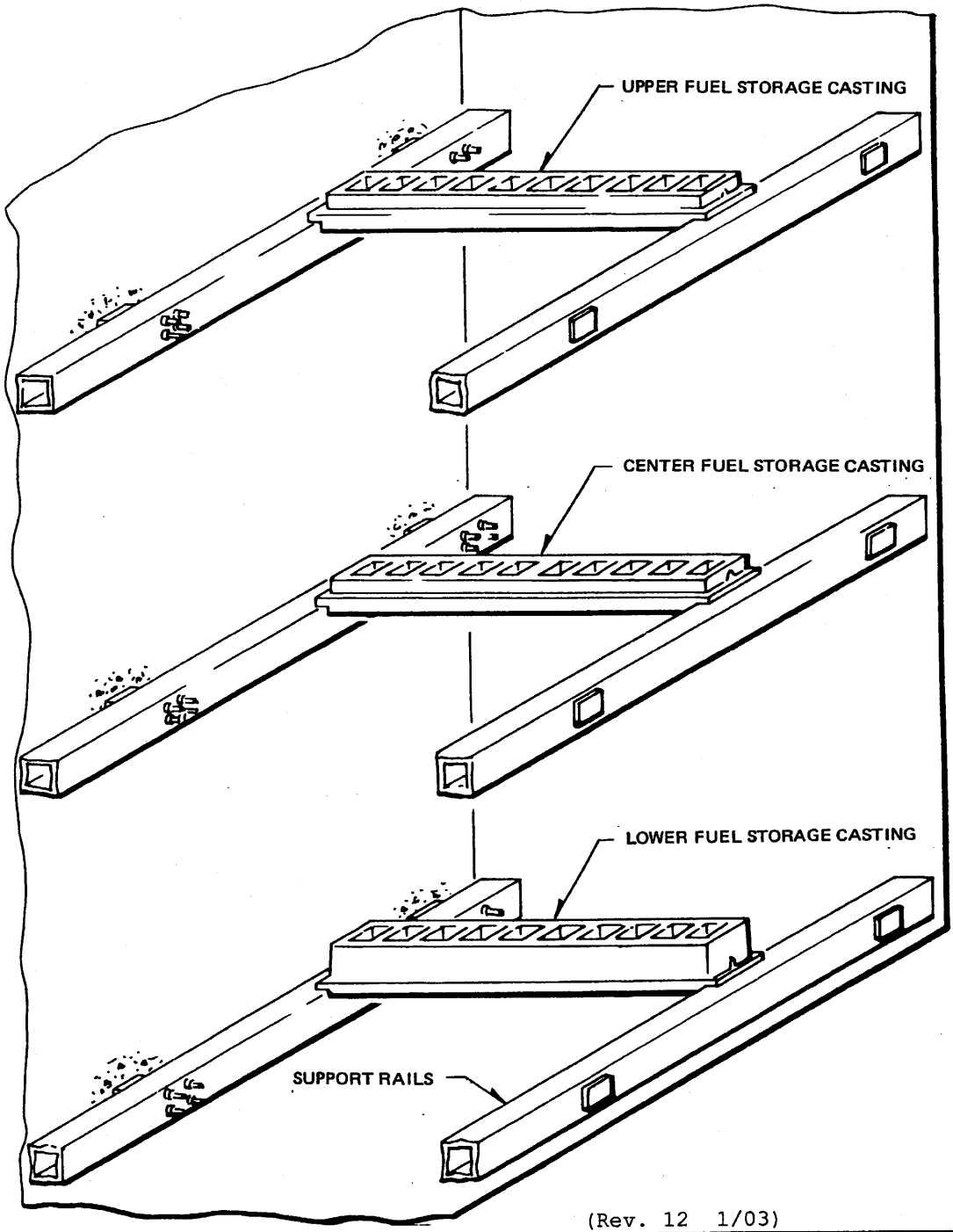

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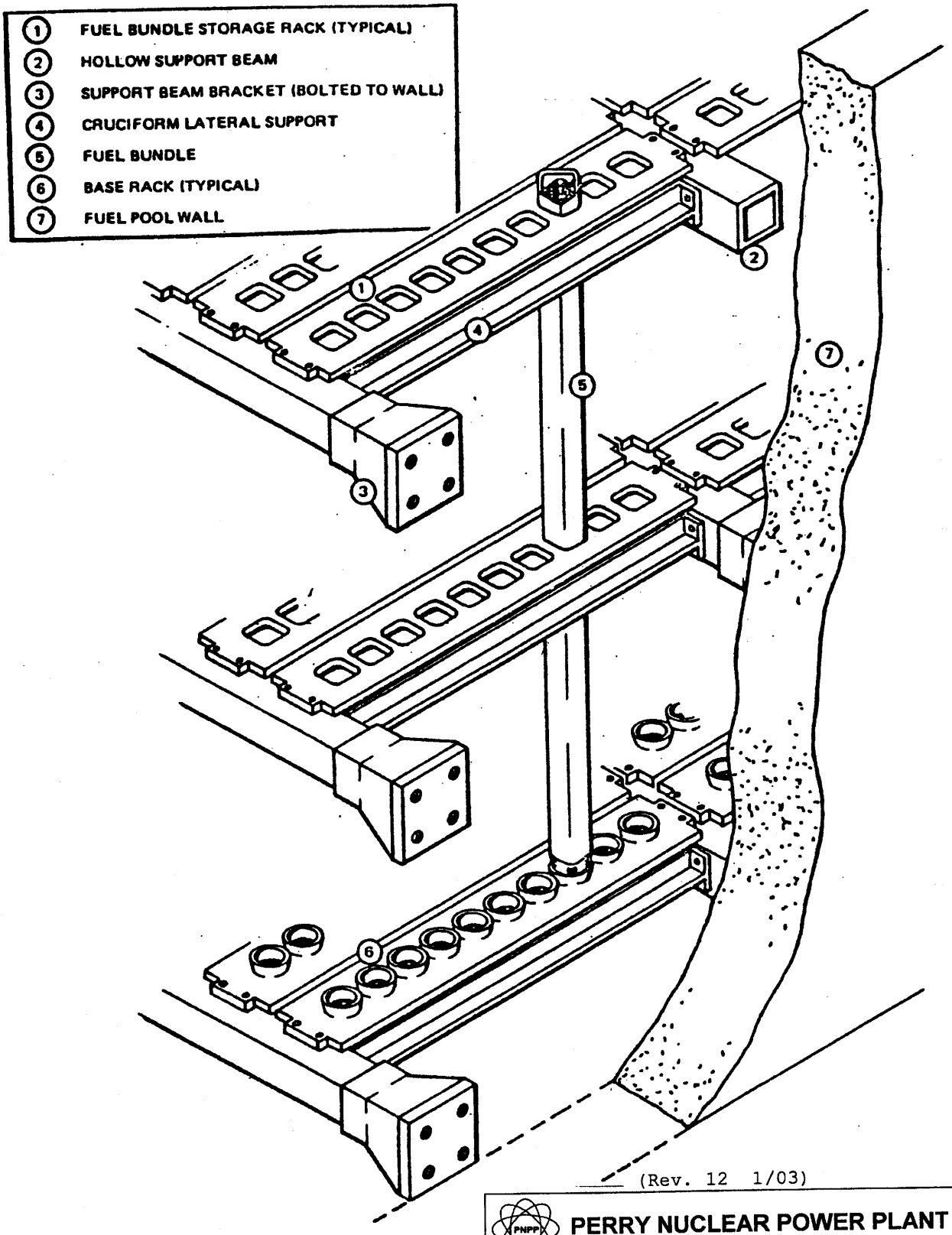
PERRY NUCLEAR POWER PLANT

New Fuel Vault

Figure 9.1-1



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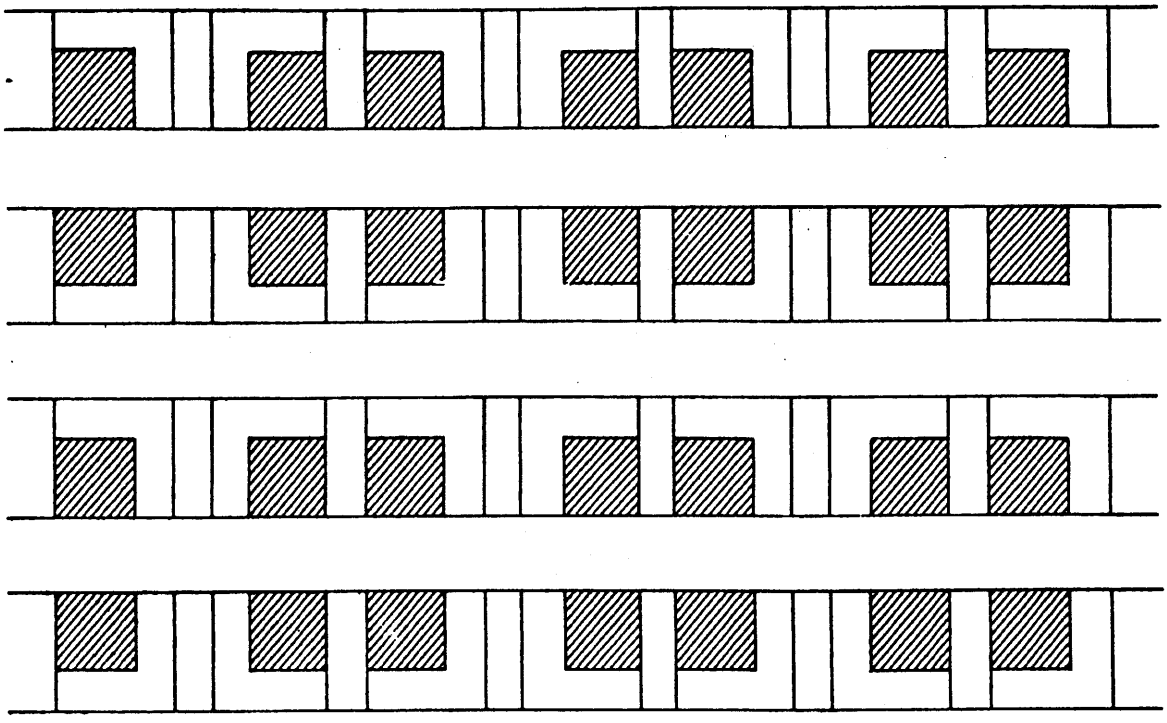
PERRY NUCLEAR POWER PLANT

Fuel Storage Racks

Figure 9.1-2



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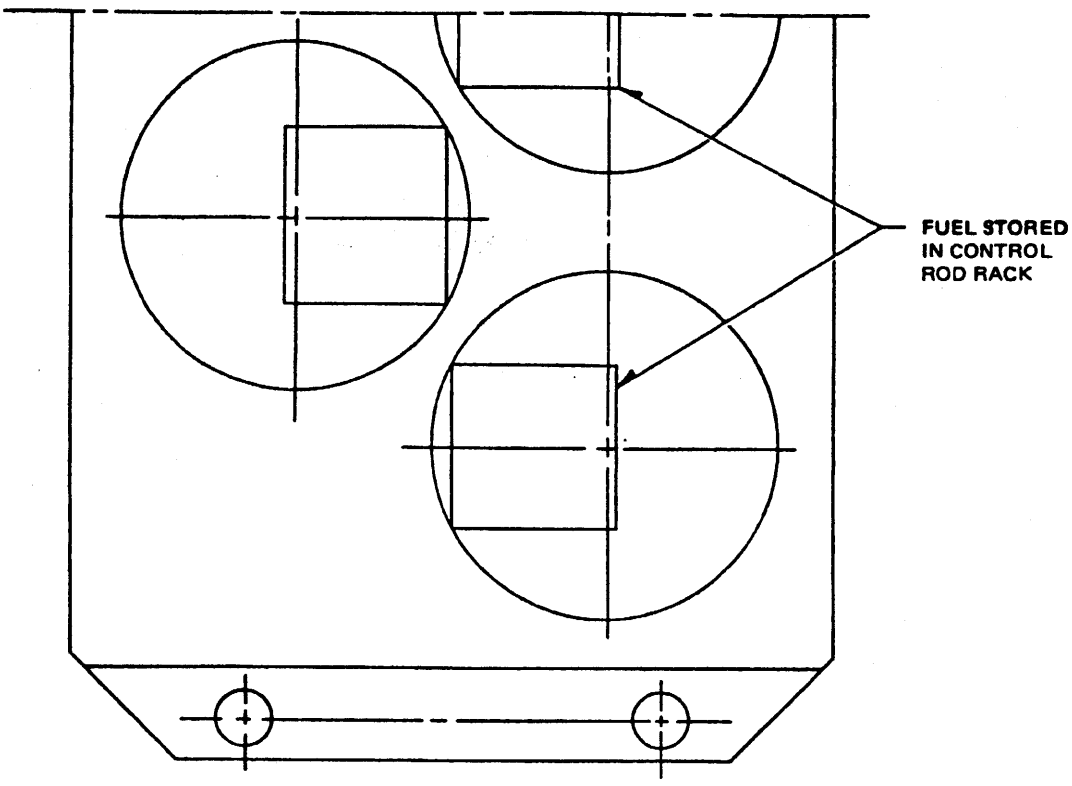
PERRY NUCLEAR POWER PLANT

Eccentric Fuel Positioning

Figure 9.1-3



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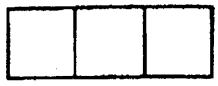
PERRY NUCLEAR POWER PLANT

Fuel Stored in Control Rod Racks

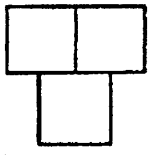
Figure 9.1-4

TWO BUNDLE SIDE-BY-SIDE ARRAY

THREE BUNDLE LINEAR ARRAY



THREE BUNDLE TEE ARRAY



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PERRY NUCLEAR POWER PLANT

Abnormal Fuel Storage Conditions

Figure 9.1-5

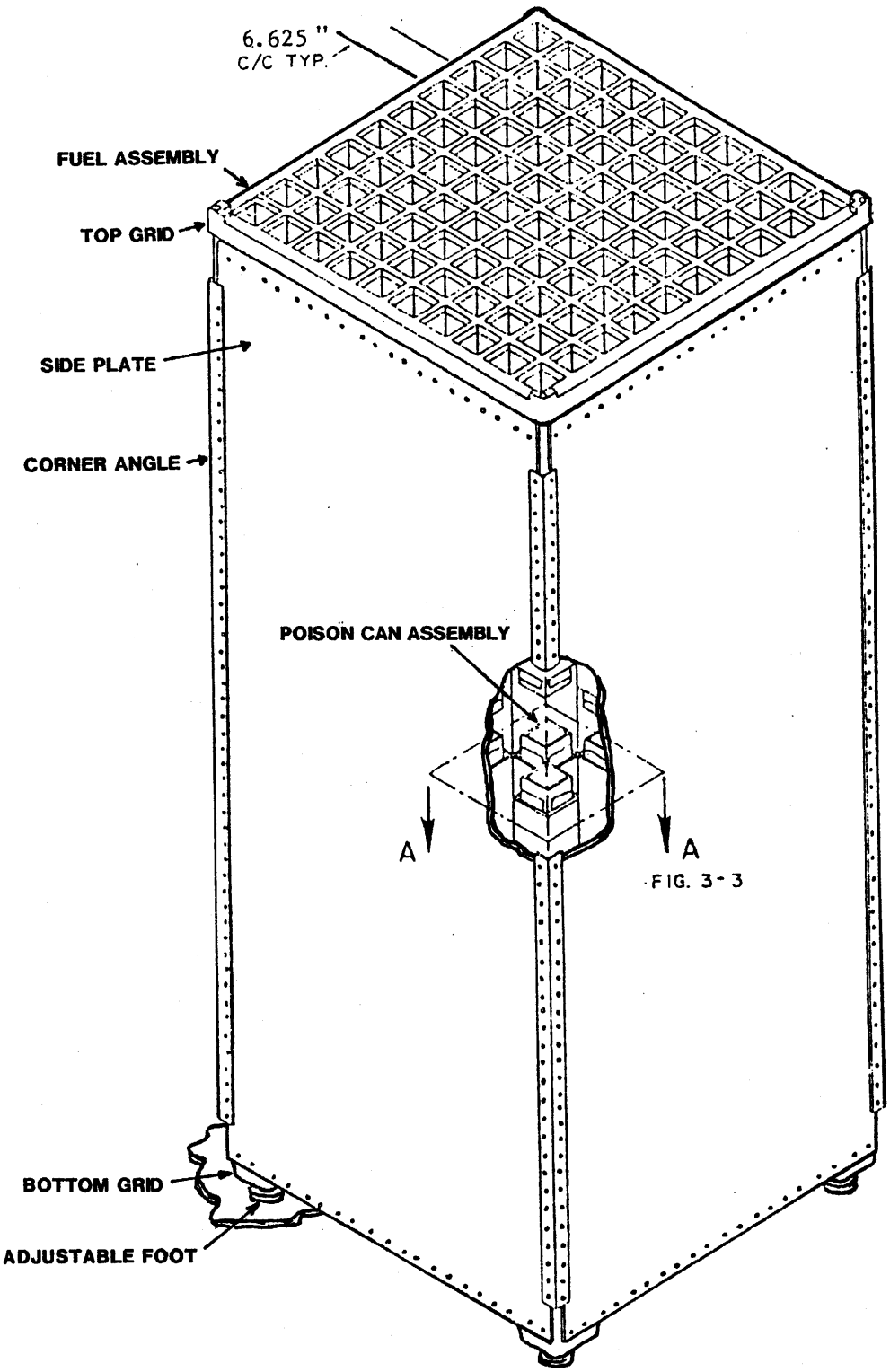

FIG. 3-3

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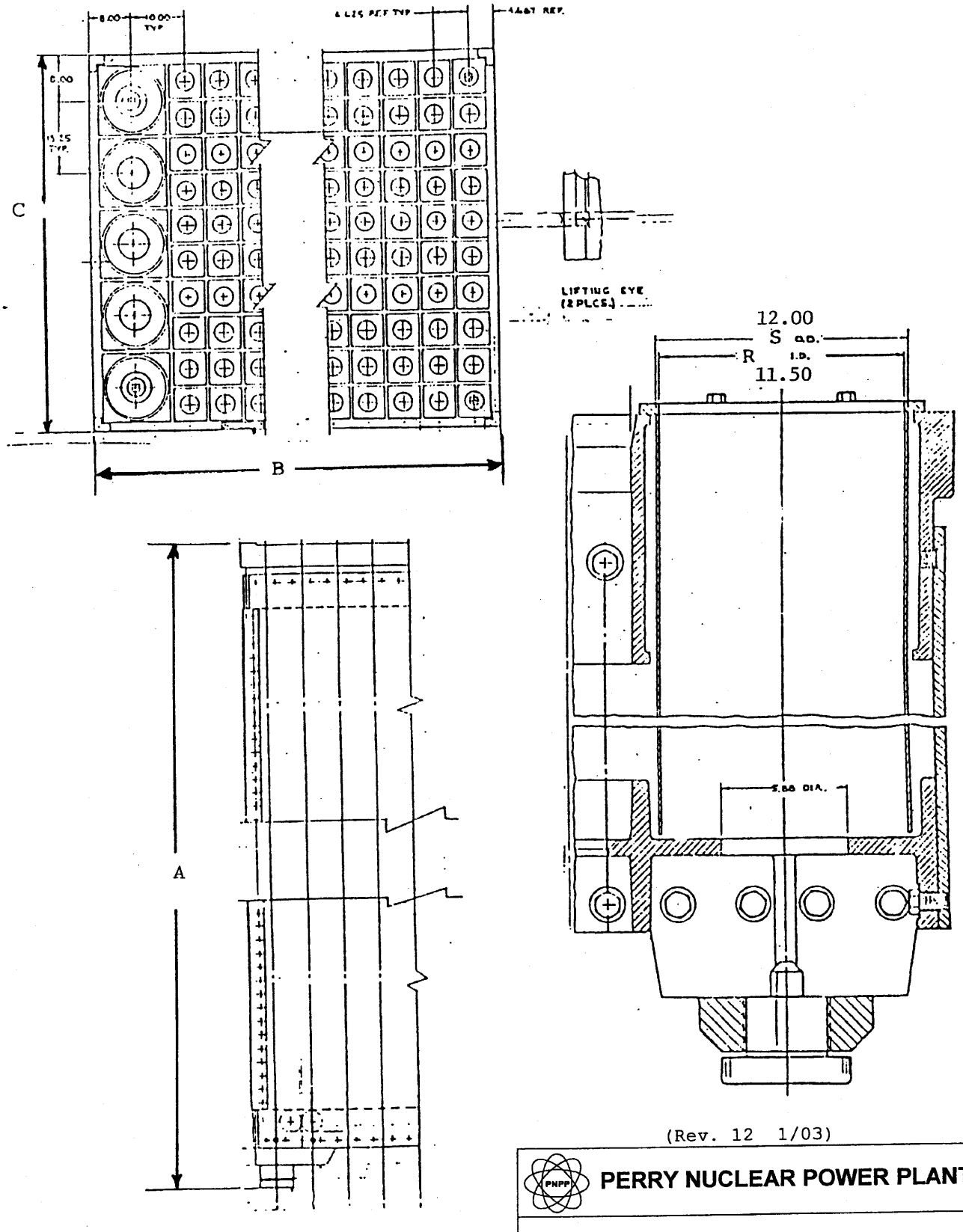
PERRY NUCLEAR POWER PLANT

Modular Isometric View

Figure 9.1-6



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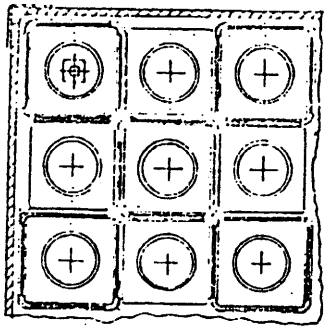
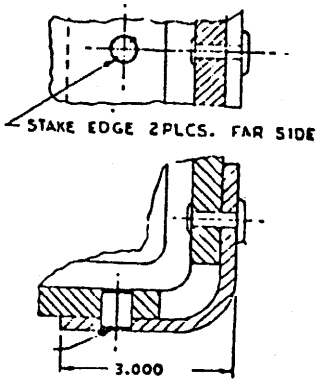
PERRY NUCLEAR POWER PLANT

7x10+5 Multiple Purpose Cavities
BWR Spent Fuel Rack

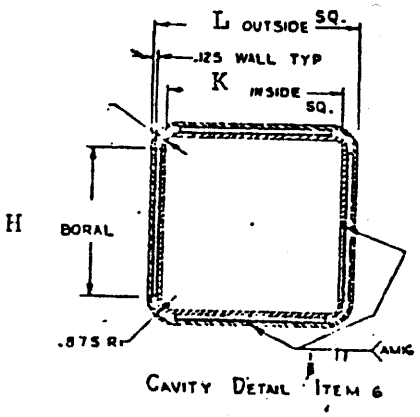
Figure 9.1-7



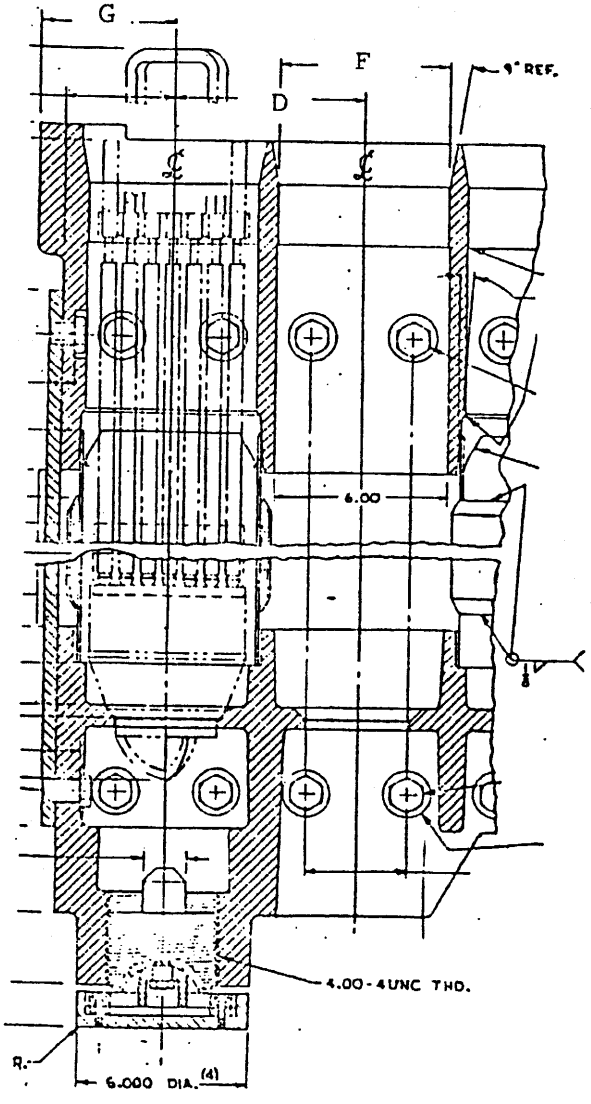
CORNER CROSS SECTION



CORNER ANGLE DETAIL



CAVITY DETAIL ITEM 6



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PERRY NUCLEAR POWER PLANT

Detail Sections

Figure 9.1-8

OPERATING DATA (NORMAL)
SEE NOTE 13

	GPM	PSIG	°F	BY		REMARKS	REV
1	300	62	*	PLL		+68°F MIN./150°F MAX	
2	50	8	*	PLL			
3	50	8	*	PLL			
4	100	8	*	PLL			
5	100	8	*	PLL			
6	300	ATMOS	*	PLL			
7	2800	-	*	-		MINIMUM	
8	2800	-	*	-		MINIMUM	

DESIGN DATA

PB	NORMAL PSIG	NORMAL °F	UPSET PSIG	UPSET °F	TIME	BY	CHKD	REMARKS	REV
1	50	180	50	180		DAK	RJS		
2	150	180	150	180		DAK	RJS		
3	150	135	150	135		DAK	RJS		
4	1250	575	1250	575		RJS	ECD		
5A	35	185	35	185		PLL	JET		
6	55	185	55	185		PLL	JET		
7	12	580	-	-		PLL	JET	SEE NOTE 12	

NOTES:

1. THE CONTAINMENT POOL SYSTEM IS SAFETY CLASS 3, EXCEPT AS NOTED.
2. LEAK DETECTION PIPING AND VALVES ARE NON-SAFETY CLASS.
3. FOR CONTINUATION OF THIS SYSTEM, REFER TO DWGS. 302-0654-00000 AND 302-0655-00000.
4. THE FOLLOWING ITEMS ARE EMBEDDED IN CONCRETE;
   A. POOL SUPPLY LINES DOWNSTREAM OF VALVES F523, 524, 525, AND 526.
   B. SKIMMER DRAIN LINE INCLUDING A PORTION OF THE 18" DRAIN HEADER.
   C. RHR RETURN LINES TO SEPERATOR AND DRYER POOLS.
   D. LEAK DETECTION LINES.
5. POOL LEVEL ALARMS;
   A. HIGH LEVEL-688'-10"
   B. LOW LEVEL-688'-5"
6. RHR LINES TO STORAGE POOLS ARE USED ONLY DURING REFUELING OPERATIONS. NOMINAL FLOW EACH RHR LOOP IS 7500 GPM.
7. SEPERATOR STORAGE AND REACTOR WELL LEAKAGE DETECTION LINES DISCHARGE INTO COMMON FUNNEL.
8. FUEL TRANSFER, FUEL STORAGE, AND DRYER STORAGE LEAKAGE DETECTION LINES DISCHARGE INTO COMMON FUNNEL.
9. ALL PANELS CARRY PREFIX 1H13, UNLESS OTHERWISE NOTED.
10. SPRAY NOZZLES ARE SPRACO NOZZLES NO. 4342311B MADE OF STAINLESS STEEL AND TAGGED D813.
11. SEE E31 LEAK DETECTION SYSTEM DIAGRAM DWG. 302-0962-00000.
12. HYDROTEST PRESSURE BASED ON DESIGN PRESSURE (12 PSIG) OF REFUELING BELLOWS.
13. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
14. ADJUSTABLE WEIR PLATES ARE NORMALLY SET AT 688'-5" TO PROVIDE A WATER LEVEL OF 688'-7". SECURING FLOW TO THE UPPER POOL WILL CAUSE THE LEVEL TO STABILIZE AT THE BOTTOM OF THE WEIR OPENING WHICH IS 688'-3.5".
15. CONTAINMENT POOL DRAIN PIPING DURING OPERATIONAL MODES 1, 2 & 3 IS NORMALLY DRAINED FROM VALVE 1G41F0507 UP TO THE OUTBOARD VALVE 1P11F0515 (302-0102-00000 & FILLED WITH NITROGEN GAS AT 1 TO 5 PSIG TO PREVENT THERMAL OVER PRESSURIZATION OF THE CONTAINMENT PENETRATION. THIS BOUNDARY, HOWEVER, MAY BE MOVED TO DRAIN FROM VALVE 1G41F0586 UP TO THE OUTBOARD VALVE 1P11F0515. IF VALVE 1G41F0507 IS NOT LEAK TIGHT.

REFERENCES:

302-0102-00000	CONDENSATE TRANSFER AND STORAGE SYSTEM P11
302-0246-00000	ALTERNATE DECAY HEAT REMOVAL G40
302-0601-00000	REACTOR WATER RECIRC. SYSTEM B33
302-0605-00000	NUCLEAR BOILER SYSTEM B21
302-0642-00000	RESIDUAL HEAT REMOVAL SYSTEM E12
302-0654-00000	FUEL POOL COOLING AND CLEAN-UP SYSTEM G41
302-0655-00000	FUEL POOL COOLING AND CLEAN-UP SYSTEM G41
302-0961-00000	LEAK DETECTION SYSTEM E31
302-0962-00000	LEAK DETECTION SYSTEM E31
911-0601-00000	REACTOR BUILDING DRAINS SYSTEM P68

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PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

FUEL POOL COOLING AND CLEANUP SYSTEM
FIGURE 9.1-9 (SHEET 1 OF 4)
(DWG. D-302-0651-00000)

OPERATING DATA (NORMAL)

SEE NOTE 7

	GPM	PSIG	F	BY	REMARKS	REV
1	1000	97	*	JET	*60°F MIN/ 150°F MAX	
2	0	97	*	JET		
3	1000	97	*	JET		
4	0	0	*	JET		
5	1000	62	*	JET		
6	1000	62	*	JET		

DESIGN DATA

	NORMAL		UPSET			BY	REMARKS	REV
	PSIG	F	PSIG	F	TIME			
	150	100	150	100		DAK	AS PER GAI DWG. 302-0654-00000	

NOTES:

1. THE FUEL POOL DEMINERALIZER SYSTEM IS NON-SAFETY.
2. THIS DRAWING TO BE WORKED IN CONJUNCTION WITH DWG. 302-0654-00000.
3. ALL PANELS AND RACKS CARRY PREFIX 0H51, UNLESS OTHERWISE NOTED.
4. A SYSTEM TROUBLE ALARM IS RETRANSMITTED TO 1H13P680.
5. ANNUBAR REPRESENTED BY ⊿⊿ SYMBOL.
6. VALVE 0G41F430 IS MECHANICALLY STOPPED AT 45° VALVE TRAVEL LIMITED FROM CLOSED TO HALF OPEN.
7. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.

REFERENCES:

302-0241-00000	SERVICE AND INSTRUMENT AIR SUPPLY SYSTEM P51 AND SYSTEM P52
302-0654-00000	FUEL POOL COOLING AND CLEAN-UP SYSTEM G41
302-0738-00000	LRW TANKS AND PUMPS FOR HANDLING BACKWASH SLURRIES FROM FUEL POOL FILTER DEMINERALIZER SYSTEM G50
302-0681-00000	SUPRESSION POOL CLEAN-UP SYSTEM G42
302-0242-00000	SERVICE AIR SYSTEM P51

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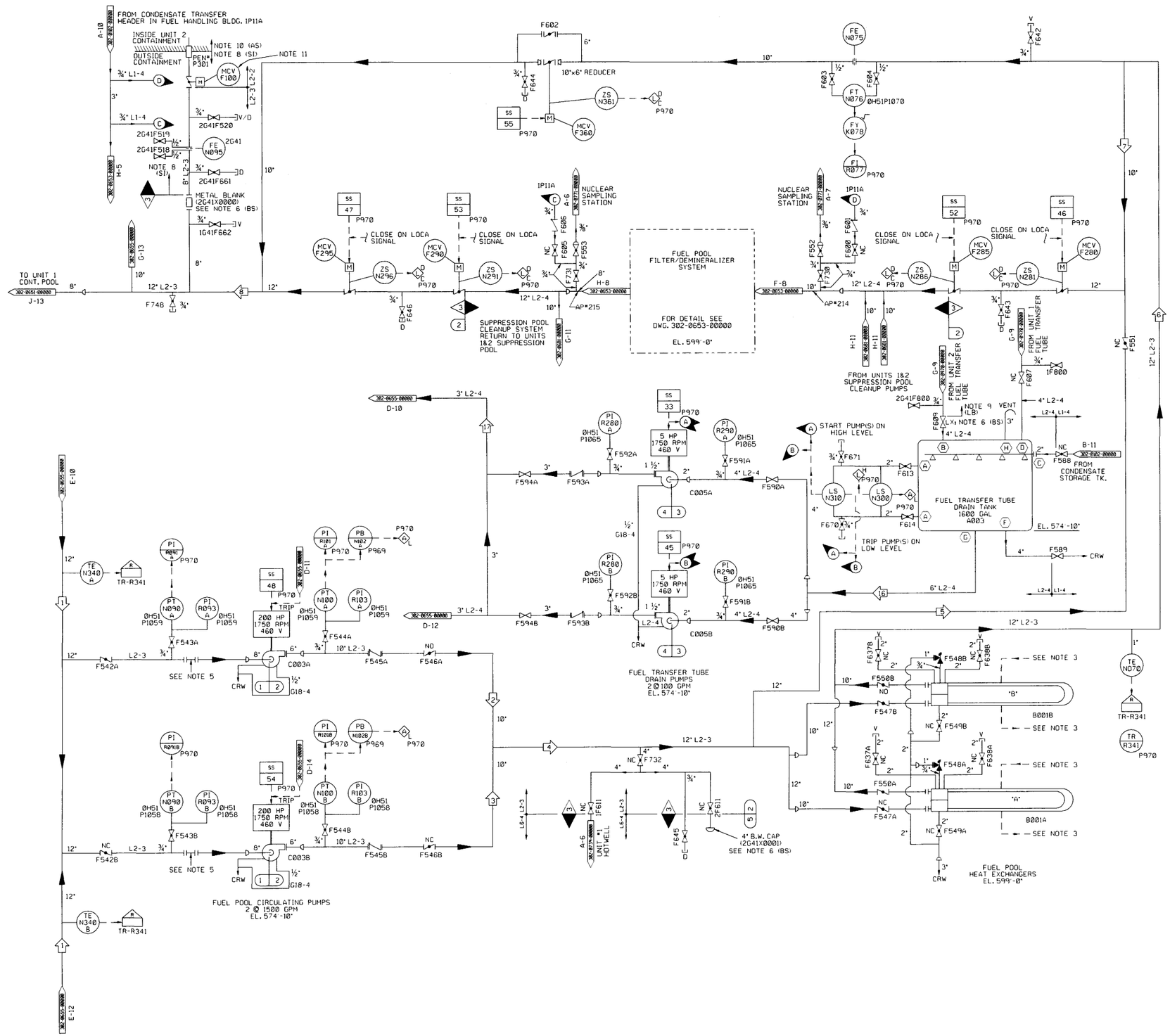
PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

FUEL POOL FILTER DEMINERALIZER SYSTEM

FIGURE 9.1-9 (SHEET 2 OF 4)

(DWG. D-302-0653-00000)



OPERATING DATA (NORMAL) SEE NOTE 7

#	GPM	PSIG	°F	BY	REMARKS	REV
1	1500	16	*	PLL		
2	1500	123	*	PLL		
3	0	123	*	PLL		
4	1500	116	*	PLL		
5	0	116	*	PLL		
6	1500	97	*	PLL		
7	1000	97	*	PLL		
8	1500	62	*	PLL		
-	-	-	-			
-	-	-	-			
-	-	-	-			
-	-	-	-			
16	100	4.0	*	PLL		
17	100	30	*	PLL		

* 60°F MIN / 150°F MAX

DESIGN DATA

#	NORMAL		UPSET			BY	CKD	REMARKS	REV
	PSIG	°F	PSIG	°F	TIME				
1	50	100	50	100		DAK	RJB		
2	150	100	150	100		DAK	RJB		
3	20	100	20	100		DAK	RJB		
4	50	100	50	100		DAK	RJB		
5	100	150	-	-		PLL	JET		

REFERENCES:

302-0102-00000	CONDENSATE TRANSFER AND STORAGE SYSTEM P11
302-0611-00000	NUCLEAR CLOSED COOLING SYSTEM P43
302-0651-00000	FUEL POOL COOLING AND CLEAN-UP SYSTEM G41
302-0653-00000	FUEL POOL FILTER DEMINERALIZER SYSTEM G41
302-0655-00000	FUEL POOL COOLING AND CLEAN-UP SYSTEM C41
302-0681-00000	SUPPRESSION POOL CLEAN-UP SYSTEM G42
302-0734-00000	LIQUID RADWASTE SUMP SYSTEM - EQUIPMENT DRAIN SUMPS AND OIL SEPARATORS SYSTEM G81
302-0771-00000	NUCLEAR SAMPLING SYSTEM P34
302-0792-00000	EMERGENCY SERVICE WATER SYSTEM P45
302-0910-00000	INCLINED FUEL TRANSFER SYSTEM F42
352-0621-00000	EMERGENCY CLOSED COOLING SYSTEM P42

NOTES:

1. THE FUEL POOL COOLING AND CLEANING SYSTEM IS SAFETY CLASS, EXCEPT AS NOTED.
2. THIS DRAWING TO BE WORKED IN CONJUNCTION WITH DWG. 302-0651-00000, 302-0653-00000, AND 302-0655-00000.
3. THE NORMAL COOLING WATER SUPPLY IS P43 NUCLEAR CLOSED COOLING (DWG. 302-0611-00000). DURING A DESIGN BASIS ACCIDENT AND FOR OTHER PURPOSES, COOLING WATER TO THE HEAT EXCHANGERS MAY BE SUPPLIED BY THE P45 EMERGENCY SERVICE WATER SYSTEM (DWG. 302-0792-00000) VIA SECTIONS OF UNIT 2 P42 EMERGENCY CLOSED COOLING SYSTEM PIPING (DWG. 352-0621-00000).
4. ALL PANELS CARRY PREFIX 0H13, UNLESS NOTED OTHERWISE.
5. TEMPORARY STRAINERS D004A AND D004B USED FOR START-UP, ARE REMOVED FOR PLANT OPERATION.
6. (BS) UNIT 1/2 BOUNDARY SEPARATION, FOR DETAILS SEE TECHNICAL ASSIGNMENT FILE 81653
7. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
8. (SI) STRUCTURAL INTEGRITY BOUNDARY FOR ABANDONED, RETIRED IN PLACE SSC'S. FOR DETAILS SEE ECP 14-0328.
9. (LB) LICENSE RENEWAL, LEAKAGE BOUNDARY FOR ABANDONED, RETIRED IN PLACE SSC'S. FOR DETAILS SEE ECP 14-0328.
10. (AS) ABANDONED SSC'S OUTSIDE SCOPE OF LICENSE RENEWAL, CONFIGURATION CONTROL NOT MAINTAINED FOR ABANDONED SSC'S (IF INSTALLED) OUTSIDE SCOPE OF LICENSE RENEWAL.
11. VALVE 2G41F0100 IS ELECTRICALLY DISABLED, MOTOR OPERATOR MAY BE DISCONNECTED OR REMOVED.

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PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

FUEL POOL TRANSFER TANK DRAIN TANK SYSTEM

FIGURE 9.1-9 (SHEET 3 OF 4)

(DWG. D-302-0654-00000)

OPERATING DATA (NORMAL)

SEE NOTE 12

#	GPM	PSIG	°F	BY	REMARKS	REV
-	-	-	-			
-	-	-	-			
-	-	-	-			
-	-	-	-			
-	-	-	-			
-	-	-	-			
-	-	-	-			
-	-	-	-			
-	-	-	-			
-	-	-	-			
12	900	62	*	JET	68°F MIN/ 150°F MAX	
13	300	10	*	JET		
14	100	10	*	JET		
15	500	10	*	JET		
-	-	-	-			
-	-	-	-			
18	200	45	*	JET		

NOTES:

1. THE FUEL POOL COOLING AND CLEANING SYSTEM IS SAFETY CLASS, EXCEPT AS NOTED.
2. LEAK DETECTION PIPING AND VALVES ARE NON-SAFETY CLASS.
3. THIS DRAWING IS TO BE WORKED IN CONJUNCTION WITH DWGS. 302-0651-00000, 302-0653-00000 & 302-0654-00000.
4. DELETED
5. DELETED
6. THE FOLLOWING ITEMS ARE EMBEDDED IN CONCRETE:
   A. SKIMMER DRAIN LINES TO SURGE TANK
   B. POOL SUPPLY LINES DOWNSTREAM OF VALVES F556, F558, AND F560
   C. RHR SUPPLEMENTAL COOLING LINES
   D. CASK PIT DRAIN LINE
   E. LEAK DETECTION LINES
7. ALL PANELS CARRY PREFIX 0H13, UNLESS NOTED OTHERWISE.
8. DELETED
9. DELETED
10. (BS) UNIT 1/2 BOUNDARY SEPARATION, FOR DETAILS SEE TECHNICAL ASSIGNMENT FILE 6653.
11. MCV 2641F145 IS ELECTRICALLY DISCONNECTED.
12. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING REPRESENTS THE MOST COMMON OPERATING CONDITION AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
13. (LB) LICENSE RENEWAL, LEAKAGE BOUNDARY FOR ABANDONED, RETIRED-IN-PLACE SSC'S, FOR DETAILS SEE ECP 14-0328
14. (AS) ABANDONED SSC'S OUTSIDE SCOPE OF LICENSE RENEWAL. CONFIGURATION CONTROL NOT MAINTAINED FOR ABANDONED SSC'S (IF INSTALLED) OUTSIDE SCOPE OF LICENSE RENEWAL.
15. (SI) STRUCTURAL INTEGRITY BOUNDARY FOR ABANDONED, RETIRED-IN-PLACE SSC'S, FOR DETAILS SEE ECP 14-0328.
16. 5" STORZ CONNECTION IS NON-SAFETY, NON-ASME, AND IS INSTALLED TO SUPPORT FLEX STRATEGY. NON-SAFETY, NON-ASME PIPING AND COMPONENTS ARE SEISMICALLY DESIGNED AND INSTALLED. REFERENCE 302-1000-00000. STORZ CONNECTIONS MAY BE REPLACED WITH VICTAULIC COUPLINGS FOR HIGH TEMPERATURE SERVICE.
17. HYDROLASE CONNECTION INSTALLED PER ISS-2000.

DESIGN DATA

#	NORMAL PSIG	NORMAL °F	UPSET PSIG	UPSET °F	UPSET TIME	BY	CHKD	REMARKS	REV
1	150	180	150	180		DAK	RJS		
2	50	180	50	180		DAK	RJS		
3	150	135	150	135		DAK	RJS		
4	150	212	150	212		RJS	ECO		
5	35	180	35	180		RJS	ECO		
6	125	150	-	-		PLL	JET		

REFERENCES:

302-0102-00000	CONDENSATE TRANSFER AND STORAGE SYSTEM P11
302-0651-00000	FUEL POOL COOLING AND CLEAN-UP SYSTEM G41
302-0654-00000	FUEL POOL COOLING AND CLEAN-UP SYSTEM G41
302-0681-00000	SUPPRESSION POOL CLEAN-UP SYSTEM E42
302-0731-00000	LRW-FLOOR DRAIN COLLECTOR TANKS AND WASTE COLLECTOR TANKS SYSTEM C50
302-0792-00000	EMERGENCY SERVICE WATER SYSTEM P45
302-0641-00000	RESIDUAL HEAT REMOVAL SYSTEM E12
302-0642-00000	RESIDUAL HEAT REMOVAL SYSTEM E12
302-0643-00000	RESIDUAL HEAT REMOVAL SYSTEM E12

(REV. 20 10/2017)

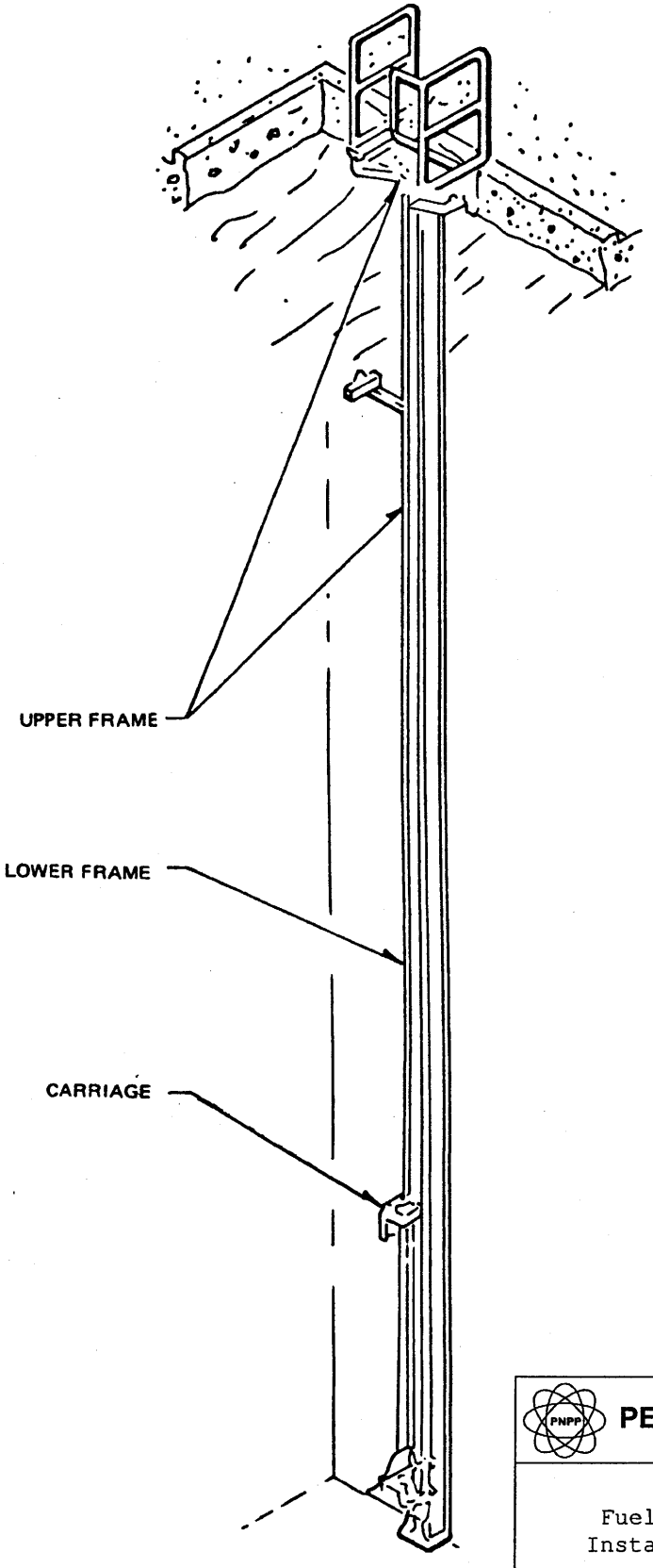
PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

FUEL POOL STORAGE AND TRANSFER SYSTEM

FIGURE 9.1-9 (SHEET 4 OF 4)

(DWG. D-302-0655-00000)



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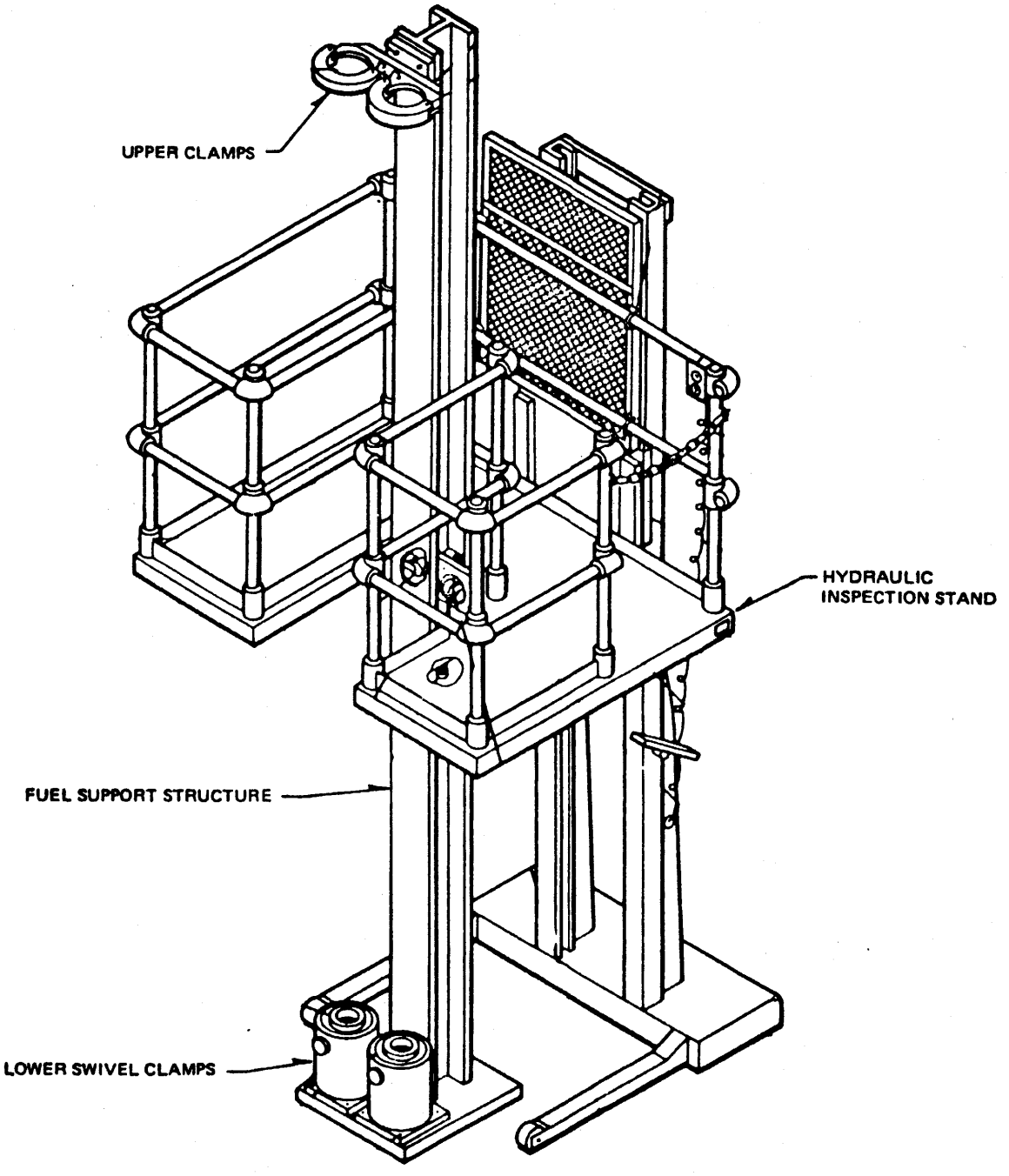
PERRY NUCLEAR POWER PLANT

Fuel Preparation Machine Shown
Installed in Facsimile Fuel Pool

Figure 9.1-10



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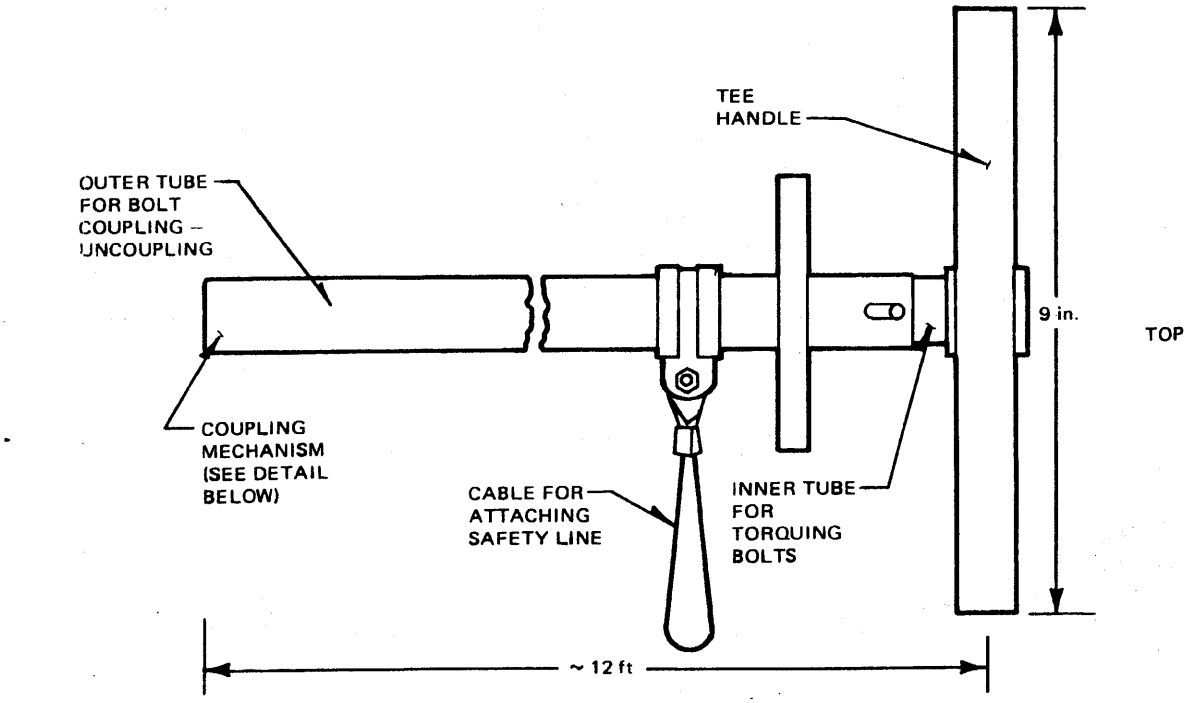
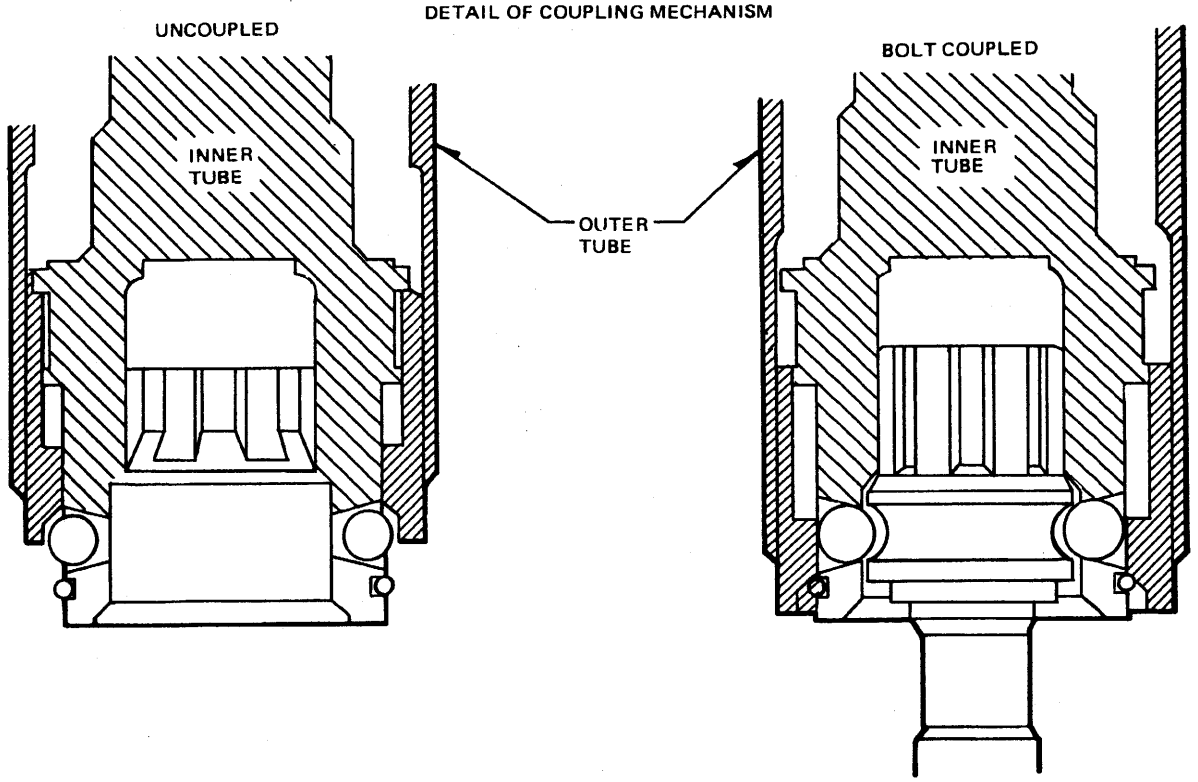
PERRY NUCLEAR POWER PLANT

New Fuel Inspection Stand

Figure 9.1-11



DETAIL OF COUPLING MECHANISM



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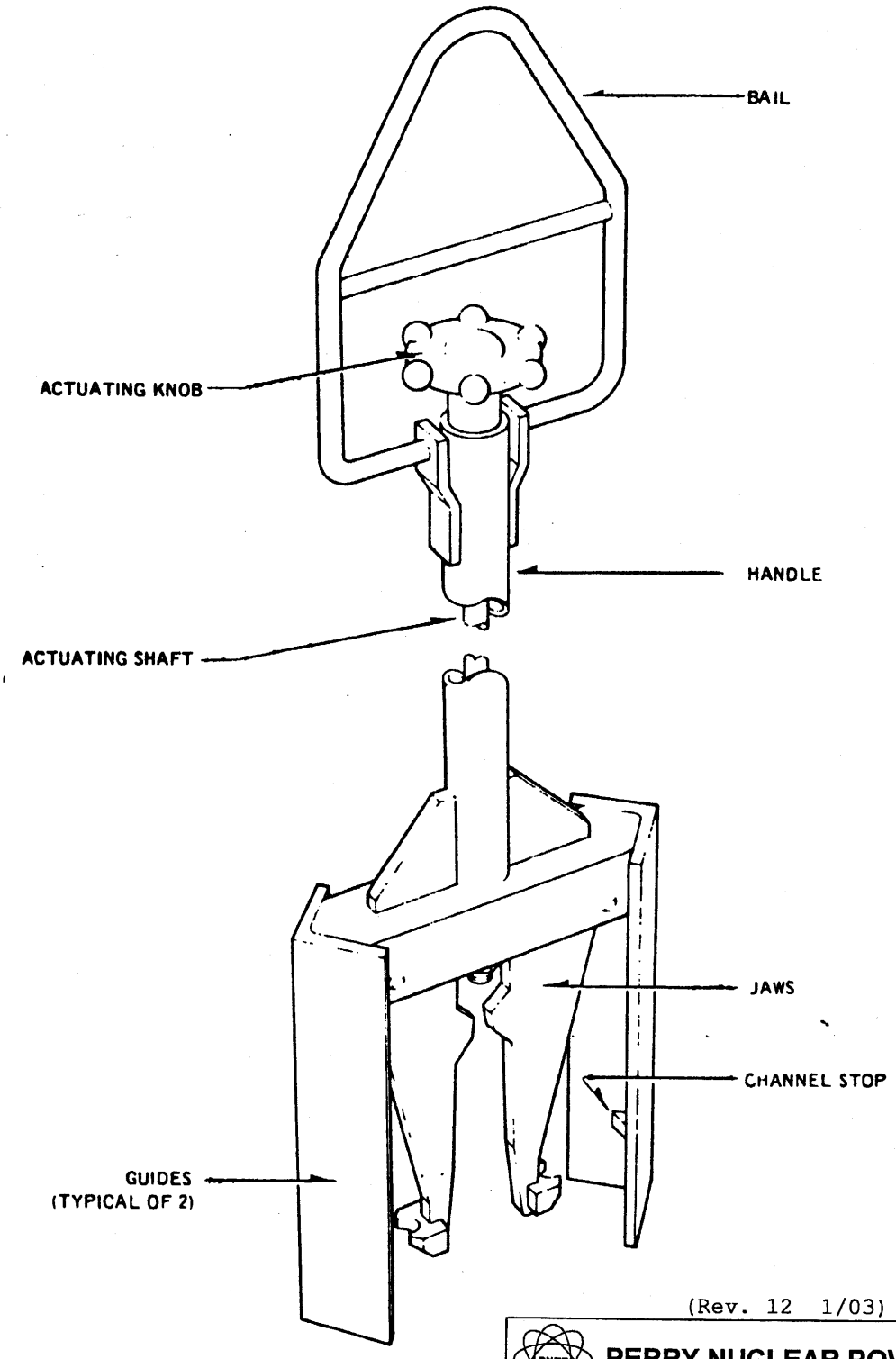
PERRY NUCLEAR POWER PLANT

Channel Bolt Wrench

Figure 9.1-12



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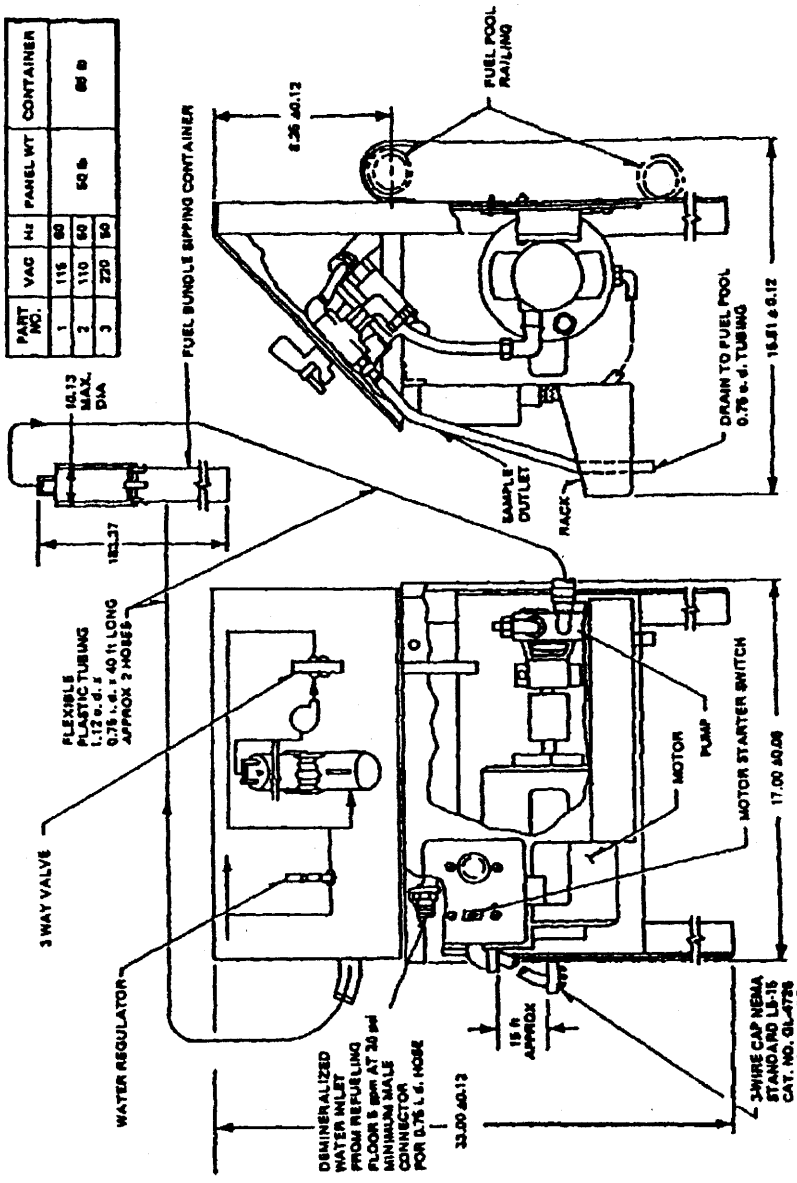
PERRY NUCLEAR POWER PLANT

Channel Handling Tool

Figure 9.1-13



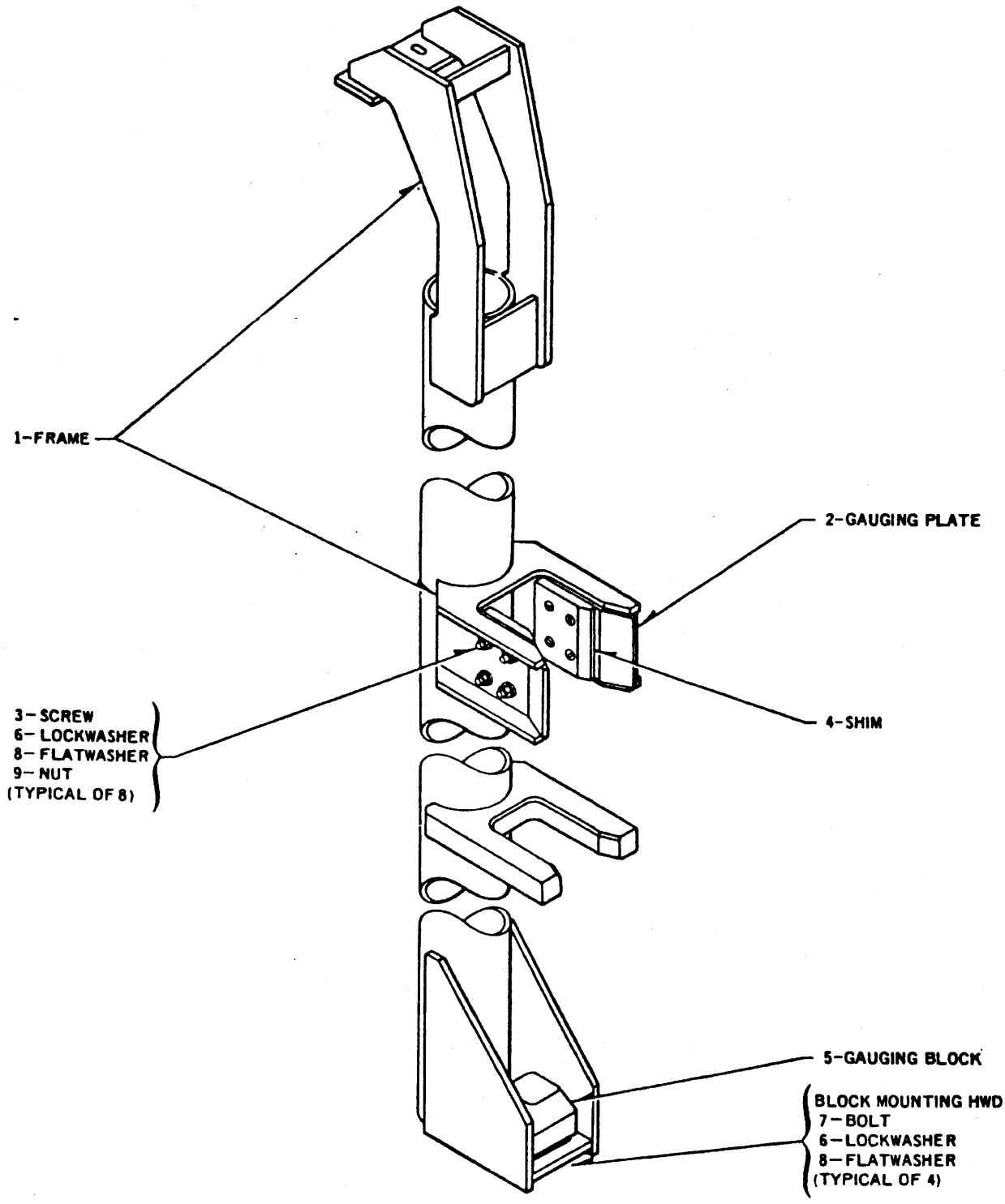
Historical Information – Fuel Sipping is typically performed using vendor supplied equipment

(Rev. 15 10/07)

PERRY NUCLEAR POWER PLANT

Fuel Pool Sipper

Figure 9.1-14

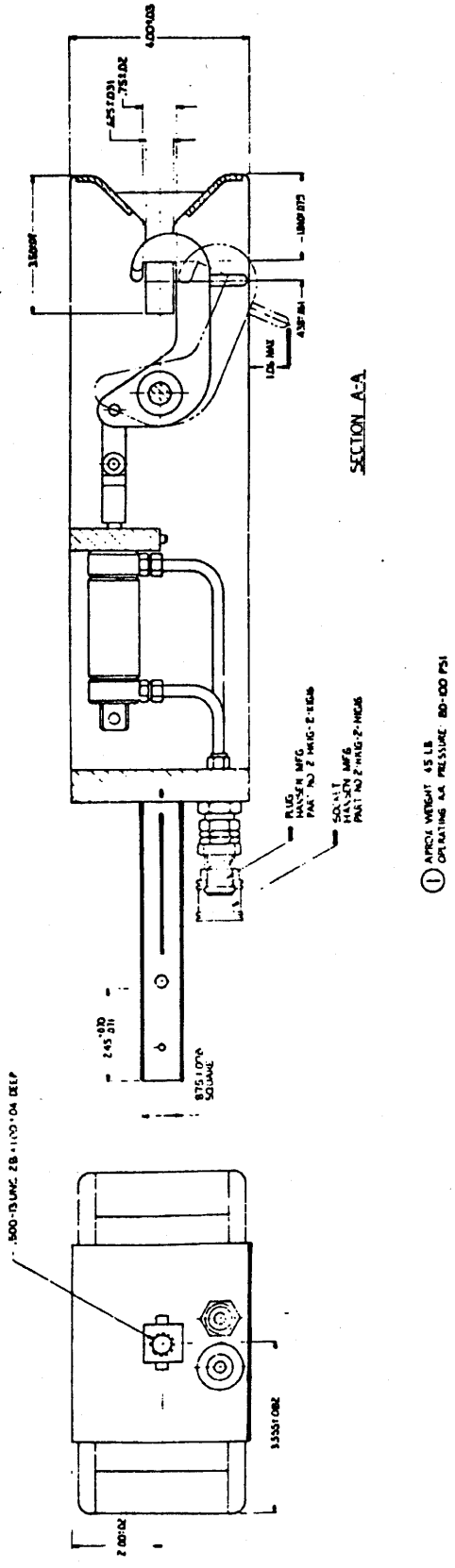


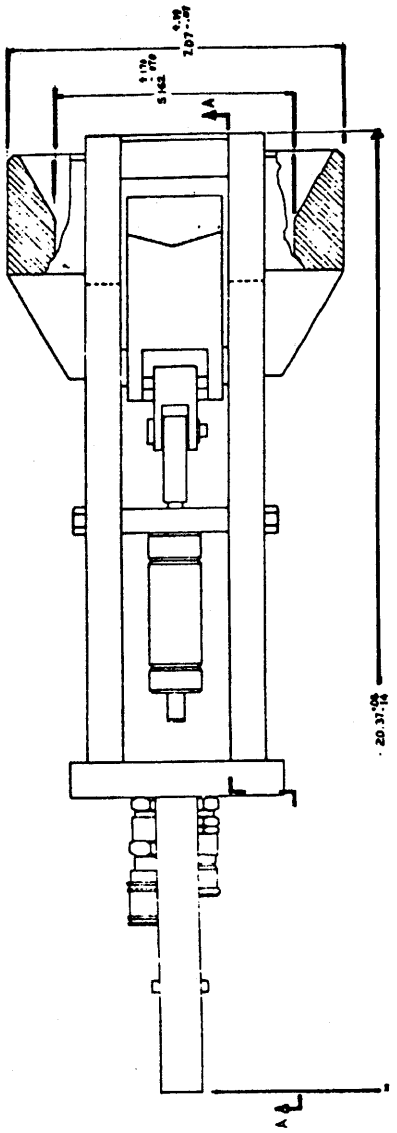
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Channel Gauging Fixture

Figure 9.1-15



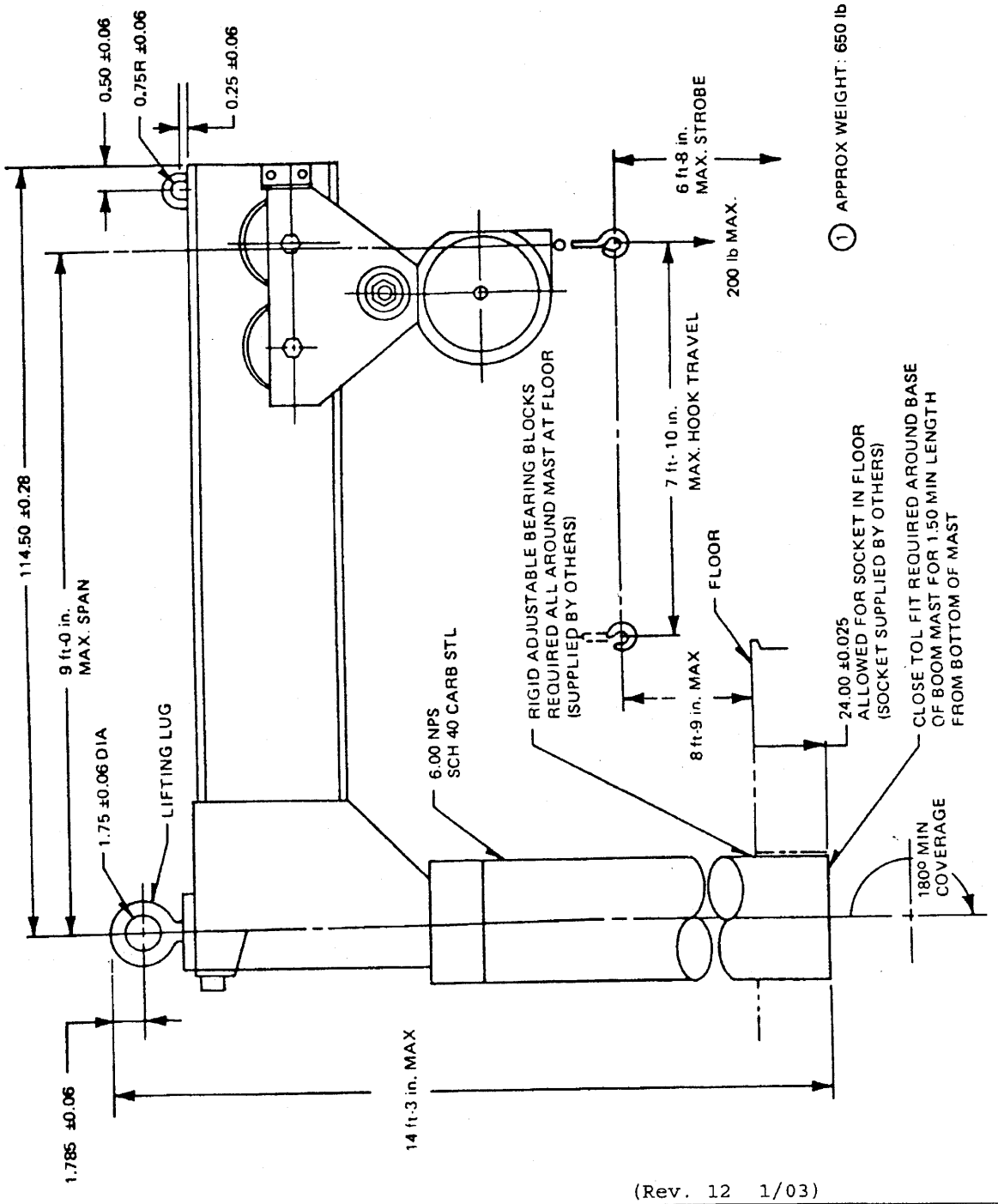


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

General Purpose Grapple

Figure 9.1-16

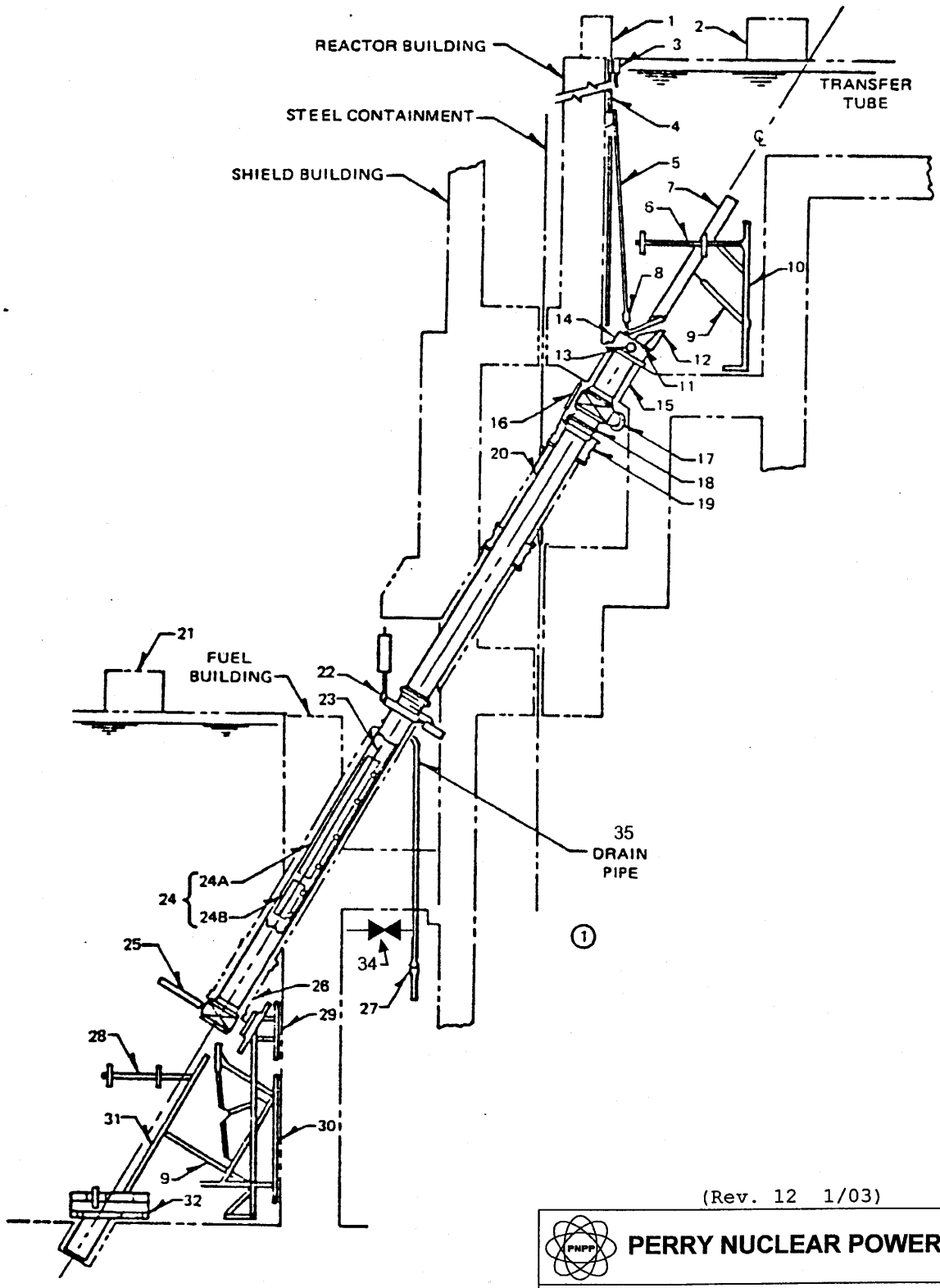


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Channel Handling Boom

Figure 9.1-18

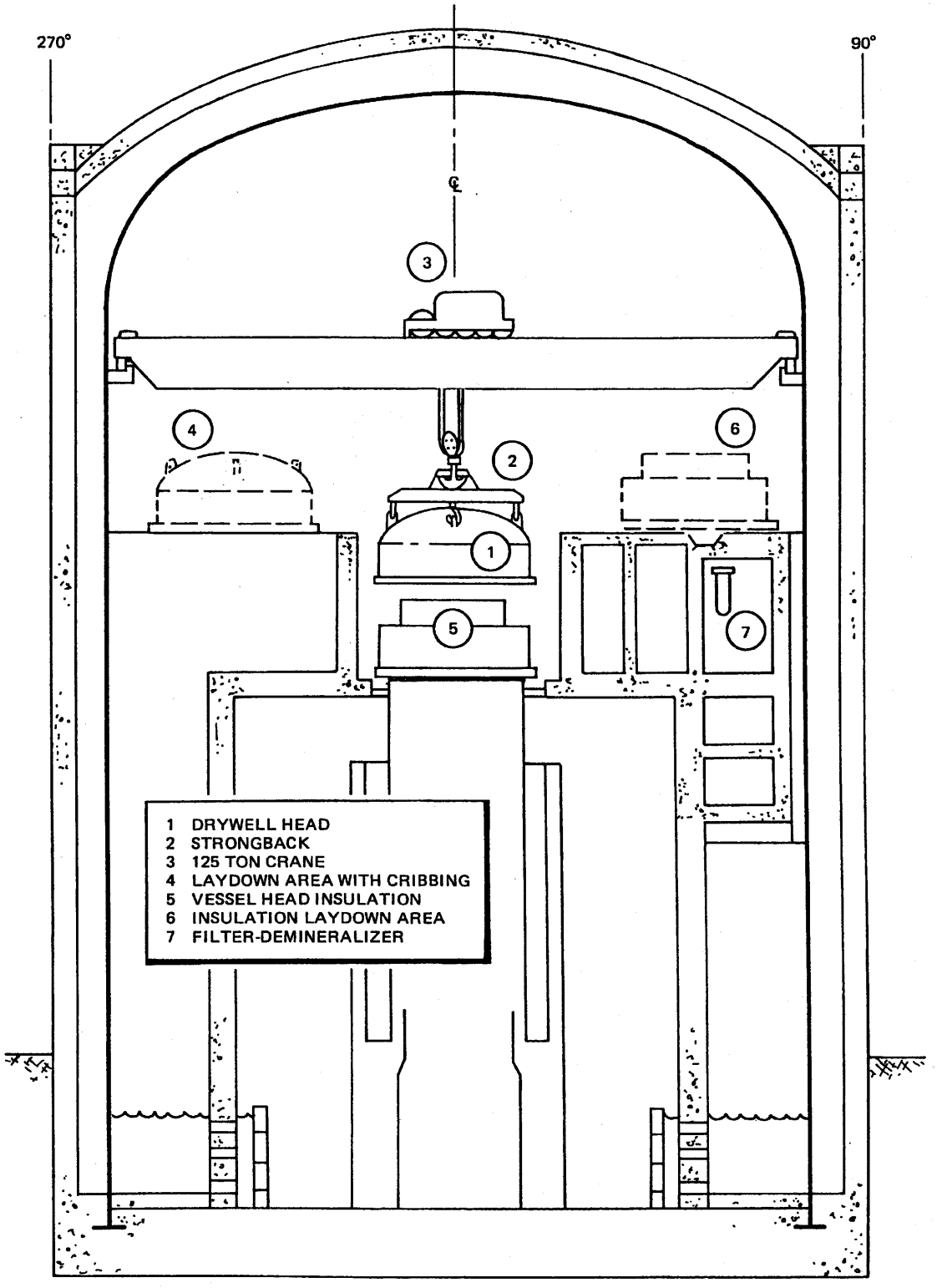


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Transfer Tube

Figure 9.1-19

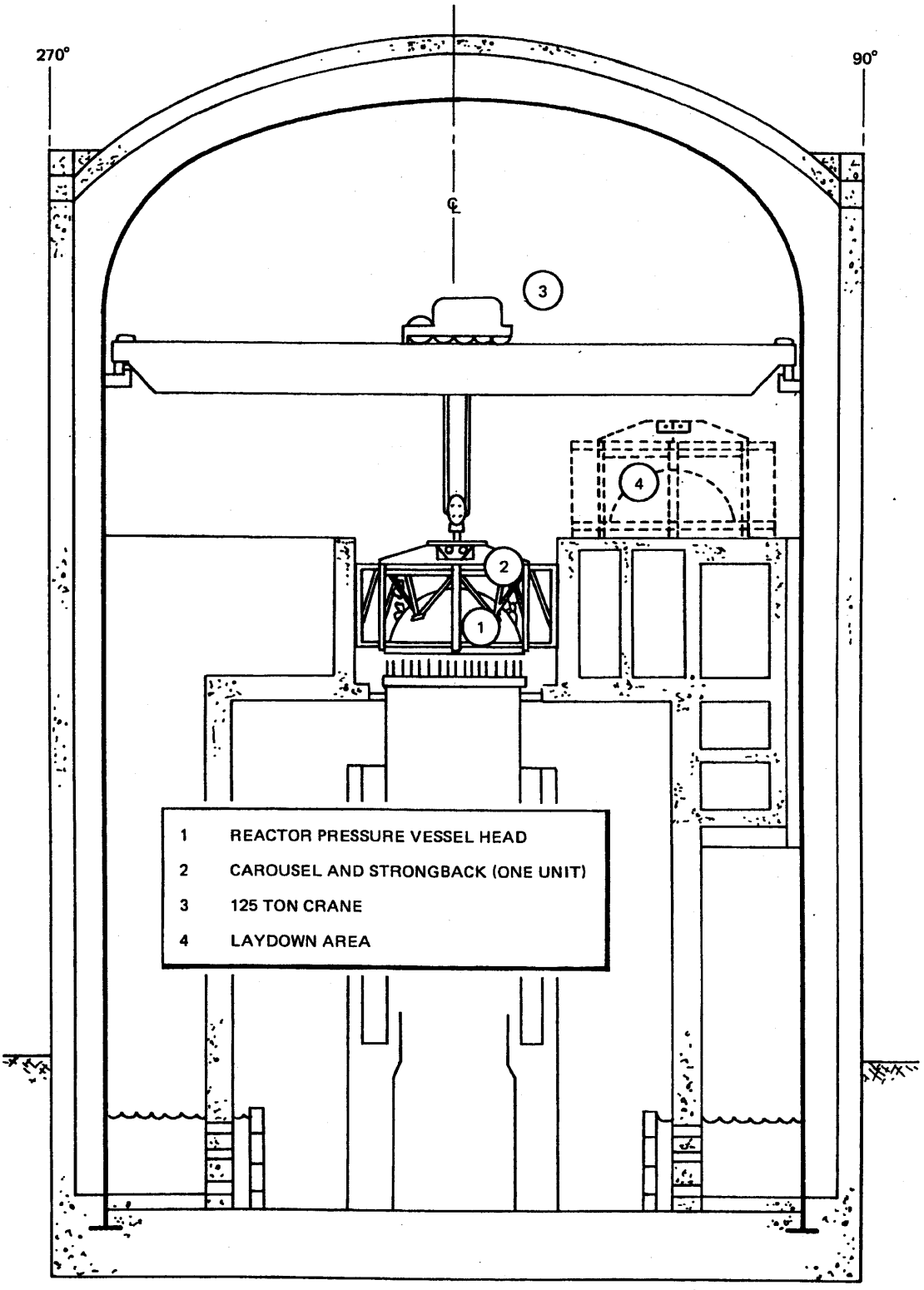


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Drywell Head Removal Sequence

Figure 9.1-21

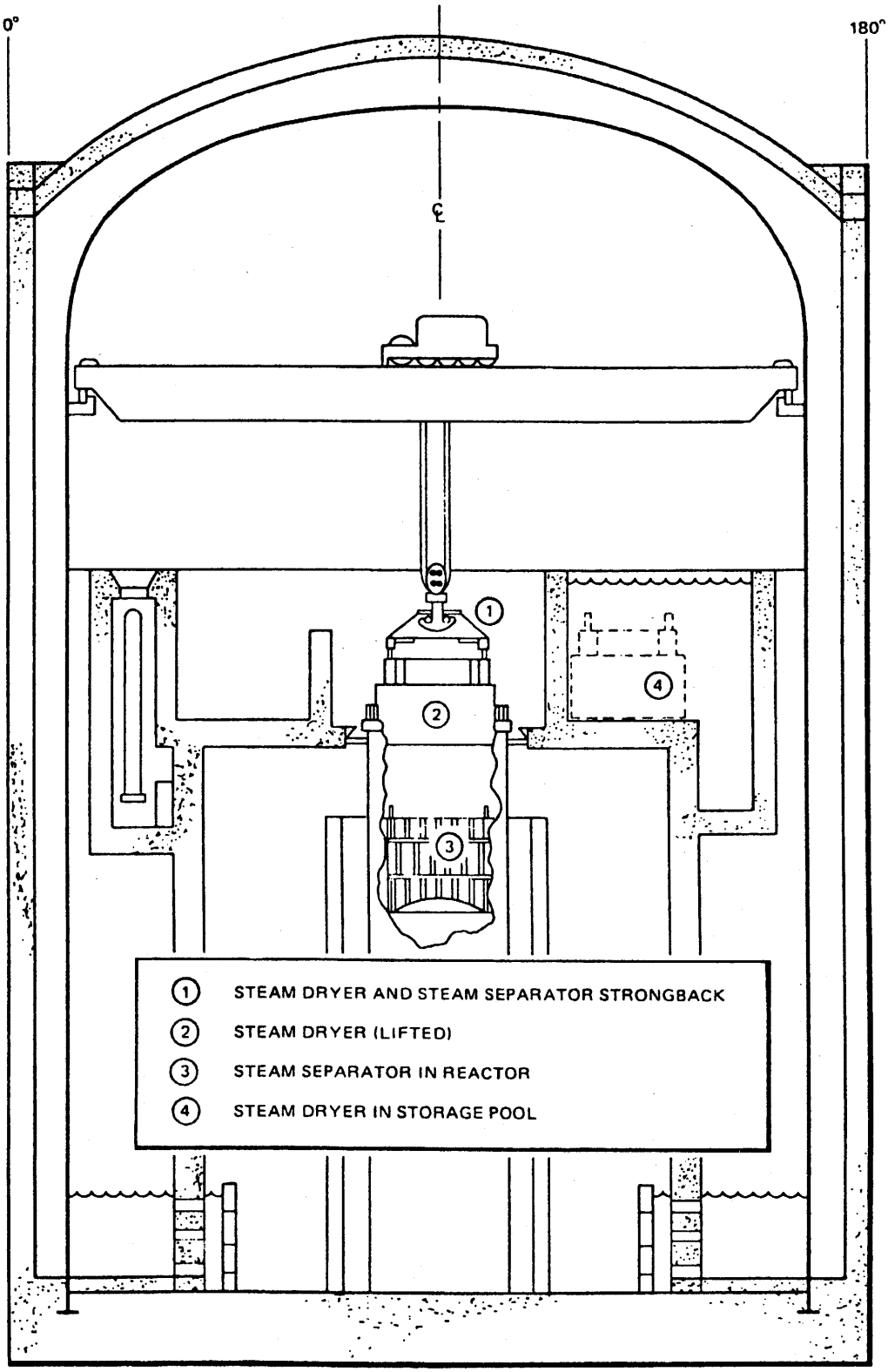


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Reactor Vessel Head
Removal Sequence

Figure 9.1-22

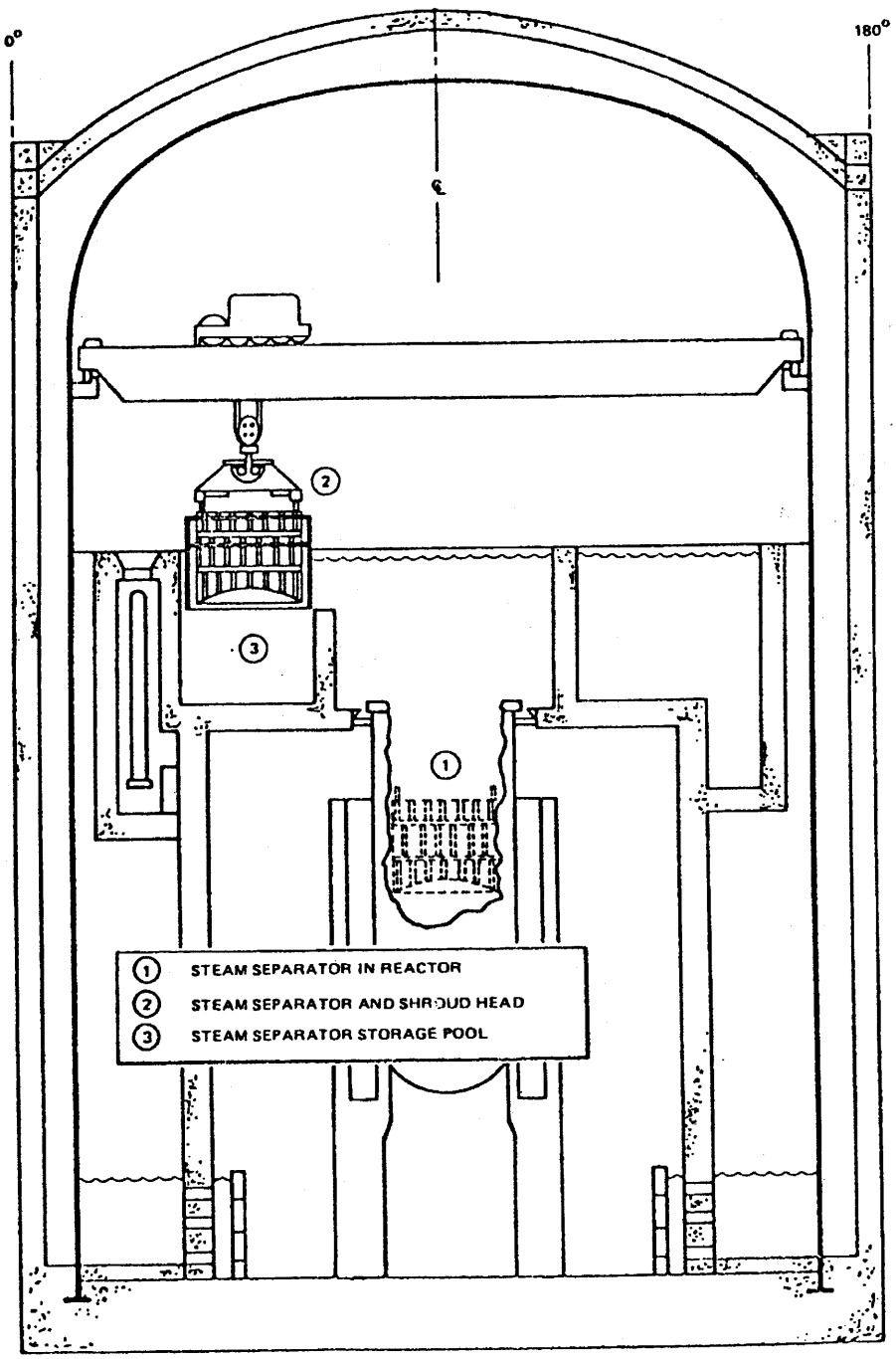


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Steam Dryer Removal Sequence

Figure 9.1-23

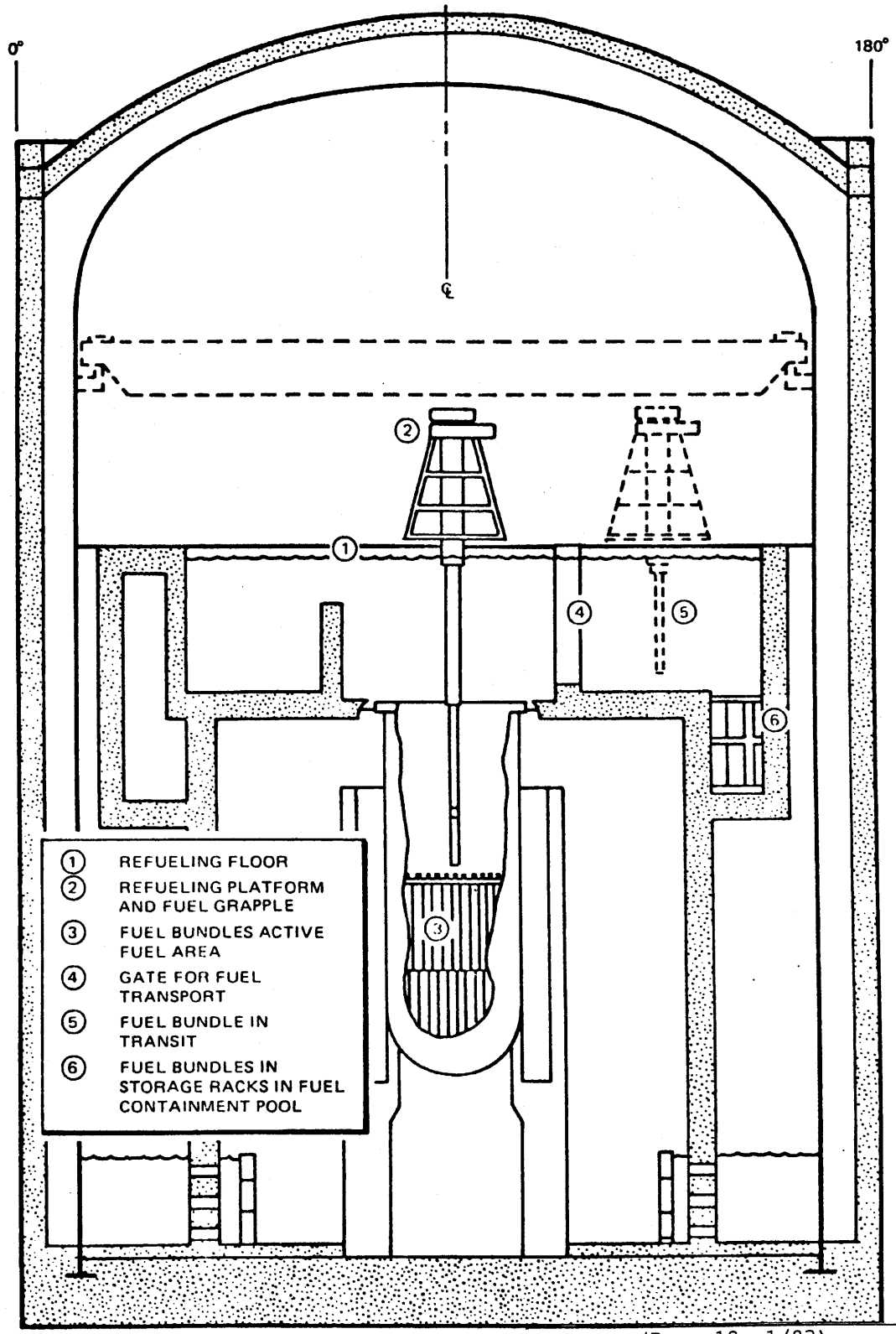


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Steam Separator Removal Sequence

Figure 9.1-24



(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Fuel Bundle Transfer Sequence

Figure 9.1-25

Removed in Accordance with RIS 2015–17

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

FUEL HANDLING FACILITIES,
LAYDOWN STUDY
FIGURE 9.1-26
(DWG. E-015-0045-00000)

Removed in Accordance with RIS 2015–17

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

REACTOR REFUELING FLOOR
LAYDOWN STUDY
FIGURE 9.1-27
(DWG. E-015-0044-00000)

DESIGN DATA

#	NORMAL PSIG	NORMAL °F	UPSET PSIG	UPSET °F	UPSET TIME	BY	CHKD	REMARKS	REV
1	150	150	--	--	--	JAB	DPW	NOTE 18	
2	140	150						NOTE 9	
3	ATM	AMB	-	-	-				

PUMP HOUSE

P45-C001A *A* LOOP

P45-C001B *B* LOOP

P45-C002 *C* LOOP

SUCTION BAY

ESW PUMP MOTOR COOLING WATER DISCHARGE TO SUCTION BAY

ESW PUMP MOTOR COOLING WATER DISCHARGE TO SUCTION BAY

TRAVELING SCREENS

P49-D001A P49-D001B

(SEE DRAWING 302-0214-00000 FOR SCREEN WASH SYSTEM)

FOREBAY

WEIR WALL TOP EL.552'-0"

PUMPS MOUNTED ON FLR.EL.586'-6"

PUMP SUCTION AT EL.538'-0" (TYP)

BOTTOM OF PUMP HOUSE AT EL.537'-0"

DIESEL GENERATOR BUILDING

AUXILIARY BUILDING

INTERMEDIATE BUILDING

CONTROL COMPLEX

HPCS ROOM COOLER M39-B003

1E22-B5002 HPCS DG HEAT EXCHANGER FL.EL.620'-6"

1E22-P001

1E22

3/8"IPC-3N

INTERLOCK FROM EMERGENCY CORE COOLING SYSTEM P45 - 208-0176-00004

INTERLOCK FROM EMERGENCY CORE COOLING SYSTEM P45 - 208-0176-00005

INTERLOCK FROM EMERGENCY CORE COOLING SYSTEM P45 - 208-0176-00006

800 HP 1200 RPM 4000 VOLTS

800 HP 1200 RPM 4000 VOLTS

75 HP 1800 RPM 460 VOLTS

1X11F0001A F0754A LX

1X11F0002A F0755A LX

1X11F0003A F0756A LX

1X11F0001B F0754B LX

1X11F0002B F0755B LX

1X11F0003B F0756B LX

TO CATCH BASIN E-11

TO SERVICE WATER PUMP HOUSE

10'-0" NORMAL SUPPLY

INTAKE TUNNEL 18'-0" DIA

6'-0" DIA. RISER (TYP. 2 PLACES)

36'-0" DIA. INTAKE HEAD (TYP. 2 PLACES)

14" DE-ICE LINES

SLUICE GATES

SEE GATE CONTROL CIRCUITRY

OPEN 0204B ON LOW LEVEL

OPEN 0204A ON LOW LEVEL

EMERGENCY SUPPLY 18'-8"

FROM DISCHARGE TUNNEL ENTRANCE STRUCTURE

DISCHARGE TUNNEL 18'-0" DIA.

