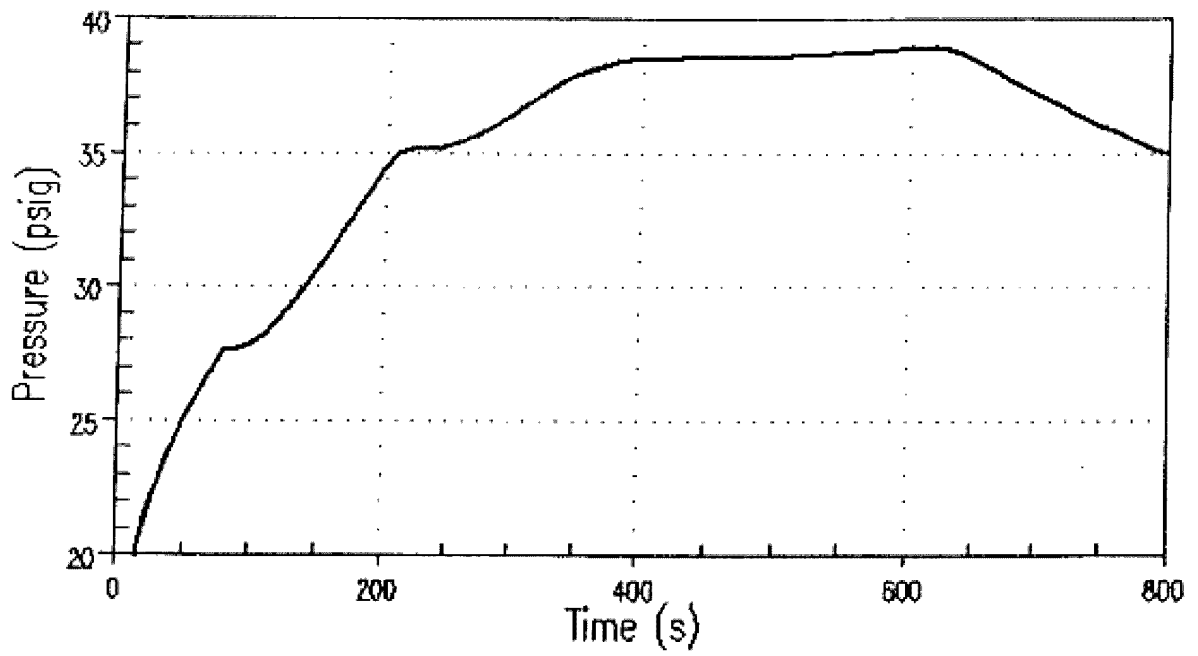


**Comanche Peak  
Final Safety Analysis Report  
Units 1 and 2**

**Containment Atmosphere  
Temperature Transient  
4.3 ft<sup>2</sup> Split SLB**

**Figure 6.2.1-3**

Amendment No. 103



<b>Comanche Peak Final Safety Analysis Report Units 1 and 2</b>
<b>Containment Pressure Transient 4.7 ft<sup>2</sup> Split SLB</b>
<b>Figure 6.2.1-4</b>

CPSSES/FSAR  
FIGURE 6.2.1-5

THIS FIGURE HAS BEEN DELETED

| 69

CPSSES/FSAR  
FIGURE 6.2.1-6

THIS FIGURE HAS BEEN DELETED

| 69

CPSSES/FSAR  
FIGURE 6.2.1-7

THIS FIGURE HAS BEEN DELETED

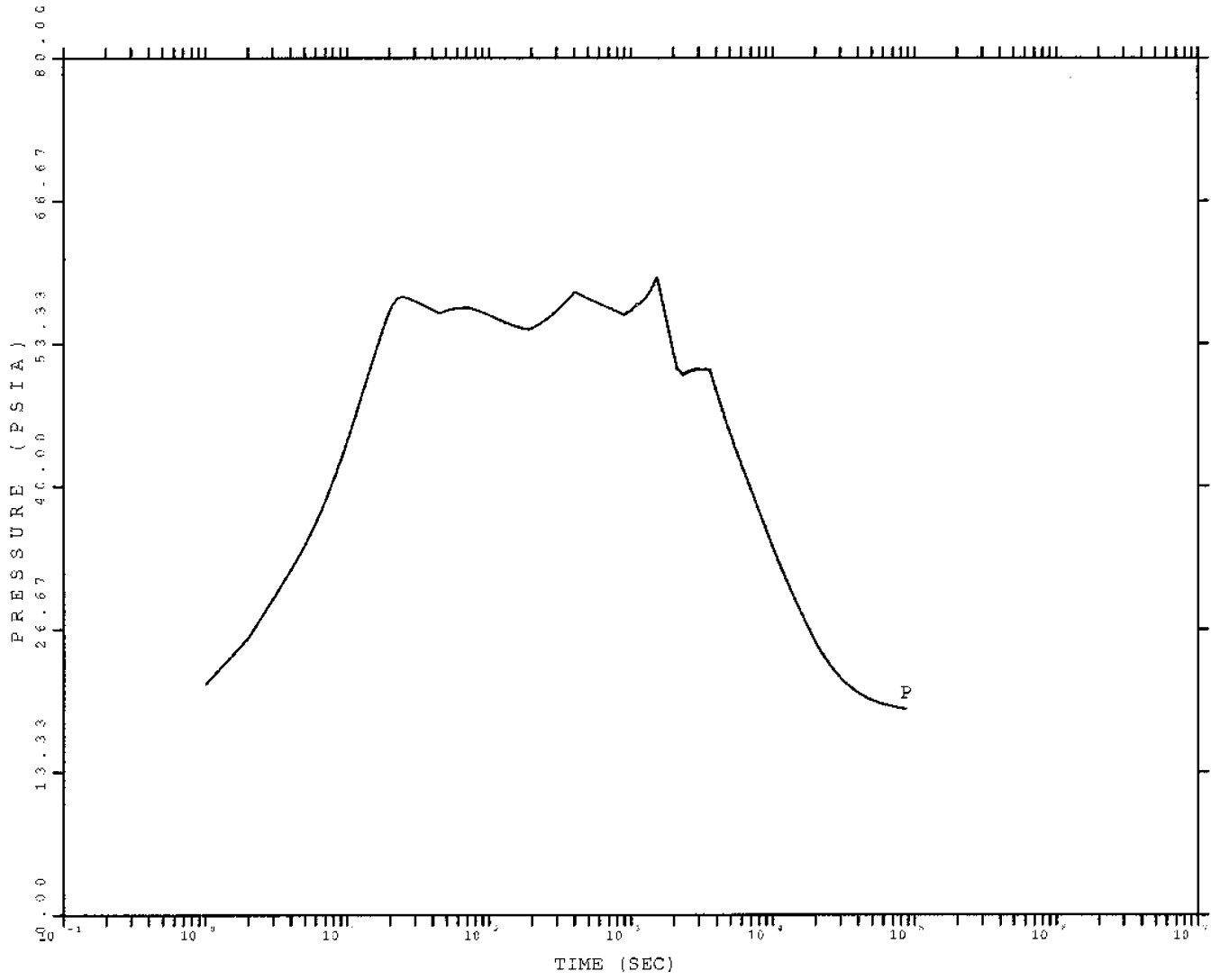
| 69

CPSES/FSAR  
FIGURE 6.2.1-8

THIS FIGURE HAS BEEN DELETED

| 69

CONTENMP-ED/918 + DU PARGON/C/REF MOLE (INTEGRATED CT, ECCS, CCM, & SCS SYSTEMS) - CONTE22, VER DJONUSA  
CPI RSG DEPSG LOCA MIN ECCS-MIN CT-(Ref 2 MINSI8 + Ref 6 Case 2)

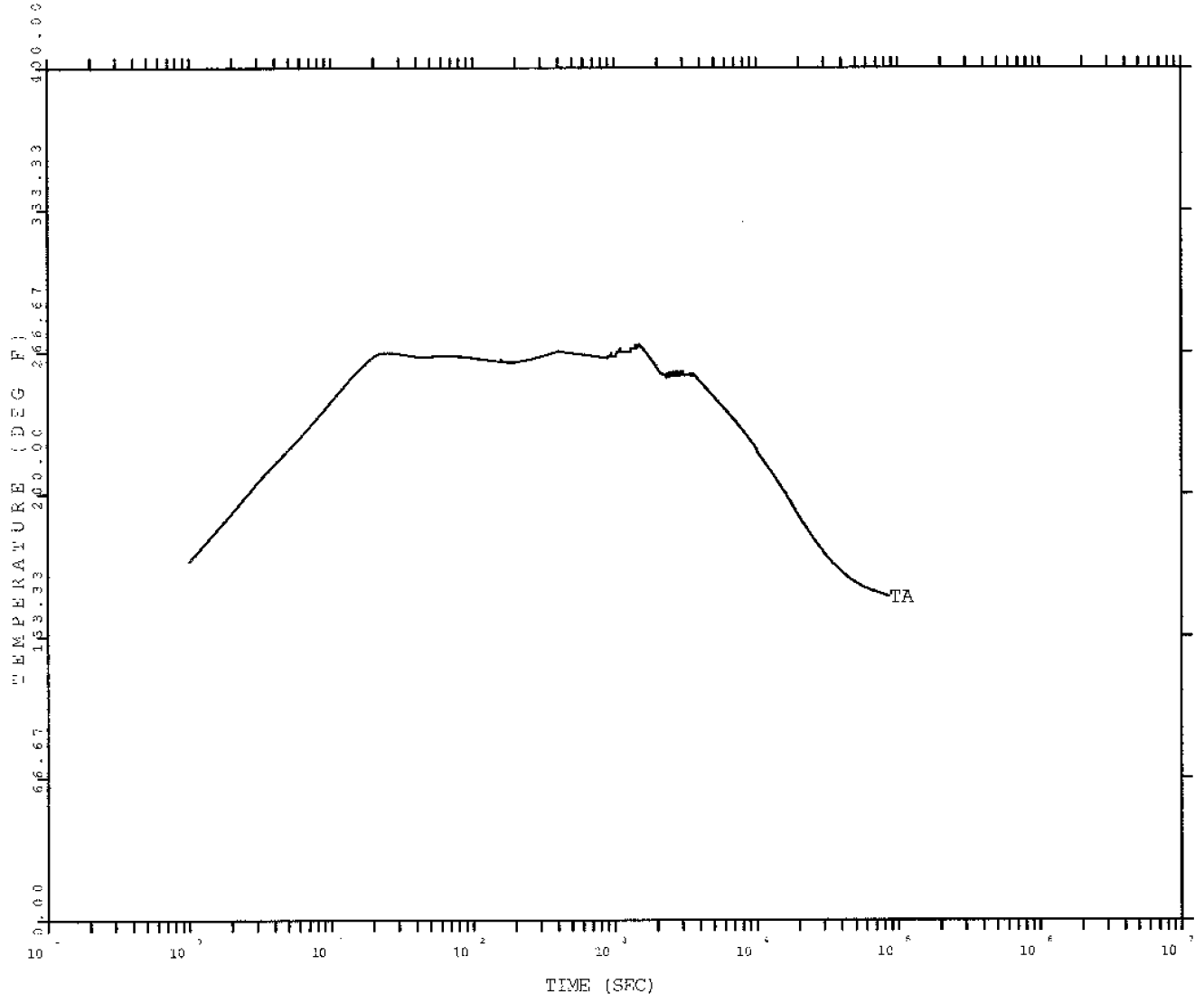


### Amendment 102

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

CONTINUED FROM + TO MAXIMUM VALUE INTEGRATED CT, ECCS, CDB, & SSI (REFLECT) - OUTLINE PER SOURCE

CP1 RSG DEPSG LOCA MIN ECCS-MIN CT-(Ref 2 MINST8 + Ref 6 Case 2)

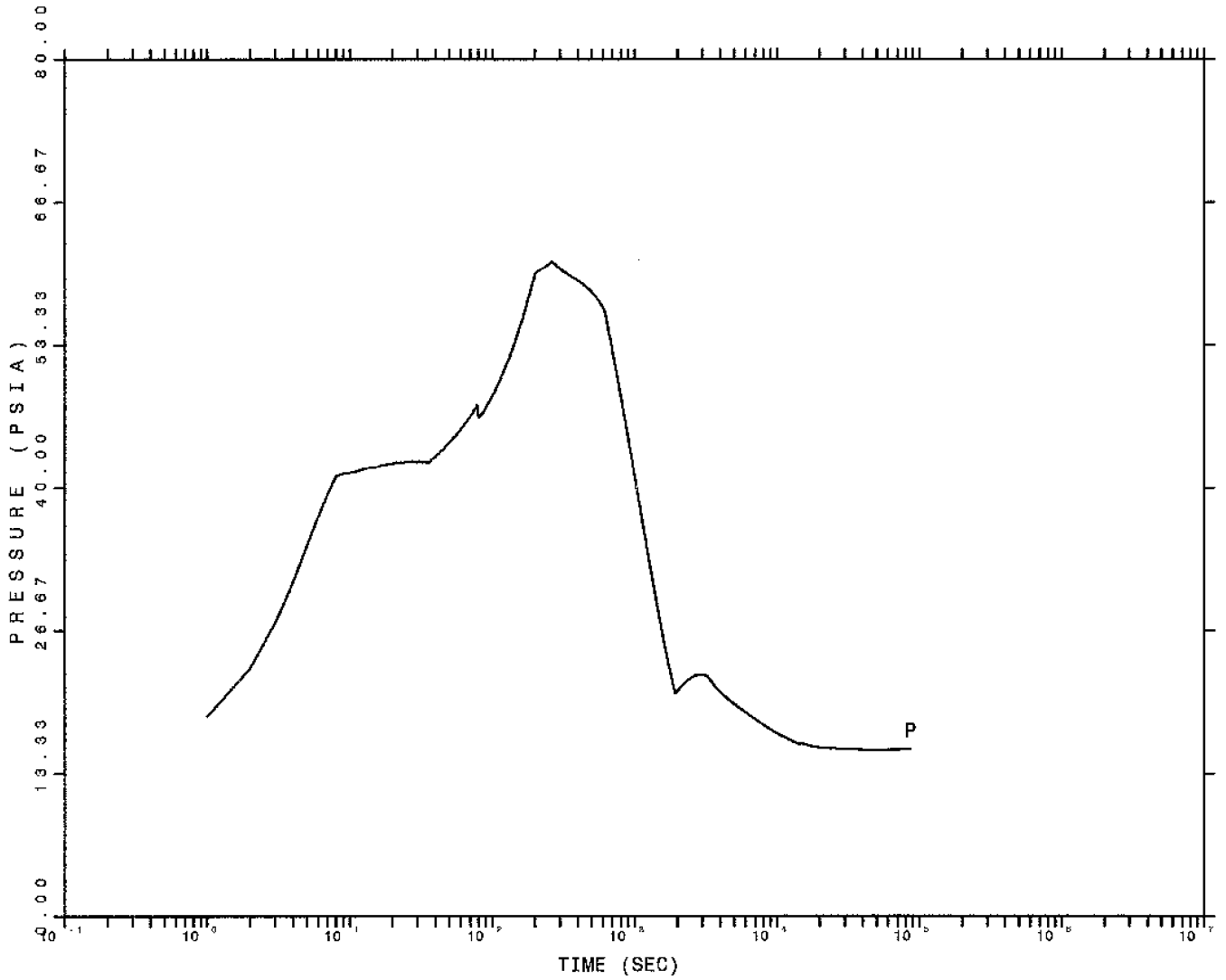


### Amendment 102

COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
CONTAINMENT ATMOSPHERE TEMPERATURE TRANSIENT UNIT 1 - LOCA
FIGURE 6.2.1-10



CONTEMPT-LT/028 + TU ELECTRIC/RXG MODES (INTEGRATED CT, EDCS, DCW, & SSI SYSTEMS) - CONTEMPT, VED EJUNW3A  
CONTEMPT-LT/028\_TU CP-1 RSG MSLB, 30% POWER, 1.4 FT\*\*2 DER

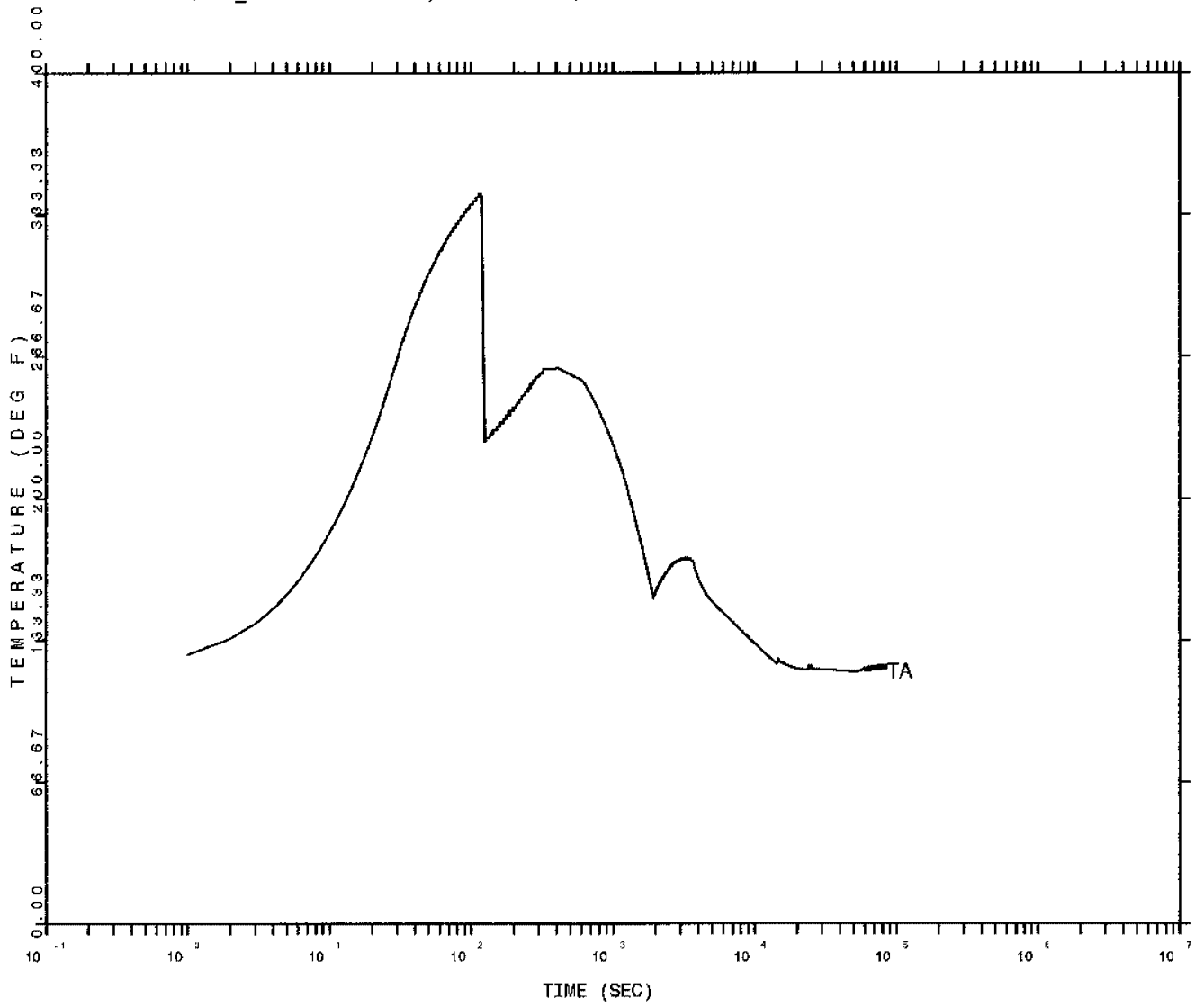


### Amendment 102

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 MDS (INTEGRATED CT, EOCs, CCW, & SST SYSTEMS) - CONT002, VER 01/09/99A

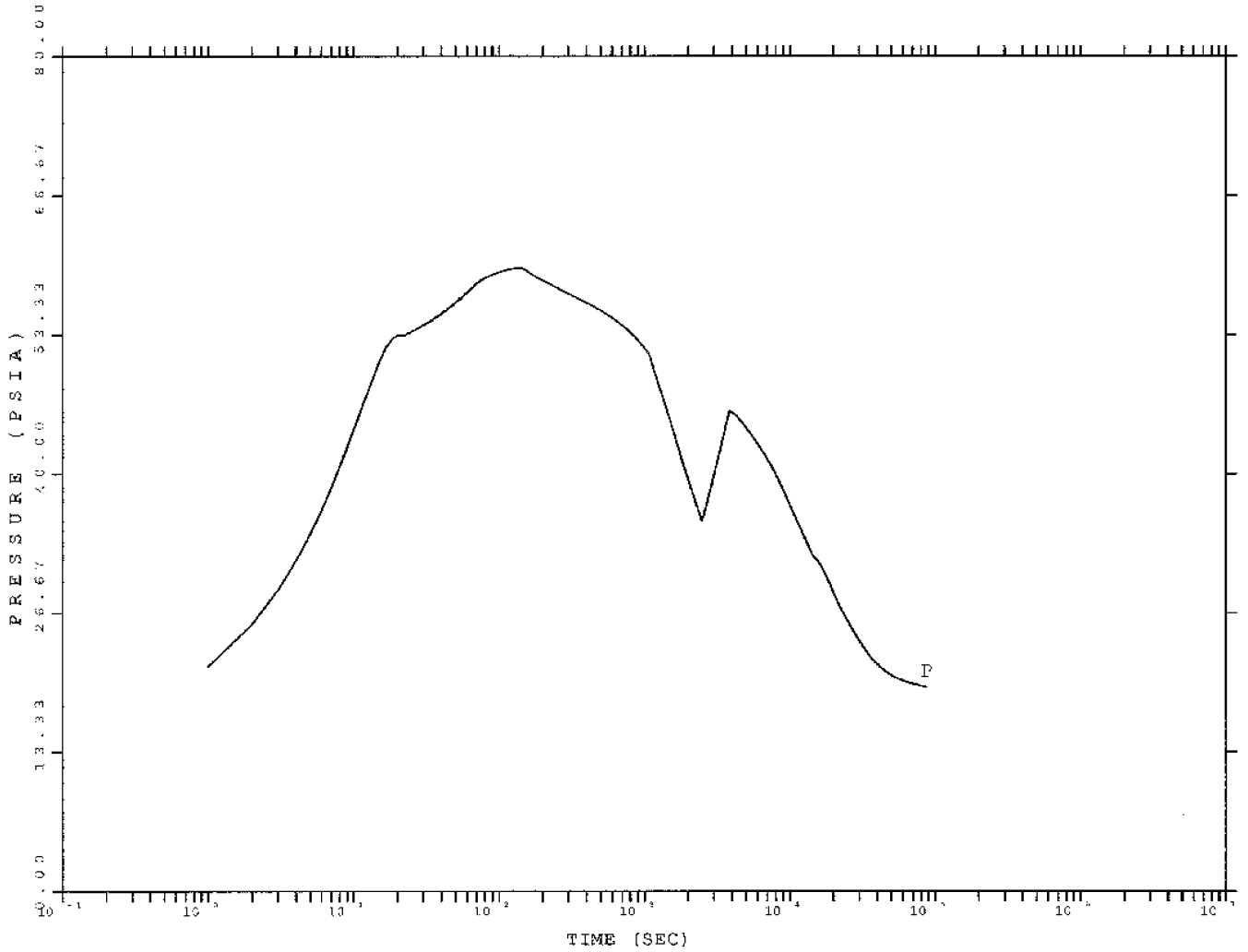
CONTEMPT-LT/028\_TU CP-1 RSG MSLB, 100.6% POWER, 0.916 FT\*\*2 SPLIT



### 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

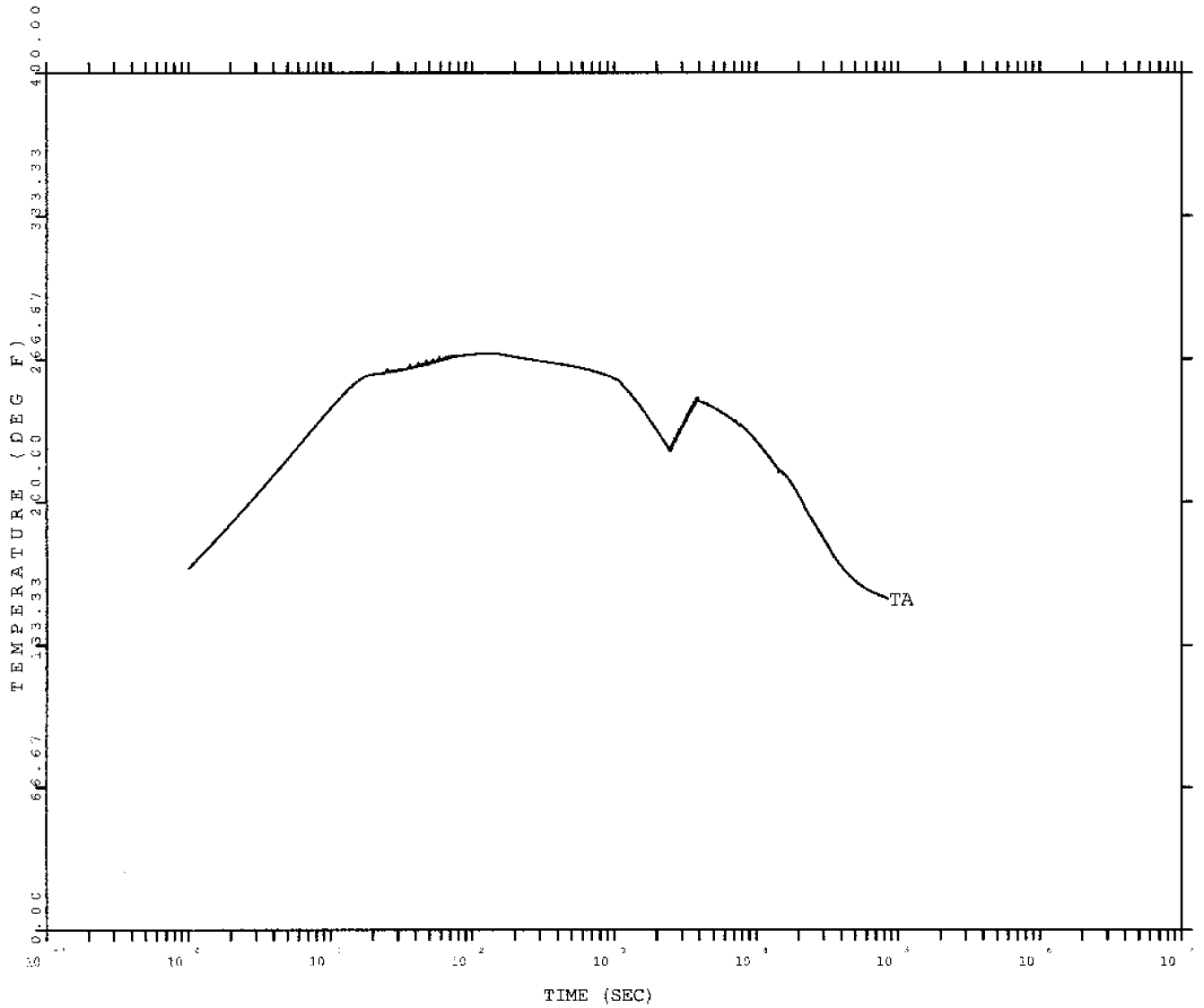
CONFIRM. - 1/1/20 - TO UPDATE/RAE MODS (INTEGRATED ST. DOCS, OCA, & SST SYSTEMS) - CONTROL, VER. B31093A  
CONTENPT-LT/028\_TU - CP1&2 DEPSG LOCA - MIN(ECCS & CSS) - 3650



### 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

COMBAT-11/020 + 10 BLENDING/FAE XDCS (INTEGRATED CI, ECCS, CSS, & SSI SYSTEMS) - CONTEK2, VER 04/05/04  
CONTEMPT-LT/028\_TU - CP1&2 DEPSG LOCA - MIN(ECCS & CSS) - 3650

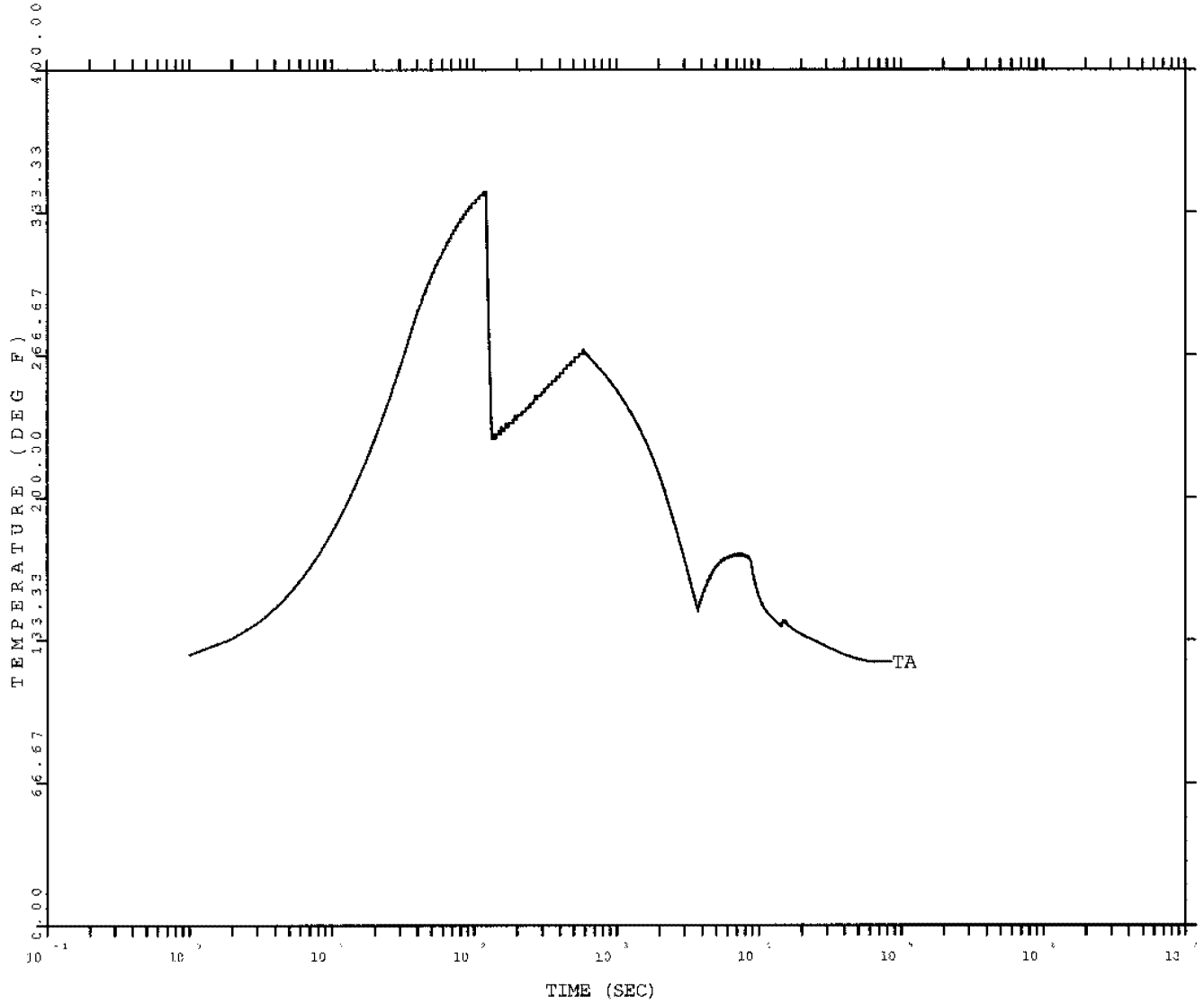


### Amendment 102

COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
CONTAINMENT ATMOSPHERE TEMPERATURE TRANSIENT UNIT 2 - LOCA
FIGURE 6.2.1-14

