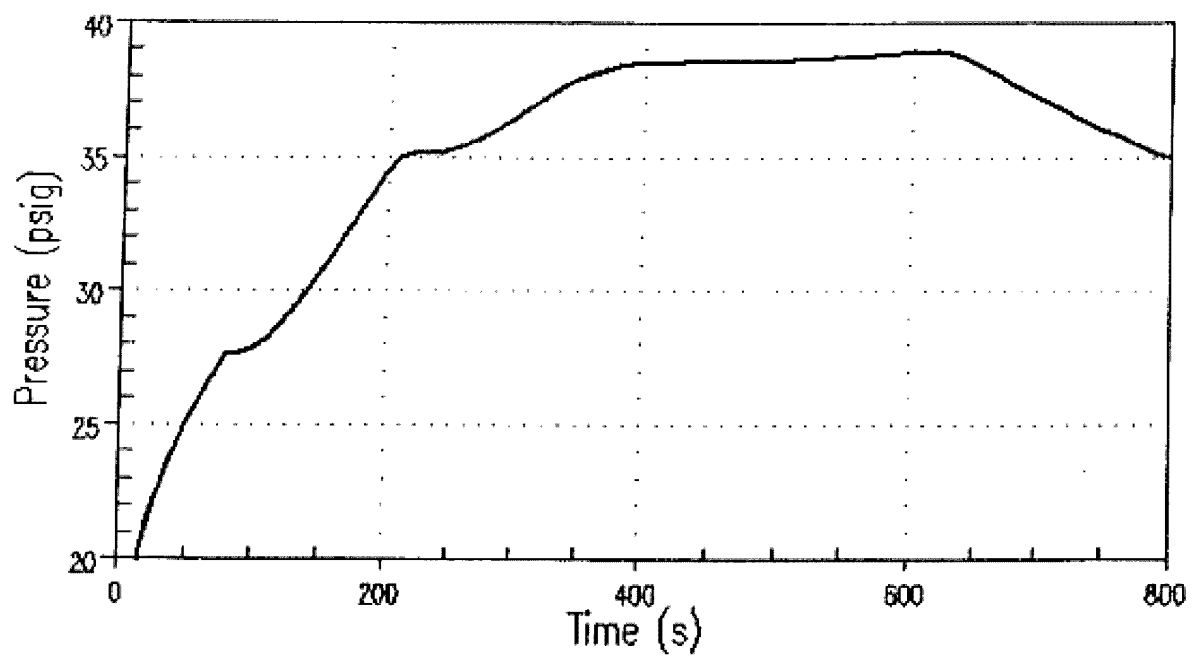


**Comanche Peak
Final Safety Analysis Report
Units 1 and 2**

**Containment Atmosphere
Temperature Transient
4.3 ft² Split SLB**

Figure 6.2.1-3

Amendment No. 103



**Comanche Peak
Final Safety Analysis Report
Units 1 and 2**

**Containment Pressure
Transient 4.7 ft² Split SLB**

Figure 6.2.1-4

Amendment No. 103

CPSES/FSAR
FIGURE 6.2.1-5

THIS FIGURE HAS BEEN DELETED

| 69

CPSES/FSAR
FIGURE 6.2.1-6

THIS FIGURE HAS BEEN DELETED

| 69

CPSSES/FSAR
FIGURE 6.2.1-7

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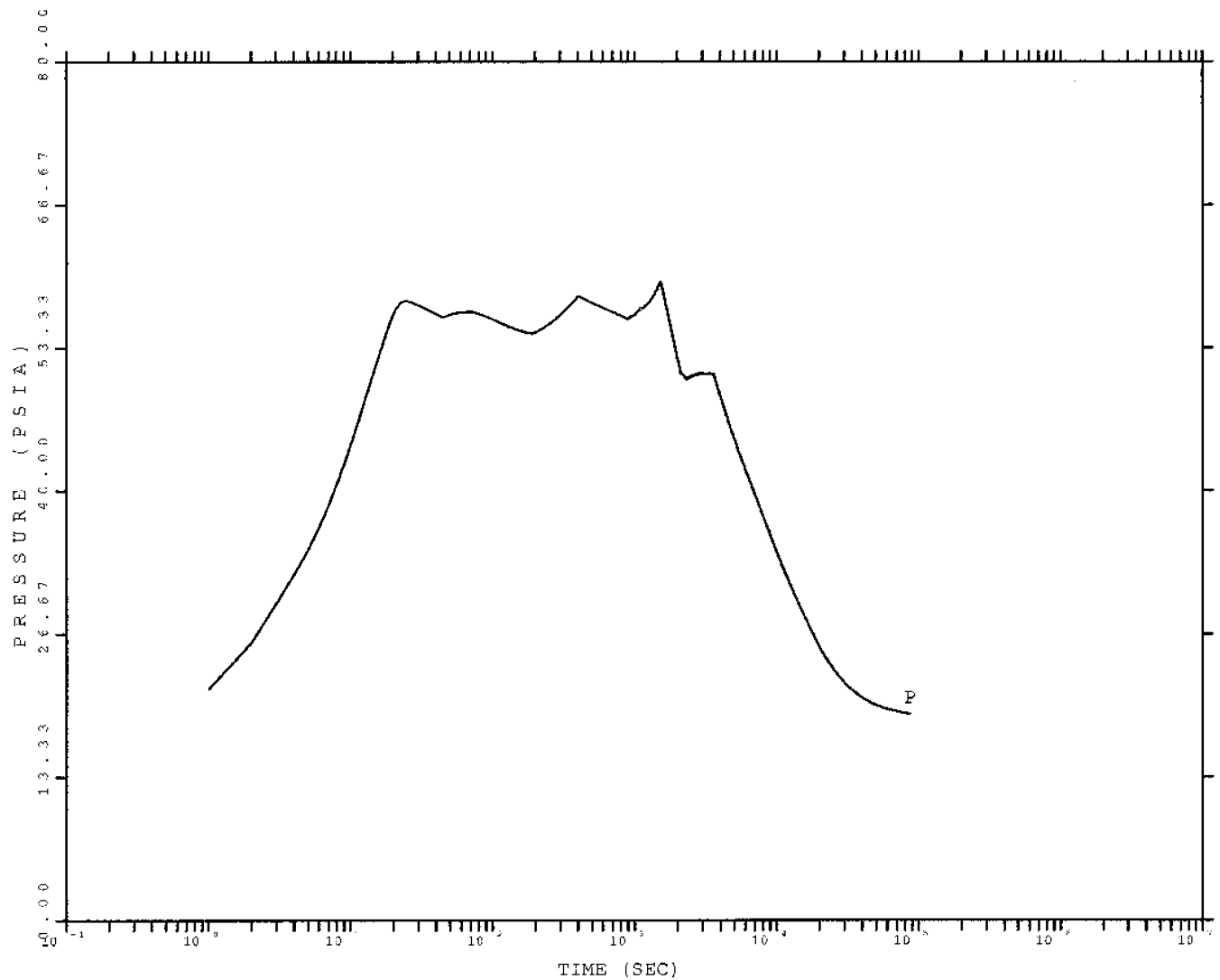
| 69

CPSES/FSAR
FIGURE 6.2.1-8

THIS FIGURE HAS BEEN DELETED

| 69

CONTENMENT-12/9/18 + DU PACTM/C/REF MOLD (INTEGRATED CT, ECCS, COW, & SCD SYSTEMS) - CONTE22, VER 03/09/84
CPI RSG DEPSG LOCA MIN ECCS-MIN CT-(Ref 2 MINSI8 + Ref 6 Case 2)



Amendment 102

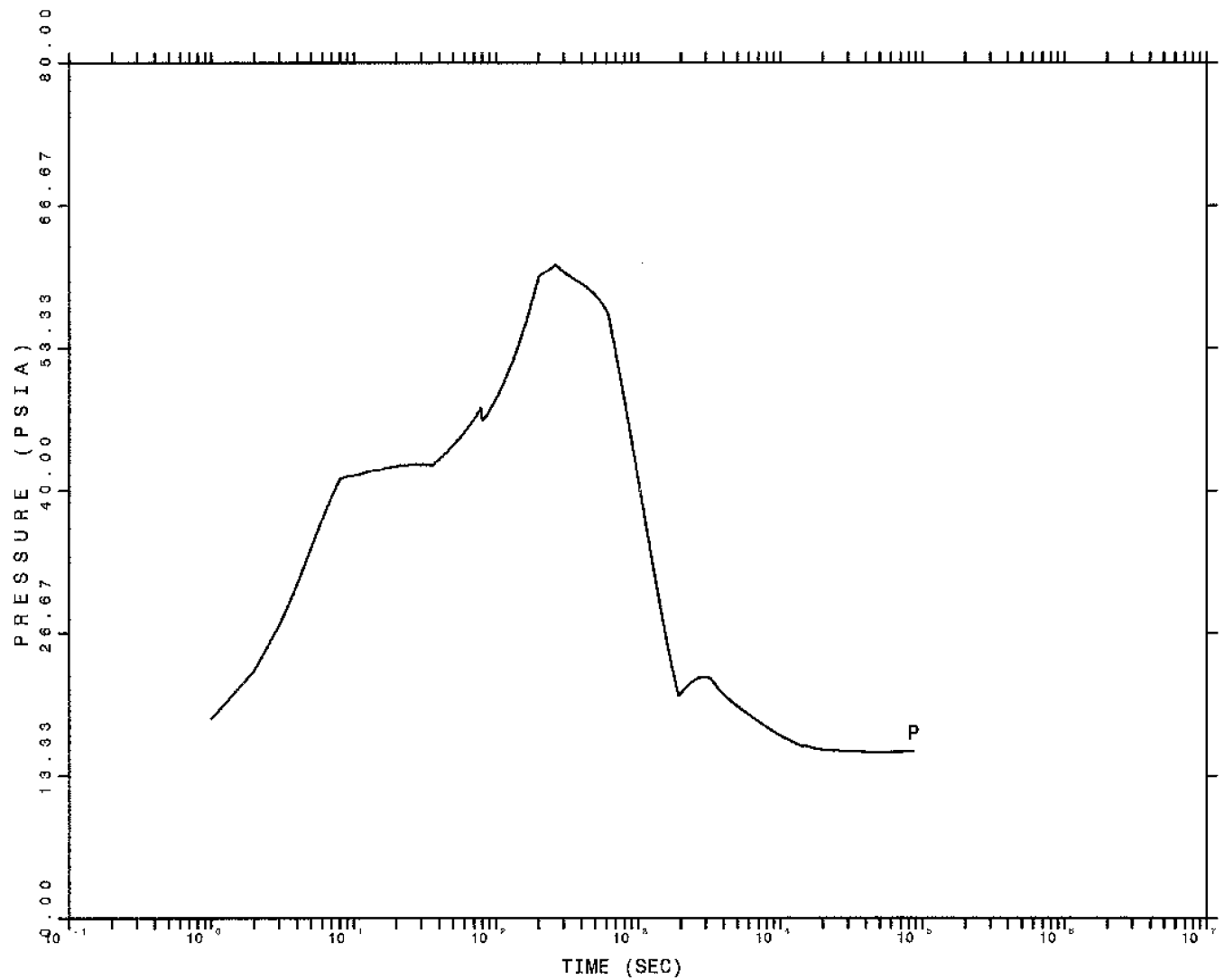
COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT ATMOSPHERE
PRESSURE TRANSIENT
UNIT 1 - LOCA

FIGURE 6.2.1-9

FIGURE 6.2.1-10

CONTEMPT-LT/028 + TU 11 FCTRIC/RKG MODS (INTEGRATED CT, EDCS, DCM, & SSI SYSTEMS) - CONTEMPT, VED EJUNW3A
CONTEMPT-LT/028_TU CP-1 RSG MSLB, 30% POWER, 1.4 FT**2 DER



Amendment 102

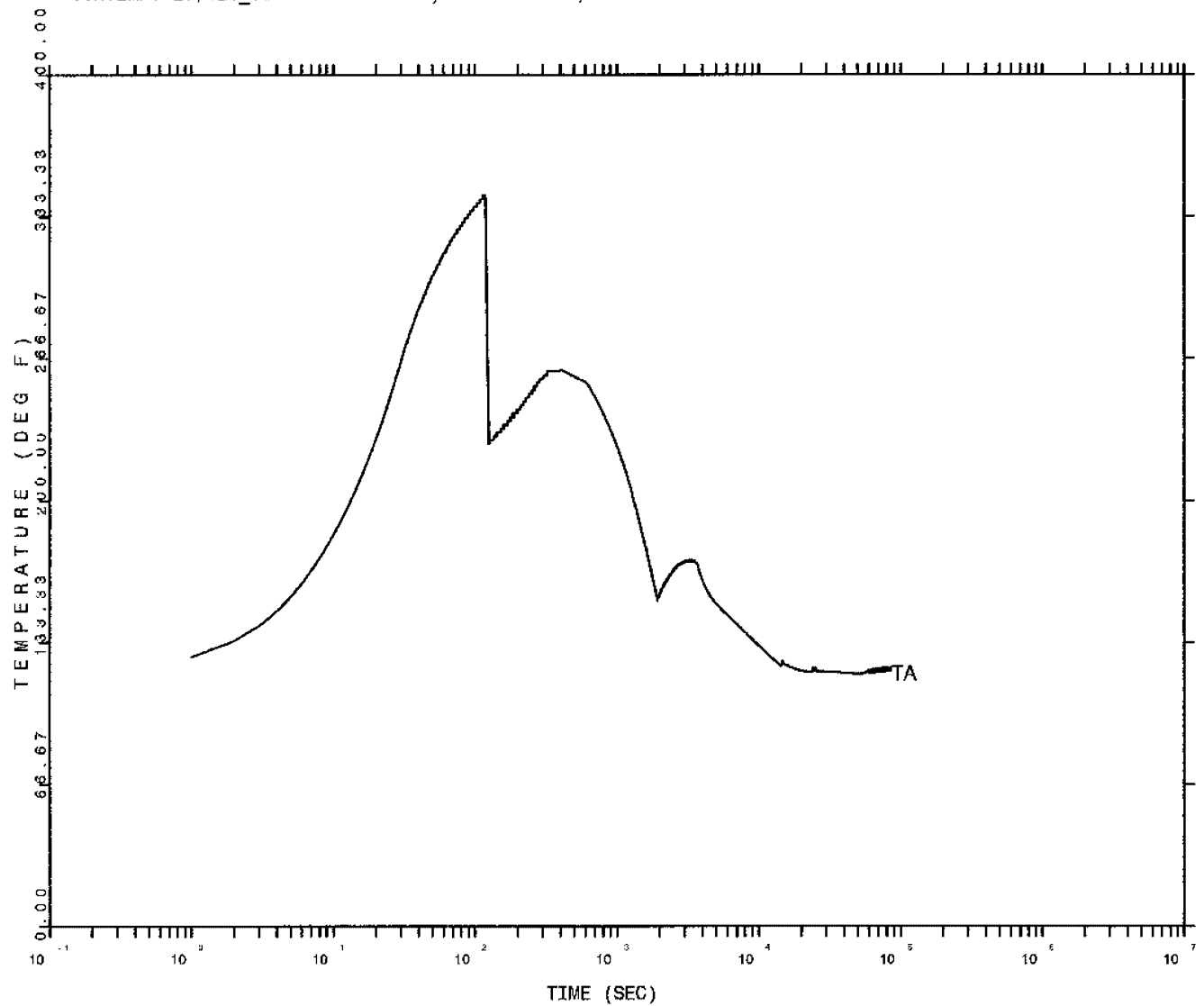
COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT ATMOSPHERE
PRESSURE TRANSIENT
UNIT 1 - MSLB

FIGURE 6.2.1-11

CONTEMPT-LT/028 - TU ELECTRIC/EXE MODS (INTEGRATED CT, EOCs, CCW, & SST SYSTEMS) - CONTC02, VER CJUN99A

CONTEMPT-LT/028_TU CP-1 RSG MSLB, 100.6% POWER, 0.916 FT**2 SPLIT



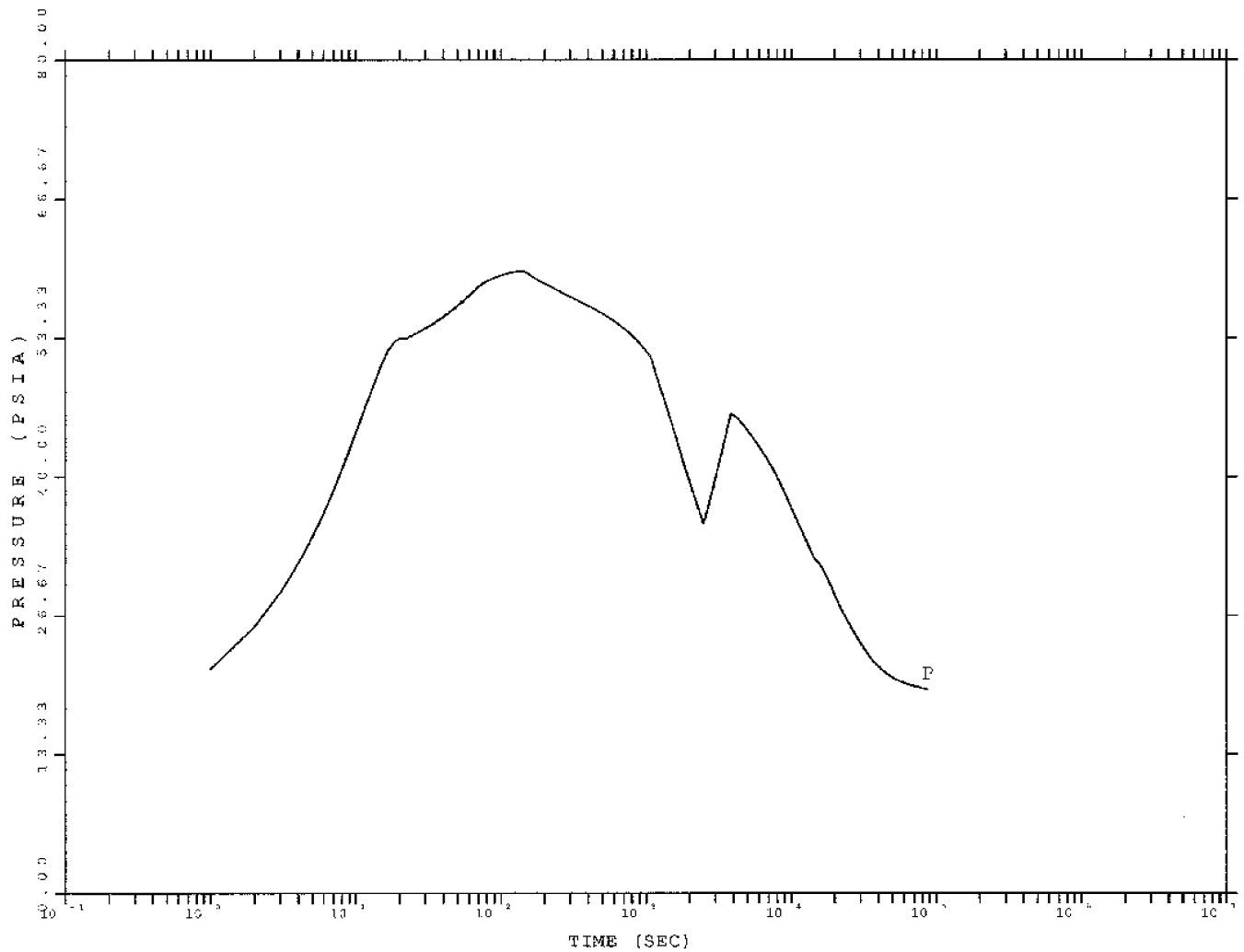
Amendment 102

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT ATMOSPHERE
TEMPERATURE TRANSIENT
UNIT 1 - MSLB

FIGURE 6.2.1-12

CONTINUED - LT/020 - TO ALTERNATE MODE (INTEGRATED ST, DOCS, CCM, & SST SYSTEMS) - CONTINUED, VER. B3CHP2A
CONTENT-1T/028_TU - CP1&2 DEPSG LOCA - MIN(ECCS & CSS) - 3650

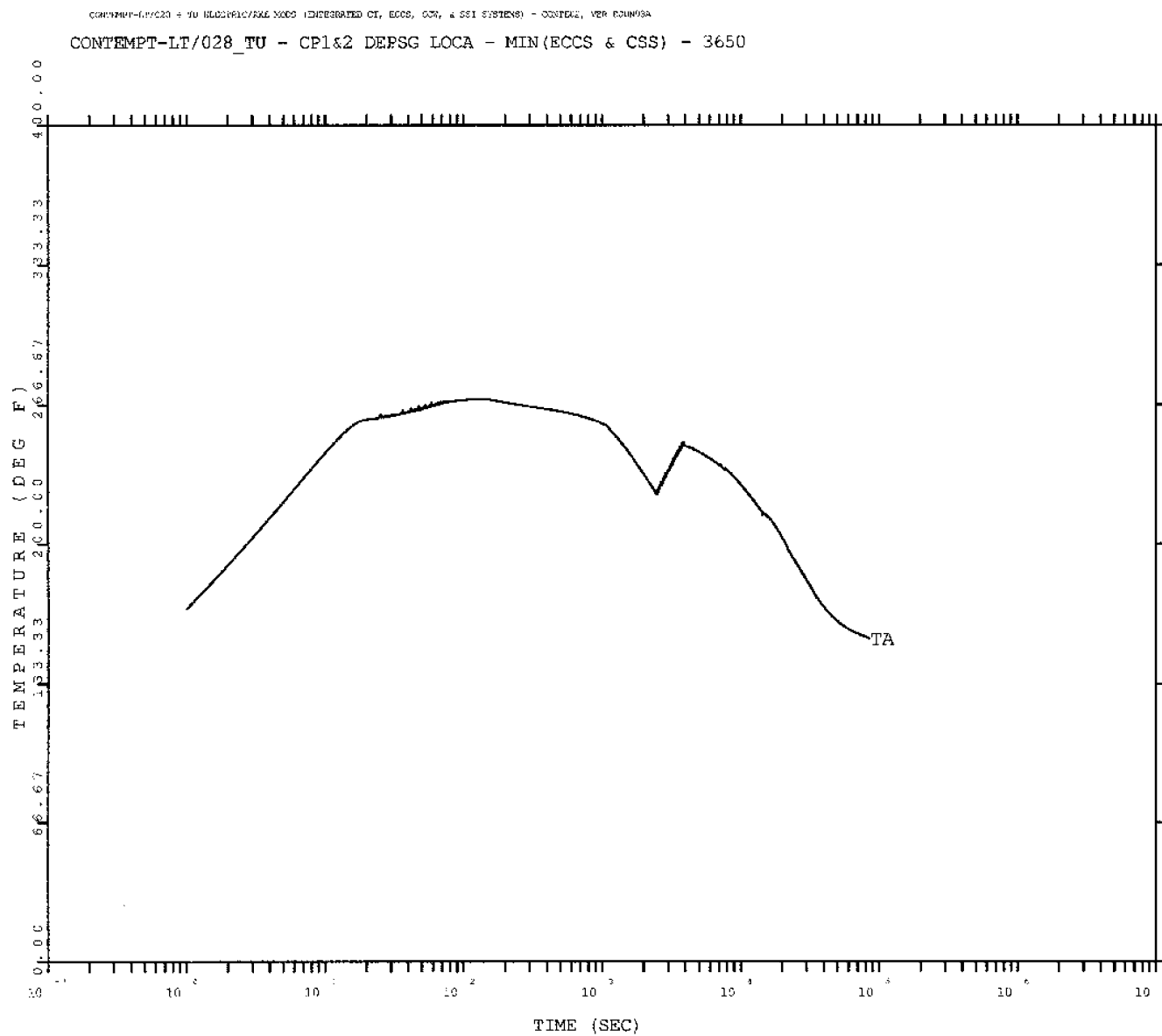


Amendment 102

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT ATMOSPHERE
PRESSURE TRANSIENT
UNIT 2 - LOCA

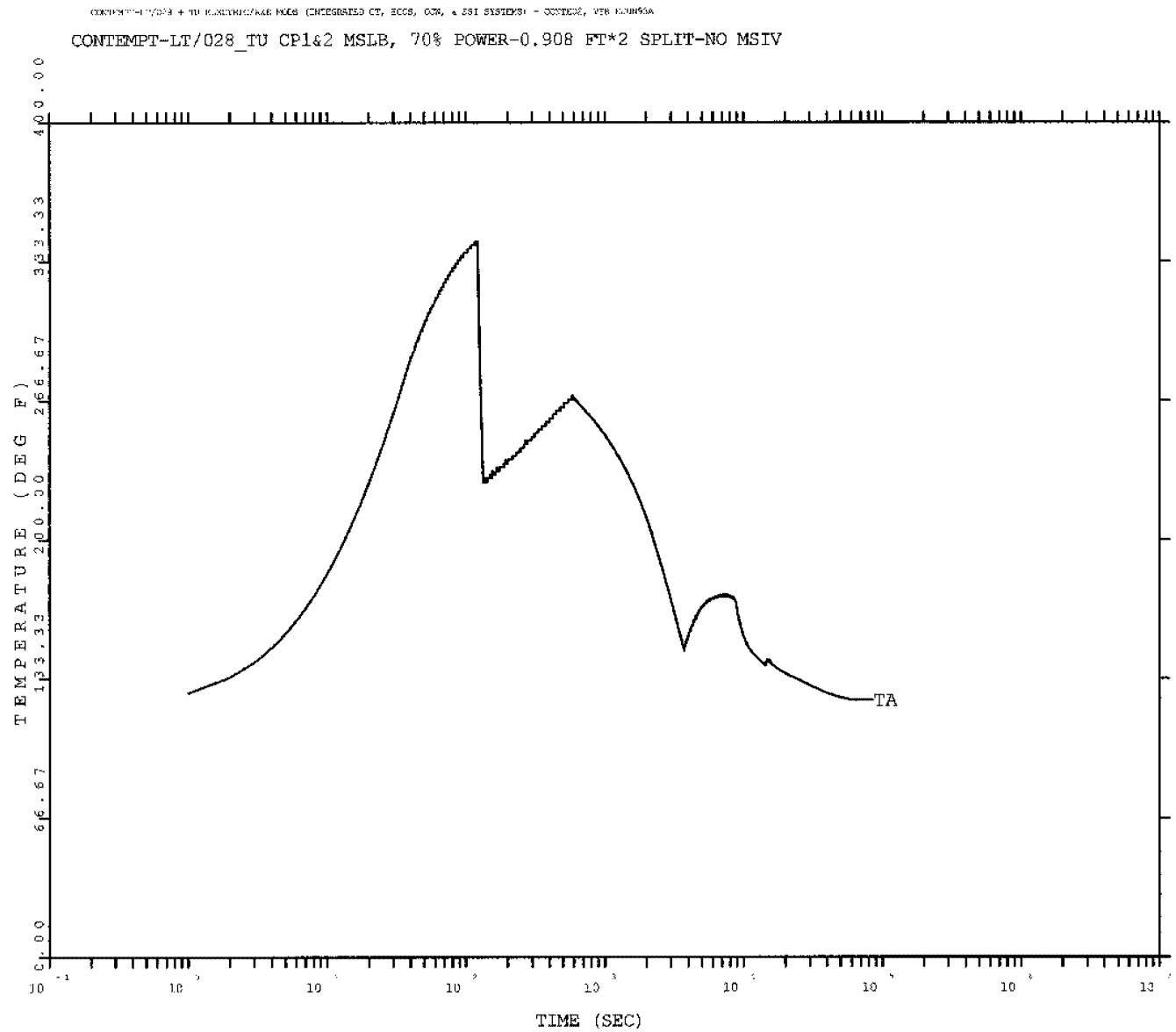
FIGURE 6.2.1-13



Amendment 102

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2CONTAINMENT ATMOSPHERE
TEMPERATURE TRANSIENT
UNIT 2 - LOCA

FIGURE 6.2.1-14



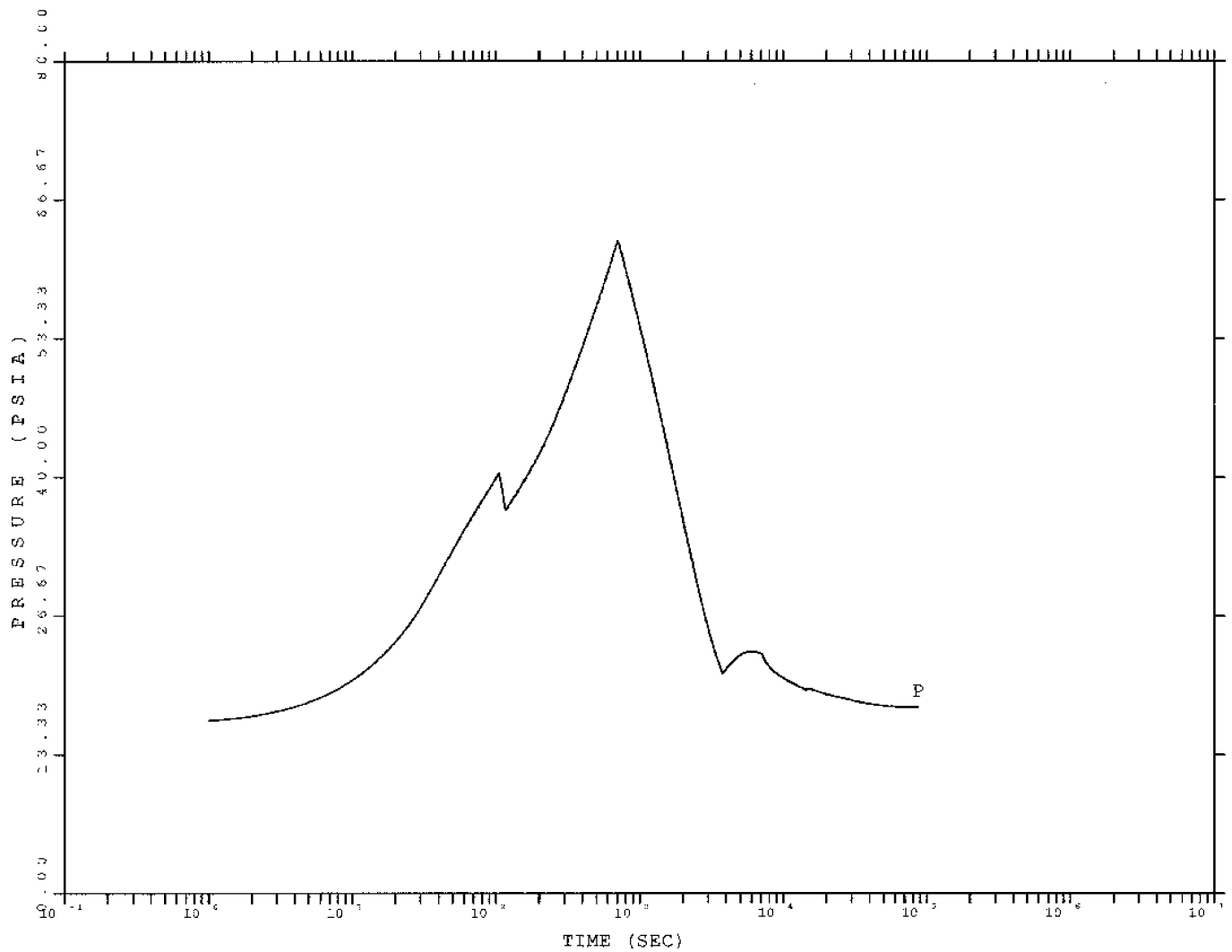
Amendment 102

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT ATMOSPHERE
PRESSURE TRANSIENT
UNIT 2 - MSLB

FIGURE 6.2.1-15

CONTEMPT-1A/008 1 TU ELECTRIC/RYE MODE (INTEGRATED CT, BCU, COA, & SCL SYSTEMS) - CONTROL, VER 80063A
CONTEMPT-LT/028_TU CP1&2 MSLB, 30% POWER-0.942 FT*2 SPLIT-NO MSIV



Amendment 102

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT ATMOSPHERE
TEMPERATURE TRANSIENT
UNIT 2 - MSLB

FIGURE 6.2.1-16

CPSSES/FSAR
FIGURE 6.2.1-16A

THIS FIGURE HAS BEEN DELETED

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FIGURE 6.2.1-17

93 |

HAS BEEN DELETED

CPSSES/FSAR
FIGURE 6.2.1-18

THIS FIGURE HAS BEEN DELETED

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CPSES/FSAR
FIGURE 6.2.1-19

THIS FIGURE HAS BEEN DELETED

| 69

CPSES/FSAR

FIGURE 6.2.1-20
THIS FIGURE HAS BEEN DELETED

CPSSES/FSAR

FIGURE 6.2.1-21

HAS BEEN DELETED

78

CPSES/FSAR

FIGURE 6.2.1-22

HAS BEEN DELETED

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CPSES/FSAR

FIGURE 6.2.1-23

HAS BEEN DELETED

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CPSES/FSAR

FIGURE 6.2.1-24
HAS BEEN DELETED

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CPSES/FSAR

FIGURE 6.2.1-25
HAS BEEN DELETED

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CPSES/FSAR

FIGURE 6.2.1-26
HAS BEEN DELETED

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CPSES/FSAR

FIGURE 6.2.1-27
HAS BEEN DELETED

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CPSES/FSAR

FIGURE 6.2.1-28
HAS BEEN DELETED

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CPSES/FSAR

FIGURE 6.2.1-29
HAS BEEN DELETED

78

CPSES/FSAR

FIGURE 6.2.1-30
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-31
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-32
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-33
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-34
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-35
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-36
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-37
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-38
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-39
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-40
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-41
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-42
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-43
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-44
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-45
THIS FIGURE HAS BEEN DELETED

This figure was deleted
in Amendment 6

AMENDMENT 10
MARCH 31, 1980

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

FIGURE 6.2.1-46

This figure was deleted
in Amendment 6

AMENDMENT 10
MARCH 31, 1980

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

FIGURE 6.2.1-47

This figure was deleted
in Amendment 6

AMENDMENT 10
MARCH 31, 1980

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

FIGURE 6.2.1-48

CPSES/FSAR

FIGURE 6.2.1-49
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-50
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-51
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-52
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-53

HAS BEEN DELETED

78

CPSES/FSAR

FIGURE 6.2.1-54
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-55
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-56
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-57

HAS BEEN DELETED

78

CPSES/FSAR

FIGURE 6.2.1-58
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-59
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-60
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-61
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-62
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-63
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-64
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-65
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-66
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-67
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

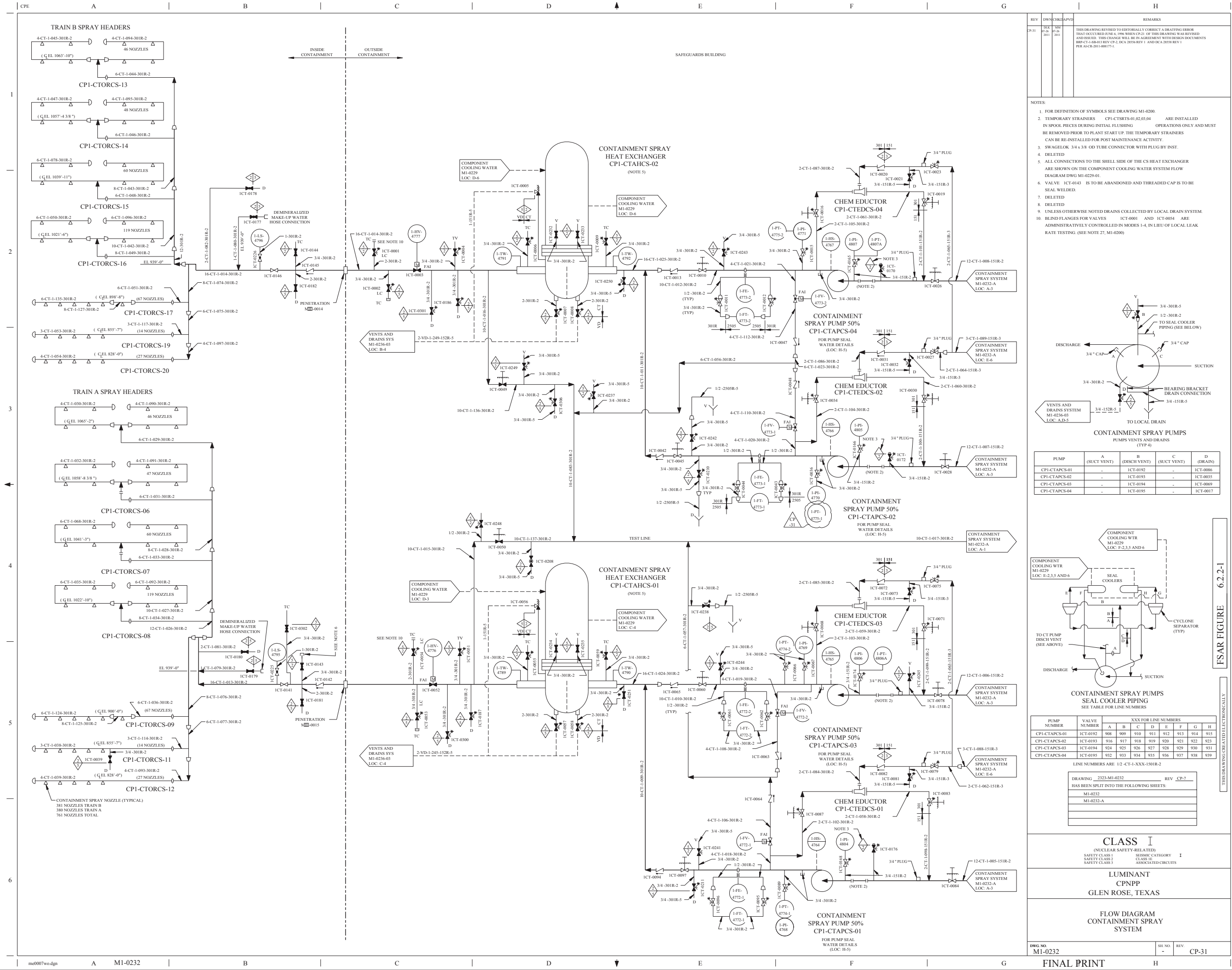
FIGURE 6.2.1-68
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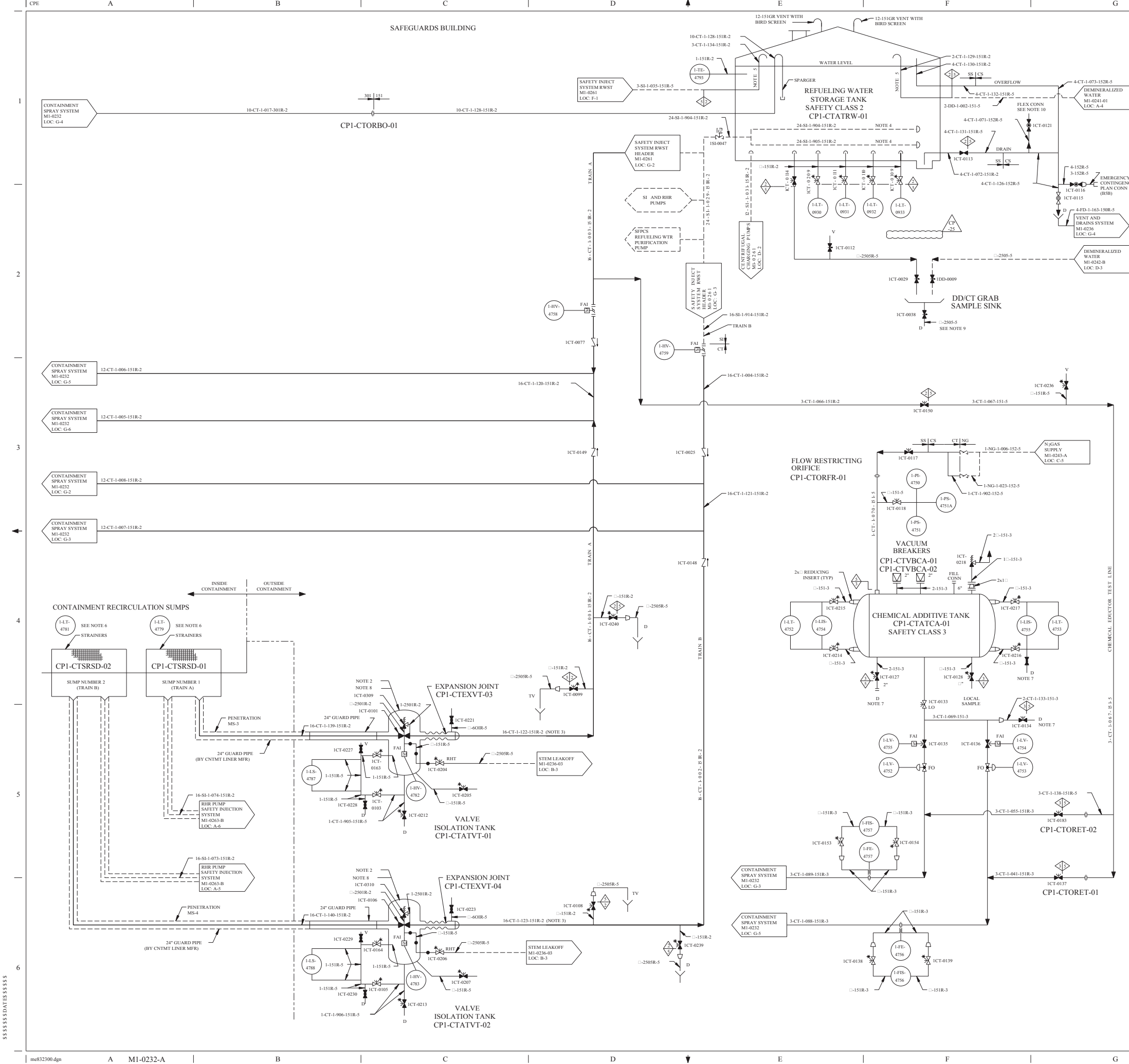
CPSES/FSAR

FIGURE 6.2.1-69
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-70
THIS FIGURE HAS BEEN DELETED





REV	DWN	CHKD	APVD	REMARKS
29-21	IKK	204		THIS DRAWING REVISED TO INCORPORATE ALCR-204-01102-1 TO EDITORIALY REMOVE FLOATING LINE NUMBER (EXTRA) CT-1-126 (LOC. F-2)

NOTES:

- FOR DEFINITION OF SYMBOLS SEE DWG MI-0200.
- VALVE ISOLATION TANK, EXPANSION JOINT, GUARD PIPE, VENT, DRAIN, VALVE STEM LEAK-OFF PIPING AND RELATED VALVES WERE FABRICATED, TESTED AND INSTALLED TO ANSI SAFETY CLASS 2, ASME CODE CLASS 2 REQUIREMENTS. THESE COMPONENTS AND PIPING HAVE BEEN RECLASSIFIED IN THEIR CURRENT APPLICATION TO NON-NUCLEAR SAFETY (NNS) SEISMIC CATEGORY II (FOR STRUCTURAL INTEGRITY AND ENHANCED LEAK DETECTION). THE ASME CODE CLASSIFICATION NEED NOT BE MAINTAINED AND THEREFORE, WORK NEED NOT BE PERFORMED TO ASME XI REQUIREMENTS.
- PIPING TO BE 16" SCH 120 OR 140 SEAMLESS SA 376, TP 304 OR TP 316. FITTINGS TO BE 16" SCH 120 SEAMLESS SA 403, TP 304 OR TP 316.
- ANTI-VORTEX PIPE.
- LINE TO TERMINATE ABOVE MAXIMUM WATER LEVEL.
- WALL MOUNTED LEVEL TRANSMITTER ASSEMBLIES.
- FLUID COLLECTED FROM DRAINS AND VENTS OFF THE CHEMICAL ADDITIVE TANK SHALL BE DISPOSED OF IN AN APPROPRIATE MANNER BY CHEMISTRY.
- VALVE ISOLATION TANK MANWAYS PROVIDE AN OPEN VENT PATH THRU THE OPEN MANWAY.
- SAMPLE SINK DRAIN COLLECTED IN A CONTAINER AND TRANSPORTED TO A DRAIN CAPABLE OF ACCEPTING RADIOACTIVE FLUIDS.
- FLEX CONNECTION - MAY BE A PIPE CAP OR STORZ FITTING.

DRAWING 2323-MI-0232		REV	CP-7
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
MI-0232			
MI-0232-A			

CLASS I (NUCLEAR SAFETY-RELATED)		SEISMIC CATEGORY	I
SAFETY CLASS 1		CLASS IIC	
SAFETY CLASS 2		ASSOCIATED CIRCUITS	
SAFETY CLASS 3			

LUMINANT
CPNPP
GLEN ROSE, TEXAS

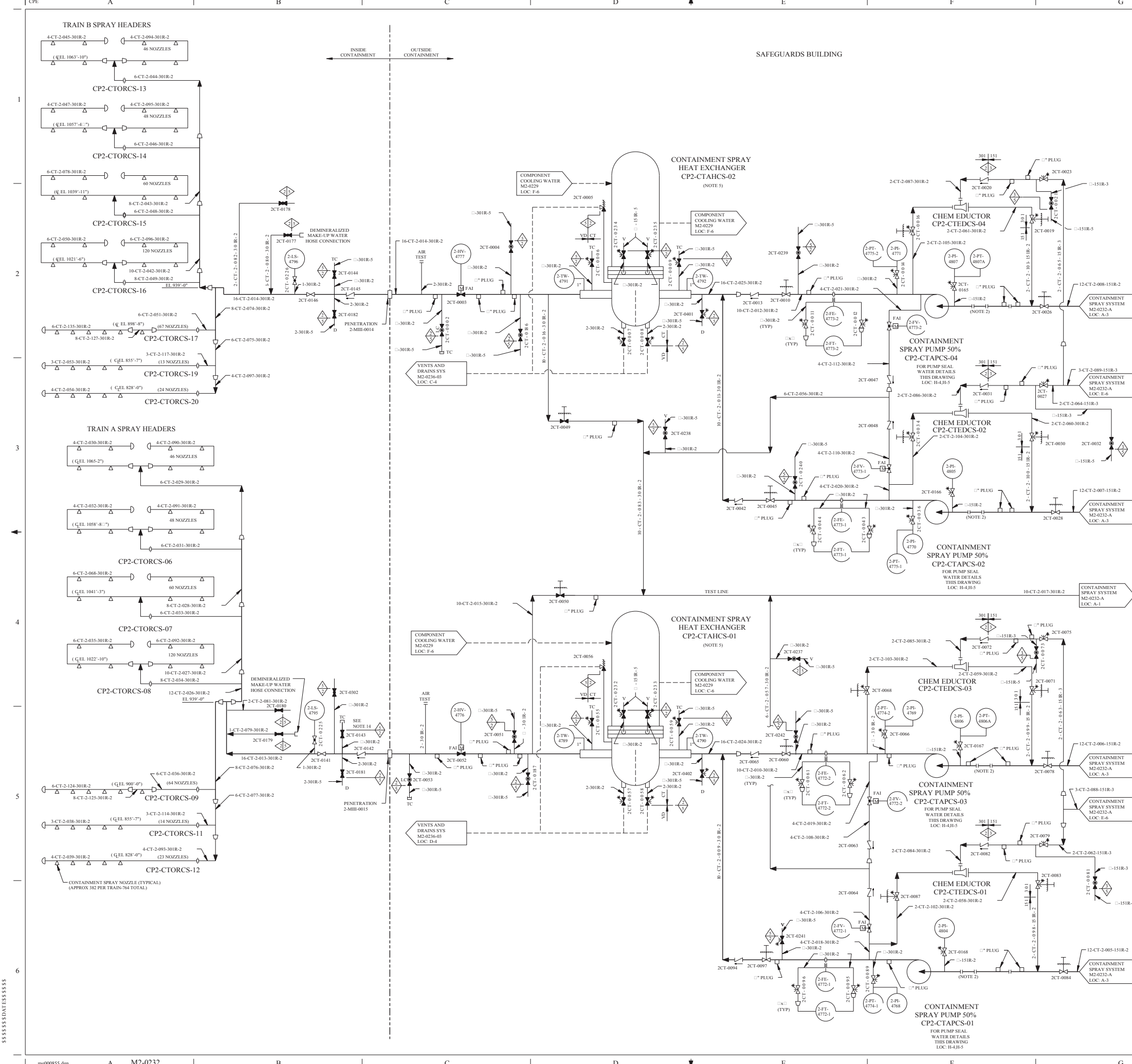
FLOW DIAGRAM
CONTAINMENT SPRAY
SYSTEM

DWG. NO.	SH. NO.	REV.
MI-0232	A	CP-25

\$\$\$\$\$SDATES\$\$\$\$\$

FSAR FIGURE 6.2.2-1

THIS DRAWING CREATED ELECTRONICALLY



REV

DWN

CHK

APPV

REMARKS

CP-22

SEA

06/21

2012

THIS DRAWING REVISED TO EDITORIALY CORRECT A DRAFTING ERROR THAT OCCURRED AUGUST 10, 2015 WHEN CP-18 OF THIS DRAWING WAS REVISED AND ISSUED PER ACR-3012-001409-1.

NOTES:

1.

FOR DEFINITION OF SYMBOLS SEE DWG M1-0200.

2.

TEMPORARY STRAINER (CP2-CTSRIS-01/02/03/04) AND THE SPOOL PIECE ARE INSTALLED DURING INITIAL FLUSHING OPERATIONS ONLY AND THE STRAINER MUST BE REMOVED PRIOR TO PLANT START UP. THE TEMPORARY STRAINERS CAN BE RE-INSTALLED FOR POST MAINTENANCE ACTIVITY.

3.

DELETED

4.

DELETED

5.

ALL CONNECTIONS TO THE SHELL SIDE OF THE CS HEAT EXCHANGER ARE SHOWN ON THE COMPONENT COOLING WATER SYSTEM FLOW DIAGRAM DWG M2-0229-01.

6.

DELETED

7.

DELETED

8.

DELETED

9.

DELETED

10.

UNLESS OTHERWISE NOTED DRAINS COLLECTED BY LOCAL DRAIN SYSTEM.

11.

DELETED

12.

DELETED

13.

DELETED

14.

VALVE 2CT-0143 IS TO BE ABANDONED AND THREADED CAP IS TO BE SEAL WELDED.

15.

DELETED

DISCHARGE

TO SEAL COOLER PIPING (SEE BELOW)

SUCTION

BEARING BRACKET DRAIN CONNECTION

VENTS AND DRAINS SYS M2-0236-03 LOC: C-4

CONTAINMENT SPRAY PUMPS, VENTS AND DRAINS

PUMP	A (SUCTION VENT)	B (DISCHARGE)	C (SUCTION VENT)	D (CASING DRAIN)
CP2-CTAPCS-01	-	2CT-0192	-	2CT-0086
CP2-CTAPCS-02	-	2CT-0193	-	2CT-0035
CP2-CTAPCS-03	-	2CT-0194	-	2CT-0069
CP2-CTAPCS-04	-	2CT-0195	-	2CT-0017

COMPONENT COOLING WTR M2-0229 LOC: D-4, E-4

SEAL COOLERS

CP-222

COMPONENT COOLING WTR M2-0229 LOC: D-4, E-4

CYCLONE SEPARATOR (TYP)

TO CT PUMP DISCH VENT (SEE ABOVE)

DISCHARGE

SUCTION

CONTAINMENT SPRAY PUMPS SEAL COOLER PIPING SEE TABLE FOR LINE NUMBERS

PUMP NUMBER	VALVE NUMBER	XXX FOR LINE NUMBERS	A	B	C	D	E	F	G	H
CP2-CTAPCS-01	2CT-0192	905	906	907	908	909	910	911	912	
CP2-CTAPCS-02	2CT-0193	913	914	915	916	917	918	919	920	
CP2-CTAPCS-03	2CT-0194	921	922	923	924	925	926	927	928	
CP2-CTAPCS-04	2CT-0195	929	930	931	932	933	934	935	936	

LINE NUMBERS ARE CT-2-XXX-1501R-2

DRAWING 2232-M2-0232
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

M2-0232
M2-0232-A

REV CP-3

CLASS I
(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1 SEISMIC CATEGORY I
SAFETY CLASS 2 CLASS IIE
SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT
CPNPP
GLEN ROSE, TEXAS

FLOW DIAGRAM
CONTAINMENT SPRAY
SYSTEM

DWG NO: M2-0232

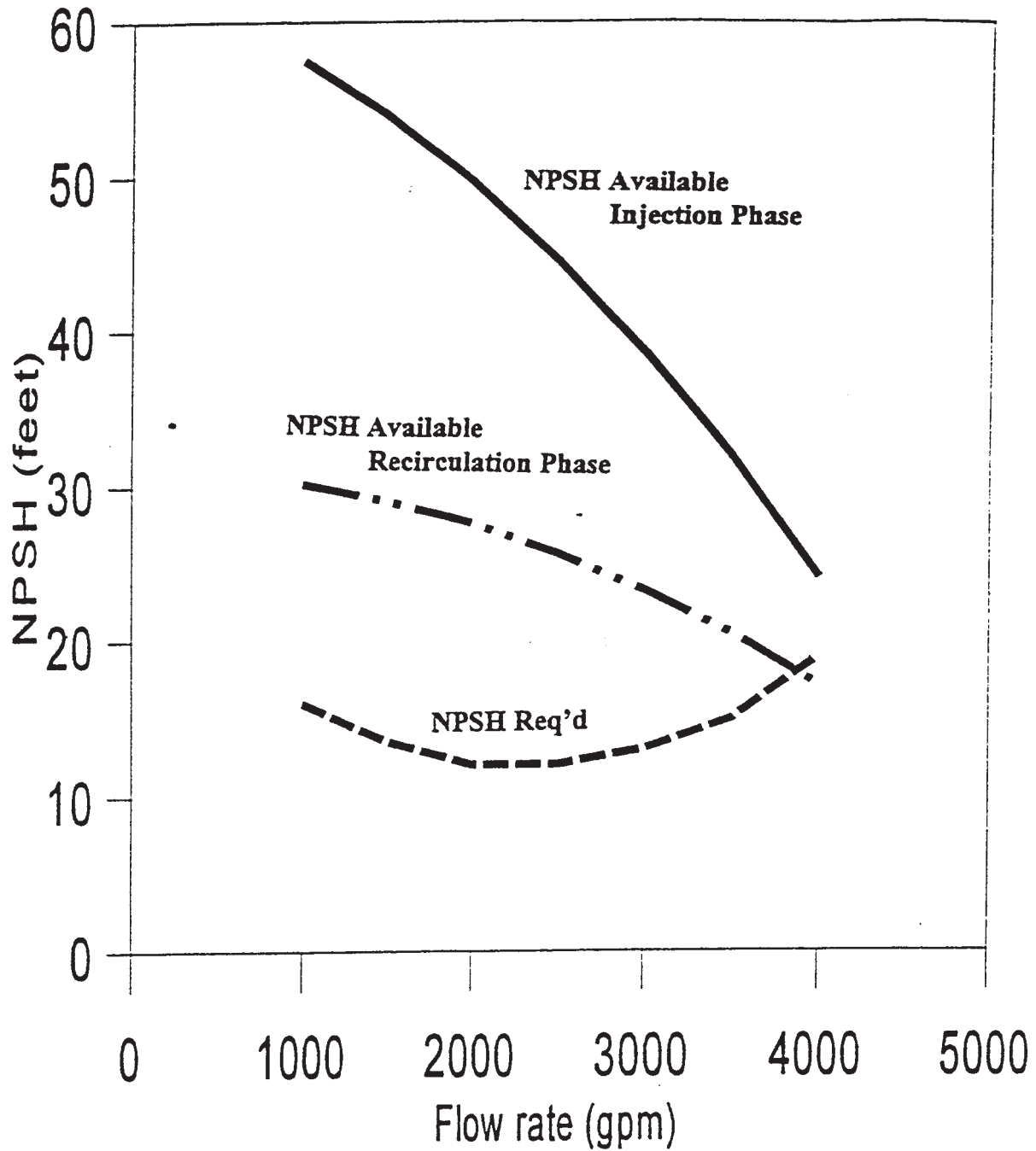
SH NO: -

REV: CP-22

< FINAL PRINT >

FSAR FIGURE 6.2.2-1

THIS DRAWING CREATED ELECTRONICALLY



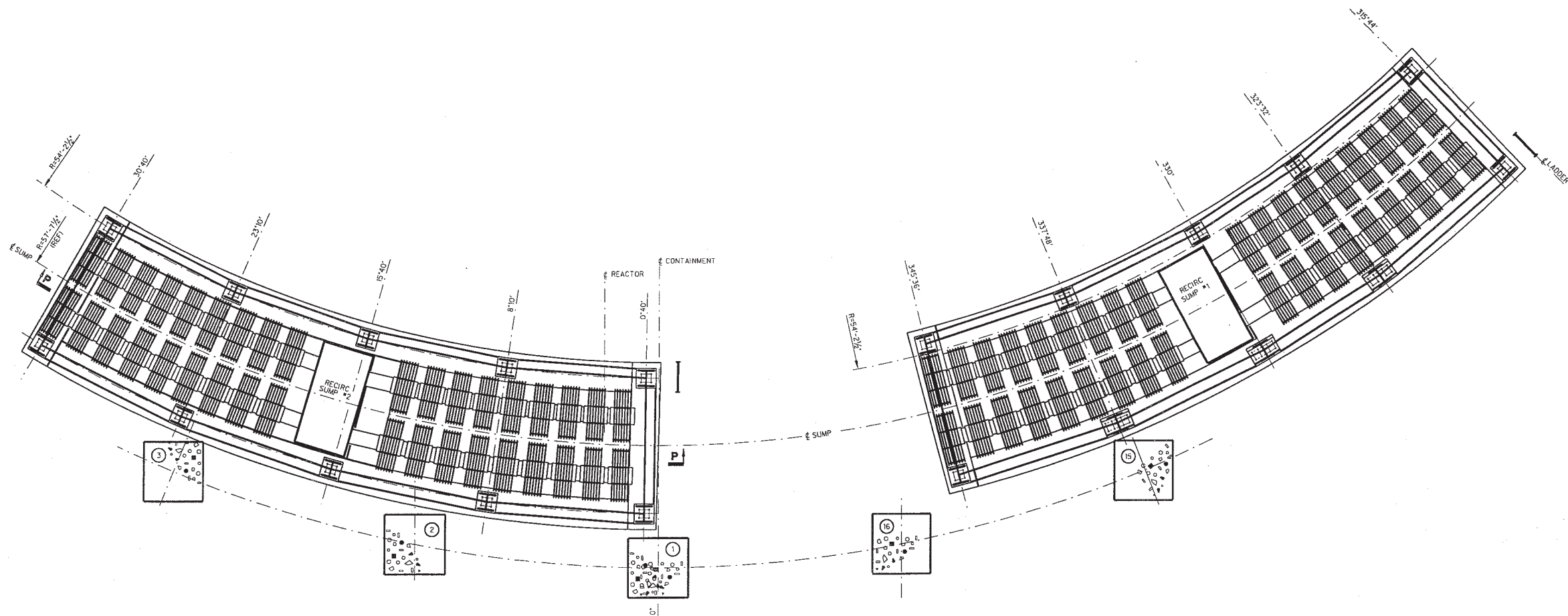
Amendment 96
August 2, 1999

COMANCHE PEAK S.E.S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT SPRAY PUMPS
AVAILABLE NPSH

FIGURE 6.2.2-2 SHEET 1

NORTH



PARTIAL PLAN REACTOR BLDG AT ELEV 808'-0"

MAX FLOOR LEVEL-ELEV 816.83' (REF)

ELEV 814.25' (REF)

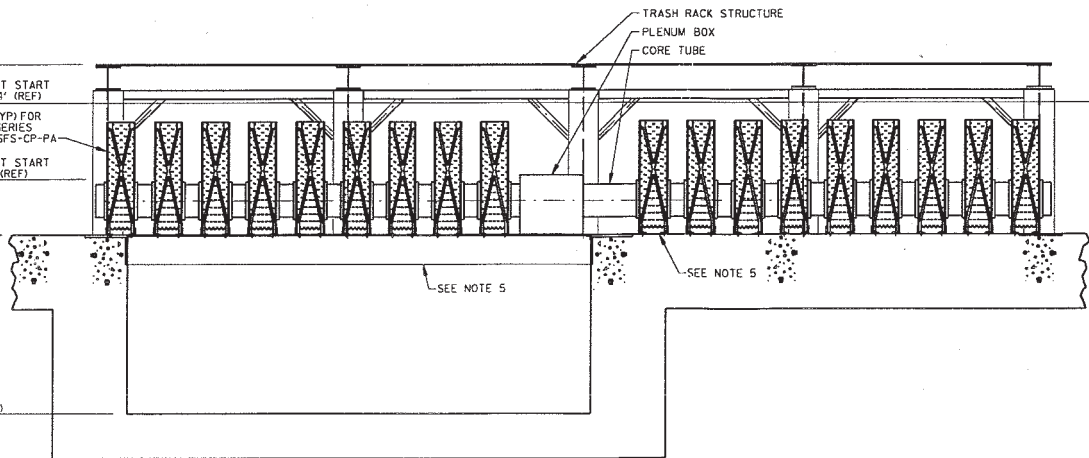
MIN SUMP WATER LEVEL AT START OF CSS RECIRC ELEV 812.4' (REF)

SURE-FLOW STRAINER (TYP) FOR LOCATION SEE VENDOR SERIES DRAWING SFS-CP-GA & SFS-CP-PA

MIN SUMP WATER LEVEL AT START OF RHR RECIRC ELEV 810' (REF)

FLOOR ELEV 808' (REF)

PIT FLOOR ELEV 802' (REF)



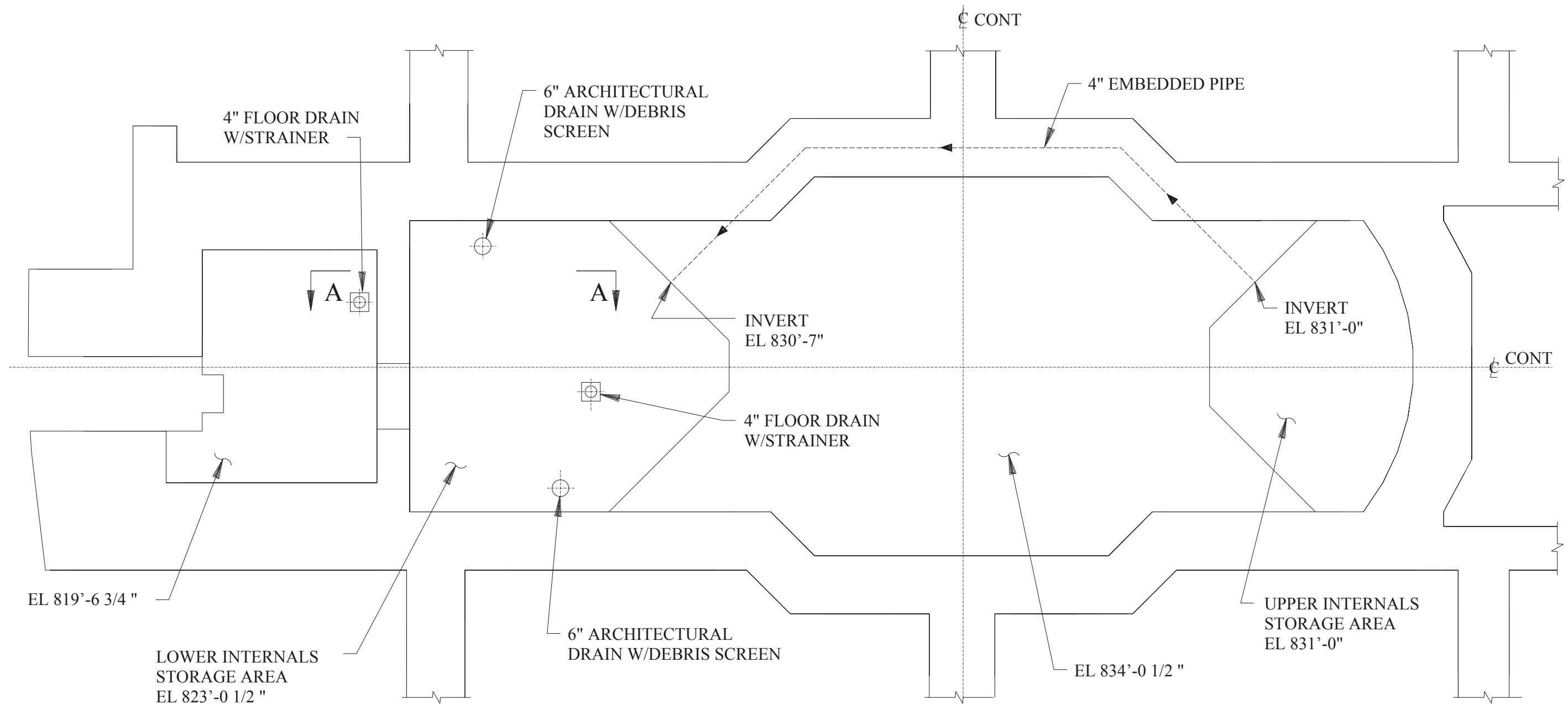
ELEVATION VIEW SECT P-P

NOTES:

1. UNIT 1 AS SHOWN.
2. UNIT 2 IS MIRROR IMAGE.
3. WORK THIS FIGURE WITH FIGURE 6.2.2-3, ARRANGEMENT OF SUMP PIPING AND VALVE ISOLATION TANK.
4. THIS FIGURE SUPERSEDES/DELETES THE FOLLOWING ON FIGURE 6.2.2-3:
 - CALLOUT FOR FINE AND COARSE SCREENS.
 - LADDER FROM MANHOLE TO THE FLOOR ELEV 808'.
 - LADDER FROM FLOOR ELEV 808' TO THE SUMP PIT AT ELEV 802'.
5. MODULAR SUMP STRAINERS ARE SUPPORTED ON THE CONCRETE ON ONE SIDE OF PLENUM BOX AND SUPPORTED BY THE COVER PLATE ON THE SUMP PIT.

Amendment 101b

COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
ARRANGEMENT OF RECIRC SUMP 1 & 2 MODULAR SURE-FLOW STRAINER
FIGURE 6.2.2-3A



NOTE:
FOR ELEVATION SEE FIG 6.2.2-5

Amendment 101b

COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2	
REACTOR CAVITY DRAIN SYSTEM PLAN	
FIGURE	6.2.2-4

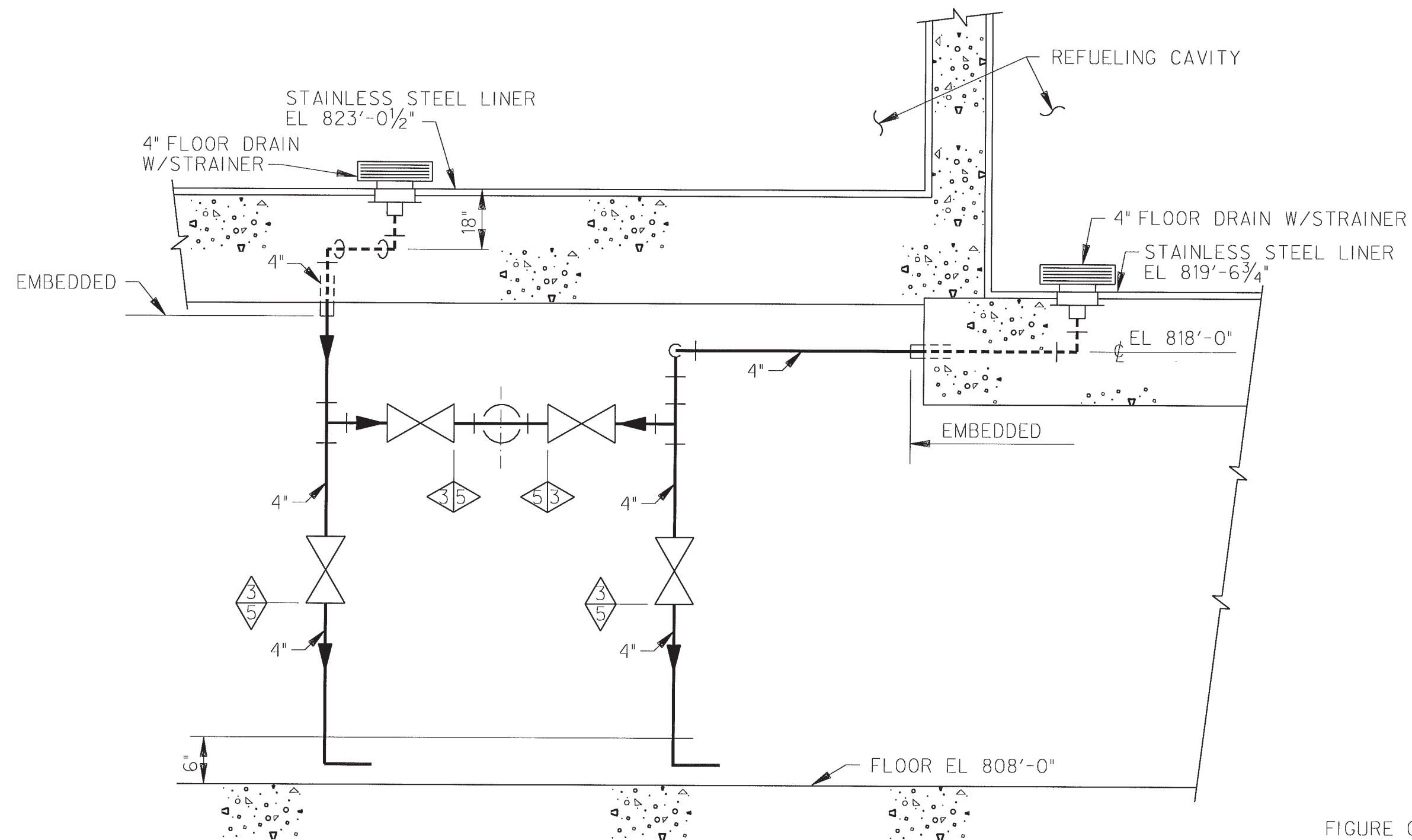


FIGURE GENERATED FOR FSAR ONLY

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

REACTOR CAVITY DRAIN
SYSTEM ELEVATION

FIGURE 6.2.2-5

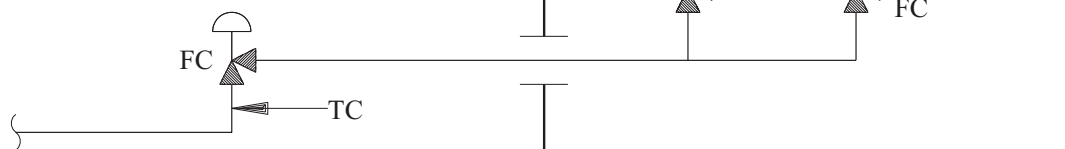
Amendment 101b

FIG622500

\$\$\$\$\$DATE\$\$\$\$\$

THIS DRAWING CREATED ELECTRONICALLY

OUTSIDE CONTAINMENT

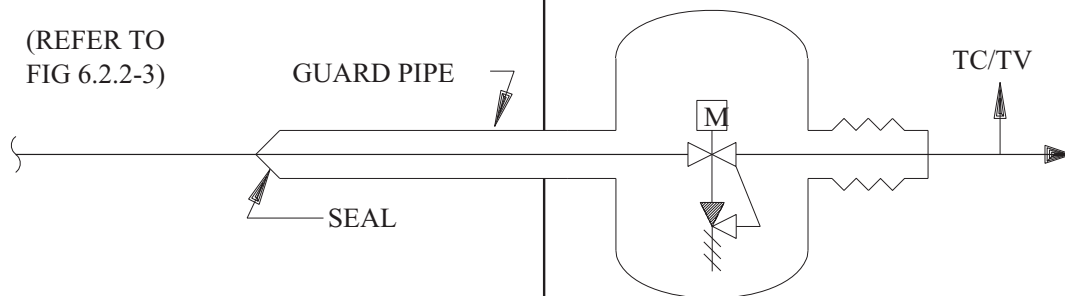


(REFER TO
FIG 6.2.2-3)

GUARD PIPE

- SEAL

TC/TV



TC

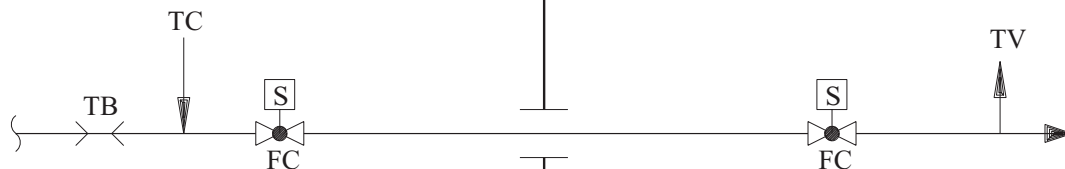
TB

FC

TV

5

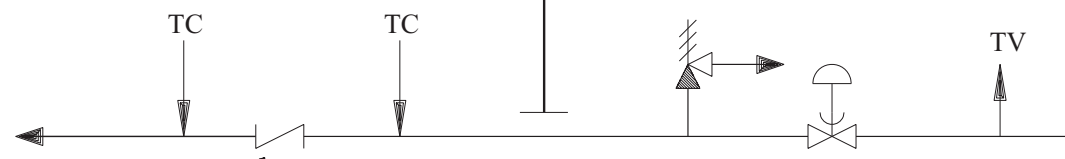
F



TC

TC

TV



CONTAINMENT WALL

NOTES

TB-TEST BARRIER

TC-TEST CONNECTION

TV-TEST VENT

FC-FAIL CLOSE

S -SOLENOID

M -MOTOR

LC-LOCKED CLOSED

Amendment 87

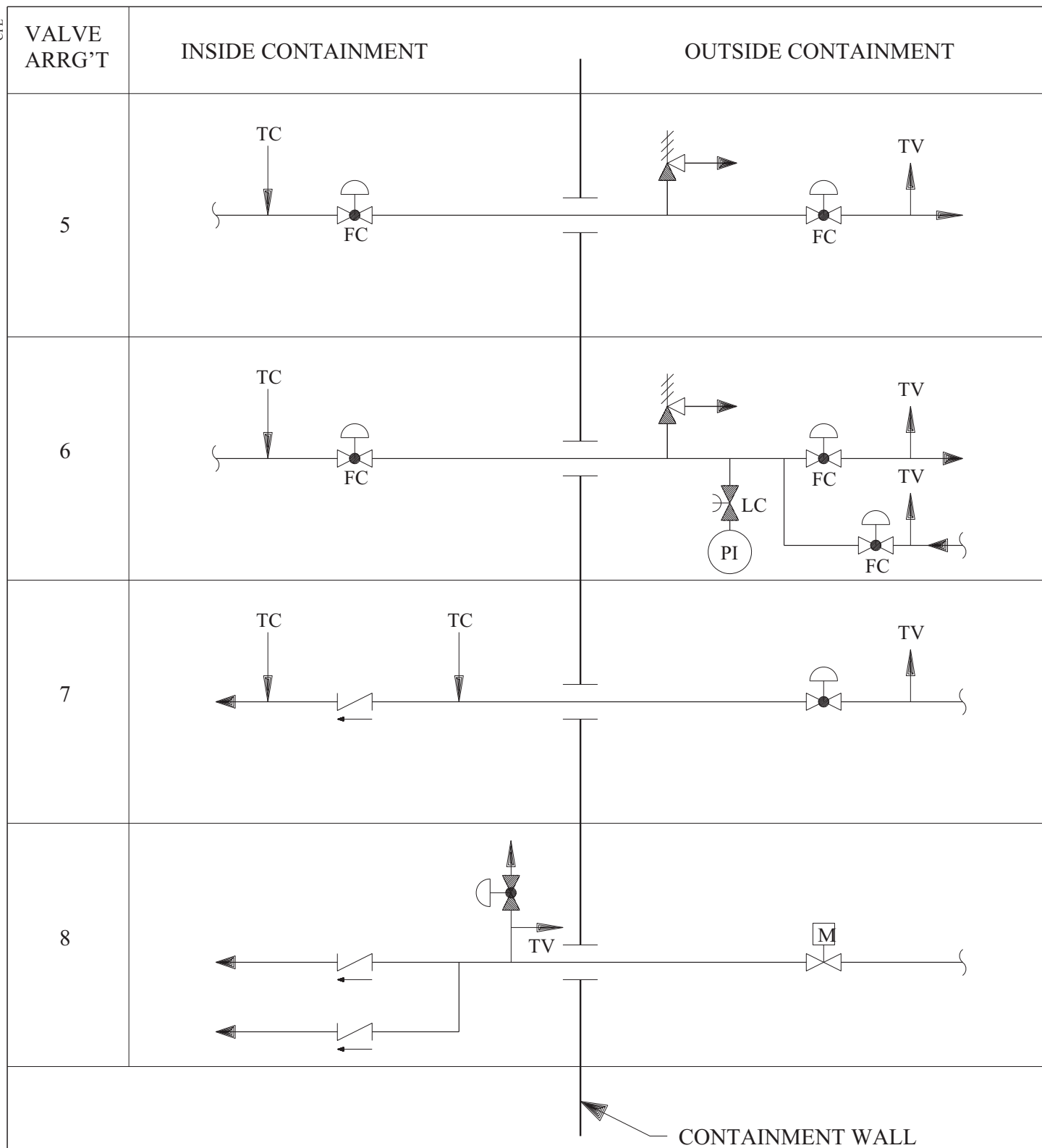
December 18, 1992

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT ISOLATION
VALVING

FIGURE 6.2.4-1 SH 1 OF 12

10-12-01



CONTAINMENT WALL

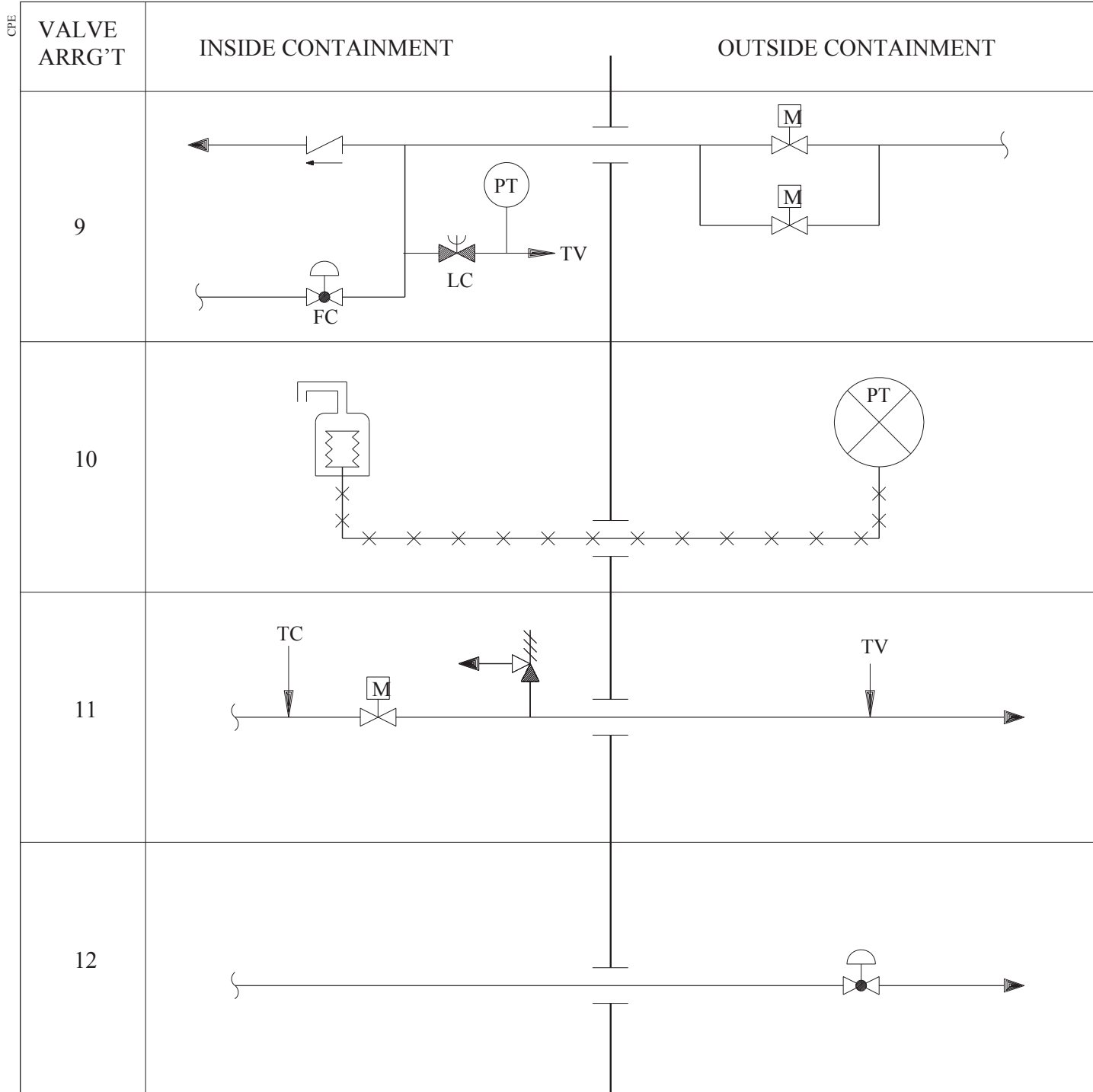
Amendment 83
December 13, 1991

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT ISOLATION
VALVING

FIGURE 6.2.4-1 SH 2 OF 12

10-12-01



CONTAINMENT
WALL

Amendment No. 103a

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT ISOLATION
VALVING

FIGURE 6.2.4-1 SH 3 OF 12

07-27-10

ve00034c.dgn

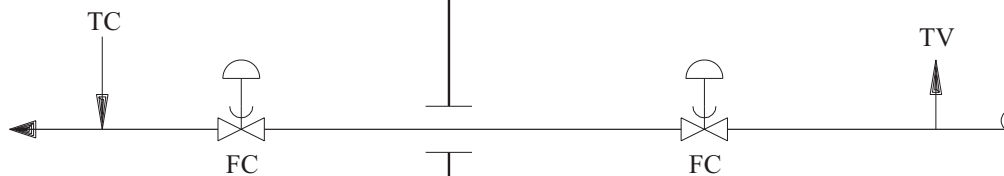
CPE

VALVE
ARRG'T

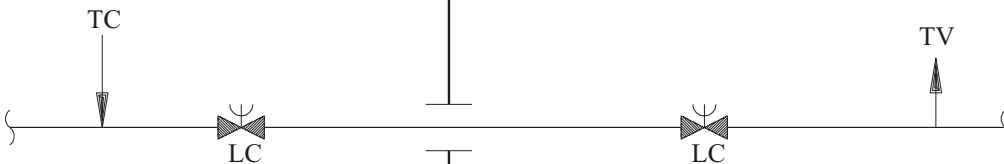
INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

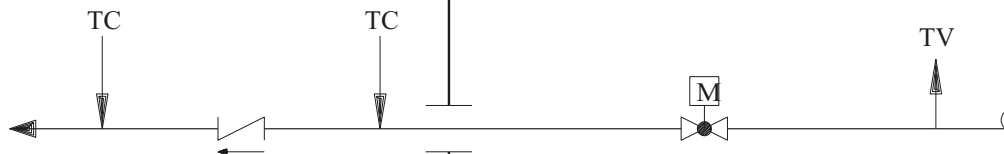
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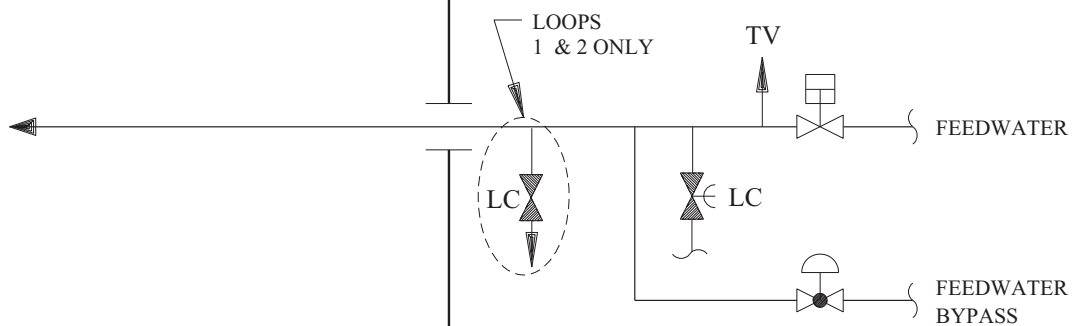
14



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16



CONTAINMENT WALL

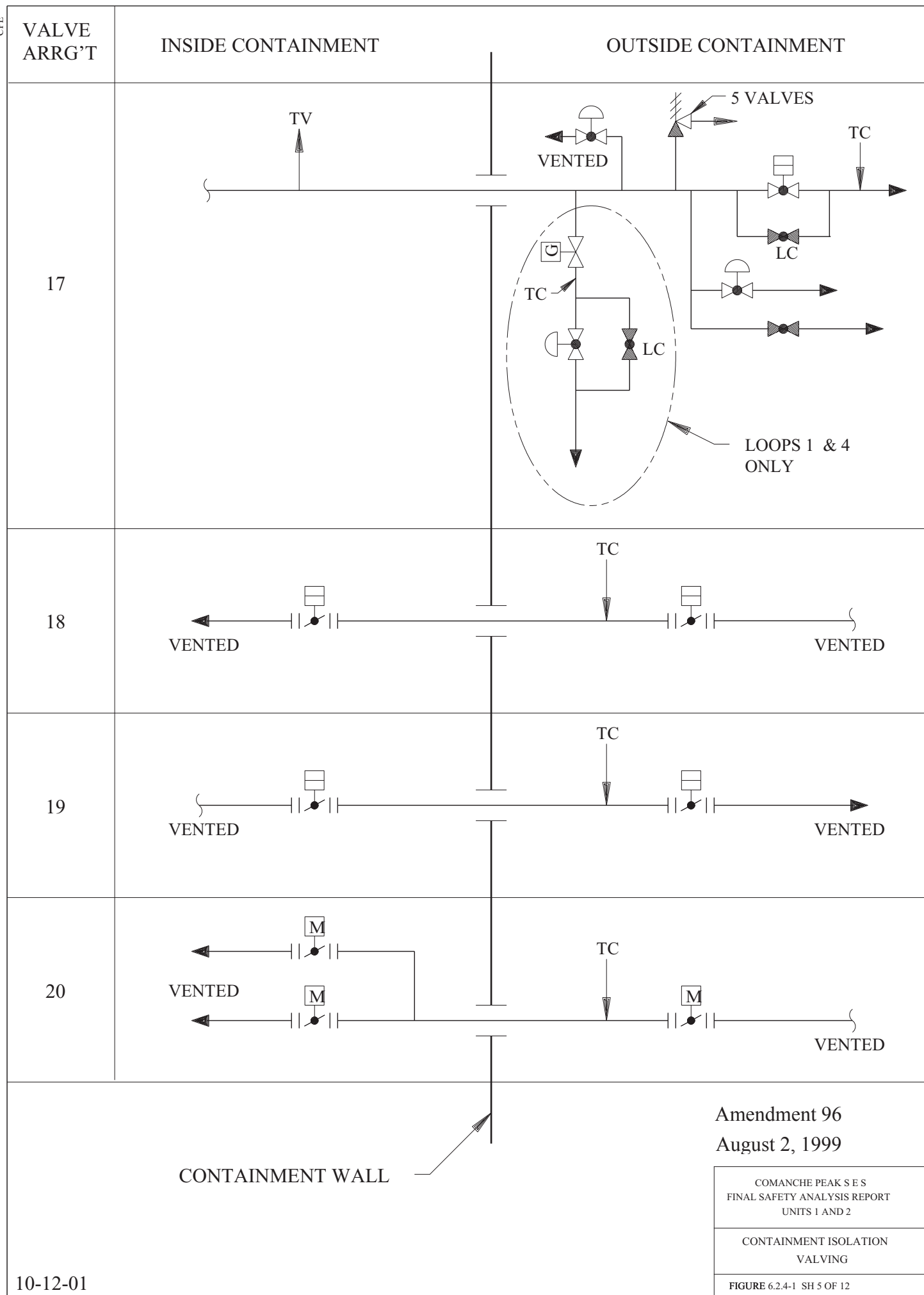
Amendment 99

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2CONTAINMENT ISOLATION
VALVING

FIGURE 6.2.4-1 SH 4 OF 12

01-27-04

ve00034d.dgn



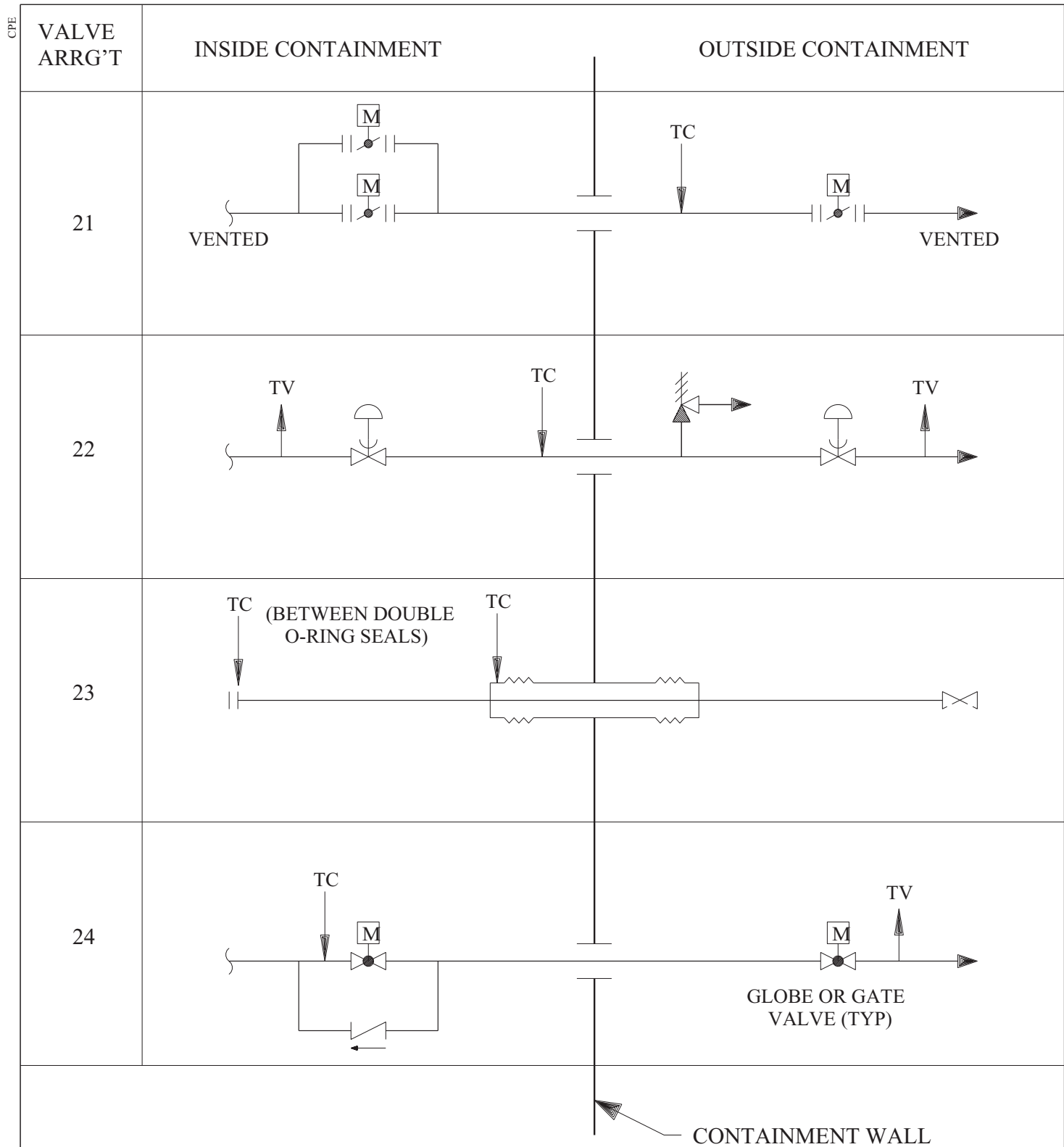
Amendment 96
August 2, 1999

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT ISOLATION
VALVING

FIGURE 6.2.4-1 SH 5 OF 12

10-12-01



Amendment 66
January 15, 1988

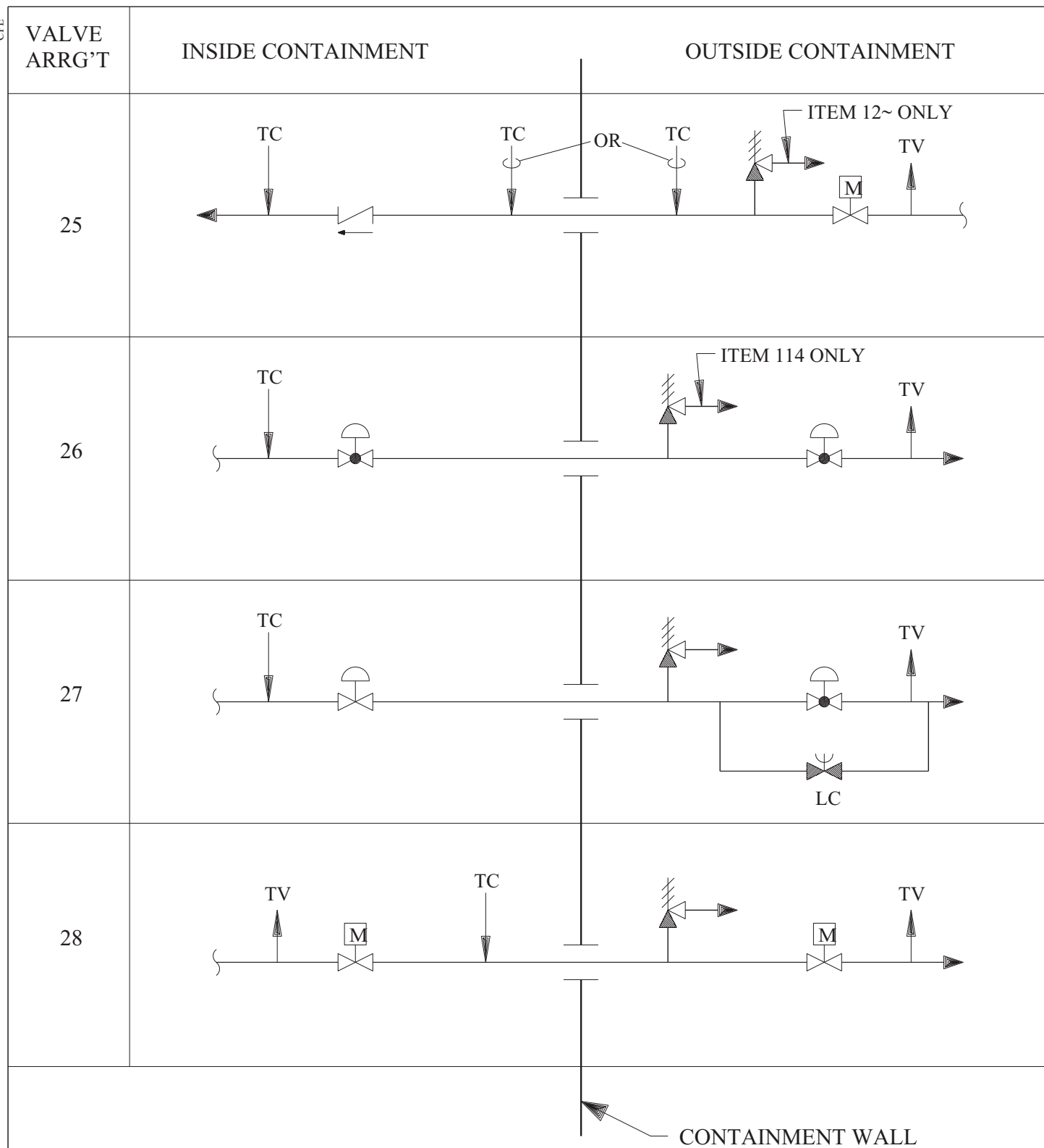
COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT ISOLATION
VALVING

FIGURE 6.2.4-1 SH 6 OF 12

10-12-01

ve00034f.dgn



Amendment 66
January 15, 1988

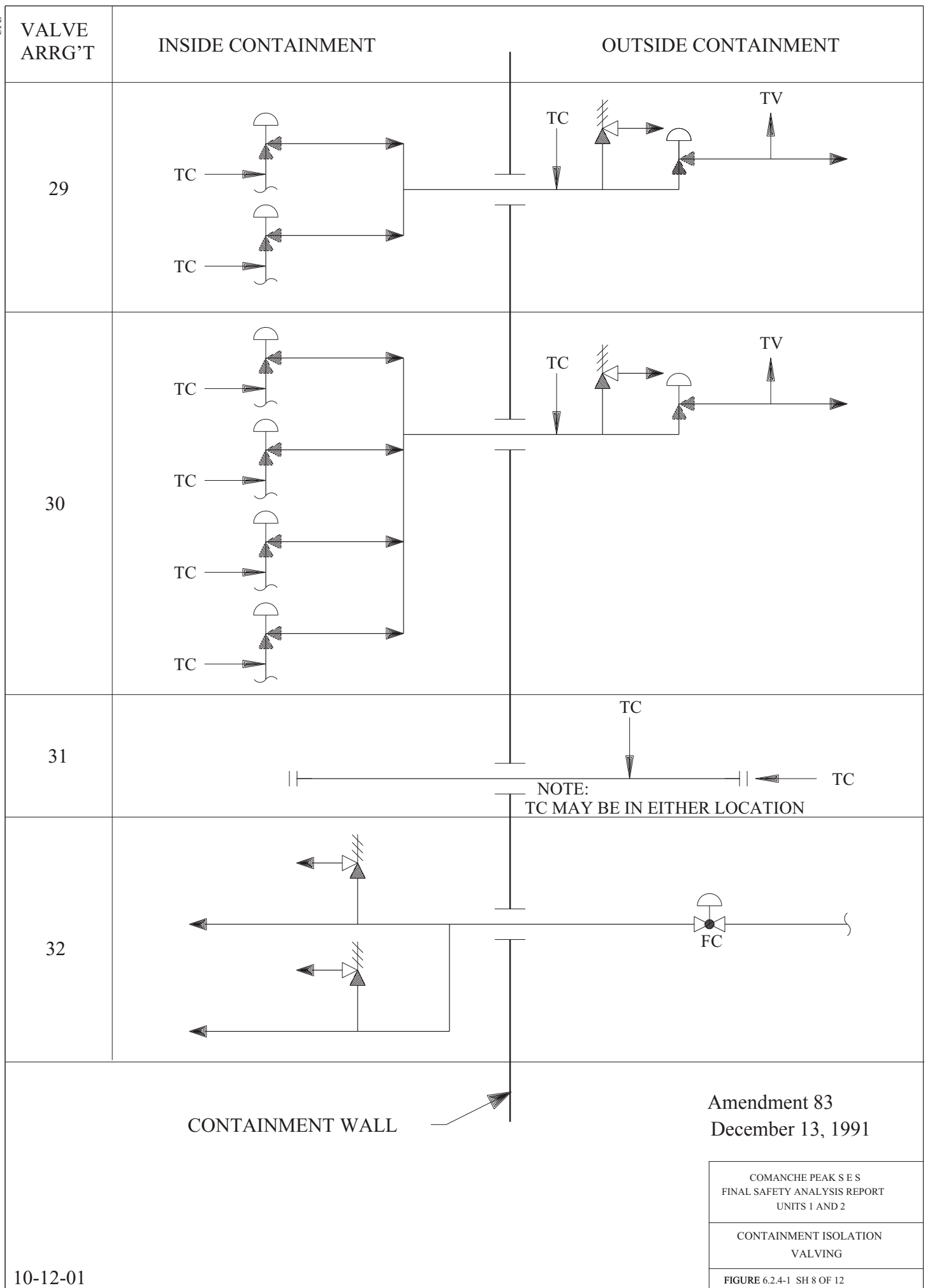
COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT ISOLATION
VALVING

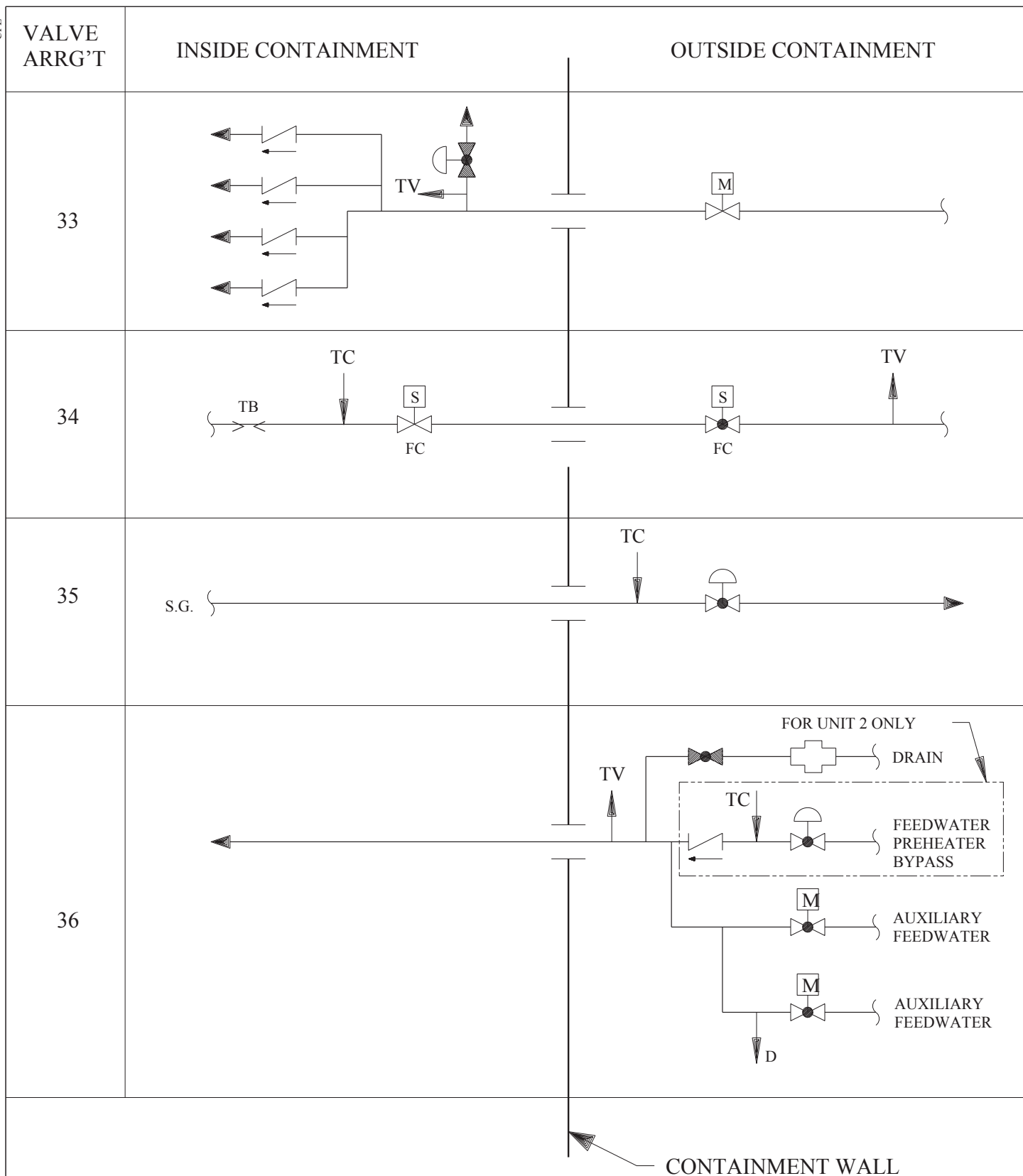
FIGURE 6.2.4-1 SH 7 OF 12

10-12-01

ve00034g.dgn



10-12-01



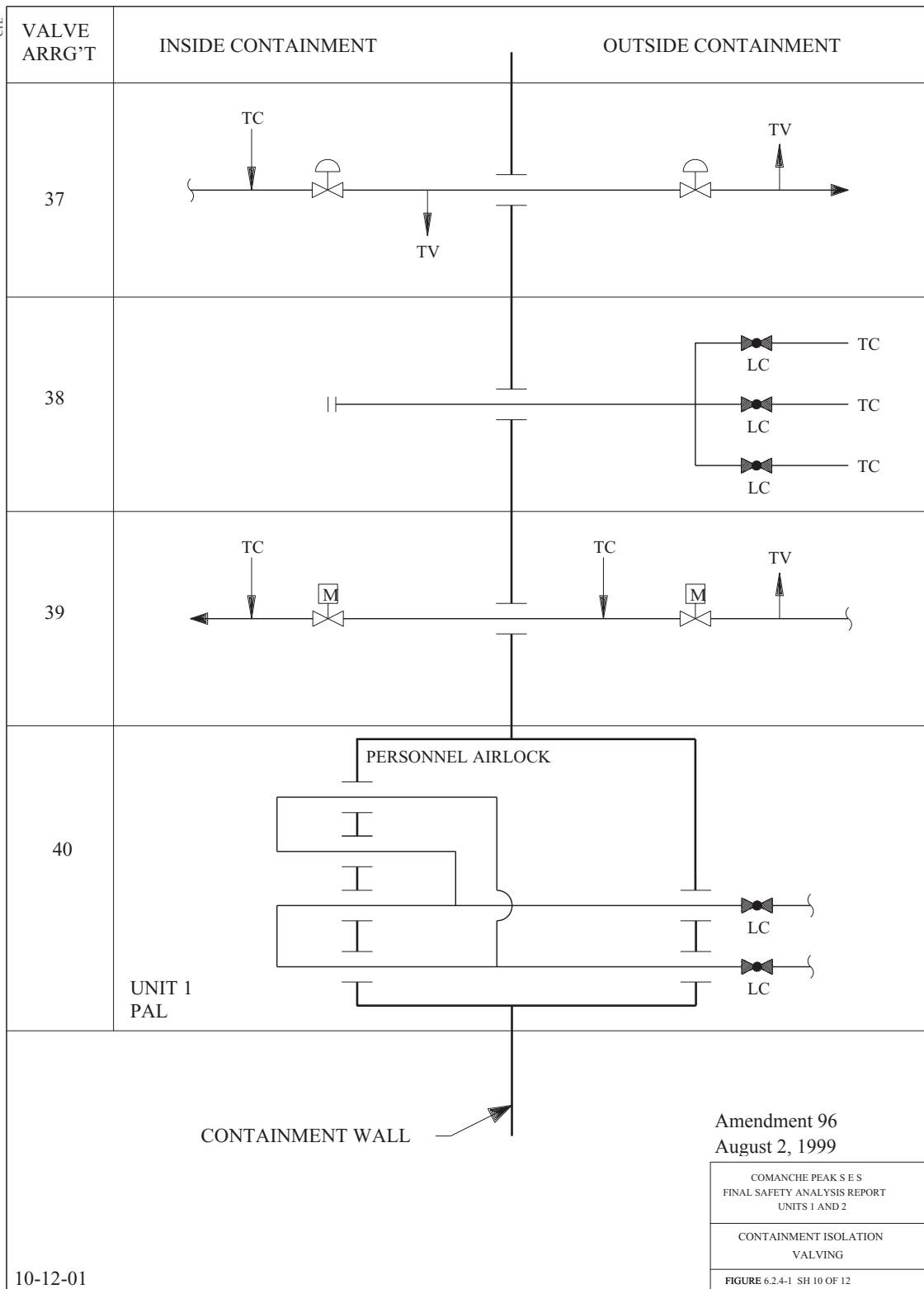
Amendment 101b

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

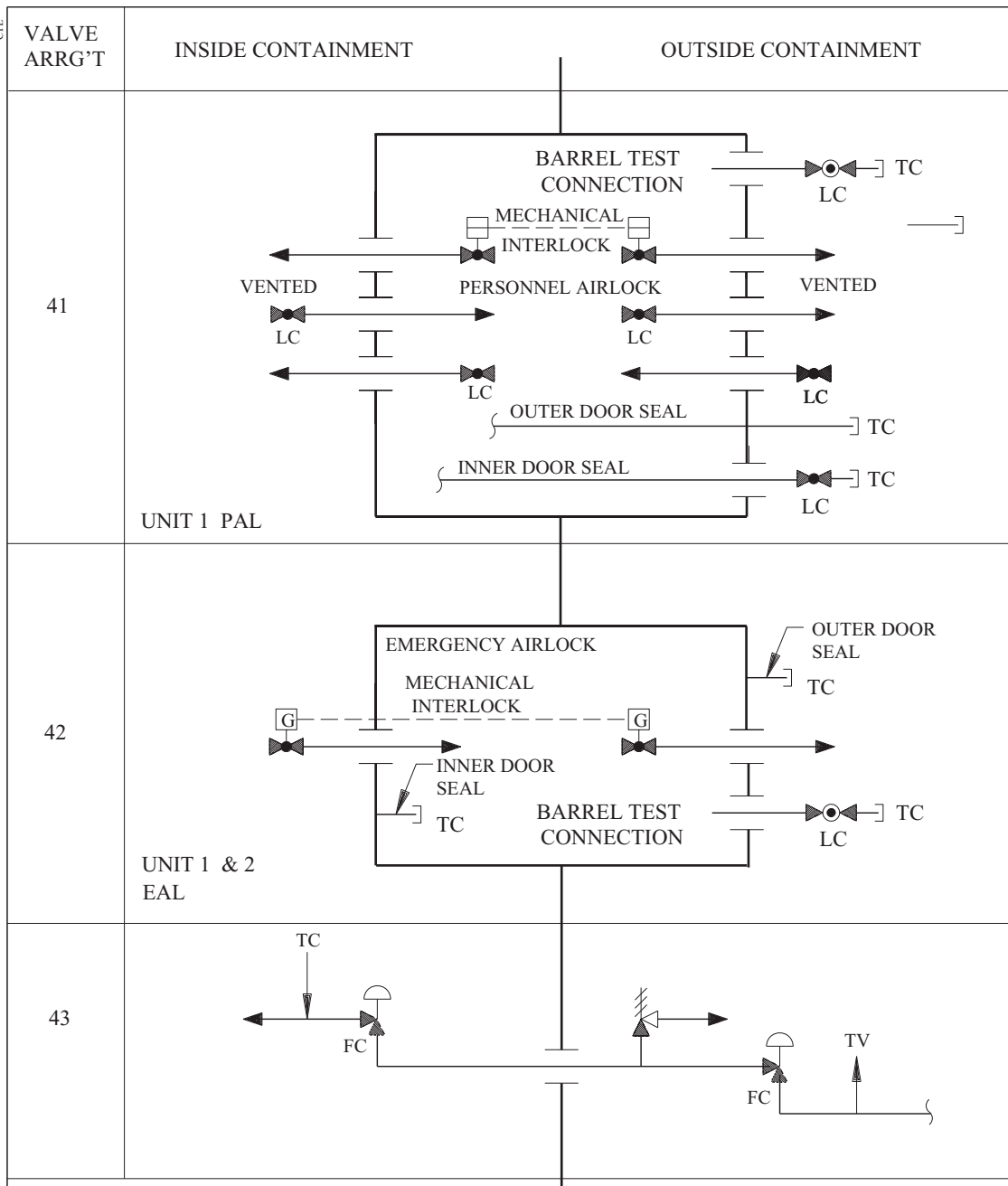
CONTAINMENT ISOLATION
VALVING

FIGURE 6.2.4-1 SH 9 OF 12

08-03-07



10-12-01



Amendment 96
August 2, 1999

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT ISOLATION
VALVING

FIGURE 6.2.4-1 SH 11 OF 12

10-12-01

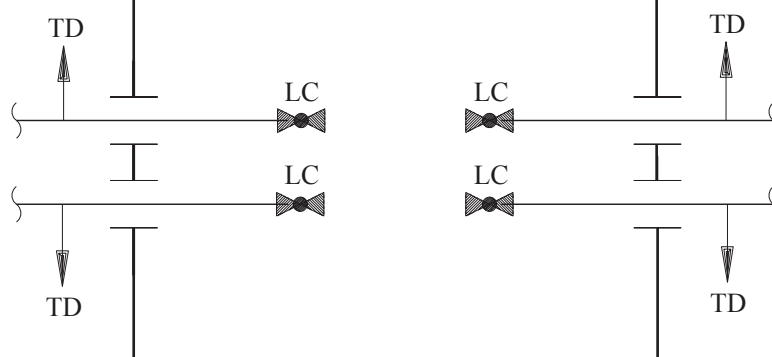
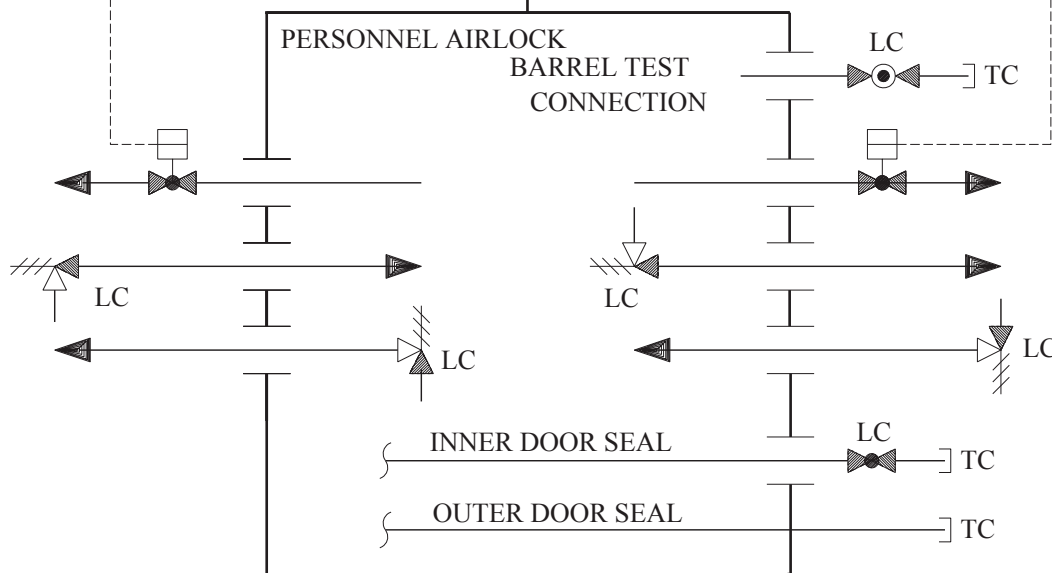
ve00034k.dgn

VALVE
ARRG'T

INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

44

UNIT 2
PALAmendment 96
August 2, 1999(ELECTRICAL
INTERLOCK)(ELECTRICAL
INTERLOCK)PERSONNEL AIRLOCK
BARREL TEST
CONNECTIONUNIT 2
PAL

46

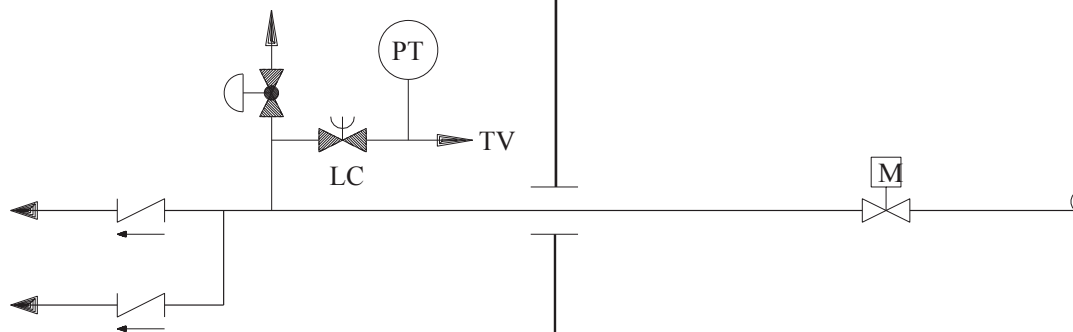
CONTAINMENT
WALLCOMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2CONTAINMENT ISOLATION
VALVING

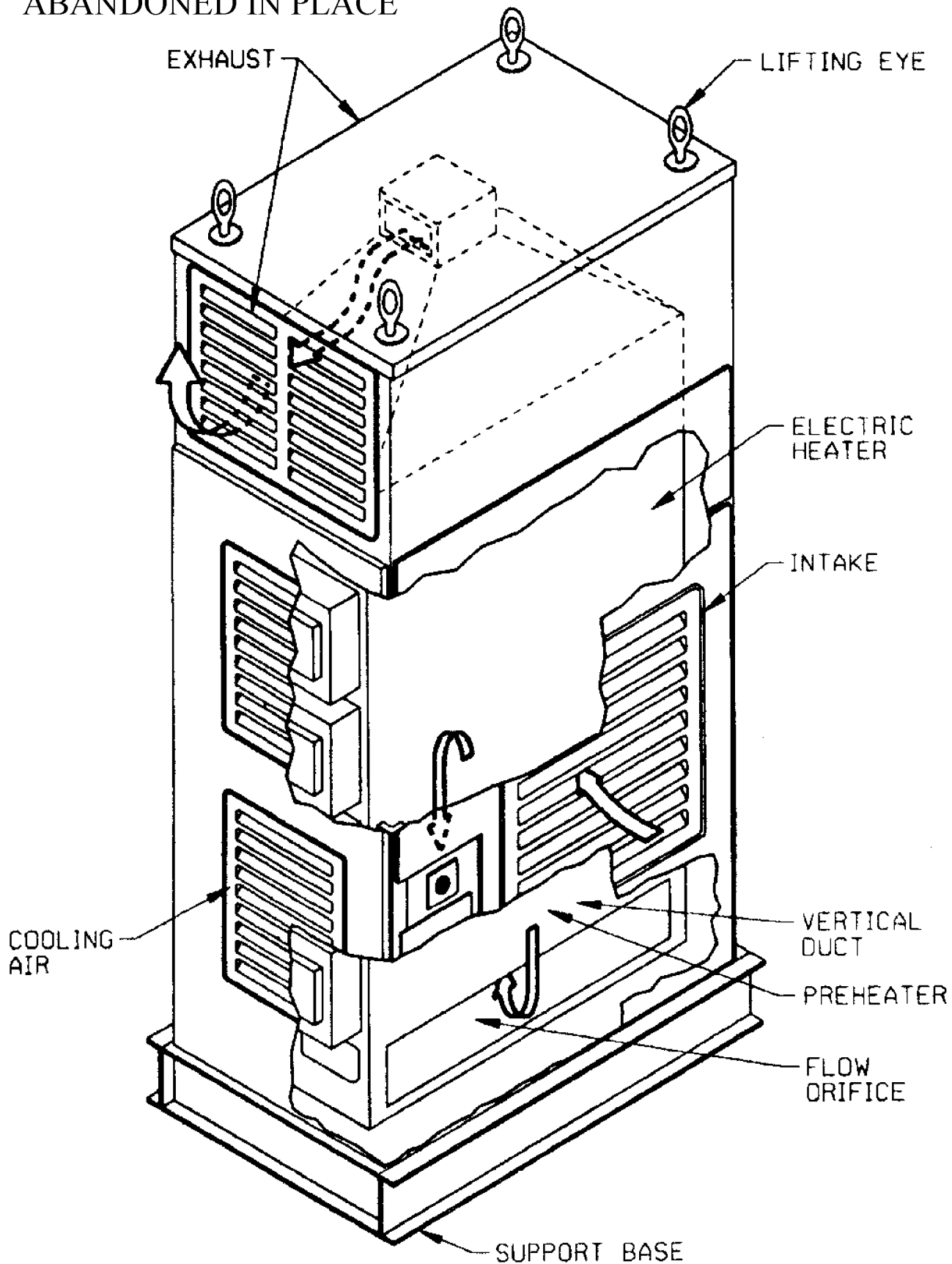
FIGURE 6.2.4-1 SH 12 OF 12

Amendment No. 103a

07-27-10

ve000341.dgn

ABANDONED IN PLACE



COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

ELECTRIC HYDROGEN
RECOMBINER

FIGURE 6.2.5-1

Amendment 101b

CPSES / FSAR
FIGURE 6.2.5-2

DELETED

FIGURE 6.2.5-3
HAS BEEN DELETED

CPSES / FSAR
FIGURE 6.2.5A-1

DELETED

CPSES / FSAR
FIGURE 6.2.5A-2

DELETED

CPSES / FSAR
FIGURE 6.2.5A-3

DELETED

FIGURE 6.2.5A-4
HAS BEEN DELETED

CPSES / FSAR
FIGURE 6.2.5A-5

DELETED

FIGURE 6.2.5A-6
HAS BEEN DELETED

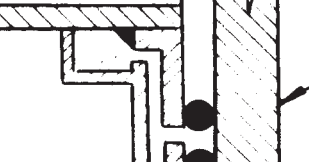
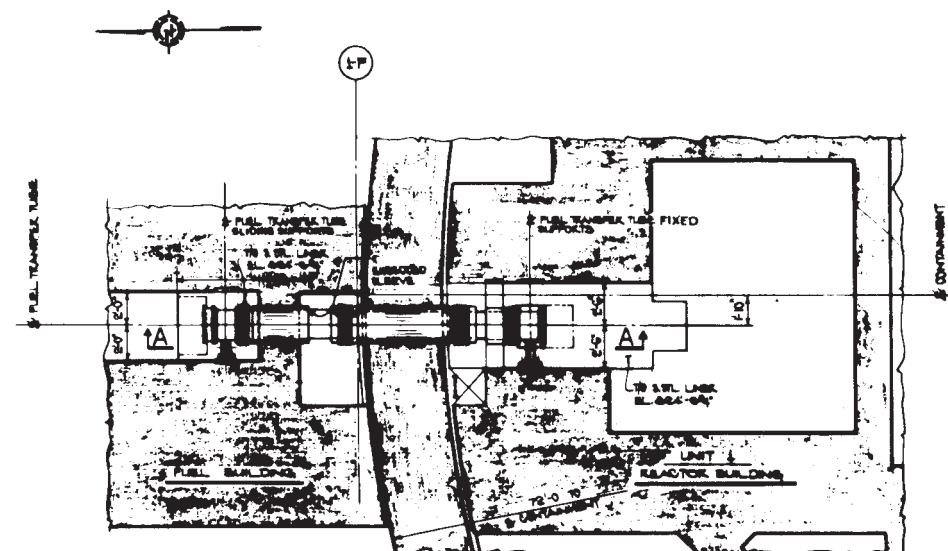
CPSES / FSAR
FIGURE 6.2.5A-7

DELETED

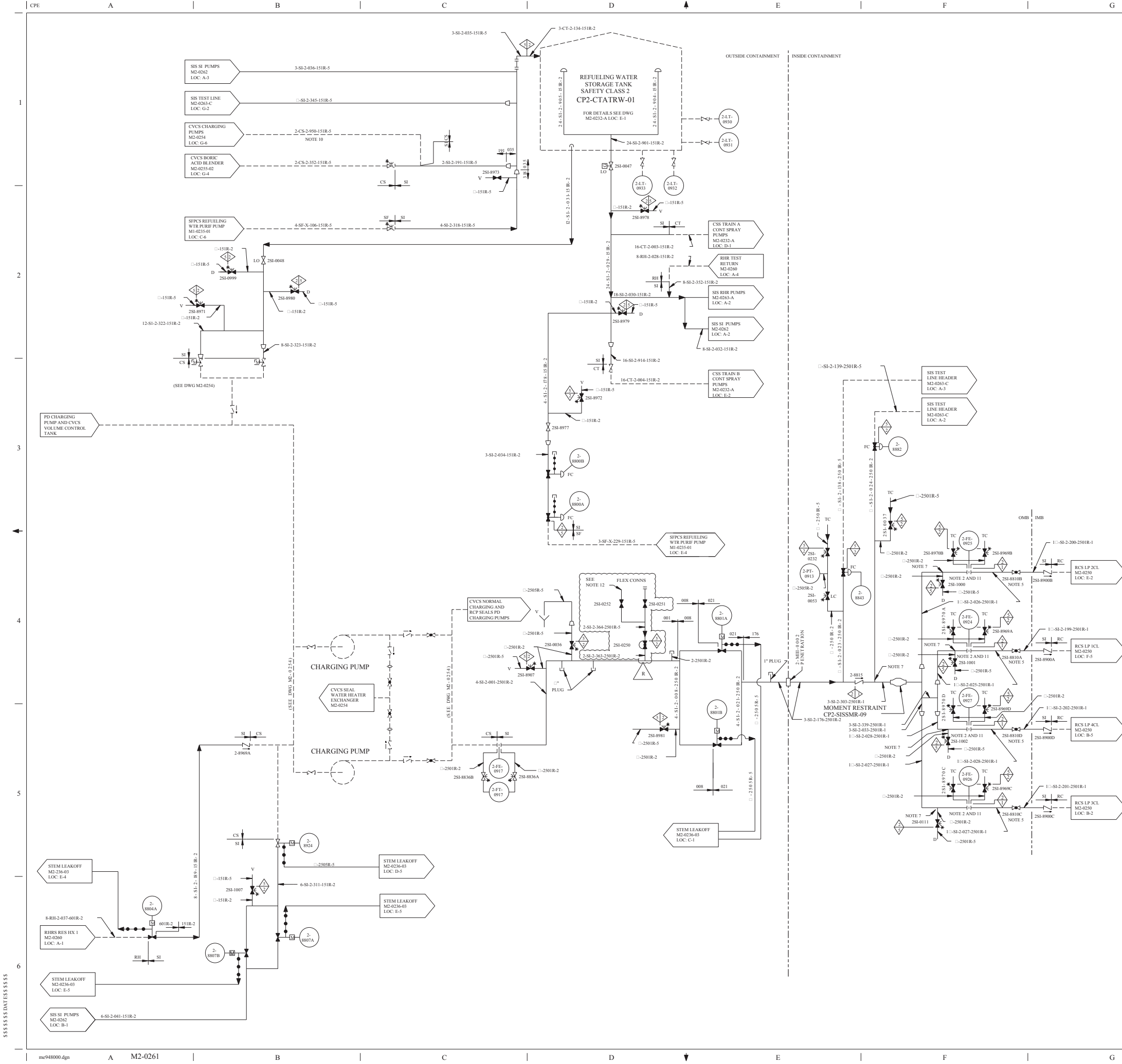
FIGURE 6.2.5A-8
HAS BEEN DELETED

CPSES / FSAR
FIGURE 6.2.5A-9

DELETED



REF. DWG. 2323-SI-0562 REV. 3



REV				DWN		CHKD	APVD	REMARKS	
CP-16	01.15	01.15	01.15	01.15	01.15	01.15	01.15	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA 2011-000000-00-00 PER SR-0002-11-000000-00-00	
NOTES:									
1. DELETED									
2. FLANGES FOR FLOW METERING ORIFICE TO VERIFY FLOW DURING PRE-OPERATIONAL TESTING.									
3. SEE DRAWING M1-0200 FOR MECHANICAL SYMBOLS AND NOTES.									
4. DELETED									
5. ADJUST AND LOCK VALVES TO LIMIT PUMP RUNOUT.									
6. DELETED									
7. 1" ID FLOW RESTRICTOR PROVIDED PER NOTE 15 ON MECHANICAL SYMBOLS AND NOTES, SEE DRAWING M1-0200.									
8. DELETED									
9. UNLESS OTHERWISE NOTED ALL DRAINS COLLECTED BY LOCAL FLOOR DRAIN SYSTEM.									
10. PIPING FROM THE OUTLET OF THE RELIEF VALVES TO THE RWST SHALL BE SUPPORTED SUCH THAT RELIEF VALVE FLOW CAN BE MAINTAINED FOLLOWING A SAFE SHUTDOWN EARTHQUAKE.									
11. PROVIDE 1" (MAX) ID FLOW RESTRICTOR.									
12. FLEX CONNECTION - MAY BE A PIPE CAP OR STORZ CONNECTION.									
<div><div></div><div>R</div></div>									
REFERENCE NOTE:									
THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM WESTINGHOUSE DRAWING 113800 (SH 1) REV 9 WITH EXCEPTION AS FOLLOWS:									
a. VALVE AND LINE NUMBERS HAVE BEEN ADDED.									
b. CONTROL LOOPS HAVE BEEN DELETED EXCEPT FOR THE PRIMARY AND THE FINAL ELEMENTS. THE DETAILS OF THE CONTROL LOOPS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAM.									
CLASS I (NUCLEAR SAFETY-RELATED) SAFETY CLASS 1 SAFETY CLASS 2 SAFETY CLASS 3									
LUMINANT CPNPP GLEN ROSE, TEXAS									
FLOW DIAGRAM SAFETY INJECTION SYSTEM SHEET 1 OF 6									
DWG NO. M2-0261				SH NO. -		REV. CP-16			

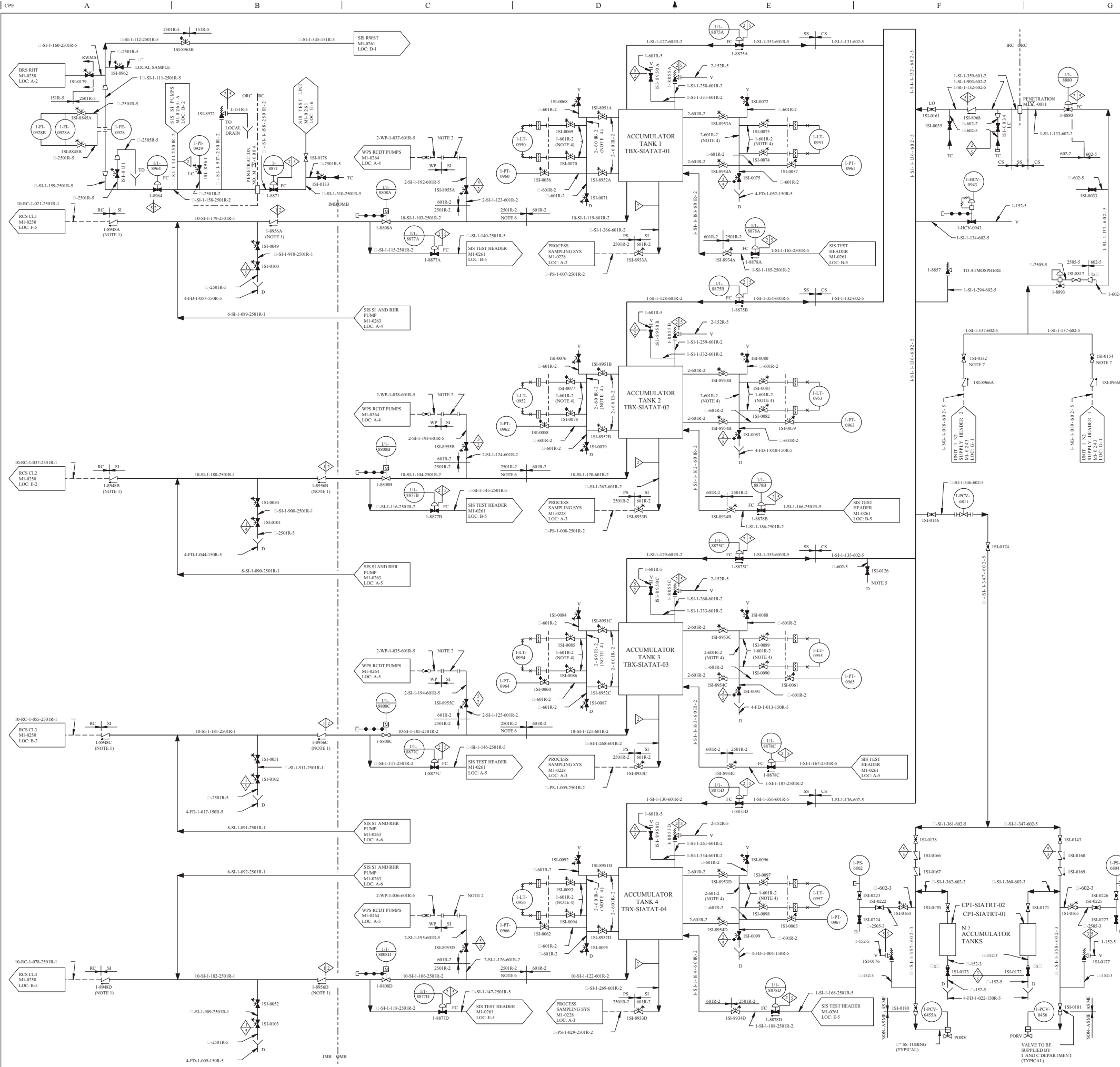
FSAR FIGURE 6.3-1

THIS DRAWING CREATED ELECTRONICALLY

\$\$\$\$\$ DATES \$\$\$\$\$

FSAR FIGURE 6.3-1

THIS DRAWING CREATED ELECTRONICALLY



REV		DWN	CHK	APP	REMARKS
CP-27	1	1	1	1	THIS DRAWING REVISED TO INCORPORATE ALCKR-2015-00121-1 TO EDITORIAL REVIEW THE TITLE BLOCK NUMBER

NOTES:

- CHECK VALVES ARE LOCATED AS CLOSE TOGETHER AS POSSIBLE AND AS CLOSE TO THE REACTOR COOLANT PIPE AS POSSIBLE.
- BLIND FLANGES NORMALLY INSTALLED. SPOOL PIECE TO BE INSTALLED DURING ACCUMULATOR DRAINING ONLY AFTER DEPRESSURIZATION.
- FOR MECHANICAL SYMBOLS AND NOTES SEE DRAWING M1-0200.
- 120 INCH STANDPIPE TO BE USED WITH SCRIBE MARK INDICATING NORMAL WATER LEVEL. LEVEL TRANSMITTER TAPS ARE LOCATED 8 INCHES ABOVE AND BELOW SCRIBE MARK.
- UNLESS OTHERWISE NOTED DRAINS COLLECTED BY LOCAL DRAIN CHANNEL B.
- PIPING SCHEDULE 140 MUST BE USED TO MEET SAFETY ANALYSIS FLOW REQUIREMENTS.
- VALVE MAY BE OPEN OR CLOSED DURING NORMAL OPERATIONS.
- DELETED

REFERENCES:

THE FLOW DIAGRAM HAS BEEN REDRAWN FROM WESTINGHOUSE DRAWING 113BE98 (SH 2) REV 5 WITH EXCEPTIONS AS FOLLOWS:

- VALVES AND LINE NUMBERS HAVE BEEN ADDED.
- CONTROL LOOPS HAVE BEEN DELETED EXCEPT FOR THE PRIMARY AND THE FINAL ELEMENTS. THE DETAILS OF THE CONTROL LOOPS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAM.

