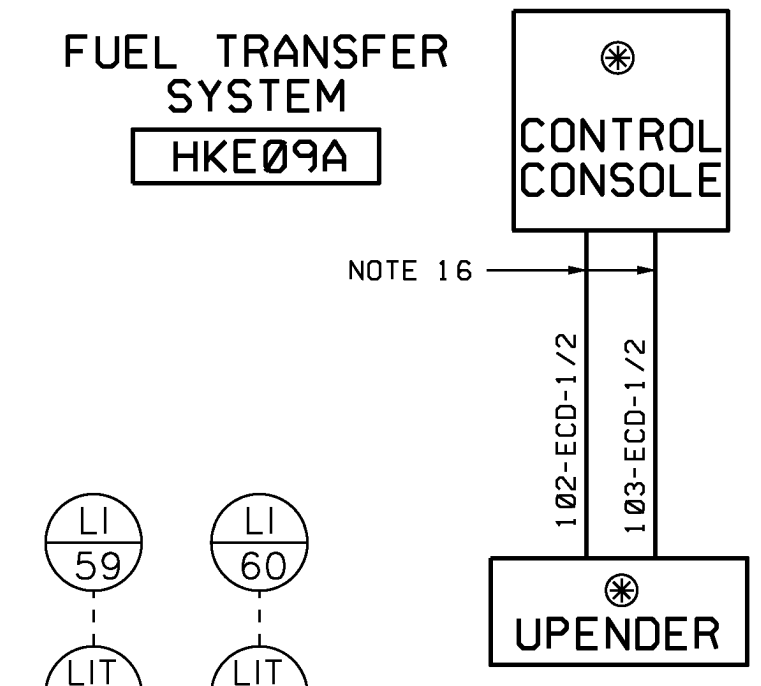
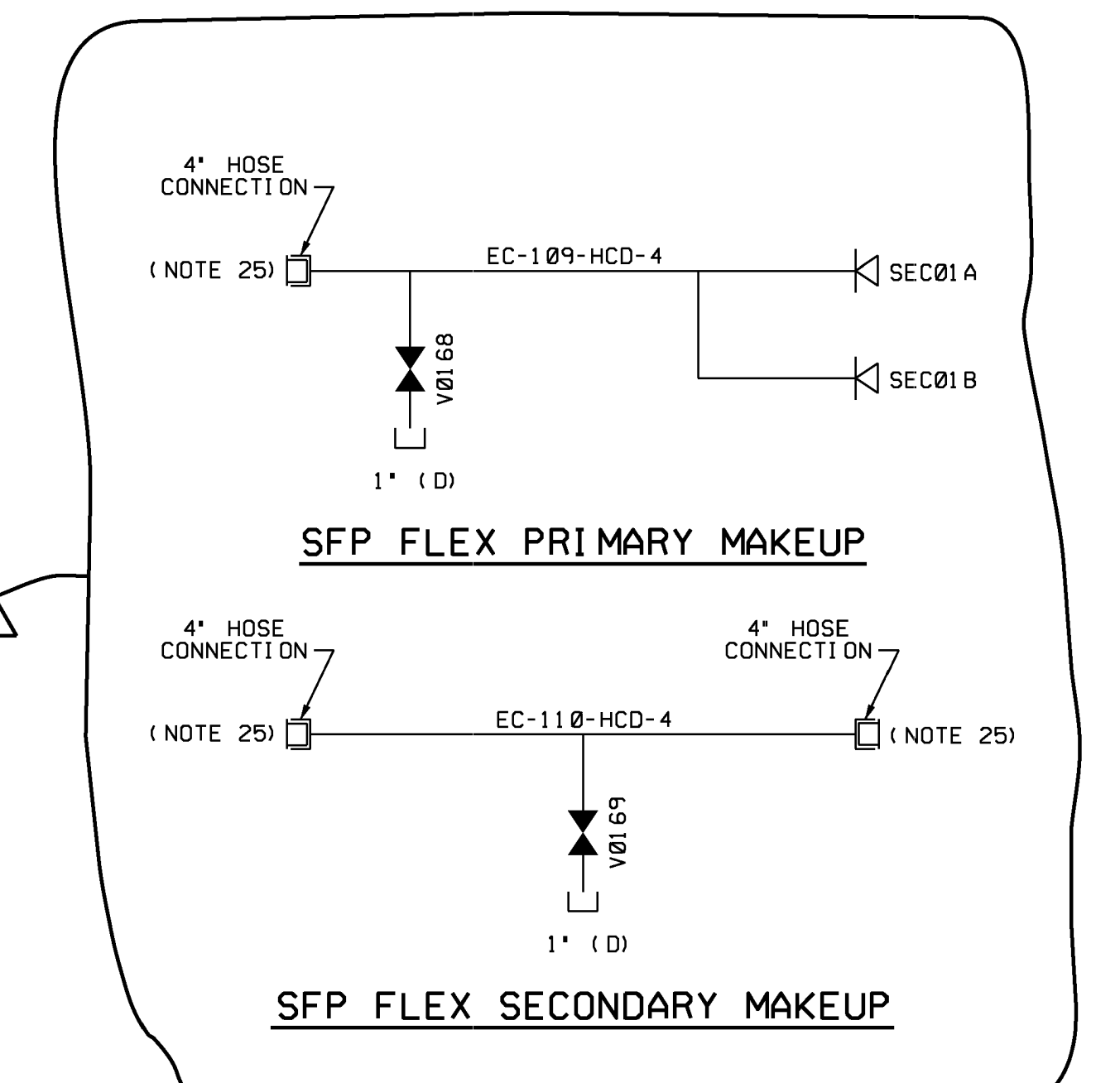


**GENERAL NOTES**

1. PIPING PENETRATES POOL BOUNDARY 3'-0" BELOW THE NORMAL WATER LEVEL OF THE POOL SECTION AT 6" BELOW NORMAL WATER LEVEL.
2. PIPING PENETRATES POOL BOUNDARY AT 18" BELOW THE NORMAL WATER LEVEL OF THE POOL.
3. PIPING PENETRATES POOL BOUNDARY 6'-0" BELOW NORMAL WATER LEVEL.
4. DELETED.
5. ALL PIPING THAT PENETRATES POOL BOUNDARY DOES SO AT EXTREME END OF FUEL TRANSFER CANAL OPPOSITE FUEL TRANSFER TUBE WITH THE EXCEPTION OF 79-HCD-3 & 86-HCD-2 1/2.
6. DELETED.
7. 3" DIA. VENT HOLES TO BE LOCATED WITH CENTERLINE AT ELEVATION 2843'-2".
8. PIPING PENETRATES POOL BOUNDARY 6 INCHES BELOW NORMAL POOL WATER LEVEL.
9. PIPING PENETRATES REFUELING POOL AT BOTTOM OF ROD CLUSTER CONTROL (RCC) CHANGING FIXTURE PIT.
10. PIPING PENETRATES REFUELING POOL ABOVE NORMAL WATER LEVEL AT THE CONTROL ROD DRIVE MECHANISM (CROM) SEISMIC SUPPORT POCKET. REMOVABLE ELBOW WHICH EXTENDS 12 INCHES BELOW NORMAL WATER LEVEL. WILL BE PROVIDED.
11. PIPING PENETRATES FUEL TRANSFER CANAL WELL 12 INCHES ABOVE NORMAL WATER LEVEL DURING REFUELING.
12. REFUELING POOL DRAIN LINES, FLANGED ONLY DURING REFUELING.
13. 3/4 INCH DIA. VENT HOLES TO BE LOADED ON TOP OF PIPE.
14. EXPANSION JOINT FOR FUEL TRANSFER SLEEVE ONLY.
15. CONTAINMENT PENETRATION LINES 067, 072, AND 081 TO BE SCHEDULE 80S.
16. LINE NO. 102, 103, 104, 105 ARE EMBEDDED & SLOPED & CONNECT THE FUEL TRANSFER SYSTEM'S CONTROL CONSOLE WITH THE UPDENDING MACHINE.
17. LINE NO. 107-HCD-2 TO EXTEND TO AT LEAST ELEVATION 2850' BEFORE GOOSENECK.
18. DELETE.
19. INLET STRAINER.
20. AN OWNER APPROVED, OPEN-ENDED HOSE MAY BE INSTALLED INTO THE FLANGED END OF LINE EC-079-HCD-3. THE OPEN-ENDED PORTION OF THE HOSE MUST NOT REST BELOW LEVEL 2842'-6" IN ORDER TO ELIMINATE THE POSSIBILITY OF SIPHONING THE SPENT FUEL POOL. TO WITHSTAND A SEISMIC EVENT THE HOSE MUST BE SECURED IN A MANNER TO WITHSTAND FIVE TIMES THE WEIGHT OF THE HOSE ASSEMBLY, INCLUDING THE WEIGHT OF WATER WHEN THE HOSE IS COMPLETELY FILLED.
21. PIPING SHALL BE FABRICATED PER MS-02, CLASS HCC, EXCEPT FOR MATERIAL TYPE WHICH SHALL BE TYPE 316L. PIPING ON THE EC SYSTEM MAY BE TYPE 304.
22. REMOVABLE STRAINER TO BE INSTALLED IN DRAIN INLET.
23. REMOVABLE SPOOL WITH SPACER RING INSTALLED. (REPLACEMENT FOR START-UP STRAINER)
24. AN OWNER APPROVED TEMPORARY SUBMERSIBLE PUMP AND A DISCHARGE HOSE (PUMP AND HOSE RATED AT LEAST 130' F) MAY BE ATTACHED TO END OF LINE EC-079-HCD-3 UNDER AN APPROVED PROCEDURE TO PERFORM THE TASK OF DRAINING THE FUEL TRANSFER CANAL AND/OR CASK PIT. PROCEDURE SHALL REQUIRE CLOSING VALVE HEB582B AND BYPASS VALVE HEB580 PRIOR TO STARTING THE PUMP FOR THE TASK. THE HOSE PRESSURE RATING MUST BE GREATER THAN THE PUMP FLUID PRESSURE. THE LIMITING PRESSURE FOR THIS TASK IS 130 PSI MAXIMUM. ONCE THE TASK IS COMPLETED, REMOVE THE PUMP, HOSE AND TO RESTORE THE SYSTEM.
25. THESE CONNECTIONS ARE FOR BEYOND-DESIGN-BASIS (FLEX) SPENT FUEL POOL MAKE-UP.



USAR FIG. 9.1-3-01

**ESSENTIAL DRAWING**

REVISED	INCORPORATED	WIP-M-12EC01-019-A-1	CHANGE 014496
ISSUED	CHG. DOC.		FIG. NO.

THIS Dwg. SUPERSEDES BY	REV.	THIS Dwg. SUPERSEDES	REV.
-------------------------	------	----------------------	------

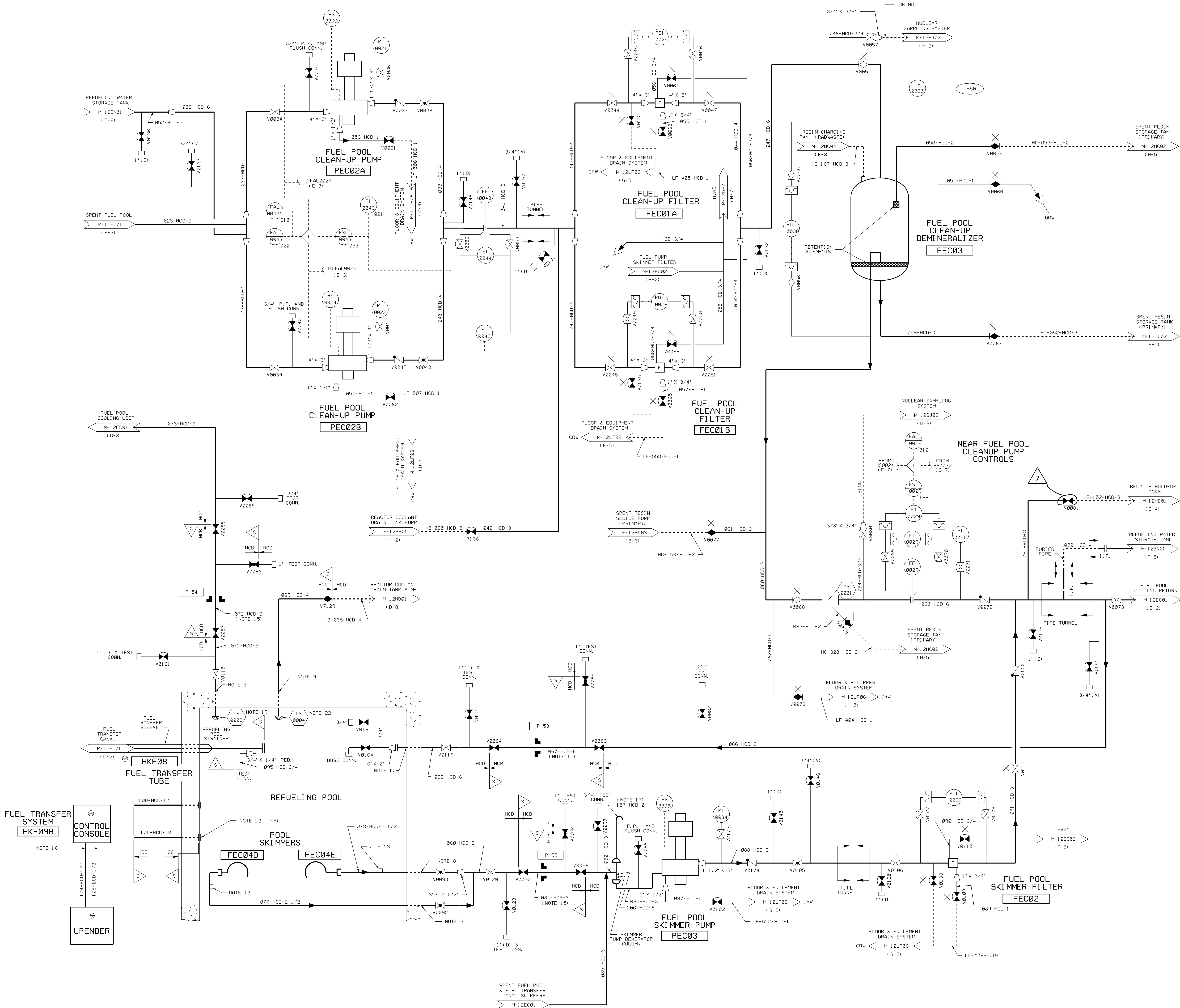
WOLF CREEK NUCLEAR OPERATING CORPORATION ELECTRONIC APPROVAL

**PIPING & INSTRUMENTATION DIAGRAM FUEL POOL COOLING AND CLEAN-UP SYSTEM**

SCALE	DRAWING NUMBER	SHEET	REV.
NONE	M-12EC01	1	22

34444 E.32E

NOTES  
1. FOR GENERAL NOTES, SEE M-12EC01.



USAR FIG. 9.1-3-02

**ESSENTIAL DRAWING**

REVISED	INCORPORATED	WIP-M-12EC02-006-A-1, R/00	CHANGE	012564
ISSUED	CHG. DOC.			PKG. NO.
THIS ENG. SUPERSEDES BY		REV.	THIS ENG. SUPERSEDES	
REVISION NOTED				

**WOLF CREEK**  
NUCLEAR OPERATING CORPORATION

**ELECTRONIC APPROVAL**

**PIPING & INSTRUMENTATION DIAGRAM  
FUEL POOL COOLING  
AND CLEAN-UP SYSTEM**

SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12EC02	07	

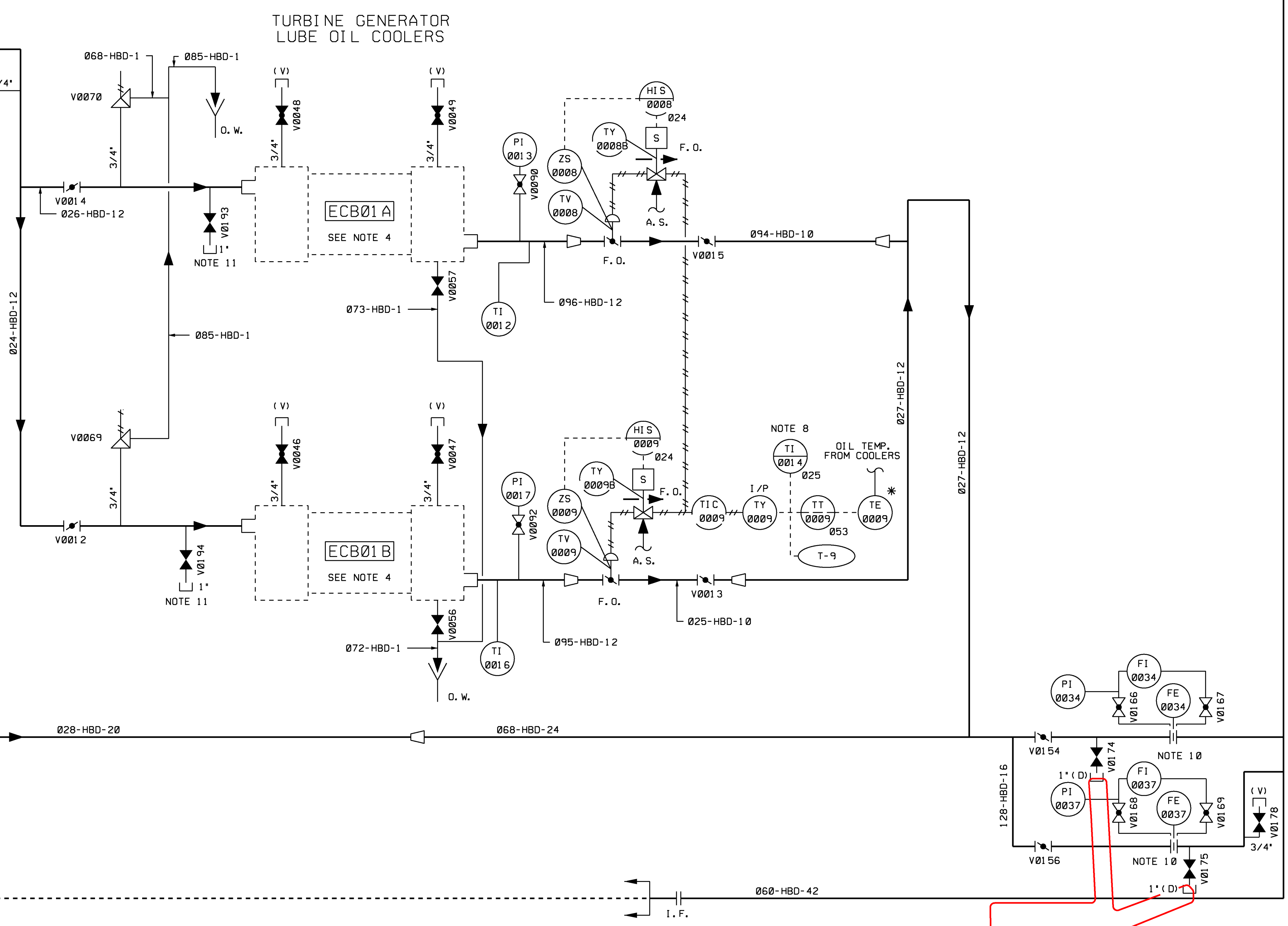
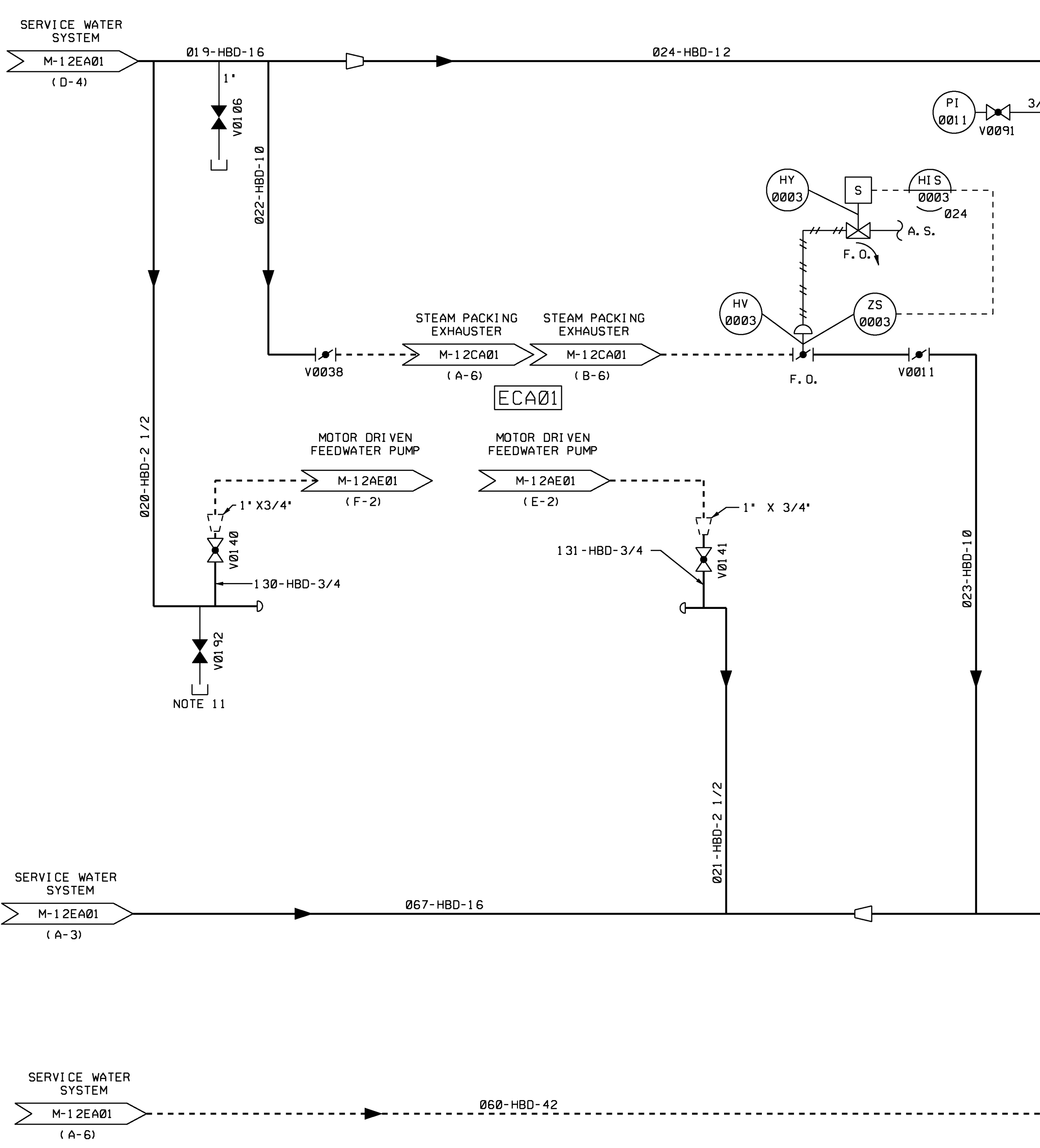
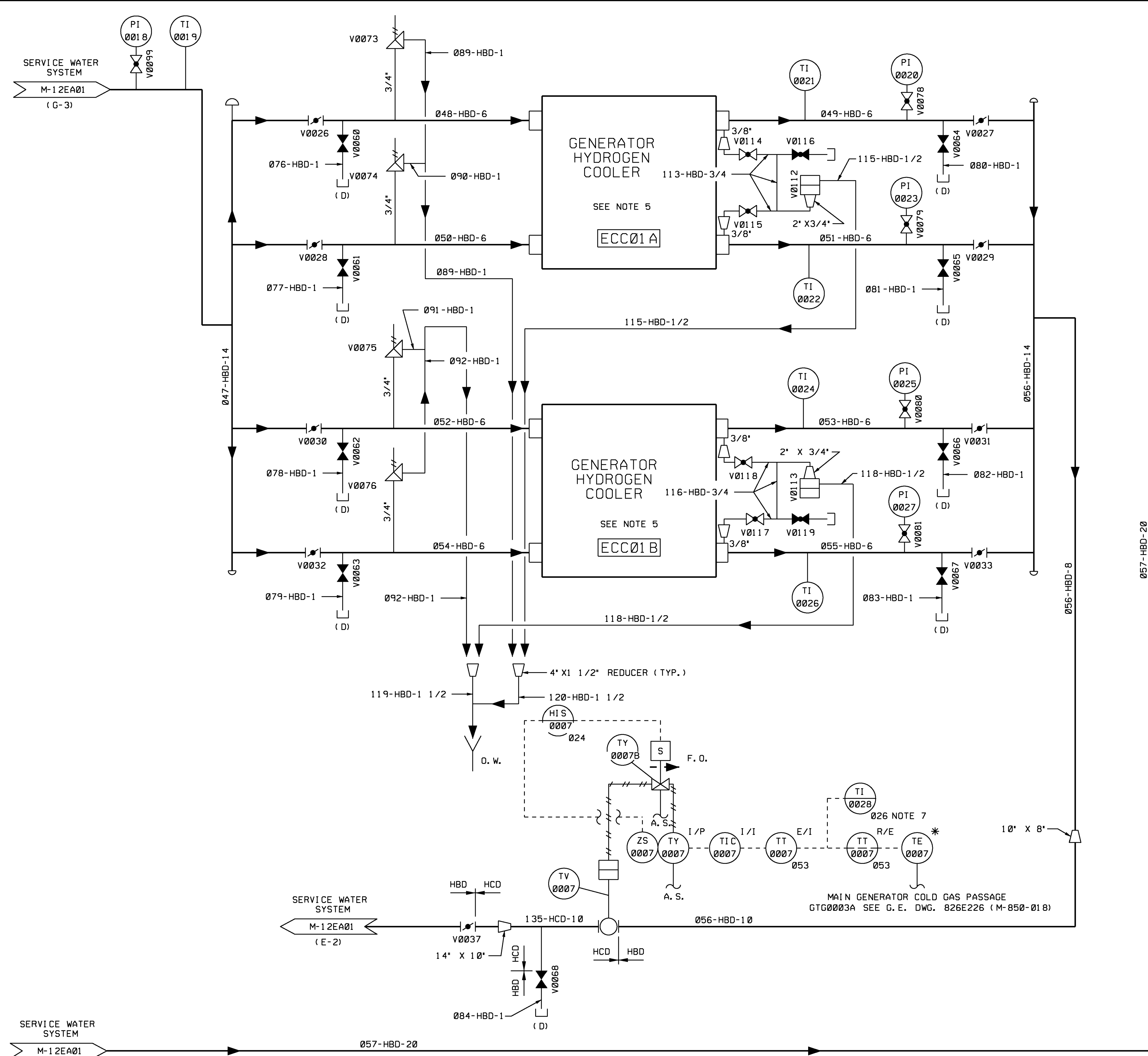
34944 E SIZE

Released by Document Services Release Date: 02/12/08



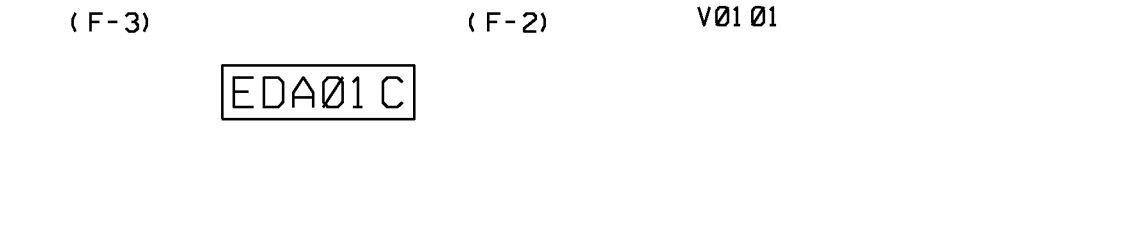
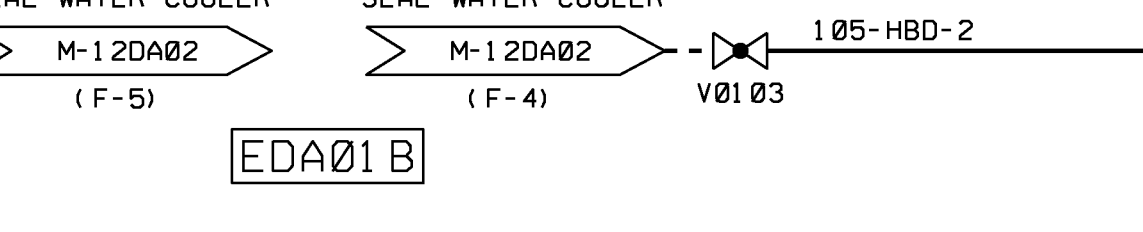
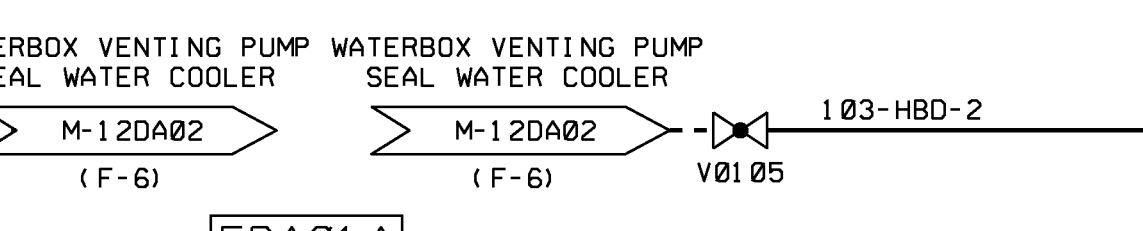
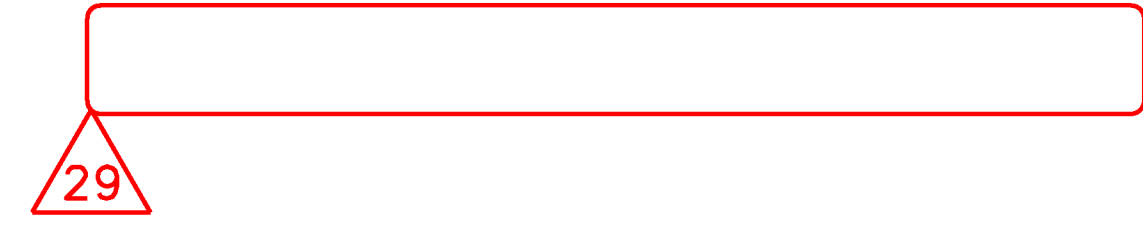






**NOTES**

1. FOR GENERAL NOTES AND REFERENCES SEE DWG M-12EA01.
2. DELETED
3. DELETED
4. REFER TO P&ID DRAWING NO. M-12CC01.
5. REFER TO P&ID DRAWING NO. M-12CC01.
6. DISCHARGE TO THE CIRCULATING WATER SYSTEM IS THROUGH ONE 42" LINE ONLY. HV-5 OR HV-6 IS CLOSED.
7. TI-28 BELONGS TO THE (C) SYSTEM
8. TI-14 BELONGS TO THE (CB) SYSTEM
9. VALVE(S) MAY BE THROTTLED AT THE 50% CLOSED POSITION.
10. THIS IS A DUAL PURPOSE ORIFICE USED TO PROVIDED BOTH BACKPRESSURE AND FLOW MEASUREMENTS.
11. CHEMICAL ADDITION TAP.
12. DELETED



USAR FIG. 9.2-1-02

ESSENTIAL DRAWING			
REVISION	INCORPORATED	CHG. DOC.	CHANGE
ISSUED			PKG. NO.
THIS ENG. SUPERSEDES		REV.	
REVISION NOTES: REVISED TO REMOVE TCC TMP 15-002			
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING & INSTRUMENTATION DIAGRAM			
SERVICE WATER SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12EA02	29	29

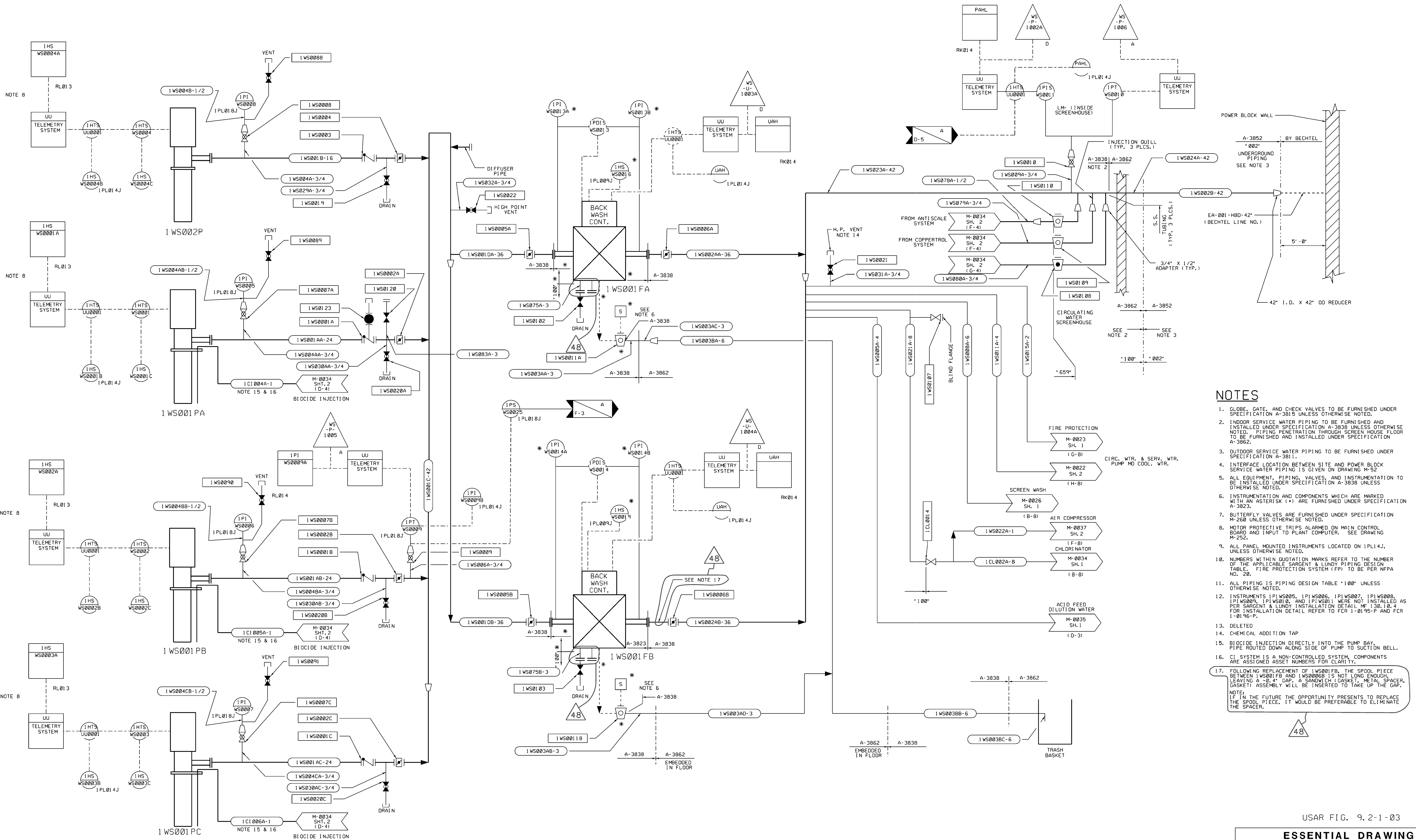


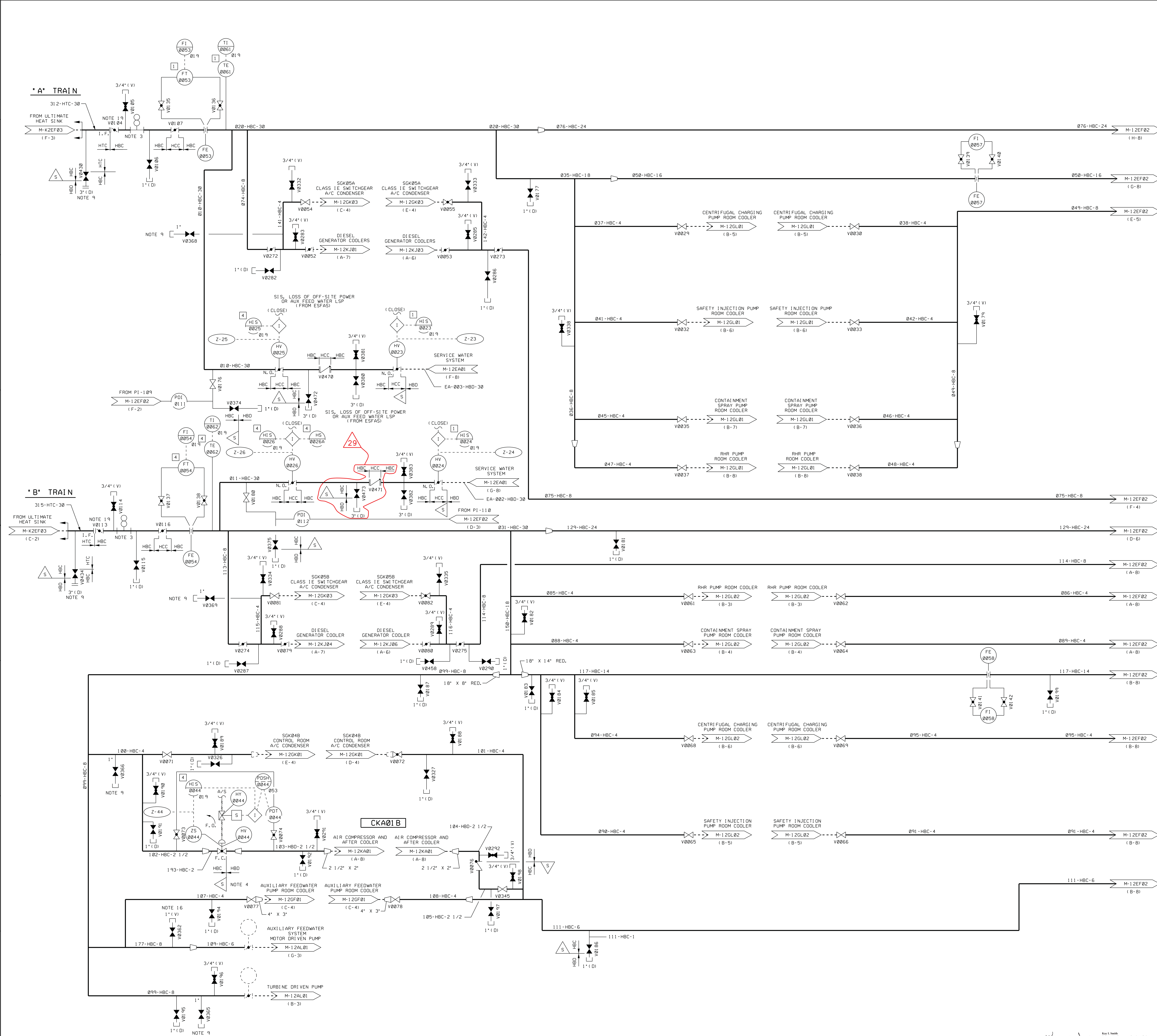


1WS002P  
LOW FLOW &  
START-UP PUMP  
A-3816

1WS001PA, 1WS001PB, & 1WS001PC  
SERVICE WATER PUMPS  
A-3816

1WS001FA, & 1WS001FB  
SERVICE WATER STRAINERS  
A-3823





**NOTES**  
 1. FOR NOTES SEE DRAWING M-12EF02

USAR FIG. 9.2-2 - 01

ESSENTIAL DRAWING			
REVISED	INCORPORATED	WP-M-12EF01-027-A-1	CHANGE 014750
ISSUED	CHG. DOC.		PKG. NO.
THIS DWG. SUPERSEDED BY		REV.	THIS DWG. SUPERSEDES
REVISION NOTES:			
		ELECTRONIC APPROVAL	
<b>PIPING &amp; INSTRUMENTATION</b> <b>DIAGRAM</b> <b>ESSENTIAL SVC WATER SYSTEM</b>			
SCALE	DRAWING NUMBER	SHEET	REV.
NONE	M-12EF01	29	1

*Ray S. Smith*  
 Ray S. Smith  
 2007.04.08 09:27:22 -0700









**NOTES**

- ALL MECHANICAL COMPONENTS, PIPING AND VALVES SHOWN ON THIS PAID ARE SEISMIC CATEGORY 1.
- SPRAY PIPING BY W/MCND. SPRAY NOZZLES BY TRAVELING WATER SCREEN VENDOR.
- ESW PUMP START OPENS SCREEN WASH WATER VALVE.
- ROUTED TO JUST ABOVE FLOOR DRAIN TO ALLOW OPERATOR TO VISUALLY VERIFY FLOW.
- THIS IS A DUAL PURPOSE RESTRICTION ORIFICE USED TO PROVIDE BOTH BACKPRESSURE REDUCTION FOLLOWING A LOCA AND FLOW MEASUREMENT DURING NORMAL OPERATION AND NORMAL SHUTDOWNS.
- DELETED.
- TRAVELING WATER SCREEN STARTS AFTER ESW PUMP START AND SCREEN WASH WATER VALVE OPENS.
- VALVE CLOSES 15 SECONDS AFTER ESW PUMP STARTS.
- COMPUTER POINT ID FOR MOTOR LOWER GUIDE BEARING THERMOCOUPLE.
- COMPUTER POINT ID FOR MOTOR UPPER THRUST BEARING THERMOCOUPLE.
- THE FOLLOWING CODE/NON-CODE BOUNDARIES APPLY TO ALL CARBON STEEL VENTS AND DRAINS:
  - 70
- THE TEMPERATURE INDICATOR IS PROVIDED FOR MONITORING DURING COLD STARTER CONDITIONS. THIS MONITORING IS REQUIRED TO ASSURE THAT THE VENT TEMPERATURES DO NOT DROP BELOW 32°F. IF A VENT TEMPERATURE REACHES 32°F, THE ESW PUMPS MUST BE STARTED AND CONTINUE TO OPERATE UNTIL THE VENT TEMPERATURE WILL REMAIN ABOVE 32°F. THE VENT IS DESIGNED TO REMAIN DRY AND THE ASME PIPING IS NOT DESIGNED FOR SUBMERGENCE. THE STILLING WELLS ARE PROVIDED FOR PERIODIC MONITORING TO ENSURE THAT THE LONG TERM OPERABILITY OF THE PIPING IS NOT AFFECTED. A PUMP CAN BE LOWERED INTO THE WELLS TO ALLOW FOR WATER REMOVAL.
- REMOVABLE SPOOL TO SERVICE CHEMICAL ADDITION NOZZLE.
- DELETED.
- LOCATE CLOSE TO TRASH RACK IN A 3" DIA., SCH. 40S PIPE.
- 3" DIA., SCH. 40S PIPE CLOSE TO LAKE.
- TERMINATED AT LOCAL TEMPERATURE TESTPOINT PANEL.
- SEE M-K2EF01A FOR ABANDONED COMPONENTS.
- THE FOLLOWING ORIFICE PLATES ARE CLASS 2 ITEMS:
  - F0-0021 F0-0026 F0-0032 F0-0040
  - F0-0022 F0-0027 F0-0033 F0-0041
  - F0-0023 F0-0028 F0-0034 F0-0042
  - F0-0024 F0-0029 F0-0035
  - F0-0025 F0-0031 F0-0039
- SECTIONS OF THE ORIGINAL 007-HBC-30 AND 003-HBC-30 PIPING ARE REMOVED BETWEEN THE ESW PUMPHOUSE WALL AND THE ACCESS VAULT TO ALLOW INSTALLATION OF THE NEW ESW SUPPLY PIPING.
- PIPING FROM THE TANK NOZZLE TO THE FIRST FITTING WILL BE REPLACED WITH STAINLESS STEEL PIPING SA312 TYPE 304. THE FITTING SHALL REMAIN CARBON STEEL AND THE PIPING SIZE/SCHEDULE SHALL REMAIN THE SAME.
- THESE ARE ESW BEYOND-DESIGN-BASIS (FLEX) CONNECTIONS.
- TWO CONNECTION POINTS, SEE DRAWING M-KC0911 FOR DETAILS.

70

**DRAWING REFERENCE**

M-K2EF01A ABANDONED ESW EQUIPMENT

USAR FIG. 9.2-2-03

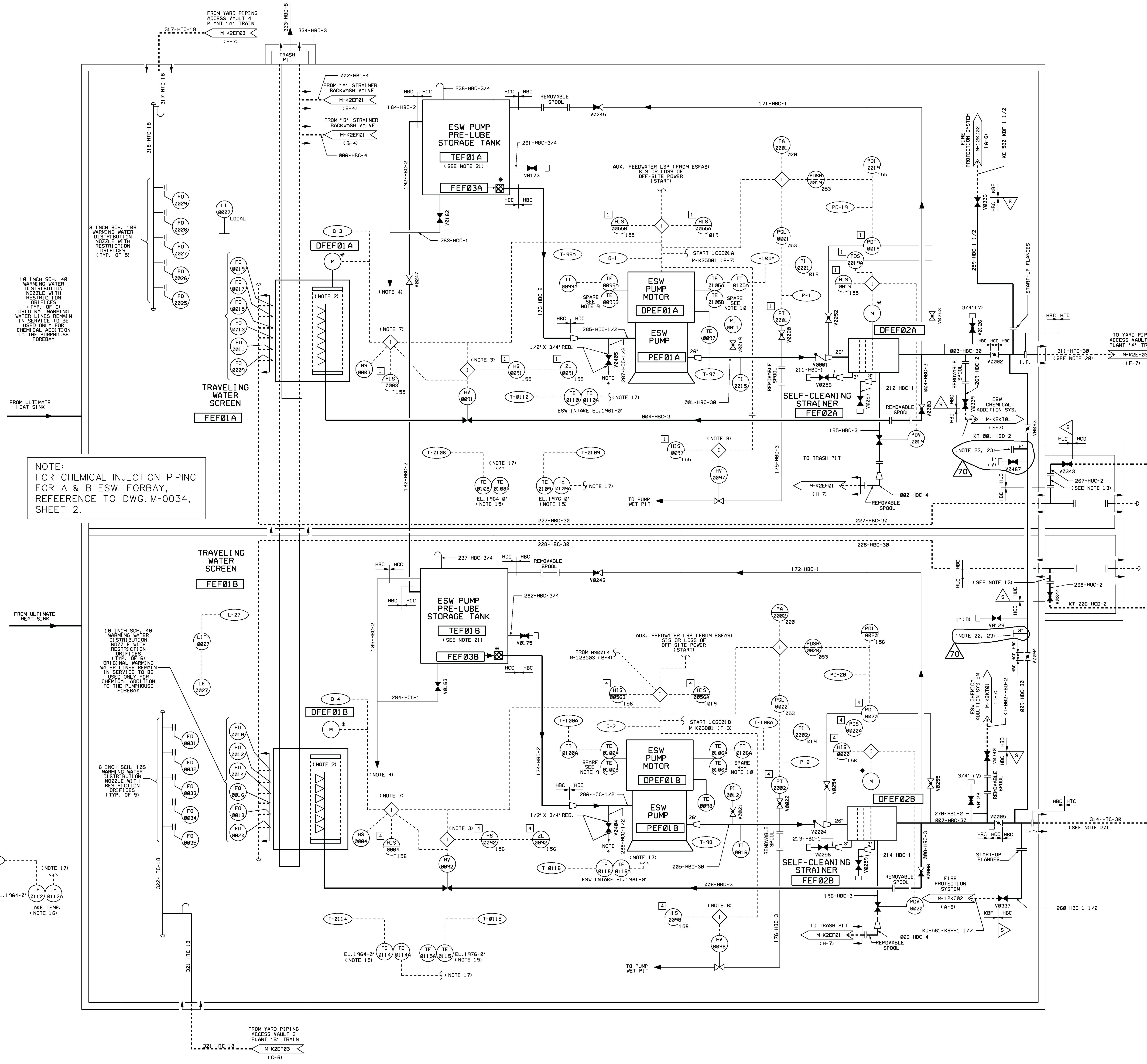
**ESSENTIAL DRAWING**

REVISED	INCORPORATED	CHG. DOC.	CHANGE
ISSUED	CHG. DOC.	PKG. NO.	014425
THIS DWG. SUPERSEDES BY		REV.	THIS DWG. SUPERSEDES
REVISION NOTES			

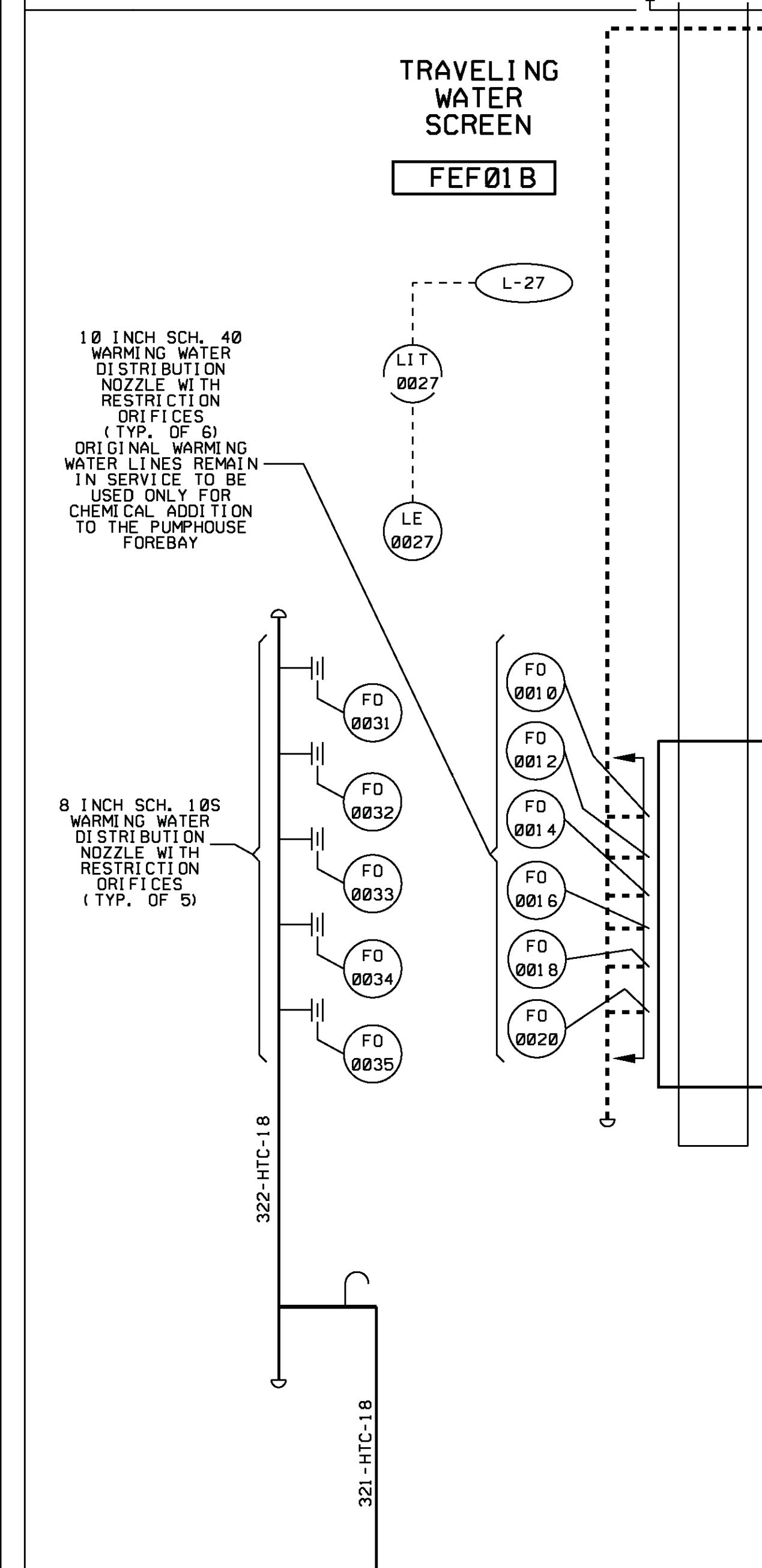
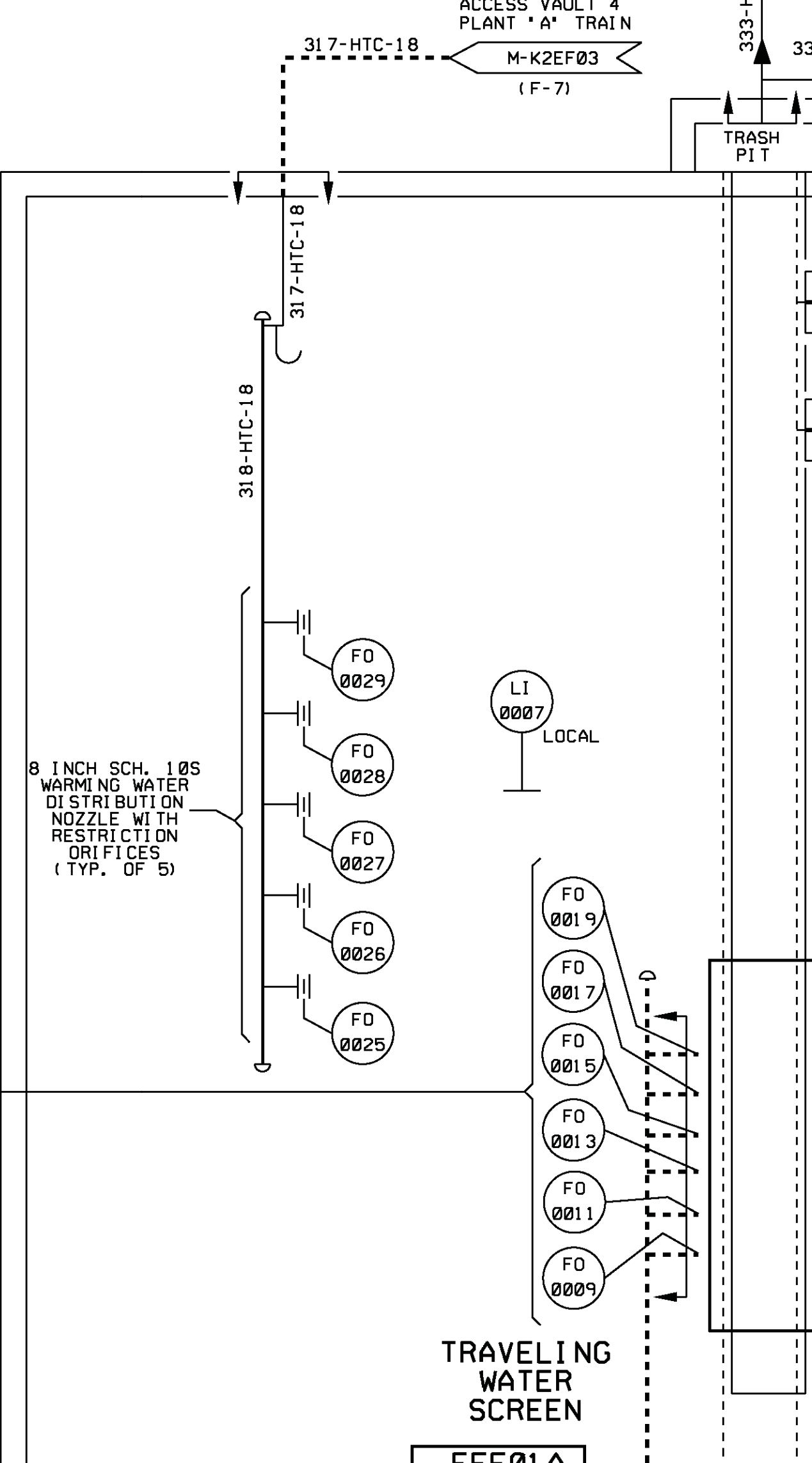
WOLF CREEK  
NUCLEAR OPERATING CORPORATION  
ELECTRONIC APPROVAL

**PIPING & INSTRUMENTATION  
DIAGRAM  
ESSENTIAL SERVICE WATER SYS.**

SCALE	DRAWING NUMBER	SHEET	REV
	M-K2EF01	1	70



NOTE:  
FOR CHEMICAL INJECTION PIPING  
FOR A & B ESW FORBAY,  
REFERENCE TO DWG. M-0034,  
SHEET 2.



H  
G  
F  
E  
D  
C  
B  
A

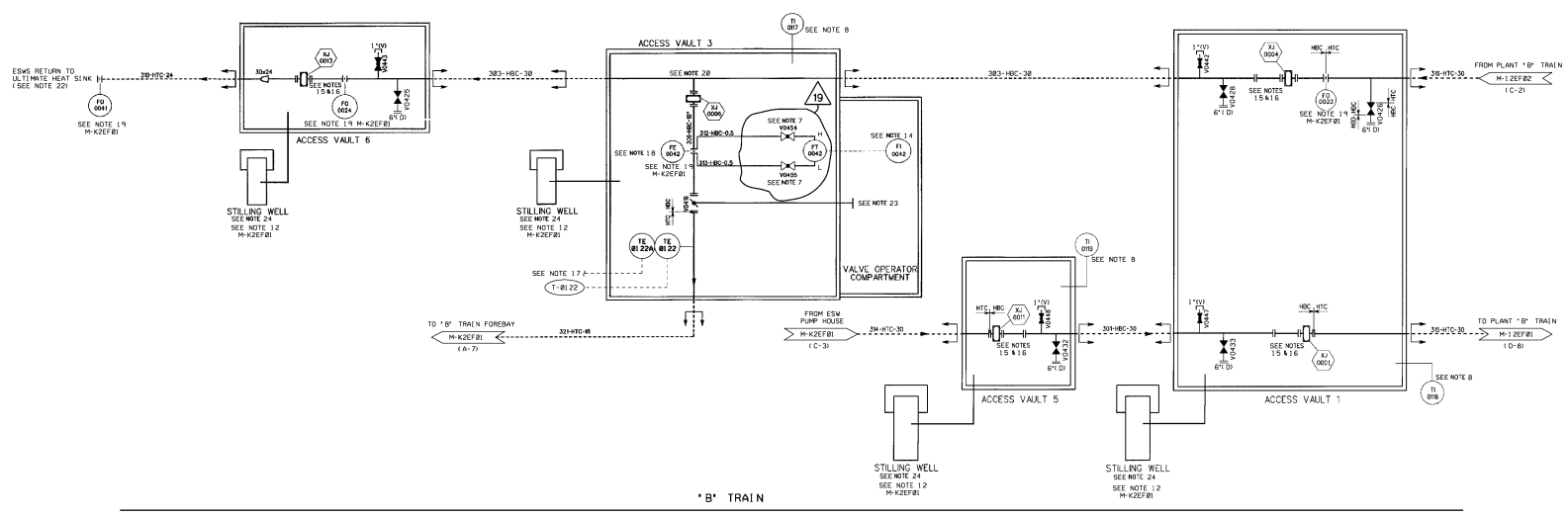
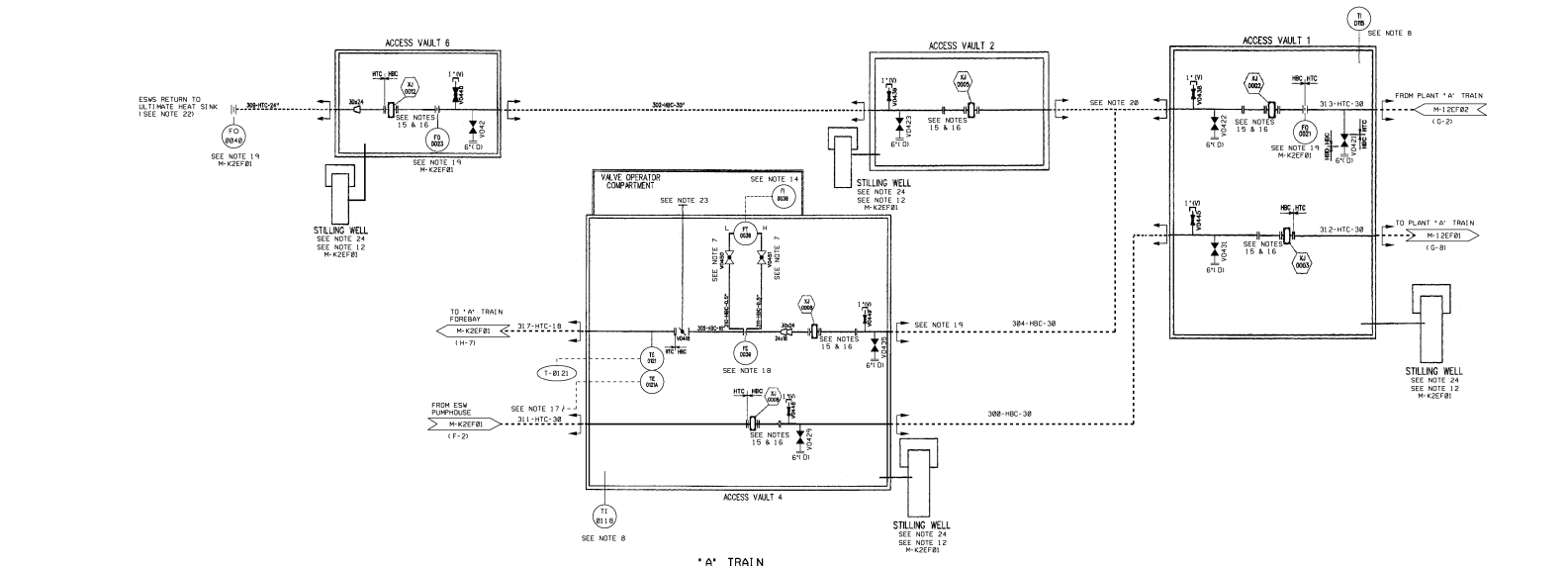
8  
7  
6  
5  
4  
3  
2  
1

3444 E SHE



NOTES

1. DELETED
2. DELETED
3. DELETED
4. DELETED
5. FOR SYMBOLS AND LEGENDS SEE WOLF CREEK MASTER OPERATING COORDINATION W/NOCH DRAWING NUMBER M-0207 THROUGH M-0209.
6. FOR PIPE CLASS CODE DEFINITION AND IDENTIFICATION SEE ESWP 839P ADDENDUM TO W/NOCH DOCUMENT NUMBER W/NOCH PIPING CLASS SHEETS.
7. ALL INSTRUMENTING TO THE FLOW TRANSMITTERS SHALL BE USING CATEGORY 1 PDS. INSTRUMENTATION IN COOL OFFICE LINE CONNECTIONS SHALL BE USING CATEGORY 2 PDS. INSTRUMENTING WORK REQUIRED FOR FLOW OFFICES PER NOTE 5 OF SPECIFICATION M-1100.
8. THE TEMPERATURE MONITORING SYSTEM IS REQUIRED TO MONITOR TEMPERATURES AT ALL INSTRUMENTING POINTS TO DETERMINE IF TEMPERATURE REACHES 32°F. THE ESWP PUMPS MUST BE STARTED AND CONTINUE TO OPERATE UNTIL THE VALVE TEMPERATURE WILL REMAIN ABOVE 32°F.
9. ISOLATED PIPING TERMINAL POINT IS IN USE CONTROL BUILDING AT BUTTERFLY VALVE NUMBERS V008 AND V010. SEE W/NOCH DRAWING NUMBER M-0207C.
10. ISOLATED PIPING TERMINAL POINT FOR SUPPLY LINES IS IN USE CONTROL BUILDING AT BUTTERFLY VALVE NUMBERS V008 AND V010. SEE W/NOCH DRAWING NUMBER M-0207C.
11. ISOLATED PIPING TERMINAL POINT IS IN USE ESWP PUMPHOUSE AT EXISTING INSULATED FLANGE. SEE W/NOCH DRAWING NUMBER M-0207C. AN INSULATED FLANGE WILL NO LONGER BE NECESSARY AND WILL BE REMOVED.
12. TYPICAL SETUP FOR ALL CARBON STEEL VENTS AND DRAINS ON CARBON STEEL PIPING RUNS.
13. THE WARNING LINE AND ESWP SUPPLY LINE SHARE ACCESS VAULT 4 FOR TRAIN A.
14. INSTRUMENTATION SHALL HAVE LOCAL INDICATION INSIDE OF THE VALVE OPERATOR COMPARTMENT.
15. REMOVABLE SPOOL PIECE INSTALLED FOR TEMPORARY PIPE INSPECTION (AUGING) PDS COMPONENT INSTALLATION PIPE SUPPORTS FOR THE REMOVABLE SPOOL AND EXISTING VALVE ARRANGEMENT ARE INCLUDED IN FOREMAN DESIGN FOR CONSTRUCTION. SHOULD THE PDS SUBCONTRACTOR REQUIRE ADDITIONAL PIPE SUPPORTS THEY SHALL BE SUPPLIED BY THE SUBCONTRACTOR. PIPING SUBCONTRACTOR SHALL SUPPLY TEMPORARY PUMP FOR PIPING OPERATIONS. WATER SOURCE AND DEGREE SHALL BE DETERMINED BY W/NOCH. MIN. AND MAXIMUM SO BENDS ARE REQUIRED TO ALLOW FOR PIPING OPERATIONS.
16. TERMINATED AT LOCAL TEMPERATURE TESTPOINT PANEL LOCATED IN THE ESWP PUMPHOUSE.
17. FOR FE-0039A A MINIMUM STRAIGHT RUN OF 8D TO THE UPSTREAM REMOVAL ORIFICE AND 15D TO THE DOWNSTREAM BUTTERFLY VALVE INLET WILL BE PROVIDED. FOR FE-0042, A MINIMUM STRAIGHT RUN OF 5D TO THE UPSTREAM AND 15D TO THE DOWNSTREAM BUTTERFLY VALVE INLET WILL BE PROVIDED.
18. THE SHIRT PORTION OF HSE PIPING BETWEEN ACCESS VAULT 2 AND TIE SHALL BE VISUALLY INSPECTED TO CONFIRM INTEGRITY OF THE PIPE INTERNALS IN ACCORDANCE WITH W/NOCH PROCEDURES.
19. BARBED TIES ARE REQUIRED TO ALLOW FOR PIPING OPERATION.
20. VALVES V008 & V010 ARE TO BE THROTTLED DURING WINTER WINDING LINE OPERATION PER W/NOCH PROCEDURE AP 21-001.
21. RESTRICTION ORIFICE TO BE SOLID TO STEEL WELD NICK FLANGE AND DUP-ON FLANGE.
22. VALVES V008 & V010 SHALL BE SUITABLE FOR THROTTLING SERVICE. THE OPERATION OF VALVES V008 & V010 SHALL BE ADDED TO THE W/NOCH PROGRAM IN ACCORDANCE WITH AP 20-000 PROCEDURE. VALVES WILL BE DESIGNED TO ALLOW VALVE OPERATION EXTERNAL TO THE ACCESS VAULT WITHIN THE VALVE OPERATOR COMPARTMENT.
23. FOR DETAILS REFER TO DRAWING C-230.
24. IF AN ISOLATING VALVE IS ALLOWED TO BE SHUT DOWN OF WINDING LINE PIPE INSIDE ESWP PUMPHOUSE FORECAST THE 1" VENT SHALL BE LOCATED ON THE ESWP PIPE BELOW WHERE THE ESWP PIPE TAKES DOWN INTO THE ESWP PUMPHOUSE FORECAST WATER AS CLOSE TO THE HORIZONTAL RUN AS POSSIBLE. THE VENT SHALL DISCHARGE IN THE DOWNWARD DIRECTION INTO THE ESWP PUMPHOUSE FORECAST.
25. FOR ABANDONED IN PLACE COMPONENTS SEE M-K2EF03A.
26. DELETED
27. DELETED
28. DELETED



USAR FIG. 9, 2-2 -4

ESSENTIAL DRAWING

REVISED	INCORPORATED	AS-BUILT UPDATE	CHANGE
DATE	DATE	PER	NO.
		A. L. 13-070001-0410	014242
		AND C. R. 08080702	014242

THIS DWG SUPERSEDES	REV	NO DWS SUPERSEDES	REV



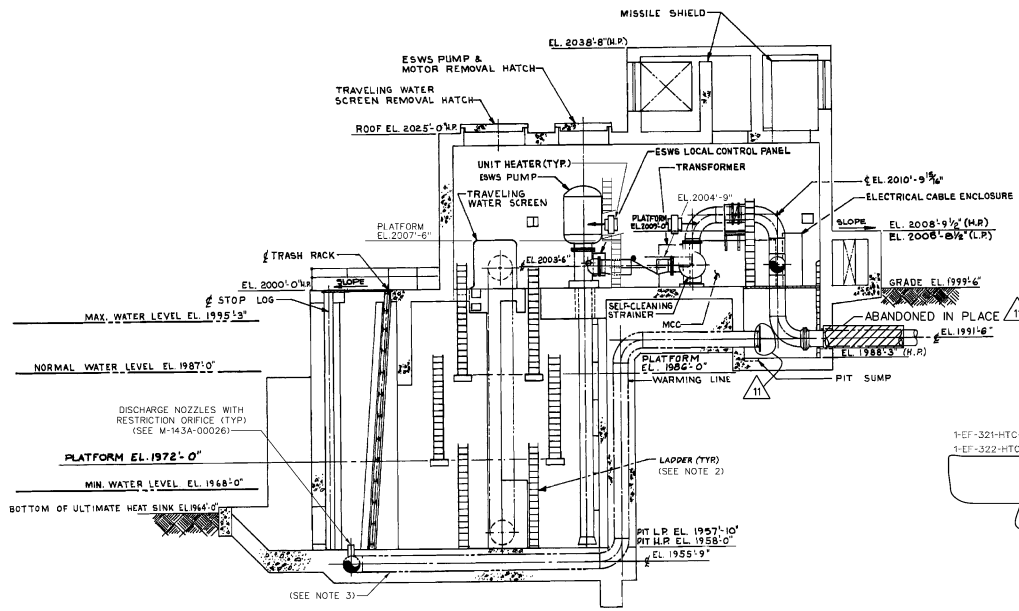
WOLF CREEK ELECTRONIC APPROVAL  
 PIPING & INSTRUMENTATION DIAGRAM ESSENTIAL SERVICE WATER SYSTEM

DATE: NONE DRAWN BY: M-K2EF03 SHEET NO: 19

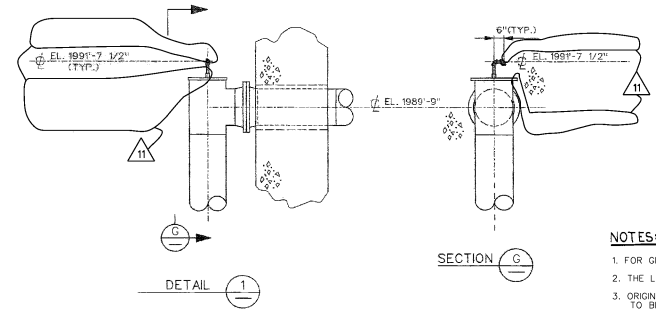




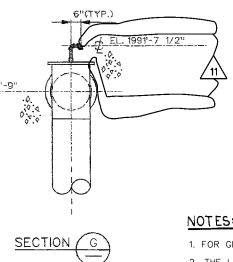




**SECTION A**  
M-KG081  
SEE DWG. M-KG080

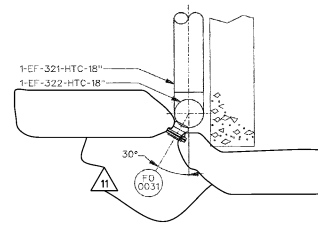


**DETAIL 1**

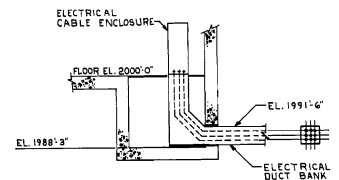


**SECTION C**  
M-KG081  
SEE DWG. M-KG080

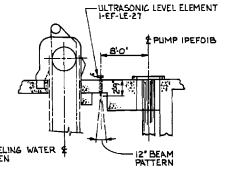
- NOTES:**
1. FOR GENERAL NOTES SEE DWG. M-KG080.
  2. THE LADDERS CAN BE LEFT IN-PLACE OR REMOVED.
  3. ORIGINAL WARMING WATER LINES REMAIN IN SERVICE TO BE USED ONLY FOR CHEMICAL ADDITION TO THE PUMPHOUSE FOREBAY.



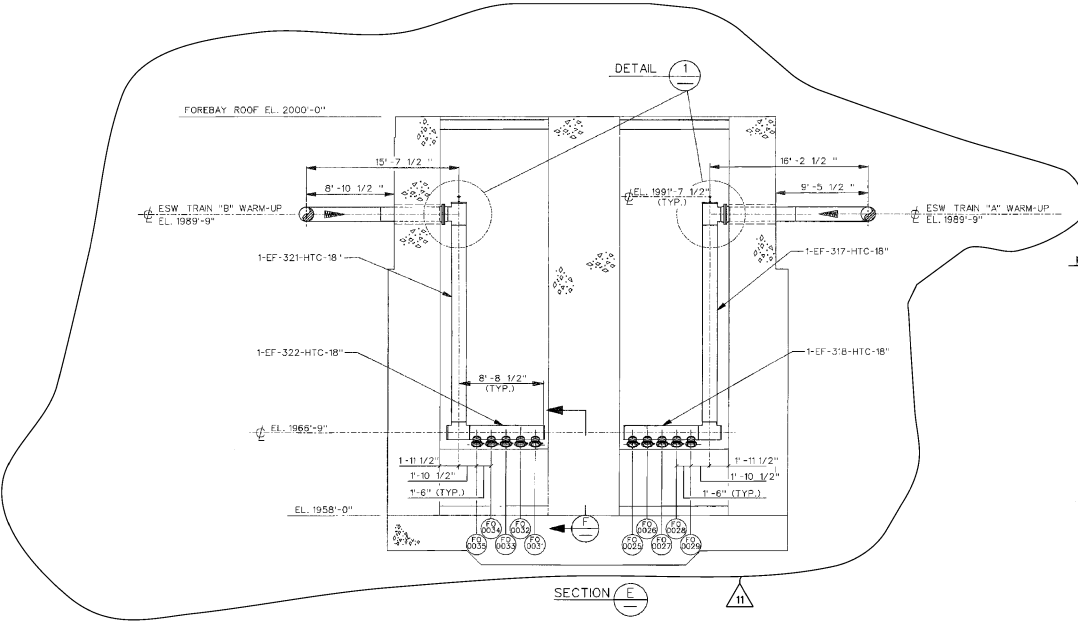
**SECTION F**



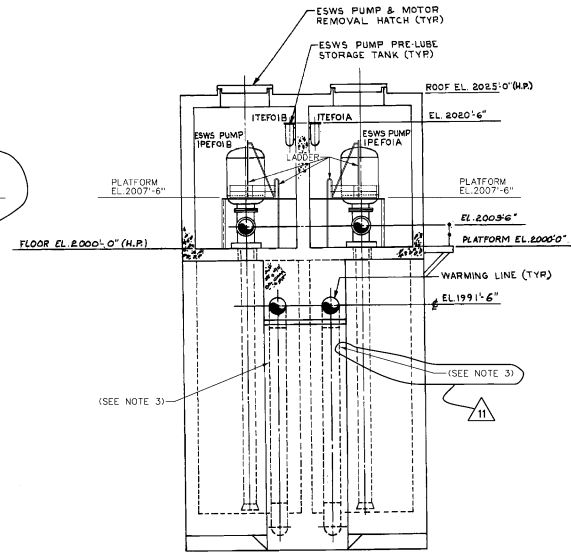
**SECTION C**  
M-KG081  
SEE DWG. M-KG080



**SECTION D**  
M-KG081  
SEE DWG. M-KG080



**SECTION E**



**SECTION B**  
M-KG081  
SEE DWG. M-KG080

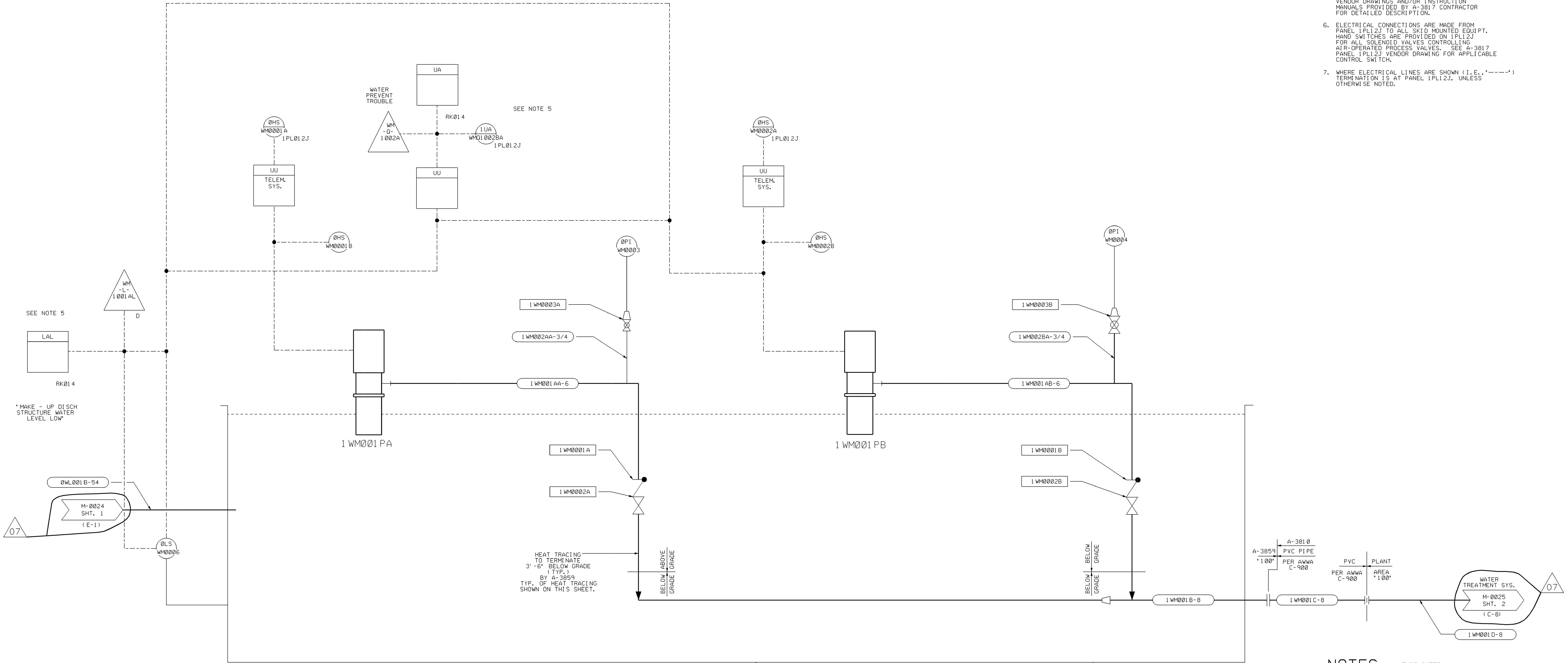
USAR FIG. 9.2-4

ESSENTIAL DRAWING			
REVISED	INCORPORATED	BY M-KG081-000-A-1	DATE: 04/20/22
ISSUED	DATE:		FIG. NO.
THIS DWG. DESIGNED BY	REV.	THIS DWG. APPROVED BY	REV.
		ELECTRONIC APPROVAL	
ESSENTIAL SERVICE WATER SYSTEM PUMPHOUSE EQUIPMENT LOCATION-SECTIONS			
SCALE	DRAWING NUMBER	SHEET	REV.
1/8" = 1'-0"	M-KG081	11	11

RAW WATER PUMPS  
1WM001 PA & 1WM001 PB  
A-3826

GENERAL NOTES

- FOR PIPING AND VALVES MARKED SKID MOUNTED OR COMPONENTS DRAWN WITH DASHED LINES ARE FURNISHED PRE-ASSEMBLED. OTHER PIPING OR VALVES MARKED \* ARE FURNISHED BY A-3817 AND INSTALLED BY A-3838.
- INDICATES "HEAT" TRACED PIPING
- VALVES MARKED \*\* ARE FURNISHED BY A-3817.
- VALVES FURNISHED BY A-3817 ARE NOT IDENTIFIED WITH S & L VALVE NUMBERS  
E. G. [1WM0001A]; HOWEVER, VENDOR NUMBERS ARE INDICATED WHERE IDENTIFIED ON A-3817 VENDOR DRAWINGS. S & L VALVE NOS. IDENTIFY VALVES BY A-3815 UNLESS OTHERWISE NOTED.
- THIS P & ID SHOWS GENERAL CONFIGURATION OF COMPONENTS FOR SKID MOUNTED PRE-ASSEMBLED EQUIPMENT AS AN AID FOR IDENTIFICATION ONLY. REFER TO VENDOR DRAWINGS AND/OR INSTRUCTION MANUALS PROVIDED BY A-3817 CONTRACTOR FOR DETAILED DESCRIPTION.
- ELECTRICAL CONNECTIONS ARE MADE FROM PANEL 1PL12J TO ALL SKID MOUNTED EQUIPT. HAND SWITCHES ARE PROVIDED ON 1PL12J FOR ALL SOLENOID VALVES CONTROLLING AIR-OPERATED PROCESS VALVES. SEE A-3817 PANEL 1PL12J VENDOR DRAWING FOR APPLICABLE CONTROL SWITCH.
- WHERE ELECTRICAL LINES ARE SHOWN (I. E., - - - - -) TERMINATION IS AT PANEL 1PL12J, UNLESS OTHERWISE NOTED.



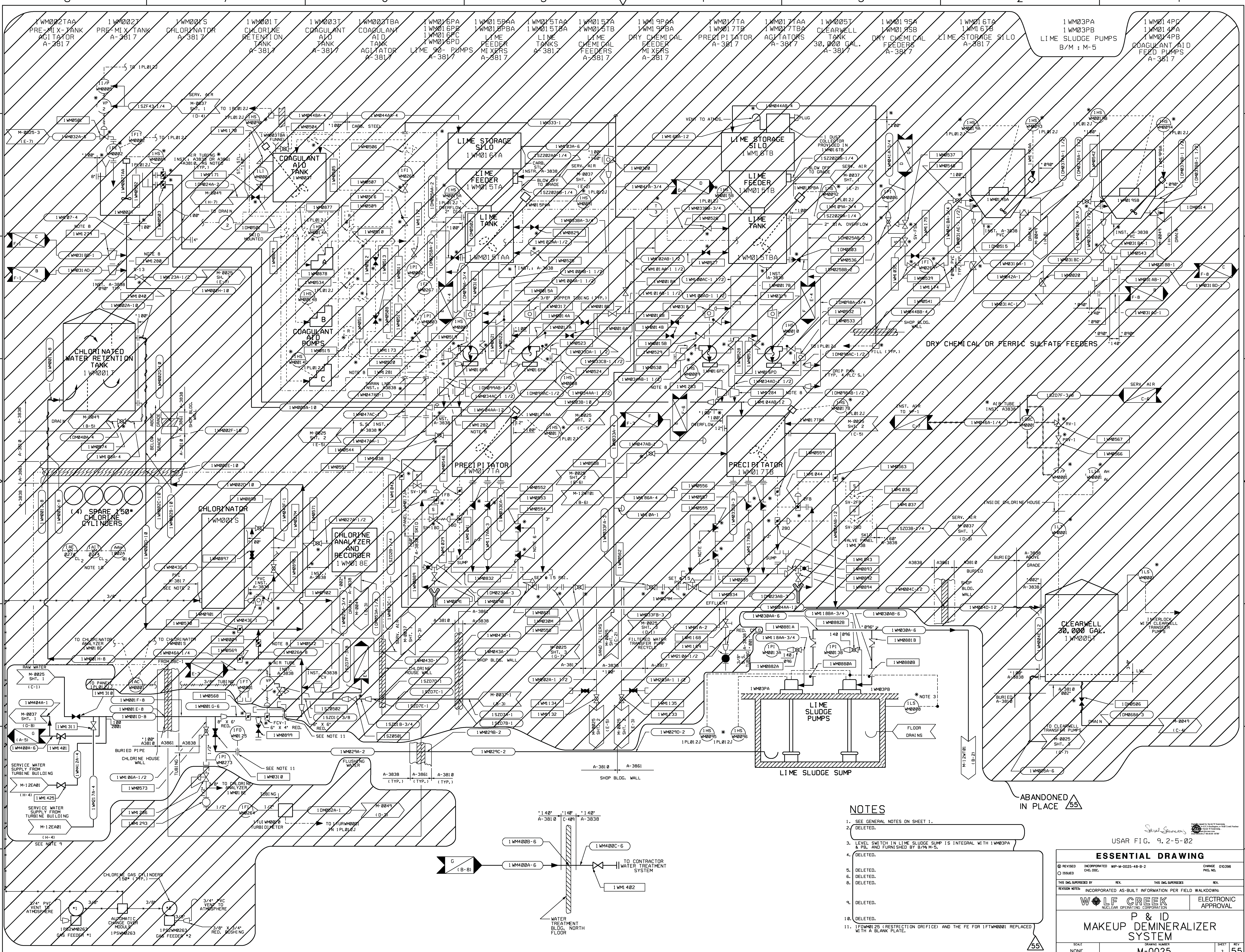
NOTES (THIS SHEET)

- SPECIFICATION A-3859 TO FURNISH ALL CHECK, GLOBE & GATE VALVES ON THIS SHEET.
- MUDS INSTRUMENTATION TO BE PURCHASED UNDER SPECIFICATION A-3859.
- PRESSURE INDICATION AND RAW WATER PUMP CONTROL TO BE PROVIDED ON WATER TREATMENT SYSTEM CONTROL PANEL 1PL12J LOCATED IN SHOP BUILDING.
- MOTOR PROTECTIVE TRIPS ALARMED ON 1PL12J. SEE DWG. M-0255.
- UA ALARMS AND COMPUTER INPUT WM-0-1002A ARE ALSO INITIATED BY ANY ALARM AT WATER TREATMENT PANEL 1PL12J.

USAR FIG. 9, 2-5-01

ESSENTIAL DRAWING			
① REVISED	INCORPORATED	CHANGE	PKG. NO.
○ ISSUED	CHG. DOC.		
THIS DWG. SUPERSEDES BY		REL.	THIS DWG. SUPERSEDES REL.
REVISION NOTES: REVISED PER AP 05-010, SECTION 6.10, TABLE A, TYPE 2			
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
P&ID MAKEUP DEMINERALIZER SYSTEM WOLF CREEK GENERATING STA. UNIT 1			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-0025	1	07





**NOTES**

1. SEE GENERAL NOTES ON SHEET 1.
2. DELETED.
3. LEVEL SWITCH IN LIME SLUDGE SUMP IS INTEGRAL WITH 1WM03PA & P&ID AND FURNISHED BY B/M-M-5.
4. DELETED.
5. DELETED.
6. DELETED.
7. DELETED.
8. DELETED.
9. DELETED.
10. DELETED.
11. 1FW00125 (RESTRICTION DRIFICE) AND THE FE FOR 1FTW0001 REPLACED WITH A BLANK PLATE.

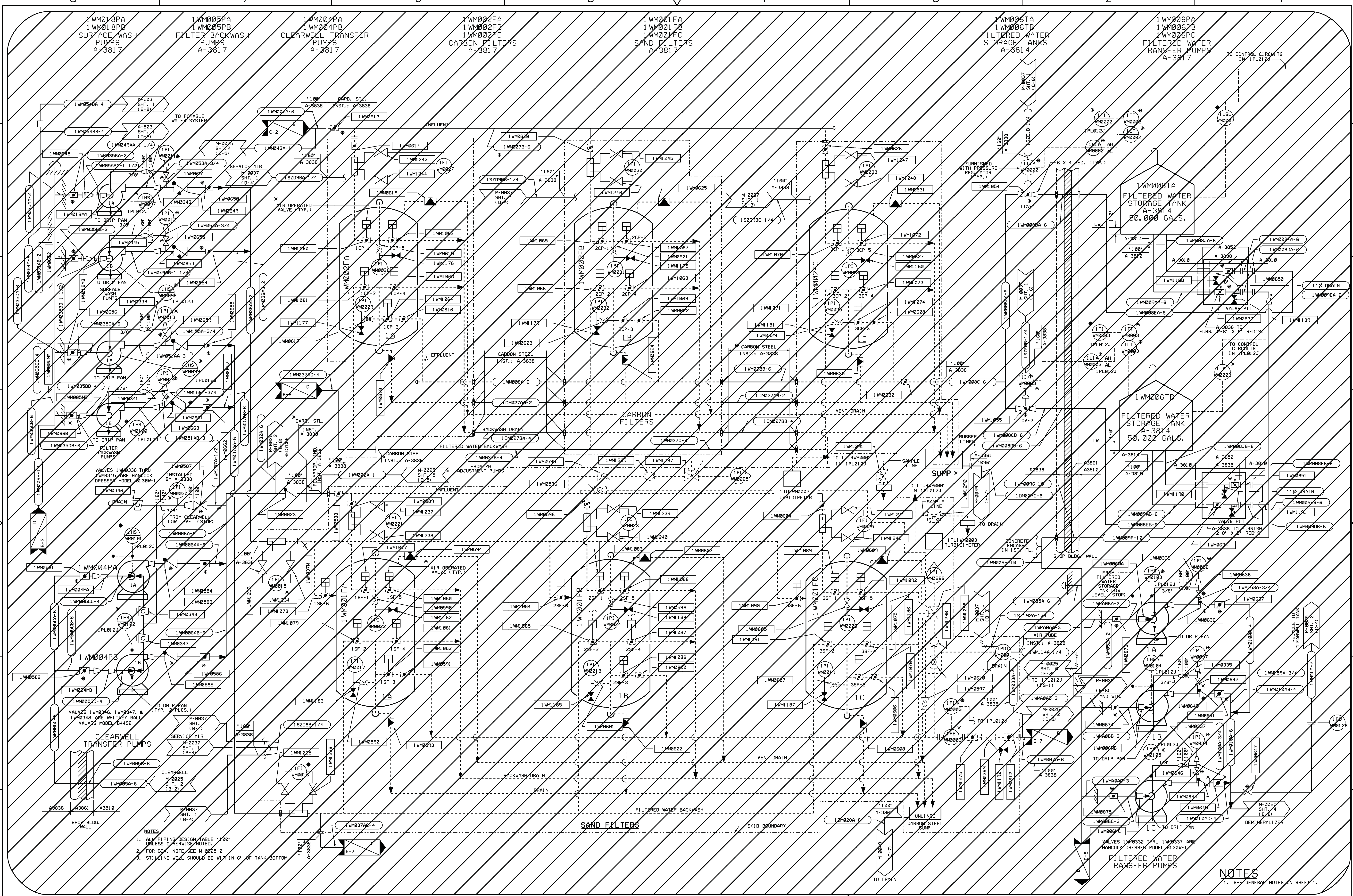
ABANDONED IN PLACE 55

USAR FIG. 9.2-5-02

**ESSENTIAL DRAWING**

REVISED	INCORPORATED	WIP-M-0025-48-B-2	CHANGE 010386
ISSUED	CHG. DOC.		FIG. NO.
THIS ENG. SUPERSEDES		REV.	REV.
INCORPORATED AS-BUILT INFORMATION PER FIELD WALKDOWN:			
<b>WOLF CREEK</b>		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
<b>P &amp; ID</b>			
<b>MAKEUP DEMINERALIZER SYSTEM</b>			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-0025	2	55





- NOTES
1. ALL PIPING DESIGN TABLE "100" UNLESS OTHERWISE NOTED.
  2. FOR GEA, NOTE SEE M-0025-2.
  3. STILLING WELL SHOULD BE WITHIN 6" OF TANK BOTTOM.

NOTES  
1. SEE GENERAL NOTES ON SHEET 1.

ABANDONED  
IN PLACE  $\nabla$  30

USAR FIG. 9.2-5-03

**ESSENTIAL DRAWING**

REVISION	REVISION	REVISION	REVISION
1	2	3	4
ISSUED	INCORPORATED	WIP-M-0025-28-A-3	CHANGE 010386
	CHG. DOC.		FIG. NO.

THIS ENG. SUPERSEDES  
THIS ENG. SUPERSEDES  
REV.

WOLF CREEK  
NUCLEAR OPERATING CORPORATION

ELECTRONIC  
APPROVAL

P&ID  
DEMINERALIZER  
SYSTEM

SCALE: NONE DRAWING NUMBER: M-0025 SHEET 3 OF 30 3444 E 32E



41 ABANDONED IN PLACE

ABANDONED IN PLACE 41

IWM11TA  
IWM11TB  
STRONG CATION  
EXCHANGER

IWM12TA  
IWM12TB  
WEAK BASE ANION  
EXCHANGER

IWM01E  
HOT WATER  
TANK  
IWM02S  
HOT WATER TANK  
ELECTRIC HEATER

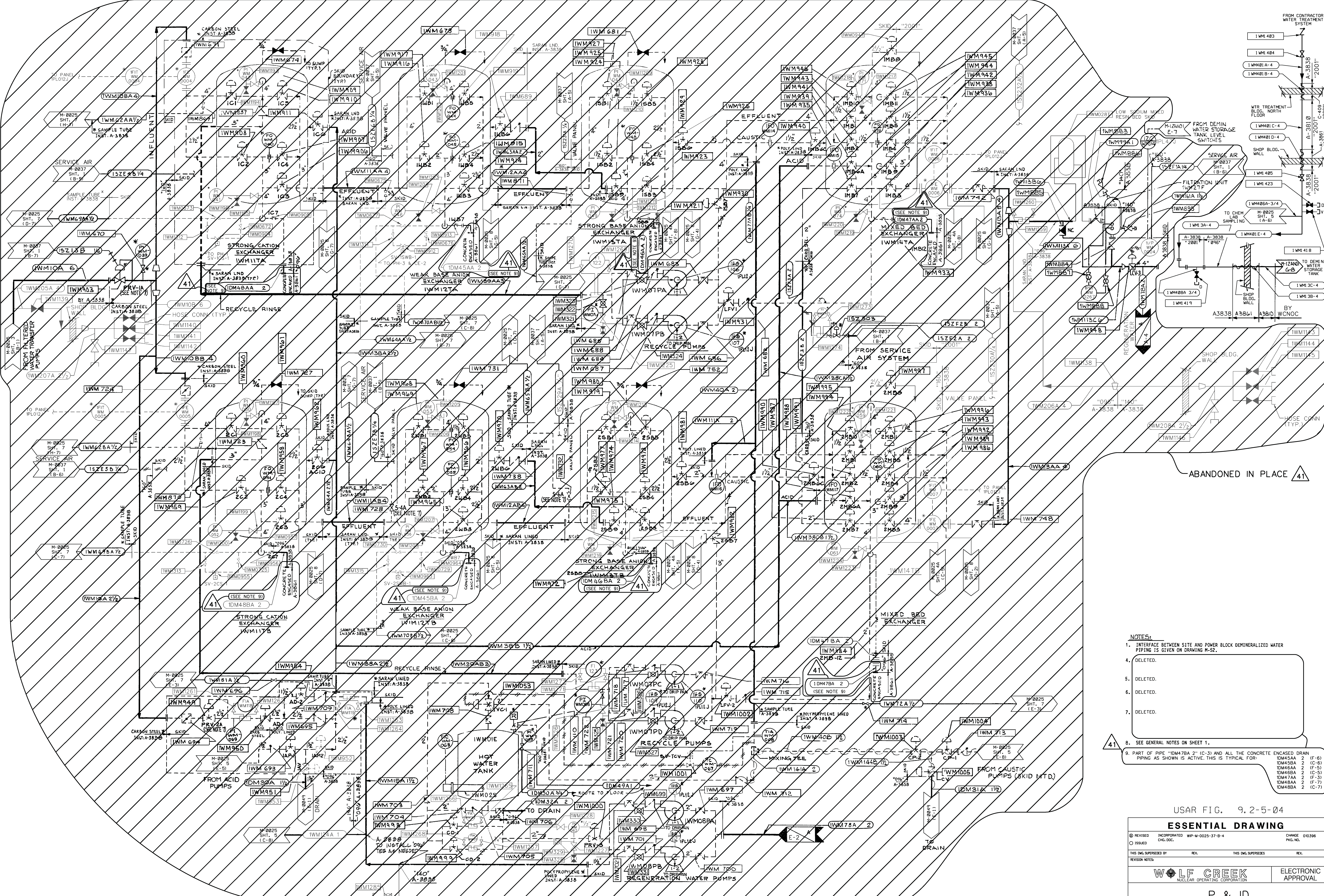
IWM13TA  
IWM13TB  
STRONG BASE  
ANION  
EXCHANGER

IWM07PA  
IWM07PB  
IWM07PC  
IWM07PD  
RECYCLE PUMPS

IWM08PA  
IWM08PB  
REGENERATION  
WATER PUMPS

IWM14TA  
IWM14TB  
MIXED BED  
EXCHANGER

IWM27F  
FILTRATION UNIT



- NOTES:
1. INTERFACE BETWEEN SITE AND POWER BLOCK DEMINERALIZED WATER PIPING IS GIVEN ON DRAWING M-52.
  4. DELETED.
  5. DELETED.
  6. DELETED.
  7. DELETED.
  8. SEE GENERAL NOTES ON SHEET 1.
  9. PART OF PIPE "IDM47BA 2" (C-3) AND ALL THE CONCRETE ENCASED DRAIN PIPING AS SHOWN IS ACTIVE. THIS IS TYPICAL FOR:
    - IDM45AA 2 (F-6)
    - IDM45BA 2 (C-6)
    - IDM46AA 2 (F-5)
    - IDM46BA 2 (C-5)
    - IDM47AA 2 (F-3)
    - IDM48AA 2 (F-7)
    - IDM48BA 2 (C-7)

USAR FIG. 9, 2-5-04

ESSENTIAL DRAWING

(R) REVISED INCORPORATED WPM-0025-37-B-4 CHANGE 010396  
 (I) ISSUED CNG, DOC. CNG, DOC. PGC, NO.