CONTINUED FROM + TO K:\MTR\102\446 PAGES (INTEGRATED CT, ECCS, GCR, & SSI SYSTEMS) - CONTING. VER K:\MTR\102

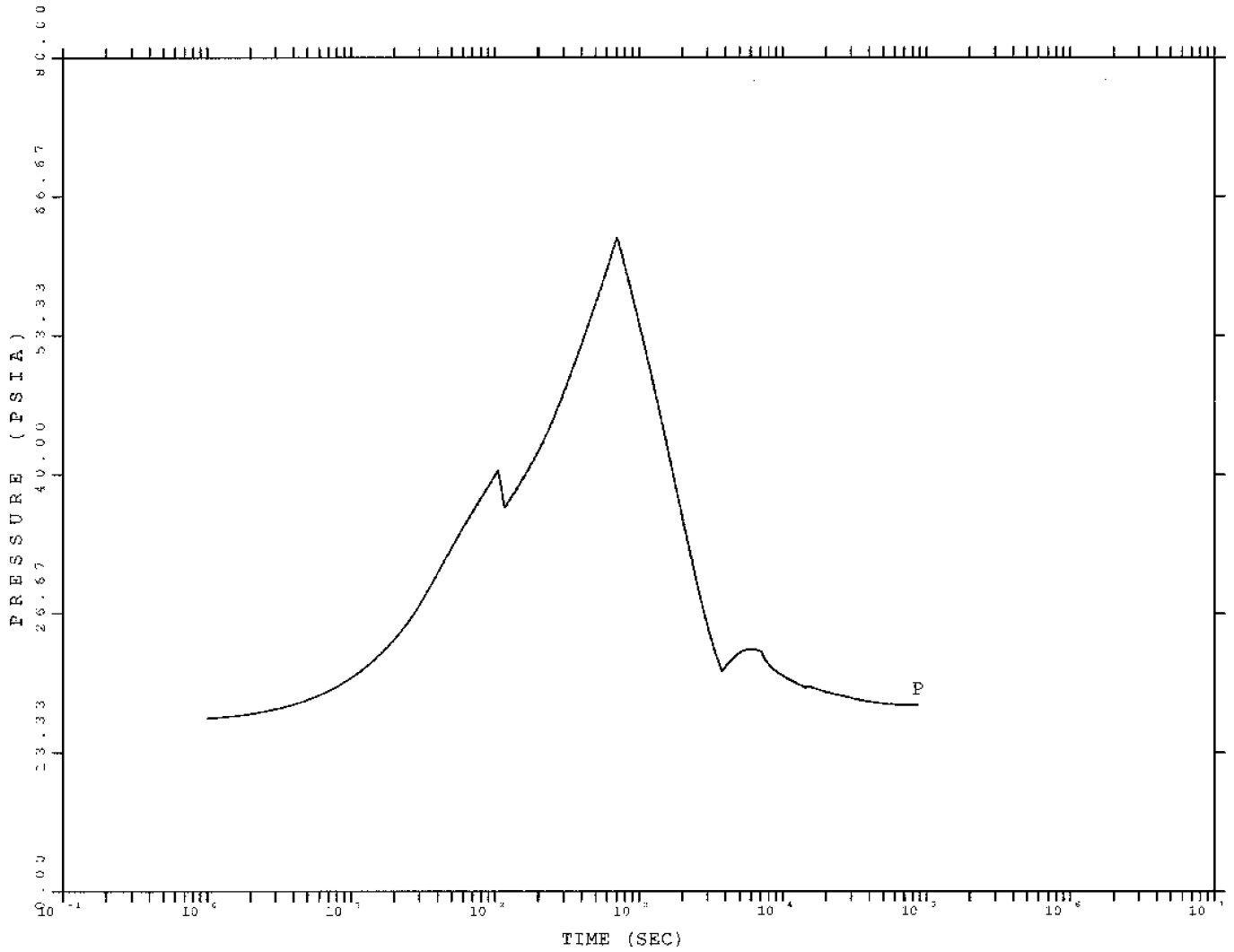
CONTEMPT-LT/028\_TU CP1&2 MSLB, 70% POWER-0.908 FT\*2 SPLIT-NO MSIV



### 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-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

| 69

FIGURE 6.2.1-17

93 |

HAS BEEN DELETED



CPSSES/FSAR  
FIGURE 6.2.1-18

THIS FIGURE HAS BEEN DELETED

| 69

CPSSES/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

78

CPSSES/FSAR

FIGURE 6.2.1-23

HAS BEEN DELETED

78

CPSSES/FSAR

FIGURE 6.2.1-24  
HAS BEEN DELETED

78

CPSSES/FSAR

FIGURE 6.2.1-25  
HAS BEEN DELETED

78



CPSES/FSAR

FIGURE 6.2.1-26  
HAS BEEN DELETED

78

CPSES/FSAR

FIGURE 6.2.1-27  
HAS BEEN DELETED

78

CPSSES/FSAR

FIGURE 6.2.1-28  
HAS BEEN DELETED

|

78

CPSSES/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

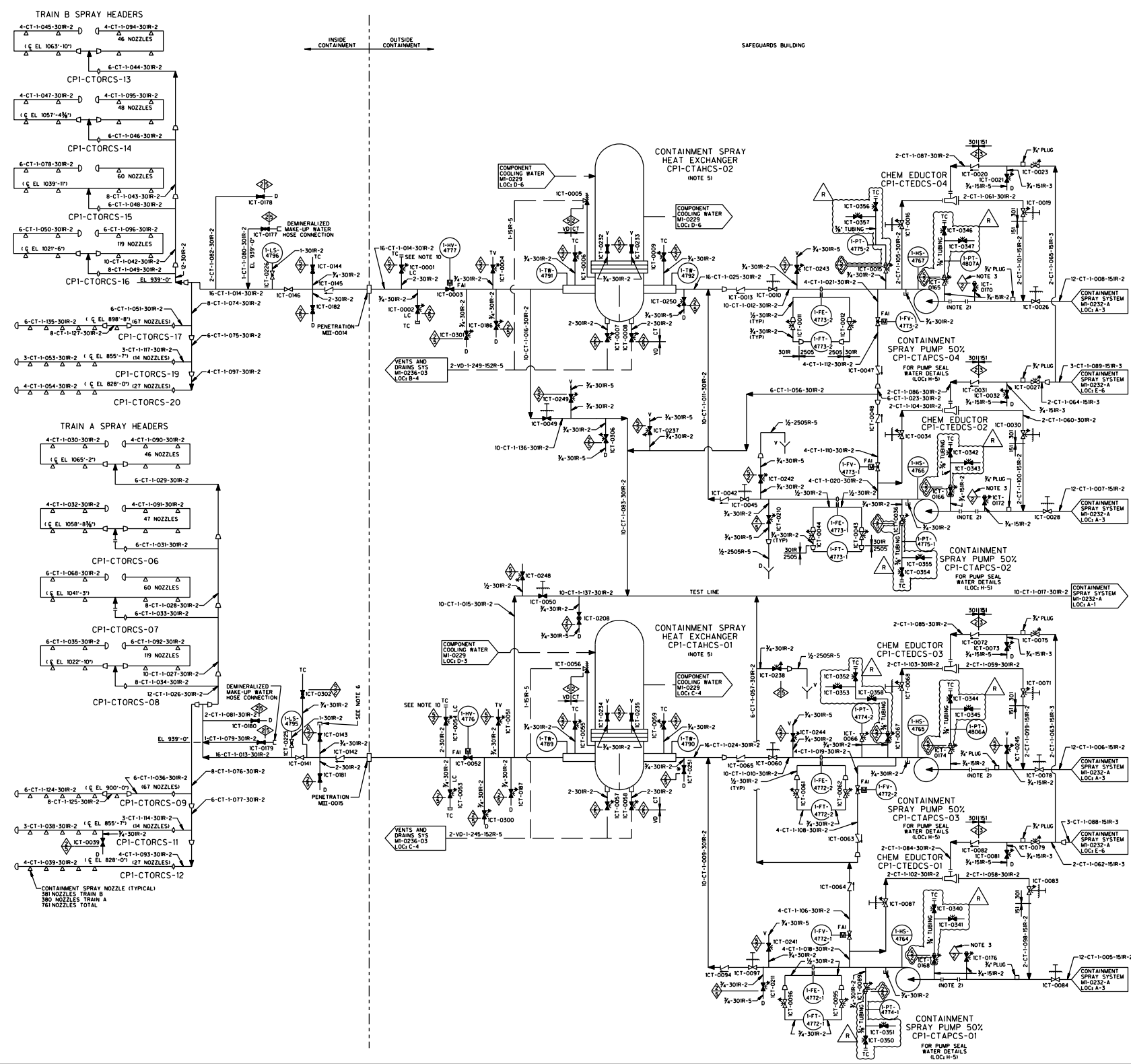
FIGURE 6.2.1-68  
THIS FIGURE HAS BEEN DELETED

CPSES/FSAR

FIGURE 6.2.1-69  
THIS FIGURE HAS BEEN DELETED

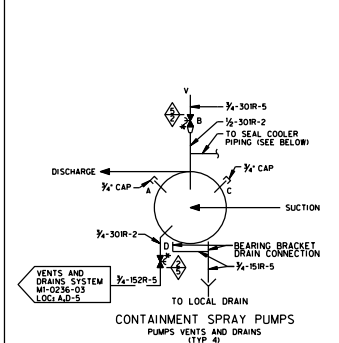
CPSES/FSAR

FIGURE 6.2.1-70  
THIS FIGURE HAS BEEN DELETED

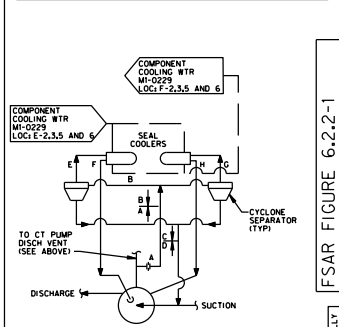


REV	DATE	DESCRIPTION	REMARKS
1	11-13-96	THIS DRAWING REVISED TO ACCOMMODATE DESIGN CHANGE FOR 2006-0004H-02-00 PER 34-0006-16-0004H-02-00.	

- NOTES:
- FOR DEFINITION OF SYMBOLS SEE DRAWING MI-0200.
  - TEMPORARY STRAINERS CPI-CTSTRS-01,02,03,04 ARE INSTALLED IN SPOOL PIECES DURING INITIAL FLUSHING OPERATIONS ONLY AND MUST BE REMOVED PRIOR TO PLANT START UP. THE TEMPORARY STRAINERS CAN BE RE-INSTALLED FOR POST MAINTENANCE ACTIVITY.
  - SWAGelok 3/4\"/>



PUMP	A	B	C	D
CPI-CTAPCS-01	ICT-0192	ICT-0193	ICT-0194	ICT-0195
CPI-CTAPCS-02	ICT-0196	ICT-0197	ICT-0198	ICT-0199
CPI-CTAPCS-03	ICT-0200	ICT-0201	ICT-0202	ICT-0203
CPI-CTAPCS-04	ICT-0204	ICT-0205	ICT-0206	ICT-0207



PUMP NUMBER	VALVE NUMBER	XXX FOR LINE NUMBERS									
CPI-CTAPCS-01	ICT-0192	908	909	910	911	912	913	914	915		
CPI-CTAPCS-02	ICT-0193	916	917	918	919	920	921	922	923		
CPI-CTAPCS-03	ICT-0194	924	925	926	927	928	929	930	931		
CPI-CTAPCS-04	ICT-0195	932	933	934	935	936	937	938	939		

LINE NUMBERS ARE 1/2 CT-1-KXX-150R-2

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

LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

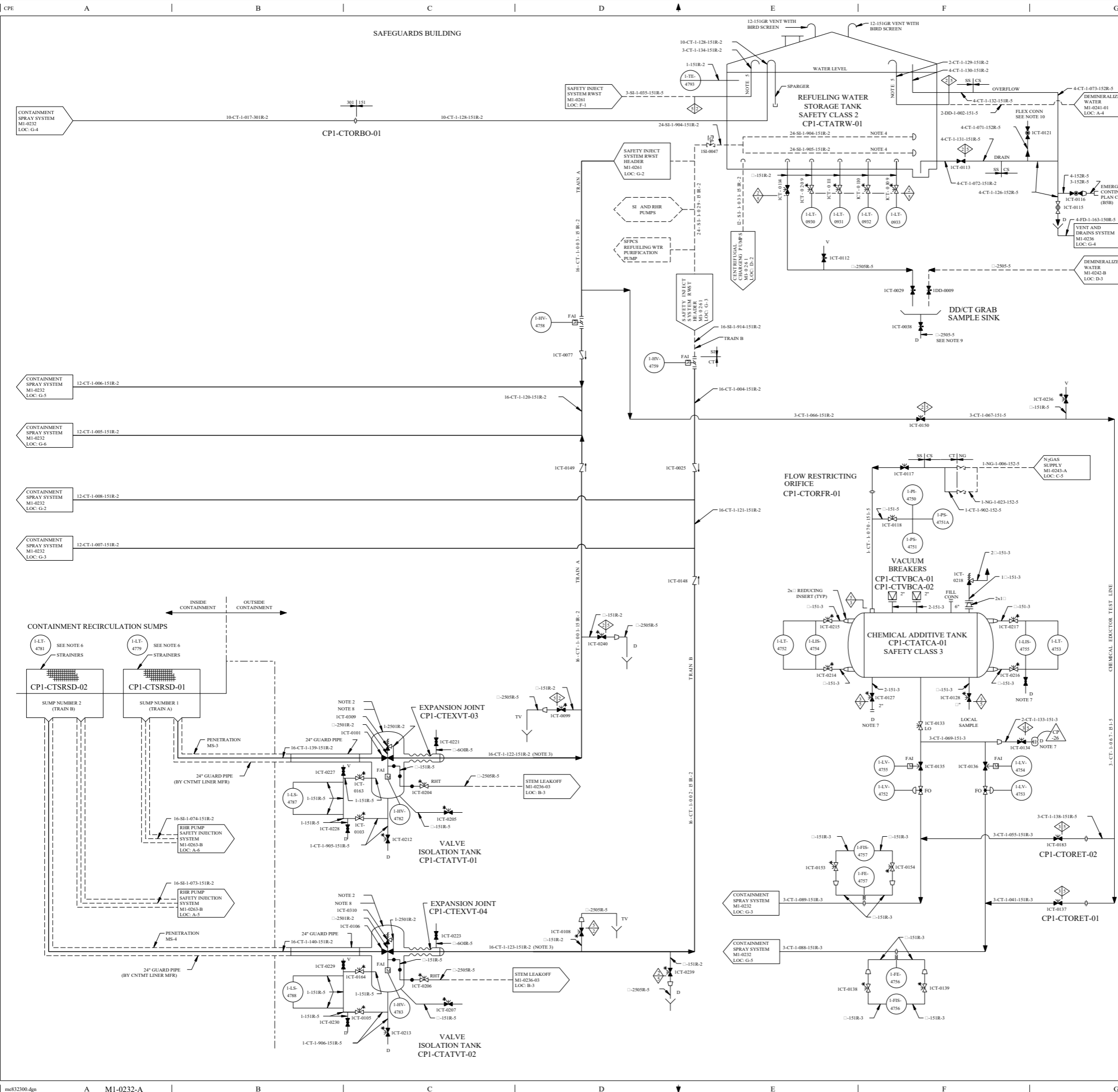
FLOW DIAGRAM  
CONTAINMENT SPRAY SYSTEM

DRG. NO. MI-0232  
S/NL NO. REV. CP-32

REF. CUD CP-22 11-13-96

THIS DRAWING CREATED ELECTRONICALLY

FSAR FIGURE 6.2-2-1



REV	DWN	CHK	APPV	REMARKS
CP-26	06/10/2004	06/10/2004	06/10/2004	THIS DRAWING REVISED TO INCORPORATE AN EDITORIAL CHANGE PER AL-CR-2018-000789-1.

- NOTES:
1. FOR DEFINITION OF SYMBOLS SEE DWG M1-0230.
  2. 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 (SNS) 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.
  3. PIPING TO BE 16" SCH 120 OR 140 SEAML. ESS SA 376, TP 304 OR TP 316. FITTINGS TO BE 16" SCH 120 SEAML. ESS SA 403, TP 304 OR TP 316.
  4. ANTI-VORTEX PIPE.
  5. LINES TO TERMINATE ABOVE MAXIMUM WATER LEVEL.
  6. WALL MOUNTED LEVEL TRANSMITTER ASSEMBLIES.
  7. FLUID COLLECTED FROM DRAINS AND VENTS OFF THE CHEMICAL ADDITIVE TANK SHALL BE DISPOSED OF IN AN APPROPRIATE MANNER BY CHEMISTRY.
  8. VALVE ISOLATION TANK MANWAYS PROVIDE AN OPEN VENT PATH THRU THE OPEN MANWAY.
  9. SAMPLE SINK DRAIN COLLECTED IN A CONTAINER AND TRANSPORTED TO A DRAIN CAPABLE OF ACCEPTING RADIOACTIVE FLUIDS.
  10. FLEX CONNECTION - MAY BE A PIPE CAP OR STORZ FITTING.

DRAWING	2323-M1-0232	REV	CP-7
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
	M1-0232		
	M1-0232-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

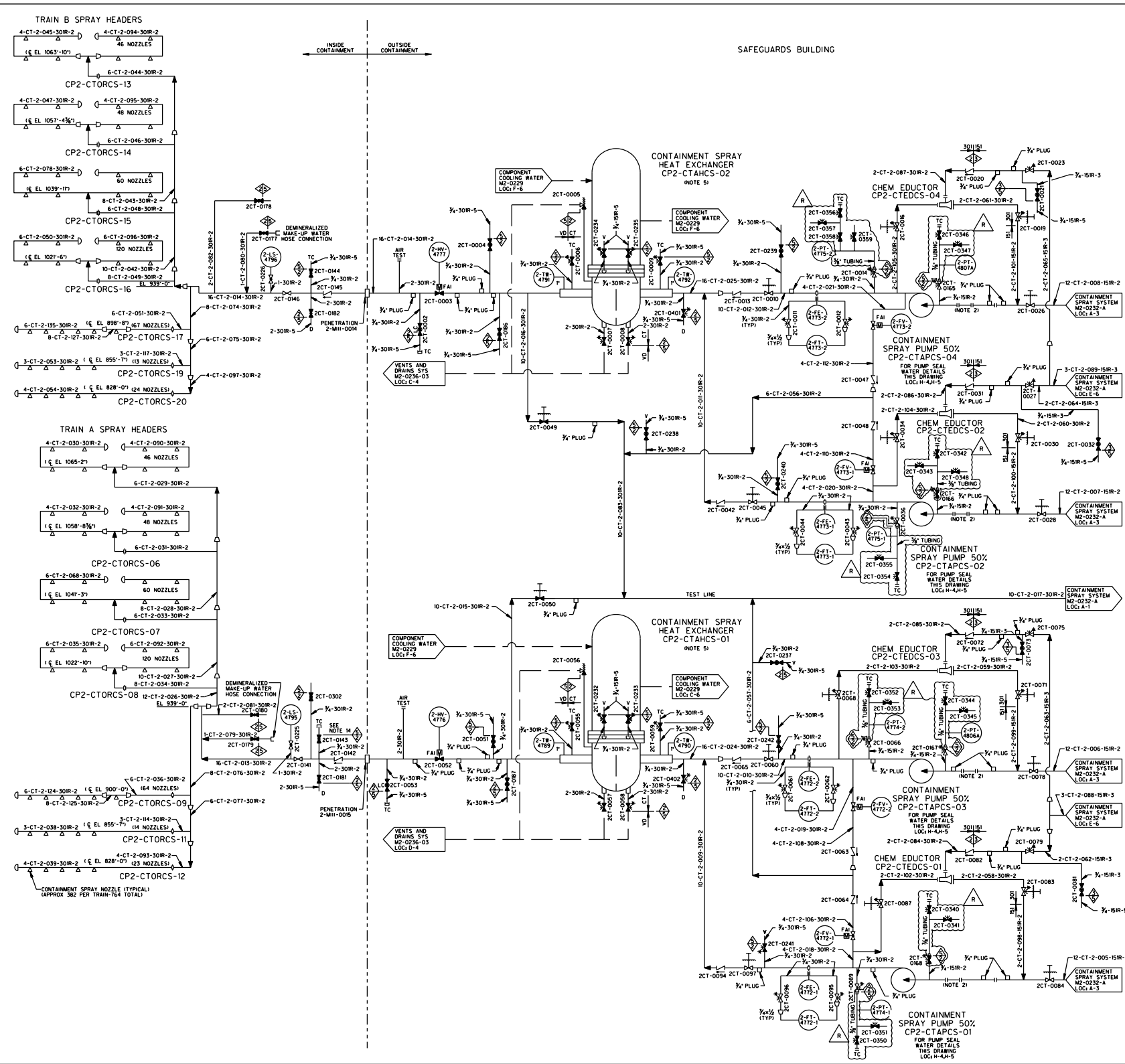
**FLOW DIAGRAM**  
CONTAINMENT SPRAY SYSTEM

DWG. NO.	M1-0232	SHEET NO.	A	REV.	CP-26
----------	---------	-----------	---	------	-------

**FINAL PRINT**

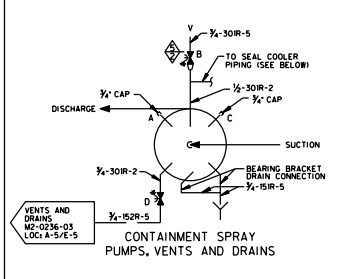
FSAR FIGURE 6.2.2-1

REF. CHK. Q. J. 30 / B

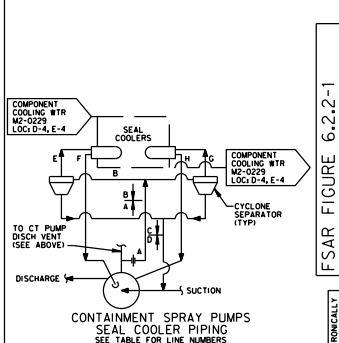


REV: 23  
 DATE: 02-03-04  
 DRAWING REVISION TO INCORPORATE DESIGN CHANGE FOR 200-2000-02-00 PER 54-0047-R-0000-02-00.

- NOTES:
1. FOR DEFINITION OF SYMBOLS SEE DWG M2-0200.
  2. TEMPORARY STRAINER CP2-CTSTRS-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



PUMP	(SUCTION VENT)	(DISCH VENT)	(SUCTION VENT)	(CASING DRAIN)
CP2-CTAPCS-01	-	2CT-0192	-	2CT-0086
CP2-CTAPCS-02	-	2CT-0193	-	2CT-0035
CP2-CTAPCS-03	-	2CT-0194	-	2CT-0068
CP2-CTAPCS-04	-	2CT-0195	-	2CT-0017



PUMP NUMBER	VALVE NUMBER	XXX FOR LINE NUMBERS									
		A	B	C	D	E	F	G	H	I	J
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 1/2-CT-2-XXX-150R-2

DRAWING: 2233-M2-0232  
 HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:  
 M2-0232  
 M2-0232-A

CLASS I  
 (NUCLEAR SAFETY-RELATED)  
 SAFETY CLASS 1  
 DESIGN CATEGORY I  
 DESIGNATED SHEET CHECKS

LUMINANT  
 CPNPP  
 GLEN ROSE, TEXAS

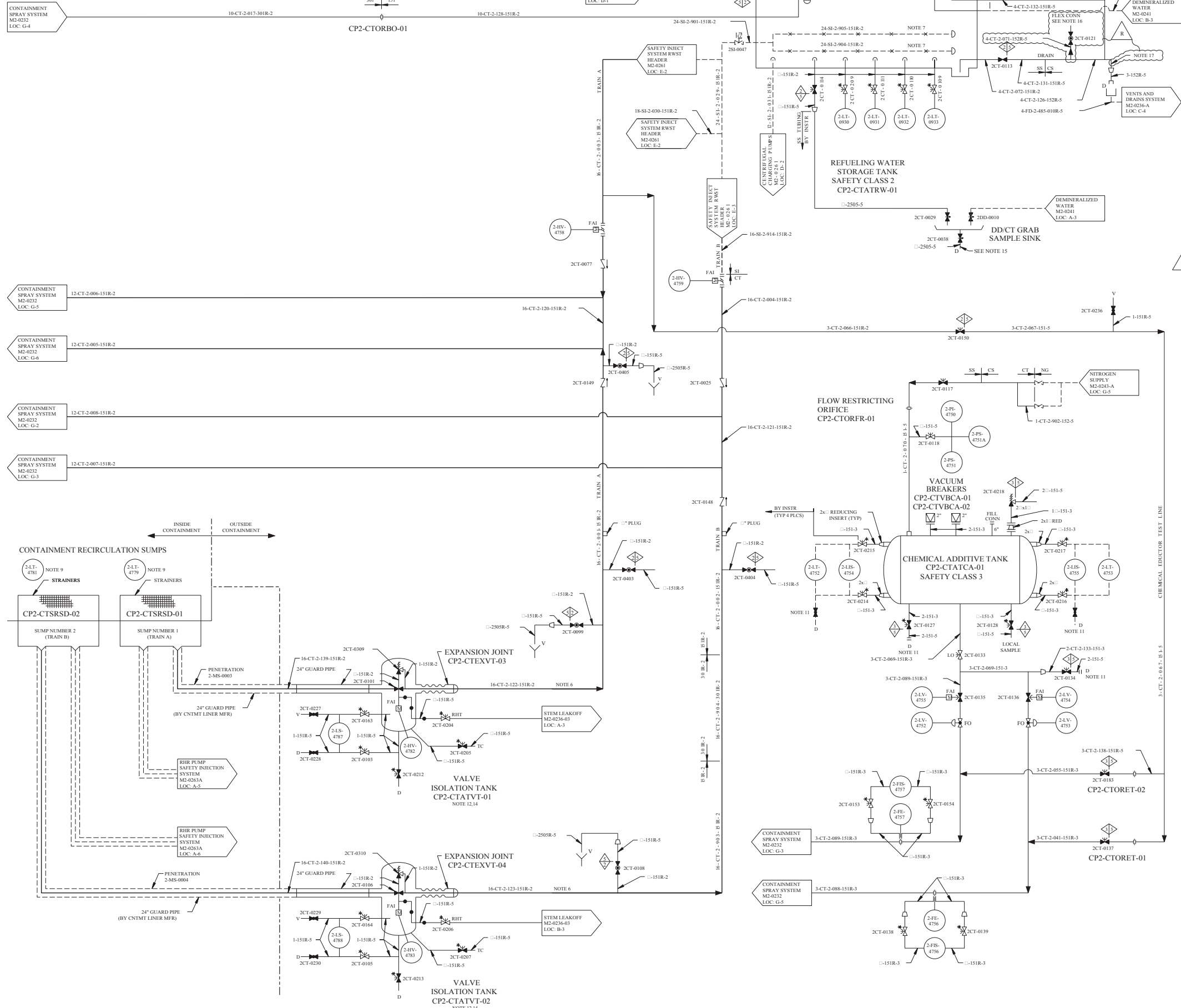
FLOW DIAGRAM  
 CONTAINMENT SPRAY SYSTEM

F.SAR FIGURE 6.2-2-1

THIS DRAWING CREATED ELECTRONICALLY



SAFEGUARDS BUILDING



- NOTES:
- FOR DEFINITION OF SYMBOLS SEE DRAWING M1-0200.
  - DELETED.
  - DELETED.
  - LINE TO TERMINATE ABOVE MAXIMUM WATER LEVEL.
  - DELETED.
  - 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 BAFFLE PIPE.
  - DELETED.
  - WALL MOUNTED LEVEL TRANSMITTER ASSEMBLIES.
  - UNLESS OTHERWISE NOTED DRAINS COLLECTED BY LOCAL DRAIN SYSTEM.
  - FLUID COLLECTED FROM DRAINS AND VENTS OFF THE CHEMICAL ADDITIVE TANK SHALL BE DISPOSED OF IN AN APPROPRIATE MANNER BY CHEMISTRY.
  - 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.
  - DELETED.
  - 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.
  - WHEN FLEX CONN IS UTILIZED, DRAIN LINE 4-CT-2-126-152R-5 SHALL BE ISOLATED WITH 2" NST/1N1 PIPE CAP. PIPE CAP MAINTAINED IN FLEX WAREHOUSE.

REV	DWN	CHKD	APVD	REMARKS
7-20	MM	MM	MM	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE: FDA 2013-000008-15-00 PER SK-0001-13-000008-15-00.
2014	MM	MM	MM	
2014	MM	MM	MM	

DRAWING 2323-M2-0232 REV CP-3  
 HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

M2-0232	
M2-0232-A	

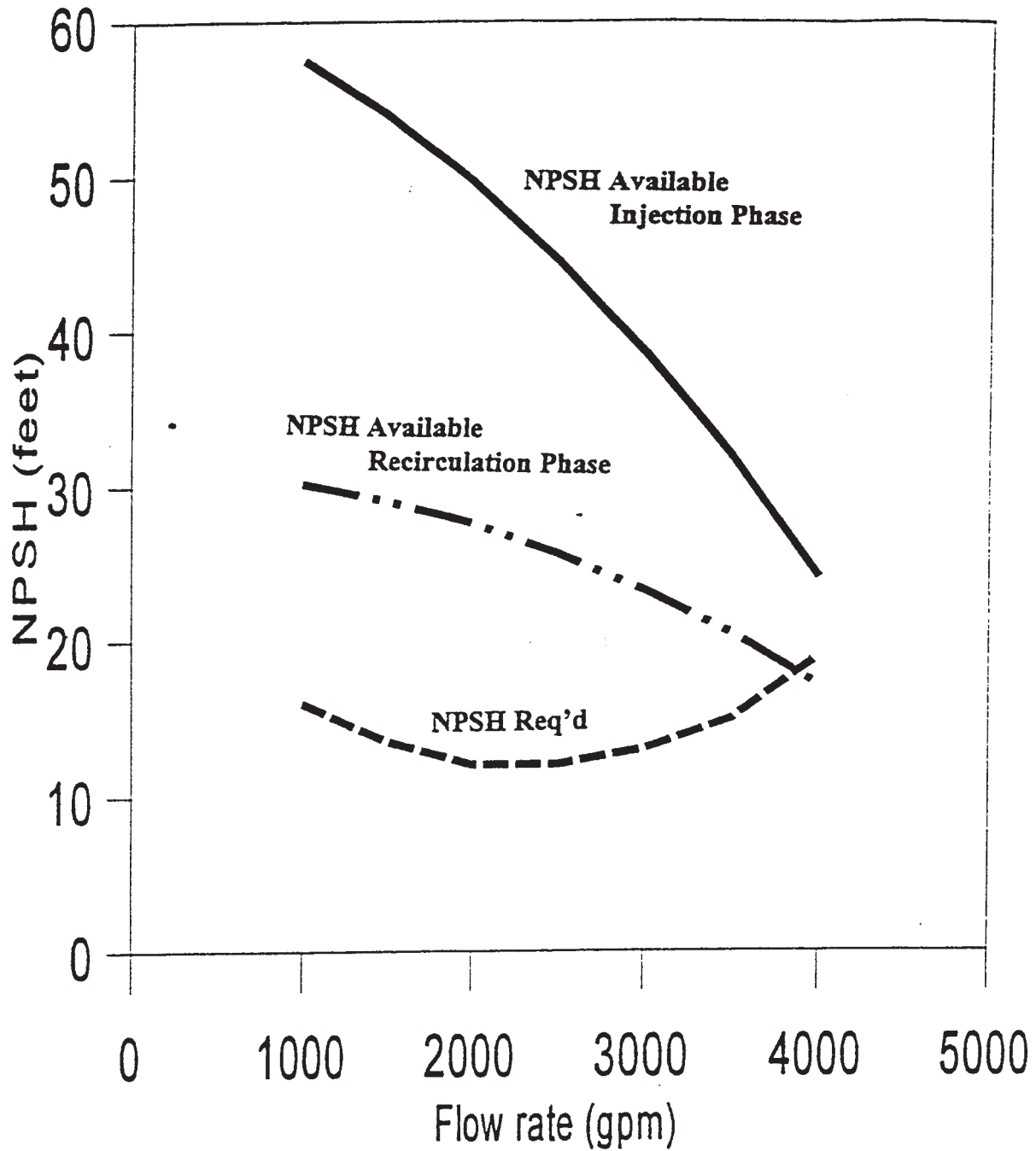
**CLASS I**  
 (NUCLEAR SAFETY-RELATED)  
 SAFETY CLASS 1 SEISMIC CATEGORY I  
 SAFETY CLASS 2 CLASS IIE  
 SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT  
 CPNPP  
 GLEN ROSE, TEXAS

