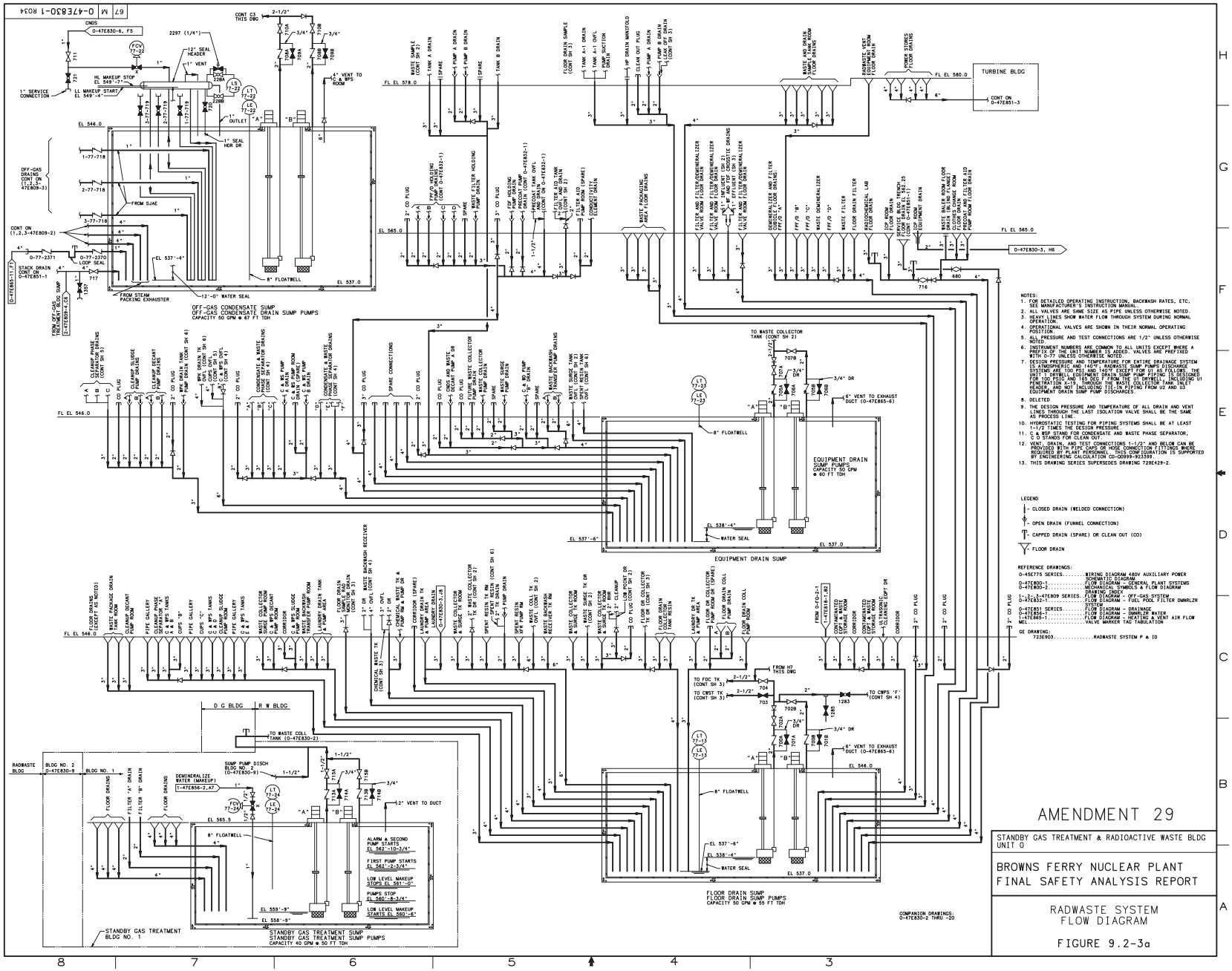
Figures 9-2-1a and 1b

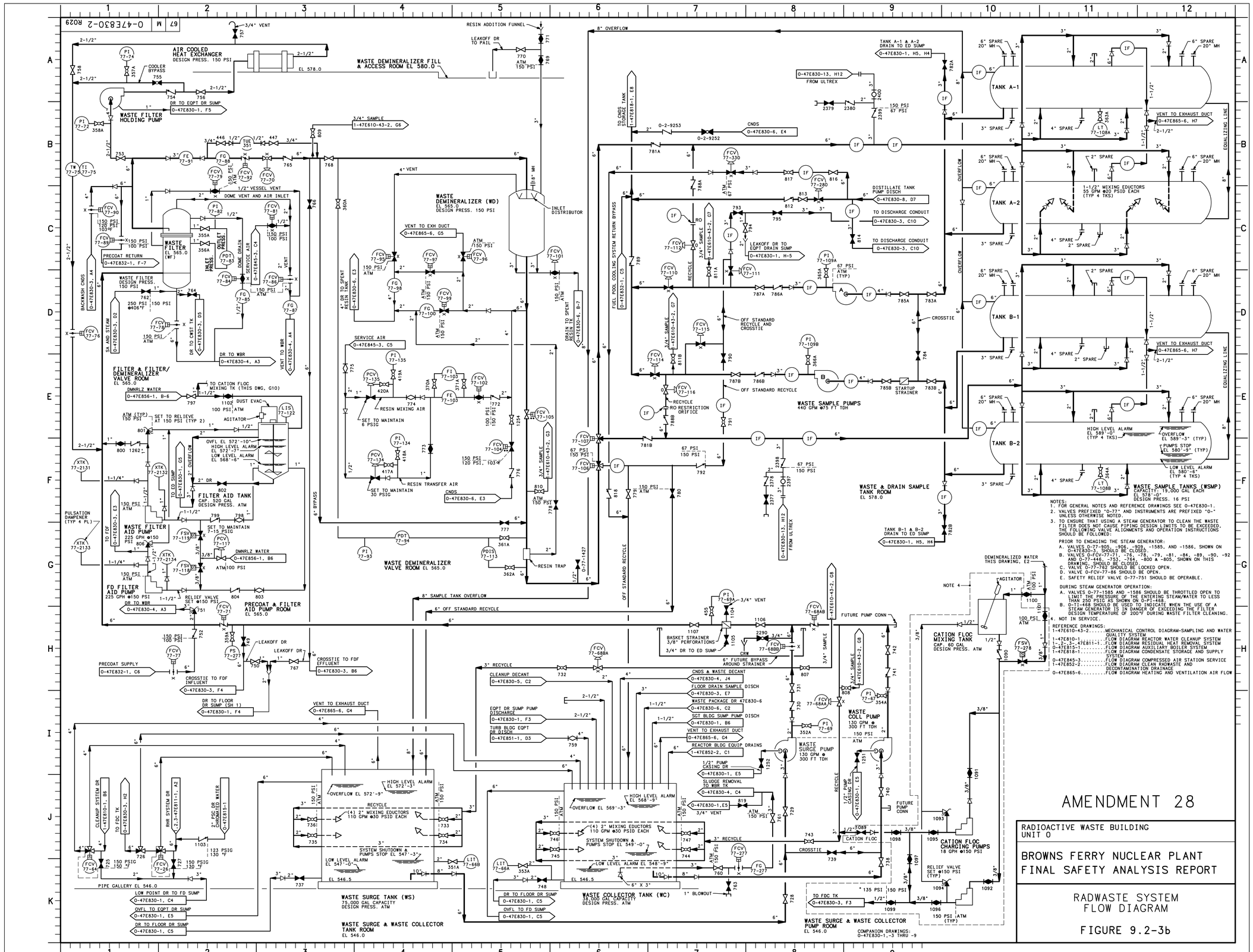
(Deleted by Amendment 17)