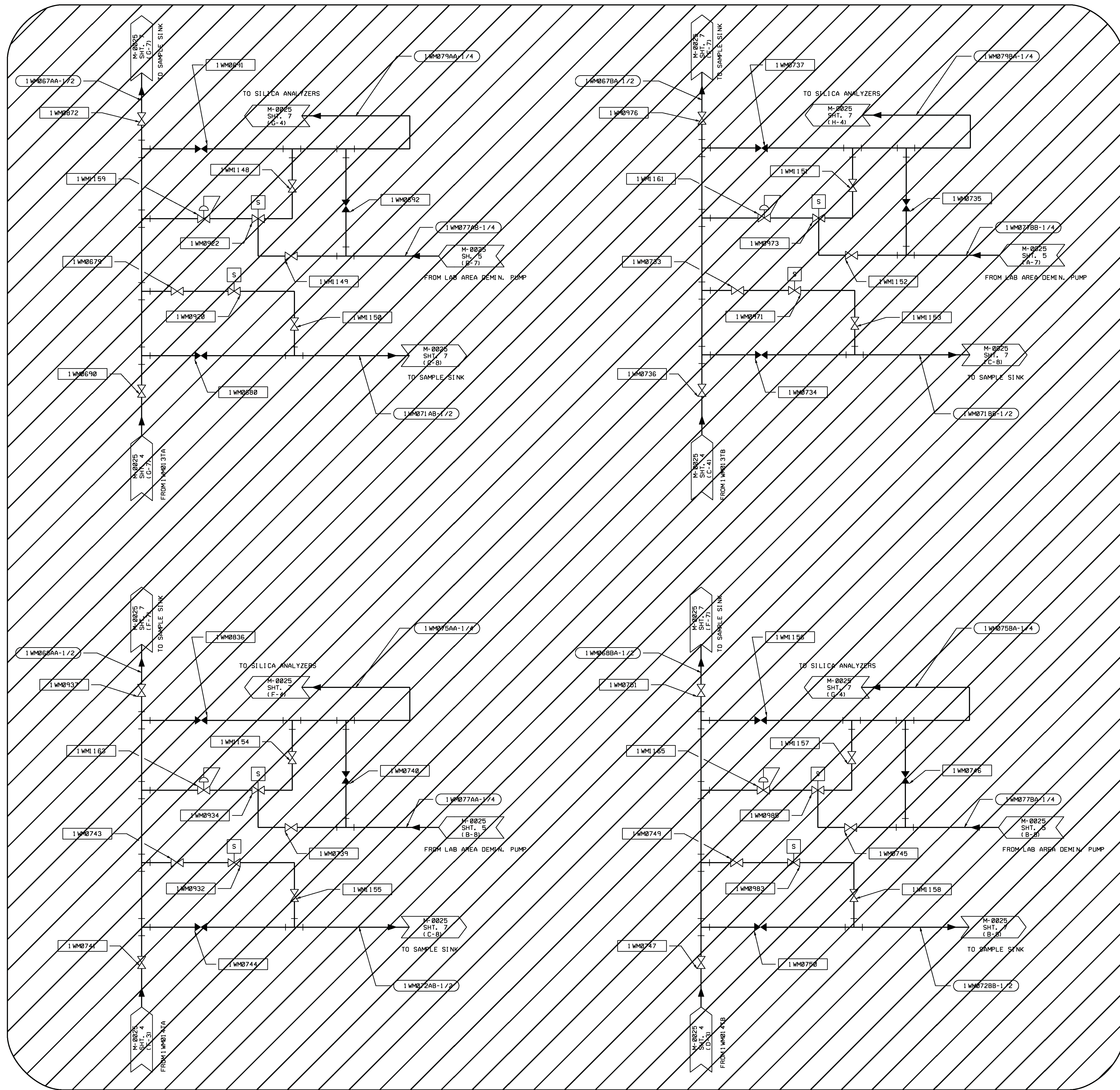
THIS ENG. SUPERSEDES REV. THIS ENG. SUPERSEDES REV.  
 REVISION NOTES

WOLF CREEK ELECTRONIC APPROVAL  
 NUCLEAR OPERATING CORPORATION

P & ID MAKEUP DEMINERALIZER SYSTEM

SCALE NONE DRAWING NUMBER M-0025 SHEET REV 4 41  
 3644 E. 32E





ABANDONED  
IN PLACE

USAR FIG. 9.2-5-4A

**ESSENTIAL DRAWING**

REVISION	INCORPORATED	WIP-M-0025-04-A-4A	CHANGE	010398
ISSUED	CNG. DOC.		PKG. NO.	
THIS ENG. SUPERSEDES BY		REV.	THIS ENG. SUPERSEDES	

REVISION NOTES

**WOLF CREEK**  
NUCLEAR OPERATING CORPORATION

ELECTRONIC  
APPROVAL

**P & ID  
MAKEUP DEMINERALIZER SYSTEM**

SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-0025	4A	06

*Ray J. Smith*  
Scale 1:1  
Checked by: Raymond J. Smith, Station  
Designer: Raymond J. Smith, Station

H  
G  
F  
E  
D  
C  
B  
A

8 7 6 5 4 3 2 1



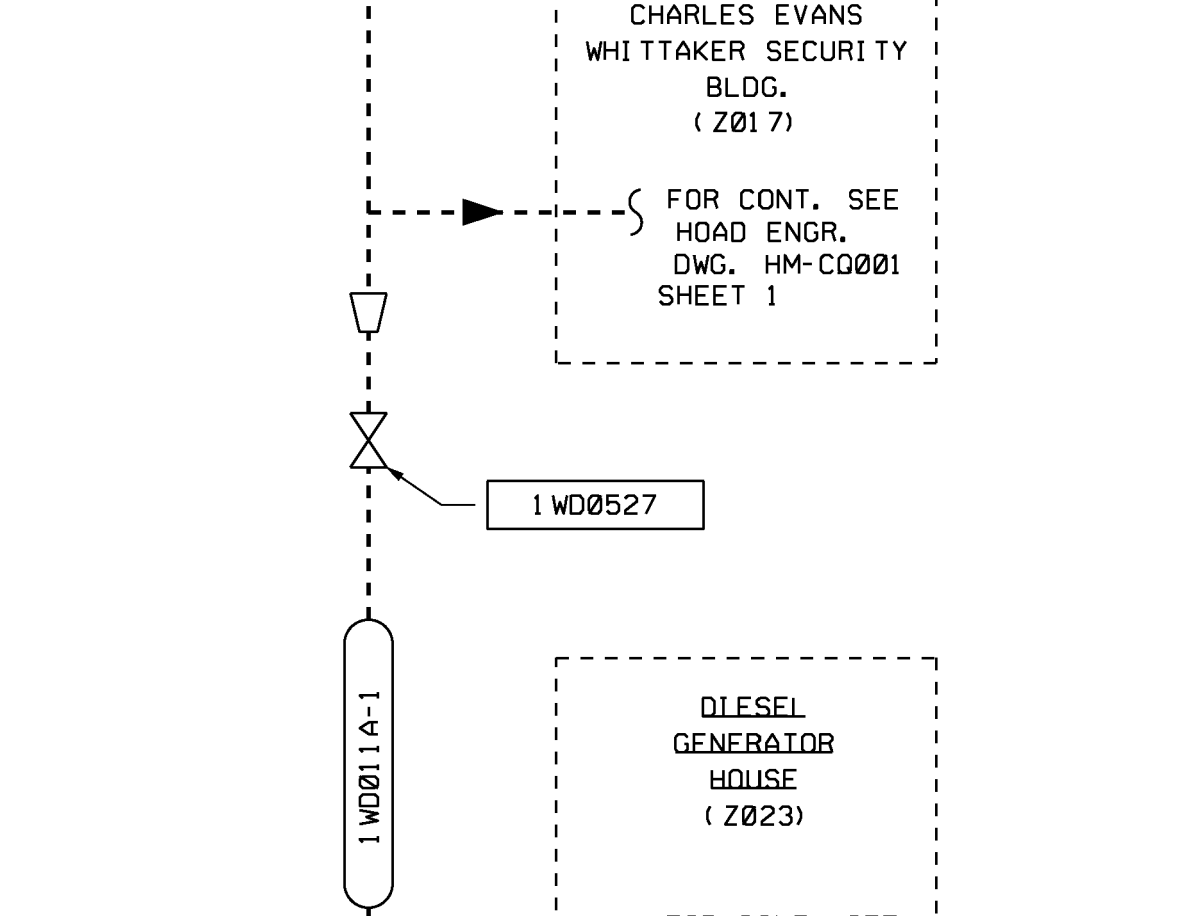
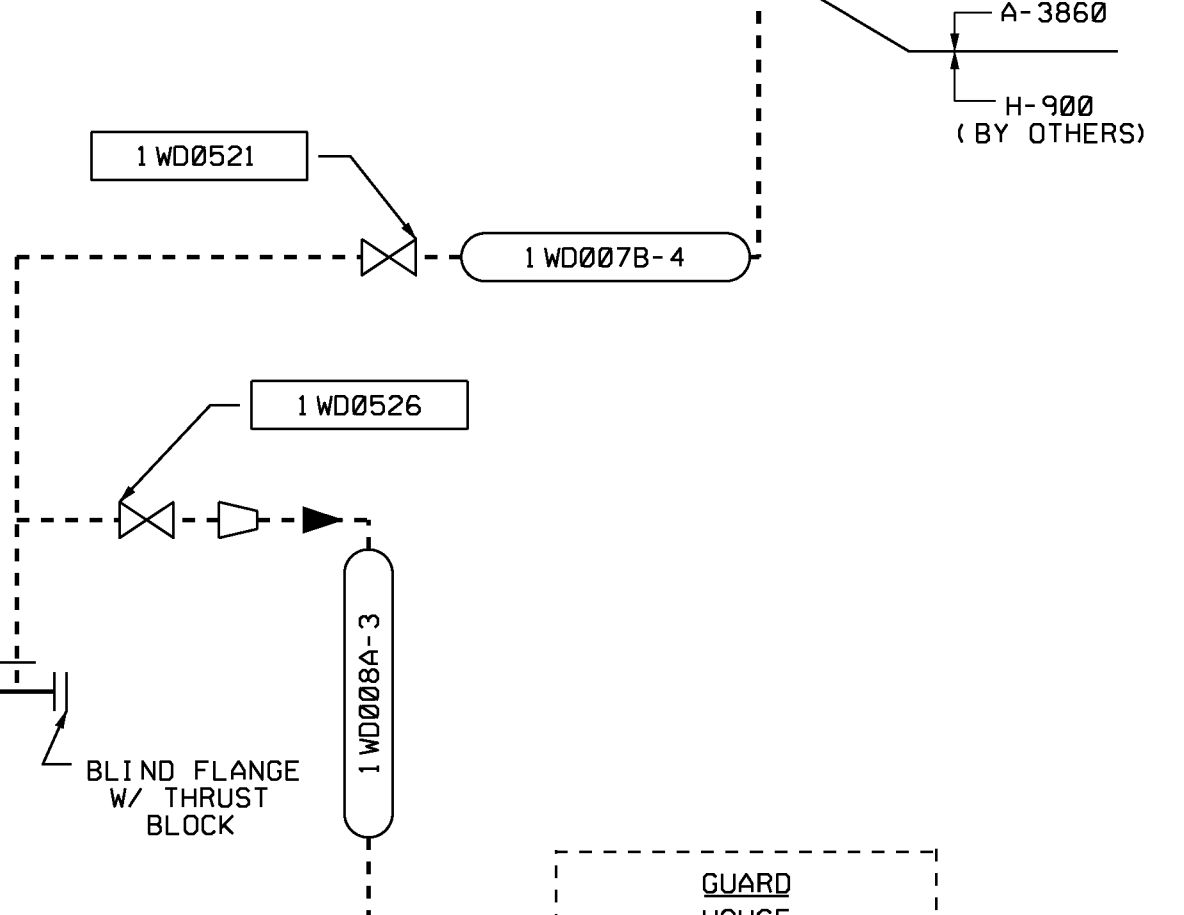
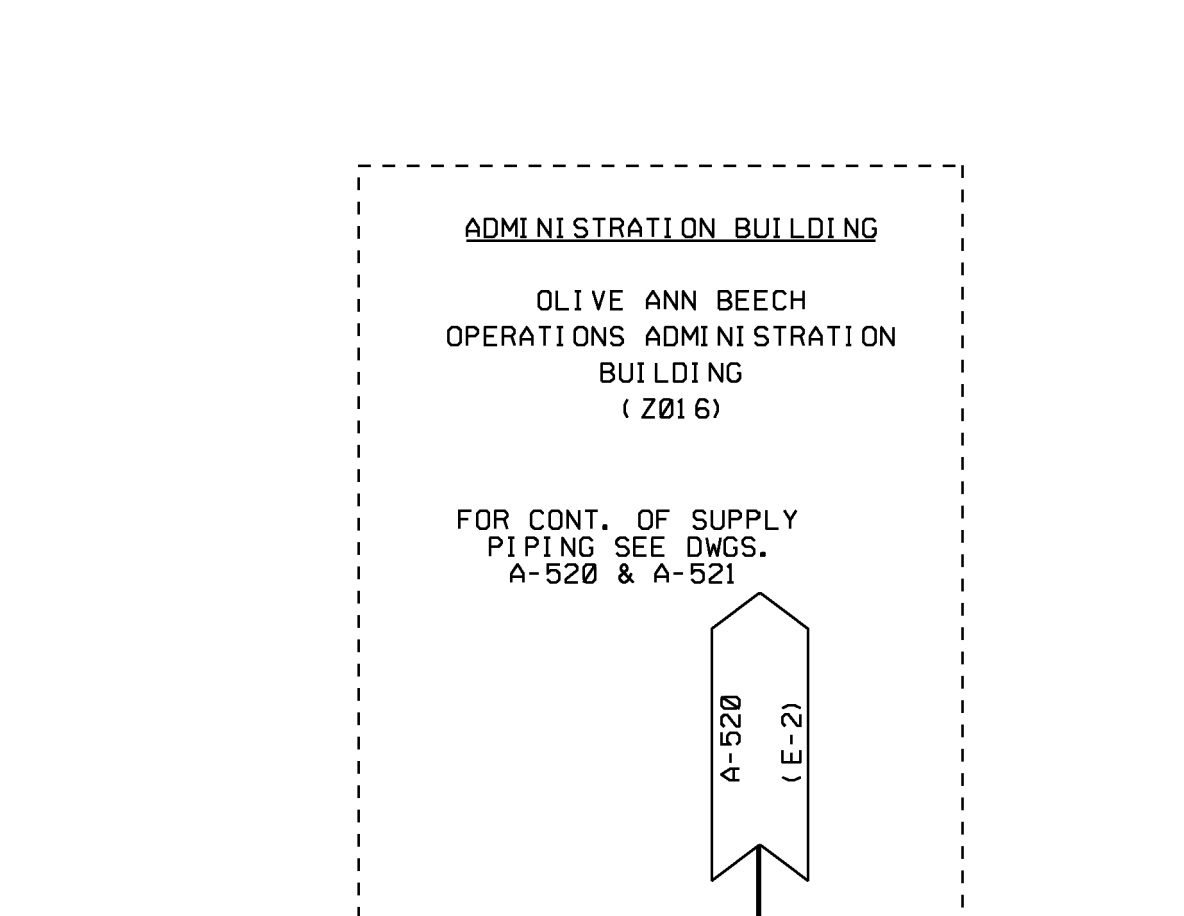
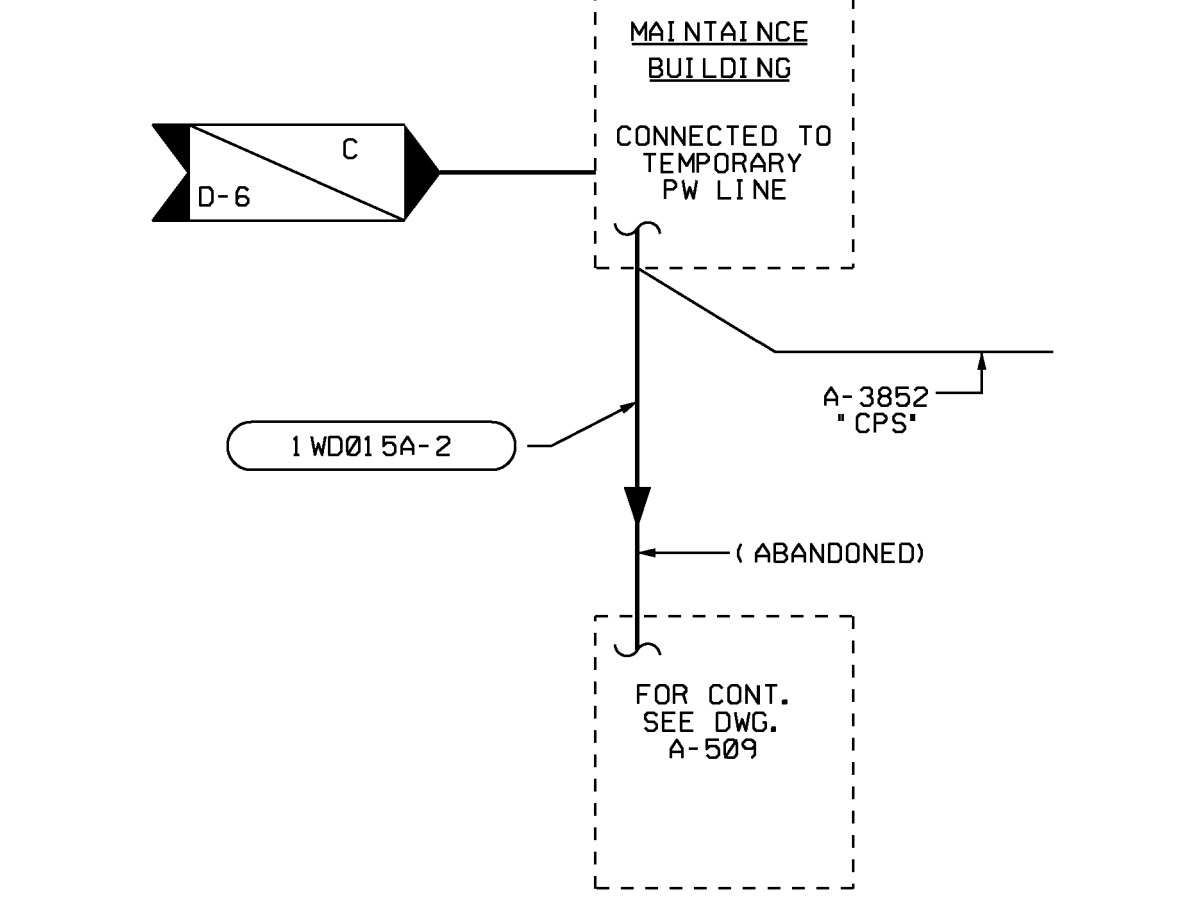
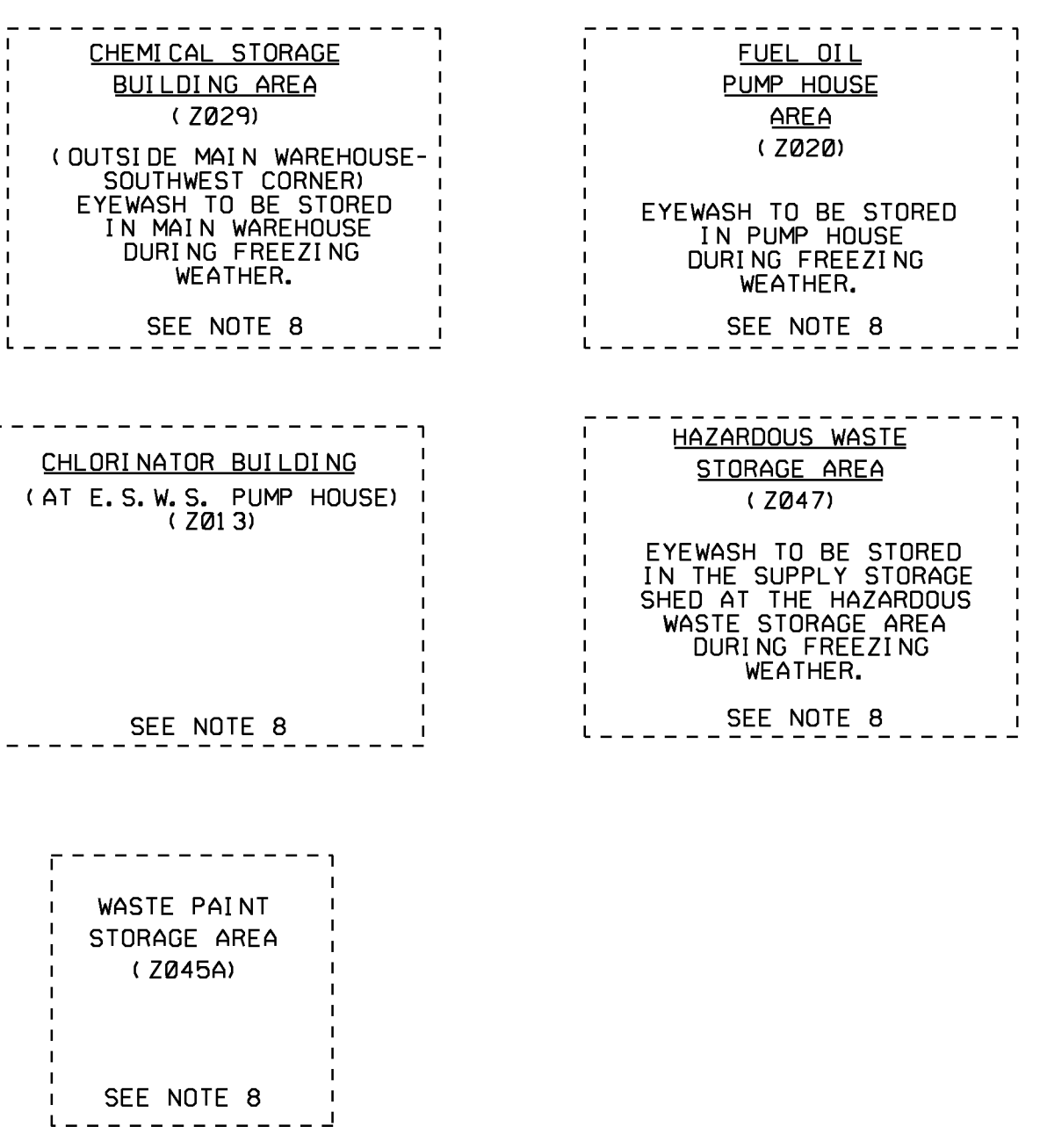
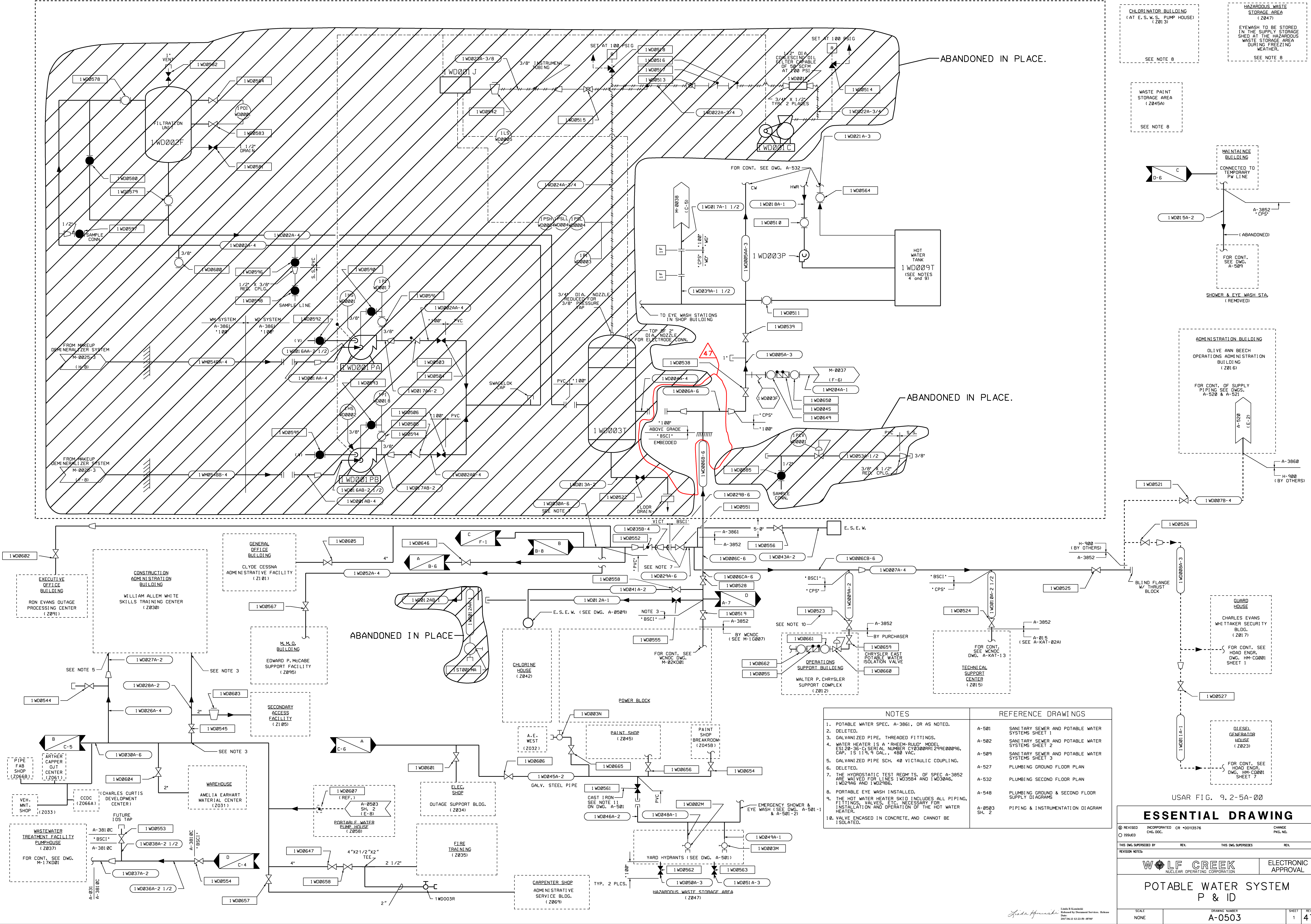
FILTRATION UNIT 1WD002F POTABLE WATER TRANSFER PUMPS 1WD001PA, 1WD001PB CONTROL PANEL 1WD001J PNEUMATIC TANK 1WD003T (16-4 1/2" X 8-7" DIA) AIR COMPRESSOR 1WD001C RECIRCULATING WATER PUMP 1WD003P HOT WATER TANK 1WD009T

SHOP BUILDING

ABANDONED IN PLACE.

ABANDONED IN PLACE.

ABANDONED IN PLACE



NOTES	REFERENCE DRAWINGS
1. POTABLE WATER SPEC. A-3861, OR AS NOTED.	A-501 SANITARY SEWER AND POTABLE WATER SYSTEMS SHEET 1
2. DELETED.	A-502 SANITARY SEWER AND POTABLE WATER SYSTEMS SHEET 2
3. GALVANIZED PIPE, THREADED FITTINGS.	A-509 SANITARY SEWER AND POTABLE WATER SYSTEMS SHEET 3
4. WATER HEATER IS A "RHEEM-RUUD" MODEL ESI 20-36-C SERIAL NUMBER CY0300RRI 299600096. CAP. IS 119.9 GAL., 400 VAC.	A-527 PLUMBING GROUND FLOOR PLAN
5. GALVANIZED PIPE SCH. 40 WICTALIC COUPLING.	A-532 PLUMBING SECOND FLOOR PLAN
6. DELETED.	A-548 PLUMBING GROUND & SECOND FLOOR SUPPLY DIAGRAMS
7. THE HYDROSTATIC TEST REQ'D TS. OF SPEC A-3852 ARE WAIVED FOR LINES 1WD0384 AND 1WD0386, 1WD2946 AND 1WD2986.	A-0503 PIPING & INSTRUMENTATION DIAGRAM
8. PORTABLE EYE WASH INSTALLED.	
9. THE HOT WATER HEATER SKID INCLUDES ALL PIPING, FITTINGS, VALVES, ETC. NECESSARY FOR INSTALLATION AND OPERATION OF THE HOT WATER HEATER.	
10. VALVE ENCASED IN CONCRETE, AND CANNOT BE ISOLATED.	

USAR FIG. 9.2-5A-00

**ESSENTIAL DRAWING**

REVISIONS: REVISED, INCORPORATED, OR ISSUED

WOLF CREEK NUCLEAR OPERATING CORPORATION

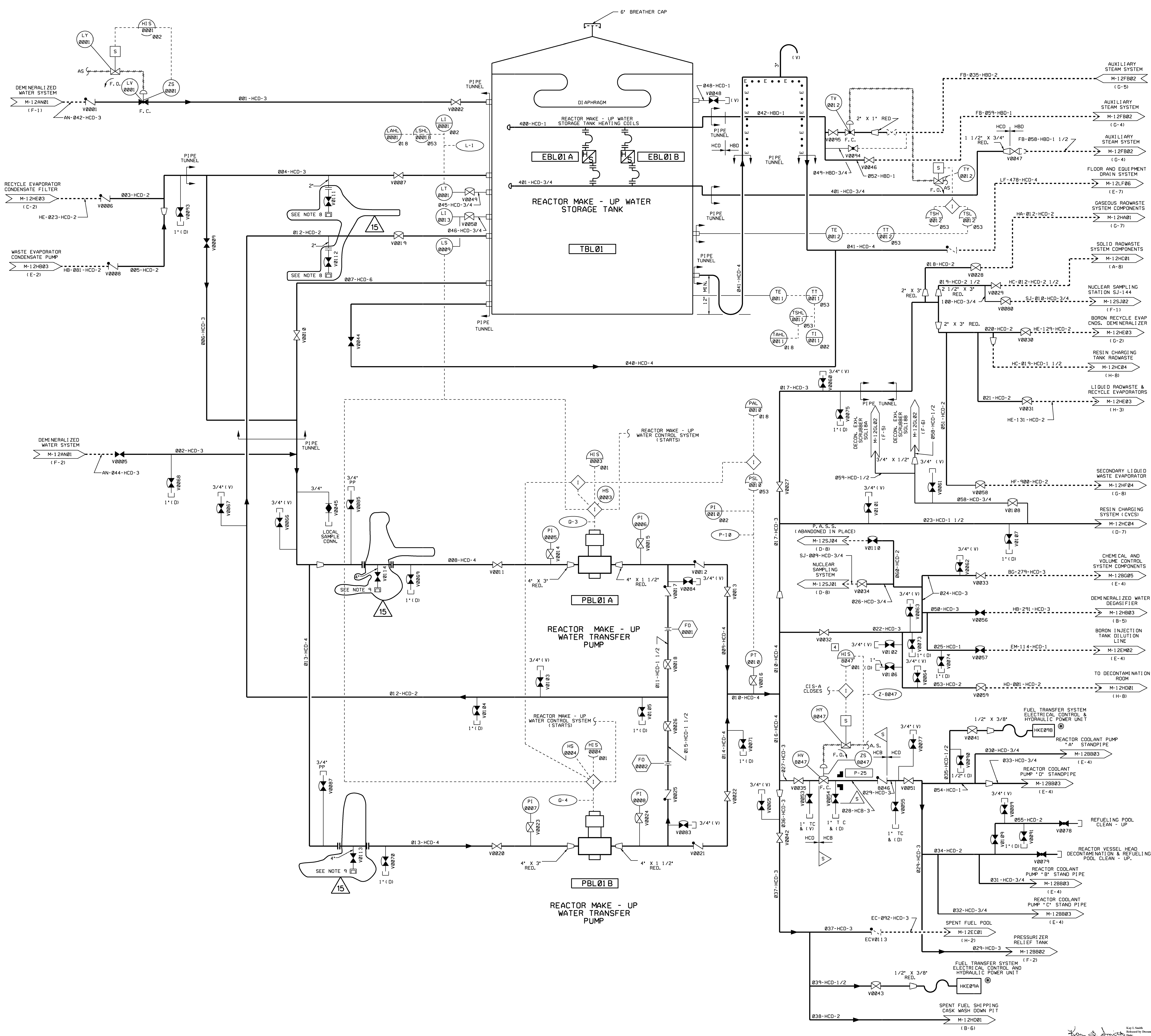
**POTABLE WATER SYSTEM P & ID**

SCALE: NONE

DRAWING NUMBER: A-0503

SHEET: 1 OF 47



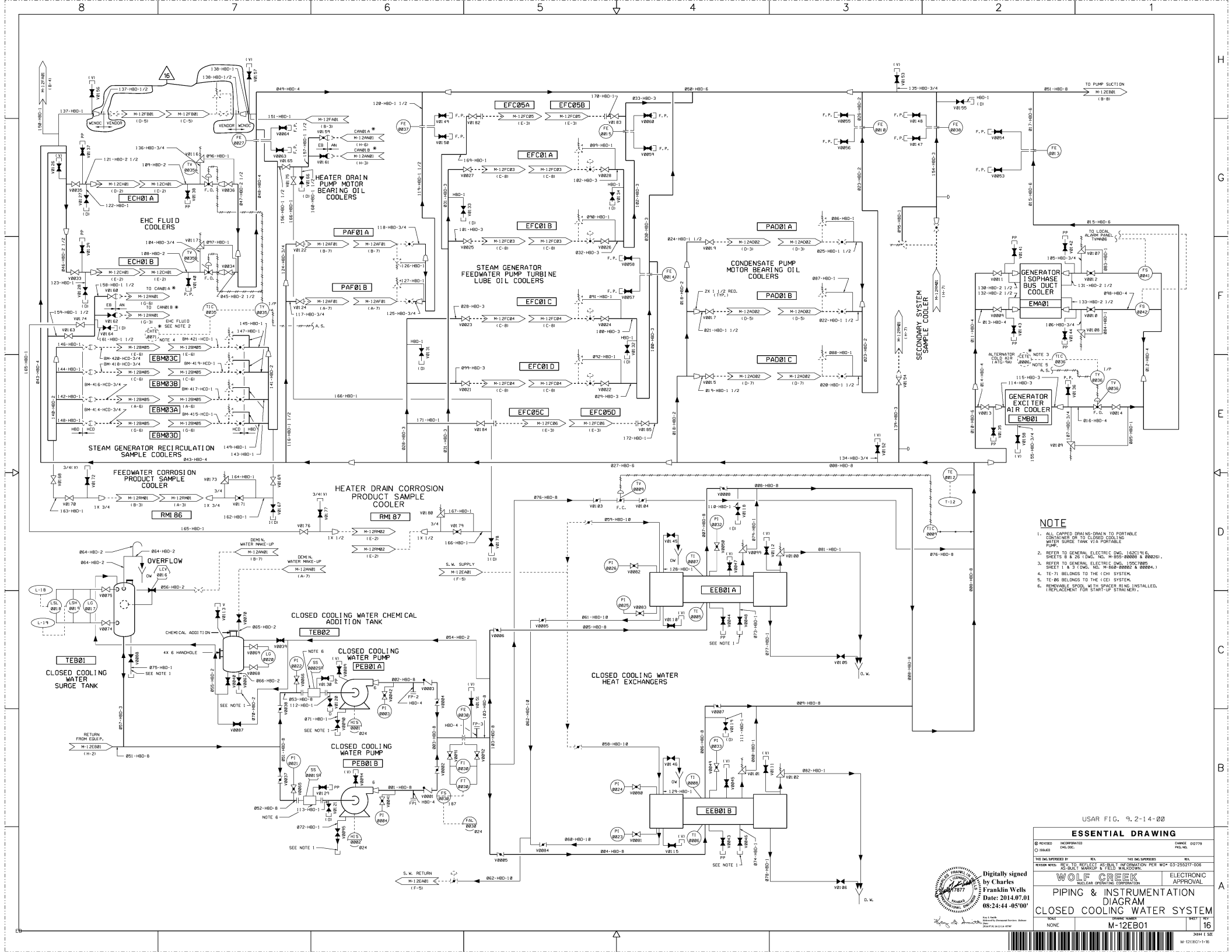


- ### NOTES
1. THE PORTIONS OF THE REACTOR MAKE - UP WATER SYSTEM WHICH ARE D-LISTED INCLUDE THE PIPING AND VALVES ASSOCIATED WITH CONTAINMENT ISOLATION ONLY.
  2. DELETED.
  3. AN ABOVE GRADE STRUCTURE IS PROVIDED TO HOUSE PIPING AND VALVES ADJACENT TO THE REACTOR MAKEUP WATER STORAGE TANK.
  4. FOR P & ID LEGEND & SYMBOLS SEE DRAWINGS 0466-M-1201-01, M-1201-02, M-1201-03 AND M-0201-04.
  5. DELETED
  6. DELETED
  7. DELETED
  8. 2" NPT TO 4" 30 DEGREE ANGLE STORZ CONNECTOR, NFPA 1963-1998, 200 PSI / 150 FT. MINIMUM, ASTM B247 B061 T6, CAPPED. INSTALL THE STORZ CONNECTOR WITH THE CONNECTION ANGLED UP. THIS CONNECTION IS FOR BEYOND-DESIGN BASIS (FLEX) USAGE ONLY.
  9. 4" NPT TO 4" STORZ CONNECTOR, NFPA 1963-1998, 200 PSI / 150 FT. MINIMUM, ASTM B247 B061 T6, CAPPED. THIS CONNECTION IS FOR BEYOND-DESIGN BASIS (FLEX) USAGE ONLY.

USAR FIG. 9.2-13-00

ESSENTIAL DRAWING			
REVISED	INCORPORATED	WIP-M-12BL01-010-B-1	CHANGE 014463
ISSUED	CNG. DEC.		PKG. NO.
THIS ENG. SUPERSEDES		REV.	REV.
REVISION NOTES		THIS ENG. SUPERSEDES	
		ELECTRONIC APPROVAL	
		<b>PIPING &amp; INSTRUMENTATION DIAGRAM</b> <b>REACTOR MAKE-UP WATER SYSTEM</b>	
SCALE	DRAWING NUMBER	SHEET	REV
	M-12BL01	1	15





- NOTE**
1. ALL CORROSION DRAIN TO PORTABLE CONTAINER OR TO CLOSED COOLING WATER SURGE TANK VIA PORTABLE PUMP.
  2. REFER TO GENERAL ELECTRIC (G.E.) SHEETS B & 20 (L.O. HD. M-12E-0000) & (M-12E-0001).
  3. REFER TO GENERAL ELECTRIC (G.E.) SHEETS 1 & 3 (L.O. HD. M-12E-0000 & M-12E-0001).
  4. TE-71 BELONGS TO THE IHD SYSTEM.
  5. TE-80 BELONGS TO THE IHD SYSTEM.
  6. REMOVABLE SPOON, WITH SPACER RING INSTALLED, REPLACEMENT FOR START-UP STRAINER.

USAR FIG. 9.2-14-00

**ESSENTIAL DRAWING**

REVISION	INCORPORATED	DATE	03/79
BY	WJ	DATE	03/79
DESIGN	WJ	DATE	03/79
INSTRUMENTATION	WJ	DATE	03/79

Digitally signed by Charles Franklin Wells  
 Date: 2014.07.01 08:24:44 -0500



WOLF CREEK ELECTRONIC APPROVAL

PIPING & INSTRUMENTATION DIAGRAM

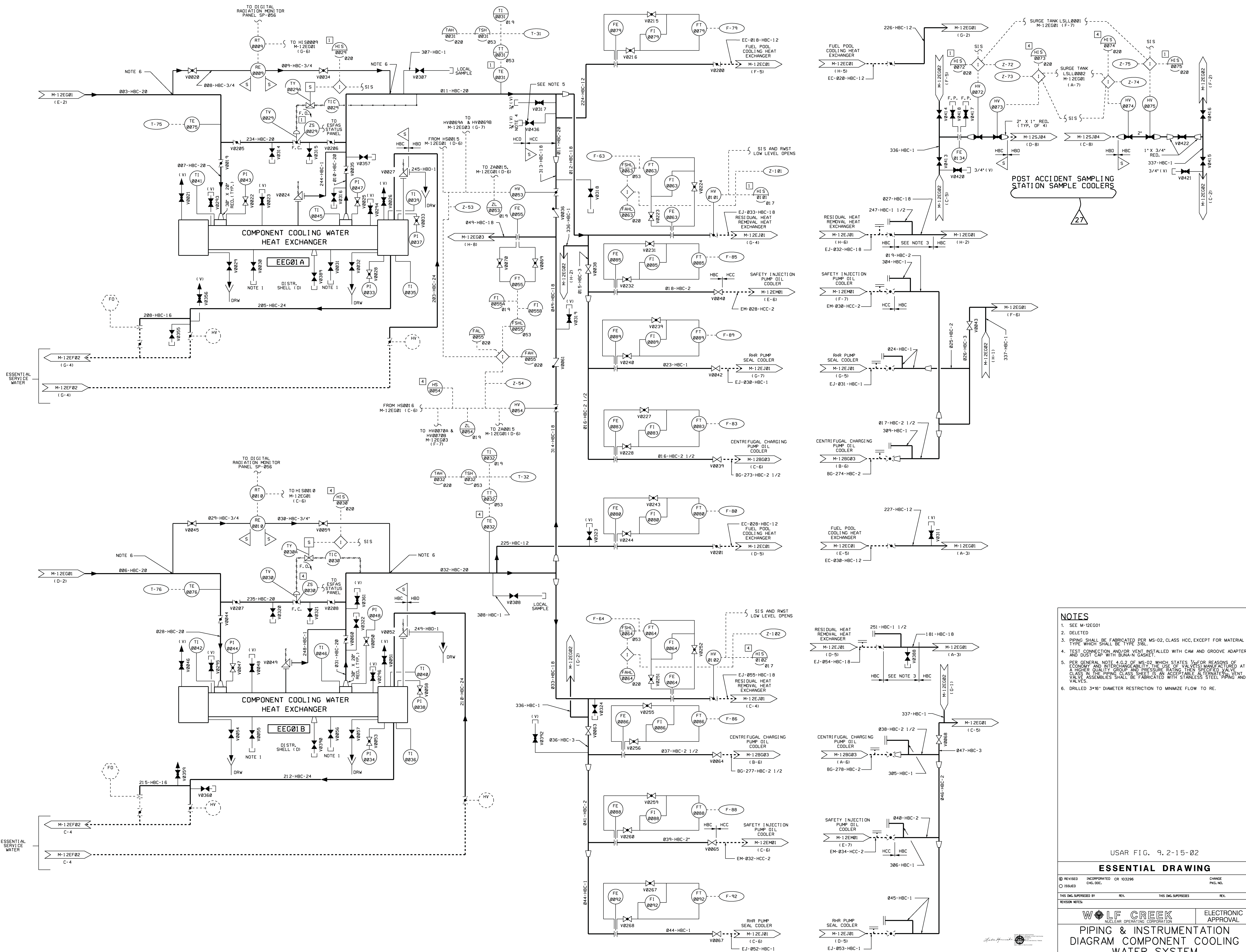
CLOSED COOLING WATER SYSTEM

SCALE	NONE	SHEET NO.	16
PROJECT	M-12E01	TOTAL SHEETS	16









- NOTES**
1. SEE M-12EG01
  2. DELETED
  3. PIPING SHALL BE FABRICATED PER MS-02, CLASS HCC, EXCEPT FOR MATERIAL TYPE WHICH SHALL BE TYPE 316L
  4. TEST CONNECTION AND/OR VENT, INSTALLED WITH CAM AND GROOVE ADAPTER AND DUST CAP WITH BUNA-N GASKET.
  5. PER GENERAL NOTE 4.G.2 OF MS-02, WHICH STATES: "FOR REASONS OF ECONOMY AND INTERCHANGEABILITY, THE USE OF VALVES MANUFACTURED AT A HIGHER QUALITY GROUP AND PRESSURE RATING THAN SPECIFIED IN THE CLASS IN THE PIPING CLASS SHEET IS AN ACCEPTABLE ALTERNATE. VENT VALVE ASSEMBLIES SHALL BE FABRICATED WITH STAINLESS STEEL PIPING AND VALVES."
  6. DRILLED 3/16" DIAMETER RESTRICTION TO MINIMIZE FLOW TO RE.

USAR FIG. 9.2-15-02

**ESSENTIAL DRAWING**

REVISED	INCORPORATED	CR 103296	CHANGE
ISSUED	CHG. DEC.		PKG. NO.
THIS DWG. SUPERSEDES		REV.	THIS DWG. SUPERSEDES
REVISION NOTES			

**WOLF CREEK**  
NUCLEAR OPERATING CORPORATION

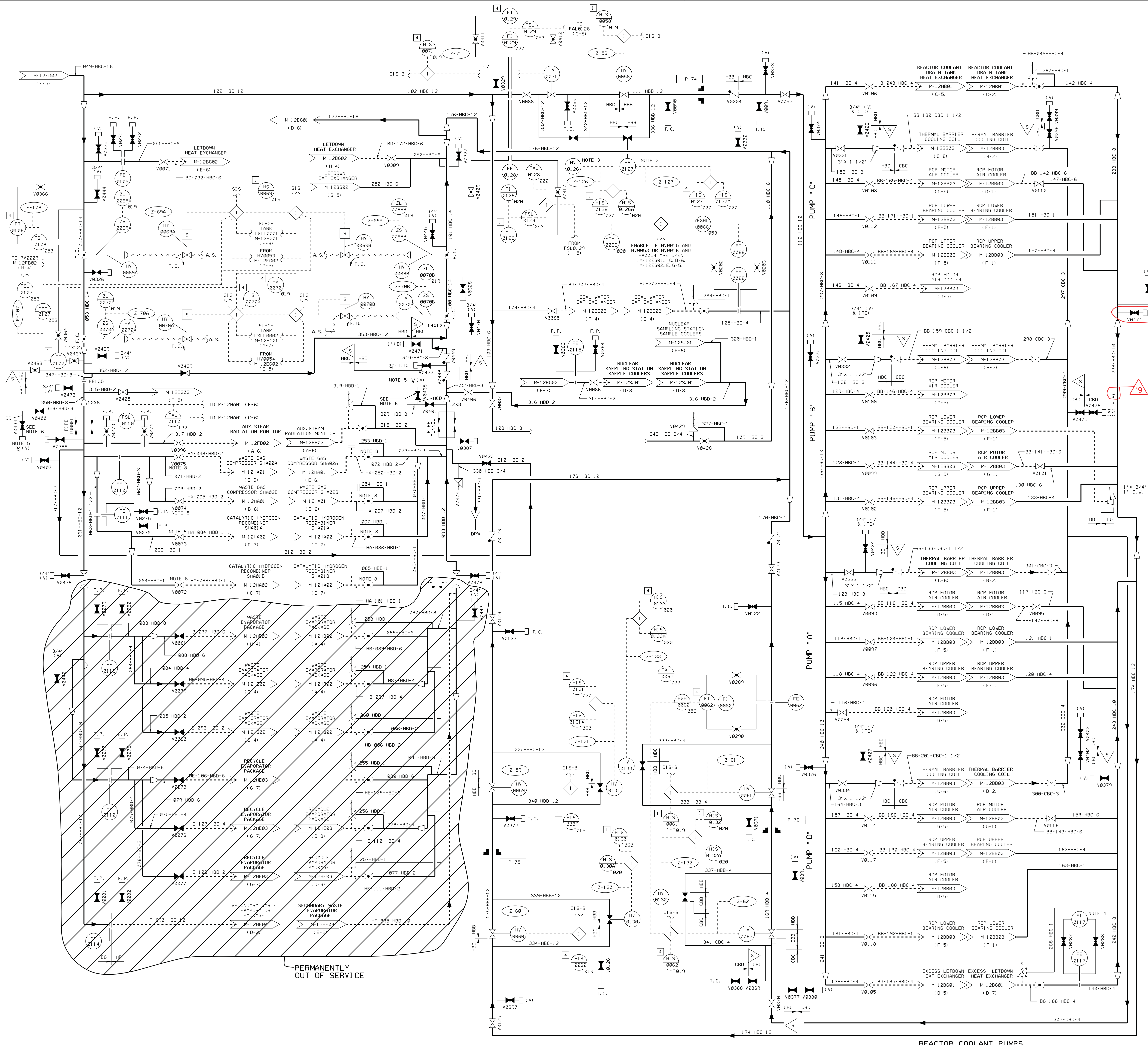
**ELECTRONIC APPROVAL**

**PIPING & INSTRUMENTATION  
DIAGRAM COMPONENT COOLING  
WATER SYSTEM**

SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12EG02	27	27

34X44 E SIZE





- NOTES**
- SEE M-12EG01
  - SEISMIC ANALYSIS AND SUPPORTS FOR PIPING EXTEND BEYOND THE INSTRUMENT CONNECTION FOR FT0187.
  - ISOLATION SWITCH PROVIDED IN THE CONTROL ROOM FOR POWER LOCKOUT OF VALVES HV0126, HV0127, HV0130, HV0132, AND HV0133. A CIS-B SIGNAL IS NOT REQUIRED FOR CLOSURE OF THESE VALVES SINCE THEY ARE MAINTAINED CLOSED.
  - FLOW INDICATOR EGF10117 IS ABANDONED IN PLACE.
  - TEST CONNECTION AND/OR VENT INSTALLED WITH CAM AND GROOVE ADAPTER AND DUST CAP WITH BUNA-N GASKET.
  - PER GENERAL NOTE 4.6.2 OF MS-02 WHICH STATES "FOR REASONS OF ECONOMY AND INTERCHANGEABILITY, THE USE OF VALVES MANUFACTURED AT A HIGHER QUALITY GROUP AND PRESSURE RATING THAN SPECIFIED VALVE CLASS IN THE PIPING CLASS SHEET IS AN ACCEPTABLE ALTERNATE - VENT VALVE ASSEMBLIES SHALL BE FABRICATED WITH STAINLESS STEEL PIPING AND VALVES."
  - DELETED
  - IF BOTH INLET AND OUTLET HEAT EXCHANGER VALVES ARE CLOSED THEN OPEN AT LEAST ONE OF THE PP OR VENT VALVES IN-BETWEEN THEM TO RELIEVE ANY POSSIBLE THERMAL EXPANSION.
  - CAM AND GROOVE COUPLINGS MAY BE SUBSTITUTED FOR THE PIPE CAPS IF DESIRED BY THE SYSTEM ENGINEER. SEE DRAWING M-13EG09, DETAIL 10.

USAR FIG. 9.2-15-03

**ESSENTIAL DRAWING**

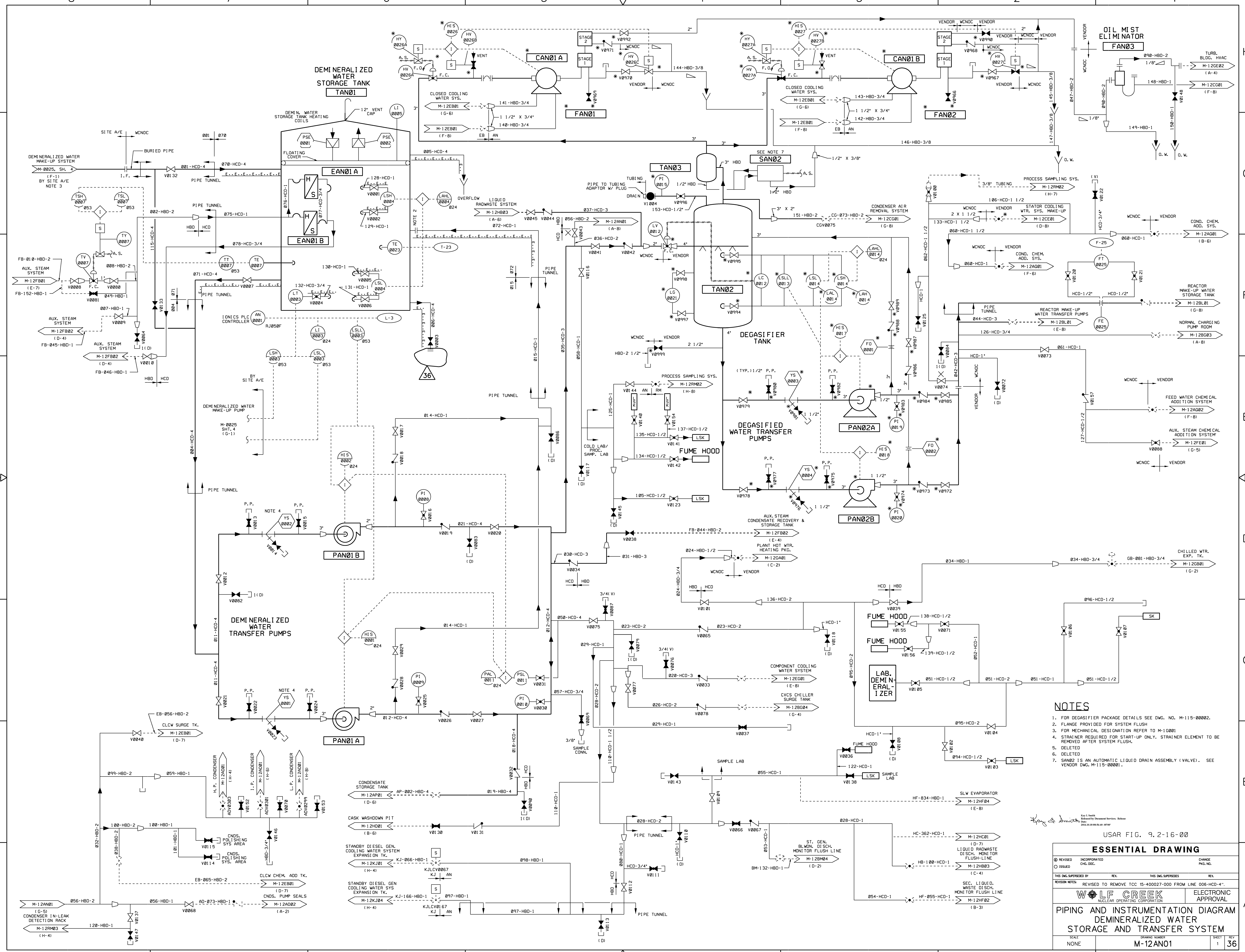
REVISED	INCORPORATED	WP-M-12EG03-012-A-1	CHANGE	014173
ISSUED	CHG. DOC.			PKG. NO.
THIS Dwg. SUPERSEDES		REV.	THIS Dwg. SUPERSEDES	
REVISION NOTES		REV.		



**PIPING AND INSTRUMENTATION DIAGRAM**  
**COMPONENT COOLING WATER SYSTEM**

SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12EG03	19	





- NOTES**
- FOR DEGASIFIER PACKAGE DETAILS SEE DWG. NO. M-115-00002.
  - FLANGE PROVIDED FOR SYSTEM FLUSH.
  - FOR MECHANICAL DESIGNATION REFER TO M-10001.
  - STRAINER REQUIRED FOR START-UP ONLY. STRAINER ELEMENT TO BE REMOVED AFTER SYSTEM FLUSH.
  - DELETED
  - DELETED
  - SAN02 IS AN AUTOMATIC LIQUID DRAIN ASSEMBLY (VALVE). SEE VENDOR DWG. M-115-00001.

USAR FIG. 9.2-16-00

**ESSENTIAL DRAWING**

REVISED	INCORPORATED	CHANGE
ISSUED	CHG. DOC.	PKG. NO.

THIS DWG. SUPERSEDES BY REV. THIS DWG. SUPERSEDES REV.

REVISION NOTES: REVISED TO REMOVE TCC 15-400027-000 FROM LINE 006-HCD-4".

**WOLF CREEK**  
NUCLEAR OPERATING CORPORATION

**ELECTRONIC APPROVAL**

**PIPING AND INSTRUMENTATION DIAGRAM**  
**DEMINERALIZED WATER**  
**STORAGE AND TRANSFER SYSTEM**

SECT: NONE DRAWING NUMBER: M-12AN01 SHEET NO.: 1 OF 32





ABANDONED IN PLACE

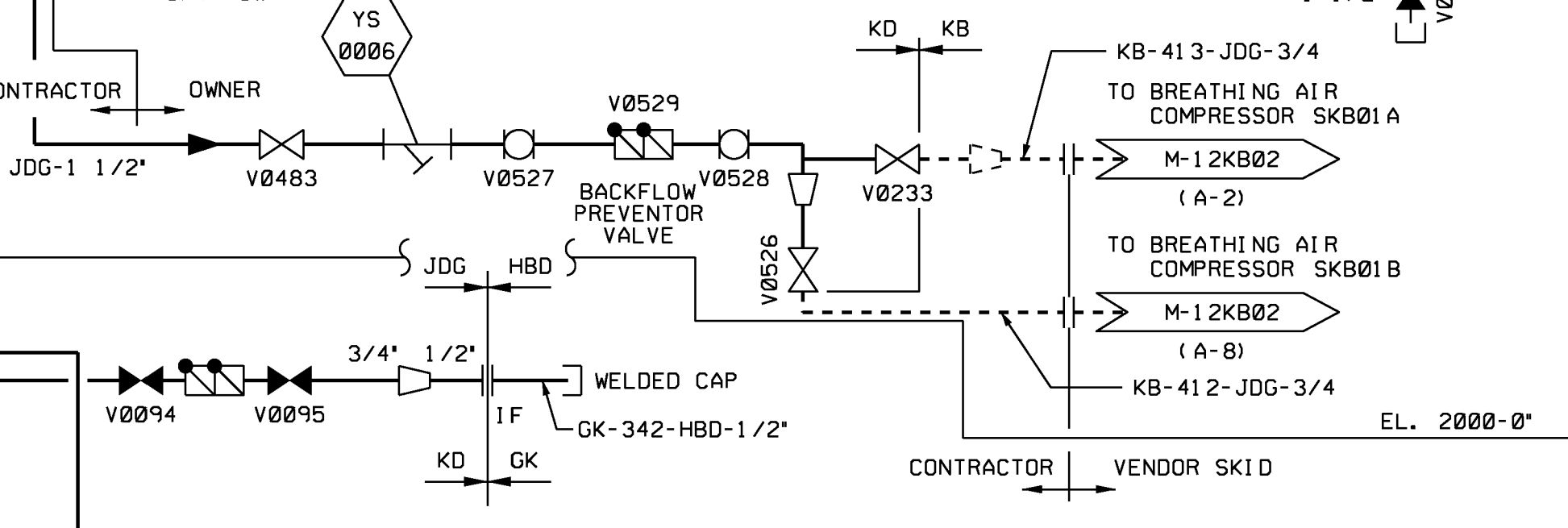
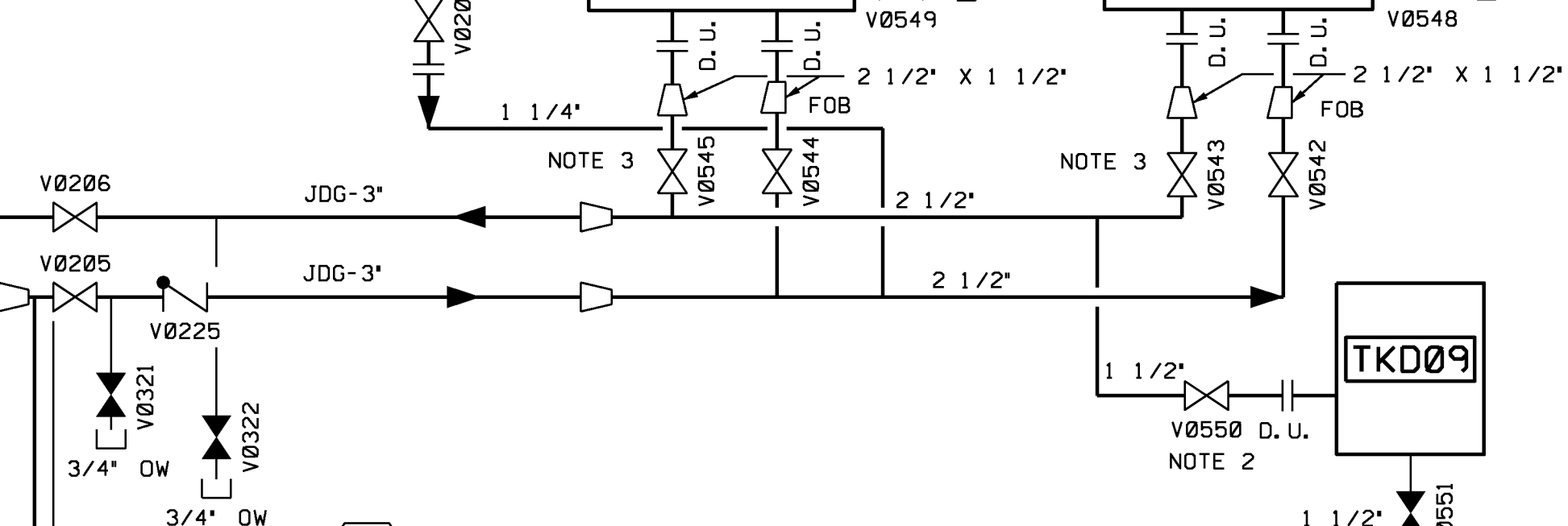
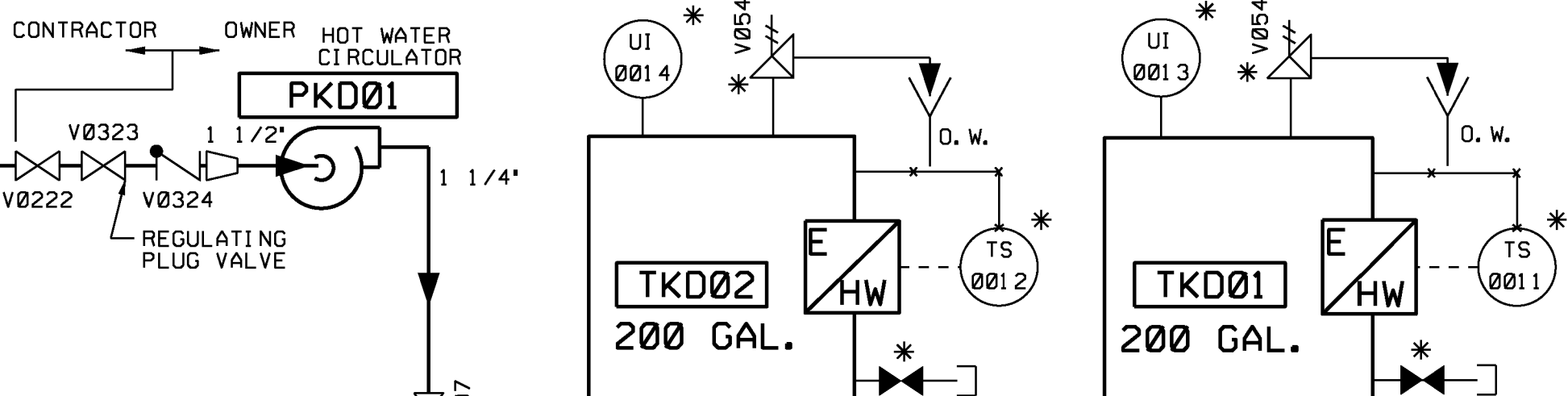
- NOTE**
- FOR GENERAL NOTES, SEE DRAWING M-12KD01.
  - VALVE V8550 MUST BE LOCKED OPEN WHEN EITHER HEATER IS OPERATING.
  - EACH HEATER'S OUTLET VALVE MUST BE LOCKED OPEN DURING THAT HEATER'S OPERATION.
  - PIPE IS CAPPED AND ABANDONED IN PLACE PER CCP 04491.

CONTROL ROOM PANTRY, TOILETS AND JANITOR'S CLOSET

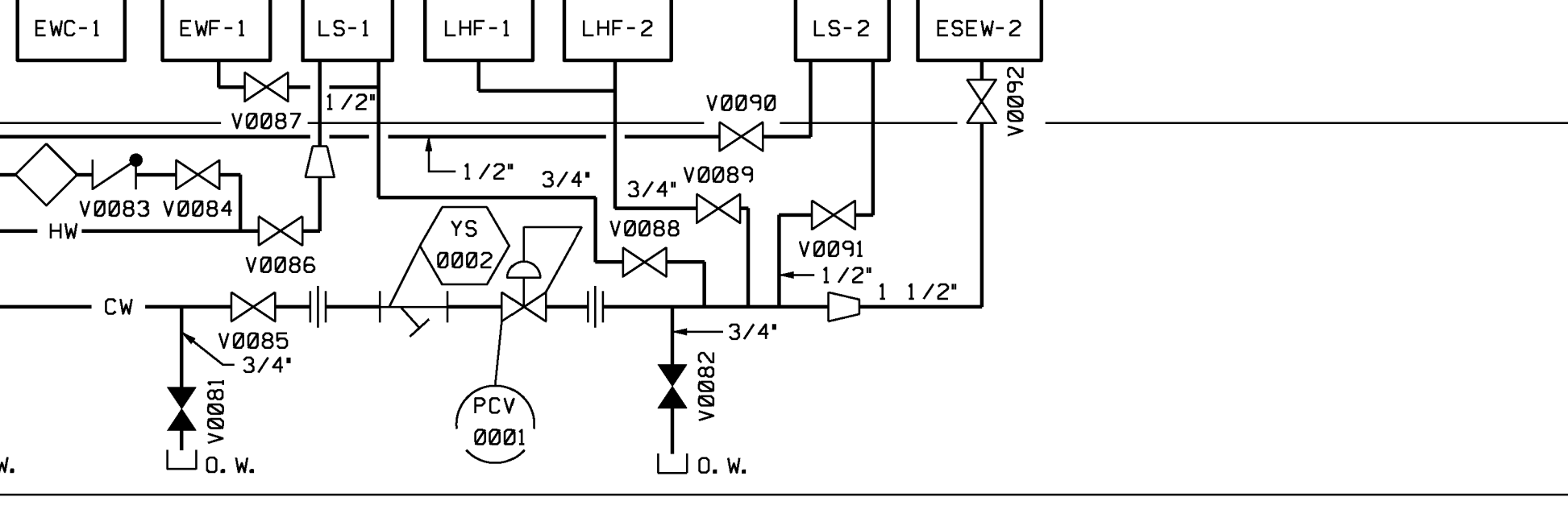
INSTRUMENT SHOP AREA

ESEW-1 HB-1

DOMESTIC WATER SUPPLY FROM TURBINE BLDG.



HOT LAB



ACCESS CONTROL AREA

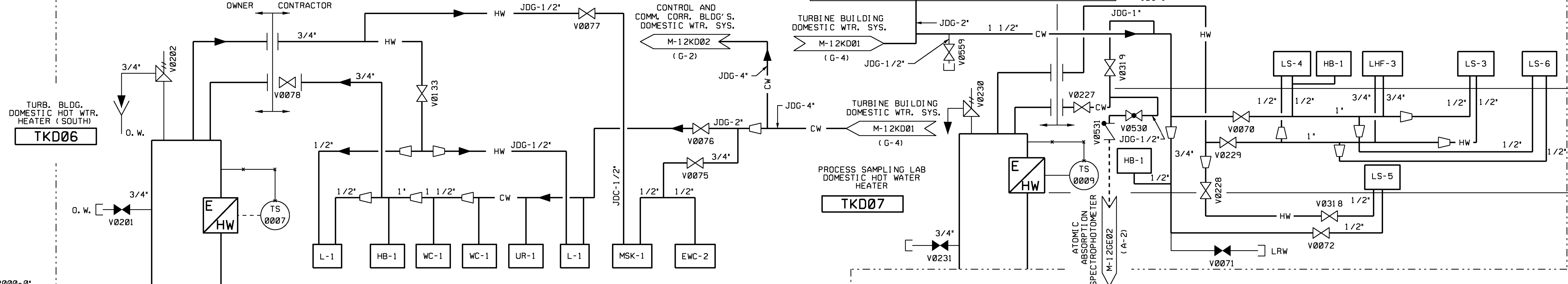
COMMUNICATIONS CORRIDOR

CONTROL BUILDING

TURBINE BLDG. TOILETS AREA

TURBINE BLDG. TOILETS AREA

TURBINE BUILDING SAMPLE LAB



USAR FIG. 9.2-17-02

**ESSENTIAL DRAWING**

REVISION	NO	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

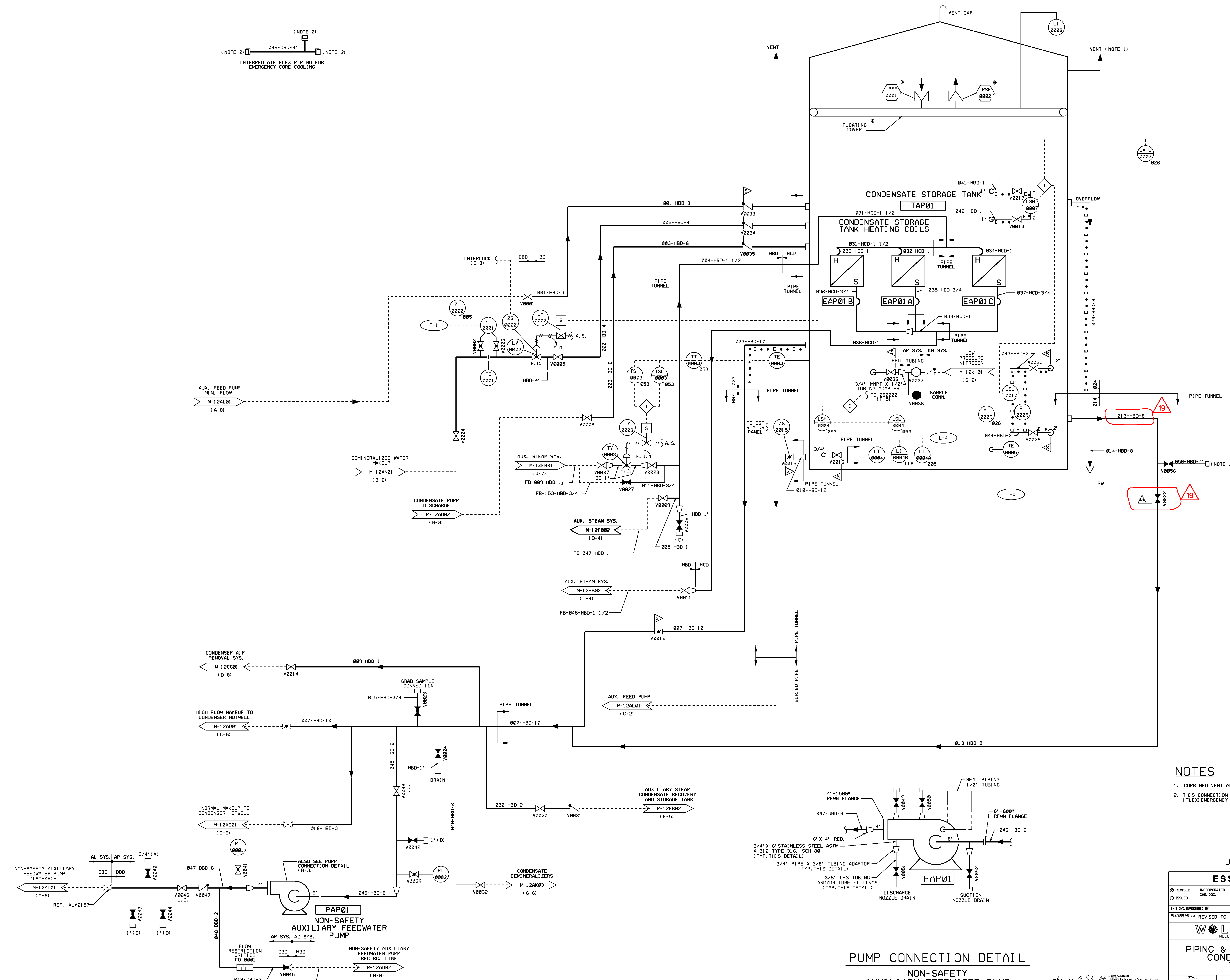
**WOLF CREEK**  
NUCLEAR OPERATING CORPORATION

**PIPING & INSTRUMENTATION**  
DIAGRAM

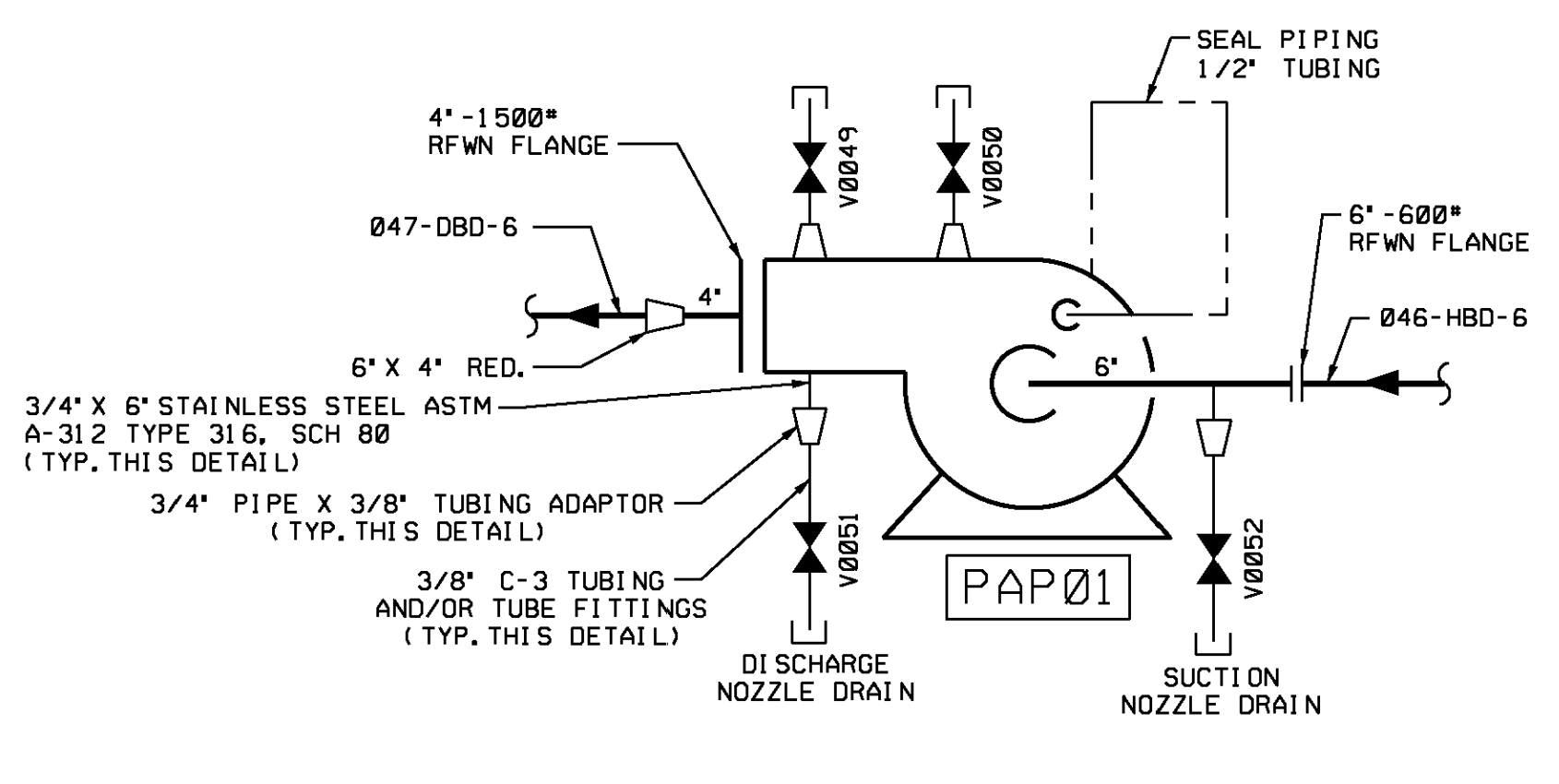
**DOMESTIC WATER SYSTEM**

SCALE: NONE  
DRAWING NUMBER: M-12KD02  
SHEET: 24  
REV: 24

(NOTE 2)  $\square$   $\square$   $\square$  (NOTE 2)  
 INTERMEDIATE FLEX PIPING FOR  
 EMERGENCY CORE COOLING



**NOTES**  
 1. COMBINED VENT AND INSPECTION HATCH.  
 2. THIS CONNECTION IS TO BE USED ONLY FOR BEYOND-DESIGN-BASIS (FLEX) EMERGENCY CORE COOLING.



**PUMP CONNECTION DETAIL**  
 NON-SAFETY  
 AUXILIARY FEEDWATER PUMP

USAR FIG. 9.2.23-00

ESSENTIAL DRAWING			
REVISION	INCORPORATED	CHANGE	
ISSUED	CWG, DCC	PKG. NO.	
THIS Dwg. SUPERSEDES		REV.	
REVISED TO CORRECT LOCATION OF VALVE V0022 PER CR. 0012104.		REV.	
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING & INSTRUMENTATION DIAGRAM CONDENSATE STORAGE AND TRANSFER SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12AP01	19	19

34X44 E SIZE

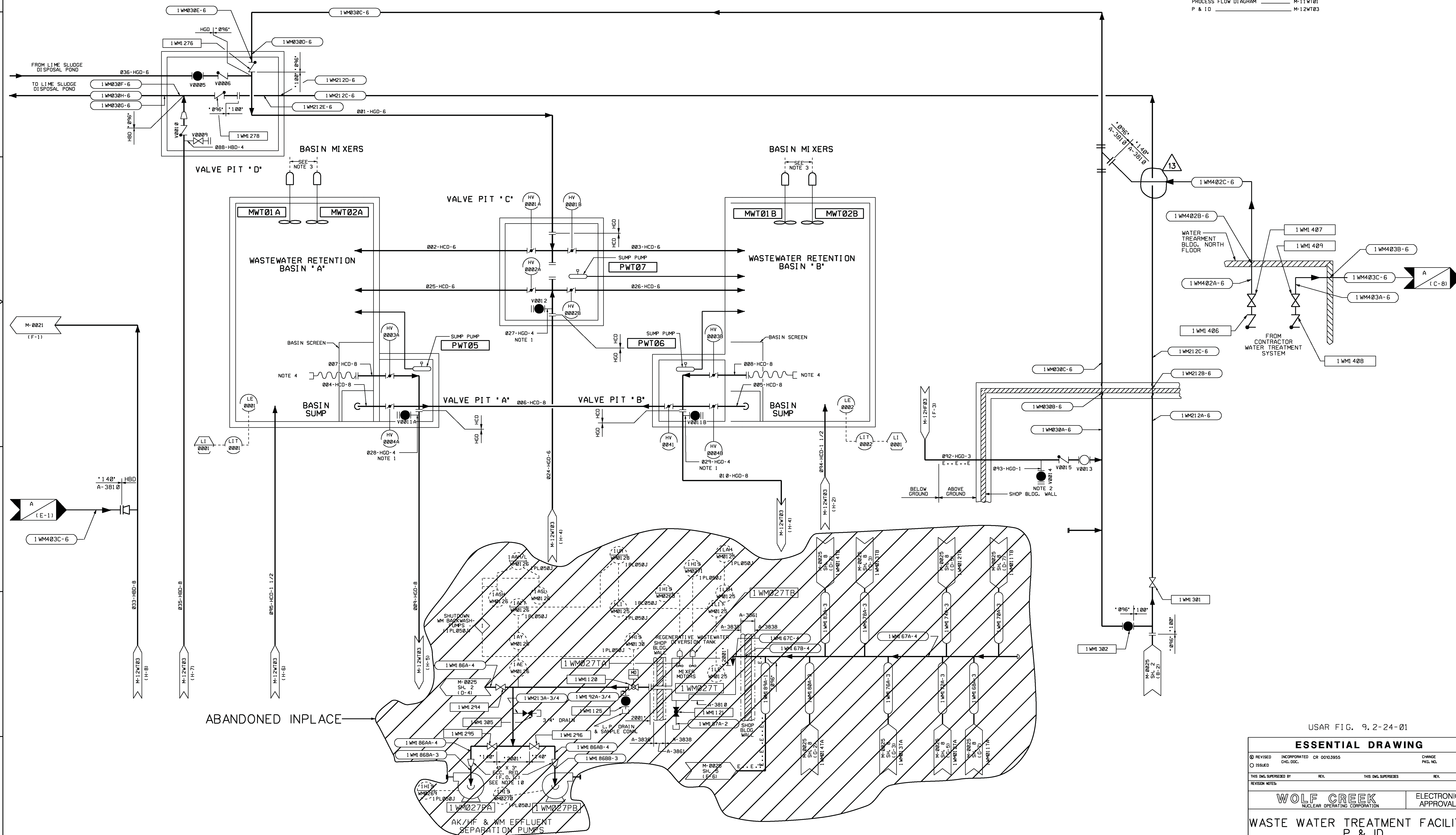


**NOTES**

1. VENDOR PROCESSING CONNECTIONS (TYP. 3 PLCS).
2. PH GRAB SAMPLE POINT (TYP. 4 PLCS).
3. ALL VALVES (HV) AND BASIN MIXERS HAVE STATUS AND/OR CONTROL 1/0 SEE NOTE 3 AND DETAILS ON DWG. M-12WT03.
4. FLOATING SUCTION SHALL BE ADDED AT A LATER DATE.
5. ALL BURIED PROCESS PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SPECIFICATION A-031.
6. PROCESS PIPING TO BE FURNISHED AND INSTALLED PER SPECIFICATION A-031 (UNLESS NOTED OTHERWISE).
7. FOR CATHODIC PROTECTION SEE S&L DRAWING E-0091 SH. 8.
8. DELETED
9. INSTRUMENT AND TUBING FIELD INSTALLATION TO BE IN ACCORDANCE WITH SPEC. A-3838 STD. M-138.1B.2.
10. DELETED

**REFERENCE DRAWINGS**

PROCESS FLOW DIAGRAM M-11WT01  
P & ID M-12WT03



USAR FIG. 9.2-24-01

**ESSENTIAL DRAWING**

REVISION	INCORPORATED	CR 0003955	CHANGE
ISSUED	CWG, DCC		PWG, NDL
THIS DWG SUPERSEDES		REV.	THIS DWG SUPERSEDES
REVISION NOTES			

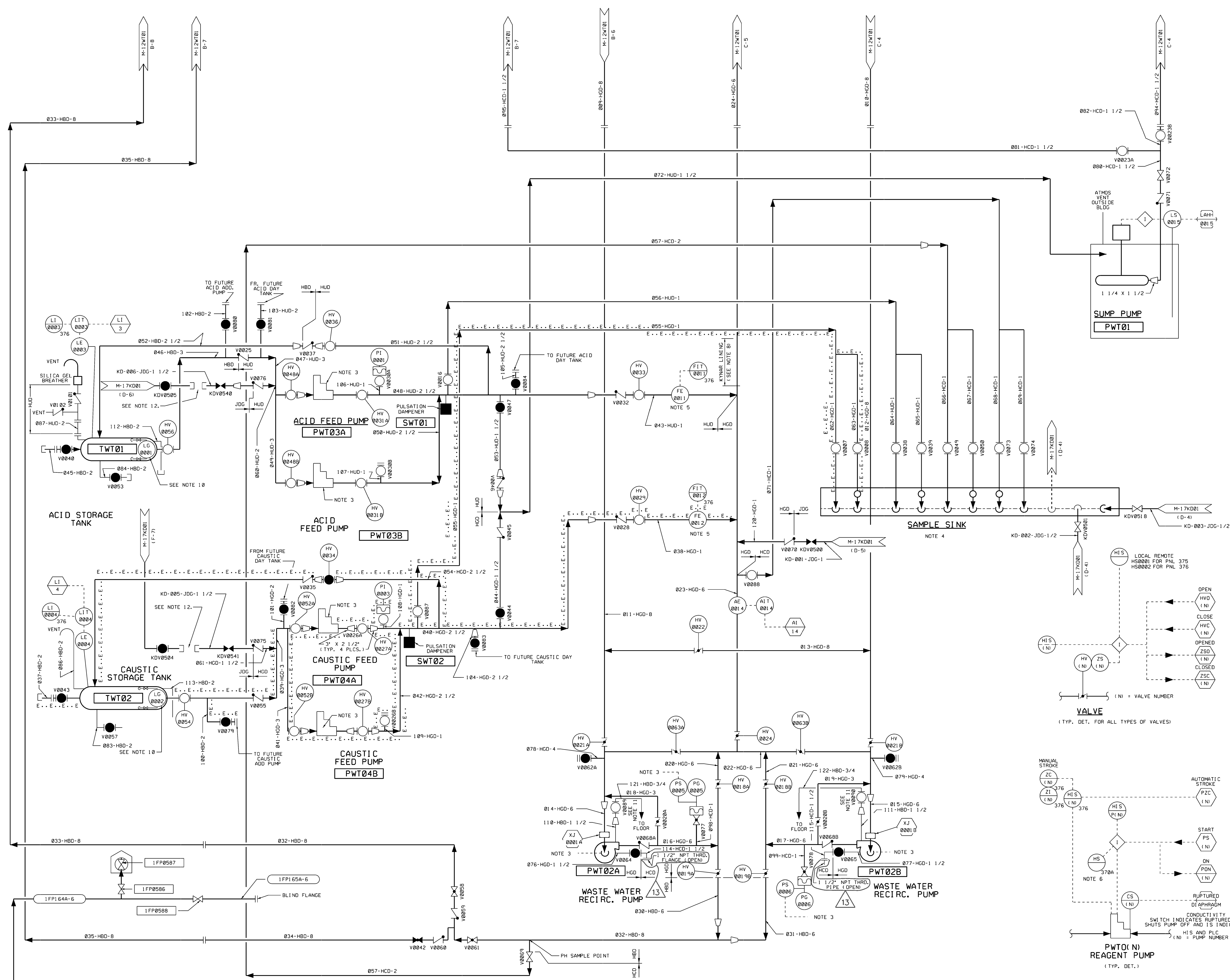
**WOLF CREEK**  
NUCLEAR OPERATING CORPORATION

ELECTRONIC  
APPROVAL

**WASTE WATER TREATMENT FACILITY**  
P & ID

SCALE: NONE  
DRAWING NUMBER: M-12WT01  
SHEET: 13

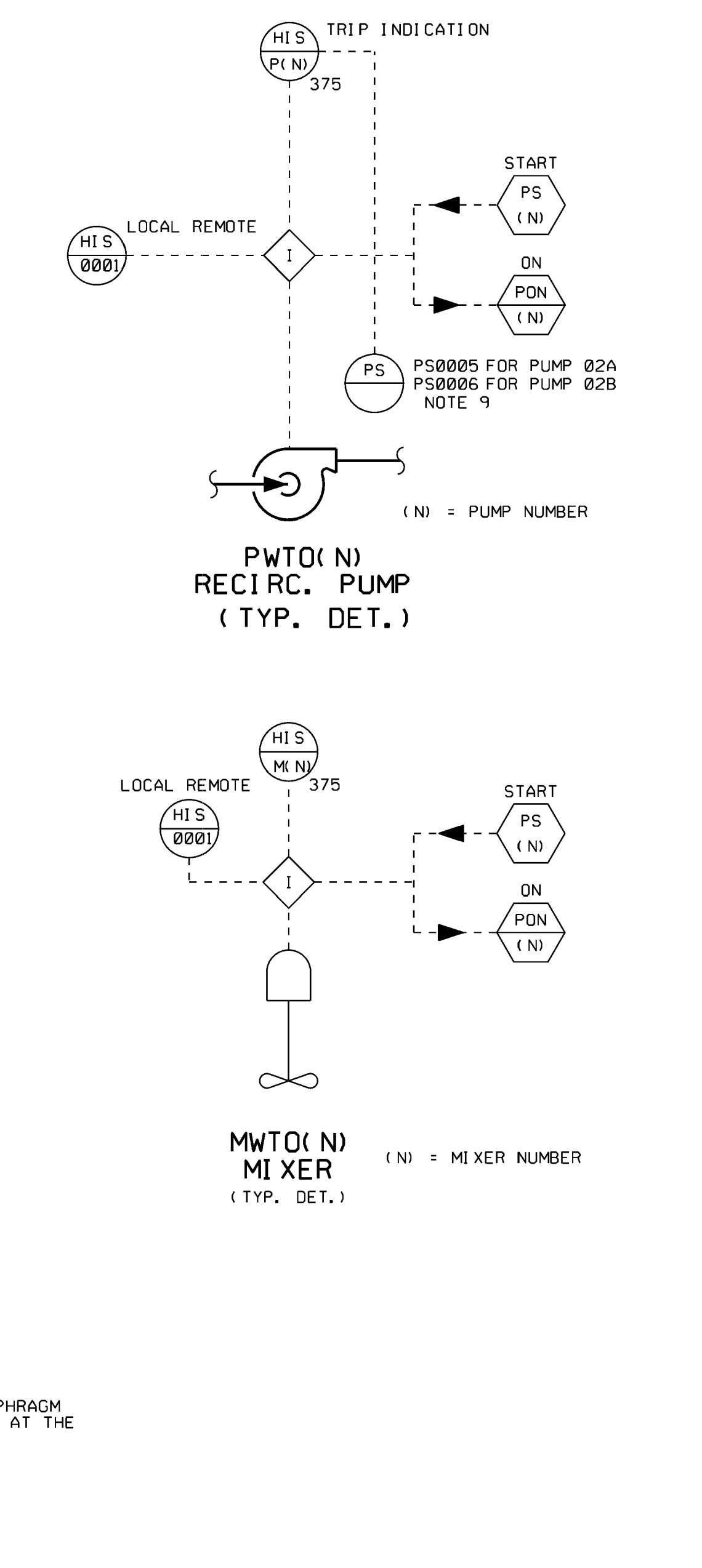
34X44 E SIZE



- NOTES**
1. PUMP AND TANK DRAINS SHALL DRAIN INTO A FLOOR DRAIN SYSTEM WHICH IN TURN SHALL DRAIN INTO THE BUILDING SUMP.
  2. ALL PROCESS PIPING INSIDE THE WASTE WATER TREATMENT FACILITY SHALL BE INSTALLED IN ACCORDANCE WITH SPECIFICATION A-831.
  3. ALL VALVES (HV), REAGENT PUMPS, RECIRCULATION PUMPS AND MIXERS HAVE STATUS AND/OR CONTROL I/O SEE TYPICAL DETAILS BELOW.
  4. SAMPLE SINK SHALL BE STAINLESS STEEL 'P' TRAP, WITH THE FOLLOWING DIMENSIONS:  
LENGTH - 4'-0"  
WIDTH - 18"  
HEIGHT - 2'-10"
  5. DIGITAL FLOW TRANSMITTER WITH TOTALIZER INDICATOR
  6. NORMAL OPERATION IS PUMPS 3A AND 4A FOR BASIN A ACID OR CAUSTIC PUMPS 3B AND 4B FOR BASIN B. HS-3 AND HS-4 IN THE NORMAL POSITION WILL ENABLE THIS ACTION. IF HS-3 IS PUT IN NORMAL 3A AND 4A WILL BE CHOSEN FOR BASIN A LIKEWISE FOR HS-4. IN NORMAL POSITION 3B AND 4B WILL BE CHOSEN FOR BASIN B. IF HS-3 IS PUT IN 'SPARE' POSITION WITH HS-4 IN NORMAL 3A AND 4A WILL NOT BE USED. THIS IS TO ALLOW FOR MAINT. ON PUMPS 3A AND 4A AND ALLOWING NORMAL CONTROL FROM THE PLC. LIKEWISE IF HS-4 IS PUT IN THE SPARE POSITION PUMPS 3B AND 4B WILL NOT BE USED. PUMPS 3A AND 4A WILL BE USED FOR BASIN B VIA THE PLC PROGRAM.
  7. FIRE PROTECTION PIPING TO BE FURNISHED AND INSTALLED PER SPECIFICATION A-831.
  8. SEE PIPING PLAN M-12WT01 (ZONE B-5) FOR PHYSICAL LOCATION OF KYNAR LINED PIPE. SPOOL PIECE SHALL BE DOW KYNAR LINED PIPE.
  9. PRESSURE SWITCH SHUTS PUMP OFF ON HIGH DISCHARGE PRESSURE.
  10. CURRENTLY A BULLS-EYE SIGHT GLASS IS PROVIDED.
  11. BALL VALVES V0089 AND V0090 ARE STAINLESS STEEL.
  12. HOSE TO BE INSTALLED FOR FLUSHING WHEN REQUIRED.

**REFERENCE DRAWINGS**

PROCESS FLOW DIAGRAM M-11WT01  
P & ID M-12WT01



USAR FIG. 9.2-25-01

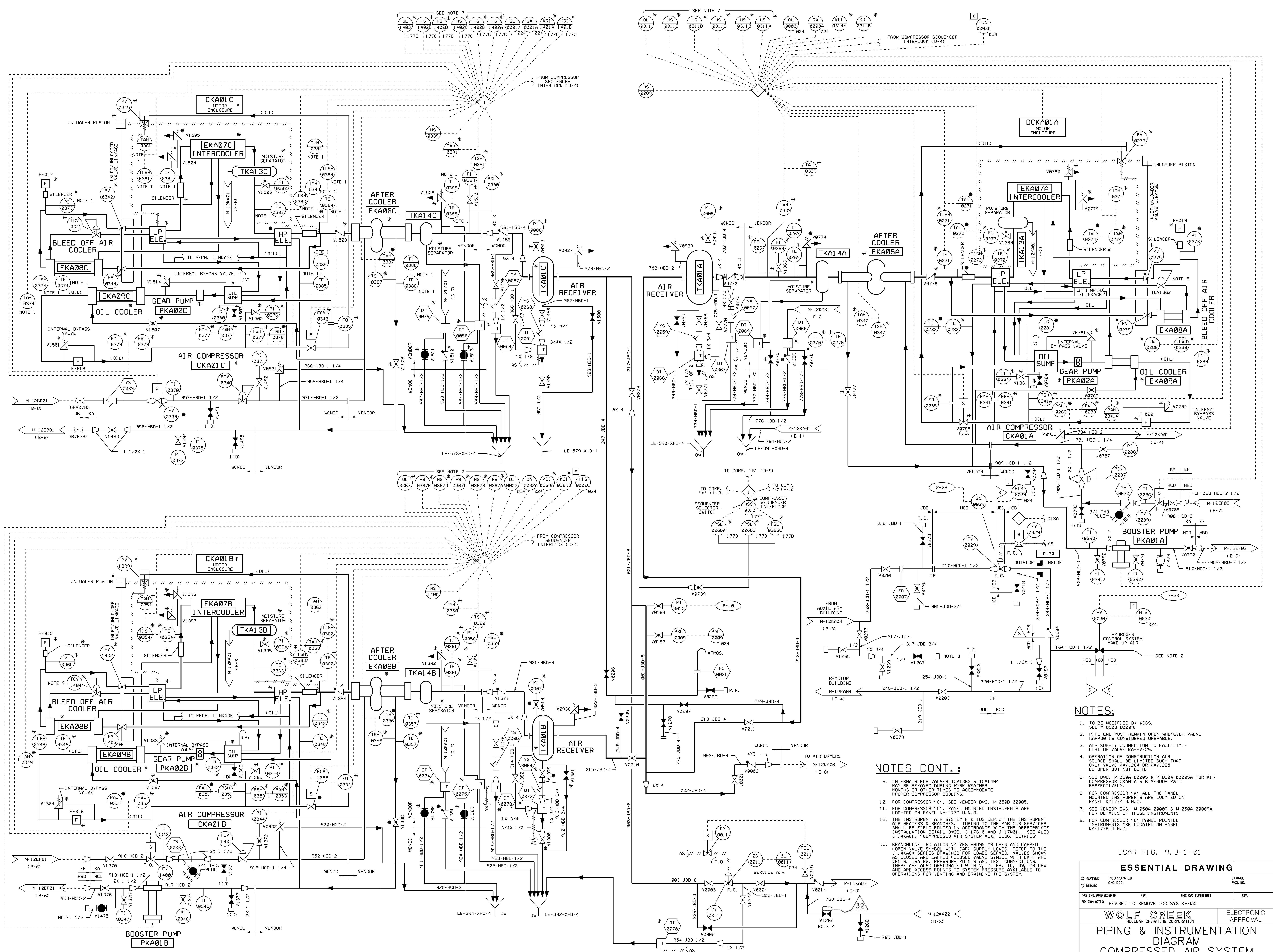
**ESSENTIAL DRAWING**

REVISED	INCORPORATED	CR 59362	CHANGE
ISSUED	CRG.DOC.		PLG.ND.
THIS DWG. SUPERSEDES	REV.	THIS DWG. SUPERSEDES	REV.
REVISION NOTES			
WOLF CREEK		ELECTRONIC APPROVAL	
WASTE WATER TREATMENT FACILITY			
P & ID			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12WT03	13	

M-0823 SHY.2 (D-11)

Scale 1/4" = 1'-0"





- NOTES:**
1. TO BE MODIFIED BY WGS.
  2. SEE M-0500-00009.
  3. PIPE END MUST REMAIN OPEN WHENEVER VALVE KNOWS IS CONSIDERED OPERABLE.
  4. AIR SUPPLY CONNECTION TO FACILITATE LLRT OF VALVE KA-FV-29.
  5. OPERATION OF CONSTRUCTION AIR SOURCE SHALL BE LIMITED SUCH THAT ONLY VALVE KAVI284 OR KAVI285 BE OPEN BUT NOT BOTH.
  6. SEE DWG. M-050A-00005 & M-050A-00005A FOR AIR COMPRESSOR CKA01A & B VENDOR P&ID RESPECTIVELY.
  7. FOR COMPRESSOR 'A' ALL THE PANEL MOUNTED INSTRUMENTS ARE LOCATED ON PANEL KA-177A U.N.O.
  8. FOR COMPRESSOR 'B' PANEL MOUNTED INSTRUMENTS ARE LOCATED ON PANEL KA-177B U.N.O.
- NOTES CONT.:**
9. INTERNALS FOR VALVES TCVI362 & TCVI404 MAY BE REMOVED DURING WARM WEATHER MONTHS OR OTHER TIMES TO ACCOMMODATE PROPER COMPRESSOR COOLING.
  10. FOR COMPRESSOR 'C', SEE VENDOR DWG. M-0500-00005.
  11. FOR COMPRESSOR 'C', PANEL MOUNTED INSTRUMENTS ARE LOCATED ON PANEL KA-177C U.N.O.
  12. THE INSTRUMENT AIR SYSTEM P&ID DEPICT THE INSTRUMENT AIR HEADERS & BRANCHES. TUBING TO THE VARIOUS SERVICES SHALL BE FIELD ROUNDED IN ACCORDANCE WITH THE APPROPRIATE INSTALLATION DETAIL DWGS. J-17010 AND J-17011. SEE ALSO J-14KAB1, "COMPRESSED AIR SYSTEM AUX. BLDG. DETAILS".
  13. BRANCHLINE ISOLATION VALVES SHOWN AS OPEN AND CAPPED (OPEN VALVE SYMBOL WITH CAPP SUPPLY LOADS; REFER TO THE J-14KABX SERIES DRAWINGS FOR LOADS SERVED). VALVES SHOWN AS CLOSED AND CAPPED (CLOSED VALVE SYMBOL WITH CAPP VENT, DRAIN, PRESSURE POINTS AND TEST CONNECTIONS). THESE ARE ALSO DESIGNATED WITH V.D., P.P., T.C., D.W. OR DRW AND ARE ACCESS POINTS TO SYSTEM PRESSURE AVAILABLE TO OPERATIONS FOR VENTING AND DRAINING THE SYSTEM.

