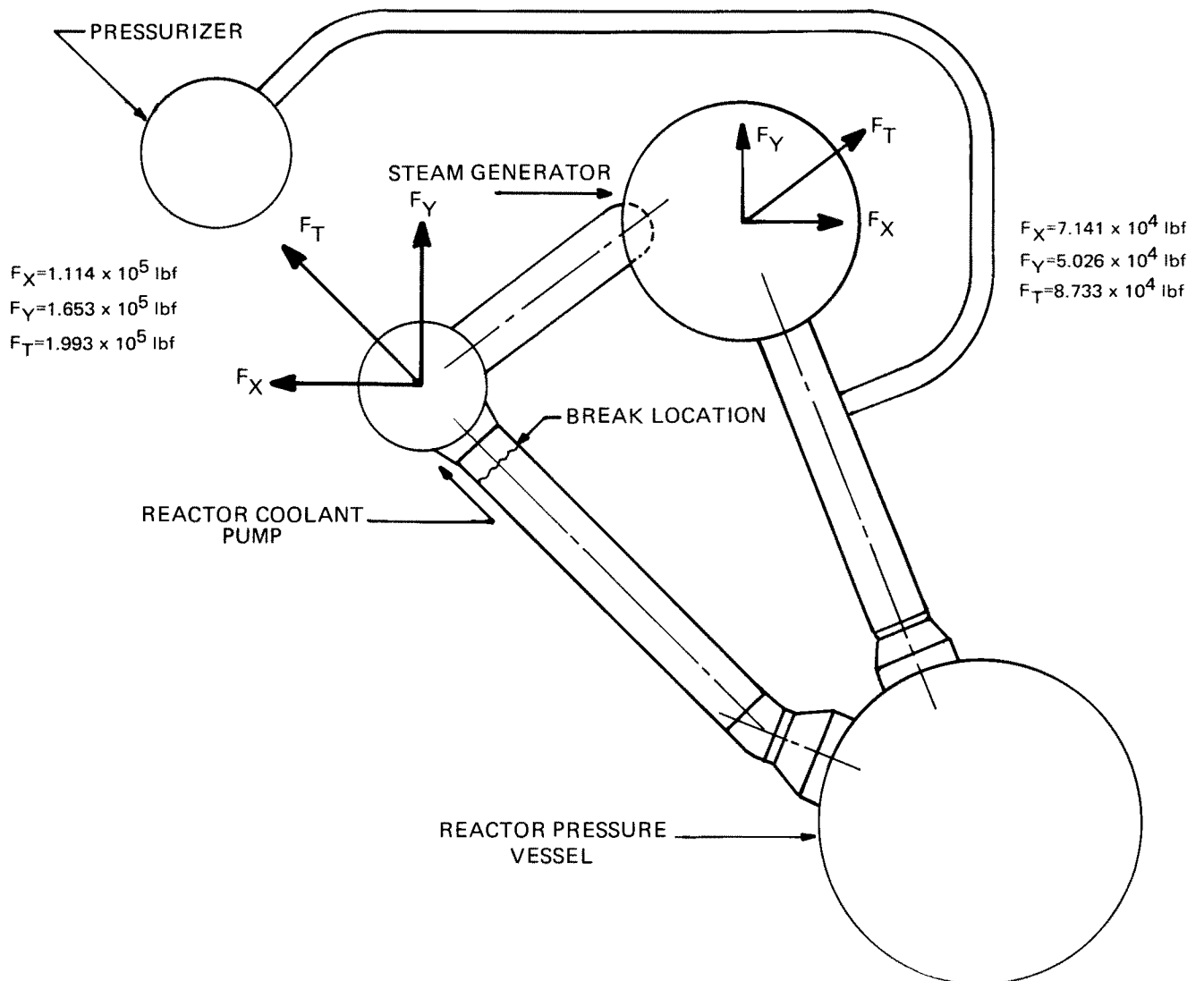


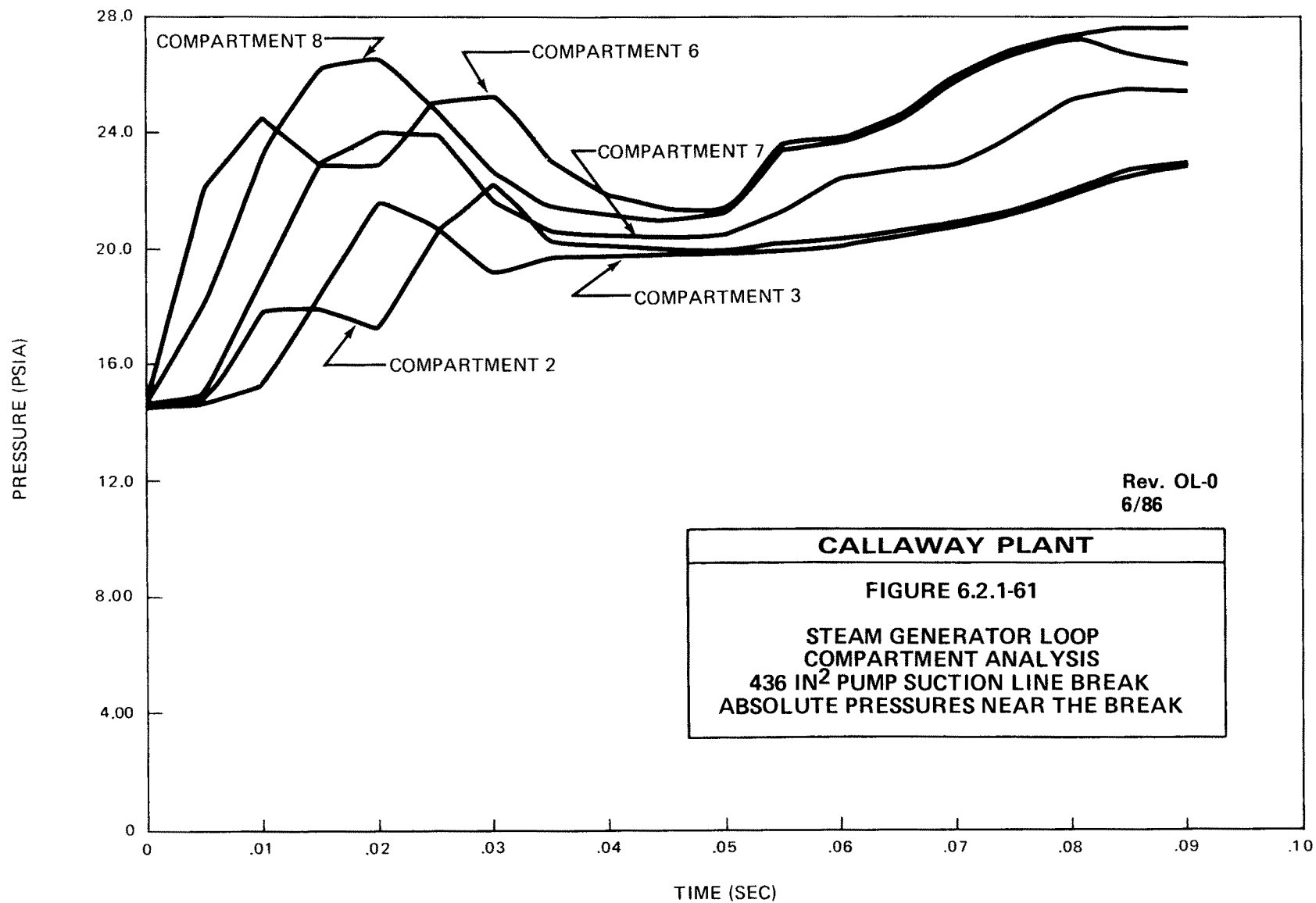
CALLAWAY PLANT

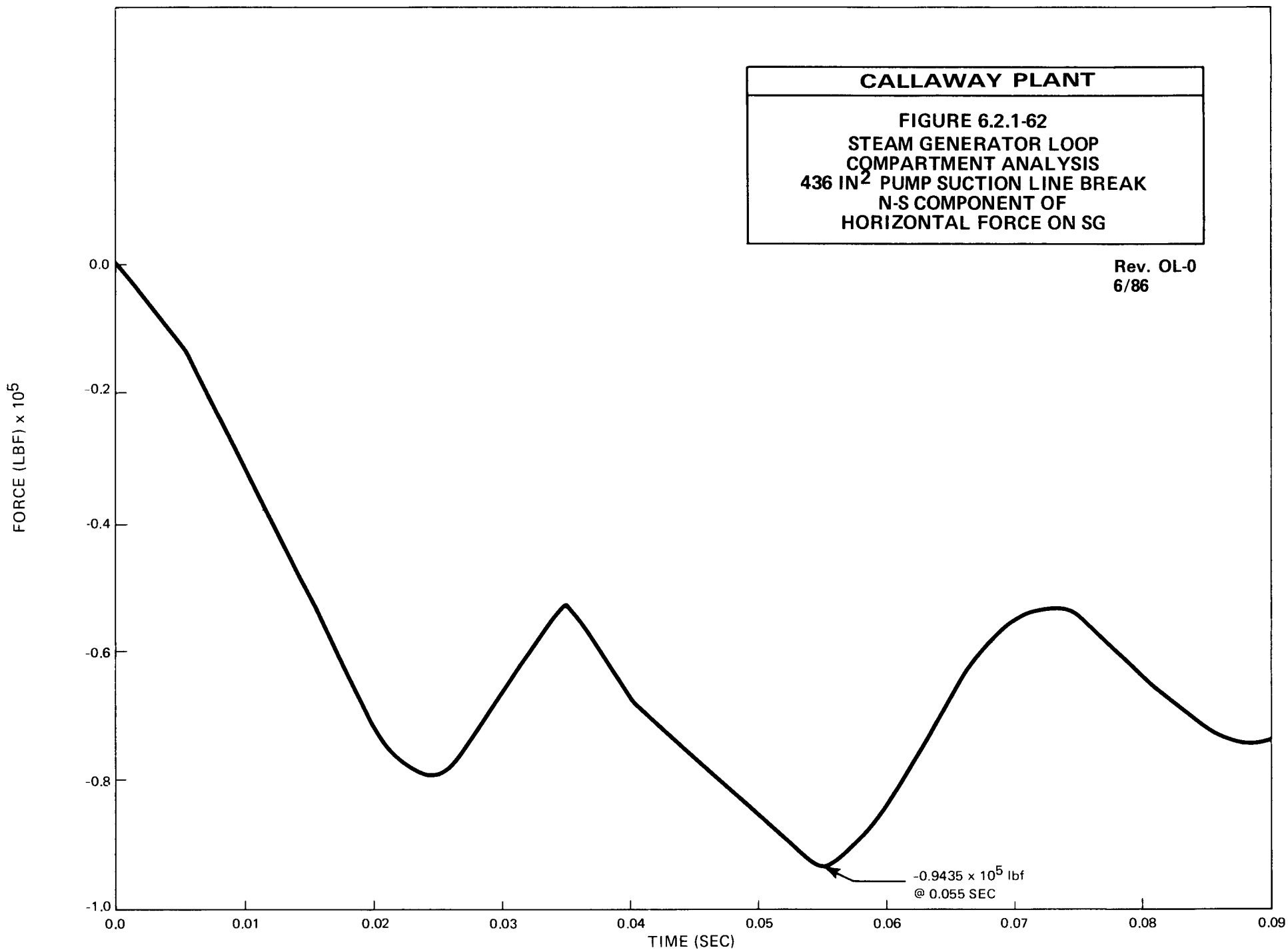
FIGURE 6.2.1-60

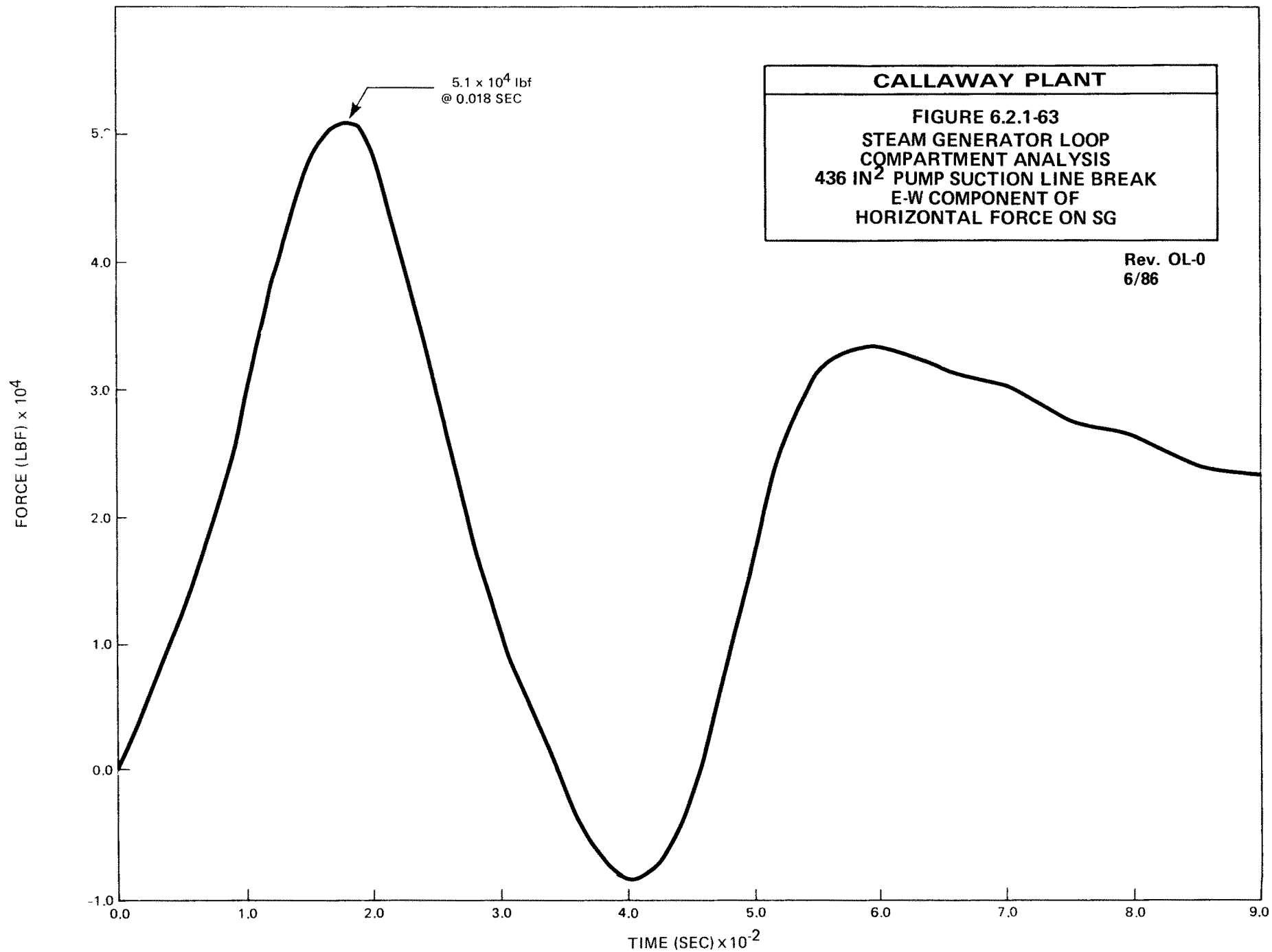
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
236 IN² COLD LEG BREAK
DIRECTION OF PEAK HORIZONTAL
FORCES ON REACTOR COOLANT
PUMP AND STEAM GENERATOR

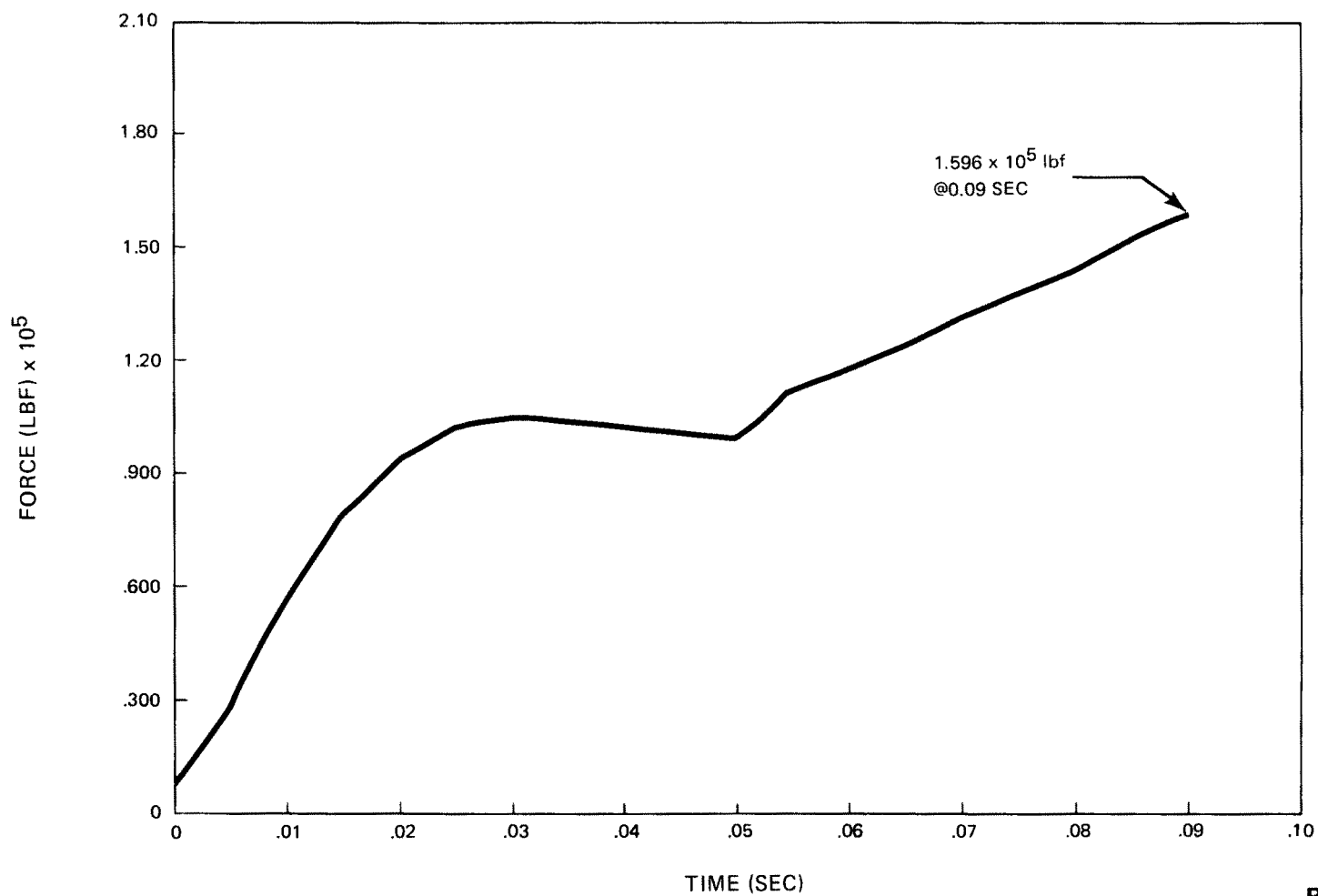
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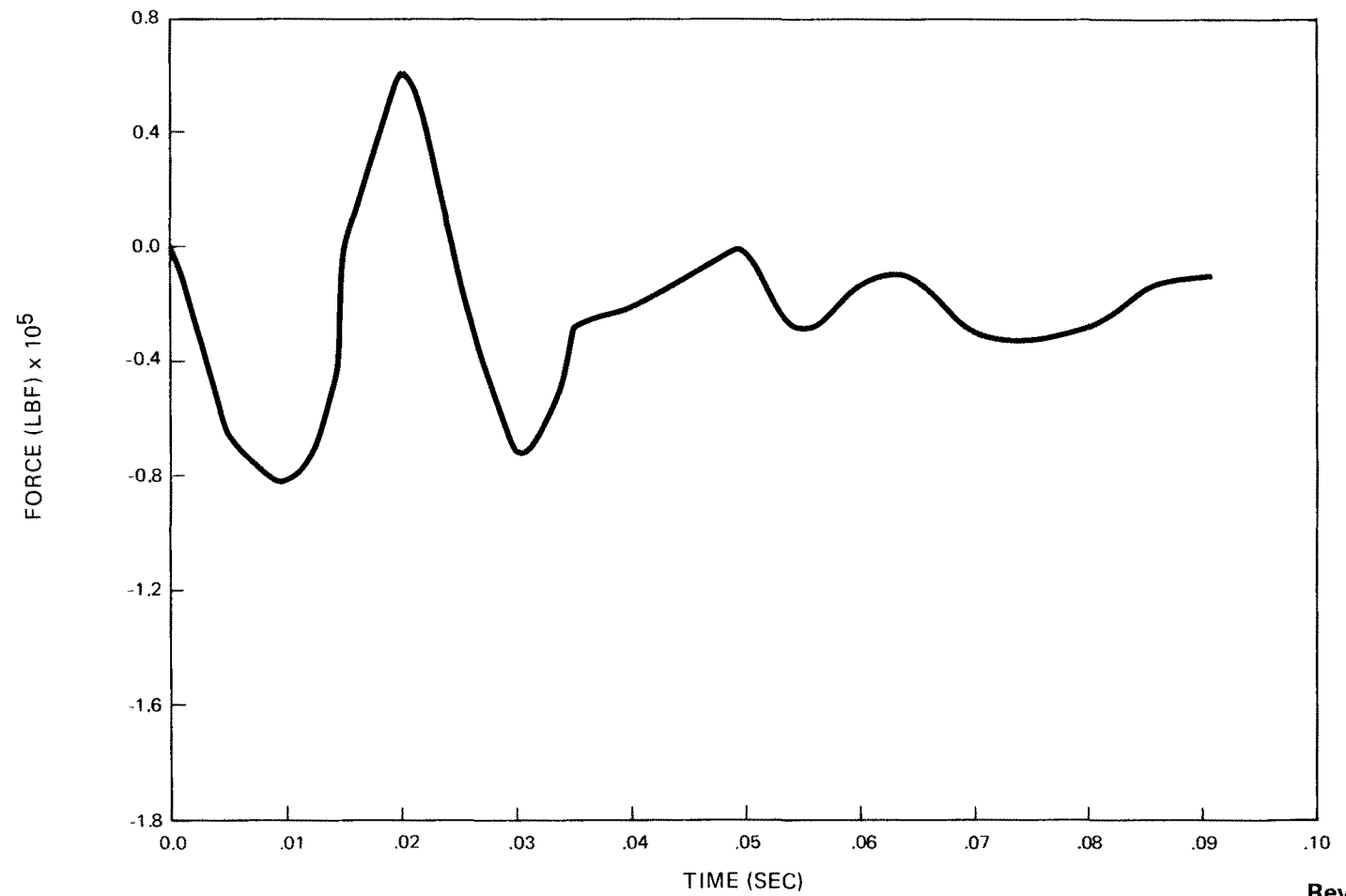




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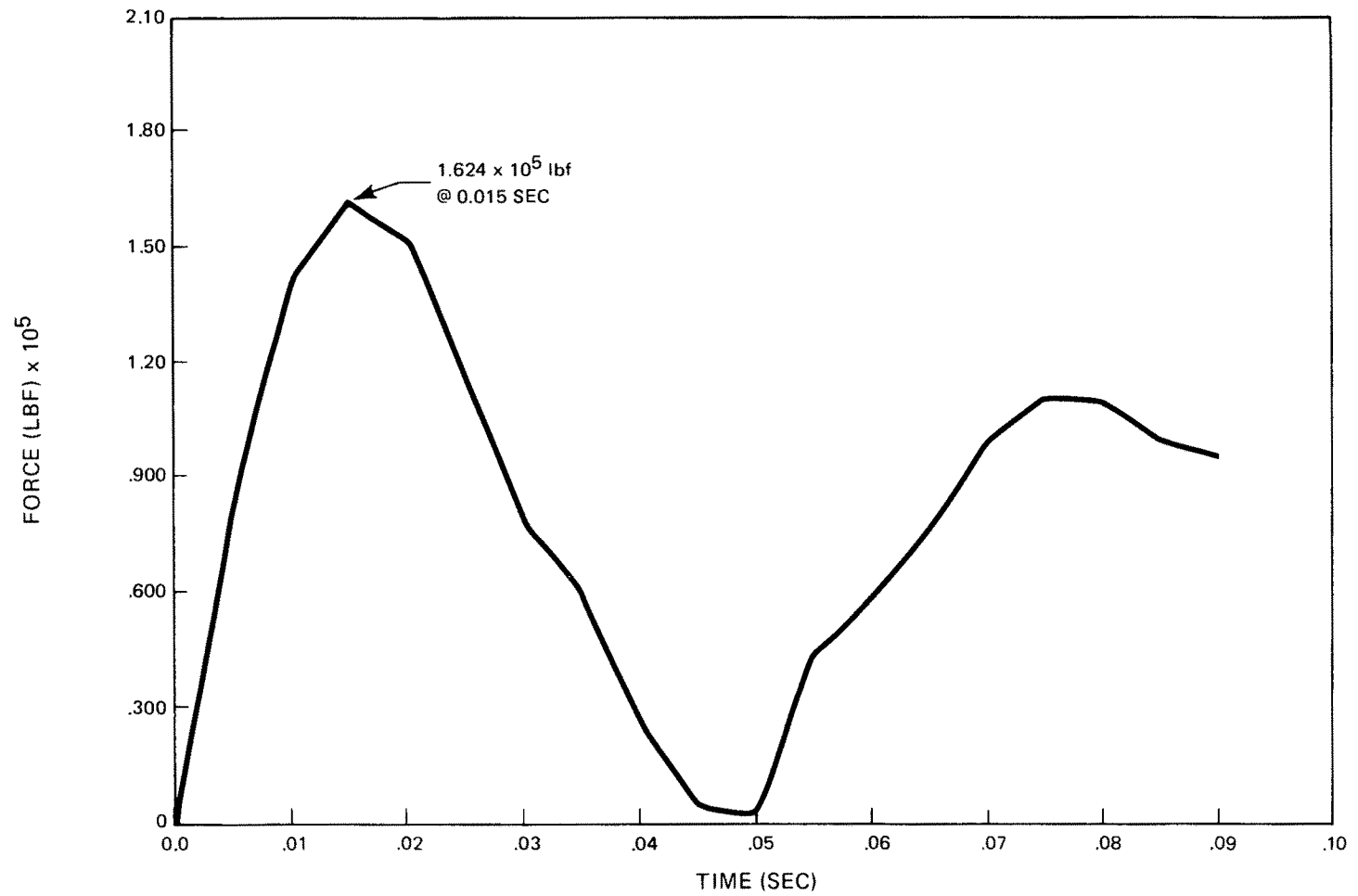
FIGURE 6.2.1-64
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
436 IN² PUMP SUCTION LINE BREAK
VERTICAL FORCE ON SG



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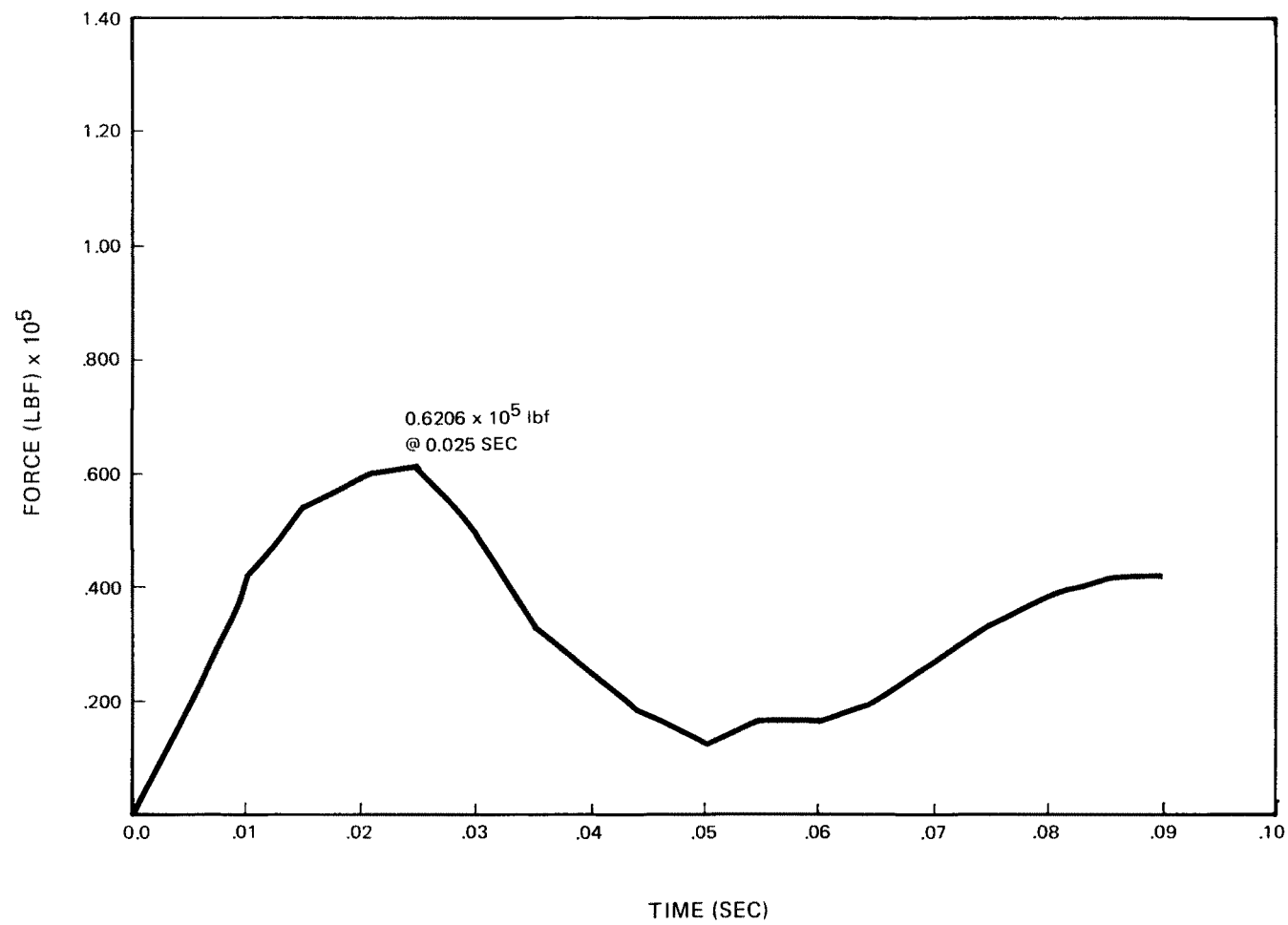
CALLAWAY PLANT

**FIGURE 6.2.1-65
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
436 IN² 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 IN² PUMP SUCTION LINE BREAK
E-W COMPONENT OF HORIZONTAL FORCE
ON RCP



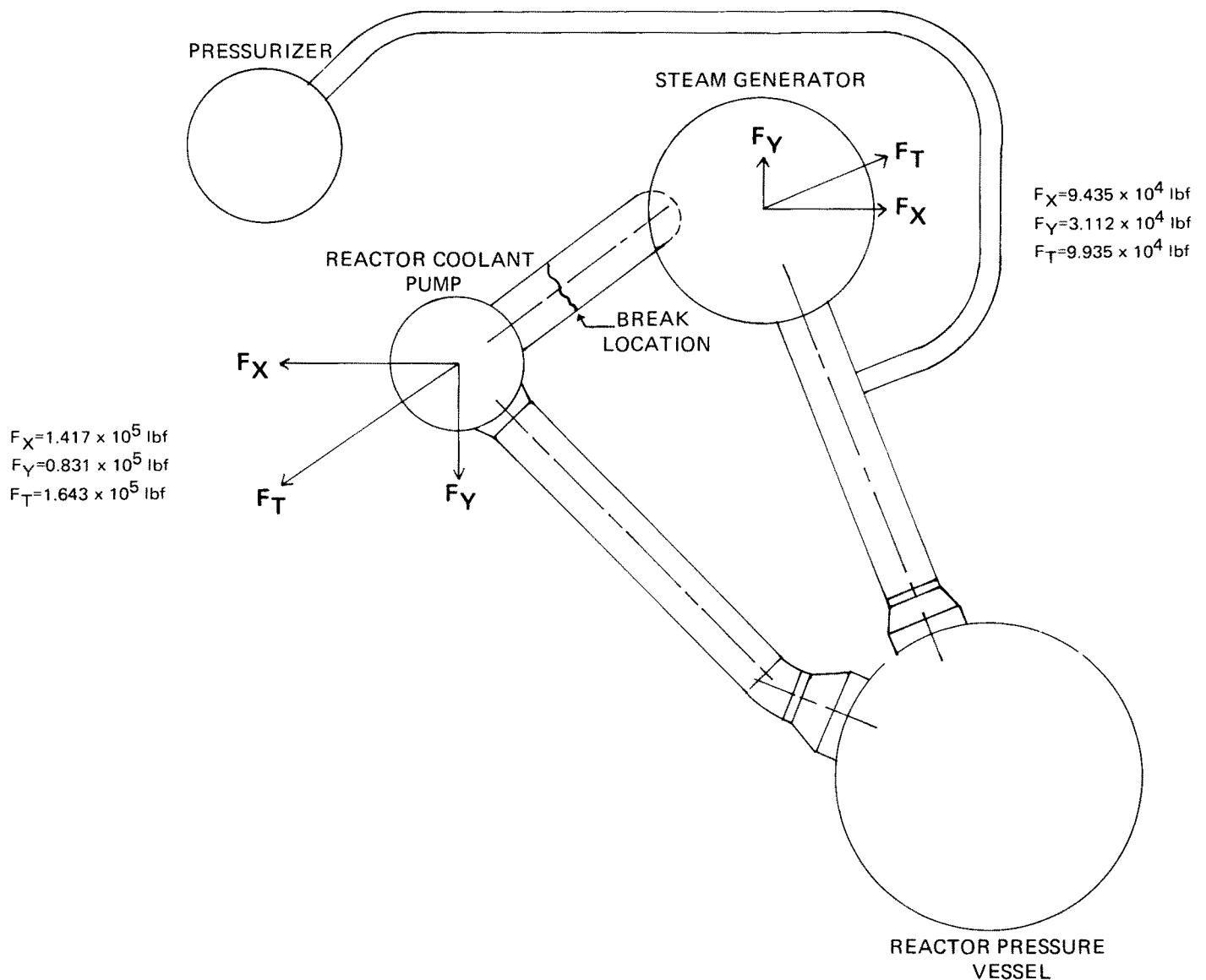
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6/86

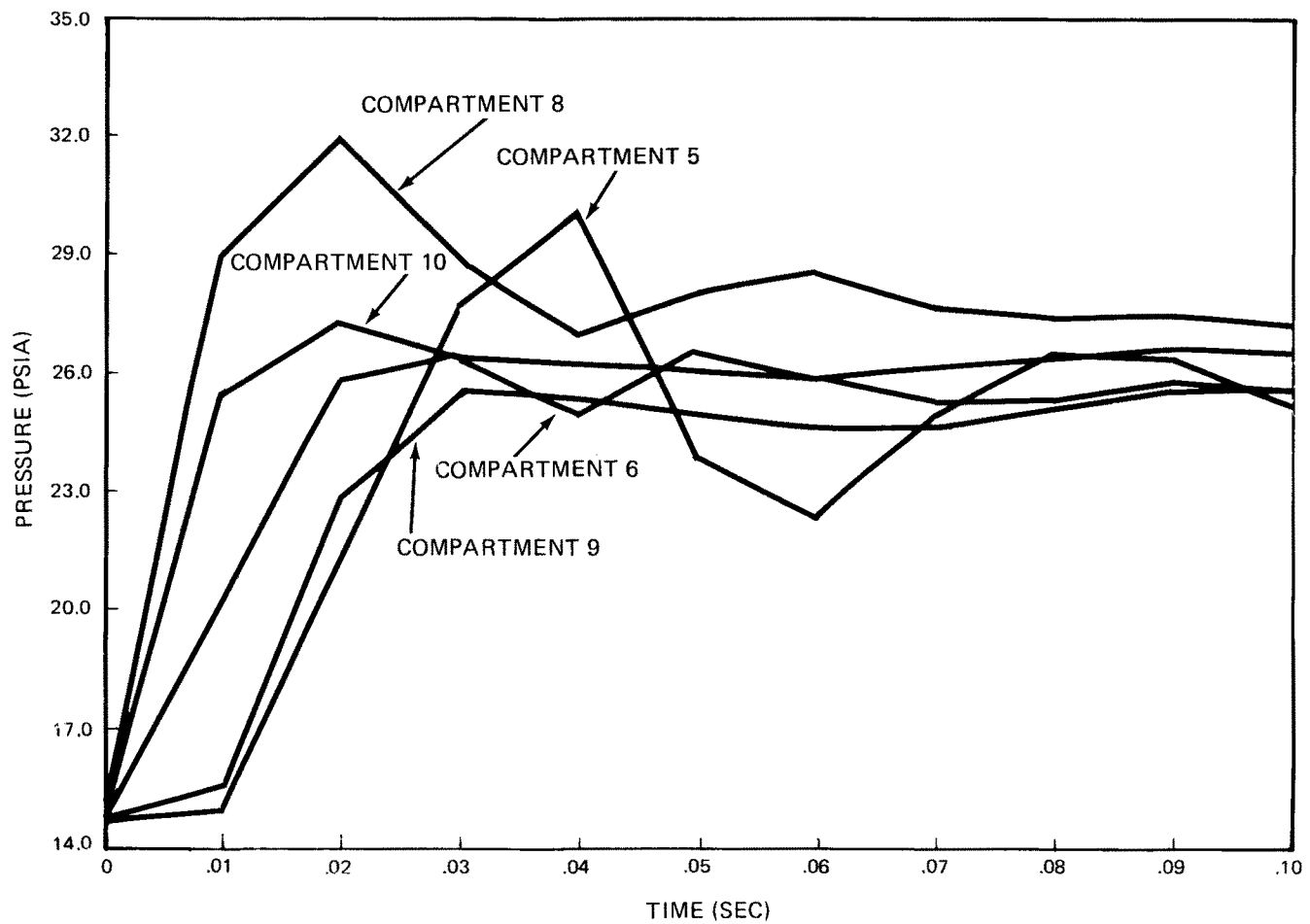
CALLAWAY PLANT

**FIGURE 6.2.1-67
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
436 IN² PUMP SUCTION LINE BREAK
VERTICAL FORCE
ON RCP**

CALLAWAY PLANT

**FIGURE 6.2.1-68
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
436 IN² PUMP SUCTION LINE BREAK
DIRECTION OF PEAK HORIZONTAL FORCES
ON REACTOR COOLANT PUMP AND
STEAM GENERATOR**

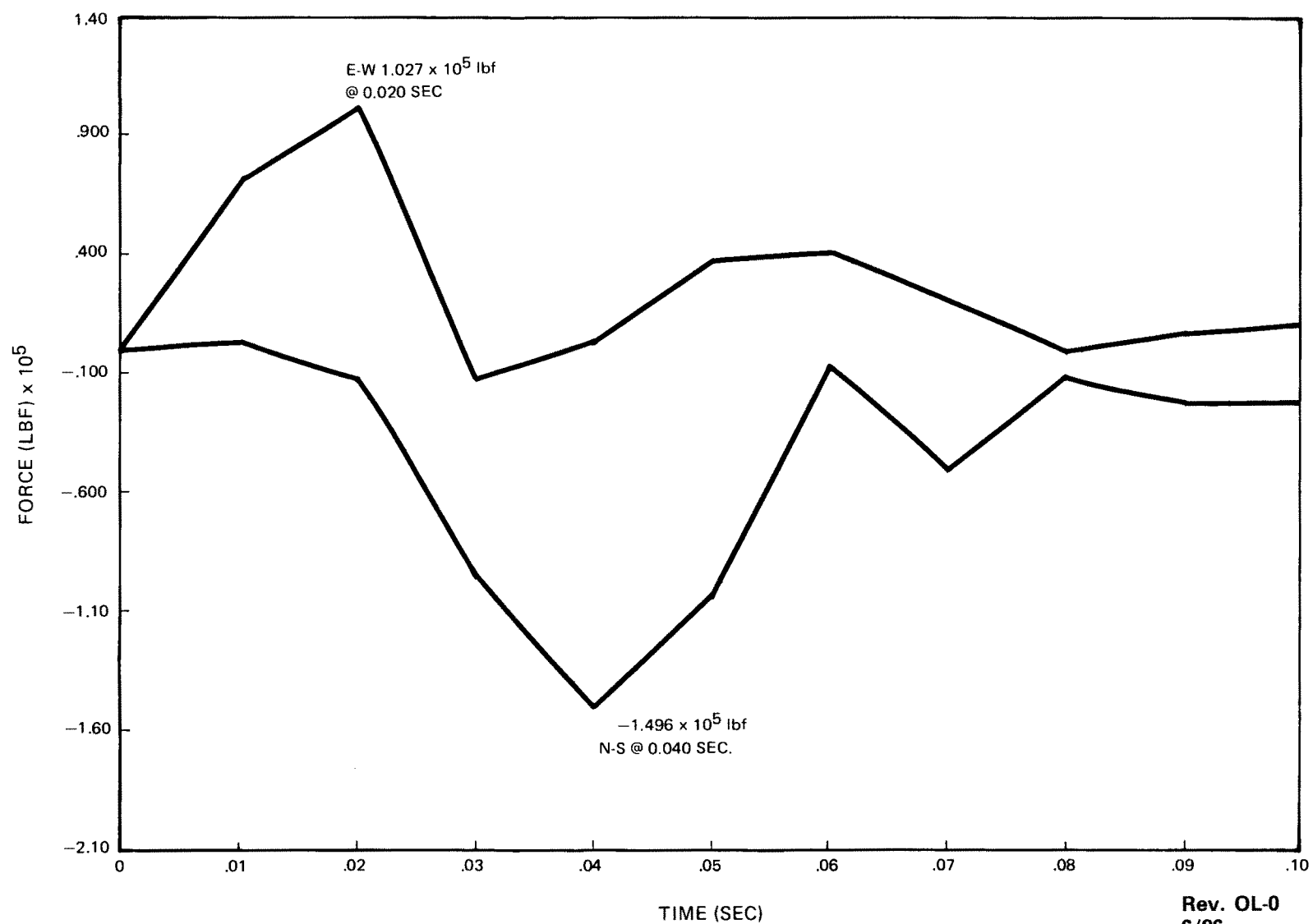




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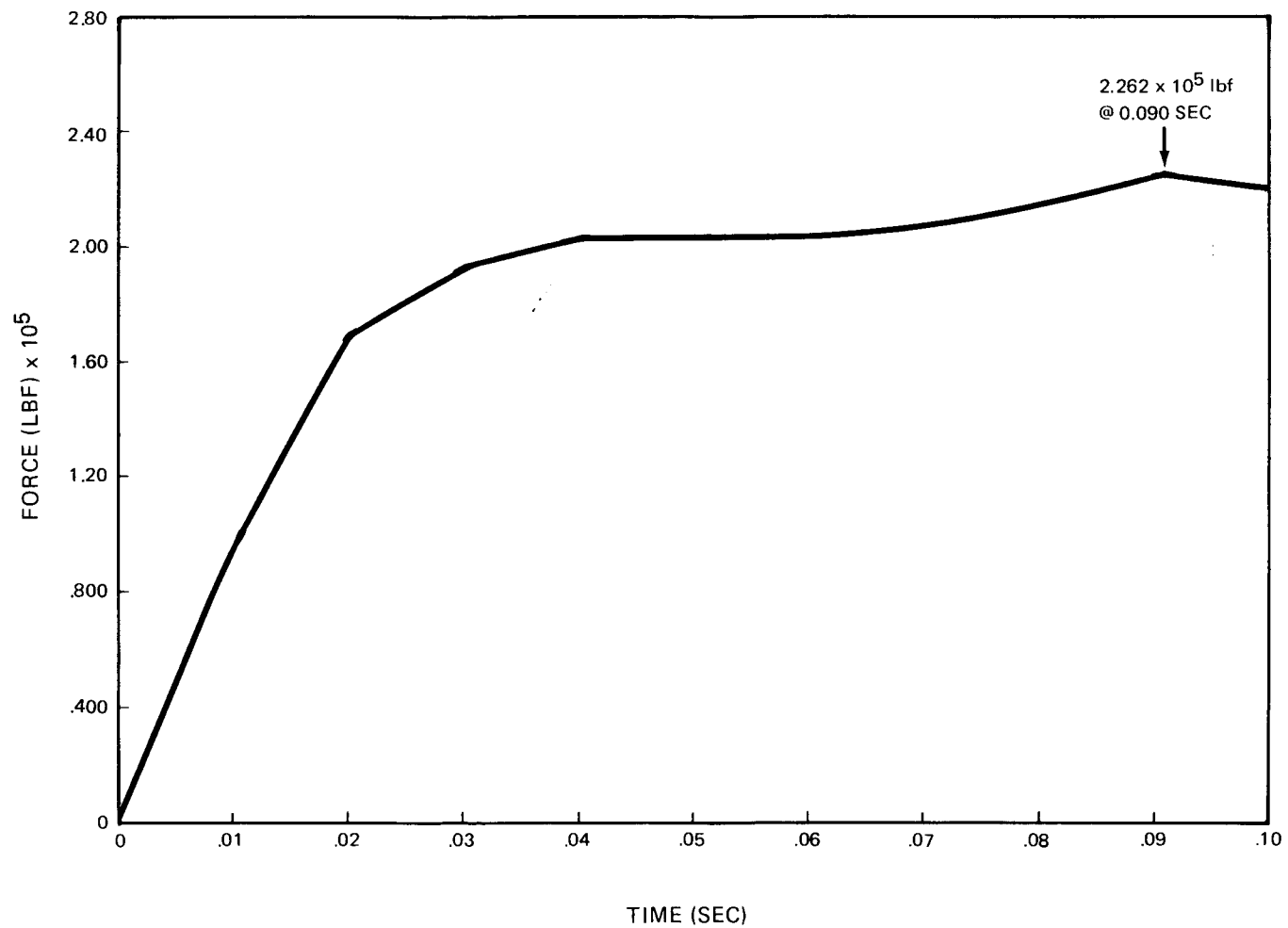
FIGURE 6.2.1-69
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
763 IN² HOT LEG BREAK
ABSOLUTE PRESSURE NEAR THE BREAK



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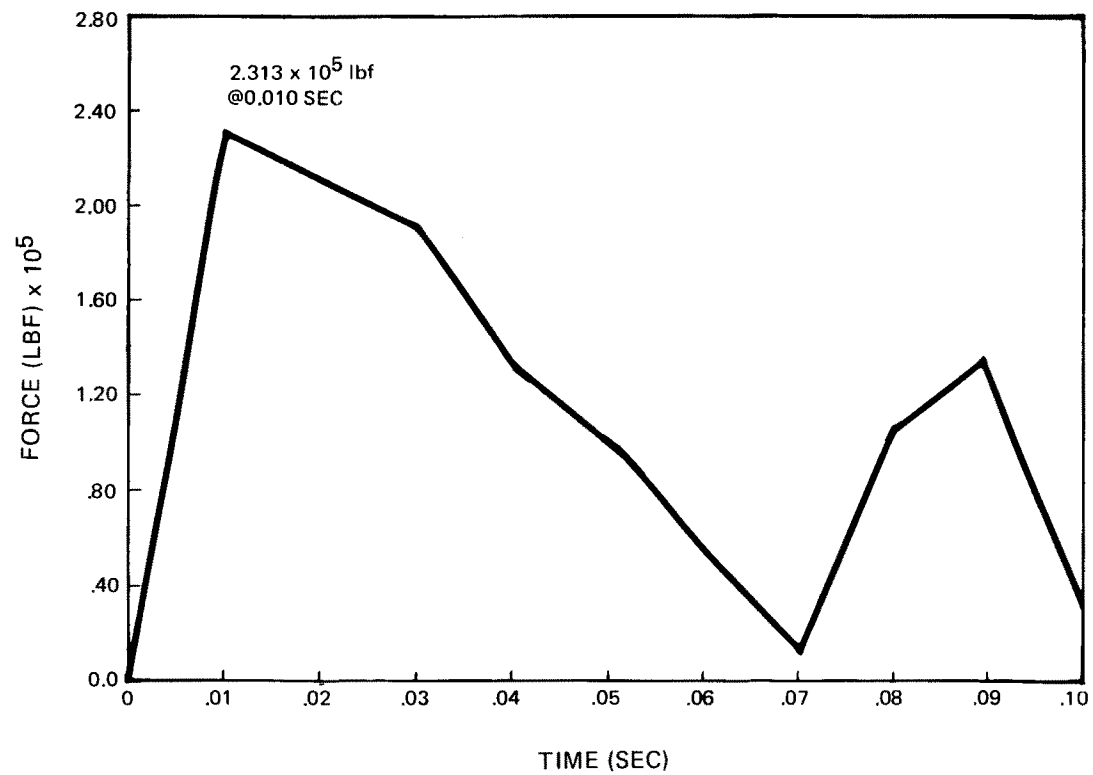
FIGURE 6.2.1-70
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
763 IN² HOT LEG BREAK
HORIZONTAL FORCES ON SG