6'-0" DIA. RISER

3'-0" DIA. DISCHARGE NOZZLE

TO SWALE

TO DISCHARGE TUNNEL ENTRANCE STRUCTURE 302-0212-00000 G-12

FROM LRW DISCHARGE 302-0734-00000 F-3

LOCAL SAMPLE TYPE A (SEE NOTE 5)

AP-104

INST. BOTTLED AIR SUPPLY

VENT

FLR.EL.574'-10"

(SEE DWG.912-0616-00000)

SEE NOTE 21

SEE NOTE 22

SEE NOTE 16

SEE NOTES 14 & 15

SEE NOTE 3

SEE NOTE 1

SEE NOTE B

NOTE 23

NOTES:

1. ALL PIPING TO BE SAFETY CLASS 3 LINE SPECIFICATION L1-3 EXCEPT AS FOLLOWS:
   a) PIPING DOWNSTREAM OF VENT AND DRAIN VALVES TO BE NON-SAFETY CLASS.
   b) 18" DIA. NORMAL AND EMERGENCY SUPPLY LINES TO BE DESIGNED TO STRUCTURAL SAFETY CLASS STANDARDS. ASME CODE SECTION III IS NOT APPLICABLE TO THESE SUPPLY LINES.
2. DELETED.
3. MAXIMUM INTAKE FLOW IS EQUAL TO THE TOTAL DISCHARGE FLOW OF ALL ESW PUMPS AND BOTH FIRE PROTECTION WATER SYSTEM PUMPS.
4. THIS DRAWING TO BE WORKED IN CONJUNCTION WITH DWG. 302-0792-00000 (REMAINDER OF SYSTEM) AND 302-0793-00000 (OPERATING DATA).
5. SEE DWG. 302-0771-00000 FOR DESCRIPTION OF SAMPLE TYPES.
6. ALL PANEL AND RACK NUMBERS PREFIXED 1H51 UNLESS OTHERWISE NOTED.
7. ALL SYSTEM INSTRUMENTS, VALVES, PUMPS, HEAT EXCHANGERS, ETC., ARE PREFIXED BY 1P45, UNLESS OTHERWISE INDICATED.
8. REDUNDANT REMOTE SHUTDOWN CONTROL SWITCHES AND INDICATING LIGHTS ARE MOUNTED ON THE MCC OR SWITCHGEAR ASSOCIATED WITH THE EQUIPMENT THEY CONTROL.
9. DESIGN PRESSURE REVISED PER NR-PPPS-1976 AND GAI CALC. P45-21, WHICH REDUCED PORTIONS OF THE SYSTEM PIPING TO 140 PSIG. SUBSEQUENTLY, THE DESIGN PRESSURE WAS RERATED TO THE ORIGINAL 150 PSIG FOR PIPING DOWNSTREAM OF THE DIVISION 1 AND DIVISION 2 PUMPS, PER ECP 04-0247.
10. SPECTACLE FLANGES ARE IN THE OPEN POSITION TO ALLOW PRESSURIZATION OF THE SYSTEM, REF. 302-0792-00000.
11. RHR HX ISOLATION VALVES 1P45-F014A & B AND F068A & B DO NOT CONFORM TO LINE SPEC. L1-3. THEY CONFORM TO L2-3 (STAINLESS STEEL), REF. DWG. 302-0792-00000.
12. EIGHT (8) STRAP-ON RTD'S UTILIZED FOR THE RHR HEAT EXCHANGERS PERFORMANCE TESTING (BP9-13), TYPICAL 4 PLACES.
13. RHR HEAT EXCHANGER VALVES F064A/B AND F068A/B ARE USED ONLY FOR MAINTENANCE AND ARE NORMALLY OPEN. THESE VALVES MAY NOT BE RELIED UPON TO AUTOMATICALLY REPOSITION TO THE OPEN POSITION DURING ACCIDENT CONDITIONS; THE AFFECTED RHR LOOPS SHALL BE DECLARED INOPERABLE IF THE VALVES ARE NOT FULL OPEN. (REF. DWG. 302-0792-00000)
14. (RS) UNIT 1/2 BOUNDARY SEPARATION, FOR DETAILS SEE TAF B1053 AND ECP 14-0442.
15. STRAINER BLOWDOWN VALVE 2P45F016B IS ELECTRICALLY DISABLED. HYDRAMOTOR MAY BE DISCONNECTED OR REMOVED.
16. REFER TO THE P45 SYSTEM OPERATING PROCEDURES FOR SEAL INFLATION LINE CONFIGURATION DURING DIFFERENT SEASONAL OPERATING MODES.
17. PIPING SYSTEM & COMPONENTS DOWNSTREAM OF THE CLASS BREAK ARE SAFETY CLASS 3, SEISMIC CATEGORY I, NON-ASME, PIPE & FITTINGS ARE PROCURED IN ACCORDANCE WITH LINE SPECIFICATION L2-3.
18. THERE ARE MAXIMUM PEAK TEMPERATURES THAT COULD THEORETICALLY OCCUR WHICH EXCEED THE DESIGN TEMPERATURE VALUE OF 150 DEGREES F. THESE TEMPERATURES OCCUR AT LOCATIONS DOWNSTREAM OF SOME OF THE HEAT EXCHANGERS THAT ARE CODED TO FLEX REFERENCE THE MAXIMUM SYSTEM TEMPERATURE DATA ON 302-0793-00000 FOR MORE INFORMATION.
19. DELETED
20. REFER TO DRAWINGS 304-0791-00108 & 304-0791-00128 FOR DETAILS OF INSTALLED CORROSION TEST COUPONS.
21. ALL FUNCTIONAL LOCATIONS ASSOCIATED WITH THE ESW SLUICE GATE AIR SUPPLY ARE PREFIXED WITH 0P45.
22. ESW PUMP DISCHARGE VALVE F0148 DOES NOT CONFORM TO LINE SPEC. L1-3. VALVE F0148 CONFORMS TO LINE SPEC. L2-3 (STAINLESS STEEL).
23. 5" STORZ HOSE CONNECTIONS ARE NON-SAFETY, NON-ASME, AND ARE PROVIDED FOR WATER SUPPLY FROM FLEX PUMPS FOR FLEX STRATEGY, NON-SAFETY, NON-ASME PIPING AND COMPONENTS ARE SEISMICALLY DESIGNED AND INSTALLED, REFERENCE DRAWING 302-1000-000000.
24. 5" STORZ HOSE CONNECTIONS ARE NON-SAFETY, NON-ASME, AND ARE PROVIDED FOR WATER SUPPLY TO LPCS, HPCS AND RCIC FOR FLEX STRATEGY, NON-SAFETY, NON-ASME PIPING AND COMPONENTS ARE SEISMICALLY DESIGNED AND INSTALLED, REFERENCE DRAWING 302-1000-000000.

REFERENCES:

302-0212-00000 SERVICE WATER SYSTEM, P41
302-0215-00000 SERVICE WATER AND ESW CHLORINATION SYSTEM, P48
302-0321-00000 COOLING TOWER CHLORINATION & PLANT DISCHARGE DECHLORINATION SYSTEM
302-0734-00000 LRW SYSTEM, REMOVES DISTILLATE TANKS AND PUMPS UP TO ISOLATION VALVES, CONDENSATE PUMPS & FILTERS, C51
302-0792-00000 EMERGENCY SERVICE WATER SYSTEM, P45
828-0301-00000 REMOTE SHUTDOWN SYSTEM, C61

REFERENCES (CONT.):

816-0405-00000 INSTRUMENT AIR TUBING INTERCONNECTION DIAGRAM EMERGENCY SERVICE WATER BUILDING ABOVE 586'-0"

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

EMERGENCY SERVICE WATER SYSTEM

FIGURE 9.2-1 (SHEET 1 OF 3)

(DWG. D-302-0791-00000)

DESIGN DATA									
REV	NORMAL PSIG	NORMAL °F	UPSET PSIG	UPSET °F	UPSET TIME	BY	CHKD	REMARKS	REV
1	150	150	--	--	-	JAB	DPW	NOTE 18	

NOTES:
1. FOR NOTES AND REMAINDER OF SYSTEM, SEE DRAWING 302-0791-00000.
FOR OPERATING DATA SEE DRAWING 302-0793-00000.

REFERENCES:

302-0621-00000	EMERGENCY CLOSED COOLING SYSTEM, P42
302-0655-00000	FUEL POOL COOLING AND CLEANUP SYSTEM, G41
302-0791-00000	EMERGENCY SERVICE WATER SYSTEM, P45
886-0818-00000	RADIATION MONITOR D17K684 & D17K685
302-0641-00000	RESIDUAL HEAT REMOVAL SYSTEM, E12
302-0642-00000	RESIDUAL HEAT REMOVAL SYSTEM, E12
302-0643-00000	RESIDUAL HEAT REMOVAL SYSTEM, E12
914-0002-00000	FIRE SERVICE WATER - UNIT #1 TURBINE AREA
914-0003-00000	FIRE SERVICE WATER - NUCLEAR PLANT

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

EMERGENCY SERVICE
WATER SYSTEM
FIGURE 9.2-1 (SHEET 2 OF 3)
(DWG. D-302-0792-00000)

HEAT LOADS (X (0*BTU/HR)

COMPONENT	MODE OF OPERATION A	B	C	D	E	NOTES
STANDBY D/G "A"	28.658	0	0	28.658	28.658	
ECC HX "A"	7.583	8.524	8.216	8.291	8.216	(7)
RHR HX "A"	63.345	126.138	48.980	126.488	126.415	(7)
FUEL POOL HX	0	0	0	2	14.060	
TOTALS FOR LOOP "A"	111.332	135.824	57.196	187.341	281.341	
STANDBY D/G "B"	28.658	0	0	28.658	28.658	
ECC HX "B"	7.580	8.529	8.216	8.291	8.216	(7)
RHR HX "B"	80.149	126.138	48.980	126.488	126.488	(7)
FUEL POOL HX	2	0	0	0	14.060	
TOTALS FOR LOOP "B"	111.322	135.824	57.196	187.341	281.341	
HPCS D/G	8.582			8.582	8.582	(3)
HPCS 26-C18	2.473			8.473	8.473	
TOTALS FOR COOLING LOOP FOR HPCS	4.863			9.853	9.853	

OPERATING DATA

MODE A
HOT STANDBY WITH LOSS OF PREFERRED AC POWER (NOTE 18)

	PSIG	GPM (NOTE 6)	°F (NOTE 6)	BY	REMARKS	REV
1	67	9327	85			
2	54	787	85			
3	34	797	138			
4	63	3453	85			
5	58	2882	85			
5A	57	2838	86			
6	56	2873	86			
7	57	8615	85			
8	49	8924	138			
9	22	3446	186			
10	19	18966	111			
11	69	9327	85			
12	53	787	85			
13	31	797	138			
14	65	3452	86			
15	58	2837	85			
15A	57	2838	90			
16	56	2846	92			
17	55	3898	85			
18	47	5932	134			
19	28	3442	183			
20	26	9329	118			
21	84	811	85			
22	78	825	85			
23	55	838	118			
24	75	85	85			
25	.	.	.			
26	.	.	.			
27	74	86	97			
28	21	840	126			
29	8	19888	110		SEE NOTE 13	
30	36	742	85		SEE NOTE 8	
31	27	741	85		SEE NOTE 8	
32	54	832	85		SEE NOTE 8	
33	26	832	85		SEE NOTE 8	

MODE B
NORMAL SHUTDOWN (NOTE 11)

	PSIG	GPM (NOTE 6)	°F (NOTE 6)	BY	REMARKS	REV
1	67	10988	85			
2	54	917	85			
3	34	917	138			
4	63	3998	85			
5	58	2337	85			
5A	57	2338	86			
6	56	2873	86			
7	57	8615	85			
8	49	8924	138			
9	22	3446	186			
10	19	18966	111			
11	69	10988	85			
12	53	917	85			
13	31	917	138			
14	65	3445	86			
15	58	2337	85			
15A	57	2338	90			
16	56	3899	92			
17	55	6916	85			
18	47	6924	134			
19	28	3996	183			
20	26	10966	111			
21						
22						
23						
24						
25						
26						
27						
28						
29	8	21852	110		SEE NOTE 13	
30	36	741	85		SEE NOTE 8	
31	27	741	85		SEE NOTE 8	
32	54	741	85		SEE NOTE 8	
33	26	741	85		SEE NOTE 8	

MODE C
CONTINUATION OF NORMAL SHUTDOWN (NOTE 5 & 11)

	PSIG	GPM (NOTE 6)	°F (NOTE 6)	BY	REMARKS	REV
1	67	10988	85			
2	54	917	85			
3	34	917	138			
4	63	3998	85			
5	58	2337	85			
5A	57	2338	86			
6	56	2877	86			
7	57	8913	85			
8	49	8934	138			
9	22	3446	186			
10	19	18967	111			
11	69	10988	85			
12	53	917	85			
13	31	917	138			
14	65	3445	86			
15	58	2337	85			
15A	57	2338	86			
16	56	3899	86			
17	55	6916	85			
18	47	6924	138			
19	28	3996	186			
20	26	10966	111			
21						
22						
23						
24						
25						
26						
27						
28						
29	8	19438	126		SEE NOTE 13	
30	36	741	85		SEE NOTE 8	
31	27	741	85		SEE NOTE 8	
32	54	741	85		SEE NOTE 8	
33	26	741	85		SEE NOTE 8	

MODE D
POST ACCIDENT WITH LOSS OF PREFERRED AC POWER (NOTE 18)

	PSIG	GPM (NOTE 6)	°F (NOTE 6)	BY	REMARKS	REV
1	67	9327	85			
2	54	787	85			
3	34	797	138			
4	63	3431	85			
5	58	2872	85			
5A	57	2835	94			
6	56	2853	103			
7	57	5896	85			
8	49	5972	134			
9	22	3442	183			
10	19	9416	138			
11	69	9327	85			
12	53	787	85			
13	31	797	138			
14	65	3431	86			
15	58	2837	85			
15A	57	2838	94			
16	56	2852	183			
17	55	5896	85			
18	47	5972	134			
19	28	3442	117			
20	26	9416	138			
21	84	811	85			
22	78	825	85			
23	55	838	118			
24	75	85	85			
25	.	.	.			
26	.	.	.			
27	74	86	97			
28	21	845	118			
29	8	19438	138		SEE NOTE 13	
30	36	832	85		SEE NOTE 8	
31	27	838	138		SEE NOTE 8	
32	54	832	85		SEE NOTE 8	
33	26	838	138		SEE NOTE 8	

MODE E
POST ACCIDENT WITH LOSS OF PREFERRED AC POWER AND CROSS TIE TO G41 PPCC HX VALVED IN (NOTE 18)

	PSIG	GPM	°F	BY	REMARKS	REV
1	67	9327	85			
2	54	787	85			
3	34	797	138			
4	63	3431	85			
5	58	2872	85			
5A	57	2835	94			
6	56	2853	103			
7	57	5896	85			
8	49	5972	134			
9	22	3447	112			
10	19	9416	138			
11	69	9327	85			
12	53	787	85			
13	31	797	138			
14	65	3431	86			
15	58	2837	85			
15A	57	2838	94			
16	56	2852	183			
17	55	5896	85			
18	47	5972	134			
19	22	3447	117			
20	26	9416	138			
21	84	811	85			
22	78	825	85			
23	55	838	118			
24	75	85	85			
25	.	.	.			
26	.	.	.			
27	74	86	97			
28	21	845	118			
29	8	19438	138		SEE NOTE 13	
30	36	832	85		SEE NOTE 8	
31	27	838	138		SEE NOTE 8	
32	54	832	85		SEE NOTE 8	
33	26	838	138		SEE NOTE 8	

MAXIMUM SYSTEM TEMPERATURES
SAME AS MODE 'E' EXCEPT HX'S ARE CLEAN AND OTHER IDEAL CONDITIONS EXIST (NOTES 10 & 12)

	PSIG	FLOW AT TEMP GPM (NOTE 6)	TEMP °F	FLOW AT TEMP GPM (NOTE 6)	TEMP °F	BY	REMARKS	REV
1	67	9327	85					
2	54	787	85					
3	34	845	169**	797	138*			
4	63	3431	85	3431	85			
5	58	2882	85	2882	85			
5A	57	2894	102	2894	102*		*SAME AS PEAK	
6	56	2938	113	2905	129			
7	57	8496	85	8496	85			
8	49	8932	137**	8932	139*		*SAME AS MODES D&E **SEE NOTE 18	
9	22	3489	186	3489	186			
10	19	9416	145	9416	138		SEE NOTE 14	
11	69	9327	85	9327	85			
12	53	787	85	787	85			
13	31	845	169**	797	138*		*SAME AS MODES D&E **SEE NOTE 18	
14	35	3431	95	3431	86			
15	58	2937	85	2882	85			
15A	57	2894	102	2894	102*		*SAME AS PEAK	
16	56	2852	183	2852	183			
17	55	3896	88	3896	85			
18	47	5883	257**	5932	139*		*SAME AS MODES D&E **SEE NOTE 18	
19	22	3489	206	3496	138			
20	22	9468	146	9469	131		SEE NOTE 14	
21	84	871	86	811	95			
22	78	826	86	825	85			
23	55	836	154**	838	119*		*SAME AS MODES D&E **SEE NOTE 18	
24	75	86	86	85	98			
25	.	.	.	.	.			
26	.	.	.	.	.			
27	74	88	105	86	105*		*SAME AS PEAK	
28	21	832	152	838	117		SEE NOTE 14	
29	8	19838	1474	19438	131		SEE NOTE 13 **SEE NOTE 18	
30	36	832	93	832	85		SEE NOTE 8	
31	27	841	146	838	138**		*SAME AS MODE E SEE NOTE 8 & 18	
32	54	832	88	832	85		SEE NOTE 8	
33	26	841	146	838	138*		*SAME AS MODE E SEE NOTE 8 & 18	

NOTES:

1. MAXIMUM AT FIRST ACCIDENT FROM INLET TO OUTLET TUBE SIDE OF ONE RHR HX, LOOP ASSUMES ONLY ONE RHR HX LOOP IS OPERATING.
2. DELETED.
3. COOLING LOOP FOR HPCS COMPONENTS IS NOT REQUIRED DURING MODES "B" AND "C".
4. DELETED.
5. HEAT LOADS FOR MODE "C" OCCUR AFTER 20 HOURS OF OPERATION.
6. DENOTES MAXIMUM OPERATING TEMPERATURE DURING NORMAL OPERATIONS WITH ESW INLET TEMPERATURE OF 85°F. MINIMUM TEMPERATURE FOR ALL MODES AND LOADS IS 33°F.
7. FLOW RATE PRESSURE AND TEMPERATURE VALUES ARE BASED ON CALCULATIONS FOR THE APPLICABLE OPERATING CONDITIONS. MINIMUM REQUIRED FLOW RATES TO ALL OF THE ESW HEAT LOADS ARE AS SHOWN. OPERATIONAL PRESSURE MAY VARY AS LONG AS MINIMUM FLOW RATES TO THE ESW HEAT LOADS ARE MAINTAINED.
8. FLOW TO THE FUEL POOL HEAT EXCHANGERS IS NOT THROTTLED AND MAY BE SIGNIFICANTLY HIGHER THAN THE MINIMUM FLOW RATES SHOWN.
9. THE VOLUMETRIC FLOW RATES SHOWN HAVE BEEN CONVERTED FROM THE MASS FLOW RATE AT EACH LOCATION USING THE RESPECTIVE TEMPERATURE.
10. THE FLOW RATES SHOWN FOR MODES "D" AND "E" ARE THE MAXIMUM OPERATING TEMPERATURE CASE REPRESENT THE MINIMUM ESW FLOW RATES REQUIRED FOR HEAT REMOVAL DURING THE DESIGN BASIS ACCIDENT. THESE FLOW RATES ARE BASED ON SPECIFIC ASSUMPTIONS CONTAINED IN DESIGN BASIS HEAT EXCHANGER AND PERFORMANCE CALCULATIONS. THE SAME FLOW RATES ARE ALSO CONSERVATIVELY ASSUMED FOR MODE "A". THESE VALUES REPRESENT DESIGN MINIMUMS AND DO NOT INCLUDE ALLOWANCES FOR FLOW DEGRADATION NOR INSTRUMENT INACCURACIES. FOR TESTING ACCEPTANCE CRITERIA REFER TO THE APPLICABLE TEST PROCEDURES AND SUPPORTING CALCULATIONS.
11. THE FLOW RATES SHOWN FOR MODES "B" AND "C" REPRESENT THE MINIMUM ESW FLOW RATES THAT ARE REQUIRED TO BE PRESENT DURING NORMAL PLANT OPERATION. THESE FLOW RATES ARE HIGHER THAN THE ACCIDENT FLOW RATES SINCE THEY ACCOUNT FOR DEGRADATIONS THAT ARE EXPECTED TO OCCUR DURING AN ACCIDENT. THESE FLOW RATES DO NOT INCLUDE ALLOWANCES FOR INSTRUMENT INACCURACIES. FOR TESTING ACCEPTANCE CRITERIA REFER TO THE APPLICABLE TEST PROCEDURES AND SUPPORTING CALCULATIONS.
12. THE MAXIMUM SYSTEM TEMPERATURES IDENTIFIED ARE BOUNDING VALUES THAT SHOULD BE USED FOR EVALUATION OF ASME CODE COMPONENTS ONLY. AT LOCATIONS WHERE PEAK TEMPERATURES OCCUR AT THE SIDE OF SOME HEAT EXCHANGERS THESE TEMPERATURES ARE CONSIDERED TO BE "ABNORMAL" TEMPERATURE VALUES. REFERENCE THE APPROPRIATE DESIGN BASIS CALCULATIONS FOR DETAILS AND ADDITIONAL INFORMATION.
13. THE FLOW RATES IDENTIFIED FOR LOCATION #29 REPRESENT THE COMBINATION OF FLOW FROM ALL THREE LOOPS OF ESW. THE TEMPERATURES IDENTIFIED AT F.O. LOCATION #29 ARE THE MAXIMUM VALUES POSSIBLE THAT COULD RESULT IN THIS CONFIGURATION OR IN ANY COMBINATION OF INSERVICE LOOPS ASSUMING SINGLE LOOP FAILURE.
14. THE VALUES SHOWN ALSO REPRESENT THE TEMPERATURES THAT COULD BE PRESENT IN THE COMMON DISCHARGE HEADER FLOW LOCATION #30 DURING NORMAL PLANT OPERATION WHEN LOOP SURVEILLANCE TESTING IS PERFORMED.
15. THE TEMPERATURE SHOWN MAY BE EXCEEDED DURING NORMAL PLANT OPERATION WHEN ONE DIESEL LOOP SURVEILLANCE TESTING IS PERFORMED. SEE TEMPERATURES AT FLOW LOCATIONS #18, #20 AND #25.
16. THE PEAK PROCESS FLUID TEMPERATURE SHOWN IS CONSIDERED TO BE AN "ABNORMAL" TEMPERATURE CONDITION AND SHALL BE TREATED AS SUCH DURING EVALUATION OF THE AFFECTED ASME CODE COMPONENTS (e.g. PIPING, SUPPORTS, HX, VLVS, ETC).
17. THE HEAT LOAD VALUES IN THE TABLE FOR THE ECC HX REPRESENT THE MAXIMUM HEAT LOAD THAT COULD BE PRESENT FOR EITHER LOOP A OR LOOP B. THIS SIMPLIFIES THE INFORMATION SHOWN AND RESULTS IN THE IDENTIFICATION OF CONSERVATIVE HX OUTLET TEMPERATURES.

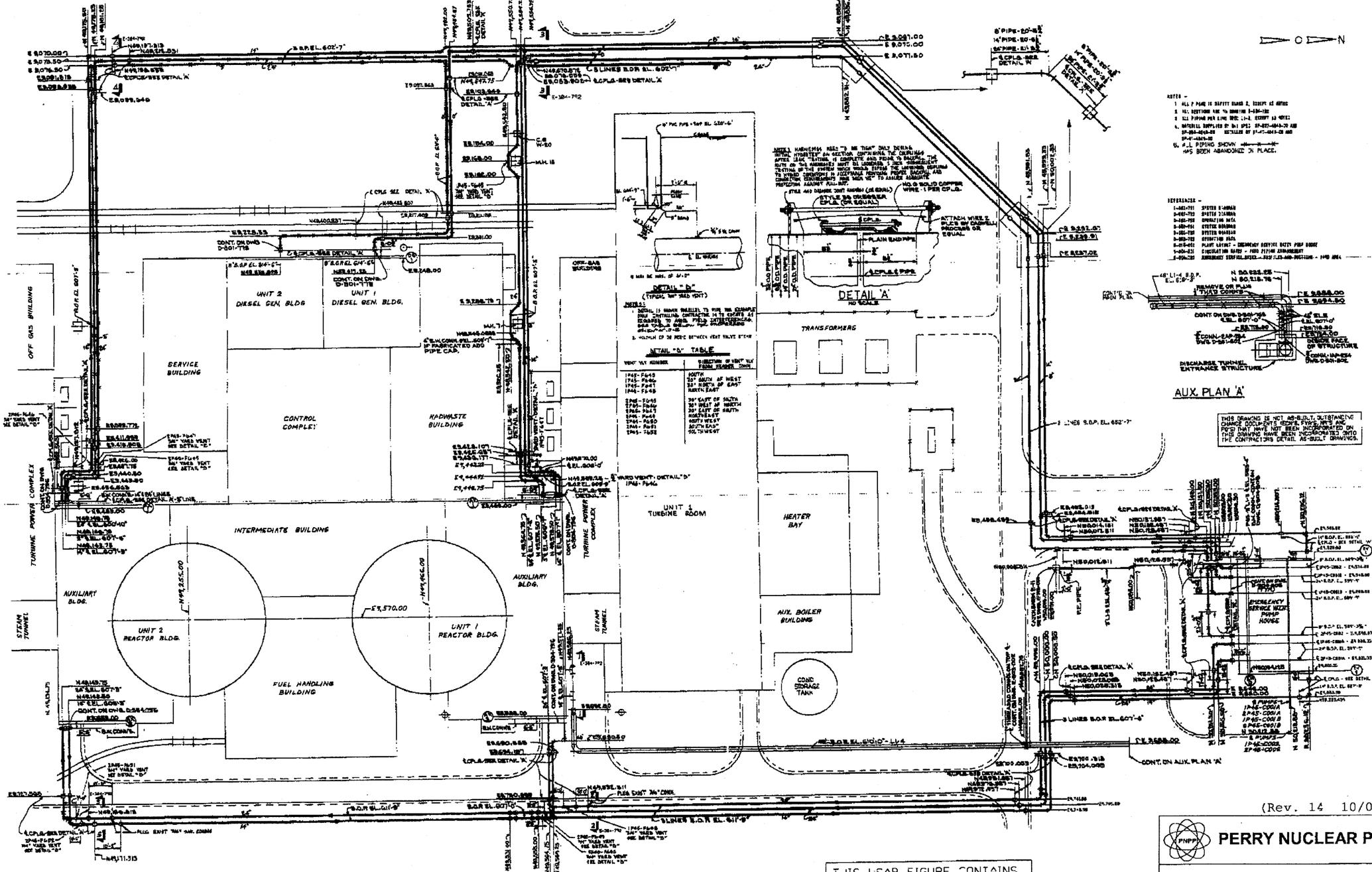
(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

Emergency Service Water System

Figure 9.2-1 (Sheet 3 of 3)

(Dwg. D-302-793)



THIS DRAWING IS NOT AS-BUILT. OUTSTANDING CHANGE DOCUMENTS (CDCR'S, FVCS, ETC.) AND/OR FCR'S THAT HAVE NOT BEEN INCORPORATED ON THIS DRAWING HAVE BEEN INCORPORATED ONTO THE CONTRACTOR'S DETAIL AS-BUILT DRAWINGS.

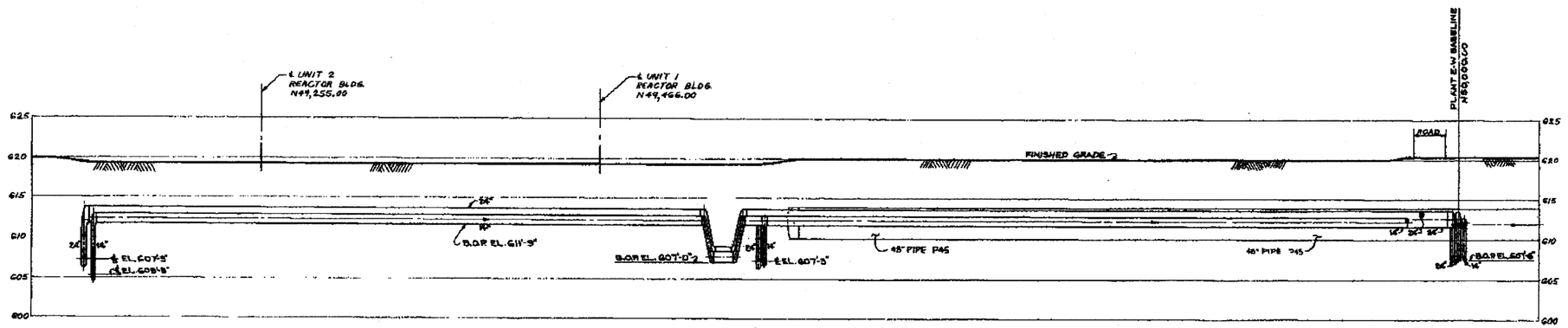
THIS USAR FIGURE CONTAINS HISTORICAL INFORMATION. FOR CURRENT INFORMATION SEE ASSOCIATED SYSTEM DIAGRAM USAR FIGURE.

(Rev. 14 10/05)

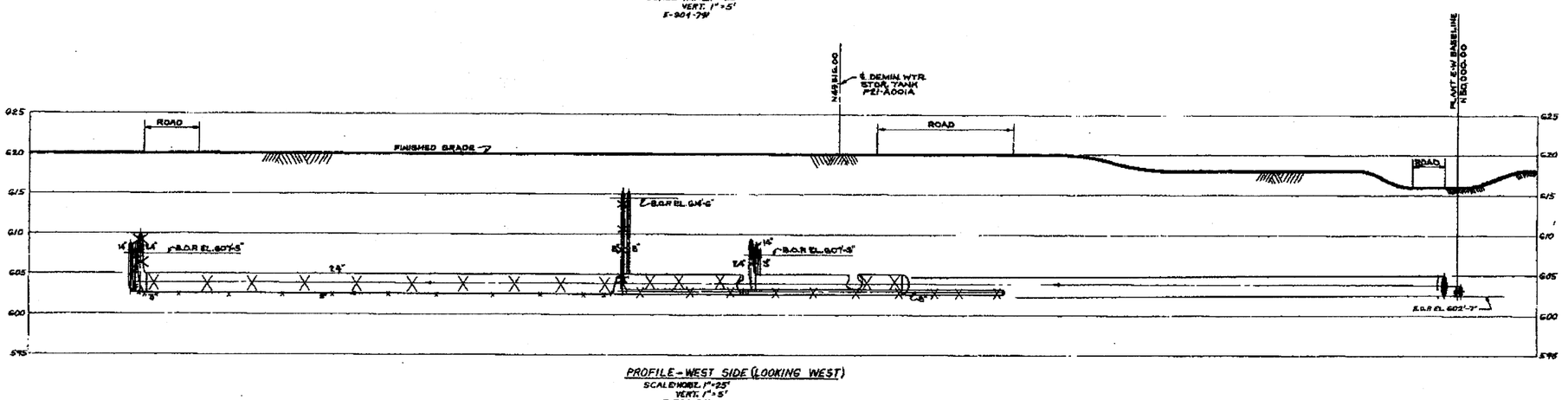
PERRY NUCLEAR POWER PLANT

Emergency Service Water Plan, Yard Area, Units 1 & 2

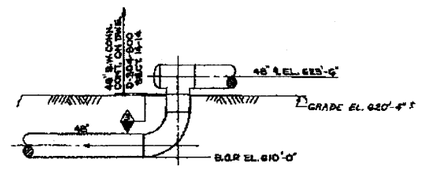
Figure 9.2-2 (Sheet 1 of 2)
(Dwg. D-304-791)



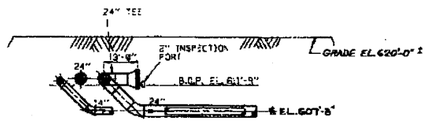
PROFILE - EAST SIDE (LOOKING WEST)
SCALE: HORIZ. 1"=25'
VERT. 1"=5'
E-304-791



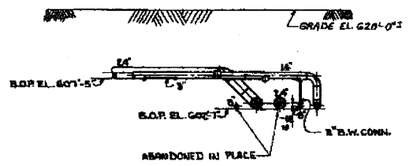
PROFILE - WEST SIDE (LOOKING WEST)
SCALE: HORIZ. 1"=25'
VERT. 1"=5'
E-304-791



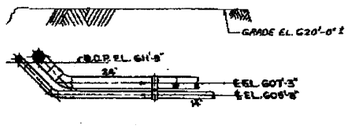
SECTION 1-1
SCALE: 1/8" = 1'-0"
E-304-791 (J-10)



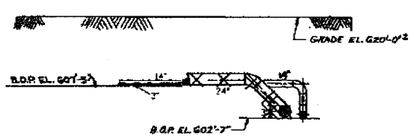
SECTION 2-2
SCALE: 1/8" = 1'-0"
E-304-791 (J-10)



SECTION 3-3
SCALE: 1/8" = 1'-0"
E-304-791 (A-11)



SECTION 5-5
SCALE: 1/8" = 1'-0"
E-304-791 (J-10)



SECTION 4-4
SCALE: 1/8" = 1'-0"
E-304-791 (A-16)

NOTES:
1. FOR NOTES AND REFERENCES, SEE DWG. E-304-791.
2. ALL PIPING SHOWN -x-x-x- HAS BEEN ABANDONED IN PLACE.

(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

Emergency Service Water Profile & Sections, Yard Area, Units 1 & 2

Figure 9.2-2 (Sheet 2 of 2)
(Dwg. E-304-792)

DESIGN DATA									
P	NORMAL		UPSET			BY	CKD	REMARKS	REV
	PSIG	°F	PSIG	°F	TIME				
1	ATM	110				JAB			
2	150	150				JAB			

NOTES:

1. ALL VENTS AND DRAINS ARE NON-SAFETY CLASS LINE SPEC. L1-4 AFTER SHUTOFF VALVE. SURGE TANK VENT FLOW MAY BE DIRECTED TO COLLECTION FACILITY WITH NON-COLLAPSIBLE HOSE OR TUBING AS NECESSARY. END OF HOSE SHALL BE INSERTED WELL WITHIN FLOOR DRAIN TO AVOID SPLASHING. HOSE SHALL BE SUPPORTED WITH PLASTIC TIE WRAPS OR EQUIVALENT AT APPROX. 4'-0" SPACING.
2. BALANCE OF SYSTEM IS SAFETY CLASS 3 UNLESS OTHERWISE NOTED. SAFETY CLASS LINE SPECIFICATION IS L1-3.
3. FOR OPERATING DATA, SEE DWG. 302-0623-00000.
4. TWO-BED MAKEUP SYSTEM - VALVES ARE NON-SAFETY CLASS BECAUSE THEY WILL NOT INHIBIT THE SUPPLY OF MAKEUP TO THE ECCW SURGE TANKS DURING AN EMERGENCY CONDITION (EMERGENCY SERVICE WATER MAKEUP CONNECTION IS LOWER THAN THE TWO-BED WATER CONNECTION).
5. ALL SYSTEM INSTRUMENTS, VALVES, PUMPS, HEAT EXCHANGERS, ETC. ARE PREFIXED BY P42, UNLESS OTHERWISE INDICATED.
6. SEE DWG. 302-0771-00000 FOR DESCRIPTION OF SAMPLE TYPES.
7. TEMPORARY STRAINERS D001A AND B USED FOR START-UP ONLY ARE REMOVED FOR PLANT OPERATION.
8. REDUNDANT REMOTE SHUTDOWN CONTROL SWITCH MOUNTED ON PUMP SWITCHGEAR.
9. DELETED.
10. TEMPERATURE ELEMENTS 0P42N0320ALB AND C AND TEMPERATURE TRANSMITTERS 0P42N0312ALB AND C ARE SPARED IN PLACE. VALVES 0P42F035ALB AND C HAVE THEIR POWER REMOVED AND ARE CONTROLLED MANUALLY.
11. DELETED.
12. VALVES F0667/F0668 ARE NORMALLY CLOSED DURING OPERATION. THESE VALVES ARE BOUNDARY VALVES BETWEEN NON-CODE SAFETY PIPING AND NON-CODE, NON-SAFETY PIPING. THE VALVES ISOLATE THE NON-SAFETY SIGHT GLASS INSTRUMENT FROM THE ECC SYSTEM. FLEX HOSES MAY BE REMOVED DURING PLANT OPERATION.
13. THE NON-SAFETY LINES UPSTREAM OF F8298 AND DOWNSTREAM OF F5329 HAVE BEEN SEISMICALLY QUALIFIED AS SEISMIC CATEGORY I OF TO PLANT ELEVATION 599'-0". THIS QUALIFICATION WILL PREVENT AN INVENTORY LOSS FROM THE P42 SYSTEM IN A SEISMIC EVENT.
14. NON-CODE SAFETY RELATED.
15. VALVES HAVE HAD THEIR POWER REMOVED AND ARE CONTROLLED MANUALLY.
16. WELDED PIPING BLINDS (D0008S & D0008I) WITH INTEGRAL VENT VALVES HAVE BEEN INSTALLED TO ISOLATE ECCW LOOP "A" FROM THE NCCW SYSTEM.
17. FLANGED PIPING BLANKS (D0008S, D0008M & D0008I) WITH INTEGRAL DRAIN OR VENT VALVES AND PIPING BLANK (D0002) HAVE BEEN INSTALLED TO ISOLATE ECCW LOOP "B" FROM NCCW.

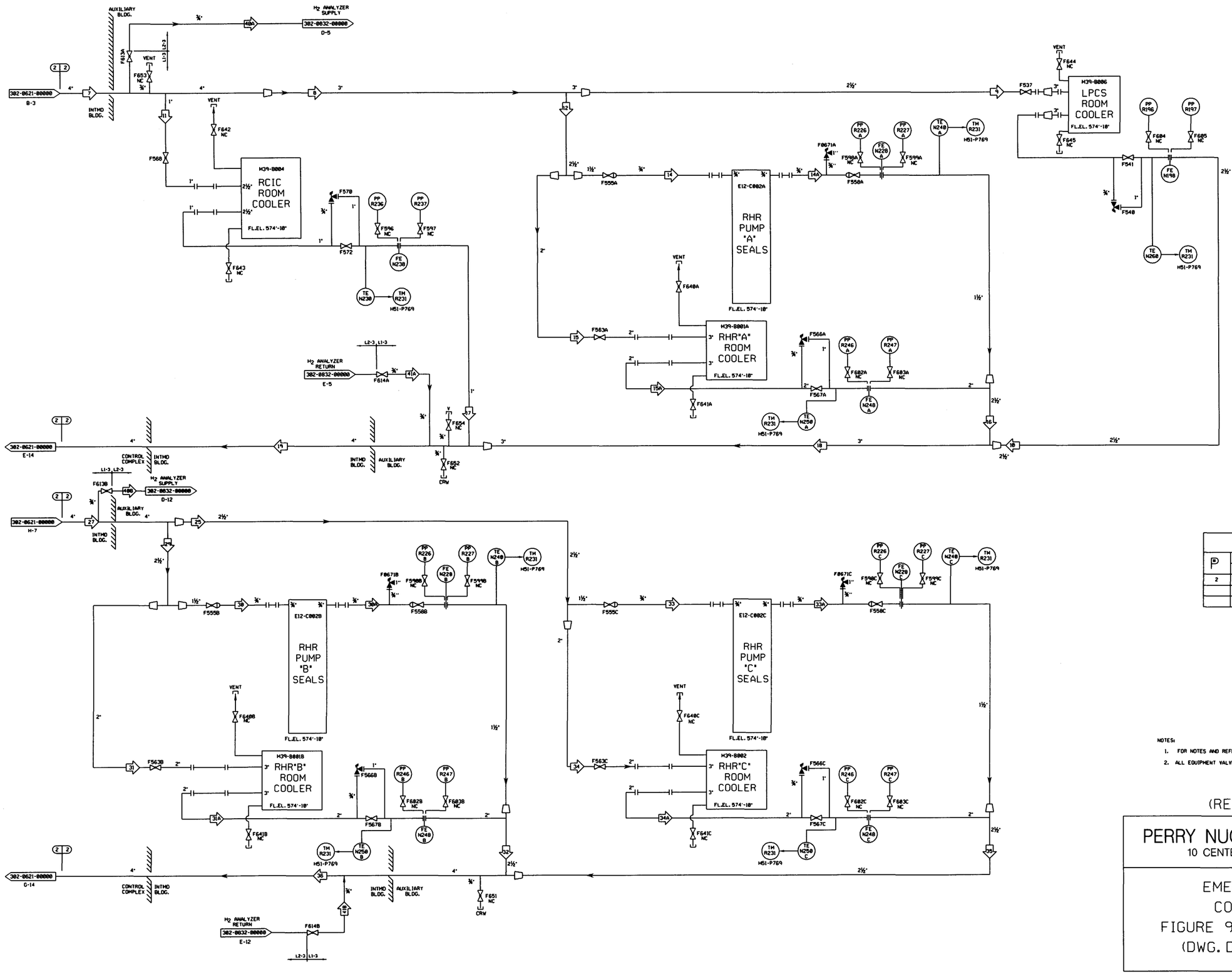
REFERENCES:

302-0611-00000	NUCLEAR CLOSED COOLING SYSTEM, P43
302-0622-00000	EMERGENCY CLOSED COOLING SYSTEM, P42
302-0712-00000	TWO-BED DEMINERALIZER AND DISTRIBUTION SYSTEM MIDDLE ZONE DISTRIBUTION, P21
302-0771-00000	NUCLEAR SAMPLING SYSTEM, P34
302-0792-00000	EMERGENCY SERVICE WATER SYSTEM, P45
302-0832-00000	COMBUSTIBLE GAS CONTROL HYDROGEN ANALYSIS SYSTEM, M51
913-0001-00000	CONTROL COMPLEX CHILLED WATER, P47

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

EMERGENCY CLOSED COOLING SYSTEM
FIGURE 9.2-3 (SHEET 1 OF 4)
(DWG. D-302-0621-00000)



DESIGN DATA									
P	NORMAL		UPSET			BY	CKD	REMARKS	REV
	PSIG	°F	PSIG	°F	TIME				
2	150	150				JAB	RTW		

NOTES:

1. FOR NOTES AND REFERENCES, REFER TO DWG. D-302-0621-00000.
2. ALL EQUIPMENT VALVE AND INSTRUMENT NUMBERS HAVE A UNIT 1 PREFIX.

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

EMERGENCY CLOSED COOLING SYSTEM

FIGURE 9.2-3 (SHEET 2 OF 4)

(DWG. D-302-0622-00000)

OPERATING DATA																																DESIGN FLOW MIN./MAX.	
MODE HOT STANDBY WITH LOSS OF PREFERRED A-C POWER (A)						MODE NORMAL SHUTDOWN (B)						MODE CONTINUATION OF NORMAL SHUTDOWN AFTER 20 HOURS (C)						MODE POST ACCIDENT WITH LOSS OF PREFERRED A-C POWER (D)															
#	PSIG	GPM	F°	BY	REMARKS	#	PSIG	GPM	F°	BY	REMARKS	#	PSIG	GPM	F°	BY	REMARKS	#	PSIG	GPM	F°	BY	REMARKS	#	PSIG	GPM	F°	BY	REMARKS	#	GPM	REMARKS
1	99	2832	102			1	102	2873	95			1	102	2873	95			1	94	1947	103			1						1		
2	83	2829	98			2	85	2873	95			2	85	2873	95			2	79	1944	98			2						2		
3	77	2829	98			3	78	2873	95			3	78	2873	95			3	73	1944	95			3						3		
4	74	164	98			4	76	168	95			4	76	168	95			4	71	197	96			4						4		
5	78	1665	95			5	80	1986	95			5	80	1986	95			5	75	1287	95			5						5		
5A	66	1888	103			5A	68	1986	95			5A	80	1986	95			5A	64	1289	103											
6	N/A	N/A	N/A		CLOSED	6	N/A	N/A	N/A		CLOSED	6	N/A	N/A	N/A		CLOSED	6	N/A	N/A	N/A		CLOSED	6						6		
7	74	164	98			7	76	168	95			7	76	169	95			7	71	157	96			7						7		
8	71	148	99			8	73	148	95			8	73	148	95			8	68	139	96			8						8		
9	73	92	96			9	74	96	95			9		94	95			9	78	89	98			9						9	80	
10	42	92	96			10	42	54	95			10	42	94	95			10	41	89	125			10						10		
11	71	14	98			11	72	14	95			11	72	14	95			11	68	13	95			11						11	10	
12	72	82	98			12	73	83	95			12	73	83	95			12	69	58	95			12						12		
13					SEE 302-8611-00800	13					SEE 302-8611-00800	13					SEE 302-8611-00200	13						13					SEE 302-8611-00800	13		
14	78	15	98		SEE NOTE 6	14	71	15	95		SEE NOTE 9	14	71	15	98		SEE NOTE 9	14	67	14	95		SEE NOTE 6	14					SEE NOTE 6	14	1020	
14A	57	15	102			14A	57	15	113			14A	57	15	98			14A	56	14	102											
15	72	37	96			15	74	38	95			15	74	38	95			15	69	36	95			15						15	68	
15A	76	37	98			15A	71	38	112			15A	71	38	183			15A	66	38	104											
16	41	52	106			16	42	53	113			16	42	93	101			16	41	98	107			16						16		
17	40	14	104			17	41	14	95			17	41	14	96			17	40	13	105			17						17		
18	39	145	99			18	40	146	101			18	40	148	97			18	39	139	105			18						18		
19	37	164	99			19	37	158	101			19	37	168	97			19	37	158	104			19						19		
20	38	2832	102			20	38	2873	95			20	38	2873	95			20	36	1947	103			20						20		
21	96	2814	102			21	100	2855	96			21	100	2855	95			21	93	1935	103			21						21		
22	83	2811	98			22	85	2855	96			22	85	2855	95			22	79	1922	96			22						22		
23	77	123	98			23	79	126	95			23	79	126	95			23	73	117	98			23						23		
24	79	2811	98			24	81	2855	96			24	81	2855	96			24	75	1922	96			24						24		
25	76	87	98			25	78	58	95			25	76	68	95			25	72	55	95			25						25		
26	81	1488	96			26	83	1929	95			26	83	1929	96			26	77	1834	95											
26A	68	1891	103			26A	69	1929	95			26A	69	1929	95			26A	65	1837	103			26						26		
27	77	123	98			27	79	126	95			27	79	126	98			27	73	117	98			27						27		
28	N/A	N/A	N/A		CLOSED	28	N/A	N/A	N/A		CLOSED	28	N/A	N/A	N/A		CLOSED	28	N/A	N/A	N/A		CLOSED	28						28		
29	75	59	98			29	77	68	95			29	77	68	95			29	72	56	99			29						29		
30	74	18	95		SEE NOTE 6	30	75	18	95		SEE NOTE 5	30	75	18	98		SEE NOTE 5	30	71	17	95		SEE NOTE 5	30	71	17	95		SEE NOTE 5	30	10/20	
30A	57	18	121			30A	58	18	118			30A	59	18	97			30A	56	17	101											
31	78	41	98			31	80	42	95			31	80	42	95			31	74	36	98			31						31	80	
31A	73	41	106			31A	75	42	112			31A	75	42	102			31A	71	48	107											
32	37	59	105			32	37	61	111			32	37	60	101			32	37	57	105			32						32		
33	75	16	98		SEE NOTE 5	33	76	17	98		SEE NOTE 5	33	76	17	95		SEE NOTE 5	33	72	16	98		SEE NOTE 5	33	18/28					33	18/28	
33A	58	16	98			33A	59	17	98			33A	59	17	95			33A	57	16	101											
34	78	41	98			34	80	42	96			34	80	42	98			34	76	39	96			34						34	60	
34A	73	41	98			34A	75	42	98			34A	75	42	95			34A	72	39	100											
35	37	57	98			35	38	58	95			35	38	58	95			35	37	56	106			35						35		
36	37	123	108			36	37	126	103			36	37	125	98			36	35	118	109			36						36		
37	38	2814	102			37	38	2855	95			37	38	2855	95			37	38	1925	103									37		
38C					SEE 302-8611-00200	38C					SEE 302-8611-00800	38C					SEE 302-8611-00800	38C					SEE 302-8611-00800	38C					SEE 302-8611-00800	38C		SEE 302-8611-00800
39A	N/A	N/A	N/A		SEE NOTE 7 & 8	39A	N/A	N/A	N/A		SEE NOTE 7 & 8	39A	N/A	N/A	N/A		SEE NOTE 7 & 8	39A	N/A	N/A	N/A		SEE NOTE 7&8	39A					SEE NOTE 7&8	39A		
39B	N/A	N/A	N/A		SEE NOTE 7 & 8	39B	N/A	N/A	N/A		SEE NOTE 7 & 8	39B	N/A	N/A	N/A		SEE NOTE 7 & 8	39B	N/A	N/A	N/A		SEE NOTE 7&8	39B					SEE NOTE 7&8	39B		
40A	69	8	98			40A	78	6	95			40A	78	6	95			40A	84	5	99									42A	5	
40B	73	8	98			40B	74	7	95			40B	74	7	95			40B	89	5	95									42B	5	
41A	37	6	95			41A	37	6	95			41A	37	6	95			41A	37	5	95											
41B	36	6	95			41B	36	7	95			41B	36	7	95			41B	36	6	93											

NOTES:

1. DELETED
2. DURING LOSS OF PREFERRED A-C POWER MODES "A" AND "D" WILL BE OPERATIONAL.
3. OPERATING DATA POINT NUMBER 38C SHOWS FLOW CONDITIONS FROM P43 SYSTEM FOR MODES "A", "B", AND "C".
4. DELETED
5. MINIMUM FLOW RATE TO RHR PUMP SEALS EQUAL TO 18 GPM. MAXIMUM FLOW RATE TO RHR PUMP SEALS EQUAL TO 28 GPM.
6. # DENOTES MAXIMUM OPERATING TEMPERATURE.
7. FLOW IS PROPORTIONED BETWEEN THIS PIPE SEGMENT AND THROUGH HEAT EXCHANGER 1P42-B00B1A BASED ON TEMPERATURE DOWNSTREAM OF THE HEAT EXCHANGER. DESIGN FLOW CONDITIONS FOR PIPE SEGMENT 1 APPLY TO THIS PIPE SEGMENT.
8. FLOW IS PROPORTIONED BETWEEN THIS PIPE SEGMENT AND THROUGH HEAT EXCHANGER 1P42-B00B1B BASED ON TEMPERATURE DOWNSTREAM OF THE HEAT EXCHANGER. DESIGN FLOW CONDITIONS FOR PIPE SEGMENT 2 APPLY TO THIS PIPE SEGMENT.
9. DELETED.
10. OPERATING DATA TABLE INFORMATION OBTAINED FROM CALCULATION P42-28. DATA DEMONSTRATES ANALYTICALLY SYSTEMS ABILITY TO PROVIDE REQUIRED MINIMUM COMPONENT FLOWS.

(Rev. 14 10/05)

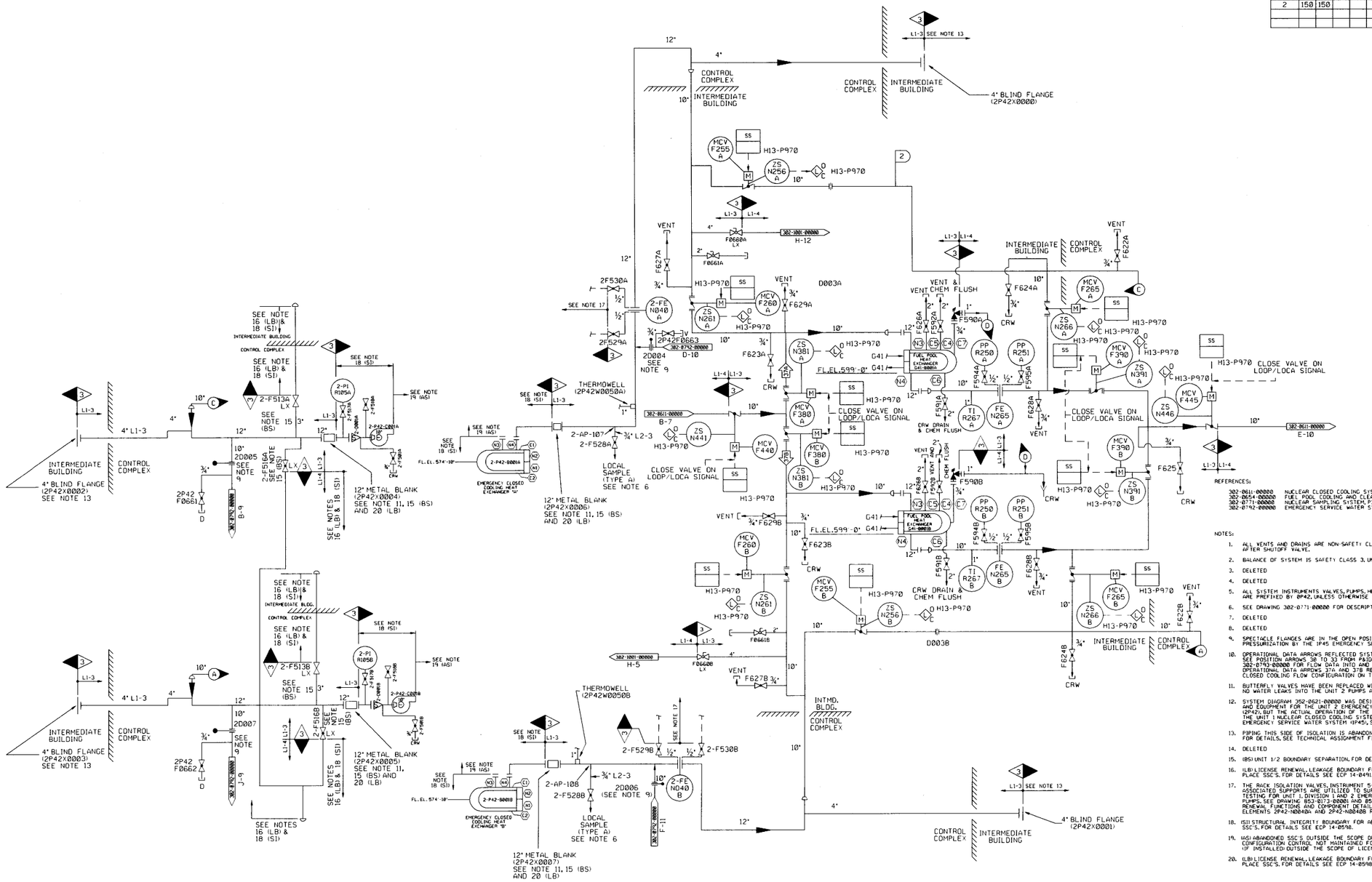
PERRY NUCLEAR POWER PLANT

Emergency Closed Cooling System

Figure 9.2-3 (Sheet 3 of 5)

(Dwg. D-302-623)

DESIGN DATA										
ⓑ	NORMAL		UPSET			BY	CHKD	REMARKS	REV
	PSIG	F	PSIG	F	TIME				
2	150	150				JAB	DFW		



REFERENCES:

302-0611-00000 NUCLEAR CLOSED COOLING SYSTEM, P43
302-0654-00000 FUEL POOL COOLING AND CLEAN-UP SYSTEM, G41
302-0771-00000 NUCLEAR SAMPLING SYSTEM, P34
302-0792-00000 EMERGENCY SERVICE WATER SYSTEM, IP45

NOTES:

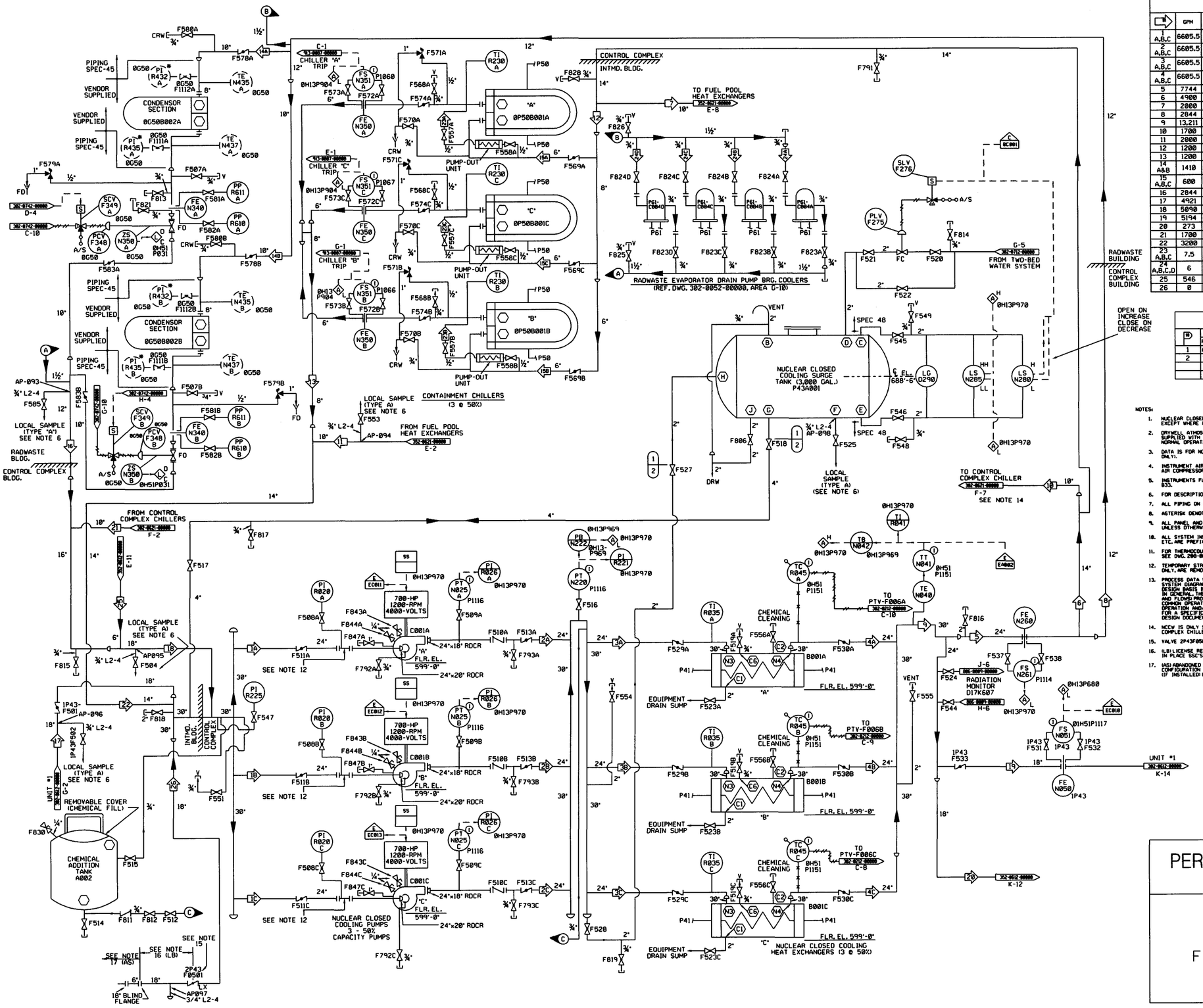
1. ALL VENTS AND DRAINS ARE NON-SAFETY CLASS LINE SPECIFICATION L1-4 AFTER SHUTOFF VALVE.
2. BALANCE OF SYSTEM IS SAFETY CLASS 3, UNLESS OTHERWISE NOTED.
3. DELETED
4. DELETED
5. ALL SYSTEM INSTRUMENTS VALVES, PUMPS, HEAT EXCHANGERS, ETC. ARE PREFIXED BY 0P42, UNLESS OTHERWISE INDICATED.
6. SEE DRAWING 302-0771-00000 FOR DESCRIPTION OF SAMPLE TYPES.
7. DELETED
8. DELETED
9. SPECTACLE FLANGES ARE IN THE OPEN POSITION TO ALLOW PRESSURIZATION BY THE 1P45 EMERGENCY SERVICE WATER SYSTEM.
10. OPERATIONAL DATA ARROWS REFLECTED SYSTEM FLOW CHARACTERISTICS. SEE POSITION ARROWS 30 TO 33 FROM P&ID 302-0792-00000 AND 302-0793-00000 FOR FLOW DATA INTO AND OUT OF THE 2P42 PIPING. OPERATIONAL DATA ARROWS 376 AND 378 REFLECT NORMAL NUCLEAR CLOSED COOLING FLOW CONFIGURATION ON THIS DRAWING.
11. BUTTERFLY VALVES HAVE BEEN REPLACED WITH SOLID BLANKS TO ENSURE NO WATER LEAKS INTO THE UNIT 2 PUMPS AND HEAT EXCHANGERS.
12. SYSTEM DIAGRAM 352-0621-00000 WAS DESIGNED TO INDICATE THE PIPING AND EQUIPMENT FOR THE UNIT 2 EMERGENCY CLOSED COOLING SYSTEM (2P42), BUT THE ACTUAL OPERATION OF THE 2P42 SYSTEM IS WITH EITHER THE UNIT 1 NUCLEAR CLOSED COOLING SYSTEM (1P43) OR THE UNIT 1 EMERGENCY SERVICE WATER SYSTEM (1P45), SEE PIFRA 97-1728-001.
13. PIPING THIS SIDE OF ISOLATION IS ABANDONED. FOR DETAILS, SEE TECHNICAL ASSIGNMENT FILE 81653.
14. DELETED
15. (BS) UNIT 1/2 BOUNDARY SEPARATION, FOR DETAILS SEE TAF 81653.
16. (LB) LICENSE RENEWAL, LEAKAGE BOUNDARY FOR ABANDONED, RETIRED IN PLACE SSC'S, FOR DETAILS SEE ECP 14-0491.
17. THE RACK ISOLATION VALVES, INSTRUMENT 5-VALVE MANIFOLD, TUBING AND ASSOCIATED SUPPORTS ARE UTILIZED TO SUPPORT PERIODIC OPERABILITY TESTING FOR UNIT 1, DIVISION 1 AND 2 EMERGENCY SERVICE WATER (ESW) PUMPS, SEE DRAWING 853-0113-00001 AND 853-0113-00002 FOR LICENSE RENEWAL FUNCTIONS AND COMPONENT DETAILS ASSOCIATED WITH FLOW ELEMENTS 2P42-N004004 AND 2P42-N004008 RESPECTIVELY.
18. (SI) STRUCTURAL INTEGRITY BOUNDARY FOR ABANDONED, RETIRED IN PLACE SSC'S, FOR DETAILS SEE ECP 14-0598.
19. (AS) ABANDONED SSC'S OUTSIDE THE SCOPE OF LICENSE RENEWAL, CONFIGURATION CONTROL NOT MAINTAINED FOR ABANDONED SSC'S (IF INSTALLED) OUTSIDE THE SCOPE OF LICENSE RENEWAL.
20. (LB) LICENSE RENEWAL, LEAKAGE BOUNDARY FOR ABANDONED, RETIRED IN PLACE SSC'S, FOR DETAILS SEE ECP 14-0598.

OPERATING DATA																							
MODE HOT STANDBY (A)						MODE NORMAL SHUTDOWN (B)						MODE CONTINUATION OF NORMAL SHUTDOWN (C)						MODE POST ACCIDENT (D)					
ⓑ	PSIG	GPM	F°	BY	REMARKS	ⓑ	PSIG	GPM	F°	BY	REMARKS	ⓑ	PSIG	GPM	F°	BY	REMARKS	ⓑ	PSIG	GPM	F°	BY	REMARKS
37A	100	1000	95	DRL		37A	100	1000	95	DRL		37A	100	1000	95	DRL		37A				JAB	CLOSED
37B	100	1000	95	DRL		37B	100	1000	95	DRL		37B	100	1000	95	DRL		37B				JAB	CLOSED

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

EMERGENCY CLOSED COOLING SYSTEM
FIGURE 9.2-3 (SHEET 4 OF 5)
(DWG. D-352-0621-00000)



OPERATING DATA
SEE NOTE 13

	GPM	PSIG	°F	BY	REMARKS	
1 A,B,C	6605.5	34	110	JCM	SEE NOTE *3	
2 A,B,C	6605.5	112	110	JCM		
3 A,B,C	6605.5	109	110	JCM		
4 A,B,C	6605.5	96	95	JCM		
5	7744	98	95	JCM		
6	4900	101	95	JAB		
7	2000	100	95	JAB		
8	2844	100	95	JCM		
9	13,211	97	95	JCM		
10	1700	100	95	JAB		
11	2000	36	105	JAB		
12	1200	100	95	JAB		
13	1200	36	105	JAB		
14 A&B	1410	93	95	JAB		
15 A,B,C	600	104	95	JAB		
16	2844	48	105	JCM		
17	4921	35	110	JAB		
18	5090	44	110	JCM		
19	5194	97	95	JCM		
20	273	97	95	JCM		
21	1700	48	105	JAB		
22	3200	34	110	JAB		
23 A,B,C	7.5	99	100	JAB	INTERMITTENT FLOW	
24 A,B,C,D	6	70	95	JCM		
25	546	47	105	DRL		
26	0	35	110	DRL		

DESIGN DATA

ⓑ	NORMAL		UPSET			BY	CHKD	REMARKS	REV
	PSIG	°F	PSIG	°F	TIME				
1	ATM	150	-	-	-	JAB	DPW		
2	150	150	-	-	-	JAB	DPW		

NOTES:

1. NUCLEAR CLOSED COOLING SYSTEM IS NON-SAFETY CLASS. EXCEPT WHERE NOTED.
2. DRYWELL ATMOSPHERE COOLING UNITS ARE ALL CONTINUOUSLY SUPPLIED WITH COOLING WATER. ALL 3 UNITS ARE IN NORMAL OPERATION.
3. DATA IS FOR NORMAL OPERATING CONDITIONS (PRELIMINARY ONLY).
4. INSTRUMENT AIR IS NORMALLY SUPPLIED BY PLANT SERVICE AIR COMPRESSORS.
5. INSTRUMENTS FURNISHED BY OTHERS SHALL HAVE PREFIX B33.
6. FOR DESCRIPTION OF SAMPLE TYPES, SEE DWG. 302-0771-00000.
7. ALL PIPING ON THIS SYSTEM IS L1-4, EXCEPT WHERE NOTED.
8. ASTERISK DENOTES EQUIPMENT SUPPLIED BY VENDOR.
9. ALL PANEL AND RACK NUMBERS ARE PREFIXED H51. UNLESS OTHERWISE NOTED.
10. ALL SYSTEM INSTRUMENTS, VALVES, PUMPS, HEAT EXCHANGERS, ETC. ARE PREFIXED BY 0P43, UNLESS OTHERWISE INDICATED.
11. FOR THERMOCOUPLES ON NUCLEAR CLOSED COOLING PUMPS SEE DWG. 298-0849-00194.
12. TEMPORARY STRAINERS D001A, B & C, USED FOR START UP ONLY, ARE REMOVED FOR PLANT OPERATION.
13. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA PRESSURES, TEMPERATURES, AND FLOWS PROVIDED ON THIS DRAWING REPRESENTS THE MOST COMMON OPERATING CONDITIONS AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP, TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVISED.
14. NCCW IS ONLY SUPPLIED TO THE 'C' CONTROL COMPLEX CHILLER.
15. VALVE 2P43F0501 IS LOCKED CLOSED. FOR DETAILS SEE ECP 14-0409
16. (LB) LICENSE RENEWAL, LEAKAGE BOUNDARY FOR ABANDONED, RETIRED IN PLACE SSC'S. FOR DETAILS SEE ECP 14-0409.
17. (AS) ABANDONED SSC'S OUTSIDE SCOPE OF LICENSE RENEWAL. CONFIGURATION CONTROL NOT MAINTAINED FOR ABANDONED SSC'S (IF INSTALLED) OUTSIDE SCOPE OF LICENSE RENEWAL.

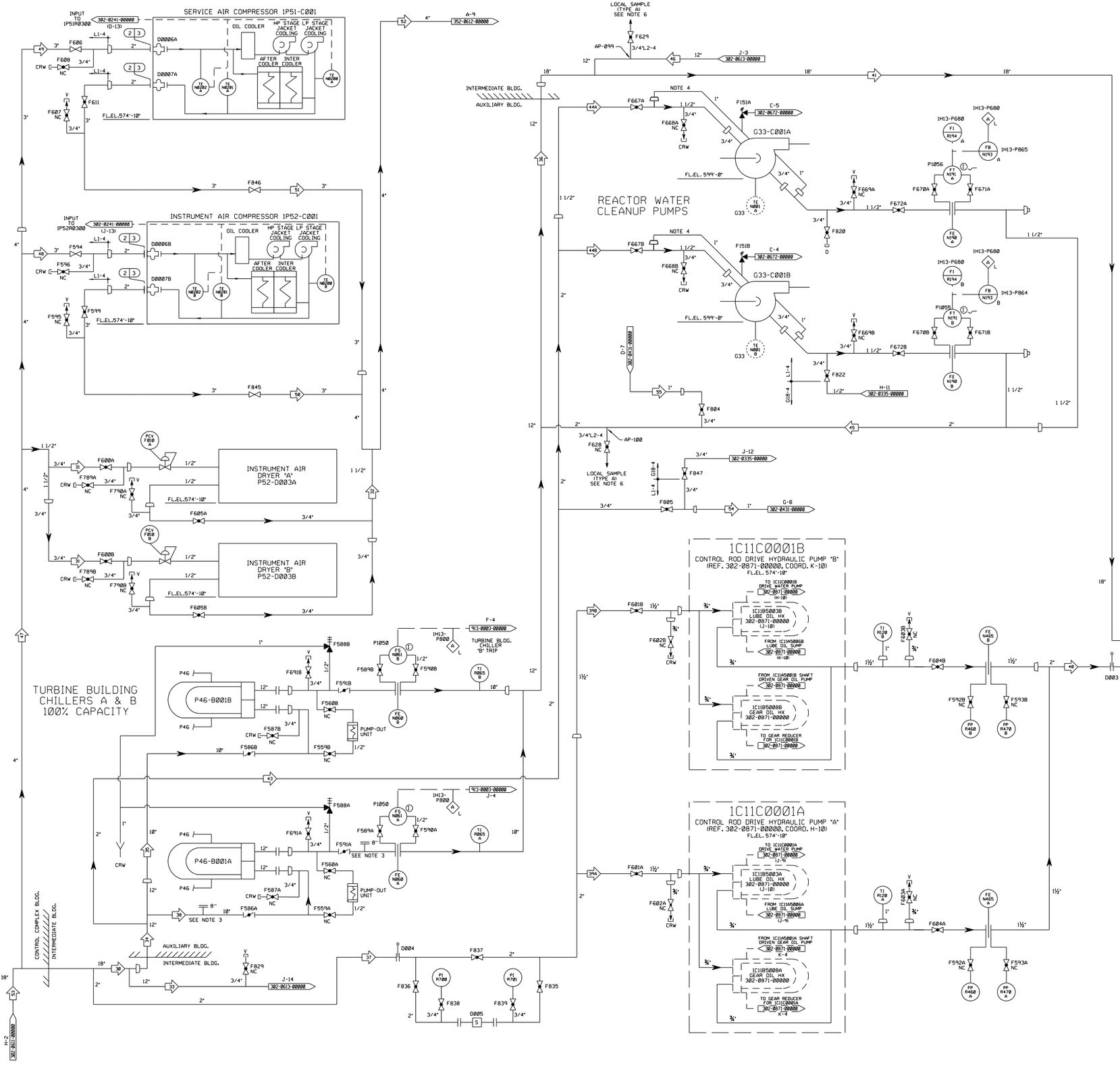
REFERENCES:

302-0052-00000	AUXILIARY STEAM P61
302-0212-00000	SERVICE WATER SYSTEM P41
302-0612-00000	NUCLEAR CLOSED COOLING SYSTEM P43
302-0621-00000	EMERGENCY CLOSED COOLING SYSTEM P42
302-0712-00000	TWO-BED DEMINERALIZER AND DISTRIBUTION SYSTEM-MIDDLE ZONE DISTRIBUTION P21
302-0742-00000	LRW - WASTE EVAPORATION/CONDENSORS G50
352-0612-00000	NUCLEAR CLOSED COOLING SYSTEM P43
352-0621-00000	EMERGENCY CLOSED COOLING SYSTEM P42
886-0089-00000	RADIATION MONITOR D17K607A
913-0087-00000	CONTAINMENT VESSEL CHILLED SYSTEM P54

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

NUCLEAR CLOSED COOLING SYSTEM
FIGURE 9.2-4 (SHEET 1 OF 5)
(DWG. D-302-0611-00000)



OPERATING DATA

SEE NOTE 2

#	GPM	PSIG	F	BY	REMARKS	REV
30	4871	92	95	JAB		
31	6.5	92	95	DRL		
32	13	48	100	JAB		
33	2427	92	95	JAB		
34	2444	92	95	JAB		
35	2400	91	95	JAB		
36	2444	50	110	DRL		
37	50	92	95	JAB		
38	2400	91	95	JAB		
39A	25	92	95	DRL		
39B	25	92	95	DRL		
40	50	50	100	JAB		
41	4871	35	110	JAB		
42	4921	35	110	JAB		
43	44	91	95	JAB		
44A	22	92	95	JAB		
44B	22	92	95	JAB		
45	44	35	100	JAB		
46	2427	50	110	DRL		
47	273	93	95	DRL		
48	110	92	95	DRL	MIN. REQ. FLOW IS 59 GPM	
49	150	92	95	DRL	MIN. REQ. FLOW IS 59 GPM	
50	110	47	105	JAB	MIN. REQ. FLOW IS 59 GPM	
51	150	47	105	JAB	MIN. REQ. FLOW IS 59 GPM	
52	273	47	105	DRL		
53	5194	97	95	DRL		
54	14	90	95	TFF	INTERMITTENT FLOW	
55	14	70	115	TFF	INTERMITTENT FLOW	

DESIGN DATA

#	NORMAL		UPSET			BY	CKD	REMARKS	REV
	PSIG	F	PSIG	F	T				
2	150	150	-	-	-	JAB	DPW		
3	145	104	-	-	-			TEMPERATURE LIMIT FOR ATLAS COPCO COMPRESSORS 104 DEG. F MAX (INLET), 122 DEG. F MAX (OUTLET)	

REFERENCES:

302-0611-00000 NUCLEAR CLOSED COOLING SYSTEM P43
302-0613-00000 NUCLEAR CLOSED COOLING SYSTEM P43
352-0612-00000 NUCLEAR CLOSED COOLING SYSTEM P43
913-0003-00000 TURBINE BUILDING CHILLED WATER P45
302-0672-00000 REACTOR WATER CLEANUP SYSTEM G33
302-0431-00000 POST ACCIDENT SAMPLING SYSTEM P87
31DE38 (31-0009-00000) REFRIGERATION SCHEMATIC (INSTRUMENT AIR DRYER)

NOTES:

1. FOR GENERAL NOTES, REFER TO DRAWING 302-0611-00000.
2. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
3. A THREADED PLUG EXISTS AT THESE LOCATIONS. THE PLUG IS THREADED INTO THE BRANCH CONNECTION AND COVERED BY A BLIND FLANGE. REFERENCE DRAWINGS 304-0611-00102 AND 304-0613-00102 FOR DETAILS.
4. COOLING WATER LINES TO RWCU PUMPS MODIFIED FOR INSTALLATION OF CMR UNITS. RELIEF VALVE F815A AND F815B PROVIDES OVERPRESSURE PROTECTION FOR THE CMR UNIT HEAT EXCHANGERS AND ARE ASME SECTION III CLASS 3 COMPONENTS (REFERENCE ECP 15-0280).