FLOW DIAGRAM  
 CONTAINMENT SPRAY  
 SYSTEM

FSAR FIGURE 6.2.2-1

THIS DRAWING CREATED ELECTRONICALLY



**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**

SEE FIGURE 6.2.2-3A  
FOR ARRANGEMENT OF SUMP  
MODULAR SURE-FLOW STRAINER

SEE FIGURE 6.2.2-3A  
FOR ARRANGEMENT OF SUMP  
MODULAR SURE-FLOW STRAINER

SEE FIGURE 6.2.2-3A  
FOR ARRANGEMENT OF SUMP  
MODULAR SURE-FLOW STRAINER

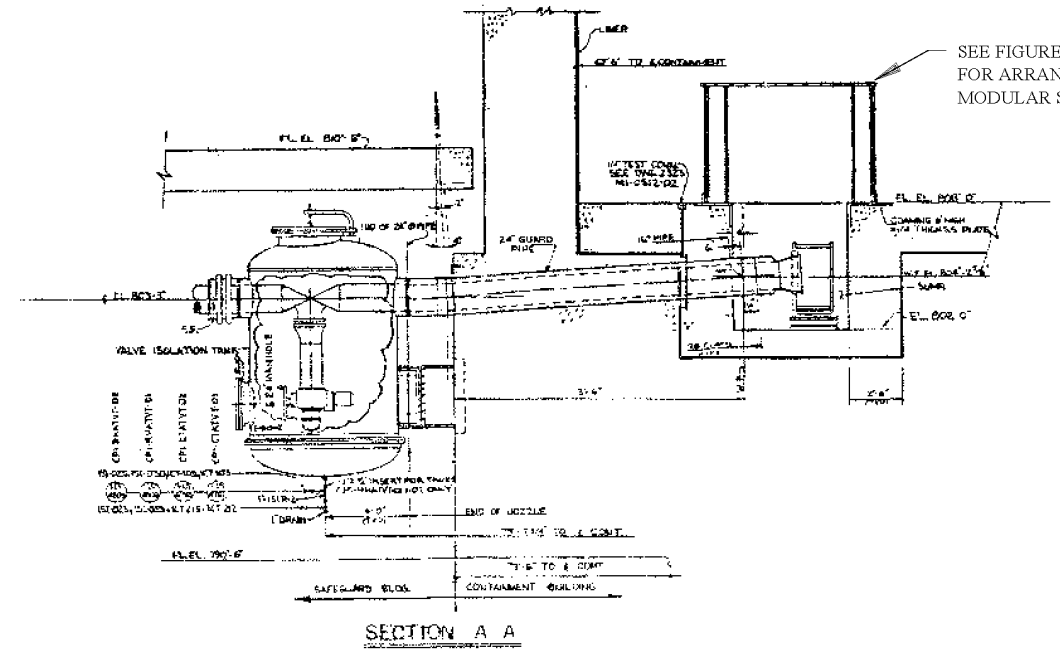
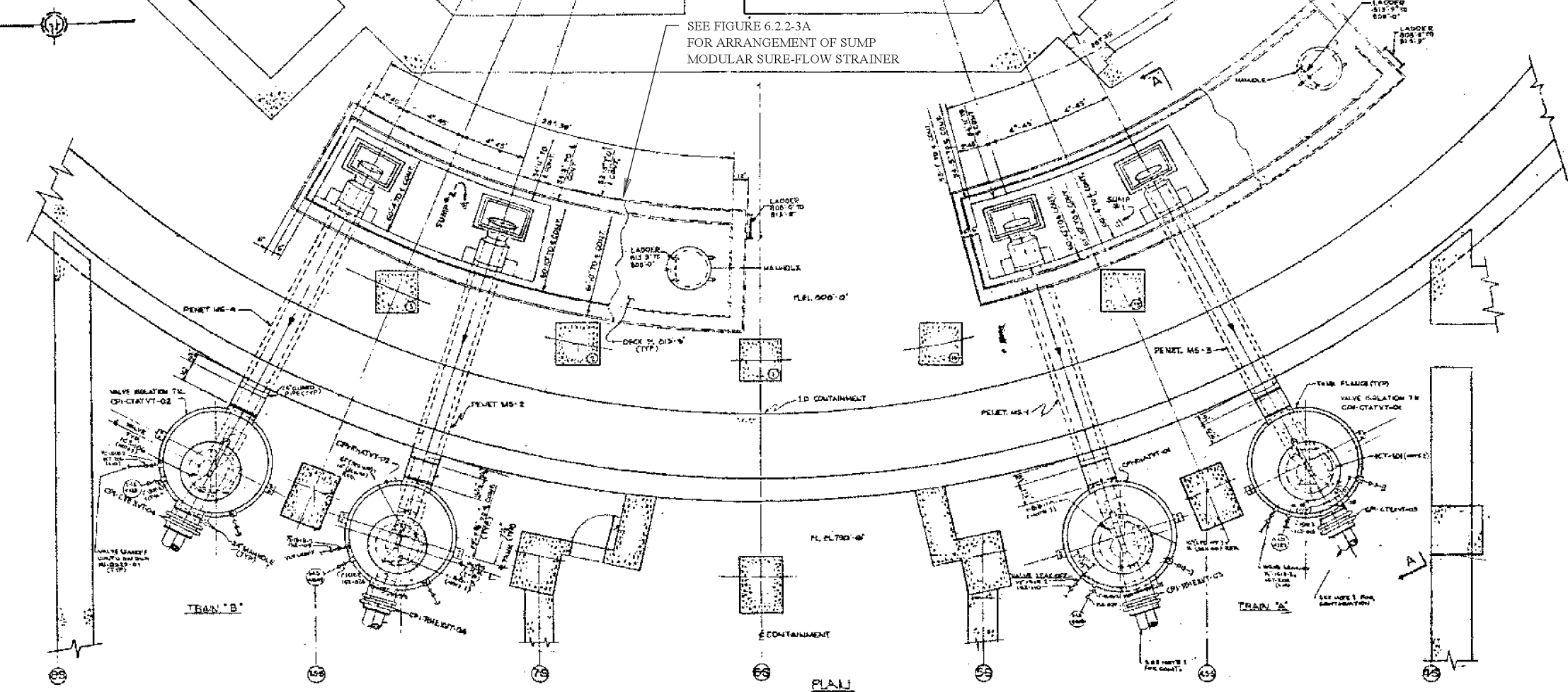
- NOTES**
1. 200 PIPING WITH IN LINE 4 CONTAINMENT
  2. SEE FIGURE 6.2.2-3A FOR ARRANGEMENT OF SUMP MODULAR SURE-FLOW STRAINER
  3. VALVE ISOLATION TANK
  4. VALVE ISOLATION TANK
  5. VALVE ISOLATION TANK
  6. VALVE ISOLATION TANK
  7. VALVE ISOLATION TANK
  8. VALVE ISOLATION TANK
  9. VALVE ISOLATION TANK
  10. VALVE ISOLATION TANK
  11. VALVE ISOLATION TANK
  12. VALVE ISOLATION TANK
  13. VALVE ISOLATION TANK
  14. VALVE ISOLATION TANK
  15. VALVE ISOLATION TANK
  16. VALVE ISOLATION TANK
  17. VALVE ISOLATION TANK
  18. VALVE ISOLATION TANK
  19. VALVE ISOLATION TANK
  20. VALVE ISOLATION TANK
  21. VALVE ISOLATION TANK
  22. VALVE ISOLATION TANK
  23. VALVE ISOLATION TANK
  24. VALVE ISOLATION TANK
  25. VALVE ISOLATION TANK
  26. VALVE ISOLATION TANK
  27. VALVE ISOLATION TANK
  28. VALVE ISOLATION TANK
  29. VALVE ISOLATION TANK
  30. VALVE ISOLATION TANK
  31. VALVE ISOLATION TANK
  32. VALVE ISOLATION TANK
  33. VALVE ISOLATION TANK
  34. VALVE ISOLATION TANK
  35. VALVE ISOLATION TANK
  36. VALVE ISOLATION TANK
  37. VALVE ISOLATION TANK
  38. VALVE ISOLATION TANK
  39. VALVE ISOLATION TANK
  40. VALVE ISOLATION TANK
  41. VALVE ISOLATION TANK
  42. VALVE ISOLATION TANK
  43. VALVE ISOLATION TANK
  44. VALVE ISOLATION TANK
  45. VALVE ISOLATION TANK
  46. VALVE ISOLATION TANK
  47. VALVE ISOLATION TANK
  48. VALVE ISOLATION TANK
  49. VALVE ISOLATION TANK
  50. VALVE ISOLATION TANK
  51. VALVE ISOLATION TANK
  52. VALVE ISOLATION TANK
  53. VALVE ISOLATION TANK
  54. VALVE ISOLATION TANK
  55. VALVE ISOLATION TANK
  56. VALVE ISOLATION TANK
  57. VALVE ISOLATION TANK
  58. VALVE ISOLATION TANK
  59. VALVE ISOLATION TANK
  60. VALVE ISOLATION TANK
  61. VALVE ISOLATION TANK
  62. VALVE ISOLATION TANK
  63. VALVE ISOLATION TANK
  64. VALVE ISOLATION TANK
  65. VALVE ISOLATION TANK
  66. VALVE ISOLATION TANK
  67. VALVE ISOLATION TANK
  68. VALVE ISOLATION TANK
  69. VALVE ISOLATION TANK
  70. VALVE ISOLATION TANK
  71. VALVE ISOLATION TANK
  72. VALVE ISOLATION TANK
  73. VALVE ISOLATION TANK
  74. VALVE ISOLATION TANK
  75. VALVE ISOLATION TANK
  76. VALVE ISOLATION TANK
  77. VALVE ISOLATION TANK
  78. VALVE ISOLATION TANK
  79. VALVE ISOLATION TANK
  80. VALVE ISOLATION TANK
  81. VALVE ISOLATION TANK
  82. VALVE ISOLATION TANK
  83. VALVE ISOLATION TANK
  84. VALVE ISOLATION TANK
  85. VALVE ISOLATION TANK
  86. VALVE ISOLATION TANK
  87. VALVE ISOLATION TANK
  88. VALVE ISOLATION TANK
  89. VALVE ISOLATION TANK
  90. VALVE ISOLATION TANK
  91. VALVE ISOLATION TANK
  92. VALVE ISOLATION TANK
  93. VALVE ISOLATION TANK
  94. VALVE ISOLATION TANK
  95. VALVE ISOLATION TANK
  96. VALVE ISOLATION TANK
  97. VALVE ISOLATION TANK
  98. VALVE ISOLATION TANK
  99. VALVE ISOLATION TANK
  100. VALVE ISOLATION TANK

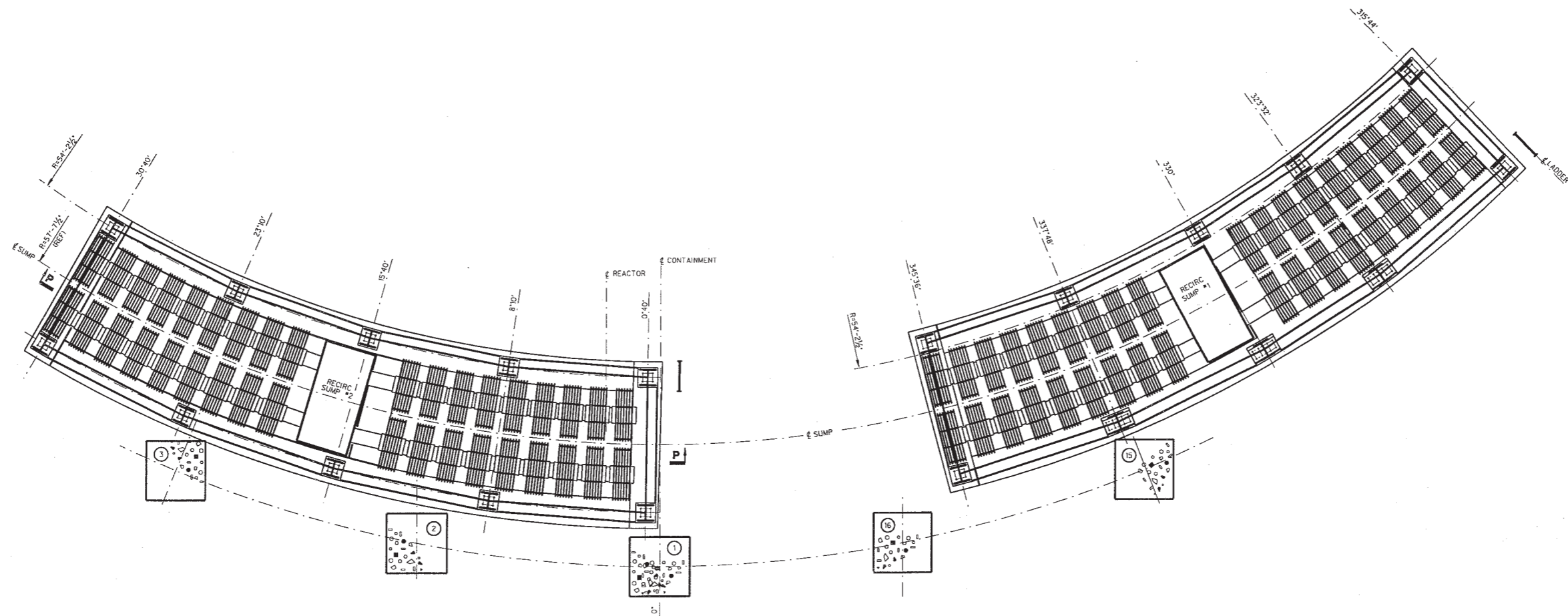
Amendment 102

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

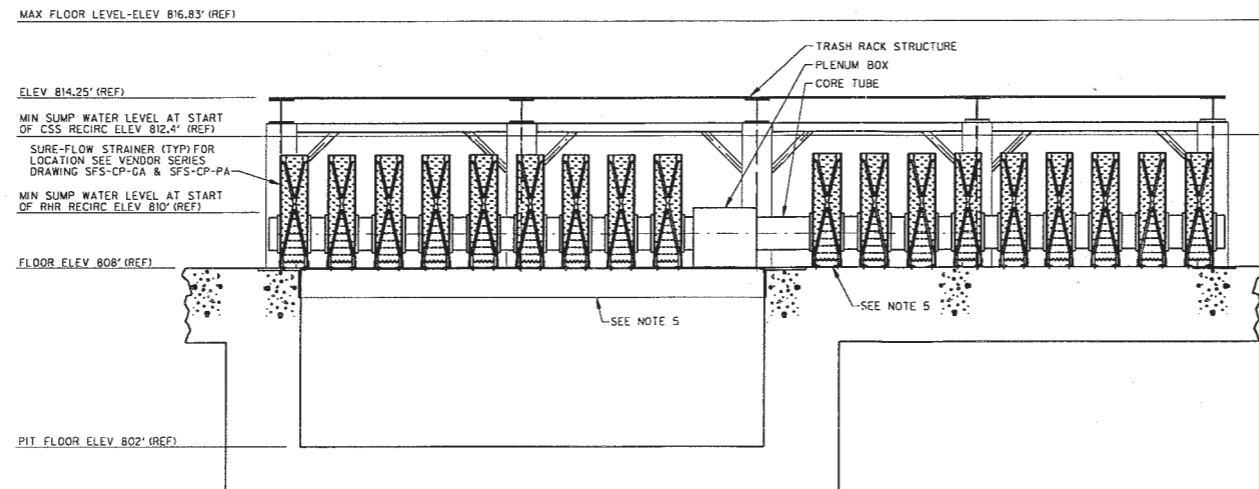
ARRANGEMENT  
OF SUMP PIPING &  
VALVE ISOLATION TANK

FIGURE 6.2.2-3





PARTIAL PLAN REACTOR BLDG AT ELEV 808'-0"

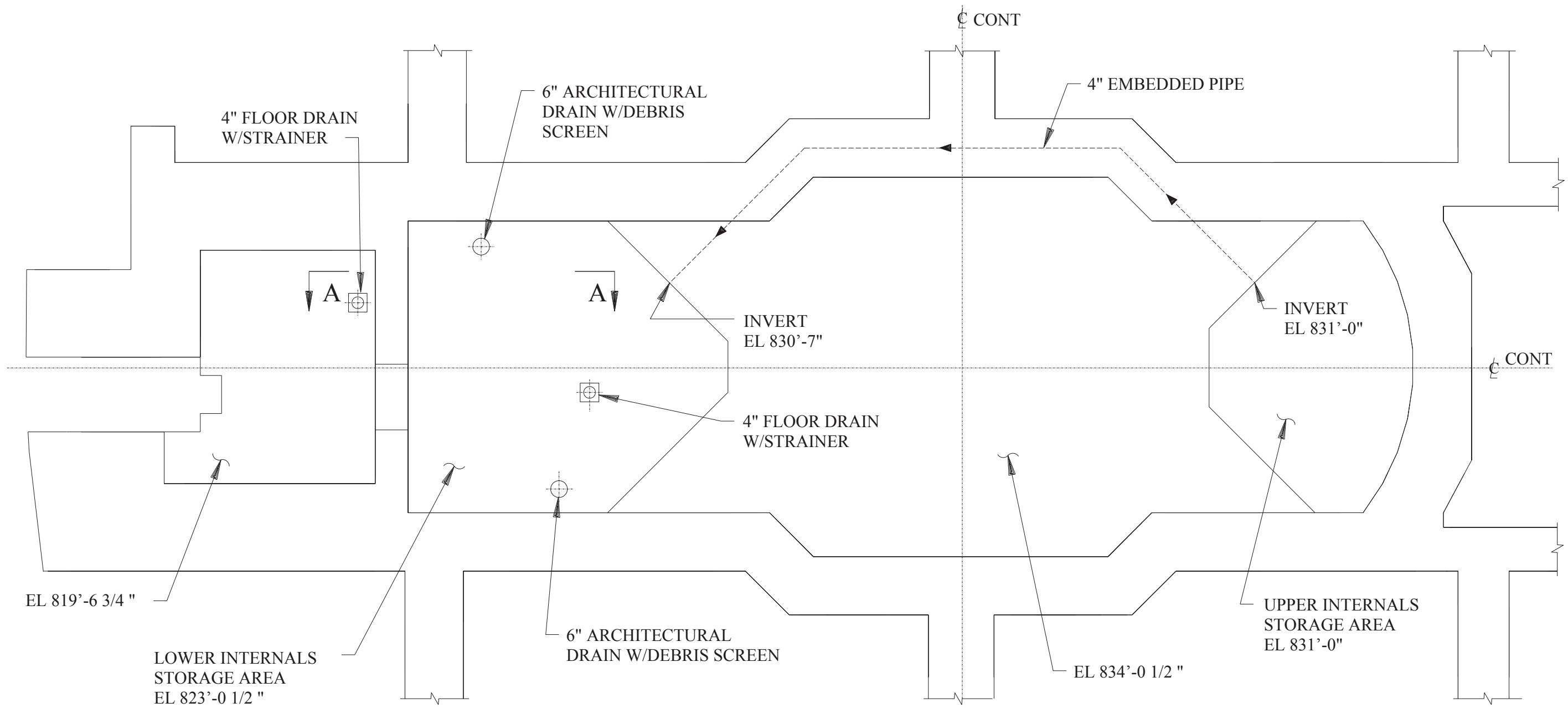


ELEVATION VIEW SECT P-P

- 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

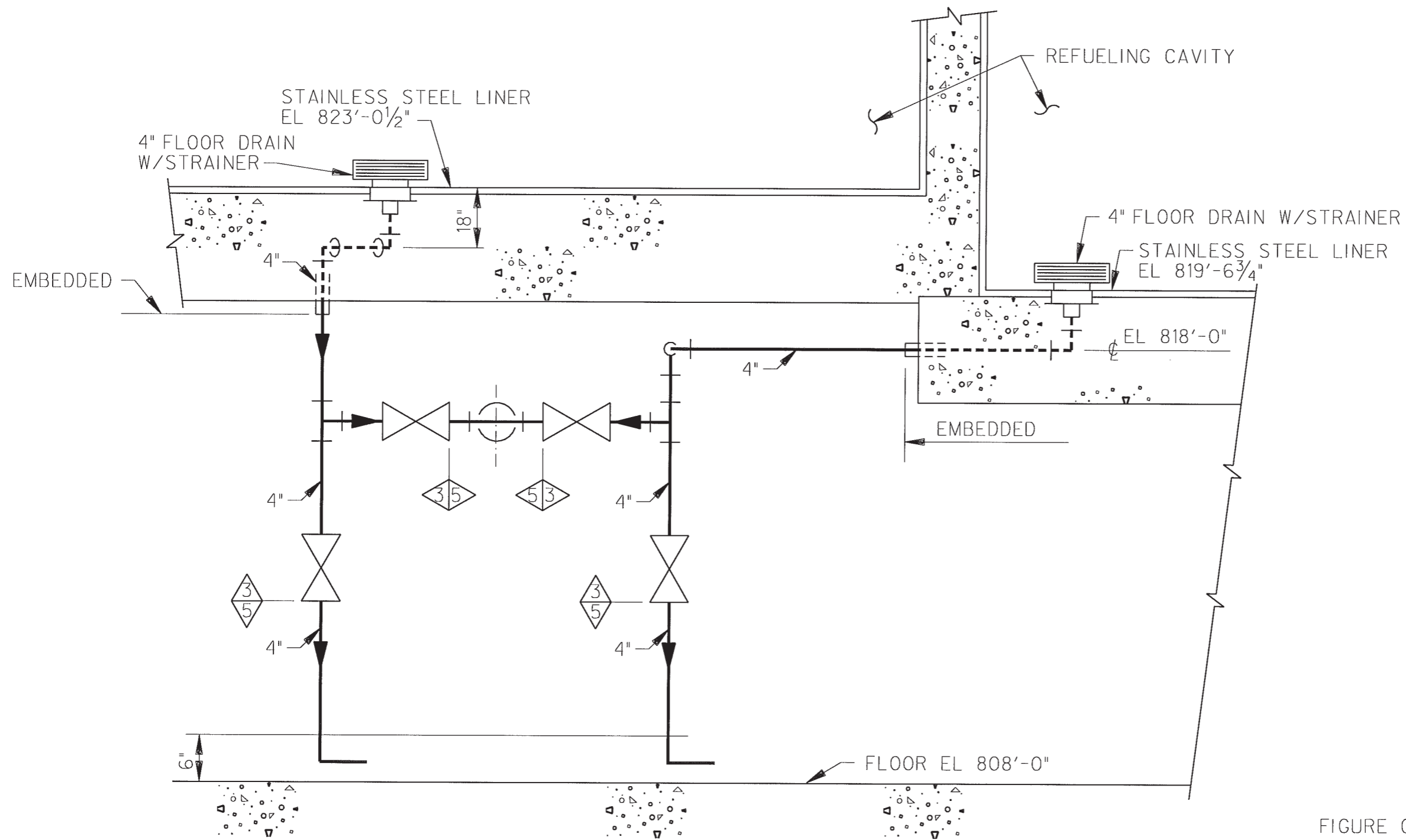
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
ARRANGEMENT OF RECIRC SUMP 1 & 2 MODULAR SURE-FLOW STRAINER
FIGURE 6.2.2-3A



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



THIS DRAWING CREATED ELECTRONICALLY

### SECTION A-A

NOTE:  
FOR FLOOR PLAN SEE FIGURE 6.2.2-4

Amendment 101b

FIGURE GENERATED FOR FSAR ONLY

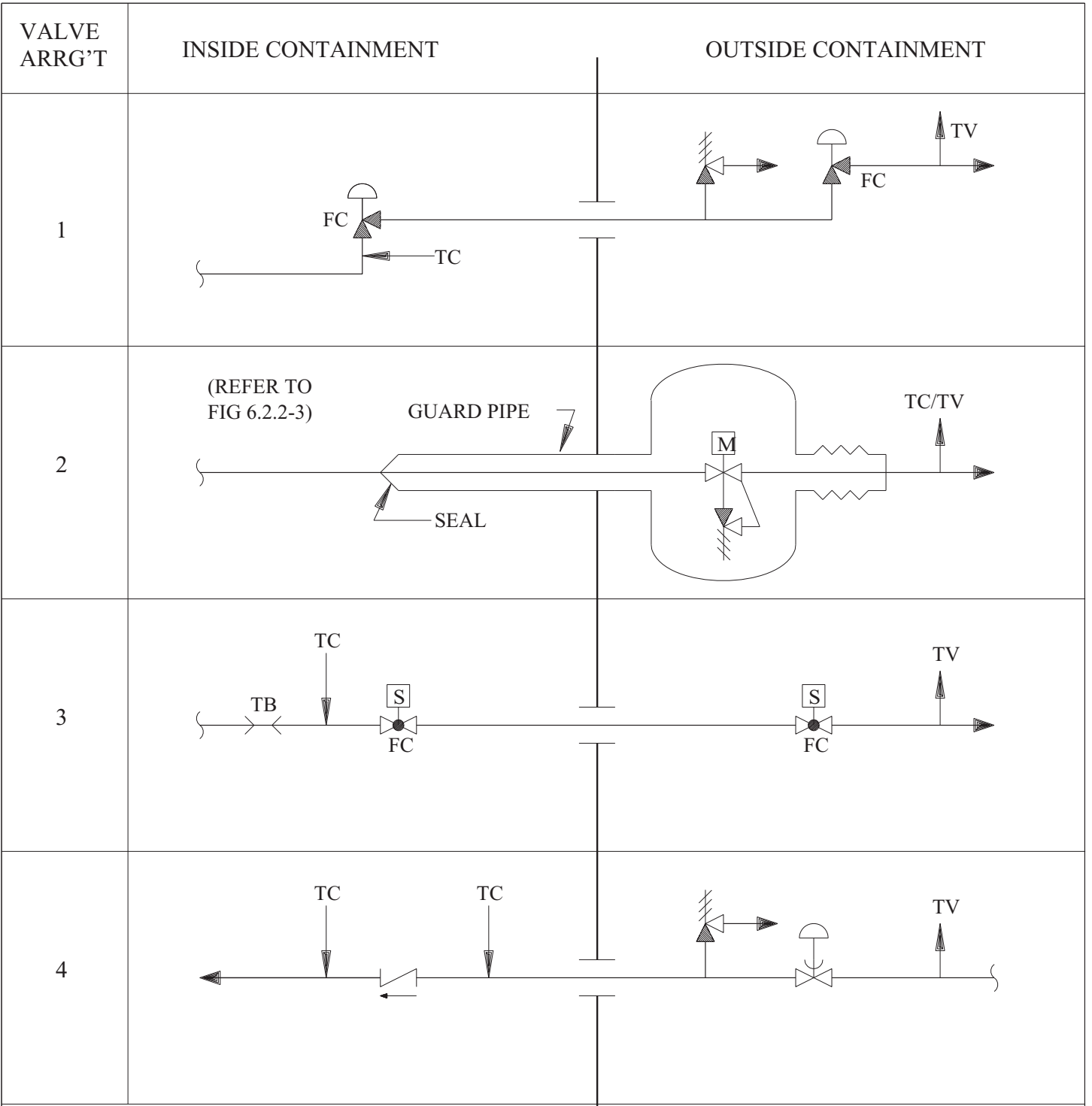
COMANCHE PEAK S.E.S.  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 AND 2

REACTOR CAVITY DRAIN  
SYSTEM ELEVATION

FIGURE 6.2.2-5

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

CPE



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

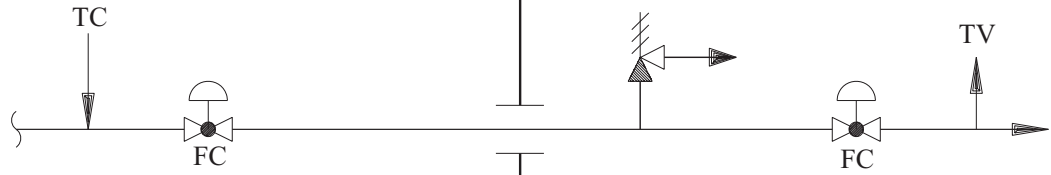
CPE

VALVE  
ARRG'T

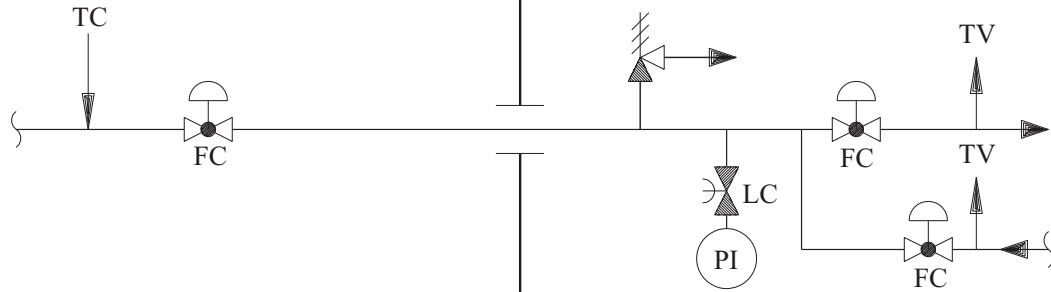
INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

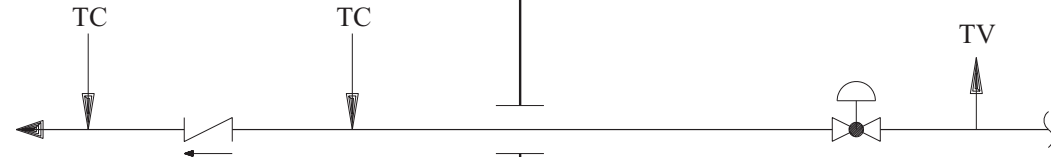
5



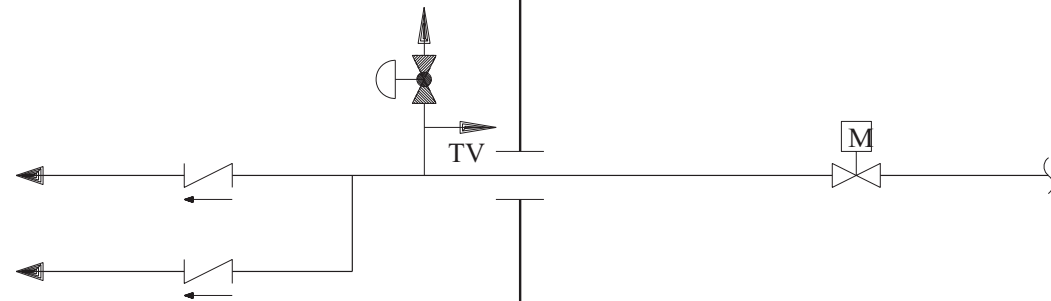
6



7



8



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

ve00034b.dgn

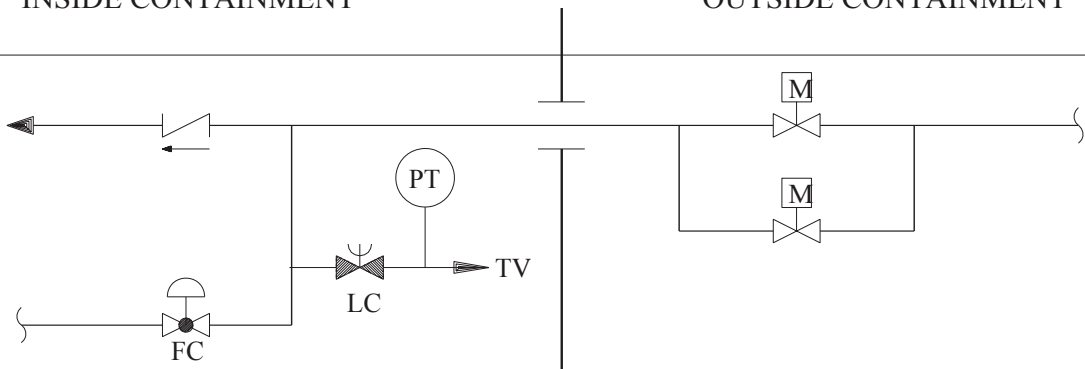


VALVE ARR'G'T

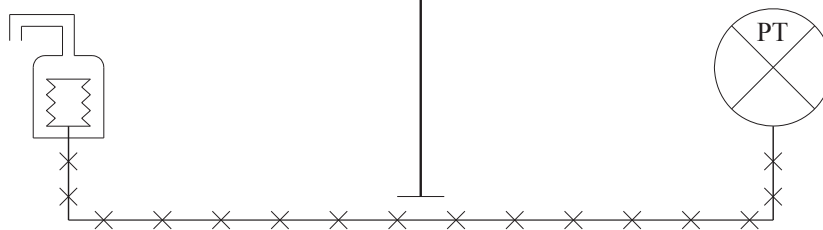
INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

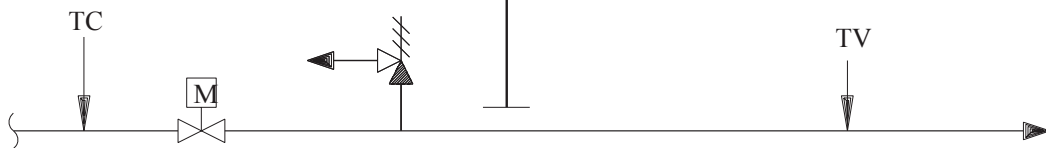
9



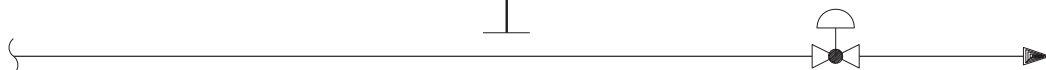
10



11



12



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

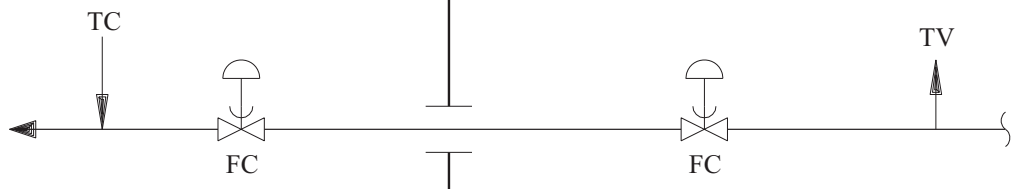
CPE

VALVE  
ARRG'T

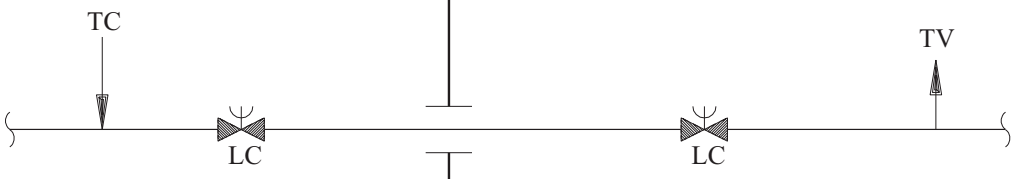
INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