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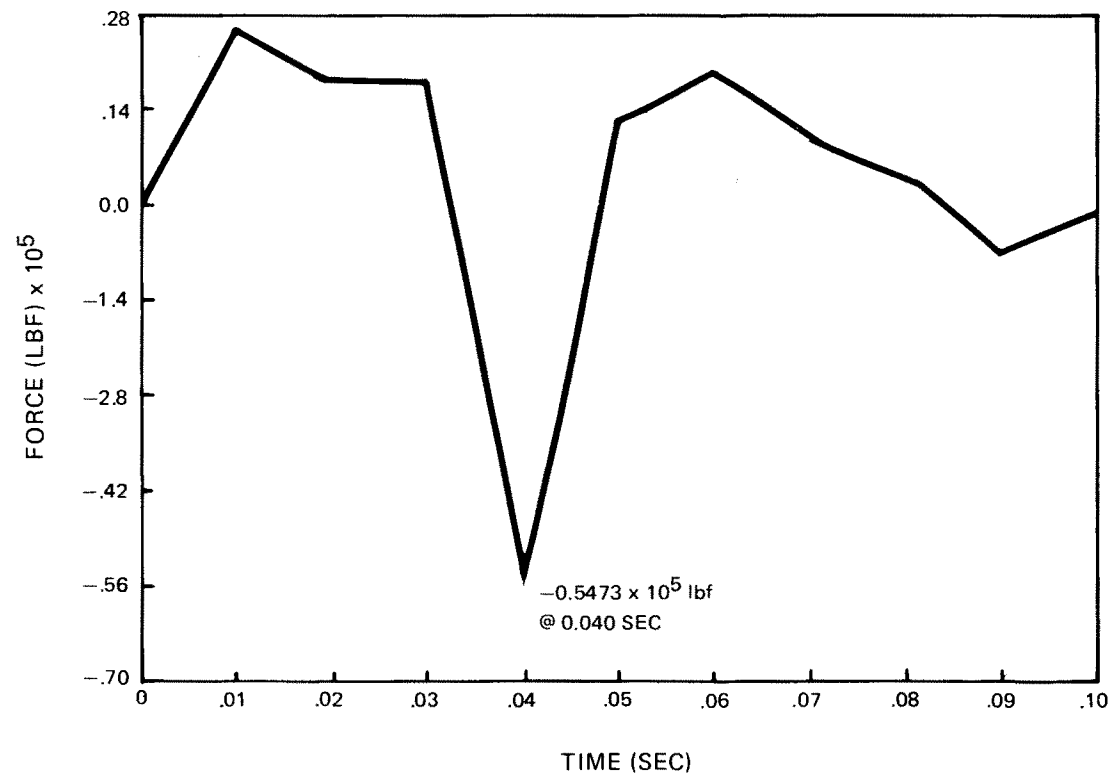
FIGURE 6.2.1-71
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
763 IN² HOT LEG BREAK
VERTICAL FORCE ON SG



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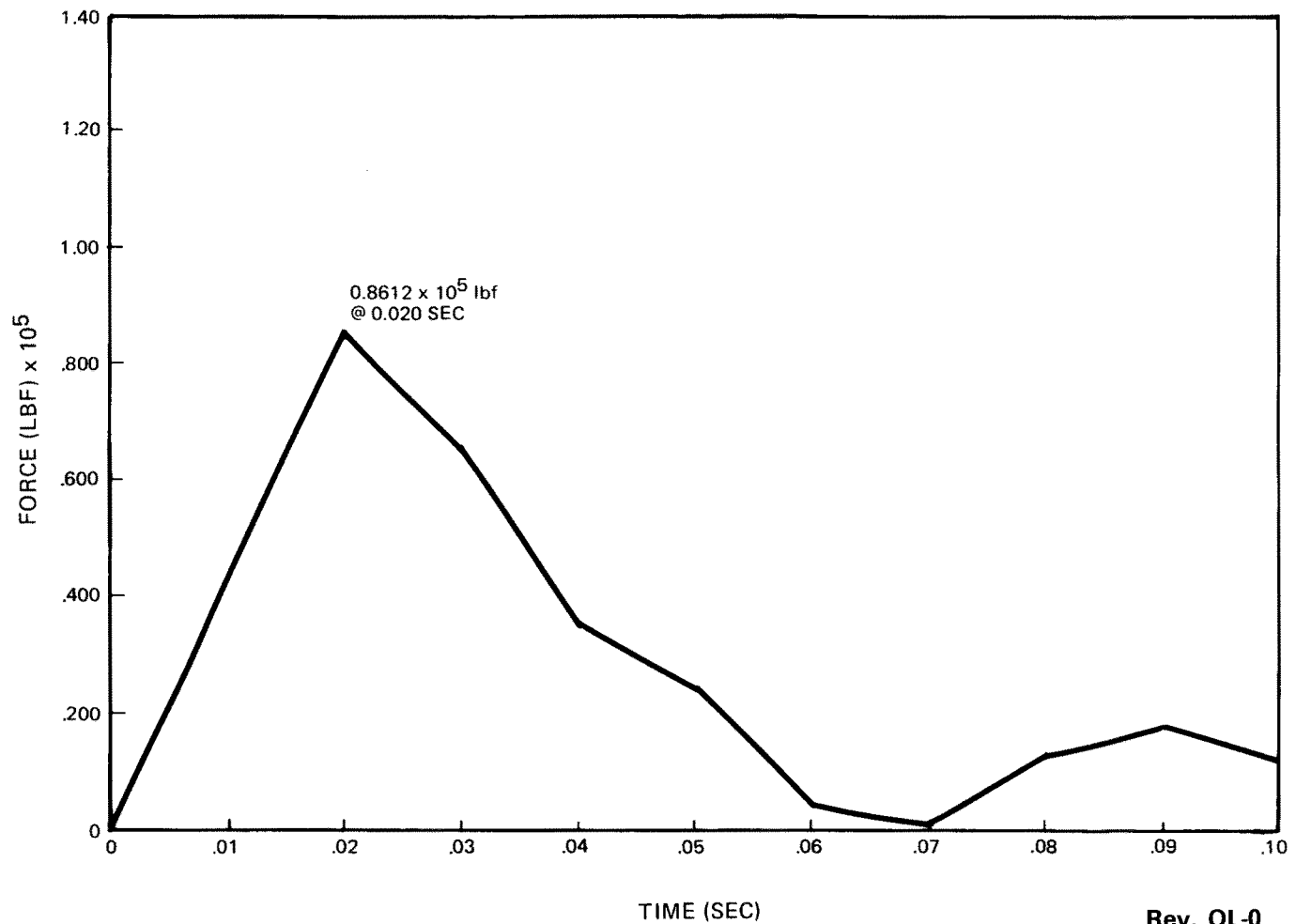
FIGURE 6.2.1-72
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
763 IN² HOT LEG BREAK
N-S COMPONENT OF
HORIZONTAL FORCE ON RCP



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



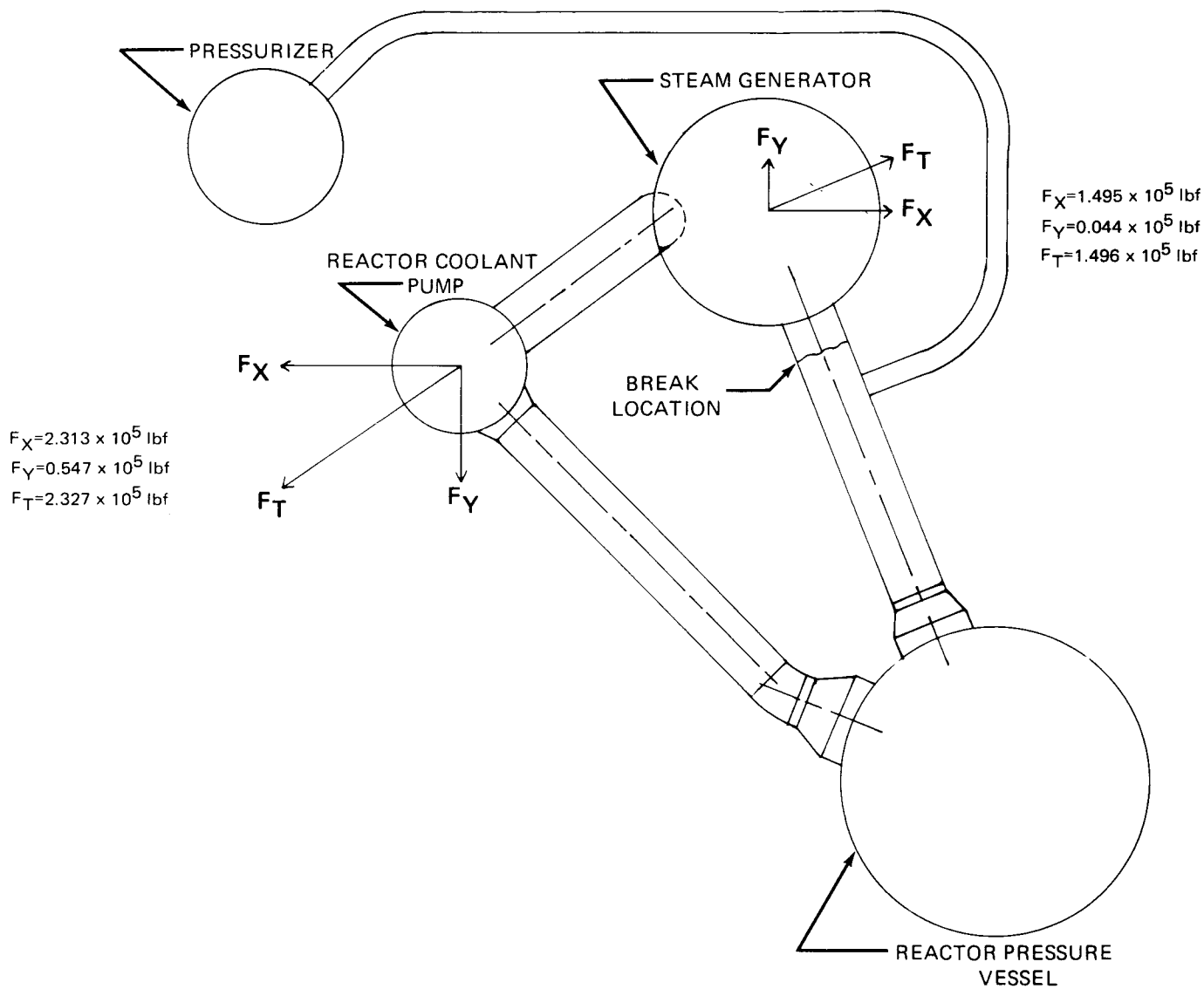
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FIGURE 6.2.1-74
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
763 IN² HOT LEG BREAK
VERTICAL FORCE ON RCP

CALLAWAY PLANT

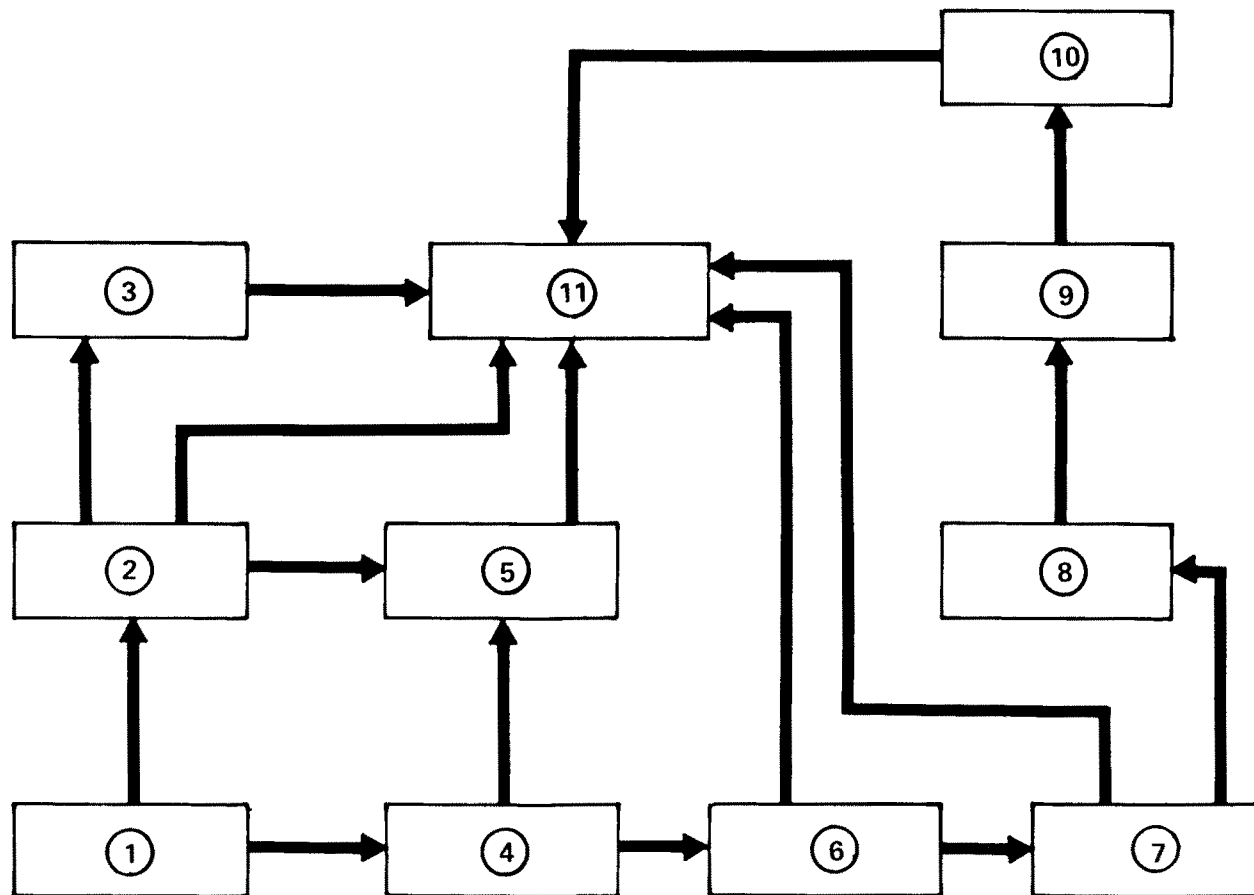
FIGURE 6.2.1-75
STEAM GENERATOR LOOP
COMPARTMENT ANALYSIS
763 IN² HOT LEG BREAK
DIRECTION OF PEAK HORIZONTAL FORCES
ON REACTOR COOLANT PUMP
AND STEAM GENERATOR



FSAR Figure 6.2.1-76 is withheld per RIS 2015-17

| |
|----------------------------------------------------------------------------------|
| CALLAWAY PLANT |
| FIGURE 6.2.1-76 |
| PRESSURIZER COMPARTMENT ANALYSIS NODALIZATION SCHEME - ELEVATION VIEW |

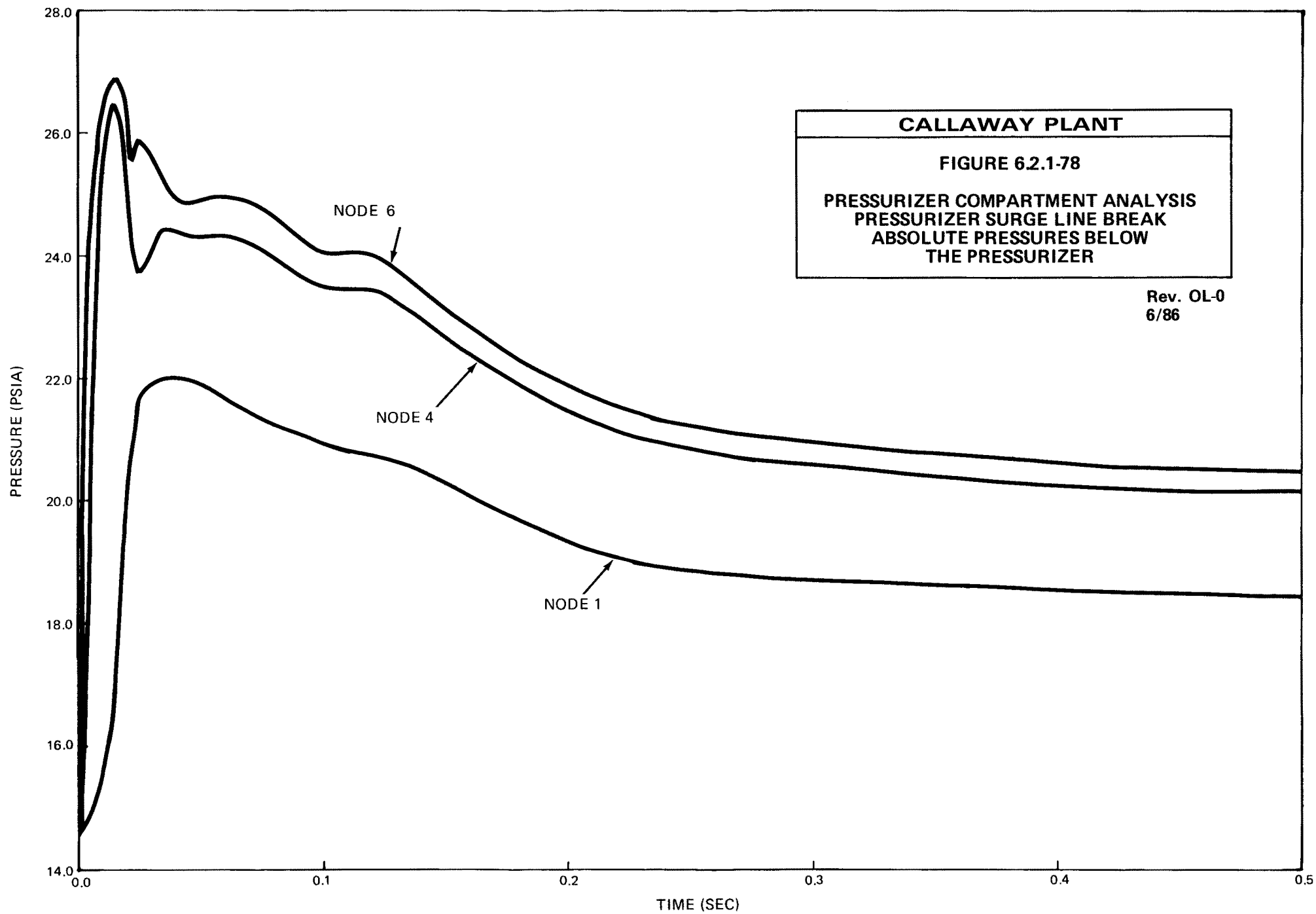
FSAR Figure 6.2.1-76 is withheld per RIS 2015-17

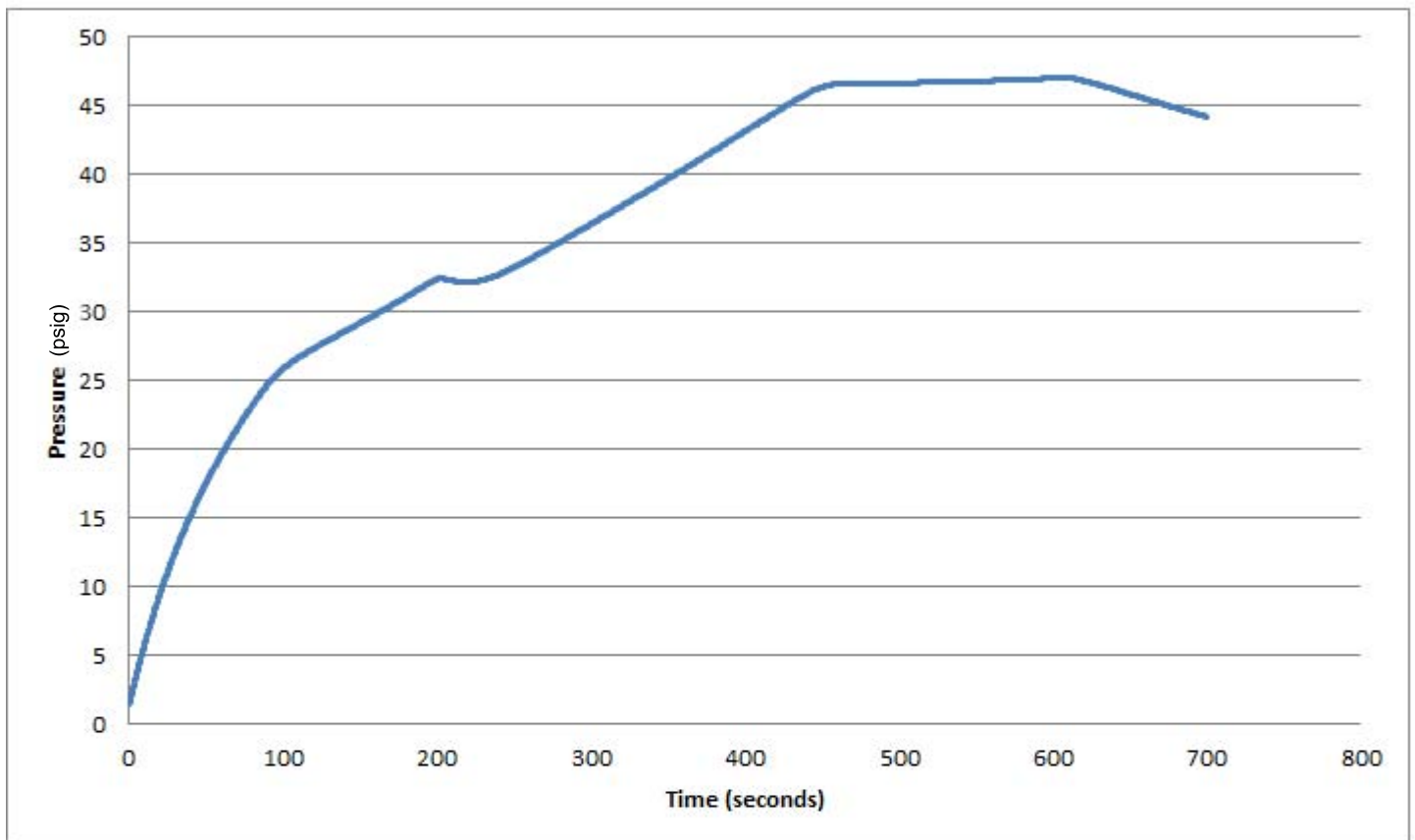


FOR NODE VOLUMES AND VENT PATH AREAS, FLOW COEFFICIENTS AND I/a's, REFER TO
TABLES 6.2.1-26 AND 6.2.1-27

Rev. OL-0
6/86

| CALLAWAY PLANT |
|--------------------------------------------------|
| FIGURE 6.2.1-77 |
| FLOW DIAGRAM PRESSURIZER COMPARTMENT ANALYSIS |





CALLAWAY PLANT

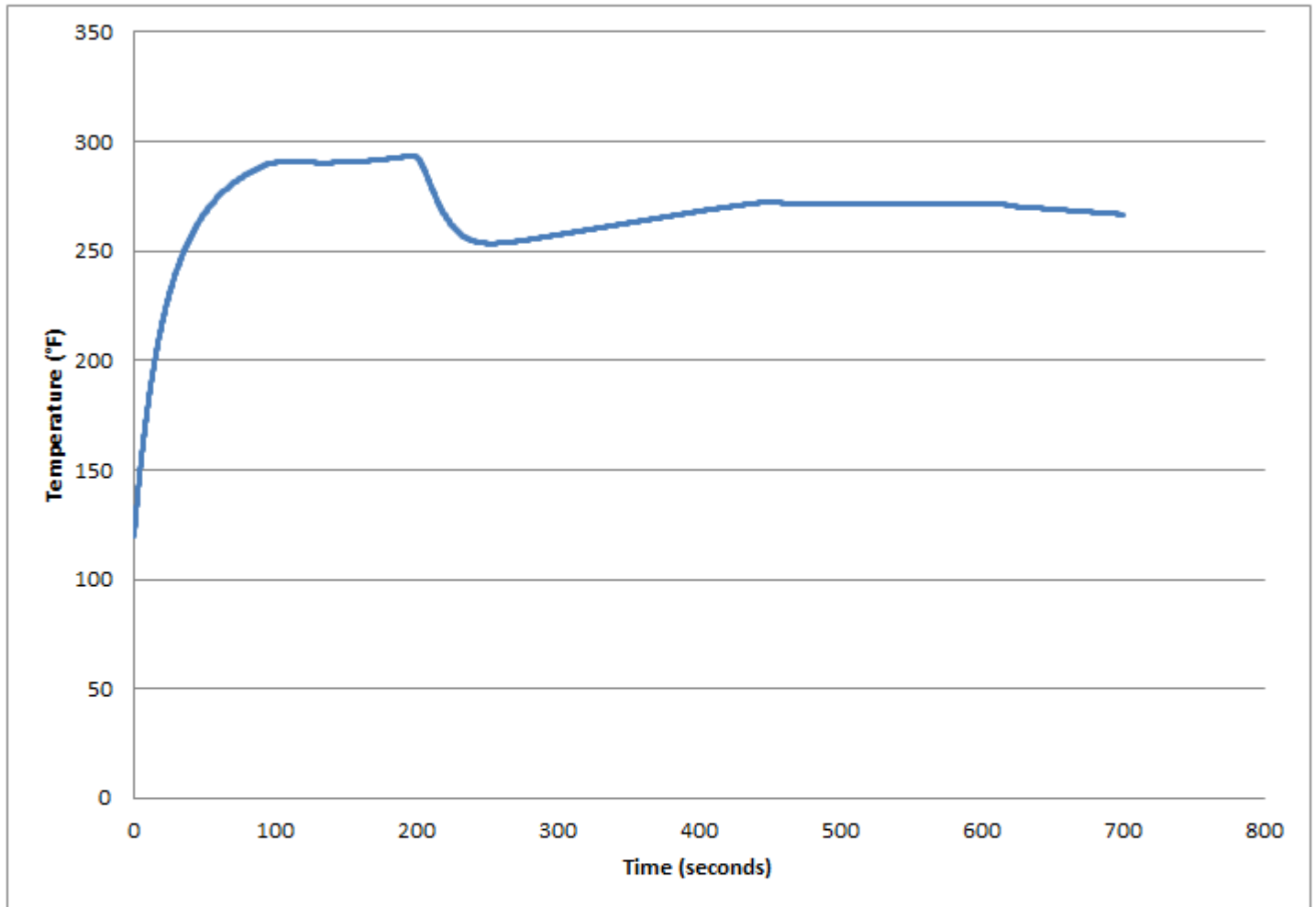
FIGURE 6.2.1-79

MAIN STEAM LINE BREAK ANALYSIS

CASE 24

CONTAINMENT PRESSURE (PSIG)

REV. 17 10/13



CALLAWAY PLANT

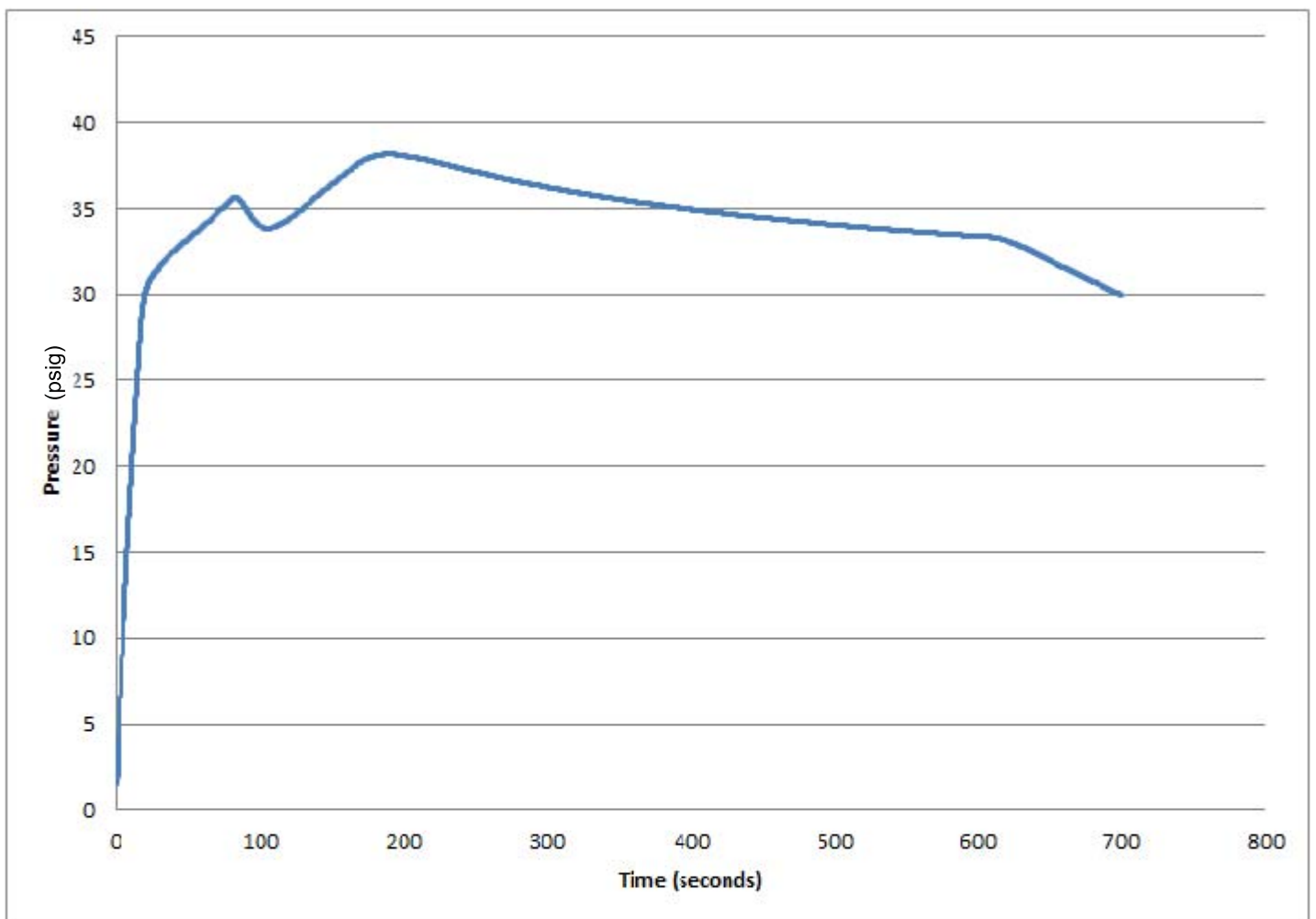
FIGURE 6.2.1-80

MAIN STEAM LINE BREAK ANALYSIS

CASE 24

CONTAINMENT TEMPERATURE (DEGREES F)

REV. 17 10/13



CALLAWAY PLANT

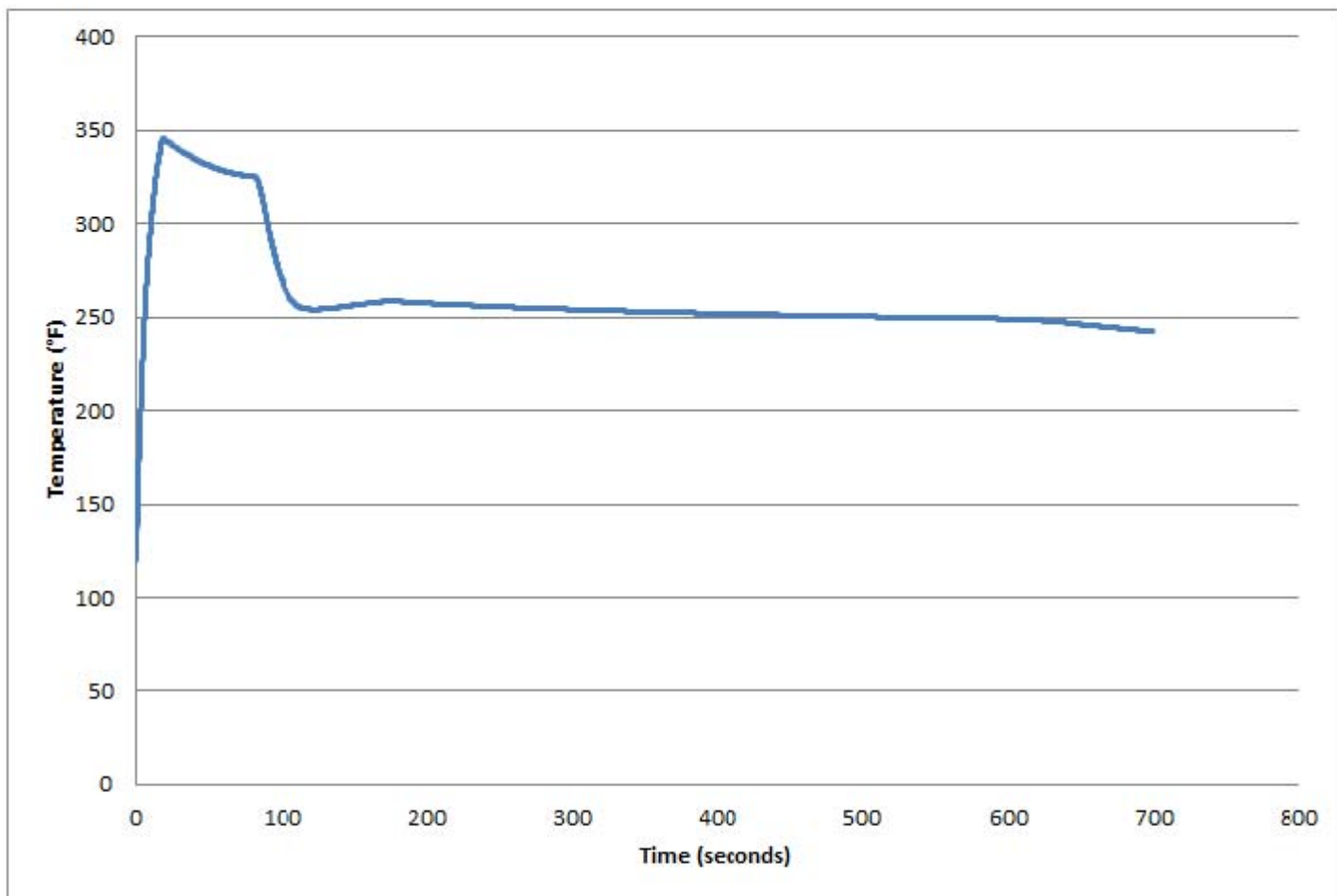
FIGURE 6.2.1-81

MAIN STEAM LINE BREAK ANALYSIS

CASE 1

CONTAINMENT PRESSURE (PSIG)

REV. 18 10/13



CALLAWAY PLANT

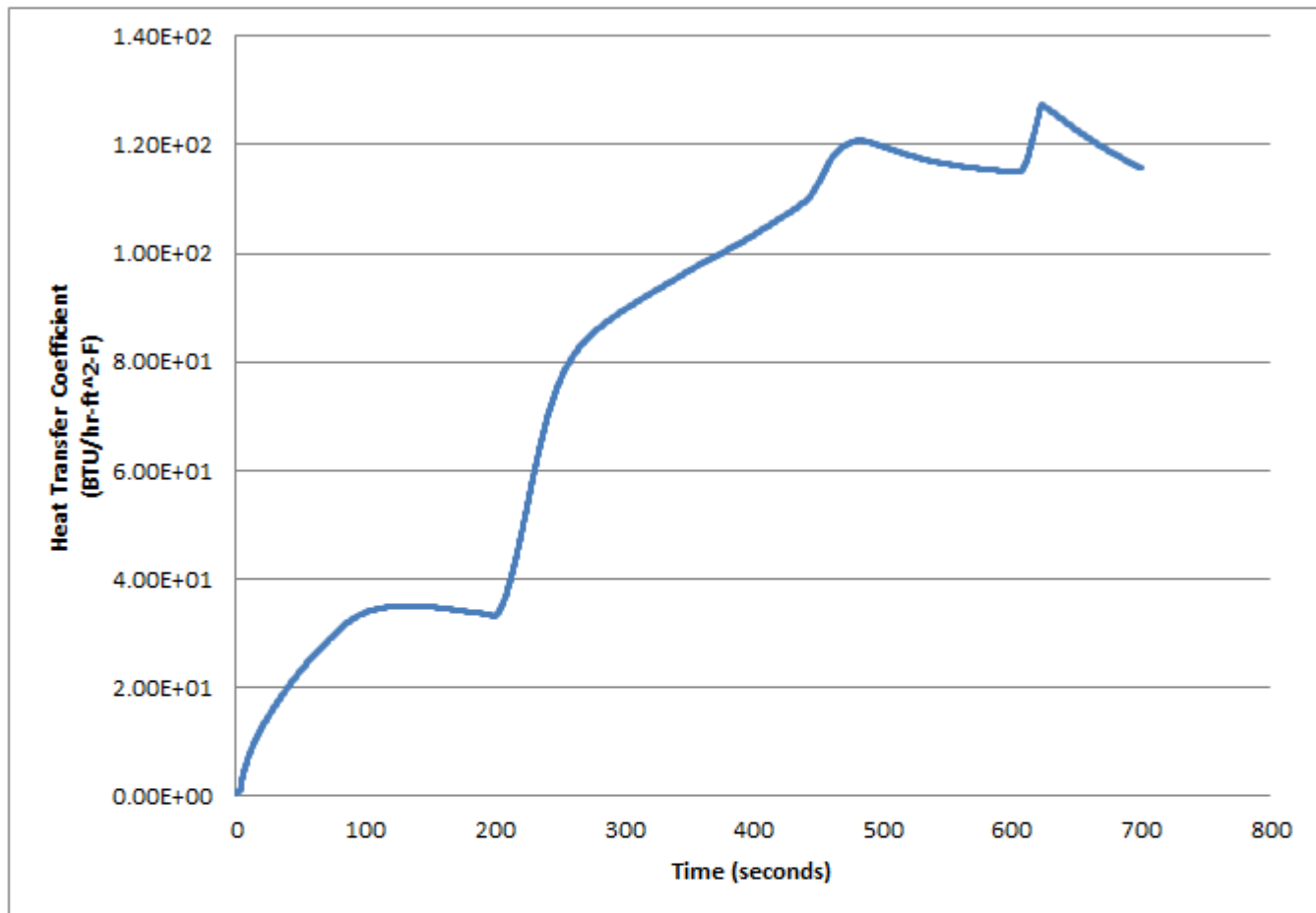
FIGURE 6.2.1-82

MAIN STEAM LINE BREAK ANALYSES

CASE 1

CONTAINMENT TEMPERATURE (DEGREES F)

REV. 18 10/13



CALLAWAY PLANT

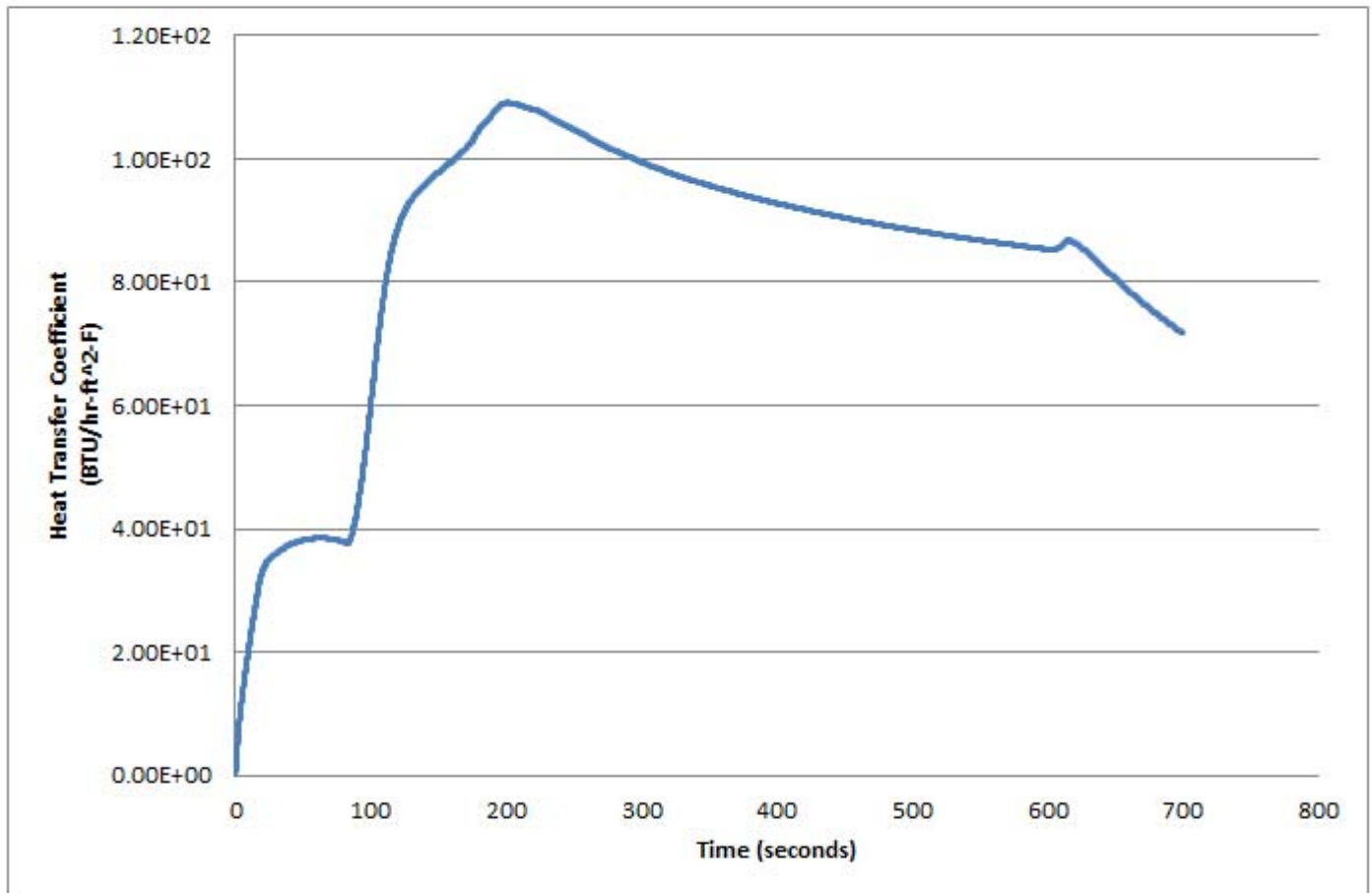
FIGURE 6.2.1-83

MAIN STEAM LINE BREAK ANALYSIS

CASE 24

UCHIDA CONDENSING HEAT TRANSFER COEFFICIENT

REV. 17 10/13



CALLAWAY PLANT

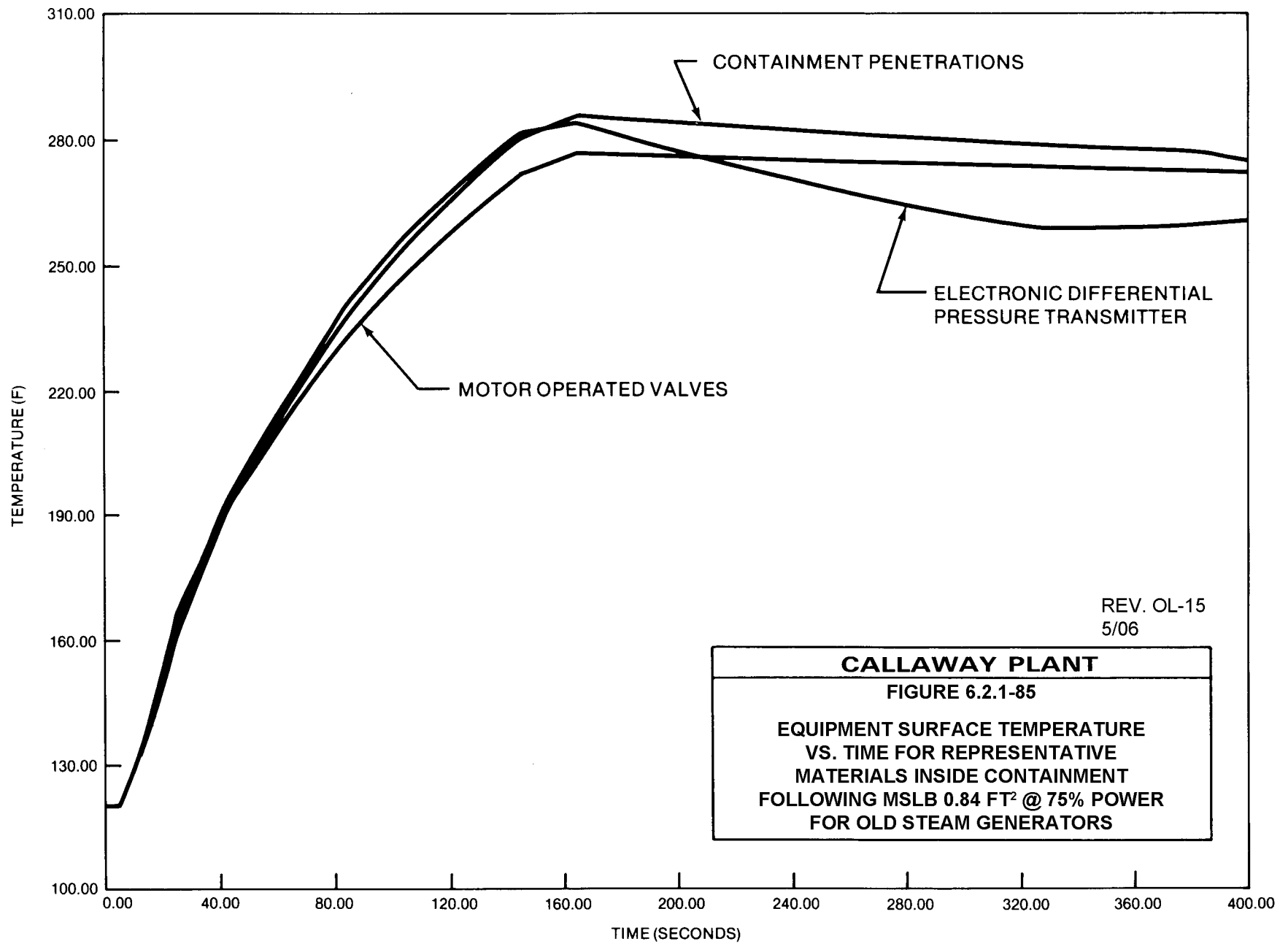
FIGURE 6.2.1-84

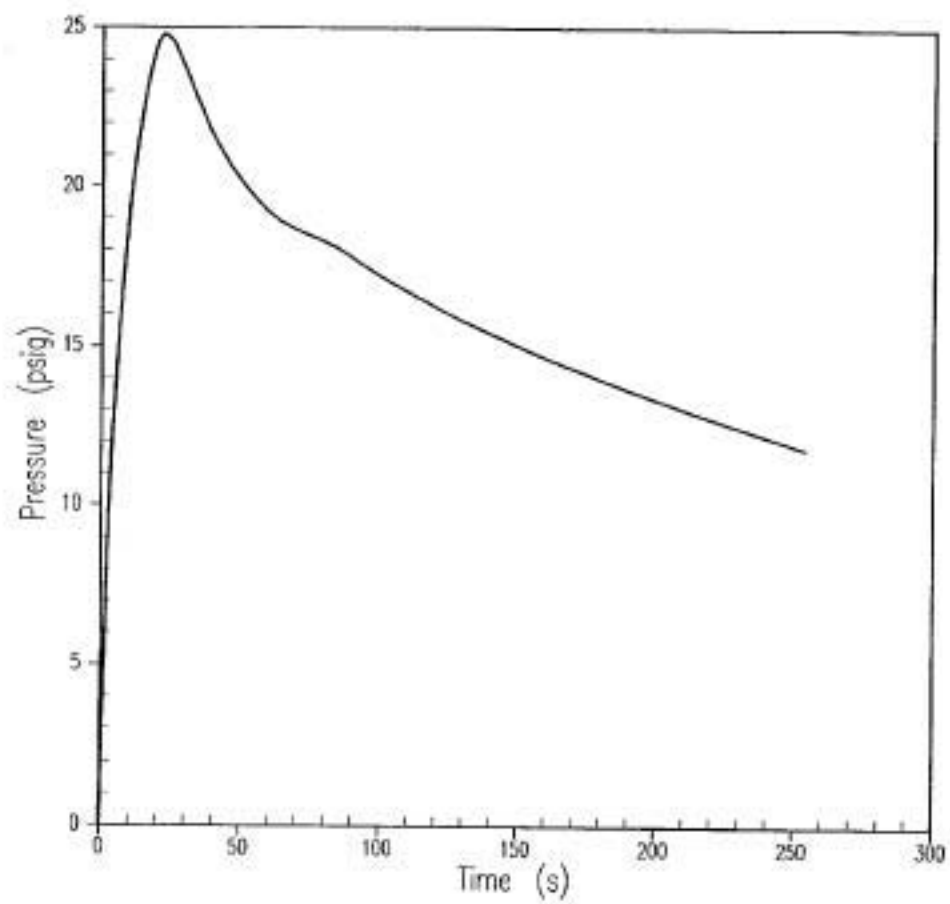
MAIN STEAM LINE BREAK ANALYSIS

CASE 1

UCHIDA CONDENSING HEAT TRANSFER COEFFICIENT

REV. 18 10/13



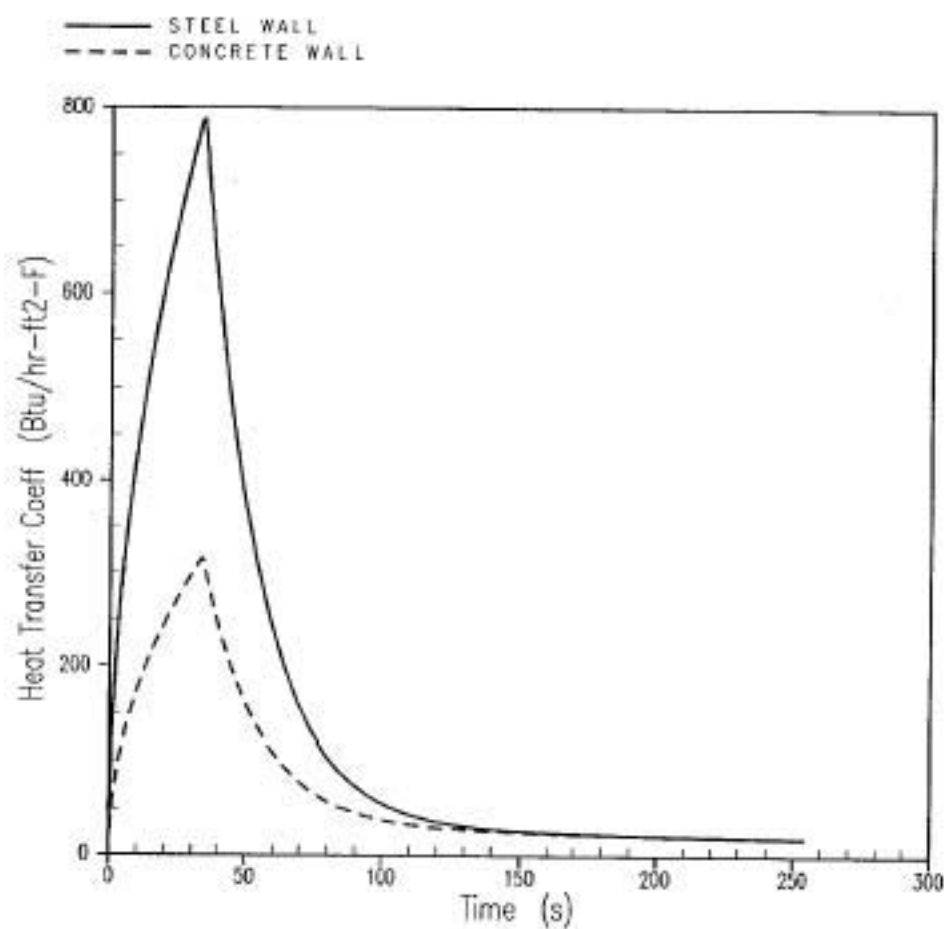


REV. OL-16
5/88

CALLAWAY PLANT

FIGURE 6.2.1-00

CONTAINMENT BACKPRESSURE
DECLG ($C_p=0.6$)
HIGHT_{AVE} MINIMUM 31



REV. 16
10/06

CALLAWAY PLANT

FIGURE 6.2.1-87

CONDENSING WALL HEAT TRANSFER COEFFICIENT
deck ($C_o=0.6$)
HIGH $T_{w/2}$ MINIMUM SI

CONTAINMENT
SPRAY PUMP

PEN01A

SPRAY ADDITIVE EDUCTOR

SEN01A

SPRAY NOZZLES

SEN02

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.