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT

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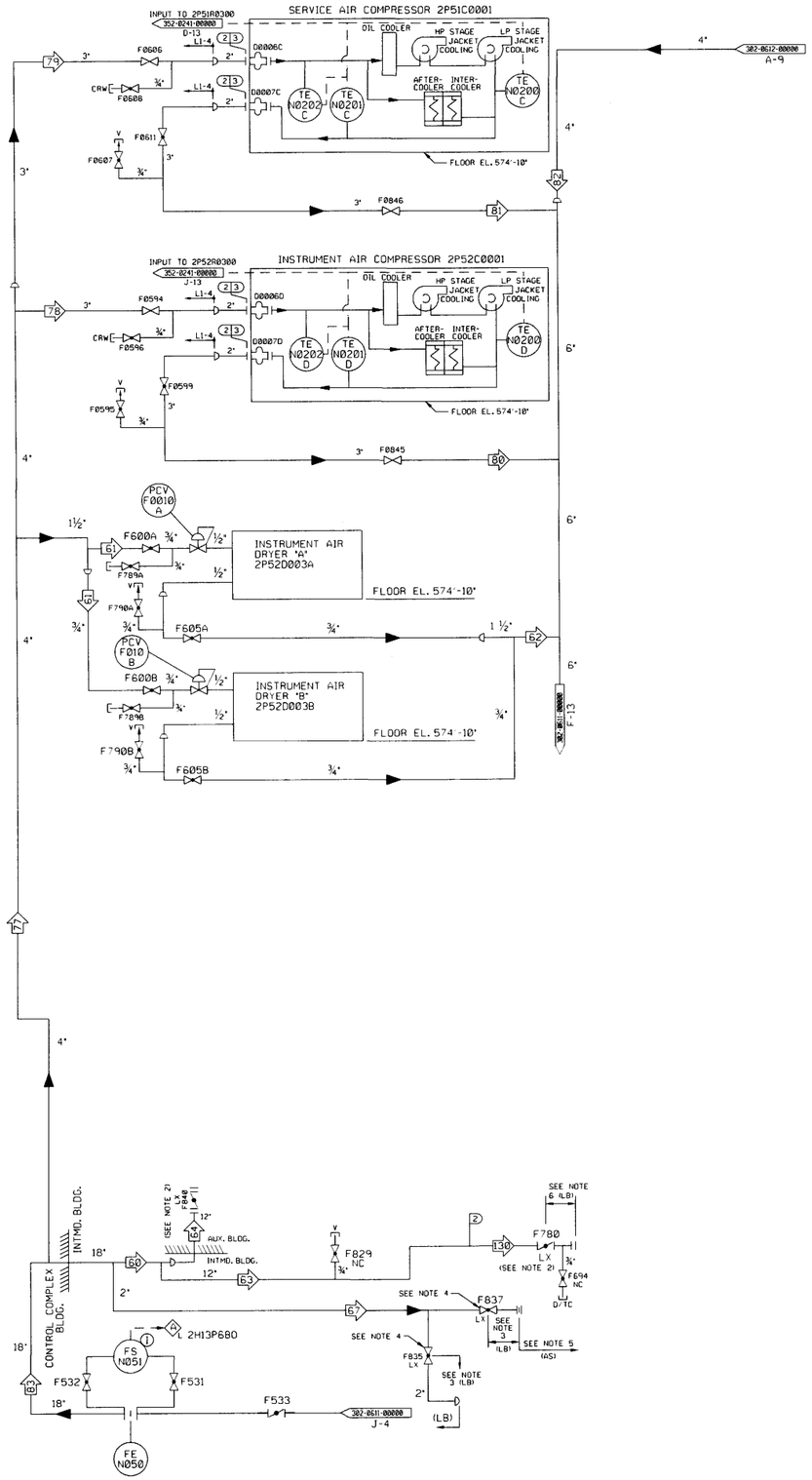
NUCLEAR CLOSED COOLING SYSTEM

FIGURE 9.2-4 (SHEET 2 OF 5)

(DWG. D-302-0612-00000)



OPERATING DATA

#	GPM	PSIG	F	REMARKS	REV
60	0	92	95	ISOLATED	
61	6.5	92	95		
62	13	48	100		
63	0	92	95	ISOLATED	
64	0	92	95	ISOLATED	
65				DELETED	
66	0	0	AMBIENT	ISOLATED	
67	0	92	95	ISOLATED	
68				DELETED	
69 A&B				DELETED	
70				DELETED	
71				DELETED	
72				DELETED	
73				DELETED	
74 A&B				DELETED	
75				DELETED	
76				DELETED	
77	273	93	95		
78	110	92	95	MIN. REQUIRED FLOW IS 59 GPM	
79	150	92	95	MIN. REQUIRED FLOW IS 59 GPM	
80	110	47	105	MIN. REQUIRED FLOW IS 59 GPM	
81	150	47	105	MIN. REQUIRED FLOW IS 59 GPM	
82	273	47	105		
83	273	97	95		
84	0	0	AMBIENT	ISOLATED	
85	0	0	AMBIENT	ISOLATED	
130	0	0	AMBIENT	ISOLATED	

DESIGN DATA

#	NORMAL		UPSET			BY	CHKD	REMARKS	REV
	PSIG	F	PSIG	F	TIME				
2	150	150	-	-	-	JAB	DPW		
3	145	104	-	-	-			TEMPERATURE LIMIT FOR ATLAS COPCO COMPRESSORS 104 DEG. F MAX (INLET), 122 DEG. F MAX (OUTLET)	

REFERENCES:

31DE38 (31-0009-00000) REFRIGERATION SCHEMATIC (INSTRUMENT AIR DRYER)

302-0611-00000 NUCLEAR CLOSED COOLING SYSTEM P43

302-0612-00000 NUCLEAR CLOSED COOLING SYSTEM P43

352-0241-00000 SERVICE AND INSTRUMENT AIR SUPPLY P51, P52

NOTES:

1. FOR GENERAL NOTES, REFER TO DRAWING 302-0611-00000.
2. UNIT 2 BOUNDARY ISOLATION VALVES 2P43F0780 AND 2P43F0840 ARE LOCKED CLOSED.
3. (LB) LICENSE RENEWAL, LEAKAGE BOUNDARY FOR ABANDONED, RETIRED-IN-PLACE SSCs. FOR DETAILS SEE ECP 14-0489.
4. UNIT 1/2 BOUNDARY ISOLATION VALVES 2P43F0835 AND 2P43F0837 ARE LOCKED CLOSED (LX). FOR DETAILS SEE ECP 14-0489
5. (AS) ABANDONED SSCs OUTSIDE THE SCOPE OF LICENSE RENEWAL CONFIGURATION CONTROL NOT MAINTAINED FOR ABANDONED SSCs (IF INSTALLED) OUTSIDE THE SCOPE OF LICENSE RENEWAL.
6. (LB) LICENSE RENEWAL, LEAKAGE BOUNDARY. FOR DETAILS SEE ECP 14-0488.

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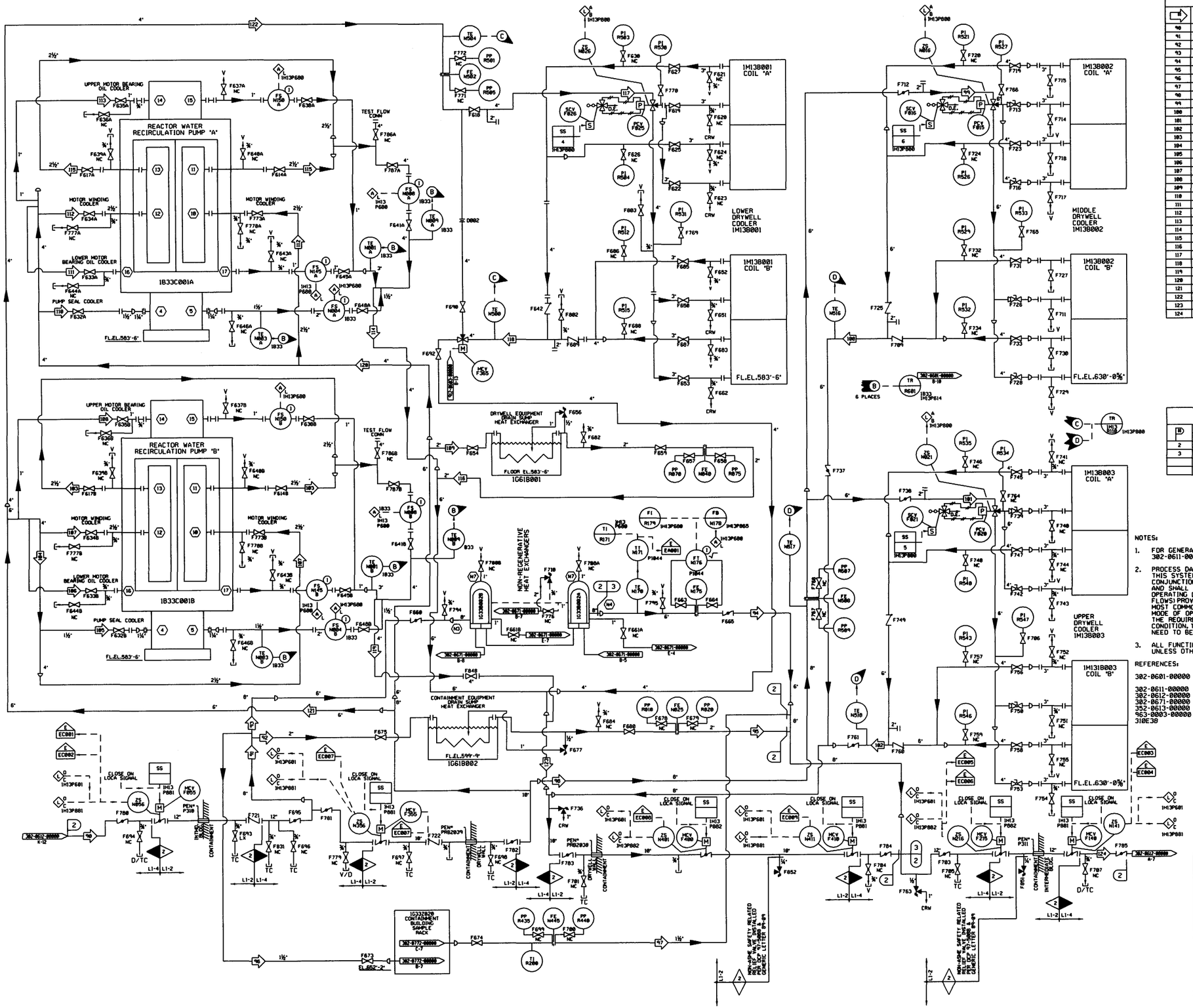
PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

NUCLEAR CLOSED COOLING SYSTEM

FIGURE 9.2-4 (SHEET 3 OF 5)

(DWG. D-352-0612-00000)



OPERATING DATA
SEE NOTE 2

#	GPM	PSIG	°F	BY	REMARKS	REV
90	2427	92	95	JAB		
91	701	86	95	JAB		
92	40	86	95	JAB		
93	636	86	95	JAB		
94	636	47	152	JAB		
95	40	50	100	DRL		
96	25	78	95	JAB		
97	25	50	100	DRL		
98	800	84	95	JAB		
99	400	69	95	JAB		
100	400	50	105	DRL		
101	400	69	95	JAB		
102	400	50	105	DRL		
103	135	50	105	JAB		
104	170	91	95	JAB		
105	35	91	95	JAB		
106	5	91	95	JAB		
107	135	91	95	JAB		
108	20	91	95	JAB		
109	40	92	95	JAB		
110	35	98	95	JAB		
111	5	98	95	JAB		
112	135	98	95	JAB		
113	20	98	95	JAB		
114	330	50	110	DRL		
115	135	50	105	JAB		
116	40	46	100	JAB		
117	226	93	95	JAB		
118	226	54	110	JAB		
119	330	49	110	DRL		
120	330	98	95	DRL		
121	556	98	95	DRL		
122	226	91	95	DRL		
123	426	50	110	DRL		
124	2427	50	110	DRL		

DESIGN DATA

#	NORMAL		UPSET			BY	CHKD	REMARKS	REV
	PSIG	°F	PSIG	°F	TIME				
2	150	150	-	-	-	JAB	DRW		
3	150	200	-	-	-				

NOTES:

1. FOR GENERAL NOTES, REFER TO DRAWING 302-0611-00000.
2. PROCESS DATA SHOWN IN THE OPERATING TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMEPRATURES, AND FLOWS) PROVIDED ON THIS DRAWING REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONDITION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
3. ALL FUNCTIONAL LOCATIONS ARE PREFIXED BY 1P43, UNLESS OTHERWISE NOTED

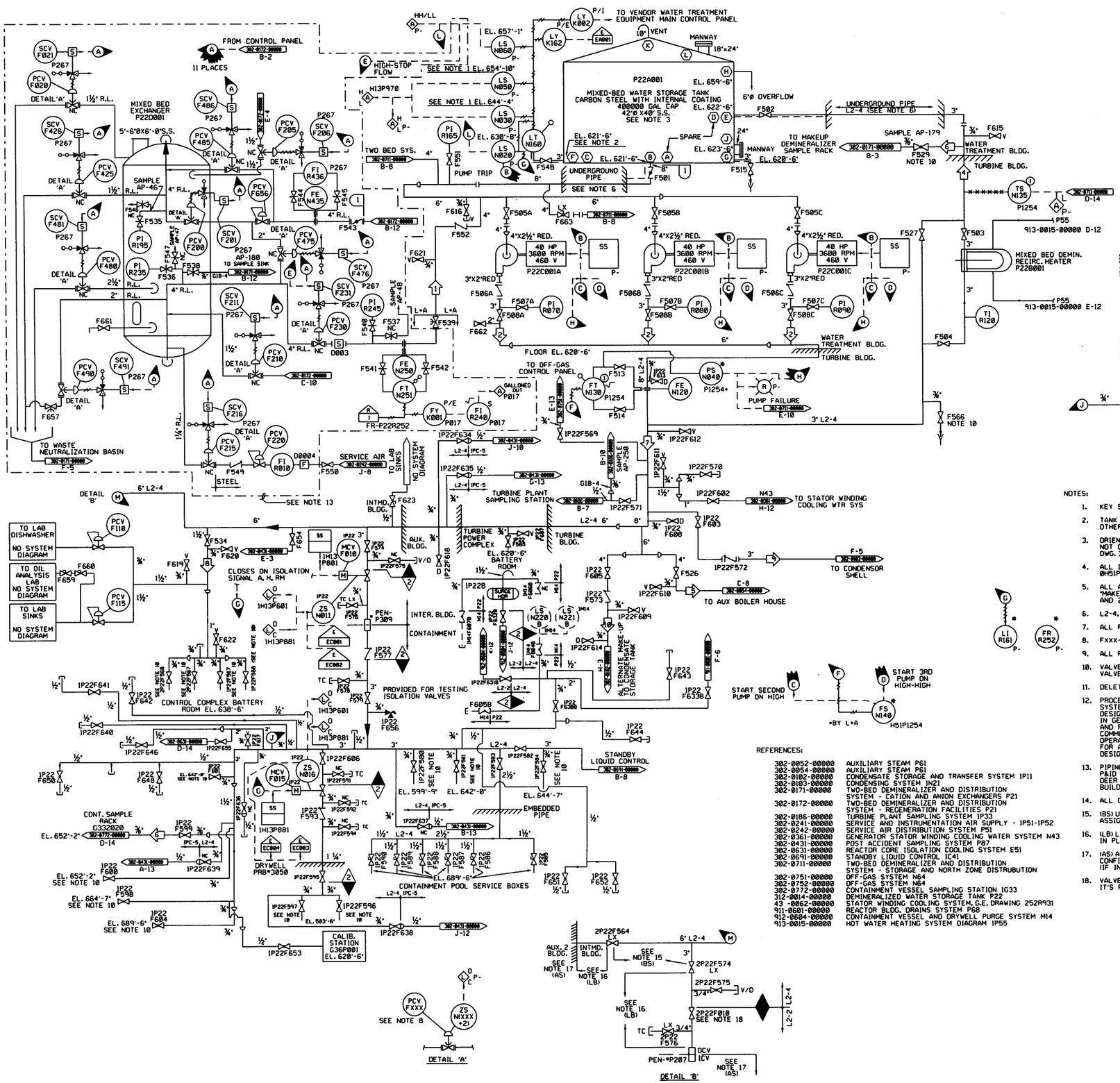
REFERENCES:

302-0601-00000	REACTOR WATER RECIRCULATION SYSTEM B33
302-0611-00000	NUCLEAR CLOSED COOLING SYSTEM P43
302-0612-00000	NUCLEAR CLOSED COOLING SYSTEM P43
302-0671-00000	REACTOR WATER CLEANUP SYSTEM G33
352-0613-00000	NUCLEAR CLOSED COOLING SYSTEM P43
963-0003-00000	TURBINE BUILDING CHILLED WATER P45
310E38	REFRIGERATION SCHEMATIC (INSTRUMENT AIR DRYER)

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

NUCLEAR CLOSED COOLING SYSTEM
FIGURE 9.2-4 (SHEET 4 OF 5)
(DWG. D-302-0613-00000)



OPERATING DATA

SEE NOTE 12

	PSIG	GPM	°F	BY	REMARKS	REV
1	70	360	36-85		MAX. GPM	
2	80	335	36-85			
4	80	120	36-85		CONTINUOUS	
5	80	350	36-85		INTERMITTENT	
6	80	1	36-85		INTERMITTENT	
7	80	880	36-85		MAX. GPM	
8	80	10	36-85		MAX. GPM	
9	80	500	36-85		INTERMITTENT	
10	80	500	36-85		INTERMITTENT	

DESIGN DATA

	NORMAL		UPSET			BY	CHKD	REMARKS	REV
	PSIG	°F	PSIG	°F	TIME				
1	150	85	150	85		WFD			

NOTES:

1. KEY SWITCH OVERRIDE ON PANEL.
2. TANK LEVEL INSTRUMENTATION BY L*A. HEAT TRACING AND CONTROLS BY OTHERS - VALVES BY OTHERS.
3. ORIENTATION OF NOZZLES AS SHOWN FOR CLARITY OF PRESENTATION DOES NOT CORRESPOND WITH ACTUAL ORIENTATION, FOR WHICH REFER TO DWG. 312-0014-00000.
4. ALL INSTRUMENTS AND CONTROLS DESIGNATED P- TO BE MOUNTED ON PANEL 0H51P017, UNLESS OTHERWISE NOTED.
5. ALL ALARMS FROM THIS SYSTEM ARE ANNUNCIATED ON SIGNEL WINDOW "MAKEUP WATER TREATMENT TROUBLE 0H51P017" ON PANELS 1H13P680 AND 2H13P680 IN THE CONTROL ROOM, EXCEPT STORAGE TANK LOW.
6. L2-4, COATED AND WRAPPED.
7. ALL PIPING IS L2-4, UNLESS OTHERWISE INDICATED.
8. FXXX-VALVE IDENTIFICATION NUMBER.
9. ALL PANELS AND RACKS ARE PREFIXED 0H51.
10. VALVE IS NOT IN ACCORDANCE WITH LINE SPEC L2-4. VALVE HAS THREADED ENDS PER DCN 4002 & DCN 4170.
11. DELETED.
12. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
13. PIPING THAT IS ADJACENT TO VALVE AND NOT SHOWN ON THIS P&ID IS EXCLUDED FROM DESIGN CONTROL. FOR DETAILS SEE DEER 06-0003. PIPING SHOWN CONNECTS TO WATER TREATMENT BUILDING.
14. ALL COMPONENTS ARE 0P22 UNLESS OTHERWISE NOTED.
15. (BS) UNIT 1/2 BOUNDARY SEPARATION. FOR DETAILS SEE TECHNICAL ASSIGNMENT FILE 81653.
16. (LB) LICENSE RENEWAL, LEAKAGE BOUNDARY FOR ABANDONED, RETIRED IN PLACE SSC'S. FOR DETAILS SEE ECP 14-0427.
17. (AS) ABANDONED SSC'S OUTSIDE SCOPE OF LICENSE RENEWAL. CONFIGURATION CONTROL NOT MAINTAINED FOR ABANDONED SSC'S (IF INSTALLED) OUTSIDE SCOPE OF LICENSE RENEWAL.
18. VALVE SYMBOL DISPLAYS ONLY VALVE BODY OF MOV IN ORDER TO SHOW IT'S FUNCTION OF A LEAKAGE BARRIER.

REFERENCES:

302-0952-00000	AUXILIARY STEAM P51
302-0054-00000	AUXILIARY STEAM P51
302-0102-00000	CONDENSATE STORAGE AND TRANSFER SYSTEM 1P11
302-0103-00000	CONDENSING SYSTEM 1N21
302-0171-00000	TWO-BED DEMINERALIZER AND DISTRIBUTION SYSTEM - CATION AND ANION EXCHANGERS P21
302-0172-00000	TWO-BED DEMINERALIZER AND DISTRIBUTION SYSTEM - REGENERATION FACILITIES P21
302-0186-00000	TURBINE PLANT SAMPLING SYSTEM 1P33
302-0241-00000	SERVICE AND INSTRUMENTATION AIR SUPPLY - 1P51-1P52
302-0242-00000	SERVICE AIR DISTRIBUTION SYSTEM P51
302-0361-00000	GENERATOR STATOR WINDING COOLING WATER SYSTEM N43
302-0431-00000	POST ACCIDENT SAMPLING SYSTEM P87
302-0631-00000	REACTOR CORE ISOLATION COOLING SYSTEM E51
302-0691-00000	STANDBY LIQUID CONTROL IC41
302-0711-00000	TWO-BED DEMINERALIZER AND DISTRIBUTION SYSTEM - STORAGE AND NORTH ZONE DISTRUBUTION
302-0751-00000	OFF-GAS SYSTEM N64
302-0752-00000	OFF-GAS SYSTEM N64
302-0772-00000	CONTAINMENT VESSEL SAMPLING STATION 1G33
312-0014-00000	DEMINERALIZED WATER STORAGE TANK P22
43-0062-00000	STATOR WINDING COOLING SYSTEM, G.E. DRAWING 252R931
911-0601-00000	REACTOR BLDG. DRAINS SYSTEM P68
912-0604-00000	CONTAINMENT VESSEL AND DRYWELL PURGE SYSTEM M14
913-0015-00000	HOT WATER HEATING SYSTEM DIAGRAM 1P55

(REV. 19 10/2015)

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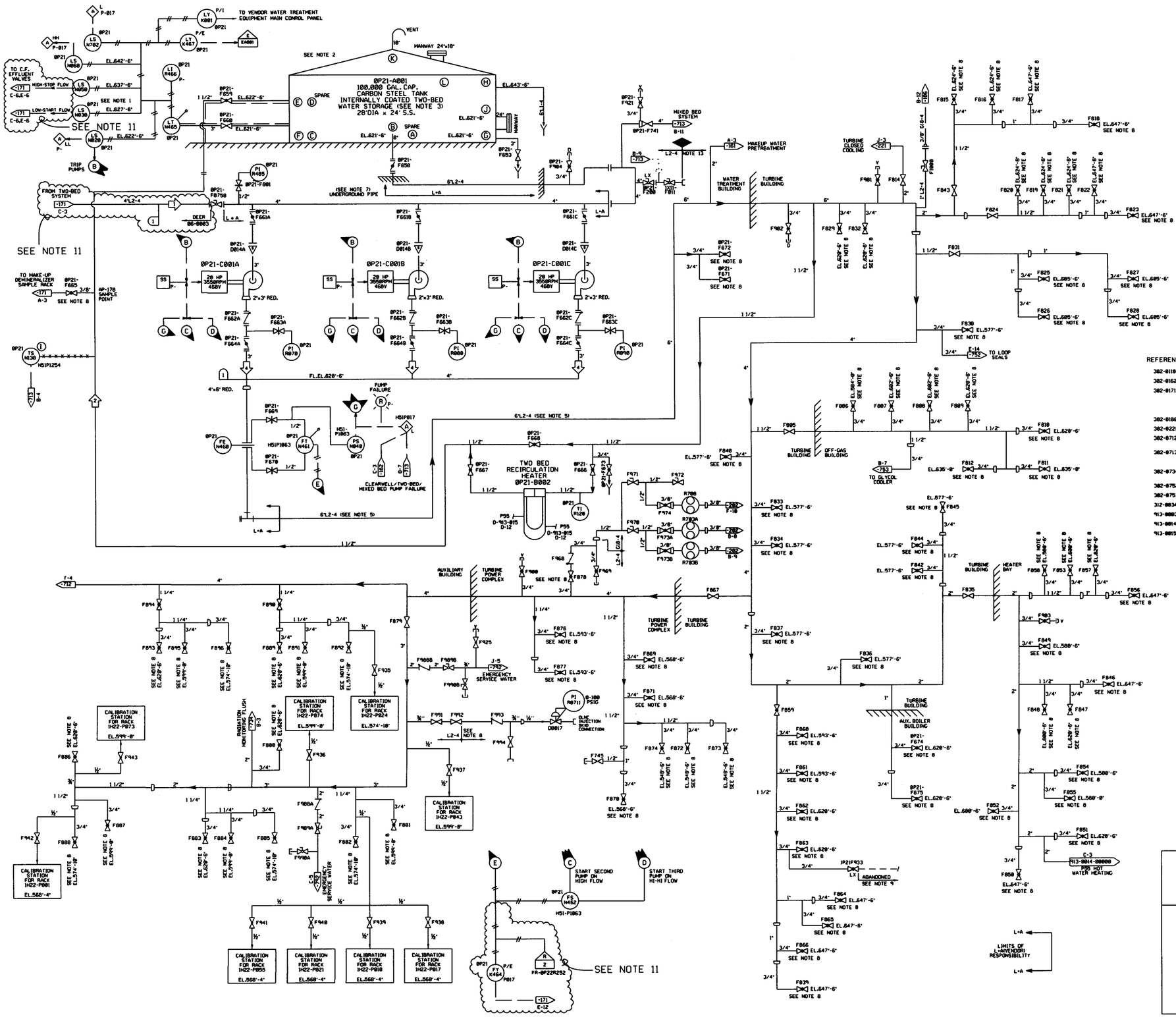
10 CENTER RD., PERRY, OHIO 44081

MIX BED DEMINERALIZER AND DISTRIBUTION SYSTEM FIGURE 9.2-5 (DWG. D-302-0713-00000)



DESIGN DATA

	NORMAL		UPSET			BY	CHKD	REV
	PSIG	°F	PSIG	°F	TIME			
1	150	85	150	85	-	WFD		

OPERATING DATA

SEE NOTE 10

	PSIG	GPM	°F	BY	REMARKS	REV
1	25	360	85	-	MAX. GPM	
2	25	30	85	-	CONTINUOUS	
3	100	10	85	-	MAX. GPM	
4	100	200	85	-	1 PUMP MIN.	
6	100	3	85	-	INTERMITTENT	
7	100	6	85	-	2 PUMPS	

REFERENCES:

302-0110-00000	CONDENSATE DEMINERALIZER SYSTEM N24
302-0162-00000	MAKEUP WATER PRETREATMENT P20
302-0171-00000	TWO-BED DEMINERALIZER AND DISTRIBUTION SYSTEM - CATION AND ANION EXCHANGERS P21
302-0186-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0221-00000	TURBINE BUILDING CLOSED COOLING SYSTEM 1P44
302-0712-00000	TWO-BED DEMINERALIZER AND DISTRIBUTION SYSTEM - MIDDLE ZONE DISTRIBUTION P21
302-0713-00000	MIXED BED DEMINERALIZER AND DISTRIBUTION SYSTEM - MIXED BED EXCHANGERS,STORAGE & NORTH ZONE DISTRIBUTION P21
302-0734-00000	LRW - CHEMICAL WASTE DISTILLATE TANKS AND PUMPS AND DETERGENT DRAIN TANKS,PUMPS AND FILTERS D58
302-0752-00000	OFF-GAS SYSTEM N64
302-0753-00000	OFF-GAS SYSTEM N64
312-0834-00000	TWO-BED STORAGE TANK P21
913-0803-00000	TURBINE BUILDING CHILLED WATER P46
913-0814-00000	HOT WATER HEATING SYSTEM P55
913-0815-00000	HOT WATER HEATING SYSTEM P55

NOTES:

1. KEY SWITCH OVERRIDE ON PANEL.
2. TANK LEVEL INSTRUMENTATION BY L+A. HEAT TRACING AND CONTROLS BY OTHERS - VALVES BY OTHERS.
3. ORIENTATION OF NOZZLES AS SHOWN FOR CLARITY DOES NOT CORRESPOND WITH ACTUAL ORIENTATION, FOR WHICH REFER TO DWG.312-0834-00000.
4. ALL ALARMS FROM THIS SYSTEM ARE ANNUNCIATED ON SINGLE WINDOW AS "MAKEUP WATER TREATMENT - TRBL - H5IP817" ON PANELS 1H13-P680 AND 2H13-P680 IN CONTROL ROOM.
5. ALL PIPE, VALVES, AND FITTINGS PER LINE SPEC L2-4, UNLESS OTHERWISE NOTED.
6. ALL INSTRUMENTS AND CONTROLS DESIGNATED P- TO BE MOUNTED ON PANEL H51-P817, UNLESS OTHERWISE NOTED.
7. L2-4, COATED AND WRAPPED.
8. VALVE IS NOT IN ACCORDANCE WITH LINE SPEC L2-4, VALVE HAS THREADED ENDS PER DCN 4002 AND DCN 4178 AND ECP 05-0110-002.
9. ALL PIPING ON THIS SIDE OF ISOLATION IS ABANDONED. FOR DETAILS, SEE TECHNICAL ASSIGNMENT FILE B1777.
10. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
11. DOWNSTREAM PIPING AND SIGNALS ARE EXCLUDED FROM DESIGN CONTROL. FOR DETAILS SEE DEER 86-0003.
12. LINE TO BE CUT AND CAPPED PER ECP 02-0174, UNTIL IMPLEMENTATION OF THIS ECP, THIS LINE IS CONNECTED TO DEERED WATER TREATMENT PIPING.
13. 5" DIA. STORZ HOSE CONNECTION (NORMAL PLANT CONFIGURATION) IS NON-SAFETY, NON-ASME, AND IS PROVIDED FOR WATER SUPPLY FROM P21 AND P22 SYSTEMS FOR FLEX STRATEGY, INSTALLED PER ECP 13-0517. REFERENCE DRAWING 302-1000-00000.

(REV. 19 10/2015)

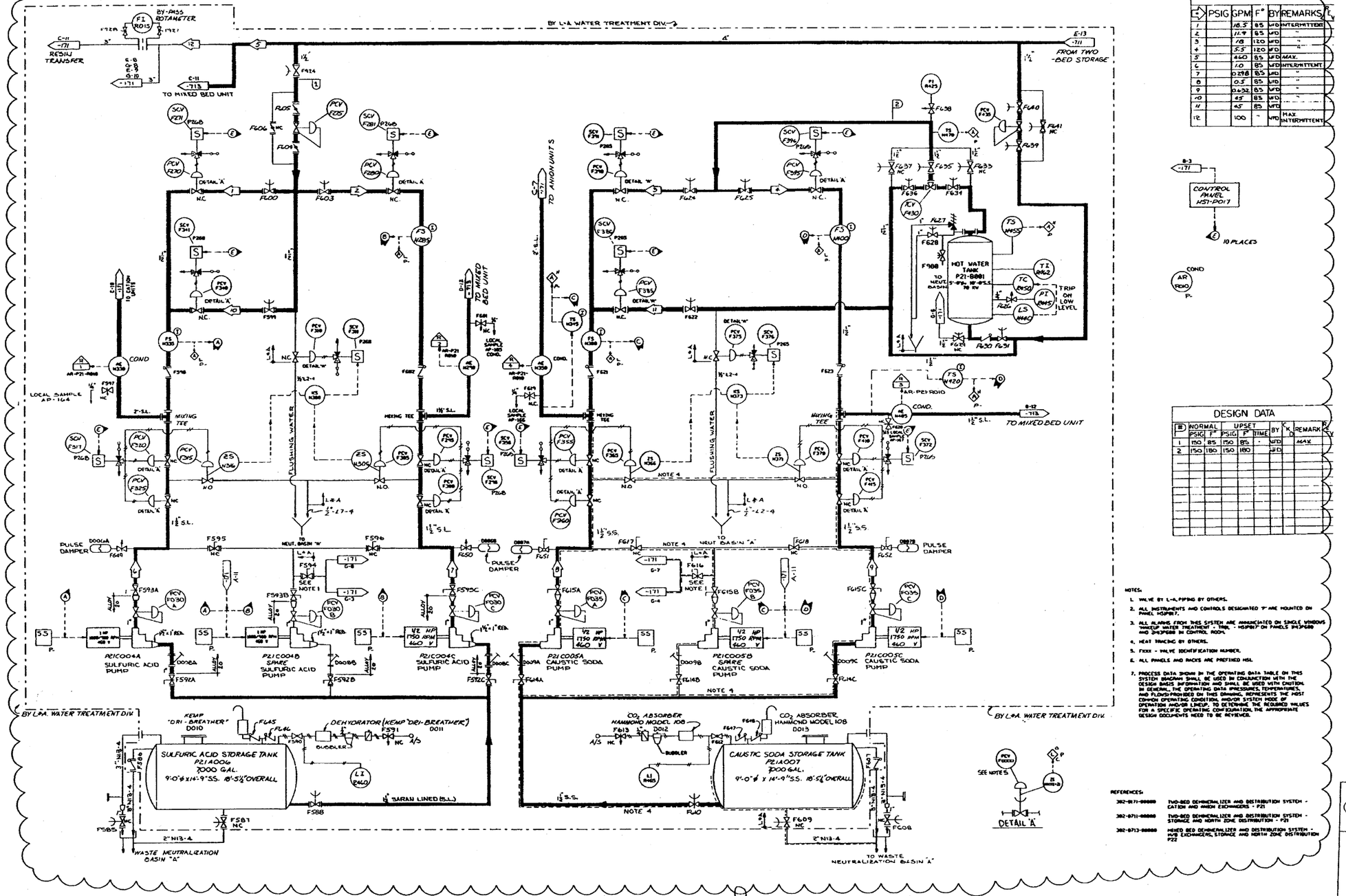
PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

TWO BED DEMINERALIZER & DISTRIBUTION SYSTEM STORAGE & NORTH ZONE DISTRIBUTION

FIGURE 9.2-6

(DWG. D-302-0711-00000)



OPERATING DATA

SEE NOTE 7

#	PSIG	GPM	F°	BY	REMARKS
1		16.5	85	WD	INTERMITTENT
2		11.9	85	WD	"
3		18	120	WD	"
4		5.5	120	WD	"
5		450	85	WD	MAX.
6		10	85	WD	INTERMITTENT
7		0.298	85	WD	"
8		0.5	85	WD	"
9		0.432	85	WD	"
10		45	85	WD	"
11		45	85	WD	"
12		100	"	WD	MAX INTERMITTENT

DESIGN DATA

#	NORMAL PSIG	NORMAL F°	UPSET PSIG	UPSET F°	UPSET TIME	BY	CK'D	REMARK
1	150	85	150	85	-	WD		MAX
2	150	180	150	180	-	WD		

NOTES:

1. VALVE BY L-A, PIPING BY OTHERS.
2. ALL INSTRUMENTS AND CONTROLS DESIGNATED 'P' ARE MOUNTED ON PANEL H5P017.
3. ALL ALARMS FROM THIS SYSTEM ARE ANNUNCIATED ON SINGLE WINDOWS "MAKEUP WATER TREATMENT - TRBL." H5P017 ON PANELS H5P5080 AND H5P5088 IN CONTROL ROOM.
4. HEAT TRACING BY OTHERS.
5. FXXX - VALVE IDENTIFICATION NUMBER.
6. ALL PANELS AND RACKS ARE PREFINED H5L.
7. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.

REFERENCES:

302-0171-00000	TWO-BED DEMINERALIZER AND DISTRIBUTION SYSTEM - CATION AND ANION EXCHANGERS - P21
302-0711-00000	TWO-BED DEMINERALIZER AND DISTRIBUTION SYSTEM - STORAGE AND NORTH ZONE DISTRIBUTION - P21
302-0713-00000	MIXED BED DEMINERALIZER AND DISTRIBUTION SYSTEM - MB EXCHANGERS, STORAGE AND NORTH ZONE DISTRIBUTION P22

(Rev. 15 10/07)

PERRY NUCLEAR POWER PLANT

Two Bed Demineralizer and Distribution System Regeneration Facilities

Figure 9.2-7
(Dwg. D-302-172)

THIS DRAWING IS EXCLUDED FROM DESIGN CONTROL. SEE DEER 06-0003 FOR DETAILS.

OPERATING DATA

SEE NOTE 10

#	GPM	PSIG	°F	pH	REMARKS	FLOW DIV
2	360	75	85	N/D	TWO STREAMS MAX.	
3	0.03	100	85	N/D	1.8 GPM MAX	
5	75	30	85	N/D	INTERMITTENT	

DESIGN DATA

#	NORMAL PSIG	NORMAL °F	UPSET PSIG	UPSET °F	UPSET TIME	pH	K	REMARKS	FLOW DIV

NOTES:

1. ALL ALARMS FROM THIS SYSTEM ARE ANNUNCIATED ON SINGLE WINDOWS "MAKEUP WATER TREATMENT - TRBL-H51P817" ON PANELS 1H13P688 AND 2H13P589 IN CONTROL ROOM.
2. ALL ITEMS SHOWN ARE FURNISHED BY L+A UNLESS OTHERWISE INDICATED.
3. ALL INSTRUMENTS AND CONTROLS DESIGNATED 'P-' ARE MOUNTED ON PANEL H51P817, UNLESS OTHERWISE NOTED.
4. DELETED
5. DELETED
6. FXXX - VALVE IDENTIFICATION NUMBER.
7. ALL PANELS AND RACKS ARE PREFIXED H51.
8. SEE INSTRUMENT INDEX FOR VALVE LIMIT SWITCH IDENTIFICATION.
9. PUMPS C010A & B MAY TRIP ON PH VALUE AS READ BY PORTABLE METER.
10. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALVES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
11. PIPING AND EQUIPMENT EXCLUDED FROM DESIGN CONTROL. FOR DETAILS SEE DEER 86-0003. PIPING SHOWN CONNECTS TO WATER TREATMENT PIPING.
12. INPUT/OUTPUT TO/FROM THE LIQUID RADWASTE DISTRIBUTED CONTROL SYSTEM.

REFERENCES:

- 302-0162-00000 MAKEUP WATER PRETREATMENT - P20
- 302-0241-00000 SERVICE AND INSTRUMENT AIR SUPPLY 1P51-1P52
- 302-0733-00000 LRW CHEMICAL WASTE TANKS - G50

(REV. 19 10/2015)

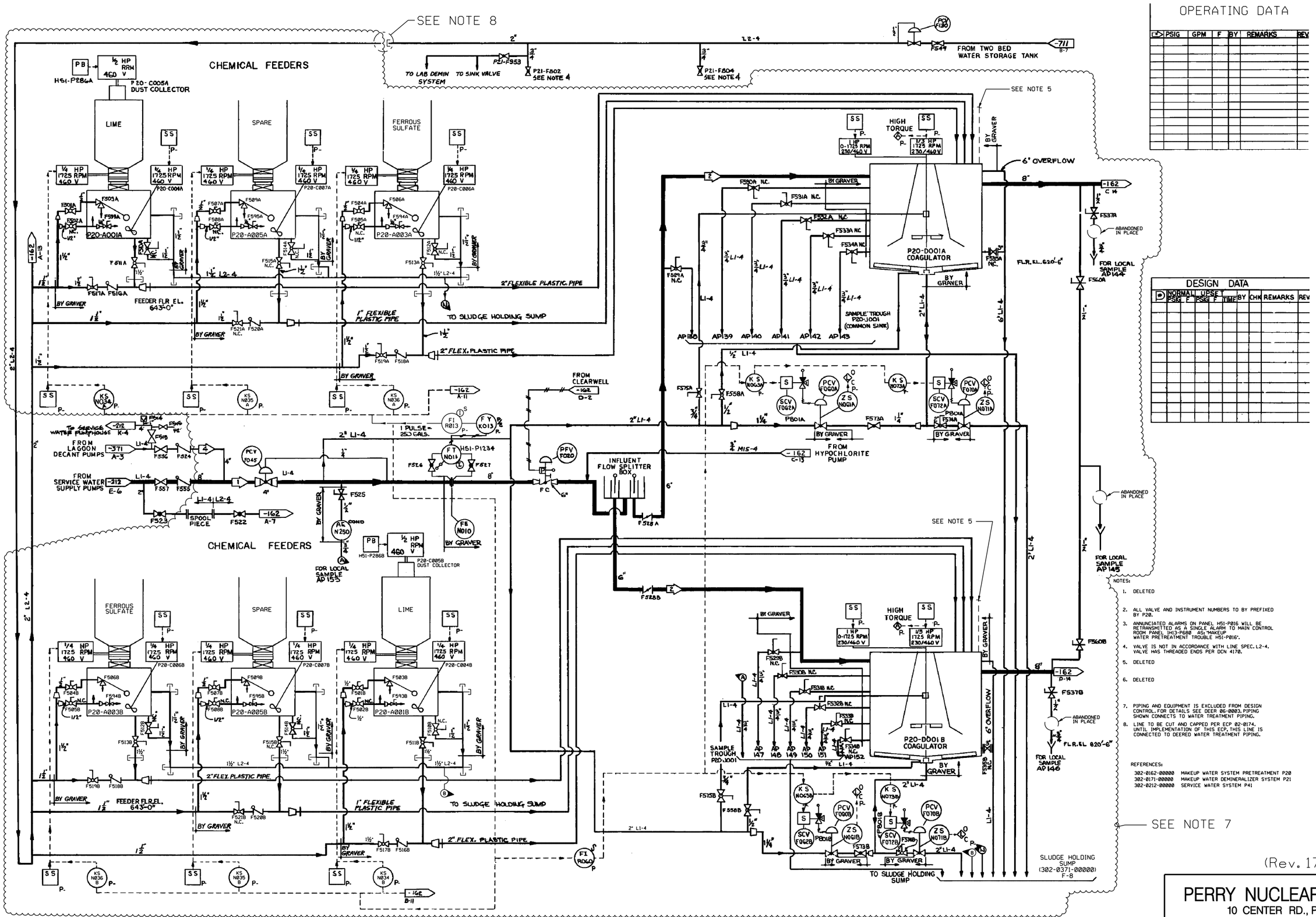
PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

TWO BED DEMINERALIZER AND DISTRIBUTION SYSTEM CATION AND ANION EXCHANGERS

FIGURE 9.2-8

(DWG. D-302-0171-00000)



OPERATING DATA

PSIG	GPM	F	BY	REMARKS	REV

DESIGN DATA

NORMAL PSIG	NORMAL F	UPSET PSIG	UPSET F	TIME	BY	CHK	REMARKS	REV

NOTES:

1. DELETED
2. ALL VALVE AND INSTRUMENT NUMBERS TO BY PREFIXED BY P20.
3. ANNUNCIATED ALARMS ON PANEL H51-P816 WILL BE RETRANSMITTED AS A SINGLE ALARM TO MAIN CONTROL ROOM PANEL 1H13-P680 AS "MAKEUP WATER PRETREATMENT TROUBLE H51-P816".
4. VALVE IS NOT IN ACCORDANCE WITH LINE SPEC. L2-4. VALVE HAS THREADED ENDS PER DCN 4170.
5. DELETED
6. DELETED
7. PIPING AND EQUIPMENT IS EXCLUDED FROM DESIGN CONTROL. FOR DETAILS SEE DEER 86-0083. PIPING SHOWN CONNECTS TO WATER TREATMENT PIPING.
8. LINE TO BE CUT AND CAPPED PER ECP 02-0174, UNTIL IMPLEMENTATION OF THIS ECP, THIS LINE IS CONNECTED TO DEERED WATER TREATMENT PIPING.

REFERENCES:

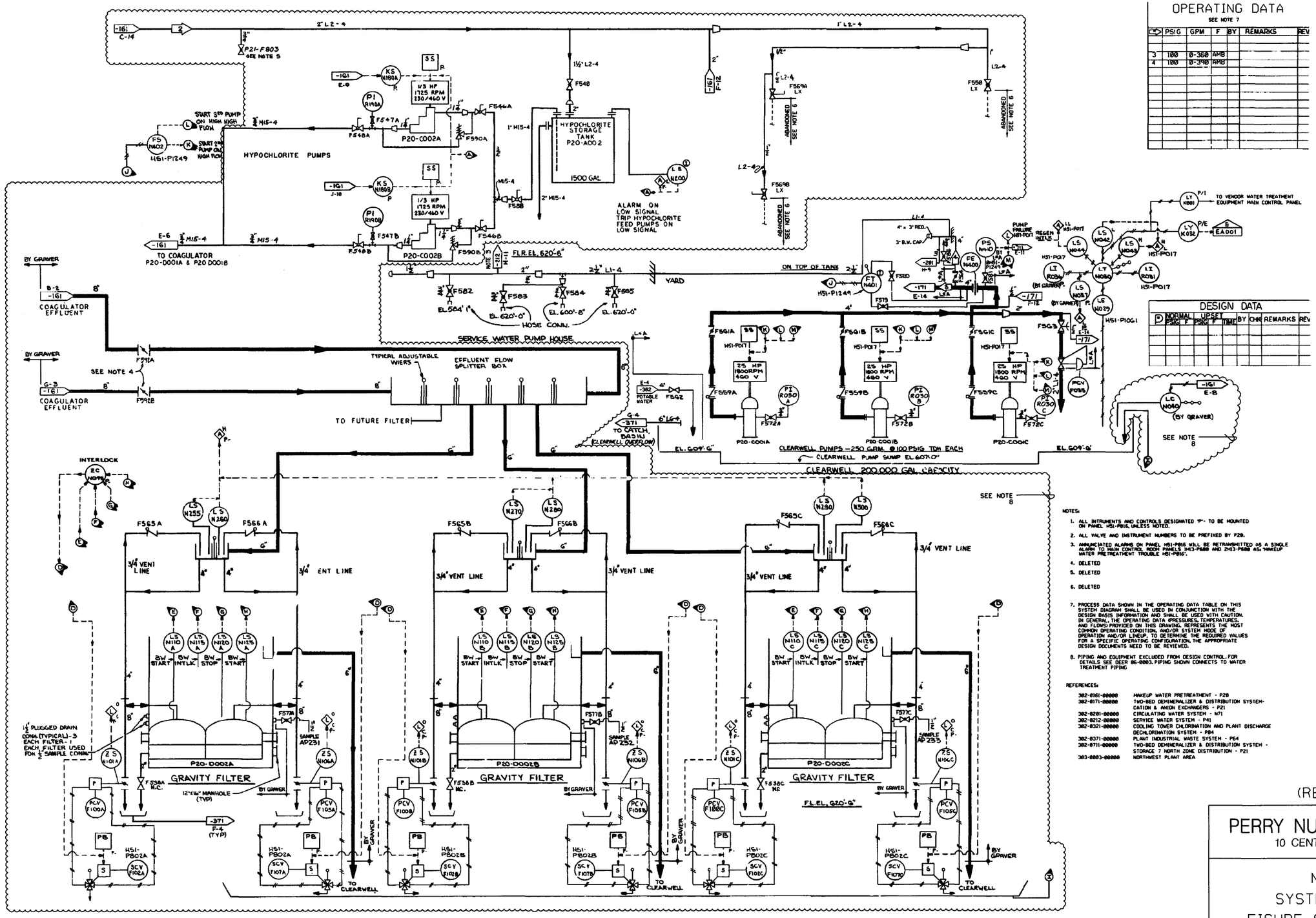
302-0162-00000 MAKEUP WATER SYSTEM PRETREATMENT P20
302-0171-00000 MAKEUP WATER DEMINERALIZER SYSTEM P21
302-0212-00000 SERVICE WATER SYSTEM P41

(Rev. 17 10/11)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

Makeup Water System
Pretreatment

Figure 9.2-9 (Sheet 1 of 2)
(DWG. D-302-0161-00000)



OPERATING DATA

SEE NOTE 7

C#	PSIG	GPM	F	BY	REMARKS	REV
3	100	0-360	AMB			
4	100	0-390	AMB			

DESIGN DATA

D	NORMAL PSIG	NORMAL F	UPSET PSIG	UPSET F	UPSET TIME	BY	CHK	REMARKS	REV

NOTES:

1. ALL INTRUMENTS AND CONTROLS DESIGNATED "P-" TO BE MOUNTED ON PANEL H5I-P816, UNLESS NOTED.
2. ALL VALVE AND INSTRUMENT NUMBERS TO BE PREFIXED BY P28.
3. ANNUNCIATED ALARMS ON PANEL H5I-P816 WILL BE RETRANSMITTED AS A SINGLE ALARM TO MAIN CONTROL ROOM PANELS 1H13-P680 AND 2H13-P680 AS "MAKEUP WATER PRETREATMENT TROUBLE H5I-P816".
4. DELETED
5. DELETED
6. DELETED
7. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
8. PIPING AND EQUIPMENT EXCLUDED FROM DESIGN CONTROL, FOR DETAILS SEE DEER 86-0003. PIPING SHOWN CONNECTS TO WATER TREATMENT PIPING

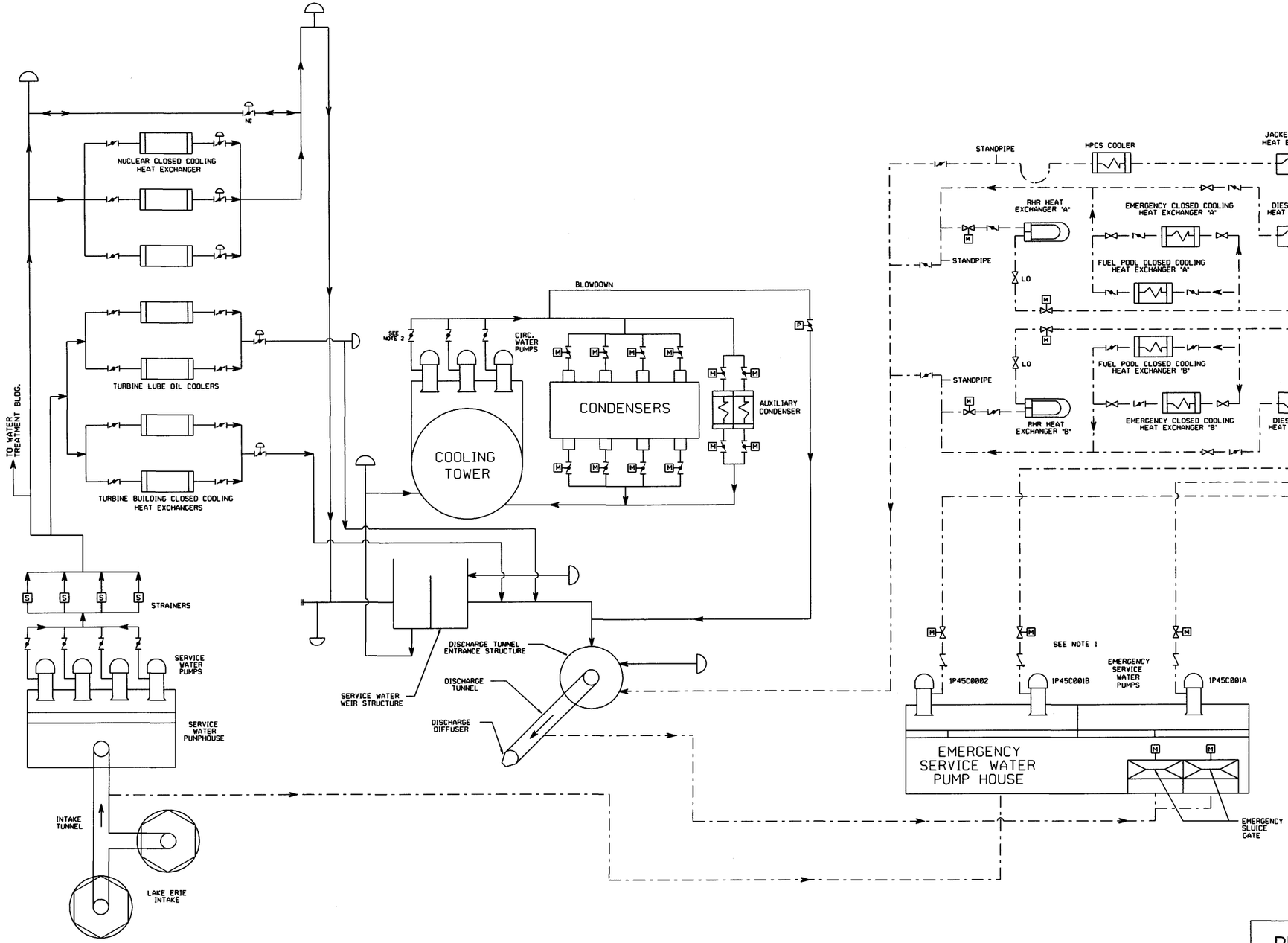
REFERENCES:

302-0161-00000	MAKEUP WATER PRETREATMENT - P28
302-0171-00000	TWO-BED DEMINERALIZER & DISTRIBUTION SYSTEM-CATION & ANION EXCHANGERS - P21
302-0281-00000	CIRCULATING WATER SYSTEM - N71
302-0212-00000	SERVICE WATER SYSTEM - P41
302-0321-00000	COOLING TOWER CHLORINATION AND PLANT DISCHARGE DECHLORINATION SYSTEM - P84
302-0371-00000	PLANT INDUSTRIAL WASTE SYSTEM - P64
302-0711-00000	TWO-BED DEMINERALIZER & DISTRIBUTION SYSTEM - STORAGE & NORTH ZONE DISTRIBUTION - P21
303-0003-00000	NORTHWEST PLANT AREA

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

MAKEUP WATER
SYSTEM PRETREATMENT
FIGURE 9.2-9 (SHEET 2 OF 2)
(DWG. D-302-0162-00000)



NOTES:

1. THE EMERGENCY SERVICE WATER PUMP DISCHARGE MOTOR OPERATED GATE VALVES ARE NORMALLY CLOSED BUT WILL BE OPENED AS THE PUMPS ARE STARTED UP DURING ULTIMATE HEAT SINK OPERATION.
2. THE CIRCULATING WATER PUMP DISCHARGE MOTOR OPERATED BUTTERFLY VALVES ARE ALWAYS OPEN EXCEPT WHEN THE CIRCULATING WATER PUMPS ARE TURNED OFF DURING LOCA OR BLACKOUT.
3. ALL VALVES CLOSED DURING NORMAL OPERATION AND ULTIMATE HEAT SINK OPERATION ARE DESIGNATED BY "NC".
4. ALL OTHER VALVES ARE ALWAYS OPEN EXCEPT FOR MAINTENANCE.
5. THE FLOW PATHS SHOWN AS DASHED LINES INDICATE THE LINES IN WHICH FLOWS OCCUR DURING ULTIMATE HEAT SINK OPERATION.
6. THE FLOW PATHS SHOWN AS SOLID LINES INDICATE THE LINES IN WHICH FLOWS OCCUR DURING NORMAL OPERATION.
7. DELETED

(REV. 19 10/2015)

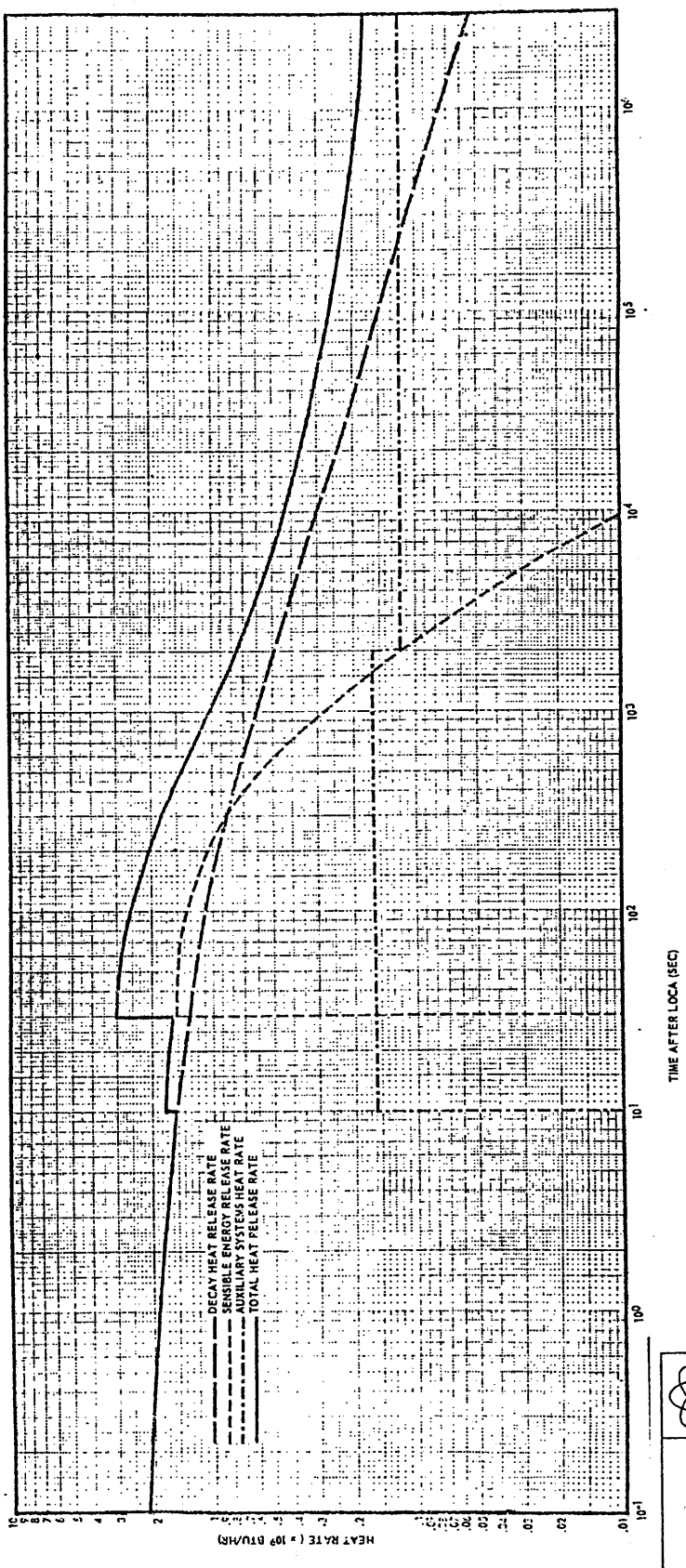
PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

ULTIMATE HEAT SINK

FIGURE 9.2-10

(DWG. D-300-0060-00002)

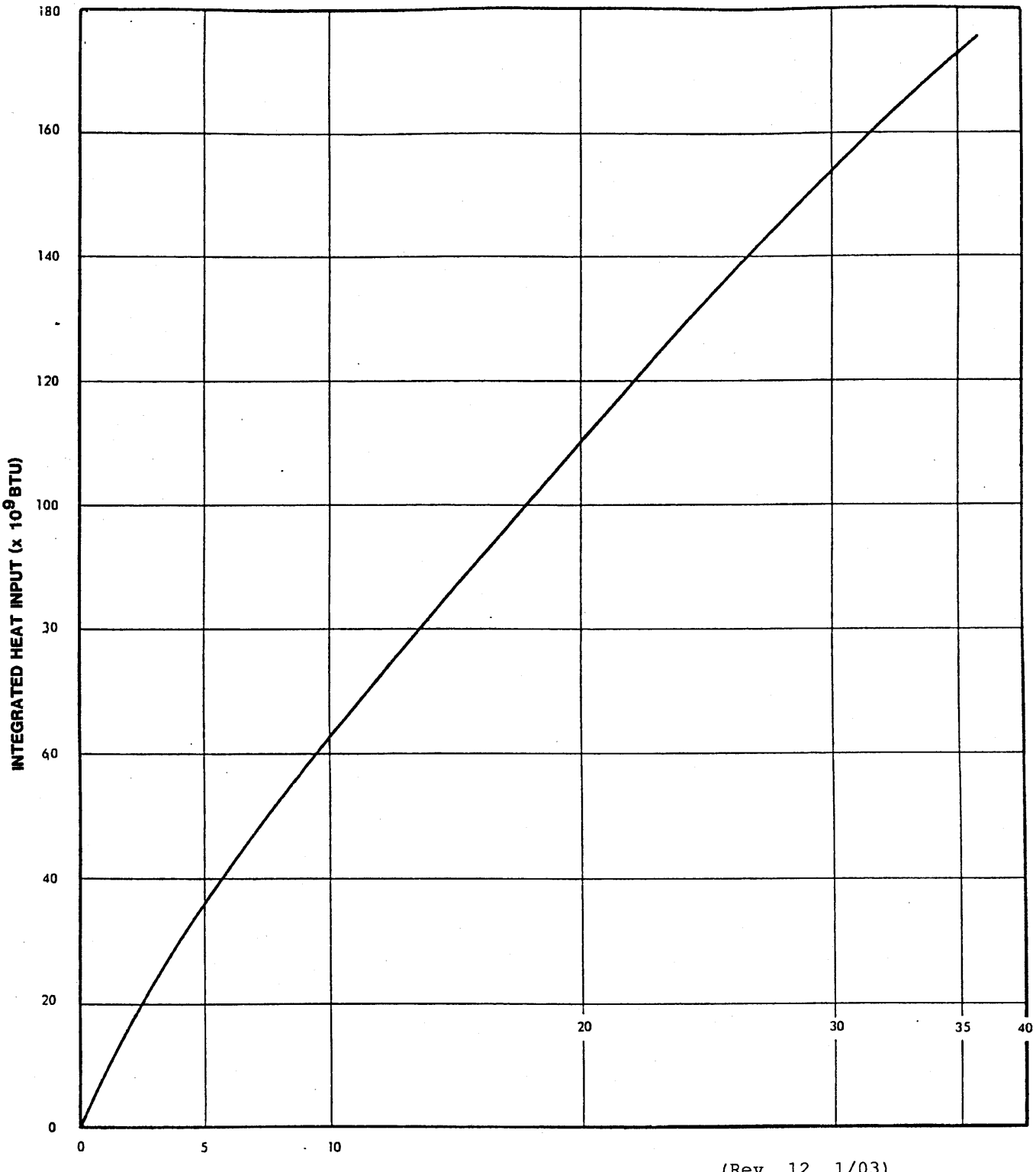


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Heat Rate Input to
Ultimate Heat Sink

Figure 9.2-11

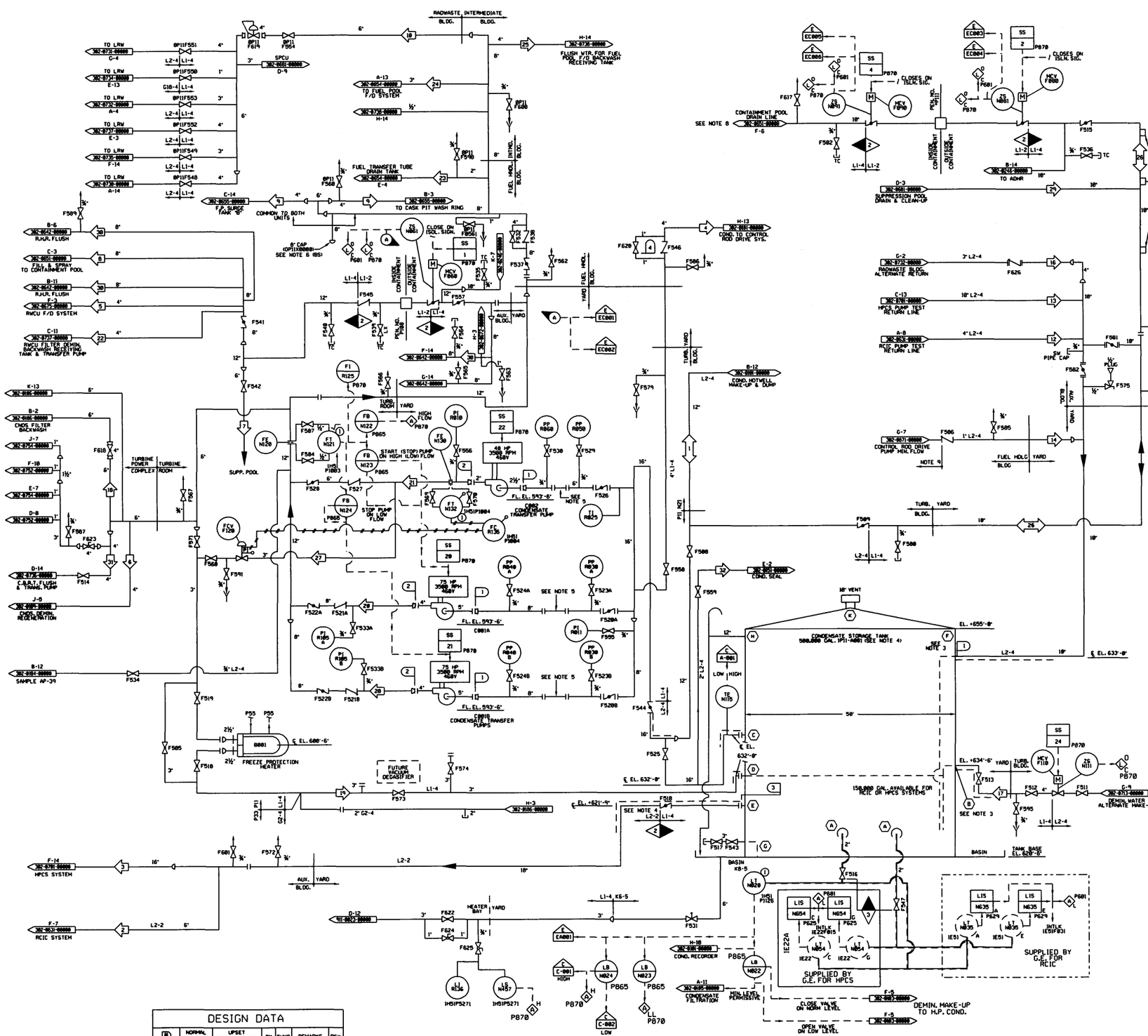


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Total Integrated Heat Input to Ultimate Heat Sink

Figure 9.2-12



OPERATING DATA

SEE NOTE 7

ID	PSIG	GPM	°F	BY	REMARKS	REV
1	13	1200	135	M.C.	5X CYCLE FLOW	
2	19	700	135	M.C.	TO RCIC PUMP	
3	28	1550	135	M.C.	6118GPM MAX @28PSIG	
4	25	185	135	M.C.	200 GPM MAX	
5	75	560	135	M.C.	7000 GAL/WK	
6	115	450	135	M.C.	40000 GAL/WK	
7	0	2000	135	M.C.	24000 GAL	
8	70	2000	135	M.C.	2000 GPM REFUELING	
9	95	200	135	M.C.	12500 GAL	
10	110	500	135	M.C.	15000 GAL/DAY	
12	50	700	135	M.C.	PUMP TEST	
13	130	1465/6118	135	M.C.	PUMP TEST	
14	100	20	135	M.C.	CONTINUOUS	
16	20	200	85	M.C.	SHUTDOWN	
17	20	500	88	M.C.	SHUTDOWN	
18	115	479	135	M.C.	10000 GAL/WK	
19	119	100	135	M.C.	MIN. FLOW RECIRC.	
20	119	1800	135	M.C.	228' T.D.H.	
21	119	330	135	M.C.	228' T.D.H.	
22	75	100	135	M.C.	TANK SPARGE	
23	110	100	135	M.C.	TANK SPARGE	
24	105	500	135	M.C.	F/D BACKWASH	
25	110	100	135	M.C.	TANK SPARGE	
26	10	3000	110	M.C.	UPPER POOL DRAIN	
27	119	100	135	M.C.	MIN. FLOW RECIRC.	
29	75	2000	90	J.T.	POOL DRAIN	
30	75	2000	135	J.T.	RJUR FLUSH	
31	115	50	135	J.J.J.	CRRT FLUSH	
32	35	7	135	J.T.	TROUGH SEAL	

DESIGN DATA

ID	NORMAL PSIG	NORMAL °F	UPSET PSIG	UPSET °F	UPSET TIME	BY	CHKD	REMARKS	REV
1	25	135	25	135		M.C.	RJS		
2	125	135	168	135		M.C.	RJS	SHUTOFF	
3	30	135	50	135		RJS			
4	50	140	250	140		JET			

* DESIGN CONDITIONS ARE INDICATED IN THE UPSET DESIGN DATA COLUMN.

REFERENCES:

302-0101-00000	CONDENSATE SYSTEM N21
302-0103-00000	CONDENSING SYSTEM N21
302-0105-00000	CONDENSATE FILTRATION N23
302-0106-00000	CONDENSATE FILTRATION SYSTEM N23
302-0109-00000	CONDENSATE DEMINERALIZER SYSTEM N24
302-0151-00000	CONDENSATE SEAL P12
302-0104-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0106-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0246-00000	ALTERNATE DECAY HEAT REMOVAL G48
302-0631-00000	REACTOR CORE ISOLATION COOLING SYSTEM E51
302-0642-00000	RESIDUAL HEAT REMOVAL SYSTEM E12
302-0651-00000	CONTAINMENT POOL SYSTEM G41
302-0652-00000	SPENT FUEL POOL SYSTEM G41
302-0653-00000	SPENT FUEL POOL FILTER DEMINERALIZER SYSTEM G41
302-0654-00000	FUEL POOL COOLING AND CLEANUP G41
302-0655-00000	FUEL POOL COOLING AND CLEANUP G41
302-0672-00000	REACTOR WATER CLEANUP SYSTEM G33
302-0675-00000	REACTOR WATER CLEANUP SYSTEM G36
302-0681-00000	SUPPRESSION POOL CLEANUP SYSTEM G42
302-0701-00000	HIGH PRESSURE CORE SPRAY SYSTEM E12
302-0713-00000	MIXED BED DEMINERALIZER SYSTEM P22
302-0730-00000	LIQUID RADWASTE SYSTEM G50
302-0731-00000	LIQUID RADWASTE SYSTEM G50
302-0732-00000	LIQUID RADWASTE SYSTEM G50
302-0734-00000	LIQUID RADWASTE SYSTEM G50
302-0735-00000	LIQUID RADWASTE SYSTEM G50
302-0736-00000	LIQUID RADWASTE SYSTEM G50
302-0737-00000	LIQUID RADWASTE SYSTEM G50
302-0738-00000	LIQUID RADWASTE SYSTEM G50
302-0752-00000	OFF-GAS SYSTEM N64
302-0754-00000	OFF-GAS SYSTEM N64
302-0871-00000	CONTROL ROD DRIVE SYSTEM C11
743-0003-00000	CATCH BASIN, STORM DRAINAGE
911-0823-00000	TB, MS, AB, AND AUX. BLDG. DRAINS P68
913-0815-00000	HOT WATER HEATING SYSTEM P55

NOTES:

1. ALL PANEL NUMBERS SHOWN ARE PREFIXED 1H13.
2. ALL VENT AND DRAIN VALVES ARE NORMALLY CLOSED.
3. LINES THAT PENETRATE C.S.T. AND GO BELOW EL. 631'-4" HAVE SYPHON BREAKER HOLES.
4. EFFECTIVE 6-12-94 THIS PART NUMBER IS SUBJECT TO APPENDIX "B" OF THE AUGMENTED QUALITY PROGRAM.
5. TEMPORARY STRAINERS USED FOR START-UP ONLY, ARE REMOVED FOR PLANT OPERATION.
6. (8) UNIT 1 / 2 BOUNDARY SEPARATION FOR DETAILS SEE TECHNICAL ASSIGNMENT FILE 81653.
7. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION IN ASCERTAINING OPERATING CONDITIONS. TEMPERATURES, AND FLOWS PROVIDED ON THIS DRAWING REPRESENTS THE MOST CONSERVATIVE OPERATING CONDITION EXISTING SYSTEM MODE OF OPERATION AND/OR LINEUP. TO OBTAIN THE REQUIRED VALUES FOR A SPECIFIC SYSTEM MODE OF OPERATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
8. CONTAINMENT POOL DRAIN PIPING DURING OPERATIONAL MODES 1,2, & 3 IS NORMALLY DRAINED FROM VALVE 1P11F060 (302-0651-00000 LP TO THE OUTBOARD VALVE 1P11F061 AND FILLED WITH NITROGEN GAS AT 150 PSIG TO PREVENT THERMAL OVER PRESSURIZATION OF THE CONTAINMENT PENETRATION. THIS BOUNDARY, HOWEVER, MAY BE MOVED TO DRAIN FROM VALVE 1P11F060A UP TO THE OUTBOARD VALVE 1P11F061A, IF VALVE 1E41F060 IS NOT LEAK TIGHT.
9. THE L2-4 PIPING BETWEEN THE RESTRICTING ORIFICE 1C11D087A/B (DETAIL 9) OF 302-0871-00000 AND VALVE 1P11F060 IS SCHEDULE 80 SEAMLESS PIPE.

(REV. 19 10/2015)

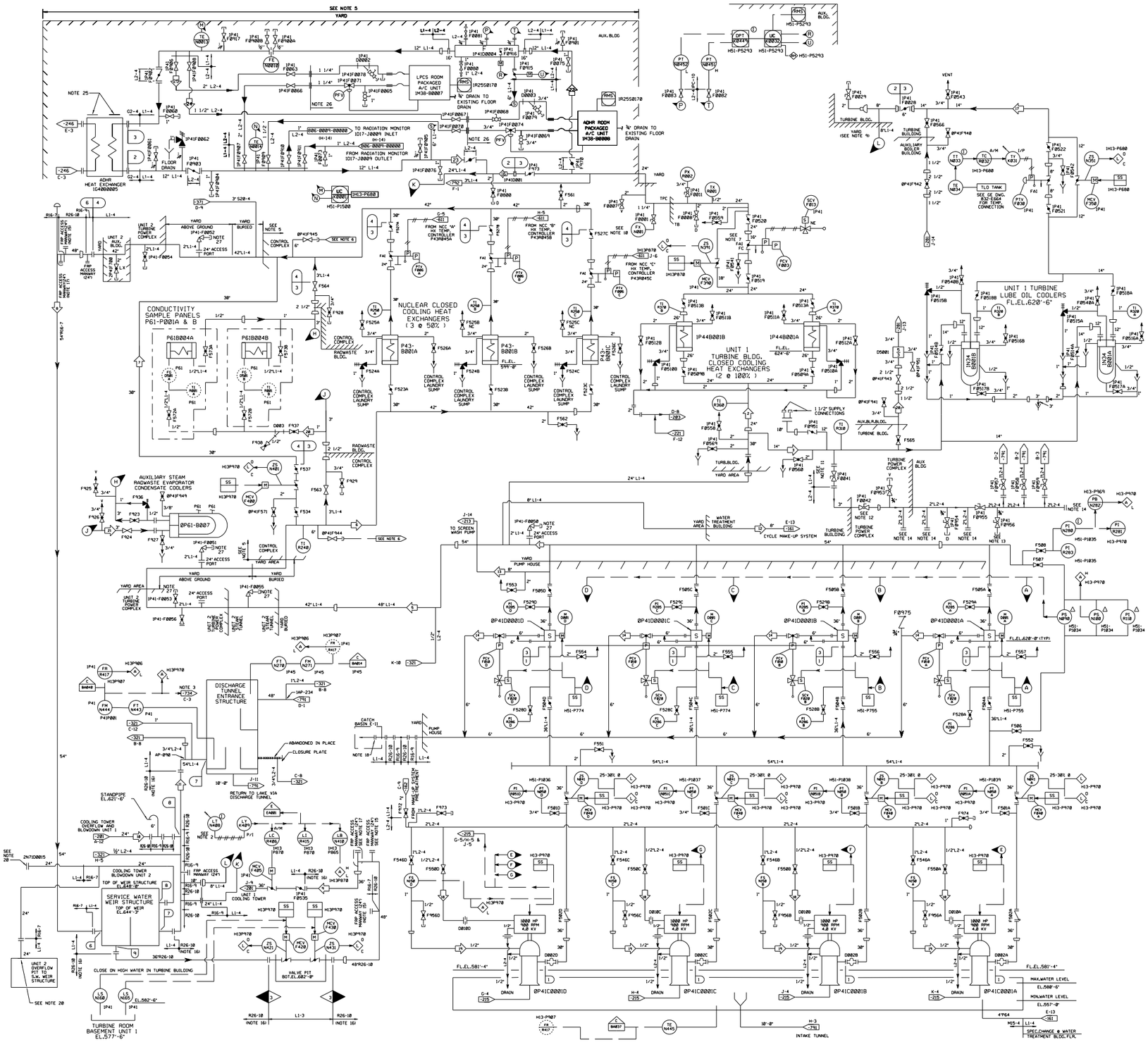
PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

CONDENSATE TRANSFER AND STORAGE SYSTEM

FIGURE 9.2-13

(DWG. D-302-0102-00000)



OPERATING DATA SEE NOTE 21

ID	PSIG	GPM	°F	REMARKS
1	44	46,000	81.5	
2	30	9,000	81.5	
3	30	1,740	81.5	
4	44	34,760	81.5	
5	48	18,200	81.5	
6	48	16,560	81.5	
7	25	24,420	81.5	
8	16	34,760	87	
9	6.5	25,980	87	
10	3.3	10,330	94	
11	3.0	29,050	98	
12	44	500	81.5	
13	35	1,000	81.5	
14	35	520	81.5	
15	-	-	-	DELETED
16	10	9,000	93	NOTE 24
17	4.0	1,720	95	
18	100	8	AMB	
19	100	5	AMB	••
20	48	20	81.5	NOTE 19
21	48	120	81.5	
22	43.8	4,530	81.5	ADHR OPERATION
23	3.5	4,530	119.5	ADHR OPERATION
24	34.8	9	81.5	ADHR OPERATION
25	39.8	24	81.5	ADHR OPERATION

•• 1 GPM MIN FLOW REQUIRED.

DESIGN DATA

ID	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	100	125	N/A	N/A		
2	50	125	N/A	N/A		
3	90	125	N/A	N/A		
4	36	125	N/A	N/A		D/S NCC HX
6	22	125	N/A	N/A		TO SWWS
7	7	125	N/A	N/A		TO DTES
8	5	94	N/A	N/A		CT B/D
9	17	125	N/A	N/A		CT M/U

•••

REFERENCES:

302-0161-00000 MAKEUP WATER PRETREATMENT SYSTEM P28
302-0162-00000 MAKEUP WATER PRETREATMENT SYSTEM P28
302-0201-00000 CIRCULATING WATER SYSTEM N71
302-0203-00000 CIRCULATING WATER CONDENSER WATER BOX VENTS & DRAINS
302-0213-00000 SERVICE WATER SCREEN WASH SYSTEM P48
302-0215-00000 SERVICE WATER AND EMERGENCY SERVICE WATER CHLORINATION SYSTEM P48
302-0221-00000 TURBINE BUILDING CLOSED COOLING SYSTEM P44
302-0281-00000 AUXILIARY BOILER CHEMICAL TREATMENT SYSTEM,P65
302-0321-00000 COOLING TOWER CHLORINATION AND PLANT DISCHARGE DECHLORINATION SYSTEM P84
302-0611-00000 NUCLEAR CLOSED COOLING SYSTEM P43
302-0734-00000 LAW-CHEMICAL WASTE DISTILLATE TANKS,PUMPS AND DETERGENT DRAIN TANKS,PUMPS & FILTERS SYSTEM,G50
302-0741-00000 EMERGENCY SERVICE WATER SYSTEM P45
808-0210-00000 SERVICE WATER PUMP TEMPERATURE INSTRUMENTATION LOOP DIAGRAM

NOTES:

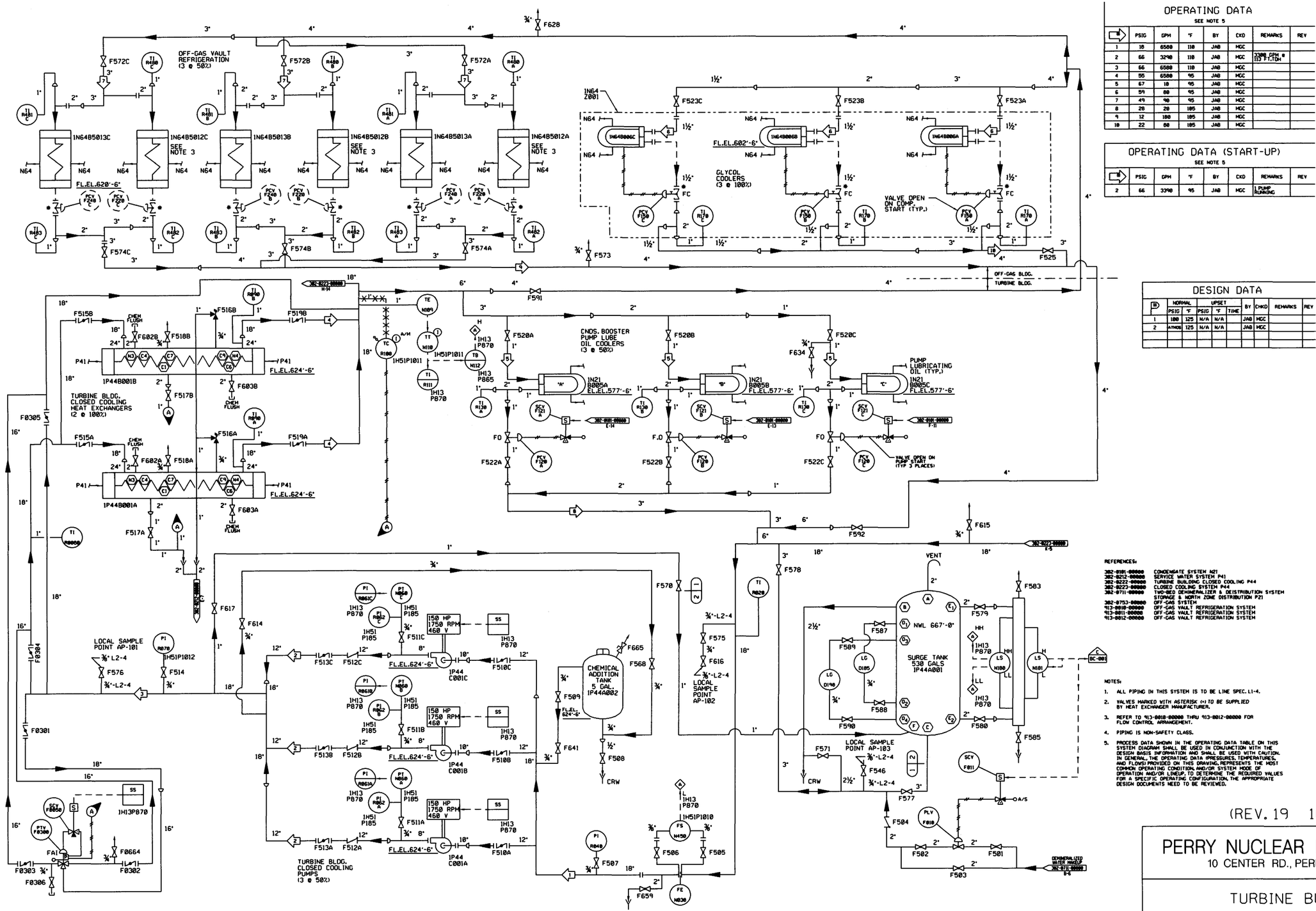
1. ALL PIPING SHALL BE AS PER LINE SPECIFICATION L1-4 UNLESS OTHERWISE NOTED.
2. LEVEL TRANSMITTERS ARE LOCATED IN THEIR RESPECTIVE COOLING TOWER BASINS.
3. INTERLOCK WITH VALVES G58-F153 AND G58-F155 VIA THE LIQUID RADWASTE DISTRIBUTED CONTROL SYSTEM STOPS RADWASTE FLOW TO ESW DISCHARGE PIPE.
4. TRANSITION FROM FIBER GLASS PIPING TO STEEL PIPING WILL AT THE BUILDING PENETRATIONS,UNLESS OTHERWISE NOTED.
5. 24", 30" AND 42" SERVICE WATER PIPING IN THE CONTROL COMPLEX AND UNIT 1 & 2 AUXILIARY BUILDINGS IS SEISMIC CATEGORY I. ADHR SERVICE WATER PIPING IN THE UNIT 1 AUXILIARY BUILDING IS SEISMIC CATEGORY I.
6. SUPPLY & RETURN FOR FUTURE VOLUME REDUCTION FACILITY.
7. VALVE 1P41-F003 FAILS AS IS (FAILS LOSS OF INSTRUMENT AIR SUPPLY AND FAILS CLOSED IFCI ON LOOP.
8. FUNCTIONAL LOCATION NUMBERS ON THIS DRAWING ARE PREFIXED WITH 1P41- UNLESS NOTED OTHERWISE EXCEPT ALL SERVICE WATER COMPONENTS FOR ADHR SYSTEM ARE PREFIXED WITH 1P41-.
9. APPROX. 60'-0" OF THE NEW 8" PIPE WHERE IT EXITS THE TURBINE BUILDING WILL USE THE EXISTING 14" FRP PIPE AS A CONDUIT.
10. COMPONENTS ASSOCIATED WITH FLOW INSTRUMENTATION ONLY (INCLUDING PIPE FITTINGS AND VALVE F003) DO NOT CONFORM TO LINE SPEC L1-4.
11. THE SPEC. BREAK L1-4, L2-4 (CARBON STEEL/STAINLESS STEEL FLANGES MUST UTILIZE A FLANGE INSULATING KIT.
12. VALVE 1P41-F042 DOES NOT CONFORM TO LINE SPEC L2-4 IN THAT IT IS A SOCKET WELDED VALVE. HOWEVER, MATERIAL AND CLASS RATING CONFORM TO L2-4 REQUIREMENTS.
13. THIS CONNECTION TO BE USED FOR ALTERNATE KEEPFILL.
14. THESE CONNECTIONS ARE CLEANOUTS AND SHALL BE PROVIDED WITH BLIND FLANGES.
15. FRP ACCESS MANWAY IS NOT USABLE DUE TO INSTALLATION OF CURE-IN-PLACE-PIPE BUT MAY BE REINSTATED IF NEEDED AT A LATER DATE. THE LINE CLASS OF MANWAY REMAINS R16-7.
16. THE CIPP WILL EXTEND INTO THE STEEL PIPE WHERE END-SEALS ARE MADE.
17. EXISTING FRP PIPE HAS BEEN LINED WITH CURED-IN-PLACE-PIPE (LINE SPEC. R26-18). INVERSION POINTS FOR THE INSTALLATION OF CIPP UTILIZE NEW FRP SECTIONS (LINE SPEC. R16-9).
18. THE CIPP WILL EXTEND INTO THE STEEL (L1-4) PIPE AND ENDS AT FLANGE. NO END-SEAL REQUIRED.
19. CONDUCTIVITY SAMPLE PANELS P61-P001A & B ARE NOT UTILITZED. FLOW INDICATED IS DESIGN,BUT NO MINIMUM FLOW IS REQUIRED. FLOW THROUGH 0P41-F943 (COORD. D-5) REMAINS AS SHOWN.
20. PERMANENT ISOLATION HAS BEEN PROVIDED AT THE UNIT 2 COOLING TOWER OVERFLOW PIT AND AT THE UNIT 2 BLOWDOWN LINE ORIFICE 2N71D0015, REFERENCE PIF 97-2118 FOR DETAILS.
21. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES,TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
22. DELETED
23. DELETED
24. THIS OPERATING DATA POINT IS BEING MODIFIED FOR ECP 06-0012. 1B0C HEAT EXCHANGER 1P44B001B RETUBE', FOR THE HEAT EXCHANGER INSTALLED UNDER ECP 03-0023. THE 1P44B001A HEAT EXCHANGER TO BE INSTALLED UNDER ECP 03-0023-01 WILL BE RETUBED WITH THE SAME MATERIAL AS THE 1P44B001B HEAT EXCHANGER, UNTIL THE 1P44B001A AMERICAN EXCHANGER FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED. FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
25. 12" INSPECTION PORTS, BASKET STRAINER,ON SERVICE WATER SIDE ONLY, PROVIDED AS PART OF HEAT EXCHANGER. BASKET STRAINER WAS LATER REMOVED BY ECP 04-0270-05.
26. VENDOR SUPPLIED EQUIPMENT, VALVES F0071 AND F0074 ARE WATER REGULATING VALVES.
27. PIPE CAPS DOWNSTREAM OF INDICATED VALVES ARE PENETRATED WITH WEEP HOLES.