USAR FIG. 9, 3-1-01

**ESSENTIAL DRAWING**

REVISED	INCORPORATED	CHANGE
ISSUED	D.C.D.	PKG. NO.

THIS DWG. SUPERSEDES: REV. THIS DWG. SUPERSEDES: REV.

REVISION NUMBER: REVISED TO REMOVE TCC SYS KA-130

**WOLF CREEK**  
NUCLEAR OPERATING CORPORATION

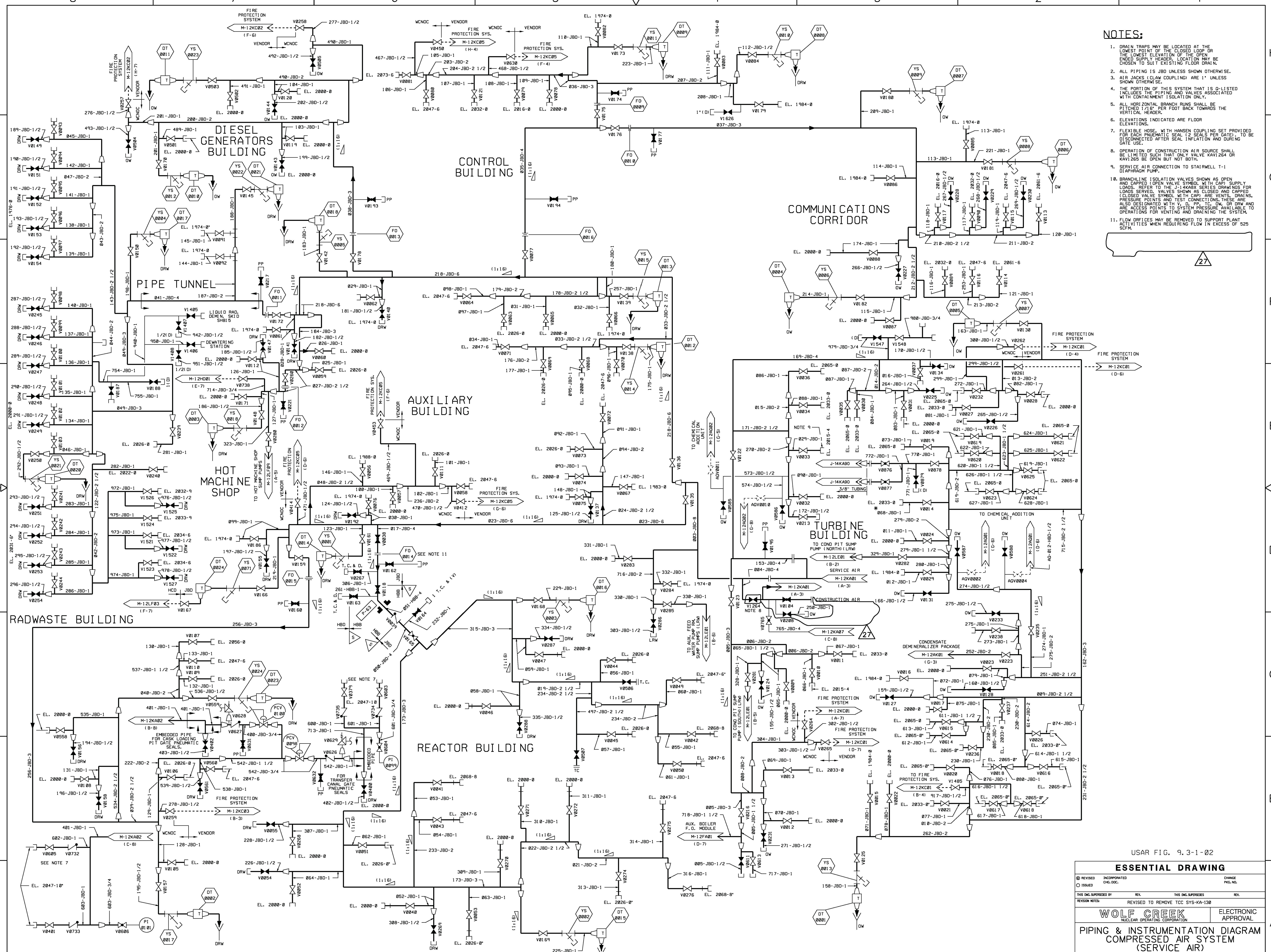
**ELECTRONIC APPROVAL**

**PIPING & INSTRUMENTATION DIAGRAM**  
**COMPRESSED AIR SYSTEM**

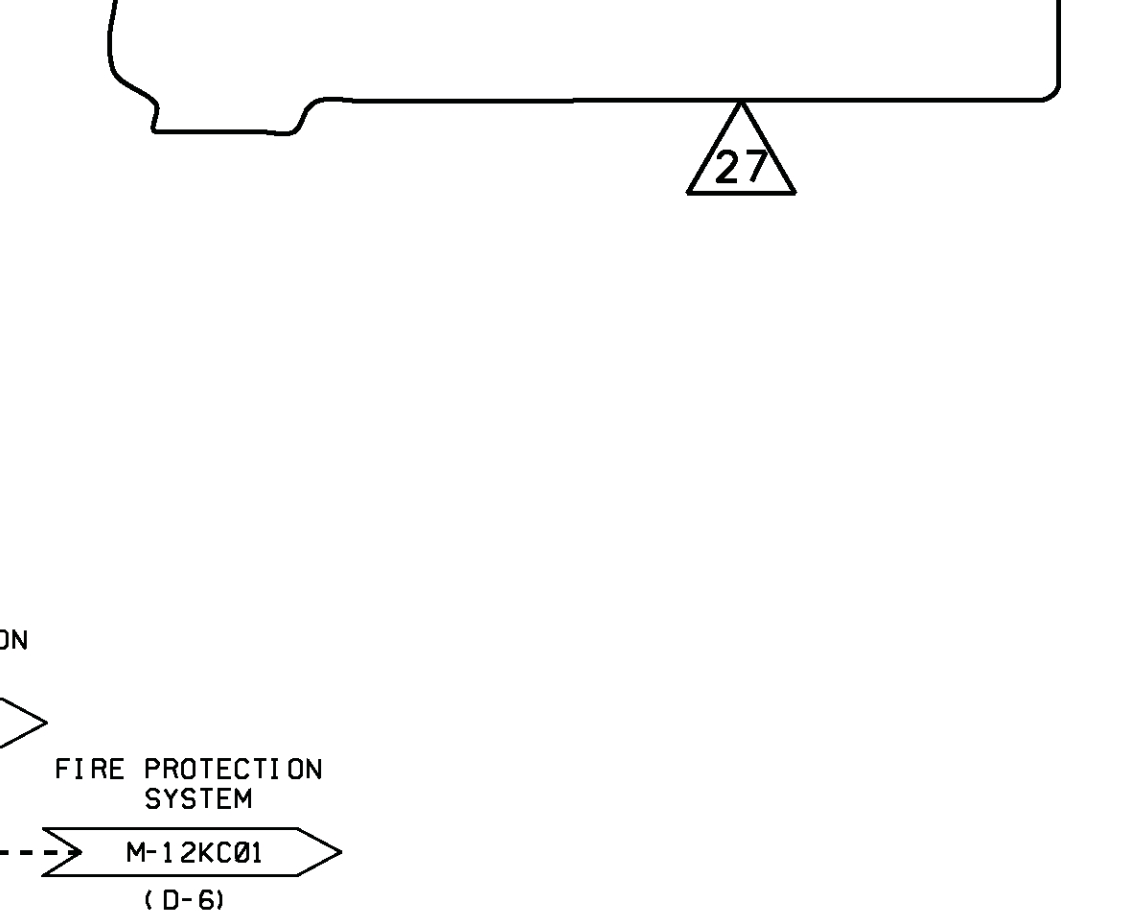
SCALE: NONE DRAWING NUMBER: M-12KA01 SHEET: 32

3444 E 32  
M-12KA01-1-32





- NOTES:**
- DRAIN TRAPS MAY BE LOCATED AT THE LOWEST POINT OF THE CLOSED LOOP OR THE LOWEST ELEVATION OF THE OPEN ENDED SUPPLY HEADER. LOCATION MAY BE CHOSEN TO SUIT EXISTING FLOOR DRAIN.
  - ALL PIPING IS J-BOW UNLESS SHOWN OTHERWISE.
  - AIR JACKS (CLAW COUPLING) ARE 1" UNLESS SHOWN OTHERWISE.
  - THE PORTION OF THIS SYSTEM THAT IS Q-LISTED INCLUDES THE PIPING AND VALVES ASSOCIATED WITH CONTAINMENT ISOLATION ONLY.
  - ALL HORIZONTAL BRANCH RUNS SHALL BE PITCHED 1/20" PER FOOT BACK TOWARDS THE VERTICAL HEADER.
  - ELEVATIONS INDICATED ARE FLOOR ELEVATIONS.
  - FLEXIBLE HOSE, WITH HANSEN COUPLING SET PROVIDED FOR EACH PNEUMATIC SEAL (2 SEALS PER GATE), TO BE DISCONNECTED AFTER SEAL INFLATION AND DURING GATE USE.
  - OPERATION OF CONSTRUCTION AIR SOURCE SHALL BE LIMITED SUCH THAT ONLY VALVE KAVI 264 OR KAVI 265 BE OPEN BUT NOT BOTH.
  - SERVICE AIR CONNECTION TO STAIRWELL T-1 DIAPHRAGM PUMP.
  - BRANCHLINE ISOLATION VALVES SHOWN AS OPEN AND CAPPED (OPEN VALVE SYMBOL WITH CAP) SUPPLY AND LOADS. REFER TO THE J-14KAX SERIES DRAWINGS FOR LOADS SERVED. VALVES SHOWN AS CLOSED AND CAPPED (CLOSED VALVE SYMBOL WITH CAP) ARE VENTS, DRAINS, PRESSURE POINTS AND TEST CONNECTIONS. THESE ARE ALSO DESIGNATED WITH 'V', 'PP', 'TC', 'OW', OR 'DR' AND ARE ACCESS POINTS TO SYSTEM PRESSURE AVAILABLE TO OPERATIONS FOR VENTING AND DRAINING THE SYSTEM.
  - FLOW ORIFICES MAY BE REMOVED TO SUPPORT PLANT ACTIVITIES WHEN REQUIRING FLOW IN EXCESS OF 525 SCFM.

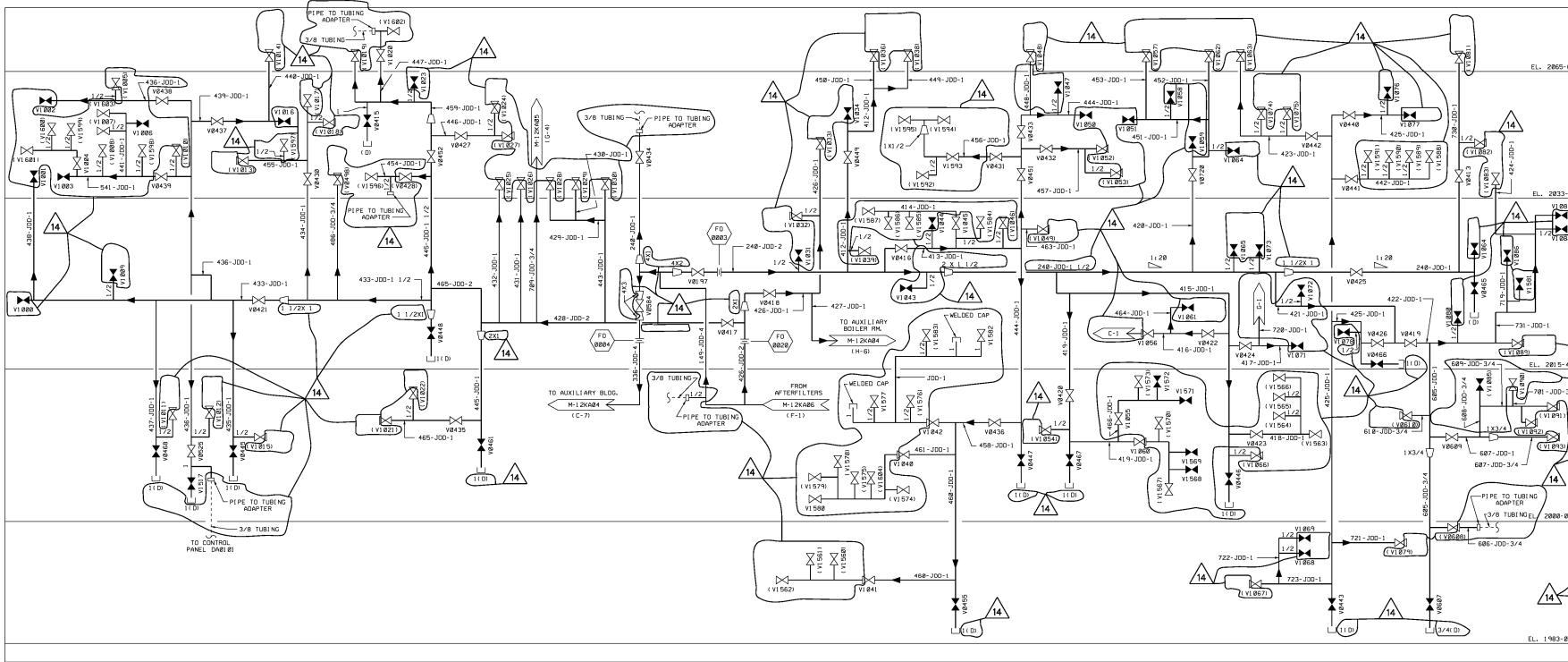


USAR FIG. 9.3-1-02

**ESSENTIAL DRAWING**

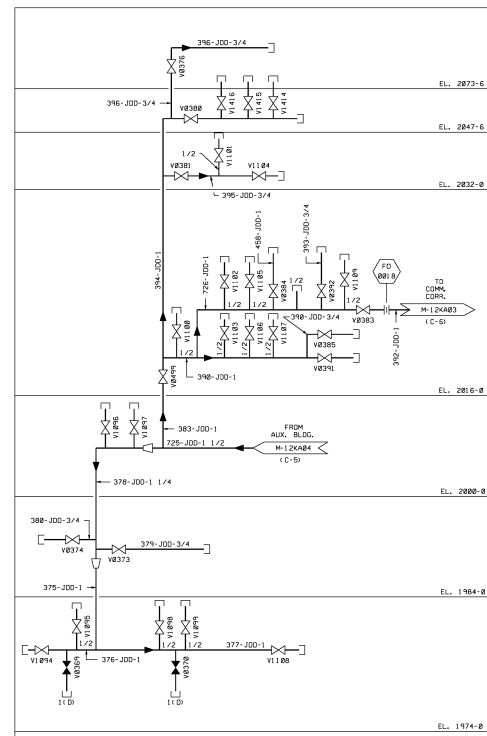
REVISION	INCORPORATED	CHANGE
ISSUED	ENG. DOC.	PRG. NO.
THIS ENG. SUPERSEDES	REV.	THIS ENG. SUPERSEDES
REVISION NOTES	REVISED TO REMOVE TCC SYS-KA-130	
<b>WOLF CREEK</b>		<b>ELECTRONIC APPROVAL</b>
NUCLEAR OPERATING CORPORATION		
<b>PIPING &amp; INSTRUMENTATION DIAGRAM</b>		
<b>COMPRESSED AIR SYSTEM</b>		
<b>(SERVICE AIR)</b>		
SCALE	DRAWING NUMBER	SHEET
NONE	M-12KA02	27
		34X4 E. SIZE



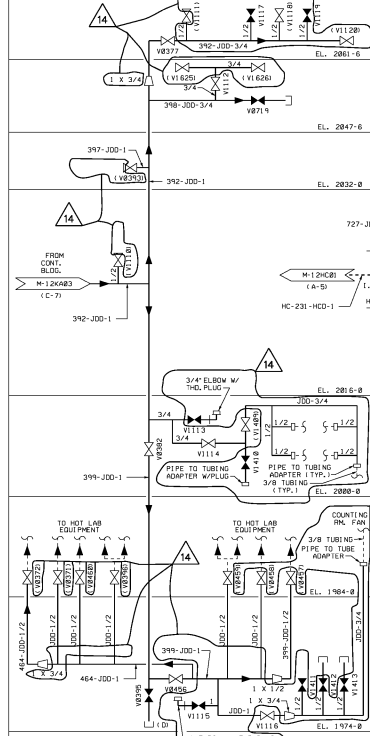


- NOTES**
1. THE INSTRUMENT AIR SYSTEM P & I LINE SYMBOLS AND THE INSTRUMENTATION BOUNDARIES SHOWN IN THIS DRAWING SHALL BE FIELD MOUNTED IN ACCORDANCE WITH THE APPROPRIATE INSTALLATION DETAIL DESIGNS, SPECIFICATIONS AND LATER.
  2. THE HORIZONTAL PIPE RUNS SHALL SHOW A MINIMUM OF 1/8" PER FOOT UNLESS OTHERWISE NOTED.
  3. ALL BRANCH LINES AND TEES ARE CAPPED UNLESS OTHERWISE NOTED. INSTRUMENTATION BOUNDARIES AND TO PARALLEL SYSTEMS SHALL BE FIELD MOUNTED. CAPS ARE REQUIRED WHEN INSTRUMENT AIR TUBING IS FIELD MOUNTED AND CONNECTED TO THE INSTRUMENT AIR SYSTEM.
  4. BRANCHES WITH FLOW LINE SEQUENCE NUMBERS ARE CAPPED TEES ONLY.
  5. DRAIN LINES CARRY THE LINE BEING DRAINED TO THE LINE UNLESS OTHERWISE INDICATED.
  6. VALVE NUMBERS V1800 THROUGH V1899 AND THE ASSOCIATED INSTRUMENTATION VALUES ARE NOT SHOWN ON THIS DRAWING. THESE VALUES ARE SHOWN ON GRAPHIC C INSTRUMENT AIR DRAWINGS.
  7. DELETED
  8. PIPE CONTROL AND SEPARATE BUILDINGS BOUNDARIES ARE SHOWN BY THE SYMBOLS AS OPEN AND CAPPED OPEN VALVE SYMBOLS. THESE SYMBOLS ARE SHOWN IN THE P&ID SERIES DRAWINGS FOR LOADS SHOWN IN THIS DRAWING. REFER TO THE INSTRUMENTATION BOUNDARIES AND TO PARALLEL SYSTEMS. INSTRUMENTATION VALUES ARE NOT SHOWN ON THIS DRAWING. THESE VALUES ARE SHOWN ON GRAPHIC C INSTRUMENT AIR DRAWINGS.
  9. FOR TUBING AND CONNECTION CORROSION PROTECTION IN A MINIMUM OF 1/8" PER FOOT UNLESS OTHERWISE NOTED. INSTRUMENTATION BOUNDARIES AND TO PARALLEL SYSTEMS SHALL BE FIELD MOUNTED. CAPS ARE REQUIRED WHEN INSTRUMENT AIR TUBING IS FIELD MOUNTED AND CONNECTED TO THE INSTRUMENT AIR SYSTEM.

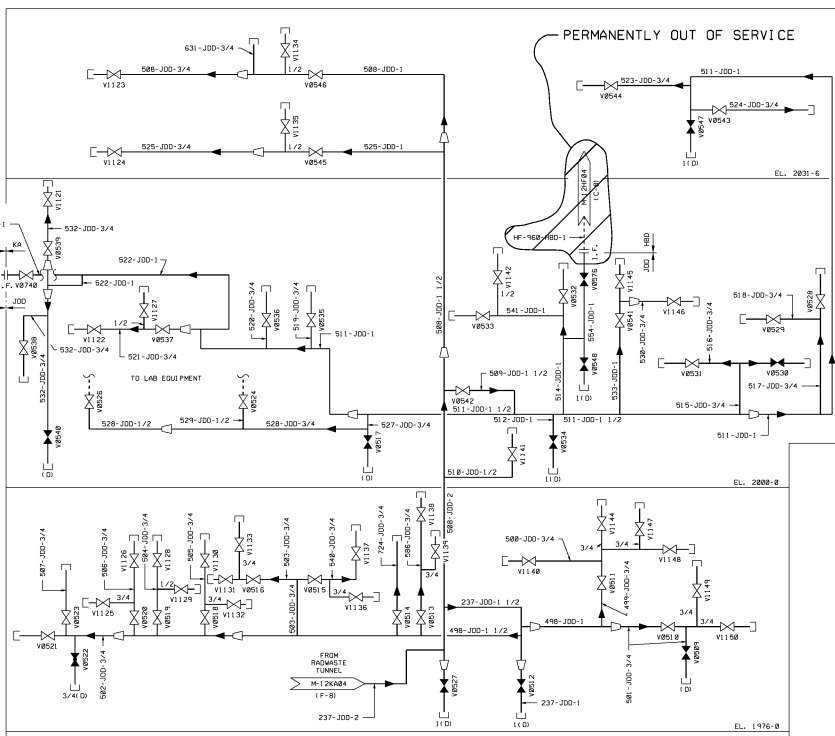
**TURBINE BUILDING**



**CONTROL BUILDING**



**COMMUNICATIONS CORRIDOR**



**RADWASTE BUILDING**

USAR FIG. 9.3-1-03

**ESSENTIAL DRAWING**

REVISIONS: REV. INCORPORATED CHANGES REV. INCORPORATED CHANGES

DATE: 10/1/03

DESIGNED BY: [Signature]

CHECKED BY: [Signature]

APPROVED BY: [Signature]

**WOLF CREEK**  
NUCLEAR OPERATIONS

**ELECTRONIC APPROVAL**

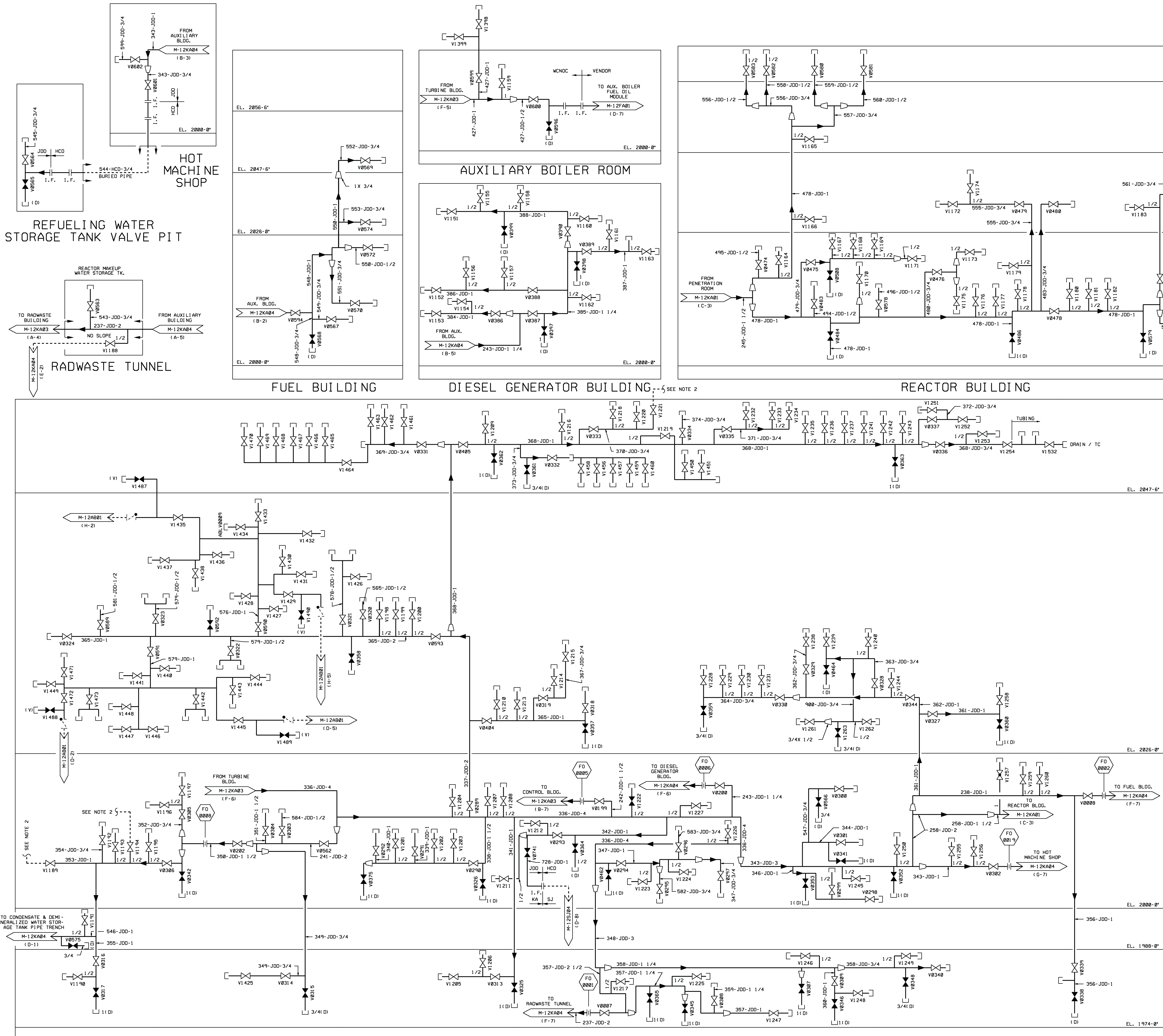
**PIPING & INSTRUMENTATION DIAGRAM**

**INSTRUMENT AIR SYSTEM**

DRAWING NUMBER: M-12KA03

SHEET: 14

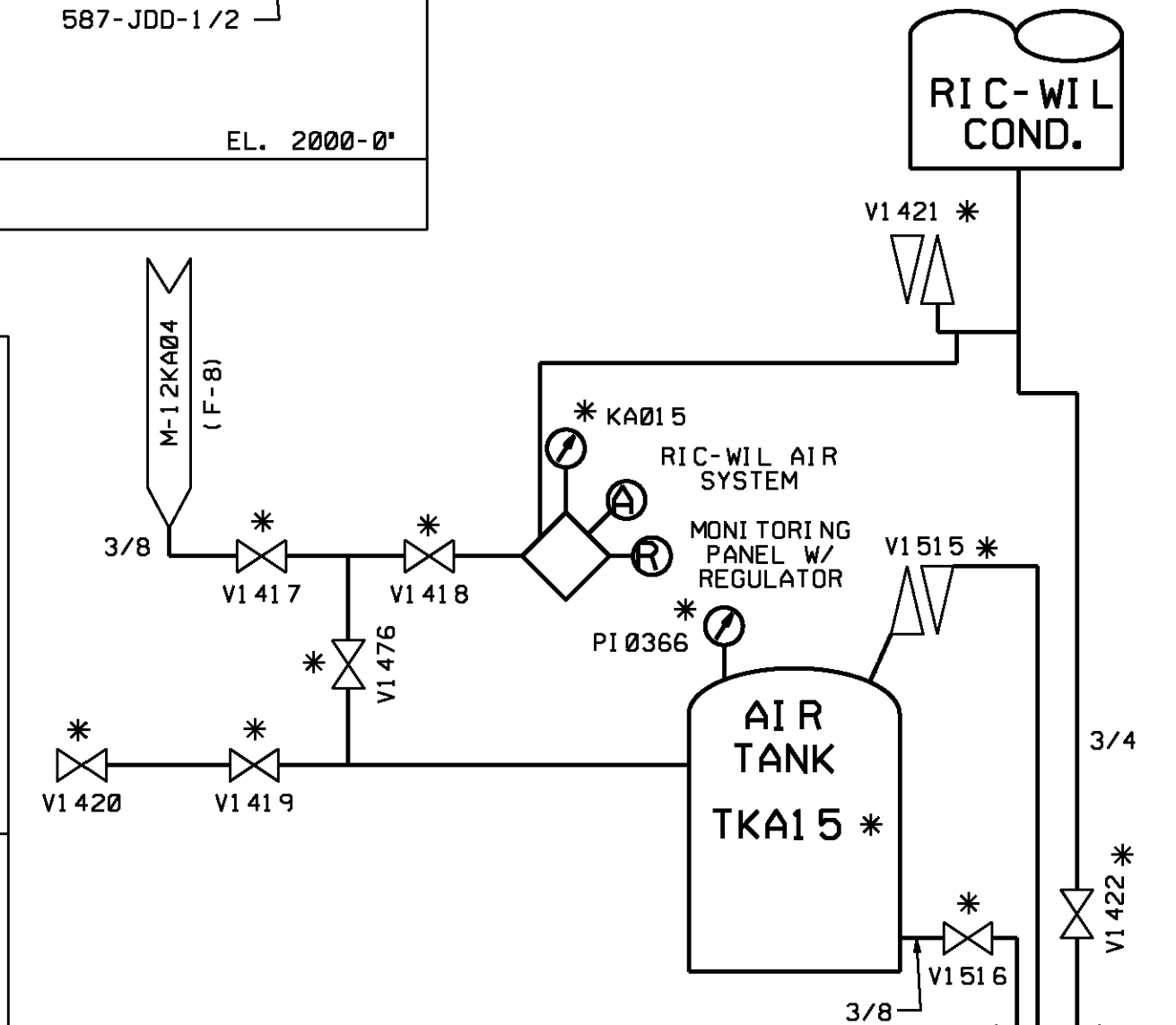
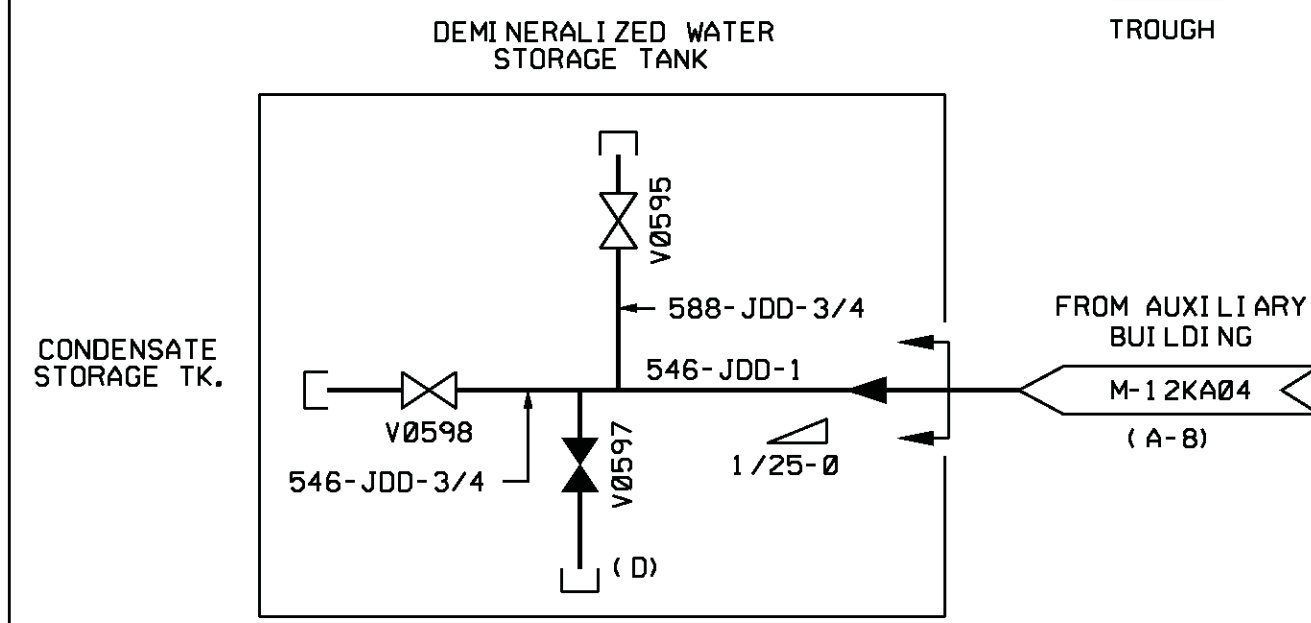




**NOTES**

- FOR NOTES SEE DWG. M-12KA03.
- SEE DWG. J-14KA01 FOR INSTRUMENT VALVES DOWNSTREAM OF ISOLATION VALVES.
- BRANCHLINE ISOLATION VALVES SHOWN AS OPEN AND CAPPED (OPEN VALVE SYMBOL WITH CAP) SUPPLY LOADS. REFER TO THE J-14KA03 SERIES DRAWINGS FOR LOADS SERVED. VALVES SHOWN AS CLOSED AND CAPPED (CLOSED VALVE SYMBOL WITH CAP) ARE VENTS, DRAINS, PRESSURE POINTS AND TEST CONNECTIONS (EXCEPT FOR VALVE V1222, WHICH IS IN ACCORDANCE WITH J-14KA01). THESE ARE ALSO DESIGNATED WITH 'V', 'D', 'P', 'T', 'W', 'OR DRAW AND ARE ACCESS POINTS TO SYSTEM PRESSURE AVAILABLE TO OPERATIONS FOR VENTING AND DRAINING THE SYSTEM.

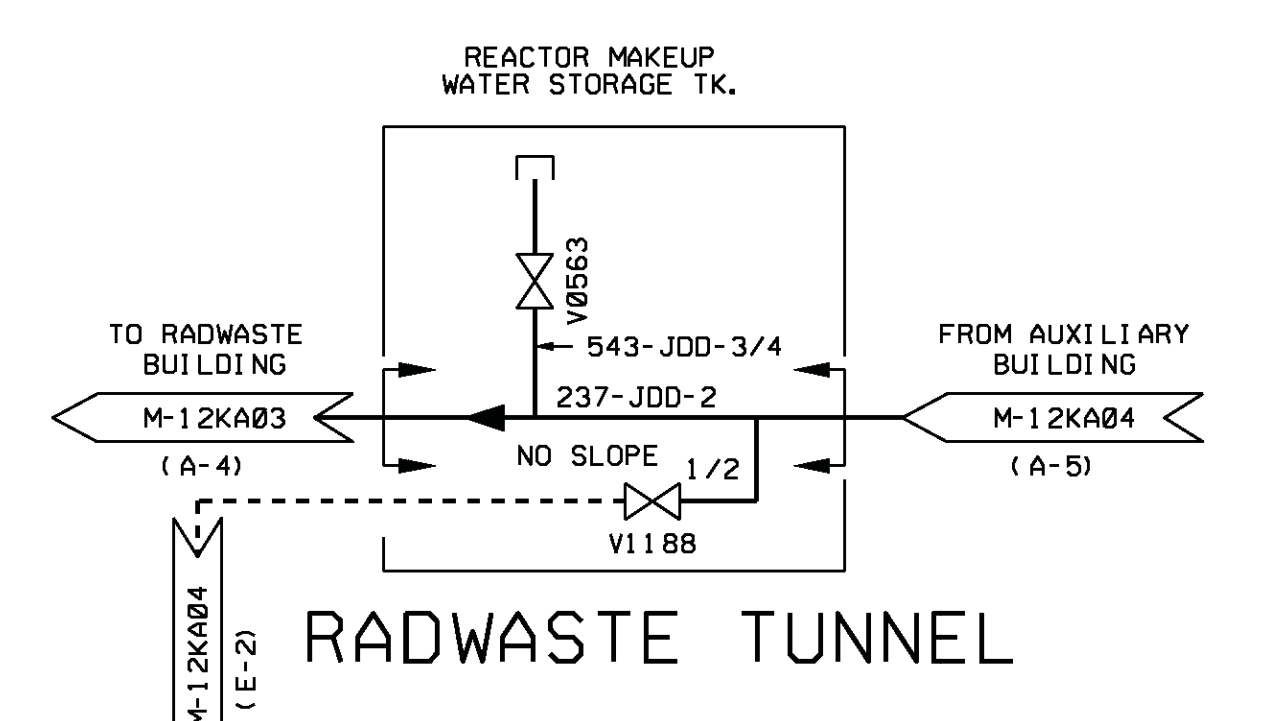
**CONDENSATE & DEMINERALIZED WATER STORAGE TANKS PIPE TRENCH**



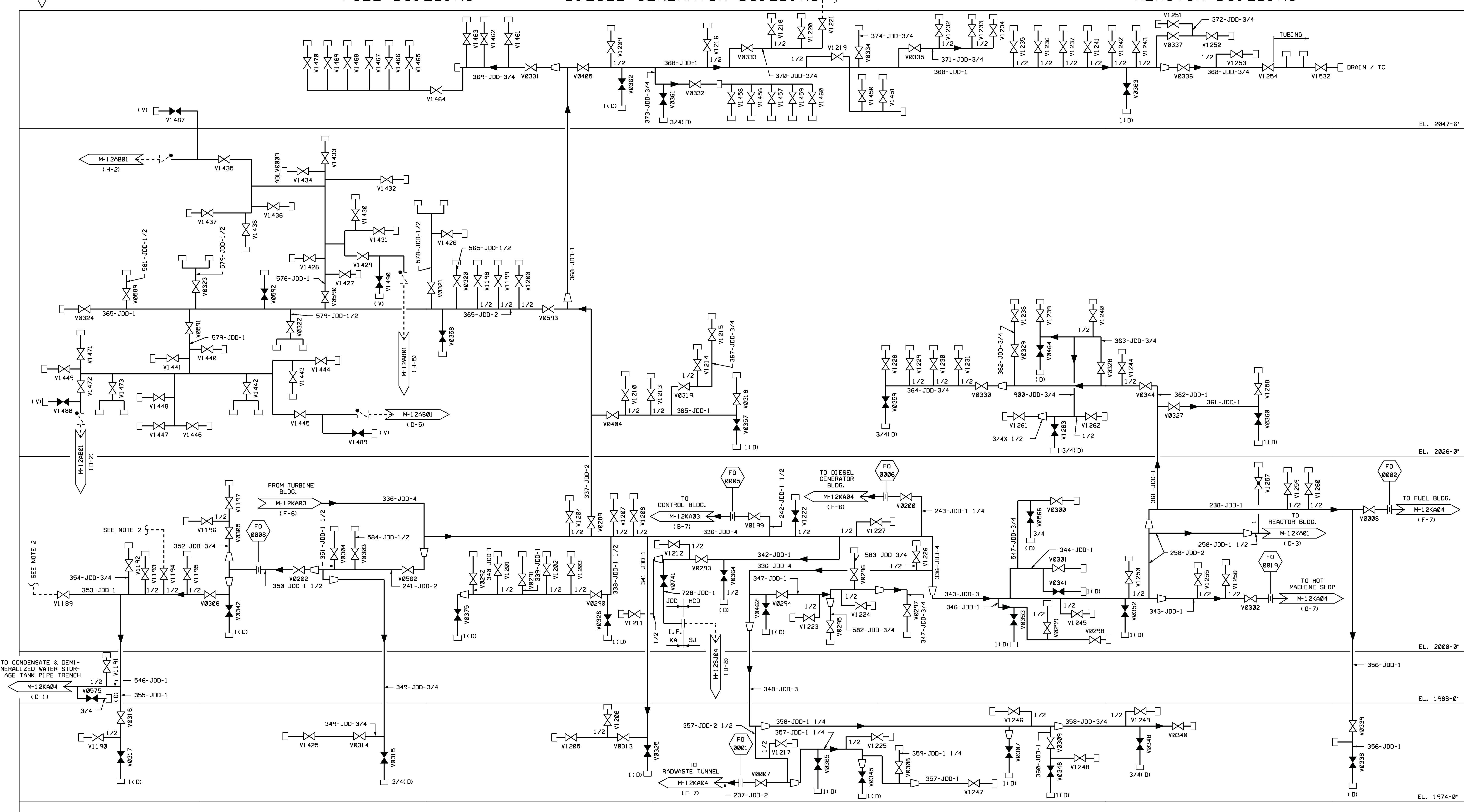
<b>ESSENTIAL DRAWING</b>			
REVISED	INCORPORATED	CHANGE	NO.
ISSUED	ORIG. DOC.	PKG. NO.	
THIS ENGR. SUPERSEDES		REV.	THIS ENGR. SUPERSEDES
REVISED USAR FIGURE NUMBER THAT WAS ERRONEOUSLY REMOVED IN A PRIOR REVISION (REF. APO5-D10, Section 6.10, Table A).		REV.	REV.
		ELECTRONIC APPROVAL	
<b>PIPING &amp; INSTRUMENTATION DIAGRAM</b>			
<b>INSTRUMENT AIR SYSTEM</b>			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12KA04	21	21

USAR FIG. 9, 3-1-04

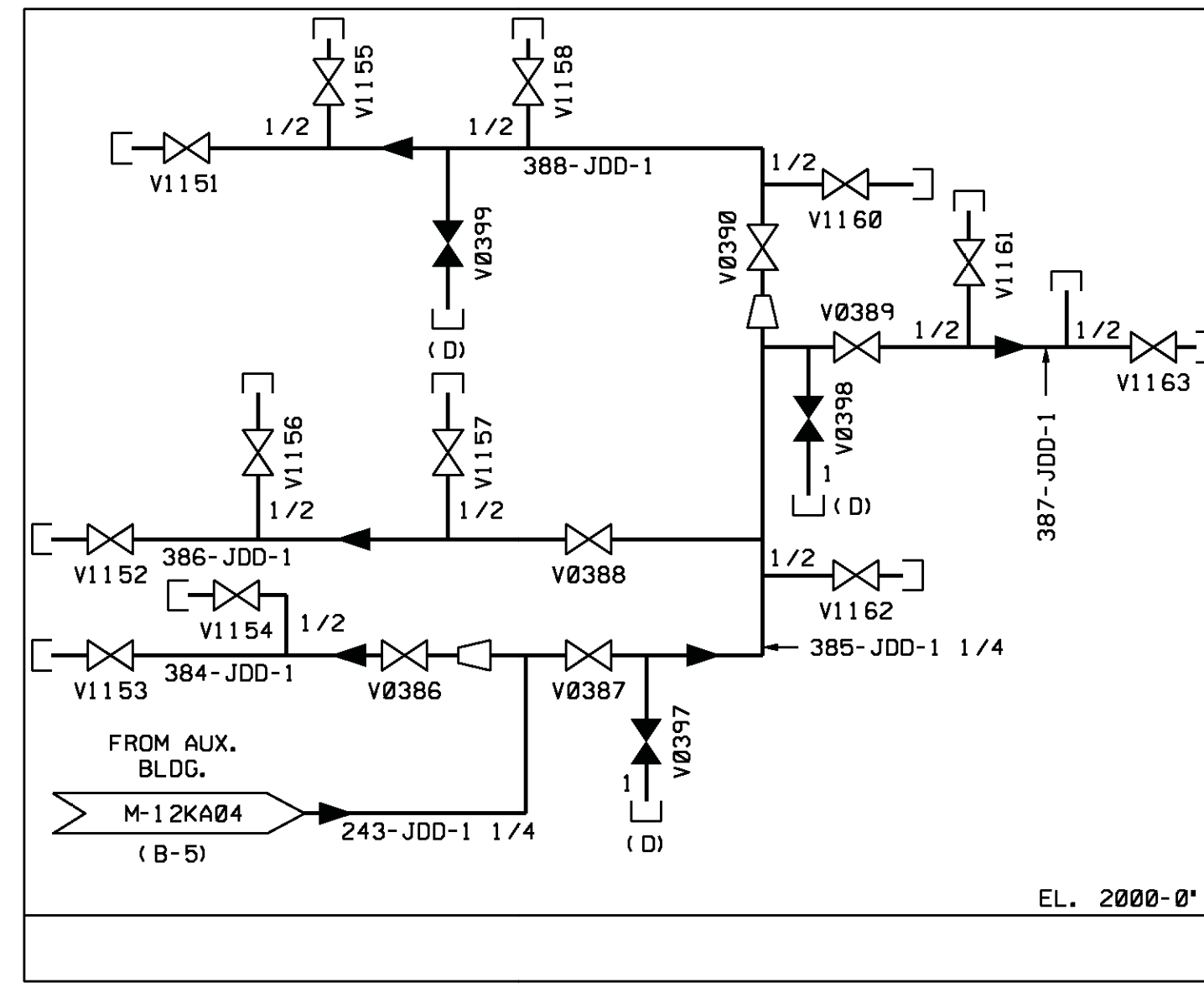
**REFUELING WATER STORAGE TANK VALVE PIT**



**RADWASTE TUNNEL**

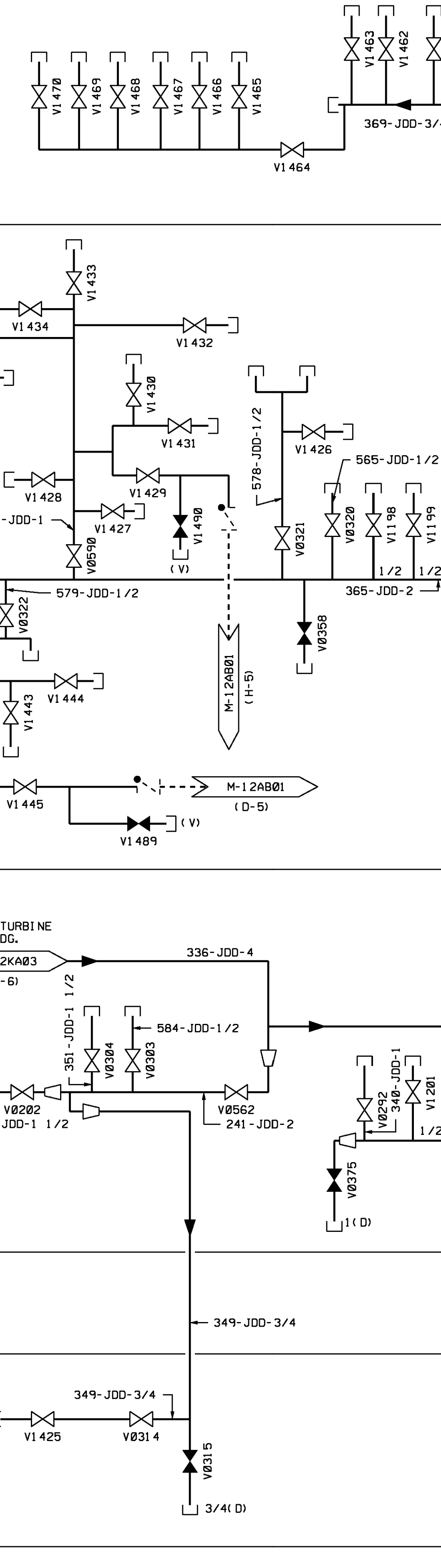


**AUXILIARY BOILER ROOM**

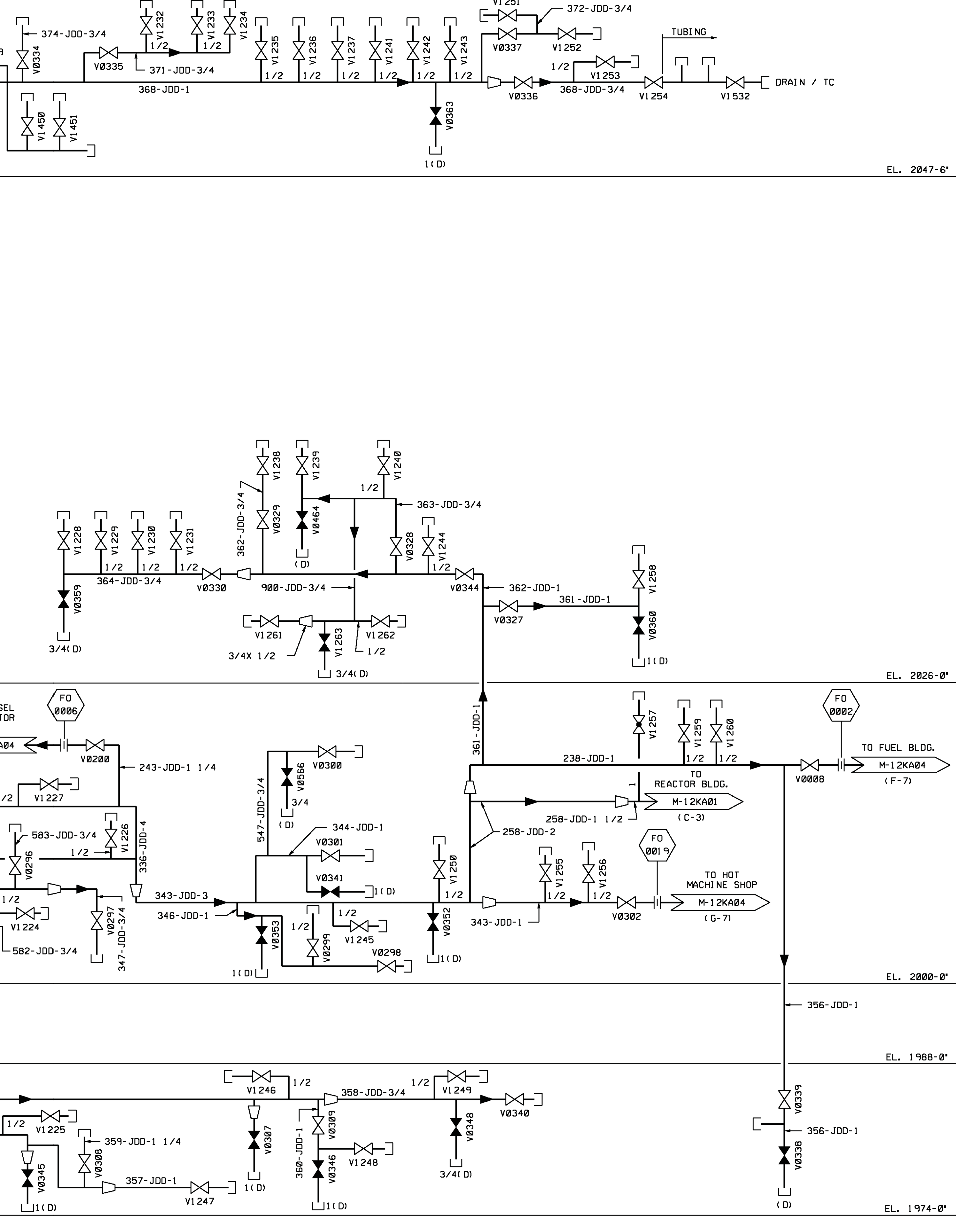


**DIESEL GENERATOR BUILDING**

**FUEL BUILDING**



**REACTOR BUILDING**



**AUXILIARY BUILDING**

**HOT MACHINE SHOP**

EL. 2000'-0"

EL. 2026'-0"

EL. 2000'-0"

EL. 2047'-6"

EL. 2068'-0"

EL. 2026'-0"

EL. 1974'-0"

EL. 2000'-0"

EL. 2026'-0"

EL. 2047'-6"

EL. 2068'-0"

EL. 2000'-0"

EL. 2026'-0"

EL. 2047'-6"

EL. 2068'-0"

EL. 2000'-0"

EL. 2026'-0"

EL. 2047'-6"

EL. 2068'-0"

EL. 2000'-0"

EL. 2026'-0"

EL. 2047'-6"

EL. 2068'-0"

EL. 2000'-0"

EL. 2026'-0"

EL. 2047'-6"

EL. 2068'-0"

EL. 2000'-0"

EL. 2026'-0"

EL. 2047'-6"

EL. 2068'-0"

EL. 2000'-0"

EL. 2026'-0"

EL. 2047'-6"

EL. 2068'-0"

EL. 2000'-0"

EL. 2026'-0"

EL. 2047'-6"

EL. 2068'-0"

EL. 2000'-0"

EL. 2026'-0"

EL. 2047'-6"

EL. 2068'-0"

EL. 2000'-0"

EL. 2026'-0"

EL. 2047'-6"

EL. 2068'-0"

EL. 2000'-0"

EL. 2026'-0"

EL. 2047'-6"

EL. 2068'-0"

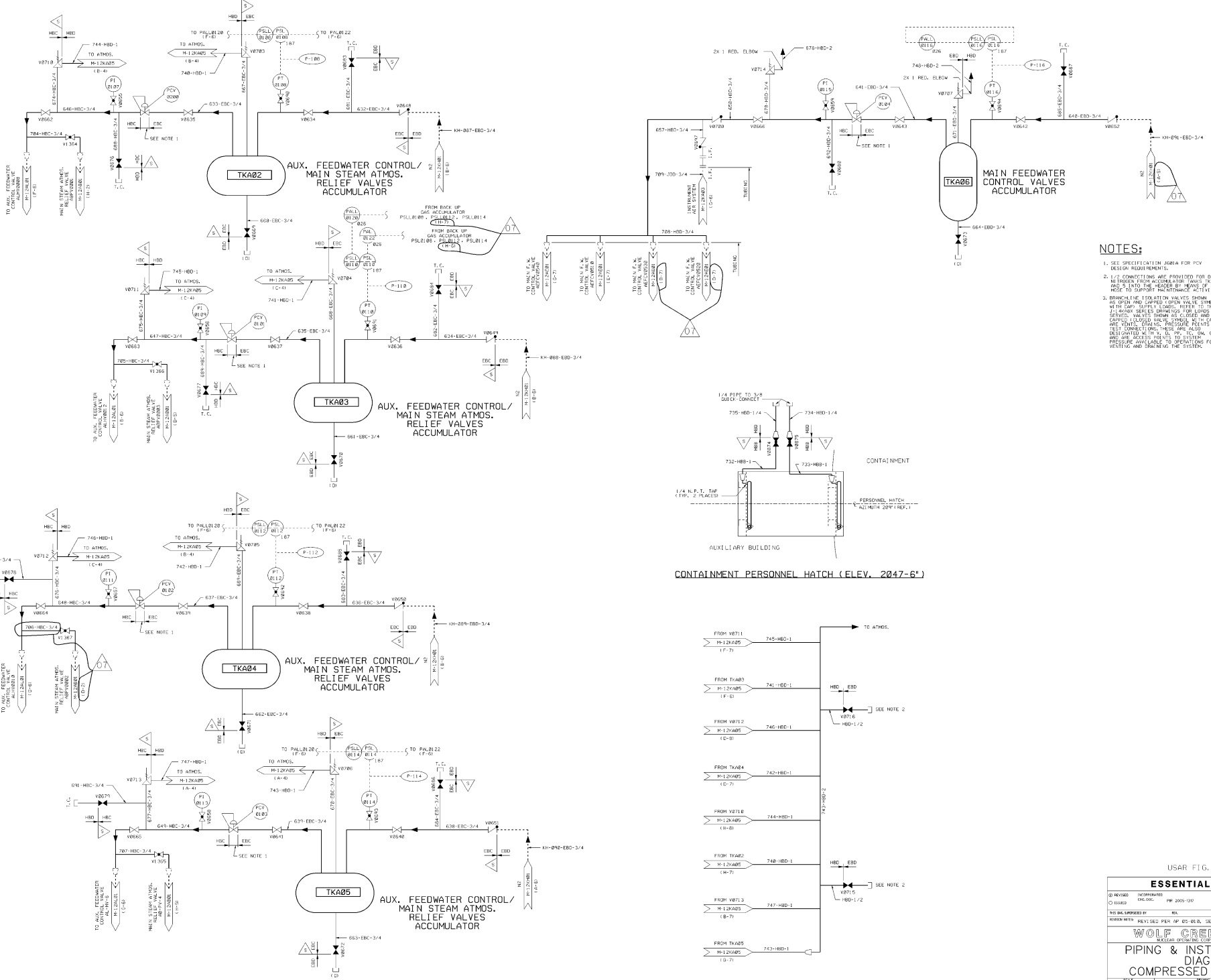
EL. 2000'-0"

EL. 2026'-0"

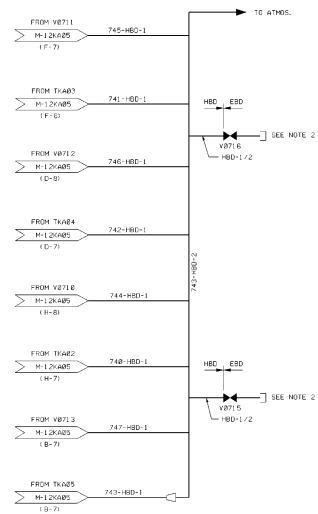
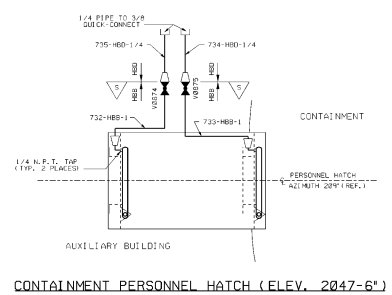
EL. 2047'-6"

EL. 2068'-0"





- NOTES:**
- SEE SPECIFICATION AREA FOR PCV DESIGN REQUIREMENTS.
  - 1/2 CONNECTIONS AND PROVIDED FOR DISCHARGING WATERS FROM ACCUMULATOR DRAIN-3/4 AND 5 INTO THE WELDER BY MEANS OF ELASIBLE HOSE TO SUPPORT MAINTENANCE ACTIVITIES ON THE TANKS.
  - BRONCHINE ISOLATION VALVES SHOWN ON OPEN AND CLOSED POSITION VALVE SYMBOL WITH SHIP SERIES LOGIC. REFER TO THE J-1400X SERIES DRAWINGS FOR LOGIC. SERVICE VALVES SHOWN AS CLOSED AND CAPPED (CLOSED VALVE SYMBOL WITH OPEN AND CLOSED POSITIONS). PRESSURE RELIEF AND TEST CONNECTIONS: THESE ARE ALSO DESIGNATED WITH AN 'R' TO INDICATE OR DRW PRESSURE APPLICABLE TO OPERATIONS FOR TESTING AND DESIGNING THE SYSTEM.



USAR FIG. 9.3-1-05

**ESSENTIAL DRAWING**

NO. 0000	REVISION	DATE	BY	CHKD.	APP. NO.
00000					
NO. 0000	REVISION	DATE	BY	CHKD.	APP. NO.
00000					

WOLF CREEK  
PIPING & INSTRUMENTATION  
DIAGRAM  
COMPRESSED AIR SYSTEM

M-12KA05

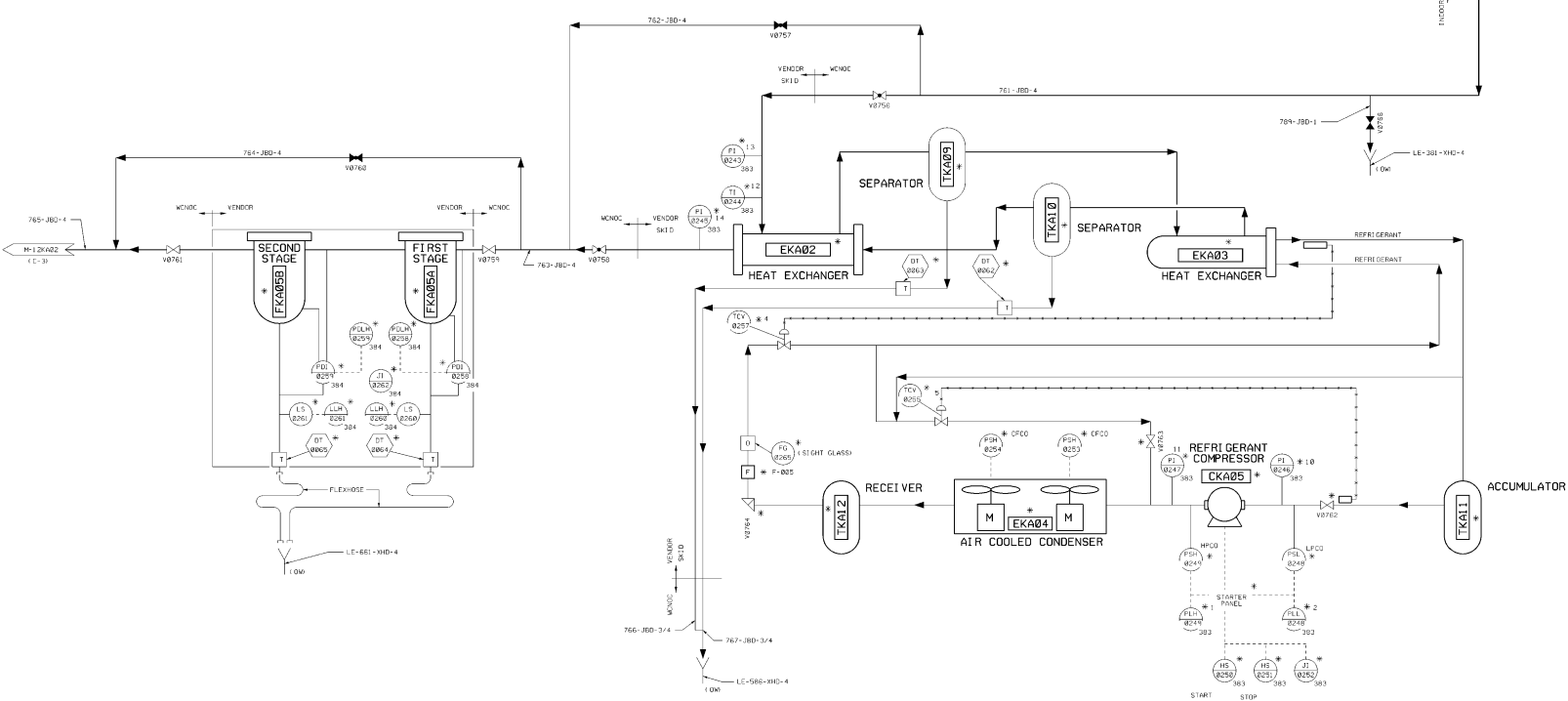
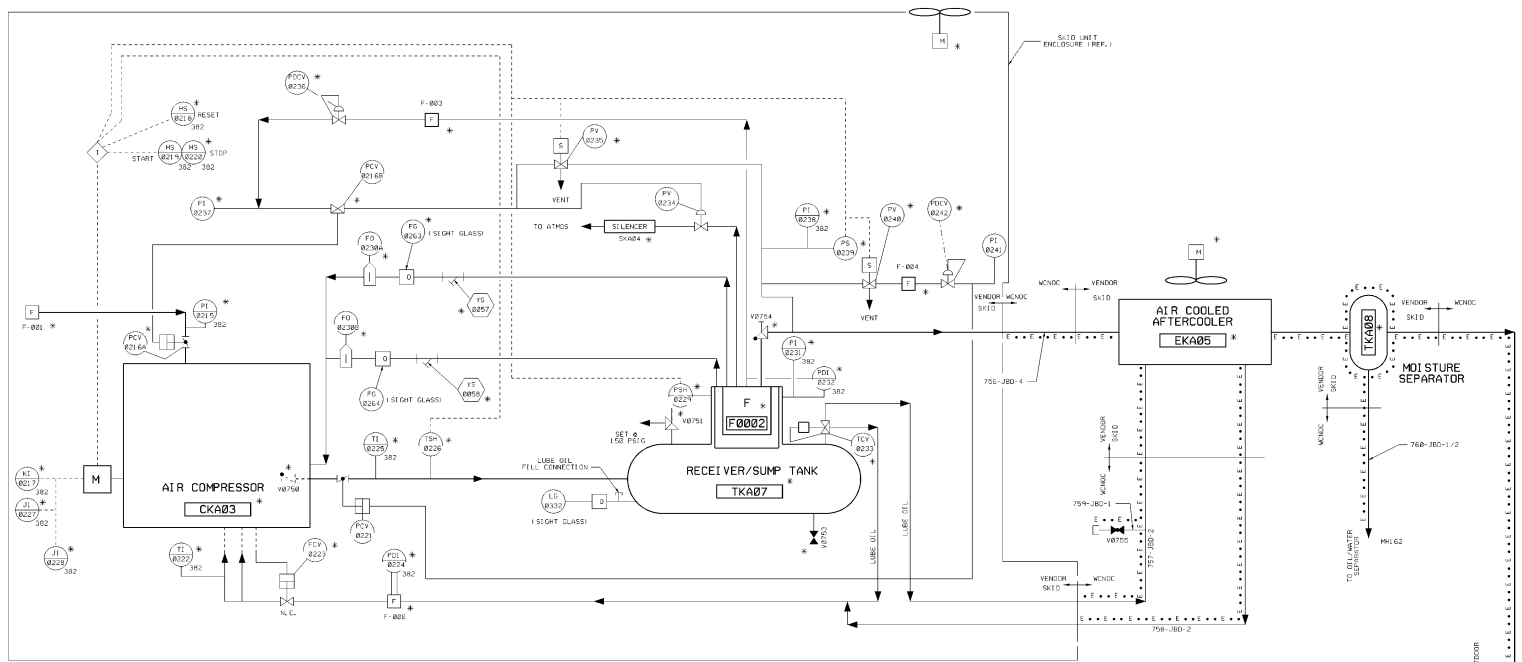
07







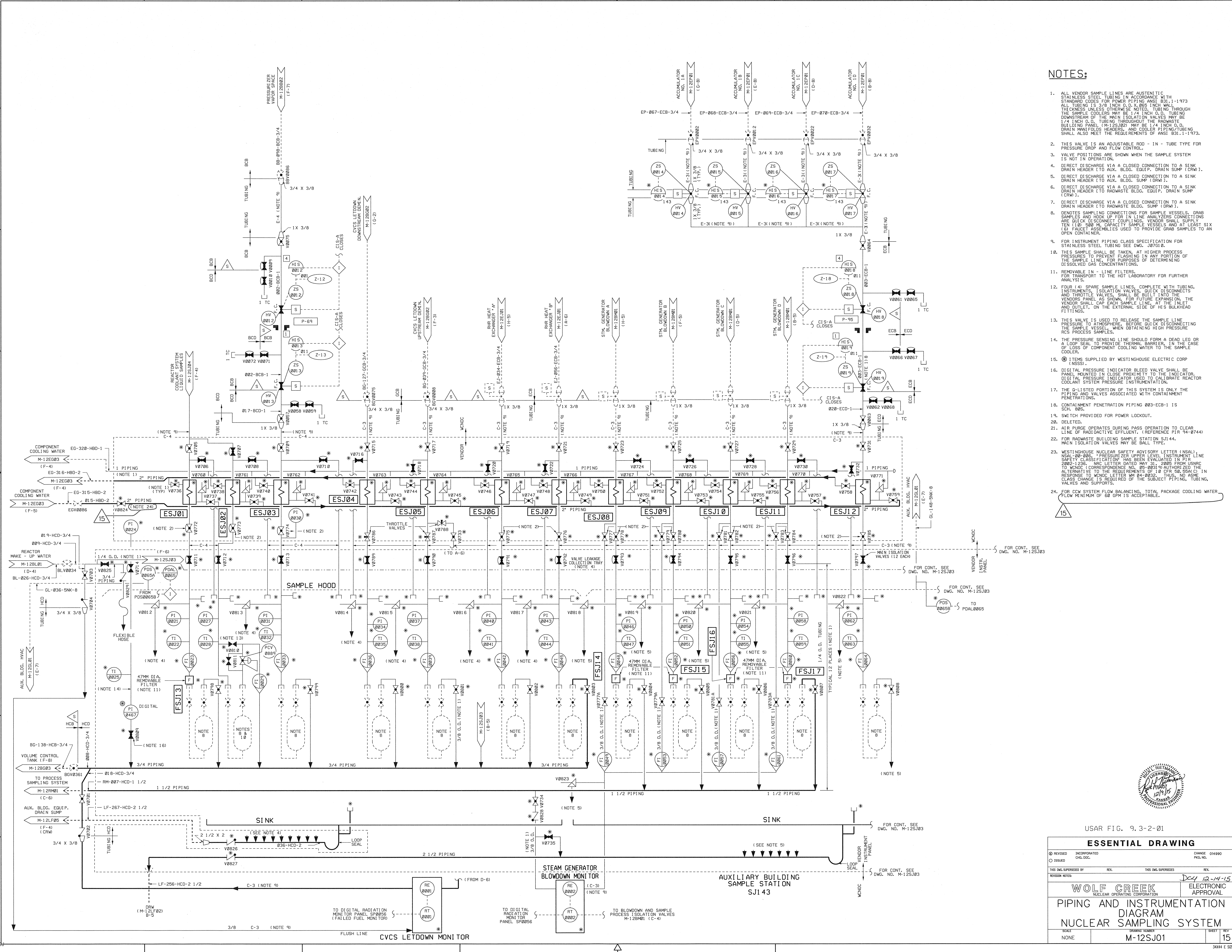
**NOTES**  
 1. FOR NOTES SEE DWG. M-12KA02 AND M-12KA03



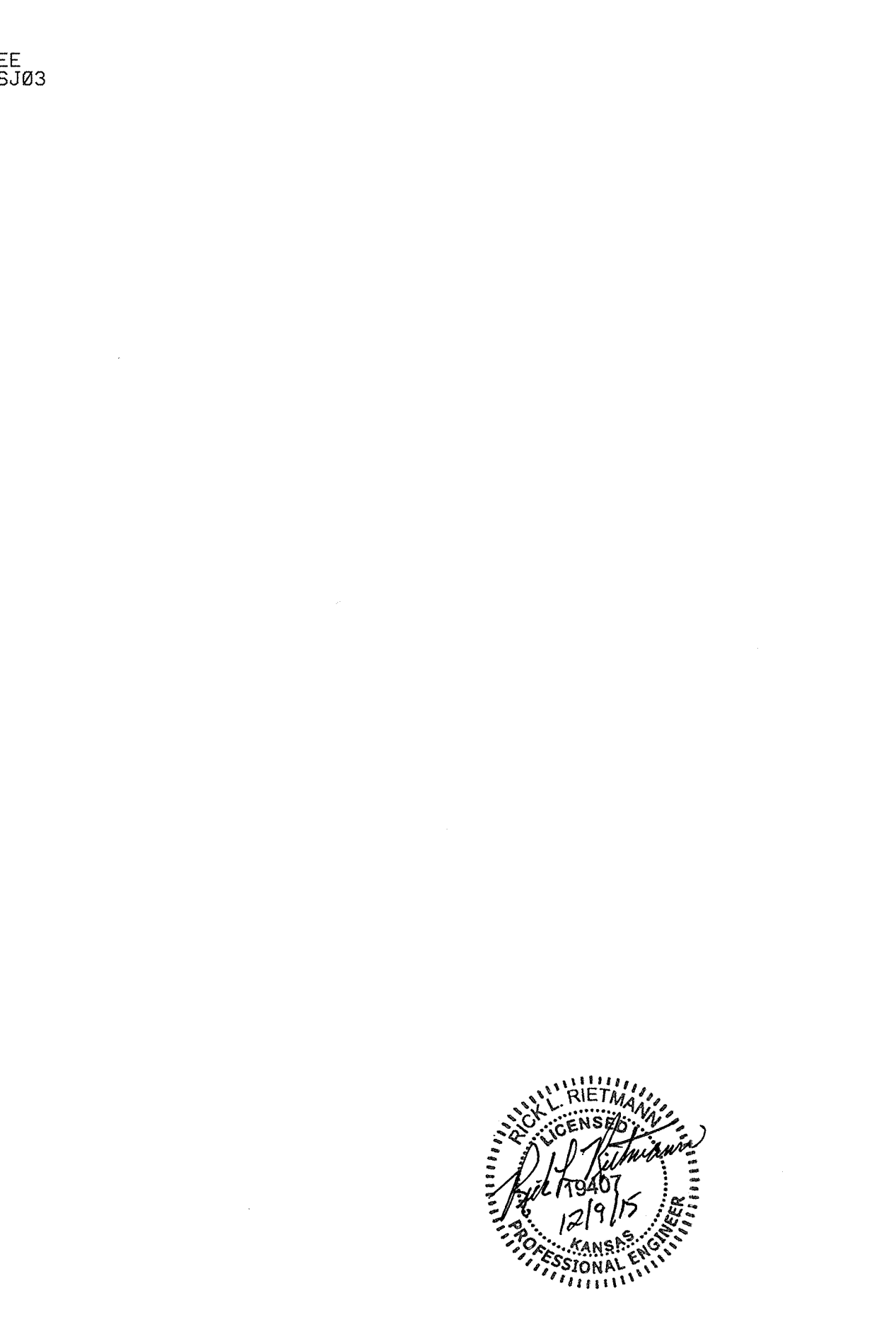
USAR FIG. 9.3-1 07

ESSENTIAL DRAWING			
© 191500	UNCLASSIFIED	DATE	07/10/07
© 151419	UNCLASSIFIED	PROJ. NO.	
THIS DOC. SUPERSEDES:		REV.	REV. NO.
REWORK W/REV. ELECTRONICALLY CONVERTED PER AP 05-01-D		ELECTRONIC APPROVAL	
WOLF CREEK Nuclear Operations Corporation		ELECTRONIC APPROVAL	
PIPING & INSTRUMENTATION DIAGRAM			
COMPRESSED AIR SYSTEM			
SCALE	DATE	SHEET	NO.
NONE	M-12KA07	101	
			3/24/07





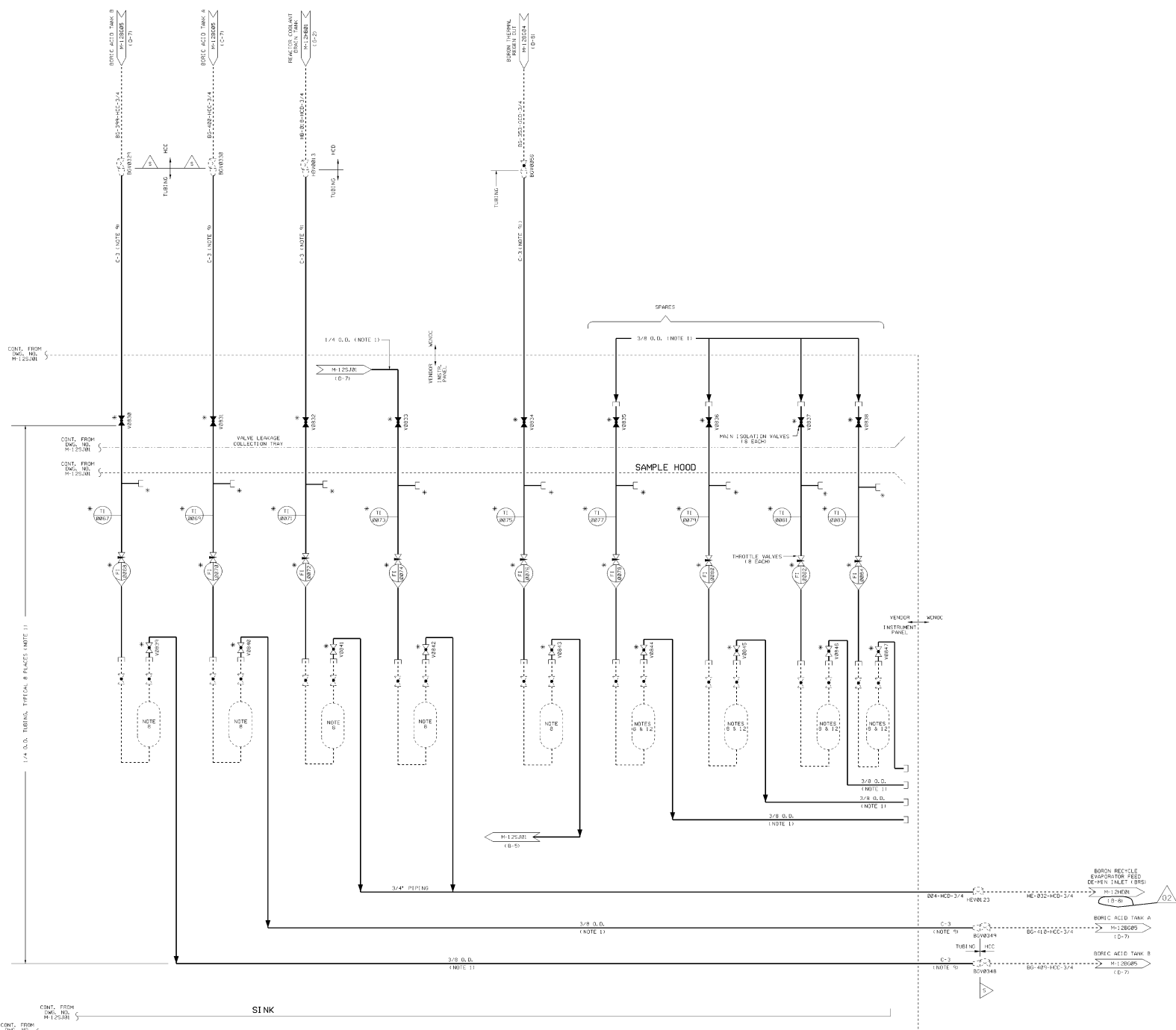
- NOTES:**
- ALL VENDOR SAMPLE LINES ARE AUSTENITIC STAINLESS STEEL TUBING IN ACCORDANCE WITH STANDARD CODES FOR POWER PIPING ANSI B31.1-1973. ALL TUBING IS 3/8 INCH O.D. X .065 INCH WALL. THE KNEES UNLESS OTHERWISE NOTED. TUBING THROUGH THE SAMPLE COOLERS MAY BE 1/4 INCH O.D. TUBING DOWNSTREAM OF THE MAIN ISOLATION VALVES MAY BE 1/4 INCH O.D. TUBING THROUGHOUT THE RADWASTE BUILDING PANEL (M-12S302) MAY BE 1/4 INCH O.D. DRAIN MANIFOLD HEADERS, AND COOLER PIPING/TUBING SHALL ALSO MEET THE REQUIREMENTS OF ANSI B31.1-1973.
  - THIS VALVE IS AN ADJUSTABLE ROD - IN - TUBE TYPE FOR PRESSURE DROP AND FLOW CONTROL.
  - VALVE POSITIONS ARE SHOWN WHEN THE SAMPLE SYSTEM IS NOT IN OPERATION.
  - DIRECT DISCHARGE VIA A CLOSED CONNECTION TO A SINK DRAIN HEADER (TO AUX. BLDG. EQUIP. DRAIN SUMP (CRW)).
  - DIRECT DISCHARGE VIA A CLOSED CONNECTION TO A SINK DRAIN HEADER (TO RADWASTE BLDG. EQUIP. DRAIN SUMP (CRW)).
  - DIRECT DISCHARGE VIA A CLOSED CONNECTION TO A SINK DRAIN HEADER (TO RADWASTE BLDG. SUMP (DRW)).
  - IDENTIFIES SAMPLING CONNECTIONS FOR SAMPLE VESSELS, GRAB SAMPLES AND HOOK UP FOR IN LINE ANALYZERS CONNECTIONS ARE QUICK DISCONNECT COUPLINGS. VENDOR SHALL SUPPLY TEN (10) 500 ML CAPACITY SAMPLE VESSELS AND AT LEAST SIX (6) PANEL ASSEMBLIES USED TO TAKE GRAB SAMPLES TO AN OPEN CONTAINER.
  - FOR INSTRUMENT PIPING CLASS SPECIFICATION FOR STAINLESS STEEL TUBING SEE DWG. J0701-3.
  - THIS SAMPLE SHALL BE TAKEN AT HIGHER PROCESS PRESSURES TO PREVENT FLASHING IN ANY PORTION OF THE SAMPLE LINE. FOR PURPOSES OF DETERMINING DISSOLVED GAS CONCENTRATIONS.
  - REMOVABLE IN - LINE FILTERS. FOR TRANSPORT TO THE HOT LABORATORY FOR FURTHER ANALYSIS.
  - FOUR (4) SPARE SAMPLE LINES, COMPLETE WITH TUBING, INSTRUMENTS, ISOLATION VALVES, QUICK DISCONNECTS AND THROTTLE VALVES, SHALL BE BUILT INTO THE VENDORS PANEL AS SHOWN, FOR FUTURE EXPANSION. THE VENDOR SHALL CAP EACH SAMPLE LINE AT THE INLET AND OUTLET, ON THE EXTERNAL SIDE OF HIS BULKHEAD FITTINGS.
  - THIS VALVE IS USED TO RELEASE THE SAMPLE LINE PRESSURE TO ATMOSPHERE. BEFORE QUICK DISCONNECTING THE SAMPLE VESSEL. WHEN OBTAINING HIGH PRESSURE RCS PROCESS SAMPLES.
  - THE PRESSURE SENSING LINE SHOULD FORM A DEAD LEG OR A LOOP SEAL TO PROVIDE THERMAL BARRIER, IN THE CASE OF LOSS OF COMPONENT COOLING WATER TO THE SAMPLE COOLER.
  - ITEMS SUPPLIED BY WESTINGHOUSE ELECTRIC CORP (NSSL).
  - DIGITAL PRESSURE INDICATOR BLEED VALVE SHALL BE PANEL MOUNTED IN CLOSE PROXIMITY TO THE INDICATOR. DIGITAL PRESSURE INDICATOR USED TO CALIBRATE REACTOR COOLANT SYSTEM PRESSURE INSTRUMENTATION.
  - THE D-LISTED PORTION OF THIS SYSTEM IS ONLY THE PIPING AND VALVES ASSOCIATED WITH CONTAINMENT PENETRATIONS.
  - CONTAINMENT PENETRATION PIPING 003-ECB-1 IS SCAL. 005.
  - SWITCH PROVIDED FOR POWER LOCKOUT.
  - DELETED.
  - AIR PURGE OPERATES DURING PASS OPERATION TO CLEAR LINE OF RADIOACTIVE EFFLUENT. (REFERENCE PFR 94-0744)
  - FOR RADWASTE BUILDING SAMPLE STATION SJ144. MAIN ISOLATION VALVES MAY BE BALL TYPE.
  - WESTINGHOUSE NUCLEAR SAFETY ADVISORY LETTER (NSAL) NSAL-00-006 "PRESSURIZER OPEN LEVEL INSTRUMENT LINE SAFETY CLASSIFICATION" HAS BEEN EVALUATED IN PFR 2002-1236. NRC LETTER DATED MAY 31, 2005 FROM USNRC TO WOLFCREEK CORP. REFERENCE NO. 05-00319 AUTHORIZED THE ALTERNATIVE TO THE REQUIREMENTS OF 10 CFR 50.55A(C) IN RESPONSE TO WOLFCREEK LETTER MW 04-0032. THIS NO ASME CLASS CHANGE IS REQUIRED OF THE SUBJECT PIPING, TUBING, VALVES AND SUPPORTS.
  - FOR RCS SYSTEM FLOW BALANCING, TOTAL PACKAGE COOLING WATER FLOW MINIMUM OF 68 GPM IS ACCEPTABLE.



USAR FIG. 9.3-2-01

ESSENTIAL DRAWING			
REVISION	ISSUED	INCORPORATED	CHANGE 014990
THIS DWG. SUPERSEDES	REV.	THIS DWG. SUPERSEDES	REV.
REVISION NOTES			DCU 12-14-15
WOLFCREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING AND INSTRUMENTATION DIAGRAM			
NUCLEAR SAMPLING SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12SJ01	15	





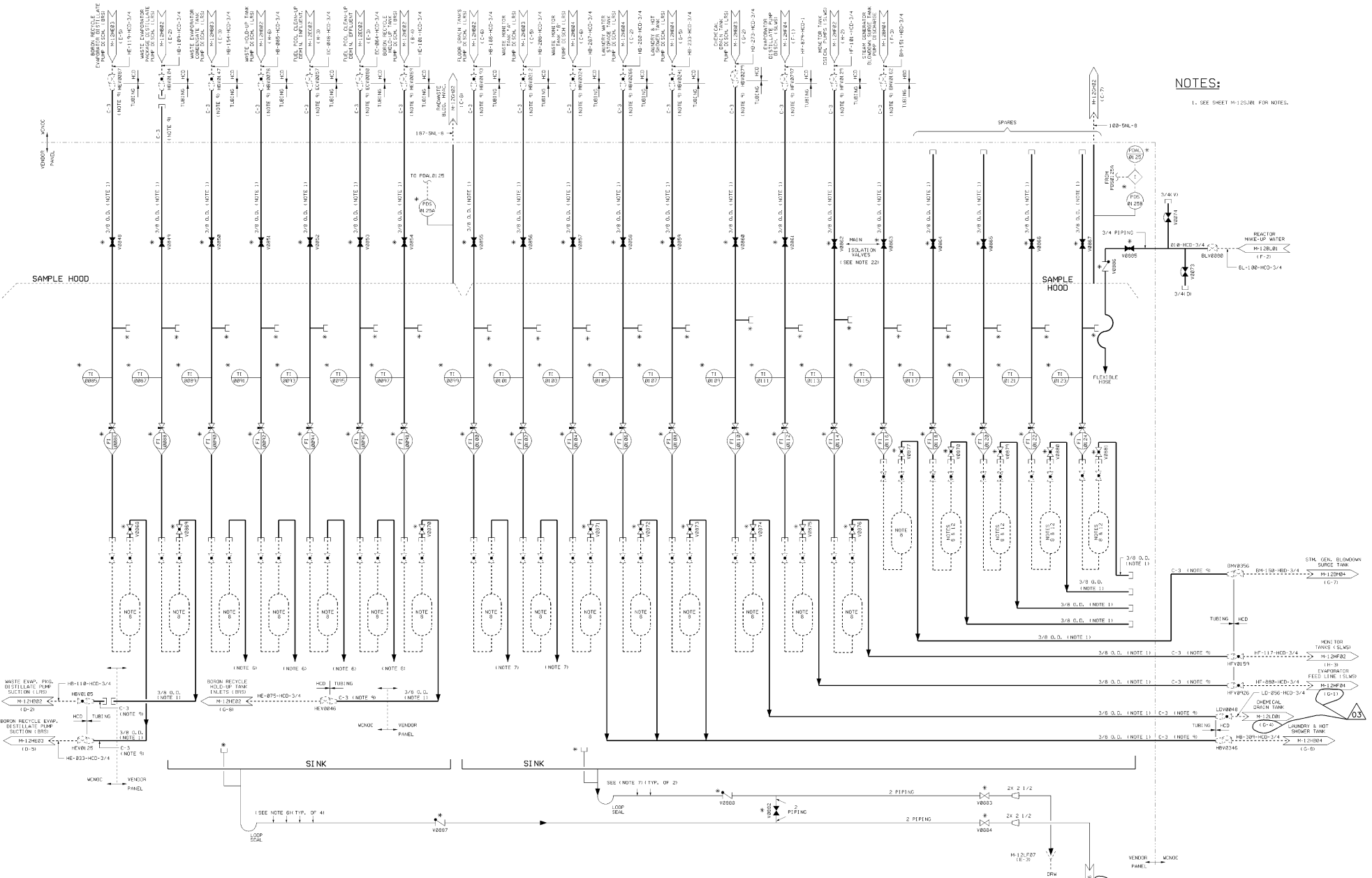
**NOTES:**  
 1. SEE SHEET M-12SJ03 FOR NOTES.

AUXILIARY BUILDING  
 SAMPLE STATION  
 SJ0143

USAR FIG. 9, 3-2-02

ESSENTIAL DRAWING			
© 1990	INCORPORATED	DATE	
D 05503	AMC, INC.	REVISED	
THIS DRAWING IS THE PROPERTY OF WOLF CREEK NUCLEAR OPERATING CORPORATION. IT IS TO BE KEPT IN CONFIDENCE AND NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.		ELECTRONIC APPROVAL	
WOLF CREEK NUCLEAR OPERATING CORPORATION			
PIPING & INSTRUMENTATION DIAGRAM			
NUCLEAR SAMPLING SYSTEM			
SCALE	AS SHOWN	SHEET NO.	02
PROJECT	M-12SJO3	DATE	03/11/02





**NOTES:**  
 1. SEE SHEET M-125J01 FOR NOTES.

RADWASTE BUILDING  
 SAMPLE STATION  
 SJ01 44

USAR FIG. 9. 3-3-B0

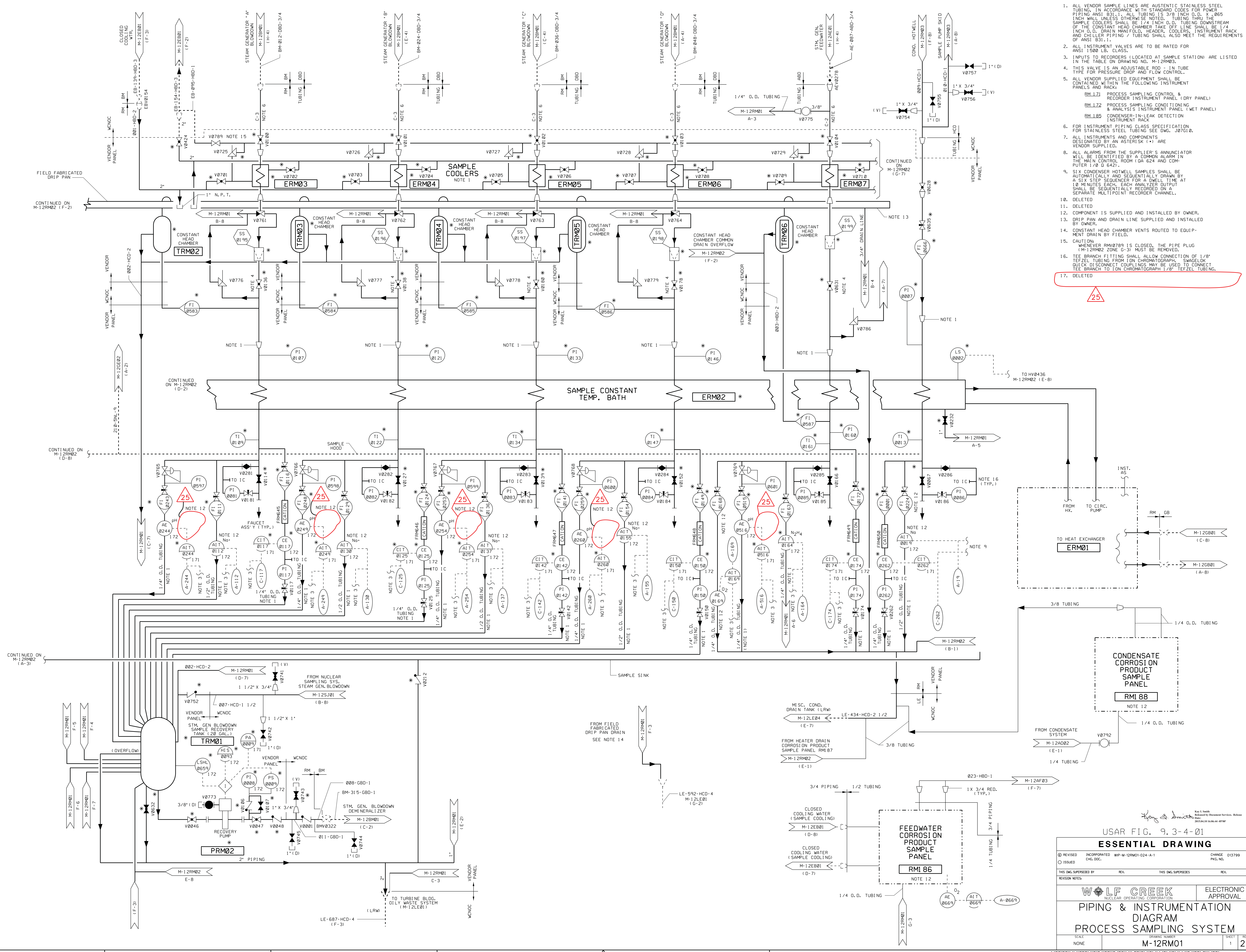
ESSENTIAL DRAWING			
REVISED	INCORPORATED	DATE	BY
ISSUED	PROLOG		
THIS DRAWING IS THE PROPERTY OF WOLF CREEK NUCLEAR CLEANING CORPORATION. IT IS TO BE USED ONLY FOR THE PROJECT AND SECTION SHOWN HEREON. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF WOLF CREEK NUCLEAR CLEANING CORPORATION.			
WOLF CREEK NUCLEAR CLEANING CORPORATION		ELECTRONIC APPROVAL	
PIPING & INSTRUMENTATION DIAGRAM			
NUCLEAR SAMPLING SYSTEM			
SCALE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
NONE	M-125J02	03	03



NOTES

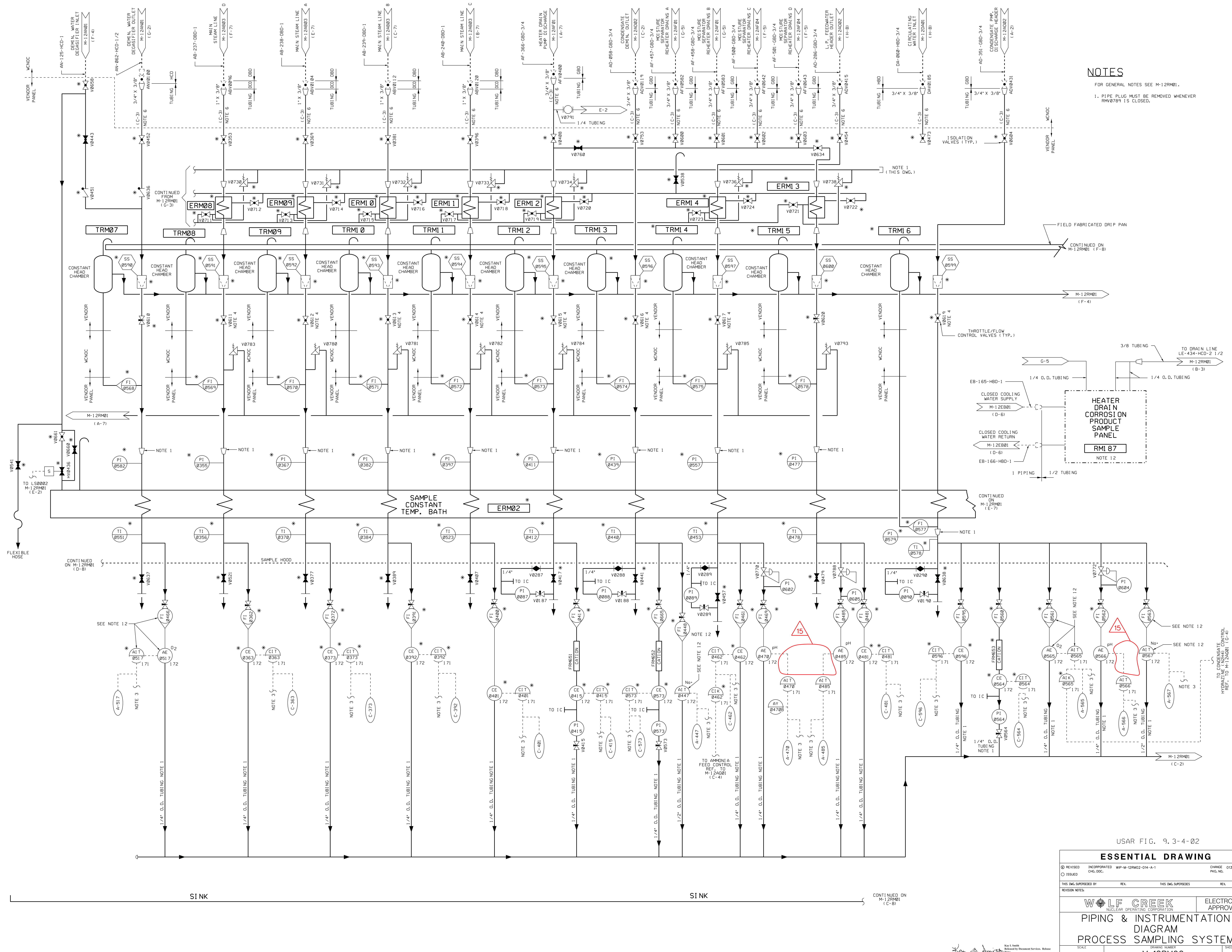
1. ALL VENDOR SAMPLE LINES ARE AUSTENITIC STAINLESS STEEL TUBING. IN ACCORDANCE WITH STANDARD CODES FOR POWER PIPING ANSI B31.1 - ALL TUBING IS 3/8 INCH O.D. X .065 INCH WALL UNLESS OTHERWISE NOTED. TUBING THRU THE SAMPLE ANALYZERS SHALL BE 1/2 INCH O.D. TUBING DOWNSTREAM OF THE CONDENSATE TAKE OFF LINE. TUBING SHALL BE 1/4 INCH O.D. DRAIN MAINFOLD, HEADER, COOLERS, INSTRUMENT RACK AND OTHER PIPING. TUBING SHALL ALSO MEET THE REQUIREMENTS OF ANSI B31.1.
2. ALL INSTRUMENT VALVES ARE TO BE RATED FOR ANSI 1500 LB. CLASS.
3. INPUTS TO RECORDERS (LOCATED AT SAMPLE STATION) ARE LISTED IN THE TABLE ON DRAWING NO. M-12RM03.
4. THE VALVE IS AN ADJUSTABLE ROD - IN TUBE TYPE FOR PRESSURE DROP AND FLOW CONTROL.
5. ALL VENDOR SUPPLIED EQUIPMENT SHALL BE CONTAINED WITHIN THE FOLLOWING INSTRUMENT PANELS AND RACK:
  - RM 171 PROCESS SAMPLING CONTROL & RECORDER INSTRUMENT PANEL (DRY PANEL)
  - RM 172 PROCESS SAMPLING CONDITIONING & ANALYSIS INSTRUMENT PANEL (WET PANEL)
  - RM 185 CONDENSER-1 LEAK DETECTION INSTRUMENT RACK
6. FOR INSTRUMENT PIPING CLASS SPECIFICATION FOR STAINLESS STEEL TUBING SEE DWG. J07610.
7. ALL INSTRUMENTS AND COMPONENTS DESIGNATED BY AN ASTERISK (\*) ARE VENDOR SUPPLIED.
8. ALL ALARMS FROM THE SUPPLIER'S ANNUNCIATOR WILL BE IDENTIFIED BY A COMMON ALARM IN THE MAIN CONTROL ROOM (QA 624 AND COMPUTER 1/0 D 642).
9. SIX CONDENSER HOTWELL SAMPLES SHALL BE AUTOMATICALLY AND SEQUENTIALLY DRAWN BY A SIX STER SEQUENCER FOR A Dwell TIME AT 1.0 MINUTES EACH. EACH ANALYZER OUTPUT SHALL BE SEQUENTIALLY RECORDED ON A SEPARATE MULTIPPOINT RECORDER CHANNEL.
10. DELETED
11. DELETED
12. COMPONENT IS SUPPLIED AND INSTALLED BY OWNER.
13. DRAIN PAN AND DRAIN LINE SUPPLIED AND INSTALLED BY OWNER.
14. CONSTANT HEAD CHAMBER VENTS ROUTED TO EQUIPMENT DRAIN BY FIELD.
15. CAUTION: WHENEVER RM0789 IS CLOSED, THE PIPE PLUG M-12RM02 ZONE C-3 MUST BE REMOVED.
16. TEE BRANCH FITTING SHALL ALLOW CONNECTION OF 1/8" TEFLON TUBING FROM ION CHROMATOGRAPH. SWAGelok QUICK DISCONNECT COUPLINGS MAY BE USED TO CONNECT TEE BRANCH TO ION CHROMATOGRAPH 1/8" TEFLON TUBING.
17. DELETED

25



USAR FIG. 9.3-4-01  
**ESSENTIAL DRAWING**  
 REVISIONS: REV. 1 INCORPORATED WP-M-12RM01-024-A-1 CHG. DOC. CHANGE 013799  
 ISSUE NONE  
 THIS DWG. SUPERSEDES: REV. 1 THIS DWG. SUPERSEDES: REV. 1  
**WOLF CREEK**  
 NUCLEAR OPERATING CORPORATION  
 ELECTRONIC APPROVAL  
**PIPING & INSTRUMENTATION**  
**DIAGRAM**  
**PROCESS SAMPLING SYSTEM**  
 SCALE: NONE DRAWING NUMBER: M-12RM01 SHEET: 1 OF 25  
 DATE: 3/4/44 E. 25  
 M-12RM01-1-25





**NOTES**  
 FOR GENERAL NOTES SEE M-12RM01.  
 1. PI/FI PLUG MUST BE REMOVED WHENEVER RM0789 IS CLOSED.

USAR FIG. 9.3-4-02

**ESSENTIAL DRAWING**

REVISIONS: INCORPORATED WP-M-12RM02-014-A-1 CHANGE 013799  
 CHG. DOC. ISSUED PAGE NO.  
 THIS DWG SUPERSEDES THIS DWG SUPERSEDES  
 REVISION NUMBER REV.