CLASS I
(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1
SAFETY CLASS 2
SAFETY CLASS 3

LUMINANT
CPNPP
GLEN ROSE, TEXAS

FLOW DIAGRAM
SAFETY INJECTION SYSTEM
SHEET 2 OF 5

DWG. NO. M1-0262

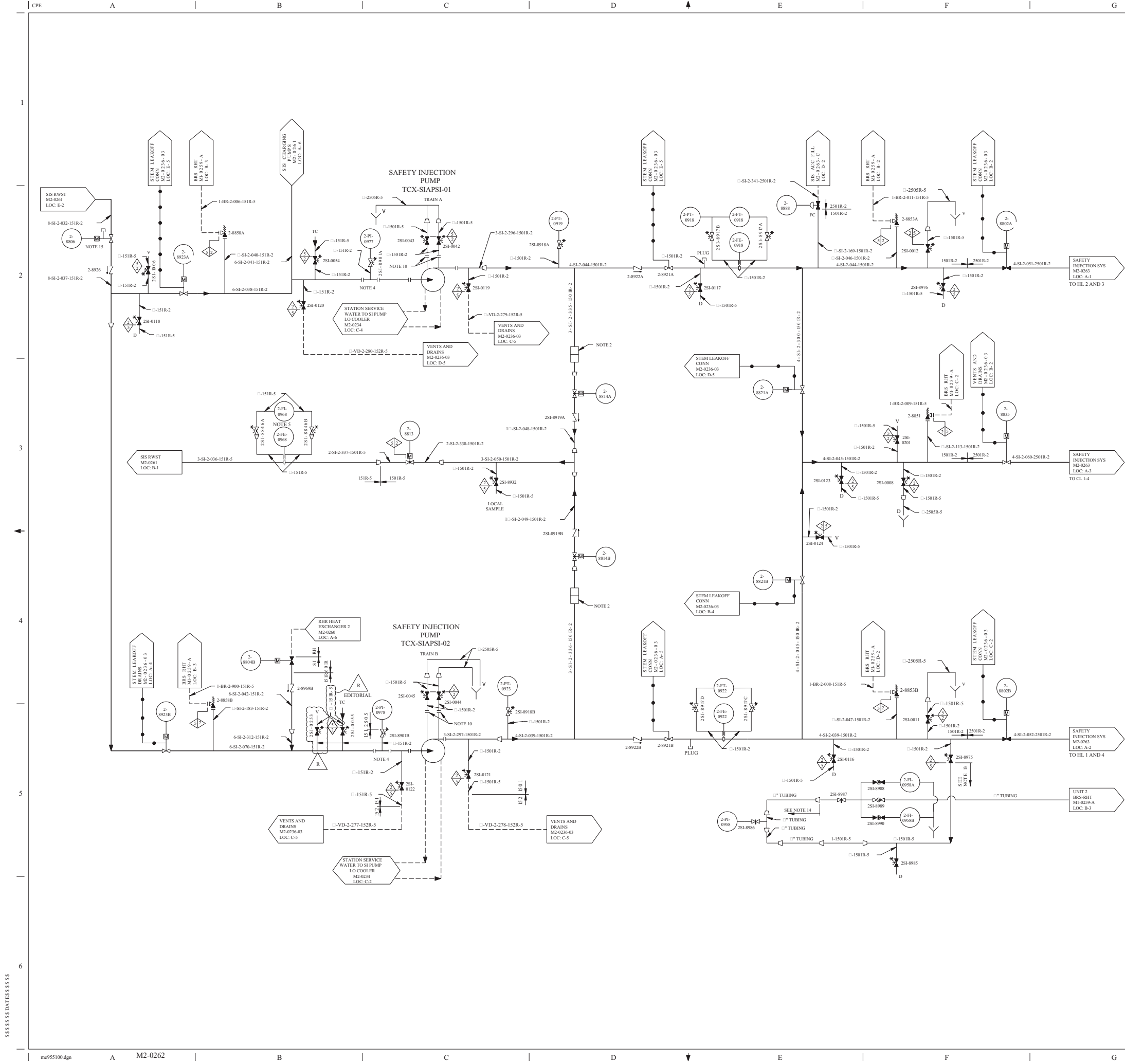
SH. NO. -

REV. CP-27

FSAR FIGURE 6.3-1

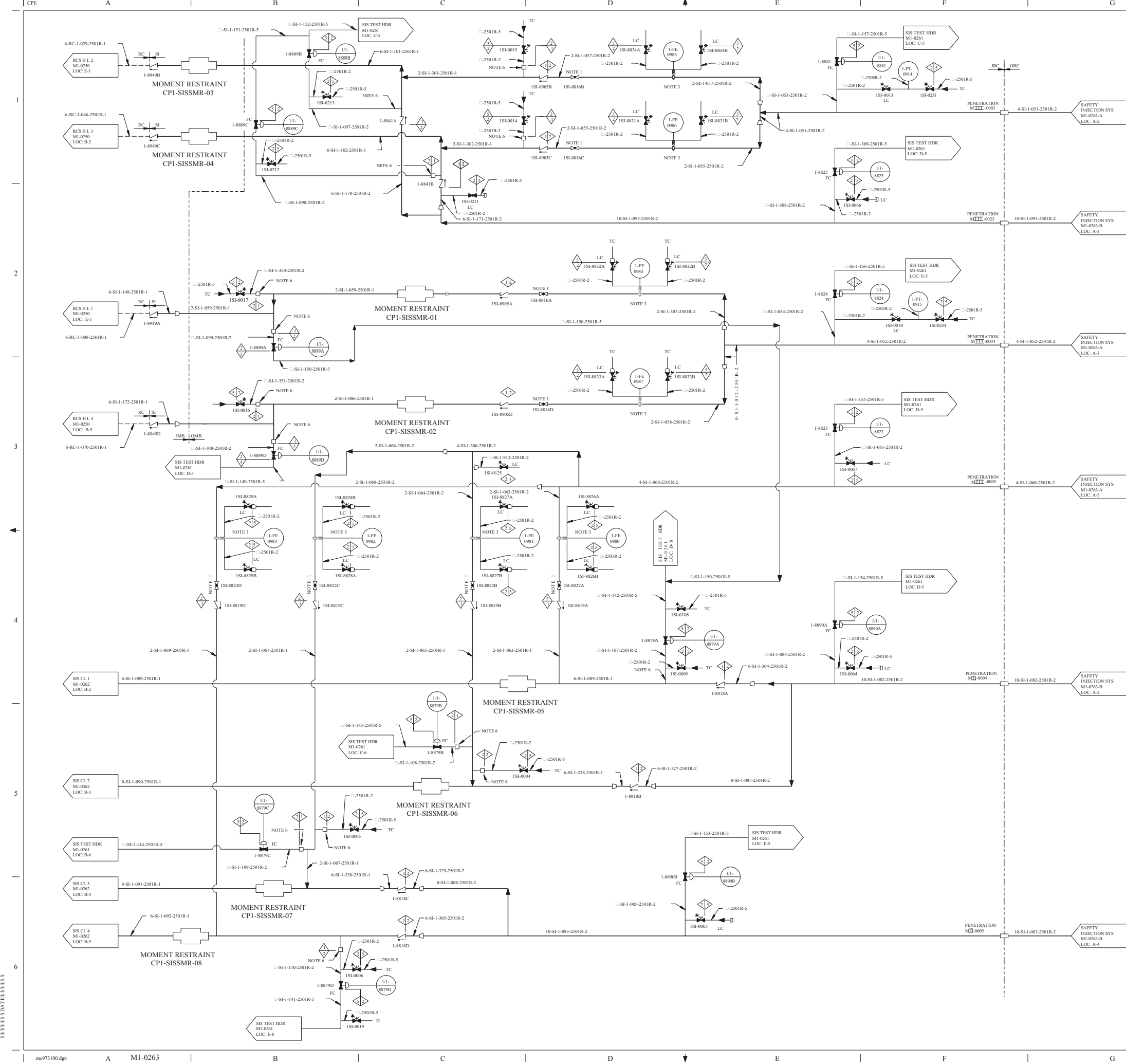
THIS DRAWING CREATED ELECTRONICALLY

\$\$\$\$\$DATE\$\$\$\$\$



REV				H		
DWN	CHKD	APPD	REMARKS			
CP-21	15.8	10/24/2013	10/24/2013	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA 2013-000071-01-00 PER SK-0001-15-000071-01-00. EDITORIAL CHANGE AS NOTED.		
NOTES:						
1. DELETED						
2. REF FDN-142 FOR MINIFLOW ORIFICE PART OF SAFETY INJECTION PUMP BY TCX-SIAPSI-01 AND TCX-SIAPSI-02.						
3. DELETED						
4. TEMPORARY STRAINERS CP2-SISRTS-01 AND CP2-SISRTS-02 ARE PLACED IN SPOOL PIECES DURING INITIAL FLUSHING OPERATIONS. STRAINERS MUST BE REMOVED BEFORE PLANT START-UP. CAPPED LINE IS CONNECTED TO PRESSURE GAUGE DURING INITIAL FLUSHING.						
5. FLOW INDICATOR LOCATED OUTSIDE OF SAFETY INJECTION PUMP ROOMS.						
6. DELETED						
7. DELETED						
8. DELETED						
9. DELETED						
10. SAFETY INJECTION PUMP CASING VENTS DESIGNED TO HAVE 300 LB FLANGES.						
11. UNLESS OTHERWISE NOTED DRAINS COLLECTED BY LOCAL DRAIN SYSTEM.						
12. DELETED						
13. ALTERNATE RELIEF PATH AND LEAK MEASUREMENT.						
14. SPECIAL CASE SEISMIC CATEGORY II (PRESSURE BOUNDARY INTEGRITY) NNS PIPING, TUBING, FITTING AND VALVES ARE ASME III, CLASS 2 MATERIALS UP TO VALVE 2SI-8987.						
15. VALVE IS LOCKED OPEN WITH POWER REMOVED AND ARE ADMINISTRATIVELY CONTROLLED.						
REFERENCE NOTE:						
THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM W DWG 1598 SH 3 REV 9 WITH EXCEPTIONS AS FOLLOWS:						
a. VALVES AND LINE NUMBERS HAVE BEEN ADDED.						
b. CONTROL LOOPS HAVE BEEN DELETED EXCEPT FOR THE PRIMARY AND THE FINAL ELEMENTS. THE DETAILS OF THE CONTROL LOOPS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAM.						
FSAR FIGURE 6.3-1						
THIS DRAWING CREATED ELECTRONICALLY						
CLASS I (NUCLEAR SAFETY-RELATED) SAFETY CLASS 1 SEISMIC CATEGORY I SAFETY CLASS 2 CLASS II SAFETY CLASS 3 ASSOCIATED CIRCUITS						
LUMINANT CPNPP GLEN ROSE, TEXAS						
FLOW DIAGRAM SAFETY INJECTION SYSTEM SHEET 2 OF 6						
DWG NO. M2-0262 SHT -				SH NO. -	REV CP-21	
< FINAL PRINT >						

FSAR FIGURE 6.3-1
THIS DRAWING CREATED ELECTRONICALLY



REV	CHG	DATE	BY	CHKD	APPV	REMARKS
CP-17		10/12/2011				THIS DRAWING REVISED TO INCORPORATE A1-CR-2015-00021-1 TO EDITORIALY ADD THE TITLE BLOCK SHEET NUMBER.

NOTES:

1. VALVES PROVIDED WITH POSITION LOCKING DEVICE ADJUST AND LOCK VALVES TO LIMIT PUMP RUNOUT.
2. DELETED
3. FLOW METERING ORIFICE TO VERIFY FLOW DURING PREOPERATIONAL TESTING.
4. DELETED
5. DELETED
6. IN SAFETY CLASS I PIPING, A FLOW RESTRICTION IS REQUIRED IN PIPING TO ALLOW TRANSITION FROM SAFETY CLASS I TO SAFETY CLASS II. TYPICAL FLOW RESTRICTOR SHOWN.
7. DELETED
8. DELETED
9. DELETED
10. DELETED
11. UNLESS OTHERWISE NOTED DRAINS COLLECTED BY LOCAL DRAIN SYSTEM
12. DELETED
13. FOR GENERAL NOTES AND SYMBOLS SEE DRAWING M1-0260.

REFERENCE NOTE:

THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM W DWG 02199B SH 3 REV 5 WITH EXCEPTIONS AS FOLLOWS:

- a. VALVES AND LINE NUMBERS HAVE BEEN ADDED
- b. CONTROL LOOPS HAVE BEEN DELETED EXCEPT FOR THE PRIMARY AND THE FINAL ELEMENTS. THE DETAILS OF THE CONTROL LOOPS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAM.

DRAWING 2223-M1-0263 SH _____ REV CP-9

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

M1-0263	
M1-0263-A	
M1-0263-B	
M1-0263-C	

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1 SEISMIC CATEGORY I

SAFETY CLASS 2 CLASS 1E

SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT

CPNPP

GLEN ROSE, TEXAS

FLOW DIAGRAM

SAFETY INJECTION SYSTEM

SHEET 3 OF 5

DWG NO. M1-0263

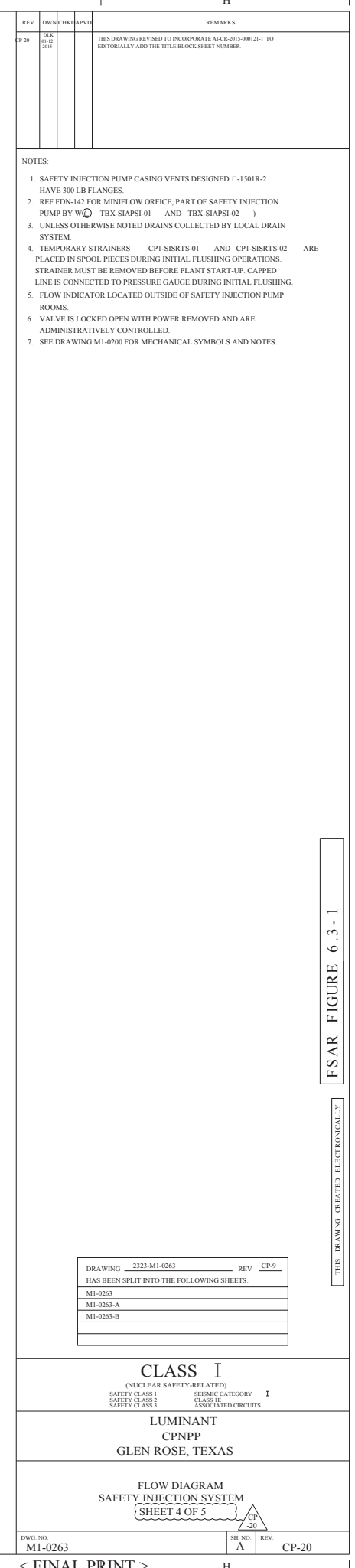
SH NO. -

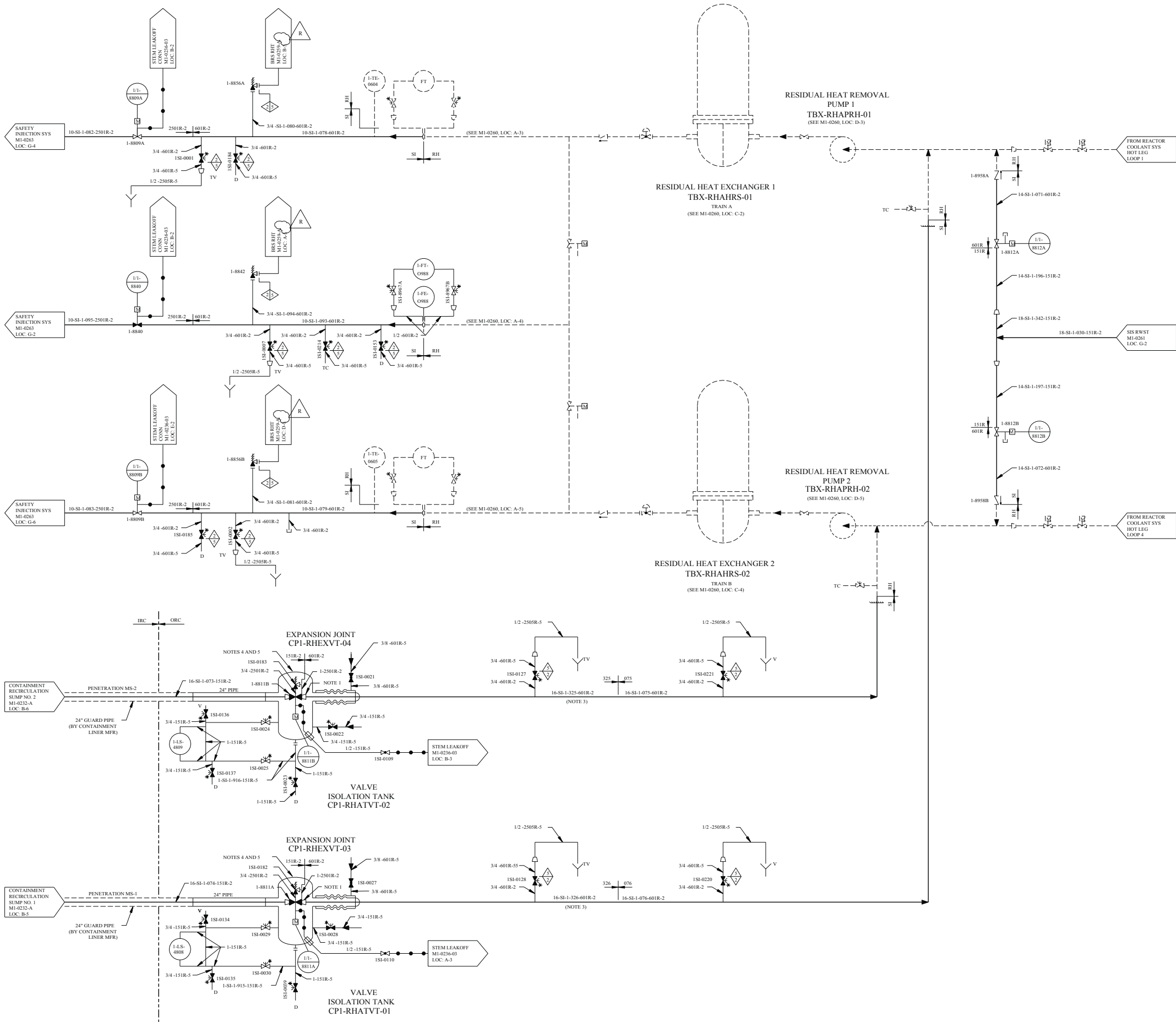
REV. CP-17

CP-17

FSAR FIGURE 6.3-1

THIS DRAWING CREATED ELECTRONICALLY





REV	CHKD	APVD	REMARKS
CP-14	10-01	10-01	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FSA 2009-0250-01-00 FOR SR-000-000-00250-01-00 EDITORIAL CHANGE AS NOTED

NOTES:

- SPECIAL FORGED PIECE 16" SCH 160 PIPE, REF GTN-24629.
- UNLESS OTHERWISE NOTED, DRAINS CONNECTED BY LOCAL DRAIN SYSTEM.
- PIPING TO BE 16" SCH 120, SEAMLESS SA-376, TP-304 OR TP-316. FITTINGS TO BE SCH 120, SEAMLESS SA-303, TP-304 OR TP-316.
- VALVE ISOLATION TANK MANWAYS PROVIDE AN OPEN VENT PATH THRU THE OPEN MANWAY.
- VALVE ISOLATION TANK, EXPANSION JOINT, GUARD PIPE, VENT, DRAIN, VALVE STEM LEAK-OFF PIPING AND RELATED VALVES WERE FABRICATED, TESTED AND INSTALLED TO ANSI SAFETY CLASS 2, ASME CODE CLASS 2 REQUIREMENTS. THESE COMPONENTS AND PIPING HAVE BEEN RECLASSIFIED IN THEIR CURRENT APPLICATION TO NON-NUCLEAR SAFETY (NNS) SEISMIC CATEGORY II (FOR STRUCTURAL INTEGRITY AND ENHANCED LEAK DETECTION). THE ASME CODE CLASSIFICATION NEED NOT BE MAINTAINED AND, THEREFORE, WORK NEED NOT BE PERFORMED TO ASME XI REQUIREMENTS.
- SEE DRAWING M1-0260 FOR MECHANICAL SYMBOLS AND NOTES.

EDITORIAL

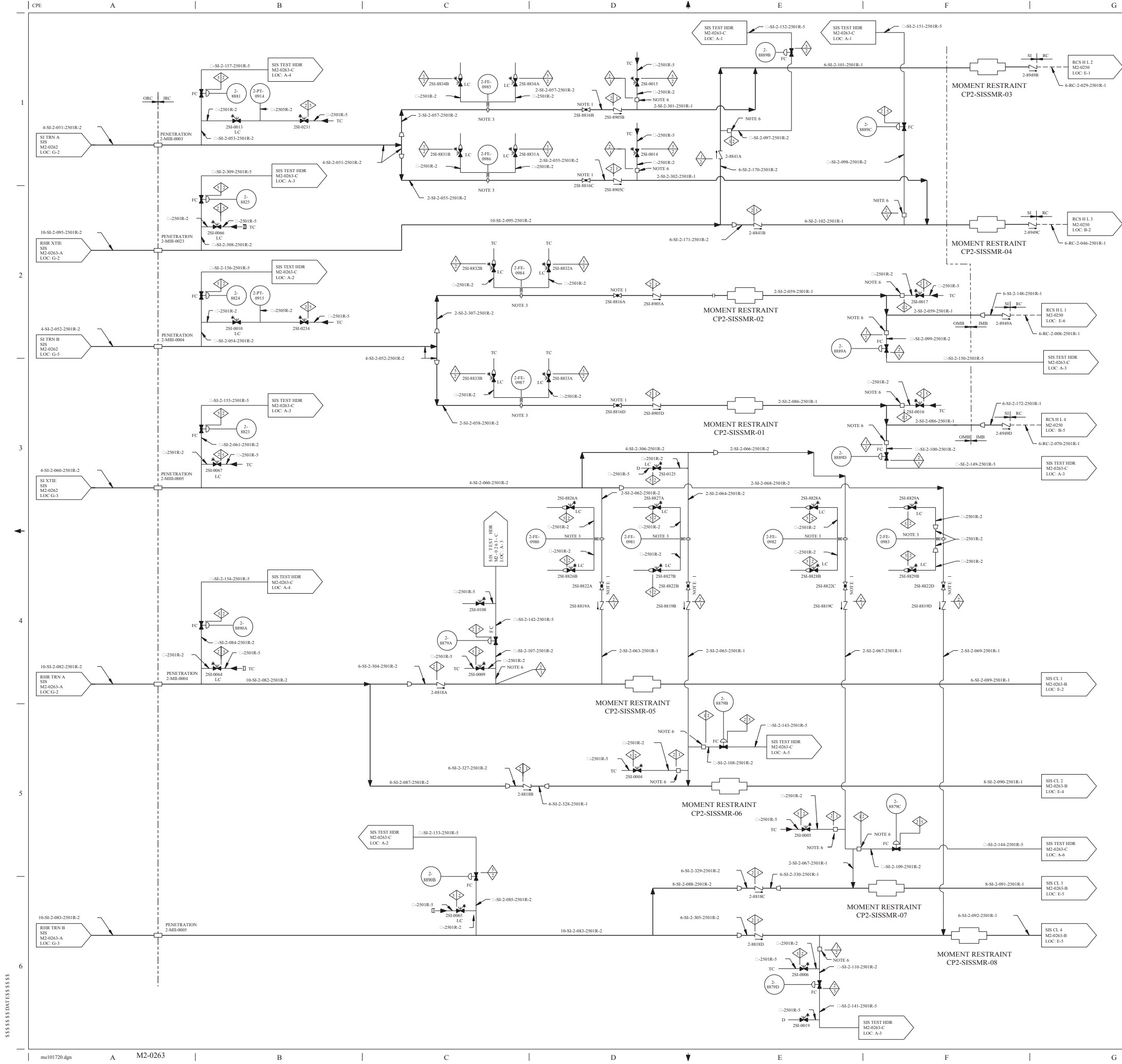
DRAWING 2323-M1-0263 REV CP-9
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:
M1-0263
M1-0263-A
M1-0263-B

CLASS I
(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1 SEISMIC CATEGORY I
SAFETY CLASS 2 CLASS II
SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT
CPNPP
GLEN ROSE, TEXAS

FLOW DIAGRAM
SAFETY INJECTION SYSTEM
SHEET 5 OF 5

DWG. NO. M1-0263 SH. NO. B REV. CP-14



REV				REMARKS			
CP-17	10K	01	001	THIS DRAWING REVISD TO INCORPORATE ALCR 2015-000121-1 TO EDITORIALY ADD THE TITLE BLOCK SHEET NUMBER.			
NOTES:							
1. VALVES PROVIDED WITH POSITION LOCKING DEVICE ADJUST AND LOCK VALVES TO LIMIT PUMP RUNOUT.							
2. DELETED							
3. FLOW METERING ORIFICE TO VERIFY FLOW DURING PREOPERATIONAL TESTING.							
4. DELETED							
5. DELETED							
6. IN SAFETY CLASS 1 PIPING, A FLOW RESTRICTION IS REQUIRED IN "P" PIPING TO ALLOW TRANSITION FROM SAFETY CLASS 1 TO SAFETY CLASS 2. TYPICAL FLOW RESTRICTOR SHOWN.							
7. FOR MECHANICAL SYMBOLS AND NOTES SEE M1-0200.							
8. DELETED							
9. DELETED							
10. UNLESS OTHERWISE NOTED, DRAINS COLLECTED BY LOCAL DRAIN SYSTEM.							
11. DELETED							
REFERENCE NOTE:							
THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM W DWG 0198 SHI 3 REV 9 WITH EXCEPTIONS AS FOLLOWS:							
a. VALVES AND LINE NUMBERS HAVE BEEN ADDED.							
b. CONTROL LOOPS HAVE BEEN DELETED EXCEPT FOR THE PRIMARY AND THE FINAL ELEMENTS. THE DETAILS OF THE CONTROL LOOPS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAM.							
CLASS I							
(NUCLEAR SAFETY-RELATED)							
SAFETY CLASS 1 (SEISMIC CATEGORY 1)							
SAFETY CLASS 2 (CLASS 1E)							
SAFETY CLASS 3 ASSOCIATED CIRCUITS							
LUMINANT							
CPNPP							
GLEN ROSE, TEXAS							
FLOW DIAGRAM							
SAFETY INJECTION SYSTEM							
SHEET 3 OF 6							
DWG. NO. M2-0263							
SHI NO. -							
REV. CP-17							

FSAR FIGURE 6.3-1

THIS DRAWING CREATED ELECTRONICALLY

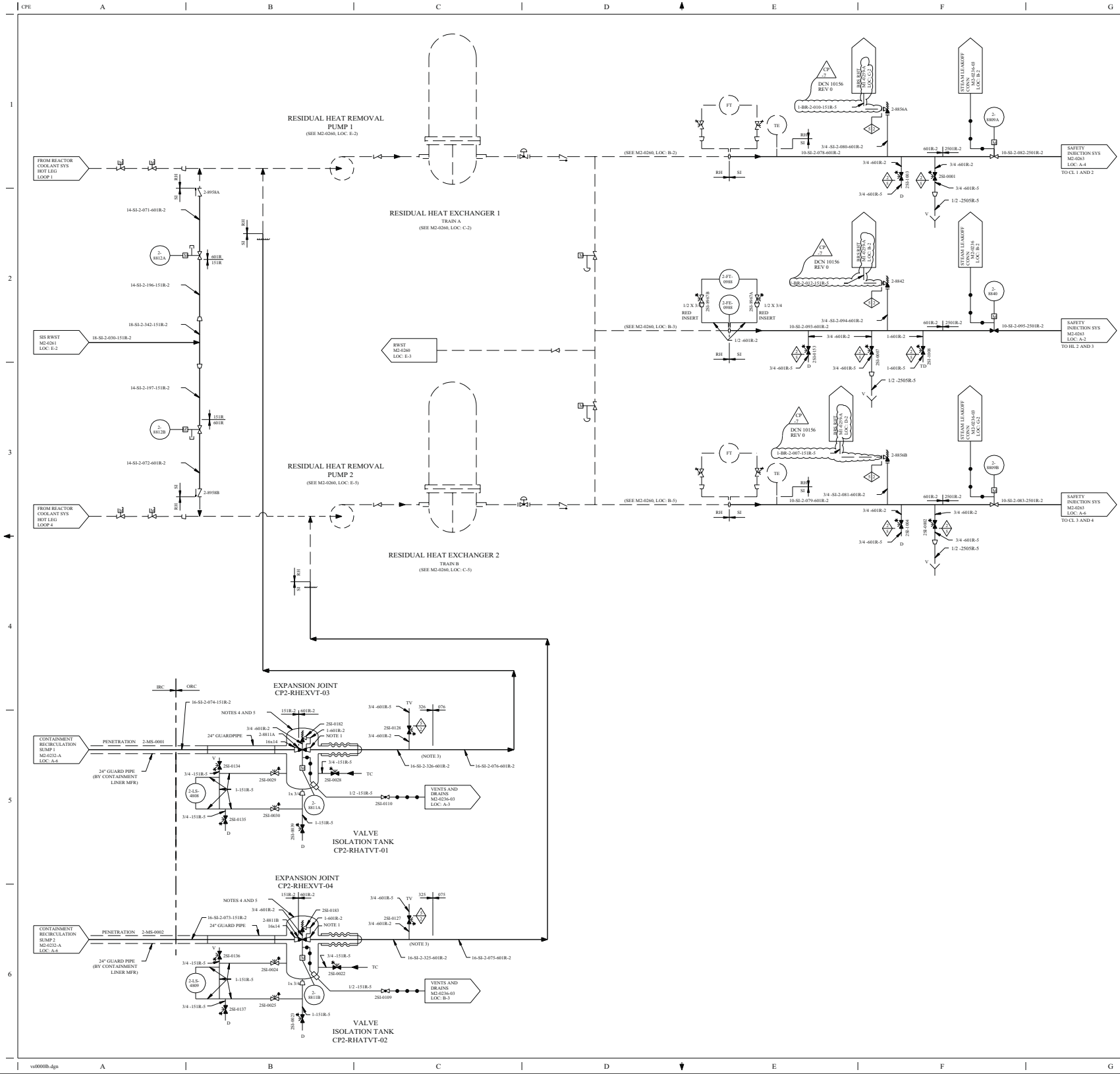
CP-17

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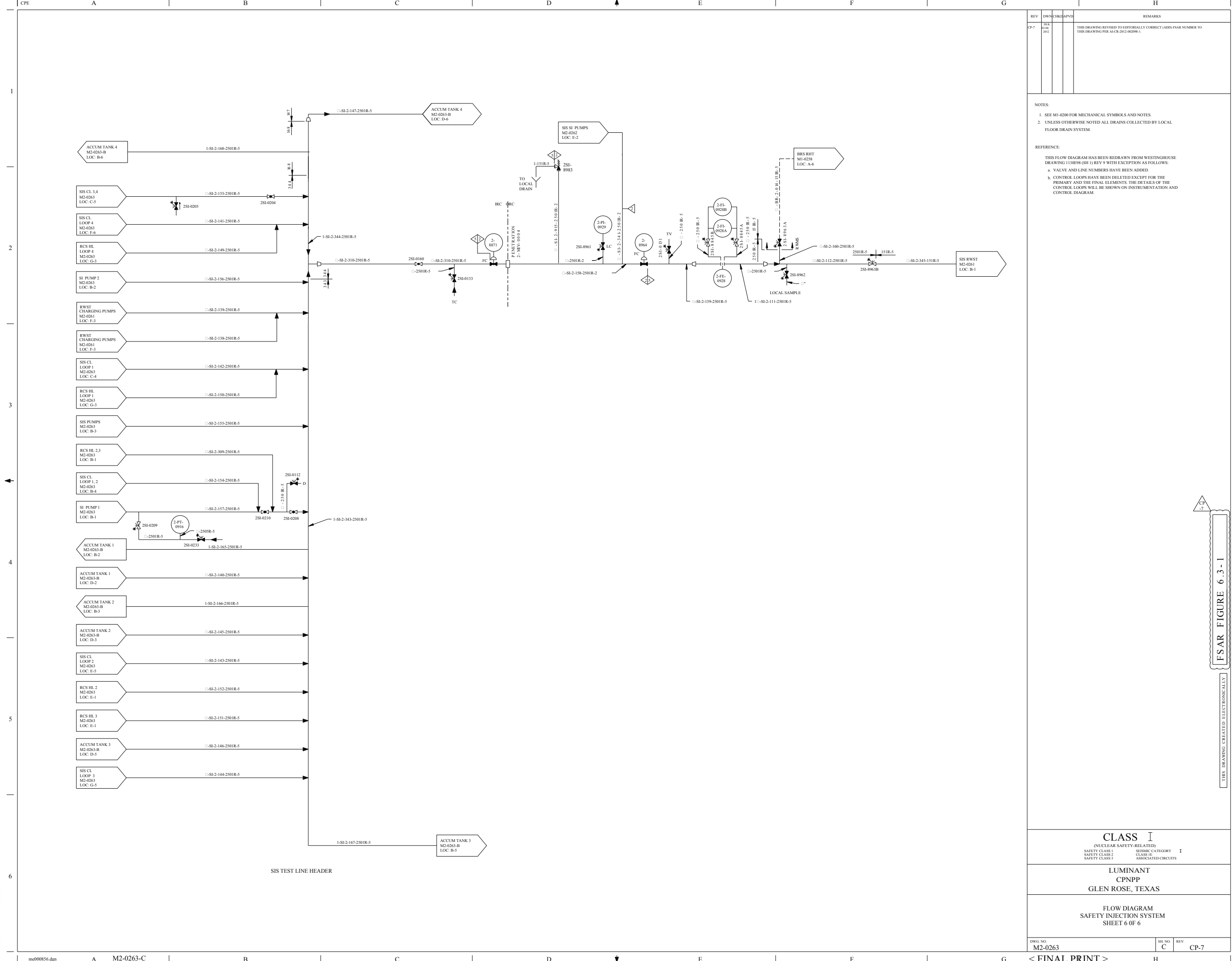
FSAR FIGURE 6.3-1

THIS DRAWING CREATED ELECTRONICALLY

\$\$\$\$\$DATE\$\$\$\$\$



REV		DESCRIPTION	REMARKS
1	1		
2	2		
3	3		
4	4		
5	5		
6	6		
NOTES			
1. SPECIAL FORGED PIECE 10" SCH 160 PIPE, REF GTN-24629.			
2. UNLESS OTHERWISE NOTED, DRAINS COLLECTED BY LOCAL DRAIN SYSTEM.			
3. PIPING TO BE 10" SCH 120, SEAMLESS SA-403, TP-304 OR TP-316. FITTINGS TO BE 10" SCH 120 SEAMLESS SA-403, TP-304 OR TP-316.			
4. VALVE ISOLATION TANK MANWAYS PROVIDE AN OPEN VENT PATH THRU THE OPEN MANWAY.			
5. VALVE ISOLATION TANK EXPANSION JOINT, GAUGED PIPE, VENT, DRAIN, VALVE STEM LEAK-OFF PIPING AND RELATED VALVES WERE FABRICATED, TESTED AND INSTALLED TO ANSI SAFETY CLASS 2, ASME CODE CLASS 2 REQUIREMENTS. THESE COMPONENTS AND PIPING HAVE BEEN RECLASSIFIED IN THEIR CURRENT APPLICATION TO NON-NUCLEAR SAFETY (NNS) RESM-CATEGORY 1 FOR STRUCTURAL INTEGRITY AND ENHANCED LEAK DETECTION. THE ASME CODE CLASSIFICATION NEED NOT BE MAINTAINED AND, THEREFORE, WORK NEED NOT BE PERFORMED TO ASME XI REQUIREMENTS.			
REFERENCE NOTE			
THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM W DWG 000000-001 REV 9 WITH EXCEPTIONS AS FOLLOWS:			
a. VALVES AND LINE NUMBERS HAVE BEEN ADDED.			
b. CONTROL LOOPS HAVE BEEN DELETED EXCEPT FOR THE PRIMARY AND THE FINAL ELEMENTS. THE DETAILS OF THE CONTROL LOOPS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAM.			
CLASS I			
(NUCLEAR SAFETY-RELATED)			
SAFETY CLASS 1			
SAFETY CLASS 2			
TXU ELECTRIC			
CPSES			
GLEN ROSE, TEXAS			
FLOW DIAGRAM			
SAFETY INJECTION SYSTEM			
SHEET 4 OF 6			
DWG NO		SR NO	REV
M2-0263		A	CP-7



NOTES:

- SEE M1-0200 FOR MECHANICAL SYMBOLS AND NOTES.
- UNLESS OTHERWISE NOTED ALL DRAINS COLLECTED BY LOCAL FLOOR DRAIN SYSTEM.

REFERENCE:

THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM WESTINGHOUSE DRAWING 113E98 (SI 1) REV 9 WITH EXCEPTION AS FOLLOWS:

- VALVE AND LINE NUMBERS HAVE BEEN ADDED.
- CONTROL LOOPS HAVE BEEN DELETED EXCEPT FOR THE PRIMARY AND THE FINAL ELEMENTS. THE DETAILS OF THE CONTROL LOOPS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAM.

REV		DWN	CHK	APPV	REMARKS
CP-7		OK	10-06	2001	THIS DRAWING REVISED TO EDITORIALY CORRECT (ADD) FSAR NUMBER TO THIS DRAWING PER AJ-CR-2012-00206-1.

CLASS I	
(NUCLEAR SAFETY-RELATED)	
SAFETY CLASS 1	SEISMIC CATEGORY I
SAFETY CLASS 2	CLASS II
SAFETY CLASS 3	ASSOCIATED CIRCUITS

LUMINANT	
CPNPP	
GLEN ROSE, TEXAS	

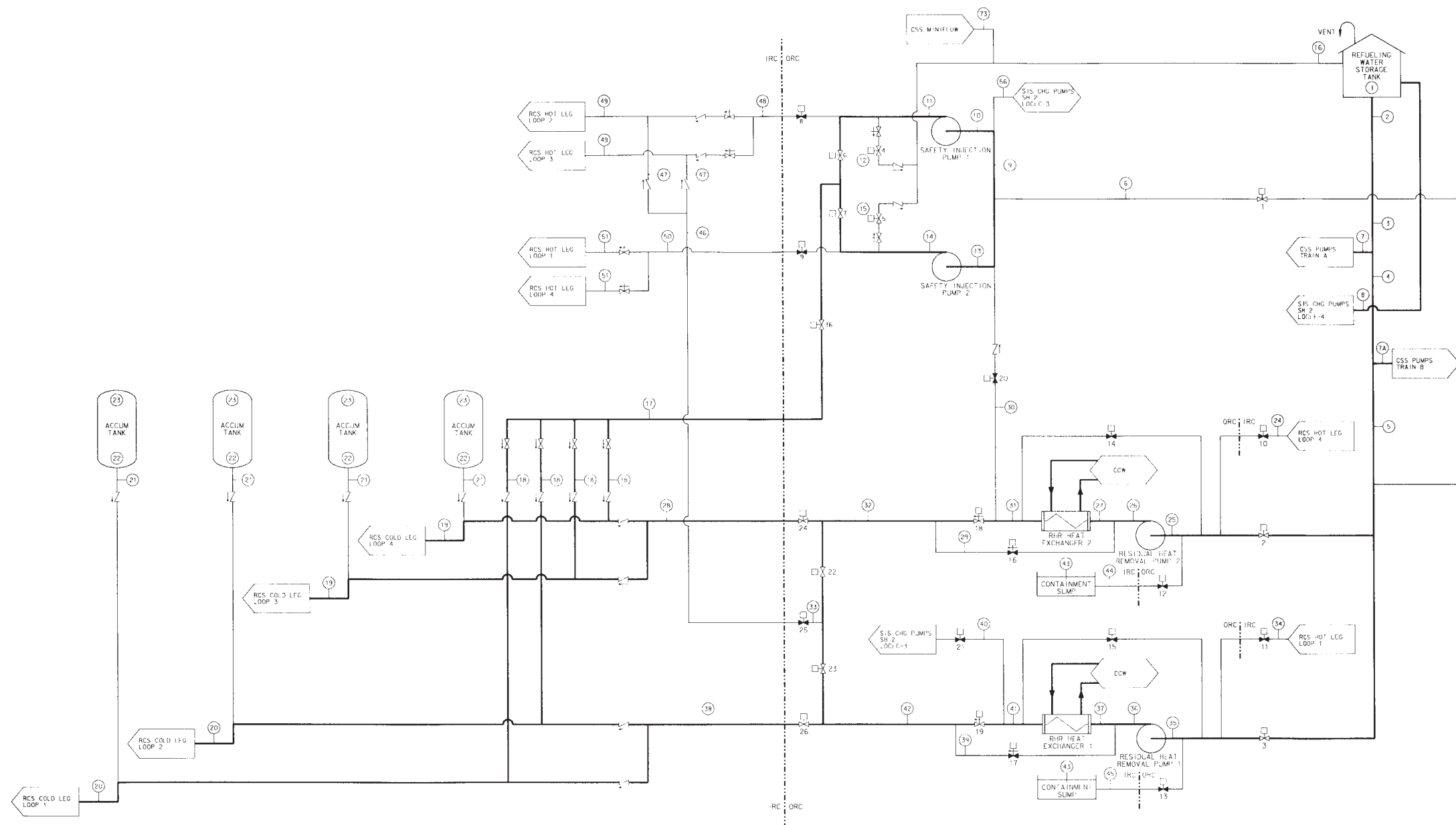
FLOW DIAGRAM	
SAFETY INJECTION SYSTEM	
SHEET 6 OF 6	

DWG. NO.	SH. NO.	REV.
M2-0263	C	CP-7

FSAR FIGURE 6.3-1

THIS DRAWING CREATED ELECTRONICALLY

\$\$\$\$\$DATE\$\$\$\$\$



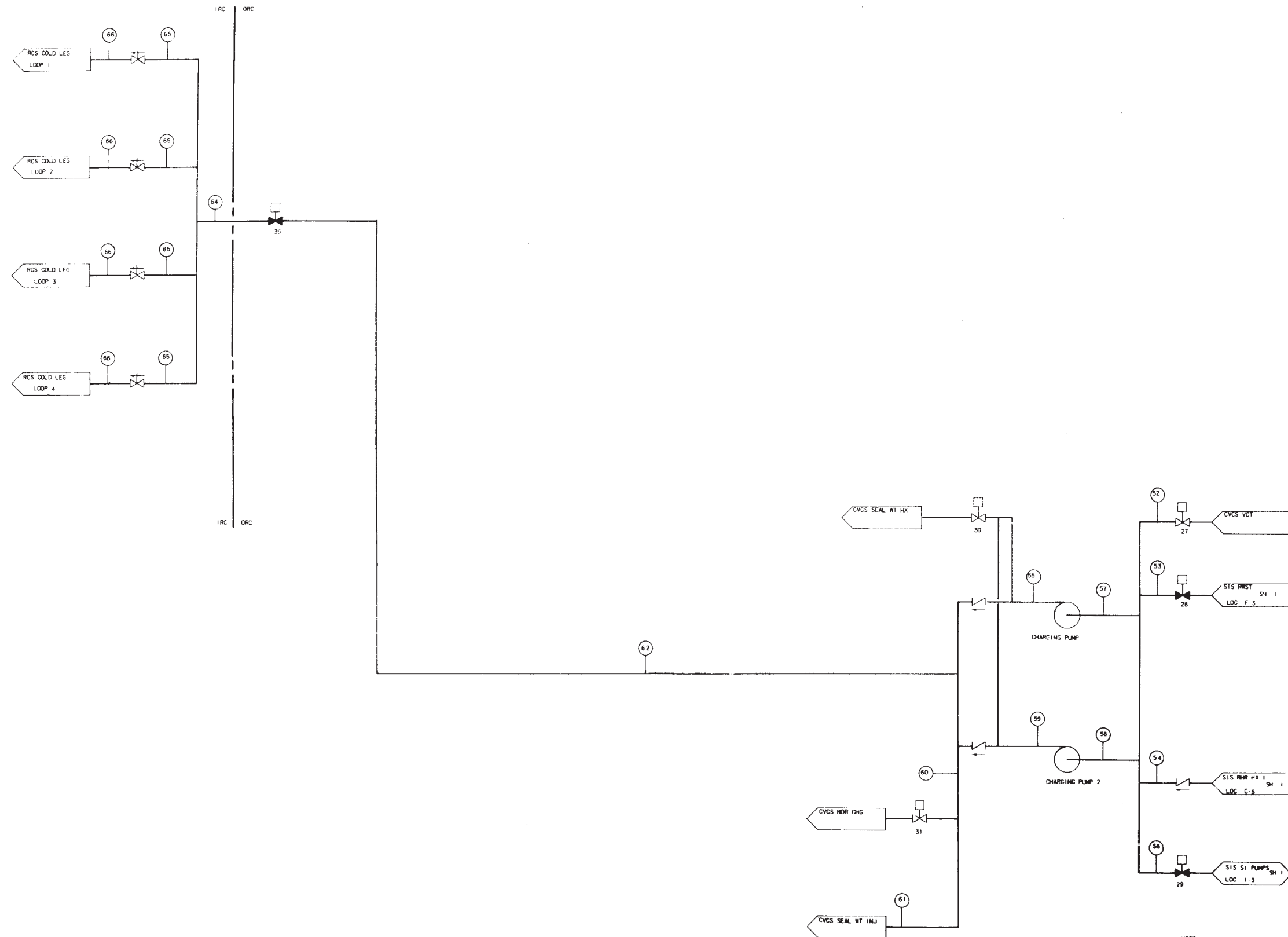
FOR CORRELATION BETWEEN FLOW DIAGRAM
NUMBERS AND FSAR FIGURE NUMBERS,
REFER TO TABLE 3.2-3.

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

SAFETY INJECTION/RESIDUAL
HEAT REMOVAL SYSTEM
PROCESS FLOW DIAGRAM

6.3-2, SH 1

AMENDMENT 78
JANUARY 15, 1980



AMENDMENT 16
MARCH 31, 1981

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2
Safety Injection/Residual
Heat Removal System
Process Flow Diagram
FIGURE 6.3-2, Sheet 2

MODES OF OPERATION

Mode A – Injection

This mode presents the process conditions for the case of maximum safeguards, i.e., all pumps operating, following accumulator delivery. Two residual heat removal (RHR) pumps, two safety injection (SI) pumps, and two centrifugal charging (CC) pumps operate, taking suction from the refueling water storage tank and delivering to the reactor through the cold leg connections. Note that the flow from each pump is less than its maximum runout since the pump discharge piping is shared by the two pumps of each subsystem. Note also that the SI pump branch connections to the residual lines are assumed very close to their discharge into the accumulator lines, thereby eliminating any increase in RHR branch line head loss due to the combined flows of the RHR and SI pumps. The RHR line resistance was assumed to be the minimum of the allowable band presented in the limiting pressure drop and elevation head design requirements, allowing maximum RHR injection flow.

Mode B – Cold Leg Recirculation

This mode presents the process conditions for the case of cold leg recirculation assuming RHR pump number 2 operating, SI pumps numbers 1 and 2 operating, and CC pumps numbers 1 and 2 operating.

In this mode the safeguards pumps operate in series, with only the RHR pump capable of taking suction from the containment sump. The recirculation coolant is then delivered by the RHR pump to both of the SI pumps

Which deliver to the reactor through their cold leg connections and to both of the CC pumps which deliver to the reactor through their cold leg connections. The RHR pump also delivers flow directly to the reactor through two cold legs since the RHR discharge cross connect valves are closed when making the transfer from injection to recirculation.

Mode C – Hot Leg Recirculation

This mode presents the process conditions for the case of hot leg recirculation, assuming RHR pump number 1 operating, CC pumps numbers 1 and 2 operating, and SI pumps numbers 1 and 2 operating.

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

VALVE ALIGNMENT CHARTOperational Modes

<u>Valve No.</u>	<u>A</u>	<u>B</u>	<u>C</u>
1	O	C	C
2	O	C	C
3	O	C	C
4	O	C	C
5	O	C	C
6	O	O	O *
7	O	O	C *
8	C	C	O
9	C	C	O
10	C	C	C
11	C	C	C
12	C	O	O
13	C	O	O
14	C	C	C
15	C	C	C
16	C	C	C
17	C	C	C
18	O	O	O
19	O	O	O
20	C	O	O
21	C	O	O
22	O	C	O
23	O	C	O
24	O	O	C
25	C	C	O

O = OPEN

C = CLOSED

* During Mode C one valve to remain open – one closed, no preference, between valves 6 & 7.

VALVE ALIGNMENT CHART (Cont' d)

<u>Valve No.</u>	<u>Operational Modes</u>		
	<u>A</u>	<u>B</u>	<u>C</u>
26	O	O	C
27	C	C	C
28	O	C	C
29	C	O	O
30	C	C	C
31	C	C	C
35	O	O	O
36	O	O	C

NOTES TO FIGURE 6.3-2

(Sheet 5 of 16)

<u>Location</u>	<u>Fluid</u>	<u>Pressure (psig)***</u>	<u>Temperature (°F)</u>	<u>Flow (gpm)**</u>	<u>(lb/sec)</u>	<u>Volume (gal)</u>
1	Refueling water	Atm tank	100	-	-	450,000
2	"	a	100	21,304	2,283	-
3	"	13 psia	100	21,304	2,166	-
4	"	-	100	15,504	1,338	-
5	"	-	100	9.704	1,222	-
6	"	11 psia	100	848	117	-
7 and 7a	"	-	100	5,800 each	Total to CSS	-
8	"	>10 psia	100	839	116	-
9	"	>10 psia	100	424	58.5	-
10	"	10 psia	100	424	58.5	-
11	"	1165	100	424	58.5	-
12	"	>25	100	26	4	-
13	"	10 psia	100	424	58.5	-
14	"	1165	100	424	58.5	-
15	"	<25	100	26	4	-
16	"	-	100	252	35	-
17	"	1050	100	796	110	-
18	"	73	100	199	27	-
19	"	-	100	2,413	333	-
20	"	-	100	2,413	333	-
21	Nitrogen	0	100	0	0	-

NOTES TO FIGURE 6.3-2

(Sheet 6 of 16)

<u>Location</u>	<u>Fluid</u>	<u>Pressure</u> <u>(psig)***</u>	<u>Temperature</u> <u>(°F)</u>	<u>Flow</u> <u>(gpm)**</u>	<u>(lb/sec)</u>	<u>Volume</u> <u>(gal)</u>
22	Nitrogen	0	100	0	0	850****
23	"	0	100	0	0	500
24	Reactor coolant	-	100	0	0	-
25	Refueling water	0	100	4428	611	-
26	"	138	100	4428	611	-
27	"	-	100	4428	611	-
28	"	47	100	4428	611	-
29	"	86	100	0	0	-
30	"	-	100	0	0	-
31	"	-	100	4428	611	-
35	Refueling water	0	100	4428	611	-
36	"	138	100	4428	611	-
37	"	-	100	4428	611	-
38	"	47	100	4428	611	-
39	"	86	100	0	0	-
40	"	-	100	0	0	-
41	"	-	100	0	0	-
42	"	86	100	4428	611	-

NOTES TO FIGURE 6.3-2

(Sheet 7 of 16)

<u>Location</u>	<u>Fluid</u>	<u>Pressure</u> <u>(psig)***</u>	<u>Temperature</u> <u>(°F)</u>	<u>Flow</u> <u>(gpm)**</u>	<u>(lb/sec)</u>	<u>Volume</u> <u>(gal)</u>
43	Recirc. coolant	Containment pressure	120	0	0	-
44	"	"	"	0	0	-
45	"	"	"	0	0	-
46	Refueling water	Low pressure	100	0	0	-
47	"	"	"	0	0	-
48	"	"	"	0	0	-
49	"	"	"	0	0	-
50	"	"	"	0	0	-
51	"	"	"	0	0	-
52	"	-	"	0	0	-
53	"	>10 psia	"	839	116	-
54	"	-	"	0	0	-
55	"	1519	"	419	58	-
56	"	—	"	0	0	-
57	"	10 psia	"	419	58	-
58	"	10 psia	"	419	58	-
59	"	1519	"	419	58	-
60	"	1516	"	124	17	-
61	"	0	"	124	17	-
62	"	1456	"	714	99	-
64	Refueling water	1396	100	714	99	-
65	"	1008	100	178.5	24.6	-
66	"	388	100	178.5	24.6	-

NOTES TO FIGURE 6.3-2

(Sheet 8 of 16)

<u>Location</u>	<u>Fluid</u>	Pressure (<u>psig</u>)***	Temperature (<u>°F</u>)	Flow (<u>gpm</u>)**	(<u>lb/sec</u>)	Volume (<u>gal</u>)
73	Refueling	-	100	200	27.6	-

NOTES TO FIGURE 6.3-2

(Sheet 9 of 16)

<u>Location</u>	<u>Fluid</u>	<u>Pressure</u> <u>(psig)***</u>	<u>Temperature</u> <u>(°F)</u>	<u>Flow#</u> <u>(gpm)</u>	<u>(lb/sec)</u>	<u>Volume</u> <u>(gal)</u>
1	Refueling water	Atm tank	100	-	-	<5000
2	“	-	100	0	0	-
3	“	-	100	0	0	-
4	“	-	100	0	0	-
5	“	-	100	0	0	-
6	Recirc. coolant	-	182	0	0	-
7	Refueling water	-	100	0	0	-
8	“	-	100	0	0	-
9	Recirc. water	35	182	1262	56	-
10	“	35	182	424	56	-
11	“	1165	182	424	56	-
12	Refueling water	-	100	0	0	-
13	Recirc. coolant	35	182	424	56	-
14	“	1165	182	424	56	-
15	Refueling water	-	100	0	0	-
16	“	-	100	0	0	-
17	Recirc. coolant	1050	182	848	106	-
18	“	73	182	199	26	-
19	“	-	182	2006	267	-
20	“	-	182	199	26	-
21	Nitrogen	0	Ambient	0	0	-

NOTES TO FIGURE 6.3-2

(Sheet 10 of 16)

MODE B - COLD LEG RECIRCULATION (PUMP NUMBER 2 OPERATING)

<u>Location</u>	<u>Fluid</u>	<u>Pressure</u> <u>(psig)***</u>	<u>Temperature</u> <u>(°F)</u>	<u>Flow#</u>		<u>Volume</u> <u>(gal)</u>
				<u>(gpm)</u>	<u>(lb/sec)</u>	
22	Nitrogen	0	Ambient	0	0	850 ^b
23	“	0	“	0	0	500
24	Recirc.	-	243	0	0	-
coolant						
25	“	12	243	5300	705	-
26	“	113	243	5300	705	-
27	“	-	243	5300	705	-
28	“	29	182	3614	481	-
29	“	56	182	0	0	-
30	“	60	182	1686	224	-
31	“	65	182	5300	705	-
35	Refueling	-	100	0	0	-
	water					
36	“	-	100	0	0	-
37	“	-	100	0	0	-
38	“	-	100	0	0	-
39	“	-	100	0	0	-
40	“	-	100	0	0	-
41	“	-	100	0	0	-
42	“	-	100	0	0	-

NOTES TO FIGURE 6.3-2

(Sheet 11 of 16)

<u>Location</u>	<u>Fluid</u>	<u>Pressure</u> <u>(psig)***</u>	<u>Temperature</u> <u>(°F)</u>	<u>Flow#</u> <u>(gpm)</u>	<u>(lb/sec)</u>	<u>Volume</u> <u>(gal)</u>
43	Recirc. coolant	Containment	243	-	-	350,000
44	"	"	243	5300	705	-
45	"	"	243	0	0	-
46	Refueling water	Low pressure	100	0	0	-
47	"	"	100	0	0	-
48	"	"	100	0	0	-
49	"	"	100	0	0	-
50	"	"	100	0	0	-
51	"	"	100	0	0	-
52	Recirc. coolant	-	182	0	0	-
53	"	-	182	0	0	-
54	"	-	182	0	0	-
55	"	1519	182	419	56	-
56	"	>30	182	838	111	-
57	"	30	182	419	45	-
58	"	30	182	419	56	-
59	"	1519	182	419	56	-
60	"	1516	182	124	16	-
61	"	0	182	124	16	-
62	"	1456	182	714	95	-

NOTES TO FIGURE 6.3-2

(Sheet 12 of 16)

<u>Location</u>	<u>Fluid</u>	<u>Pressure</u> <u>(psig)***</u>	<u>Temperature</u> <u>(°F)</u>	<u>Flow#</u> <u>(gpm)</u>	<u>(lb/sec)</u>	<u>Volume</u> <u>(gal)</u>
64	Recirc. coolant	1396	182	714	95	-
65	“	1008	182	178.5	24	-
66	“	388	182	178.5	24	-
73	Refueling water	-	100	0	0	-

NOTES TO FIGURE 6.3-2

(Sheet 13 of 16)

<u>Location</u>	<u>Fluid</u>	Pressure	Temperature	Flow#		Volume
		<u>(psig)***</u>	<u>(°F)</u>	<u>(gpm)</u>	<u>(lb/sec)</u>	<u>(gal)</u>
1	Refueling water	Atm tank	100	-	-	<5000
2	“	-	100	0	0	-
3	“	-	100	0	0	-
4	“	-	100	0	0	-
5	“	-	100	0	0	-
6	Recirc. coolant	-	182	0	0	-
7	Refueling water	-	100	0	0	-
8	“	-	100	0	0	-
9	Recirc. coolant	25	182	650	86	-
10	“	25	182	650	86	-
11	“	715	182	650	86	-
12	Refueling water	-	100	0	0	-
13	Recirc. coolant	25	182	650	86	-
14	“	715	182	650	86	-
15	Refueling water	-	100	0	0	-
16	“	-	100	0	0	-
17	Recirc. coolant	0	182	0	0	-
18	“	-	182	0	0	-
19	“	-	182	0	0	-
20	“	-	182	0	0	-
21	Nitrogen	-	Ambient	0	0	-

NOTES TO FIGURE 6.3-2

(Sheet 14 of 16)

<u>Location</u>	<u>Fluid</u>	<u>Pressure</u> <u>(psig)***</u>	<u>Temperature</u> <u>(°F)</u>	<u>Flow#</u>		<u>Volume</u> <u>(gal)</u>
				<u>(gpm)</u>	<u>(lb/sec)</u>	
22	Nitrogen	0	Ambient	0	0	850 ^b
23	“	0	Ambient	0	0	500
24	Recirc. coolant	-	243	0	0	-
25	“	-	<212	0	0	-
26	“	-	<212	0	0	-
27	“	-	<212	0	0	-
28	“	-	<182	0	0	-
29	“	-	<182	0	0	-
30	“	-	<182	0	0	-
31	“	-	<182	0	0	-
35	“	12	243	5300	705	-
36	“	113	243	5300	705	-
37	“	-	243	5300	705	-
38	“	-	<182	0	0	-
39	“	55	182	0	0	-
40	“	60	182	2138	284	-
41	“	65	182	5300	705	-
42	“	55	182	3162	421	-

NOTES TO FIGURE 6.3-2

(Sheet 15 of 16)

<u>Location</u>	<u>Fluid</u>	<u>Pressure</u> <u>(psig)***</u>	<u>Temperature</u> <u>(°F)</u>	<u>Flow#</u> <u>(gpm)</u>	<u>(lb/sec)</u>	<u>Volume</u> <u>(gal)</u>
43	Recirc. coolant	Containment pressure	243	-	-	-
44	"	"	243	0	0	-
45	"	"	243	5300	705	-
46	"	7	182	3162	421	-
47	"	5	182	1581	210	-
48	"	645	182	650	86	-
49	"	-	182	1906	253	-
50	"	645	182	650	86	-
51	"	-	182	325	43	-
52	"	-	182	0	0	-
53	"	-	182	0	0	-
54	"	-	182	2138	284	-
55	"	1519	182	419	56	-
56	"	<35	182	1300	173	-
57	"	35	182	419	56	-
58	"	35	182	419	56	-
59	"	1516	182	419	56	-
60	"	1516	182	124	16	-
61	"	0	182	124	16	-
62	"	1456	182	714	95	-

NOTES TO FIGURE 6.3-2

(Sheet 16 of 16)

MODE C - HOT LEG RECIRCULATION (PUMP NUMBER 1 OPERATING)

<u>Location</u>	<u>Fluid</u>	<u>Pressure</u> <u>(psig)***</u>	<u>Temperature</u> <u>(°F)</u>	<u>Flow#</u>		<u>Volume</u> <u>(gal)</u>
				<u>(gpm)</u>	<u>(lb/sec)</u>	
64	Recirc. coolant	1396	182	714	95	-
65	“	1008	182	178.5	24	-
66	“	388	182	178.5	24	-
73	Refueling water	-	100	0	0	-

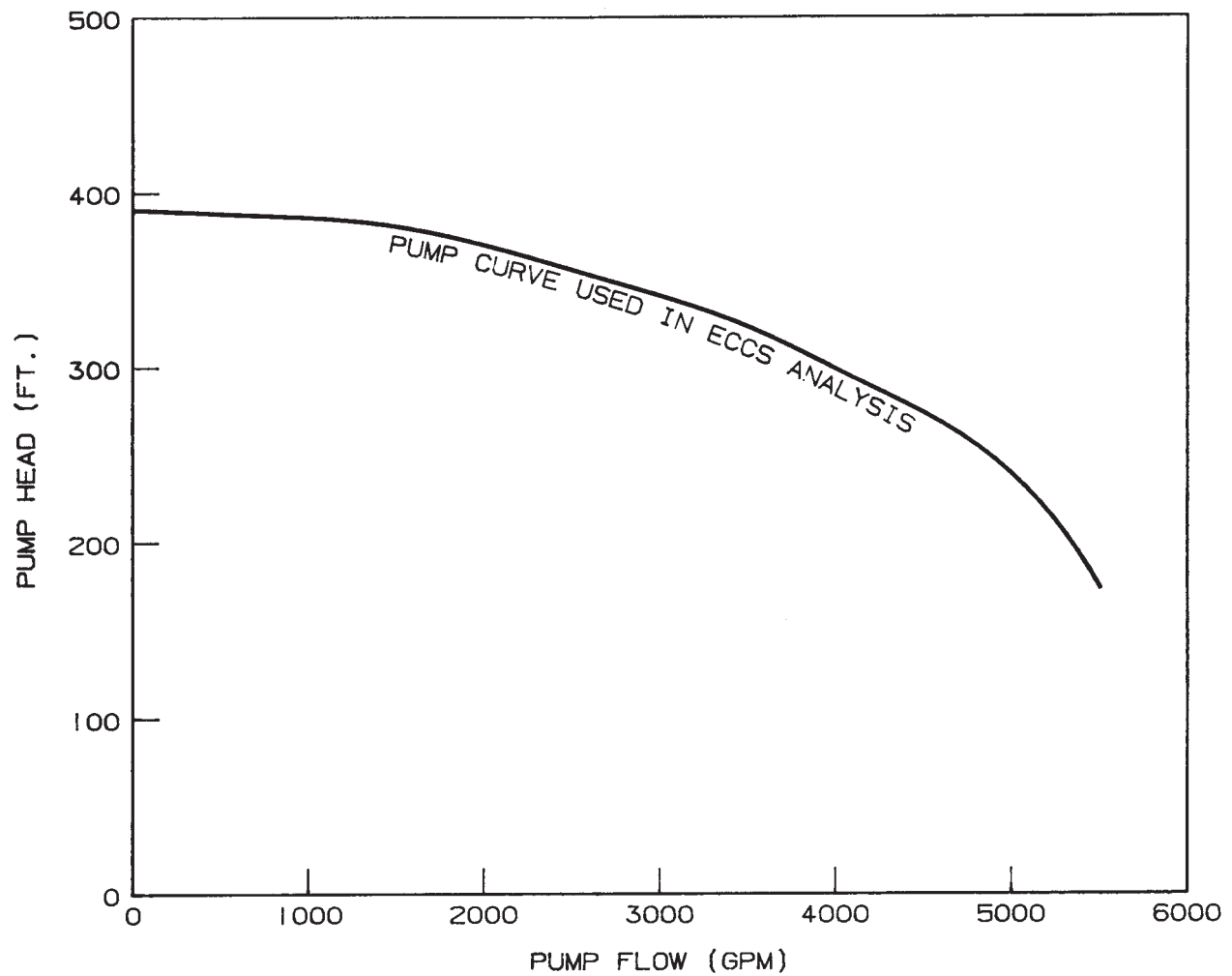
Footnotes

** At reference conditions, 100° F and 0 psig.

*** Listed pressure provides adequate NPSH to the charging and safety injection pumps at the corresponding flow conditions. Actual minimum available NPSH based on the actual layout and with conservative assumptions is provided in Table 6.3-1.

**** Minimum allowable volume at normal operating conditions.

At reference conditions, 212°F and 0 psig.

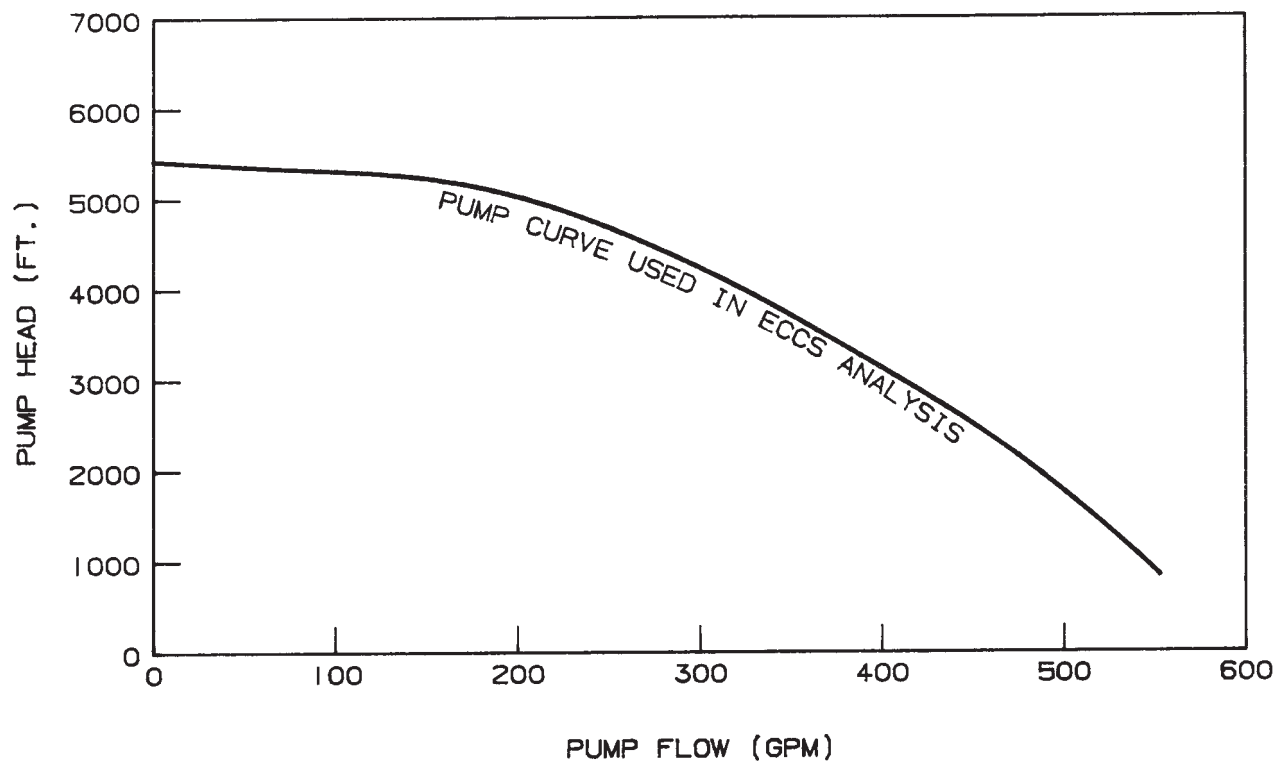


AMENDMENT 53
NOVEMBER 5, 1984

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Residual Heat Removal
Pump Performance Curve

FIGURE 6.3-3.

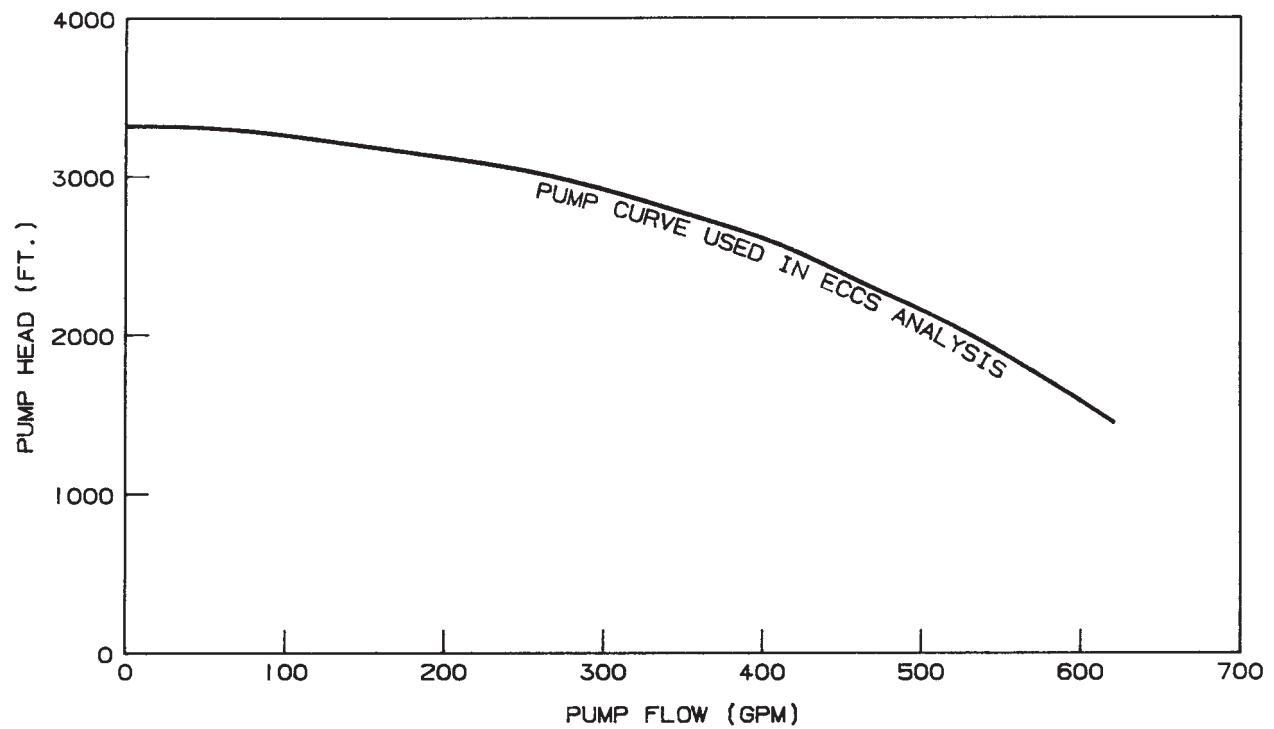


AMENDMENT 53
NOVEMBER 5, 1984

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Centrifugal Charging Pump
Performance Curve

FIGURE 6.3-4.



AMENDMENT 53
NOVEMBER 5, 1984

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Safety Injection Pump
Performance Curve

FIGURE 6.3-5.

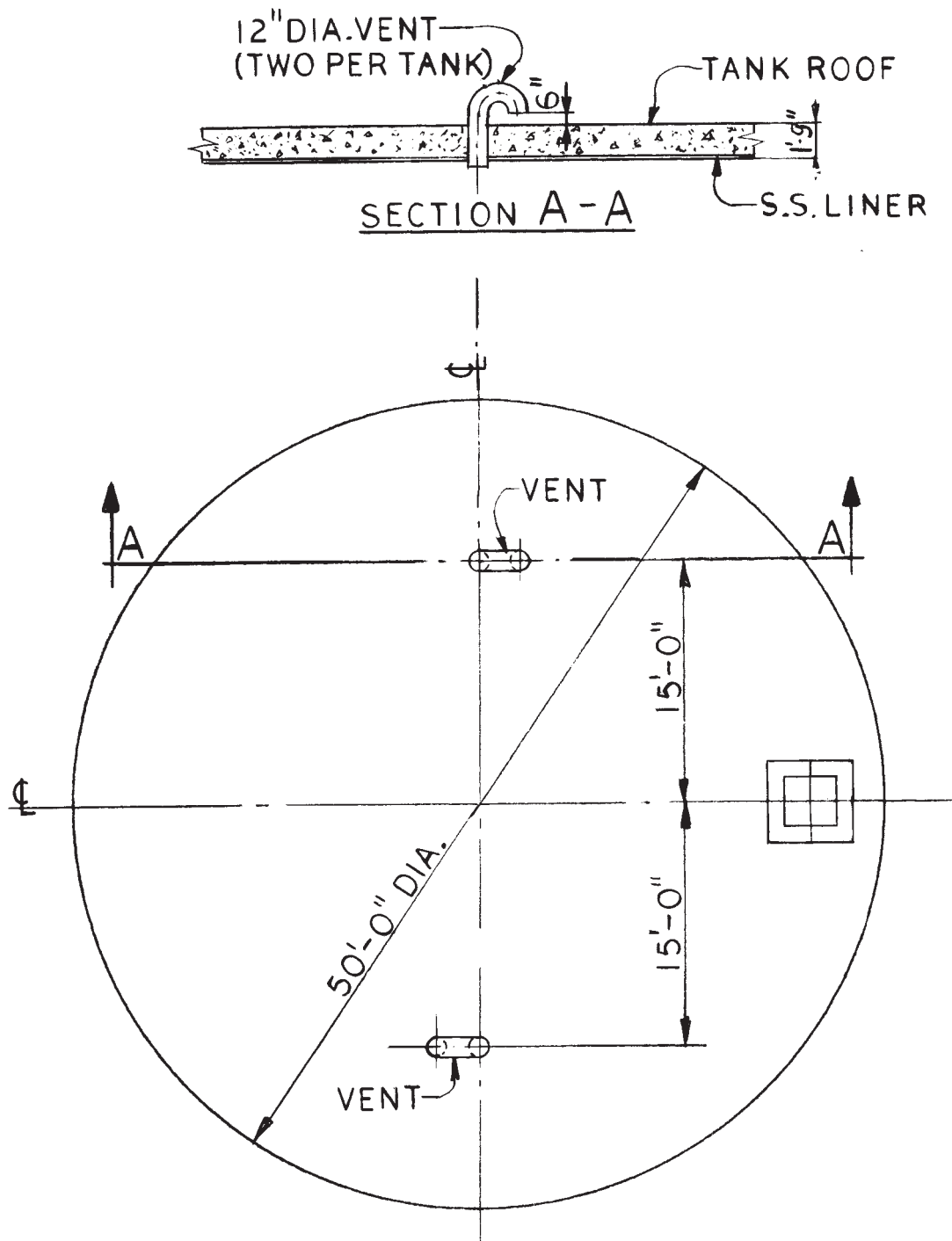
See Figure 6.2.2.-3

AMENDMENT 52
AUGUST 27, 1984

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

SUCTION PIPING FOR RHR AND
CONTAINMENT SPRAY SUMP LINES

FIGURE 6.3-6



AMENDMENT 6
MAY 31, 1979

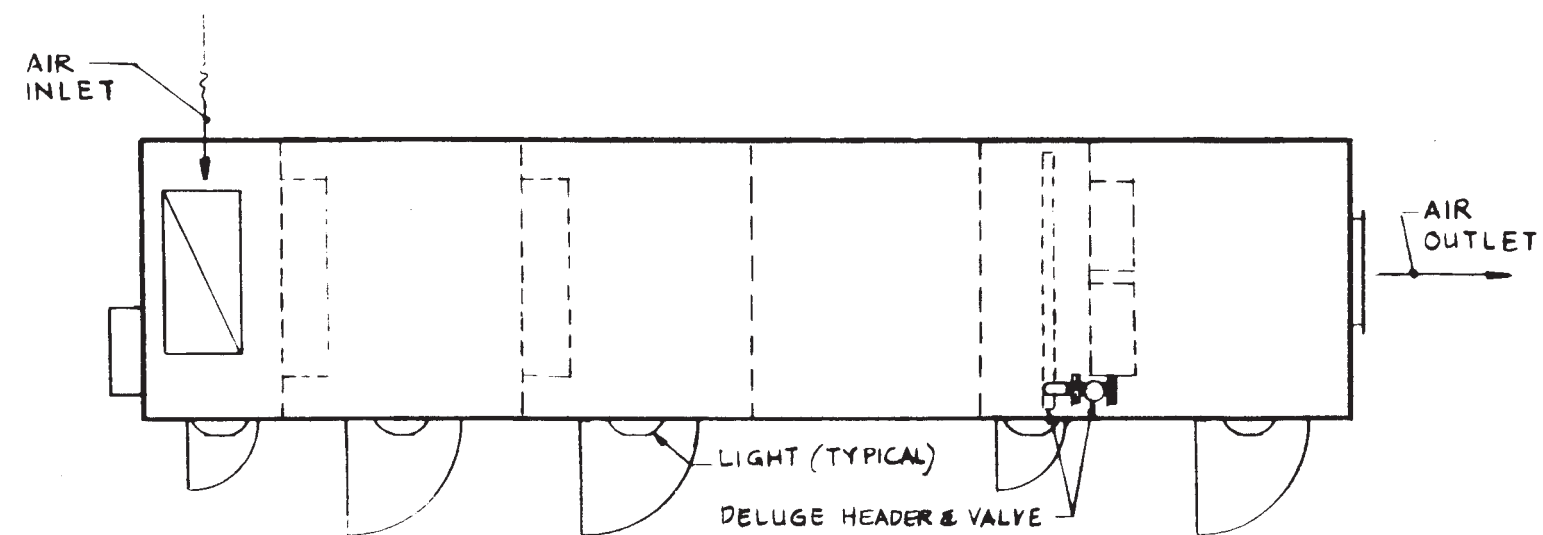
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

REFUELING WATER STORAGE
TANK VENT

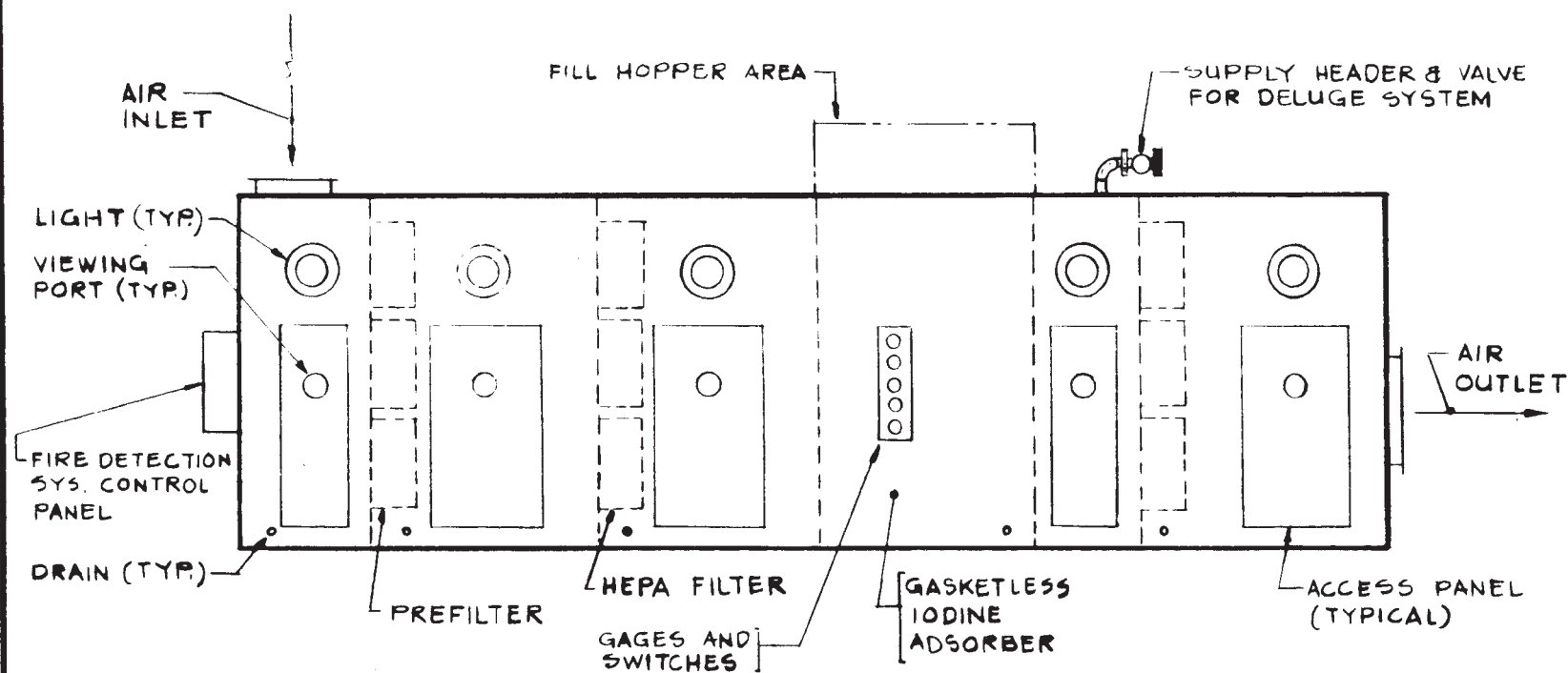
FIGURE 6.3-7

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PLAN

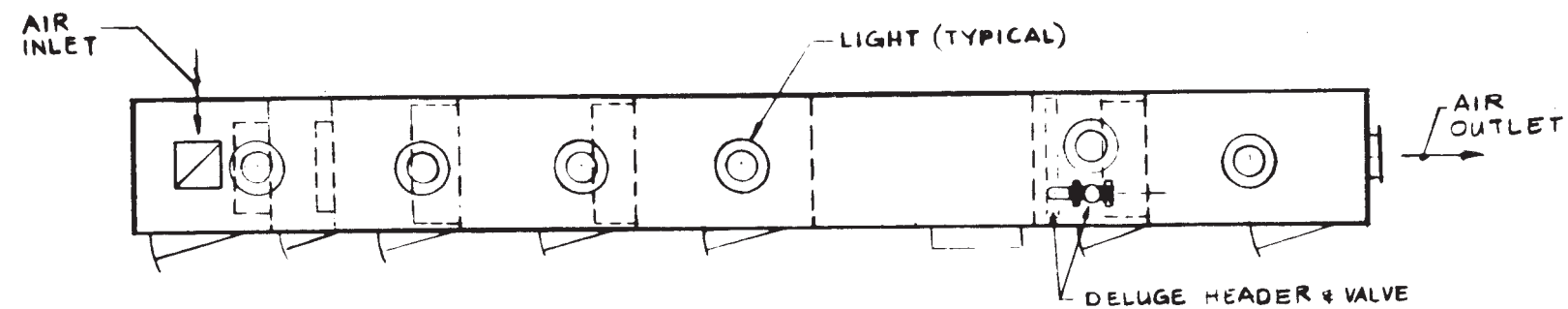


ELEVATION

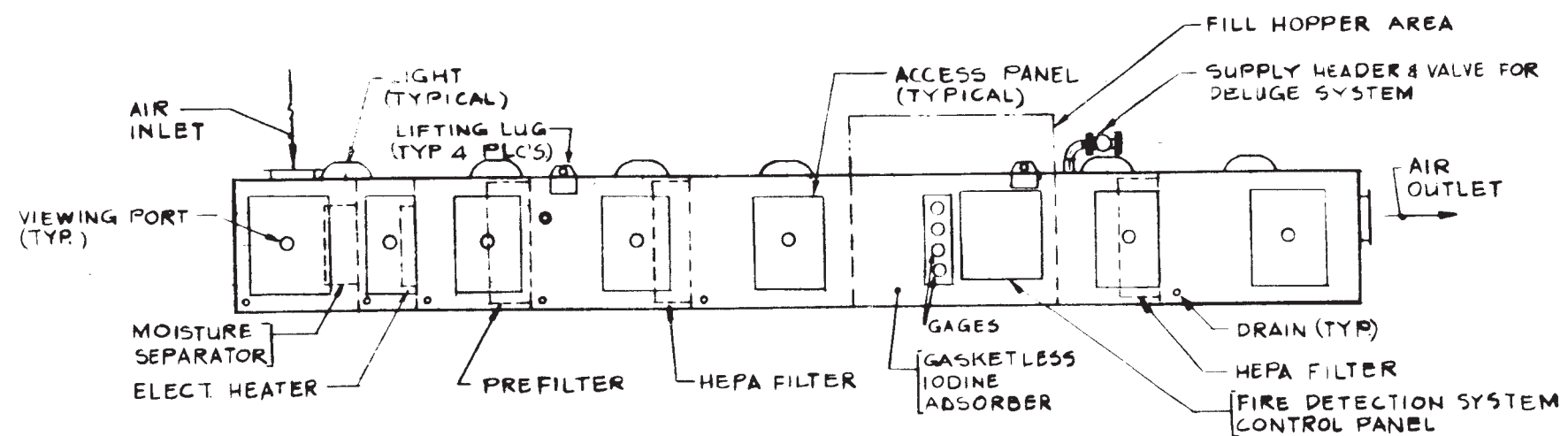
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

DETAIL OF FILTER TRAIN
CONTROL ROOM EMERGENCY
FILTRATION UNIT

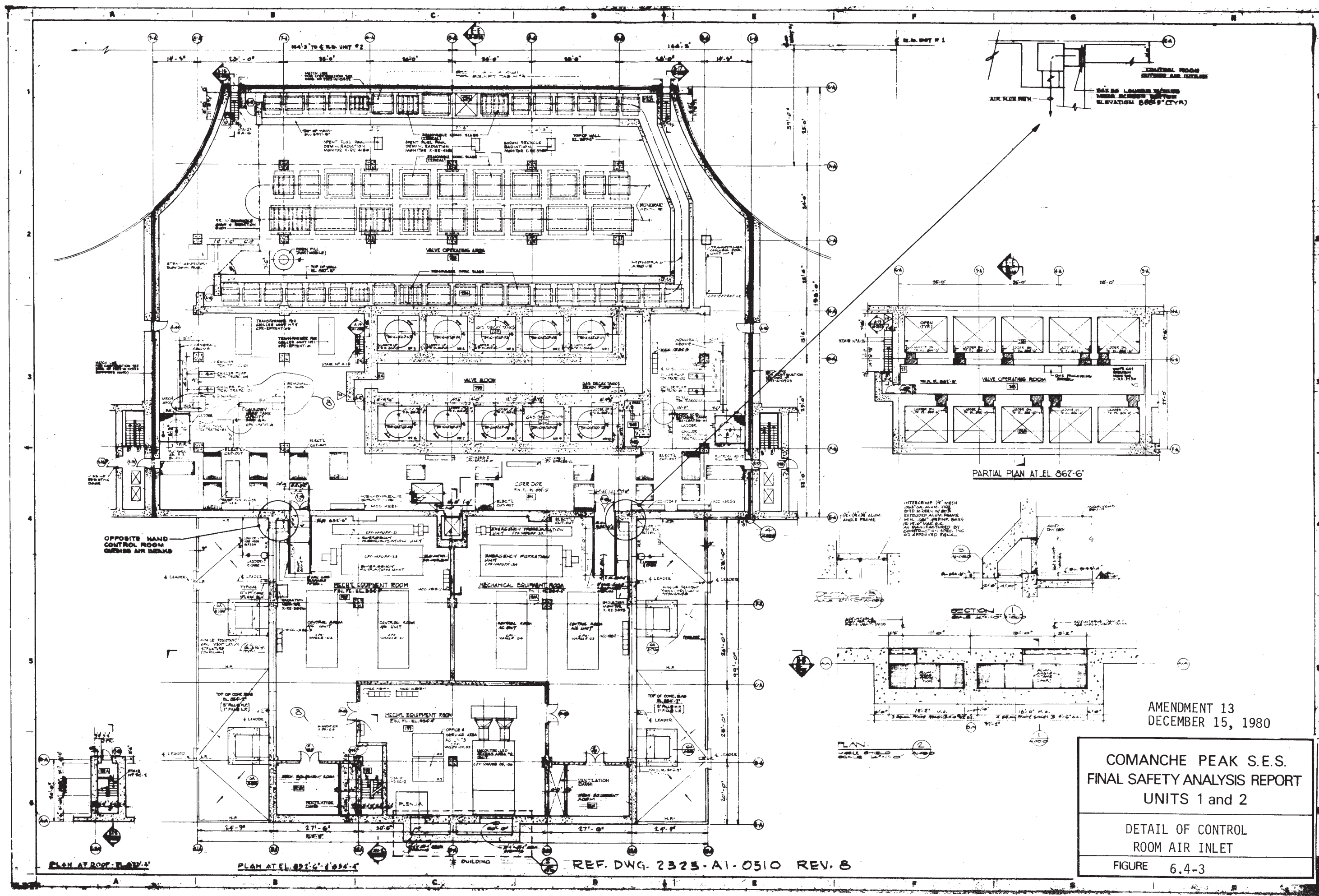
FIGURE 6.4-1

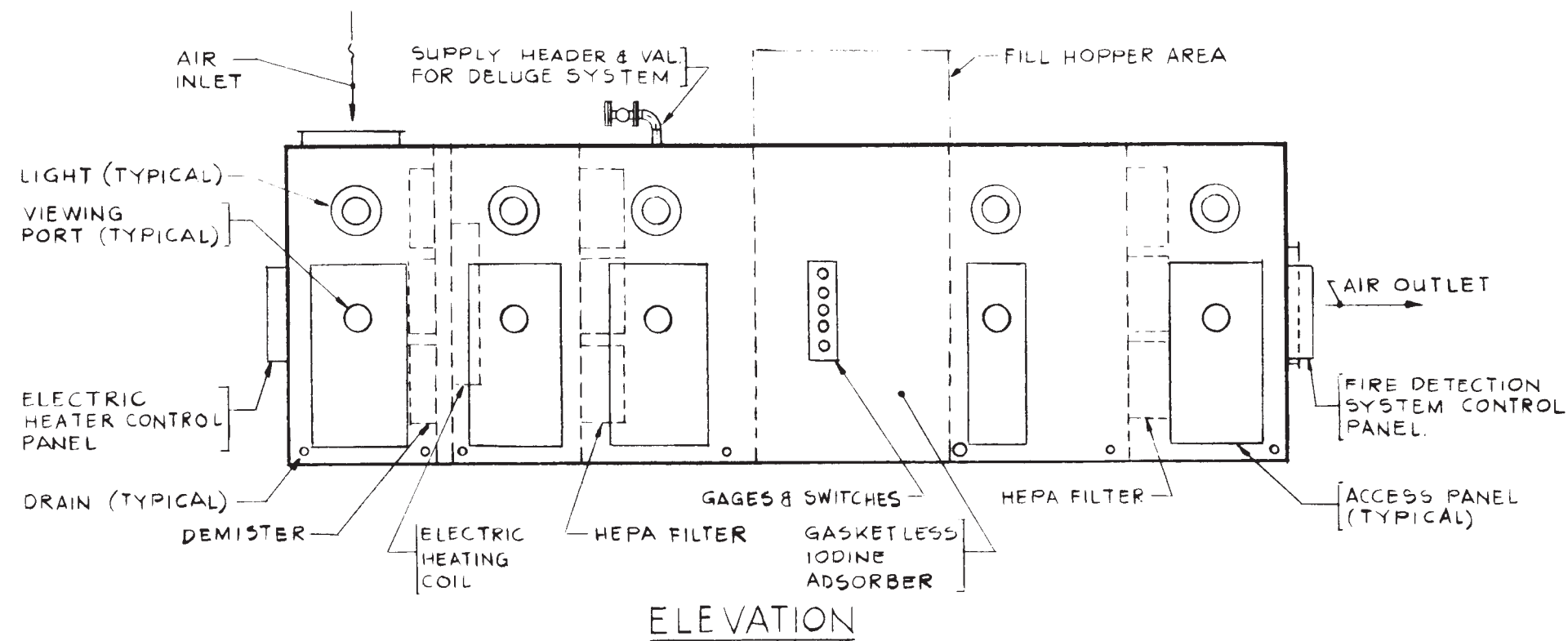
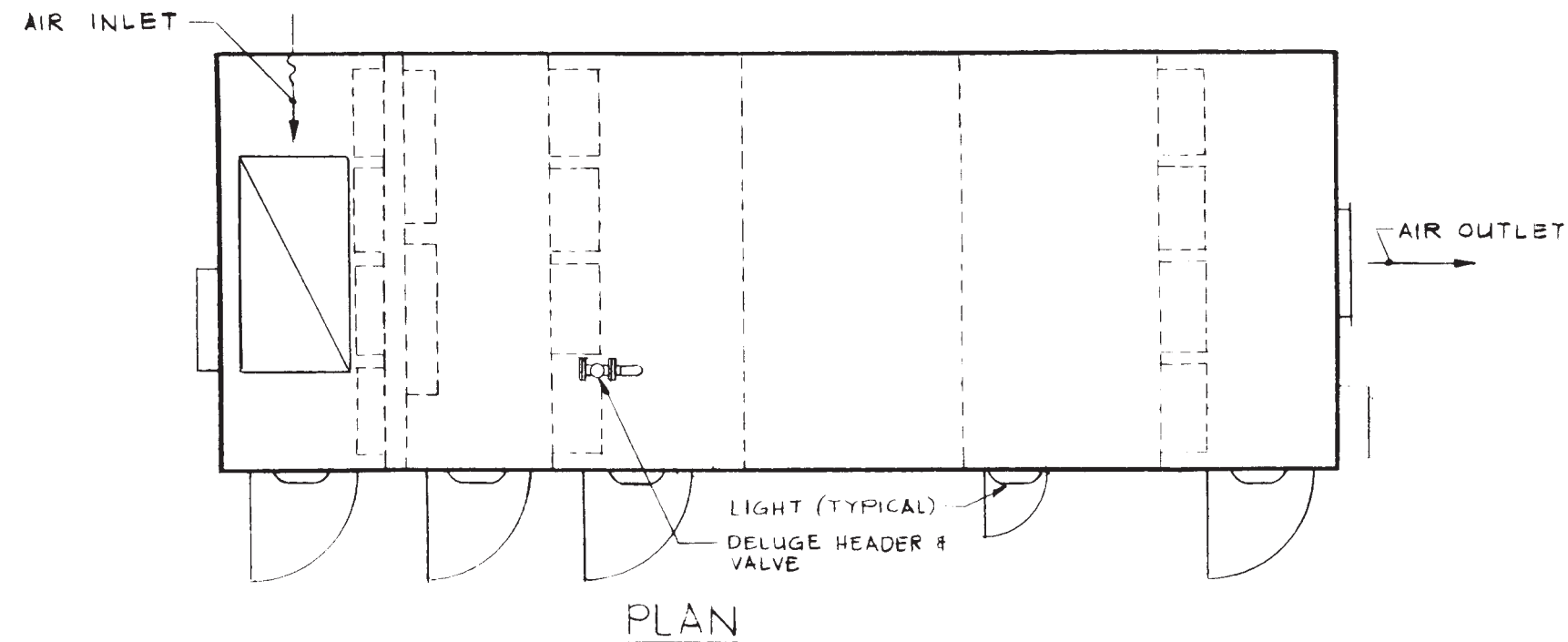


PLAN



ELEVATION





COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2
DETAIL OF FILTER TRAIN -
ESF
FIGURE 6.5-1

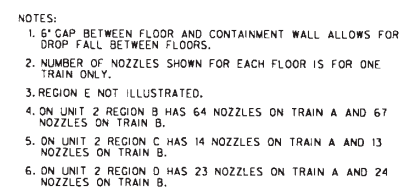
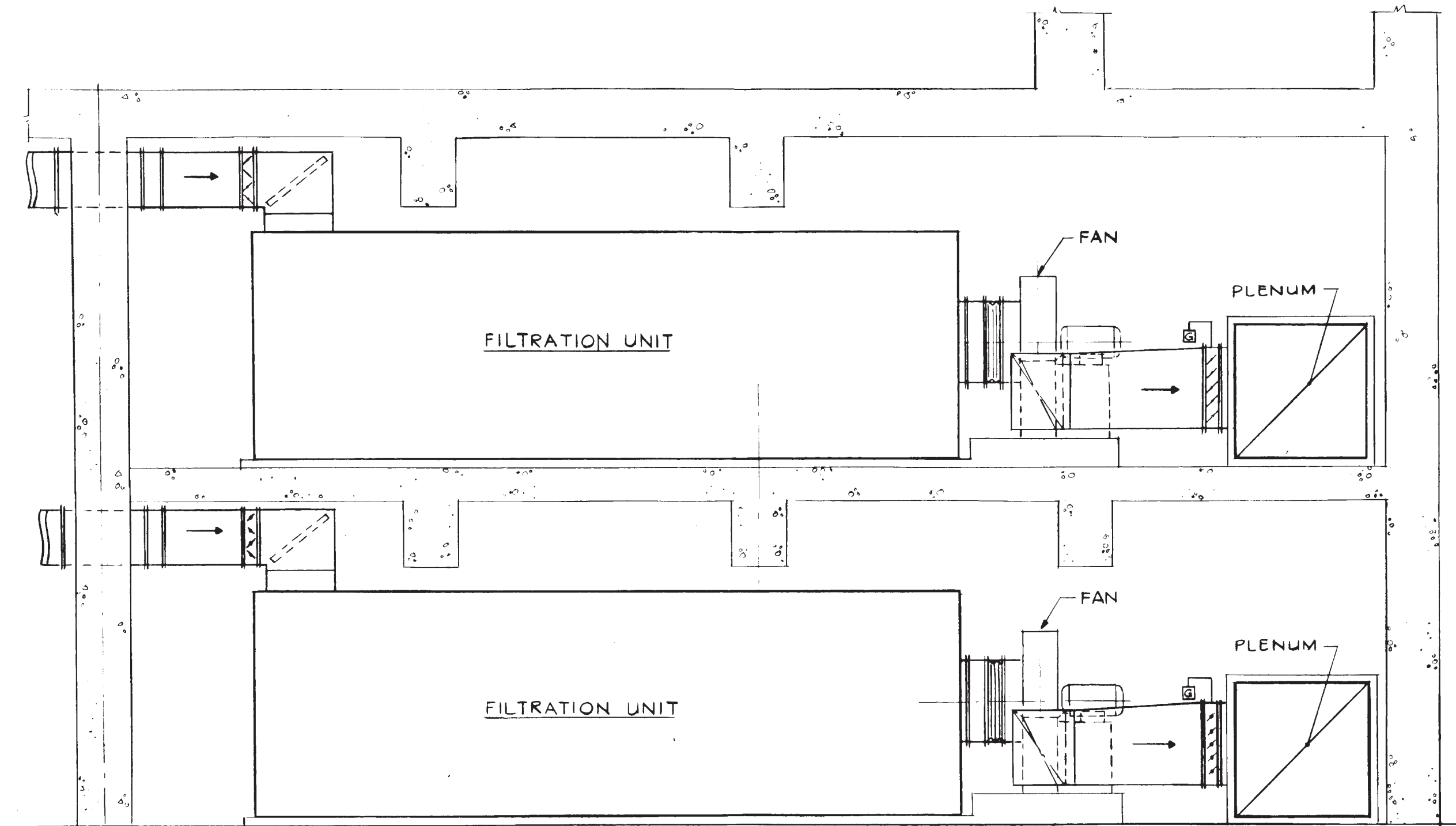


FIGURE GENERATED FOR FSAR ONLY
BASED ON DRAWING

CONTAINMENT SPRAY LAYOUT SCHEMATIC

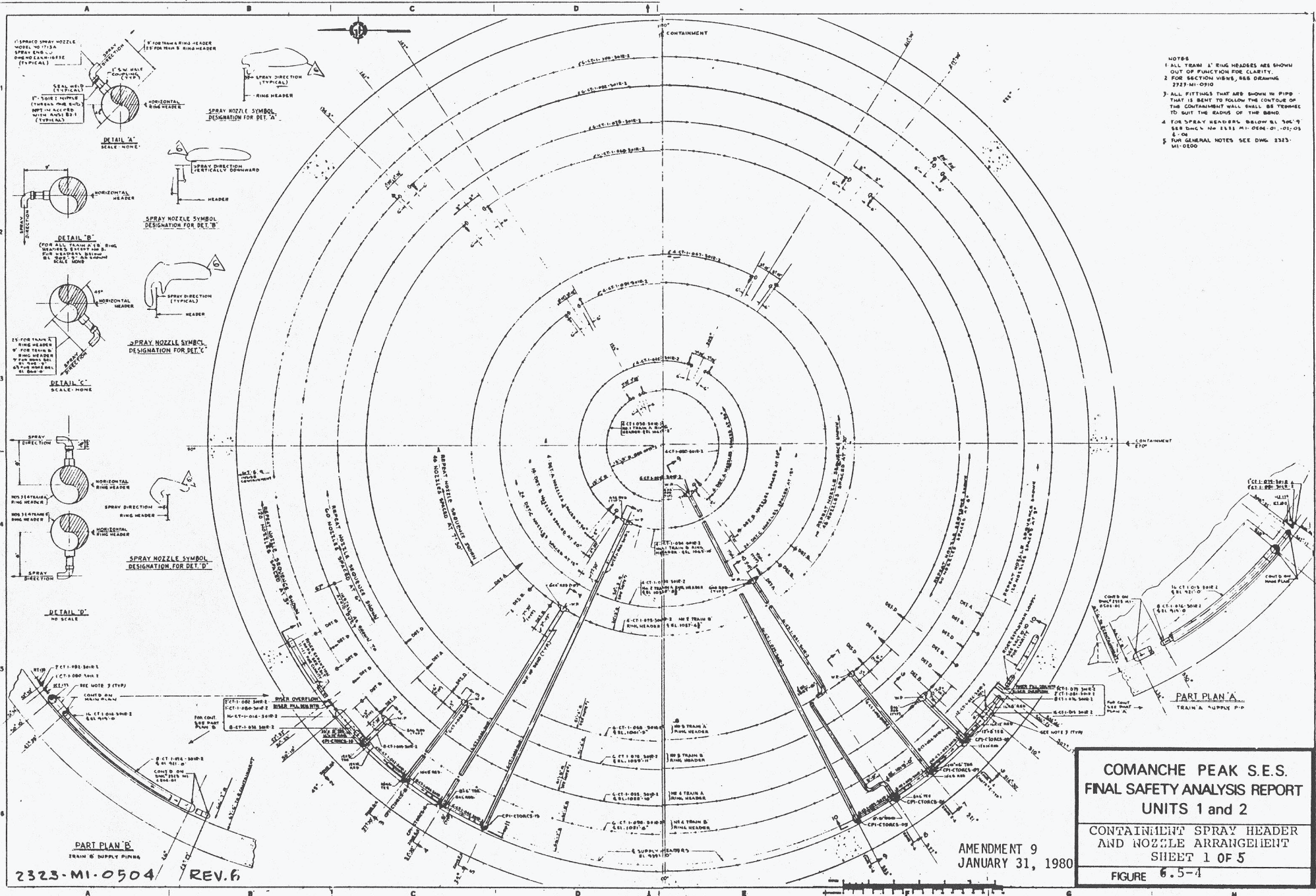
FIGURE 6.5-2



SECTION

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2
FILTER TRAIN SEPARATION

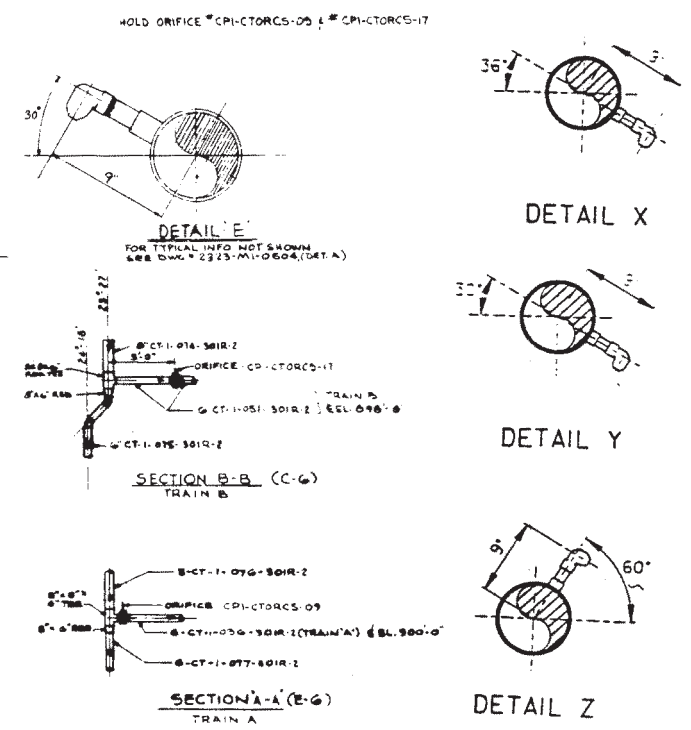
FIGURE 6.5-3



2323-MI-0504-01 REV. 6

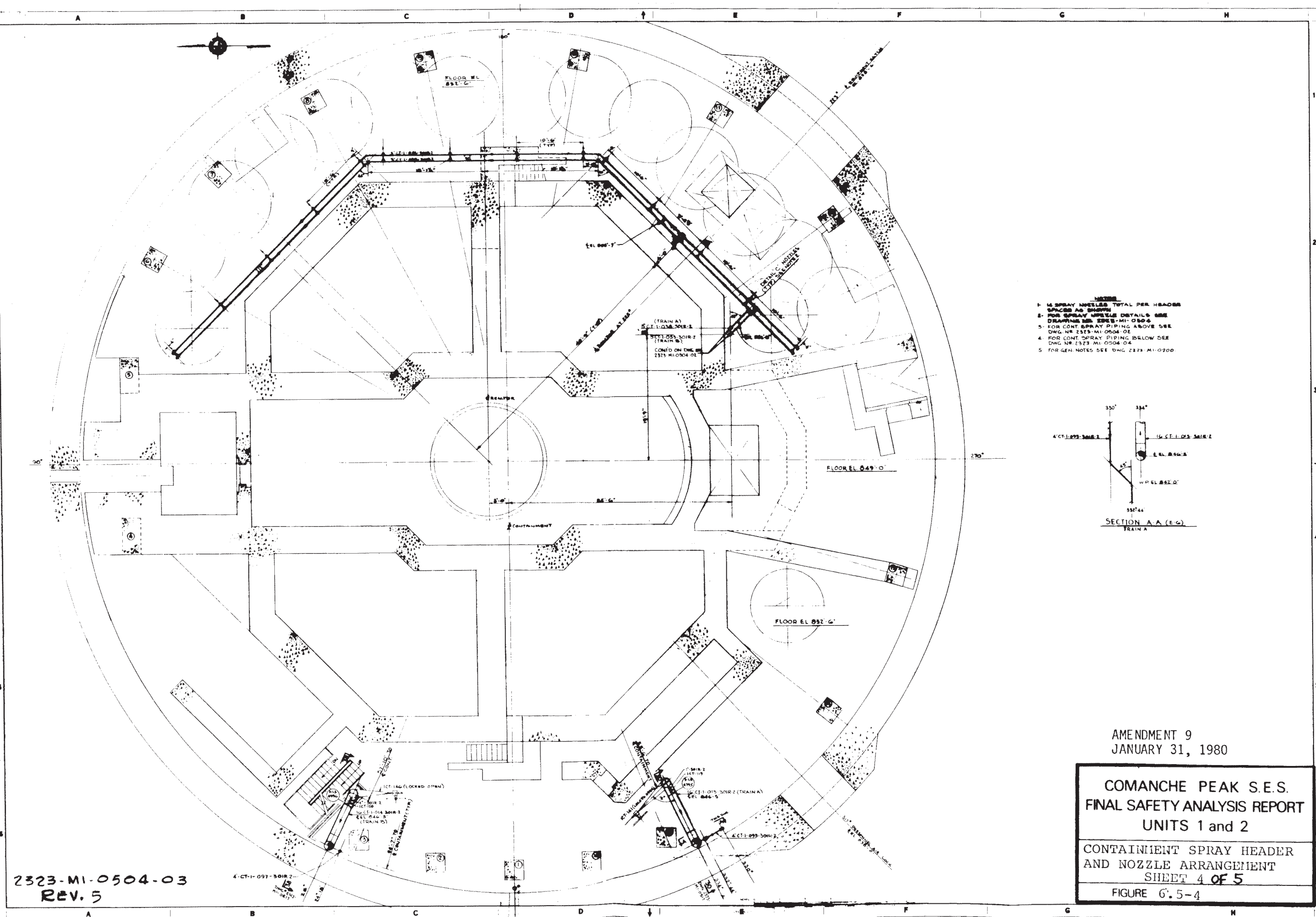
NOTES

1. TRAIN A - 30 DETAIL B SPRAY NOZZLES, 15 DETAIL C SPRAY NOZZLES AND 19 DETAIL E SPRAY NOZZLES - TOTAL 64 NOZZLES
TRAIN B - 30 DETAIL B SPRAY NOZZLES, 1 SPECIAL SPRAY NOZZLE SPRAYING DIRECTION DOWN, 16 DETAIL C SPRAY NOZZLES, 17 DETAIL E SPRAY NOZZLES 1 EACH DETAIL X, Y AND Z SPRAY NOZZLES - TOTAL 67 NOZZLES.
2. FOR NOZZLE DETAILS NOT SHOWN ON THIS DRAWING, SEE DWG 3232-M1-0504
3. FOR CONT. SPRAY PIPING ABOVE, SEE DWG 32323-M1-0504
4. FOR CONT. SPRAY PIPING BELOW, SEE DWG 32323-M1-0504-02
5. FOR GENERAL NOTES, SEE DWG 32323-M1-0200
6. ALL PIPING BENDS TO BE 6 DIA UNLESS OTHERWISE NOTED

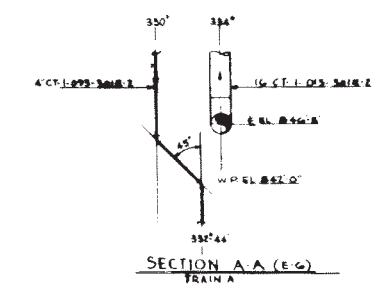


Amendment 96
August 2, 1999

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2
CONTAINMENT SPRAY HEADER
AND NOZZLE ARRANGEMENT
SHEET 3 OF 5
FIGURE 6.5-4



- NOTES
1. 14 SPRAY NOZZLES TOTAL PER HEADER SPACED AS SHOWN
 2. FOR SPRAY NOZZLE DETAILS SEE DRAWING NO. 2323-MI-0504-04
 3. FOR CONT. SPRAY PIPING ABOVE SEE DWG. NO. 2323-MI-0504-02
 4. FOR CONT. SPRAY PIPING BELOW SEE DWG. NO. 2323-MI-0504-04
 5. FOR GEN. NOTES SEE DWG. 2323-MI-0700



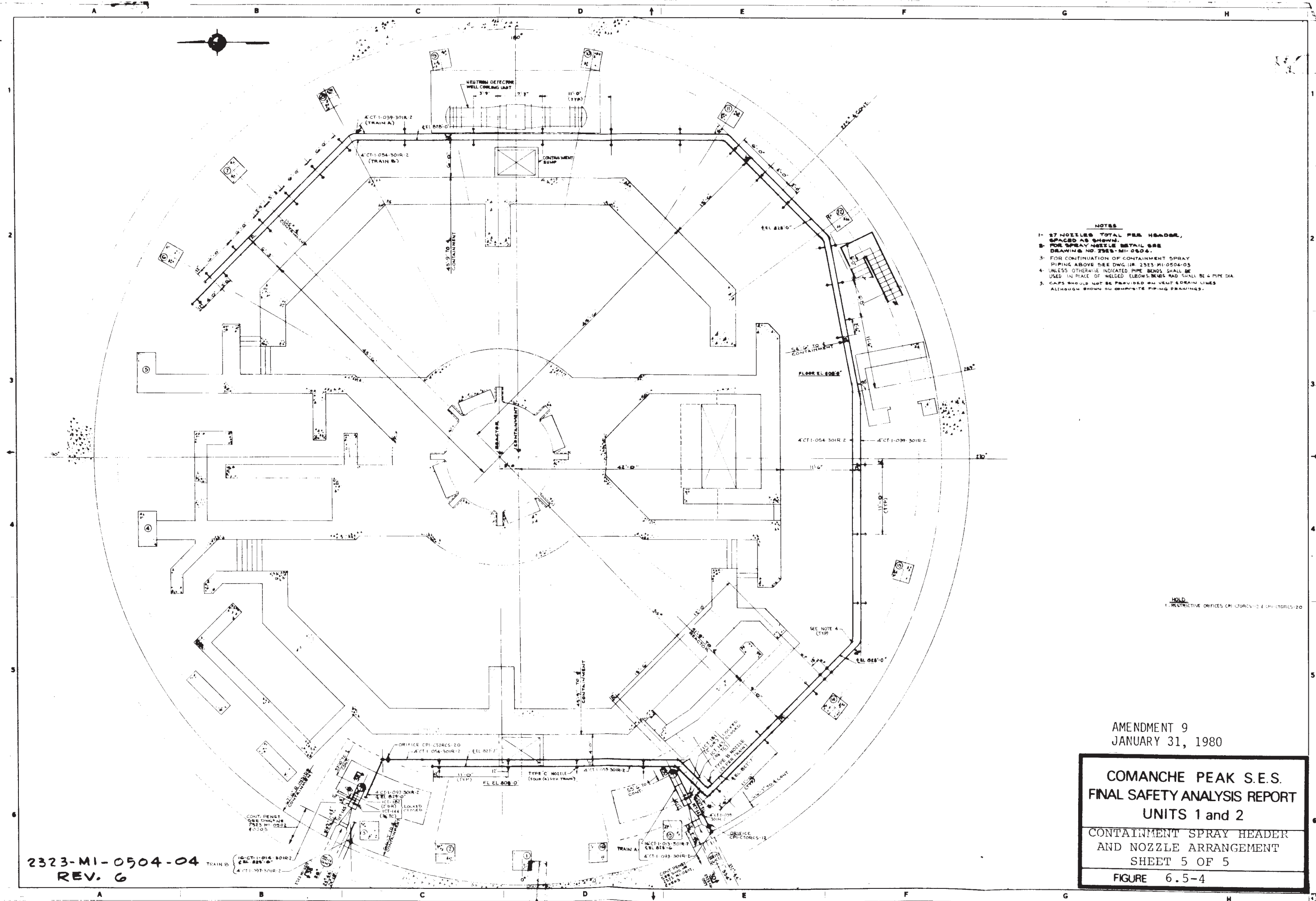
2323-MI-0504-03
REV. 5

AMENDMENT 9
JANUARY 31, 1980

**COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2**

CONTAINMENT SPRAY HEADER
AND NOZZLE ARRANGEMENT
SHEET 4 OF 5

FIGURE 6.5-4



- NOTES**
- 1- 27 NOZZLES TOTAL PER HEADER, SPACED AS SHOWN.
 - 2- FOR SPRAY NOZZLE DETAIL SEE DRAWING NO. 2323-MI-0504-03.
 - 3- FOR CONTINUATION OF CONTAINMENT SPRAY PIPING ABOVE SEE DWG. NO. 2323-MI-0504-03.
 - 4- UNLESS OTHERWISE INDICATED PIPE BENDS SHALL BE USED IN PLACE OF WELDED ELBOWS. BEND RAD. SHALL BE 4 PIPE DIA.
 - 5- CAPS SHOULD NOT BE PROVIDED ON VENT & DRAIN LINES ALTHOUGH SHOWN ON CONCRETE PIPING DRAWINGS.

HOLD
1. RESTRICTIVE ORIFICES CRI-0005-12 & CRI-0005-20

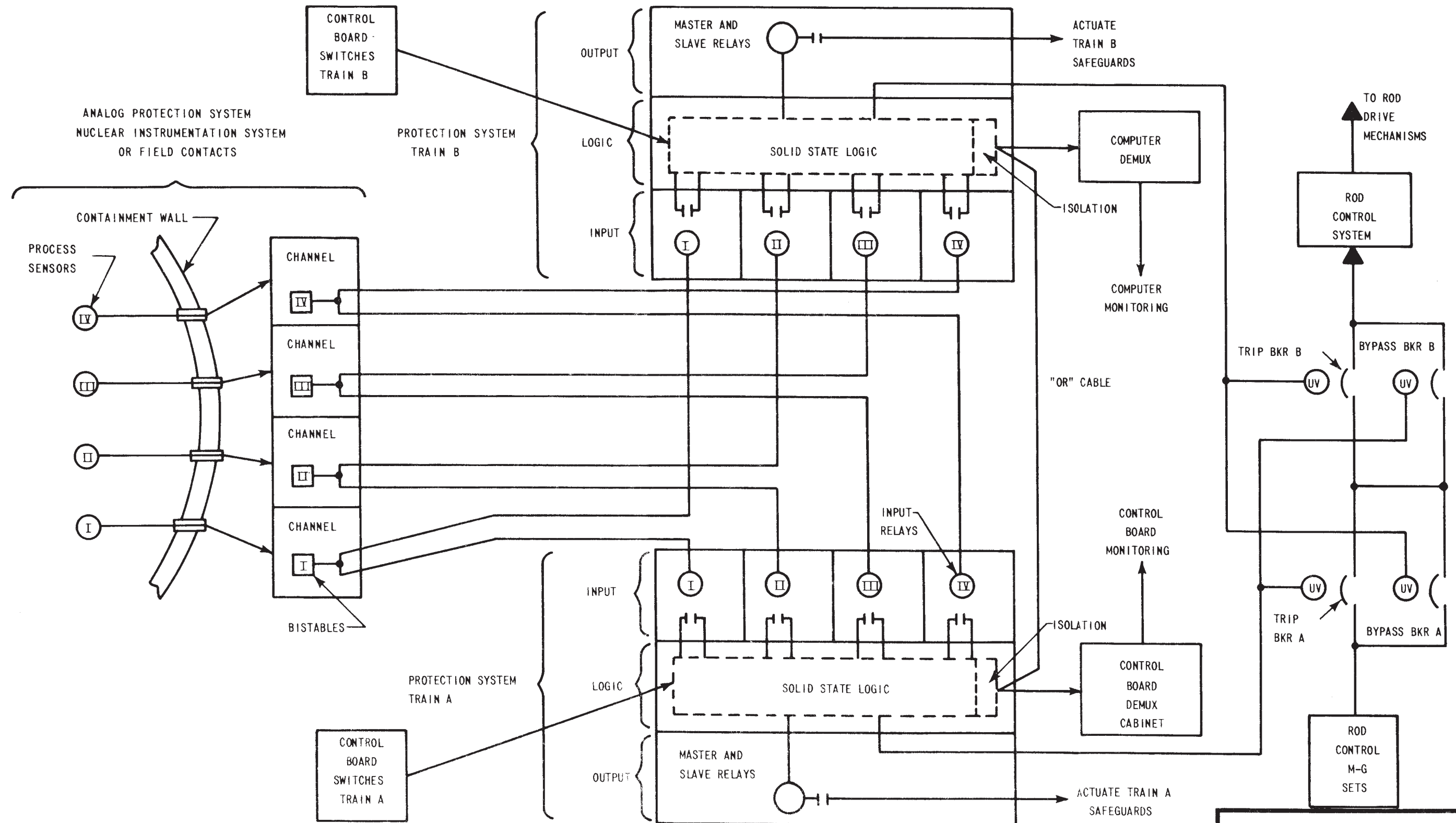
AMENDMENT 9
JANUARY 31, 1980

**COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2**

**CONTAINMENT SPRAY HEADER
AND NOZZLE ARRANGEMENT
SHEET 5 OF 5**

FIGURE 6.5-4

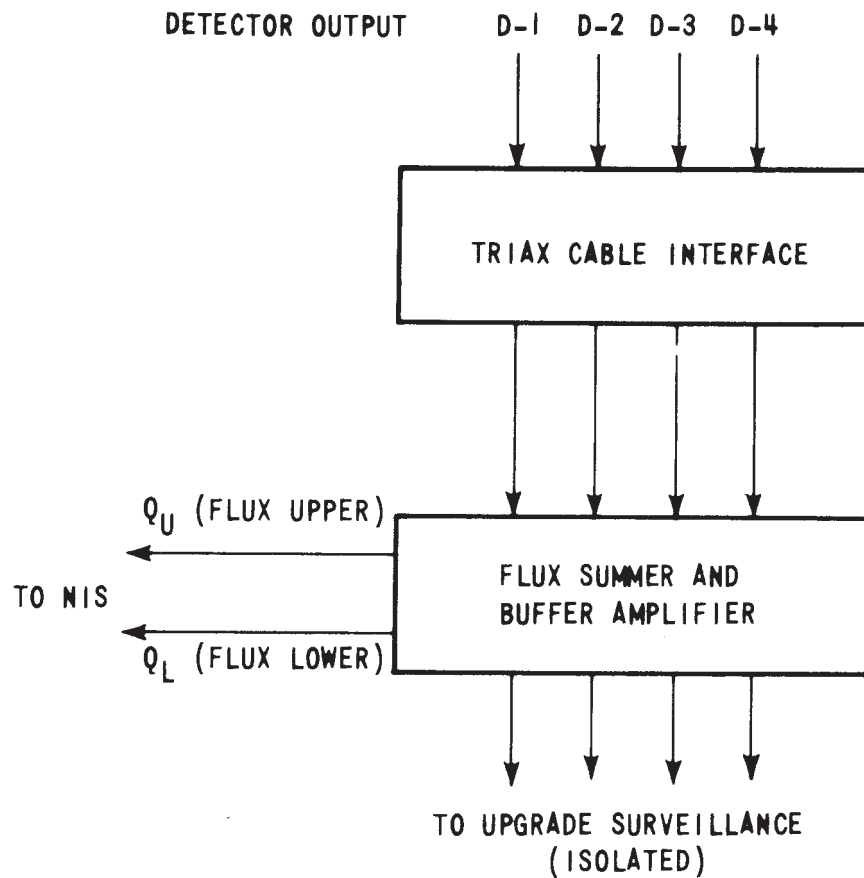
2323-MI-0504-04
REV. 6



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
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Protection System Block Diagram

FIGURE 7.1-1



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COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Excore Instrumentation
Interface (Typical of 4)

FIGURE 7.1-2

Explanatory Notes for Figure 7.1-3

These figures show relative locations of Class 1E and Accident Monitoring Instrumentation as required by FSAR Standard Format and address the requirement for "Location Layout Drawings" in FSAR Section 7.2, 7.3 and 7.5. All locations are approximate.

The following notes apply to these figures:

1. Reactor Trip System (RTS) and Engineered Safety Features Actuation (ESFAS) Instrumentation can be identified by the Protection group to which they are assigned. The symbol "PROT II" on the drawings means that the instrument is assigned to Protection Channel II; likewise for Channels I, III and IV.
2. An asterisk (*) associated with a sensor or transmitter indicates an accident-monitoring device. Refer to table 7.5-7 for indication of the accident monitoring type and category.
3. The symbol "LI" refers to the identification of the local instrument rack on which the device is mounted.
4. These figures do not include valve, pump, fan, or damper status indication and do not include Post Accident Sampling System or Meteorological System indication for accident monitoring purposes.
5. These figures do not include Class 1E electrical equipment, such as metering equipment, relays and similar electrical hardware.
6. These figures do not include Reactor Coolant Pump Undervoltage/Underfrequency sensors. Refer to Figure 8.3-5.
7. Location of sensors and transmitters shown is subject to minor relocation in accordance with established field relocation criteria.
8. Those instruments which are not identified as PROT I, II, III, IV, Train A or B are non-1E instruments.

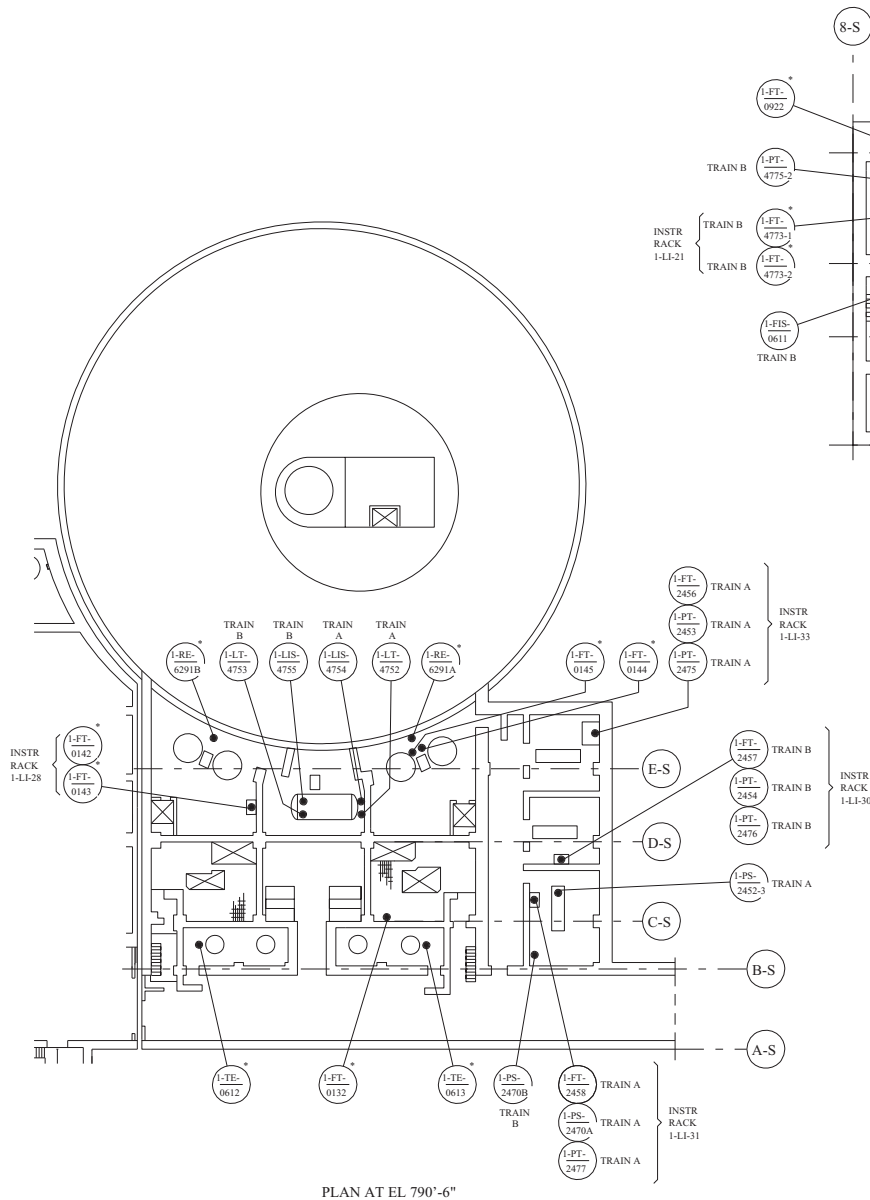
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COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Location of Class 1E Instrs.
and Accident Monitoring Instrs.

Explanatory Notes

Figure No. 7.1-3 (Sh. 1 of 36)



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PRIMARY PLANT - UNIT 1 CONTAINMENT
AND SAFEGUARD BUILDINGS
PLAN AT ELEVATION 790'-6"

1-FT-0132 RCS HI PRESS LETDOWN FLOW
1-FT-0142 RCP 4 SEAL WATER INJ FLOW
1-FT-0143 RCP 3 SEAL WATER INJ FLOW
1-FT-0144 RCP 2 SEAL WATER INJ FLOW
1-FT-0145 RCP 1 SEAL WATER INJ FLOW
1-TE-0612 RHR DISCH TEMP (PUMP 1)
1-TE-0613 RHR DISCH TEMP (PUMP 2)
1-PS-2452-3 AFW PMP TURB LUB OIL PRESS
1-PT-2453 MTR DRIVEN AFW
1-PT-2454 MTR DRIVEN AFW
1-PT-2456 MTR DRIVEN AFW
1-PT-2457B MTR DRIVEN AFW
1-FT-2458 TURB DRIVEN AFW PMP DISCH
1-PS-2470A TURB DRIVEN AFW PMP
1-PS-2470B SCT HDR PRESS LO
1-PT-2475 TURB DRIVEN AFW PMP
1-PT-2477 MTR DRIVEN AFW
1-LT-4752 PMP SUCT HDR
1-LT-4753 CHEM ADD TANK
1-LIS-4754 CHEM ADD TANK
1-LIS-4755 CHEM ADD TANK
1-RE-6291A HIGH RANGE AREA MONITOR
1-RE-6291B ISOL VLV TANK TRN B

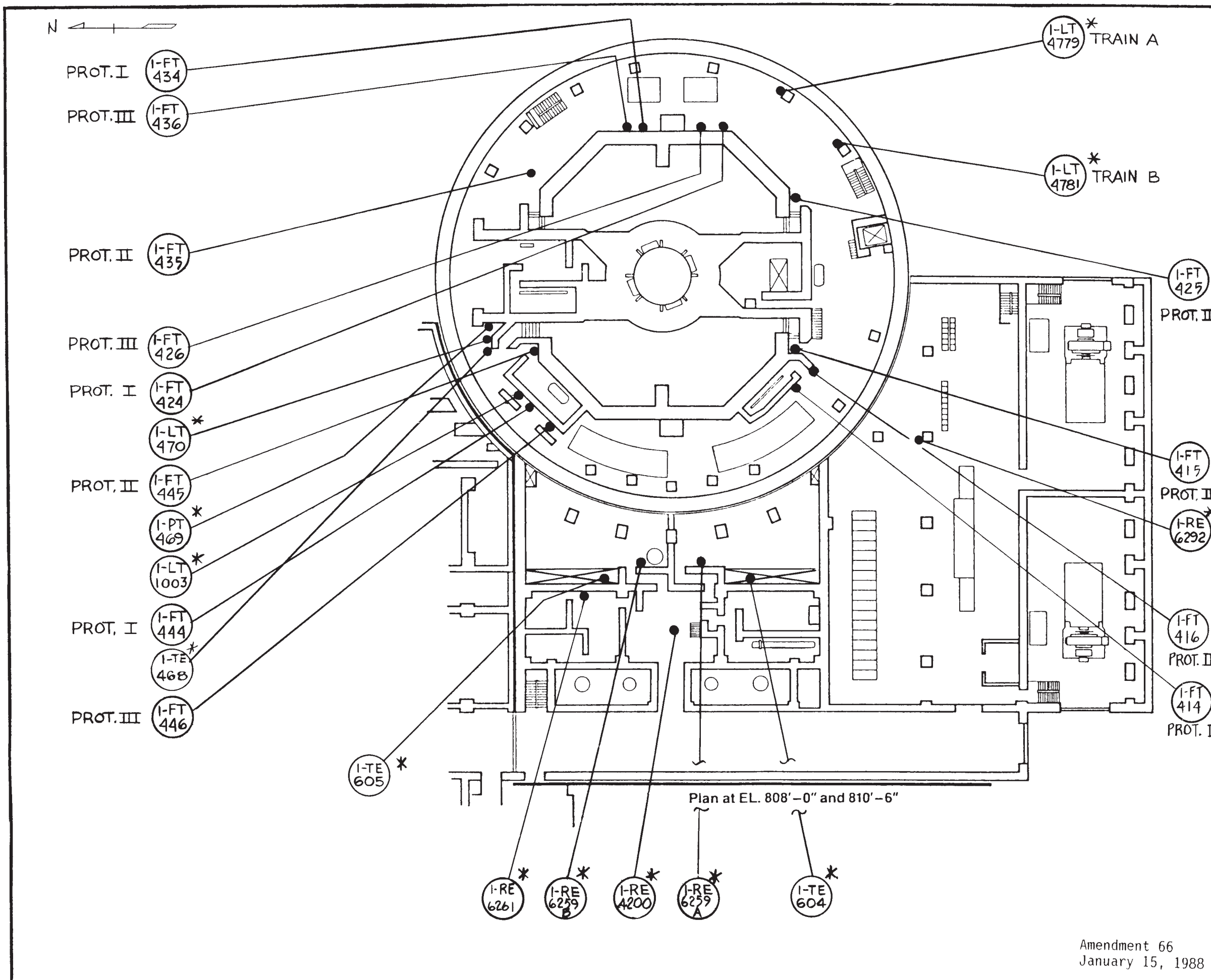
PRIMARY PLANT - UNIT 1 CONTAINMENT
AND SAFEGUARD BUILDINGS
PLAN AT ELEVATION 773'-0"

1-FIS-0610 RHR PMP 1 MIN FLOW
1-FIS-0611 RHR PMP 2 MIN FLOW
1-FT-0618 RHR HX 2 BYP CONT
1-FT-0619 RHR HX 2 BYP CONT
1-FT-0918 SI PMP 1 DISCH
1-FT-0922 SI PMP 2 DISCH
1-FT-0988 RHR PMP DISCH
1-FT-4772-1 CONTMT SPRAY PMP 1 DISCH
1-FT-4772-2 CONTMT SPRAY PMP 2 DISCH
1-FT-4773-1 CONTMT SPRAY PMP 3 DISCH
1-FT-4773-2 CONTMT SPRAY PMP 4 DISCH
1-PT-4774-1 CONTMT SPRAY PMP 1 DISCH
1-PT-4774-2 CONTMT SPRAY PMP 2 DISCH
1-PT-4775-1 CONTMT SPRAY PMP 3 DISCH
1-PT-4775-2 CONTMT SPRAY PMP 4 DISCH
1-LS-4900 SB FLR DR SUMP 2 LVL HI-1/LO
1-LS-4901 SB FLR DR SUMP 2 LVL HI-2
1-LS-4905 SB FLR DR SUMP 1 LVL HI/LO
1-LS-4906 SB FLR DR SUMP 1 LVL HI-2
1-RE-6260A HIGH RANGE AREA MONITOR
1-RE-6260B HIGH RANGE AREA MONITOR

COMANCHE PEAK S.E.S.
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UNITS 1 and 2

LOCATION OF CLASS 1E INSTRUMENTS
AND ACCIDENT MONITORING INSTRUMENTS
UNIT 1 CONTAINMENT AND
SAFEGUARD BUILDINGS

FIGURE NO 7.1-3 (SH 02 OF 36)



Plan at Elevations 808'-0" & 810'-6"

- 1-FT-414 RC Flow Loop 1
- 1-FT-415 RC Flow Loop 1
- 1-FT-416 RC Flow Loop 1
- 1-FT-424 RC Flow Loop 2
- 1-FT-425 RC Flow Loop 2
- 1-FT-426 RC Flow Loop 2
- 1-FT-434 RC Flow Loop 3
- 1-FT-435 RC Flow Loop 3
- 1-FT-436 RC Flow Loop 3
- 1-FT-444 RC Flow Loop 4
- 1-FT-445 RC Flow Loop 4
- 1-FT-446 RC Flow Loop 4
- 1-TE-468 PRZR Relief Tank
- 1-PT-469 PRZR Relief Tank
- 1-LT-470 PRZR Relief Tank
- 1-TE-604 Residual HX 1 Return
- 1-TE-605 Residual HX 2 Return
- 1-LT-1003 RC Drain Tank
- 1-LT-4779 CNTMT Level Wide Range
- 1-LT-4781 CNTMT Level Wide Range
- 1-RE-4200 SG Blo Dwn Mon
- 1-RE-6259A High Range Area Monitor Pipe Penet. S.
- 1-RE-6259B High Range Area Monitor Pipe Penet. N.
- 1-RE-6261 Low Range Area Monitor SB Sampling RM
- 1-RE-6292 High Range Area Monitor SWGR RM TRN A

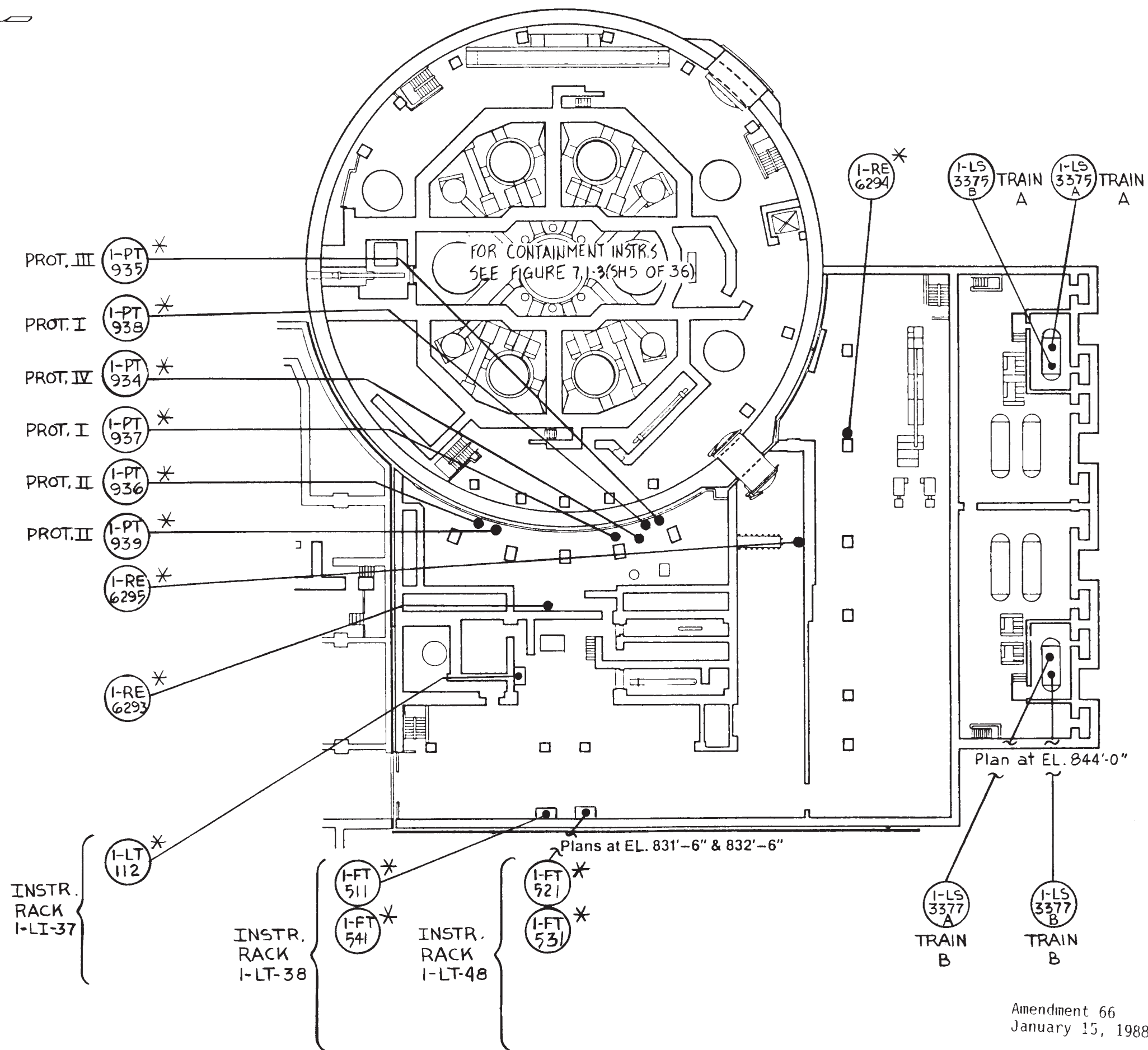
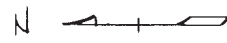
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Location of Class 1E Instrs.
and Accident Monitoring Instrs.

Unit 1
Containment & Safeguard Buildings
Plans at EL. 808' 0" & 810' 6"

Figure No. 7.1-3 (Sh. 3 of 36)

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Plan at Elevation 831'-6" Safeguard Building

1-LT-112	Vol Control
1-PT-511	Stm Gen FW Flow Loop 1
1-PT-521	Stm Gen FW Flow Loop 2
1-PT-531	Stm Gen FW Flow Loop 3
1-PT-541	Stm Gen FW Flow Loop 4
1-PT-934	Containment Press
1-PT-935	Containment Press
1-PT-936	Containment Press
1-PT-937	Containment Press
1-PT-938	Containment Press
1-PT-939	Containment Press
1-RE-6293	High Range Area Monitor Pipe Penet.
1-RE-6294	High Range Area Monitor Elec. Equip. ZV.
1-RE-6295	High Range Area Monitor Containment Access Hall

Plan at Elevation 844'-0" Diesel Generator Building

1-LS-3375A	D.F.O. Day Tk 1 LVL Hi/Lo
1-LS-3375B	D.F.O. Day Tk 1 LVL Hi/Lo
1-LS-3377A	D.F.O. Day Tk 2 LVL Hi/Lo
1-LS-3377B	D.F.O. Day Tk 2 LVL Hi/Lo

Plan at Elevations 832'-6" & 842'-6" Containment Building

1-TE-001	Core Exit Temp
Thru 1-TE-050	
1-NE-31	Source Range I
1-NE-32	Source Range II
1-NE-35	Interim Range I
1-NE-36	Interim Range II
1-NE-41	Power Range I
1-NE-42	Power Range II
1-NE-43	Power Range III
1-NE-44	Power Range IV
1-NE-50A	Neutron Flux
1-NE-50B	Neutron Flux
1-PT-403	RC Loop 4 Wide Range
1-PT-405	RC Loop 1 Wide Range
1-JE-410	N-16 Detector Prot I
1-JE-420	N-16 Detector Prot II
1-JE-430	N-16 Detector Prot III
1-JE-440	N-16 Detector Prot IV

For Continuation of List
See Figure No. 7.1-3 (sh. 5 of 36)

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Location of Class 1E Instrs.
and Accident Monitoring Instrs.