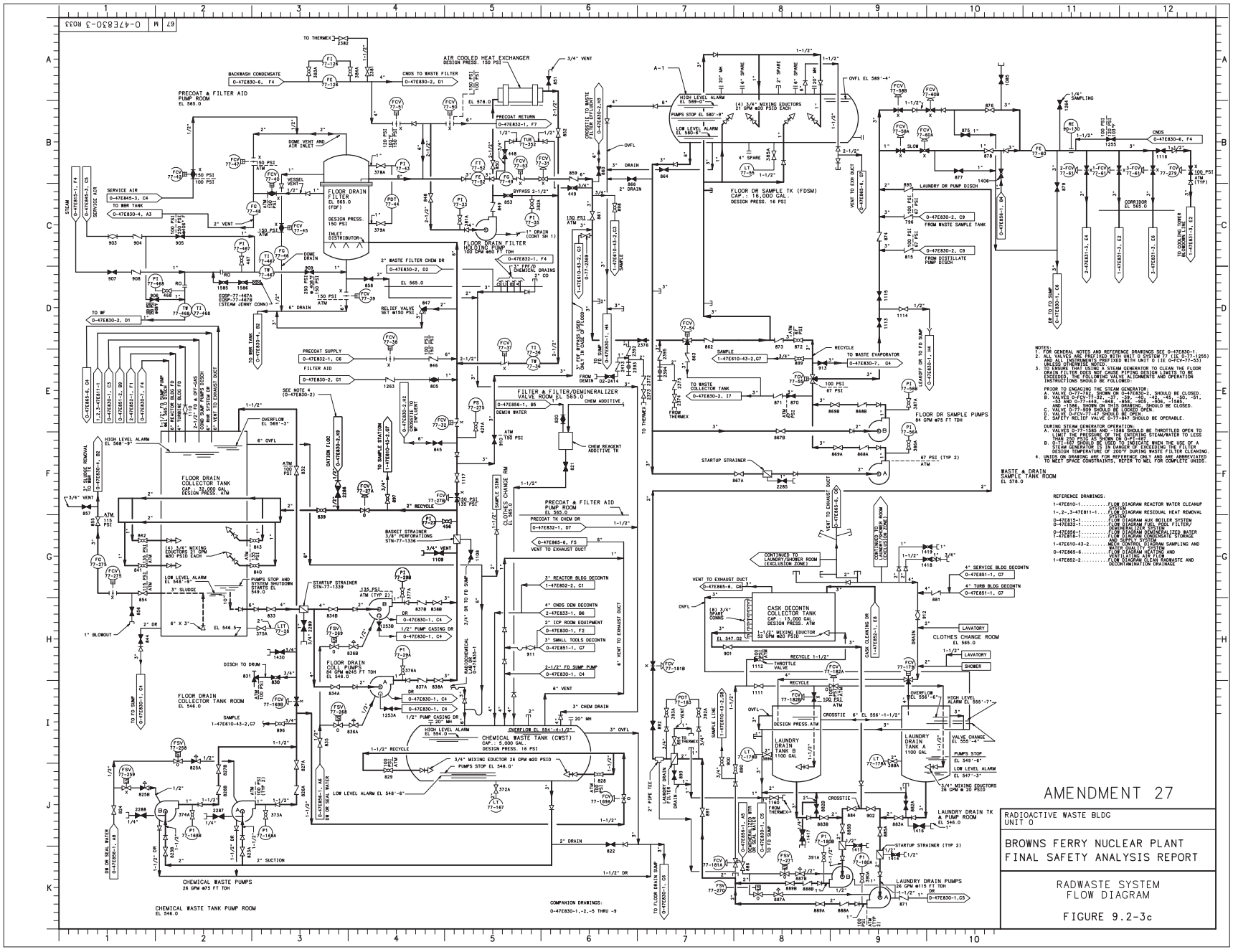
BFN-16

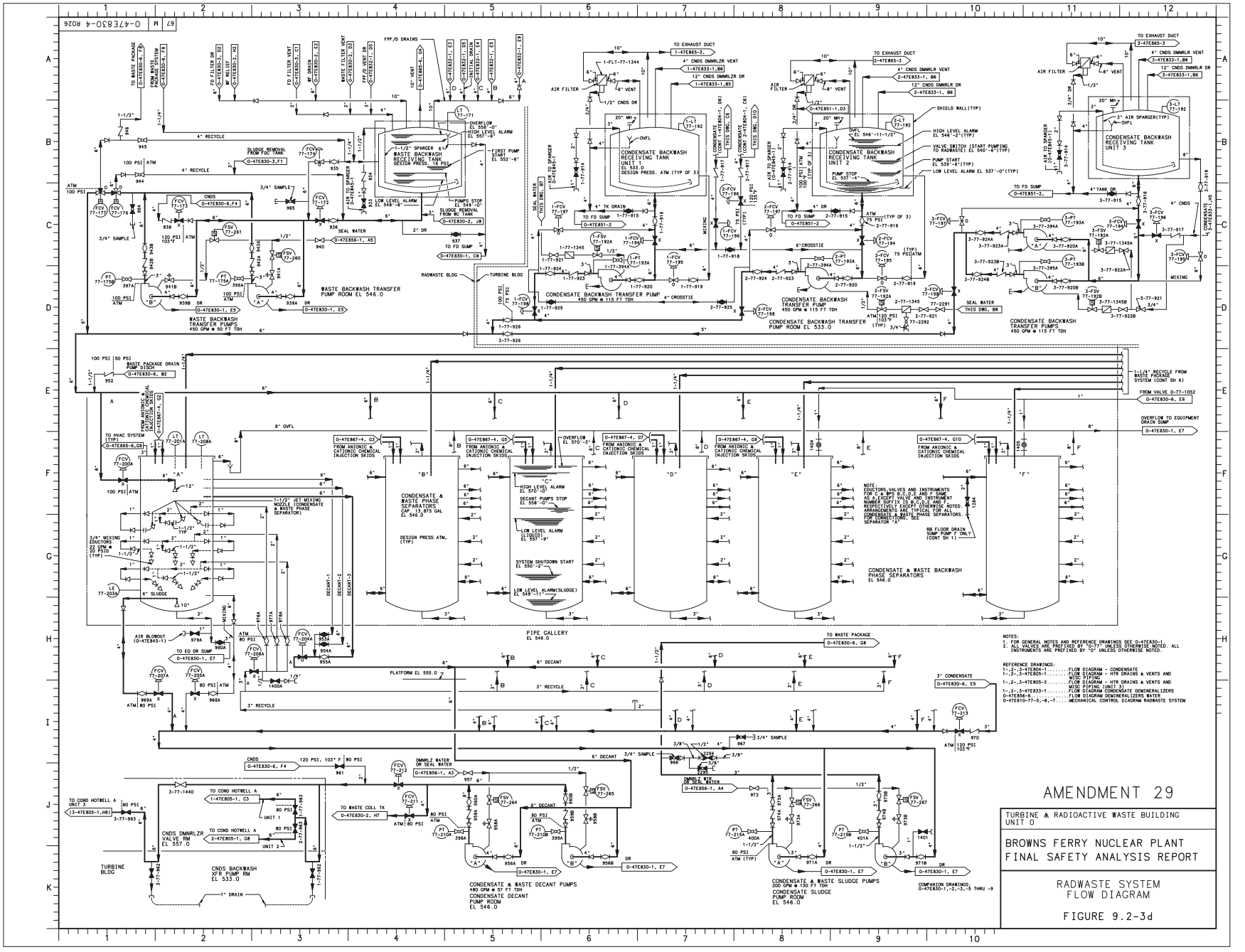
Figure 9.2-2

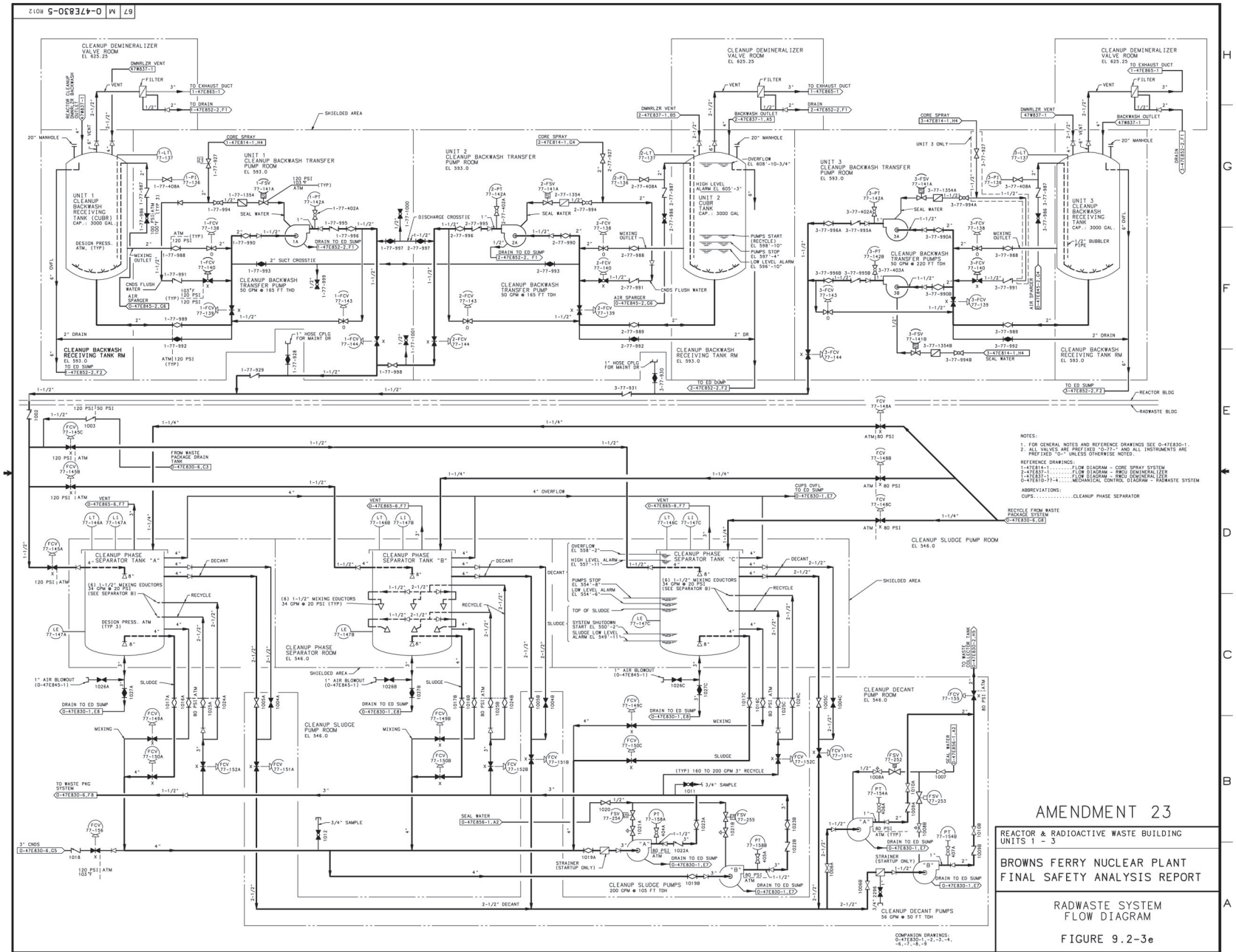
Deleted by Amendment 7.

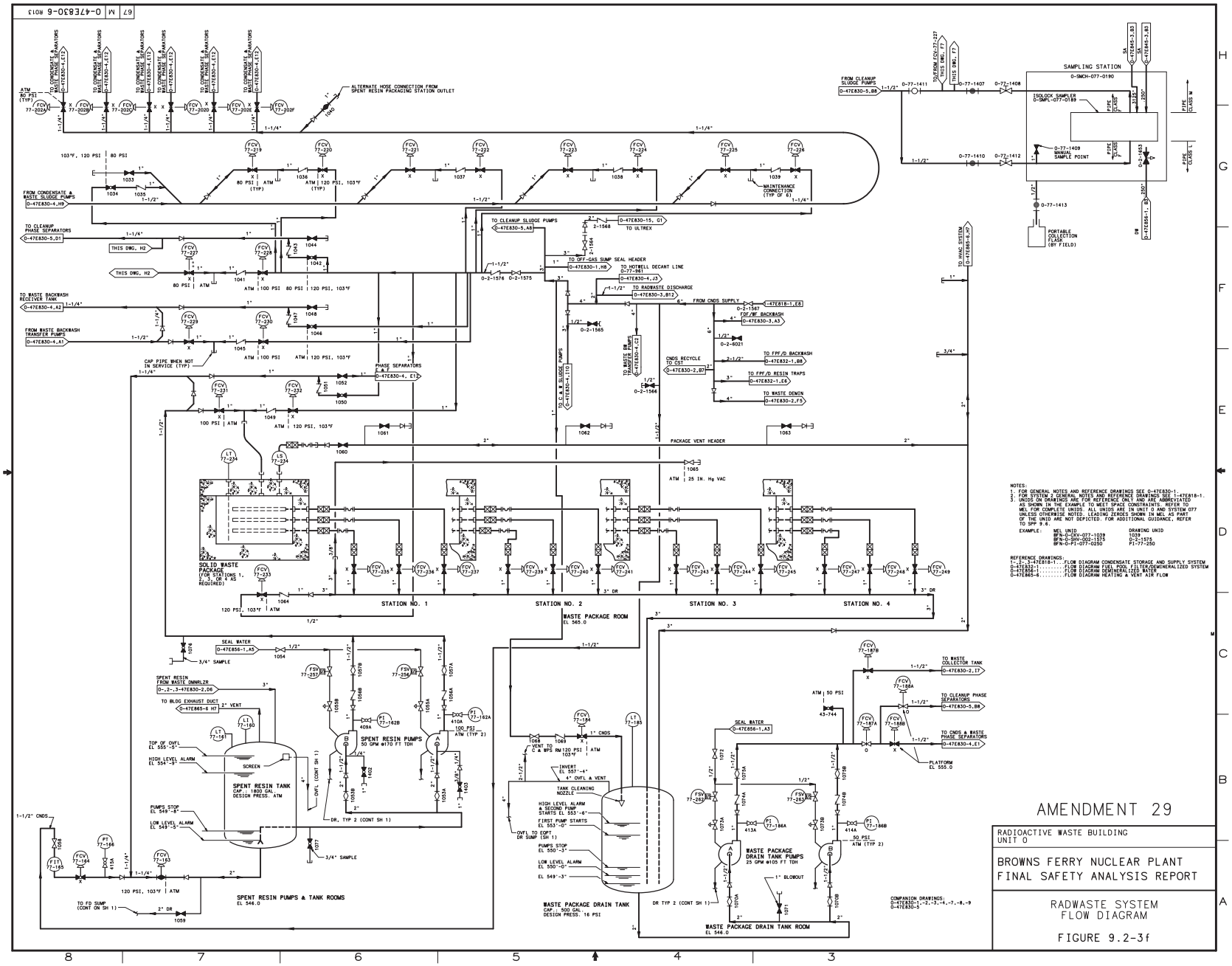

O-47E830-1 R034
OFF-GAS CONDENSATE SUMP
OFF-GAS CONDENSATE DRAIN SUMP PUMPS
CAPACITY 50 GPM @ 67 FT TDH
EQUIPMENT DRAIN SUMP
EQUIPMENT DRAIN SUMP PUMPS
CAPACITY 50 GPM @ 60 FT TDH
FLOOR DRAIN SUMP
FLOOR DRAIN SUMP PUMPS
CAPACITY 50 GPM @ 55 FT TDH
STANDBY GAS TREATMENT SUMP
STANDBY GAS TREATMENT SUMP PUMPS
CAPACITY 40 GPM @ 50 FT TDH
TURBINE BLDG
RADWASTE BLDG
STANDBY GAS TREATMENT BLDG NO. 1
D G BLDG
R W BLDG
NOTES:
1. FOR DETAILED OPERATING INSTRUCTION, BACKWASH RATES, ETC. SEE MANUFACTURER'S INSTRUCTION MANUAL.
2. ALL VALVES ARE SAME SIZE AS PIPE UNLESS OTHERWISE NOTED.
3. HEAVY LINES SHOW WATER FLOW THROUGH SYSTEM DURING NORMAL OPERATION.
4. OPERATIONAL VALVES ARE SHOWN IN THEIR NORMAL OPERATING POSITION.
5. ALL PRESSURE AND TEST CONNECTIONS ARE 1/2" UNLESS OTHERWISE NOTED.
6. INSTRUMENT NUMBERS ARE COMMON TO ALL UNITS EXCEPT WHERE A PREFIX OF THE UNIT NUMBER IS ADDED. VALVES ARE PREFIXED WITH 0-77 UNLESS OTHERWISE NOTED.
7. DESIGN PRESSURE AND TEMPERATURE FOR ENTIRE DRAINAGE SYSTEM IS ATMOSPHERIC AND 140°F. RADWASTE SUMP PUMP DISCHARGE PIPING FROM U1 AND U2 TO THE U1 DRYWELL AND FROM U3 TO THE U3 DRYWELL CONTAINMENT DRAIN SUMP PUMP PIPING IS DESIGNED FOR 100 PSIG AND 185 DEG F FROM THE U1 DRYWELL, INCLUDING U1 PENETRATION X-19, THROUGH THE WASTE COLLECTOR TANK INLET HEADER, AND NOT INCLUDING TIE-IN PIPING FROM U2 AND U3 EQUIPMENT DRAIN SUMP PUMP DISCHARGES.
8. DELETED
9. THE DESIGN PRESSURE AND TEMPERATURE OF ALL DRAIN AND VENT LINES THROUGH THE LAST ISOLATION VALVE SHALL BE THE SAME AS PROCESS LINE
10. HYDROSTATIC TESTING FOR PIPING SYSTEMS SHALL BE AT LEAST 1-1/2 TIMES THE DESIGN PRESSURE.
11. C & WSP STAND FOR CONDENSATE AND WASTE PHASE SEPARATOR, C S STANDS FOR CLEAN OUT.
12. VENT, DRAIN, AND TEST CONNECTIONS 1-1/2" AND BELOW CAN BE PROVIDED WITH PIPE CAPS OR HOSE CONNECTION FITTINGS WHERE REQUIRED BY PLANT PERSONNEL. THIS CONFIGURATION IS SUPPORTED BY ENGINEERING CALCULATION CD-Q0999-925399.
13. THIS DRAWING SERIES SUPERSEDES DRAWING 729E429-2.
LEGEND
- CLOSED DRAIN (WELDED CONNECTION)
- OPEN DRAIN (FUNNEL CONNECTION)
- CAPPED DRAIN (SPARE) OR CLEAN OUT (CO)
- FLOOR DRAIN
REFERENCE DRAWINGS:
0-45E775 SERIES.....WIRING DIAGRAM 480V AUXILIARY POWER SCHEMATIC DIAGRAM
0-47B800-1.....FLOW DIAGRAM - GENERAL PLANT SYSTEMS
0-47B800-2.....MECHANICAL SYMBOLS & FLOW DIAGRAM DRAWING INDEX
1-, 2-, 3-47E809 SERIES..FLOW DIAGRAM - OFF-GAS SYSTEM
0-47E832-1.....FLOW DIAGRAM - FUEL POOL FILTER DEMINRLZR SYSTEM
0-47E851 SERIES.....FLOW DIAGRAM - DRAINAGE
0-47E856-1.....FLOW DIAGRAM - DEMINERIZE WATER
0-47E865-1.....FLOW DIAGRAM - HEATING & VENT AIR FLOW
MEL.....VALVE MARKER TAG TABULATION
GE DRAWING:
733E903.....RADWASTE SYSTEM P & ID
COMPANION DRAWINGS:
0-47E830-2 THRU -20
AMENDMENT 29
STANDBY GAS TREATMENT & RADIOACTIVE WASTE BLDG UNIT 0
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT
RADWASTE SYSTEM
FLOW DIAGRAM
FIGURE 9.2-3a