SPRAY ADDITIVE EDUCTOR

SEN01B

CONTAINMENT
SPRAY PUMP

PEN01B

SPRAY NOZZLES

SEN02

AS-BUILT CLASS 1

| DRWN | (DATE) | N/A |
|-----------------------------------------|--------|-----|
| CHKD | (DATE) | N/A |
| SUPV | (DATE) | N/A |
| APPR | (DATE) | N/A |
| UNION ELECTRIC COMPANY ST. LOUIS, MO | | |
| FSAR FIGURE 6.2.2-1 | | |
| CALLAWAY PLANT | | |
| M-22EN01 (Q) | | |
| REV. 16 | | |

FSAR Figure 6.2.2-2 Sheet 1 is withheld per RIS 2015-17

FSAR Figure 6.2.2-2 Sheet 1 is withheld per RIS 2015-17

| | | | | | | |
|-------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------|---------------------|-------|------|------|
| 3 | 042005 | INCORP. RFR 22941A | TJC | MAL | N/A | TWS |
| 2 | 3/19/93 | REFLECTS TURNOVER TO U.E. INCORP. RFR 10589 | SSR | SS | --- | --- |
| 1 | 1/1/93 | INC. FOR 1-3278-P (CDEF-5.6) 2FC-1399-P (H-2), NCR 25N 8102-P (E-F-2). ADDED NOTE 12. | --- | --- | --- | --- |
| 0 | 7/1/91 | ISSUED FOR CONSTRUCTION. THIS INCORP. SITE RELATED NCR # 25N-3208-P. | --- | --- | --- | --- |
| NO. | DATE | REVISIONS | BY | CHK | ENGR | PROJ |
| SCALE | NONE | DATE: 7-25-81 | DESIGNED | DRAWN | SSR | ENGR |
| BECHTEL GAITHERSBURG, MARYLAND | | | | | | |
| SNUPPS | | | | | | |
| PIPING ORTHOGRAPHIC CONTAINMENT SPRAY SYSTEM REACTOR BUILDING "A" & "B" TRAINS FSAR FIGURE 6.2.2-2 SHEET | | | | | | |
| AS-BUILT | | | UTILITY DRAWING NO. | | REV | |
| 10466 | | | BECHTEL DRAWING NO. | | REV | |
| M-23EN03(Q) | | | 3 | | 3 | |
| DRAWING APPLICABLE TO UNITS | | | | | | |

M-23EN03(Q)

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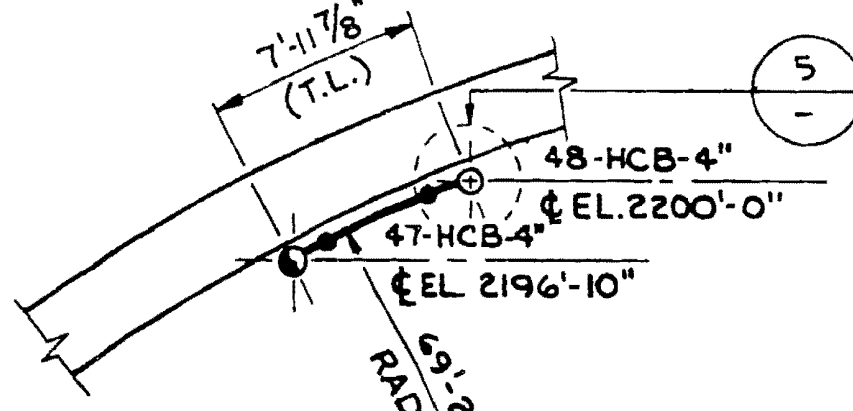
M-23EN04 (Q)

| TABLE FOR PIPE NOZZLES | | | | | | | | | |
|------------------------|----------|--------------|-----------|----------|---|-------------|--|--|--|
| SEQ. NO. | DET. NO. | POS. ON PIPE | PIPE SIZE | AZ | C | BL | | | |
| 1 | 1 | "B" | 3" | 4° | | EL 2165'-8" | | | |
| 2 | | "A" | 3" | 5° | | | | | |
| 3 | | "C" | 3" | 6° | | | | | |
| 4 | | "B" | 3" | 11° | | | | | |
| 5 | | "A" | 3" | 13° | | | | | |
| 6 | | "C" | 3" | 18° | | | | | |
| 7 | | "B" | 3" | 19° | | | | | |
| 8 | | "A" | 3" | 21° | | | | | |
| 9 | | "B" | 3" | 26° | | | | | |
| 10 | | "A" | 3" | 29° | | | | | |
| 11 | | "C" | 3" | 31° | | | | | |
| 12 | | "B" | 3" | 34° | | | | | |
| 13 | | "A" | 3" | 36° | | | | | |
| 14 | | "B" | 3" | 41° | | | | | |
| 15 | | "C" | 3" | 42° | | | | | |
| 16 | | "A" | 3" | 44° | | | | | |
| 17 | | "B" | 3" | 49° | | | | | |
| 18 | | "A" | 3" | 51° | | | | | |
| 19 | | "C" | 3" | 54° | | | | | |
| 20 | | "B" | 3" | 56° | | | | | |
| 21 | | "A" | 3" | 59° | | | | | |
| 22 | | "B" | 3" | 64° | | | | | |
| 23 | | "A" | 3" | 66° | | | | | |
| 24 | | "C" | 3" | 67° | | | | | |
| 25 | | "B" | 3" | 71° | | | | | |
| 26 | | "A" | 3" | 74° | | | | | |
| 27 | | "C" | 3" | 78° | | | | | |
| 28 | | "B" | 3" | 79° | | | | | |
| 29 | | "A" | 3" | 81° | | | | | |
| 30 | | "B" | 3" | 89° | | | | | |
| 31 | | "A" | 3" | 91° | | | | | |
| 32 | | "C" | 3" | 94° | | | | | |
| 33 | | "B" | 3" | 96° | | | | | |
| 34 | | "A" | 3" | 101° | | | | | |
| 35 | | "C" | 3" | 102° | | | | | |
| 36 | | "A" | 3" | 104° | | | | | |
| 37 | | "B" | 3" | 109° | | | | | |
| 38 | | "A" | 3" | 111° | | | | | |
| 39 | | "C" | 3" | 114° | | | | | |
| 40 | | "B" | 3" | 116° | | | | | |
| 41 | | "A" | 3" | 119° | | | | | |
| 42 | | "B" | 3" | 124° | | | | | |
| 43 | | "A" | 3" | 126° | | | | | |
| 44 | | "C" | 3" | 127° | | | | | |
| 45 | | "B" | 3" | 131° | | | | | |
| 46 | | "A" | 3" | 134° | | | | | |
| 47 | | "B" | 3" | 138° | | | | | |
| 48 | | "A" | 3" | 139° | | | | | |
| 49 | | "C" | 3" | 141° | | | | | |
| 50 | | "B" | 3" | 142° | | | | | |
| 51 | | "A" | 3" | 149° | | | | | |
| 52 | | "C" | 3" | 151° | | | | | |
| 53 | | "B" | 3" | 154° | | | | | |
| 54 | | "A" | 3" | 156° | | | | | |
| 55 | | "B" | 3" | 161° | | | | | |
| 56 | | "C" | 3" | 162° | | | | | |
| 57 | | "A" | 3" | 167° | | | | | |
| 58 | | "B" | 3" | 169° | | | | | |
| 59 | | "C" | 3" | 175° | | | | | |
| 60 | | "A" | 3" | 176° | | | | | |
| 61 | | "B" | 3" | 177° | | | | | |
| 62 | | "C" | 3" | 184°-30' | | EL 2170'-3" | | | |
| 63 | | "A" | 3" | 184° | | EL 2170'-3" | | | |
| 64 | | "B" | 3" | 189° | | | | | |
| 65 | | "C" | 3" | 192° | | | | | |
| 66 | | "A" | 3" | 195° | | | | | |
| 67 | | "B" | 3" | 197° | | | | | |
| 68 | | "C" | 3" | 203° | | | | | |
| 69 | | "A" | 3" | 205° | | | | | |
| 70 | | "B" | 3" | 207° | | | | | |
| 71 | | "C" | 3" | 212° | | | | | |
| 72 | | "A" | 3" | 214° | | | | | |
| 73 | | "B" | 3" | 215° | | | | | |
| 74 | | "C" | 3" | 219° | | | | | |
| 75 | | "A" | 3" | 221° | | | | | |
| 76 | | "B" | 3" | 222° | | | | | |
| 77 | | "C" | 3" | 227° | | | | | |
| 78 | | "A" | 3" | 227° | | | | | |
| 79 | | "B" | 3" | 231° | | | | | |
| 80 | | "C" | 3" | 231° | | | | | |
| 81 | | "A" | 3" | 235° | | | | | |
| 82 | | "B" | 3" | 235° | | | | | |
| 83 | | "C" | 3" | 253° | | | | | |
| 84 | | "A" | 3" | 259° | | | | | |
| 85 | | "B" | 3" | 261° | | | | | |
| 86 | | "C" | 3" | 267° | | | | | |
| 87 | | "A" | 3" | 268° | | | | | |
| 88 | | "B" | 3" | 271° | | | | | |
| 89 | | "C" | 3" | 275° | | | | | |
| 90 | | "A" | 3" | 277° | | | | | |
| 91 | | "B" | 3" | 282° | | | | | |
| 92 | | "C" | 3" | 283° | | | | | |
| 93 | | "A" | 3" | 285° | | | | | |
| 94 | | "B" | 3" | 291° | | | | | |
| 95 | | "C" | 3" | 293° | | | | | |
| 96 | | "A" | 3" | 297° | | | | | |
| 97 | | "B" | 3" | 297° | | | | | |
| 98 | | "C" | 3" | 301° | | | | | |
| 99 | | "A" | 3" | 308° | | | | | |
| 100 | | "B" | 3" | 309° | | | | | |
| 101 | | "C" | 3" | 312° | | | | | |
| 102 | | "A" | 3" | 317° | | | | | |
| 103 | | "B" | 3" | 317° | | | | | |
| 104 | | "C" | 3" | 323° | | | | | |
| 105 | | "A" | 3" | 325° | | | | | |
| 106 | | "B" | 3" | 327° | | | | | |
| 107 | | "C" | 3" | 332° | | | | | |
| 108 | | "A" | 3" | 332° | | | | | |
| 109 | | "B" | 3" | 342° | | | | | |
| 110 | | "C" | 3" | 347° | | | | | |
| 111 | | "A" | 3" | 349° | | | | | |
| 112 | | "B" | 3" | 355° | | | | | |
| 113 | | "C" | 3" | 355° | | | | | |
| 114 | | "A" | 3" | 357° | | EL 2170'-3" | | | |
| 115 | | "B" | 3" | 357° | | EL 2195'-3" | | | |
| 116 | | "C" | 3" | 359° | | | | | |
| 117 | | "A" | 3" | 359° | | EL 2165'-8" | | | |
| 118 | | "B" | 3" | 359° | | | | | |
| 119 | | "C" | 3" | 359° | | | | | |
| 120 | | "A" | 3" | 359° | | | | | |
| 121 | | "B" | 3" | 359° | | | | | |
| 122 | | "C" | 3" | 359° | | | | | |
| 123 | | "A" | 3" | 359° | | | | | |
| 124 | | "B" | 3" | 359° | | | | | |
| 125 | | "C" | 3" | 359° | | | | | |
| 126 | | "A" | 3" | 359° | | | | | |

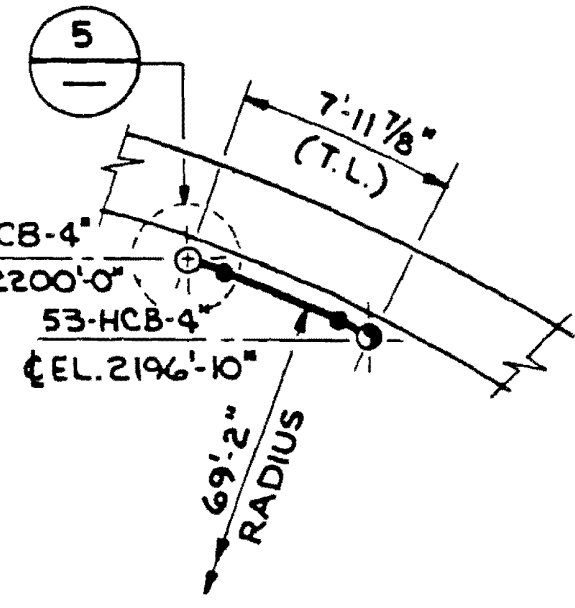
| | | | | | | | |
|---------------|---------------|-----|-----|-----|----------|-------------|-------------|
| LOCATION-26/2 | 1 | 4 | "J" | "G" | 4°-30' | EL 2170'-3" | |
| | 2 | 3 | "H" | | 7° | | |
| | 3 | 2 | "E" | | 9° | | |
| | 4 | 1 | "C" | | 12° | | |
| | 5 | 3 | "H" | | 15° | | |
| | 6 | 2 | "E" | | 17° | | |
| | 7 | 3 | "H" | | 23° | | |
| | 8 | 2 | "E" | | 25° | | |
| | 9 | 1 | "C" | | 27° | | |
| | 10 | 3 | "H" | | 32° | | |
| | 11 | 2 | "E" | | 34° | | |
| | 12 | 3 | "H" | | 39° | | |
| | 13 | 2 | "E" | | 41° | | |
| | 14 | 1 | "C" | | 42° | | |
| | 15 | 3 | "H" | ↑ | 47° | | |
| | 16 | 2 | "E" | "G" | 49° | | |
| | 17 | 3 | "H" | 4' | 53° | | |
| | 18 | 2 | "E" | | 57° | | |
| | 19 | 1 | "C" | | 58° | | |
| | 20 | 3 | "H" | | 63° | | |
| | 21 | 2 | "E" | | 65° | | |
| | 22 | 3 | "H" | | 71° | | |
| LOCATION-26/2 | 23 | 1 | "C" | | 72° | | |
| | 24 | 2 | "E" | | 73° | | |
| | 25 | 3 | "H" | | 79° | | |
| | 26 | 2 | "E" | | 81° | | |
| | 27 | 3 | "H" | | 87° | | |
| | 28 | 1 | "C" | | 88° | | |
| | 29 | 2 | "E" | | 89° | | |
| | 30 | 3 | "H" | | 95° | | |
| | 31 | 2 | "E" | | 97° | | |
| | 32 | 1 | "C" | | 102° | | |
| | 33 | 3 | "H" | | 103° | | |
| | 34 | 2 | "E" | | 105° | | |
| | 35 | 3 | "H" | | 111° | | |
| | 36 | 2 | "E" | | 113° | | |
| | 37 | 1 | "C" | | 117° | | |
| | 38 | 3 | "H" | | 119° | | |
| | 39 | 2 | "E" | 4' | 121° | | |
| | 40 | 3 | "H" | 3' | 128° | | |
| | 41 | 2 | "E" | | 129° | | |
| | 42 | 1 | "C" | | 132° | | |
| | LOCATION-26/2 | 43 | 3 | "H" | | 135° | |
| | | 44 | 2 | "E" | | 137° | |
| 45 | | 3 | "H" | | 143° | | |
| 46 | | 2 | "E" | | 145° | | |
| 47 | | 1 | "C" | | 147° | | |
| 48 | | 3 | "H" | | 152° | | |
| 49 | | 2 | "E" | | 153° | | |
| 50 | | 3 | "H" | | 159° | | |
| 51 | | 2 | "E" | | 161° | | |
| 52 | | 1 | "C" | | 162° | | |
| 53 | | 3 | "H" | | 167° | | |
| 54 | | 2 | "E" | | 169° | | |
| 55 | | 3 | "H" | | 175° | | |
| 56 | | 1 | "C" | ↑ | 176° | ↑ | |
| 57 | | 2 | "E" | "G" | 177° | EL 2170'-3" | |
| 58 | | 1 | "C" | | 184°-30' | EL 2170'-3" | |
| 59 | | 3 | "H" | | 187° | | |
| 60 | | 2 | "E" | | 189° | | |
| LOCATION-26/1 | | 61 | 1 | "C" | | 192° | |
| | | 62 | 3 | "H" | | 195° | |
| | | 63 | 2 | "E" | | 197° | |
| | | 64 | 3 | "H" | | 203° | |
| | 65 | 2 | "E" | | 205° | | |
| | 66 | 1 | "C" | | 207° | | |
| | 67 | 3 | "H" | | 212° | | |
| | 68 | 2 | "E" | | 214° | | |
| | 69 | 3 | "H" | | 219° | | |
| | 70 | 2 | "E" | | 221° | | |
| | 71 | 1 | "C" | | 232° | | |
| | 72 | 3 | "H" | ↑ | 227° | | |
| | 73 | 2 | "E" | 4' | 224° | | |
| | 74 | 3 | "H" | | 235° | | |
| | 75 | 2 | "E" | | 231° | | |
| | 76 | 1 | "C" | | 238° | | |
| | 77 | 3 | "H" | | 243° | | |
| | 78 | 2 | "E" | | 245° | | |
| | 79 | 3 | "H" | | 251° | | |
| | LOCATION-26/1 | 80 | 1 | "C" | | 252° | |
| | | 81 | 2 | "E" | | 253° | |
| | | 82 | 3 | "H" | | 259° | |
| 83 | | 2 | "E" | | 261° | | |
| 84 | | 3 | "H" | | 267° | | |
| 85 | | 1 | "C" | | 268° | | |
| 86 | | 2 | "E" | | 269° | | |
| 87 | | 3 | "H" | | 275° | | |
| 88 | | 2 | "E" | | 277° | | |
| 89 | | 1 | "C" | | 282° | | |
| 90 | | 3 | "H" | | 283° | | |
| 91 | | 2 | "E" | | 285° | | |
| 92 | | 3 | "H" | | 291° | | |
| 93 | | 2 | "E" | | 293° | | |
| 94 | | 1 | "C" | | 297° | | |
| 95 | | 3 | "H" | ↑ | 299° | | |
| 96 | | 2 | "E" | 4' | 301° | | |
| 97 | | 3 | "H" | 3' | 308° | | |
| 98 | | 2 | "E" | | 309° | | |
| 99 | | 1 | "C" | | 312° | | |
| LOCATION-26/1 | | 100 | 3 | "H" | | 315° | |
| | | 101 | 2 | "E" | | 317° | |
| | 102 | 3 | "H" | | 323° | | |
| | 103 | 2 | "E" | | 325° | | |
| | 104 | 1 | "C" | | 327° | | |
| | 105 | 3 | "H" | | 332° | | |
| | 106 | 2 | "E" | | 333° | | |
| | 107 | 3 | "H" | | 339° | | |
| | 108 | 2 | "E" | | 341° | | |
| | 109 | 1 | "C" | | 342° | | |
| | 110 | 3 | "H" | | 347° | | |
| | 111 | 2 | "E" | | 349° | | |
| | 112 | 3 | "H" | | 355° | | |
| | 113 | 1 | "C" | | 356° | ↑ | |
| | 114 | 2 | "E" | 3' | 357° | EL 2170'-3" | |
| | LOCATION-26/2 | 1 | 1 | "D" | 3' | "G" | EL 2195'-3" |
| | | 2 | 2 | "F" | | 8° | |
| | | 3 | 1 | "C" | | 12° | |
| | | 4 | 1 | "D" | | 18° | |
| | | 5 | 2 | "F" | | 22° | |
| | | 6 | 1 | "D" | | 32° | |
| | | 7 | 1 | "C" | | 34° | |
| 8 | | 2 | "F" | | 36° | | |
| 9 | | 1 | "D" | | 46° | | |
| 10 | | 2 | "F" | | 48° | | |
| 11 | | 1 | "C" | | 58° | | |
| 12 | | 1 | "D" | | 62° | | |
| 13 | | 2 | "F" | | 64° | | |
| 14 | | 1 | "D" | | 74° | | |
| 15 | | 2 | "F" | | 78° | ↑ | |
| 16 | | 1 | "C" | 3' | 82° | EL 2170'-3" | |

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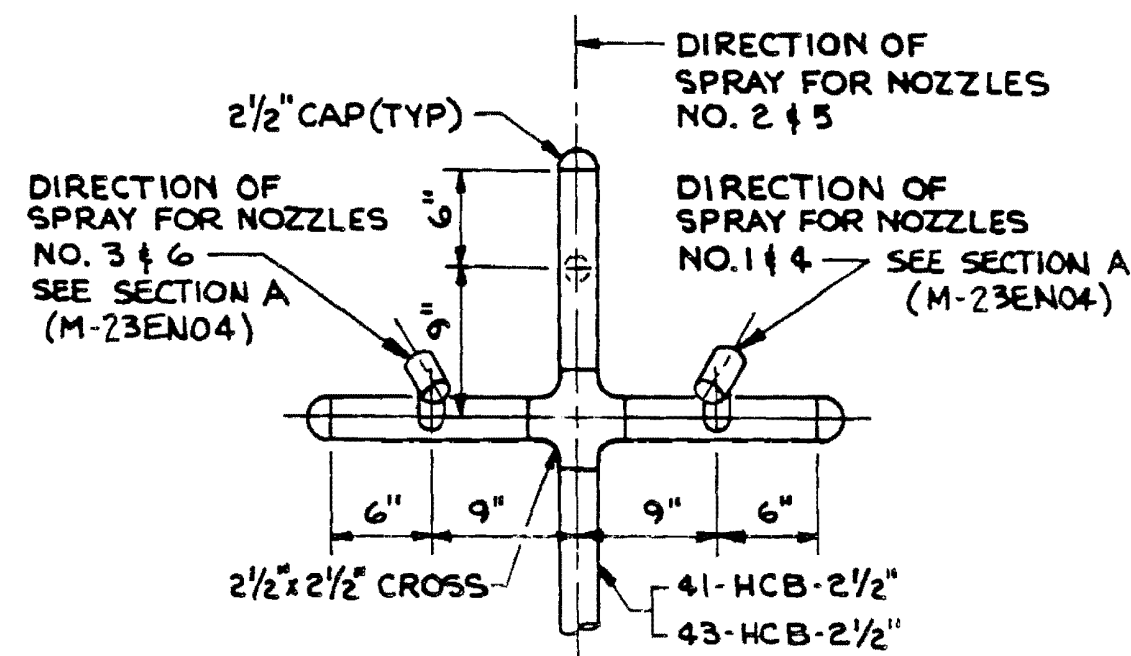
| VALVE INFORMATION TABLE | | | | |
|-------------------------|--|-------------|--------------|---------------|
| VALVE NO. | | VENDOR | VALVE IDENT. | P.O. ITEM NO. |
| VOB2 | | M-221-00081 | BECHTEL | 2.07 |
| VOB8 | | M-221-00081 | BECHTEL | 2.07 |
| VO18 | | M-221-040 | BECHTEL | 2.02 |
| VO17 | | M-221-054 | BECHTEL | 6.02 |
| VO14 | | M-221-040 | BECHTEL | 2.02 |
| VO13 | | M-221-054 | BECHTEL | 6.02 |
| VO77 | | M-231A-102 | BECHTEL | 2.23 |
| VOB1 | | M-231A-102 | BECHTEL | 2.23 |



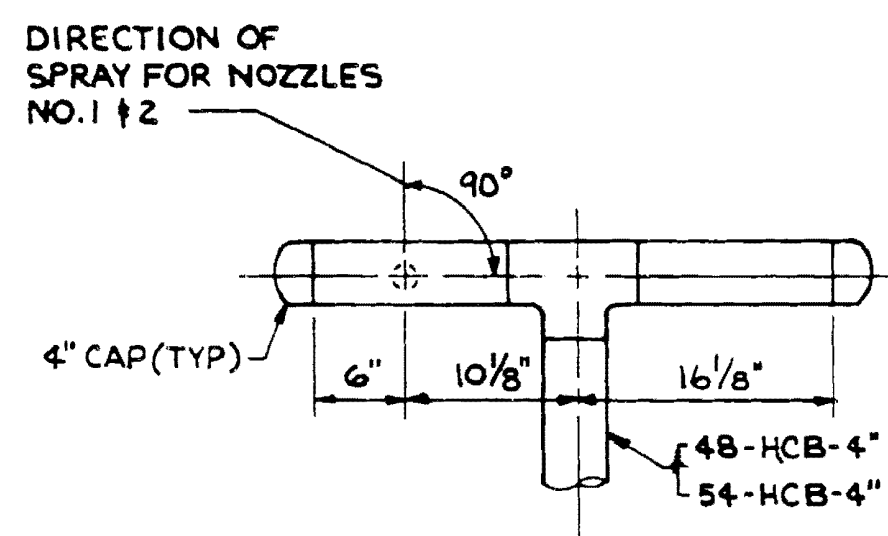
SECTION C
M-23EN05
SEE DRAWING M-23EN03 (C-5)



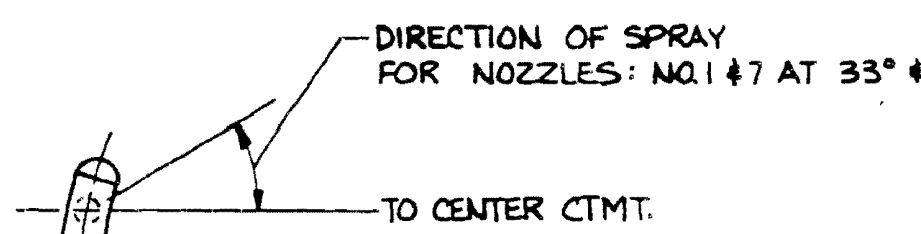
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M-23EN05
SEE DRAWING M-23EN03 (F-5)



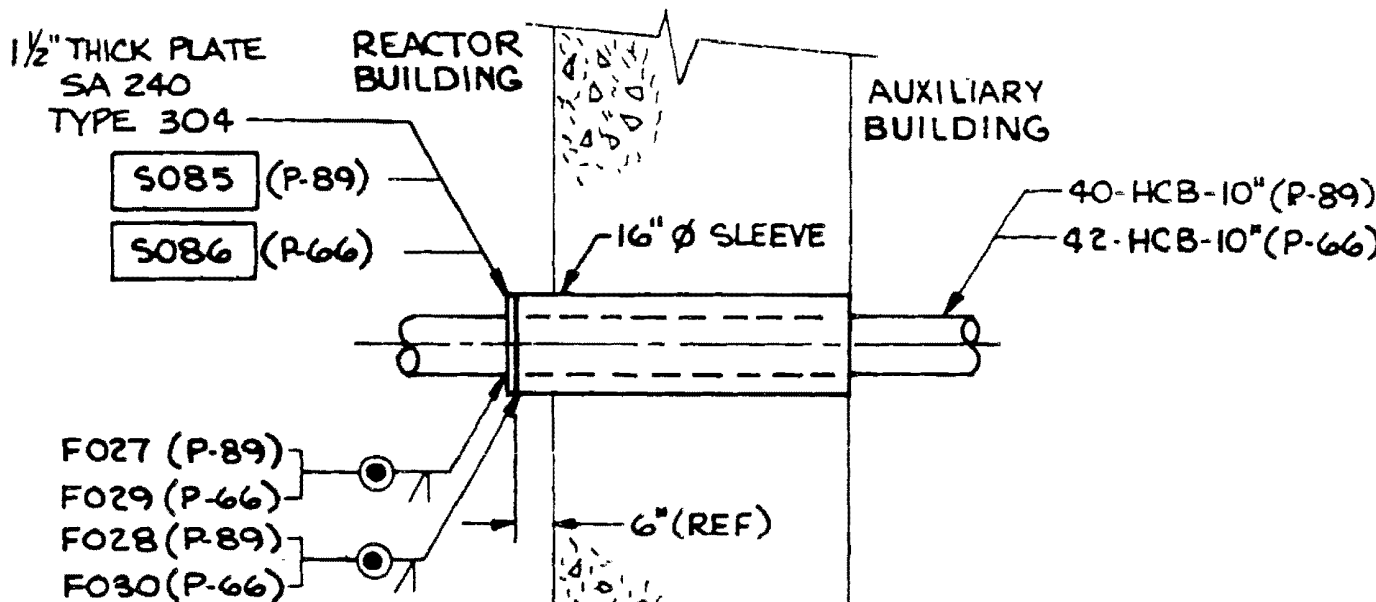
DETAIL 4
M-23EN05
SEE DRAWING M-23EN03 (D-5)



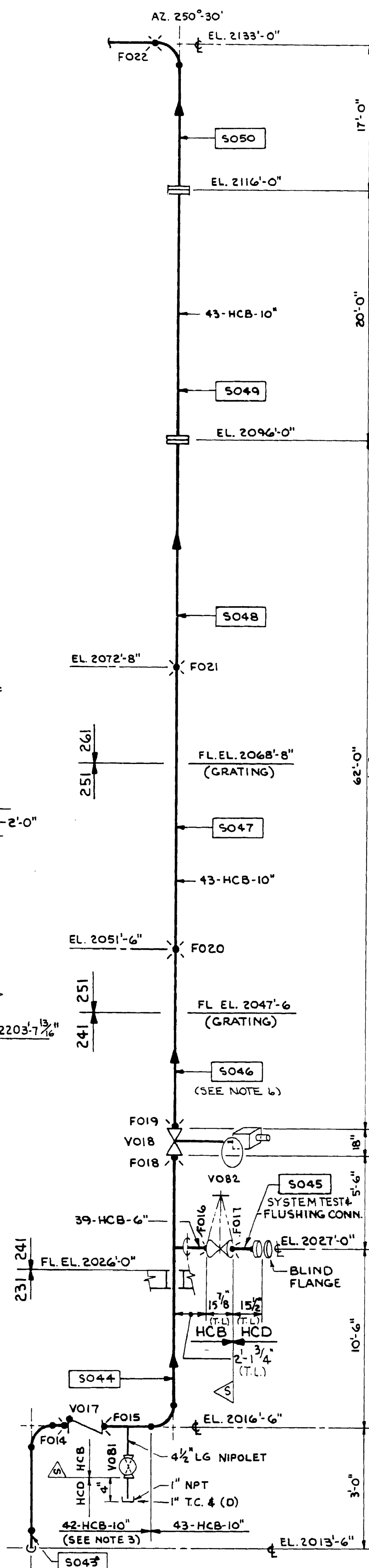
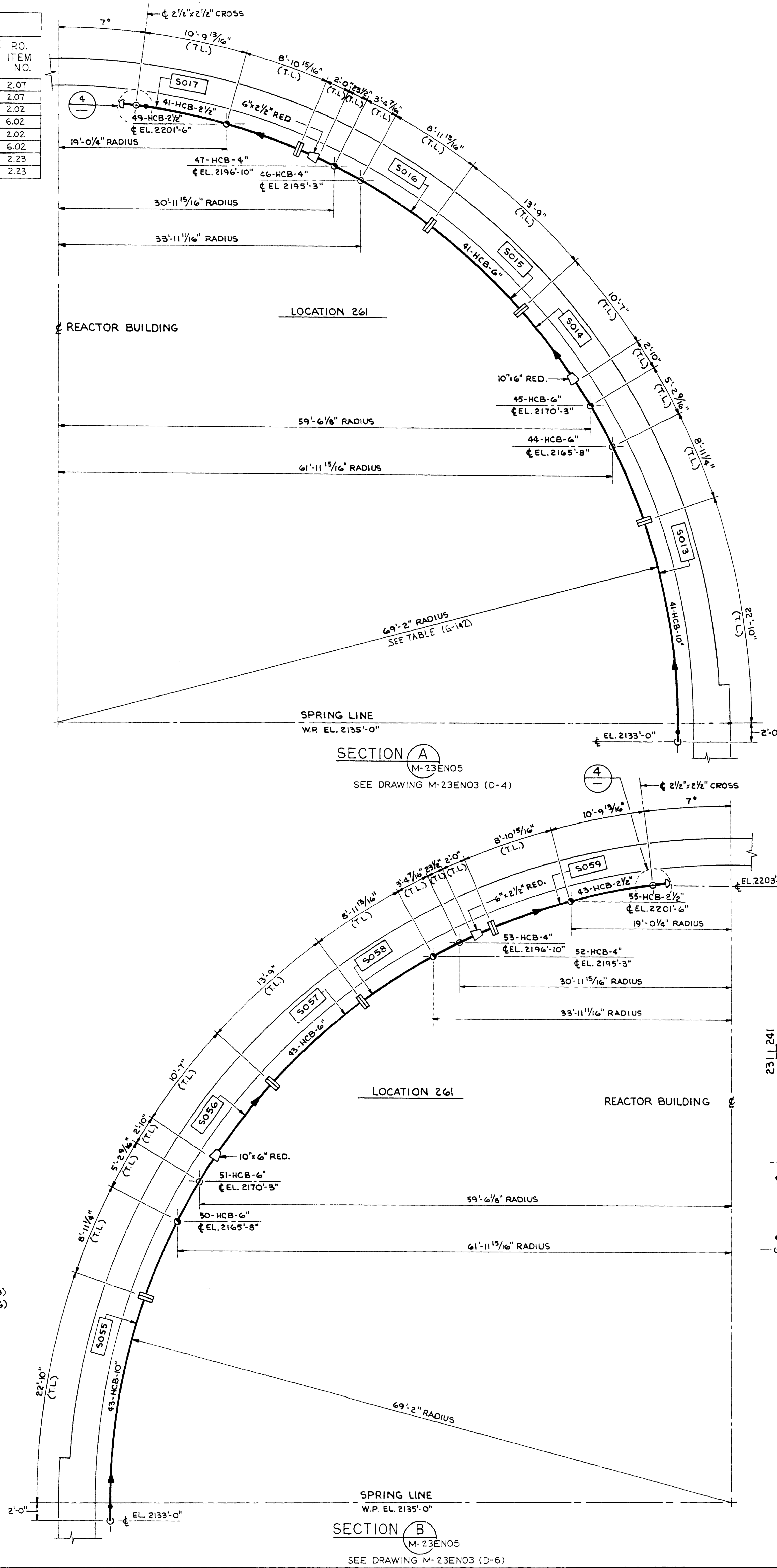
DETAIL 5
M-23EN05
SEE DRAWING M-23EN03 (C-5, F-5)



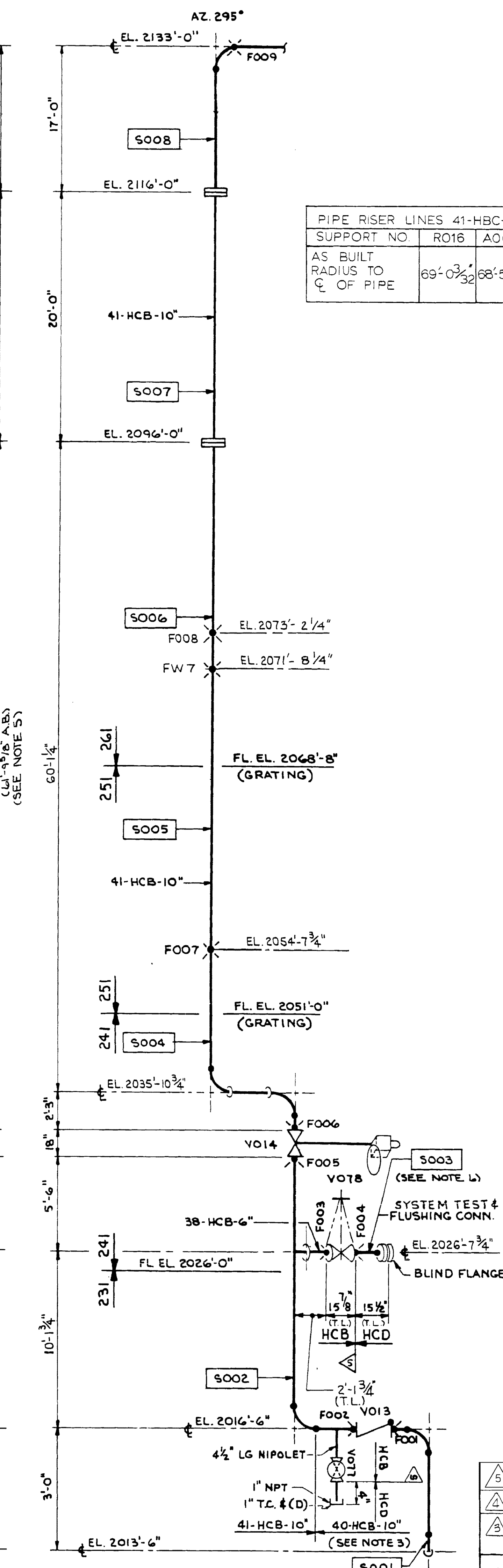
DETAIL 6
M-23EN05
SEE DRAWING M-23EN03 (F-6, D-5)



DETAIL 7
M-23EN05
SEE DRAWING M-23EN03 (G-2, H-8)



SECTION E
M-23EN05
SEE DRAWING M-23EN03 (H-7)



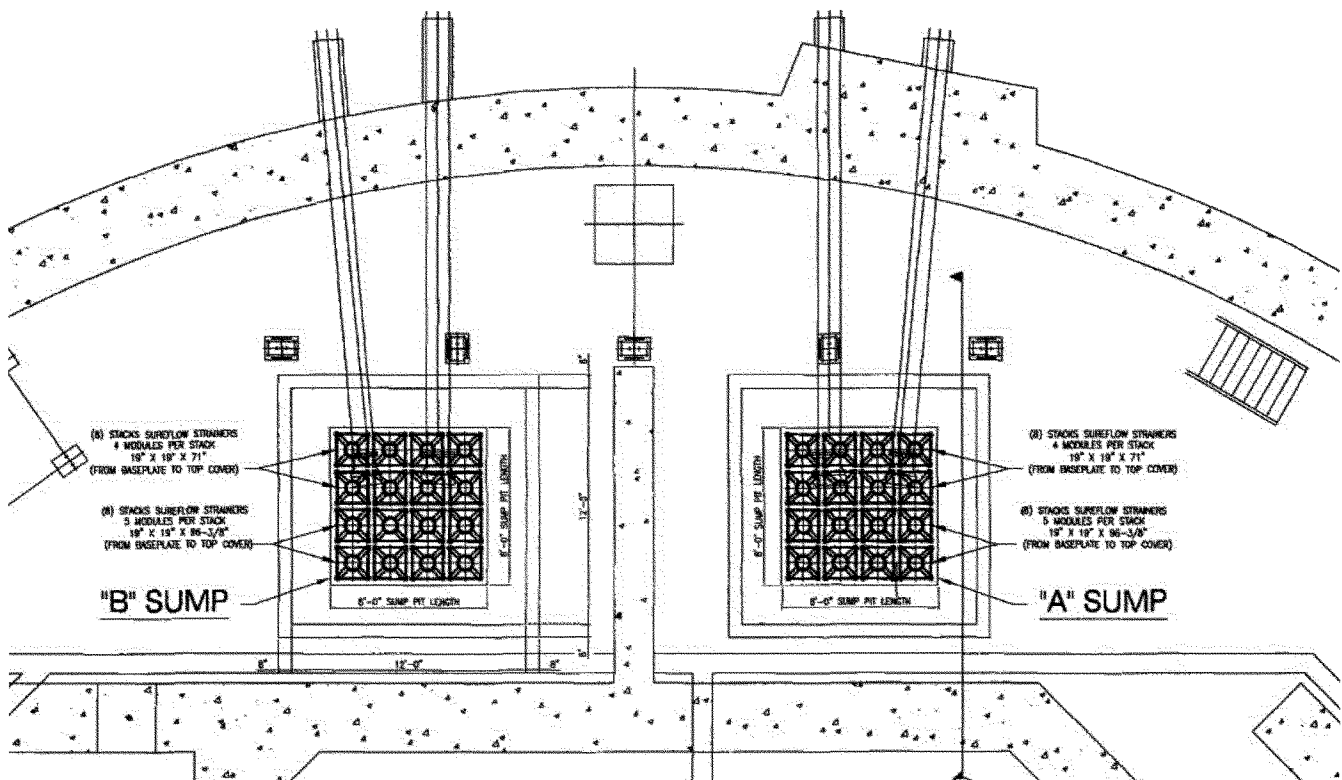
SECTION F
M-23EN05
SEE DRAWING M-23EN03 (G-3)

| PIPE RISER LINES 41-HCB-10, 41-HCB-6, 41-HCB-2 1/2 | | | | | | | | | |
|----------------------------------------------------|------------|------------|-------------|-----------|------------|------------|------------|------------|--|
| SUPPORT NO | RO18 | A002 | C005 | C006 | C007 | C008 | C009 | C010 | |
| AS BUILT | 69'-0 3/32 | 68'-5 9/32 | 68'-11 1/16 | 69'-1 1/4 | 69'-1 3/16 | 69'-3 1/32 | 69'-0 3/32 | 68'-7 3/32 | |
| RADIUS TO C OF PIPE | | | | | | | | | |

- NOTES:
- FOR GENERAL NOTES AND REFERENCES SEE DRAWING M-23EN01.
 - WORK THIS DRAWING WITH DRAWING M-23EN03 AND M-23EN04.
 - LINE NUMBERS 40-HCB-10" AND 42-HCB-10" SHALL BE SCHEDULE 80S.
 - THIS DRAWING WAS EXPANDED FROM M-23EN03 AND M-23EN04.
 - ELEVATIONS, DIMENSIONS & LOCATING DIMENSIONS REFERENCED TO THIS NOTE REFLECT THE "AS-BUILT" (A.B.) CONDITION. ASSOCIATED DIMENSIONS THAT ARE WITHIN ALLOWABLE TOLERANCES HAVE NOT BEEN ADJUSTED.
 - MATERIAL SA-312, TP-304L APPROVED FOR PIPING, SPOOLS 5003 AND 5046.

| | | | | | |
|---------|----------------------------------------------------------------------------------------------------------|-------------|----------|-------|--------|
| 042005 | INCORP. RFR 22941A | TJC | MAL | N/A | TWS |
| 2104 | INCORP. RFR 09691A | MAL | BE | | |
| 6/30/89 | REFLECTS TURNOVER TO US INCORP. RFR 03885A AND DEC-0320 | MAL | BE | | |
| 1/14/93 | ADDED ADDITIONAL INFO PER RFR 13278-P NO FIELD CHANGE REQ'D. (D-24) INC NCR 250-1674-P ADDED NOTES 5 & 6 | MAL | BE | | |
| 7/1/93 | INC NCR 250-3102-P (G-2) (E-25) INC RFR'S 1-3278-P (C-2,3) 2FC-1639-P (C-7) | MAL | BE | | |
| 7/1/93 | ISSUED FOR CONSTRUCTION. THIS INCORPORATES SITE RELATED NCR 25N-1606-P | MAL | BE | | |
| NO. | DATE | REVISIONS | BY | CHK | DES |
| SCALE | NONE | DATE 6-9-81 | DESIGNED | DRAWN | 7/7/81 |

| | |
|----------------------------------------------------------------------------------------------------------------------|-------------------------|
| BECHTEL GAITHERSBURG, MARYLAND | |
| SNUPPS | |
| PIPING ORTHOGRAPHIC CONTAINMENT SPRAY SYSTEM REACTOR BUILDING "A" & "B" TRAINS (SAR FIGURE 6-2-2-2 SHEET 3) | |
| AS-BUILT | UTILITY DRAWING NO. REV |
| 3444 | RECHTEL DRAWING NO. REV |
| 10466 | M-23EN05 (Q) 5 |
| DRAWING APPLICABLE TO UNITS | |