Unit 1
Containment & Safeguard Buildings
Plans at EL 831' 6" & 844' 0"

Figure No. 7.1-3 (Sh. 4 of 36)



(NARROW)
WIDE RING TEMP HOT LEG
WIDE RING TEMP HOT LEG
WIDE RING TEMP COLD LEG
(SPARE)
NARROW RING TEMP COLD LEG
WIDE RING TEMP HOT LEG
WIDE RING TEMP COLD LEG
(SPARE)
NARROW RING TEMP COLD LEG
WIDE RING TEMP HOT LEG
WIDE RING TEMP COLD LEG
(SPARE)
NARROW RING TEMP COLD LEG
WIDE RING TEMP HOT LEG
WIDE RING TEMP COLD LEG
SG LOOP 1 WIDE RANGE
SG LOOP 1 NARROW RANGE
SG LOOP 2 WIDE RANGE
SG LOOP 2 NARROW RANGE
ACCU TANK 1
ACCU TANK 1
ACCU TANK 2
ACCU TANK 2
ACCU TANK 3
ACCU TANK 3
ACCU TANK 1
ACCU TANK 2
ACCU TANK 2
ACCU TANK 3
ACCU TANK 3
REACTOR COOLANT SUBCOOLING
REACTOR COOLANT SUBCOOLING
REACTOR VESSEL LEVEL
REACTOR VESSEL LEVEL
REACTOR VESSEL LEVEL
REACTOR VESSEL LEVEL
REACTOR VESSEL LEVEL
REACTOR VESSEL LEVEL
REACTOR VESSEL LEVEL
REACTOR VESSEL LEVEL
REACTOR VESSEL LEVEL
MONITOR
RC LOOP 1 WIDE RANGE
SOURCE RANGE
SOURCE RANGE
INTERM RANGE
INTERM RANGE
POWER RANGE
POWER RANGE
POWER RANGE
NEUTRON FLUX

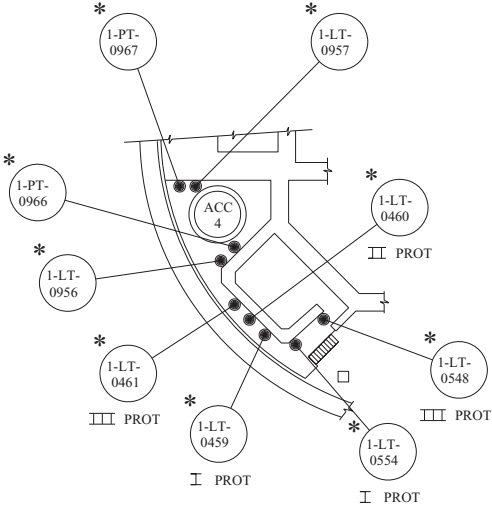
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1-NE-0050B	NEUTRON FLUX
1-PT-0403	RC LOOP 4 WIDE RANGE
1-PT-0405	RC LOOP 1 WIDE RANGE
1-JE-0410A/D	N-16 DETECTOR PROT
1-JE-0420A/D	N-16 DETECTOR PROT
1-JE-0430A/D	N-16 DETECTOR PROT
1-JE-0440A/D	N-16 DETECTOR PROT
1-TE-0001 THRU 2-TE-0050	CORE EXIT T/C

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRUMENTS
AND ACCIDENT MONITORING INSTRUMENTS
UNIT 1 CONTAINMENT BUILDING
PLAN AT EL 832'-6"

FIGURE 7.1-3 (SH 05 OF 36)



PLAN AT ELEVATION 842'-0"

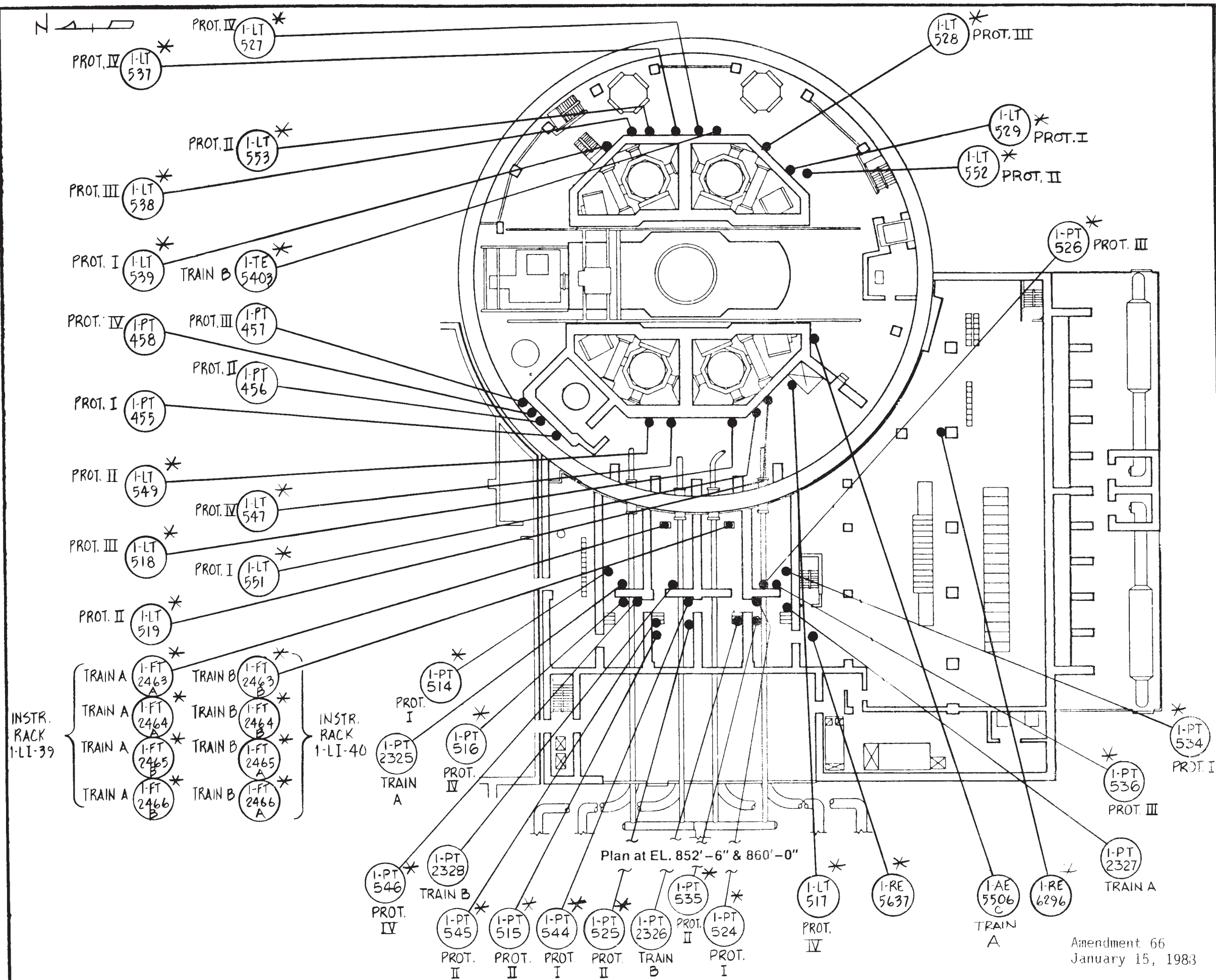
1-LT-0459	PRZR LEVEL
1-LT-0460	PRZR LEVEL
1-LT-0461	PRZR LEVEL
1-LT-0548	ACCUM TANK 4
1-LT-0554	ACCUM TANK 4
1-LT-0956	ACCUM TANK 4
1-LT-0957	ACCUM TANK 4
1-PT-0966	ACCUM TANK 4
1-PT-0967	ACCUM TANK 4

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COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRUMENTS
AND ACCIDENT MONITORING INSTRUMENTS
UNIT 1 CONTAINMENT BUILDING
PLAN AT EL 842'-0"

FIGURE 7.1-3 (SH 05A OF 36)



Plan at Elevations 852'-6" & 860'-0"

- 1-FT-2463A Aux FW to Stm Gen 1
- 1-FT-2463B Aux FW to Stm Gen 1
- 1-FT-2464A Aux FW to Stm Gen 2
- 1-FT-2464B Aux FW to Stm Gen 2
- 1-FT-2465A Aux FW to Stm Gen 3
- 1-FT-2465B Aux FW to Stm Gen 3
- 1-FT-2466A Aux FW to Stm Gen 4
- 1-FT-2466B Aux FW to Stm Gen 4
- 1-RE-5637 MS and FW Area Exh
- 1-RE-6296 High Range Radiation Monitor SWGR RM

- 1-TE-450 Press. Surge Line Temp.
- 1-TE-453 PRZR Liquid Temp
- 1-PT-455 PRZR Pressure
- 1-PT-456 PRZR Pressure
- 1-PT-457 PRZR Pressure
- 1-PT-458 PRZR Pressure
- 1-LT-517 SG #1 Level Narrow Range
- 1-LT-518 SG #1 Level Narrow Range
- 1-LT-519 SG #1 Level Narrow Range
- 1-LT-527 SG #2 Level Narrow Range
- 1-LT-528 SG #2 Level Narrow Range
- 1-LT-529 SG #2 Level Narrow Range
- 1-LT-537 SG #3 Level Narrow Range
- 1-LT-538 SG #3 Level Narrow Range
- 1-LT-539 SG #3 Level Narrow Range
- 1-LT-547 SG #4 Level Narrow Range
- 1-LT-549 SG #4 Level Narrow Range
- 1-LT-551 SG #1 Level Narrow Range
- 1-LT-552 SG #2 Level Narrow Range
- 1-LT-553 SG #3 Level Narrow Range
- 1-TE-5403 CNTMT. Temp El 865' - 0"
- 1-AE-5506C H₂ Monitor EL 864' - 0"
- 1-PT-514 SG LP1 Stm Press
- 1-PT-515 SG LP1 Stm Press
- 1-PT-516 SG LP1 Stm Press
- 1-PT-524 SG LP2 Stm Press
- 1-PT-525 SG LP2 Stm Press
- 1-PT-526 SG LP2 Stm Press
- 1-PT-534 SG LP3 Stm Press
- 1-PT-535 SG LP3 Stm Press
- 1-PT-536 SG LP3 Stm Press
- 1-PT-544 SG LP4 Stm Press
- 1-PT-545 SG LP4 Stm Press
- 1-PT-546 SG LP4 Stm Press
- 1-PT-2325 Loop 1 Main Steam
- 1-PT-2326 Loop 2 Main Steam
- 1-PT-2327 Loop 3 Main Steam
- 1-PT-2328 Loop 4 Main Steam

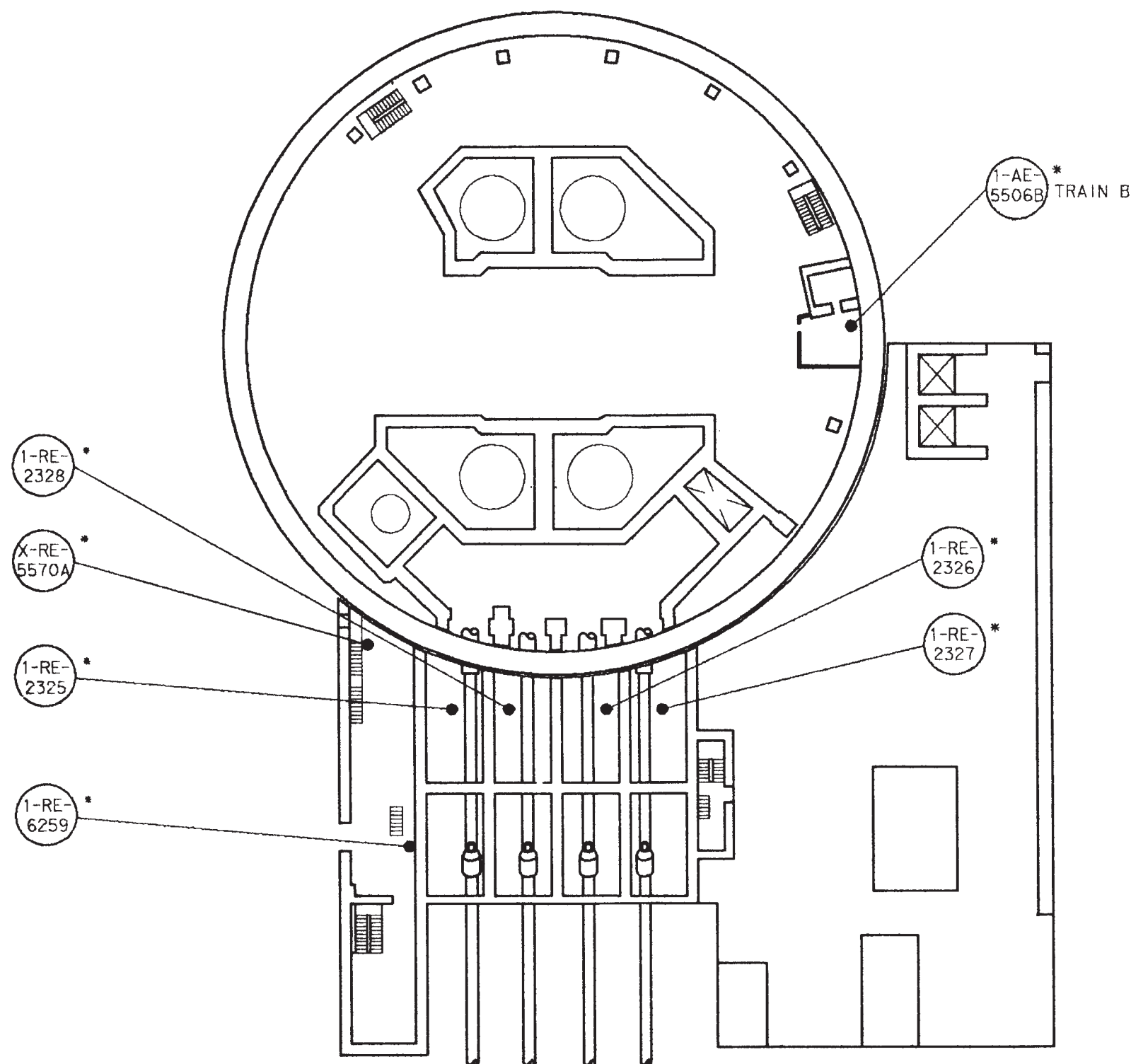
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2

Location of Class 1E Instrs.
and Accident Monitoring Instrs.

Unit 1
Containment & Safeguard Buildings
Plans at EL 852' 6" & 860' 0"

Figure No. 7.1-3 (Sh. 6 of 36)

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Plan at EL. 873'-6"

PLANS AT ELEVATIONS 873'-6"

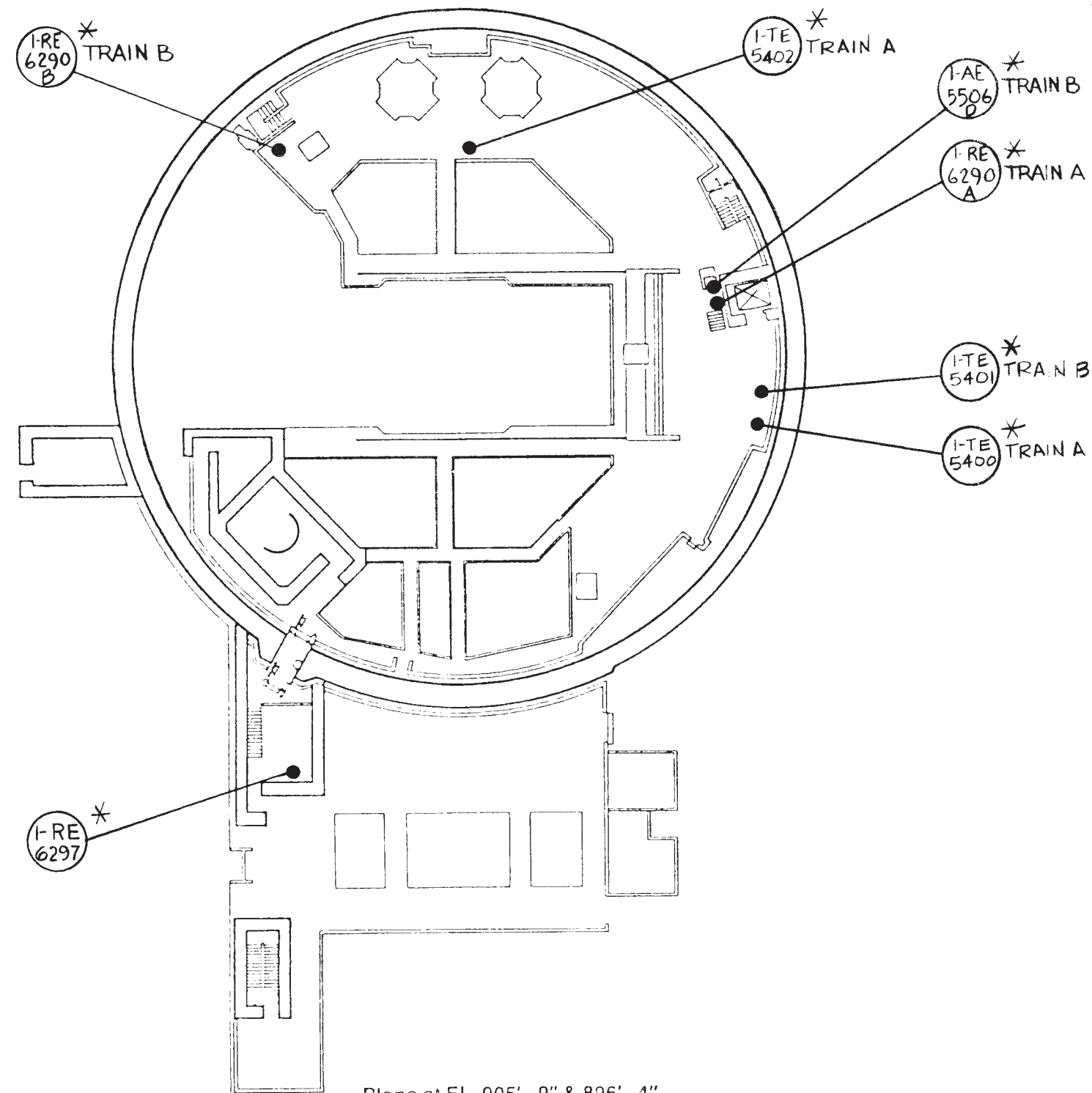
- 1-RE-2325 MSL MONITOR NUMBER 1
- 1-RE-2326 MSL MONITOR NUMBER 2
- 1-RE-2327 MSL MONITOR NUMBER 3
- 1-RE-2328 MSL MONITOR NUMBER 4
- X-RE-5570A WIDE RANGE GAS MONITOR
S PLANT VENT STACK
- 1-RE-6259 LOW RANGE AREA MONITOR
PLANT VENT STASCK SAMPLE
- 1-AE-5506B H₂ MONITOR EL 877'-0"

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRS
AND ACCIDENT MONITORING INSTRS
UNIT 1
CONTAINMENT AND SAFEGUARDS BUILDINGS
PLANS AT EL 873'-6"

FIGURE 7.1-3 (SH 7 OF 36)

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Plans at Elevations 905'-9",
896'-4"

1-TE-5400	CNTMT Temp EL 1001' 0"
1-TE-5401	CNTMT Temp EL 1001' 0"
1-TE-5402	CNTMT Temp EL 909' 0"
1-AE-5506D	H2 Monitor EL 910' 0"
1-RE-6290A	High Range Radiation Monitor CNTMT EL Area 905
1-RE-6290B	High Range Radiation Monitor CNTMT E. Wall
1-RE-6297	High Range Area Monitor Emer Air Lock

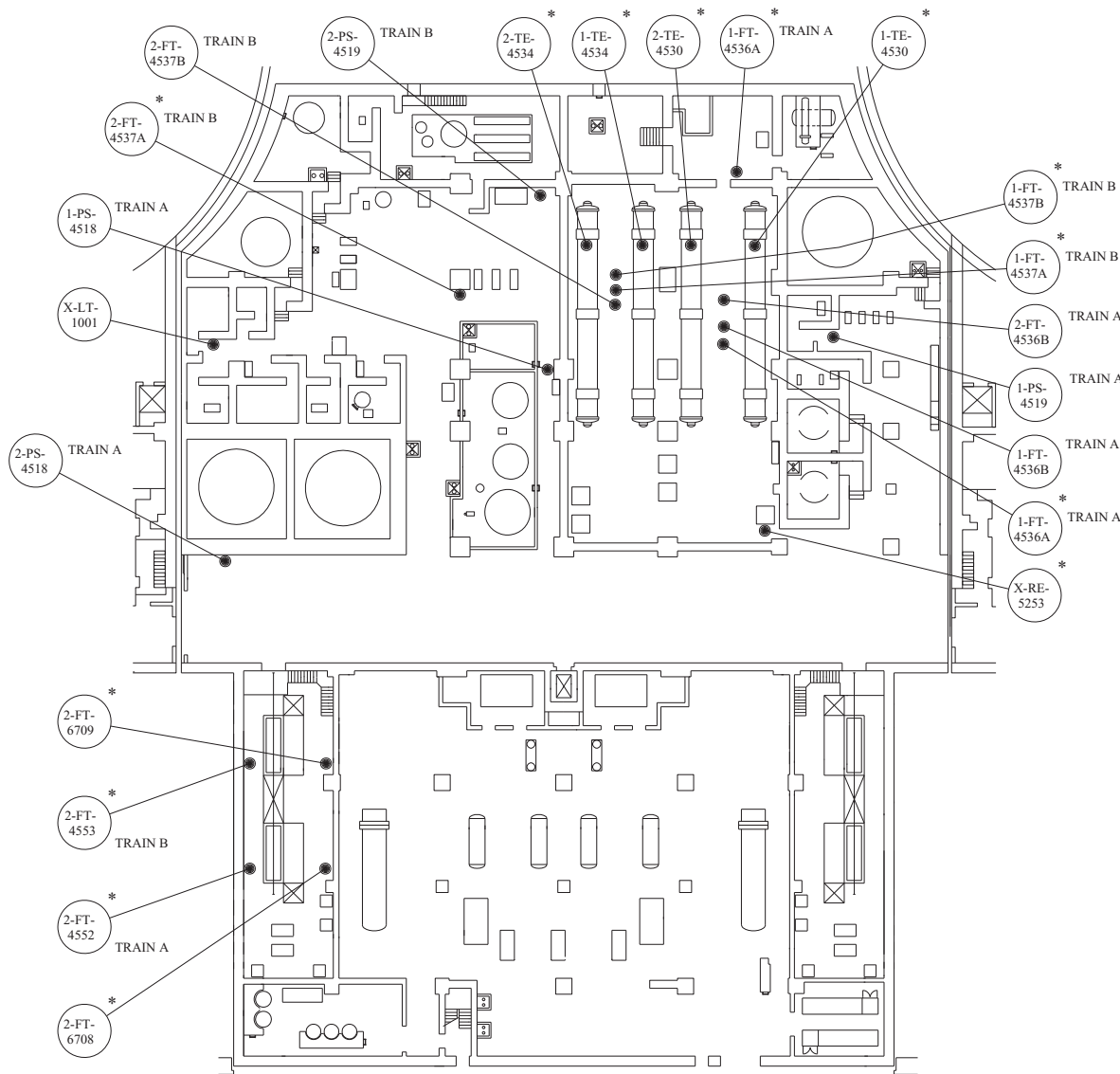
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Location of Class 1E Instrs.
and Accident Monitoring Instrs.

Containment & Safeguard Buildings
Plans at EL 905' 9" & 896' 4"

Figure No. 7.1-3 (Sh. 8 of 36)

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PLAN AT ELEVATION 778'-0"

PLAN AT ELEVATION 773'-0"

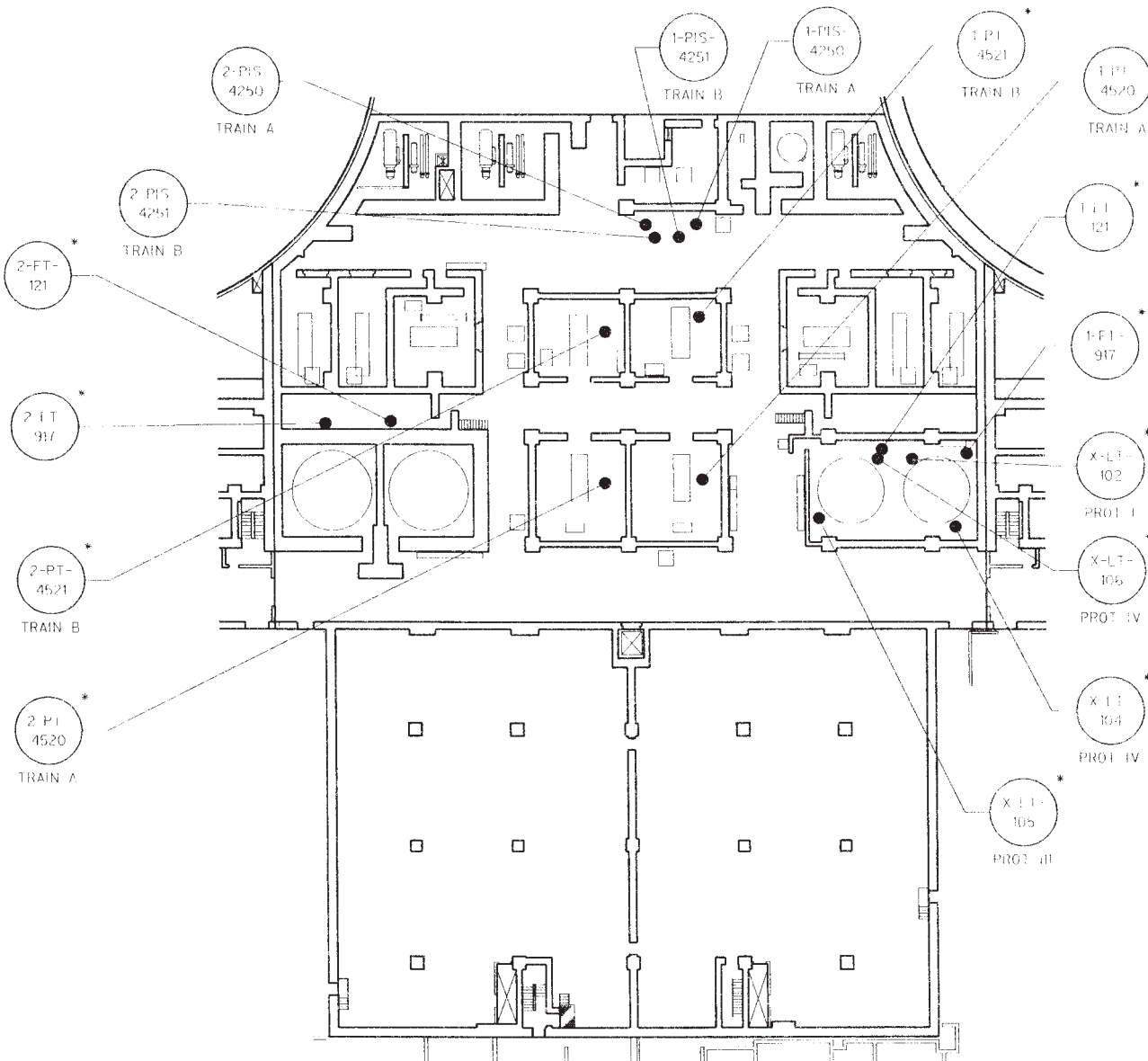
X-LT-1001	WASTE HOLDUP TANK LEVEL
1-PS-4518	CCW SUPPLY HDR 2 PRESS LO
1-PS-4519	CCW SUPPLY HDR 1 PRESS HI
1-TE-4530	CCW HEADER TEMP
1-TE-4534	CCW HEADER TEMP
1-FT-4536A	CCW HEAT EX 01 TO COMP CIRS
1-FT-4536B	CCW LOOP 01 ELECTRIC
1-FT-4537A	CCW HEAT EX 02 TO COMP CIRS
1-FT-4537B	CCW LOOP 02 ELECTRIC
X-RE-5253	LIQUID WASTE MONITOR
2-PS-4518	CCW SUPPLY HDR 2 PRESS LO
2-PS-4519	CCW SUPPLY HDR 1 PRESS HI
2-TE-4530	CCW HEADER TEMP
2-TE-4534	CCW HEADER TEMP
2-FT-4536A	CCW HEAT EX 01 TO COMP CIRS
2-FT-4536B	CCW LOOP 01 ELECTRIC
2-FT-4537A	CCW HEAT EX 02 TO COMP CIRS
2-FT-4537B	CCW LOOP 02 ELECTRIC
2-PT-4552	SAFETY CHILLER 05 REFRIG PRESS
2-PT-4553	SAFETY CHILLER 06 REFRIG PRESS
2-FT-6708	SAFETY CHILLER 05 RETURN FLOW
2-FT-6709	SAFETY CHILLER 06 RETURN FLOW

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August 1, 1996

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRUMENTS
AND ACCIDENT MONITORING INSTRUMENTS
AUXILIARY AND CONTROL BUILDING
PLAN AT EL 778'-0" AND 790'-6"

FIGURE 7.1-3 (SH 09 OF 36)



PLAN AT EL. 807'-0" AND 810'-6"

PLAN AT ELEVATIONS 807'-0" AND 810'-6"

X-LT-102 BORIC ACID TANK #1
 X-LT-104 BORIC ACID TANK #1
 X-LT-105 BORIC ACID TANK #2
 X-LT-106 BORIC ACID TANK #2

1-PT-121 CHARGING LINE
 1-PT-917 CHARGING PMP DISCHARGE
 1-PT-4250 SSW TRN B SPLY HDR PRESS. I/O
 1-PT-4251 SSW TRN A SPLY HDR PRESS. I/O
 1-PT-4520 COW PMP NUMBER 1 DISCH.
 1-PT-4521 COW PMP NUMBER 2 DISCH.

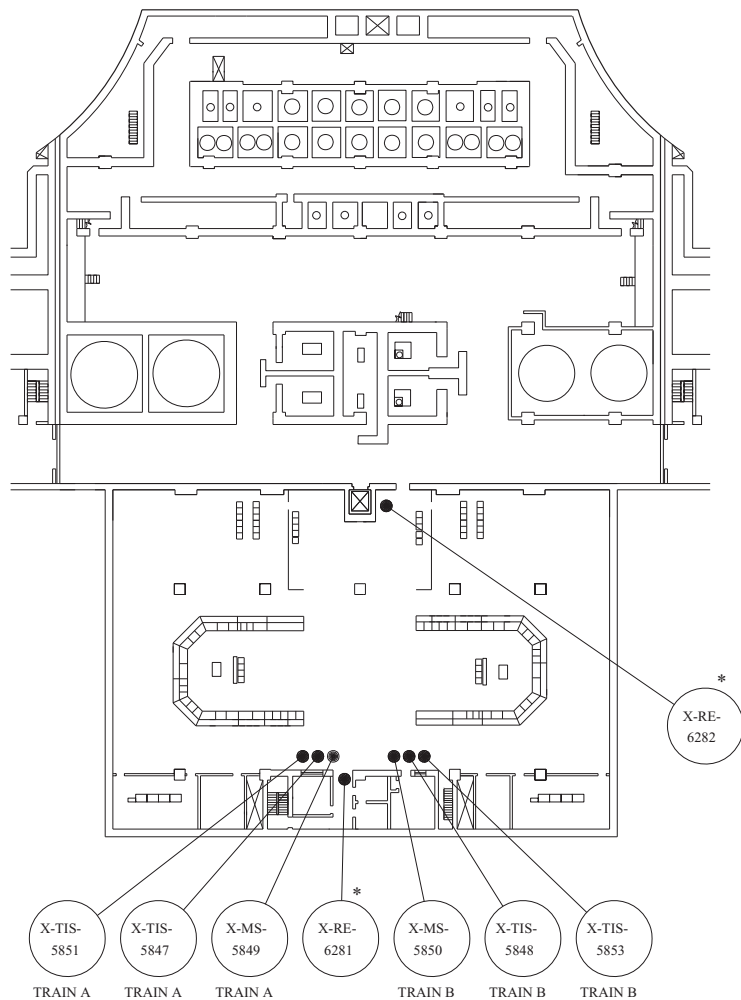
2-PT-0121 CHARGING LINE
 2-PT-0917 CHARGING PMP DISCHARGE
 2-PT-4250 SSW TRN B SPLY HDR PRESS.
 2-PT-4251 SSW TRN A SPLY HDR PRESS.
 2-PT-4520 COW PUMP NUMBER 1 DISCH.
 2-PT-4521 COW PUMP NUMBER 2 DISCH.

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 DECEMBER 18, 1992

COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRS.
 AND ACCIDENT MONITORING INSTRS.
 AUXILIARY AND ELECTRICAL
 CONTROL BUILDINGS
 PLANS AT EL. 807'-0" AND 810'-6"

FIGURE 7.1-3 (SH 10 OF 36)



PLAN AT EL. 830'-0" AND 831'-6"

PLAN AT ELEVATIONS 830'-0" AND 831'-6"

X-TIS-5847	CONTROL RM A/C UNITS 1 AND 2 HI-LO
X-TIS-5848	CONTROL RM A/C UNITS 3 AND 4 HI-LO
X-MS-5849	CONTROL RM A/C UNITS 1 AND 2 HUMID
X-MS-5850	CONTROL RM A/C UNITS 3 AND 4 HUMID
X-TIS-5851	CONTROL RM A/C UNITS 1 AND 2 HI-HI/LO-LO
X-TIS-5853	CONTROL RM A/C UNITS 3 AND 4 HI-HI/LO-LO
X-RE-6281	LOW RANGE AREA MONITOR CR WEST WALL
X-RE-6282	LOW RANGE AREA MONITOR CR EAST WALL

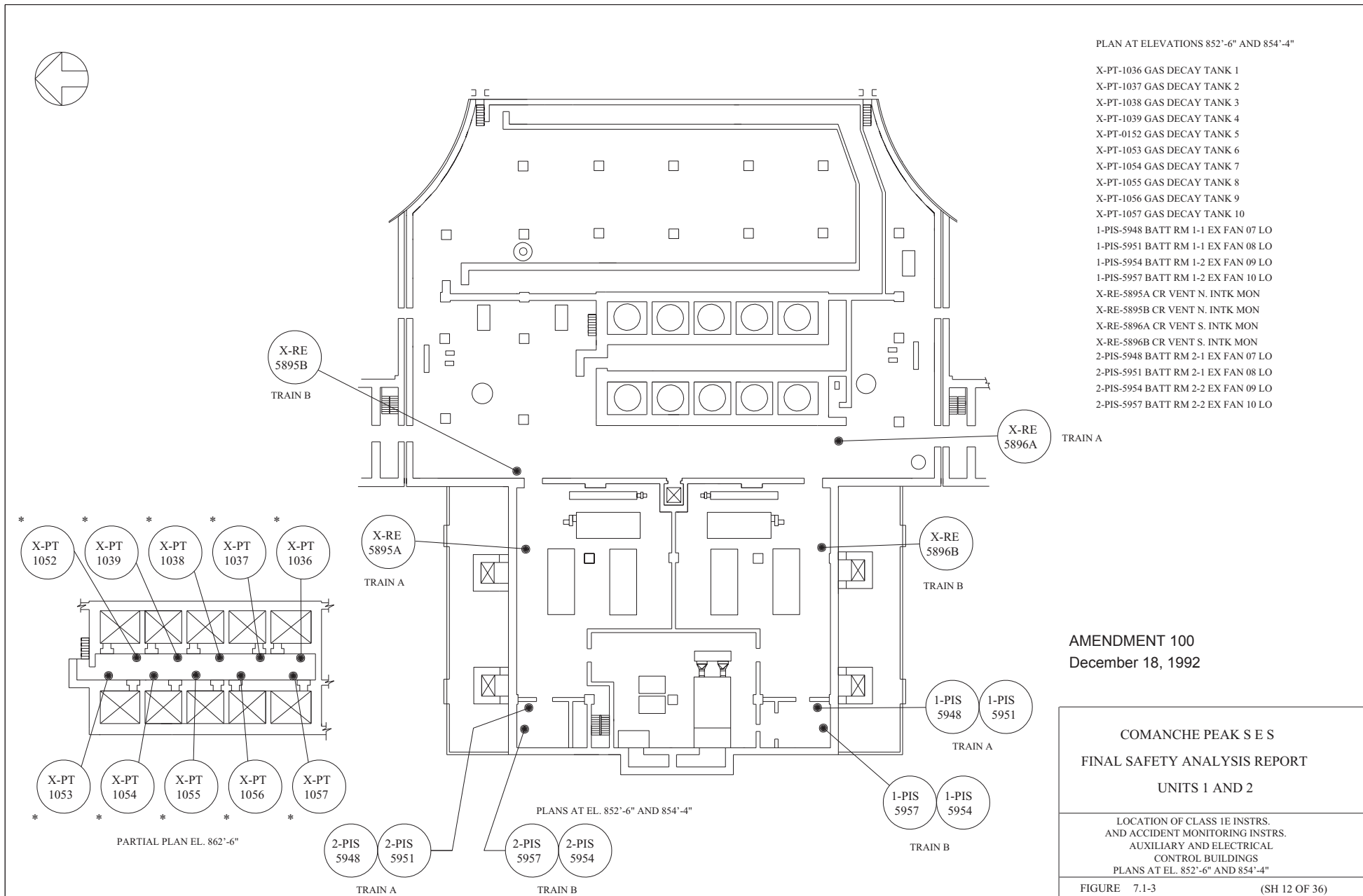
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December 18, 1992

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRS.
AND ACCIDENT MONITORING INSTRS.
AUXILIARY AND ELECTRICAL
CONTROL BUILDINGS
PLANS AT EL. 830'-0" AND 831'-6"

FIGURE 7.1-3

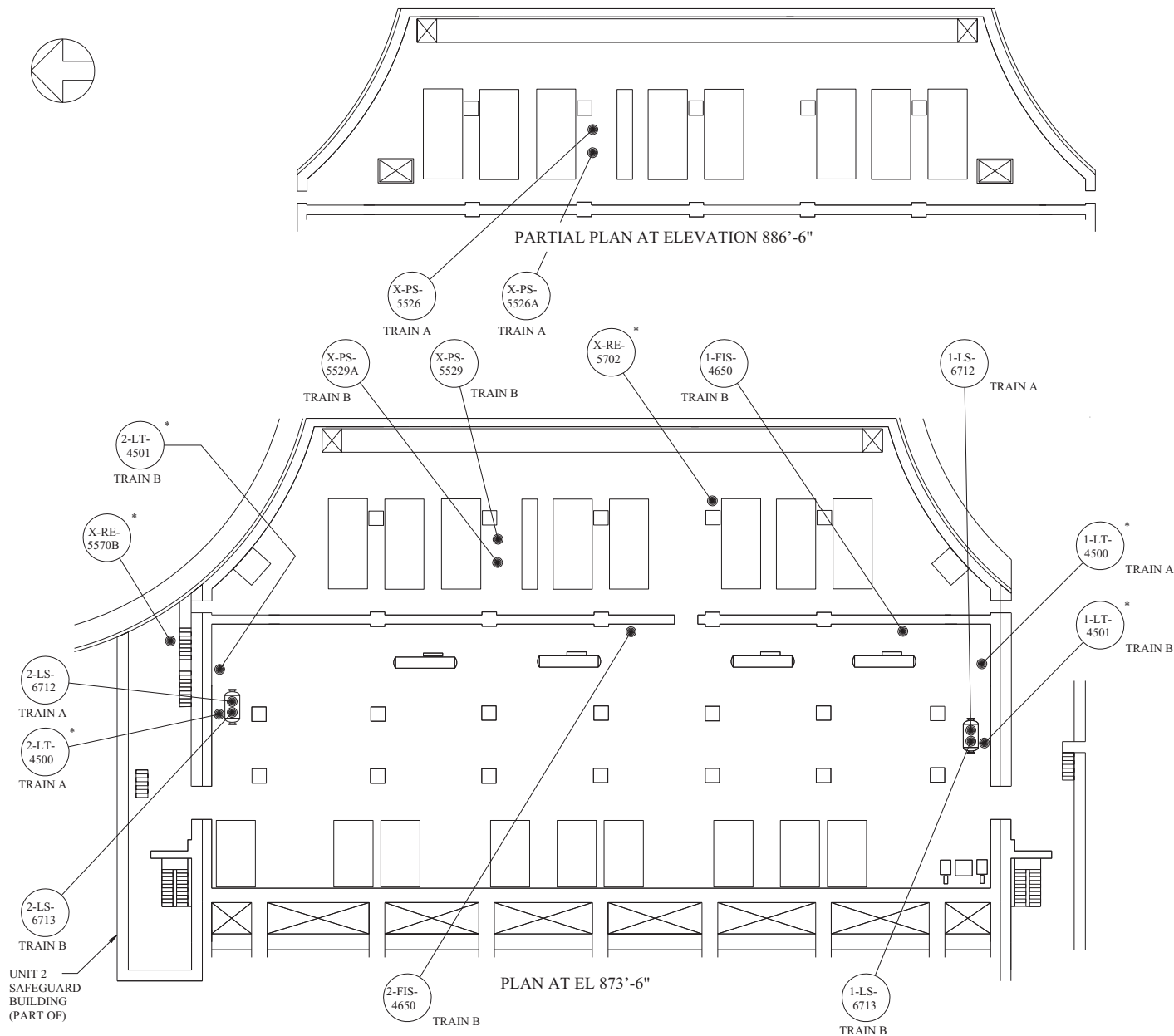
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COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRS.
 AND ACCIDENT MONITORING INSTRS.
 AUXILIARY AND ELECTRICAL
 CONTROL BUILDINGS
 PLANS AT EL. 852'-6" AND 854'-4"



1-LS-6712	EXPANSION TANK LVL HI-LO
1-LS-6713	EXPANSION TANK LVL HI-LO
X-RE-5570B	WIDE RANGE GAS MONITOR N PLANT VENT STACK
X-RE-5702	HVAC EQUIP ROOM VENT AIR RADIATION MONITOR
2-LT-4500	CCW SURGE TANK
2-LT-4501	CCW SURGE TANK
2-FIS-4650	VENT CHILLER CCW FLOW HI
2-LS-6712	EXPANSION TANK LVL HI-LO
2-LS-6713	EXPANSION TANK LVL HI-LO

X-PS-5526	CNTMT H ₂ BURGE AIR EXH TO FAN 01 HI
X-PS-5526A	CNTMT H ₂ BURGE AIR EXH TO FAN 01 HI-HI

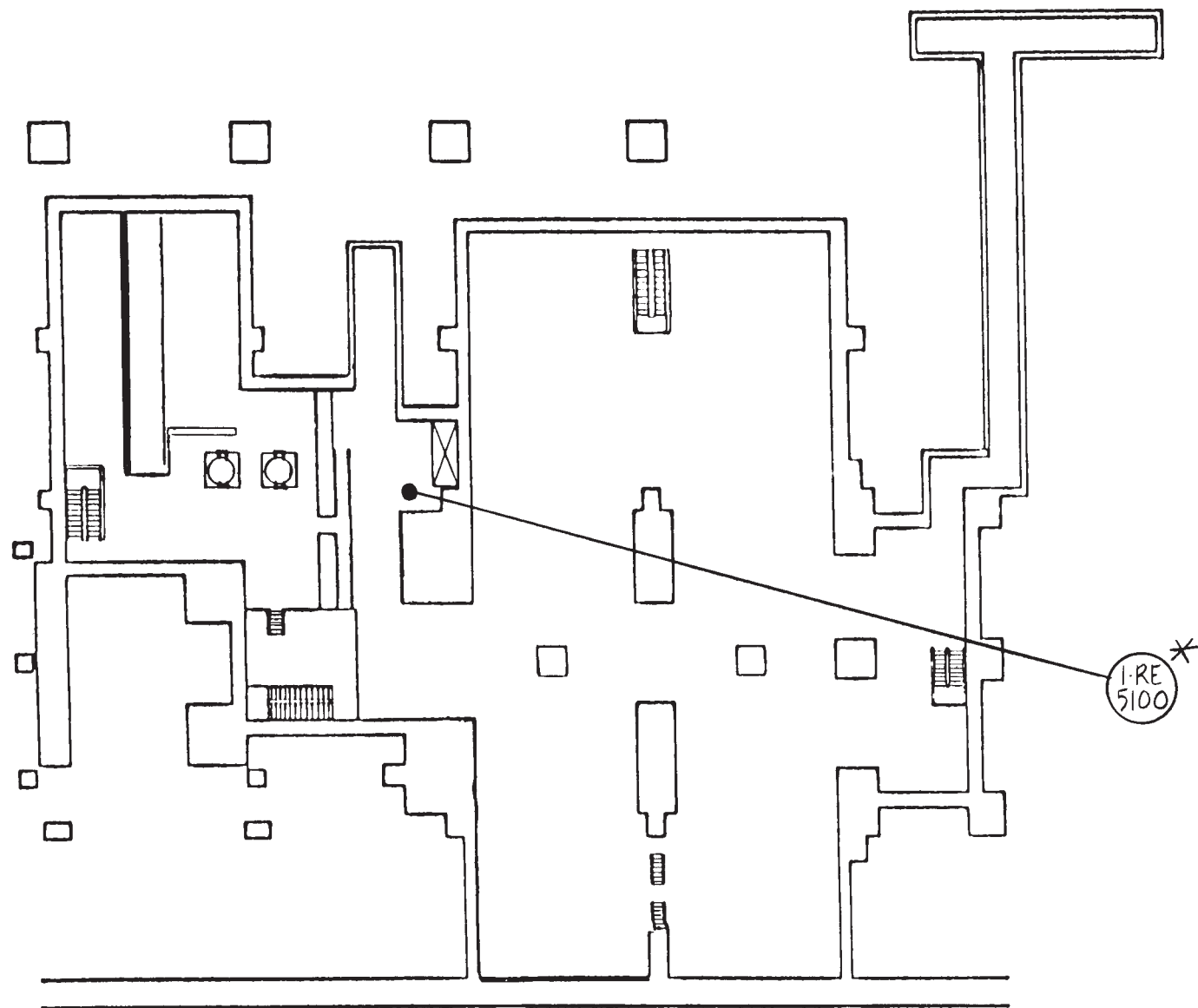
Amendment 99

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRUMENTS
AND ACCIDENT MONITORING INSTRUMENTS
AUXILIARY BUILDING
PLANS AT EL 873'-6" AND 886'-6"

FIGURE 7.1-3 (SH 13 OF 36)

N



Plan at EL. 755'-4" & 758'-3"

Partial Plan at Elevations 755'-4" & 758'-3"

1-RE-5100

Turbine Building Drains
Monitor

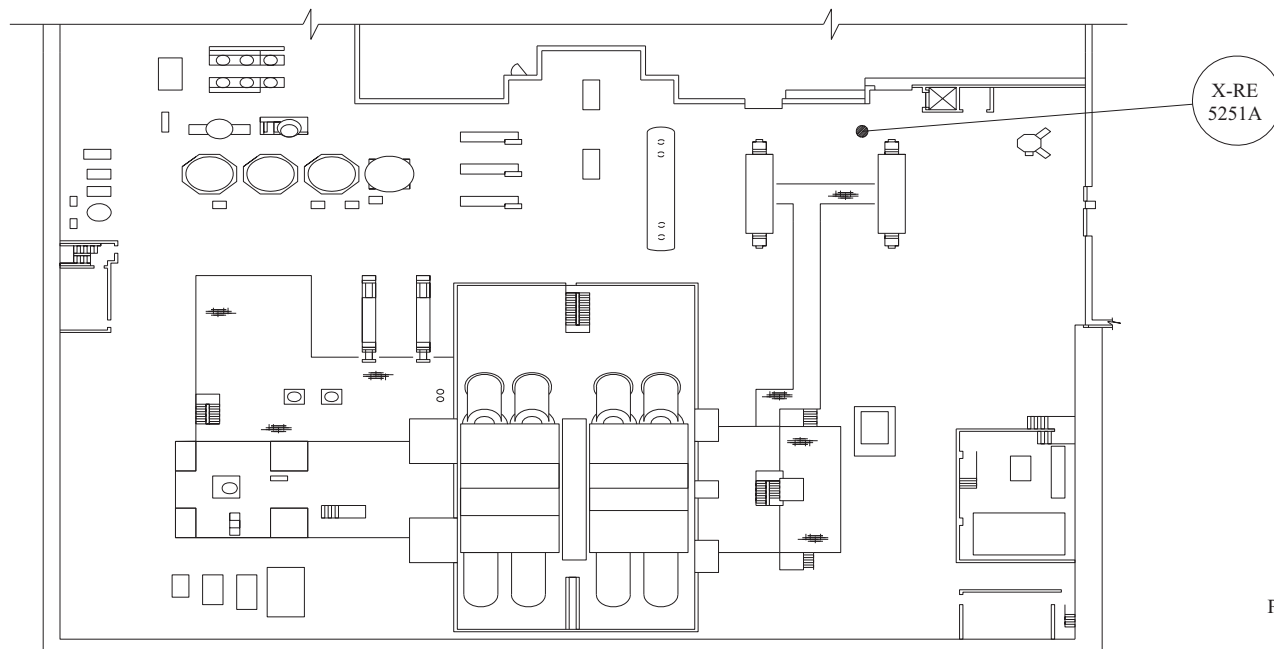
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Location of Class 1E Instrs.
and Accident Monitoring Instrs.

Unit 1
Turbine Building
Plans at EL 755' 4" & 758' 3"

Figure No. 7.1-3 (Sh. 14 of 36)

Amendment 66
January 15, 1988



PLAN AT EL 778'-0"
(BASEMENT FLOOR PLAN)

PLAN AT ELEVATION 778'-0"

1. X-RE-5251A LIQUID WASTE
MONITOR

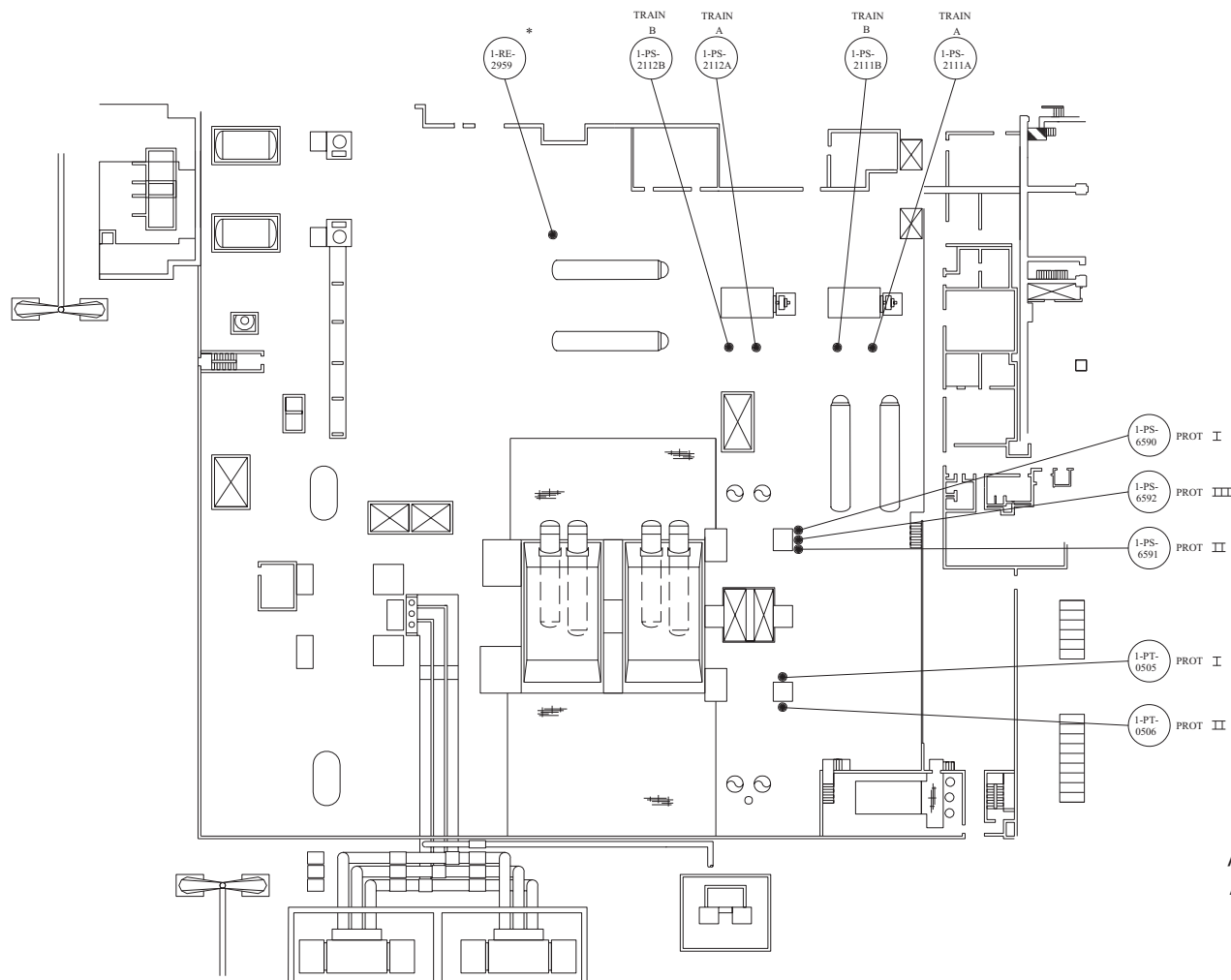
AMENDMENT 96

August 2, 1999

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRS.
AND ACCIDENT MONITORING INSTRS.
UNIT 1 TURBINE BUILDING
PLAN AT EL 778'-0"

FIGURE 7.1-3 (SH 15 OF 36)



PLAN AT EL 803'-0" AND 810'-6"

1-PS-6590	TURBINE GEN HYDRO
1-PS-6591	TURBINE GEN HYDRO
1-PS-6592	TURBINE GEN HYDRO
1-PS-2111A	FW PUMP 2-A OIL PRESS LO
1-PS-2111B	FW PUMP 2-A OIL PRESS LO
1-PS-2112A	FW PUMP 2-B OIL PRESS LO
1-PS-2112B	FW PUMP 2-B OIL PRESS LO
1-PT-0505	TURBINE IMPULSE PRESS
1-PT-0506	TURBINE IMPULSE PRESS
1-RE-2959	CONDENSER OFF GAS MONITOR

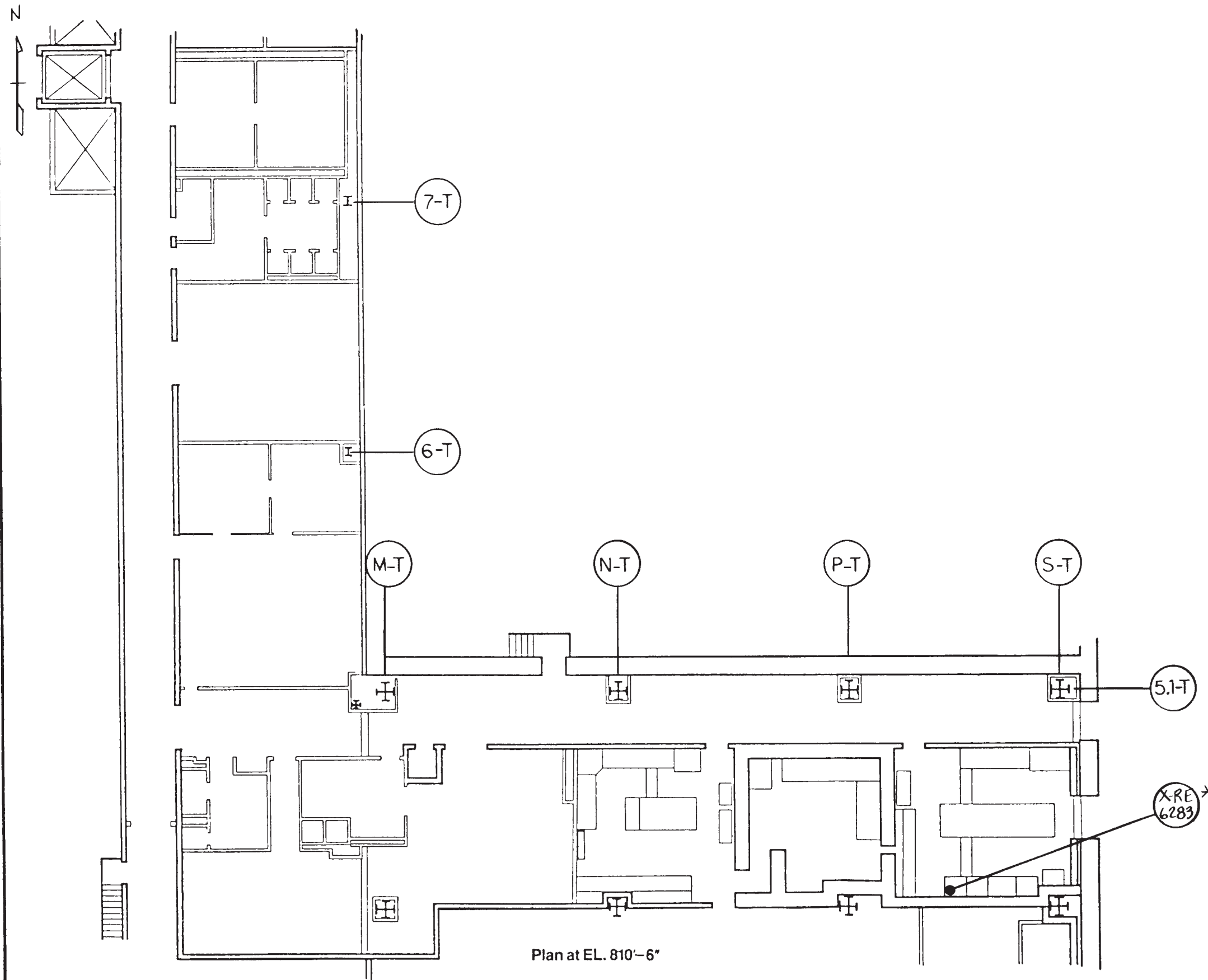
AMENDMENT 92
August 31, 1992

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRUMENTS
AND ACCIDENT MONITORING INSTRUMENTS
UNIT 1 TURBINE BUILDING
PLANS AT EL 803'-0" AND 810'-6"

FIGURE

7.1-3 (SH 16 OF 36)



Amendment 66
January 15, 1988

Plan at Elevation 810'-6"

X-RE-6283

Low Range Area Monitor
Hot Lab

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Location of Class 1E Instrs.
and Accident Monitoring Instrs.

Common Area
Turbine Building
Plan at EL 810' 6"

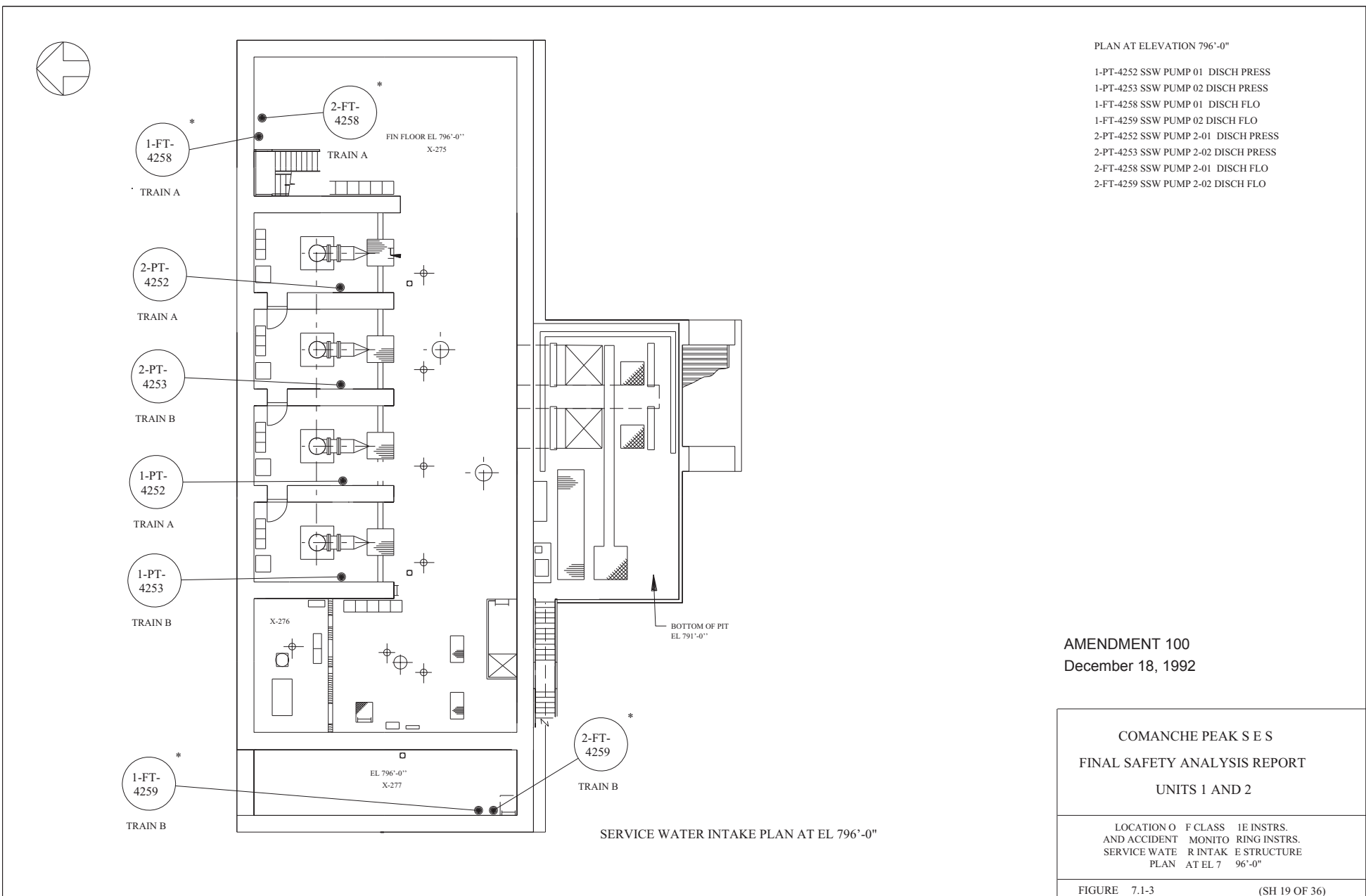
Figure No. 7.1-3 (Sh. 17 of 36)

CPSES/FSAR

FIGURE 7.1-3
(SHEET 18 OF 36)

78

THIS FIGURE HAS BEEN DELETED

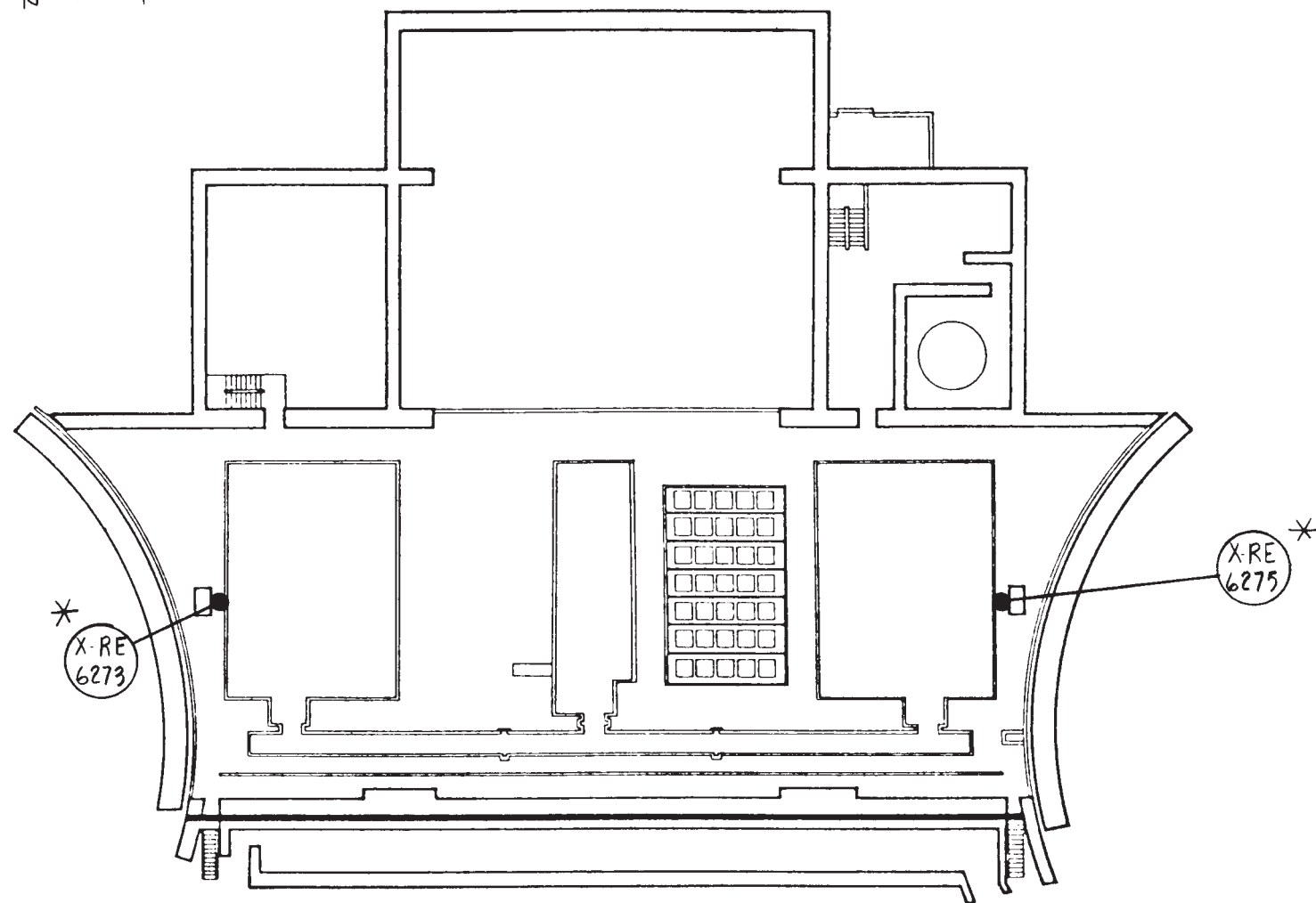


PLAN AT ELEVATION 796'-0"

- 1-PT-4252 SSW PUMP 01 DISCH PRESS
- 1-PT-4253 SSW PUMP 02 DISCH PRESS
- 1-FT-4258 SSW PUMP 01 DISCH FLO
- 1-FT-4259 SSW PUMP 02 DISCH FLO
- 2-PT-4252 SSW PUMP 2-01 DISCH PRESS
- 2-PT-4253 SSW PUMP 2-02 DISCH PRESS
- 2-FT-4258 SSW PUMP 2-01 DISCH FLO
- 2-FT-4259 SSW PUMP 2-02 DISCH FLO

AMENDMENT 100
December 18, 1992

COMANCHE PEAK S E S		
FINAL SAFETY ANALYSIS REPORT		
UNITS 1 AND 2		
LOCATION OF AND ACCIDENT SERVICE WATER PLAN	F CLASS MONITORING R INTAKE AT EL 7	IE INSTRS. RING INSTRS. E STRUCTURE 96'-0"
FIGURE 7.1-3	(SH 19 OF 36)	



Plan at EL. 860' - 0"

Amendment 66
January 15, 1988

Plan at Elevation 860' - 0"

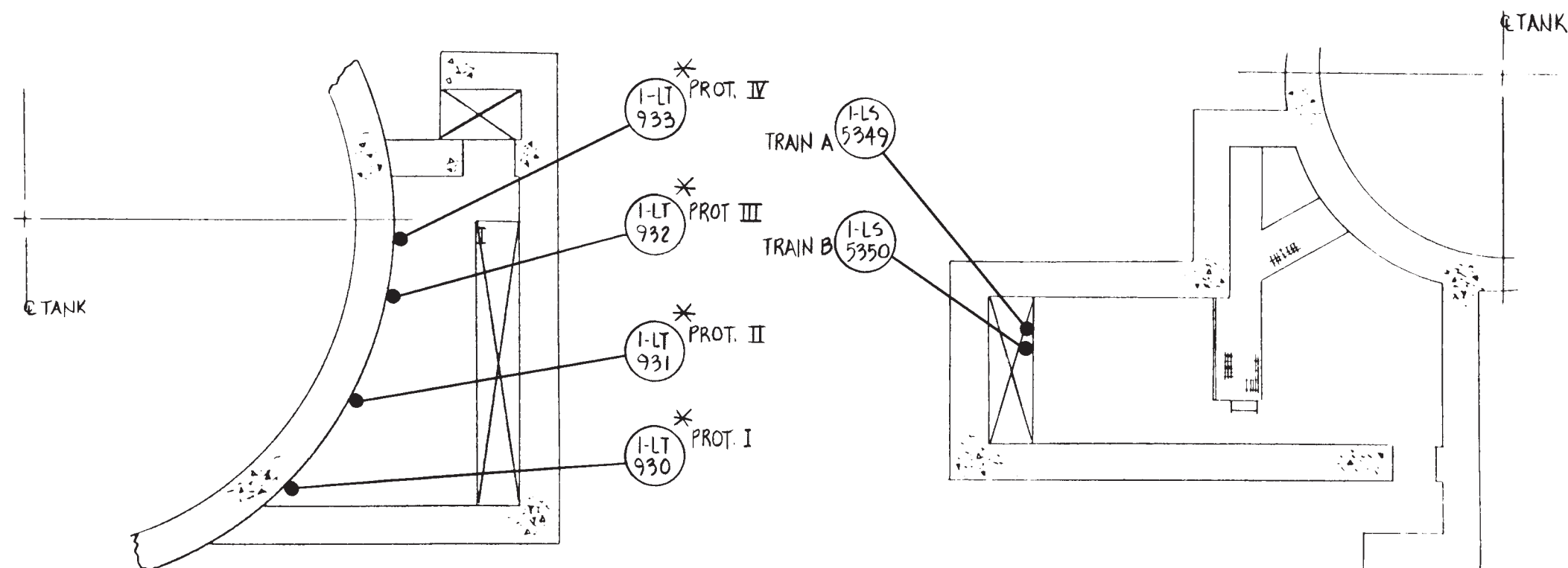
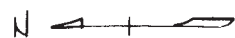
X-RE-6273	Low Range Area Monitor SFP 2 N. Wall
X-RE-6275	Low Range Area Monitor SFP 1 S. Wall

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Location of Class 1E Instrs.
and Accident Monitoring Instrs.

Fuel Building
Plan at EL 860' 0"

Figure No. 7.1-3 (Sh. 20 of 36)



Refueling Water Storage Tank
CPI-CTATRW-OI

Reactor Make-up Water Storage Tank
CPI-DDATRM-OI

Plans at EL. 810'-6"

Plan at Elevation 810'-6"

I-LT-930	Refueling Wtr Storage Tk
I-LT-931	Refueling Wtr Storage Tk
I-LT-932	Refueling Wtr Storage Tk
I-LT-933	Refueling Wtr Storage Tk
I-LS-5349	Reactor Make-Up Wtr Storage Tk
I-LS-5350	Reactor Make-Up Wtr Storage Tk

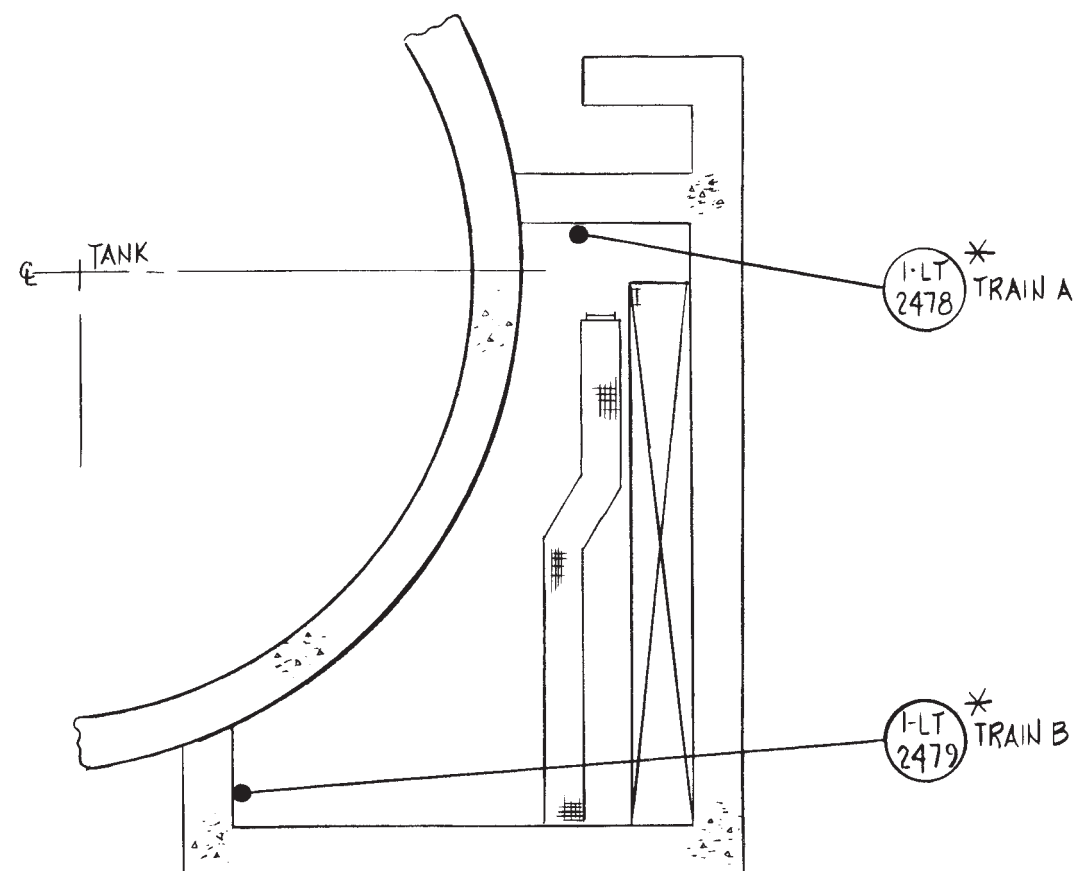
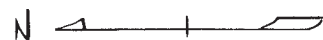
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Location of Class 1E Instrs.
and Accident Monitoring Instrs.

Unit 1
Yard
Plan at EL 810' 6"

Figure No. 7.1-3 (Sh. 21 of 36)

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Condensate Water Storage Tank
CPI-AFATCS-01

Amendment 66
January 15, 1988

Plan at Elevation 810'-6"

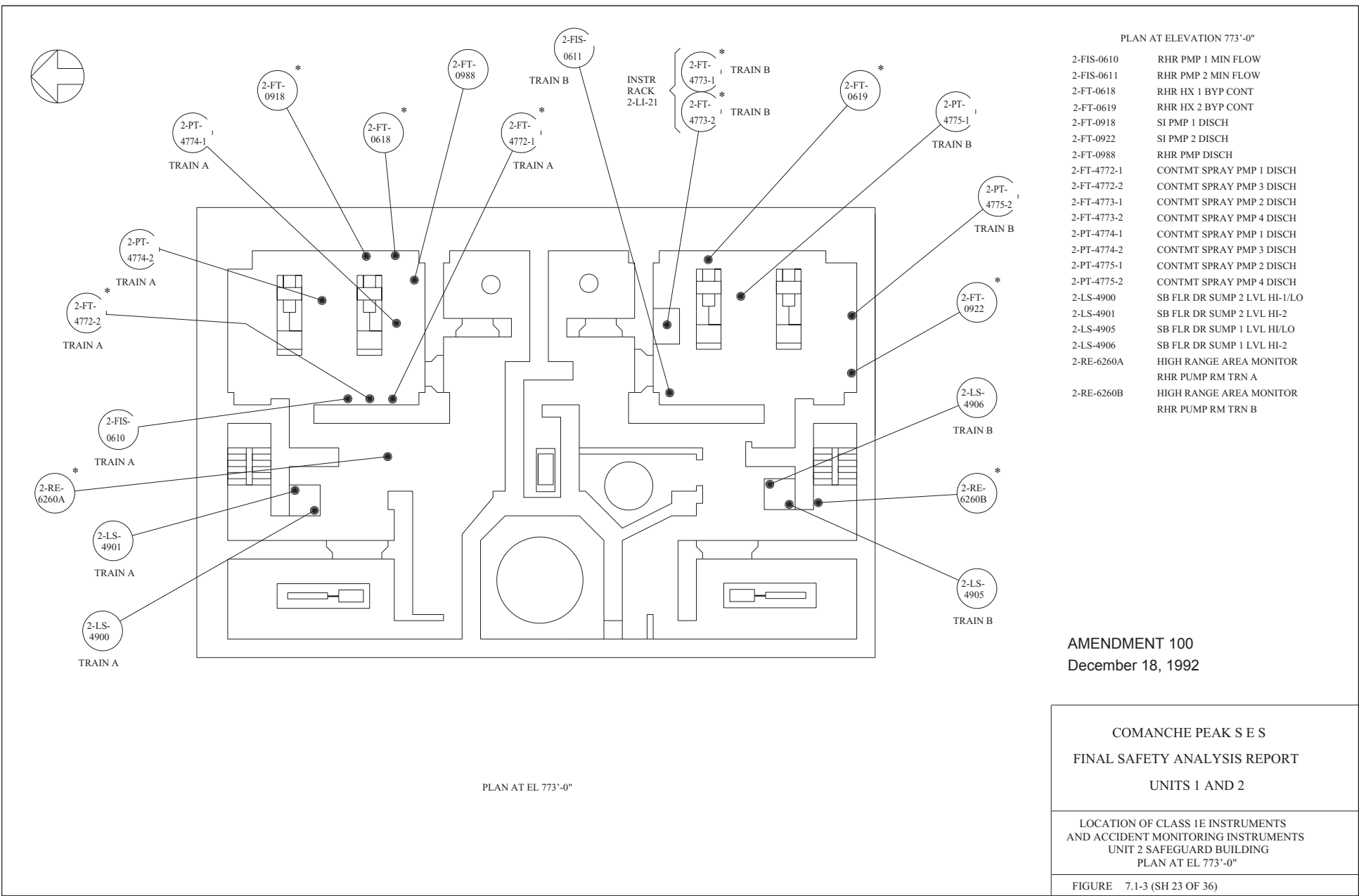
I-LT-2478 Condensate Storage Tank
I-LT-2479 Condensate Storage Tank

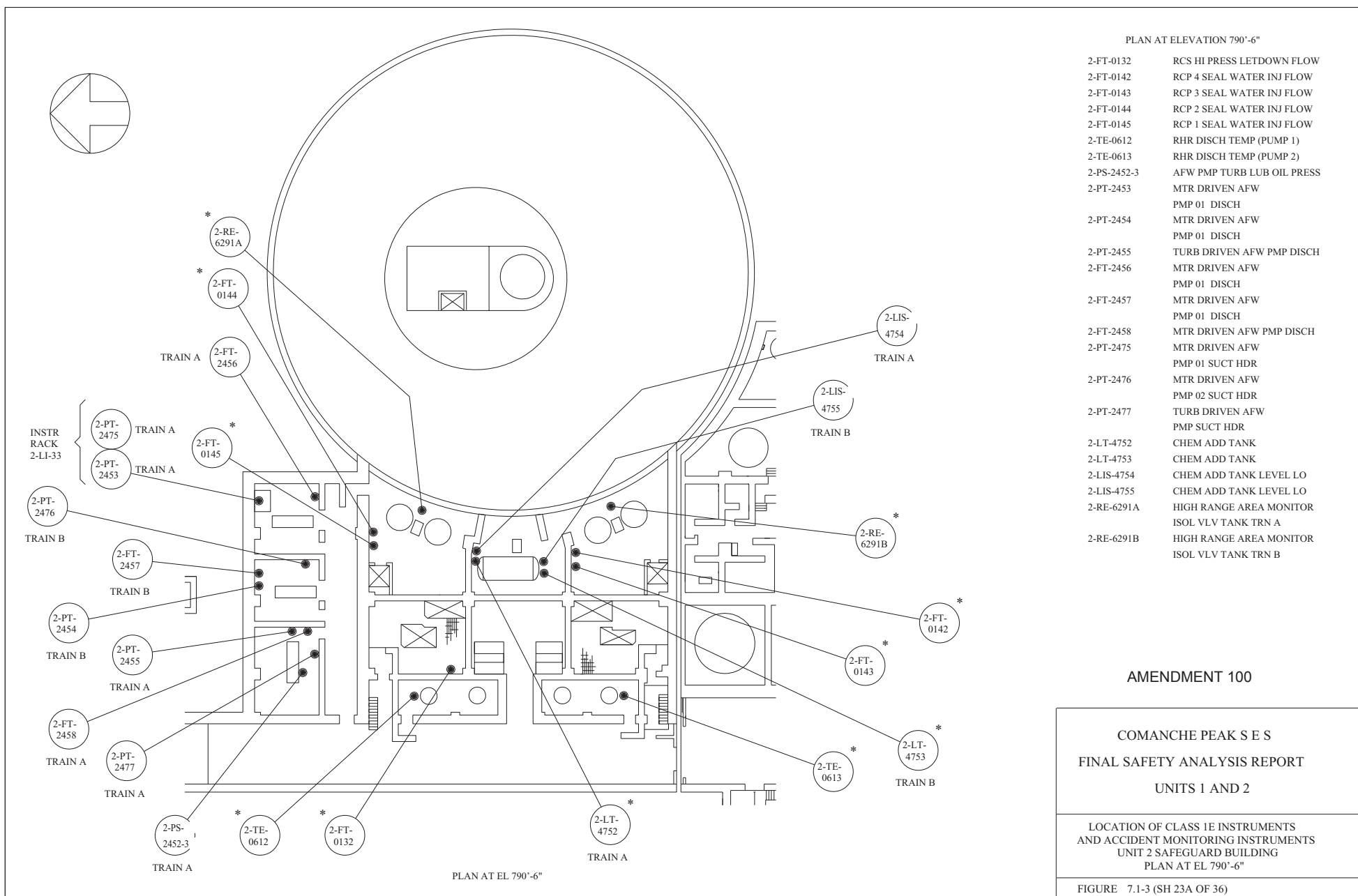
**COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2**

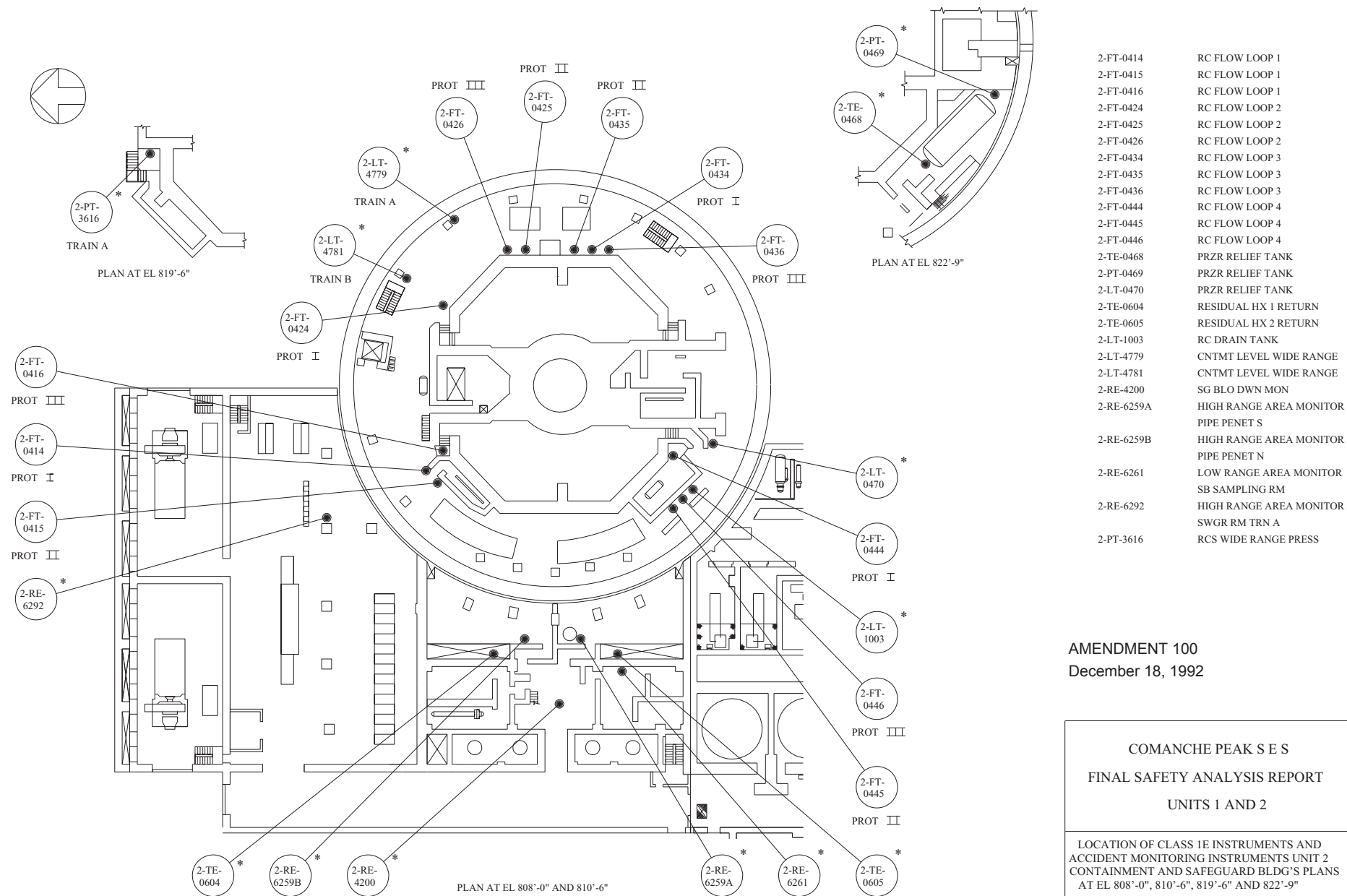
Location of Class 1E Instrs.
and Accident Monitoring Instrs.

Unit 1
Yard
Plan at EL 810' 6"

Figure No. 7.1-3 (Sh. 22 of 36)





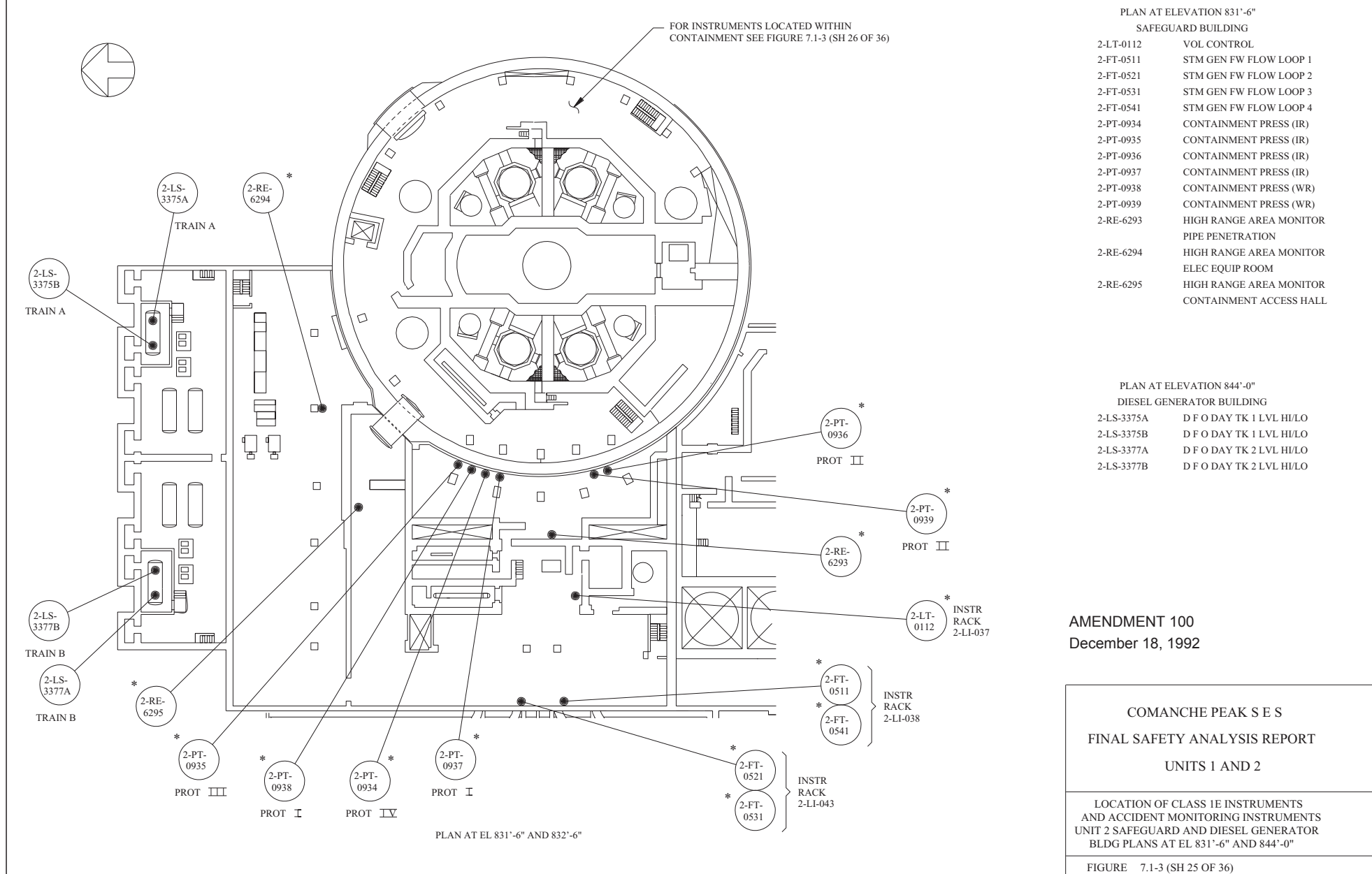


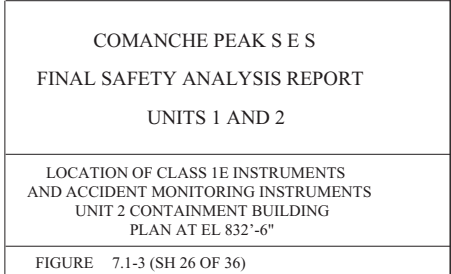
AMENDMENT 100
December 18, 1992

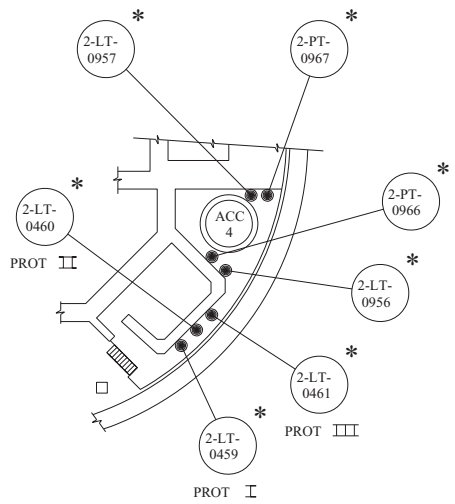
COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRUMENTS AND
ACCIDENT MONITORING INSTRUMENTS UNIT 2
CONTAINMENT AND SAFEGUARD BLDG'S PLANS
AT EL 808'-0", 810'-6", 819'-6" AND 822'-9"

FIGURE 7.1-3 (SH 24 OF 36)







PLAN AT EL 842'-0"

PLAN AT ELEVATION 842'-0"

2-LT-0459	PRZR LEVEL
2-LT-0460	PRZR LEVEL
2-LT-0461	PRZR LEVEL
2-LT-0956	ACCUM TANK 4
2-LT-0957	ACCUM TANK 4
2-PT-0966	ACCUM TANK 4
2-PT-0967	ACCUM TANK 4

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COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

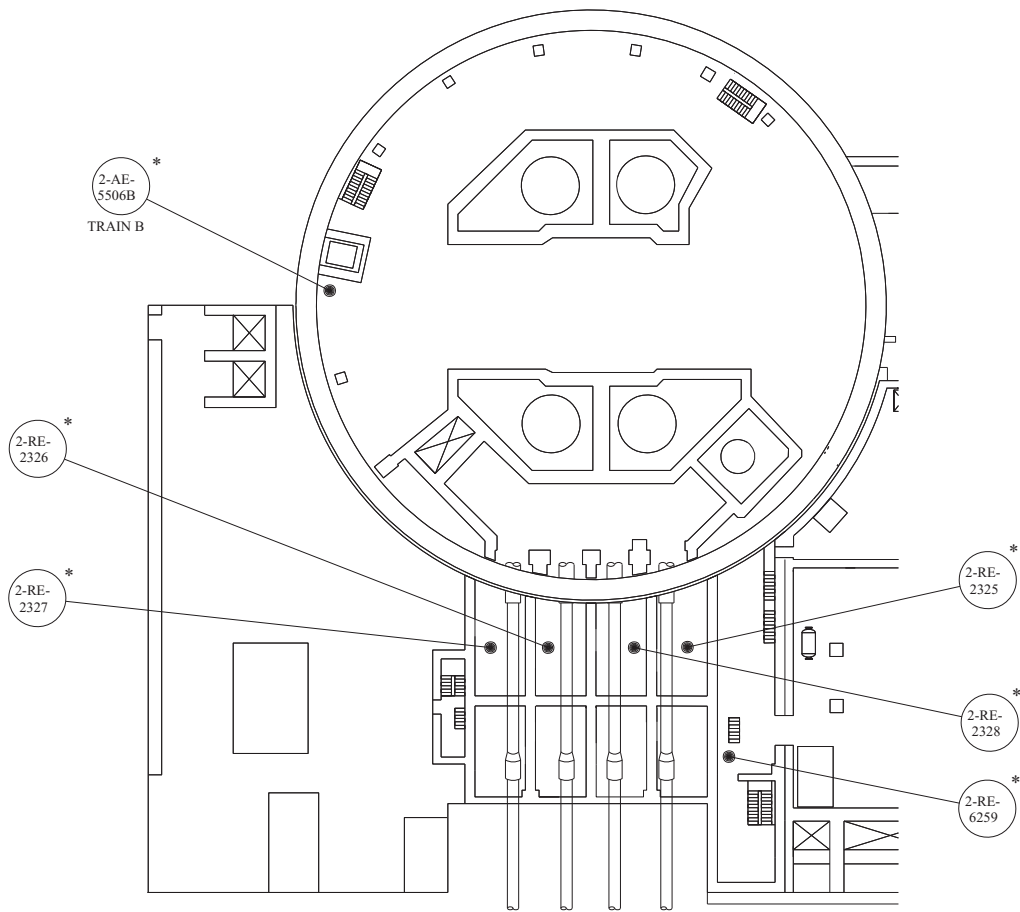
LOCATION OF CLASS 1E INSTRUMENTS
AND ACCIDENT MONITORING INSTRUMENTS
UNIT 2 CONTAINMENT BUILDING
PLAN AT EL 842'-0"

AMENDMENT 100
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COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRUMENTS
AND ACCIDENT MONITORING INSTRUMENTS
UNIT 2 CONTAINMENT AND SAFEGUARD
BLDG PLANS AT EL 852'-6" AND 860'-0"

FIGURE 7.1-3 (SH 27 OF 36)



PLAN AT EL 873'-6"

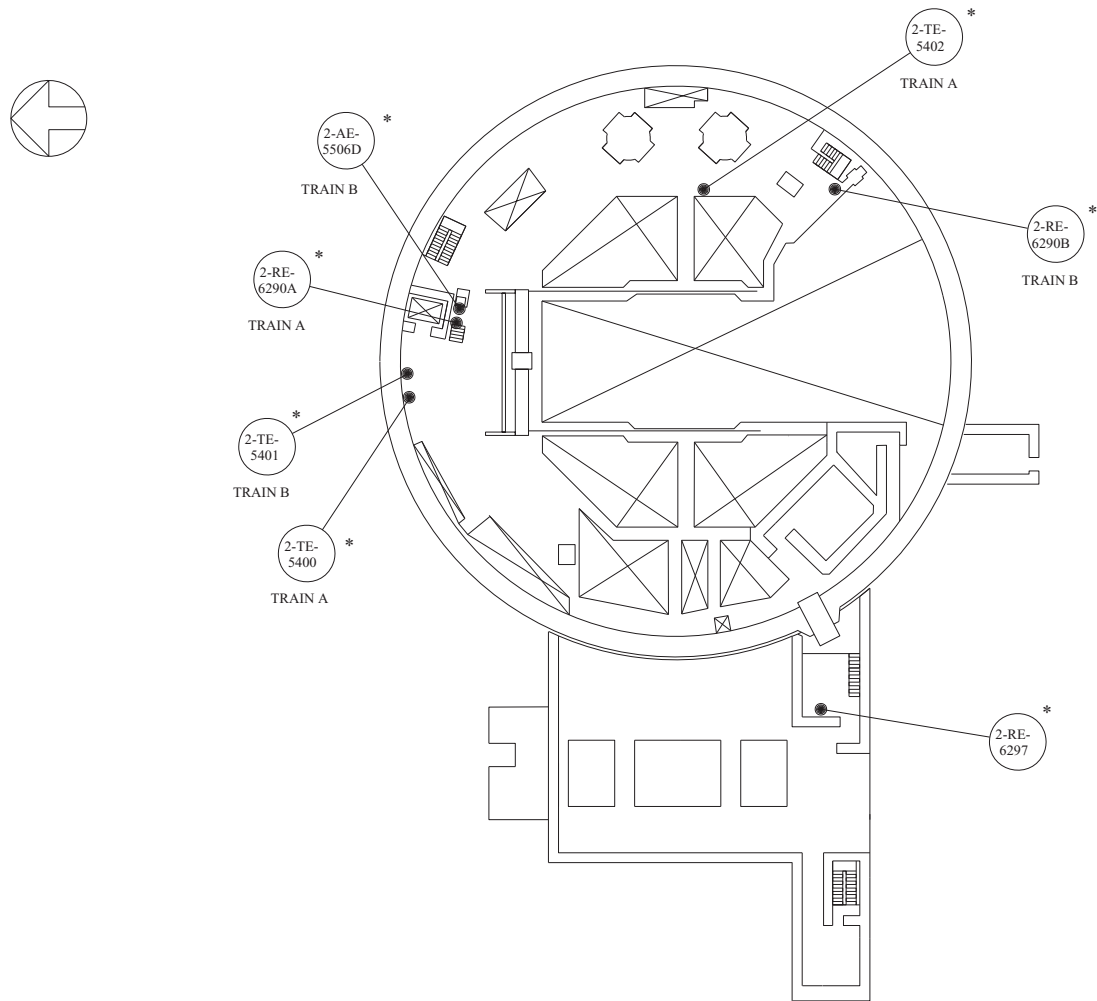
- 2-RE-2325 MSL MONITOR NUMBER 1
- 2-RE-2326 MSL MONITOR NUMBER 2
- 2-RE-2327 MSL MONITOR NUMBER 3
- 2-RE-2328 MSL MONITOR NUMBER 4
- 2-RE-6259 LOW RANGE AREA MONITOR
PLANT VENT STACK SAMPLE
- 2-AE-5506B H₂ MONITOR EL 877'-0"

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COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRUMENTS
AND ACCIDENT MONITORING INSTRUMENTS
UNIT 2 CONTAINMENT AND SAFEGUARD
BLDG PLANS AT EL 873'-6"

FIGURE 7.1-3 (SH 28 OF 36)



2-TE-5400	CNTMT TEMP EL 1001'-0"
2-TE-5401	CNTMT TEMP EL 1001'-0"
2-TE-5402	CNTMT TEMP EL 909'-0"
2-AE-5506D	H ₂ MONITOR EL 910'-0"
2-RE-6290A	HIGH RANGE RADIATION MONITOR CNTMT EL 905'
2-RE-6290B	HIGH RANGE RADIATION MONITOR CNTMT EAST WALL
2-RE-6297	HIGH RANGE AREA MONITOR EMER AIR LOCK

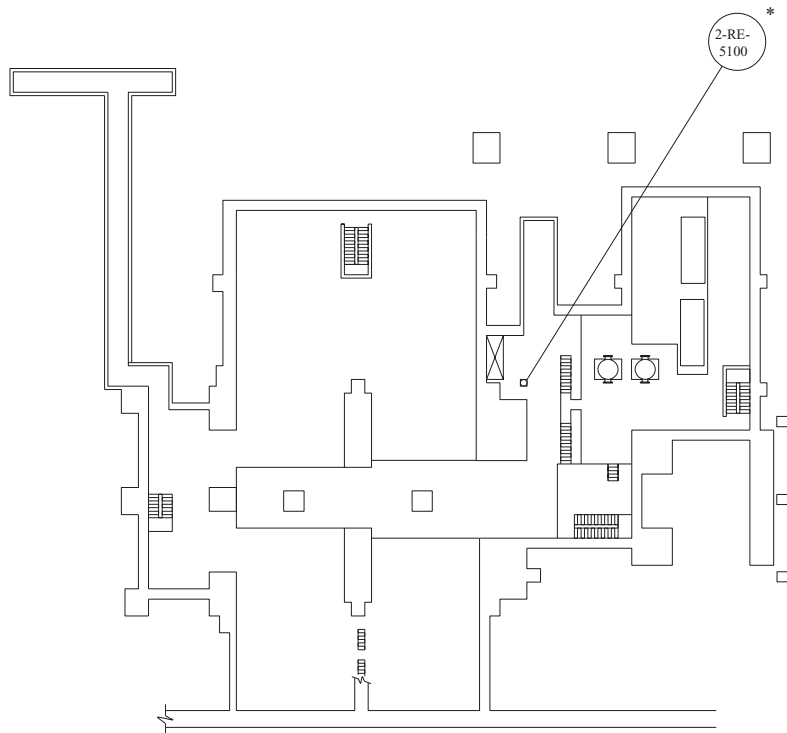
PLANS AT EL 905'-9" AND 896'-4"

AMENDMENT 100
December 18, 1992

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRUMENTS
AND ACCIDENT MONITORING INSTRUMENTS
UNIT 2 CONTAINMENT BUILDING
AND SAFEGUARD BUILDING ROOF
PLANS AT EL 905'-9" AND 896'-4"

FIGURE 7.1-3 (SH 29 OF 36)



PLAN AT EL 755'-4" & 758'-3"

2-RE-5100

TB SUMP 2-04 RADIATION
DETECTOR

AMENDMENT 100
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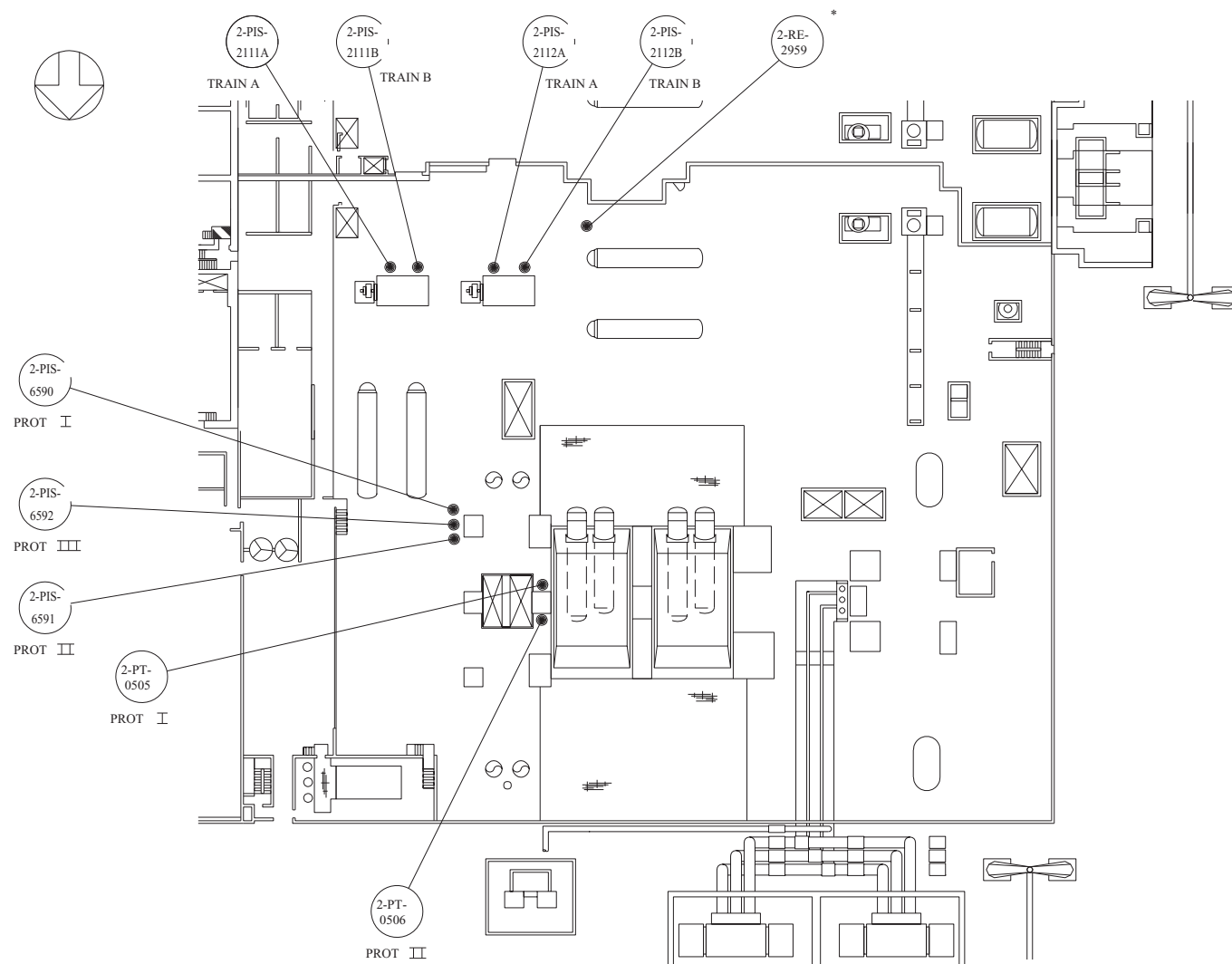
COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRUMENTS
AND ACCIDENT MONITORING INSTRUMENTS
UNIT 2 TURBINE BUILDING
PLANS AT EL 755'-4" AND 758'-3"

FIGURE 7.1-3 (SH 30 OF 36)

FIGURE 7.1-3
Sheet 31 of 36

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2-PIS-6590	TURBINE GEN HYDRO
2-PIS-6591	TURBINE GEN HYDRO
2-PIS-6592	TURBINE GEN HYDRO
2-PIS-2111A	FW PUMP 2-A OIL PRESS LO
2-PIS-2111B	FW PUMP 2-A OIL PRESS LO
2-PIS-2112A	FW PUMP 2-B OIL PRESS LO
2-PIS-2112B	FW PUMP 2-B OIL PRESS LO
2-PT-0505	TURBINE IMPULSE PRESS
2-PT-0506	TURBINE IMPULSE PRESS
2-RE-2959	CONDENSER OFF GAS MONITOR

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August 2, 1999

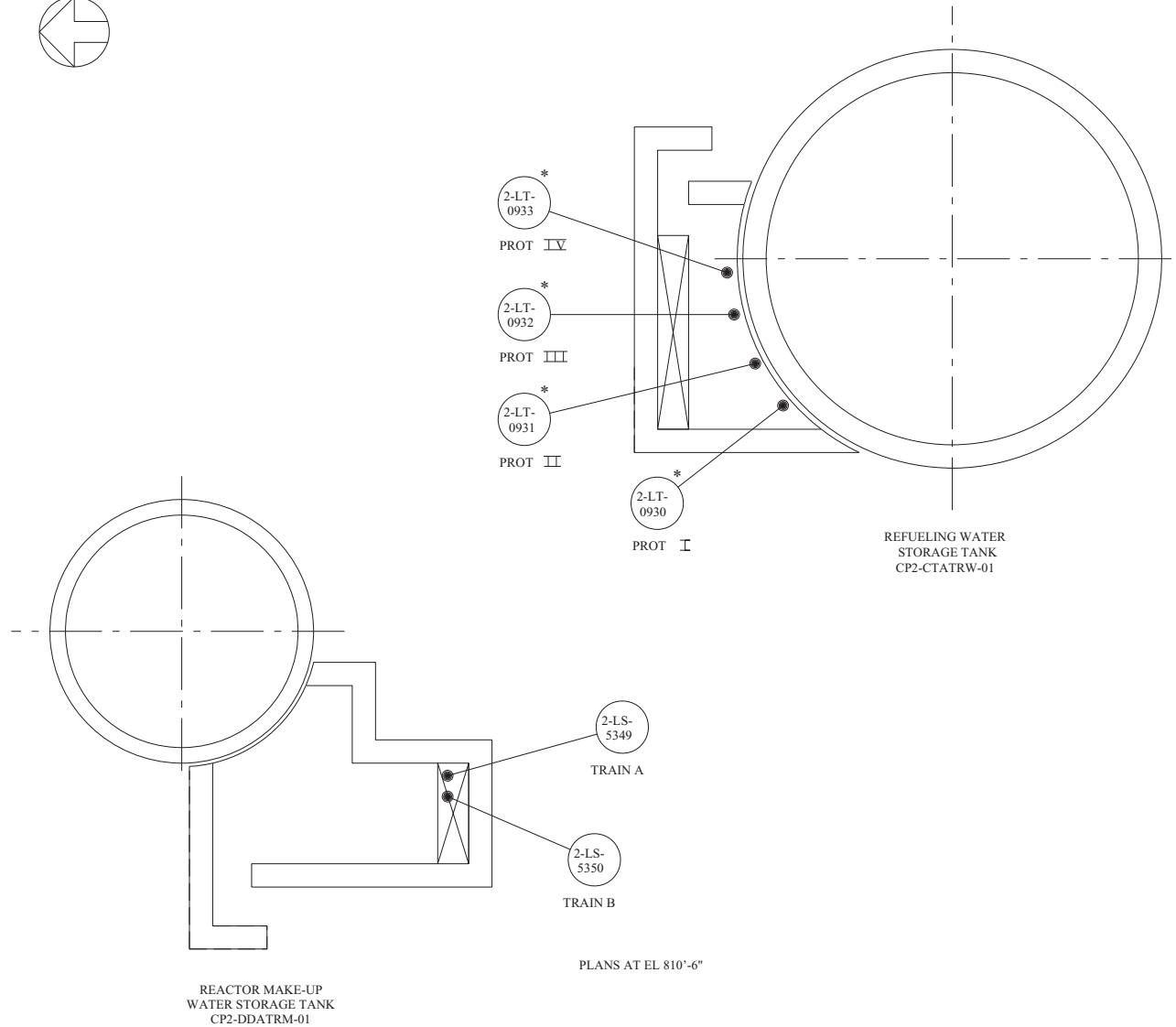
COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRUMENTS
AND ACCIDENT MONITORING INSTRUMENTS
UNIT 2 TURBINE BUILDING
PLANS AT EL 803'-0" AND 810'-6"

FIGURE 7.1-3 (SH 32 OF 36)



2-LT-0930	REFUELING WTR STORAGE TK
2-LT-0931	REFUELING WTR STORAGE TK
2-LT-0932	REFUELING WTR STORAGE TK
2-LT-0933	REFUELING WTR STORAGE TK
2-LS-5349	REACTOR MAKE-UP WTR STORAGE TK
2-LS-5350	REACTOR MAKE-UP WTR STORAGE TK



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COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

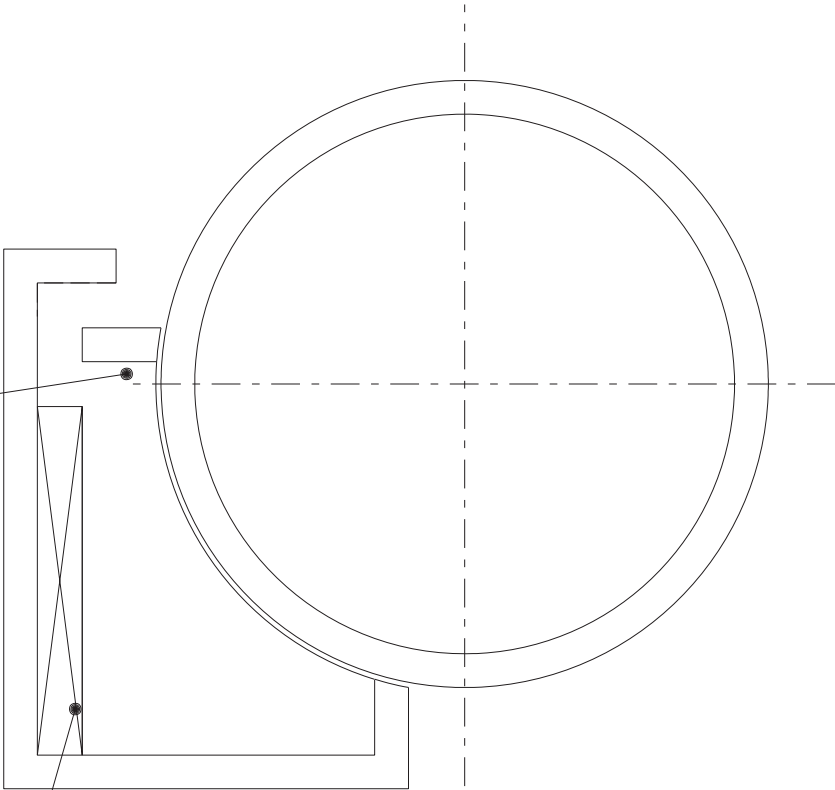
LOCATION OF CLASS 1E INSTRUMENTS
AND ACCIDENT MONITORING INSTRUMENTS
UNIT 2 YARD
PLAN AT EL 810'-6"

FIGURE 7.1-3 (SH 33 OF 36)



2-LT-2478
*
TRAIN A

2-LT-2479
*
TRAIN B



CONDENSATE
STORAGE TANK
CP2-AFATCS-01

PLAN AT EL 810'-6"

2-LT-2478
2-LT-2479

CONDENSATE STORAGE TANK
CONDENSATE STORAGE TANK

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December 18, 1992

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

LOCATION OF CLASS 1E INSTRUMENTS
AND ACCIDENT MONITORING INSTRUMENTS
UNIT 2 YARD
PLAN AT EL 810'-6"

FIGURE 7.1-3 (SH 34 OF 36)

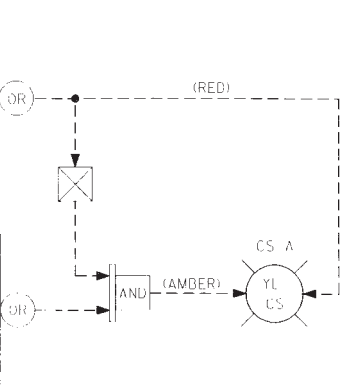
CONTAINMENT SPRAY SYSTEM

PRIMARY

MANUAL VALVE SI-0047 NOT OPEN
CONTMT SPRAY HEADER VALVE SW HS 4776 IN LOCKOUT POSITION
CONTMT SPRAY PUMPS RM COOLER SW HS 5680A-1 IN LOCKOUT POSITION
CONTMT SPRAY PUMPS RM COOLER SW HS 5680B-1 IN LOCKOUT POSITION
CONTMT SPRAY O1 SW HS 4764 LOCKOUT
CONTMT SPRAY O2 SW HS 4765 LOCKOUT
* OPERATOR MANUAL ACTION (BACKLIGHTED PUSHBUTTON CS A PUSHED IN)
RWS1 ISO VALVE HV 4758 LIMIT SW ISO NOT OPEN

SECONDARY

SCH W UNAVAILABLE
CCW UNAVAILABLE
118V AC UNAVAILABLE
125V DC UNAVAILABLE
480V AC UNAVAILABLE
6.9 kV BUS IEA1 UV RELAY TEST
6.9 kV BUS TIE BREAKER RT RELAY OPEN



TYPICAL FOR:

	TRAIN	MANUAL VALVE	HEADER VALVE SW HS	RM COOLER SW HS	PMP O1/O2 SW HS	PMP O1/O2 SW HS	RWS1 ISO VALVE HV	TIE BKR	BACKLIGHT PB	
CS A	AA	SI-0047	4776	5680A-1	5680B-1	4764	4765	4758	BT-11A1	CS A
CS B	BB	SI-0047	4777	5682A-1	5682B-1	4766	4767	4759	BT-11A2	CS B

NOTES:

1. * OPERATOR MANUAL ACTION SET BY PUSHING IN THE APPLICABLE BACKLIGHTED PUSHBUTTON FOR ANY OTHER BYPASS NOT INCLUDED IN THE ABOVE MENTIONED AUTOMATIC INPUT. IN THIS CASE THE ALARM CAN ONLY BE RESET BY PUSHING IN AGAIN THE SAME BUTTON. OPERATOR MANUAL RESETTING SHALL NOT TURN OFF THE INDICATOR IF ANY OF THE AUTOMATIC INPUTS ARE ON.

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AUGUST 31, 1992

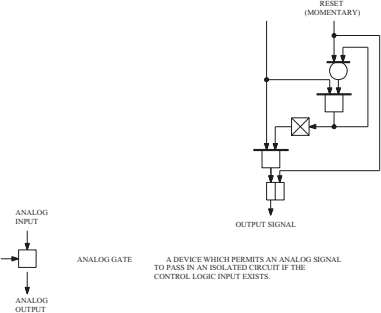
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

SAFETY SYSTEM
INOPERABLE INDICATOR LOGIC
FOR CONTAINMENT SPRAY SYSTEM (TYP)

FIGURE 7.1-4

LOGIC SYMBOLS

SYMBOL	LOGIC FUNCTION	DESCRIPTION
	OR	A DEVICE WHICH PRODUCES AN OUTPUT ONLY WHEN ONE INPUT (OR MORE) EXISTS.
	NOT	A DEVICE WHICH PRODUCES AN OUTPUT ONLY WHEN THE INPUT DOES NOT EXIST.
	AND	A DEVICE WHICH PRODUCES AN OUTPUT ONLY WHEN EVERY INPUT EXISTS.
	COINCIDENCE (2 OUT OF 3 SHOWN)	A DEVICE WHICH PRODUCES AN OUTPUT WHEN THE PRESCRIBED NUMBER OF INPUTS EXIST (EXAMPLE 2 INPUTS MUST EXIST FOR AN OUTPUT).
	ADJUSTABLE TIME DELAY	A DEVICE WHICH PRODUCES AN OUTPUT FOLLOWING DEFINITE INTENTIONAL TIME DELAY AFTER RECEIVING AN INPUT.
	OFF RETURN MEMORY	A DEVICE WHICH RETAINS THE CONDITION OF OUTPUT CORRESPONDING TO THE LAST ENERGIZED INPUT EXCEPT UPON INTERRUPTION OF POWER IT RETURNS TO THE OFF CONDITION.
	RETENTIVE MEMORY	A DEVICE WHICH RETAINS THE CONDITION OF OUTPUT CORRESPONDING TO THE LAST ENERGIZED INPUT (ALSO UPON INTERRUPTION OF POWER).
	RETENTIVE MEMORY WITH ACTUATION BLOCK	A DEVICE HAVING RETENTIVE MEMORY AND ACTUATION SIGNAL BLOCK LOGIC FUNCTIONS AS INDICATED BY THE DIAGRAM BELOW ACTUATING SIGNAL.

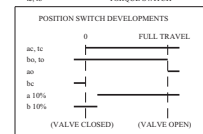


ADDITIONAL SYMBOLS

	INSTRUMENT CHANNEL BISTABLE
	OUTPUT INDICATOR
	BISTABLE OUTPUT IS A LOGIC "1" WHEN THE MEASURED PARAMETER IS GREATER THAN THE SETPOINT VALUE.
	BISTABLE OUTPUT IS A LOGIC "1" WHEN THE MEASURED PARAMETER IS LESS THAN THE SETPOINT VALUE.
	BISTABLE OUTPUT IS A LOGIC "1" WHEN THE MEASURED PARAMETER DEVIATES FROM THE NORMAL VALUE BY MORE THAN THE SETPOINT AMOUNTS.
	SAME AS ABOVE EXCEPT WITH AN AUTOMATICALLY ADJUSTED SETPOINT.
	SAME AS ABOVE EXCEPT WITH REQUIRED HYSTERESIS.
	NON-INSTRUMENT BISTABLE
	OUTPUT INDICATOR (SAME AS EXPLAINED ABOVE)
	ALARM ANNUNCIATOR (ALARMS ON THE SAME SHEET WITH THE SAME SUBSCRIPT SHARE A COMMON ANNUNCIATOR WINDOW)
	REACTOR TRIP "FIRST OUT" ANNUNCIATOR
	TURBINE TRIP "FIRST OUT" ANNUNCIATOR
	INDICATOR LAMP A - ACTUATION STATUS LIGHTS T - TRIP STATUS LIGHTS P - PERMISSIVE STATUS LIGHTS B - BYPASS STATUS LIGHTS
	COMPUTER INPUT
	LOGIC INFORMATION TRANSMISSION
	ANALOG INFORMATION TRANSMISSION
	ANALOG DISPLAY 1 - ANALOG INDICATOR R - RECORDER R2 - RECORDER 2 PEN R3 - RECORDER 3 PEN R8 - RECORDER 8 POINT
	ANALOG SUMMER

DEVICE FUNCTION LETTERS AND NUMBERS

FB	FLOW CHANNEL
LB	LEVEL CHANNEL
NC	NUCLEAR CHANNEL
PB	PRESSURE CHANNEL
RC	RADIATION CHANNEL
SB	SPEED CHANNEL
TB	TEMPERATURE CHANNEL
ZB	POSITION CHANNEL
20	ELECTRIC OPERATED VALVE
27	UNDERVOLTAGE RELAY
33	POSITION SWITCH
	SUFFIX LETTER:
ac, ao, bc, bo	- LIMIT SWITCH
tc, to	- TORQUE SWITCH



52	AC CIRCUIT BREAKER
	SUFFIX LETTER:
a	AUXILIARY CONTACT
b	AUXILIARY CONTACT
H	IN CELL SWITCH
63	PRESSURE SWITCH
71	LEVEL SWITCH
80	FLOW SWITCH
81	UNDERFREQUENCY RELAY

GENERAL NOTES: (FOR ALL SHEETS)

- IN ALL LOGIC CIRCUITS, THE INDICATED ACTUATION OF A SYSTEM OR DEVICE OCCURS WHEN A LOGIC "1" SIGNAL IS PRESENT. EXCEPT WHERE INDICATED OTHERWISE, ALL BISTABLES ARE "DE-ENERGIZE TO ACTUATE" SUCH THAT A LOGIC "1" SIGNAL IS DEFINED TO BE PRESENT WHEN THE BISTABLE OUTPUT VOLTAGE IS OFF.
- EXCEPT WHERE INDICATED OTHERWISE, THE FOLLOWING IS TRUE: ALL LOGIC CIRCUITS ARE REDUNDANT THAT IS EVERY LOGIC CIRCUIT SHOWN HAS A DUPLICATE LOCATED IN A SEPARATE CABINET. ALL INSTRUMENT CHANNELS, BISTABLES, ANNUNCIATORS, COMPUTER INPUTS, AND INDICATOR LAMPS ARE NOT REDUNDANT. MANUAL CONTROLS DO NOT HAVE REDUNDANT ACTUATORS, BUT DO HAVE REDUNDANT CONTACTS WHERE LOGIC IS REDUNDANT. ALL INDICATOR LAMPS, ANNUNCIATORS, AND COMPUTER INPUTS ARE CONNECTED TO BOTH TRAINS (WHERE LOGIC IS REDUNDANT) SO THAT A SIGNAL IN EITHER TRAIN WILL ACTUATE.
- WHENEVER A PROCESS SIGNAL IS USED FOR CONTROL AND IS DERIVED FROM A PROTECTION CHANNEL, ISOLATION MUST BE PROVIDED.
- THIS SET OF DRAWINGS ILLUSTRATES THE FUNCTIONAL REQUIREMENTS OF AMSAC AND THE REACTOR CONTROL AND PROTECTION SYSTEM, INCLUDING ENGINEERED SAFEGUARDS. THESE DRAWINGS DO NOT REPRESENT ACTUAL HARDWARE IMPLEMENTATION. FOR HARDWARE IMPLEMENTATION, REFER TO THE FOLLOWING LIST:

FUNCTIONAL DIAGRAM	BLOCK OR WIRING DIAGRAM
REACTOR PROTECTION SYSTEM (SHEETS 1 TO 8, 15, 16 & 18)	DRAWING NUMBERS: 5655D49, 5655D50, 5655D51, 7247D64, 8758D39, 1084E16, 1095E43, 271C120, 3D20430
REACTOR CONTROL SYSTEM (SHEETS 9 TO 16)	DRAWING NUMBERS: 5655D52, 8758D39, 271C120

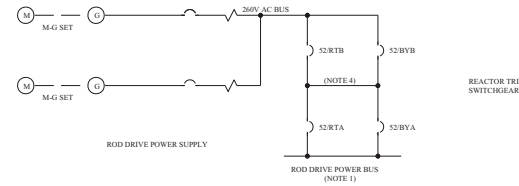
- FOR A TWO UNIT PLANT:
THIS SET OF DRAWINGS IS IDENTICAL FOR UNITS 1 AND 2 EXCEPT FOR THE TAG NUMBERS.
FOR UNIT 1 TAG NUMBERS ADD A "1". EXAMPLE: 1PB-45SE.
FOR UNIT 2 TAG NUMBERS ADD A "2". EXAMPLE: 2PB-45SE.
- FOR THIS SET OF DRAWINGS, ALL SWITCHES, PUSH BUTTONS, ANNUNCIATORS, STATUS LIGHTS, AND INDICATORS EXCEPT FOR THE PROCESS SYSTEMS INDICATORS, CONTROLLERS, AND MANUAL AUTO STATIONS WHICH ARE MOUNTED ON THE MAIN CONTROL BOARD ARE SUPPLIED BY OTHERS. IN ADDITION TO THE ABOVE, SCOPE BY OTHERS IS ALSO INDICATED DIRECTLY ON SHEETS WITHIN THIS SET.

INDEX	
TITLE	SH. NO.
INDEX AND SYMBOLS	1
REACTOR TRIP SYMBOLS	2
NUCLEAR INSTR. AND MANUAL TRIP SIGNALS	3
NUCLEAR INSTR. PERMISSIVES AND BLOCKS	4
PRIMARY COOLANT SYSTEM TRIP SIGNALS	5
PRESSURIZER TRIP SIGNALS	6
STEAM GENERATOR TRIP SIGNALS	7
SAFEGUARDS ACTUATION SIGNALS	8
ROD CONTROLS AND ROD BLOCKS	9
STEAM DUMP CONTROL	10
PRESSURIZER PRESSURE AND LEVEL CONTROL	11
PRESSURIZER HEATER CONTROL	12
FEEDWATER CONTROL AND ISOLATION	13
FEEDWATER CONTROL AND ISOLATION	14
AUXILIARY FEEDWATER PUMPS STARTUP	15
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AMENDMENT 76
May 1, 1989

FIGURE GENERATED FOR FSAR ONLY BASED ON DRAWING 7247D05 SH 1
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUNCTIONAL DIAGRAMS
FIGURE 72-1 SH 1

ROD DRIVE SUPPLY ONE LINE DIAGRAM

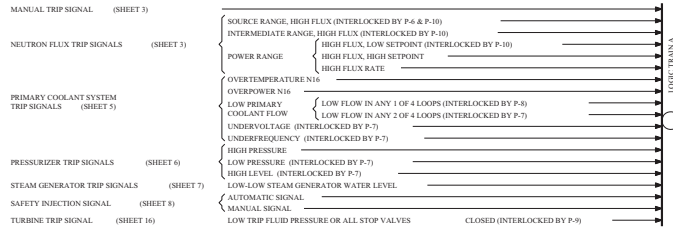


- NOTES:
- TRIPPING THE REACTOR TRIP BREAKERS 52RTA AND 52RTB REDUNDANTLY DE-ENERGIZES THE ROD DRIVES. ALL FULL LENGTH CONTROL RODS AND SHUTDOWNS RODS ARE THEREBY RELEASED FOR GRAVITY INSERTION INTO THE REACTOR CORE.
 - NORMAL REACTOR OPERATION IS TO BE WITH REACTOR TRIP BREAKERS 52RTA AND 52RTB IN SERVICE AND BY-PASS BREAKERS 52BYA AND 52BYB WITHDRAWN. DURING TEST, ONE BY-PASS BREAKER IS TO BE PUT IN SERVICE AND THEN THE RESPECTIVE REACTOR TRIP BREAKER IS OPERATED USING A SIMULATED REACTOR TRIP SIGNAL IN THE TRAIN UNDER TEST. THE REACTOR WILL NOT BE TRIPPED BY THE SIMULATED SIGNAL SINCE THE BY-PASS BREAKER IS CONTROLLED FROM THE OTHER TRAIN. ONLY ONE REACTOR TRIP BREAKER IS TO BE TESTED AT A TIME.
 - ALL CIRCUITS ON THIS SHEET ARE NOT REDUNDANT BECAUSE BOTH TRAINS ARE SHOWN.
 - OPEN/CLOSED INDICATION FOR EACH TRIP BREAKER AND EACH BY-PASS BREAKER IN CONTROL ROOM.

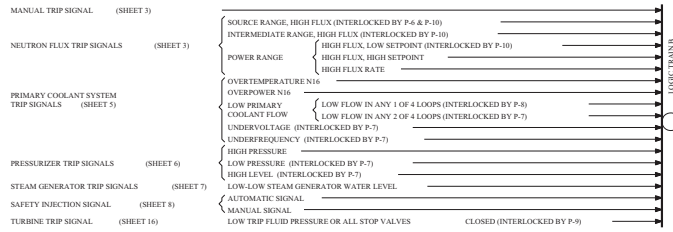
TRAIN A REACTOR SHUNT TRIP SIGNALS

MANUAL REACTOR TRIP SIGNAL (SHEET 3)
MANUAL SAFETY INJECTION DSIGNAL (SHEET 8)

LOGIC TRAIN A REACTOR TRIP SIGNALS



LOGIC TRAIN B REACTOR TRIP SIGNALS



TRAIN B REACTOR SHUNT TRIP SIGNALS

MANUAL REACTOR TRIP SIGNAL (SHEET 3)
MANUAL SAFETY INJECTION SIGNAL (SHEET 8)

AMENDMENT 100

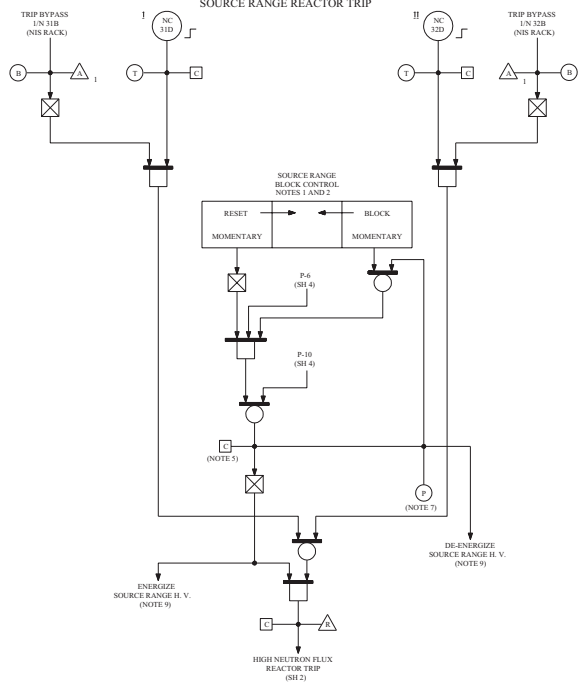
September 8, 1989

FIGURE GENERATED FOR FSAR ONLY
BASED ON DRAWING
© 7247D05 SH 2
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

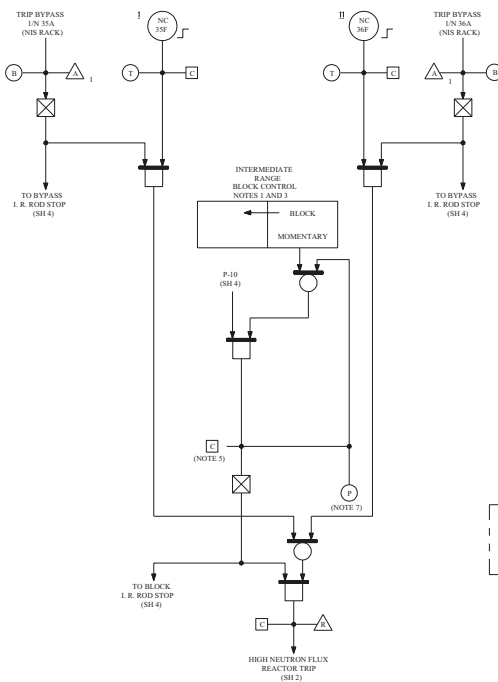
FUNCTIONAL DIAGRAM

FIGURE 72-1 SH 2

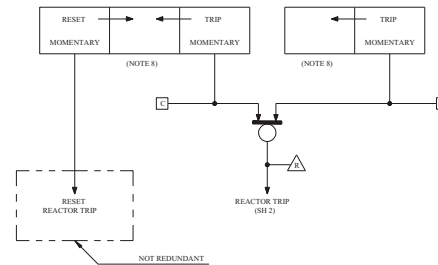
SOURCE RANGE REACTOR TRIP



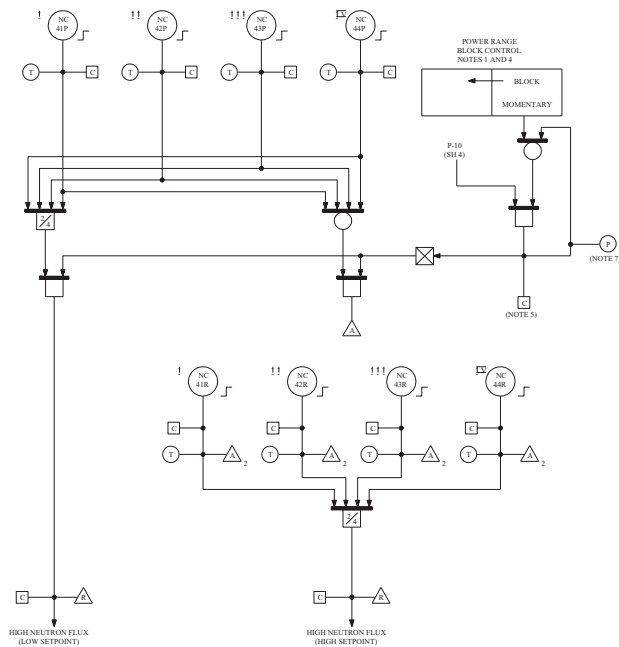
INTERMEDIATE RANGE REACTOR TRIP



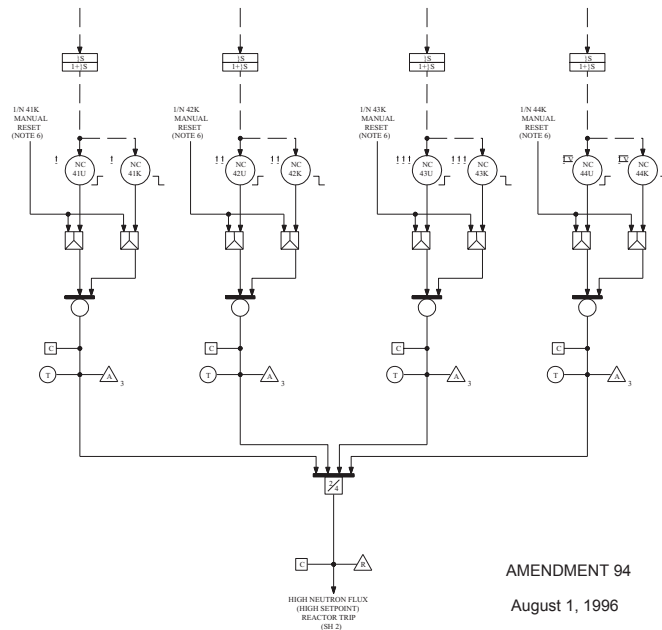
MANUAL TRIP (MAIN CONTROL BOARD)



POWER RANGE REACTOR TRIP



POWER RANGE HIGH NEUTRON FLUX RATE REACTOR TRIP



NOTES:

1. THE REDUNDANT MANUAL BLOCK CONTROLS CONSIST OF TWO CONTROLS ON THE CONTROL BOARD FOR EACH RANGE, ONE FOR EACH TRAIN, SUPPLIED BY OTHERS
2. 1N 33A IS IN LOGIC TRAIN A.
3. 1N 33B IS IN LOGIC TRAIN B.
4. 1N 34A IS IN LOGIC TRAIN A.
5. 1N 34B IS IN LOGIC TRAIN B.
6. TWO COMPUTER INPUTS ARE CONNECTED TO THIS CIRCUIT, INDIVIDUAL FOR EACH TRAIN.
7. MANUAL RESET CONTROLS CONSIST OF FOUR MOMENTARY CONTROLS IN THE CONTROL ROOM, ONE CONTROL FOR EACH INSTRUMENT CHANNEL.
8. TWO PERMISSIVE STATUS LIGHTS ARE CONNECTED TO THIS CIRCUIT, INDIVIDUAL FOR EACH TRAIN.
9. SUPPLIED BY OTHERS.
10. EACH SOURCE RANGE FLUX DETECTOR IS ENERGIZED AND DE-ENERGIZED BY LOGIC OUTPUT FROM A SINGLE TRAIN. THE TWO SOURCE RANGE FLUX DETECTORS (N-31 AND N-32) ARE ON SEPARATE TRAINS.