**WOLF CREEK**  
 NUCLEAR OPERATING CORPORATION  
 ELECTRONIC APPROVAL  
**PIPING & INSTRUMENTATION**  
**DIAGRAM**  
**PROCESS SAMPLING SYSTEM**

SCALE: NONE DRAWING NUMBER: M-12RM02 SHEET: 1 REV: 15  
 DATE: 2014-08-14



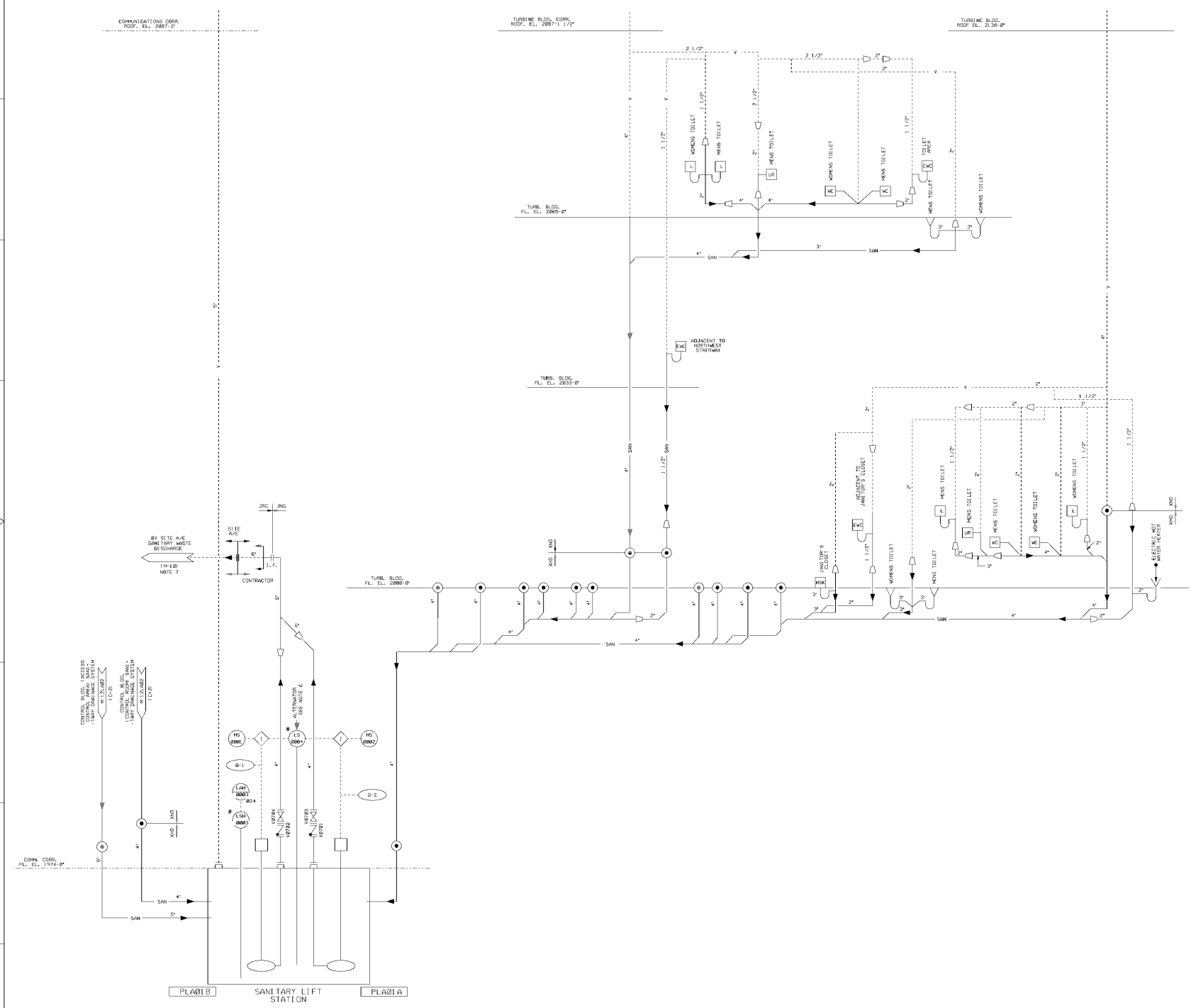






NOTES

1. PIPING, FITTINGS, VALVES, FIXTURES AND OTHER COMPONENTS ARE INDICATED FOR THE SANITARY DRAINAGE SYSTEM SHALL BE FURNISHED, INSTALLED, CLEANED AND TESTED IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE (UPC) FOR THE APPLICABLE LOCAL OR STATE CODE.
2. WATER CLOSETS AND URINALS ARE PROVIDED WITH INTEGRAL TRAPS.
3. ADDITIONAL SYMBOLS NOT SHOWN ON DWG. M-820183 ARE AS FOLLOWS:  
 ● - CLEANOUT  
 DS - DEEP SINK  
 OS - OMBARGE DISPOSAL  
 PS - PANTRY SINK
4. PIPING CLASS FOR THE SANITARY WASTE SYSTEM SHALL BE AS FOLLOWS EXCEPT AS NOTED:  
 MATERIAL CLASS 200 EXTRA SERVICE WASTE PIPE, HEAVY CAST IRON CONTROL BLDG. A CONC. POLYETHYLENE PIPE AND BLUE/BLU. 200W" DP 3" BELLOWS  
 CLASS 1 AND 2 GALVANIZED CARBON STEEL SYSTEM AND DRAINAGE FITTINGS  
 CLASS 3 AND 4 GALVANIZED CARBON STEEL SYSTEM AND DRAINAGE FITTINGS  
 CLASS 5 304 STAINLESS STEEL SYSTEM AND DRAINAGE FITTINGS  
 CLASS 6 304 STAINLESS STEEL SYSTEM AND DRAINAGE FITTINGS  
 PIPING WITH FLANGED CONNECTIONS  
 OTHER SANITARY WASTE AND ALL VENT PIPING TO BE SANITARY LIFT STATION SHALL BE CLASS 5 AS NOTED BELOW  
 SANITARY LIFT STATION DRAINAGE PIPING SHALL BE CLASS 5 PER THE REQUIREMENTS OF SPECIFICATION M-2202.
5. PUMPING FIXTURES SHALL BE PER THE REQUIREMENTS OF SPECIFICATION M-2202.
6. ALTERNATOR ALTERNATES PUMP OPERATION WHEN SUMP LEVEL IS HIGH - HIGH AND BOTH PUMPS STOP ON LOW LEVEL.
7. MECHANICAL DESIGNATION PER M-12001.
8. THE SANITARY LIFT STATION PUMPS AND COVER ARE PROVIDED BY BESTSELL. ALL OTHER EQUIPMENT TO THE SYSTEM IS SAME PROVIDED EXCEPT WHERE INDICATED.



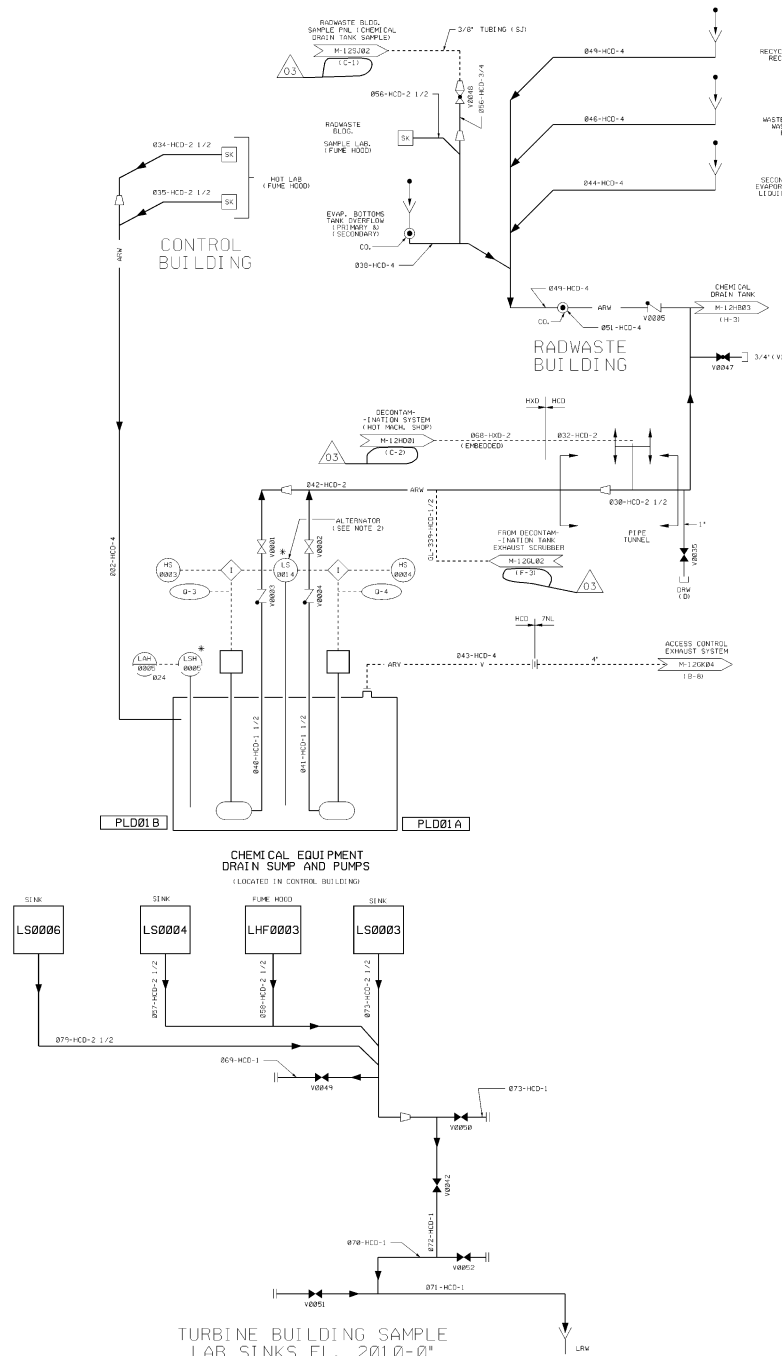
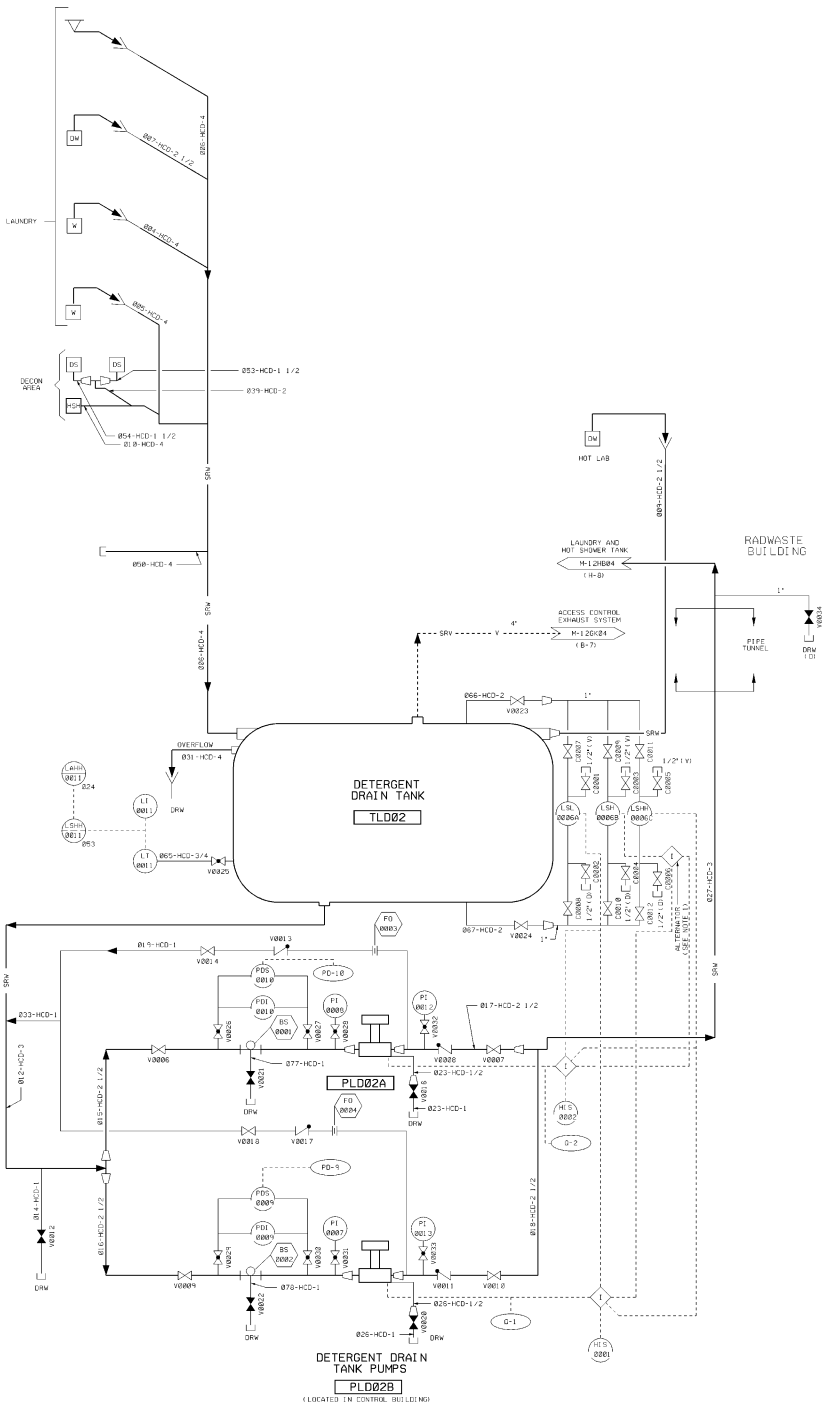
USAR FIG. 9.3-5-01

ESSENTIAL DRAWING			
DESIGNED BY	INSTRUMENTED BY	CHECKED BY	DATE
DRAWN BY	CHK. BY		
THIS DRAWING IS THE PROPERTY OF WOLF CREEK AND SHALL BE KEPT IN THE OFFICE OF THE PROJECT MANAGER.			
APPROVED BY		DATE	
ELECTRONICALLY CONVERTED PER AP 25-012			
WOLF CREEK		ELECTRONIC APPROVAL	
PIPING AND INSTRUMENTATION DIAGRAM SANITARY LIFT STATION & TURB. BLDG. SANITARY DRAINAGE SYSTEM			
SCALE	DATE	REV.	BY
NONE	M-12LA01	00	SHAM E DC









- NOTES**
1. ELECTRICAL ALTERNATOR ALTERNATES PUMP OPERATION WHEN TANK LEVEL IS HIGH. BOTH PUMPS RUN WHEN TANK LEVEL IS HIGH - LOW.
  2. MECHANICAL ALTERNATOR ALTERNATES PUMP OPERATION WHEN SUPPLY LEVEL IS HIGH. BOTH PUMPS RUN WHEN SUPPLY LEVEL IS HIGH - HIGH.
  3. DS - DEEP SINK.
  4. HSD AND DS TO BE USED FOR DECONTAMINATION PURPOSES ONLY.
  5. HSH - HOT SHOWER.
  6. DELETED.

USAR FIG. 9, 3-5-03

**ESSENTIAL DRAWING**

(S) REVISION INCORPORATED CHANGE  
 (D) ISSUED REVISION

THIS DRAWING IS THE PROPERTY OF THE U.S. GOVERNMENT AND IS TO BE REPRODUCED FOR OFFICIAL USE ONLY. IT IS TO BE KEPT IN THE ORIGINAL FILE AND NOT REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.

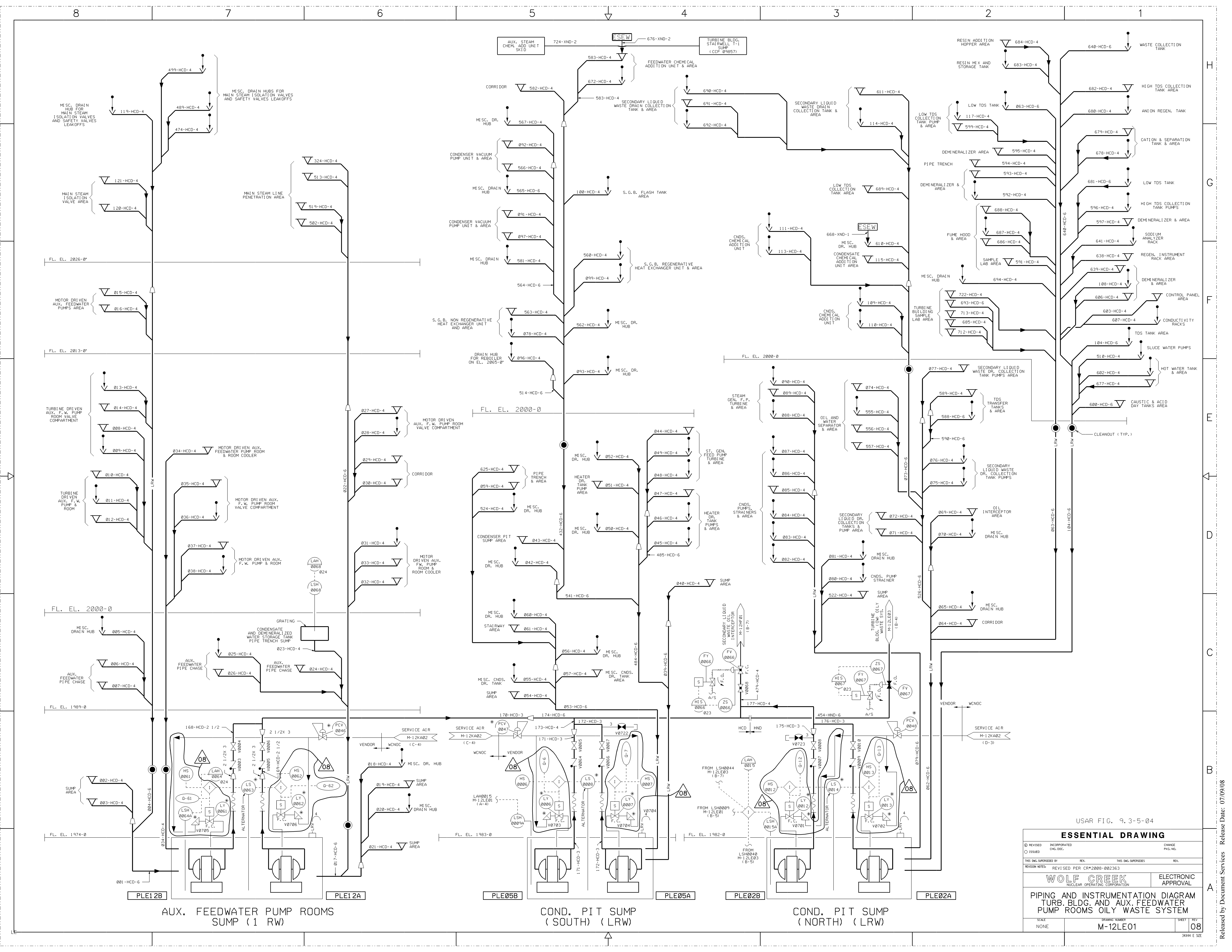
**WOLF CREEK**  
 NUCLEAR OPERATIONS CORPORATION

**PIPING & INSTRUMENTATION DIAGRAM CHEMICAL & DETERGENT WASTE**

TITLE: NONE SHEET NO: M-12LD01 OF 03

DATE: 03/03/03





USAR FIG. 9.3-5-04

ESSENTIAL DRAWING			
REVISION	INCORPORATED	CHANGE	
ISSUED	CHG. DOC.	PKG. NO.	
THIS DWG. SUPERSEDES	REV.	THIS DWG. SUPERSEDES	REV.
REVISION NOTES	REVISED PER CR#2008-002363		
<b>WOLF CREEK</b>		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION		SHEET REV	
PIPING AND INSTRUMENTATION DIAGRAM			
TURB. BLDG. AND AUX. FEEDWATER PUMP ROOMS OILY WASTE SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12LE01	08	

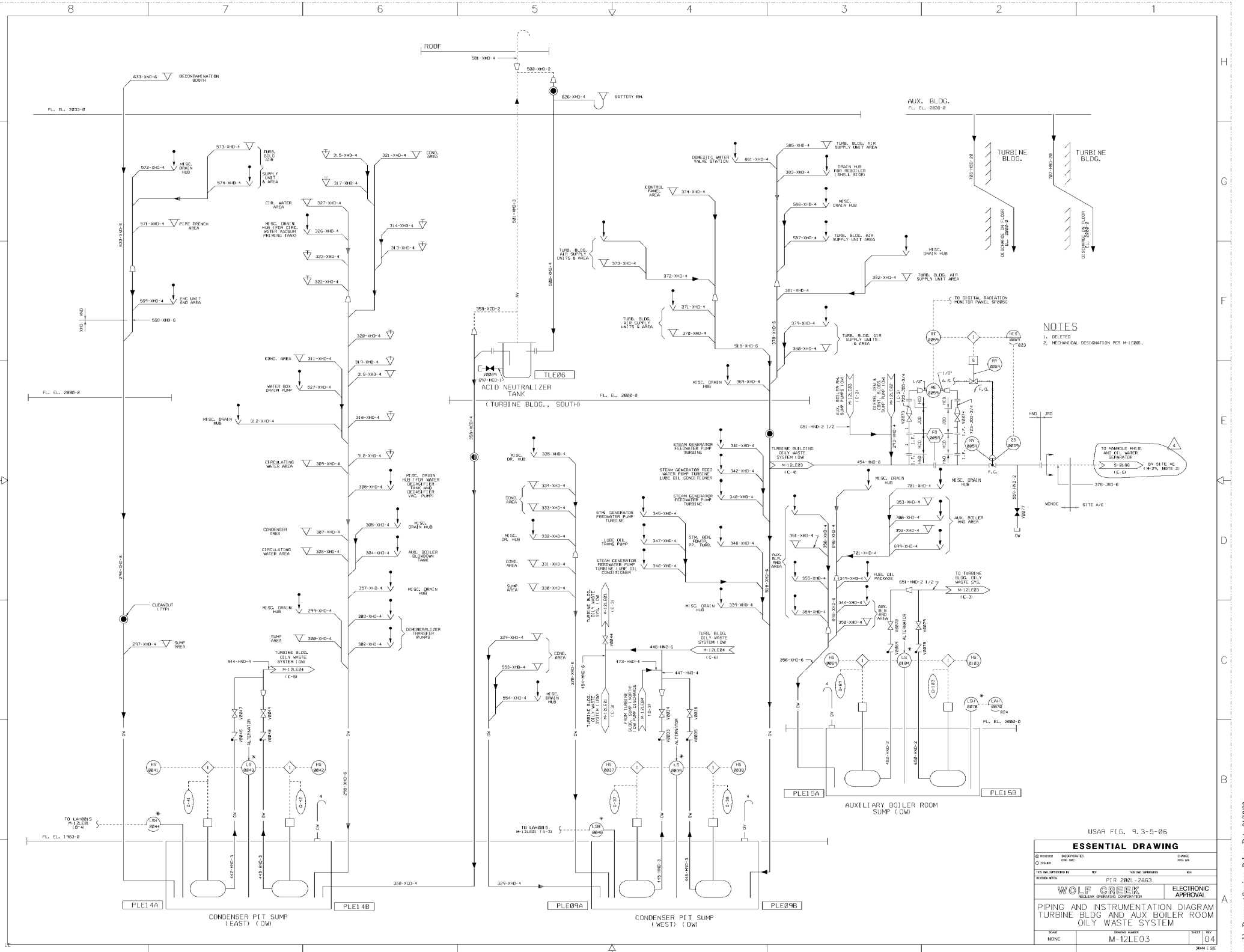
3444 E SIZE

Released by Document Services Release Date: 07/09/08









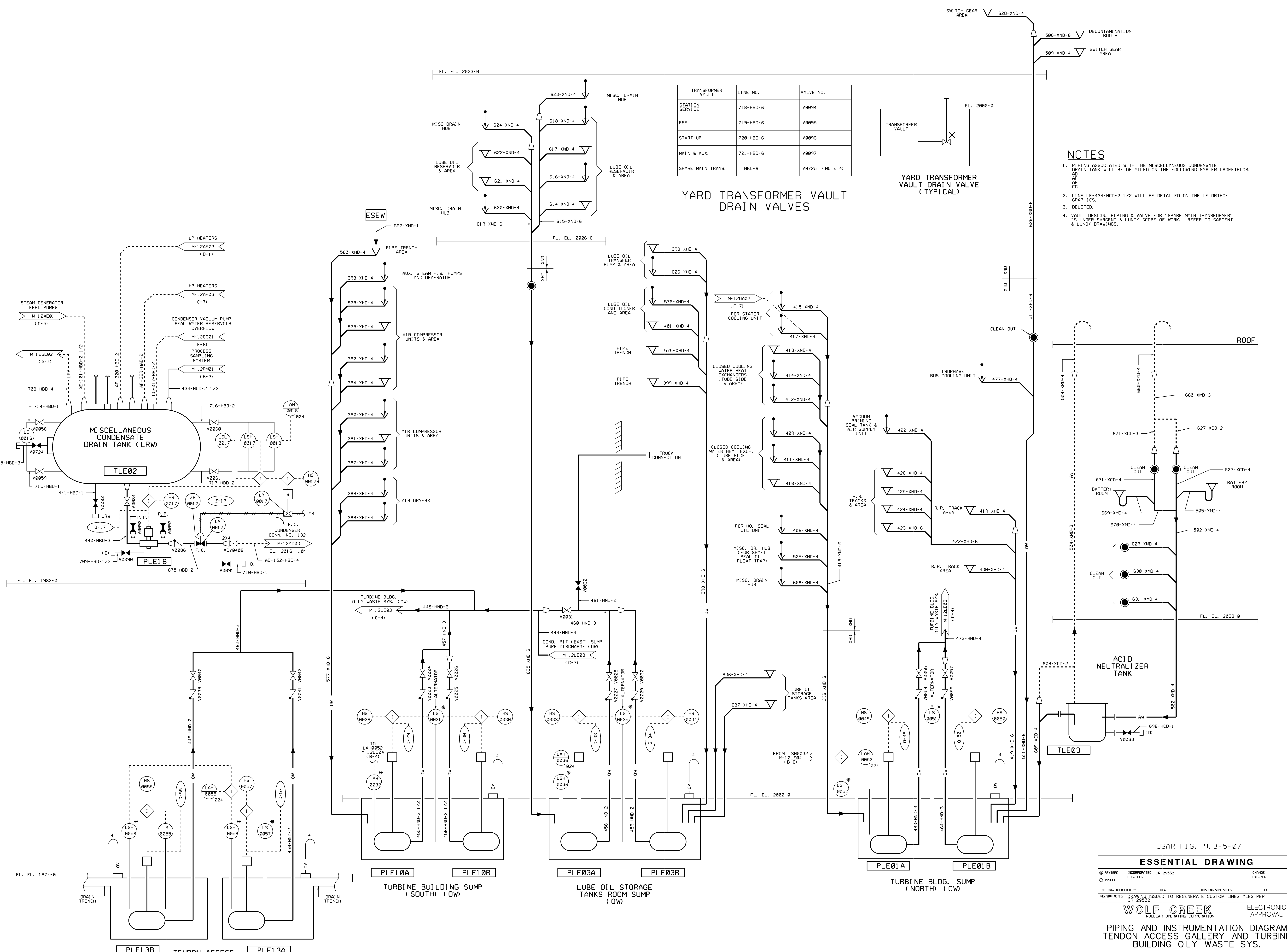
**NOTES**  
 1. DELETED  
 2. MECHANICAL DESIGNATION PER M-1081.

USAR FIG. 9.3-5-05

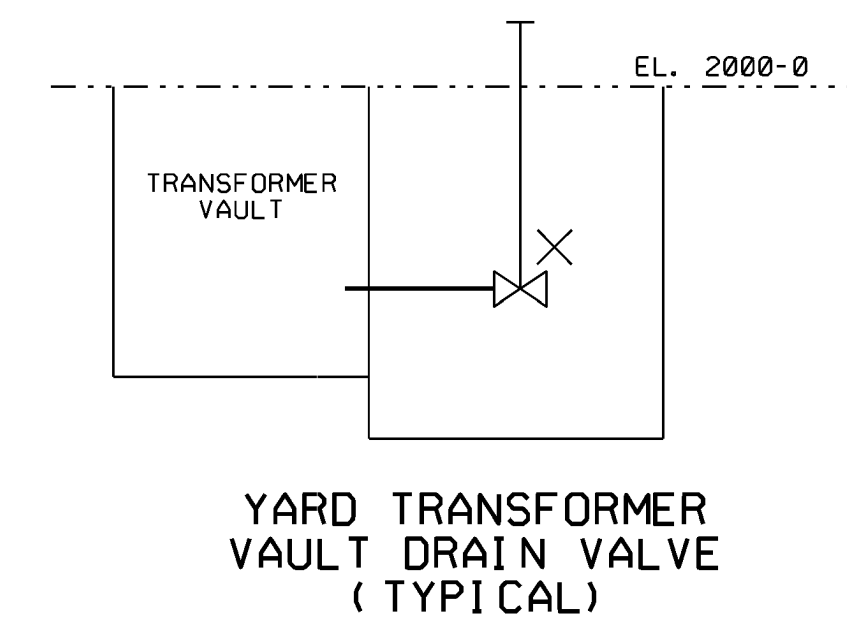
ESSENTIAL DRAWING			
DESIGNED BY	ENGINEERED BY	CHECKED BY	DRAWN BY
DATE	DATE	DATE	DATE
REVISION BY	REV	THIS INC. SUBSTITUTES	REV
WOLF CREEK NUCLEAR OPERATING CORPORATION		ELECTRONIC APPROVAL	
PIPING AND INSTRUMENTATION DIAGRAM TURBINE BLDG. AND AUX. BOILER ROOM OILY WASTE SYSTEM			
SCALE	PROJECT NUMBER	SHEET	TOTAL
NONE	M-12LE03	04	04

Released by Document Services Release Date: 01/18/02





TRANSFORMER VAULT	LINE NO.	VALVE NO.
STATION SERVICE	718-HBD-6	V0094
ESF	719-HBD-6	V0095
START-UP	720-HBD-6	V0096
MAIN & AUX.	721-HBD-6	V0097
SPARE MAIN TRANS.	HBD-6	V0725 (NOTE 4)



**YARD TRANSFORMER VAULT DRAIN VALVES**

- NOTES**
1. PIPING ASSOCIATED WITH THE MISCELLANEOUS CONDENSATE DRAIN TANK WILL BE DETAILED ON THE FOLLOWING SYSTEM ISOMETRICS.
  2. LINE LE-434-HCD-2 1/2 WILL BE DETAILED ON THE LE ORTHO-GRAPHICS.
  3. DELETED.
  4. VAULT DESIGN, PIPING & VALVE FOR "SPARE MAIN TRANSFORMER" IS UNDER SARGENT & LUNDY SCOPE OF WORK. REFER TO SARGENT & LUNDY DRAWINGS.

USAR FIG. 9.3-5-07

ESSENTIAL DRAWING			
REVISED	INCORPORATED CR 29532	CHANGE	
ISSUED	ENG. DOC.	CHK. NO.	
THIS DWG. SUPERSEDES BY REV.		THIS DWG. SUPERSEDES REV.	
REVISION NOTES: DRAWING ISSUED TO REGENERATE CUSTOM LINESYLES PER			
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING AND INSTRUMENTATION DIAGRAM TENDON ACCESS GALLERY AND TURBINE BUILDING OILY WASTE SYS.			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12LE04	08	

Released by Document Services  
3011 E. 13th St. Suite 400  
Denver, CO 80202



FL. EL. 1988-0  
FL. EL. 1974-0

FL. EL. 1988-0  
FL. EL. 1974-0

**NOTES**

1. THE AUXILIARY BUILDING AND THE PUMP ROOM SETBACK CATEGORY I LEVEL INDICATORS WILL BE INSTALLED ON A SEPARATE TRIANGULAR COVER PROVIDED BY BECHTEL. SPACE FOR THIS COVER WILL BE MADE BY MOVING A TRIANGULAR CUT OF SAME SIZE ON DRILLING SURF COVER PLATE. TRIANGULAR COVER WILL BE CATEGORY I.
2. DRAWING D-LIST PERTAINS TO LEVEL INDICATORS L-180, L-181, AND L-184 ONLY.
3. ▽ CAPPED EQUIP. DRAIN.
4. ◊ PLUGGED FLOOR DRAIN.
5. DRAINS SHOWN FOR VALVE STEM LEANOFFS ARE THE RECOMMENDED DRAINS. CONSTRUCTION MAY REDUCE VALVE STEM LEANOFFS TO ANY OTHER CONVENIENT DRAIN SI PROVIDED DRW AND DRW DRAINS ARE SECREATED FROM EACH OTHER.
6. RECIRCULATION ORIFICES (DRILLED HOLES) ARE TO EXTEND PUMP LIFE DURING SHUT - OFF CONDITIONS ON SITE.

FL. EL. 1974-0  
FL. EL. 1967-0

FL. EL. 1974-0  
FL. EL. 1967-0

BOTTOM OF SUMP EL. 1962-0

USAR FIG. 9.3-5-08

**ESSENTIAL DRAWING**

REVISION	INCORPORATED	DATE	BY

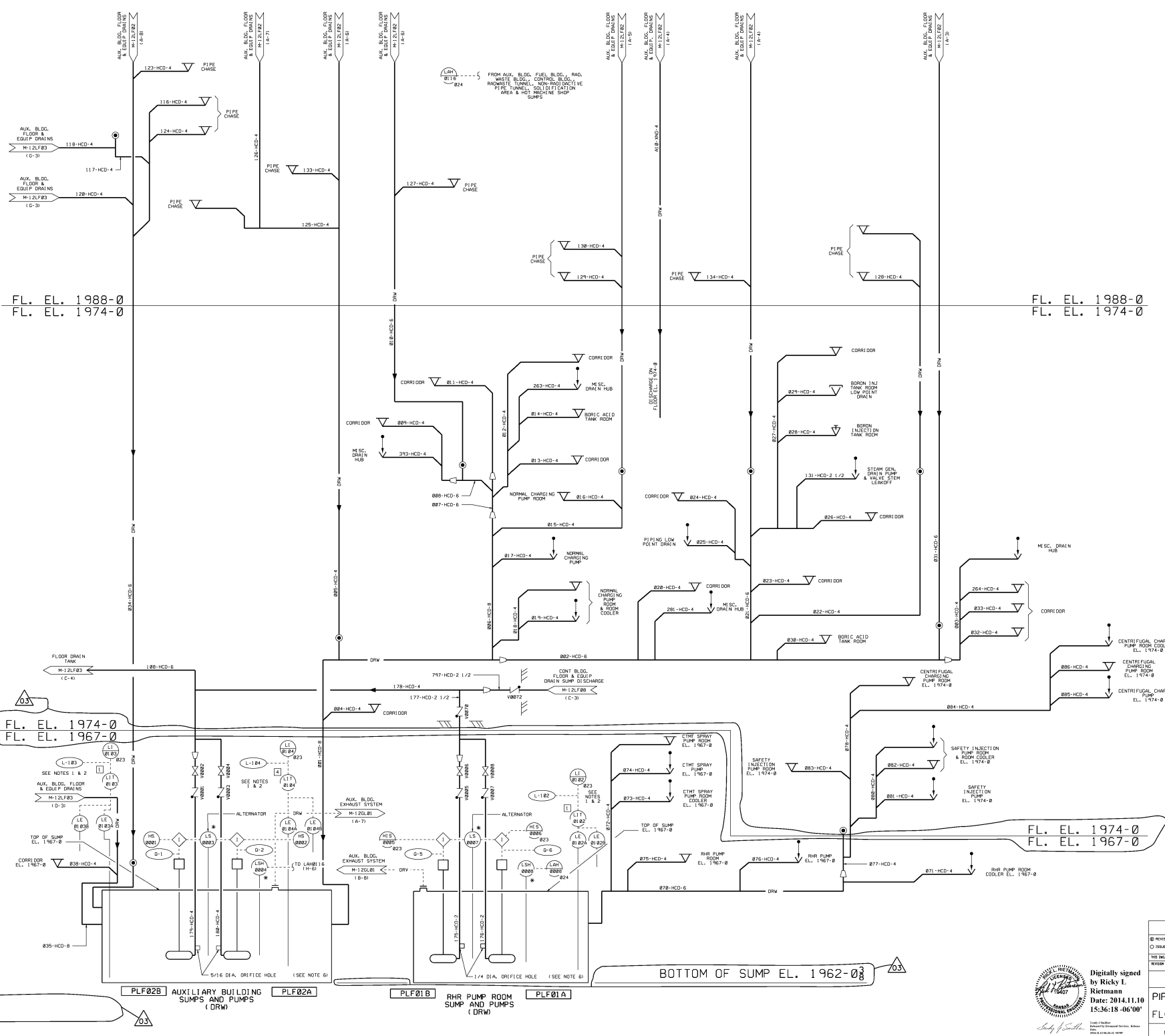
WOLF CREEK  
NUCLEAR OPERATIONS CORPORATION

PIPING AND INSTRUMENTATION DIAGRAM  
FLOOR AND EQUIPMENT DRAIN SYSTEM

Digitally signed by  
Ricky L. Rietmann  
Date: 2014.11.10  
15:36:18 -0600

DRW: M-12LF01

SCALE: NONE



PLF02B AUXILIARY BUILDING SUMPS AND PUMPS (DRW)

PLF02A

PLF01B RHR PUMP ROOM SUMP AND PUMPS (DRW)

PLF01A

USAR FIG. 9.3-5-08

ESSENTIAL DRAWING

REVISION	INCORPORATED	DATE	BY

WOLF CREEK  
NUCLEAR OPERATIONS CORPORATION

PIPING AND INSTRUMENTATION DIAGRAM  
FLOOR AND EQUIPMENT DRAIN SYSTEM

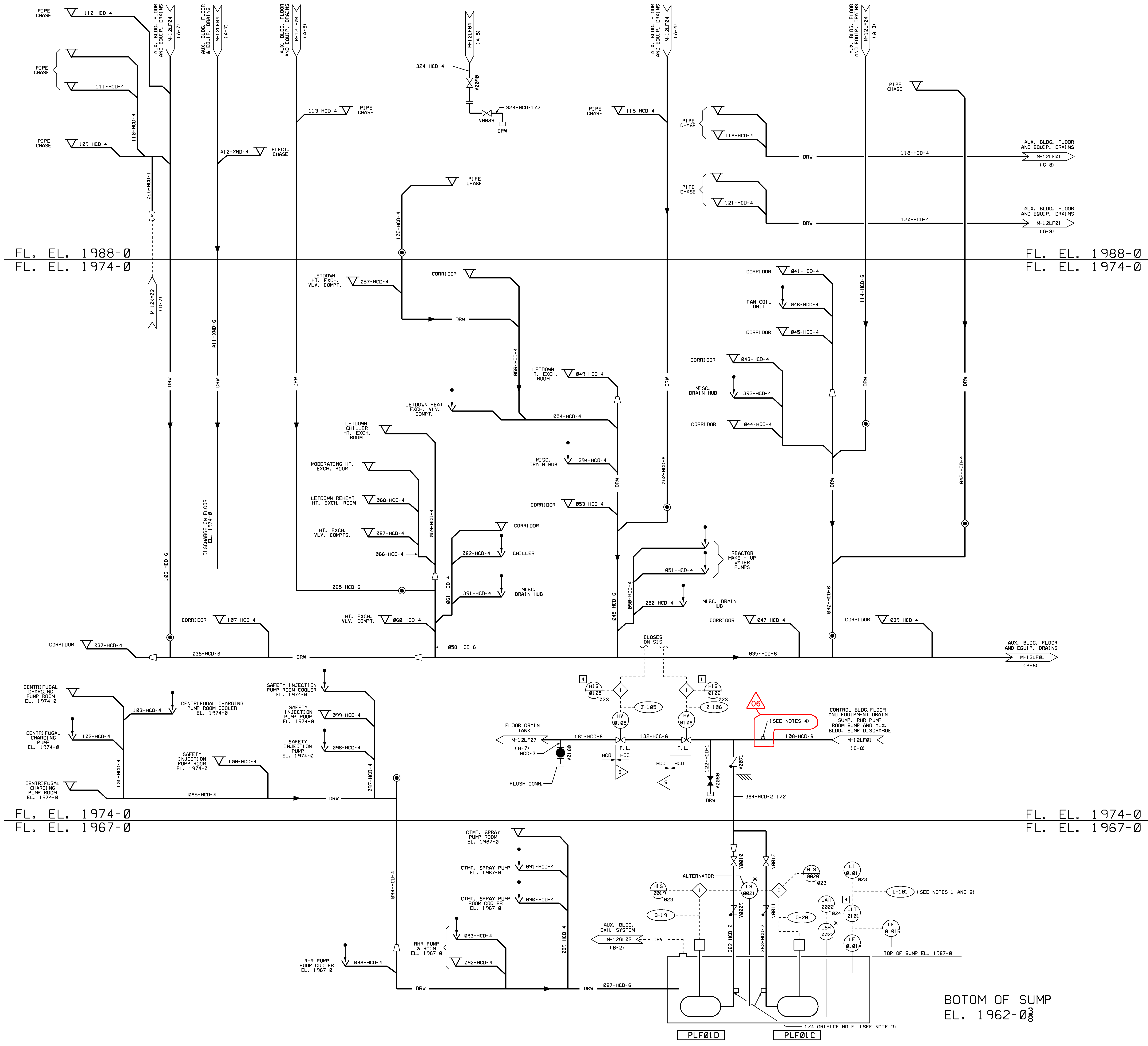
DRW: M-12LF01

SCALE: NONE









- NOTES**
1. THE RHR PUMP ROOM SEISMIC CATEGORY 1 LEVEL INDICATORS WILL BE INSTALLED ON A SEPARATE TRIANGULAR COVER PROVIDED BY BECTHEL. SPACE FOR THIS COVER WILL BE MADE BY HAVING A TRIANGULAR CUT OF SAME SIZE ON ORIGINAL SUMP COVER PLATE. COVER WILL BE CATEGORY 1.
  2. DRAWING Q - LIST PERTAINS TO LEVEL INDICATOR L-101 AND VALVES HV0105 AND HV0106 ONLY.
  3. RECIRCULATION ORIFICES (DRILLED HOLES) ARE TO EXTEND PUMP LIFE DURING SHUT - OFF CONDITION ON SIS.
  4. 3" STAINLESS STEEL THREADED INSTEAD FOR INSPECTION/RETRIEVAL ACCESS. REFER TO DRAWING M-12LF02 FOR EXACT LOCATION.

06

FL. EL. 1988-0  
FL. EL. 1974-0

FL. EL. 1988-0  
FL. EL. 1974-0

FL. EL. 1974-0  
FL. EL. 1967-0

FL. EL. 1974-0  
FL. EL. 1967-0

BOTTOM OF SUMP  
EL. 1962-0

USAR FIG. 9.3-5-10

ESSENTIAL DRAWING			
REVISION	INCORPORATED	WFP-M-12LF03-005-A-1	CHANGE 015050
ISSUED	DWG. DOC.		PGS. NO.
THIS Dwg. SUPERSEDES		REV.	THIS Dwg. SUPERSEDES
REVISION NOTES			
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING AND INSTRUMENTATION DIAGRAM			
AUXILIARY BUILDING FLOOR AND EQUIPMENT DRAIN SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12LF03	06	
34444 E SIZE			

34444 E SIZE

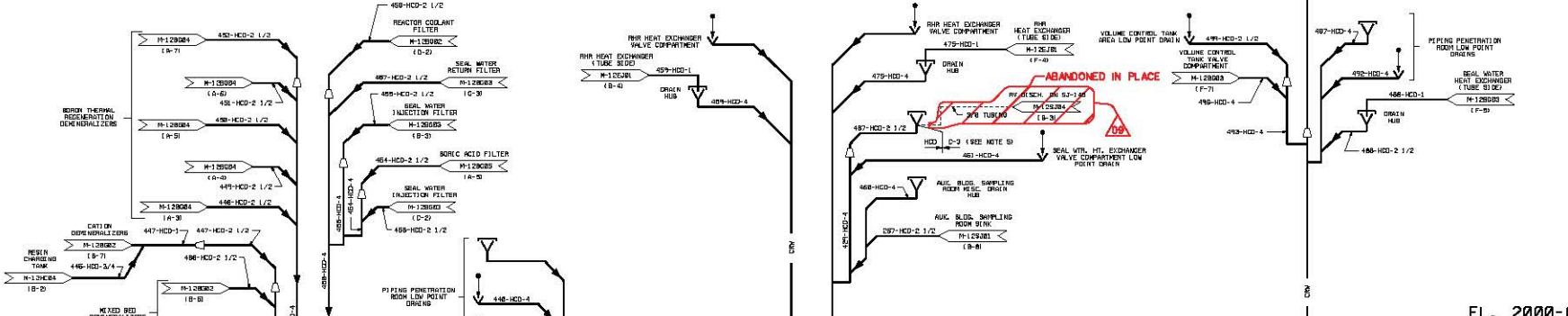






EL. 2026-0  
EL. 2000-0

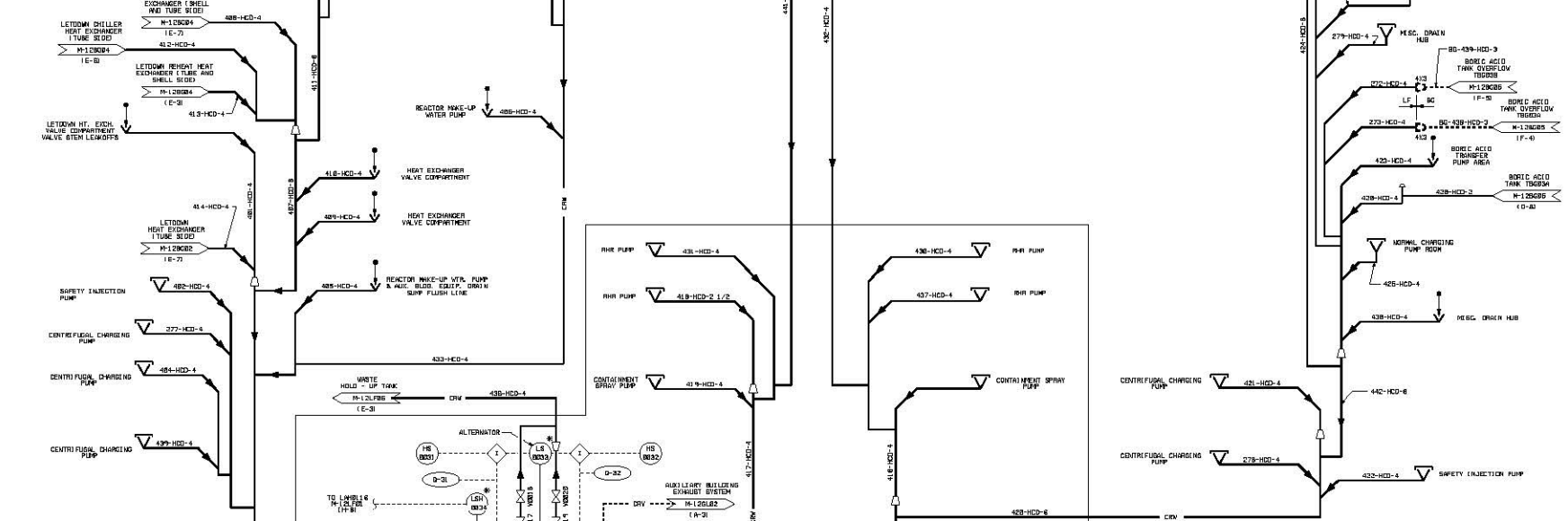
EL. 2026-0  
EL. 2000-0



- NOTES**
- EQUIPMENT DRAIN HUBS SHALL RECEIVE DIRECT DRAINING FROM THE PROCESS SERVICE. INDICATED EQUIPMENT DRAIN LINES AND VALVE STEM LEAKOFFS SHALL BE CLOSED AND APPROVED AS NECESSARY TO CONNECT TO THE DRAIN HUBS INDICATED.
  - INDICATED M.L.T.I. - DRAIN CONNECTED FROM LINES INDICATED IN SOME PROCESS P & I SHEET.
  - BROCKETED VALVE NUMBERS INDICATED M.L.T.I. - VALVE STEM LEAKOFF CONNECTIONS TO HUB.
  - INDICATES CAPPED EQUIPMENT DRAIN.
  - SEE ENG. JETTED FOR INSTRUMENT PIPING CLASS SPEC. FOR STRAINERS, ETC., TUBING.
  - OPENING OR USING A CAPPED EQUIPMENT DRAIN LINE, PER 1.1 OR 1.2, MUST BE IMMEDIATELY CONTROLLED PLANT OPERATIONS TO PREVENT UNDESIRABLE ANALYSIS TO IMPACT OPERATIONS.

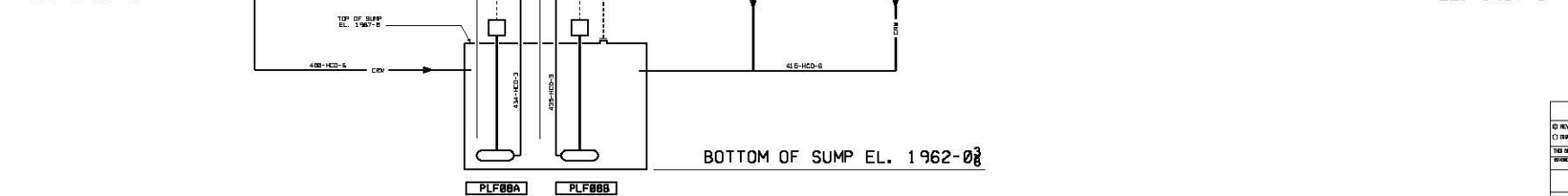
EL. 2000-0  
EL. 1974-0

EL. 2000-0  
EL. 1974-0



EL. 1974-0  
EL. 1967-0

EL. 1974-0  
EL. 1967-0

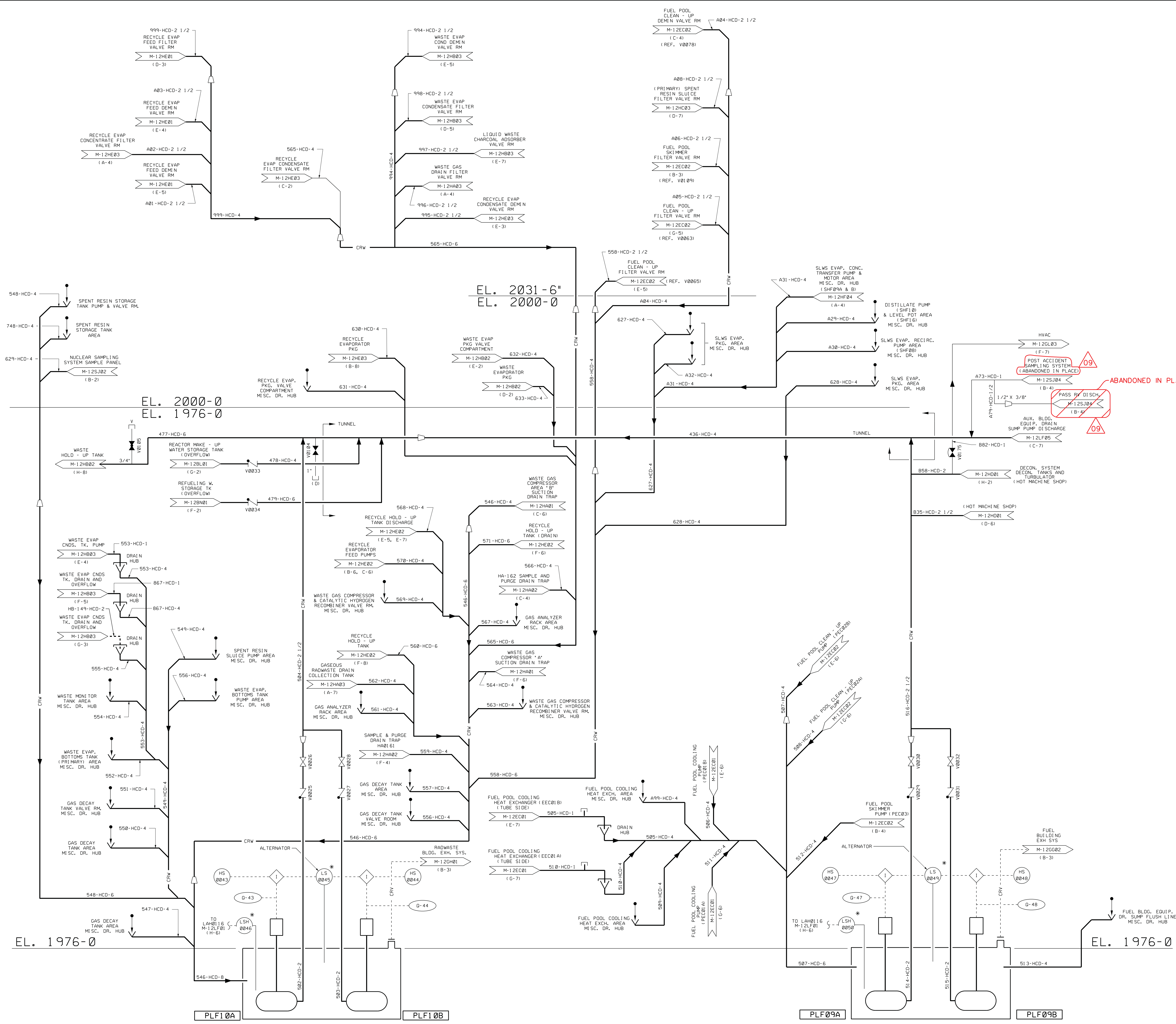


AUXILIARY BUILDING  
EQUIPMENT DRAIN SUMP AND PUMPS (CRW)

USAR FIG. NO. 9.3-5-12

ESSENTIAL DRAWING			
0	REVISION	DATE	BY
1	ISSUED	08/10/00	RS/SG
THIS DRAWING IS THE PROPERTY OF WOLF CREEK. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREON. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF WOLF CREEK.			
DESIGNED BY		CHECKED BY	
DRAWN BY		APPROVED BY	
DATE		SCALE	
NOV 1999		AS SHOWN	
PROJECT		SHEET NO.	
AUXILIARY BUILDING		09	
FLOOR & EQUIP. DRAIN SYSTEM		01	





- NOTES**
1. THE PROCESS SYSTEM DRAIN LINE ISOMETRIC SHALL BEAR THE LINE NUMBER OF THE DRAIN HUB TO WHICH THEY ARE CONNECTED. REFER TO PROCESS SYSTEM ISOMETRICS FOR EQUIP. DRAIN LINE ROUTING & CONFIGURATION.
  2. INDICATES MULTI - DRAIN CONNECTIONS FROM LINES INDICATED ON SAME PROCESS P & TD SHEET.
  3. BRACKETED VALVE NUMBERS INDICATES MULTI - VALVE STEM LEAKOFF CONNECTIONS TO HUB.
  4. CRW MISCELLANEOUS DRAIN HUBS TO BE CAPED WITH A STAINLESS STEEL BODY AND PLUG ASSEMBLY, CD-1 AS SHOWN IN DETAIL 5 OF M-12LF02.
  5. FOR GENERAL NOTES SEE DRAWING M-12LF01.

09  
 POST ACCIDENT SAMPLING SYSTEM (ABANDONED IN PLACE)  
 M-12SJ04 (B-4)  
 1/2" X 3/8"  
 A79-HCD-1/2  
 M-12LF05 (C-7)  
 09  
 ABANDONED IN PLACE

EL. 1976-0

USAR FIG. 9.3-5-13

**ESSENTIAL DRAWING**

REVISED	INCORPORATED	WIP-M-12LF06-006-A-1	CHANGE	06187
ISSUED	CHG. DOC.			PKG. NO.
THIS DWG. SUPERSEDES BY		REV.	THIS DWG. SUPERSEDES	
REVISION NOTES				

**WOLF CREEK**  
 NUCLEAR OPERATING CORPORATION

**ELECTRONIC APPROVAL**

PIPING AND INSTRUMENTATION DIAGRAM  
 RADWASTE AND FUEL BUILDINGS  
 FLOOR AND EQUIP. DRAIN SYSTEM

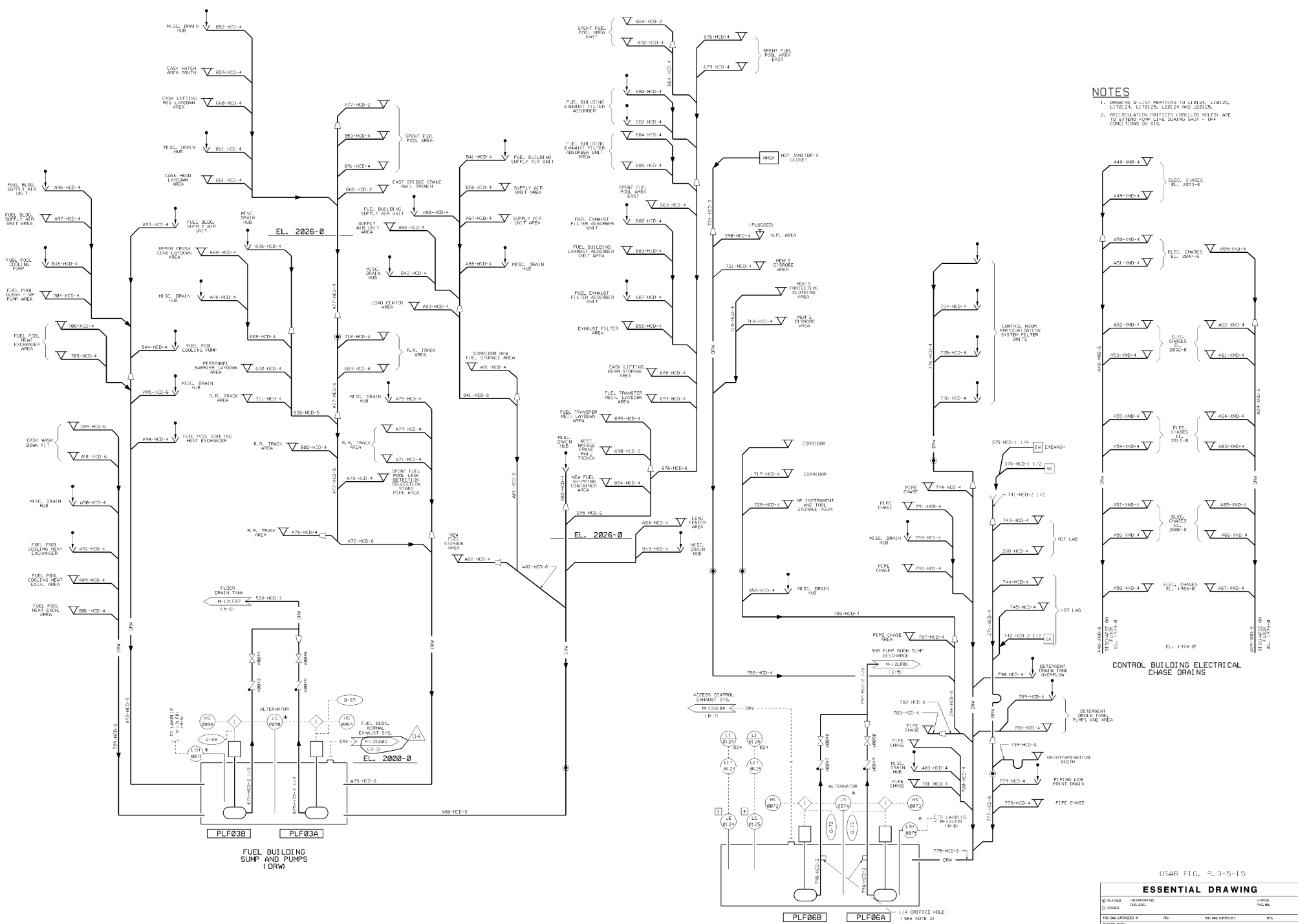
SCALE: NONE  
 DRAWING NUMBER: M-12LF06  
 SHEET: 09  
 REV: 09

3444 E SIZE









- NOTES**
1. DRAWING Q-LIST PERTAINS TO LISTS A, L101-25, L102-24, L103-25, L104-24 AND L105-25.
  2. REGULATION OFFICES (BULLETT HOLES) ARE TO EXTEND FROM LIFE DURING SHUT - OFF CONDITIONS ON DES.

**CONTROL BUILDING ELECTRICAL CHASE DRAINS**

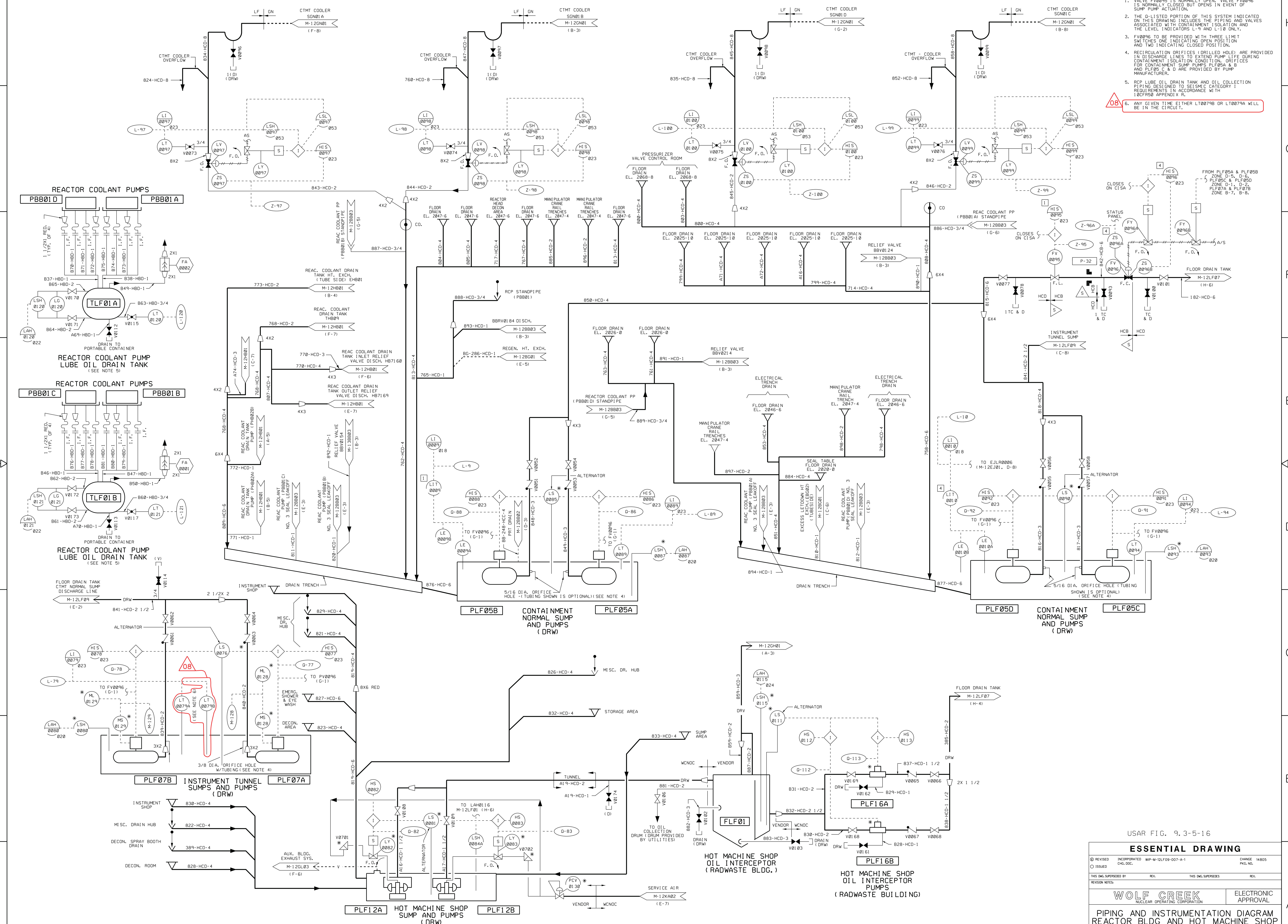
USAR FIG. 9, 3-5-15

ESSENTIAL DRAWING			
© 1978	INCORPORATED	CHARGE	REV.
0 5550	INC.		
THIS DRAWING IS THE PROPERTY OF WOLF CREEK NUCLEAR OPERATING CORPORATION		ELECTRONIC APPROVAL	
<b>WOLF CREEK</b> NUCLEAR OPERATING CORPORATION		ELECTRONIC APPROVAL	
		PIPING AND INSTRUMENTATION DIAGRAM CONTROL AND FUEL BLDGS. FLOOR AND EQUIPMENT DRAIN SYSTEM	
SCALE NONE	DRAWING NUMBER M-12LF08	SHEET NO. 04	TOTAL SHEETS 04



**NOTES**

1. VALVE FV0095 IS NORMALLY OPEN. VALVE FV0096 IS NORMALLY CLOSED BUT OPENS IN EVENT OF SUMP PUMP ACTUATION.
2. THE O-LISTED PORTION OF THIS SYSTEM INDICATED ON THIS DRAWING INCLUDES THE PIPING AND VALVES ASSOCIATED WITH CONTAINMENT ISOLATION AND THE LEVEL INDICATORS L-9 AND L-10 ONLY.
3. FV0096 TO BE PROVIDED WITH THREE LIMIT SWITCHES ONE INDICATING OPEN POSITION AND TWO INDICATING CLOSED POSITION.
4. RECIRCULATION DEVICES (DRILLED HOLE) ARE PROVIDED IN DI SCHEMATIC LINES TO EXTEND PUMP LIFE DURING CONTAINMENT ISOLATION CONDITION. ORIFICES FOR CONTAINMENT SUMP PUMPS PLF05A & B AND PLF05C & D ARE PROVIDED BY PUMP MANUFACTURER.
5. RCP LUBE OIL DRAIN TANK AND OIL COLLECTION PIPING DESIGNED TO SEISMIC CATEGORY 1 REQUIREMENTS IN ACCORDANCE WITH 10CFR50 APPENDIX K R.
6. ANY GIVEN TIME EITHER LT00798 OR LT00799A WILL BE IN THE CIRCUIT.



USAR FIG. 9.3-5-16

**ESSENTIAL DRAWING**

REVISIONS: REVISED, INCORPORATED, CHG. DOC., ISSUED

THIS DWG SUPERSEDES: REV. THIS DWG SUPERSEDES: REV.

**WOLF CREEK**  
NUCLEAR OPERATING CORPORATION

ELECTRONIC APPROVAL

PIPING AND INSTRUMENTATION DIAGRAM  
REACTOR BLDG AND HOT MACHINE SHOP  
FLOOR AND EQUIPMENT DRAIN SYSTEM

SCALE: NONE

DWG NO: M-12LF09

SHEET NO: 08

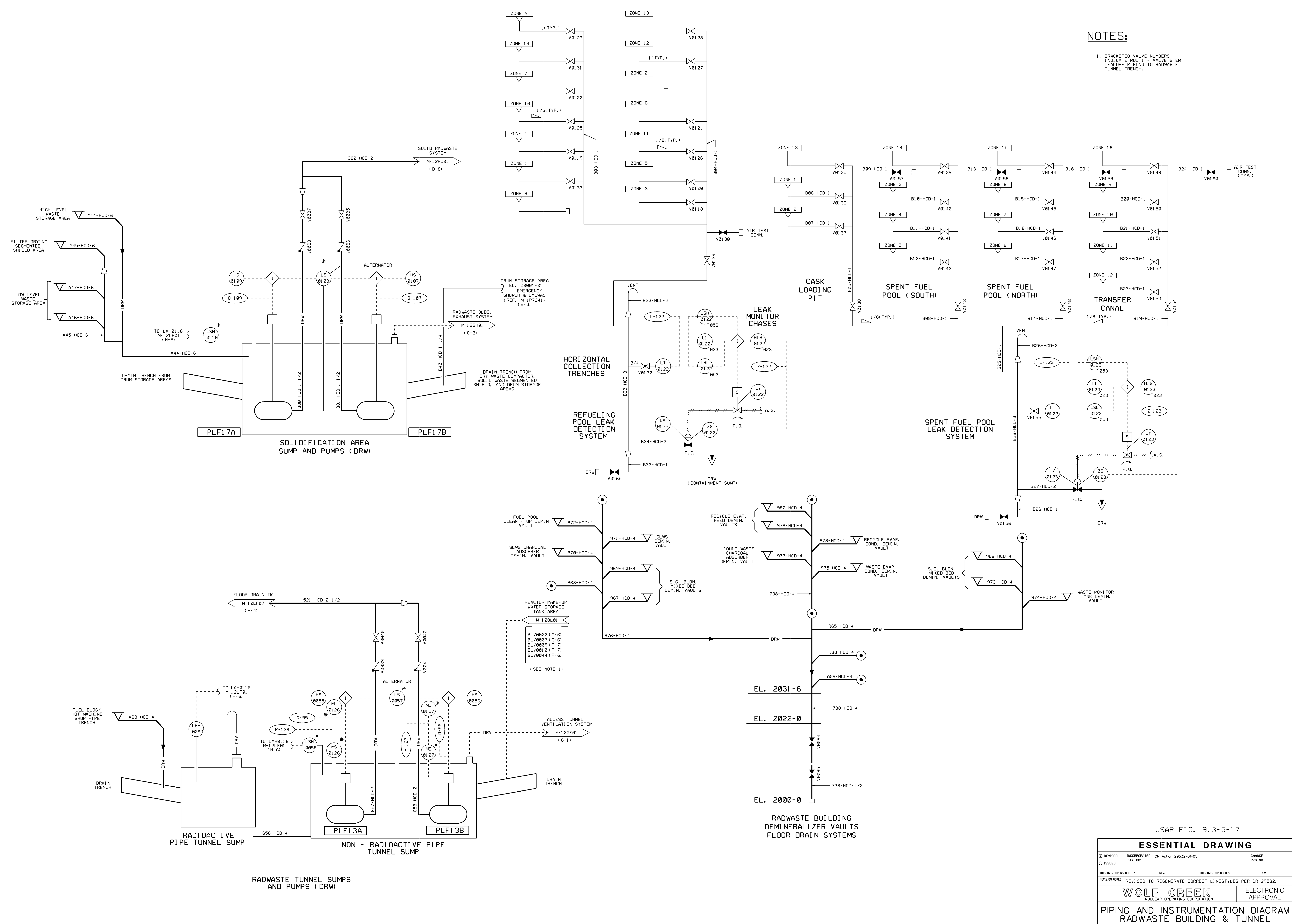
DATE: 08/20/09

3444 E. 08

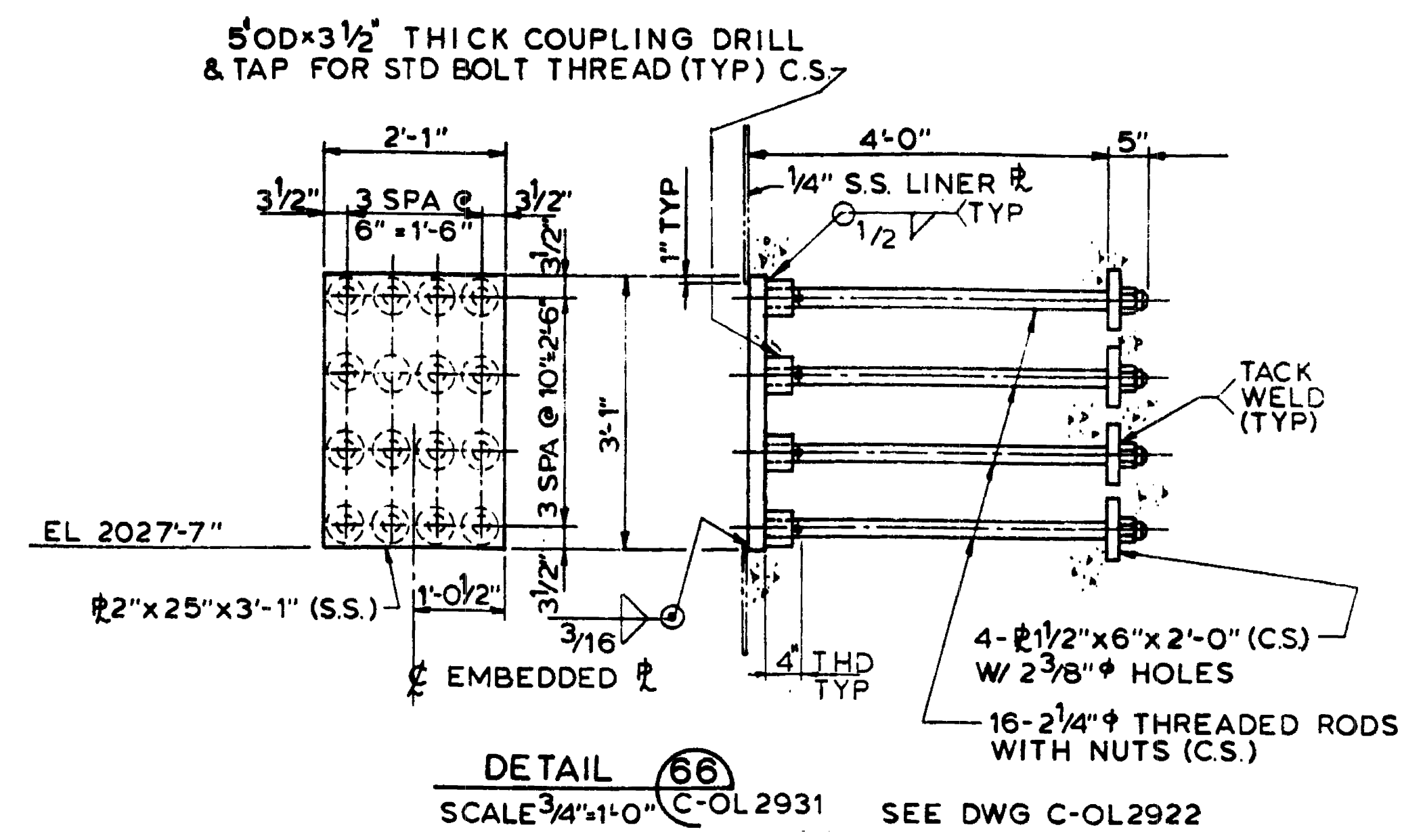
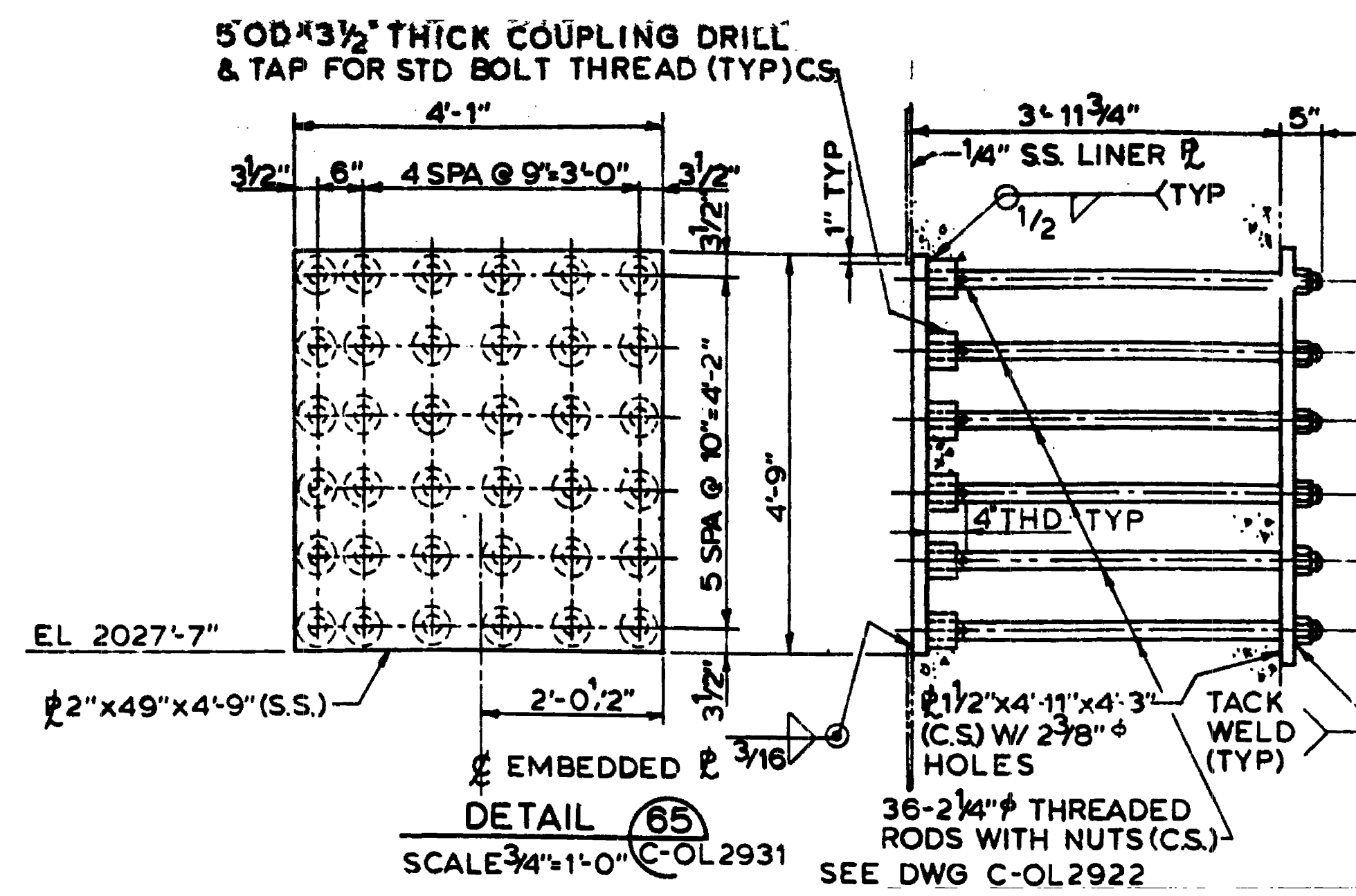
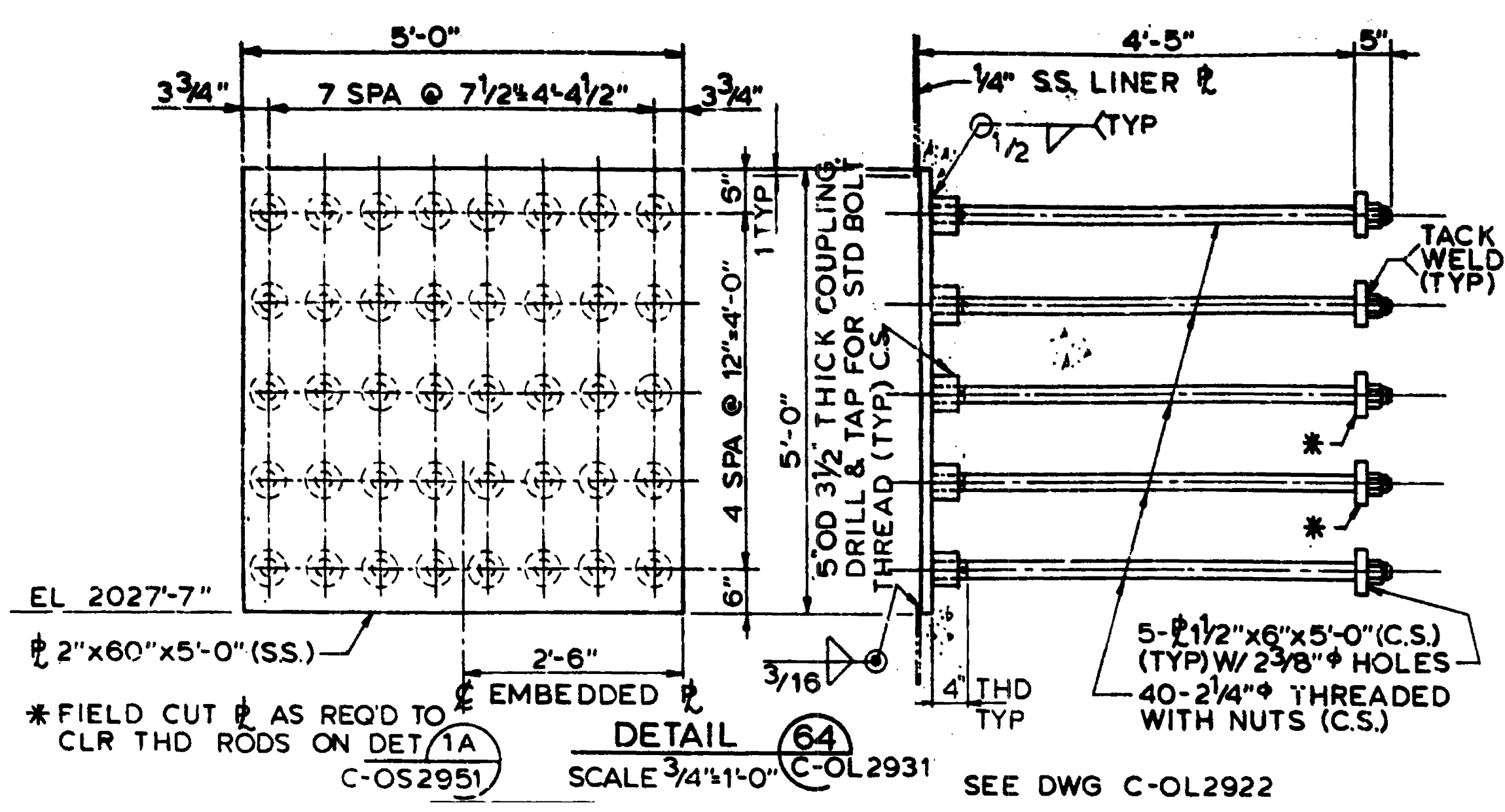


NOTES:

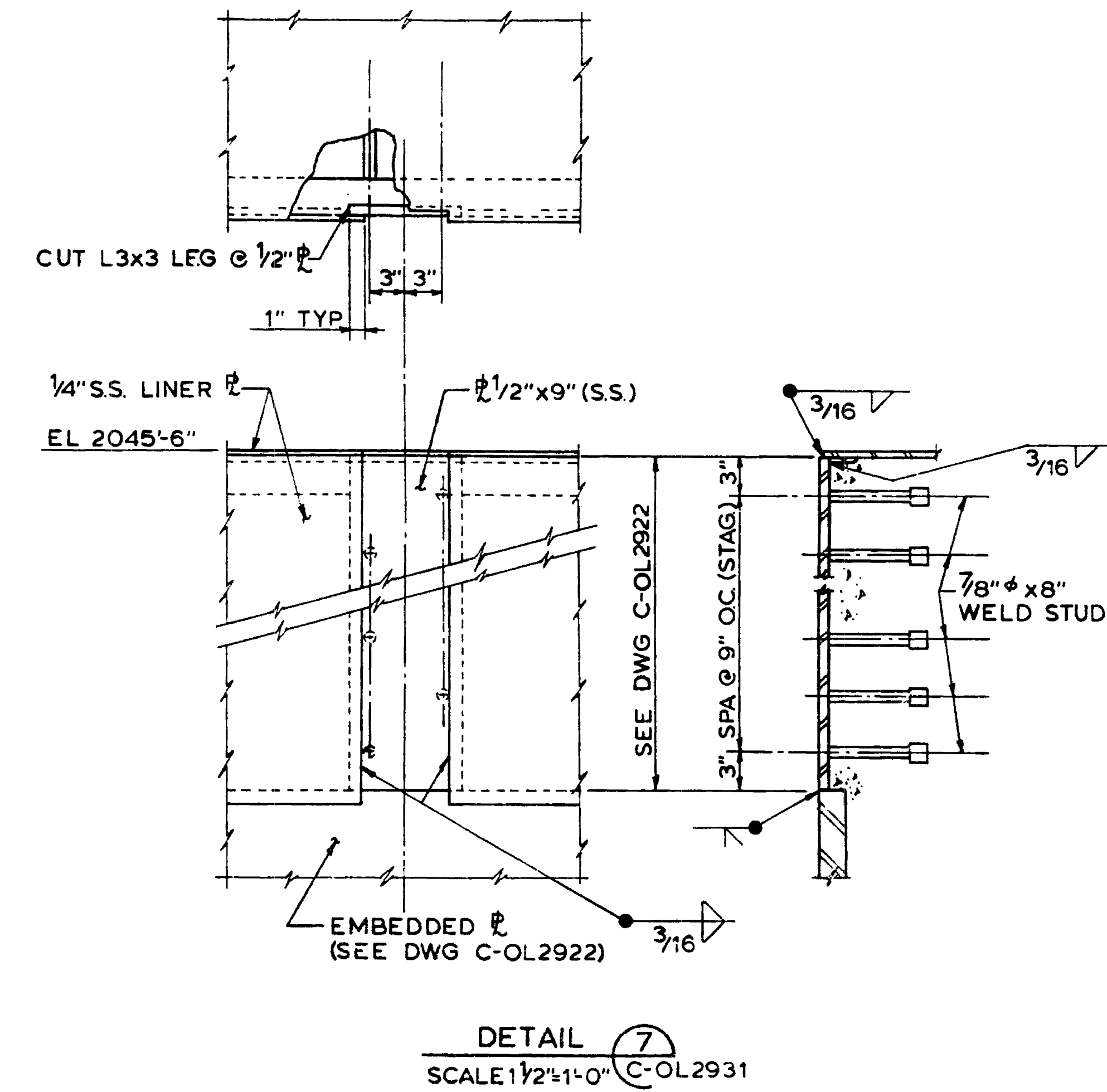
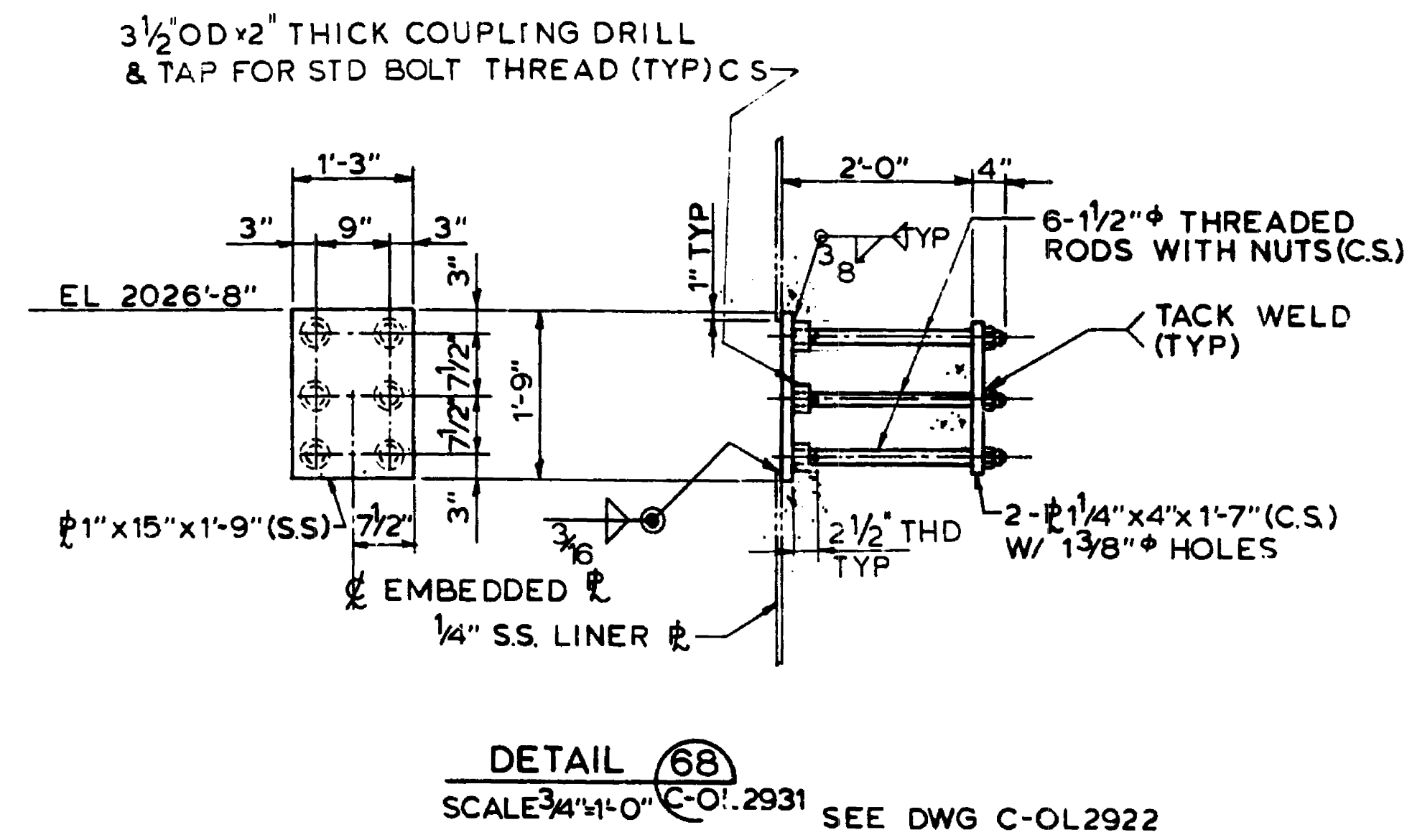
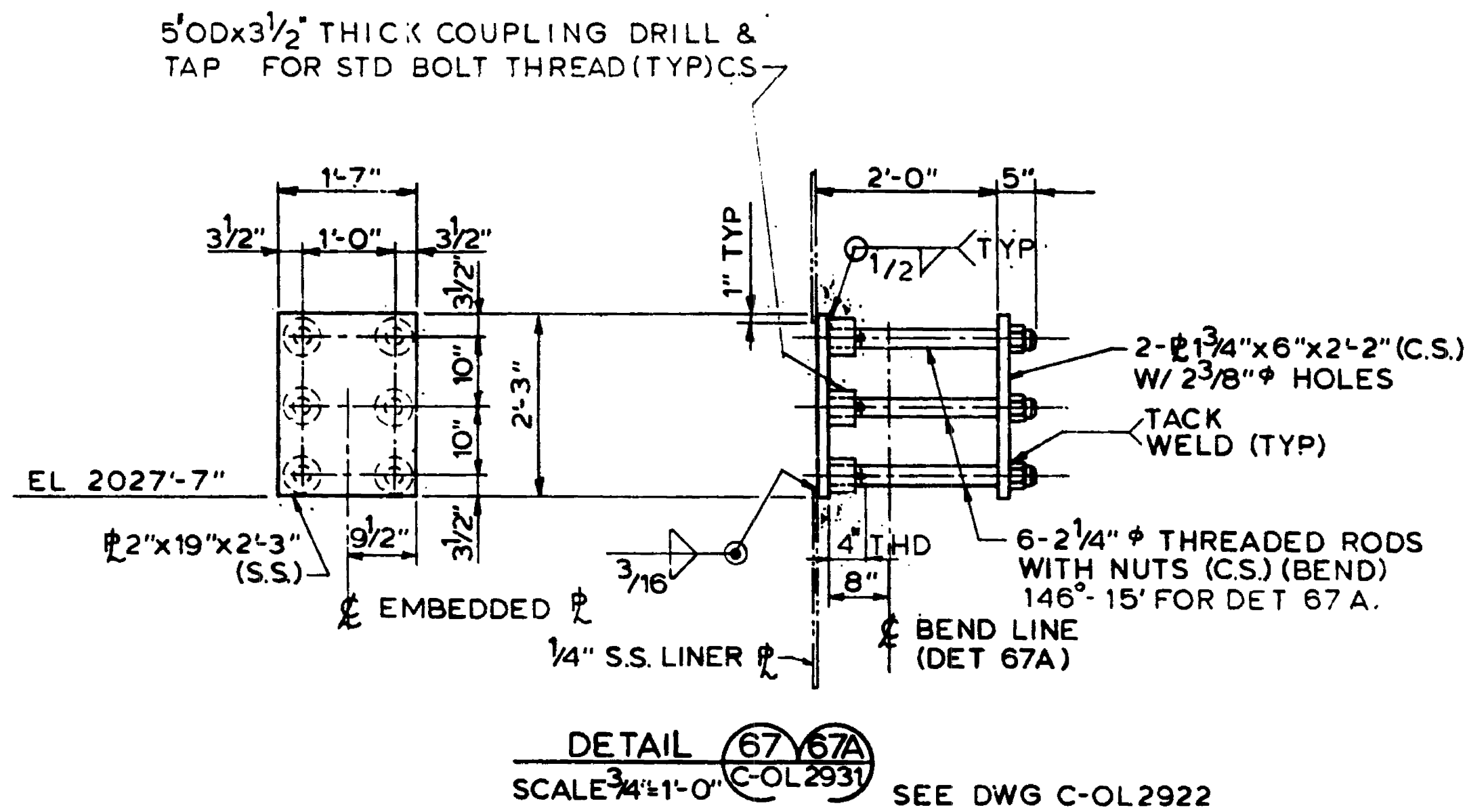
1. BRACKETED VALVE NUMBERS INDICATE MULTI-VALVE SYSTEM LEAKOFF PIPING TO RADWASTE TUNNEL TRENCH.