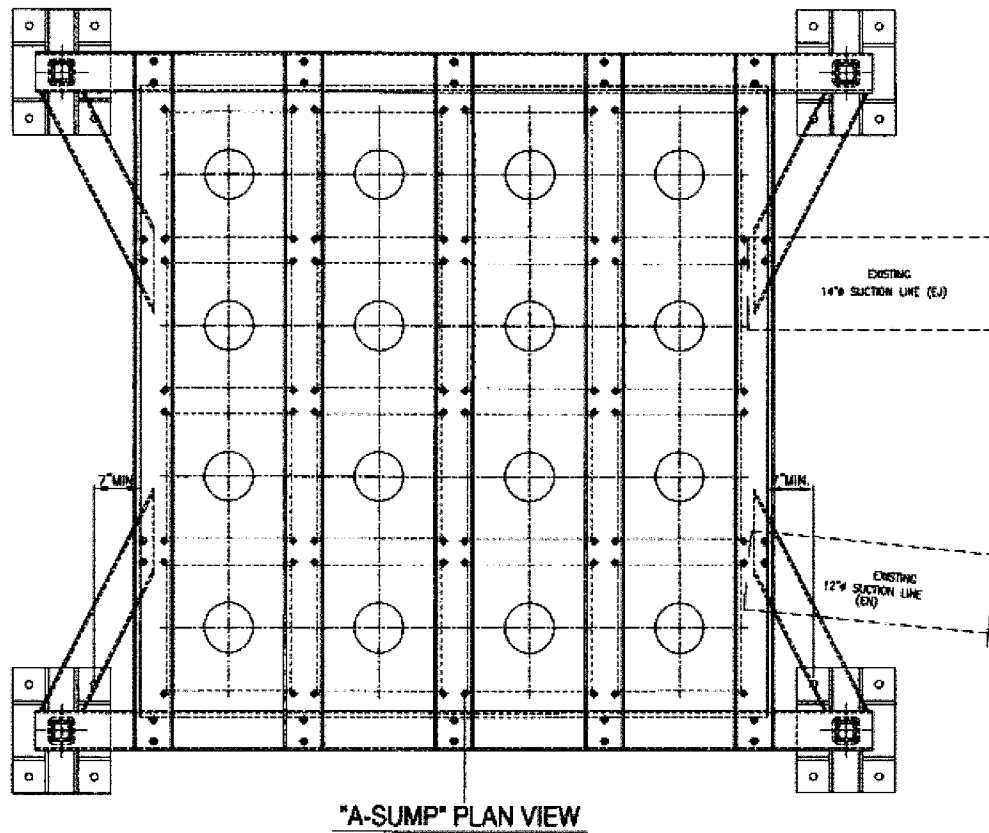


CALLAWAY PLANT

FIGURE 6.2.2-3
SHEET 1

RECIRCULATION SUMP STRAINER
ARRANGEMENT

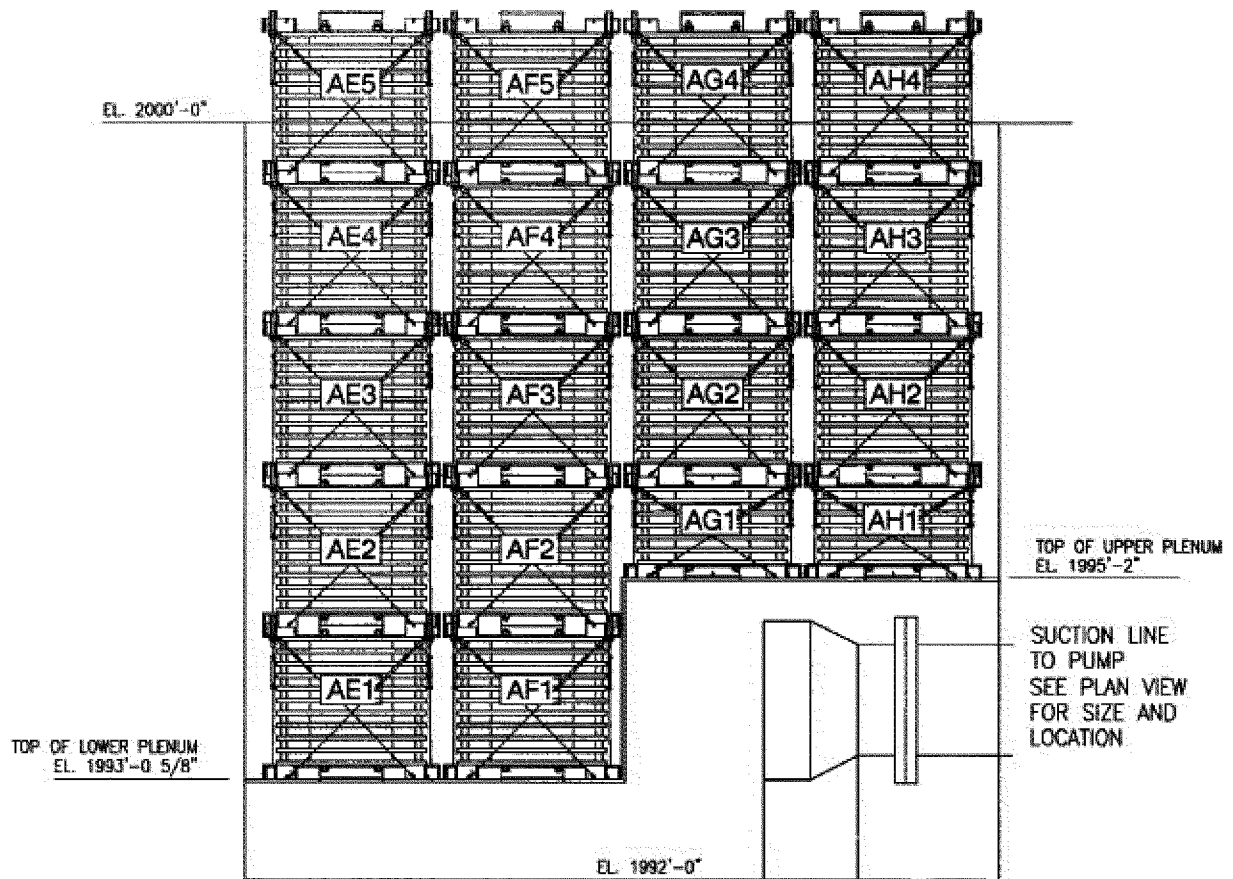
REV. 10 10/07



CALLAWAY PLANT

FIGURE 6.2.2-3
SHEET 2

RECIRCULATION SUMP STRAINER
ARRANGEMENT
REV. 1 10/07

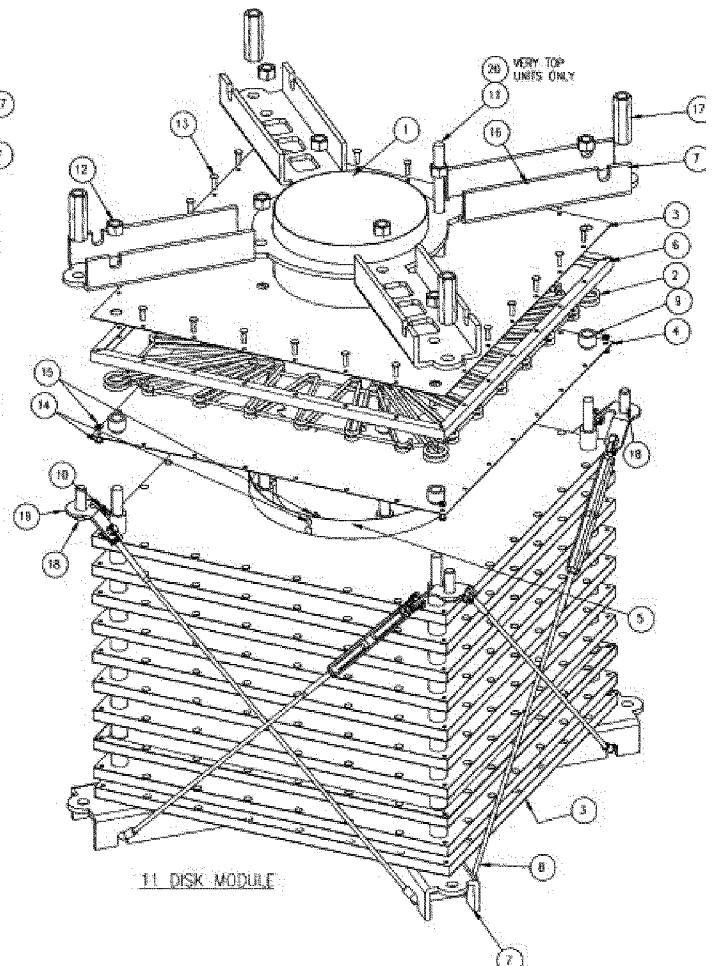
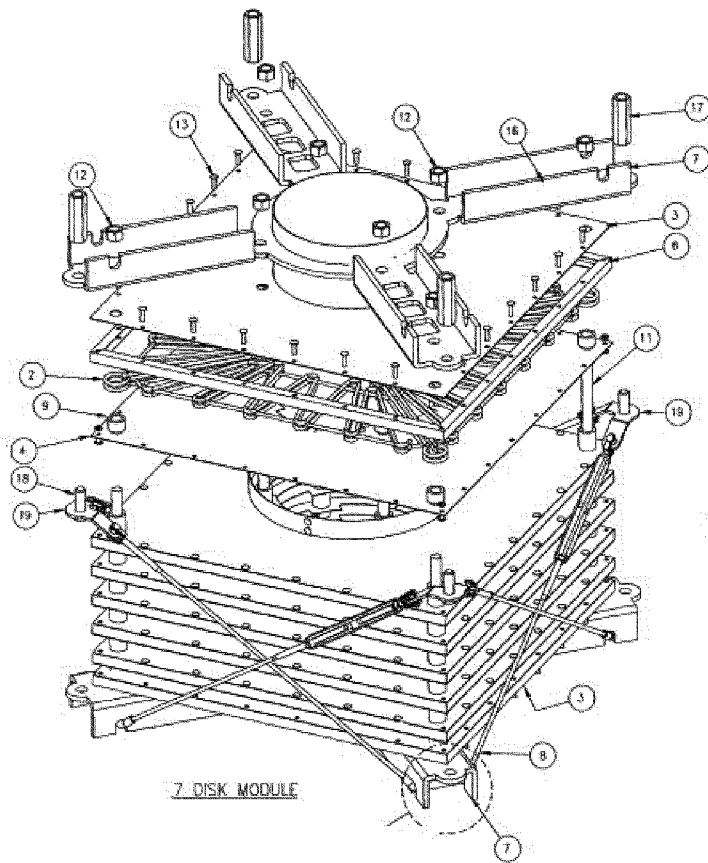


CALLAWAY PLANT

FIGURE 6.2.2-3
SHEET 3

RECIRCULATION SUMP STRAINER
ARRANGEMENT

REV. 1 10/07



CALLAWAY PLANT

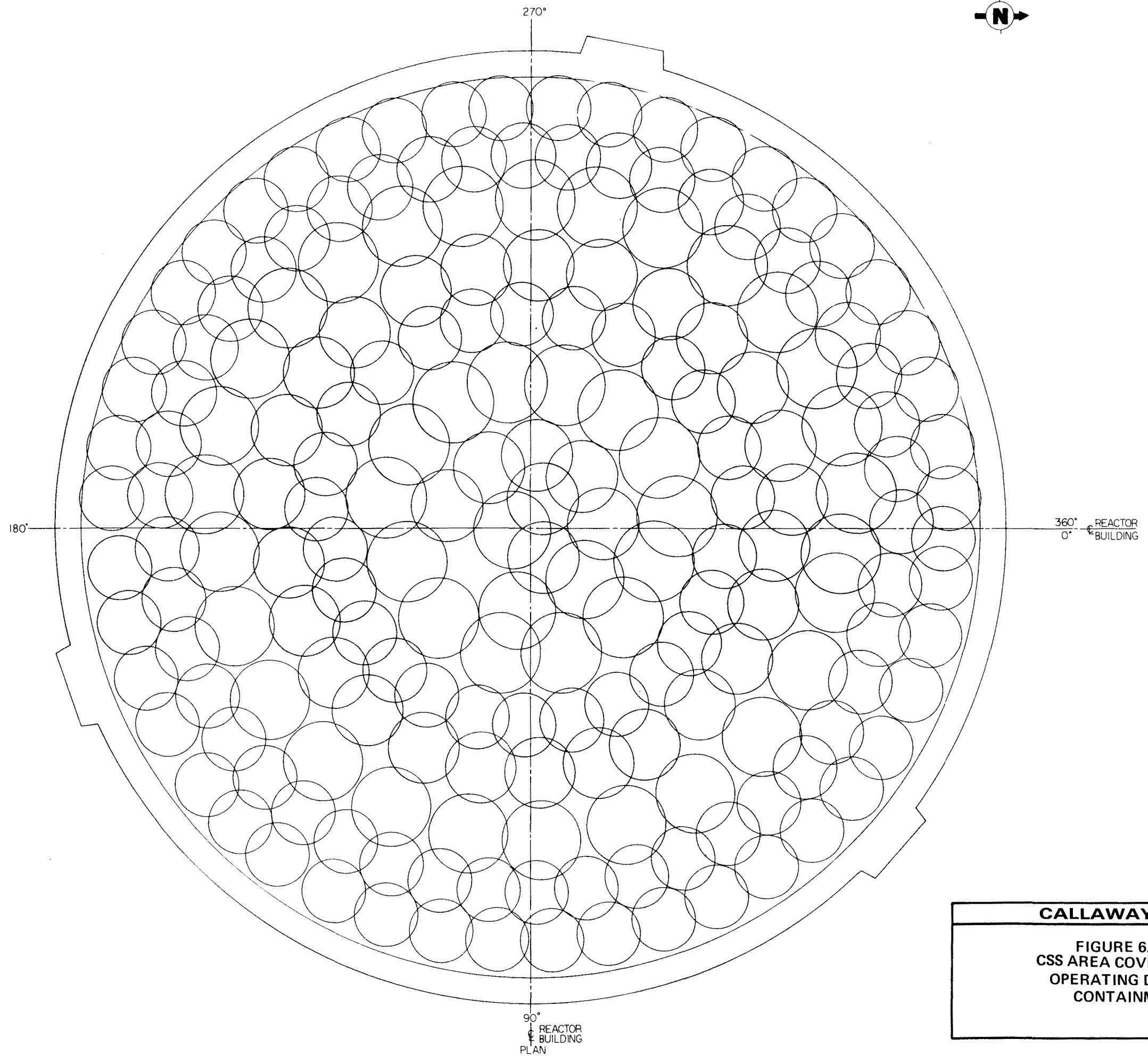
FIGURE 3.2.2-3
SHEET 4

RECIRCULATION SUMP STRAINER
ARRANGEMENT

REV. 1 10/07

**FIGURE 6.2.2-3
SHEET 5 THROUGH 10**

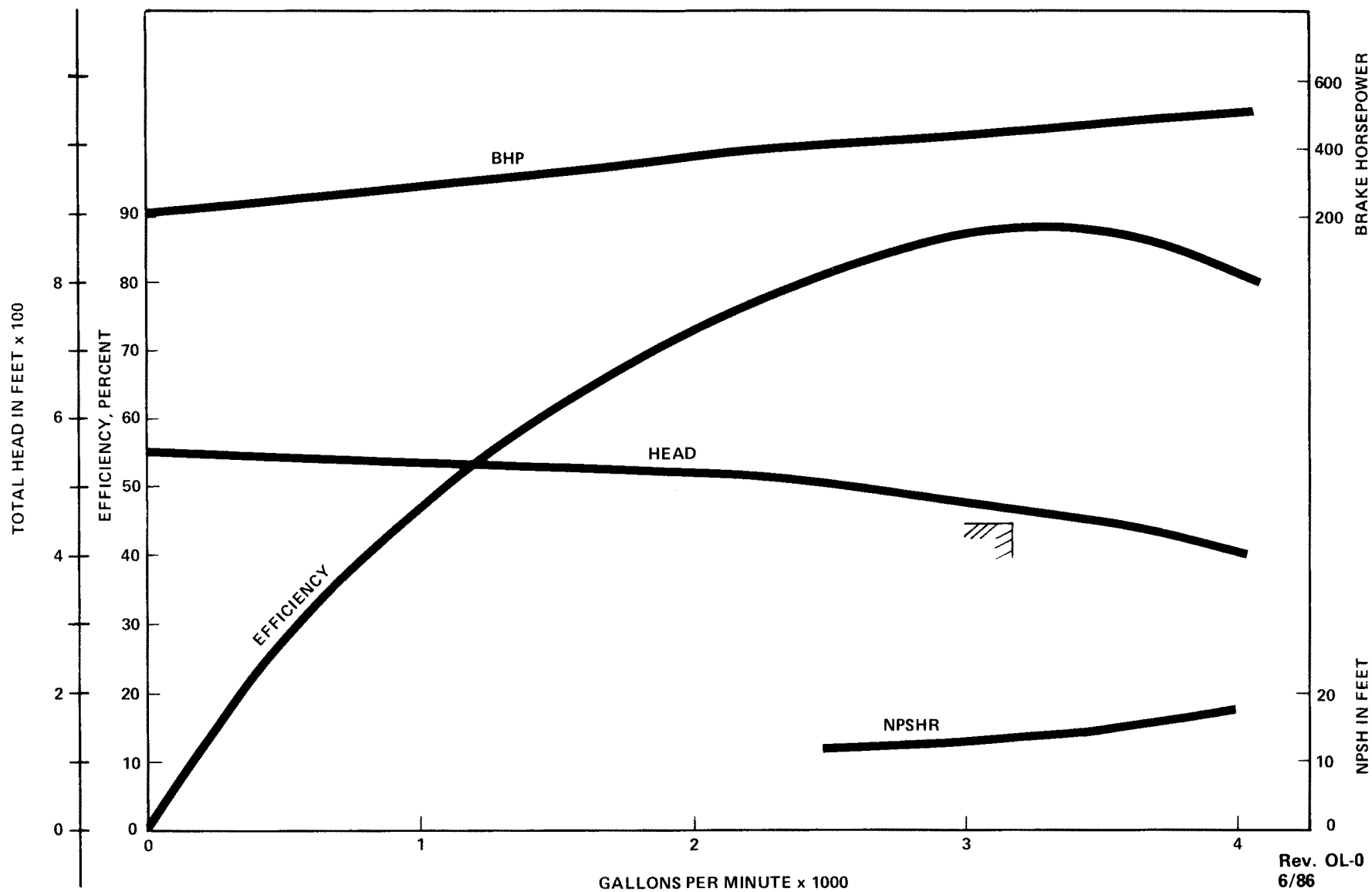
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CALLAWAY PLANT

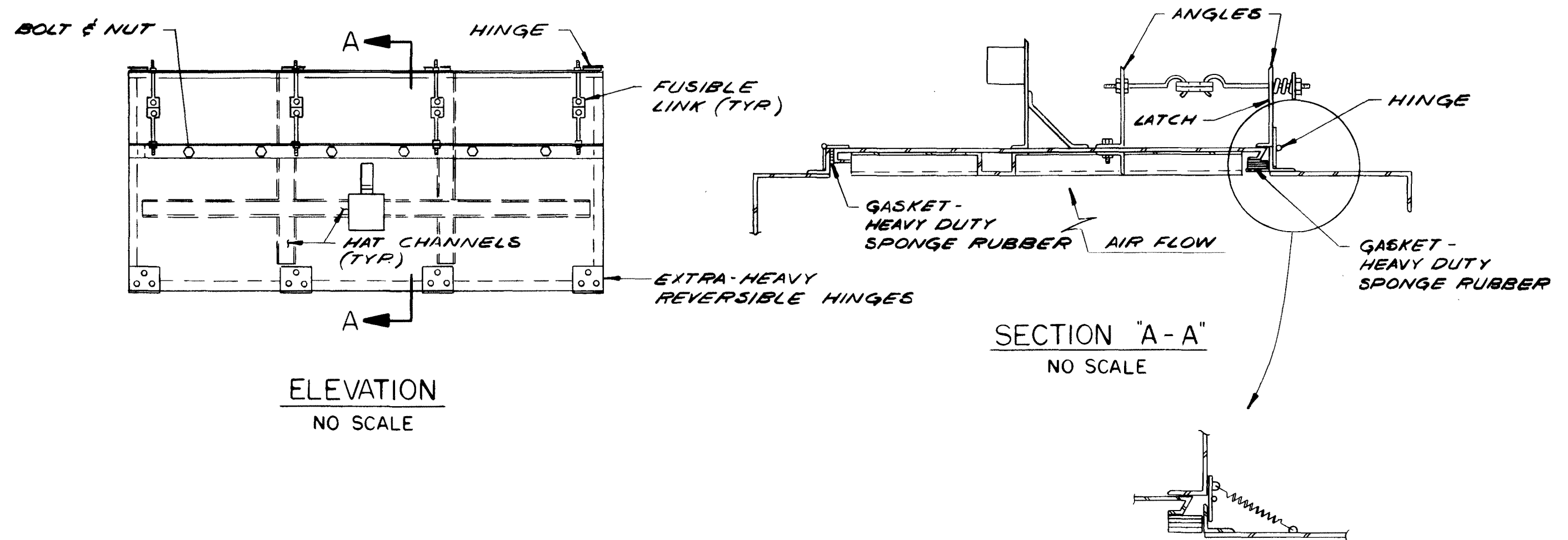
**FIGURE 6.2.2-4
CSS AREA COVERAGE AT
OPERATING DECK OF
CONTAINMENT**



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CALLAWAY PLANT

FIGURE 6.2.2-5
CSS PUMP
PERFORMANCE CURVE



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| |
|-------------------------------------------------------------------------------------------------------------------------------|
| CALLAWAY PLANT |
| <p>FIGURE 6.2.2-6 TYPICAL DETAIL OF FUSIBLE LINK PLATES ON CONTAINMENT AIR COOLERS</p> |

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| CALLAWAY PLANT |
|-----------------------------------------------------------------------------------------|
| FIGURE 6.2.2-7 EXPECTED INTERNAL AIR FLOW PATTERNS IN CONTAINMENT POST-LOCA |

| 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 | |
| ABPV0004 | 10/8 | OUTSIDE | OUT | GLOBE | AIR | 4 | NONE | REM/MAN | 20 | CLOSED | CLOSED | CLOSED | CLOSED | OPEN |
| ABHV0011 | 28/28 | OUTSIDE | OUT | GATE | HYDRAULIC ⁽¹⁾ | 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 CONTAINMENT 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 INSTRUMENTATION AND VALVE CONFIGURATION / IDENTIFICATION.

NOTE 2: OPERATOR UTILIZES SYSTEM-MEDIUM AS THE PROCESS 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.

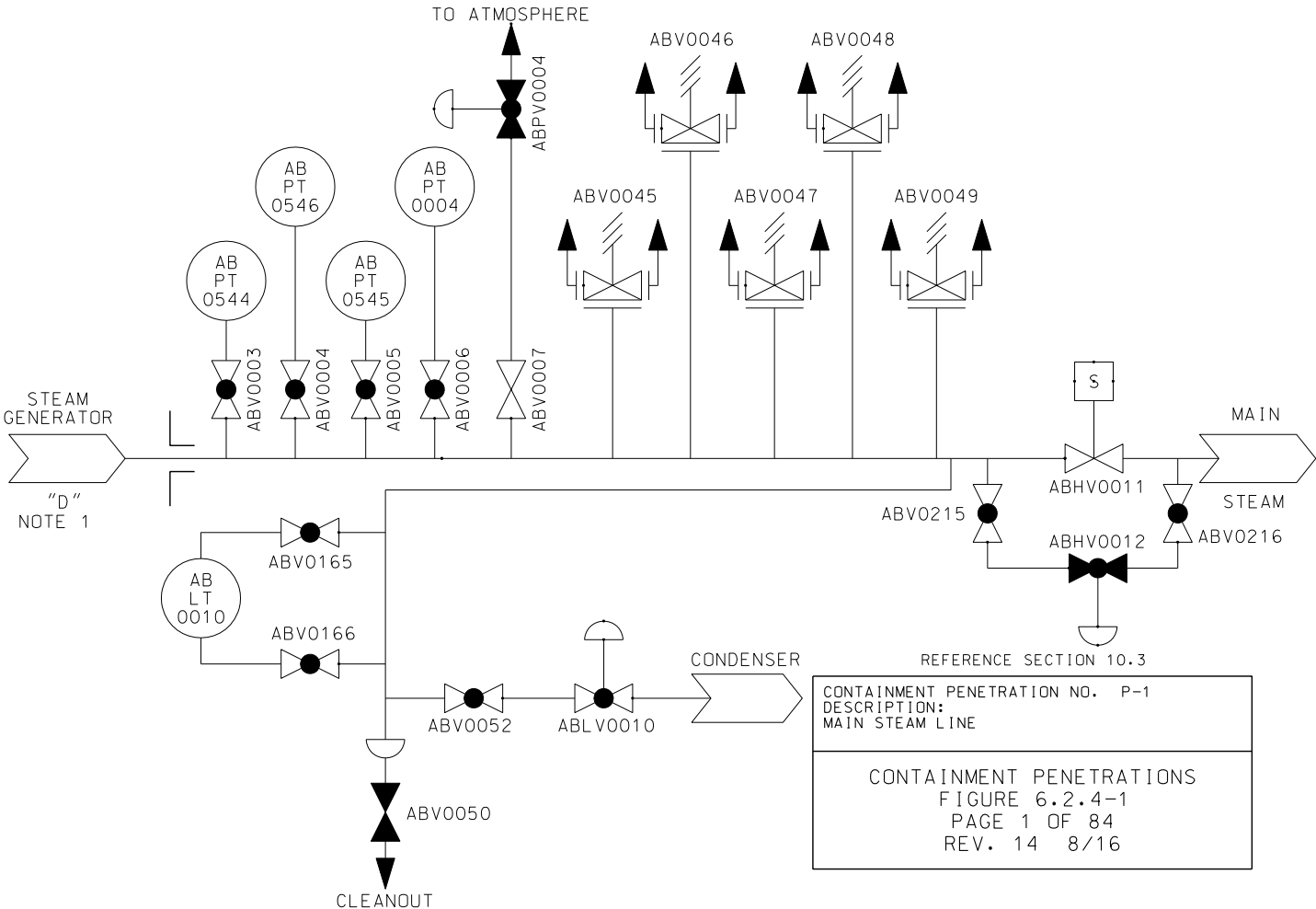
APPENDIX J REQUIREMENT

TYPE A ☐

B ☐

C ☐

NONE ☒



| 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 |
| ABPV0001 | 10/8 | OUTSIDE | OUT | GLOBE | AIR | 1 | NONE | REM/MAN | 20 | CLOSED | CLOSED | CLOSED | CLOSED | OPEN |
| ABHV0014 | 28/28 | OUTSIDE | OUT | GATE | HYDRAULIC ⁽¹⁾ | 1, 4 | SL IS | NONE | (3) | OPEN | OPEN | CLOSED | CLOSED | N/A |
| ABHV0015 | 2/2 | OUTSIDE | OUT | GLOBE | AIR | 1, 4 | SL IS | 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 | SL IS | 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.

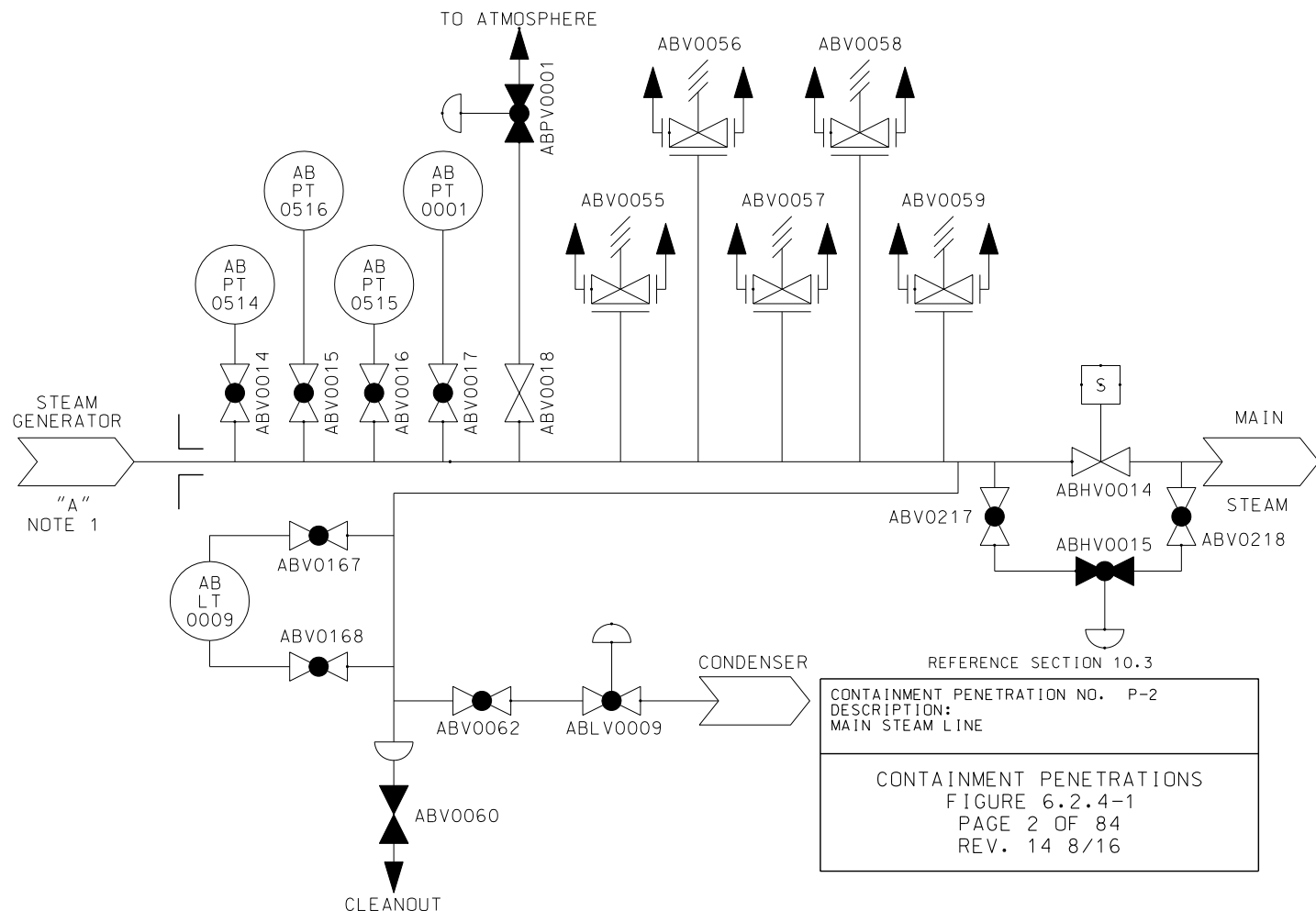
THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

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 INSTRUMENTATION AND VALVE CONFIGURATION / IDENTIFICATION.

NOTE 2: OPERATOR UTILIZES SYSTEM-MEDIUM AS THE PROCESS 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-2
 DESCRIPTION:
 MAIN STEAM LINE

CONTAINMENT PENETRATIONS
 FIGURE 6.2.4-1
 PAGE 2 OF 84
 REV. 14 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.) | 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 BARRIER 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 ABOVE) 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.

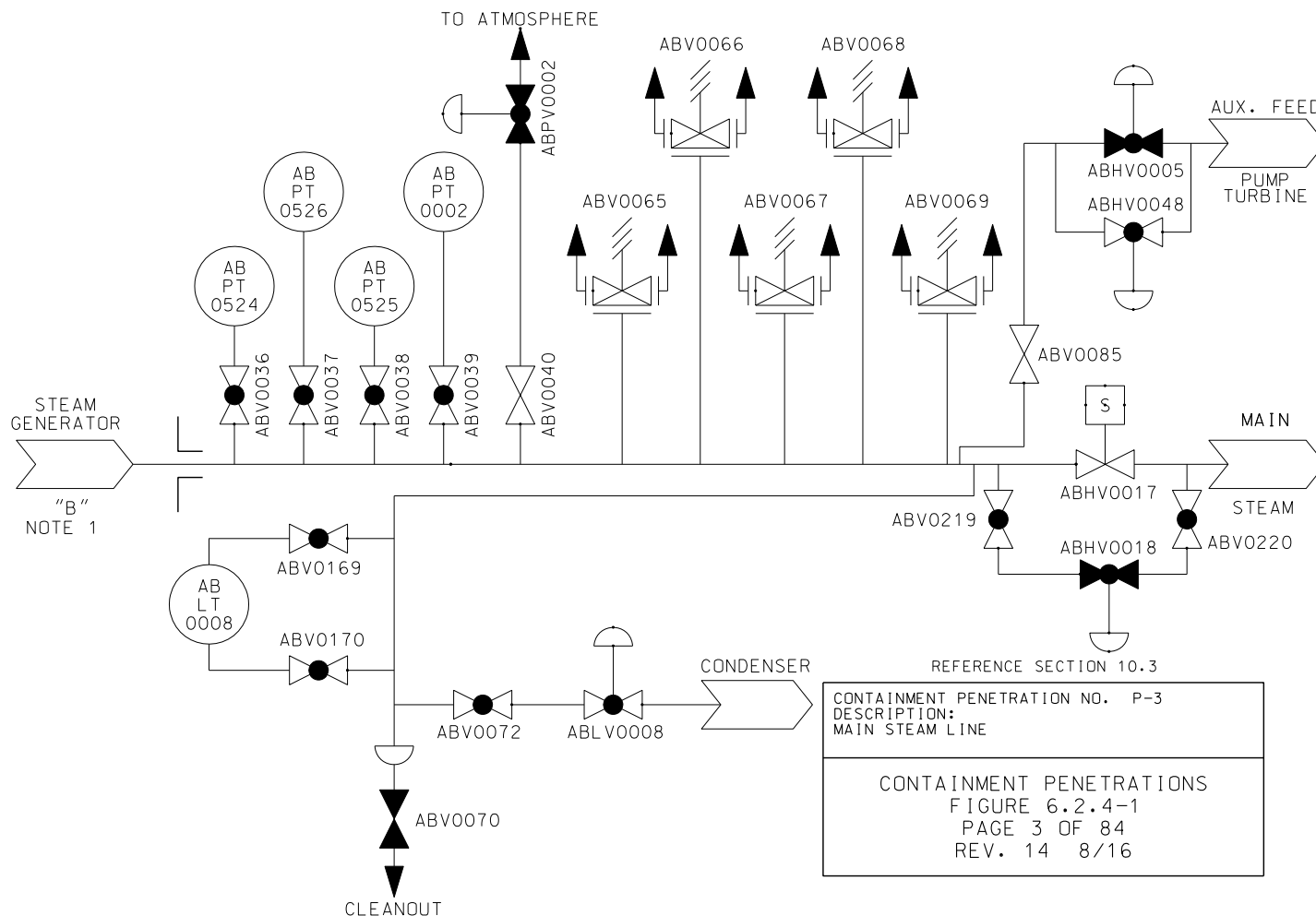
NOTE 2: OPERATOR UTILIZES SYSTEM-MEDIUM AS THE PROCESS FLUID.

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 ☒



| 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 |
| 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 | SL IS | NONE | (3) | OPEN | OPEN | CLOSED | CLOSED | N/A |
| ABHV0021 | 2/2 | OUTSIDE | OUT | GLOBE | AIR | 1, 4 | SL IS | 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 | SL IS | 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 | SL IS | 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 INSTRUMENTATION AND VALVE CONFIGURATION / IDENTIFICATION.

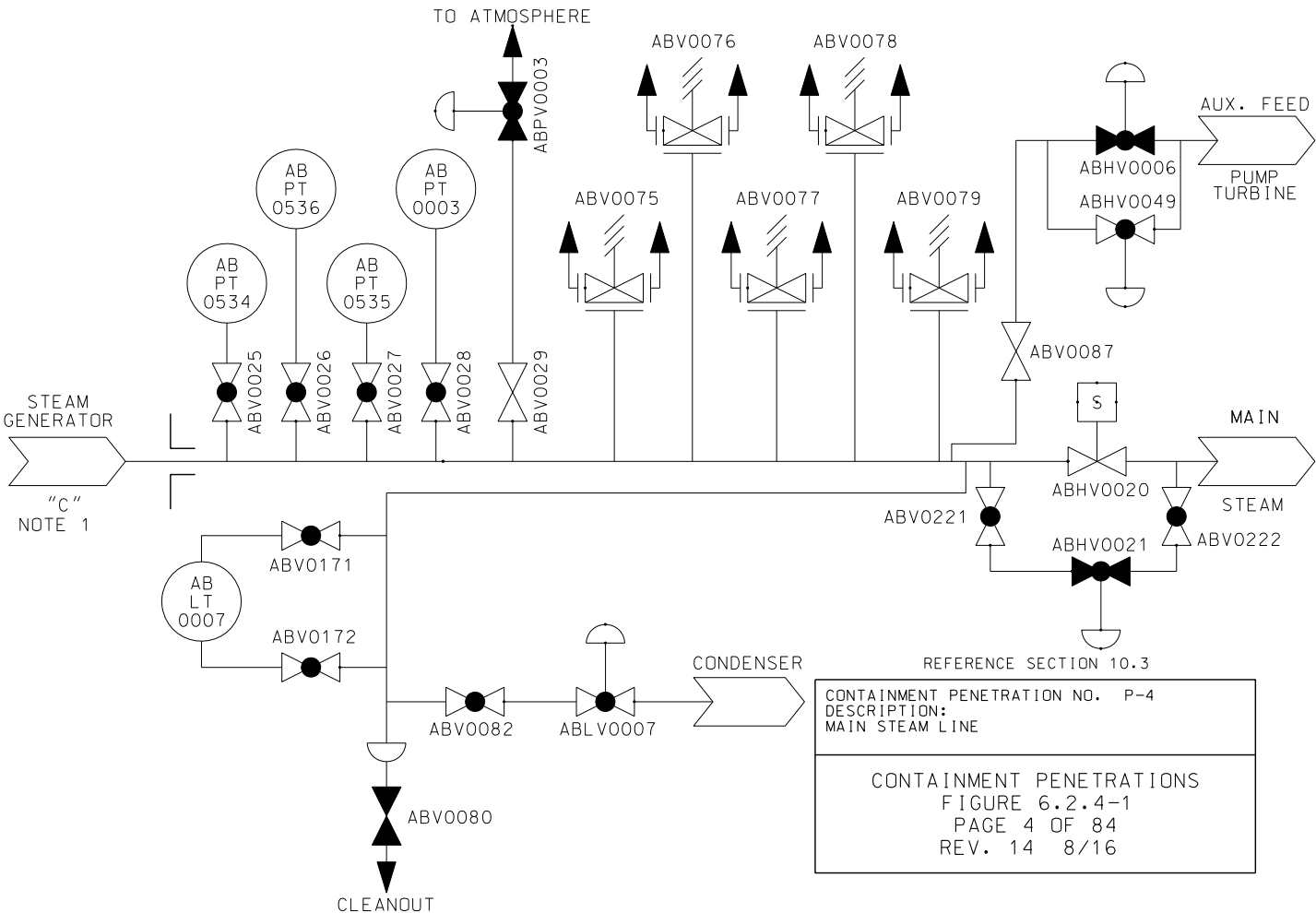
NOTE 2: OPERATOR UTILIZES SYSTEM-MEDIUM AS THE PROCCESS FLUID.

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

NOTE 4: 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 ☒



| 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 CONTAINMENT 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 INSTRUMENTATION AND VALVE CONFIGURATION / IDENTIFICATION.

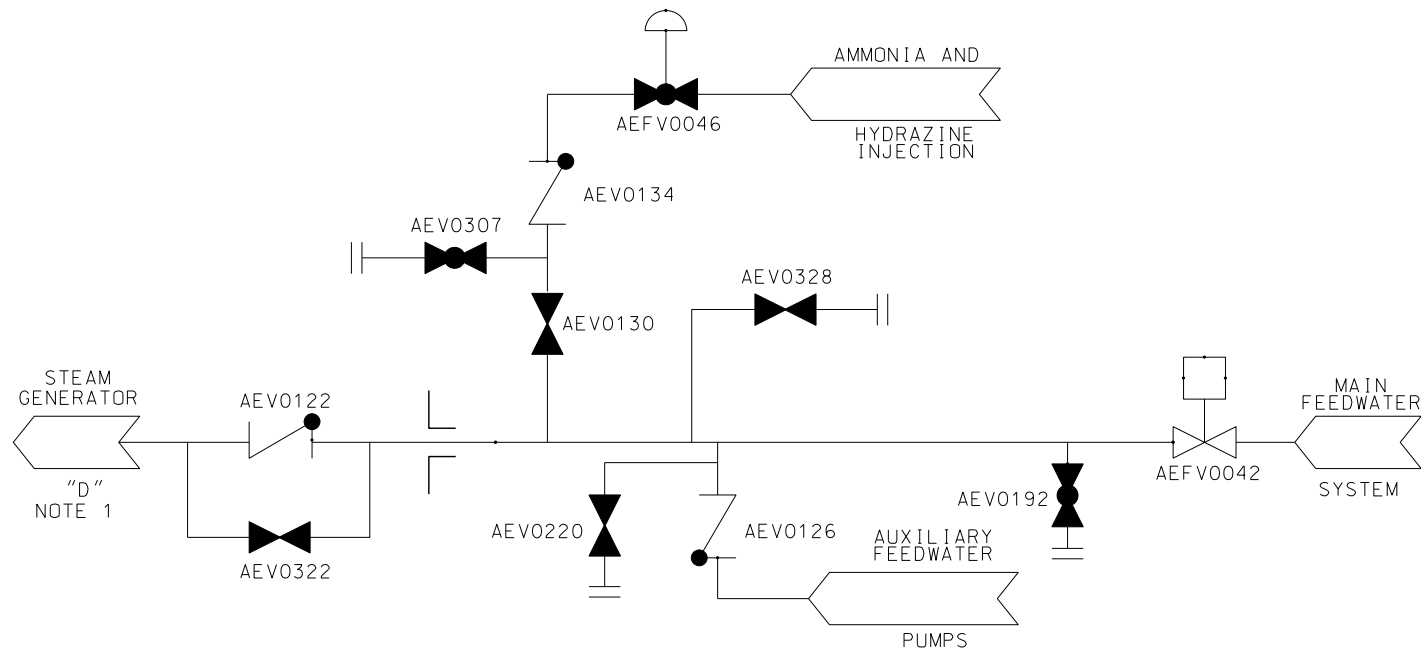
NOTE 2: SYSTEM-MEDIUM UTILIZING PROCESS FLUID.

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 ☒



REFERENCE SECTION 10.4.7

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 5 OF 84
REV. 17 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.) | 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.

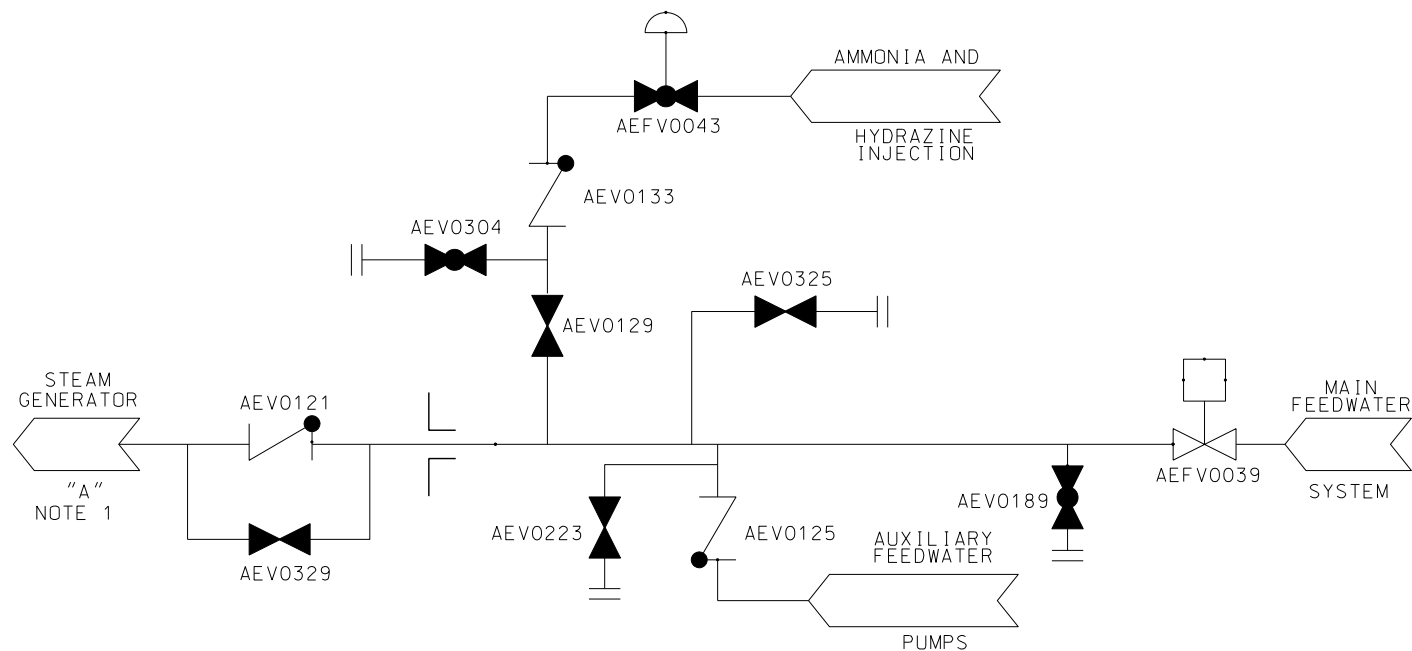
THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

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 PROCCESSED 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
PAGE 6 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 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.

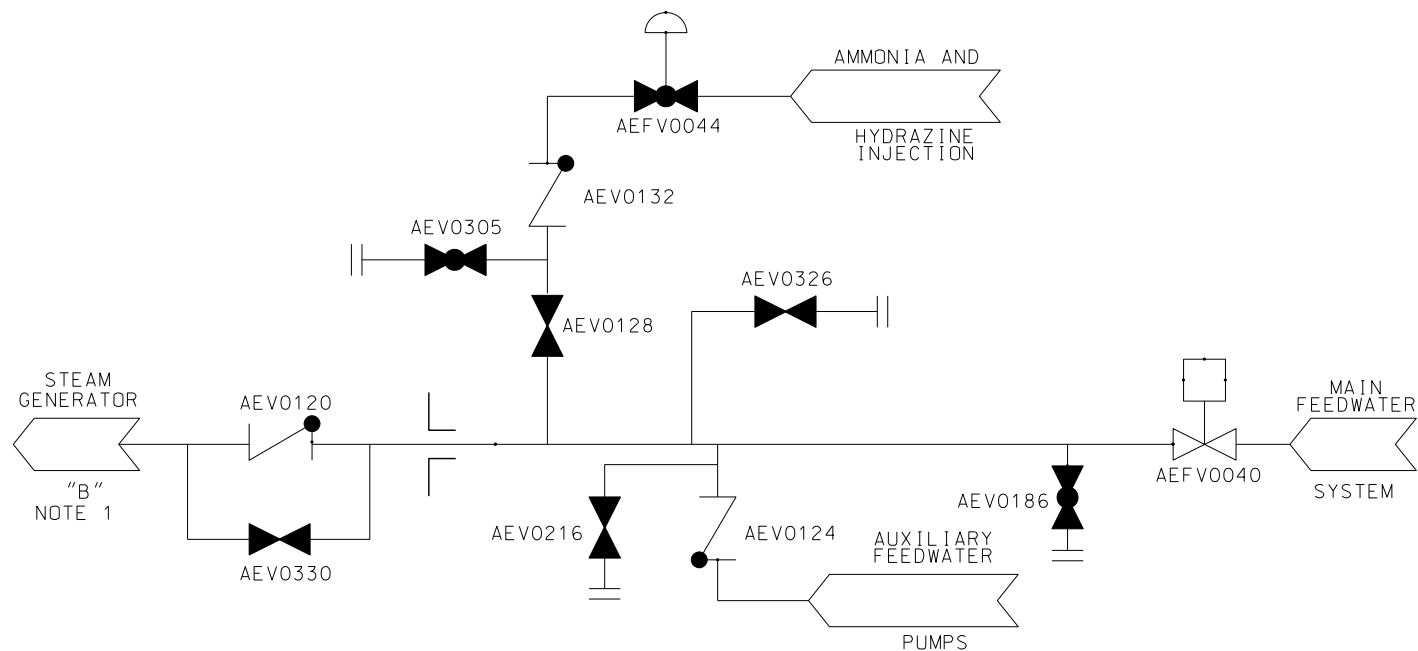
THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

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 PROCESS 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
PAGE 7 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 4) | VALVE POSITION | | | | |
|----------------------------------|-----------------------|-----------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|---------------|-----------|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT | |
| | | | | | | | | | | | | | PRIMARY | SECONDARY |
| AEFV0041 | 14/14 | OUTSIDE | IN | GATE | HYDRAULIC (1) | 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.

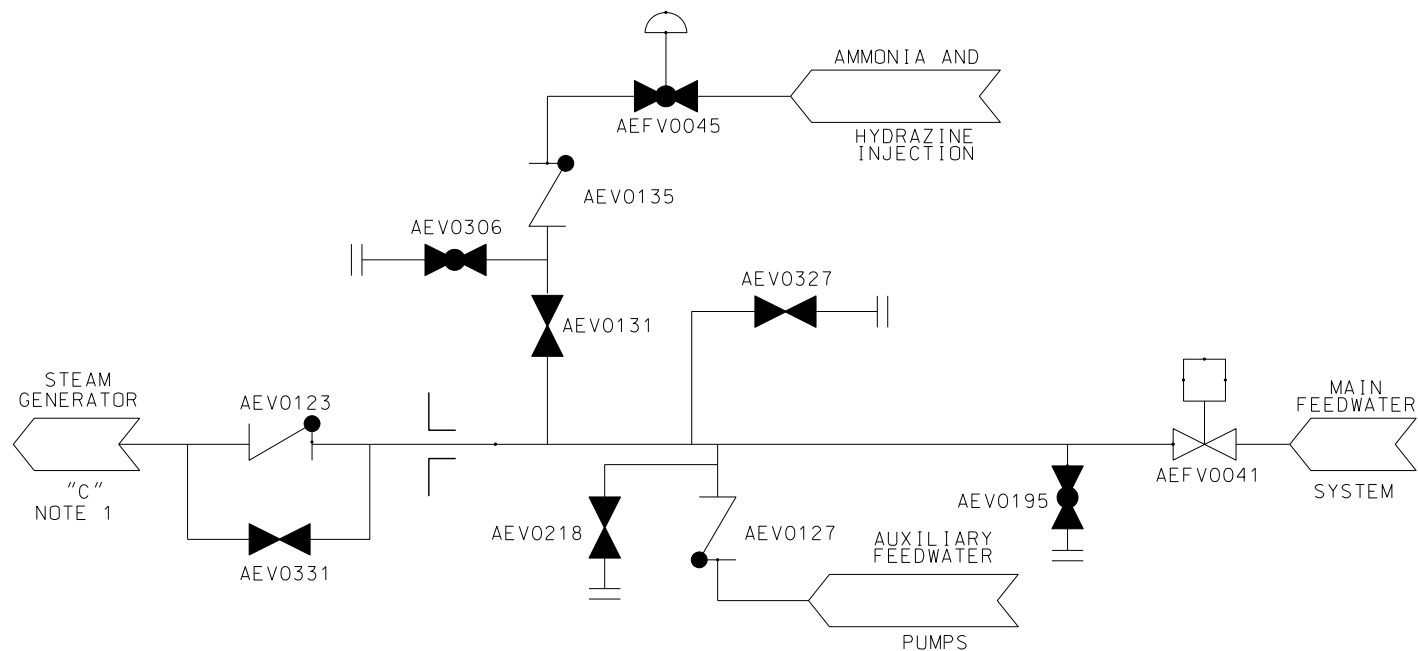
THE PENETRATION CONFIGURATION IS PRESENTED FOR FIGURE 6.2.4-1 COMPLETENESS. NONE OF THE VALVES SHOWN ARE CONTAINMENT ISOLATION VALVES.