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

SERVICE WATER SYSTEM
UNIT 1
FIGURE 9.2-14
(DWG. D-302-0212-00000)



OPERATING DATA

SEE NOTE 5

ID	PSIG	GPM	°F	BY	CKD	REMARKS	REV
1	18	6500	110	JAB	MDC		
2	66	3298	118	JAB	MDC	1298 GPM @ 113 FT.TDH	
3	66	6500	110	JAB	MDC		
4	55	6500	95	JAB	MDC		
5	67	10	95	JAB	MDC		
6	59	80	95	JAB	MDC		
7	49	90	95	JAB	MDC		
8	28	20	105	JAB	MDC		
9	12	100	105	JAB	MDC		
10	22	80	105	JAB	MDC		

OPERATING DATA (START-UP)

SEE NOTE 5

ID	PSIG	GPM	°F	BY	CKD	REMARKS	REV
2	66	3298	95	JAB	MDC	1 PUMP RUNNING	

DESIGN DATA

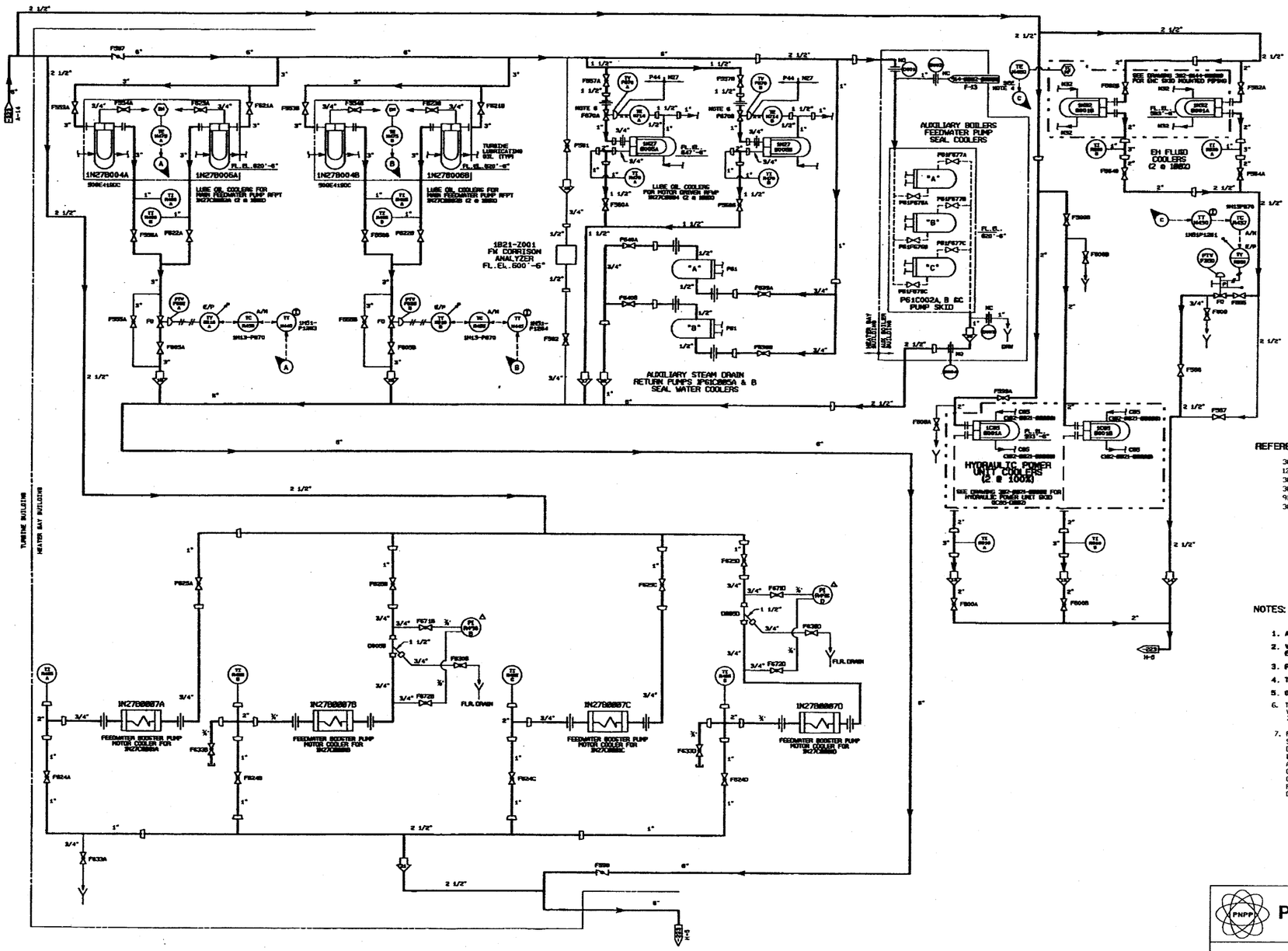
ID	NORMAL		UPSET			BY	CHKD	REMARKS	REV
	PSIG	°F	PSIG	°F	TIME				
1	100	125	N/A	N/A		JAB	MDC		
2	ATMOS	125	N/A	N/A		JAB	MDC		

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

TURBINE BUILDING
CLOSED COOLING SYSTEM
FIGURE 9.2-15 (SHEET 1 OF 3)
(DWG. D-302-0221-00000)



OPERATING DATA

SEE NOTE 7

	PSIG	GPM	°F	BY	CKD	REMARKS	REV
13	10	20	100	JAB	MBC		
14	55	50	100	JAB	MBC		
15	5	180	103	JAB	MBC		
16	20	5	100	JAB	MBC		
17	27	12	95			SEE NOTE 5	
19	15	25	110	JAB	MBC		
21	10	35	120	JAB	MBC		
22	30	12	110	MBC	MBC		

OPERATING DATA (START-UP)

SEE NOTE 7

	PSIG	GPM	°F	BY	CKD	REMARKS	REV
17	27	12	105	JAB	MBC		

REFERENCES:

302-0221-00000	TURBINE BUILDING CLOSED COOLING P44
12501389	GAS CONTROL PIPING DIAGRAM (G.E.)
302-0144-00000	REACTOR/TURBINE GENERATOR TRIP SYSTEM (EHC), N32
302-0131-00000	CONDENSER AIR REMOVAL N62
914-0002-00000	FIRE SERVICE WATER
302-0021-00000	STEAM BYPASS AND PRESSURE REGULATION SYSTEM, C85

NOTES:

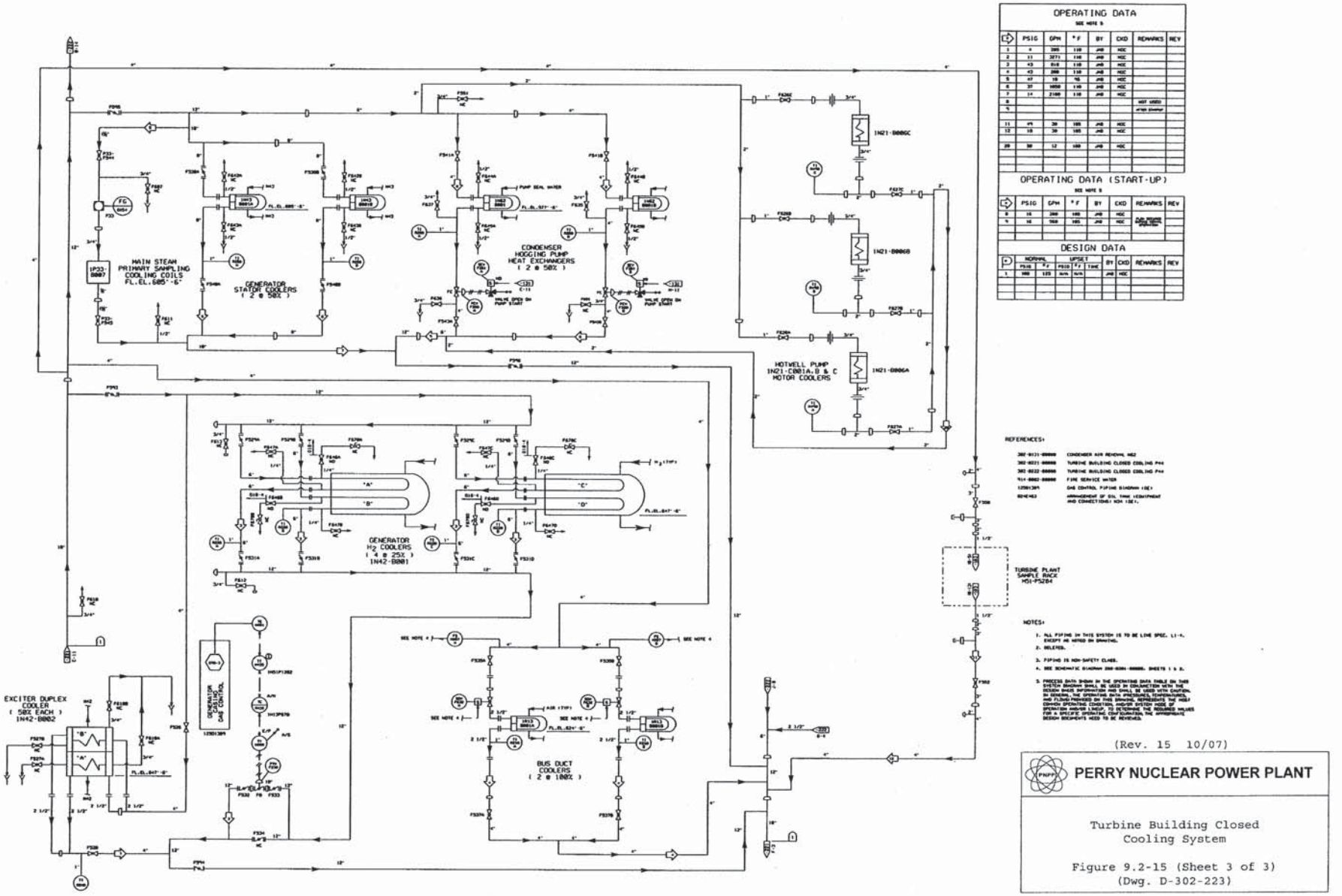
1. ALL PIPING IN THIS SYSTEM IS TO BE LINE SPECIFICATION L1-4.
2. VALVES MARKED WITH ASTERISK (*) TO BE SUPPLIED BY HEAT EXCHANGER MANUFACTURER.
3. PIPING IS NON-SAFETY CLASS.
4. THERMOCOUPLE AND THERMOWELL ARE SUPPLIED BY G.E.T.
5. ONE COOLER IS USED AT A TIME.
6. TEMPERATURE SENSOR 1N27-N714A & B IS AN INTEGRAL PART OF VALVE 1P44-F670A & B. SEE DWG. (CAD 26-0179-00001, 26-0179-00002 & DWG. 26-0189-000000.
7. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.

(Rev. 13 12/03)

PERRY NUCLEAR POWER PLANT

Turbine Building Closed Cooling System

Figure 9.2-15 (Sheet 2 of 3)
(Dwg. D-302-222)



(Rev. 15 10/07)

PERRY NUCLEAR POWER PLANT

Turbine Building Closed Cooling System

Figure 9.2-15 (Sheet 3 of 3)
(Dwg. D-302-223)

DESIGN DATA						
	NORMAL		UPSET			
	PSIG	°F	PSIG	°F	TIME	REMARKS
1	200	358	N/A	N/A		
2	100	212				
3	135	200				
4	250	200				
5	600	212				
6	500	358				
7	125	212				

OPERATING DATA				
	PSIG	GPM	°F	REMARKS
1	50	3,000	135	MODE 5 ONLY
2	25	3,000	200	
3	150	3,000	200	
4	150	3,000	200	
5	120	2,000	135	MODE 5 ONLY
6	120	3,000	200	

NOTES:

1. ADHR TROUBLE ALARM.
2. ALL EQUIPMENT AND INSTRUMENTS ARE PREFIXED BY SYSTEM G40, UNLESS OTHERWISE NOTED
3. ALL REMOTE MANUAL SWITCHES, ALARMS, AND INDICATING LIGHTS ARE LOCATED ON H13-P655, UNLESS OTHERWISE NOTED
4. CARBON STEEL TO STAINLESS STEEL INTERFACE AT SW PIPING (L2-4) FLANGED CONNECTION TO HEAT EXCHANGER (STAINLESS STEEL) MUST UTILIZE A FLANGE INSULATING KIT
5. 12" INSPECTION PORTS, BASKET STRAINER ON SERVICE WATER SIDE PROVIDED AS PART OF HEAT EXCHANGER.
6. VALVE DISK MODIFIED TO ADDRESS OVER PRESSURE PROTECTION.
7. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
8. 5" STORZ CONNECTIONS FOR UNIT 1 SUPPRESSION POOL HEAT REMOVAL FOR FLEX STRATEGY, REFERENCE DWG. 302-1000-00000. STORZ CONNECTIONS MAY BE REPLACED WITH VICTAULIC COUPLINGS FOR HIGH TEMPERATURE SERVICE.

REFERENCES:

302-0001-00000	P & ID SYMBOLOGY
302-0002-00000	P & ID SYMBOLOGY
302-0102-00000	CONDENSATE TRANSFER AND STORAGE SYSTEM, P11
302-0641-00000	RESIDUAL HEAT REMOVAL SYSTEM, E12
302-0642-00000	RESIDUAL HEAT REMOVAL SYSTEM, E12
302-0651-00000	FUEL POOL COOLING AND CLEANUP SYSTEM, G41
302-0705-00000	LOW PRESSURE CORE SPRAY SYSTEM, E21
302-0212-00000	SERVICE WATER SYSTEM
320-0102-00000	DESIGN SPEC. CONDENSATE TRANSFER & STORAGE SYSTEM, P11
320-0641-00000	DESIGN SPEC. RESIDUAL HEAT REMOVAL SYSTEM, E12
320-0642-00000	DESIGN SPEC. RESIDUAL HEAT REMOVAL SYSTEM, E12
320-0705-00000	DESIGN SPEC. LOW PRESSURE CORE SPRAY SYSTEM, E21

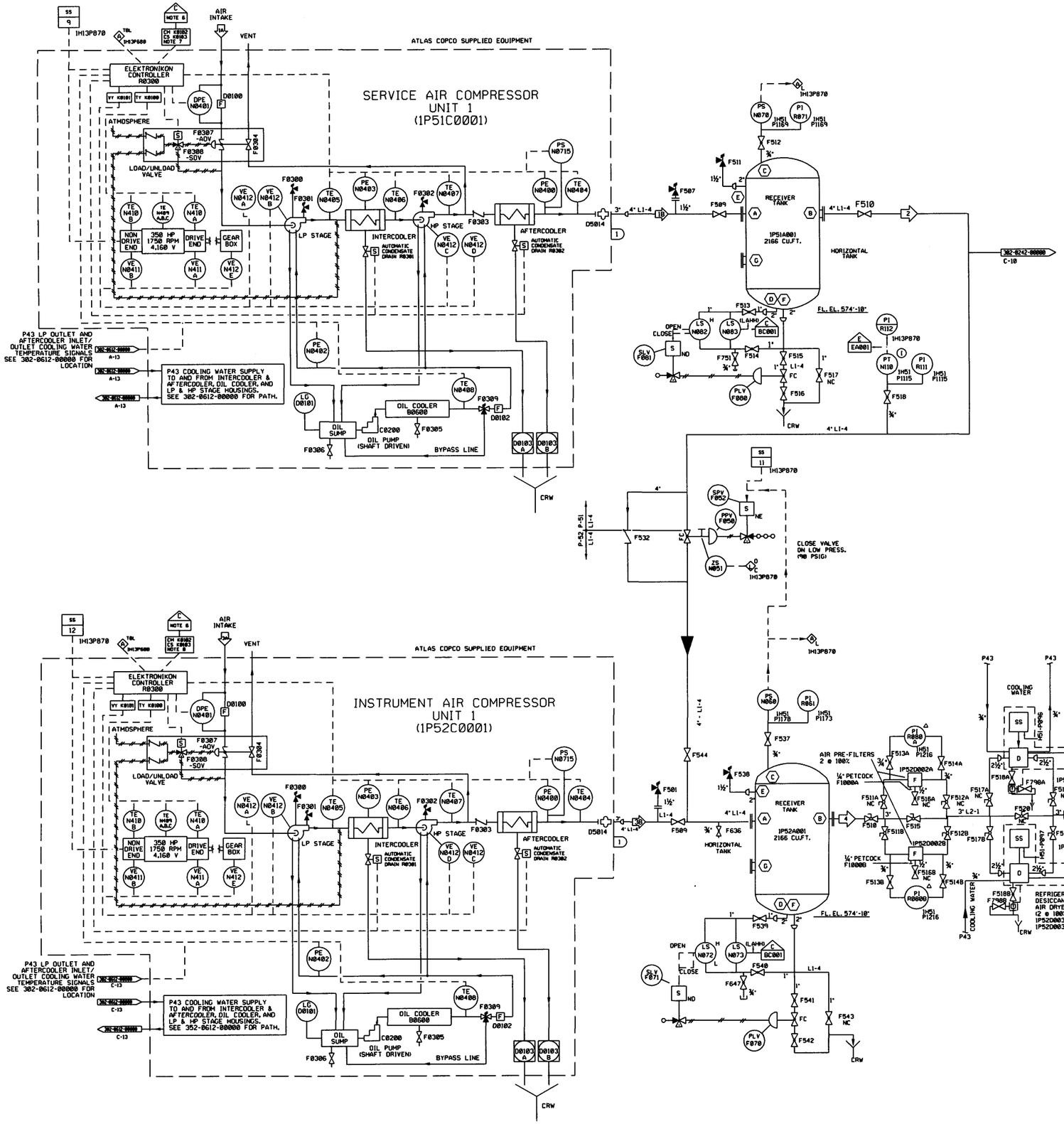
(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

ALTERNATE DECAY HEAT REMOVAL SYSTEM FIGURE 9.2-16

(DWG. D-302-0246-00000)



OPERATING DATA
SEE NOTE 5

#	PSIG	ACFM	F	BY	REMARKS	REV
1A	0	1520	68		SEE NOTE 3	
1B	125	AS REQUIRED BASED ON SYSTEM DEMANDS & RECEIVER TANK PRESSURE	110			
2	120	AS REQUIRED BASED ON SYSTEM DEMANDS	110			
3A	0	1520	68		SEE NOTE 3	
3B	125	AS REQUIRED BASED ON SYSTEM DEMANDS & RECEIVER TANK PRESSURE	110			
4	120	AS REQUIRED BASED ON SYSTEM DEMANDS	110			

DESIGN DATA

ID	NORMAL PSIG	NORMAL F	UPSET PSIG	UPSET F	UPSET TIME	BY	CHKD	REMARKS	REV
1	150	110	N/A	N/A	N/A				

NOTES:

1. •FURNISHED WITH EQUIPMENT.
2. SYSTEM TROUBLE ALARMS FOR SERVICE AIR SYSTEM CONTROL PANEL, 1P51-P0001, AND INSTRUMENT AIR PANEL, 1P52-P0001, ARE ANNUNCIATED ON H13-P680.
3. RATED COMPRESSOR FLOW (ACFM) IS BASED ON 14.5 PSIA, 68 DEG. F AND RH=8% UPSTREAM OF INLET FILTER.
4. VALVES F089, F810A, F810B, F510, F511A, F511B, F512A, F512B, F517A, F517B, F519A, F519B, F520, F521A, F521B, F525A, F525B, AND F815 ARE BALL AND PLUG VALVES AND DO NOT HAVE TO CONFORM TO LINE SPEC. L2-4.
5. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
6. REFER TO THE ICS FOR A LIST OF 1P51 AND 1P52 SERIES COMPUTER POINTS PROVIDED TO THE C91 PROCESS COMPUTER.
7. SEE DRAWING 288-0182-00004 FOR DETAILS OF NETWORK LINK.
8. SEE DRAWING 288-0183-00004 FOR DETAILS OF NETWORK LINK.

REFERENCES:

302-0242-0000	SERVICE AIR DISTRIBUTION SYSTEM
302-0243-00000	INSTRUMENT AIR
302-0244-00000	PARALLEL INSTRUMENT AIR DISTRIBUTION SYSTEM
302-0612-00000	NUCLEAR CLOSED COOLING SYSTEM P43
888-0210-00000	SERVICE AND INSTRUMENT AIR COMPRESSOR MOTOR TEMPERATURE INSTRUMENATION

SYSTEM DESIGNATION

P51 - SERVICE AIR SUPPLY
P52 - INSTRUMENT AIR SUPPLY

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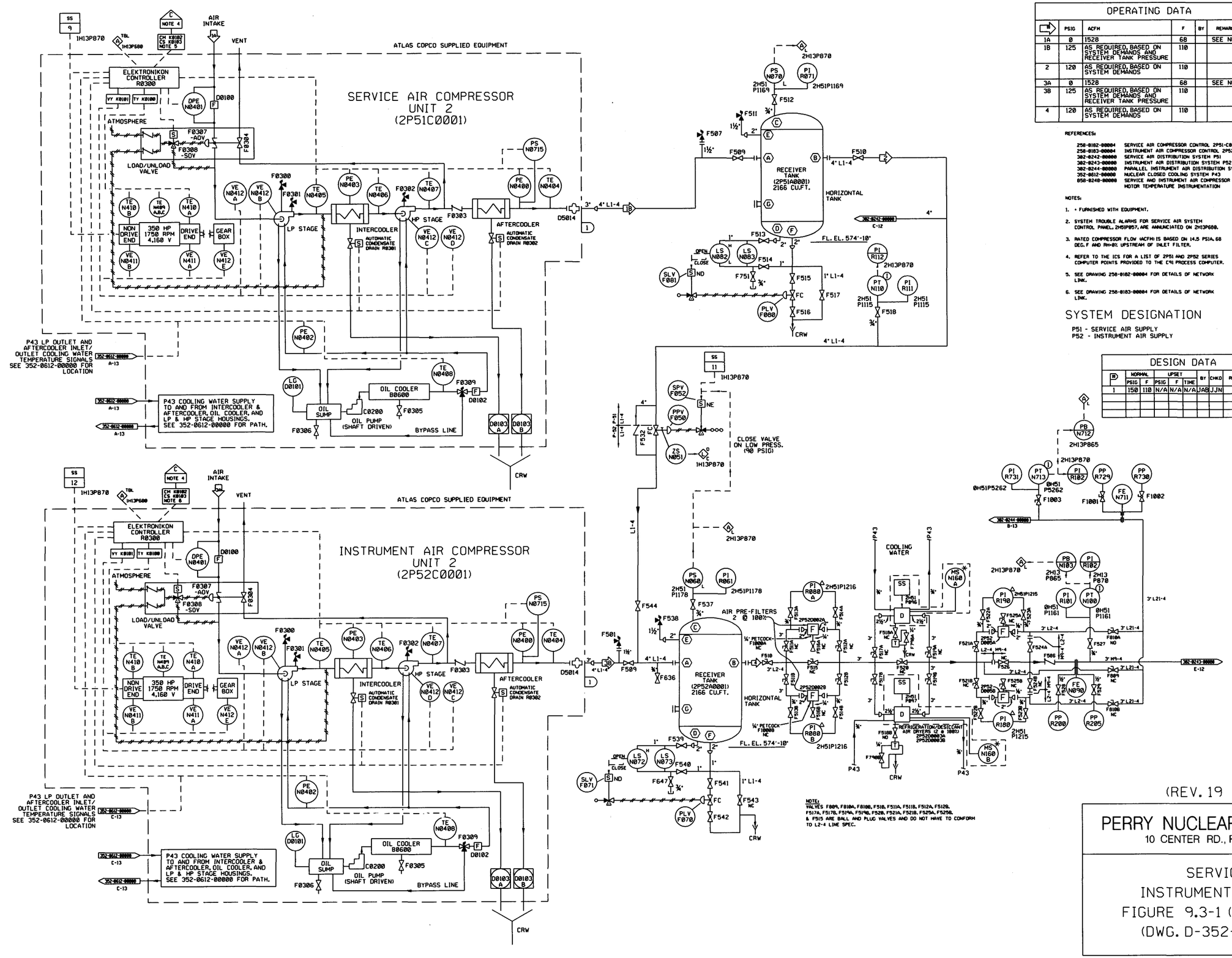
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

SERVICE AND
INSTRUMENT AIR SUPPLY
FIGURE 9.3-1 (SHEET 1 OF 2)
(DWG. D-302-0241-00000)



OPERATING DATA

	PSIG	ACFM	F	BY	REMARKS	REV
1A	0	1528	68		SEE NOTE 3	
1B	125	AS REQUIRED, BASED ON SYSTEM DEMANDS AND RECEIVER TANK PRESSURE	110			
2	120	AS REQUIRED, BASED ON SYSTEM DEMANDS	110			
3A	0	1528	68		SEE NOTE 3	
3B	125	AS REQUIRED, BASED ON SYSTEM DEMANDS AND RECEIVER TANK PRESSURE	110			
4	120	AS REQUIRED, BASED ON SYSTEM DEMANDS	110			

REFERENCES:

258-0182-00004	SERVICE AIR COMPRESSOR CONTROL 2P51-C001
258-0183-00004	INSTRUMENT AIR COMPRESSOR CONTROL 2P52-C001
382-8242-00000	SERVICE AIR DISTRIBUTION SYSTEM P51
382-8243-00000	INSTRUMENT AIR DISTRIBUTION SYSTEM P52
382-8244-00000	PARALLEL INSTRUMENT AIR DISTRIBUTION SYSTEM P52
352-0612-00000	NUCLEAR CLOSED COOLING SYSTEM P43
858-8248-00000	SERVICE AND INSTRUMENT AIR COMPRESSOR MOTOR TEMPERATURE INSTRUMENTATION

NOTES:

1. * FURNISHED WITH EQUIPMENT.
2. SYSTEM TROUBLE ALARMS FOR SERVICE AIR SYSTEM CONTROL PANEL, 2H51P857, ARE ANNUNCIATED ON 2H13P680.
3. RATED COMPRESSOR FLOW (ACFM) IS BASED ON 14.5 PSIA, 68 DEG. F AND RH=0% UPSTREAM OF INLET FILTER.
4. REFER TO THE ICS FOR A LIST OF 2P51 AND 2P52 SERIES COMPUTER POINTS PROVIDED TO THE C*E PROCESS COMPUTER.
5. SEE DRAWING 258-0182-00004 FOR DETAILS OF NETWORK LINK.
6. SEE DRAWING 258-0183-00004 FOR DETAILS OF NETWORK LINK.

SYSTEM DESIGNATION

P51 - SERVICE AIR SUPPLY
P52 - INSTRUMENT AIR SUPPLY

DESIGN DATA

ID	NORMAL PSIG	NORMAL F	UPSET PSIG	UPSET F	UPSET TIME	BY	CHKD	REMARKS	REV
1	150	110	N/A	N/A	N/A	JAB	JJN		

(REV. 19 10/2015)

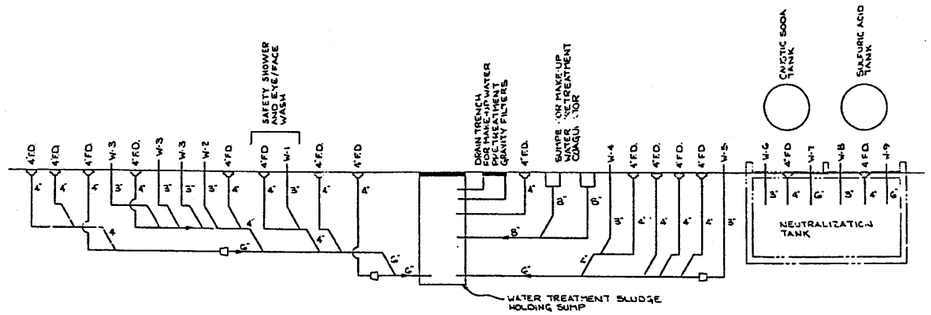
PERRY NUCLEAR POWER PLANT

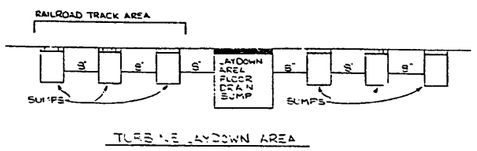
10 CENTER RD., PERRY, OHIO 44081

SERVICE AND
INSTRUMENT AIR SUPPLY
FIGURE 9.3-1 (SHEET 2 OF 2)
(DWG. D-352-0241-00000)

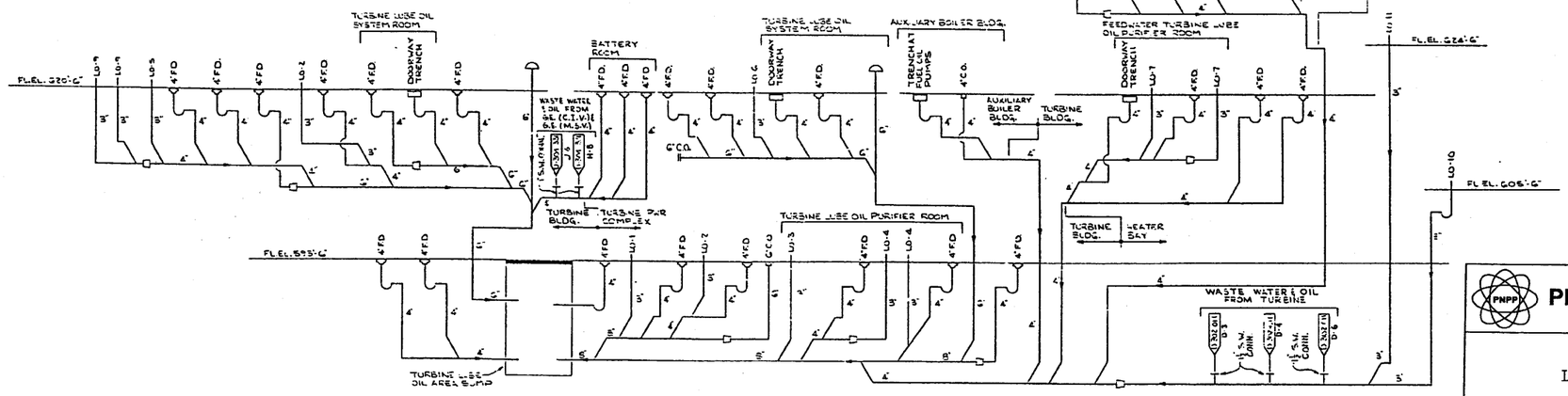
LEGEND	ABBREVIATIONS
END CAP	F.D. FLOOR DRAIN
FLOOR DRAIN	C.O. CLEAN-OUT
DOORWAY TRENCH OR SUMP	S.S. STAINLESS STEEL
TRAP	E.C. END CAP
REDUCER	TYPICAL DRAIN DESCRIPTION: 4" FLOOR, DRAIN LINE
CLEAN-OUT	
FLOW ARROW AND LINE SIZE	

	DRAIN DESCRIPTION	EQPT. NO.	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
LD-1	ELECTRO HYDRAULIC CONTROL UNIT DRAIN	N32-2001	D-921-005 (D-8)	
LD-2	FIRE SERVICE DRAIN	———	D-921-005(E-7) D-921-008(B-12)	
LD-3	TURBINE LUBE OIL TANK AFTER COOLERS DRAIN	N34-A001	D-921-005 (C-7)	EQPT. ON D-921-008
LD-4	TURBINE LUBE OIL PURIFIER DRAIN	N34-D001	D-921-006 (C-3)(C-4)	
LD-5	SODIUM HYPOCHLORITE FEED PUMP DRAIN	P84-C005	D-921-008 (D-14)	
LD-6	OIL MIST ELIMINATOR DRAIN	———	D-921-006 (C-6)	
LD-7	FEEDWATER TURBINE LUBE OIL PURIFIER DRAIN	N34-D002A&B	D-921-046 (D-15)(E-15)	
LD-8	MAIN FEEDWATER LUBE OIL VENT DRAIN	———	D-921-047 (C-17)(E-18)	
LD-9	SODIUM HYPOCHLORITE TRANSFER PUMP DRAIN	P84-C006A&B	D-921-008 (D-13)(E-13)	
LD-10	HYDROGEN SEAL UNIT DRAIN	N42-D001	D-921-007 (F-4)	
LD-11	LUBE OIL PURIFICATION LOOP SEAL DRAIN	———	D-921-009 (F-3)	
W-1	SAFETY EYE WASH DRAIN	———	D-921-070 (D-11)	
W-2	DEMINERALIZER WATER TWO BED STORAGE & DISTRIBUTION TRANSFER PUMP DRAIN	P21-C001A,B&C	D-921-070 (D-12)	
W-3	MIXED BED DEMINERALIZER TRANSFER PUMP DRAIN	P22-C001A,B&C	D-921-070 (D-13)(E-13)	
W-4	MAKE-UP WATER PRETREATMENT SAMPLE SINK DRAIN	P20-J001	D-921-070 (E-5)	
W-5	WATER TREATMENT LABORATORY SINK DRAIN	———	D-921-070 (H-7)	
W-6	TWO BED WATER DEMINERALIZER CAUSTIC PUMP DRAIN	P21-C005A,B&C	D-921-070 (E-12)	
W-7	TWO BED WATER DEMIN. CAUSTIC SODA STORAGE TANK DR. & OVERFLOW	P21-A007	D-921-070 (D-12)	
W-8	TWO BED WATER DEMINERALIZER SULFURIC ACID PUMP DRAIN	P21-C004A,B&C	D-921-070 (C-12)	
W-9	TWO BED WATER DEMIN. SULFURIC ACID STORAGE TANK DR. & OVERFLOW	P21-A006	D-921-070 (C-12)	





TURBINE LAYDOWN AREA



TURBINE BUILDING LUBE OIL AREA

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

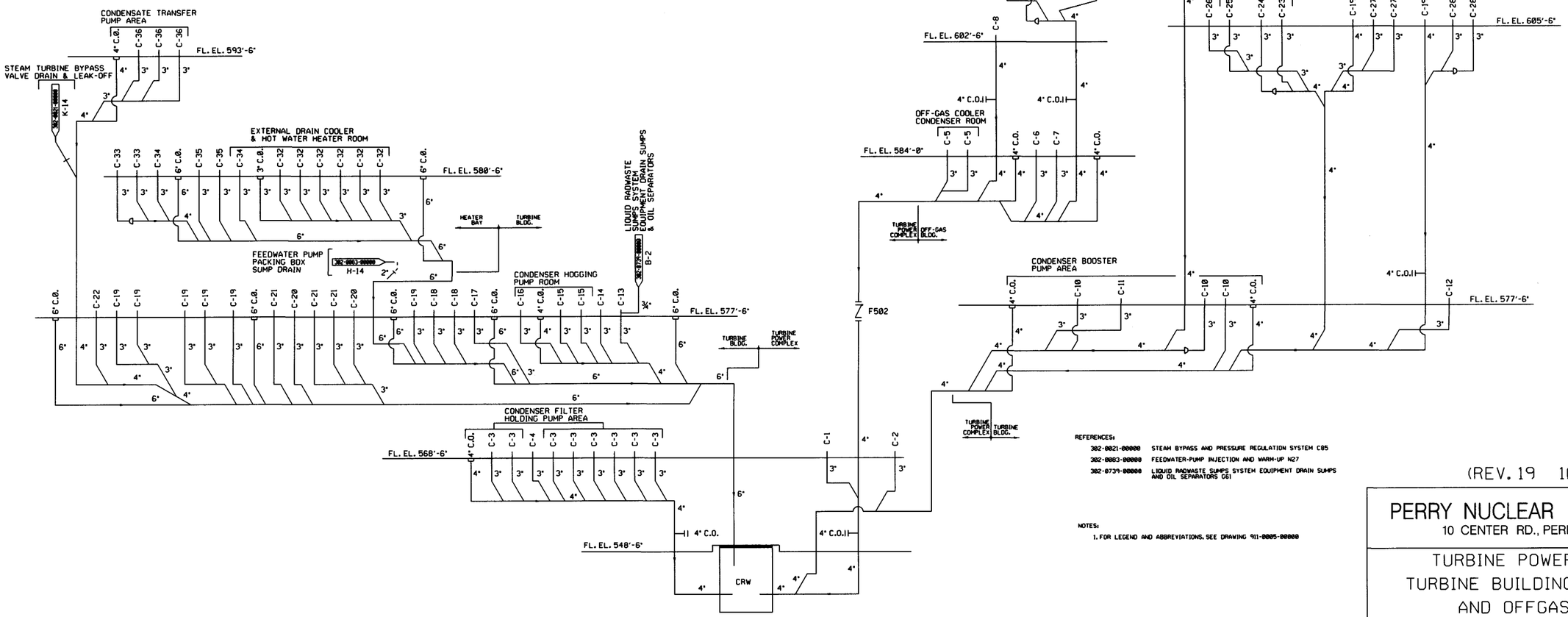
Lube Oil Area and Turbine Location Drains

Figure 9.3-5
(Dwg. D-911-005)

	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
C-1	OFF-GAS LOOP SEAL DRAIN	-----				921-0024-00000 (B-11)	
C-2	CONDENSATE DEMINERALIZER EFFLUENT SAMPLE RACK DRAIN	1N24J001				921-0024-00000 (C-10)	
C-3	CONDENSATE FILTER HOLDING PUMP DRAIN	1N23C004A THRU 1N23C004H				921-0022-00000 (B-11)(E-11)(D-11) 921-0023-00000 (C-11)(D-11)(E-11) (F-11)(G-11)	
C-4	CONDENSATE DEMINERALIZER HOT WATER TANK DRAIN	1N24B001				921-0022-00000 (C-9)	
C-5	OFF-GAS COOLER CONDENSER DRAIN	1N64B010A & B				921-0061-00000 (J-9)	
C-6	OFF-GAS COOLER INLET PIPING DRAIN	-----				921-0061-00000 (E-10)	
C-7	AIR HANDLING COOLING UNITS DRAIN	-----				921-0061-00000 (C-10)	
C-8	MISCELLANEOUS CRW DRAIN	-----				921-0062-00000 (H-12)	
C-9	OFF-GAS CHARCOAL VAULT REFRIGERATION SYS. BRINE CLG. PACKAGE DR.	1N64B0113A & C				921-0063-00000 (B-8)(B-11)	NOT USED
C-10	CONDENSATE BOOSTER PUMP DRAIN	1N21C002A, B, & C				921-0004-00000 (E-12)(G-12)(H-12)	
C-11	STEAM PACKING EXHAUSTER DRAIN	-----				921-0004-00000 (G-13)	
C-12	CHEMICAL CLEANING DRAIN	-----				921-0004-00000 (F-4)	
C-13	DRAIN FOR ANALYTICAL ELEMENT ON RADWASTE SYS.	-----				921-0004-00000 (J-9)	
C-14	LOOP SEAL DRAIN FOR STEAM JET AIR EJECTOR	1N62C002A & B				921-0004-00000 (B-8)	
C-15	CONDENSER HOGGING PUMP DRAIN	1N62C001A & B				921-0004-00000 (E-8)(F-9)	
C-16	DEEP SEAL TRAP OFF HOLD UP LINE DRAIN	-----				921-0004-00000 (E-7)	
C-17	CONDENSER TROUGH & VACUUM BREAKER DRAIN	-----				921-0003-00000 (B-3)	
C-18	SAMPLE EXTRACTION PUMP DRAIN	1P33C001 THRU 1P33C009				921-0003-00000 (C-4)(D-4)	
C-19	MISCELLANEOUS CRW DRAIN	-----				921-0082-00000 (C-13)(E-6)(E-10) (G-7)(G-10) 921-0003-00000 (H-6) 921-0007-00000 (B-9)(F-3)	

	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
C-20	LOW POINT DRAIN FOR CHEMICAL CLEANING PIPING	-----				921-0003-00000 (D-12)(E-12)	
C-21	CONDENSATE HEATERS DRAIN	-----				921-0003-00000 (D-11)(E-11)(H-11)	
C-22	TEMPORARY TEST FLOW NOZZLE DRAIN	-----				921-0002-00000 (J-12)	
C-23	OFF-GAS WATER SEPARATOR DRAIN	-----				921-0007-00000 (F-9)	
C-24	OFF-GAS CONDENSER TUBE DRAIN	-----				921-0007-00000 (F-9)	
C-25	STEAM JET AIR EJECTOR FINAL STAGE DRAIN	-----				921-0007-00000 (F-7)	
C-26	STEAM JET AIR EJECTOR FINAL STAGE DRAIN	-----				921-0006-00000 (C-7)	
C-27	FEEDWATER SEAL INJECTION PUMP DRAIN	1N27C005A & B				921-0007-00000 (C-10)	
C-28	GENERATOR STATOR COOLING UNIT DRAIN	1N43D001				921-0006-00000 (C-5)(D-5)	
C-29	TURBINE BUILDING CLOSED COOLING PUMP DRAIN	1P44C001A, B, & C				921-0009-00000 (D-12)(E-12)(F-12)	
C-30	TURBINE BUILDING CLOSED COOLING HEAT EXCHANGER DRAIN	1P44B001A & B				921-0009-00000 (C-11)	
C-31	TURBINE BUILDING CLOSED COOLING SURGE TANK OVERFLOW	1P44A001				921-0009-00000 (H-13)	
C-32	EXTERNAL DRAIN COOLER DRAIN	1N27B003A & B				921-0042-00000 (F-9)(F-10)(F-12)	
C-33	AUX. STEAM HOT WATER HEAT EXCHANGER DRAIN PUMP DRAIN	1P61C005A & B				921-0041-0000 (C-10)(C-11)	
C-34	HOT WATER HEAT EXCHANGER DRAIN	1P55B001A & B				921-0041-00000 (C-11) 921-0042-00000 (G-11)	

	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
C-35	HOT WATER PUMP DRAIN	1P55C001A & B				921-0041-00000 (B-12)(C-12)	
C-36	CONDENSATE TRANSFER PUMP DRAIN	1P11C001A & B 1P11C002				921-0005-00000 (E-11)(E-12)(E-13)	
C-37	TURBINE BUILDING SUPPLY PLENUM DRAIN	1M35B0001A, B, C				921-0064-00000 (E-10)(F-10)(H-10)	



TURBINE POWER COMPLEX CLEAN RADWASTE EQUIPMENT DRAINS

REFERENCES:

302-0021-00000	STEAM BYPASS AND PRESSURE REGULATION SYSTEM C85
302-0083-00000	FEEDWATER-PUMP INJECTION AND WARM-UP N27
302-0739-00000	LIQUID RADWASTE SUMPS SYSTEM EQUIPMENT DRAIN SUMPS AND OIL SEPARATORS G61

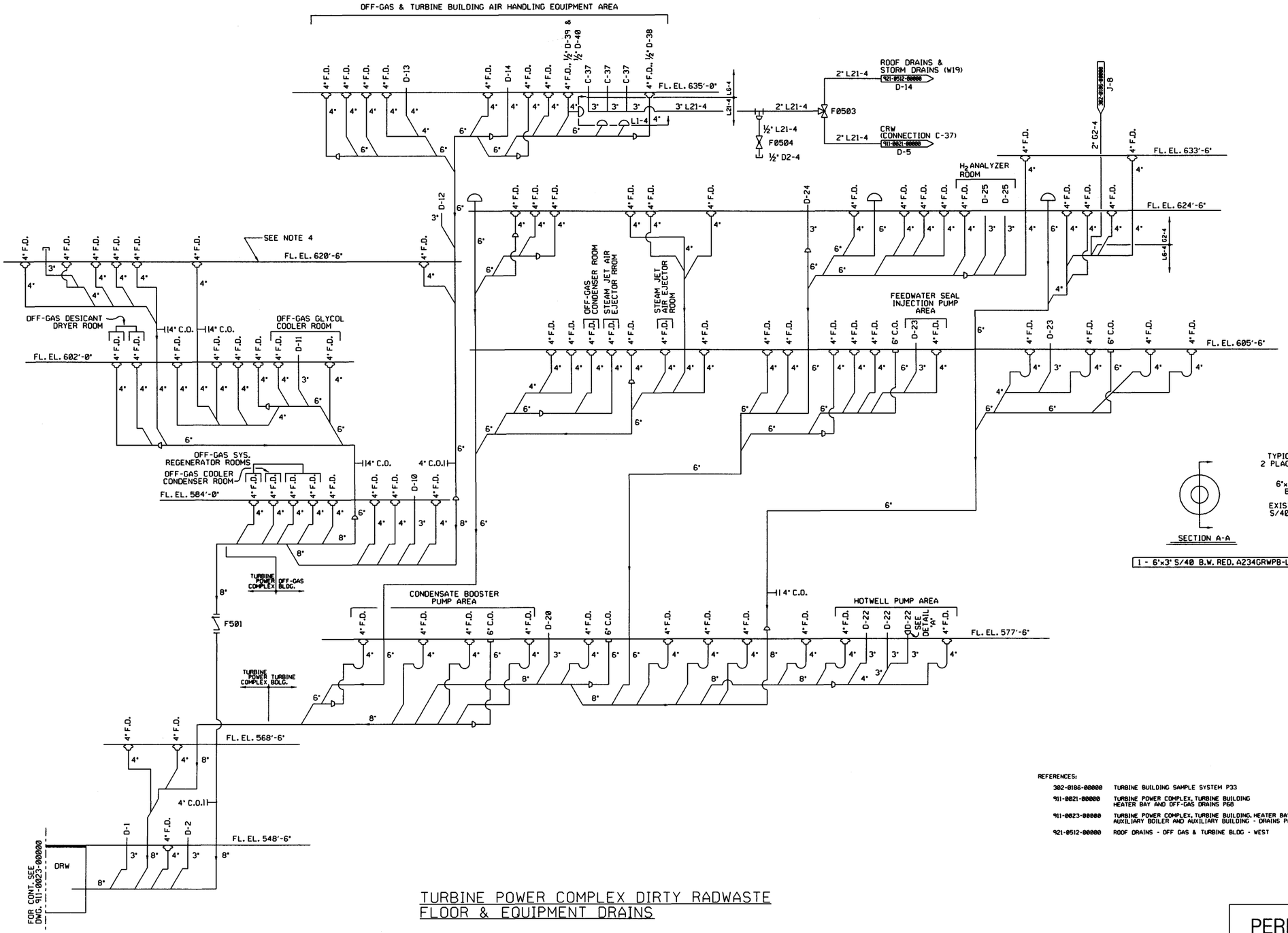
NOTES:

1. FOR LEGEND AND ABBREVIATIONS, SEE DRAWING 911-0005-00000

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

TURBINE POWER COMPLEX, TURBINE BUILDING, HEATER BAY AND OFFGAS DRAINS
FIGURE 9.3-6
(DWG. D-911-0021-00000)



TURBINE POWER COMPLEX DIRTY RADWASTE FLOOR & EQUIPMENT DRAINS

REFERENCES:

302-0186-00000	TURBINE BUILDING SAMPLE SYSTEM P33
911-0021-00000	TURBINE POWER COMPLEX, TURBINE BUILDING HEATER BAY AND OFF-GAS DRAINS P&B
911-0023-00000	TURBINE POWER COMPLEX, TURBINE BUILDING, HEATER BAY, AUXILIARY BOILER AND AUXILIARY BUILDING - DRAINS P&B
921-0512-00000	ROOF DRAINS - OFF GAS & TURBINE BLDG - WEST

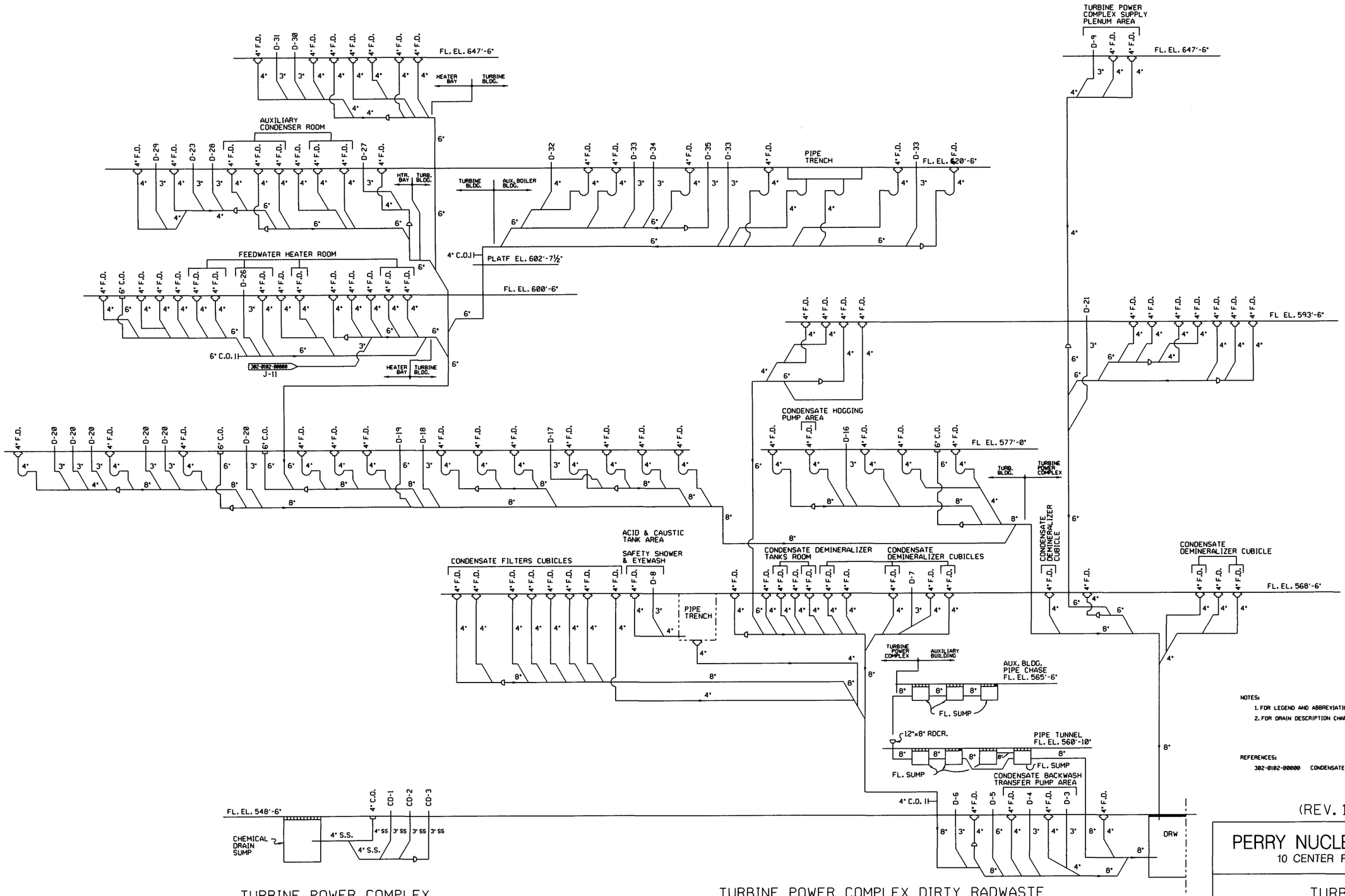
NOTES:

1. FOR LEGEND AND ABBREVIATIONS, SEE DWG. 911-0005-00000.
2. FOR DRAIN DESCRIPTION CHART, SEE DWG. 911-0024-00000.
3. CUT 6"x3" REDUCER IN HALF PER SECTION 'A-A' AND WELD TO FLOOR DRAIN AVOIDING INTERFERENCE WITH EXISTING ¾" DIA. LINE.
4. THREE OF THE SEVEN FLOOR DRAINS AT 628' OFF GAS BLDG. HAVE BEEN PLUGGED PER DCP 930116 REV.0.

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

TURBINE POWER COMPLEX DRAINS
FIGURE 9.3-7
(DWG. D-911-0022-00000)



TURBINE POWER COMPLEX
CHEMICAL DRAINS

TURBINE POWER COMPLEX DIRTY RADWASTE
FLOOR & EQUIPMENT DRAINS

NOTES:

1. FOR LEGEND AND ABBREVIATIONS, SEE DWG. 911-0005-00000.
2. FOR DRAIN DESCRIPTION CHART, SEE DWG. 911-0024-00000

REFERENCES:

302-0102-00000 CONDENSATE TRANSFER AND STORAGE SYSTEM P11

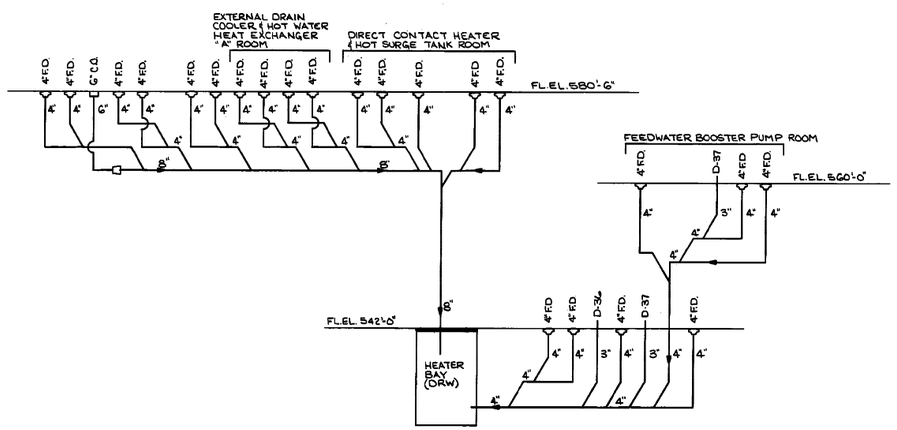
(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

TURBINE POWER
COMPLEX DRAINS
FIGURE 9.3-8
(DWG. D-911-0023-00000)

	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
D-1	CONDENSATE DEMINERALIZER BACKWASH RINSE RECEIVING TK. OVERFLOW	N26-A004				D-921-021 (C-10)	
D-2	CONDENSATE DEMINERALIZER BACKWASH RINSE RECEIVING TANK DRAIN	N24-A004				D-921-021 (B-10)	
D-3	CONDENSATE BACKWASH TRANSFER PUMP DRAIN	G50-C009B				D-921-021 (F-10)	
D-4	CONDENSATE BACKWASH TRANSFER PUMP DRAIN	G50-C009A				D-921-021 (F-9)	
D-5	CONDENSATE F/D BACKWASH RECEIVING TANK DRAIN & OVERFLOW	G50-A010				D-921-021 (G-10)	
D-6	SPENT RESIN TRANSFER PUMP DRAIN	G50-C022				D-921-021 (J-10)	
D-7	CONDENSATE FILTER PRECOAT TANK DRAIN	N23-A001				D-921-024 (J-12)	
D-8	SAFETY EYE WASH DRAIN	———				D-921-022 (E-12)	
D-9	TURBINE POWER COMPLEX SUPPLY PLENUM DRAIN	M42-B001				D-921-029 (F-11)	
D-10	OFF GAS POST-TREATMENT SAMPLE PANEL DRAIN	D17-J013				D-921-061 (E-10)	
D-11	OFF GAS GLYCOL COOLER DRAIN	N44-Z001				D-921-062 (F-11)	
D-12	FIRE SERVICE DRAIN	———				D-921-063 (D-12)	
D-13	OFF GAS EXHAUST PLENUM DRAIN	M36-D001B				D-921-064 (C-11)	
D-14	OFF GAS EXHAUST PLENUM DRAIN	M36-D001A				D-921-064 (B-10)	
D-15	DELETED						
D-16	OFF GAS SAMPLE CHAMBER DRAIN	———				D-921-004 (B-10)	
D-17	CONDENSER WATER BOX DRAIN PUMP DRAIN	N71-C005				D-921-003 (G-4)	
D-18	LOW POINT DRAIN FOR CHEMICAL CLEANING PIPING	———				D-921-002 (C-13)	
D-19	MISCELLANEOUS DRW DRAIN	———				D-921-002 (D-13)	
D-20	MISCELLANEOUS DRW DRAIN	———				D-921-002 (F-9)(F-9)(F-11)(H-6) D-921-004 (D-13)	
D-21	FIRE SERVICE DRAIN	———				D-921-027 (F-12)	
D-22	HOTWELL PUMP DRAIN & CONDENSATE VENT DISCHARGE	N21-C001A,B&C				D-921-004 (G-4)(G-3)(G-4)	CONDENSATE VENT DISC. (AREA G-4 ONLY)
D-23	FIRE SERVICE DRAIN	———				D-921-007 (D-5)(G-4) D-921-045 (F-9)	
D-24	TURBINE PLANT SAMPLING ANALYSIS PANEL DRAIN	H51-P009				D-921-010 (C-9)	
D-25	H_2 ANALYZER DRAIN	N64-N012A&B				D-921-010 (F-9)(F-10)	
D-26	FEEDWATER INJECTION OVERFLOW OF LEAK OFF DRAIN TANK DRAIN	———				D-921-044 (F-13)	
D-27	HOT WATER HEAT EXPANSION TANK DRAIN	P55-A002				D-921-046 (F-15)	
D-28	CONDENSATE SEAL OVERFLOW DRAIN	———				D-921-045 (G-9)	
D-29	AMERTAP PUMP DRAIN	N71-C004				D-921-045 (E-9)	
D-30	MAIN FEEDWATER PUMP MAINTENANCE DRAIN	N27-C002B				D-921-047 (G-9)	
D-31	MAIN FEEDWATER PUMP MAINTENANCE DRAIN	N27-C002A				D-921-047 (E-9)	
D-32	AUXILIARY STEAM BLOWDOWN TANK DRAIN	P61-A002				D-921-080 (D-12)	
D-33	RELIEF VALVE DRAIN	———				D-921-080 (C-7)(C-11)(E-9)	
D-34	DEAERATOR DRAIN	P61-B002				D-921-080 (D-8)	
D-35	PANEL SAMPLE DRAIN	H51-P100				D-921-080 (D-7)	
D-36	FEEDWATER BOOSTER PUMP DRAIN	N27-C001A,B&C				D-921-041 (G-13)	
D-37	MISCELLANEOUS DRW DRAIN	———				D-921-041 (H-6)(H-12)	
D-38	BUILDING HEATING AUTO VENT DISCHARGE	P55-F807				D-921-064 (J-9)	
D-39	BUILDING HEATING AUTO VENT DISCHARGE	P55-F808				D-921-064 (E-10)	
D-40	BUILDING HEATING AUTO VENT DISCHARGE	P55-F809				D-921-064 (E-10)	
CD-1	WASTE TRANSFER PUMP DRAIN	N24-C001A,B&C				D-921-021 (D-11)	
CD-2	CONDENSATE DEMIN. REGENERATION CHEMICAL WASTE TANK OVERFLOW	N24-A005				D-921-021 (C-11)	
CD-3	CONDENSATE DEMIN. REGENERATION CHEMICAL WASTE TANK DRAIN	N24-A005				D-921-021 (B-11)	



HEATER BAY DIRTY RADWASTE FLOOR & EQUIPMENT DRAINS

NOTES:-
1. FOR LEGEND AND ABBREVIATIONS, SEE DRAWING D-911-005.

(Rev. 18 10/13)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

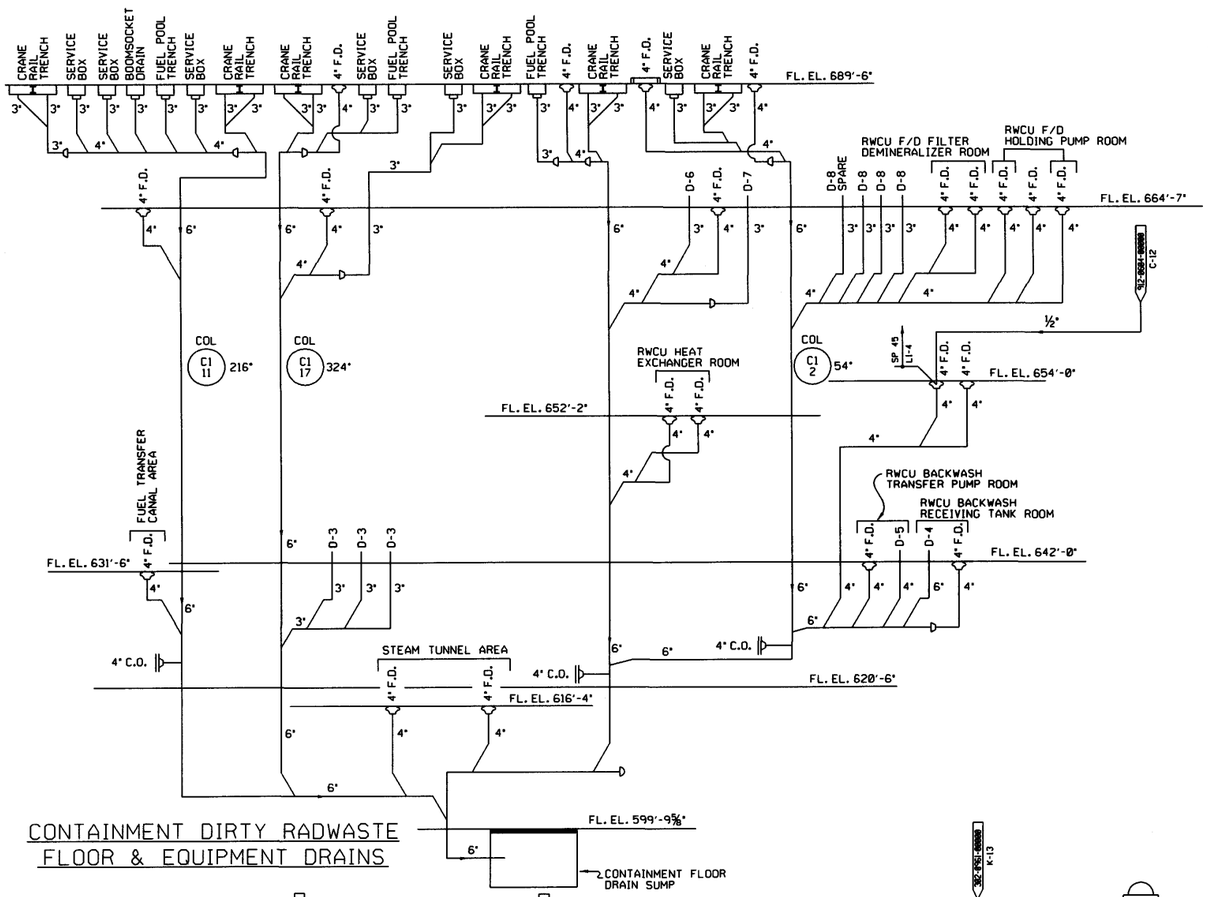
Heater Bay
Building Drains

Figure 9.3-9
(DWG. D-911-0024-00000)

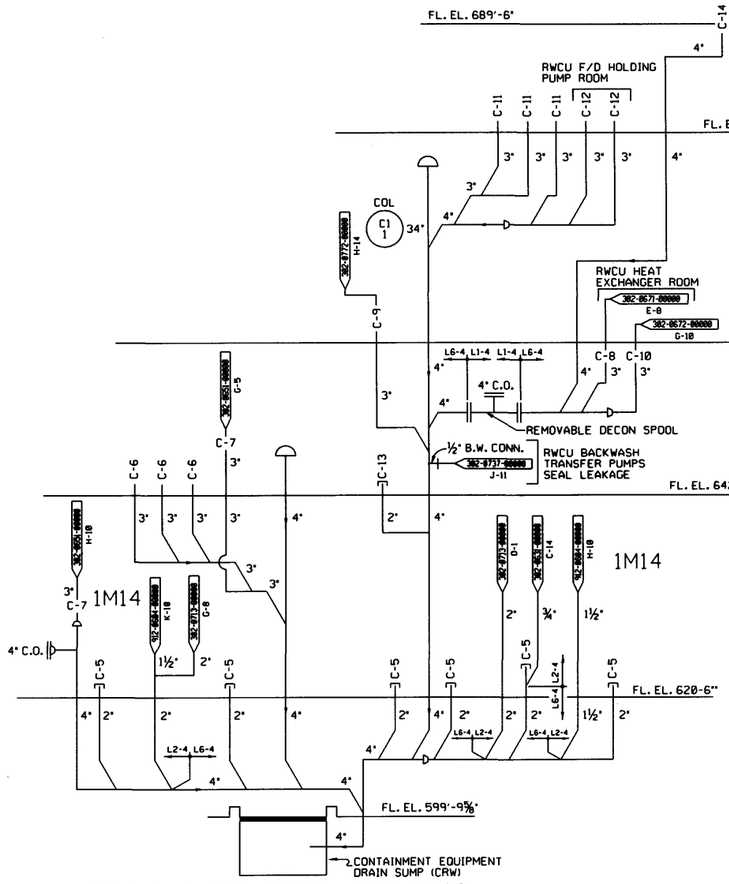
	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
D-1	MISCELLANEOUS DRW DRAIN	———				921-0601-00000 (E-7)(C-5) 921-0602-00000 (C-6)(E-8)(D-10)	
D-2	DRYWELL COOLING SUPPLY PLENUM CONDENSATE DRAIN	1M13B002 1M13B003				921-0602-00000 (C-11)	
D-3	CONTAINMENT VESSEL AIR HANDLING UNIT DRAIN	1M11B001A, B, & C				921-0607-00000 (C-9)(D-9)(D-5)	CONDENSATE DRAIN
D-4	RWCU BACKWASH RECEIVING TANK OVERFLOW & DRAIN	1G36A003				921-0608-00000 (F-8)	
D-5	RWCU BACKWASH TRANSFER PUMP DRAIN	1G50C012				921-0608-00000 (G-7)	
D-6	RESIN METERING PUMP DRAIN	1G36C003				921-0612-00000 (E-4)	
D-7	PRECOAT PUMP DRAIN	1G36C002				921-0612-00000 (D-6)	
D-8	CONTAINMENT VESSEL AIR HANDLING UNIT DRAIN	1M11B001D, E, & F				921-0612-00000 (E-6)(F-5)(F-6)	CONDENSATE DRAIN

	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
C-1	REACTOR VESSEL DRAIN	———				921-0602-00000 (B-7)	
C-2	REACTOR RECIRCULATION SYSTEM MAINTENANCE DRAIN	———				921-0601-00000 (F-8)(C-7) 921-0602-00000 (B-9)(C-8)	
C-3	MISCELLANEOUS CRW DRAIN	———				921-0601-00000 (E-9)(F-6) 921-0602-00000 (C-10)	
C-4	DRYWELL COOLING SUPPLY COOLING COIL DRAIN	1M13B001				921-0601-00000 (F-9)	NUCLEAR CLOSED COOLING WATER
C-5	INSTRUMENTATION PANEL VALVE BLOWDOWN DRAIN	———				921-0605-00000 (D-4)(D-11) 921-0606-00000 (D-13)(E-3)(G-5)(G-10)	ALL PANELS ARE LOCATED ON EL. 620'-6"
C-6	CONTAINMENT VESSEL AIR HANDLING UNIT DRAIN	1M11B001A, B, & C				921-0607-00000 (D-5)(C-9)(D-9)	CHILLED WATER PIPING DRAIN

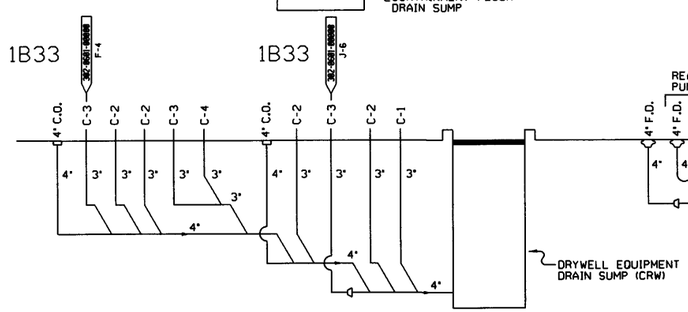
	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
C-7	FUEL POOL LEAK DETECTION DRAIN	———				921-0607-00000 (F-11) 921-0609-00000 (F-4)	
C-8	RWCU NON-REGENERATIVE HEAT EXCHANGER DRAIN	1G33B002A & B				921-0610-00000 (C-4)	
C-9	RWCU CONTAINMENT SAMPLE DRAIN	1G33Z020				921-0610-00000 (F-6)	
C-10	RWCU REGENERATIVE HEAT EXCHANGER DRAIN	1G33B001A, B, & C				921-0609-00000 (G-4)	
C-11	CONTAINMENT VESSEL AIR HANDLING UNIT DRAIN	1M11B001D, E, & F				921-0612-00000 (E-6)(F-5)(F-6)	CHILLED WATER PIPING DRAIN
C-12	RWCU FILTER/DEMINERALIZER HOLDING PUMP SEAL DRAIN	1G36C001A & B				921-0612-00000 (E-7)(E-9)	
C-13	INSTRUMENTATION PANEL VALVE BLOWDOWN DRAIN	1H22P002				921-0608-00000 (E-4)	
C-14	POOL OVERFLOW DRAIN	———				921-0614-00000 (D-4)	



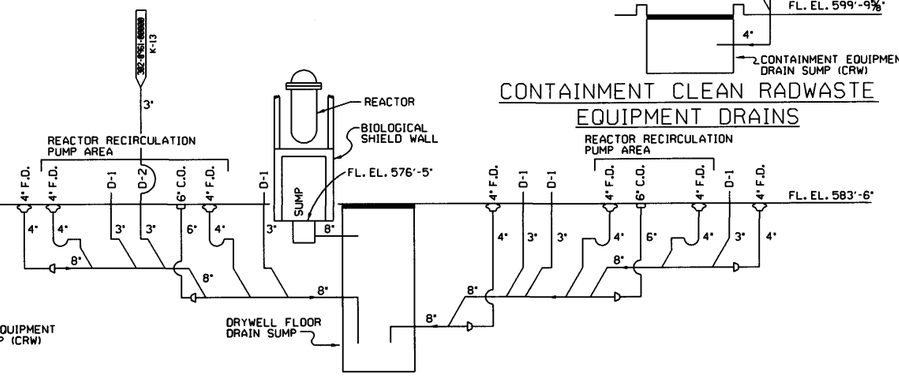
CONTAINMENT DIRTY RADWASTE FLOOR & EQUIPMENT DRAINS



CONTAINMENT CLEAN RADWASTE EQUIPMENT DRAINS



DRYWELL CLEAN RADWASTE EQUIPMENT DRAINS



DRYWELL DIRTY RADWASTE FLOOR & EQUIPMENT DRAINS

NOTES:

1. FOR LEGEND AND ABBREVIATIONS SEE DRAWING 911-0005-00000.

REFERENCES:

302-0601-00000	REACTOR WATER RECIRCULATION SYSTEM B33
302-0631-00000	REACTOR CORE ISOLATION COOLING SYSTEM E51
302-0651-00000	FUEL POOL COOLING & CLEAN-UP SYSTEM G41
302-0671-00000	REACTOR WATER CLEAN-UP SYSTEM G33
302-0672-00000	REACTOR WATER CLEAN-UP SYSTEM G33
302-0713-00000	MIXED BED DEMINERALIZER AND DISTRIBUTION SYSTEM P22
302-0737-00000	LRW - TANKS & PUMPS FOR HANDLING RWCU G50
302-0772-00000	REACTOR PLANT SAMPLING P35
302-0961-00000	LEAK DETECTION SYSTEM 1E31
911-0005-00000	LUBE OIL AREA, TURBINE LAYDOWN AND WATER TREATMENT BUILDING DRAINS P68
912-0604-00000	CONTAINMENT VESSEL & DRYWELL PURGE H14

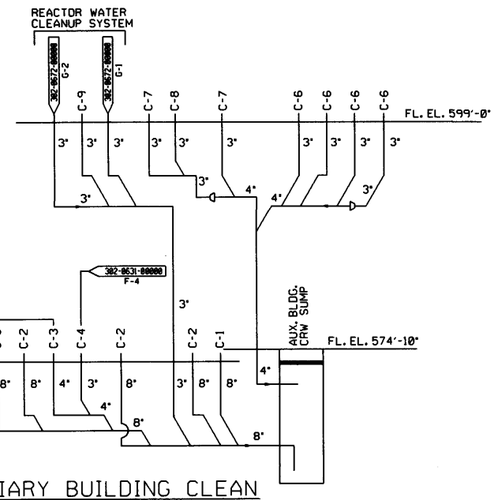
(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

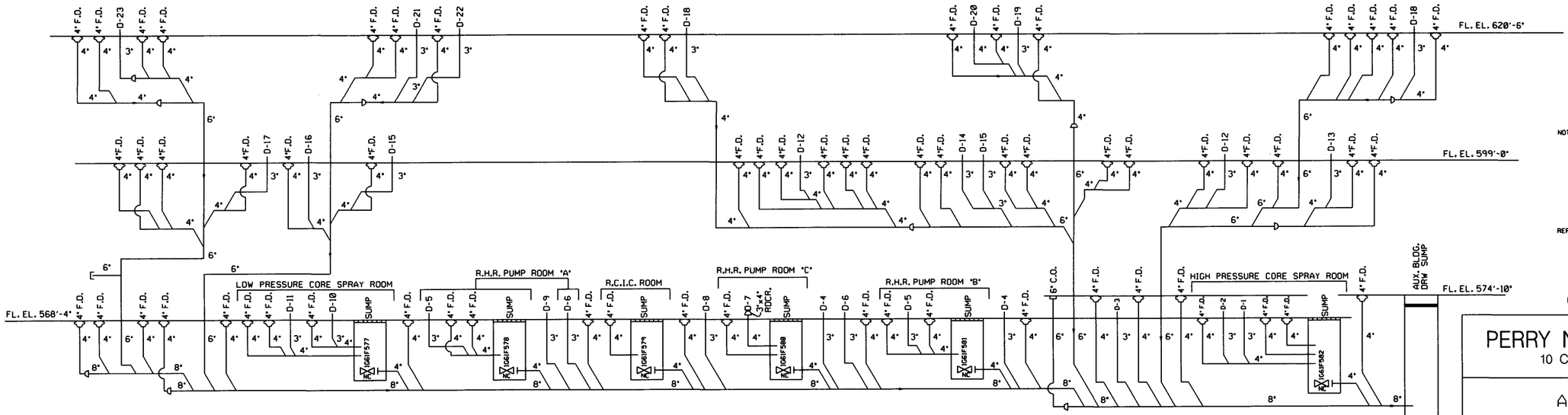
REACTOR
BUILDING DRAINS
FIGURE 9.3-10
(DWG. D-911-0601-00000)

	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
D-1	SUPPRESSION POOL CLEAN-UP PUMP DRAIN	1G42C001				921-0617-00000 (D-8)	
D-2	HIGH PRESSURE CORE SPRAY PUMP SEAL DRAIN	1E22C001				921-0617-00000 (D-7)	
D-3	HIGH PRESSURE CORE SPRAY RELIEF VALVE DISCHARGE DRAIN	-----				921-0617-00000 (D-6)	
D-4	MISCELLANEOUS DRAIN	-----				921-0617-00000 (D-3)(G-3)	
D-5	RESIDUAL HEAT REMOVAL RELIEF VALVE DISCHARGE DRAIN	-----				921-0616-00000 (D-7) 921-0617-00000 (C-8)	
D-6	RESIDUAL HEAT REMOVAL HEAT EXCHANGER DRAIN	1E12B001A,B,C,&D				921-0616-00000 (D-5) 921-0617-00000 (C-6)	
D-7	RESIDUAL HEAT REMOVAL RELIEF VALVE DISCHARGE DRAIN	-----				921-0617-00000 (H-6)	
D-8	EMERGENCY SERVICE WATER LOOP "B" RADIATION MONITOR DRAIN	1D17J006				921-0617-00000 (G-3)	
D-9	EMERGENCY SERVICE WATER LOOP "A" RADIATION MONITOR DRAIN	1D17J005				921-0616-00000 (D-4)	
D-10	LOW PRESSURE CORE SPRAY PUMP SEAL DRAIN	1E21C001				921-0616-00000 (G-6)	
D-11	LOW PRESSURE CORE SPRAY RELIEF VALVE DISCHARGE DRAIN	-----				921-0616-00000 (F-7)	
D-12	FIRE SERVICE DRAIN	-----				921-0618-00000 (C-4) 921-0619-00000 (E-4)	
D-13	NUCLEAR CLOSED COOLING WATER SAMPLE DRAIN	-----				921-0619-00000 (C-11)	
D-14	EMERGENCY SERVICE WATER LEAK DETECTION DRAIN	-----				921-0619-00000 (E-5)	
D-15	EMERGENCY SERVICE WATER RELIEF VALVE DISCHARGE DRAIN	-----				921-0618-00000 (C-4) 921-0619-00000 (E-5)	
D-16	EMERGENCY SERVICE WATER LOCAL SAMPLE DRAIN	-----				921-0618-00000 (F-3)	
D-17	RESIDUAL HEAT REMOVAL SAMPLE DRAIN	-----				921-0618-00000 (F-5)	

	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
D-18	SPARE	-----				921-0621-00000 (G-9)(H-8)	
D-19	FIRE SERVICE STRAINER DRAIN	-----				921-0621-00000 (C-5)	CHARCOAL FILTER UNIT
D-20	AUXILIARY BUILDING EXHAUST PLENUM DRAIN	1M38D001				921-0621-00000 (D-6)	
D-21	RADWASTE DISCHARGE RADIATION MONITOR DRAIN	0D17J007				921-0620-00000 (F-4)	
D-22	STEAM TUNNEL SUPPLY PLENUM DRAIN	1M47B001				921-0620-00000 (C-4)	
D-23	LEAK RATE TEST SYSTEM DRAIN	-----				921-0620-00000 (H-11)	
C-1	HIGH PRESSURE CORE SPRAY FLUSH DRAIN	-----				921-0617-00000 (D-8)	
C-2	RESIDUAL HEAT REMOVAL FLUSH DRAIN	-----				921-0616-00000 (D-6) 921-0617-00000 (C-5)(H-5)	
C-3	AUXILIARY STEAM/RCIC TURBINE CONDENSATE DRAIN	-----				921-0616-00000 (B-4)	
C-4	REACTOR CORE ISOLATION COOLING SYS. RELIEF VALVE DISCHARGE DR.	-----				921-0616-00000 (B-5)	
C-5	LOW PRESSURE CORE SPRAY FLUSH DRAIN	-----				921-0616-00000 (G-8)	
C-6	TURBINE BUILDING WATER CHILLER DRAIN	1P46B001A & B				921-0619-00000 (C-7)(C-8)(D-7)(D-8)	
C-7	TURBINE BUILDING CHILLED WATER PUMP DRAIN	1P46C001A & B				921-619-00000 (C-10)	
C-8	NUCLEAR CLOSED COOLING WATER RELIEF VALVE DRAIN	-----				921-0619-00000 (C-9)	
C-9	REACTOR WATER CLEAN-UP FLUSHING DRAIN	-----				921-0619-00000 (J-6)	
C-10	REACTOR WATER CLEAN-UP PUMP DRAIN	1G33C001A & B				921-0618-00000 (B-6) 921-0619-00000 (H-5)	



AUXILIARY BUILDING CLEAN RADWASTE EQUIPMENT DRAINS



AUXILIARY BUILDING DIRTY RADWASTE FLOOR & EQUIPMENT DRAINS

NOTES:

1. FOR LEGEND AND ABBREVIATIONS, SEE DRAWING 911-0005-00000

REFERENCES:

302-0631-00000	REACTOR CORE ISOLATION COOLING SYSTEM E51
302-0643-00000	RESIDUAL HEAT REMOVAL SYSTEM E12
302-0672-00000	REACTOR WATER CLEANUP SYSTEM G33

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT

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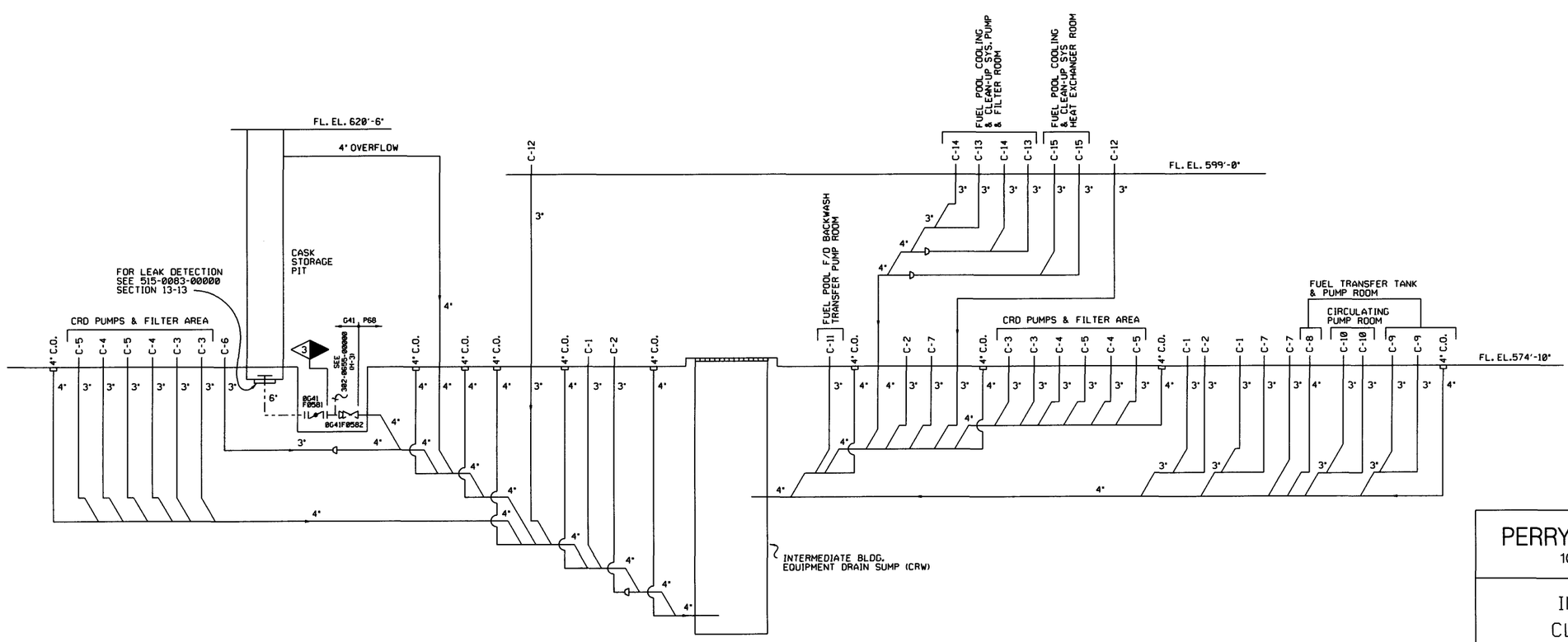
AUXILIARY BUILDING
DIRTY RADWASTE DRAINS
FIGURE 9.3-11
(DWG. D-911-0617-00000)

	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
C-1	NUCLEAR CLOSED COOLING WATER MAINTENANCE & RELIEF VALVE DRAIN	————				921-0628-00000 (F-11) 921-0629-00000 (F-3)(F-6)	
C-2	CONTAINMENT CHILLER DRAIN	0P50B001A,B,&C				921-0628-00000 (F-10)(F-13) 921-0629-00000 (F-5)	
C-3	DRIVEWATER FILTER DRAIN	1C11D003A&B 2C11D003A&B				921-0626-00000 (C-4)(C-11) 921-0627-00000 (H-3)(H-12)	
C-4	DRIVEWATER PUMP DRAIN	1C11C001A&B 2C11C001A&B				921-0626-00000 (D-2)(E-2) (D-12)(E-12)	
C-5	PUMP SUCTION FILTER DRAIN	1C11D010A&B 2C11D010A&B				921-0626-00000 (D-2)(E-2) (D-13)(E-13)	
C-6	CASK PIT DRAIN PUMP DRAIN	0G41C004				921-0626-00000 (E-7)	
C-7	CONTAINMENT CHILLER PUMP DRAIN	0P50C001A,B,&C				921-0628-00000 (F-9)(G-12) 921-0629-00000 (G-4)	
C-8	FUEL TRANSFER TUBE DRAIN TANK DRAIN	0G41A003				921-0629-00000 (G-4)	
C-9	FUEL TRANSFER TUBE DRAIN PUMP DRAIN	0G41C005A&B				921-0629-00000 (H-4)	
C-10	CIRCULATING PUMP DRAIN	0G41C003A&B				921-0628-00000 (H-12)(H-13)	
C-11	SEAL WATER DRAIN	————				921-0628-00000 (E-11)	
C-12	FUEL POOL COOLING & CLEAN-UP SURGE TANK OVERFLOW	0G41A002A&B				921-0632-00000 (C-6)(C-11)	
C-13	FUEL POOL COOLING & CLEAN-UP SYSTEM HOLDING PUMP DRAIN	0G41C001A&B				921-0633-00000 (E-11)(E-12)	
C-14	FUEL POOL COOLING & CLEAN-UP SYSTEM POST FILTER DRAIN	0G41D002A&B				921-0633-00000 (F-11)(F-12)	
C-15	FUEL POOL COOLING & CLEAN-UP HEAT EXCHANGER DRAIN	0G41B001A&B				921-0633-00000 (H-12) 921-0634-00000 (H-4)	



INTERMEDIATE BLDG. CLEAN RADWASTE EQUIPMENT DRAINS

NOTES:

1. FOR LEGEND AND ABBREVIATIONS, SEE DRAWING 911-0005-00000

REFERENCES:

302-0655-00000	FUEL POOL COOLING & CLEANUP SYSTEM G41
515-0083-00000	FUEL HANDLING BUILDING LINER PLATE DETAILS FOR FUEL CASK STORAGE PIT
911-0005-00000	LUBE OIL AREA, TURBINE LAYDOWN AND WATER TREATMENT BUILDING DRAINS P68

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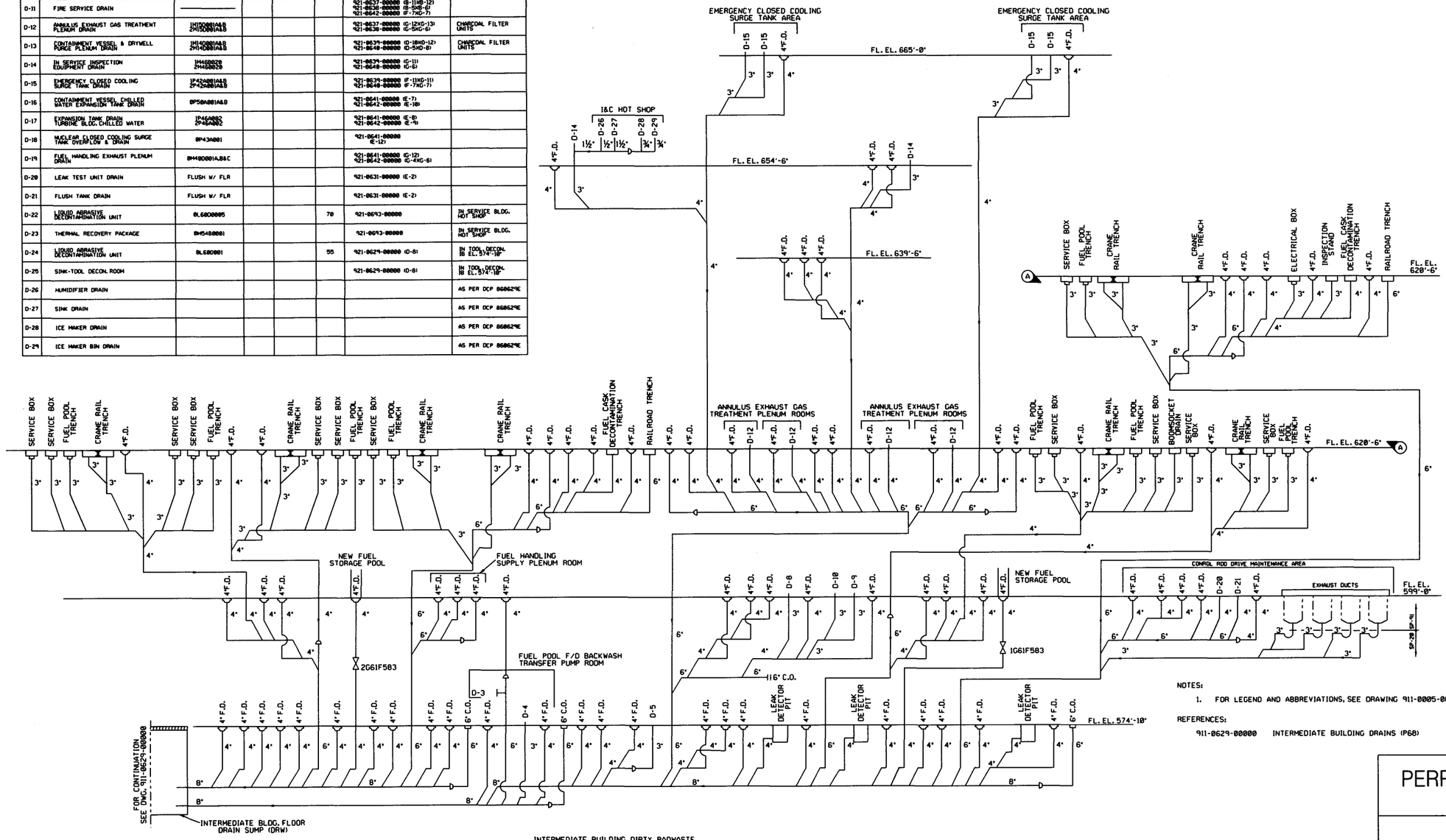
INTERMEDIATE BUILDING
CLEAN RADWASTE DRAINS
FIGURE 9.3-12
(DWG. D-911-0627-00000)