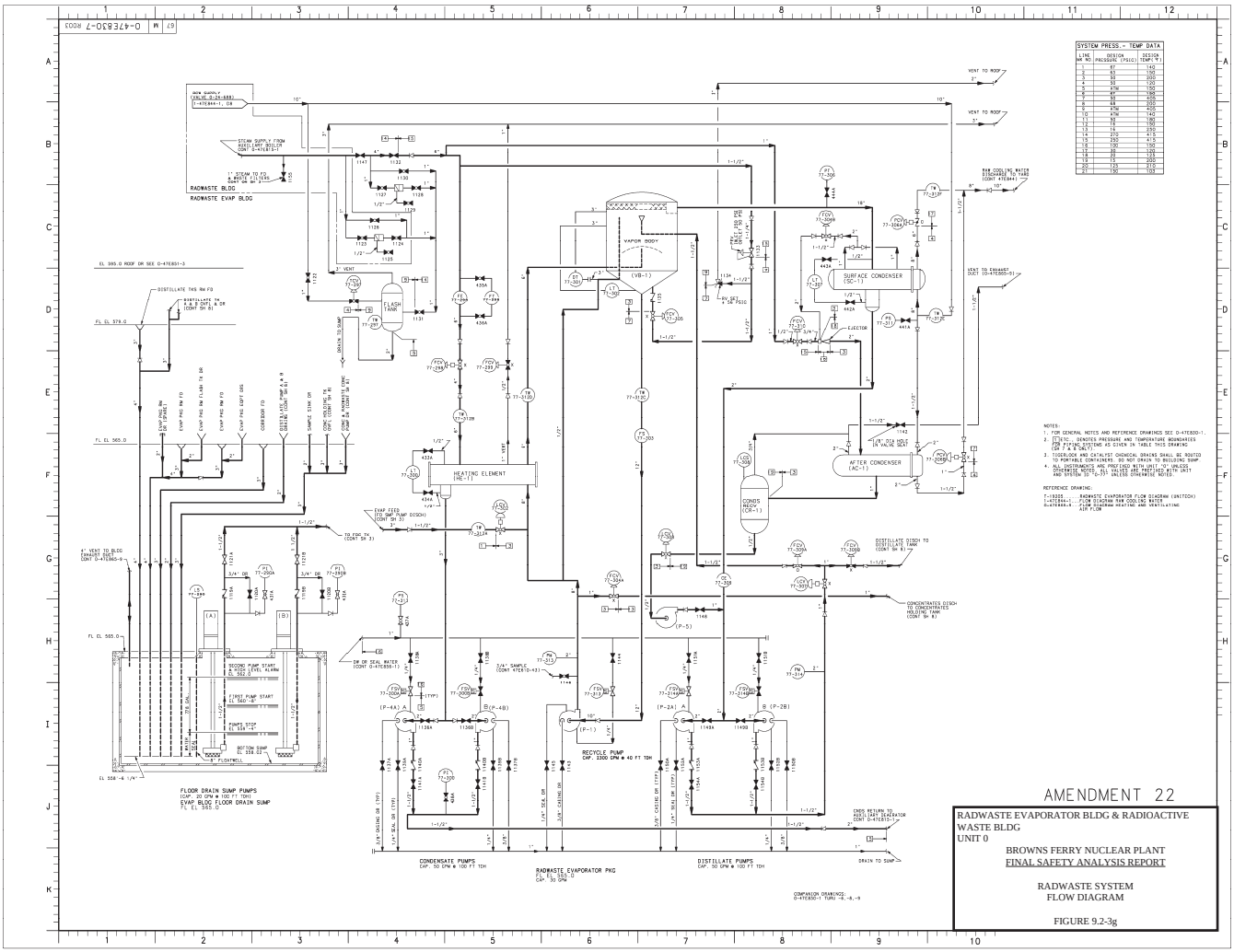

0-47E830-2 R029
AIR COOLED HEAT EXCHANGER
DESIGN PRESS. 150 PSI
WASTE DEMINERALIZER FILL & ACCESS ROOM EL 580.0
RESIN ADDITION FUNNEL
LEAKOFF DR TO PAIL
WASTE FILTER HOLDING PUMP
DR TO EQPT DR SUMP
0-47E830-1, F5
3/4" SAMPLE
1-47E610-43-2, G6
WASTE FILTER
EL 565.0 (WF)
PRECOAT RETURN
0-47E832-1, F-7
WASTE FILTER DESIGN PRESS. 150 PSI
BACKWASH CNDS
0-47E830-3, A4
SK MED STEAM
0-47E830-3, D2
DR TO WBR
0-47E830-4, A3
VENT TO WBR
0-47E830-4, A4
FILTER & FILTER/ DEMINERALIZER VALVE ROOM
EL 565.0
DMNRLZ WATER
0-47E856-1, B-6
TO CATION FLOC MIXING TK (THIS DWG, G10)
DUST EVAC
AGITATOR
SET TO RELIEVE AT 150 PSI (TYP 2)
OVFL EL 572'-10"
HIGH LEVEL ALARM EL 572'-7"
LOW LEVEL ALARM EL 568'-6"
FILTER AID TANK
CAP. 520 GAL
DESIGN PRESS. ATM
PULSATION DAMPENER (TYP 4 PL)
WASTE FILTER AID PUMP
225 GPM @150 PSI
FD FILTER AID PUMP
225 GPM @150 PSI
RELIEF VALVE SET @150 PSI
PRECOAT & FILTER AID PUMP ROOM
EL 565.0
PRECOAT SUPPLY
0-47E832-1, C6
CROSSTIE TO FDF INFLUENT
0-47E830-3, F4
LEAKOFF DR
CROSSTIE TO FDF EFFLUENT
0-47E830-3, B6
DR TO FLOOR DR SUMP (SH 1)
0-47E830-1, F4
VENT TO EXHAUST DUCT
0-47E865-6, G4
WASTE DEMINERALIZER (WD)
EL 565.0
DESIGN PRESS. 150 PSI
INLET DISTRIBUTOR
VENT TO EXH DUCT
0-47E865-6, G5
AIR OR N2 TO SPENT RESIN TK
0-47E830-6, E3
DRAIN TO SPENT RESIN TK
0-47E830-6, B-7
SERVICE AIR
0-47E845-3, C5
RESIN MIXING AIR
SET TO MAINTAIN 6 PSIG
RESIN TRANSFER AIR
SET TO MAINTAIN 30 PSIG
CNDS
0-47E830-6, E3
RESIN TRAP
WASTE DEMINERALIZER VALVE ROOM EL 565.0
8" OVERFLOW
TANK A-1 & A-2 DRAIN TO ED SUMP
0-47E830-1, H5, H4
0-47E830-13, H12 FROM ULTREX
TO CNDS STORAGE TANK 0-47E818-1, E8
CNDS
0-47E830-6, E4
DISTILLATE TANK PUMP DISCH
0-47E830-8, D7
TO DISCHARGE CONDUIT
0-47E830-3, C10
LEAKOFF DR TO EQPT DRAIN SUMP
0-47E830-1, H-5
FUEL POOL COOLING SYSTEM RETURN BYPASS
0-47E832-1, C5
OFF STANDARD RECYCLE AND CROSSTIE
OFF STANDARD RECYCLE
CROSSTIE
WASTE SAMPLE PUMPS
440 GPM @75 FT TDH
STARTUP STRAINER
RECYCLE RO RESTRICTION ORIFICE
WASTE & DRAIN SAMPLE TANK ROOM
EL 578.0
TANK B-1 & B-2 DRAIN TO ED SUMP
0-47E830-1, H5, H4
TANK A-1
TANK A-2
TANK B-1
TANK B-2
1-1/2" MIXING EDUCTORS 55 GPM @20 PSID EACH (TYP 4 TKS)
VENT TO EXHAUST DUCT
0-47E865-6, H7
EQUALIZING LINE
HIGH LEVEL ALARM EL 589'-0" (TYP 4 TKS)
OVERFLOW EL 589'-3" (TYP)
PUMPS STOP EL 580'-9" (TYP)
LOW LEVEL ALARM EL 580'-6" (TYP 4 TKS)
WASTE SAMPLE TANKS (WSMP)
CAPACITY: 19,000 GAL EACH
EL 578'-0"
DESIGN PRESS. 16 PSI
NOTES:
1. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE 0-47E830-1.
2. VALVES PREFIXED "0-77" AND INSTRUMENTS ARE PREFIXED "0-" UNLESS OTHERWISE NOTED.
3. TO ENSURE THAT USING A STEAM GENERATOR TO CLEAN THE WASTE FILTER DOES NOT CAUSE PIPING DESIGN LIMITS TO BE EXCEEDED, THE FOLLOWING VALVE ALIGNMENTS AND OPERATION INSTRUCTIONS SHOULD BE FOLLOWED:
PRIOR TO ENGAGING THE STEAM GENERATOR:
A. VALVES 0-77-905, -906, -909, -1585, AND -1586, SHOWN ON 0-47E830-3, SHOULD BE CLOSED.
B. VALVES 0-FCV-77-71, -76, -78, -79, -81, -84, -89, -90, -92 AND 0-77-446, -753, -764, -800 & -805, SHOWN ON THIS DRAWING, SHOULD BE CLOSED.
C. VALVE 0-77-782 SHOULD BE LOCKED OPEN.
D. VALVE 0-FCV-77-86 SHOULD BE OPEN.
E. SAFETY RELIEF VALVE 0-77-751 SHOULD BE OPERABLE.
DURING STEAM GENERATOR OPERATION:
A. VALVES 0-77-1585 AND -1586 SHOULD BE THROTTLED OPEN TO LIMIT THE PRESSURE OF THE ENTERING STEAM/WATER TO LESS THAN 250 PSIG AS SHOWN ON 0-PI-468.
B. 0-TI-468 SHOULD BE USED TO INDICATE WHEN THE USE OF A STEAM GENERATOR IS IN DANGER OF EXCEEDING THE FILTER DESIGN TEMPERATURE OF 200°F DURING WASTE FILTER CLEANING.
4. NOT IN SERVICE.
REFERENCE DRAWINGS:
1-47E610-43-2.....MECHANICAL CONTROL DIAGRAM-SAMPLING AND WATER QUALITY SYSTEM
1-47E810-1.....FLOW DIAGRAM REACTOR WATER CLEANUP SYSTEM
1-2,3-47E811-1.....FLOW DIAGRAM RESIDUAL HEAT REMOVAL SYSTEM
0-47E815-1.....FLOW DIAGRAM AUXILIARY BOILER SYSTEM
1-47E818-1.....FLOW DIAGRAM CONDENSATE STORAGE AND SUPPLY SYSTEM
0-47E845-3.....FLOW DIAGRAM COMPRESSED AIR STATION SERVICE
1-47E852-2.....FLOW DIAGRAM CLEAN RADWASTE AND DECONTAMINATION DRAINAGE
0-47E865-6.....FLOW DIAGRAM HEATING AND VENTILATION AIR FLOW
CATION FLOC MIXING TANK
CAP. 60 GAL
DESIGN PRESS. ATM
CATION FLOC CHARGING PUMPS
18 GPH @150 PSI
RELIEF VALVE SET @150 PSI (TYP)
DEMINERALIZED WATER THIS DRAWING, E2
WASTE COLL PUMP
130 GPM @ 300 FT TDH
WASTE SURGE PUMP
130 GPM @ 300 FT TDH
FUTURE PUMP CONN
BASKET STRAINER 3/8" PERFORATIONS
3/4" DR TO ED SUMP
6" FUTURE BYPASS AROUND STRAINER
CNDS & WASTE DECANT
0-47E830-4, J4
FLOOR DRAIN SAMPLE DISCH
0-47E830-3, E7
WASTE PACKAGE DR 47E830-6
0-47E830-6, C2
SGT BLDG SUMP PUMP DISCH
0-47E830-1, B6
REACTOR BLDG EQUIP DRAINS
1-47E852-2, C1
1/2" PUMP CASING DR
0-47E830-1, E5
SLUDGE REMOVAL TO WBR TK
0-47E830-4, C4
CLEANUP DECANT
0-47E830-5, C2
EQPT DR SUMP PUMP DISCHARGE
0-47E830-1, F3
TURB BLDG EQPT DR DISCH
0-47E851-1, D3
3" RECYCLE
CRW
WASTE SURGE & WASTE COLLECTOR PUMP ROOM
EL 546.0
COMPANION DRAWINGS:
0-47E830-1,-3 THRU -9
PIPE GALLERY EL 546.0
LOW POINT DR TO FD SUMP
0-47E830-1, C4
OVFL TO EQPT DR SUMP
0-47E830-1, E5
DR TO FLOOR DR SUMP
0-47E830-1, C5
WASTE SURGE TANK (WS)
75,000 GAL CAPACITY
DESIGN PRESS. ATM
WASTE SURGE & WASTE COLLECTOR TANK ROOM
EL 546.0
HIGH LEVEL ALARM EL 572'-3"
RECYCLE
(4) 2" MIXING EDUCTORS 110 GPM @30 PSID EACH
SYSTEM SHUTDOWN & PUMPS STOP EL 547'-3"
LOW LEVEL ALARM EL 547'-0"
WASTE COLLECTOR TANK (WC)
30,000 GAL CAPACITY
DESIGN PRESS. ATM
HIGH LEVEL ALARM EL 568'-9"
OVERFLOW EL 569'-3"
SYSTEM SHUTDOWN & PUMPS STOP EL 549'-0"
LOW LEVEL ALARM EL 548'-9"
OVFL TO FD SUMP
0-47E830-1, C5
1" BLOWOUT
CATION FLOC
TO FDC TK
0-47E830-3, F3
FUTURE PUMP CONN
RECYCLE
1/2" PUMP CASING DR
0-47E830-1, E5
AMENDMENT 28
RADIOACTIVE WASTE BUILDING
UNIT 0
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT
RADWASTE SYSTEM
FLOW DIAGRAM
FIGURE 9.2-3b