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 PROCESS 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-8
DESCRIPTION:
MAIN FEEDWATER LINE

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 8 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 | |
| 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 <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: | WATER |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: | 8.3 FT. |
| APPLICABLE GDC NO. | NONE |

GENERAL COMMENTS:

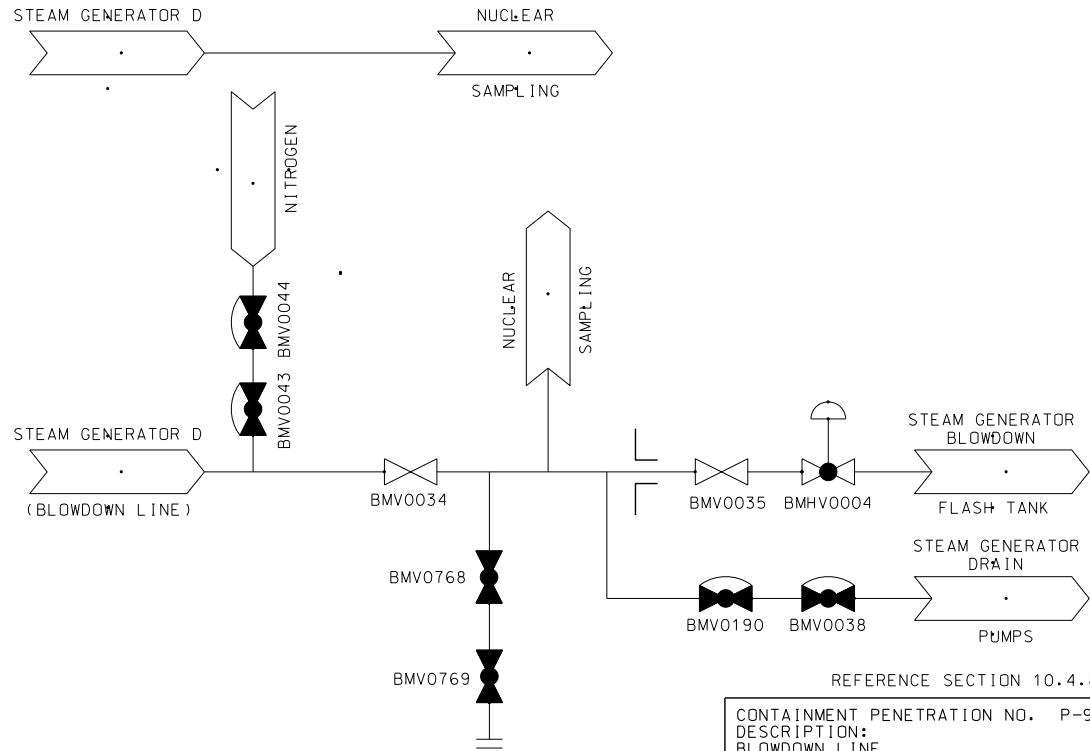
THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING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

APPENDIX J REQUIREMENT

TYPE A ☐
 B ☐
 C ☐
 NONE ☒



REFERENCE SECTION 10.4.8

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 9 OF 84
REV. 17 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 | |
| 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 |
| | | | | | | | | | | | | | | |
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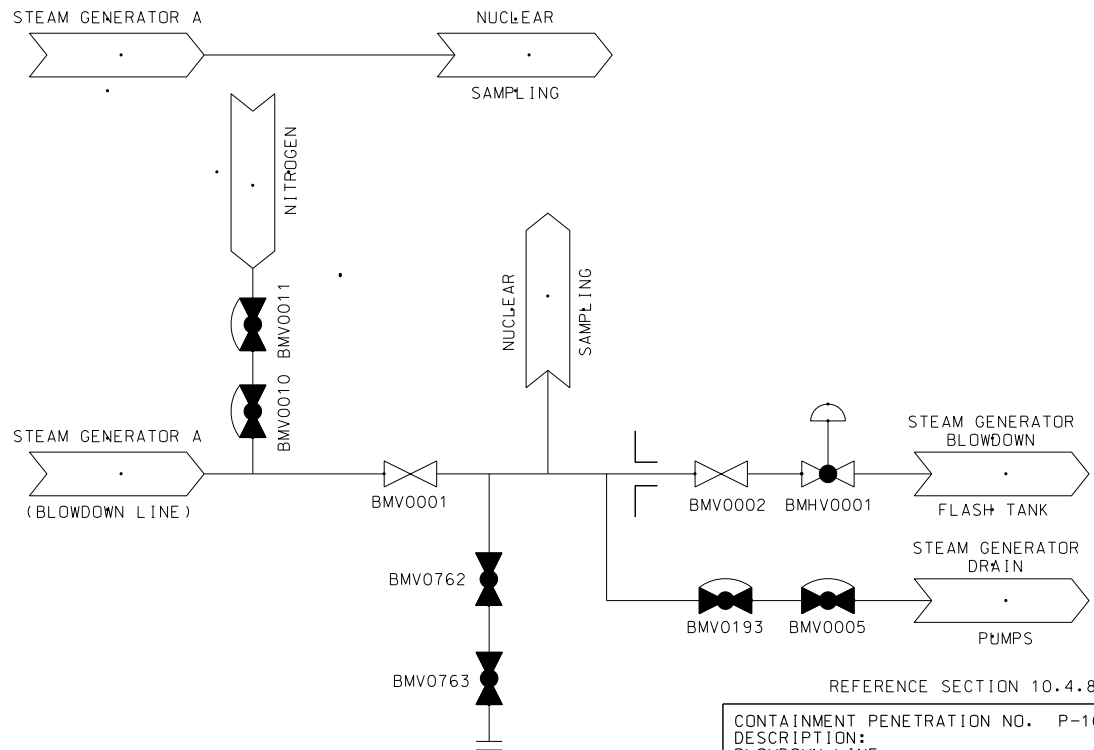
| | |
|------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: | WATER |
| LENGTH OF PIPING TO OUTERMOST ISOLATION 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.



APPENDIX J REQUIREMENT

TYPE A ☐
 B ☐
 C ☐
 NONE ☒

| |
|-----------------------------------------------------------------------------|
| 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 |

| 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 | |
| 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 |
| | | | | | | | | | | | | | | |
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|------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: | WATER |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: | 6.0 FT. |
| APPLICABLE GDC NO. | NONE |

GENERAL COMMENTS:

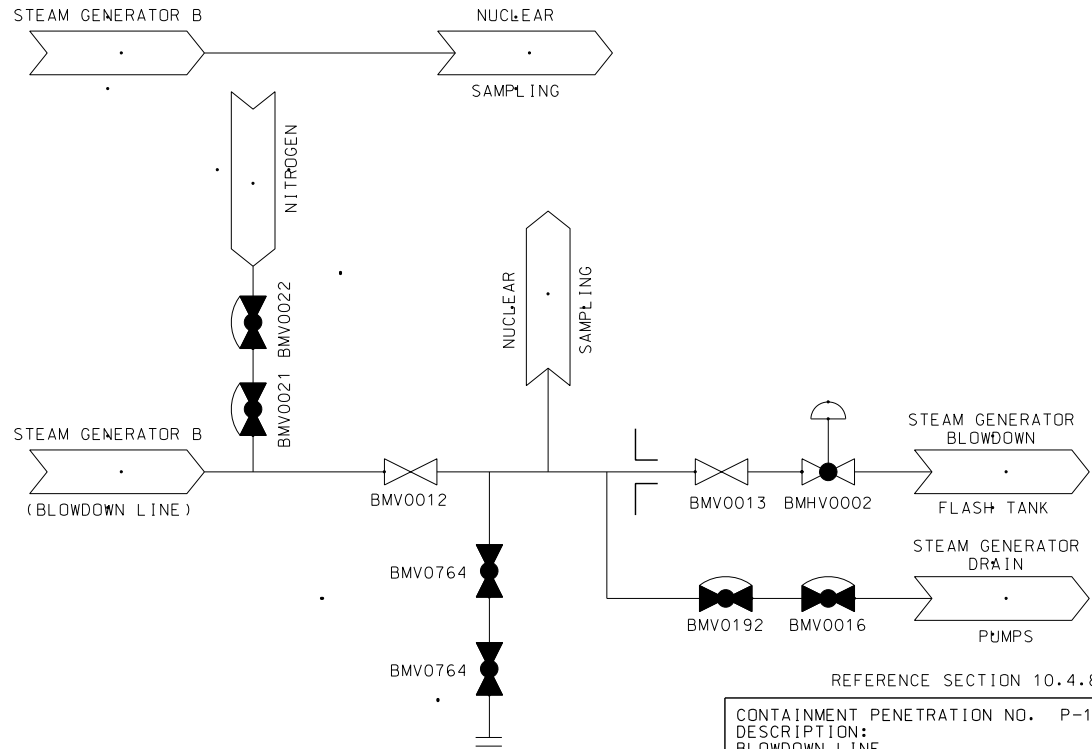
THE CONTAINMENT PENETRATIONS ASSOCIATED WITH THE STEAM GENERATORS ARE NOT SUBJECT TO GDC-57, SINCE THE CONTAINMENT BARRIER INTEGRITY IS NOT BREACHED. THE BOUNDARY OR BARRIER AGAINST FISSION PRODUCT LEAKAGE TO THE ENVIRONMENT IS THE INSIDE OF THE STEAM GENERATOR TUBES AND THE OUTSIDE OF THE LINES EMANATING 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: 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-11 |
| DESCRIPTION: BLOWDOWN LINE STEAM GENERATOR BLOWDOWN SYSTEM |
| CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 11 OF 84 REV. 17 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.) | VALVE POSITION | | | | |
|-----------|-----------------------|-----------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|-----------------------------|----------------|----------|---------------|---------------|-----|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT | |
| 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 |
| | | | | | | | | | | | | | | |
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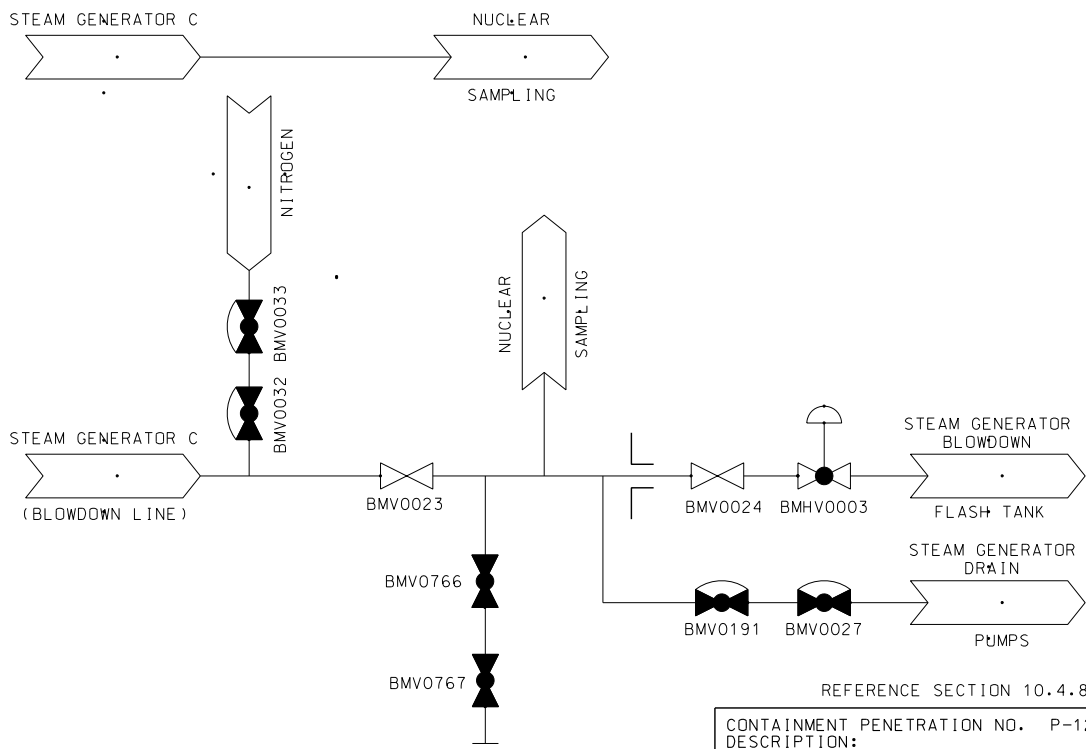
| | |
|------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: | WATER |
| LENGTH OF PIPING TO OUTERMOST ISOLATION 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: 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-12 |
| DESCRIPTION: BLOWDOWN LINE STEAM GENERATOR BLOWDOWN SYSTEM |
| CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 12 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 |
| 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 |
| | | | | | | | | | | | | | | |
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|------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: | WATER |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: | N/A |
| APPLICABLE GDC NO. | 56 |

GENERAL COMMENTS:

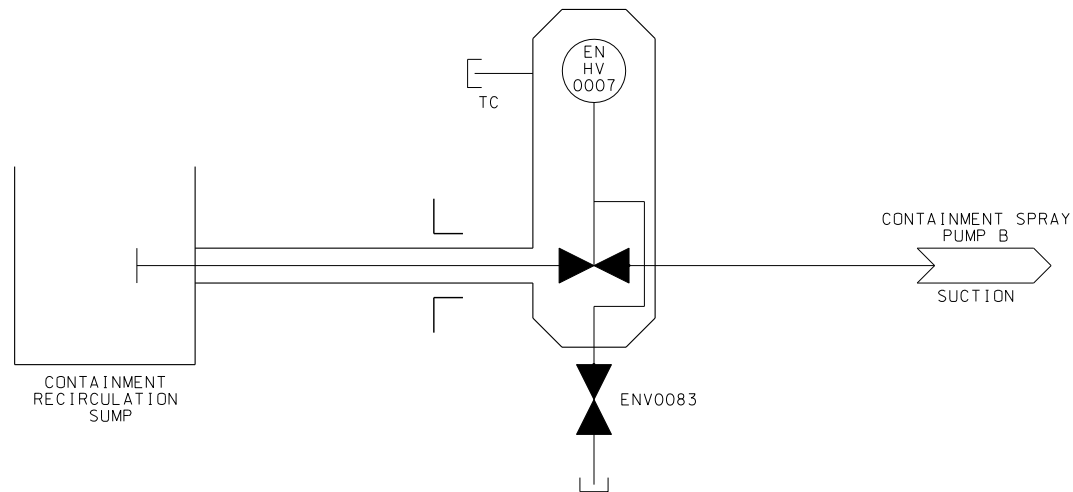
THIS PENETRATION IS ASSOCIATED WITH THE CONTAINMENT SPRAY SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A SINGLE REMOTE-MANUAL ISOLATION IS PROVIDED, LOCATED WITHIN A WATERTIGHT COMPARTMENT OUTSIDE THE CONTAINMENT, FOR GREATER SYSTEM RELIABILITY. A SINGLE ACTIVE OR PASSIVE FAILURE 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: 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 (S) 6.2.2

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

CONTAINMENT PENETRATIONS
 FIGURE 6.2.4-1
 PAGE 13 OF 84
 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 |
| 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 |
| | | | | | | | | | | | | | | |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: N/A

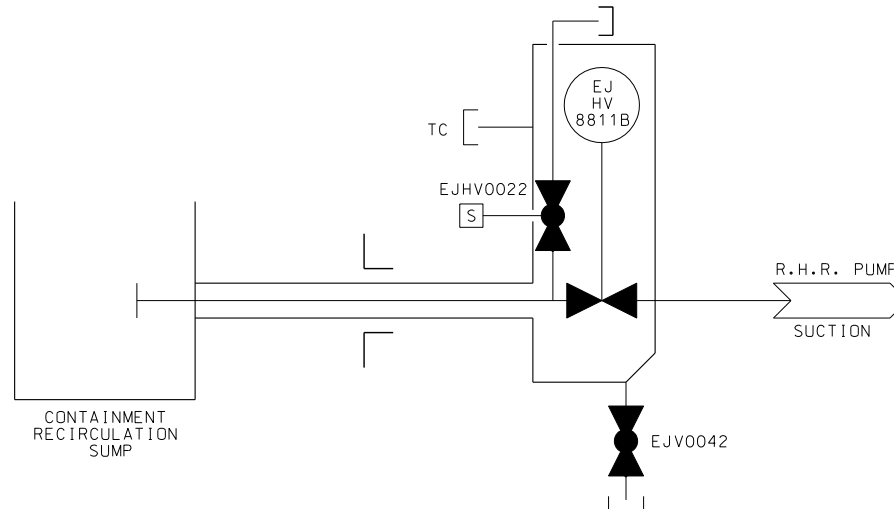
APPLICABLE GDC NO. 56

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 14 OF 84
REV. 15 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 |
| 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 |
| | | | | | | | | | | | | | | |
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ENGINEERED SAFETY
FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST
ISOLATION VALVE: N/A

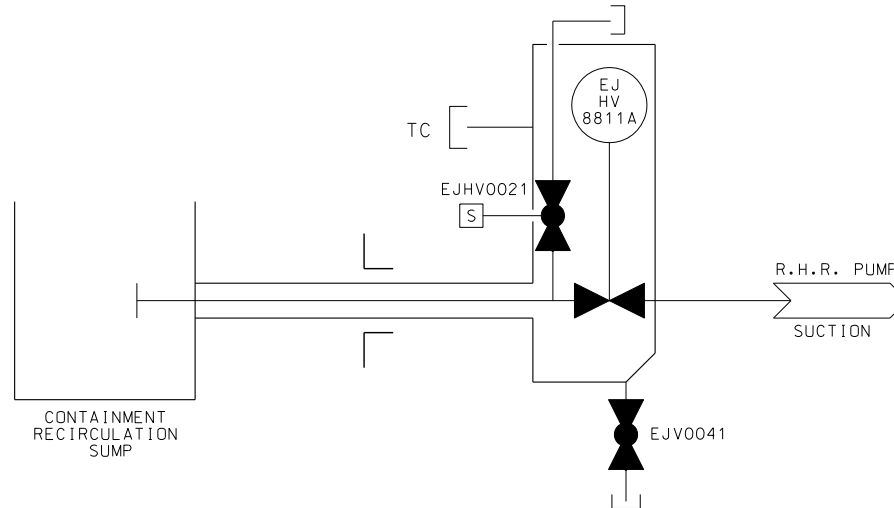
APPLICABLE
GDC NO. 56

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: 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-15
DESCRIPTION:
RECIRCULATION LINE
RESIDUAL HEAT REMOVAL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 15 OF 84
REV. 15 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 |
| 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 |
| | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | |
| ENGINEERED SAFETY FEATURE SYSTEM | | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> | | | | | | | | | | | | |
| FLUID CONTAINED: | | WATER | | | | | | | | | | | | |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: | | N/A | | | | | | | | | | | | |
| APPLICABLE GDC NO. | | 56 | | | | | | | | | | | | |

GENERAL COMMENTS:

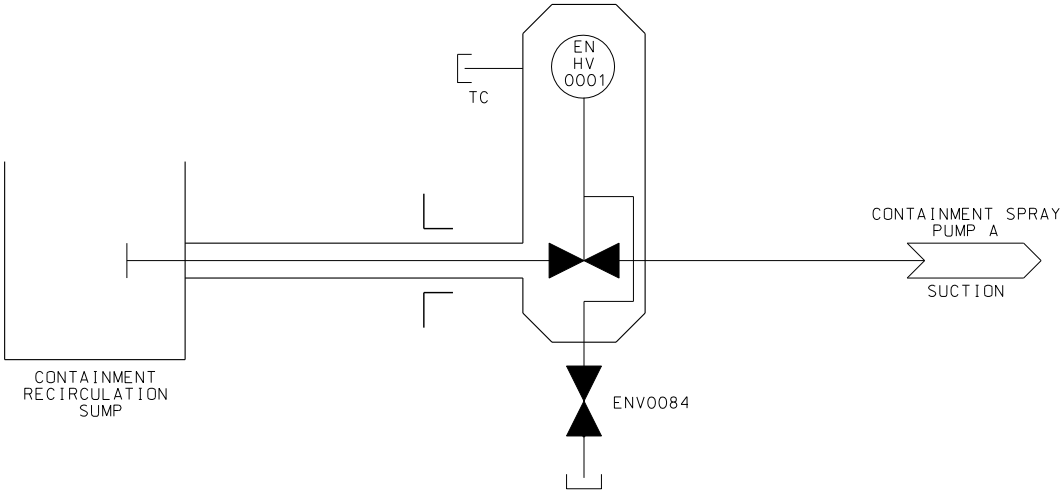
THIS PENETRATION IS ASSOCIATED WITH THE CONTAINMENT SPRAY SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A SINGLE REMOTE-MANUAL ISOLATION IS PROVIDED, LOCATED WITHIN A WATERTIGHT COMPARTMENT OUTSIDE THE CONTAINMENT, FOR GREATER SYSTEM RELIABILITY. A SINGLE ACTIVE OR PASSIVE FAILURE 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: 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 (S) 6.2.2

| |
|-----------------------------------------------------------------------------|
| CONTAINMENT PENETRATION NO. P-16 |
| DESCRIPTION: RECIRCULATION LINE CONTAINMENT SPRAY SYSTEM |
| CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 16 OF 84 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 |
| 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 |
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| 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 |
| | | | | | | | | | | | | | | |

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|---------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: | WATER |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: | 6.9 FT |
| APPLICABLE GDC NO. | 55 |

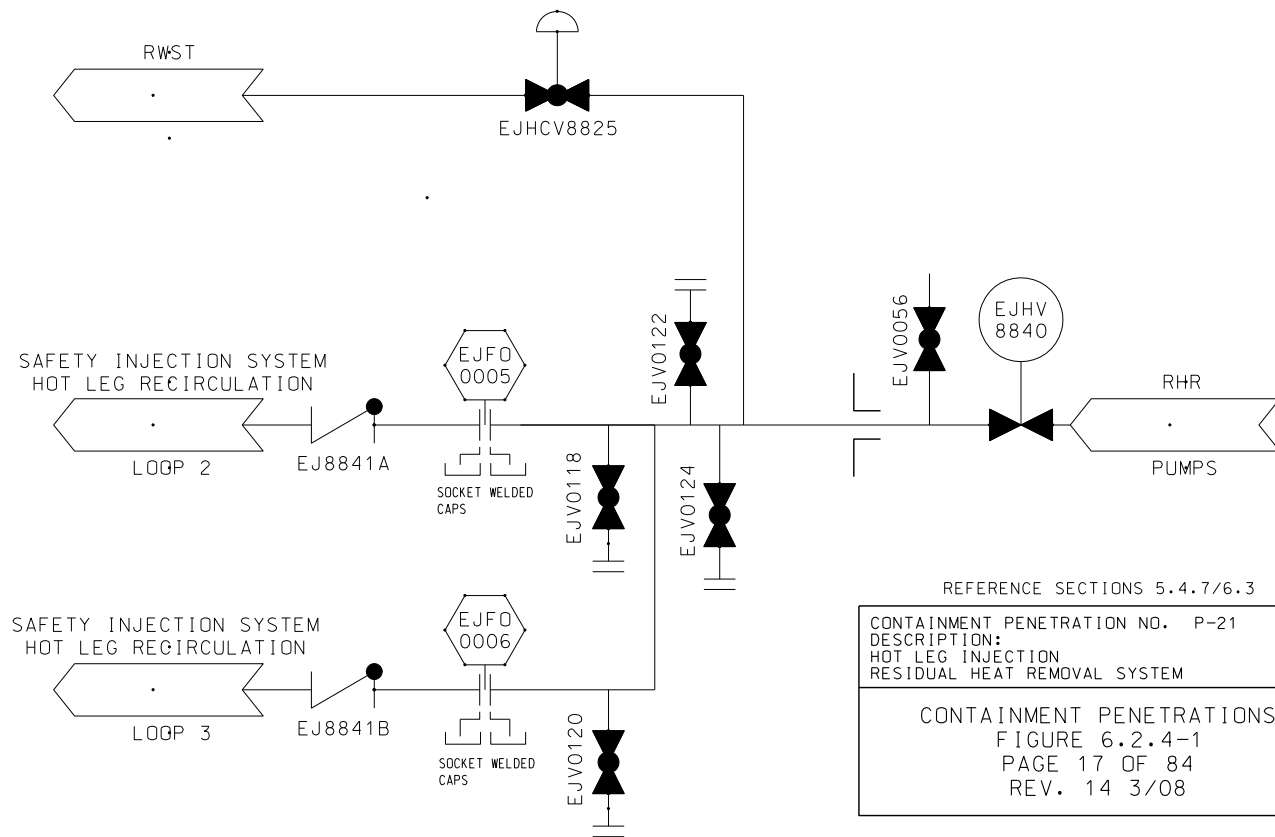
GENERAL COMMENTS:
THIS PENETRATION IS ASSOCIATED WITH THE RESIDUAL HEAT REMOVAL SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE IS PROVIDED FOR EACH BRANCH LINE INSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE 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 PENETRATIONS FIGURE 6.2.4-1 PAGE 17 OF 84 REV. 14 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 |
| 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 |
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|--------------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| FLUID CONTAINED: WATER | |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 7.2 FT. | |
| APPLICABLE GDC NO. | 55 |

GENERAL COMMENTS:

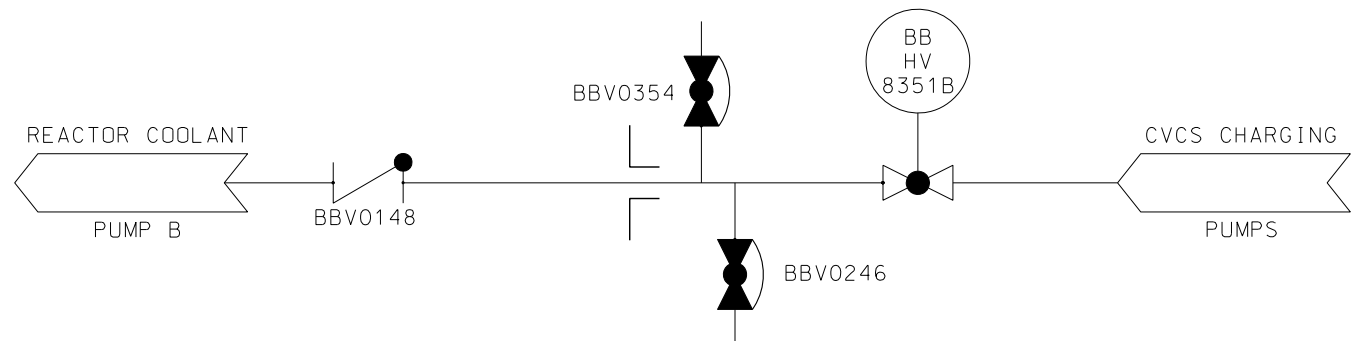
THIS PENETRATION PIPING HAS A HIGH PRESSURE WATER INFLOW WHICH PRECLUDES THE NEED FOR AUTOMATIC ISOLATION OF THIS PENETRATION. THE CVCS CHARGING PUMPS SUPPLY REACTOR COOLANT PUMP SEAL INJECTION WATER, AND THERE IS A POTENTIAL FOR DAMAGE TO THE REACTOR COOLANT PUMP IF UNDESIRE ISOLATION SHOULD OCCUR.

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: 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 5.4

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

CONTAINMENT PENETRATIONS
 FIGURE 6.2.4-1
 PAGE 18 OF 84
 REV. 12 9/14

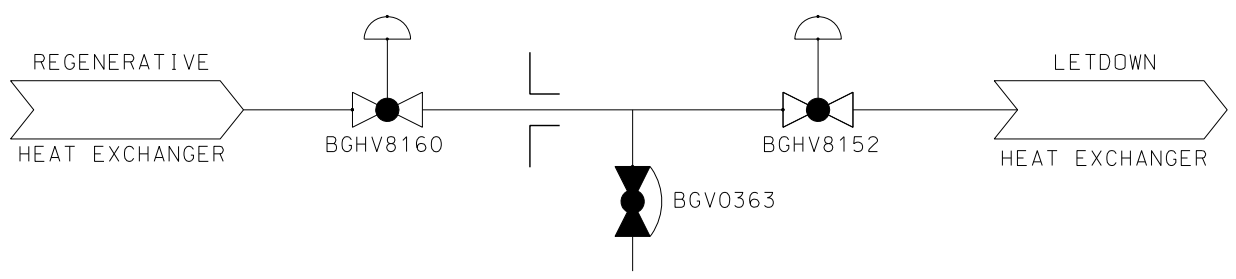
| VALVE NO. | LINE / VALVE SIZE, IN. | INSIDE / OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|---------------|-----|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT | |
| 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 |
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|--------------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| FLUID CONTAINED: WATER | |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 6.5 FT. | |
| APPLICABLE GDC NO. | 55 |

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 9.3.4

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| 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 | POST ACCIDENT 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 |
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ENGINEERED SAFETY
FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

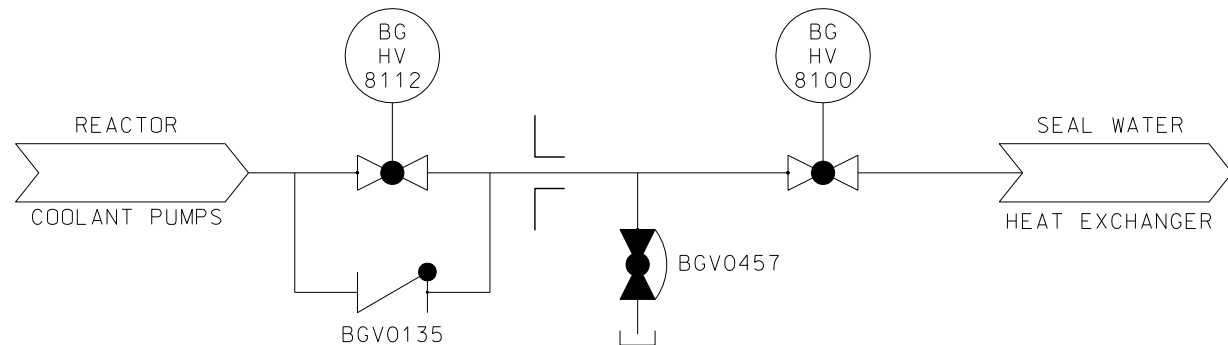
LENGTH OF PIPING TO OUTERMOST
ISOLATION VALVE: 7.8 FT.

APPLICABLE
GDC NO. 55

GENERAL COMMENTS:

NONE

NOTE 1: 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 9.3.4

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 20 OF 84
REV. 12 8/16

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

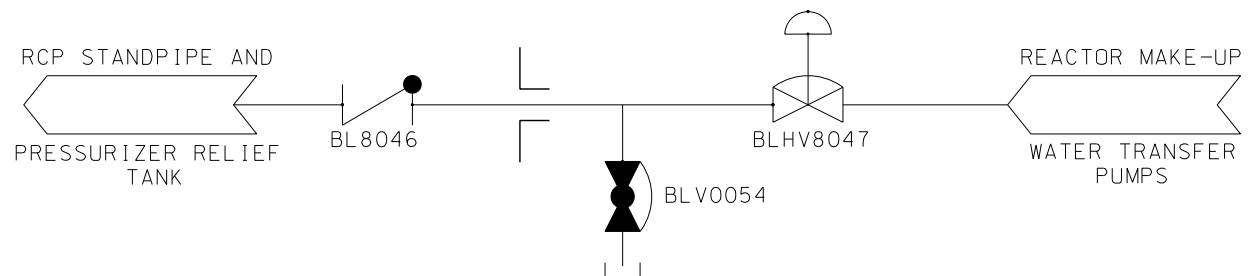
| VALVE NO. | LINE / VALVE SIZE, IN. | INSIDE / OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|-----------------------|-------------------------|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT PRIMARY | POST ACCIDENT SECONDARY |
| 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 |
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| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| FLUID CONTAINED: WATER | |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 7.4 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 9.2.7

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 21 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 | POST ACCIDENT 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 |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

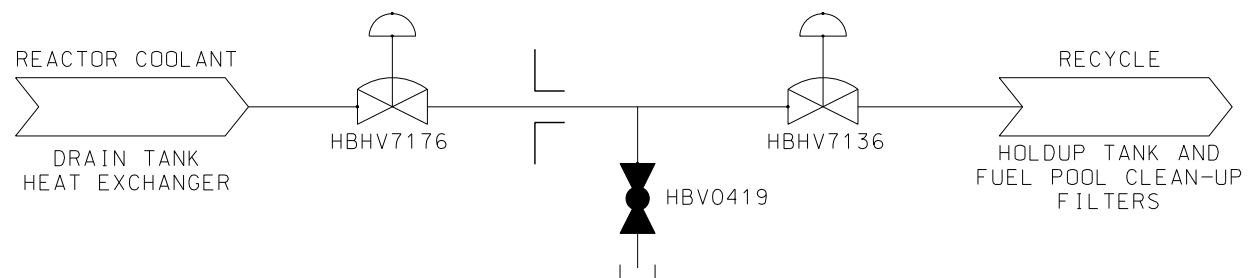
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 11.9 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: 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 11.2

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 22 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 |
| 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 |
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| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: | WATER |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: | 13.3 FT |
| APPLICABLE GDC NO. | 55 |

GENERAL COMMENTS:

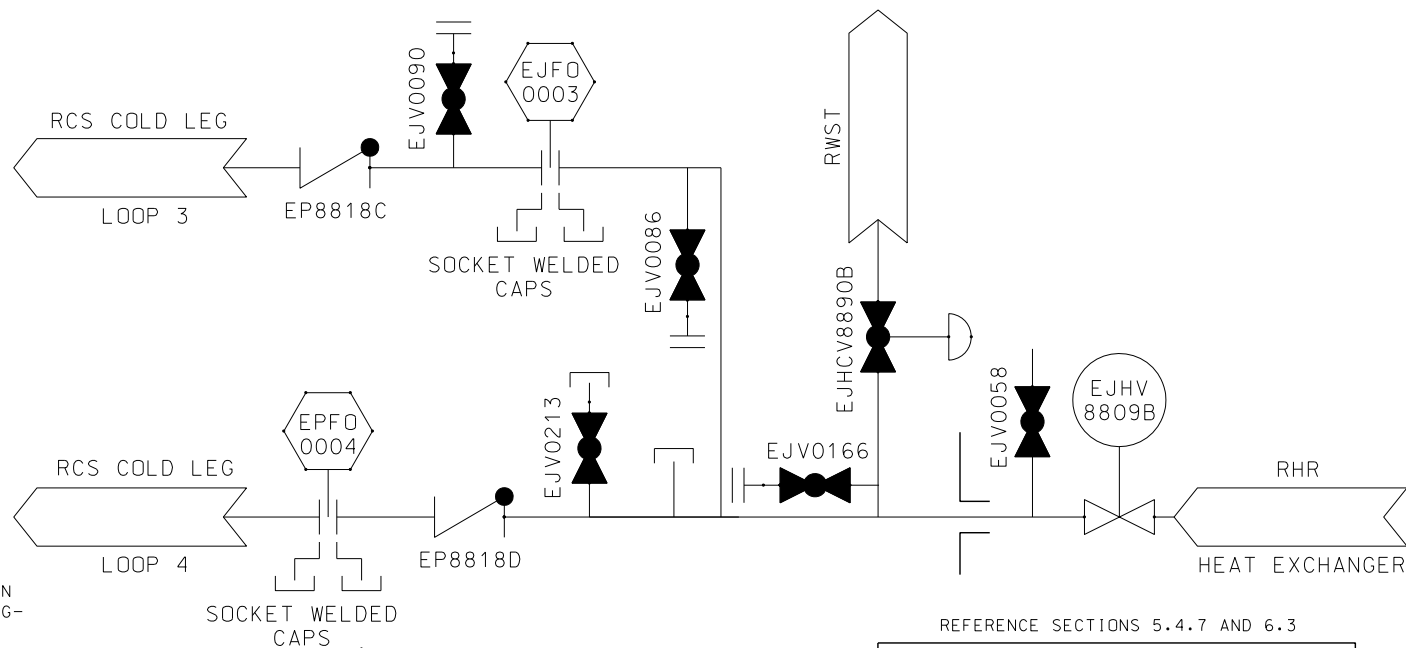
THIS PENETRATION IS ASSOCIATED WITH THE RESIDUAL HEAT REMOVAL SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE IS PROVIDED FOR EACH BRANCH LINE INSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR PASSIVE FAILURE 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
 PAGE 23 OF 84
 REV. 17 11/10

| 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 |
| | | | | | | | | | | | | | | |
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| ENGINEERED SAFETY FEATURE SYSTEM YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> | | | | | | | | | | | | | | |
| FLUID CONTAINED: WATER | | | | | | | | | | | | | | |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 12.8 FT. | | | | | | | | | | | | | | |
| APPLICABLE GDC NO. 56 | | | | | | | | | | | | | | |

GENERAL COMMENTS:

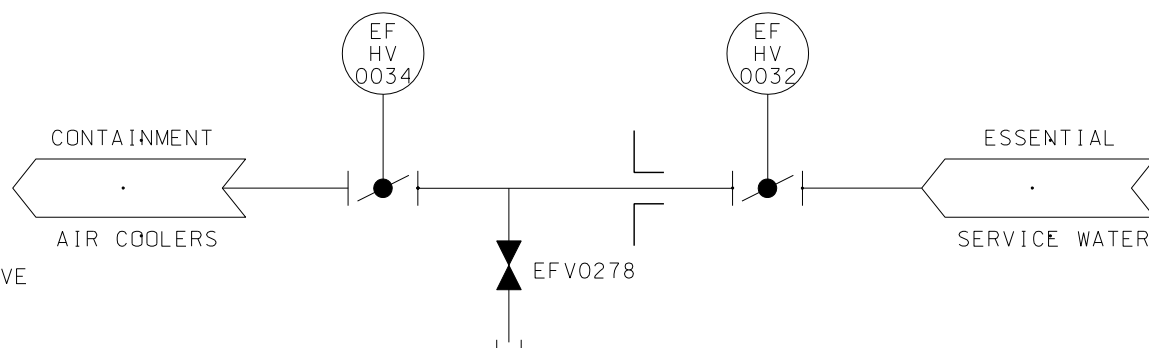
THIS PENETRATION IS ASSOCIATED WITH THE ESSENTIAL SERVICE WATER SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A REMOTE-MANUAL POWER-OPERATED VALVE IS LOCATED INSIDE, AND A REMOTE-MANUAL POWER-OPERATED VALVE IS LOCATED OUTSIDE THE CONTAINMENT.

THESE VALVES ARE POWERED FROM THE SAME POWER SOURCE FOR GREATER SYSTEM RELIABILITY. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED 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: 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 | <input type="checkbox"/> |
| | B | <input type="checkbox"/> |
| | C | <input checked="" type="checkbox"/> |
| NONE | | <input type="checkbox"/> |



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
PAGE 24 OF 84
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 |
| 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 |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 13.8

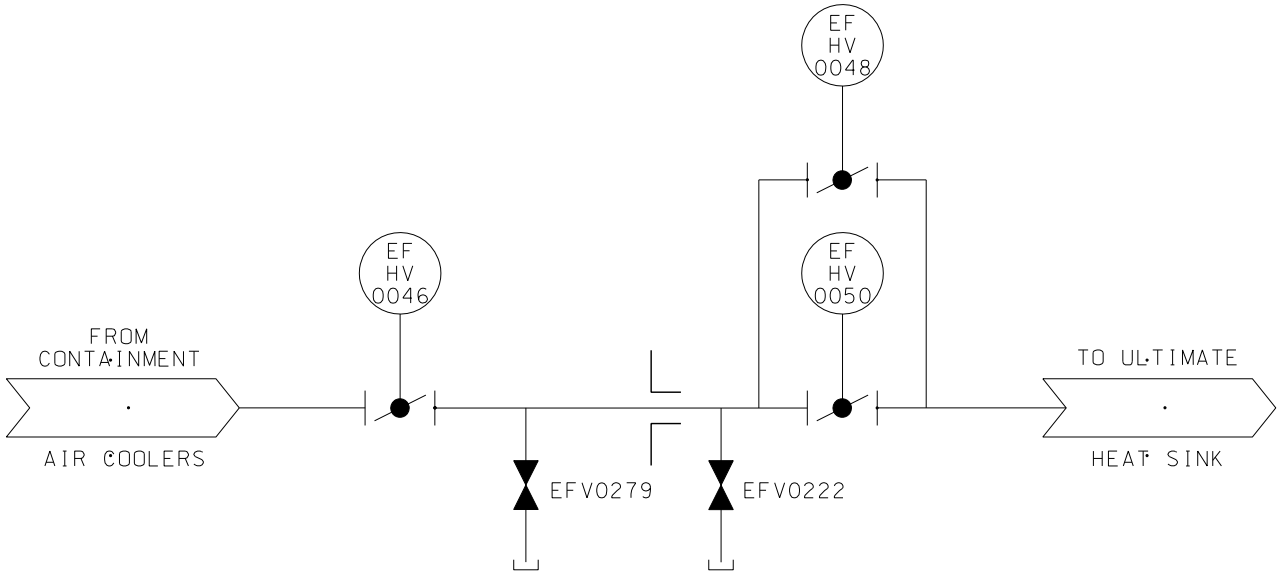
APPLICABLE GDC NO. 56

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 ACCOMMODATED 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: 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 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
PAGE 25 OF 84
REV. 11 3/08

| | | |
|------------------------------------------------------------|------------------------------|----------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> | NO <input checked="" type="checkbox"/> |
| FLUID CONTAINED: WATER | | |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 13.8 FT. | | |
| APPLICABLE GDC NO. | 56 | |

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.

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 27 OF 84
REV. 11/3/08

TYPE A ☐
 B ☐
 C ☒
 NONE ☐

[illegible]

ENGINEERED SAFETY
FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: AIR

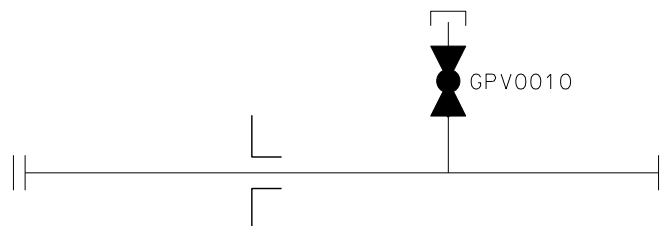
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: N/A

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| APPLICABLE GDC NO. | 56 |
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GENERAL COMMENTS:

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

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 | <input type="checkbox"/> |
| | B | <input checked="" type="checkbox"/> |
| | C | <input type="checkbox"/> |
| NONE | | <input type="checkbox"/> |

REFERENCE SECTION 6.2.6

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 28 OF 84
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.) | 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 |
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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: 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 6.2.6

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 29 OF 84
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 | |
| 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 |
| | | | | | | | | | | | | | | |
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| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| FLUID CONTAINED: WATER | |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 12.2 FT. | |
| APPLICABLE GDC NO. | 55 |

GENERAL COMMENTS:

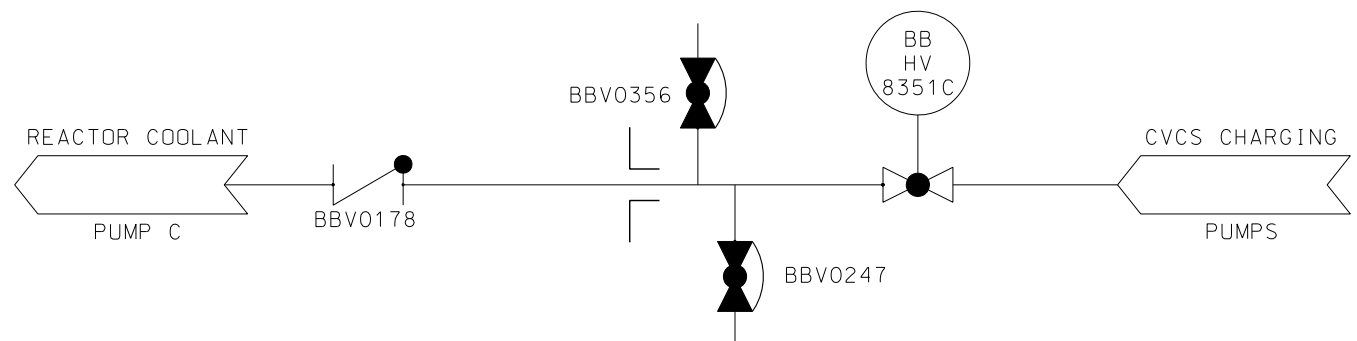
THIS PENETRATION PIPING HAS A HIGH PRESSURE WATER INFLOW WHICH PRECLUDES THE NEED FOR AUTOMATIC ISOLATION OF THIS PENETRATION. THE CVCS CHARGING PUMPS SUPPLY REACTOR COOLANT PUMP SEAL INJECTION WATER, AND THERE IS A POTENTIAL FOR DAMAGE TO THE REACTOR COOLANT PUMP IF UNDESIRE ISOLATION SHOULD OCCUR.

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: 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 5.4

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

CONTAINMENT PENETRATIONS
 FIGURE 6.2.4-1
 PAGE 30 OF 84
 REV. 13 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 | |
| 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 |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 17.1 FT.

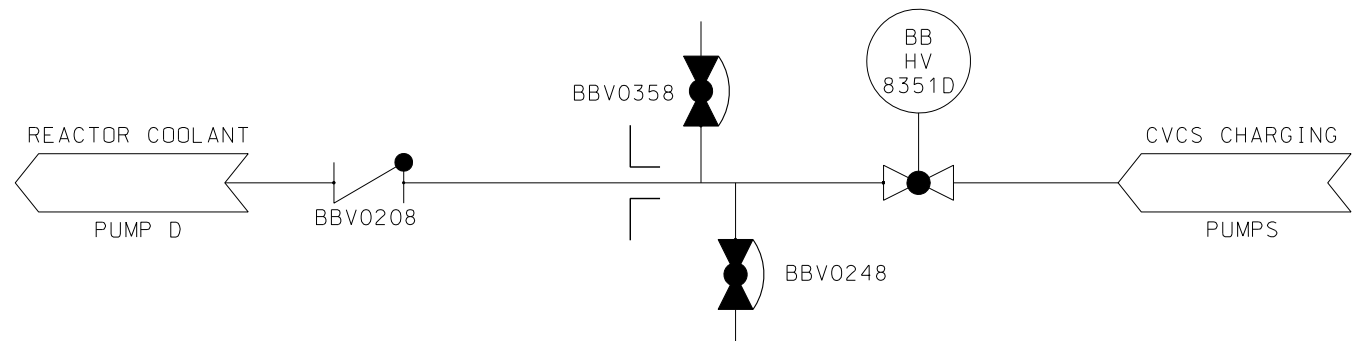
APPLICABLE GDC NO. 55

GENERAL COMMENTS:

THIS PENETRATION PIPING HAS A HIGH PRESSURE WATER INFLOW WHICH 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 UNDESIRE 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: 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 5.4

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 31 OF 84
REV. 13 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 | |
| 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 |
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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:

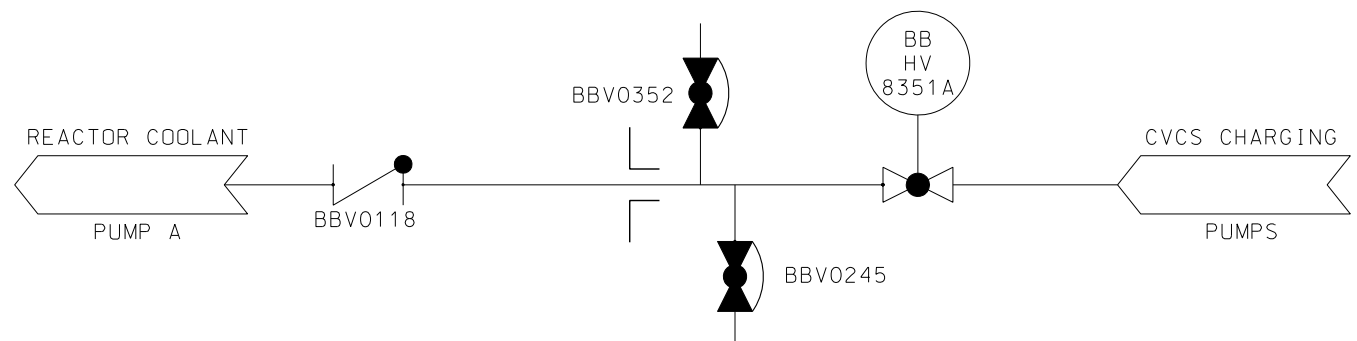
THIS PENETRATION PIPING HAS A HIGH PRESSURE WATER INFLOW WHICH PRECLUDES THE NEED FOR AUTOMATIC ISOLATION OF THIS PENETRATION. THE CVCS CHARGING PUMPS SUPPLY REACTOR COOLANT PUMP SEAL INJECTION WATER, AND THERE IS A POTENTIAL FOR DAMAGE TO THE REACTOR COOLANT PUMP IF UNDESIRE ISOLATION SHOULD OCCUR.