	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE(GPM)	BATCH (GAL)	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
D-1	MISCELLANEOUS DRW DRAIN	———				921-0628-00000 (B-3)(B-6)(B-12) 921-0629-00000 (B-8)	
D-2	FUEL POOL F/D BACKWASH RECEIVING TANK OVERFLOW & DRAIN	0C50A022				921-0628-00000 (D-12)	
D-3	FUEL POOL F/D BACKWASH RECEIVING TANK DRAIN	0C50A022				921-0628-00000 (E-11)	
D-4	FUEL POOL F/D BACKWASH TRANSFER PUMP DRAIN	0C50C027				921-0628-00000 (E-11)	
D-5	CHEMICAL FEED LINE DRAIN	———				921-0628-00000 (G-13)	
D-6	NUCLEAR CLOSED COOLING WATER SAMPLE DRAIN	———				921-0633-00000 (D-5)(D-11) 921-0634-00000 (D-5)(D-7)(D-13)	
D-7	SCULLERY SINK DRAIN	———				921-0633-00000 (D-4)	LOCATED IN HOT I&C REPAIR SHOP
D-8	FUEL POOL COOLING & CLEAN-UP SYS. BODY FEED TANK DRAIN	0C41D004				921-0633-00000 (G-12)	
D-9	FUEL POOL COOLING & CLEAN-UP SYS. PRECOAT PUMP DRAIN	0C41C002				921-0633-00000 (F-12)	
D-10	FUEL POOL COOLING & CLEAN-UP SYS. PRECOAT TANK DRAIN	0C41A001				921-0633-00000 (F-13)	
D-11	FIRE SERVICE DRAIN	———				921-0637-00000 (B-11)(B-12) 921-0638-00000 (B-5)(B-6) 921-0642-00000 (F-7)(G-7)	
D-12	ANNULUS EXHAUST GAS TREATMENT PLENUM DRAIN	1H15D001A&B 2H15D001A&B				921-0637-00000 (G-12)(G-13) 921-0638-00000 (G-5)(G-6)	CHARCOAL FILTER UNITS
D-13	CONTAINMENT VESSEL & DRYWELL PURGE PLENUM DRAIN	1H14D001A&B 2H14D001A&B				921-0639-00000 (D-18)(D-12) 921-0640-00000 (D-5)(D-8)	CHARCOAL FILTER UNITS
D-14	IN SERVICE INSPECTION EQUIPMENT DRAIN	1H46B028 2H46B028				921-0639-00000 (D-1) 921-0640-00000 (D-5)	
D-15	EMERGENCY CLOSED COOLING SURGE TANK DRAIN	1P42A001A&B 2P42A001A&B				921-0639-00000 (F-11)(G-11) 921-0640-00000 (F-7)(G-7)	
D-16	CONTAINMENT VESSEL CHILLED WATER EXPANSION TANK DRAIN	0P58A001A&B				921-0641-00000 (E-7) 921-0642-00000 (E-18)	
D-17	EXPANSION TANK DRAIN TURBINE BLDG. CHILLED WATER	1P46A003 2P46A003				921-0641-00000 (E-8) 921-0642-00000 (E-9)	
D-18	NUCLEAR CLOSED COOLING SURGE TANK OVERFLOW & DRAIN	0P43A001				921-0641-00000 (E-12)	
D-19	FUEL HANDLING EXHAUST PLENUM DRAIN	0H48D001A,B&C				921-0641-00000 (G-12) 921-0642-00000 (G-4)(G-6)	
D-20	LEAK TEST UNIT DRAIN	FLUSH W/ FLR				921-0631-00000 (E-2)	
D-21	FLUSH TANK DRAIN	FLUSH W/ FLR				921-0631-00000 (E-2)	
D-22	LIQUID ABRASIVE DECONTAMINATION UNIT	0L68D0005			70	921-0693-00000	IN SERVICE BLDG. HOT SHOP
D-23	THERMAL RECOVERY PACKAGE	0H54B0001				921-0693-00000	IN SERVICE BLDG. HOT SHOP
D-24	LIQUID ABRASIVE DECONTAMINATION UNIT	0L68D001			55	921-0629-00000 (D-8)	IN TOOL DECON. BL EL. 574'-10"
D-25	SINK-TOOL DECON. ROOM					921-0629-00000 (D-8)	IN TOOL DECON. BL EL. 574'-10"
D-26	HUMIDIFIER DRAIN						AS PER DCP 86862"E
D-27	SINK DRAIN						AS PER DCP 86862"E
D-28	ICE MAKER DRAIN						AS PER DCP 86862"E
D-29	ICE MAKER BIN DRAIN						AS PER DCP 86862"E



NOTES:

1. FOR LEGEND AND ABBREVIATIONS, SEE DRAWING 911-0005-00000.

REFERENCES:

911-0629-00000 INTERMEDIATE BUILDING DRAINS (P&B)

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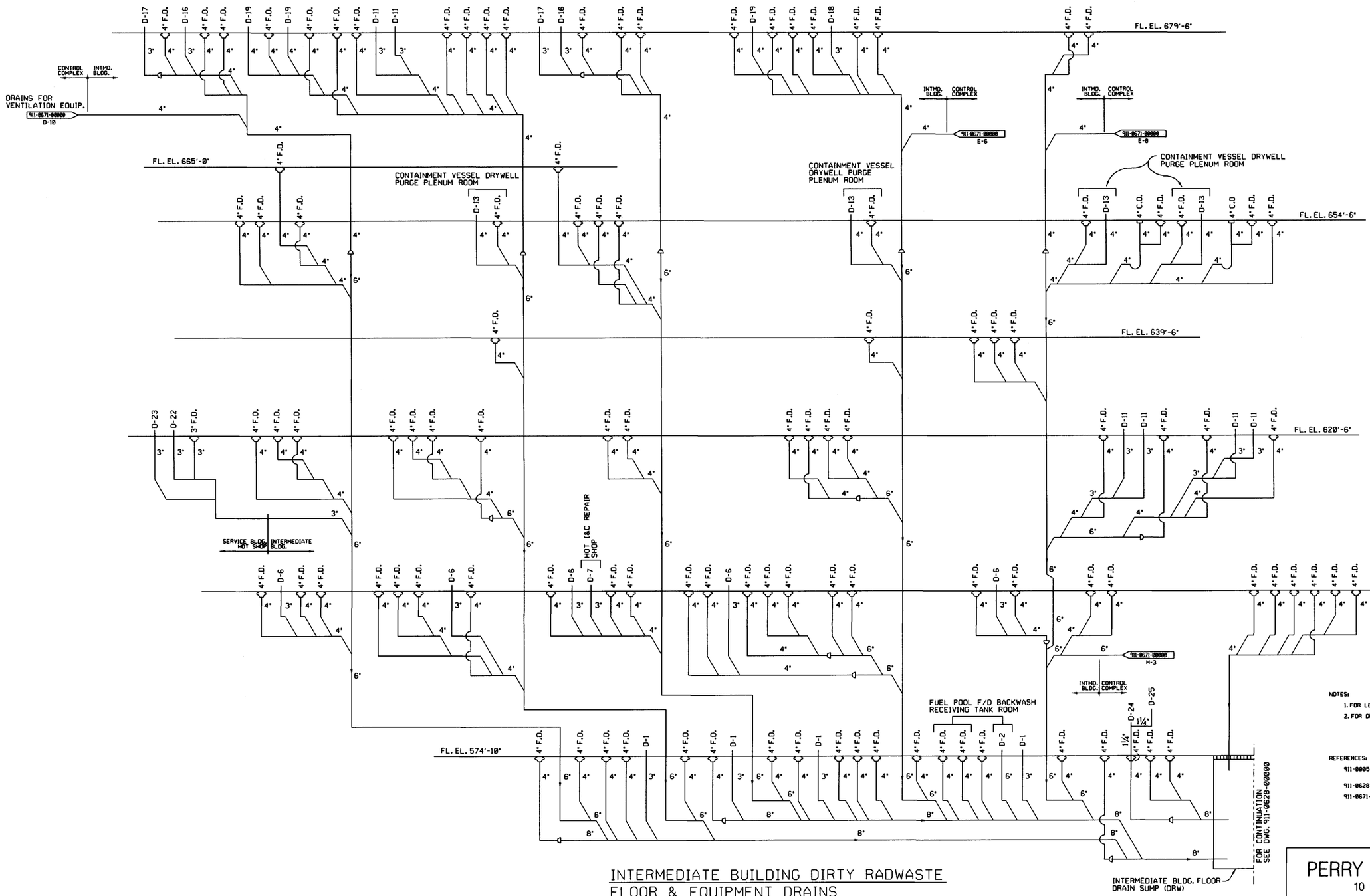
INTERMEDIATE BUILDING
DIRTY RADWASTE FLOOR AND
EQUIPMENT DRAINS, UNITS 1 & 2
FIGURE 9.3-13
(DWG. D-911-628-00000)



INTERMEDIATE BUILDING DIRTY RADWASTE
FLOOR & EQUIPMENT DRAINS

NOTES:

1. FOR LEGEND AND ABBREVIATIONS, SEE DWG. 911-8005-00000.
2. FOR DRAIN DESCRIPTION CHART, SEE DWG. 911-8628-00000.

REFERENCES:

911-8005-00000	LUBE OIL AREA, TURBINE LAYDOWN AND WATER TREATMENT BUILDING P&B
911-8628-00000	INTERMEDIATE BUILDING DRAINS P&B
911-8671-00000	CONTROL COMPLEX DRAINS P&B

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
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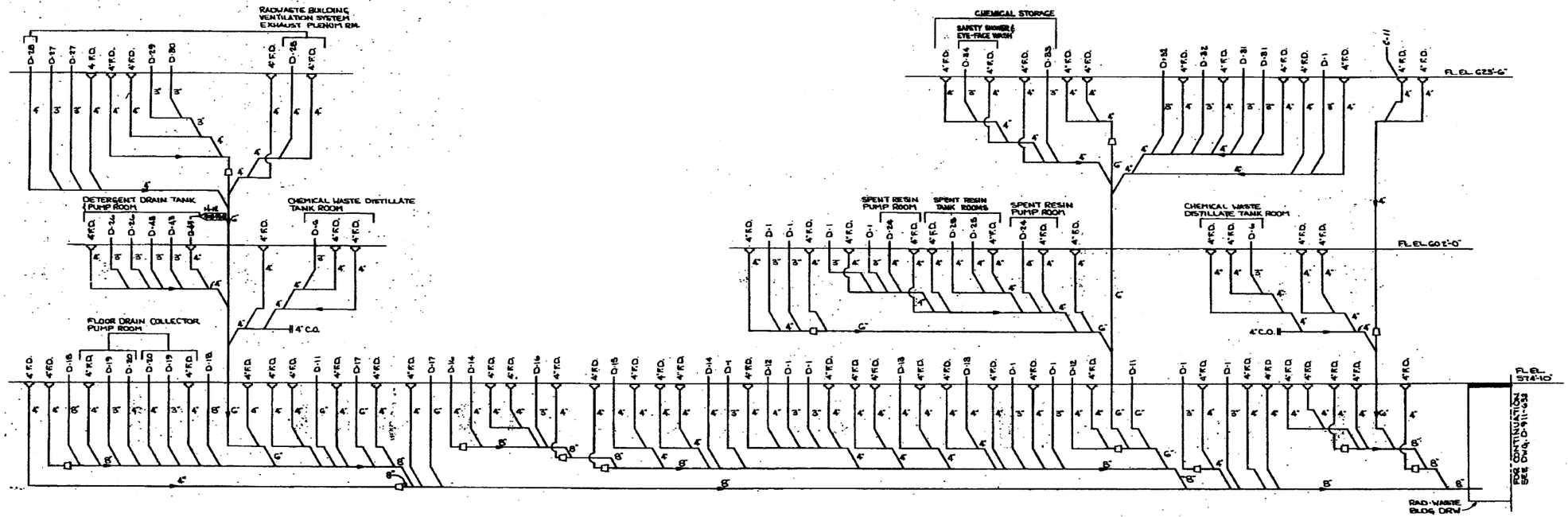
INTERMEDIATE BUILDING DIRTY RADWASTE FLOOR AND EQUIPMENT DRAINS, UNITS1 AND 2
FIGURE 9.3-14
(DWG. D-911-0629-00000)

	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. / COOR. LOCATION	REMARKS
D-1	SAMPLE DRAIN	——				D-921-[illegible]	
D-2	CONDENSATE FILTER BACKWASH SETTLING TK. "B" OVERFLOW & DR. (CBST)	G50A011B				D-921-G52 (F-C)	
D-3	CONDENSATE FILTER BACKWASH SETTLING TK. "B" FLUSH & PUMP DR. (CBST)	G50C010B				D-921-G52 (E-D)	
D-4	CONDENSATE FILTER BACKWASH SETTLING TK. "A" OVERFLOW & DR. (CBST)	G50A011A				D-921-G52 (C-5)	
D-5	CONDENSATE FILTER BACKWASH SETTLING TK. "A" FLUSH & PUMP DR. (CBST)	G50C010A				D-921-G52 (D-7)	
D-6	CHEMICAL WASTE DISTILLATE PUMP DRAIN	G50C006A|B				D-921-G54 (E-7)(E-9)	
D-7	CHEMICAL WASTE TANK "A" OVERFLOW DRAIN (CWT)	G50A005A				D-921-G53 (C-8)	
D-8	CHEMICAL WASTE PUMP SEAL DRAIN	G50C005A|B				D-921-G53 (B-8)(B-9)	
D-9	CHEMICAL WASTE TANK & PUMP DRAIN (CWT)	G50A005A|B & G50C005A|B				D-921-G58 (B-8)(B-9)	
D-10	CHEMICAL WASTE TANK "B" OVERFLOW DRAIN (CWT)	G50A006B				D-921-G53 (C-10)	
D-11	FUEL POOL F/D BACKWASH SETTLING TK. OVERFLOW & DR. (FPST)	G50A014A|B				D-921-G51 (D-11) D-921-G62 (G-10)	
D-12	RWCU F/D BACKWASH SETTLING TANK OVERFLOW & DRAIN (FBST)	G50A013A|B				D-921-G52 (C-10)(E-10)	
D-13	RWCU F/D BACKWASH SETTLING PUMP DRAIN & FLUSH (FBST)	G50C013A|B				D-921-G52 (C-9) (E-9)	
D-14	FLOOR DRAIN SAMPLE TANK OVERFLOW DRAIN (FDST)	G50A004A|B				D-921-G63 (E-10)(H-10)	
D-15	FLOOR DRAIN SAMPLE TANK "B" DRAIN (FDST)	G50A004B				D-921-G53 (F-10)	
D-16	FLOOR DRAIN SAMPLE PUMP DRAIN (FDST)	G50C004A|B				D-921-G53 (E-9)	
D-17	FUEL POOL SLUDGE DECHARGE MIXING PUMP DRAIN & FLUSH CONN.	G50C015A|B				D-921-G51 (C-9) D-921-G52 (H-9)	
D-18	FLOOR DRAIN COLLECTOR TANK OVERFLOW & DRAIN (FDCT)	G50A003A|B				D-921-G51 (E-11)(H-11)	
D-19	FLOOR DRAIN COLLECTOR PUMP DRAIN	G50C003A|B				D-921-G51 (F-10)(G-10)	

	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. / COOR. LOCATION	REMARKS
D-20	FLOOR DRAIN COLLECTOR TANK "B" FLUSH DRAIN	G50A003A|B				D-921-G51 (F-10)(G-10)	
D-21	CONDENSATE RETURN PUMP DRAIN	PG1C004A|B|C|D				D-921-G56 (G-8)(H-8)	
D-22	CONDENSATE RETURN TANK DRAIN	——				D-921-G56 (H-9)	
D-23	CONCENTRATED WASTE TRANSFER PUMP DRAIN	G50-C026A|B				D-921-G55 (D-7)(E-7)	
D-24	SPENT RESIN PUMP DRAIN	G50-C008A|B				D-921-G65 (D-3)(E-3)	
D-25	SPENT RESIN TANK OVERFLOW DRAIN	G50-A009A|B				D-921-G65 (D-12)(E-12)	
D-26	DETERGENT DRAIN FILTERS DRAIN	G50 D005A|B				D-921-G54 (C-12)(D-12)	
D-27	FIRE SERVICE DRAINS	——				D-921-G57|G59 (E-11)|(H-11)	
D-28	RADWASTE BUILDING VENTILATION SYSTEM EXHAUST PLENUM DR.	M31-D001A|B				D-921-G57 (G-10)(G-11)	CHARCOAL FILTER UNITS
D-29	SUPPRESSION POOL DEMINERALIZER OVERFLOW & VENT DR.	G42-D002				D-921-G57 (C-11)	
D-30	SUPPRESSION POOL DEMINERALIZER TANK DRAIN	G42-D002				D-921-G57 (C-11)	
D-31	WASTE DEMINERALITER TANK OVERFLOW & DRAIN	G50-D003				D-921-G56 (C-11)(D-11)	
D-32	FLOOR DRAIN DEMINERALITER TANK OVERFLOW & DRAIN	G50-D004				D-921-G58 (E-11)	
D-33	RESIN FEED TANK DRAIN	G50-A016				D-921-G58 (F-11)	
D-34	SAFETY EYE WASH DRAIN	——				D-921-G58 (G-10)	
D-35	RELIEF VALVE DRAIN	——				D-921-G56 (B-5)(D-5)	VALVE # FS79 A|B
D-36	SODIUM SILICATE FEED PUMP DRAIN	G51-C004				D-921-G39 (B-9)	
D-37	FILTER AID TANK DRAIN	G50-A017				D-921-G60 (G-9)	
D-38	FILTER PRECOAT TANK DRAIN	G50-A015				D-921-G60 (G-10)	

	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. / COOR. LOCATION	REMARKS
D-39	FLOOR DRAIN FILTRATE TANK DRAIN	G50-A025				D-921-G60 (B-11)	
D-40	FLOOR DRAIN FILTER DRAIN	G50-D002				D-921-G60 (D-10)	
D-41	WASTE/CEMENT MIXING PUMP DRAIN	G51-C005A|B				D-921-G60 (E-5)(E-3)	
D-42	WASTE MIXING DEWATERING TANK DRAIN	G51-A001A|B				D-921-G60 (F-3)(F-4)	
D-43	DETERGENT DRAIN PUMP DRAIN	G50-C007A|B				D-921-G54 (C-11)(D-11)	
D-44	WASTE COLLECTOR FILTER DRAIN	G50-D001				D-921-G60 (D-9)	
D-45	CHEMWASHT DRAIN TANK DRAIN	G50-A003B A|B			1600	D-921-G64 (E-10)	1600 GAL AN TANK DRAINS AND FINAL RINSING EFFLUENT
C-1	RWCU SLUDGE DECANT PUMP DRAIN	G50-C014A|B				D-921-G62 (D-7)(E-9)	
C-2	CONDENSATE SLUDGE DECANT PUMP DRAIN	G50-C011A|B				D-921-G62 (C-4)(C-5)	
C-3	WASTE SAMPLE PUMP DRAIN	G50-C002A|B				D-921-G53 (G-8)(H-8)	
C-4	WASTE SAMPLE TANK "B" OVERFLOW & DRAIN (WST)	G50-A002B				D-921-G65 (H-1)	
C-5	WASTE SAMPLE TANK "A" DRAIN (WST)	G50-A002A				D-921-G53 (F-7)	
C-6	WASTE SAMPLE TANK "A" OVERFLOW DRAIN	G50-A002A				D-921-G53 (E-8)	
C-7	FUEL POOL SLUDGE DECANT PUMP DRAIN	G50-C014A|B				D-921-G51 (G-7) (H-8)	
C-8	WASTE COLLECTOR TANK OVERFLOW & DRAIN (WCT)	G50-A001A|B				D-921-G51 (E-6)(H-6)	
C-9	WASTE COLLECTOR TRANSFER PUMP DRAIN	G50-C001A|B				D-921-G51 (F-7)(G-7)	
C-10	WASTE COLLECTOR TANK "A" & "B" FLUSH DRAIN	G50-A001A|B				D-921-G51 (F-11)(G-7)	
C-11	PROGRAMABLE CONTROL AREA HVAC CONDENSATE DRAIN	M48-B5002				D-922-[illegible] (D-5)	



RADWASTE BUILDING DIRTY RADWASTE FLOOR & EQUIPMENT DRAINS

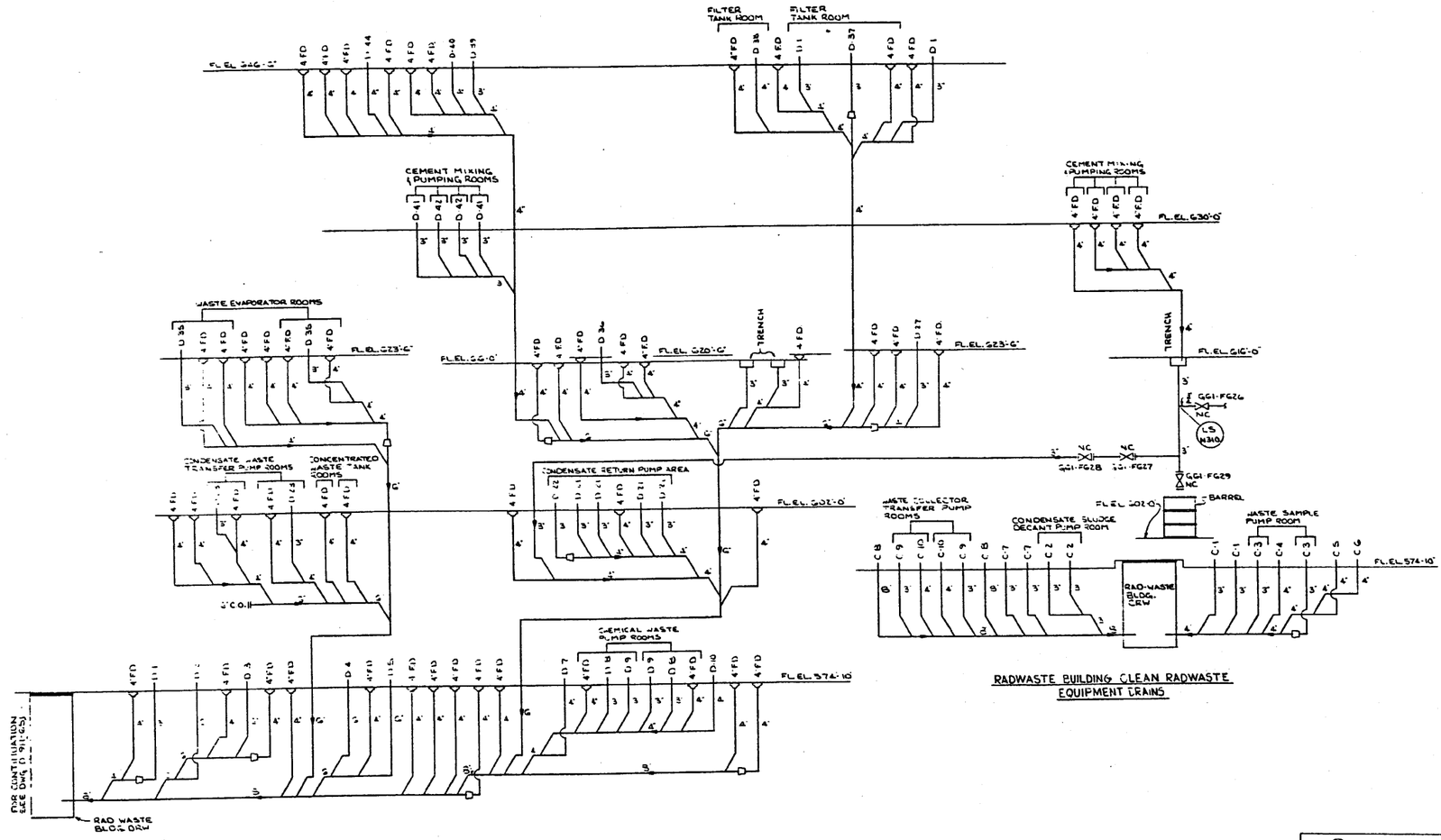
NOTES:
1. FOR LEGEND AND ABBREVIATIONS, SEE DRAWING D-911-000.

(Rev. 13 12/03)

PERRY NUCLEAR POWER PLANT

Radwaste Building Dirty Radwaste Floor and Equipment Drains

Figure 9.3-15
(Dwg. D-911-651)



RADWASTE BUILDING CLEAN RADWASTE EQUIPMENT DRAINS

RADWASTE BUILDING DIRTY RADWASTE FLOOR & EQUIPMENT DRAINS

NOTES:-
1. FOR LEGEND AND ABBREVIATIONS, SEE DWG. D-911-000.
2. FOR DRAIN DESCRIPTION CHART, SEE DWG. D-911-001.

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

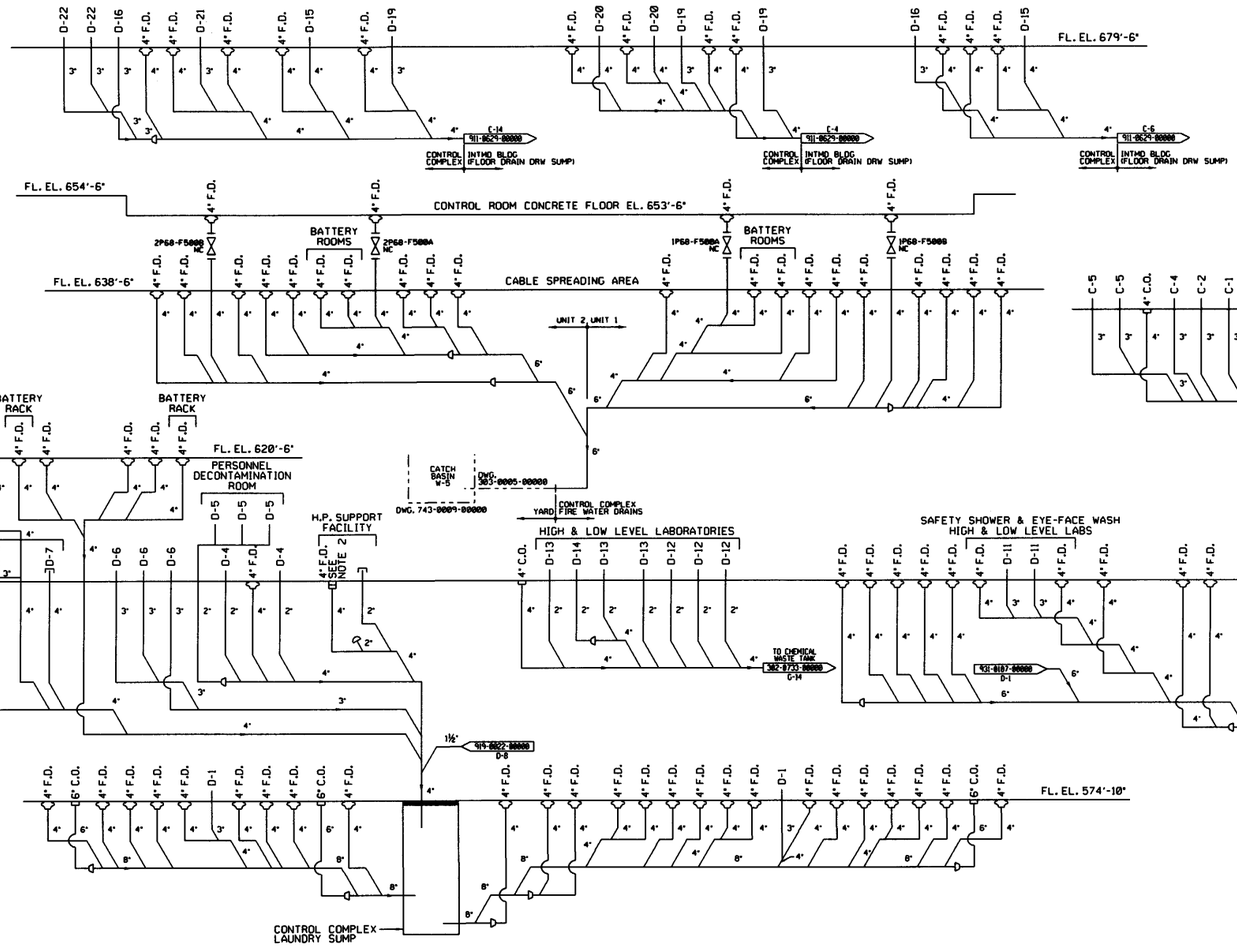
Radwaste Building Clean and Dirty Equipment Drains

Figure 9.3-16
(Dwg. D-911-652)

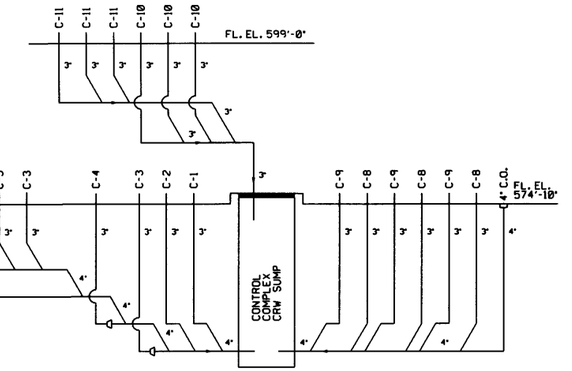
	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
D-1	EMERGENCY CLOSED COOLING HEAT EXCHANGER TUBE DRAIN	1P42-B001A&B 2P42-B001A&B				921-0671-00000 (C-9) (F-9)	
D-2	DELETED	---				921-0673-00000 (D-5)	IN H.P. SUPPORT FACILITY
D-3	DELETED	---				921-0673-00000 (C-7)	IN H.P. SUPPORT FACILITY
D-4	SHOWER DRAIN	---				921-0673-00000 (B-7)	IN PERSONNEL DECONTAMINATION ROOM
D-5	LAVATORY DRAIN	---				921-0673-00000 (B-7) (B-8)	IN PERSONNEL DECONTAMINATION ROOM
D-6	NUCLEAR CLOSED COOLING SYSTEM HEAT EXCHANGER TUBE DRAIN	P43-B001A,B&C				921-0673-00000 (E-7) (F-7) (H-7)	
D-7	WASHER DRAIN (CAPPED)	---				921-0673-00000 (G-13) (G-14)	IN RESPIRATORY CLEANING FACILITY
D-8	ULTRASONIC CLEANER DRAIN	---				921-0673-00000 (D-4)	IN SHOP FACILITY
D-9	NUCLEAR CLOSED COOLING SYSTEM RADIATION MONITOR DRAIN	D17-J008				921-0673-00000 (E-7)	
D-10	SPARE						
D-11	SAFETY EYE WASH DRAIN	---				921-0673-00000 (B-11) (D-11)	HIGH & LOW LEVEL LABORATORIES
D-12	LAB SINK DRAIN	---				921-0673-00000 (C-13) 921-0674-00000 (G-13) (H-13)	IN LOW LEVEL LAB.
D-13	LAB SINK DRAIN	---				921-0673-00000 (C-13) (D-12) (E-13)	IN HIGH LEVEL LAB.
D-14	LAB SINK DRAIN	---				921-0673-00000 (D-11)	IN MATH, PHYS, & RAD. PROTECTION SERVICE ROOM
D-15	CONTROL ACCESS AREA EXHAUST PLENUM	M21-D001A&B				921-0677-00000 (D-3) (D-13)	CHARCOAL FILTER FIRE WATER DRAIN
D-16	CHILLED WATER EXPANSION TANK DRAIN	P47-A002A&B				921-0678-00000 (C-5) (C-11)	
D-17	SCULLERY SINK DRAIN	---				919-0825-00000	IN RESPIRATORY CLEANING FACILITY
D-18	DISHWASHER DRAIN (CAPPED)	---				919-0825-00000	IN RESPIRATORY CLEANING FACILITY
D-19	CONDENSATE DRAIN FROM HUMIDIFIER	---				921-0677-00000 (C-8) (C-9) (C-11)	
D-20	CONTROL ROOM RECIRCULATION PLENUM	M25-D001A&B				921-0678-00000 (F-7) (F-8)	CHARCOAL FILTER FIRE WATER DRAIN
D-21	ELECTRIC STEAM BOILER DRAIN	M29-B001				921-0677-00000 (D-11)	
D-22	FIRE SERVICE DRAIN	---				921-0678-00000 (C-10) (C-11)	

	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
C-1	SERVICE AIR COMPRESSOR DRAIN	1P51-C001 2P51-C001				921-0671-00000 (C-3) (E-3)	
C-2	INSTRUMENT AIR COMPRESSOR DRAIN	1P52-C001 2P52-C001				921-0671-00000 (D-3) (F-3)	
C-3	SERVICE AIR COMPRESSOR RECEIVER TANK DRAIN	1P51-A001 2P51-A001				921-0671-00000 (E-5) (E-5)	
C-4	INSTRUMENT AIR COMPRESSOR RECEIVER TANK DRAIN	1P52-A001 2P52-A001				921-0671-00000 (D-5) (F-5)	
C-5	INSTRUMENT AIR DRYER DRAIN	1P52-D003A&B 2P52-D003A&B				921-0671-00000 (E-5) (E-5) (H-5) (H-5)	
C-6	EMERGENCY CLOSED COOLING HEAT EXCHANGER SHELL DRAIN	1P42-B001A&B 2P42-B001A&B				921-0671-00000 (C-9) (F-9)	
C-7	EMERGENCY CLOSED COOLING PUMP DRAIN	1P42-C001A&B 2P42-C001A&B				921-0671-00000 (C-12) (D-12) (E-12) (F-12)	
C-8	CONTROL COMPLEX WATER CHILLER DRAIN	P47-B001A,B&C				921-0672-00000 (C-5) (D-5) (D-12)	
C-9	CONTROL COMPLEX CHILLED WATER PUMP DRAIN	P47-C001A,B&C				921-0672-00000 (E-5) (E-5) (E-12)	
C-10	NUCLEAR CLOSED COOLING SYSTEM HEAT EXCHANGER SHELL DRAIN	P43-B001A,B&C				921-0673-00000 (E-3) (G-3) (H-3)	
C-11	NUCLEAR CLOSED COOLING PUMP DRAIN	P43-C001A,B&C				921-0673-00000 (F-11) (F-12) (F-13)	

VENTILATION EQUIPMENT ROOM



CONTROL COMPLEX DIRTY RADWASTE FLOOR & EQUIPMENT DRAINS



CONTROL COMPLEX CLEAN RADWASTE EQUIPMENT DRAINS

NOTES:
1. FOR LEGEND AND ABBREVIATIONS, SEE DRAWING 911-0005-00000.
2. PLUGGED AND GROUTED FLUSH WITH THE FLOOR.

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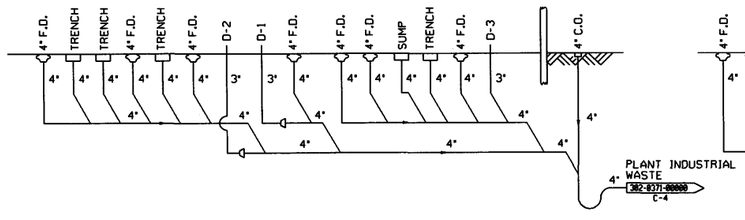
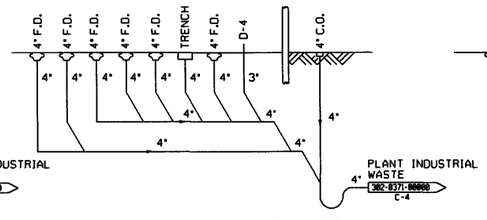
CONTROL COMPLEX DIRTY RADWASTE FLOOR AND EQUIPMENT DRAIN
FIGURE 9.3-17
(DWG. D-911-0671-00000)

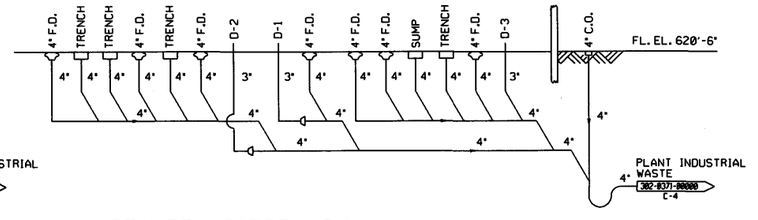
	DRAIN DESCRIPTION	EQPT. NO.	DAILY (GPD)	MAX. FLOW RATE (GPM)	BATCH (GAL)	SYSTEM DWG. NO. & COOR. LOCATION	REMARKS
D-1	STARTING AIR COMPRESSOR DRAIN	1R44C001A&B 1R44C002A&B				921-0691-00000 (B-7)(B-12)	
		2R44C001A&B 2R44C002A&B				921-0692-00000 (B-8)(B-12)	
D-2	AIR DRYER DRAIN	1R44D001A&B 1R44D002A&B				921-0691-00000 (C-8)(C-13)	
		2R44D001A&B 2R44D002A&B				921-0692-00000 (B-9)(B-13)	
D-3	STANDBY DIESEL GENERATOR DRAIN	1R43S001A&B 2R43S001A&B				921-0691-00000 (C-6)(C-11) 921-0692-00000 (C-7)(C-11)	
D-4	HPCS DIESEL FUEL OIL TRANSFER PUMP DRAIN	1R45C001C 1R45C002C				921-0691-00000 (C-8)	
		2R45C001C 2R45C002C				921-0692-00000 (C-9)	



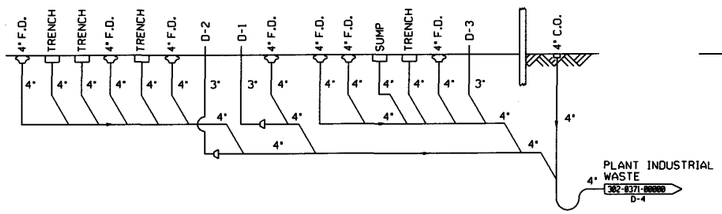
STANDBY DIESEL GENERATOR
(2R43-S001A)



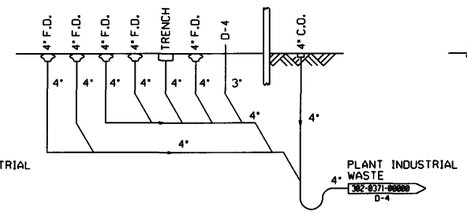
HPCS DIESEL GENERATOR
(2E22-S001)



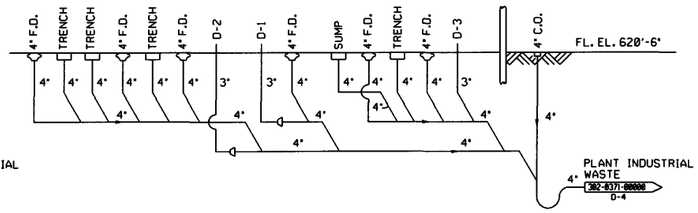
STANDBY DIESEL GENERATOR
(2R43-S001B)



STANDBY DIESEL GENERATOR
(1R43-S001A)



HPCS DIESEL GENERATOR
(1E22-S001)



STANDBY DIESEL GENERATOR
(1R43-S001B)

NOTES:

1. FOR LEGEND AND ABBREVIATIONS, SEE DRAWING 911-0005-00000.

REFERENCES:

302-0371-00000 PLANT INDUSTRIAL WASTE PG4

911-0005-00000 LUBE OIL AREA, TURBINE LAYDOWN AND WATER TREATMENT BUILDING PG8

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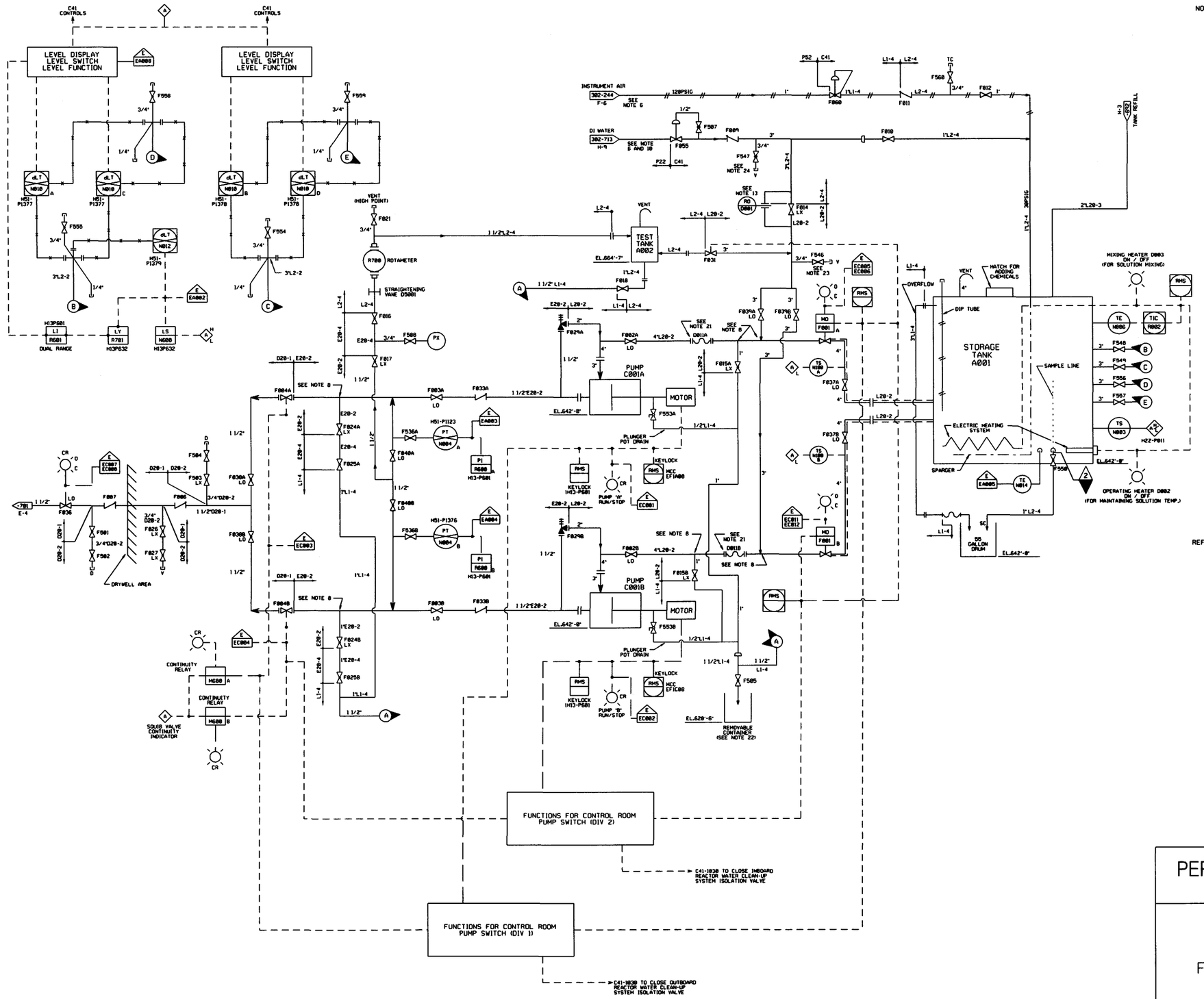
DIESEL GENERATOR
BUILDING DRAIN
FIGURE 9.3-18
(DWG. D-911-0691-00000)



NOTES:

1. EXCEPT AT POINTS OF CONNECTION WITH GE NED SUPPLIED EQUIPMENT OR PIPING, THE PIPING DESIGNER SHALL SIZE PIPES IN CONFORMANCE WITH THE SYSTEM DESIGN SPECIFICATION.
2. INSTRUMENT PIPING AND VALVING SHALL BE INSTALLED IN ACCORDANCE WITH A62-4878.
3. PIPING HIGH POINT VENTS AND LOW POINT DRAINS ARE TO BE ADDED AT ALL SUCH HIGH OR LOW POINTS NOT SERVED BY EQUIPMENT VENTS AND DRAINS.
4. ALL EQUIPMENT AND INSTRUMENTS ARE PREFIXED BY C41, UNLESS OTHERWISE NOTED.
5. DRAINS SHOULD BE ROUTED TO A COMMON COLLECTION AREA. MANIFOLDING OF DRAIN LINES, WHERE PRACTICAL, IS PERMISSIBLE. SPACE SHALL BE PROVIDED IN COLLECTION AREA FOR REMOVABLE TYPE CONTAINERS, SUCH AS 55 GALLON DRUMS.
6. THE ELEVATION OF THE DEMINERALIZER WATER AND PLANT AIR SUPPLY LINES SHALL BE ABOVE THE TOP OF THE STORAGE TANK.
7. FOR LOCATION AND IDENTIFICATION OF INSTRUMENTS, SEE INSTRUMENT DATA SHEET LISTED IN MPL FOR EACH INSTRUMENT.
8. FLUSHING CONNECTIONS (SUPPLY & DRAIN) SHALL BE LOCATED TO ALLOW FOR MAXIMUM SYSTEM FLUSH & DRAIN & SHALL BE PROVIDED IN ACCORDANCE WITH A62-4148. TEMPORARY STRAINER SCREENS SHALL BE PROVIDED ON THE SUCTION SIDE OF ALL PUMPS IN ACCORDANCE WITH A62-4148.
9. DELETED.
10. THE DEMINERALIZER WATER SUPPLY SHALL HAVE PRESSURE HIGHER THAN THE STATIC PRESSURE OF THE STORAGE TANK SOLUTION, BUT NOT TOO HIGH TO CAUSE LEAKAGE OR BACK FLOW THROUGH VALVES F806A & B INTO THE STORAGE TANK WHILE THESE VALVES ARE NORMALLY CLOSED.
11. THE LINE BETWEEN THE TANK & THE VALVES F801A & B SHALL BE MINIMUM TO PREVENT PRECIPITATION OF SOLUTION, OR A HEAT TRACING DEVICE BEING SUPPLIED BY PIPING DESIGNER AS REQUIRED.
12. THE SUCTION PIPING SHALL BE SIZED SUCH THAT THE AVAILABLE NPSH AT PUMP INLET NOZZLE IS AS SPECIFIED IN THE DATA SHEET (REFER TO 22A6893).
13. THE RESTRICTING ORIFICE D001 SHALL BE SIZED DURING PREOPERATIONAL TEST. IT SHALL BE LARGE ENOUGH TO PASS SUFFICIENT FLOW TO MAKEUP ALL LEAKAGE OF EQUIPMENT, BUT NOT BE SO LARGE THAT IT WILL CAUSE VARIATION IN THE BORON INJECTION RATE.
    REFER TO CALCULATION C41-014 FOR EVALUATION DETAILS.
14. PIPING DESIGNER HAS DETERMINED THAT INSTALLATION OF ACCUMULATORS IN PUMP DISCHARGE PIPING IS NOT REQUIRED TO ASSURE THE DISCHARGE PIPING INTEGRITY.
15. CONNECTION TO HPCS SYSTEM SHALL BE DOWNSTREAM OF THE INBOARD TESTABLE CHECK VALVE AND SHALL HAVE DRAINAGE CAPABILITY. SEE NOTES 3 AND 5.
16. THE SLCS MAKEUP SUBSYSTEM SHALL CONSIST OF A MIXING TANK, PUMP, CHECK VALVE, & A LOCKED CLOSED MANUAL VALVE FOR CONTAINMENT ISOLATION.
17. THE VALVES F837 SHALL BE LOCATED AS CLOSE AS POSSIBLE TO MOTOR OPERATED VALVES F801.
18. DELETED.
19. THIS SYSTEM DIAGRAM IS A PHOTOGRAPHIC REPRODUCTION OF G.E. DWG. 76E413CA SPECIFIC REVISION IS SHOWN BENEATH TITLE BLOCK.
20. THE INSTRUMENT LINE BETWEEN THE INSTRUMENT SENSORS AND THE STORAGE TANK SHALL BE AS SHORT AS POSSIBLE TO PREVENT PRECIPITATION OF BORON SOLUTION IN THE LINE OR HEAT TRACING SHALL BE SUPPLIED AS REQUIRED.
21. AFTER FLUSHING/TESTING SYSTEM AND BEFORE PLANT OPERATION, REMOVE TEMPORARY STRAINERS D8044, D8048, AND FLANGED SPOOL SECTIONS. REPLACE WITH METAL BELLOWS D011A AND D011B.
22. CONTAINER AT 620'- 6" ELEVATION IS USED FOR DRAINING PURPOSES ONLY AND SHALL NOT BE PERMANENTLY INSTALLED DURING OPERATING MODES 1, 2, AND 3.
23. MAKE PRESSURE GAUGE MAY BE UTILIZED AT VENT VALVE F8046. OBTAIN PRESSURE READING THROUGH MOMENTARY OPENING OF VENT VALVE ONLY. REFERENCE DCN 4987.
24. HOSE MAY BE UTILIZED AT VENT VALVE F8547 TO DIRECT LEAK-OFF FROM VENT VALVE TO FLOOR DRAINS. REFERENCE DCN 4987.

REFERENCES:

D-302-241	SERVICE & INSTRUMENT AIR SYSTEM P51, P52.
D-302-781	HIGH PRESSURE CORE SPRAY SYSTEM, E22.
D-302-713	MIXED BED DEMINERALIZER WATER SYSTEM, P22.
A62-1810	PIPING & INSTRUMENT SYMBOLS DRAWING.
A62-4878	PROCESS INSTRUMENTATION.
A62-4148	CLEANING OF PIPING AND EQUIPMENT.
C41-1030	SLC SYSTEM FCD (REF. DWG. 4549-11-033).
C41-4810	SLC SYS. DESIGN SPEC. (REF. GEDSP 22A6893).

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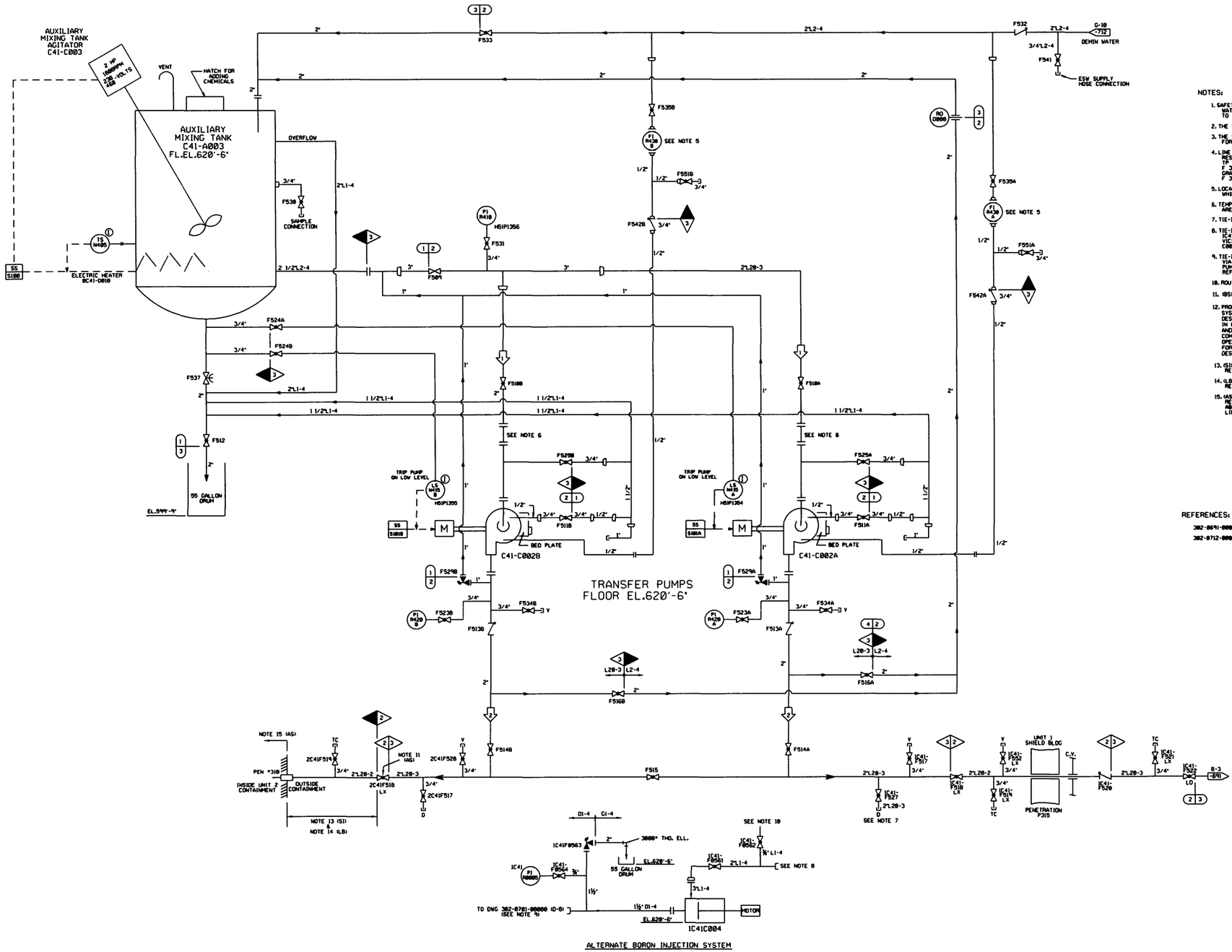
STANDBY LIQUID CONTROL SYSTEM

FIGURE 9.3-19 (SHEET 1 OF 2)

(DWG. D-302-0691-00000)



OPERATING DATA

SEE NOTE 12

	PSIG	GPM	°F	BY	REMARKS	REV
1	4	20	150	DRL		
2	32	20	150	DRL		

DESIGN DATA

	NORMAL		UPSET			BY	CHKD	REMARKS	REV
	PSIG	°F	PSIG	°F	TIME				
1	40	150				DRL		STATIC HEAD	A
2	150	150				DRL			A
3	ATM	150				DRL			A

NOTES:

1. SAFETY SUPPLY OF WATER WILL BE FROM THE EMERGENCY SERVICE WATER SYSTEM (P45). HOSE WILL BE USED TO SUPPLY THIS LATER TO THE MIXING TANK.
2. THE MIXING TANK IS NON-SAFETY CLASS, SEISMIC CATEGORY I.
3. THE STRAINERS SHOWN ARE TEMPORARY AND ARE USED ONLY FOR START-UP.
4. LINE CLASS L20-2 AND L20-3 ARE THE SAME AS L2-2 AND L2-3 RESPECTIVELY, EXCEPT PIPE MATERIAL TO BE SA-312, GRADE TP 316L, FITTING MATERIAL 2" AND UNDER TO BE SA-182, GRADE F 316L, FITTING MATERIAL 2-1/2" AND OVER TO BE SA-403, GRADE WP 316L AND FLANGE MATERIAL TO BE SA-182, GRADE F 316L. L20-2 AND L20-3 GASKETS TO BE FLEXATALLIC STYLE CG.
5. LOCATE VALVE SO THAT CORRESPONDING FI CAN BE OBSERVED WHILE ADJUSTING VALVE.
6. TEMPORARY STRAINERS D006 A & B, USED FOR START-UP ONLY, ARE REMOVED FOR PLANT OPERATION.
7. TIE-IN LOCATION FOR ALTERNATE BORON INJECTION SYSTEM.
8. TIE-IN TO STANDBY LIQUID CONTROL TRANSFER SYSTEM (VALVE 1C41-F527) VIA LOW PRESSURE HOSE 1C41-D0082 (STORED IN THE VICINITY OF PUMP C004). FOR DESIGN DATA UPSTREAM OF PUMP C004, REFER TO C41 DESIGN FLAG *2.
9. TIE-IN TO HIGH PRESSURE CORE SPRAY SYSTEM (VALVE 1E22-F031) VIA HIGH PRESSURE HOSE 1C41-D0083 (STORED IN THE VICINITY OF PUMP C004). FOR DESIGN DATA DOWNSTREAM OF PUMP C004, REFER TO E22 DESIGN FLAG *2.
10. ROUTE TO 55 GALLON DRUM VIA HOSE.
11. (BS) UNIT 1/2 BOUNDARY SEPRATION. FOR DETAILS SEE TAF 81653.
12. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
13. (SI) STRUCTURAL INTEGRITY BOUNDARY FOR ABANDONED, RETIRED IN PLACE SSC'S. FOR DETAILS SEE ECP 14-03748.
14. (LB) LICENSE RENEWAL LEAKAGE BOUNDARY FOR ABANDONED, RETIRED IN PLACE SSC'S. FOR DETAILS SEE ECP 14-03748.
15. (AS) ABANDONED SSC'S OUTSIDE THE SCOPE OF LICENSE RENEWAL CONFIGURATION CONTROL, NOT MAINTAINED FOR ABANDONED SSC'S (IF INSTALLED) OUTSIDE THE SCOPE OF LICENSE RENEWAL.

REFERENCES:

302-0691-00000	STANDBY LIQUID CONTROL SYSTEM C41, UNIT 1
302-0712-00000	TWO-BED WATER DEMINERALIZER & DISTRIBUTION SYSTEM, P21

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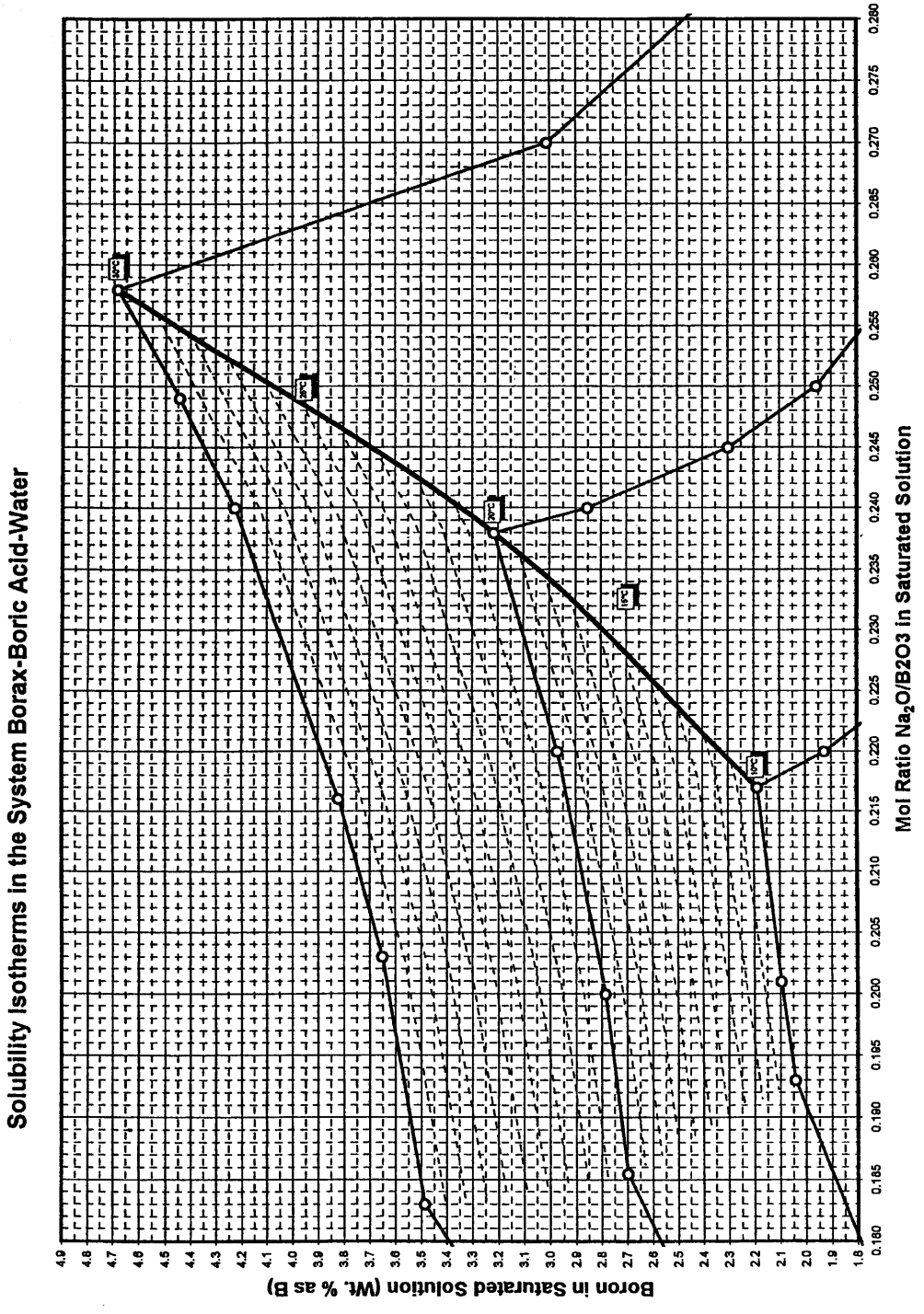
STANDBY LIQUID CONTROL SYSTEM

FIGURE 9.3-19 (SHEET 2 OF 2)

(DWG. D-302-0692-00000)

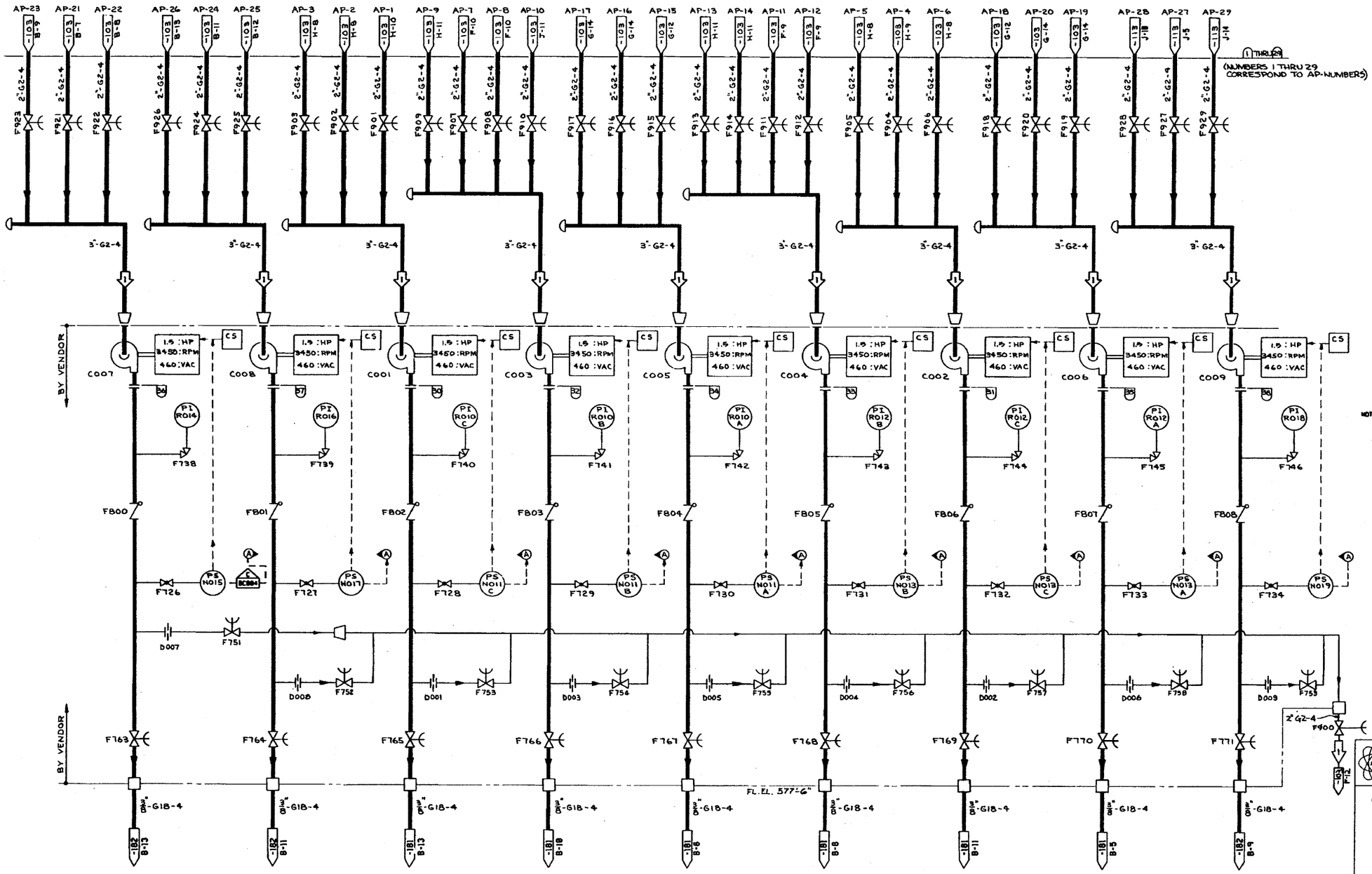


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Solubility Isotherms in the Standby Liquid Control System

Figure 9.3-20



OPERATING DATA

SEE NOTE 3

	PSIG	GPM	F	BY	REMARKS	REV
1	VAC	0			AP-1	
	↓	↓			THRU	
					AP-29	
2	10	67.5	100			

DESIGN DATA

P	NORMAL PSIG	NORMAL F	UPSET PSIG	UPSET F	UPSET TIME	BY	K_a	REMARKS	REV
1	VAC	135						AP-1	
THRU	↓	↓						THRU	
29								AP-29	
30	85	135							
THRU	↓	↓							
38									

REFERENCES:

302-0103-00000 CONDENSING SYSTEM
302-0113-00000 LOW PRESSURE HEATER DRAINS AND VENTS
302-0101-00000 TURBINE PLANT SAMPLING SYSTEM
302-0102-00000 TURBINE PLANT SAMPLING SYSTEM

NOTES:

1. ALL ITEM NUMBERS PREFIXED BY 1P33, UNLESS OTHERWISE NOTED.
2. ALL PUMP CONTROLS LOCATED ON PANEL H51-P328.
3. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.

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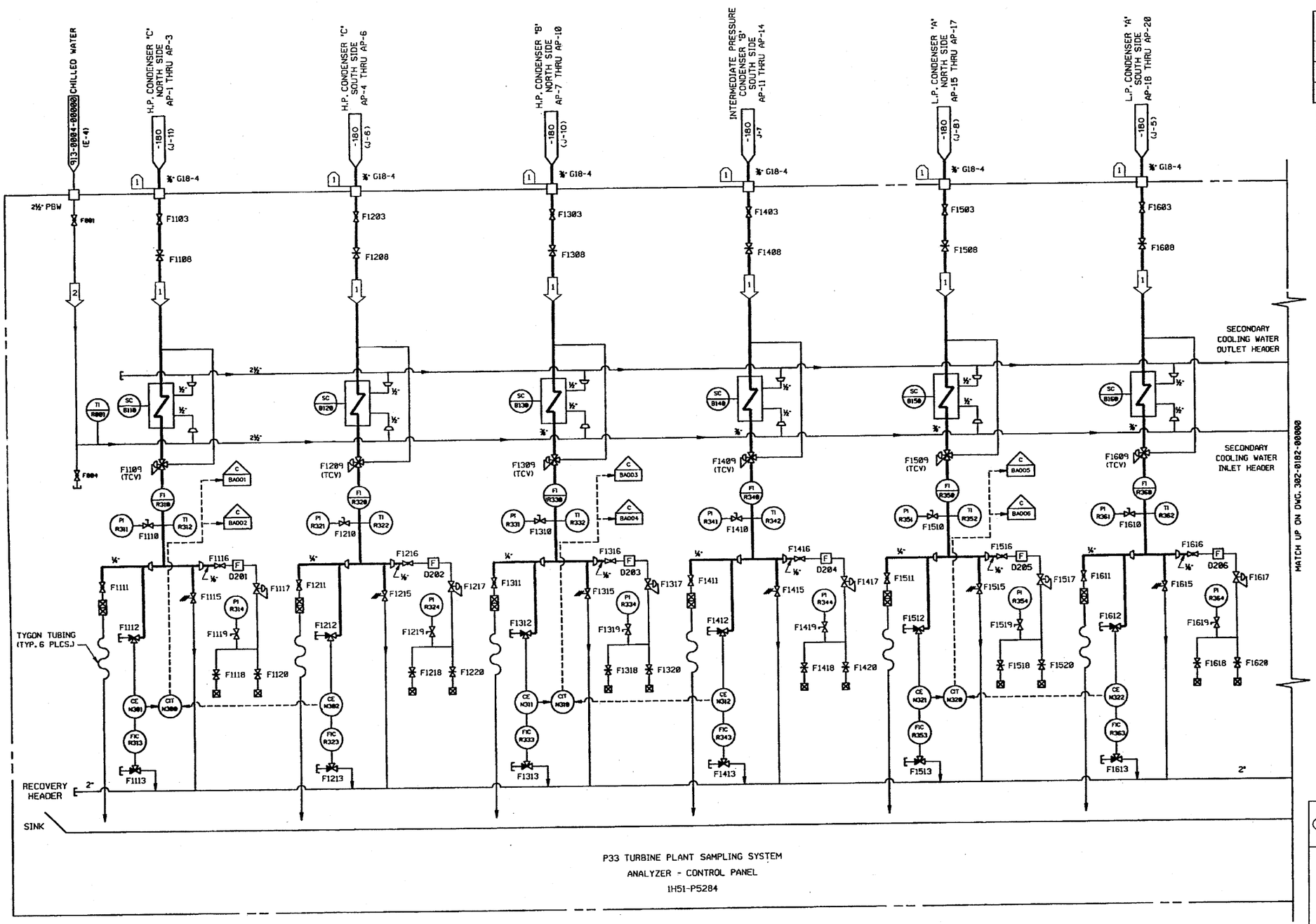
PERRY NUCLEAR POWER PLANT

Turbine Plant Sampling System

Figure 9.3-21

(Dwg. D-302-180)



OPERATING DATA SEE NOTE 3							
⇨	PSIG	GPM	CC/MIN	°F	BY	REMARKS	REV
1	25	--	1000	100		AP-1 - AP-20	
2	150	40	--	55		P46 CHILLED WATER	

DESIGN DATA									
Ⓟ	NORMAL		UPSET			BY	CKD	REMARKS	REV
	PSIG	°F	PSIG	°F	TIME				
1	85	135						SEE DWG. D-302-180 FOR AP-1 THRU AP-20	

NOTES:

1. ALL ITEM NUMBERS PREFIXED BY 1P33- UNLESS OTHERWISE NOTED.
2. REFER TO 302-0183-00000 FOR OTHER PERTINENT NOTES.
3. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.

REFERENCES:

302-0180-00000 TURBINE PLANT SAMPLING SYSTEM P33
302-0182-00000 TURBINE PLANT SAMPLING SYSTEM P33
913-0004-00000 TURBINE BUILDING CHILLED WATER SYSTEM P46

P33 TURBINE PLANT SAMPLING SYSTEM
ANALYZER - CONTROL PANEL
1H51-P5284

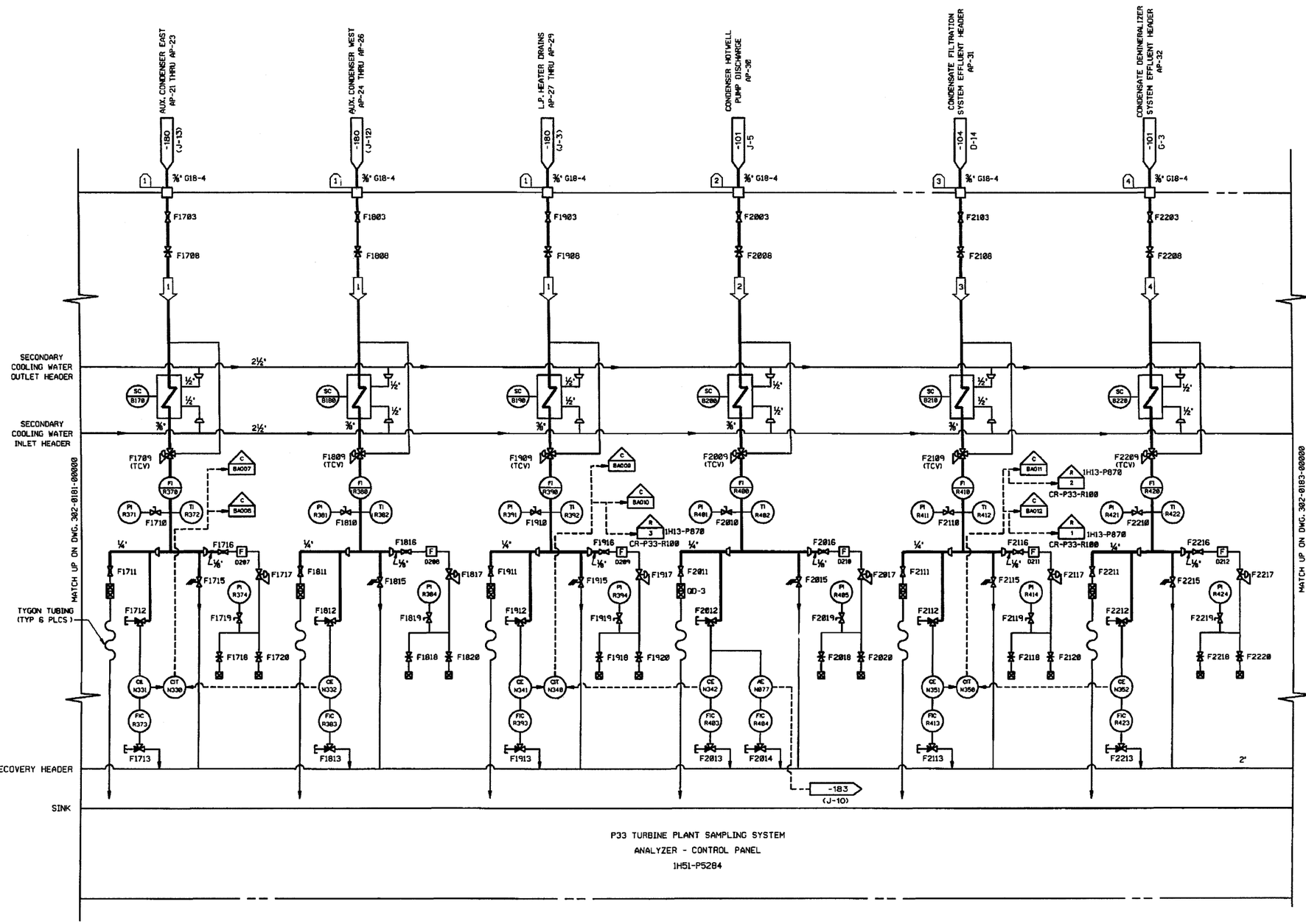
(Rev. 15 10/07)

PERRY NUCLEAR POWER PLANT

Turbine Plant Sampling System

Figure 9.3-22

(Dwg. D-302-181)



OPERATING DATA (SEE NOTE 3)							
ID	PSIG	GPM	CC/MIN	°F	BY	REMARKS	REV
1	25		1000	100		AP-21 - AP29	
2	130		1500	101		AP-30	
3	90		1500	105		AP-31	
4	55		1500	101		AP-32	

DESIGN DATA									
ID	NORMAL		UPSET			BY	CKD	REMARKS	REV
	PSIG	°F	PSIG	°F	TIME				
1	65	135						SEE DWG. D-302-100 FOR AP-21 THRU AP-29	
2	250	135						SEE DWG D-302-101 FOR AP-30 THRU AP-32	
3	250	135						SEE DWG. D-302-100 FOR AP-31	
4	250	135							

NOTES:
1. ALL ITEM NUMBERS PREFIXED BY 1P33- UNLESS OTHERWISE NOTED.
2. REFER TO 302-0183-00000 FOR OTHER PERINENT NOTES.
3. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.

REFERENCES:

302-0101-00000	CONDENSATE SYSTEM N21
302-0104-00000	CONDENSATE FILTRATION SYSTEM N23
302-0180-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0181-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0183-00000	TURBINE PLANT SAMPLING SYSTEM P33

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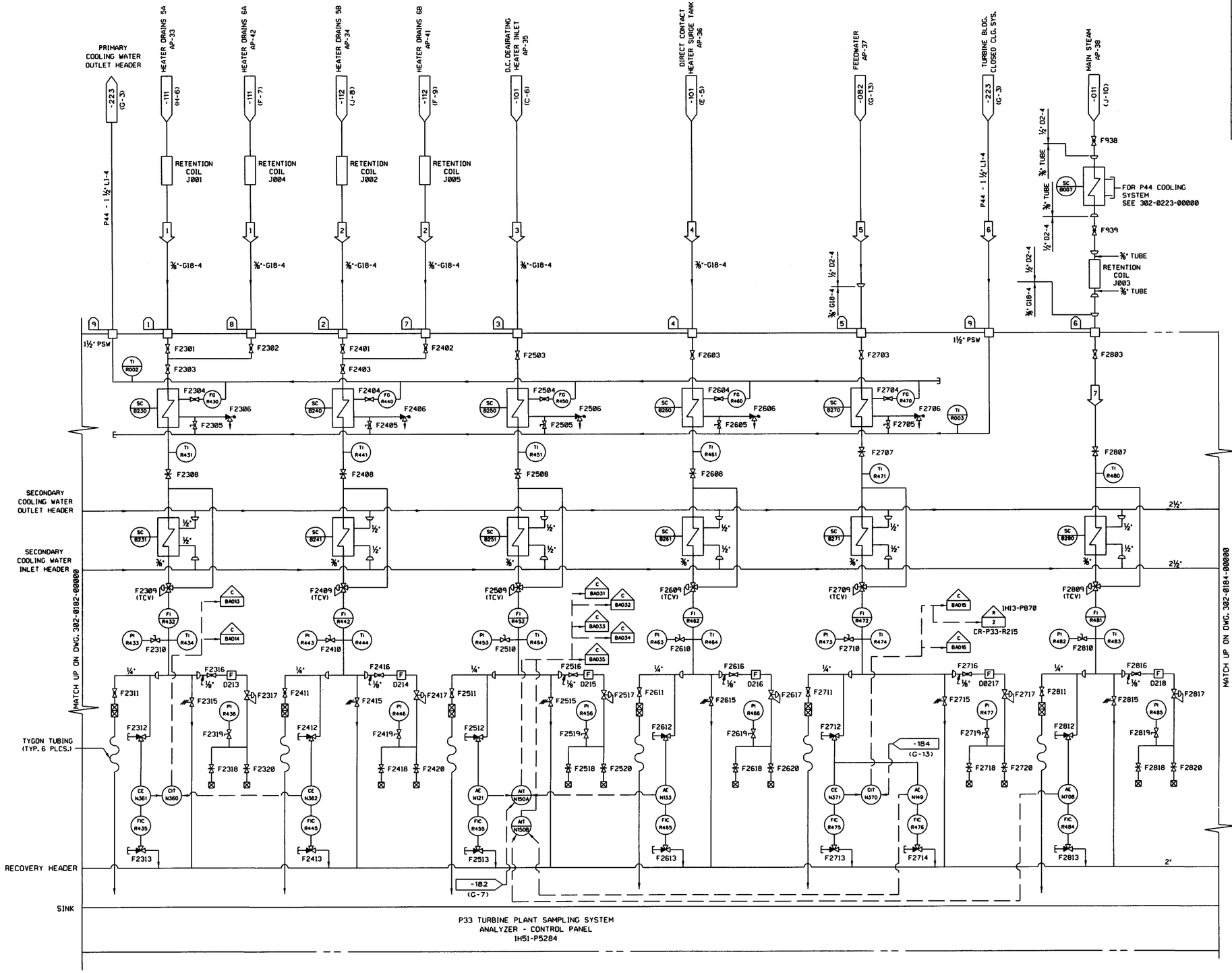
TURBINE PLANT
SAMPLING SYSTEM
FIGURE 9.3-23
(DWG. D-302-0182-00000)



OPERATING DATA
SEE NOTE 3

ⓑ	PSIG	GPM	CC/MIN	°F	BY	REMARKS	REV
1	90		1500	381		AP-33/42	
2	90		1500	381		AP-34/41	
3	25		1000	288		AP-35	
4	25		1000	328		AP-36	
5	1050		1500	424		AP-37	
6	62	40		95		P44 TURB. BLDG. CLOSED COOLING WTR.	
7	925		1800	105		AP-38	

DESIGN DATA

ⓑ	NORMAL		UPSET			BY	CKD	REMARKS	REV
	PSIG	°F	PSIG	°F	TIME				
1	200	385						AP-33	
2	200	385						AP-34	
3	125	288						AP-35	
4	125	350						AP-36	
5	1500	420						AP-37	
6	1250	525						AP-38	
7	200	385						AP-41	
8	200	385						AP-42	
9	100	125						P44 TURB. BLDG. CLOSED COOLING WTR.	

NOTES:

1. ALL ITEM NUMBERS PREFIXED BY 1P33- UNLESS OTHERWISE NOTED.
2. RETENTION TIME DEVICES ARE REQUIRED FOR THE HIGH PRESSURE HEATER DRAIN SAMPLES AND FOR THE MAIN STEAM SAMPLE.
   FOR THE HIGH PRESSURE HEATER DRAINS THE RETENTION TIME DEVICES SHALL BE LOCATED AS CLOSE TO THE SAMPLE SOURCE AS POSSIBLE AND THE PRIMARY COOLING COILS SHALL BE LOCATED AT THE SAMPLE ANALYZER CONTROL PANEL. BOTH THE RETENTION TIME DEVICE AND THE PRIMARY COOLING COIL SHALL BE LOCATED AS CLOSE AS POSSIBLE TO THE SAMPLE SOURCE.
3. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.

REFERENCES:

302-0011-00000	MAIN STEAM SYSTEM N11
302-0082-00000	FEEDWATER N27
302-0101-00000	CONDENSATE SYSTEM N21
302-0111-00000	HIGH PRESSURE HEATER DRAINS AND VENTS "A" N29
302-0112-00000	HIGH PRESSURE HEATER DRAINS AND VENTS "B" N25
302-0223-00000	TURBINE BUILDING CLOSED COOLING SYSTEM P44
302-0182-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0184-00000	TURBINE PLANT SAMPLING SYSTEM P33

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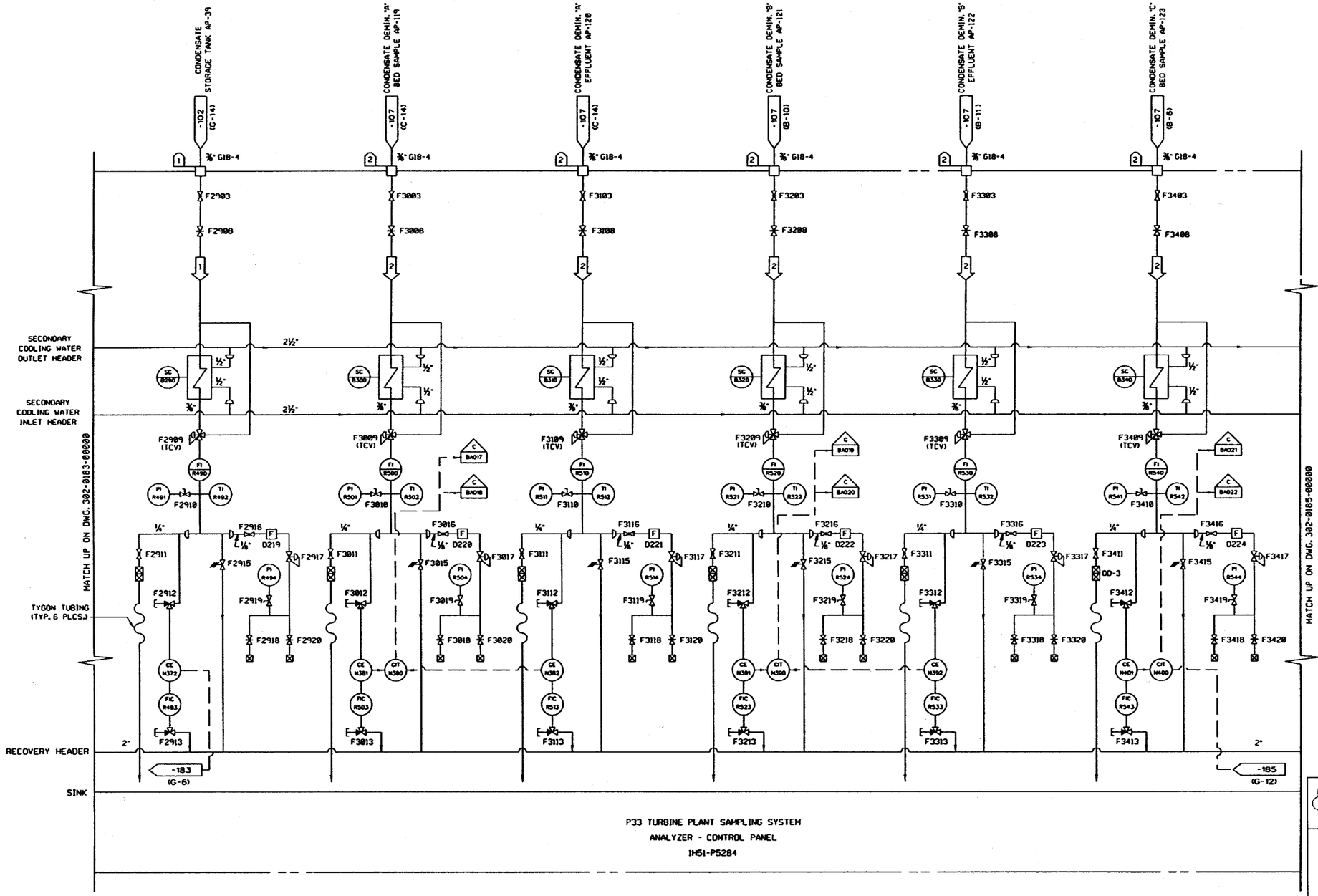
TURBINE PLANT
SAMPLING SYSTEM
FIGURE 9.3-24
(DWG. D-302-0183-00000)



OPERATING DATA SEE NOTE 3							
⇨	PSIG	GPM	CC/MIN	°F	BY	REMARKS	REV
1	20		1500	135		AP-39	
2	35		1500	105		AP-119 THRU 123	

DESIGN DATA									
P	NORMAL		UPSET			BY	CKD	REMARKS	REV
	PSIG	°F	PSIG	°F	TIME				
1	125	135						AP-39	
2	250	105	250	140				AP-119 THRU AP-123	

NOTES:

1. ALL ITEM NUMBERS PREFIXED BY 1P33- UNLESS OTHERWISE NOTED.
2. REFER TO 302-0183-00000 FOR OTHER PERTINENT NOTES.
3. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.

REFERENCES:

302-0102-00000 CONDENSATE TRANSFER AND STORAGE SYSTEM P11
913-0107-00000 CONDENSATE DEMINERALIZER SYSTEM N24
302-0183-00000 TURBINE PLANT SAMPLING SYSTEM P33
302-0185-00000 TURBINE PLANT SAMPLING SYSTEM P33

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PERRY NUCLEAR POWER PLANT

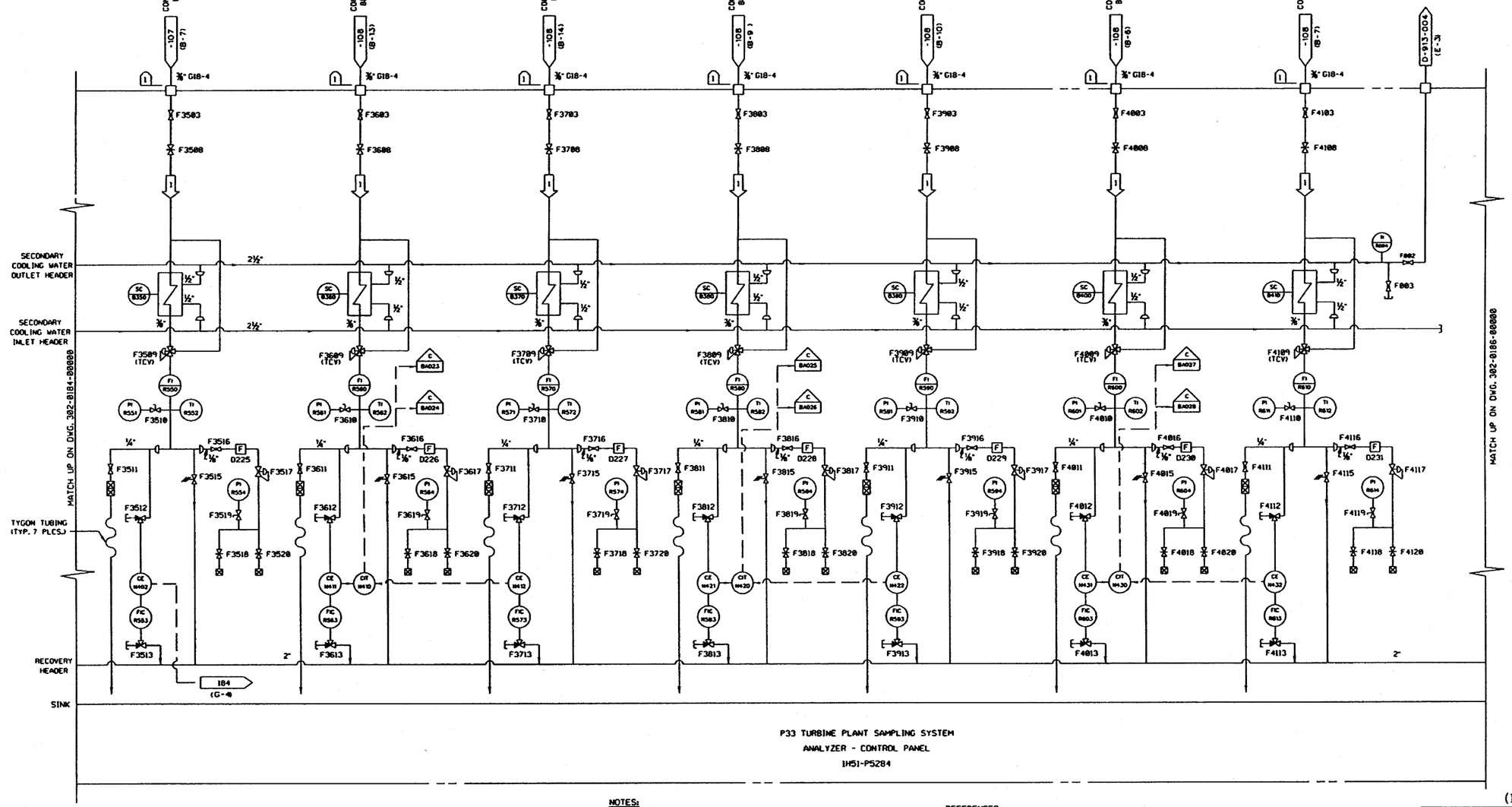
Turbine Plant Sampling System

Figure 9.3-25

(Dwg. D-302-184)

OPERATING DATA SEE NOTE 3							
⇨	PSIG	GPM	CC/MIN	°F	BY	REMARKS	REV
1	35	--	1500	105		AP-124 THRU 130	

DESIGN DATA									
P	NORMAL		UPSET			BY	CKD	REMARKS	REV
	PSIG	°F	PSIG	°F	TIME				
1	250	105	250	140				AP-124 THRU AP-130	



NOTES:

1. ALL ITEM NUMBERS PREFIXED BY 1P33- UNLESS OTHERWISE NOTED.
2. REFER TO 302-0183-00000 FOR OTHER PERTINENT NOTES.
3. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.