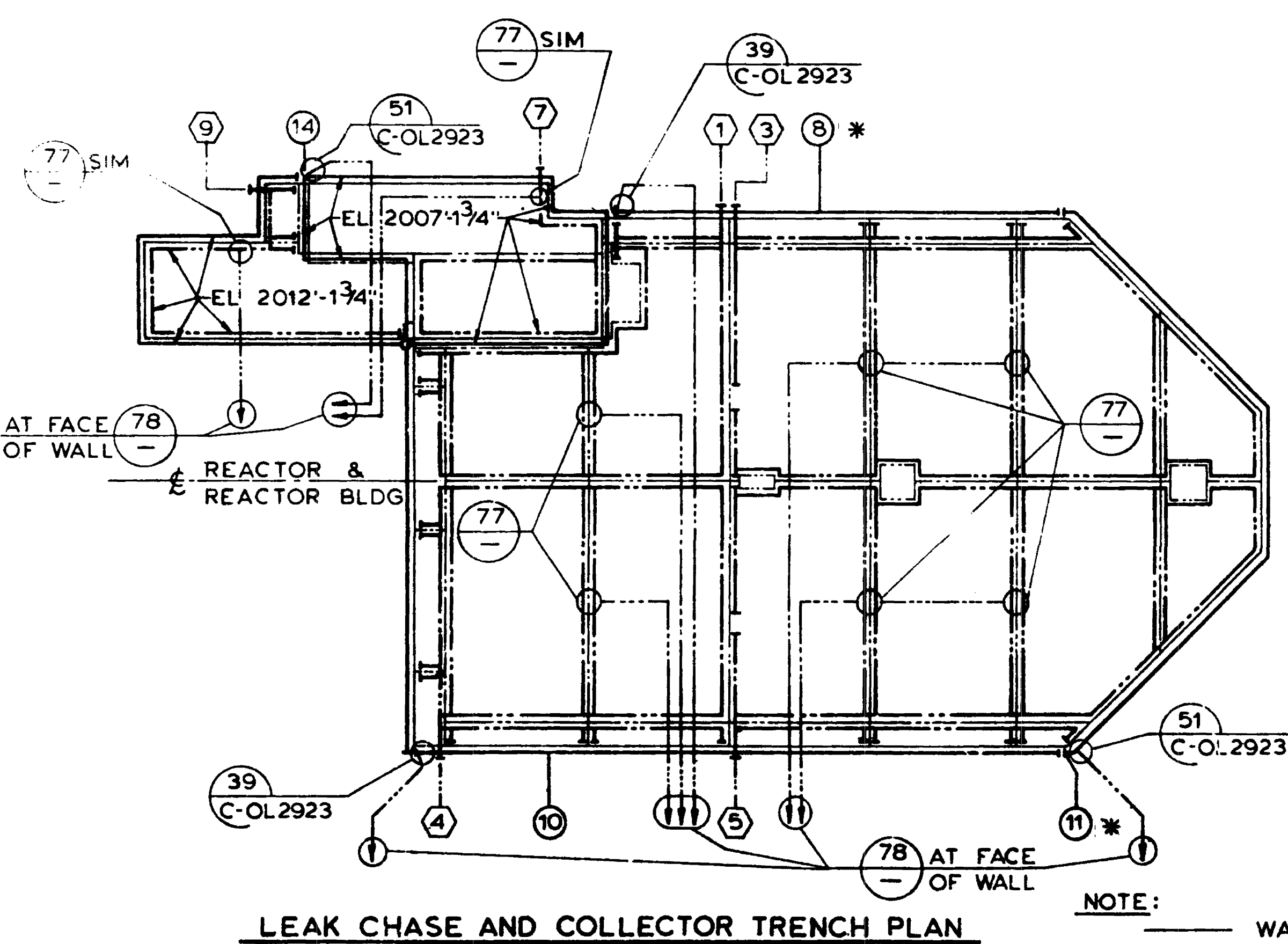
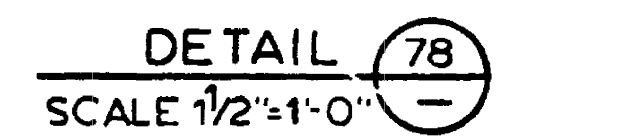
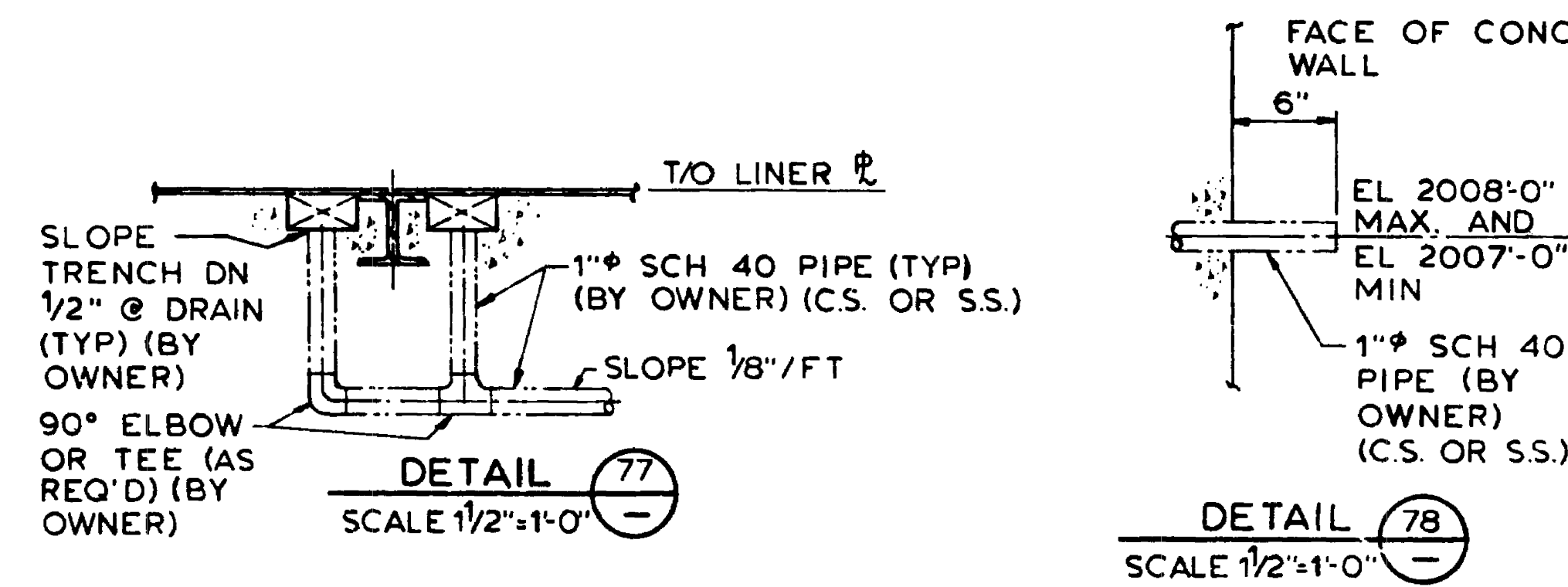
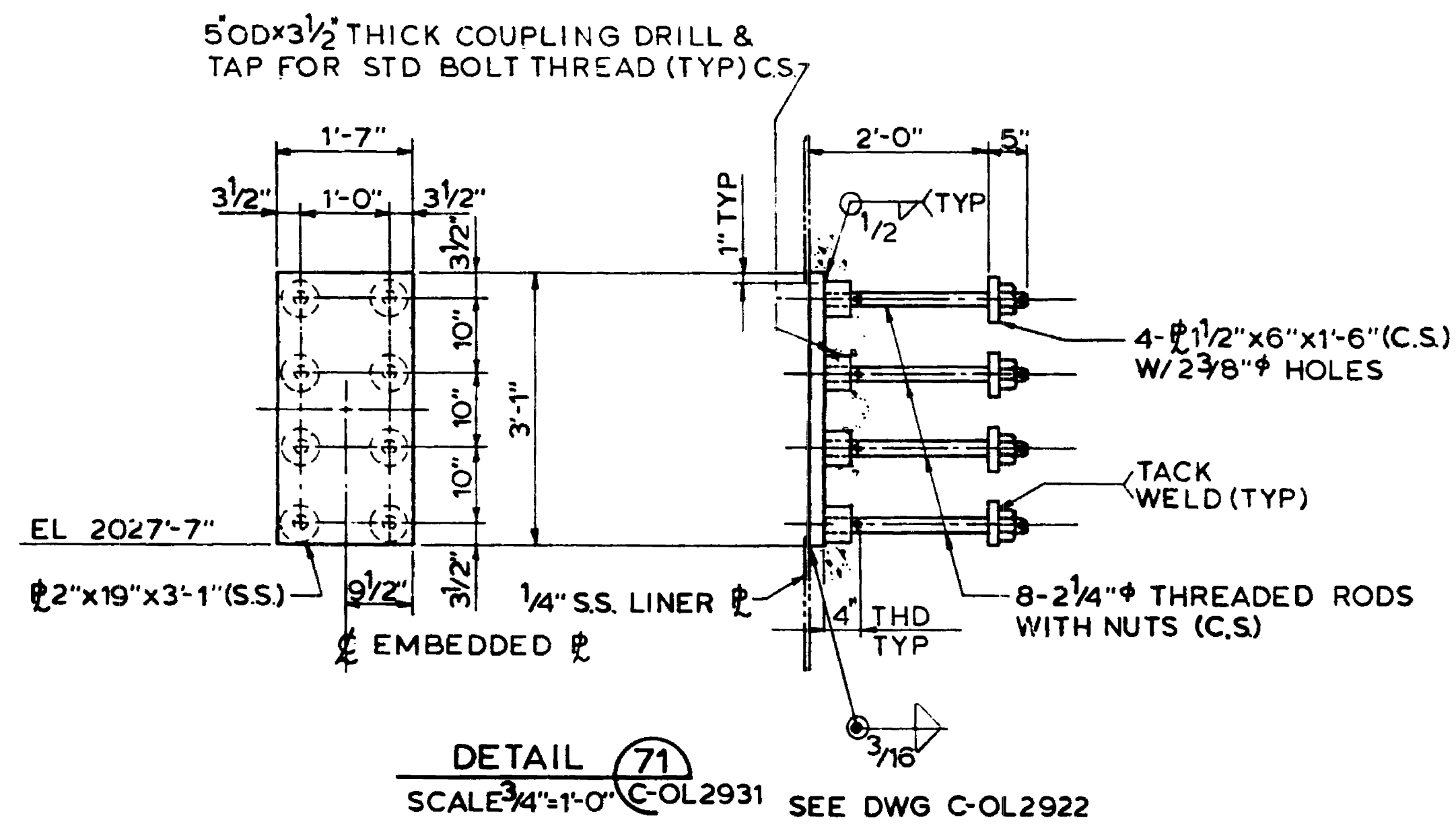


- NOTES**
- SEE DWG C-OL2921
  - DETAILS 7, 64, 65, 66, 67, 67A, 68, & 71 ARE O. EVERYTHING ELSE IS NON-O
  - THE COLLECTOR TRENCH PIPING IN THE FLOOR OF THE REFUELING POOL SHALL BE TESTED WITH A HYDROSTATIC HEAD OF 10 FEET



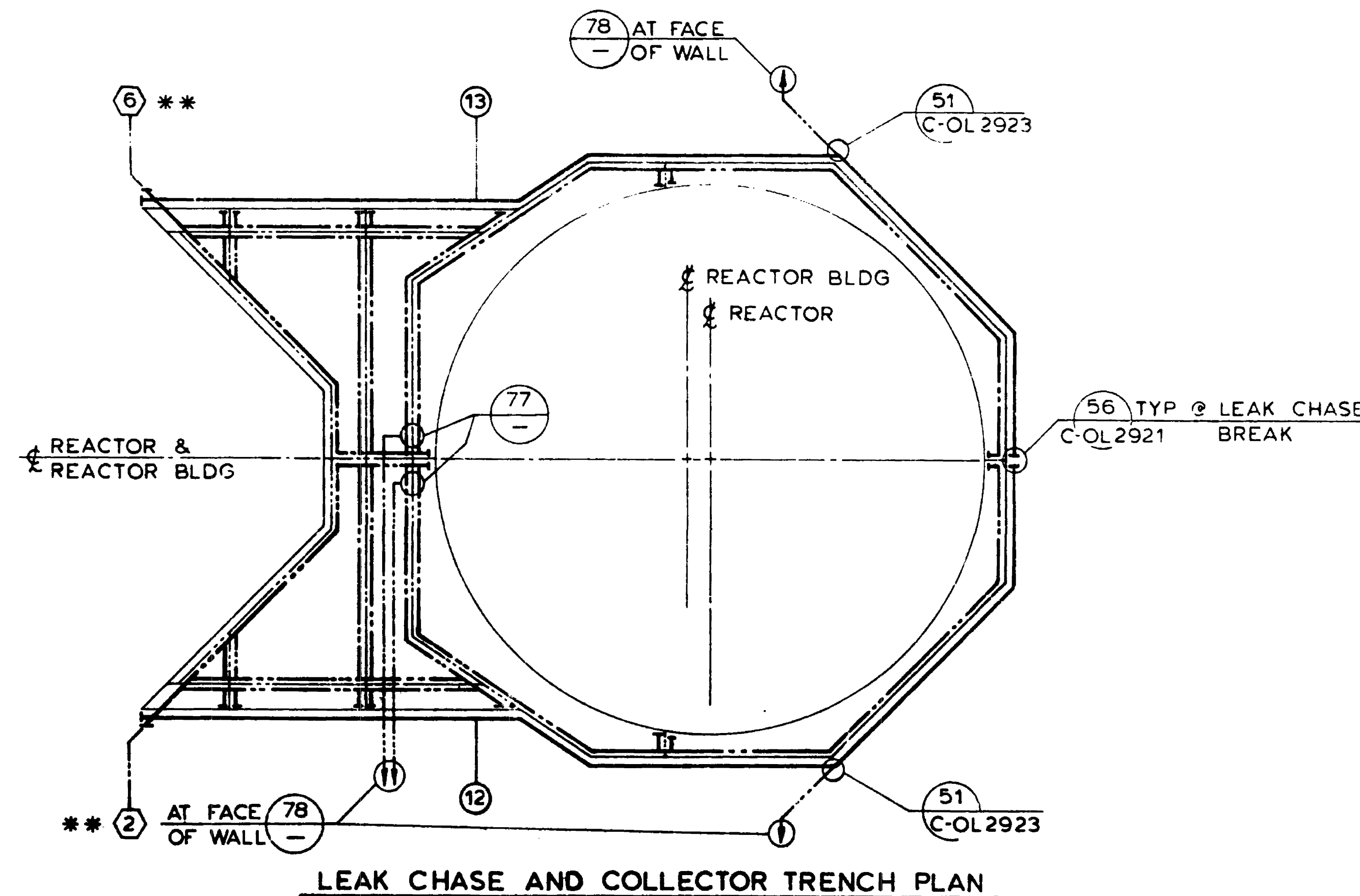
- REFERENCE DRAWINGS**
- SEE DWG C-OL2921
  - SEE DWG M-03LF16 & M-03LF17 FOR LEAK CHASE PIPING ISO.

- MATERIAL RESPONSIBILITY**
- SEE DWG C-OL2921



\* - UNIT 1 DOES NOT HAVE ZONE 8. IT IS COMBINED WITH ZONE 11.

- NOTE:**
- WALL
  - FLOOR SEAM
  - COLLECTOR TRENCH
  - LEAK CHASE
  - SCH 40 PIPE (BY OWNER)



\* \* - UNIT 1 DOES NOT HAVE ZONE 2. IT IS COMBINED WITH ZONE 6.

USAR FIG. 9, 3-7

**ESSENTIAL DRAWING**

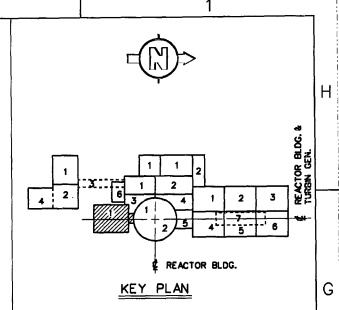
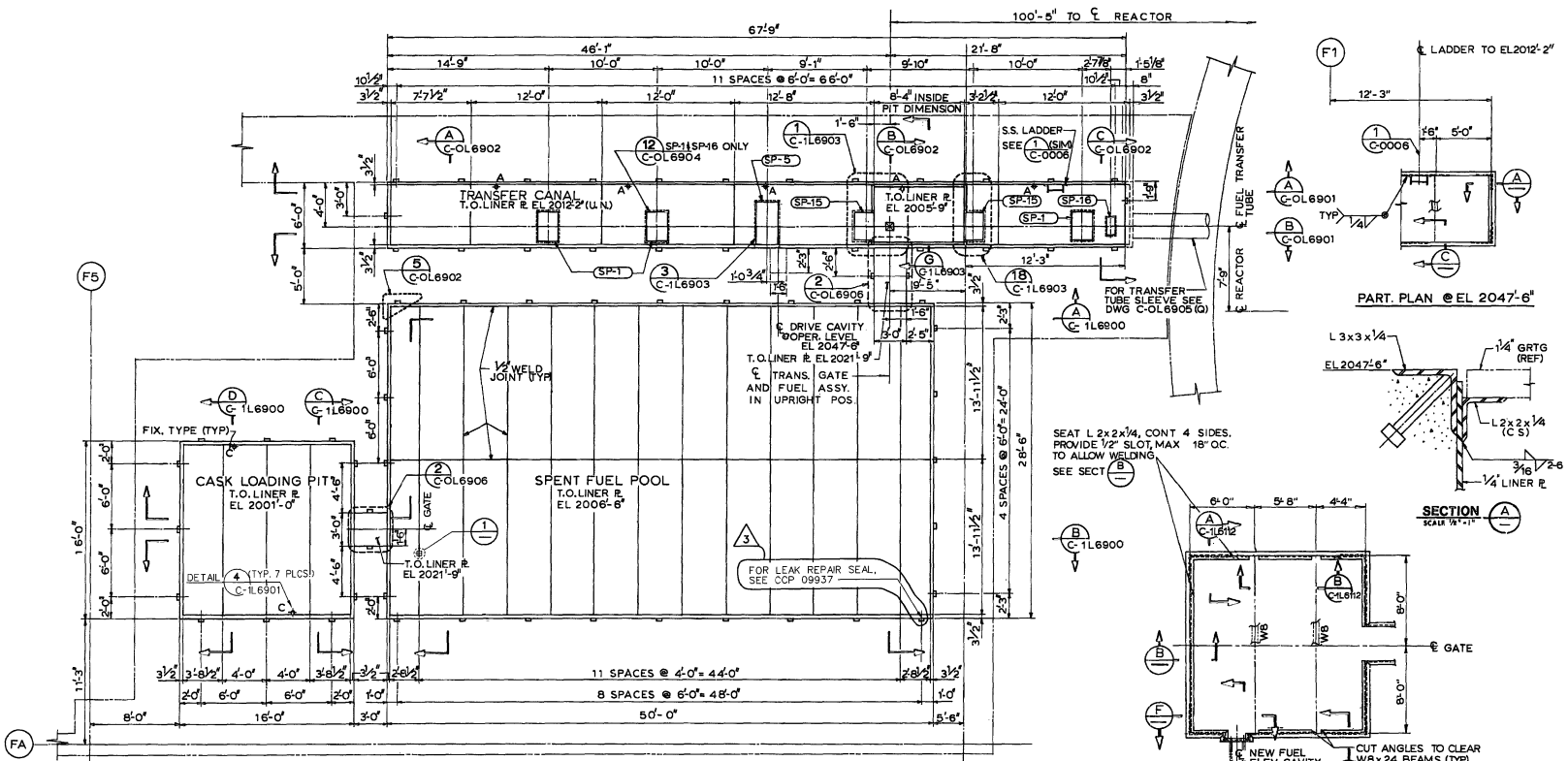
REF. CR 2007-000952

**WOLF CREEK**  
NUCLEAR OPERATING CORPORATION

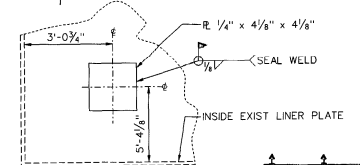
REACTOR BUILDING  
S.S. LINER PLATE REACTOR  
REFUELING CANAL - DETAILS

SCALE: NONE DRAWING NUMBER: C-1L2931 SHEET: 00 REV: 00

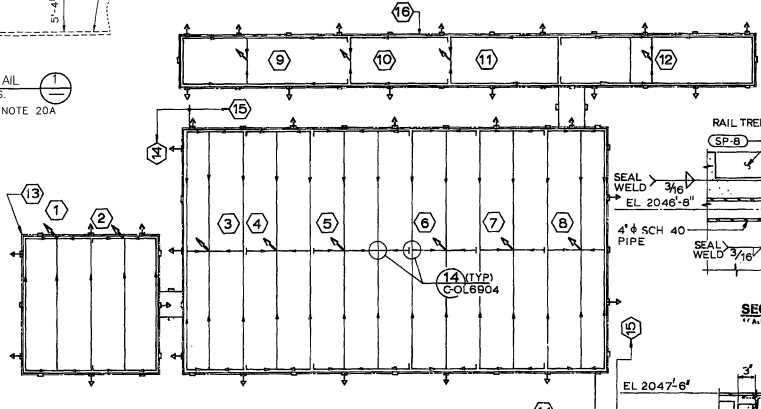
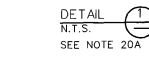




- NOTES**
1. STAINLESS STEEL LINER PLATE AND APPURTENANCES SHALL BE FURNISHED IN ACCORDANCE WITH SPEC 10466-C-171 AND ERRECTED IN ACCORDANCE WITH SPEC 10466-C-174.
  2. TRANSFER GATES SHALL CONFORM TO THE REQUIREMENTS OF SPEC 10466-C-174.
  3. ALL DIMENSIONS OR ELEVATIONS ARE MEASURED ALONG THE INSIDE SURFACE OF STAINLESS STL LINER R. (UN. O.).
  4. STAINLESS STL LINER R. SHALL BE 1/4" THICK.
  5. THE STAINLESS STL LINER R. IS DESIGNED AS FORMWORK. FORM TIES SHALL BE SPACED AT A MAXIMUM DISTANCE OF 6'-0" ALONG THE HORIZONTAL CHANNEL STIFFENERS.
  6. CONCRETE SHALL BE PLACED AT A MAX RATE OF 1.5 FT PER HOUR.
  7. REFERENCE EL 2000'-0" IS TOP OF FUEL BLDG GROUND FLOOR.
  8. ALL EXPOSED FIELD WELDS SHALL BE GROUND TO A SMOOTH FINISH.
  9. ALL UNDERCUT SECTIONS IN LINER R. SEAMS AND CORNER WELDS SHALL BE COVERED WITH S.S. METAL.
  10. FOR DESIGNATION OF ALL SUPPORT PLATES SEE SCHEDULE ON DWG C-OL6904.
  11. ALL PLATES AND SHAPES SHALL CONFORM TO ASTM-A240 TYPE 304L UNLESS NOTED.
  12. DELETED
  13. CARBON STEEL PLATES AND SHAPES SHALL CONFORM TO ASTM-A36.
  14. BOLTS AND NUTS SHALL CONFORM TO ASTM-A325.
  15. FOR FUEL TRANSFER SYSTEM INSTALLATION REQUIREMENTS SEE DWG. C-OL6906.
  16. FORMWORK SHALL BE ADEQUATELY BRACED PRIOR TO CONCRETE PLACEMENT.
  17. TEMPORARY ERECTION BRACING SHALL BE PROVIDED BY THE ERECTOR WHEREVER NECESSARY TO TAKE CARE OF ALL LOADS TO WHICH THE STRUCTURE MAY BE SUBJECTED, INCLUDING WIND, ERECTION EQUIPMENT AND OPERATION OF SAME.
  18. FLOOR LEAK CHASE CHANNELS SHALL BE SET WITHIN THE FOLLOWING TOLERANCES:  
LOCATION: ± 1/2"  
ELEVATION: ± 1/2"  
LEAK CHASE SHALL BE 10'-0" IN ANY DIRECTION ACROSS THE LEAK CHASE CHANNEL PATTERN.
  19. NOTED PLATES SHALL BE USED FOR GROUNDING.
  20. THE TOP OF THE CASK LOADING PIT LINER PLATE (EL 2047'-6") SHALL BE ADJUSTED AND BRACED TO MAINTAIN SQUARENESS. THE TOLERANCE FOR THE DIAGONAL DIMENSIONS AT THE TOP OF THE LINER PLATE IS ± 3/4".
  - 20A. FLOOR LINER REPAIR PLATE PER CHANGE PACKAGE 09189. SEE ALSO DWG. C-171-00086. PLATE INSTALLATION TOLERANCE IS ± 1/2" FROM DIMENSIONS SHOWN.

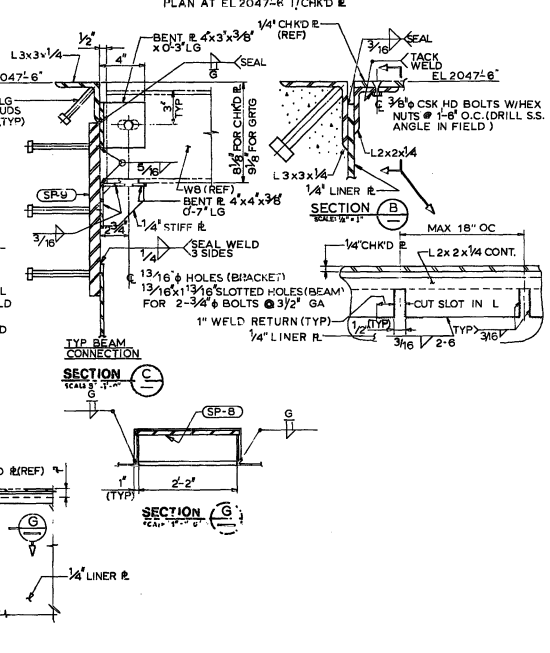


**PLAN @ EL 2021'-9"**  
SCALE: 1/4"=1'-0"



**PLAN OF LEAK CHASE ZONES**  
SCALE: 3/16"=1'-0"

- 1 THRU 12 FLOOR LEAK CHASE ZONE
- 13 THRU 16 WALL LEAK CHASE ZONE



**REFERENCE DRAWING**  
C-OL6905 S.S. LINER PLATE FUEL TRANSFER TUBE

**MATERIAL RESPONSIBILITY**

1. FURNISHING OF SPENT FUEL POOL S.S. LINER R. AND APPURTENANCES UNDER SPEC 10466-C-171
2. FURNISHING OF SPENT FUEL POOL GATES UNDER SPEC 10466-C-174.
3. FURNISHING OF S.S. LADDERS UNDER SPEC 10466-C-171A.
4. FURNISHING OF 2" W.B. R'S UNDER SPEC 10466-C-171B.

USAR FIG. 9.3-7-02

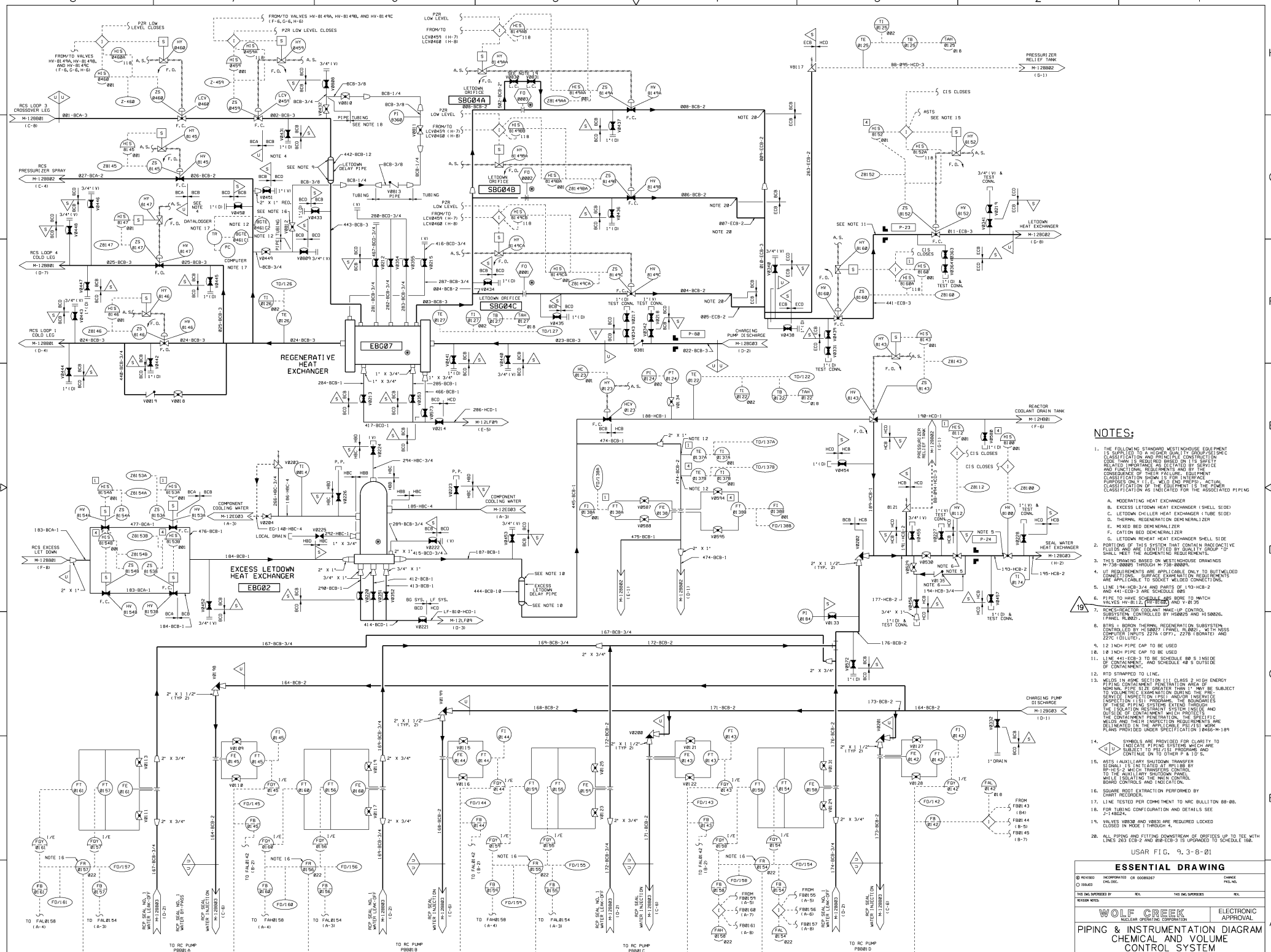
**ESSENTIAL DRAWING**

© REVISED INCORPORATED: WP-C-1690-02-A, 9/02  
 © ISSUED: C-171-00086, PLATE INSTALLATION TOLERANCE IS ± 1/2" FROM DIMENSIONS SHOWN.  
 THIS DOC. SUPPLIED BY: WFL 100 DMS SP/SP/03  
 REVISIONS: NONE

**WOLF CREEK**  
 FUEL BUILDING-AREA 1  
 STAINLESS STEEL LINER PLATE  
 PLAN-SPENT FUEL POOL  
 C-1L6111

DATE: 09/02/03  
 NOTED: [Signature]  
 SHEET: 103  
 TOTAL SHEETS: 103





- NOTES:**
- THE FOLLOWING STANDARD WESTINGHOUSE EQUIPMENT IS APPLICABLE TO THIS DRAWING UNLESS OTHERWISE SPECIFIED. THIS IS BASED ON THE SAFETY RELATED IMPORTANCE AS DICTATED BY SERVICE AND FUNCTIONAL REQUIREMENTS AND BY THE CONSEQUENCE OF THEIR FAILURE. EQUIPMENT CLASSIFICATION SHOWN FOR INFORMATIONAL PURPOSES ONLY. THE EQUIPMENT IS THE POWER CLASSIFICATION AS INDICATED FOR THE ASSOCIATED PIPING.
  - PORTIONS OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS AND ARE IDENTIFIED BY QUALITY GROUP "D" SHALL MEET THE APPLICABLE REQUIREMENTS.
  - THIS DRAWING IS BASED ON WESTINGHOUSE DRAWINGS M-120083 THROUGH M-120088.
  - IF REQUIREMENTS ARE APPLICABLE TO THE UNMELTED COMPONENTS, THE UNMELTED CONNECTIONS SHALL MEET THE APPLICABLE REQUIREMENTS.
  - LINE 194-HCB-3/4 AND PARTS OF 193-HCB-2 AND 411-ECB-3 ARE SCHEDULE 80S TO MATCH VALVES HY-8115, (HY-8128) AND V-8135.
  - PIPE TO HAVE SCHEDULE 80S ARE BORE TO MATCH VALVES HY-8115, (HY-8128) AND V-8135.
  - MANUFACTURER'S DRAWING FOR CONTROL SUBSYSTEMS CONTROLLED BY H80262 AND H80266, FRAME 18002.
  - BTR-1 BORON THERMAL REGENERATION SUBSYSTEM (BTR-1) H80267 FRAME 18002 IS THE PROCESS COMPUTER INPUTS ZETA (ZFF), Z78 (ZGRATER) AND Z7C (ZCOLLET).
  - 12 INCH PIPE CAP TO BE USED
  - 10 INCH PIPE CAP TO BE USED
  - LINE 441-ECB-3 TO BE SCHEDULE 80S INSIDE OF CONTAINMENT, AND SCHEDULE 40S OUTSIDE OF CONTAINMENT.
  - RTD STRAPPED TO LINE.
  - MELDS IN A9C SECTION (11 CLASS 2 HIGH ENERGY PIPING) CONTAINMENT DEMONSTRATION AREA IS SUBJECT TO VOLUNTARY EXAMINATION DURING THE PRE-OPERATION INSPECTION (POI) PROGRAM. THE BOUNDARIES OF THESE INSPECTION SYSTEMS EXTEND THROUGH THE ISOLATION RESTRAINT SYSTEM (IRS) AND OUTSIDE OF CONTAINMENT. MELDS (11 CLASS 2) WELDS AND THEIR INSPECTION REQUIREMENTS ARE LIMITED TO THE APPLICABLE (11) WORK PLANS PROVIDED UNDER SPECIFICATION 18466-M-189.
  - SYMBOLS ARE PROVIDED FOR CLARITY TO INDICATE CONTROL SYSTEMS WHICH ARE SUBJECT TO PLY/LSI PROGRAMS AND CONTINUE ON TO PAGES 2, 3 & 4.
  - ASIS AUXILIARY SHUTDOWN TRANSFER (ASIS) SIGNALS INITIATED AT P881 BY BB-8E-2 WHICH TRANSFERS CONTROL TO THE AUXILIARY SHUTDOWN TRANSFER ISOLATE ISOLATING THE MAIN CONTROL BOARD CONTROLS AND LOCKDOWN.
  - SQUARE ROOT EXTRACTION PERFORMED BY BOARD RECORDER.
  - LINE TESTED PER COMMENT TO NRC BULLETIN 88-88.
  - FOR TUBING CONFIGURATION AND DETAILS SEE J-148242A.
  - VALVES V808 AND V803 ARE REQUIRED LOCKED CLOSED IN MODE 1 THROUGH.
  - ALL BTR-1 AND BTR-2 QUANTITIES OF OFFICES UP TO TEST WITH LINES 283-ECB-2 AND 810-ECB-3 IS UPGRADDED TO SCHEDULE 16S.

USAR FIG. 9.3-8-01

**ESSENTIAL DRAWING**

REVISIONS: INCORPORATED OR 0008027 CHECK FILE NO. DATE: 11/15/83 BY: WJG INC. APPROVES: WJG

**WOLF CREEK** NUCLEAR OPERATIONS CORPORATION ELECTRONIC APPROVAL

**PIPING & INSTRUMENTATION DIAGRAM**

**CHEMICAL AND VOLUME CONTROL SYSTEM**

SCALE: NONE TITLE: M-120083 SHEET NO: 19

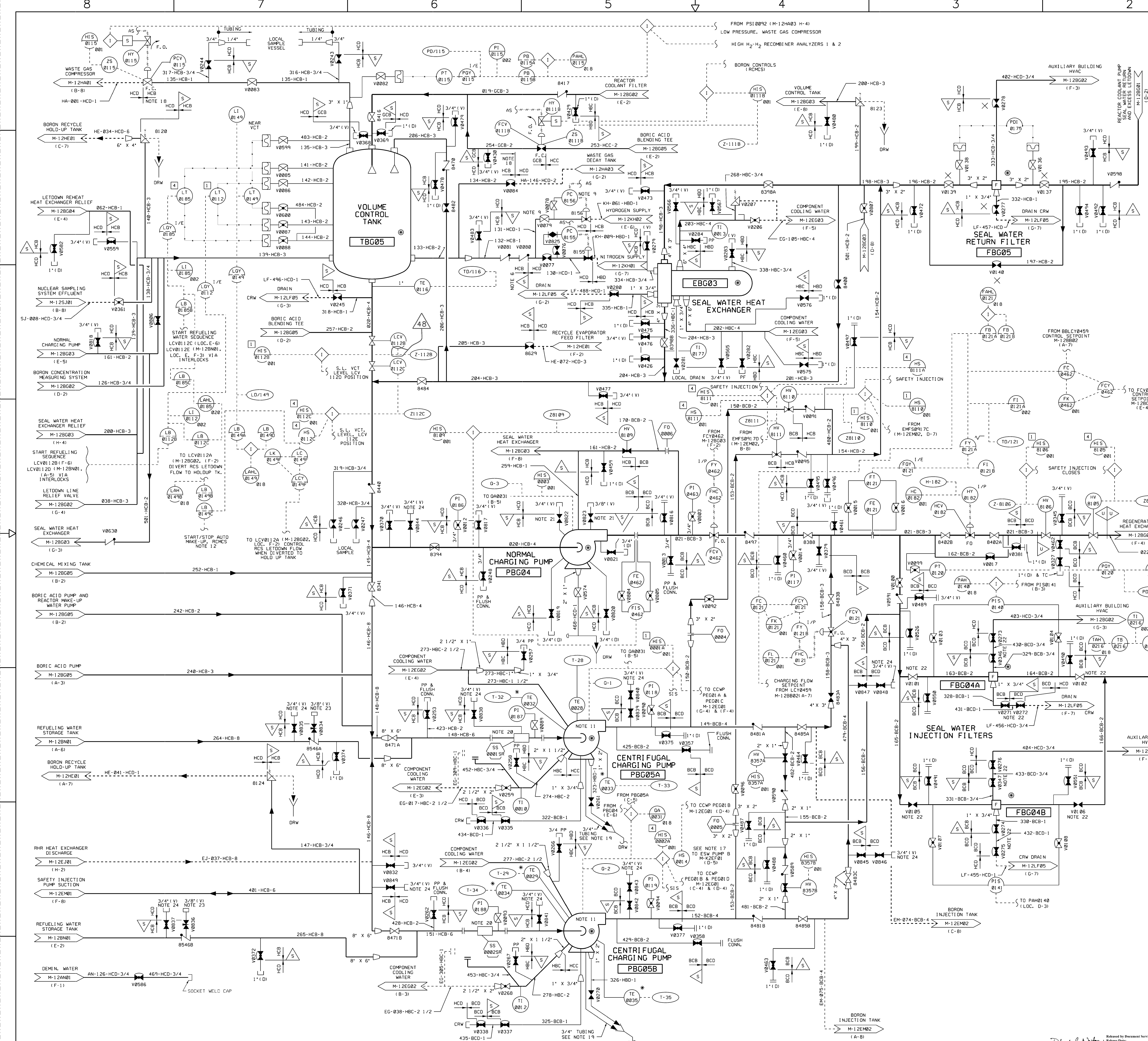




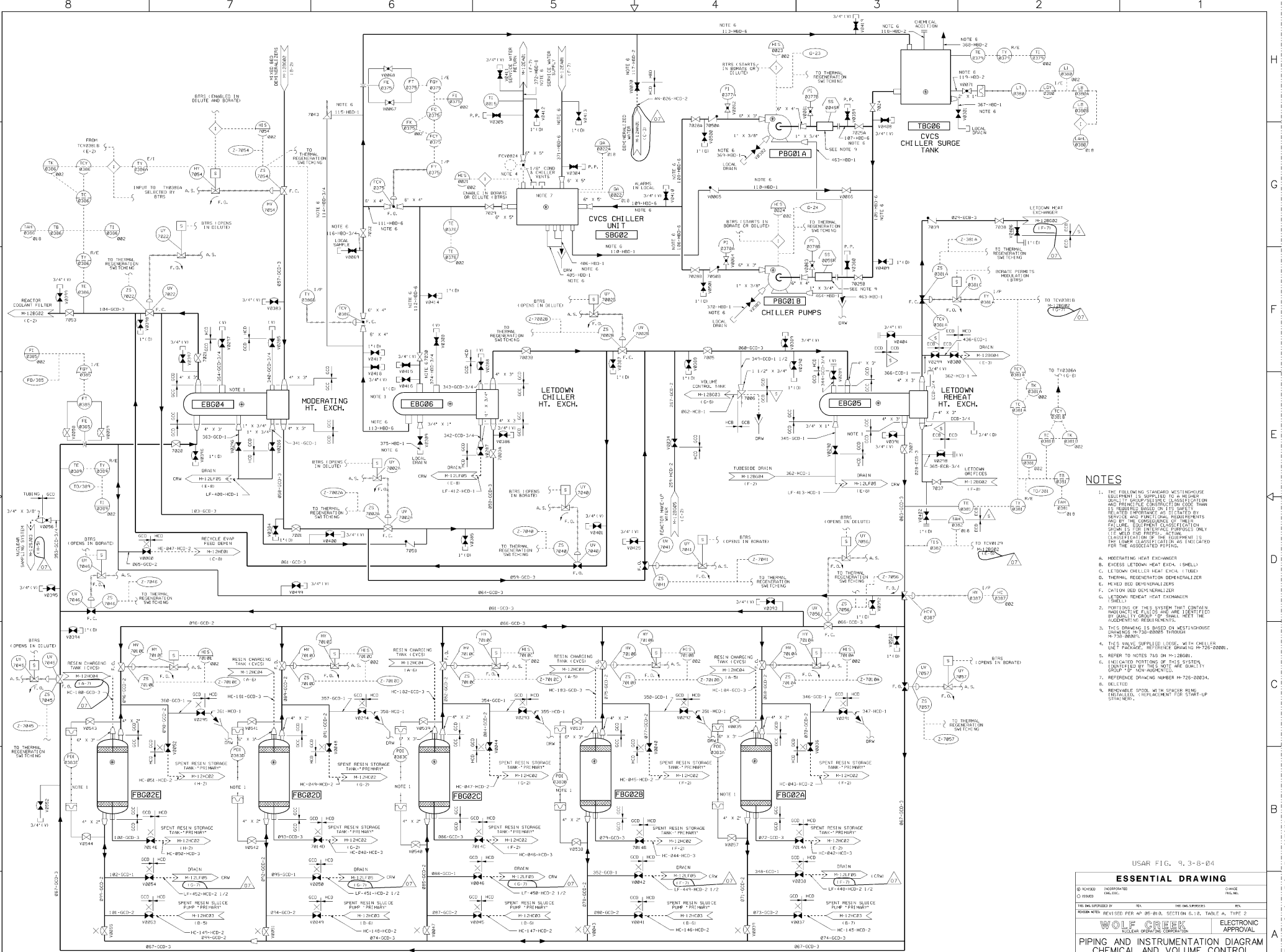


NOTES

- THE FOLLOWING STANDARD WESTINGHOUSE EQUIPMENT IS SUPPLIED TO A HIGHER QUALITY GROUP (SHEM) CLASSIFICATION AND PRIOR TO CONSTRUCTION CODE THAN IS REQUIRED BASED ON ITS SAFETY RELATED IMPORTANCE AS DETERMINED BY SERVICE AND FUNCTIONAL REQUIREMENTS AND BY THE CONSEQUENCE TO THEIR FAILURE. EQUIPMENT CLASSIFICATION SHOWN IS FOR INTERFARE PURPOSES ONLY. THE WELDED END PREPS, ACTUAL CLASSIFICATION OF THE EQUIPMENT IS THE LOWER CLASSIFICATION, AS INDICATED FOR THE SPECIFIC PIPING.
- EXCEPT AS NOTED BY NOTE 6, PORTIONS OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS AND ARE INDICATED BY QUALITY GROUP "D" NON-AUGMENTED.
- THIS DRAWING BASED ON WESTINGHOUSE DRAWINGS M-738-0005 THROUGH M-738-0009.
- DELETED.
- REFER TO NOTES 7 & 8 ON M-12B001.
- INDICATED PORTION OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "D" NON-AUGMENTED.
- DELETED.
- DELETED.
- PRESSURE CONTROLLER IS VALVE MOUNTED.
- DELETED.
- REFERENCE DRAWING NUMBER M-721-00040.
- SEE WESTINGHOUSE DRAWING M-761-00093.
- DELETED.
- WELDS IN ASME SECTION III, CLASS 2 HIGH ENERGY PIPING CONTAINMENT PENETRATION AREA OF NOMINAL PIPE SIZE GREATER THAN ONE INCH, MAY BE SUBJECT TO VOLUMETRIC EXAMINATION DURING THE PSI AND/OR ISI PROGRAMS. THE BOUNDARIES OF THESE PIPING SYSTEMS EXTEND THROUGH THE ISOLATION RESTRAINT SYSTEMS INSIDE AND OUTSIDE OF CONTAINMENT WHICH PROTECTS THE CONTAINMENT PENETRATION. THE SPECIFIC WELDS AND THEIR INSPECTION REQUIREMENTS ARE DELINEATED IN THE PSI/ISI WORK PLANS PROVIDED UNDER SPECIFICATION 18466-M-109.
- U U SYMBOLS ARE PROVIDED FOR CLARITY TO INDICATE ASME SECTION III, CLASS 2 PIPING SYSTEMS WHICH ARE SUBJECT TO THE PSI/ISI PROGRAMS AND CONTINUE ON TO OTHER P & IDs.
- DELETED.
- HS0014 BELONGS TO NB SYSTEM.
- THIS POINT DEFINES THE "D" BOUNDARY. BEYOND THIS POINT THE HCB PIPING IS ANALYZED CONSIDERING A SINGLE DEGREE OF FREEDOM.
- DRIP POCKET DRAINS (TWO PER PUMP) FIELD ROUTED PER DNG. M-14801.
- REMOVABLE SPOOL WITH SPACER RING INSTALLED (REPLACEMENT FOR START-UP STRAINER).
- V0822 IS THE DRIVE END SEAL VENT FOR PB004. V0823 IS THE NON-DRIVE END SEAL VENT FOR PB004.
- REACH RODS FOR VALVES V0101, V0102, V0105, V0106, V0271, V0272, V0273, V0274, V0275, V0276, V0346, & V0347 HAVE BEEN DISCONNECTED. THESE VALVES MAY BE OPERATED LOCALLY UNTIL SUCH TIME THAT THE RADIATION LEVELS IN ROOM 1306 BECOME PROHIBITIVE.
- VENT INSTALLED IN THE BONNET OF THE CHECK VALVE USING 3/8" INSTRUMENT FITTINGS AND VALVE.
- VENT INSTALLED WITH CAM AND GROOVE ADAPTER AND DUST CAP WITH BUMPER GASKET.







- NOTES**
1. THE FOLLOWING STANDARD WASTEWATER EQUIPMENT IS SUPPLIED TO A MINIMUM QUALITY SPECIFICATION. LOCATION AND PRELIMINARY CONNECTIONS FROM THE DRAWING SHOULD BE BASED ON THE QUALITY SPECIFICATION AND THE PRELIMINARY CONNECTIONS AND BY THE CONSEQUENCE OF THEIR FAILURE. EQUIPMENT CLASSIFICATION SHOULD BE FOR INTERFERENCE PURPOSES ONLY. CLASSIFICATION OF THE EQUIPMENT IS THE LOWER CLASSIFICATION AS INDICATED FOR THE ASSOCIATED PIPING.
  2. PORTINGS OF THIS SYSTEM MUST CONTAIN SUFFICIENT STRENGTH TO MEET THE FOLLOWING REQUIREMENTS:
    - A. MODERATING HEAT EXCHANGER
    - B. EXCESS LETDOWN HEAT EXCH. (SHELL)
    - C. LETDOWN CHILLER HEAT EXCH. (TUBES)
    - D. THERMAL REGENERATION DEMINERALIZER
    - E. HEAT BED DEMINERALIZER
    - F. CATION BED DEMINERALIZER (SHELL)
    - G. LETDOWN REHEAT HEAT EXCHANGER (SHELL)
  3. THIS DRAWING IS BASED ON WASTEWATER SYSTEMS AND IS SUBJECT TO CHANGE THROUGHOUT THE PROJECT.
  4. THIS ISVOLUME SUPPLIED LOOSE, WITH CHILLER UNIT PACKAGE. REFER DRAWING M-725-00001.
  5. REFER TO NOTES 745 ON M-12000.
  6. INDICATED PORTINGS OF THIS SYSTEM ARE TO BE PROVIDED BY THE QUALITY GROUP OF NON-ANGULATED.
  7. REFERENCE DRAWING NUMBER M-725-00034.
  8. REMOVABLE DRAIN WITH SPENIN RISER SHALL BE PROVIDED FOR START-UP STRAINING.

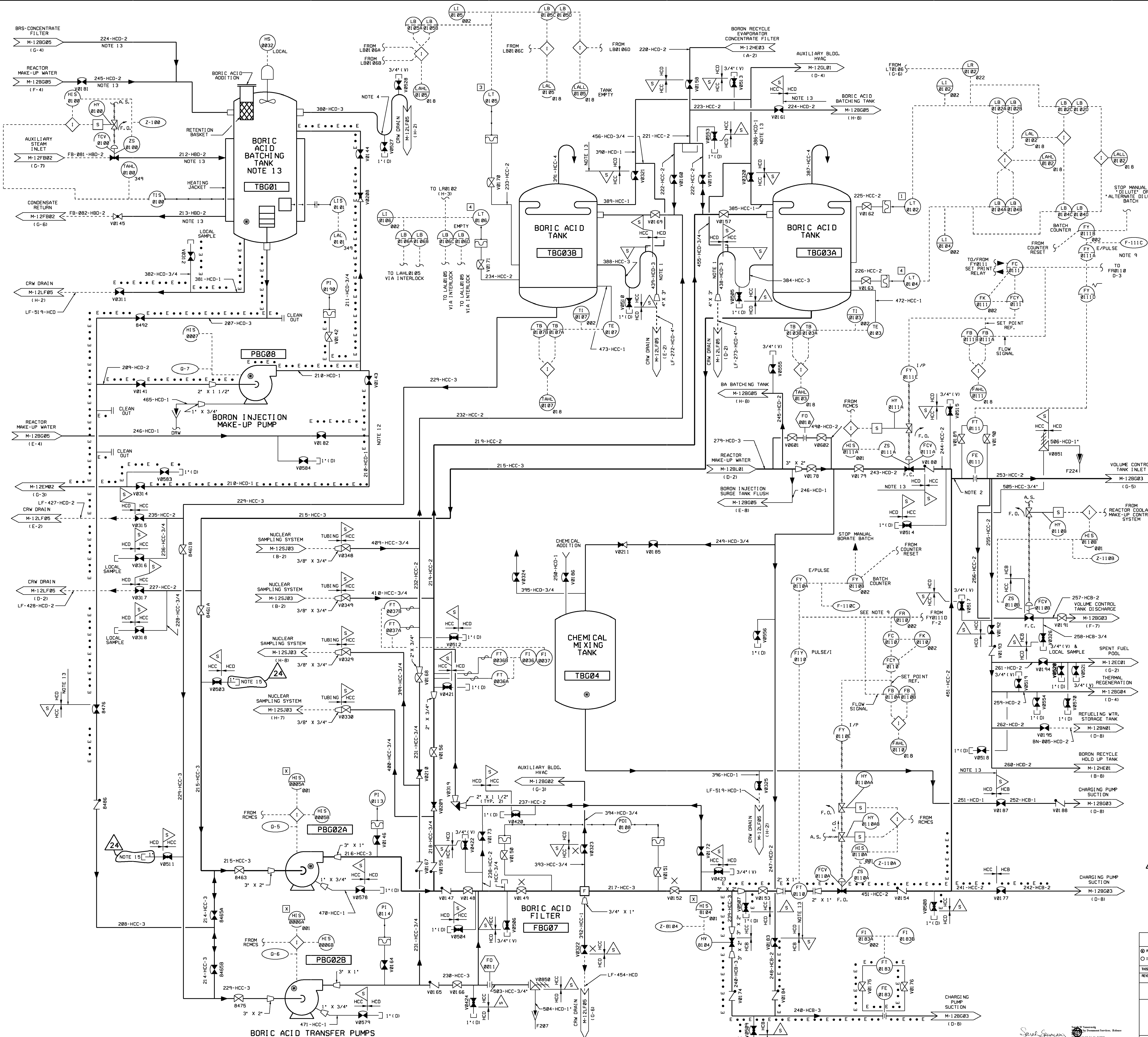
BORON THERMAL REGENERATION DEMINERALIZERS (5)

USAR FIG. 3, 3-B-D4

**ESSENTIAL DRAWING**

DESIGNED BY	INTEGRATED	DATE
DATE	REVISED	NO.
THIS DRAWING IS THE PROPERTY OF WOLF CREEK	NO. 100-1000000	REV.
NO. 100-1000000	NO. 100-1000000	NO. 100-1000000
WOLF CREEK		ELECTRONIC APPROVAL
PIPING AND INSTRUMENTATION DIAGRAM		
CHEMICAL AND VOLUME CONTROL SYSTEM		
SCALE	SHEET NO.	TOTAL SHEETS
NONE	M-12BG04	07





- ### NOTES
- LOWER LOOP TO EXTEND 12" BELOW NOZZLE, UPPER LOOP TO EXTEND 6" BELOW DIAPHRAGM FLANGE. SIPHON BREAK LOCATED AT TOP OF PIPE.
  - CONNECT PIPING TO BORIC ACID BLENDING TEE AS SHOWN.
  - THIS DRAWING BASED ON WESTINGHOUSE DRAWINGS M-738-00005, M-738-00006, M-738-00007, M-738-00008 & M-738-00009.
  - LOOP SEAL TO EXTEND 12" ABOVE AND BELOW TANK NOZZLE.
  - THE FOLLOWING STANDARD WESTINGHOUSE EQUIPMENT IS SUPPLIED TO A HIGHER QUALITY GROUP/SEISMIC CLASSIFICATION AND PRINCIPLE CONSTRUCTION CODE THAN IS REQUIRED BASED ON ITS SAFETY RELATED FUNCTIONAL REQUIREMENTS AND BY THE CONSEQUENCE OF THEIR FAILURE. EQUIPMENT CLASSIFICATION SHOWN IS FOR INTERFACE PURPOSES ONLY (I.E. WELD END PREPS). ACTUAL CLASSIFICATION OF THE EQUIPMENT IS THE LOWER CLASSIFICATION, AS INDICATED FOR THE ASSOCIATED PIPING.
    - A. MODERATING HEAT EXCHANGER
    - B. EXCESS LETDOWN HEAT EXCHANGER (SHELL SIDE)
    - C. LETDOWN CHILLER HEAT EXCHANGER (TUBE SIDE)
    - D. THERMAL REGENERATION DEMINERALIZER
    - E. MIXED BED DEMINERALIZER
    - F. CATION BED DEMINERALIZER
    - G. LETDOWN REHEAT HEAT EXCHANGER (SHELL SIDE)
  - PORTIONS OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS AND ARE IDENTIFIED BY QUALITY GROUP CLASSIFICATION 'D' SHALL MEET THE AUGMENTING REQUIREMENTS.
  - DELETED.
  - DELETED.
  - NSSS COMPUTER INPUT
  - REFER TO NOTES 7 & 8 ON DRAWING M-128G01.
  - DELETED
  - VALVES V-0143, V-0182, V-0314 TO BE LOCATED CLOSE TO EACH OTHER AND TO TEE OF LINE 246 WITH 218.
  - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP D NON-AUGMENTED
  - DELETED
  - THESE CONNECTIONS ARE FOR BEYOND-DESIGN-BASIS (FLEX) REACTOR COOLANT SYSTEM MAKE-UP.

USAR FIG. 9.3-8-05

**ESSENTIAL DRAWING**

REVISED	INCORPORATED	WIP-M-128G05-021-A-1	CHANGE 01413
ISSUED	ENG. DOC.		REV. NO.

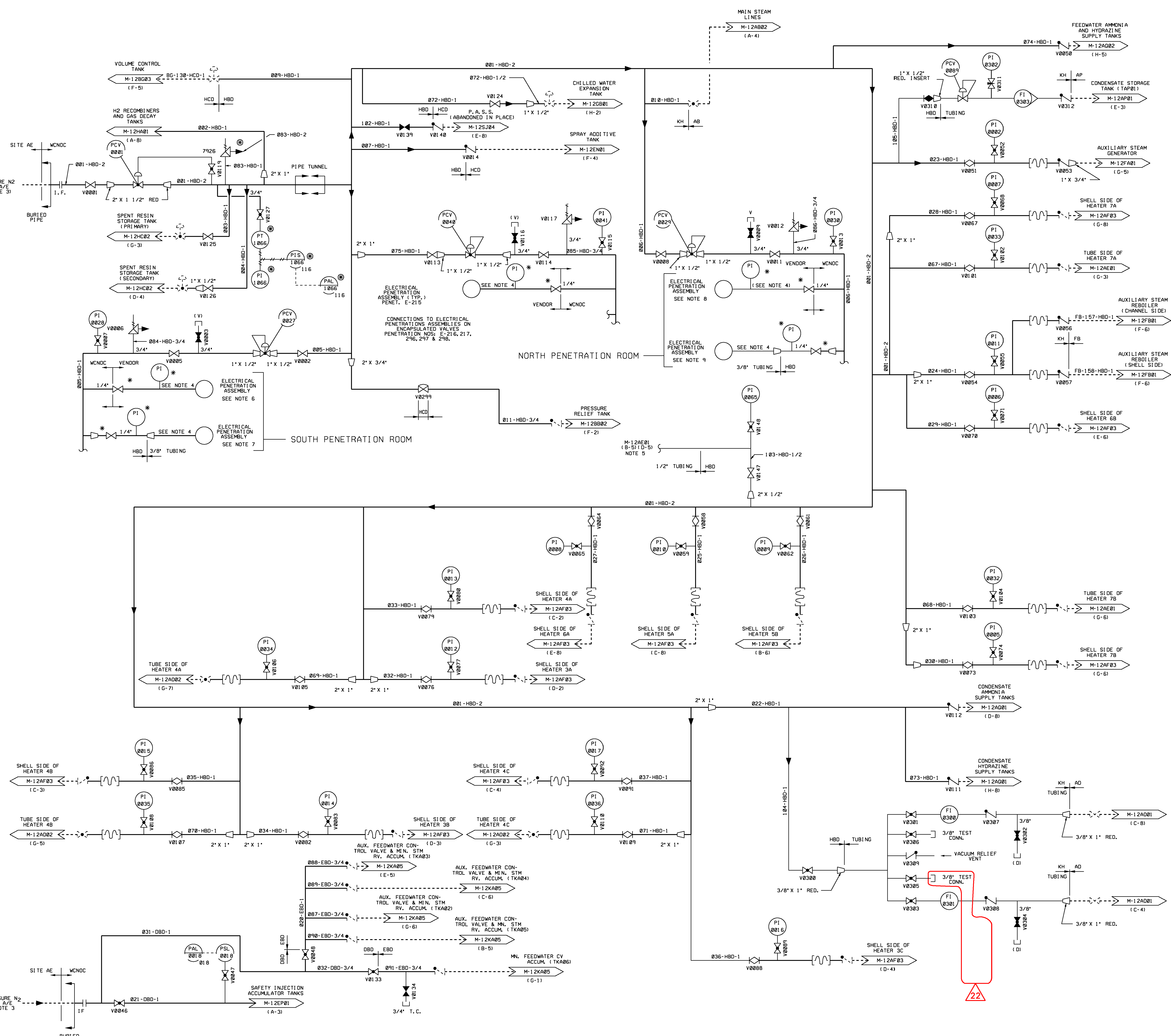
THIS ENG. SUPERSEDES: \_\_\_\_\_ REV. \_\_\_\_\_ THIS ENG. SUPERSEDES: \_\_\_\_\_

REVISION NOTES:

WOLF CREEK NUCLEAR OPERATING CORPORATION	ELECTRONIC APPROVAL
PIPING & INSTRUMENTATION DIAGRAM CHEMICAL & VOLUME CONTROL SYSTEM	
SCALE: NONE	DRAWING NUMBER: M-128G05
	SHEET: 24

3444 E. SIDE





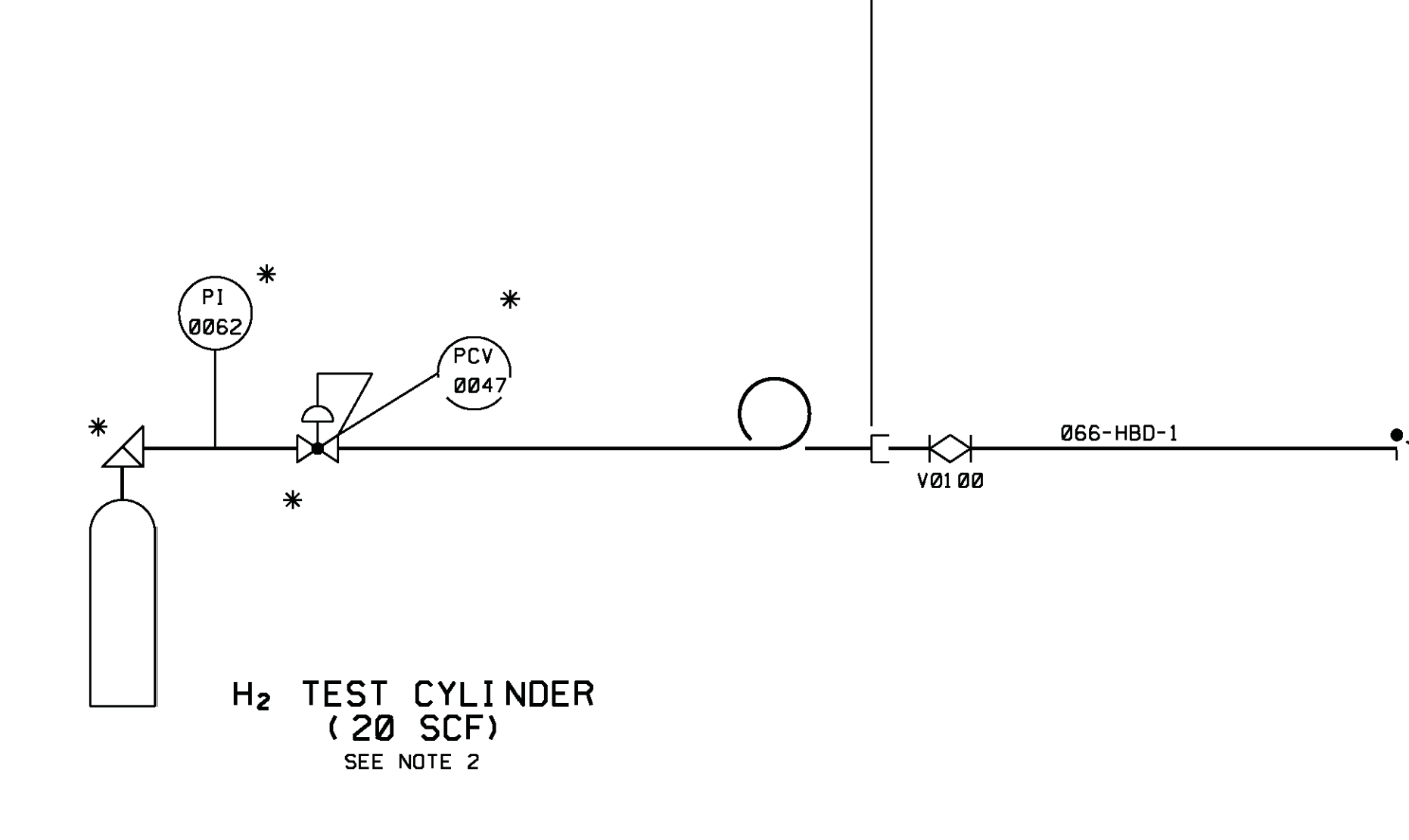
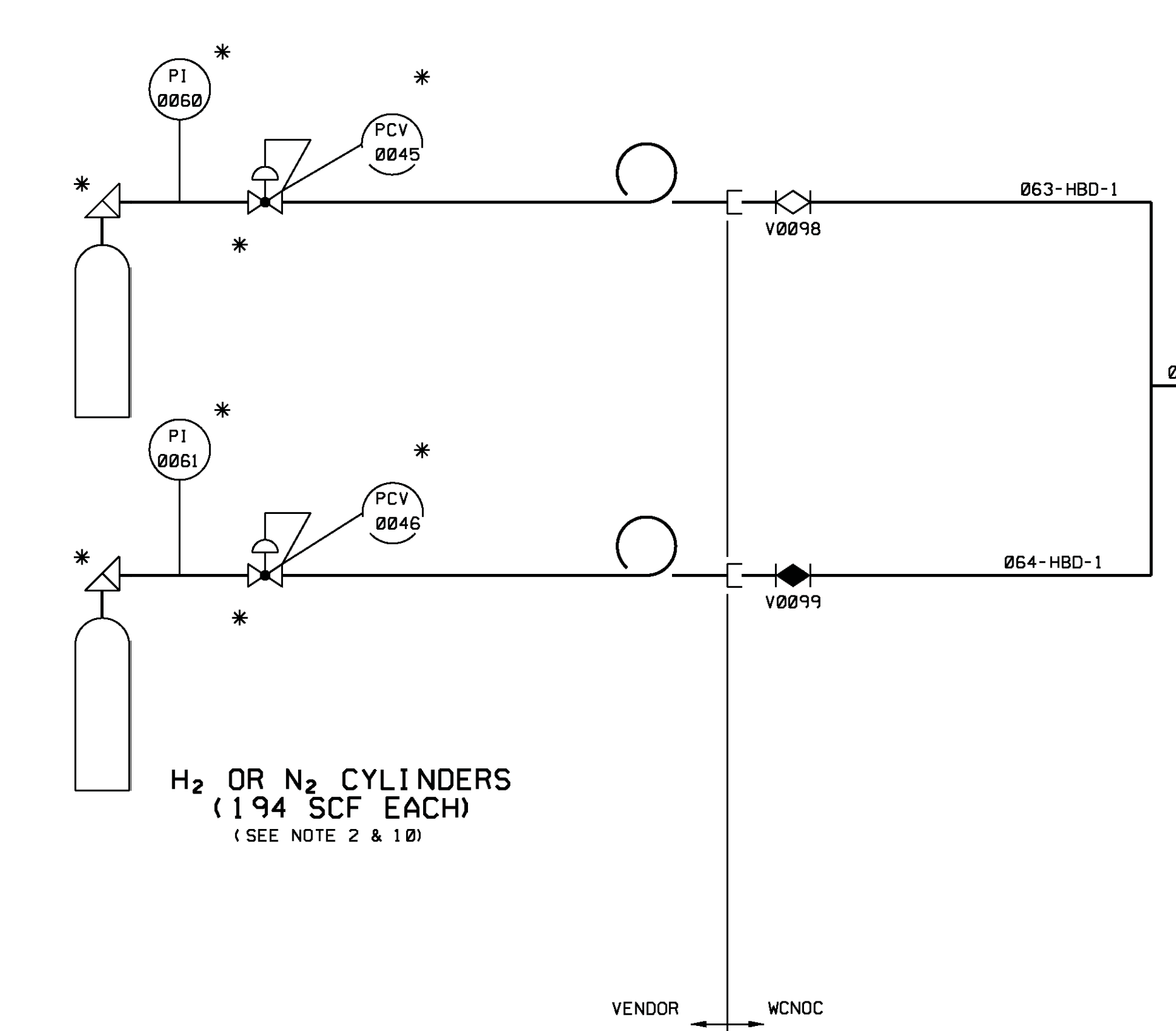
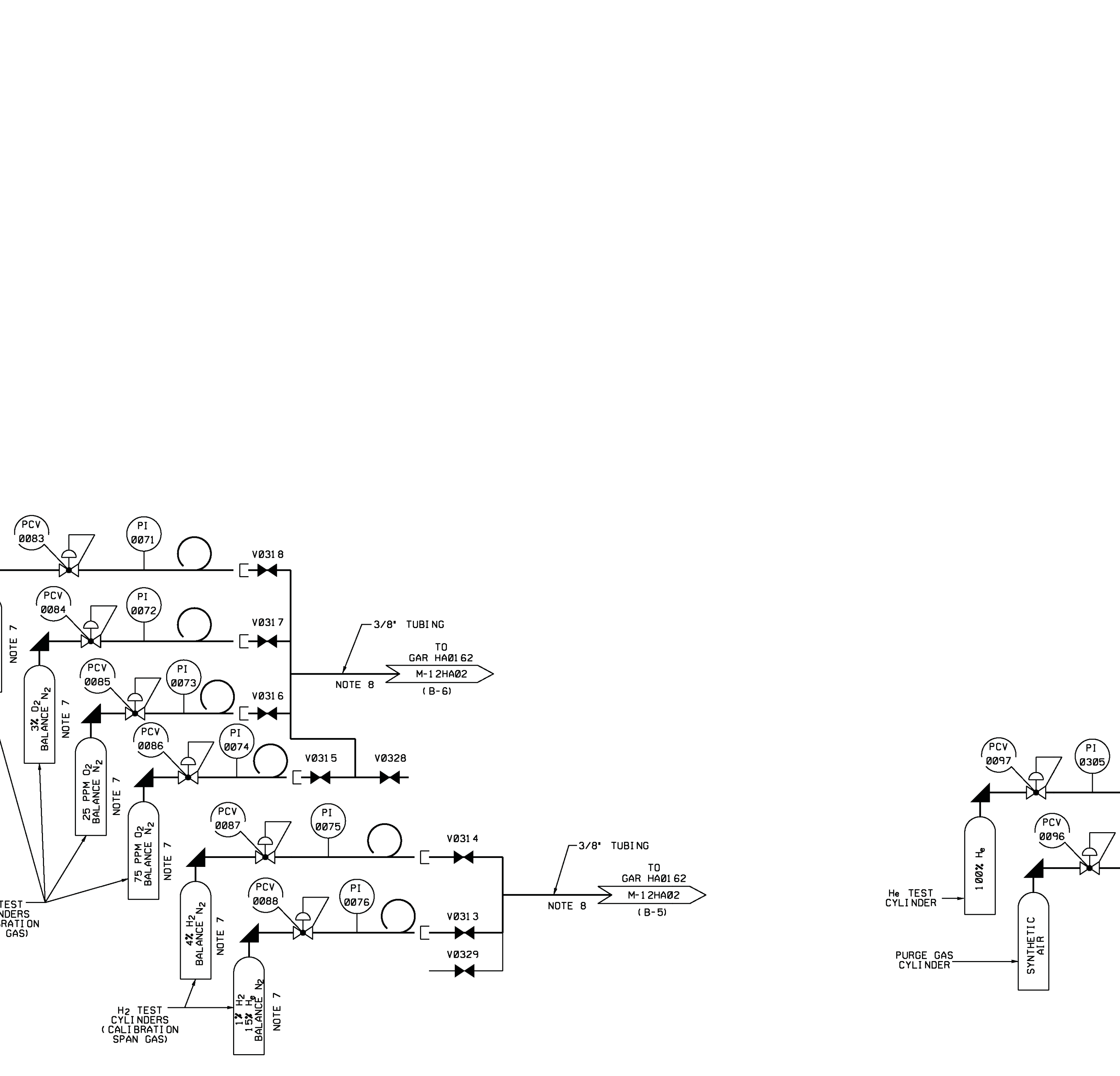
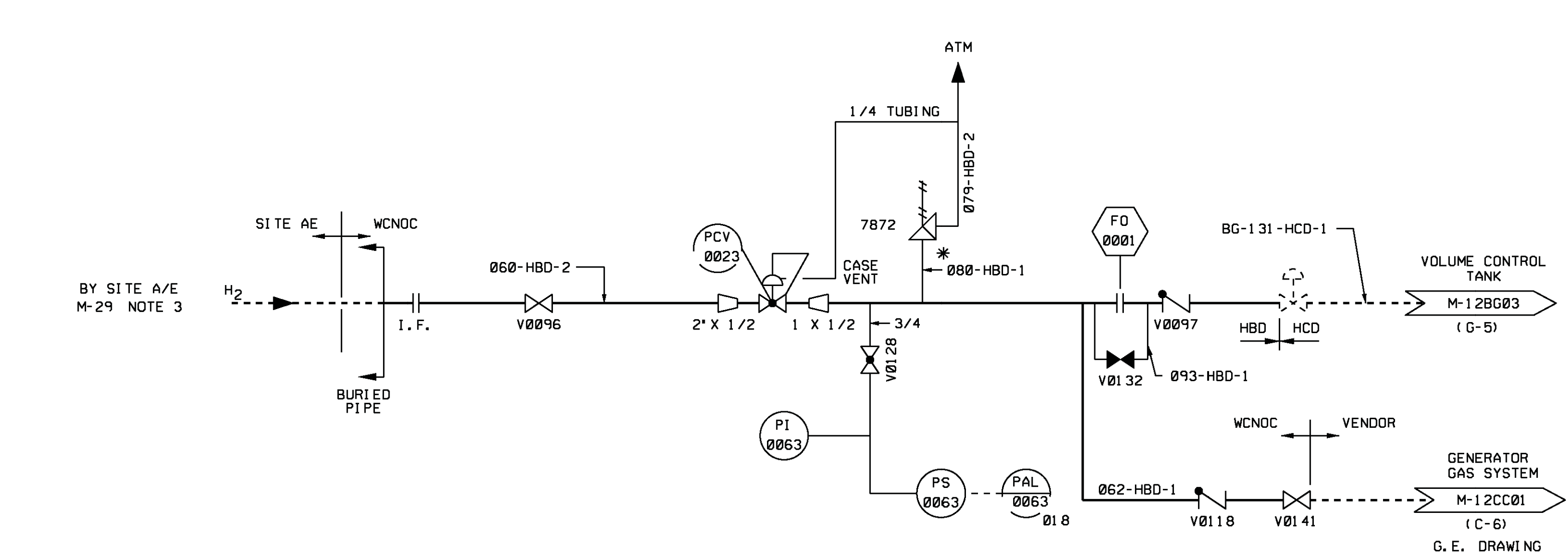
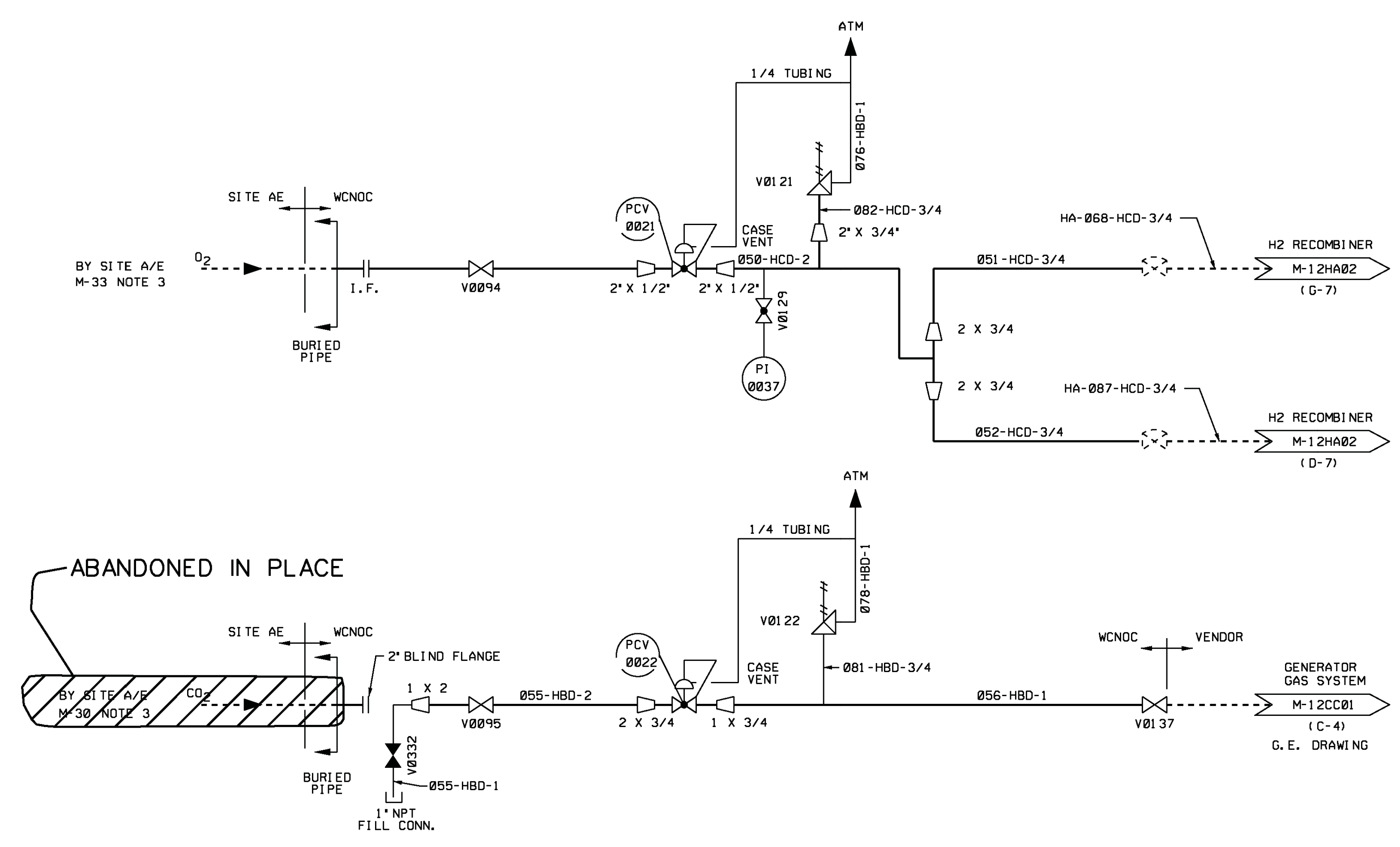
- NOTES**
- FOR P & ID LEGEND AND SYMBOLS SEE DRAWINGS M-020101 THRU M-020104.
  - DELETED.
  - MECHANICAL DESIGNATION PER M-00001.
  - COMPONENT NUMBERS FOR PIS ASSOCIATED WITH N2 SUPPLY TO ELECTRICAL PENETRATIONS WILL BE THE SAME AS THE PENETRATION NUMBER, ASSOCIATED VENDOR SUPPLIED VALVE WILL BE SIMILARLY NUMBERED, BUT WITH A LETTER 'V' PREFIX.
  - FIELD ROUTED TUBING TO SERVE AS NITROGEN BACK-UP FOR LOSS OF CONTROL AIR TO VALVES AE-FV-1B AND AE-FV-2B.
  - FOR PENETRATIONS NOS. E-249, 250, 252, 253, 254, 255 AND 256.
  - FOR PENETRATIONS NOS. E-297, 208, 218, 219, 222, 223, 224, 225, 226, 233, 234, 240, AND 243.
  - FOR PENETRATIONS NOS. E-288, 289, 290, 291, 292, 293, 294 AND 295.
  - FOR PENETRATIONS NOS. E-264, 265, 267, 268, 269, 271, 272, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285 AND 287.
  - NITROGEN GAS FROM THE LOW PRESSURE DISTRIBUTION PIPING (125 PSIG NOMINAL) MAY BE USED FOR PERFORMING AN EMERGENCY H2 PURGE OF THE MAIN GENERATOR IN THE ABSENCE OF A BULK CO2 SUPPLY.

USAR FIG. 9.3-9-01

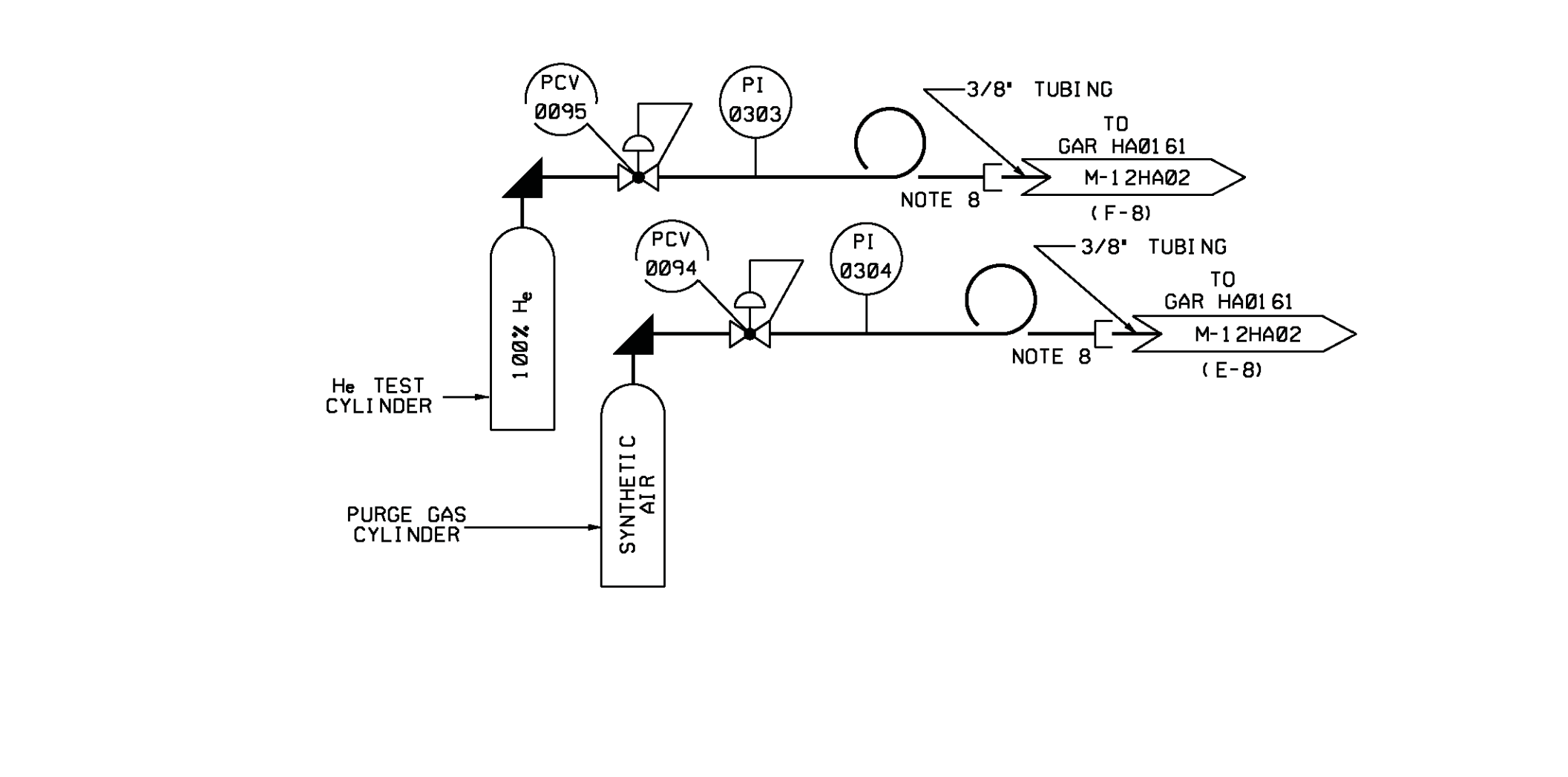
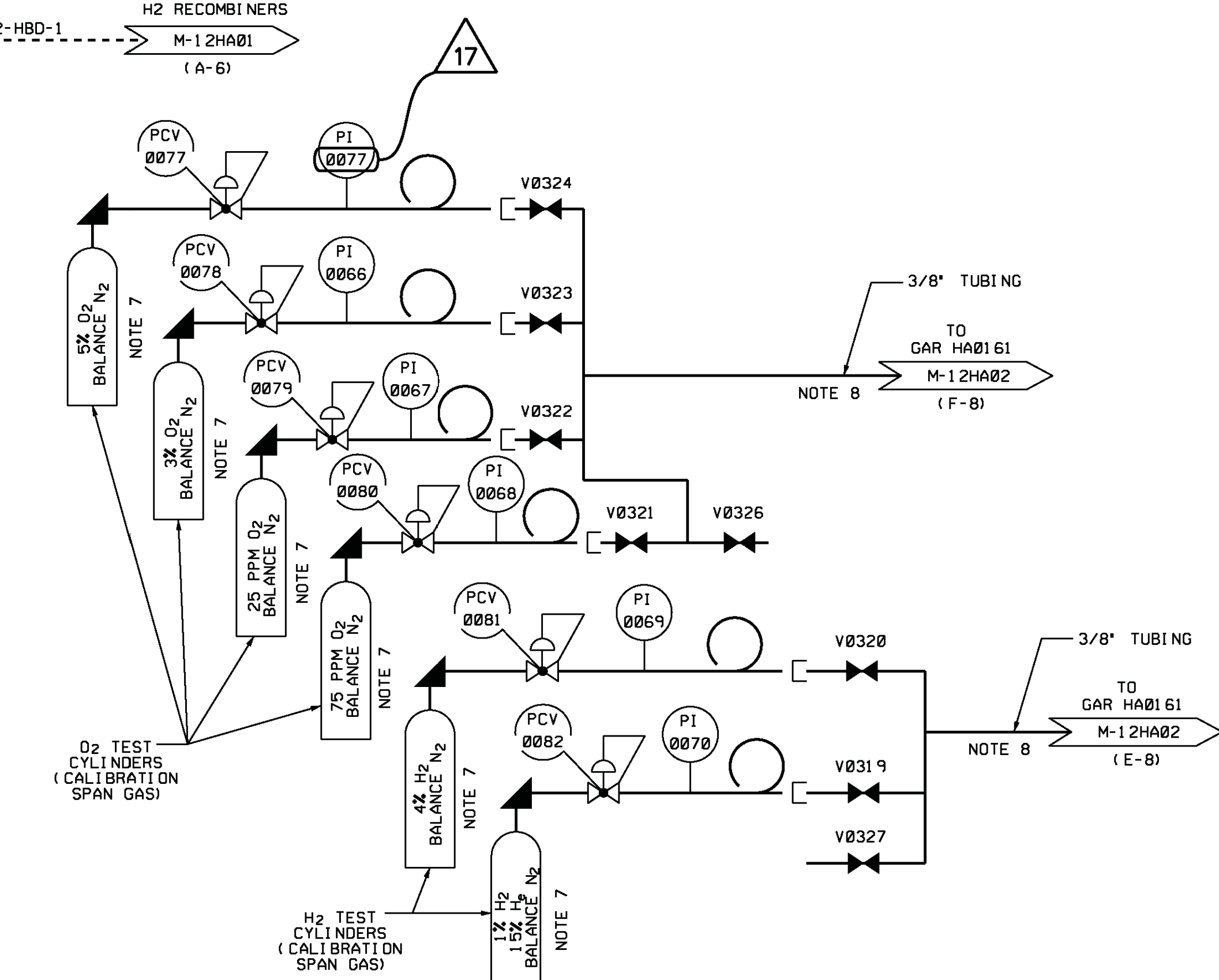
ESSENTIAL DRAWING			
REVISED	INCORPORATED	CHANGE	
ISSUED	CHG. DEC.	PKG. NO.	
THIS ENG. SUPERSEDES		REV. NO.	
REVISION NOTES: REVISED TO REMOVE TCC SYS NT-120			
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING AND INSTRUMENTATION DIAGRAM			
SERVICE GAS SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12KH01	22	22

*Anna A. Shultz*





- NOTES**
- FOR NOTES, SEE M-12KH01.
  - H<sub>2</sub> CYLINDERS WITH WELDING TYPE PRESSURE REGULATORS SUPPLIED BY PLANT OWNER.
  - RECOMMENDED BOTTLE PRESSURE IS 6000 PSIG. CHANGE PRESSURE OF ACCUMULATORS IS APPROXIMATELY 4000 PSIG.
  - PIPING ASSOCIATED WITH LABORATORY GASES IS FIELD RUN.
  - INDICATES FLEXIBLE CONN. BY PLANT OWNER.
  - WHEN NOT IN USE THE NITROGEN PIPING SHALL BE DEPRESSURIZED. PRESSURE GAUGES SHALL ONLY BE INSTALLED AND REMOVED FROM THE PRESSURE POINTS WHEN THE SYSTEM IS DEPRESSURIZED.
  - NOMINAL COMPOSITION OF PRESSURIZED GASES.
  - SPAN GAS CALIBRATION CYLINDERS TUBING SUPPORTS AND ASSOCIATED FITTINGS FROM THE PRESSURIZED CYLINDERS TO THE CATALYTIC HYDROGEN RECOMBINER GAS ANALYZER RACKS (HA-161 AND HA-162), ARE BY OWNER.
  - DELETED.
  - N<sub>2</sub> CAN BE USED IN PLACE OF H<sub>2</sub>.



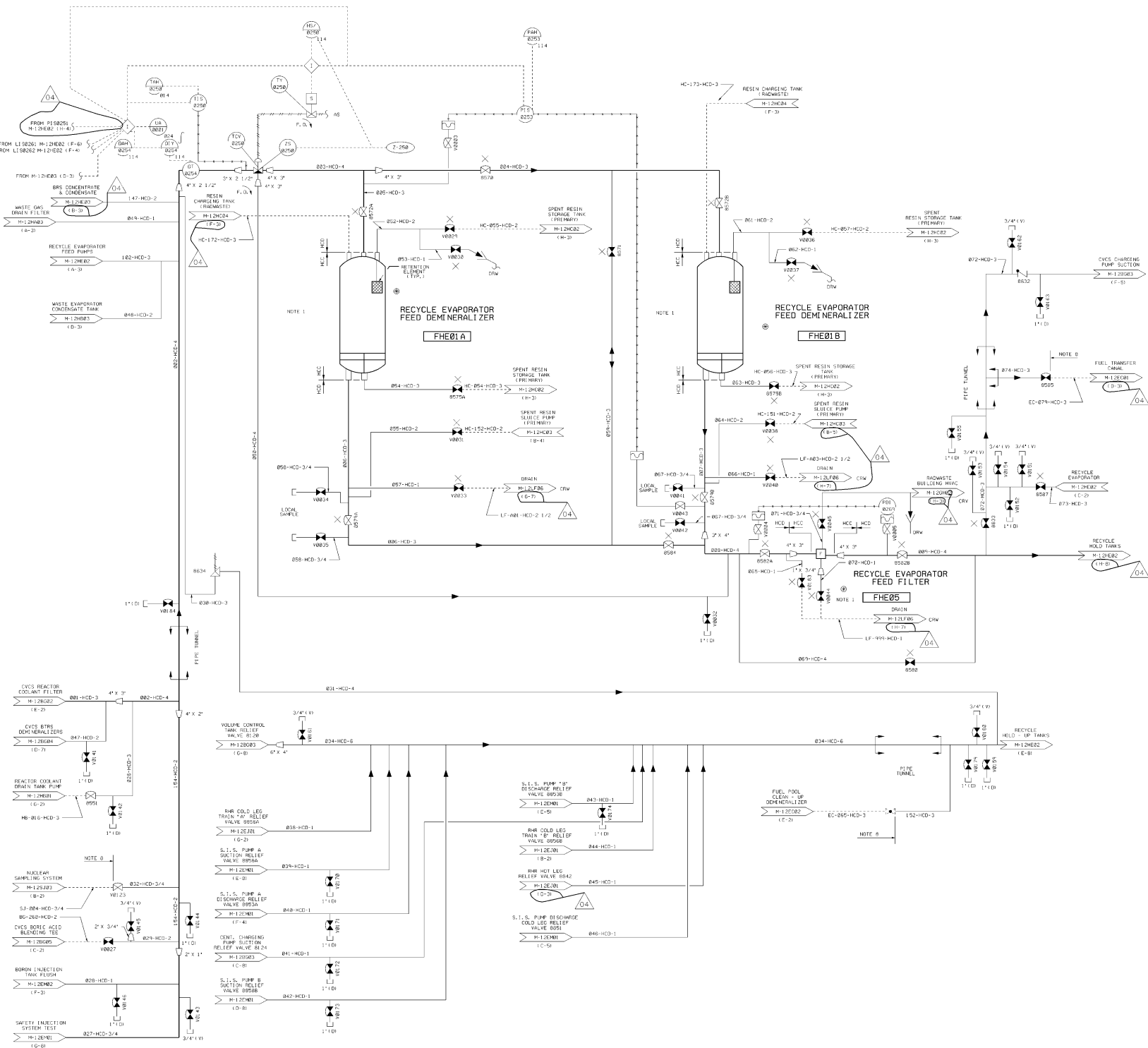
USAR FIG. 9.3-9-02

ESSENTIAL DRAWING			
REVISED	INCORPORATED	CR #00098464	CHANGE NO.
ISSUED	ENG. DOC.		
THIS ENG. SUPERSEDES		REV.	THIS ENG. SUPERSEDES
REVISION NOTES			
		ELECTRONIC APPROVAL	
PIPING AND INSTRUMENTATION DIAGRAM SERVICE GAS SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12KH02	01	17



NOTES

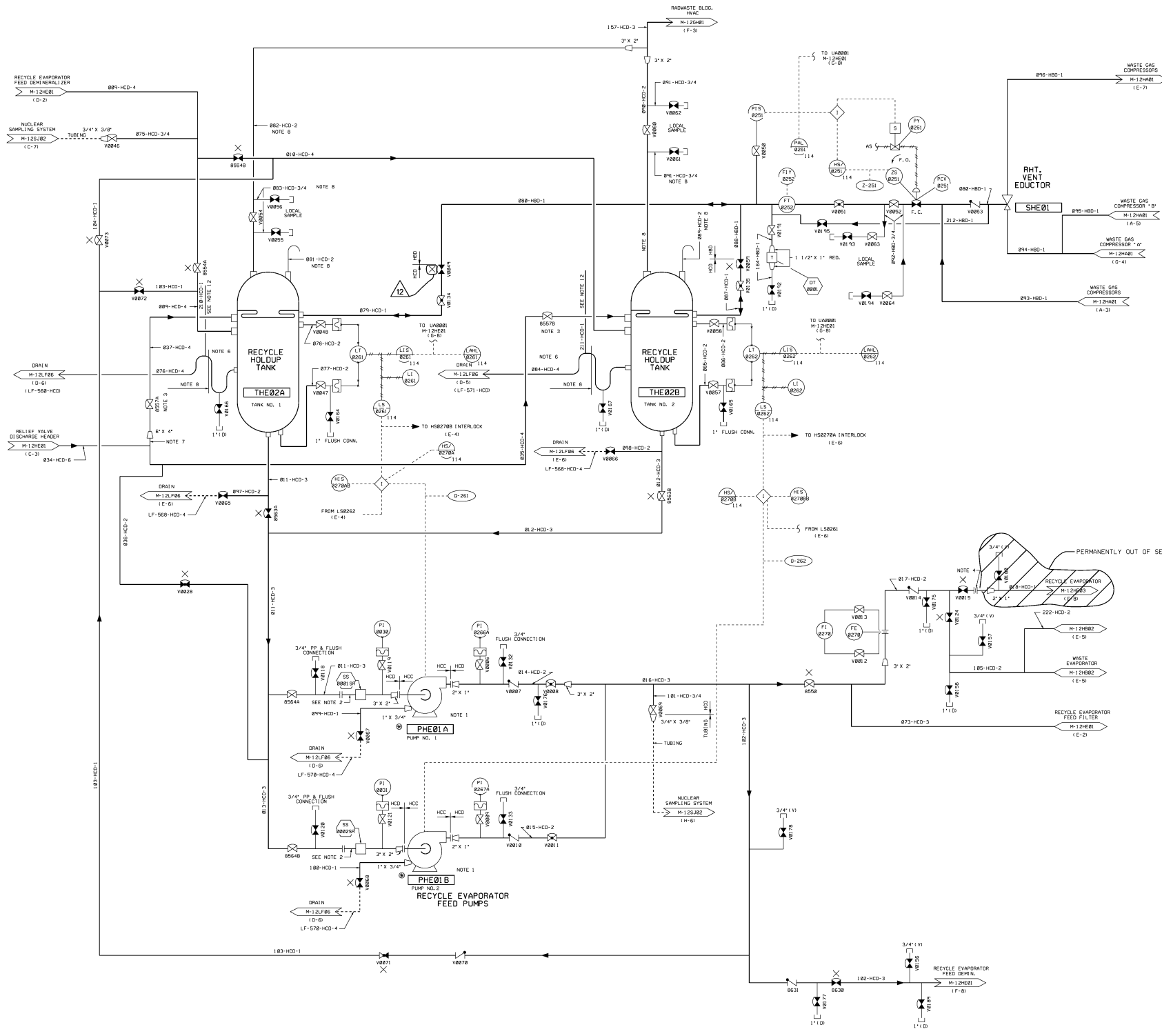
- THE FOLLOWING WASTEWATER STANDING EQUIPMENT IS SUPPLIED TO BE COMPLETED BY CONTRACTOR. CODE CLASSIFICATION AND INSTRUMENTATION CODE SHALL BE DETERMINED BASED ON THE SAFETY RELATED IMPORTANCE AS DETERMINED BY SERVICE AND FUNCTIONAL REQUIREMENTS AND BY THE EXPERIENCE OF THE FIELD ENGINEER. EQUIPMENT CLASSIFICATION SHALL BE FOR INTERFACE PURPOSES ONLY. I.F. AND END PRESS. ARE CLASSIFICATION OF THE EQUIPMENT IS THE LOWER CLASSIFICATION AS INDICATED FOR THE ASSOCIATED PIPING.
  - A. RECYCLE EVAPORATOR FEED DEMINERALIZER
  - B. RECYCLE EVAPORATOR FEED FILTER
  - C. RECYCLE EVAPORATOR FEED PUMPS
  - D. RECYCLE EVAPORATOR
  - E. R.W. 1. WASTE EVAPORATOR
  - F. RECYCLE EVAPORATOR CONDENSATE DEMINERALIZER
  - G. RECYCLE EVAPORATOR CONDENSATE FILTER
  - H. RECYCLE EVAPORATOR CONDENSATE PUMP
  - I. RECYCLE EVAPORATOR CONDENSATE PUMP
- PORTIONS OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS ARE INDICATED BY QUALITY GROUP CLASSIFICATION "Q" SHALL MEET ASBESTOS REMEDIATION REQUIREMENTS.
- THIS DRAWING BASED ON WASTEWATER DRAWINGS M-730-0001-4 THROUGH M-730-0001-5.
- LOWER RECYCLE EVAPORATOR REAGENT TANK TO ALLOW GRAVITY DRAIN TO RECYCLE EVAPORATOR.
- THE FOLLOWING EQUIPMENT IS SUPPLIED WITH EVAPORATOR PACKAGE BY VENDOR.
  - A. FCV-316
  - B. FCV-304
  - C. FCV-317
  - D. S-STRAINER, SRE24
  - E. FCV-307
  - F. FCV-305
  - G. BEF-27
  - H. SRE23
- LOWER LOOP TO EXTEND 20 INCHES BELOW OVERFLOW CONNECTION, WSPR LOOP TO EXTEND 3 INCHES ABOVE OVERFLOW FLANGE. LOCATE STRAIN BREAK ON TOP OF UPPER LOOP.
- HIGH POINT OF PIPE DOWNSTREAM OF THIS POINT TO BE ONE FOOT BELOW OVERFLOW FLANGE.
- INDICATED KNOBLOCS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "Q" NOT ASSIGNED.
- CONTROLS FOR THE RECYCLE EVAPORATOR ARE ON PANEL M-12C.
- PIPING AND INSTRUMENTATION DIAGRAM FOR THE RECYCLE EVAPORATOR IS SHOWN ON RECYCLED DRAWING M-240-0001-3.
- REMOVABLE SPOOL PROVIDED FOR START-UP.
- 1" VOLUME BREAKS (LINE 10) BE TERMINATED BETWEEN 15 AND 18 INCHES FROM LOCAL WASTE EXHAUST RESISTOR.



USAR FIG. 9.3-11-01

ESSENTIAL DRAWING			
REVISED	INCORPORATED	DATE	BY
01	01		
THIS DRAWING IS THE PROPERTY OF THE U.S. GOVERNMENT AND IS LOANED TO YOU BY THE U.S. GOVERNMENT. IT IS TO BE RETURNED TO THE U.S. GOVERNMENT AND NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.			
WOLF CREEK NUCLEAR OPERATIONS CENTER		ELECTRONIC APPROVAL	
PIPING & INSTRUMENTATION DIAGRAM BORON RECYCLE SYSTEM			
SHEET NUMBER		SHEET NO.	
NONE		04	





- NOTES**
1. FOR NOTES SEE DRAWING M-12HE01.
  2. REMOVABLE BPOOL WITH SPACER RING INSTALLED. (REPLACEMENT FOR START UP STRAINER).
  3. HEADWORK OR B MUST BE OPEN AT ALL TIMES TO ENSURE RELIEF LINE INTEGRITY.
  4. BLIND FLANGE INSTALLED FOR LINE ISOLATION.