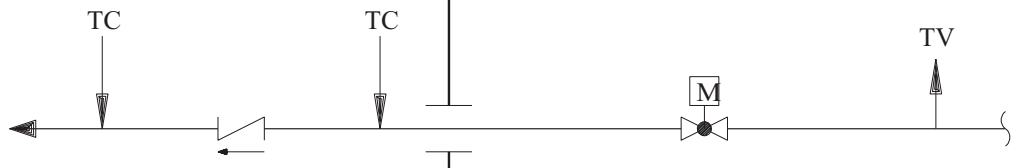
13



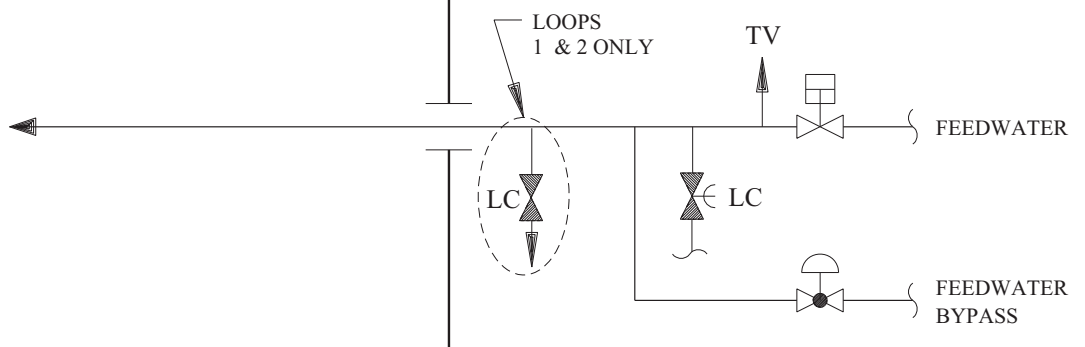
14



15



16



CONTAINMENT WALL

Amendment 99

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

CONTAINMENT ISOLATION  
VALVING

FIGURE 6.2.4-1 SH 4 OF 12

01-27-04

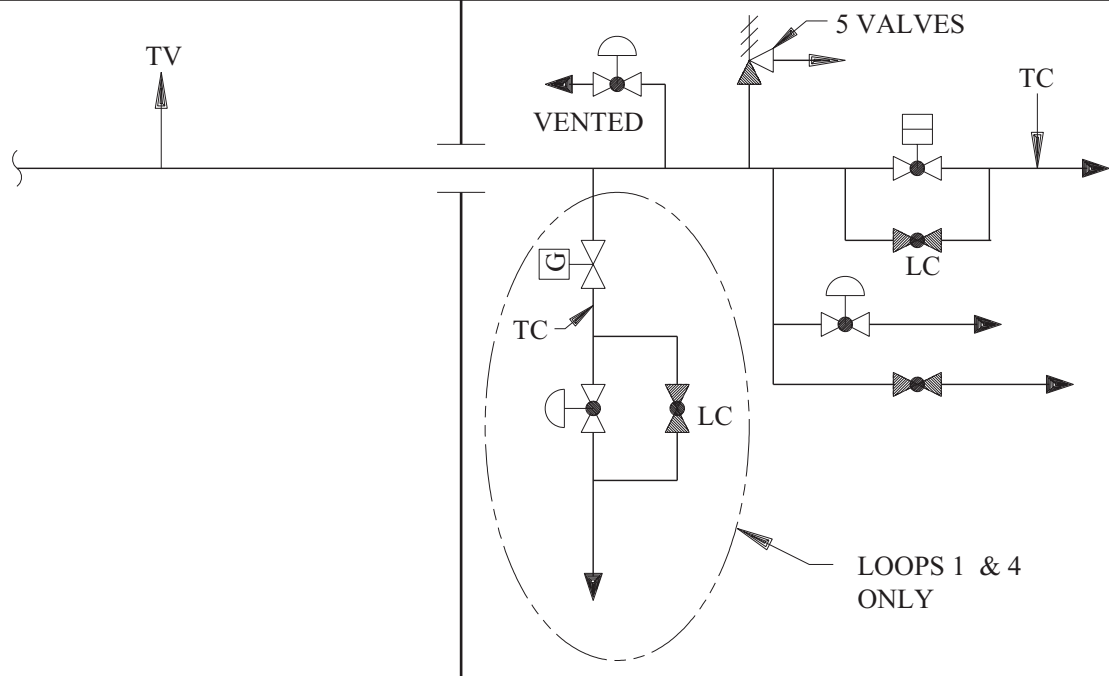
ve00034d.dgn

VALVE ARR'G'T

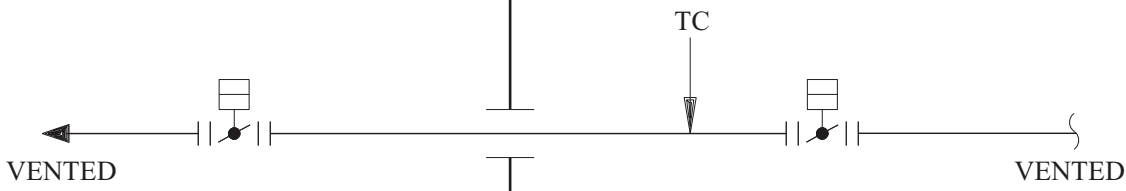
INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

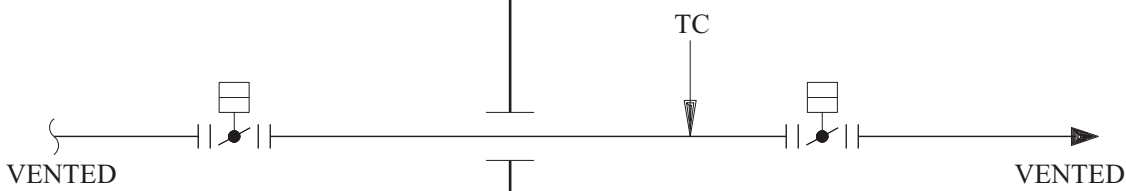
17



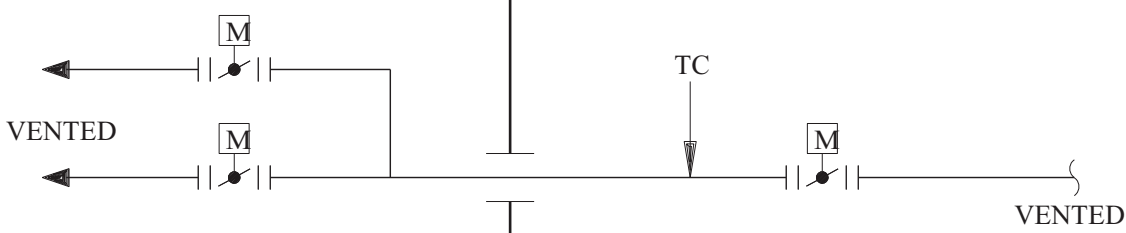
18



19



20



CONTAINMENT WALL

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

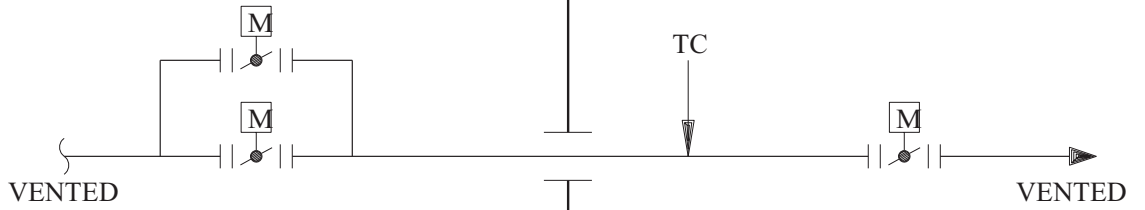
CPE

VALVE ARR'G'T

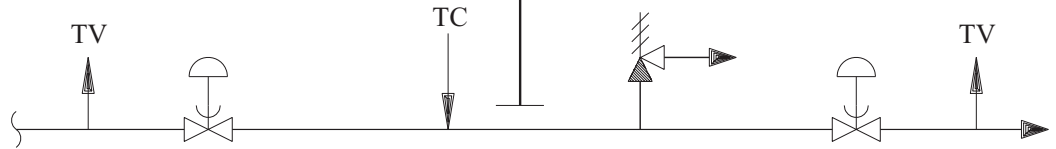
INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

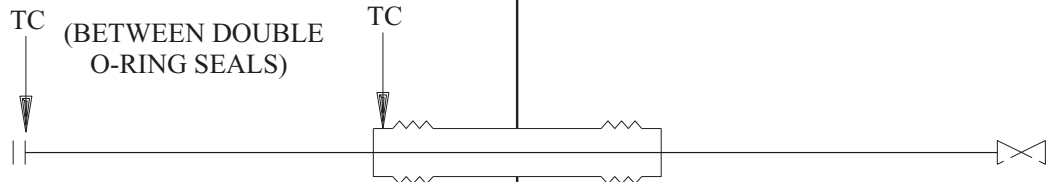
21



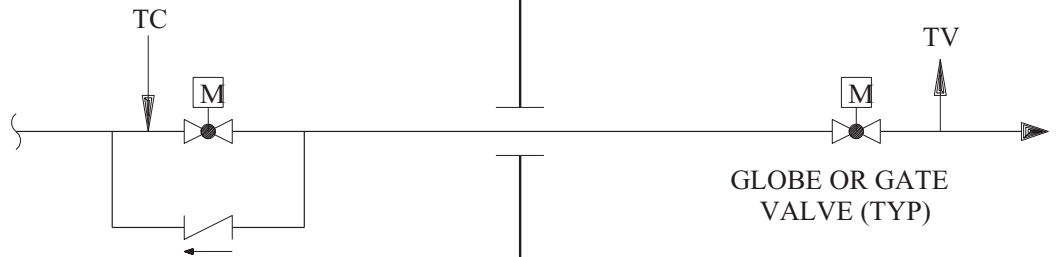
22



23



24



CONTAINMENT WALL

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

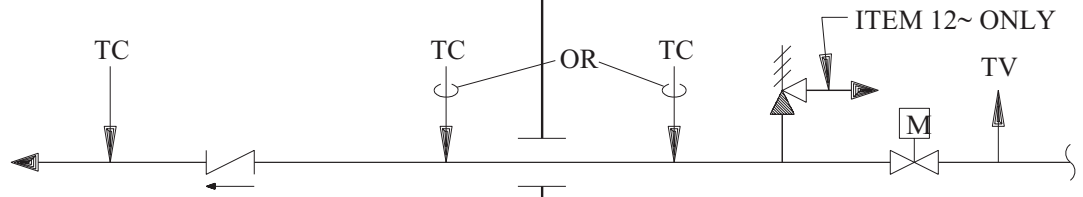
CPE

VALVE  
ARRG'T

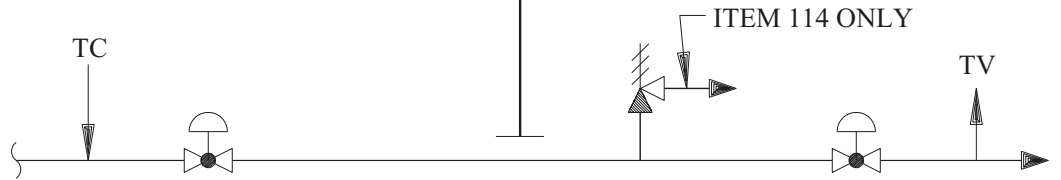
INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

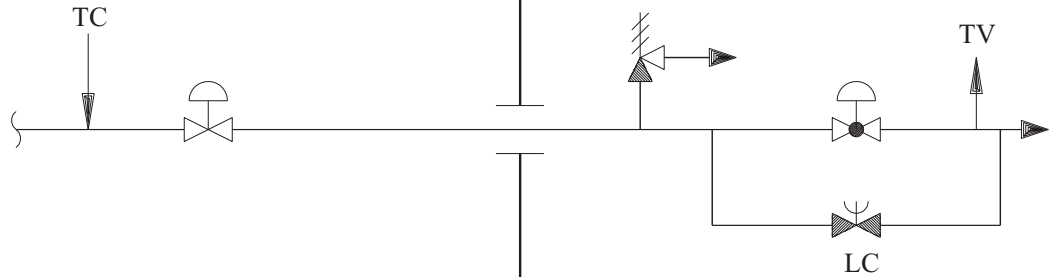
25



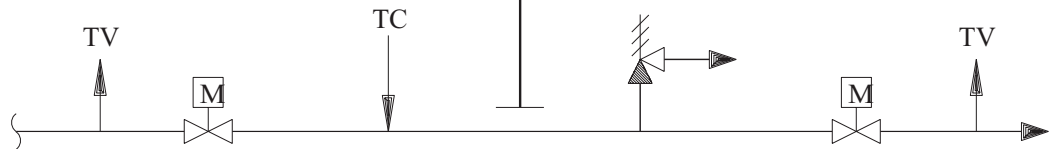
26



27



28



CONTAINMENT WALL

Amendment 66  
January 15, 1988

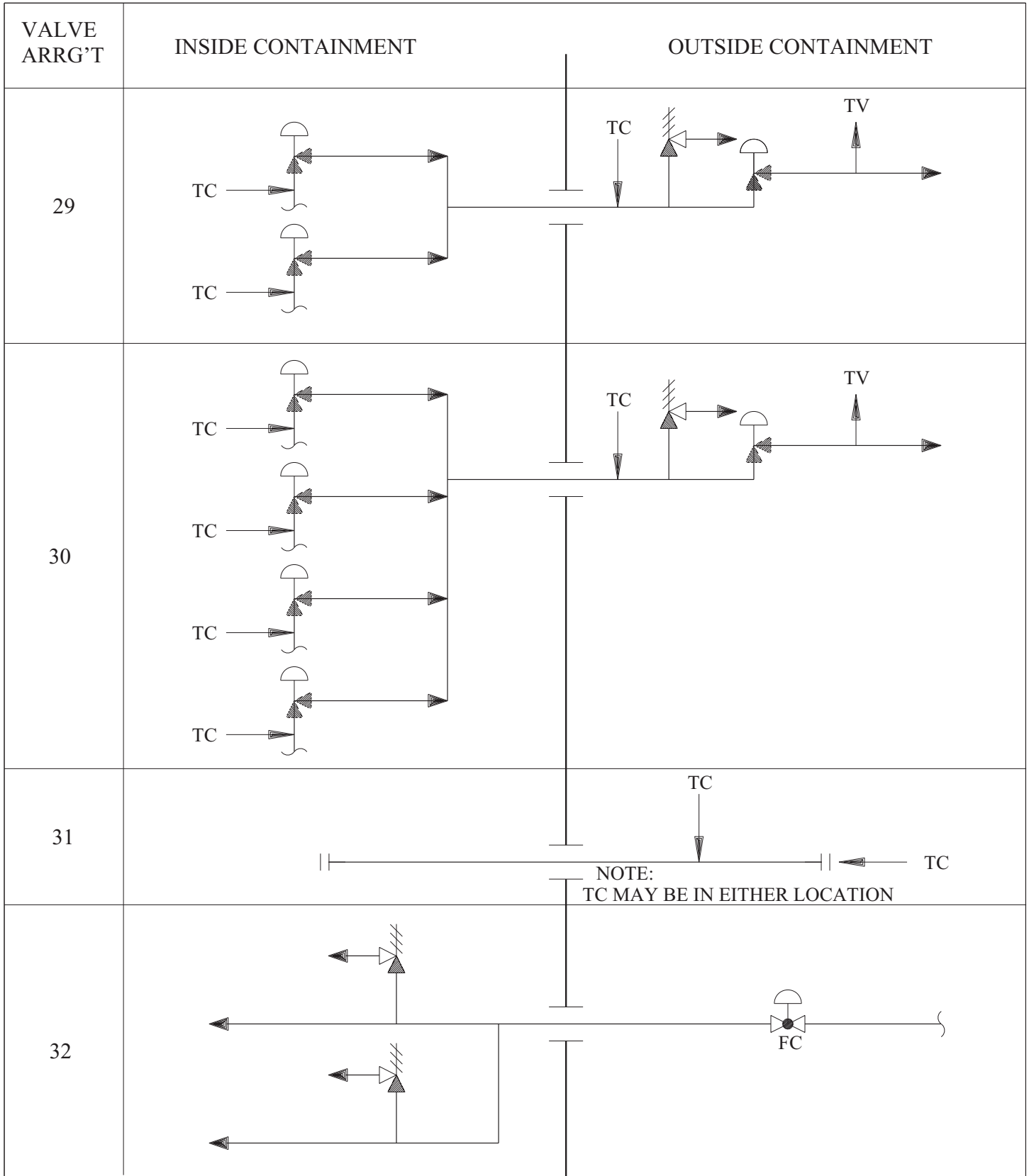
COMANCHE PEAK S E S  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 AND 2

CONTAINMENT ISOLATION  
VALVING

FIGURE 6.2.4-1 SH 7 OF 12

10-12-01

ve00034g.dgn

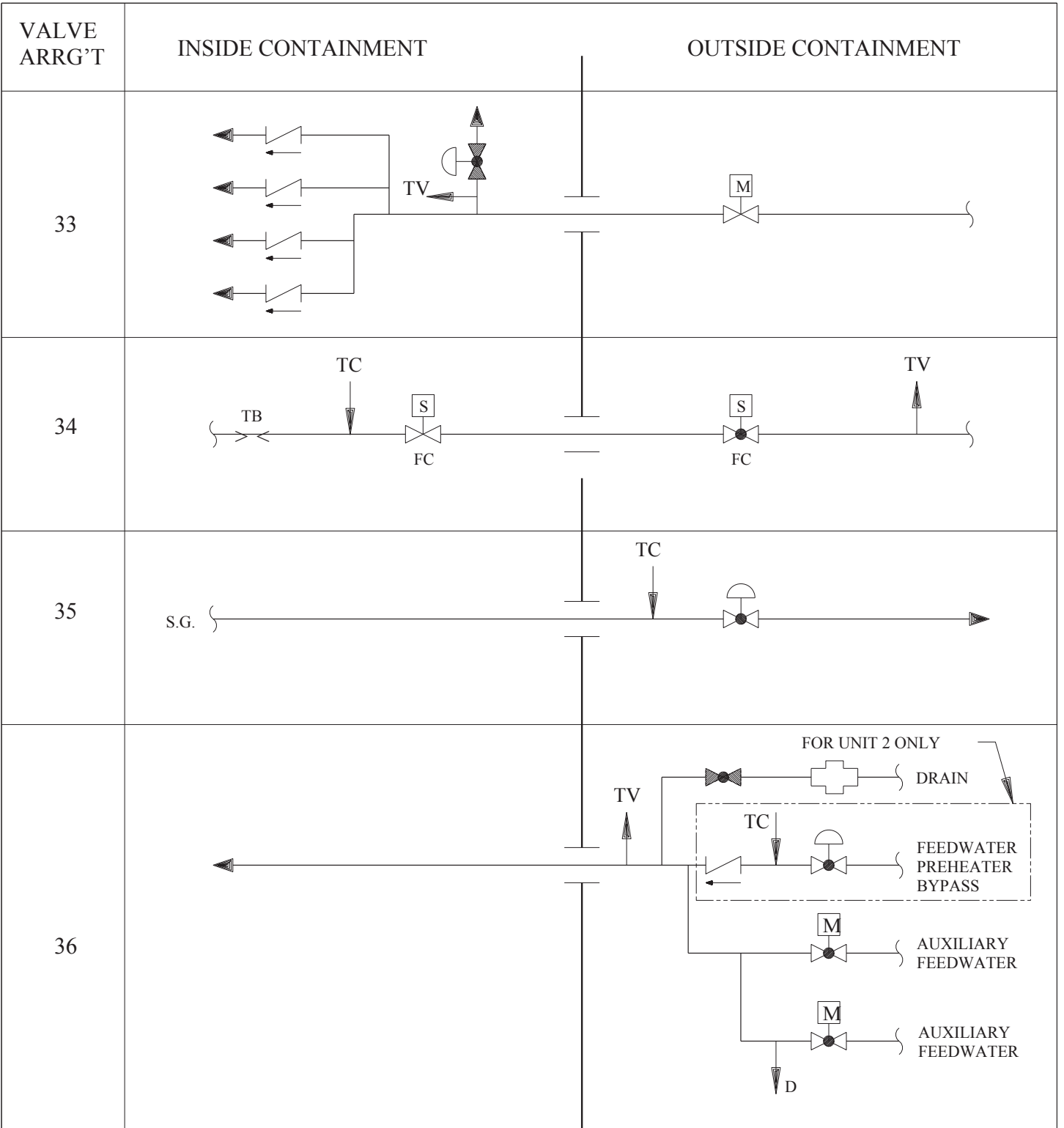


CONTAINMENT WALL

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 8 OF 12

CPE



CONTAINMENT WALL

**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

VALVE ARR'G'T	INSIDE CONTAINMENT	OUTSIDE CONTAINMENT
37		
38		
39		
40		

CONTAINMENT WALL

Amendment 96  
August 2, 1999

<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2</p>
<p>CONTAINMENT ISOLATION VALVING</p>
<p>FIGURE 6.2.4-1 SH 10 OF 12</p>



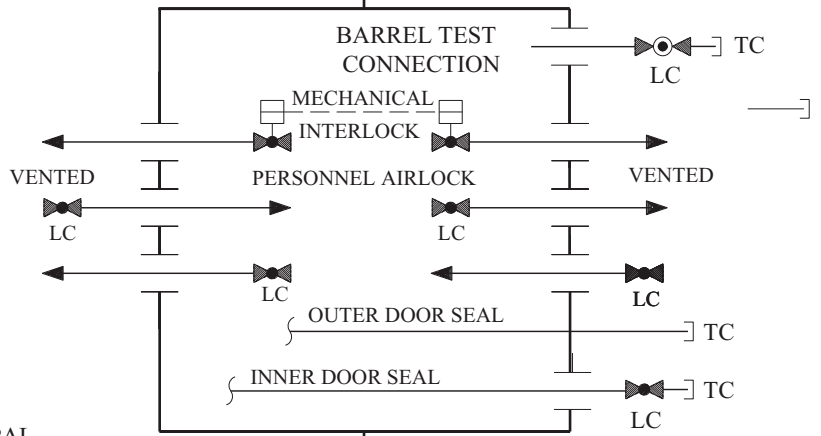
VALVE  
ARRG'T

INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

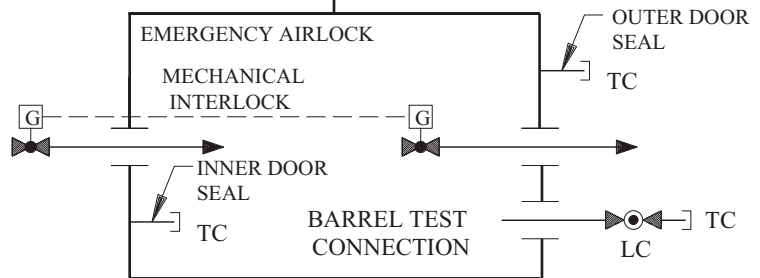
41

UNIT 1 PAL

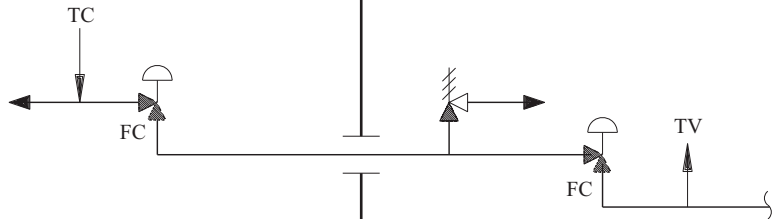


42

UNIT 1 & 2  
EAL



43



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

CPE

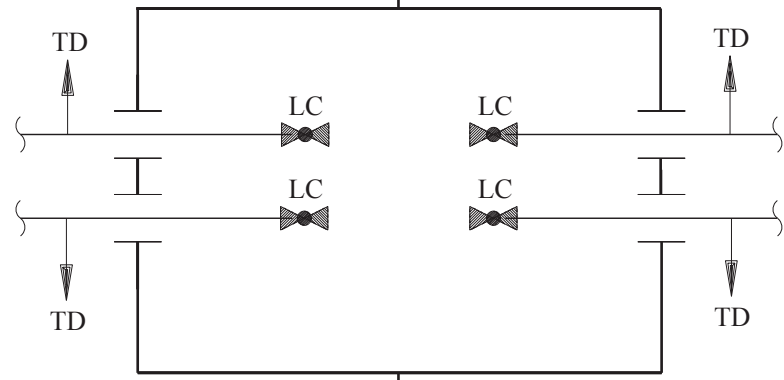
VALVE  
ARRG'T

INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

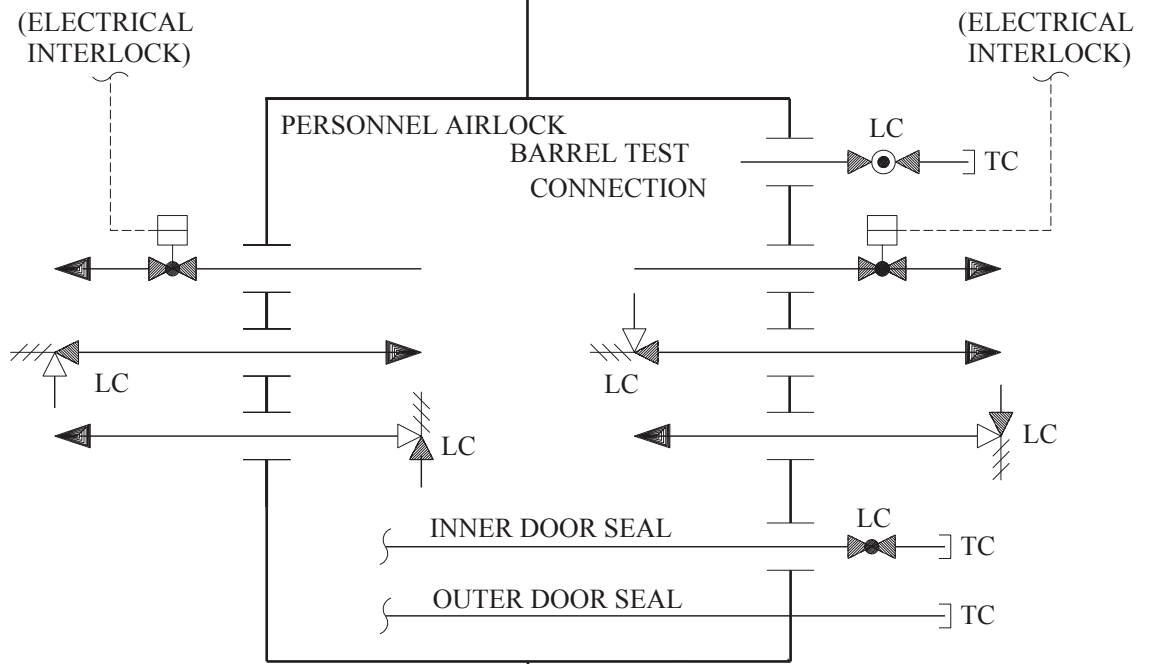
44

UNIT 2  
PAL

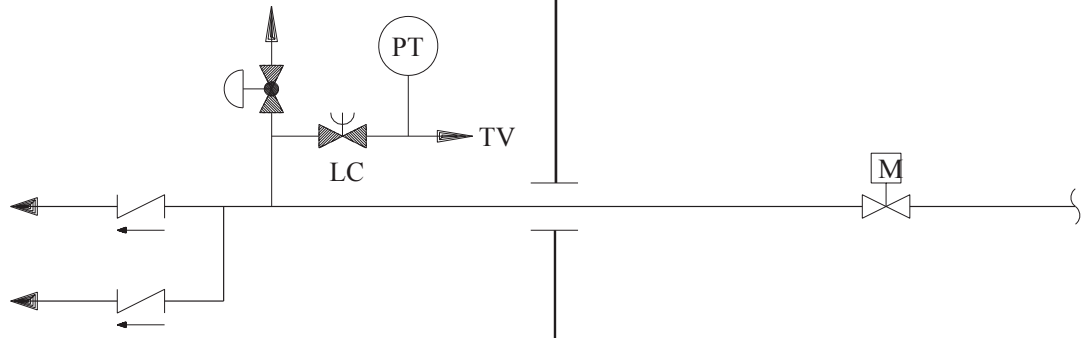


Amendment 96  
August 2, 1999

UNIT 2  
PAL



46



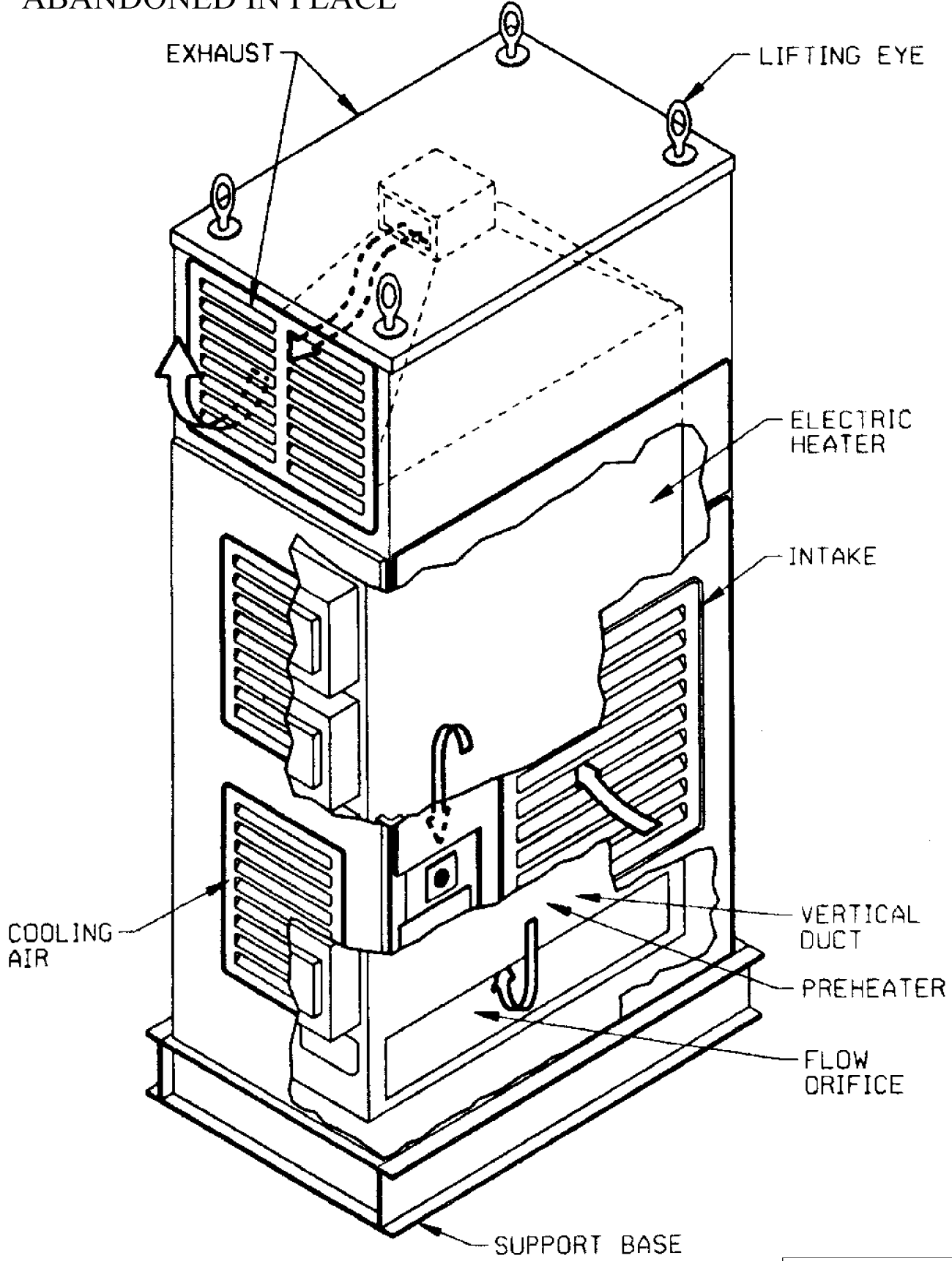
CONTAINMENT  
WALL

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

CONTAINMENT ISOLATION  
VALVING

FIGURE 6.2.4-1 SH 12 OF 12

# 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

CPSSES / FSAR  
FIGURE 6.2.5-2

DELETED

FIGURE 6.2.5-3  
HAS BEEN DELETED

CPSSES / FSAR  
FIGURE 6.2.5A-1

DELETED

CPSSES / FSAR  
FIGURE 6.2.5A-2

DELETED

CPSSES / FSAR  
FIGURE 6.2.5A-3

DELETED



FIGURE 6.2.5A-4  
HAS BEEN DELETED

CPSSES / FSAR  
FIGURE 6.2.5A-5

DELETED

FIGURE 6.2.5A-6  
HAS BEEN DELETED

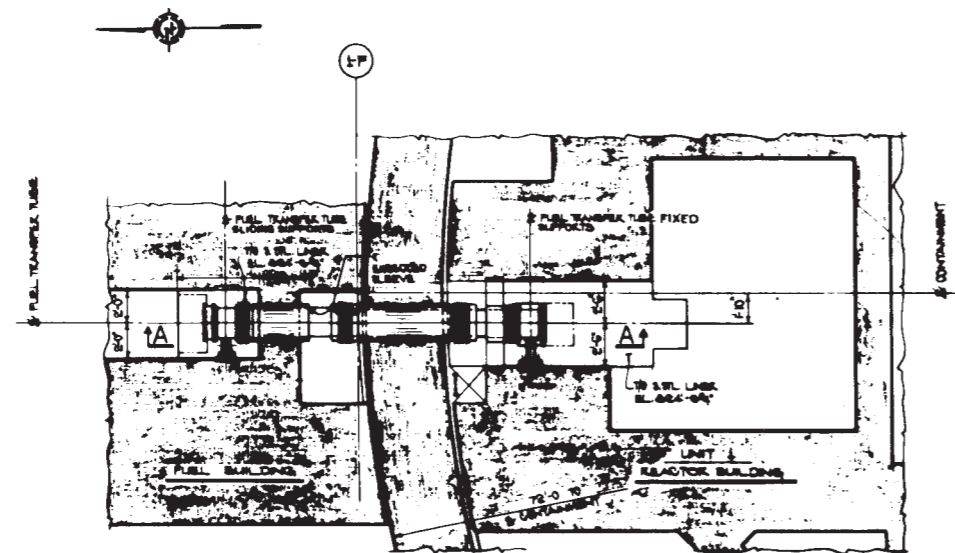
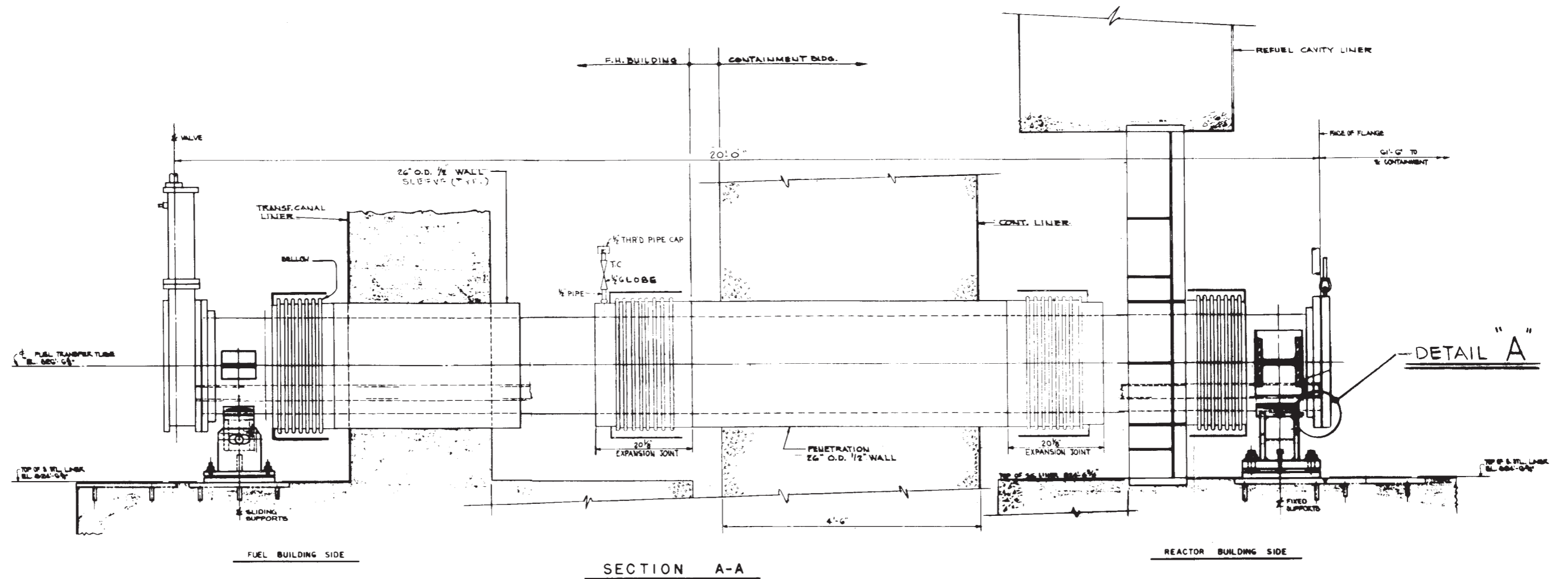
CPSSES / FSAR  
FIGURE 6.2.5A-7