REFERENCES:

302-0107-00000	CONDENSATE DEMINERALIZER SYSTEM N24
302-0186-00000	CONDENSATE DEMINERALIZER SYSTEM N24
302-0184-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0186-00000	TURBINE PLANT SAMPLING SYSTEM P33
913-0004-00000	TURBINE BUILDING CHILLED WATER P46

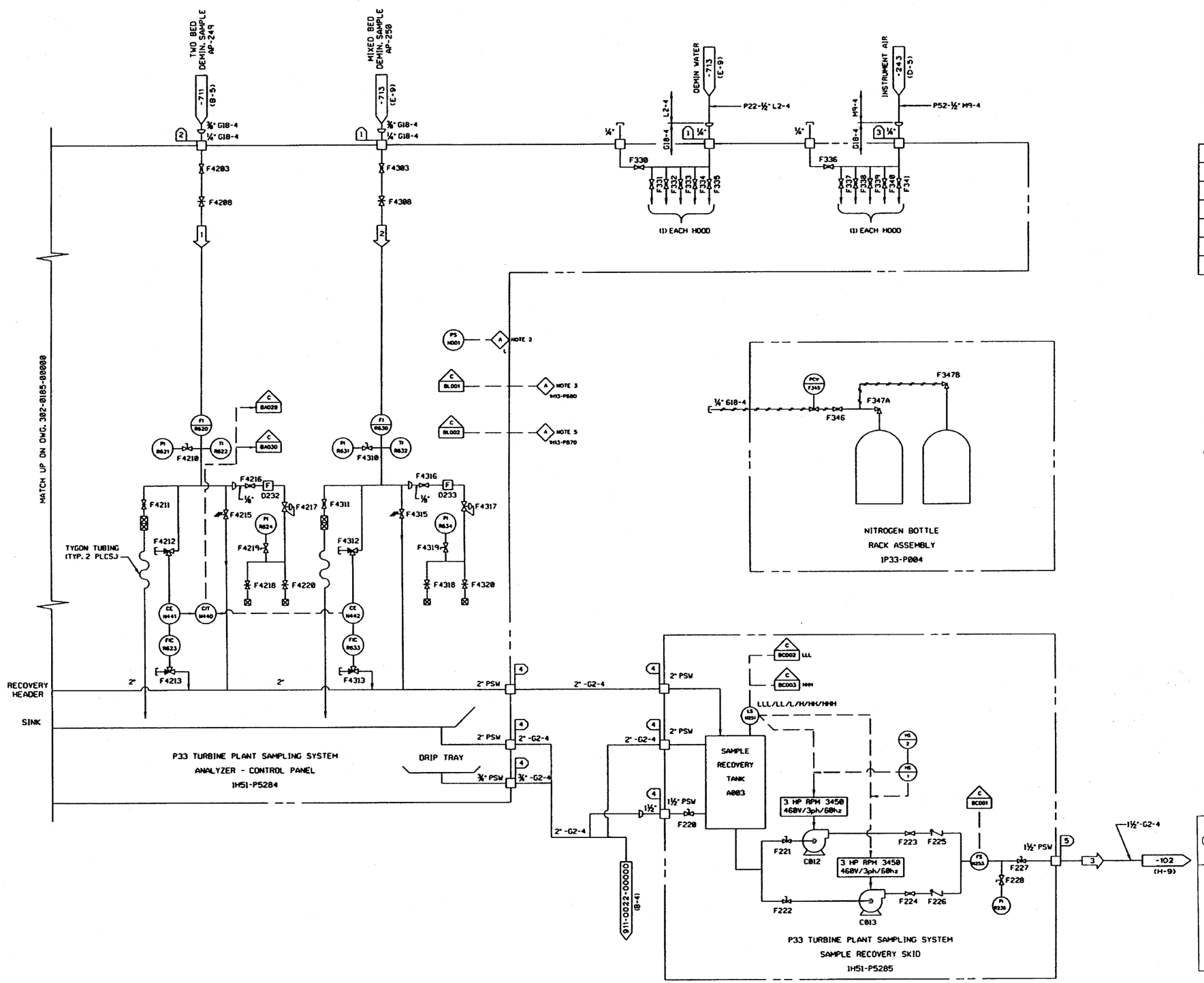
(Rev. 15 10/07)

PERRY NUCLEAR POWER PLANT

Turbine Plant Sampling System

Figure 9.3-26

(Dwg. D-302-185)



OPERATING DATA

SEE NOTE 6

ID	PSIG	GPM	CC/MIN	°F	BY	REMARKS	REV
1	100		1500	85		AP-249	
2	80		1500	85		AP-250	
3	125	20		AMB.		INTERMITTENT SAMPLE RETURN	

DESIGN DATA

ID	NORMAL		UPSET			BY	CKD	REMARKS	REV
	PSIG	°F	PSIG	°F	TIME				
1	150	85						SEE DWG. 302-0713-00000	
2	150	85						SEE DWG. 302-0711-00000	
3	150	110						SEE DWG. 302-0241-00000	
4	ATM.	AMB.							
5	175	AMB.							

NOTES:

1. ALL ITEM NUMBERS PREFIXED BY 1P33- UNLESS OTHERWISE NOTED.
2. FUME HOOD LOW AIR FLOW ALARM, LOW PRESSURE SENSING LINE ROUTED TO PANEL DAMPER. HIGH PRESSURE SENSING LINE ROUTED TO OUTSIDE PANEL.
3. P33 COMMON TROUBLE ALARM 1H13-P680 ACTIVATED FROM PROCESS COMPUTER.
4. 1P33 -P003 LOCAL C91 COMPUTER PANEL.
5. CONDENSATE OR FEEDWATER CONDUCTIVITY HIGH ALARM 1H13-P870 ACTIVATED FROM PROCESS COMPUTER.
6. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.

REFERENCES:

302-0102-00000	CONDENSATE TRANSFER AND STORAGE SYSTEM P11
302-0185-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0243-00000	INSTRUMENT AIR SYSTEM P52
302-0711-00000	TWO-BED DEMIN. AND DISTR. SYSTEM P21
302-0713-00000	MIXED-BED DEMIN. AND DISTR. SYSTEM 1P22
911-0022-00000	TURBINE POWER COMPLEX TURBINE BLDG. AND OFFGAS BLDG. DRAINS

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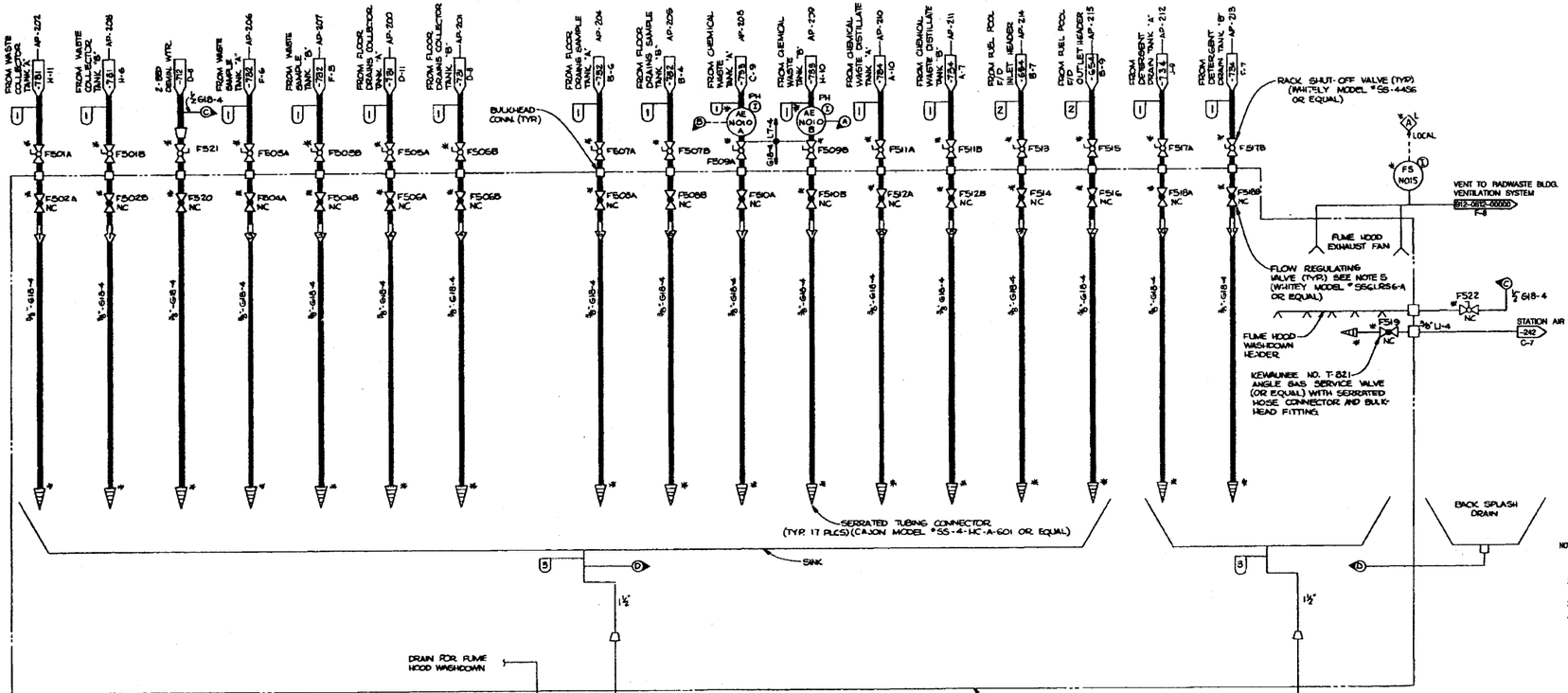
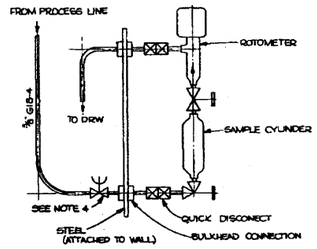
PERRY NUCLEAR POWER PLANT

Turbine Plant Sampling System

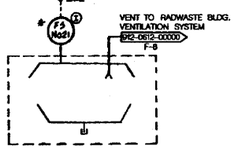
Figure 9.3-26a

(Dwg. D-302-186)

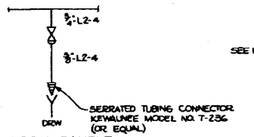




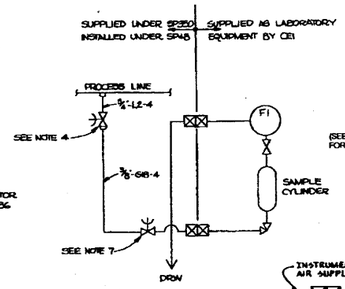
TYPICAL TYPE 'B' LOCAL SAMPLE STATION DESIGN



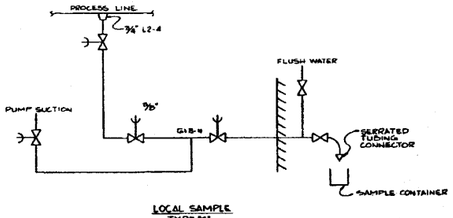
TEST SOLIDIFICATION STATION P34-E001



LOCAL SAMPLE TYPE A (NON RADIOACTIVE) (SEE NOTE 2)

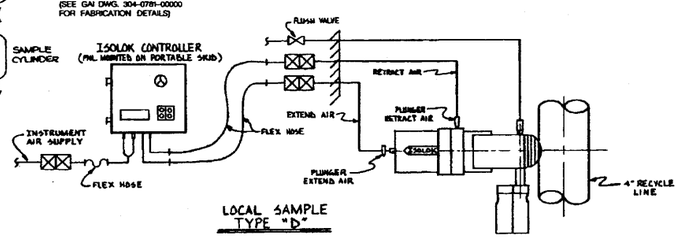


LOCAL SAMPLE TYPE 'B' (RADIOACTIVE) (SEE NOTE 2)



LOCAL SAMPLE TYPE 'C' (RADIOACTIVE) (SEE NOTE 2)

(SEE GAI DWG. 304-0781-00000 FOR FABRICATION DETAILS)



LOCAL SAMPLE TYPE "D"

OPERATING DATA
SEE NOTE 7

Ⓓ	PSIG	GPM	F	BY	REMARKS	P_V
1	50	0.2	70	CWE		
2	58	0.2	107	DAK		
3	80	0.2	70	CWE		
4	50	0.2	70	CWE		
5	0	0.2	70	CWE		
6	80	0.2	70	CWE		
7	20	0.2	70	CWE		
8	40	0.2	70	CWE		
9	118	0.2	107	DAK		
10	50	0.2	70	CWE		
11	50	0.2	70	CWE		
12	0	0.2	70	CWE		

DESIGN DATA

	NORMAL		UPSET			BY	C_V	REMARKS	P_V
	PSIG	F	PSIG	F	TIME				
1	125	150	NA	NA	NA	CWE			
2	250	180	250	180	NA	DAK			
3	15	150	NA	NA	NA	CWE			

NOTES:

1. THE LENGTH OF SAMPLE TUBING INSIDE FUME HOOD TO BE AS SHORT AS POSSIBLE.
2. FOR LIST OF ALL SAMPLES & SAMPLE PROBE DETAILS, SEE DWG. 302-0002-00000.
3. THIS SYSTEM IS NON-SAFETY CLASS, NON-NUCLEAR CLASS.
4. IN CASES WHERE PROCESS LINE TO BE SAMPLED IS AN ACCESSIBLE, LOW RADIATION ZONE, LOCAL SAMPLE STATION SHALL BE LOCATED CLOSE TO ROOT VALVE SO THAT ROOT VALVE CAN BE USED AS SAMPLE CONTROL VALVE. WHERE PROCESS LINE IS NOT ACCESSIBLE, LOCAL SAMPLE STATION SHALL BE LOCATED IN CONVENIENT, ACCESSIBLE AREA AND A SECOND VALVE SHALL BE PROVIDED AT THE SAMPLE STATION FOR USE AS SAMPLE CONTROL VALVE. THE NEED FOR A SECOND VALVE SHALL BE INDICATED ON THE INDIVIDUAL SYSTEM DIAGRAM. EACH SYSTEM DIAGRAM SHALL ALSO INDICATE IF SHIELDED EXTENDING STEM ARM FOR FLUSHING CONNECTIONS ARE NECESSARY FOR THE LOCAL SAMPLES IN THAT SYSTEM.
5. ALL REGULATING VALVES HAVE STEM EXTENSION FOR OPERATION FROM FRONT OF FUME HOOD.
6. EQUIPMENT WITH ASTERISKS ARE SUPPLIED WITH FUME HOOD.
7. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.

REFERENCES:

302-0004-00000	FUEL POOL COOLING AND CLEAN-UP SYSTEM G43
302-0721-00000	LRW – FLOOR DRAIN COLLECTOR TANKS AND WASTE COLLECTING TANKS SYSTEM 026
302-0722-00000	LRW – FLOOR DRAIN DEMINERALIZER AND SAMPLE TANKS AND WASTE DEMINERALIZER AND SAMPLE TANKS SYSTEM 029
302-0723-00000	LRW – CHEMICAL WASTE TANKS AND WASTE EVAPORATOR/CONDENSER SYSTEM 030
302-0725-00000	LRW – CHEMICAL WASTE DISTILLATE TANKS AND PUMPS AND DETERGENT DRAINS TANKS, SUMPS, AND FILTERS SYSTEM 034
912-0612-00000	RADWASTE BUILDING VENTILATION SYSTEM H31
302-0712-00000	TWO-BED DEMINERALIZER AND DISTRIBUTION SYSTEM MIDDLE ZONE DISTRIBUTION SYSTEM P21

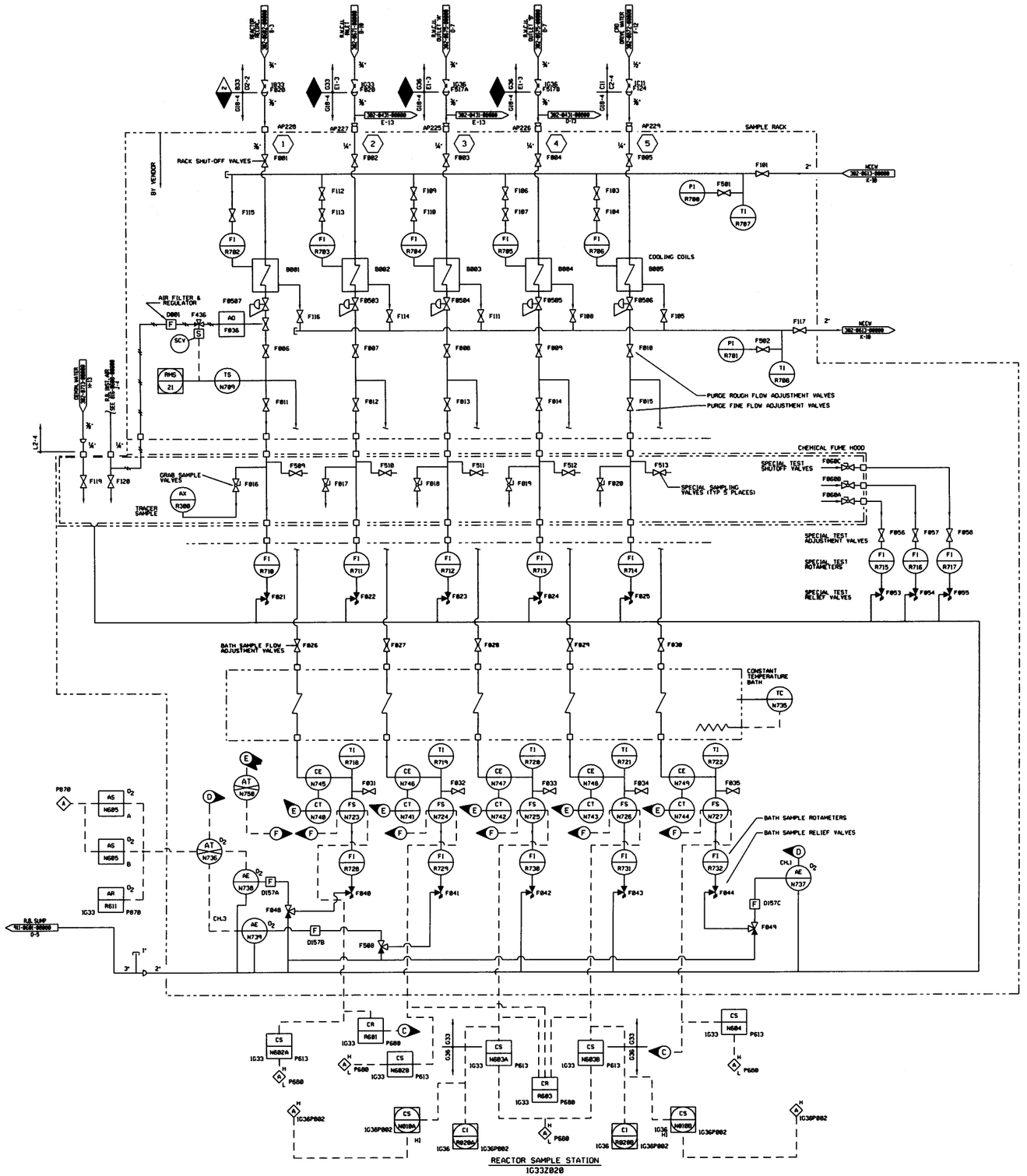
(Rev. 15 10/07)

PERRY NUCLEAR POWER PLANT

Nuclear Sampling System

Figure 9.3-27

(Dwg. D-302-771)



NOTES:

1. ALL FUNCTIONAL LOCATION NUMBERS ARE PREFIXED BY IP35, UNLESS OTHERWISE NOTED.
2. THIS DRAWING WAS DEVELOPED FROM G.E. DWG. 769E336.
3. ALL PANEL NUMBERS ARE PREFIXED BY IH13, UNLESS OTHERWISE NOTED.

REFERENCES:

302-8431-00000	POST ACCIDENT SAMPLING SYSTEM (PASS)
302-8402-00000	REACTOR WATER RECIRCULATING SYSTEM
302-8413-00000	NUCLEAR CLOSED COOLING SYSTEM
302-8671-00000	RWCU SYSTEM
302-8675-00000	RWCU F/D SYSTEM
302-8713-00000	MIXED BED DEMINERALIZED WATER SYSTEM
302-8872-00000	CRD-HYDRAULIC SYSTEM
816-2687-00000	INSTRUMENT AIR TUBING DIAGRAM - REACTOR BUILDING
911-8681-00000	REACTOR BUILDING DRAINS

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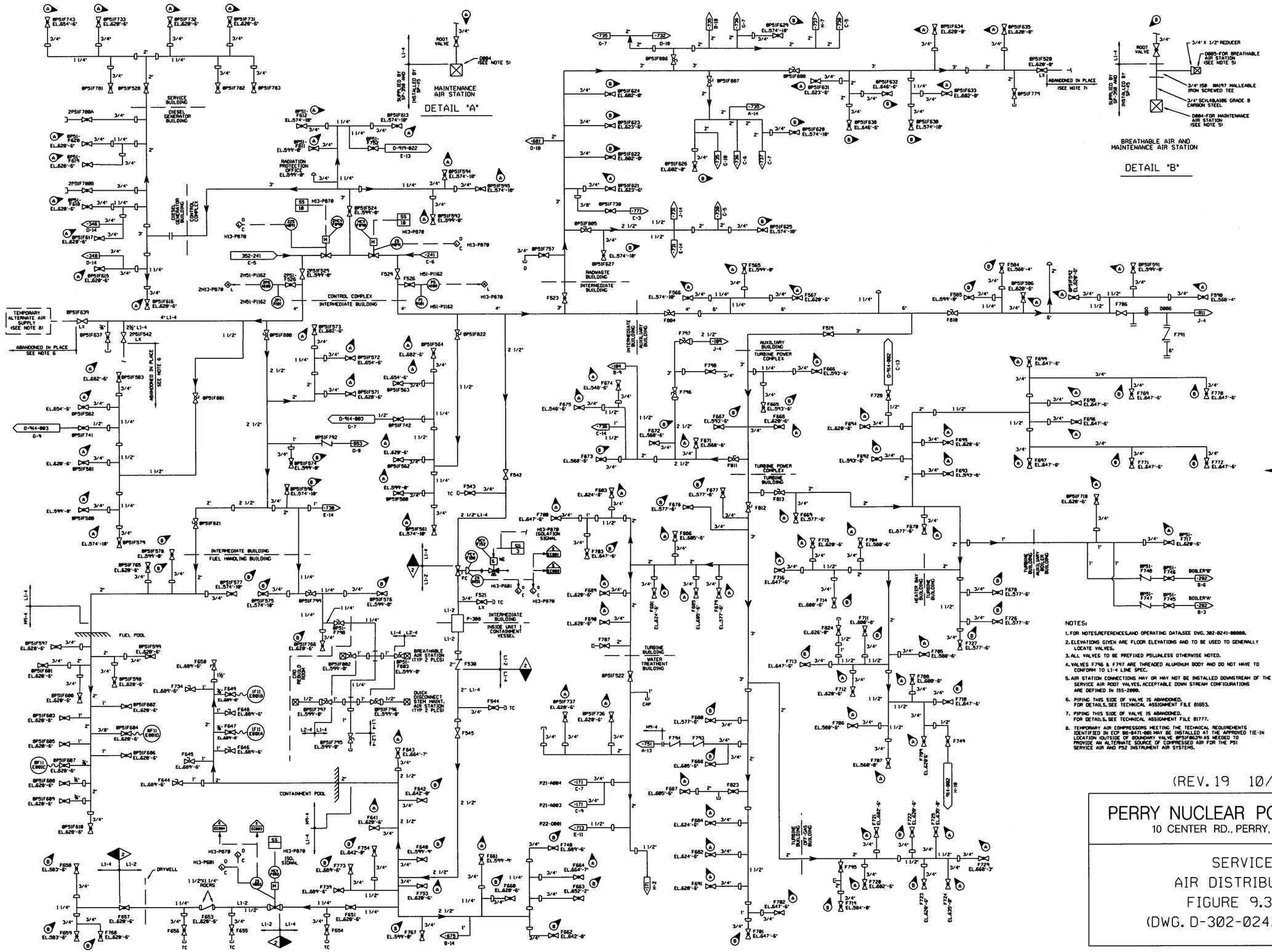
REACTOR
PLANT SAMPLING
FIGURE 9.3-28
(DWG. D-302-0772-00000)



NOTES:

1. FOR NOTES, REFERENCES, AND OPERATING DATA, SEE DWG. 302-0241-00000.
2. ELEVATIONS GIVEN ARE FLOOR ELEVATIONS AND TO BE USED TO GENERALLY LOCATE VALVES.
3. ALL VALVES TO BE PREFIXED PSI UNLESS OTHERWISE NOTED.
4. VALVES F796 & F797 ARE THREADED ALUMINUM BODY AND DO NOT HAVE TO CONFORM TO L1-4 LINE SPEC.
5. AIR STATION CONNECTIONS MAY OR MAY NOT BE INSTALLED DOWNSTREAM OF THE SERVICE AIR ROOT VALVES. ACCEPTABLE DOWN STREAM CONFIGURATIONS ARE DEFINED IN ISS-2000.
6. PIPING THIS SIDE OF VALVE IS ABANDONED. FOR DETAILS, SEE TECHNICAL ASSIGNMENT FILE 81663.
7. PIPING THIS SIDE OF VALVE IS ABANDONED. FOR DETAILS, SEE TECHNICAL ASSIGNMENT FILE 81777.
8. TEMPORARY AIR COMPRESSORS MEETING THE TECHNICAL REQUIREMENTS IDENTIFIED IN ECP 88-9431-000 MAY BE INSTALLED AT THE APPROVED TIE-IN LOCATION (OUTSIDE OF BOUNDARY VALVE 0P51F863A) AS NEEDED TO PROVIDE AN ALTERNATE SOURCE OF COMPRESSED AIR FOR THE PSI SERVICE AIR AND PS2 INSTRUMENT AIR SYSTEMS.

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PERRY NUCLEAR POWER PLANT

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SERVICE
AIR DISTRIBUTION
FIGURE 9.3-29
(DWG. D-302-0242-00000)

REFERENCES:

302-0082-00000	FEEDWATER SYSTEM N27
302-0186-00000	TURBINE PLANT SAMPLING SYSTEM P33
302-0241-00000	SERVICE AND INSTRUMENT AIR SUPPLY SYSTEM P51,P52
302-0605-00000	NUCLEAR BOILER SYSTEM B21
302-0675-00000	REACTOR WATER CLEAN-UP FILTER DEMINERALIZER SYSTEM G36
302-0730-00000	LRW - WASTE COLLECTOR FILTER AND FLOOR DRAINS SYSTEM G50
302-0742-00000	LRW - WASTE EVAPORATOR CONDENSERS SYSTEM GG50
302-0752-00000	OFF-GAS SYSTEM N64
302-0754-00000	OFF-GAS SYSTEM N64
302-0871-00000	CONTROL ROD DRIVE HYDRAULIC SYSTEM C11
352-0241-00000	SERVICE AND INSTRUMENT AIR SUPPLY SYSTEM P51,P52
304-0476-00000	INSTRUMENT AIR SYSTEM P52 - INTERMEDIATE BUILDING
304-0480-00000	INSTRUMENT AIR DISTRIBUTION SYSTEM P52 - CONTROL COMPLEX
304-0488-00000	INSTRUMENT AIR SYSTEM P52 - DIESEL GENERATOR AND SERVICE BUILDING
302-0761-00000	PENETRATION PRESSURIZATION SYSTEM P53 - REACTOR BUILDING
302-0762-00000	PENETRATION PRESSURIZATION SYSTEM P53 - REACTOR BUILDING
814-0420-00000	FUEL OIL STORAGE TANK - LEVEL INSTRUMENTATION
814-0438-00000	COOLING TOWER BASIN - LEVEL INSTRUMENTATION
816-0401-00000	INSTRUMENT AIR TUBING INTERCONNECTION DIAGRAM - SERVICE WATER PUMP HOUSE
816-0402-00000	INSTRUMENT AIR TUBING INTERCONNECTION DIAGRAM - CIRC. WATER PUMP HOUSE
816-0405-00000	INSTRUMENT AIR TUBING INTERCONNECTION DIAGRAM - EMERGENCY SERVICE WATER
816-0409-00000	INSTRUMENT AIR TUBING INTERCONNECTION DIAGRAM - MISCELLANEOUS BUILDINGS
304-0052-00000	AUXILIARY STEAM HEATER BAY
302-0271-00000	SAFETY RELATED INSTRUMENT AIR SYSTEM P57

NOTES:

1. INSTRUMENT AIR DISTRIBUTION MANIFOLDS ARE INDICATED BY LETTER "J" FOLLOWED BY THREE DIGITS.
2. AIR DISTRIBUTION MANIFOLD ASSIGNMENTS ARE SHOWN ON VARIOUS S-809 SERIES DRAWINGS.
3. ENTIRE SYSTEM IN ACCORDANCE WITH LINE SPECIFICATION M9-4 EXCEPT WHERE NOTED OTHERWISE.
4. FOR OPERATING DATA AND DESIGN DATA, SEE DWG. 302-0241-00000.
5. VALVE 1P52F1427 DOES NOT CONFORM TO LINE SPEC M9-4.
6. THERE IS NO PIPING INSTALLED ON THIS SIDE OF ISOLATION. FOR DETAILS, SEE TECHNICAL ASSIGNMENT FILE 81653.
7. ALL PIPING ON THIS SIDE OF ISOLATION IS ABANDONED. FOR DETAILS, SEE TECHNICAL ASSIGNMENT FILE 81653.
8. ALL PIPING ON THIS SIDE OF ISOLATION IS ABANDONED. FOR DETAILS, SEE TECHNICAL ASSIGNMENT FILE 81777.
9. ORIGINAL LINE "ABANDONED IN PLACE". REPLACEMENT P52-1" AQUA SHIELD POLYETHYLENE COATED COPPER LINE INSTALLED (REF. M9-4 NOTE VIII).

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PERRY NUCLEAR POWER PLANT

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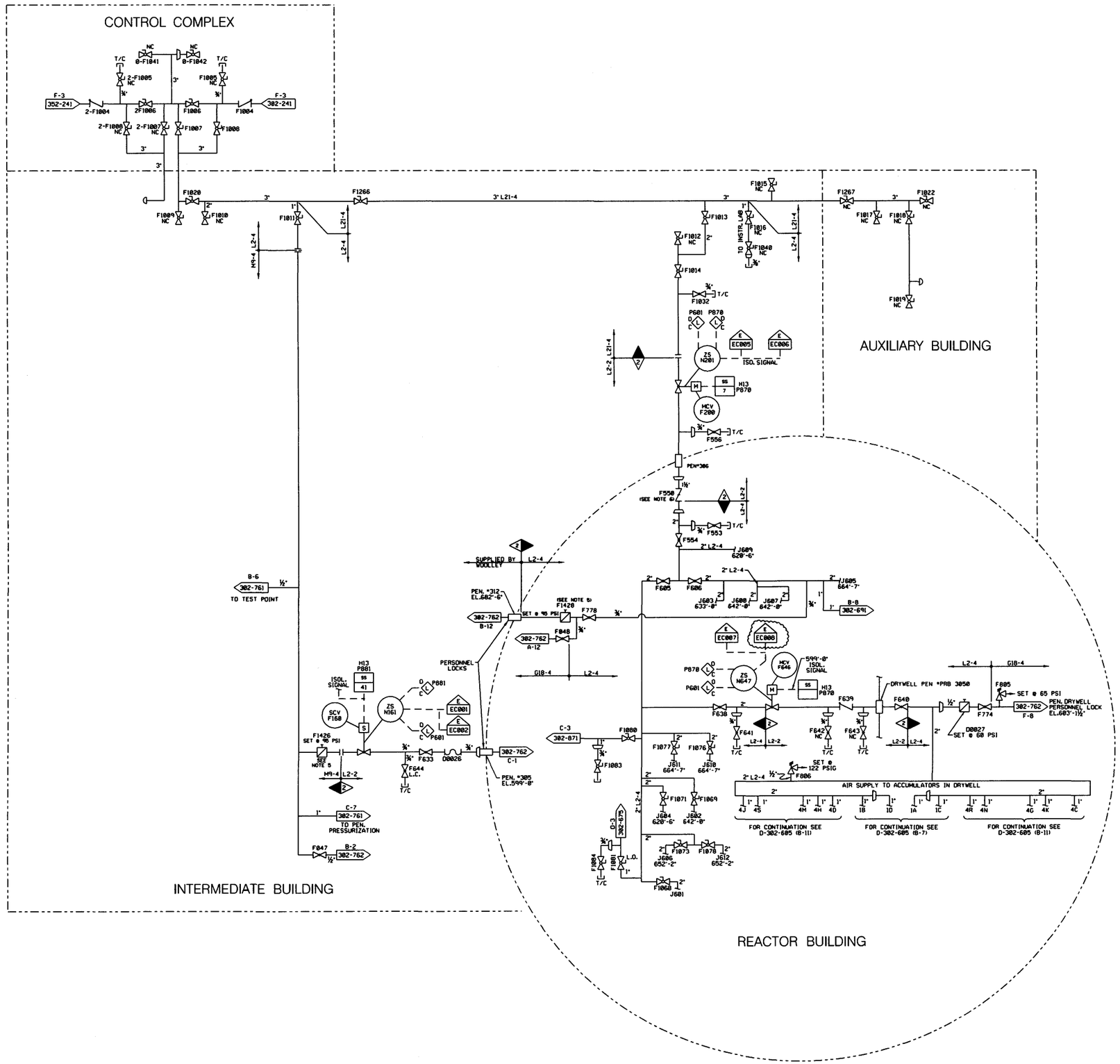
INSTRUMENT AIR

FIGURE 9.3-31 (SHEET 1 OF 2)

(DWG. D-302-0243-00000)



NOTES:

1. INSTRUMENT AIR DISTRIBUTION MANIFOLDS ARE INDICATED BY LETTER "J" FOLLOWED BY THREE DIGITS.
2. AIR DISTRIBUTION MANIFOLD ASSIGNMENTS ARE SHOWN ON VARIOUS S-809 SERIES DRAWINGS.
3. ENTIRE SYSTEM IS IN ACCORDANCE WITH LINE SPEC. M9-4 EXCEPT WHERE NOTED OTHERWISE.
4. FOR OPERATING DATA AND DESIGN DATA, SEE DRAWING D-302-241.
5. VALVE 1P52-F1428 DOES NOT CONFORM TO LINE SPEC. L2-4 AND VALVE 1P52-F1426 DOES NOT CONFORM TO LINE SPEC. M9-4.
6. VALVE 1P52-F550 DOES NOT CONFORM TO LINE SPEC L2-2. DIFFERENCE INVOLVES ONLY THE PRESSURE RATING CLASS OF 1500# INSTEAD OF 600#.

REFERENCES:

D-302-241	SERVICE AND INSTRUMENT AIR SUPPY SYSTEM, P51/P52
D-302-675	REACTOR WATER CLEAN-UP FILTER DEMIN. SYSTEM, 1G36
D-302-691	STAND-BY LIQUID CONTROL SYSTEM, 1C41
D-302-761	PEN. PRESSURIZATION AND PERSONNEL AIRLOCK LEAKAGE CONTROL SYSTEM, 1P53
D-302-762	CONTAINMENT AND DRYWELL PERSONNEL AIRLOCKS, 1P53
D-302-871	CONTROL ROD DRIVE HYDRAULIC SYSTEM, C11
D-352-241	SERVICE AND INSTRUMENT AIR SUPPLY SYSTEM, 2P51/2P52

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PARALLEL INSTRUMENT AIR DISTRIBUTION SYSTEM

FIGURE 9.3-31 (SHEET 2 OF 2)

(DWG. D-302-0244-00000)

DESIGN DATA

ID	NORMAL PSIG	NORMAL F	UPSET PSIG	UPSET F	UPSET TIME	BY	CHKD	REMARKS	REV
1	1410	575	1410	575	-	JG			A
2	300	330	300	330	-	JG			A
3	150	100	150	100	-	JG			A
4	30	330	30	330	-	JG			A

OPERATING CONDITIONS

SEE NOTE 5

	PSIG	CC/MIN	°F	BY	REMARKS	REV
1	30	5600	330	HGE		0
2	15	5600	185	HGE		0
3	15	5600	185	HGE		0
4	-0.014	5600	104	HGE		0
5	1250	1400	575	HGE		0
6	1410	1400	150	HGE		0
7	1410	1400	150	HGE		0
8	500	1400	358	HGE		0
9	100	1400	212	HGE		0
10	100	1400	330	HGE		0
11	100	33984	104	HGE		A
12	-	-	-	-	DELETED	0
13	100	28320	AMB	HGE		A
14	100	28320	AMB	HGE		A
15	40	7192	96-105	HGE		A
16	80	3785	AMB	HGE	1 GPM	A
17	100	1400	96-105	HGE		A
18	90	37850	95	HGE	(14 GPM)	A
19	70	37850	95	HGE	(14 GPM)	A

REFERENCES:

302-0713-00000	MIXED BED DEMINERALIZER AND DISTRIBUTION SYSTEM- MIXED BED EXCHANGER, STORAGE, AND NORTH ZONE DISTRIBUTION SYSTEM P22
302-0603-00000	REACTOR WATER RECIRCULATION SYSTEM B33
302-0604-00000	REACTOR WATER RECIRCULATION SYSTEM B33
302-0772-00000	REACTOR PLANT SAMPLING STATION SYSTEM P35
302-0641-00000	RESIDUAL HEAT REMOVAL SYSTEM E12
302-0642-00000	RESIDUAL HEAT REMOVAL SYSTEM E12
302-0643-00000	RESIDUAL HEAT REMOVAL SYSTEM E12
302-0686-00000	SUPPRESSION POOL MAKEUP SYSTEM C43
302-0832-00000	COMBUSTIBLE GAS CONTROL HYDROGEN ANALYSIS SYSTEM M51
302-0811-00000	CONTAINMENT INTEGRATED LEAK RATE TESTING SYSTEM E61
302-0612-00000	NUCLEAR CLOSED COOLING SYSTEM P43
302-0741-00000	LIQUID RADWASTE SUMPS SYSTEM - LAUNDRY, CHEMICAL, COMMON FLOOR, AND EQUIPMENT DRAIN SUMPS SYSTEM G61

NOTES:

1. HEAT TRACED TUBING SHALL BE TECHNICAL HEATERS MODEL 500,OR EQUAL, WITH CORE TUBING ¾" O.D., 0.035" WALL, WITH MATERIAL AS SPECIFIED PER LINE SPECIFICATION 1PC-10. CONSTRUCTION SHALL CONSIST OF TWO 0.003" THICK LAYERS OF DUPONT KAPTON POLYIMIDE INSULATION OVER THE STAINLESS STEEL TUBING. HELICALLY WOUND NICKEL-CHROMIUM ALLOY HEATER WIRE, 0.010" TO 0.057" DIAMETER, WITH INDIVIDUAL TURNS UNIFORMLY SPACED 0.25" TO 0.50" APART WITH RESULTANT POWER DENSITY OF 20-50 WATTS/LINEAL FOOT. OVER THE HEATER WIRE SHALL BE TWO ADDITIONAL LAYERS OF KAPTON, A ½" THICKNESS OF FIBERGLASS FELT THERMAL INSULATION AND AN OUTER LAYER OF WRAPPED AND OVEN-VULCANIZED EPDM SYNTHETIC RUBBER. TUBING SHALL BE DESIGNED TO MAINTAIN NOMINAL TEMPERATURE OF 330°F AT MINIMUM AMBIENT OF 96°F.
2. VALVE SPARED IN PLACE.
3. CUSTOM BLIND COUPLING.
4. ALL TUBING ON THIS SIDE OF ISOLATION IS ABANDONED. FOR DETAILS, SEE TECHNICAL ASSIGNMENT FILE 81653.
5. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
6. DRYWELL FLOOR DRAIN SUMP PUMP DISCHARGE PIPING IS DRAINED & FILLED WITH AIR FROM APPROXIMATELY THE P22 CONNECTION INSIDE DRYWELL UP TO PASS GRAB SAMPLE PANEL 1P87P003 TO PREVENT THERMAL OVER PRESSURIZATION.
7. (BS) UNIT 1 / 2 BOUNDARY SEPARATION. FOR DETAILS SEE TECHNICAL ASSIGNMENT FILE 81653.
8. (LB) LICENSE RENEWAL, LEAKAGE BOUNDARY FOR ABANDONED, RETIRED IN PLACE SSC'S. FOR DETAILS SEE ECP 14-0461 AND ECP 14-0467.

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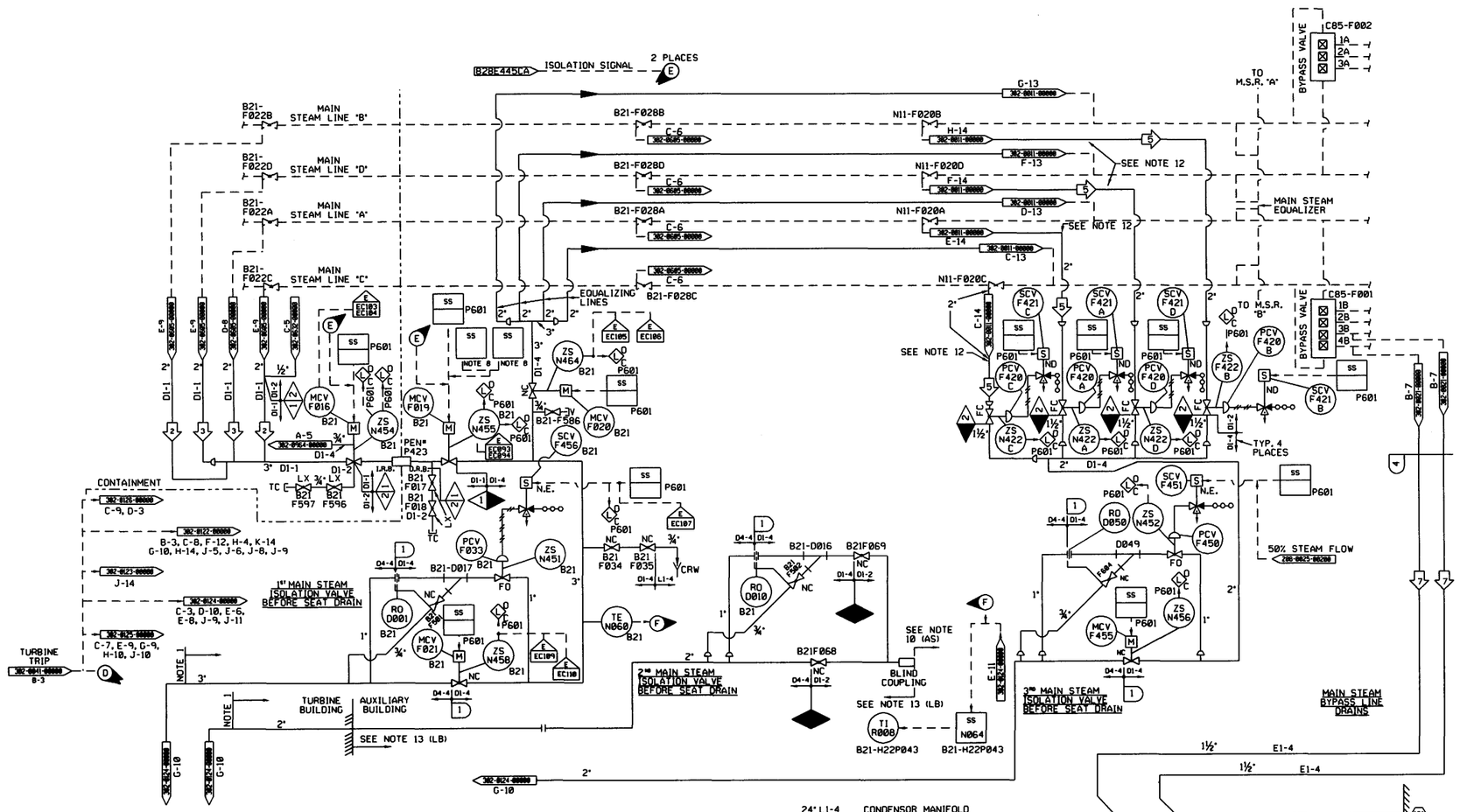
POST ACCIDENT SAMPLING SYSTEM

FIGURE 9.3-33

(DWG. D-302-0431-00000)



OPERATING DATA

SEE NOTE 11

	PSIG	lbm/hr	F	BY	REMARKS	REV
2	950	90	540	JEB	1940 WARMUP	
3	950	65	540	JEB	1395 WARMUP	
4	950	0	540	JEB	0	
5	950	80	540	JEB	1820 WARMUP	
6	562	110	485	JEB	2300 WARMUP	
7	450	1250 MAX	450	JEB	1250 WARMUP	
8	176	0	380	JEB	8255 WARMUP	
9	176	0	380	JEB	8785 WARMUP	

NOTES:

1. THIS DRAIN SCHEME IS ALSO SHOWN ON G.E. P&ID 768E324. IT IS REPEATED HERE FOR COMPLETENESS AND CLARITY.
2. ALL HORIZONTAL DRAIN LINES DOWN TOWARD CONDENSER.
3. PIPING SHOWN AS DOTTED IS NOT INCLUDED IN THIS SYSTEM BUT IS SHOWN FOR EXPLANATORY PURPOSES.
4. ALL PANELS CARRY PREFIX H13, UNLESS NOTED OTHERWISE.
5. ALL INSTRUMENTATION IS N22 PREFIX, UNLESS NOTED OTHERWISE.
6. WHERE LINE SPECIFICATION CHANGES DOWNSTREAM OF THE CONTROL VALVE, THE SAME CHANGE SHALL APPLY DOWNSTREAM OF THE ORIFICE AND BLOWDOWN VALVE.
7. VALVE AND INSTRUMENTATION BY G.E.T.
8. PROVIDES CONTROL ROOM ISOLATION AND REMOTE SHUTDOWN CONTROL OF B21-F819 FOR APPENDIX R REMOTE SHUTDOWN METHOD A. SWITCHES LOCATED ON MOTOR CONTROL CENTER EF1A07.
9. DELETED.
10. (AS) ATTACHED PIPING ABANDONED, RETIRED IN PLACE THIS SIDE OF BLIND COUPLING. ABANDONED SSC'S OUTSIDE THE SCOPE OF LICENSE RENEWAL. SEE DCP 96-0044 AND ECP 14-0587 FOR DETAILS.
11. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
12. THIS PORTION OF PIPING IS DESIGNATED AS E32 (MSIV LEAKAGE CONTROL) FOR ASME CODE PURPOSES ONLY.
13. (LB) LICENSE RENEWAL LEAKAGE BOUNDARY. FOR DETAILS SEE ECP 14-0587.

DESIGN DATA

	NORMAL PSIG	NORMAL F	UPSET PSIG	UPSET F	UPSET TIME	BY	CHKD	REMARKS	REV
1	1250	575	1250	575		JEB	MGC		
2	620	495				JEB	MGC		
3	270	650				JEB	MGC		
4	500	450				JEB	MGC		

REFERENCES:

302-0011-00000	MAIN STEAM SYSTEM N11
302-0012-00000	REHEAT STEAM SYSTEM N11
302-0041-00000	EXTRACTION STEAM SYSTEM N36
768E324	NUCLEAR BOILER SYSTEM B21 (G.E.)
828E445CA	NUCLEAR BOILER SYSTEM ELEMENTARY DIAGRAM
828E445CA	NUCLEAR STEAM SUPPLY SHUTOFF SYSTEM ELEMENTARY DIAGRAM
762E481	NUCLEAR BOILER SYSTEM FC0
825E339	DIAGRAM OF TURBINE STEAM DRAINS (G.E.T.)
302-0025-00000	FEEDWATER CONTROL SYSTEM C34
302-0021-00000	STEAM BYPASS AND PRESSURE REGULATION SYSTEM C85
302-0122-00000	MAIN, REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
302-0123-00000	MAIN, REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
302-0124-00000	MAIN, REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
302-0125-00000	MAIN, REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
302-0126-00000	MAIN, REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
302-0685-00000	NUCLEAR BOILER SYSTEM B21
302-0964-00000	LEAK DETECTION SYSTEM E31
302-0014-00000	REHEATER HEATING STEAM SYSTEM N11
302-0832-00000	REACTOR CORE ISOLATION COOLING SYSTEM E51

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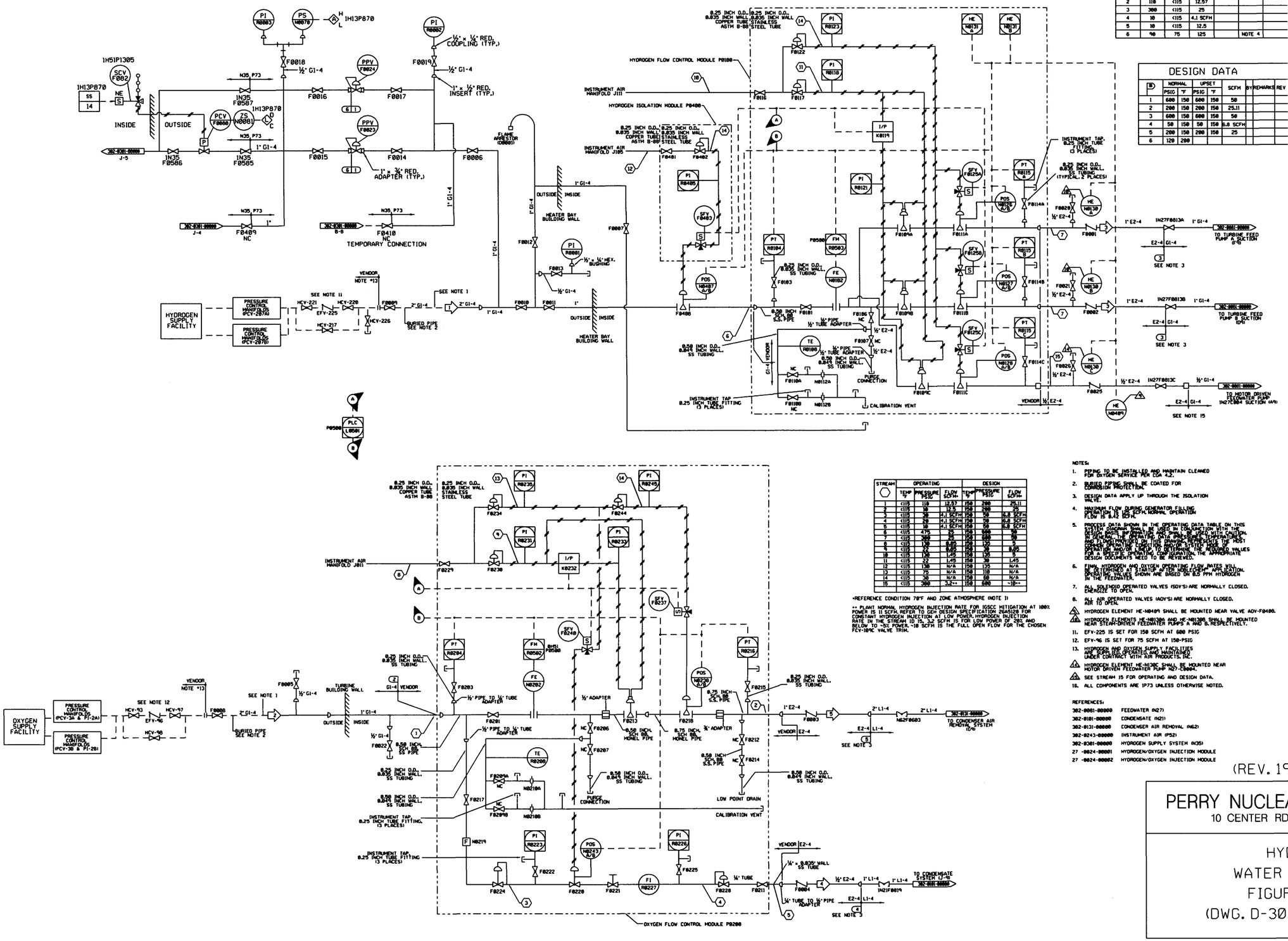
MAIN REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS

FIGURE 9.3-34

(DWG. D-302-0121-00000)



OPERATING DATA

SEE NOTE 5

	PSIG	°F	SCFM	BY	REMARKS	REV
1	475	<115	25			
2	110	<115	12.57			
3	300	<115	25			
4	10	<115	4.1 SCFH			
5	10	<115	12.5			
6	90	75	125		NOTE 4	

DESIGN DATA

	NORMAL		UPSET		SCFM	BY	REMARKS	REV
	PSIG	°F	PSIG	°F				
1	600	150	600	150	50			
2	200	150	200	150	25.11			
3	600	150	600	150	50			
4	50	150	50	150	8.8 SCFH			
5	200	150	200	150	25			
6	120	200						

STREAM	OPERATING			DESIGN		
	TEMP °F	PRESSURE PSIG	FLOW SCFM	TEMP °F	PRESSURE PSIG	FLOW SCFM
1	<115	110	12.57	150	200	25.11
2	<115	10	12.5	150	200	25
3	<115	30	4.1 SCFH	150	50	8.8 SCFH
4	<115	10	4.1 SCFH	150	50	8.8 SCFH
5	<115	10	4.1 SCFH	150	50	8.8 SCFH
6	<115	475	25	150	600	50
7	<115	300	25	150	600	50
8	<115	130	8.45	150	135	5
9	<115	22	8.45	150	30	8.25
10	<115	130	8.45	150	135	5
11	<115	1.29	1.45	150	30	1.45
12	<115	138	N/A	150	135	N/A
13	<115	75	N/A	150	110	N/A
14	<115	30	N/A	150	60	N/A
15	<115	300	3.2**	150	600	~10~

*REFERENCE CONDITION 78°F AND ZONE ATMOSPHERE (NOTE 1)

** PLANT NORMAL HYDROGEN INJECTION RATE FOR IGSCC MITIGATION AT 100% POWER IS 11 SCFM. REFER TO GEH DESIGN SPECIFICATION 26A5120 FOR CONSTANT HYDROGEN INJECTION AT LOW POWER. HYDROGEN INJECTION RATE IN THE STREAM ID 15, 3.2 SCFM IS FOR LOW POWER OF 20% AND BELOW TO ~35% POWER. ~10 SCFM IS THE FULL OPEN FLOW FOR THE CHOSEN FCV-109C VALVE TRIM.

NOTES:

1. PIPING TO BE INSTALLED AND MAINTAIN CLEANED FOR OXYGEN SERVICE PER CGA 4.2.
2. BURIED PIPING SHALL BE COATED FOR CORROSION PROTECTION.
3. DESIGN DATA APPLY UP THROUGH THE ISOLATION VALVE.
4. MAXIMUM FLOW DURING GENERATOR FILLING OPERATION IS 125 SCFM. NORMAL OPERATION FLOW IS 8.45 SCFM.
5. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN CERTAIN LINE SEGMENTS, DATA SUCH AS TEMPERATURE, AND FLOW MAY VARY. THE DATA SHOWN REPRESENTS THE MOST CONSERVATIVE CONDITIONS TO BE APPLIED TO THE SYSTEM DESIGN. ANY DEVIATION FROM THE SPECIFIED REQUIRED VALUES FOR A SPECIFIC APPLICATION SHALL BE EVALUATION. THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
6. FINAL HYDROGEN AND OXYGEN OPERATING FLOW RATES WILL BE DETERMINED AT STARTUP AFTER HOT FEEDWATER APPLICATION. OPERATING VALUES SHOWN ARE BASED ON 0.5 PPM HYDROGEN IN THE FEEDWATER.
7. ALL SOLENOID OPERATED VALVES (SOV'S) ARE NORMALLY CLOSED. ENERGIZE TO OPEN.
8. ALL AIR OPERATED VALVES (AOV'S) ARE NORMALLY CLOSED. AIR TO OPEN.

⚠3 HYDROGEN ELEMENT HE-N8149 SHALL BE MOUNTED NEAR VALVE AOV-F0400.

⚠4⚠5 HYDROGEN ELEMENTS HE-N8138A AND HE-N8138C SHALL BE MOUNTED NEAR STEAM-DRIVEN FEEDWATER PUMPS A AND C, RESPECTIVELY.

11. EFV-225 IS SET FOR 150 SCFM AT 600 PSIG
12. EFV-96 IS SET FOR 75 SCFM AT 150-PSIG
13. HYDROGEN AND OXYGEN SUPPLY FACILITIES ARE SUPPLIED, OPERATED, AND MAINTAINED UNDER CONTRACT WITH AIR PRODUCTS, INC.

⚠1 HYDROGEN ELEMENT HE-N128C SHALL BE MOUNTED NEAR MOTOR DRIVEN FEEDWATER PUMP NO7-C804.

⚠2 SEE STREAM 15 FOR OPERATING AND DESIGN DATA.

16. ALL COMPONENTS ARE IP73 UNLESS OTHERWISE NOTED.

REFERENCES:

302-0001-00000	FEEDWATER (M27)
302-0101-00000	CONDENSATE (N21)
302-0131-00000	CONDENSER AIR REMOVAL (M62)
302-0243-00000	INSTRUMENT AIR (P52)
302-0301-00000	HYDROGEN SUPPLY SYSTEM (N35)
27 -0024-00001	HYDROGEN/OXYGEN INJECTION MODULE
27 -0024-00002	HYDROGEN/OXYGEN INJECTION MODULE

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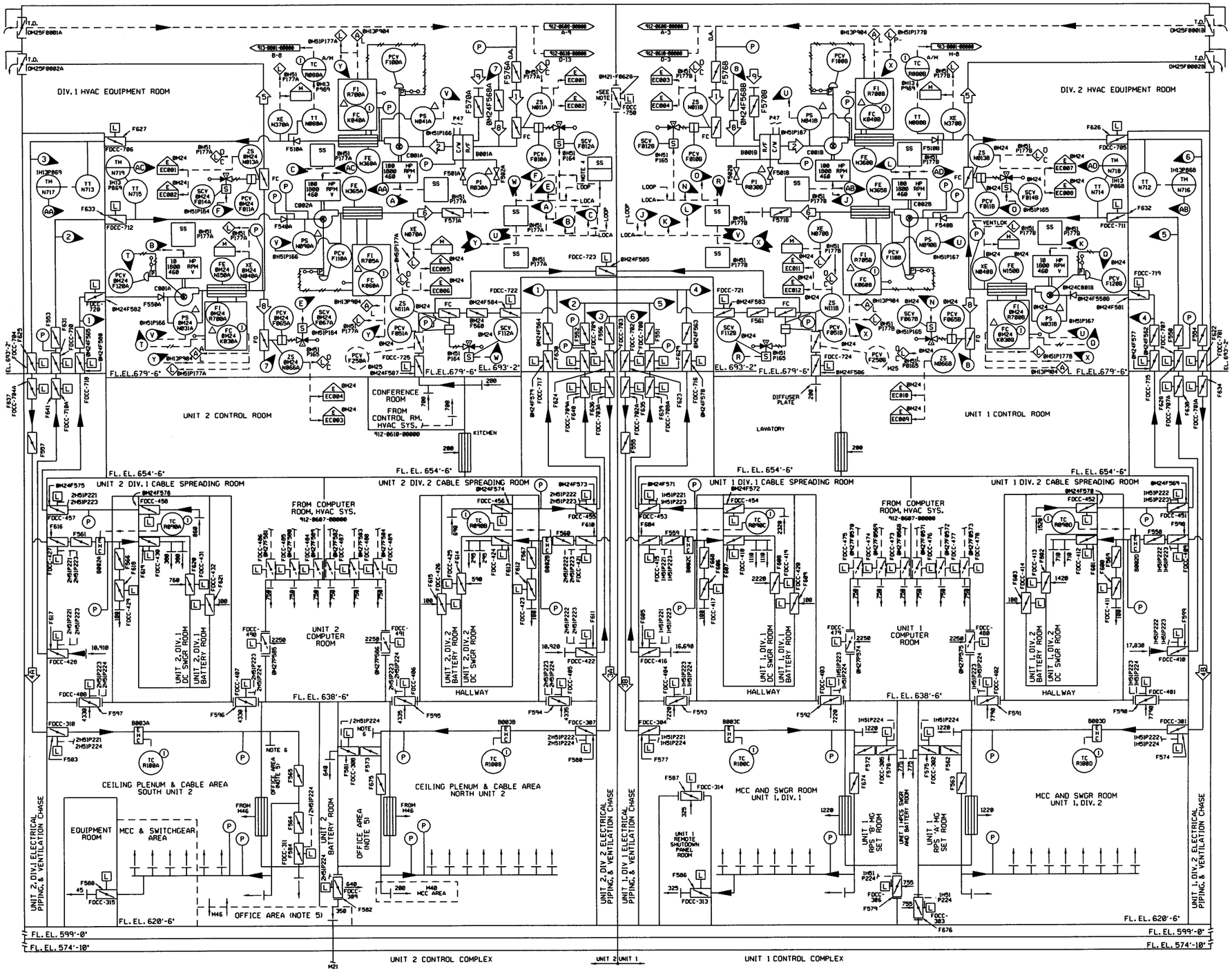
HYDROGEN
WATER CHEMISTRY
FIGURE 9.3-35
(DWG. D-302-0077-00000)



DESIGN DATA (NORMAL)						
	CFM			BY	REMARKS	REV
1	5,390					
2	53,890					
3A	9,270					
3B	14,440					
4A	8,410					
4B	15,580					
5	6,490					
6	56,350					
8	0					
9	47,700					

DESIGN DATA (RECIRCULATION)						
	CFM			BY	REMARKS	REV
1	0					
2	53,090					
3A	9,270					
3B	14,440					
4A	8,410					
4B	15,580					
5	0					
6	56,350					
8	5,390					
9	47,700					

NOTES:

1. FOR NOTES AND REFERENCES, SEE DWG. 912-0611-00000.
2. ALL AIR QUANTITIES ARE IN CFM.
3. FIRE DAMPERS (FDXX-XXX) SHOWN ON THIS DRAWING ARE TO BE AWS SAFETY CLASS WNS AND SEISMIC CATEGORY I.
4. PROVIDES CONTROL ROOM ISOLATION FOR M23C0001A, M23C0002A, M24C0001A, M24F0067A, M23F0012A, & M24F0014A PER APPENDIX R REMOTE SHUTDOWN METHOD A, MANUAL CONTROL PROVIDED ON H51P0177A TRANSFER SW LOCATED ON SW GEAR EF1A01.
5. OFFICE AREAS ARE DESIGNATED AS NON-SAFETY. THESE AREAS ARE SERVED BY THE M46 SYSTEM. REFER TO DRAWING 912-0632-00000.
6. OUTLET BLANKED CLOSED.
7. REFER TO DWG. 912-0608-00000 FOR FIRE DAMPER FDCC-750 (F628) FLOW VALUES.
8. ALL FUNCTIONAL LOCATIONS ARE PREFIXED WITH 0M23 UNLESS NOTED OTHERWISE.

REFERENCES:

912-0607-00000	COMPUTER ROOM-HVAC SYSTEM M27
912-0608-00000	CONTROLLED ACCESS AND MISCELLANEOUS EQUIPMENT AREAS-HVAC SYSTEM M21
912-0610-00000	CONTROL ROOM-HVAC AND EMERGENCY RECIRCULATION SYSTEMS M25/M26
912-0611-00000	CONTROL ROOM-HVAC AND EMERGENCY RECIRCULATION AND CONTROL COMPLEX-HVAC NOTES AND OPERATING DATA SYSTEMS M23, M24, M25 AND M26
913-0001-00000	CONTROL COMPLEX-CHILLED WATER SYSTEM P47

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MCC SWITCHGEAR AND MISCELLANEOUS EQUIPMENT AREAS HVAC SYSTEM FIGURE 9.4-1 (SHEET 1 OF 2) (DWG. D-912-0609-00000)

MOTOR CONTROL CENTER SWITCHGEAR AND MISCELLANEOUS ELECTRICAL EQUIPMENT AREAS
-HVAC SYSTEM AND BATTERY ROOM M23-M24
NOTES AND OPERATING DATA
912-0689-00000

NOTES:-

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH THE FAN MOTOR STARTER AND PROVIDED WITH TIME DELAY RELAY.
2. ALL CONTROL SWITCHES, FAN STATUS LIGHTS, ALARM INDICATING LIGHTS, AND DAMPER POSITION LIGHTS ARE LOCATED ON THE CORRESPONDING LOCAL PANEL, H51-P177A OR H51-P177B, EXCEPT WHERE NOTED.
3. FAN STATUS LIGHTS, ALARMS, AND TEMPERATURE INDICATORS ARE LOCATED ON THE COMMON HVAC PANEL H13-P904 IN CONTROL ROOM #1.
4. ALL ALARMS FROM THIS SYSTEM ARE ANNUNCIATED AS "COMMON HVAC TROUBLE" ON PANEL H13-P680 IN BOTH CONTROL ROOMS.
5. THE FAN TRAIN SETUP SWITCH WILL START THE 3 FANS WITH A TIME DELAY FOR M23-C001A(B) AND M23-C002A(B) IN ORDER TO START M24-C001A(B) FIRST.
6. WHEN A FAN TRAIN IS SIGNALED TO START, THE FANS ARE PROVIDED WITH TIME DELAY SO THAT THE DAMPERS WILL BE POSITIONED FIRST, PRIOR TO FAN TRAIN START.
7. ON LOSS OF FAN OPERATION (LOW FLOW OR FAN TRIP) ON ANY OF THE 3 OPERATING FANS (A OR B) THE AIR FLOW MONITOR DEVICE WILL TRIP THE REMAINING FANS IN THE TRAIN AND THE DIFFERENTIAL PRESSURE SWITCH WILL PROVIDE A SIGNAL TO AUTOMATICALLY SWITCH OVER TO THE STAND BY FAN TRAIN (A OR B).
8. THE 2 - POSITION SELECTOR SWITCH WILL POSITION THE DAMPERS AS INDICATED IN THE TABLE BELOW:

SYSTEM	ITEM	RECIRC.	NORMAL	REMARKS
M24	F011A (8)	C	O	
M23	F010A (11)	C	O	
M24	F065A (10)	O	C	
M24	F051A (11)	C	O	SEE NOTE 11

O = OPEN
C = CLOSED

9. DAMPERS ARE POSITIONED ACCORDING TO THE DAMPER OPERATOR SELECTOR SWITCH POSITION ONLY WHEN THE ASSOCIATED FAN TRAIN IS MANUALLY STARTED OR IN STANDBY WITH AUTOMATIC START SIGNAL FROM THE SWITCHOVER NETWORK, OTHERWISE THE DAMPERS ARE IN THE FAIL SAFE POSITION (RECIRCULATION MODE).
10. EACH ROOM (TOTAL OF 23 ROOMS) SERVED BY M23/M24/M27 ARE PROVIDED WITH THE FOLLOWING TEMPERATURE ELEMENTS WHICH TRANSMIT TO THE RILEY MODEL 88 TEMPERATURE MONITORING SYSTEM LOCATED ON PANEL H13-P904.

TEMP. ELEM. NUMBER	ROOM OR AREA LOCATED
M23-H180-TE	DC SWGR ROOM, DIV. I, UNIT 1
M23-H110-TE	DC SWGR ROOM, DIV. II, UNIT 1
M23-H120-TE	DC SWGR ROOM, DIV. I, UNIT 2
M23-H130-TE	DC SWGR ROOM, DIV. II, UNIT 2
M23-H140-TE	BATTERY ROOM, DIV. I, UNIT 1
M23-H150-TE	BATTERY ROOM, DIV. II, UNIT 1
M23-H160-TE	BATTERY ROOM, DIV. I, UNIT 2
M23-H170-TE	BATTERY ROOM, DIV. II, UNIT 2
M23-H180-TE	CABLE SPREADING AREA, DIV. I, UNIT 1
M23-H190-TE	CABLE SPREADING AREA, DIV. II, UNIT 1
M23-H200-TE	CABLE SPREADING AREA, DIV. I, UNIT 2
M23-H210-TE	CABLE SPREADING AREA, DIV. II, UNIT 2
M27-H220-TE	COMPUTER ROOM UNIT 1
M27-H230-TE	COMPUTER ROOM UNIT 2
M23-H240-TE	MCC & SWGR ROOM, DIV. I, UNIT 1
M23-H250-TE	MCC & SWGR ROOM, DIV. II, UNIT 1
M23-H260-TE	MCC & SWGR ROOM, UNIT 2
M23-H270-TE	H48 MCC ROOM, UNIT 2
M23-H280-TE	HPCS TRANSFORMER & BATTERY ROOM, UNIT 1
M23-H290-TE	HPCS TRANSFORMER & BATTERY ROOM, UNIT 2
M23-H300-TE	REMOTE SHUTDOWN PANEL ROOM, UNIT 1
M23-H320-TE	RPS MG SET ROOM, DIV. I, UNIT 1
M23-H330-TE	RPS MG SET ROOM, DIV. II, UNIT 1

11. M24-F051A (8) IS POSITIONED CLOSED WHEN ANY OF THE FOLLOWING IS MET:
    A. M25/26 IN SMOKE CLEAR OR EMERG. RECIRC. (MANUAL OR AUTO INITIATION)
    B. M23/M24 MODE SWITCH IN RECIRC.
    C. ASSOCIATED FAN TRAIN IS SHUT DOWN.

CONTROL ROOM HVAC AND EMERGENCY RECIRCULATION SYSTEM- M25, M26
NOTES AND OPERATING DATA
912-0618-00000

NOTES:-

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH THE FAN MOTOR STARTER AND PROVIDED WITH TIME DELAY RELAY.
2. ALL CONTROL SWITCHES, STATUS LIGHTS, ALARMS AND TEMPERATURE INDICATORS ARE LOCATED ON THE COMMON HVAC PANEL (H13-P904) IN CONTROL ROOM #1.
3. ALL ALARMS FROM THIS SYSTEM ARE ANNUNCIATED AS "COMMON HVAC TROUBLE" ON PANEL H13-P680 IN BOTH CONTROL ROOMS.
4. THE 3-POSITION MODE SELECT SWITCH WILL POSITION THE DAMPERS AND START AND STOP FANS AS INDICATED IN THE TABLE BELOW:

ITEM		SMOKE CLEAR	NORMAL	REMARKS	EMER. RECIRC.
F130A (9)		O	C		C
F110A (11)		C	O		C
F010A (12)		O	O		C
F250A (10)		C	O	SEE NOTE 12	C
F255A (10)		C	O		C
SCV-F220A (11)		E	DE	SEE NOTE 13	E
M26-C001A (8)		S	S		R
M25-C001A (9)		R	R		R
M25-C002A (10)		R	R		S
M25-F260A (10)		DE	E	SEE NOTE 9	DE
M25-F243A (8)		C	O		C

R = RUN
S = STOP
C = CLOSED
O = OPEN
E = ENERGIZE
DE = DEENERGIZE

5. FANS AND DAMPERS, EXCEPT F130A(8), F250A(10), F255A(10), AND F243A(8), ARE OPERATED ACCORDING TO THE MODE SELECT SWITCH POSITION ONLY WHEN THE ASSOCIATED FAN TRAIN INITIATE SWITCH IS IN THE "ON" POSITION, OTHERWISE THE DAMPERS ARE IN THE FAIL SAFE POSITION.
6. LOSS OF FAN OPERATION (LOW FLOW OR FAN TRIP) ON ANY OF THE OPERATING FAN TRAIN (A OR B) WILL TRIP THE REMAINING FANS. THE STAND BY FAN TRAIN (A OR B) IS MANUALLY STARTED AND WILL OPERATE ACCORDING TO THE MODE SELECT SWITCH POSITION (SEE NOTE 4)
7. LOCA (FROM EITHER REACTOR), HIGH RADIATION, OR LOOP WILL OVERRIDE THE MODE SELECT SWITCH AND OPERATE THE SYSTEM IN THE EMERGENCY RECIRCULATION MODE. BOTH FAN TRAINS WILL RUN.
8. THE SOLENOID VALVE (SCV-F220A, B) ENERGIZES TO VENT ACTUATORS (PCV-F220A, B) AND POSITION THE VARIABLE INLET VANES OF FANS (M25-C002A, B) TO REDUCE THE AIR FLOW TO 30,000 CFM.
9. DE-ENERGIZING ACTUATOR (SCV-F260A, B) WILL POSITION THE VARIABLE INLET VANES OF FANS (M25-C001A, B) TO REDUCE THE AIR FLOW TO 30,000 CFM.
10. BYPASS AND INOPERABLE STATUS INDICATION IS REQUIRED IN THE CONTROL ROOM.
11. FOR PROPER SYSTEM OPERATION, BOTH A AND B TRAIN MODE SELECT SWITCHES SHOULD BE ADMINISTRATIVELY KEPT IN THE SAME POSITION.
12. M24-F051A(8) OPERATES WITH M25-F250A(10) EXCEPT WHEN M25/26 SYSTEM MODE SWITCH IS IN RECIRC. OR WHEN THE ASSOCIATED M23/24 FAN TRAIN IS SHUTDOWN EITHER OF WHICH CLOSES M24-F051A(8).
13. M25-F020A(8) IS NOT POSITIONED BY THE MODE SWITCH, BUT IS CLOSED BY LOCA, HIGH RADIATION, OR LOOP. M25-F020A(8) HAS AN INDEPENDENT CONTROL SWITCH FOR MANUAL POSITIONING THE DAMPER IN OTHER MODES.

REFERENCES:
912-0689-00000 MCC SWITCHGEAR AND MISCELLANEOUS ELECTRICAL EQUIPMENT. M23, M24
912-0618-00000 CONTROL ROOM HVAC AND EMERGENCY RECIRCULATION SYSTEM M25, M26.

NOTES:-
1. SEE DRAWINGS 912-0689-00000 AND 912-0618-00000

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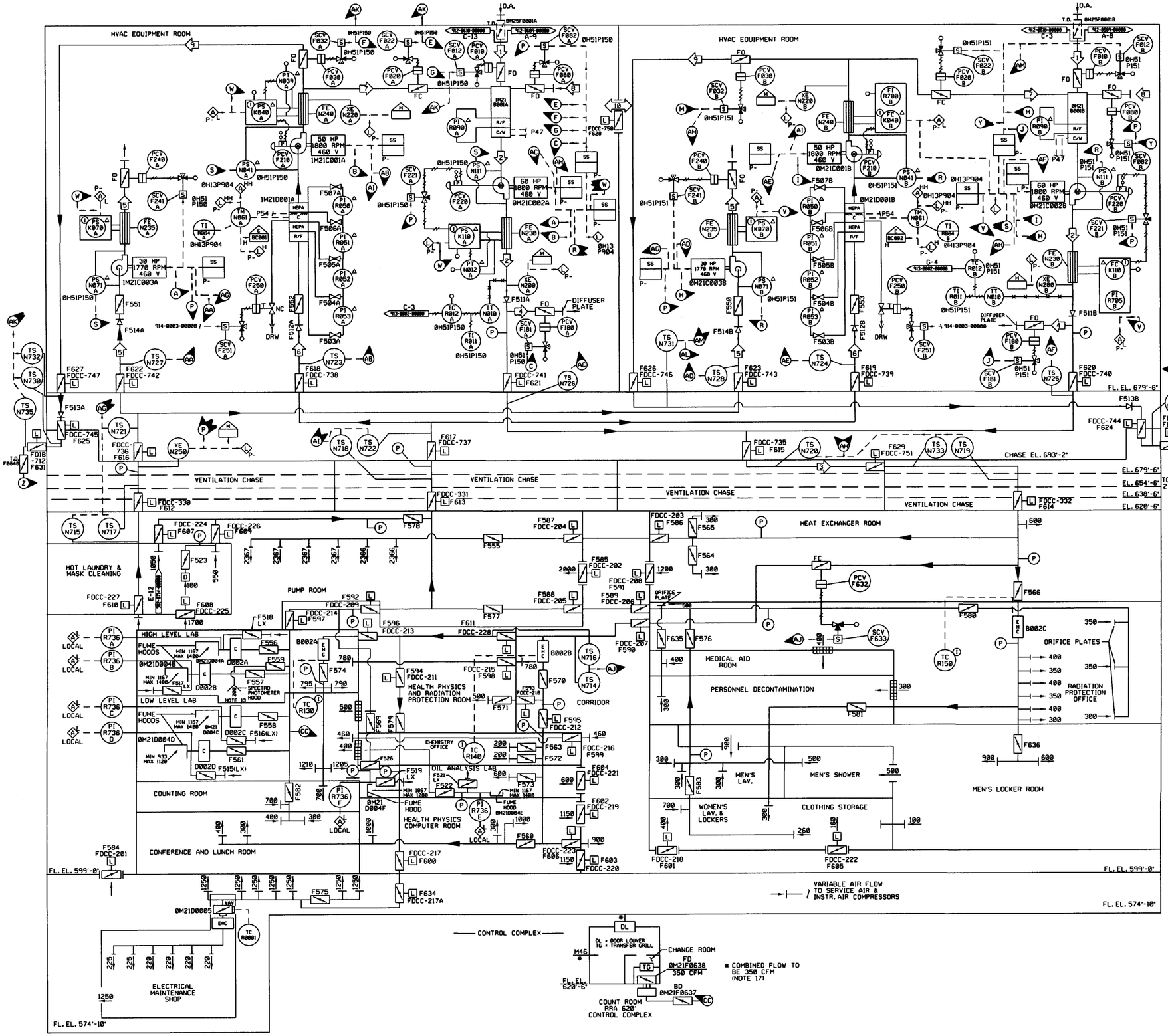
PERRY NUCLEAR POWER PLANT

Notes and Operating Data
for <Figure 6.4-1> and <Figure 9.4-1>

Figure 9.4-1 (Sheet 2 of 2)
(Dwg. D-912-611)



*COMBINED FLOW TO BE 350 CFM (NOTE 17)

DL = DOOR LOUVER
TG = TRANSFER GRILL

*DESIGN DATA (NORMAL)

		CFM		BY	REMARKS	REV
1		10,100				
2		42,000				
3		39,500				
4		2,500			SEE NOTE 15	
5		24,500				
6		15,000				
7		0				
8		31,900				
9		15,000				
10		4,950				

*DESIGN DATA (RECIRCULATION)

1		0				
2		42,000				
3		39,500				
4		2,500			SEE NOTE 15	
5		24,500				
6		15,000				
7		15,000				
8		27,000				
9		0				
10		2,500				

*SEE NOTE 16

REFERENCES:

302-0714-00000	RESPIRATORY CLEANING FACILITY L58
912-0609-00000	MCC SWITCHGEAR AND MISC. ELECTRICAL EQUIPMENT AREAS HVAC SYSTEM AND BATTERY ROOM EXHAUST M23/24
912-0610-00000	CONTROL ROOM HVAC AND EMERGENCY RECIRCULATING SYSTEM M25/M26
912-0613-00000	INTERMEDIATE BUILDING VENTILATION SYSTEM M33
913-0002-00000	CONTROL COMPLEX CHILLED WATER SYSTEM P47
914-0003-00000	FIRE SERVICE WATER P54

NOTES:

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH THE FAN MOTOR STARTER AND PROVIDED WITH TIME DELAY RELAY.
2. ALL CONTROL SWITCHES, FAN STATUS LIGHTS, AND ALARM INDICATING LIGHTS ARE LOCATED ON THE LOCAL PANEL 0H51P033, EXCEPT WHERE NOTED.
3. FAN STATUS LIGHTS, CHARCOAL HIGH TEMPERATURE ALARMS, AND TEMPERATURE INDICATORS ARE LOCATED ON THE COMMON HVAC PANEL 0H13P904 IN THE CONTROL ROOM.
4. ALL ALARMS FROM THIS SYSTEM ARE ANNUNCIATED AS 'CA AND HFA HVAC SYSTEM TROUBLE' ON PANEL 1H13P680 IN BOTH CONTROL ROOMS, EXCEPT LOCAL ALARMS ASSOCIATED WITH 0M21R736A, R736B, R736C, & R736D.
5. THE FAN TRAIN SETUP SWITCH WILL START THE 3 FANS WITH A TIME DELAY FOR 0M21C003A (B) AND 0M21C002A (B) IN ORDER TO START 0M21C001A (B) FIRST.
6. WHEN A FAN TRAIN IS SIGNALED TO START, THE FANS ARE PROVIDED WITH TIME DELAY SO THAT THE DAMPERS WILL BE POSITIONED FIRST PRIOR TO FAN TRAIN START.
7. LOSS OF FAN OPERATION (LOW FLOW OR FAN TRIP) ON ANY OF 3 OPERATING FANS (A OR B) WILL TRIP THE REMAINING FANS IN THE TRAIN AND AUTOMATICALLY SWITCH OVER TO THE STANDBY FAN TRAIN (A OR B), EXCEPT ON HIGH SMOKE CONDITION IN THE MAIN RETURN DUCT.
8. THE 2-POSITION SELECTOR SWITCH WILL POSITION THE DAMPERS AS INDICATED IN THE TABLE BELOW

ITEM	RECIRC	NORM
F010A(B)	C	O
F020A(B)	O	C
F030A(B)	C	O
F008A(B)	O	O
F180A(B)	O	O
F240A(B)	O	O

9. DAMPERS ARE POSITIONED ACCORDING TO THE DAMPER OPERATOR SELECTOR SWITCH POSITION ONLY WHEN THE ASSOCIATED FAN TRAIN IS MANUALLY STARTED OR IN STANDBY WITH AUTOMATIC START SIGNAL FROM THE SWITCH OVER NETWORK.
10. SMOKE DETECTOR, XE-N250, WILL TRIP RETURN FANS 0M21C003A AND B, CLOSE DAMPERS 0M21F240A AND B, AND ENERGIZES SOLENOIDS SCV-F221A AND B TO REDUCE THE SUPPLY FAN FLOW RATE.
11. DAMPER 0M21F240A (B) WILL OPEN WHEN THE CORRESPONDING FAN 0M21C003A (B) OPERATES AND CLOSES WHEN FAN STOPS.
12. ALL AIR QUANTITIES ARE IN CFM.
13. REFERENCE FD 49747 VERIFY FLOW WITHOUT EXTINGUISHING THE SPECTRO PHOTOMETER FLAME.
14. DUE TO RELOCATION OF WALLS, FIRE DAMPERS FDCC-211, 213, & 214 HAVE BEEN ADMINISTRATIVELY LOCKED OPEN.
15. DAMPER 0M21F181B(A&B) OPEN WHEN OPPOSITE TRAIN IS IN SERVICE.
16. DESIGN DATA ASSUMES OTHER CONTROL COMPLEX VENTILATION SYSTEMS ARE ALSO OPERATED IN THE SAME MODE.
17. THE DESIGN SUPPLY/EXHAUST FAN FLOWS DO NOT INCLUDE THE 350 CFM FROM THE RRA 620' COUNT ROOM. THIS 350 CFM EXHAUST IS A SMALL PERCENTAGE OF THE TOTAL SYSTEM FLOW AND IS ACHIEVED BASED ON AVAILABLE SYSTEM/REGISTER AIRFLOW TOLERANCES.
18. TORNADO DAMPERS (TD) SHOWN ON THIS DRAWING ARE TO BE SAFETY-RELATED CLASS 3, NON-SEISMIC

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PERRY NUCLEAR POWER PLANT

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CONTROLLED ACCESS AND MISCELLANEOUS EQUIPMENT AREAS HVAC SYSTEM

FIGURE 9.4-2

(DWG. D-912-0608-00000)

DESIGN DATA

	CFM			BY	REMARKS	REV
1A, 1B	9000					
2A, 2B	4500					

OPERATING DATA

	RUN FAN		CFM	REMARKS	REV
*	0M27B001A	1A	8810		
		1B	0		
**		2A	4180		
**		2B	4630		
*	0M27B001B	1A	0		
		1B	8550		
**		2A	3830		
**		2B	4720		

NOTES:

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH THE FAN MOTOR STARTER AND PROVIDED WITH A TIME DELAY RELAY.
2. ALL CONTROL SWITCHES STATUS LIGHTS AND ALARMS ARE LOCATED ON THE LOCAL HVAC PANEL H51P033, UNLESS NOTED.
3. ALL ALARMS FROM THIS SYSTEM ARE ANNUNCIATED INDIVIDUALLY ON PANEL H51P033 AND AS "M21/M27/M29 TROUBLE" ON PANEL H13-P680 IN BOTH CONTROL ROOMS.
4. ALL AIR FLOWS IN CFM.

* INDICATES THE SUM OF THE BRANCHES PER FD * 41635

** INDICATES THE SUM OF THE DIFFUSERS FOR THE BRANCH PER FD * 41635. THIS IS THE MOST ACCURATE FLOW READING.

REFERENCES:

912-0609-00000	MCC, SWITCHGEAR AND MISCELLANEOUS ELECTRICAL EQUIPMENT AREAS HVAC SYSTEM AND BATTERY ROOM EXHAUST M23/M24
913-0002-00000	CONTROL ROOM COMPLEX CHILLED WATER P47
913-0018-00000	CONTROL AND COMPUTER ROOMS HUMIDIFICATION SYSTEM M29

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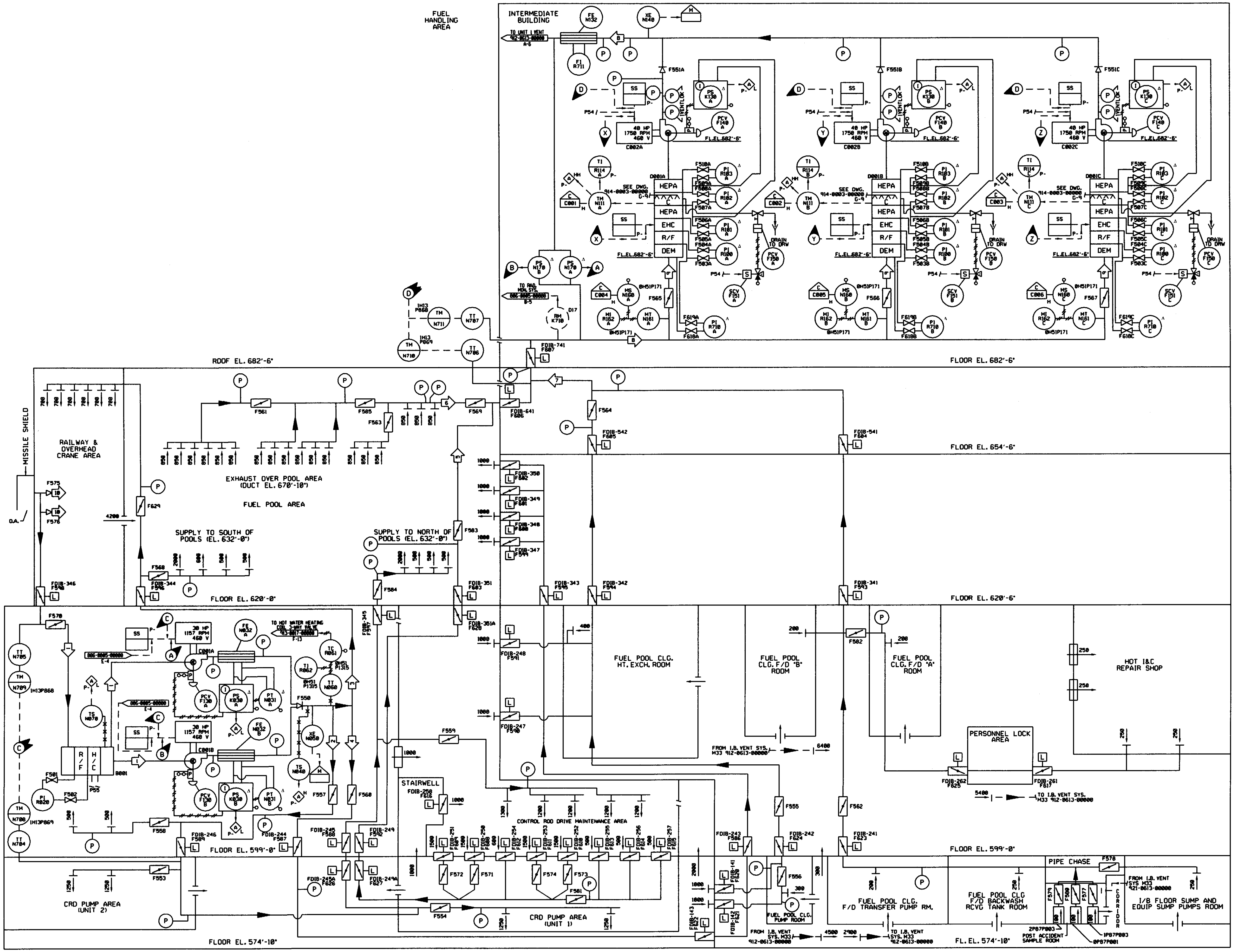
PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

COMPUTER ROOM
HVAC SYSTEM
FIGURE 9.4-3
(DWG. D-912-0607-00000)



DESIGN DATA (NORMAL)

#		CFM		BY	REMARKS	REV
1		27,400			SEE NOTE 8	
2		15,600				E
3		7,000				E
4		4,000				E
5		8,100				E
6		15,300				E
7		6,600				E
8		30,000				E
9		15,000				E
10		0			SEE NOTE 7	F

NOTES:

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH FAN MOTOR STARTER AND PROVIDED WITH TIME DELAY RELAY.
2. ALL CONTROL SWITCHES (INCLUDING THE CHARCOAL SPRAY SWITCHES), STATUS LIGHTS, ALARMS AND TEMPERATURE INDICATORS ARE LOCATED ON COMMON HVAC PANEL (0H13P904) IN THE CONTROL ROOM. EXCEPT WHERE NOTED.
3. ALL ALARMS FROM THIS SYSTEM WILL BE ANNUNCIATED AS "COMMON HVAC P904" ON PANEL 1H13P680.
4. ALL FAN INLET VANE LEVER ARM GUIDES ARE SUPPLIED WITH A MECHANICAL STOP TO PREVENT AIR FLOW FROM BEING REDUCED BELOW 50%.
5. ALL AIR QUANTITIES ARE IN CFM.
6. FIRE DAMPERS (FDXX-XXX) SHOWN ON THIS DRAWING ARE TO BE ANS SAFETY CLASS NNS AND SEISMIC CATEGORY I.
7. UNDER A HIGH RADIATION CONDITION FLOW FOR DAMPERS F575 AND F576 TO BE 15,000 CFM.
8. SYSTEM FLOW CAN VARY BY ±10%. PREOPERATIONAL TEST RESULTS OF 25,167 CFM FOR 0M40C0001A AND 24,726 CFM FOR 0M40C0001B ARE ACCEPTABLE AS OPERATIONAL DATA. REFERENCE NR-DOC-1864.