AMENDMENT 94

August 1, 1996

FIGURE GENERATED FOR FSAR ONLY
BASED ON DRAWING
7247D05 SH 3
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

FUNCTIONAL DIAGRAM

FIGURE 72-1 SH 3

REF:KAD-11705

A

B

C

D

E

F

G

H

1

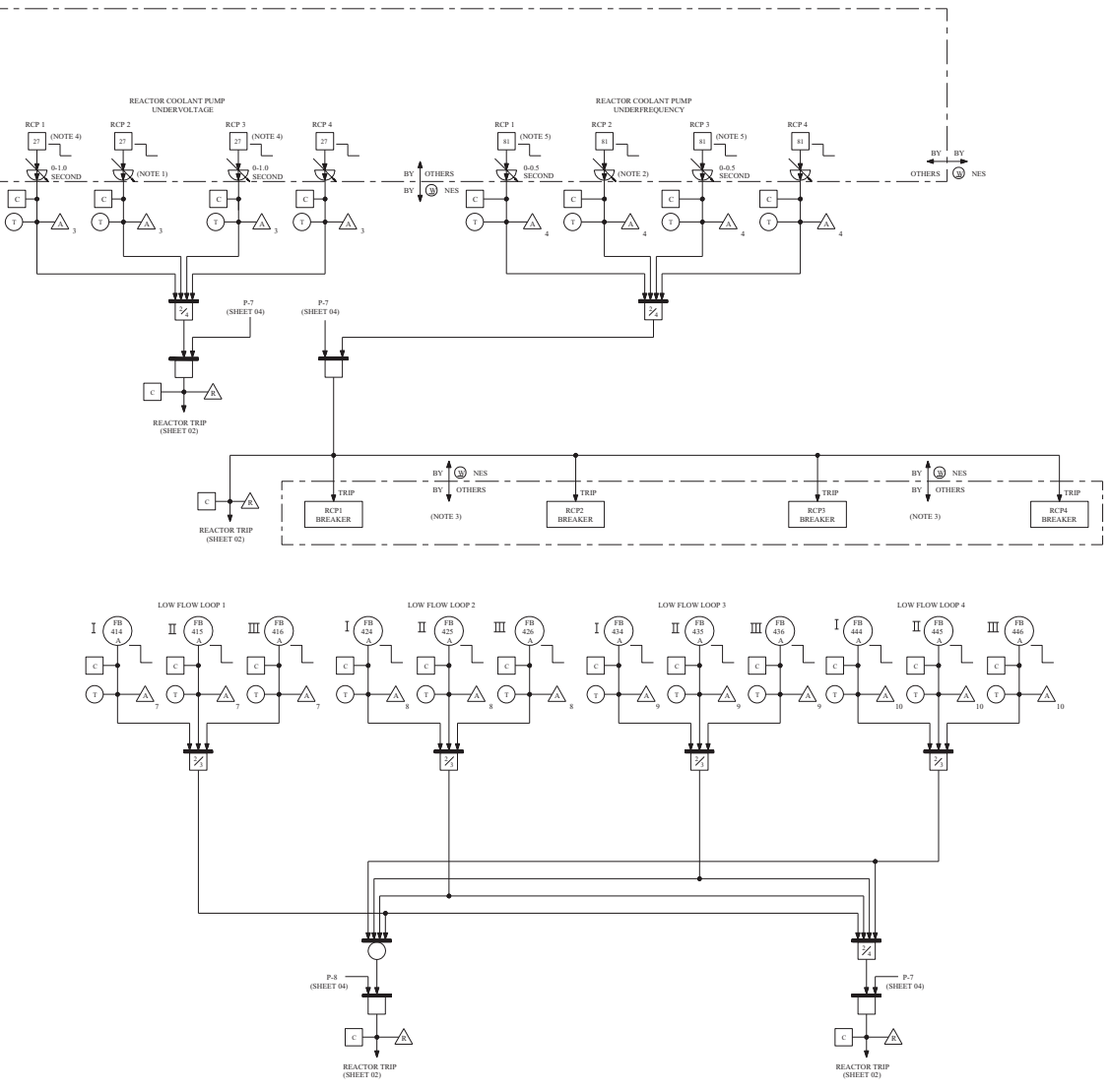
2

3

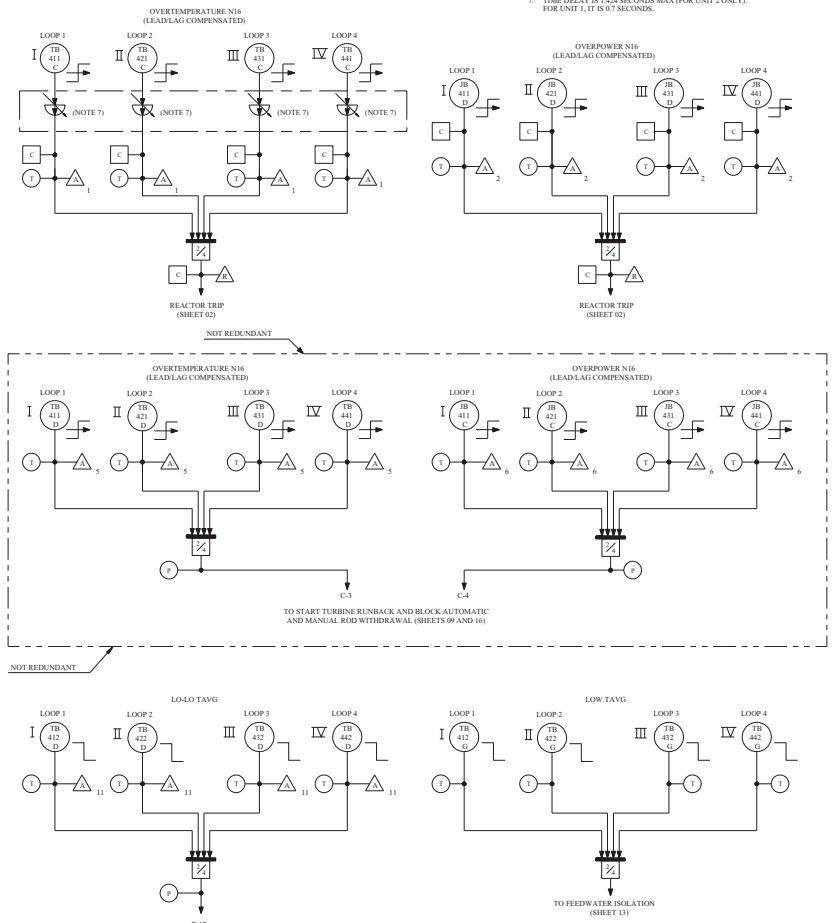
4

5

6



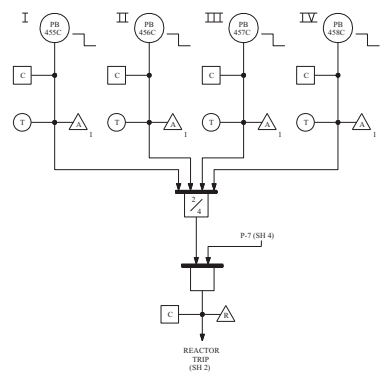
- NOTES
1. THE SETPOINT OF THE UNDERVOLTAGE RELAYS SHOULD BE ADJUSTABLE BETWEEN 60% AND 80% OF NOMINAL VOLTAGE. WITH THE ADJUSTABLE TIME DELAY SET TO ITS MINIMUM VALUE, THE UNDERVOLTAGE DETECTOR SHOULD HAVE A TIME RESPONSE OF LESS THAN 0.2 SECOND. THE ADJUSTABLE DELAY SHOULD ALLOW AN ADDITIONAL INTENTIONAL DELAY BETWEEN 0 TO 1.0 SECOND.
 2. THE SETPOINT OF THE UNDERFREQUENCY RELAYS SHOULD BE ADJUSTABLE BETWEEN 54 Hz AND 59 Hz. WITH THE ADJUSTABLE TIME DELAY SET TO ITS MINIMUM VALUE, THE UNDERFREQUENCY DETECTOR SHOULD HAVE A TIME RESPONSE OF LESS THAN 0.2 SECOND. THE ADJUSTABLE DELAY SHOULD ALLOW AN ADDITIONAL INTENTIONAL DELAY BETWEEN 0 TO 0.5 SECOND.
 3. THE MAXIMUM ALLOWABLE RCP BREAKER TRIP TIME DELAY IS 0.1 SECOND.
 4. THE UNDERVOLTAGE SENSORS (POTENTIAL TRANSFORMERS) MUST BE LOCATED ON THE MOTOR SIDE OF THE RCP CIRCUIT BREAKERS TO DETECT THE TRIP OF THE RCP CIRCUIT BREAKERS IN ADDITION TO BUS UNDERVOLTAGE.
 5. THE UNDERFREQUENCY SENSORS MAY BE LOCATED ON THE MOTOR SIDE OF THE RCP CIRCUIT BREAKERS.
 6. FOR GENERAL NOTES, LEGEND, AND INDEX SEE DRAWING 7247D05 SH 01.
 7. TIME DELAY IS 1.424 SECONDS MAX (FOR UNIT 2 ONLY). FOR UNIT 1, IT IS 0.7 SECONDS.



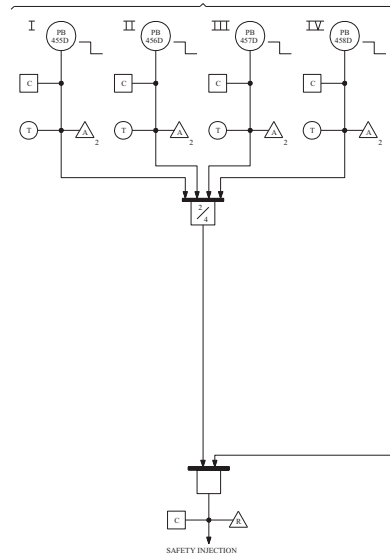
AMENDMENT 100

FIGURE GENERATED FOR FSAR ONLY BASED ON DRAWING 7247D05 SH 5
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
FUNCTIONAL DIAGRAM
FIGURE 7.2-1 SH 5

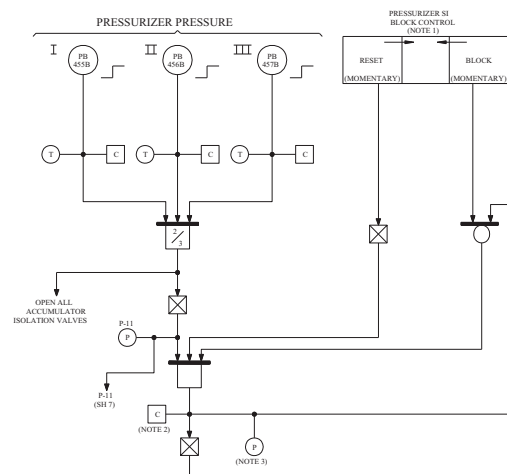
PRESSURIZER LOW PRESSURE
(LEAD LAG COMPENSATED)



PRESSURIZER LOW PRESSURE

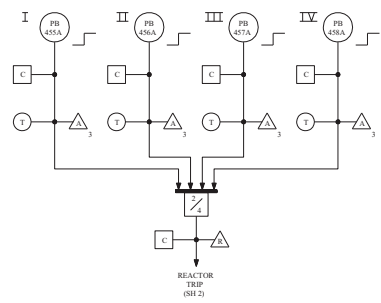


PRESSURIZER PRESSURE

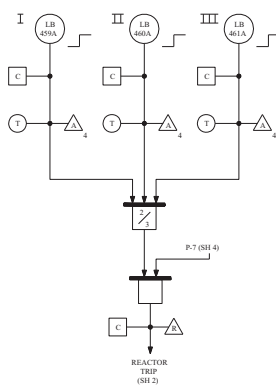


- NOTES
1. THE REDUNDANT MANUAL BLOCK CONTROL CONSISTS OF TWO CONTROLS ON THE CONTROL BOARD, ONE FOR EACH TRAIN, SUPPLIED BY OTHERS.
 2. TWO COMPUTER INPUTS ARE CONNECTED TO THIS CIRCUIT, INDIVIDUAL FOR EACH TRAIN.
 3. TWO PERMISSIVE STATUS LIGHTS ARE CONNECTED TO THIS CIRCUIT, INDIVIDUAL FOR EACH TRAIN.

PRESSURIZER HIGH PRESSURE

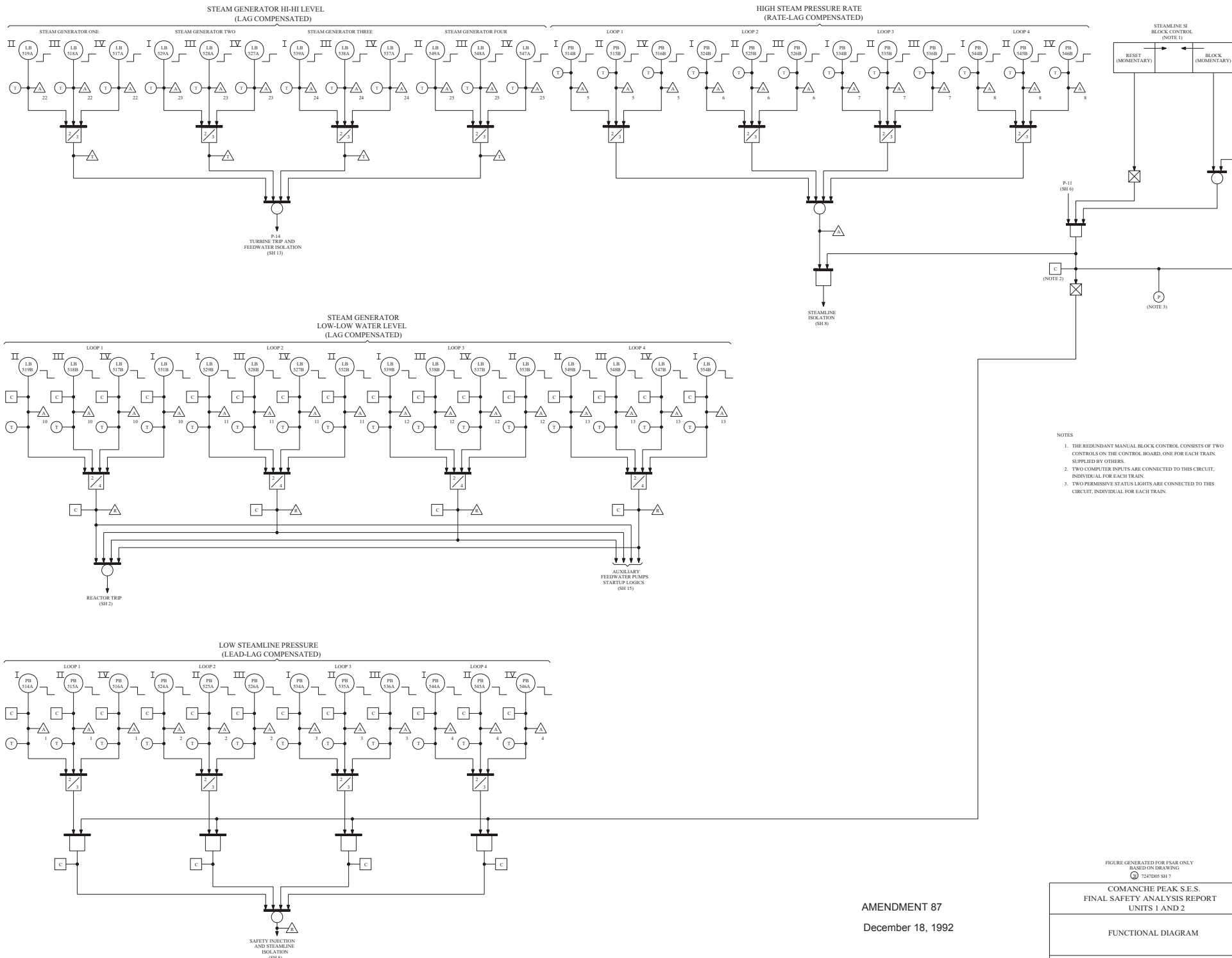


PRESSURIZER HIGH WATER LEVEL



AMENDMENT 76
May 1, 1989

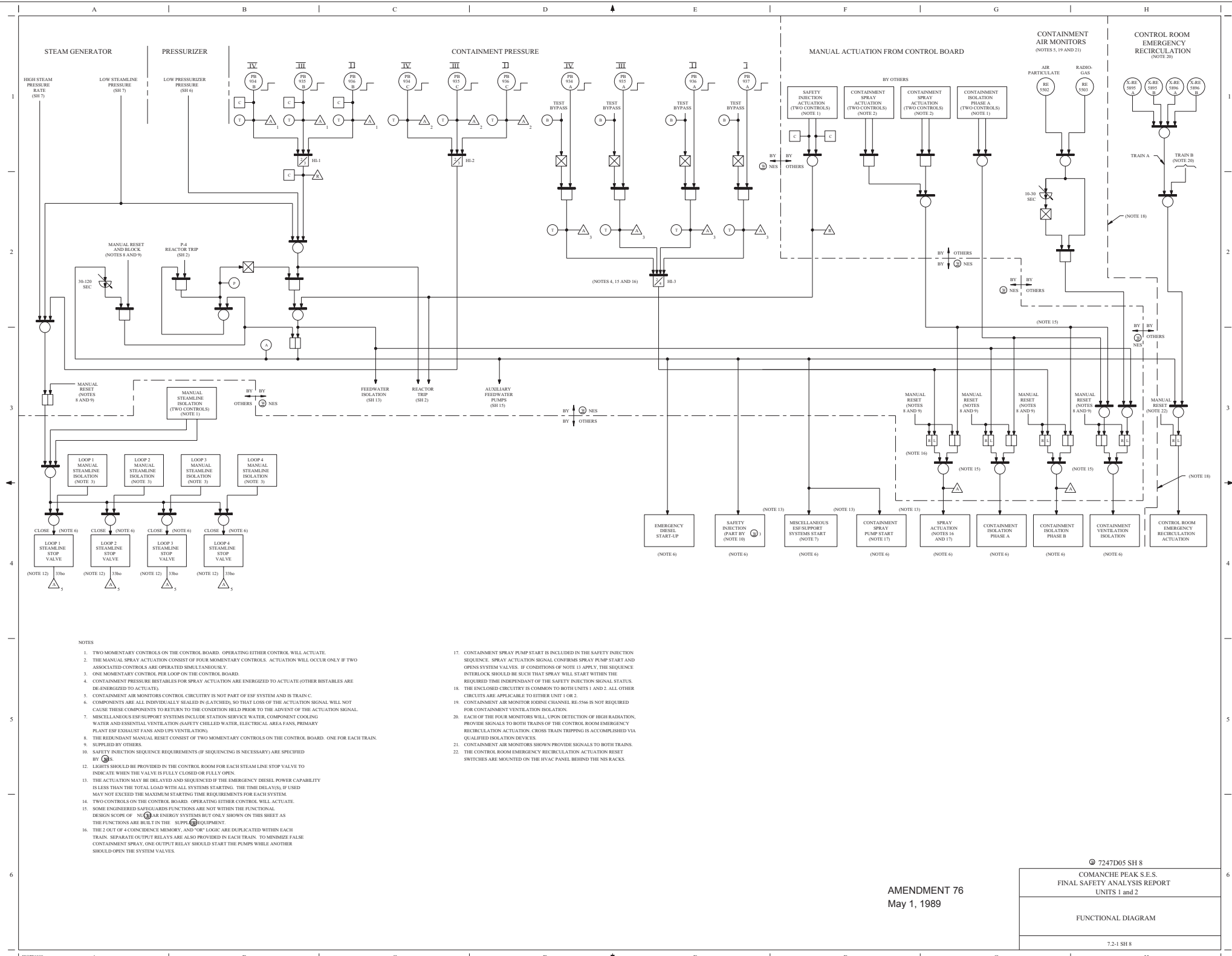
FIGURE GENERATED FOR FSAR ONLY BASED ON DRAWING 7247D05 SH 6
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUNCTIONAL DIAGRAM
FIGURE 7.2-1 SH 6



- NOTES
1. THE REDUNDANT MANUAL BLOCK CONTROL CONSISTS OF TWO CONTROLS ON THE CONTROL BOARD, ONE FOR EACH TRAIN. SUPPLIED BY OTHERS.
 2. TWO COMPUTER INPUTS ARE CONNECTED TO THIS CIRCUIT, INDIVIDUAL FOR EACH TRAIN.
 3. TWO PERMISSIVE STATUS LIGHTS ARE CONNECTED TO THIS CIRCUIT, INDIVIDUAL FOR EACH TRAIN.

AMENDMENT 87
December 18, 1992

FIGURE GENERATED FOR PSAR ONLY BASED ON DRAWING 7247D05 SH 7	
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2	
FUNCTIONAL DIAGRAM	
FIGURE 7.2-1 SH 7	



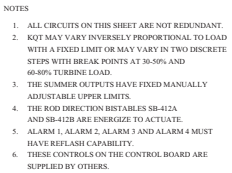
AMENDMENT 76
May 1, 1989

© 7247D05 SH 8

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

FUNCTIONAL DIAGRAM

7.2-1 SH 8



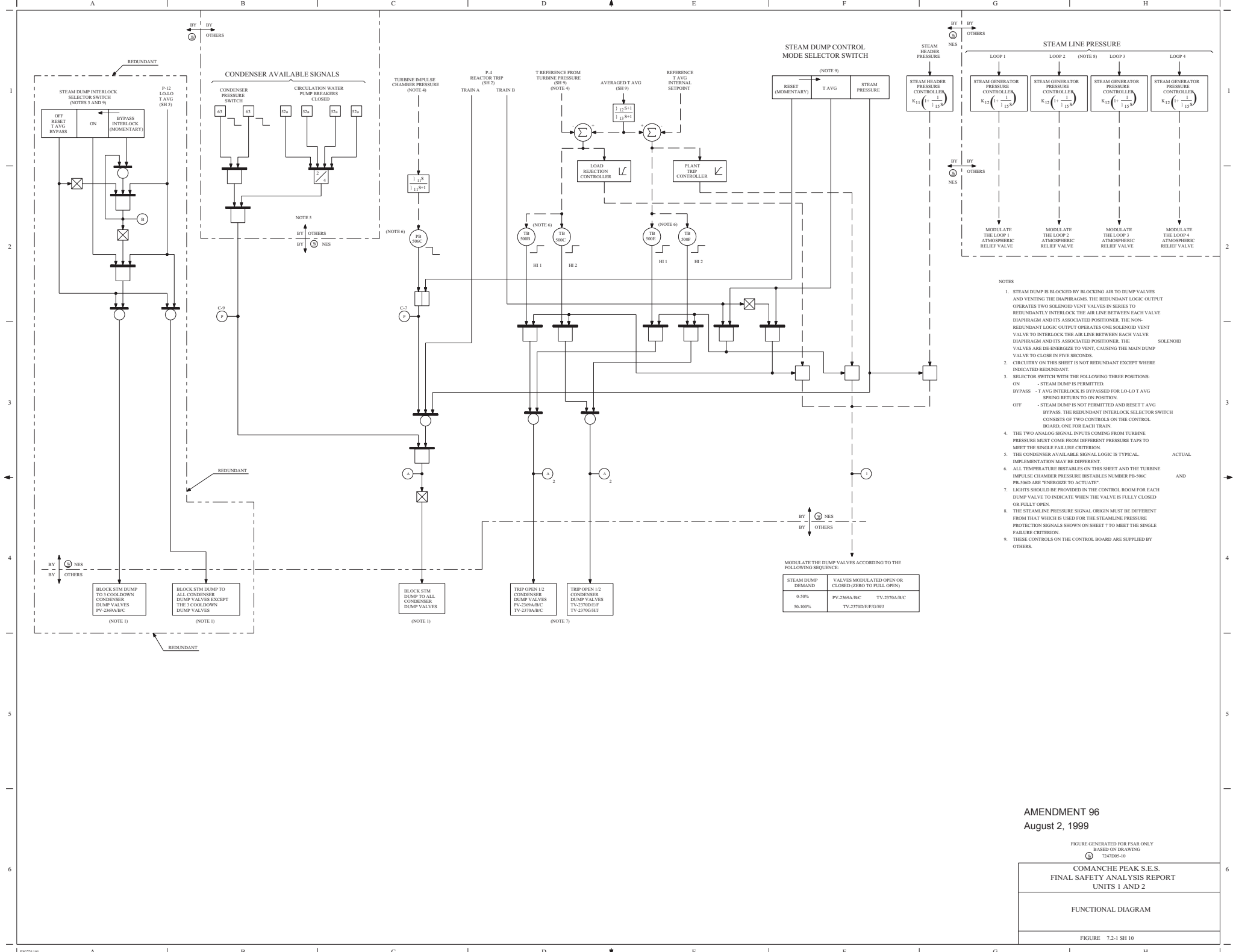
AMENDMENT 96
August 2, 1999

© 7247D05 SH 9

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

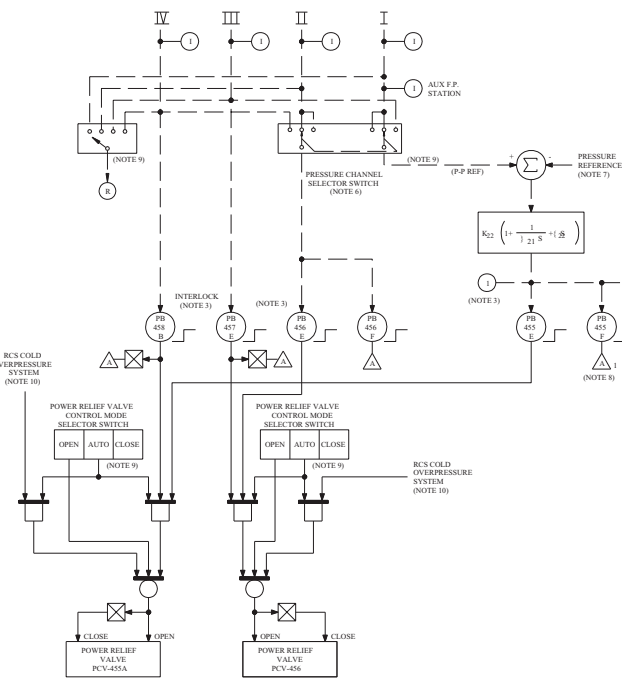
FUNCTIONAL DIAGRAM

7.2-1 SH 9

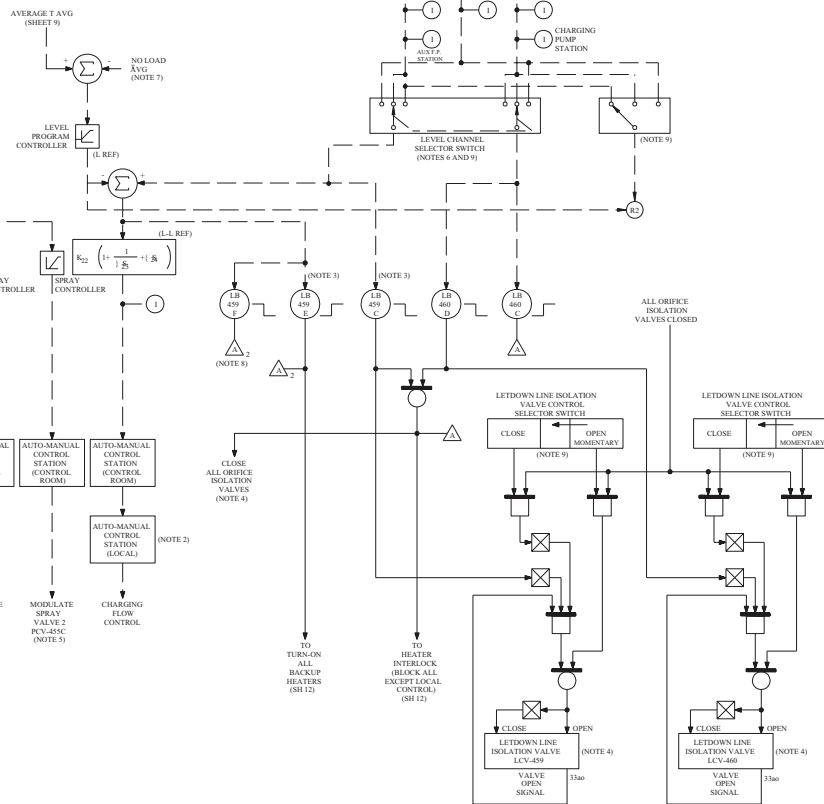


AMENDMENT 96
August 2, 1999

PRESSURIZER PRESSURE CHANNELS



PRESSURIZER LEVEL CHANNELS



NOTES

1. ALL CIRCUITS ON THIS SHEET ARE NOT REDUNDANT.
2. LOCAL CONTROL OVERRIDES ALL OTHER SIGNALS. LOCAL OVERRIDE ACTUATES ALARM IN CONTROL ROOM.
3. PRESSURE BISTABLES NO. PB-453E, PB-453G, PB-454E, PB-457E, AND PB-458E AND LEVEL BISTABLES NO. LB-459C, LB-459E AND LB-460D ARE ENERGIZED TO ACTIVATE.
4. OPEN/SHUT INDICATION IN CONTROL ROOM.
5. A LIGHT SHOULD BE PROVIDED IN THE CONTROL ROOM FOR EACH SPRAY VALVE TO INDICATE WHEN IT IS NOT FULLY CLOSED.
6. CENTER POSITION NORMALLY SELECTED.
7. ADJUSTABLE SETPOINT WITHIN CONTROLLER.
8. ALARM 1 AND ALARM 2 MUST HAVE REFRESH CAPABILITY.
9. THESE CONTROLS ON THE CONTROL BOARD ARE SUPPLIED BY OTHERS.
10. LOGIC FOR THIS SYSTEM IS SHOWN ON INTERLOCK RC-5.

AMENDMENT 96
August 2, 1999

© 7247D05 SH 11
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

FUNCTIONAL DIAGRAM

7.2-1 SH 11

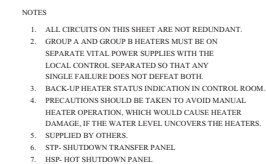
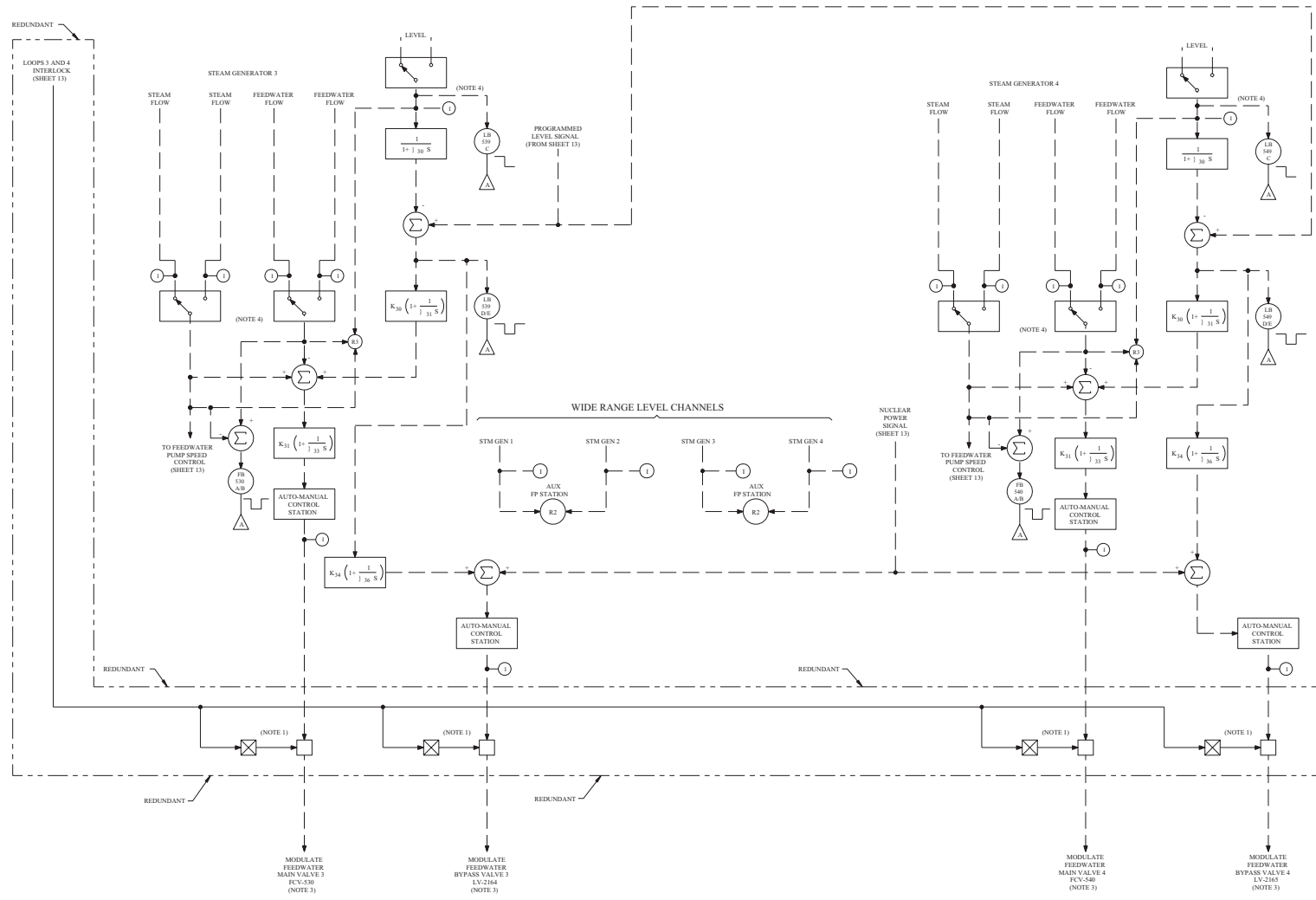


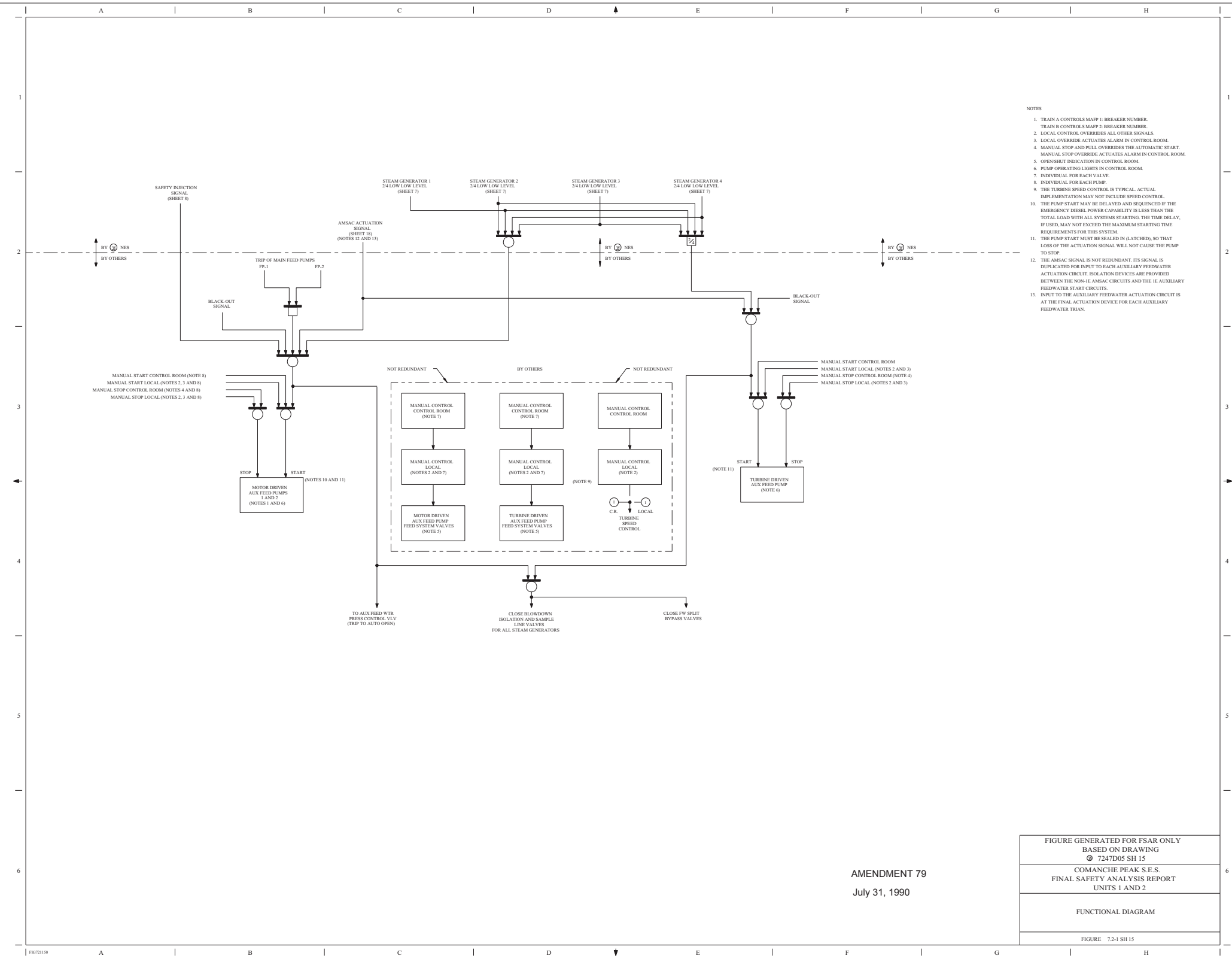
FIGURE GENERATED FOR FSAR ONLY BASED ON DRAWING Q 7247D05 SH 12
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUNCTIONAL DIAGRAM
FIGURE 7.2-1 SH 12



- NOTES:
1. ANALOG GATE CONSISTS OF TWO SOLENOID VENT VALVES IN SERIES TO REDUNDANTLY INTERLOCK THE AIR LINE BETWEEN EACH VALVE DIAPHRAGM AND ITS ASSOCIATED POSITIONER. THE SOLENOID VALVES ARE DE-ENERGIZED TO VENT, CAUSING THE FEEDWATER VALVE TO CLOSE IN FIVE SECONDS.
 2. ALL CIRCUITS ON THIS SHEET ARE NOT REDUNDANT, EXCEPT WHERE INDICATED REDUNDANT.
 3. OPEN SHUT INDICATION FOR EACH FEEDWATER MAIN VALVE IN CONTROL ROOM.
 4. THESE CONTROLS ON THE CONTROL BOARD ARE SUPPLIED BY OTHERS.

AMENDMENT 76
May 1, 1989

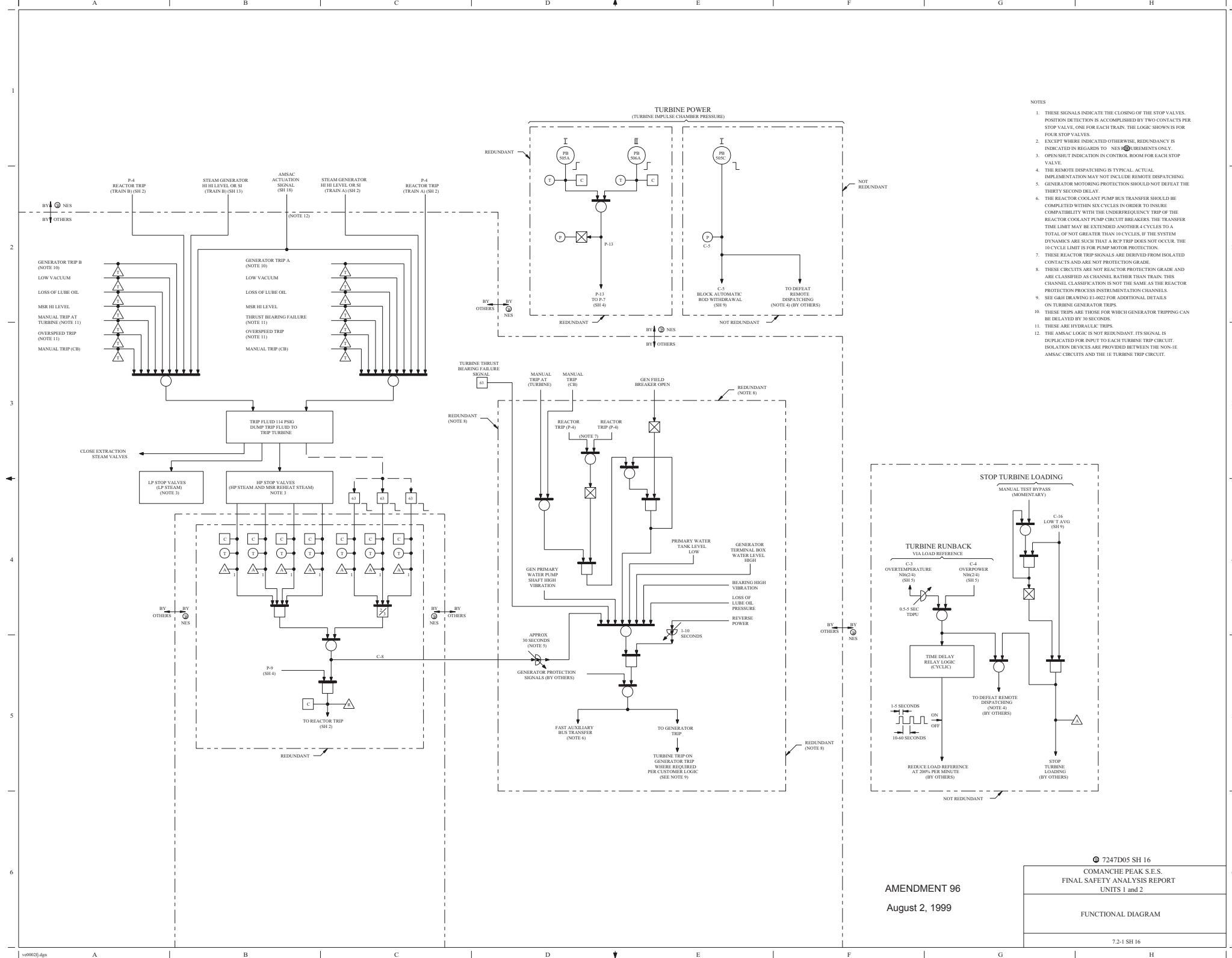
FIGURE GENERATED FOR FSAR ONLY BASED ON DRAWING 7247D05 SH 14
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUNCTIONAL DIAGRAM
FIGURE 7.2-1 SH 14



- NOTES
1. TRAIN A CONTROLS MAFF 1: BREAKER NUMBER.
TRAIN B CONTROLS MAFF 2: BREAKER NUMBER.
 2. LOCAL CONTROL OVERRIDES ALL OTHER SIGNALS.
 3. LOCAL OVERRIDE ACTUATES ALARM IN CONTROL ROOM.
 4. MANUAL STOP AND PULL OVERRIDES THE AUTOMATIC START.
MANUAL STOP OVERRIDE ACTUATES ALARM IN CONTROL ROOM.
 5. OPEN SHUT INDICATION IN CONTROL ROOM.
 6. PUMP OPERATING LIGHTS IN CONTROL ROOM.
 7. INDIVIDUAL FOR EACH VALVE.
 8. INDIVIDUAL FOR EACH PUMP.
 9. THE TURBINE SPEED CONTROL IS TYPICAL. ACTUAL IMPLEMENTATION MAY NOT INCLUDE SPEED CONTROL.
 10. THE PUMP START MAY BE DELAYED AND SEQUENCED IF THE EMERGENCY DIESEL POWER CAPABILITY IS LESS THAN THE TOTAL LOAD WITH ALL SYSTEMS STARTING. THE TIME DELAY, IF USED, MAY NOT EXCEED THE MAXIMUM STARTING TIME REQUIREMENTS FOR THIS SYSTEM.
 11. THE PUMP START MUST BE SEALED IN (LATCHED), SO THAT LOSS OF THE ACTUATION SIGNAL WILL NOT CAUSE THE PUMP TO STOP.
 12. THE AMSAC SIGNAL IS NOT REDUNDANT. ITS SIGNAL IS DUPLICATED FOR INPUT TO EACH AUXILIARY FEEDWATER ACTUATION CIRCUIT. ISOLATION DEVICES ARE PROVIDED BETWEEN THE NON-IE AMSAC CIRCUITS AND THE IE AUXILIARY FEEDWATER START CIRCUITS.
 13. INPUT TO THE AUXILIARY FEEDWATER ACTUATION CIRCUIT IS AT THE FINAL ACTUATION DEVICE FOR EACH AUXILIARY FEEDWATER TRAIN.

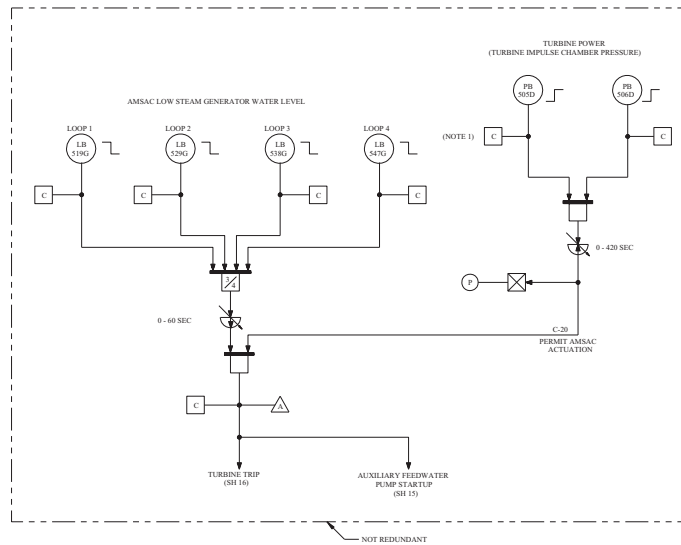
AMENDMENT 79
July 31, 1990

FIGURE GENERATED FOR FSAR ONLY BASED ON DRAWING 7247D05 SH 15
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUNCTIONAL DIAGRAM
FIGURE 72-1 SH 15



- NOTES
1. THESE SIGNALS INDICATE THE CLOSING OF THE STOP VALVES. POSITION DETECTION IS ACCOMPLISHED BY TWO CONTACTS PER STOP VALVE, ONE FOR EACH TRAIN. THE LOGIC SHOWN IS FOR FOUR STOP VALVES.
 2. EXCEPT WHERE INDICATED OTHERWISE, REDUNDANCY IS INDICATED IN REGARDS TO NES REQUIREMENTS ONLY.
 3. OPEN/SHUT INDICATION IN CONTROL ROOM FOR EACH STOP VALVE.
 4. THE REMOTE DISPATCHING IS TYPICAL. ACTUAL IMPLEMENTATION MAY NOT INCLUDE REMOTE DISPATCHING.
 5. GENERATOR MOTORING PROTECTION SHOULD NOT DEFEAT THE THIRTY SECOND DELAY.
 6. THE REACTOR COOLANT PUMP BUS TRANSFER SHOULD BE COMPLETED WITHIN SIX CYCLES IN ORDER TO INSURE COMPATIBILITY WITH THE UNDERFREQUENCY TRIP OF THE REACTOR COOLANT PUMP CIRCUIT BREAKERS. THE TRANSFER TIME LIMIT MAY BE EXTENDED ANOTHER 4 CYCLES TO A TOTAL OF NOT GREATER THAN 10 CYCLES, IF THE SYSTEM DYNAMICS ARE SUCH THAT A RCP TRIP DOES NOT OCCUR. THE 10 CYCLE LIMIT IS FOR PUMP MOTOR PROTECTION.
 7. THESE REACTOR TRIP SIGNALS ARE DERIVED FROM ISOLATED CONTACTS AND ARE NOT PROTECTION GRADE.
 8. THESE CIRCUITS ARE NOT REACTOR PROTECTION GRADE AND ARE CLASSIFIED AS CHANNEL RATHER THAN TRAIN. THIS CHANNEL CLASSIFICATION IS NOT THE SAME AS THE REACTOR PROTECTION PROCESS INSTRUMENTATION CHANNELS.
 9. SEE G4H DRAWING E1-802 FOR ADDITIONAL DETAILS ON TURBINE GENERATOR TRIPS.
 10. THESE TRIPS ARE THOSE FOR WHICH GENERATOR TRIPPING CAN BE DELAYED BY 30 SECONDS.
 11. THESE ARE HYDRAULIC TRIPS.
 12. THE AMSAC LOGIC IS NOT REDUNDANT. ITS SIGNAL IS DUPLICATED FOR INPUT TO EACH TURBINE TRIP CIRCUIT. ISOLATION DEVICES ARE PROVIDED BETWEEN THE NON-IE AMSAC CIRCUITS AND THE IE TURBINE TRIP CIRCUIT.

AMENDMENT 96
August 2, 1999

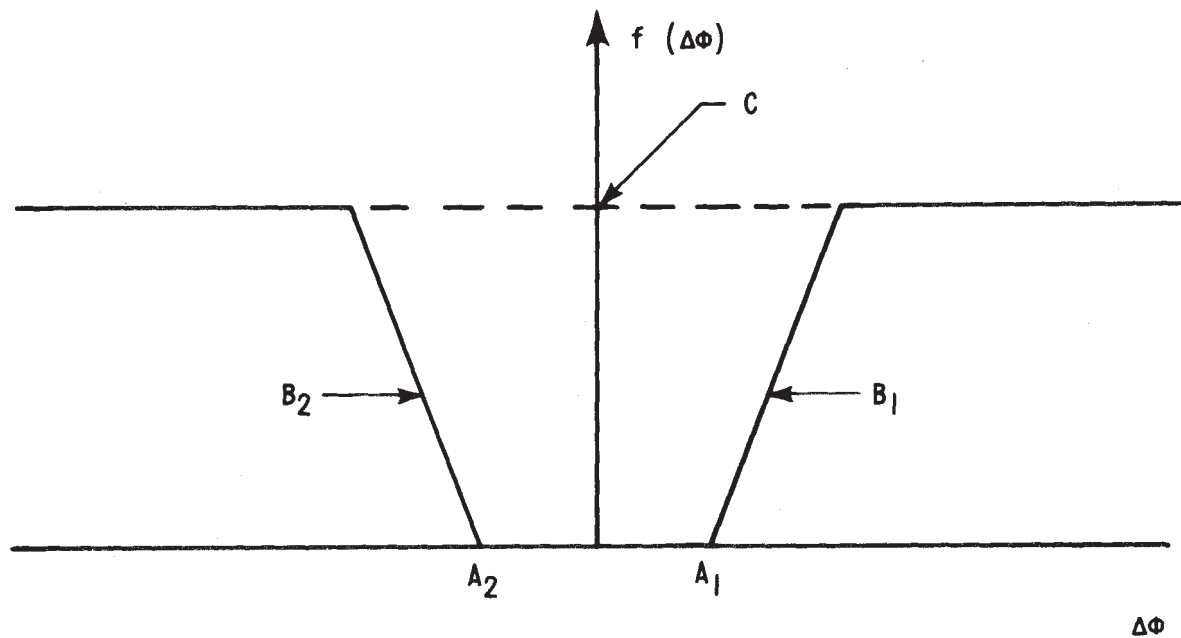


NOTES

1. AMSAC MAY BE REMOVED FROM SERVICE FOR TEST PURPOSES.

AMENDMENT 76
May 1, 1989

FIGURE GENERATED FOR FSAR ONLY BASED ON DRAWING ⑦ 7247D05 SH 18 COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUNCTIONAL DIAGRAM
FIGURE 7.2-1 SH 18



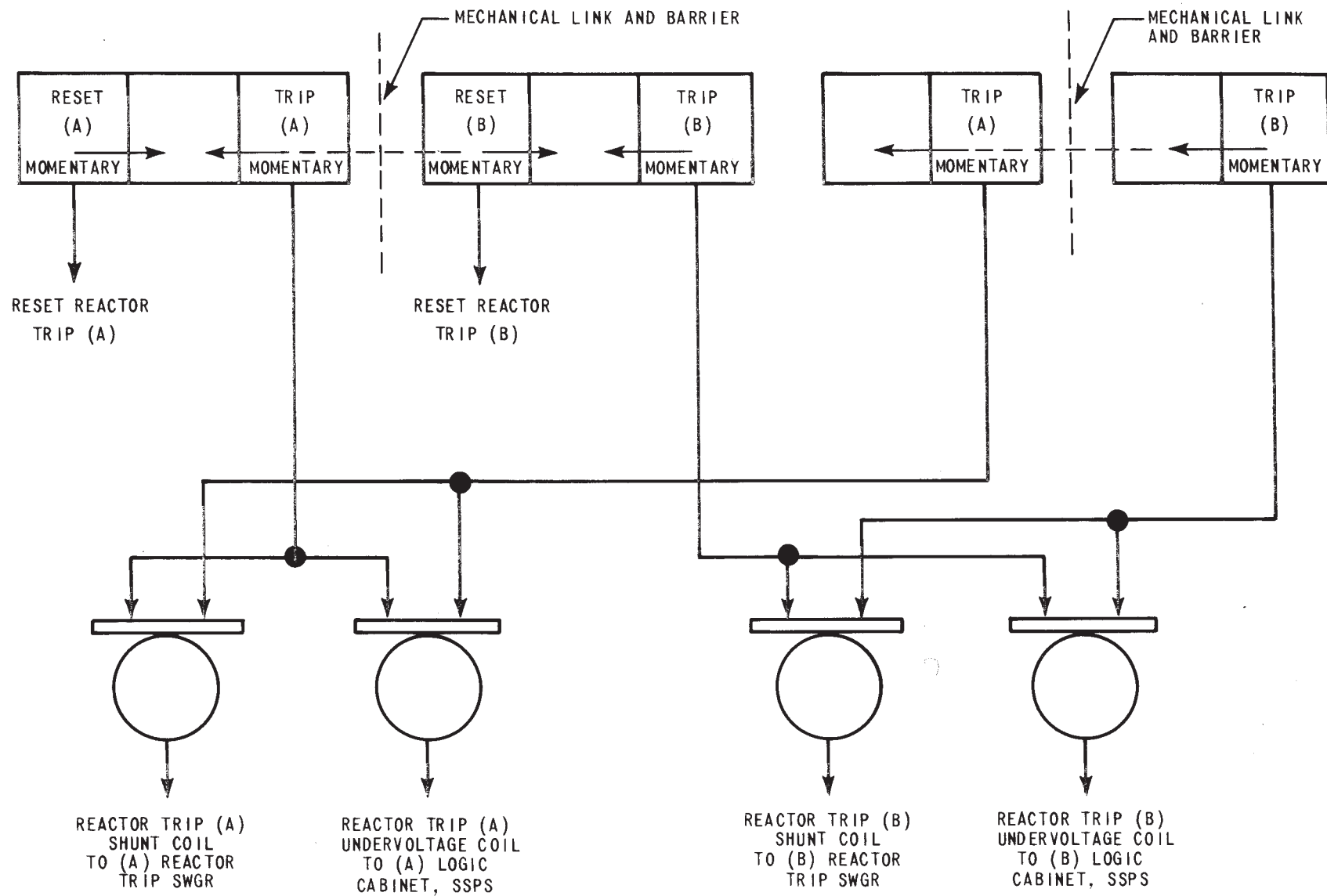
- $\Delta\Phi$ - NEUTRON FLUX DIFFERENCE BETWEEN UPPER AND LOWER LONG
ION CHAMBERS
- A_1, A_2 - LIMIT OF $f(\Delta\Phi)$ DEADBAND
- B_1, B_2 - SLOPE OF RAMP: DETERMINES RATE AT WHICH FUNCTION
REACHES IT'S MAXIMUM VALUE ONCE DEADBAND IS EXCEEDED
- C - MAGNITUDE OF MAXIMUM VALUE THE FUNCTION MAY ATTAIN

Amendment 76
May 1, 1989

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Setpoint Reduction Function
For Overtemperatures N16 Trips

FIGURE 7.2-2



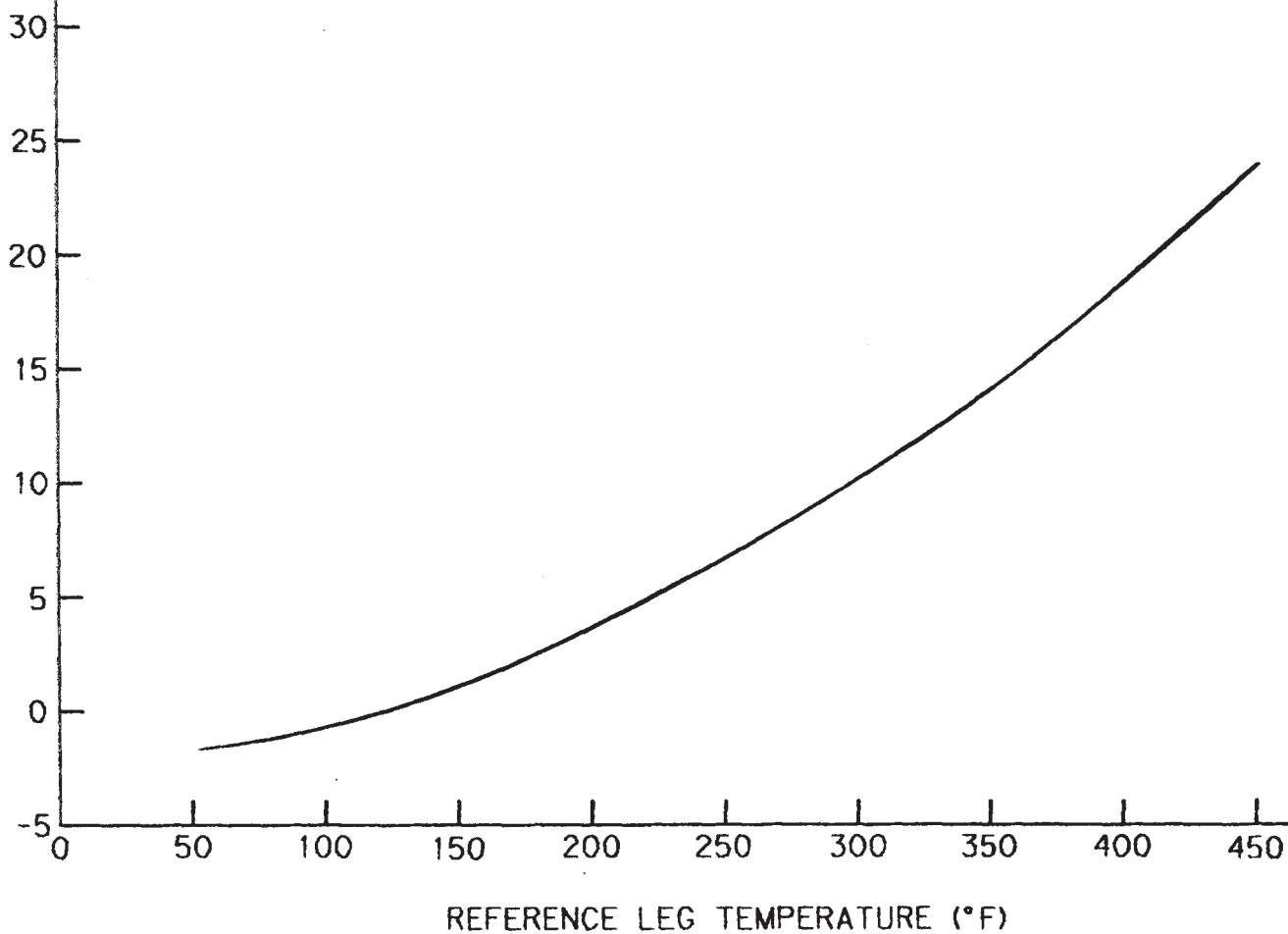
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Reactor Trip/ESF
Actuation Mechanical Linkage

FIGURE 7.2-3

BASIS: HEIGHT OF REFERENCE LEG = 1.01 x LEVEL SPAN
CALIBRATION AT 120° F, 1053 PSIA

CORRECTION FOR REFERENCE LEG HEATUP
(% OF LEVEL SPAN)

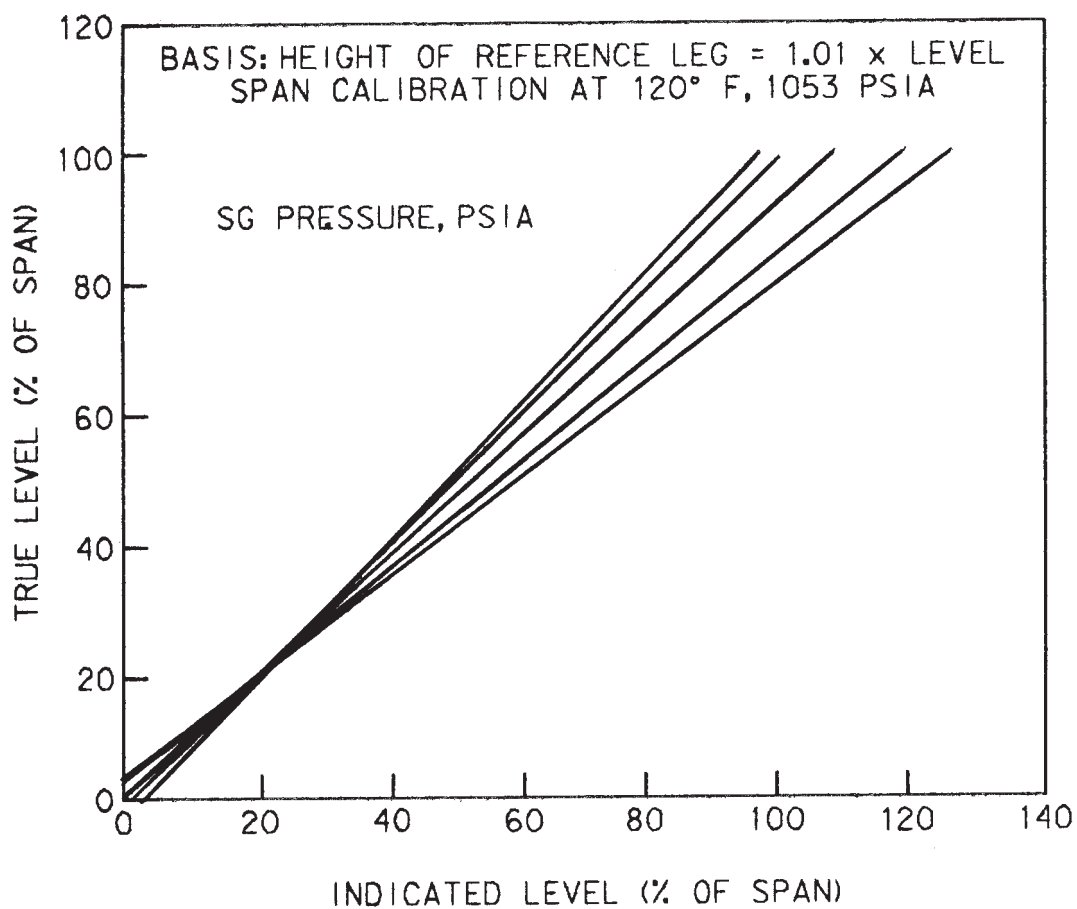


COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

BIAS DUE TO STEAM GENERATOR
REFERENCE LEG HEATUP

Amendment 91
April 15, 1994

FIGURE 7.2.4

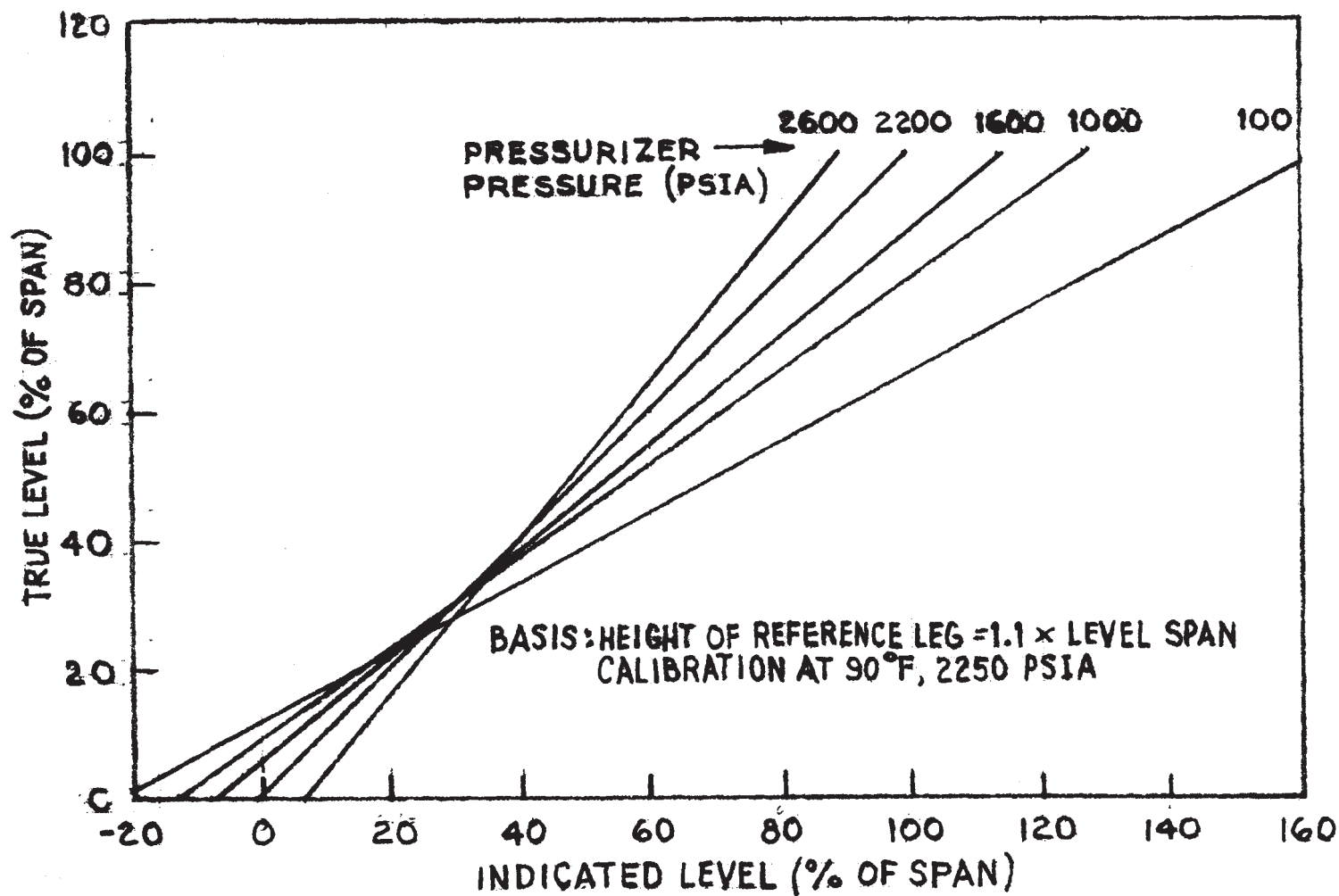


COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

BIAS DUE TO STEAM GENERATOR
PRESSURE CHANGE

FIGURE 7.2-5

Amendment 91
April 15, 1994



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

BIAS DUE TO PRESSURIZER
PRESSURE CHANGE

FIGURE 7.2-6

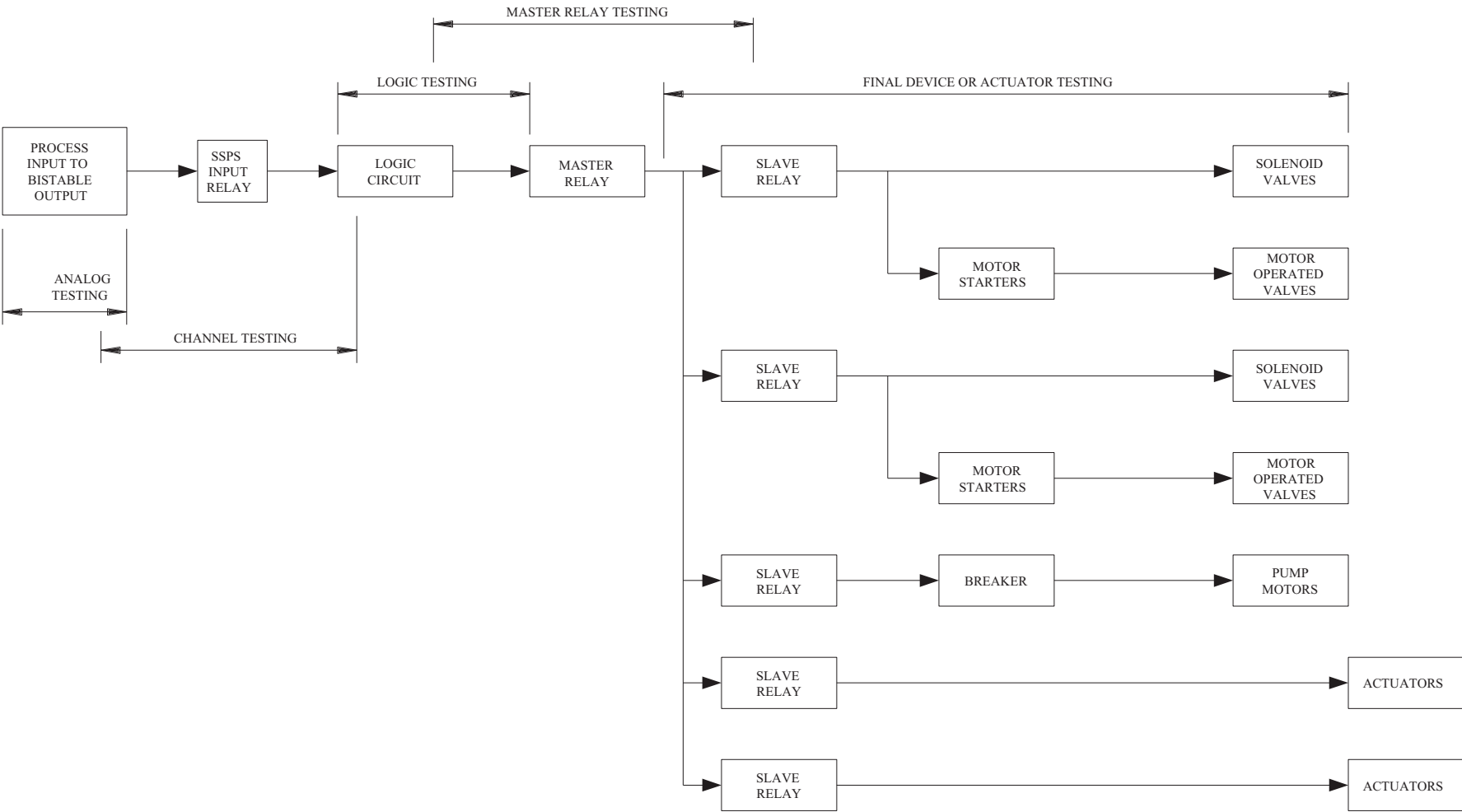
Amendment 91
April 15, 1994

OCTOBER 8, 1980

**COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2**

Deleted

FIGURE 7.3-1



COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2	
TYPICAL ESF TEST CIRCUITS	
FIGURE	7.3-2

GENERAL NOTES:

1. CIRCUITRY AND HARDWARE FOR REDUNDANT PROTECTION TRAINS "A" AND "B" TEST CABINETS ARE DUPLICATE EXCEPT AS NOTED

A - TRAIN "A" ONLY
B - TRAIN "B" ONLY

2. IN DETAILS A & B THE SYMBOL * REPRESENTS THE SUFFIX NUMBERS OF THE DEVICE REFERENCED.

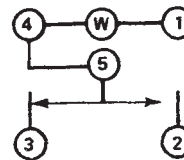
K* - SPS RELAY, K601, K602, ETC.
K(O) - OPERATING COIL
K(R) - RESET COIL
S* - STC TEST SWITCH, S802, S834, ETC.
K8* - STC RELAY, K811, K817, ETC.
DS* - STC LIGHT, DS8009, DS8077, ETC.

3. "DETAIL A" & "B" TYPE CIRCUITS ARE DETAILED ON THE SCHEMATICS. "DETAIL B" CIRCUITS WILL BE SUBSTITUTED FOR "DETAIL A" CIRCUITS WHERE REQUIRED.

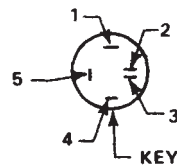
LOCATION LEGEND

SPS - SOLID STATE PROTECTION SYSTEM
STC - SAFEGUARDS TEST CABINET
X - SWGR, MCC, AUXILIARY RELAY RACK, ETC.

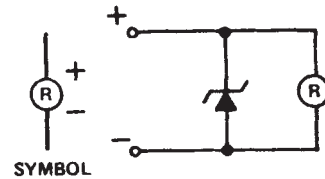
*THE BASIS FOR THIS DRAWING IS WESTINGHOUSE 9555D15 SUB 1 SHEET 1 OF 20

TEST LIGHTS DS*
DEV 3ILLUMINATED PUSHBUTTON
SWITCH WITH 28V LAMP NO.
3327 (EXCEPT AS NOTED)

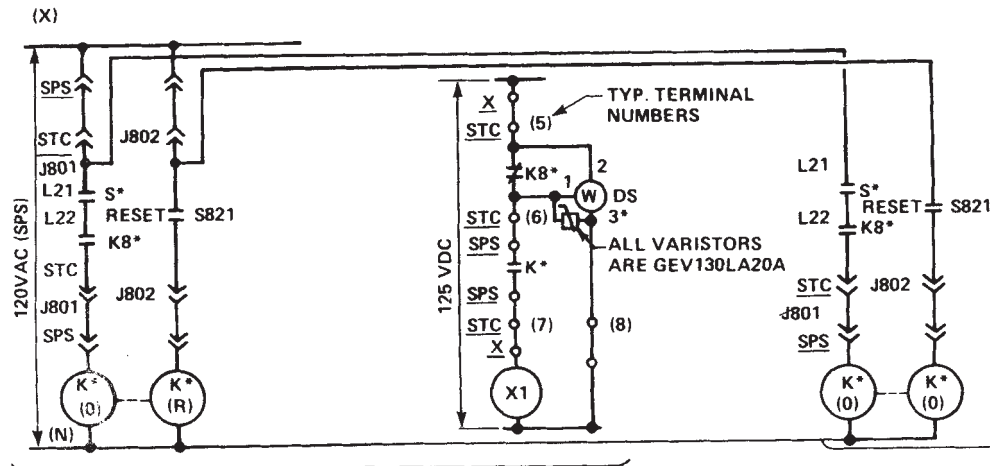
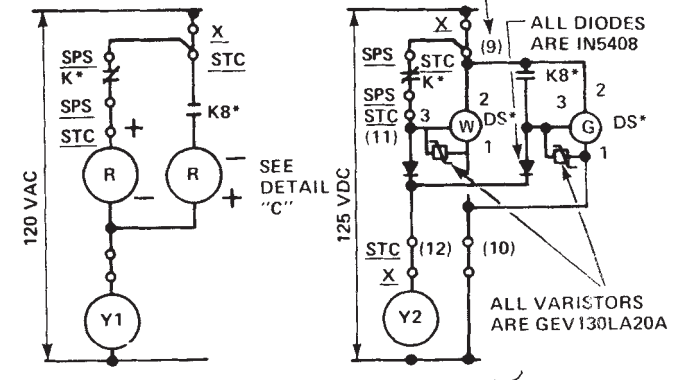
REAR OF PANEL



CONTACT LOCATION SCHEME



DETAIL C CURRENT MONITOR DS* LED WITH INTERNAL RESISTOR

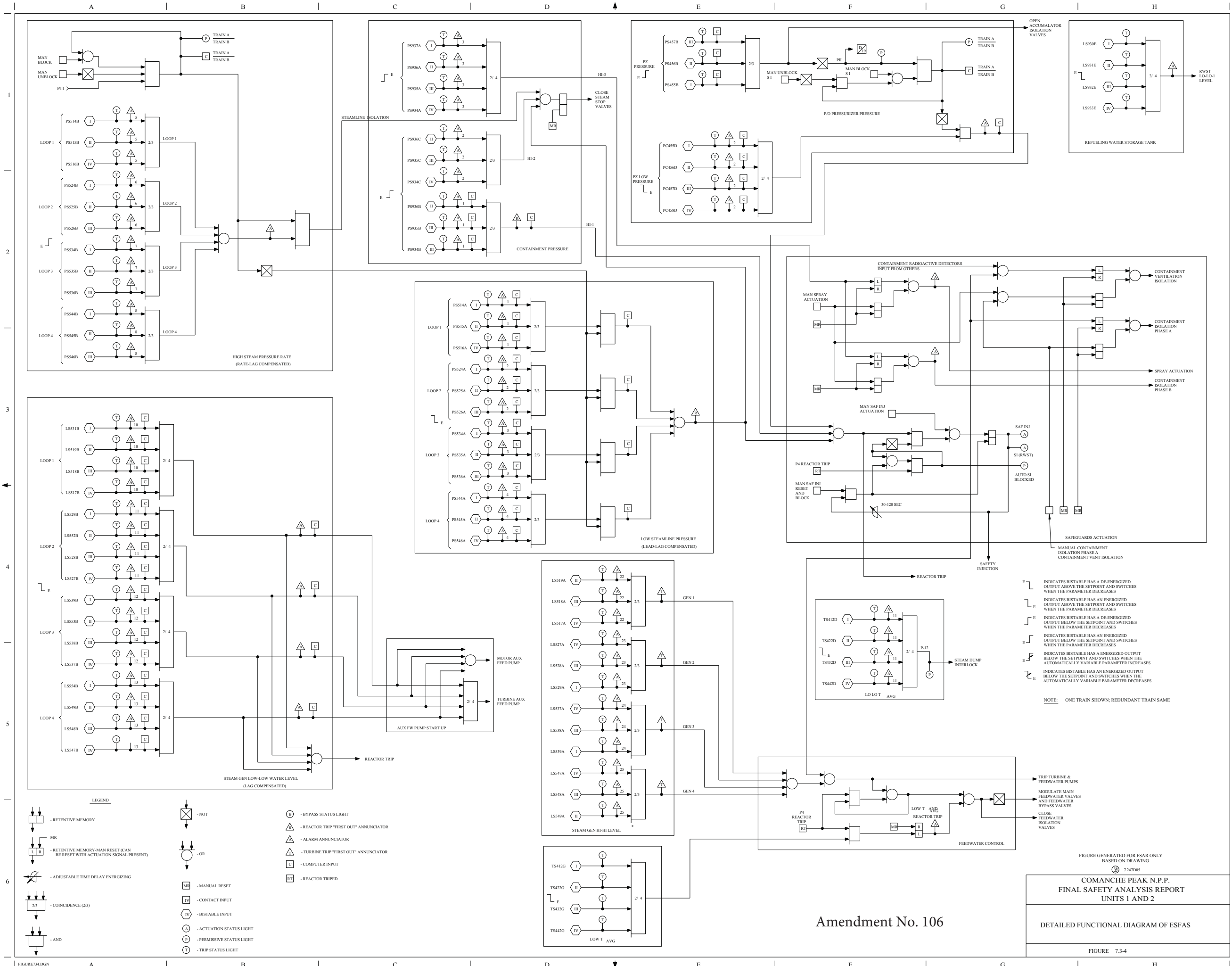
DETAIL A TYPICAL PROTECTION ACTUATION
CIRCUIT BLOCKING SCHEMES
(CONTACT CLOSURE FOR
ACTUATION)DETAIL B TYPICAL PROTECTION ACTUATION CIRCUIT BLOCKING
SCHEMES (CONTACT OPENING FOR ACTUATION)

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Engineered Safeguards Test
Cabinet, Index, Notes
and Legend*

FIGURE 7.3-3.

AMENDMENT 11
JULY 31, 1980



Amendment No. 106

- DELETED -

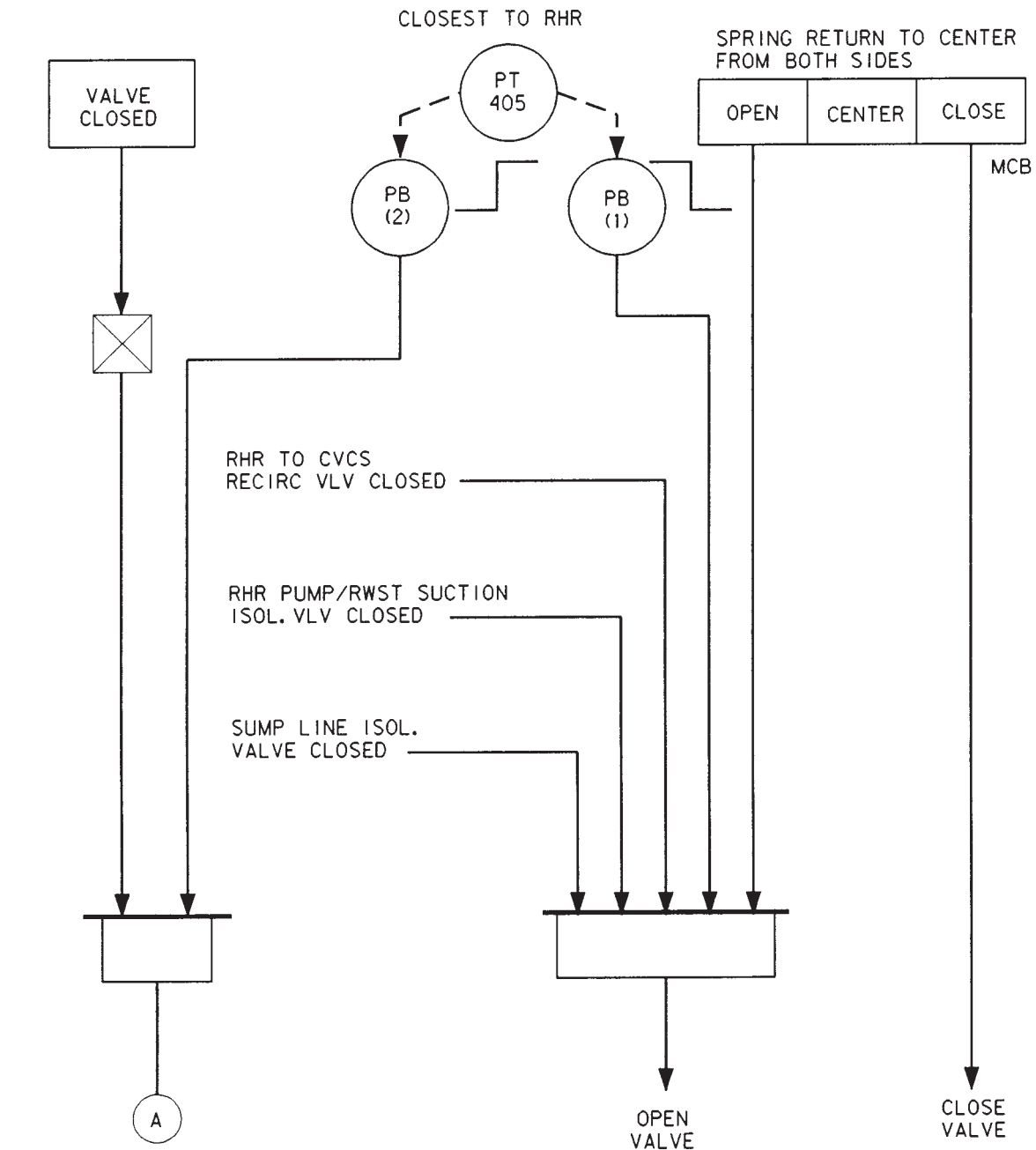
See FSAR Figure 8.3-15

AMENDMENT 12
OCTOBER 8, 1980

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Instrumentation and Control
Power Supply System

FIGURE 7.6-1



(1) DE-ENERGIZED AT LOW SETPOINT
 (2) ENERGIZED AT HIGH PRESSURE SETPOINT

NOTE: LOGIC FOR VALVES IN EACH FLUID SYSTEM TRAIN IDENTICAL

- BISTABLE OUTPUT IS LOGIC "1" WHEN MEASURED PARAMETER IS GREATER THAN THE SETPOINT VALUE.
- BISTABLE OUTPUT IS LOGIC "1" WHEN MEASURED PARAMETER IS LESS THAN THE SETPOINT VALUE.

COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 AND 2

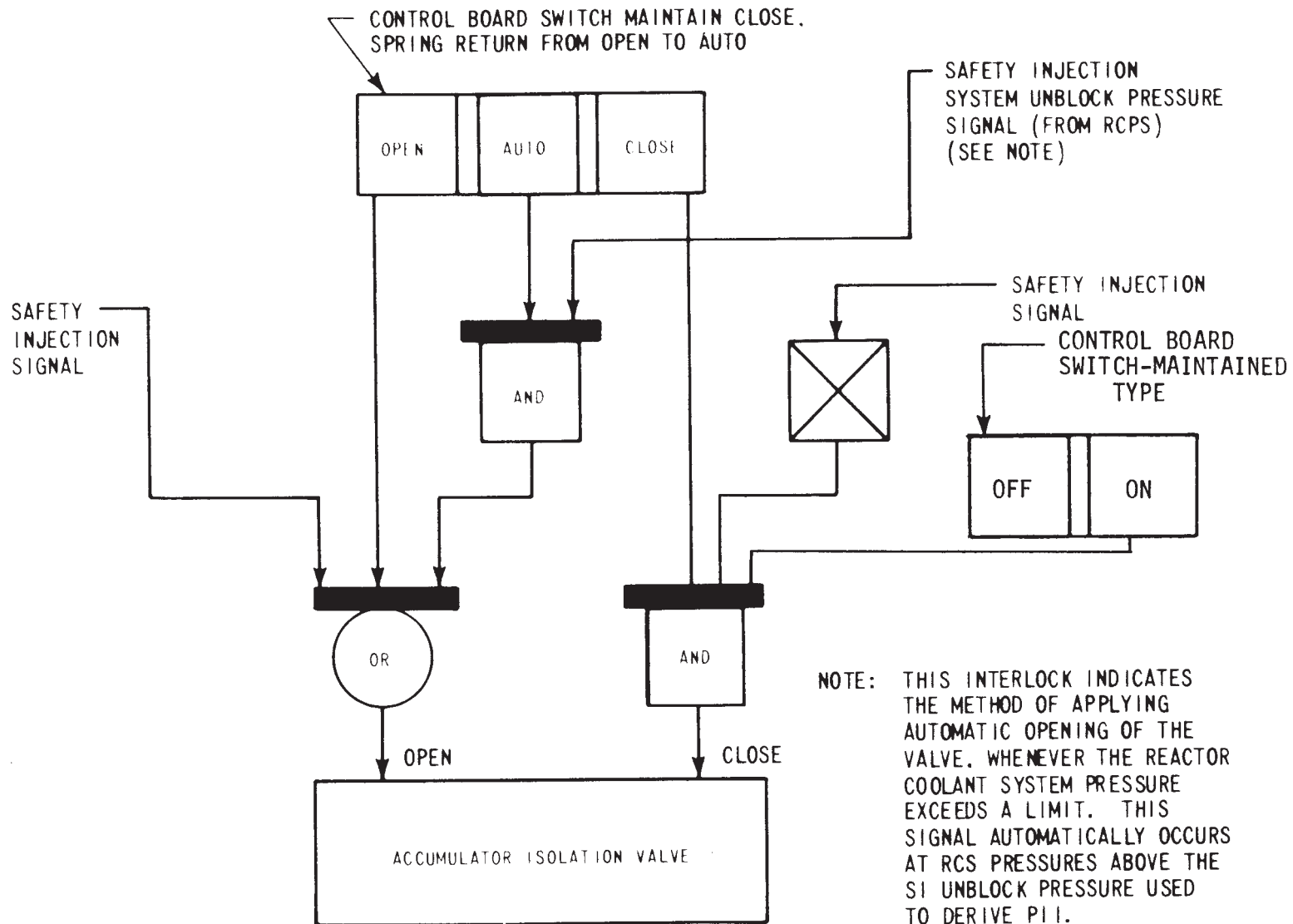
LOGIC DIAGRAM FOR (OUTER)
 RHRS ISOLATION VALVE

FIGURE 7.6-2, SHEET 1

AMENDMENT 83
 DECEMBER 13, 1991



DS1391036



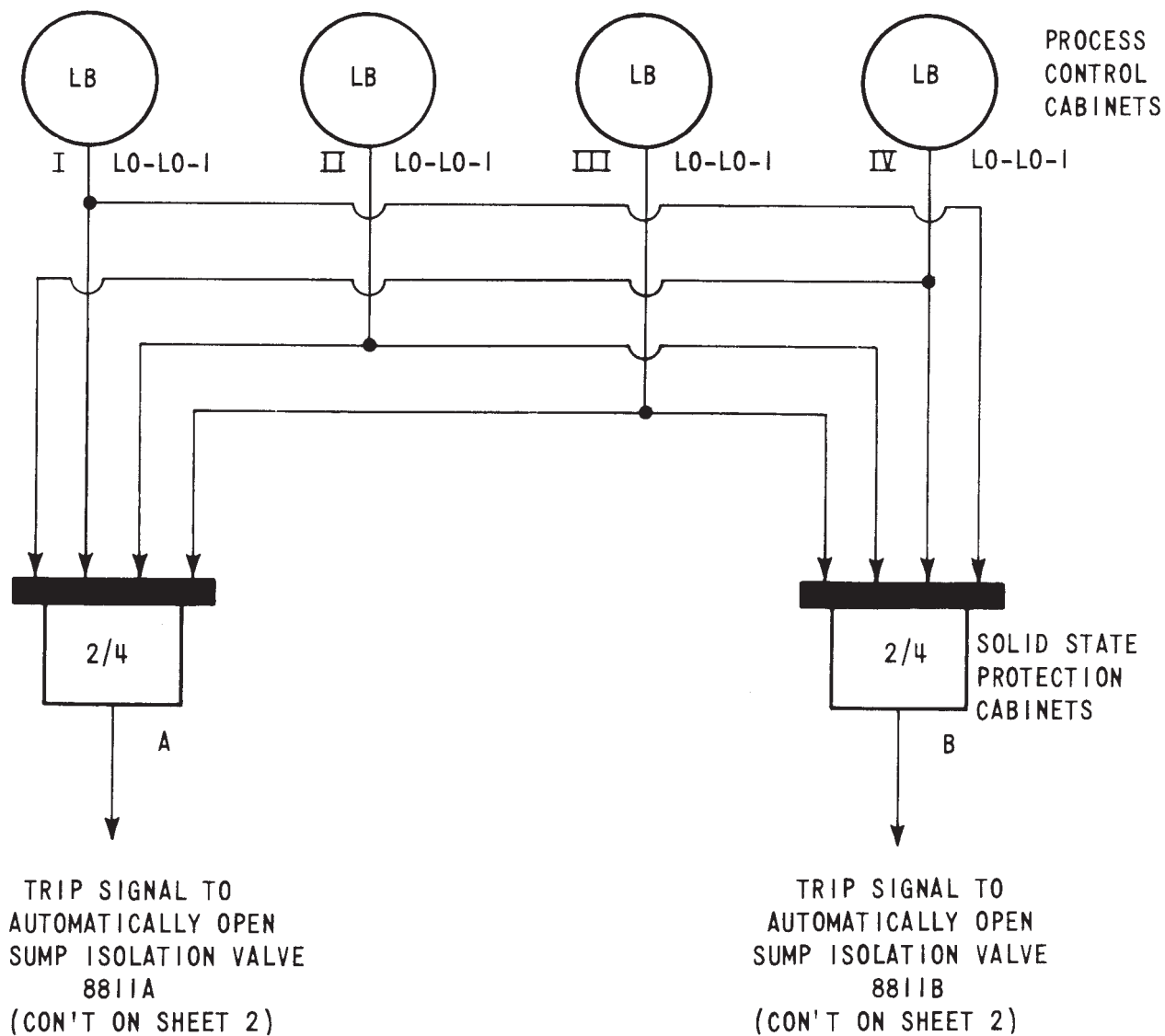
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Functional Block Diagram
of Accumulator Isolation Valve

FIGURE 7.6-3

RWST LEVEL CHANNEL BISTABLES

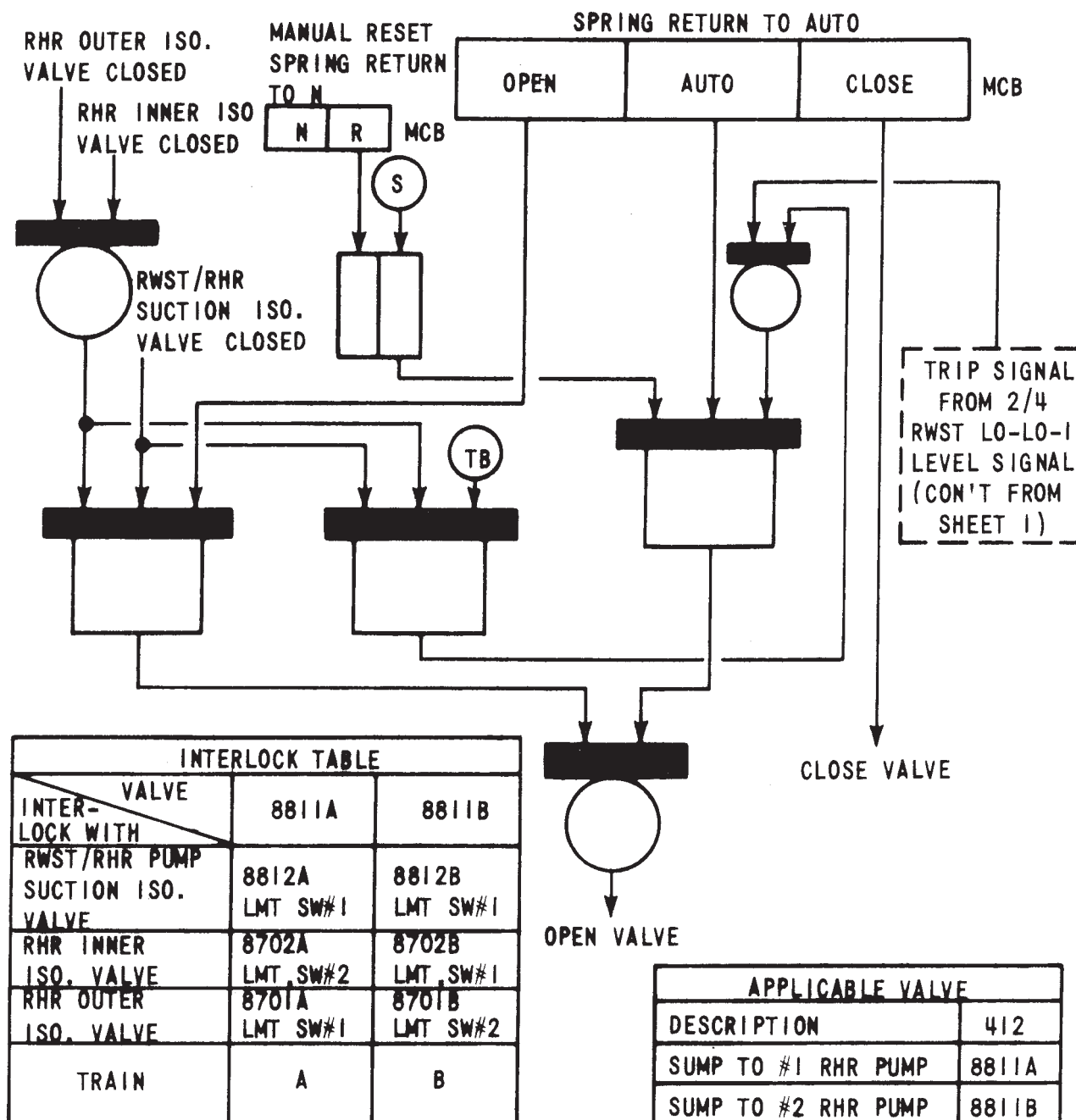
- 1) NORMALLY DE-ENERGIZED
- 2) DE-ENERGIZED ON LOSS OF POWER
- 3) TRIP SIGNAL PROVIDED WHEN ENERGIZED
- 4) ENERGIZED ON LO-LO-1 SETPOINT



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Safety Injection System
Recirculation Sump Isolation
Valves

FIGURE 7.6-4, Sheet 1



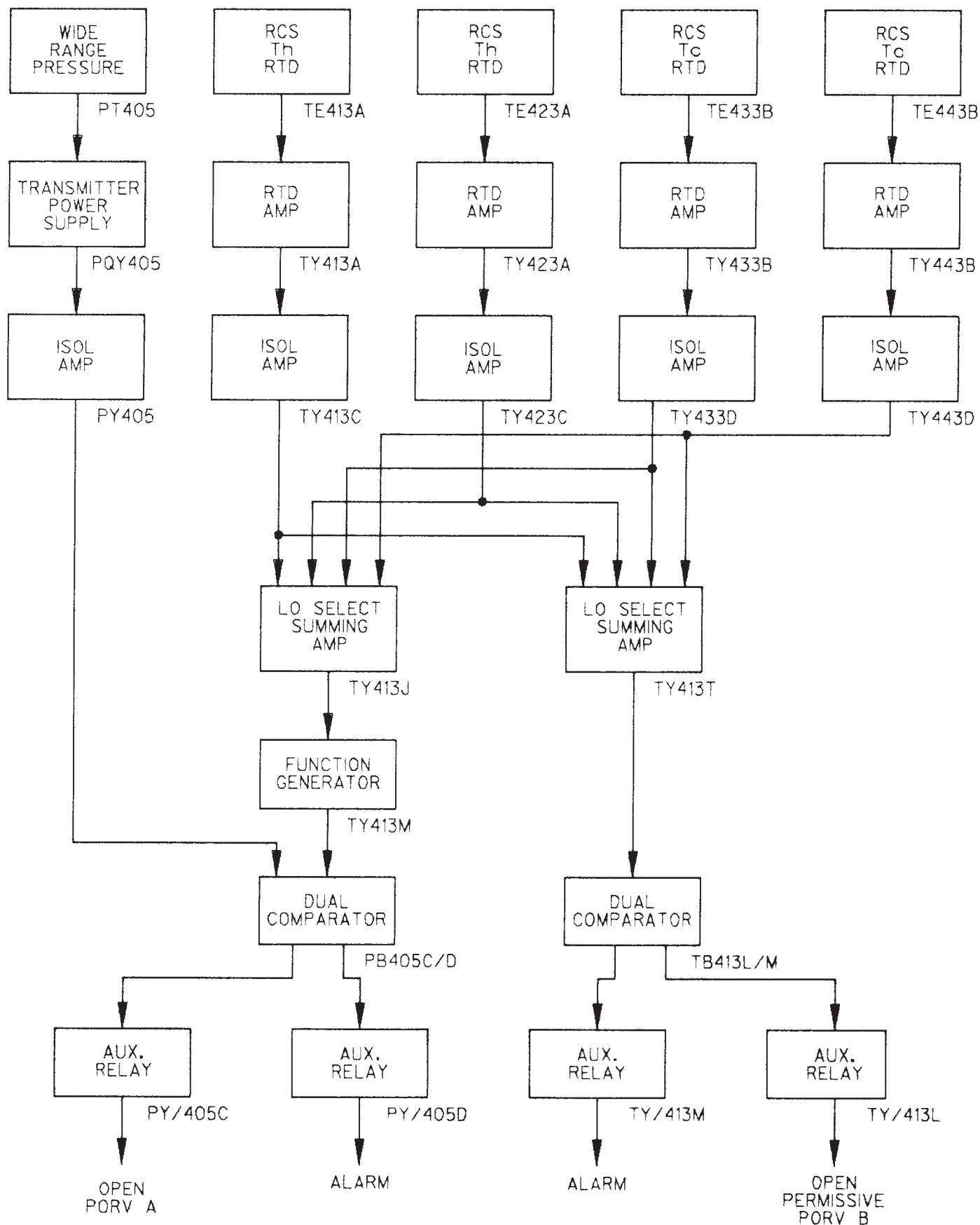
LIMIT SWITCH #1 IS THE NORMAL POSITION SIGNAL AND IS USED FOR POSITION SIGNALS BETWEEN VALVES ASSIGNED TO THE SAME TRAIN.

LIMIT SWITCH #2 IS THE STEM MOUNTED POSITION SWITCH AND IT IS USED FOR POSITION SIGNALS BETWEEN VALVES ASSIGNED TO OPPOSITE TRAINS.

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Safety Injection System
Recirculation Sump Isolation
Valves

FIGURE 7.6-4, Sheet 2

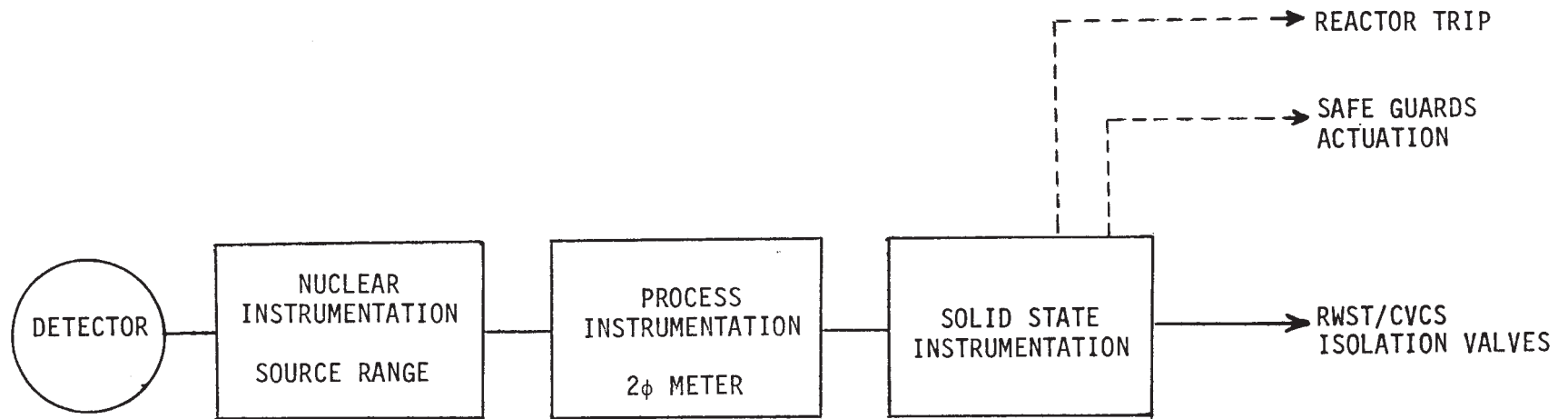


NOTES: 1. LOGIC FOR PORV A (AND PERMISSIVE FOR PORV B) IS SHOWN. REDUNDANT LOGIC FOR PORV B (AND PERMISSIVE FOR PORV A) IS SIMILAR.

Amendment 67
February 5, 1988

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2
PRESSURIZER PORV
LOW TEMPERATURE OVERPRESSURE
CONTROL LOGIC
FIGURE T.6-5

CPSSES/FSAR



AMENDMENT 15
FEBRUARY 20, 1981

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

INSTRUMENTATION FOR PROTECTION
AGAINST INADVERTENT BORON
DILUTION

FIGURE 7.6-6

NOTES:

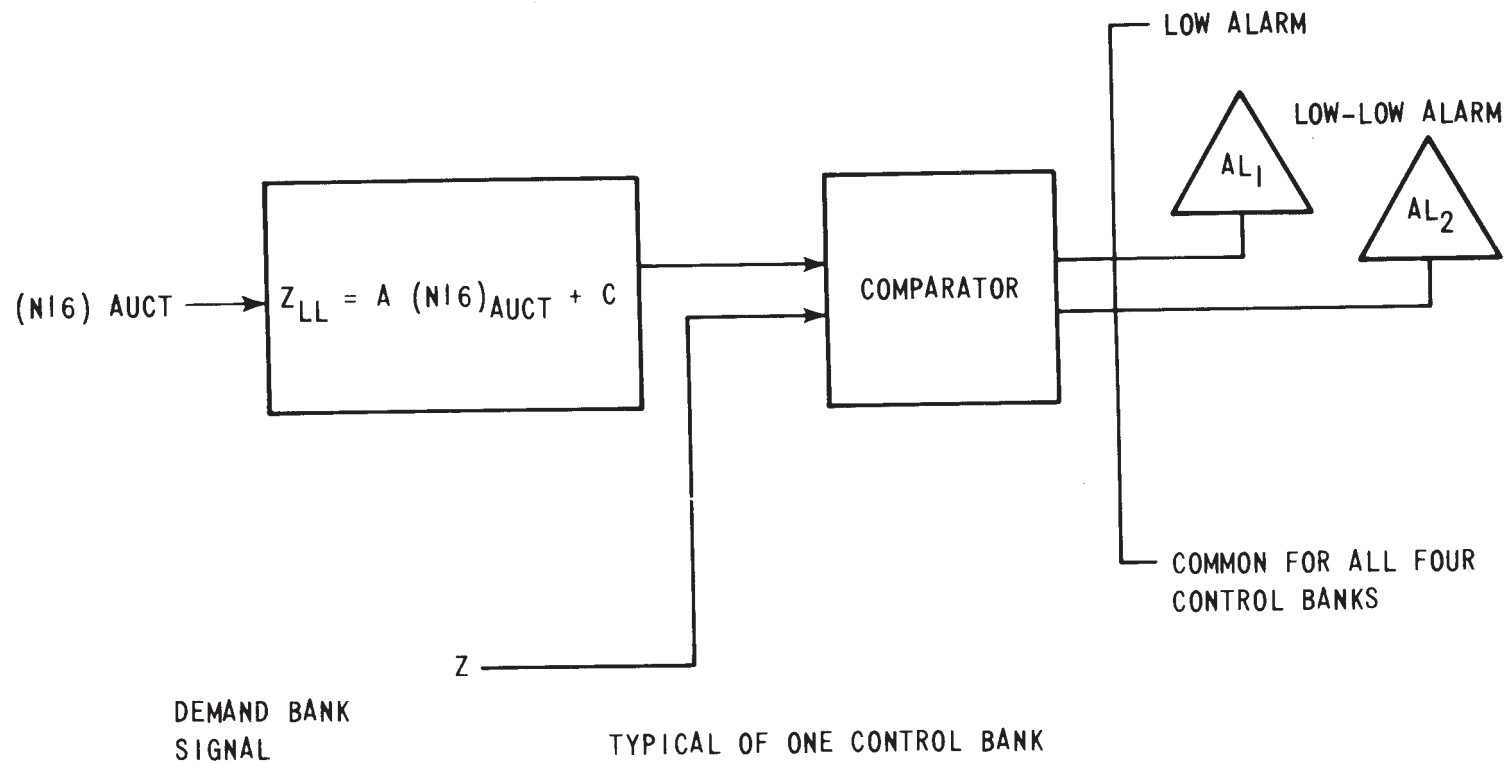
1. TEMPERATURE IS MEASURED AT STEAM GENERATOR'S OUTLET.
2. PRESSURE IS MEASURED AT THE PRESSURIZER.
3. T_{AVG} DETERMINED AS SHOWN IN FIG 7.7-18.

Amendment 96
August 2, 1999

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

**SIMPLIFIED BLOCK DIAGRAM
OF REACTOR CONTROL SYSTEM**

FIGURE 7.7-1



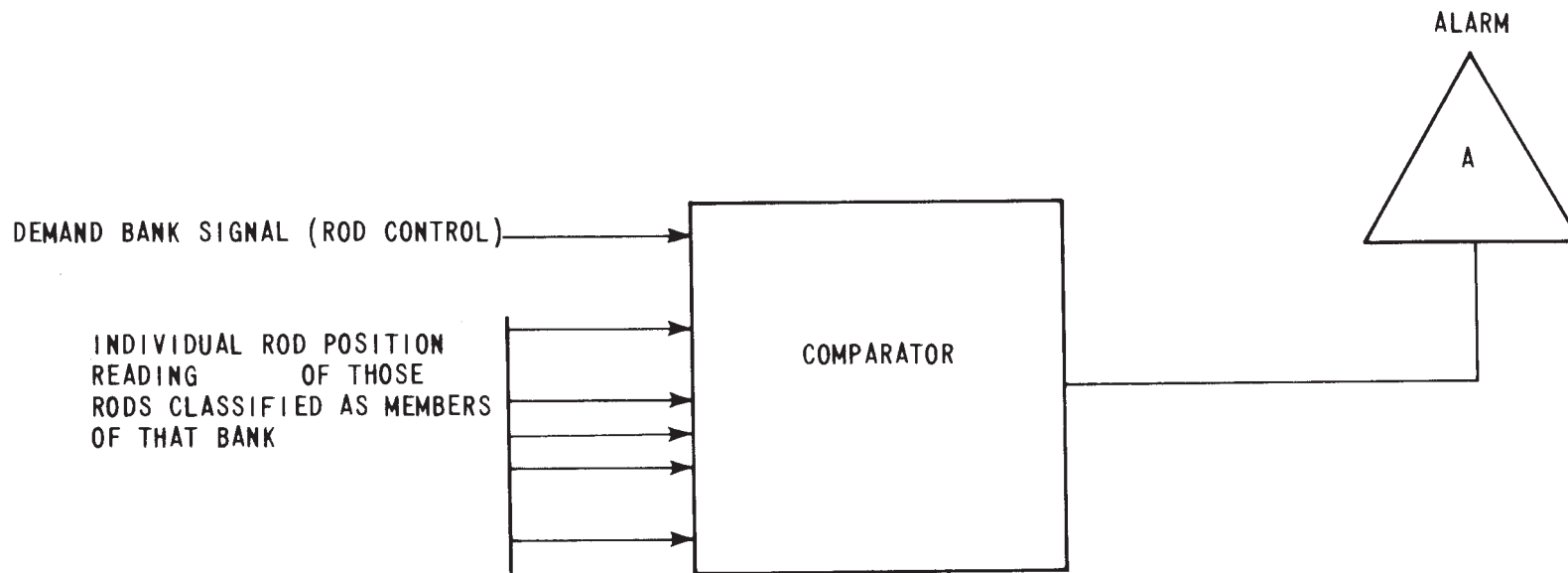
NOVEMBER 30, 1979

- NOTE: 1. ANALOG CIRCUITRY IS USED FOR THE COMPARATOR NETWORK
 2. COMPARISON IS DONE FOR ALL CONTROL BANKS

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

Control Bank Rod
 Insertion Monitor

FIGURE 7.7-2

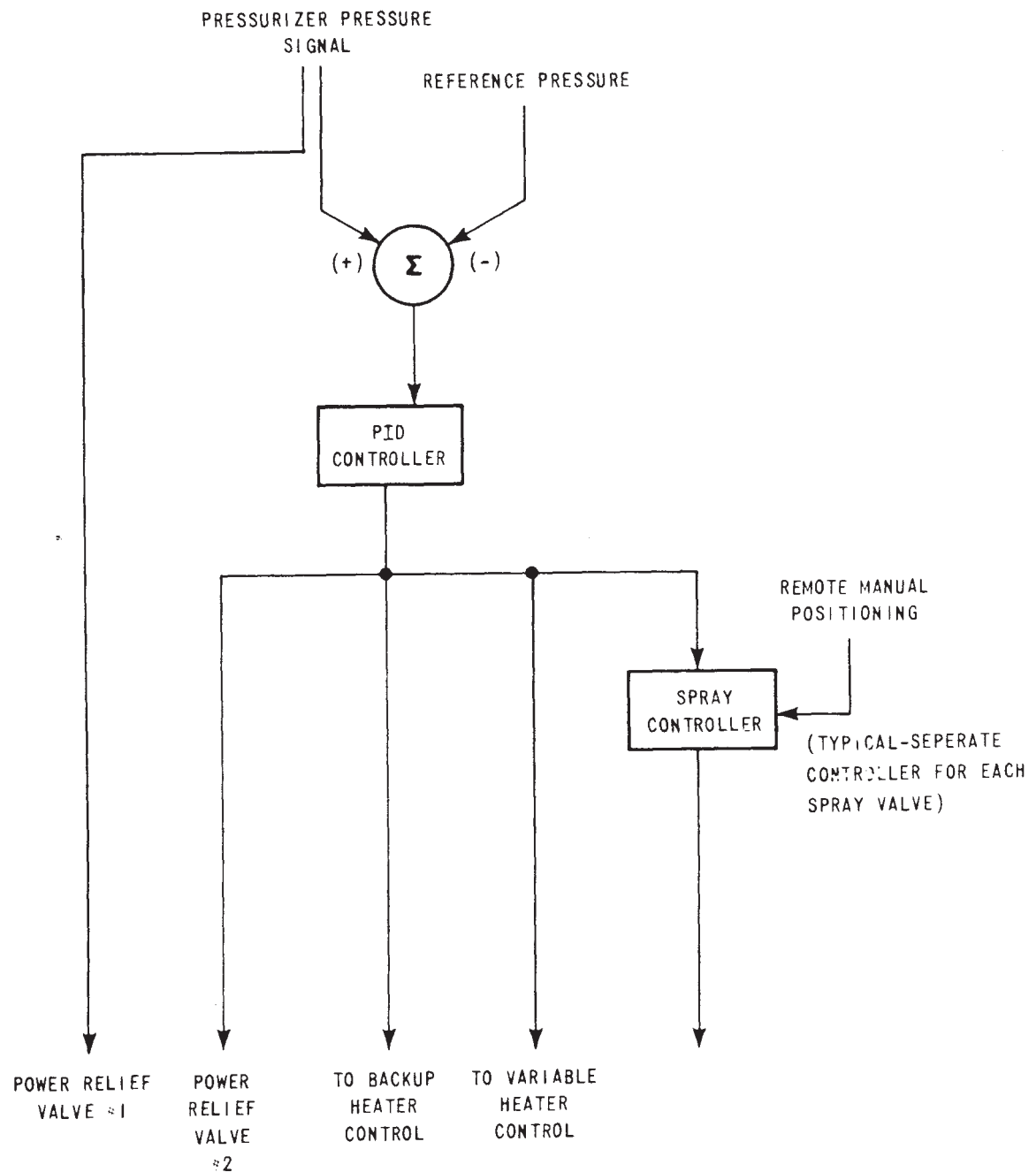


- NOTE:
1. DIGITAL OR ANALOG SIGNALS MAY BE USED FOR THE COMPARATOR COMPUTER INPUTS.
 2. THE COMPARATOR WILL ENERGIZE THE ALARM IF THERE EXISTS A POSITION DIFFERENCE GREATER THAN A PRESET LIMIT BETWEEN ANY INDIVIDUAL ROD POSITION SIGNAL DEVIATES FROM THE OTHER RODS IN THE BANK SIGNAL.
 3. COMPARISON IS INDIVIDUALLY DONE FOR ALL CONTROL BANKS.

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Rod Deviation Comparator

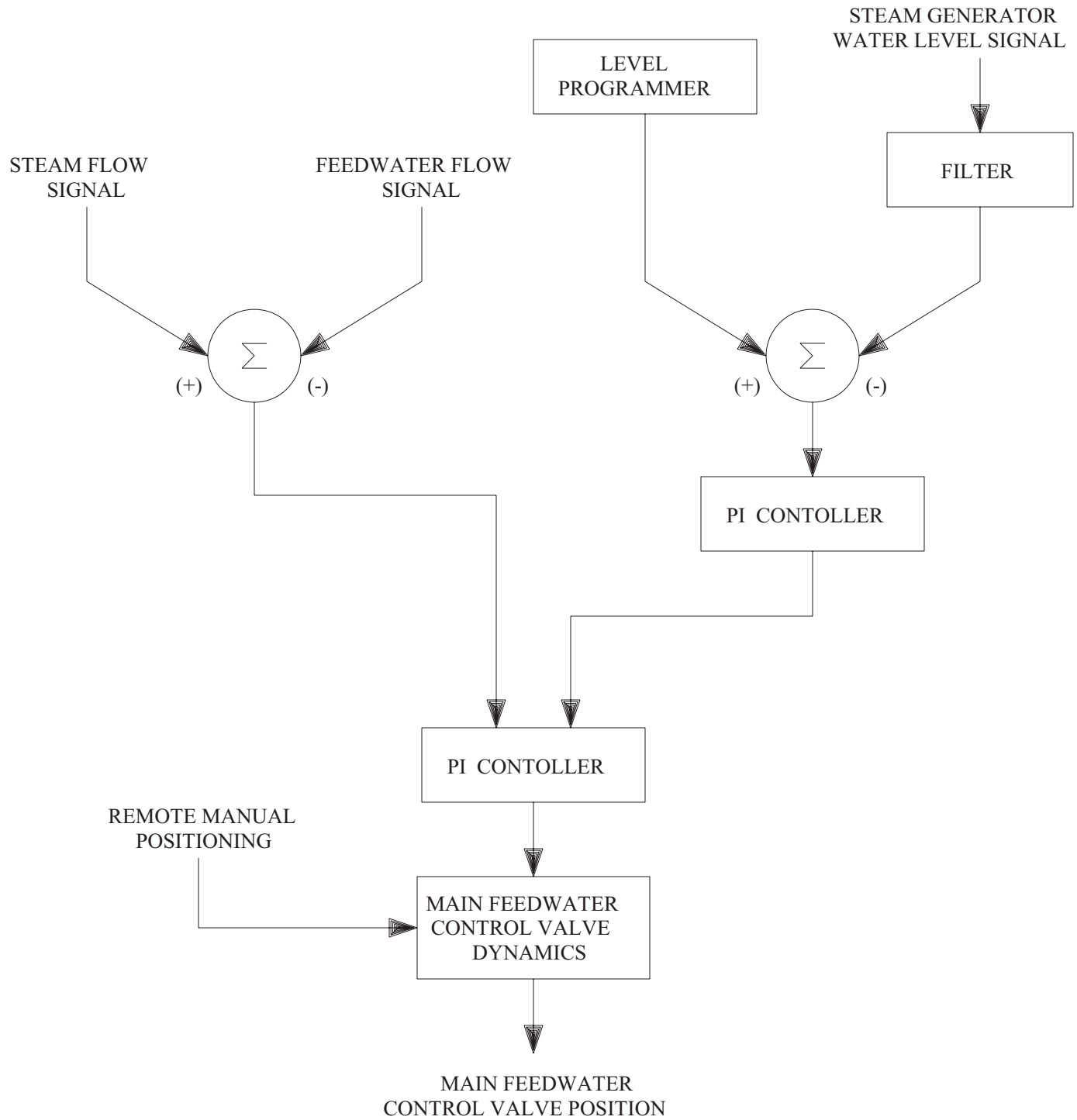
FIGURE 7.7-3



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Block Diagram of Pressurizer
Pressure Control System

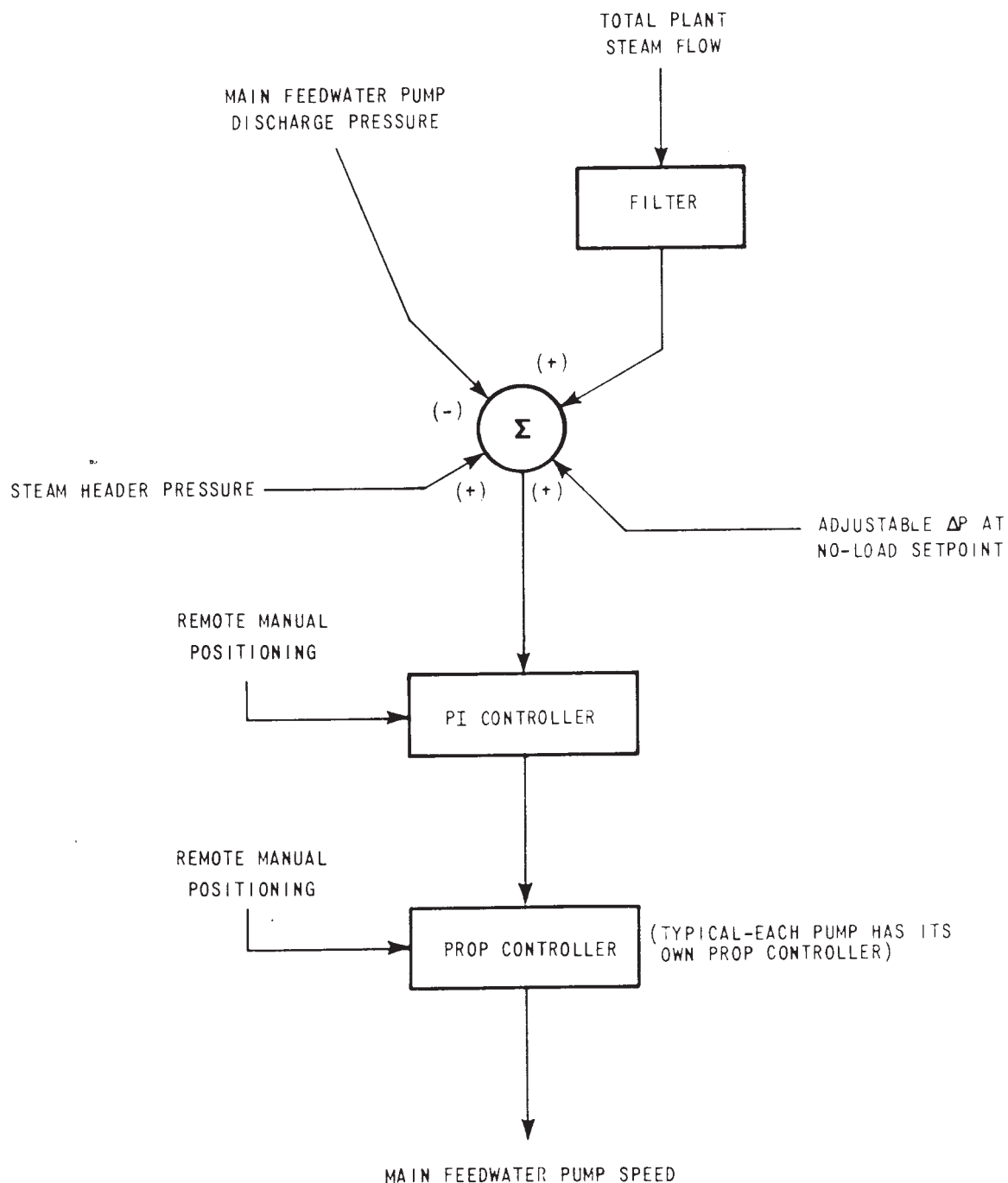
FIGURE 7.7-4



COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

BLOCK DIAGRAM OF STEAM
GENERATOR WATER LEVEL
CONTROL SYSTEM

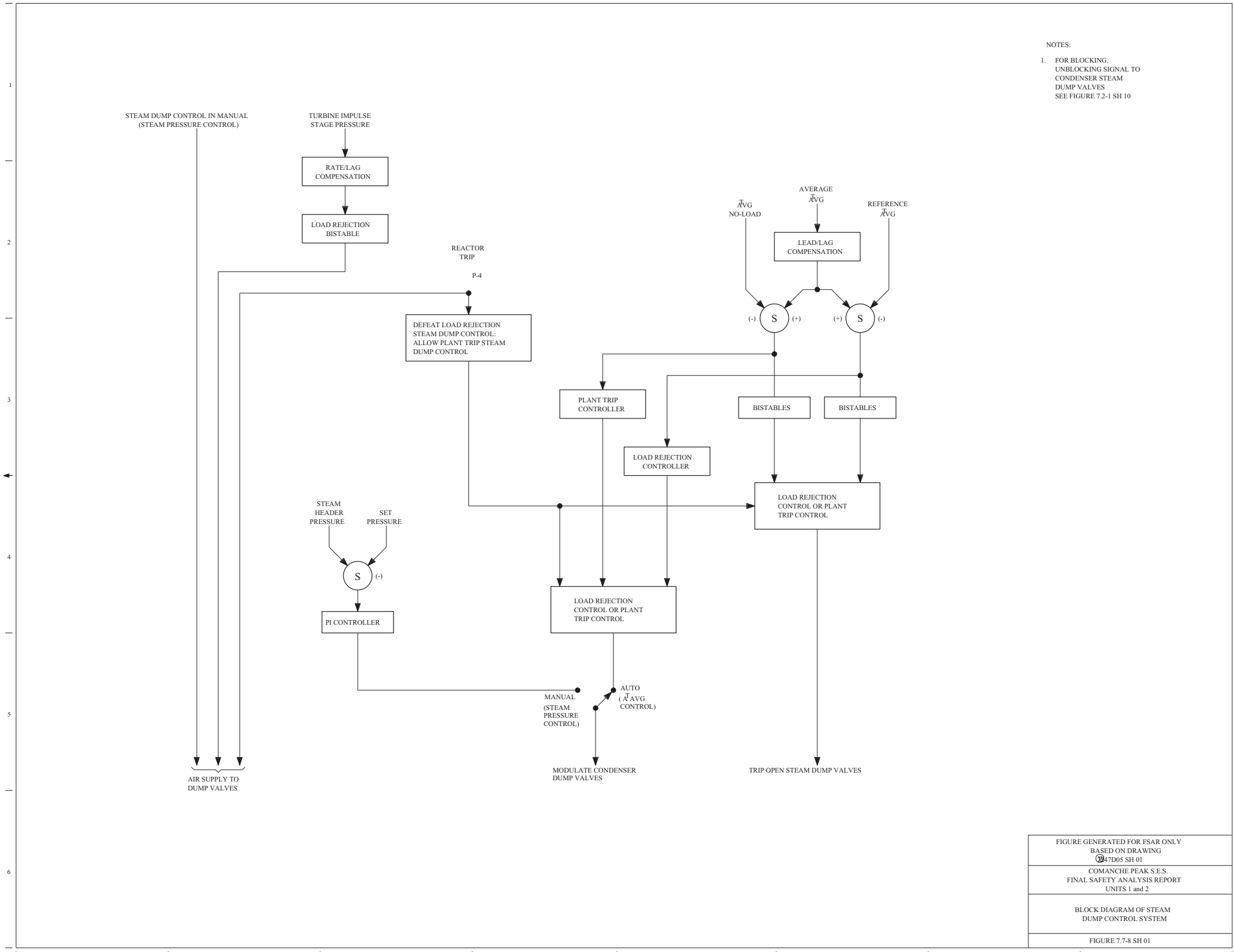
FIGURE 7.7-6



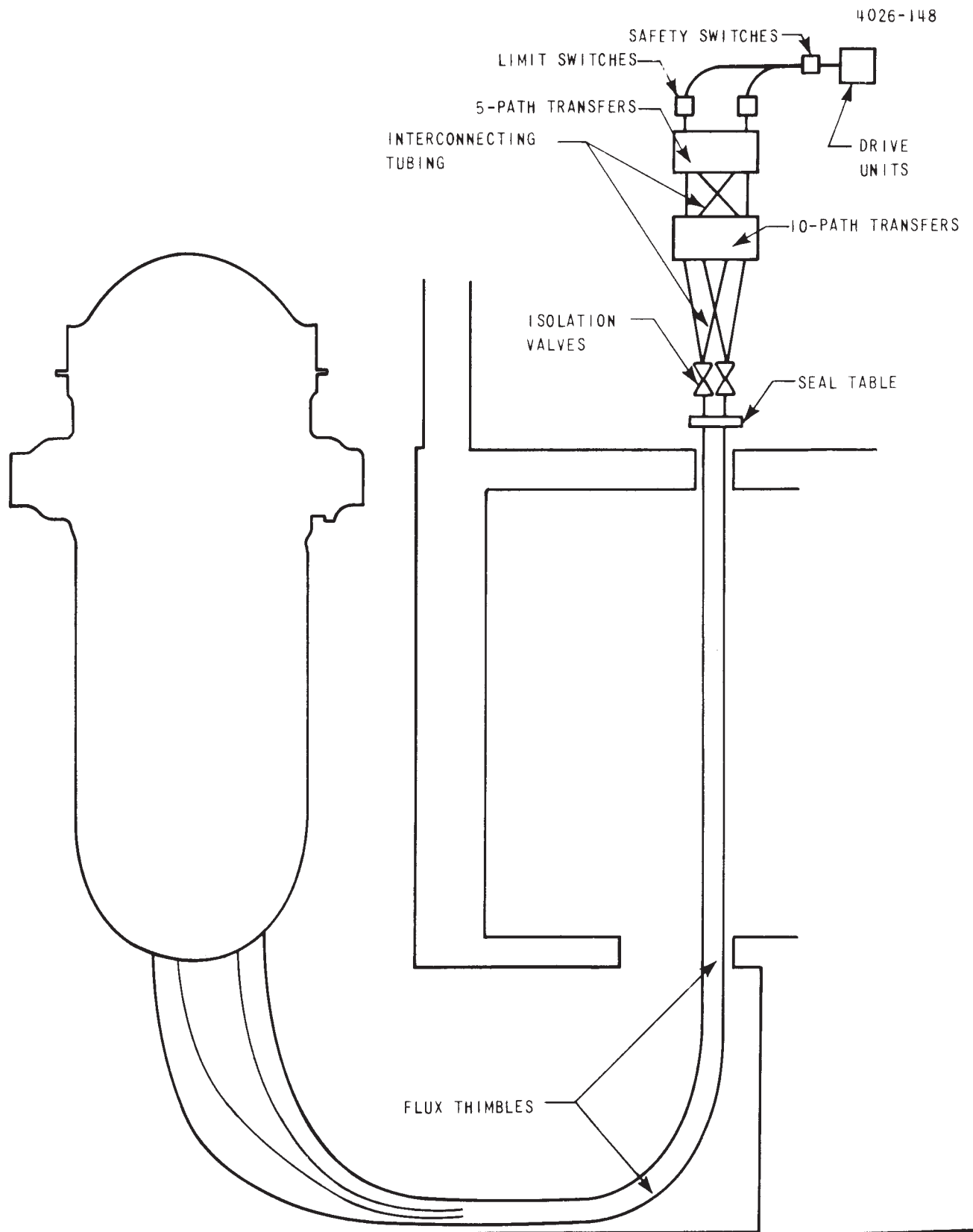
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Block Diagram of Main
Feedwater Pump Speed
Control System

FIGURE 7.7-7



NOTES:
1. FOR BLOCKING.
UNBLOCKING SIGNAL TO
CONDENSER STEAM
DUMP VALVES
SEE FIGURE 7.2-1 SH 10



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Basic Flux-Mapping System

FIGURE 7.7-9

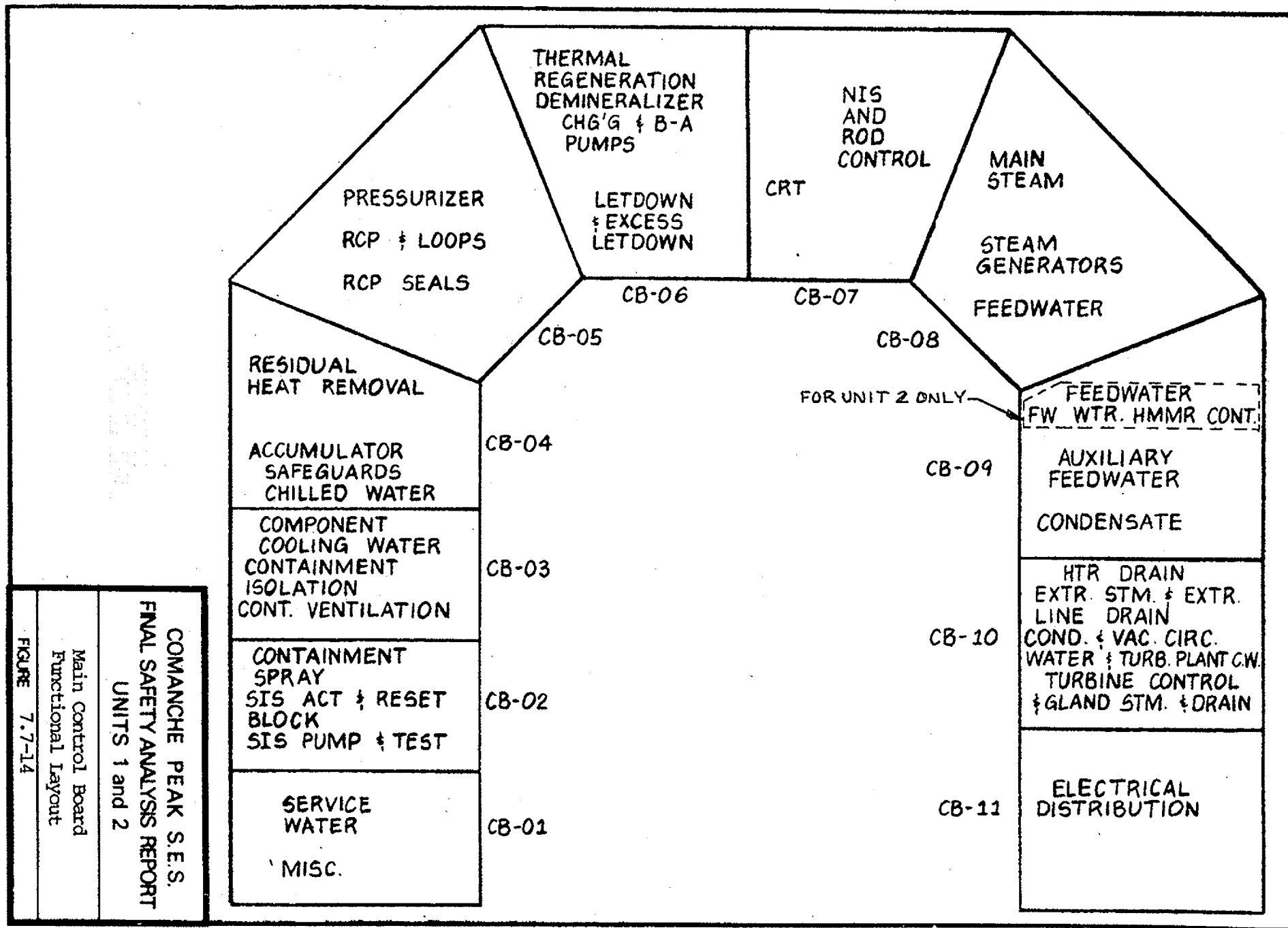
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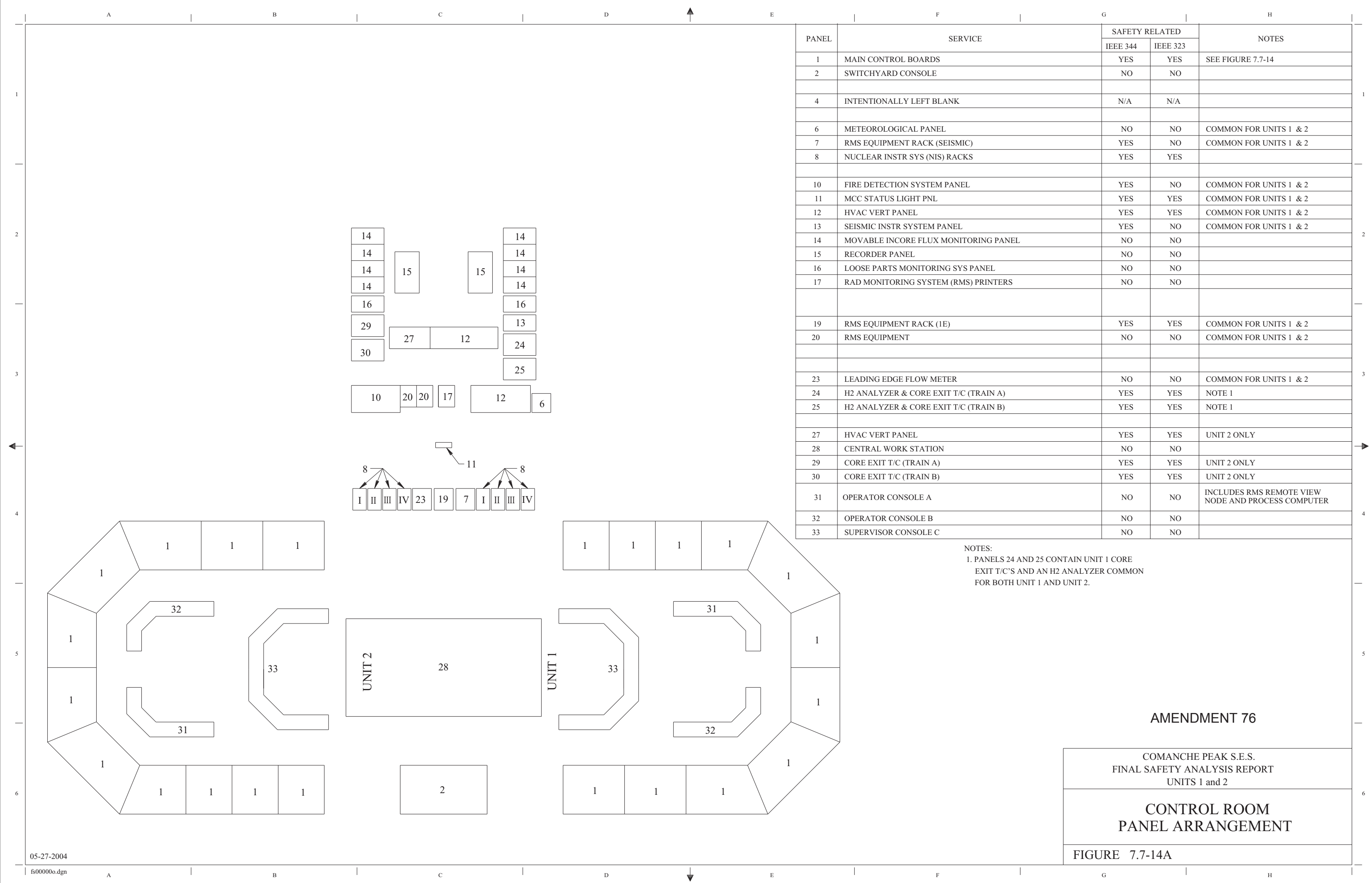
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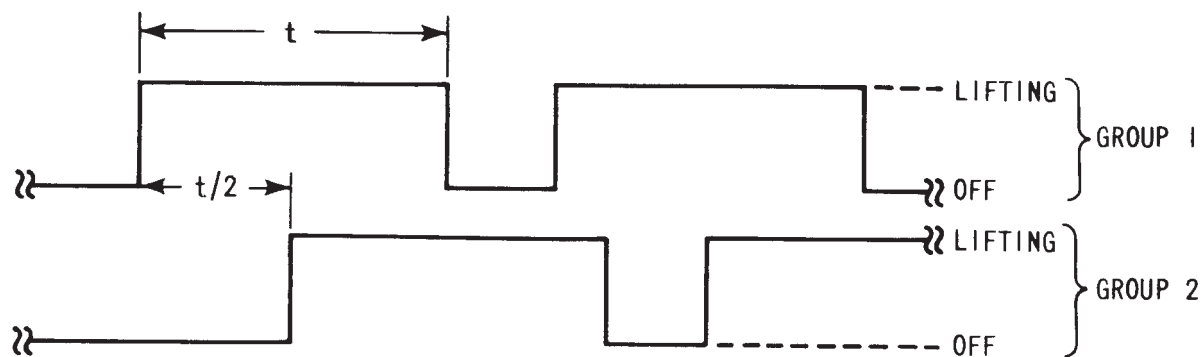
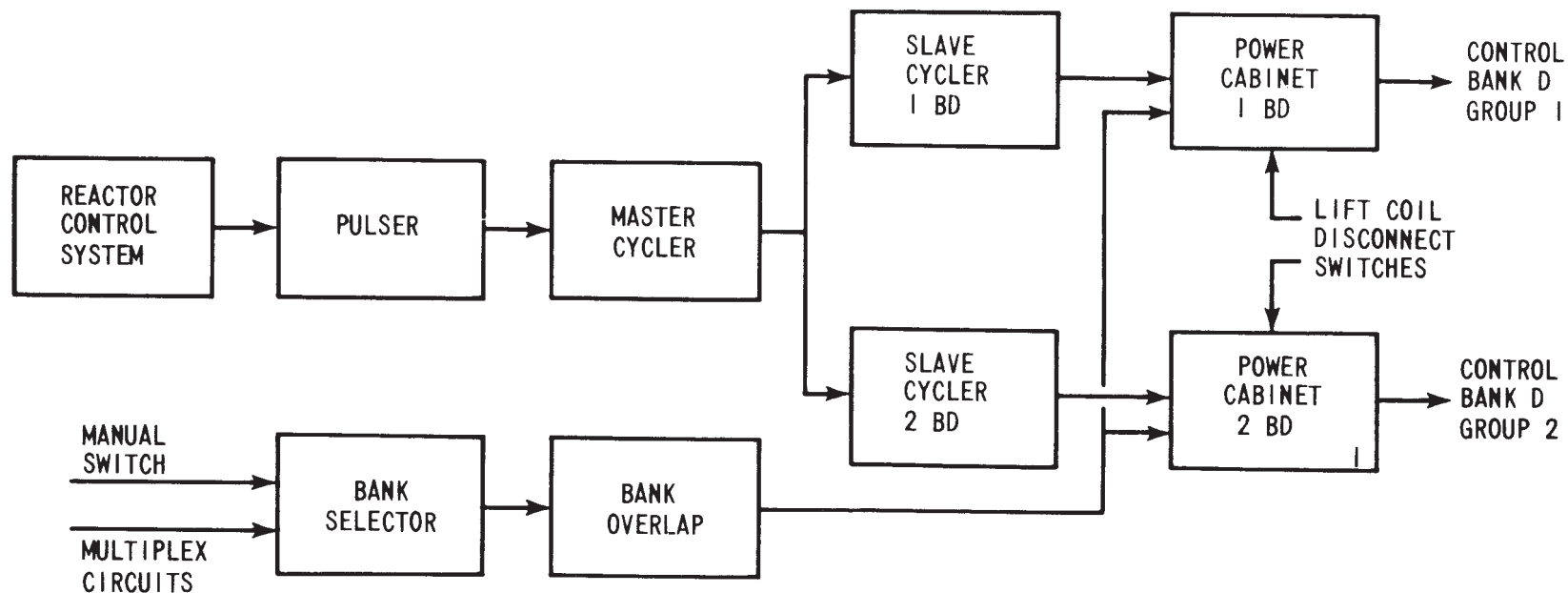
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FIGURE 7.7-13