DELETED

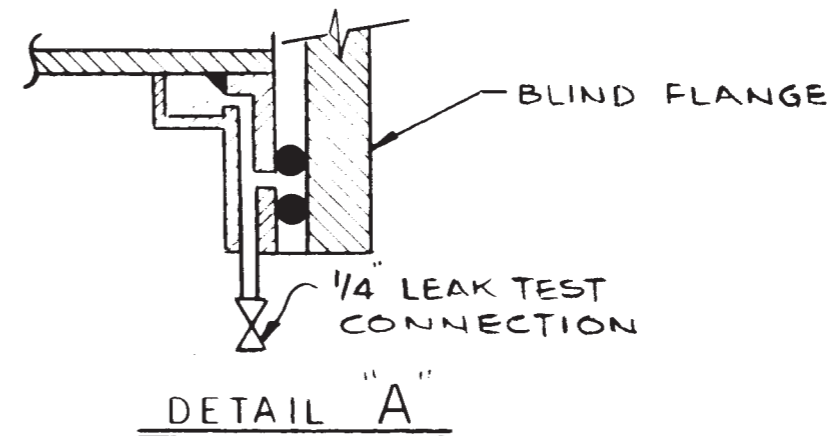
FIGURE 6.2.5A-8  
HAS BEEN DELETED

CPSSES / FSAR  
FIGURE 6.2.5A-9

DELETED



PART PLAN AT EL 826'-6 1/2"  
SCALE 1/4"=1'-0"



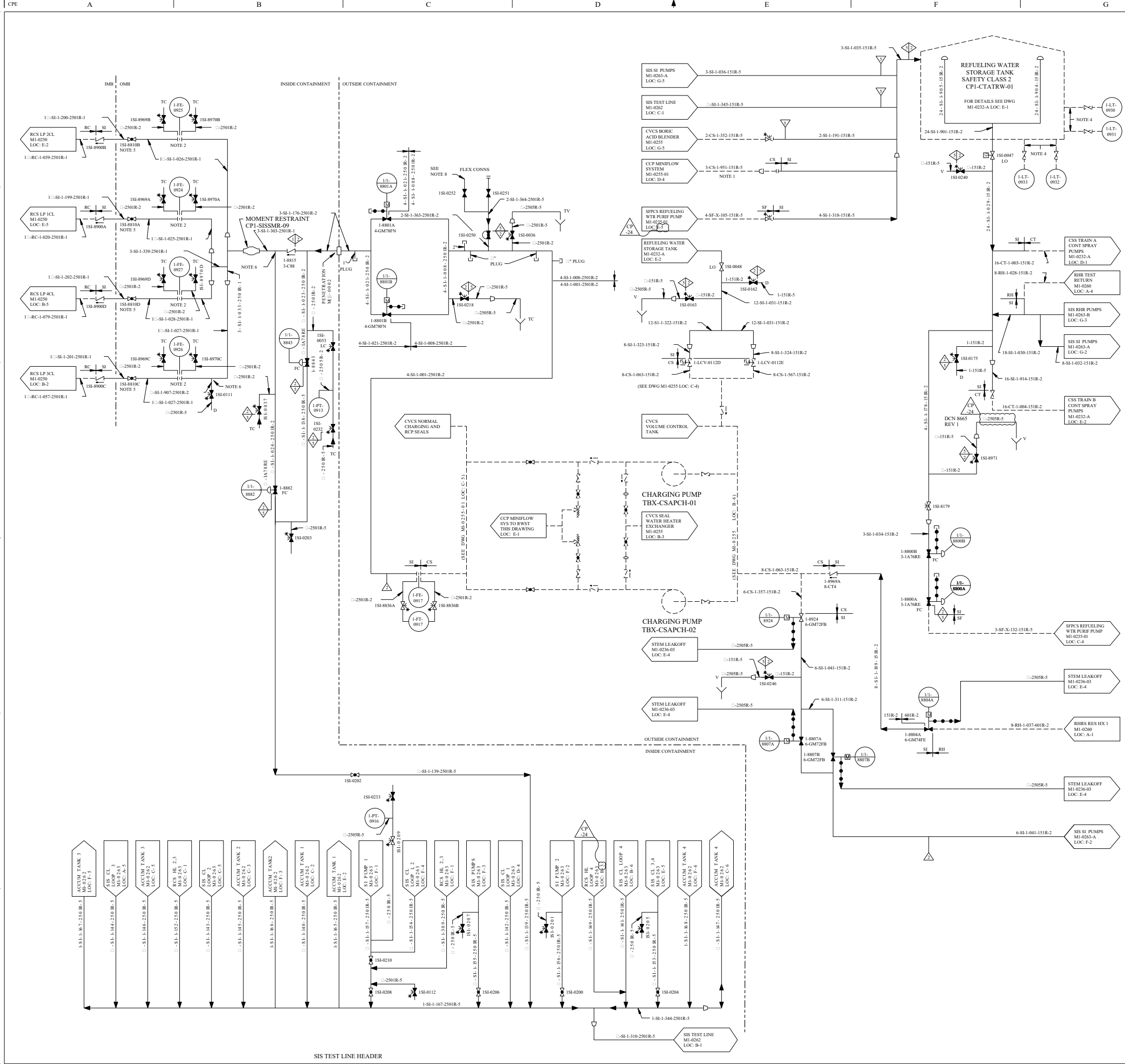
DETAIL "A"

AMENDMENT 13  
DECEMBER 15, 1980

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

FUEL TRANSFER TUBE LEAK  
TEST ARRANGEMENT

FIGURE 6.2.6-1



REV	DATE	BY	CHKD	APPV	REMARKS
CP-24	05/14/2018	05/14/2018			THIS DRAWING REVISED TO CORRECTLY INCORPORATE DESIGN CHANGE DCM 9665 REV 1. EDITORIAL CHANGES AS NOTED.

- NOTES:
1. PIPING FROM THE OUTLET OF THE RELIEF VALVES TO THE RWST SHALL BE SUPPORTED SUCH THAT THE PRESSURE BOUNDARY WILL REMAIN INTACT AND ALLOW FLOW PATH THROUGH THE LINE FOLLOWING A SAFE SHUTDOWN EARTHQUAKE.
  2. FLANGES FOR FLOW METERING ORifice TO VERIFY FLOW DURING PRE-OPERATIONAL TESTING.
  3. \* INDICATES HERMETICALLY SEALED VALVE.
  4. LOCATE TAPS AT SAME ELEVATION (APPROX 1 FOOT ABOVE BOTTOM OF RWST). PROVIDE MAXIMUM PHYSICAL SEPARATION BETWEEN EACH TAP LOCATION.
  5. ADJUST AND LOCK VALVES TO LIMIT PUMP RUNOUT.
  6. \* ID FLOW RESTRICTOR PROVIDED PER NOTE 15 ON MECHANICAL SYMBOLS AND NOTES SEE DRAWING M1-0200.
  7. UNLESS OTHERWISE NOTED ALL DRAINS COLLECTED BY LOCAL FLOOR DRAIN SYSTEM.
  8. FLEX CONNECTION - MAY BE A PIPE CAP OR STORZ CONNECTION.

REFERENCE NOTE:  
THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM WESTINGHOUSE DRAWING 113899 (SH 1) REV 5 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 SERVIC CATEGORY I  
SAFETY CLASS 3 CLASS II ASSOCIATED CIRCUITS

**LUMINANT**  
CPNPP  
GLEN ROSE, TEXAS

**FLOW DIAGRAM**  
SAFETY INJECTION SYSTEM  
SHEET 1 OF 5

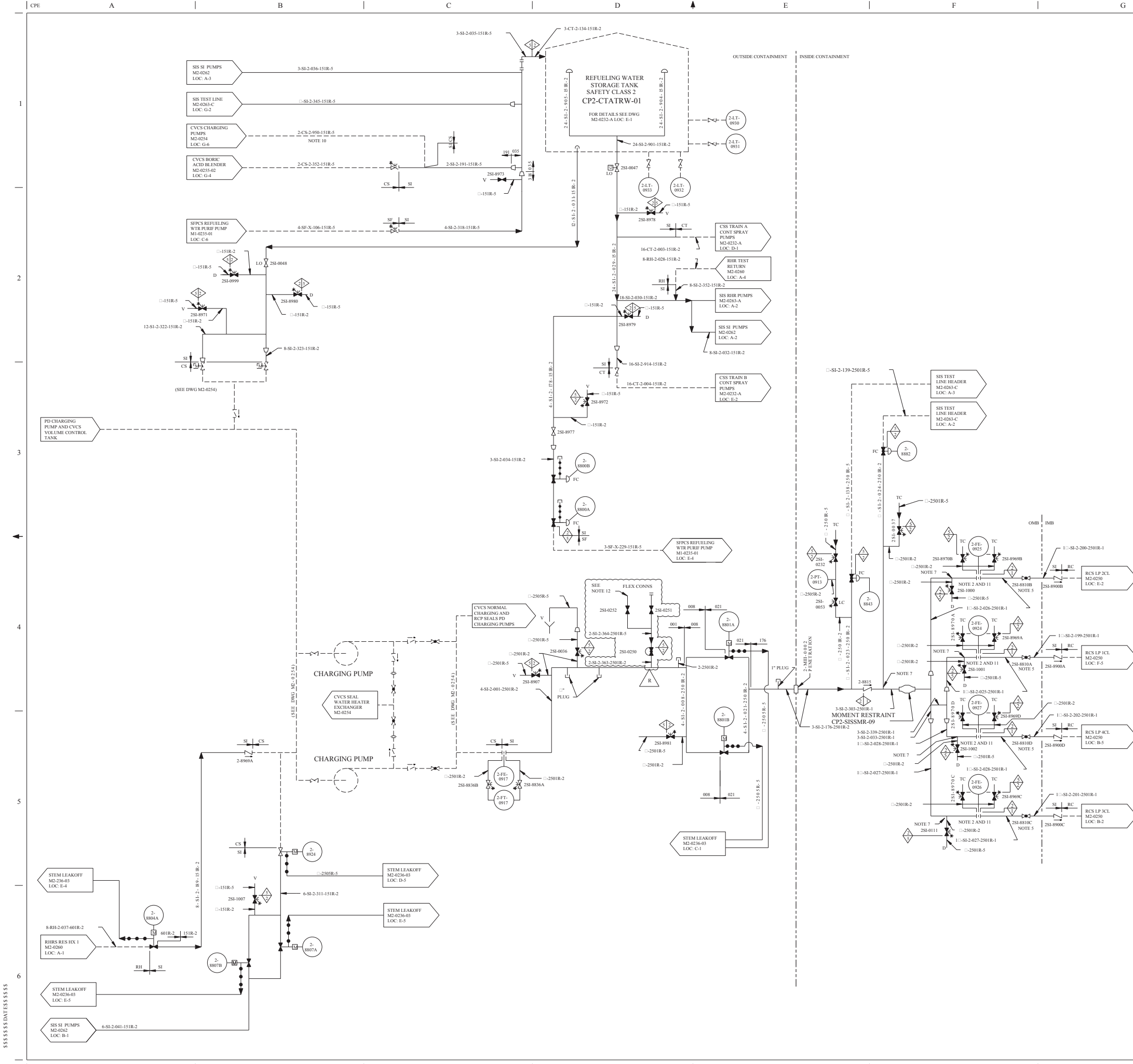
DWG NO.	SH NO.	REV.
M1-0261	-	CP-24

REF. CHK. 2 / 01/2018 REV CP-24

FSAR FIGURE 6.3-1

THIS DRAWING CREATED ELECTRONICALLY





REV	DWN	CHKD	APPV	REMARKS
CP-16	DLK 01-15 2014	KRM 06-21 2014		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE: FDX 2011-00006-06-00 PER SR 0002-11-00006-06-00

NOTES:

- DELETED
- FLANGES FOR FLOW METERING ORIFICE TO VERIFY FLOW DURING PRE-OPERATIONAL TESTING.
- SEE DRAWING M1-0200 FOR MECHANICAL SYMBOLS AND NOTES.
- DELETED
- ADJUST AND LOCK VALVES TO LIMIT PUMP RUNOUT.
- DELETED
- 1" ID FLOW RESTRICTOR PROVIDED PER NOTE 15 ON MECHANICAL SYMBOLS AND NOTES. SEE DRAWING M1-0200.
- DELETED
- UNLESS OTHERWISE NOTED ALL DRAINS COLLECTED BY LOCAL FLOOR DRAIN SYSTEM.
- 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.
- PROVIDE 1" (MAX) ID FLOW RESTRICTOR.
- FLEX CONNECTION - MAY BE A PIPE CAP OR STORZ CONNECTION.

REFERENCE NOTE:

THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM WESTINGHOUSE DRAWING 113808(SI-1) REV 9 WITH EXCEPTIONS 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.

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

**LUMINANT**  
CPNPP  
GLEN ROSE, TEXAS

FLOW DIAGRAM  
SAFETY INJECTION SYSTEM  
SHEET 1 OF 6

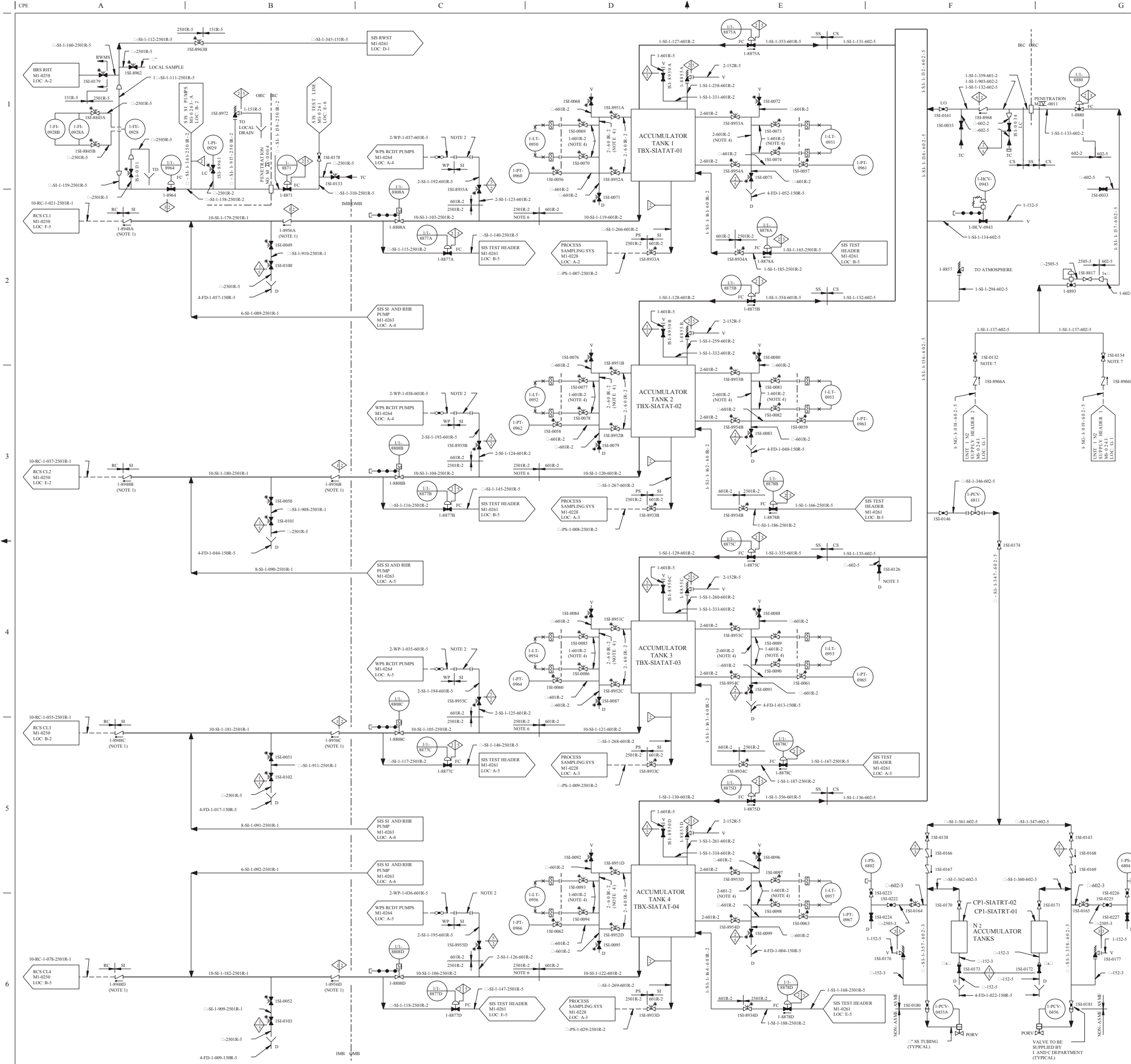
  

DWG NO. M2-0261	SH NO. -	REV. CP-16
--------------------	-------------	---------------

FSAR FIGURE 6.3-1

THIS DRAWING CREATED ELECTRONICALLY

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



REV	CHK	APPV	REMARKS
CP-27	10/08/2011		THIS DRAWING REVISED TO INCORPORATE AL-CK-2015-00021-1 TO EDITORIALY REVISE THE TITLE BLOCK SHEET 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 113B898 (SI 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      SEISMIC CATEGORY I  
SAFETY CLASS 2      CLASS 1B ASSOCIATED CIRCUITS  
SAFETY CLASS 3

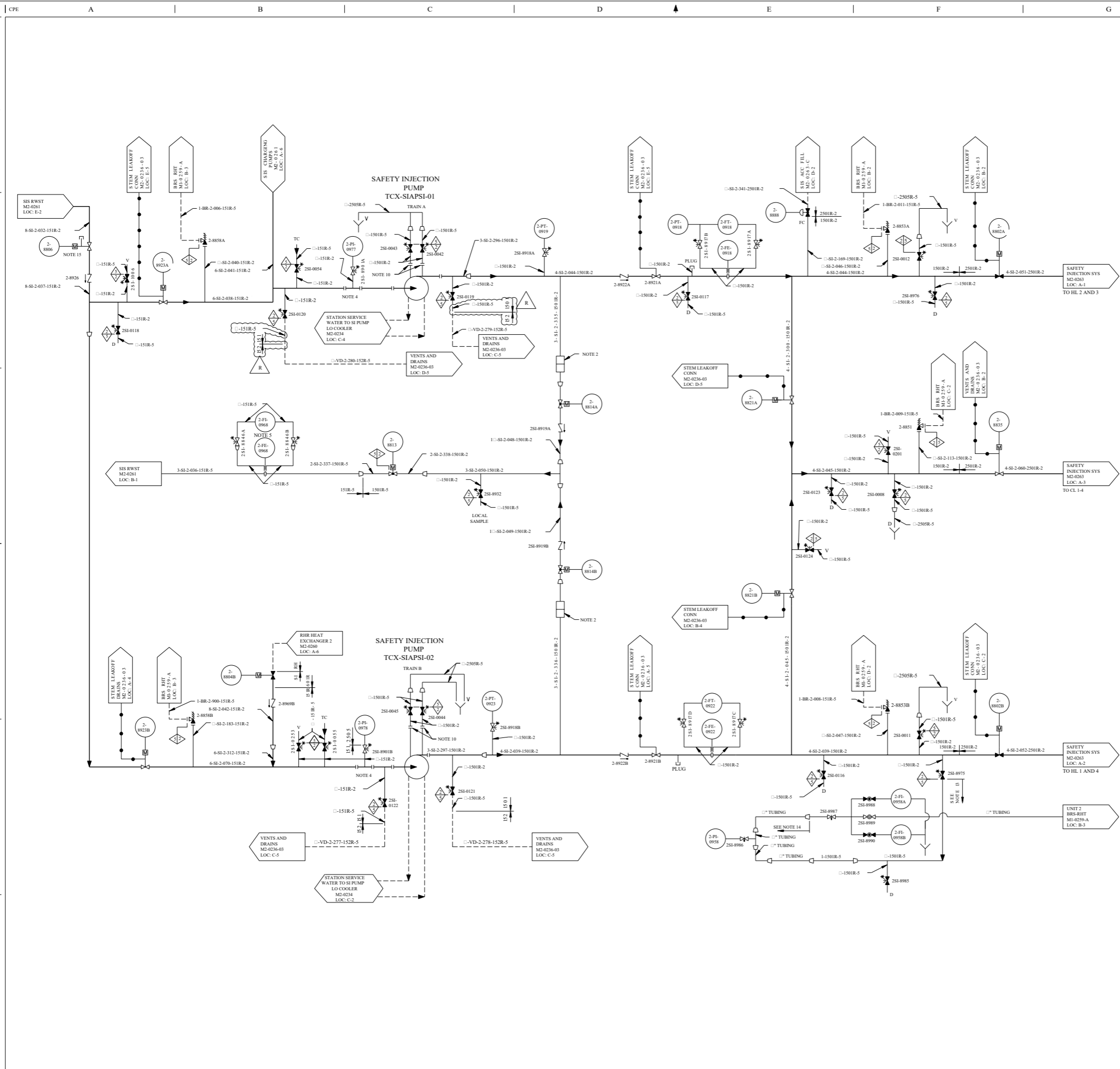
**LUMINANT**  
CPNPP  
GLEN ROSE, TEXAS

**FLOW DIAGRAM**  
SAFETY INJECTION SYSTEM  
SHEET 2 OF 5

DWG. NO.	SH. NO.	REV.
M1-0262	-	CP-27

THIS DRAWING CREATED ELECTRONICALLY

FSAR FIGURE 6.3-1



REV	DATE	BY	CHKD	APPD	REMARKS
CP-22	06/14/2011	06/14/2011			THIS DRAWING REVISSED TO INCORPORATE DESIGN CHANGE TDA-2010-00007-01-00 PER SK-9003-10-00007-01-00.

- NOTES:
- DELETED
  - REF FDN-142 FOR MINIFLOW/ORIFICE PART OF SAFETY INJECTION PUMP BY TCX-SIAPSI-01 AND TCX-SIAPSI-02.
  - DELETED
  - 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.
  - FLOW INDICATOR LOCATED OUTSIDE OF SAFETY INJECTION PUMP ROOMS.
  - DELETED
  - DELETED
  - DELETED
  - DELETED
  - DELETED
  - SAFETY INJECTION PUMP CASING VENTS DESIGNED TO HAVE 300 LB FLANGES.
  - UNLESS OTHERWISE NOTED DRAINS COLLECTED BY LOCAL DRAIN SYSTEM.
  - DELETED
  - ALTERNATE RELIEF PATH AND LEAK MEASUREMENT.
  - 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.
  - VALVE IS LOCKED OPEN WITH POWER REMOVED AND ARE ADMINISTRATIVELY CONTROLLED.
- REFERENCE NOTE:  
 THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM W DWG E98 SI 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.

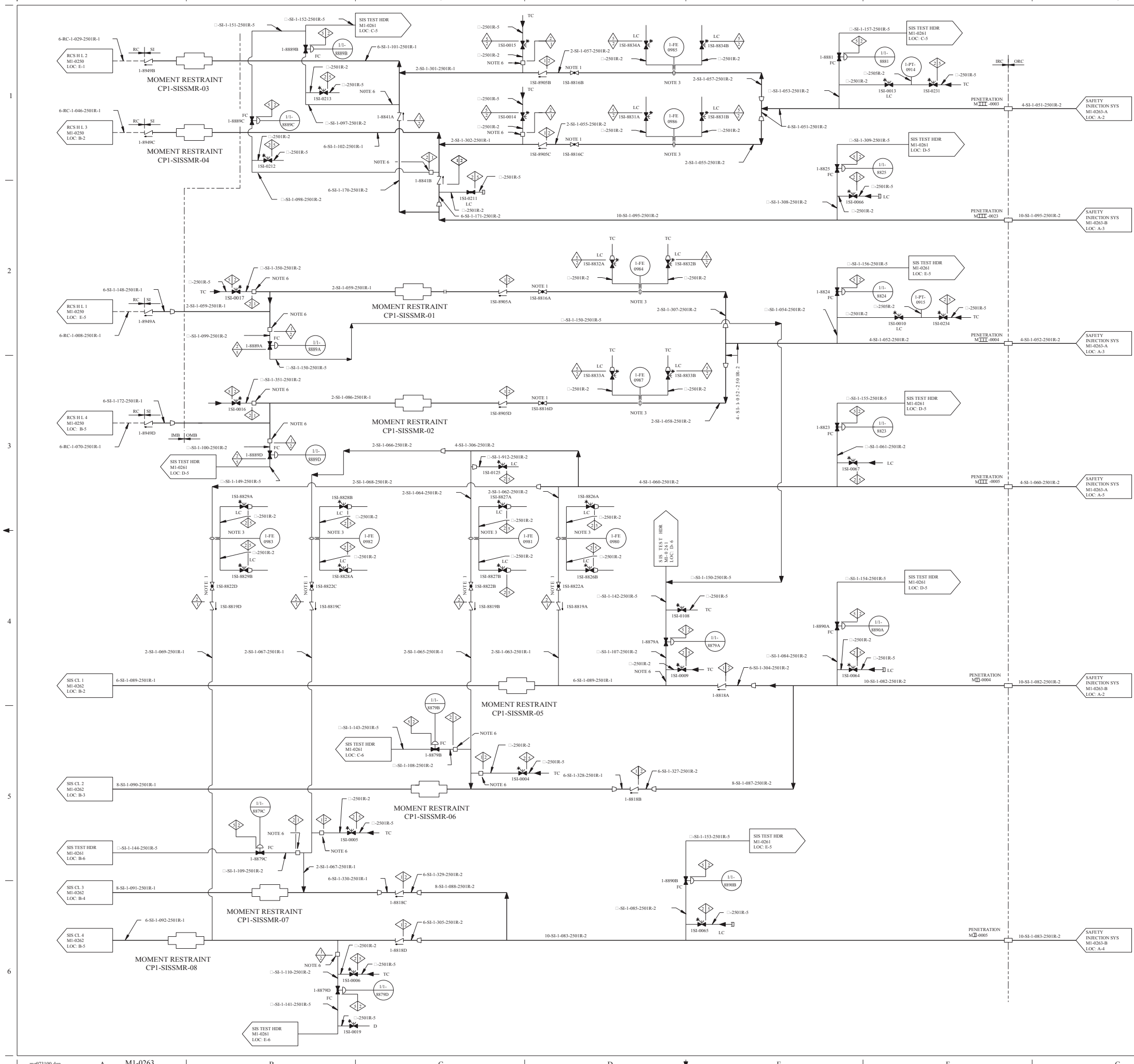
FSAR FIGURE 6.3-1  
THIS DRAWING CREATED ELECTRONICALLY

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

LUMINANT  
 CPNPP  
 GLEN ROSE, TEXAS

FLOW DIAGRAM  
 SAFETY INJECTION SYSTEM  
 SHEET 2 OF 6

DWG. NO. M2-0262	SH. NO. -	REV. CP-22
---------------------	--------------	---------------



REV	DATE	BY	CHKD	APPVD	REMARKS
19-17	10/22/2019				THIS DRAWING REVISED TO INCORPORATE AICR-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 0199B 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				

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

**LUMINANT**  
 CPNPP  
 GLEN ROSE, TEXAS

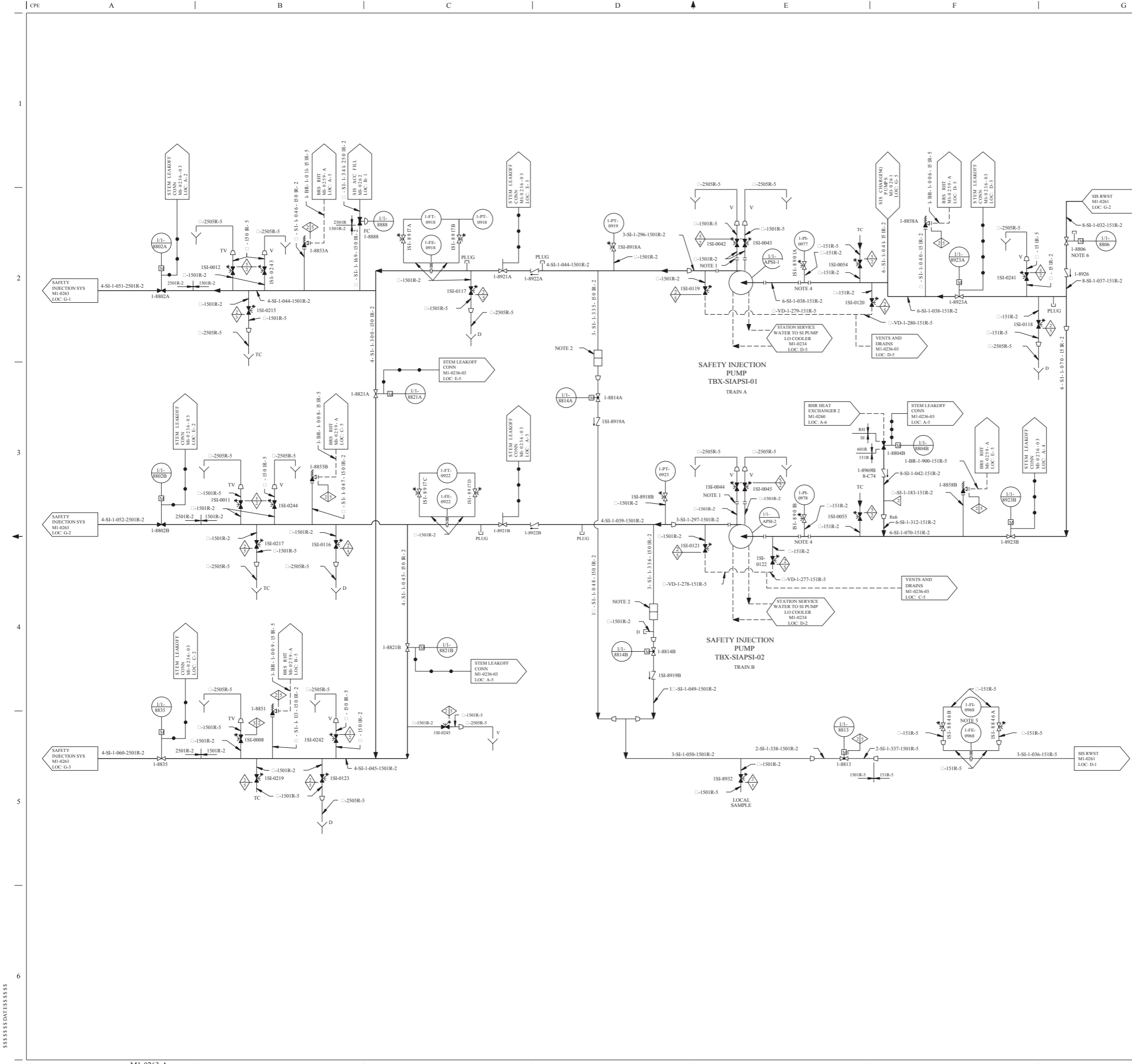
**FLOW DIAGRAM**  
**SAFETY INJECTION SYSTEM**  
 SHEET 3 OF 5

DWG NO.	M1-0263	SH NO.	-	REV.	CP-17
---------	---------	--------	---	------	-------

FSAR FIGURE 6.3-1

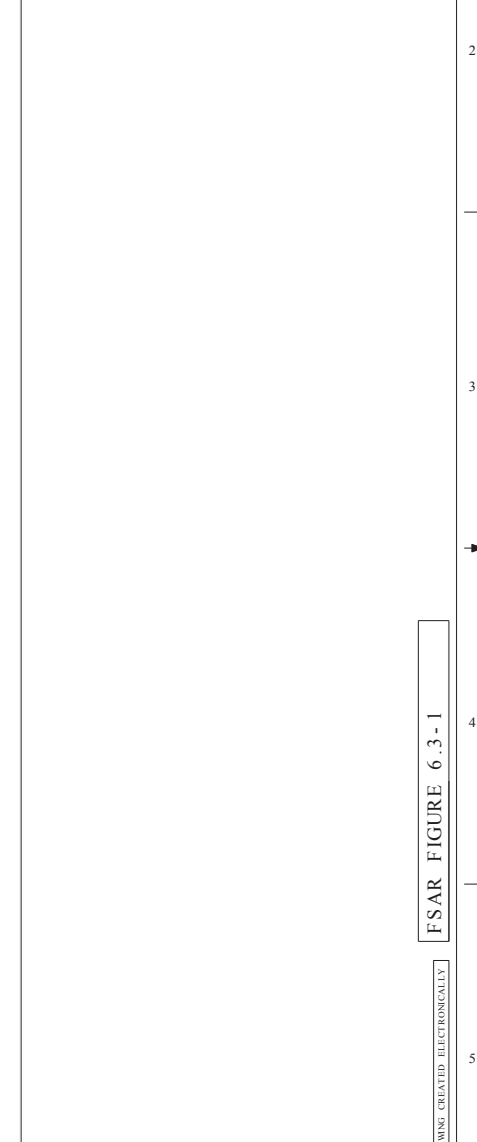
THIS DRAWING CREATED ELECTRONICALLY

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



REV	OWN	CHK	APPV	REMARKS
CP-20	DK	6612	300	THIS DRAWING REVISION TO INCORPORATE AS-CR-2013-000121-1 TO EDITORIALY ADD THE TITLE BLOCK SHEET NUMBER.