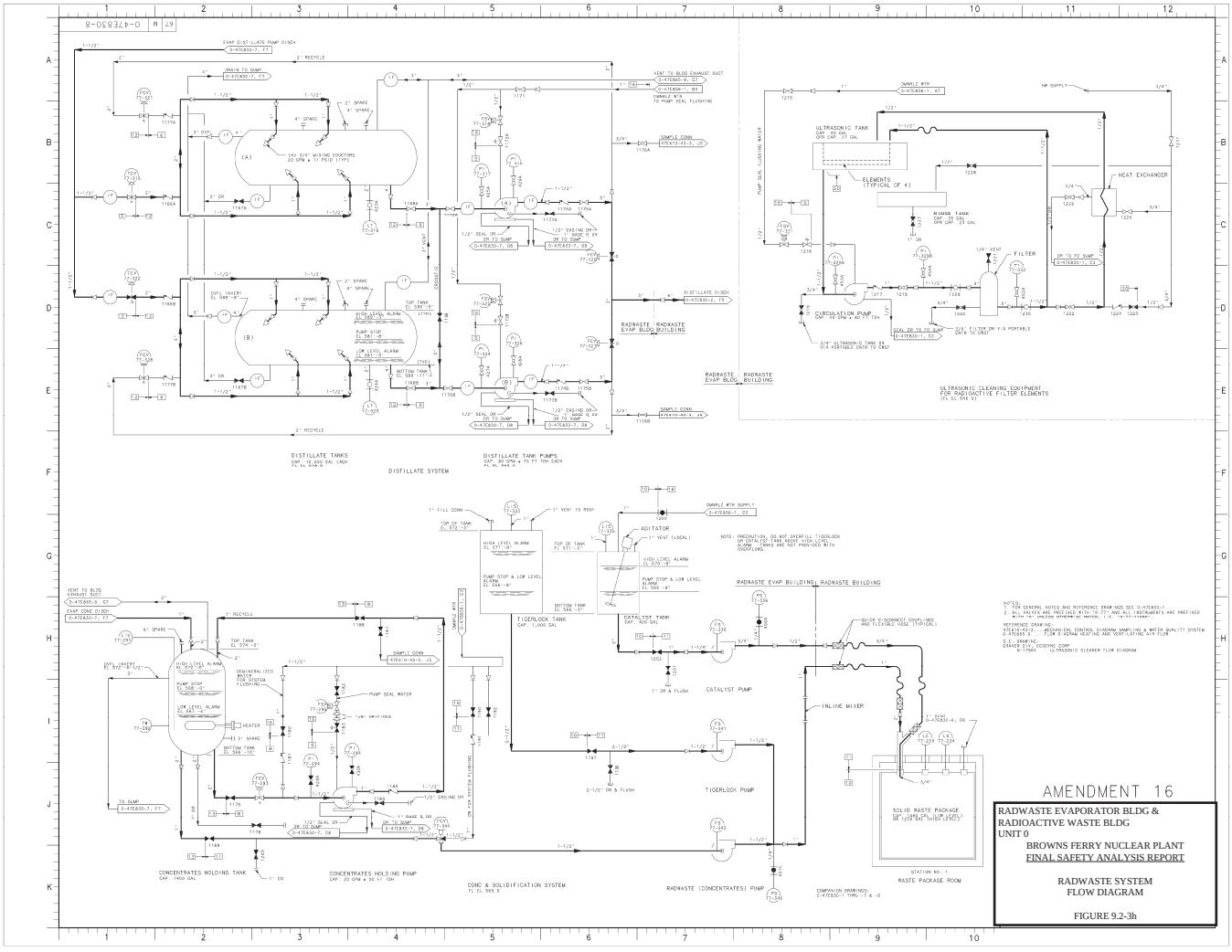

AMENDMENT 27
RADIOACTIVE WASTE BLDG UNIT 0
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT
RADWASTE SYSTEM FLOW DIAGRAM
FIGURE 9.2-3c
O-47E830-3 R033
FLOOR DRAIN FILTER
FLOOR DRAIN COLLECTOR TANK
FLOOR DRAIN COLLECTOR TANK ROOM
FLOOR DRAIN COLL PUMPS
FLOOR DRAIN FILTER PUMP
CHEMICAL WASTE TANK (CWST)
CHEMICAL WASTE PUMPS
CHEMICAL WASTE TANK PUMP ROOM
FLOOR DR SAMPLE TK (FDSM)
FLOOR DR SAMPLE PUMPS
WASTE & DRAIN SAMPLE TANK ROOM
CASK DECONTN COLLECTOR TANK
LAUNDRY DRAIN TANK A
LAUNDRY DRAIN TANK B
LAUNDRY DRAIN TK & PUMP ROOM
LAUNDRY DRAIN PUMPS
CLOTHES CHANGE ROOM
FILTER & FILTER/DEMINERALIZER VALVE ROOM
PRECOAT & FILTER AID PUMP ROOM
AIR COOLED HEAT EXCHANGER
NOTES:
REFERENCE DRAWINGS:
COMPANION DRAWINGS:


O-47E830-4 R026
WASTE BACKWASH TRANSFER PUMPS 450 GPM @ 50 FT TDH
WASTE BACKWASH TRANSFER PUMP ROOM EL 546.0
CONDENSATE BACKWASH RECEIVING TANK UNIT 1 EL 533.0 DESIGN PRESS. ATM (TYP OF 3)
CONDENSATE BACKWASH RECEIVING TANK UNIT 2
CONDENSATE BACKWASH RECEIVING TANK UNIT 3
CONDENSATE BACKWASH TRANSFER PUMP 450 GPM @ 115 FT TDH
CONDENSATE BACKWASH TRANSFER PUMP ROOM EL 533.0
CONDENSATE BACKWASH TRANSFER PUMPS 450 GPM @ 115 FT TDH
CONDENSATE & WASTE PHASE SEPARATORS CAP. 13,875 GAL EL 546.0
CONDENSATE & WASTE BACKWASH PHASE SEPARATORS EL 546.0
PIPE GALLERY EL 546.0
CONDENSATE & WASTE DECANT PUMPS 480 GPM @ 97 FT TDH CONDENSATE DECANT PUMP ROOM EL 546.0
CONDENSATE & WASTE SLUDGE PUMPS 200 GPM @ 130 FT TDH CONDENSATE SLUDGE PUMP ROOM EL 546.0
CNDS BACKWASH XFR PUMP RM EL 533.0
CNDS DMNRLZR VALVE RM EL 557.0
TURBINE BLDG
RADWASTE BLDG
AMENDMENT 29
TURBINE & RADIOACTIVE WASTE BUILDING UNIT 0
BROWNS FERRY NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
RADWASTE SYSTEM FLOW DIAGRAM
FIGURE 9.2-3d


67 M O-47E830-5 R012
CLEANUP DEMINERALIZER VALVE ROOM EL 625.25
UNIT 1 CLEANUP BACKWASH TRANSFER PUMP ROOM EL 593.0
UNIT 2 CLEANUP BACKWASH TRANSFER PUMP ROOM EL 593.0
UNIT 3 CLEANUP BACKWASH TRANSFER PUMP ROOM EL 593.0
UNIT 1 CLEANUP BACKWASH RECEIVING TANK (CUBR) CAP.: 3000 GAL
UNIT 2 CUBR TANK CAP.: 3000 GAL
UNIT 3 CLEANUP BACKWASH RECEIVING TANK CAP.: 3000 GAL
CLEANUP BACKWASH TRANSFER PUMP 50 GPM @ 165 FT TDH
CLEANUP BACKWASH TRANSFER PUMPS 50 GPM @ 220 FT TDH
CLEANUP BACKWASH RECEIVING TANK RM EL 593.0
CLEANUP PHASE SEPARATOR TANK "A"
CLEANUP PHASE SEPARATOR TANK "B"
CLEANUP PHASE SEPARATOR TANK "C"
CLEANUP PHASE SEPARATOR ROOM EL 546.0
CLEANUP SLUDGE PUMP ROOM EL 546.0
CLEANUP SLUDGE PUMPS 200 GPM @ 105 FT TDH
CLEANUP DECANT PUMP ROOM EL 546.0
CLEANUP DECANT PUMPS 56 GPM @ 30 FT TDH
SHIELDED AREA
REACTOR BLDG
RADWASTE BLDG
NOTES:
1. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE O-47E830-1.
2. ALL VALVES ARE PREFIXED "O-77-" AND ALL INSTRUMENTS ARE PREFIXED "O-" UNLESS OTHERWISE NOTED.
REFERENCE DRAWINGS:
1-47E814-1 ..... FLOW DIAGRAM - CORE SPRAY SYSTEM
2-47E837-1 ..... FLOW DIAGRAM - RWCU DEMINERALIZER
1-47E837-1 ..... FLOW DIAGRAM - RWCU DEMINERALIZER
O-47E610-77-4 ..... MECHANICAL CONTROL DIAGRAM - RADWASTE SYSTEM
ABBREVIATIONS:
CUPS ..... CLEANUP PHASE SEPARATOR
AMENDMENT 23
REACTOR & RADIOACTIVE WASTE BUILDING UNITS 1 - 3
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT
RADWASTE SYSTEM FLOW DIAGRAM
FIGURE 9.2-3e


O-47E830-6 R013
SOLID WASTE PACKAGE (FOR STATIONS 1, 2, OR 4 AS REQUIRED)
STATION NO. 1
STATION NO. 2
STATION NO. 3
STATION NO. 4
WASTE PACKAGE ROOM EL 565.0
SPENT RESIN TANK CAP.: 1800 GAL DESIGN PRESS: ATM
SPENT RESIN PUMPS 50 GPM @170 FT TDH
SPENT RESIN PUMPS & TANK ROOMS EL 546.0
WASTE PACKAGE DRAIN TANK CAP.: 500 GAL DESIGN PRESS: 16 PSI
WASTE PACKAGE DRAIN TANK PUMPS 25 GPM @105 FT TDH
WASTE PACKAGE DRAIN TANK ROOM EL 546.0
SAMPLING STATION
PLATFORM EL 555.0
PACKAGE VENT HEADER
NOTES:
1. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE O-47E830-1.
2. FOR SYSTEM 2 GENERAL NOTES AND REFERENCE DRAWINGS SEE 1-47E818-1.
3. UNIDS ON DRAWINGS ARE FOR REFERENCE ONLY AND ARE ABBREVIATED AS SHOWN IN THE EXAMPLE TO MEET SPACE CONSTRAINTS. REFER TO MEL FOR COMPLETE UNIDS. ALL UNIDS ARE IN UNIT 0 AND SYSTEM 077 UNLESS OTHERWISE NOTED. LEADING ZEROES SHOWN IN MEL AS PART OF THE UNID ARE NOT DEPICTED. FOR ADDITIONAL GUIDANCE, REFER TO SPP 9.6.
EXAMPLE:
MEL UNID: BFN-0-GWV-077-1039
BFN-0-SHV-002-1575
BFN-0-PI-077-0250
DRAWING UNID: 1039, O-2-1575, PI-77-250
REFERENCE DRAWINGS:
1-2-3-47E818-1.....FLOW DIAGRAM CONDENSATE STORAGE AND SUPPLY SYSTEM
O-47E832-1.....FLOW DIAGRAM FUEL POOL FILTER/DEMINERALIZED SYSTEM
O-47E856-1.....FLOW DIAGRAM DEMINERALIZED WATER
O-47E865-6.....FLOW DIAGRAM HEATING & VENT AIR FLOW
COMPANION DRAWINGS: O-47E830-1,-2,-3,-4,-7,-8,-9
AMENDMENT 29
RADIOACTIVE WASTE BUILDING UNIT 0
BROWNS FERRY NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
RADWASTE SYSTEM FLOW DIAGRAM
FIGURE 9.2-3f


SYSTEM PRESS. - TEMP DATA
LINE NO.
DESIGN PRESSURE (PSIG)
DESIGN TEMP. (°F)
RADWASTE BLDG
RADWASTE EVAP BLDG
VENT TO ROOF
VAPOR BODY
(VB-1)
SURFACE CONDENSER
(SC-1)
EJECTOR
FLASH CHAMBER
HEATING ELEMENT
(HE-1)
AFTER CONDENSER
(AC-1)
COND RCVR
(CR-1)
RECYCLE PUMP
CAP. 2300 GPM @ 40 FT TDH
CONDENSATE PUMPS
CAP. 50 GPM @ 100 FT TDH
RADWASTE EVAPORATOR PKG
DISTILLATE PUMPS
CAP. 50 GPM @ 100 FT TDH
FLOOR DRAIN SUMP PUMPS
(CAP. 20 GPM @ 100 FT TDH)
EVAP BLDG FLOOR DRAIN SUMP
FL EL 565.0
FL EL 565.0
FL EL 558'-6 1/4"
FL EL 579.0
EL 595.0 ROOF DR SEE D-47E651-3
DRAIN TO SUMP
EVAP FEED TO SUMP PUMP DISCH
TO FDG TK (CONT SH 3)
DISTILLATE DISCH TO DISTILLATE TANK (CONT SH 61)
CONCENTRATES DISCH TO RADWASTE HOLDING TANKS (CONT SH 63)
DW OR SEAL WATER (CONT D-47E856-1)
RAW COOLING WATER SUPPLY FROM TURB (CONT 47E844)
CNDS RETURN TO ASSY (HX) DEAERATOR CONT D-47E615
DRAIN TO SUMP
COMPANION DRAWINGS: D-47E650-1 THRU -6, -8, -9
NOTES:
1. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE D-47E650-1.
2. [T][E][C] - DENOTES PRESSURE AND TEMPERATURE BOUNDARIES FOR PIPING SYSTEMS AS GIVEN IN TABLE THIS DRAWING (SH 7 A & CALC)
3. TIGER-LOOK AND CATALYST CHEMICAL DRAINS SHALL BE ROUTED TO PORTABLE CONTAINERS. DO NOT DRAIN TO BUILDING SUMP.
4. ALL EQUIPMENT NOTED AS (NOT INSTALLED) IN UNIT 0 ARE INSTALLED IN UNIT 1 AND SHARED BY BOTH UNITS AND SYSTEM "EC" (1-2) UNLESS OTHERWISE NOTED.
REFERENCE DRAWING:
1-47E856-1 ... RADWASTE EVAPORATOR FLOW DIAGRAM (SWITCH)
1-47E844-1 ... FLOW DIAGRAM RAW COOLING WATER
D-47E848-8 ... FLOW DIAGRAM HEATING AND VENTILATING AIR FLOW
AMENDMENT 22
RADWASTE EVAPORATOR BLDG & RADIOACTIVE WASTE BLDG
UNIT 0
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT
RADWASTE SYSTEM
FLOW DIAGRAM
FIGURE 9.2-3g



AMENDMENT 16

RADWASTE EVAPORATOR BLDG & RADIOACTIVE WASTE BLDG
UNIT 0

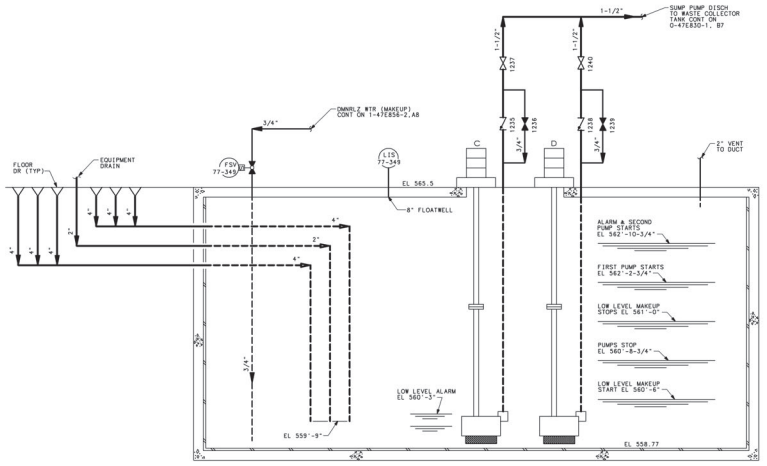
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT

RADWASTE SYSTEM
FLOW DIAGRAM

FIGURE 9.2-3h

NOTES:
1. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE 0-47E830-1.
2. ALL VALVES ARE PREFIXED BY UNIT AND SYSTEM ID "0-77-" UNLESS OTHERWISE NOTED; ALL INSTRUMENTS ARE PREFIXED WITH UNIT ID "0" UNLESS OTHERWISE NOTED.