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: 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 5.4

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

CONTAINMENT PENETRATIONS
 FIGURE 6.2.4-1
 PAGE 32 OF 84
 REV. 12 9/14

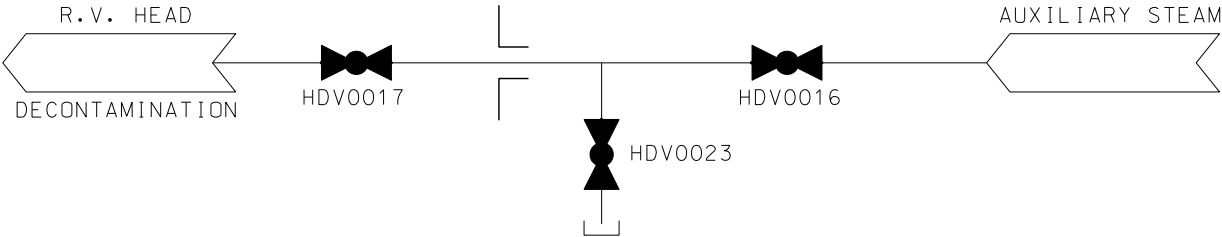
| VALVE NO. | LINE / VALVE SIZE, IN. | INSIDE / OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|---------------|-----|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT | |
| 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 |
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|---------------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| FLUID CONTAINED: STEAM | |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 10.9 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 TIME WERE 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
PAGE 33 OF 84
REV. 11/3/08

APPENDIX J REQUIREMENT

TYPE A ☐
 B ☐
 C ☒
 NONE ☐

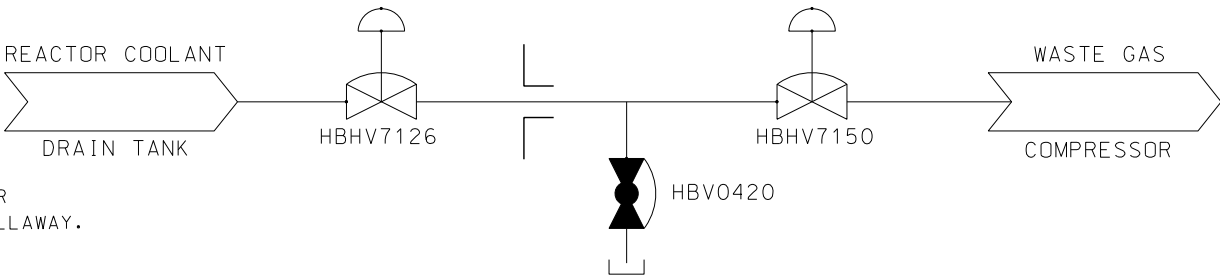
| VALVE NO. | LINE / VALVE SIZE, IN. | INSIDE / OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|-----------------------|-------------------------|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT PRIMARY | POST ACCIDENT 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 |
| | | | | | | | | | | | | | | |
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|------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| FLUID CONTAINED: | GAS |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: | 8.1 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 11.2

| |
|--------------------------------------------------------------------------------------------------------------|
| CONTAINMENT PENETRATION NO. P-44 DESCRIPTION: REACTOR COOLANT DRAIN TANK VENT LINE LIQUID RADWASTE SYSTEM |
| CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 34 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 |
| 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 |
| | | | | | | | | | | | | | | |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: GAS

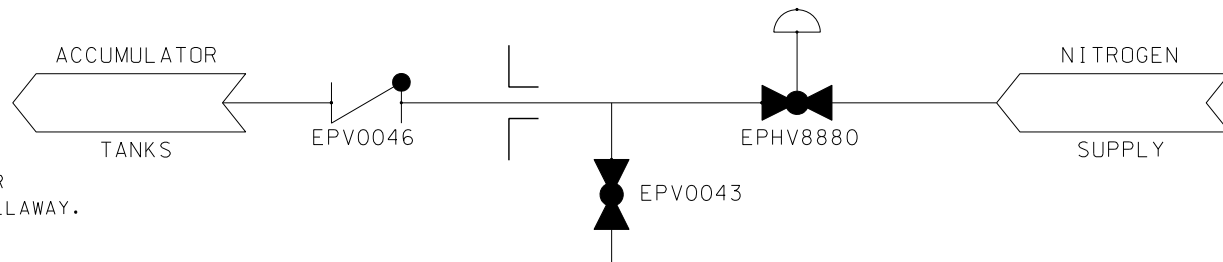
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 13.0 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: 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 6.3

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 35 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 |
| 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:

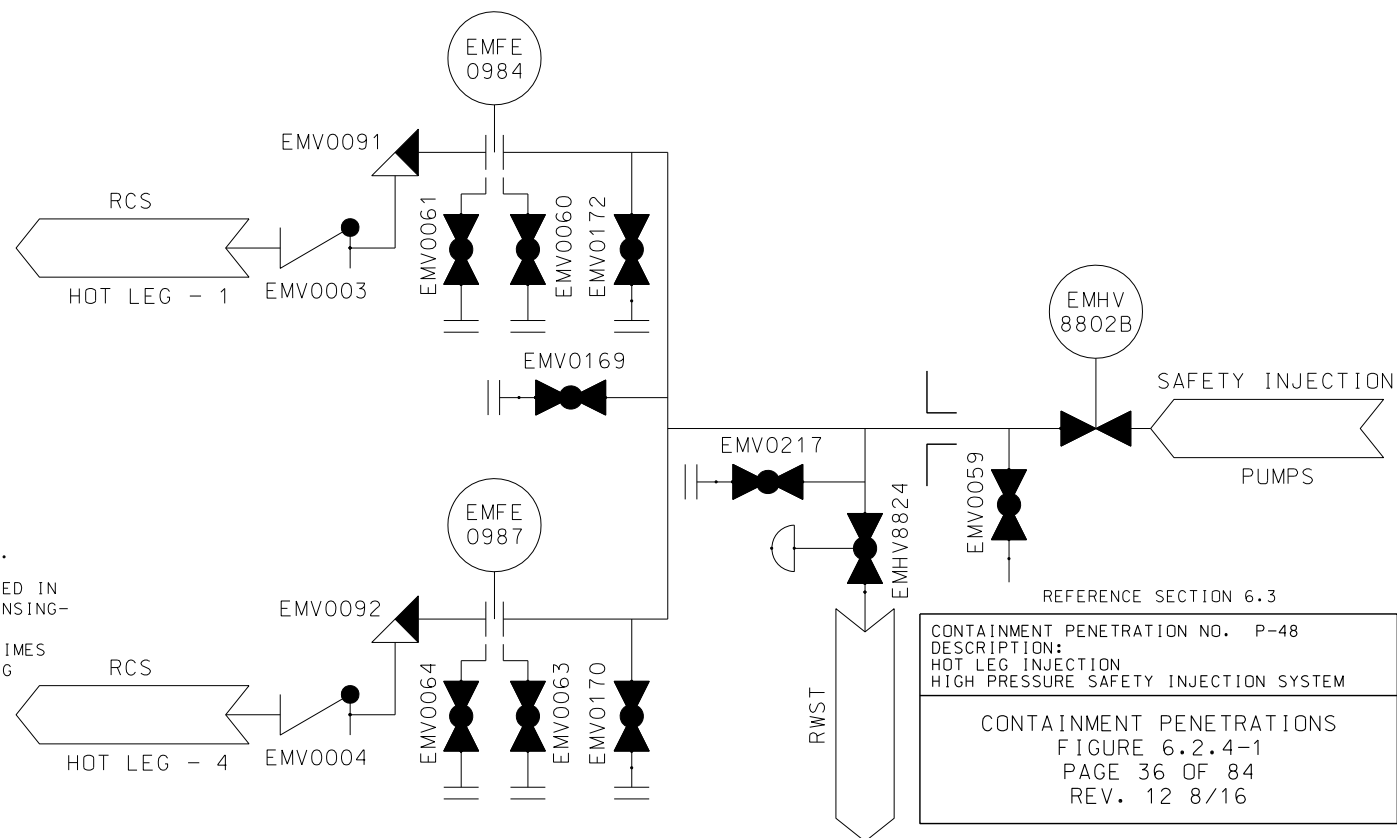
THIS PENETRATION IS ASSOCIATED WITH THE HIGH PRESSURE COOLANT INJECTION SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE IS PROVIDED FOR EACH BRANCH LINE INSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR 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: 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 ☐



| 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 |
| 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 |

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|------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: | WATER |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: | 12.1 FT |
| APPLICABLE GDC NO. | 55 |

GENERAL COMMENTS:

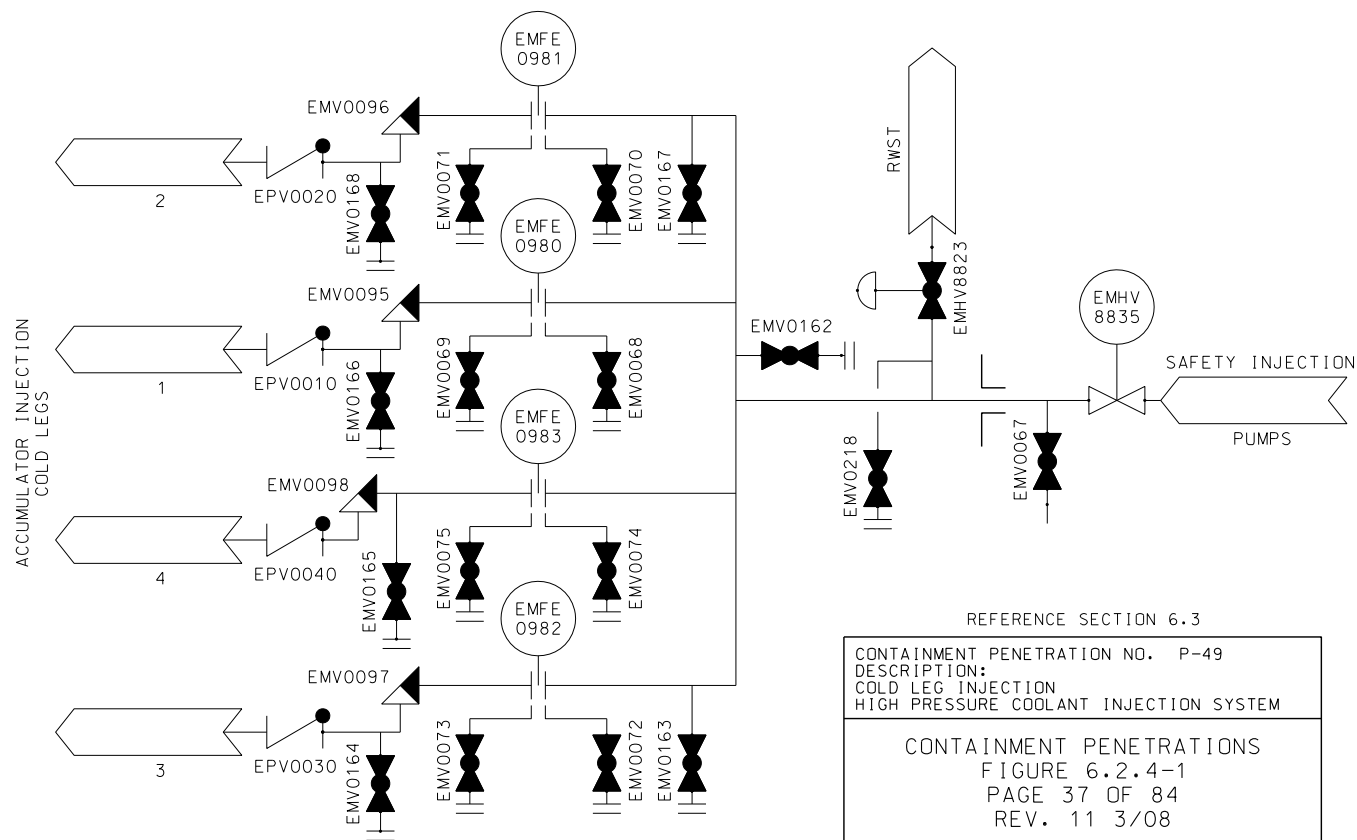
THIS PENETRATION IS ASSOCIATED WITH THE HIGH PRESSURE COOLANT INJECTION SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE IS PROVIDED FOR EACH BRANCH LINE INSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR 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 ☐



| 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 |
| 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 |
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| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| 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: 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 ☐

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 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
 PAGE 38 OF 84
 REV. 12 8/16

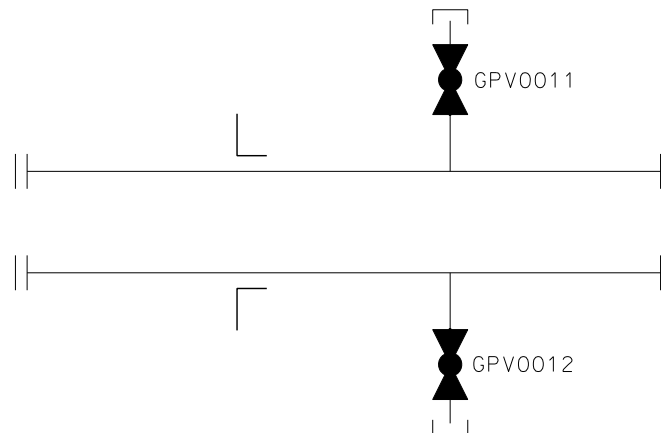
| VALVE NO. | LINE / VALVE SIZE, IN. | INSIDE / OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|-----------------------|-------------------------|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT PRIMARY | POST ACCIDENT 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 |
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| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| 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: 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 6.2.6

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

CONTAINMENT PENETRATIONS
 FIGURE 6.2.4-1
 PAGE 39 OF 84
 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.) | 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 |
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| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: | WATER |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: | N/A |
| APPLICABLE GDC NO. | 55 |

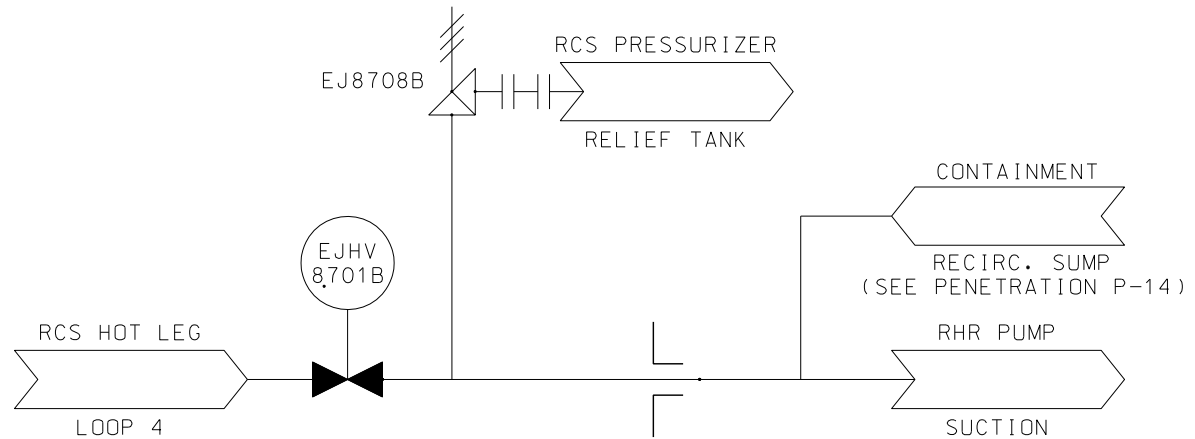
GENERAL COMMENTS:
 THE RESIDUAL HEAT REMOVAL SYSTEM SUCTION LINE FROM THE REACTOR COOLANT SYSTEM CONTAINS TWO NORMALLY CLOSED, POWER-OPERATED REMOTE MANUAL VALVES IN SERIES INSIDE THE CONTAINMENT (I.E., EJHV8701B AND BBPV8702B). THESE VALVES ARE INTERLOCKED TO PREVENT THEM FROM BEING INADVERTENTLY OPENED. 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: 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-52 |
| DESCRIPTION: RHR SHUTDOWN LINES RESIDUAL HEAT REMOVAL SYSTEM |
| CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 40 OF 84 REV. 13 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 | POST ACCIDENT 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 |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

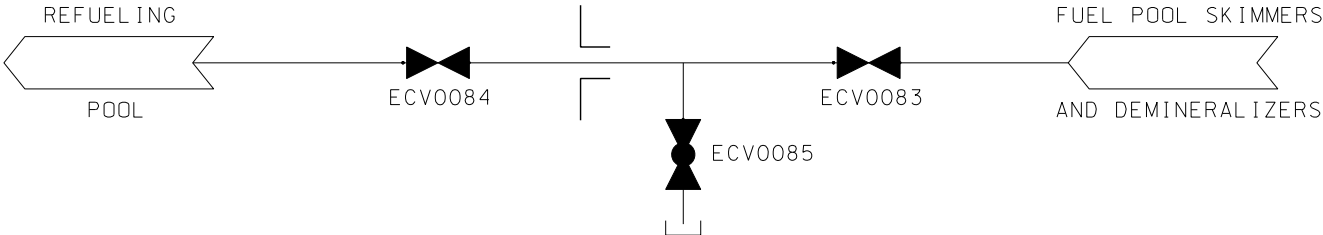
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 3.0 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: 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-53
DESCRIPTION: CLEANUP RETURN
FUEL POOL COOLING AND CLEANUP SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 41 OF 84
REV. 11 3/08

APPENDIX J REQUIREMENT

TYPE A ☐

B ☐

C ☒

NONE ☐

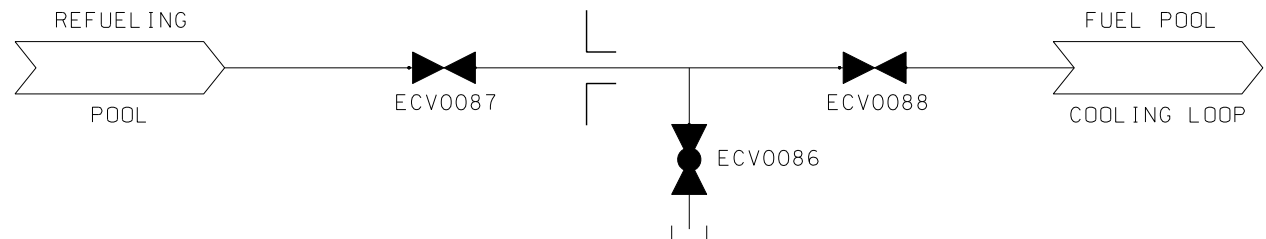
| VALVE NO. | LINE / VALVE SIZE, IN. | INSIDE / OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|---------------|-----|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT | |
| 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 |
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| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| FLUID CONTAINED: WATER | |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 3.0 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-54
DESCRIPTION: REFUELING POOL CLEANUP LINE
FUEL POOL COOLING AND CLEANUP SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 42 OF 84
REV. 12 8/16

APPENDIX J REQUIREMENT

TYPE A ☐
B ☐
C ☒
NONE ☐

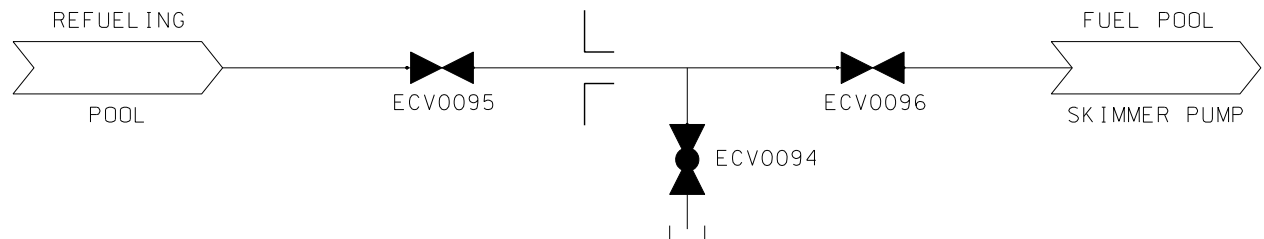
| VALVE NO. | LINE / VALVE SIZE, IN. | INSIDE / OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|---------------|-----|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT | |
| 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 |
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|--------------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| 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
PAGE 43 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 |
| 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 |
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ENGINEERED SAFETY
FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: AIR

LENGTH OF PIPING TO OUTERMOST
ISOLATION VALVE: 3.2 FT

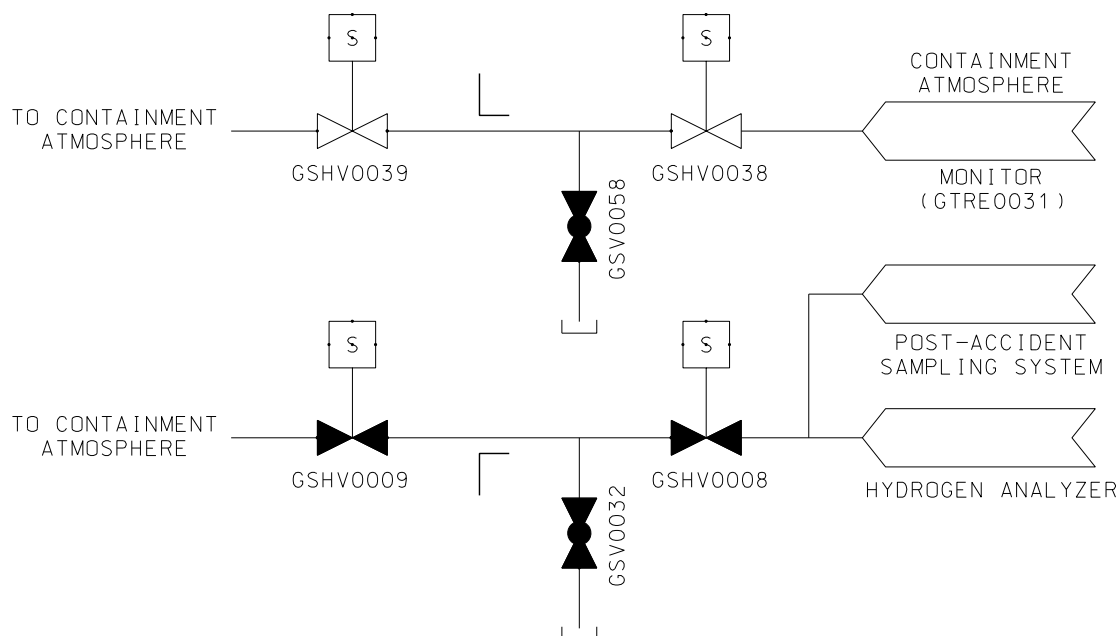
APPLICABLE
GDC NO. 56

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 RELEASE OF 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: 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 6.2.5

CONTAINMENT PENETRATION NO. P-56
DESCRIPTION:
H₂ SAMPLE RETURN
CONTAINMENT HYDROGEN CONTROL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 44 OF 84
REV. 15 9/14

APPENDIX J REQUIREMENT

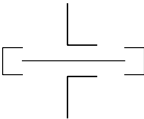
TYPE A ☐
B ☐
C ☒
NONE ☐

| 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 |
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|---------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| 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: 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

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| TYPE | A <input type="checkbox"/> |
| | B <input type="checkbox"/> |
| | C <input checked="" type="checkbox"/> |
| NONE | <input type="checkbox"/> |

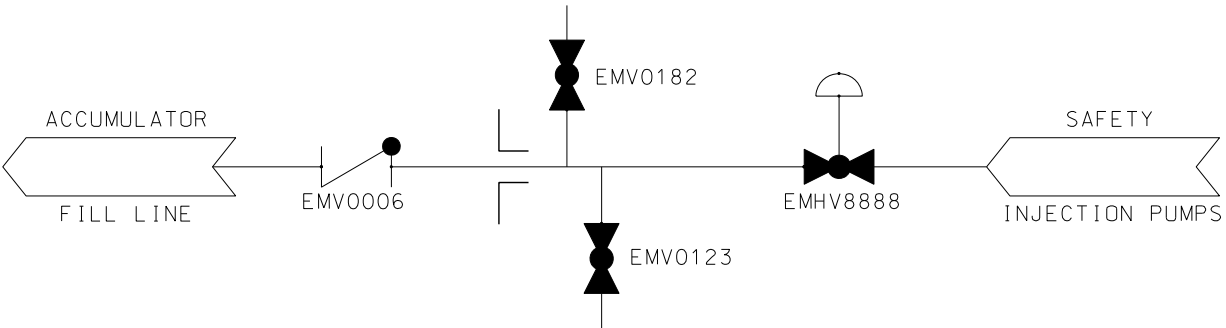
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| REFERENCE SECTION 18.2.3 |
| CONTAINMENT PENETRATION NO. P-57 DESCRIPTION: SPARE |
| CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 45 OF 84 REV. 14 3/08 |

| 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 |
| 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 |
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|--------------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: WATER | |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 7.6 FT. | |
| APPLICABLE GDC NO. | 56 |

GENERAL COMMENTS:

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 6.3

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

CONTAINMENT PENETRATIONS
 FIGURE 6.2.4-1
 PAGE 46 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 |
| 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 |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

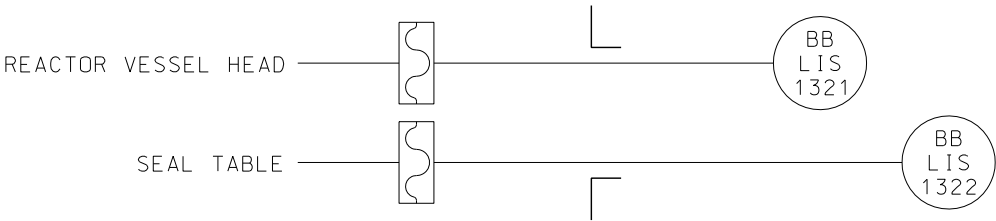
FLUID CONTAINED: WATER

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: 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 18.2.13.2

CONTAINMENT PENETRATION NO. P-59

DESCRIPTION:
RVLIS SAMPLE LINE
REACTOR COOLANT SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 47 OF 84
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 |
| 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 |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: GAS

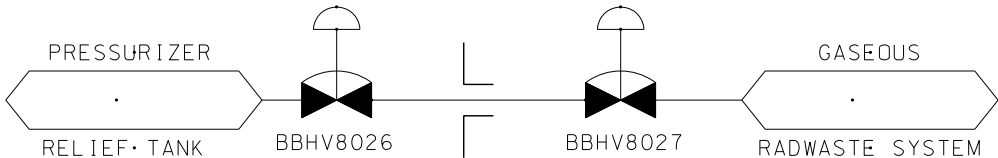
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 8.2 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: 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 5.4

CONTAINMENT PENETRATION NO. P-62

DESCRIPTION:
PRESSURIZER PURGE AND VENT LINE
REACTOR COOLANT SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 48 OF 84
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 | POST ACCIDENT 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 |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

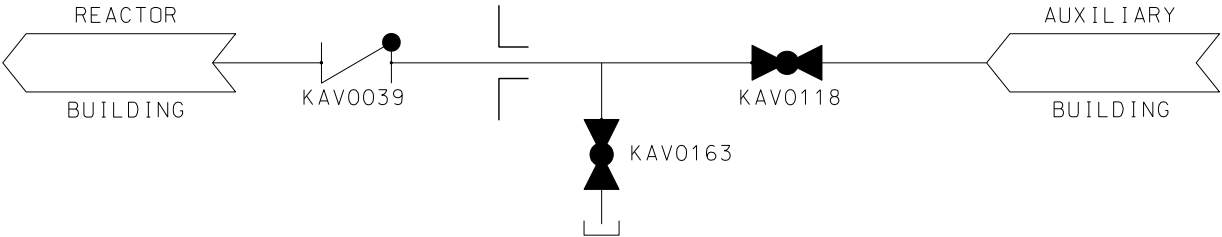
FLUID CONTAINED: AIR

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 4.1 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:
NONE

NOTE 1: 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 9.3.1

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 49 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 | |
| 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 |
| SJVO106 | 1/1 | OUTSIDE | N/A | GLOBE | MANUAL | N/A | N/A | N/A | N/A | CLOSED | CLOSED | N/A | CLOSED | N/A |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

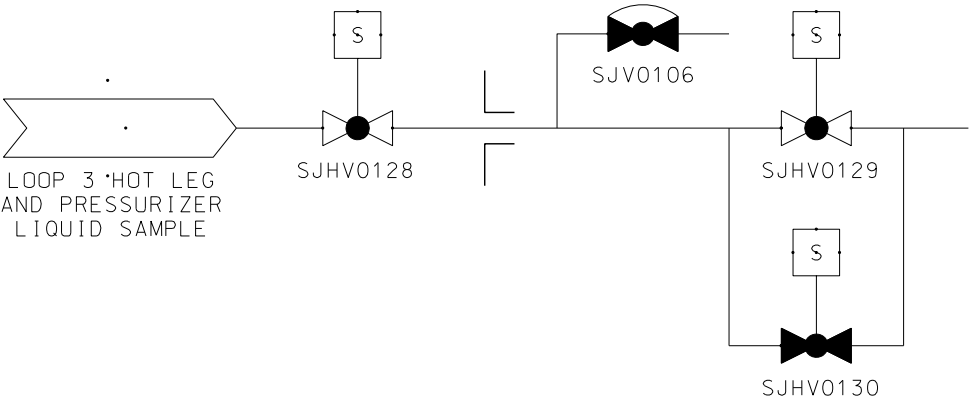
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 10.6 FT.

APPLICABLE GDC NO. 55

GENERAL COMMENTS:

NONE

NOTE 1: 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 18.2.3

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 50 OF 84
REV. 15 11/08

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 |
| 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 |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: AIR

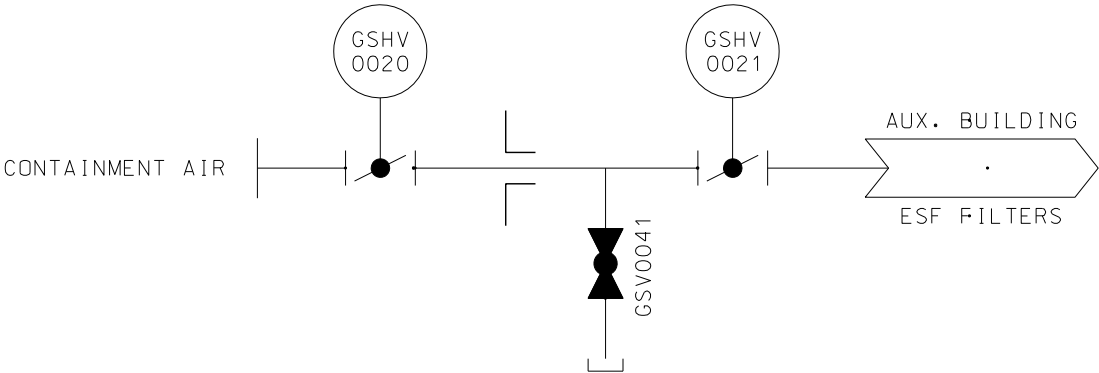
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 1.0 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: 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 6.2.5

CONTAINMENT PENETRATION NO. P-65
DESCRIPTION:
CONTAINMENT H₂ PURGE
CONTAINMENT HYDROGEN CONTROL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 51 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 |
| 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 |
| | | | | | | | | | | | | | | |
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| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: | WATER |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: | 16.6 FT |
| APPLICABLE GDC NO. | 56 |

GENERAL COMMENTS:

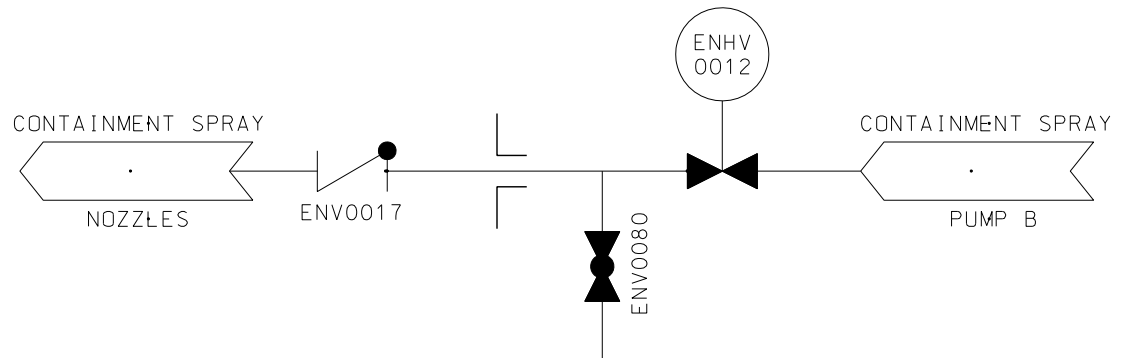
THIS PENETRATION IS ASSOCIATED WITH THE CONTAINMENT SPRAY SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE IS PROVIDED INSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED 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 6.2.2

| |
|-----------------------------------------------------------------------------|
| CONTAINMENT PENETRATION NO. P-66 |
| DESCRIPTION: CONTAINMENT SPRAY CONTAINMENT SPRAY SYSTEM |
| CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 52 OF 84 REV. 13 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 | POST ACCIDENT 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 |
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| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| 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: 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 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
PAGE 54 OF 84
REV. 12 8/16

APPENDIX J REQUIREMENT

TYPE A ☐
B ☒
C ☐
NONE ☐

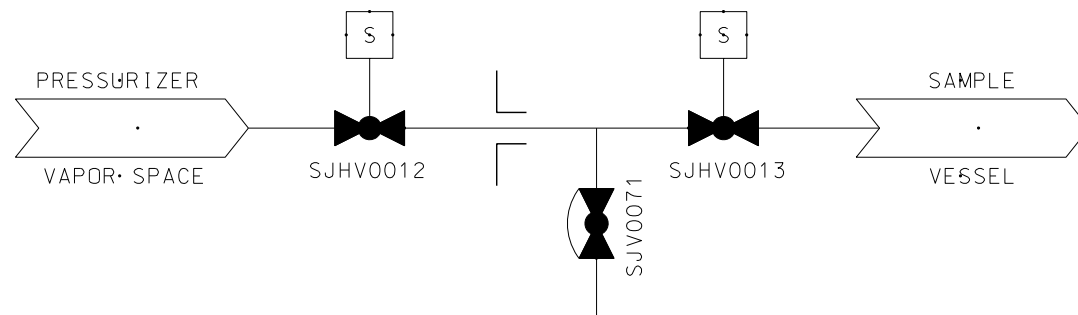
| VALVE NO. | LINE / VALVE SIZE, IN. | INSIDE / OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|-----------------------|-------------------------|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT PRIMARY | POST ACCIDENT SECONDARY |
| 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 |
| SJVO071 | 1/1 | OUTSIDE | N/A | GLOBE | MANUAL | N/A | N/A | N/A | N/A | CLOSED | CLOSED | N/A | CLOSED | N/A |
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|---------------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| FLUID CONTAINED: STEAM | |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 10.7 FT. | |
| APPLICABLE GDC NO. | 55 |

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 9.3.2

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|-----------------------------------------------------------------------------|
| CONTAINMENT PENETRATION NO. P-69 |
| DESCRIPTION: PRESSURIZER VAPOR SAMPLE LINE NUCLEAR SAMPLING SYSTEM |
| CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 55 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 |
| 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 |
| | | | | | | | | | | | | | | |
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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:

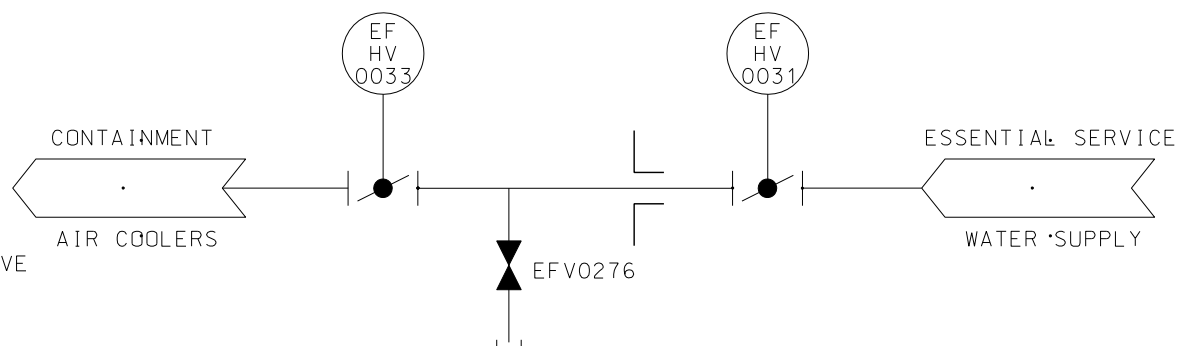
THIS PENETRATION IS ASSOCIATED WITH THE ESSENTIAL SERVICE WATER SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A REMOTE-MANUAL POWER-OPERATED VALVE IS LOCATED INSIDE, AND A REMOTE-MANUAL POWER-OPERATED VALVE IS LOCATED OUTSIDE THE CONTAINMENT.

THESE VALVES ARE POWERED FROM THE SAME POWER SOURCE FOR GREATER SYSTEM RELIABILITY. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED 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: 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 9.2.1.2

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

CONTAINMENT PENETRATIONS
 FIGURE 6.2.4-1
 PAGE 56 OF 84
 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 |
| 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 |
| | | | | | | | | | | | | | | |
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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:

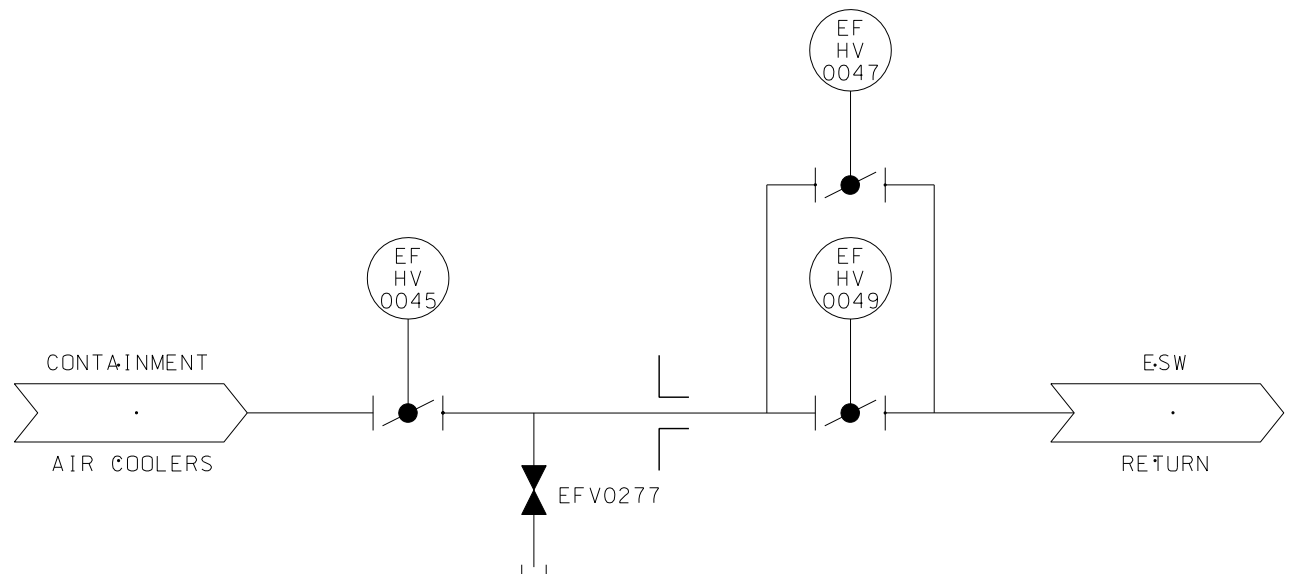
THIS PENETRATION IS ASSOCIATED WITH THE ESSENTIAL SERVICE WATER SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A REMOTE-MANUAL POWER-OPERATED VALVE IS LOCATED INSIDE, AND A REMOTE-MANUAL POWER-OPERATED VALVE IS LOCATED OUTSIDE THE CONTAINMENT. THE SECOND ISOLATION VALVE OUTSIDE THE 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 ACCOMMODATED 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: 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 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
 PAGE 57 OF 84
 REV. 11 3/08

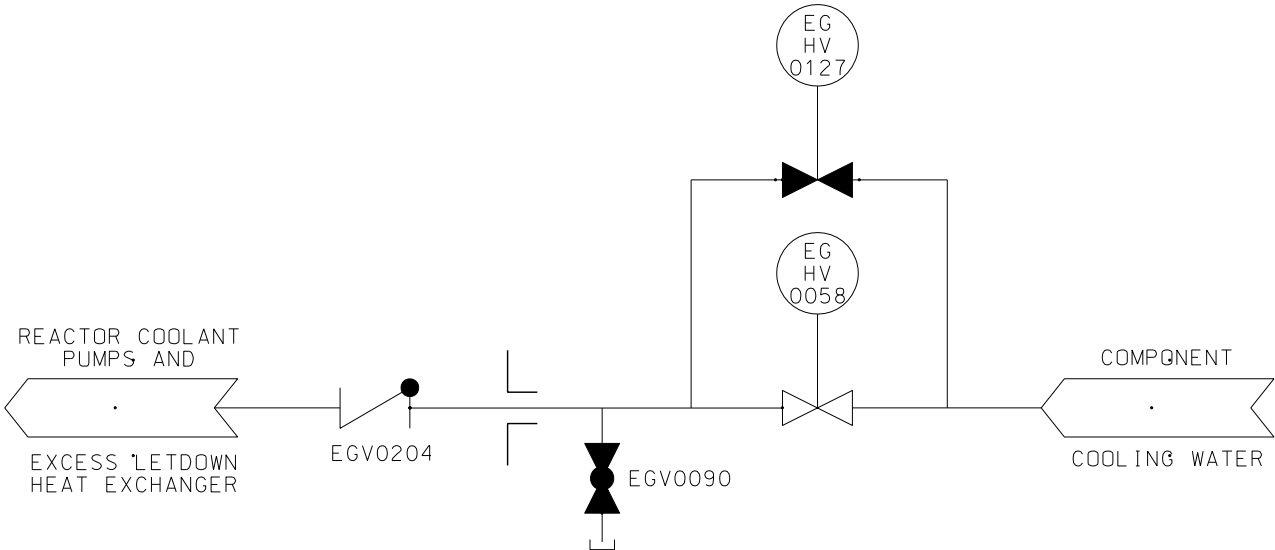
| VALVE NO. | LINE / VALVE SIZE, IN. | INSIDE / OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|---------------|-----|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT | |
| 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 |
| | | | | | | | | | | | | | | |
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|------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| 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: 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 9.2.2

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| CONTAINMENT PENETRATION NO. P-74 |
| DESCRIPTION: CCW TO REACTOR COOLANT PUMPS COMPONENT COOLING WATER SYSTEM |
| CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 58 OF 84 REV. 16 8/16 |

APPENDIX J REQUIREMENT

- TYPE
- A

☐
- B

☐
- C

☒
- NONE

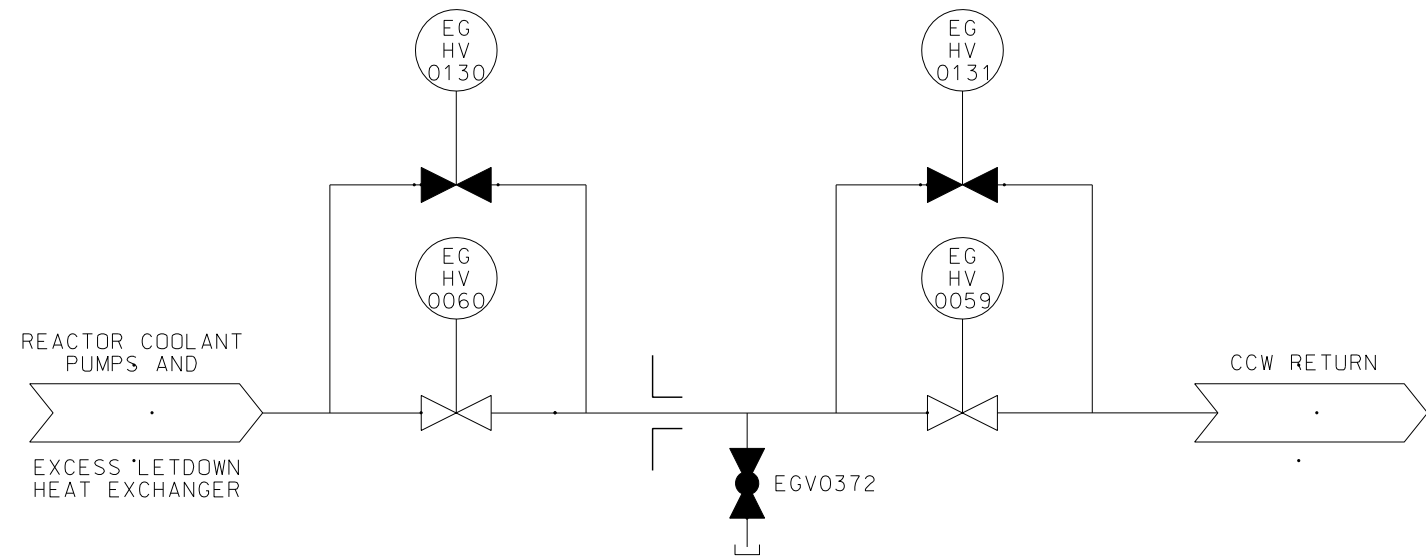
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| VALVE NO. | LINE / VALVE SIZE, IN. | INSIDE / OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|---------------|-----------|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT | |
| EGHV0060 | 12/12 | INSIDE | OUT | GATE | MOTOR | 4 | CIS-B | NONE | 30 | OPEN | OPEN | AS IS | PRIMARY | SECONDARY |
| 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 |
| | | | | | | | | | | | | | | |
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|---------------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| 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.



APPENDIX J REQUIREMENT

TYPE A ☐

 B ☐

 C ☒

 NONE ☐

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|----------------------------------|
| REFERENCE SECTION 9.2.2 |
| CONTAINMENT PENETRATION NO. P-75 |
| DESCRIPTION: |
| CCW RETURN |
| COMPONENT COOLING WATER SYSTEM |
| CONTAINMENT PENETRATIONS |
| FIGURE 6.2.4-1 |
| PAGE 59 OF 84 |
| REV. 15 3/08 |

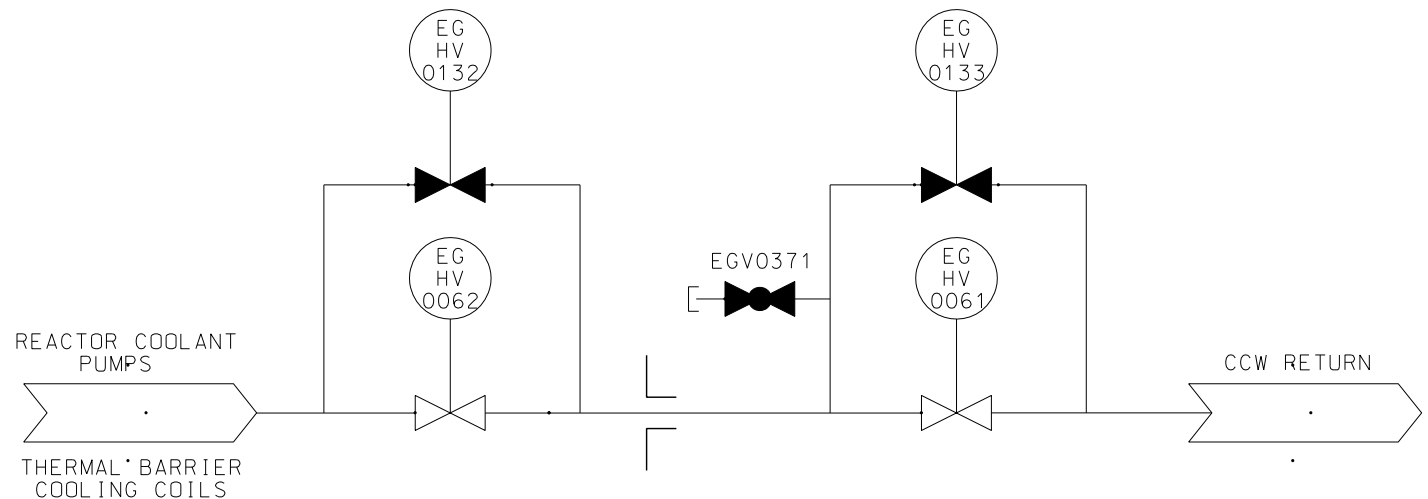
| VALVE NO. | LINE / VALVE SIZE, IN. | INSIDE / OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|---------------|-----|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT | |
| 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 |
| | | | | | | | | | | | | | | |
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|--------------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| 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: 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 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
 PAGE 60 OF 84
 REV. 16 8/16

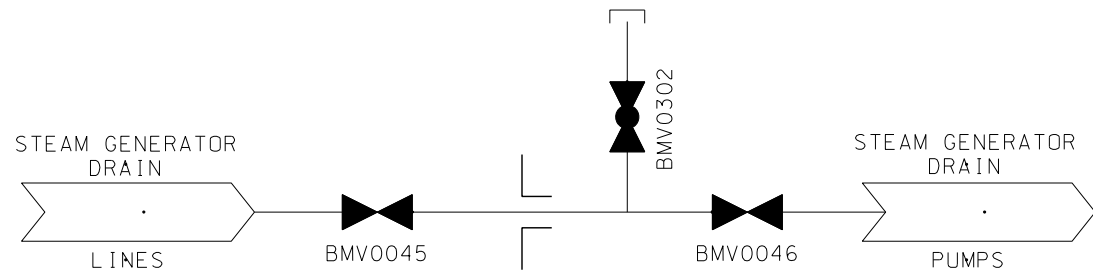
| VALVE NO. | LINE / VALVE SIZE, IN. | INSIDE / OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|-----------------------|-------------------------|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT PRIMARY | POST ACCIDENT 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 |
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|------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| 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 PAGE 61 OF 84 REV. 17 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 |
| 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 |
| EJVO154 | 3/4 / 3/4 | INSIDE | N/A | GLOBE | MANUAL | N/A | N/A | N/A | N/A | CLOSED | CLOSED | N/A | CLOSED | N/A |
| | | | | | | | | | | | | | | |
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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: 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.