- NOTES:
1. SAFETY INJECTION PUMP CASING VENTS DESIGNED □-1501R-2 HAVE 300 LB FLANGES.
  2. REF FDN-142 FOR MINIFLOW ORIFICE, PART OF SAFETY INJECTION PUMP BY W ( ) TBX-SIAPSI-01 AND TBX-SIAPSI-02 )
  3. UNLESS OTHERWISE NOTED DRAINS COLLECTED BY LOCAL DRAIN SYSTEM.
  4. TEMPORARY STRAINERS CPI-SISRTS-01 AND CPI-SISRTS-02 ARE PLACED IN SPOL PIECES DURING INITIAL FLUSHING OPERATIONS. STRAINER 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. VALVE IS LOCKED OPEN WITH POWER REMOVED AND ARE ADMINISTRATIVELY CONTROLLED.
  7. SEE DRAWING M1-0200 FOR MECHANICAL SYMBOLS AND NOTES.



DRAWING	2123-MI-0263	REV	CP-9
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
M1-0263			
M1-0263-A			
M1-0263-B			

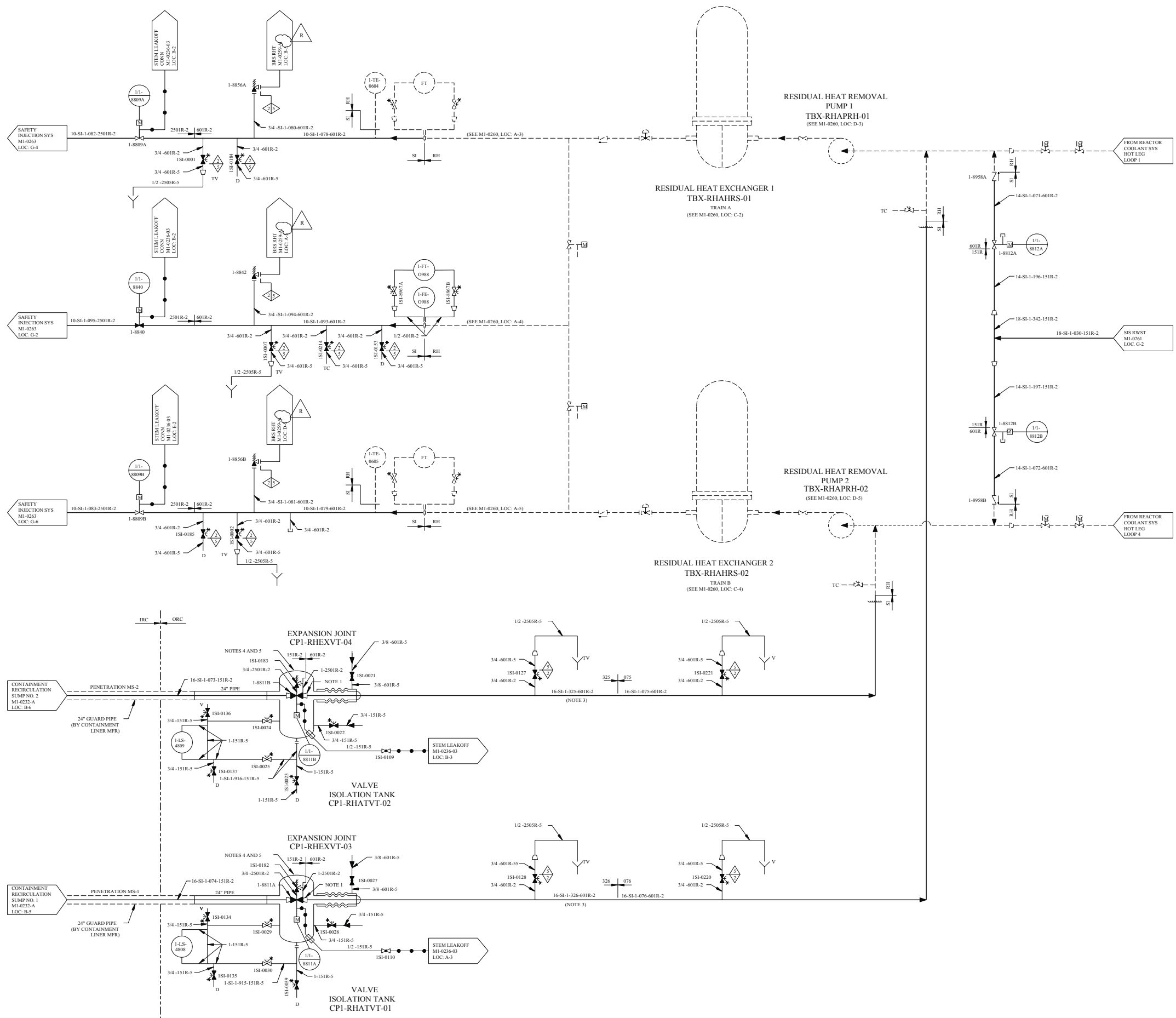
**CLASS I**  
(NUCLEAR SAFETY-RELATED)  
 SAFETY CLASS 1      SERVIC CATEGORY 1  
 SAFETY CLASS 2      CLASS IIF  
 SAFETY CLASS 3      ASSOCIATED CIRCUITS

**LUMINANT**  
 CPNPP  
 GLEN ROSE, TEXAS

FLOW DIAGRAM  
 SAFETY INJECTION SYSTEM  
 SHEET 4 OF 5

DWG. NO.	M1-0263	SH. NO.	A	REV.	CP-20
----------	---------	---------	---	------	-------

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



REV	DWN	CHK	APPV'D	REMARKS
CP-14	10-01	10-01	10-01	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE TDX 2009-025161-00 FOR SR-000-09-025161-00 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 MAINWAYS PROVIDE AN OPEN VENT PATH THRU THE OPEN MAINWAY.
  - 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.

R  
EDITORIAL

FROM REACTOR COOLANT SYS HOT LEG LOOP 1

SIS RWST M1-0261 LOC. G-2

FROM REACTOR COOLANT SYS HOT LEG LOOP 4

EXPANSION JOINT CPI-RHEXVT-04

EXPANSION JOINT CPI-RHEXVT-03

VALVE ISOLATION TANK CPI-RHATVT-02

VALVE ISOLATION TANK CPI-RHATVT-01

CONTAINMENT RECIRCULATION SUMP NO. 2 M1-0232-A LOC. B-6

CONTAINMENT RECIRCULATION SUMP NO. 1 M1-0232-A LOC. B-5

RESIDUAL HEAT EXCHANGER 1 TBX-RHAHRS-01 TRAIN A (SEE M1-0260, LOC. C-2)

RESIDUAL HEAT EXCHANGER 2 TBX-RHAHRS-02 TRAIN B (SEE M1-0260, LOC. C-4)

RESIDUAL HEAT REMOVAL PUMP 1 TBX-RHAPRH-01 (SEE M1-0260, LOC. D-3)

RESIDUAL HEAT REMOVAL PUMP 2 TBX-RHAPRH-02 (SEE M1-0260, LOC. D-5)

SAFETY INJECTION SYS M1-0263 LOC. G-4

SAFETY INJECTION SYS M1-0263 LOC. G-2

SAFETY INJECTION SYS M1-0263 LOC. G-6

SAFETY INJECTION SYS M1-0263 LOC. G-4

SAFETY INJECTION SYS M1-0263 LOC. G-2

SAFETY INJECTION SYS M1-0263 LOC. G-6

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

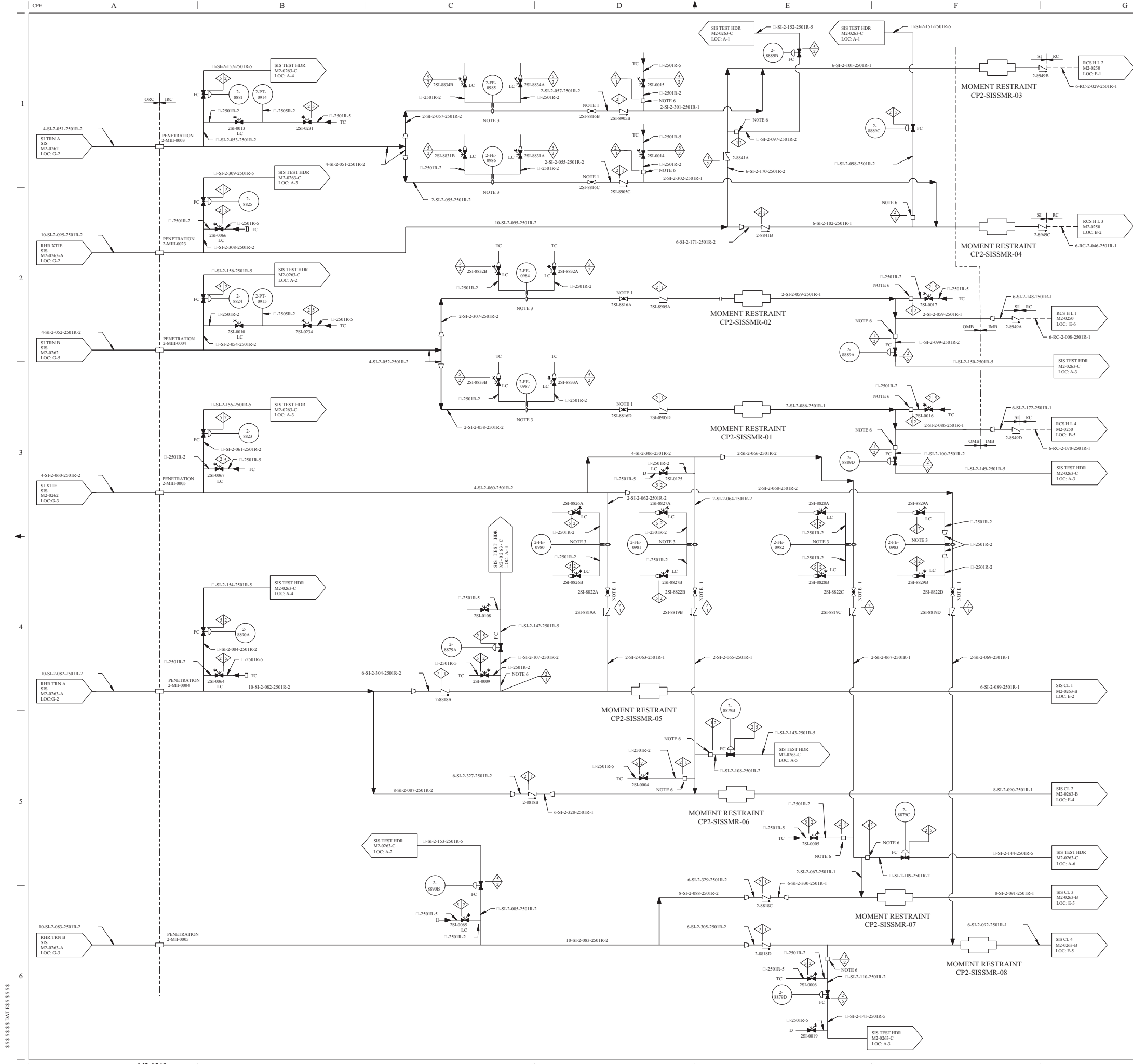
LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

FLOW DIAGRAM  
SAFETY INJECTION SYSTEM  
SHEET 5 OF 5

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

FSAR FIGURE 6.3-1

THIS DRAWING CREATED ELECTRONICALLY



REV	OWN	CHKD	APPV	REMARKS
CP-17	DLK	DLK	DLK	THIS DRAWING REVISED TO INCORPORATE ALCR 2015-00021-1 TO EDITORIALY ADD THE TITLE BLOCK SHEET NUMBER.

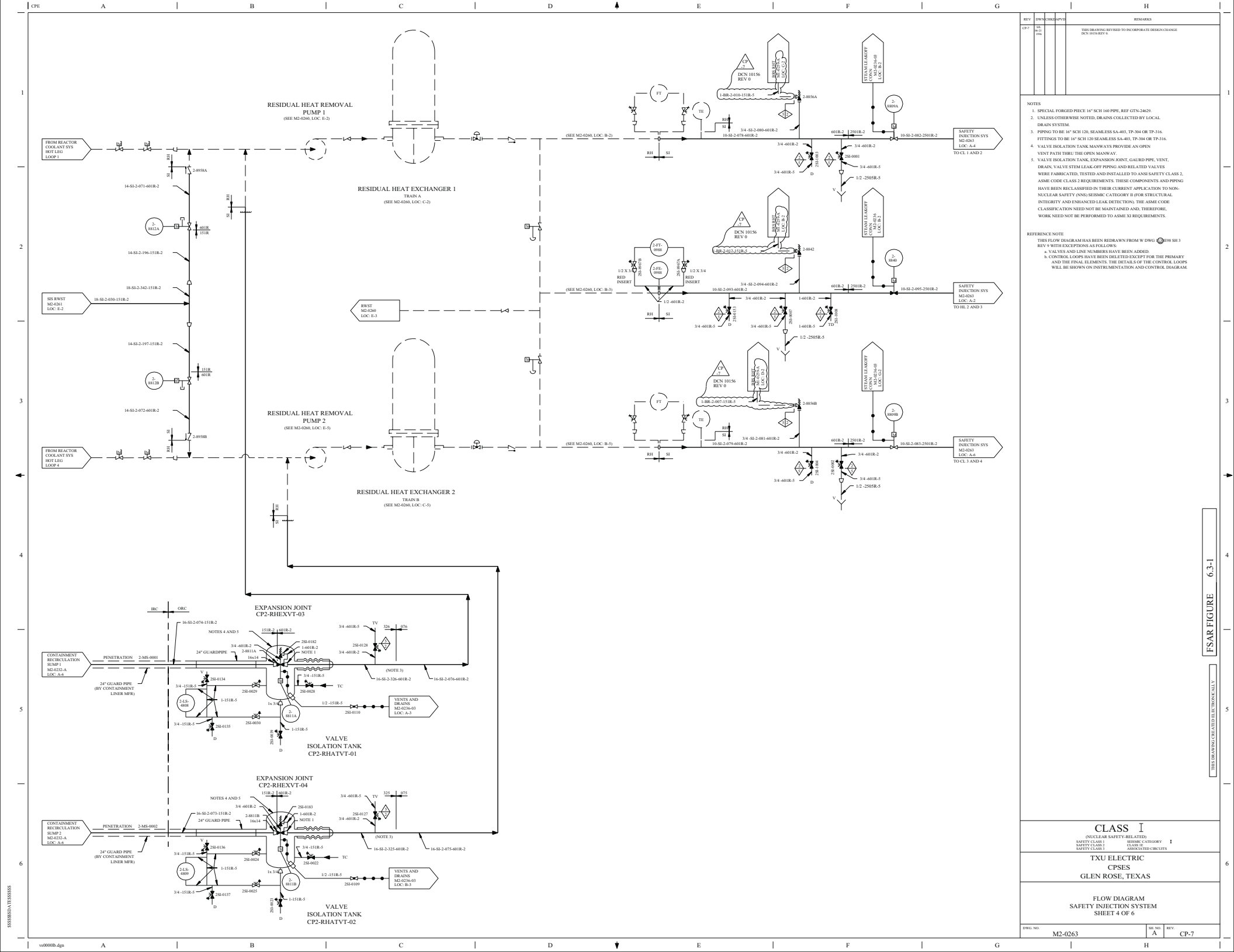
- NOTES:
1. VALVES PROVIDED WITH POSITION LOCKING DEVICE ADJUST AND LOCK VALVES TO LIMIT PUMP RUNOUT.
  2. DELETED
  3. FLOW METERING ORIFICE TO VERIFY FLOW DURING PREOPERATIONAL TESTING.
  4. DELETED
  5. DELETED
  6. IN SAFETY CLASS 1 PIPING A FLOW RESTRICTION IS REQUIRED IN " PIPING TO ALLOW TRANSITION 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 DWG 098 SII 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 LOGS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAM.

FSAR FIGURE 6.3-1

THIS DRAWING CREATED ELECTRONICALLY

<b>CLASS I</b> (NUCLEAR SAFETY-RELATED) SAFETY CLASS I SEISMIC CATEGORY SAFETY CLASS 2 CLASS 1E SAFETY CLASS 3 ASSOCIATED CIRCUITS		I
<b>LUMINANT</b> CPNPP GLEN ROSE, TEXAS		
<b>FLOW DIAGRAM</b> <b>SAFETY INJECTION SYSTEM</b> SHEET 3 OF 6		
DWG. NO. M2-0263	SH. NO. -	REV. CP-17



REV	DATE	BY	CHKD	APPV	REMARKS

- NOTES
- SPECIAL FORGED PIECE 10" SCH 160 PIPE, REF GTN-34269.
  - UNLESS OTHERWISE NOTED, DRAINS COLLECTED BY LOCAL DRAIN SYSTEM.
  - 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.
  - VALVE ISOLATION TANK MANWAYS PROVIDE AN OPEN VENT PATH THRU THE OPEN MANWAY.
  - VALVE ISOLATION TANK, EXPANSION JOINT, GAUGE 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 (NON-REACTIVE CATEGORY II) FOR STRUCTURAL INTEGRITY AND ENHANCED LEAK DETECTIONS. 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 038 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.

<b>CLASS I</b> (NUCLEAR SAFETY-RELATED)	
SAFETY CLASS 1	REACTIVE CATEGORY I
SAFETY CLASS 2	NON-REACTIVE CATEGORY II
SAFETY CLASS 3	NON-REACTIVE CATEGORY III
TXU ELECTRIC CPSES GLEN ROSE, TEXAS	

FLOW DIAGRAM  
SAFETY INJECTION SYSTEM  
SHEET 4 OF 6

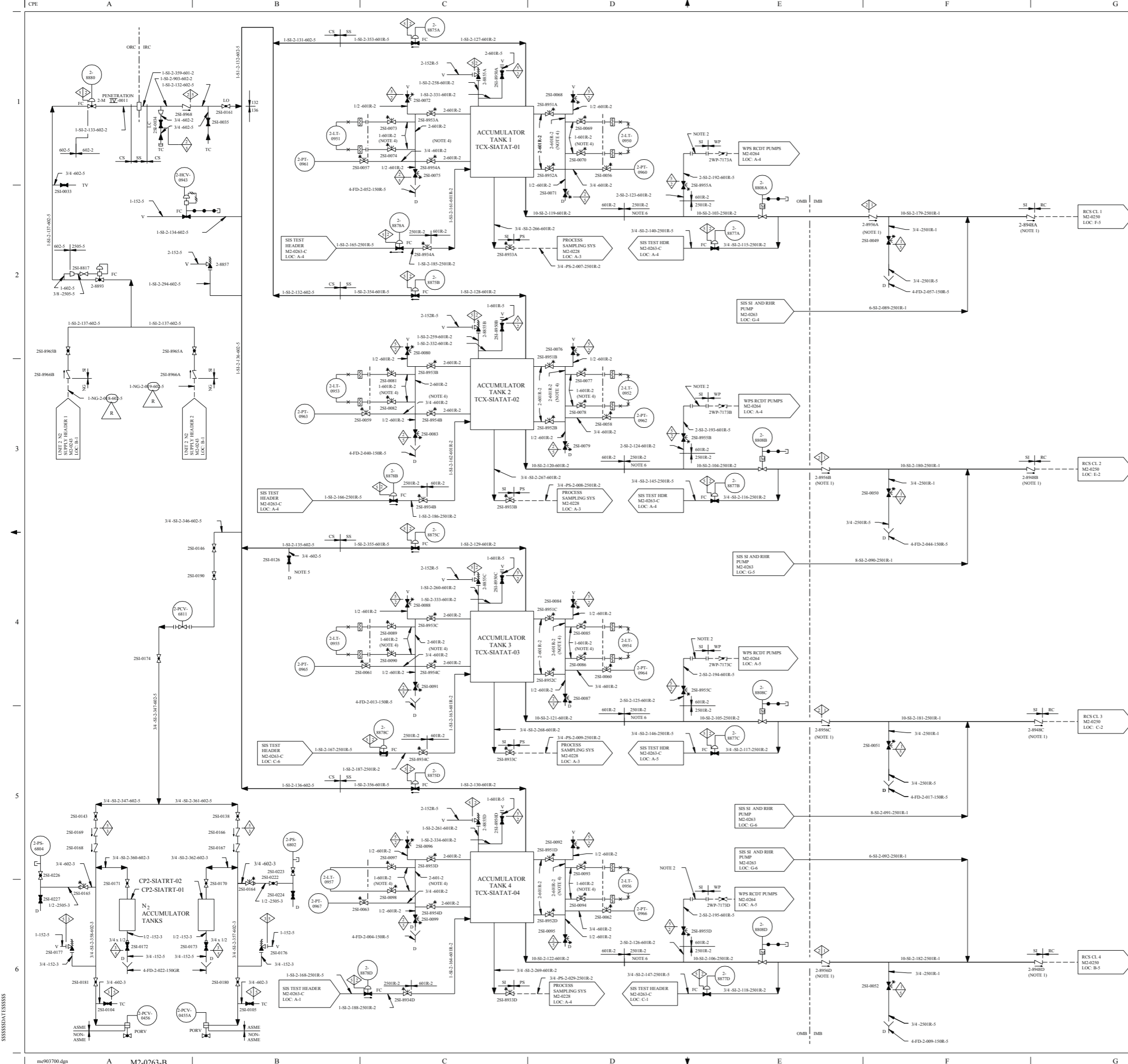
DWG. NO.	M2-0263	SH. NO.	A	REV.	CP-7
----------	---------	---------	---	------	------

FSAR FIGURE 6.3-1

THIS DRAWING IS UNCONTROLLED

SESSION:TEXSSSS





REV	DATE	BY	CHKD	APPD	REMARKS
CP-13	08/27/2008	08/27/2008			THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA 2008-062277-01-00 PER SR-0001-08-062277-01-00

- 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.

REFERENCE NOTE:  
 THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM DWG M2-0263-01-00 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

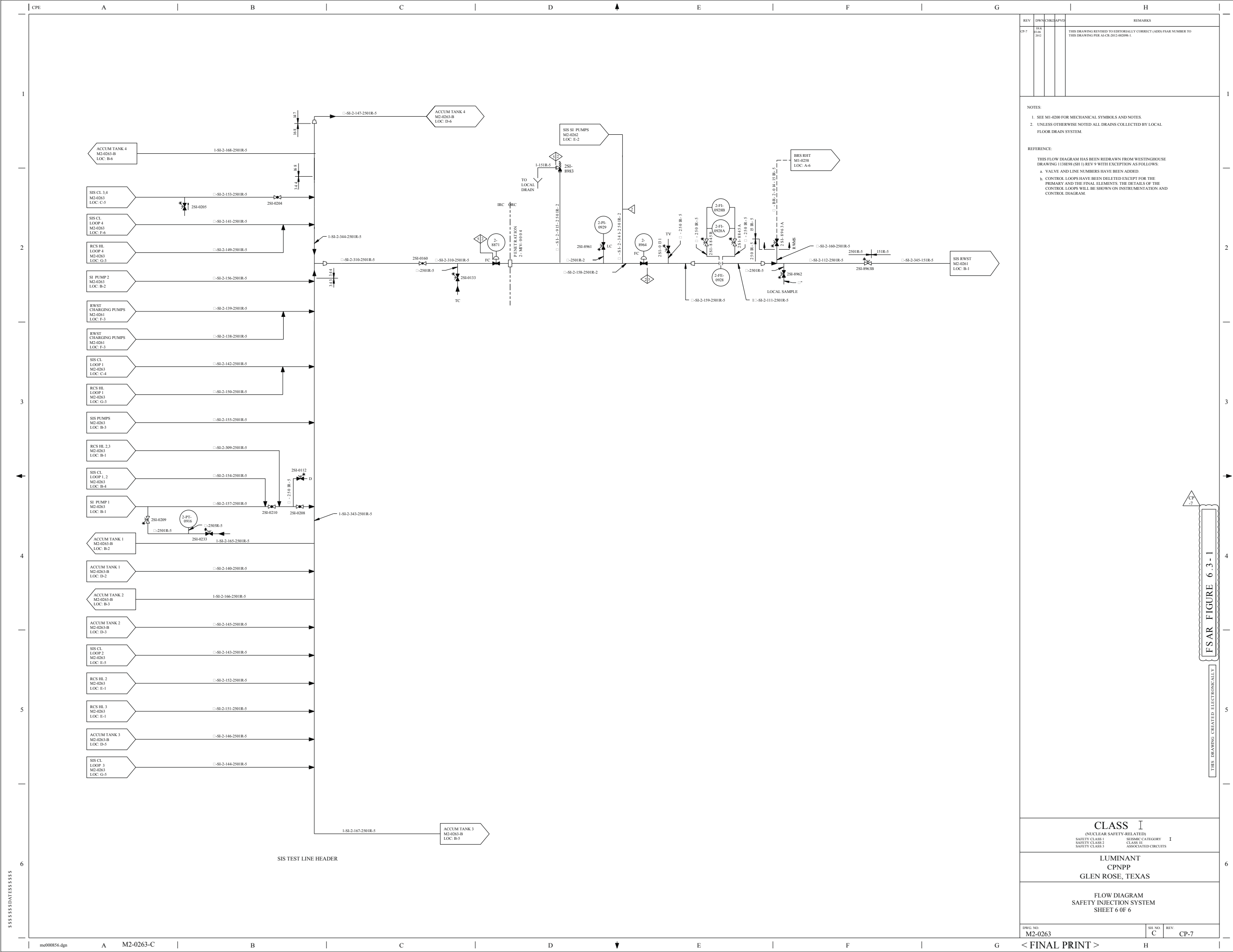
**LUMINANT  
 CPNPP  
 GLEN ROSE, TEXAS**

**FLOW DIAGRAM  
 SAFETY INJECTION SYSTEM  
 SHEET 5 OF 6**

DRW NO. M2-0263	SI NO. B	REV. CP-13
--------------------	-------------	---------------

FSAR FIGURE 6.3-1

THIS DRAWING CREATED ELECTRONICALLY



REV	DWN	CHKD	APPD	REMARKS
CP-7				THIS DRAWING REVISED TO EDITORIALY CORRECT (ADD) FSAR NUMBER TO THIS DRAWING PER AICR-SIC-00296-1.

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

REFERENCE:  
 THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM WESTINGHOUSE DRAWING 113E98(SH) 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.

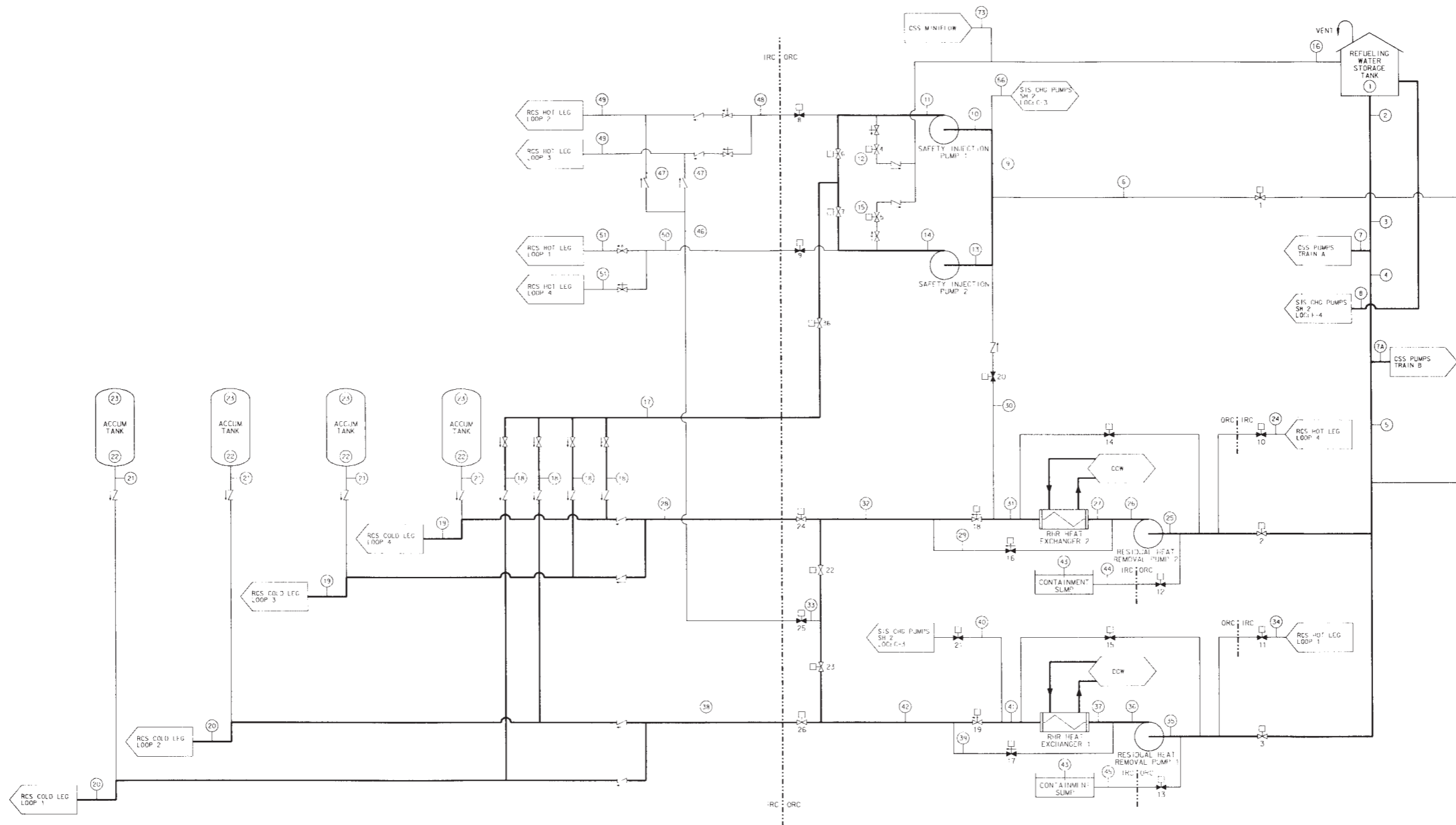
**CLASS I**  
 (NUCLEAR SAFETY-RELATED)  
 SAFETY CLASS 1 SEISMIC CATEGORY I  
 SAFETY CLASS 2 CLASS II  
 SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT  
 CPNPP  
 GLEN ROSE, TEXAS

FLOW DIAGRAM  
 SAFETY INJECTION SYSTEM  
 SHEET 6 OF 6

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

FSAR FIGURE 6.3-1  
 THIS DRAWING CREATED ELECTRONICALLY



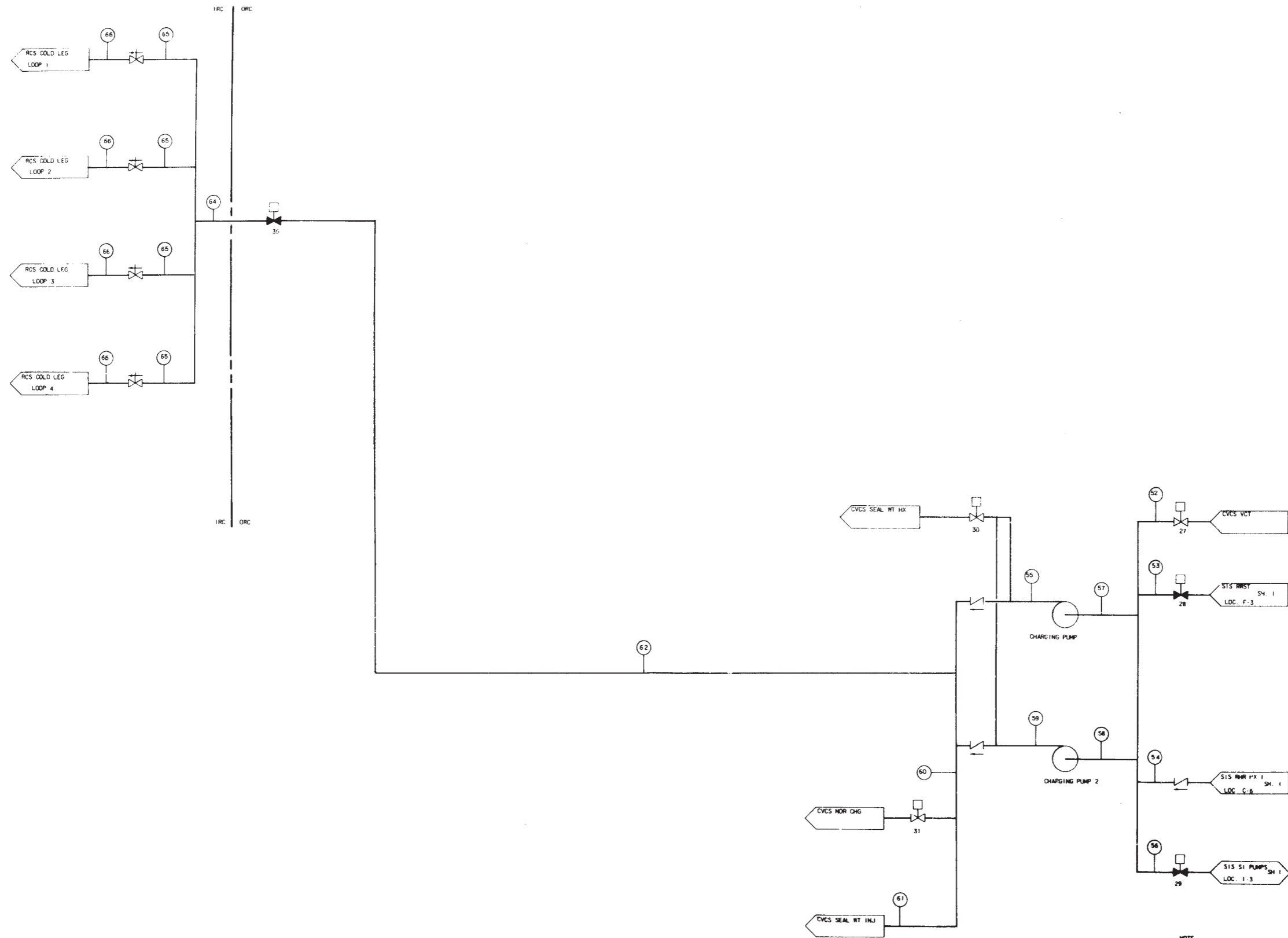
FOR CORRELATION BETWEEN FLOW DIAGRAM  
NUMBERS AND FSAR FIGURE NUMBERS,  
REFER TO TABLE 3.2-3.