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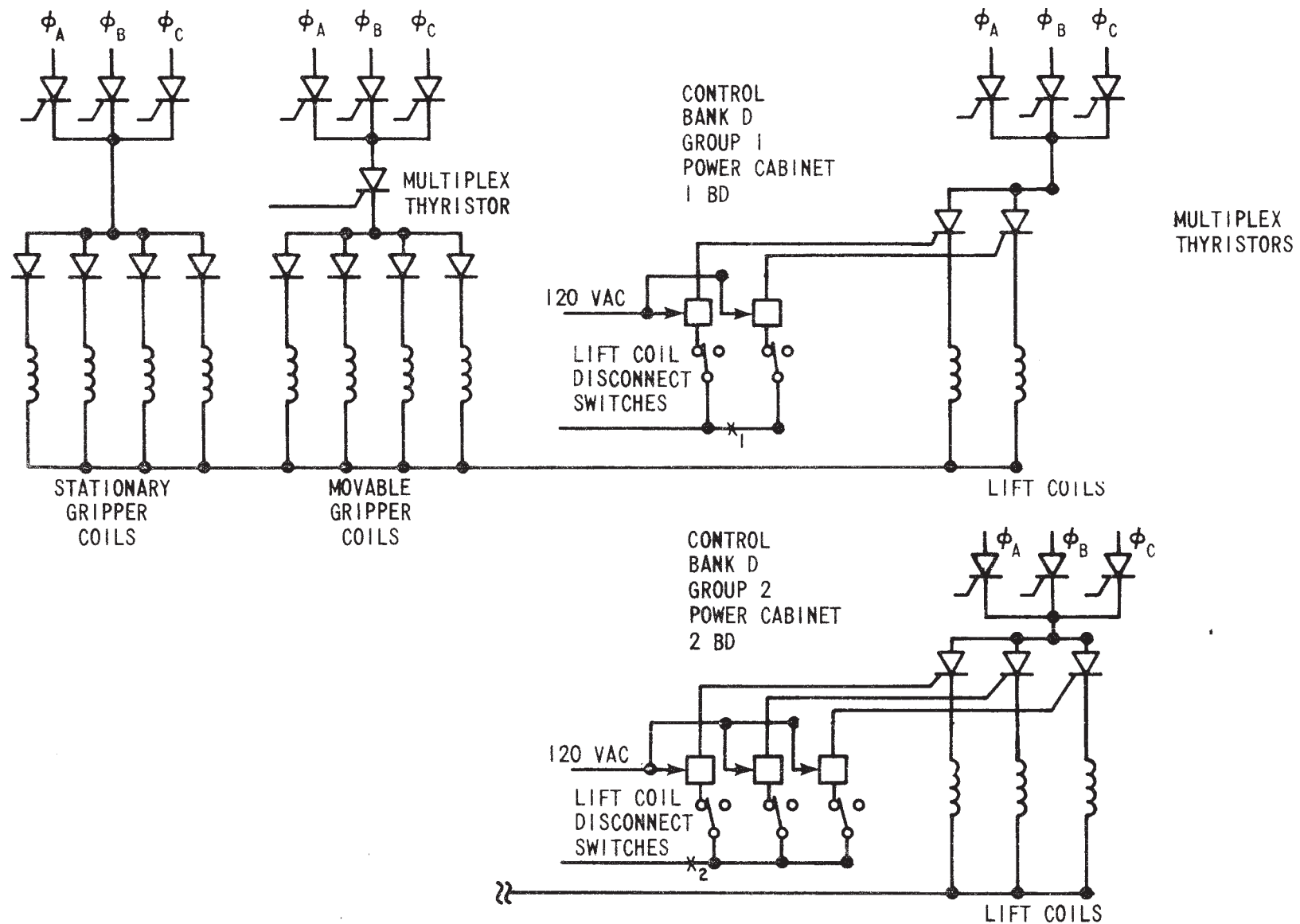
NORMAL SEQUENCING OF GROUPS WITHIN BANK

1 NOTE: ONLY CABINETS 1BD AND 2BD SHOWN. FOR MORE COMPLETE DIAGRAM INCLUDING POWER CABINETS 1AC, 2AC, AND SCD. SEE REF. 1

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Simplified Block Diagram
Rod Control System

FIGURE 7.7-15



AMENDMENT 2
 JULY 27, 1978

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

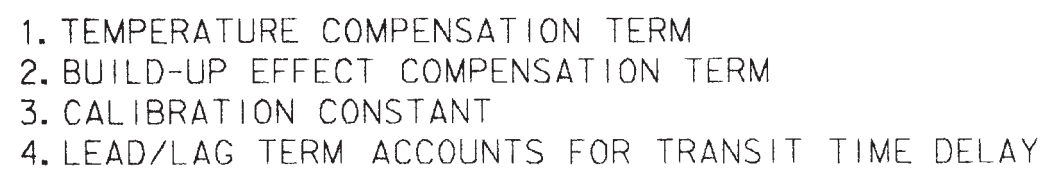
Control Bank D Partial
 Simplified Schematic Diagram
 Power Cabinets 1BD & 2BD

FIGURE 7.7-16

FIGURE 7.7-17

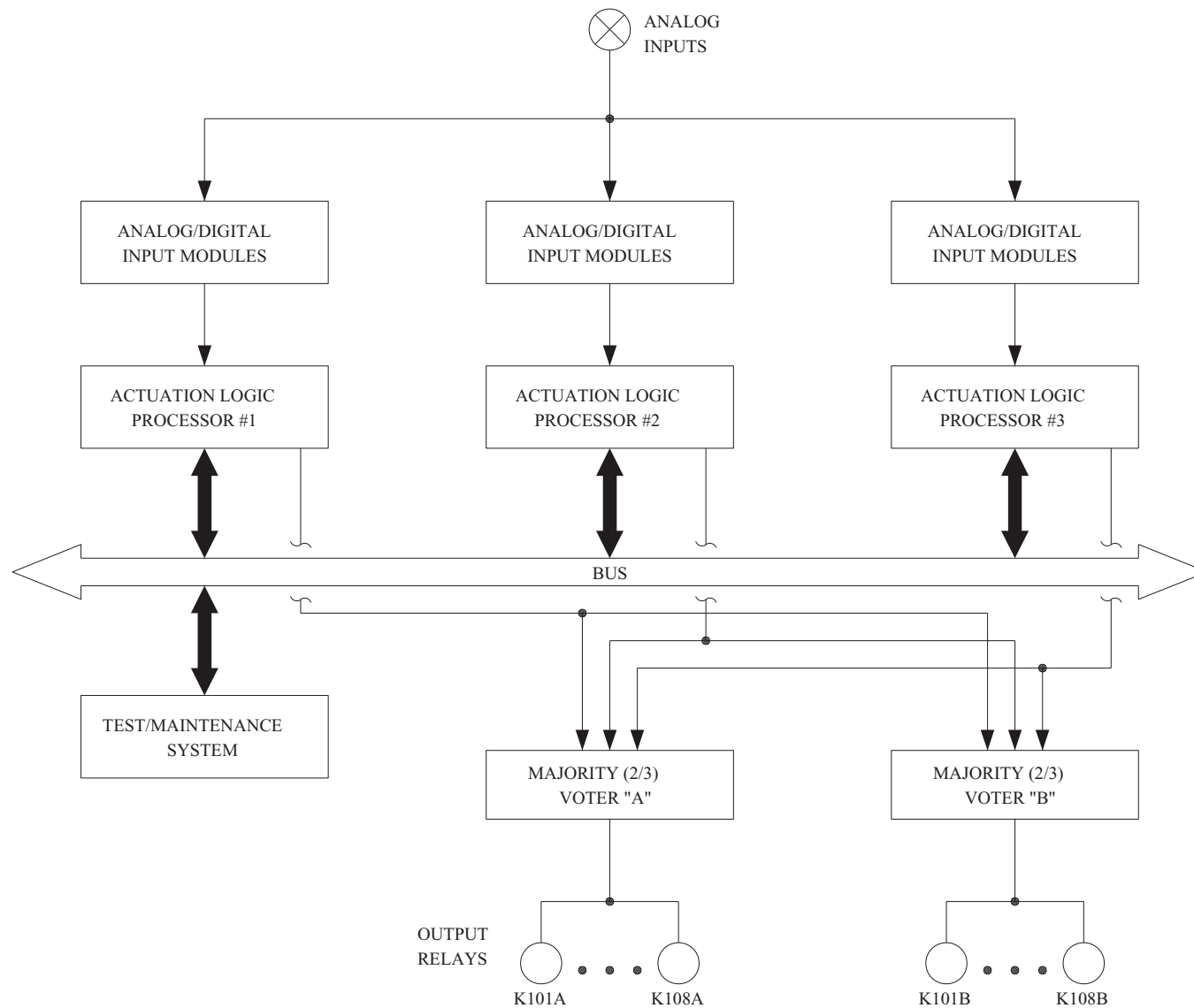
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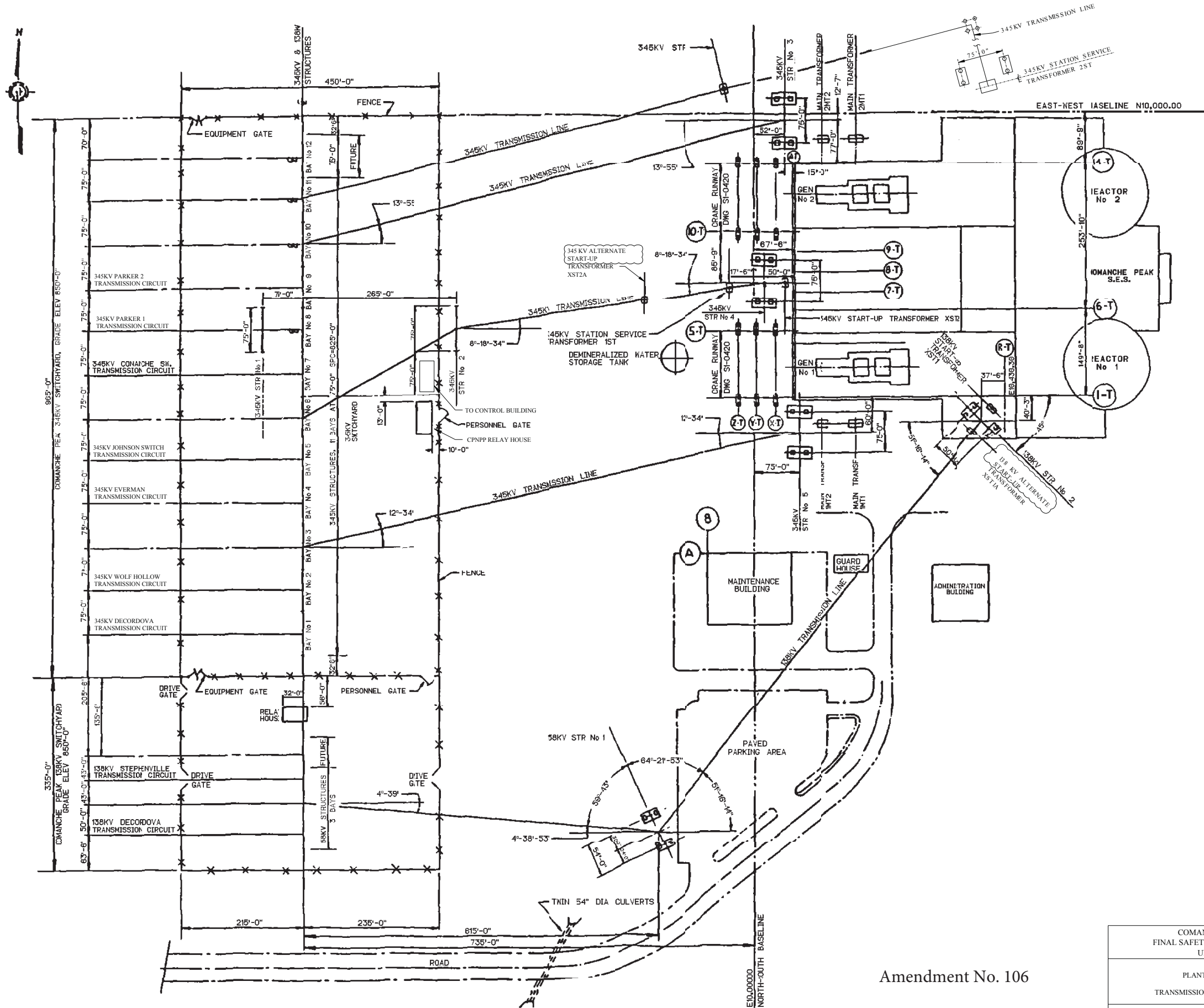
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

FIGURE 7.7-18



COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2	
ACTUATION LOGIC SYSTEM ARCHITECTURE	
FIGURE	7.8-1

THIS FIGURE GENERATED FOR FSR ONLY. THE
ASSOCIATED PROJECT DWG IS 233-S-0200 REV 6,
AND TES DWG E-40782 SH 1



Amendment No. 106

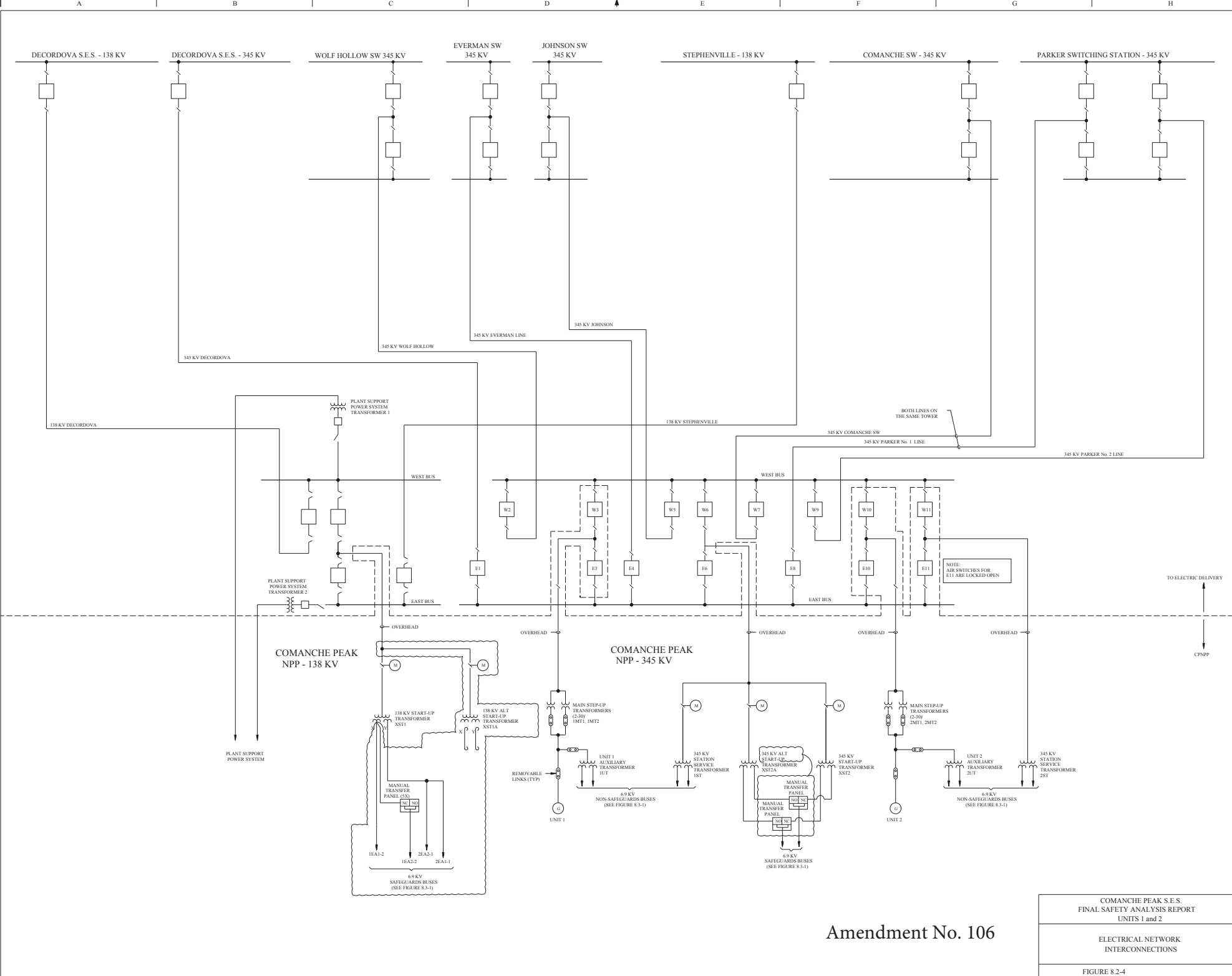
COMANCHE PEAK N.P.P.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

PLANT SWITCHYARDS
AND
TRANSMISSION LINE CONNECTIONS

FIGURE 8.2-1

Figure 8.2-2

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Amendment No. 106

COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
ELECTRICAL NETWORK INTERCONNECTIONS
FIGURE 8.2-4



Figure 8.2-6

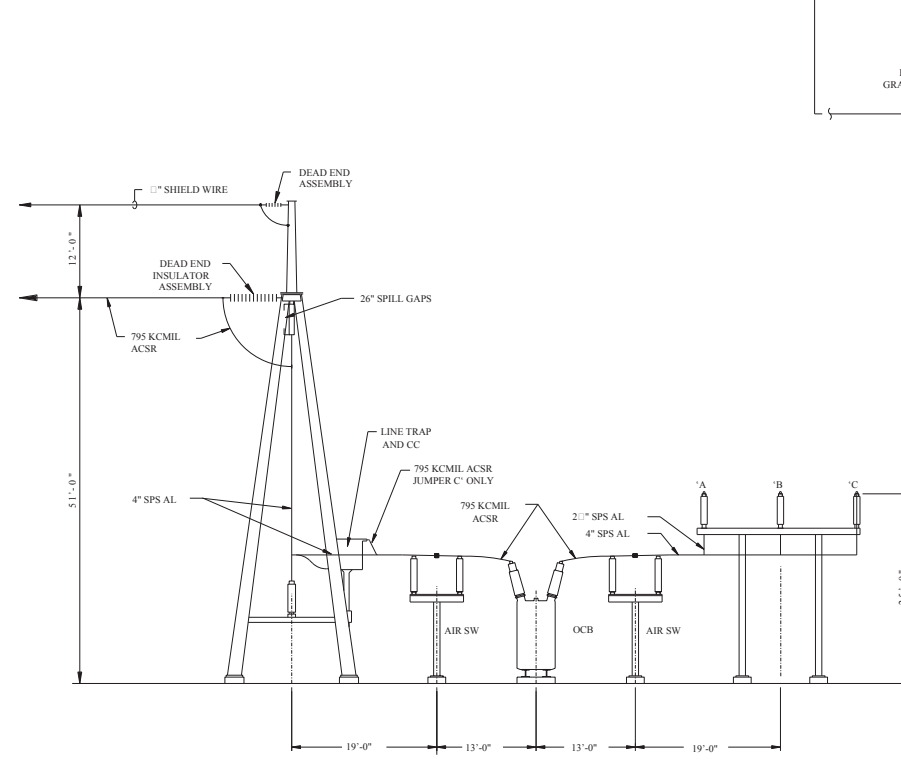
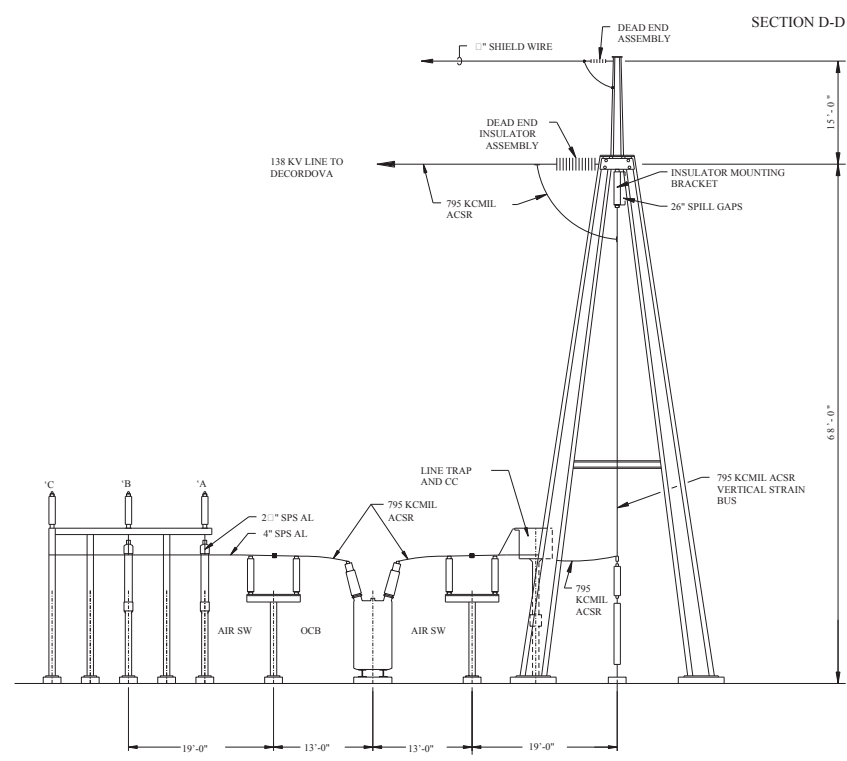
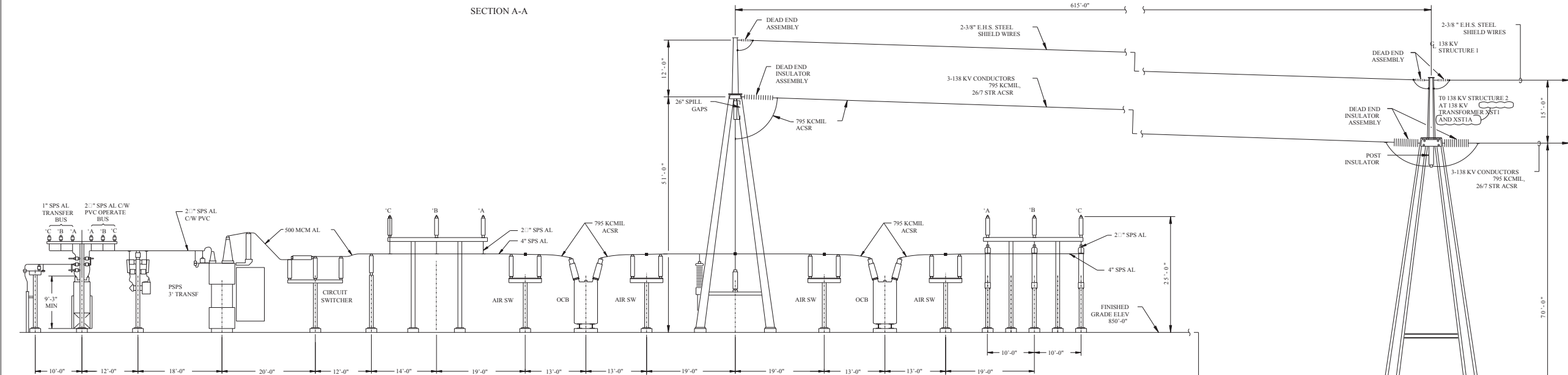
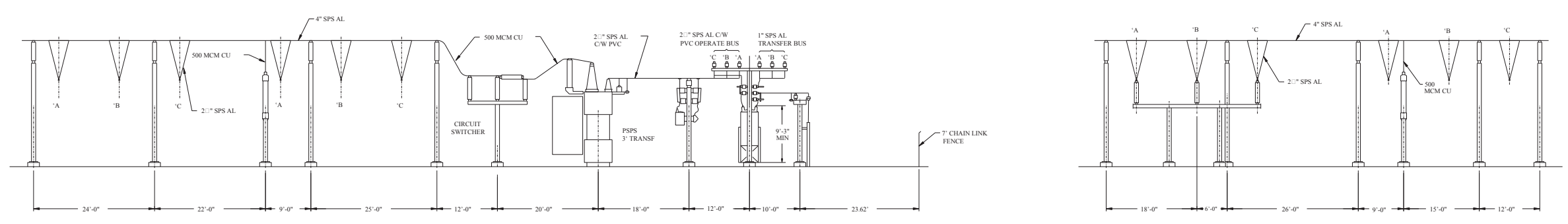
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THIS FIGURE GENERATED FOR PSAR ONLY. THE ASSOCIATED PROJECT DWG IS DES DMC E-49742 SHEETS 2 AND 3

FSAR87029.DGN

A 05-30-2014

1
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4
5
6



COMANCHE PEAK N.P.P. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
138 KV SWITCHYARD PLAN ELEVATIONS, AND SECTIONS
FIGURE 8.2-7 SH 2 OF 2

Amendment No. 106

1
2
3
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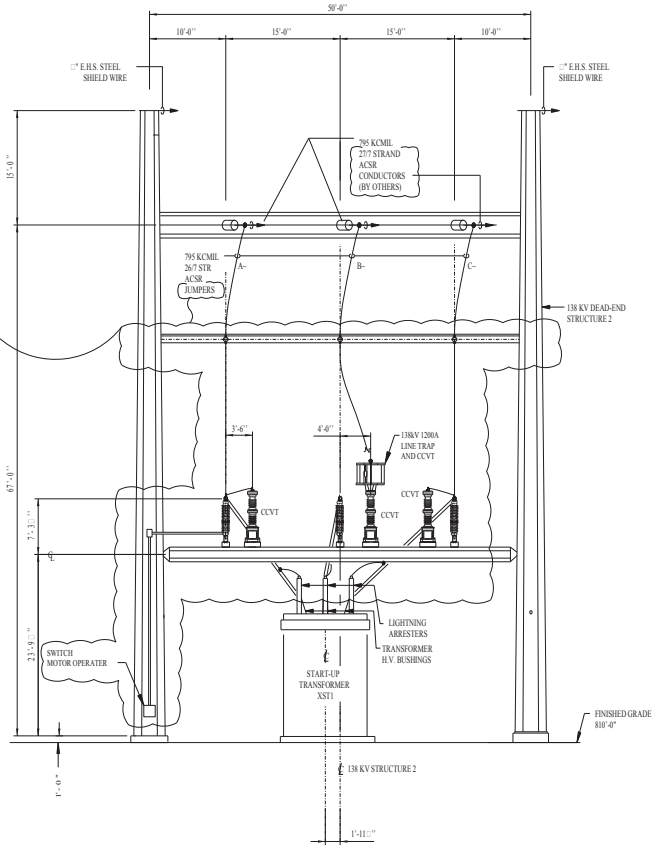
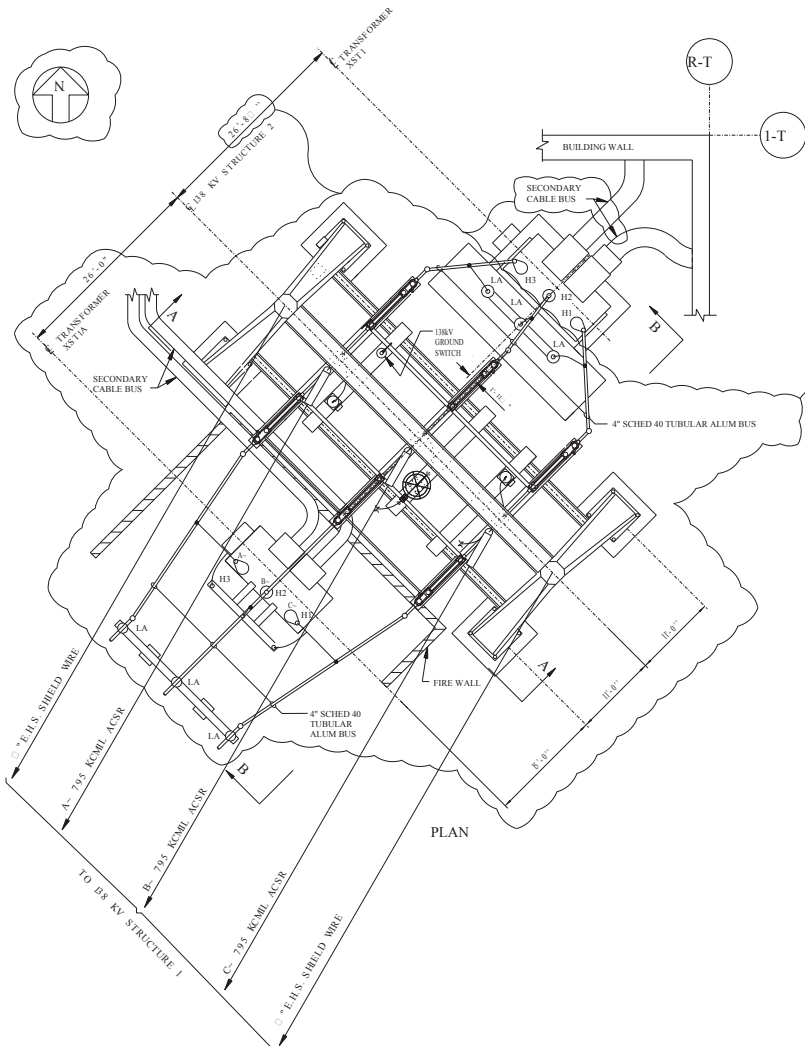
FIGURE 8.2-8 IS DELETED

CPSES/FSAR

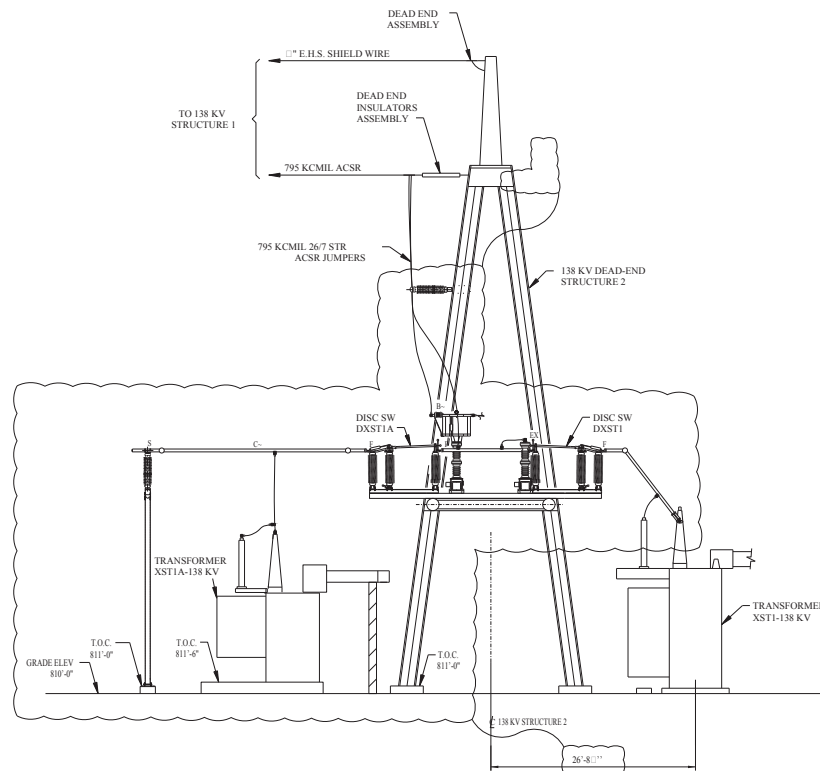
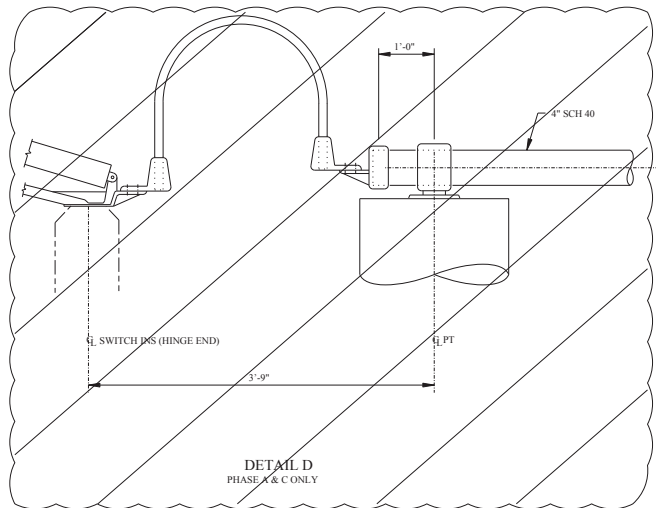
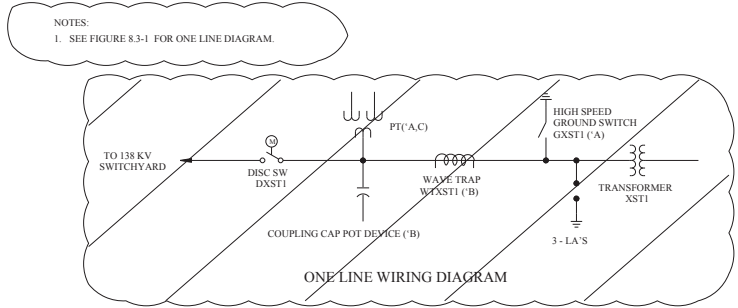
UNITS 1 & 2

FIGURE 8.2-8a IS DELETED

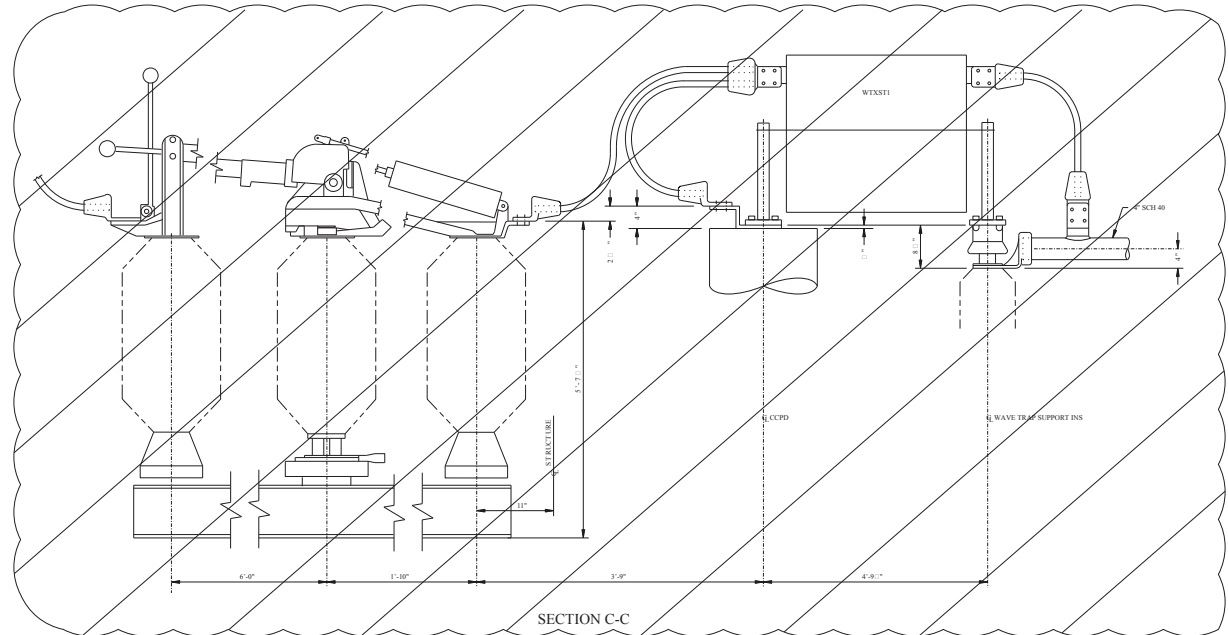
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SECTION A-A



SECTION B-B

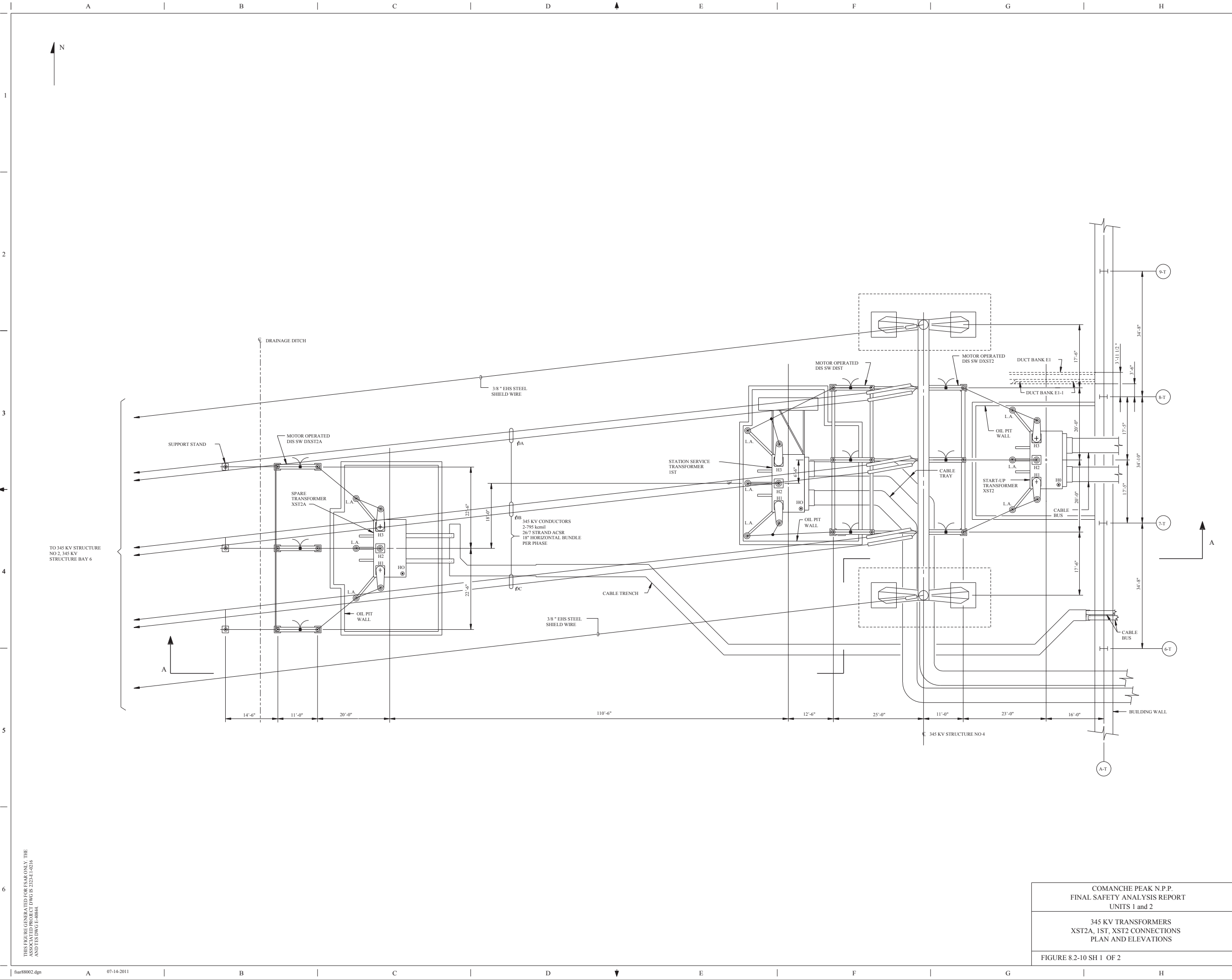


SECTION C-C

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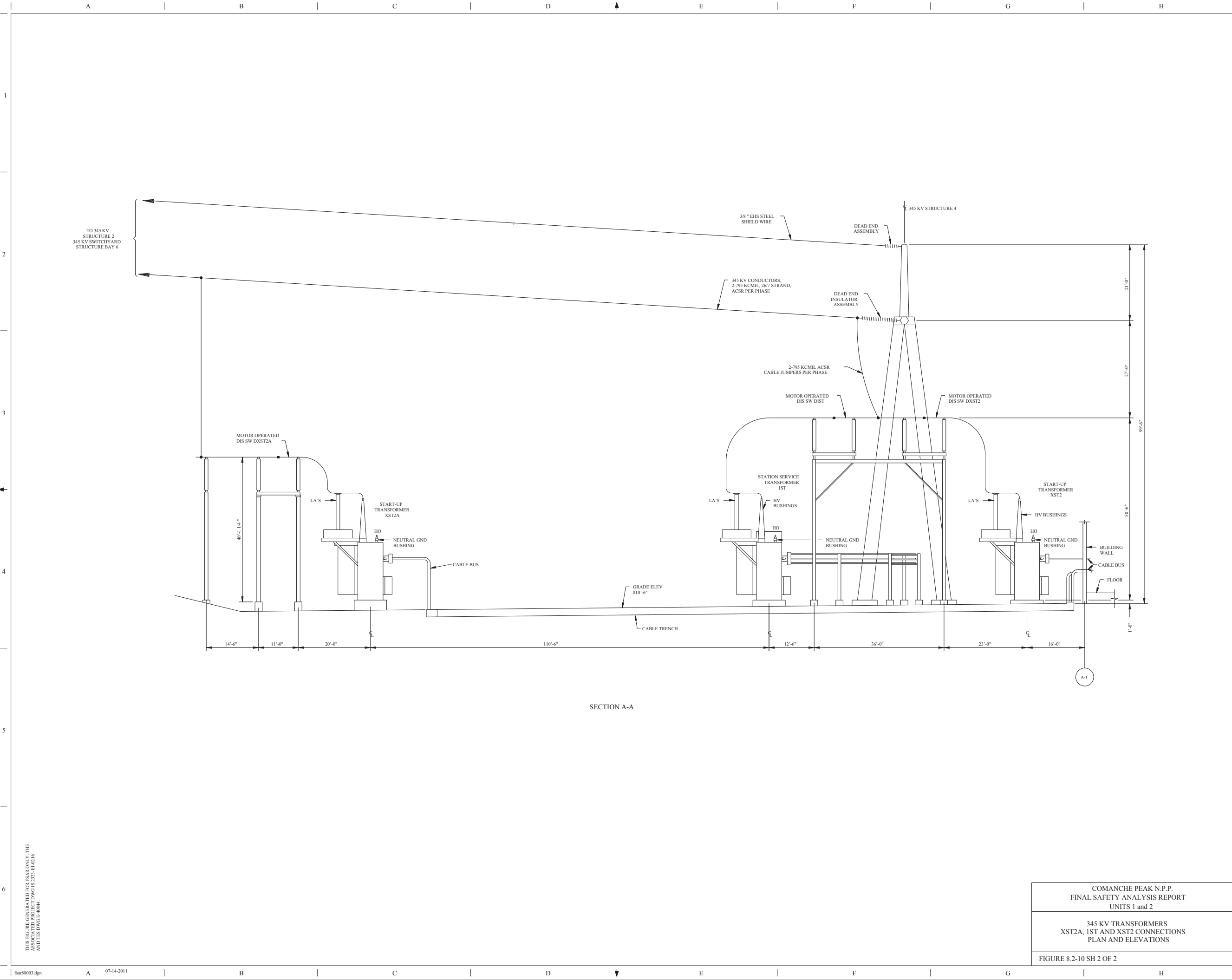
Amendment No. 106

COMANCHE PEAK N.P.P. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
138 KV TRANSFORMER CONNECTIONS PLAN AND ELEVATIONS
FIGURE 8.2-9



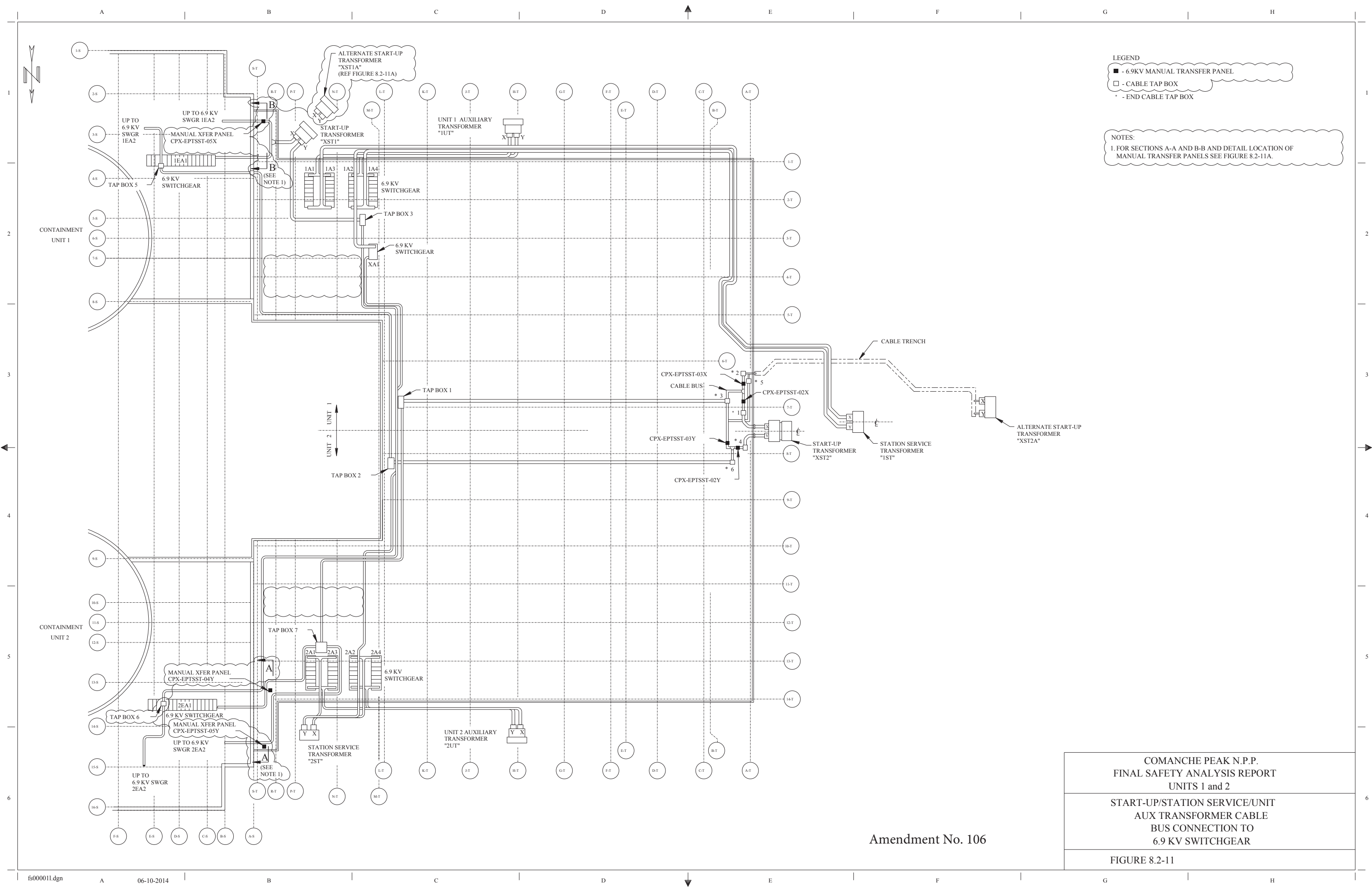
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COMANCHE PEAK N.P.P. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
345 KV TRANSFORMERS XST2A, 1ST, XST2 CONNECTIONS PLAN AND ELEVATIONS
FIGURE 8.2-10 SH 1 OF 2



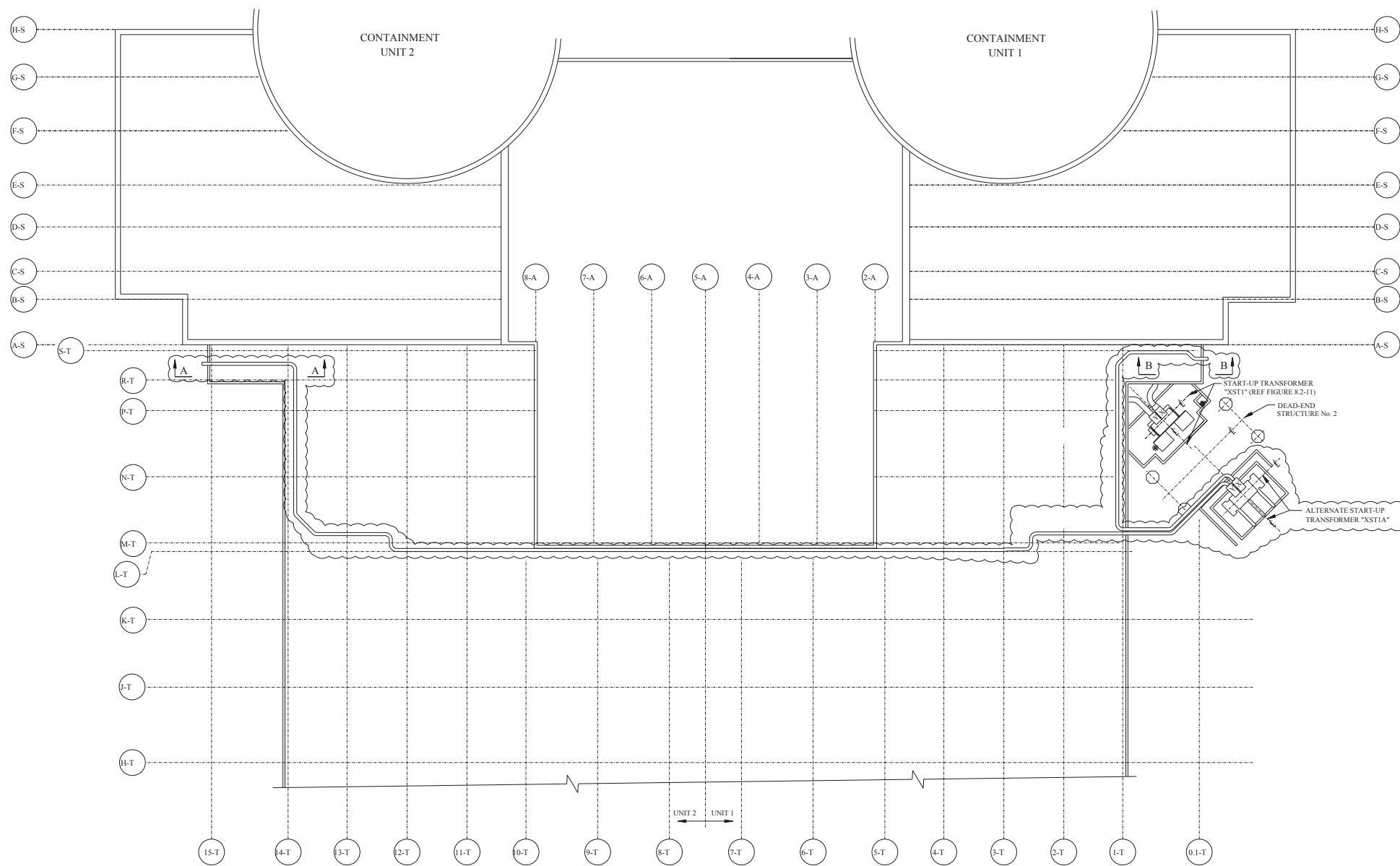
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ANALYSIS AND DESIGN IS 2125-11-0210
AND TEST DWG E-40844

COMANCHE PEAK N.P.P. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
345 KV TRANSFORMERS XST2A, 1ST AND XST2 CONNECTIONS PLAN AND ELEVATIONS
FIGURE 8.2-10 SH 2 OF 2

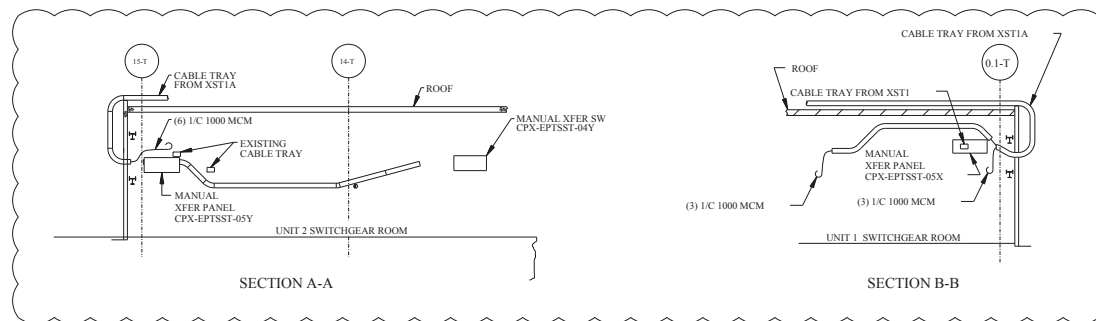


COMANCHE PEAK N.P.P. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
START-UP/STATION SERVICE/UNIT AUX TRANSFORMER CABLE BUS CONNECTION TO 6.9 KV SWITCHGEAR
FIGURE 8.2-11

Amendment No. 106

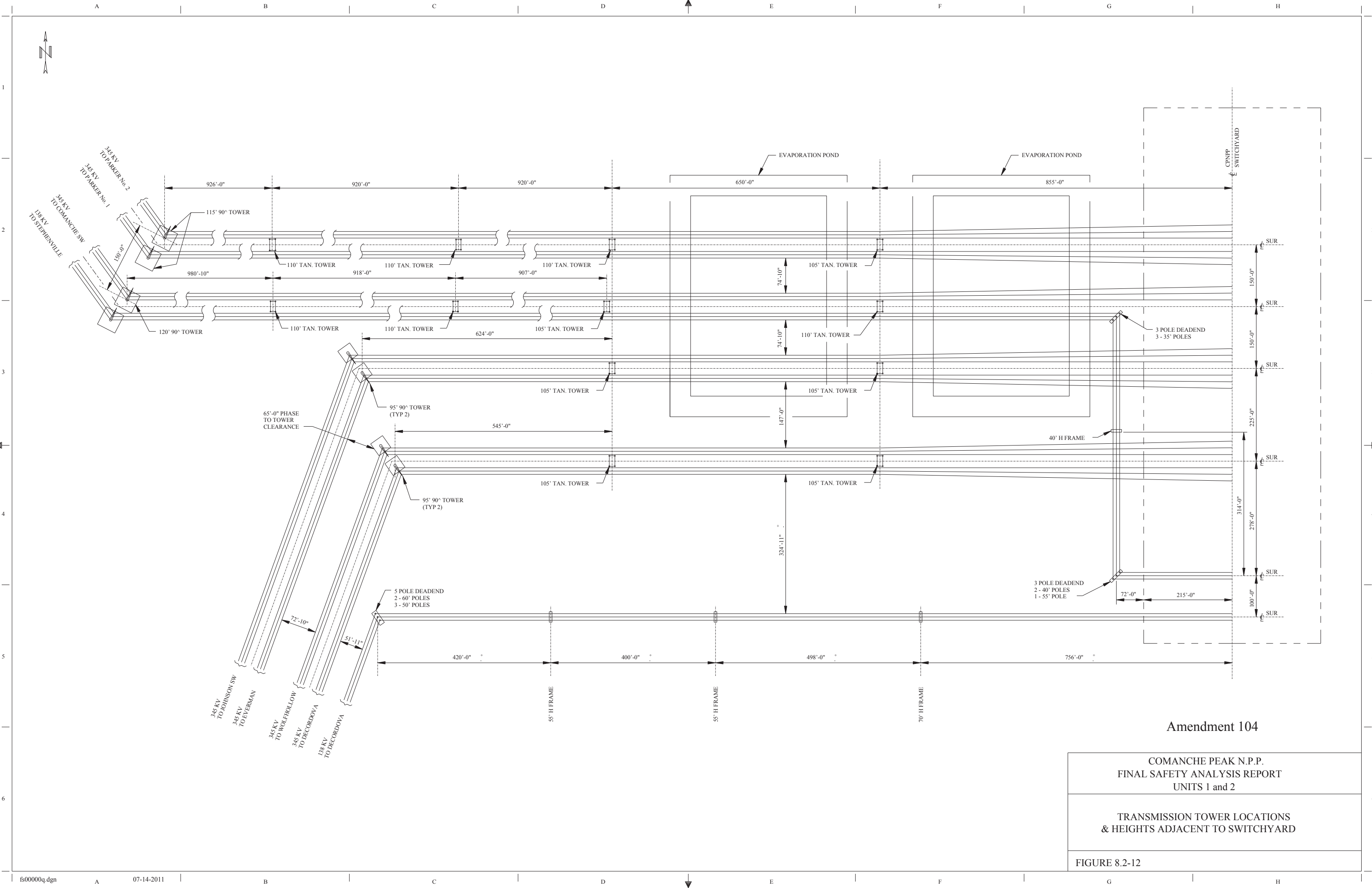


PARTIAL PLAN VIEW



Amendment No. 106

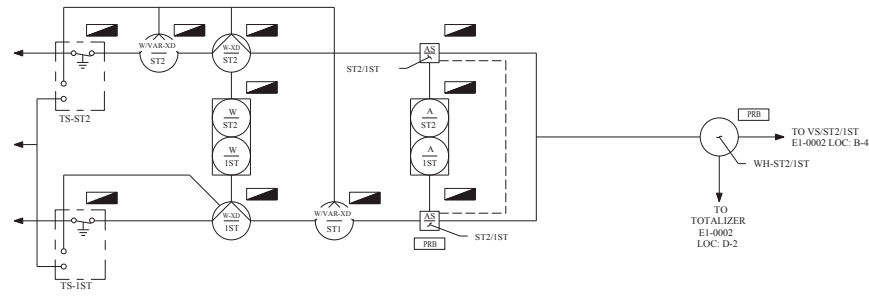
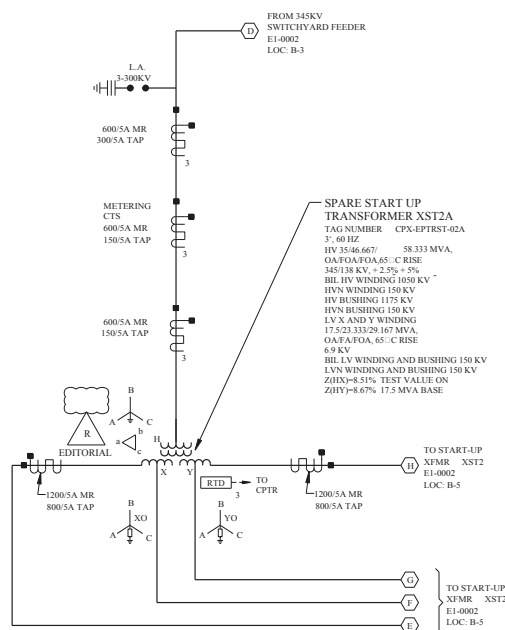
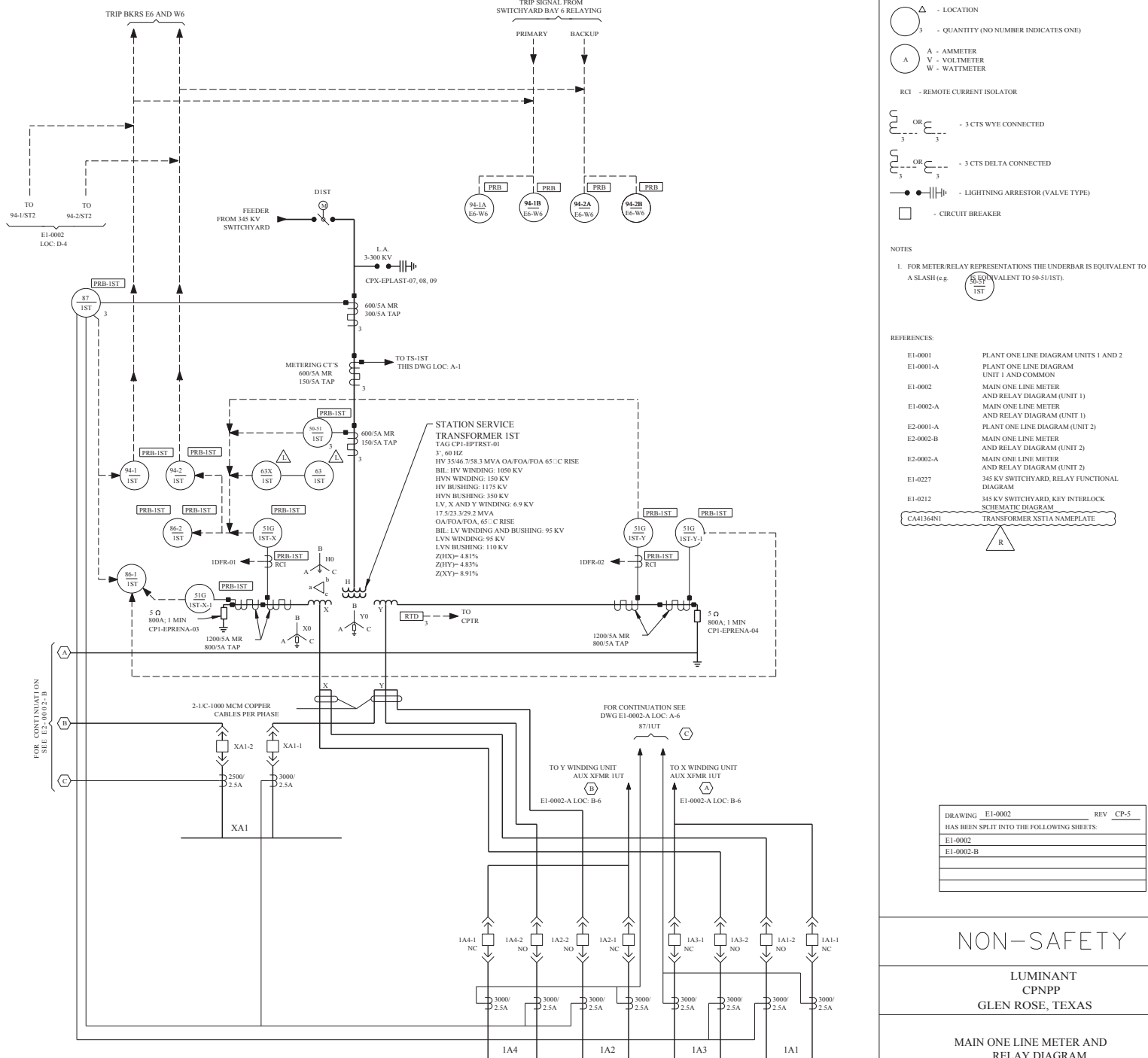
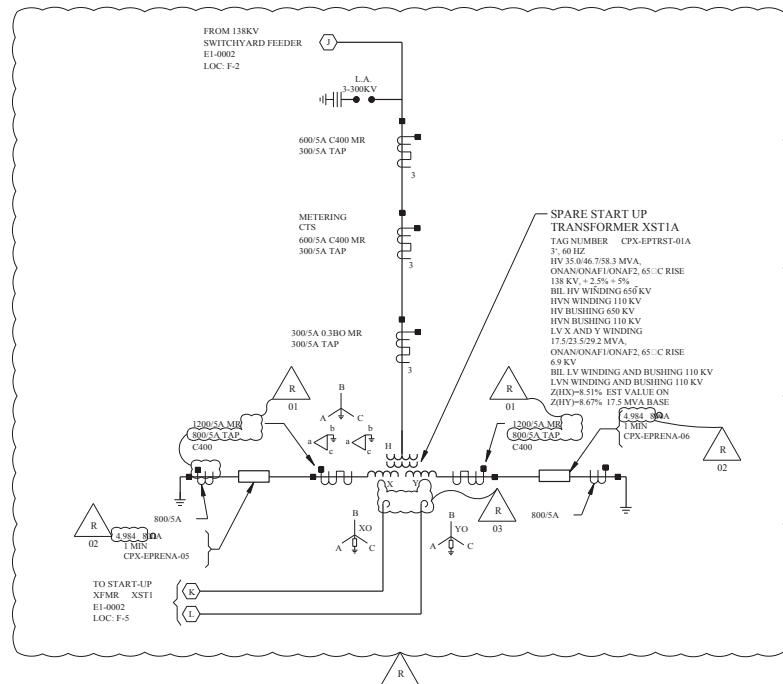
COMANCHE PEAK N.P.P.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2
SPARE START-UP
TRANSFORMER XST1A CABLE
BUS CONNECTION TO
6.9 KV SWITCHGEAR
FIGURE 8.2-11A



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[illegible]






REV	DWG	CHK	APPV	REMARKS
CP-15	SM (2-10 2013)	MBP (2-10 2013)		THIS DRAWING REVISITED TO INCORPORATE DESIGN CHANGE PDS-2012-000073-01-14 PER 38-0003-12-000073-01-03. EDITORIAL CHANGE AS NOTED

FSAR FIGURE 8.3-2


LEGEND:

	- PROTECTIVE RELAY BOARD IN CONTROL RM (1-CR-10)
	- LOCAL
	- RES TEMP DETECTOR FOR TRANSFORMERS, ONE FOR EACH LOW VOLTAGE WINDING HOT SPOT AND ONE FOR OIL TEMP
	- AMMETER SWITCH
	- PROTECTIVE RELAY BOARD FOR TRANSFORMER 1ST (1-CR-40)
	- SWITCHYARD CONSOLE (CONTROL ROOM) X-CB-12
	- FIXED RESISTOR
	- DRAWOUT DISCONNECT FOR BREAKER OR POTENTIAL TRANSFORMER
	- MOTOR OPERATED DISCONNECT
	- TRANSDUCER (XD)
	- LOCATION
	- QUANTITY (NO NUMBER INDICATES ONE)
	A - AMMETER
	V - VOLTMETER
	W - WATTMETER

RCI - REMOTE CURRENT ISOLATOR


	OR		OR		- 3 CTS WYE CONNECTED
					- LIGHTNING ARRESTOR (VALVE TYPE)
					- CIRCUIT BREAKER

NOTES


1. FOR METER/RELAY REPRESENTATIONS THE UNDERBAR IS EQUIVALENT TO A SLASH (e.g.  IS EQUIVALENT TO 50-51/1ST).

REFERENCES:

E1-0001	PLANT ONE LINE DIAGRAM UNITS 1 AND 2
E1-0001-A	PLANT ONE LINE DIAGRAM UNIT 1 AND COMMON
E1-0002	MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)
E1-0002-A	MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)
E2-0001-A	PLANT ONE LINE DIAGRAM (UNIT 2)
E2-0002-B	MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 2)
E2-0002-A	MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 2)
E1-0227	345 KV SWITCHYARD, RELAY FUNCTIONAL DIAGRAM
E1-0212	345 KV SWITCHYARD, KEY INTERLOCK SCHEMATIC DIAGRAM



TRANSFORMER XSTIA NAMEPLATE



R

DRAWING E1-0002 REV CP-5

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

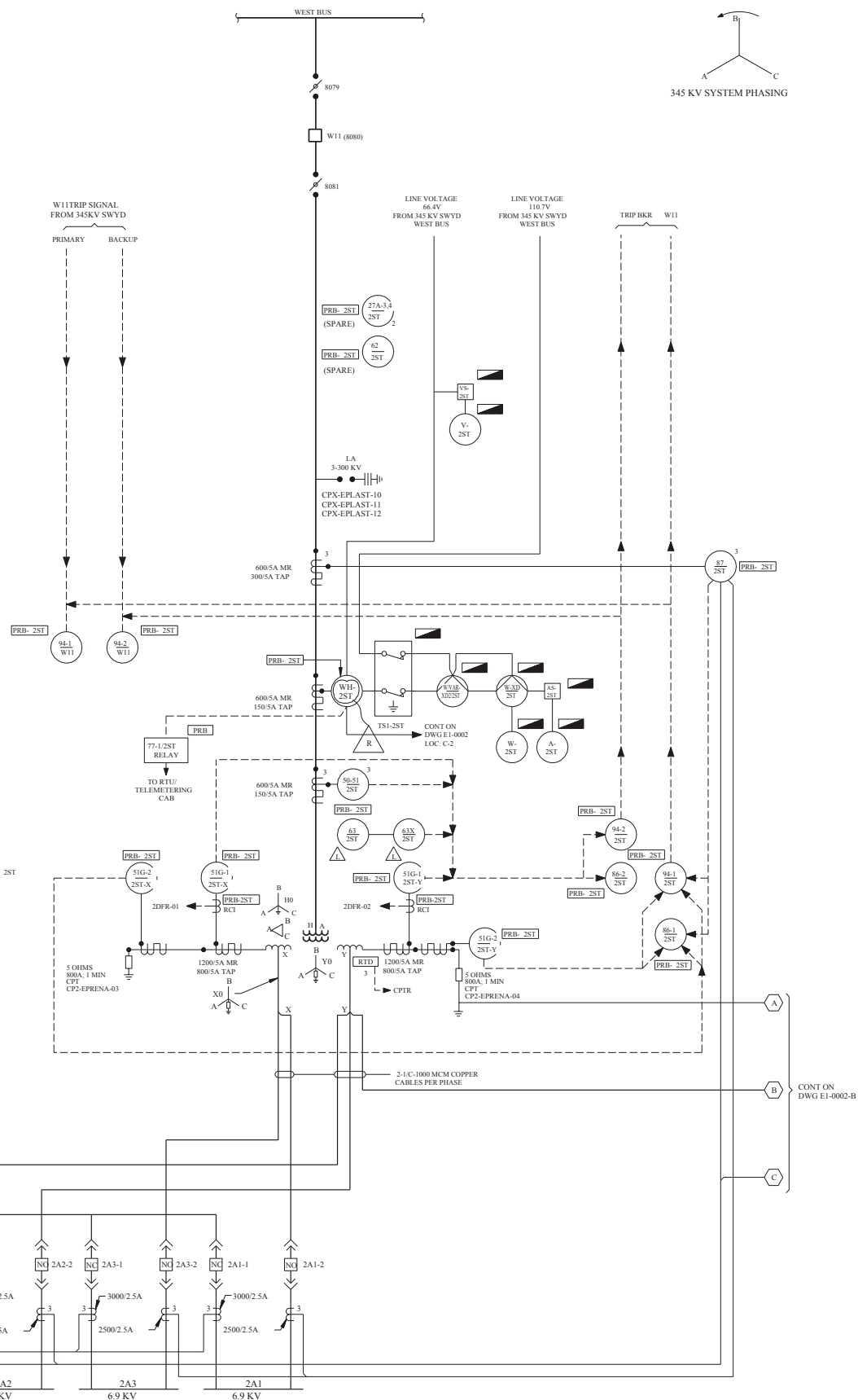
E1-0002
E1-0002-B




















NON-SAFETY

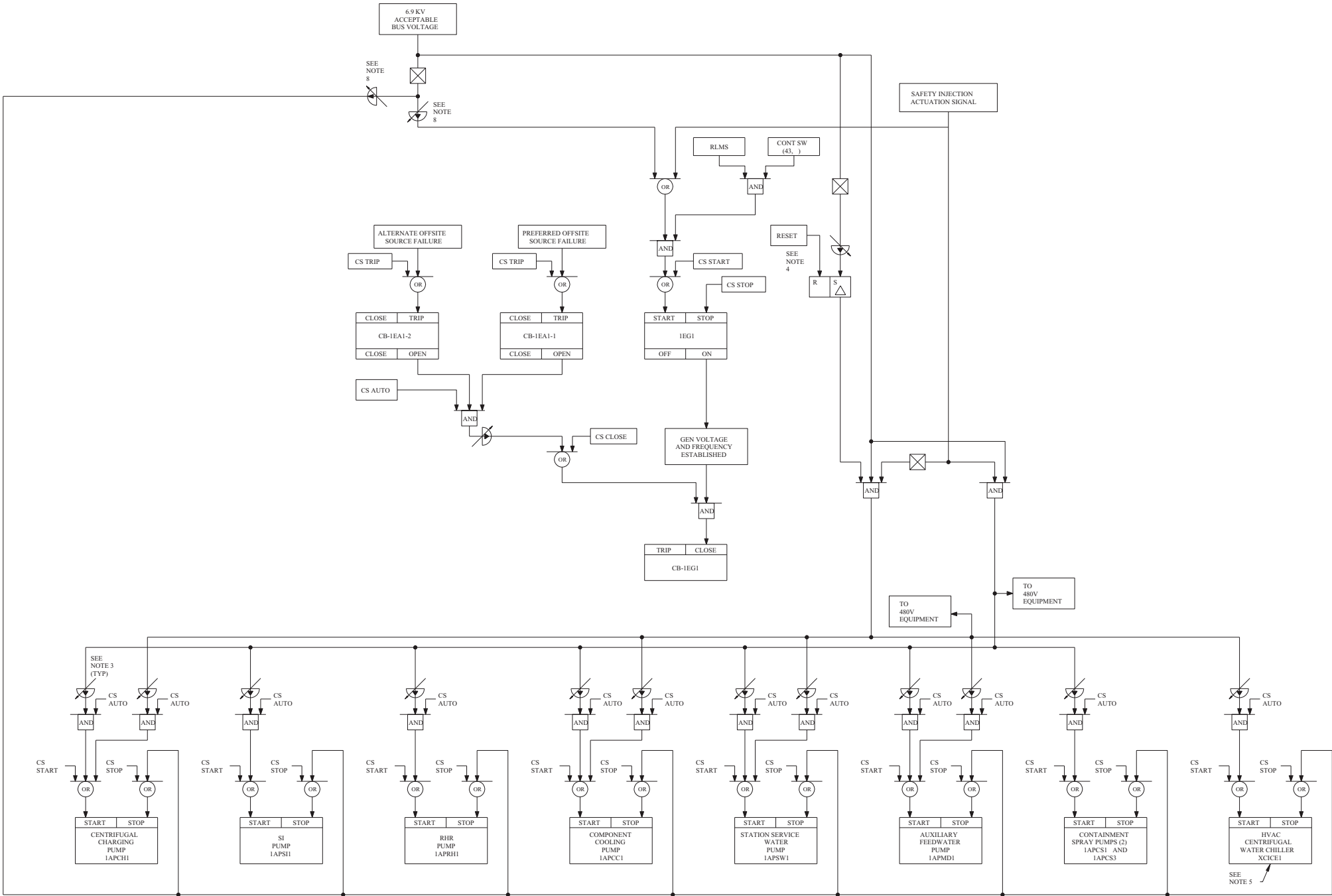
LUMINANT CPNPP GLEN ROSE, TEXAS

MAIN ONE LINE METER AND RELAY DIAGRAM

RELAY TABLE			
DEVICE NUMBER		MFG-TYPE	DESCRIPTION
MAIN TRANSFORMERS			
50N/2MT1 , 50N/2MT2	GE-12PIC11AV1A	MAIN TRANSF 1 AND 2 GRD OVERCURRENT RELAY	
63-1/2MT1, 63-2/2MT1	QUALITROL 900-020-02	MAIN TRANSF 1 SUDDEN PRESSURE RELAY	
63-1/2MT2, 63-2/2MT2	QUALITROL 900-020-02	MAIN TRANSF 2 SUDDEN PRESSURE RELAY	
63/XMT1	GE-TYPE 900-1	SPARE MAIN TRANSF 1 SUDDEN PRESSURE RELAY	
63/XMT2	GE-TYPE 900-1	SPARE MAIN TRANSF 2 SUDDEN PRESSURE RELAY	
GENERATOR			
60BX/2G	GE-12HFA51A42H	AUXILIARY RELAY	
59-81/2G	GE-12STV11A1A	OVER VOLTS/HERTZ RELAY (SEE NOTE 2)	
21/2G	GE-12SLY92A4D	GEN DISTANCE RELAY	
32-1/2G , 32-2/2G	GE-12GPG53C1A	GEN REVERSE POWER RELAY	
40-1/2G	GE-12C3H51A1A	GEN LOSS OF FIELD (TOTAL) RELAY (SEE NOTE 2)	
40-2/2G	W-292033A10	GEN LOSS OF FIELD (PARTIAL) RELAY	
46/2G	GE-12SGC12B1A	GEN NEG SEQUENCE RELAY (SEE NOTE 2)	
59/2G	GE-12NGV22B2A	GEN OVERVOLTAGE RELAY (100-165V, 2 RELAYS IN ONE CASE)	
64-1/2G	GE-12IAV51K1A	GEN STATOR GROUND DETECTOR RELAY (SEE NOTE 2)	
64-2/2G	GE-12IAV51D2A	GEN STATOR GROUND DETECTOR RELAY (SEE NOTE 2)	
60A-B/2G	GE-12CFVB11B1A	GEN PTS VOLTAGE BAL RELAY (A-COIL, B-COIL)	
21T/2G	GE-12SAM13C22A	1.1 SEC AND 1.4 SEC (2-STEP) TIME DELAY RELAY (SEE NOTE 2)	
32-1T/2G , 1TA/2G , 2T/2G , 2TA/2	AGASTAT 7012	TIME DELAY PICKUP RELAY (RANGE/SETTING AS SHOWN)	
40-1T/2G	AGASTAT 7012	10 SEC TIME DELAY PICKUP RELAY (1.5-15 SEC/RANGE)	
40-T/2G	AGASTAT 7012	5 SEC TIME DELAY PICKUP RELAY (1.5-15 SEC/RANGE)	
62-SVA/2G , 62-SVB/2G	W-ART-ON	30 SEC TIME DELAY PICKUP RELAYS (0.1-30 SEC RANGE)	
64F/2G , 64F/2GE	FRAMATOOME ANP	GEN FLD GND AND MAIN EXCTR FLD GND DETECTOR RELAYS	
87/2GMT	GE-12BDD16B11A	GEN AND TRANSFORMER DIFFERENTIAL RELAY (SEE NOTE 2)	
86-1 , 86-2/2G	GE-12HEA61B240	GEN LOCKOUT RELAY PRIMARY AND BACK-UP RELAYS	
87/2G	GE-12CFD22B2A	GEN DIFFERENTIAL RELAY	
87X/2GMT	W-6608D2A13	GEN AND TRANSF DIFFERENTIAL AUX RELAY	
94-1/2G , 94-2/2G	GE-12HFA53K91	TURBINE TRIP-GENERATOR TRIP AUXILIARY RELAY	
UNIT AUXILIARY TRANSFORMER			
51G-2UT-X	GE-12IAC51A801A	UNIT AUX TRANSF INV GRD CURRENT RELAY (SEE NOTE 2)	
51G-2UT-Y	GE-12IAC51A801A	UNIT AUX TRANSF INV GRD CURRENT RELAY (SEE NOTE 2)	
63/2UT	GE-900-1	UNIT AUX TRANSF SUDDEN PRESSURE RELAY	
87/2UT	GE-12BDD16B11A	UNIT AUX TRANSF DIFFERENTIAL RELAY (SEE NOTE 2)	
50-51/2UT	GE-12IAC77B71A	UNIT AUX TRANSF TIME DELAY AND INST OVERCURRENT RELAY (SEE NOTE 2)	
MISCELLANEOUS			
27HV2	GE-12NGV13A11A	345KV BUS UNDERVOLTAGE RELAY	
63X-1/2MT1 , 2MT2 , 63X-2/2MT1 , 2MT2	QUALITROL 909-200-01	AUXILIARY RELAY	
63X/XMT1 , XMT2 , 2UT	GE-12HAA16B2	AUXILIARY RELAY	
61/E10 , 61/W10	W-SLB STYLE 644F682A02	345KV GEN BREAKER POLE DISAGREEMENT RELAY WITH 2 TIMING UNITS	
50-1/E10 , 50-2/E10 , 50-1/W10 , 50-2/W10	GE-12CHC21A	FAULT DETECTOR RELAY	
62-1/E10 , 62-2/E10 , 62-1/W10 , 62-2/W10	GE-12SAC11B21A	ONE STEP TIMER, 0.03-1.0 SEC TIME RANGE RELAY	
50-51/2ST	GE-12IAC77B811A	STATION SERVICE TRANSF TIME DELAY AND INST OVER CURRENT RELAY	
51G-1/2ST-X , 51G-2/2ST-X	GE-12IAC51A801A	STATION SERVICE TRANSF INV GRD OVER CURRENT RELAY	
51G-1/2ST-Y , 51G-2/2ST-Y	GE-12IAC51A801A	STATION SERVICE TRANSF INV GRD OVER CURRENT RELAY	
63/2ST	QUALITROL 900	STATION SERVICE TRANSF SUDDEN PRESSURE RELAY	
86-1/2ST , 86-2/2ST	GE-12HEA61B240	STATION SERVICE TRANSF LOCKOUT, PRIMARY AND BACK-UP RELAYS	
87/2ST	GE-12BDD16B11A	STATION SERVICE TRANSF DIFFERENTIAL RELAY	
63X/2ST	GE-12HAA16B2	AUXILIARY RELAY	
27A-3/2ST AND 27A-4/2ST	ITE-27N(211 TO 375)	SPARE	
62/2ST	AGA-7012PE	SPARE	
94-1/2ST , 94-2/2ST , 94-1/W11 , 94-2/W11	GE-12HFA53K91	AUXILIARY TRIPPING RELAY	



				H	
REV	DWGN	CHKD	APP'D	REMARKS	
CP-8	MD 10-13 2010	EL 10-15 2010		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2004-003029-01-00 PER SK-001-1-04-003029-01-00	
				FSAR FIGURE 8.3-2	
LEGEND:					
 PROTECTIVE RELAY BOARD 2-CR-10					
 LOCAL					
					
 LOCATION 3 QUANTITY (NO NUMBER INDICATES ONE)					
					
					
					
 VOLTMETER					
 AMMETER			PROTECTIVE RELAY BOARD 2-CR-40 TRANSFORMER 2ST		
 VOLTMETER SWITCH					
 AMMETER SWITCH					
RC1 REMOTE CURRENT ISOLATOR					
NOTES					
1. SEE DWG E1-0002 FOR SWGR BUS 2EA1 AND 2EA2					
2. TARGET RESET MECHANISM FOR THE RELAY IS REMOVED					
3. METER/RELAY NUMBER SUFFIXES ARE NOT ALWAYS SHOWN. THE SUFFIXES ARE THE ALTERNATE TAG NUMBER FOR THAT PIECE OF EQUIPMENT THAT IT IS ASSOCIATED WITH (i.e. V/2ST) FOR THOSE METER/RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE UNDERBAR IS EQUIVALENT TO 94-2/2ST).					
EQUIVALENT TO 94-2/2ST)					
REFERENCES:					
E1-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2					
E1-0001-A PLANT ONE LINE DIAGRAM UNIT ONE AND COMMON					
E1-0002 MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)					
E1-0002-A MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)					
E1-0002-B MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)					
E2-0002-A MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 2)					
E2-0001-A PLANT ONE LINE DIAGRAM (UNIT 2)					
E2-0227 345 KV SWITCHYARD RELAY FUNCTIONAL DIAGRAM					
E2-0212 345 KV SWITCHYARD KEY INTERLOCK SCHEMATIC DIAGRAM					
NON-SAFETY					
LUMINANT CPNPP GLEN ROSE, TEXAS					
MAIN ONE LINE METER AND RELAY DIAGRAM					
DWG. NO. E2-0002		SHEET NO. B		REV. CP-8	
FINAL PRINT		H			



REV	DWN	CHKD	APVD	REMARKS
CP-1	12-01 2001	12-02 2001		THIS DRAWING CREATED TO INCORPORATE DESIGN CHANGE FDA-2002-003579-01-00 PER 9K-0005-02-003579-01-00

FSAR FIGURE 8.3-3

LEGEND

- INDICATES A DEVICE WHICH PRODUCES AN OUTPUT ONLY WHEN EVERY INPUT IS ENERGIZED
- INDICATES A DEVICE WHICH PRODUCES AN OUTPUT WHEN ONE INPUT (OR MORE) IS ENERGIZED
- INDICATES A DEVICE WHICH PRODUCES AN OUTPUT FOLLOWING DEFINITE INTENTIONAL TIME DELAY AFTER RELAY RECEIVING AN INPUT (ADJUSTABLE TIME DELAY RELAY-ENERGIZING)
- A DEVICE WHICH RETAINS THE CONDITION OF OUTPUT CORRESPONDING TO THE LAST ENERGIZED INPUT.
 INDICATES THE OUTPUT THAT WILL PREVAIL UNDER SIMULTANEOUS SET AND RESET INPUTS
- INDICATES DEVICE WHICH PRODUCES AN OUTPUT ONLY WHEN THE INPUT IS NOT ENERGIZED

NOTES

1. DIAGRAM SHOWS THE AUTOMATIC SEQUENCE OF THE DIESEL-GENERATOR STARTING AND LOADING SEQUENCE. OTHER FUNCTIONS OPERATING ON THE CIRCUIT BREAKERS SHOWN OR DIESEL START STOP LOGIC ARE OMITTED FOR SIMPLICITY.
2. FOR THE ELECTRICAL ONE LINE DIAGRAMS SEE REF DWG 1 AND 2.
3. FOR SOLID STATE SAFEGUARDS SEQUENCER LOGIC DIAGRAM SEE REF DWG 3.
4. THIS IS RESET AFTER THE SEQUENCER CYCLE IS OVER.
5. HVAC CENTRIFUGAL CHILLERS ARE NON-CLASS 1E.
6. THIS SEQUENCE DIAGRAM IS FOR 1EG1, DIAGRAM FOR 1EG2, 2EG1, AND 2EG2 WILL BE SIMILAR.
7. THIS DIAGRAM DOES NOT SHOW THE LOAD CENTER TRANSFORMERS. THESE TRANSFORMERS ARE ENERGIZED WHEN DG BREAKER CLOSES. THE SEQUENCER DOES NOT SEQUENCE THESE TRANSFORMERS ON TO THE EDG.
8. UPON DETECTION OF DEGRADED BUS STATUS ALL RUNNING MOTORS WILL BE TRIPPED OFF THE BUS AFTER A TIME DELAY AND THE DIESEL ENGINE START SIGNAL IS INITIATED.
9. THE DIESEL GENERATOR STARTING AND LOADING SEQUENCE FOR 1EG1, 2EG1, AND 2EG2 ARE SIMILAR TO 1EG1 SHOWN ON THIS DRAWING.

REFERENCE DRAWINGS

- | | |
|---------------|--|
| 1. E1-0004 | 6.9KV ONE LINE SAFEGUARD BUS, UNIT 1 |
| 2. E1-0005 | 480V ONE LINE SAFEGUARD BUS, UNIT 1 |
| 3. E1-0022-05 | SOLID STATE SAFEGUARDS SYSTEM SEQUENCER |
| 4. E1-0030 | 6.9KV SCHEMATIC DIAGRAMS |
| 5. E1-0031 | 6.9KV SCHEMATIC DIAGRAMS |
| 6. E1-0033 | 480V SCHEMATIC DIAGRAMS |
| 7. E1-0067-95 | DIESEL GENERATOR SCHEMATIC AND 3-LINE DIAGRAMS |
| THRU 100 | |

Amendment 104

CLASS I		
(NUCLEAR SAFETY-RELATED)		
SAFETY CLASS 1	SEISMIC CATEGORY	I
SAFETY CLASS 2	CLASS 1E	
SAFETY CLASS 3	ASSOCIATED CIRCUITS	
TXU POWER		
CPSES		
GLEN ROSE, TEXAS		
DIESEL GENERATOR AUTOMATIC STARTING AND LOADING SEQUENCE DIAGRAM		
DWG. NO. E1-0022	SH. NO. 02	REV. CP-1

1

2

3

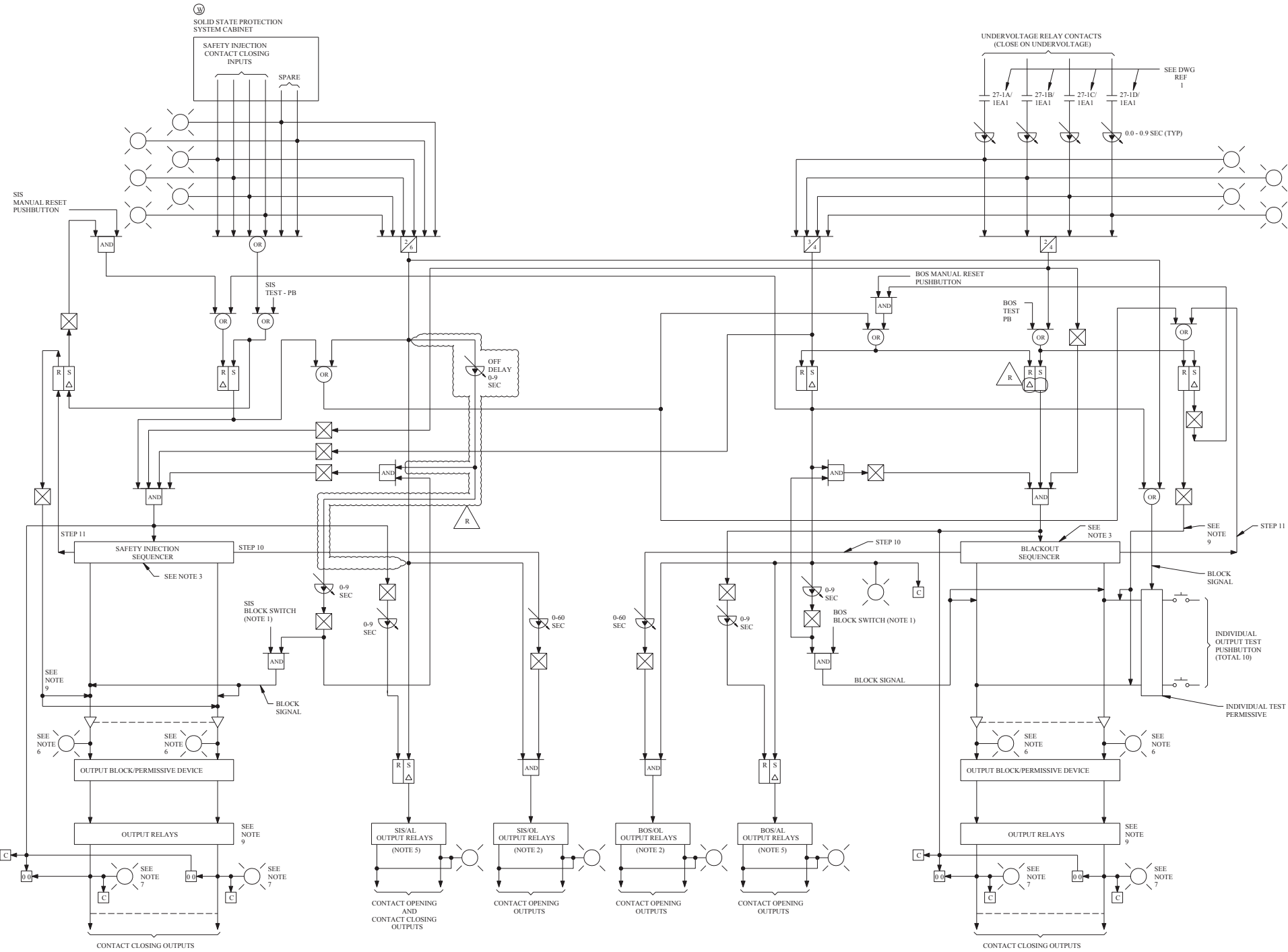
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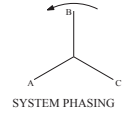
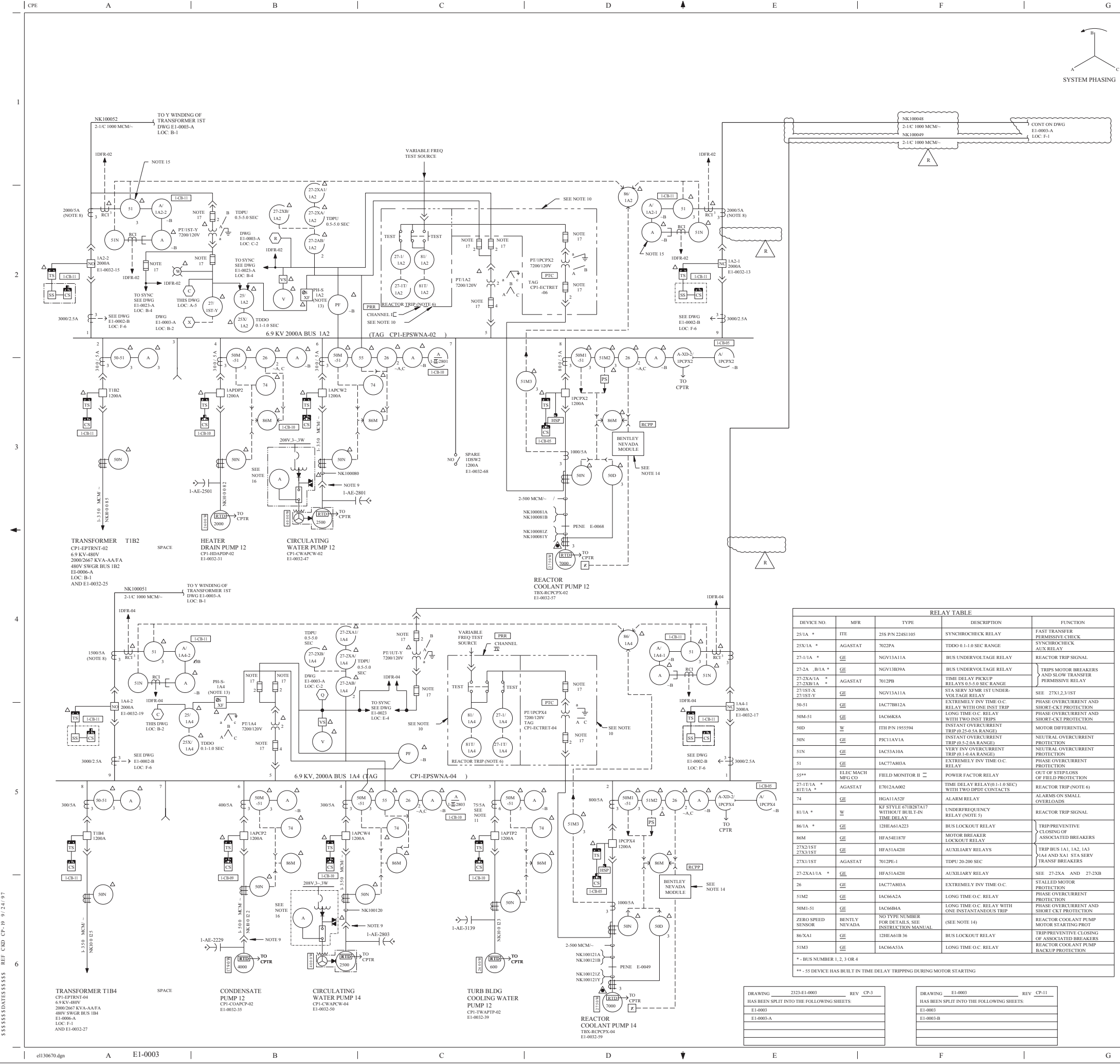
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6

REV	BY	CHKD	APPV	REMARKS			
CP-2	12-04-2007	12-10-2007		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FSA-2007-003413-01-00 PER SK-0001-07-003413-01-00			
FSAR FIGURE 8.3-4							
<div>LEGEND</div> <div><div></div><div>INDICATES A DEVICE WHICH PRODUCES AN OUTPUT ONLY WHEN EVERY INPUT EXISTS</div></div> <div><div></div><div>INDICATES A DEVICE WHICH PRODUCES AN OUTPUT ONLY WHEN THE INPUT DOES NOT EXIST</div></div> <div><div></div><div>INDICATES A DEVICE WHICH PRODUCES AN OUTPUT WHEN ONE INPUT (OR MORE) EXISTS</div></div> <div><div></div><div>INDICATES A DEVICE WHICH RETAINS THE CONDITION OF OUTPUT CORRESPONDING TO THE LAST ENERGIZED INPUT. Δ INDICATES THE OUTPUT THAT WILL PREVAIL UNDER SIMULTANEOUS SET AND RESET INPUTS</div></div> <div><div></div><div>INDICATES A DEVICE WHICH PRODUCES AN OUTPUT WHEN THE PRESCRIBED NUMBER OF INPUT EXIST (EXAMPLE: 2 INPUTS MUST EXIST FOR AN OUTPUT)</div></div> <div><div></div><div>INDICATES A DEVICE WHICH PROVIDES DIGITAL INDICATION OF ELAPSED TIME BETWEEN INITIAL INPUT AND SECOND INPUT</div></div> <div><div></div><div>INDICATES A DEVICE WHICH PRODUCES AN OUTPUT UPON AN ADJUSTABLE TIME AFTER A MAINTAINED INPUT OCCURS</div></div> <div><div></div><div>INDICATES A DEVICE WHICH PRODUCES AN IMMEDIATE OUTPUT AFTER AN INPUT OCCURS. OUTPUT TERMINATES UPON AN ADJUSTABLE TIME AFTER THE INPUT TERMINATES.</div></div> <div><div></div><div>INDICATES A DEVICE WHICH PRODUCES AN OUTPUT WITH SUFFICIENT ENERGY TO OPERATE AND MAINTAIN AN OUTPUT RELAY IN THE OPERATED CONDITION WHEN AN INPUT EXISTS</div></div> <div><div></div><div>INDICATING LIGHT</div></div> <div><div></div><div>INDICATES COMPUTER INPUT</div></div> <div>ABBREVIATIONS</div> <div><div>SIS</div><div>- SAFETY INJECTION SEQUENCER</div></div> <div><div>SIS/AL</div><div>- SAFETY INJECTION SEQUENCER/AUTO LOCKOUT</div></div> <div><div>SIS/OL</div><div>- SAFETY INJECTION SEQUENCER/OPERATOR LOCKOUT</div></div> <div><div>BOS</div><div>- BLACKOUT SEQUENCER</div></div> <div><div>BOS/AL</div><div>- BLACKOUT SEQUENCER/AUTO LOCKOUT</div></div> <div><div>BOS/OL</div><div>- BLACKOUT SEQUENCER/OPERATOR LOCKOUT</div></div> <div>NOTES</div> <div><div>1. BLOCK SWITCHES HAVE MAINTAINED CONTACTS ALL OTHER TEST SWITCHES AND PUSHBUTTONS HAVE MOMENTARY CONTACTS.</div></div> <div><div>2. SIS AND BOS OPERATOR LOCKOUTS SHALL EACH PROVIDE 30 INDEPENDENT CONTACT OPENING OUTPUTS.</div></div> <div><div>3. SAFETY INJECTION SEQUENCER AND BLACKOUT SEQUENCER SHALL EACH PROVIDE (11) ELEVEN INDEPENDENTLY ADJUSTABLE TIME STEPS.</div></div> <div><div>4. ONLY MANUAL TESTING LOGIC IS SHOWN. ADDITIONAL CONTINUOUS AUTOMATIC SIMULATION OF INPUTS AND VERIFICATION OF OUTPUTS OF RELAY DRIVERS INCLUDING VERIFICATION OF TIME SETTINGS SHALL ALSO BE PROVIDED IN SEQUENCER CABINET.</div></div> <div><div>5. SIS AND BOS AUTO LOCKOUTS SHALL EACH PROVIDE (18) EIGHTEEN INDEPENDENT CONTACT OPENING OUTPUTS AND SIS/AL SHALL ALSO PROVIDE (6) SIX CONTACT CLOSING OUTPUTS.</div></div> <div><div>6. SEQUENCER OUTPUT INDICATING LIGHT SHALL BE TURNED ON WHEN ASSOCIATED TIMESTEP OUTPUT SIGNAL IS FIRST PRESENT AND SHALL BE MAINTAINED ON UNTIL SEQUENCER IS RESET.</div></div> <div><div>7. SEQUENCER OUTPUT RELAY INDICATING LIGHTS SHALL BE TURNED ON WHEN ASSOCIATED RELAY IS FIRST ENERGIZED AND REMAIN ON UNTIL RELAY CHANGES STATE.</div></div> <div><div>8. AN ALARM CONTACT SHALL BE PROVIDED TO ACTUATE REMOTE ANNUNCIATOR UPON LOSS OF SUPPLY POWER TO SEQUENCER.</div></div> <div><div>9. THIS SIGNAL RESETS TYPE 1 OUTPUT RELAYS, RESETS AFTER SEQUENCER COMPLETES LAST SIS. ONLY TYPE 2 OUTPUT RELAYS RESET AFTER THE SEQUENCER IS RESET.</div></div> <div><div>10. SOLID STATE SAFEGUARD SEQUENCER LOGIC FOR 1EA2, 2EA1, AND 2EA2 IS SIMILAR TO 1EA1 SHOWN ON THIS DRAWING.</div></div> <div>REFERENCE DRAWINGS</div> <div><div>1. E1-0022-04</div><div>UNDER/OVER VOLTAGE RELAY PROTECTION FOR CLASS 1E 6.9KV/480V BUSES</div></div> <div><div>2. E2-0022-04</div><div>UNDER/OVER VOLTAGE RELAY PROTECTION FOR CLASS 1E 6.9KV/480V BUSES</div></div> <div>Amendment 104</div> <div><div>CLASS I</div><div>(NUCLEAR SAFETY-RELATED)</div><div>SAFETY CLASS 1 SEISMIC CATEGORY I</div><div>SAFETY CLASS 2 CLASS 1E ASSOCIATED CIRCUITS</div><div>SAFETY CLASS 3</div></div> <div><div>LUMINANT CPSES</div><div>GLEN ROSE, TEXAS</div></div> <div><div>SOLID STATE SAFEGUARD SEQUENCER LOGIC DIAGRAM</div></div> <tr><td>DWG NO. E1-0022</td><td>SH. NO. 05</td><td>REV. CP-2</td></tr>					DWG NO. E1-0022	SH. NO. 05	REV. CP-2
DWG NO. E1-0022	SH. NO. 05	REV. CP-2					

THIS DRAWING CREATED ELECTRONICALLY





REV

DWN

CHK

APV

REMARKS

P.30

10-11-2004

10-11-2004

THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE
FDA-2014-000227-02-00 PER SK-0004-14-000227-02-00

FSAR FIGURE 8.3-5

LEGEND

SYMBOLS:

LOCATION

3 QUANTITY (NO NUMBER INDICATES ONE)

PHASE SHIFTING TRANSFORMER

SYNCHRONIZING SWITCH

PERMISSIVE SWITCH WITH LIGHTS

CONTROL SWITCH WITH LIGHTS

GREEN LIGHT

RED LIGHT

KIRK KEY INTERLOCK WITH THE KEY IN

DISCONNECT SWITCH

PARTIAL DISCHARGE COUPLING CAPACITOR/TEST POINT

SYNCHRONOUS MOTOR WITH BRUSHLESS EXCITER

AUTO TRANSFORMER RECTIFIER

SURGE SUPPRESSOR

TEST PUSH BUTTON, LOCKABLE IN EXTENDED POSITION

MOTOR SPACE HEATER (WATTS LATER)

DRAWOUT/CONNECT FOR BREAKER OR POTENTIAL TRANSFORMER; CABLE DISCONNECT

SHUNT FOR DC AMMETER

FOR OTHER SYMBOLS SEE DWG E1-0001

LOCATIONS

CONTROL ROOM PANEL NUMBER *

LOCAL NEAR CHILLER

IN 6.9 KV SWITCHGEAR

AT MOTOR

INDICATES COMPUTER

CLASS 1E PROTECTIVE RELAY RACK

FIELDWATER TURBINE AND REACTOR COOLANT PUMP SUPERVISORY PANEL

POTENTIAL TRANSFORMER CABINET

HOT SHUTDOWN PANEL

REMOTE CURRENT ISOLATOR

NOTES

1. SWITCHGEAR CLASS: 500 MVA IC

2. ALL NEUTRAL OVERCURRENT CT'S ON CABLE FEEDERS ARE TYPE BYZ WITH 50:5A RATIO.

3. CT'S SHOWN AT MOTOR ARE GROUNDED SENSORS, BYZ WITH 50:5A RATIO

4. QUANTITY, WHERE NOT SHOWN, IS ONE.

5. TYPE KF UNDERFREQUENCY RELAY HAS A FREQUENCY RANGE OF 50.59-59.5HZ.

6. PER FUNCTIONAL DIAGRAM DWG 7247D05 SH 5 REACTOR TRIP OCCURS ON SIGNAL FROM TWO OUT OF FOUR BUSES UNDERVOLTAGE OR FREQUENCY.

7. CABLE SIZE, WHERE NOT SHOWN IS 40 AWG.

8. THESE CT'S SHALL HAVE RELAYING ACCURACY OF 10C400.

9. CABLE QUICK DISCONNECT TYPE CONNECTORS ARE PROVIDED FOR VERTICAL MOTORS AND ARE LOCATED IN THE MOTOR TERMINAL BOX.

10. PUMP AND WIRING ENCLOSED INSIDE DASHED LINE IS CLASS 1E ELECTRICAL EQUIPMENT AND WIRING.

11. TWO 755A CURRENT TRANSFORMERS ARE CONNECTED IN SERIES TO ACHIEVE 10C50 ACCURACY CLASS.

12. DELETED

13. PHASE SHIFTING TRANSFORMER OSXF SECONDARY VOLTAGE LAGS PRIMARY VOLTAGE BY 30 DEGREES.

14. BENTLEY NEVADA MODULE INCLUDES CIRCUITRY TO PROVIDE STALLED MOTOR/TOO SLOW ACCELERATION PROTECTION.

15. METER/RELAY NUMBER SUFFIXES ARE NOT ALWAYS SHOWN, THE SUFFIXES ARE THE ALTERNATIVE TAG NUMBER FOR THAT PIECE OF EQUIPMENT THAT IT IS ASSOCIATED WITH (e.g. 51/1A2-1, 51/1A2-2).

16. EXCITER POWER SUPPLY IS LOCATED IN AUXILIARY CUBICLE 5.

17. FOR FUSE INFORMATION SEE THREE LINE DIAGRAMS, REF DWG 6.

REFERENCE DRAWINGS

1. E1-0001

PLANT ONE LINE DIAGRAM UNITS 1 AND 2

2. E1-0001-A

PLANT ONE LINE DIAGRAM UNIT 1 AND COMMON

3. E1-0002

MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)

4. E1-0002-A

MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)

5. E1-0002-B

MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)

6. E1-0026-02, 02A

6.9 KV THREE LINE DIAGRAM

7. E1-0032-0

NORMAL 6.9 KV SWGR BREAKER SCHEMATICS AND CONNECTION DIAGRAM INDEX

CLASS I

(NUCLEAR SAFETY RELATED)

SAFETY CLASS 1

SAFETY CLASS 2

SAFETY CLASS 3

SEISMIC CATEGORY

CLASS 1E

ASSOCIATED CIRCUITS

I

LUMINANT

CPNPP

GLEN ROSE, TEXAS

6.9 KV AUXILIARIES

ONE LINE DIAGRAM

NORMAL BUSES

DWG NO

E1-0003

SH NO

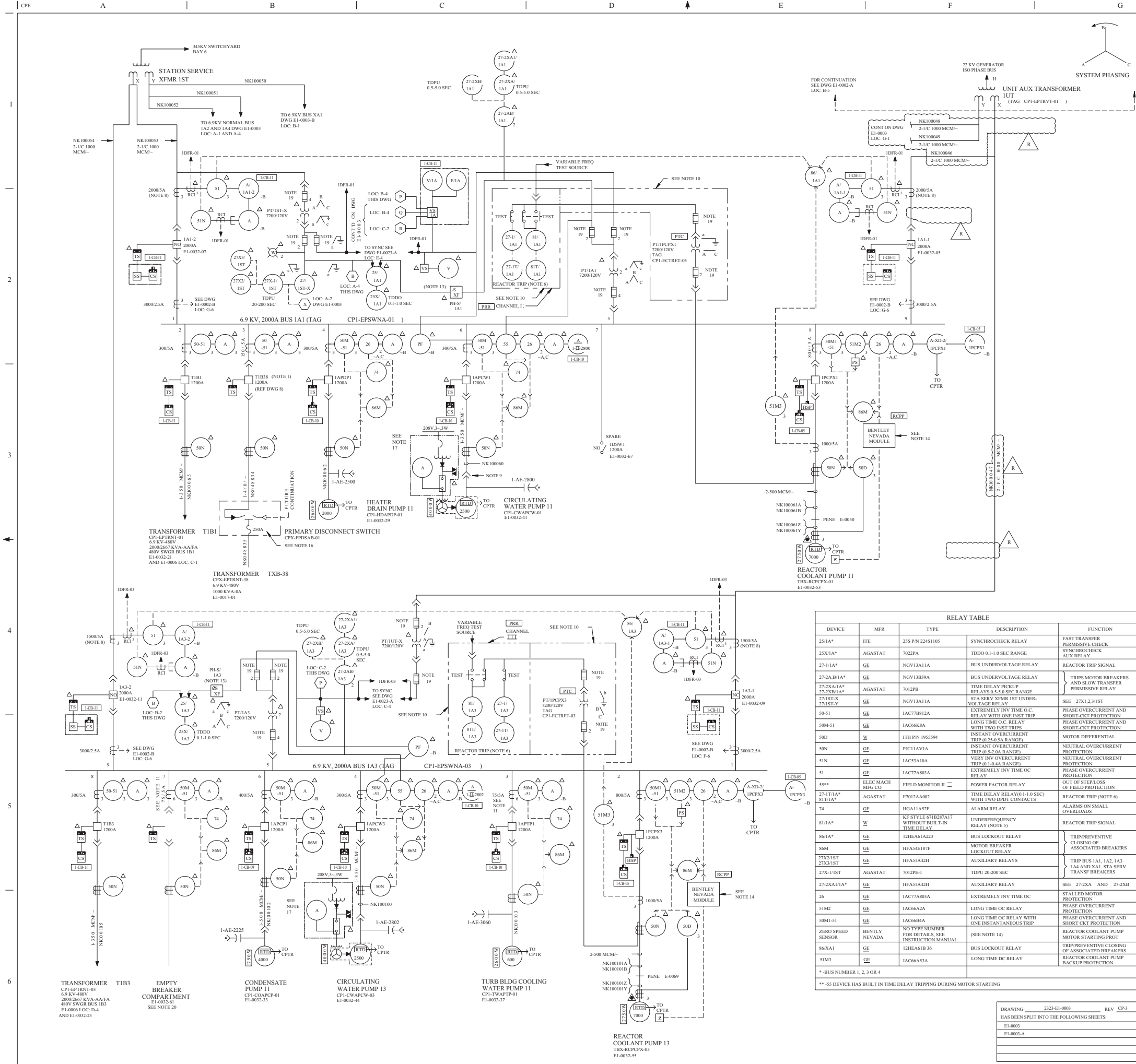
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





























REV

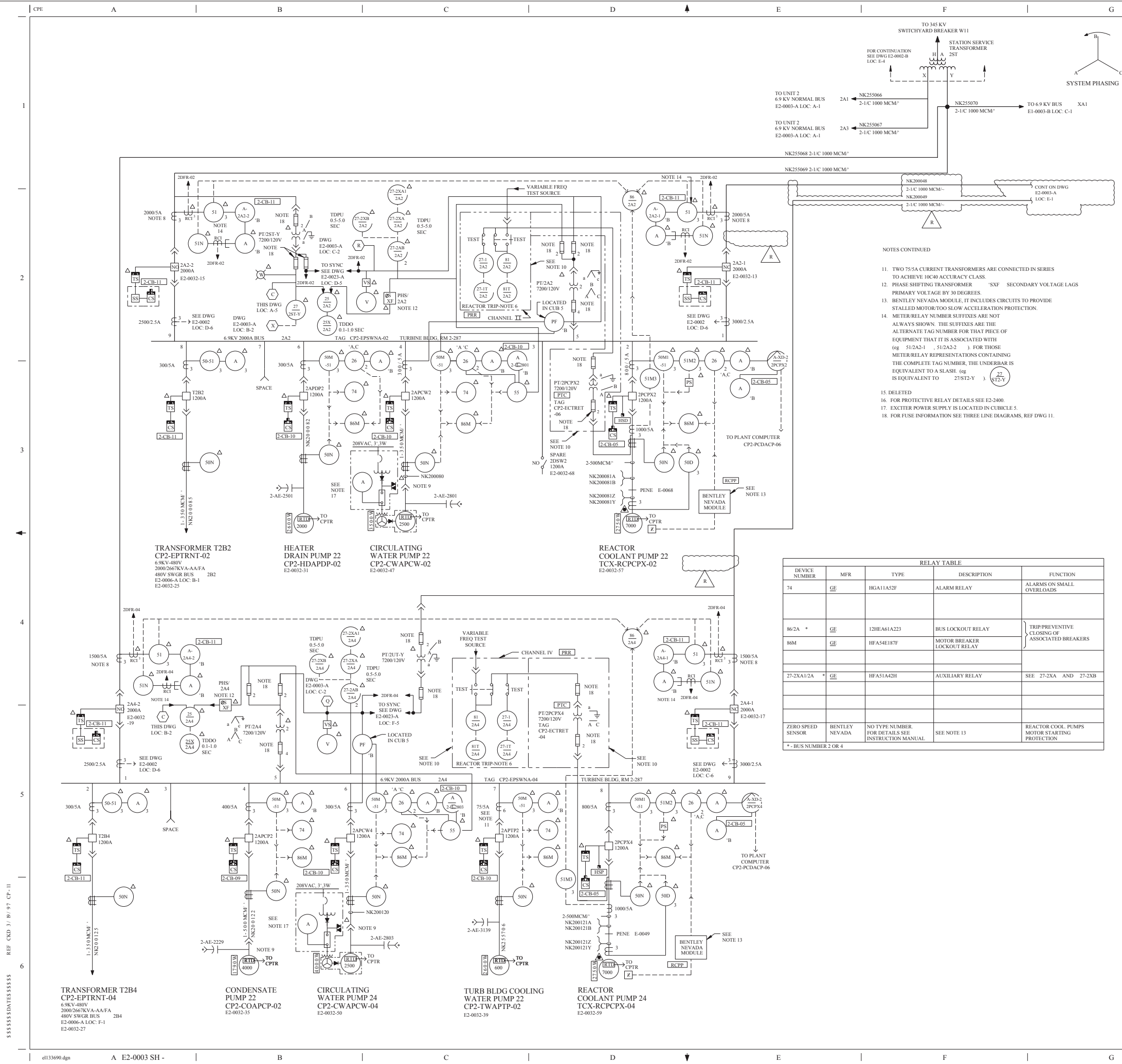
CP-30

REF CUD CP-19 9/24/97

THIS DRAWING CREATED ELECTRONICALLY



REV			DWN/CHECK/APVD			REMARKS		
7P-32	108-11-00-2004	108-11-03-2004	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2014-000222-02-00 PER SR-0005-14-000222-02-00					
FSAR FIGURE 8.3-5								
LEGEND								
RCI - REMOTE CURRENT ISOLATOR								
SYMBOLS-								
 LOCATION								
3 QUANTITY (NO NUMBER INDICATES ONE)								
 PHASE SHIFTING TRANSFORMER								
 SYNCHRONIZING SWITCH								
 PERMISSIVE SWITCH WITH LIGHTS								
 CONTROL SWITCH WITH LIGHTS								
 GREEN LIGHT								
 WHITE LIGHT								
 BLUE LIGHT								
 RED LIGHT								
 AMBER LIGHT								
 PROTECTION SWITCH								
 WINDOW OR THRU TYPE CURRENT TRANSFORMER (SEE NOTE 2)								
 DISCONNECT SWITCH								
 PARTIAL DISCHARGE COUPLING CAPACITOR/TEST POINT								
 SYNCHRONOUS MOTOR WITH BRUSHLESS EXCITER								
 EXCITER								
 AUTO TRANSFORMER RECTIFIER								
 SURGE SUPPRESSOR								
 FIELD EXCITATION SUPPLY FOR SYN MOTOR								
 TEST								
 MOTOR SPACE HEATER								
 DRAWOUT/DISCONNECT FOR BREAKER OR POTENTIAL TRANSFORMER; CABLE DISCONNECT								
 SHUNT FOR DC AMMETER								
FOR OTHER SYMBOLS SEE DWG EI-0001								
LOCATIONS								
 CONTROL ROOM PANEL NUMBER *								
 IN 6.9 KV SWITCHGEAR								
 AT MOTOR								
 CPTIR INDICATES COMPUTER								
 PRR CLASS 1E PROTECTIVE RELAY RACK 1-CR-11								
 RCTP FEEDWATER TURBINE AND REACTOR COOLANT PUMP SUPERVISORY PANEL 1-CV-07								
 PTC POTENTIAL TRANSFORMER CABINET								
 HSP HOT SHUTDOWN PANEL 1-LV-01								
NOTES								
1. SWITCHGEAR CLASS: 500 MVA IC								
2. ALL NEUTRAL OVERCURRENT CT'S ON CABLE FEEDERS ARE W TYPE BYZ WITH 50/5A RATIO.								
3. CT'S SHOWN AT MOTOR ARE W GROUND SENSORS, BYZ WITH 50/5A RATIO.								
4. QUANTITY, WHERE NOT SHOWN, IS ONE.								
5. TYPE KF UNDERFREQUENCY RELAY HAS A FREQUENCY RANGE OF 55-59.5HZ.								
6. PER FUNCTIONAL DIAGRAM DWG 2747D05 SH-S REACTOR TRIP OCCURS ON SIGNAL FROM TWO OUT OF FOUR BUSES UNDERVOLTAGE OR FREQUENCY.								
7. CABLE SIZE, WHERE NOT SHOWN IS 4WG AWG.								
8. THESE CT'S SHALL HAVE RELAYING ACCURACY OF 10C400.								
9. CABLE QUICK DISCONNECT TYPE CONNECTORS ARE PROVIDED FOR VERTICAL MOTORS AND ARE LOCATED IN THE MOTOR TERMINAL BOX.								
10. EQUIP AND WIRING ENCLOSED INSIDE DASHED LINE IS CLASS 1E ELECTRICAL EQUIPMENT AND WIRING.								
11. TWO 75-5A CURRENT TRANSFORMERS ARE CONNECTED IN SERIES TO ACHIEVE 10C30 ACCURACY CLASS.								
12. KIRK KEY INTERLOCK IS PROVIDED BETWEEN BREAKER XA1-4 AND ELECTRICAL START-UP BOILER HIGH VOLTAGE COMPARTMENT.								
13. PHASE SHIFTING TRANSFORMER OXY SECONDARY VOLTAGE LAGS PRIMARY VOLTAGE BY 30 DEGREES.								
14. BENTLEY NEVADA MODULE INCLUDES CIRCUITRY TO PROVIDE STALLED MOTOR TOO SLOW ACCELERATION PROTECTION.								
15. METER/RELAY NUMBER SUFFIXES ARE NOT ALWAYS SHOWN. THE SUFFIXES ARE THE ALTERNATE TAG NUMBER FOR THAT PIECE OF EQUIPMENT THAT IT'S ASSOCIATED WITH (e.g. 51/A3-1, 51/A3-2).								
16. FUSE SIZE 250 AMPS, WESTINGHOUSE TYPE RBA-RDB-400.								
17. EXCITER POWER SUPPLY IS LOCATED IN CUBICLE 5.								
18. DELETED								
19. FOR FUSE INFORMATION SEE THREE LINE DIAGRAMS, REF DWG 6.								
20. BREAKER HAS BEEN PERMANENTLY REMOVED FROM SWITCHGEAR CUBICLE.								
REFERENCES								
1. EI-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2								
2. EI-0001-A PLANT ONE LINE DIAGRAM UNIT 1 AND COMMON								
3. EI-0002 MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)								
4. EI-0002-A MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)								
5. EI-0002-B MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)								
6. EI-0026-01, 01A 6.9 KV THREE LINE DIAGRAM								
7. EI-0032-0 NORMAL 6.9 KV SWGR BREAKER SCHEMATICS AND CONNECTION DIAGRAM INDEX								
8. 53-1261-D1543 6.9KV SWGR BUS 1A1 CUB 3 SCHEMATIC WIRING DIAGRAM								
CLASS I (NUCLEAR SAFETY-RELATED)								
SAFETY CLASS 1 SUBM/CATEGORY I								
SAFETY CLASS 2 CLASS II ASSOCIATED CIRCUITS								
LUMINANT CPNPP GLEN ROSE, TEXAS								
6.9 KV AUXILIARIES ONE LINE DIAGRAM NORMAL BUSES								
DWG. NO. EI-0003								
SH. NO. A								
REV. CP-32								
< FINAL PRINT >								



REV
P-27
11-01
2014

OWN
11-01
2014

CHECK
11-01
2014

APPROV
11-01
2014

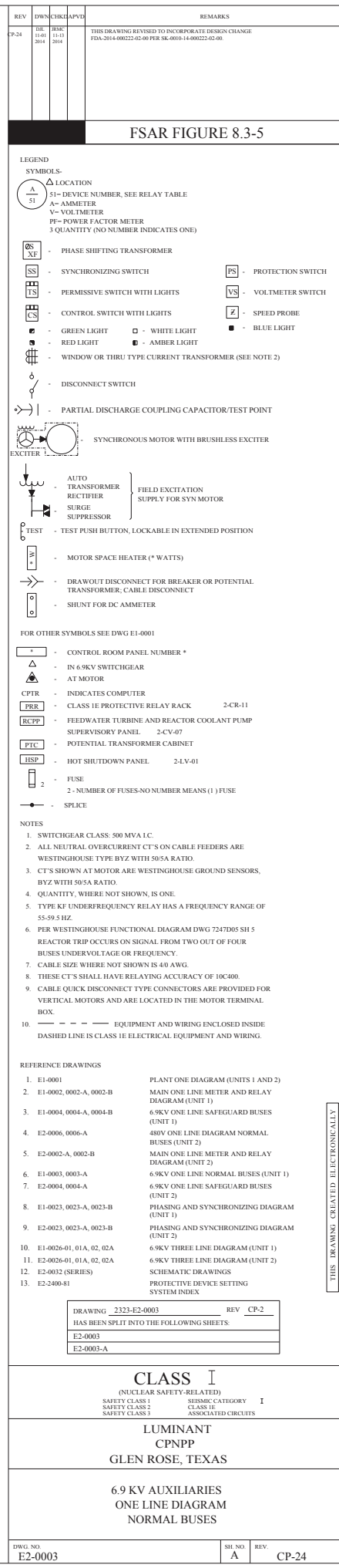
REMARKS
THIS DRAWING REVISD TO INCORPORATE DESIGN CHANGE
FDA-2014-000222-02-00 PER 36-0009-14-000222-02-00

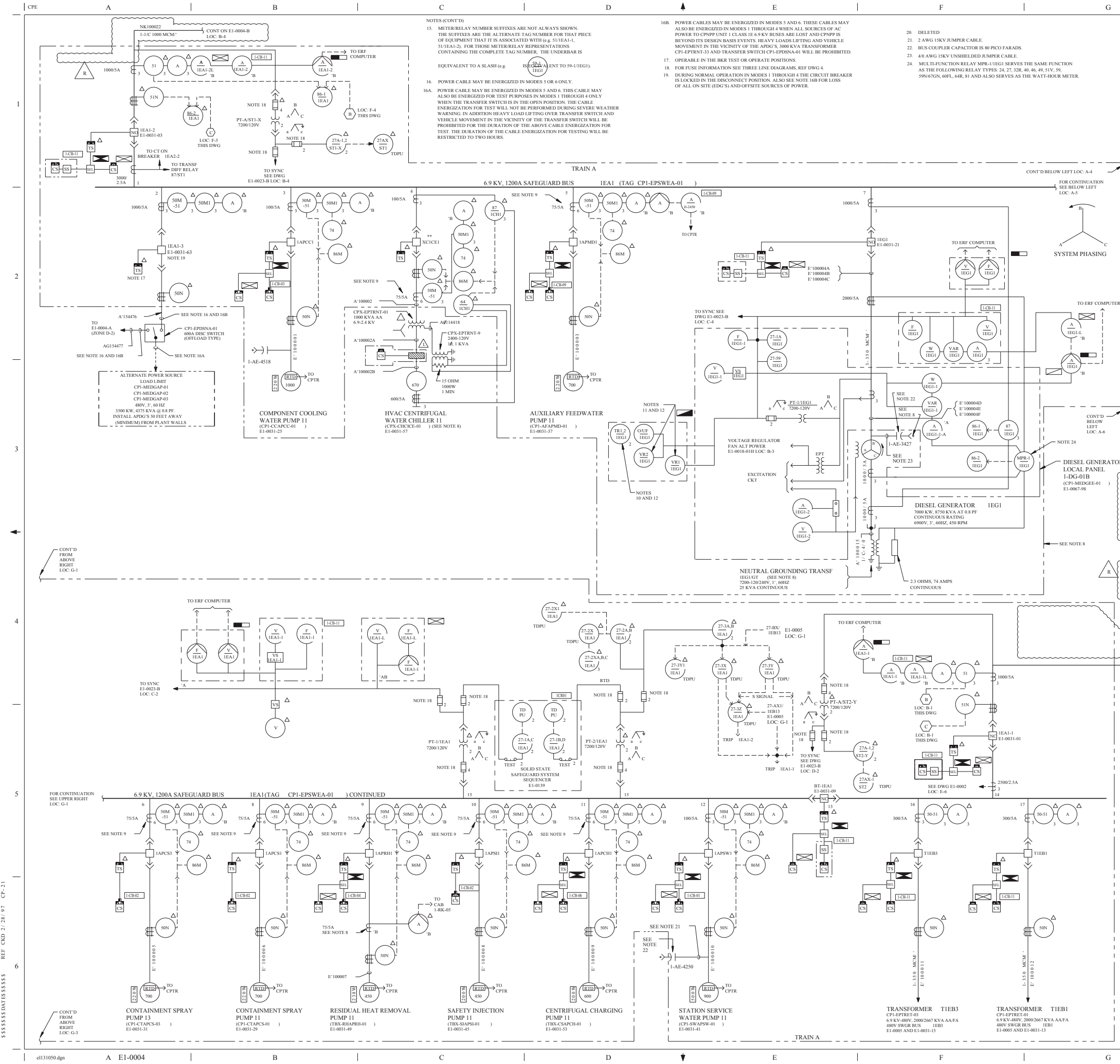
FSAR FIGURE 8.3-5

LEGEND
RCI - REMOTE CURRENT ISOLATOR
LOCATION
51=DEVICE NUMBER, SEE RELAY TABLE
A=AMMETER
V=VOLTMETER
PF=POWER FACTOR METER
3 QUANTITY (NO NUMBER INDICATES ONE)
PHASE SHIFTING TRANSFORMER
SYNCHRONIZING SWITCH
PERMISSIVE SWITCH WITH LIGHTS
CONTROL SWITCH WITH LIGHTS
GREEN LIGHT
RED LIGHT
WINDOW OR THRU TYPE CURRENT TRANSFORMER (SEE NOTE 2)
DISCONNECT SWITCH
PARTIAL DISCHARGE COUPLING CAPACITOR/TEST POINT
SYNCHRONOUS MOTOR WITH BRUSHLESS EXCITER
AUTO TRANSFORMER RECTIFIER
SURGE SUPPRESSOR
TEST TEST PUSH BUTTON, LOCKABLE IN EXTENDED POSITION
MOTOR SPACE HEATER (* WATTS)
DRAWOUT DISCONNECT FOR BREAKER OR POTENTIAL TRANSFORMER CABLE DISCONNECT
SHUNT FOR DC AMMETER
FOR OTHER SYMBOLS SEE DWG EI-0001
CONTROL ROOM PANEL, NUMBER *
IN 6.9KV SWITCHGEAR
AT MOTOR
INDICATES COMPUTER
CLASS IE PROTECTIVE RELAY RACK
FEEDWATER TURBINE AND REACTOR COOLANT PUMP SUPERVISORY PANEL
POTENTIAL TRANSFORMER CABINET
HOT SHUTDOWN PANEL
FUSE
2 - NUMBER OF FUSES, NO NUMBER MEANS (1) FUSE
NOTES
1. SWITCHGEAR CLASS: 500 MVA IC
2. ALL NEUTRAL OVERCURRENT CT'S ON CABLE FEEDERS ARE WESTINGHOUSE TYPE BYZ WITH 50/5A RATIO
3. CT'S SHOWN AT MOTOR ARE WESTINGHOUSE GROUND SENSORS, BYZ WITH 50/5A RATIO
4. QUANTITY, WHERE NOT SHOWN, IS ONE
5. TYPE KF UNDERFREQUENCY RELAY HAS A FREQUENCY RANGE OF 55-59.5 HZ
6. PER WESTINGHOUSE FUNCTIONAL DIAGRAM DWG 7247D05 SH 5 REACTOR TRIP OCCURS ON SIGNAL FROM TWO OUT OF FOUR BUSES UNDERVOLTAGE OR FREQUENCY
7. CABLE SIZE WHERE NOT SHOWN IS 40 AWG
8. THESE CT'S SHALL HAVE RELAYING ACCURACY OF 10C400
9. CABLE QUICK DISCONNECT TYPE CONNECTORS ARE PROVIDED FOR VERTICAL MOTORS AND ARE LOCATED IN THE MOTOR TERMINAL BOX
10. EQUIPMENT AND WIRING ENCLOSED INSIDE DASHED LINE IS CLASS IE ELECTRICAL EQUIPMENT AND WIRING
REFERENCE DRAWINGS
1. EI-0001 PLANT ONE DIAGRAM (UNITS 1 AND 2)
2. EI-0002, 0002A, 0002B MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)
3. EI-0004, -0004A, -0004B 6.9KV ONE LINE SAFEGUARD BUSES (UNIT 1)
4. E2-0006, 0006-A 480V ONE LINE DIAGRAM NORMAL BUSES (UNIT 2)
5. E2-0002-A, 0002-B MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 2)
6. EI-0003, -0003A 6.9KV ONE LINE NORMAL BUSES (UNIT 1)
7. E2-0004, 0004-A 6.9KV ONE LINE SAFEGUARD BUSES (UNIT 2)
8. EI-0023, -0023A, -0023B PHASING AND SYNCHRONIZING DIAGRAM (UNIT 1)
9. E2-0023, 0023-A, 0023B PHASING AND SYNCHRONIZING DIAGRAM (UNIT 2)
10. EI-0026-01, 02, 02A 6.9KV THREE LINE DIAGRAM (UNIT 1)
11. E2-0026-01, 01A, 02, 02A 6.9KV THREE LINE DIAGRAM (UNIT 2)
12. E2-0032 (SERIES) SCHEMATIC DRAWINGS
13. E2-2400-81 PROTECTIVE DEVICE SETTING SYSTEM INDEX
DRAWING 2323-E2-0003 REV CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:
E2-0003
E2-0003-A
CLASS I
(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1 SEISMIC CATEGORY I
SAFETY CLASS 2 CLASS II
SAFETY CLASS 3 ASSOCIATED CIRCUITS
LUMINANT
CPNPP
GLEN ROSE, TEXAS
6.9 KV AUXILIARIES
ONE LINE DIAGRAM
NORMAL BUSES
DWG NO E2-0003 SH NO - REV CP-27

REF CKD 3 / 9 / 97 CP-11

THIS DRAWING CREATID ELECTRONICALLY





REV

PN

CHK

APD

REMARKS

7-40	10-11	10-11	10-11	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE TDA-2014-00022-00-00 FOR 96-0000-14-00022-00-00
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FSAR FIGURE 8.3-6

LEGEND

LOCATION

QUANTITY (NO NUMBER INDICATES ONE)

CONTROL SWITCH WITH LIGHTS

PERMISSIVE SWITCH WITH LIGHTS

GREEN LIGHT

WHITE LIGHT

RED LIGHT

AMBER LIGHT

BLUE LIGHT

VOLTMETER SWITCH

SELECTOR SWITCH

SYNCHRONIZING SWITCH

CIRCUIT BREAKER

WINDOW OR THRU TYPE CURRENT TRANSFORMER, SEE NOTE 2

DRAWOUT DISCONNECT FOR BREAKER OR POTENTIAL TRANSFORMER

LOCAL STARTER

MOTOR SPACE HEATER (500 WATTS)

DC SHUNT 400A 50mV

TRANSDUCER (XD)

LINEAR REACTOR RESISTANCE--0015 OHM

HEAVY 164V MAX 310 AMPS

THYRISTOR SCR

GOVERNOR RESISTOR BOX

EXCITER POWER TRANSFORMER 3" 153 KVA 6900V (383Y)-284.3V (164Y)

(FOR OTHER SYMBOLS SEE DWG E1-0001)

LOCATIONS

CONTROL ROOM PANEL NUMBER *

DIESEL GENERATOR-LOCAL GENERATOR PANEL

DIESEL GENERATOR-LOCAL ENGINE PANEL

HOT SHUTDOWN PANEL (HSP)

SHUTDOWN TRANSFER PANEL (STP)

ERF TRANSDUCER PANEL

CP1-ECPLV-16

6900V SWITCHGEAR

LOCAL NEAR CHILLER

CPTR

INDICATES COMPUTER

NOTES

1. SWITCHGEAR CLASS 500 MVA IC ALL BREAKERS ARE 1200A.

2. GROUND SENSOR (TYPE G85) TO BE USED WITH GROUND OVERCURRENT RELAYS SON AND SIN, 5-50A PRIMARY RANGE.

3. CABLE SIZE, WHERE NOT SHOWN, IS 40 AWG.

4. QUANTITY, WHERE NOT SHOWN, IS ONE (1).

5. ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOAD IS PROVIDED BY THE LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKERS, INDICATED BY ** NEXT TO THE LOAD CIRCUIT BREAKER, AND THE BREAKER TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL.

6. DELETED

7. DELETED

8. EQUIPMENT ENCLOSED INSIDE DASHED LINE IS CLASS 1E ELECTRICAL EQUIPMENT EXCEPT THE FOLLOWING:
GROUNDING TRANSFORMER DG 1EG1 IS NON-CLASS 1E.
POWER CABLING FOR HVAC CENTRIFUGAL WATER CHILLER 11 IS ASSOCIATED CLASS 1E, TRAIN A, ALSO, ON THE LOAD SIDE OF BKR 1APRH1, THE 'B' 755A CT'S SECONDARY IS NON CLASS 1E, MPR-1/IEG1.

9. TEST POINT FOR PARTIAL DISCHARGE MONITORING.

10. TWO 755A CURRENT TRANSFORMERS ARE CONNECTED IN SERIES TO ACHIEVE THE REQUIRED ACCURACY.

11. TACHOMETER RELAY SET AT APP. 94.5% SPEED.

12. UNDERVOLTAGE 3 PHASE RELAY WILMAR MODEL 401-45, RANGE 85-120, SET AT 103.5 (90 % RATED) VOLTS.

13. GENERATOR BREAKER CLOSING PERMITTED WHEN VOLTAGE AND SPEED ABOVE THE SET VALUES.

14. FOR RELAY TABLE DATA, SEE DWG E1-0004-B.

15. MOTOR SPACE HEATERS ARE NON-CLASS 1E.

REFERENCE DRAWINGS

1. E1-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2

2. E1-0001-A PLANT ONE LINE DIAGRAM UNIT 1 AND COMMON

3. E1-0002 MAIN ONE LINE METER AND RELAY DIAGRAMS

4. E1-0027-01, 01A 6.9 KV THREE LINE DIAGRAM SAFEGUARD 6.9 KV SWGR BKR SCHEMATICS AND CONNECTION DIAGRAM INDEX

5. E1-0031-0

DRAWING

2123-E1-0004

REV

CP-5

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E1-0004

E1-0004-A

E1-0004-B

TRAIN A

CLASS 1E

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1

SAFETY CLASS 2

SAFETY CLASS 3

SEISMIC CATEGORY 1

CLASS II

ASSOCIATED CIRCUITS

LUMINANT

CPNPP

GLEN ROSE, TEXAS

6.9 KV AUXILIARIES

ONE LINE DIAGRAM

SAFEGUARD BUSES

DWG NO

E1-0004

SHEET NO

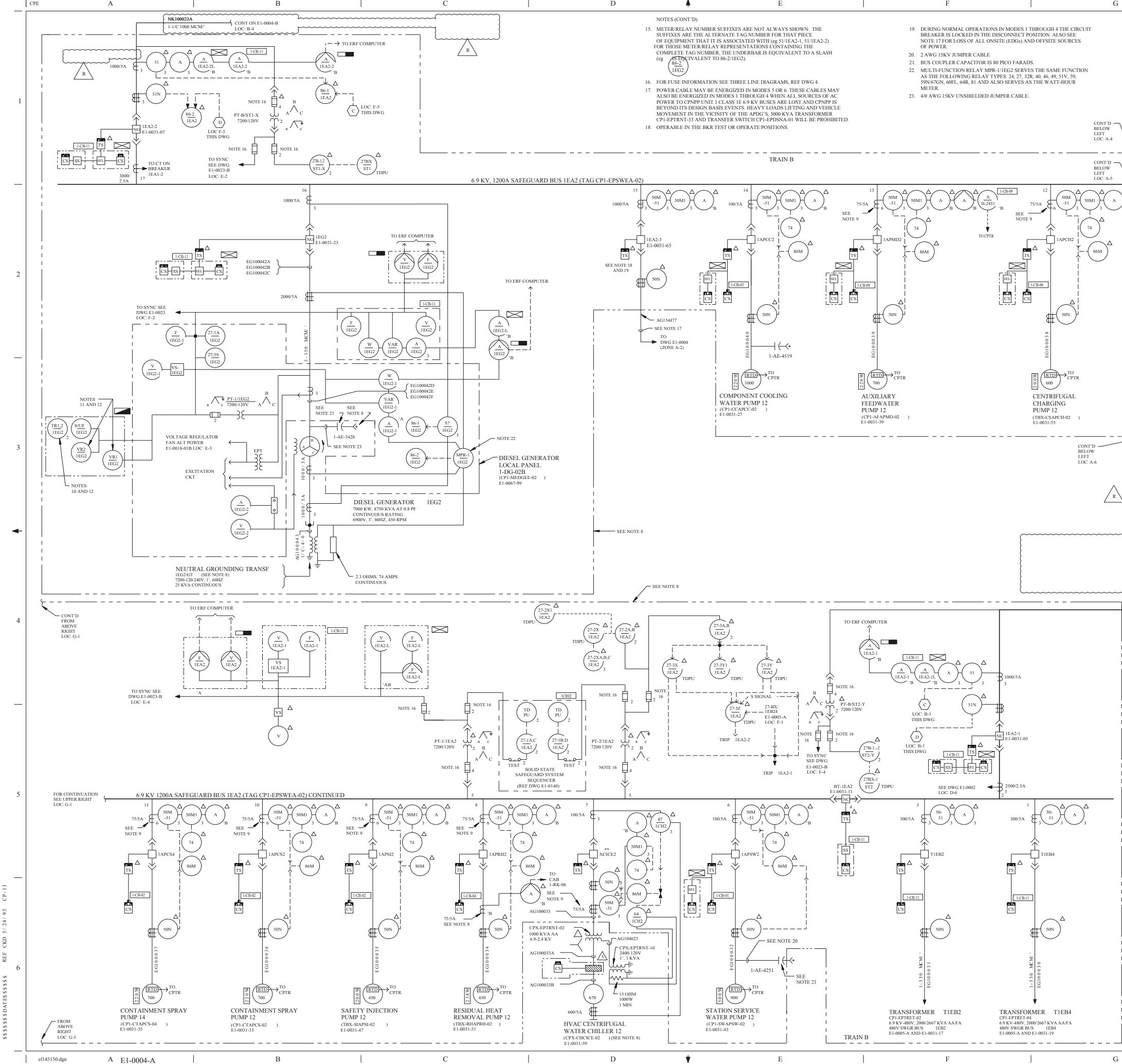
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REV

CP-40

el131050.dgn A E1-0004 B C D E F G

THIS DRAWING CREATED ELECTRONICALLY



REV

DWG

CHKD

APPRD

23-31

01/11/2014

01/11/2014

01/11/2014

REMARKS

THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE
FDA-2014-000222-02-00 PER SK-0007-14-000222-02-00

FSAR FIGURE 8.3-6

LEGEND

LOCATION

QUANTITY (NO NUMBER INDICATES ONE)

CONTROL SWITCH WITH LIGHTS

PERMISSIVE SWITCH WITH LIGHTS

GREEN LIGHT

RED LIGHT

WHITE LIGHT

BLUE LIGHT

AMBER LIGHT

VOLTMETER SWITCH

SELECTOR SWITCH

SYNCHRONIZING SWITCH

WINDOW OR THRU TYPE CURRENT TRANSFORMER, SEE NOTE 2

DRAWOUT DISCONNECT FOR BREAKER OR POTENTIAL TRANSFORMER

LOCAL STARTER

MOTOR SPACE HEATER (500 WATTS)

DC SHUNT 400A 50mV

TRANSDUCER (XD)

LINEAR REACTOR RESISTANCE-0015 OHM
HEAVY 164V MAX 310 AMPS

THYRISTOR SCR

GOVERNOR RESISTOR BOX

EXCITER POWER TRANSFORMER 3 153 KVA
6900V (983Y)-284.3V (164Y)
(FOR OTHER SYMBOLS SEE DWG E1-0001)

LOCATIONS

CONTROL ROOM PANEL NUMBER *

DIESEL GENERATOR - LOCAL ENGINE PANEL

HOT SHUTDOWN PANEL (HSP)

DIESEL GENERATOR - LOCAL GENERATOR PANEL

ERF TRANSDUCER PANEL CP1-EPDMSA-01

6900V SWITCHGEAR

LOCAL NEAR CHILLER

INDICATES COMPUTER

CIRCUIT BREAKER

PARTIAL DISCHARGE COUPLING CAPACITOR/TEST POINT

NOTES

1. SWITCHGEAR CLASS 500 MVA IC. ALL BREAKERS ARE 1200A.

2. GROUND SENSOR (ITE TYPE G5) TO BE USED WITH GROUND OVERCURRENT RELAYS 50N AND 51N, 5-50A PRIMARY RANGE.

3. CABLE SIZE, WHERE NOT SHOWN, IS 4/0 AWG.

4. QUANTITY, WHERE NOT SHOWN, IS ONE (1).

5. ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOAD IS PROVIDED BY THE LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKERS, INDICATED BY "N" NEXT TO THE LOAD CIRCUIT BREAKER, AND THE BREAKER TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL.