REFERENCES:

006-0005-00000	RADIATION MONITORING SYSTEM D17
912-0613-00000	INTERMEDIATE BUILDING VENTILATION SYSTEM M33
913-0017-00000	HOT WATER HEATING SYSTEM P55
914-0003-00000	FIRE SERVICE WATER P54

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PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

FUEL HANDLING
VENTILATION SYSTEM
FIGURE 9.4-4
(DWG. D-912-0617-00000)

DESIGN DATA						
		CFM		BY	REMARKS	REV
1		29,325				
2		4,000				
3		31,825				
4		6,500				

NOTES:

1. PUMP ROOM COOLERS ARE SHOWN ON DWG 912-0616-00000.
2. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH FAN MOTOR STARTERS AND ARE PROVIDED WITH TIME DELAY RELAY.
3. ALL ALARMS FROM THIS SYSTEM EXCEPT HIGH RADIATION AND HIGH SMOKE ALARM WILL BE ANNUNCIATED ON HVAC PANEL 1H51P172 AND WILL ALSO BE ANNUNCIATED AS "HVAC TROUBLE" ON PANEL 1H13P680 IN THE CONTROL ROOM.
4. ALL CONTROL SWITCHES, STATUS LIGHTS AND ALARMS ARE LOCATED ON THE LOCAL PANEL (1H51P172), EXCEPT WHERE NOTED.
5. THESE AREAS ARE CONNECTED BY EAST-WEST HALLWAYS.
6. THESE AREAS ARE CONNECTED BY EAST-WEST HALLWAYS.
7. ALL AIR QUANTITIES ARE IN CFM.
8. ADDITIONAL AIR FOR THIS AREA IS FROM THE EAST-WEST HALLWAY.
9. THE SUPPLY PLENUM ROUGHING FILTERS MAY BE REMOVED DURING WINTER OPERATING PERIODS WHEN ADVERSE SNOW CONDITIONS ARE EXPECTED OR HAVE OCCURRED WHICH COULD CAUSE SNOW LOADING ON THE FILTER WHICH WOULD CREATE A LOW FLOW CONDITION. IF THE ROUGHING FILTERS ARE REMOVED THEY SHALL BE REINSTALLED WHEN WEATHER CONDITIONS PERMIT.
10. USED DURING OPERATION & TESTING OF ADHR SYSTEM (G40)

REFERENCES:

302-0212-00000	SERVICE WATER SYSTEM P41
806-0004-00000	RADIATION MONITORING SYSTEM D17
912-0613-00000	INTERMEDIATE BUILDING VENT. SYSTEM M33
912-0614-00000	TURBINE BUILDING VENT SYSTEM M35
912-0616-00000	ECCS PUMP ROOMS COOLING SYSTEMS M39
912-0625-00000	STEAM TUNNEL COOLING SYSTEM M47
913-0016-00000	HOT WATER HEATING SYSTEM P55
914-0003-00000	FIRE SERVICE WATER P54

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PERRY NUCLEAR POWER PLANT

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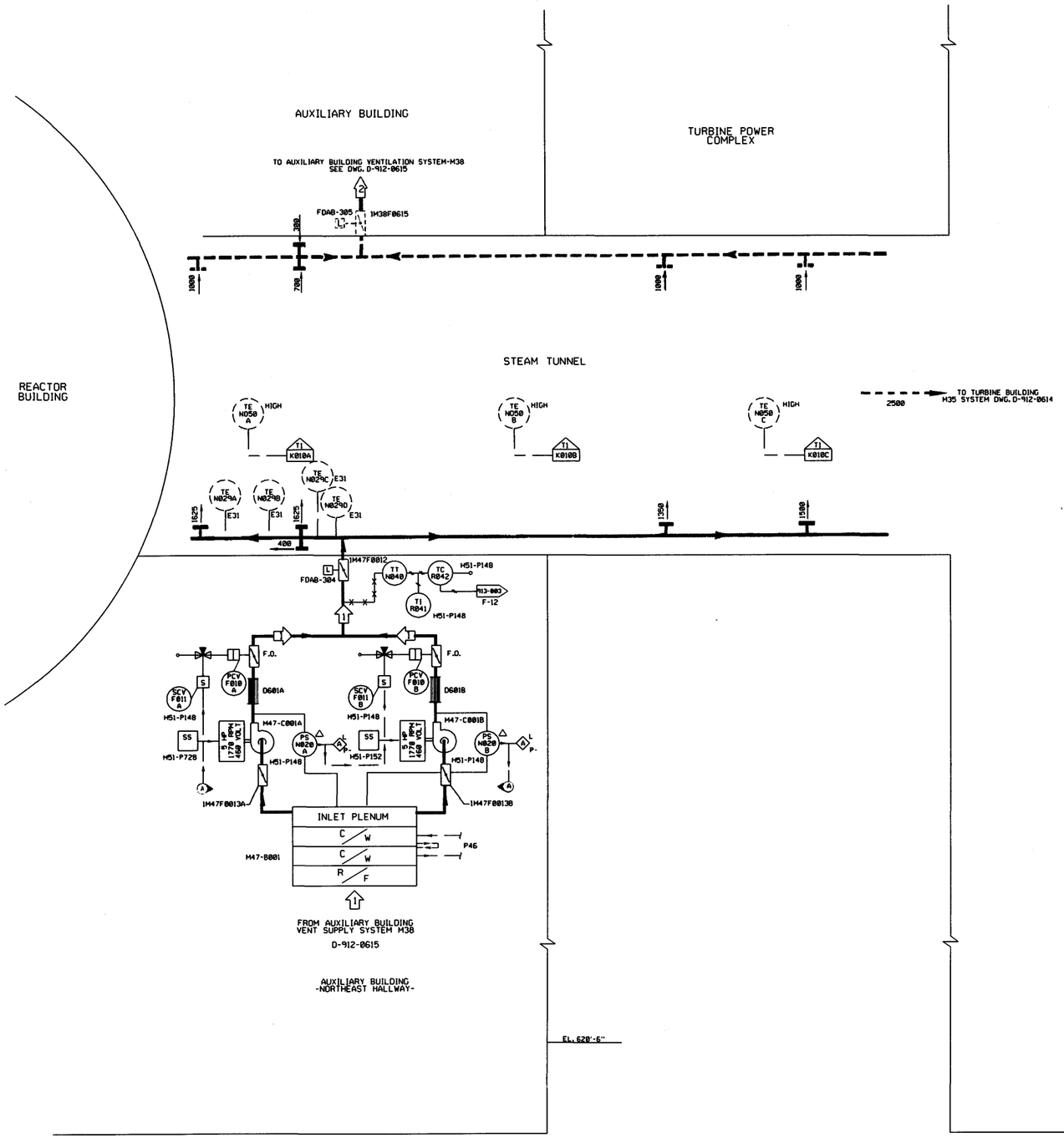
AUXILIARY BUILDING
VENTILATION SYSTEM
FIGURE 9.4-5
(DWG. D-912-0615-00000)



DESIGN DATA

#	CFM		BY	REMARKS	REV
1	6500				
2	4000				

NOTES:-

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH FAN MOTOR STARTERS AND PROVIDED WITH TIME DELAY RELAY.
2. ALL ALARMS FROM THIS SYSTEM WILL BE ANNUNCIATED ON PANEL (H51-P172) AND AS "HVAC TROUBLE" ON PANEL (H13-P688) IN THE CONTROL ROOM.
3. ALL CONTROL SWITCHES, AND FAN STATUS LIGHTS ARE LOCATED ON THE LOCAL PANEL (H51-P172).
4. ALL AIR QUANTITIES ARE IN CFM.
5. DAMPERS F010A&B ARE FAIL OPEN ON LOSS OF AIR AND CLOSE UPON LOSS OF SYSTEM POWER OR SHUT DOWN OF ASSOCIATED FAN.

REFERENCES:-

D-913-0003 TURBINE BUILDING CHILLED WATER SYSTEM-P46
D-912-0615 AUXILIARY BUILDING VENTILATION SYSTEM-M38
D-912-0614 TURBINE BUILDING VENTILATION SYSTEM-M35

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PERRY NUCLEAR POWER PLANT

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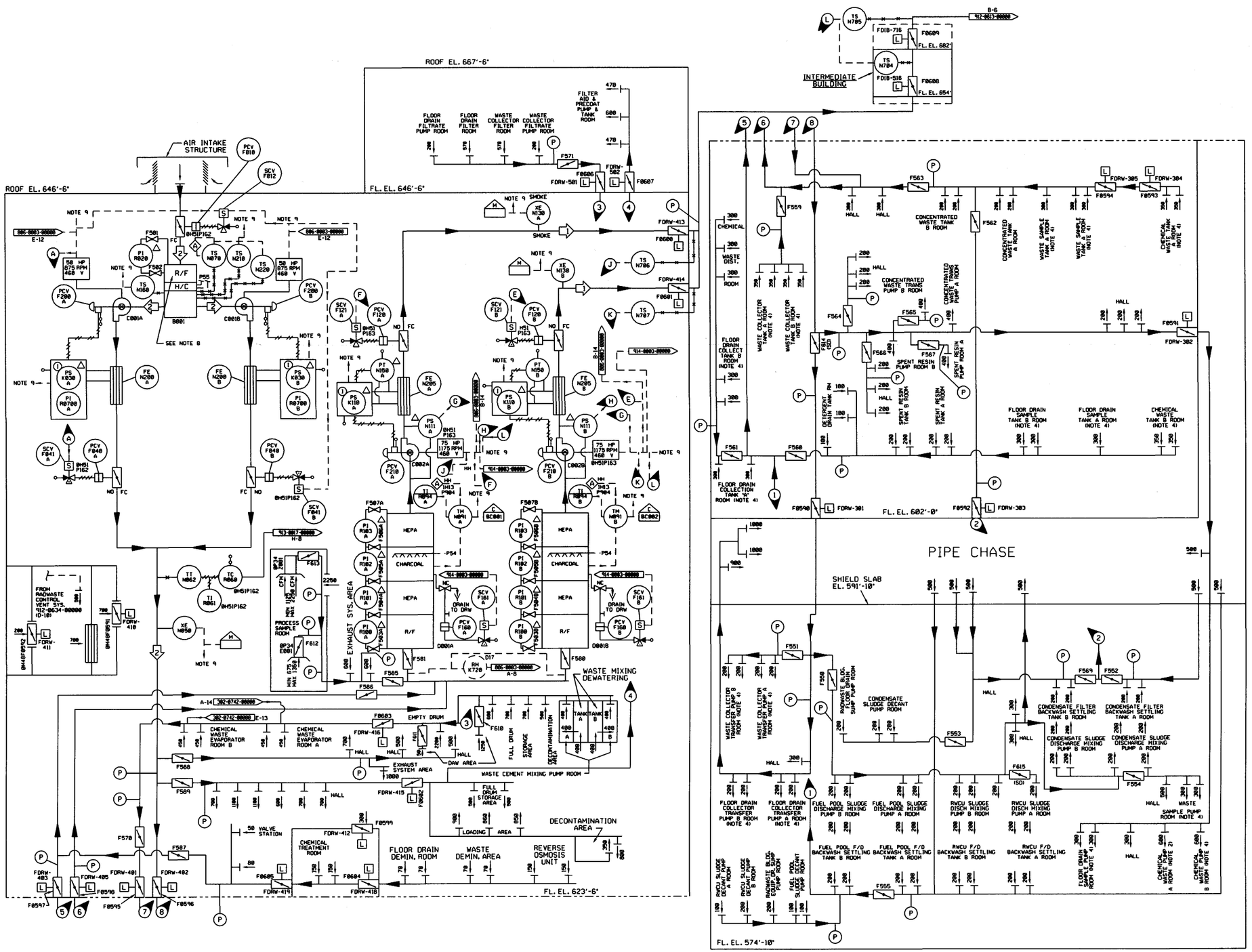
STEAM TUNNEL
COOLING SYSTEM
FIGURE 9.4-6
(DWG. D-912-0625-00000)

DESIGN DATA

ID	CFM			BY	CHKD	REMARKS	REV
1	30,000						
2	29,300						



NOTES:

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH THE FAN MOTOR STARTER AND PROVIDED WITH A TIME DELAY RELAY.
2. DELETED
3. ALL ALARMS FROM THIS SYSTEM EXCEPT HIGH SMOKE AND HIGH RADIATION WILL BE ANNUNCIATED AS SYSTEM TROUBLE ALARM ON PANEL 8H13P804.
4. TANK ROOM PENETRATES FLOOR (EL. 602'-8") AIR FLOW INTO ROOM FROM FLOOR EL. 574'-10" TANK PUMP ROOM.
5. ALL AIR QUANTITIES ARE IN CFM.
6. DELETED
7. DELETED
8. THE SUPPLY PLENUM ROUGHING FILTERS MAY BE REMOVED DURING WINTER OPERATING PERIODS WHEN ADVERSE SNOW CONDITIONS ARE EXPECTED OR HAVE OCCURED WHICH COULD CAUSE SNOW LOADING ON THE FILTERS WHICH WOULD CREATE A LOW FLOW CONDITION. IF THE ROUGHING FILTERS ARE REMOVED THEY SHALL BE REINSTALLED WHEN WEATHER CONDITIONS PERMIT.
9. INPUT/OUTPUT TO/FROM THE LIQUID RADWASTE DISTRIBUTED CONTROL SYSTEM.

REFERENCES

302-0742-00000	LRW WASTE EVAPORATOR CONDENSERS D50
912-0613-00000	INTERMEDIATE BLDG. VENTILATION SYSTEM M33
912-8634-00000	RADWASTE CONTROL ROOM HVAC SYSTEM M48
913-0817-00000	HOT WATER HEATING SYSTEM P55
914-0803-00000	FIRE SYSTEM WATER P54
806-0803-00000	RADIATION MONITORING SYSTEM D17

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RADWASTE BUILDING
VENTILATION SYSTEM
FIGURE 9.4-7
(DWG. D-912-0612-00000)

DESIGN DATA						
#		CFM		BY	REMARKS	REV
1		66,125				
2		124,350				
3		3900				
4		180,000			NOTE 6	

NOTES

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH THE FAN MOTOR STARTER AND PROVIDED WITH A TIME DELAY RELAY.
2. ALL CONTROL SWITCHES STATUS LIGHTS AND ALARMS ARE LOCATED ON THE LOCAL PANEL (1H51P842) EXCEPT WHERE NOTED.
3. A COMMON ALARM FROM THIS SYSTEM (H35) EXCEPT (HIGH SMOKE) WILL BE ANNUNCIATED AS "H35/H41 TROUBLE" ON PANEL 1H51P808.
4. SELECTOR SWITCHES FOR NORTHEAST WINDOW SASH, CENTRAL WINDOW SASH AND SOUTHEAST WINDOW SASH OPERATE WINDOW MOTOR OPERATOR IL53E801A, IL53E801B, AND IL53E801C RESPECTIVELY. SEE DWG 182-0631-00000 SELECTOR SWITCH FOR WEST WINDOW SASH OPERATES WINDOW MOTOR OPERATOR IL53E860A, IL53E860B. SEE DWG 182-0841-00000
5. ALL AIR QUANTITIES ARE IN CFM
6. WINTER DESIGN FLOW IS 118,000 CFM.
7. THE SUPPLY ROUGHING FILTERS MAY BE REMOVED AND REPLACED WITH PERFORATED PLATES CONTAINING 0.375 INCH DIAMETER HOLES WITH A DISTANCE APART OF 0.562 INCH ON CENTER AND 0.062 INCH THICK GALVANIZED CRS INSIDE A VARICEL FRAME DURING THE MONTHS WHEN SNOW IS EXPECTED.
8. 30 CFM IS DUCTED DIRECTLY TO EACH OF THE (N64P3000/G H_2/O_2 ANALYZER PANELS (60 CFM TOTAL)

REFERENCES

913-0004-00000	TURBINE BUILDING CHILLED WATER SYSTEM P46
913-0016-00000	HOT WATER HEATING SYSTEM P55
912-0622-00000	OFF-GAS EXHAUST M36
912-0621-00000	HEATER BAY VENTILATION SYSTEM M41/M35
182-0631-00000	EAST ELEV TURBINE BLDG COMPLEX
182-0841-00000	WEST ELEV TURBINE BLDG COMPLEX
912-0615-00000	AUX BUILDING VENT SYSTEM M33

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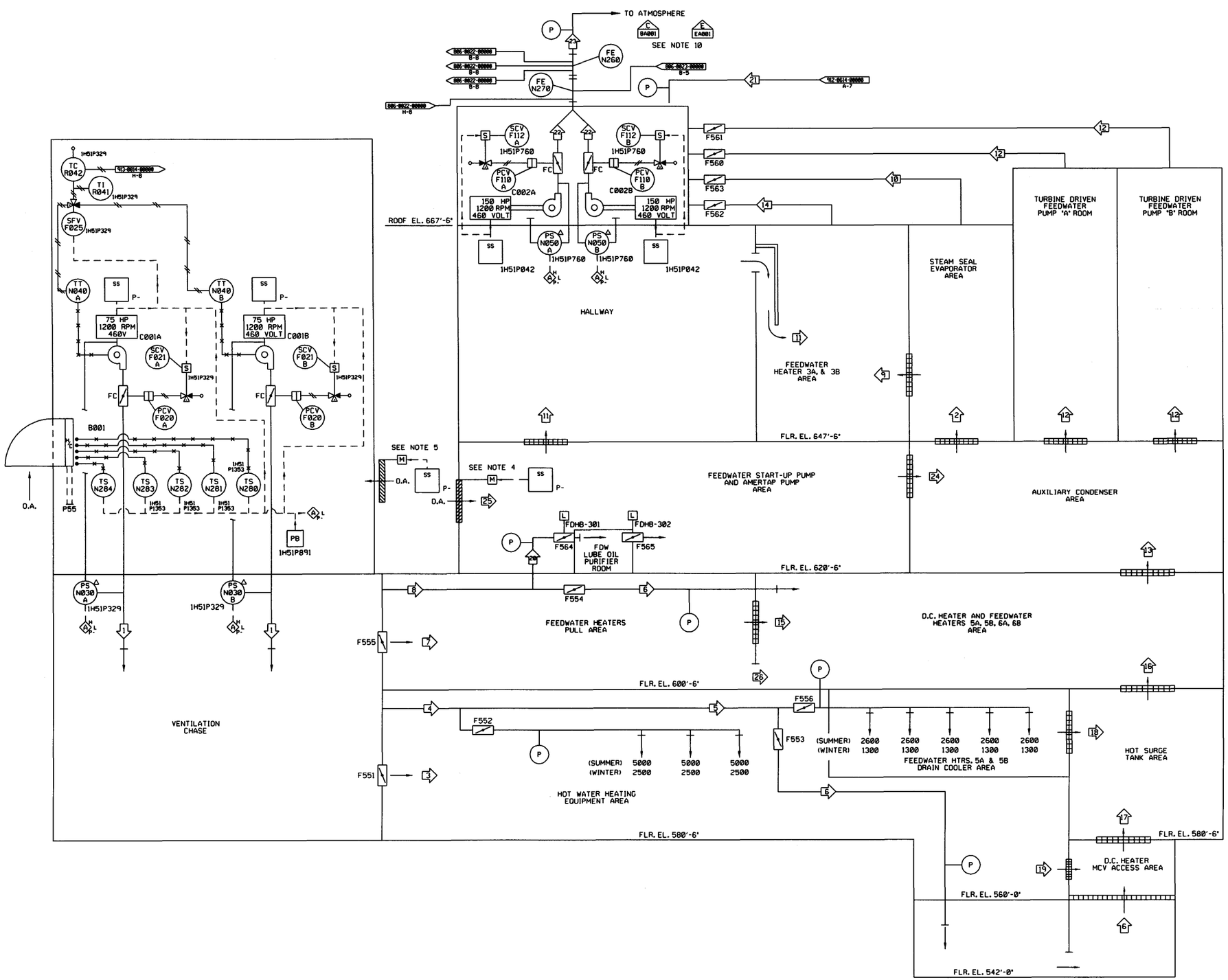
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

TURBINE BUILDING
VENTILATION SYSTEM
FIGURE 9.4-8
(DWG. D-912-0614-00000)



DESIGN DATA

		SUMMER CFM	WINTER CFM	REMARKS	REV
1		80,000	80,000	NOTE 8	
2		83,000	39,800		
3		82,000	41,000		
4		38,000	19,000		
5		23,000	11,500		
6		10,000	5,000		
7		28,500	14,250		
8		11,500	5,750		
9		46,000	22,000		
10		37,000	17,800		
11		14,000	400		
12		41,500	19,900		
13		158,500	79,250		
14		60,000	28,000		
15		20,000	10,000		
16		120,000	60,000		
17		107,000	53,500		
18		13,000	6,500		
19		97,000	48,500		
20		1,500	750		
21		180,000	118,000		
22		180,000	198,000	A OR B	
23		360,000	198,000	NOTE 9	
24		7,500	350		
25		20,000	0		
26		8,500	4,250		

NOTES:

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH THE FAN MOTOR STARTER & PROVIDED WITH A TIME DELAY RELAY.
2. ALL CONTROL SWITCHES, STATUS LIGHTS & ALARMS ARE LOCATED ON THE LOCAL PANEL 1H51P842, EXCEPT WHERE NOTED.
3. A COMMON ALARM FROM THIS SYSTEM WILL BE ANNUNCIATED AS "M35/M41 TROUBLE" ON THE MINIATURIZED CONTROL CONSOLE (1H13P680) IN THE CONTROL ROOM.
4. OPERATORS FOR THESE LOUVERS CONSIST OF 3 ELECTRIC MOTOR OPERATORS, IL53E032L, IL53E032M & IL53E032N, CONNECTED TO ONE SELECTOR SWITCH. SEE DWG. 101-0016-00000.
5. OPERATORS FOR THESE LOUVERS CONSIST OF EIGHT ELECTRIC MOTOR OPERATORS IL53E029K & IL53E030A & IL53E032A & B AND IL53E032A & B CONNECTED TO ONE SELECTOR SWITCH. SEE DRAWING 101-0016-00000.
6. POSITION OF LOUVERS IS SHOWN ON PANEL 1H51P042.
7. ALL AIR QUANTITIES ARE IN CFM.
8. ACTUAL COMBINED SUMMER FLOW FROM 1H41C001A & B IS 155,135 CFM.
9. ACTUAL COMBINED SUMMER FLOW FROM 1H41C002A & B IS 345,800 CFM.
10. COMPUTER POINTS ACTUALLY OBTAINED FROM INSTRUMENTATION WITHIN 1H51P146 ON 806-0022-00000 BUT ARE SHOWN HERE FOR CLARITY.
11. THE ENERGIZED SELECTION FOR SOLENOID VALVE 1H41F0025 IS 1H41N0040A. THE DEFAULT DE-ENERGIZED STATE IS 1H41N0040B AND MANUAL OVERRIDE SELECTION IS ACCESSIBLE IN THE EVENT OF SOLENOID FAILURE.

REFERENCES:

101-0016-00000	TURBINE BUILDING COMPLEX FLOOR PLAN
806-0022-00000	PLANT RADIATION MONITORING - D17
806-0023-00000	PLANT RADIATION MONITORING AUTOMATIC ISOKINETIC SAMPLING SYSTEM - D17
912-0614-00000	TURBINE BUILDING VENTILATION SYSTEM - M35
913-0014-00000	HOT WATER HEATING SYSTEM - P55

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PERRY NUCLEAR POWER PLANT

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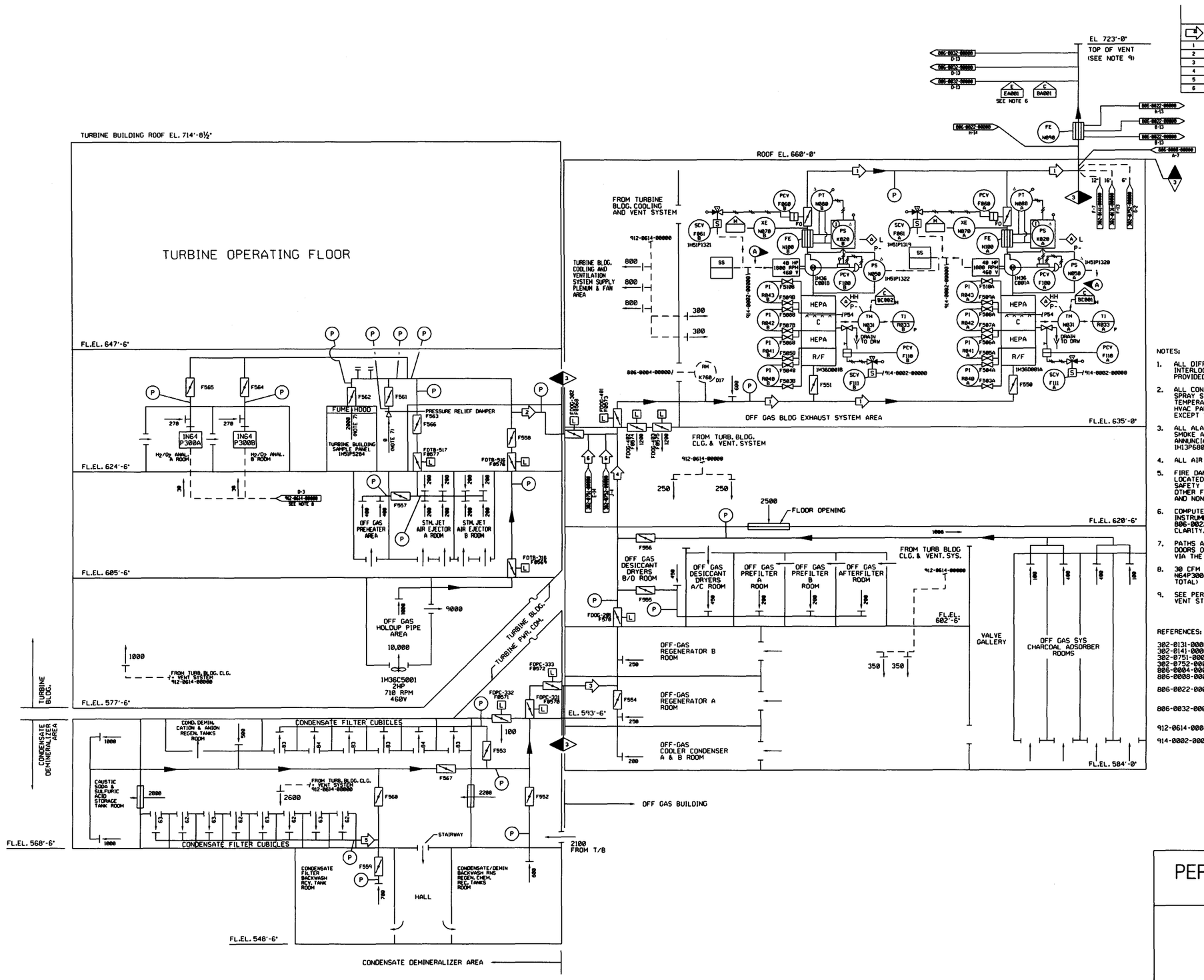
HEATER BAY VENTILATION SYSTEM FIGURE 9.4-9 (DWG. D-912-0621-00000)



NOTES:

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH FAN MOTOR STARTERS AND ARE PROVIDED WITH TIME DELAY RELAY.
2. ALL CONTROL SWITCHES (INCLUDING THE CHARCOAL SPRAY SWITCHES), STATUS LIGHTS, ALARMS, AND TEMPERATURE INDICATORS ARE LOCATED ON THE HVAC PANEL 1H13P800 IN THE CONTROL ROOM EXCEPT WHERE NOTED.
3. ALL ALARMS FROM THIS SYSTEM EXCEPT HIGH SMOKE AND HIGH RADIATION ALARMS ARE ANNUNCIATED AS "HVAC TROUBLE" ON PANEL 1H13P680 IN THE CONTROL ROOM.
4. ALL AIR QUANTITIES ARE IN CFM.
5. FIRE DAMPERS (FDXX-XXX) SHOWN ON THIS DRAWING, LOCATED IN THE OFF-GAS BUILDING ARE TO BE ANS SAFETY CLASS NNS AND SEISMIC CATEGORY I. ALL OTHER FIRE DAMPERS ARE ANS SAFETY CLASS NNS AND NON-SEISMIC.
6. COMPUTER POINTS ACTUALLY OBTAINED FROM INSTRUMENTATION WITHIN 1H51P146 ON 806-0022-00000 BUT ARE SHOWN HERE FOR CLARITY.
7. PATHS ARE BALANCED WITH THE SAMPLE PANEL DOORS OPEN OR SHUT. EXHAUST FLOW IS 2000 CFM VIA THE FUME HOOD AND 0 CFM VIA THE BYPASS.
8. 30 CFM IS DUCTED DIRECTLY TO EACH OF THE N64P300A/B H_2/O_2 ANALYZER PANELS (60 CFM TOTAL)
9. SEE PERRY PLANT COMPUTER SYSTEM FOR TOTAL VENT STACK FLOW.

REFERENCES:

302-0131-00000	CONDENSER AIR REMOVAL N62
302-0141-00000	STEAM SEAL SYSTEM N33
302-0751-00000	OFF GAS SYSTEM N64
302-0752-00000	GAS WASTE DISPOSAL (OFF-GAS) N64
806-0004-00000	RADIATION MONITORING SYSTEM D17
806-0008-00000	PLANT RADIATION MONITORING D17 K-800, K-830, AND K-840
806-0022-00000	PLANT RADIATION MONITORING D17 AUTOMATIC ISOKINETIC SAMPLING SYSTEM
806-0032-00000	POST ACCIDENT RADIATION MONITORING SYSTEM IODINE & PARTICULATE SAMPLING D19
912-0614-00000	TURBINE BUILDING VENTILATION SYSTEM M35
914-0002-00000	FIRE SERVICE WATER SYSTEM P54

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PERRY NUCLEAR POWER PLANT

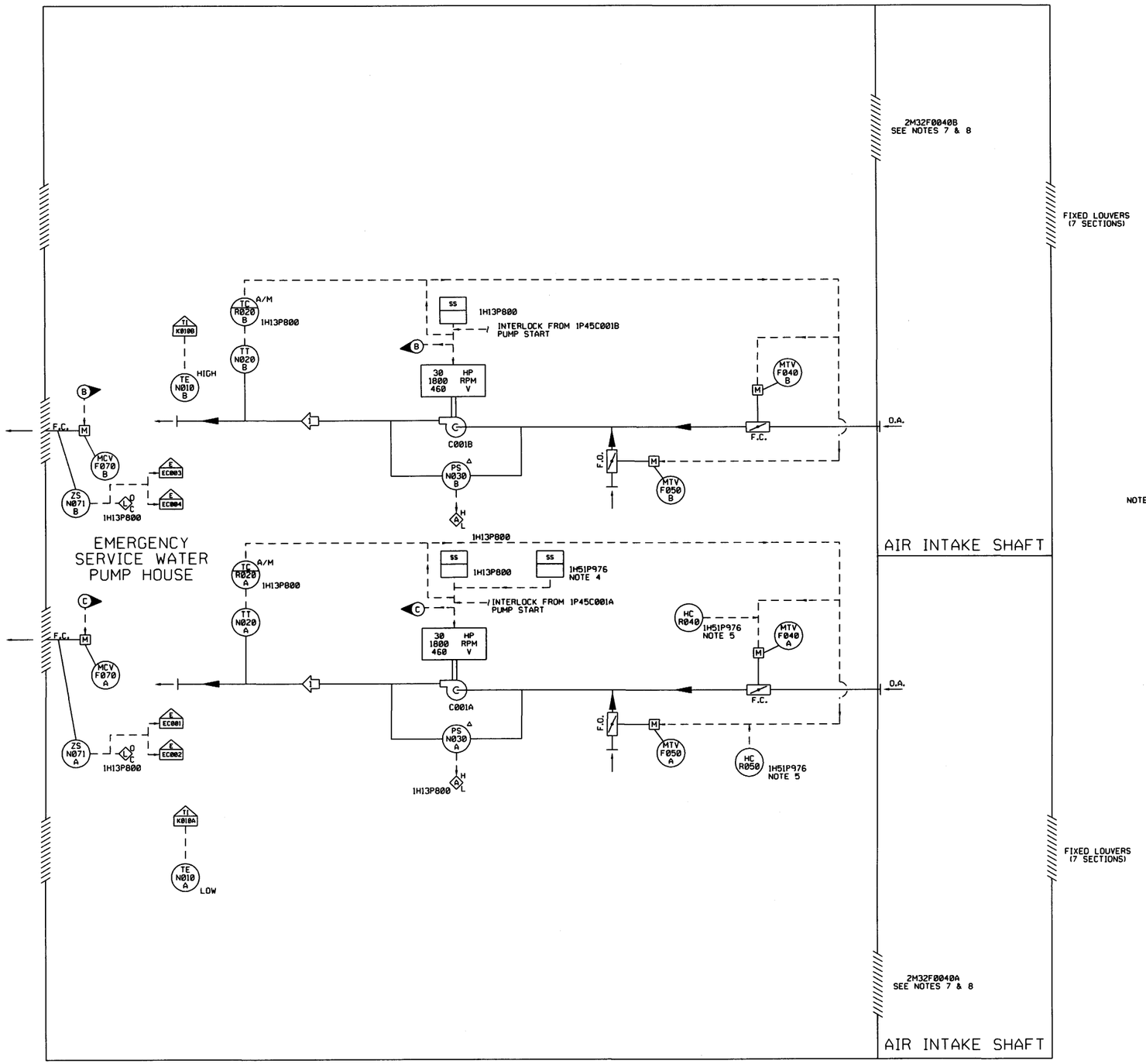
10 CENTER RD., PERRY, OHIO 44081

OFFGAS BUILDING
EXHAUST
FIGURE 9.4-10
(DWG. D-912-0622-00000)

DESIGN DATA						
⇦	CFM	H,O	°F	BY	REMARKS	REV
1	40,000		95		SUMMER	
1	40,000		60		WINTER	

OPERATING DATA							
FAN NUMBER	⇦	CFM	H,O	°F	BY	REMARKS	REV
C001A	1	46,428	0.90"	*			
C001B	1	47,436	0.87"	*			

*TEMP. IS 95°F SUMMER AND 60°F WINTER



EMERGENCY SERVICE WATER PUMPHOUSE
VENTILATION SYSTEM
SAFETY CLASS 3, SEISMIC CATEGORY 1

NOTES:

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH FAN MOTOR STARTER AND PROVIDED WITH TIME DELAY RELAY.
2. ALL CONTROL SWITCHES, STATUS LIGHTS, AND ALARMS FROM THIS SYSTEM WILL BE ANNUNCIATED ON PANEL 1H13P800 LOCATED IN THE CONTROL ROOM.
3. HIGH AND LOW TEMPERATURE ALARMS ARE PROVIDED FOR THIS SYSTEM.
4. PROVIDES CONTROL ROOM ISOLATION OF 1M32C001A, 1M32F040A, 1M32F070A AND 1M32F050A AND REMOTE SHUTDOWN CONTROL OF 1M32C001A AND 1M32F070A, FOR APPENDIX R REMOTE SHUTDOWN METHOD A.
5. PROVIDES REMOTE SHUTDOWN CONTROL OF 1M32F040A AND 1M32F050A FOR APPENDIX R REMOTE SHUTDOWN METHOD A.
6. ALL COMPONENTS ARE 1M32 UNLESS OTHERWISE NOTED.
7. ABANDONED, RETIRED IN PLACE UNIT 2 DAMPER BLOCKED CLOSED AS A BARRIER TO AIR FLOW.
8. LICENSE RENEWAL, SHELTER AND PROTECT. FOR DETAILS SEE ECP 14-0355.

(REV. 19 10/2015)

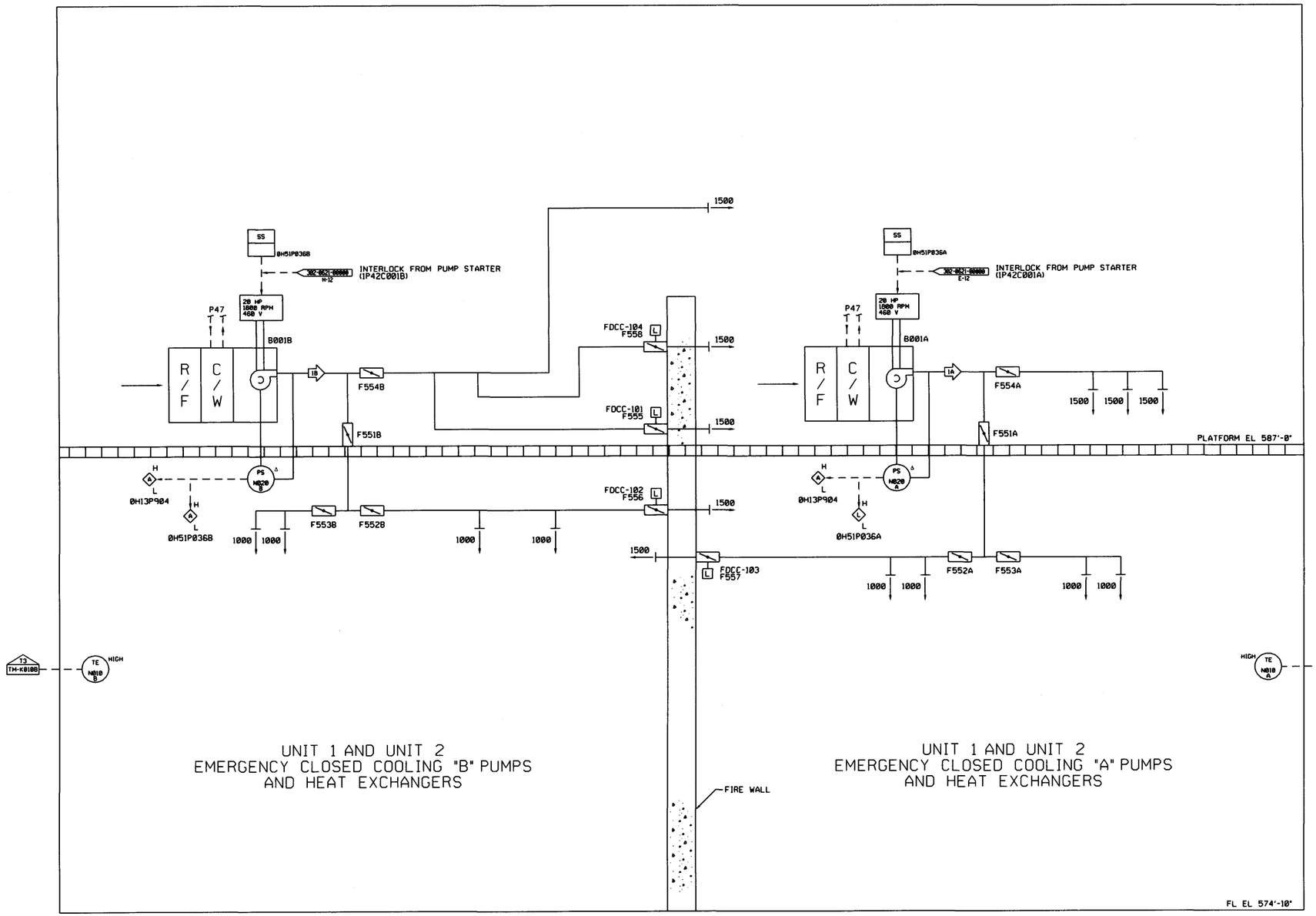
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

EMERGENCY SERVICE WATER
PUMPHOUSE VENTILATION SYSTEM
FIGURE 9.4-11
(DWG. D-912-0630-00000)

DESIGN DATA						
ID	CFM			BY	REMARKS	REV
1A	10,000					
1B	10,000					

OPERATING DATA			
ID	CFM	REMARKS	REV
1A	11,142	FAN B001A OPERATING	
1B	11,512	FAN B001B OPERATING	

PER NR'S 00C 1229 AND 00C 946



NOTES:

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH FAN MOTOR STARTER AND PROVIDED WITH TIME DELAY RELAY
2. THE SHARED AREA SAFETY RELATED TEMPERATURE MONITORING SYSTEM ON PANEL 0H13P904 IS A MULTI-TRIP UNIT. ANY ALARMED POINT WILL ALARM A SINGLE ALARM ON 0H13P904 THE TEMPERATURE ON ANY POINT CAN BE READ FROM A COMMON TEMPERATURE INDICATOR
3. ALL ALARMS FOR THIS SYSTEM WILL BE ANNUNCIATED ON PANEL 0H13P0904 AND WILL ALSO BE ANNUNCIATED AS "COMMON HVAC P904" ON PANEL 1H13P0680.
4. FAN STATUS LIGHTS FOR SYSTEM M28 ARE LOCATED ON THE LOCAL PANEL (0H51P036A AND B) AND ON 0H13P904
5. HIGH TEMPERATURE ALARMS ARE PROVIDED FOR THIS SYSTEM
6. ALL AIR QUANTITIES ARE IN CFM
7. FIRE DAMPER (FDXX-XXX) SHOWN ON THIS DRAWING IS TO BE ANS SAFETY CLASS NNS AND SEISMIC CATEGORY I

REFERENCES:

913-0001-00000 CONTROL COMPLEX CHILLED WATER SYSTEM - P47
302-0621-00000 EMERGENCY CLOSED COOLING SYSTEM - P42

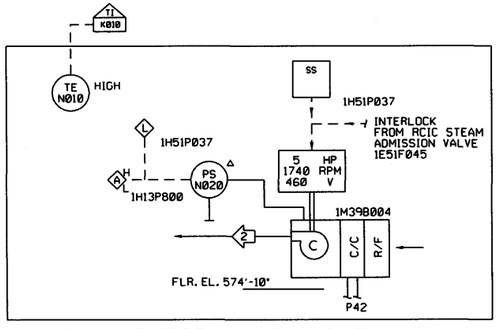
(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

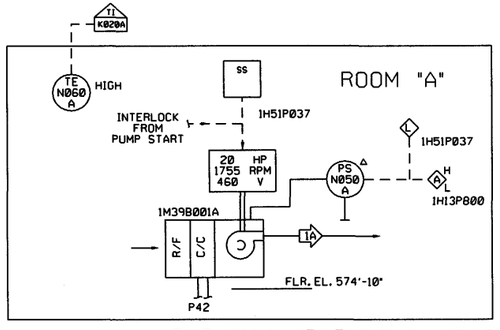
EMERGENCY CLOSED COOLING
PUMP AREA COOLING SYSTEM
FIGURE 9.4-12
(DWG. D-912-0623-00000)

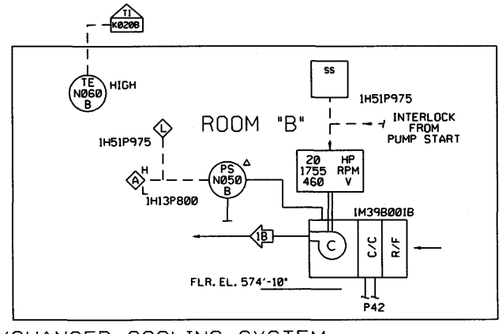
DESIGN DATA (NORMAL)		
④	CFM	REMARKS
1A, 1B	11,150	SEE NOTE 5
2	1,999	SEE NOTE 5
3	10,750	SEE NOTE 5
4	12,050	SEE NOTE 5
5	11,150	SEE NOTE 5



RCIC PUMP ROOM COOLING SYSTEM

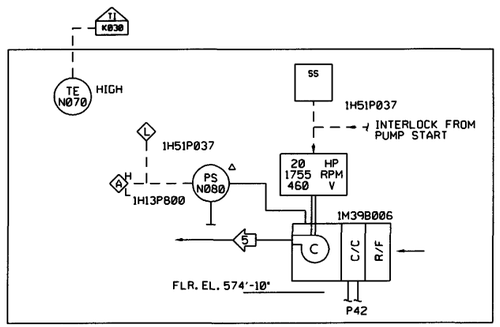
SAFETY CLASS 3, SEISMIC CATEGORY 1





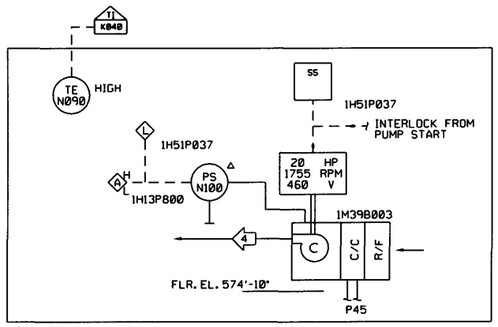
RHR "A" & "B" PUMP & HEAT EXCHANGER COOLING SYSTEM

SAFETY CLASS 3, SEISMIC CATEGORY 1



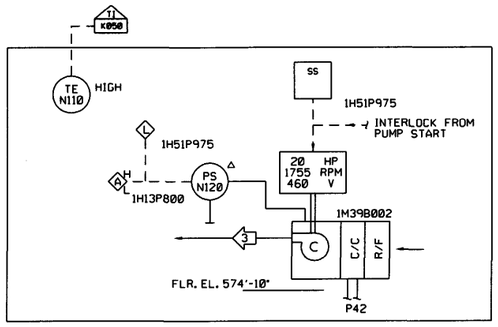
LPCS PUMP ROOM COOLING SYSTEM

SAFETY CLASS 3, SEISMIC CATEGORY 1



HPCS PUMP ROOM COOLING SYSTEM

SAFETY CLASS 3, SEISMIC CATEGORY 1



RHR "C" PUMP ROOM COOLING SYSTEM

SAFETY CLASS 3, SEISMIC CATEGORY 1

NOTES:

1. ALL DIFF. PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH FAN MOTOR STARTERS AND PROVIDED WITH TIME DELAY RELAY.
2. ALL ALARMS WILL BE ANNUNCIATED ON THE HVAC PANEL (1H13P800) AND AS "HVAC TROUBLE" ON THE PANEL (1H13P680) IN THE CONTROL ROOM.
3. FAN STATUS LIGHTS FOR ALL FANS, EXCEPT 1M39B001B AND 1M39B002 ARE LOCATED ON LOCAL PANEL 1H51P037 AND ALSO ON THE HVAC PANEL (1H13P800) IN THE CONTROL ROOM.
4. FAN STATUS LIGHTS FOR 1M39B001B AND 1M39B002 ARE LOCATED ON LOCAL PANEL 1H51P975 AND ALSO ON THE HVAC PANEL (1H13P800) IN THE CONTROL ROOM.
5. DESIGN CFM REPRESENTS THE MINIMUM "CLEAN FILTER" AIR HANDLING UNIT AIRFLOW. THIS CLEAN FILTER AIRFLOW MAY NOT REPRESENT THE MOST CONSERVATIVE DESIGN AIRFLOW SINCE FLOW DEGRADATIONS, SUCH AS THOSE CAUSED BY FILTER LOADING, ARE NOT CONSIDERED. DESIGN DATA SHOWN ON THIS SYSTEM DIAGRAM REPRESENTS ONLY A SINGLE OPERATING CONDITION. PROPER APPLICATION OF THIS INFORMATION SHOULD BE BASED ON REFERENCE TO THE APPROPRIATE DESIGN BASIS CALCULATIONS.

REFERENCES:

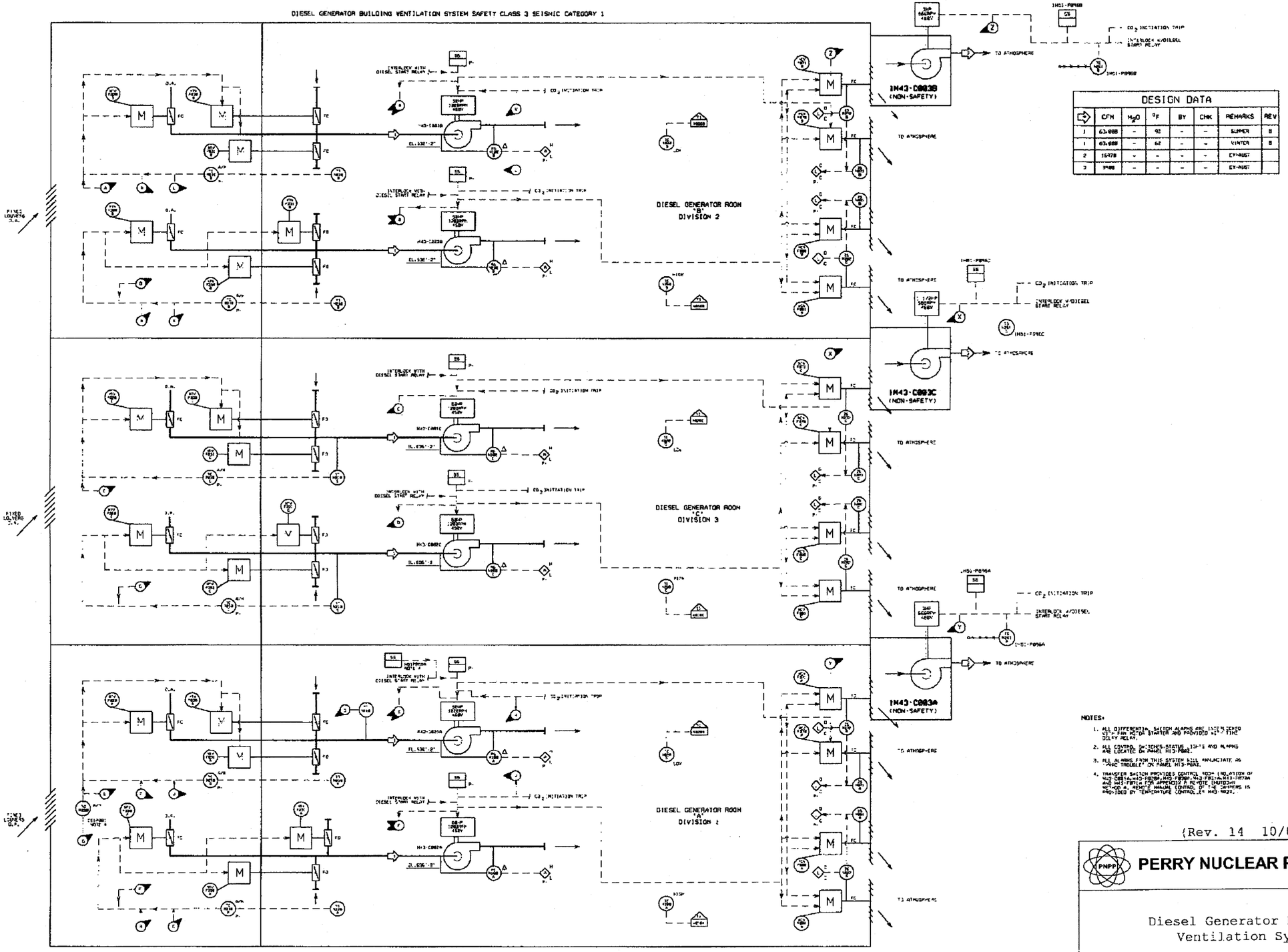
302-0622-00000 EMERGENCY CLOSED COOLING SERVICE, P42
302-0791-00000 EMERGENCY SERVICE WATER SYSTEM, P45

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

ECCS PUMP ROOMS
COOLING SYSTEMS
FIGURE 9.4-13
(DWG. D-912-0616-00000)



NOTES:

1. ALL DIFFERENTIAL SWITCH ALARMS ARE LATCHED UPON FAN MOTOR STARTER AND PROVIDED WITH TIME DELAY RELAY.
2. ALL CONTROL SWITCHES, STATUS LIGHTS AND ALARMS ARE LOCATED ON PANEL H13-P682.
3. ALL ALARMS FROM THIS SYSTEM WILL ANNUNCIATE AS "HVAC TROUBLE" ON PANEL H13-P683.
4. TRANSFER SWITCH PROVIDES CONTROL LOGIC FOR LOCATION OF H43-C001A, H43-C003A, H43-C003B, H43-C003C, H43-C004A AND H43-C004B FOR APPENDIX R REMOTE SHUTDOWN WITH LOSS OF ALL OFFSITE POWER. REMOTE MANUAL CONTROL OF THE DAMPERS IS PROVIDED BY TEMPERATURE CONTROLLER H43-N029.

(Rev. 14 10/05)

PERRY NUCLEAR POWER PLANT

Diesel Generator Building
Ventilation System

Figure 9.4-14
(Dwg. D-912-619)

DESIGN DATA						
	CFM @ 105°F/81% RELHUM			BY	REMARKS	
8A-1F	35,000					
9	59,000					
4	17,000					
5	1,000					

OPERATING DATA						
1A	35100					
1B	35400					
1C	36,500					
1D	37,400					
1E	36,200					
1F	36,200					

NOTES:

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH THE CORRESPONDING FAN MOTOR STARTER AND PROVIDED WITH TIME DELAY RELAY.
2. ALL CONTROL SWITCHES, STATUS LIGHTS AND ALARMS ARE LOCATED ON PANEL H13-P680 IN THE CONTROL ROOM.
3. ALL ALARMS FROM THIS SYSTEM ARE ANNUNCIATED ON PANEL H13-P680 AND AS "HVAC TROUBLE" ON PANEL H13-P680.
4. PANEL H13-P680 HAS A TEMPERATURE RECORDER THAT INDICATES, ALARMS, AND RECORDS THE FOLLOWING POINTS:
   A. D-DUCT AIR TEMPERATURE
   B. 13-ZONE TEMPERATURE
   C. 3-REFUELING BELLOWS TEMPERATURE
5. THERMOCOUPLES IN DRYWELL HEAD REGION WILL BE CAPABLE OF BEING REMOVED DURING REFUELING OPERATION.
6. ALL DIFFERENTIAL PRESSURE SWITCHES ARE LOCATED IN PANEL H61-P636.
7. ALL AIR QUANTITIES ARE IN CFM @ 105° AND STANDARD PRESSURE.
8. ROUGHING FILTERS MAY BE REMOVED DURING NORMAL OPERATIONS. FILTERS SHALL BE INSTALLED IN OUTAGE SITUATIONS WHEN WORK IS BEING PERFORMED IN THE DRYWELL AREA.

REFERENCES:

302-0613-00000 NUCLEAR CLOSED COOLING SYSTEM P43

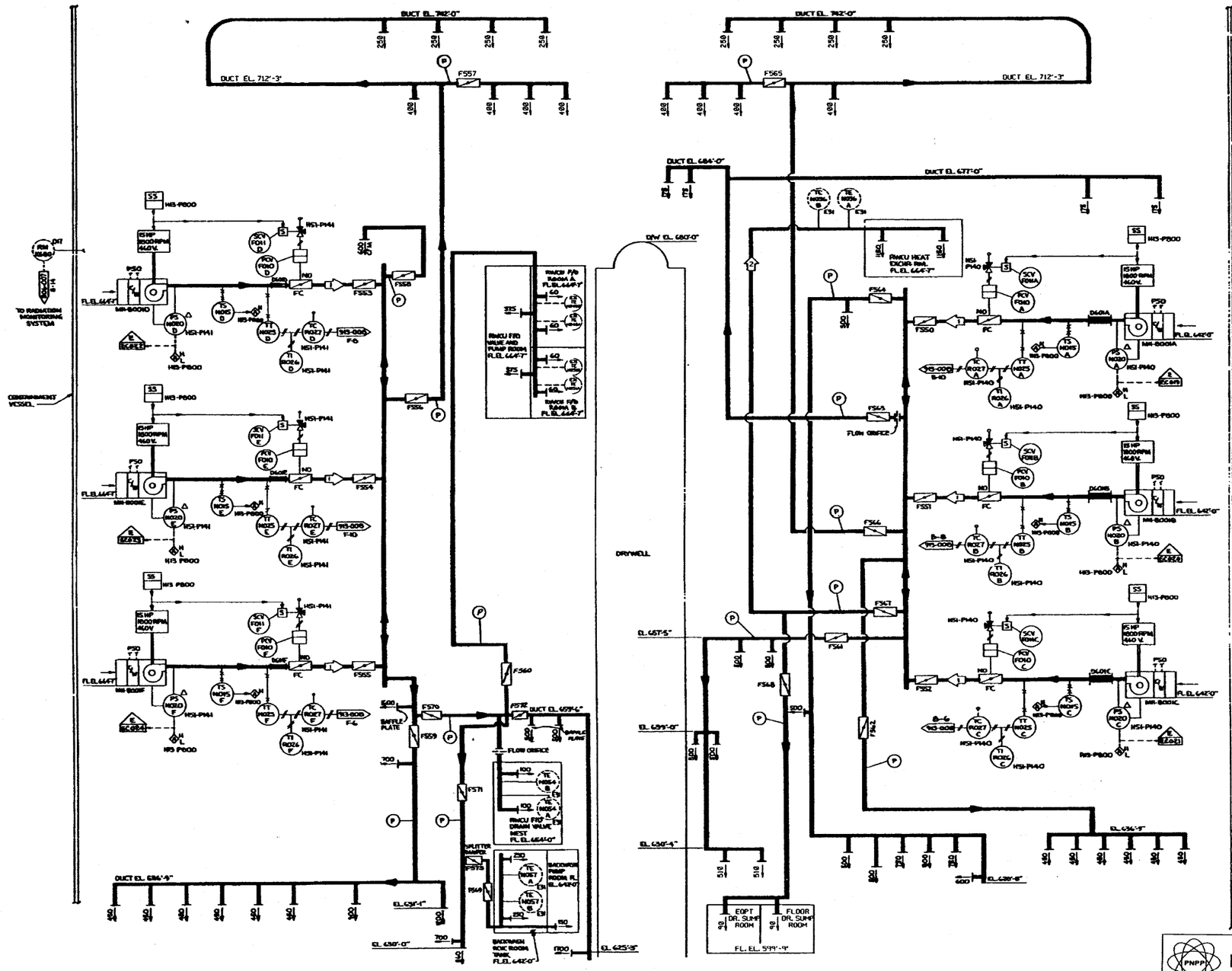
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Drywell Cooling System

Figure 9.4-15

(Dwg. D-912-603)



DESIGN DATA

		CFM		BY	REMARKS	REV.
1		9,200				
2		2,300			NOTE 4	

OPERATING DATA

FAN COMBINATION	CFM
AB	17400
BC	17500
AC	18600
AF	17500
DE	17400
EF	17500

NOTES: -

1. ALL DIFFERENTIAL PRESSURE SWITCH AND TEMPERATURE SWITCH ALARMS ARE INTERLOCKED WITH THE CORRESPONDING FAN MOTOR STARTER AND PROVIDED WITH TIME DELAY RELAY.
2. ALL ALARMS ARE ANNUNCIATED ON THE HVAC CONTROL PANEL H13-P880 AND ALSO ANNUNCIATED AS "HVAC TROUBLE" ON PANEL H13-P680.
3. ALL AIR QUANTITIES ARE CFM.
4. THIS FLOW HAS A LIMITED TOLERANCE OF +10%/-0%. REFERENCE CALCULATION M11-008.

REFERENCES: -

D-913-008 CONTAINMENT VESSEL CHILLED WATER SYSTEM P58
D-806-007 RADIATION MONITORING SYSTEM D17

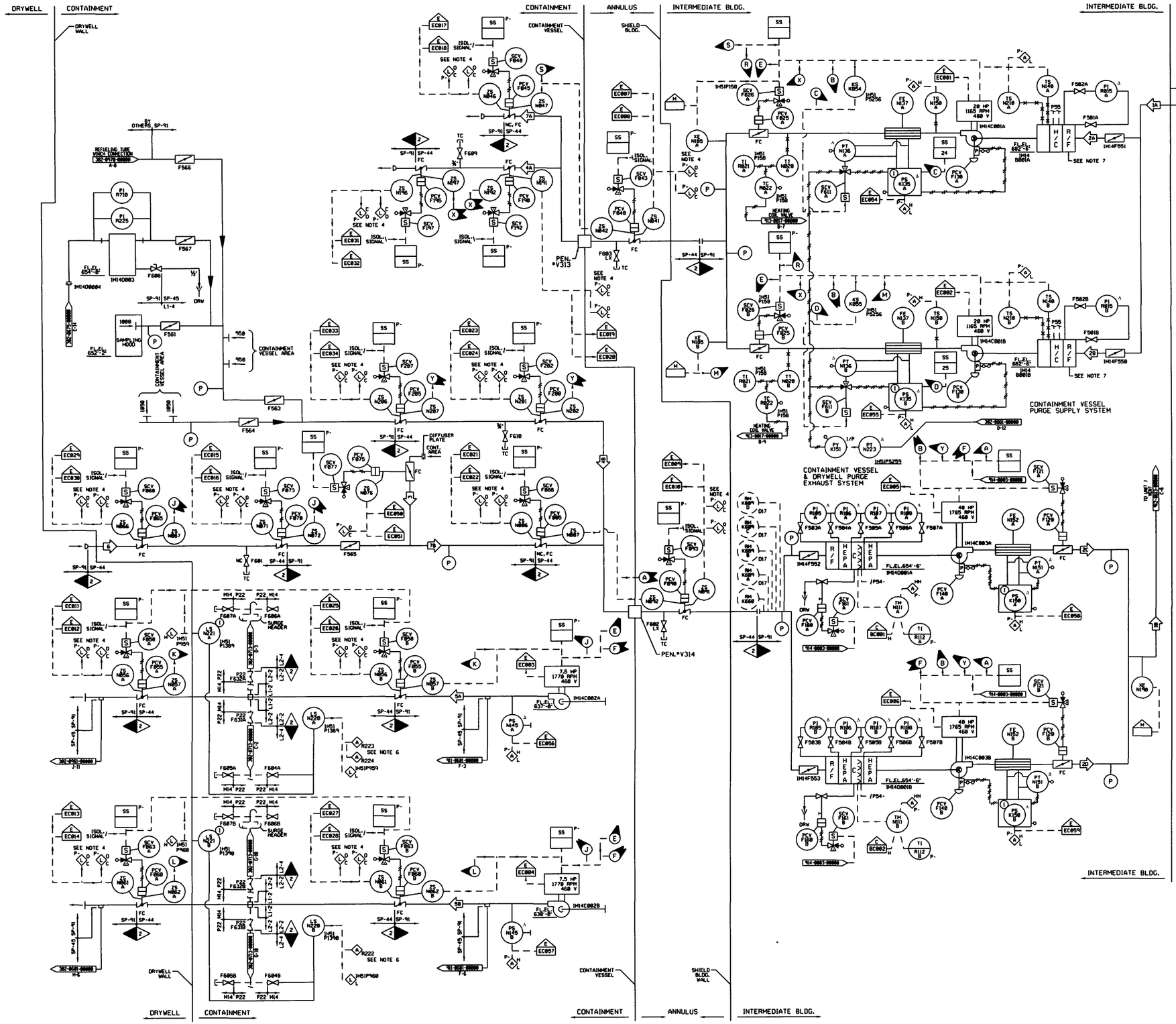
(Rev. 13 12/03)

PERRY NUCLEAR POWER PLANT

Containment Vessel Cooling System

Figure 9.4-16

(Dwg. D-912-602)



DESIGN DATA (NORMAL)

	CFM	BY	REMARKS	REV
1A, 1B	5,000			
2A-2D	5,000			
3	0			
4A, 4B	5,000			
5	0			
6	0			
7A, 7B	0			D

	DESIGN DATA (SHUTDOWN)				OPERATING DATA
	CFM	BY	REMARKS	REV	CFM
1A	30,000				24,701
1B	30,000				24,832
2A	15,000			D	12,435
2B	15,000			D	12,266
2C	15,000			D	12,256
2D	15,000			D	12,576
3	5,000				4,891
4A	5,000			D	2,430
4B	5,000			D	3,998
5A	10,000				8,181
5B	10,000				8,188
6	20,000				16,744
7A	25,000				22,271
7B	25,000				20,835

NOTES:

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH THE FAN MOTOR STARTER AND PROVIDED WITH TIME DELAY RELAY.
2. ALL CONTROL SWITCHES, STATUS LIGHTS, ALARMS AND TEMPERATURE INDICATORS ARE LOCATED ON THE HVAC PANEL (1H13P880) IN THE CONTROL ROOM.
3. ALL ALARMS ARE ANNUNCIATED ON THE HVAC CONTROL PANEL 1H13P880 AND ALSO ANNUNCIATED AS "HVAC TROUBLE" ON PANEL 1H13P680, EXCEPT AS NOTED.
4. THESE LIGHTS ARE LOCATED ON THE CONTAINMENT ISOLATION STATUS PANEL, 1H13P680.
5. ALL AIR QUANTITIES ARE IN CFM.
6. FLASHING ALARM BEACON LOCATED AT ENTRANCE TO M14 PENETRATION AREA.
7. THE SUPPLY PLENUM ROUGHING FILTERS MAY BE REMOVED DURING WINTER OPERATING PERIODS WHEN ADVERSE SNOW CONDITIONS ARE EXPECTED OR HAVE OCCURRED WHICH COULD CAUSE EXCESSIVE SNOW LOADING ON THE FILTERS WHICH WOULD CREATE A LOW FLOW CONDITION. IF THE ROUGHING FILTERS ARE REMOVED THEY SHALL BE REINSTALLED WHEN WEATHER CONDITIONS PERMIT.

REFERENCES:

302-0691-00000	REACTOR WATER RECIRCULATION SYSTEM B33
302-0675-00000	REACTOR WATER CLEAN-UP FILTER/DEMIN SYS. G36
302-0713-00000	MIXED BED DEMINERALIZER AND DISTRIBUTION SYSTEM, MIXED BED EXCHANGER STORAGE, AND NORTH ZONE DISTRIBUTION P32
302-0881-00000	CONTAINMENT ATMOSPHERE MONITORING SYSTEM D23
302-0941-00000	LEAK DETECTION SYSTEM E31
302-0478-00000	INCLINED FUEL TRANSFER SYS. F42
886-0806-00000	PLANT RADIATION MONITORING - K668, K669A, K669B
886-0824-00000	PLANT RADIATION MONITORING - K689
911-0001-00000	REACTOR BUILDING CRANE P48
912-0613-00000	VENTILATION SYSTEM M33
913-0817-00000	HOT WATER HEATING SYSTEM P55
914-0803-00000	FIRE SERVICE WATER P54

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CONTAINMENT VESSEL
AND DRWELL PURGE
FIGURE 9.4-17
(DWG. D-912-0604-00000)

DESIGN DATA					
	CFM		BY	CHKD	REV
1	38000	NOTE 11			
2	27400				
3	2000				
4	12000				

REFERENCES:

D-806-883 PLANT RAD/MON.K720&K730,K810 SYS.D17
D-806-887 PLANT RAD/MON.K680&K780,K790 SYS.D17
D-806-823 PLANT RAD/MON.AUTOMATIC ISOKINETIC SAMPLING SYSTEM D17
D-806-832 POST ACCIDENT MONITORING SYSTEM D19
D-806-833 POST ACCIDENT RAD/MON. SYSTEM D19
D-856-887 PLANT RADIATION MONITORING SYS. D17
D-856-823 PLANT RADIATION MONITORING SYS. D17
D-856-832 POST ACCIDENT MONITORING SYSTEM D19
D-856-833 POST ACCIDENT RAD/MON. SYSTEM D19
D-912-684 CNTMT.VESSEL & DRYWELL PURGE SYS. M14
D-912-680 REACTOR BUILDING ANNULUS EXHAUST GAS TREATMENT M15
D-912-680 CONTROLLED ACCESS AND MISC. EQUIP. AREAS HVAC SYSTEM M21
D-912-612 RADWASTE BLDG.VENT. SYSTEM M31
D-912-615 AUXILIARY BLDG. VENT. SYSTEM M38
D-912-617 FUEL HANDLING AREA VENT. SYSTEM M40
D-912-633 SMOKE PURGING SYSTEM/MISC. ELECTRICAL AREAS M49
D-912-649 SERVICE BUILDING HOT MACHINE SHOP HVAC SYSTEM
D-913-817 HOT WATER HEATING SYSTEM P55

NOTES:

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH FAN MOTOR STARTER AND PROVIDED WITH TIME DELAY RELAY.
2. FAN LOW FLOW OR SUPPLY AIR TEMP HIGH OR LOW ANNUNCIATES AS "IB HVAC TROUBLE" ON PANEL H13-P680 IN BOTH CONTROL ROOMS.
3. HIGH RADIATION AND SMOKE ALARMS ARE ALSO INDICATED ON THE LOCAL PANEL H51-P848 WITH RED INDICATING LIGHTS.
4. ALL AIR QUANTITIES ARE IN CFM.
5. THIS IS A UNIT 2 SYSTEM WHICH IS ISOLATED FROM THE PLANT VENT FOR UNIT 1 OPERATION. SHEET METAL BLANKS ARE INSTALLED AND IDENTIFIED WITH THE PREFIX "2M33X".
6. ALL FIRE DAMPERS ARE APPLICABLE TO THE AUGMENTED OA PROGRAM.
7. THIS IS A UNIT 2 SYSTEM (2M38)A PORTION OF WHICH IS REQUIRED FOR UNIT 1 OPERATION. A SHEET METAL BLANK IS INSTALLED UPSTREAM OF THE M54 SYSTEM EXHAUST AIR INLET,ALLOWING M54 EXHAUST AIR TO REACH THE PLANT VENT, WHILE ISOLATING THE 2M38 SYSTEM FROM THE PLANT VENT. THE SHEET METAL BLANK 2M33X0004 IS INSTALLED.
8. COMPUTER POINTS ACTUALLY OBTAINED FROM INSTRUMENTATION WITHIN H51-P149 & 2H51-P149 OR D-856-823 & D-856-823, BUT ARE SHOWN HERE FOR CLARITY.
9. THE CHARCOAL ADSORBER BANK WITHIN THE M33-C001 SUB-EXHAUST PLENUM IS NOT FOR FILTERING GASEOUS IODINE AND THEREFORE SHALL NOT COMPLY WITH RG 1.140.
10. THE SUPPLY PLENUM ROUGHING FILTERS MAY BE REMOVED DURING WINTER OPERATING PERIODS WHEN ADVERSE SNOW CONDITIONS ARE EXPECTED, OR HAVE OCCURRED, WHICH COULD CAUSE SNOW LOADING ON THE FILTER, WHICH COULD CREATE A LOW FLOW CONDITION. IF THE ROUGHING FILTERS ARE REMOVED, THEY SHALL BE REINSTALLED WHEN WEATHER CONDITIONS PERMIT.
11. AN ADDITIONAL 75 CFM SUPPLY IS PROVIDED TO IB-E298 PER DCP 94-3048. THE INCREASE IN TOTAL SUPPLY FLOW IS INSIGNIFICANT AND THEREFORE NOT REFLECTED IN THE TOTAL SUPPLY FAN FLOW.
12. FAN (X)M33C0001 ONLY OPERATES WHEN TEMPERATURE IS ABOVE THE SETPOINT (110 DEG F.). FAN IS RATED FOR 1300 CFM +20% / -0%.

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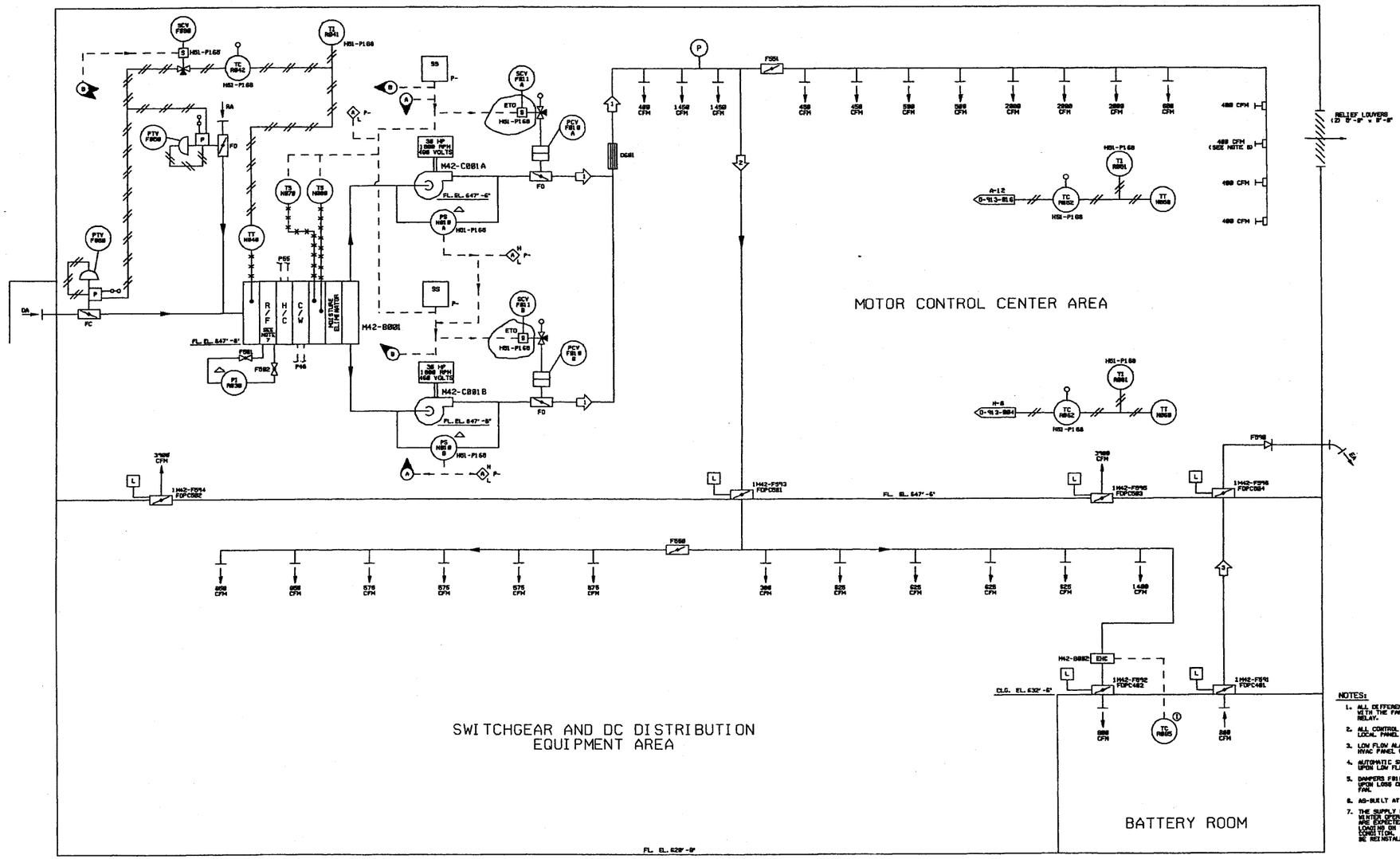
PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

INTERMEDIATE BUILDING VENTILATION SYSTEM FIGURE 9.4-18 (DWG. D-912-0613-00000)



DESIGN DATA								
Δ	CFM				BY	CHKD	REMARKS	REV
1	22898							B
2	9688							B
3	889							B

NOTES:

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTER-LOCKED WITH THE FAN MOTOR STARTER AND PROVIDED WITH TIME DELAY RELAY.
2. ALL CONTROL SWITCHES AND STATUS LIGHTS ARE LOCATED ON THE LOCAL PANEL H2L-P641, EXCEPT WHERE NOTED.
3. LOW FLOW ALARM FROM EITHER FAN WILL ANNUNCIATE ON THE HVAC PANEL (H13-P888 IN THE CONTROL ROOM.
4. AUTOMATIC SWITCH OVER FEATURE TO START THE STANDBY FAN UPON LOW FLOW CONDITION OF THE OPERATING FAN IS PROVIDED.
5. DAMPERS F81BA & B ARE FAIL OPEN ON LOSS OF AIR AND CLOSE UPON LOSS OF SYSTEM POWER OR SHUTDOWN OF ASSOCIATED FAN.
6. AS-BUILT AT 248 CFM.
7. THE SUPPLY ROUGHING FILTERS MAY BE REMOVED DURING WINTER OPERATION, PERIODS WHEN ADVERSE SNOW CONDITIONS ARE EXPECTED OR HAVE OCCURRED WHICH COULD CAUSE SNOW LOADING ON THE FILTERS WHICH WOULD CREATE A LOW FLOW CONDITION. IF THE ROUGHING FILTERS ARE REMOVED THEY SHALL BE REINSTALLED WHEN WEATHER CONDITIONS PERMIT.

REFERENCES:

D-913-884	TURBINE BUILDING CHILLED WATER SYSTEM, P46
D-913-816	BUILDING HEATING SYSTEM, P85

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Turbine Power Complex
Ventilation System

Figure 9.4-19
(Dwg. D-912-618)

OPERATING DATA *

	PSIG	GPM	°F	BY	REMARKS	REV
1	150	1513	55		NOTE 8	
2	150	100	55			
3	150	400	55			
4	150	500	55			
5	150	505	55			
6	150	420	55			
7	150	85	55			
8	150	1700	95			
9	150	1700	106			
* SEE NOTE 9						

NOTES:

1. CONDENSER WATER SUPPLY TO THE "C" CHILLER IS FROM NUCLEAR CLOSED COOLING SYSTEM FOR NORMAL OPERATION & SHUTDOWN. CONDENSER WATER SUPPLY TO THE "A" & "B" CHILLERS IS FROM EMERGENCY CLOSED COOLING SYSTEM FOR ALL OPERATING MODES, INLUDING LOCA & BLACKOUT.
2. A & B OPERATING TRAINS (CHILLERS & CHILLED WATER PUMPS) START (RESTART) ON A LOCA/LOOP SIGNAL. TRAINS ARE MANUALLY STARTED FROM THE CONTROL ROOM FOR NORMAL OPERATION.
3. CONTROL ROOM SWITCHES, STATUS LIGHTS AND ALARMS ARE LOCATED IN THE CONTROL ROOM COMMON HVAC PANEL (0H13P984).
4. ALL ALARMS FROM THIS SYSTEM ARE ANNUNCIATED AS "COMMON HVAC P984" ON PANEL 1H13P680.
5. REFRIGERANT RELIEF VALVE CONNECTION TO ATMOSPHERE.
6. PUMP SHAFT SEAL LEAKAGE TO BE PIPED TO DRAIN.
8. MAX. OPERATING TEMPERATURE IS 55 °F FOR THE NORMALLY OPERATING LOOP. THE CHILLED WATER SUPPLY TO EACH COMPONENT COOLING COIL(S) IS 45 °F AND THE CHILLED WATER RETURN IS 55 °F. FOR THE NON-OPERATING LOOP, THE SYSTEM IS AT AN AMBIENT TEMPERATURE OF 60 °F TO 104 °F DURING NORMAL PLANT OPERATION.
9. THE DESIGN CONDITIONS FOR ALL SAFETY RELATED PIPING ARE 150 PSIG & 120 °F.
10. THE L1-4 REFRIGERANT ATMOSPHERIC VENT TO BE SEISMICALLY SUPPORTED.
11. PROVIDES CONTROL ROOM ISOLATION & REMOTE MANUAL CONTROL OF 0P47C0001A & 0P47B0001A FOR APPENDIX R REMOTE SHUTDOWN METHOD A. 0P47C0001A TRANSFER SWITCH LOCATED ON SWITCH GEAR EP1B01. 0P47B0001A TRANSFER SWITCHES LOCATED ON SWITCH GEAR EH1187 & ON PANEL 0H51P318.
12. TEMPORARY STRAINERS USED FOR START UP ONLY, ARE REMOVED FOR PLANT OPERATION.
13. ALL STANDARD ROOT VALVE CONFIGURATIONS FOR NORMALLY CLOSED VENT, DRAIN & INSTRUMENTATION LINES SHALL BE CAPPED.
14. "C" CHILLER AND CHILLED WATER PUMP WILL TRIP ON LOCA/LOOP SIGNAL AND WILL NOT AUTOMATICALLY RESTART.

REFERENCES:

912-0589-00000	MCC, SWGR & MISC. ELEC. EQUIP. AREAS HVAC, SYSTEM & BATTERY RM M23/24
912-0618-00000	CONTROL ROOM HVAC & EMERGENCY RECIRCULATION SYSTEMS M25/26
912-0623-00000	EMERGENCY CLOSED COOLING PUMP COOLING SYSTEM M28
382-0621-00000	EMERGENCY CLOSED COOLING P42
382-0712-00000	MAKE-UP WATER - TWO BED DEMIN STORAGE & DIST. SYSTEM P21
913-0002-00000	CONTROL COMPLEX CHILLED WATER SYSTEM DIAGRAM P47

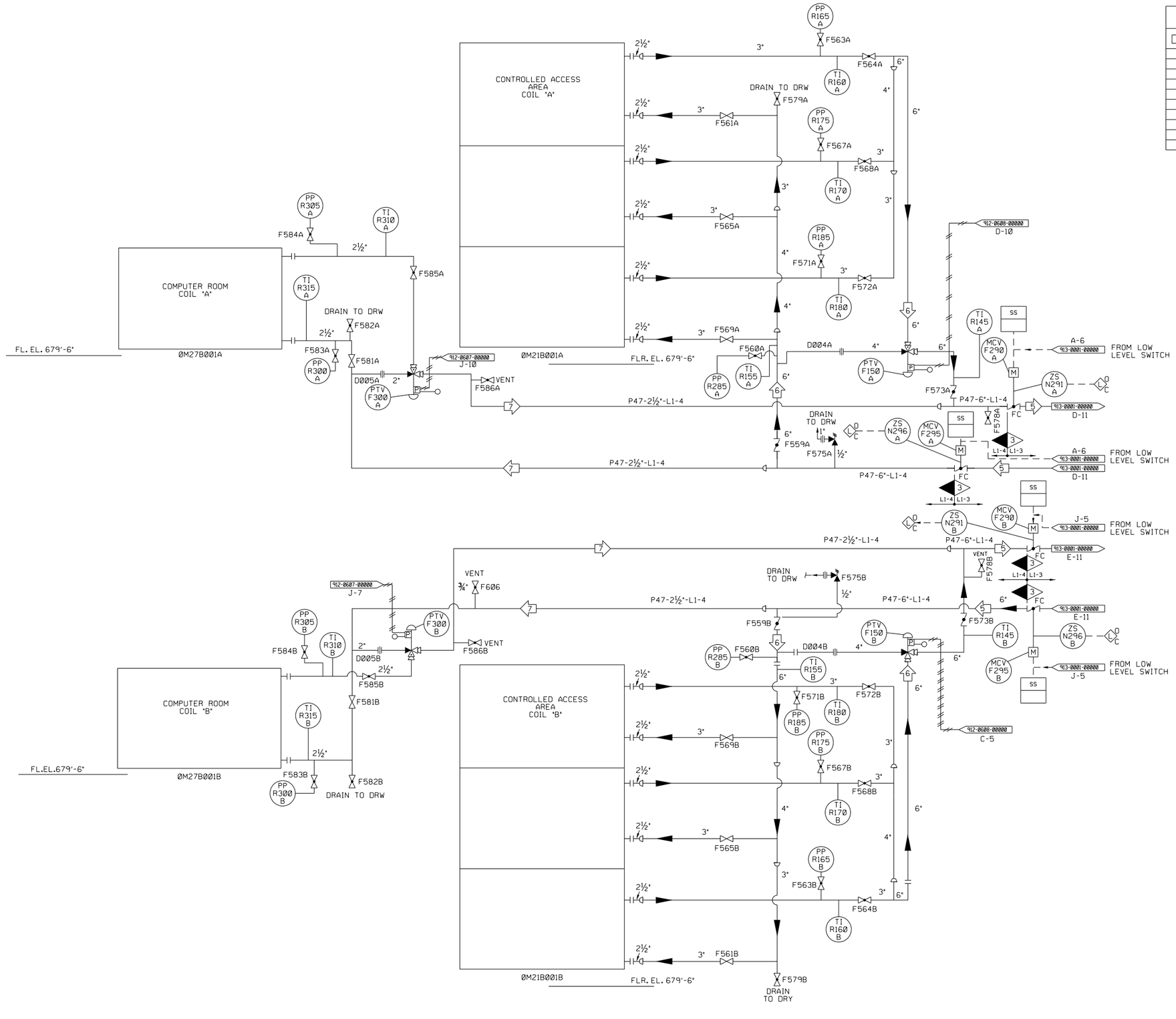
(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

CONTROL COMPLEX
CHILLED WATER
FIGURE 9.4-20 (SHEET 1 OF 2)
(DWG. D-913-0001-00000)

OPERATING DATA						
#	PSIG	GPM	°F	BY	REMARKS	REV
SEE 913-0001-00000						



NOTE:

1. CONTROL SWITCHES AND ALARMS ARE ALL LOCATED ON THE HVAC PANEL IN CONTROL ROOM, UNIT 1 (0H13P904)

REFERENCES:

912-0608-00000	CONTROLLED ACCESS AND MISC EQUIPMENT AREAS M21
912-0607-00000	COMPUTER ROOMS HVAC SYSTEM M27
913-0001-00000	CONTROL COMPLEX CHILLED WATER SYSTEM DIAGRAM (P47)

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

CONTROL COMPLEX
CHILLED WATER
FIGURE 9.4-20 (SHEET 2 OF 2)
(DWG. D-913-0002-00000)

OPERATING DATA						
#	PSIG	GPM	°F	BY	REMARKS	REV
1	150	1972	55			
2	150	120	55			
3	150	1852	55			
4	150	25	85			

VENT
NC F576 DE-ENERGIZE ON HIGH
ENERGIZE ON LOW
1H51P044
F571
F538
EXPANSION TANK
(130 GAL. FLOODED)
OVERFLOW RUN TO DRW ELEV. 686'-6"
1P46A002
LS N175
LS N176
LG D177
F539
F570
SLV F171
PLV F170
F503
FC
F501
F575 NC DRAIN
F502
L1-4 L2-4
MAKE-UP WATER
302-0712-00000
G-5
F579
2" L1-4
CONDENSING WATER (P43) 302-0612-00000
NOT INSTALLED, TEMPORARY SPOOL INSTALLED WITH BRANCHES TO DRYWELL COOLING
1H51P044
PI R040 B
PI R045 B
TI R050 B
100 HP 1750 RPM .46 KV
VENT F518B NC
F505B
F506B
VENT NC F569B
F504B
SEE NOTE 8
F523B NC DRAIN TO CRW (SEE NOTE 6)
DRAIN TO DRW
1P46C001B
F507B
FLR.EL.599'-0"
TO ATMOSPHERE (SEE NOTE 5)
VENT NC F562B
VENT NC F563B
"B" REFRIG. STORAGE TK
F565B NC
"B" CONDENSOR
"B" COOLER
"B" PUMPOUT UNIT
F573B NC
302-0612-00000
CHILLER TRIP
CHILLER "B"
CHILLER AUXILIARY PANEL 1H51P314
TROUBLE
FE N015 B
F560B
TO CRW
TI R010 B
PI R165 B
F508B
F512B
F524B
F509B
F574B
1P46B001B
F566B
DRAIN TO CRW
FROM CONDENSOR WATER FLOW SWITCH F-10
F511B
F510B
FS N016 B
1H51P1053
1H51P044
REFRIGERANT RELIEF VALVE VENT
CONDENSING WATER (P43) 302-0612-00000
VENT F581 NC
CHEMICAL FEED TANK
F622 NC
ELEV. 602'-1½"
1P46A001
½" NC F516 DRAIN
VENT NC F578
¾" L1-4
NC F517
F515 NC
PI R040 A
PI R045 A
100 HP 1750 RPM .46 KV
VENT F518A NC
F505A
F506A
F504A
SEE NOTE 8
F523A NC DRAIN TO CRW (SEE NOTE 6)
DRAIN TO DRW
1P46C001A
FLR.EL.599'-0"
TI R050 A
F507A
NC F569A
VENT
VENT NC F562A
VENT F563A NC
F565A NC
"A" CONDENSOR
"A" COOLER
"A" PUMPOUT UNIT
F573A NC
302-0612-00000
CHILLER TRIP
CHILLER "A"
CHILLER AUXILIARY PANEL 1H51P313
TROUBLE
FE N015 A
F560A
TO CRW
TI R010 A
PI R165 A
F508A
F512A
F572 NC VENT
F524A
F509A
F574A NC
1P46B001A
F566A
DRAIN TO CRW
FROM CONDENSOR WATER FLOW SWITCH H-10
F511A
F510A
FS N016 A
1H51P1052
1H51P044
REFRIGERANT RELIEF VALVE VENT
STEAM TUNNEL COOLING COILS
1M47B001
FLR.EL. 620'-6"
VENT NC F580
F519
F520
PP R030
TI R035
2½" L1-4
F540 NC DRAIN TO DRW
PP R025
F521
TI R020
VENT F541
F522
DRAIN TO DRW
DD02
F543
PTV F010
E-9
10" L1-4
3" L1-4
2" L1-4
10" L1-4
10" L1-4
10" L1-4
10" L1-4
10" L1-4
F-3
F-3
NOTES:
1. ALL FLOW SWITCH ALARMS ARE INTERLOCKED WITH PUMP MOTOR STARTER AND PROVIDED WITH A TIME DELAY RELAY.
2. ALL CONTROL SWITCHES, STATUS LIGHTS AND ALARMS ARE LOCATED ON PANEL 1H13P680, EXCEPT WHERE NOTED.
3. CHILLED WATER PUMPS STATUS LIGHTS ARE LOCATED IN THE LOCAL PANEL 1H51P044.
4. ALL ALARMS FROM THIS SYSTEM ARE ANNUCIATED AS "HVAC TROUBLE" ON PANEL 1H13P680 IN THE CONTROL ROOM.
5. REFRIGERANT RELIEF VALVE CONNECTION TO ATMOSPHERE.
6. PUMP SHAFT SEAL LEAKAGE TO BE PIPED TO DRAIN.
7. ALL STANDARD ROOT VALVE CONFIGURATIONS FOR NORMALLY CLOSED VENT, DRAIN AND INSTRUMENT LINES SHALL BE CAPPED.
8. TEMPORARY STRAINERS USED FOR START-UP ONLY AND REMOVED FOR PLANT OPERATION.