REFERENCE DRAWINGS:
1-47E856-2.....FLOW DIAGRAM DEMINERALIZED WATER



STANDBY GAS TREATMENT SUMP
STANDBY GAS TREATMENT SUMP PUMPS
CAP. 40 GPM @50 FT TDH

STANDBY GAS TREATMENT BLDG NO. 2 | STANDBY GAS TREATMENT BLDG NO. 1
0-47E830-1, B7

COMPANION DRAWINGS:
0-47E830-1 THRU -8

AMENDMENT 16

STANDBY GAS TREATMENT BUILDING
UNIT 0

BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT

RADWASTE SYSTEM
FLOW DIAGRAM

FIGURE 9.2-3i

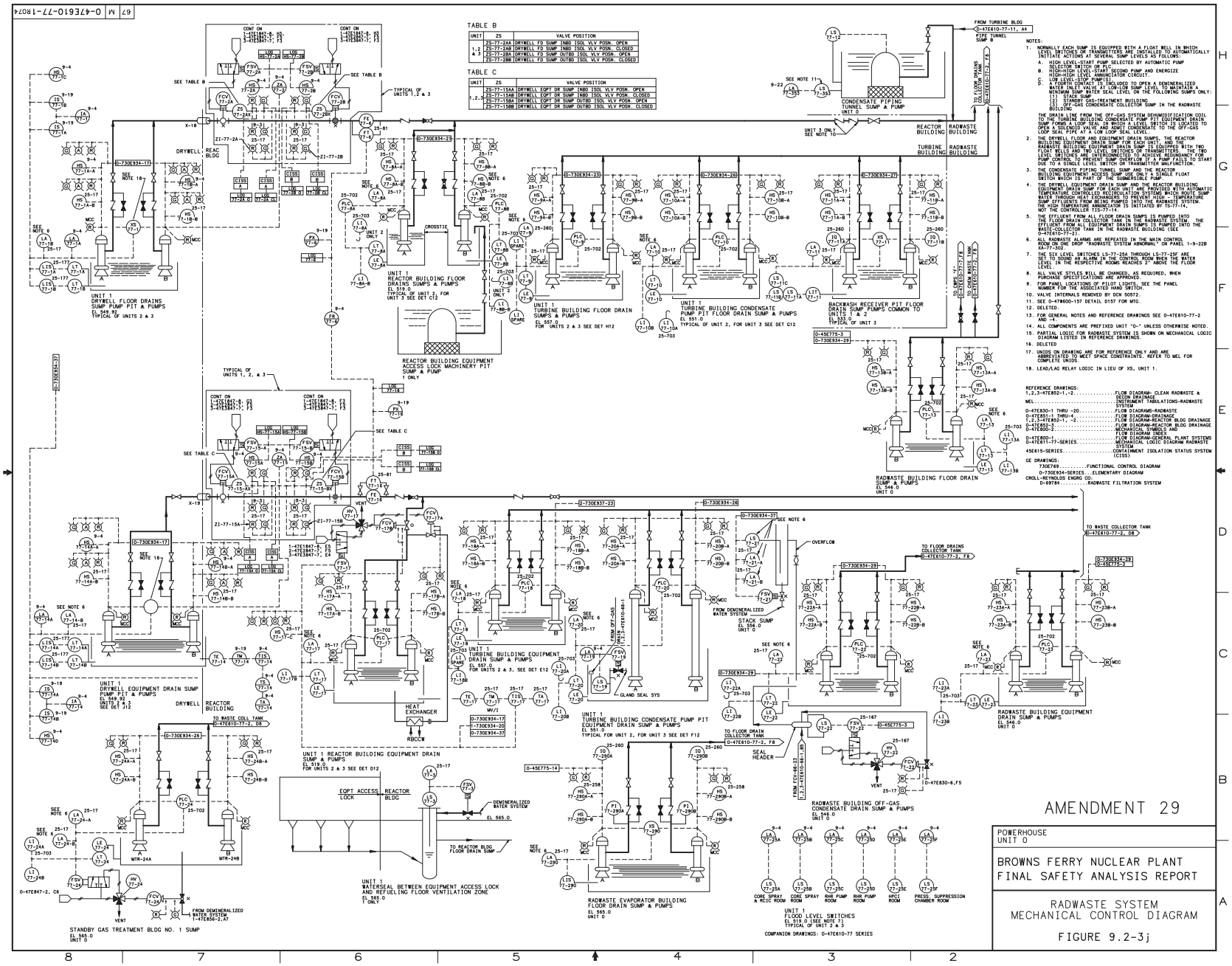
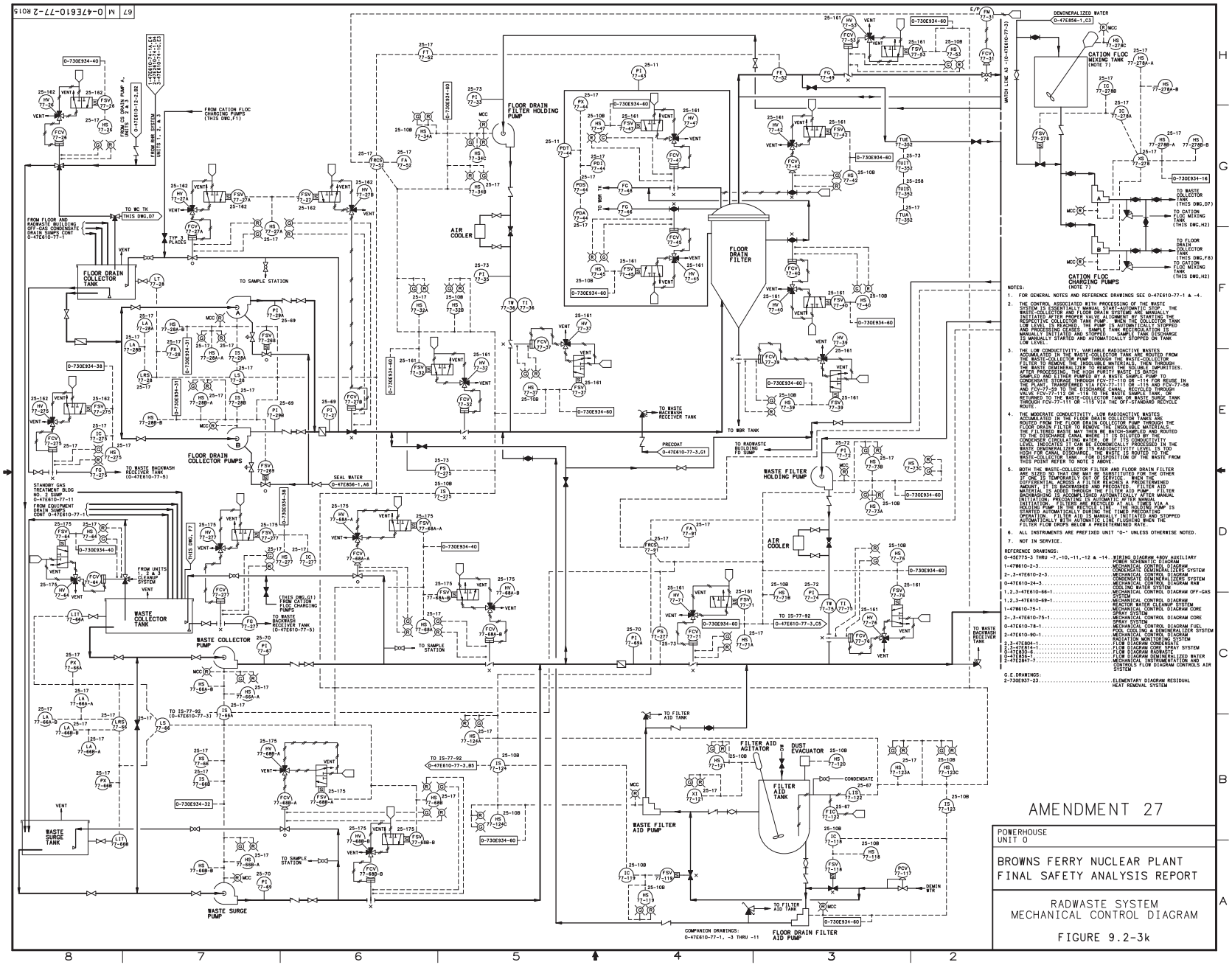
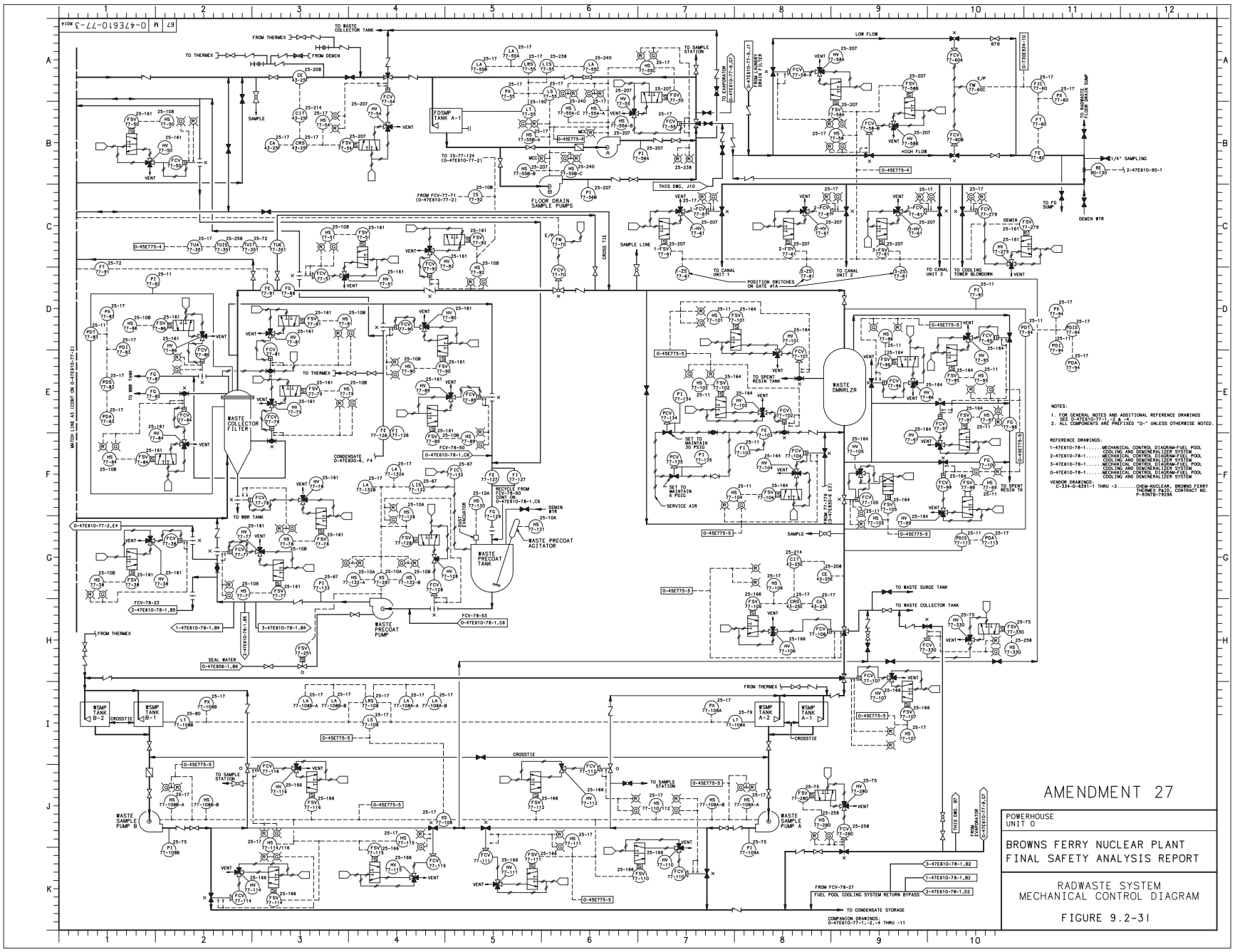


TABLE B
TABLE C
NOTES:
REFERENCE DRAWINGS:
GE DRAWINGS:
UNIT 1 DRYWELL FLOOR DRAINS SUMP PUMP PIT & PUMPS
UNIT 1 REACTOR BUILDING FLOOR DRAINS SUMPS & PUMPS
UNIT 1 TURBINE BUILDING FLOOR DRAIN SUMPS & PUMPS
UNIT 1 TURBINE BUILDING CONDENSATE PUMP PIT FLOOR DRAIN SUMP & PUMPS
BACKWASH RECEIVER PIT FLOOR DRAIN SUMP PUMPS COMMON TO UNITS 1 & 2
RADWASTE BUILDING FLOOR DRAIN SUMP & PUMPS
UNIT 1 DRYWELL EQUIPMENT DRAIN SUMP PUMP PIT & PUMPS
UNIT 1 REACTOR BUILDING EQUIPMENT DRAIN SUMP & PUMPS
UNIT 1 TURBINE BUILDING EQUIPMENT DRAIN SUMP & PUMPS
UNIT 1 TURBINE BUILDING CONDENSATE PUMP PIT EQUIPMENT DRAIN SUMP & PUMPS
RADWASTE BUILDING EQUIPMENT DRAIN SUMP & PUMPS
STANDBY GAS TREATMENT BLDG NO. 1 SUMP
RADWASTE EVAPORATOR BUILDING FLOOR DRAIN SUMP & PUMPS
RADWASTE BUILDING OFF-GAS CONDENSATE DRAIN SUMP & PUMPS
UNIT 1 FLOOD LEVEL SWITCHES
UNIT WATERSEAL BETWEEN EQUIPMENT ACCESS LOCK AND REFUELING FLOOR VENTILATION ZONE
AMENDMENT 29
POWERHOUSE UNIT 0
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT
RADWASTE SYSTEM MECHANICAL CONTROL DIAGRAM
FIGURE 9.2-3j