6. DELETED

7. DELETED

8. EQUIPMENT ENCLOSED INSIDE DASHED LINE IS CLASS 1E ELECTRICAL EQUIPMENT EXCEPT THE FOLLOWING:
GROUNDING TRANSFORMER FOR DG 1EG2 IS NON-CLASS 1E.
POWER CABLES FOR HVAC CENTRIFUGAL WATER CHILLER 12 IS ASSOCIATED CLASS 1E, TRAIN BB. ALSO ON THE LOAD SIDE OF BKR IAPR12, THE "B" 75-5A CT'S SECONDARY IS NON CLASS 1E.
MPR-1/1EG2
TEST POINT FOR PARTIAL DISCHARGE MONITORING.

9. TWO 75-5A CURRENT TRANSFORMERS ARE CONNECTED IN SERIES TO ACHIEVE THE REQUIRED ACCURACY.

10. TACHOMETER RELAY SET AT APP. 94.5% SPEED.

11. UNDERVOLTAGE 3 PHASE RELAY WILMAR MODEL 401-45, RANGE 85-120, SET AT 103.5 (90% RATED) VOLTS.

12. GENERATOR BREAKER CLOSING PERMITTED WHEN VOLTAGE AND SPEED ABOVE THE SET VALUES.

13. FOR RELAY TABLE DATA, SEE DWG E1-0004-B.

14. MOTOR SPACE HEATERS ARE NON-CLASS 1E.

REFERENCE DRAWINGS

1. E1-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2

2. E1-0001-A PLANT ONE LINE DIAGRAM UNIT 1 AND COMMON

3. E1-0002, E1-0002-A AND E1-0002-B MAIN ONE LINE METER AND RELAY DIAGRAMS

4. E1-0027-02, 02A 6.9 KV THREE LINE DIAGRAMS

5. E1-0031-0 SAFEGUARD 6.9 KV SWGR BKR SCHEMATICS AND CONNECTION DIAGRAM INDEX

DRAWING

2323-E1-0004

REV

CP-5

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E1-0004

E1-0004-A

E1-0004-B

TRAIN B

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1 SHIMMER CATEGORY I

SAFETY CLASS 2 CLASS 1E

SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT

CPNPP

GLEN ROSE, TEXAS

6.9 KV AUXILIARIES

ONE LINE DIAGRAM

SAFEGUARD BUSES

DWG NO

E1-0004

SH NO

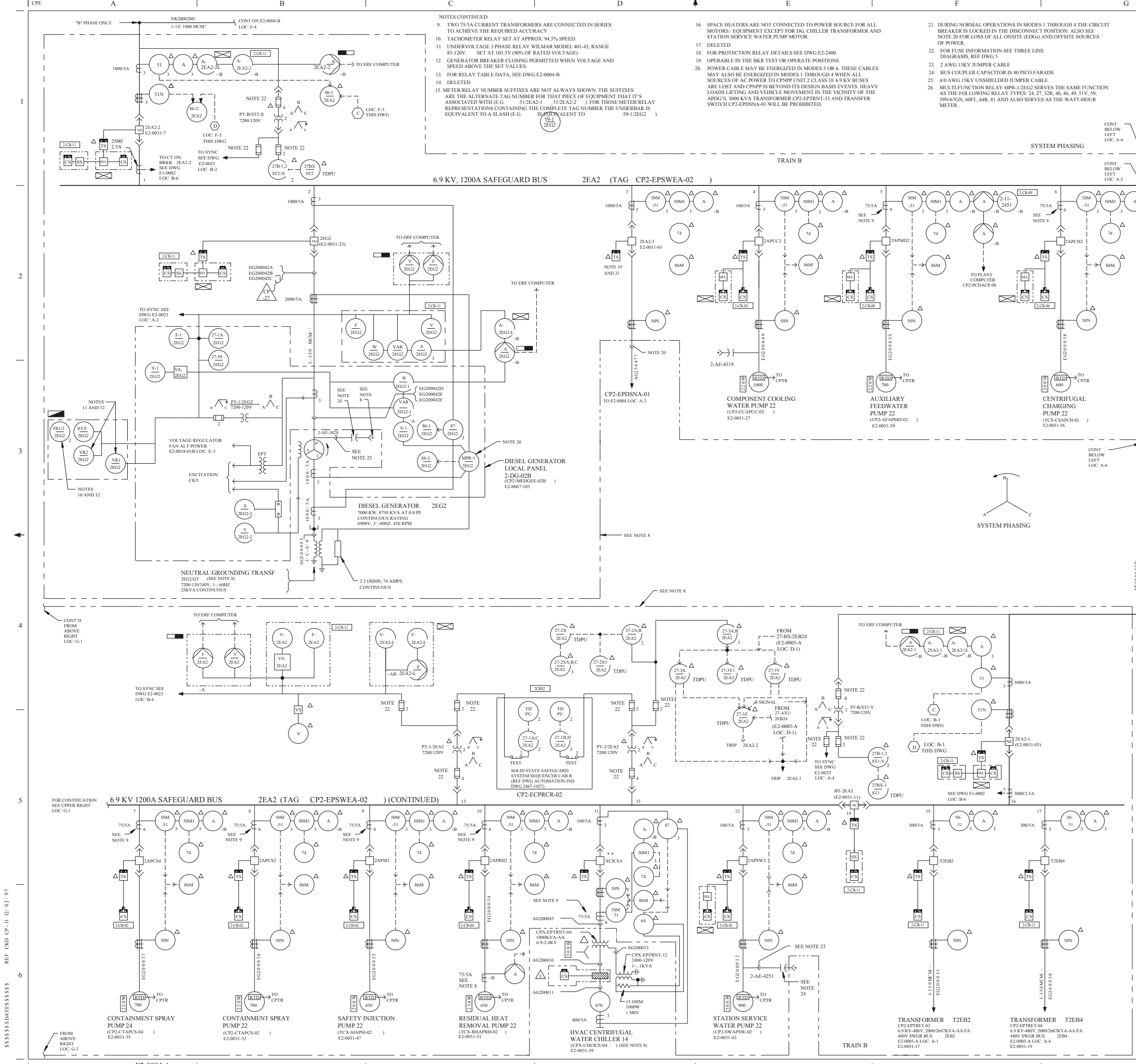
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REV

CP-31

et145150.dgn REF CKD 5/24/95 CP-13

THIS DRAWING CREATED ELECTRONICALLY



REV

DWN

CHK

APVD

DATE

BY

APP

DATE

BY

APP

DATE

BY

APP

REMARKS

LEGEND:

3

LOCATION

CS

CONTROL SWITCH WITH LIGHTS

TS

PERMISSIVE SWITCH WITH LIGHTS

VS

GREEN LIGHT

WL

WHITE LIGHT

RL

RED LIGHT

AL

AMBER LIGHT

VS

VOLTMETER SWITCH

SS

SELECTOR SWITCH

SS

SYNCHRONIZING SWITCH

RTM

RUNNING TIME METER

W

WINDOW OR THRU TYPE CURRENT TRANSFORMER, SEE NOTE 2

W

DRAWOUT DISCONNECT FOR BREAKER OR POTENTIAL TRANSFORMER

W

LOCAL STARTER

W

MOTOR SPACE HEATER (* WATTS, KW = KILOWATTS), SEE NOTE 16

W

DC SHUNT, 400A, 50mV

W

TRANSDUCER (XD)

W

LINEAR REACTOR RESISTANCE=0015 OHMS

W

HEAVY, 164V MAX, 310 AMPS

W

THYRISTOR (SCR)

W

GOVERNOR RESISTOR BOX

W

EXCITER POWER TRANSFORMER 3-, 153KV A 6900V (3983Y)-284.3V (164V) (FOR OTHER SYMBOLS SEE DWG E1-0001)

W

CONTROL ROOM PANEL NUMBER *

W

DIESEL GENERATOR-LOCAL GENERATOR PANEL

W

DIESEL GENERATOR-LOCAL ENGINE PANEL

W

HOT SHUTDOWN PANEL (HSD)

W

SHUTDOWN TRANSFER PANEL (STP)

W

ERF TRANSDUCER PANEL CP2-ECRPLV-16

W

ERF TRANSDUCER PANEL CP2-ECRPLV-17

W

6900V SWITCHGEAR

W

LOCAL NEAR CHILLER

W

INDICATES COMPUTER

W

FUSE

W

1E.6A-FUSE RATING

W

2-NUMBER OF FUSES, NO NUMBER MEANS (1) FUSE

W

BUS COUPLER CAPACITOR/TEST POINT FOR PARTIAL DISCHARGE MONITORING

NOTES:

1. SWITCHGEAR CLASS 500MVA I.C. ALL BREAKERS ARE 1200A.

2. GROUND SENSORS TO BE USED WITH GROUND OVERCURRENT (ITE TYPE GS-5, 5-50A) RELAYS 50N AND 51N.

3. CABLE SIZE, WHERE NOT SHOWN, IS 4/0 AWG.

4. QUANTITY, WHERE NOT SHOWN, IS ONE (1).

5. ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOAD IS PROVIDED BY THE LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKERS, INDICATED BY ** NEXT TO THE LOAD CIRCUIT BREAKER, AND THE BREAKER TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL.

6. DELETED

7. DELETED

8. EQUIPMENT ENCLOSED INSIDE DASHED LINE IS CLASS 1E ELECTRICAL EQUIPMENT EXCEPT THE FOLLOWING: GROUNDING TRANSFORMER FOR 2EG2 IS NON-CLASS 1E. POWER CABLING FOR HVAC CENTRIFUGAL WATER CHILLER 14 IS ASSOCIATED CLASS 1E TRAIN BB. ALSO ON THE LOAD SIDE OF BREAKER 2APRH2 THE -B 75/5A CT'S SECONDARY IS NON-CLASS 1E, TEST POINT FOR PARTIAL DISCHARGE MONITORING.

9. MPR-1/2EG2

REFERENCE DRAWINGS:

1. E1-0001

2. E1-0002

3. E1-0002-A AND E1-0002-B

4. E2-0004

5. E2-0005 AND E2-0005-A

6. E2-0027-02 AND E2-0027-02A

7. E2-0002 AND E2-0002-A

8. E2-0002 (SERIES)

9. E2-0031 AND E2-0067 (SERIES)

10. 2462-1027

11. E2-2400-301

PLANT ONE LINE DIAGRAM (UNIT 1 AND 2)

MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1 SAFEGUARD)

6.9 KV ONE LINE SAFEGUARD BUS (UNIT 2)

480V ONE LINE SAFEGUARD BUS (UNIT 2)

6.9 KV THREE LINE DIAGRAM- SAFEGUARD BUSES (UNIT 2)

MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 2)

PHASING AND SYNCHRONIZING DIAGRAM (UNIT 2)

SCHEMATIC DRAWINGS

AUTOMATIC IND (SOLID STATE SEQUENCER)

PROTECTIVE DEVICE SETTING SYSTEM INDEX

DRAWING

2323-E2-0004

REV

CP-1

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E2-0004

E2-0004-A

E2-0004-B

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1

SAFETY CLASS 2

SAFETY CLASS 3

SAFETY CATEGORY

I

ASSOCIATED CIRCUITS

LUMINANT

CPNPP

GLEN ROSE, TEXAS

6.9 KV AUXILIARIES

ONE LINE DIAGRAM

SAFEGUARD BUSES

DWG NO.

E2-0004

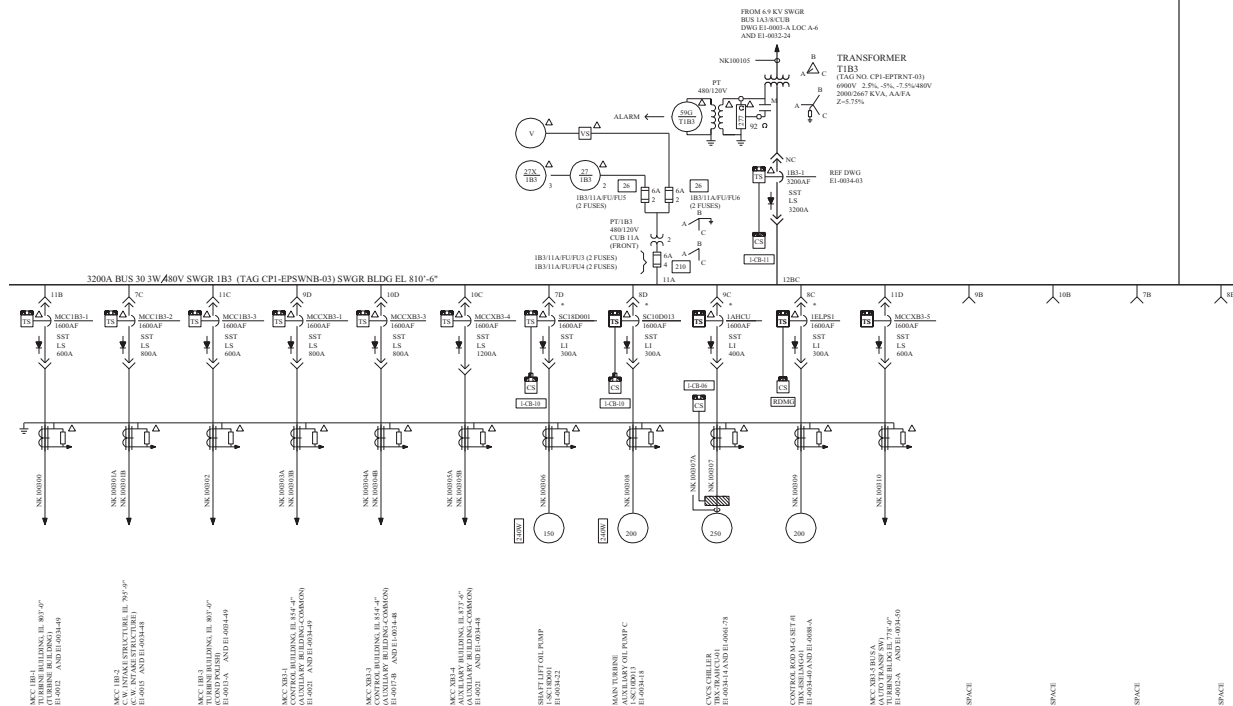
SHEET NO.

A

REV.


CP-27


el136240.dgn A E2-0004-A B C D E F G H





LEGEND


SYMBOLS -


 - DRAWOUT BREAKER CONNECTED


 - AIR CIRCUIT BREAKER, STORED ENERGY
ELECTRICALLY OPERATED, DRAWOUT TYPE


 - SOLID STATE TRIP


 - LONG TIME, SHORT TIME


 - INSTANTANEOUS


 - LOCATION


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
 - TYPICAL


 - SST


 - 600A


 - SENSOR RATING
(SEE NOTE 4)


 - CLOSE-TRIP PUSH BUTTONS WITH LIGHTS


 - GREEN LIGHT


 - RED LIGHT


 - WHITE LIGHT


 - AMBER LIGHT


 - VOLTMETER SELECTOR SWITCH


 - LOCAL STARTER


 - MOTOR SPACE HEATER WITH "X" WATT RATING


 - WINDOW TYPE C.T.


 - TYPE BZ 50.5 AMP RATIO


 - RESISTOR 1


 - 5 WATT

 - TO GROUND POLE SLIP DETECTION SCHEME, REF DWG 4


 - 277 Ω GROUNDING RESISTOR TAPPED AT 92


 - M - CONTACT OF PULSING CONTACTOR


 - VOLTMETER


 - V - SEE NOTE 2

LOCATIONS -


 - ROD DRIVE M.G. SET CONTROL PANEL


 - 480V SWITCHGEAR


 - CONTROL ROOM PANEL "X"


 - LOCAL

RELAYS -

 - UNDER VOLTAGE "UG" TYPE NOV13A11A OR EQUAL

 - 278 TIME DELAY PICK-UP AUX RELAY 0.1-1.0 SEC AGADAST TYPE 7012 PA

 - 290 OVER-VOLTAGE, Φ PE CV-8, 6 VOLTS RANGE.

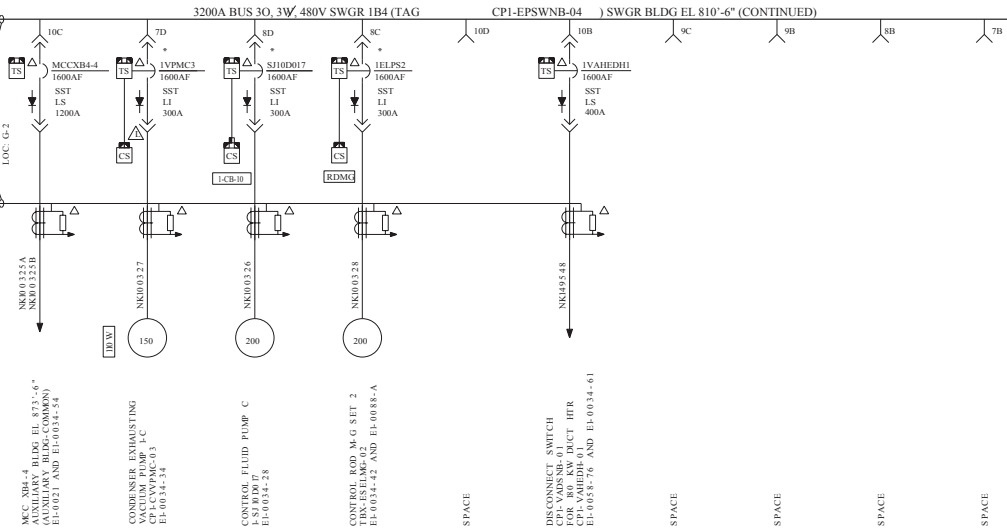
 - 296 FUSE B-M ITEM NUMBER REF DWG 5

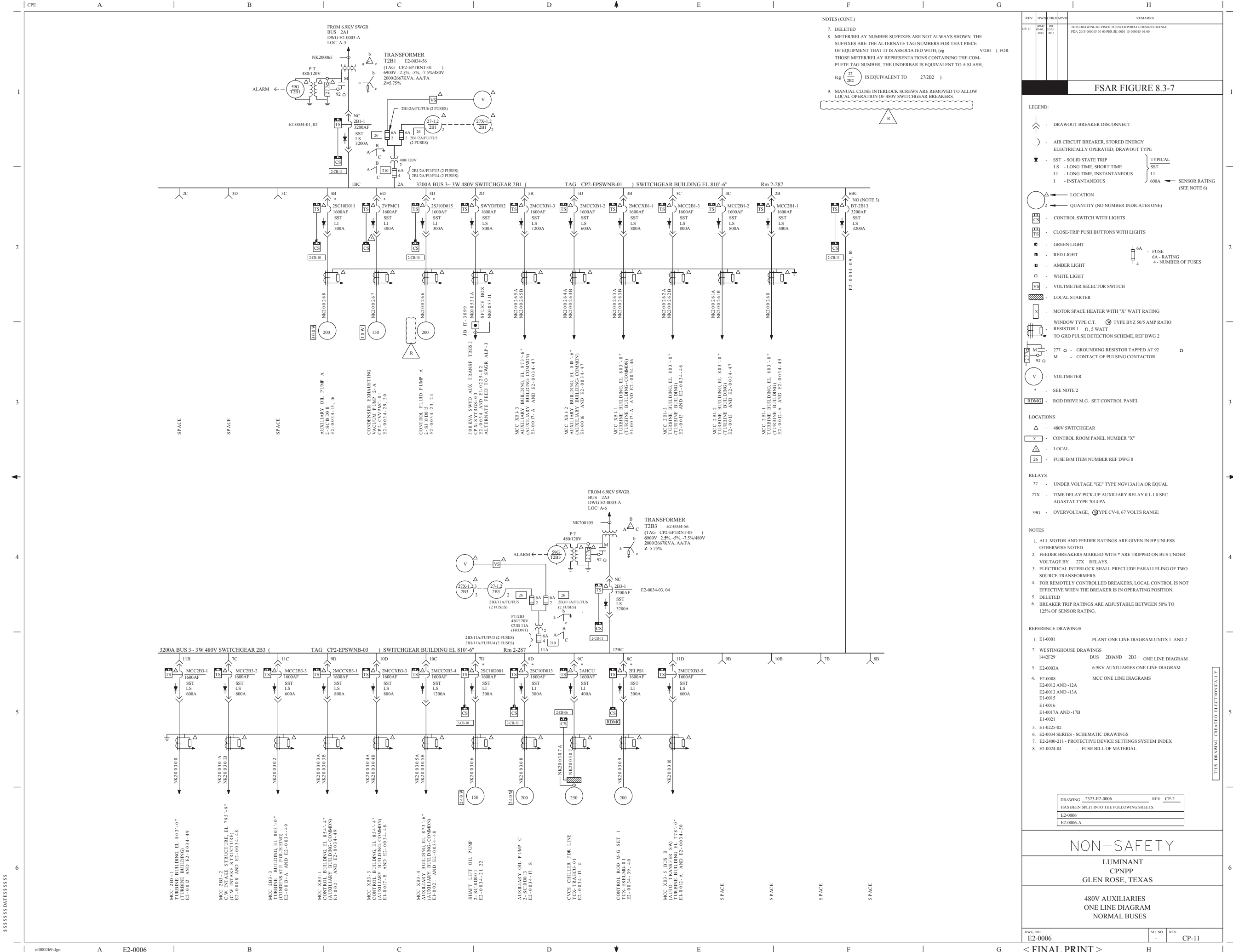
[illegible]

REFERENCE DRAWINGS		15	REV 0
1.	E1-0001	PLANT ONE LINE DIAGRAM UNITS 1 AND 2	
2.	E1-0001-A	PLANT ONE LINE DIAGRAM UNIT 1 AND COMMON	
3.	E1-0034-0	NORMAL 480V SWGR BKR SCHEMATIC AND CONNECTION DIAGRAM INDEX	
4.	142F01 AND 142F03	BUS 1B2 AND 1B4 ONE LINE AND SCHEMATIC DIAGRAMS	
5.	E1-0024-04	FUSE BILL OF MATERIAL	

DRAWING	2323-E1-0006	REV	CP-5
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0006			
E1-0006-A			

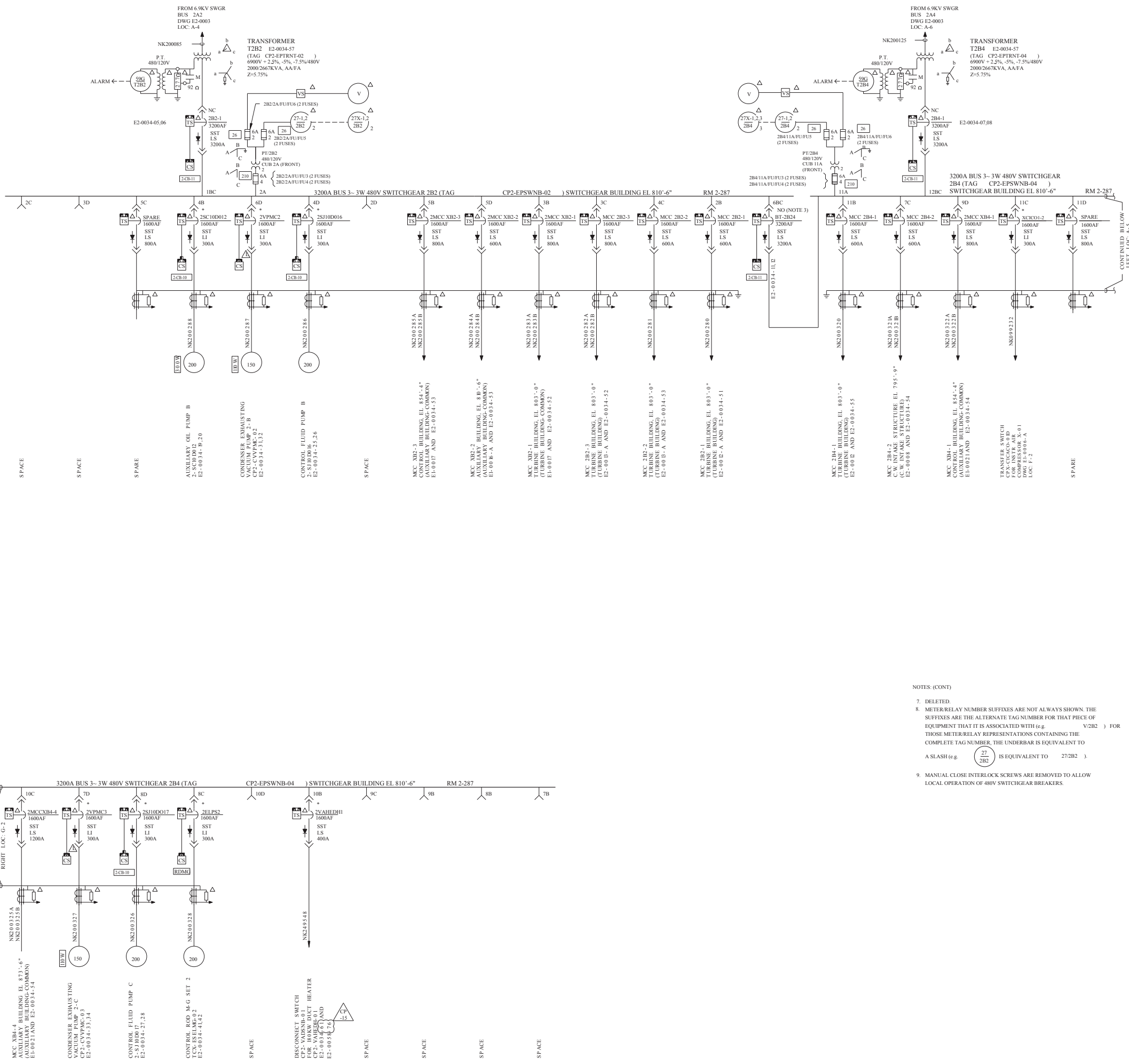
480V AUXILIARIES





55555555555555555555

THIS DRAWING CREATED ELECTRONICALLY



REV	DWN	CHK	APP'D	DATE	REMARKS
CP-15				10/26/2015	THIS DRAWING REVISED TO INCORPORATE ALCR-2015-010091-1 TO EDITORIALY CORRECT THE DRAWING CONTINUATIONS FROM E2-0004 AND E2-0058 TO E2-0034(4) AND E2-0058-76.

FSAR FIGURE 8.3-7

LEGEND:

- DRAWOUT BREAKER DISCONNECT

 - AIR CIRCUIT BREAKER, STORED ENERGY
ELECTRICALLY OPERATED, DRAWOUT TYPE

 - SST - SOLID STATE TRIP
LS - LONG TIME, SHORT TIME
LI - LONG TIME, INSTANTANEOUS
I - INSTANTANEOUS

TYPICAL
 LI
 600A

SENSOR RATING
(SEE NOTE 6)

LOCATION
 2 QUANTITY (NO NUMBER INDICATES ONE)

- CONTROL SWITCH WITH LIGHTS
 - CLOSE-TRIP PUSH BUTTONS WITH LIGHTS

- GREEN LIGHT
 - RED LIGHT

- AMBER LIGHT
 - WHITE LIGHT

 - VOLTMETER SELECTOR SWITCH
 - MOTOR SPACE HEATER WITH "X" WATT RATING
 WINDOW TYPE C.T. Ⓢ TYPE BZV 50.5 AMP RATIO
 RESISTOR 1 Ω, 5 WATT
 TO GRD PULSE DETECTION SCHEME, REF DWG 2

277 Ω - GROUNDING RESISTOR TAPPED AT 92 Ω
 M - CONTACT OF PULSING CONTACTOR

- VOLTMETER
 * - SEE NOTE 2

- ROD DRIVE M.G. SET CONTROL PANEL

LOCATIONS:

- 480V SWITCHGEAR
 - CONTROL ROOM PANEL NUMBER "X"
 - LOCAL
 - FUSE B/M ITEM NUMBER REF DWG 7

RELAYS:

27 - UNDER VOLTAGE "GE" TYPE
 27X - TIME DELAY PICK-UP AUXILIARY RELAY 0.1-0.0 SEC
 AGASTAT TYPE 7014 PA
 59G - OVERVOLTAGE, Ⓢ TYPE CV-8, 67 VOLTS RANGE

NGV13A11A OR EQUAL

NOTES:

- ALL MOTOR AND FEEDER RATINGS ARE GIVEN IN HP UNLESS OTHERWISE NOTED.
- FEEDER BREAKERS MARKED WITH * ARE TRIPPED ON BUS UNDER VOLTAGE BY 27X RELAYS.
- ELECTRICAL INTERLOCK SHALL PRECLUDE PARALLELING OF TWO SOURCE TRANSFORMERS.
- FOR REMOTELY CONTROLLED BREAKERS, LOCAL CONTROL IS NOT EFFECTIVE WHEN THE BREAKER IS IN OPERATING POSITION.
- DELETED
- BREAKER TRIP RATINGS ARE ADJUSTABLE BETWEEN 50% TO 125% OF SENSOR RATING.

REFERENCE DRAWINGS:

1. EI-0001
 2. WESTINGHOUSE DRAWINGS

PLANT ONE LINE DIAGRAM - UNITS 1 AND 2

 1442F30 BUS 2B2 AND 2B4 ONE LINE DIAGRAM
 3. E2-0003 6.9KV AUXILIARIES ONE LINE DIAGRAM
 4. E2-0008 MCC ONE LINE DIAGRAMS
 E2-0012 AND-12A
 E2-0013-A
 E1-0015 AND-15A
 E1-0016-A
 E1-0017
 E1-0021
 5. E2-0034 SERIES, SCHEMATIC DIAGRAMS
 6. E2-2400-211 - PROTECTIVE DEVICE SETTINGS SYSTEM INDEX
 7. E2-0024-04 - FUSE BILL OF MATERIAL.

DRAWING 2323-E2-0006 _____, REV CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:
E2-0006
E2-0006-A

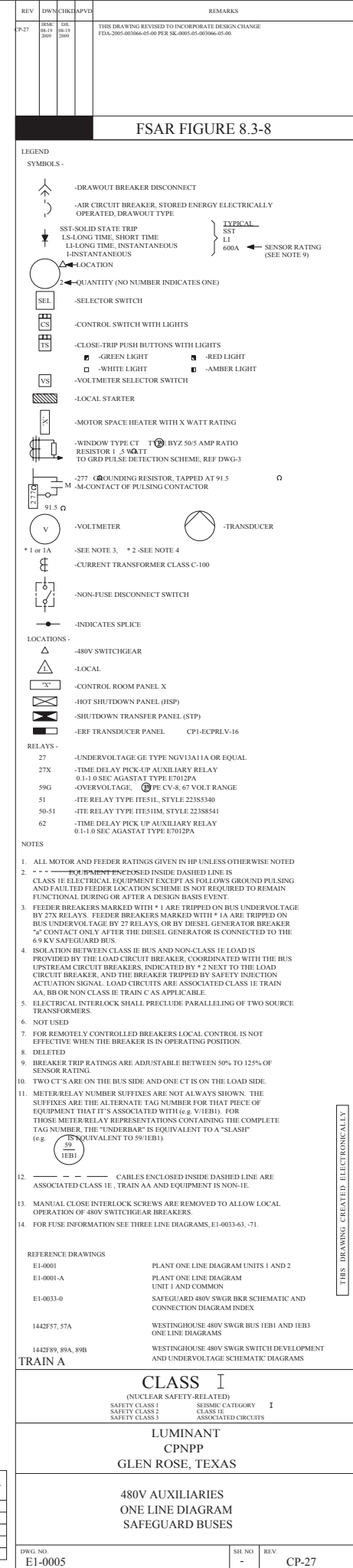
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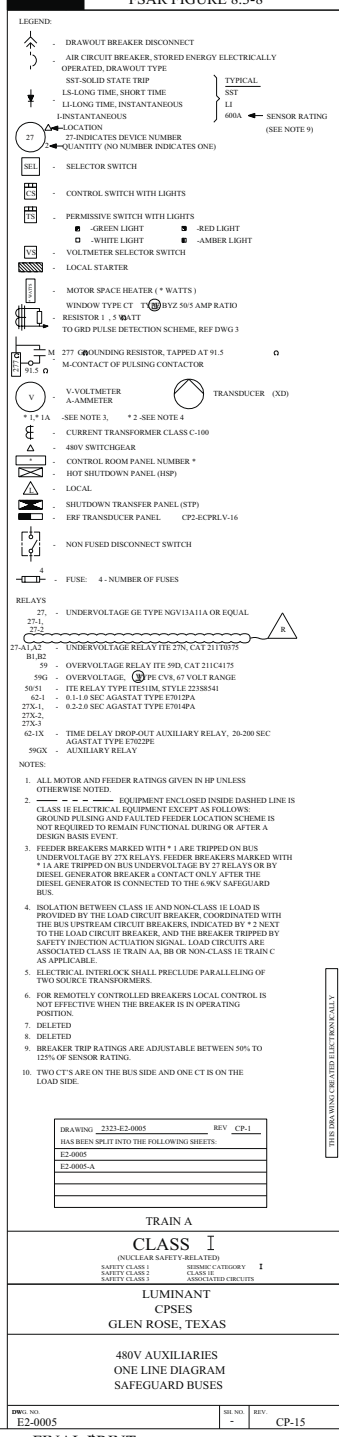
NON-SAFETY

**LUMINANT
CPNPP
GLEN ROSE, TEXAS**

**480V AUXILIARIES
ONE LINE DIAGRAM
NORMAL BUSES**

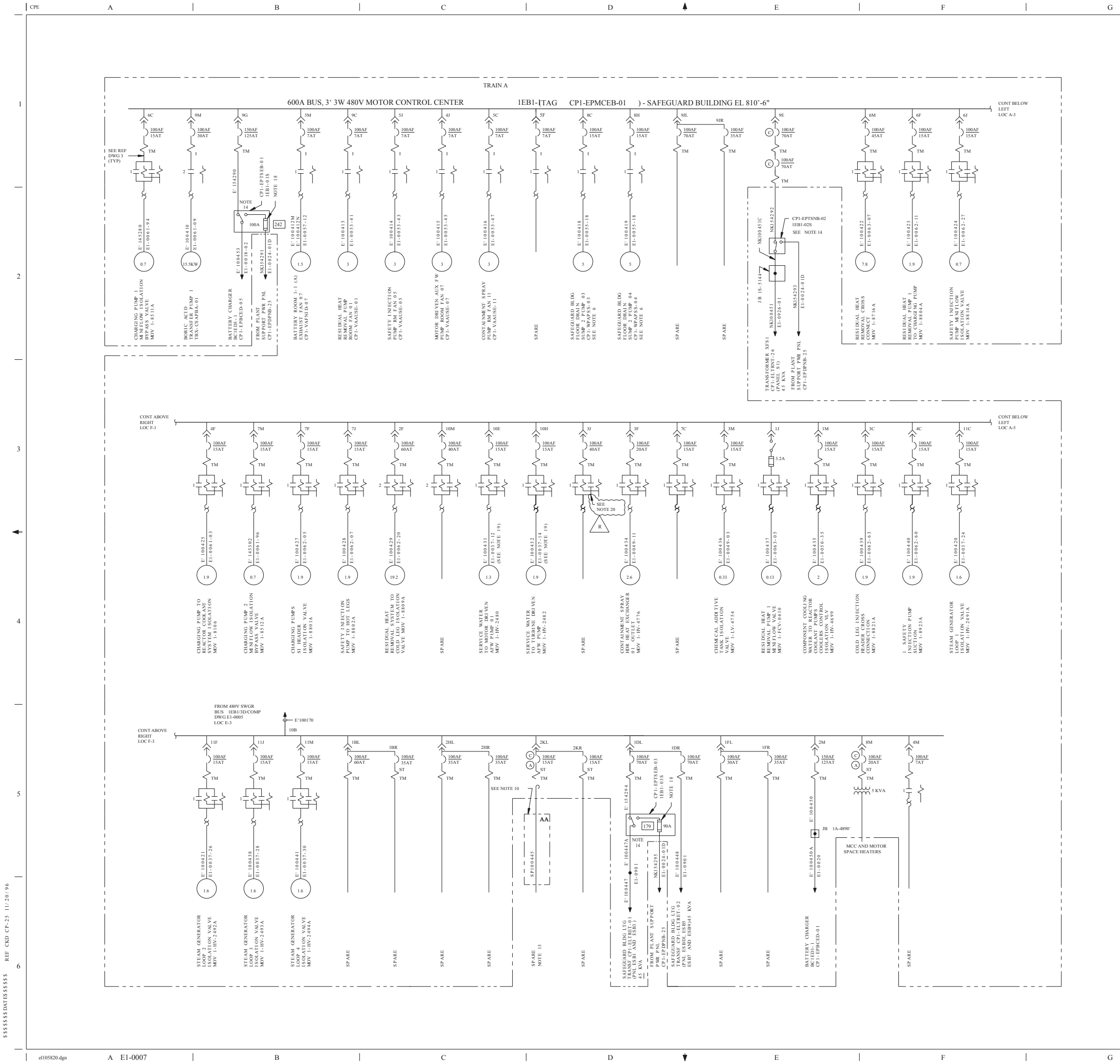
DWG NO. E2-0006	SH. NO. A	REV. CP-15
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THIS DRAWING CREATED ELECTRONICALLY



REV

CP-35

DATE

08-29-2013

BY

MD

CHKD

MD

APVD

MD

REMARKS

THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE
FDA-2010-00003-01-00 FOR EL-0001-15-00003-01-00

FSAR FIGURE 8.3-9

LEGEND:

4C

— MCC COMPARTMENT NUMBER

—

DRAWOUT BREAKER DISCONNECT

—

3" CIRCUIT BREAKER

AF

— BREAKER FRAME SIZE

AT

— BREAKER TRIP RATING

—

3" 30 AMP FUSED SWITCH WITH GOLD SHAWMUT TYPE TRI-ONIC FUSES

3.2A

— 3.2 AMP FUSE RATING

—

MAGNETIC TRIP ELEMENT

—

ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP

SEE NOTE 12

—

TM

— THERMAL MAGNETIC TRIP ELEMENT

ST

— INDICATES BREAKER WITH SHUNT TRIP DEVICE

—

MOTOR STARTER COIL AND CONTACTS (REVERSING) NEMA SIZE 2 STARTER

—

THERMAL OVERLOAD RELAY

2

— INDICATES MOTOR 2 HORSEPOWER

—

INDICATES DISTRIBUTION TRANSFORMER 480-240/120V-1 PHASE (FOR SPACE HEATERS)

—

INDICATES SPLICE

A

— SEE NOTE 16

C

— SEE NOTE 16 AND 17

90A

159

— FUSE

90A

159

— FUSE RATING

159

— FUSE B/M ITEM NUMBER REF DWG 5

NOTES:

1. DELETED

2. DELETED

3. DELETED

4. DELETED

5. THERMAL OVERLOAD RELAYS FOR CLASS 1E MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.

6. SAFEGUARD BUILDING FLOOR DRAIN SUMP 1 AND SUMP 2 PUMPS CP1-WPAPS-01.02 AND CP1-WPAPS-03.04 WILL HAVE ELECTRIC ALTERNATORS LOCATED IN THE MCC'S.

7. DELETED

8. DELETED

9. INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25,000 RMS SYMMETRICAL AMPERES.

10. EQUIPMENT/CABLE ENCLOSED INSIDE DASHED LINE IS ASSOCIATED CLASS 1E, TRAIN AA OR TRAIN BB AS NOTED.

11. DELETED

12. FOR BREAKERS/OLH SETTINGS SEE REFERENCE DRAWING 2.

13. 100AF BREAKER TO BE REPLACED WITH 150AF BREAKER WHEN REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED.

14. THIS TRANSFER SWITCH IS AN "OFF-LOAD TYPE" AND IS NORMALLY ALIGNED TO THE MCC. IT CAN ONLY BE ALIGNED TO PLANT SUPPORT POWER DURING OUTAGES. REQUIREMENTS AND PRIORITIES FOR TRANSFER OF POWER ARE STATED IN DDD EE-641 "480V AND 120V AC ELECTRICAL POWER SYSTEM."

15. ASSOCIATED SPARE CABLE SP10445 IS DETERMINATED AT BOTH ENDS 1. AT THE MCC AND AT THE MOTOR STARTER LOCATED IN PANEL CP1-EPRV-48.

16. ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOAD IS PROVIDED BY LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKER. INDICATED BY (C) NEXT TO THE LOAD CIRCUIT BREAKER, AND TRIPPING THE CIRCUIT BREAKER OR STARTER BY SAFETY INJECTION SIGNAL INDICATED BY (A) NEXT TO THE BREAKER/STARTER AS FOLLOWS:
(A) - TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (SIAS).

17. ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOAD IS PROVIDED BY TWO BREAKERS, A BREAKER AND A FUSE OR TWO FUSES IN SERIES, EACH COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKER. INDICATED BY (NE) TO THE BREAKER/FUSE.

18. FUSES ARE NON-CLASS 1E.

19. CIRCUIT BREAKER NORMALLY OPEN (ONLY REQUIRED IN MODES 1 THROUGH 4) FOR FSSA MODIFICATION. REFERENCE FDA-2010-000172-82.

20. STARTER IS DEFECTIVE.

REFERENCE DRAWINGS:

1. E1-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2

2. E1-2400 PROTECTIVE DEVICE SETTINGS

3. E1-0007-D CONTROL POWER XFMR FUSE & CONTROL CIRCUIT LOADING DATA

4. E1-0066-74 LOAD SHEDDING SCHEMATIC DIAGRAM

5. E1-0024-04 FUSE BILL OF MATERIAL

DRAWING

2323-E1-0007

REV

CP-6

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E1-0007

E1-0007-A

E1-0007-B

E1-0007-C

CLASS 1

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1

SAFETY CLASS 2

SAFETY CLASS 3

SEISMIC CATEGORY

1

CLASS 1E

ASSOCIATED CIRCUITS

LUMINANT

CPNPP

GLEN ROSE, TEXAS

SAFEGUARD AND AUXILIARY BUILDINGS

SAFEGUARD 480V MCC'S

ONE LINE DIAGRAM

DWG NO

E1-0007

SH NO

-

REV

CP-35

\$\$\$\$\$DATE\$\$\$\$\$ REF CKD CP-25 11/20/96

THIS DRAWING CREATED ELECTRONICALLY

REF: CND 051397 CP-23

c123230.dgn

A E1-0007-A

B

C

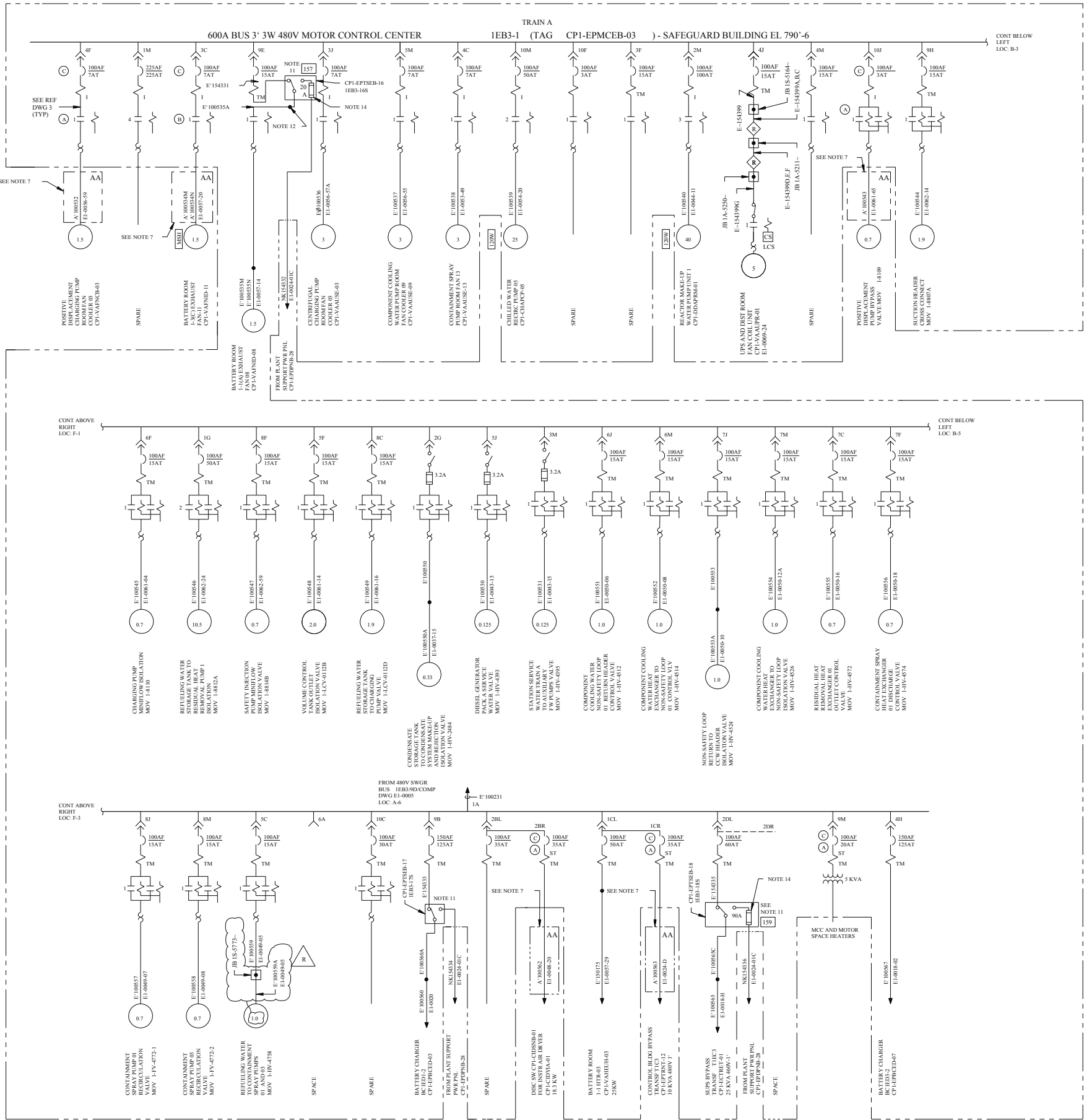
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F

G FINAL PRINT

H



LEGEND

- INDICATES FIREZONE R CABLE INSTALLED TO PROVIDE A ONE HOUR FIRE BARRIER REQUIRED TO MEET FIRE SAFE SHUTDOWN ANALYSIS REQUIREMENTS
- MCC COMPARTMENT NUMBER
- DRAWOUT BREAKER DISCONNECT
- 3" CIRCUIT BREAKER
- AF-BREAKER FRAME SIZE
- AT-BREAKER TRIP RATING
- 3", 30 AMP FUSED SWITCH WITH GOULD-SHAWMUT TYPE TRI-ONIC FUSES
- 2 AMP FUSE, TRIP RATING
- MAGNETIC TRIP ELEMENT
- ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SEE NOTE 9
- THERMAL MAGNETIC TRIP ELEMENT
- INDICATES BREAKER WITH SHUNT TRIP DEVICE
- MOTOR STARTER COIL AND CONTACT (NON REVERSING) NEMA SIZE 1 STARTER
- MOTOR STARTER COIL AND CONTACTS (REVERSING) NEMA SIZE 1 STARTER
- INDICATES MOTOR 2 HORSEPOWER
- MOTOR SPACE HEATER WITH "X" WATT RATING
- INDICATES DISTRIBUTION TRANSFORMER 480-240/120V-1 PHASE (FOR SPACE HEATERS)
- INDICATES SPLICE
- MSH - MOTOR SPACE HEATER
- SEE NOTE 13
- SEE NOTE 13
- SEE NOTE 13
- FUSE
- FUSE RATING
- FUSE B/M ITEM NUMBER REF DWG 5

NOTES

- DELETED
- EQUIPMENT CABLES ENCLOSED INSIDE DASHED LINE ARE CLASS 1E, TRAIN A OR TRAIN BB AS NOTED. EQUIPMENT OUTSIDE THE DASHED LINE IS NON-CLASS 1E, 1UON.
- DELETED
- DELETED
- THERMAL OVERLOAD RELAYS FOR CLASS 1E MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.
- INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25,000 RMS SYMMETRICAL AMPERES.
- CABLES ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS 1E, TRAIN AA OR TRAIN BB AS NOTED.
- DELETED
- FOR BREAKER/OLH SETTINGS SEE REFERENCE DRAWING 2.
- 100AF BREAKER TO BE REPLACED WITH 150AF BREAKER WHEN REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED.
- THIS TRANSFER SWITCH IS AN "OFF-LOAD TYPE" AND IS NORMALLY ALIGNED TO THE MCC. IT CAN ONLY BE ALIGNED TO PLANT SUPPORT POWER DURING OUTAGES. REQUIREMENTS AND PREREQUISITES FOR TRANSFER OF POWER ARE STATED IN DBD E1-047 "480V AND 120V AC ELECTRICAL POWER SYSTEM".
- SPLICE #4 AWG ONTO CABLE IN TRANSFER SWITCH ENCLOSURE. TERMINATE #4 AWG ONTO TRANSFER SWITCH.
- ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOAD IS PROVIDED BY LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKER, INDICATED BY NEXT TO THE LOAD CIRCUIT BREAKER, AND TRIPPING THE CIRCUIT BREAKER OR STARTER BY SAFETY INJECTION SIGNAL INDICATED BY OR NEXT TO THE BREAKER/STARTER AS FOLLOWS:
 - TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (SIAS)
 - TRIPPED BY SAFETY INJECTION SEQUENCER AUTO LOCKOUT CONTACT (SISIAL)
- FUSES ARE NON-CLASS 1E.

REFERENCE DRAWINGS

- E1-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2
- E1-2400 PROTECTIVE DEVICE SETTINGS
- E1-0007-D CONTROL POWER XFMR FUSE & CONTROL CIRCUIT LOADING DATA
- E1-0066-74 LOAD SHEDDING SCHEMATIC DIAGRAM
- E1-0024-04 FUSE BILL OF MATERIAL

DRAWING	2323-E1-0007	REV	CP-6
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0007			
E1-0007-A			
E1-0007-B			
E1-0007-C			

CLASS I	
(NUCLEAR SAFETY-RELATED)	
SAFETY CLASS 1	SEISMIC CATEGORY I
SAFETY CLASS 2	CLASS II
SAFETY CLASS 3	ASSOCIATED CIRCUITS
LUMINANT	
CPSES	
GLEN ROSE, TEXAS	

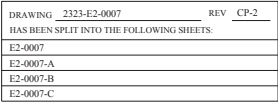
SAFEGUARD AND AUXILIARY BUILDINGS
SAFEGUARD 480V MCC'S
ONE LINE DIAGRAM

DWG NO.	E1-0007	SH NO.	A	REV.	CP-35
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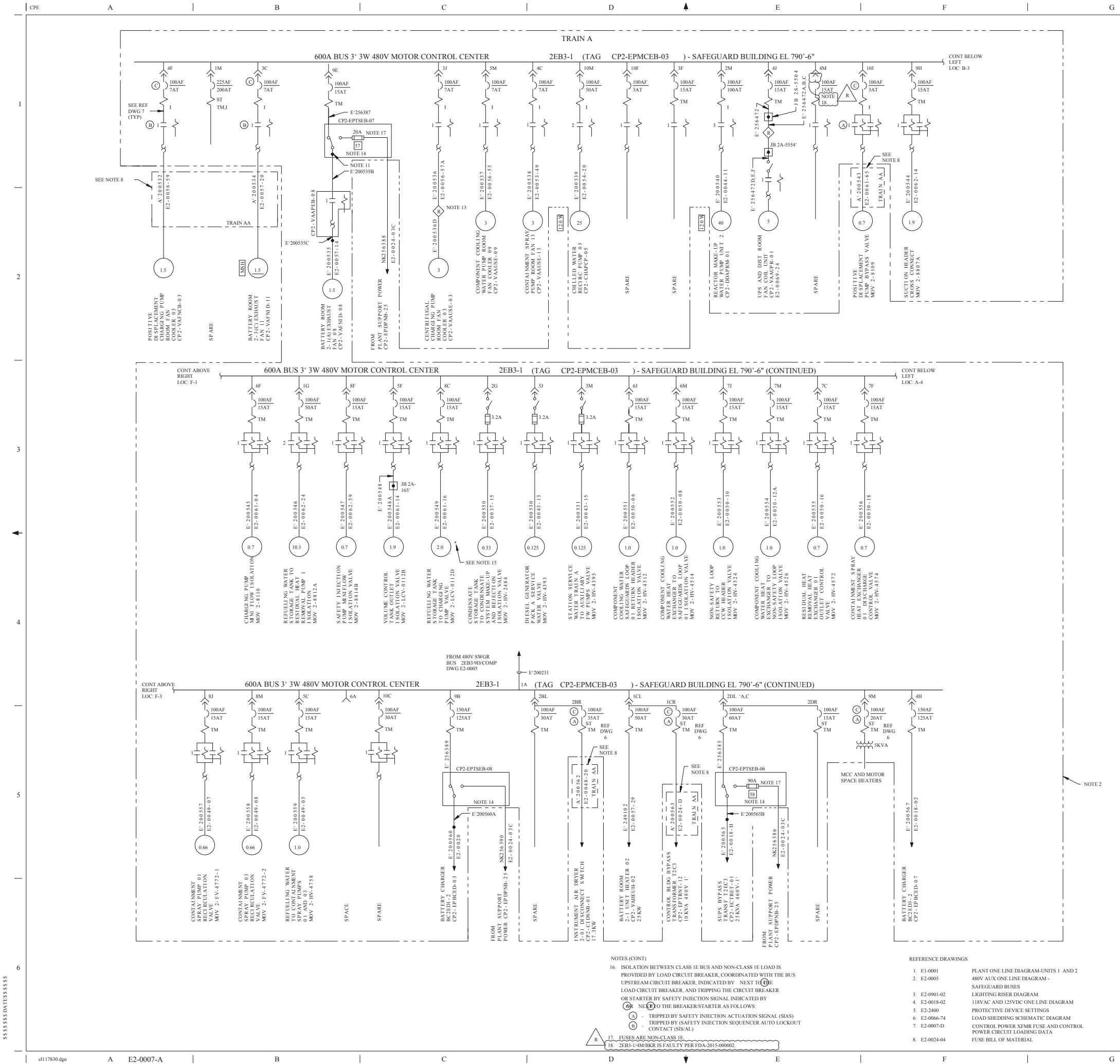
THIS DRAWING CREATED ELECTRONICALLY

THIS DRAWING CREATED ELECTRONICALLY





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REV

OWN

CHK

APPV

REMARKS

CP-27				THIS DRAWING REVISID TO INCORPORATE DESIGN CHANGE FDA-2015-000002-01-08 PER 98-0001-15-000002-01-08
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FSAR FIGURE 8.3-9

LEGEND

- INDICATES SPLICE

2C

- MCC COMPARTMENT NUMBER 2C DRAWOUT BREAKER DISCONNECT

AF

AT

- 3" CIRCUIT BREAKER
AF - BREAKER FRAME SIZE
AT - BREAKER TRIP RATING

3

2A

- 3", 30 AMP FUSED SWITCH WITH
2 AMP FUSE TRIP RATING

I

- MAGNETIC TRIP ELEMENT, ADJUSTABLE INSTANTANEOUS
MAGNETIC TRIP (SEE NOTE 10)

TM

- THERMAL MAGNETIC TRIP ELEMENT

ST

- INDICATES BREAKER WITH SHUNT TRIP DEVICE

2

- MOTOR STARTER COIL AND CONTACT (NON REVERSING)
NEMA SIZE 2 STARTER

- THERMAL OVERLOAD RELAY

- MOTOR STARTER COIL AND CONTACTS (REVERSING)
NEMA SIZE 1 STARTER

2

- INDICATES MOTOR 2 HORSEPOWER

- INDICATES DISTRIBUTION TRANSFORMER
480-240/120V-1 PHASE (FOR SPACE HEATERS)

10A

57

- FUSE
10A - FUSE RATING
57 - FUSE B/M ITEM NUMBER REF DWG 8

R

- INDICATES FIREZONE R CABLE INSTALLED TO PROVIDE
A ONE HOUR FIRE BARRIER REQUIRED TO MEET FIRE
SAFE SHUTDOWN ANALYSIS REQUIREMENTS

X

- MOTOR SPACE HEATER WITH "X" WATT RATING

MSH

- MOTOR SPACE HEATER

*

- FEEDER TO LOCAL PANEL, STARTER OR CONTACTOR
AT EQUIPMENT

A

- SEE NOTE 16

B

- SEE NOTE 16

C

- SEE NOTE 16

NOTES

1. ALL MOTOR AND FEEDER RATINGS ARE GIVEN IN HORSEPOWER UNLESS OTHERWISE NOTED.

2. - - - - - EQUIPMENT/CABLES ENCLOSED INSIDE DASHED LINE ARE CLASS 1E, TRAIN A OR TRAIN B AS NOTED. EQUIPMENT OUTSIDE THE DASHED LINE IS NON-1E, UON.

3. DELETED

4. DELETED

5. THERMAL OVERLOAD RELAYS FOR CLASS 1E MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.

6. DELETED

7. INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25,000 RMS SYMMETRICAL AMPERES

8. - - - - - CABLE(S) ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS 1E, TRAIN AA OR TRAIN BB AS NOTED.

9. DELETED

10. FOR BREAKER/OLH SETTINGS SEE REFERENCE DRAWING 5.

11. SPLICE #4 AWG ONTO CABLE IN TRANSFER SWITCH ENCLOSURE. TERMINATE #4 AWG ONTO TRANSFER SWITCH.

12. DELETED

13. FIRE ZONE R CABLES (E'200536A, B AND C) SPLICED IN TWO PLACES. SEE DRAWING E2-0056-57A FOR DETAILS.

14. TRANSFER SWITCH NORMALLY ALIGNED TO MCC AND ONLY ALIGNED TO PLANT SUPPORT POWER DURING OUTAGES. PREREQUISITES AND REQUIREMENTS FOR ALIGNING TO PLANT SUPPORT POWER ARE IN DBD-EE-041 "480V AND 120V AC ELECTRICAL POWER SYSTEM."

15. ALL MOTORS ARE RATED 460V EXCEPT FOR MOTORS MARKED WITH * SIGN, WHICH HAVE A 480V RATING.

DRAWING 2323-E2-0007

REV CP-2

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E2-0007

E2-0007-A

E2-0007-B

E2-0007-C

TRAIN A

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1

SAFETY CLASS 2

SAFETY CLASS 3

SEVERITY CATEGORY I

CLASS 1E

ASSOCIATED CIRCUITS

LUMINANT

CPNPP

GLEN ROSE, TEXAS

SAFEGUARD AND AUXILIARY BUILDINGS

SAFEGUARD 480V MCC'S

ONE LINE DIAGRAM

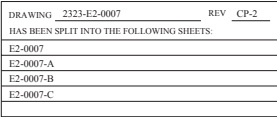
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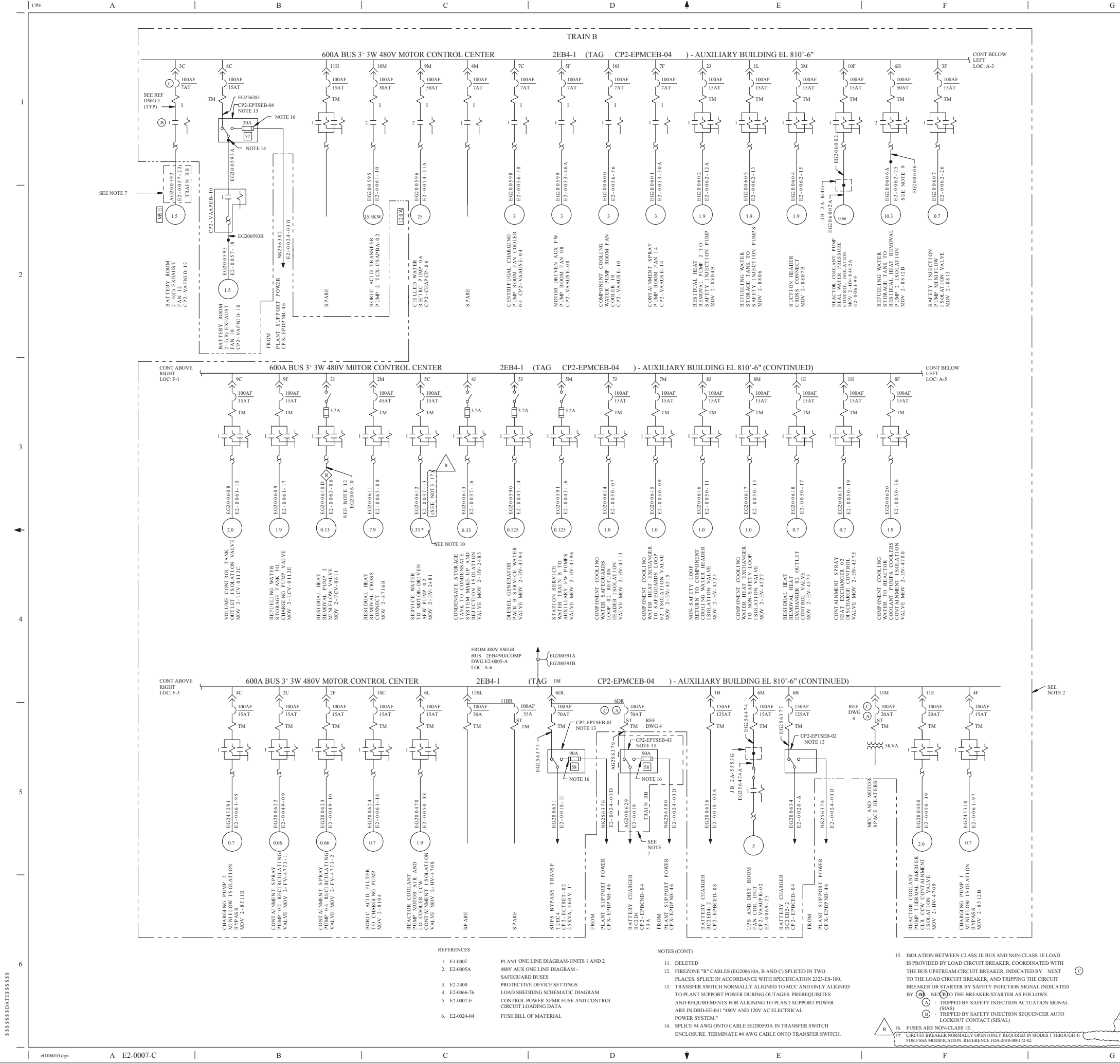
SHEET NO. A

REV CP-27

\$\$\$\$\$DATE\$\$\$\$\$

THIS DRAWING CREATED ELECTRONICALLY





REV

OWN

CHK

APPV

SP-29

SAW

6-06

2011

MRP

6-06

2011

THIS DRAWING REVISION TO INCORPORATE DESIGN CHANGE

FDA-2010-000172-R2-01 PER 38-0005-10-000172-R2-01

REMARKS

FSAR FIGURE 8.3-9

LEGEND

20A

FUSE

20A

FUSE RATING

57

FUSE BM ITEM NUMBER REF DWG 6

2C

MCC COMPARTMENT NUMBER

AF

DRAWOUT BREAKER DISCONNECT

AF

3' CIRCUIT BREAKER

AT

BREAKER FRAME SIZE

AT

BREAKER TRIP RATING

3

3' 30 AMP FUSED SWITCH

2A

2 AMP FUSE TRIP RATING

1

MAGNETIC TRIP ELEMENT, ADJUSTABLE INSTANTANEOUS TRIP (SEE NOTE 8)

TM

THERMAL MAGNETIC TRIP ELEMENT

ST

INDICATES BREAKER WITH SHUNT TRIP DEVICE

2

MOTOR STARTER COIL AND CONTACT (NON REVERSING) NEMA SIZE 2 STARTER

1

THERMAL OVERLOAD RELAY

1

MOTOR STARTER COIL AND CONTACTS (REVERSING) NEMA SIZE 1 STARTER

2

INDICATES MOTOR 2 HORSEPOWER

2

INDICATES DISTRIBUTION TRANSFORMER 480-240/120V-1 PHASE (FOR SPACE HEATERS)

R

INDICATES FIRE ZONE R INSTALLED TO PROVIDE A ONE HOUR FIRE BARRIER REQUIRED TO MEET FIRE SAFE SHUTDOWN ANALYSIS REQUIREMENTS

NSH

INDICATES SPLICE

X

MOTOR SPACE HEATER

X

MOTOR SPACE HEATER WITH "X" WATT RATING

A

SEE NOTE 15

B

SEE NOTE 15

C

SEE NOTE 15

NOTES

1. ALL MOTOR AND FEEDER RATINGS ARE GIVEN IN HORSEPOWER UNLESS OTHERWISE NOTED.

2. EQUIPMENT CABLES ENCLOSED INSIDE DASHED LINE ARE CLASS 1E, TRAIN A OR TRAIN B AS NOTED. EQUIPMENT OUTSIDE THE DASHED LINE IS NON-1E, UON.

3. DELETED

4. DELETED

5. THERMAL OVERLOAD RELAYS FOR CLASS 1E MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.

6. INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25,000 RMS SYMMETRICAL AMPERES.

7. CABLE(S) ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS 1E, TRAIN AA OR TRAIN BB AS NOTED.

8. FOR BREAKER/OLH SETTING SEE REFERENCE DRAWING 3.

9. FIELD SHALL SPLICE CABLES EG200606 AND EG200606A AT JB 2S-47050 USING AMP AMPPOWER SOLISTRAND UNINSULATED SINGLE-HOLE BOLTED RING-TONGUE LUGS. TAPE LUGS WITH OKONITE TAPE. BOLTING HARDWARE AND APPLICATION OF THE OKONITE TAPE SHALL BE IN ACCORDANCE WITH 2323-ES-100. FIELD HAS OPTION TO USE A NUMBER 2 AMP AMPPOWER PARALLEL SLEEVE (CAT NUMBER 3245-12) IN LIEU OF BOLTING RING-TONGUE LUGS. USE OF NOTED LUGS (SLEEVES) IS A ONE-TIME DEVIATION TO SPEC 2323-ES-100.

10. ALL MOTORS ARE RATED 460V EXCEPT FOR MOTORS MARKED WITH * SIGN WHICH HAVE A 480V RATING.

DRAWING E2-0007-C

REV CP-3

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E2-0007-C

E2-0007-D

DRAWING E2-0007-C

REV CP-2

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E2-0007-C

E2-0007-E

DRAWING E2-0007

REV CP-2

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E2-0007

E2-0007-A

E2-0007-B

E2-0007-C

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1

SAFETY CLASS 2

SAFETY CLASS 3

SEISMIC CATEGORY I

CLASS II

ASSOCIATED CIRCUITS

LUMINANT

CPNPP

GLEN ROSE, TEXAS

SAFEGUARD AND AUXILIARY BUILDINGS

SAFEGUARD 480V MCC'S

ONE LINE DIAGRAM

DWG. NO.

E2-0007

SHEET NO.

C

REV.

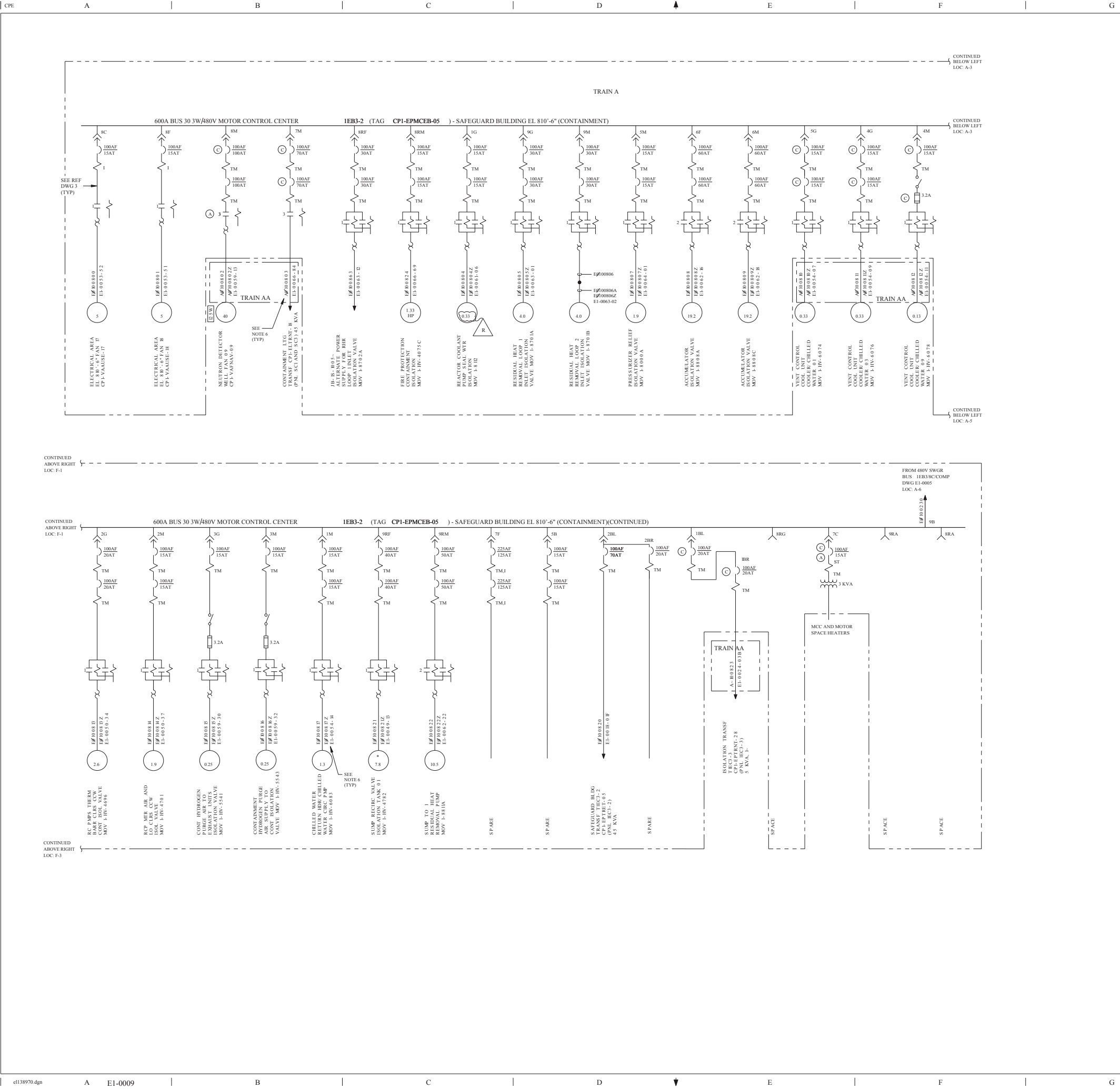
CP-29

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THIS DRAWING CANNOT BE ELECTRONICALLY

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6



REV	OWN	CHK	APV	REMARKS
SP-27	SM	10.31	201	THIS DRAWING REWITT TO INCORPORATE DESIGN CHANGE FDA-2010-000172-75-00 PER 3K-0001-10-000172-75-00

FSAR FIGURE 8.3-10

LEGEND

2M

= MCC COMPARTMENT NUMBER

100AF

= DRAWOUT BREAKER DISCONNECT

3.2A

= 30/30 AMP FUSED SWITCH WITH GOULD SHAWMUT TYPE TRI-IONIC FUSES
3.2 AMP FUSE TRIP RATING

100AF

= 30 CIRCUIT BREAKER
AF - BREAKER FRAME SIZE
AT - BREAKER TRIP RATING

1

= MAGNETIC TRIP ELEMENT
ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP
SEE NOTE 10

TM

= THERMAL MAGNETIC TRIP ELEMENT

1

= MOTOR STARTER COIL AND CONTACT (NON-REVERSING)
NEMA SIZE 2 STARTER

1

= THERMAL OVERLOAD RELAY

2

= MOTOR STARTER COILS AND CONTACTS (REVERSING)
NEMA SIZE 1 STARTER

1

= INDICATES DISTRIBUTION TRANSFORMER 480-240/120V
1 PHASE (FOR SPACE HEATER)

1

= MOTOR SPACE HEATER WITH "X" WATT RATING

1

= INDICATES SPLICE

1

= INDICATES BREAKER WITH SHUNT TRIP DEVICE

13

= SEE NOTE 13

13

= SEE NOTE 13 AND 14

NOTES

1. DELETED

2. DELETED

3. DELETED

4. DELETED

5. THERMAL OVERLOAD RELAYS FOR CLASS IE MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.

6. NUMBERS SHOWN ON LINES BETWEEN MCC AND THE LOAD IT IS SUPPLYING ARE CABLE NUMBERS (eg A-100803). CABLE NUMBERS HAVING Z SUFFIX (eg E-100817Z) ARE CABLE NUMBERS FOR RUNS FROM THE ELECTRICAL PENETRATION TO THE LOAD INSIDE THE REACTOR CONTAINMENT.

7. INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25,000 RMS SYMMETRICAL AMPERES.

8. CABLE(S) ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS IE, TRAIN AA OR TRAIN BB AS NOTED.

9. DELETED

10. FOR BREAKER O/LH SETTING SEE REFERENCE DRAWING 2.

11. 100AF BREAKER TO BE REPLACED WITH 150AF BREAKER WHEN REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED.

12. ALL MOTORS ARE RATED 460 VAC EXCEPT FOR MOTORS MARKED WITH * SIGN WHICH HAVE 480 VAC VOLTAGE RATING.

13. ISOLATION BETWEEN CLASS IE BUS AND NON-CLASS IE LOAD IS PROVIDED BY LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKER, INDICATED BY NEXT TO THE LOAD CIRCUIT BREAKER, AND TRIPPING THE CIRCUIT BREAKER OR STARTER BY SAFETY INJECTION SIGNAL INDICATED BY NEXT TO THE BREAKER STARTER AS FOLLOWS:

A

= TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (SIAS)

14. ISOLATION BETWEEN CLASS IE BUS AND NON-CLASS IE LOAD IS PROVIDED BY TWO BREAKERS, A BREAKER AND A FUSE OR TWO FUSES IN SERIES, EACH COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKER, INDICATED BY NEXT TO THE BREAKER FUSE.

REFERENCE DRAWINGS

1. EI-0001

PLANT ONE LINE DIAGRAM UNITS 1 AND 2

2. EI-2400

PROTECTIVE DEVICE SETTINGS

3. EI-0009-B

CONTROL POWER XFR FUSE AND CONTROL CIRCUIT LOADING DATA

4. EI-0066-74

LOAD SHEDDING SCHEMATIC DIAGRAM

DRAWING 2223-EI-0009

REV CP-3

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

EI-0009

EI-0009-A

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1 SEISMIC CATEGORY I

SAFETY CLASS 2 CLASS IE ASSOCIATED CIRCUITS

SAFETY CLASS 3

LUMINANT

CPNPP

GLEN ROSE, TEXAS

CONTAINMENT AND DIESEL GENERATOR

SAFEGUARD 480V MCC'S

ONE LINE DIAGRAM

DWG. NO.

EI-0009

SH. NO.

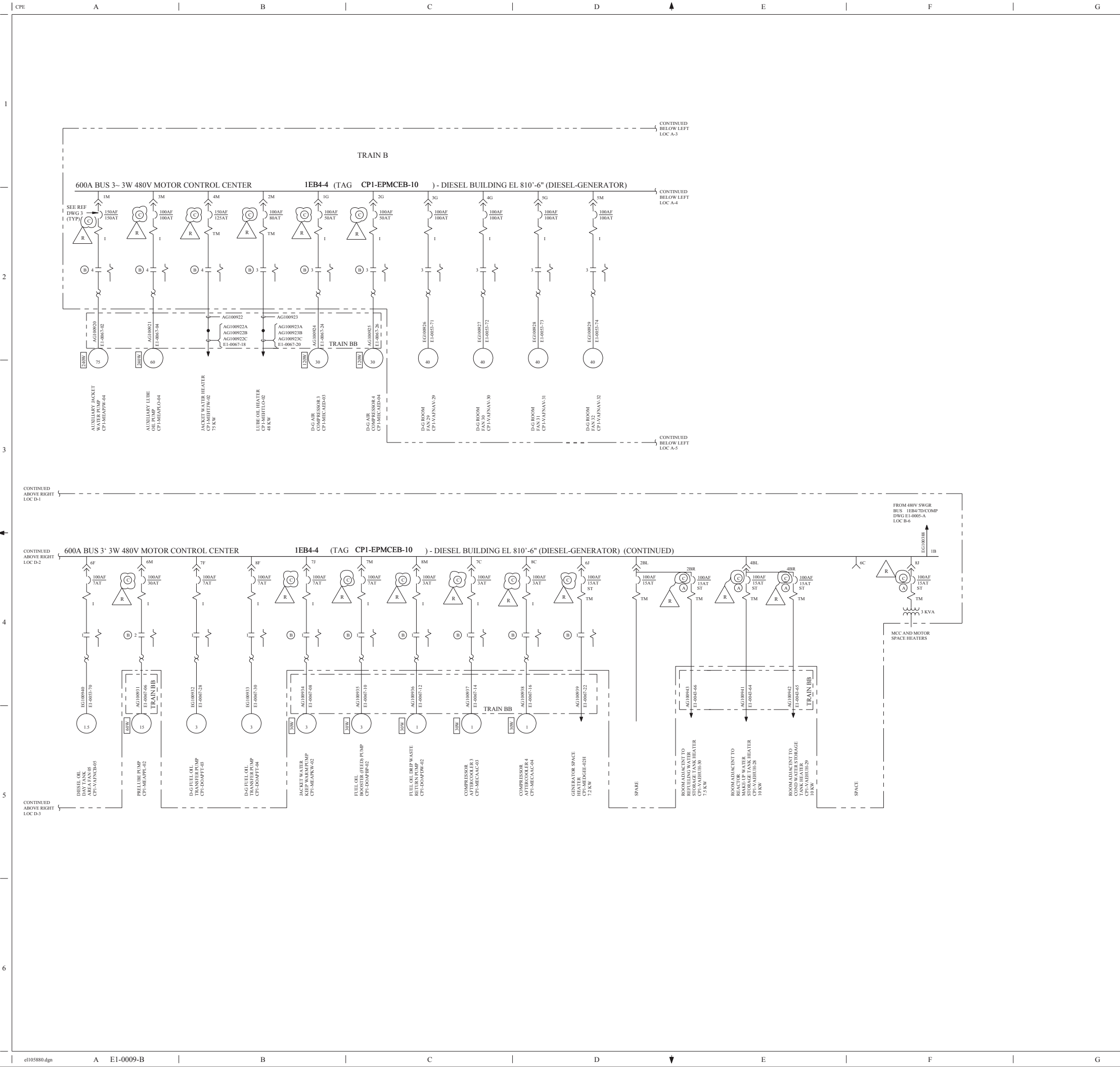
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REV.

CP-27

THIS DRAWING CREATED ELECTRONICALLY

\$\$\$\$\$DATE\$\$\$\$\$



REV	DWN	CHK	APVD	REMARKS
CP-8	10-01	10-01	10-01	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2002-003779-01-00 PER 98-0016-02-003779-01-00

FSAR FIGURE 8.3-10

LEGEND

MCC COMPARTMENT NUMBER

DRAWOUT BREAKER DISCONNECT

30AMP FUSED SWITCH WITH 3 2A FUSE TRIP RATING

3 CIRCUIT BREAKER

AF-BREAKER FRAME SIZE

AT-BREAKER TRIP RATING

MAGNETIC TRIP ELEMENT

ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SEE NOTE 10

THERMAL MAGNETIC TRIP ELEMENT

MOTOR STARTER COIL AND CONTACT (NON-REVERSING)

NEMA SIZE 2 STARTER

THERMAL OVERLOAD RELAY

MOTOR STARTER COILS AND CONTACTS (REVERSING)

NEMA SIZE 1 STARTER

INDICATES MOTOR 2 HORSEPOWER

INDICATES DISTRIBUTION TRANSFORMER 480-240/120V
1 PHASE (FOR SPACE HEATER)

MOTOR SPACE HEATER WITH "X" WATT RATING

INDICATES BREAKER WITH SHUNT TRIP DEVICE

INDICATES SPLICE

SEE NOTE 14

SEE NOTE 14

SEE NOTE 14

NOTES

1. DELETED

2. EQUIPMENT/CABLES ENCLOSED INSIDE DASHED LINE
ARE CLASS 1E, TRAIN A OR TRAIN B AS NOTED. EQUIPMENT OUTSIDE
THE DASHED LINE IS NON-1E, 10N.

3. DELETED

4. DELETED

5. THERMAL OVERLOAD RELAYS FOR CLASS 1E MOTOR OPERATED VALVES
ARE USED FOR ALARM ONLY.

6. NUMBERS SHOWN ON LINES BETWEEN MCC AND THE LOAD IT IS
SUPPLYING ARE CABLE NUMBERS (eg A0100803). CABLE NUMBERS
HAVING Z SUFFIX (eg E0100817Z) ARE CABLE NUMBERS FOR RUNS
FROM THE ELECTRICAL PENETRATION TO THE LOAD INSIDE THE
REACTOR CONTAINMENT.

7. INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER
CIRCUIT BREAKERS IS 25,000 RMS SYMMETRICAL AMPERES.

8. CABLE(S) ENCLOSED INSIDE THE DASHED LINE IS (ARE)
ASSOCIATED CLASS 1E, TRAIN AA OR TRAIN BB AS NOTED.

9. FIELD POWER CABLE SHALL BE ROUTED IN CONDUIT. CONSTRUCTION
TO WRAP CABLE PER 2323-ES-100 SPECIFICATION, APPENDIX F
SKETCHES 16345-E-129 OR 16345-E-130, OR INSTALL A FLEX
PER 2323-ES-100 APPENDIX F SKETCH 16345-E-119.

10. FOR BREAKER/OLH SETTINGS SEE REFERENCE DRAWING 2.

11. 100AF BREAKER TO BE REPLACED WITH 150AF BREAKER WHEN
REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED.

12. THIS TRANSFER SWITCH IS AN "OFF-LOAD TYPE" AND IS
NORMALLY ALIGNED TO THE MCC. IT CAN ONLY BE ALIGNED TO
PLANT SUPPORT POWER DURING OUTAGES. REQUIREMENTS AND
PREREQUISITES FOR TRANSFER OF POWER ARE STATED IN DBD
EE-041 "480V AND 120V AC ELECTRICAL POWER SYSTEM."

13. DELETED

14. ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOAD IS
PROVIDED BY LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS
UPSTREAM CIRCUIT BREAKER, INDICATED BY NEXT TO THE LOAD
CIRCUIT BREAKER, AND TRIPPING THE CIRCUIT BREAKER OR STARTER
BY SAFETY INJECTION SIGNAL INDICATED BY OR NEXT TO THE
BREAKER/STARTER AS FOLLOWS:

A

TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (SIAS)

B

TRIPPED BY SAFETY INJECTION SEQUENCER AUTO LOCKOUT
CONTACT (SIS/AL)

DRAWING

E1-0009-A

REV

CP-11

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E1-0009-A

E1-0009-B

E1-0009-C

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1

SAFETY CLASS 2

SAFETY CLASS 3

SEISMIC CATEGORY

I

CLASS I

ASSOCIATED CIRCUITS

TXU POWER

CPSES

GLEN ROSE, TEXAS

CONTAINMENT AND DIESEL GENERATOR

SAFEGUARD 480V MCC'S

ONE LINE DIAGRAM

DWG. NO.

E1-0009

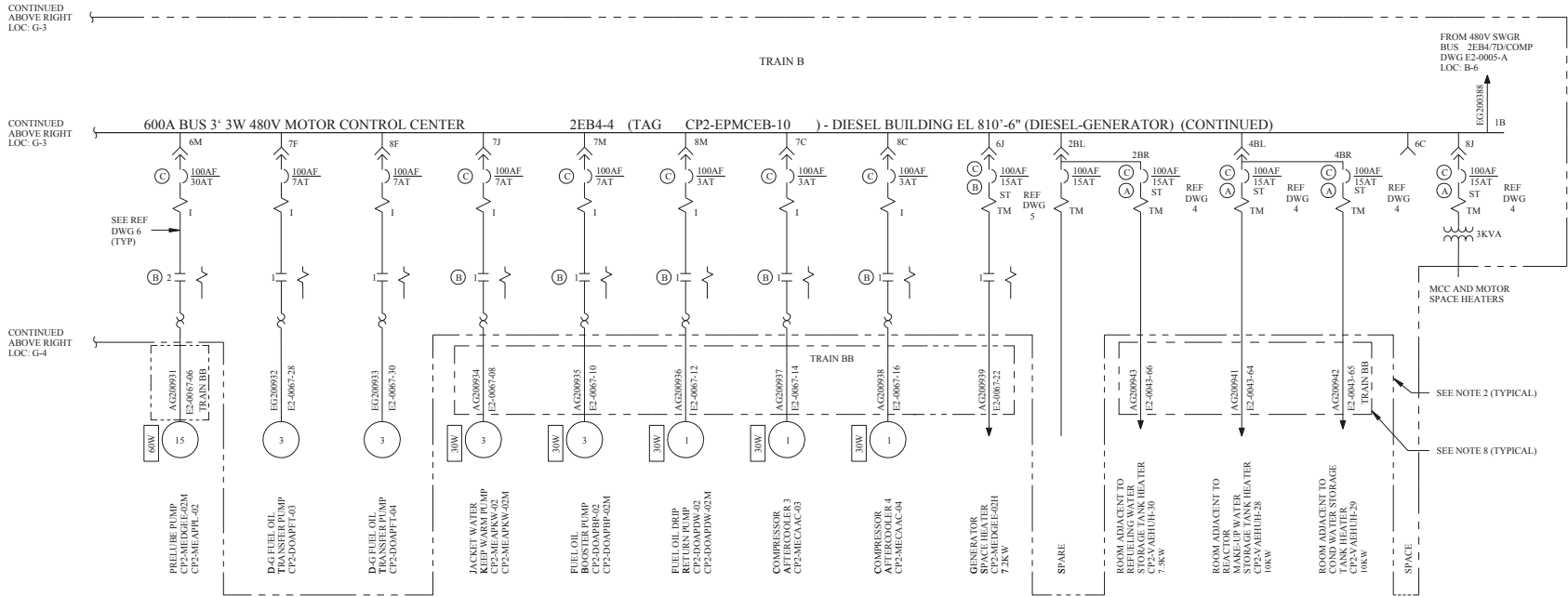
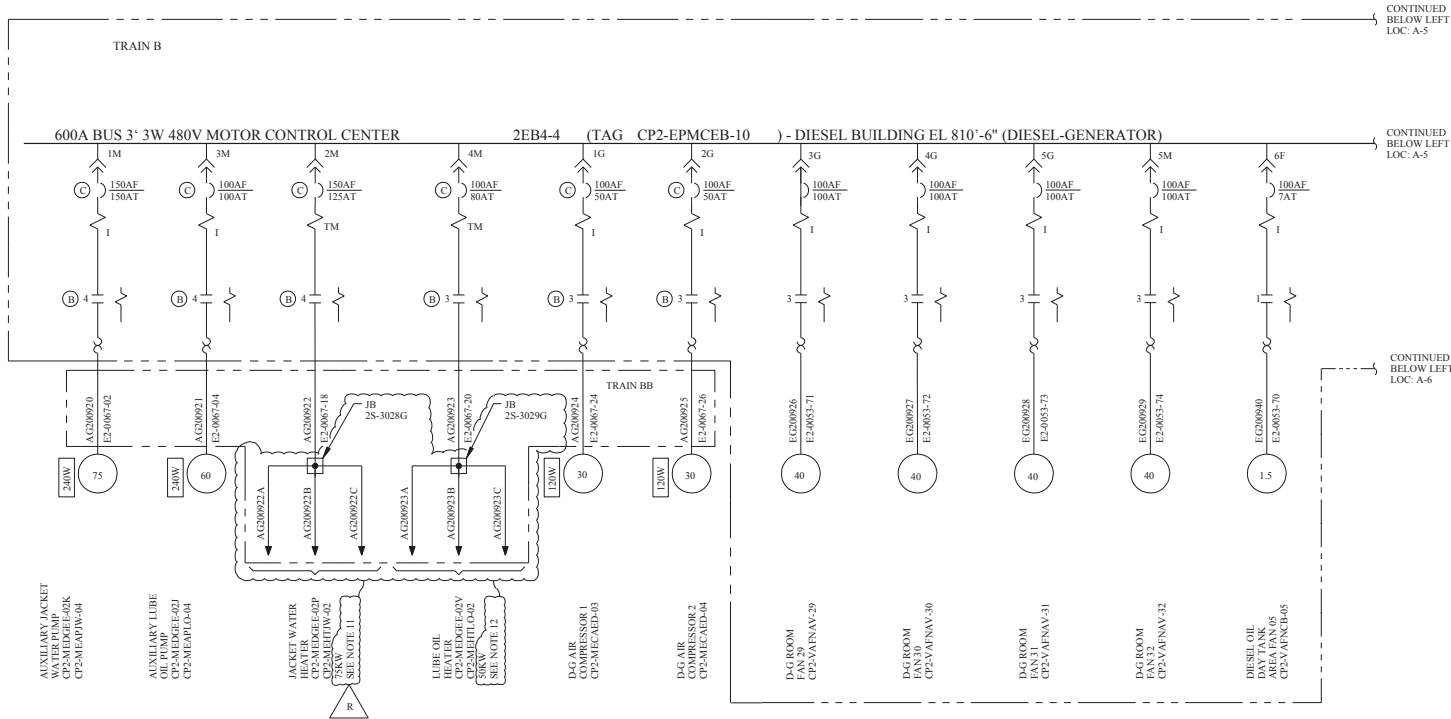
SH. NO.

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REV.

CP-8

THIS DRAWING CREATED ELECTRONICALLY



REV	DWN	CHK	APPD	REMARKS
CP-13	10-12-2001	10-12-2001		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2001-002353-01-00 PER 98-0002-01-002353-01-00

FSAR FIGURE 8.3-10

LEGEND

- 2M - MCC COMPARTMENT NUMBER
- AE - DRAWOUT BREAKER DISCONNECT
- 3' - CIRCUIT BREAKER
- AF - BREAKER FRAME SIZE
- AT - BREAKER TRIP RATING
- ST - BREAKER WITH SHUNT TRIP DEVICE
- MAGNETIC TRIP ELEMENT ADJUSTABLE
- INSTANTANEOUS MAGNETIC TRIP SEE NOTE 9
- TM - THERMAL MAGNETIC TRIP ELEMENT
- MOTOR STARTER COIL AND CONTACT (NON-REVERSING)
- NEMA SIZE 2 STARTER
- THERMAL OVERLOAD RELAY
- INDICATES MOTOR 2 HORSEPOWER
- INDICATES DISTRIBUTION TRANSFORMER, 480-240/120V 1 PHASE (FOR SPACE HEATERS)
- MOTOR SPACE HEATER WITH X WATT RATING
- SEE NOTE 10
- SEE NOTE 10
- SEE NOTE 10
- JUNCTION BOX

- NOTES**
- ALL MOTOR AND FEEDER LOADS GIVEN IN HP UNLESS OTHERWISE NOTED.
 - EQUIPMENT/CABLES ENCLOSED INSIDE DASHED LINE ARE CLASS 1E, TRAIN A OR TRAIN B AS NOTED. EQUIPMENT OUTSIDE THE DASHED LINE IS NON-1E, UON.
 - DELETED
 - DELETED
 - THERMAL OVERLOAD RELAYS FOR CLASS 1E MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.
 - NUMBERS SHOWN ON LINES BETWEEN MCC AND THE LOAD IT IS SUPPLYING ARE CABLE NUMBERS (i.e. A'200803). CABLE NUMBERS HAVING Z SUFFIX (i.e. E'200817Z) ARE CABLE NUMBERS FOR RUNS FROM THE ELECTRICAL PENETRATION TO THE LOAD INSIDE THE REACTOR CONTAINMENT.
 - INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25,000 RMS SYMMETRICAL AMPERES.
 - CABLE(S) ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS 1E, TRAIN AA OR TRAIN BB AS NOTED.
 - FOR BREAKER/OLH SETTING SEE REF DRAWING 3.
 - ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOAD IS PROVIDED BY LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKER, INDICATED BY NEXT TO THE LOAD CIRCUIT BREAKER, AND TRIPPING THE CIRCUIT BREAKER OR STARTER BY SAFETY INJECTION SIGNAL INDICATED BY (A) NEXT TO THE BREAKER/STARTER AS FOLLOWS:
 - (A) - TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (SIS)
 - (B) - TRIPPED BY SAFETY INJECTION SEQUENCER AUTO LOCKOUT CONTACT (SIS/L)
 - THIS IS A 3-3' HEATER. FOR CONNECTION DETAILS SEE REF DRAWING 7.
 - THIS IS A 3-3' HEATER. FOR CONNECTION DETAILS SEE REF DRAWING 8.

REFERENCE DRAWING		
1. E1-0001	PLANT ONE LINE DIAGRAMS-	UNITS 1 AND 2
2. E2-0005A	480V AUXILIARIES ONE LINE	
3. E2-2400	DIAGRAM-SAFEGUARD BUSES	
4. E2-0066-82	PROTECTIVE DEVICE SETTING	
5. E2-0067-38	LOAD SHEDDING SCHEMATIC DIAGRAM	
6. E2-0069-D	LOAD SHEDDING SCHEMATIC DIAGRAM	
7. E2-0067-18	CONTROL POWER XFMR FUSE AND CONTROL	
8. E2-0067-20	CIRCUIT LOADING DATA	
	JACKET WATER HEATER TAG CP2-MEHTJW-02	
	LUBE OIL HEATER TAG CP2-MEHTLO-02	

DRAWING E2-0009-B REV CP-3
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:
E2-0009-B
E2-0009-C

DRAWING E2-0009-B REV CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:
E2-0009-B
E2-0009-D

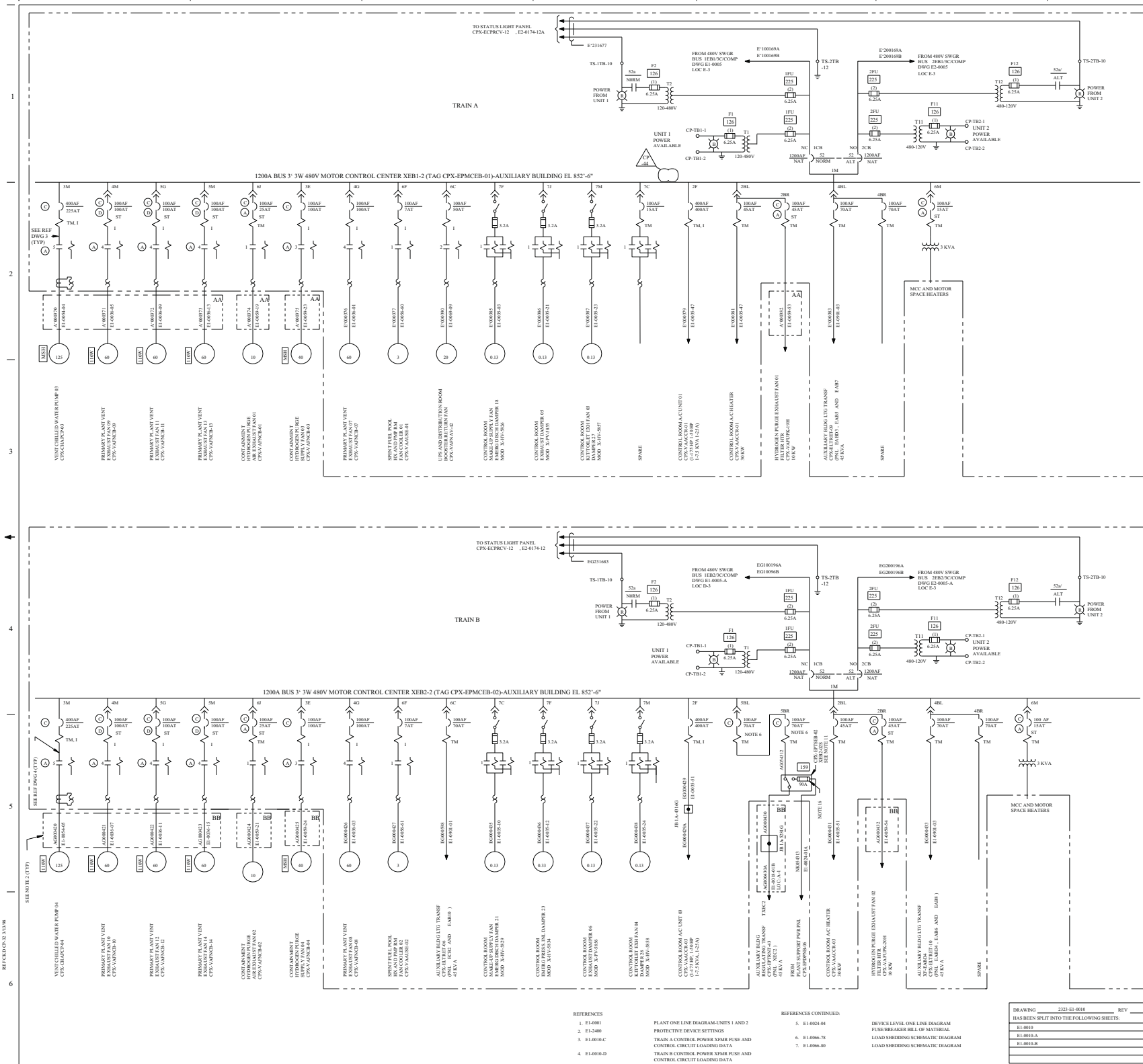
DRAWING E2-0009-A REV CP-1
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:
E2-0009-A
E2-0009-B

CLASS I

(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1 SEISMIC CATEGORY I
SAFETY CLASS 2 CLASS II
SAFETY CLASS 3 ASSOCIATED CIRCUITS

TXU POWER
CPSES
GLEN ROSE, TEXAS

CONTAINMENT & DIESEL GENERATOR
SAFEGUARD 480V MCC'S
ONE LINE DIAGRAM



REV

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REF: CDD 001100 CP-54

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A E1-0010-A

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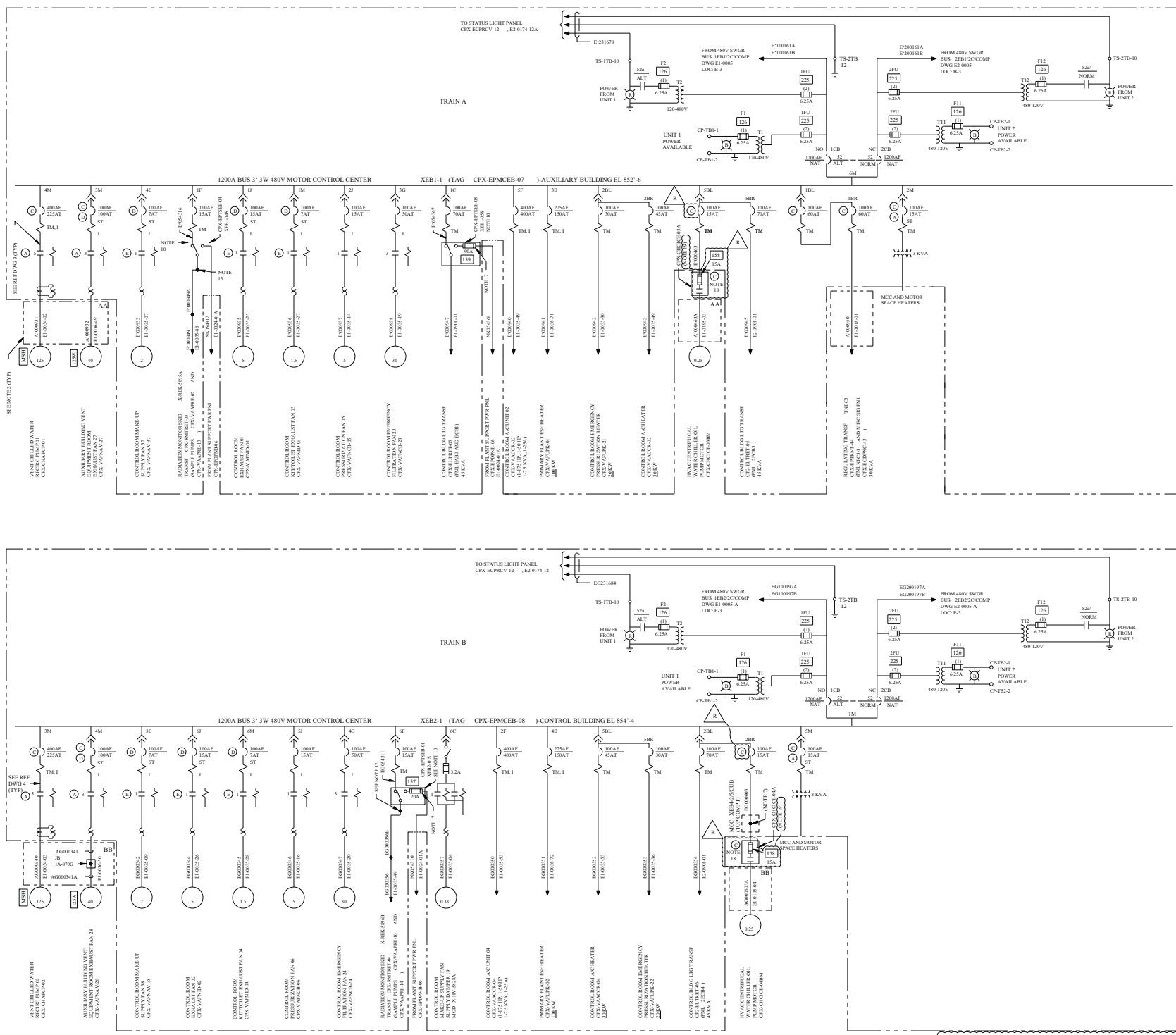
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DRAWING	2123-E1-010	REV	CP-7
1	E1-0010		
2	E1-0010-A		
3	E1-0010-B		
4	E1-0010-C		
5	E1-0010-D		
6	E1-0010-E		
7	E1-0010-F		

- REFERENCES
- E1-0010
 - E1-0010-A
 - E1-0010-B
 - E1-0010-C
 - E1-0010-D
 - E1-0010-E
 - E1-0010-F
 - E1-0010-G

- NOTES (CONT)
- THE 1A TYPE KICK-8 FUSES IN THE STARTER ARE COORDINATED WITH THE MCC CIRCUIT BREAKER. THE FUSES ARE QUALIFIED FOR SAFETY RELATED CLASS II USE AND ARE ACCEPTABLE TO BE USED AS AN ISOLATION DEVICE.
 - STARTER IS SHOCKMOUNTED.

REV	DATE	BY	CHK	APP	REMARKS
7-30	06-11	00-11	00-11	00-11	THIS DRAWING IS USED TO INCORPORATE DESIGN CHANGE FSA 2005-00075-01-00 PER 1L-0001-01-00075-01-00

FSAR FIGURE 8.3-11

LEGEND

- FUSE
- FUSE RATING
- FUSE B/M ITEM NUMBER REF DWG 5
- MCC COMPARTMENT NUMBER
- DRAWOUT BREAKER DISCONNECT
- AUTOMATIC TRANSFER UNIT WITH TWO, 3 CIRCUIT BREAKERS
- BREAKER FRAME SIZE
- NAT - NON AUTOMATIC TRIP
- 3 CIRCUIT BREAKER (UNLESS OTHERWISE NOTED)
- AT-BREAKER TRIP RATING
- MOTOR STARTER COIL AND CONTACT (NON REVERSING) NEMA SIZE 2 STARTER
- MOTOR STARTER COIL AND CONTACTS (REVERSING) NEMA SIZE 1 STARTER
- THERMAL MAGNETIC TRIP ELEMENT
- MAGNETIC TRIP ELEMENT
- ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SEE NOTE 9
- THERMAL OVERLOAD RELAY
- MOTOR SPACE HEATER WITH "X" WATT RATING
- INDICATES MOTOR 2 HORSEPOWER
- INDICATES DISTRIBUTION TRANSFORMER 480V-240/120V 1 PHASE (FOR SPACE HEATER)
- 3, 30 AMP FUSED SWITCH WITH GOLD-SHAUNWALT TYPE TRS TRONIC FUSES 1/2 AMP FUSE TRIP RATING
- INDICATING LIGHT (B-BLUE), B-RED
- INDICATES TERMINAL IN 480V MCC
- MOTOR SPACE HEATER
- AUTOMATIC TRANSFER UNIT CIRCUIT BREAKER 1
- ST
- INDICATES SPACE
- SEE NOTE 14
- SEE NOTE 15
- SEE NOTE 16
- SEE NOTE 16

NOTES

- EQUIPMENT CABLES ENCLOSED INSIDE DASHED LINE ARE CLASS II, TRAIN A OR TRAIN B AS NOTED. EQUIPMENT OUTSIDE THE DASHED LINE IS NON-IE, UON.
- CABLES ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS II, TRAIN AA OR TRAIN BB AS NOTED.
- DELETED.
- DELETED.
- INTERTRIP RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25,000 RMS SYMMETRICAL AMPERES.
- DELETED.
- SPLICE CABLE EG000603 USING COMPRESSION SPICE SLEEVES AND INSULATE WITH RAVENHIM TUBING PER 2123-E5-100.
- DELETED.
- FOR BREAKERS/SH SETTINGS SEE REFERENCE DRAWING 2.
- THIS TRANSFER SWITCH IS AN "OFF-LOAD TYPE" AND IS NORMALLY ALIGNED TO THE MCC. IT CAN ONLY BE ALIGNED TO PLANT SUPPORT POWER OR BOMB OUTGAS. REQUIREMENTS AND PRECAUTIONS FOR TRANSFER OF POWER ARE STATED IN DDD IE-041 "480V AND 120V AC ELECTRICAL POWER SYSTEM".
- 100AF BREAKER TO BE REPLACED WITH 150AF BREAKER WHEN REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED.
- SPLICE IN WING ONTIC CABLE IN TRANSFER SWITCH ENCLOSURE. TERMINATE IN WING ONTIC TRANSFER SWITCH.
- A SHORT LENGTH OF 14 AWG CABLE IS SPLICED INTO EG000604 FOR PROPER INSTALLATION AT THE SWITCH.
- ISOLATION BETWEEN CLASS II BUS AND NON-CLASS II LOAD IS PROVIDED BY LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKER, INDICATED BY NEXT TO THE LOAD CIRCUIT BREAKER, AND TRIPPING THE CIRCUIT BREAKER OR STARTER BY SAFETY INJECTION SIGNAL INDICATED BY NEXT TO THE BREAKER/STARTER AS FOLLOWS:
 - TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (SIAS) FROM EITHER UNIT.
- ISOLATION BETWEEN CLASS II BUS AND NON-CLASS II LOAD IS PROVIDED BY TWO BREAKERS, A BREAKER AND A FUSE OR TWO FUSES IN SERIES, EACH COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKER, INDICATED BY NEXT TO THE BREAKER/FUSE.
- TO ASSURE SINGLE ACTIVE FAULT PROOF TRIP OF THE FAN, THE BREAKER IS TRIPPED OR CONTACTOR OPENED BY ACCIDENT SIGNAL INDICATED NEXT TO THE DEVICE AS FOLLOWS:
 - OPPOSITE TRAIN SIAS (SAFETY INJECTION ACTUATION SIGNAL) FROM EITHER UNIT.
 - SAME TRAIN SIAS (SAFETY INJECTION ACTUATION SIGNAL) FROM EITHER UNIT.
- FUSES ARE NON-CLASS II.

CLASS I
(NUCLEAR SAFETY-RELATED)

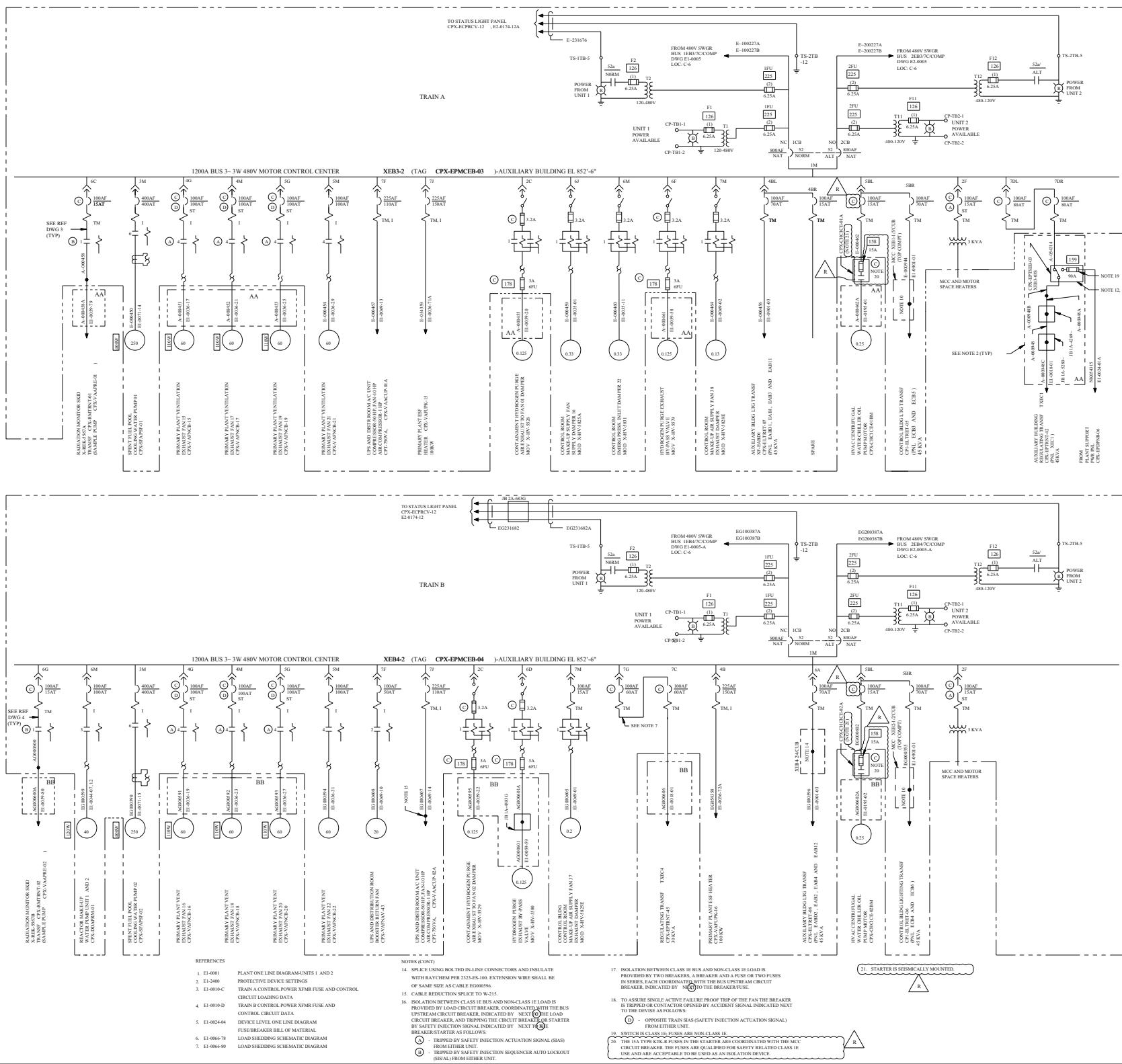
SAFETY CLASS 1
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TXU POWER
CPSES
GLEN ROSE, TEXAS

COMMON AUXILIARY AND CONTROL BLDGS
SAFEGUARD 480 V MCCS
ONE LINE DIAGRAM

DWG NO. E1-0010

REV. CP-39



- LEGEND
- MCC COMPARTMENT NUMBER
 - DRAWOUT BREAKER DISCONNECT
 - AUTOMATIC TRANSFER UNIT WITH TWO 3-CIRCUIT BREAKERS
 - AF - BREAKER FRAME SIZE
 - NAT - NON AUTOMATIC TRIP
 - 3-CIRCUIT BREAKER (UNLESS OTHERWISE NOTED)
 - AF BREAKER FRAME SIZE
 - AT BREAKER TRIP RATING
 - MOTOR STARTER COIL AND CONTACT (NON REVERSING) NEMA SIZE 1 STARTER
 - MOTOR STARTER COIL AND CONTACTS (REVERSING) NEMA SIZE 1 STARTER
 - THERMAL MAGNETIC TRIP ELEMENT
 - MAGNETIC TRIP ELEMENT
 - ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SEE NOTE 11
 - THERMAL OVERLOAD RELAY
 - CURRENT TRANSFORMER
 - MOTOR SPACE HEATER WITH "X" WATT RATING
 - INDICATES MOTOR 2 HORSEPOWER
 - INDICATES DISTRIBUTION TRANSFORMER 480V-240V 1 PHASE (FOR SPACE HEATER)
 - 3" 30 AMP FUSED SWITCH WITH COILED SHOWN WITH TYPE TRIP-BONC FUSES 3.2 AMP FUSE TRIP RATING
 - INDICATING LIGHT B (BLUE), R (RED)
 - INDICATES TERMINAL IN 480V MCC
 - AUTOMATIC TRANSFER UNIT CIRCUIT BREAKER 1
 - CIRCUIT BREAKER WITH SHUNT TRIP DEVICE
 - INDICATES SPICE PER 2323-ES-100 UNLESS OTHERWISE NOTED
 - FUSE
 - FUSE B/M ITEM NUMBER (REF DWG 5)
 - FUSE QUANTITY
 - FUSE RATING
 - SEE NOTE 16
 - SEE NOTE 16 AND 17
 - SEE NOTE 18

- NOTES
- EQUIPMENT CABLES ENCLOSED INSIDE DASHED LINE
 - ARE CLASS IE, TRAIN A OR TRAIN B AS NOTED. EQUIPMENT OUTSIDE THE DASHED LINE IS NON-IE, UON
 - CABLES ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS IE, TRAIN AA OR TRAIN BB AS NOTED
 - DELETED
 - DELETED
 - INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25,000 RMS SYMMETRICAL AMPERES
 - DELETED
 - SIZE AND TYPE OF JUMPER BETWEEN COMPT "GO" AND "C" SHALL BE SAME AS LOAD SIDE
 - DELETED
 - SPICE CABLES E-40944 AND E-000151 USING COMPRESSION SPICE SLEEVES AND INSULATE WITH RAYCHEM TUBING PER 2323-ES-100
 - FOR BREAKER/OLH SETTINGS SEE REFERENCE DRAWING 2
 - THIS TRANSFER SWITCH IS AN "OFF" LOAD TYPE AND IS NORMALLY ALIGNED TO THE MCC. IT CAN ONLY BE ALIGNED TO PLANT SUPPORT POWER DURING OUTAGES, REQUIREMENTS AND PRIORITIES FOR TRANSFER OF POWER ARE STATED IN DHD IE-041 "480V AND 240V AC ELECTRICAL POWER SYSTEM"
 - 1200V BREAKER TO BE REPLACED WITH 1200V BREAKER WHEN REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED

DRAWING: E1-0010-B	REV: CP-19
E1-0010-B	
E1-0010-C	
E1-0010-D	

DRAWING: 2323-ES-010	REV: CP-7
E1-0010	
E1-0010-A	
E1-0010-B	

CLASS I
(NUCLEAR SAFETY-RELATED)

TXU POWER
CPSES
GLEN ROSE, TEXAS

COMMON AUXILIARY AND CONTROL BLDGS
SAFEGUARD 480 V MCCS
ONE LINE DIAGRAM

DWG NO: E1-0010

1

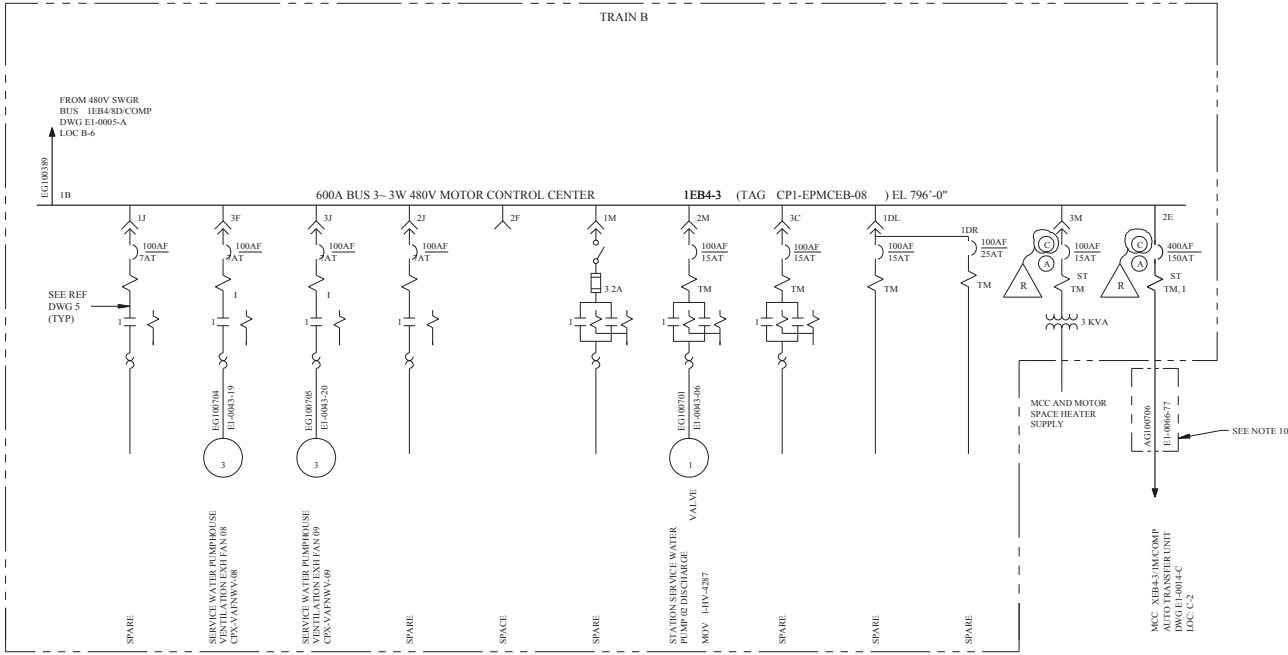
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REV	DWN	CHK	APP'D	REMARKS
CP-21	SH 10-05 2001	DE 10-06 2001		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2002-003779-01-00 PER 98-0025-02-003779-01-00

FSAR FIGURE 8.3-12

LEGEND

- 2M - MCC COMPARTMENT NUMBER
- DRAWOUT BREAKER DISCONNECT
- 3' - 3' CIRCUIT BREAKER
AF - BREAKER FRAME SIZE
AT - BREAKER TRIP RATING
- ST - INDICATES BREAKER WITH SHUNT TRIP DEVICE
- 3, 30 AMP FUSED SWITCH WITH GOULD-SHAWMUT TYPE TRI-ONIC FUSES
3.2 AMP FUSE TRIP RATING
- THERMAL OVERLOAD RELAY
- MAGNETIC TRIP ELEMENT
ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SEE NOTE 11
- THERMAL MAGNETIC ELEMENT
- MOTOR STARTER COIL AND CONTACT (NON REVERSING)
NEMA SIZE 2 STARTER
- MOTOR STARTER COILS AND CONTACTS (REVERSING)
NEMA SIZE 1 STARTER
- INDICATES MOTOR, 2 HORSEPOWER (NOTE 3)
- INDICATES DISTRIBUTION TRANSFORMER
480-240/120V-1 PHASE (FOR SPACE HEATERS)
- SEE NOTE 14
- SEE NOTE 14

- NOTES
- DELETED
 - EQUIPMENT/CABLES ENCLOSED INSIDE DASHED LINE ARE CLASS 1E, TRAIN A OR TRAIN B AS NOTED. EQUIPMENT OUTSIDE THE DASHED LINE IS NON-1E, UON.
 - DELETED
 - DELETED
 - DELETED
 - THERMAL OVERLOAD RELAYS FOR CLASS 1E MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.
 - MCC STARTER IS USED ONLY TO BLOCK PUMP START DURING BLACKOUT SEQUENCE.
 - DELETED
 - DELETED
 - INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25000 RMS SYMMETRICAL AMPERES
 - CABLE(S) ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS 1E, TRAIN AA OR TRAIN BB AS NOTED.
 - SEE REFERENCE DRAWING 2 FOR BREAKER/OLH SETTINGS
 - DELETED
 - 100AF BREAKER TO BE REPLACED WITH 150AF BREAKER WHEN REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED
 - ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOAD IS PROVIDED BY LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKER, INDICATED BY NEXT TO THE LOAD CIRCUIT BREAKER, AND TRIPPING THE CIRCUIT BREAKER OR STARTER BY SAFETY INJECTION SIGNAL INDICATED BY NEXT TO THE BREAKER/STARTER AS FOLLOWS:
A - TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (SIAS)

REFERENCE DRAWINGS	
1. E1-0001	PLANT ONE LINE DIAGRAM (UNITS 1 AND 2)
2. E1-2400	PROTECTIVE DEVICE SETTINGS
3. E1-0024-04	DEVICE LEVEL ONE LINE DIAGRAM FUSE/BREAKER BILL OF MATERIAL
4. DELETED	
5. E1-0014-D	TRAIN A, B, AND C CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA
6. 212B7150-2	MCC 1EB4-3 OUTLINE SUMMARY
7. 212B7150-5, 6	MCC XEB4-3 OUTLINE SUMMARY

DRAWING	2323-E1-0014	REV	CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0014			
E1-0014-A			

DRAWING	E1-0014-A	REV	CP-10
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0014-A			
E1-0014-B			
E1-0014-C			
E1-0014-D			

TRAIN B

CLASS I

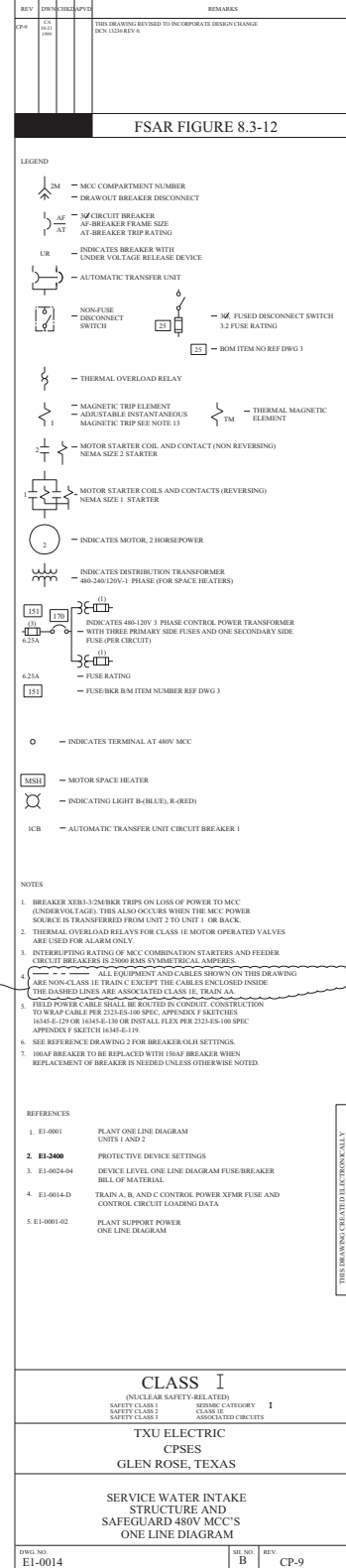
(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1 SEISMIC CATEGORY I
SAFETY CLASS 2 CLASS 1E
SAFETY CLASS 3 ASSOCIATED CIRCUITS

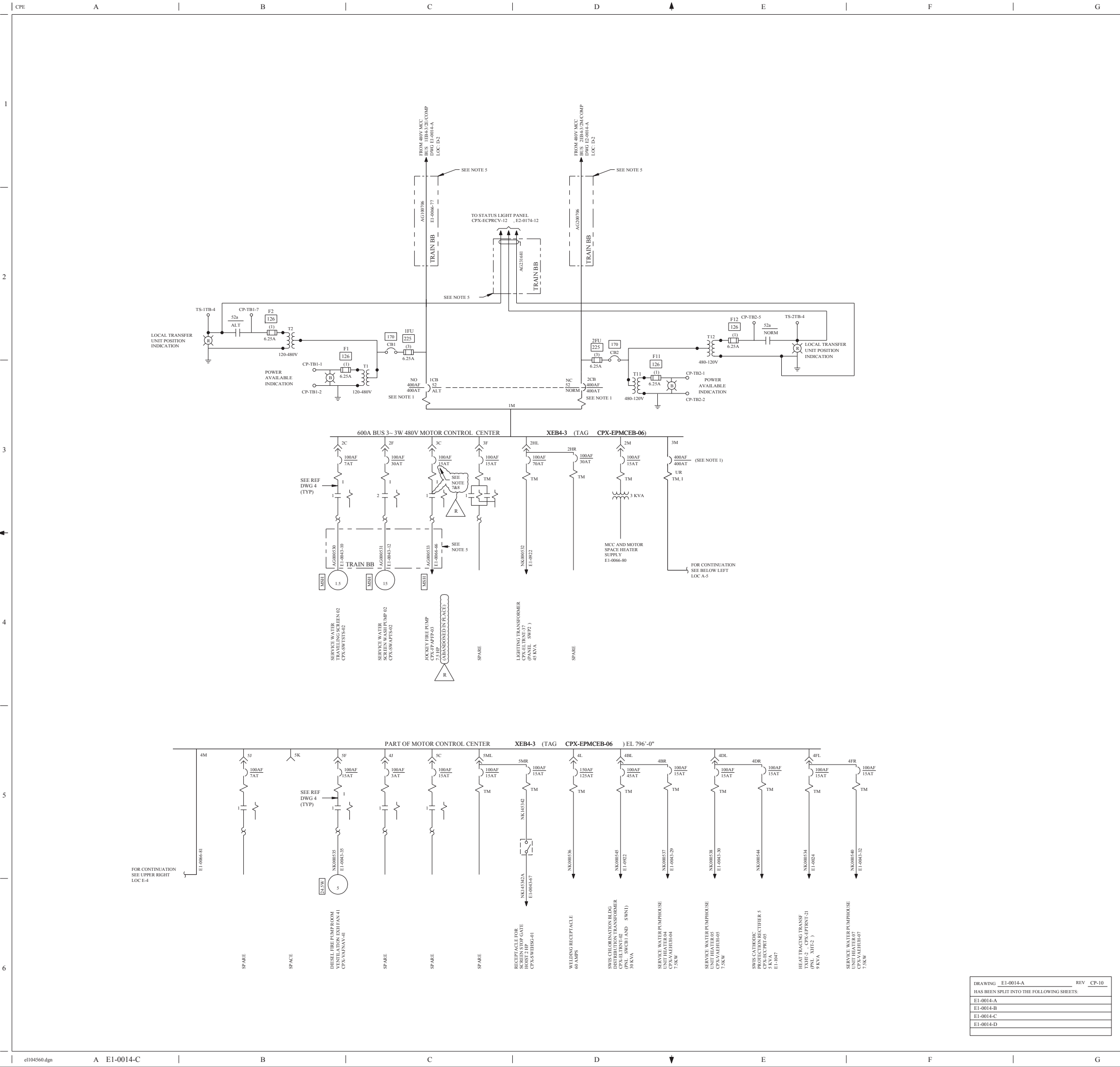
TXU POWER
CPSES
GLEN ROSE, TEXAS

SERVICE WATER INTAKE
STRUCTURE AND
SAFEGUARD 480V MCC'S
ONE LINE DIAGRAM

DWG. NO.	E1-0014	SH. NO.	A	REV.	CP-21
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FINAL PRINT





REV	DWN	CHK	APPD	REMARKS
CP-9	106-07-2000	506-17-2000	506-17-2000	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-1999-000115-02-00 PER 98-0001-99-000115-02-00

FSAR FIGURE 8.3-12

LEGEND

2M - MCC COMPARTMENT NUMBER

AE
AT - DRAWOUT BREAKER DISCONNECT

3' - 3' CIRCUIT BREAKER
AF - BREAKER FRAME SIZE
AT - BREAKER TRIP RATING

UR - INDICATES BREAKER WITH UNDER VOLTAGE RELEASE DEVICE

ATU - AUTOMATIC TRANSFER UNIT

OL - THERMAL OVERLOAD RELAY

1 - MAGNETIC TRIP ELEMENT
ADJUSTABLE INSTANTANEOUS
MAGNETIC TRIP SEE NOTE 11

TM - THERMAL MAGNETIC ELEMENT

2 - MOTOR STARTER COIL AND CONTACT (NON REVERSING)
NEMA SIZE 2 STARTER

1 - MOTOR STARTER COILS AND CONTACTS (REVERSING)
NEMA SIZE 1 STARTER

2 - INDICATES MOTOR, 2 HORSEPOWER (NOTE 3)

480-240/120V-1 PHASE (FOR SPACE HEATERS)

INDICATES 480-120V 3 PHASE CONTROL POWER TRANSFORMER
WITH THREE PRIMARY SIDE FUSES AND ONE SECONDARY SIDE FUSE (PER CIRCUIT)

6.25A - FUSE RATING

151 - FUSE/BKR B/M ITEM NUMBER REF DWG 3

MSH - MOTOR SPACE HEATER WITH "X" WATT RATING

○ - INDICATES TERMINAL AT 480V MCC

MSH - MOTOR SPACE HEATER

○ - NON-FUSE DISCONNECT SWITCH

○ - INDICATING LIGHT B-(BLUE), R-(RED)

ICB - AUTOMATIC TRANSFER UNIT CIRCUIT BREAKER 1

● - INDICATES SPLICE

NOTES

1. BREAKER XEB4-3/MBKR TRIPS ON LOSS OF POWER TO MCC (UNDERVOLTAGE). THIS ALSO OCCURS WHEN THE MCC POWER SOURCE IS TRANSFERRED FROM UNIT 2 TO UNIT 1 OR BACK.

2. THERMAL OVERLOAD RELAYS FOR CLASS 1E MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.

3. MCC STARTER IS USED ONLY TO BLOCK PUMP START DURING BLACKOUT SEQUENCE.

4. INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 2500 RMS SYMMETRICAL AMPERES.

5. ALL EQUIPMENT AND CABLES SHOWN ON THIS DRAWING ARE NON-CLASS 1E TRAIN C EXCEPT THE CABLES ENCLOSED INSIDE THE DASHED LINE THAT ARE ASSOCIATED CLASS 1E, TRAIN BB.

6. SEE REFERENCE DRAWING 2 FOR BREAKER/OLH SETTINGS.

7. 100AF BREAKER TO BE REPLACED WITH 150AF BREAKER WHEN REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED.

8. BREAKER TO BE MAINTAINED IN THE "OFF" POSITION. JOCKEY PUMP X-03 IS ABANDONED IN PLACE.

REFERENCE DRAWINGS

1. E1-0001

PLANT ONE LINE DIAGRAM (UNITS 1 AND 2)

2. E1-2400

PROTECTIVE DEVICE SETTINGS

3. E1-0024-04

DEVICE LEVEL ONE LINE DIAGRAM FUSE/BREAKER BILL OF MATERIAL

4. E1-0014-D

TRAIN A, B, AND C CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA

5. 212B7150-2

MCC 1EB4-3 OUTLINE SUMMARY

6. 212B7150-5, 6

MCC XEB4-3 OUTLINE SUMMARY

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1 SEISMIC CATEGORY I

SAFETY CLASS 2 CLASS II

SAFETY CLASS 3 ASSOCIATED CIRCUITS

TXU POWER

CPSES

GLEN ROSE, TEXAS

SERVICE WATER INTAKE

STRUCTURE AND

SAFEGUARD 480V MCC'S

ONE LINE DIAGRAM

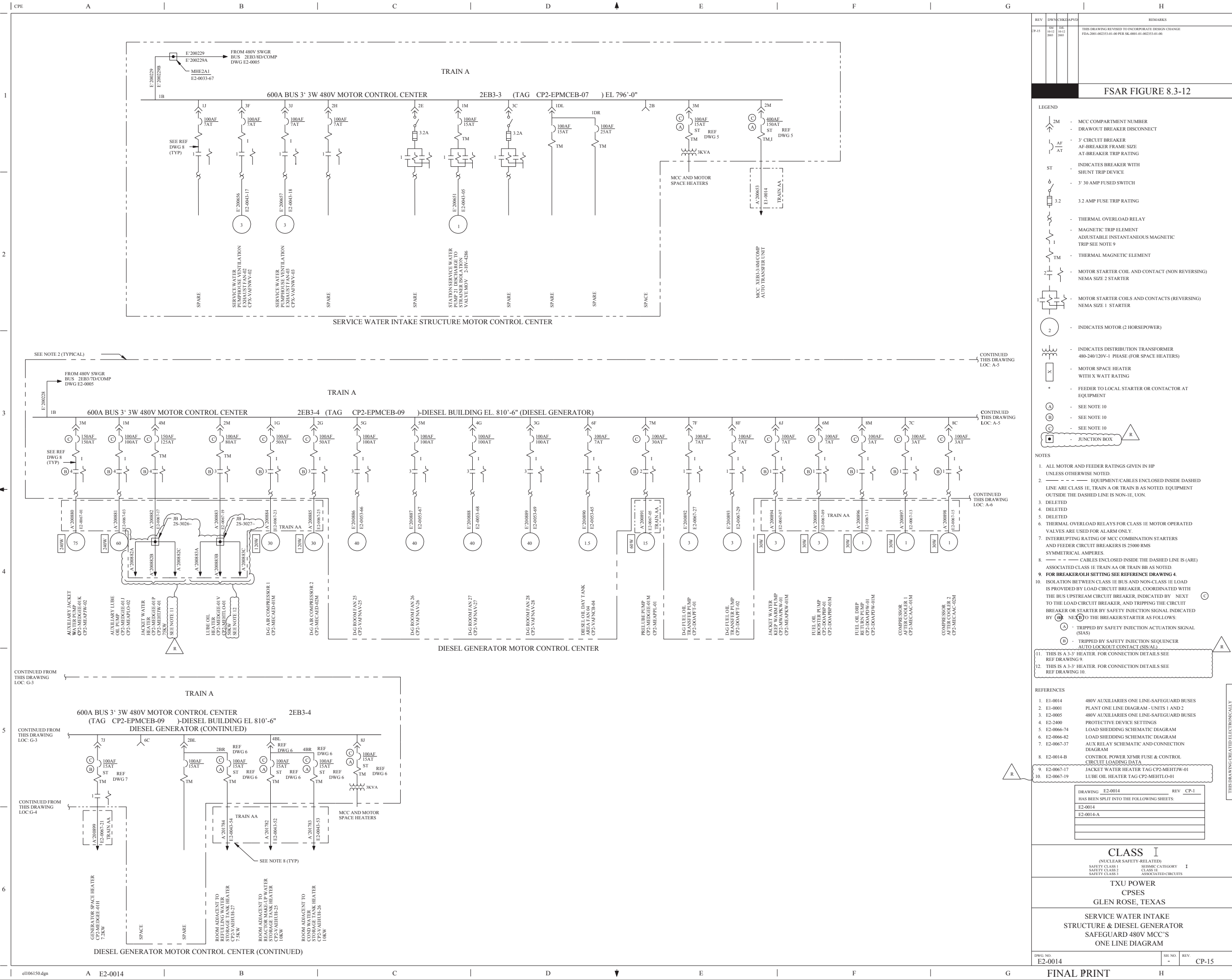
DWG NO. E1-0014

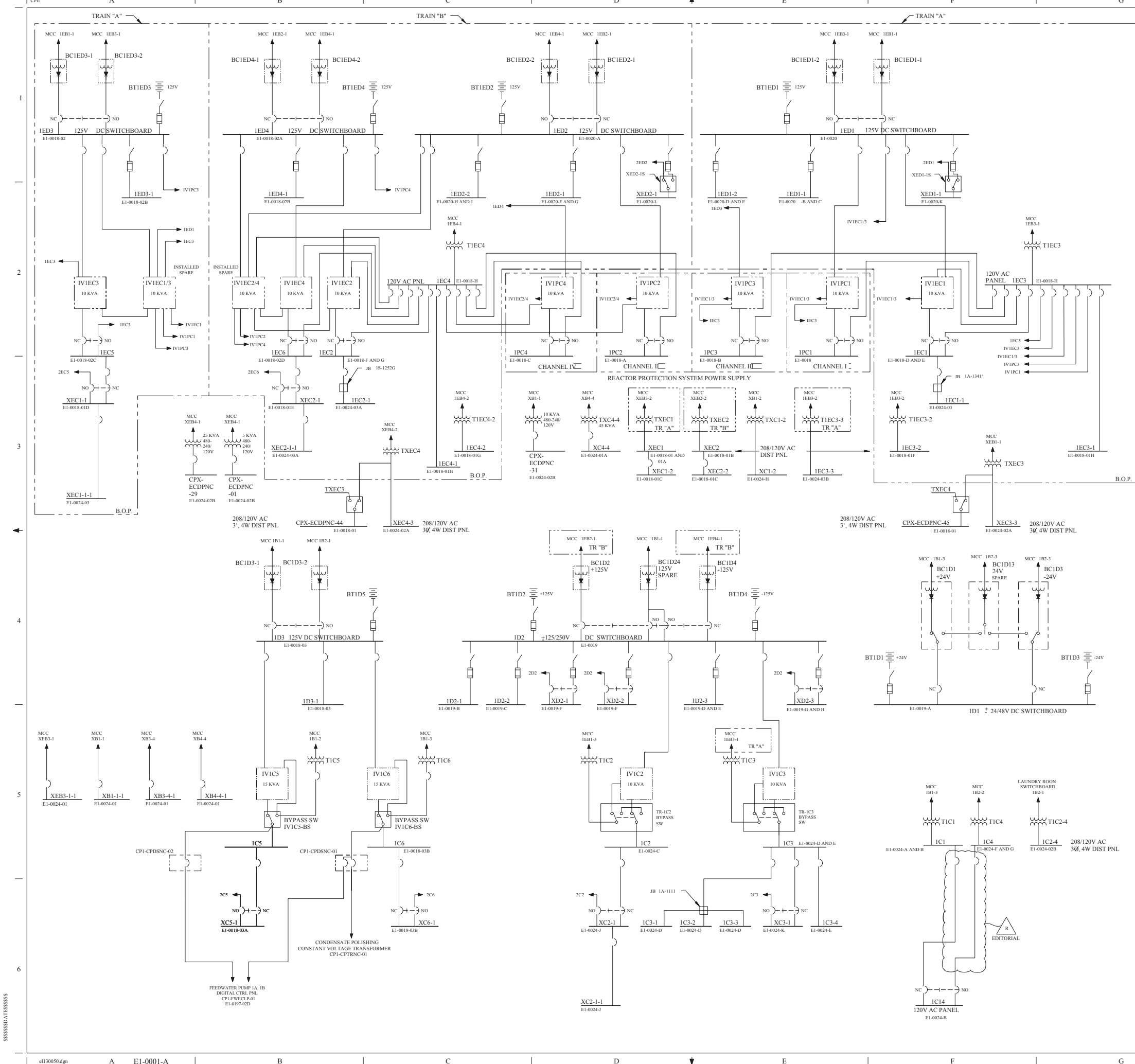
SH NO. C

REV. CP-9

DRAWING	E1-0014-A	REV	CP-10
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0014-A			
E1-0014-B			
E1-0014-C			
E1-0014-D			

THIS DRAWING CREATED ELECTRONICALLY





REV	DWN	CHKD	APVD	REMARKS
23-18	EIS	EL-19	EL-19	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE ITEM 2004-000005-16-00 PER SC-0012-06-000005-16-00 EDITORIAL CHANGE AS NOTED

FSAR FIGURE 8.3-13

LEGEND

- INVERTERS, * KVA RATING
- BATTERY, * VOLTAGE
- BYPASS SWITCH
- MANUAL TRANSFER SWITCH
- AIR CIRCUIT BREAKER
- AUTOMATIC TRANSFER SWITCH
- MECHANICALLY INTERLOCKED BREAKERS
- BATTERY CHARGER SOLID-STATE
- FUSIBLE SWITCH
- AS NOTED - TAP BOX OR JUNCTION BOX

NOTES

- EQUIPMENT AND WIRING ENCLOSED IN DASHED LINE IS CLASS IIE.
- THOSE BREAKERS WITHOUT POSITION INDICATED ARE NORMALLY IN CLOSED POSITION.
- DELETED.
- FOR OTHER LOADS ON AC AND DC BUSES NOT SHOWN ON THIS DRAWING SEE REFERENCE DWGS BELOW FOR DETAILS.
- FOR UNIT 2 AC AND DC PANEL ONE LINE DIAGRAM SEE DWG E1-0001-01 MAIN PLANT ONE LINE DIAGRAM UNIT 2.