USAR FIG. 9.3-11-02

**ESSENTIAL DRAWING**

REVISION	INCORPORATED OR 0000976	CHECK
DATE	DATE	DATE
THIS DRAWING BY	REV.	THIS DRAWING BY
REVISION	DATE	DATE

**WOLF CREEK**  
NUCLEAR OPERATING CORPORATION

**PIPING & INSTRUMENTATION DIAGRAM**  
**BORON RECYCLE SYSTEM**

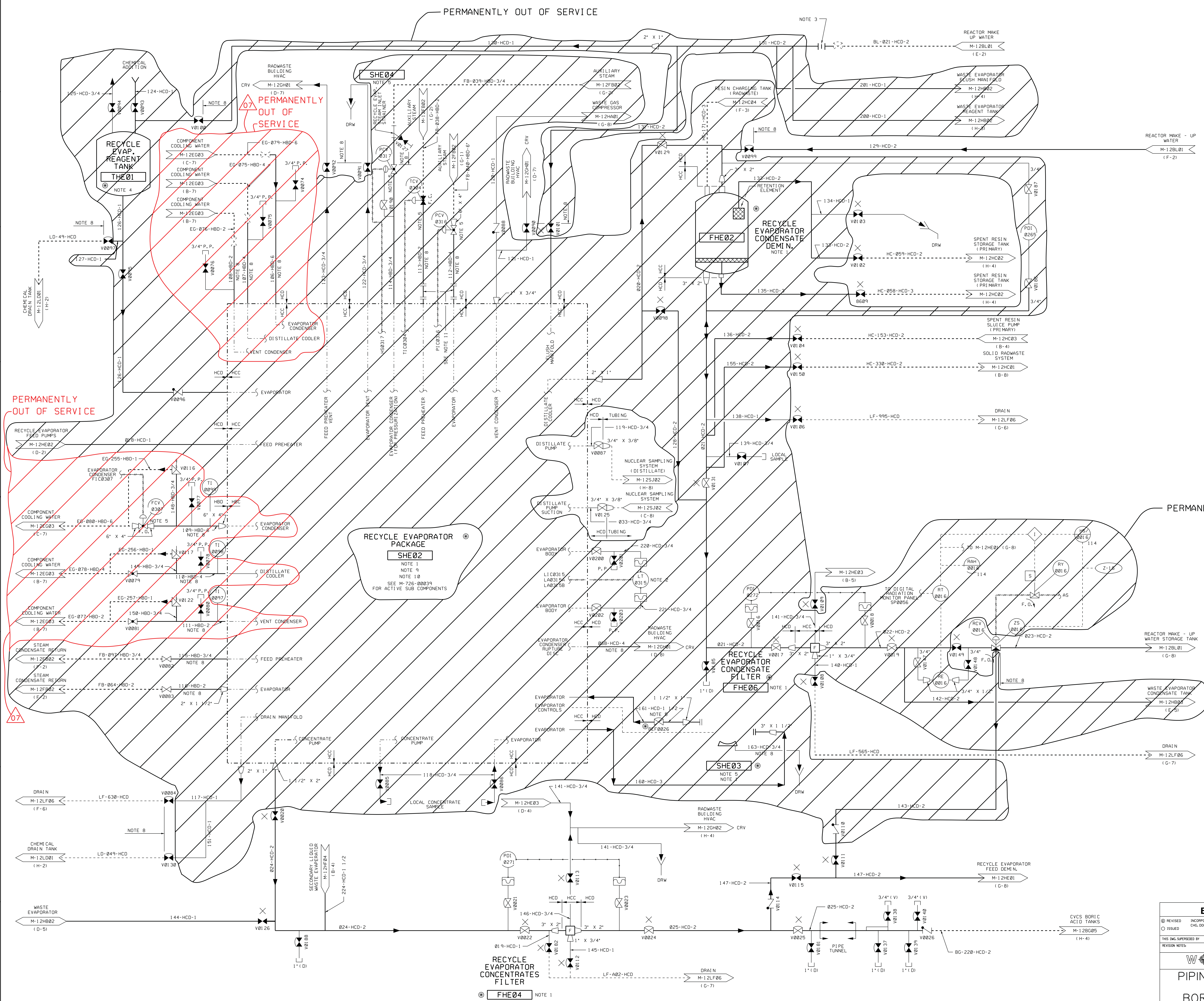
DRAWING NUMBER: **M-12HE02** SHEET NO: **12**





**NOTES**

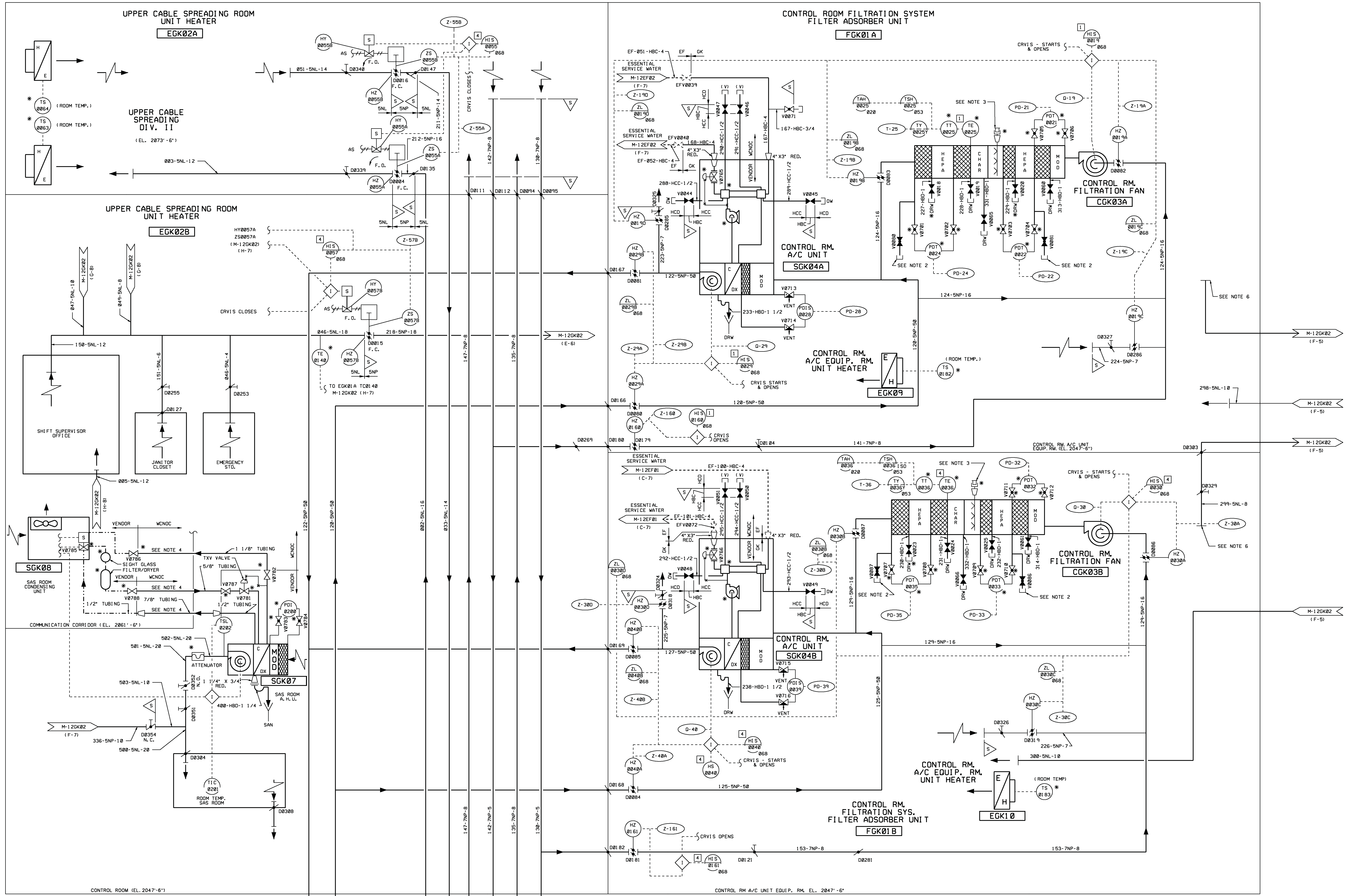
1. FOR GENERAL NOTES SEE DRAWING M-12HE01.
2. THE FOLLOWING EQUIPMENT IS SUPPLIED WITH EVAPORATOR PACKAGE BY VENDOR:
  - A. L100315, BELLOWS, AND ASSOCIATED TUBING.
3. BLIND FLANGE INSTALLED FOR LINE ISOLATION.



USAR FIG. 9.3-11-03

<b>ESSENTIAL DRAWING</b>			
REVISIONS: REVISION NO.   REV.   THIS DWG. SUPERSEDES   REV.	INCORPORATED WP-M-12HE03-006-A-1 CHG. DOC.		CHANGE 015540 PKG. NO.
		ELECTRONIC APPROVAL	
<b>PIPING &amp; INSTRUMENTATION DIAGRAM BORON RECYCLE SYSTEM</b>			
SCALE: NONE	SHEET NO. 07	DRAWING NUMBER: M-12HE03	SHEET TOTAL: 07





CONTROL BUILDING

AUXILIARY BUILDING

- NOTES**
1. CRVIS - CONTROL ROOM VENTILATION ISOLATION SIGNAL.
  2. CONNECTIONS ARE FOR OWNER SUPPLIED MANOMETER.
  3. FIRE HOSE FROM HOSE STATIONS 043 (FOR UNIT FGK01A) AND 038 (FOR UNIT FGK01B) TO CONNECT TO WATER SPRAY SYSTEM INLET WHEN REQUIRED.
  4. REFRIGERANT TUBING AND FITTINGS NOT INCLUDED WITH VENDOR PACKAGES FOR THE SAS ROOM AHU, AND SAS ROOM CONDENSING UNIT TO BE FURNISHED AND INSTALLED BY WOND.
  5. THE INDICATED PORTION OF PIPING REFERENCED TO THIS NOTE SHALL BE FABRICATED PER MS-2, CLASS HCC USING SCHEDULE 80 PIPE.
  6. EXHAUST REGISTERS FROM ROOMS 1501 AND 1512 ARE BLANKED OFF TO PRECLUDE A POTENTIAL UNMONITORED RELEASE PATH FROM THE AUXILIARY BUILDING PER DCP 06018.
  7. BOLTING MATERIAL MEETING THE REQUIREMENTS OF PIPE CLASS HBC OF SPECIFICATION MS-02 MAY BE USED TO INSTALL ESSENTIAL SERVICE WATER SUPPLIED PIPING AND COMPONENTS ON SGK04A/B.

USAR FIG. 9.4-1-01

**ESSENTIAL DRAWING**

REVISED	INCORPORATED	CHANGE 012860
ISSUED	ENG. DDC.	FIG. NO.

THIS ENG. SUPERSEDES BY	REV.	THIS ENG. SUPERSEDES	REV.
REVISION NOTES	NOTE ADDED PER CHANGE PACKAGE ENGINEER		

**WOLF CREEK** ELECTRONIC APPROVAL  
NUCLEAR OPERATING CORPORATION

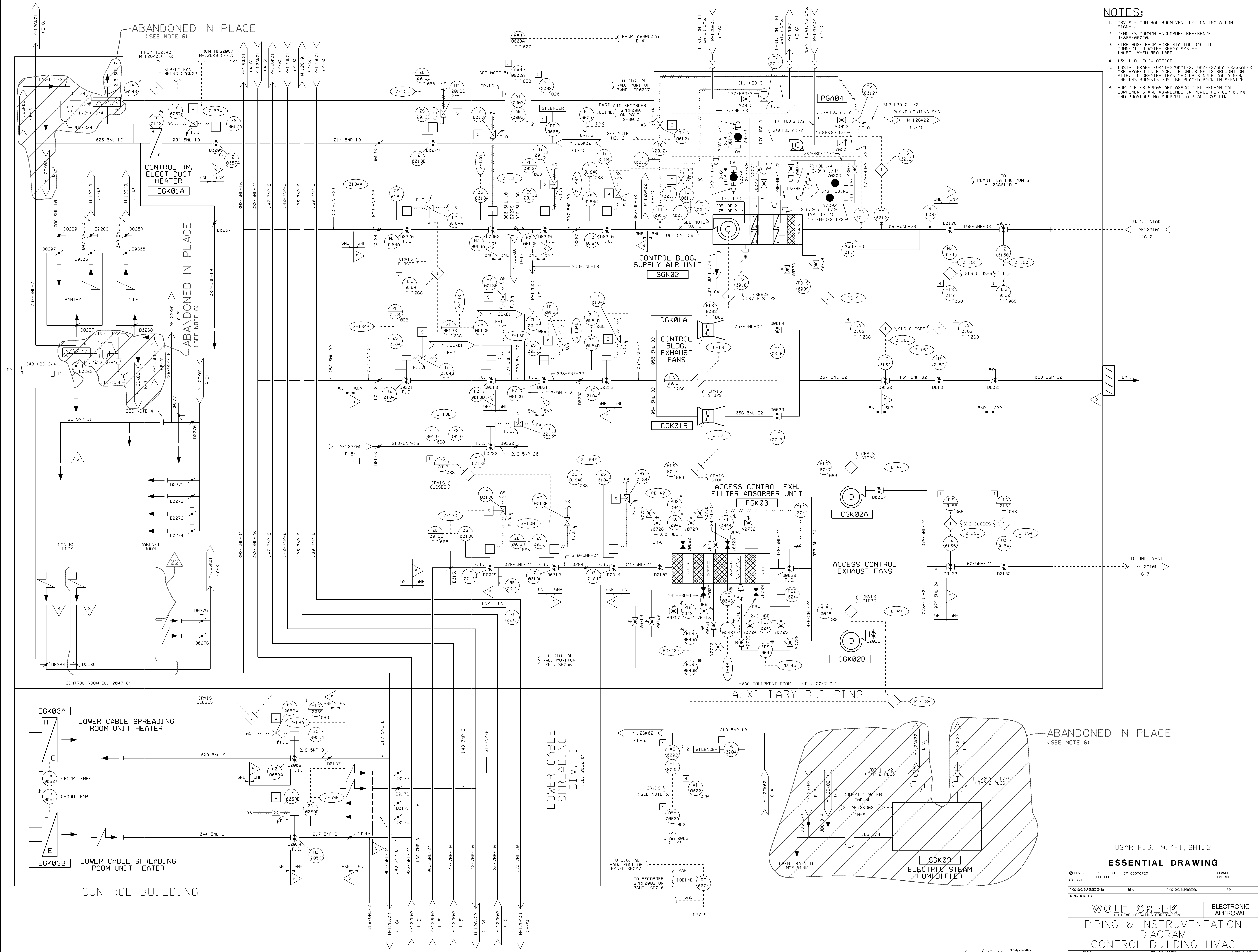
**PIPING & INSTRUMENTATION DIAGRAM**

**CONTROL BUILDING H.V.A.C.**

SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12GK01	14	

3444 E SIZE  
M-12GK01-11-14





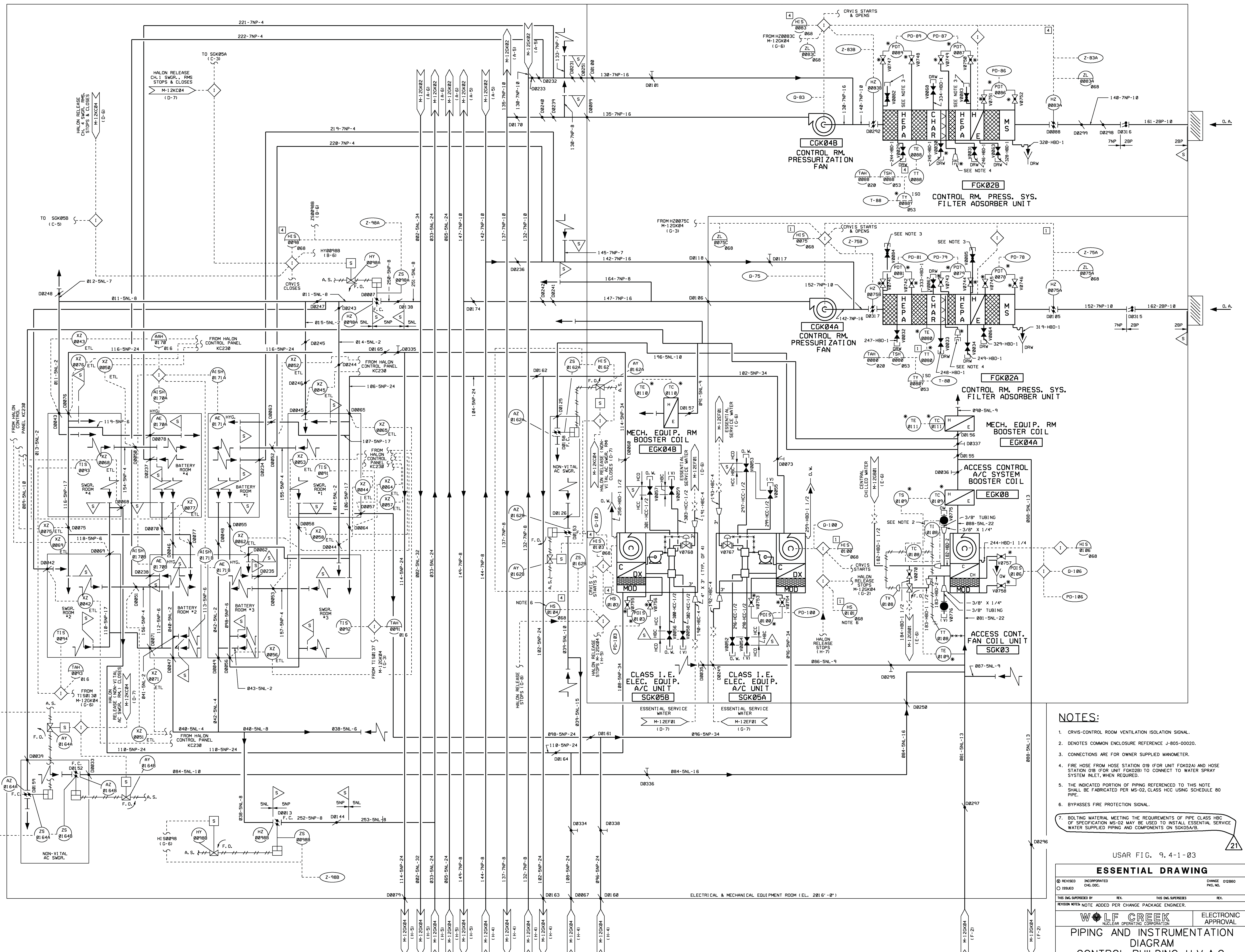
- NOTES:**
- CRV1S - CONTROL ROOM VENTILATION ISOLATION SIGNAL.
  - REVISIONS DENOTES COMMON ENCLOSURE REFERENCE J-505-00020.
  - FIRE HOSE FROM HOSE STATION 045 TO CONNECT TO WATER SPRAY SYSTEM INLET, WHEN REQUIRED.
  - 15" I.D. FLOW ORFFICE.
  - INSTR. GRADE-2/GRAIT-2/GKAI-2, GKAE-3/GKAT-3/GKAI-3 ARE SPARED IN PLACE, IF CHLORINE IS BROUGHT ON SITE, IN GREATER THAN 150 LB SINGLE CONTAINER, THE INSTRUMENTS MUST BE PLACED BACK IN SERVICE.
  - HUMIDIFIER SGK09 AND ASSOCIATED MECHANICAL COMPONENTS ARE ABANDONED IN PLACE PER CCP 09991 AND PROVIDES NO SUPPORT TO PLANT SYSTEM.

USAR FIG. 9.4-1, SHT. 2

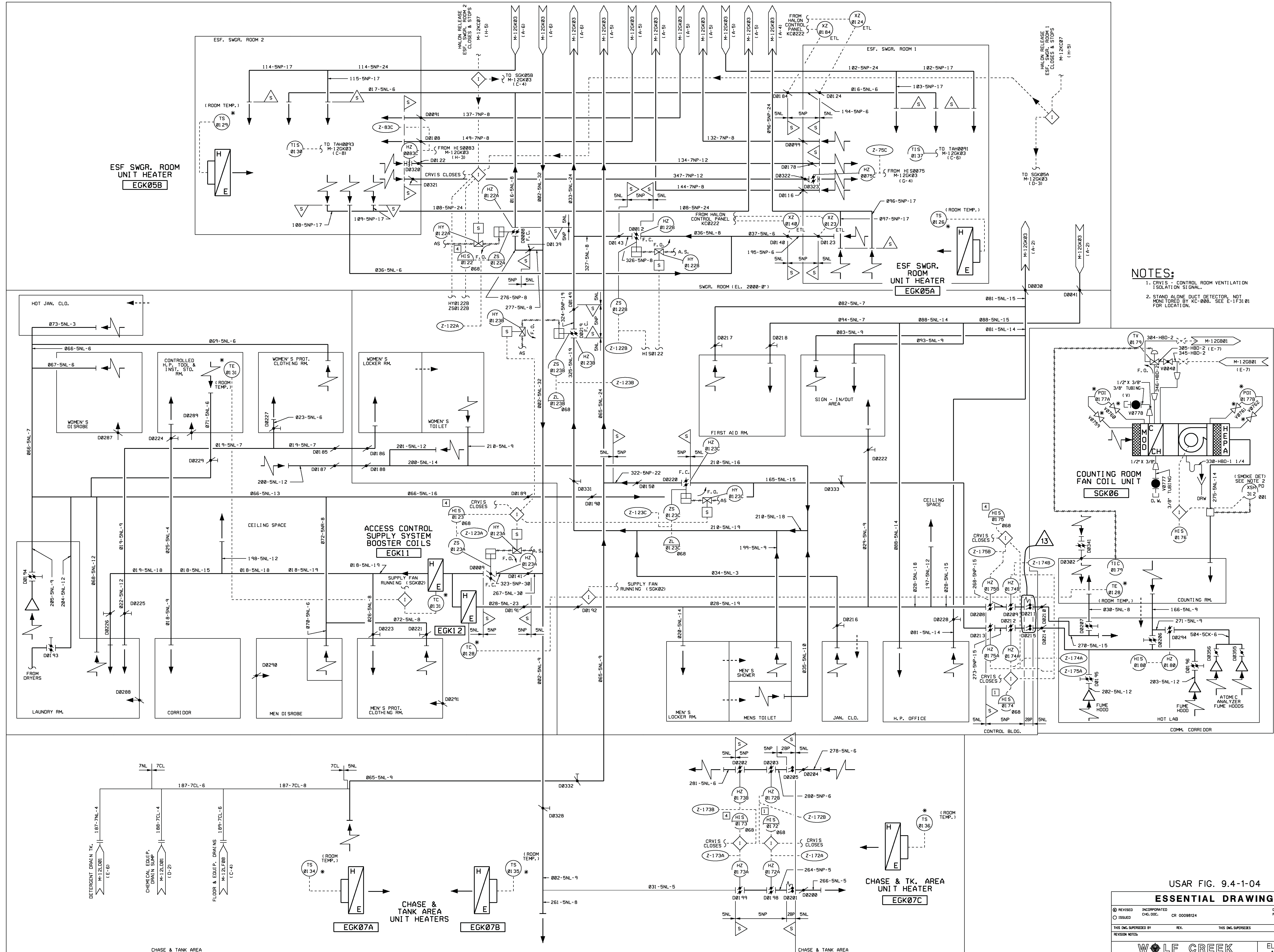
ESSENTIAL DRAWING			
REVISION	INCORPORATED	CR 00070720	CHANGE
ISSUED	CHG. DOC.		PKG. NO.
THIS Dwg. SUPERSEDES		REV.	THIS Dwg. SUPERSEDES
REVISION NOTES:			
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING & INSTRUMENTATION			
DIAGRAM			
CONTROL BUILDING HVAC			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12GK02	11	22

3444 E. SIDE  
M-12GK02-1-22









**NOTES:**

1. CRV15 - CONTROL ROOM VENTILATION ISOLATION SIGNAL.
2. STAND ALONE DUCT DETECTOR, NOT MONITORED BY KC-088. SEE E-1F31 01 FOR LOCATION.

USAR FIG. 9.4-1-04

**ESSENTIAL DRAWING**

REVISED	INCORPORATED	CHANGE
○ ISSUED	ENG. DOC. CR 0008124	FIG. NO.

THIS ENG. SUPERSEDES BY REV. THIS ENG. SUPERSEDES BY REV.

REVISION NOTES:

**WOLF CREEK**  
NUCLEAR OPERATING CORPORATION

ELECTRONIC APPROVAL

**PIPING AND INSTRUMENTATION DIAGRAM CONTROL BUILDING H.V.A.C.**

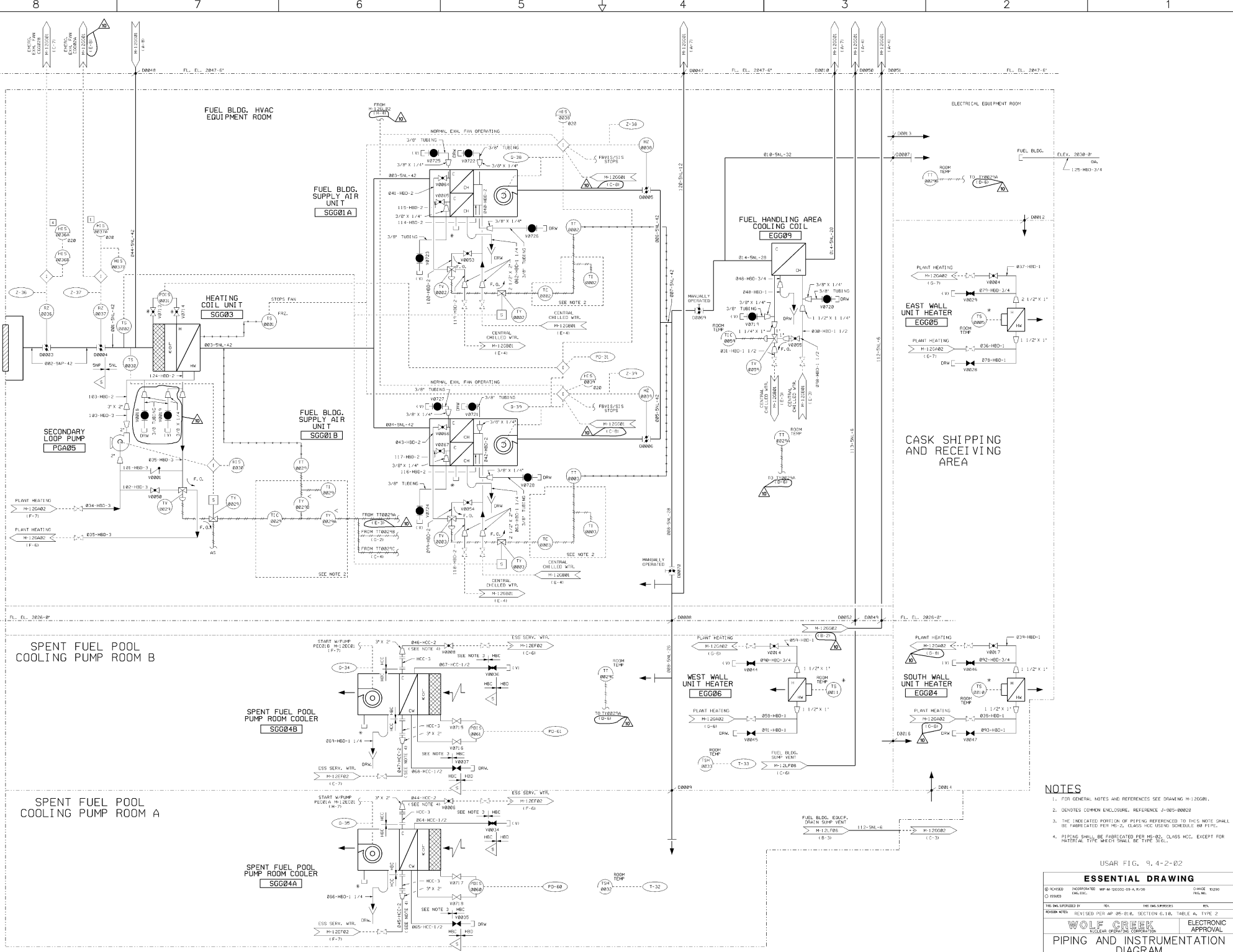
SCALE: NONE DRAWING NUMBER: M-12GK04 SHEET: 13

3444 E. 13







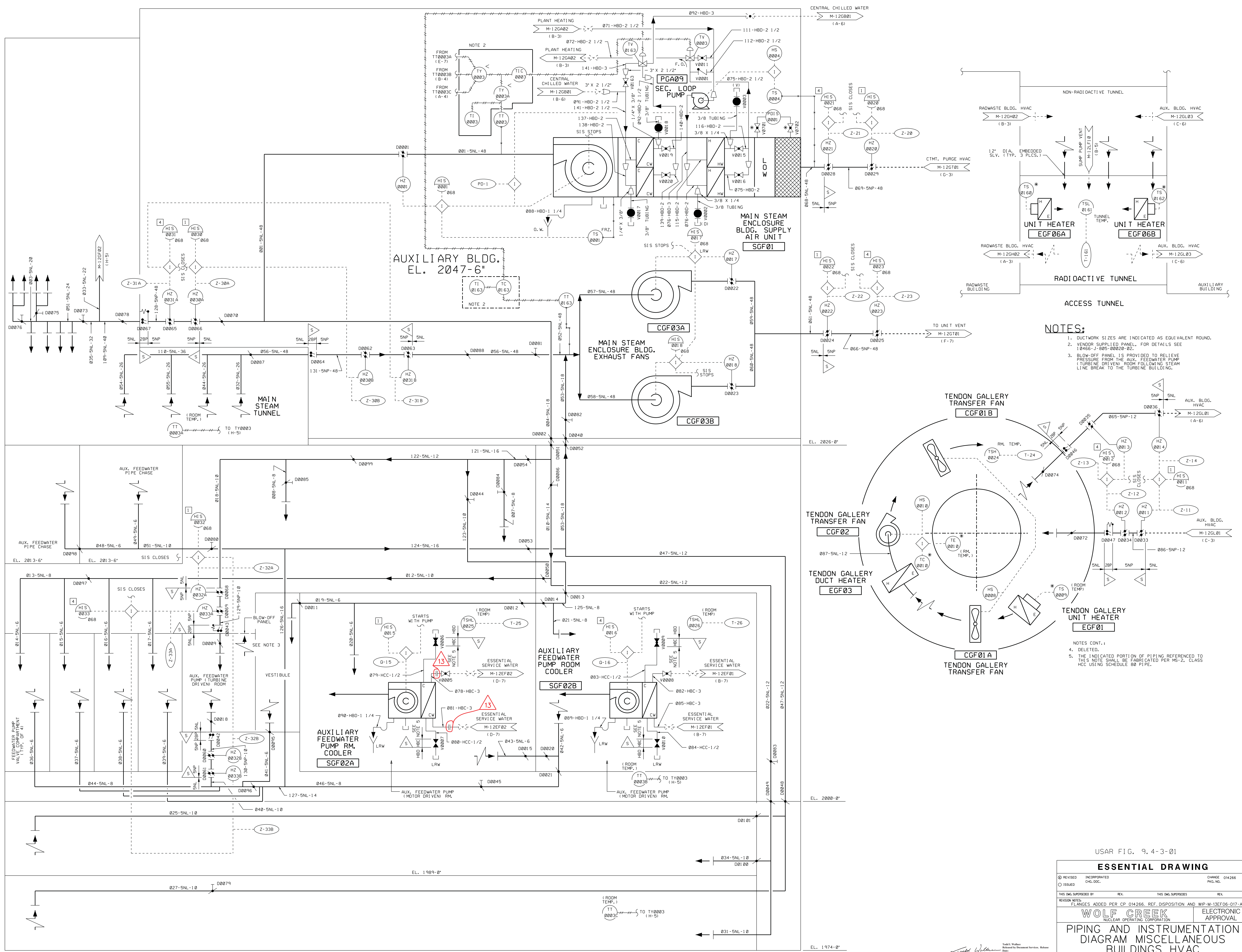


- NOTES**
1. FOR GENERAL NOTES AND REFERENCES SEE DRAWING M-12GG01.
  2. DENOTES COMMON ENCLOSURE, REFERENCE J-NB-NR02.
  3. THE INDICATED POINT (OR) OF PIPING REFERENCED TO THIS NOTE SHALL BE FABRICATED PER MS-2, CLASS MCC USING SCHEDULE 80 PIPE.
  4. PIPING SHALL BE FABRICATED PER MS-02, CLASS MCC, EXCEPT FOR MATERIAL TYPE WHICH SHALL BE TYPE 316L.

USAR FIG. 9, 4-2-B2

ESSENTIAL DRAWING			
REVISED FOR MS-02, SECTION 6.1.B, TABLE A, TYPE 2	DATE: 02/09	BY: J. WOLF	APP: J. WOLF
<b>WOLF CREEK</b> NUCLEAR OPERATIONS CORPORATION		ELECTRONIC APPROVAL	
<b>PIPING AND INSTRUMENTATION DIAGRAM</b> <b>FUEL BUILDING HVAC</b>			
SCALE: NONE	SYMBOL: M-12GG02	SHEET NO: 10	DATE: 02/09





- NOTES:**
1. DUCTWORK SIZES ARE INDICATED AS EQUIVALENT ROUND.
  2. VENDOR SUPPLIED PANEL. FOR DETAILS SEE 10466-J-005-0020-02.
  3. BLOW-OFF PANEL IS PROVIDED TO RELIEVE PRESSURE FROM THE AUX. FEEDWATER PUMP (TURBINE DRIVEN) ROOM FOLLOWING STEAM LINE BREAK TO THE TURBINE BUILDING.

- NOTES CONT.:**
4. DELETED.
  5. THE INDICATED PORTION OF PIPING REFERENCED TO THIS NOTE SHALL BE FABRICATED PER MS-2, CLASS HCC USING SCHEDULE 80 PIPE.

MAIN STEAM ENCLOSURE BUILDING

USAR FIG. 9.4-3-01

**ESSENTIAL DRAWING**

REVISED	INCORPORATED	CHANGE	014266
ISSUED	CHG. DOC.	PKG. NO.	

THIS DWG. SUPERSEDES: REV. THIS DWG. SUPERSEDES: REV.

REVISION NOTES:  
FLANGES ADDED PER CP 014266, REF. DISPOSITION AND WIP-M-130E06-017-A-1

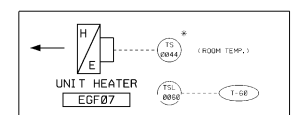
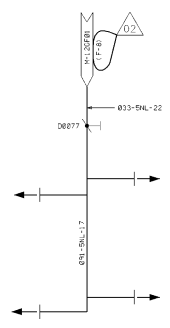
WOLF CREEK NUCLEAR OPERATING CORPORATION	ELECTRONIC APPROVAL
---	------------------------

PIPING AND INSTRUMENTATION  
DIAGRAM MISCELLANEOUS  
BUILDINGS HVAC

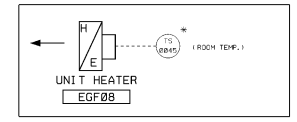
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12GF01	13	13

34X44 E SIZE  
M-12GF01-1-13

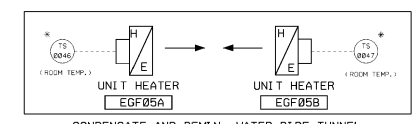




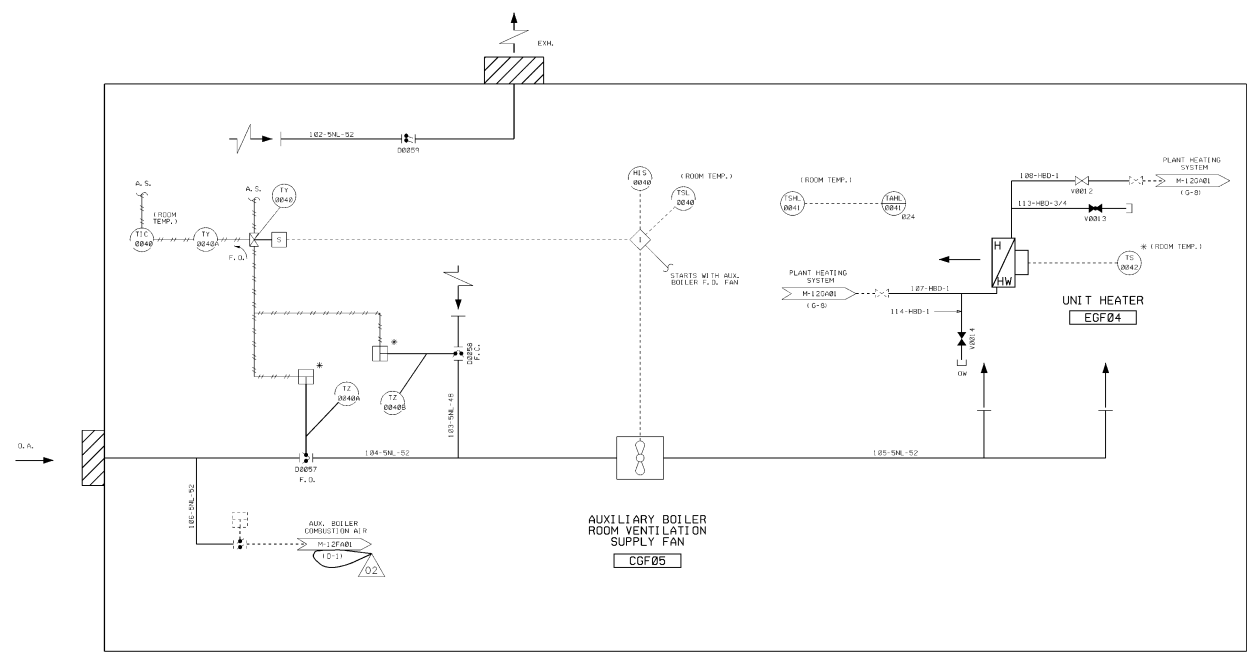
REFUELING WATER STORAGE TANK VALVE HOUSE



REACTOR MAKE-UP WATER STORAGE TANK VALVE HOUSE



CONDENSATE AND DEMIN. WATER PIPE TUNNEL



AUXILIARY BOILER ROOM

NOTES:

1. DUCTWORK SIZES ARE INDICATED AS EQUIVALENT ROUND.

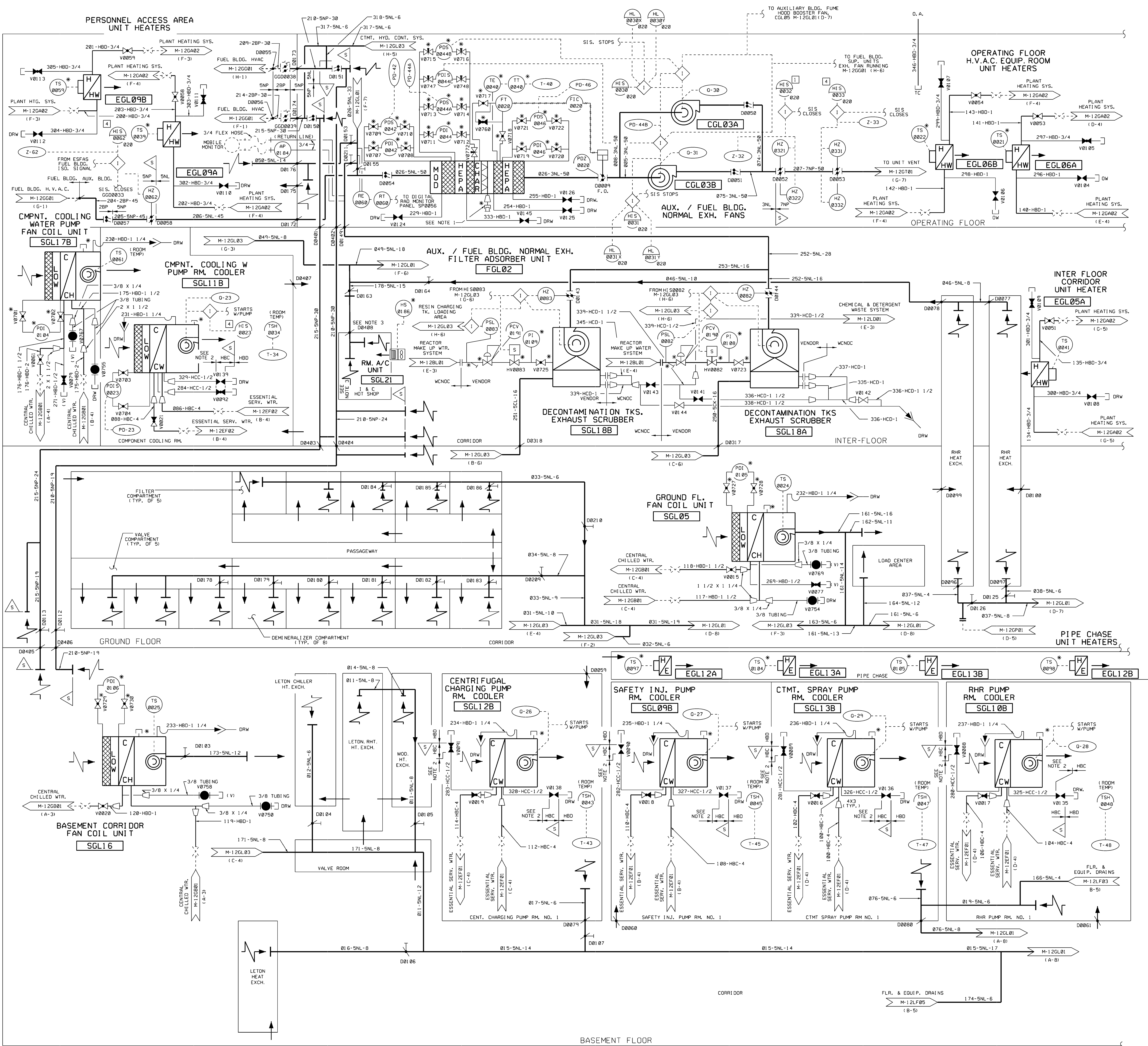
USAR FIG. 9, 4-3-02

ESSENTIAL DRAWING			
Q REVISION	INCORPORATED	DATE	BY
0	ISSUED		
THIS DRAWING IS THE PROPERTY OF WOLF CREEK		NO PART OF THIS DRAWING IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF WOLF CREEK	
WOLF CREEK		ELECTRONIC APPROVAL	
PIPING & INSTRUMENTATION DIAGRAM			
MISCELLANEOUS BUILDINGS HVAC			
SCALE	DRAWING NUMBER	SHEET	NO.
NONE	M-12GF02	02	









- NOTES**
1. FIRE HOSE FROM HOSE STATION 033 TO CONNECT TO WATER SPRAY SYSTEM INLET, WHEN REQUIRED.
  2. THE INDICATED PORTION OF PIPING REFERENCED TO THIS NOTE SHALL BE FABRICATED PER MS-02, CLASS MCC USING SCHEDULE 80 PIPE.
  3. COMMUNICATES WITH RESIN CHARGING TANK, 1. LOADING AREA ABOVE 1&C HOT SHOP SUSPENDED CEILING.

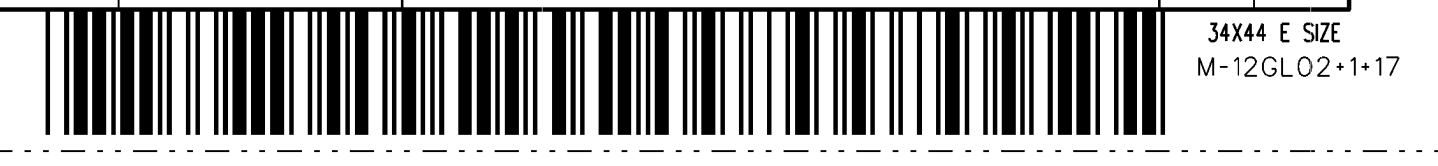
**LEGEND**

ROOM AIR CONDITIONER

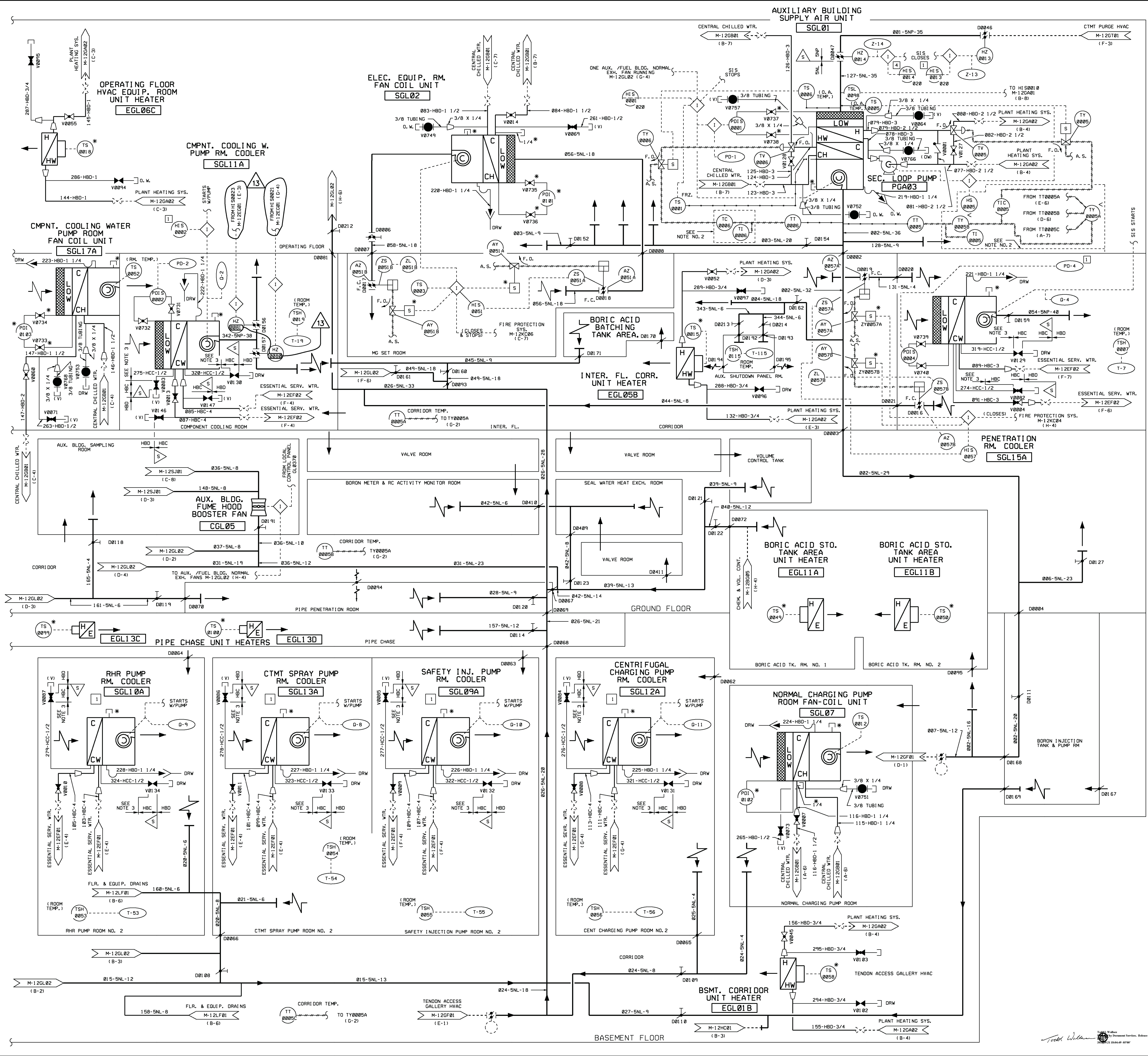
Blade & Nichols Released by Document Services  
2013.12.12 12:53:25 06/00

USAR FIG. 9.4-3-04

ESSENTIAL DRAWING			
REVISION	INCORPORATED	CR 29532	CHANGE
ISSUED	CHG. DOC.		PAG. NO.
THIS Dwg. SUPERSEDES		REV.	THIS Dwg. SUPERSEDES
REVISION NOTES: DRAWING ISSUED TO REGENERATE CUSTOM LINESYLES PER CR 29532		REV.	REV.
WOLF CREEK		ELECTRONIC APPROVAL	
PIPING AND INSTRUMENTATION DIAGRAM			
AUXILIARY BUILDING HVAC			
SCALE	DRAWING NUMBER	SHEET	REV.
NONE	M-12GL02	17	







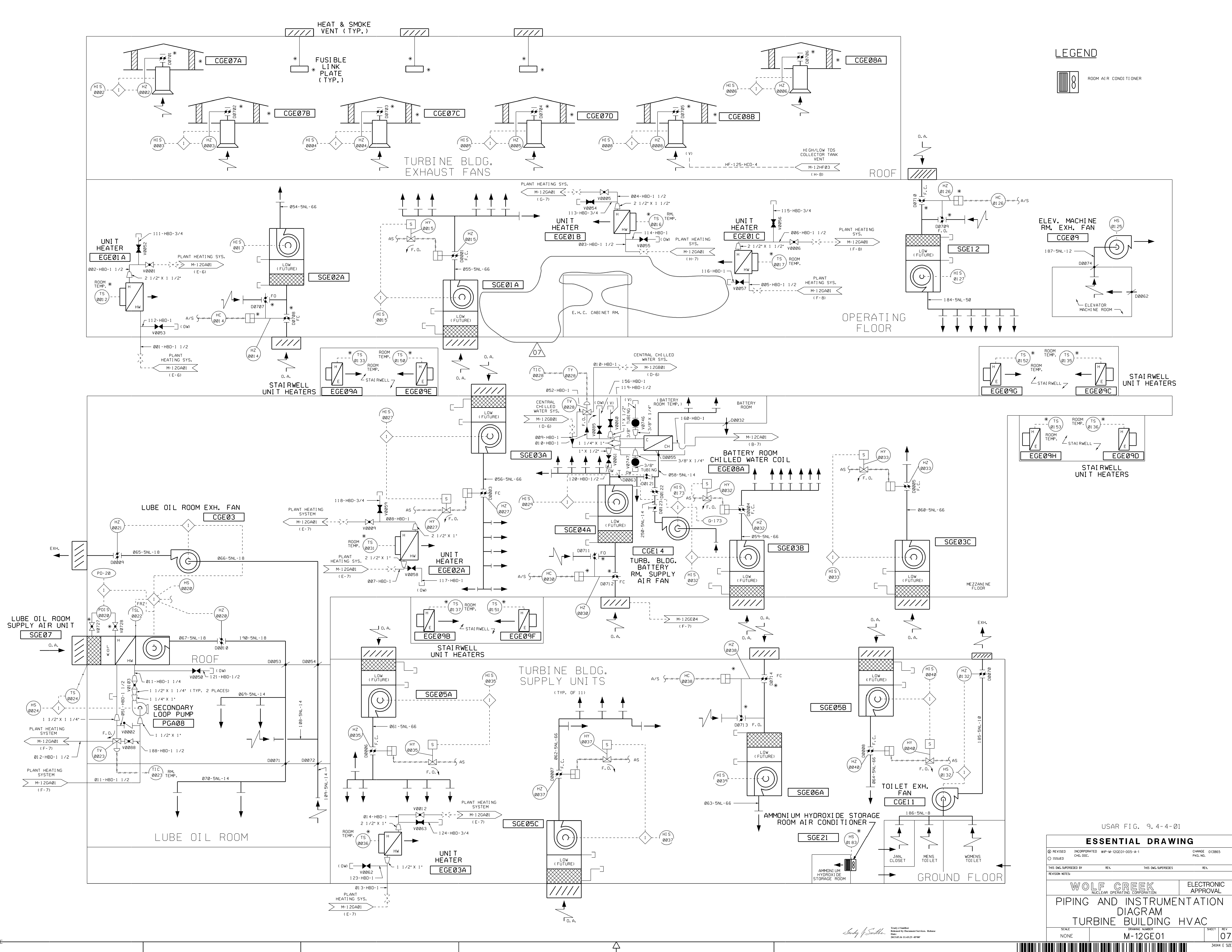
**NOTES**

- DUCTWORK SIZE ARE INDICATED AS EQUIVALENT ROUND.
- LINE DENOTES UNIT ENCLOSURE REF. J-805-0020.
- THIS NOTE SHALL BE FABRICATED PER MS-2, CLASS HCC USING SCHEDULE 80 PIPE.

USAR FIG. 9.4-3 - 05

ESSENTIAL DRAWING			
REVISED	INCORPORATED	C.R. #006996	CHANGE PRC. NO.
ISSUED	CHG. DOC.		
THIS ENG. SUPERSEDES		REV.	THIS ENG. SUPERSEDES
REVISION NOTES			
<b>WOLF CREEK</b>		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION		PIPING AND INSTRUMENTATION	
DIAGRAM			
AUXILIARY BUILDING HVAC			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12GL01	13	





**LEGEND**

ROOM AIR CONDITIONER

USAR FIG. 9.4-4-01

**ESSENTIAL DRAWING**

REVISED  
 INCORPORATED  
 WFP-M-12GE01-005-A-1  
 CHG. DOC.  
 ISSUED

THIS DWG. SUPERSEDED BY: \_\_\_\_\_ REV. \_\_\_\_\_ THIS DWG. SUPERSEDES: \_\_\_\_\_ REV. \_\_\_\_\_  
 REVISION NOTES: \_\_\_\_\_

**WOLF CREEK**  
 NUCLEAR OPERATING CORPORATION

**ELECTRONIC APPROVAL**  
 PIPING AND INSTRUMENTATION  
 DIAGRAM  
 TURBINE BUILDING HVAC

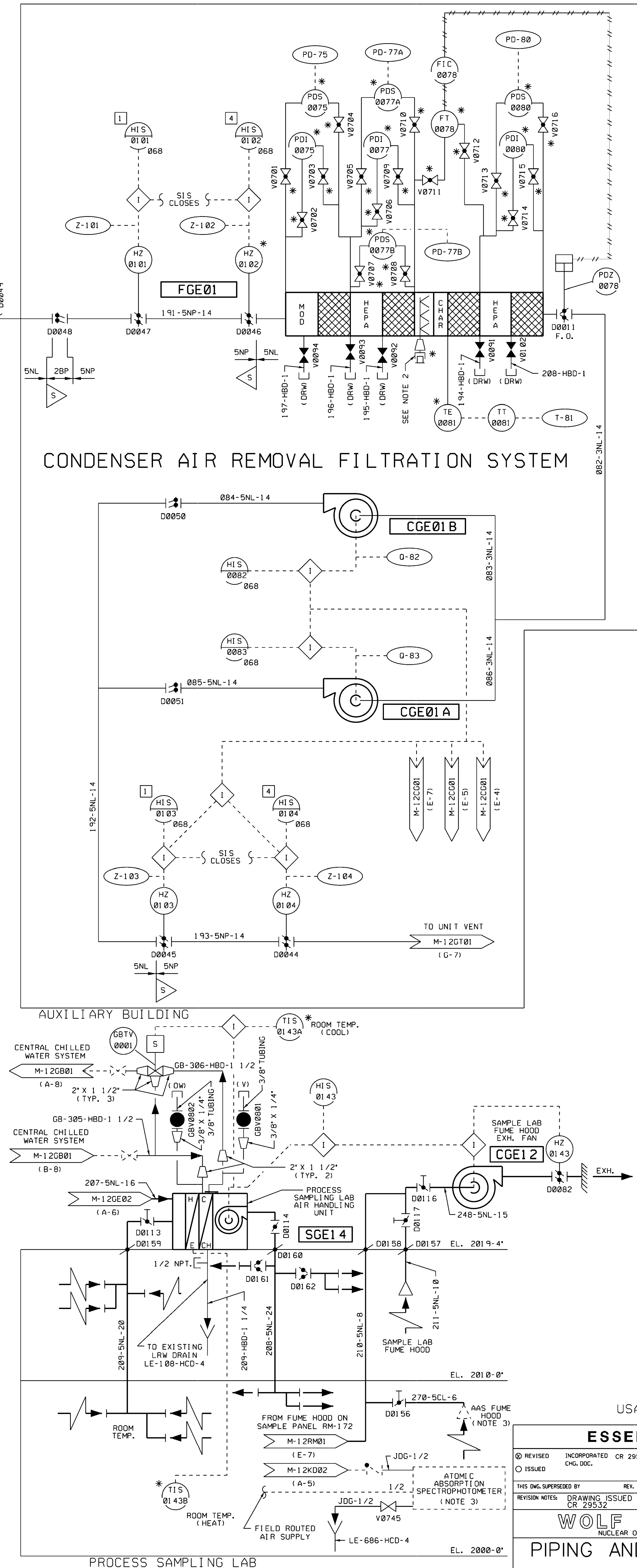
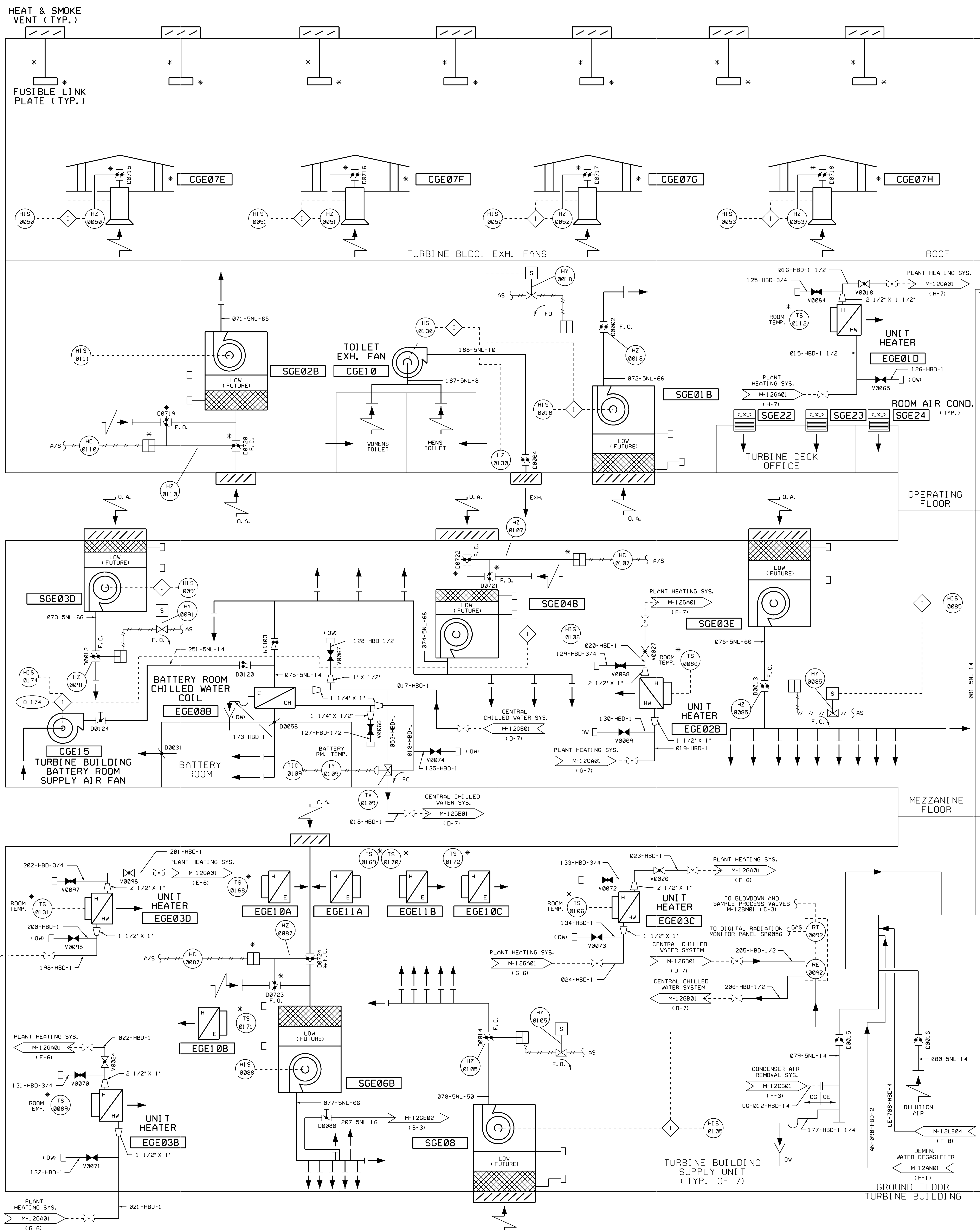
SCALE: NONE  
 DRAWING NUMBER: M-12GE01  
 SHEET: 07  
 REV: 07

3444 E 52E  
M-12GE01-1-07



**NOTES:**

- REFRIGERANT PIPING, VALVES, FITTINGS AND OTHER SPECIALTIES FOR THE PROCESS SAMPLING LAB. HVAC SYSTEM TO BE SPECIFIED, FURNISHED AND INSTALLED BY THE CONSTRUCTOR.
- FIRE HOSE FROM HOSE STATION 050 TO CONNECT TO WATER SPRAY SYSTEM INLET.
- ATOMIC ABSORPTION SPECTROPHOTOMETER PROVIDED BY OWNER.



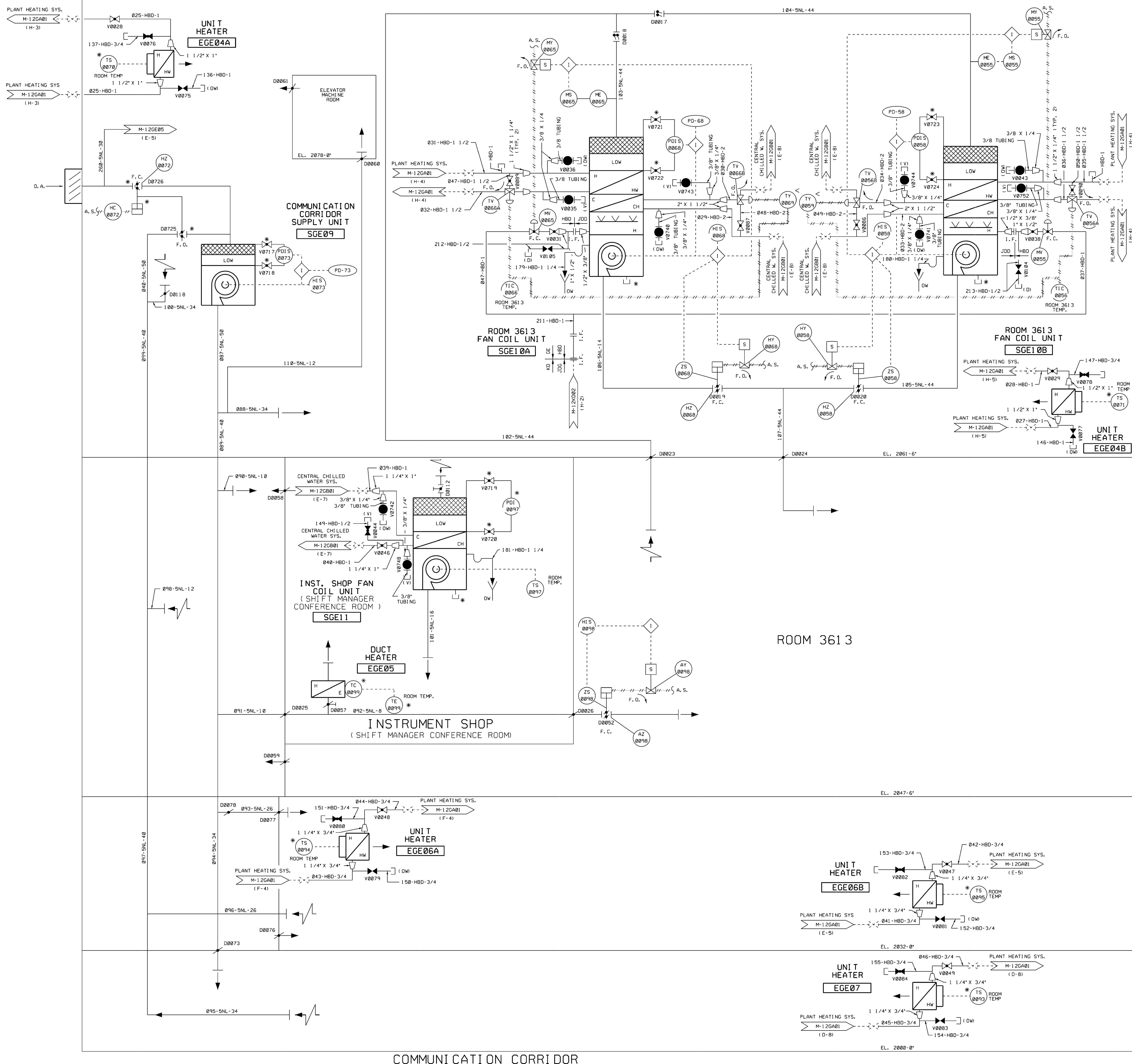
USAR FIG. 9.4-02

**ESSENTIAL DRAWING**

REVISION	INCORPORATED	CHANGE
NO.	CR 29532	PKG. NO.
ISSUED	CHG. DOC.	REV.
THIS Dwg. SUPERSEDES	THIS Dwg. SUPERSEDES	REV.
REVISION NOTES:	DRAWING ISSUED TO REGENERATE CUSTOM LINESYLES PER CR 29532	ELECTRONIC APPROVAL
<b>WOLF CREEK</b> NUCLEAR OPERATING CORPORATION		ELECTRONIC APPROVAL
<b>PIPING AND INSTRUMENTATION DIAGRAM</b>		
<b>TURBINE BUILDING HVAC</b>		
SCALE	DRAWING NUMBER	SHEET
NONE	M-12GE02	09

34X44 E SIZE  
M-12GE02-1-09



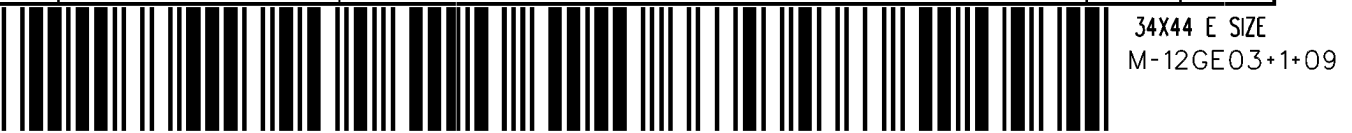


USAR FIG. 9.4-4-03

ESSENTIAL DRAWING			
REVISION	INCORPORATED	CR 29532	CHANGE
ISSUED	DWG. DOC.		PKG. NO.
THIS DWG. SUPERSEDES BY		REV.	THIS DWG. SUPERSEDES
REVISION NOTES: DRAWING ISSUED TO REGENERATE CUSTOM LIFESTYLES PER CR 29532			
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING AND INSTRUMENTATION DIAGRAM			
TURBINE BUILDING HVAC			

SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12GE03	09	

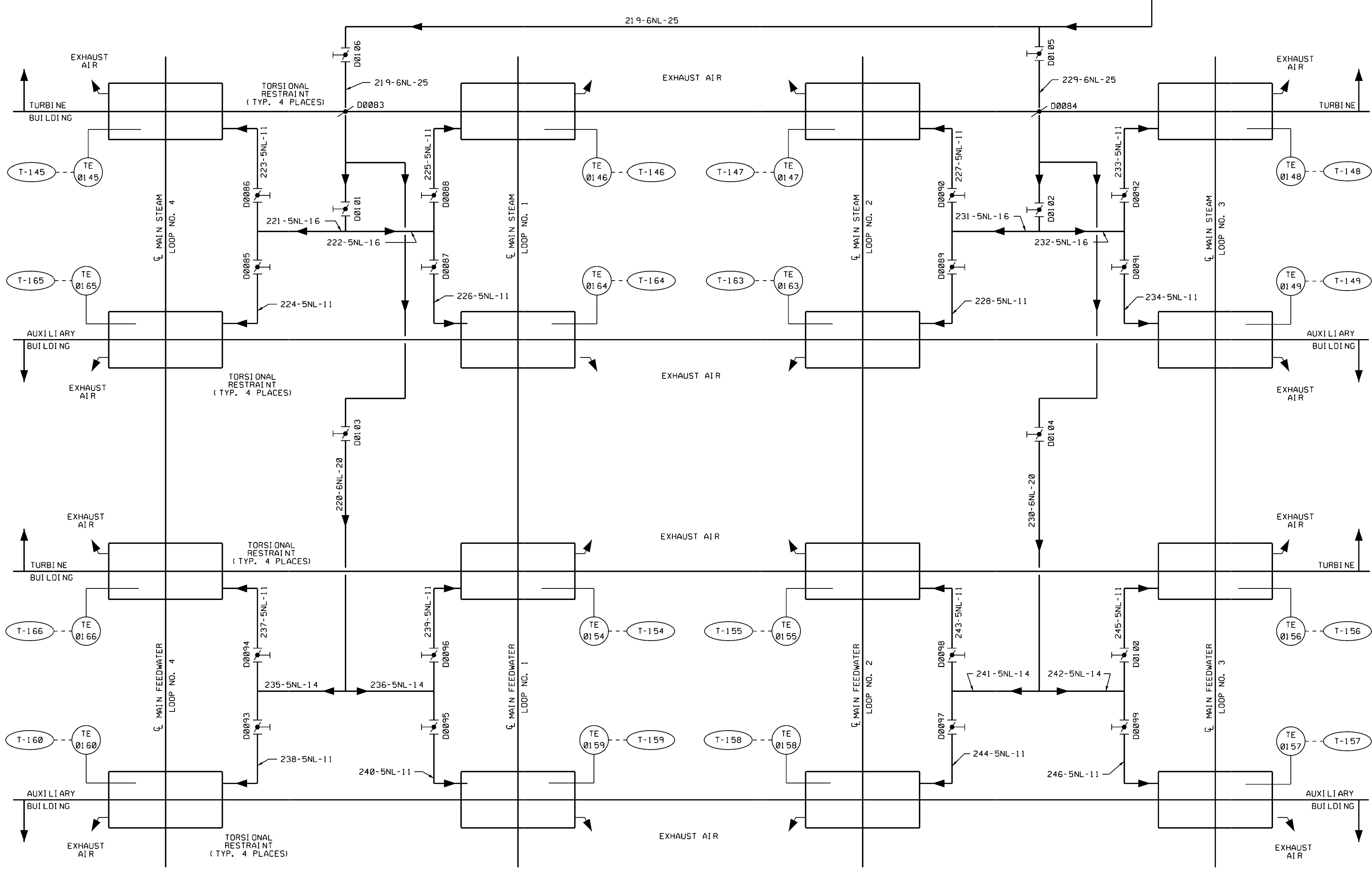
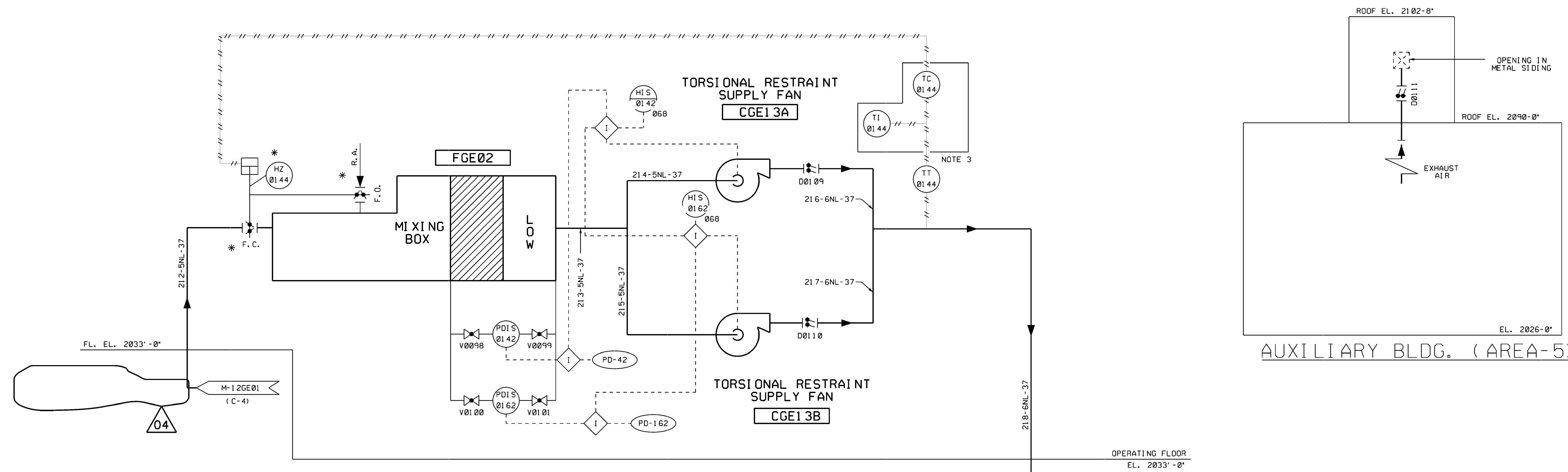
Blanca G. Nieto  
Released by Document Services  
Revision Date: 2011.12.12 08:52:39 -06'00'





**NOTES:**

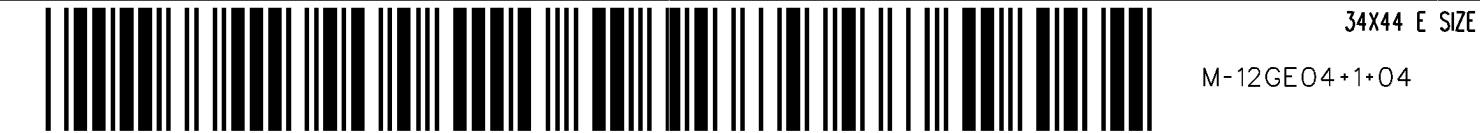
1. ALL T.E.'S ARE MONITORING CONCRETE TEMPERATURE.
2. DUCTWORK SIZES ARE INDICATED AS EQUIVALENT ROUND.
3. DENOTES COMMON ENCLOSURE REFERENCE J-805-00020.



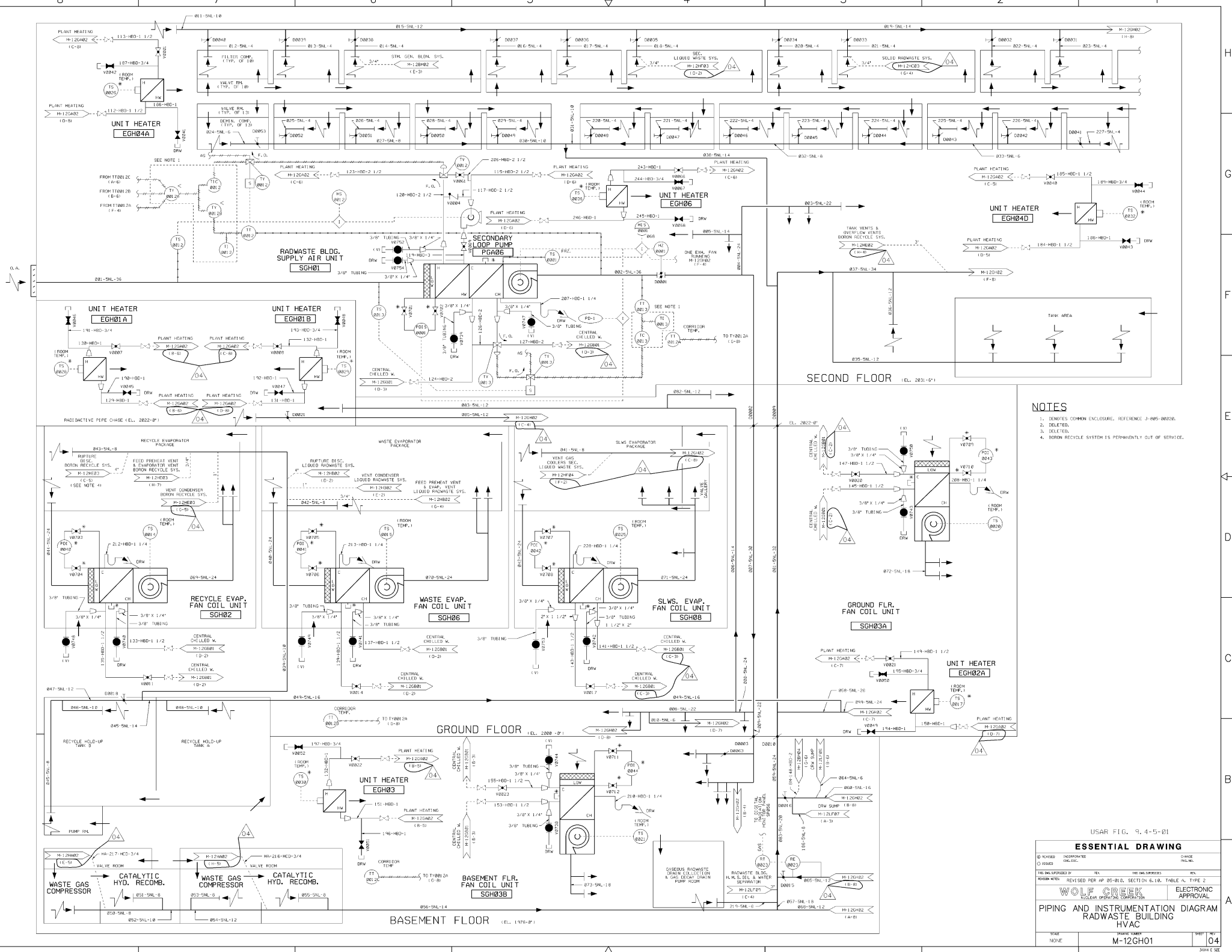
USAR FIG. 9.4-4-04

ESSENTIAL DRAWING			
REVISION	INCORPORATED	CR# 00045144	CHANGE
ISSUED	CHG. DOC.		PKG. NO.
THIS DWG. SUPERSEDES BY		REV.	THIS DWG. SUPERSEDES
REVISION NOTES			
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING AND INSTRUMENTATION DIAGRAM			
TURBINE BUILDING HVAC			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12GE04	04	

*Handwritten signature*







- NOTES**
1. IDENTIFY COMMON ENCLOSURE. REFERENCE J-895-00206.
  2. DELETED.
  3. DELETED.
  4. BORON RECYCLE SYSTEM IS PERMANENTLY OUT OF SERVICE.

USAR FIG. 3, 4-5-81

**ESSENTIAL DRAWING**

REVISED	INCORPORATED	DATE
ISSUED	REVISION	BY

THIS DRAWING IS THE PROPERTY OF THE U.S. GOVERNMENT AND IS LOANED TO YOU BY THE U.S. GOVERNMENT. IT IS TO BE RETURNED TO THE U.S. GOVERNMENT OFFICE OF CONSTRUCTION.

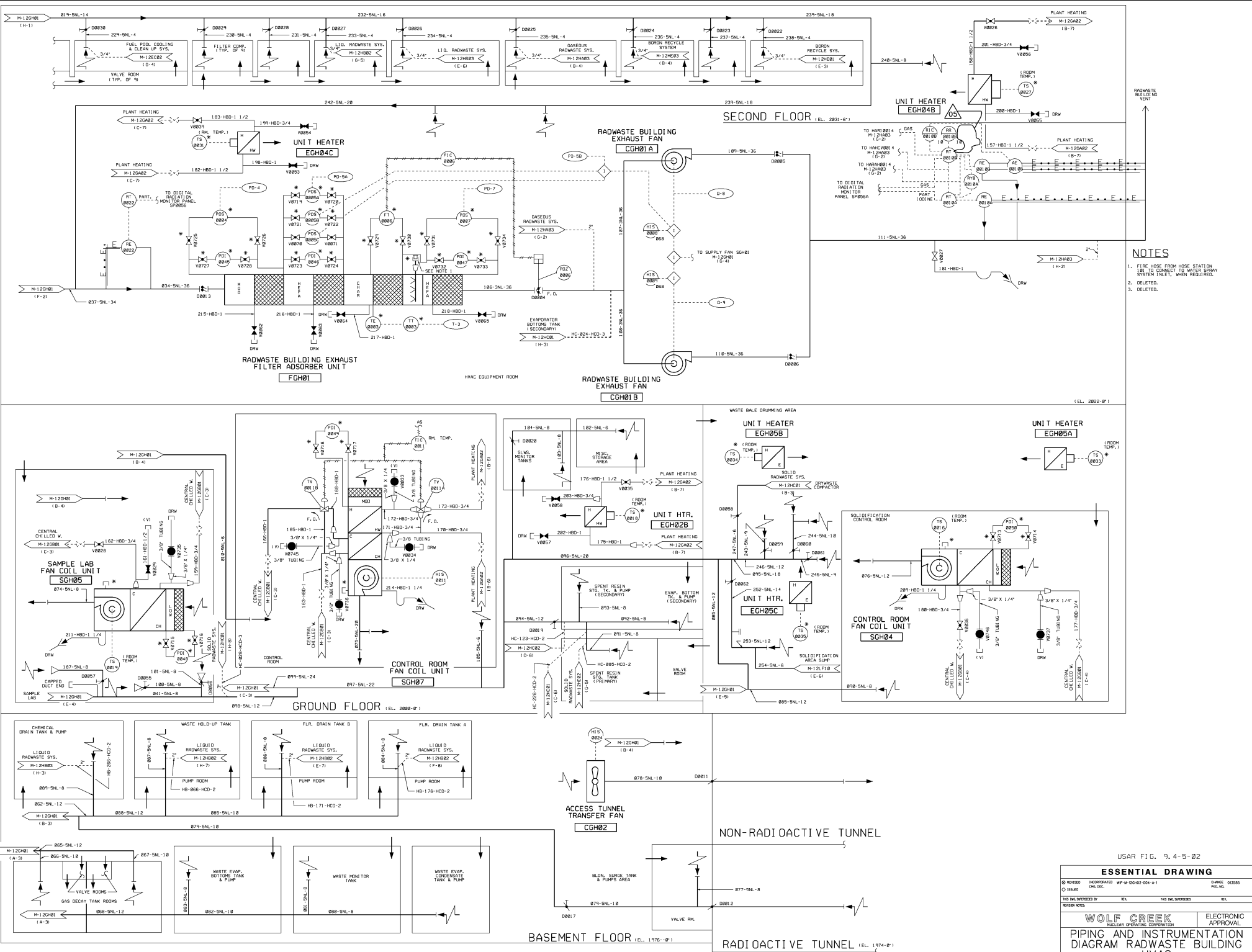
**WOLF CREEK** ELECTRONIC APPROVAL

**PIPING AND INSTRUMENTATION DIAGRAM**  
RADWASTE BUILDING  
HVAC

SCALE	SHEET NO.	TOTAL SHEETS
NONE	M-12GH01	04

DATE: 04/16/85





- NOTES**
1. FIRE HOSE FROM HOSE STATION IS TO CONNECT TO WATER SPRAY SYSTEM INLET, WHEN REQUIRED.
  2. DELETED.
  3. DELETED.

USAR FIG. 9.4-5-02

**ESSENTIAL DRAWING**

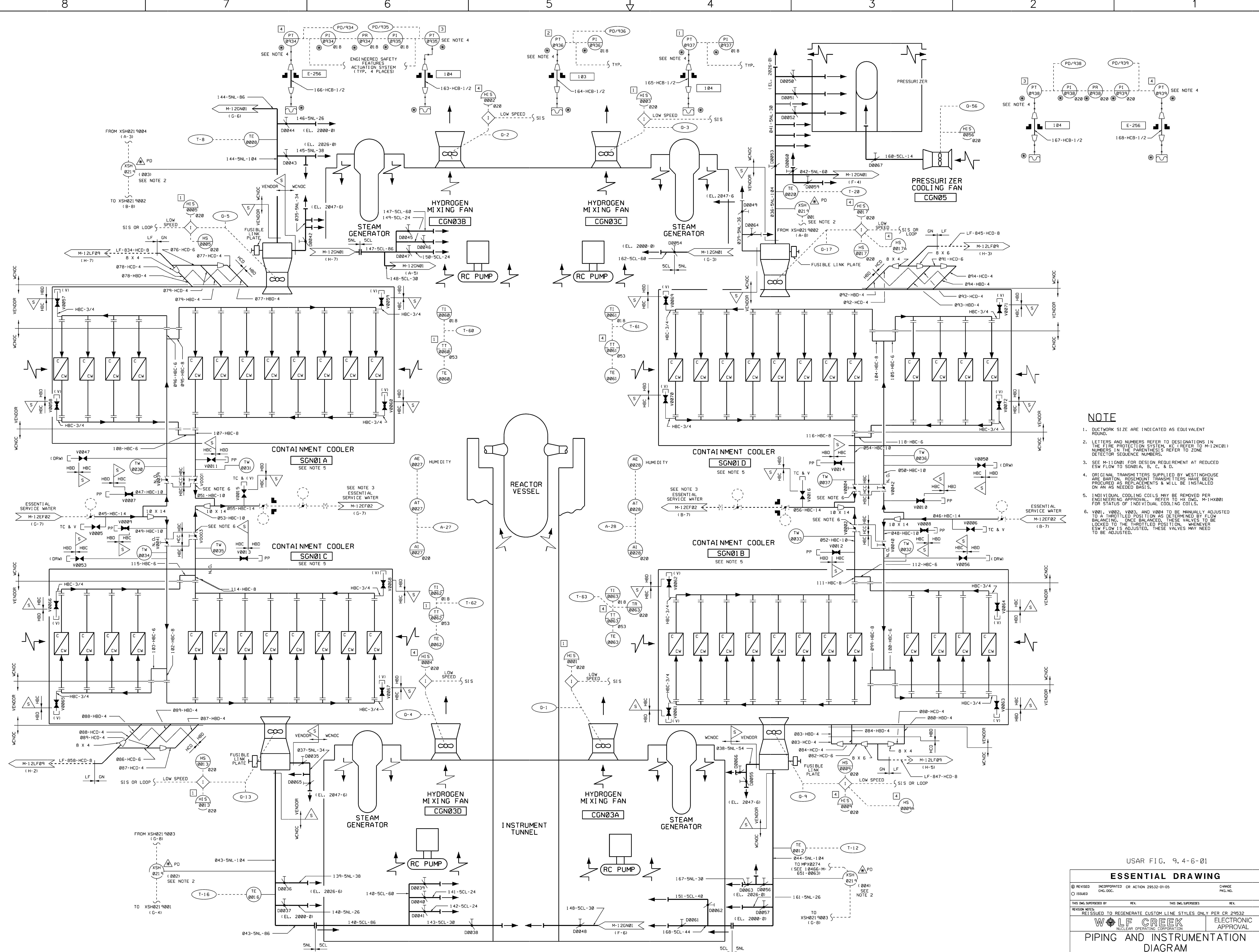
© REVISED INCORPORATED WP-4-200402-004-A-1 CHECKED 03580  
 03/04/02 PLO/DOO  
 THIS DRAWING APPROVED BY: [Signature] HAS NO APPROVALS: [Signature]  
 DESIGN NOTES:

**WOLF CREEK**  
 NUCLEAR OPERATING CORPORATION  
 ELECTRONIC APPROVAL

**PIPING AND INSTRUMENTATION  
 DIAGRAM RADWASTE BUILDING  
 HVAC**

SCALE: NONE DRAWING NUMBER: M-12GH02 SHEET NO: 05  
 DATE: 03/04/02





- NOTE**
1. DUCTWORK SIZE ARE INDICATED AS EQUIVALENT ROUND.
  2. LETTERS AND NUMBERS REFER TO DESIGNATIONS IN THE FIRE PROTECTION SYSTEM, KE (REFER TO M-12GN01) NUMBERS IN THE PARENTHESES REFER TO ZONE DETECTOR SEQUENCE NUMBERS.
  3. SEE M-11GN01 FOR DESIGN REQUIREMENT AT REDUCED ESW FLOW TO SGN01A, B, C, & D.
  4. ORIGINAL TRANSMITTERS SUPPLIED BY WESTINGHOUSE ARE BARTON. ROSEMOUNT TRANSMITTERS HAVE BEEN PROCURED AS REPLACEMENTS & WILL BE INSTALLED ON AN AS NEEDED BASIS.
  5. INDIVIDUAL COOLING COILS MAY BE REMOVED PER ENGINEERING APPROVAL. REFER TO HX DWG. M-1HX001 FOR STATUS OF INDIVIDUAL COOLING COILS.
  6. V0801, V0802, V0803, AND V0804 TO BE MANUALLY ADJUSTED TO A THROTTLED POSITION AS DETERMINED BY FLOW BALANCING. ONCE BALANCED, THESE VALVES TO BE LOCKED TO THE THROTTLED POSITION. WHENEVER ESW FLOW IS ADJUSTED, THESE VALVES MAY NEED TO BE ADJUSTED.

USAR FIG. 9, 4-6-01

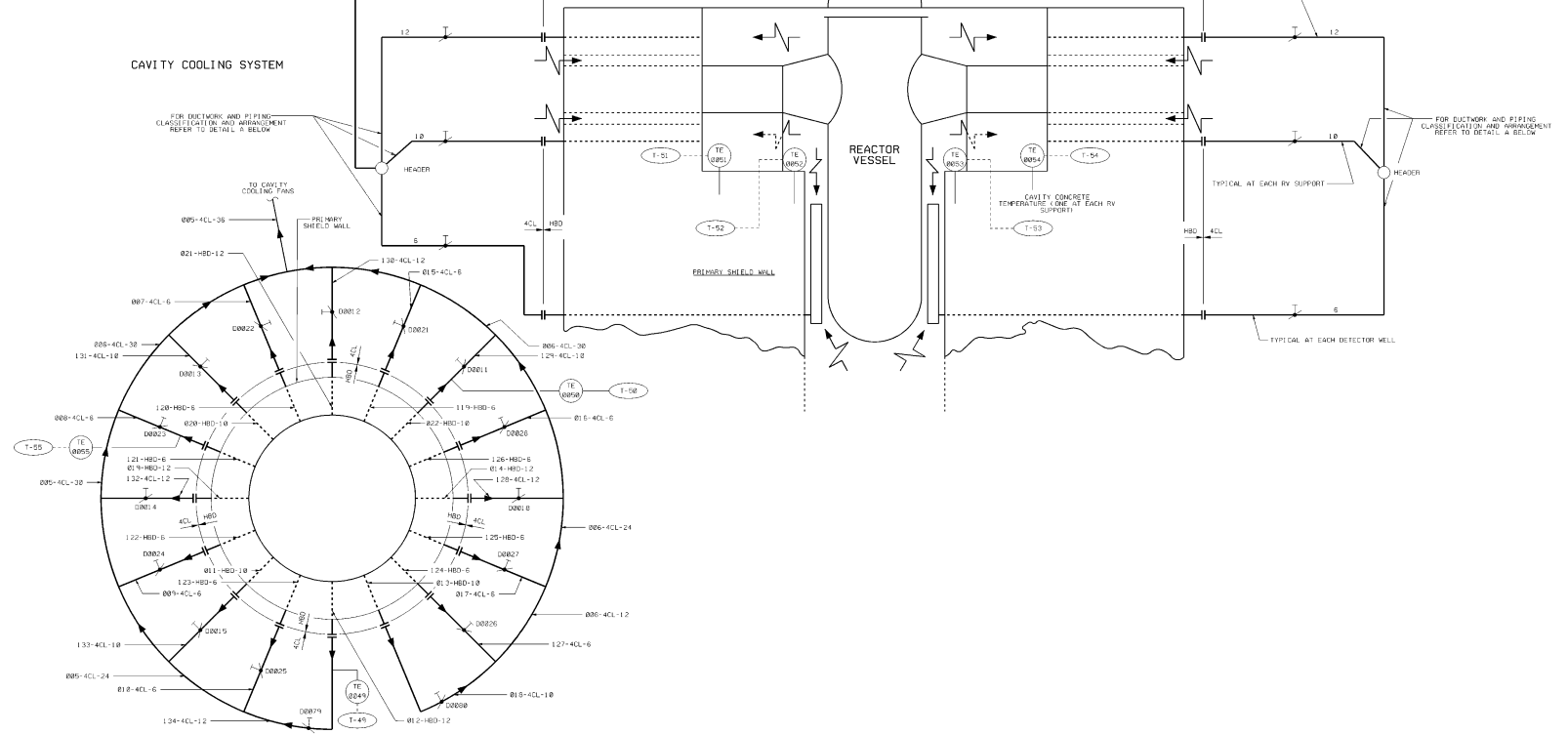
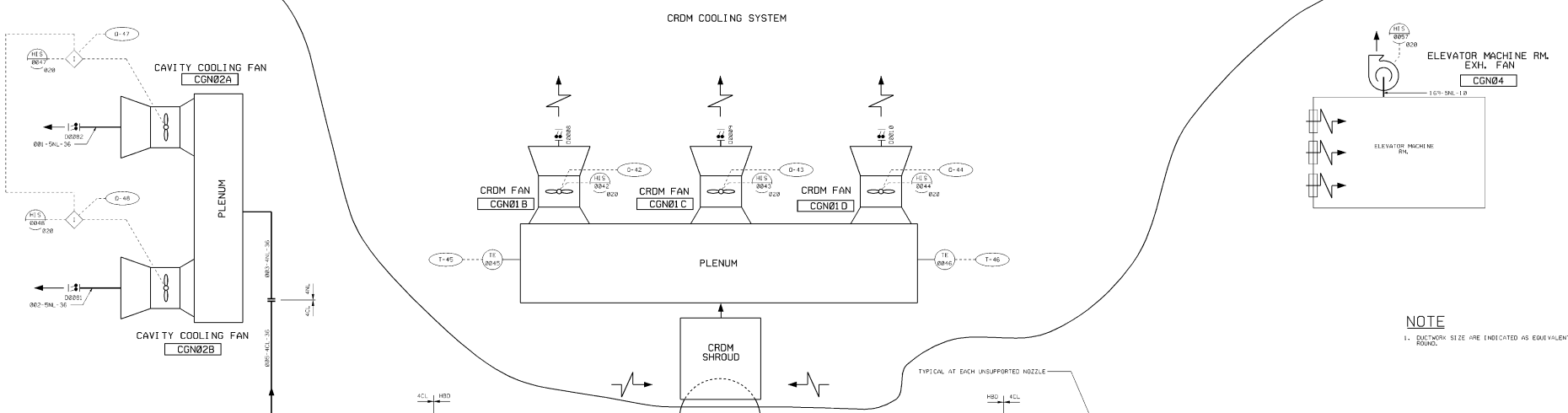
<b>ESSENTIAL DRAWING</b>	
<small>         REVISIONS:         <ul style="list-style-type: none"> <li>① REVISED INCORPORATED CR ACTION 29532-01-05</li> <li>② ISSUED</li> </ul> </small>	<small>         CHANGE NO.                   P&amp;ID NO.       </small>
<small>         THIS DWG SUPERSEDES:       </small>	
<small>         REVISIONS TO REGENERATE CUSTOM LINE STYLES ONLY PER CR 29532       </small>	
<b>PIPING AND INSTRUMENTATION DIAGRAM</b>	
<b>CONTAINMENT COOLING SYSTEM</b>	
<small>         SCALE: NONE       </small>	<small>         DRAWING NUMBER: M-12GN01       </small>
<small>         SHEET: 24       </small>	<small>         REV: 02       </small>

Blaine G. Newton

M-12GN01-1-24



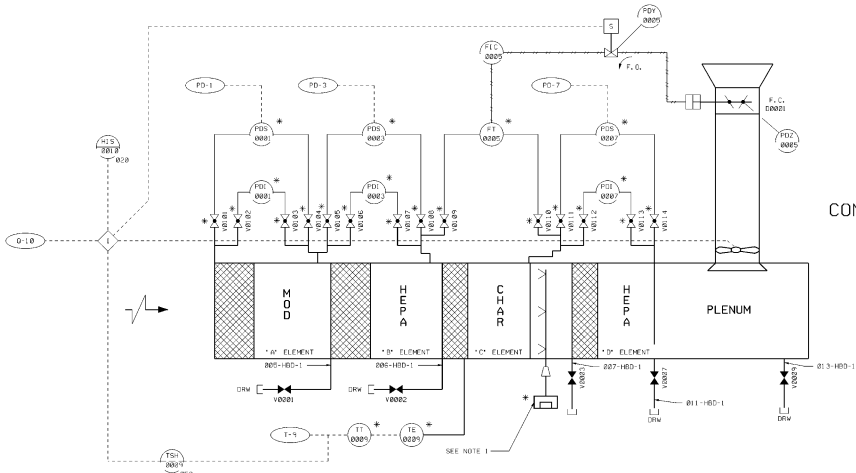




**DETAIL A**  
(PLAN VIEW)

USAR FIG. 9, 4-G-02

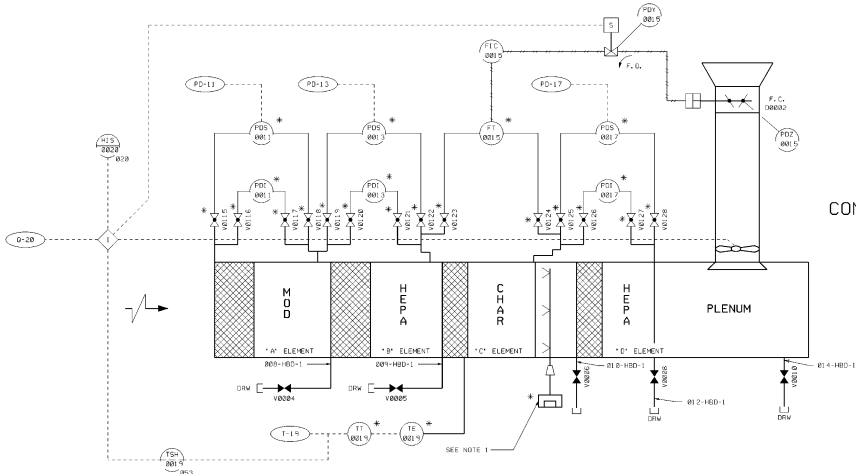
ESSENTIAL DRAWING			
DESIGNED BY	INCORPORATED	W.P. N. 100001-01-A, B, D	CHECKED
ISSUED	DATE		BY
THE DRAWING IS BY	REV.	THE DATE	BY
REVISION	DATE		
<b>WOLF CREEK</b>		ELECTRONIC APPROVAL	
PIPING & INSTRUMENTATION DIAGRAM			
CONTAINMENT COOLING SYSTEM			
SCALE	DATE	BY	NO.
NONE	M-12GN02		03



CONTAINMENT ATMOSPHERIC CONTROL SYSTEM FILTRATION TRAIN  
FGR01 A

CONTAINMENT ATMOSPHERIC CONTROL SYSTEM FAN  
CGR01 A

**NOTES**  
1. FIRE HOSE FROM HOSE STATION 123 (FOR BOTH UNITS) TO CONNECT TO WATER SPRAY SYSTEM 1 MEET, WHEN REQUIRED.



CONTAINMENT ATMOSPHERIC CONTROL SYSTEM FILTRATION TRAIN  
FGR01 B

CONTAINMENT ATMOSPHERIC CONTROL SYSTEM FAN  
CGR01 B

USAR FIG. 9.4-6-03

ESSENTIAL DRAWING			
REVISION	DESCRIPTION	DATE	BY
1	ISSUED	08-01-02	...
THIS WAS SUPERSEDED BY		NO.	DATE
ELECTRONICALLY CONVERTED PER AP 05-012		...	...
WOLF CREEK		ELECTRONIC APPROVAL	
PIPING & INSTRUMENTATION DIAGRAM CONTAINMENT ATMOSPHERIC CONTROL SYSTEM			
TITLE	ISSUE NUMBER	SHEET	REV.
NONE	M-12GR01	01	01



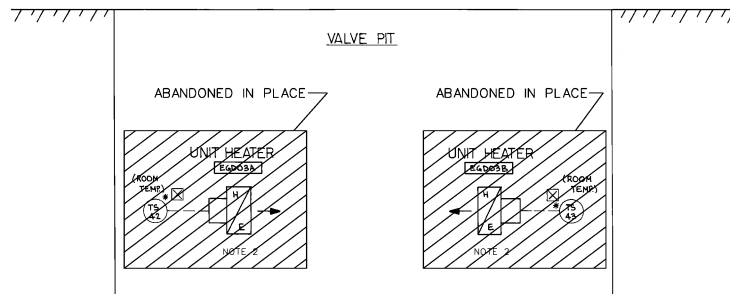
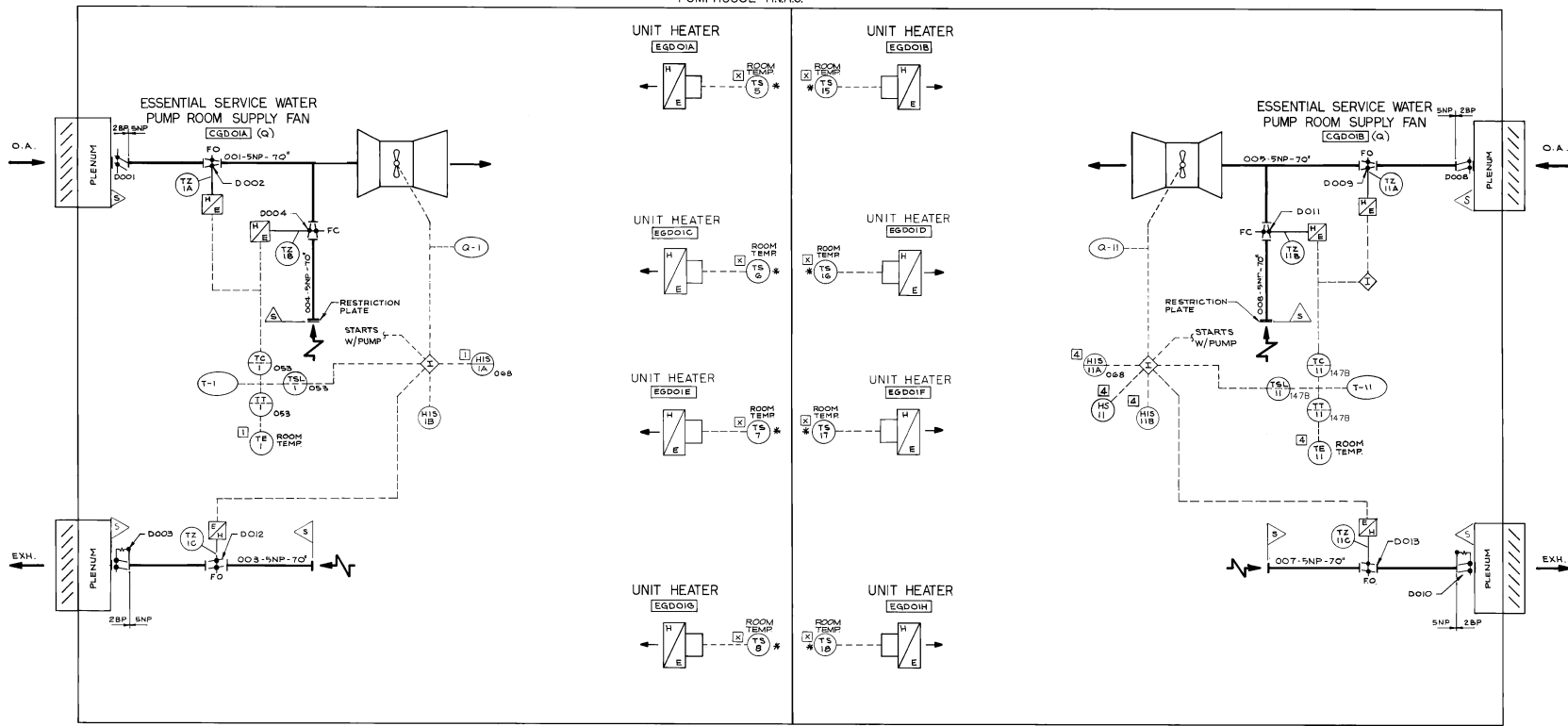








ESSENTIAL SERVICE WATER  
PUMPHOUSE HVAC.