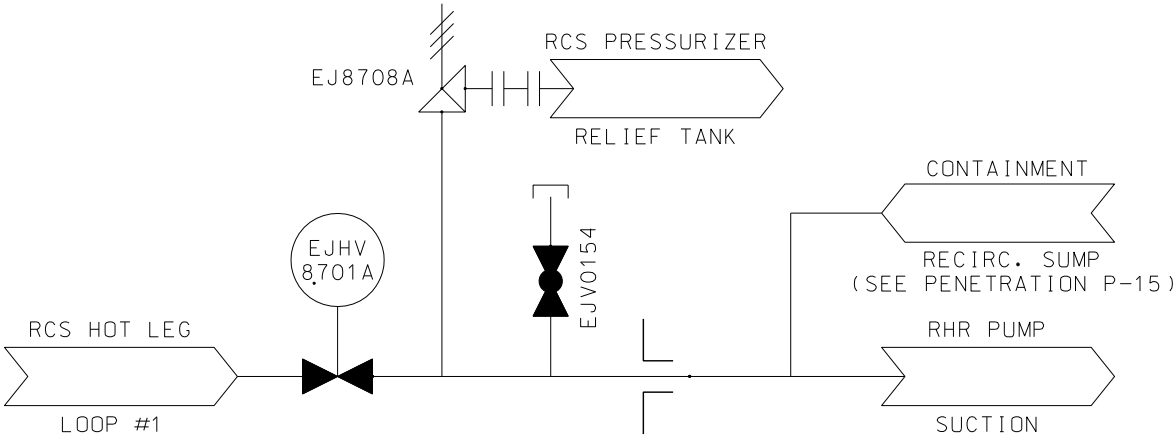
APPENDIX J REQUIREMENT

TYPE A ☒

B ☐

C ☐

NONE ☐



REFERENCE SECTIONS 5.4.7 AND 6.3

CONTAINMENT PENETRATION NO. P-79

DESCRIPTION:
RHR SHUTDOWN LINES
RESIDUAL HEAT REMOVAL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 62 OF 84
REV. 13 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 | POST ACCIDENT 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 |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

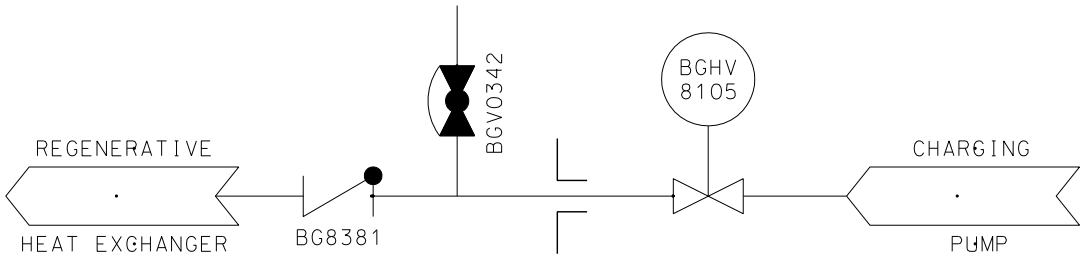
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 17.6 FT.

APPLICABLE GDC NO. 55

GENERAL COMMENTS:

NONE

NOTE 1: 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 9.3.4

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 63 OF 84
REV. 15 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 |
| EJHV8809A | 10/10 | OUTSIDE | IN | GATE | MOTOR | 1 | NONE | REM/MAN | 15 | OPEN | OPEN | AS IS | OPEN | CLOSED |
| EJVO054 | 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 |
| EJVO134 | 3/4 / 3/4 | INSIDE | N/A | GLOBE | MANUAL | N/A | N/A | N/A | N/A | CLOSED | CLOSED | N/A | CLOSED | N/A |
| EJVO136 | 3/4 / 3/4 | INSIDE | N/A | GLOBE | MANUAL | N/A | N/A | N/A | N/A | CLOSED | CLOSED | N/A | CLOSED | N/A |
| EJVO132 | 1/1 | INSIDE | N/A | GLOBE | MANUAL | N/A | N/A | N/A | N/A | CLOSED | CLOSED | N/A | CLOSED | N/A |
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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:

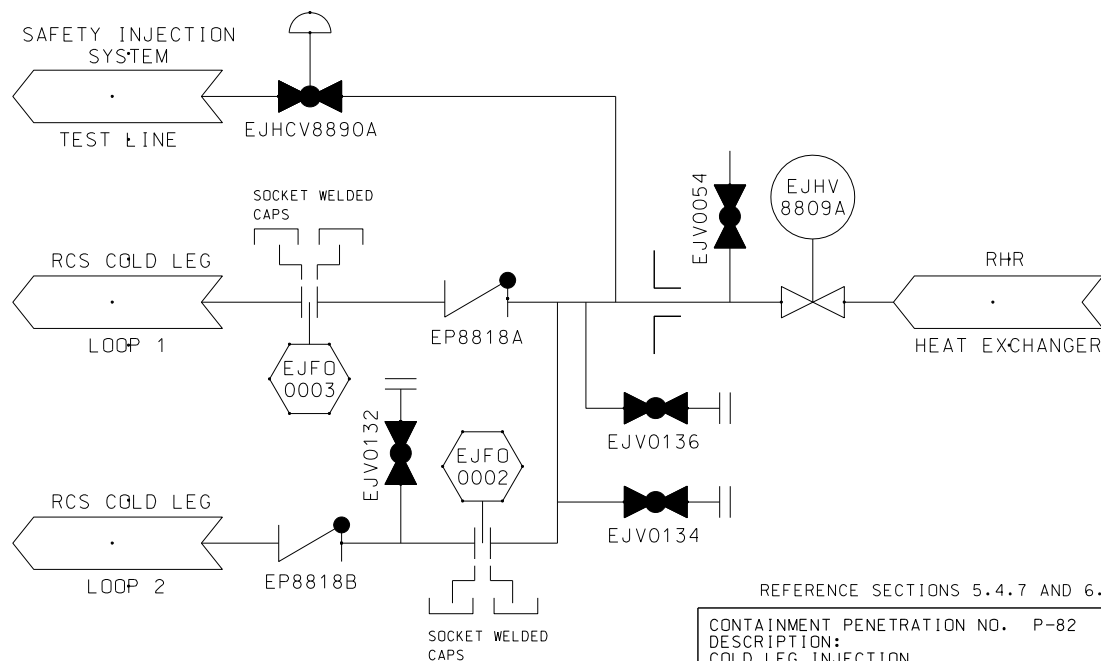
THIS PENETRATION IS ASSOCIATED WITH THE HIGH PRESSURE COOLANT INJECTION SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE IS PROVIDED FOR EACH BRANCH LINE INSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR 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
PAGE 64 OF 84
REV. 17 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 |
| 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 |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 15.6 FT

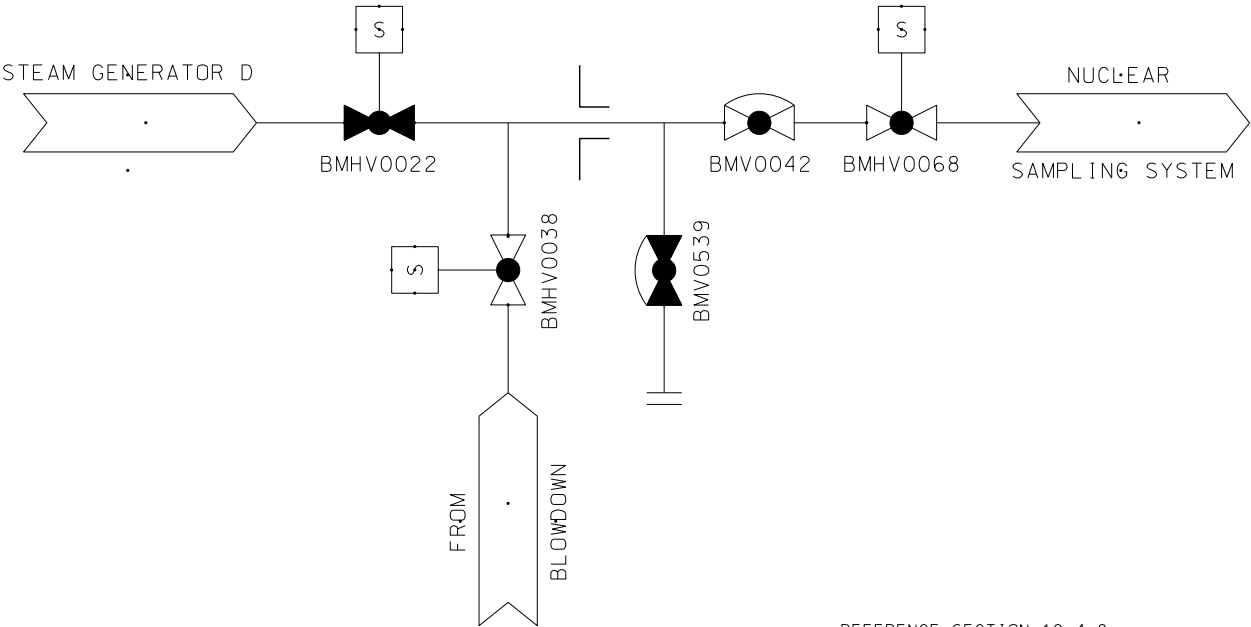
APPLICABLE GDC NO. NONE

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.



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
 PAGE 65 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 |
| 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 |
| | | | | | | | | | | | | | | |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 15.9 FT

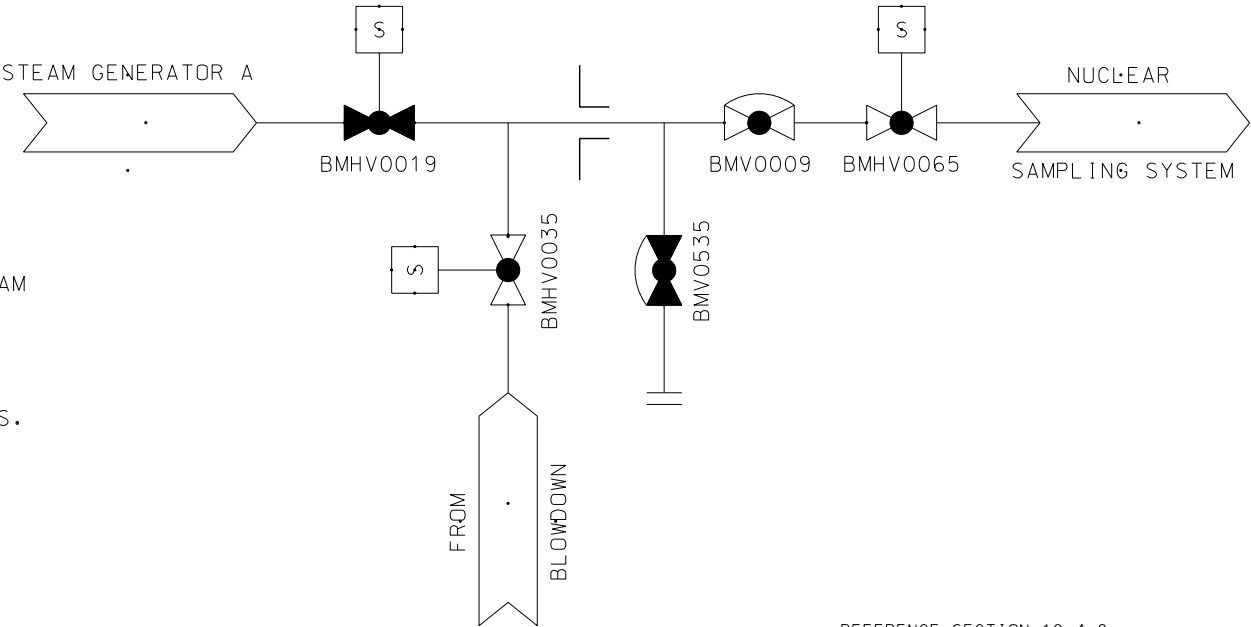
APPLICABLE GDC NO. NONE

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: 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-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 ☐

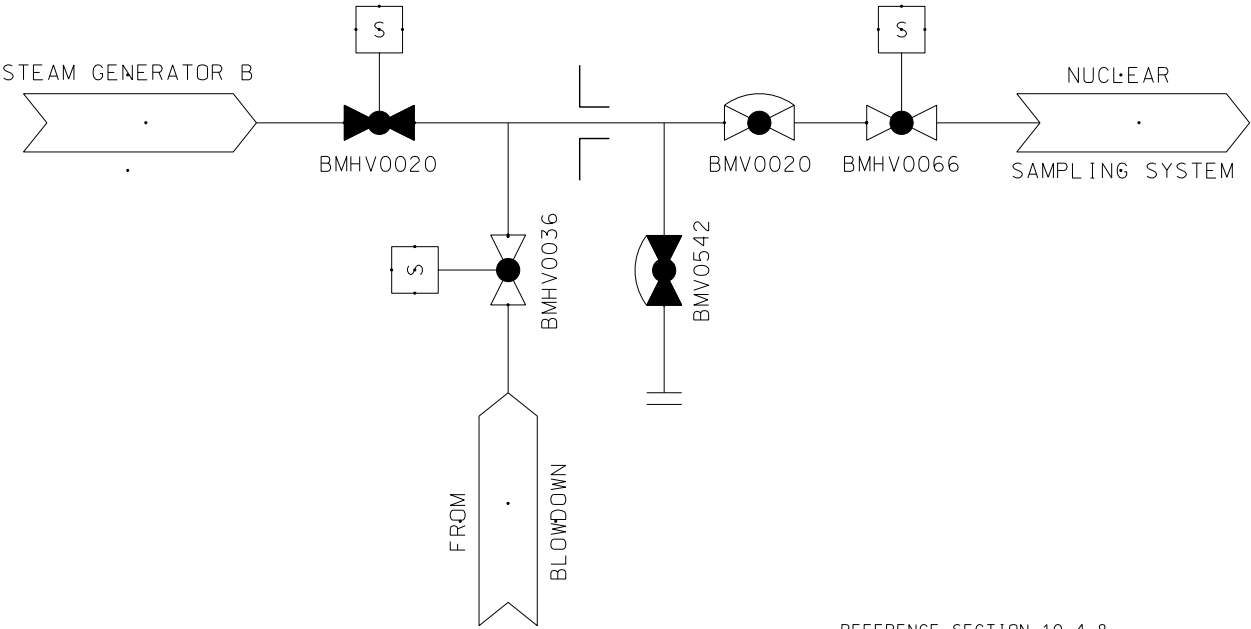
| VALVE NO. | LINE/ VALVE SIZE, IN. | INSIDE/ OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|-----------------------|-----------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|---------------|-----------|
| | | | | | | | | | | 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 |
| | | | | | | | | | | | | | | |
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|------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| 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: 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-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 <input checked="" type="checkbox"/> |
| | B <input type="checkbox"/> |
| | C <input type="checkbox"/> |
| NONE | <input type="checkbox"/> |

| 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 |
| 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 |
| | | | | | | | | | | | | | | |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: WATER

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 15.9 FT

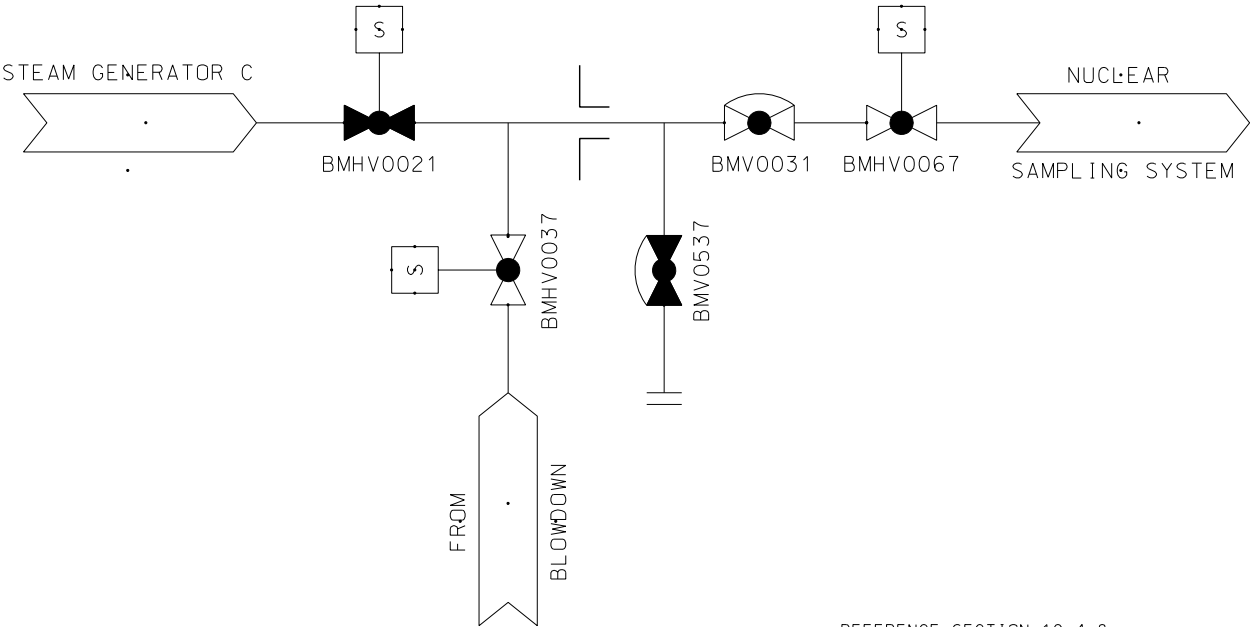
APPLICABLE GDC NO. NONE

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: 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-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 | POST ACCIDENT 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:

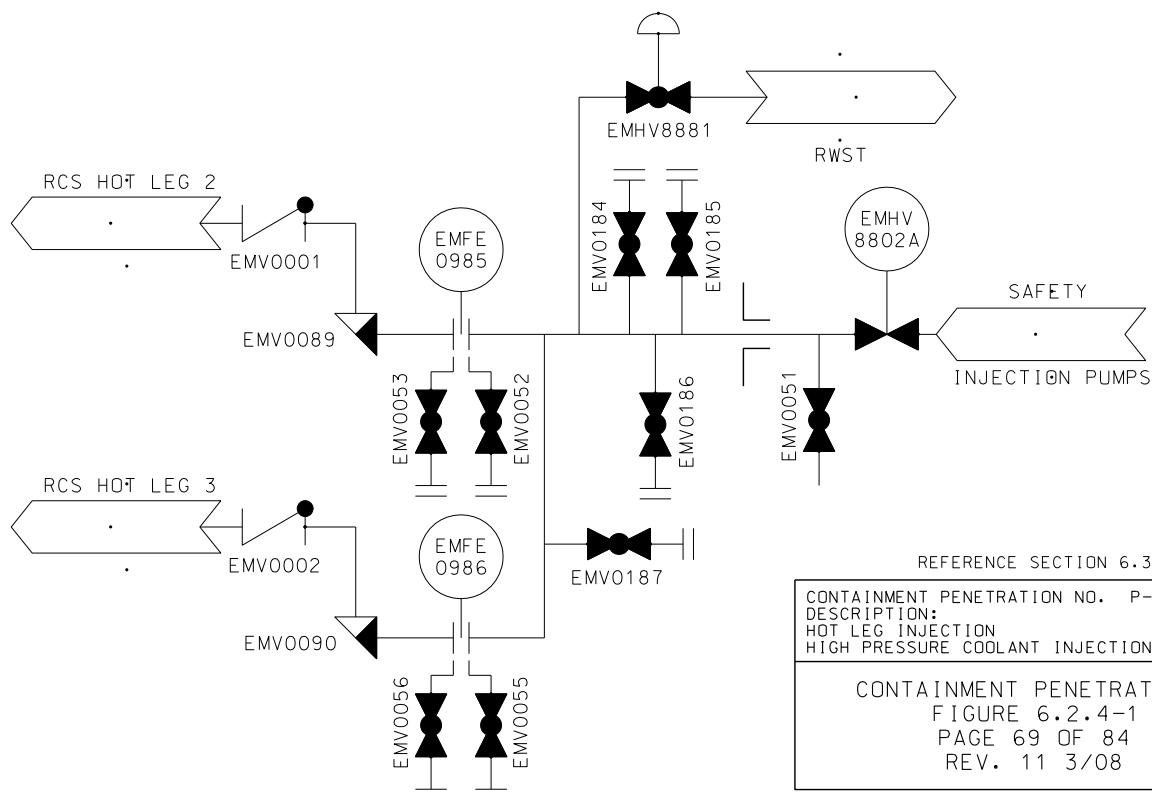
THIS PENETRATION IS ASSOCIATED WITH THE HIGH PRESSURE COOLANT INJECTION SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE IS PROVIDED FOR EACH BRANCH LINE INSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR 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: 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-87
DESCRIPTION:
HOT LEG INJECTION
HIGH PRESSURE COOLANT INJECTION SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 69 OF 84
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 |
| 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 |
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| ENGINEERED SAFETY FEATURE SYSTEM | | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> | | | | | | | | | | | | |
| FLUID CONTAINED: | | WATER | | | | | | | | | | | | |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: | | N/A | | | | | | | | | | | | |
| APPLICABLE GDC NO. | | 55 | | | | | | | | | | | | |

GENERAL COMMENTS:

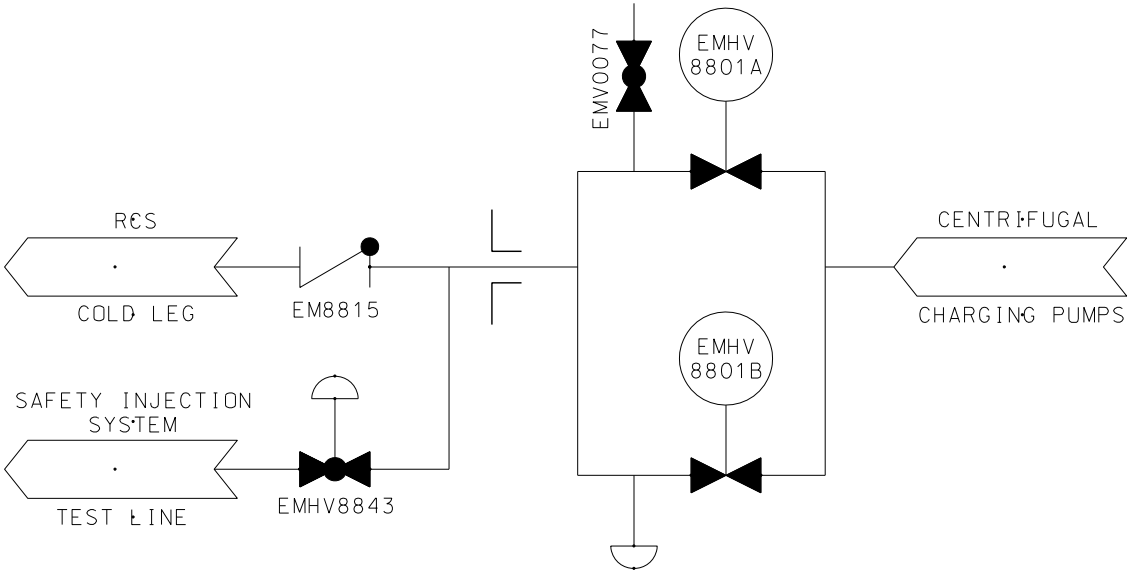
THIS PENETRATION IS ASSOCIATED WITH THE HIGH PRESSURE COOLANT INJECTION SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE AND A REMOTE-MANUAL ISOLATION VALVE ARE PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR PASSIVE FAILURE CAN BE ACCOMMODATED SINCE THE SYSTEM IS 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: 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-88
DESCRIPTION:
BORON INJECTION TO COLD LEGS
HIGH PRESSURE COOLANT INJECTION SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 70 OF 84
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.) | 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 |
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| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: | WATER |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: | 20.4 FT |
| APPLICABLE GDC NO. | 56 |

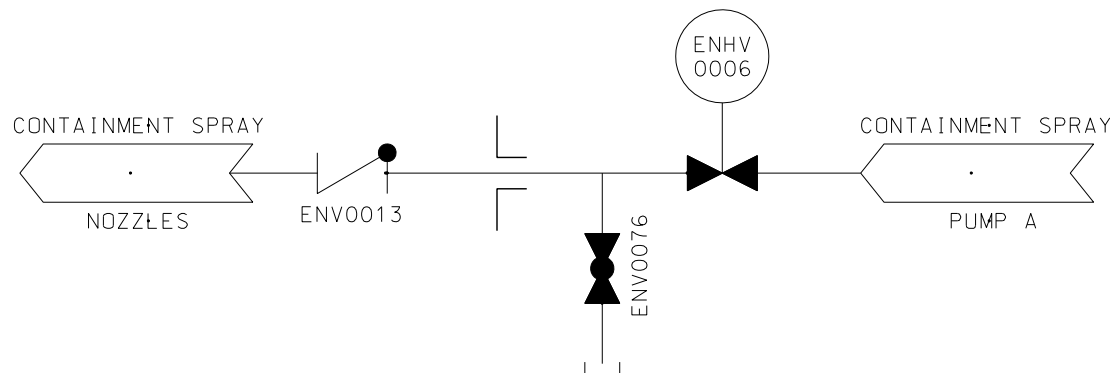
GENERAL COMMENTS:
THIS PENETRATION IS ASSOCIATED WITH THE CONTAINMENT SPRAY SYSTEM, WHICH IS REQUIRED TO MITIGATE THE CONSEQUENCES OF A LOCA. A CHECK VALVE IS PROVIDED OUTSIDE THE CONTAINMENT, AND A REMOTE-MANUAL ISOLATION VALVE IS PROVIDED OUTSIDE THE CONTAINMENT. A SINGLE ACTIVE OR PASSIVE FAILURE 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 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 ☐



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|-----------------------------------------------------------------------------|
| REFERENCE SECTION 6.2.2 |
| CONTAINMENT PENETRATION NO. P-89 |
| DESCRIPTION: CONTAINMENT SPRAY CONTAINMENT SPRAY SYSTEM |
| CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 71 OF 84 REV. 12 6/08 |

| 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 | POST ACCIDENT 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 |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

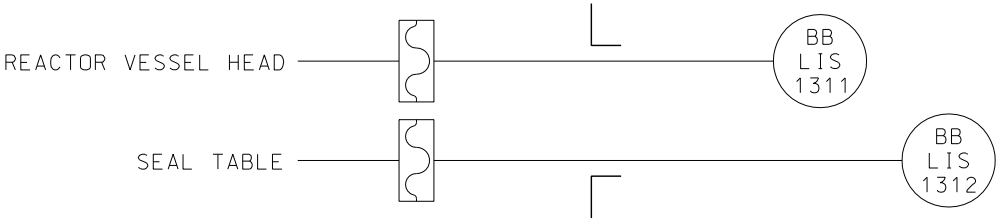
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: N/A

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: 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 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
REV. 12 8/16

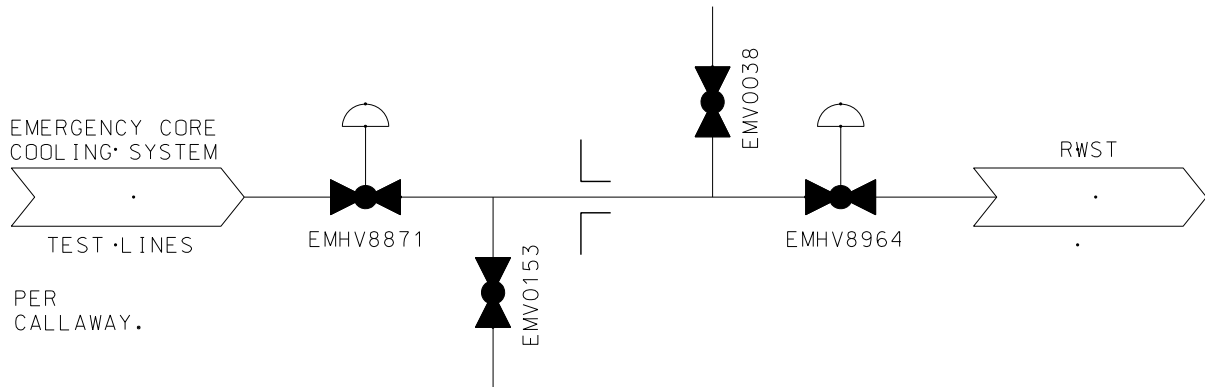
| VALVE NO. | LINE / VALVE SIZE, IN. | INSIDE / OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|-----------------------|-------------------------|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT PRIMARY | POST ACCIDENT 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 |
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| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: WATER | |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 8.4 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 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 | |
| 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 |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: WATER

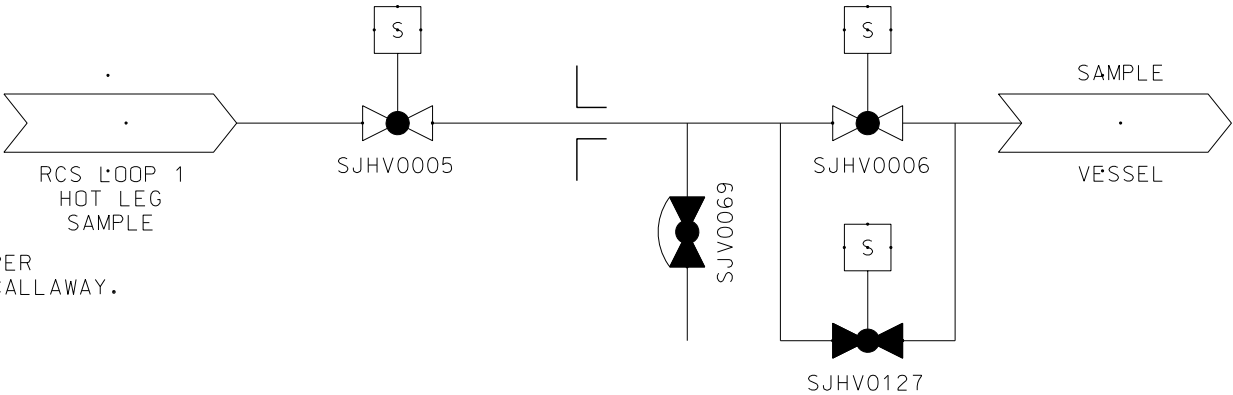
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 8.4 FT.

APPLICABLE GDC NO. 55

GENERAL COMMENTS:

NONE

NOTE 1: 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 9.3.2

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 74 OF 84
REV. 13 8/16

APPENDIX J REQUIREMENT

TYPE A ☐

B ☐

C ☒

NONE ☐

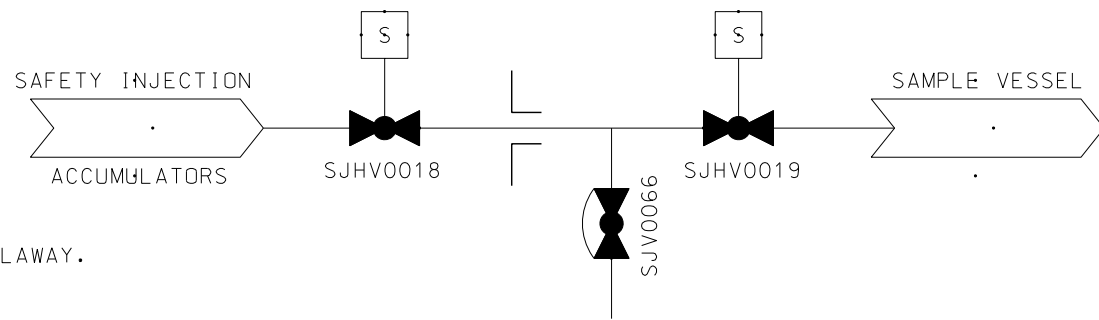
| VALVE NO. | LINE / VALVE SIZE, IN. | INSIDE / OUTSIDE CONT. | NORMAL FLOW DIRECTION | VALVE TYPE | VALVE OPERATOR | POWER SOURCE | PRIMARY ACTUATION SIGNAL | SECONDARY ACTUATION SIGNAL | MAXIMUM CLOSURE TIME (SEC.) (NOTE 1) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|--------------------------------------|----------------|----------|---------------|-----------------------|-------------------------|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT PRIMARY | POST ACCIDENT SECONDARY |
| 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 |
| SJVV0066 | 1/1 | OUTSIDE | N/A | GLOBE | MANUAL | N/A | N/A | N/A | N/A | CLOSED | CLOSED | N/A | CLOSED | N/A |
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| ENGINEERED SAFETY FEATURE SYSTEM | YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |
| FLUID CONTAINED: WATER | |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 8.6 FT. | |
| APPLICABLE GDC NO. | 55 |

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 9.3.2

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|-----------------------------------------------------------------------------|
| CONTAINMENT PENETRATION NO. P-95 |
| DESCRIPTION: ACCUMULATOR SAMPLING NUCLEAR SAMPLING SYSTEM |
| CONTAINMENT PENETRATIONS FIGURE 6.2.4-1 PAGE 75 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 |
| 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 |
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| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: | AIR |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: | 4.3 FT. |
| APPLICABLE GDC NO. | 56 |

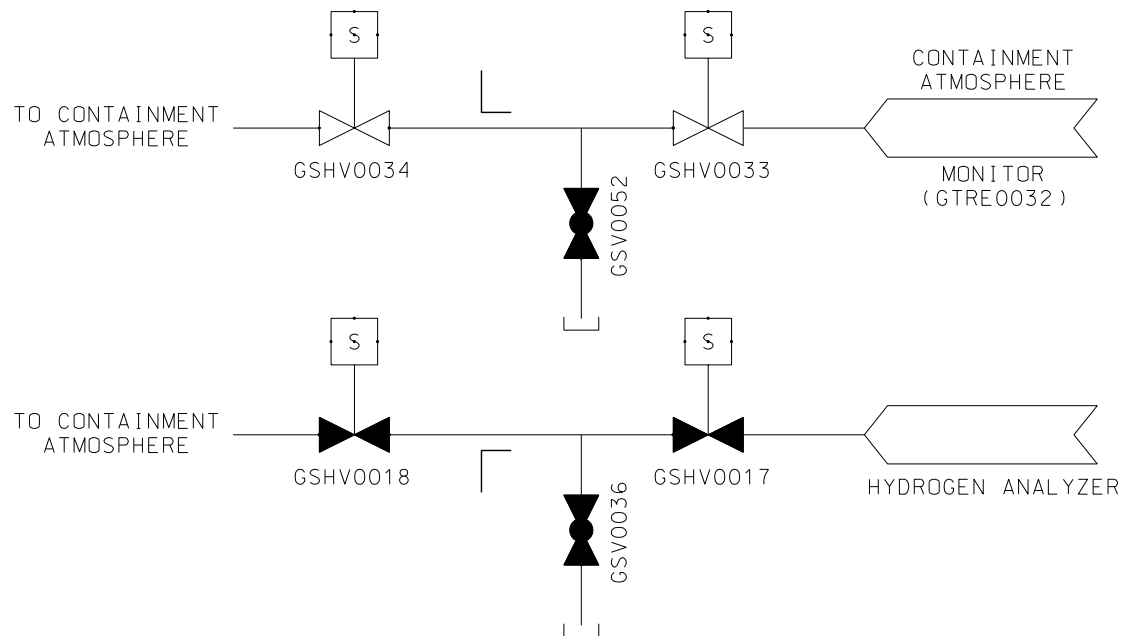
GENERAL COMMENTS:

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: 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

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| TYPE | A <input type="checkbox"/> |
| | B <input type="checkbox"/> |
| | C <input checked="" type="checkbox"/> |
| NONE | <input type="checkbox"/> |



REFERENCE SECTION 6.2.5

| |
|-------------------------------------|
| CONTAINMENT PENETRATION NO. P-97 |
| DESCRIPTION: |
| H ₂ SAMPLE RETURN |
| CONTAINMENT HYDROGEN CONTROL SYSTEM |
| CONTAINMENT PENETRATIONS |
| FIGURE 6.2.4-1 |
| PAGE 76 OF 84 |
| REV. 15 9/14 |

| 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 |
| 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 |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☐ NO ☒

FLUID CONTAINED: AIR

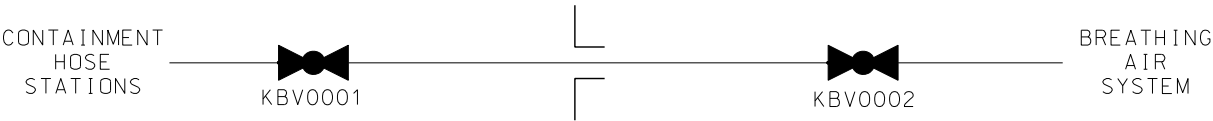
LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 2.8 FT.

APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NONE

NOTE 1: 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 9.5.1

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 77 OF 84
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 |
| 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

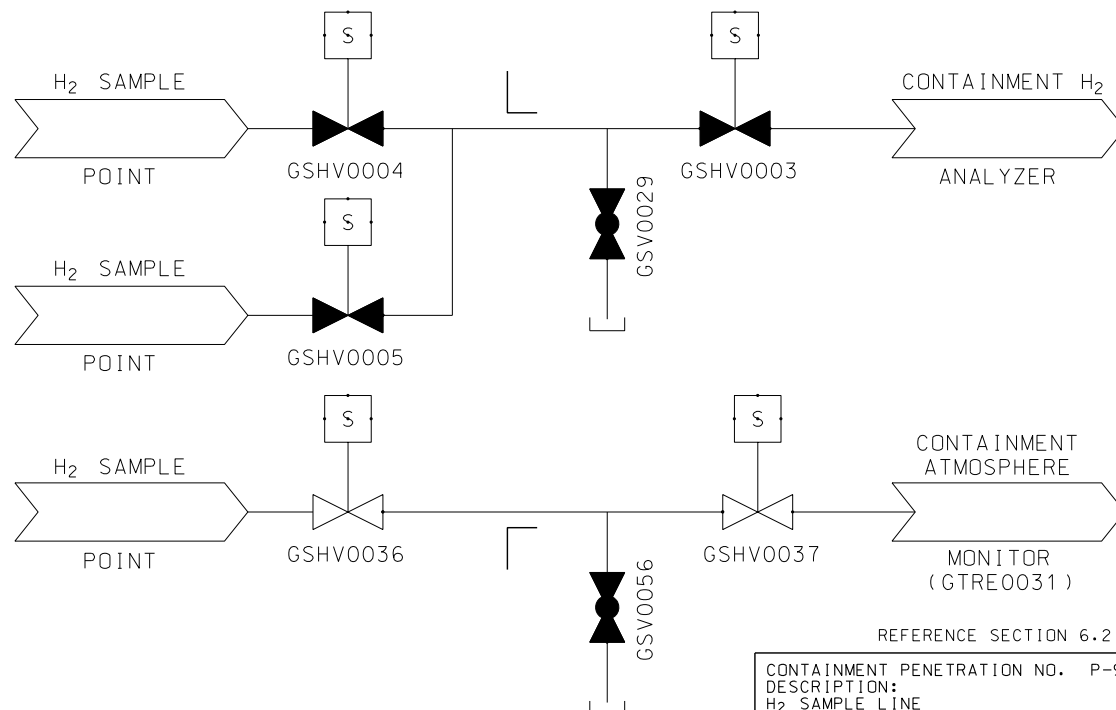
GENERAL COMMENTS:

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: 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 6.2

CONTAINMENT PENETRATION NO. P-99
 DESCRIPTION:
 H₂ SAMPLE LINE
 CONTAINMENT HYDROGEN CONTROL SYSTEM

CONTAINMENT PENETRATIONS
 FIGURE 6.2.4-1
 PAGE 78 OF 84
 REV. 15 9/14

| 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 |
| | | | | | | | | | | | | | | |
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ENGINEERED SAFETY
FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: AIR

LENGTH OF PIPING TO OUTERMOST
ISOLATION VALVE: 11.9 FT

APPLICABLE
GDC NO. 56

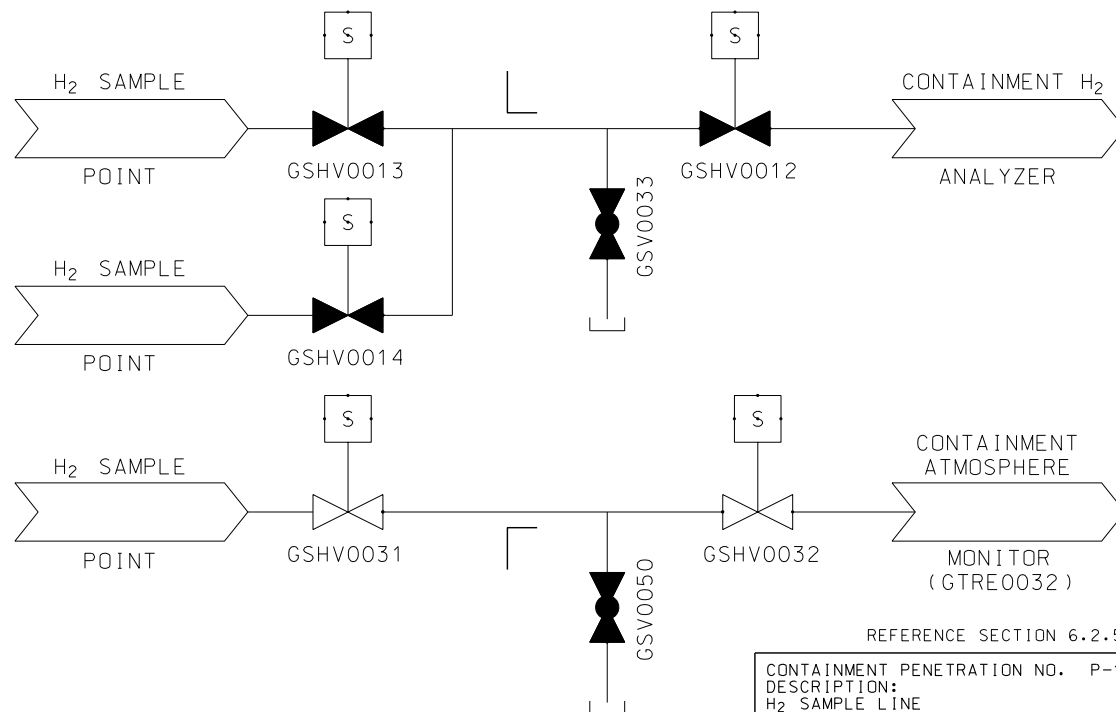
GENERAL COMMENTS:

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: 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 6.2.5

CONTAINMENT PENETRATION NO. P-101
DESCRIPTION:
H₂ SAMPLE LINE
CONTAINMENT HYDROGEN CONTROL SYSTEM

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 79 OF 84
REV. 16 9/14

| 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 |
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|------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: | WATER |
| LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: | N/A |
| APPLICABLE GDC NO. | 56 |

GENERAL COMMENTS:

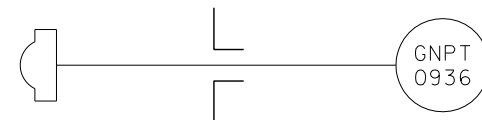
GNPT0936
THERE ARE FOUR INSTRUMENT LINES WHICH PENETRATE THE CONTAINMENT AND WHICH ARE REQUIRED TO REMAIN FUNCTIONAL FOLLOWING A LOCA OR STEAM BREAK. THESE LINES SENSE THE PRESSURE OF CONTAINMENT ATMOSPHERE ON THE INSIDE AND ARE CONNECTED TO PRESSURE TRANSMITTERS ON THE OUTSIDE. SIGNALS FROM THESE TRANSMITTERS 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.

APPENDIX J REQUIREMENT

TYPE A ☒ B ☐ C ☐ NONE ☐

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 TO 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: 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.



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|----------------------------------------------------------------------------------------------------------------------|
| 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 PAGE 80 OF 84 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 |
| 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 |
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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 ☒

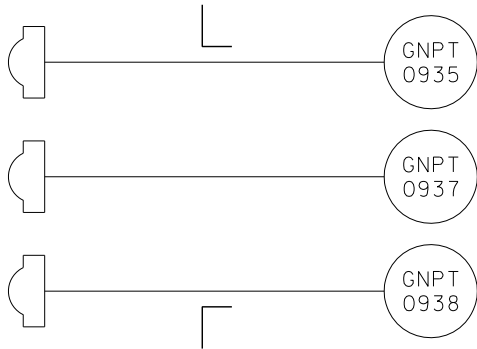
B ☐

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
PAGE 81 OF 84
REV. 15 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 | |
| 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 |
| | | | | | | | | | | | | | | |
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ENGINEERED SAFETY FEATURE SYSTEM YES ☒ NO ☐

FLUID CONTAINED: AIR

LENGTH OF PIPING TO OUTERMOST ISOLATION VALVE: 6.3 FT.

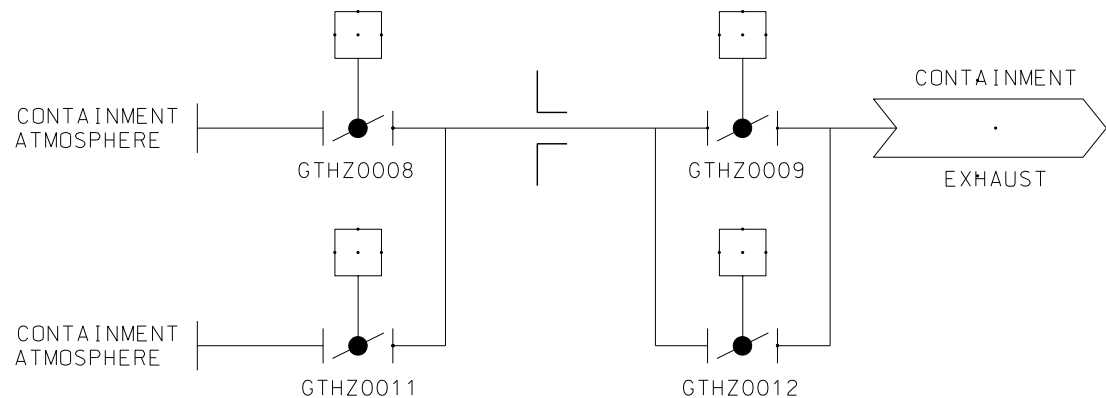
APPLICABLE GDC NO. 56

GENERAL COMMENTS:

NOTE 1

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

NOTE 1: 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 9.4

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

CONTAINMENT PENETRATIONS
FIGURE 6.2.4-1
PAGE 82 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.) | VALVE POSITION | | | | |
|-----------|------------------------|------------------------|-----------------------|------------|----------------|--------------|--------------------------|----------------------------|-----------------------------|----------------|----------|---------------|---------------|-----|
| | | | | | | | | | | NORMAL | SHUTDOWN | POWER FAILURE | POST ACCIDENT | |
| 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 |
| | | | | | | | | | | | | | | |
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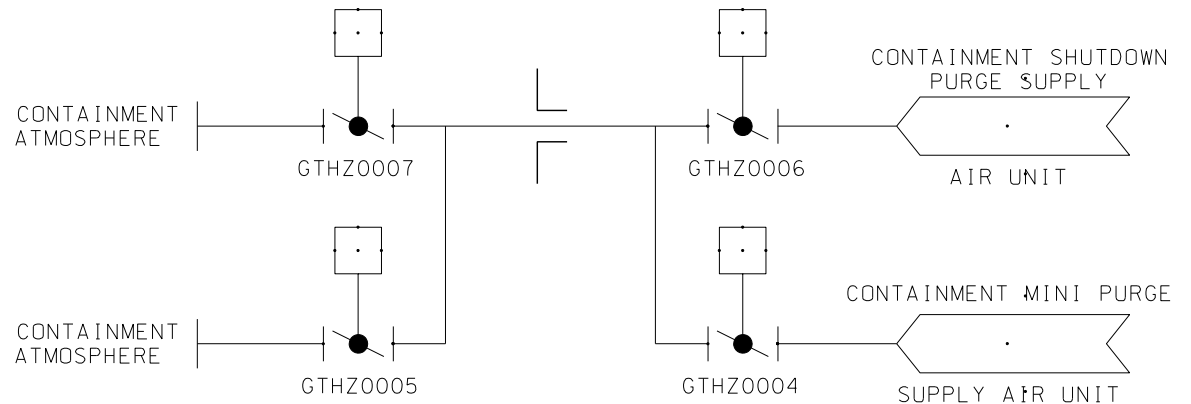
| | |
|------------------------------------------------|---------------------------------------------------------------------|
| ENGINEERED SAFETY FEATURE SYSTEM | YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| FLUID CONTAINED: | AIR |
| LENGTH OF PIPING TO OUTERMOST ISOLATION 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: 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 9.4

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 |
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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 ☒

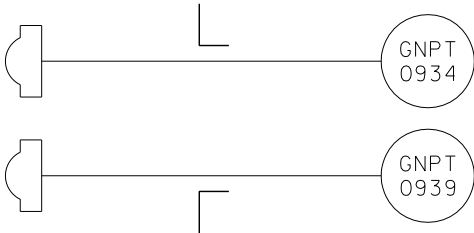
B ☐

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.