REFERENCES

E1-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2
E2-0001-A PLANT ONE LINE DIAGRAM (UNIT 2)

DRAWING 2323-E1-0001
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:
E1-0001
E1-0001-A

REV CP-1

CLASS I

(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1
SAFETY CLASS 2
SAFETY CLASS 3

SEISMIC CATEGORY I
CLASS IIE
ASSOCIATED CIRCUITS

LUMINANT CPNPP

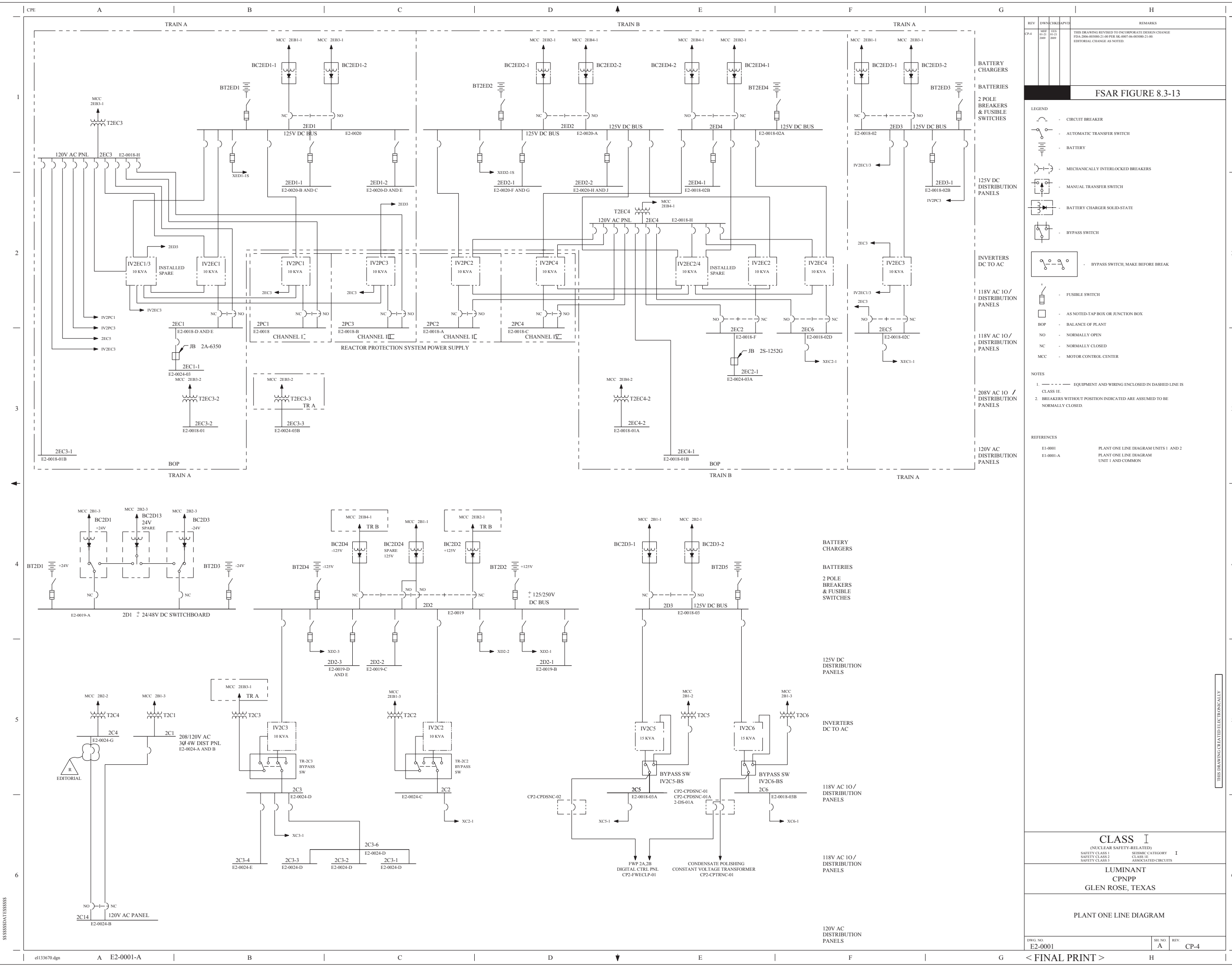
GLEN ROSE, TEXAS

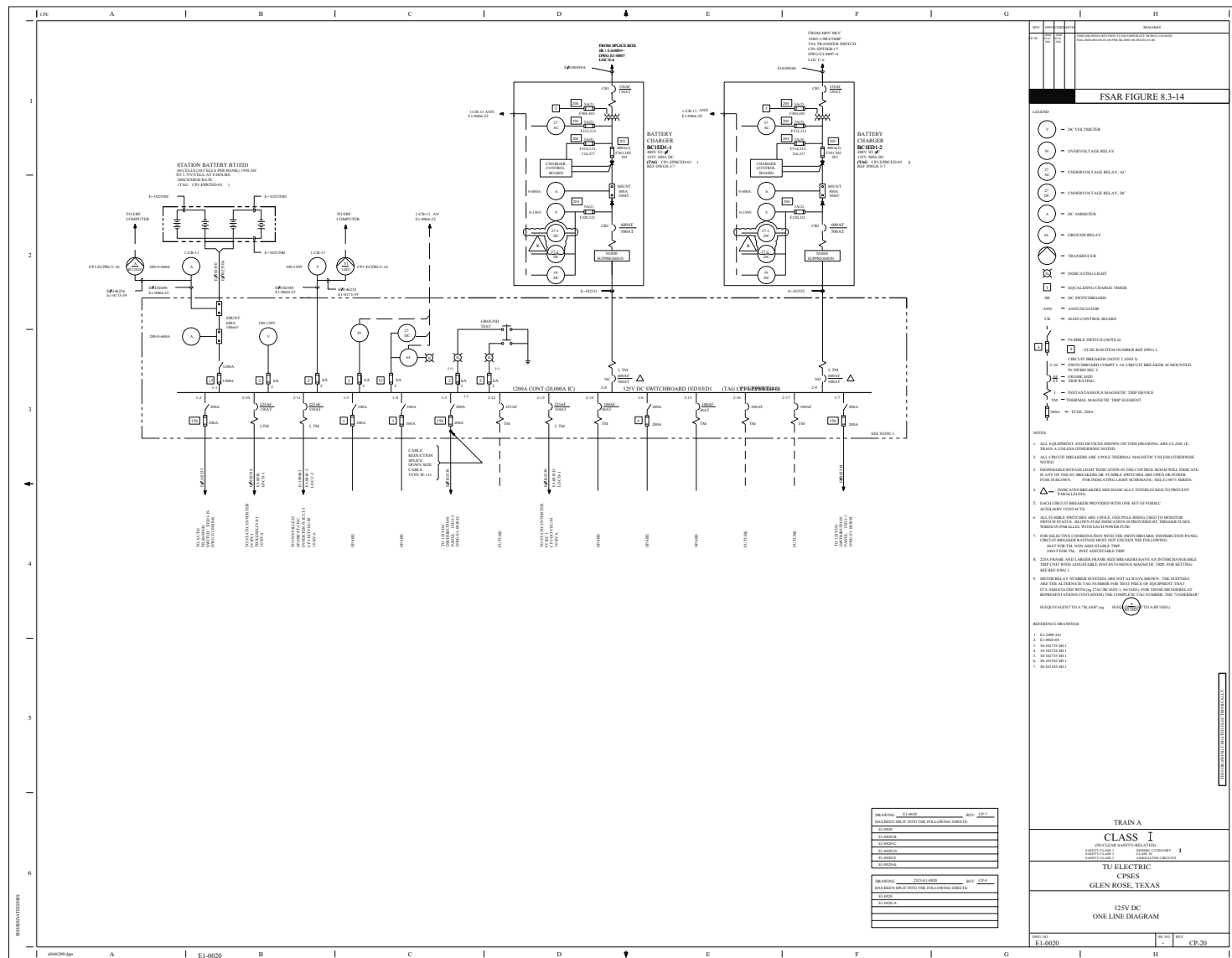
PLANT ONE LINE DIAGRAM UNIT 1 AND COMMON DISTRIBUTION PANELS

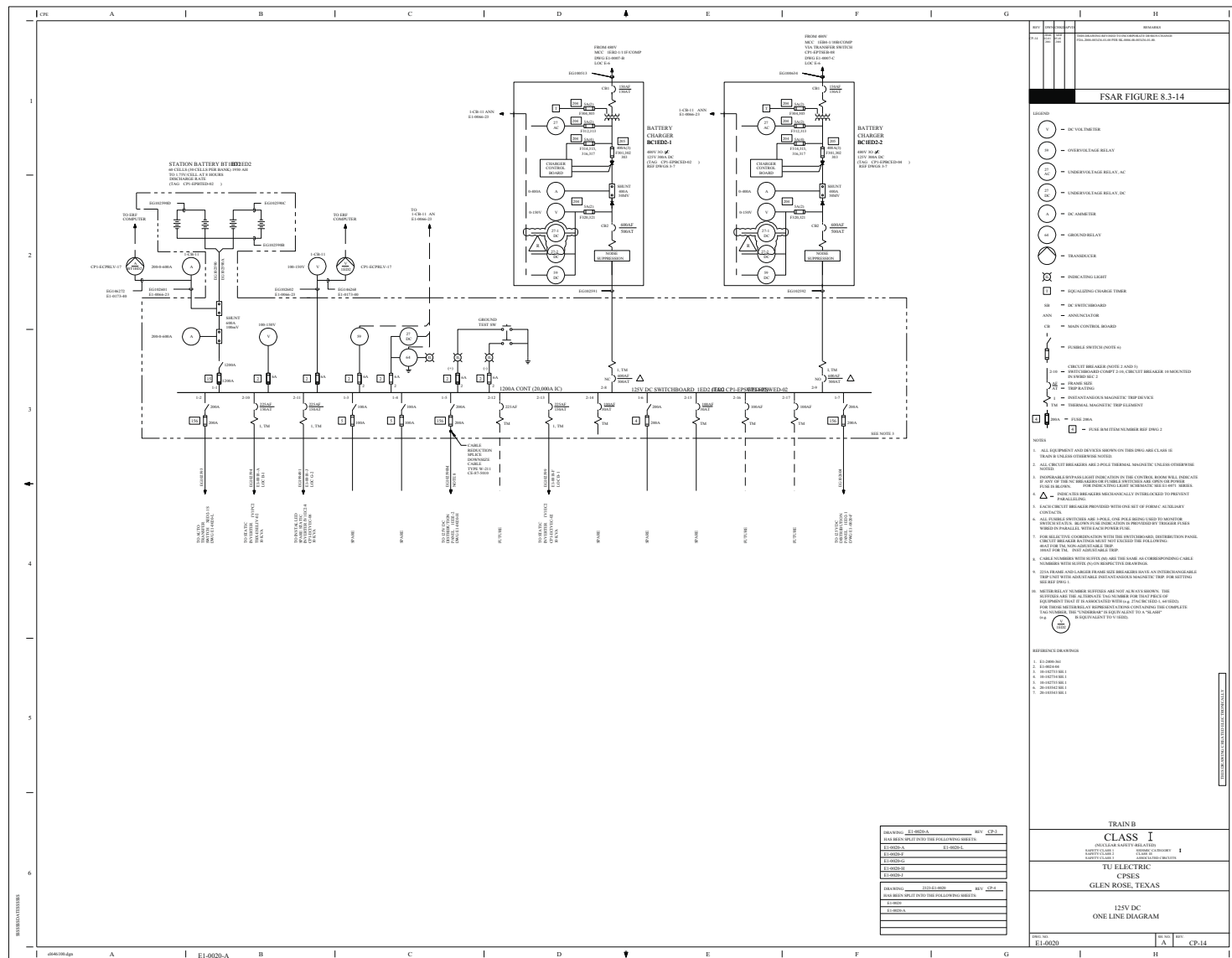
DWG NO. E1-0001 SHEET NO. A REV. CP-18

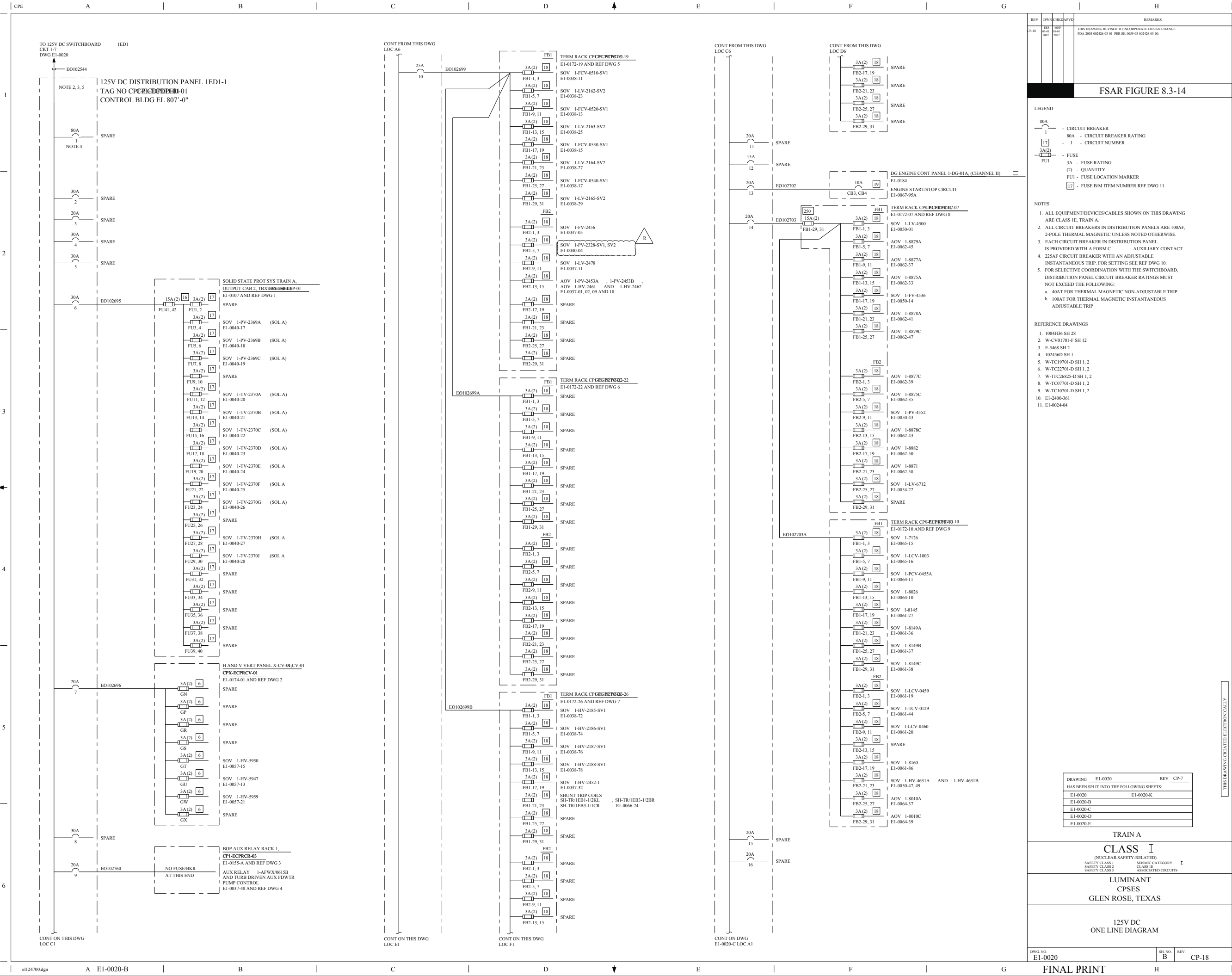
SSSSSSSDATSSSSSSSS

THIS DRAWING CREATED ELECTRONICALLY











CONT FROM DWG E1-0020-D LOC E6



CONT FROM THIS
DWG LOC A6



CONT FROM THIS
DWG LOC B6

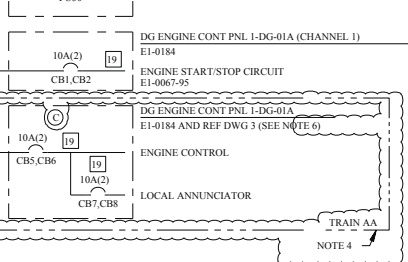
FSAR FIGURE 8.3-14

图 1 研究区位置示意图

100 A



1. ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING

-

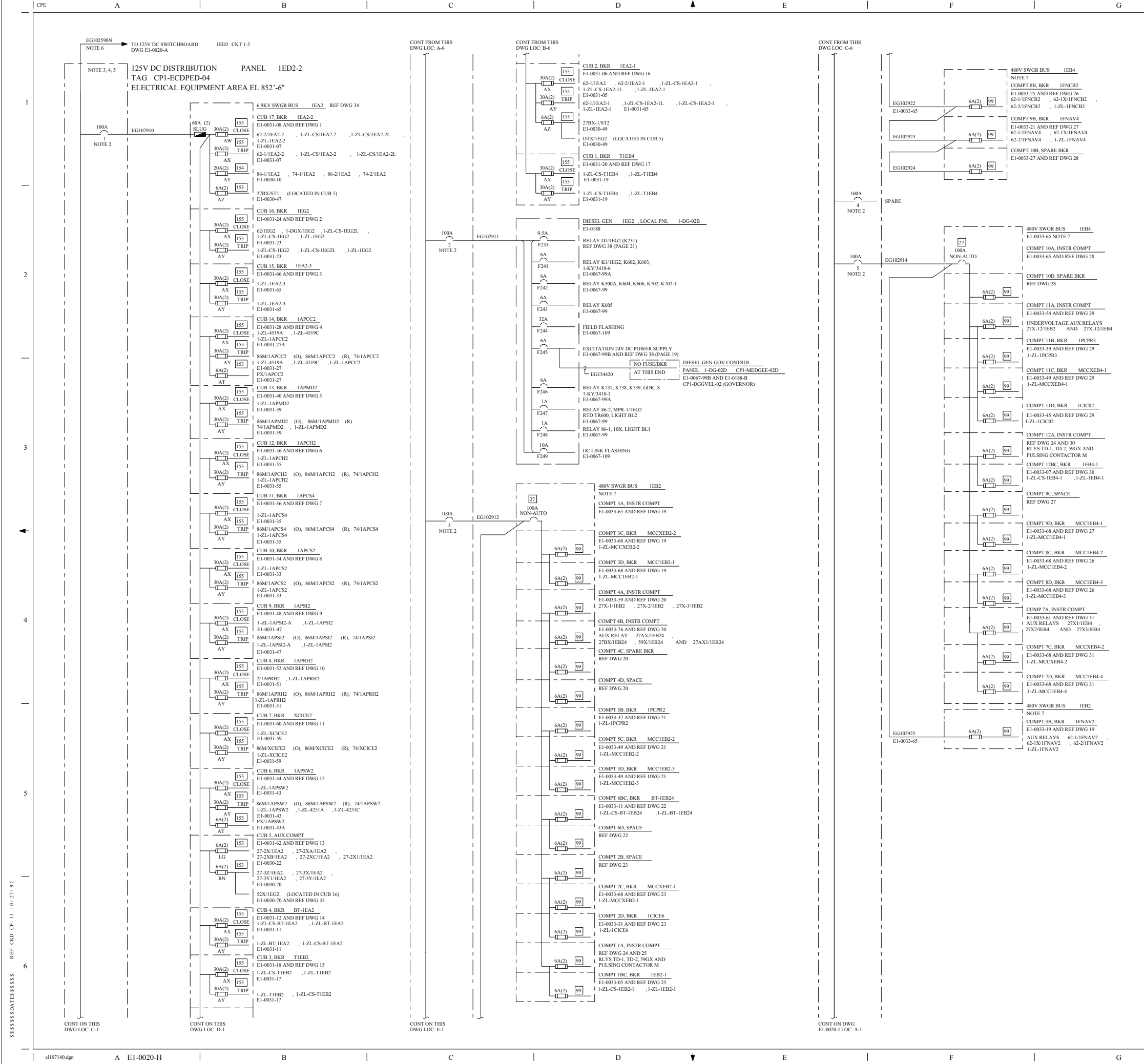
1. W-LV08805-F SH 1.2.3

TRAIN A

CLASS I

TYU POWER

FINAL PRINT H



REV	DWN	CHK	APV	REMARKS
CP-17	RM	04/08/2014		THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGE PER A1-CKR-2014-00399-1.

FSAR FIGURE 8.3-14

LEGEND

100A - CIRCUIT BREAKER
100A - CIRCUIT BREAKER RATING
1 - CIRCUIT NUMBER

30A(2) - FUSE
AX - FUSE RATING
(2) - QUANTITY
AX - FUSE LOCATION MARKER
CLOSE - BKR CLOSE CKT
TRIP - BKR TRIP CKT
20 - FUSE BM ITEM NUMBER
REF DWG 33

NOTES

- ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS 1E.
- INDICATES 225AF CIRCUIT BREAKER WITH AN ADJUSTABLE INSTANTANEOUS TRIP FOR SETTING SEE REF DWG 32.
- ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
- FOR SELECTIVE COORDINATION WITH THE SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:
a. 40AT FOR THERMAL MAGNETIC NON-ADJUSTABLE TRIP
b. 100AT FOR THERMAL MAGNETIC INSTANTANEOUS ADJUSTABLE TRIP
- EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.
- CABLE NUMBERS WITH SUFFIX N ARE THE SAME AS THE CORRESPONDING CABLE NUMBER WITH SUFFIX M ON THE RESPECTIVE DRAWING.
- FUSES FOR EQUIPMENT IN VARIOUS 480 VOLT SWITCH GEAR COMPARTMENTS ARE LOCATED IN THE TOP OF THAT UNIT (COMPT A).

REFERENCE DRAWINGS

- 33-51261-E577
- 33-51261-E576
- 33-51261-D575
- 33-51261-E574
- 33-51261-E573
- 33-51261-E572
- 33-51261-E591
- 33-51261-E590
- 33-51261-E589
- 33-51261-E588
- 33-51261-E587
- 33-51261-E586
- 33-51261-E585
- 33-51261-D584
- 33-51261-E583
- 33-51261-E582
- 33-51261-E581
- D54925-3, D54925-4 SH 3
- 1442F76
- 1442F77
- 1442F78
- 1442F79
- 1442F75
- 1442F61B
- 1442F74
- 1442F81
- 1442F82
- 1442F83 SH A
- 1442F84
- 1442F85
- 1442F80
- E1-2400-361
- E1-0024-04
- 33-51261-E578, A
- 55097-E0277
- E1-0004-A
- E1-0005-A
- 38 - FANP DWG 38-1290428-**

DRAWING E1-0020-A REV CP-3
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:
E1-0020-A E1-0020-L
E1-0020-F
E1-0020-G
E1-0020-H
E1-0020-J

TRAIN B
CLASS I
(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1
SAFETY CLASS 2
SAFETY CLASS 3
SERVSAFE CATEGORY
CLASS 1E
ASSOCIATED CIRCUITS

LUMINANT
CPNPP
GLEN ROSE, TEXAS

125V DC
ONE LINE DIAGRAM

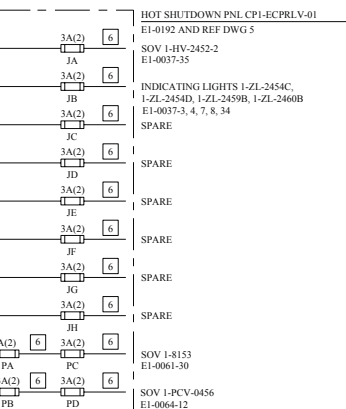
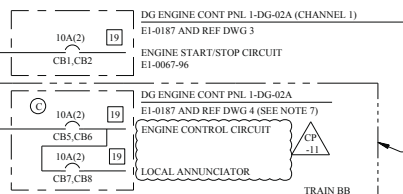
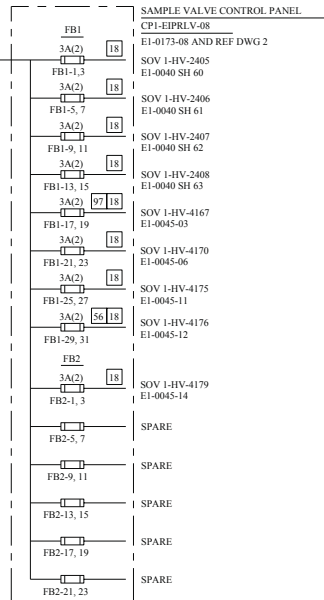
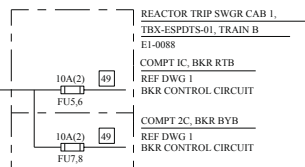
DWG NO. E1-0020 SH NO. H REV. CP-17

10/27/97 REF CKD CP-13

THIS DRAWING CREATED ELECTRONICALLY



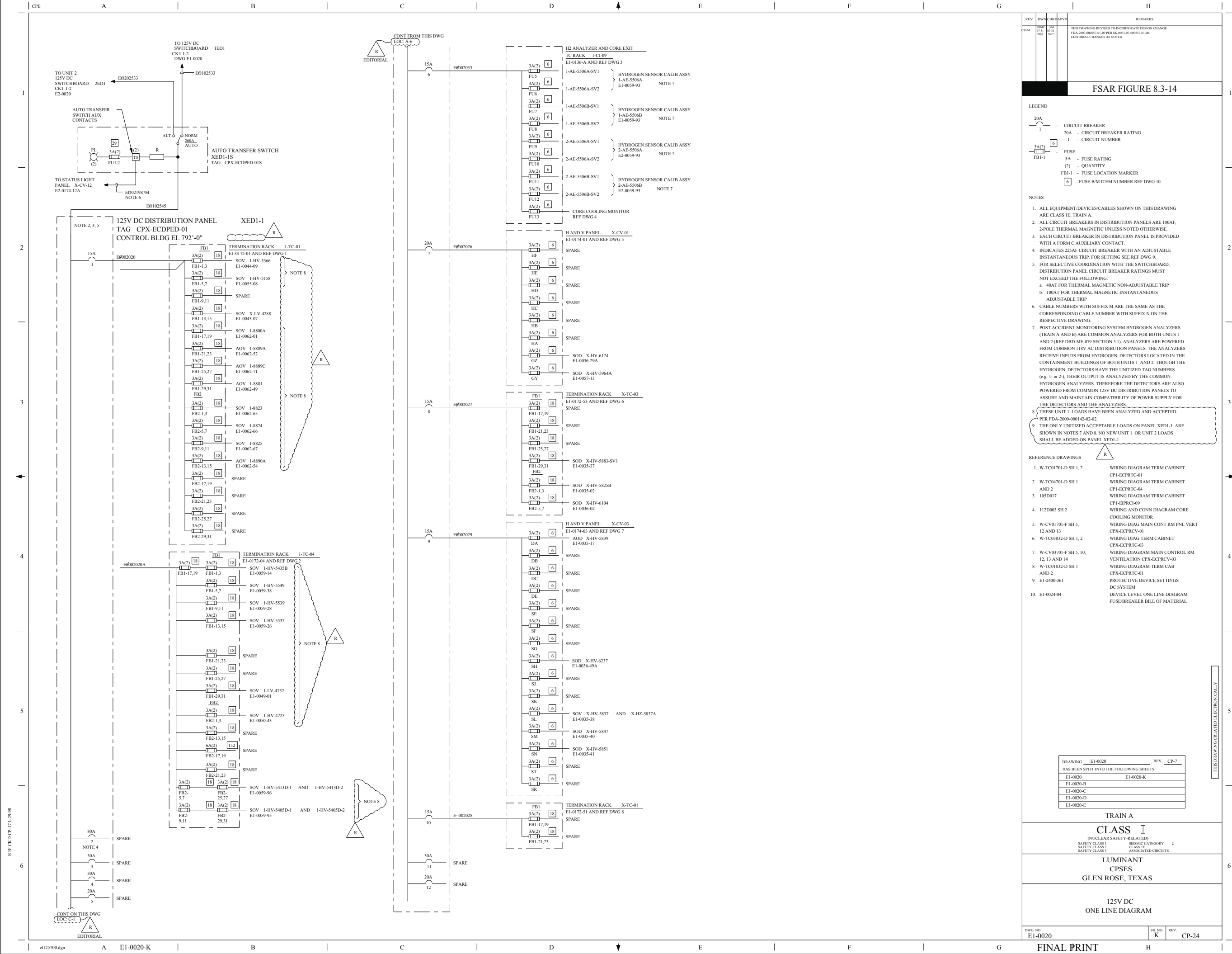
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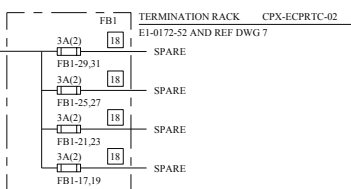
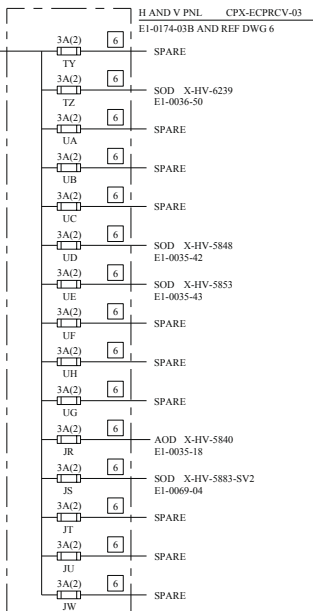
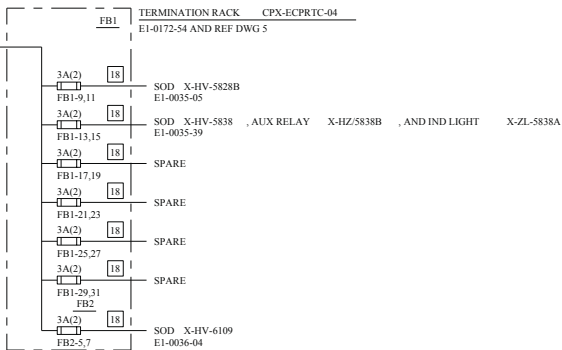
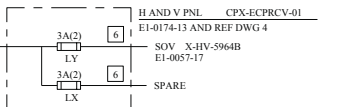
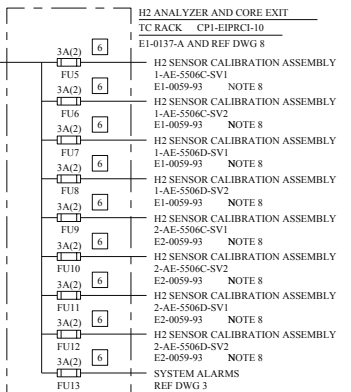
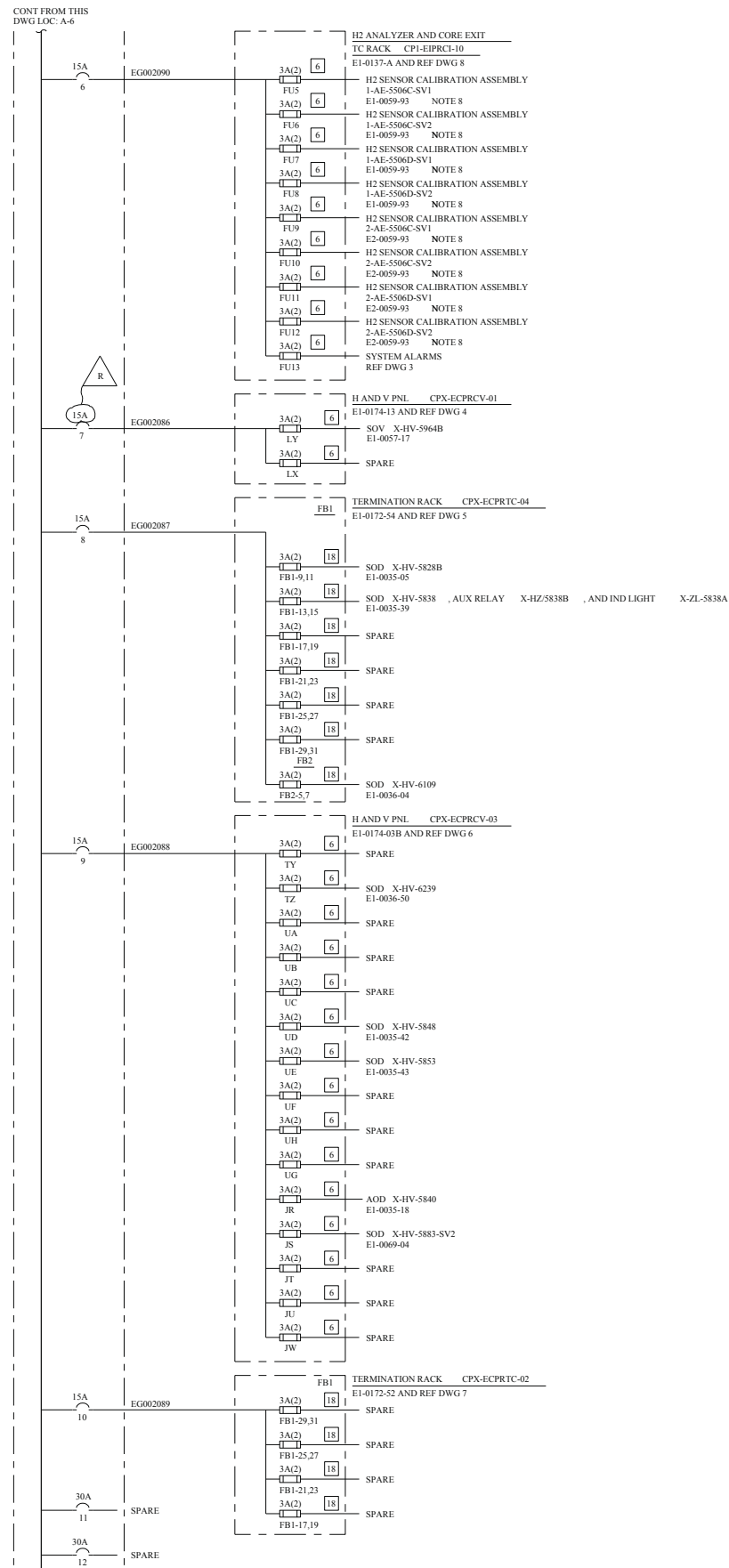
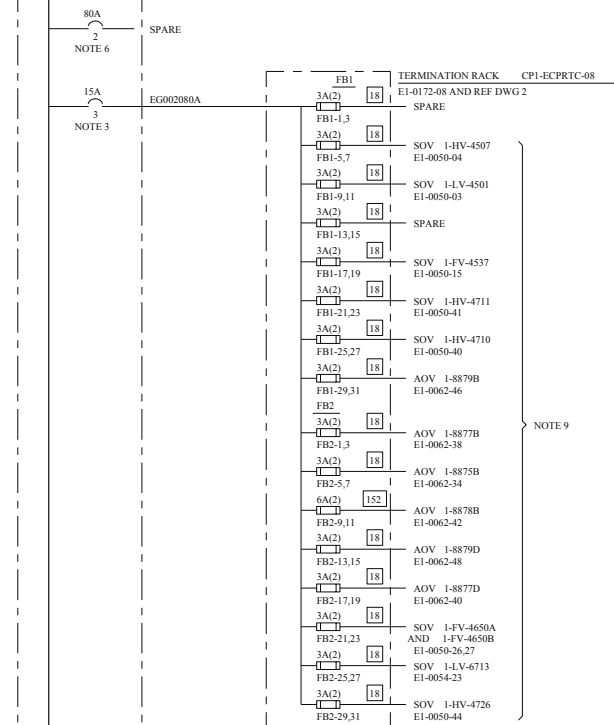
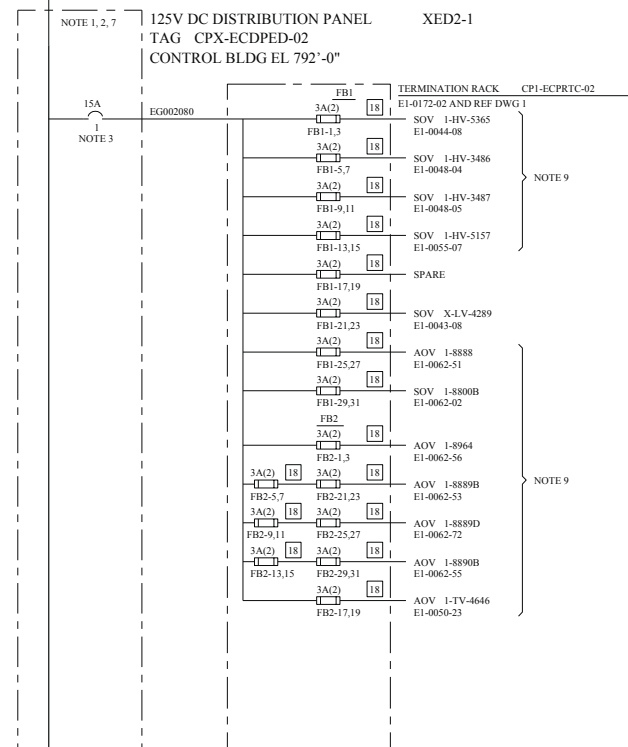
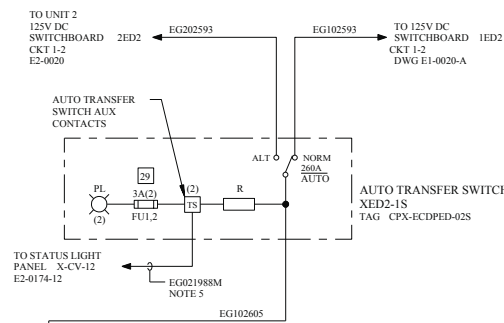


AND 1-ZL-2476B

NOTE 2, 3, 4

REV	DWG	CHK	APP	REMARKS
CP-11	SH 06-14 2013			THIS DRAWING REVISED TO INCORPORATE AN EDITORIAL CHANGE AS NOTED PER AEC-CR-2013-005-009-1.
FSAR FIGURE 8.3-14				
LEGEND				
<div><div><div>100A</div><div>1</div></div><div>-</div><div>CIRCUIT BREAKER</div></div> <div><div>100A</div><div>-</div><div>CIRCUIT BREAKER RATING</div></div> <div><div>1</div><div>-</div><div>CIRCUIT NUMBER</div></div> <div><div><div>3A(2)</div><div>18</div></div><div>JA</div></div> <div>-</div> <div>FUSE</div> <div>3A</div> <div>-</div> <div>FUSE RATING</div> <div>(2)</div> <div>-</div> <div>QUANTITY</div> <div>JA</div> <div>-</div> <div>FUSE LOCATION MARKER</div> <div>18</div> <div>-</div> <div>FUSE B/M ITEM NUMBER</div> <div>REF DWG 6</div> <div><div>C</div></div> <div>-</div> <div>SEE NOTE 6</div>				
NOTES				
<div>1. ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS 1E.</div> <div>2. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 2-POLE THERMAL/MAGNETIC UNLESS NOTED OTHERWISE.</div> <div>3. FOR SELECTIVE COORDINATION WITH THE SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:<div><div>a.</div><div>40AT FOR THERMAL/MAGNETIC NON-ADJUSTABLE TRIP</div><div>100AT FOR THERMAL/MAGNETIC INSTANTANEOUS ADJUSTABLE TRIP</div></div></div> <div>4. EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.</div> <div>5. - - - - - ALL WIRING AND CABLING ENCLOSED BY DASHED LINES IS ASSOCIATED CLASS 1E, TRAIN BB. THE FUNCTION OF THE LOAD IS NOT SAFETY RELATED AND THE LOAD CIRCUIT BREAKER IS CLASS 1E.</div> <div>6. ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOAD IS PROVIDED BY TWO CIRCUIT BREAKERS, EACH COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKER, INDICATED BY NEXT TO THE BREAKER.</div> <div>7. ALL INTERNALS, COMPONENTS AND WIRING SUPPLIED BY THE FEEDER CIRCUIT BREAKERS ARE NON-CLASS 1E, TRAIN C.</div>				
REFERENCE DRAWINGS				
<div>1. 7026D76, 7026D77, 7026D78</div> <div>2. W-LV08805-F SH 1, 2, 3</div> <div>3. 09-500-76001 SH 3, 8</div> <div>4. 09-500-76001 SH 4, 6, 8</div> <div>5. W-99X03934-F SH 7, 9, 14</div> <div>6. E1-0024-04</div>				
TRAIN B				
CLASS I				
(NUCLEAR SAFETY-RELATED)				
SAFETY CLASS 1				
SAFETY CLASS 2				
SAFETY CLASS 3				
SYSTEM CATEGORY				
CLASS 1E				
ASSOCIATED CIRCUITS				
LUMINANT				
CPNPP				
GLEN ROSE, TEXAS				
125V DC				
ONE LINE DIAGRAM				
THIS DRAWING CREATED ELECTRONICALLY				
DRAWING E1-0020-A REV CP-3				
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:				
E1-0020-A				
E1-0020-F				
E1-0020-G				
E1-0020-H				
E1-0020-J				
DWG. NO. E1-0020				
SH. NO. J				
REV. CP-11				





REV	DATE	DESCRIPTION	REMARKS
CP-23	18-06-2007	101-06-2007	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FIDA-2001-002250-04-01 PER 38-0001-01-002250-04-00.

FSAR FIGURE 8.3-14

LEGEND

20A

1

- CIRCUIT BREAKER

20A

1

- CIRCUIT BREAKER RATING

3A(2)

18

- FUSE

3A

(2)

- FUSE RATING

FB1-1

18

- FUSE B/M ITEM NUMBER

REF DWG 9

NOTES

1. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.

2. EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.

3. TO ENSURE PROPER PROTECTION OF CABLES, TDDA, NOT INCREASE THE AMPACITY OF THIS CIRCUIT BREAKER.

4. ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS 1E.

5. CABLE NUMBERS WITH SUFFIX M ARE THE SAME AS THE CORRESPONDING CABLE NUMBER WITH SUFFIX N ON THE RESPECTIVE DRAWING.

6. 225 AMP FRAME BREAKER WITH ADJUSTABLE INSTANTANEOUS TRIP. SEE REF DWG 10.

7. FOR SELECTIVE COORDINATION WITH THE SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:

a. 40AT FOR THERMAL MAGNETIC NON-ADJUSTABLE TRIP

b. 100AT FOR THERMAL MAGNETIC INSTANTANEOUS ADJUSTABLE TRIP

8. POST ACCIDENT MONITORING SYSTEM HYDROGEN ANALYZERS (TRAIN A AND B) ARE COMMON ANALYZERS FOR BOTH UNITS 1 AND 2 (REF DBD-ME-079 SECTION 5.1). ANALYZERS ARE POWERED FROM COMMON 118V AC DISTRIBUTION PANELS. THE ANALYZERS RECEIVE INPUTS FROM HYDROGEN DETECTORS LOCATED IN THE CONTAINMENT BUILDINGS OF BOTH UNITS 1 AND 2. THOUGH THE HYDROGEN DETECTORS HAVE THE UNITIZED TAG NUMBERS (e.g. 1- or 2-), THEIR OUTPUT IS ANALYZED BY THE COMMON HYDROGEN ANALYZERS. THEREFORE THE DETECTORS ARE ALSO POWERED FROM COMMON 125V DC DISTRIBUTION PANELS TO ASSURE AND MAINTAIN COMPATIBILITY OF POWER SUPPLY FOR THE DETECTORS AND THE ANALYZERS.

9. THESE UNIT 1 LOADS HAVE BEEN ANALYZED AND ACCEPTED PER FIDA-2000-0001-42-02-02.

10. THE ONLY UNITIZED ACCEPTABLE LOADS ON PANEL XED2-1 ARE SHOWN IN NOTES 8 AND 9. NO NEW UNIT 1 OR UNIT 2 LOADS SHALL BE ADDED ON PANEL XED2-1.

REFERENCE DRAWINGS

1. W-TC02701-D SH 1, 2

WIRING DIAGRAM TERMINATION CABINET

2. W-TC08701-D SH 1, 2

WIRING DIAGRAM TERMINATION CABINET

3. 112D003 SH 2

WIRING AND CONN DIAG CORE COOLING MONITOR

4. W-CV01701-F SH 7, 16

WIRING DIAG MAIN CONT RM PNL VERT

5. W-TC04832-D SH 1, 2

WIRING DIAG TERM CAB CPX-ECPRTC-04 WD TERM CAB TRIN B

6. W-CV03701-F SH 7, 16, 13

WIRING DIAG CONT RM VERT BD V PNL CPX-ECPRCV-03 WD MN CONT RM VV

7. W-TC02832-D SH 1, 2

WIRING DIAGRAM TERM CAB CPX-ECPRTC-02 WD TERM CAB TR B

8. 105D017

WIRING AND CONNECTION DIAGRAM

9. EI-0024-04

DEVICE LEVEL ONE LINE DIAGRAM FUSE/BREAKER BILL OF MATERIAL

10. EI-2400-361

PROTECTIVE DEVICE SETTINGS DC SYSTEM

DRAWING

EI-0020-A

REV

CP-3

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

EI-0020-A

EI-0020-L

EI-0020-F

EI-0020-G

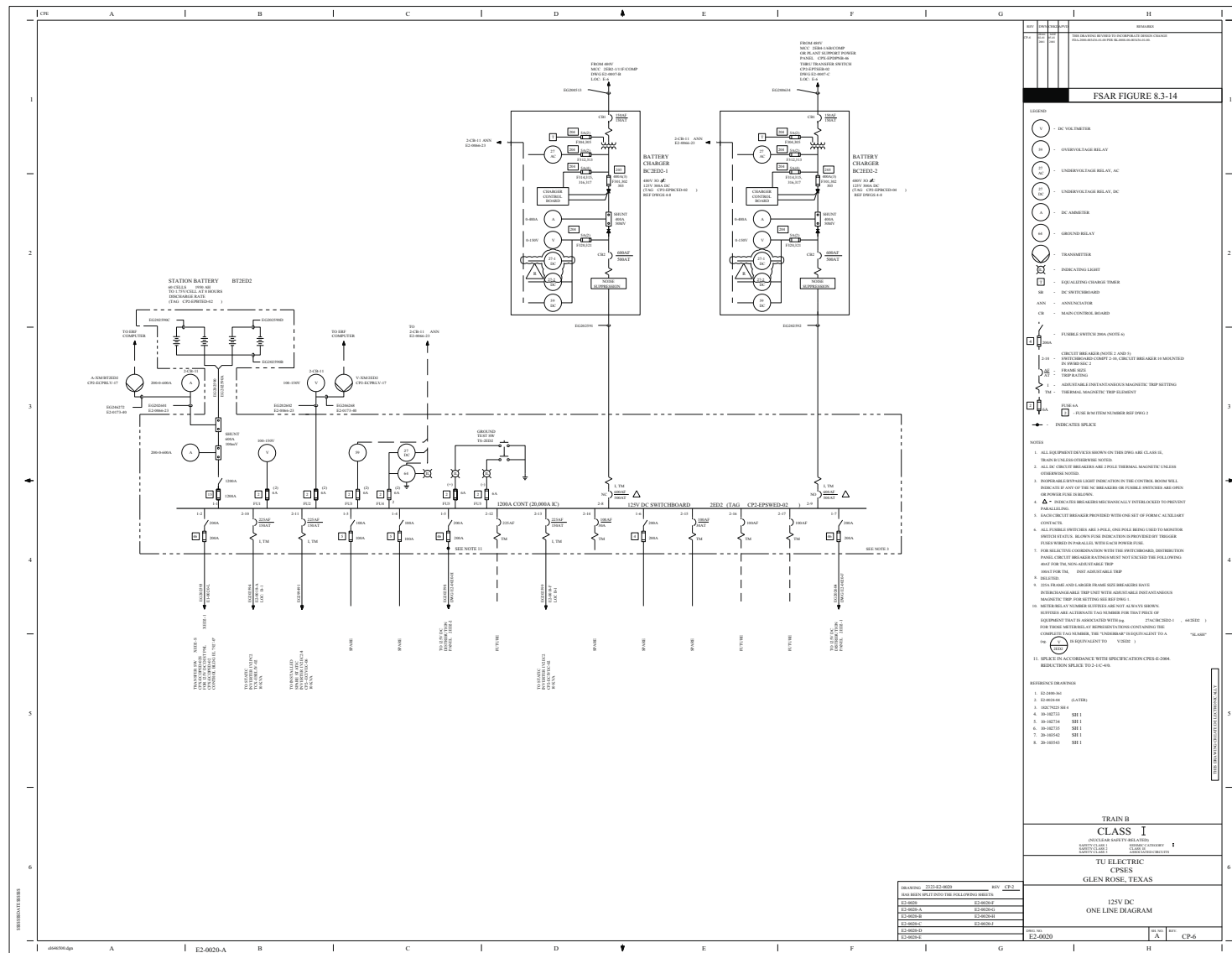
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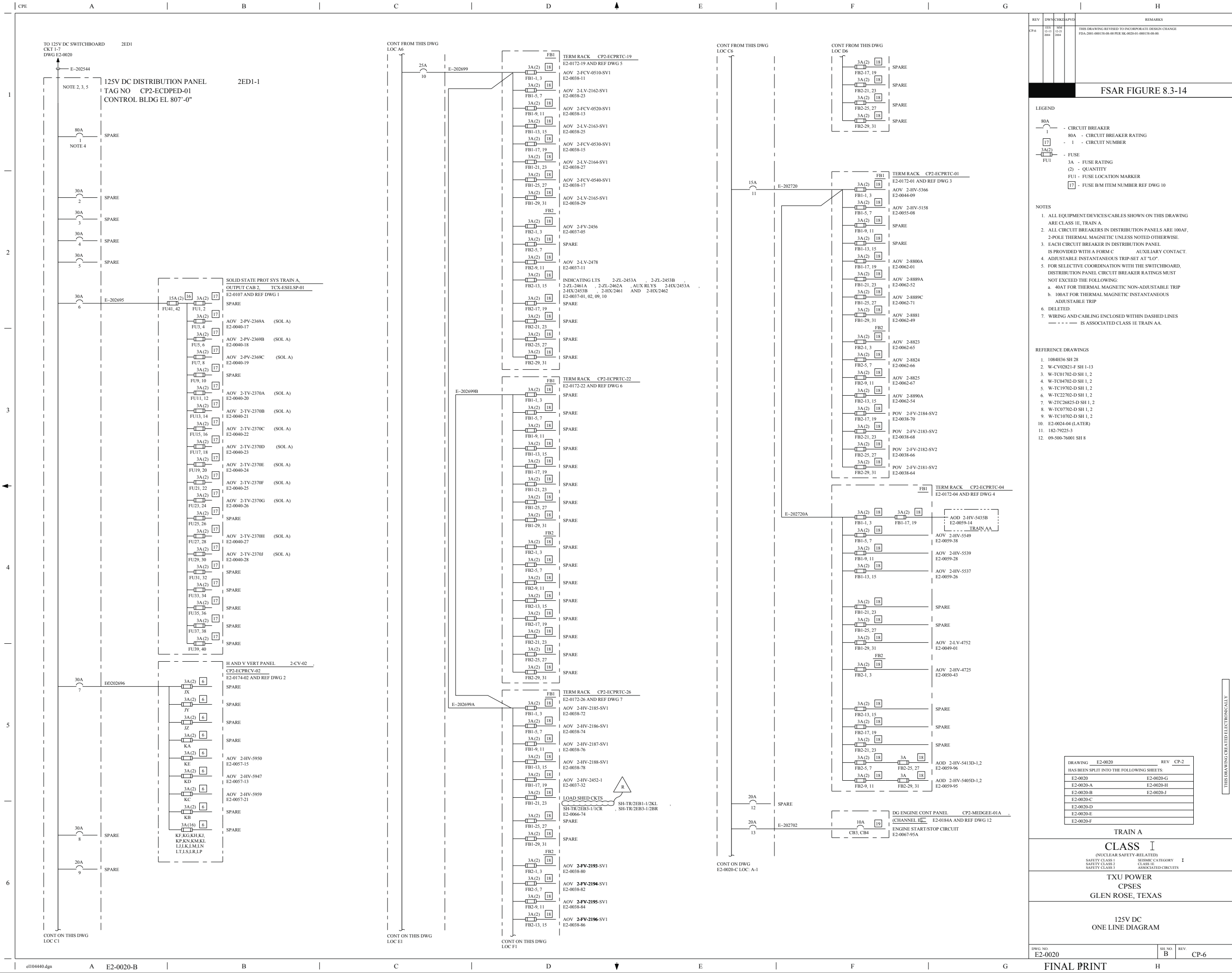
EI-0020-J

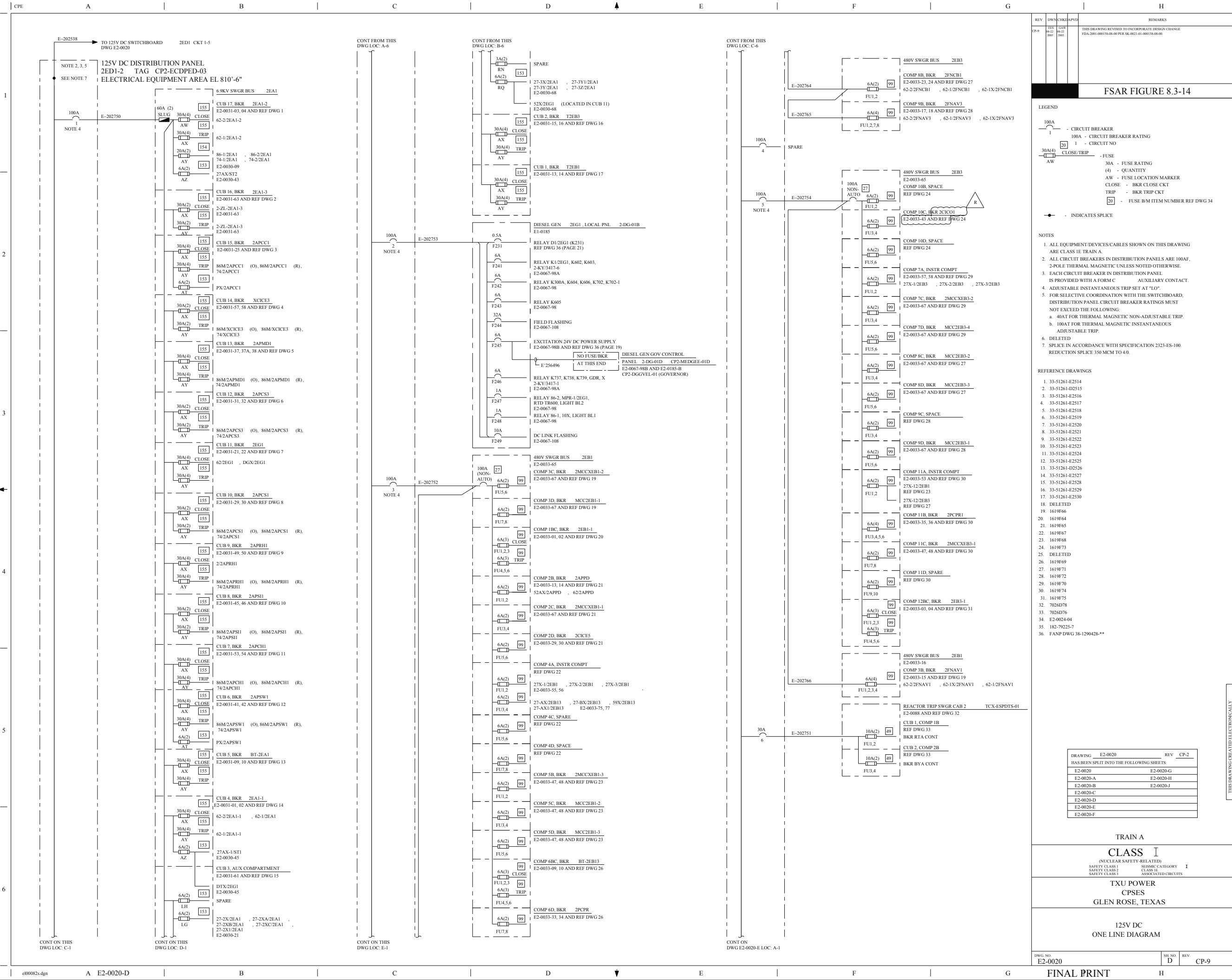
THIS DRAWING CREATED ELECTRONICALLY

THIS DRAWING CREATED ELECTRONICALLY

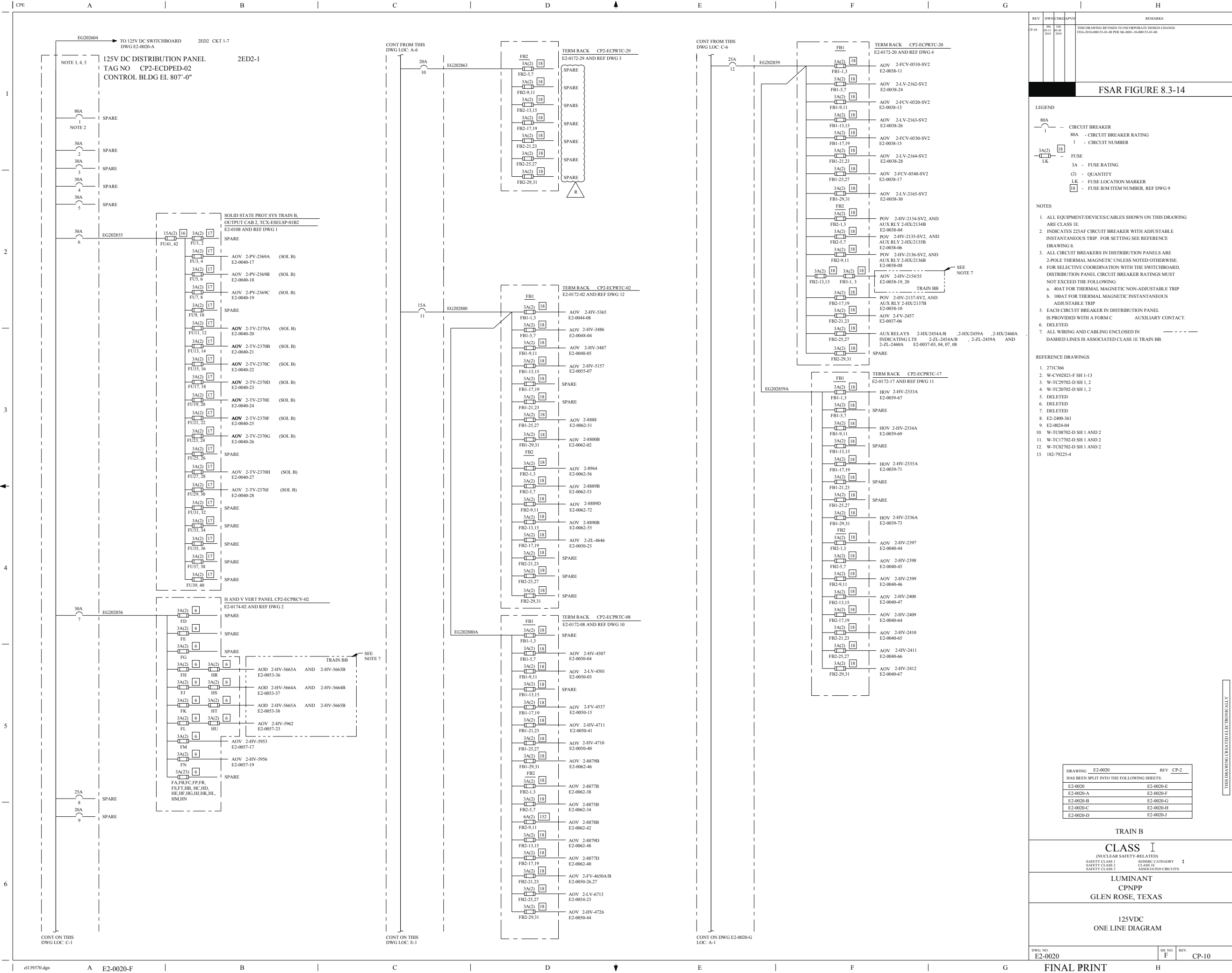
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REV	DWG	CIRCUIT	APVT	REMARKS
CP-7	10-27 2006	10-29 2006		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2004-00181-02-00 PER SK-0001-04-00181-02-00 EDITORIAL CHANGE AS NOTED

FSAR FIGURE 8.3-14

LEGEND

80A

1

- CIRCUIT BREAKER

80A - CIRCUIT BREAKER RATING

1 - CIRCUIT NO

3A(2)

FB2-1

- FUSE

3A - FUSE RATING

(2) - QUANTITY

FB2-1 - FUSE LOCATION MARKER

18

- FUSE B/M ITEM NUMBER REF DWG 3

NOTES

1. ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS 1E.
2. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
3. EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.
4. DELETED.
5. WIRING AND CABLING ENCLOSED WITHIN DASHED LINES
----- IS ASSOCIATED CLASS 1E TRAIN BB.

REFERENCE DRAWINGS

1. W-TC05702-D SH 1, 2
2. W-TC11702-D SH 1, 2
3. E2-0024-04
4. 112D003 SH 1, 2
5. W-2TC27825-D SH 1,2
6. W-TC14702-D SH 1,2
7. W-TC23702-D SH 1,2

THIS DRAWING CREATED ELECTRONICALLY

DRAWING	E2-0020	REV	CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E2-0020	E2-0020-E		
E2-0020-A	E2-0020-F		
E2-0020-B	E2-0020-G		
E2-0020-C	E2-0020-H		
E2-0020-D	E2-0020-J		

TRAIN B

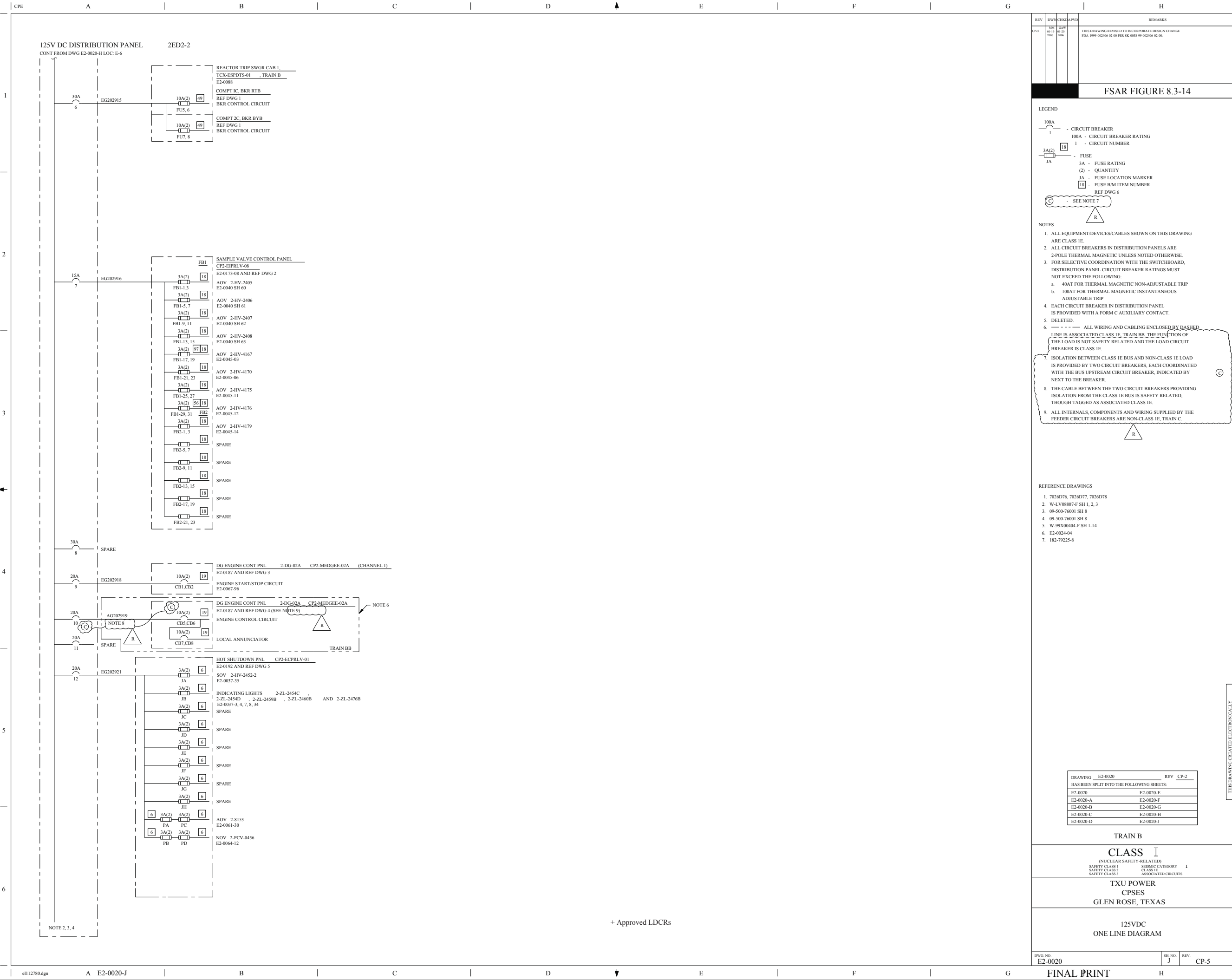
CLASS I

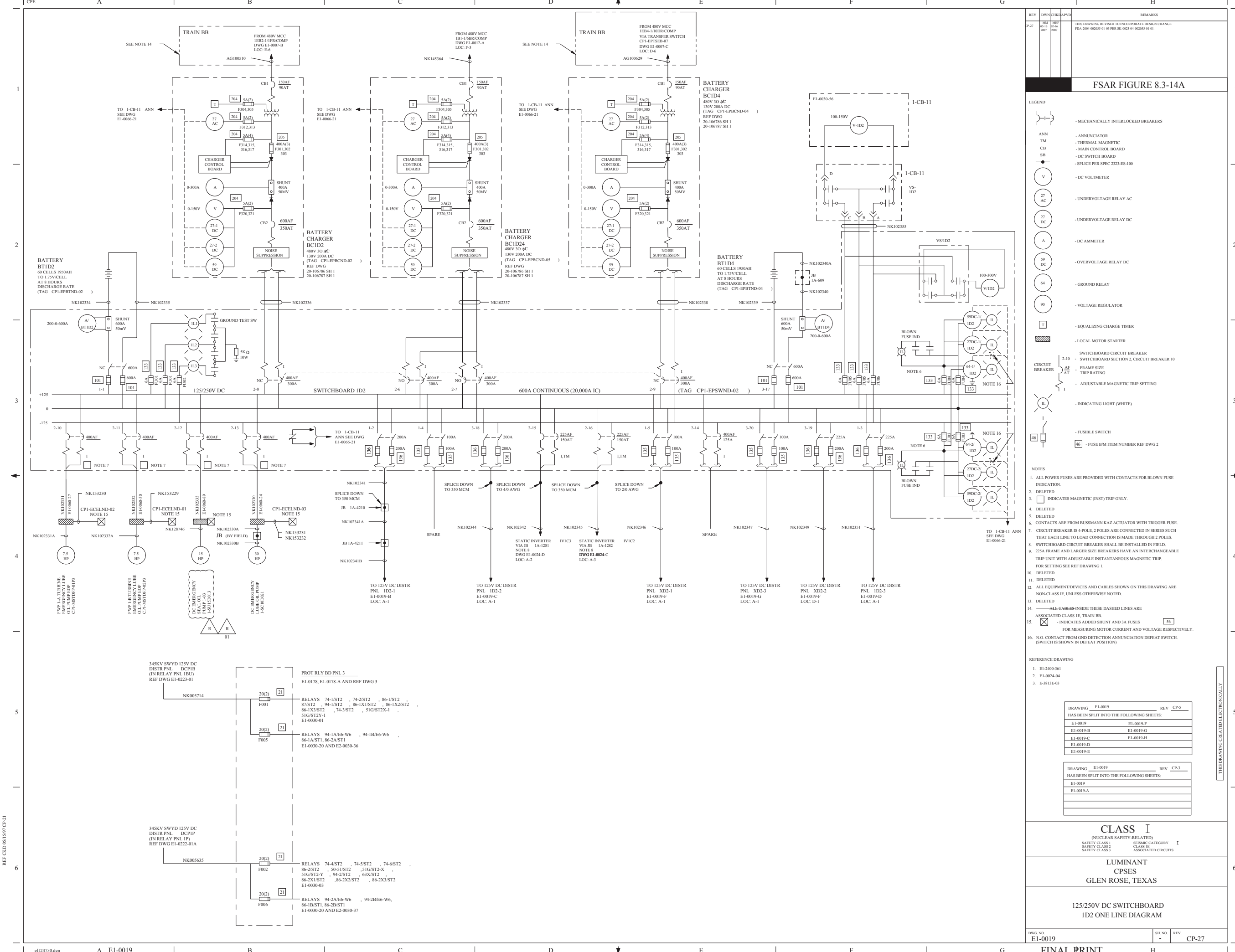
(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1 SUBSIC CATEGORY I
SAFETY CLASS 2 CLASS II
SAFETY CLASS 3 ASSOCIATED CIRCUITS

TXU POWER
CPSES
GLEN ROSE, TEXAS

125VDC
ONE LINE DIAGRAM

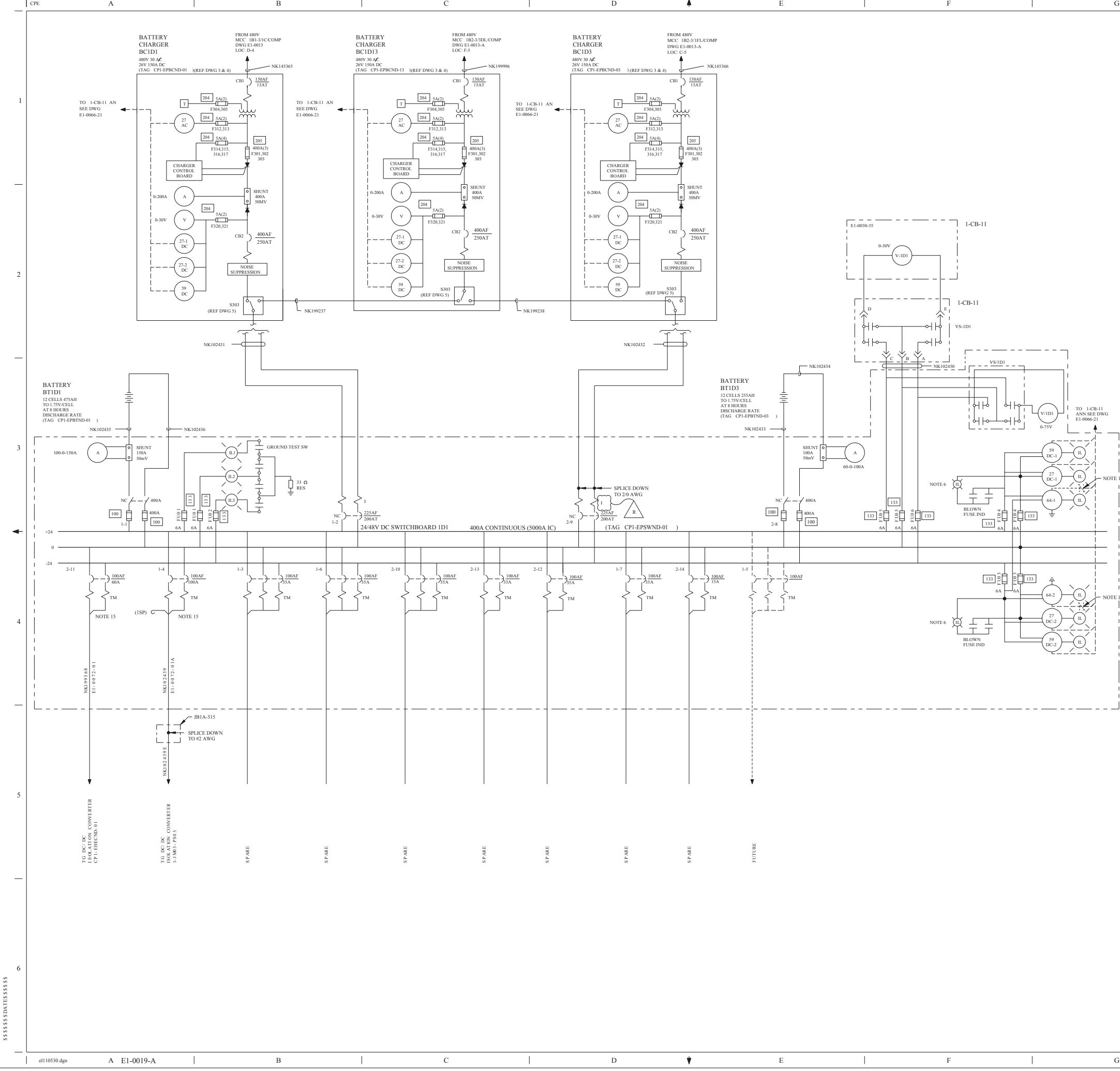
DWG. NO. E2-0020	SHL NO. G	REV. CP-7
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REF CKD 05/15/97/CP-21

THIS DRAWING CREATED ELECTRONICALLY



REV	DWN	CHK	APPV	REMARKS
CP-16	01/17/2014	08/17/2014	08/17/2014	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2014-000118-01-00 PER SR-0000-14-000118-01-00

FSAR FIGURE 8.3-14A

LEGEND

MECHANICALLY INTERLOCKED BREAKERS

ANNUNCIATOR

THERMAL MAGNETIC

MAIN CONTROL BOARD

DC SWITCHBOARD

SPLICE

DC VOLTMETER

UNDERVOLTAGE RELAY, AC

UNDERVOLTAGE RELAY, DC

DC AMMETER

OVERVOLTAGE RELAY, DC

GROUND RELAY

EQUALIZING CHARGE TIMER

SWITCHBOARD CIRCUIT BREAKER

SWITCHBOARD SECTION 2, CIRCUIT BREAKER 10

FRAME SIZE
CONTINUOUS RATING

INST MAGNETIC TRIP DEVICE SEE NOTE 4

INDICATING LIGHT (WHITE)

FUSIBLE SWITCH

FUSE BM ITEM NUMBER
REF DWG 2

NOTES

- ALL POWER FUSES ARE PROVIDED WITH CONTACTS FOR BLOWN FUSE INDICATION.
- ALL CIRCUIT BREAKERS ARE 2-POLE THERMAL MAGNETIC UNLESS OTHERWISE NOTED.
- INDICATES MAGNETIC (INST) TRIP ONLY.
- FOR INST MAGNETIC TRIP SETTING SEE REF DWG 1.
- DELETED
- CONTACTS ARE FROM BUSSMANN KAZUATOR WITH TRIGGER FUSE.
- CIRCUIT BREAKER IS 4-POLE. 2 POLES ARE CONNECTED IN SERIES SUCH THAT EACH LINE TO LOAD CONNECTION IS MADE THROUGH 2 POLES.
- SWITCHBOARD CIRCUIT BREAKER SHALL BE INSTALLED IN FIELD.
- DELETED
- INCOMING CIRCUIT BREAKERS ARE NON-AUTOMATIC (NO-TRIPS).
- DELETED
- ALL EQUIPMENT DEVICES AND CABLES SHOWN ON THIS DRAWING ARE NON-CLASS IIE, UNLESS OTHERWISE NOTED.
- METER/RELAY NUMBER SUFFIXES ARE NOT ALWAYS SHOWN. THE SUFFIXES ARE THE ALTERNATE TAG NUMBER FOR THAT PIECE OF EQUIPMENT THAT IT IS ASSOCIATED WITH (e.g. 27AC/BC1D1, 64-I/1D1).
- N.O. CONTACT FROM GND DETECTION ANNUNCIATION DEFEAT SWITCH (SWITCH IS SHOWN IN DEFEAT POSITION)
- THIS IS A 3 POLE BREAKER WITH 2 POLES USED.

REFERENCE DRAWINGS

- E1-2400-361
- E1-0024-04
- SCI DWG 20-106790 SH 1
- SCI DWG 20-106791 SH 1
- SCI DWG 20-105214 SH 1

THE FOLLOWING CABLE(S) ARE SPARED IN SWITCHBOARD 1D1:

SP102440	SP102444
SP102441	SP102445
SP102442	SP102446
SP102443	

DRAWING 2323-E1-0019

REV CP-3

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS

E1-0019
E1-0019-A

NON-SAFETY

LUMINANT
CPNPP
GLEN ROSE, TEXAS

24/48V DC
ONE LINE DIAGRAM

DWG. NO.
E1-0019

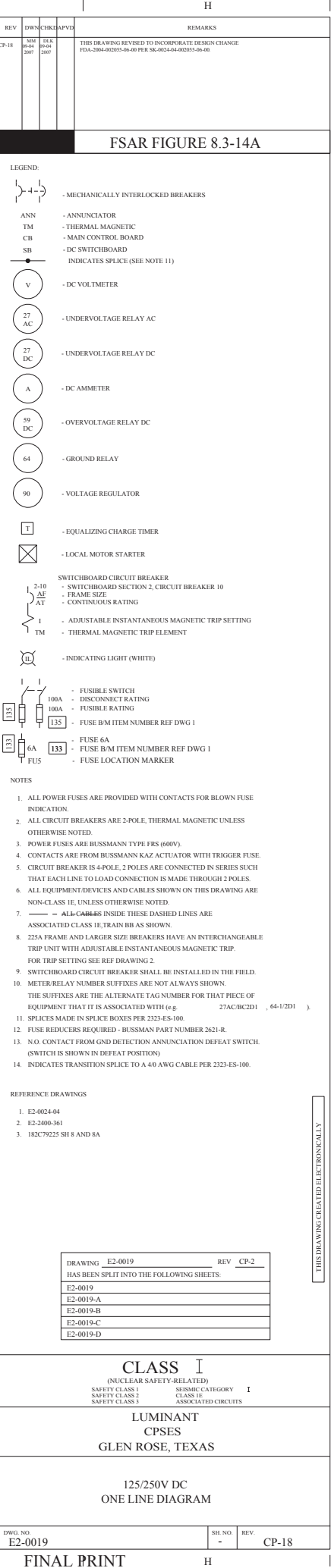
SHEET NO.
A

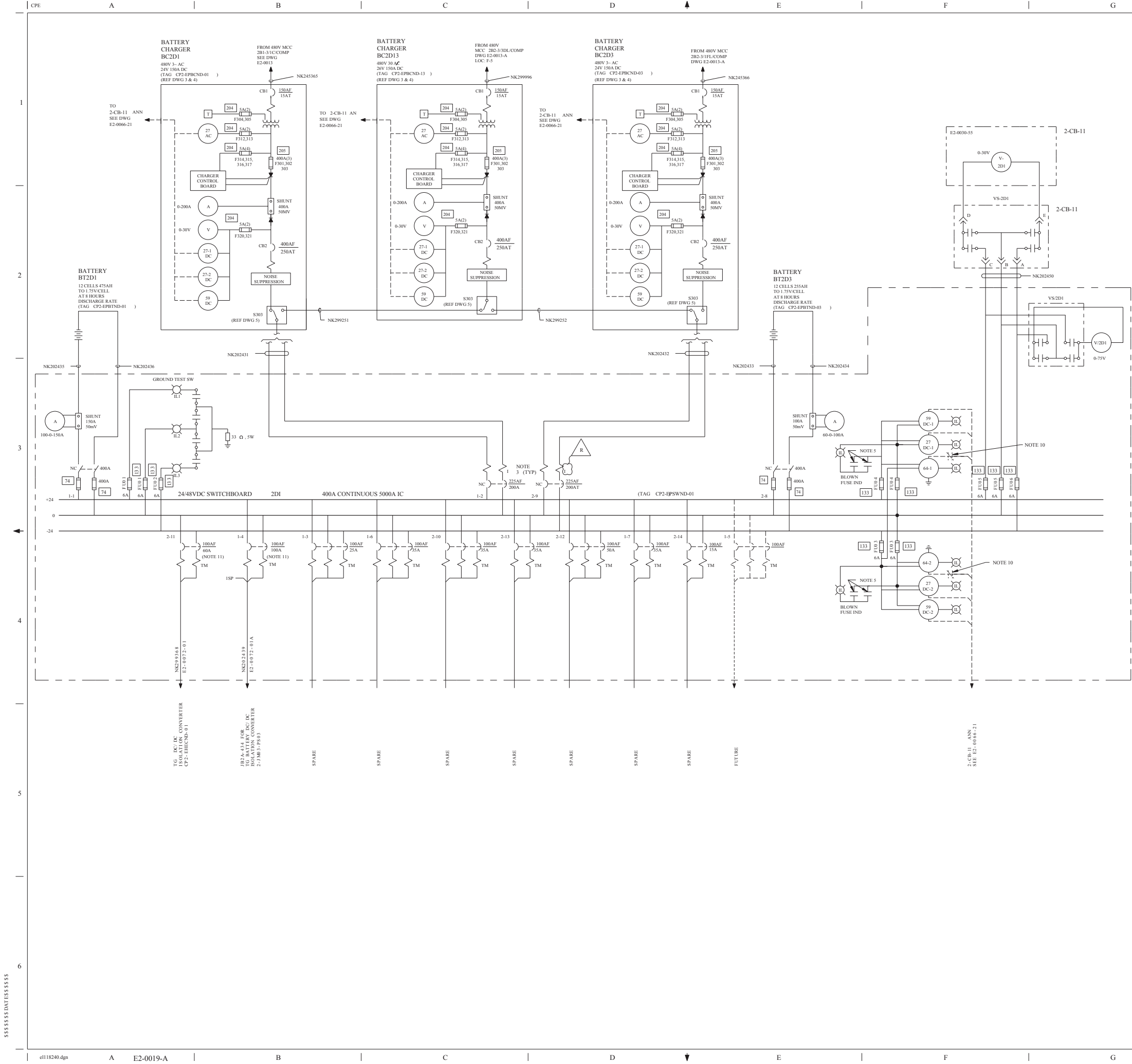
REV.
CP-16

< FINAL PRINT >

H

THIS DRAWING CREATED ELECTRONICALLY





REV	DOWN	CHK	APPV	REMARKS
CP-11	DL	SH		THIS DRAWING REVISD TO INCORPORATE DESIGN CHANGE FDA-2014-000118-01-00 PIR SK-0004-14-000118-01-00

FSAR FIGURE 8.3-14A

LEGEND:

- MECHANICALLY INTERLOCKED BREAKERS

- ANNUNCIATOR

- THERMAL MAGNETIC

- MAIN CONTROL BOARD

- DC SWITCHBOARD

- DC VOLTMETER

- UNDERVOLTAGE RELAY AC

- UNDERVOLTAGE RELAY DC

- DC AMMETER

- OVERVOLTAGE RELAY DC

- GROUND RELAY

- EQUALIZING CHARGE TIMER

- SWITCHBOARD CIRCUIT BREAKER

- FRAME SIZE

- CONTINUOUS RATING

- ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SETTING
SEE NOTE 3

- INDICATING LIGHT (WHITE)

- DISCONNECT RATING

- FUSIBLE RATING

- FUSIBLE SWITCH

- FUSE B/M ITEM NUMBER
REF DWG 1

- FUSE 6A RATING

- FUSE B/M ITEM NUMBER REF DWG 1

- LOCATION MARKER

NOTES

- ALL POWER FUSES ARE PROVIDED WITH CONTACTS FOR BLOWN FUSE INDICATION.
- ALL CIRCUIT BREAKERS ARE 2-POLE, THERMAL MAGNETIC UNLESS OTHERWISE NOTED.
- 225A FRAME AND LARGER FRAME SIZE BREAKERS HAVE INTERCHANGEABLE TRIP UNIT WITH ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP, FOR SETTING SEE REF DWG 2.
- POWER FUSES ARE BUSSMANN TYPE FRB (600V).
- CONTACTS ARE FROM BUSSMANN KAZ ACTUATOR WITH TRIGGER FUSE.
- ALL EQUIPMENT DEVICES AND CABLES SHOWN ON THIS DRAWING ARE NON-CLASS IIE, UNLESS OTHERWISE NOTED.
- METER RELAY NUMBER SUFFIXES ARE NOT ALWAYS SHOWN.
THE SUFFIXES ARE THE ALTERNATE TAG NUMBER FOR THAT PIECE OF EQUIPMENT THAT IT IS ASSOCIATED WITH (e.g. 27AC/BC2D1, 64-1/2D1).
- INCOMING CIRCUIT BREAKERS ARE NON-AUTOMATIC (NO-TRIPS).
- SWITCHBOARD CIRCUIT BREAKER SHALL BE INSTALLED IN FIELD.
- N.O. CONTACT FROM GND DETECTION ANNUNCIATION DEFEAT SWITCH (SWITCH IS SHOWN IN DEFEAT POSITION).
- THIS IS A 3-POLE BREAKER WITH 2-POLES USED.

REFERENCE DRAWINGS

- E2-0024-04
- E2-2400-361
- SCT DWG 20-106790 SH 1
- SCT DWG 20-106791 SH 1
- SCT DWG 20-105214 SH 1

THE FOLLOWING CABLE(S) ARE SPARED IN SWITCHBOARD 2DI:

JB 2A-439
SP202443

JB 2A-435
SP202445

JB 2A-438
SP202444

JB 2T-277
SP202446

DRAWING E2-0019

REV CP-2

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E2-0019

E2-0019-E

E2-0019-A

E2-0019-B

E2-0019-C

E2-0019-D

NON-SAFETY

LUMINANT
CPNPP
GLEN ROSE, TEXAS

24/48V DC
ONE LINE DIAGRAM

DWG NO.
E2-0019

SH NO.
A

REV.
CP-11

< FINAL PRINT >

THIS DRAWING CREATED ELECTRONICALLY

\$\$\$\$\$DATE\$\$\$\$\$

e1118240.dgn

E2-0019-A

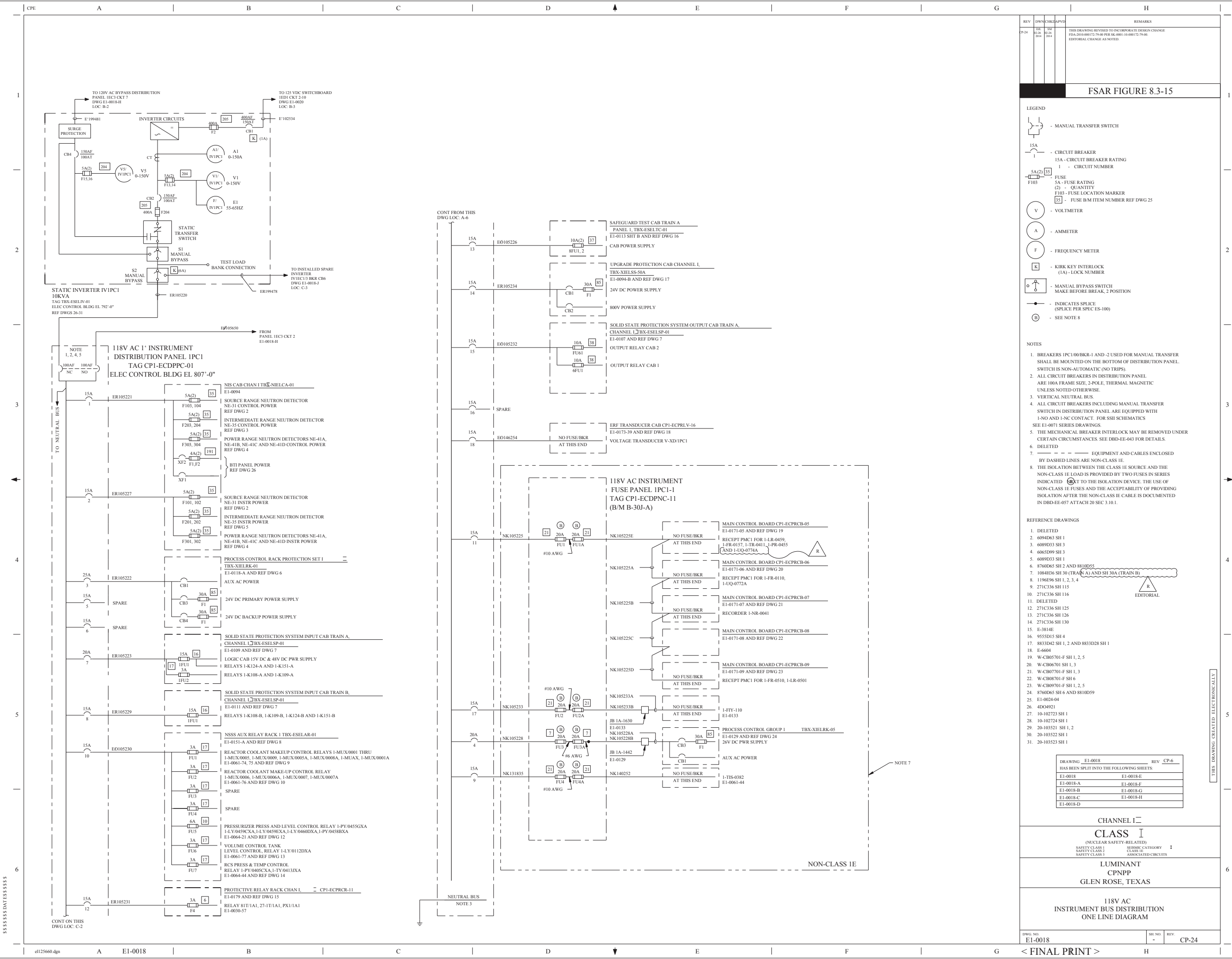
E2-0019

A

CP-11

< FINAL PRINT >

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FSAR FIGURE 8.3-15

- LEGEND
- MANUAL TRANSFER SWITCH
 - CIRCUIT BREAKER
15A - CIRCUIT BREAKER RATING
1 - CIRCUIT NUMBER
 - FUSE
5A(2) - FUSE RATING
(2) - QUANTITY
F103 - FUSE LOCATION MARKER
35 - FUSE B/M ITEM NUMBER REF DWG 25
 - VOLTMETER
 - AMMETER
 - FREQUENCY METER
 - KIRK KEY INTERLOCK
(1A) - LOCK NUMBER
 - MANUAL BYPASS SWITCH
MAKE BEFORE BREAK, 2 POSITION
 - INDICATES SPICE
(SPLICE PER SPEC ES-100)
 - SEE NOTE 8

- NOTES
- BREAKERS 1PC100BKR-1 AND -2 USED FOR MANUAL TRANSFER SWITCH IS NON-AUTOMATIC (NO TRIPS).
 - ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 100A FRAME SIZE, 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
 - VERTICAL NEUTRAL BUS.
 - ALL CIRCUIT BREAKERS INCLUDING MANUAL TRANSFER SWITCH IN DISTRIBUTION PANEL ARE EQUIPPED WITH 1-NO AND 1-NC CONTACT. FOR SHII SCHEMATICS SEE EI-0071 SERIES DRAWINGS.
 - THE MECHANICAL BREAKER INTERLOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES. SEE DBD-EE-043 FOR DETAILS.
 - DELETED
 - EQUIPMENT AND CABLES ENCLOSED BY DASHED LINES ARE NON-CLASS 1E.
 - THE ISOLATION BETWEEN THE CLASS 1E SOURCE AND THE NON-CLASS 1E LOAD IS PROVIDED BY TWO FUSES IN SERIES INDICATED (X) TO THE ISOLATION DEVICE. THE USE OF NON-CLASS 1E FUSES AND THE ACCEPTABILITY OF PROVIDING ISOLATION AFTER THE NON-CLASS 1E CABLE IS DOCUMENTED IN DBD-EE-057 ATTACH 20 SEC 3.10.1.

- REFERENCE DRAWINGS
- DELETED
 - 6094D63 SH 1
 - 6089D33 SH 3
 - 6065D99 SH 3
 - 6089D33 SH 1
 - 8760D65 SH 2 AND 8810D55
 - 1084H36 SH 30 (TRAIN A) AND SH 30A (TRAIN B)
 - 1196E96 SH 1, 2, 3, 4
 - 271C336 SH 115
 - 271C336 SH 116
 - DELETED
 - 271C336 SH 125
 - 271C336 SH 126
 - 271C336 SH 130
 - E-3814E
 - 955D115 SH 4
 - 8833D42 SH 1, 2 AND 8833D28 SH 1
 - E-6604
 - W-CB05701-F SH 1, 2, 5
 - W-CB08701-F SH 1, 3
 - W-CB07701-F SH 1, 3
 - W-CB08701-F SH 6
 - W-CB09701-F SH 1, 2, 5
 - 8760D65 SH 6 AND 8810D59
 - E1-0024-04
 - 4D04921
 - 10-102723 SH 1
 - 10-102724 SH 1
 - 20-103521 SH 1, 2
 - 20-103522 SH 1
 - 20-103523 SH 1

DRAWING	E1-0018	REV	CP-6
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0018	E1-0018-E		
E1-0018-A	E1-0018-F		
E1-0018-B	E1-0018-G		
E1-0018-C	E1-0018-H		
E1-0018-D			

CHANNEL 1

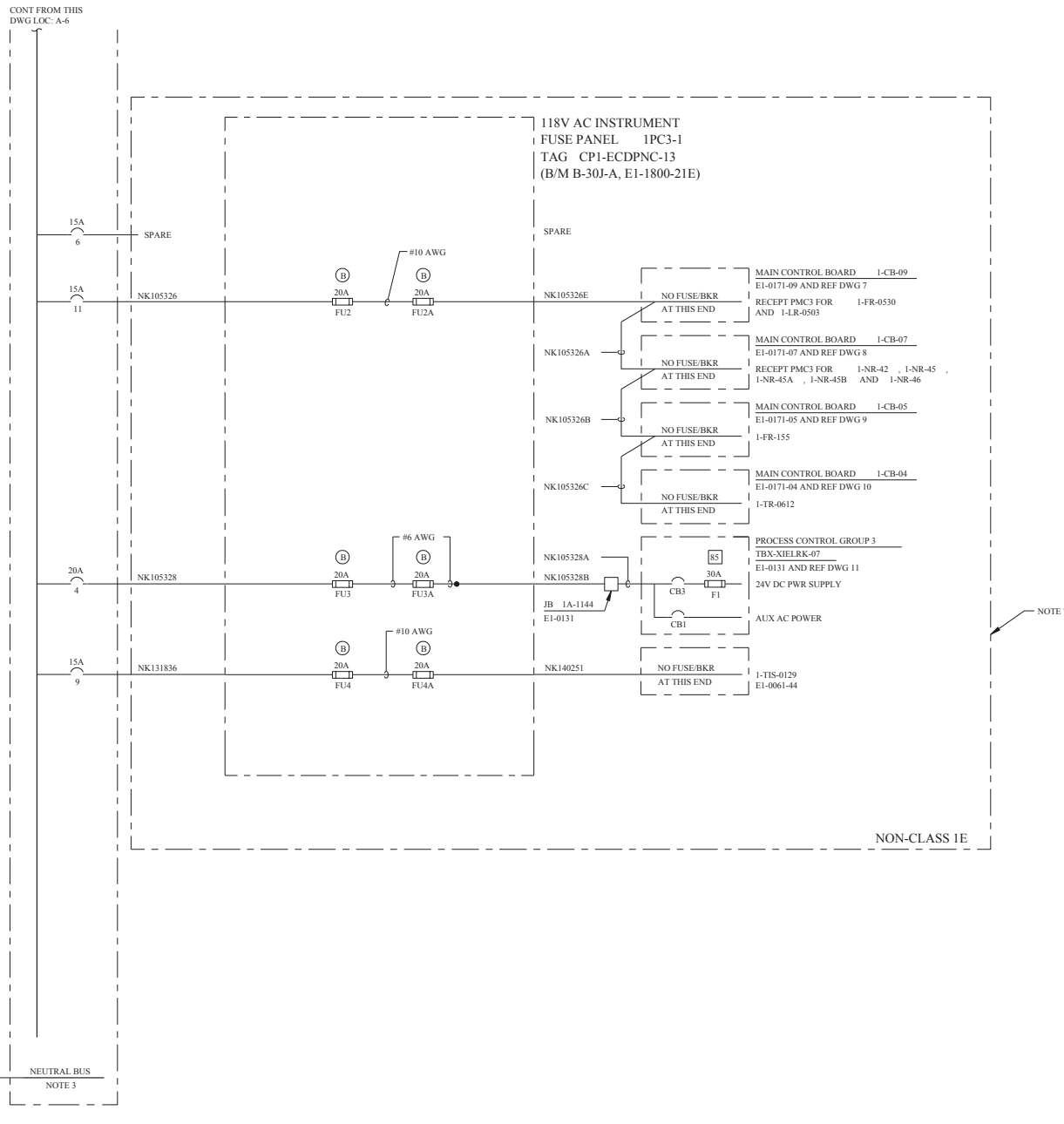
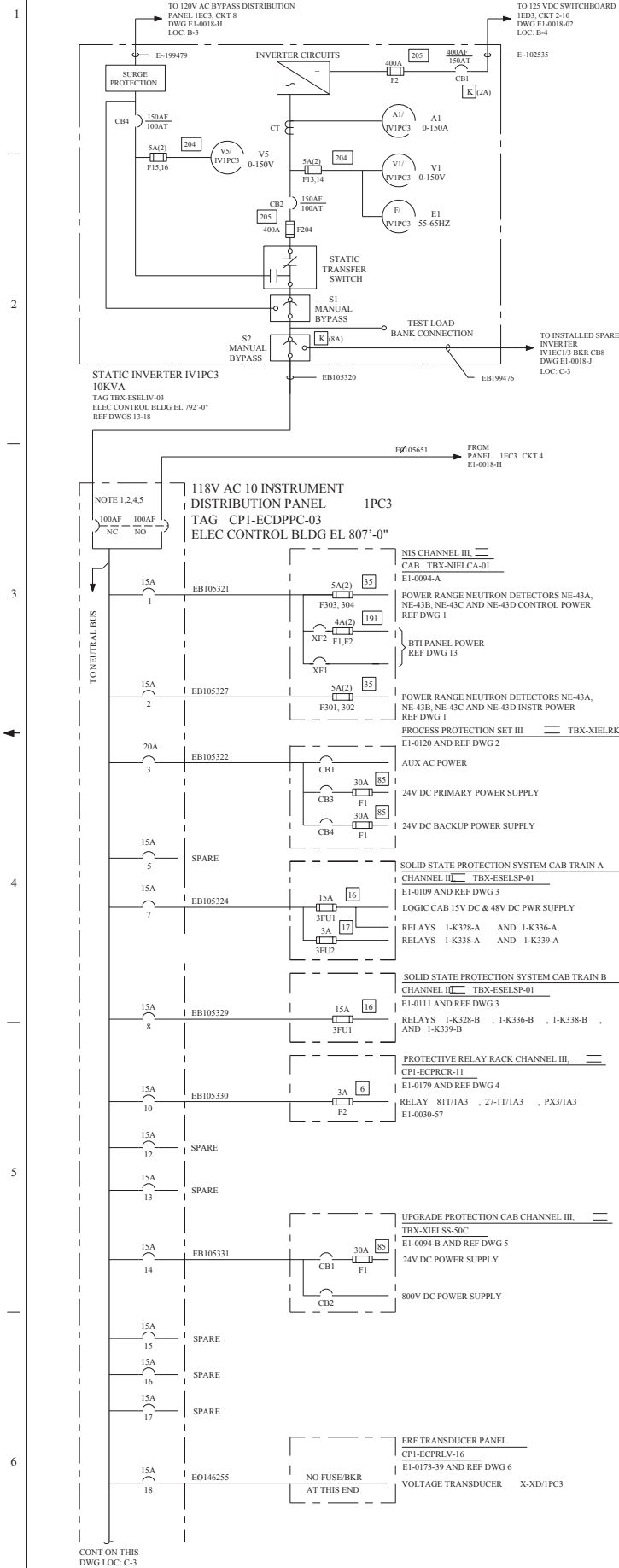
CLASS 1

(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1
SAFETY CLASS 2
SAFETY CLASS 3

LUMINANT
CPNPP

GLEN ROSE, TEXAS

118V AC
INSTRUMENT BUS DISTRIBUTION
ONE LINE DIAGRAM



REV	DWN	CHK	APPV		REMARKS
CP-16	JUL 16-05 2010	JUL 16-05 2010		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE PTA-2000-08003 (J) ON PER SR-001-10-08003 (J) 00. EDITORIAL CHANGE AS NOTED.	

FSAR FIGURE 8.3-15

LEGEND

- MANUAL TRANSFER SWITCH

- CIRCUIT BREAKER
15A - CIRCUIT BREAKER RATING
1 - CIRCUIT NUMBER

- FUSE
5A - FUSE RATING
(2) - QUANTITY
F303 - FUSE LOCATION MARKER
35 - FUSE BM ITEM NUMBER REF DWG 12

- VOLTMETER

- AMMETER

- FREQUENCY METER

- KIRK KEY INTERLOCK
(2A) - LOCK NUMBER

- MANUAL BYPASS SWITCH
MAKE BEFORE BREAK, 2 POSITION

- INDICATES SPLICE PER SPEC 2323-ES-100

- SEE NOTE 11

NOTES

- BREAKERS 1PC300BKR-1 AND 1PC300BKR-2 USED FOR MANUAL TRANSFER SHALL BE MOUNTED ON THE BOTTOM OF DISTRIBUTION PANEL. SWITCH IS NON-AUTOMATIC (NO TRIPS).
- ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 100A FRAME SIZE, 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
- VERTICAL NEUTRAL BUS.
- ALL CIRCUIT BREAKERS INCLUDING MANUAL TRANSFER SWITCH IN DISTRIBUTION PANEL ARE EQUIPPED WITH 1-NO AND 1-NC CONTACT FOR SSH SCHEMATICS SEE E1-0071 SERIES DRAWINGS.
- THE MECHANICAL BREAKER INTERLOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES. SEE DBD-EE-043 FOR DETAILS.
- DELETED
- EQUIPMENT AND CABLES ENCLOSED BY DASHED LINES ARE NON-CLASS 1E
- FUSES FU1, 1A, 2, 2A, 4 AND 4A ARE GOULD SHAWMUT TYPE A25X20. FUSES FU3 AND 3A ARE BUSSMANN TYPE NON-20.
- DELETED
- METER/RELAY TAG NUMBER SUFFIXES ARE NOT ALWAYS SHOWN. THE SUFFIXES ARE THE ALTERNATE TAG NUMBER FOR THAT PIECE OF EQUIPMENT THAT IT IS ASSOCIATED WITH (e.g. 1AM/IV1PC3).
- THE ISOLATION BETWEEN THE CLASS 1E SOURCE AND THE NON-CLASS 1E LOAD IS PROVIDED BY TWO FUSES IN SERIES INDICATED TO THE ISOLATION DEVICE. THE USE OF NON-CLASS 1E FUSES AND THE ACCEPTABILITY OF PROVIDING ISOLATION AFTER THE NON-CLASS 1E CABLE IS DOCUMENTED IN DBD-EE-057 ATTACH 20 SEC 3.10.1.

REFERENCE DRAWINGS

- 6065D999 SH 3
- 8760D65 SH 4 AND 8810D57
- 1084H36 SH 30
- E-3814E
- 8833D42 SH 1, 2 AND 8833D28 SH 1
- E-6604
- W-CB09701-F SH 1, 2, 3
- W-CB07701-F SH 1, 3
- W-CB05701-F SH 2, 5
- W-CB04701-F SH 1, 3
- 8760D65 SH 8 AND 8810D61
- E1-0024-04
- 4D04921
- 10-102723 SH 1
- 10-102724 SH 1
- 20-103521 SH 1, 2
- 20-103522 SH 1
- 20-103523 SH 1

DRAWING E1-0018-B	REV CP-1
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E1-0018-B	
E1-0018-C	

DRAWING E1-0018	REV CP-5
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E1-0018	
E1-0018-B	

CHANNEL 1

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1	SERVIC CLASS I
SAFETY CLASS 2	CLASS II ASSOCIATED CIRCUITS
SAFETY CLASS 3	

LUMINANT

CPNPP

GLEN ROSE, TEXAS

118V AC

INSTRUMENT BUS DISTRIBUTION

ONE LINE DIAGRAM

DWG. NO.

E1-0018

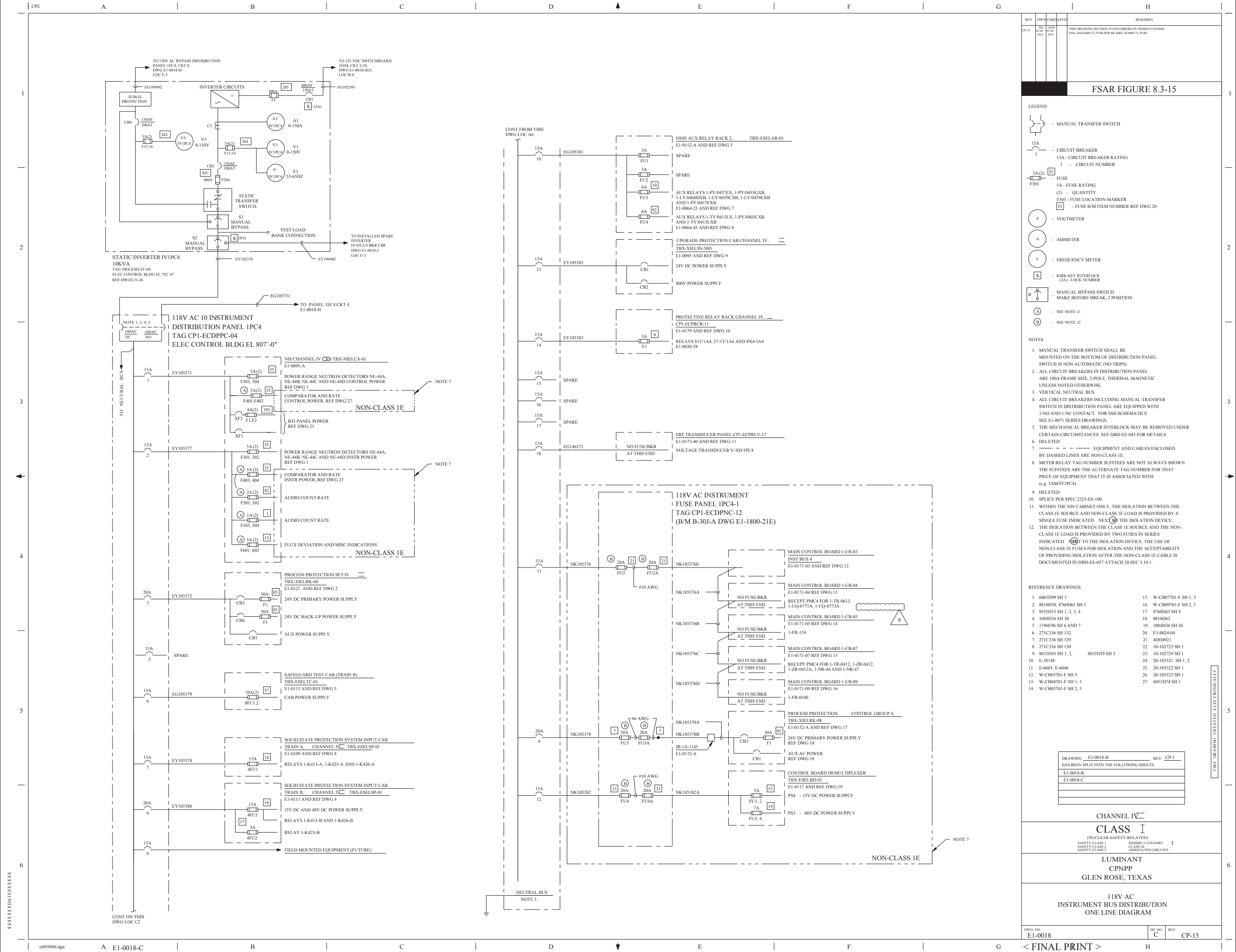
SH. NO.

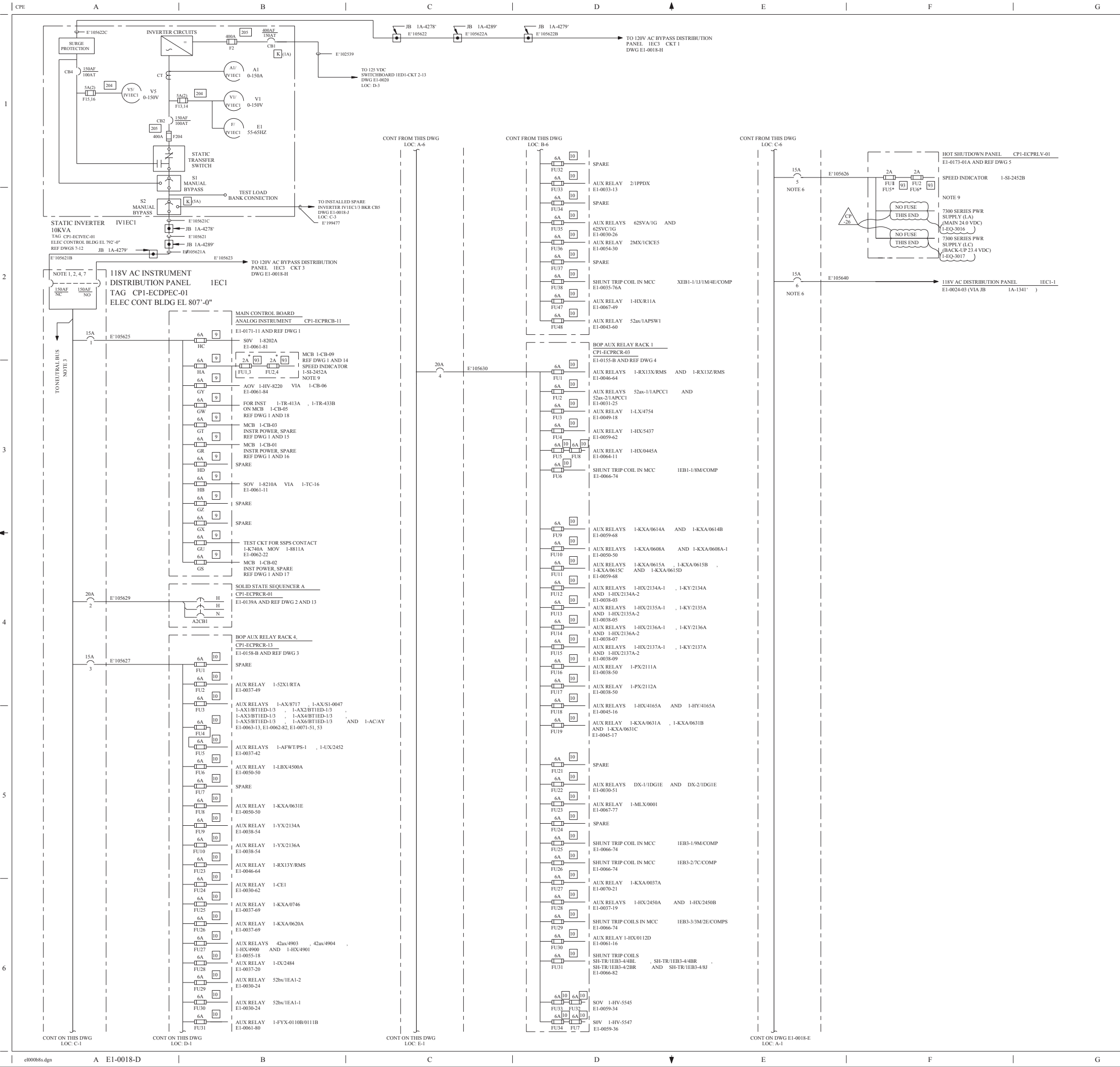
B

REV.

CP-16

THIS DRAWING CREATED ELECTRONICALLY





REV	DWN	CHK	APPD	REMARKS
CP-26	SH	11-11	2011	THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGES AS NOTED PER A1-CR-2011-011451-1.

FSAR FIGURE 8.3-15

LEGEND

- MANUAL TRANSFER SWITCH
- CIRCUIT BREAKER
- 20A - CIRCUIT BREAKER RATING
- 1 - CIRCUIT NUMBER
- FUSE
- 6A - FUSE RATING
- HC - FUSE LOCATION MARKER
- 9 - FUSE B/M ITEM NUMBER REF DWG 6
- VOLTMETER
- AMMETER
- FREQUENCY METER
- SPLICE
- THERMAL MAGNETIC TRIP ELEMENT
- 3P - THREE POLE
- K - KIRK KEY INTERLOCK (1A) - LOCK NUMBER
- MANUAL BYPASS SWITCH MAKE BEFORE BREAK, 2 POSITION

- NOTES
- BREAKERS 1EC1/00/BKR-1 AND 1EC1/00/BKR-2 USED FOR MANUAL TRANSFER SHALL BE MOUNTED ON THE BOTTOM OF DISTRIBUTION PANEL. SWITCH IS NON-AUTOMATIC (NO TRIPS).
 - ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 100A FRAME SIZE, 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
 - VERTICAL NEUTRAL BUS.
 - ALL CIRCUIT BREAKERS INCLUDING MANUAL TRANSFER SWITCH IN DISTRIBUTION PANEL ARE EQUIPPED WITH 1-N80 AND 1-NC CONTACT. FOR SSII SCHEMATICS SEE EI-0071 SERIES DRAWINGS.
 - DELETED
 - TO ENSURE PROPER PROTECTION OF CABLES THFA, DO NOT INCREASE THE AMPACITY OF THIS CIRCUIT BREAKER.
 - THE MECHANICAL BREAKER INTERLOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES. SEE DBD-EE-043 FOR DETAILS.
 - DELETED.
 - * - INDICATES NEUTRAL FUSED SAME AS PHASE

- REFERENCE DRAWINGS
- W-CB11701-F SH 6 AND 8
 - 2462-1004 SH 3
 - E-5591 SH 1 AND 4
 - E-5468 SH 1
 - W-99X03934-F SH 2, 8, 10, 12 AND 14
 - E1-0024-04
 - 10-102722 SH 1, 2
 - 10-102723 SH 1
 - 10-102724 SH 1
 - 20-103521 SH 1, 2
 - 20-103522 SH 1
 - 20-103523 SH 1
 - 2462-1027 SH 6
 - W-CB09701-F SH 01 AND 05
 - W-CB30701-F SH 5
 - W-CB01701-F SH 3
 - W-CB02701-F SH 5
 - W-CB05701-F SH 01, 02 AND 05

DRAWING	E1-0018-A	REV	CP-3
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0018	E1-0018-E		
E1-0018-A	E1-0018-F		
E1-0018-B	E1-0018-G		
E1-0018-C	E1-0018-H		
E1-0018-D			

TRAIN A

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1 SEISMIC CATEGORY I

SAFETY CLASS 2 CLASS IIC

SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT

CPNPP

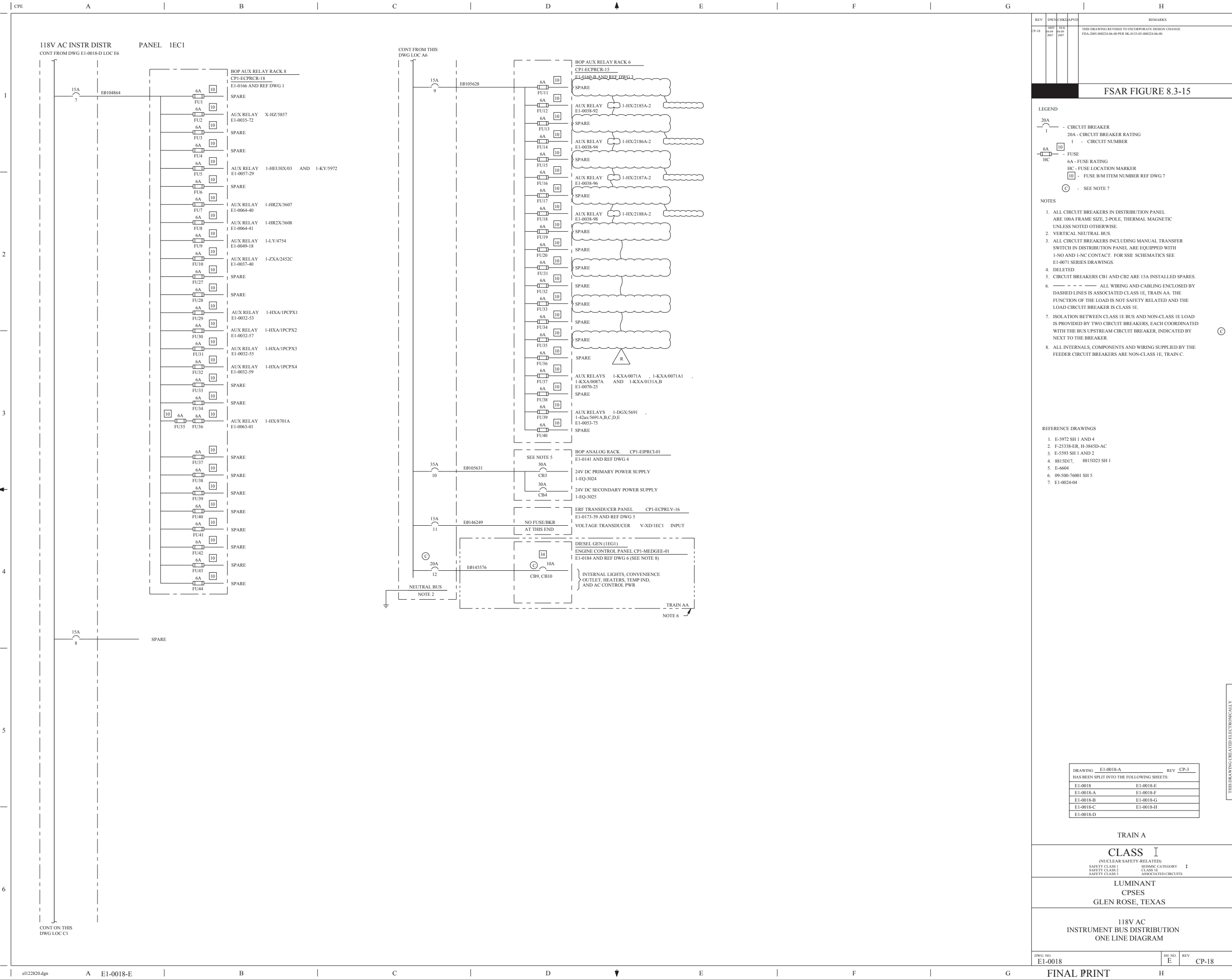
GLEN ROSE, TEXAS

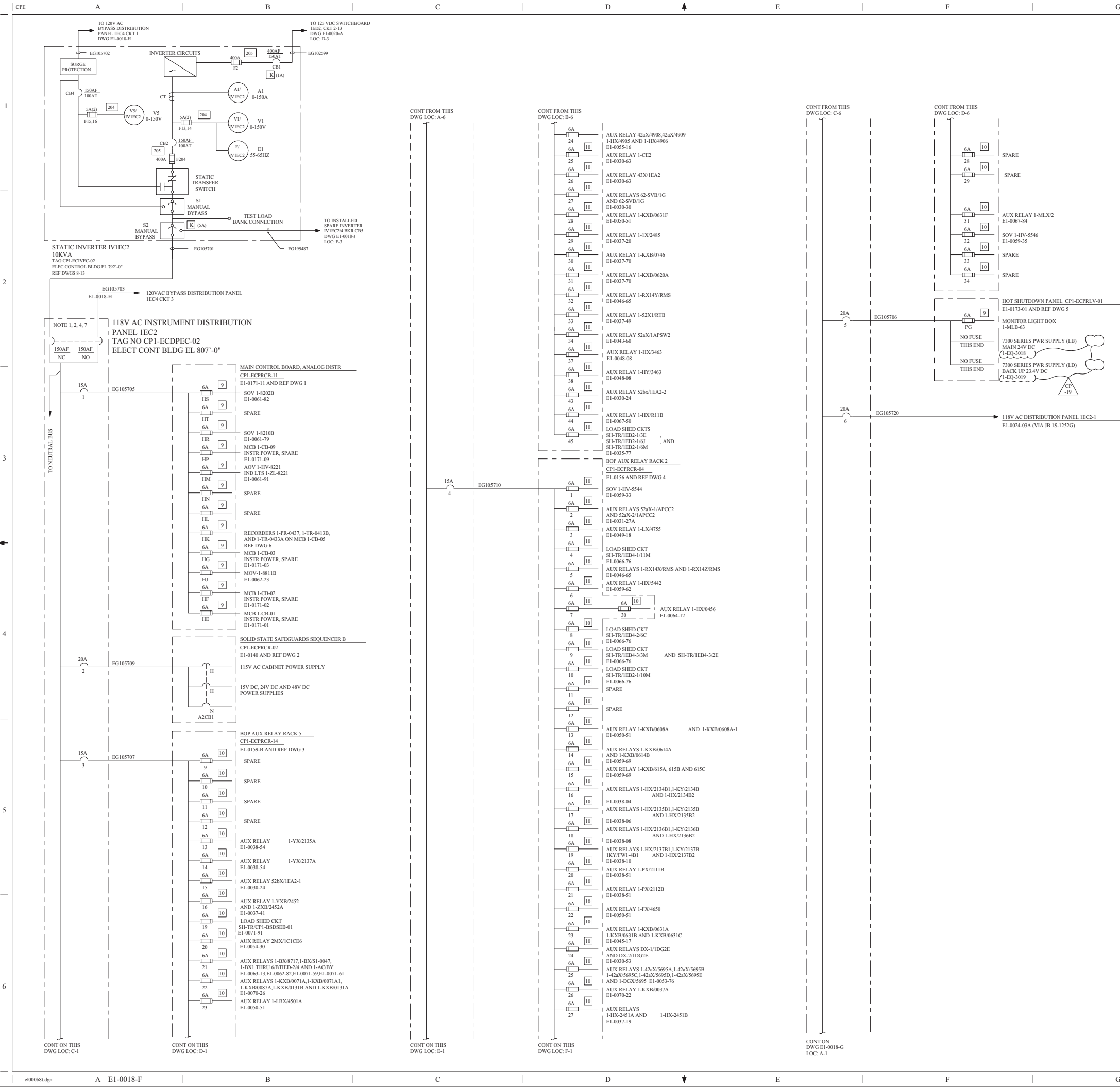
118V AC

INSTRUMENT BUS DISTRIBUTION

ONE LINE DIAGRAM

DWG NO. E1-0018 SH NO. D REV. CP-26





REV	DWN	CHK	APP'D	REMARKS
CP-19	SH	11-11	2011	THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGES AS NOTED PER AI-CR-2011-011451-1.

FSAR FIGURE 8.3-15

- LEGEND
- MANUAL TRANSFER SWITCH
 - CIRCUIT BREAKER
 - CIRCUIT BREAKER RATING
 - CIRCUIT NUMBER
 - FUSE
 - FUSE RATING
 - FUSE LOCATION MARKER
 - FUSE B/M ITEM NUMBER REF DWG 6
 - AMMETER
 - VOLTMETER
 - FREQUENCY METER
 - THERMAL MAGNETIC TRIP ELEMENT
 - THREE POLE
 - KIRK KEY INTERLOCK (1A) - LOCK NUMBER
 - MANUAL BYPASS SWITCH MAKE BEFORE BREAK, 2 POSITION

- NOTES
- MANUAL TRANSFER SWITCH SHALL BE MOUNTED AT THE BOTTOM OF DISTR PANEL. SWITCH IS NON AUTOMATIC (NO TRIPS)
 - ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 100A FRAME SIZE, 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
 - VERTICAL NEUTRAL BUS
 - ALL CIRCUIT BREAKERS INCLUDING MANUAL TRANSFER SWITCH ARE EQUIPPED WITH 1-NO AND 1-NC AUX CONTACT. FOR SSH INDICATING LIGHT SCHEMATICS SEE E1-0071 SERIES DRAWINGS.
 - DELETED
 - METER/RELAY TAG NUMBER SUFFIXES ARE NOT ALWAYS SHOWN. THE SUFFIXES ARE THE ALTERNATE TAG NUMBER FOR THAT PIECE OF EQUIPMENT THAT IT'S ASSOCIATED WITH (e.g. VM2/IV1EC2).
 - THE MECHANICAL BREAKER INTERLOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES. SEE DBD-EE-043 FOR DETAILS.

REFERENCE DRAWINGS

- W-CB11701-F SH 6,7
- 2462-1027 SH 61,62
- E-5592 SH 1,4
- VEI-E-5469 SH 1,2
- W-99X03934-F SH 12,14
- W-CB-05701 SH 1-5
- E1-0024-04
- 10-102722 SH 1,2
- 10-102723 SH 1
- 10-102724 SH 1
- 20-103521 SH 1,2
- 20-103522 SH 1
- 20-103523 SH 1

DRAWING	E1-0018-A	REV	CP-3
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0018	E1-0018-E		
E1-0018-A	E1-0018-F		
E1-0018-B	E1-0018-G		
E1-0018-C	E1-0018-H		
E1-0018-D			

TRAIN B

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1 SERIMC CATEGORY I

SAFETY CLASS 2

SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT
CPNPP
GLEN ROSE, TEXAS

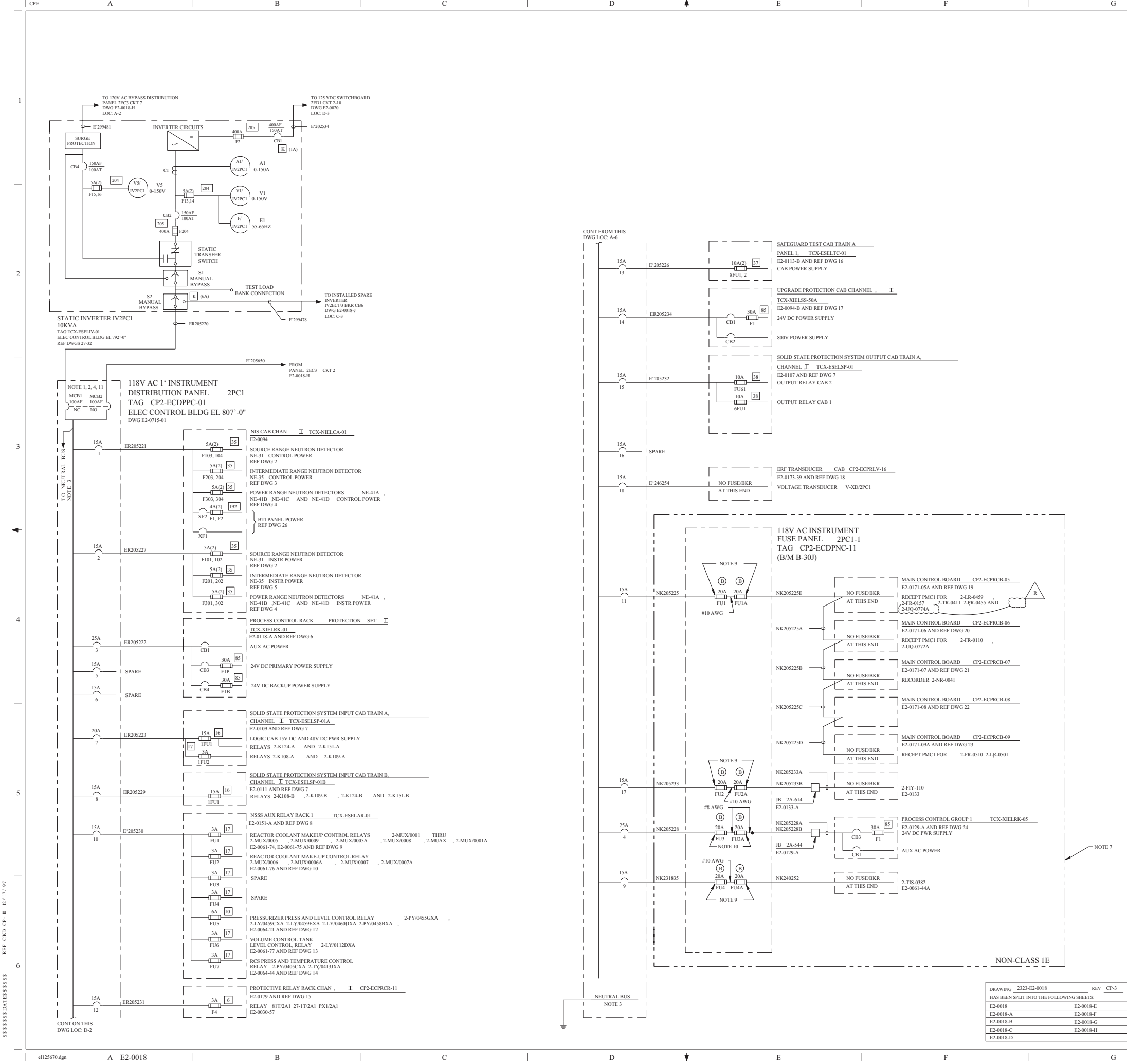
118V AC
INSTRUMENT DISTRIBUTION
ONE LINE DIAGRAM

DWG NO.
E1-0018

SH NO.
F

REV.
CP-19

THIS DRAWING CREATED ELECTRONICALLY



REV	DWN	CHK	APP'D	REMARKS
CP-19	MM	MM	MM	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2010-000172-76-00 PER SK-0006-10-000172-76-00

FSAR FIGURE 8.3-15

LEGEND

- MANUAL TRANSFER SWITCH

- CIRCUIT BREAKER

15A

1

15A

- CIRCUIT BREAKER RATING

1

- CIRCUIT NUMBER

- FUSE

30A

F1

85

30A

- FUSE RATING

F1

- FUSE LOCATION MARKER

85

- FUSE BM ITEM NUMBER

REF DWG 25

- VOLTMETER

- AMMETER

- FREQUENCY METER

- KIRK KEY INTERLOCK

(1A)

(1A)

- LOCK NUMBER

- MANUAL BYPASS SWITCH

MAKE BEFORE BREAK, 2 POSITION

- INDICATES SPLICE PER 2323-ES-100

- SEE NOTE 12

NOTES

1. MANUAL TRANSFER SWITCH SHALL BE MOUNTED ON THE BOTTOM OF DISTRIBUTION PANEL. SWITCH IS NON-AUTOMATIC (NO TRIPS).

2. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 100A FRAME SIZE, 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.

3. VERTICAL NEUTRAL BUS.

4. ALL CIRCUIT BREAKERS INCLUDING MANUAL TRANSFER SWITCH IN DISTRIBUTION PANEL ARE EQUIPPED WITH 1 NO AND 1 NC CONTACT. FOR SSH SCHEMATICS SEE E2-0071 SERIES DRAWINGS.

5. DELETED

6. EQUIPMENT WITHIN NISS SCOPE OF SUPPLY.

7. EQUIPMENT AND CABLES ENCLOSED BY DASHED LINES ARE NON-CLASS 1E.

8. DELETED

9. BUSS FUSE, LIMITRON FAST ACTING KTK-R FUSE 20 AMP, 600V (CATALOG NUMBER KTK-R-20).

10. BUSS FUSE, ONE TIME NON FUSE 20 AMP, 250V (CATALOG NUMBER NON-20).

11. THE MECHANICAL BREAKER INTERLOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES, SEE DBD-EE-043 FOR DETAILS.

12. THE ISOLATION BETWEEN THE CLASS 1E SOURCE AND THE NON-CLASS 1E LOAD IS PROVIDED BY TWO FUSES IN SERIES INDICATED TO THE ISOLATION DEVICE. THE USE OF NON-CLASS 1E FUSES AND THE ACCEPTABILITY OF PROVIDING ISOLATION AFTER THE NON-CLASS 1E CABLE IS DOCUMENTED IN DBD-EE-057 ATTACH 20 SEC 3.10.1.