**NOTE:**  
 1. DRAWING APPLICABLE TO WOLF CREEK UNIT 1 ONLY.  
 2. UNIT HEATER & TEMPERATURE SWITCH ARE ABANDONED IN PLACE.

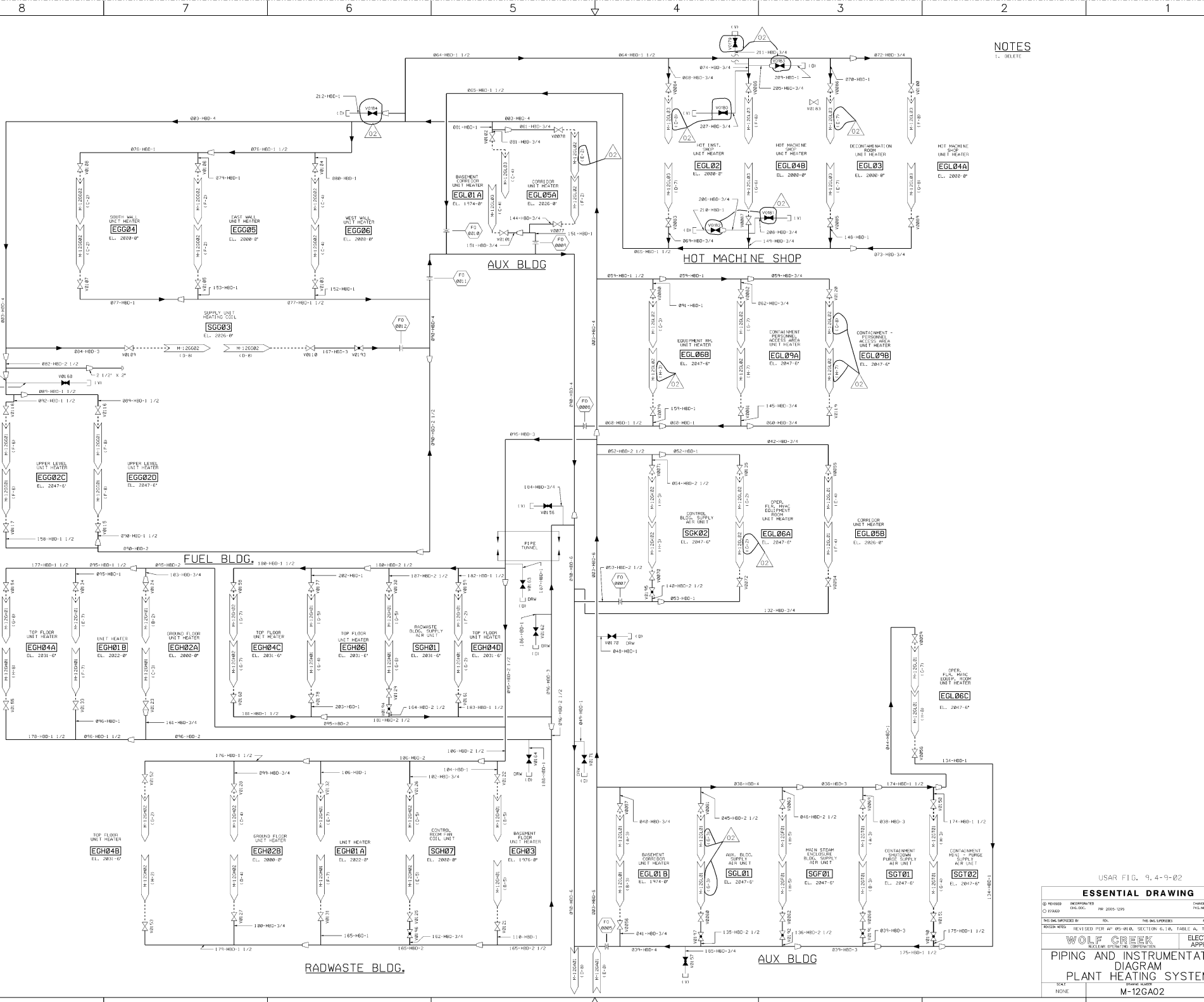
USAR FIG. 9.4-8-00

ESSENTIAL DRAWING			
REVISION	INCORPORATED	W-P-M-K2G001-008-A-1	CHANGE 014592
DATE	04/05/00		FILE NO.
DESIGNED BY	SK	NO. OF APPROVES	SK
REVISION NOTES	ISSUED REVISIONS TO NO. IMP. DRAFTING CHANGES NOT INCORPORATED.		
		ELECTRONIC APPROVAL	
PIPING & INSTRUMENTATION DIAGRAM ESSENTIAL SERVICE WATER PUMP HOUSE HVAC			
SCALE	NONE	DRAWING NUMBER	M-K2G001
SHEET	12	DATE	04/05/00









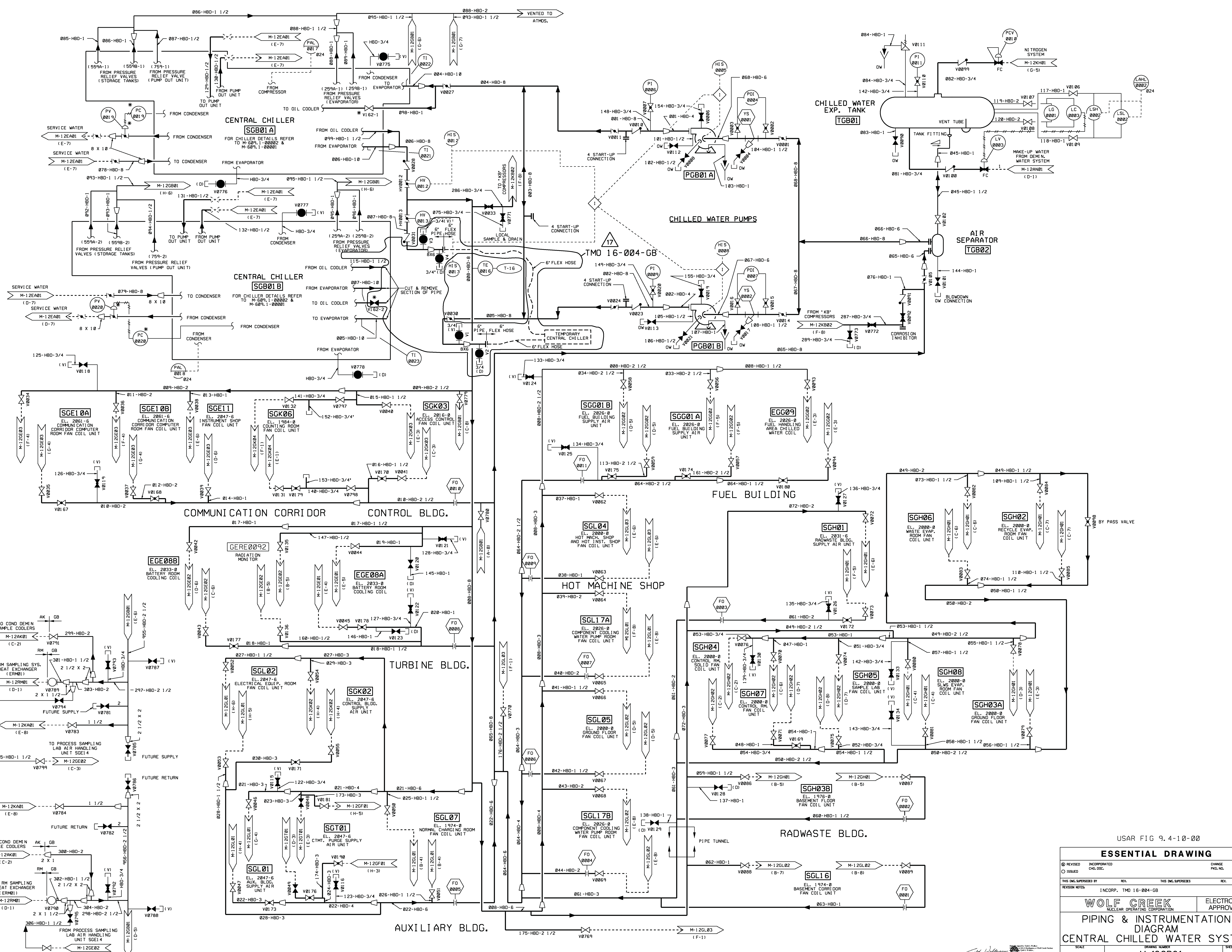
NOTES  
1. DELETE

USAR FIG. 9.4-9-02

ESSENTIAL DRAWING			
DESIGNED BY	REVISIONS	DATE	BY
010000	REV. 001	08/20/05	02
NO. OF SHEETS	REV. NO.	NO. OF SHEETS	NO. OF SHEETS
1	001	1	1
		ELECTRONIC APPROVAL	
<b>PIPING AND INSTRUMENTATION DIAGRAM</b> <b>PLANT HEATING SYSTEM</b>			
SCALE	SHEET NO.	SHEET TOTAL	
NONE	M-12GA02	02	

Released by Document Services Release Date: 08/04/05

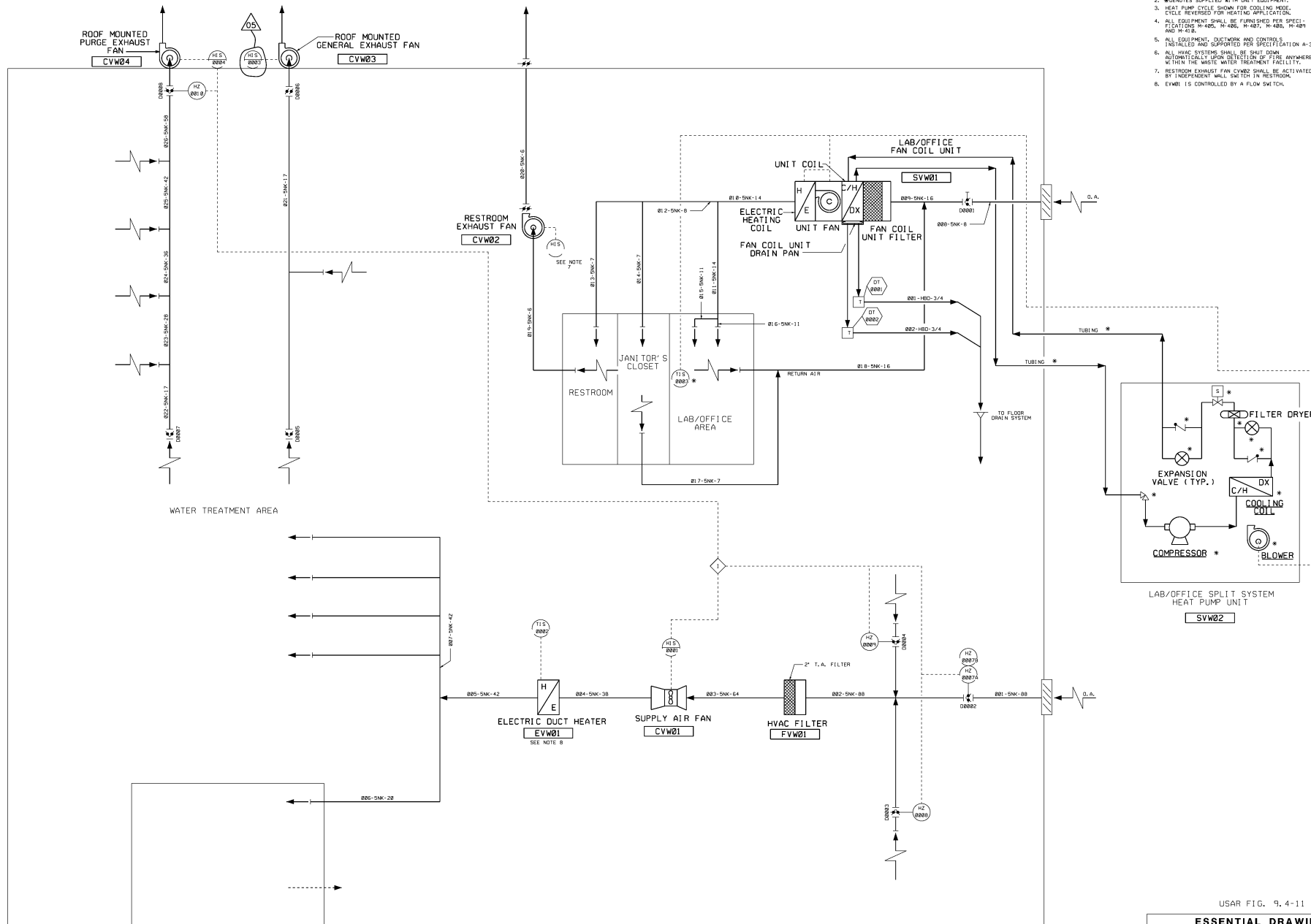






**NOTES**

1. DUCTWORK SIZES ARE INDICATED AS EQUIVALENT ROUND.
2. # IDENTITIES SUPPLIED WITH UNIT EQUIPMENT.
3. HEAT PUMP CYCLE SHOWN FOR COOLING MODE. CYCLE REVERSED FOR HEATING APPLICATION.
4. ALL EQUIPMENT SHALL BE FURNISHED PER SPEC. IDENTIFIED BY #001, #100, #101, #102, #103, #104.
5. ALL EQUIPMENT, DUCTWORK AND CONTROLS INSTALLED AND SUPPORTED PER SPECIFICATION A-300.
6. ALL HVAC SYSTEMS SHALL BE SHUT DOWN AUTOMATICALLY UPON DETECTION OF FIRE ANYWHERE WITHIN THE WASTE WATER TREATMENT FACILITY.
7. RESTROOM EXHAUST FAN CVW02 SHALL BE ACTIVATED BY INDEPENDENT WALL SWITCH IN RESTROOM.
8. EVW01 IS CONTROLLED BY A FLOW SWITCH.



USAR FIG. 9.4-11

**ESSENTIAL DRAWING**

REVISED	INCORPORATED OR 0603	CHANGE
ISSUED	04/00	FILE NO.
THIS SHEET APPROVED BY	REV.	NO. INC. APPROVES
DESIGN NOTE		

**WOLF CREEK**  
WASTE WATER OPERATIONS CORPORATION  
ELECTRONIC APPROVAL

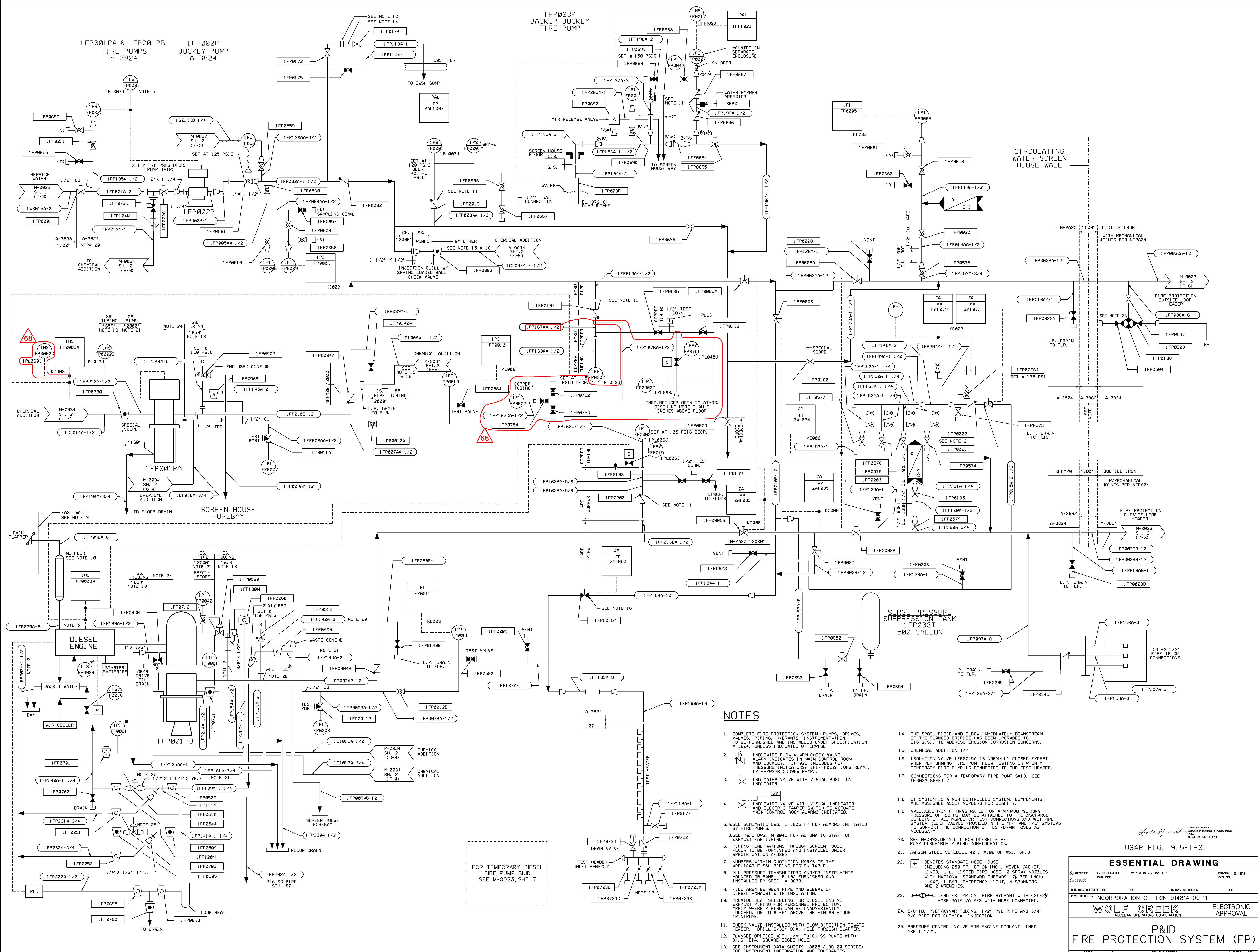
**WASTE WATER TREATMENT FACILITY**  
H.V.A.C. P310

SHEET NO. M-12VW01 REV. 05

DATE: NONE DRAWN: NONE







**NOTES**

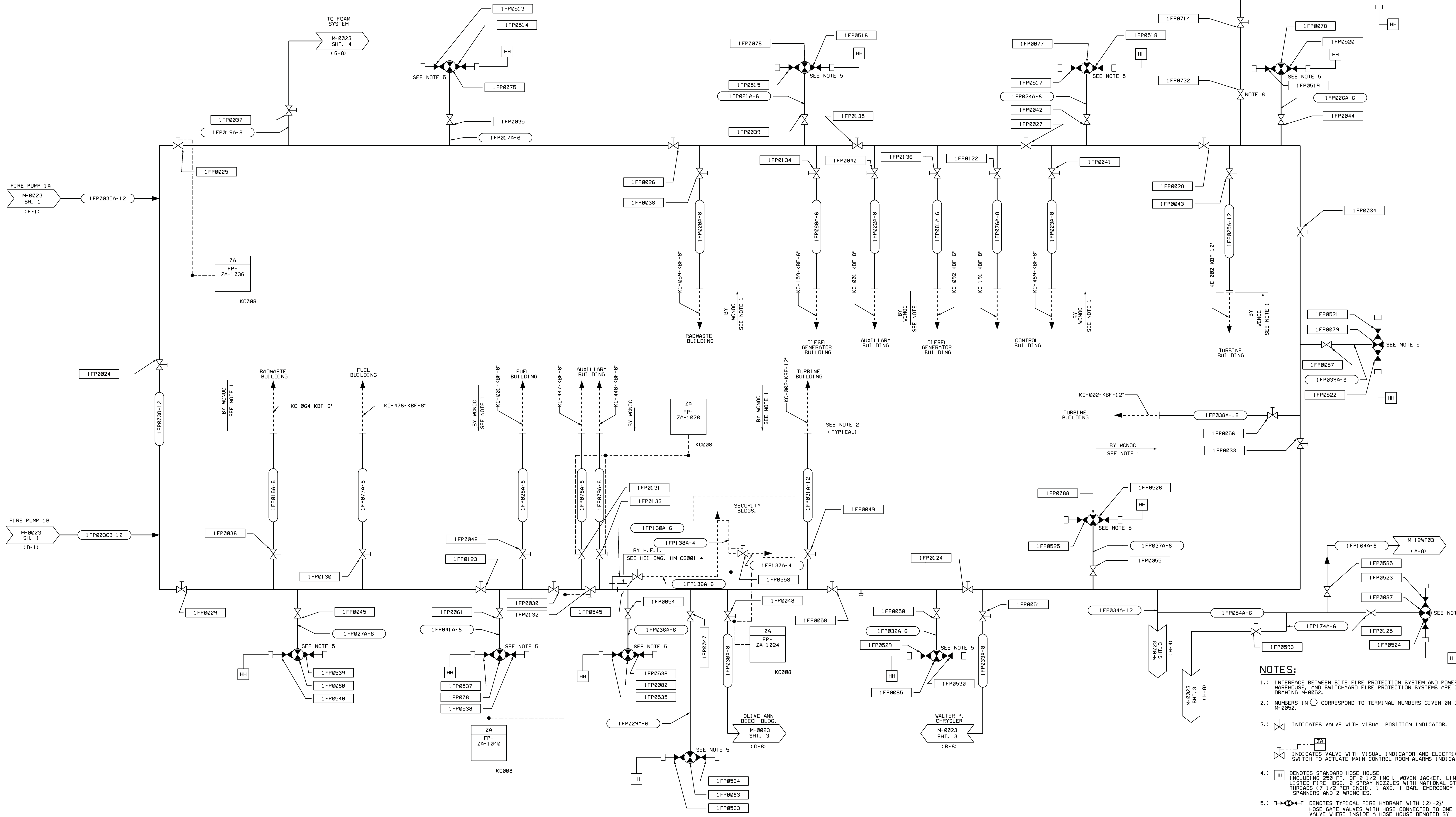
- COMPLETE FIRE PROTECTION SYSTEM (PUMPS, DRIVES, VALVES, PIPING, HYDRANTS, INSTRUMENTATION) TO BE FURNISHED AND INSTALLED UNDER SPECIFICATION A-3824, UNLESS INDICATED OTHERWISE.
- INDICATES FLOW ALARM CHECK VALVE. ALARM INDICATES IN MAIN CONTROL ROOM AND LOCALLY. 1FP022 INCLUDES (2) PRESSURE INDICATORS: 1FP1022A (UPSTREAM), 1FP1022B (DOWNSTREAM).
- INDICATES VALVE WITH VISUAL POSITION INDICATOR.
- INDICATES VALVE WITH VISUAL INDICATOR AND ELECTRIC TAMPER SWITCH TO ACTIVATE MAIN CONTROL ROOM ALARMS INDICATED.
- SEE SCHEMATIC DWG. E-1005-FP FOR ALARMS INITIATED BY FIRE PUMPS.
- SEE P&ID DWG. M-0042 FOR AUTOMATIC START OF FLOOR TO BE FURNISHED AND INSTALLED UNDER SPECIFICATION A-3824.
- NUMBERS WITHIN QUOTATION MARKS OF THE APPLICABLE S&L PIPING DESIGN TABLE.
- ALL PRESSURE TRANSMITTERS AND/OR INSTRUMENTS MOUNTED OR PANEL 1PL15J FURNISHED AND INSTALLED BY SPEC. A-3838.
- FILL AREA BETWEEN PIPE AND SLEEVE OF DIESEL EXHAUST WITH INSULATION.
- PROVIDE HEAT SHIELDING FOR DIESEL ENGINE EXHAUST PIPING FOR PERSONNEL PROTECTION. APPLY WHERE PIPING CAN BE INADVERTENTLY TOUCHED, UP TO 6'-0" ABOVE THE FINISH FLOOR (MINIMUM).
- CHECK VALVE INSTALLED WITH FLOW DIRECTION TOWARD HEADER. ORIF. 3/32" DIA. HOLE THROUGH CLAMPER.
- FLANGED ORIFICE WITH 1/4" THICK SS PLATE WITH 3/16" DIA. SQUARE EGGED HOLE.
- SEE INSTRUMENT DATA SHEETS (8025-J-00-00 SERIES) FOR INSTRUMENT INFORMATION AND TOLERANCES.
- THE SPOOL PIECE AND ELBOW IMMEDIATELY DOWNSTREAM OF THE FLANGED ORIFICE HAS BEEN UPGRADED TO 316 S.S. TO ADDRESS EROSION/CORROSION CONCERNS.
- CHEMICAL ADDITION TAP.
- ISOLATION VALVE 1FP0015A IS NORMALLY CLOSED EXCEPT WHEN PERFORMING FIRE PUMP FLOW TESTING OR WHEN A TEMPORARY FIRE PUMP IS CONNECTED TO THE TEST HEADER.
- CONNECTIONS FOR A TEMPORARY FIRE PUMP SKID. SEE M-0023, SHEET 7.
- CI SYSTEM IS A NON-CONTROLLED SYSTEM, COMPONENTS ARE ASSIGNED ASSET NUMBERS FOR CLARITY.
- MALLEABLE IRON FITTINGS RATED FOR A MINIMUM WORKING PRESSURE OF 150 PSIG MAY BE ATTACHED TO THE DISCHARGE OUTLETS OF ALL INSPECTOR TEST CONNECTIONS AND WET PIPE SYSTEM RELIEF VALVES PROVIDED IN THE "FP" AND "KCC" SYSTEMS TO SUPPORT THE CONNECTION OF TEST/DRAIN HOSES AS NECESSARY.
- SEE M-0093, DETAIL 1 FOR DIESEL FIRE PUMP DISCHARGE PIPING CONFIGURATION.
- CARBON STEEL SCHEDULE 40, A106 OR A53, GR. B.
- HH DENOTES STANDARD HOSE HOUSE INCLUDING 250 FT. OF 2 1/2 INCH. WOVEN JACKET, LINED, U.L. LISTED FIRE HOSE, 2 SPRAY NOZZLES WITH NATIONAL STANDARD THREADS (7 1/2 PER INCH), 1-AXE, 1-BAR, EMERGENCY LIGHT, 4-SPANNERS AND 2-WRENCHES.
- 3-2-1/2" DENOTES TYPICAL FIRE HYDRANT WITH (2) 2 1/2" HOSE GATE VALVES WITH HOSE CONNECTED.
- 5/8" ID. PVDF/KYNAR TUBING, 1/2" PVC PIPE AND 3/4" PVC PIPE FOR CHEMICAL INJECTION.
- PRESSURE CONTROL VALVE FOR ENGINE COOLANT LINES ARE 1 1/2".

USAR FIG. 9.5-1-01

ESSENTIAL DRAWING			
REVISED	INCORPORATED	WIP-M-0023-065-B-1	CHANGE 014814
ISSUED	CHG. DOC.		P&ID. NO.
THIS DWG. SUPERSEDES		REV.	THIS DWG. SUPERSEDES
REVISION NUMBER INCORPORATION OF IFCN 014814-00-11			
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION		APPROVAL	
P&ID FIRE PROTECTION SYSTEM (FP)			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-0023	1	68

3444 E. SE





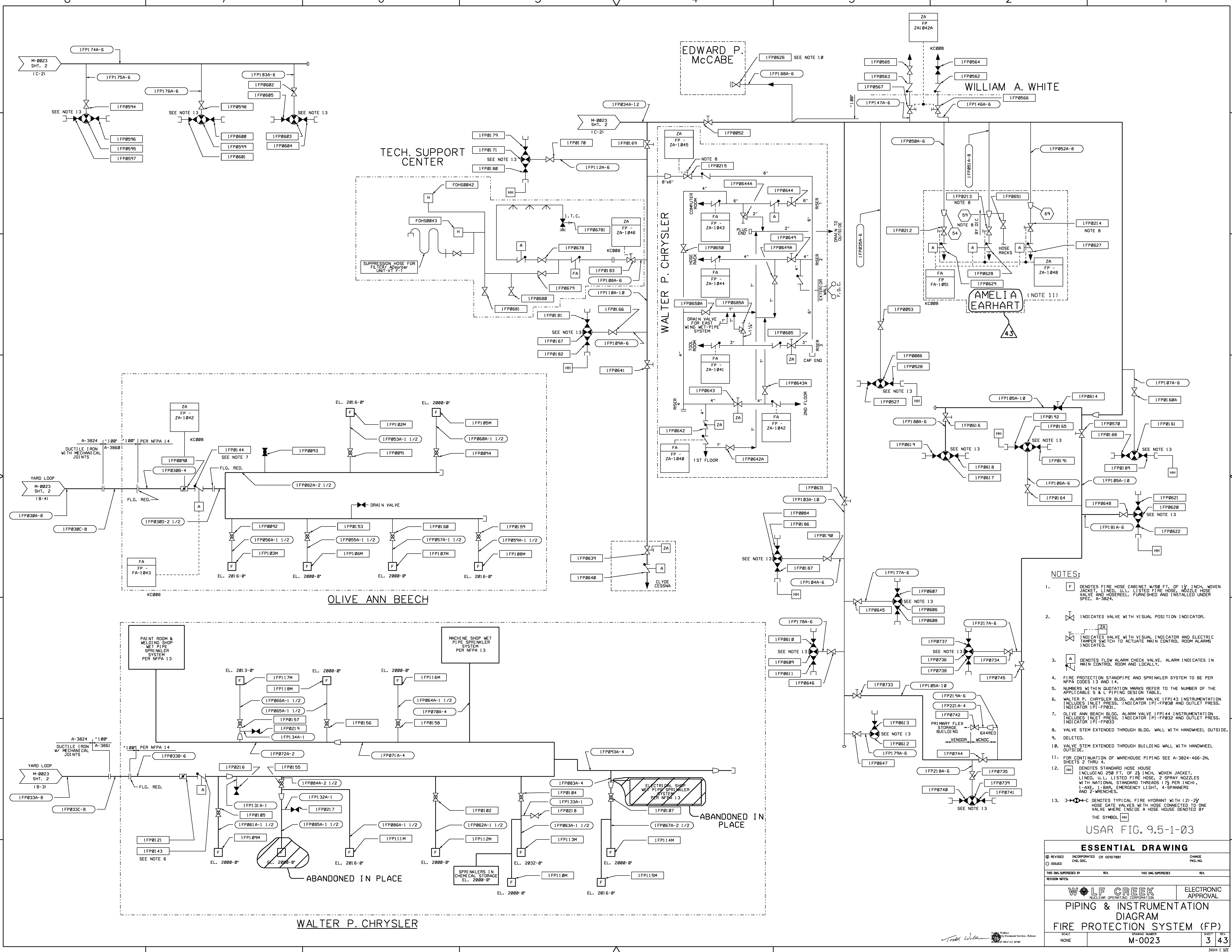
- NOTES:**
- 1.) INTERFACE BETWEEN SITE FIRE PROTECTION SYSTEM AND POWER BLOCK, WAREHOUSE, AND SWITCHYARD FIRE PROTECTION SYSTEMS ARE GIVEN ON DRAWING M-0052.
  - 2.) NUMBERS IN ○ CORRESPOND TO TERMINAL NUMBERS GIVEN ON DRAWING M-0052.
  - 3.) INDICATES VALVE WITH VISUAL POSITION INDICATOR.
  - 4.) INDICATES VALVE WITH VISUAL INDICATOR AND ELECTRIC TAMPER SWITCH TO ACTIVATE MAIN CONTROL ROOM ALARMS INDICATED.
  - 5.) DENOTES STANDARD HOSE HOUSE INCLUDING 250 FT. OF 2 1/2 INCH. MOVEN JACKET, LINED, U.L. LISTED FIRE HOSE, 2 SPRAY NOZZLES WITH NATIONAL STANDARD THREADS (7 1/2 PER INCH), 1-AXE, 1-BAR, EMERGENCY LIGHT, SPANNERS AND 2-WRENCHES.
  - 6.) DENOTES TYPICAL FIRE HYDRANT WITH (2)-2" HOSE GATE VALVES WITH HOSE CONNECTED TO ONE VALVE WHERE INSIDE A HOSE HOUSE DENOTED BY THE SYMBOL .
  - 7.) UNDERGROUND FIRE PROTECTION YARD LOOP TO BE PER NFPA NO. 24.
  - 8.) NUMBERS WITHIN QUOTATION MARKS REFER TO THE NUMBER OF THE APPLICABLE S&L PIPING DESIGN TABLE.

ESAR FIG. 9.5-1-02

REVISION NOTES			
①	REVISED	INCORPORATED	0005057
②	ISSUED	CHG. DEC.	CHANGE PKG. NO.
THIS DWG. SUPERSEDED BY:		REV.	THIS DWG. SUPERSEDES
REVISION NOTES		REV.	REV.
		ELECTRONIC APPROVAL	
<b>P&amp;ID FIRE PROTECTION SYSTEM (FP)</b>			
SCALE	NONE	DRAWING NUMBER	M-0023
SHEET	2	REV	28

*Linda Hunsaker*



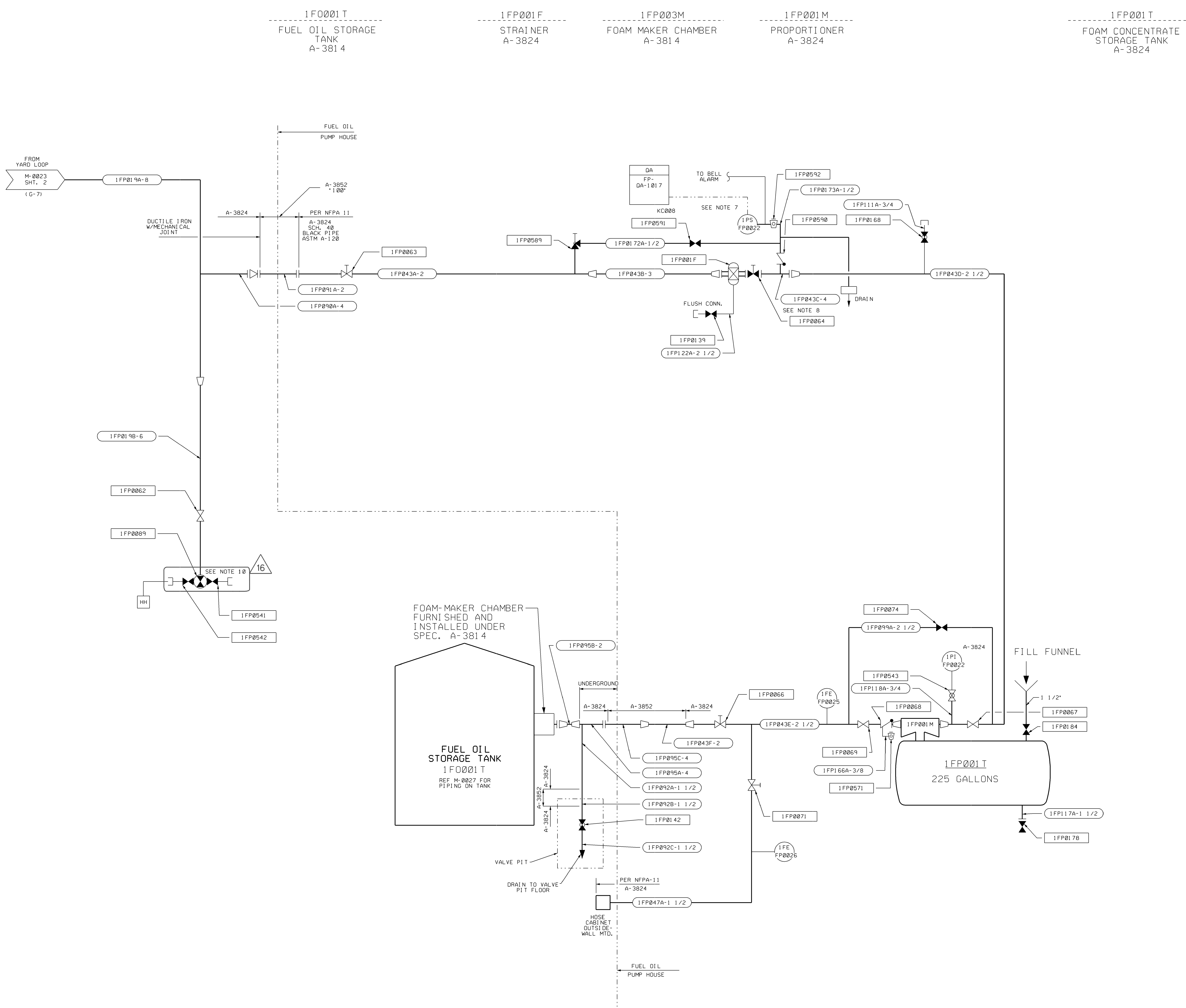


- NOTES:**
- [F] DENOTES FIRE HOSE CABINET W/50 FT. OF 1 1/2 INCH. WOVEN JACKETS, 1 INCH. I.D. LISTED FIRE HOSE, NOZZLE, HOSE VALVE AND HOSE REEL. FURNISHED AND INSTALLED UNDER SPEC. A-3824.
  - [V] INDICATES VALVE WITH VISUAL POSITION INDICATOR.
  - [A] INDICATES VALVE WITH VISUAL INDICATOR AND ELECTRIC TAMPER SWITCH TO ACTUATE MAIN CONTROL ROOM ALARMS INDICATED.
  - [A] DENOTES FLOW ALARM CHECK VALVE. ALARM INDICATES IN MAIN CONTROL ROOM AND LOCALLY.
  - FIRE PROTECTION STANDPIPE AND SPRINKLER SYSTEM TO BE PER NFPA CODES 13 AND 14.
  - NUMBERS WITHIN DUTATION MARKS REFER TO THE NUMBER OF THE APPLICABLE 5 & L-PIPING DESIGN TABLE.
  - WALTER P. CHRYSLER BLDG. ALARM VALVE IPI43 INSTRUMENTATION INCLUDES INLET PRESS. INDICATOR IPI-FF038 AND OUTLET PRESS. INDICATOR IPI-FF031.
  - OLIVE ANN BEACH BLDG. ALARM VALVE IPI44 INSTRUMENTATION INCLUDES INLET PRESS. INDICATOR IPI-FF032 AND OUTLET PRESS. INDICATOR IPI-FF033.
  - VALVE STEM EXTENDED THROUGH BLDG. WALL WITH HANDWHEEL OUTSIDE.
  - DELETED.
  - VALVE STEM EXTENDED THROUGH BUILDING WALL WITH HANDWHEEL OUTSIDE.
  - FOR CONTINUATION OF WAREHOUSE PIPING SEE A-3824-466-2N, SHEETS 2 THRU 4.
  - [HH] DENOTES STANDARD HOSE HOUSE. INCLUDING 250 FT. OF 2 1/2 INCH. WOVEN JACKET, LINED, I.D. LISTED FIRE HOSE, 2 SPRAY NOZZLES WITH NATIONAL STANDARD THREADS (7/8" PER INCH, 1-AXE, 1-BALL, EMERGENCY LIGHT, 4-SPANNERS AND 2-WRENCHES.
  - [H] DENOTES TYPICAL FIRE HYDRANT WITH (2)-2 1/2" HOSE GATE VALVES WITH HOSE CONNECTED TO ONE VALVE WHERE INSIDE A HOSE HOUSE DENOTED BY THE SYMBOL [HH].

USAR FIG. 9.5-1-03

ESSENTIAL DRAWING			
REVISION	INCORPORATED	CR 00107881	CHANGE PKG. NO.
ISSUED	CHG. DOC.		
THIS DWG. SUPERSEDES BY		REV.	THIS DWG. SUPERSEDES
REVISION NOTES			
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING & INSTRUMENTATION DIAGRAM			
FIRE PROTECTION SYSTEM (FP)			
SCALE	DRAWING NUMBER	SHEET	REV.
NONE	M-0023	3	43





- NOTES:**
1. DELETED
  2. INDICATES VALVE WITH VISUAL POSITION INDICATION.
  3. FOAM FIRE PROTECTION SYSTEM TO BE FURNISHED & INSTALLED UNDER SPEC. A-3824, INDOOR PIPING IN THE FUEL OIL PUMP HOUSE TO BE FIELD ROUTED.
  4. FOAM FIRE PROTECTION SYSTEM TO BE PER NFPA NO. 11.
  5. NUMBERS WITHIN QUOTATION MARKS REFER TO THE NUMBER OF THE APPLICABLE S & L PIPING DESIGN TABLE.
  6. DELETED.
  7. SWITCH FACTORY SET @ 5 LBS. ± 1 LB.
  8. OPEN VALVE 1FP064 TO INITIATE THE FOAM SPRAY SYSTEM.
  9. DENOTES STANDARD HOSE CABINET INCLUDING 250 FT. OF 2 1/2 INCH. WOVEN JACKET, LINED, U.L. LISTED FIRE HOSE, 2 SPRAY NOZZLES WITH NATIONAL STANDARD THREADS (7 1/2 PER 1 INCH), 1-AXE, 1-BAR, EMERGENCY LIGHT, 6-SPANNERS AND 2-WRENCHES.
  10. DENOTES TYPICAL FIRE HYDRANT WITH (2) 2 1/2" HOSE GATE VALVES WITH HOSE CONNECTED.

USAR FIG. 9.5-1-004

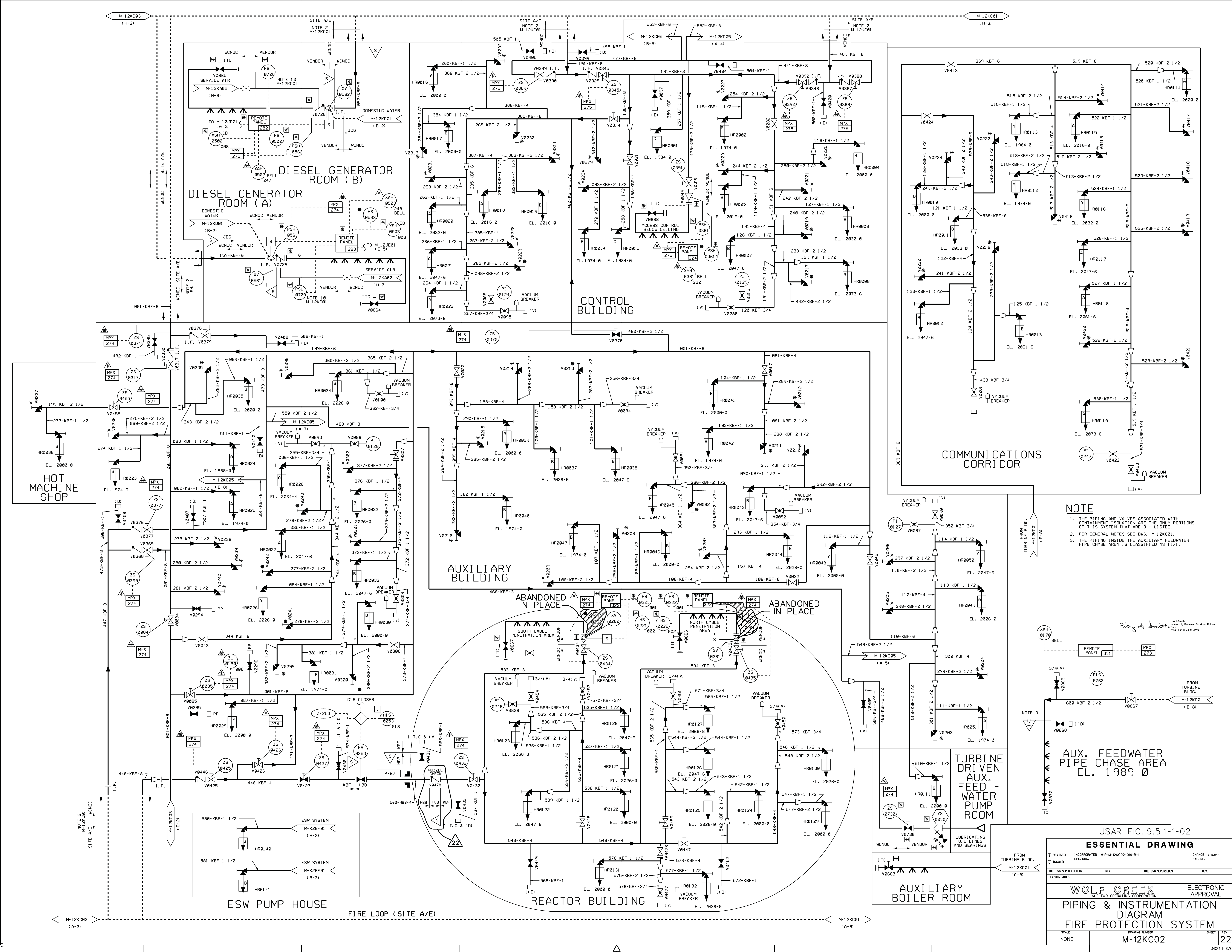
ESSENTIAL DRAWING			
① REVISED	INCORPORATED CR 5710.3	CHANGE	
○ ISSUED	CHG. DOC.	PKG. NO.	
THIS DWG. SUPERSEDES BY		REV.	THIS DWG. SUPERSEDES
REVISION NOTES			
<b>WOLF CREEK</b>		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION		SARGENT & LUNDY	
P & ID			
FIRE PROTECTION SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV.
NONE	M-0023	4	16

*Ray Smith* Rev. 1/2004  
 2013.01.24 13:30:41 067W









- NOTE**
1. THE PIPING AND VALVES ASSOCIATED WITH CONTAINMENT ISOLATION ARE THE ONLY PORTIONS OF THIS SYSTEM THAT ARE 'D' LISTED.
  2. FOR GENERAL NOTES SEE DWG. M-12KC01.
  3. THE PIPING INSIDE THE AUXILIARY FEEDWATER PIPE CHASE AREA IS CLASSIFIED AS I/I.

USAR FIG. 9.5-1-102

**ESSENTIAL DRAWING**

REVISIONS: INCORPORATED WP-M-12KC02-019-B-1, CHANGE 014815, PFG. MOD.  
 ISSUED: CHG. DOC.  
 THIS DNG. SUPERSEDES: M-12KC01 (A-B)  
 THIS DNG. SUPERSEDES: M-12KC02 (A-B)

**WOLF CREEK**  
 NUCLEAR OPERATING CORPORATION  
 ELECTRONIC APPROVAL

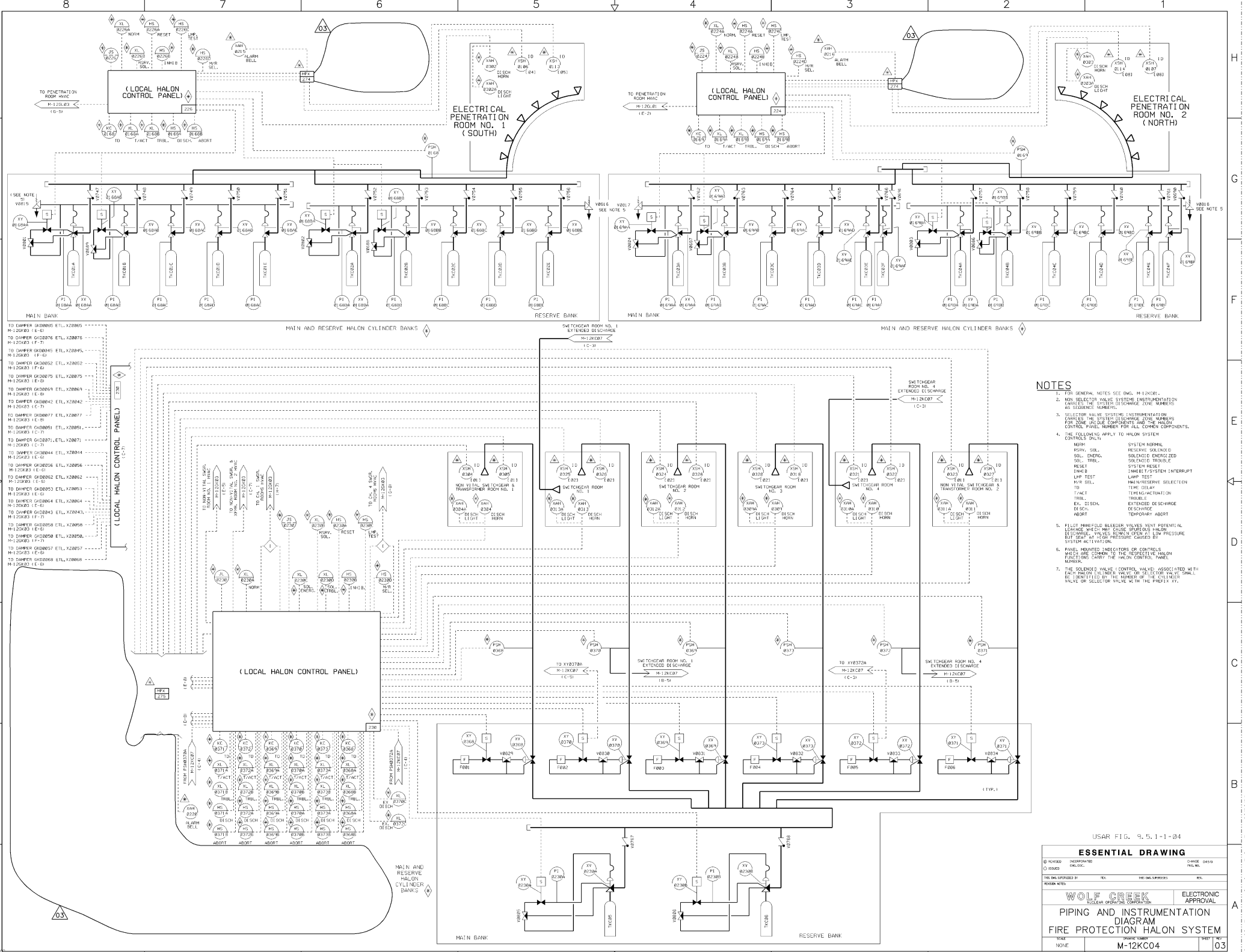
**PIPING & INSTRUMENTATION DIAGRAM**  
**FIRE PROTECTION SYSTEM**

SCALE: NONE  
 DRAWING NUMBER: M-12KC02  
 SHEET: 22  
 REV:









- NOTES**
1. GENERAL NOTES SEE ENG. M-12K04.
  2. NON-SELECTOR VALVE SYSTEM INSTRUMENTATION CARRIES THE SYSTEM DISCHARGE (S/N) NUMBER AS SEQUENCE NUMBER.
  3. SELECTOR VALVE SYSTEM INSTRUMENTATION CARRIES THE SYSTEM DISCHARGE (S/N) NUMBER FOR SOME INDIVIDUAL COMPONENTS AND THE MAIN CONTROL PANEL NUMBER FOR ALL COMMON COMPONENTS.
  4. THE FOLLOWING APPLY TO HALON SYSTEM CONTROL ONLY:
    - MAIN:
      - FROM SOL.
      - SOL. ENDRG.
      - SOL. TRBL.
      - SYSTEM RESET
      - SWITCH
      - LAMP TEST
      - MAN/RESERVE SELECTION
      - TRIG. DELAY
      - TRIG. ACTUATION
      - TRBL.
      - EX. DISCH.
      - DISCH.
      - ABORT
      - TEMPORARY ABORT
    - RESERVE:
      - SOL. ENDRG.
      - SOL. ENDRG. TRBL.
      - SYSTEM RESET
      - SWITCH
      - LAMP TEST
      - MAN/RESERVE SELECTION
      - TRIG. DELAY
      - TRIG. ACTUATION
      - TRBL.
      - EX. DISCH.
      - DISCH.
      - TEMPORARY ABORT
  5. PILOT MANFOLD BLEEDER VALVES VENT POTENTIAL CHARGE PRESSURE TO THE ATMOSPHERE. HALON DISCHARGE VALVES REMAIN OPEN AT LOW PRESSURE BUT SEAL AT HIGH PRESSURE CAUSED BY SYSTEM ACTIVATION.
  6. PANEL INDICATED INDICATORS OR CONTROLS WHICH ARE COMMON TO THE RESPECTIVE HALON FUNCTION CARRY THE MAIN CONTROL PANEL NUMBER.
  7. THE BLEEDER VALVE CONTROL VALVE ASSOCIATED WITH THE MAIN CYLINDER VALVE OR SELECTOR VALVE SHALL BE IDENTIFIED BY THE NUMBER OF THE BLEEDER VALVE OR SELECTOR VALVE IN THE PREFIX XY.

USAR FIG. 9.5.1-1-84

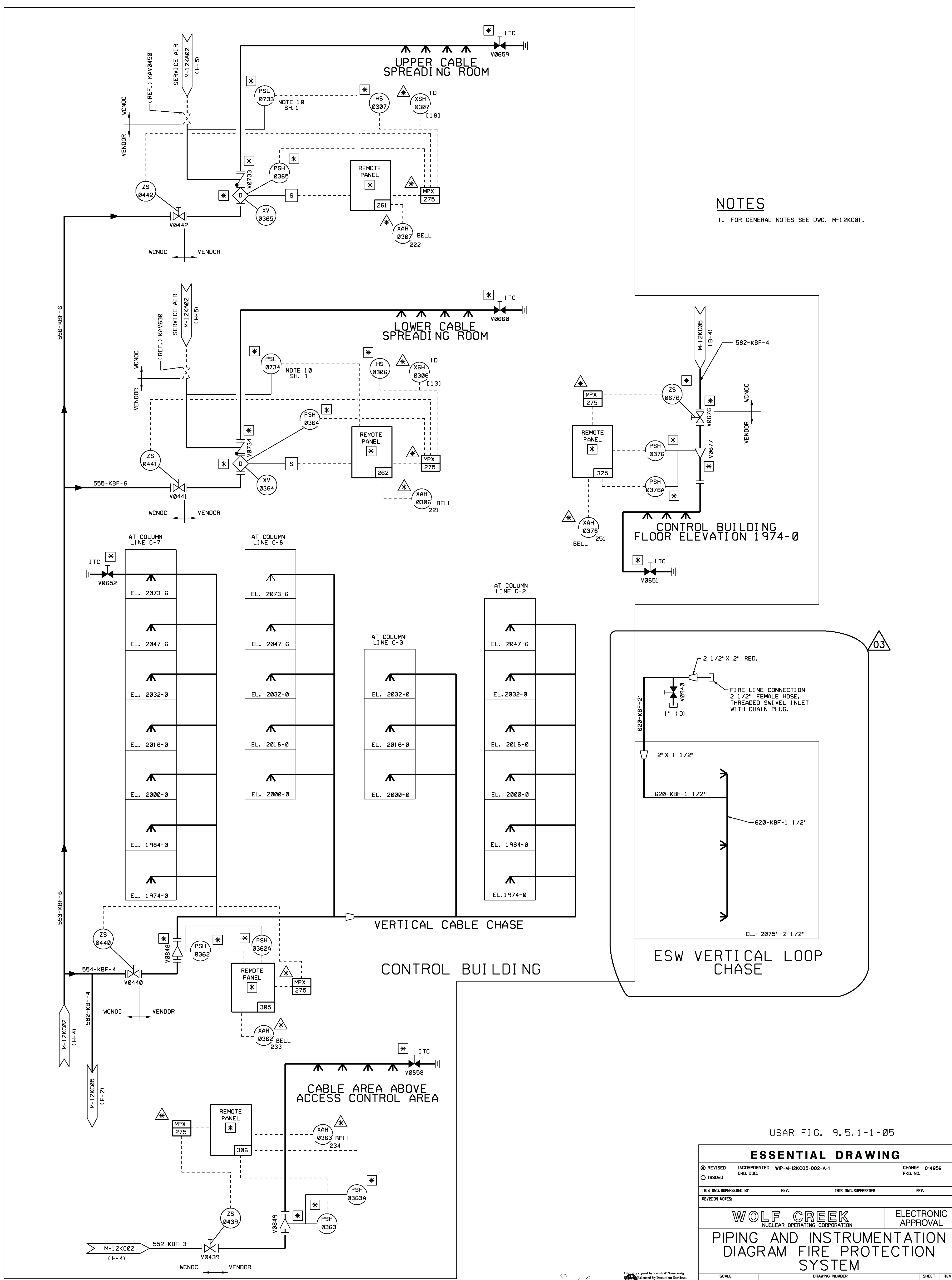
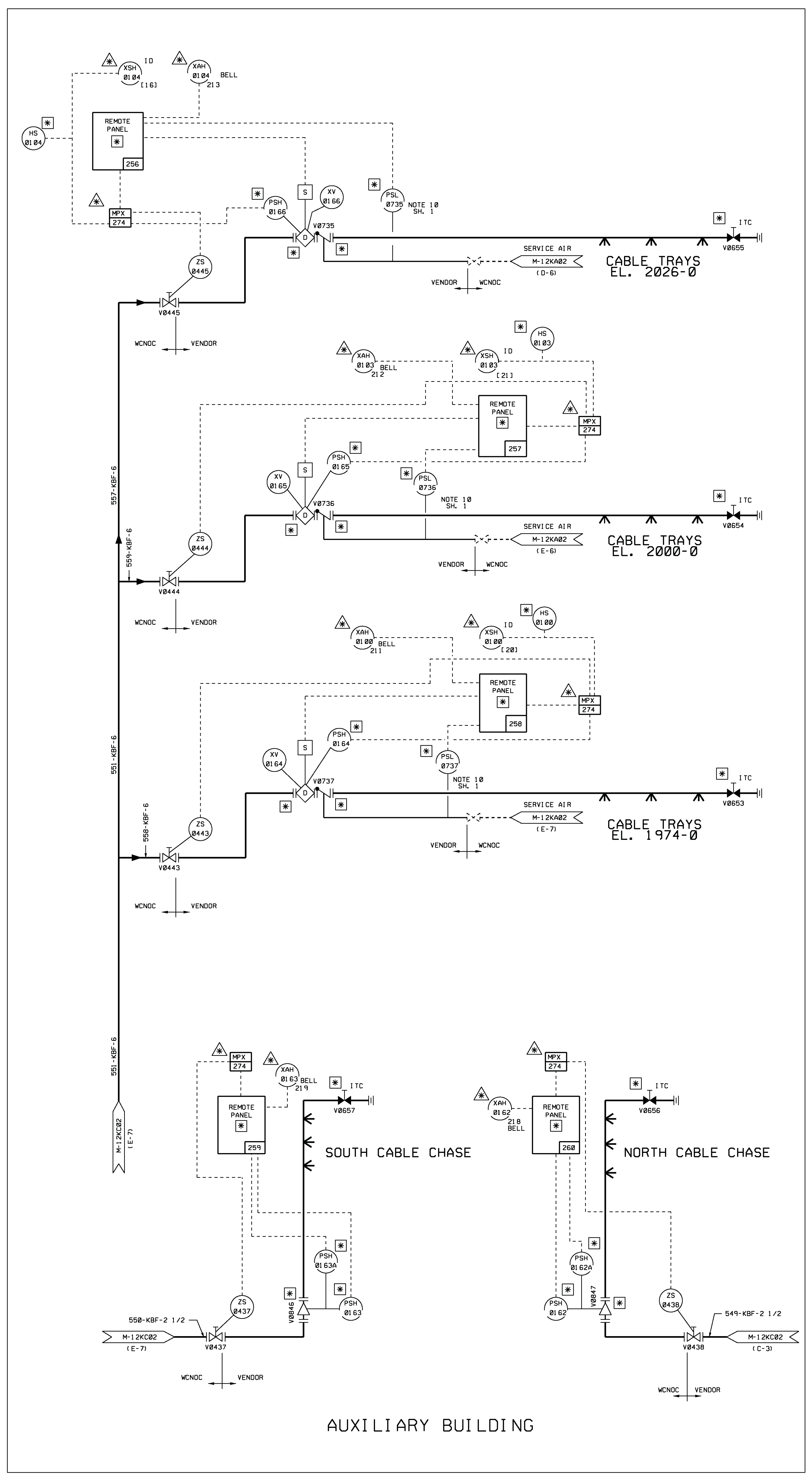
**ESSENTIAL DRAWING**

© 1980 INCORPORATED  
 0 85500  
 THE WORK SUPPLIED BY WOLF CREEK IS THE PROPERTY OF WOLF CREEK

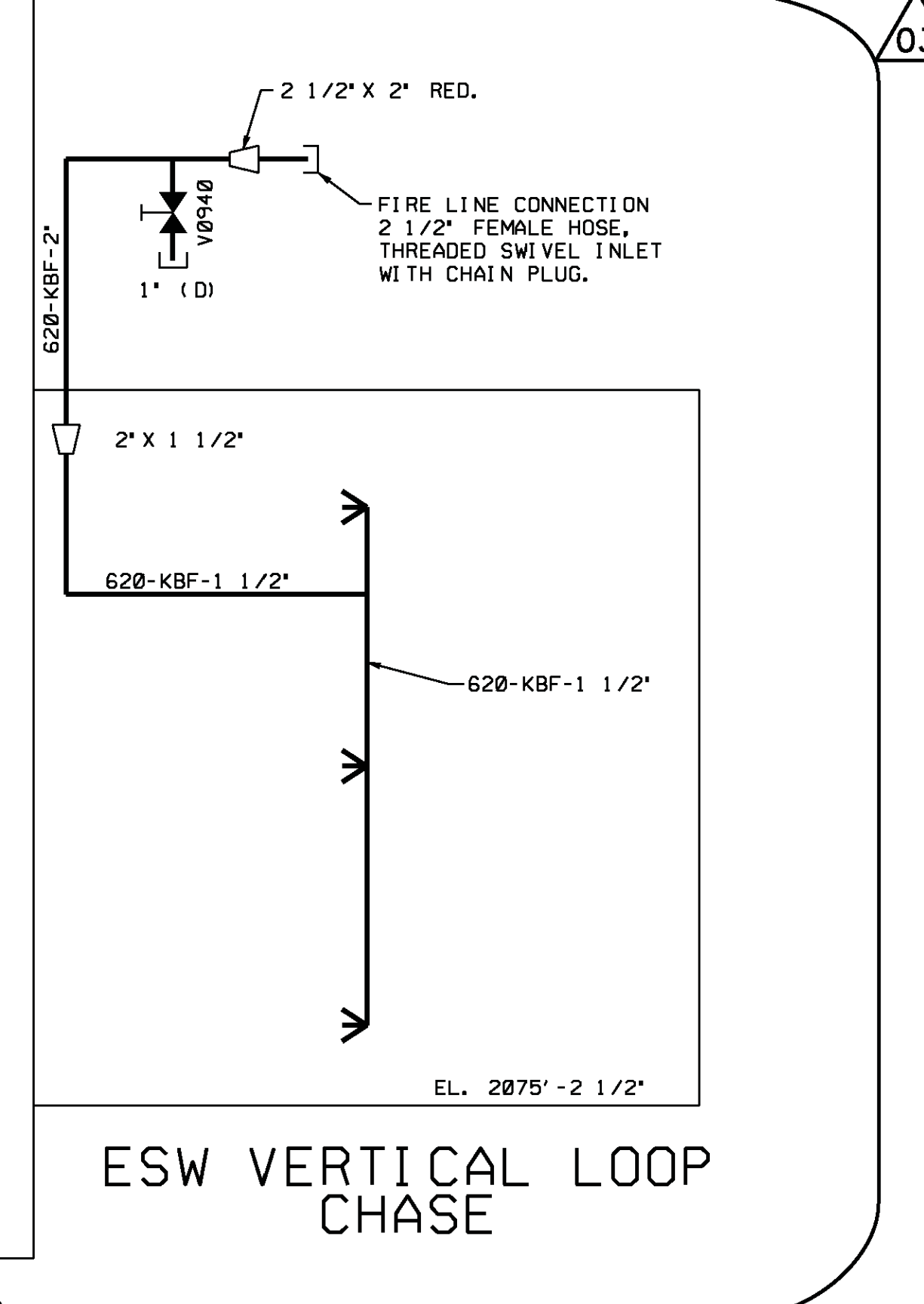
DATE: 04/93  
 INCL. NO.  
 WOLF CREEK  
 ELECTRONIC APPROVAL

**PIPING AND INSTRUMENTATION  
 FIRE PROTECTION HALON SYSTEM**

SCALE: NONE  
 SHEET NO.: M-12K04  
 OF: 03



**NOTES**  
 1. FOR GENERAL NOTES SEE DWG. M-12KC01.



USAR FIG. 9.5.1-1-05

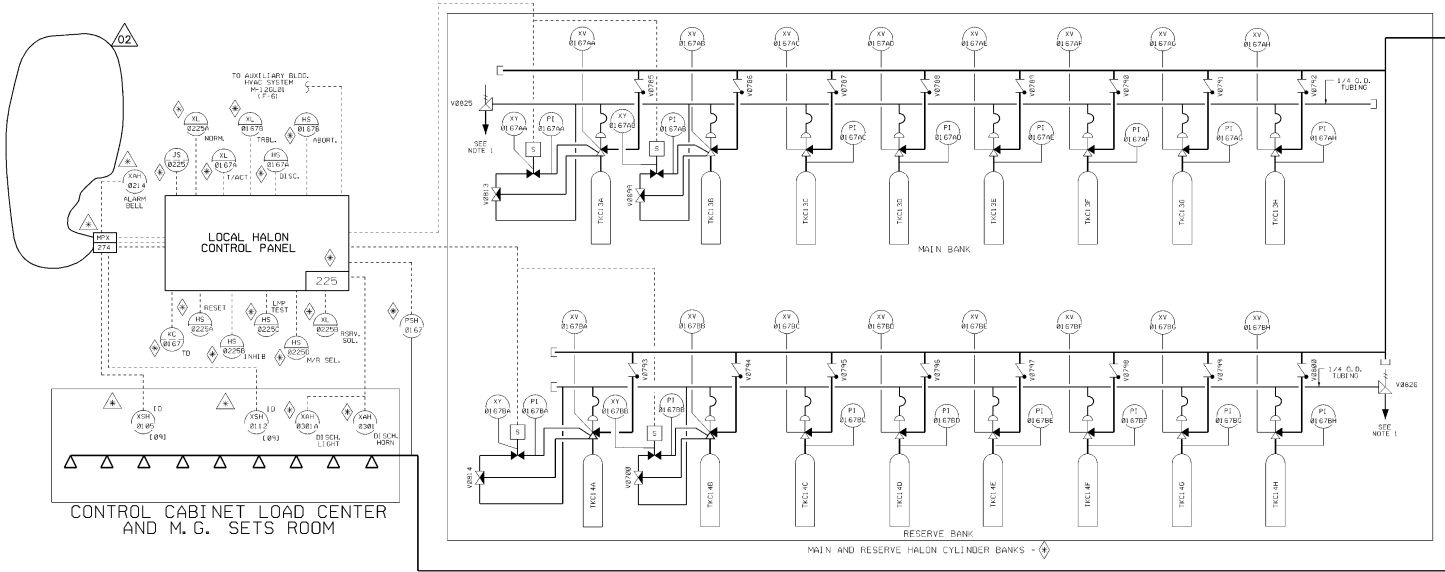
**ESSENTIAL DRAWING**

REVISION	INCORPORATED	WIP-M-12KC05-002-A-1	CHANGE	014959
ISSUED	ENG. DOC.			FIG. NO.
THIS DWG. SUPERSEDES		REV.	THIS DWG. SUPERSEDES	
REVISION NOTES				
<b>WOLF CREEK</b> NUCLEAR OPERATING CORPORATION			ELECTRONIC APPROVAL	
<b>PIPING AND INSTRUMENTATION DIAGRAM FIRE PROTECTION SYSTEM</b>				
SCALE	DRAWING NUMBER		SHEET	REV
NONE	M-12KC05		03	03

3444 E SIZE



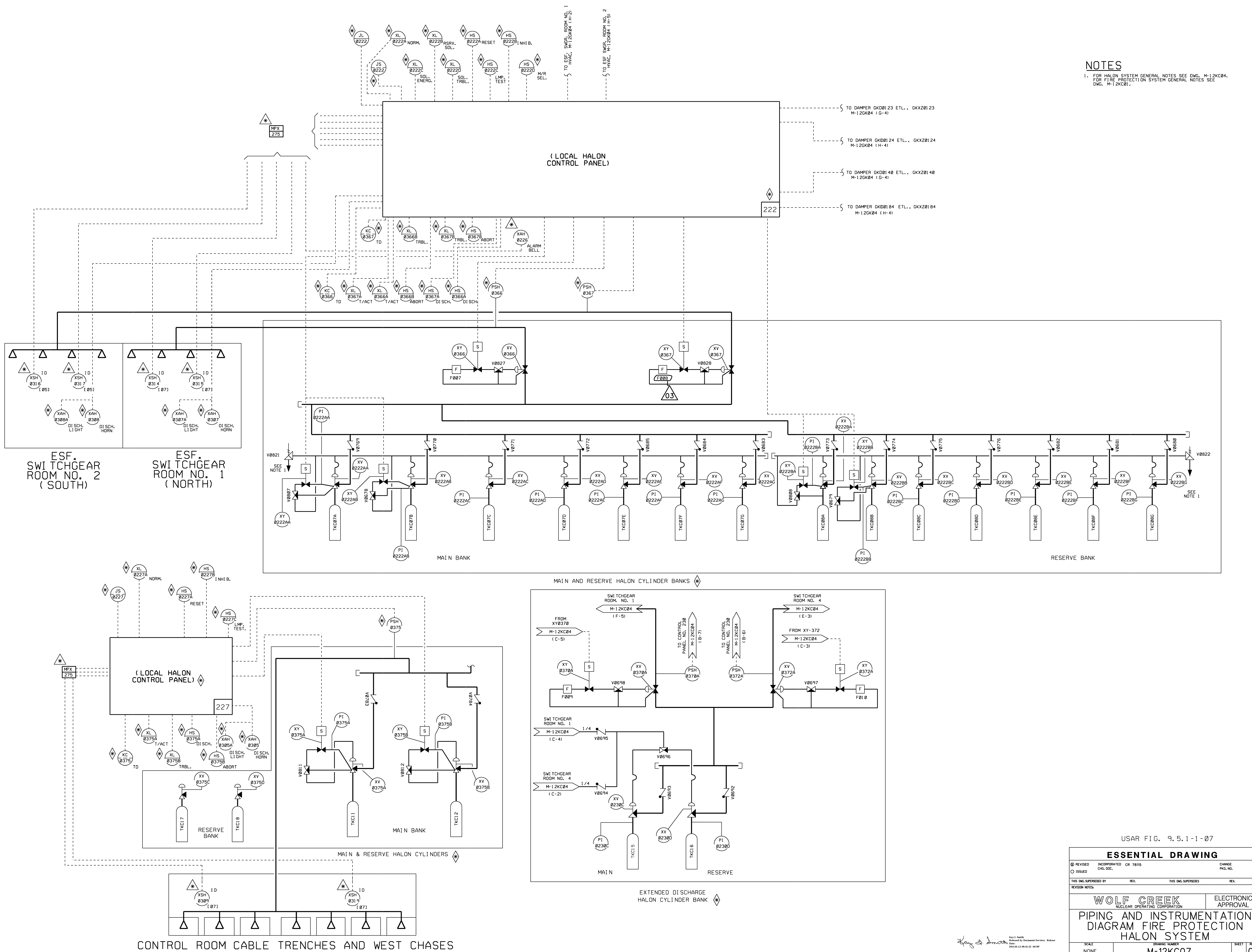
NOTES  
 1. FOR HALON SYSTEM GENERAL NOTES SEE DWG. M-12K004.  
 FOR FIRE PROTECTION SYSTEM GENERAL NOTES SEE  
 DWG. M-12K001.



USAR FIG. 9.5.1-1-06

<b>ESSENTIAL DRAWING</b>			
© REPROD	INCORPORATED	CHANGE 0415	INC. 0415
© ISSUED	04-0000		
THIS INC. APPROVED BY	REV.	THIS INC. APPROVED BY	REV.
<b>WOLF CREEK</b> NUCLEAR OPERATING CORPORATION			
<b>PIPING &amp; INSTRUMENTATION          DIAGRAM FIRE PROTECTION          HALON SYSTEM</b>		<b>ELECTRONIC          APPROVAL</b>	
NOTE:	DRAWING NUMBER:	SHEET NO.:	DATE:
NONE	M-12KC06	102	02
			SCALE: 1/2" = 1'-0"

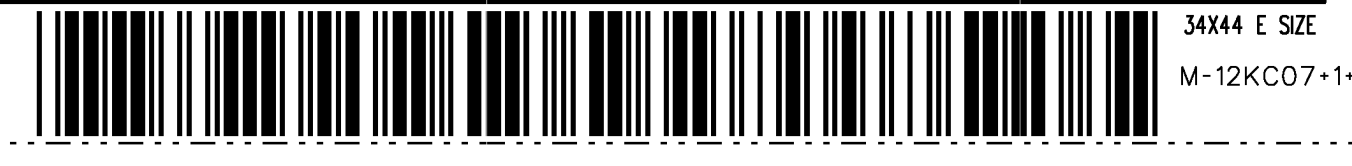
**NOTES**  
 1. FOR HALON SYSTEM GENERAL NOTES SEE DWG. M-12KC04.  
 FOR FIRE PROTECTION SYSTEM GENERAL NOTES SEE  
 DWG. M-12KC01.



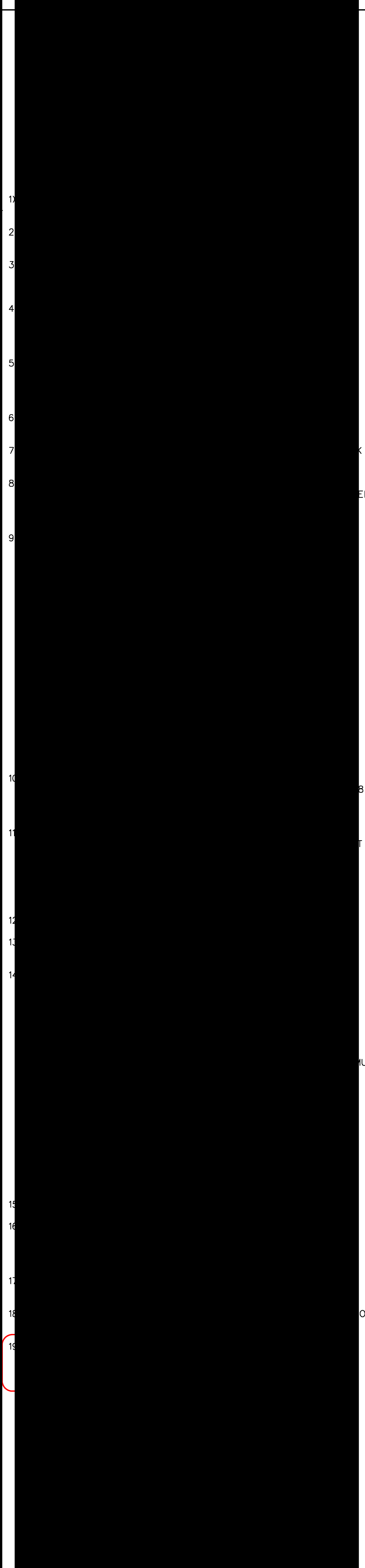
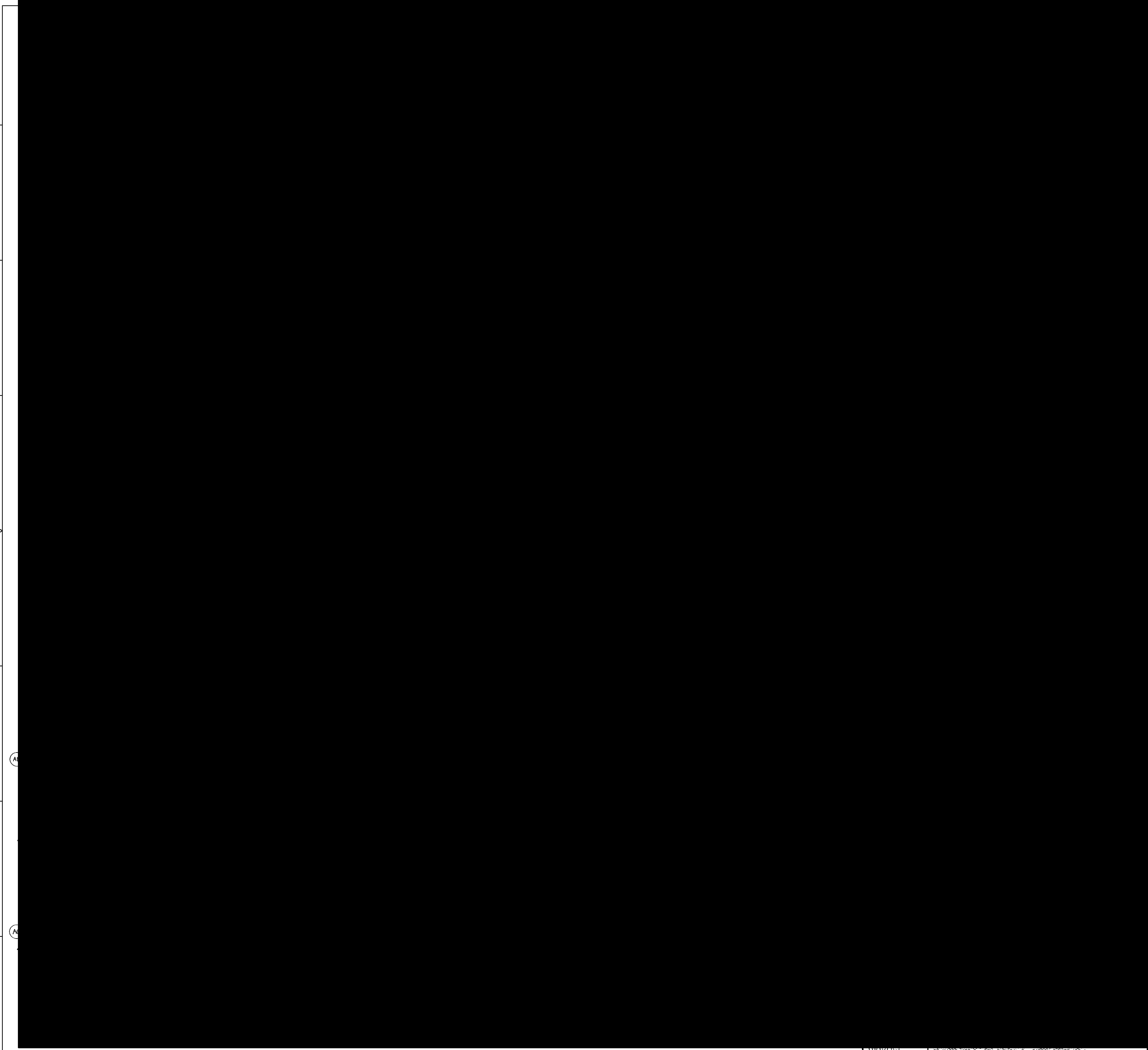
USAR FIG. 9.5.1-1-07

ESSENTIAL DRAWING			
REVISED	INCORPORATED	CR 78115	CHANGE
ISSUED	CHG. DOC.		PKG. NO.
THIS DWG. SUPPRESSED BY		REV.	THIS DWG. SUPPRESSED
REVISION NOTES			
WOLF CREEK		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
PIPING AND INSTRUMENTATION			
DIAGRAM FIRE PROTECTION			
HALON SYSTEM			
SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12KC07	03	03

*Ray & Smith*  
 Ray & Smith  
 Industrial Process Services, Spokane  
 204.833.8841 FAX 204.833.8842







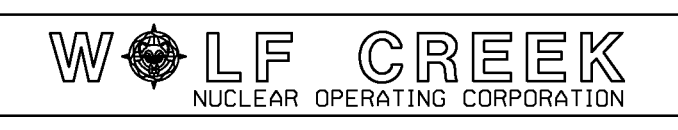
USAR FIG.-9.5.1-2-01

**ESSENTIAL DRAWING**

REVISOR	INCORPORATED	CHANGE	015274
ISSUED	CHG. DOC.	PKG. NO.	

THIS DWG. SUPERSEDED BY	REV.	THIS DWG. SUPERSEDES	REV.
-------------------------	------	----------------------	------

REVISION NOTES:



ELECTRONIC APPROVAL

**ARCHITECTURAL  
FIRE DELINEATION  
FLOOR PLAN, EL. 1974'-0"**

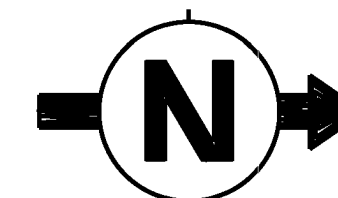
SCALE	DRAWING NUMBER	SHEET	REV
1/16" = 1'-0"	10466-A-1801	15	

OR WATER MIST; D - DRY CHEMICAL; C - CARBON DIOXIDE (CO<sub>2</sub>)

H  
G  
F  
E  
D  
C  
B  
A

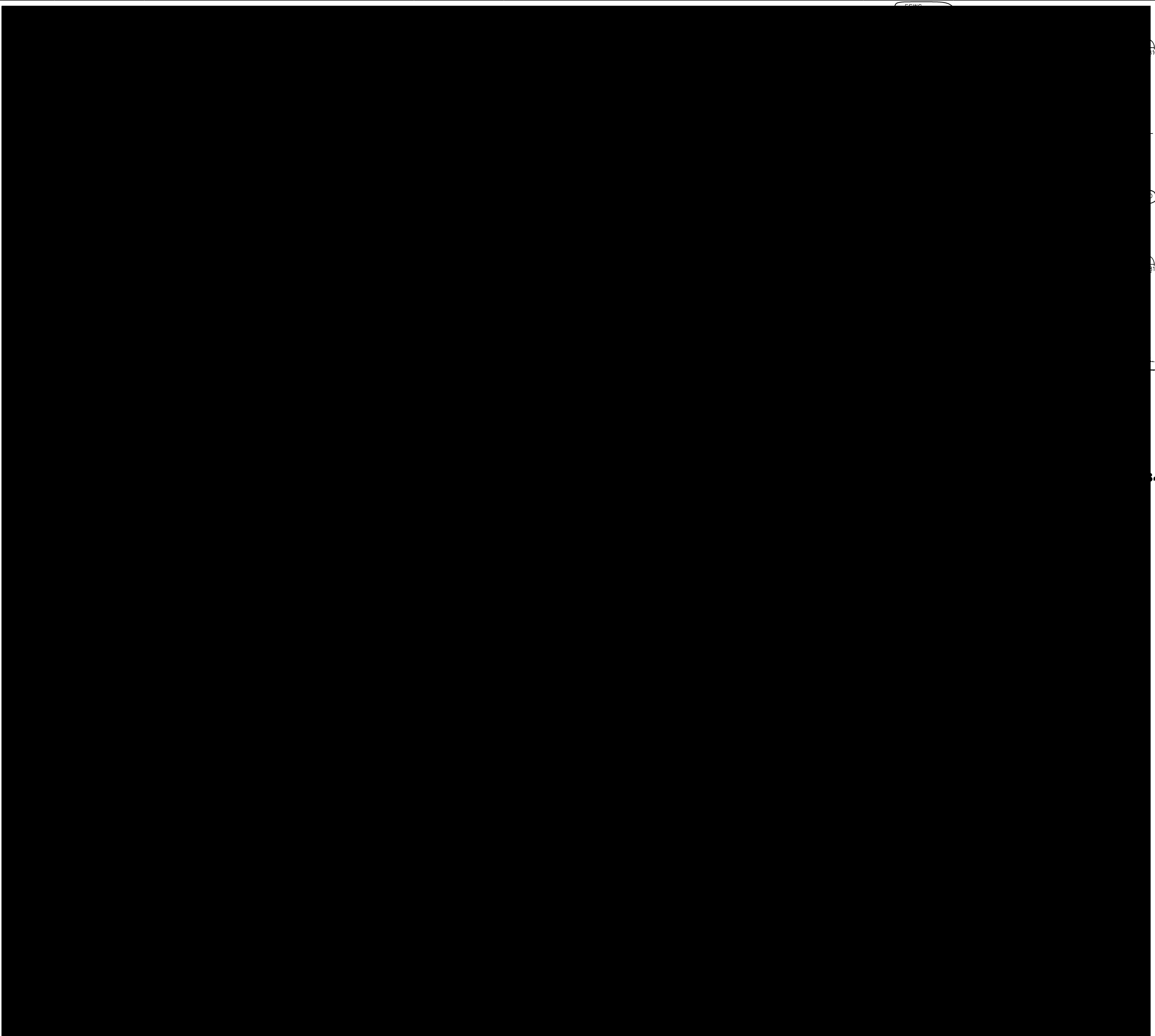
1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20

8 7 6 5 4 3 2 1



**NOTE :**

- 1. SEE DRAWING 10466-A-1801 FOR ADDITIONAL FIREPROOFING NOTES.
- 2. DELETED



4

USAR FIG. 9.5.1-2-02

**ESSENTIAL DRAWING**

⊗ REVISED	INCORPORATED	CHANGE	014959
○ ISSUED	DWG. DOC.	WP-10466-A-1802-016-A-1	FIG. NO.

THIS DWG. SUPERSEDES BY REV. THIS DWG. SUPERSEDES REV.

REVISION NOTES:



**ARCHITECTURAL  
FIRE DELINEATION  
FLOOR PLAN EL.2000'-0"**

BEST COPY AVAILABLE.  
MAY NOT REPRODUCE LEGIBLY.

*Seal*

SCALE	DRAWING NUMBER	SHEET	REV
1/16" = 1'-0"	10466-A-1802	17	

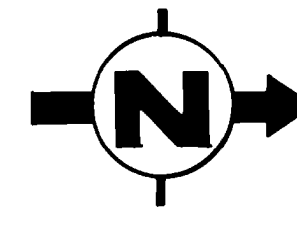
H  
G  
F  
E  
D  
C  
B  
A

✓ (A3) (A2) (A1)

34444 E SIZE



8 7 6 5 4 3 2 1



**NOTE:**

- 1. SEE DRAWING 10466-A-1801 FOR ADDITIONAL FIREPROOFING NOTES.
- 2. DELETED



USAR FIG. 9.5.1-2-03

**ESSENTIAL DRAWING**

⊗ REVISED	INCORPORATED	WP-10466-A-1803-009-A-1	CHANGE 014959
○ ISSUED	DWG. DOC.		FIG. NO.
THIS DWG. SUPERSEDED BY		REV.	THIS DWG. SUPERSEDES
REVISION NOTES:			



**FIRE DELINEATION FLOOR PLAN, EL. 2026'-0"**

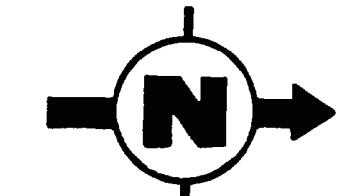
SCALE	DRAWING NUMBER	SHEET	REV.
1/16"=1'-0"	10466-A-1803	10	

BEST COPY AVAILABLE. MAY NOT REPRODUCE LEGIBLY.

*Paul Simmons*

H  
G  
F  
E  
D  
C  
B  
A





**NOTE :**

- 1. SEE DRAWING 10466-A-1801 FOR ADDITIONAL FIRE PROOFING NOTES.
- 2. DELETED
- 3. FIREPROOFING ON STRUCTURAL STEEL SHALL BE HAND TROWELLED SMOOTH FINISH FOR ROOMS 3T02 AND 3T03. SEE SPEC. A-126 AND DWG. A-1801, NOTE 9.
- 4. DELETED

13



USAR FIG. 9.5.1-2-04

ESSENTIAL DRAWING			
<input type="checkbox"/> REVISED <input type="checkbox"/> ISSUED	INCORPORATED CHG. DOC.	WP-10466-A-1804-012-A-1	CHANGE PGM. NO. 014959
THIS DWG. SUPERSEDED BY		REV.	THIS DWG. SUPERSEDES
REVISION NOTES:			
		ELECTRONIC APPROVAL	
<b>ARCHITECTURAL FIRE DELINEATION FLOOR PLAN, EL. 2047'-6"</b>			
SCALE 1/16" = 1'-0"	DRAWING NUMBER 10466-A-1804	SHEET 13	REV. 13

H

G

F

E

D

C

B

A

8 7 6 5 4 3 2 1



GENERAL NOTES

1. FOR PIPING AT JOHN REDMOND RESERVOIR DAM SEE M-0069.
  2. FOR CIRCULATING WATER PIPING SEE M-0071 THRU M-0080 (SPEC. A-3089).
  3. U.P.C. DENOTES MISCELLANEOUS UNDERGROUND PIPING CONTRACTOR (SPEC. A-3810).
  4. F.P.S.C. DENOTES FIRE PROTECTION SYSTEM CONTRACTOR (SPEC. A-3824).
  5. S.W.P.C. DENOTES SERVICE WATER (ITEM 'B') PIPING CONTRACTOR (SPEC. A-3811).
  6. ALL PIPING IN SIZES LARGER THAN 24" EXCLUDING MANHOLES SHALL BE BASED ON CLEAR INTERNAL DIAMETER.
  7. WALL THICKNESS OF STEEL PIPE IN SIZES GREATER THAN 24" SHALL BE 3/8" UNLESS OTHERWISE NOTED.
  8. WALL THICKNESS OF STEEL PIPE IN SIZES 24" AND SMALLER SHALL BE AS FOLLOWS:
- | PIPE SIZE          | WALL THICKNESS |
|--------------------|----------------|
| 2 1/2" AND SMALLER | SCHEDULE 80    |
| 2 1/2" THROUGH 10" | SCHEDULE 40    |
| 10" THROUGH 24"    | 3/8" NOMINAL   |
9. ALL MISCELLANEOUS UNDERGROUND PIPING FURNISHED UNDER SPECIFICATION A-3810 TO BE INSTALLED BY ERECTION CONTRACTOR UNDER SPECIFICATION A-3832.
  10. WARMING LINE AND SERVICE WATER PIPING TO BE FURNISHED UNDER SPECIFICATION A-3811 AND INSTALLED UNDER SPECIFICATION A-3852.
  11. ALL FIRE PROTECTION SYSTEM PIPING, VALVES, AND INSTRUMENTATION TO BE FURNISHED AND INSTALLED UNDER SPECIFICATION A-3824.
  12. WARMING LINE VALVE TO BE FURNISHED UNDER SPECIFICATION A-3822 AND INSTALLED BY ERECTION CONTRACTOR UNDER SPECIFICATION A-3838.
  13. ALL VALVES, EXCEPT WARMING LINE VALVE AND FIRE PROTECTION SYSTEM VALVES, TO BE FURNISHED UNDER SPECIFICATION A-3815 AND INSTALLED BY ERECTION CONTRACTOR UNDER SPECIFICATION A-3838.
  14. ERECTION CONTRACTOR AND FIRE PROTECTION SYSTEM CONTRACTOR SHALL BE RESPONSIBLE FOR ANCHORING, SUPPORTING, AND RESTRAINING PIPING TO ENSURE THE PHYSICAL INTEGRITY OF PIPING UNDER THEIR RESPECTIVE SCOPE OF WORK.
  15. DIMENSIONS GIVEN ARE DESIGN DIMENSIONS; NO ALLOWANCES ARE MADE FOR CUT-SHORTS OR MAKE-LOGS UNLESS NOTED AS SUCH.
  16. EXCAVATION OF SERVICE WATER PIPING (1 W82842) AND WARMING LINE (1 W03442) SHALL BE BY SITEWORK CONTRACTOR UNDER SPECIFICATION A-3858.
  17. ⓧ DENOTES FIRE HYDRANT, SHUT-OFF VALVE, AND HOSE HOUSE CONTAINING 250 FT. OF 2 1/2 INCH. WOVEN JACKET, LINED, U.L. LISTED FIRE HOSE, 2 SPRAY NOZZLES WITH NATIONAL STANDARD THREADS (7 1/2 PER INCH) 1 AXE, 1 BAR, EMERGENCY LIGHT, 6 SPANNERS, AND 2 WRENCHES. FOR TYPICAL DETAIL SEE M-0066.
  18. † DENOTES FIRE PROTECTION SYSTEM ISOLATION VALVE WITH POST INDICATOR AND CLOSED CIRCUIT ELECTRICALLY ACTUATED POSITION SWITCHES TO INDICATE VALVE IS NOT FULLY OPEN. FOR TYPICAL DETAIL SEE M-0066.
  19. WALL THICKNESS REQUIREMENTS FOR MITER JOINT FITTINGS GIVEN IN SPECIFICATIONS.
  20. ○ DENOTES CATHODIC PROTECTION TEST POINT PER S & L STD. EP-316.
  21. WHERE PIPING IS MARKED WITH PIPE PENETRATION NUMBERS (E.G., PP-103) REFER TO PIPE PENETRATION DRAWING FOR DETAILS.
  22. PIPING MARKED A-3838 TO BE FURNISHED AND INSTALLED UNDER SPECIFICATION A-3838.
  23. EQUIPMENT AND POWER FOR ACID UNLOAD PUMPS TO BE REMOVED WITH PIPE AND POWER CABLE TERMINATED 2 FEET BELOW GRADE.