REFERENCES:

912-0625-00000	STEAM TUNNEL COOLING SYSTEM M47
302-0612-00000	NUCLEAR CLOSED COOLING SYSTEM P43
302-0712-00000	MAKE-UP WATER - TWO BED STORAGE & DIST. SYSTEM P21
913-0004-00000	TURBINE BUILDING CHILLED WATER P46

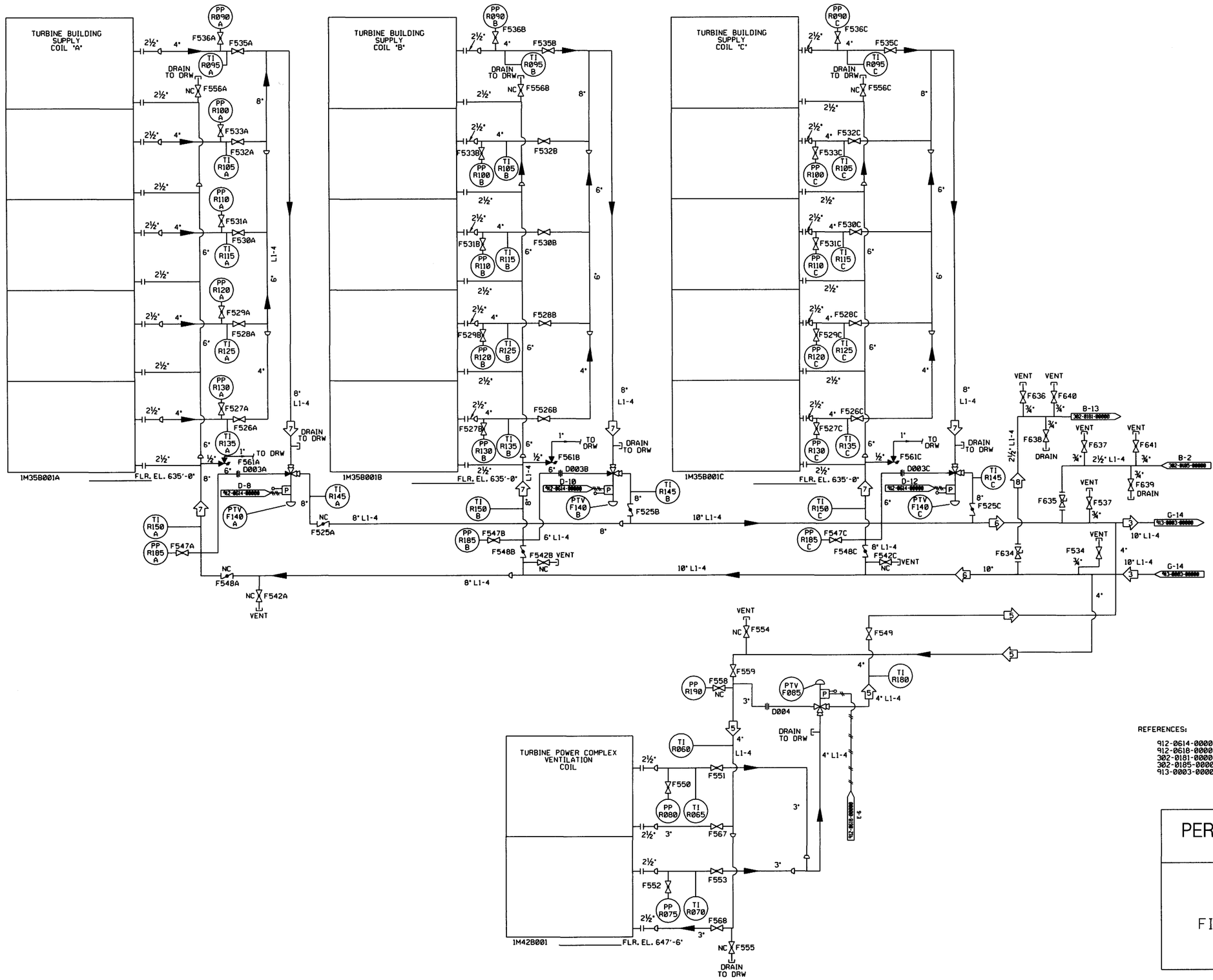
(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

TURBINE BUILDING
CHILLED WATER
FIGURE 9.4-21 (SHEET 1 OF 2)
(DWG. D-913-0003-00000)

OPERATING DATA						
#	PSIG	GPM	°F	BY	REMARKS	REV
1						
2						
3	150	1852	55			
4						
5	150	300	55			
6	150	1512	55			
7	150	756	55			
8	150	40	55			



REFERENCES:

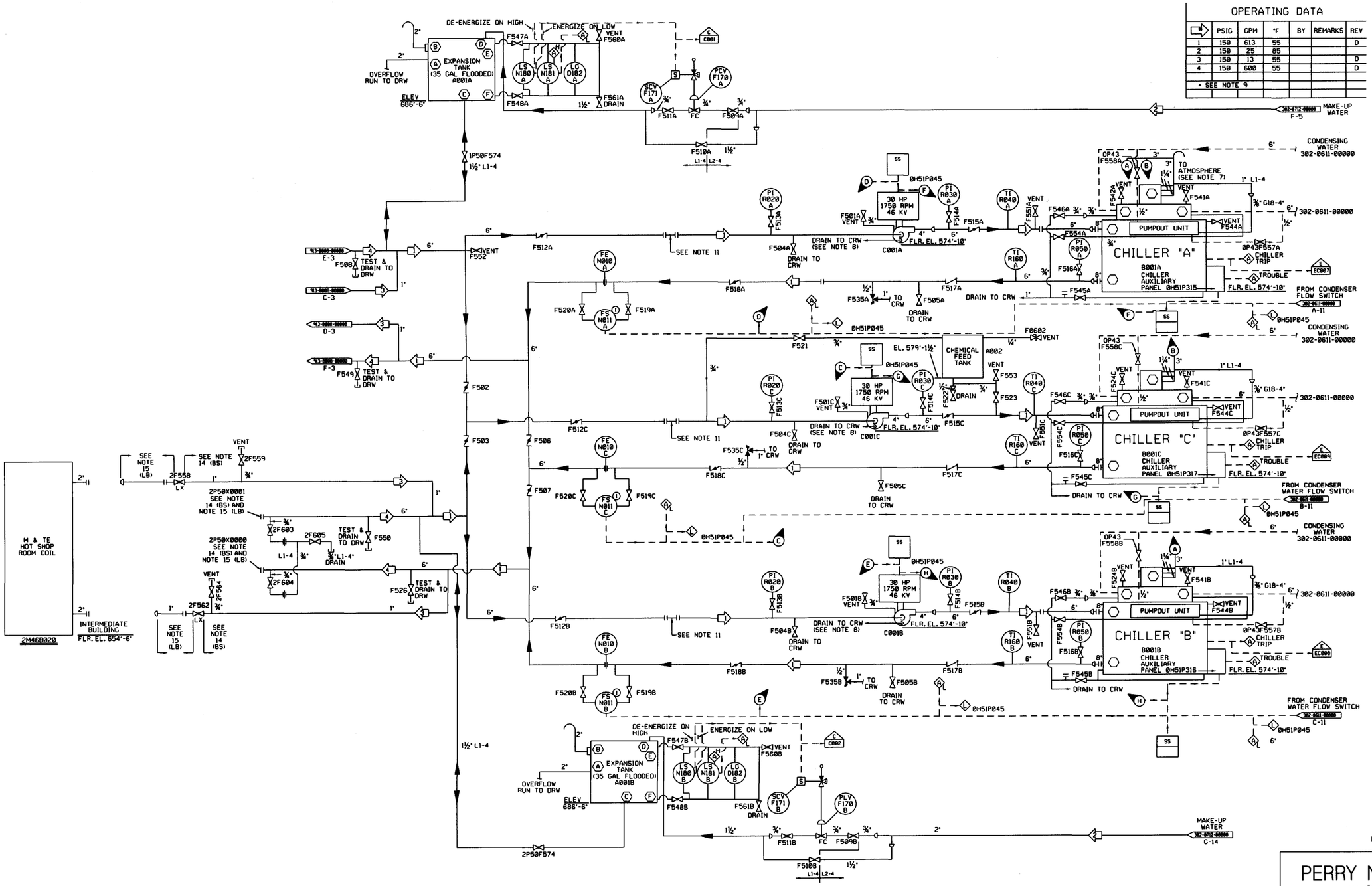
912-0614-00000 TURBINE BUILDING VENTILATION M35
912-0618-00000 TURBINE POWER COMPLEX VENTILATION M42
302-0181-00000 TURBINE PLANT SAMPLING SYSTEM P33
302-0185-00000 TURBINE PLANT SAMPLING SYSTEM P33
913-0003-00000 TURBINE BUILDING CHILLED WATER P46

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

TURBINE BUILDING
CHILLED WATER
FIGURE 9.4-21 (SHEET 2 OF 2)
(DWG. D-913-0004-00000)



NOTES:

1. ALL FLOW SWITCH ALARMS ARE INTERLOCKED WITH PUMP MOTOR STARTER AND PROVIDED WITH TIME DELAY RELAY.
2. ALL CONTROL SWITCHES, STATUS LIGHTS AND ALARMS ARE LOCATED ON PANEL 0H13 P004 EXCEPT WHERE NOTED.
3. CHILLED WATER PUMP STATUS LIGHTS ARE LOCATED ON PANEL 0H51P045.
4. STATUS LIGHTS FOR CHILLERS A & C ARE ALSO LOCATED ON PANEL 1H13P888.
5. STATUS LIGHTS FOR CHILLERS B & C ARE ALSO LOCATED ON PANEL 2H13P888.
6. ALL ALARMS FROM THIS SYSTEM ARE ANNUNCIATED AS "COMMON HVAC P004" ON PANEL 1H13P888.
7. REFRIGERANT RELIEF VALVE CONNECTION TO ATMOSPHERE.
8. PUMP SHAFT SEAL LEAKAGE TO BE PIPED TO DRAIN.
9. PRESSURE INDICATED IS PIPE DESIGN PRESSURE.
10. ALL STANDARD ROOT VALVE CONFIGURATIONS FOR NORMALLY CLOSED VENT, DRAIN AND INSTRUMENTATION LINES SHALL BE CAPPED.
11. TEMPORARY STRAINERS USED FOR START-UP ONLY ARE REMOVED FOR PLANT OPERATION.
12. DELETED
13. DELETED
14. (BS) UNIT 1/2 BOUNDARY SEPARATION. FOR DETAILS SEE TECHNICAL ASSIGNMENT FILE 01603.
15. (LB) LICENSE RENEWAL, LEAKAGE BOUNDARY FOR ABANDONED, RETIRED IN PLACE SSC'S. FOR DETAILS SEE ECP 14-0480.

REFERENCES:

302-0611-00000	NUCLEAR CLOSED COOLING P-43.
302-0712-00000	MAKE-UP WATER-TWO BED
913-0006-00000	STORAGE & DIST. SYSTEM P-21. CONT. VESSEL CHILLED WATER SYSTEM P50, UNIT "1".

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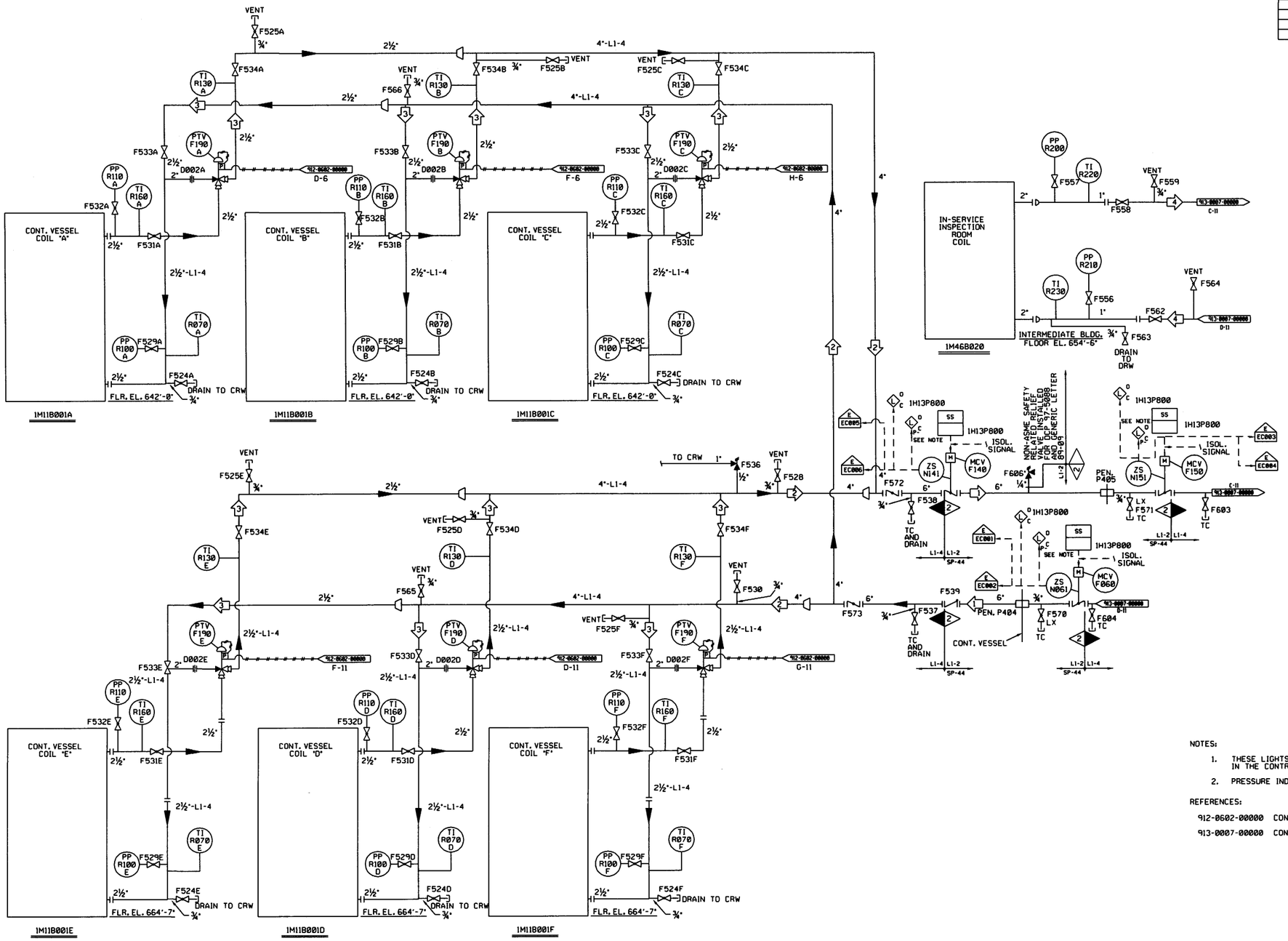
PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

CONTAINMENT VESSEL
CHILLED WATER SYSTEM
FIGURE 9.4-22 (SHEET 1 OF 2)
(DWG. D-913-0007-00000)

OPERATING DATA						
	PSIG	GPM	°F	BY	REMARKS	REV
1	150	600	55			
2	150	300	55			
3	150	100	55			
4	150	13	55			
• SEE NOTE 2						



NOTES:

1. THESE LIGHTS ARE LOCATED ON A STATUS PANEL IN THE CONTROL ROOM.
2. PRESSURE INDICATED IS PIPE DESIGN PRESSURE.

REFERENCES:

912-0602-00000 CONTAINMENT VESSEL COOLING SYSTEM M11

913-0007-00000 CONTAINMENT VESSEL CHILLED WATER SYSTEM P50

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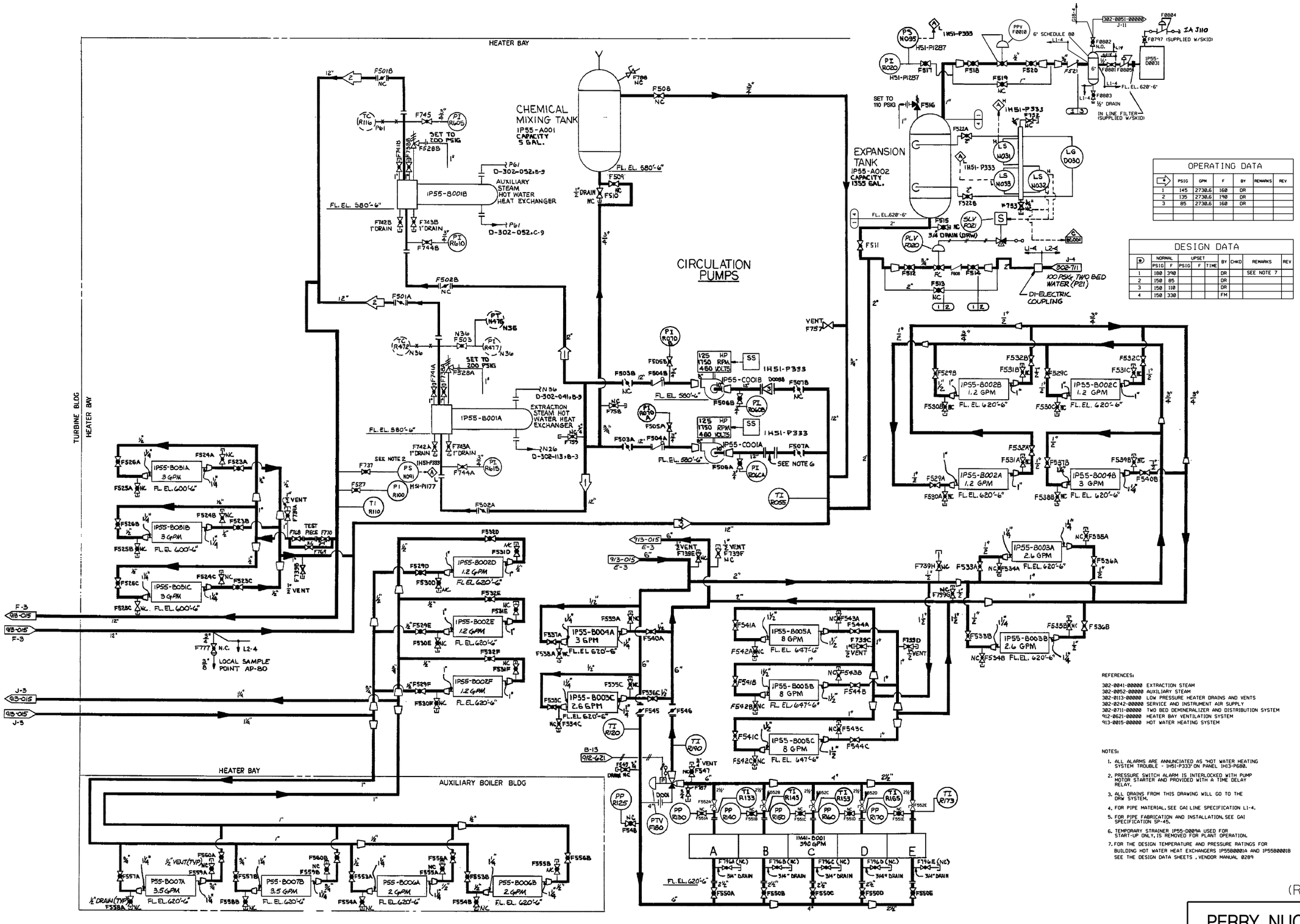
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CONTAINMENT VESSEL
CHILLED WATER SYSTEM
FIGURE 9.4-22 (SHEET 2 OF 2)
(DWG. D-913-0008-00000)



OPERATING DATA

	PSIG	GPM	F	BY	REMARKS	REV
1	145	2738.6	160	DR		
2	135	2738.6	190	DR		
3	85	2738.6	160	DR		

DESIGN DATA

	NORMAL		UPSET			BY	CHKD	REMARKS	REV
	PSIG	F	PSIG	F	TIME				
1	180	390				DR		SEE NOTE 7	
2	150	85				DR			
3	150	110				DR			
4	150	330				FM			

REFERENCES:

302-0041-00000 EXTRACTION STEAM
302-0052-00000 AUXILIARY STEAM
302-0113-00000 LOW PRESSURE HEATER DRAINS AND VENTS
302-0242-00000 SERVICE AND INSTRUMENT AIR SUPPLY
302-0711-00000 TWO BED DEMINERALIZER AND DISTRIBUTION SYSTEM
912-0621-00000 HEATER BAY VENTILATION SYSTEM
913-0015-00000 HOT WATER HEATING SYSTEM

NOTES:

1. ALL ALARMS ARE ANNUNCIATED AS "HOT WATER HEATING SYSTEM TROUBLE - 1H51-P333" ON PANEL 1H13-P680.
2. PRESSURE SWITCH ALARM IS INTERLOCKED WITH PUMP MOTOR STARTER AND PROVIDED WITH A TIME DELAY RELAY.
3. ALL DRAINS FROM THIS DRAWING WILL GO TO THE DRW SYSTEM.
4. FOR PIPE MATERIAL, SEE GAI LINE SPECIFICATION L1-4.
5. FOR PIPE FABRICATION AND INSTALLATION, SEE GAI SPECIFICATION SP-45.
6. TEMPORARY STRAINER IP55-D0090 USED FOR START-UP ONLY, IS REMOVED FOR PLANT OPERATION.
7. FOR THE DESIGN TEMPERATURE AND PRESSURE RATINGS FOR BUILDING HOT WATER HEAT EXCHANGERS IP55B0001A AND IP55B0001B SEE THE DESIGN DATA SHEETS , VENDOR MANUAL 0289

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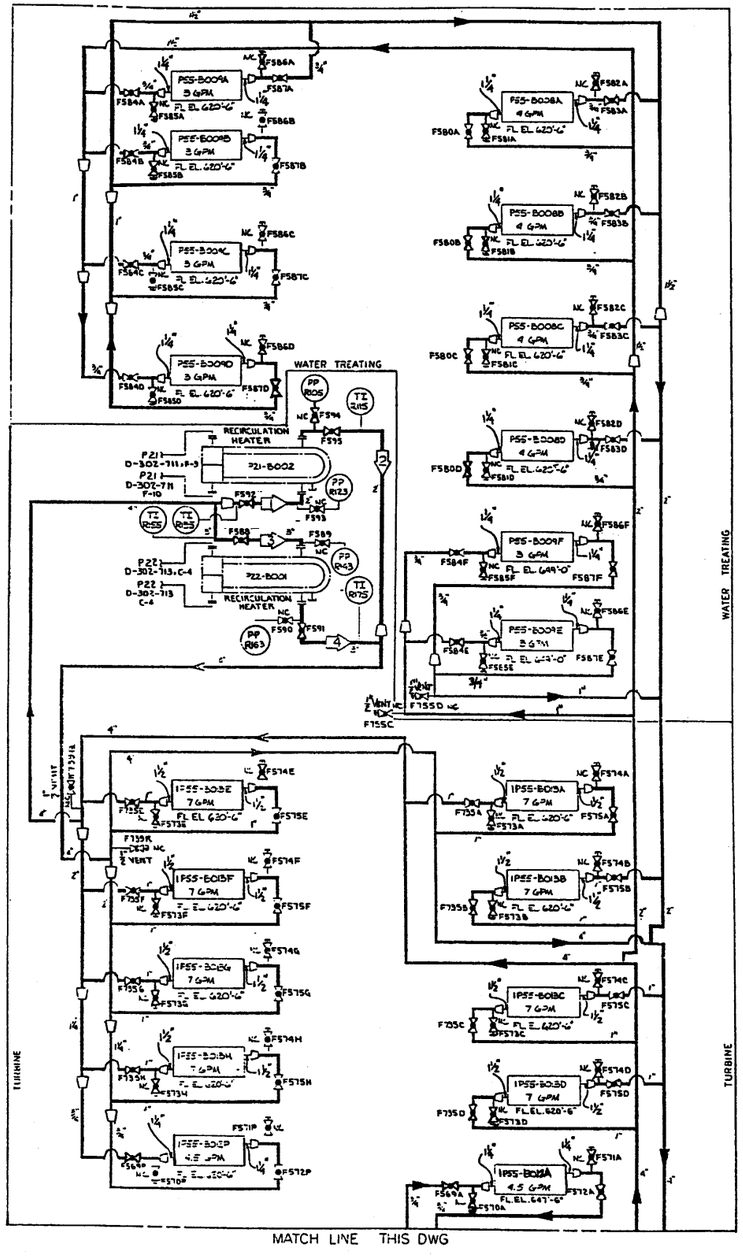
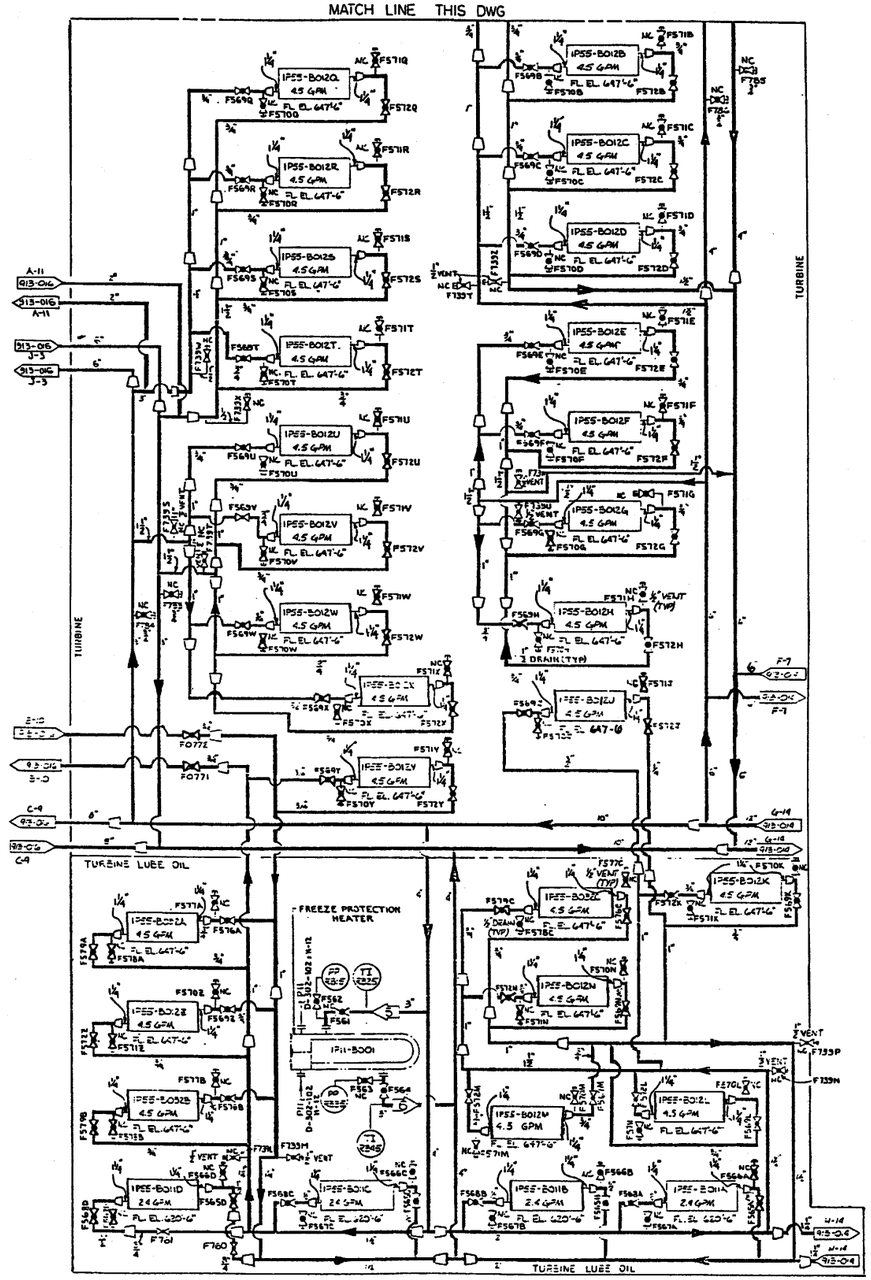
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

Hot Water Heating System,
Heater Bay and Auxiliary
Boiler Building, Unit 1
Figure 9.4-23 (Sheet 1 of 3)
(DWG. D-913-0014-00000)





OPERATING DATA				
⇨ PSIG	GPM	F	BY	REMARKS
1	110	137.5	.110	DR
2	108	137.5	.120	DR
3	109	.120	.140	DR
4	106	.120	.150	DR
5	125	.120	.140	DR
6	122	.120	.120	DR

DESIGN DATA							
⇨ NORMAL PSIG	F	UPSET PSIG	F	TIME	BY	REMARK	

REFERENCES -

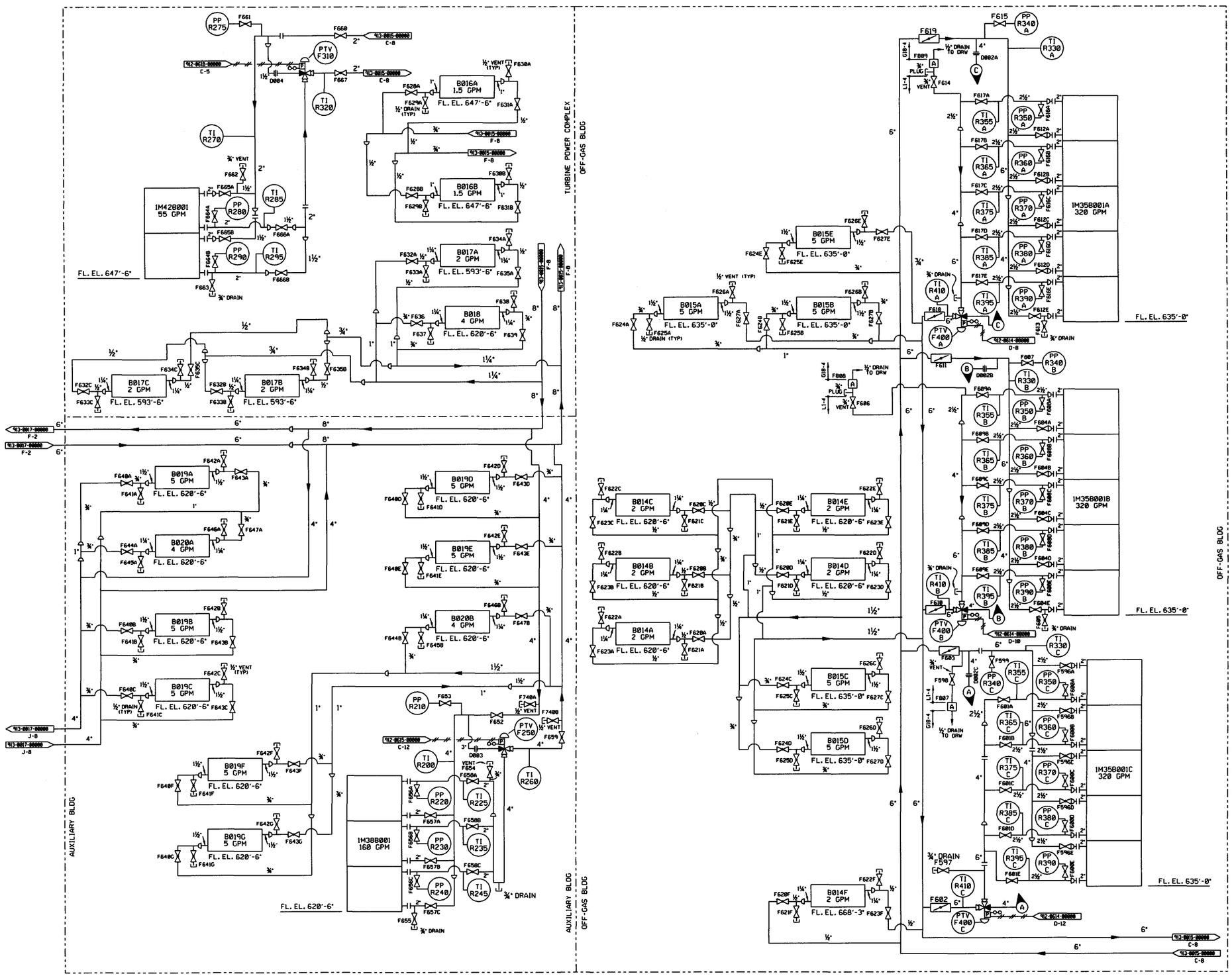
D-302-102	CONDENSATE TRANSFER AND STORAGE SYSTEM
D-302-111	740 BHU DEMINERALIZER AND DISTRIBUTION SYSTEM
D-302-113	MIXED BED DEMINERALIZER AND DISTRIBUTION SYSTEM
D-513-014	HOT WATER HEATING SYSTEM
D-513-016	HOT WATER HEATING SYSTEM

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Hot Water Heating System, Turbine Building, Water Treatment Building and Turbine Lube Oil System, Unit 1

Figure 9.4-23 (Sheet 2 of 3)
(Dwg. D-913-015)



OPERATING DATA						
#	PSIG	GPM	F	BY	REMARKS	REV

DESIGN DATA									
	NORMAL		UPSET			BY	CHKD	REMARKS	REV
	PSIG	F	PSIG	F	TIME				

REFERENCES:

912-0614-00000	TURBINE BUILDING VENTILATION SYSTEM M35
912-0615-00000	AUXILIARY BUILDING VENTILATION SYSTEM M38
912-0618-00000	TURBINE POWER COMPLEX VENTILATION SYSTEM M42
913-0015-00000	HOT WATER HEATING SYSTEM P55
913-0017-00000	HOT WATER HEATING SYSTEM P55

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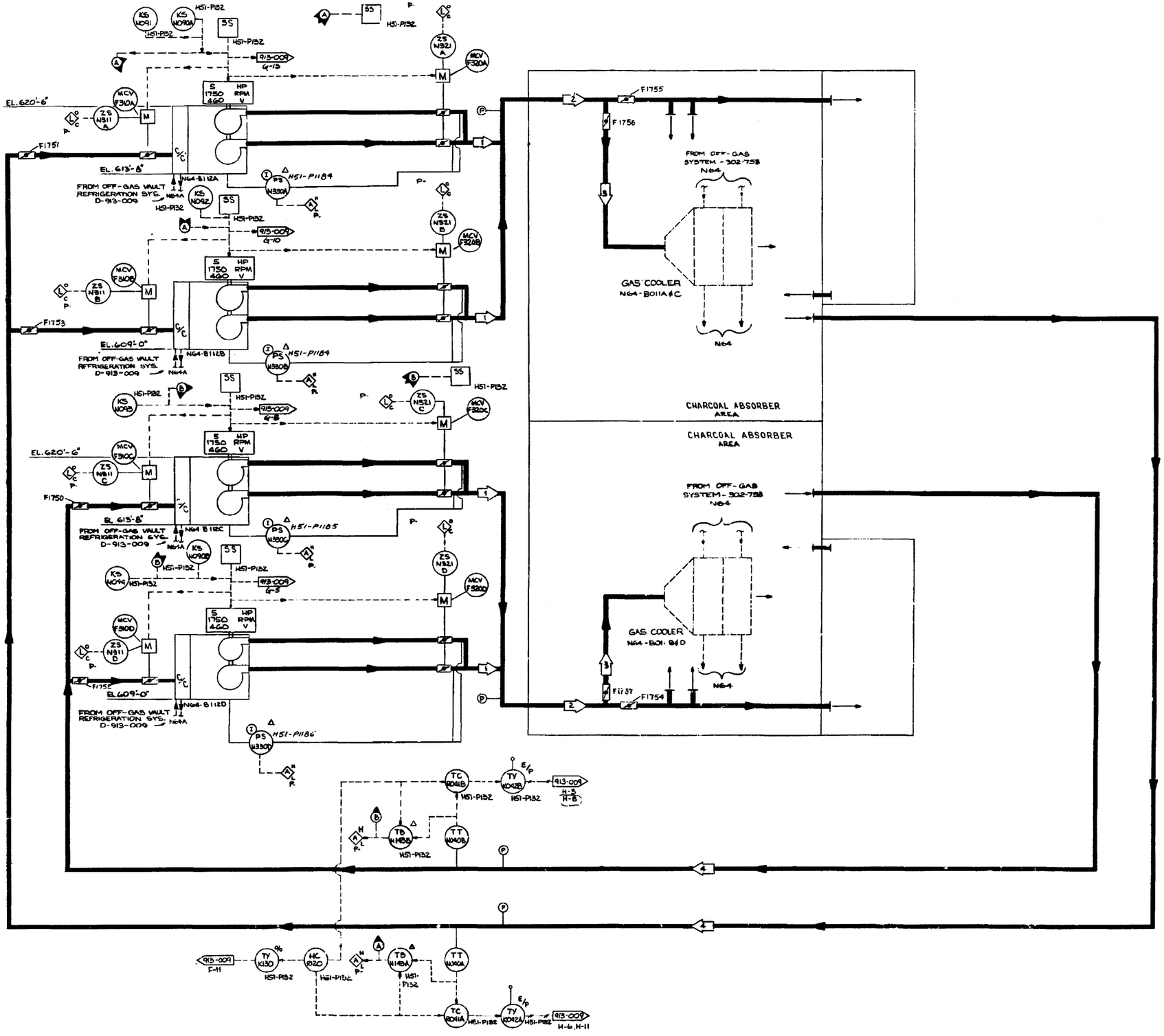
PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

HOT WATER HEATING SYSTEM, TURBINE POWER COMPLEX, AUXILIARY BUILDING AND OFF-GAS BUILDING, UNIT 1

FIGURE 9.4-23 (SHEET 3 OF 3)

(DWG. D-913-0016-00000)



OPERATING DATA

#	CFM	H_2O	F	BY	REMARKS	P_{E_V}
1	5,000	2.0 IN.	*			
2	5,000		*			
3	1,800	0.8 IN	*			
4	5,000					

* AS REQUIRED TO MAINTAIN THE CHARCOAL ADSORBER VAULT TEMPERATURE BETWEEN NOMINAL 8°F AND 48°F (-8°F REFERENCED).

NOTES:

1. ALL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH MOTOR CONTROL SWITCHES OF AIR HANDLING UNITS, AND PROVIDED WITH TIME DELAY RELAY.
2. ALL CONTROL SWITCHES, STATUS LIGHTS AND ALARMS ARE LOCATED IN THE LOCAL PANEL H51-P132, EXCEPT WHERE NOTED
3. ALL ALARMS FROM THIS SYSTEM ARE ANNUNCIATED AS "N64A SYSTEM TROUBLE" ON PANEL H13-P680 IN THE CONTROL ROOM.

REFERENCES:-

D-913-009	OFF-GAS VAULT REFRIGERATION SYSTEM - CHILLED LIQUID DIAGRAM - N64A
D-302-753	OFF-GAS SYSTEM - N64

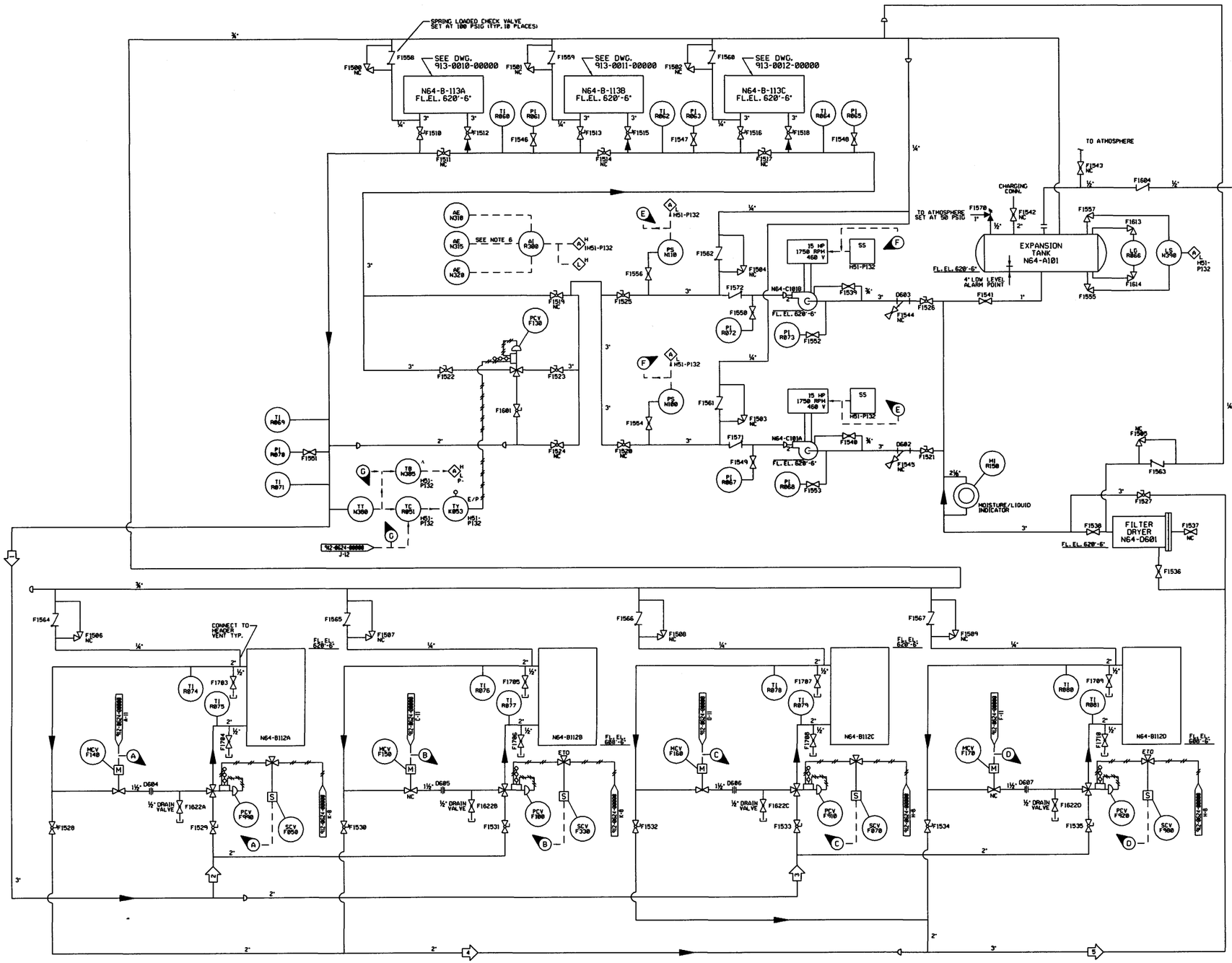
(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

OFFGAS CHARCOAL VAULT REFRIGERATION SYSTEM, CHILLED LIQUID DIAGRAM
FIGURE 9.4-24 (SHEET 1 OF 5)
(DWG. D-912-0624-00000)

OPERATING DATA							
⇨	PSIG	GPM	°F	BY	CKD	REMARKS	REV
1	15	130	*				
2	15	65	*				
3	15	65	*				
4	15	65					
5	15	130					
6	15	-					

* AS REQUIRED TO MAINTAIN THE CHARCOAL ADSORBER VAULT TEMPERATURE BETWEEN NOMINAL 0°F AND 40°F (-30°F REFERENCE)



NOTES:

1. ALL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH MOTOR CONTROL SWITCHES OF BRINE PUMPS AND PROVIDED WITH A TIME DELAY RELAY.
2. ALL CONTROL SWITCHES, STATUS LIGHTS, AND ALARMS ARE LOCATED IN THE LOCAL PANEL H51-P132, EXCEPT WHERE NOTED.
3. ALL ALARMS FROM THIS SYSTEM ARE ANNUNCIATED AS "N64A SYSTEM TROUBLE" ON PANEL H13-P680 IN THE CONTROL ROOM.
4. DELETED
5. NORMAL FLOW IS TO TWO AIR HANDLING UNITS WITH TWO IN STANDBY.
6. DELETED
7. THE N64A SYSTEM HEAT TRANSFER MEDIUM IS AN ENGINEERED FLUID. MATERIALS OF CONSTRUCTION OF WETTED COMPONENTS AND ASSOCIATED MATERIALS (e.g. GASKETS) NEED TO BE COMPATIBLE WITH THE HEAT TRANSFER MEDIUM. FOR REPLACEMENT PARTS / COMPONENTS, UTILIZE CURRENT DESIGN DOCUMENTS FOR ACCEPTABLE MATERIALS. ACCEPTABLE PACKING / GASKET MATERIALS ARE IDENTIFIED IN THE VENDOR MANUAL ASSOCIATED WITH N64A01001. IF UNCERTAIN ABOUT ACCEPTABILITY OF A REPLACEMENT ITEM / COMPONENT, CONTACT ENGINEERING FOR ASSISTANCE. REFERENCE CR 98-2035 AND ECP 14-00641.

REFERENCES:

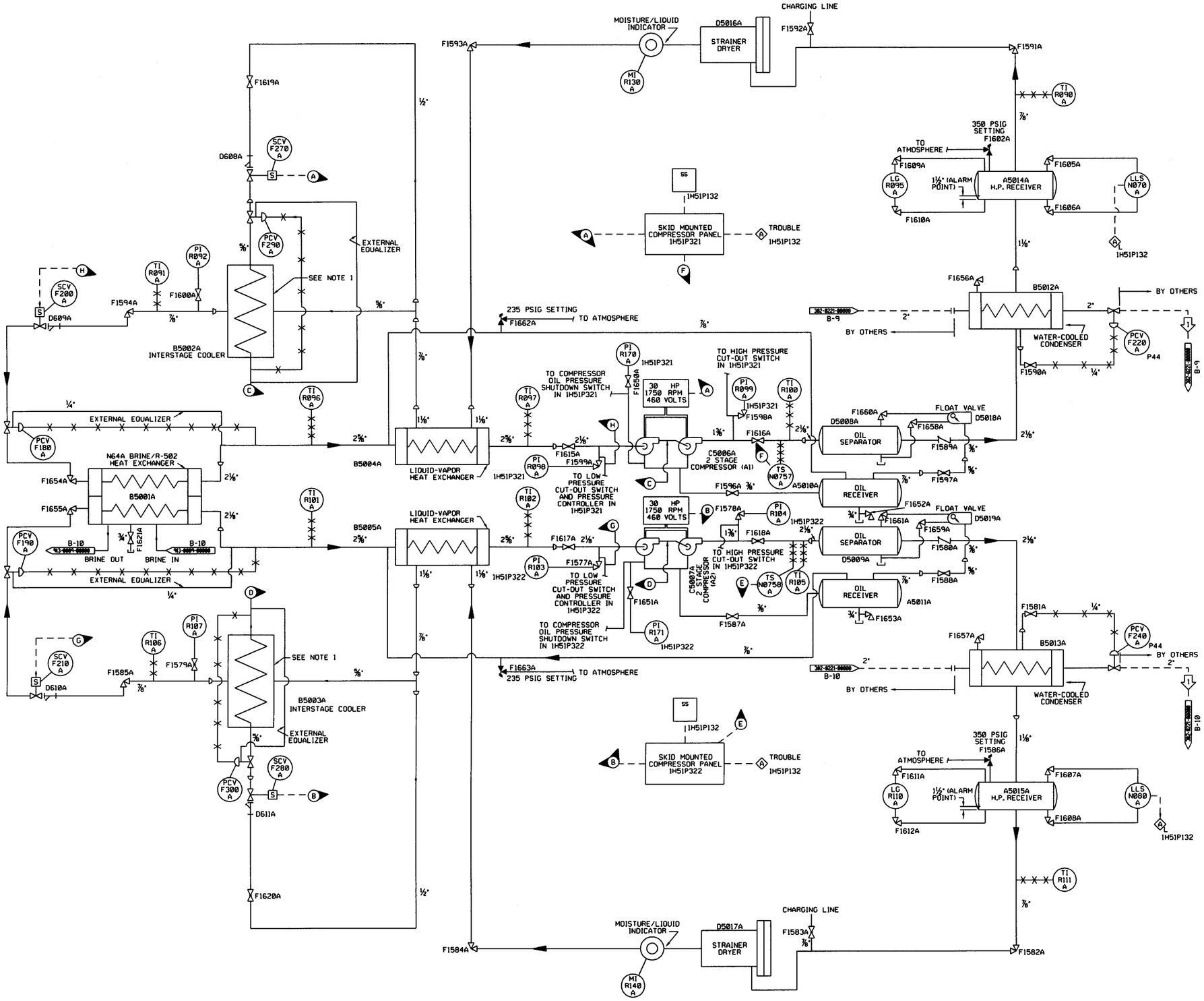
913-0010-00000	OFF-GAS VAULT REFRIGERATION SYSTEM BRINE COOLING PACKAGE DIAGRAM (N64-B113A)
912-8624-00000	OFF-GAS CHARCOAL VAULT REFRIGERATION SYSTEM
913-0011-00000	OFF-GAS VAULT REFRIGERATION SYSTEM BRINE COOLING PACKAGE DIAGRAM (N64-B113B)
913-0012-00000	OFF-GAS VAULT REFRIGERATION SYSTEM BRINE COOLING PACKAGE DIAGRAM (N64-B113C)

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

OFFGAS CHARCOAL VAULT REFRIGERATION SYSTEM, CHILLED LIQUID DIAGRAM
FIGURE 9.4-24 (SHEET 2 OF 5)
(DWG. D-913-0009-00000)

OPERATING DATA							
PSIG	GPM	°F	BY	CHECKED	REMARKS	REV
1		45					



NOTES:

1. INTERSTAGE COOLER AND RELATED PIPING, VALVES AND CONTROLS ARE INCLUDED IN THE COMPRESSOR PACKAGE.
2. SKID MOUNTED COMPRESSOR PANEL HAS THE FOLLOWING INDICATION AND CONTROLS:
   - A. HIGH PRESSURE CUTOUT (MANUAL RESET) WITH CORRESPONDING RED ALARM LIGHT.
   - B. AUTOMATIC RESET LOW PRESSURE CUTOUT FOR PUMPDOWN CONTROL.
   - C. OIL PRESSURE FAILURE SWITCH (MANUAL RESET) WITH CORRESPONDING RED ALARM LIGHT.
   - D. HIGH DISCHARGE TEMPERATURE CUTOUT WITH CORRESPONDING RED ALARM LIGHT.
   - E. CRANKCASE HEATER CONTROL.
   - F. COMPRESSOR ON-OFF SELECTOR SWITCH.
   - G. PRESSURE CONTROL TO ENERGIZE LIQUID LINE SOLENOID AT 15 PSIG OR LOWER.
   - H. SUCTION AND DISCHARGE PRESSURE GAGES.
   - I. OIL PRESSURE GAGE.
   - J. INHERENT PROTECTION MOTOR RELAY WITH CORRESPONDING RED ALARM LIGHT (HIGH WINDING TEMPERATURE).

REFERENCES:

302-0221-00000	TURBINE BLDG. CLOSED COOLING SYSTEM-P44
913-0009-00000	OFF-GAS VAULT REFRIGERATION SYSTEM-CHILLED LIQUID DIAGRAM

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT

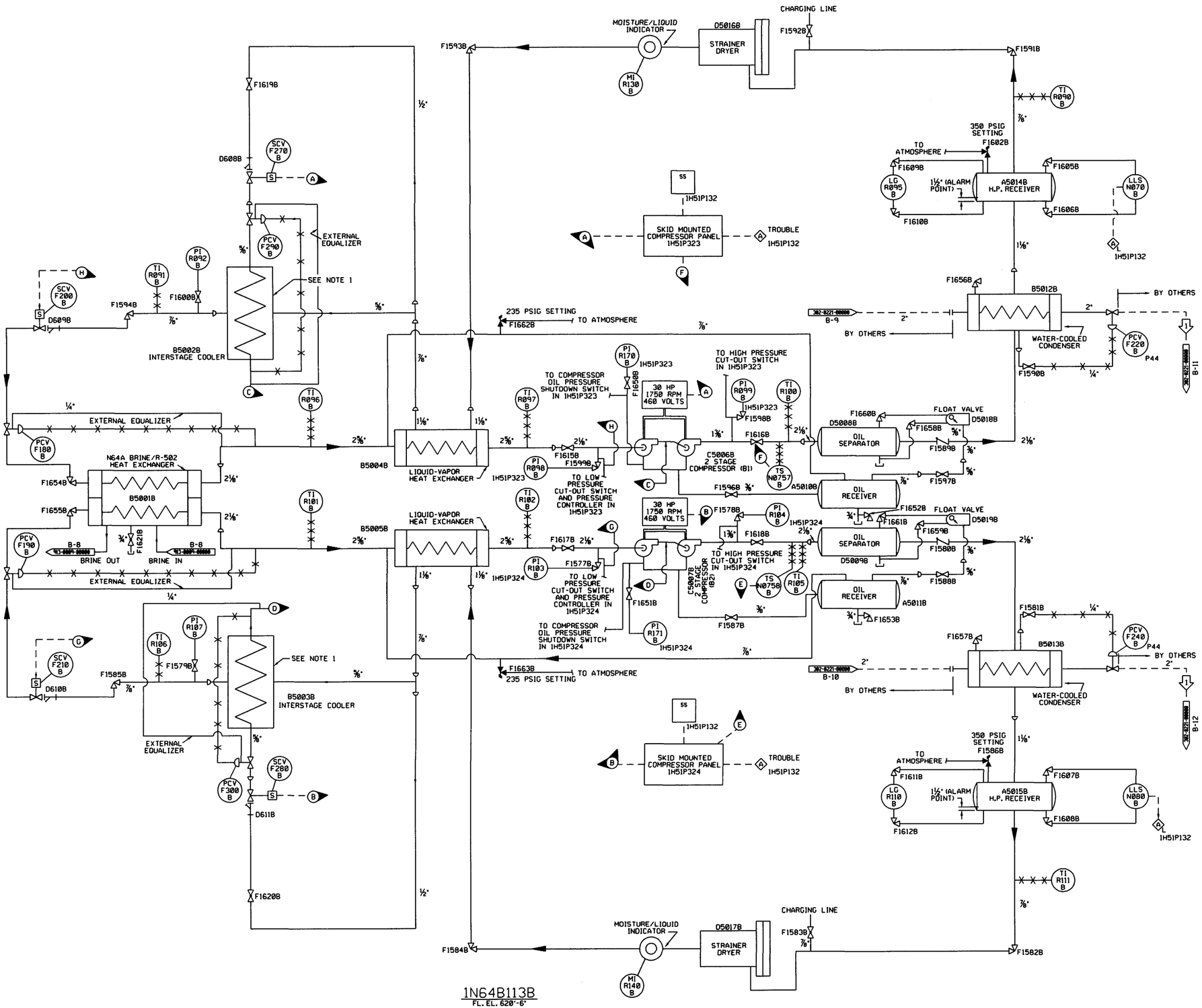
10 CENTER RD., PERRY, OHIO 44081

OFFGAS CHARCOAL VAULT REFRIGERATION SYSTEM, BRINE COOLING PACKAGE BOILER DIAGRAM

FIGURE 9.4-24 (SHEET 3 OF 5)

(DWG. D-913-0010-00000)

OPERATING DATA							
ITEM	PSIG	GPM	°F	BY	CHECKED	REMARKS	REV
1		45					



NOTES:

1. INTERSTAGE COOLER AND RELATED PIPING, VALVES AND CONTROLS ARE INCLUDED IN THE COMPRESSOR PACKAGE.
2. SKID MOUNTED COMPRESSOR PANEL HAS THE FOLLOWING INDICATION AND CONTROLS:
   - A. HIGH PRESSURE CUTOUT (MANUAL RESET) WITH CORRESPONDING RED ALARM LIGHT.
   - B. AUTOMATIC RESET LOW PRESSURE CUTOUT FOR PUMPDOWN CONTROL.
   - C. OIL PRESSURE FAILURE SWITCH (MANUAL RESET) WITH CORRESPONDING RED ALARM LIGHT.
   - D. HIGH DISCHARGE TEMPERATURE CUTOUT WITH CORRESPONDING RED ALARM LIGHT.
   - E. CRANKCASE HEATER CONTROL.
   - F. COMPRESSOR ON-OFF SELECTOR SWITCH.
   - G. PRESSURE CONTROL TO ENERGIZE LIQUID LINE SOLENOID AT 15 PSIG OR LOWER.
   - H. SUCTION AND DISCHARGE PRESSURE GAGES.
   - I. OIL PRESSURE GAGE.
   - J. INHERENT PROTECTION MOTOR RELAY WITH CORRESPONDING RED ALARM LIGHT (HIGH WINDING TEMPERATURE).

REFERENCES:

302-0221-00000	TURBINE BLDG. CLOSED COOLING SYSTEM-P44
913-0009-00000	OFF-GAS VAULT REFRIGERATION SYSTEM-CHILLED LIQUID DIAGRAM

(REV. 19 10/2015)

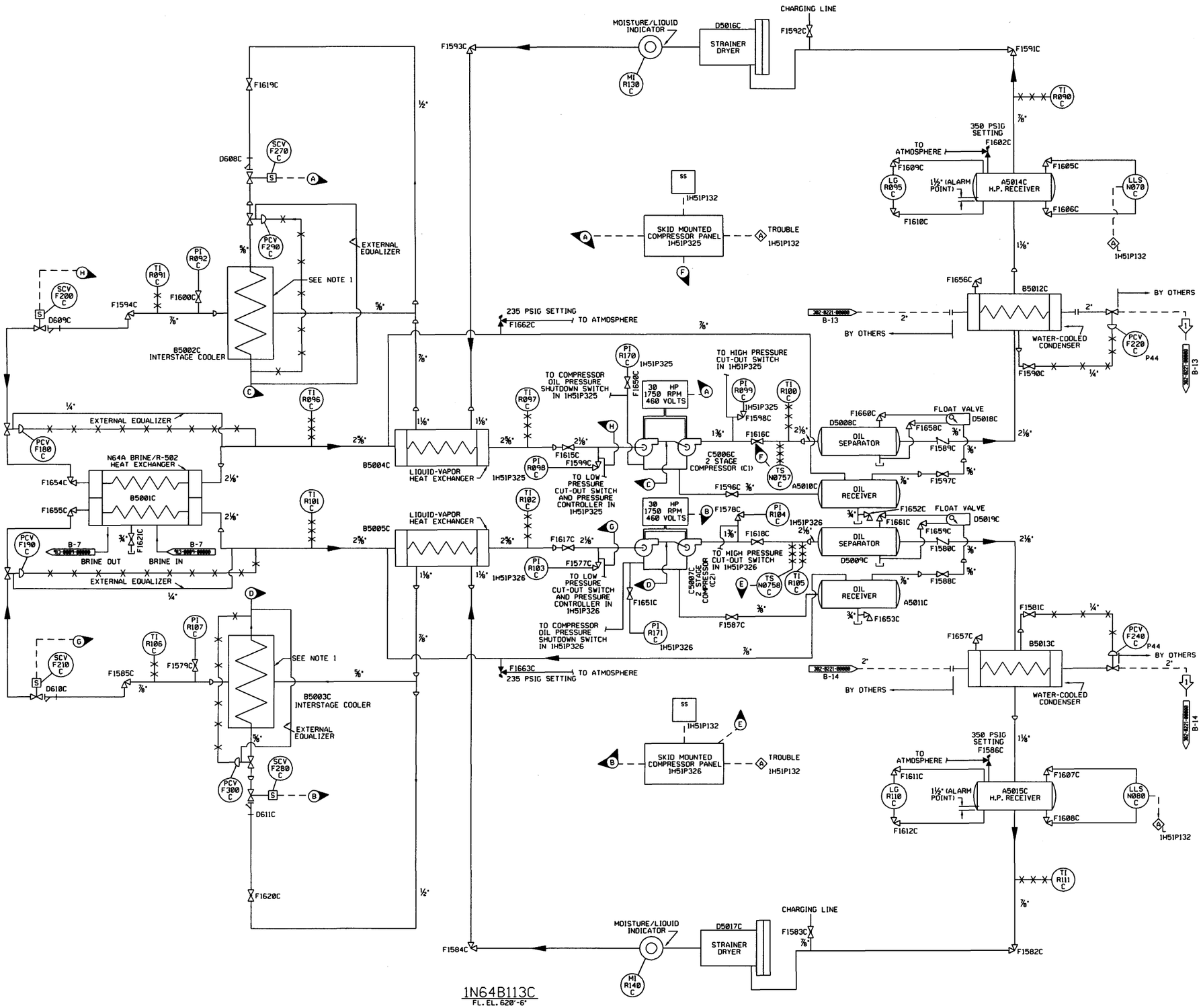
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

OFFGAS CHARCOAL VAULT REFRIGERATION SYSTEM, BRINE COOLING PACKAGE BOILER DIAGRAM

FIGURE 9.4-24 (SHEET 4 OF 5)

(DWG. D-913-0011-00000)

OPERATING DATA							
	PSIG	GPM	°F	BY	CHECKED	REMARKS	REV
1		45					



NOTES:

1. INTERSTAGE COOLER AND RELATED PIPING, VALVES AND CONTROLS ARE INCLUDED IN THE COMPRESSOR PACKAGE.
2. SKID MOUNTED COMPRESSOR PANEL HAS THE FOLLOWING INDICATION AND CONTROLS:
   - A. HIGH PRESSURE CUTOUT (MANUAL RESET) WITH CORRESPONDING RED ALARM LIGHT.
   - B. AUTOMATIC RESET LOW PRESSURE CUTOUT FOR PUMPDOWN CONTROL.
   - C. OIL PRESSURE FAILURE SWITCH (MANUAL RESET) WITH CORRESPONDING RED ALARM LIGHT.
   - D. HIGH DISCHARGE TEMPERATURE CUTOUT WITH CORRESPONDING RED ALARM LIGHT.
   - E. CRANKCASE HEATER CONTROL.
   - F. COMPRESSOR ON-OFF SELECTOR SWITCH.
   - G. PRESSURE CONTROL TO ENERGIZE LIQUID LINE SOLENOID AT 15 PSIG OR LOWER.
   - H. SUCTION AND DISCHARGE PRESSURE GAGES.
   - I. OIL PRESSURE GAGE.
   - J. INHERENT PROTECTION MOTOR RELAY WITH CORRESPONDING RED ALARM LIGHT (HIGH WINDING TEMPERATURE).

REFERENCES:

302-0221-00000	TURBINE BLDG. CLOSED COOLING SYSTEM-P44
913-0009-00000	OFF-GAS VAULT REFRIGERATION SYSTEM-CHILLED LIQUID DIAGRAM

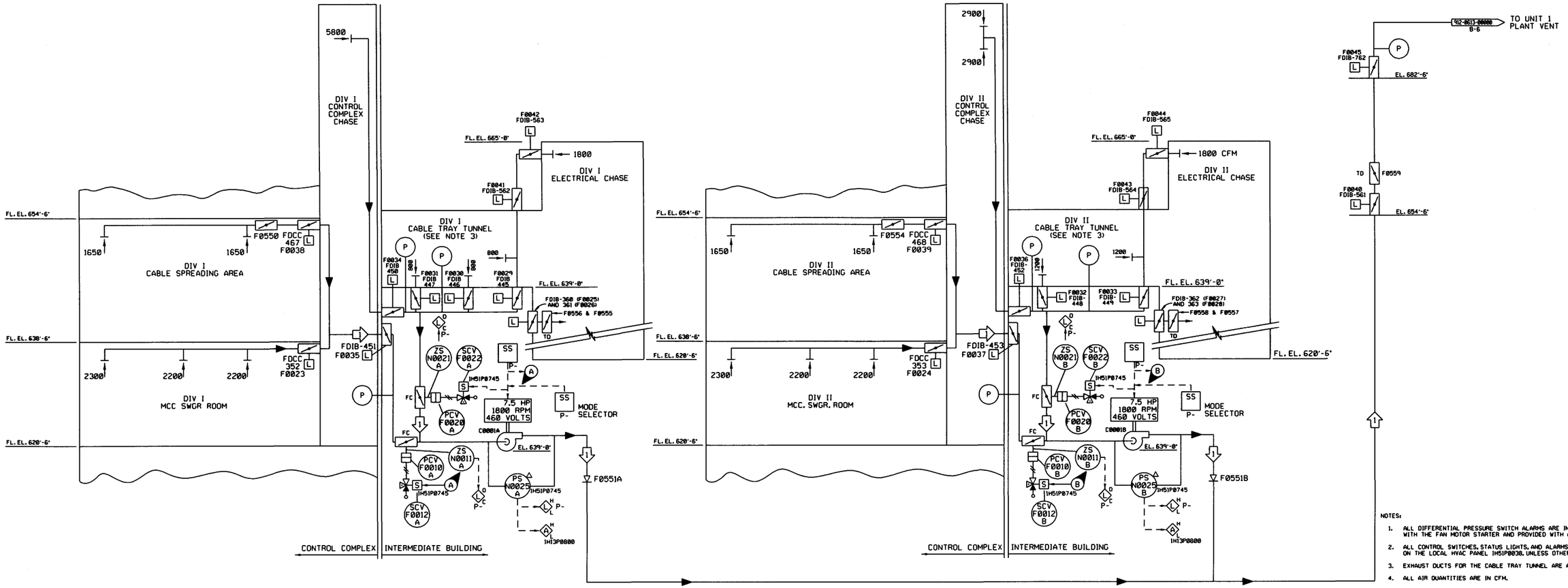
(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

OFFGAS CHARCOAL VAULT REFRIGERATION SYSTEM, BRINE COOLING PACKAGE BOILER DIAGRAM

FIGURE 9.4-24 (SHEET 5 OF 5)
(DWG. D-913-0012-00000)

OPERATING DATA				
#	CFM	H_2O	°F	REMARKS
1	10,000			



NOTES:

1. ALL DIFFERENTIAL PRESSURE SWITCH ALARMS ARE INTERLOCKED WITH THE FAN MOTOR STARTER AND PROVIDED WITH A TIME DELAY RELAY.
2. ALL CONTROL SWITCHES, STATUS LIGHTS, AND ALARMS ARE LOCATED ON THE LOCAL HVAC PANEL IM51P0038, UNLESS OTHERWISE NOTED.
3. EXHAUST DUCTS FOR THE CABLE TRAY TUNNEL ARE AT EL. 658'-1".
4. ALL AIR QUANTITIES ARE IN CFM.
5. TORNADO DAMPERS (TD) SHOWN ON THIS DRAWING ARE TO BE SAFETY-RELATED CLASS 3, NON-SEISMIC

REFERENCES:

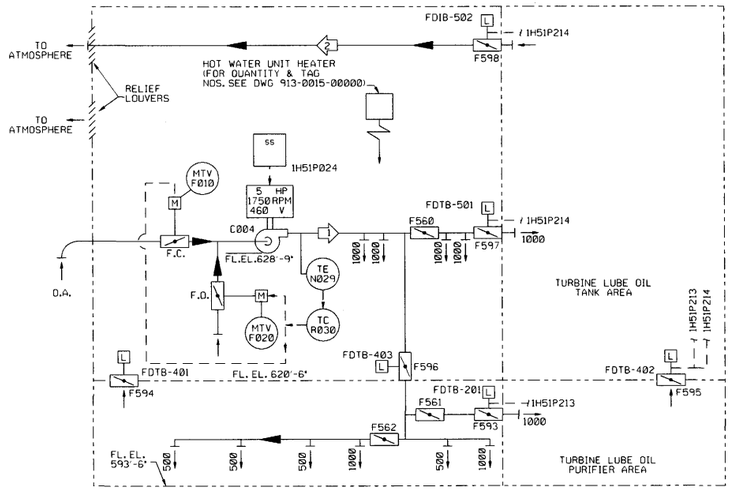
912-0613-00000 INTERMEDIATE BUILDING VENT SYSTEM M33

(REV. 19 10/2015)

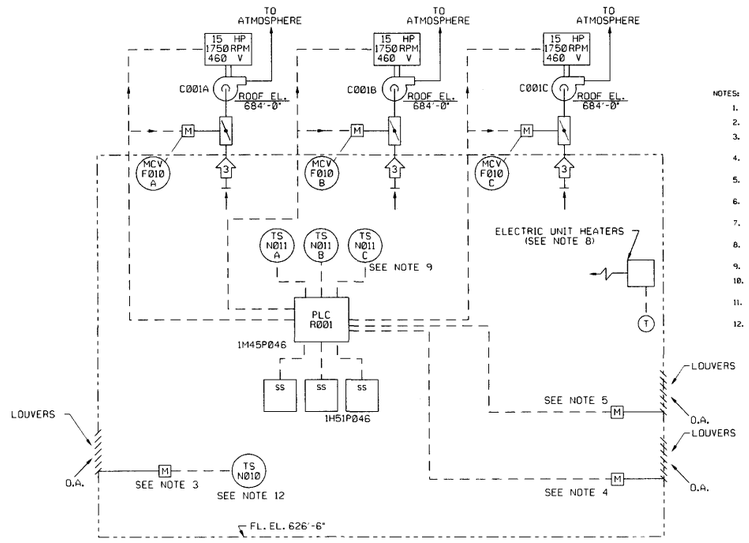
PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

SMOKE VENTING SYSTEM,
MISCELLANEOUS ELECTRICAL AREAS
FIGURE 9.4-25
(DWG. D-912-0633-00000)



TURBINE LUBE OIL STORAGE AREA
VENTILATION SYSTEM (1M46) (UNIT 1)

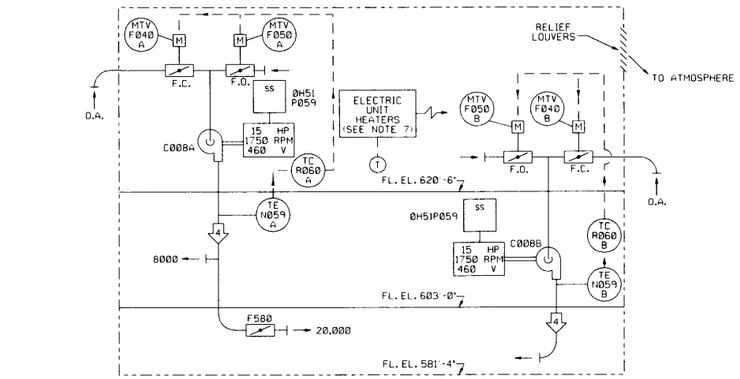


CIRCULATING WATER PUMPHOUSE
VENTILATION SYSTEM (1M45) (UNIT 1)

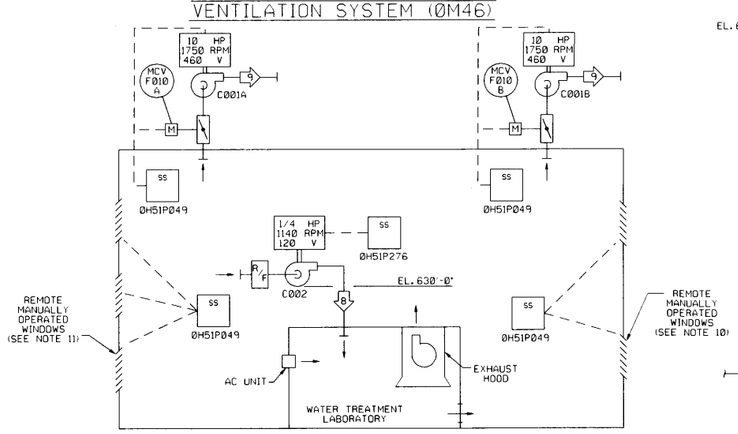
OPERATING DATA						
#	CFM			BY	REMARKS	REV
1	10,000					
2	2,000					B
3	86,682					
4	28,000					
5	15,500					
6	15,500					B
7	42,051					
8	960					C
9	42,051					B

NOTES:

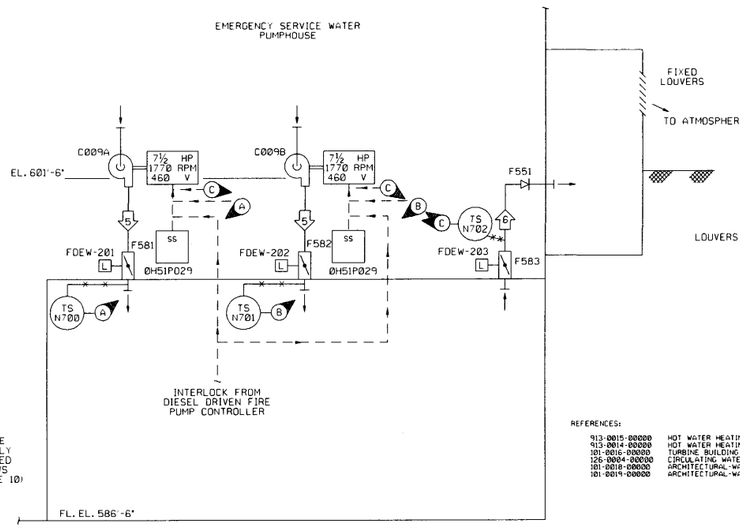
1. SELECTOR SWITCHES AND STATUS LIGHTS TO BE LOCATED ON LOCAL PANEL.
2. NO INSTRUMENTATION IS REQUIRED IN THE CONTROL ROOM FOR THESE SYSTEMS.
3. THIS MOTOR SYMBOLIZES THE FOLLOWING MOTORS: IL53E013A&B, IL53E014A&B, IL53E015A&B, AND IL53E016A&B, SEE DWG. 126-0004-00000.
4. THIS MOTOR SYMBOLIZES THE FOLLOWING MOTORS: IL53E005A&B, IL53E007A&B, IL53E009A&B, AND IL53E011A&B, SEE DWG. 126-0004-00000.
5. THIS MOTOR SYMBOLIZES THE FOLLOWING MOTORS: IL53E006A&B, IL53E008A&B, IL53E010A&B, AND IL53E012A&B, SEE DWG. 126-0004-00000.
6. THIS MOTOR SYMBOLIZES THE FOLLOWING MOTORS: IL53E039A&B, AND IL53E040A&B, SEE DWG. 101-0016-00000.
7. TEN ELECTRIC UNIT HEATERS (10 KW EACH) TAGGED P55-BE40A THRU -BE40K. LETTER I IS NOT USED.
8. TWELVE ELECTRIC UNIT HEATERS (10 KW EACH) TAGGED 1P55-BE39A THRU BE39M. LETTER I IS NOT USED.
9. TEMPERATURE SWITCHES TO START SEQUENCING OF HVAC EQUIPMENT.
10. SELECTOR SWITCH OPERATES MOTOR OPERATOR L53E062A AND L53E062B, SEE DWG. 102-0011-00000 AND DWG. 102-0041-00000.
11. SELECTOR SWITCH OPERATES MOTOR OPERATOR L53E062E, L53E062C, AND L53E062D. SEE DWGS. 102-0041-00000 AND 102-0031-00000.
12. TEMPERATURE SWITCH TO OPEN LOUVERS IL53E013A/B, IL53E014A/B, IL53E015A/B AND IL53E016A/B.



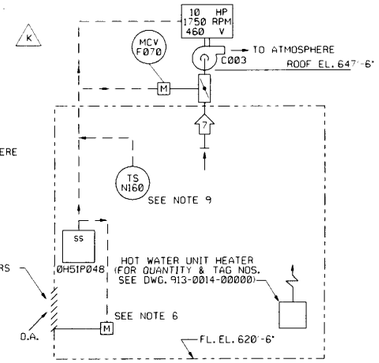
SERVICE WATER PUMPHOUSE
VENTILATION SYSTEM (0M46)



WATER TREATMENT BUILDING (0M37)



DIESEL DRIVEN FIRE PUMP AREA
VENTILATION SYSTEM (0M46)



AUXILIARY BOILER BUILDING
VENTILATION SYSTEM (0M46)

REFERENCES:

913-0015-00000	HOT WATER HEATING SYSTEM P55
913-0014-00000	HOT WATER HEATING SYSTEM P55
101-0016-00000	TURBINE BUILDING COMPLEX FLOOR PLAN-EL. 620'-6"
126-0004-00000	CIRCULATING WATER PUMP HOUSE FLOOR PLANS AND SCHEDULES
101-0018-00000	ARCHITECTURAL-WATER TREATMENT BUILDING-EL. 609'-6" AND EL. 620'-6"
101-0019-00000	ARCHITECTURAL-WATER TREATMENT BUILDING-EL. 604'-6" AND EL. 620'-6"

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT

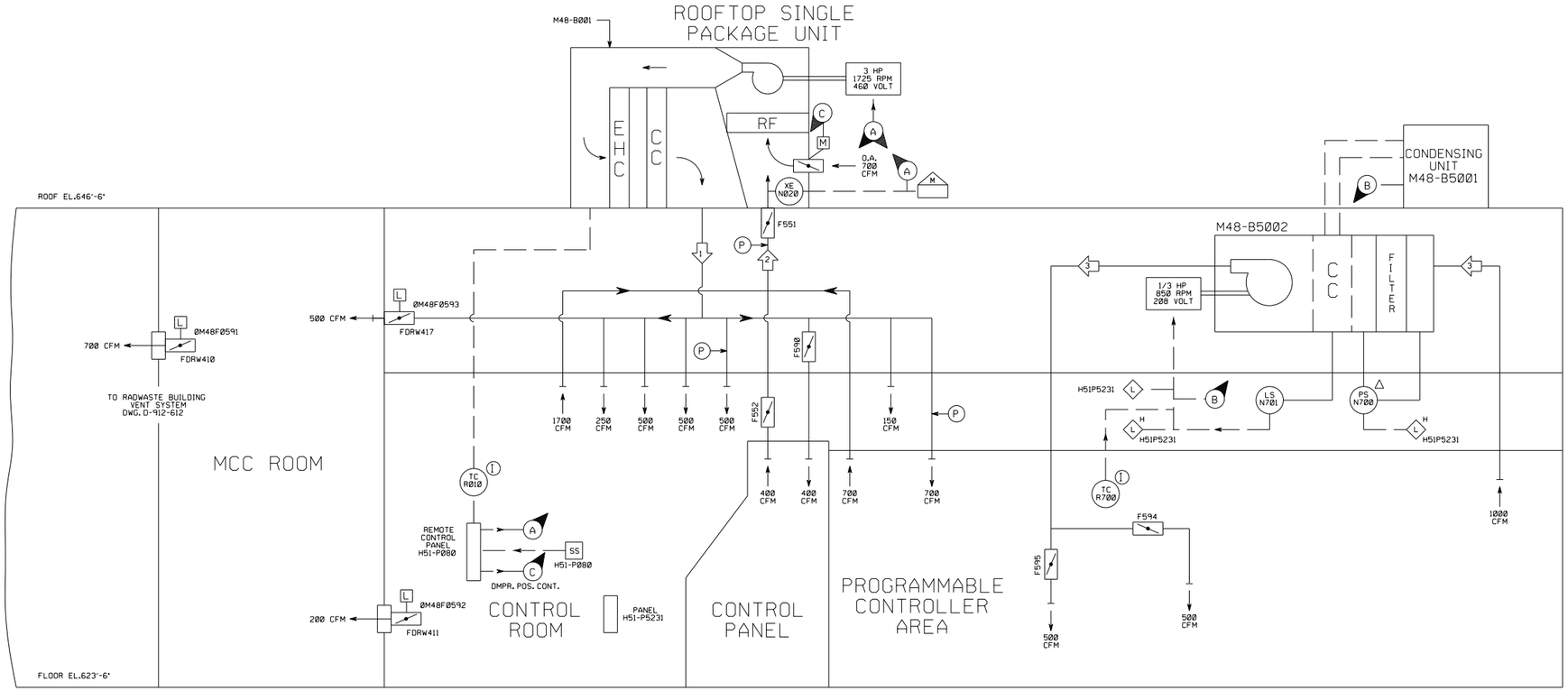
10 CENTER RD., PERRY, OHIO 44081

TURBINE LUBE OIL STORAGE AREA, DIESEL DRIVEN FIRE PUMP AREA, SERVICE WATER PUMPHOUSE, WATER TREATMENT BUILDING, AND CIRCULATING WATER PUMPHOUSE AND AUXILIARY BOILER BUILDING VENTILATION SYSTEMS

FIGURE 9.4-27

(DWG. D-912-0629-00000)

DESIGN DATA						
*	CFM	GPM	°F	BY	REMARKS	REV
1	3500					
2	2800					
3	1000					



REFERENCES:

D-912-612 RADWASTE BUILDING VENTILATION SYSTEM, M31

NOTES:

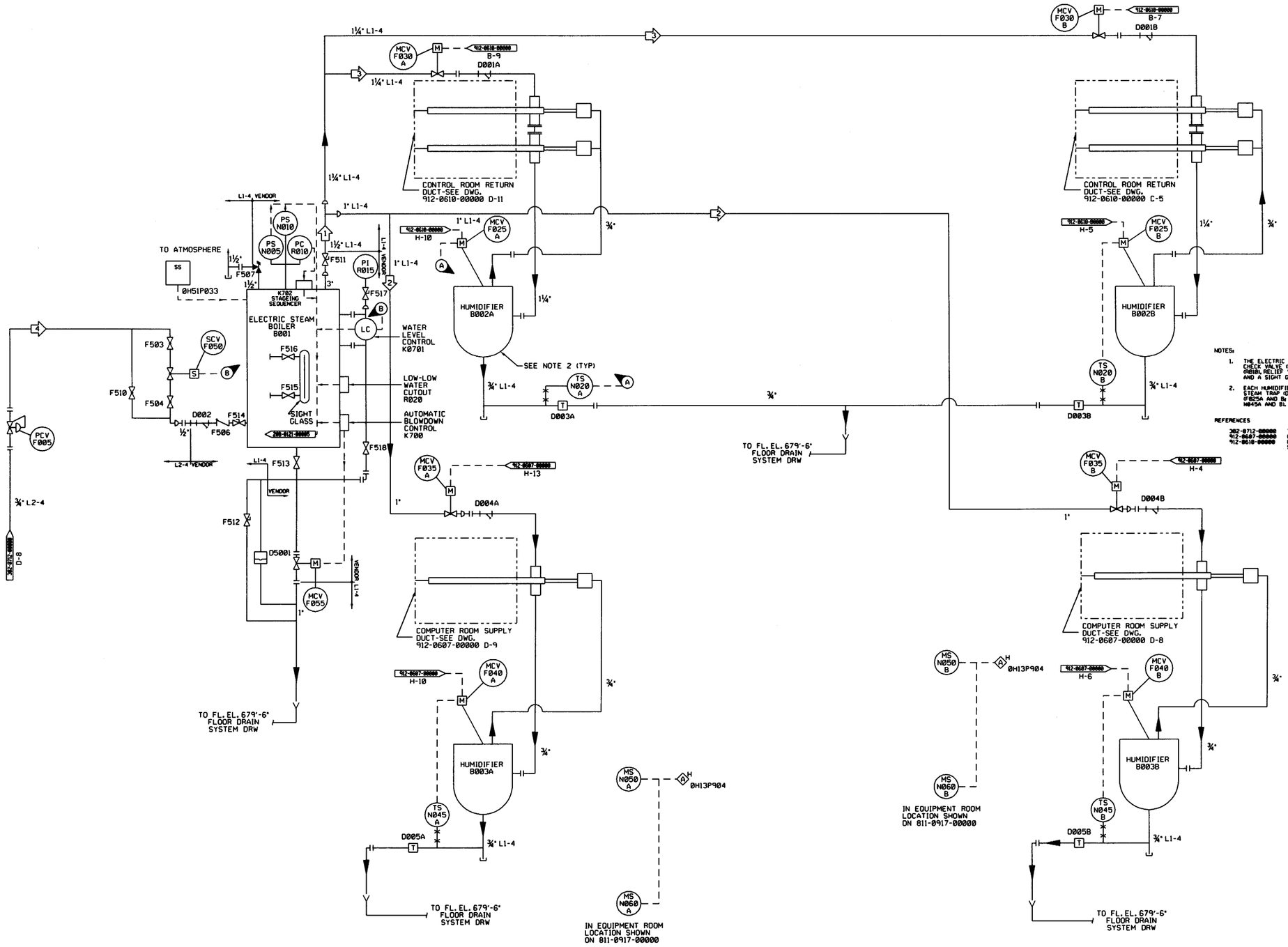
1. INDICATING TEMPERATURE CONTROLLER AND REMOTE CONTROL PANEL ARE INCLUDED WITH THE ROOFTOP SINGLE PACKAGE UNIT.

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

RADWASTE CONTROL ROOM
HVAC SYSTEM
FIGURE 9.4-28
(DWG. D-912-0634-00000)

DESIGN DATA						
⇨	PSIG	lbs/hr	°F	BY	REMARKS	REV
1	5	320				
2	5	120				
3	5	200				
4	20	320				



NOTES:

1. THE ELECTRIC STEAM BOILER IS PROVIDED WITH A STRAINER (D002), CHECK VALVE (F506), PRESSURE INDICATOR (R015), PRESSURE CONTROLLER (R010), RELIEF VALVE (F507), MANUAL VALVE (F513), DRAIN VALVE (F055), AND A SIGHT GLASS.
2. EACH HUMIDIFIER IS PROVIDED WITH A STRAINER (D001A AND B, D004A AND B), STEAM TRAP (D003A AND B, D005A AND B), MOISTURE CONTROL VALVE (F025A AND B, F040A AND B), AND A TEMPERATURE SWITCH (N020A AND B, N045A AND B).

REFERENCES

362-0712-00000	TWO BED WATER STORAGE AND DISTRIBUTION SYSTEM (P21)
912-0607-00000	COMPUTER ROOMS HVAC SYSTEMS (H27)
912-0610-00000	CONTROL ROOM HVAC AND EMERGENCY RECIRCULATION SYSTEMS (H25/26)

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT

10 CENTER RD., PERRY, OHIO 44081

CONTROL AND COMPUTER ROOMS HUMIDFICATION SYSTEM

FIGURE 9.4-29

(DWG. D-913-0018-00000)