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

SAFETY INJECTION/RESIDUAL  
HEAT REMOVAL SYSTEM  
PROCESS FLOW DIAGRAM

AMENDMENT 78  
JANUARY 15, 1980

6.3-2, SH 1



NOTE  
 1. THIS DIAGRAM IS A SIMPLIFICATION OF THE SYSTEM INTENDED TO FACILITATE THE UNDERSTANDING OF THE PROCESS. FOR DETAILS OF THE PIPING, VALVES, INSTRUMENTATION, ETC. REFER TO THE ENGINEERING FLOOR DIAGRAM. REFER TO PROCESS FLOW DIAGRAM TABLES FOR THE CONDITIONS AT EACH NUMBERED POINT.

AMENDMENT 16  
 MARCH 31, 1981

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

## 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 CHART

Operational 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 (psig)***</u>	<u>Temperature (°F)</u>	<u>Flow</u>		<u>Volume (gal)</u>
				<u>(gpm)**</u>	<u>(lb/sec)</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 (psig)***</u>	<u>Temperature (°F)</u>	<u>Flow#</u>		<u>Volume (gal)</u>
				<u>(gpm)</u>	<u>(lb/sec)</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 (psig)***</u>	<u>Temperature (°F)</u>	<u>Flow#</u>		<u>Volume (gal)</u>
				<u>(gpm)</u>	<u>(lb/sec)</u>	
22	Nitrogen	0	Ambient	0	0	850 <sup>b</sup>
23	“	0	“	0	0	500
24	Recirc. coolant	-	243	0	0	-
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 water	-	100	0	0	-
36	“	-	100	0	0	-
37	“	-	100	0	0	-
38	“	-	100	0	0	-
39	“	-	100	0	0	-
40	“	-	100	0	0	-
41	“	-	100	0	0	-
42	“	-	100	0	0	-

NOTES TO FIGURE 6.3-2

(Sheet 11 of 16)

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



NOTES TO FIGURE 6.3-2

(Sheet 13 of 16)

<u>Location</u>	<u>Fluid</u>	<u>Pressure</u>	<u>Temperature</u>	<u>Flow#</u>		<u>Volume</u>
		<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 <sup>b</sup>
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 (psig)***</u>	<u>Temperature (°F)</u>	<u>Flow# (gpm)</u>	<u>(lb/sec)</u>	<u>Volume (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 (psig)***</u>	<u>Temperature (°F)</u>	<u>Flow#</u>		<u>Volume (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	-

---

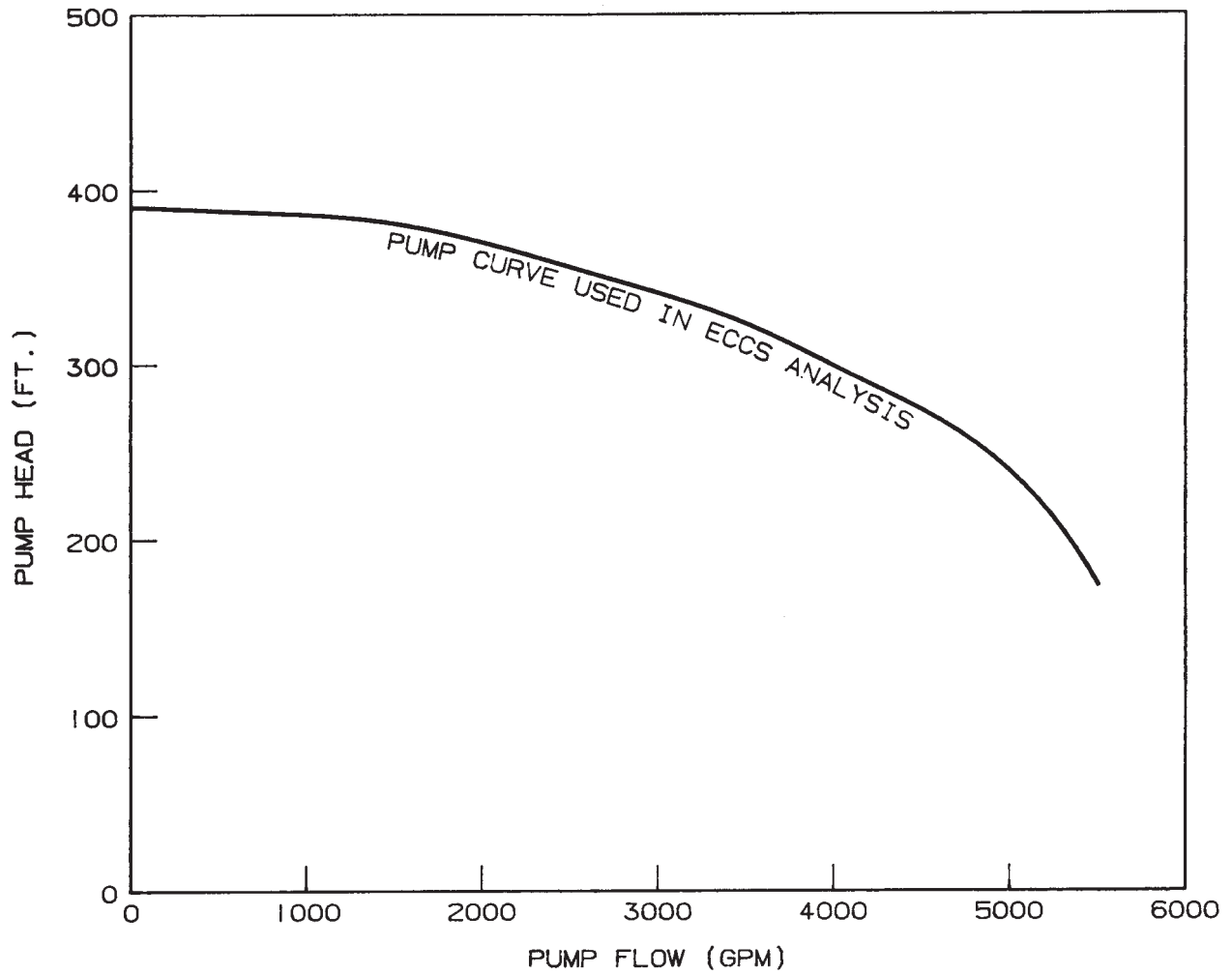
Footnotes

\*\* 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.

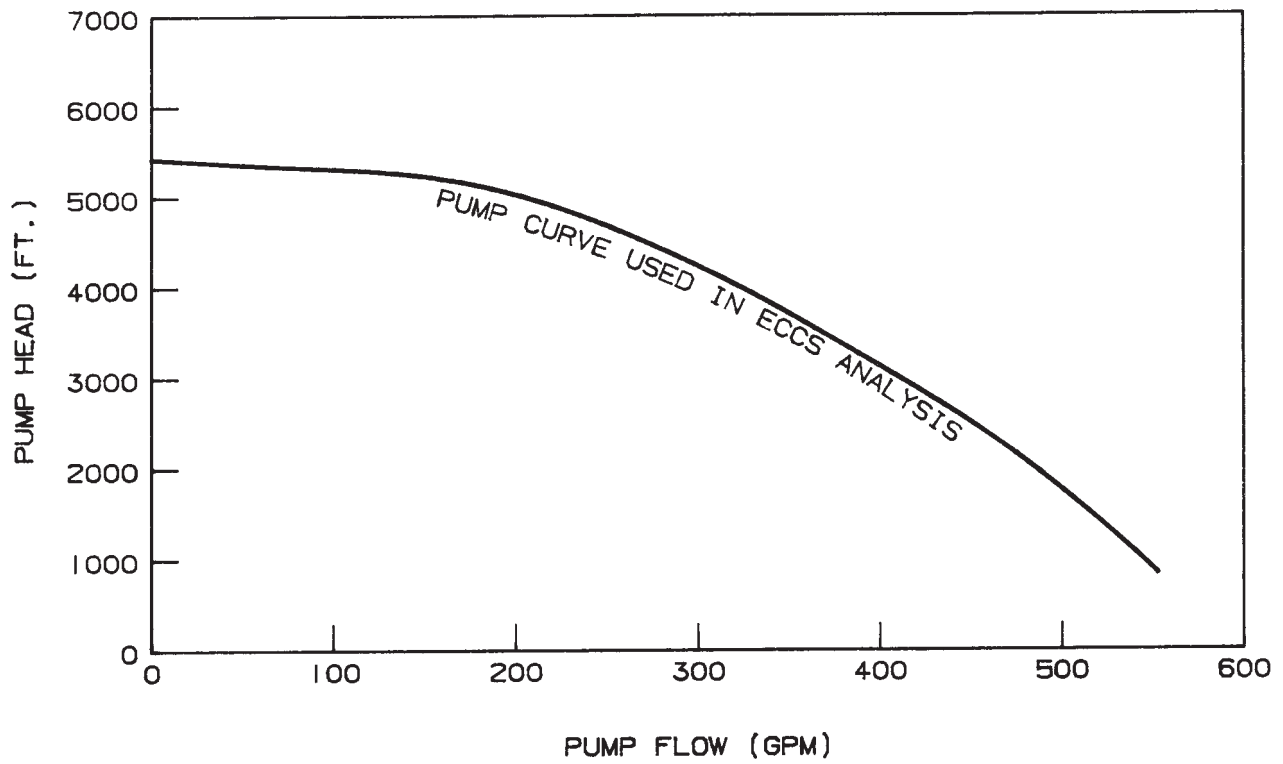


AMENDMENT 53  
NOVEMBER 5, 1984

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

Residual Heat Removal  
Pump Performance Curve

FIGURE 6.3-3.

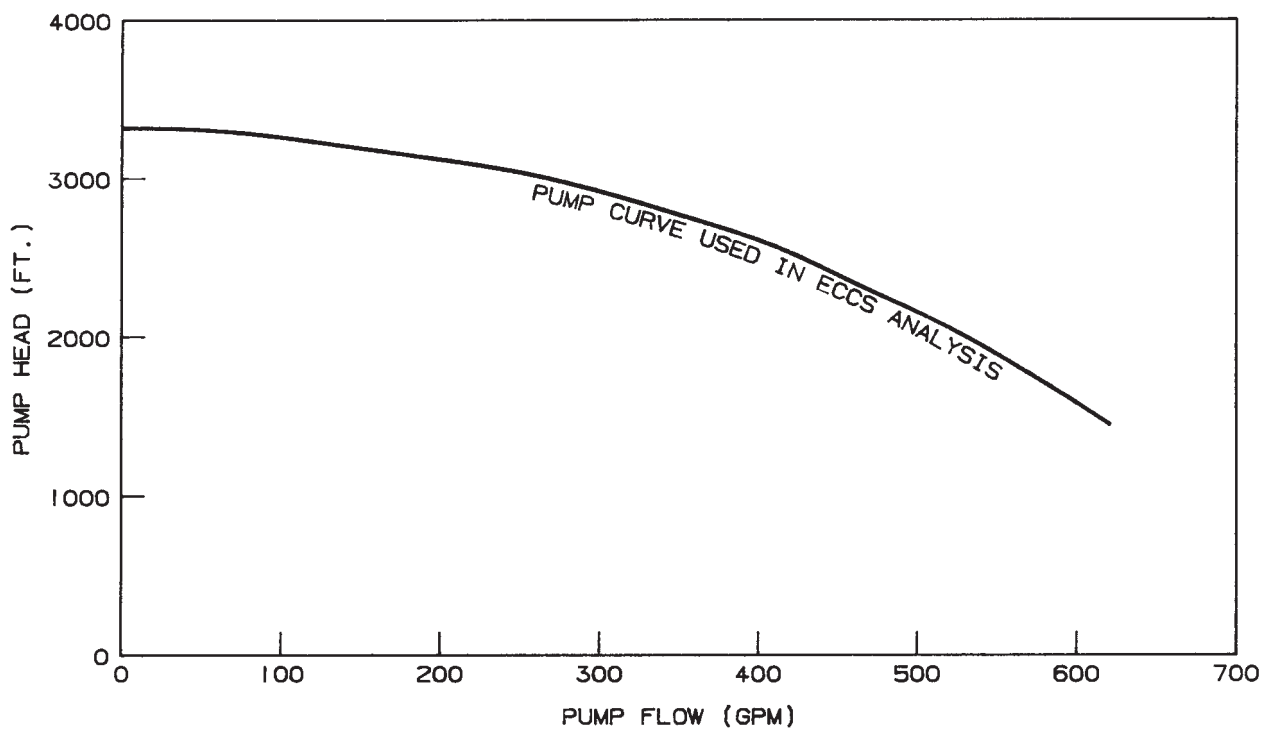


AMENDMENT 53  
NOVEMBER 5, 1984

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

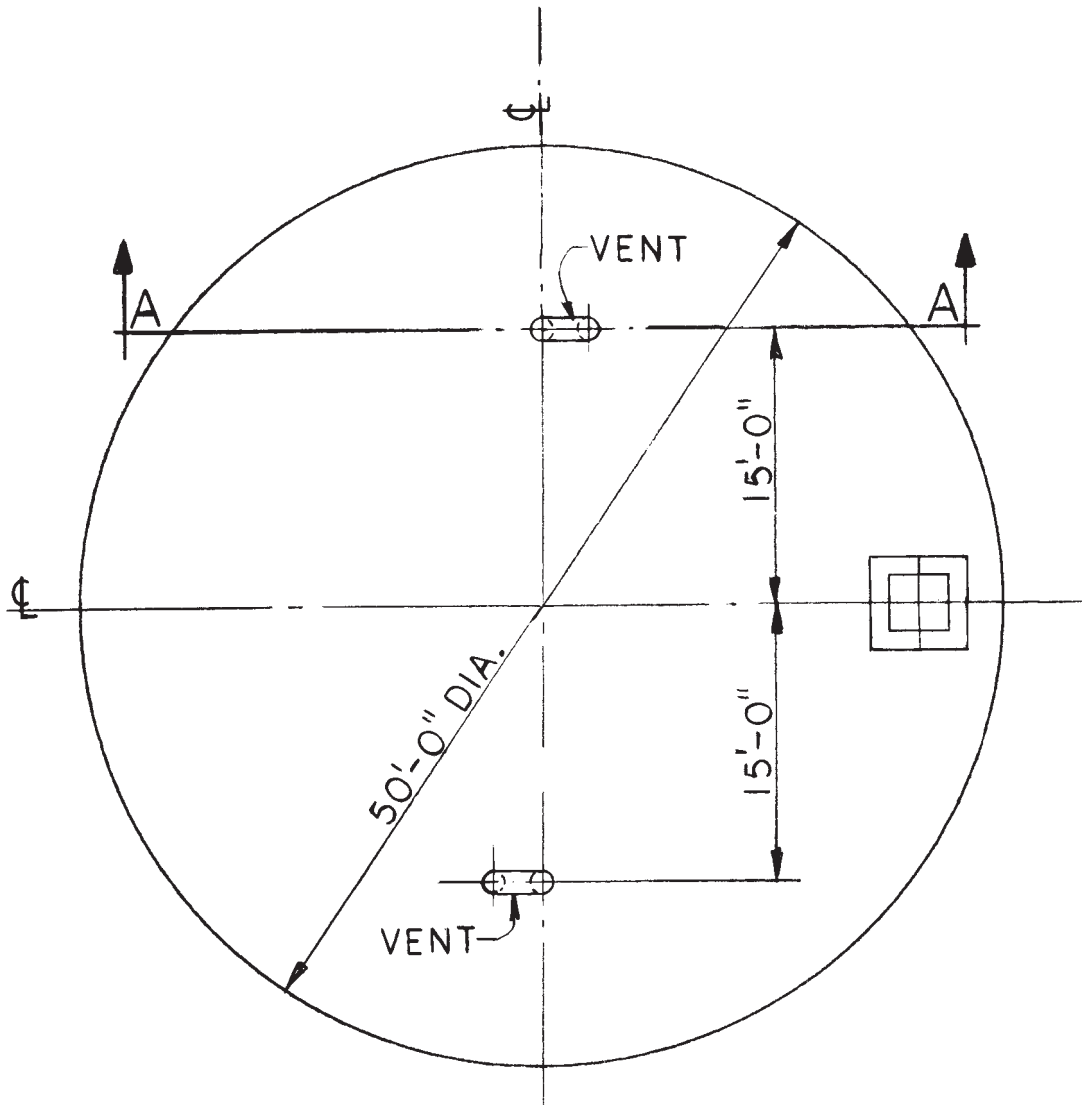
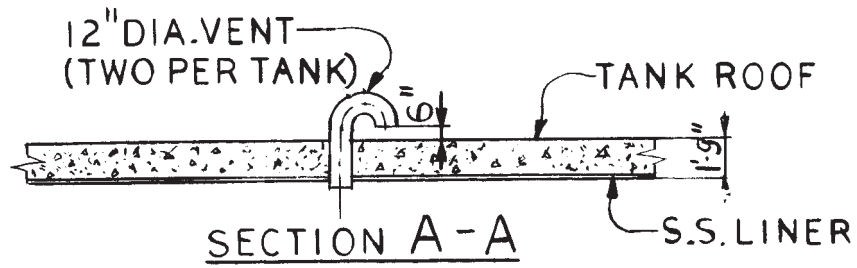
AMENDMENT 52  
AUGUST 27, 1984

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

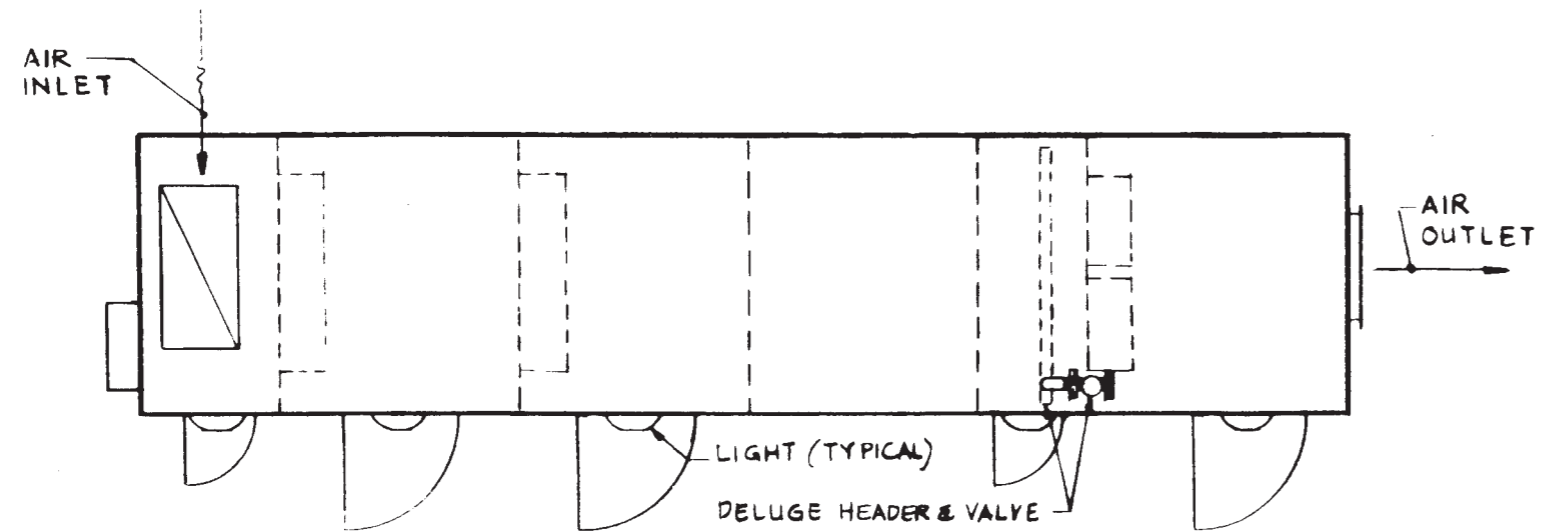
COMANCHE PEAK S.E.S.  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 and 2

REFUELING WATER STORAGE  
TANK VENT

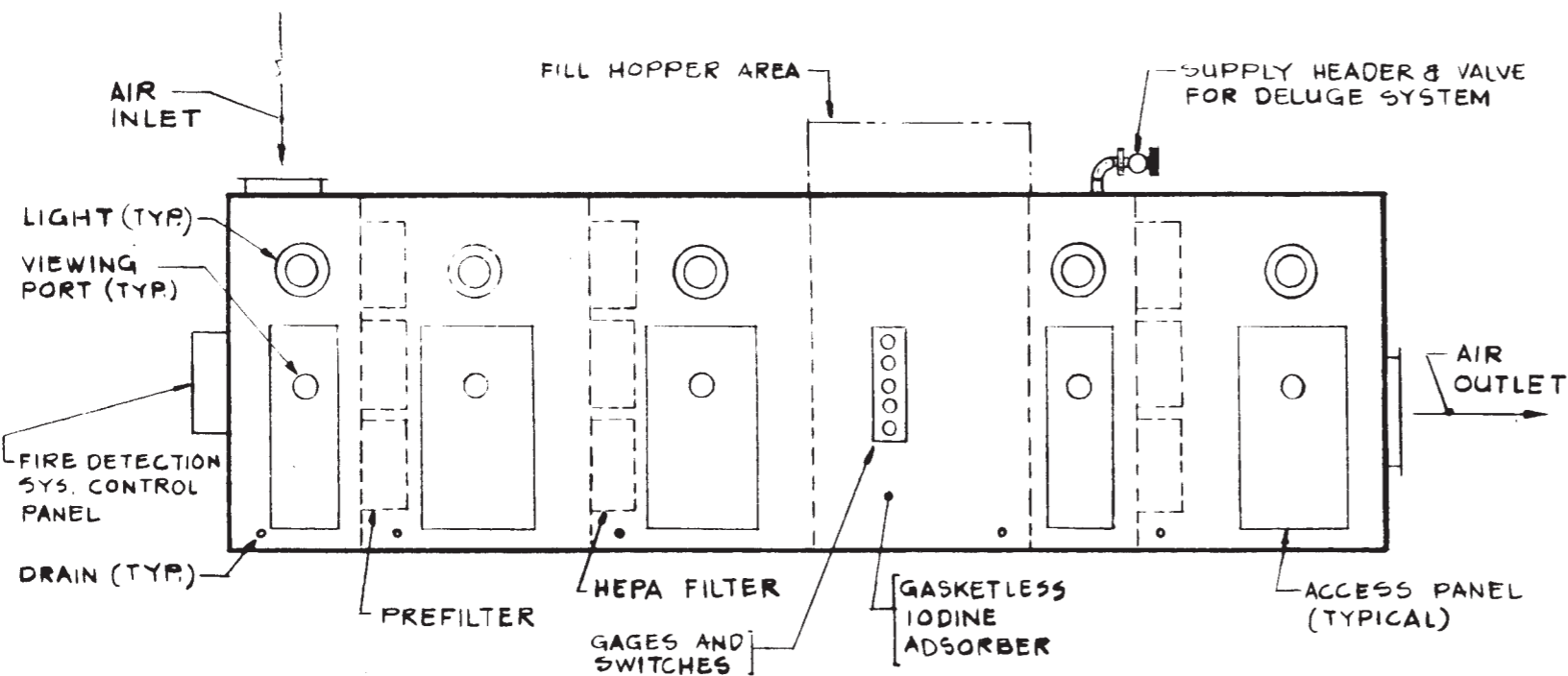
FIGURE 6.3-7

This Figure has been deleted

This Figure has been deleted

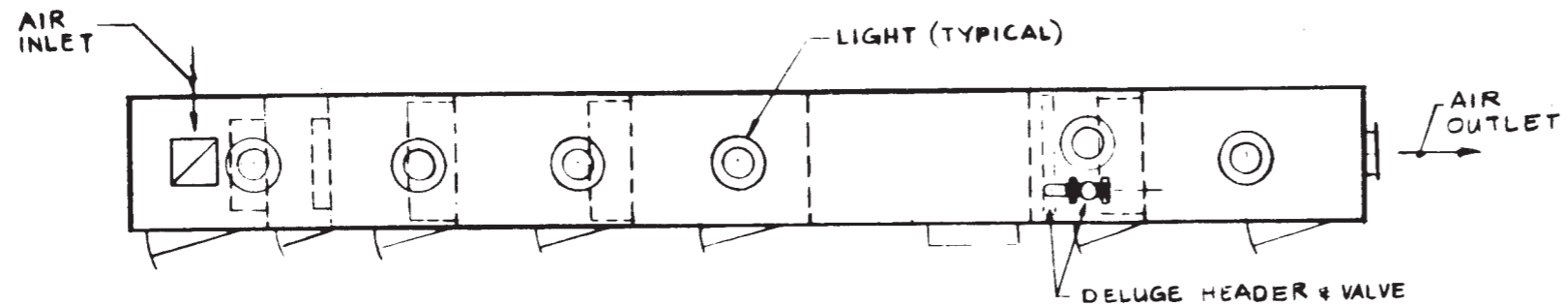


PLAN

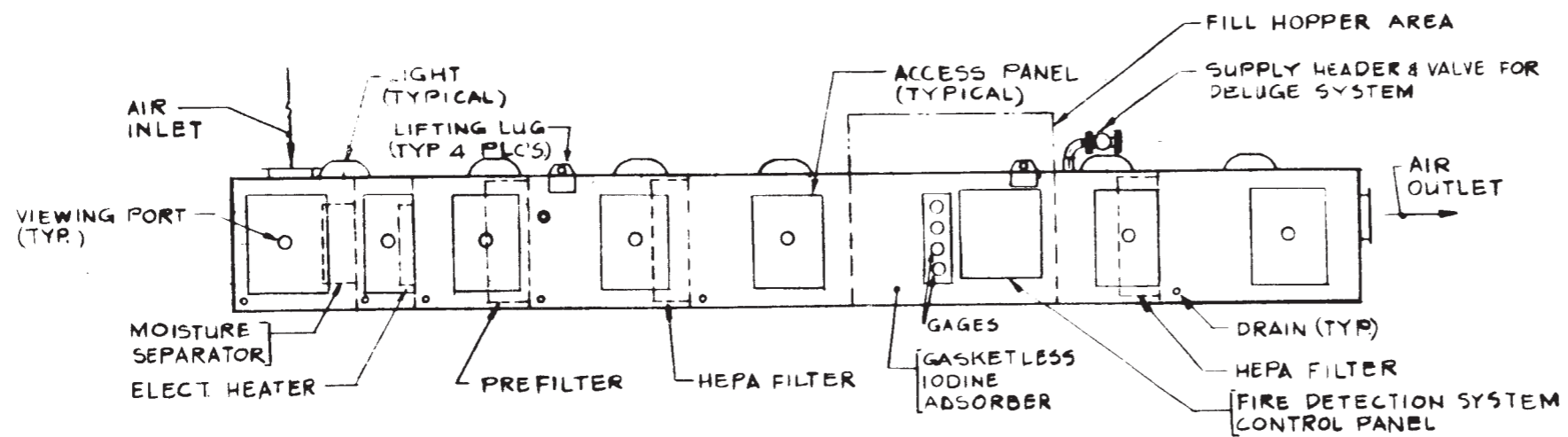


ELEVATION

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

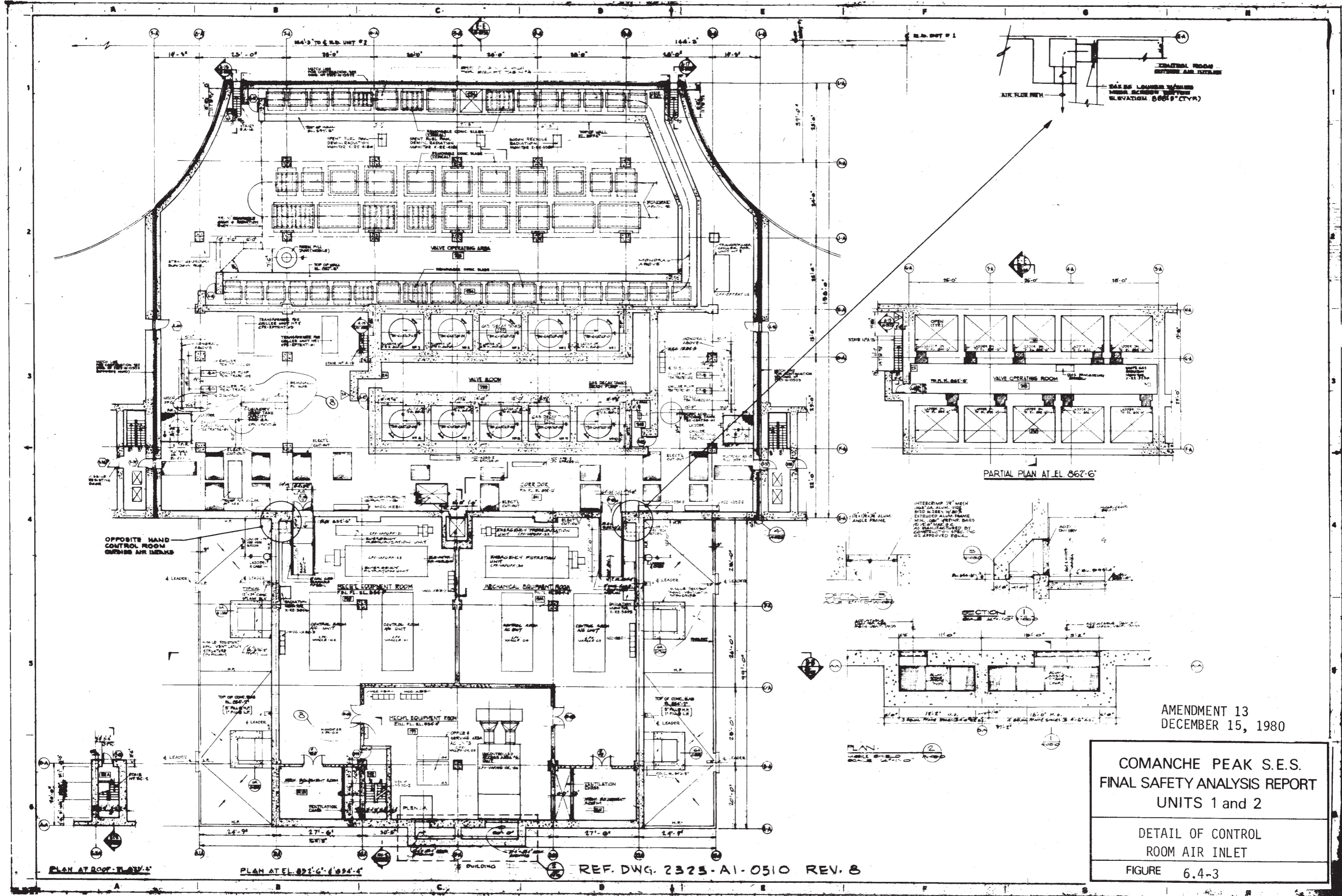


PLAN



ELEVATION

COMANCHE PEAK S.E.S.  
 FINAL SAFETY ANALYSIS REPORT  
 UNITS 1 and 2  
 -----  
 DETAIL OF FILTER TRAIN  
 CONTROL ROOM EMERGENCY  
 PRESSURIZATION UNIT  
 -----  
 FIGURE 6.4-2