FLOOR DRAIN COLLECTOR TANK
FLOOR DRAIN COLLECTOR PUMPS
WASTE COLLECTOR TANK
WASTE COLLECTOR PUMP
WASTE SURGE TANK
WASTE SURGE PUMP
FLOOR DRAIN FILTER HOLDING PUMP
AIR COOLER
FLOOR DRAIN FILTER
WASTE FILTER HOLDING PUMP
FILTER AID AGITATOR
DUST EVACUATOR
FILTER AID TANK
WASTE FILTER AID PUMP
FLOOR DRAIN FILTER AID PUMP
CATION FLOC MIXING TANK (NOTE 7)
CATION FLOC CHARGING PUMPS (NOTE 7)
DEMINERALIZED WATER
TO SAMPLE STATION
TO WASTE BACKWASH RECEIVER TANK
TO RADWASTE BUILDING FD SUMP
TO MBR TANK
SEAL WATER
PRECOAT
NOTES:
1. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE 0-47E610-77-1 & -4.
2. THE CONTROL ASSOCIATED WITH PROCESSING OF THE WASTE SYSTEM IS ESSENTIALLY MANUAL START-AUTOMATIC STOP. WASTE-COLLECTOR AND FLOOR DRAIN SYSTEMS ARE MANUALLY INITIATED AFTER PROPER VALVE ALIGNMENT BY STARTING THE RESPECTIVE COLLECTOR TANK PUMP. WHEN THE COLLECTOR TANK LOW LEVEL IS REACHED, THE PUMP IS AUTOMATICALLY STOPPED FOR PROCESSING DECAGE. THE SAMPLE TANK DISCHARGE IS MANUALLY INITIATED AND STOPPED. SAMPLE TANK DISCHARGE IS MANUALLY STARTED AND AUTOMATICALLY STOPPED ON TANK LOW LEVEL.
3. THE LOW CONDUCTIVITY, VARIABLE RADIOACTIVE WASTES ACCUMULATED IN THE WASTE-COLLECTOR TANK ARE ROUTED FROM THE WASTE-COLLECTOR PUMP THROUGH THE WASTE-COLLECTOR FILTER TO REMOVE THE INSOLUBLE MATERIALS, THEN THROUGH THE WASTE DEMINERALIZER TO REMOVE THE SOLUBLE IMPURITIES. THE DEMINERALIZED WASTE MAY THEN BE BATCH-SAMPLED AND SAMPLED AND EITHER PUMPED BY THE WASTE SAMPLE PUMP TO CONDENSATE STORAGE THROUGH FCV-77-110 OR -114 FOR REUSE IN THE PLANT, TRANSFERRED VIA FCV-77-111 OR -115 AND FCV-77-58 AND FCV-77-99 TO THE DISCHARGE CANAL, RECYCLED THROUGH VALVE FCV-77-112 OR -116 TO THE WASTE SAMPLE TANK, OR RETURNED TO THE WASTE-COLLECTOR TANK OR WASTE SURGE TANK THROUGH FCV-77-111 OR -115 VIA THE "STANDARD RECYCLE" ROUTE.
4. THE MODERATE CONDUCTIVITY, LOW RADIOACTIVE WASTES ACCUMULATED IN THE FLOOR DRAIN COLLECTOR TANKS ARE ROUTED FROM THE FLOOR DRAIN COLLECTOR PUMP THROUGH THE FLOOR DRAIN FILTER TO REMOVE THE INSOLUBLE MATERIALS. THE FILTERED WASTE MAY THEN BE BATCH-SAMPLED AND ROUTED TO THE DISCHARGE CANAL WHERE IT IS DILUTED BY THE CONDENSER CIRCULATING WATER. IF ITS CONDUCTIVITY EXCEEDS THE LIMIT FOR DISCHARGE, OR IF ACCOMPANYING THE WASTE DEMINERALIZER OR ITS RADIOACTIVITY LEVEL IS TOO HIGH FOR CANAL DISCHARGE, THE WASTE IS ROUTED TO THE WASTE-COLLECTOR TANK FOR DISPOSITION OF THE WASTE FROM THIS POINT REFER TO NOTE 2 ABOVE.
5. BOTH THE WASTE-COLLECTOR FILTER AND FLOOR DRAIN FILTER ARE SIZED SO THAT ONE MAY BE SUBSTITUTED FOR THE OTHER IF ONE IS TEMPORARILY OUT OF SERVICE. WHEN THE DIFFERENTIAL ACROSS A FILTER REACHES A PREDETERMINED AMOUNT, IT IS BACKWASHED AND PRECOATED. THE FILTER AID MATERIAL IS ADDED THROUGH A FUNNEL. THE FILTER BACKWASHING IS ACCOMPLISHED AUTOMATICALLY AFTER MANUAL INITIATION. PRECOATING IS AUTOMATIC AFTER MANUAL INITIATION. FILTERS ARE RECYCLED AT ALL TIMES VIA A HOLDING PUMP. IN THE RECYCLE MODE, THE HOLDING PUMP IS STARTED AUTOMATICALLY DURING THE TIMED INITIATION OF BACKWASH. IT IS STARTED MANUALLY, INITIATED AND STOPPED AUTOMATICALLY WITH AUTOMATIC LINE FLUSHING WHEN THE FILTER FLOW DROPS BELOW A PREDETERMINED RATE.
6. ALL INSTRUMENTS ARE PREFIXED UNIT "0-" UNLESS OTHERWISE NOTED.
7. NOT IN SERVICE.
REFERENCE DRAWINGS:
0-45E775-3 THRU -7,-10,-11,-12 & -14 ... WIRING DIAGRAM 480V AUXILIARY POWER SCHEMATIC DIAGRAM
1-47B610-2-3 ... MECHANICAL CONTROL DIAGRAM CONDENSATE DEMINERALIZERS SYSTEM
2-,3-47E610-2-3 ... MECHANICAL CONTROL DIAGRAM CONDENSATE DEMINERALIZERS SYSTEM
0-47E610-24-3 ... MECHANICAL CONTROL DIAGRAM RAW COOLING WATER SYSTEM
1,2,3-47E610-68-1 ... MECHANICAL CONTROL DIAGRAM OFF-GAS SYSTEM
1,2,3-47E610-69-1 ... MECHANICAL CONTROL DIAGRAM REACTOR BUILDING CLOSED COOLING WATER SYSTEM
1-47B610-75-1 ... MECHANICAL CONTROL DIAGRAM CORE SPRAY SYSTEM
2-,3-47E610-75-1 ... MECHANICAL CONTROL DIAGRAM CORE SPRAY SYSTEM
0-47E610-78-1 ... MECHANICAL CONTROL DIAGRAM FUEL POOL COOLING AND CLEANUP SYSTEM
2-47E610-90-1 ... RADIATION MONITORING SYSTEM
2,3-47E804-1 ... FLOW DIAGRAM CONDENSATE
2,3-47E814-1 ... FLOW DIAGRAM CORE SPRAY SYSTEM
0-47E830-6 ... FLOW DIAGRAM RADWASTE
0-47E856-1 ... FLOW DIAGRAM DEMINERALIZED WATER
2-47E2847-1 ... FLOW DIAGRAM REACTOR BUILDING CLOSED COOLING WATER AND CONTROLS FLOW DIAGRAM CONTROLS AIR SYSTEM
G.E.DRAWINGS:
2-730E937-23 ... ELEMENTARY DIAGRAM RESIDUAL HEAT REMOVAL SYSTEM
COMPANION DRAWINGS: 0-47E610-77-1, -3 THRU -11
AMENDMENT 27
POWERHOUSE UNIT 0
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT
RADWASTE SYSTEM
MECHANICAL CONTROL DIAGRAM
FIGURE 9.2-3k