REFERENCE DRAWINGS

1. DELETED

2. 6094D63 SH 1

3. 6080D33 SH 3

4. 6065D99 SH 3

5. 6080D33 SH 1

6. 8760D65 SH 2 AND 8810D55

7. 1084H36 SH 30B (TRAIN A) AND 30C (TRAIN B)

8. 1196E96 SH 1, 2, 3, 4

9. 271C36 SH 115

10. 271C36 SH 116

11. 271C36 SH 132

12. 271C36 SH 125

13. 271C36 SH 126

14. 271C36 SH 130

15. E-5812

16. 955D15 SH 4

17. 8760D60 AND 8760D65

18. E-6608

19. W-CB08814-F SH 1, 2, 5

20. W-CB08815-F SH 1, 3

21. W-CB07816-F SH 1, 3

22. W-CB08817-F SH 6

23. W-CB09818-F SH 1, 2, 5

24. 8760D65 SH 6 AND 8810D59

25. E2-0024-04

26. 4D04921

27. 20-102722 SH 1, 2

28. 20-102723 SH 1

29. 20-102724 SH 1

30. 20-103521 SH 1, 2

31. 20-103522 SH 1

32. 20-103523 SH 1

INDEX DRAWINGS

1. E2-0018

118VAC INSTRUMENT DISTRIBUTION PANEL BOARD 2PC1 AND 2PC1-1

2. E2-0018-A

118VAC INSTRUMENT DISTRIBUTION PANEL BOARD 2PC2 AND 2PC2-1

3. E2-0018-B

118VAC INSTRUMENT DISTRIBUTION PANEL BOARD 2PC3 AND 2PC3-1

4. E2-0018-C

118VAC INSTRUMENT DISTRIBUTION PANEL BOARD 2PC4 AND 2PC4-1

5. E2-0018-D

118VAC INSTRUMENT DISTRIBUTION PANEL BOARD 2EC1

6. E2-0018-F

118VAC INSTRUMENT DISTRIBUTION PANEL BOARD 2EC2

7. E2-0018-H

118VAC INSTRUMENT DISTRIBUTION PANEL BOARD 2EC3 AND 2EC4

CLASS I

(NUCLEAR SAFETY RELATED)

SAFETY CLASS 1

SAFETY CLASS 2

SAFETY CLASS 3

SSIMC CATEGORY

CLASS 1E

ASSOCIATED CIRCUITS

LUMINANT

CPNPP

GLEN ROSE, TEXAS

118VAC

INSTRUMENT BUS DISTRIBUTION

ONE LINE DIAGRAM

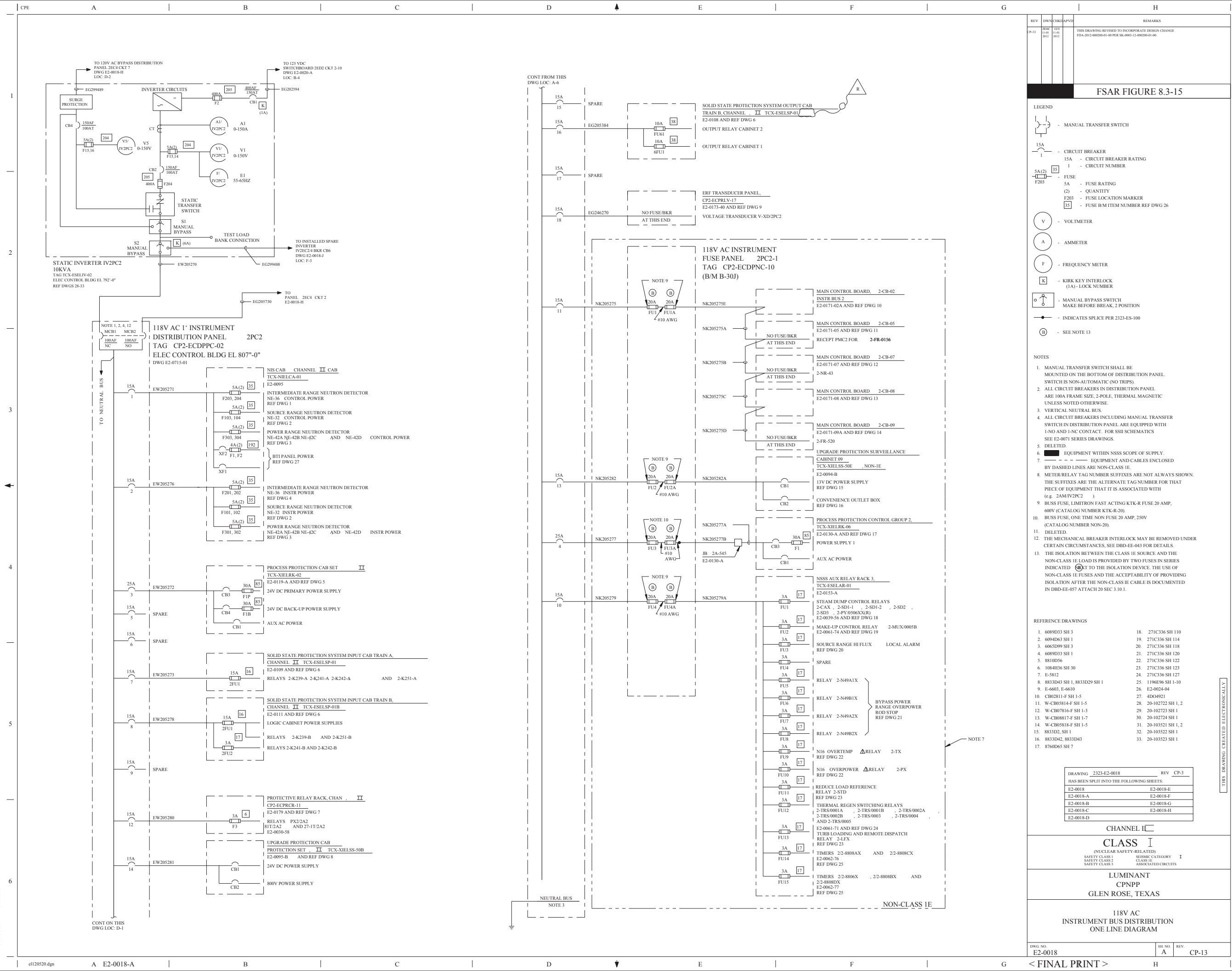
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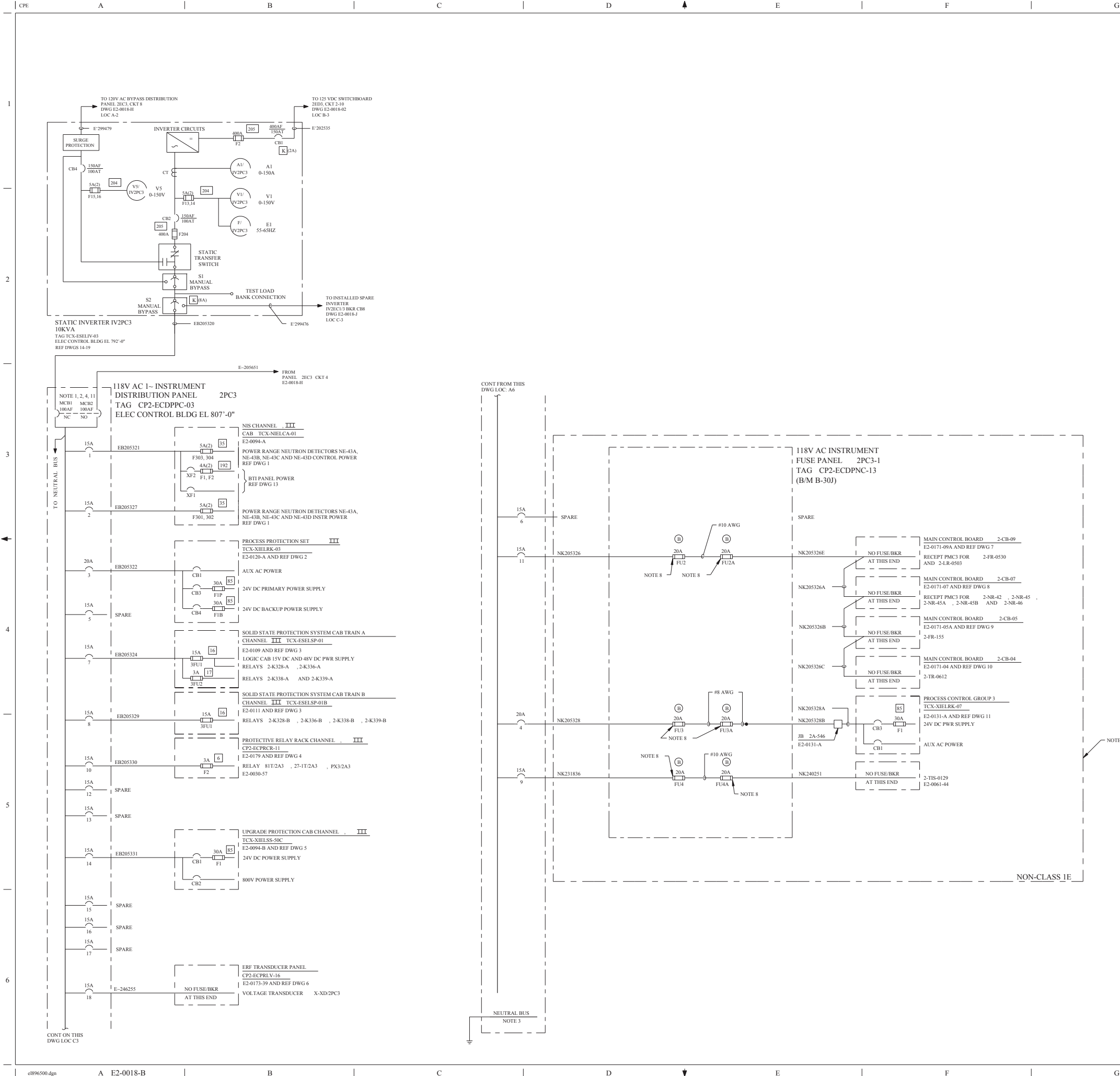
SH NO. -

REV. CP-19

REF. CKD CP-B 12/17/97

THIS DRAWING CREATED ELECTRONICALLY





REV	DWN	CHK	APPV	REMARKS
CP-12	SM	SM		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2013-000168-01-00 PER SK-0001-13-000168-01-00

FSAR FIGURE 8.3-15

LEGEND

- MANUAL TRANSFER SWITCH
- CIRCUIT BREAKER
15A - CIRCUIT BREAKER RATING
1 - CIRCUIT NUMBER
- FUSE
5A(2) - FUSE RATING
F303 - QUANTITY
F303 - FUSE LOCATION MARKER
35 - FUSE B/M ITEM NUMBER REF DWG 12
- VOLTMETER
- AMMETER
- FREQUENCY METER
- KIRK KEY INTERLOCK
(1A) - LOCK NUMBER
- MANUAL BYPASS SWITCH
MAKE BEFORE BREAK, 2 POSITION
- INDICATES SPLICE PER 2323-ES-100
- SEE NOTE 12

NOTES

- MANUAL TRANSFER SWITCH SHALL BE MOUNTED ON THE BOTTOM OF DISTRIBUTION PANEL. SWITCH IS NON-AUTOMATIC (NO TRIPS).
- ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 100A FRAME SIZE, 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
- VERTICAL NEUTRAL BUS.
- ALL CIRCUIT BREAKERS INCLUDING MANUAL TRANSFER SWITCH IN DISTRIBUTION PANEL ARE EQUIPPED WITH 1-NO AND 1-NC CONTACT. FOR SSH SCHEMATICS SEE E2-0071 SERIES DRAWINGS.
- DELETED
- EQUIPMENT WITHIN NSSS SCOPE OF SUPPLY.
- DELETED
- EQUIPMENT AND CABLES ENCLOSED
- FUSES FU1, 1A, 2, 2A, 4 AND 4A ARE BUSS FUSE. LIMITRON FAST ACTING KTK-R FUSE 20 AMP, 600V (CATALOG NUMBER KTK-R-20). FUSES FU3 AND 3A ARE BUSSMANN TYPE NON-20.
- DELETED
- DELETED
- THE MECHANICAL BREAKER INTERLOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES, SEE DBD-EE-043 FOR DETAILS.
- THE ISOLATION BETWEEN THE CLASS 1E SOURCE AND THE NON-CLASS 1E LOAD IS PROVIDED BY TWO FUSES IN SERIES INDICATED TO THE ISOLATION DEVICE. THE USE OF NON-CLASS 1E FUSES AND THE ACCEPTABILITY OF PROVIDING ISOLATION AFTER THE NON-CLASS 1E CABLE IS DOCUMENTED IN DBD-EE-057 ATTACH 20 SEC 3.10.1.

REFERENCE DRAWINGS

- 6065D99 SH 3
- 8810D41
- 1084H36 SH 30
- E-5812
- 8833D80
- E-6608, E-6603
- W-CB09818-F SH 1-5
- W-CB07816-F SH 1-3
- W-CB05814-F SH 1-5
- W-CB04813-F SH 1-3
- 8810D41
- E2-0024-04
- 4D04921
- 20-102722 SH 1, 2
- 20-102723 SH 1
- 20-102724 SH 1
- 20-103521 SH 1, 2
- 20-103522 SH 1
- 20-103523 SH 1

DRAWING	2323-E2-0018	REV	CP-3
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E2-0018	E2-0018-E		
E2-0018-A	E2-0018-F		
E2-0018-B	E2-0018-G		
E2-0018-C	E2-0018-H		
E2-0018-D			

CHANNEL III

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1	SAFETY CLASS 2	SAFETY CLASS 3	SAFETY CLASS 1	SAFETY CLASS 2	SAFETY CLASS 3

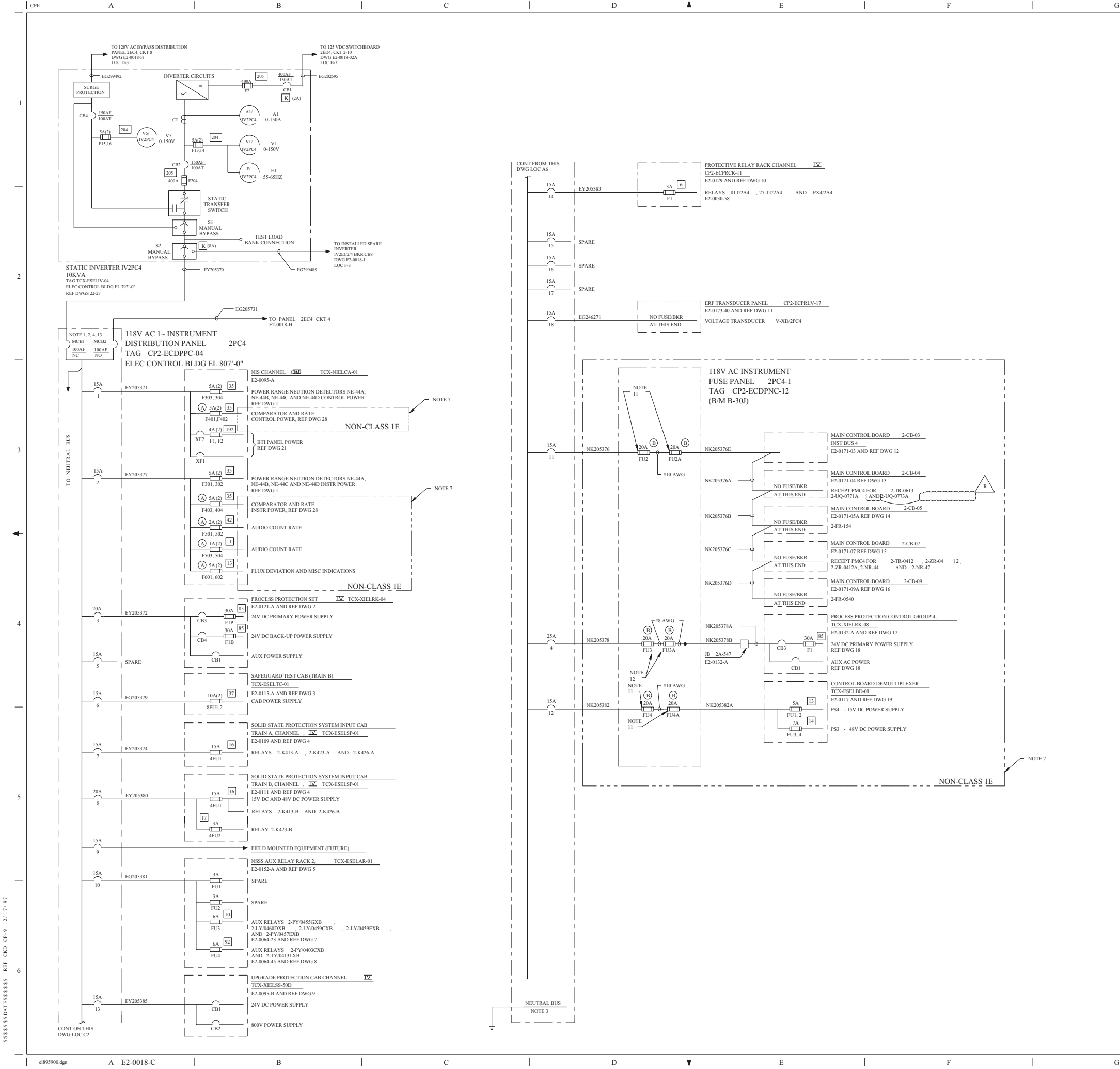
LUMINANT

CPNPP
GLEN ROSE, TEXAS

118V AC INSTRUMENT BUS DISTRIBUTION ONE LINE DIAGRAM

DWG NO	SH NO	REV
E2-0018	B	CP-12

< FINAL PRINT >



REV	DWN	CHKD	APVD	REMARKS
CP-13	10/29/2013	10/29/2013		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE: FDA-2010-000172-78-00 PER 18C-0007-10-000172-78-00

FSAR FIGURE 8.3-15

LEGEND:

- MANUAL TRANSFER SWITCH
- CIRCUIT BREAKER
15A - CIRCUIT BREAKER RATING
1 - CIRCUIT NUMBER
- FUSE
5A(2) - FUSE RATING
(2) - QUANTITY
F303 - FUSE LOCATION MARKER
35 - FUSE B/M ITEM NUMBER REF DWG 20
- VOLTMETER
- AMMETER
- FREQUENCY METER
- KIRK KEY INTERLOCK
(1A) - LOCK NUMBER
- MANUAL BYPASS SWITCH
MAKE BEFORE BREAK, 2 POSITION
- INDICATES SPLICE PER 2323-ES-100
- SEE NOTE 14
- SEE NOTE 15

- NOTES:
- MANUAL TRANSFER SWITCH SHALL BE MOUNTED ON THE BOTTOM OF DISTRIBUTION PANEL. SWITCH IS NON-AUTOMATIC (NO TRIPS).
 - ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 100A FRAME SIZE, 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
 - VERTICAL NEUTRAL BUS.
 - ALL CIRCUIT BREAKERS INCLUDING MANUAL TRANSFER SWITCH IN DISTRIBUTION PANEL ARE EQUIPPED WITH 1-NO AND 1-NC CONTACT. FOR SSII SCHEMATICS SEE E2-0071 SERIES DRAWINGS.
 - DELETED.
 - EQUIPMENT WITHIN NSSS SCOPE OF SUPPLY.
 - EQUIPMENT AND CABLES ENCLOSED BY DASHED LINES ARE NON-CLASS 1E.
 - METER/RELAY TAG NUMBER SUFFIXES ARE NOT ALWAYS SHOWN. THE SUFFIXES ARE THE ALTERNATE TAG NUMBER FOR THAT PIECE OF EQUIPMENT THAT IT IS ASSOCIATED WITH (e.g. 3AM/IV2PC 4)
 - DELETED.
 - DELETED.
 - BUSS FUSE, LIMITRON FAST ACTING KTK-R FUSE 20A, 600V (CATALOG NUMBER KTK-R-20).
 - BUSS FUSE, ONE TIME, NON FUSE 20A, 250V (CATALOG NUMBER NON-25).
 - THE MECHANICAL BREAKER INTER-LOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES, SEE DBD-EE-043 FOR DETAILS.
 - WITHIN THE NIS CABINET ONLY, THE ISOLATION BETWEEN THE CLASS 1E SOURCE AND NON-CLASS 1E LOAD IS PROVIDED BY A SINGLE FUSE INDICATED NEAR THE ISOLATION DEVICE.
 - THE ISOLATION BETWEEN THE CLASS 1E SOURCE AND THE NON-CLASS 1E LOAD IS PROVIDED BY TWO FUSES IN SERIES INDICATED XT TO THE ISOLATION DEVICE. THE USE OF NON-CLASS 1E FUSES FOR ISOLATION AND THE ACCEPTABILITY OF PROVIDING ISOLATION AFTER THE NON-CLASS 1E CABLE IS DOCUMENTED IN DBD-EE-057 ATTACH 20 SEC 3.10.1.

- REFERENCE DRAWINGS:
- | | |
|--------------------------|-------------------------|
| 1. 6065D99 SH 3 | 15. W-CB07816-F SH 1, 3 |
| 2. 8810D58, 8760D65 SH 5 | 16. W-CB09818-F SH 2, 5 |
| 3. 955D15 SH 1-4 | 17. 8760D65 SH 9 |
| 4. 1084H36 SH 30 | 18. 8810D62 |
| 5. 1196E96 SH 5, 6, 7 | 19. 1084H36 SH 26 |
| 6. DELETED | 20. E2-0024-04 |
| 7. 271C36 SH 129 | 21. 4D04921 |
| 8. 271C36 SH 130 | 22. 20-102722 SH 1, 2 |
| 9. 8833D43 SH 1, 2 | 23. 20-102723 SH 1 |
| 10. E-5812 | 24. 20-102724 SH 1 |
| 11. E-6605, E-6610 | 25. 20-103523 SH 1, 2 |
| 12. W-CB0812-F SH 5 | 26. 20-103523 SH 1 |
| 13. W-CB0813-F SH 1, 3 | 27. 20-103523 SH 1 |
| 14. W-CB05814-F SH 2, 5 | 28. 6051D74 SH 1 |

DRAWING 2323-E2-0018	REV CP-3
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E2-0018	E2-0018-E
E2-0018-A	E2-0018-F
E2-0018-B	E2-0018-G
E2-0018-C	E2-0018-H
E2-0018-D	

CHANNEL IV

CLASS I
(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1	SEISMIC CATEGORY 1
SAFETY CLASS 2	CLASS 1E ASSOCIATED CIRCUITS

LUMINANT
CPNPP
GLEN ROSE, TEXAS

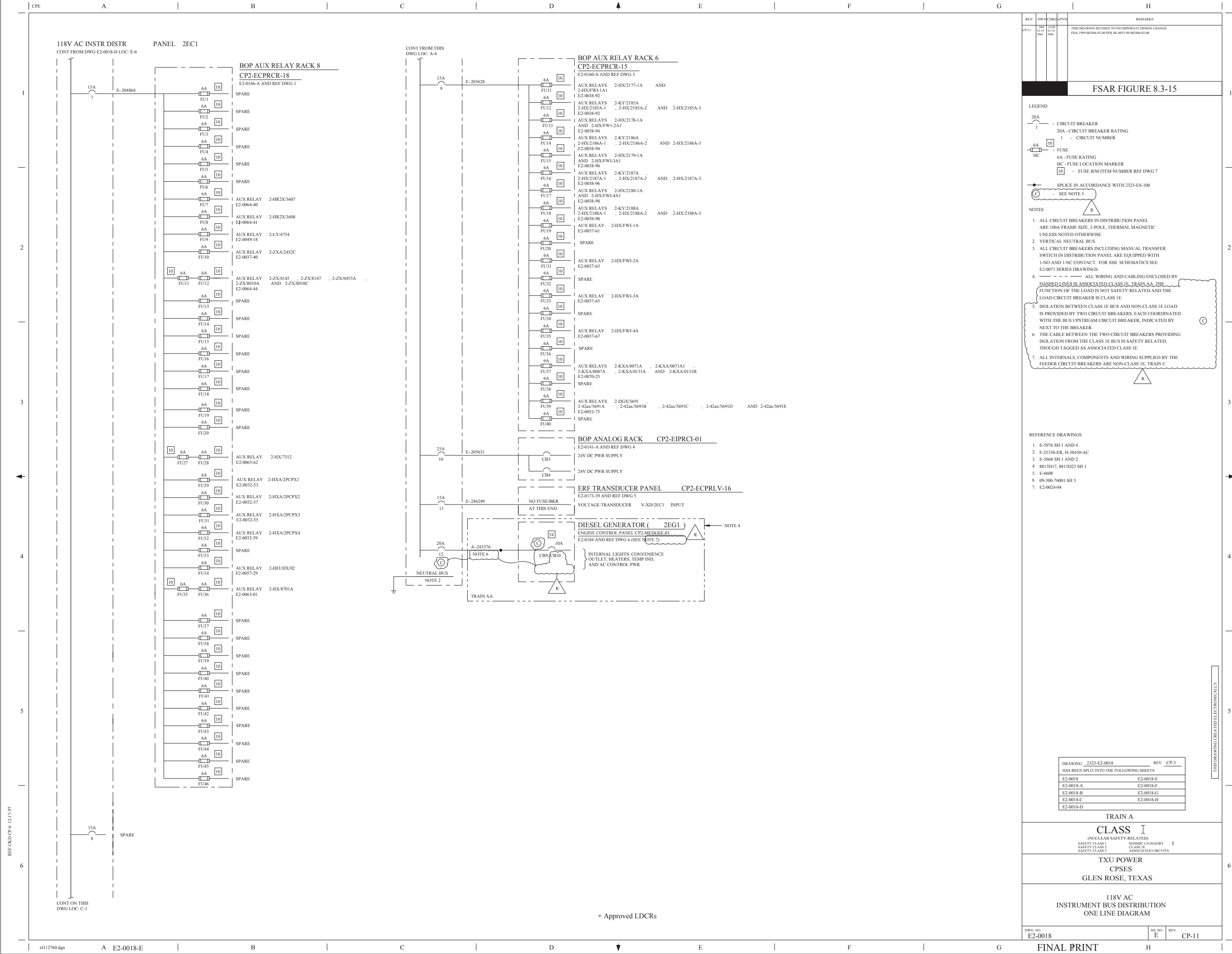
118V AC
INSTRUMENT BUS DISTRIBUTION
ONE LINE DIAGRAM

DWG NO E2-0018	SH NO C	REV CP-13
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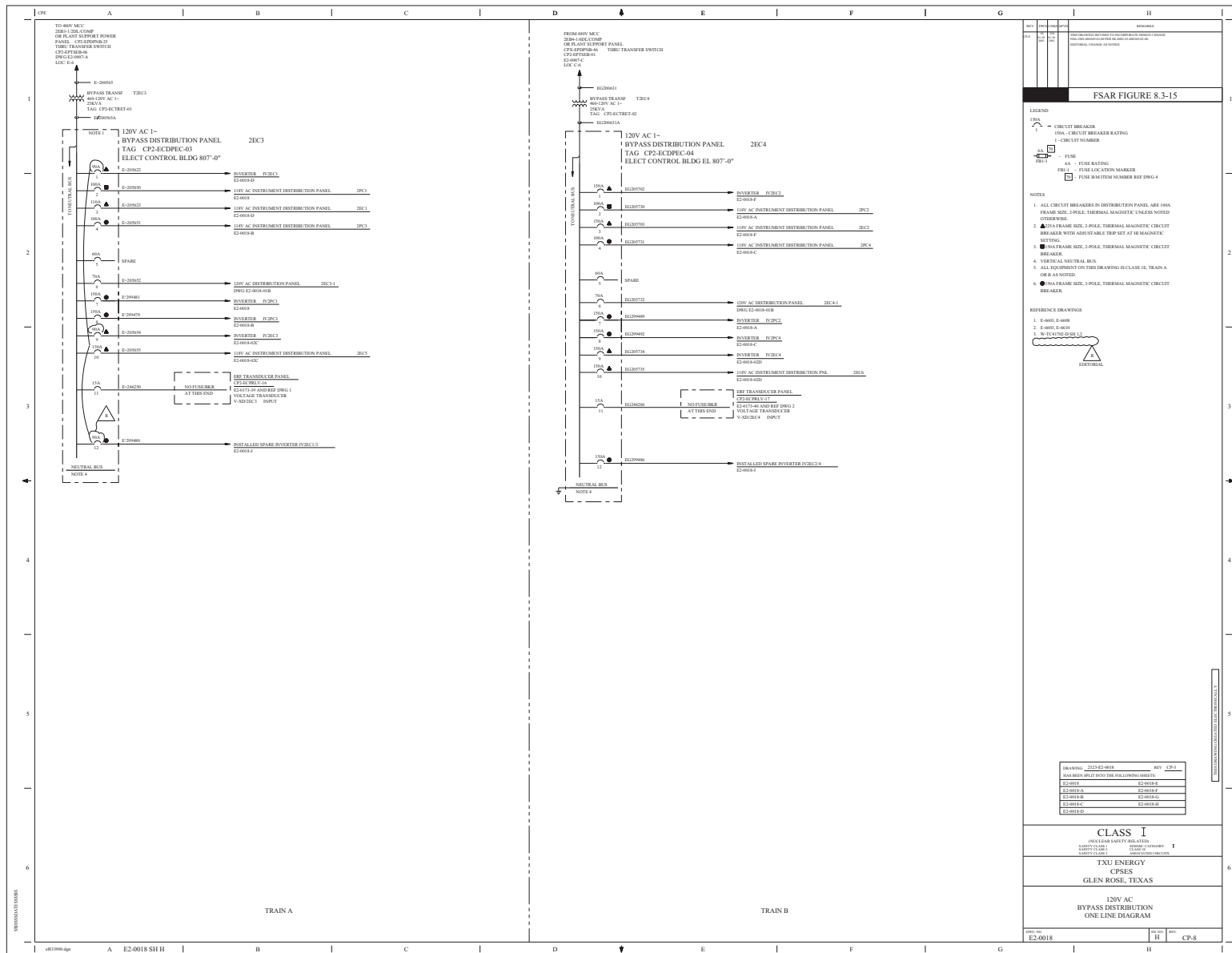
\$\$\$\$\$DATE\$\$\$\$\$ REF CKD CP-9 12/17/97

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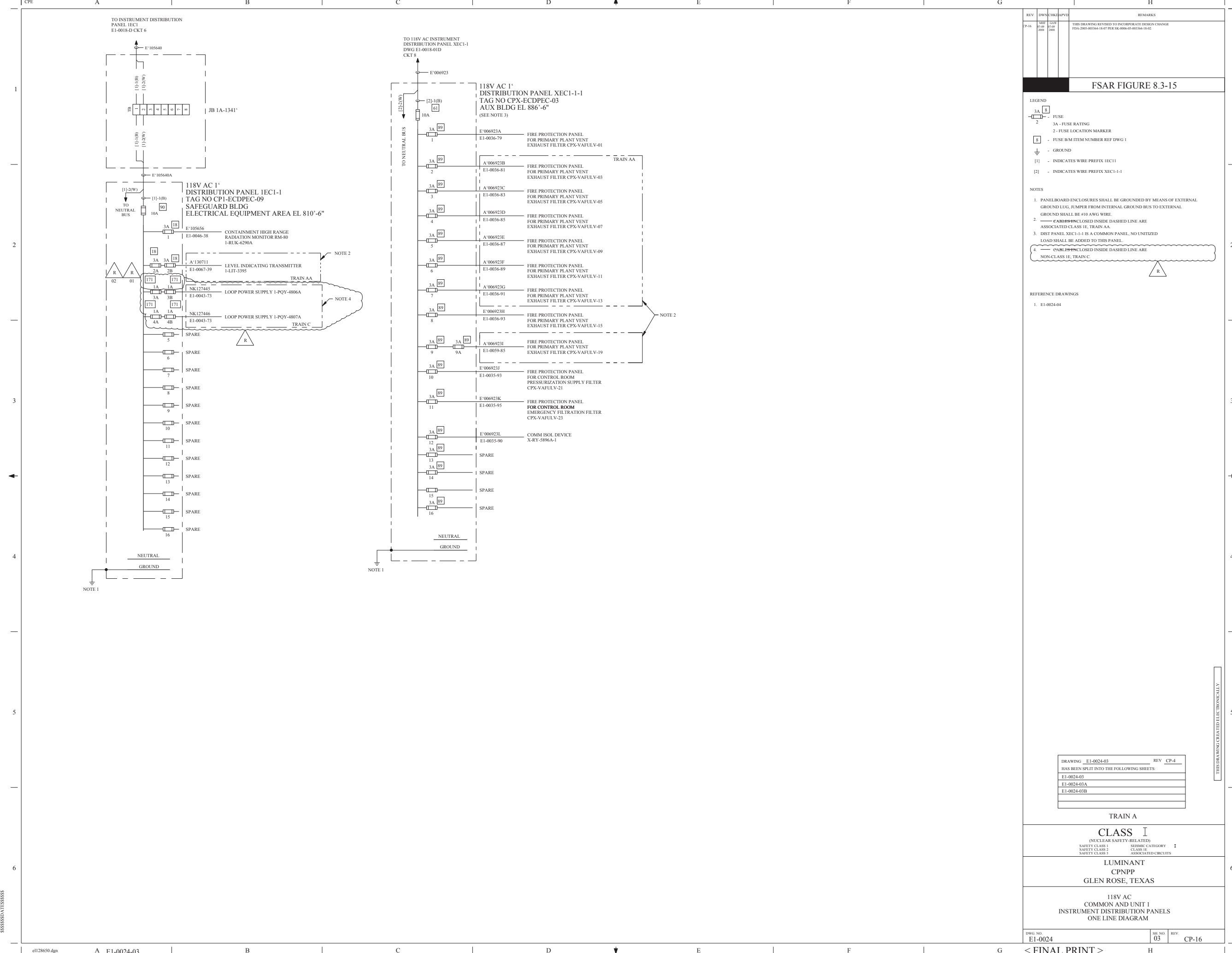


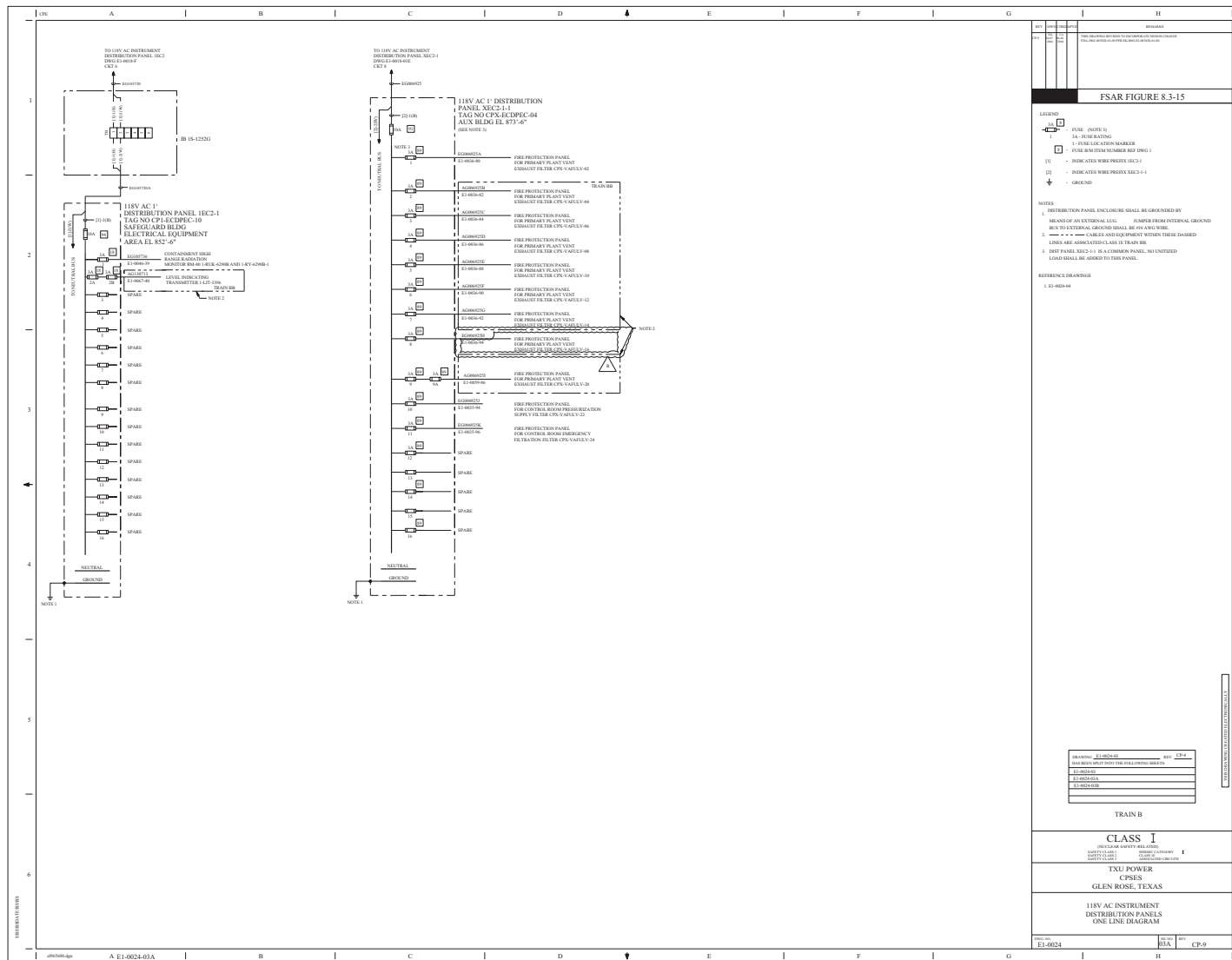


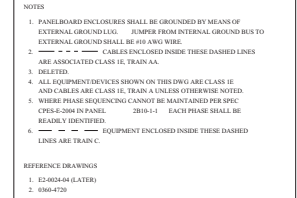




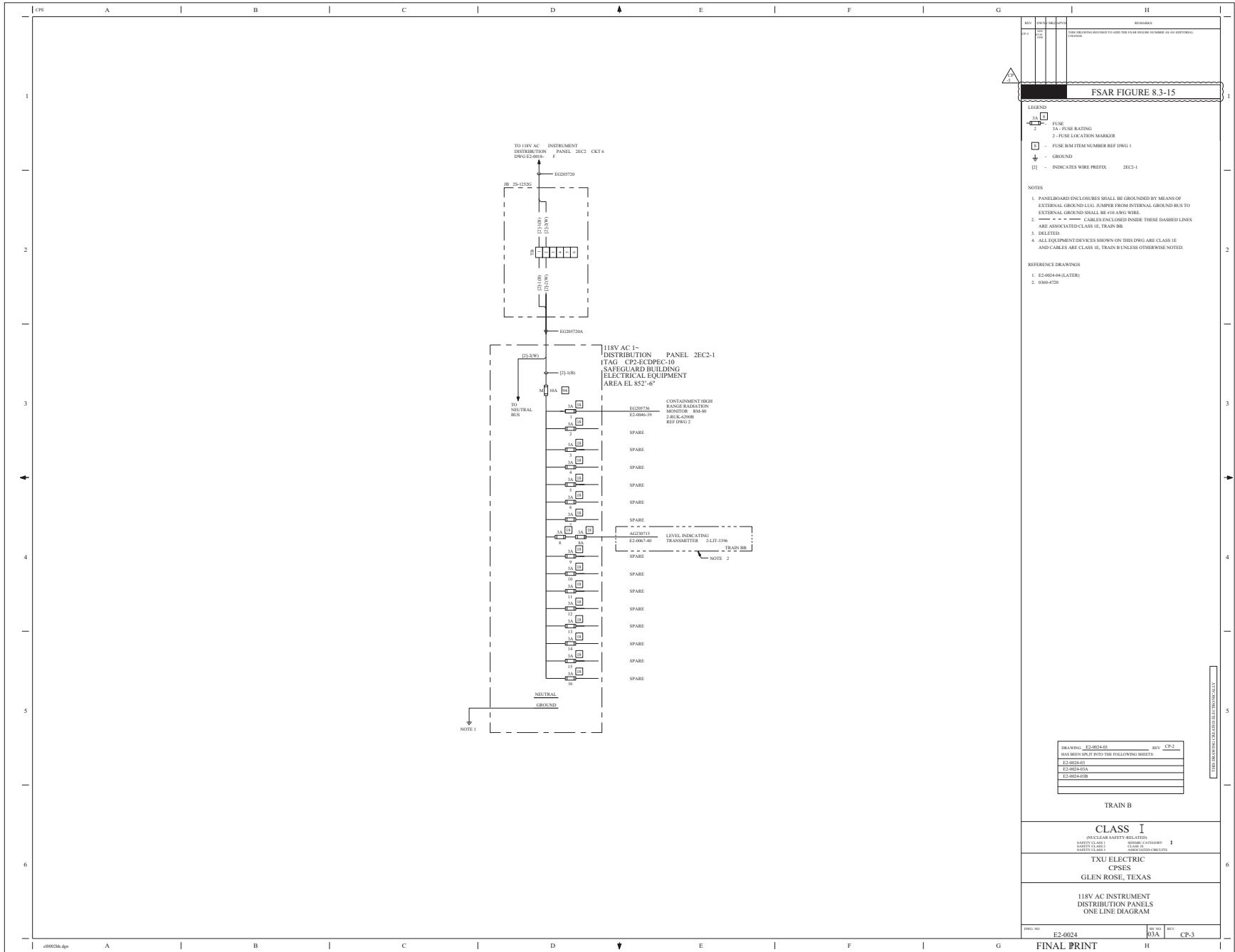
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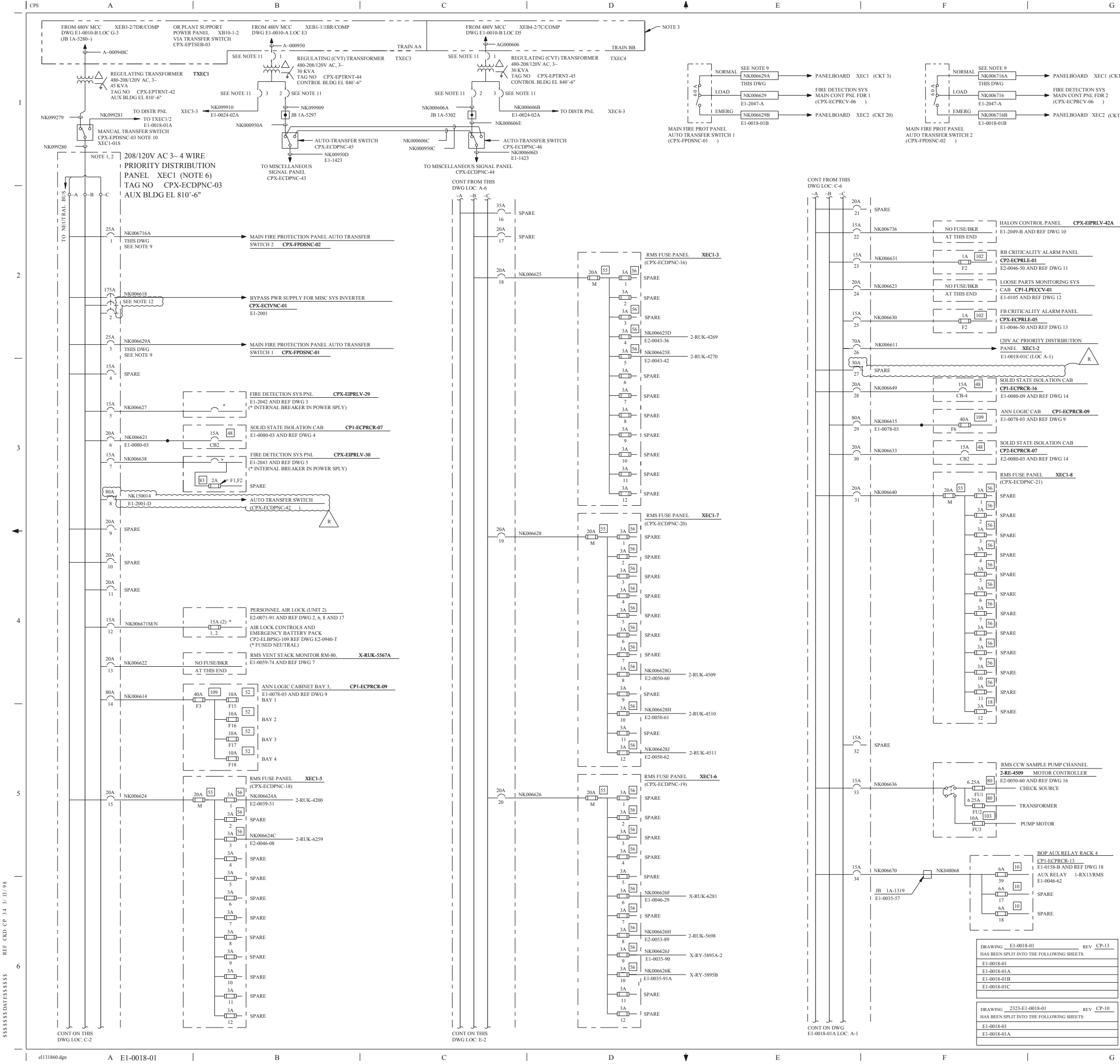






TRAIN A												
<h1>CLASS I</h1> <p>(NUCLEAR SAFETY RELATED)</p> <table> <tr> <td>SAFETY CLASS 1</td> <td>DESIGN CATEGORY</td> <td>I</td> </tr> <tr> <td>SAFETY CLASS 2</td> <td>CLASS</td> <td></td> </tr> <tr> <td>SAFETY CLASS 3</td> <td>ADMINISTRATIVE CATEGORY</td> <td></td> </tr> </table>				SAFETY CLASS 1	DESIGN CATEGORY	I	SAFETY CLASS 2	CLASS		SAFETY CLASS 3	ADMINISTRATIVE CATEGORY	
SAFETY CLASS 1	DESIGN CATEGORY	I										
SAFETY CLASS 2	CLASS											
SAFETY CLASS 3	ADMINISTRATIVE CATEGORY											
<p>TXU ELECTRIC CPSES GLEN ROSE, TEXAS</p>												
<p>118V AC INSTRUMENT FUSED DISTRIBUTION PANEL ONE LINE DIAGRAM</p>												
DRWG NO.	E2-0024	REV. 03	REV. CP-7									





REV	OWN	CHK	APPV	REMARKS
CP-49	SW	SW	SW	THIS DRAWING REVISYD TO INCORPORATE DESIGN CHANGE
06-12	001	001	001	FDA 2014-000079-02-00 PER SC-0008-14-000079-02-06

FSAR FIGURE 8.3-15A

LEGEND:
15A - CIRCUIT BREAKER 1-POLE
15A - CIRCUIT BREAKER RATING
1 - CIRCUIT NUMBER
CIRCUIT BREAKER 3-POLE
6A - FUSE
39 - FUSE RATING
10 - FUSE LOCATION MARKER
10 - FUSE B/M ITEM NUMBER REF DWG 21
DISCONNECT SWITCH
INDICATES SPLICE (SPICE PER 2323-ES-100)

NOTES:
1. INCOMING LUGS SHALL BE MOUNTED AT THE TOP OF PANEL.
2. DISTRIBUTION PANEL IS SEISMIC CATEGORY 1, NON-CLASS 1E.
3. ALL EQUIPMENT/DEVICES AND CABLES INSIDE THESE DASHED LINES ARE CLASS 1E, AS NOTED. ALL OTHER EQUIPMENT/DEVICES AND CABLES ARE NON-CLASS 1E.
4. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE THERMAL MAGNETIC.
5. DELETED
6. TOTAL LOAD ON THIS PANEL IS TO THE FULL CAPACITY OF TRANSFORMER CPX-EPTNT-42. NO MORE LOAD SHALL BE ADDED TO THIS PANEL. REFERENCE CALC NUMBER EE-1E-XEB3-2.
7. DELETED
8. DELETED
9. SPARE THE RED CONDUCTOR ON CABLE NK006716A AND NK00629A.
10. TRANSFER SWITCH CPX-EPDNC-03 SHALL BE ALIGNED TO TRANSFORMER TXEC1/2 ONLY DURING MAINTENANCE OF TRANSFORMER TXEC1 UNDER PROCEDURAL CONTROL. AT NO TIME SHALL BOTH TRANSFER SWITCHES CPX-EPDNC-03 AND CPX-EPDNC-04 BE ALIGNED TO TRANSFORMER TXEC1/2.
11. CIRCUIT BREAKER IS SUPPLIED WITH TRANSFORMER, SEE REFERENCE DRAWING 22.
12. CIRCUIT BREAKER IS A 3-POLE BREAKER. CABLE NK006618 IS CONNECTED TO PHASE A ONLY.

REFERENCE DRAWINGS:
1. 771574 SH 1 MN CONTROL PNL SCHEMATIC DIAGRAM
2. VE2-74-2428-120 SCHEMATIC UNIT 2 PERSONNEL AIR LOCK
3. 771567-01 MODEL 8088 LOCAL CONTROL PANEL CPX-EIPRLV-29
4. E-302714-01 SH 4 WIRING DIAGRAM S/S CAB
5. 771569-01 LOCAL CONTROL PNL CPX-EIPRLV-30
6. VE2-74-2428-120 SCHEMATIC UNIT 2 PERSONNEL AIR LOCK SH A
7. 0353-1720 SH 1 CONN DIAG GAS OFFLINE MONITOR
8. 74-2428-0131 WIRING DIAG UNIT 2 PERSONNEL AIR LOCK
9. 800674 SH 1, 800704 SH 1 ANNUN PWR PANEL ASSEMBLY CUSTOMER EXTERNAL PWR BR CONTROL CONNECTIONS
10. E-81388-15-C CONTROL PANEL INTERNAL WIRING UNIT 1 AND 2 CABLE SPREADING RM
11. 0353-1553 SH 1 CONTAIN CRIT ALARM SCHEM
12. 1230030E LPM-4 INTERCONN DETAILS
13. 0353-1554 SH 1 FB CRIT ALARM SCHEM
14. E-302775-01 SH 4 SOLID STATE ISOL CAB WIRING
15. E-302775-01 SH 3 SOLID STATE ISOL CAB WIRING
16. 0353-2820 CONN DIAG LIQ MONITOR WITH PUMP
17. 74-2428-0130 WIRING DIAG UNIT 2 PERSONNEL AIR LOCK
18. E-5591 SH 1 BOP AUX RELAY RK 4
19. 53920E SH 1 FIRE PROTEC SYS SCHEM AND INTERCONN DIAG SINGLE ZONE DETECTION
20. DELETED
21. E1-0024-04 DEVICE LEVEL ONE LINE DIAGRAM FUSE/BREAKER BILL OF MATERIAL
22. 406319-1 CIRCUIT DIAGRAM SERIES 700

CLASS I
(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1 SEISMIC CATEGORY I
SAFETY CLASS 2 CLASS 1E
SAFETY CLASS 3 ASSOCIATED CIRCUITS

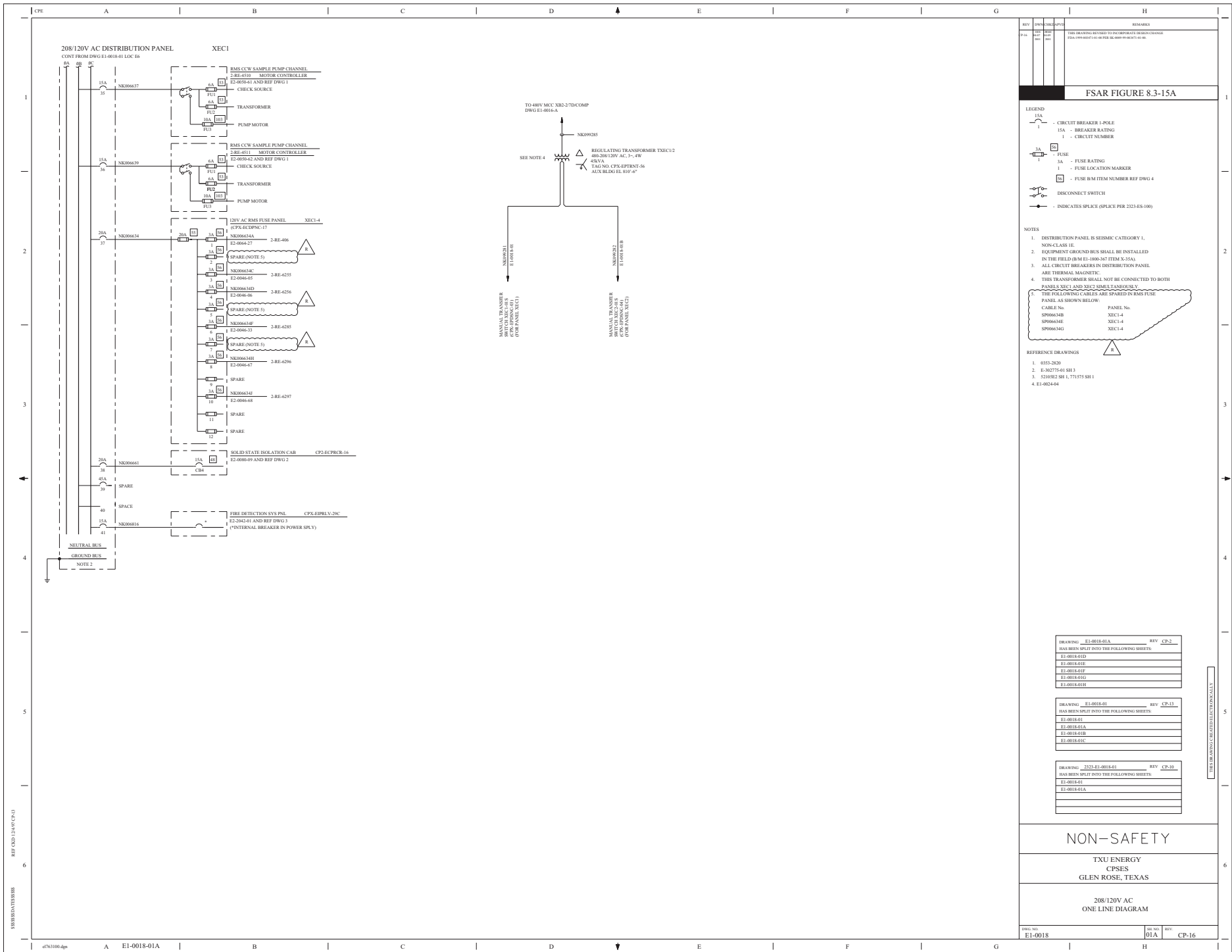
LUMINANT
CPNPP
GLEN ROSE, TEXAS

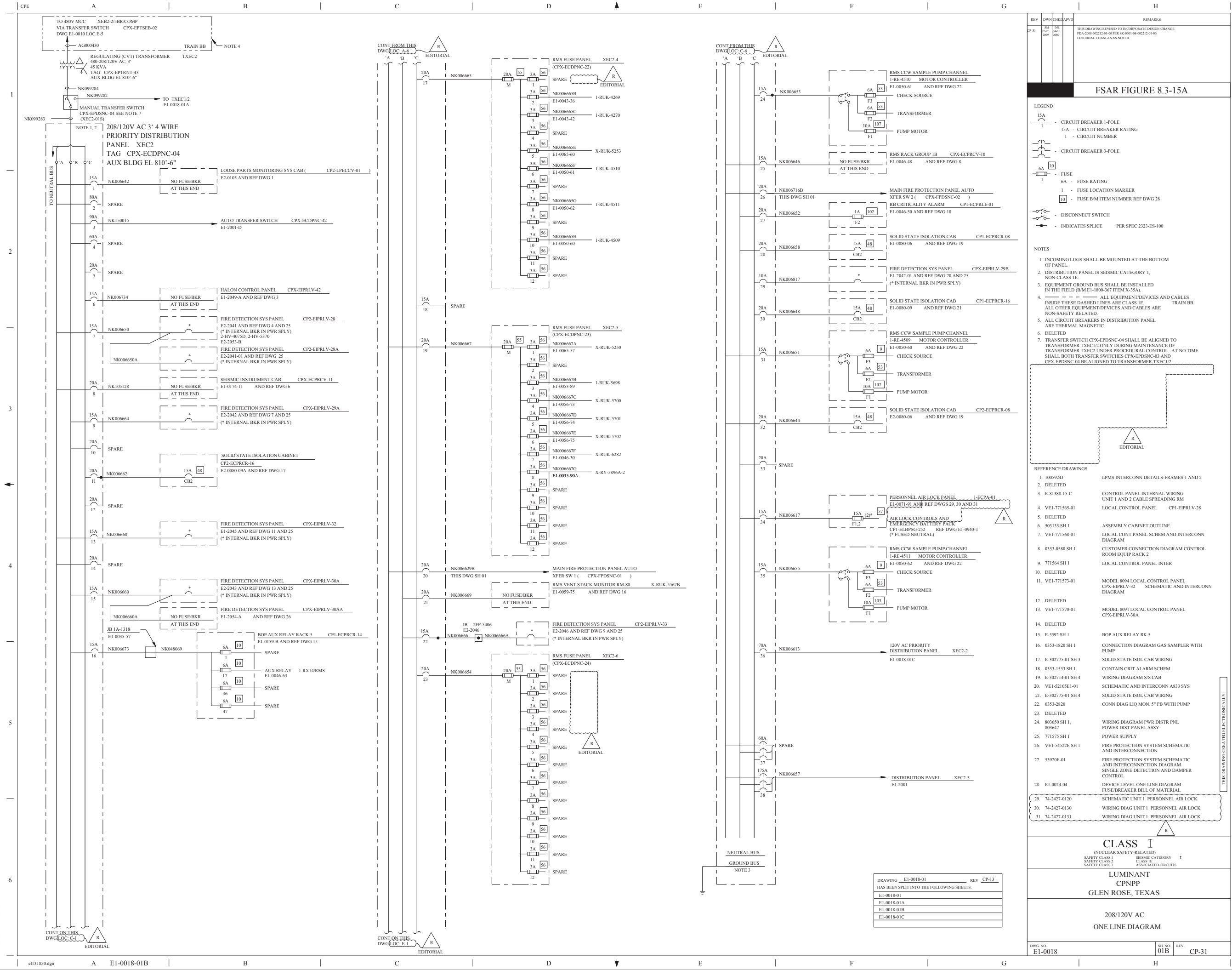
208/120V AC
ONE LINE DIAGRAM

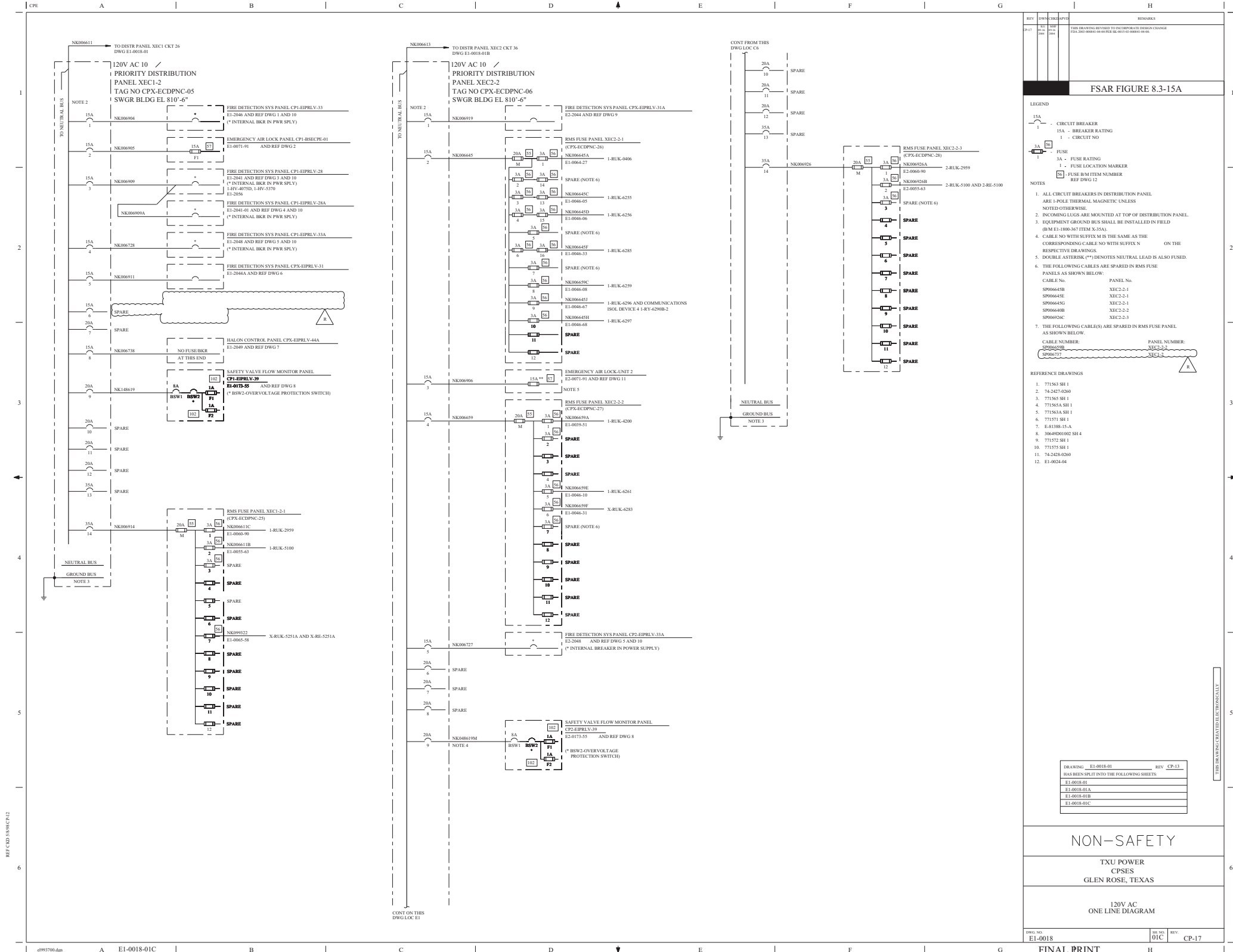
DWG NO. E1-0018 SH NO. 01 REV. CP-49

REF CMD CP 34 3/11/98
\$\$\$\$\$DATE\$\$\$\$\$

THIS DRAWING CREATED ELECTRONICALLY







REV

DATE

BY

CHKD

APPV

REMARKS

24-17

5/21/2024

CP-15

THIS DRAWING IS REQUIRED TO INCORPORATE DESIGN CHANGE
FDN 2001-000001-04-00 PER 30-0011-01 0000-01 00-05

FSAR FIGURE 8.3-15A

DRAWING

REV

E1-0018-01

CP-15

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E1-0018-01

E1-0018-01A

E1-0018-01B

E1-0018-01C

NON-SAFETY

TXU POWER

CPSES

GLEN ROSE, TEXAS

120V AC

ONE LINE DIAGRAM

DWG NO

REV

E1-0018

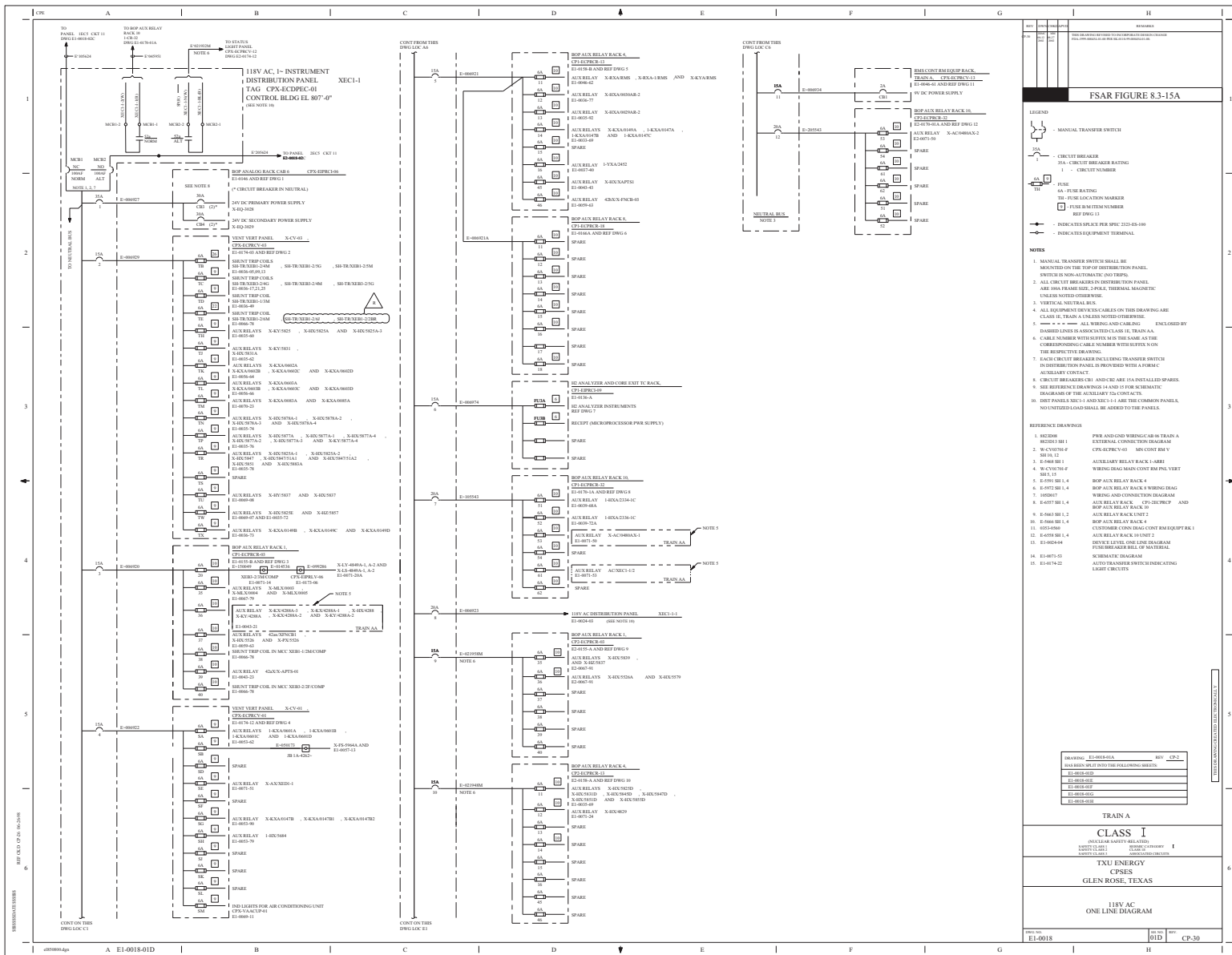
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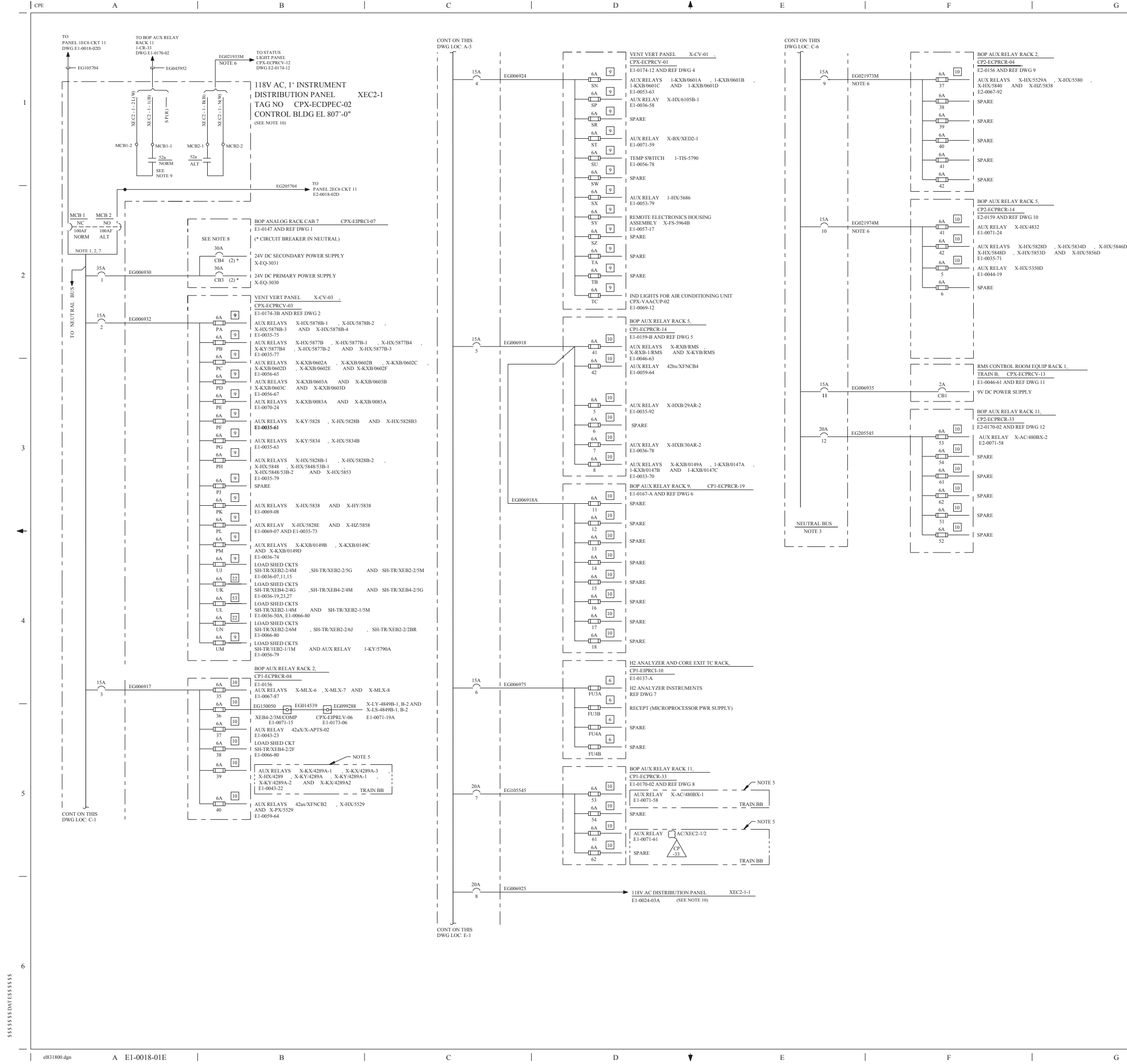
CP-17

FINAL PRINT

REF: CKD 33/06/CP-12

THIS DRAWING CREATED ELECTRONICALLY





REV		DWG		CHK		APP		REMARKS	
CP-33	01	04	04					THIS DRAWING REVISION TO INCORPORATE AN EDITORIAL CHANGE PER ALCR-2014-01010-1.	

FSAR FIGURE 8.3-15A

LEGEND

- MANUAL TRANSFER SWITCH
- CIRCUIT BREAKER
- 35A - CIRCUIT BREAKER RATING
- 1 - CIRCUIT NO
- FUSE
- 6A - FUSE RATING
- PA - FUSE LOCATION MARKER
- FUSE B/M ITEM NUMBER
- 9 - FUSE B/M ITEM NUMBER
- REF DWG 13

NOTES

- MANUAL TRANSFER SWITCH SHALL BE MOUNTED ON THE TOP OF DISTRIBUTION PANEL. SWITCH IS NON-AUTOMATIC (NO TRIPS).
- ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 100A FRAME SIZE, 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
- VERTICAL NEUTRAL BUS.
- ALL EQUIPMENT/DEVICES/CABLES ON THIS DRAWING ARE CLASS 1E TRAIN B UNLESS NOTED OTHERWISE.
- ALL WIRING AND CABLEING ENCLOSED BY DASHED LINES IS ASSOCIATED CLASS 1E TRAIN BB.
- CABLE NUMBER WITH SUFFIX M IS THE SAME AS THE CORRESPONDING CABLE NUMBER WITH SUFFIX N ON THE RESPECTIVE DRAWING.
- EACH CIRCUIT BREAKER INCLUDING TRANSFER SWITCH IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.
- CIRCUIT BREAKERS CB1 AND CB2 ARE 15A INSTALLED SPARES.
- SEE REFERENCE DRAWINGS 14 AND 15 FOR SCHEMATIC DIAGRAMS OF THE AUXILIARY 52a CONTACTS.
- DIST PANELS XEC2-1 AND XEC2-1-1 ARE THE COMMON PANELS, NO UNUNITED LOAD SHALL BE ADDED TO THE PANELS.

REFERENCE DRAWINGS

1. 8823D09	PWR AND GND WIRING/CAB 07 TR B
8823D14 SH 1	EXTERNAL CONNECTION DIAGRAM
2. W-CV03701-F	CPX-ECPCRCV-03 WD MN CONT RM VV
SH 11, 12	
3. DELETED	
4. W-CV01701-F	WIRING DIAG MAIN CONT RM PNL VERT
SH 7, 14	
5. E-5592-1, -4	BOP AUX RELAY RK 5 WIRING DIAGRAM
6. E-5973-1, -4	BOP AUX RELAY RK 3, 9 INTERNAL WIRING DIAGRAM
7. 105D017	WIRING AND CONNECTION DIAGRAM
8. E-6559-1, -4	WIRING DIAG AUX RELAY RK 2 UNIT 1
	BOP AUX RELAY RK 11
9. E-5664-1, -2	BOP AUX RACK 2 INTERNAL WIRING DIAG
10. E-5667-1, -4	BOP AUX RELAY RACK 5 WIRING DIAG
11. 0353-0560	CUSTOMER CONN DIAG CONT RM EQUIP RK 1
12. E-6560-1, -4	AUX RELAY RACK 11 UNIT 2
13. E1-0024-04	DEVICE LEVEL ONE LINE DIAGRAM
	FUSE/BREAKER BILL OF MATERIAL
14. E1-0071-61	1-S811-2 118V AC AND BUS TIE BKR SCHEMATIC DIAGRAM
15. E1-0174-22	AUTO TRANSFER SWITCH INDICATING LIGHT CIRCUITS

DRAWING E1-0018-01A REV CP-2

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E1-0018-01D
E1-0018-01E
E1-0018-01F
E1-0018-01G
E1-0018-01H

TRAIN B

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1	SEISMIC CATEGORY	I
SAFETY CLASS 2	CLASS II	
SAFETY CLASS 3	ASSOCIATED CIRCUITS	

LUMINANT

CPNPP

GLEN ROSE, TEXAS

118V AC

ONE LINE DIAGRAM

DWG NO. E1-0018

SHEET NO. 01E

REV. CP-33

\$\$\$\$\$\$\$\$\$DATE\$\$\$\$\$\$

THIS DRAWING CREATED ELECTRONICALLY



REV		DWN		CHKD		APVD		REMARKS	
CP-12	11-24-2009	11-24-2009	11-24-2009					THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2006-003732-01-00 PER 98-0008-06-003732-01-00	

FSAR FIGURE 8.3-15A

LEGEND

CIRCUIT BREAKER 3-POLE

70A - BREAKER RATING

1 - CIRCUIT NO

CIRCUIT BREAKER

20A - CIRCUIT BREAKER RATING

AZ - CIRCUIT BREAKER LOCATION MARKER

CIRCUIT BREAKER B/M ITEM NUMBER

REFERENCE DRAWING 28

FUSE

15A - FUSE RATING

RY - FUSE LOCATION MARKER

NOTES

1. INCOMING LUGS SHALL BE MOUNTED AT THE TOP OF PANEL.

2. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.

3. ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DWG ARE CLASS 1E TRAIN A UNLESS NOTED OTHERWISE.

4. CABLE NUMBER E'104837 IS DISCONNECTED AND CONDUCTORS TAPED AT BOTH ENDS. FUTURE USE OF THIS CABLE DURING OUTAGES REQUIRES AUTHORIZATION THROUGH A DCA. CABLE NUMBER HAS BEEN REIDENTIFIED AS SP104837.

5. SPACE HEATERS IN 480V SWITCHGEAR HAVE BEEN DISCONNECTED. RECONNECTION DURING OUTAGE, IF NEEDED, REQUIRES AUTHORIZATION THROUGH A DCA. FUSES AND LEAD WIRE TO RECEPTACLES HAVE BEEN REMOVED AND SHALL NOT BE REINSTALLED.

REFERENCE DRAWINGS

1. 33-51261-E483

2. 33-51261-D484

3. 33-51261-E485

4. 33-51261-E486

5. 33-51261-E487

6. 33-51261-E488

7. 33-51261-E489

8. 33-51261-E490

9. 33-51261-E491

10. 33-51261-E492

11. 33-51261-E493

12. 33-51261-E494

13. 33-51261-D495

14. 33-51261-E496

15. 33-51261-E497

16. 33-51261-E498

17. 33-51261-E499

18. 1442F64

19. 1442F63

20. 1442F65

21. 1442F67

22. 1442F71

23. 1442F69

24. 1442F70

25. 1442F72

26. 182C79225 SH 11B

27. 182C79225 SH 11

28. E1-0024-04

29. 1983C98

30. 8693D37

31. 1442F60

DRAWING E1-0018-01A

REV CP-2

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E1-0018-01D

E1-0018-01E

E1-0018-01F

E1-0018-01G

E1-0018-01H

TRAIN A

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1 SERIMC CATEGORY I

SAFETY CLASS 2 CLASS II

SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT

CPNPP

GLEN ROSE, TEXAS

208/120V AC

ONE LINE DIAGRAM

DWG NO. E1-0018

SH NO. 01F

REV. CP-12

ct140910.dgn

A E1-0018-01F

B

C

D

E

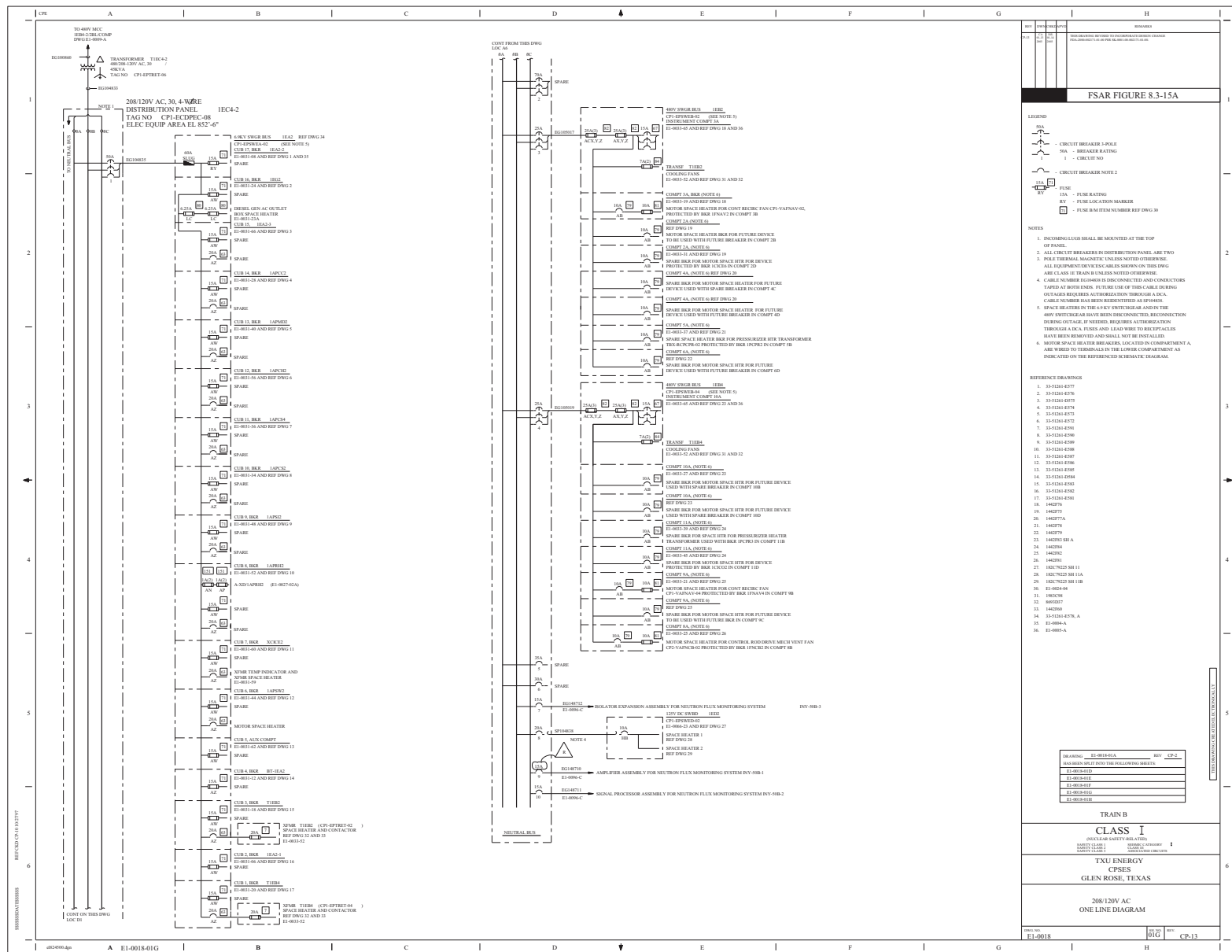
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G

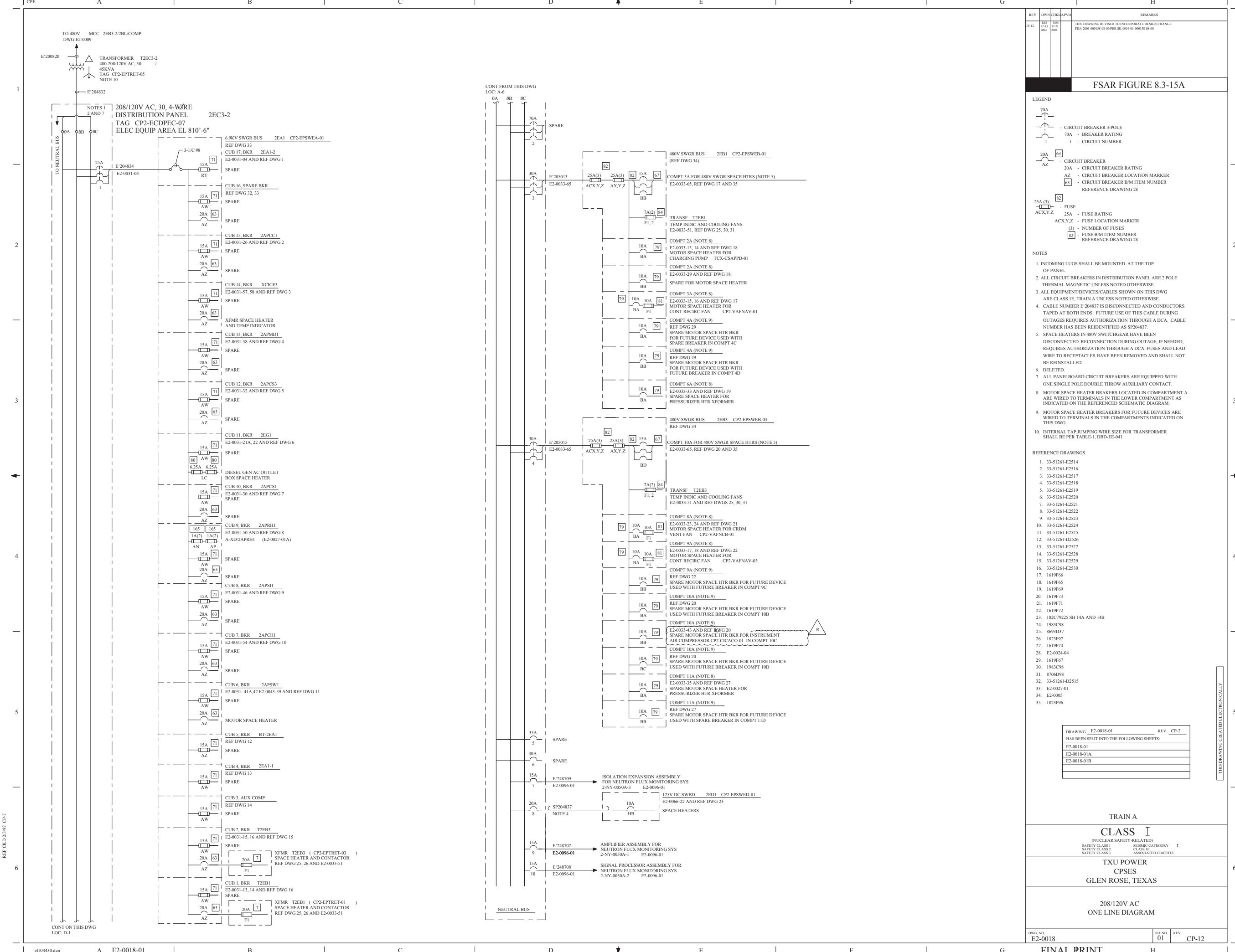
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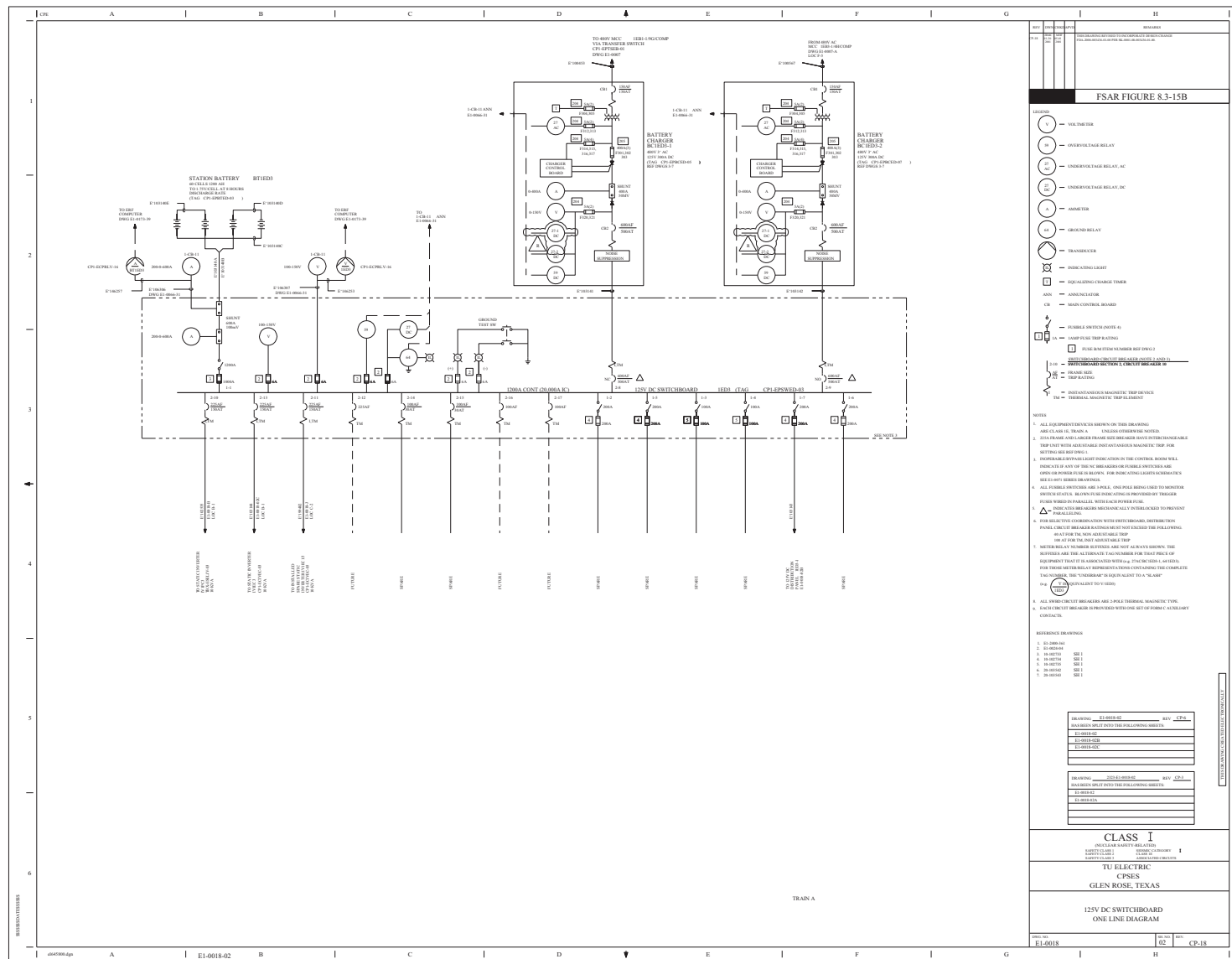
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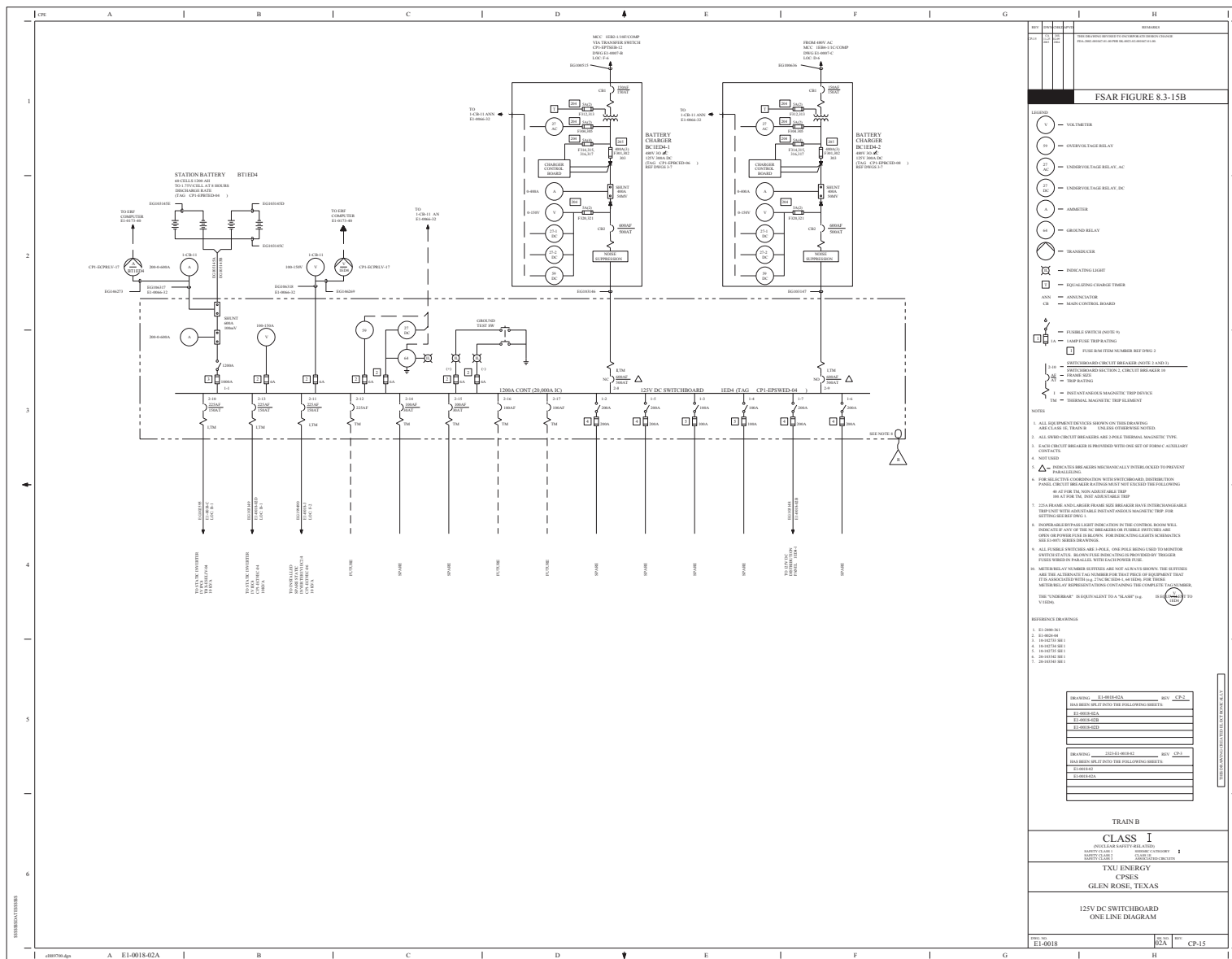
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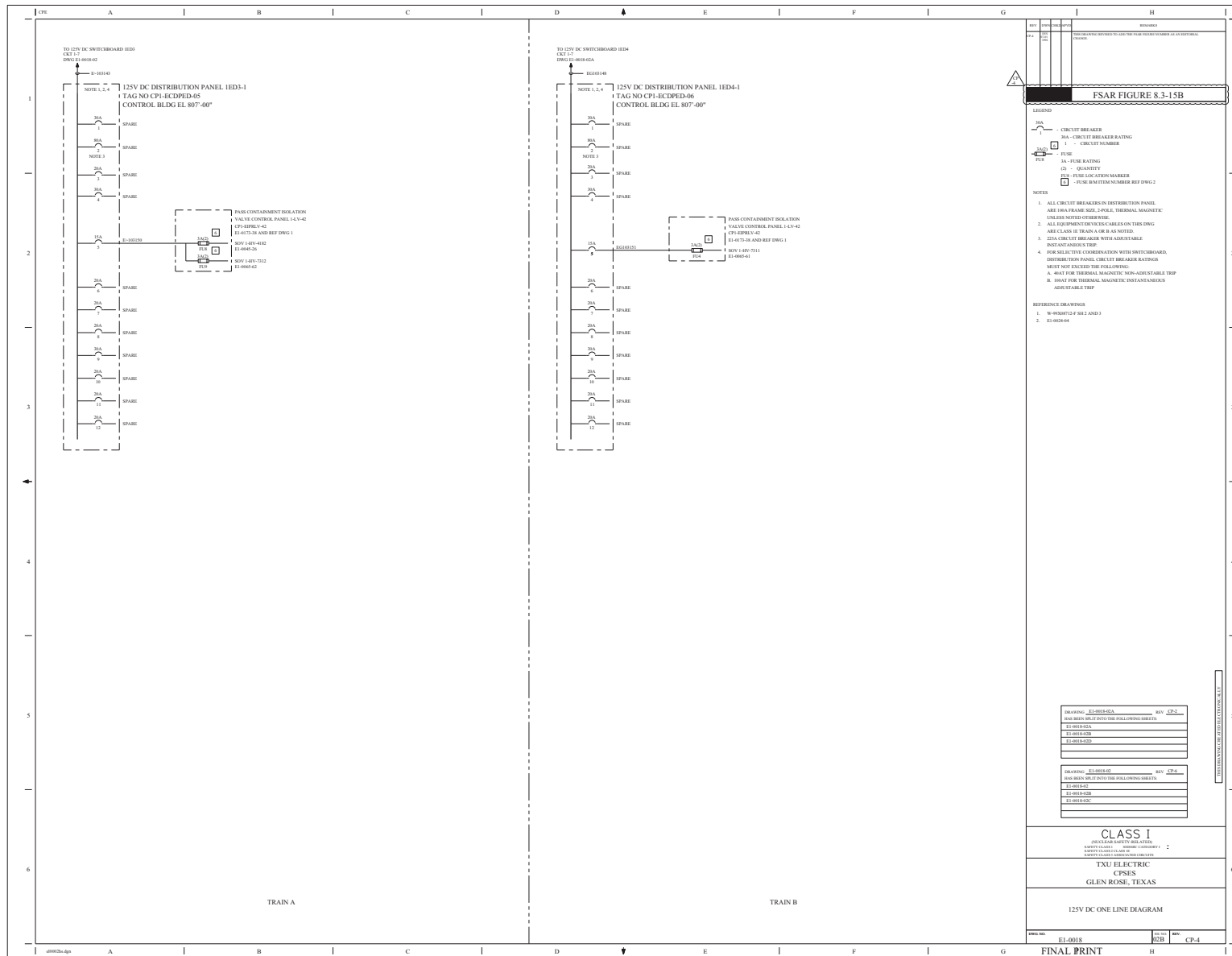


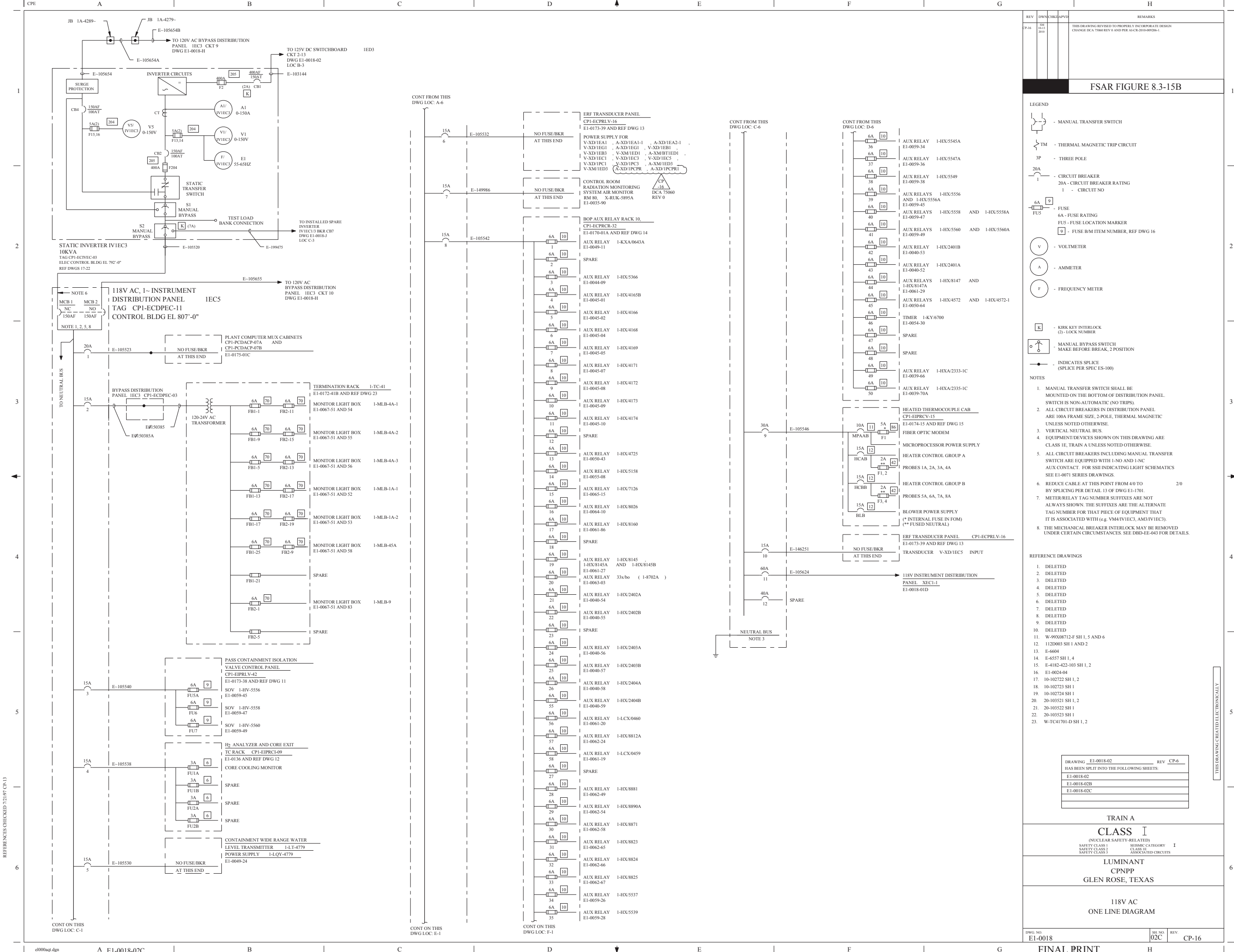
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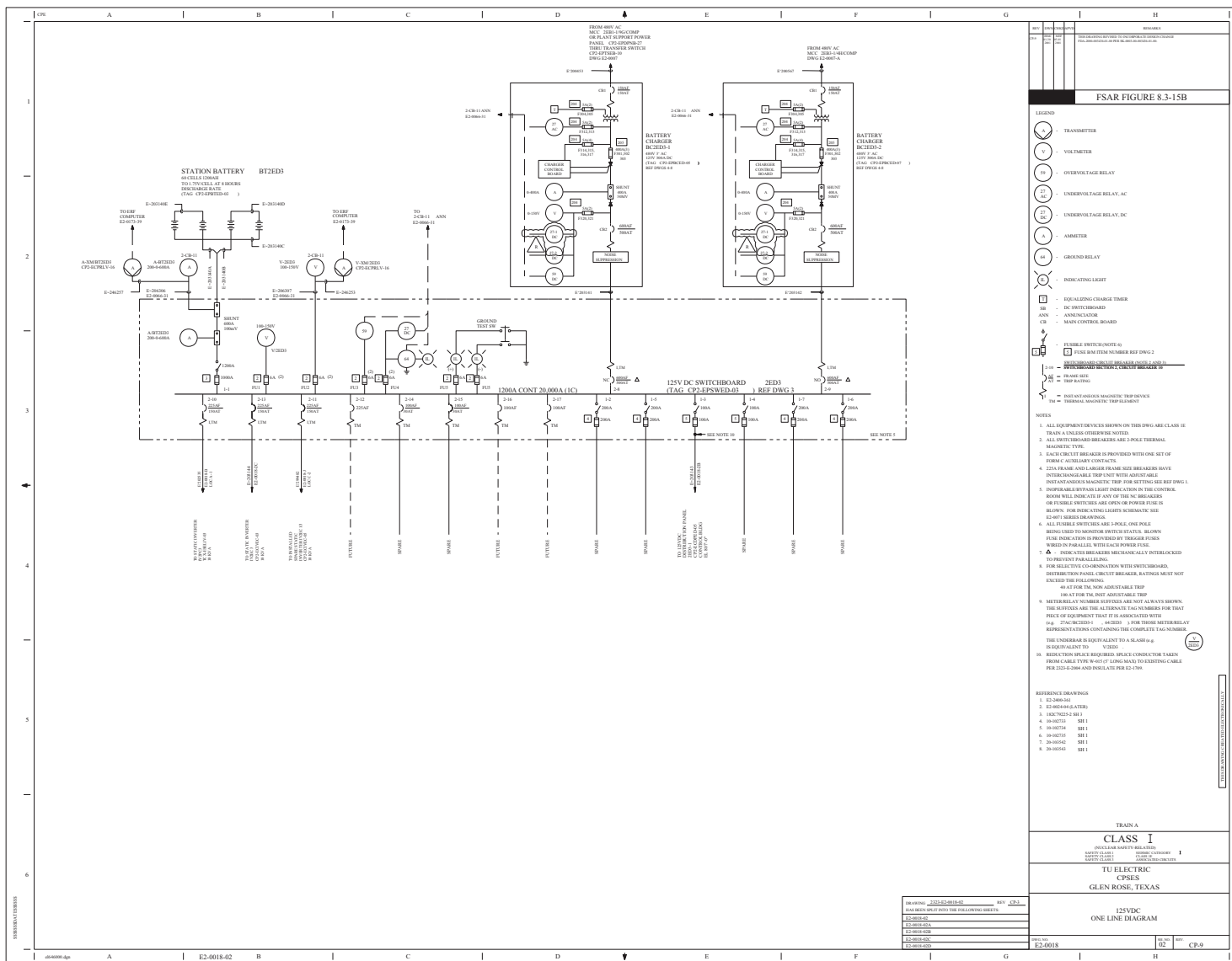


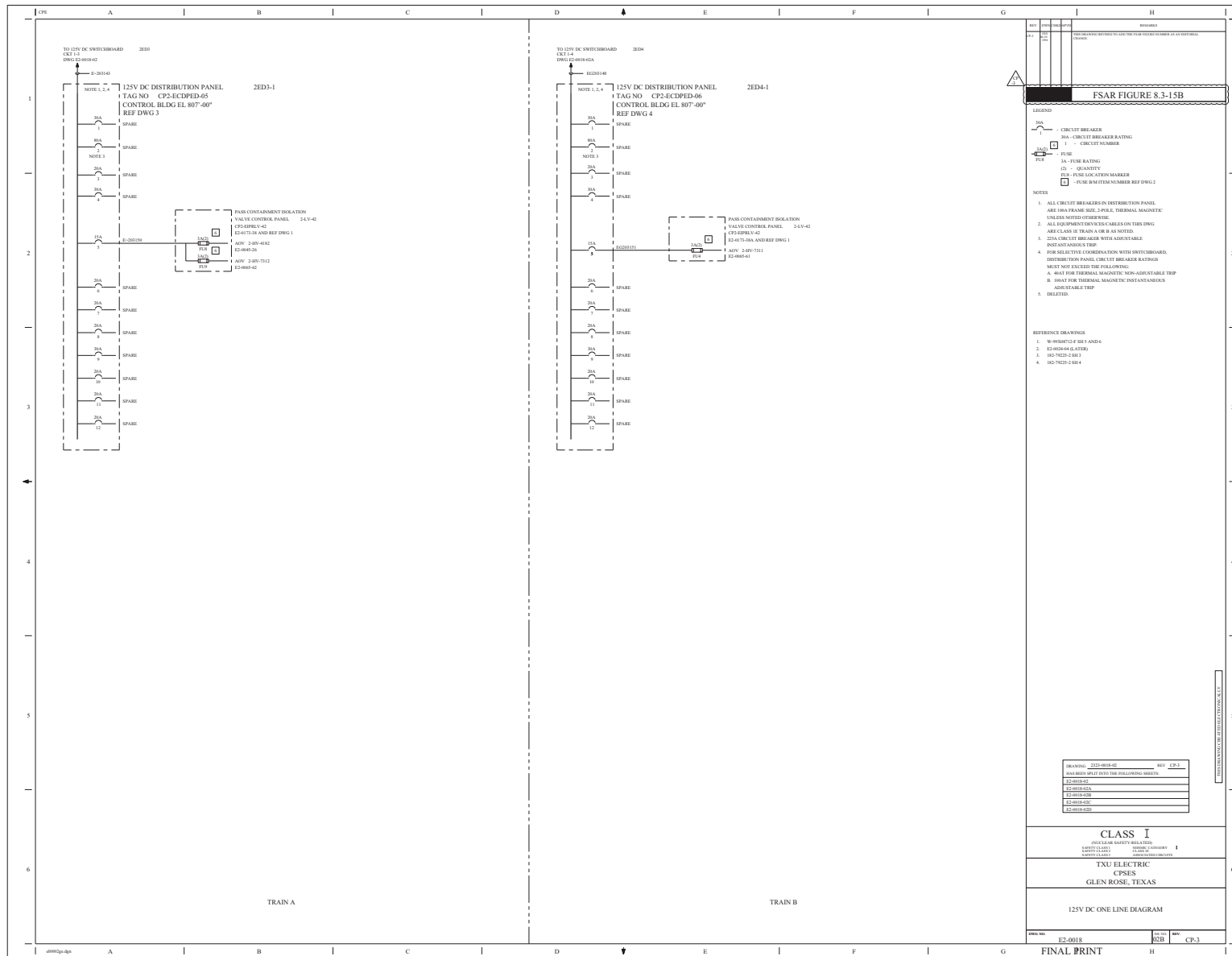




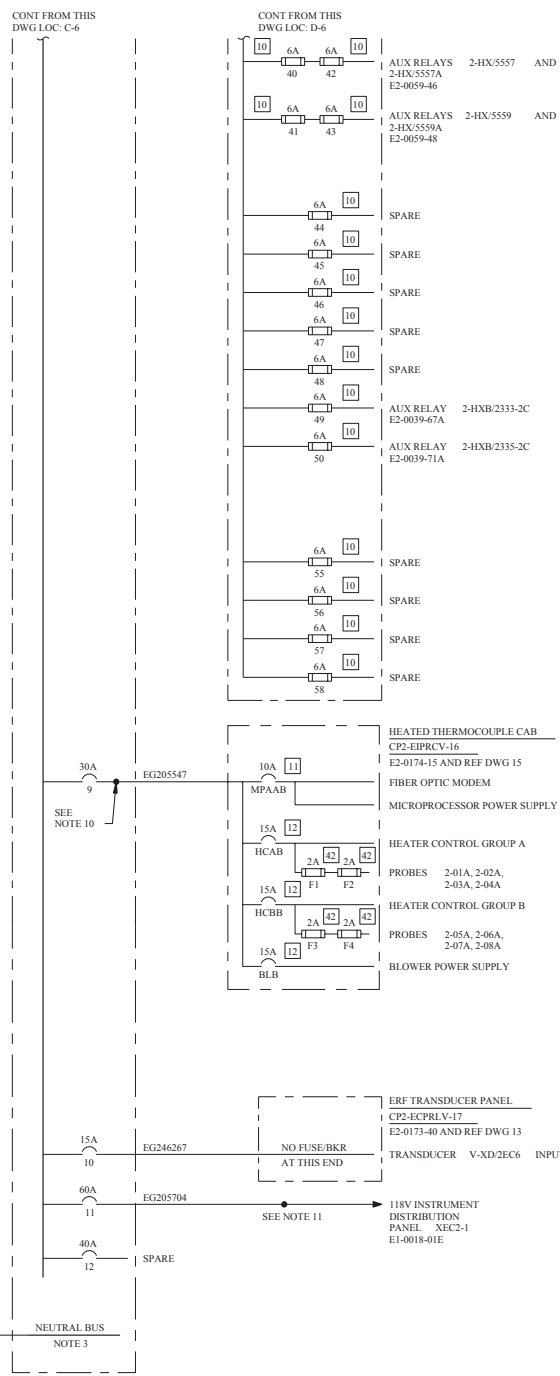
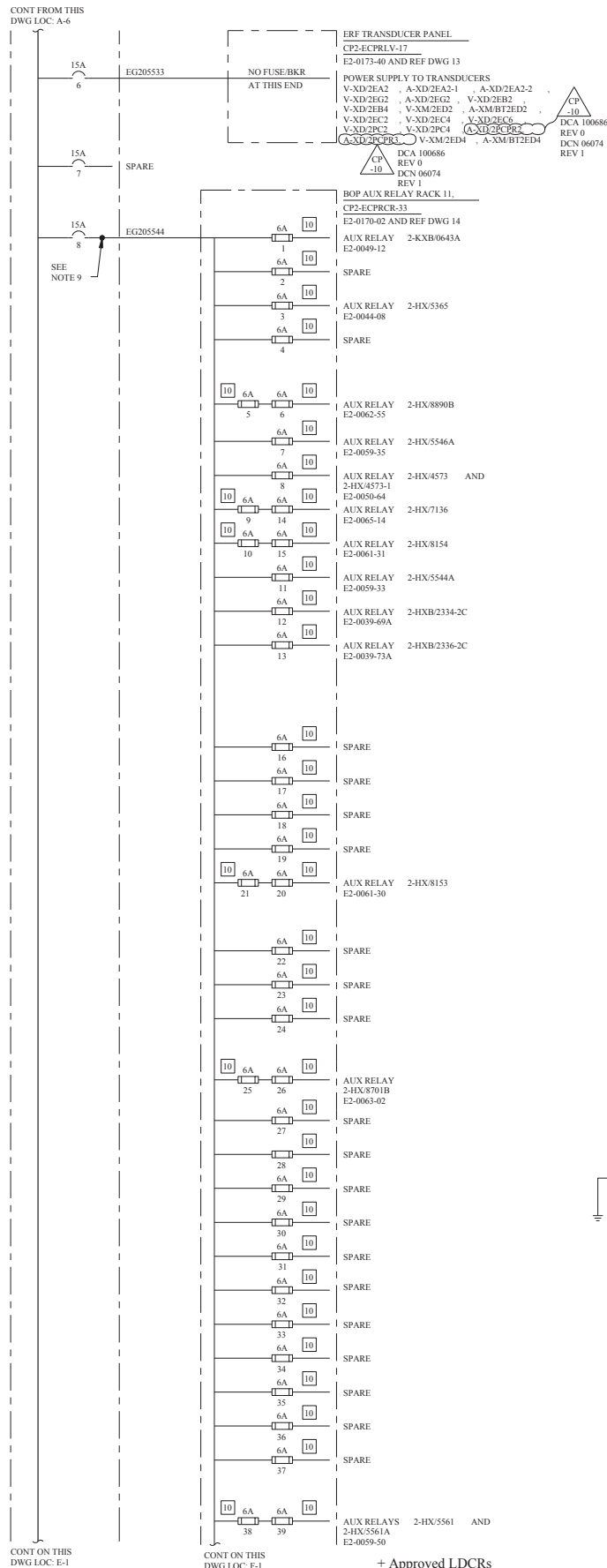
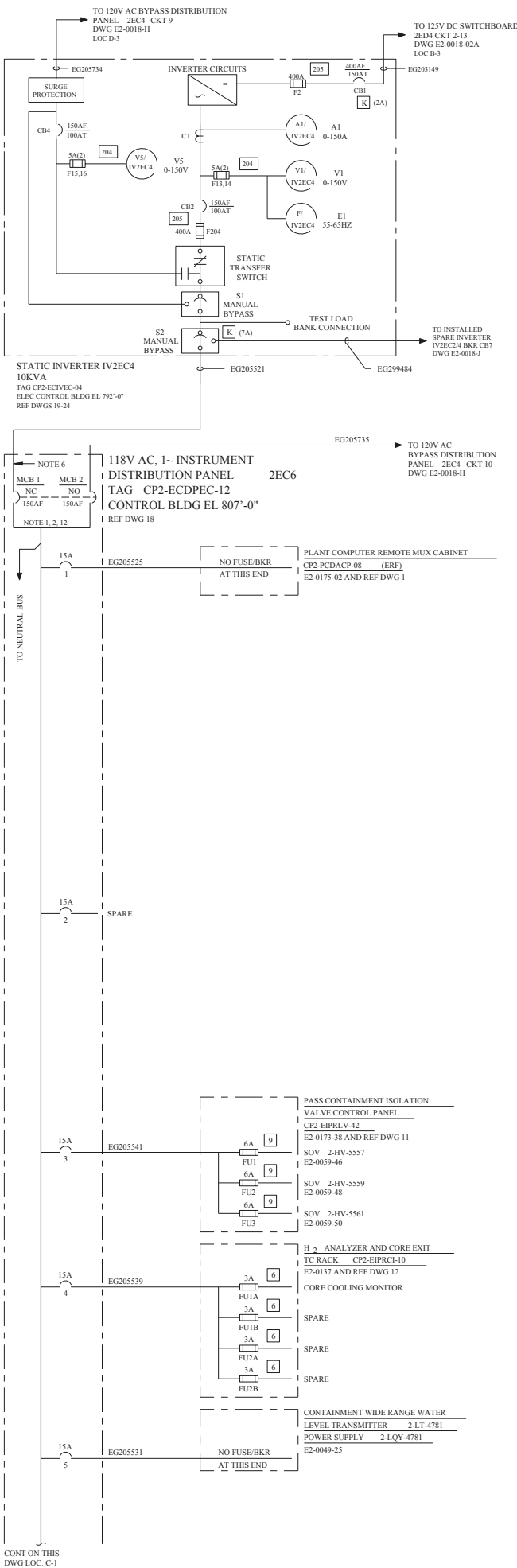














REV	DWN	CHK	APPV	REMARKS
CP-10	SH 10/12 2010			THIS DRAWING REVISED TO PROPERLY INCORPORATE DESIGN CHANGES DCA 10086 REV 0 AND DCN 08074 REV 1 AND PER A1-CR-0021010-009286-1.

FSAR FIGURE 8.3-15B


LEGEND




- MANUAL TRANSFER SWITCH




- THERMAL MAGNETIC TRIP ELEMENT




- THREE POLE




- CIRCUIT BREAKER




20A - CIRCUIT BREAKER RATING




1 - CIRCUIT NUMBER




6A - FUSE RATING




FU1 - FUSE LOCATION MARKER




9 - FUSE B/M ITEM NUMBER REF DWG 16




- VOLTMETER




- AMMETER




- FREQUENCY METER




- KIRK KEY INTERLOCK




(1A) - LOCK NUMBER



- MANUAL BYPASS SWITCH



MAKE BEFORE BREAK, 2 POSITION



- INDICATES SPLICE

NOTES

1. MANUAL TRANSFER SWITCH SHALL BE MOUNTED ON THE BOTTOM OF DISTRIBUTION PANEL. SWITCH IS NON-AUTOMATIC (NO TRIPS).

2. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 100A FRAME SIZE, 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.

3. VERTICAL NEUTRAL BUS.

4. EQUIPMENT/DEVICES SHOWN ON THIS DRAWING ARE CLASS 1E, TRAIN B UNLESS NOTED OTHERWISE.

5. EACH CIRCUIT BREAKER IS PROVIDED WITH ONE SET OF FORM C AUXILIARY CONTACT.

6. REDUCE CABLE AT THIS POINT FROM 4/0 TO 2/0 BY SPLICING PER CPES-E-2004.

7. METER/RELAY TAG NUMBER SUFFIXES ARE NOT ALWAYS SHOWN. THE SUFFIXES ARE THE ALTERNATE TAG NUMBER FOR THAT PIECE OF EQUIPMENT THAT IT'S ASSOCIATED WITH. (e.g. AM1/IV2EC4 , FMS/IV2EC4).

8. DELETED.

9. SPLICE IN ACCORDANCE WITH CPES-E-2004. REDUCTION 2/C #6 TO 2/C #10.

10. SPLICE IN ACCORDANCE WITH CPES-E-2004. REDUCTION 2/C #6 TO 2/C #8.

11. SPLICE IN ACCORDANCE WITH SPECIFICATION CPES-E-2004.

12. THE MECHANICAL BREAKER INTERLOCK MAY BE UNDER CERTAIN CIRCUMSTANCES. SEE DBD-EE-043 FOR DETAILS.

REFERENCE DRAWINGS

11. W-99X08712-F SH 2 AND 3

12. 112D063 SH 1 AND 2

13. E-6610

14. E-6560 SH 1, 2, 3, 4

15. E-4182-422-103 SH 3, 4

16. E2-0024-04 (LATER)

17. DELETED

18. 182-79230-7/4

19. 20-102722 SH 1, 2

20. 20-102723 SH 1

21. 20-102724 SH 1

22. 20-103521 SH 1, 2

23. 20-103522 SH 1

24. 20-103523 SH 1

DRAWING 2323-E2-0018-02 _____ REV CP-3 _____

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E2-0018-02 _____

E2-0018-02A _____

E2-0018-02B _____

E2-0018-02C _____

E2-0018-02D _____

TRAIN B

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1 SEISMIC CATEGORY I

SAFETY CLASS 2 CLASS 1E

SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT

CPNPP

GLEN ROSE, TEXAS

118V AC

ONE LINE DIAGRAM

DWG NO. E2-0018

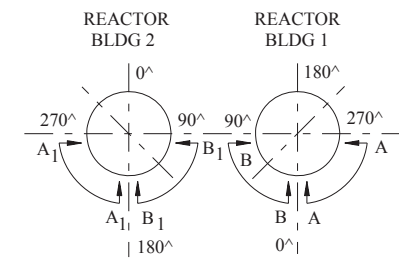
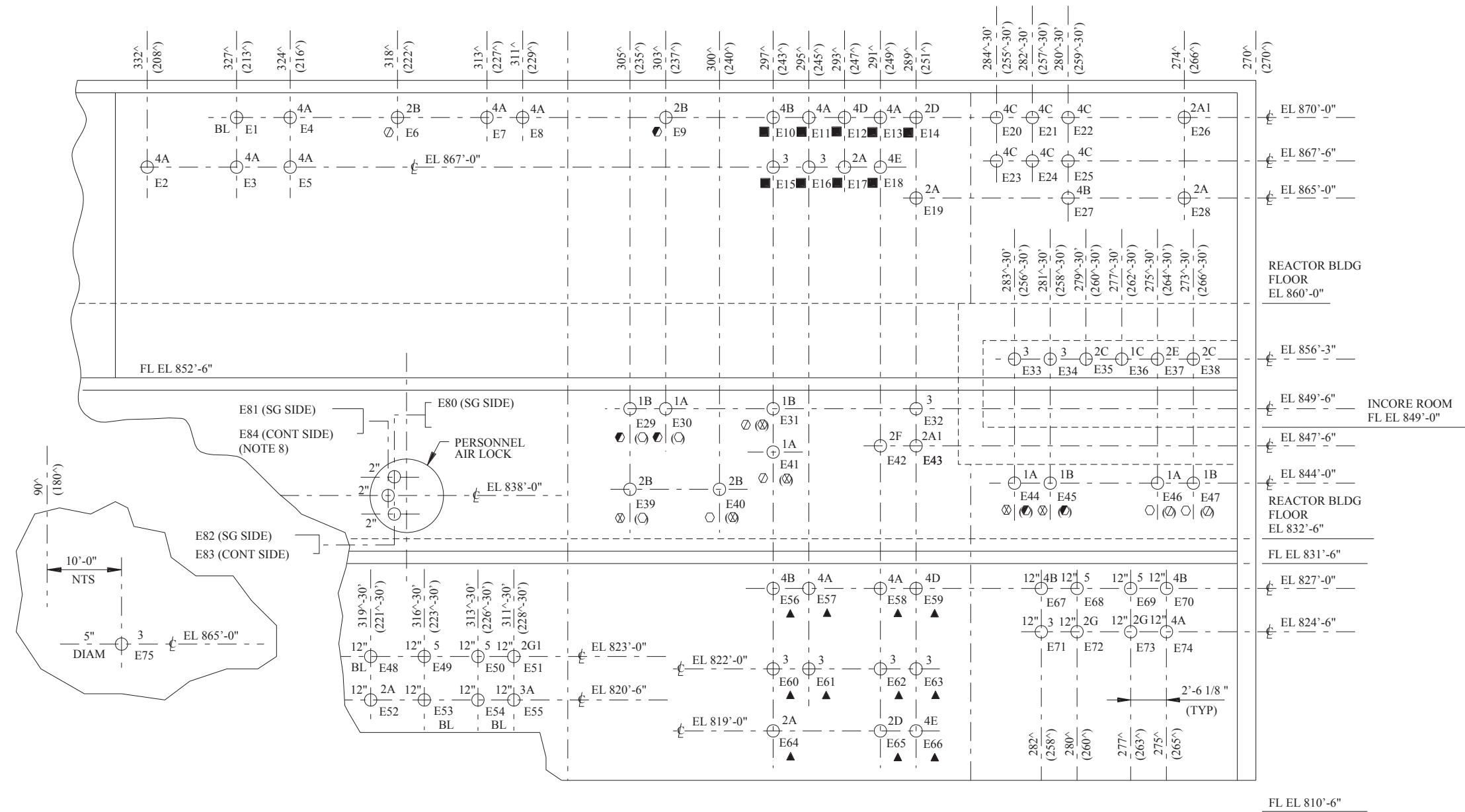
SH NO 02D

REV.

CP-10

THIS DRAWING CREATED ELECTRONICALLY



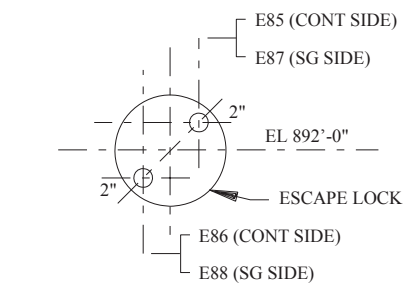


KEY PLAN

NOTES

1. OUTSIDE REACTOR BLDG
 $1^\wedge=1'-3 \frac{1}{16} "$ (1.256').
2. INSIDE REACTOR BLDG
 $1^\wedge=1'-2 \frac{1}{8} "$ (1.177').
3. FLOOR EL SHOWN ARE
SAFEGUARD BLDG UNLESS
OTHERWISE NOTED.
4. ALL NOZZLES DIAMETER OF
PENETRATIONS ARE 10"
EXCEPT AS NOTED.
5. RACEWAY DESIGNATIONS:
TRAIN "A" ▲
TRAIN "B" ■
CHANNEL I □ ○
CHANNEL II □ ⊗
CHANNEL III □ ⊗
CHANNEL IV □ ⊗
6. ABBREVIATIONS:
BL-BLANK HEADER PLATE.
7. UNIT 2 OPPOSITE HAND OF
UNIT 1 EXCEPT IN
PARENTHESIS.
8. PENETRATIONS ON THE SIDE
OF AIRLOCK.
9. CIRCUIT WALLING LEVEL IS NOT APPLICABLE
FOR FIBER OPTIC CIRCUITS.

PENETRATION TYPE		CONDUCTOR SIZE	VOLTAGE (SEE NOTE 9)	T R A N S M I S S I O N	T R A N S M I S S I O N	N O R M A L	C H A N N E L	B L A N K	T O T A L	FUNCTION
5		500MCM 2/ ϕ	6.9KV			4			4	6.9KV PWR
4	A	2/0 & UP	480V	2	2	7			11	480V PWR
	B	#10 TO #2	480V	1	1	3			5	480V PWR
	C	#8 & #4	125VDC			6			6	CONTROL ROD PWR
	D	#2 & 2/0	480V	1	1				2	480V PWR
	E	#10	480V	1	1				2	480V PWR & CONT
3		#12	125VDC/120VAC	4	2	14			20	CONTROL
2	A	#12 & FIBER OPTIC	125VDC/120VAC			1			1	CONTROL/FIBER OPTIC
	A1	#16	LOW SIGNAL	1	1	3			5	INSTRUMENTATION
	B	#16 & FIBER OPTIC	LOW SIGNAL			2			2	INSTRUMENTATION
	C	#16	LOW SIGNAL				4		4	REACTOR PROTECTION
	D	#16 & COAX	LOW SIGNAL			2			2	RADIATION MONITORING
	E	#16 & COAX	LOW SIGNAL	1	1				2	INSTRUMENTATION
	F	#16	LOW SIGNAL			1			1	INSTR INCORE
	G	#14 & #16	LOW SIGNAL			1			1	INSTRUMENTATION
	GI	COAX	LOW SIGNAL			2			2	INSTRUMENTATION
	1	A	COAX & FIBER OPTIC	LOW SIGNAL			1		1	INSTRUMENTATION/FIBER OPTIC
1	B	TRIAx	LOW SIGNAL				4		4	NIS
	C	TRIAx & #16	LOW SIGNAL				4		4	NIS
		TRIAx	LOW SIGNAL			1			1	INCOR
BLANK								4	4	
TOTAL				11	9	48	12	4	84	



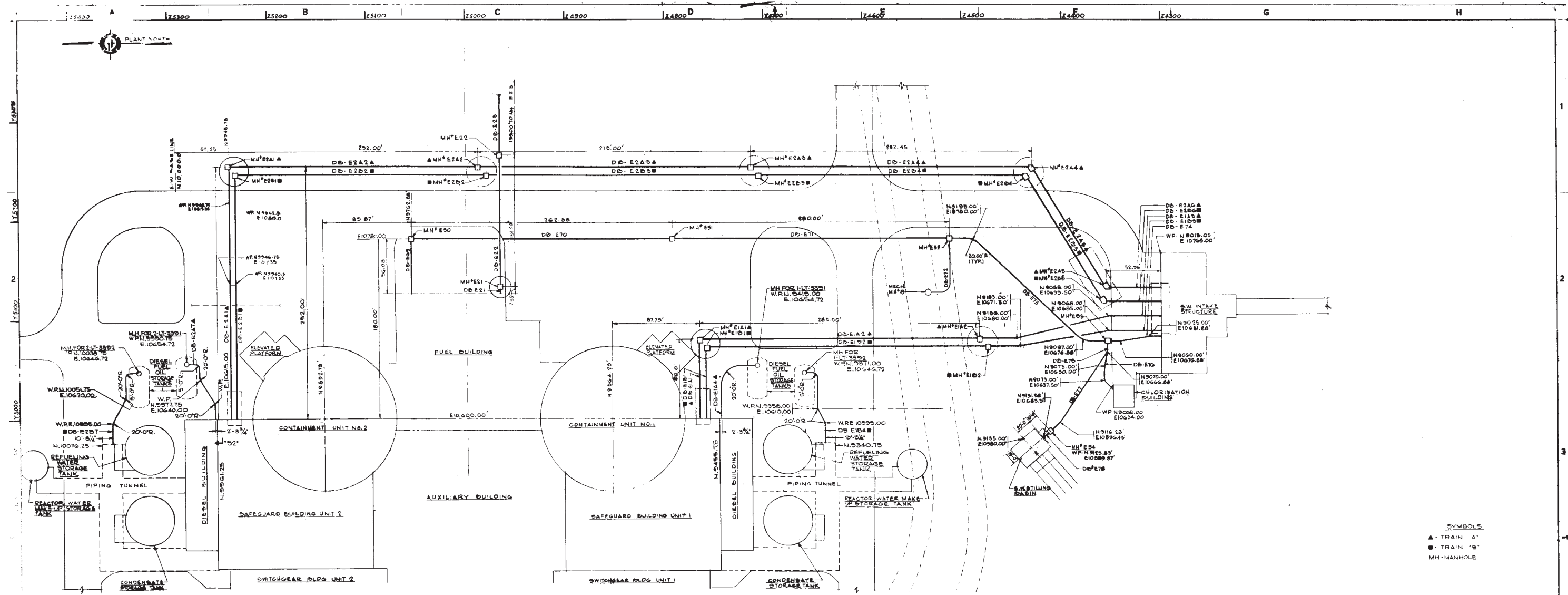
SECTION B-B FOR UNIT 1 AS SHOWN
(SECTION B -B FOR UNIT 2 OPPOSITE HAND)

Amendment 101

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

CONTAINMENT ELECTRICAL PENETRATIONS

FIGURE 8.3-16

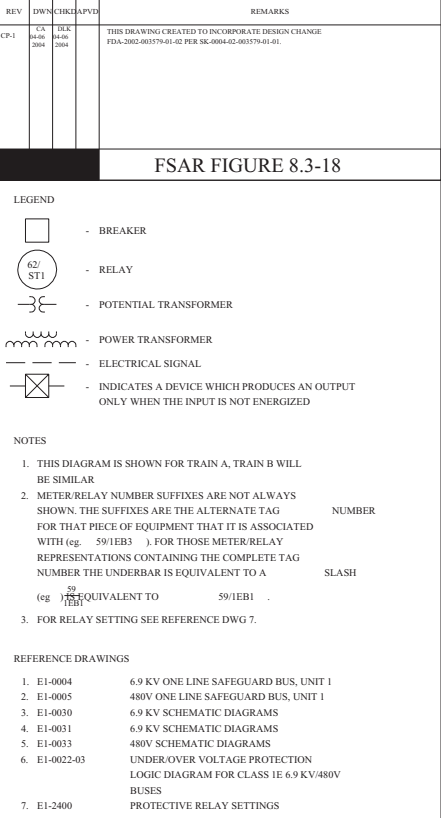


SYMBOLS
 ▲ - TRAIN 'A'
 ■ - TRAIN 'B'
 MH - MANHOLE

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 DUCT RUNS
 TO
 SERVICE WATER INTAKE STRUCTURE
 FIGURE 8.3-17

AMENDMENT 9
 JANUARY 31, 1980

2323 51-1007-01 REV. 5

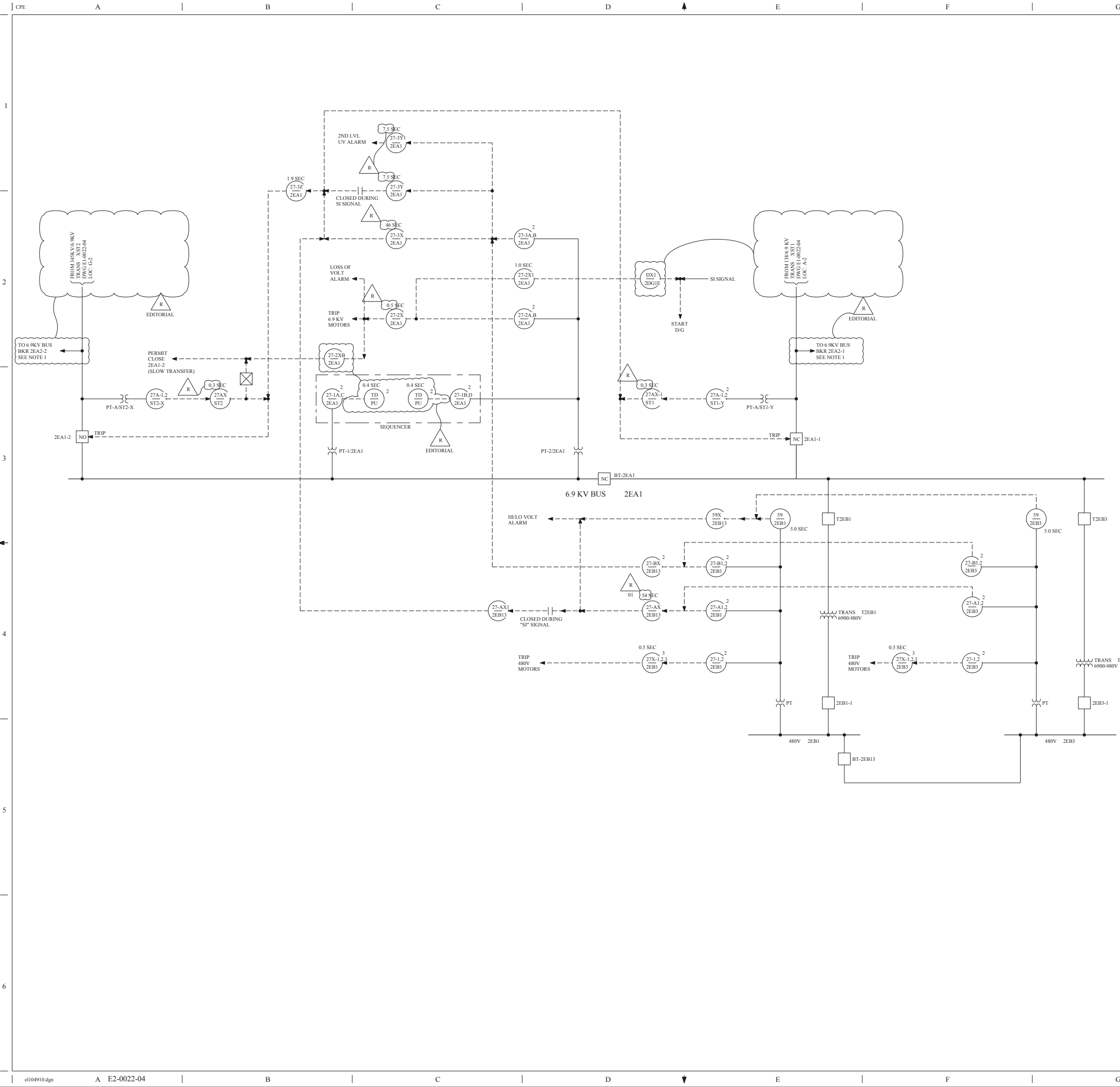


CLASS I
(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1	SEISMIC CATEGORY I
SAFETY CLASS 2	CLASS 1E
SAFETY CLASS 3	ASSOCIATED CIRCUITS

TXU POWER
CPSES
GLEN ROSE, TEXAS

UNDER/OVER VOLTAGE RELAY
PROTECTION FOR
15 KV 6.9 KV/480V BUSES



REV	DWN	CHK	APV	REMARKS
CP-5	CA	CK	AP	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2002-003579-01-02 PER 98-0002-02-003579-01-01 EDITORIAL CHANGES AS NOTED.

FSAR FIGURE 8.3-18

LEGEND

- BREAKER

- RELAY

- POTENTIAL TRANSFORMER

- POWER TRANSFORMER

- ELECTRICAL SIGNAL

- INDICATES A DEVICE WHICH PRODUCES AN OUTPUT ONLY WHEN THE INPUT IS NOT ENERGIZED

NOTES

1. THIS DIAGRAM IS SHOWN FOR TRAIN A, TRAIN B WILL BE SIMILAR

2. METER/RELAY NUMBER SUFFIXES ARE NOT ALWAYS SHOWN. THE SUFFIXES ARE THE ALTERNATE TAG FOR THAT PIECE OF EQUIPMENT THAT IT IS ASSOCIATED WITH (eg. 59/2EB3) FOR THOSE METER/RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER THE UNDERBAR IS EQUIVALENT TO A SLASH (eg. 59/2EB3)

3. FOR RELAY SETTING SEE REFERENCE DWG 7.

REFERENCE DRAWINGS

1. E2-0004

6.9 KV ONE LINE SAFEGUARD BUS, UNIT 2

2. E2-0005

480V ONE LINE SAFEGUARD BUS, UNIT 2

3. E2-0030

6.9 KV SCHEMATIC DIAGRAMS

4. E2-0031

6.9 KV SCHEMATIC DIAGRAMS

5. E2-0033

480V SCHEMATIC DIAGRAMS

6. E2-0022-03

UNDER/OVER VOLTAGE PROTECTION LOGIC DIAGRAM FOR CLASS 1E 6.9 KV/480V BUSES

7. E2-2400

PROTECTIVE RELAY SETTINGS

THIS DRAWING CREATED ELECTRONICALLY

Amendment 104

CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1
SAFETY CLASS 2
SAFETY CLASS 3

SEISMIC CATEGORY I
CLASS II
ASSOCIATED CIRCUITS

TXU POWER

CPSES

GLEN ROSE, TEXAS

UNDER/OVER VOLTAGE RELAY

PROTECTION FOR

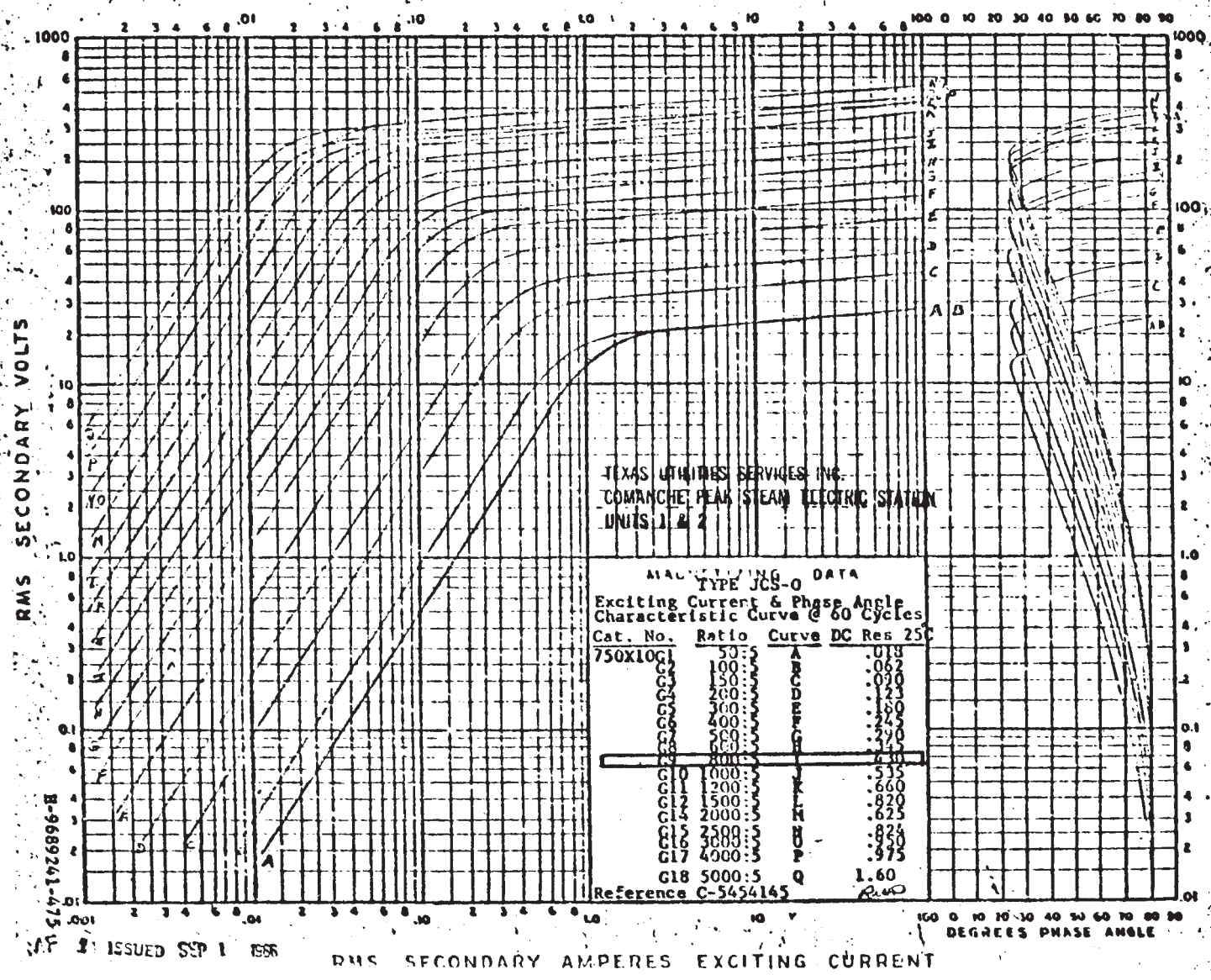
CLASS 1E 6.9 KV/480V BUSES

DWG. NO.
E2-0022

SH. NO.
04

REV.
CP-5

H-9689241-475



Amendment 91
April 15, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

EXCITATION CHARACTERISTIC
CURVE FOR DIESEL GENERATOR

FIGURE 8.3-19

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| 66

February 2, 1998

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February 2, 1998