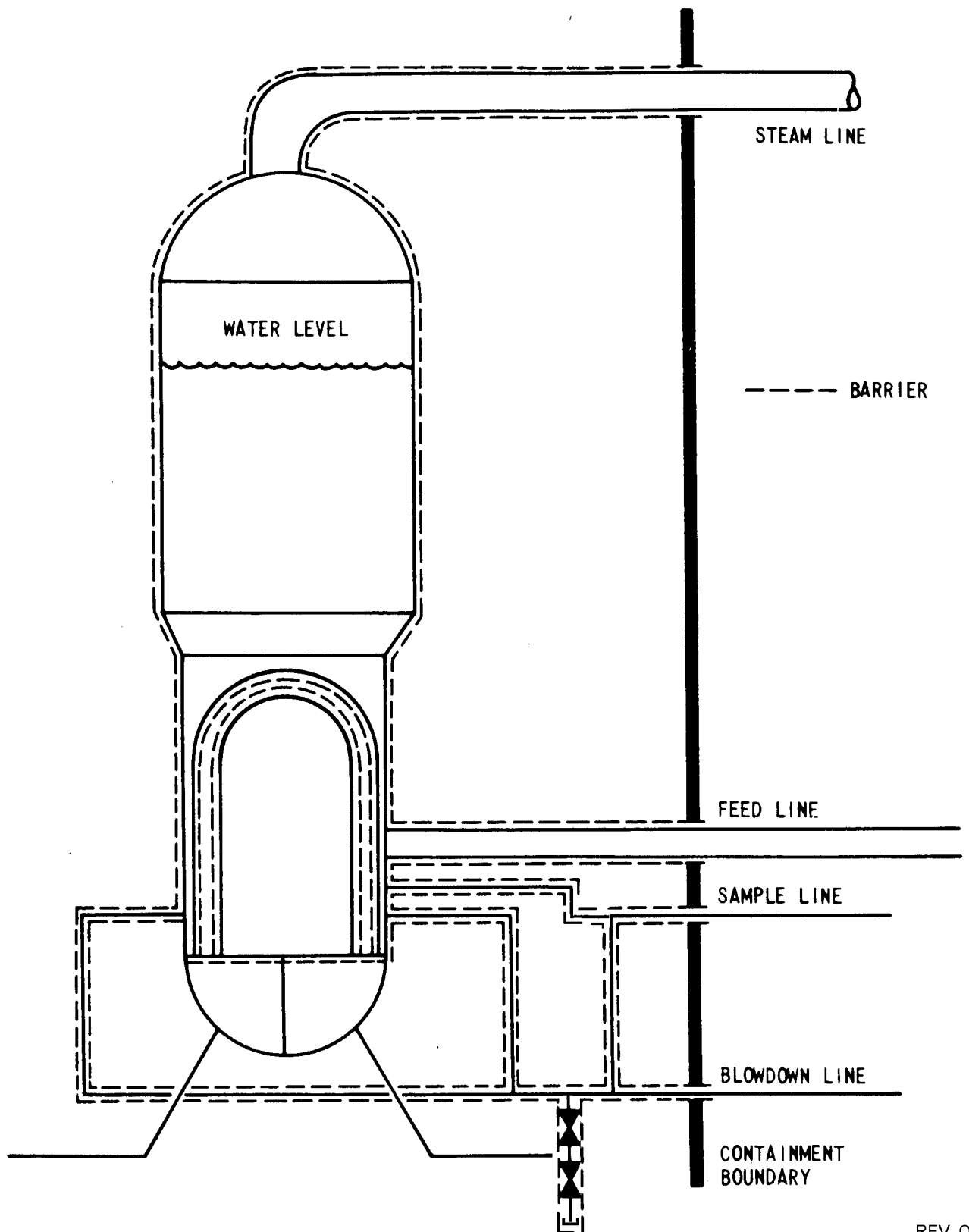
NOTE 1: MAXIMIUM CLOSURE TIMES SPECIFIED IN THIS FIGURE ARE NOMINAL DESIGN OR LICENSING-BASIS VALUES. PERFORMANCE-BASED VALVE OPERABILITY LIMITS FOR VALVE CLOSURE TIMES ARE SPECIFIED PER THE INSERVICE TESTING PROGRAM FOR CALLAWAY.



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
PAGE 84 OF 84
REV. 16 8/16



REV. OL-15
5/06

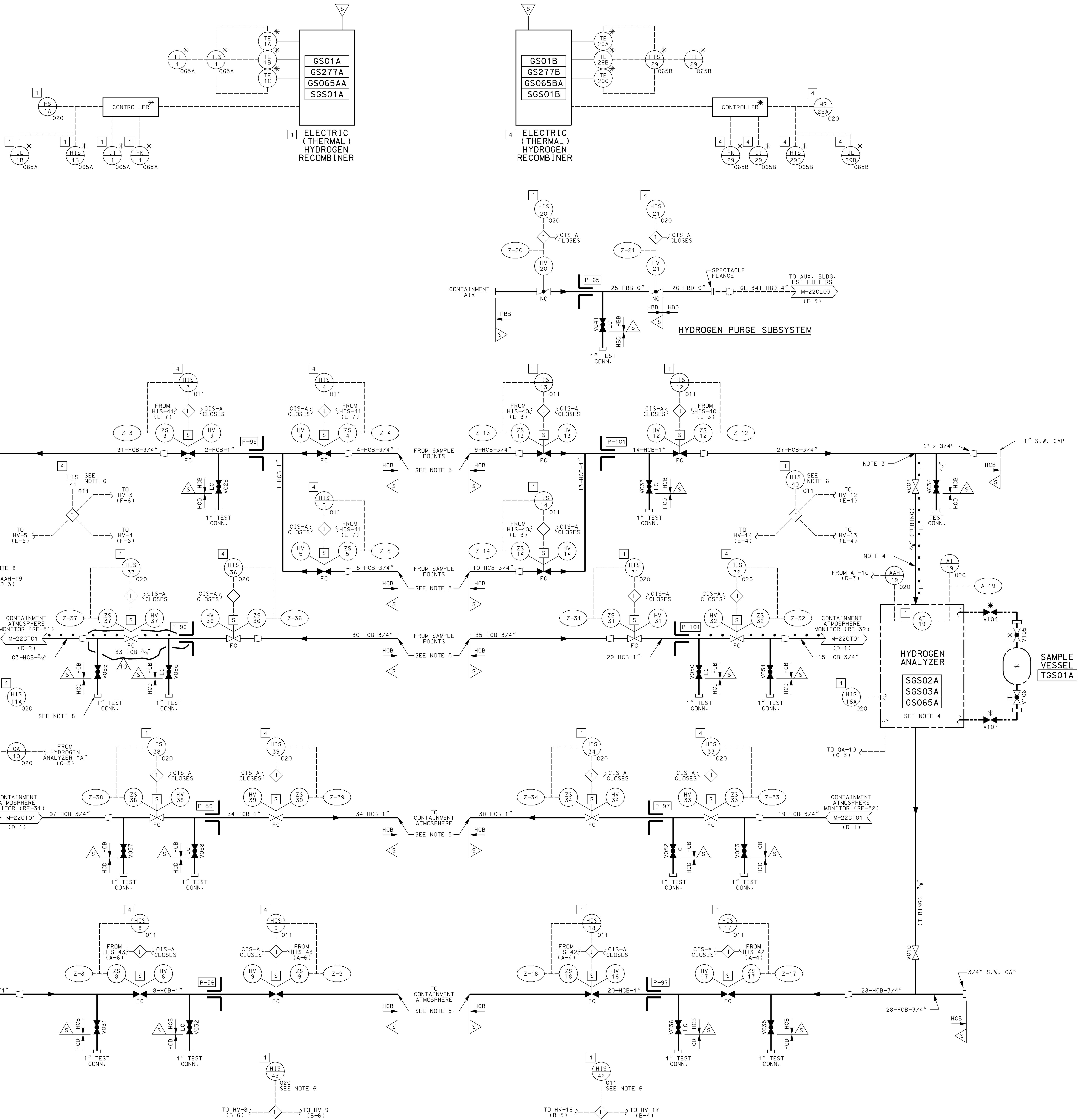
CALLAWAY PLANT

FIGURE 6.2.4-2

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

H
G
F
E
D
C
B
A

(0) 10S92Z-M

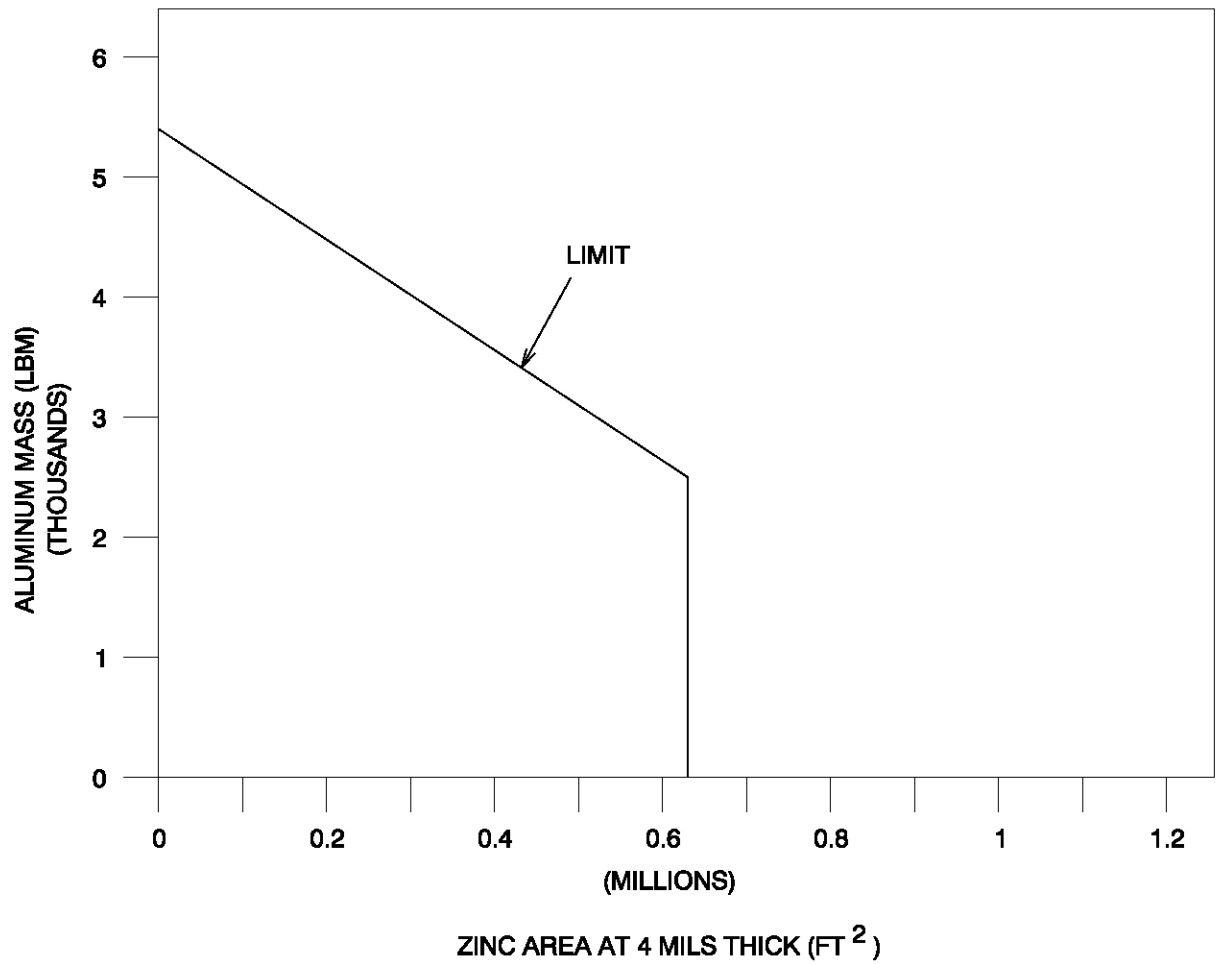


NOTES:

1. THE HYDROGEN PURGE MAKEUP SUPPLY AIR IS SUPPLIED BY THE COMPRESSED AIR SYS AND IS SHOWN ON P&ID M-22KAO1.
2. THE HYDROGEN MIXING FANS ARE SHOWN ON THE CONTAINMENT COOLING SYS P&ID M-22CNO1.
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 GS065A & GS065B ARE SUPPLIED BY HYDROGEN ANALYZER VENDOR (J-359). HYDROGEN RECOMBINER PANEL INSERTS GS065AA & GS065BA ARE SUPPLIED BY THE HYDROGEN RECOMBINER VENDOR (M-637). CONTROL PANEL INSERTS ARE MOUNTED ON HYDROGEN ANALYZER PANELS GS065A & GS065B.
8. THESE LOCATIONS MAY BE USED AS GRAB SAMPLE POINTS: SEE HTF-ZZ-03006.

AS-BUILT CLASS 1

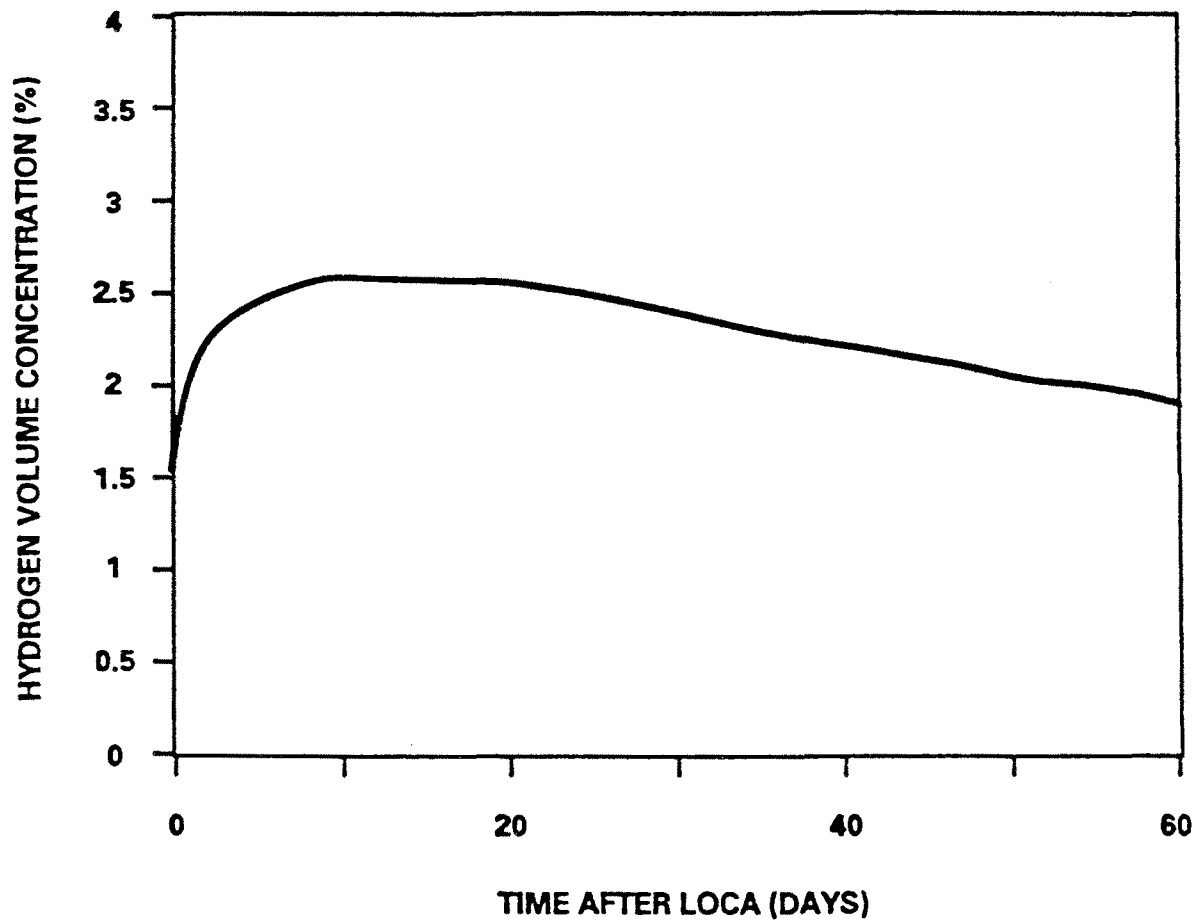
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|-----------------------------------------|-----|--------|---------|
| CHKD | N/A | (DATE) | |
| SUPV | N/A | (DATE) | |
| APPR | N/A | (DATE) | |
| UNION ELECTRIC COMPANY ST. LOUIS, MO | | | |
| M-22GS01 (Q) | | | REV. 10 |



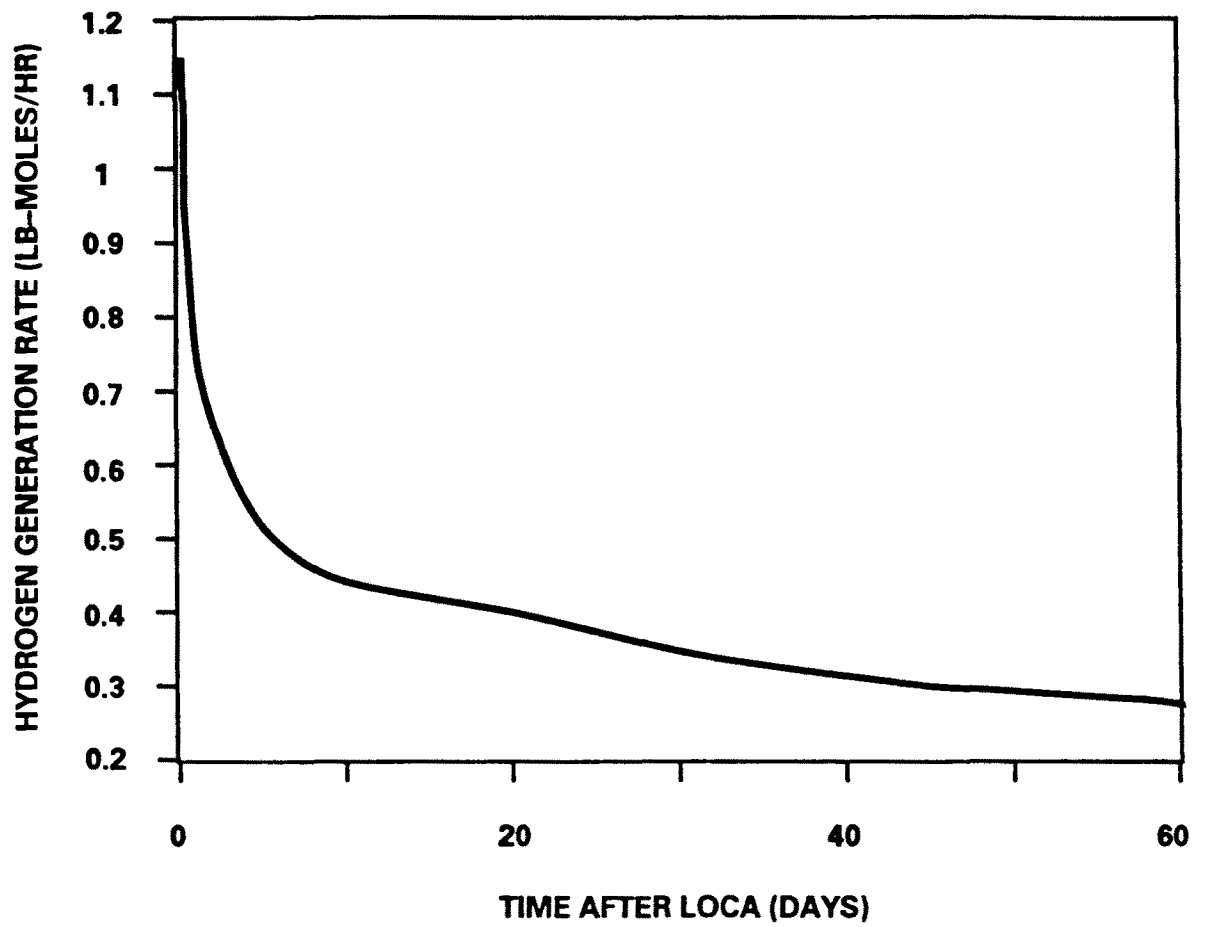
CALLAWAY PLANT

**FIGURE 6.2.5-2
REV OL-8 11/95**

**MAXIMUM ALLOWABLE
QUANTITIES OF ALUMINUM
AND ZINC IN CONTAINMENT**



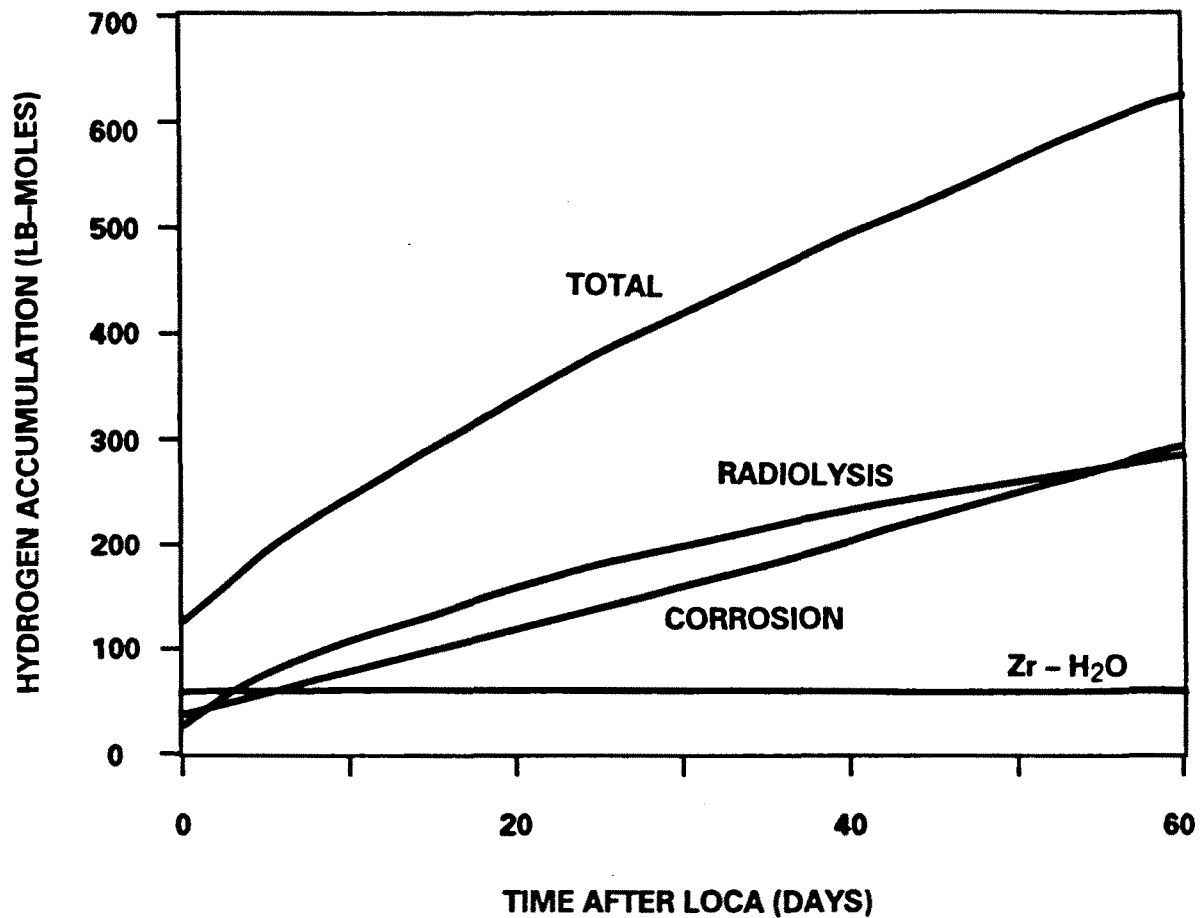
| |
|----------------------------------------------------------------------------------------------------|
| CALLAWAY PLANT |
| FIGURE 6.2.5-3 REV OL-3 6/89 |
| HYDROGEN VOLUME CONCENTRATION IN CONTAINMENT WITH ONE RECOMBINER OPERATING AT 1 DAY |



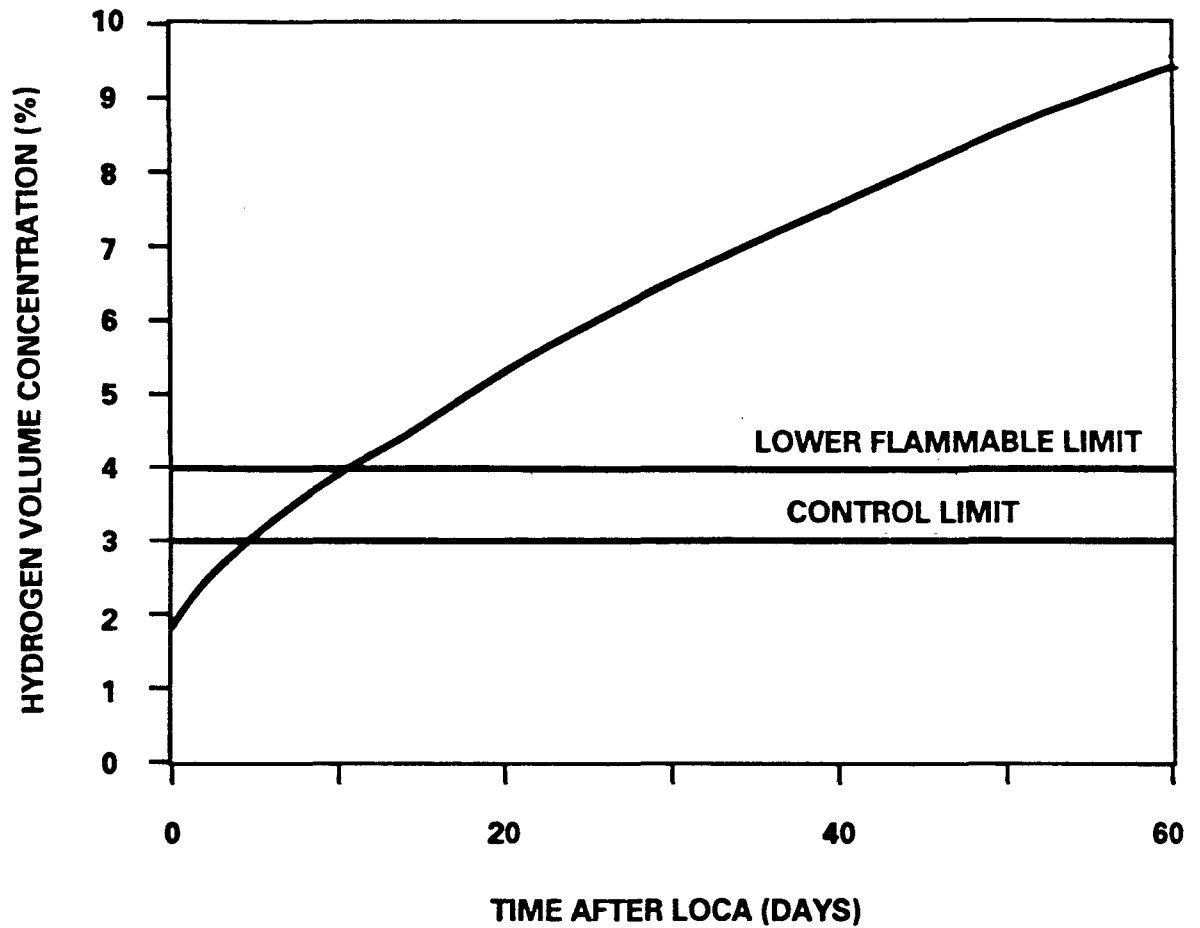
CALLAWAY PLANT

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

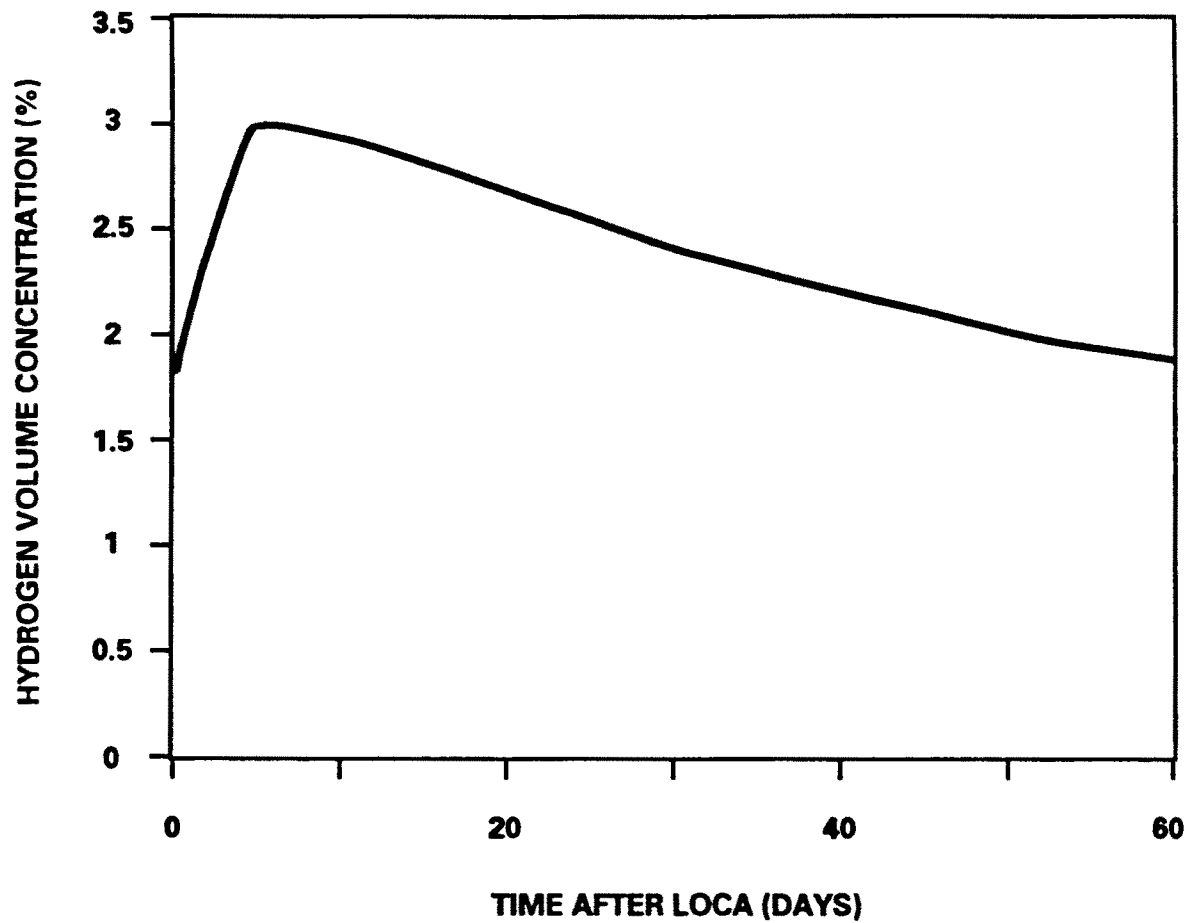
**HYDROGEN GENERATION IN
CONTAINMENT**



| | |
|-------------------------------------------------|------------------|
| CALLAWAY PLANT | |
| FIGURE 6.2.5-5 | REV 0L-3 6/89 |
| 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 | |

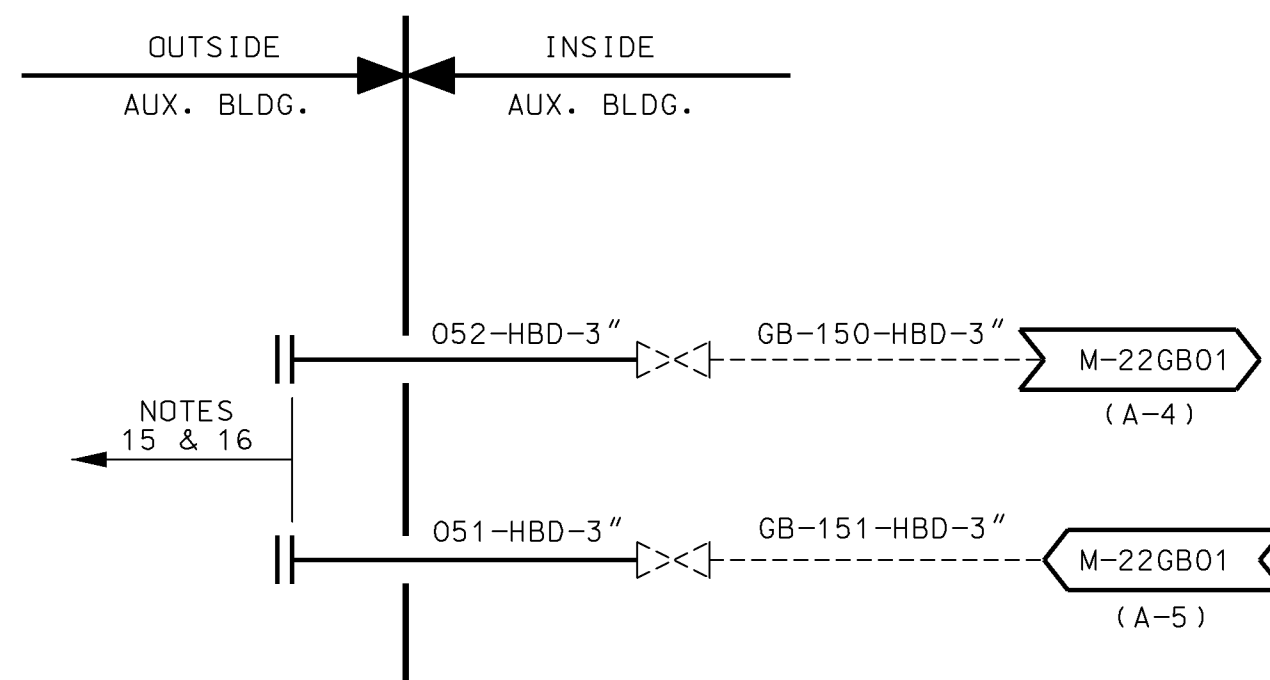


| |
|-----------------------------------------------------------------------------------------|
| CALLAWAY PLANT |
| FIGURE 6.2.5-7 REV 0L-3 6/89 |
| HYDROGEN VOLUME CONCENTRATION IN CONTAINMENT WITH PURGING AFTER 5.1 DAYS |

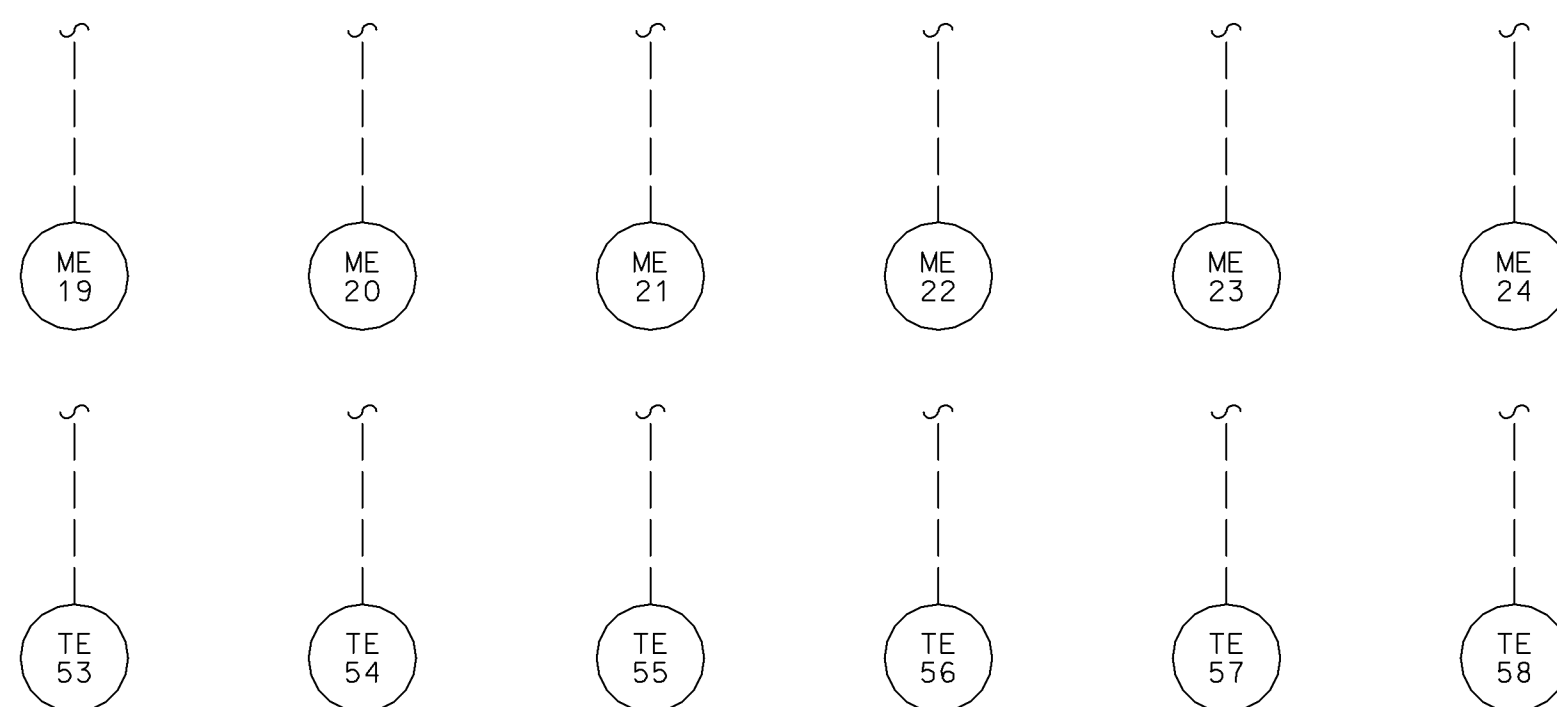
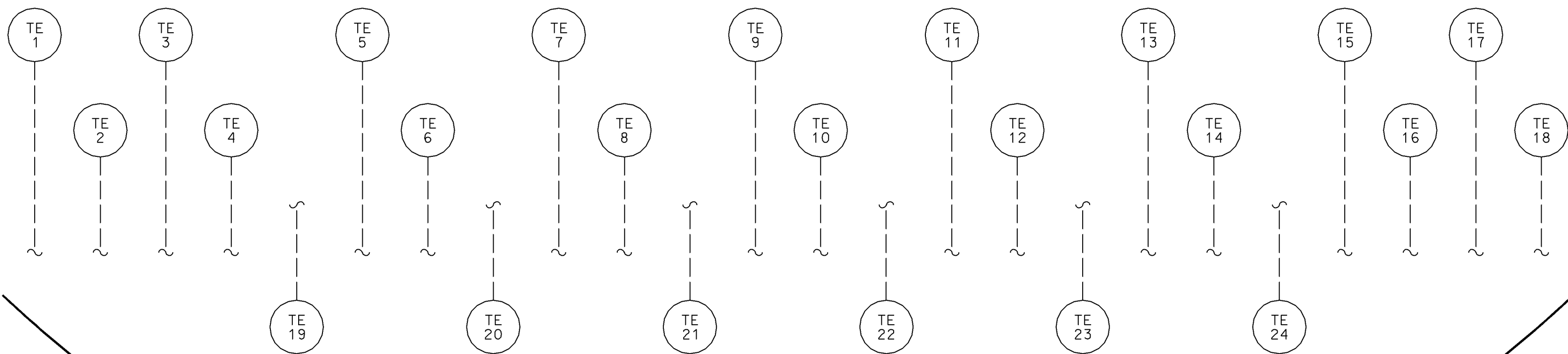
M-22GP01(Q)

| (A) | (B) |
|-------------|-----------|
| PENETRATION | VALVE NO. |
| P-36 | GPV0048 |
| P-50 | GPV0049 |
| P-68 | GPV0050 |

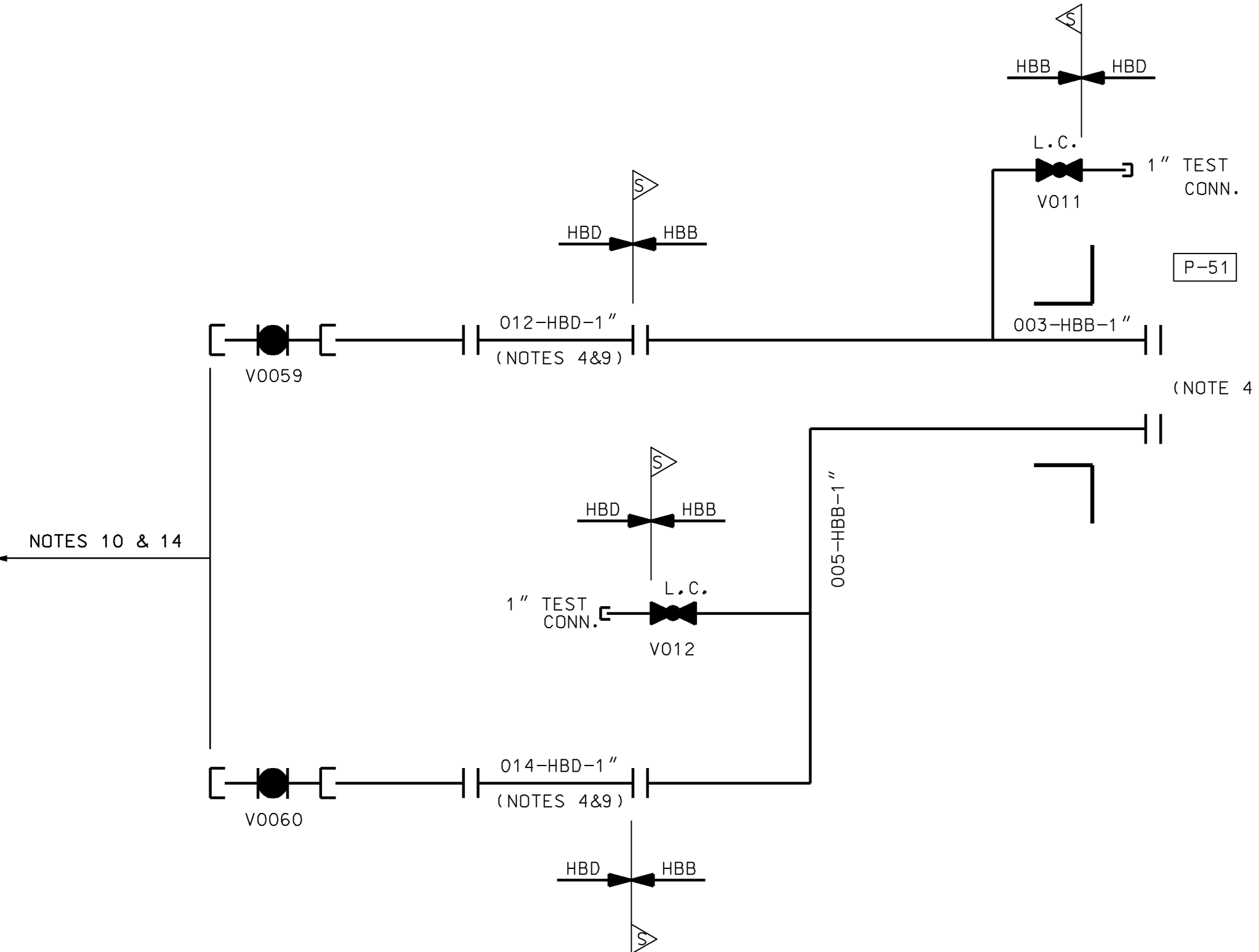
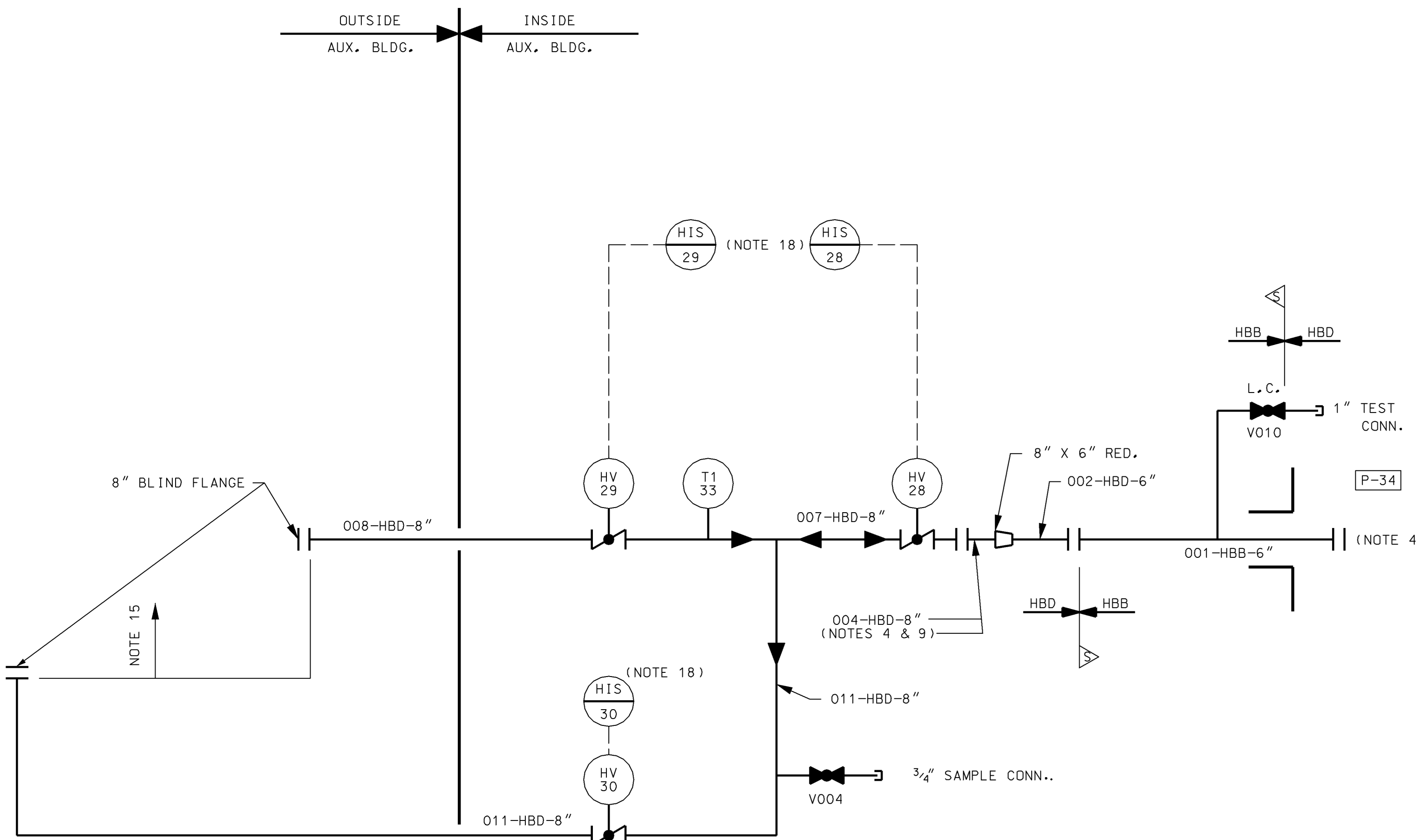
PENETRATION DETAIL
FOR CONTAINMENT ILRT SYSTEM
PER FSAR FIG. 6.2.4-1
(SEE NOTE 19)



CTMT. TEMPERATURE
MONITORS (24)
(NOTE 8)



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



NOTES:

- DELETED.
- DELETED.
- DELETED.
- BLIND FLANGE TO BE INSTALLED DURING NORMAL OPERATION.
- DELETED.
- DELETED.
- EACH RELATIVE HUMIDITY SENSOR WILL BE PAIRED WITH A TEMPERATURE SENSOR TO PROVIDE DEWPOINT INFORMATION.
- 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 ACQUISITION EQUIPMENT CAN USE THE INSTALLED CABLING AS SHOWN ON E-23GP02 AND E-23GP03.
- SPOOL PIECE INSTALLED ONLY DURING ILRT.
- FLOW AND PRESSURE INSTRUMENTATION FOR ILRT ACTIVITIES ARE INSTALLED AT THESE CONNECTION POINTS.
- DELETED.
- DELETED.
- DELETED.
- CAP TO BE INSTALLED FOR NORMAL PLANT OPERATION.
- 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.
- BLIND FLANGES REMOVED AND HOSE CONNECTIONS INSTALLED DURING USE FOR RWST COOLING.
- DATA CAN BE TRANSMITTED IN A DIGITAL FORMAT TO THE PLANT COMPUTER. DIGITAL INTERFACE IS LOCATED IN CABINET GP-348.
- GPH1528, GPH1529 AND GPH1530 ARE LOCATED ON THE WALL ACROSS FROM THE VALVES AT AUX. BLDG EL. 2000' COL. LINES AN-A13 (GRID LOCATION AF05).
- THIS DETAIL DOES NOT APPLY TO THE PERFORMANCE OF TYPE A TESTS.

AS-BUILT CLASS 1

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