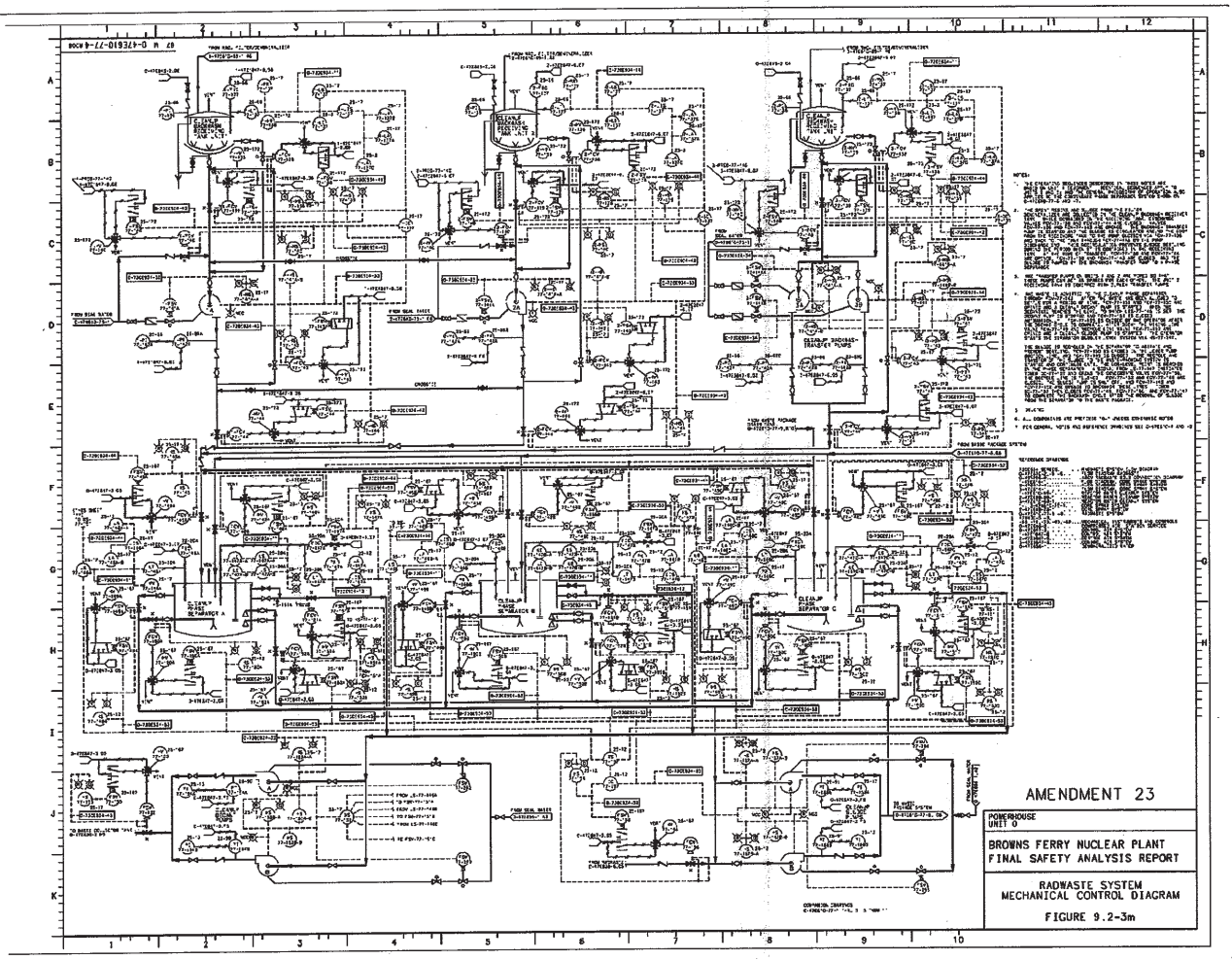
AMENDMENT 27

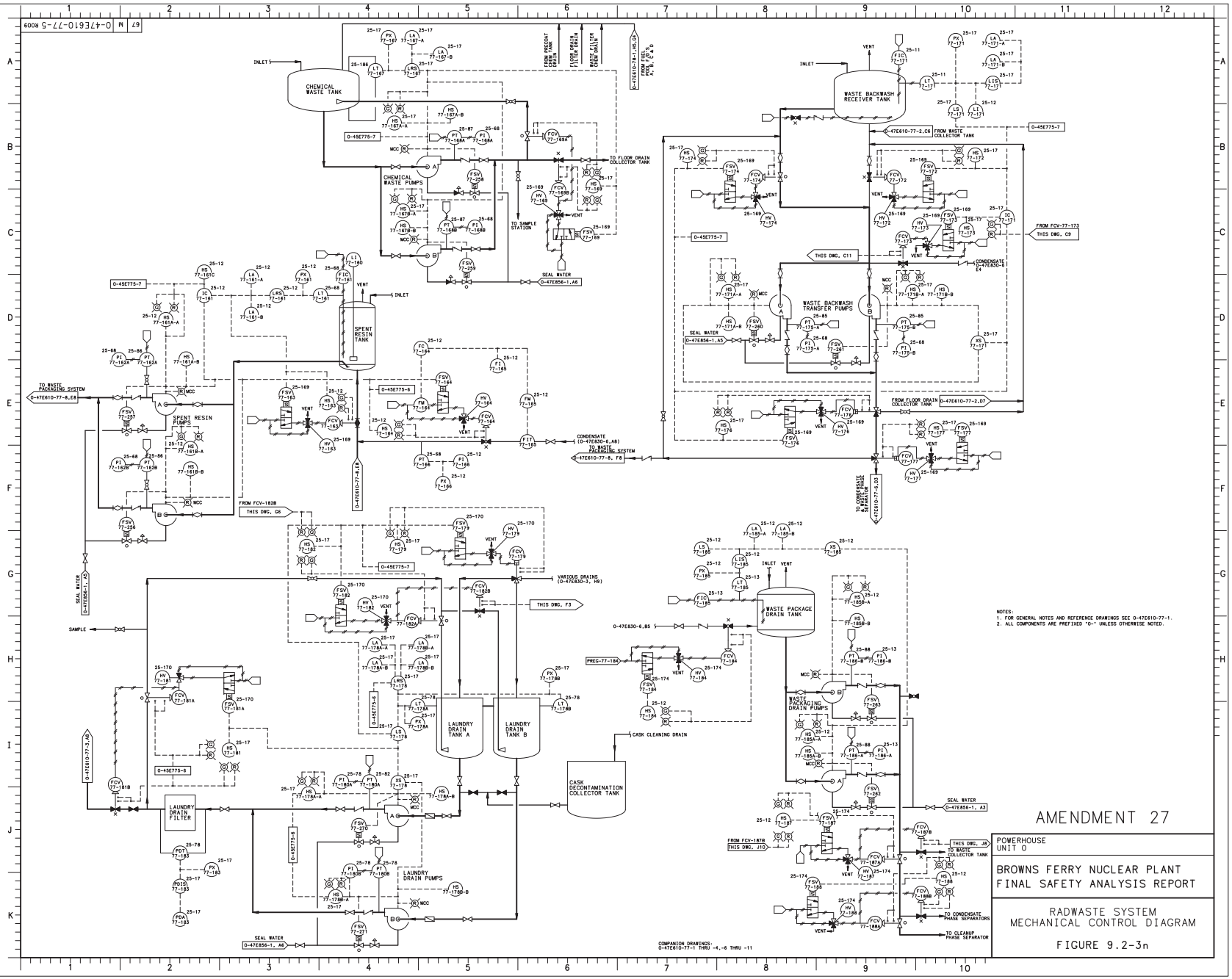
POWERHOUSE
UNIT O

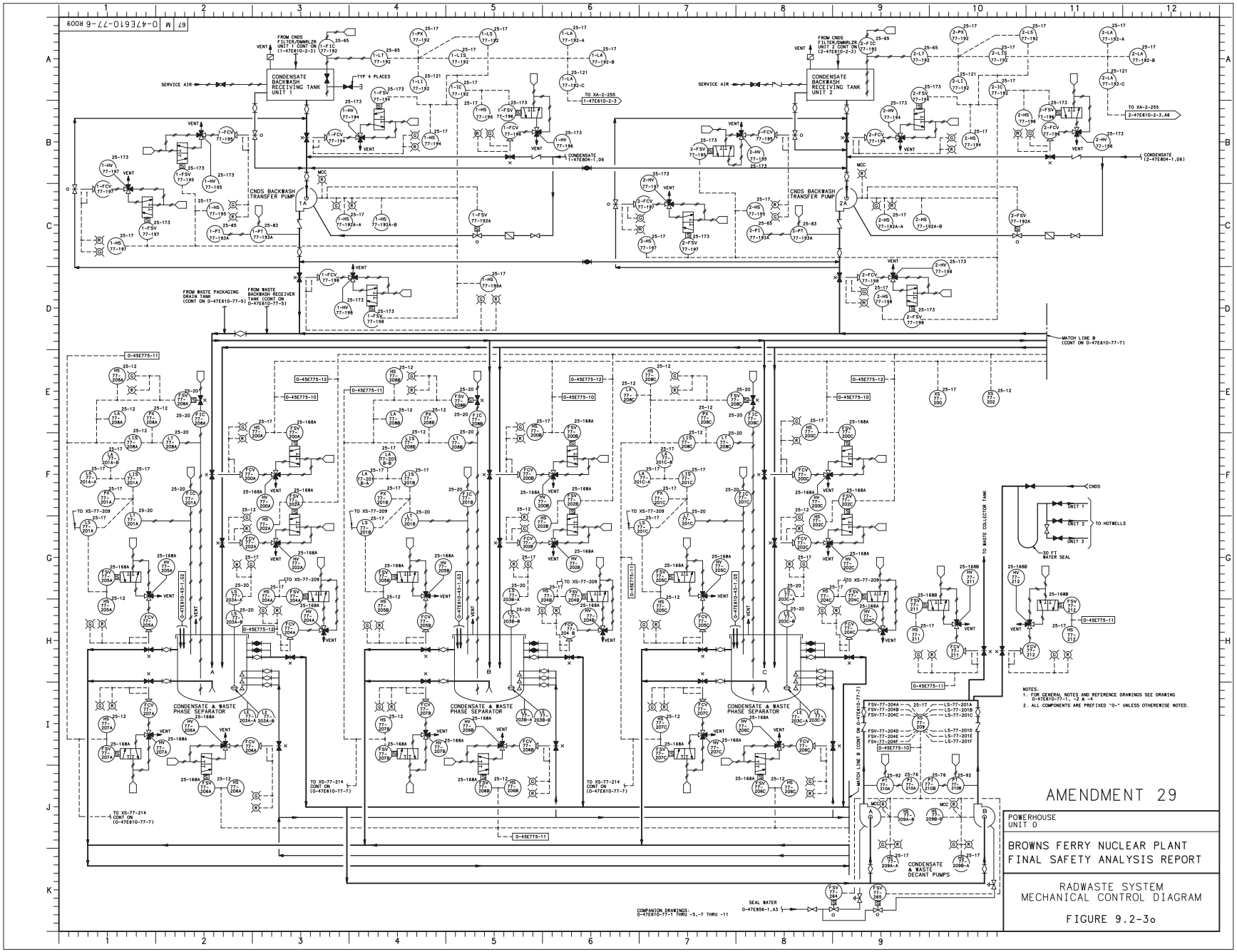
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT

RADWASTE SYSTEM
MECHANICAL CONTROL DIAGRAM

FIGURE 9.2-31


AMENDMENT 23
POWERHOUSE
UNIT 0
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT
RADWASTE SYSTEM
MECHANICAL CONTROL DIAGRAM
FIGURE 9.2-3m


CHEMICAL WASTE TANK
CHEMICAL WASTE PUMPS
SPENT RESIN TANK
SPENT RESIN PUMPS
WASTE BACKWASH RECEIVER TANK
WASTE BACKWASH TRANSFER PUMPS
WASTE PACKAGE DRAIN TANK
WASTE PACKAGING DRAIN PUMPS
LAUNDRY DRAIN TANK A
LAUNDRY DRAIN TANK B
LAUNDRY DRAIN FILTER
LAUNDRY DRAIN PUMPS
CASK DECONTAMINATION COLLECTOR TANK
NOTES:
1. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE 0-47E610-77-1.
2. ALL COMPONENTS ARE PREFIXED "0-" UNLESS OTHERWISE NOTED.
AMENDMENT 27
POWERHOUSE
UNIT 0
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT
RADWASTE SYSTEM
MECHANICAL CONTROL DIAGRAM
FIGURE 9.2-3n



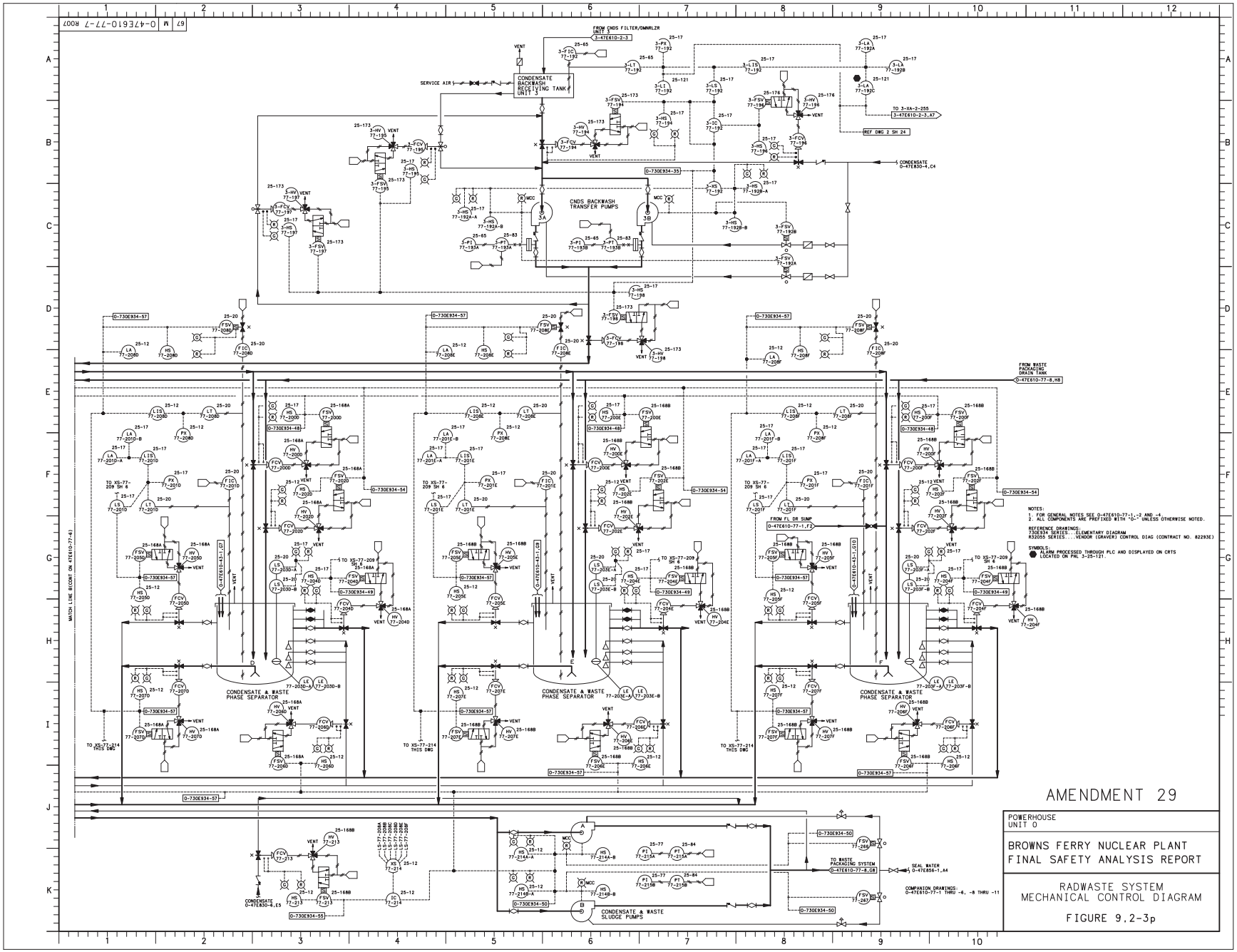
AMENDMENT 29

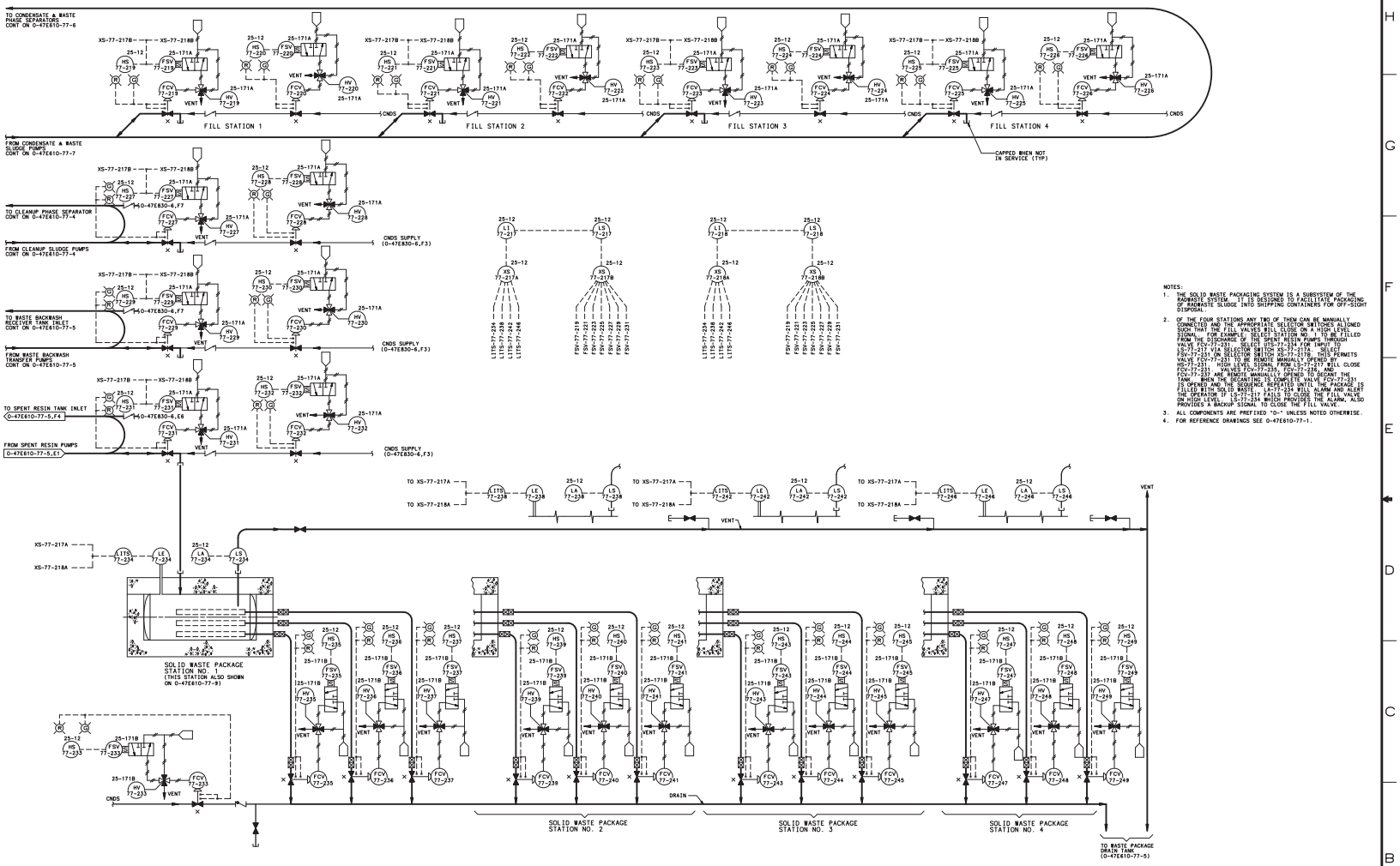
POWERHOUSE
UNIT 0

BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT

RADWASTE SYSTEM
MECHANICAL CONTROL DIAGRAM

FIGURE 9.2-3o


AMENDMENT 29
POWERHOUSE
UNIT 0
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT
RADWASTE SYSTEM
MECHANICAL CONTROL DIAGRAM
FIGURE 9.2-3p
CONDENSATE BACKWASH RECEIVING TANK UNIT 3
CNDS BACKWASH TRANSFER PUMPS
CONDENSATE & WASTE PHASE SEPARATOR
CONDENSATE & WASTE SLUDGE PUMPS
NOTES:
1. FOR GENERAL NOTES SEE 0-47E610-77-1,-2 AND -4.
2. ALL COMPONENTS ARE PREFIXED WITH "0-" UNLESS OTHERWISE NOTED.
REFERENCE DRAWINGS:
730E934 SERIES: ELEMENTARY DIAGRAM
R32055 SERIES....VENDOR (GRAVER) CONTROL DIAG (CONTRACT NO. 82293E)
SYMBOLS:
ALARM PROCESSED THROUGH PLC AND DISPLAYED ON CRTS LOCATED ON PNL 3-25-121.