REFERENCE DRAWINGS

- M-1G001  
INTERFACE PEN. SITE  
ARRANGEMENT
- M-1G006 & M-1G007  
INTERFACE UNDER  
GROUND PIPING LOCATIONS

USAR FIG. 9.5-2-00

ESSENTIAL DRAWING

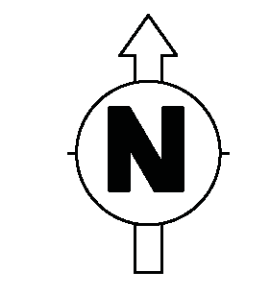
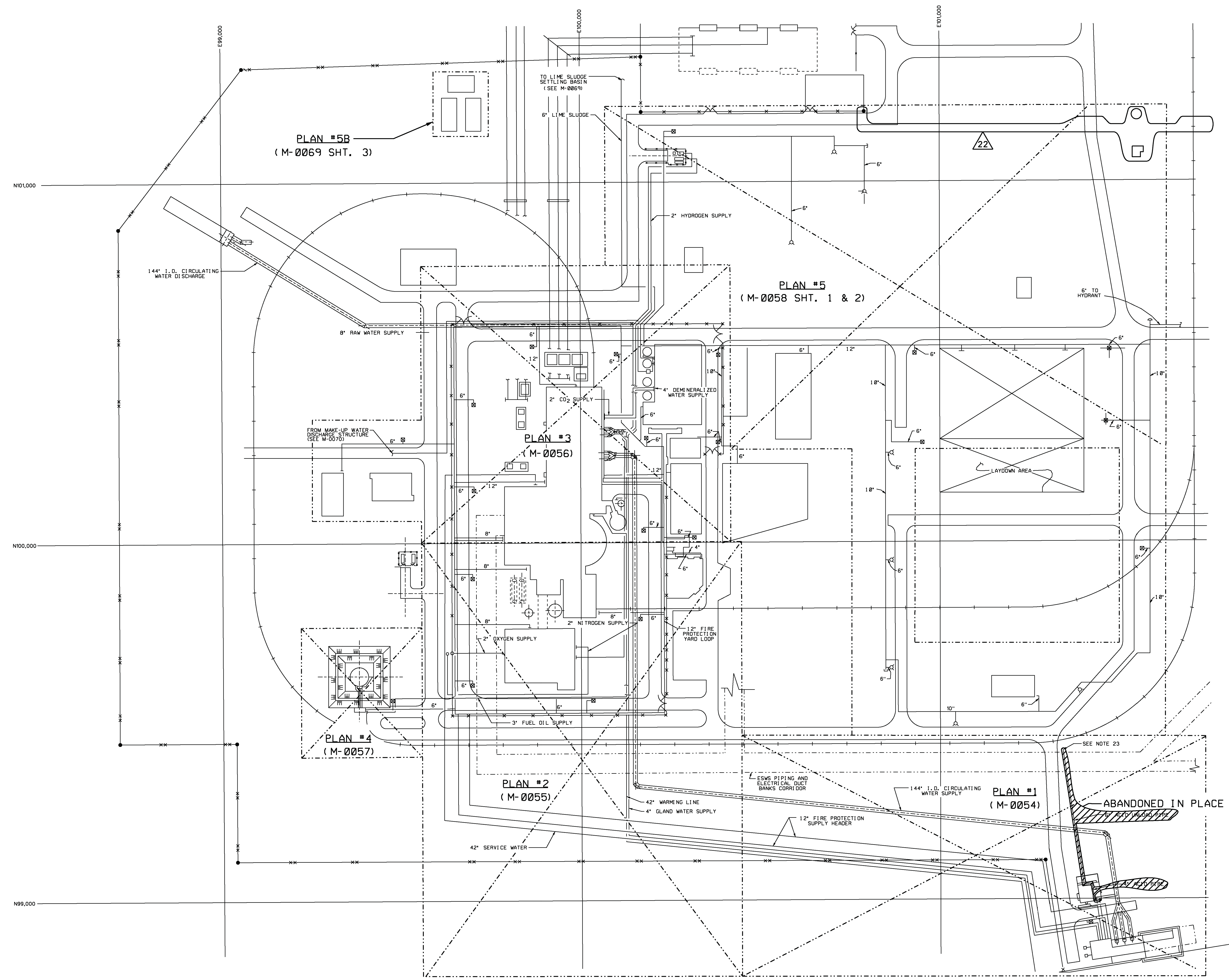
ⓧ REVISION	INCORPORATED	CHANGE	05586
○ ISSUED	CHG. DOC.	FIG. NO.	
THIS ENG. SUPERSEDES	REV.	THIS ENG. SUPERSEDES	REV.

WOLF CREEK NUCLEAR OPERATING CORPORATION		ELECTRONIC APPROVAL
---	--	------------------------

OUTDOOR PIPING  
KEY PLAN & GENERAL NOTES

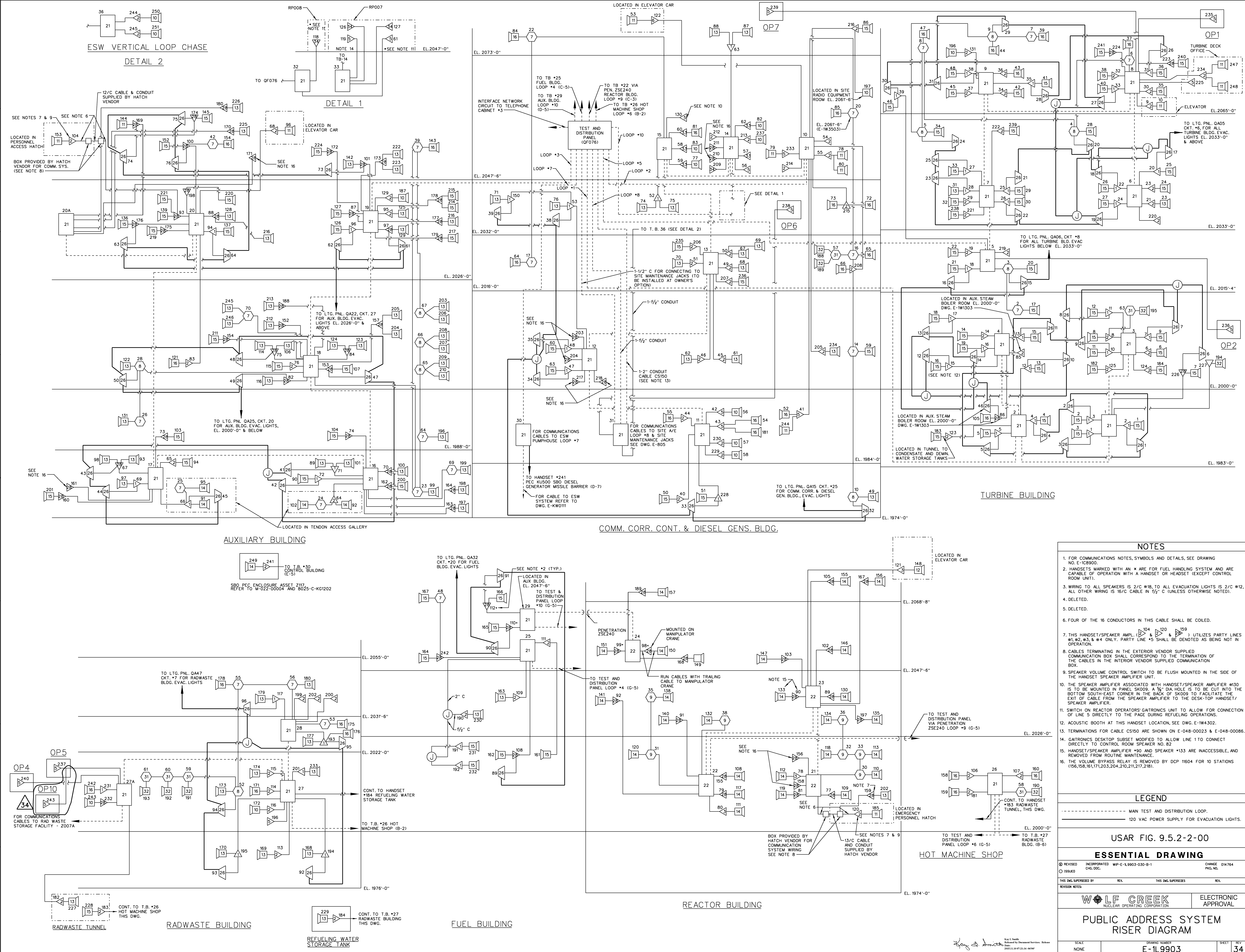
SCALE	DRAWING NUMBER	SHEET	REV.
1"=100'-0"	M-0051	22	

34444 E SHEET









**NOTES**

- FOR COMMUNICATIONS NOTES, SYMBOLS AND DETAILS, SEE DRAWING NO. E-1C8900.
- HANDSETS MARKED WITH AN \* ARE FOR FUEL HANDLING SYSTEM AND ARE CAPABLE OF OPERATION WITH A HANDSET OR HEADSET (EXCEPT CONTROL ROOM UNIT).
- WIRING TO ALL SPEAKERS IS 2/C #18, TO ALL EVACUATION LIGHTS IS 2/C #12, ALL OTHER WIRING IS 16/C CABLE IN 1/2" C (UNLESS OTHERWISE NOTED).
- DELETED.
- DELETED.
- FOUR OF THE 16 CONDUCTORS IN THIS CABLE SHALL BE COILED.
- THIS HANDSET/SPEAKER AMP. UTILIZES PARTY LINES #1, #2, #3, & #4 ONLY. PARTY LINE #5 SHALL BE DENOTED AS BEING NOT IN OPERATION.
- CABLES TERMINATING IN THE EXTERIOR VENDOR SUPPLIED COMMUNICATION BOX SHALL CORRESPOND TO THE TERMINATION OF THE CABLES IN THE INTERIOR VENDOR SUPPLIED COMMUNICATION BOX.
- SPEAKER VOLUME CONTROL SWITCH TO BE FLUSH MOUNTED IN THE SIDE OF THE HANDSET SPEAKER AMPLIFIER UNIT.
- THE SPEAKER AMPLIFIER ASSOCIATED WITH HANDSET/SPEAKER AMPLIFIER #130 IS TO BE MOUNTED IN PANEL SK009. A 3/4" DIA. HOLE IS TO BE CUT INTO THE BOTTOM SOUTH-EAST CORNER IN THE BACK OF SK009 TO FACILITATE THE EXIT OF CABLE FROM THE SPEAKER AMPLIFIER TO THE DESK-TOP HANDSET/SPEAKER AMPLIFIER.
- SWITCH ON REACTOR OPERATORS' GATRONICS UNIT TO ALLOW FOR CONNECTION OF LINE 5 DIRECTLY TO THE PAGE DURING REFUELING OPERATIONS.
- ACOUSTIC BOOTH AT THIS HANDSET LOCATION, SEE DWG. E-1W4302.
- TERMINATIONS FOR CABLE CS150 ARE SHOWN ON E-048-00023 & E-048-00086.
- GATRONICS DESKTOP SUBSET MODIFIED TO ALLOW LINE 1 TO CONNECT DIRECTLY TO CONTROL ROOM SPEAKER NO. 82.
- HANDSET/SPEAKER AMPLIFIER #130 AND SPEAKER #133 ARE INACCESSIBLE, AND REMOVED FROM ROUTINE MAINTENANCE.
- THE VOLUME BYPASS RELAY IS REMOVED BY DCP 11604 FOR 10 STATIONS (156,158,161,171,203,204,210,211,217,218).

**LEGEND**

- MAIN TEST AND DISTRIBUTION LOOP.
- 120 VAC POWER SUPPLY FOR EVACUATION LIGHTS.

**USAR FIG. 9.5.2-2-00**

**ESSENTIAL DRAWING**

REVISIONS:

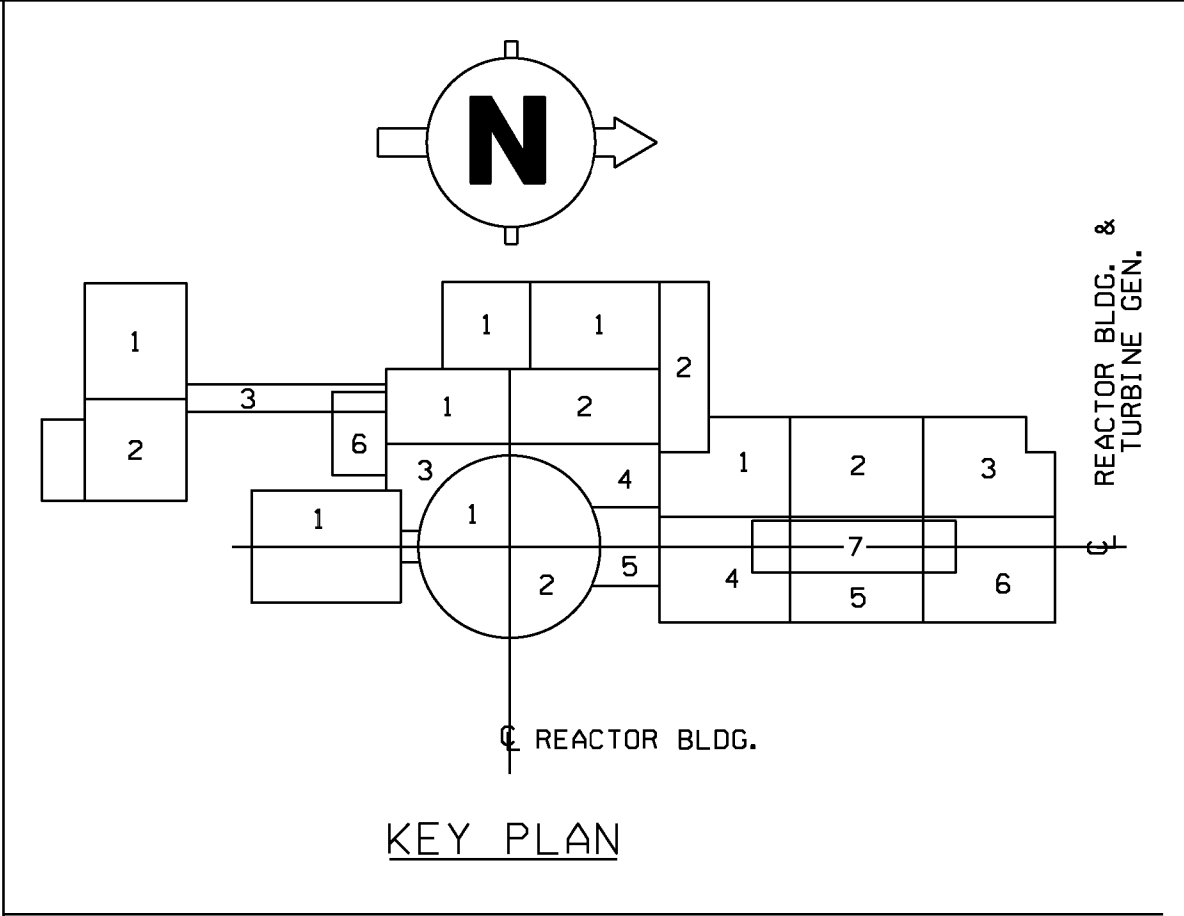
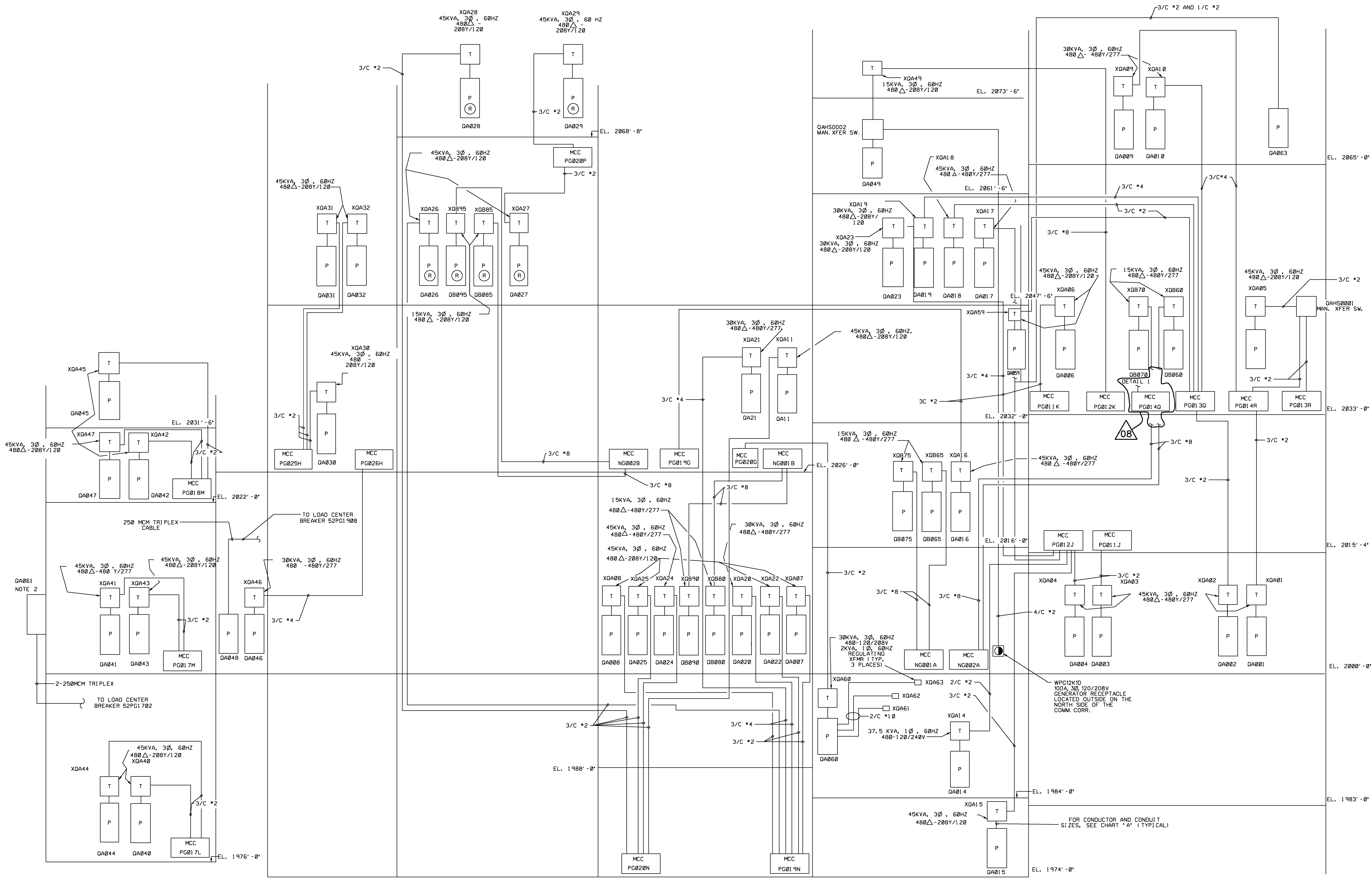
NO.	DESCRIPTION	DATE	BY	CHK.
1	ISSUED	11/19/93	...	...

**WOLF CREEK** NUCLEAR OPERATING CORPORATION

**ELECTRONIC APPROVAL**

**PUBLIC ADDRESS SYSTEM RISER DIAGRAM**

SCALE: NONE      DRAWING NUMBER: E-1L9903      SHEET: 34



KEY PLAN  
 REACTOR BLDG.  
 TURBINE GEN.

REFERENCE DRAWINGS  
 E-1L8900 LIGHTING NOTES SYMBOLS AND DETAILS  
 E-1L9900 PANEL SCHEDULES

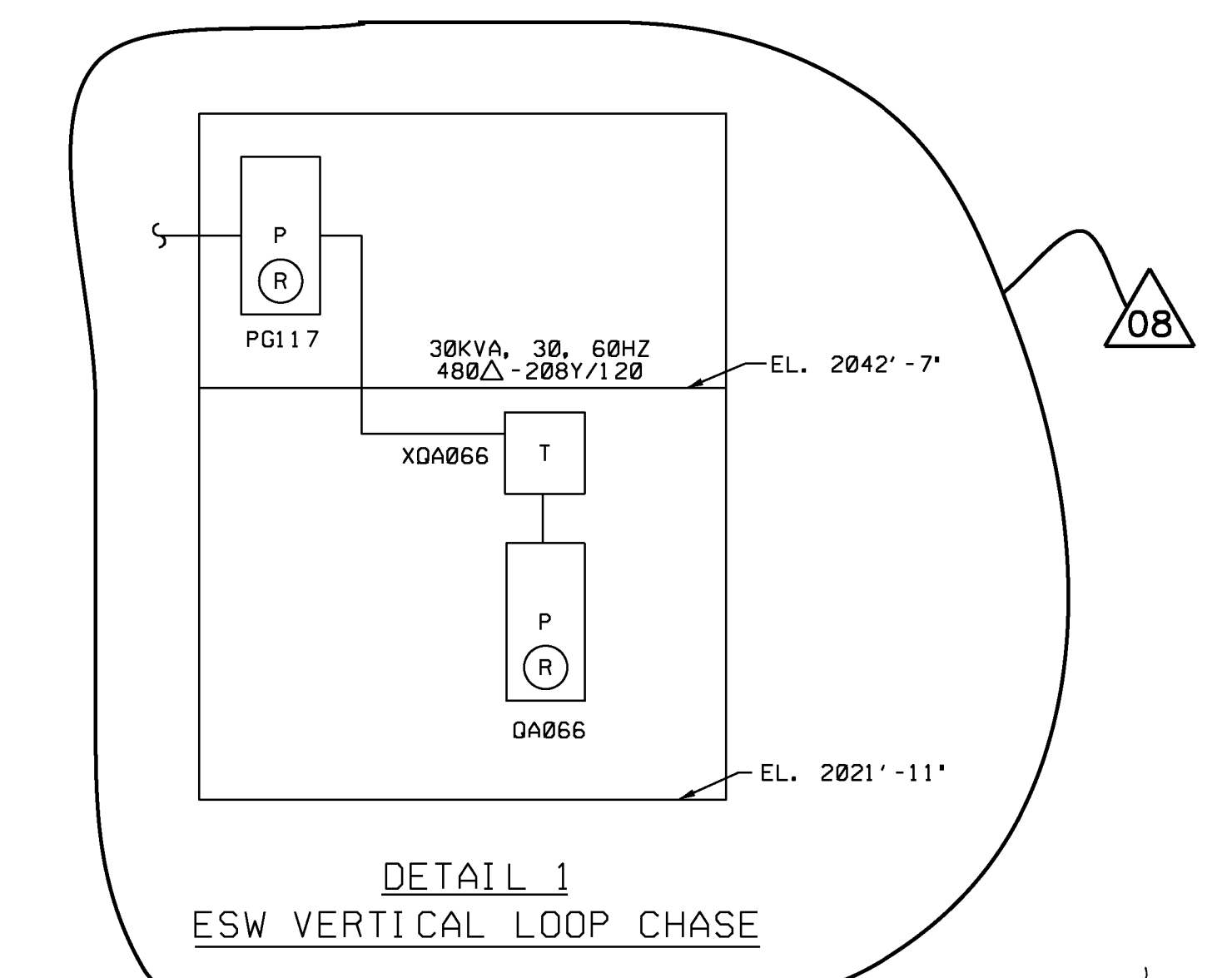
NOTES  
 1. (R) INDICATES RAINTIGHT ENCLOSURE, SEE E-1L9900.  
 2. PANEL GA061 IS LOCATED ON THE EXTERIOR WALL OF THE RADWASTE BLDG. AND IS DEDICATED TO SUPPLY THE ADJOINING MAINTENANCE BUILDING.

RADWASTE BUILDING    HOT MACHINE SHOP    FUEL BUILDING    REACTOR BUILDING    AUXILIARY BUILDING    COMM. CORR., CONT. & DIESEL GEN.'S BLDG.    TURBINE BUILDING

TRANSFORMER TO PANEL WIRING INFO.

TRANSFORMER RATING	CONDUCTOR SIZE (MIN. SIZE)	CONDUIT SIZE (MIN.)
45kva (3Ø)	480Y/277	4/C *4
480Y/120	4/C *4	1 1/2"
30kva (3Ø)	480Y/277	4/C *6
208Y/120	4/C *2	1 1/2"
15kva (3Ø)	480Y/277	4/C *10
208Y/120	4/C *6	1"
37.5kva (1Ø)	120/240	3/C 4/0
		2"

CHART A



DETAIL 1  
 ESW VERTICAL LOOP CHASE

USAR FIG. 9.5.3-1-00

**ESSENTIAL DRAWING**

REVISIONS:  
 INCORPORATED WP-E-19901-007-B-1  
 CHG. DOC.    CHANGE 014763  
 ISSUED    PEG. NO.

THIS DNG. SUPERSEDES BY:    REV.    THIS DNG. SUPERSEDES    REV.

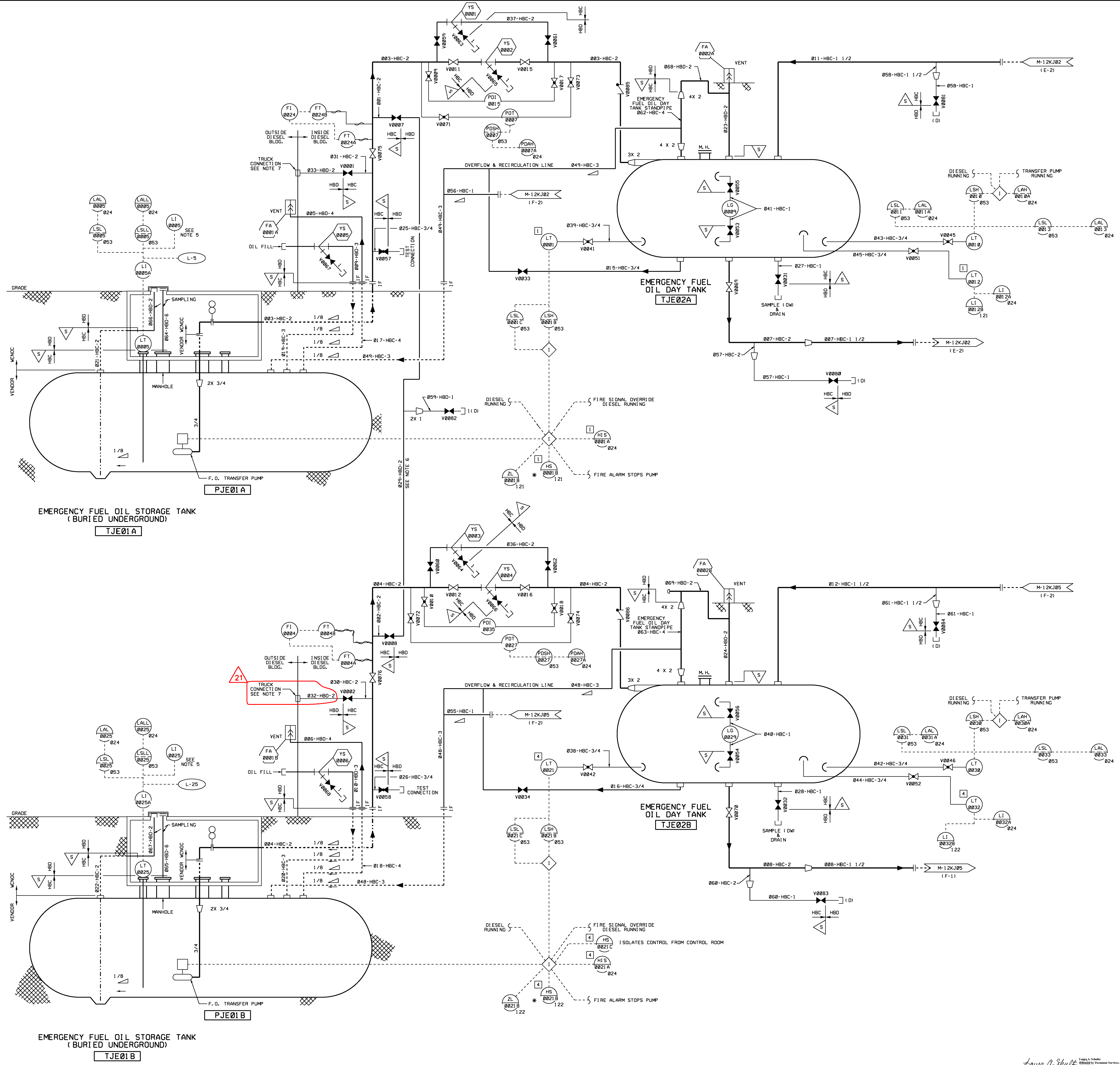
REVISION NUMBER: REVISED TO INCORPORATE WIP PER WO\* 14-390612-068, STEPS 1 & 2.

**WOLF CREEK**    ELECTRONIC APPROVAL  
 NUCLEAR OPERATING CORPORATION

LIGHTING DISTRIBUTION RISER DIAGRAM

SCALE: NONE    DRAWING NUMBER: E-1L9901    SHEET: 08    REV: 08





- NOTES**
1. THE ASME SECTION III, CLASS 3 COMPONENTS ARE SUBJECT TO VISUAL INSPECTION REQUIREMENTS.
  2. HYDROTESTING FOR INSERVICE INSPECTION SHALL BE WITH NO. 2 DIESEL OIL.
  3. ALL BURIED LINES TO SLOPE 1/8" PER FOOT TOWARD EMERGENCY FUEL OIL STORAGE TANKS.
  4. INSULATING FLANGES MATERIALS SHALL BE COMPATIBLE WITH NO. 2 DIESEL FUEL OIL.
  5. LI 0005 & LI 0025 ARE LOCATED OUTSIDE THE DIESEL BUILDING ADJACENT TO THE FILL CONNECTION.
  6. SEISMICALLY SUPPORTED.
  7. THE TRUCK CONNECTION IS RECESSED FROM THE EXTERIOR WALL SURFACE APPROXIMATELY 1" A 2" BUSHING IS WELDED TO THE END OF THE PIPE AND THREADED TO ACCEPT A 1" NPTF PIPE PLUG COVERED WITH A CARBON STEEL PLATE FOR TORNADO GENERATED MISSILE PROTECTION. REFERENCE DRAWING C-065903 FOR PLATE DETAIL.

21

USAR FIG. 9.5.4-1-00

**ESSENTIAL DRAWING**

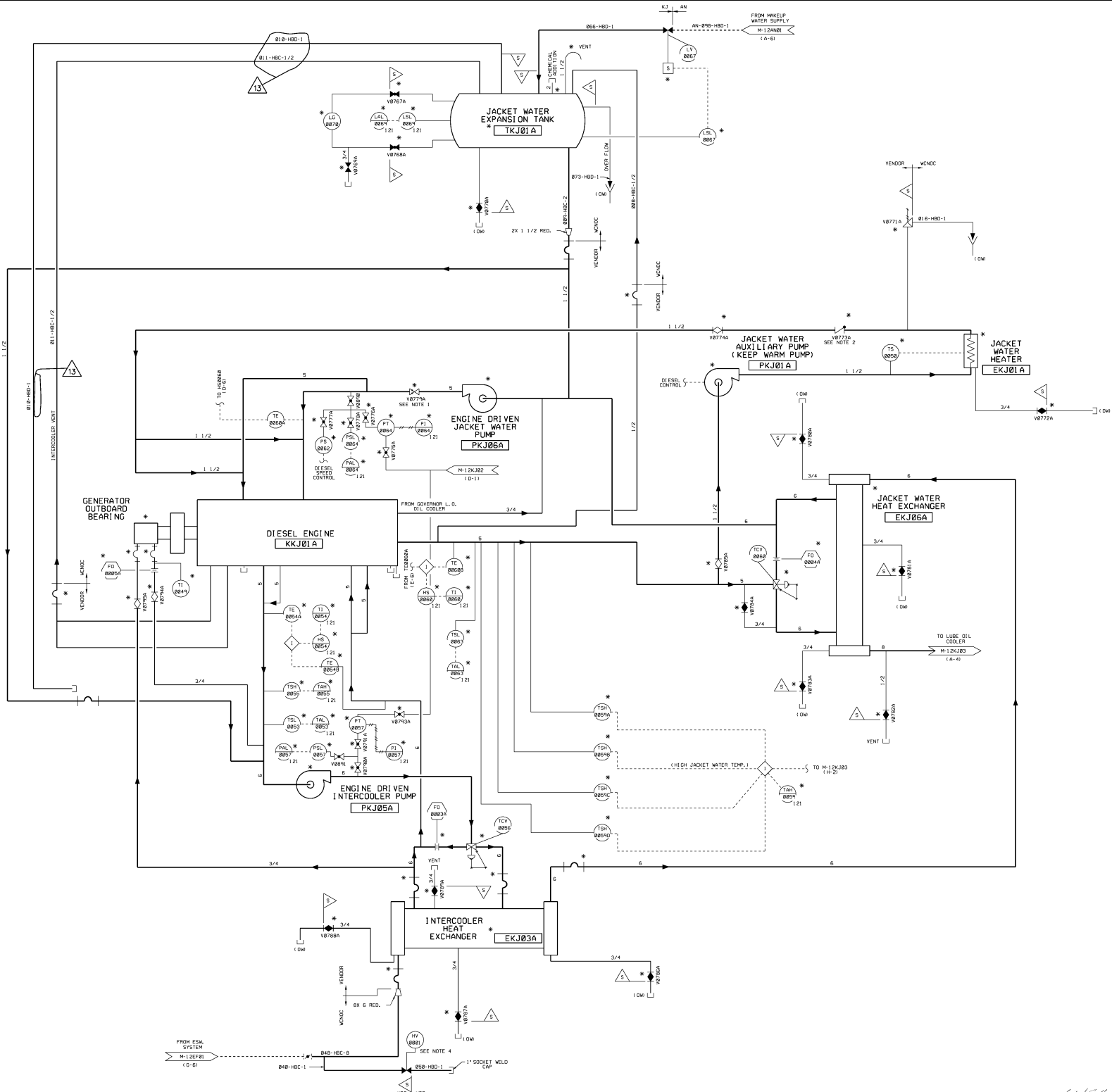
REVISION	INCORPORATED	WP-M-12JE01-D19-A-1	CHANGE	015264
ISSUED	CNG. DEC.		FIG. NO.	
THIS ENG. SUPERSEDES		REV.	THIS ENG. SUPERSEDES	
REVISION NOTES				

**WOLF CREEK**  
NUCLEAR OPERATING CORPORATION

**PIPING & INSTRUMENTATION DIAGRAM**  
**EMERGENCY FUEL OIL SYSTEM**

SCALE	DRAWING NUMBER	SHEET	REV
NONE	M-12JE01	21	

*Anna C. Schultz*



- NOTES**
1. REPRESENTS A DUAL PLATE CHECK VALVE
  2. THE INTERNALS OF VALVE V8773A HAVE BEEN REMOVED
  3. DELETED
  4. KJHV01 IS ABANDONED IN PLACE AND BLOCKED CLOSED WITH THE ACTUATOR REMOVED.

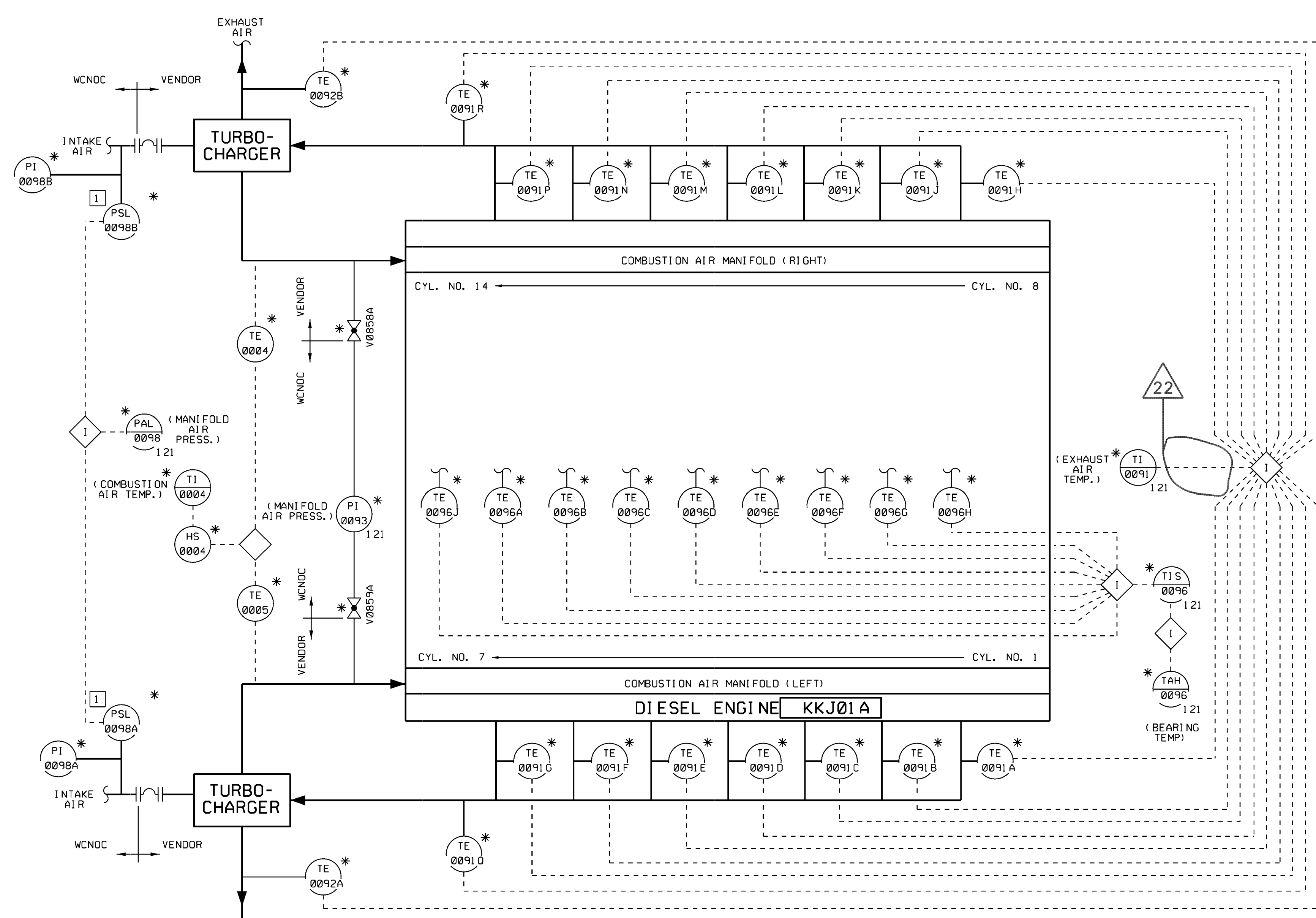
USAR FIG. 9.5.5-1-01

ESSENTIAL DRAWING			
REVISED	INCORPORATED	CR-0008438	CHANGE
DATE	BY	DATE	BY
THIS DRAWING IS THE PROPERTY OF	WOLF CREEK	NO. 0008438	REV.
REVISION	REVISION	REVISION	REVISION
WOLF CREEK		ELECTRONIC APPROVAL	
PIPING & INSTRUMENTATION DIAGRAM			
STANDBY DIESEL GENERATOR "A"			
COOLING WATER SYSTEM			
SCALE	DATE	13	13
NONE	09/20/2009	M-12KJ01	13

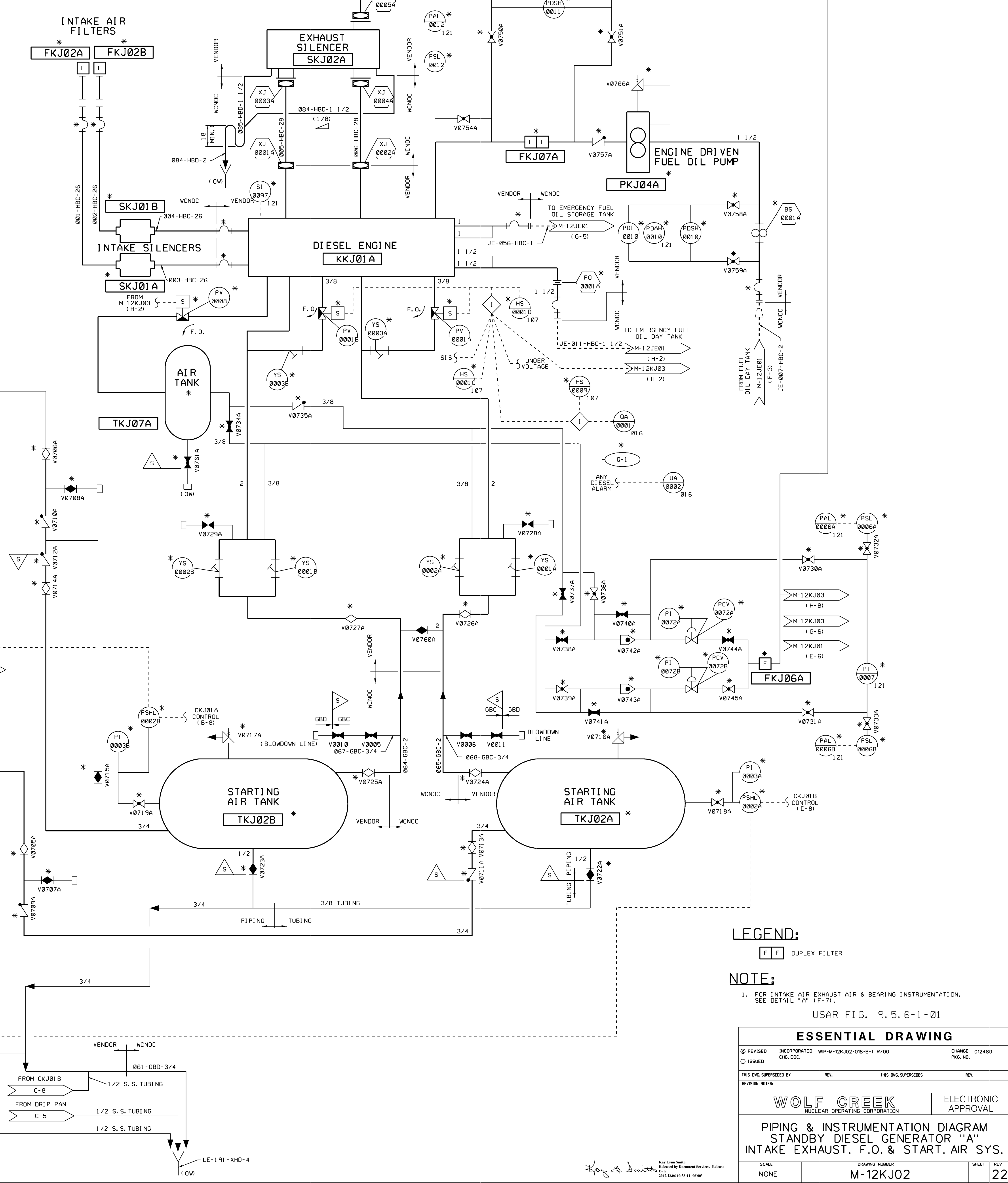
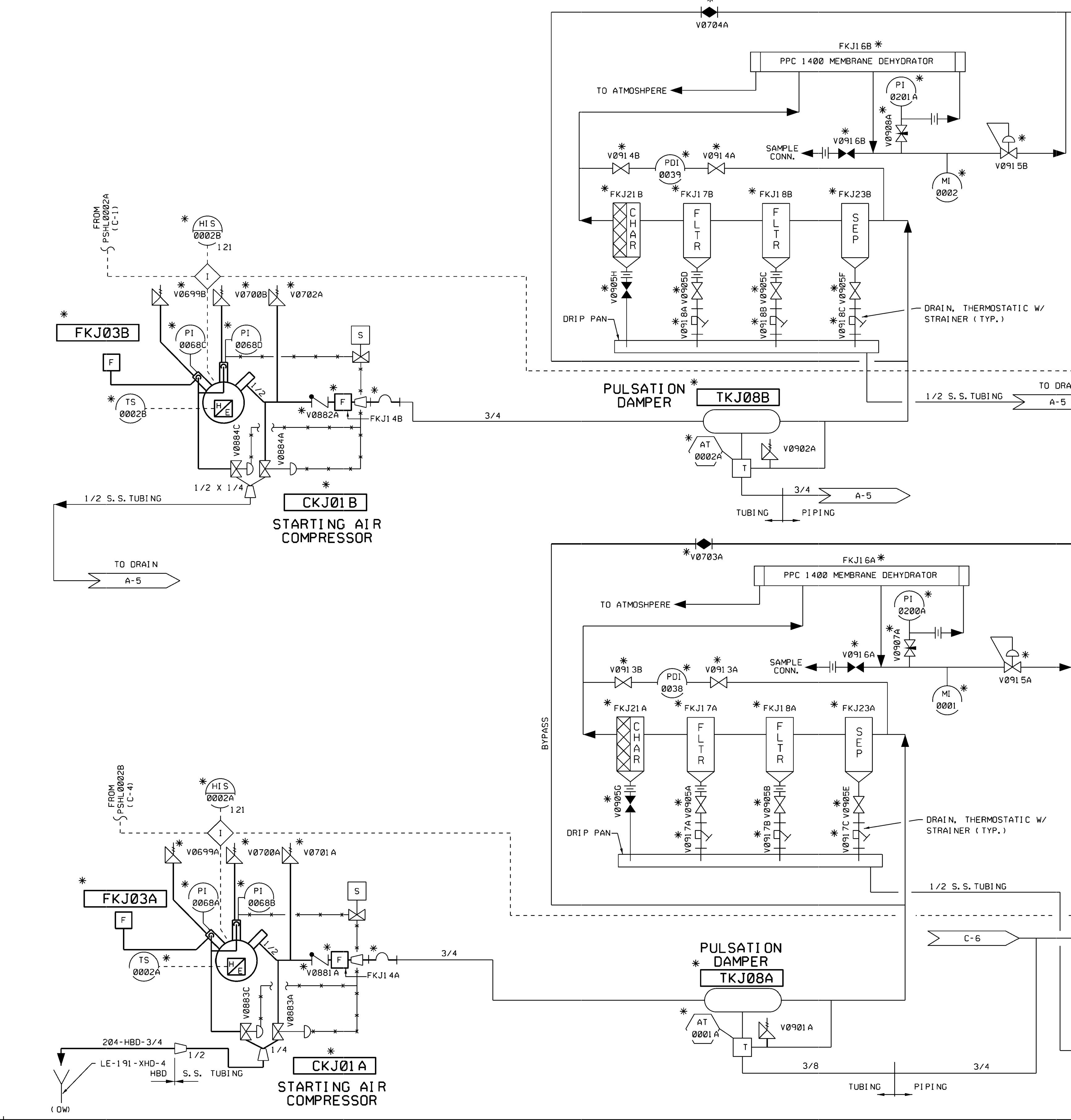








DETAIL "A"

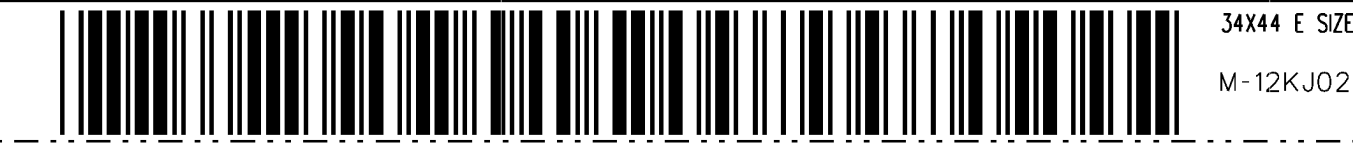


**LEGEND:**  
 FF DUPLEX FILTER

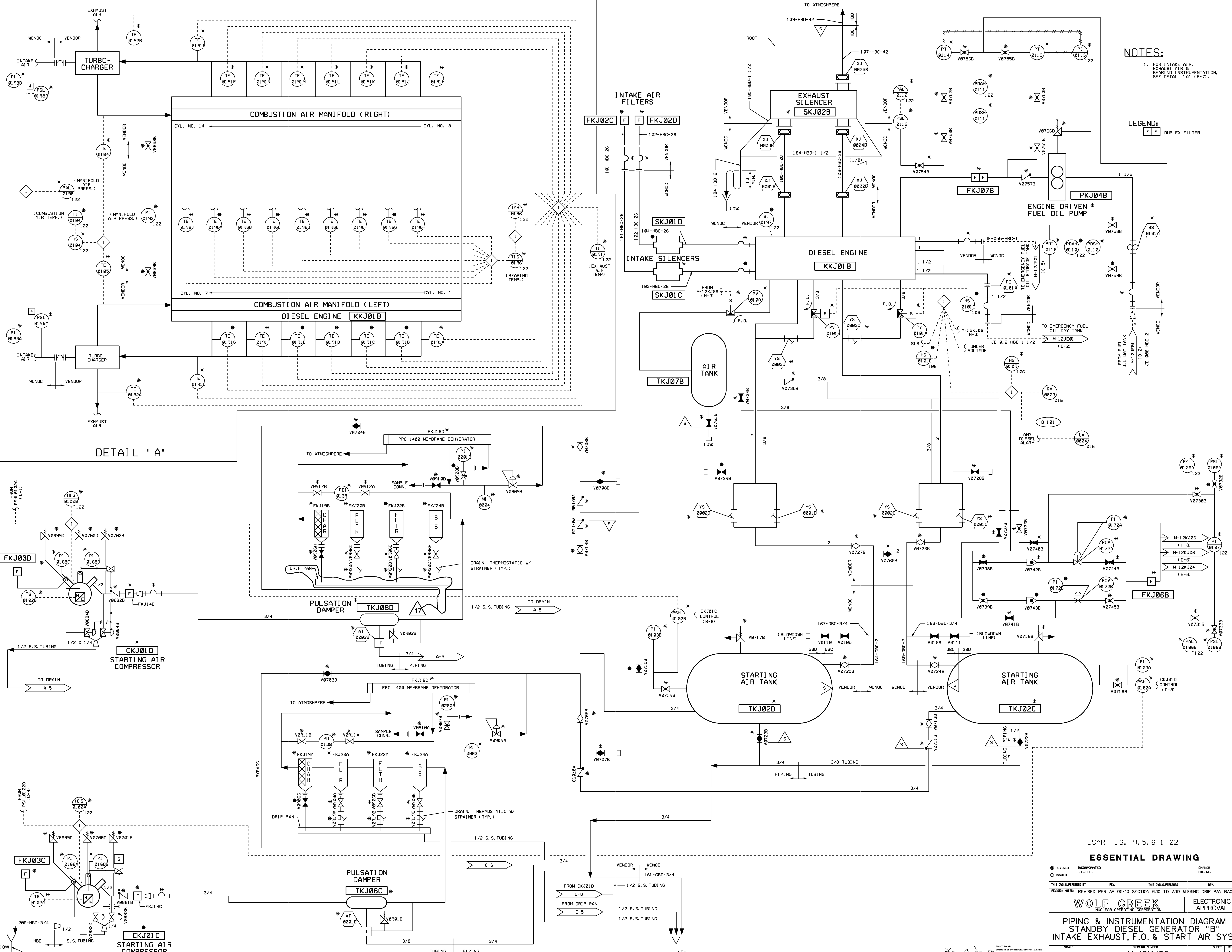
**NOTE:**  
 1. FOR INTAKE AIR EXHAUST AIR & BEARING INSTRUMENTATION, SEE DETAIL "A" (F-7).

USAR FIG. 9.5.6-1-01

ESSENTIAL DRAWING			
REVISED	INCORPORATED	W/P-M-12KJ02-018-B-1 R/00	CHANGE 012480
ISSUED	CHG. DOC.		FIG. NO.
THIS ENG. SUPERSEDES		REV.	THIS ENG. SUPERSEDES
REVISION NOTES			
<b>WOLF CREEK</b>		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
<b>PIPING &amp; INSTRUMENTATION DIAGRAM</b>			
<b>STANDBY DIESEL GENERATOR "A"</b>			
<b>INTAKE EXHAUST, F.O. &amp; START. AIR SYS.</b>			
SIZE	DRAWING NUMBER		SHEET
NONE	M-12KJ02		22







**NOTES:**  
 1. FOR INTAKE AIR, EXHAUST AIR & BEARING INSTRUMENTATION, SEE DETAIL "A".

**LEGEND:**  
 F F DUPLEX FILTER

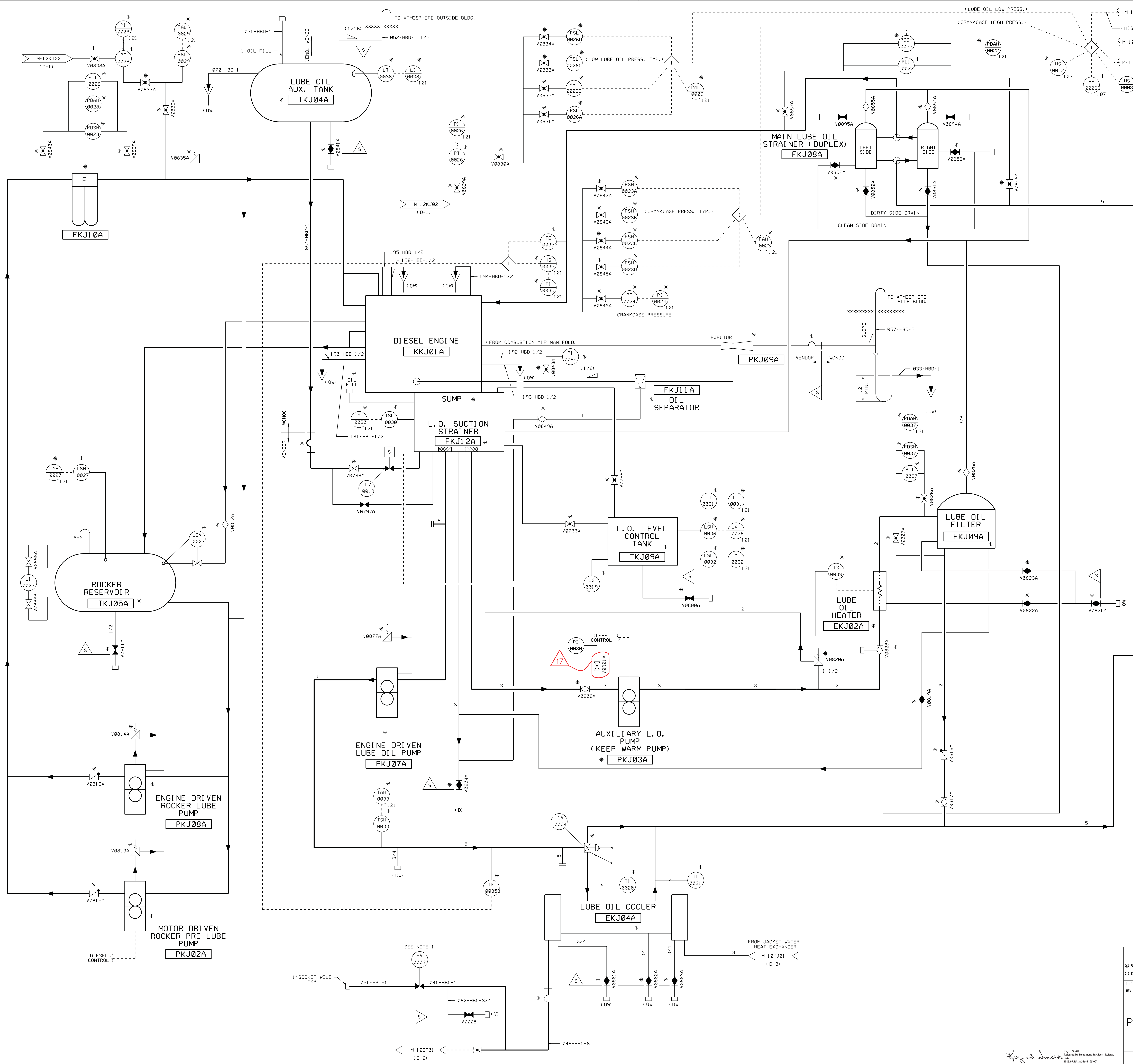
DETAIL "A"

USAR FIG. 9.5.6-1-02

**ESSENTIAL DRAWING**

REVISION	INCORPORATED	CHANGE
ISSUED	ENG. DOC.	FIG. NO.
THIS ENG. SUPERSEDES		
REVISION NOTES	REVISED PER AP 05-10 SECTION 6.10 TO ADD MISSING DRIP PAN BACK	REV.
<b>WOLF CREEK</b>		
NUCLEAR OPERATING CORPORATION		ELECTRONIC APPROVAL
<b>PIPING &amp; INSTRUMENTATION DIAGRAM</b>		
<b>STANDBY DIESEL GENERATOR "B"</b>		
<b>INTAKE EXHAUST, F.O. &amp; START AIR SYS.</b>		
SCALE	DRAWING NUMBER	SHEET
NONE	M-12KJ05	17





**NOTES**  
 1. KJHY022 IS ABANDONED IN PLACE AND BLOCKED CLOSED WITH THE ACTUATOR REMOVED.

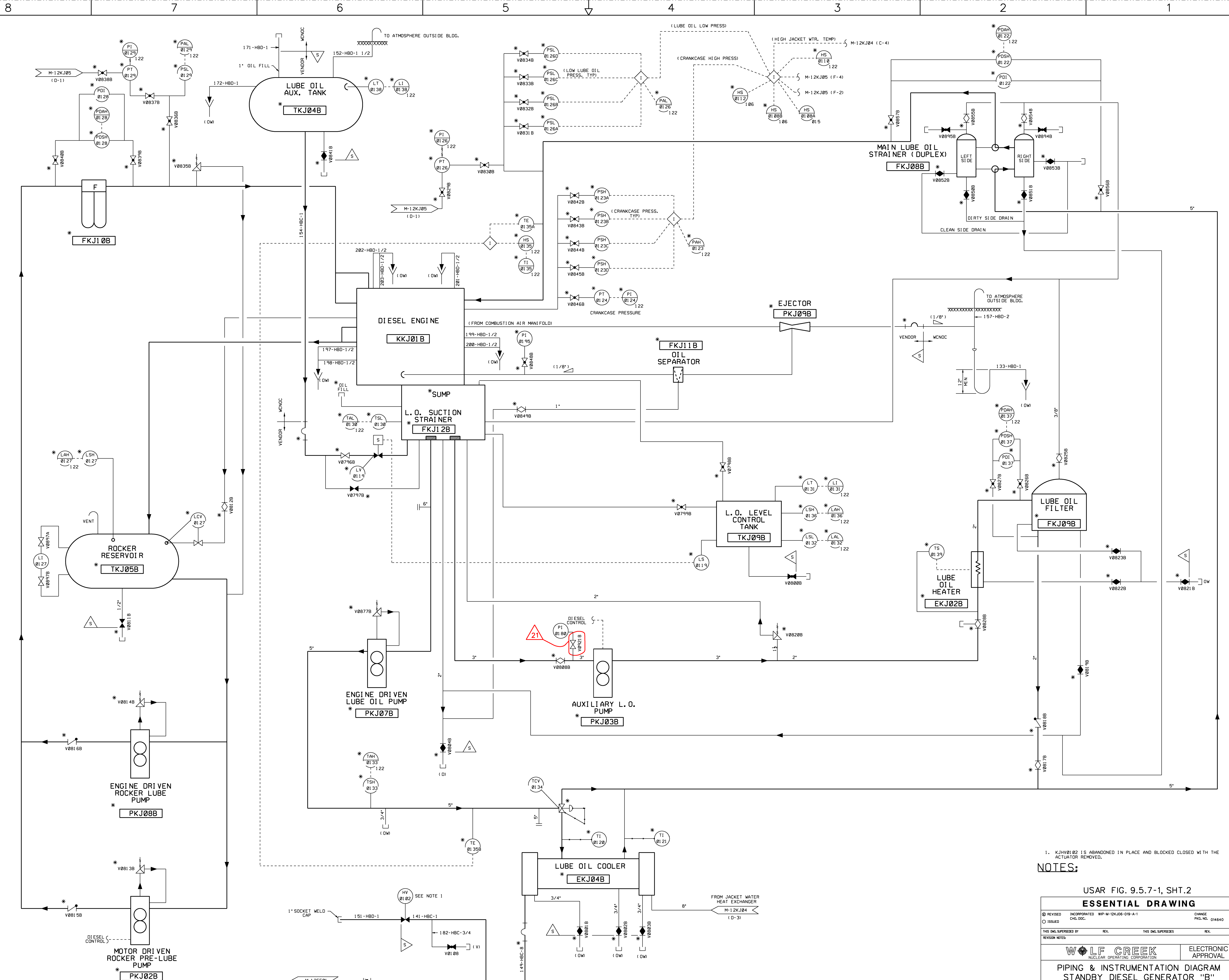
USAR FIG. 9.5.7-1-01

**ESSENTIAL DRAWING**

REVISION	INCORPORATED	WP-M-12KJ03-016-A-1	CHANGE 014640
ISSUED	CHG. DOC.		PAG. NO.
THIS DWG SUPERSEDES BY		REV.	THIS DWG SUPERSEDES
REVISION NOTES:			
<b>WOLF CREEK</b>		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION		APPROVAL	
<b>PIPING &amp; INSTRUMENTATION DIAGRAM</b>			
<b>STANDBY DIESEL GENERATOR</b>			
<b>"A" LUBE OIL SYSTEM</b>			
SCALE	NONE	DRAWING NUMBER	M-12KJ03
SHEET	1	REV.	17

*Ray S. Smith*  
 Ray S. Smith  
 Electrical Instrumentation Technician  
 2010/11/15 14:22:46 -0700





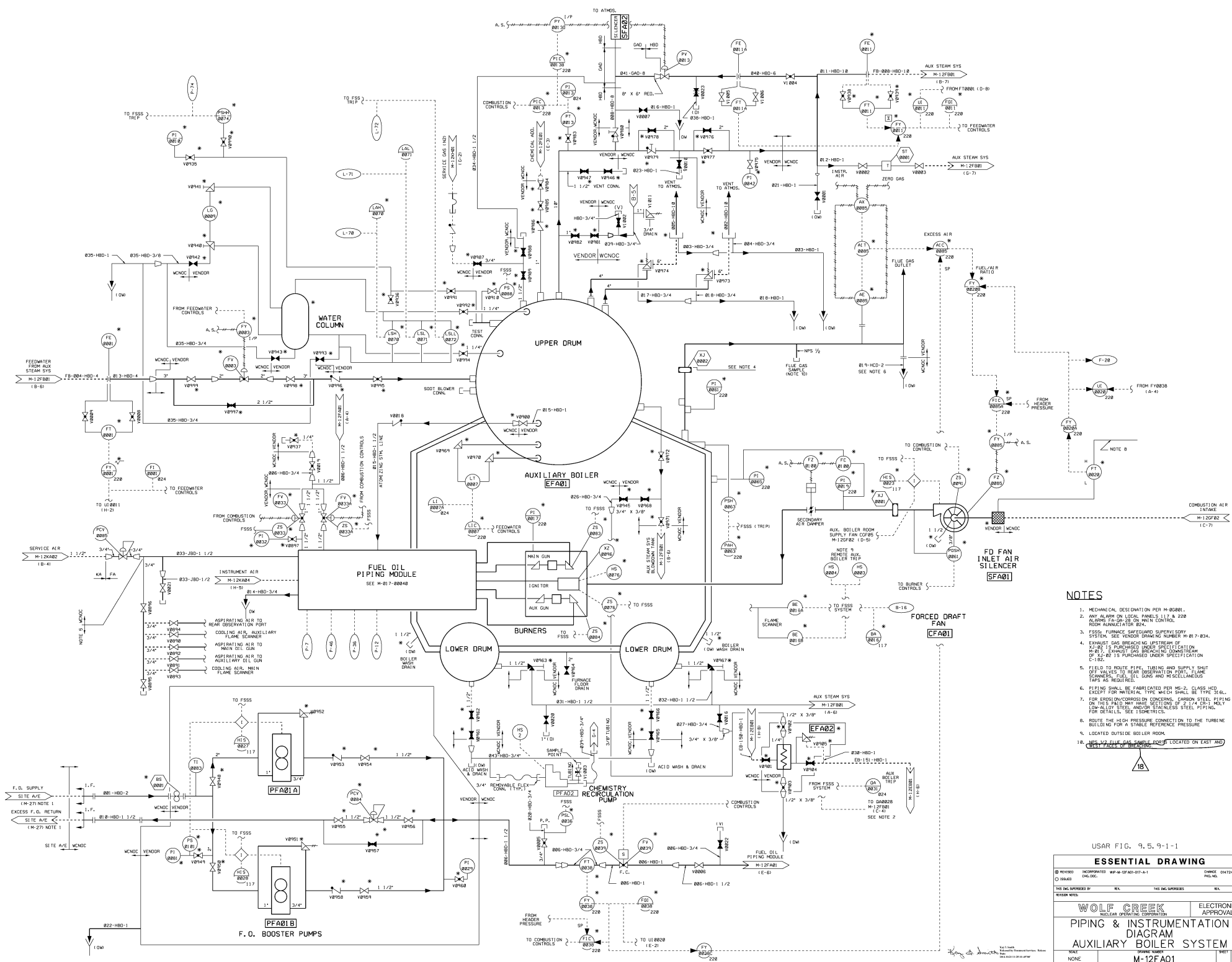
1. KJHV0102 IS ABANDONED IN PLACE AND BLOCKED CLOSED WITH THE ACTUATOR REMOVED.

**NOTES:**

USAR FIG. 9.5.7-1, SHT.2  
**ESSENTIAL DRAWING**

REVISED	INCORPORATED	WIP-M-12KJ06-019-A-1	CHANGE
ISSUED	CHG. DOC.		PKG. NO. 014640
THIS ENG. SUPERSEDES BY		REV.	THIS ENG. SUPERSEDES
REVISION NOTES:			
<b>WOLF CREEK</b>		ELECTRONIC APPROVAL	
NUCLEAR OPERATING CORPORATION			
<b>PIPING &amp; INSTRUMENTATION DIAGRAM</b>			
<b>STANDBY DIESEL GENERATOR "B"</b>			
<b>LUBE OIL SYSTEM</b>			
SCALE	DRAWING NUMBER		SHEET
NONE	M-12KJ06		21

*Selena King*



- NOTES**
- MECHANICAL DESIGNATION PER M-808R1.
  - ANY ALARM ON LOCAL PANELS 117 & 220 ALARMS FOR SH-28 OR MAIN CONTROL ROOM ALARMATOR B24.
  - FSSS: FURNACE SAFETY SYSTEM SUPERVISORY SYSTEM. SEE VENDOR DRAWING NUMBER M-817-834.
  - EXHAUST GAS BREACHING UPSTREAM OF A-2-27 IS PURCHASED UNDER SPECIFICATION M-817-834. EXHAUST GAS BREACHING DOWNSTREAM OF A-2-27 IS PURCHASED UNDER SPECIFICATION C-1-2.
  - FIELD TO ROUTE PIPE, TUBING AND SUPPLY SHUT OFF VALVES TO BEAR OBSERVATION POINT.
  - PIPING SHALL BE FABRICATED PER MS-2, CLASS HCD EXCEPT FOR MATERIAL TYPE WHICH SHALL BE TYPE 316L.
  - FOR EXHAUST/GAS/COOLING CONDENSING, CARBON STEEL PIPING ON THIS P&ID MAY HAVE SECTIONS OF 3/4" (CR) HOLEY LOW ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS, SEE ISOMETRICS.
  - ROUTE THE HIGH PRESSURE CONNECTION TO THE TURBINE BUILDING FOR A STABLE REFERENCE PRESSURE.
  - LOCATED OUTSIDE BOILER ROOM.
  - SEE THE PIPE PANEL FOR 18 LOCATED ON EAST END OF THE BOILER ROOM.

USAR FIG. 9.5.9-1-1

**ESSENTIAL DRAWING**

REVISION NO. INCORPORATED WP-4-07-AD-017-A-1 CHECKED 014724  
 DATE 01/04/00 DRAWN 014724  
 THIS DRAWING IS THE PROPERTY OF WOLF CREEK. NO REPRODUCTION OR TRANSMISSION IS PERMITTED WITHOUT THE WRITTEN PERMISSION OF WOLF CREEK.

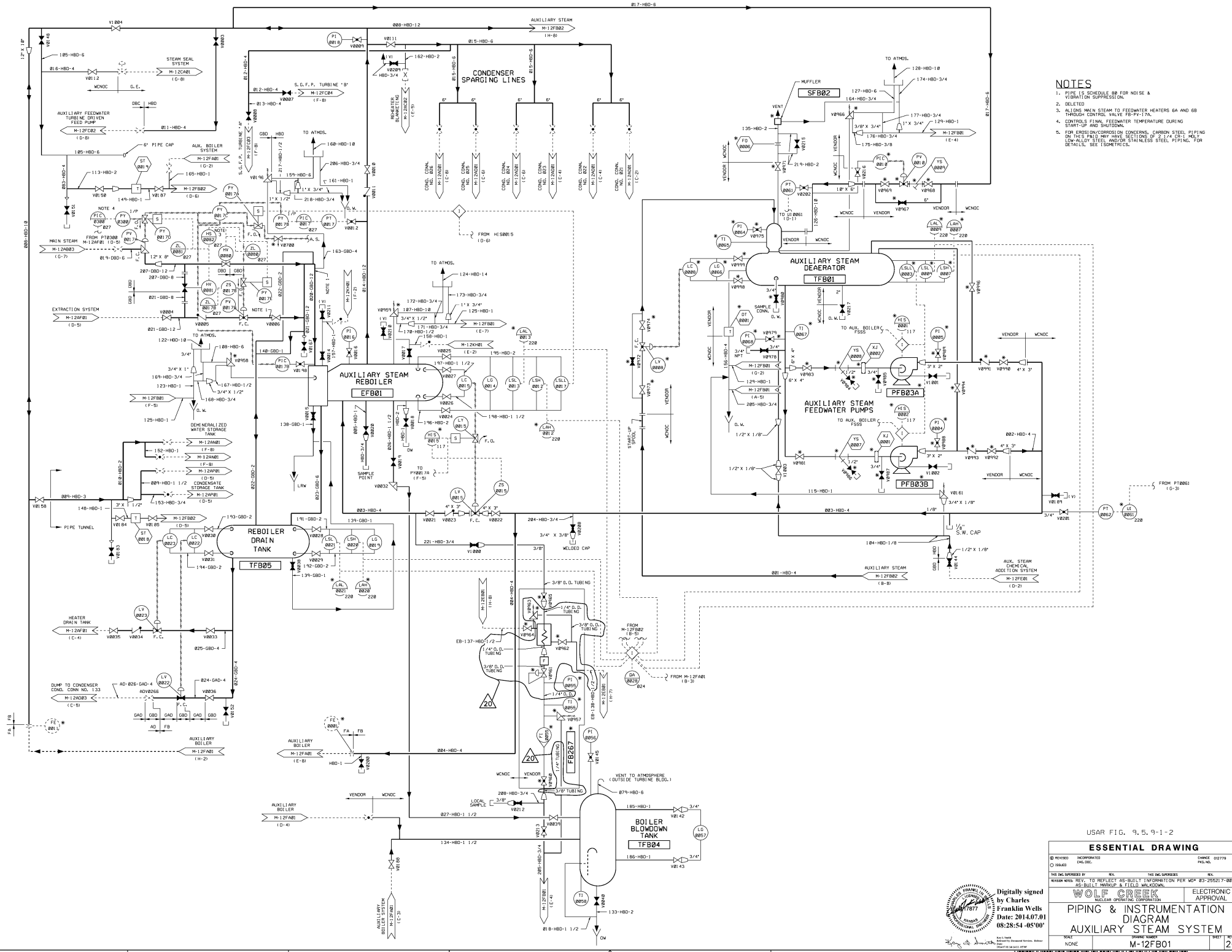
**WOLF CREEK** ELECTRONIC APPROVAL  
 NUCLEAR OPERATIONS CORPORATION

**PIPING & INSTRUMENTATION DIAGRAM**  
**AUXILIARY BOILER SYSTEM**

SHEET NO. M-12FA01 REV. NO. 18  
 DATE 01/04/00







- NOTES**
1. PIPE IS SCHEDULE 80 FOR NOISE & VIBRATION SUPPRESSION.
  2. DELETED
  3. ALLOWS MAIN STEAM TO FEEDWATER HEATERS 6A AND 6B THROUGH CONTROL VALVE ES-PY-170.
  4. CONTROLS FINAL FEEDWATER TEMPERATURE DURING START-UP AND SHUTDOWN.
  5. FOR EROSION/CORROSION CONCERNS, CARBON STEEL PIPING ON THIS FEED MAY HAVE SECTIONS OF 2" 1/4 O.D. 1" LOW-ALLOY STEEL AND/OR STAINLESS STEEL PIPING, FOR DETAILS, SEE ISOMETRIC.

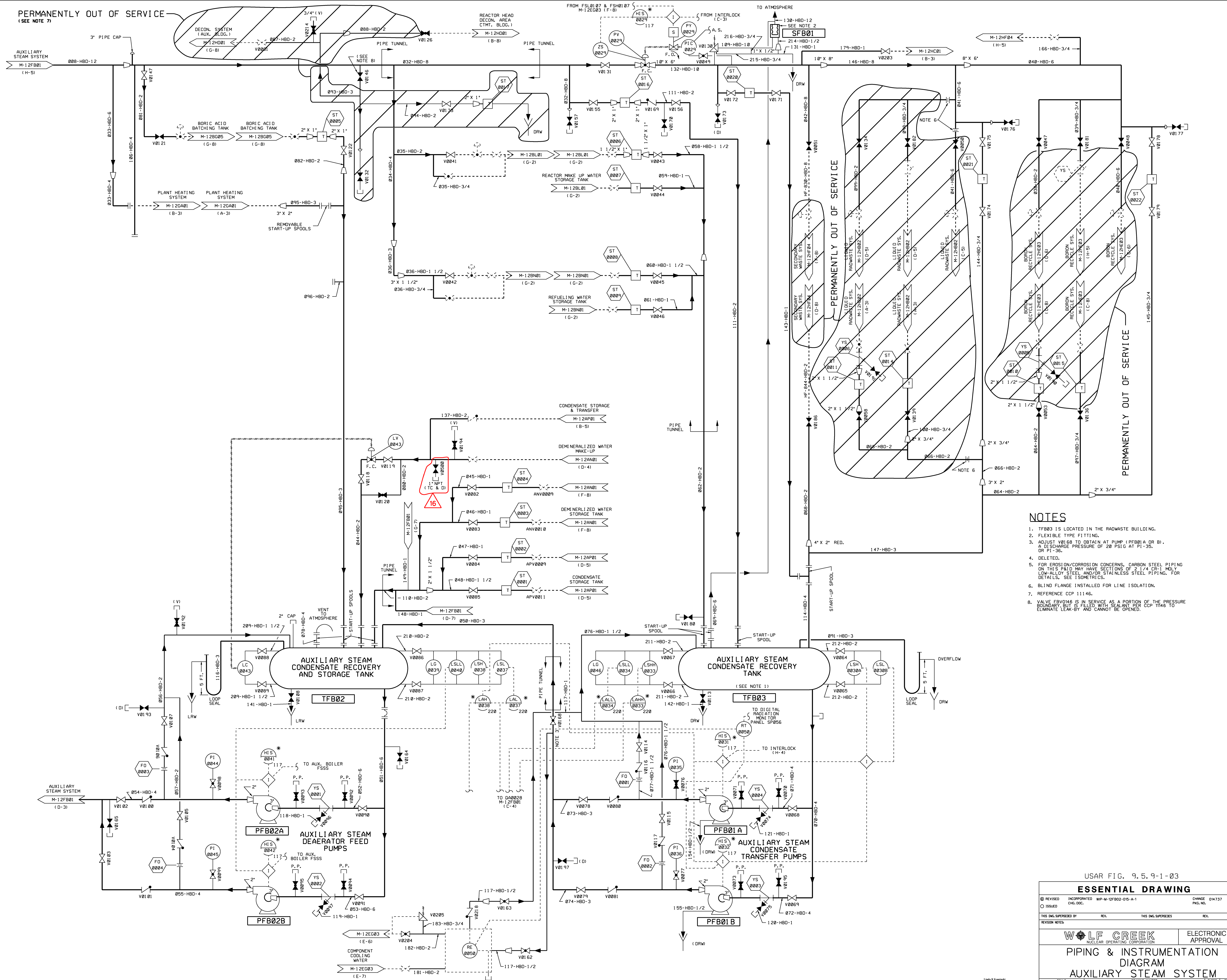
USAR FIG. 9.5.9-1-2

**ESSENTIAL DRAWING**

REVISION	INCORPORATED	DATE	02779
DESIGNED BY	CHKD BY	DATE	
THIS DRAWING IS THE PROPERTY OF FRANKLIN WELLS	NO REPRODUCTION	DATE	
ISSUES WITH REV. TO REFLECT AS-BUILT INFORMATION PER MPA #3-255217-886	AS-BUILT THROUGHOUT & FIELD MODIFICATIONS	DATE	
WORLDWIDE	FRANKLIN WELLS	ELECTRONIC APPROVAL	
<p>PIPING &amp; INSTRUMENTATION DIAGRAM</p> <p><b>AUXILIARY STEAM SYSTEM</b></p>			
SCALE	DATE	PROJECT NO.	REV.
		M-12FB01	20

Digitally signed by Charles Franklin Wells  
 Date: 2014.07.01 08:28:54 -05'00'





- NOTES**
1. TFB03 IS LOCATED IN THE RADWASTE BUILDING.
  2. FLEXIBLE TYPE FITTING.
  3. ADJUST V0166 TO OBTAIN AT PUMP (PFB01A OR B) A DISCHARGE PRESSURE OF 20 PSIG AT P1-35, OR P1-36.
  4. DELETED.
  5. FOR EROSION/CORROSION CONCERNS, CARBON STEEL PIPING ON THIS P&ID MAY HAVE SECTIONS OF 2 1/4 CR-1 MILDY LOW-ALLOY STEEL AND/OR STAINLESS STEEL PIPING. FOR DETAILS, SEE ISOMETRICS.
  6. BLIND FLANGE INSTALLED FOR LINE ISOLATION.
  7. REFERENCE CCP 11146.
  8. VALVE FV0146 IS IN SERVICE AS A PORTION OF THE PRESSURE BOUNDARY, BUT IS FILLED WITH SEALANT PER CCP 11146 TO ELIMINATE LEAK-BY AND CANNOT BE OPENED.

USAR FIG. 9.5.9-1-03

**ESSENTIAL DRAWING**

REVISED	INCORPORATED	WIP-M-12FB02-015-A-1	CHANGE 014237
ISSUED	CHG. DOC.		FIG. NO.

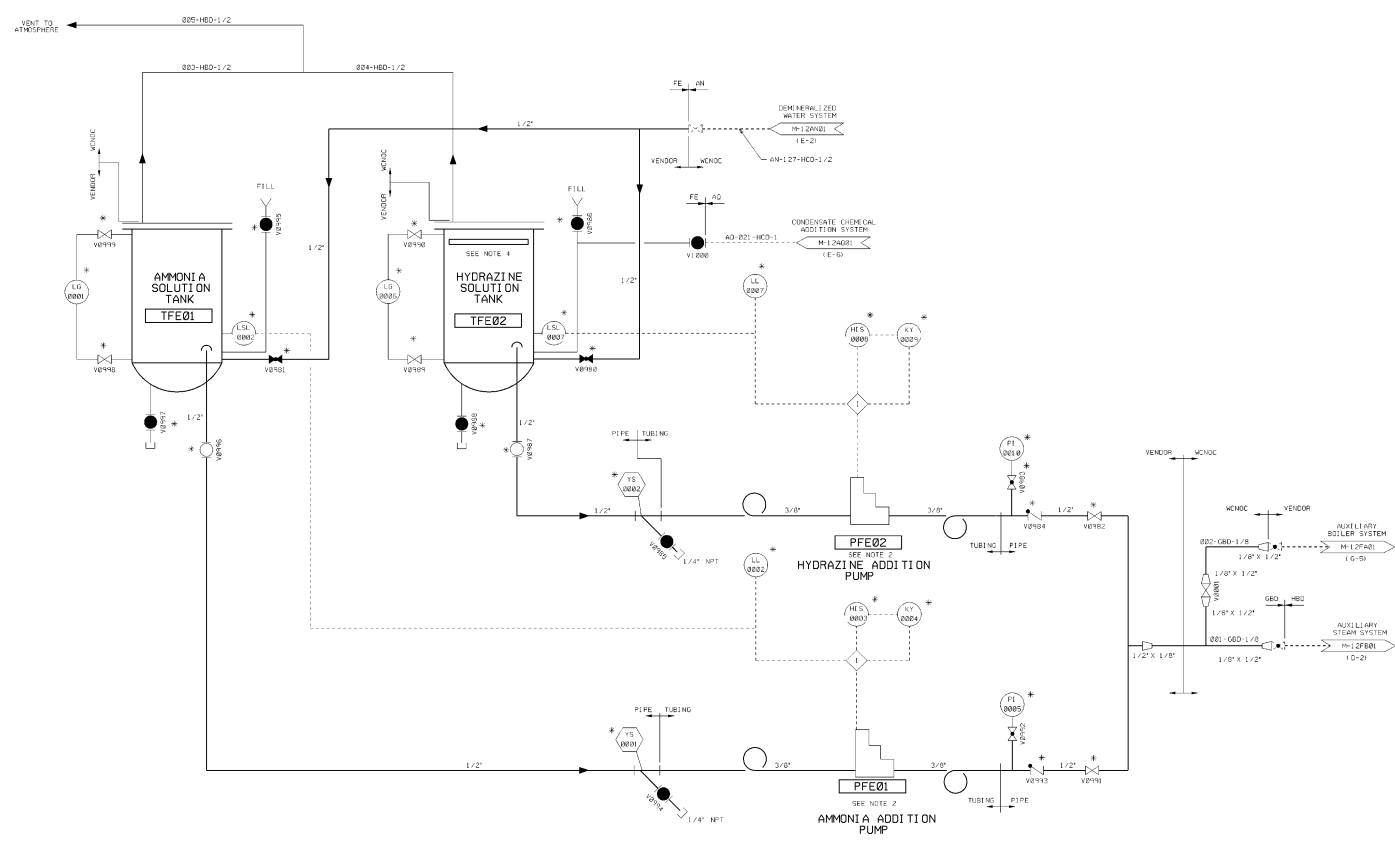
THIS ENG. SUPERSEDES BY: \_\_\_\_\_ REV. \_\_\_\_\_ THIS ENG. SUPERSEDES REV. \_\_\_\_\_

REVISION NUMBER:

<b>WOLF CREEK</b> NUCLEAR OPERATING CORPORATION	ELECTRONIC APPROVAL
PIPING & INSTRUMENTATION DIAGRAM	
AUXILIARY STEAM SYSTEM	
SCALE: NONE	DRAWING NUMBER: M-12FB02
SHEET: 16	REV: 16

Scale of Drawing: 1" = 10'-0" (unless otherwise noted)  
 Date of Issue: 12/14/83  
 Drawn by: J. H. ...  
 Checked by: ...  
 Approved by: ...





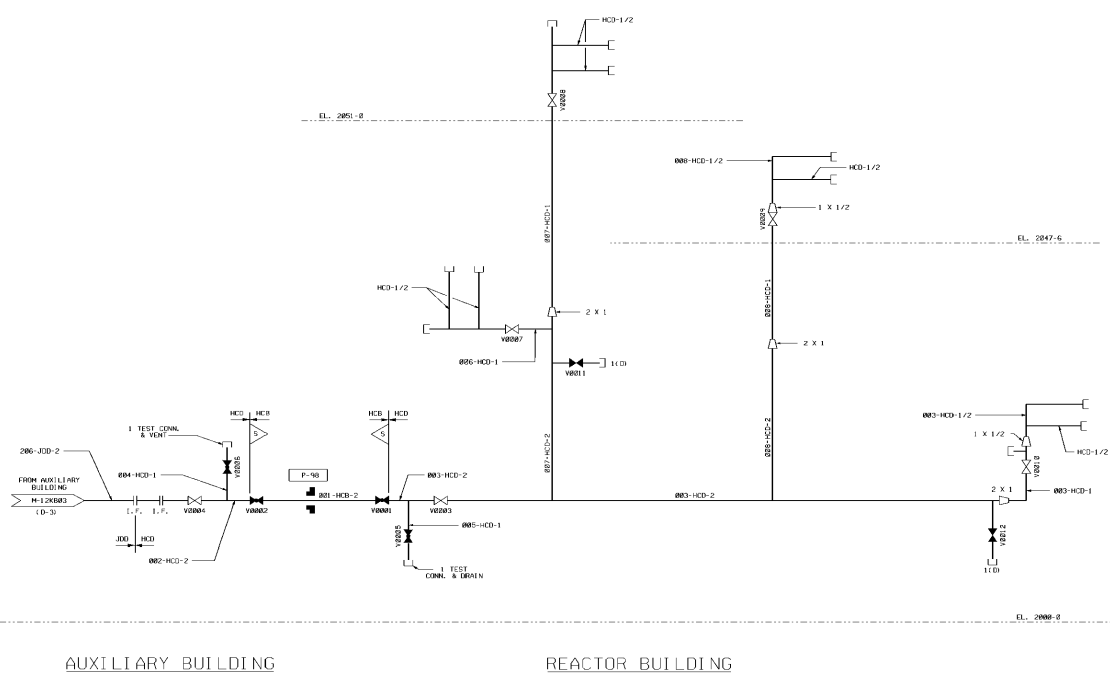
- NOTES**
1. FE SYSTEM IS MANUALLY OPERATED.
  2. PUMPS ARE EQUIPPED WITH MANUAL SHUT OFF.
  3. TIMER HAS A RANGE OF 8 TO 30 HOURS.
  4. HIGH DENSITY POLYETHYLENE FLUORINE COVER SUPPLIED WITH TANK.

USAR FIG. 9.5.9-1-04

ESSENTIAL DRAWING			
REVISION	DESCRIPTION	DATE	BY
01	ISSUED		
THIS DRAWING IS THE PROPERTY OF THE U.S. GOVERNMENT AND IS TO BE REPRODUCED AS SHOWN WITHOUT LIMITATION.		WHEN REPRODUCED FROM THIS DRAWING, THE U.S. GOVERNMENT ASSUMES NO LIABILITY FOR THE USE OR RESULTS OF ANY INFORMATION CONTAINED HEREIN.	
		ELECTRONIC APPROVAL	
<b>PIPING &amp; INSTRUMENTATION DIAGRAM AUXILIARY STEAM CHEMICAL ADDITION SYSTEM</b>			
SCALE	DESIGN NUMBER	SHEET NO.	TOTAL SHEETS
NONE	M-12FE01	10	10

**NOTES**

1. THE PIPING AND VALVES ASSOCIATED WITH CONFINEMENT ISOLATION ARE THE ONLY PORTIONS OF THIS SYSTEM THAT ARE G-LISTED.



AUXILIARY BUILDING

REACTOR BUILDING

USAR FIG. 9.5.10-01

<b>ESSENTIAL DRAWING</b>			
DESIGNED BY	INSTRUMENTED BY	CHECKED BY	DATE
DRAWN BY	ELECTRONICALLY CONVERTED PER AF-22-01-0	DATE	BY
<b>WOLF CREEK</b>		ELECTRONIC APPROVAL	
<b>PIPING &amp; INSTRUMENTATION DIAGRAM</b>			
<b>BREATHING AIR SYSTEM</b>			
SCALE	SHEET NO.		OF
NONE	M-12KB01		04





HOSE STATION NUMBER	PRESSURE REGULATORS										ISOLATION VALVES										LINE NUMBERS										FLOW INDICATORS					PRESSURE INDICATORS					PRESS. SW. TCH.	PRESS. ALARM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
10	PCV011A	PCV011B	PCV011C	PCV011D	PCV011E	VR011	VR012	VR013	VR014	VR015	VR016	VR017	VR018	VR019	VR020	VR021	VR022	VR023	VR024	VR025	VR026	VR027	VR028	VR029	VR030	VR031	VR032	VR033	VR034	VR035	VR036	VR037	VR038	VR039	VR040	VR041	VR042	VR043	VR044	VR045	VR046	VR047	VR048	VR049	VR050	VR051	VR052	VR053	VR054	VR055	VR056	VR057	VR058	VR059	VR060	VR061	VR062	VR063	VR064	VR065	VR066	VR067	VR068	VR069	VR070	VR071	VR072	VR073	VR074	VR075	VR076	VR077	VR078	VR079	VR080	VR081	VR082	VR083	VR084	VR085	VR086	VR087	VR088	VR089	VR090	VR091	VR092	VR093	VR094	VR095	VR096	VR097	VR098	VR099	VR100	VR101	VR102	VR103	VR104	VR105	VR106	VR107	VR108	VR109	VR110	VR111	VR112	VR113	VR114	VR115	VR116	VR117	VR118	VR119	VR120	VR121	VR122	VR123	VR124	VR125	VR126	VR127	VR128	VR129	VR130	VR131	VR132	VR133	VR134	VR135	VR136	VR137	VR138	VR139	VR140	VR141	VR142	VR143	VR144	VR145	VR146	VR147	VR148	VR149	VR150	VR151	VR152	VR153	VR154	VR155	VR156	VR157	VR158	VR159	VR160	VR161	VR162	VR163	VR164	VR165	VR166	VR167	VR168	VR169	VR170	VR171	VR172	VR173	VR174	VR175	VR176	VR177	VR178	VR179	VR180	VR181	VR182	VR183	VR184	VR185	VR186	VR187	VR188	VR189	VR190	VR191	VR192	VR193	VR194	VR195	VR196	VR197	VR198	VR199	VR200	VR201	VR202	VR203	VR204	VR205	VR206	VR207	VR208	VR209	VR210	VR211	VR212	VR213	VR214	VR215	VR216	VR217	VR218	VR219	VR220	VR221	VR222	VR223	VR224	VR225	VR226	VR227	VR228	VR229	VR230	VR231	VR232	VR233	VR234	VR235	VR236	VR237	VR238	VR239	VR240	VR241	VR242	VR243	VR244	VR245	VR246	VR247	VR248	VR249	VR250	VR251	VR252	VR253	VR254	VR255	VR256	VR257	VR258	VR259	VR260	VR261	VR262	VR263	VR264	VR265	VR266	VR267	VR268	VR269	VR270	VR271	VR272	VR273	VR274	VR275	VR276	VR277	VR278	VR279	VR280	VR281	VR282	VR283	VR284	VR285	VR286	VR287	VR288	VR289	VR290	VR291	VR292	VR293	VR294	VR295	VR296	VR297	VR298	VR299	VR300	VR301	VR302	VR303	VR304	VR305	VR306	VR307	VR308	VR309	VR310	VR311	VR312	VR313	VR314	VR315	VR316	VR317	VR318	VR319	VR320	VR321	VR322	VR323	VR324	VR325	VR326	VR327	VR328	VR329	VR330	VR331	VR332	VR333	VR334	VR335	VR336	VR337	VR338	VR339	VR340	VR341	VR342	VR343	VR344	VR345	VR346	VR347	VR348	VR349	VR350	VR351	VR352	VR353	VR354	VR355	VR356	VR357	VR358	VR359	VR360	VR361	VR362	VR363	VR364	VR365	VR366	VR367	VR368	VR369	VR370	VR371	VR372	VR373	VR374	VR375	VR376	VR377	VR378	VR379	VR380	VR381	VR382	VR383	VR384	VR385	VR386	VR387	VR388	VR389	VR390	VR391	VR392	VR393	VR394	VR395	VR396	VR397	VR398	VR399	VR400	VR401	VR402	VR403	VR404	VR405	VR406	VR407	VR408	VR409	VR410	VR411	VR412	VR413	VR414	VR415	VR416	VR417	VR418	VR419	VR420	VR421	VR422	VR423	VR424	VR425	VR426	VR427	VR428	VR429	VR430	VR431	VR432	VR433	VR434	VR435	VR436	VR437	VR438	VR439	VR440	VR441	VR442	VR443	VR444	VR445	VR446	VR447	VR448	VR449	VR450	VR451	VR452	VR453	VR454	VR455	VR456	VR457	VR458	VR459	VR460	VR461	VR462	VR463	VR464	VR465	VR466	VR467	VR468	VR469	VR470	VR471	VR472	VR473	VR474	VR475	VR476	VR477	VR478	VR479	VR480	VR481	VR482	VR483	VR484	VR485	VR486	VR487	VR488	VR489	VR490	VR491	VR492	VR493	VR494	VR495	VR496	VR497	VR498	VR499	VR500	VR501	VR502	VR503	VR504	VR505	VR506	VR507	VR508	VR509	VR510	VR511	VR512	VR513	VR514	VR515	VR516	VR517	VR518	VR519	VR520	VR521	VR522	VR523	VR524	VR525	VR526	VR527	VR528	VR529	VR530	VR531	VR532	VR533	VR534	VR535	VR536	VR537	VR538	VR539	VR540	VR541	VR542	VR543	VR544	VR545	VR546	VR547	VR548	VR549	VR550	VR551	VR552	VR553	VR554	VR555	VR556	VR557	VR558	VR559	VR560	VR561	VR562	VR563	VR564	VR565	VR566	VR567	VR568	VR569	VR570	VR571	VR572	VR573	VR574	VR575	VR576	VR577	VR578	VR579	VR580	VR581	VR582	VR583	VR584	VR585	VR586	VR587	VR588	VR589	VR590	VR591	VR592	VR593	VR594	VR595	VR596	VR597	VR598	VR599	VR600	VR601	VR602	VR603	VR604	VR605	VR606	VR607	VR608	VR609	VR610	VR611	VR612	VR613	VR614	VR615	VR616	VR617	VR618	VR619	VR620	VR621	VR622	VR623	VR624	VR625	VR626	VR627	VR628	VR629	VR630	VR631	VR632	VR633	VR634	VR635	VR636	VR637	VR638	VR639	VR640	VR641	VR642	VR643	VR644	VR645	VR646	VR647	VR648	VR649	VR650	VR651	VR652	VR653	VR654	VR655	VR656	VR657	VR658	VR659	VR660	VR661	VR662	VR663	VR664	VR665	VR666	VR667	VR668	VR669	VR670	VR671	VR672	VR673	VR674	VR675	VR676	VR677	VR678	VR679	VR680	VR681	VR682	VR683	VR684	VR685	VR686	VR687	VR688	VR689	VR690	VR691	VR692	VR693	VR694	VR695	VR696	VR697	VR698	VR699	VR700	VR701	VR702	VR703	VR704	VR705	VR706	VR707	VR708	VR709	VR710	VR711	VR712	VR713	VR714	VR715	VR716	VR717	VR718	VR719	VR720	VR721	VR722	VR723	VR724	VR725	VR726	VR727	VR728	VR729	VR730	VR731	VR732	VR733	VR734	VR735	VR736	VR737	VR738	VR739	VR740	VR741	VR742	VR743	VR744	VR745	VR746	VR747	VR748	VR749	VR750	VR751	VR752	VR753	VR754	VR755	VR756	VR757	VR758	VR759	VR760	VR761	VR762	VR763	VR764	VR765	VR766	VR767	VR768	VR769	VR770	VR771	VR772	VR773	VR774	VR775	VR776	VR777	VR778	VR779	VR780	VR781	VR782	VR783	VR784	VR785	VR786	VR787	VR788	VR789	VR790	VR791	VR792	VR793	VR794	VR795	VR796	VR797	VR798	VR799	VR800	VR801	VR802	VR803	VR804	VR805	VR806	VR807	VR808	VR809	VR810	VR811	VR812	VR813	VR814	VR815	VR816	VR817	VR818	VR819	VR820	VR821	VR822	VR823	VR824	VR825	VR826	VR827	VR828	VR829	VR830	VR831	VR832	VR833	VR834	VR835	VR836	VR837	VR838	VR839	VR840	VR841	VR842	VR843	VR844	VR845	VR846	VR847	VR848	VR849	VR850	VR851	VR852	VR853	VR854	VR855	VR856	VR857	VR858	VR859	VR860	VR861	VR862	VR863	VR864	VR865	VR866	VR867	VR868	VR869	VR870	VR871	VR872	VR873	VR874	VR875	VR876	VR877	VR878	VR879	VR880	VR881	VR882	VR883	VR884	VR885	VR886	VR887	VR888	VR889	VR890	VR891	VR892	VR893	VR894	VR895	VR896	VR897	VR898	VR899	VR900	VR901	VR902	VR903	VR904	VR905	VR906	VR907	VR908	VR909	VR910	VR911	VR912	VR913	VR914	VR915	VR916	VR917	VR918	VR919	VR920	VR921	VR922	VR923	VR924	VR925	VR926	VR927	VR928	VR929	VR930	VR931	VR932	VR933	VR934	VR935	VR936	VR937	VR938	VR939	VR940	VR941	VR942	VR943	VR944	VR945	VR946	VR947	VR948	VR949	VR950	VR951	VR952	VR953	VR954	VR955	VR956	VR957	VR958	VR959	VR960	VR961	VR962	VR963	VR964	VR965	VR966	VR967	VR968	VR969	VR970	VR971	VR972	VR973	VR974	VR975	VR976	VR977	VR978	VR979	VR980	VR981	VR982	VR983	VR984	VR985	VR986	VR987	VR988	VR989	VR990	VR991	VR992	VR993	VR994	VR995	VR996	VR997	VR998	VR999	VR1000	VR1001	VR1002	VR1003	VR1004	VR1005	VR1006	VR1007	VR1008	VR1009	VR1010	VR1011	VR1012	VR1013	VR1014	VR1015	VR1016	VR1017	VR1018	VR1019	VR1020	VR1021	VR1022	VR1023	VR1024	VR1025	VR1026	VR1027	VR1028	VR1029	VR1030	VR1031	VR1032	VR1033	VR1034	VR1035	VR1036	VR1037	VR1038	VR1039	VR1040	VR1041	VR1042	VR1043	VR1044	VR1045	VR1046	VR1047	VR1048	VR1049	VR1050	VR1051	VR1052	VR1053	VR1054	VR1055	VR1056	VR1057	VR1058	VR1059	VR1060	VR1061	VR1062	VR1063	VR1064	VR1065	VR1066	VR1067	VR1068	VR1069	VR1070	VR1071	VR1072	VR1073	VR1074	VR1075	VR1076	VR1077	VR1078	VR1079	VR1080	VR1081	VR1082	VR1083	VR1084	VR1085	VR1086	VR1087	VR1088	VR1089	VR1090	VR1091	VR1092	VR1093	VR1094	VR1095	VR1096	VR1097	VR1098	VR1099	VR1100	VR1101	VR1102	VR1103	VR1104	VR1105	VR1106	VR1107	VR1108	VR1109	VR1110	VR1111	VR1112	VR1113	VR1114	VR1115	VR1116	VR1117	VR1118	VR1119	VR1120	VR1121	VR1122	VR1123	VR1124	VR1125	VR1126	VR1127	VR1128	VR1129	VR1130	VR1131	VR1132	VR1133	VR1134	VR1135	VR1136	VR1137	VR1138	VR1139	VR1140	VR1141	VR1142	VR1143	VR1144	VR1145	VR1146	VR1147	VR1148	VR1149	VR1150	VR1151	VR1152	VR1153	VR1154	VR1155	VR1156	VR1157	VR1158	VR1159	VR1160	VR1161	VR1162	VR1163	VR1164	VR1165	VR1166	VR1167	VR1168	VR1169	VR1170	VR1171	VR1172	VR1173	VR1174	VR1175	VR1176	VR1177	VR1178	VR1179	VR1180	VR1181	VR1182	VR1183	VR1184	VR1185	VR1186	VR1187	VR1188	VR1189	VR1190	VR1191	VR1192	VR1193	VR1194	VR1195	VR1196	VR1197	VR1198	VR1199	VR1200	VR1201	VR1202	VR1203	VR1204	VR1205	VR1206	VR1207	VR1208	VR1209	VR1210	VR1211	VR1212	VR1213	VR1214	VR1215	VR1216	VR1217	VR1218	VR1219	VR1220	VR1221	VR1222	VR1223	VR1224	VR1225	VR1226	VR1227	VR1228	VR1229	VR1230	VR1231	VR1232	VR1233	VR1234	VR1235	VR1236	VR1237	VR1238	VR1239	VR1240	VR1241	VR1242	VR1243	VR1244	VR1245	VR1246	VR1247	VR1248	VR1249	VR1250	VR1251	VR1252	VR1253	VR1254	VR1255	VR1256	VR1257	VR1258	VR1259	VR1260	VR1261	VR1262	VR1263	VR1264	VR1265	VR1266	VR1267	VR1268	VR1269	VR1270	VR1271	VR1272	VR1273	VR1274	VR1275	VR1276	VR1277	VR1278	VR1279	VR1280	VR1281	VR1282	VR1283	VR1284	VR1285	VR1286	VR1287	VR1288	VR1289	VR1290	VR1291	VR1292	VR1293	VR1294	VR1295	VR1296