NOTES:

1. THE SOLID WASTE PACKAGING SYSTEM IS A SUBSYSTEM OF THE RADWASTE SYSTEM. IT IS DESIGNED TO FACILITATE PACKAGING OF RADWASTE SLUDGE INTO SHIPPING CONTAINERS FOR OFF-SIGHT DISPOSAL.
2. OF THE FOUR STATIONS ANY TWO OF THEM CAN BE MANUALLY CONNECTED AND THE APPROPRIATE SELECTOR SWITCHES ALIGNED SUCH THAT THE FILL VALVES WILL CLOSE ON A HIGH LEVEL SIGNAL. FOR EXAMPLE, SELECT STATION NO. 1 TO BE FILLED FROM THE DISCHARGE OF THE SPENT RESIN PUMPS THROUGH VALVE FCV-77-231. SELECT STATION NO. 2 TO BE FILLED THROUGH VALVE FCV-77-232. SELECTOR SWITCH XS-77-217A SELECTS FSV-77-231 ON SELECTOR SWITCH XS-77-217B. THIS PERMITS VALVE FCV-77-231 TO BE REMOTE MANUALLY OPENED BY HS-77-231. HIGH LEVEL SIGNAL FROM LS-77-217 WILL CLOSE FCV-77-231. VALVES FCV-77-235, FCV-77-236, AND FCV-77-237 ARE REMOTE MANUALLY OPENED TO DRAIN THE TANK. WHEN THE REMOTE MANUAL CONTROL VALVE FCV-77-231 IS OPENED AND THE SEQUENCE REPEATED UNTIL THE PACKAGE IS FILLED WITH SOLID WASTE. LA-77-234 WILL ALARM AND ALERT THE OPERATOR IF LS-77-21 FAILS TO CLOSE THE FILL VALVE ON HIGH LEVEL. LS-77-234 WHICH PROVIDES THE ALARM, ALSO PROVIDES A BACKUP SIGNAL TO CLOSE THE FILL VALVE.
3. ALL COMPONENTS ARE PREFIXED "0-" UNLESS NOTED OTHERWISE.
4. FOR REFERENCE DRAWINGS SEE 0-47E610-77-1.

COMPANION DRAWINGS: 0-47E610-77-1 THRU -7,-9 THRU -11

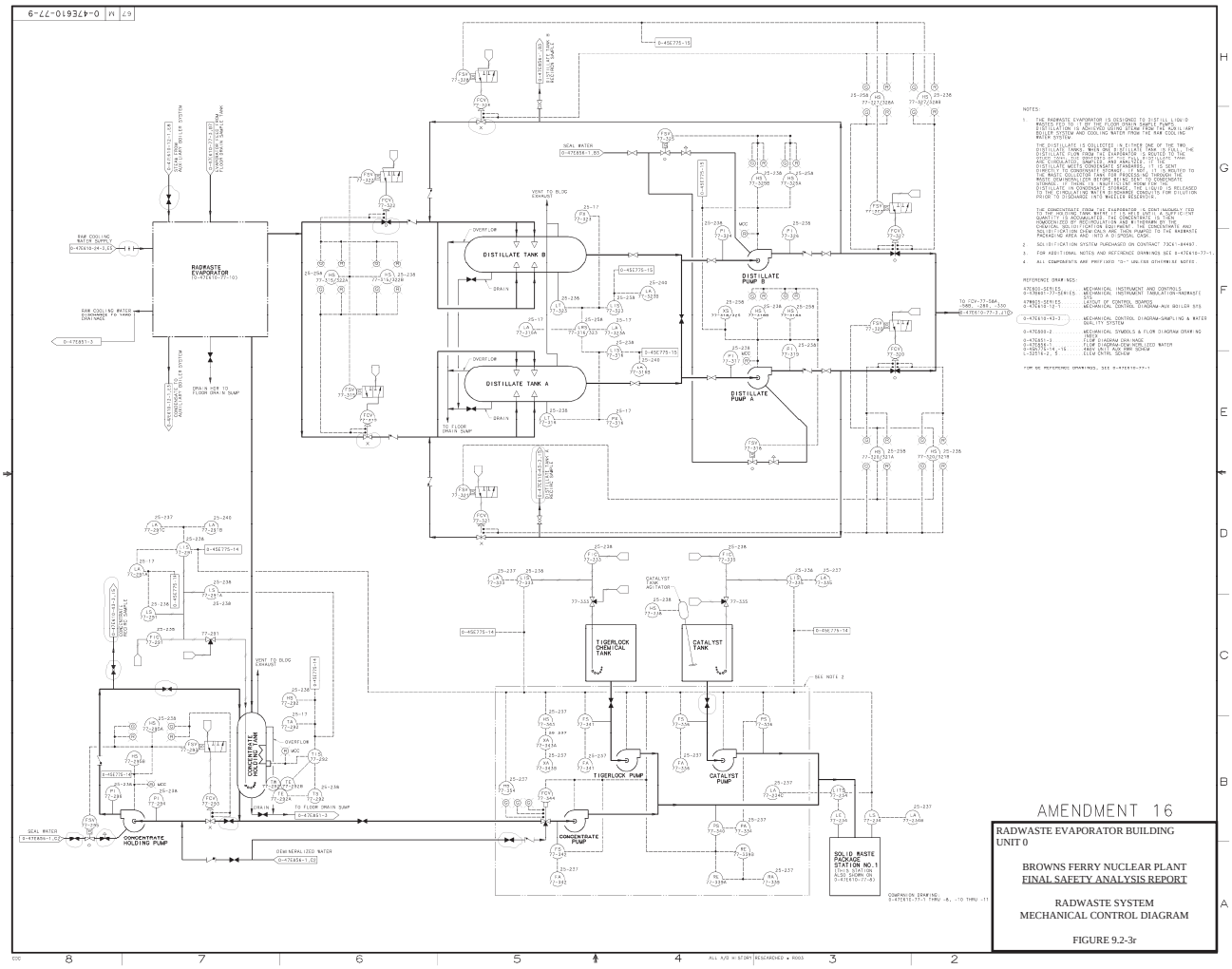
AMENDMENT 29

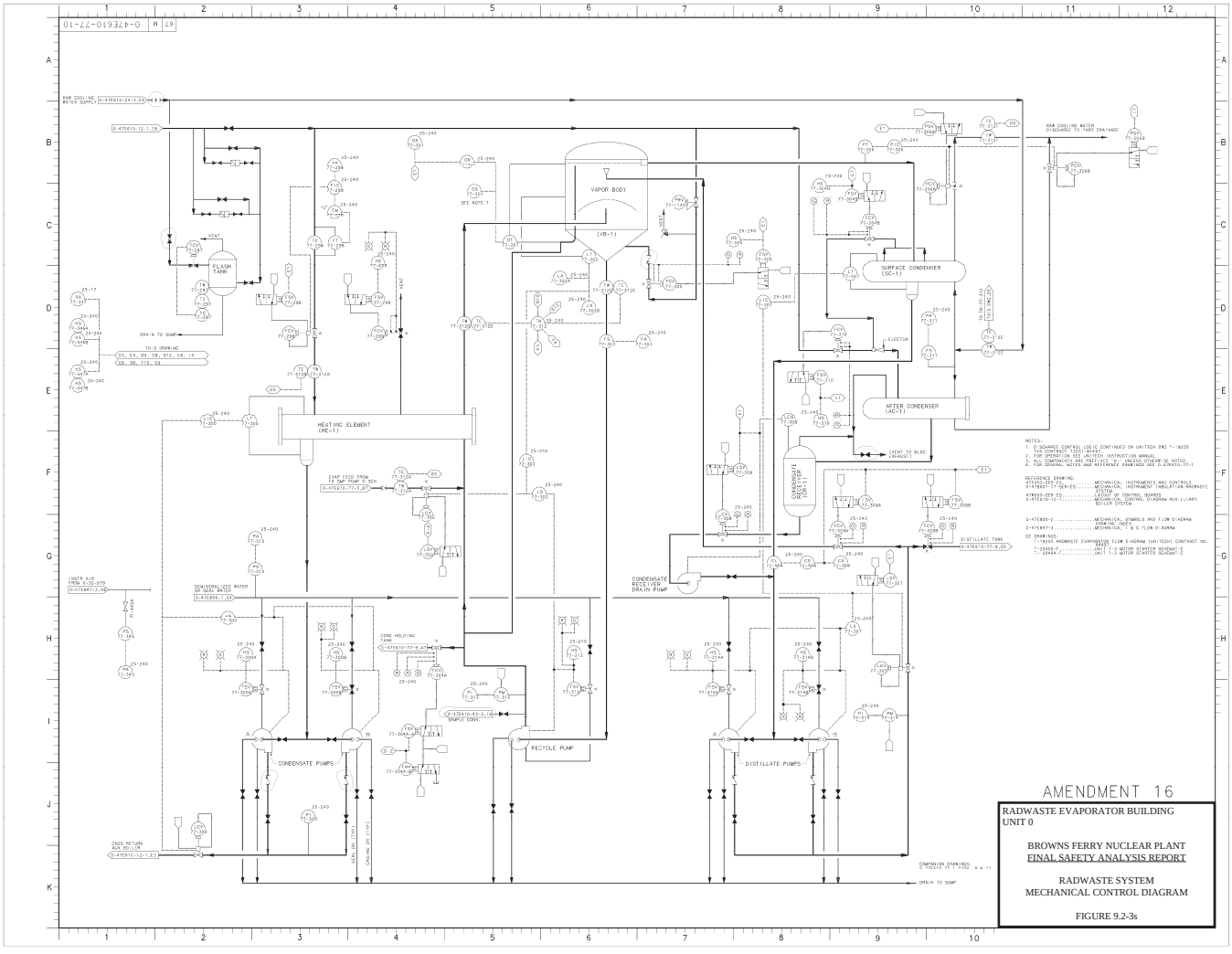
POWERHOUSE
UNIT 0

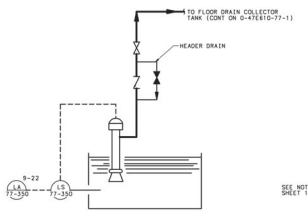
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT

RADWASTE SYSTEM
MECHANICAL CONTROL DIAGRAM

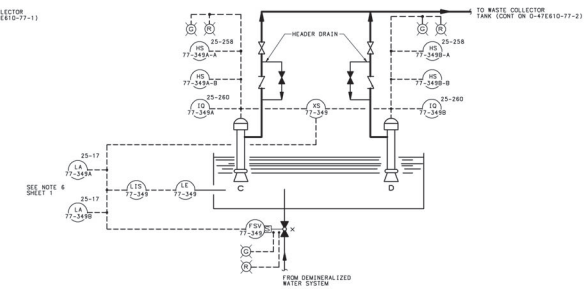
FIGURE 9.2-3q


RADWASTE EVAPORATOR
DISTILLATE TANK B
DISTILLATE TANK A
DISTILLATE PUMP B
DISTILLATE PUMP A
CONCENTRATE HOLDING TANK
CONCENTRATE PUMP
TIGERLOCK CHEMICAL TANK
CATALYST TANK
TIGERLOCK PUMP
CATALYST PUMP
SOLID WASTE PACKAGE STATION NO. 1
CONCENTRATE HOLDING PUMP
DEMINERALIZED WATER
SEAL WATER
RAW COOLING WATER SUPPLY
RAW COOLING WATER SYSTEM FOR HAND DRAINAGE
DRAIN HDR TO FLOOR DRAIN SUMP
TO FLOOR DRAIN SUMP
VENT TO BLDG EXHAUST
TO CCV-77-584A
NOTES:
REFERENCE DRAWINGS:
AMENDMENT 16
RADWASTE EVAPORATOR BUILDING UNIT 0
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT
RADWASTE SYSTEM
MECHANICAL CONTROL DIAGRAM
FIGURE 9.2-3r


VAPOR BODY
(VB-1)
FLASH TANK
HEATING ELEMENT (HE-1)
SURFACE CONDENSER (SC-1)
EJECTOR
AFTER CONDENSER (AC-1)
CONDENSATE RECEIVER DRAIN PUMP
CONDENSATE PUMPS
RECYCLE PUMP
DISTILLATE PUMPS
VENT TO BLDG EXHAUST
DRAIN TO SUMP
RAW COOLING WATER DISCHARGE TO YARD DRAINAGE
AMENDMENT 16
RADWASTE EVAPORATOR BUILDING
UNIT 0
BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT
RADWASTE SYSTEM
MECHANICAL CONTROL DIAGRAM
FIGURE 9.2-3s



CONDENSATE PIPE TUNNEL SUMP B
EL 550.5
(1 ONLY)



STANDBY GAS TREATMENT BLDG NO. 2 SUMP
EL 565.0
(1 ONLY)

NOTES:

1. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE 0-47E610-77-1.
2. ALL COMPONENTS ARE PREFIXED "0-" UNLESS NOTED OTHERWISE.

REFERENCE DRAWING:
0-47E830-9.....FLOW DIAGRAM, RADWASTE

COMPANION DRAWINGS:
0-47E610-77-1 THRU -10

AMENDMENT 25

POWERHOUSE
UNIT 0

BROWNS FERRY NUCLEAR PLANT
FINAL SAFETY ANALYSIS REPORT

RADWASTE SYSTEM
MECHANICAL CONTROL DIAGRAM

FIGURE 9.2-3t

Figure 9.2-4
(Deleted by Amendment 22)

Figures 9.2-4a through 9.2-4f

Deleted by Amendment 9.