AMENDMENT 13  
DECEMBER 15, 1980

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

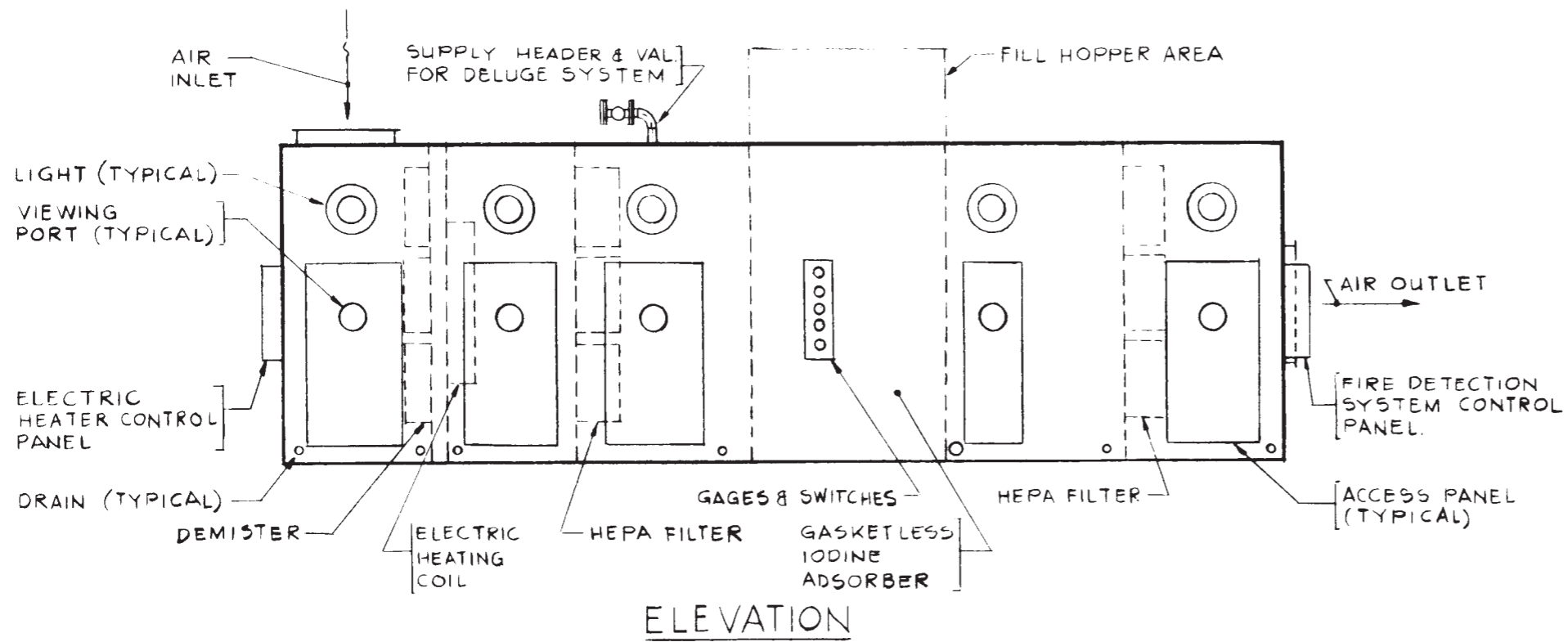
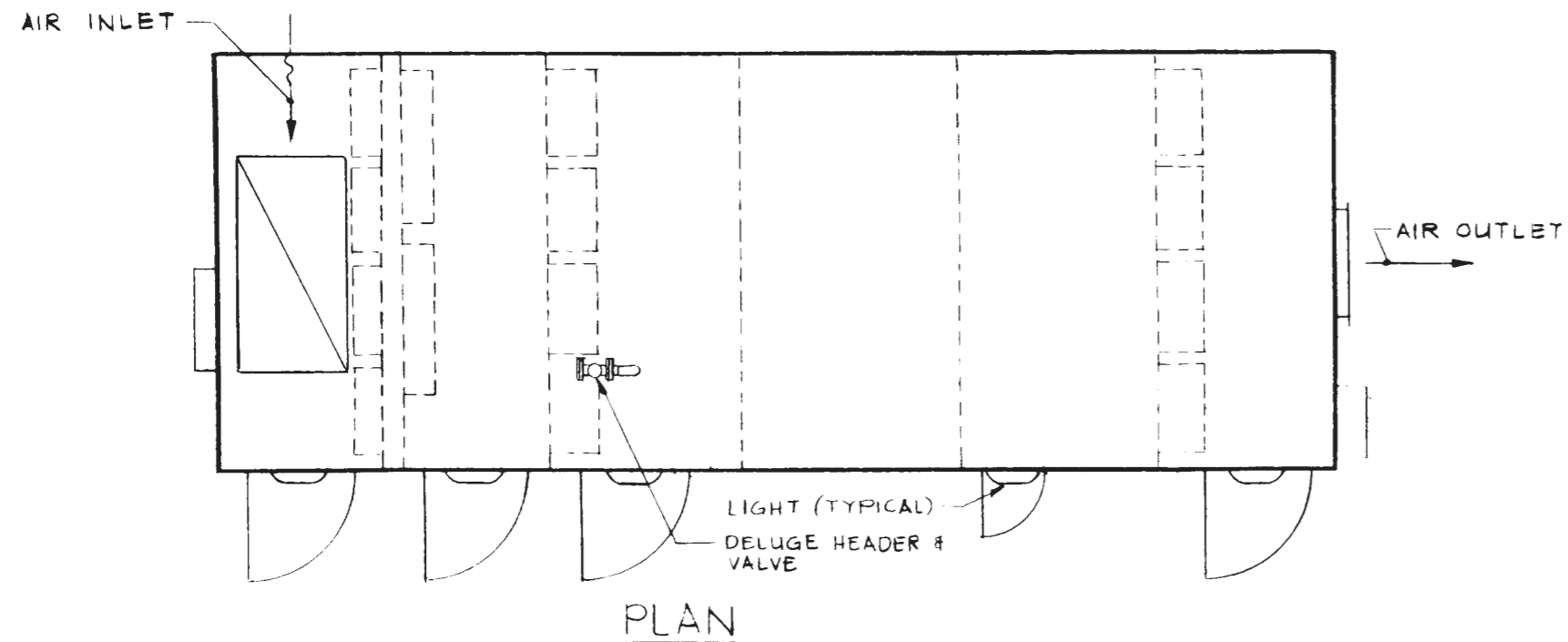
DETAIL OF CONTROL  
ROOM AIR INLET

FIGURE 6.4-3

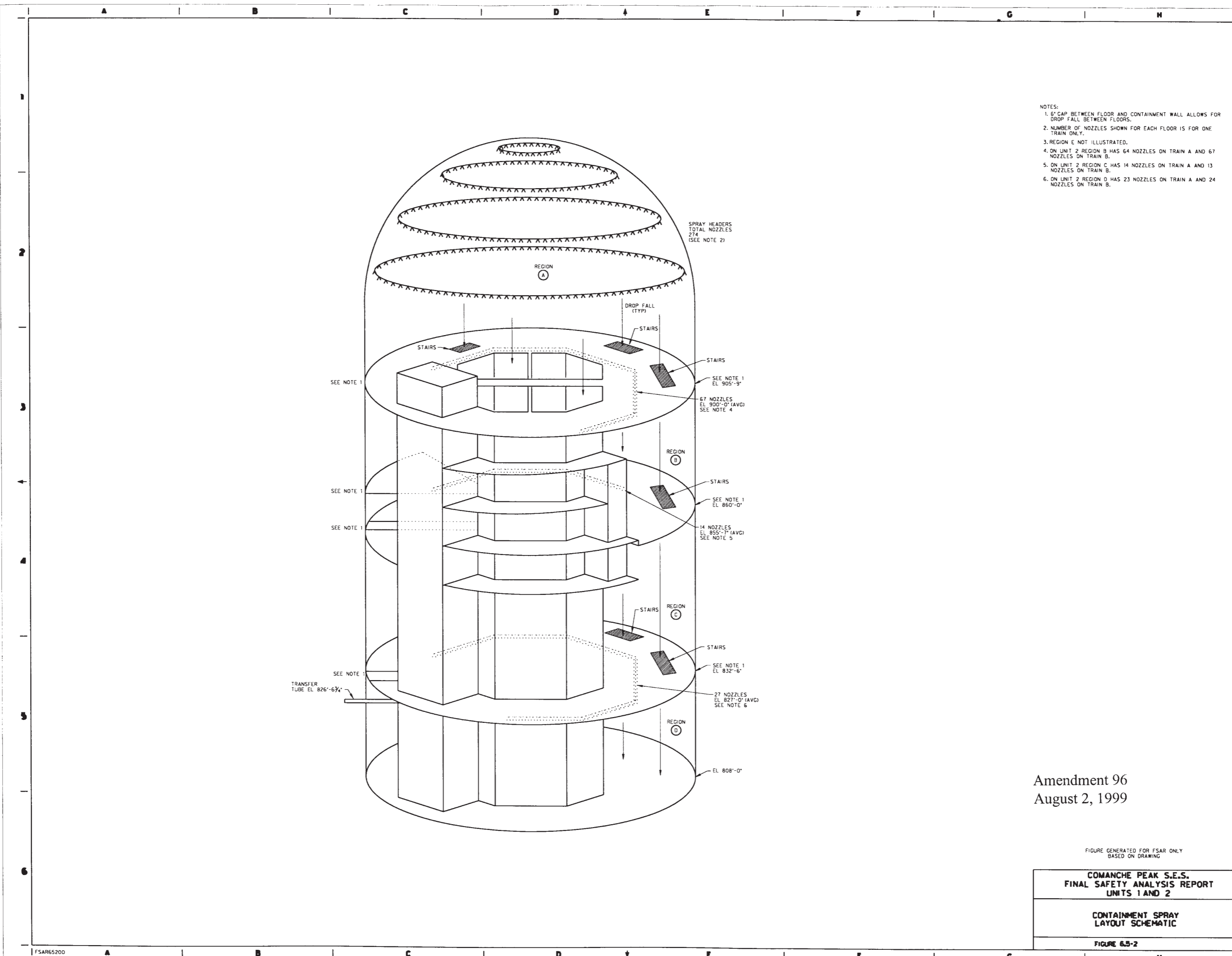
PLAN AT ROOF TYPICAL

PLAN AT EL. 867'-6" 867'-6"

REF. DWG. 2325-A1-0510 REV. 8



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



- NOTES:
1. 6" GAP BETWEEN FLOOR AND CONTAINMENT WALL ALLOWS FOR DROP FALL BETWEEN FLOORS.
  2. NUMBER OF NOZZLES SHOWN FOR EACH FLOOR IS FOR ONE TRAIN ONLY.
  3. REGION E NOT ILLUSTRATED.
  4. ON UNIT 2 REGION B HAS 64 NOZZLES ON TRAIN A AND 67 NOZZLES ON TRAIN B.
  5. ON UNIT 2 REGION C HAS 14 NOZZLES ON TRAIN A AND 13 NOZZLES ON TRAIN B.
  6. ON UNIT 2 REGION D HAS 23 NOZZLES ON TRAIN A AND 24 NOZZLES ON TRAIN B.

SPRAY HEADERS  
TOTAL NOZZLES  
274  
(SEE NOTE 2)

REGION  
A

DROP FALL  
(TYP)

STAIRS

STAIRS

STAIRS

SEE NOTE 1

SEE NOTE 1  
EL 905'-9"

67 NOZZLES  
EL 900'-0" (AVG)  
SEE NOTE 4

REGION  
B

STAIRS

SEE NOTE 1

SEE NOTE 1  
EL 860'-0"

14 NOZZLES  
EL 855'-7" (AVG)  
SEE NOTE 5

SEE NOTE 1

REGION  
C

STAIRS

SEE NOTE 1

SEE NOTE 1  
EL 832'-6"

27 NOZZLES  
EL 827'-0" (AVG)  
SEE NOTE 6

TRANSFER  
TUBE EL 826'-6 3/4"

REGION  
D

EL 808'-0"

Amendment 96  
August 2, 1999

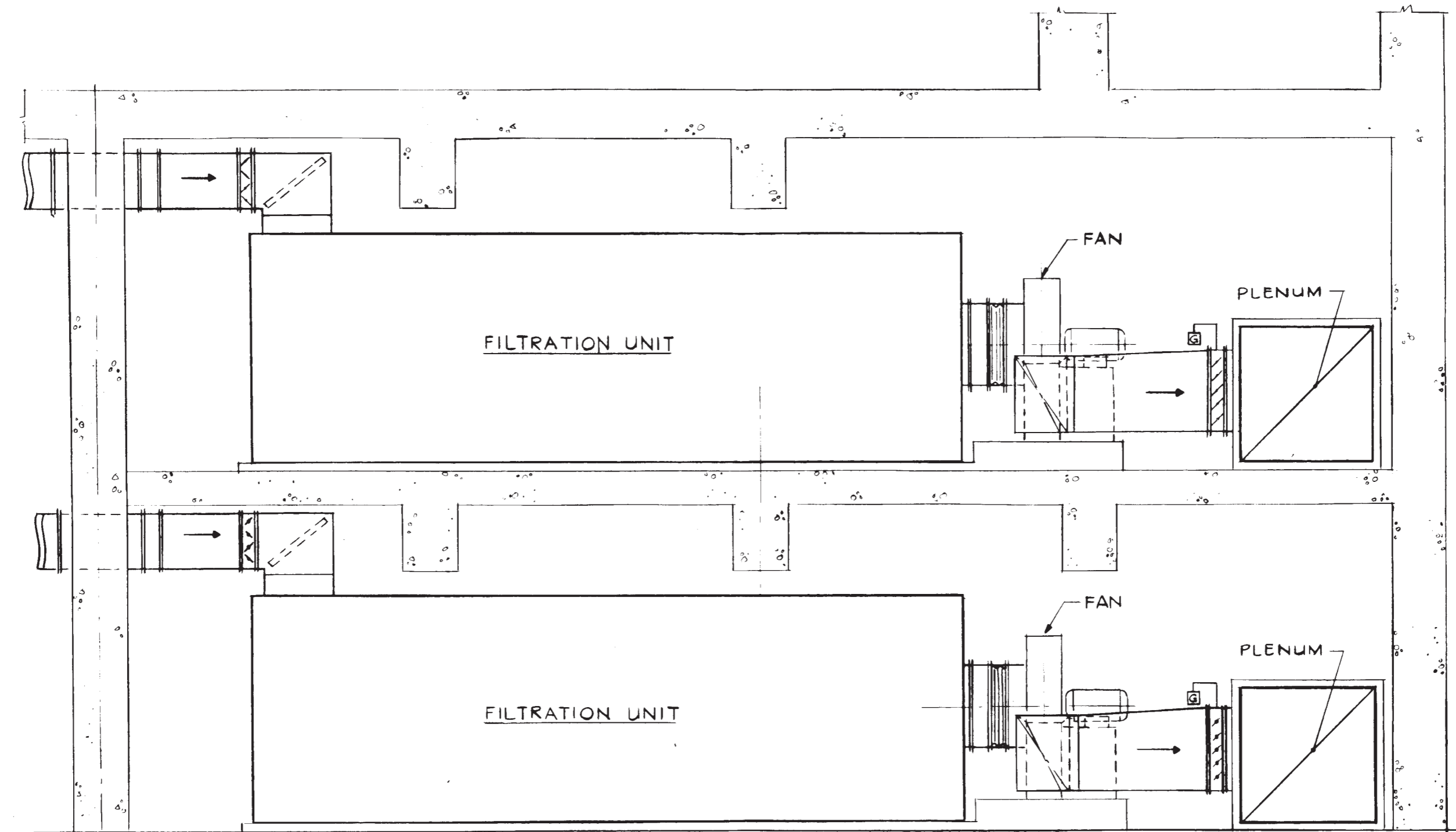
FIGURE GENERATED FOR FSAR ONLY  
BASED ON DRAWING

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

CONTAINMENT SPRAY  
LAYOUT SCHEMATIC

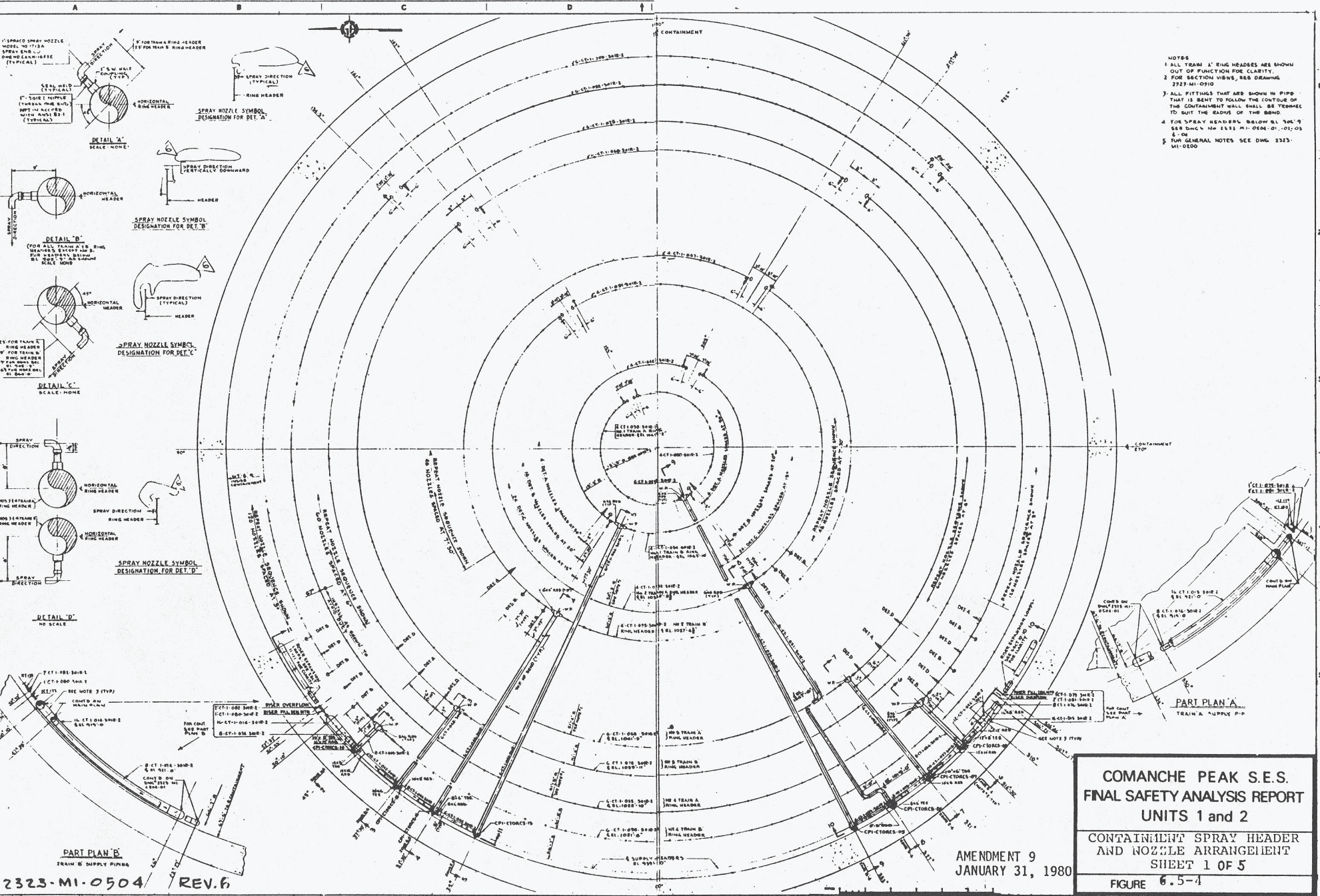
FIGURE 6.5-2



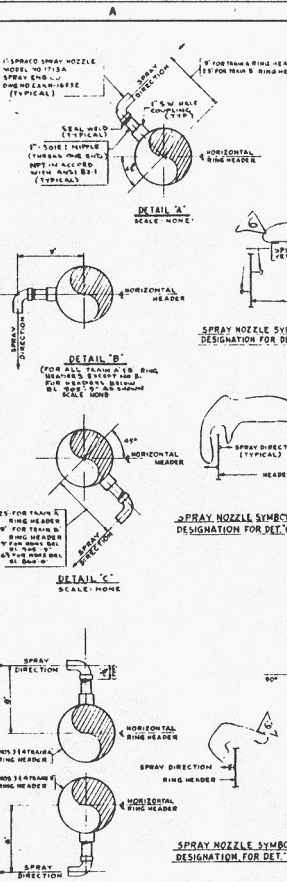


SECTION

COMANCHE PEAK S.E.S.  
 FINAL SAFETY ANALYSIS REPORT  
 UNITS 1 and 2  
 FILTER TRAIN SEPARATION  
 FIGURE 6.5-3



- NOTES
1. ALL TRAIN A RING HEADERS ARE SHOWN OUT OF FUNCTION FOR CLARITY.
  2. FOR SECTION VIEWS, SEE DRAWING 2323-MI-0510
  3. ALL FITTINGS THAT ARE SHOWN IN PIPE THAT IS BENT TO FOLLOW THE CONTOUR OF THE CONTAINMENT WALL SHALL BE TYPED TO SUIT THE RADIUS OF THE BEND.
  4. FOR SPRAY HEADERS, BELOW ALL VMS, SEE DWG. NO. 2323-MI-0506-01-02-03 & 04
  5. FOR GENERAL NOTES SEE DWG. 2323-MI-0500



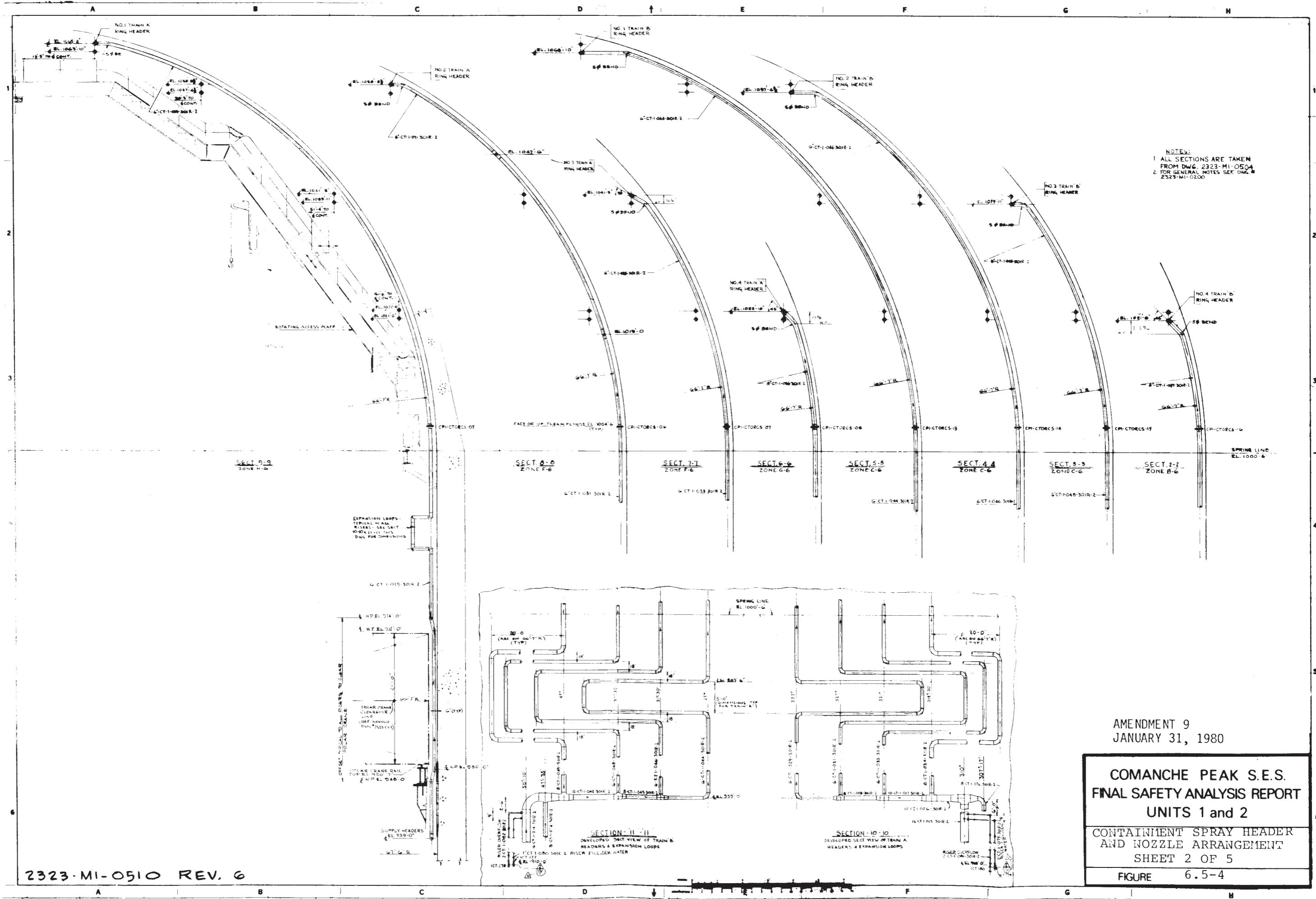
**COMANCHE PEAK S.E.S.**  
**FINAL SAFETY ANALYSIS REPORT**  
**UNITS 1 and 2**

**CONTAINMENT SPRAY HEADER AND NOZZLE ARRANGEMENT**  
**SHEET 1 OF 5**

AMENDMENT 9  
 JANUARY 31, 1980

FIGURE 6.5-4

2323-MI-0504 REV.6



NOTES:  
 1 ALL SECTIONS ARE TAKEN FROM DWG. 2323-MI-0504  
 2 FOR GENERAL NOTES SEE DWG. 2323-MI-0200

SECT. 9-9  
 ZONE H-G

SECT. 8-8  
 ZONE F-G

SECT. 7-7  
 ZONE E-G

SECT. 6-6  
 ZONE D-G

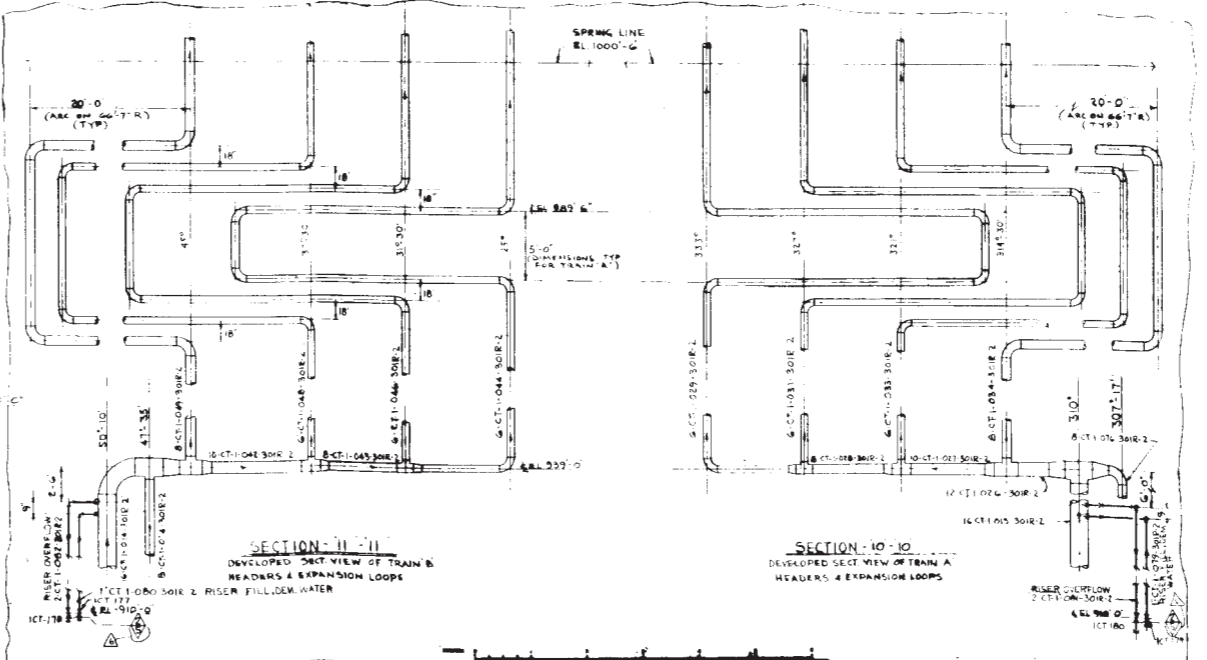
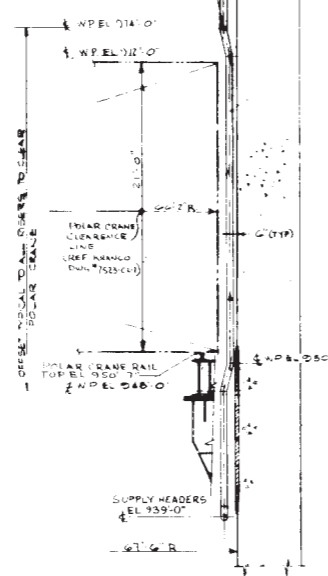
SECT. 5-5  
 ZONE C-G

SECT. 4-4  
 ZONE B-G

SECT. 3-3  
 ZONE A-G

SECT. 2-2  
 ZONE A-B

EXPANSION LOOPS - TYPICAL IN ALL RISERS - SEE SECT. 10-10 & 11-11 FOR DIMENSIONS



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 2 OF 5

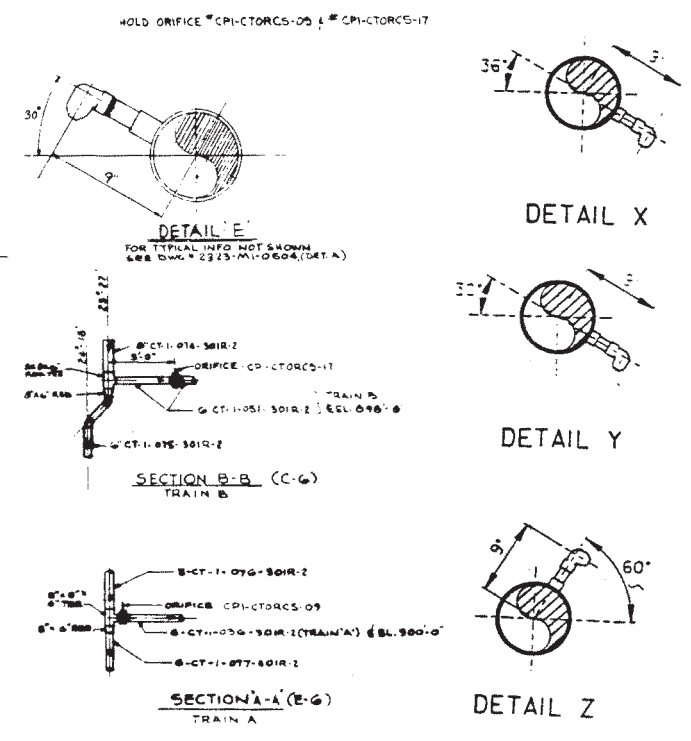
FIGURE 6.5-4

2323-MI-0510 REV. 6

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
2. TRAIN B - 30 DETAIL B SPRAY NOZZLES, 1 SPECIAL SPRAY NOZZLE SPRAYING DIRECTION DOWN, 15 DETAIL C SPRAY NOZZLES, 17 DETAIL E SPRAY NOZZLES 1 EACH DETAIL X, Y AND Z SPRAY NOZZLES - TOTAL 67 NOZZLES.
3. FOR NOZZLE DETAILS NOT SHOWN ON THIS DRAWING, SEE DWG 32323-M1-0504
4. FOR CONT. SPRAY PIPING ABOVE, 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

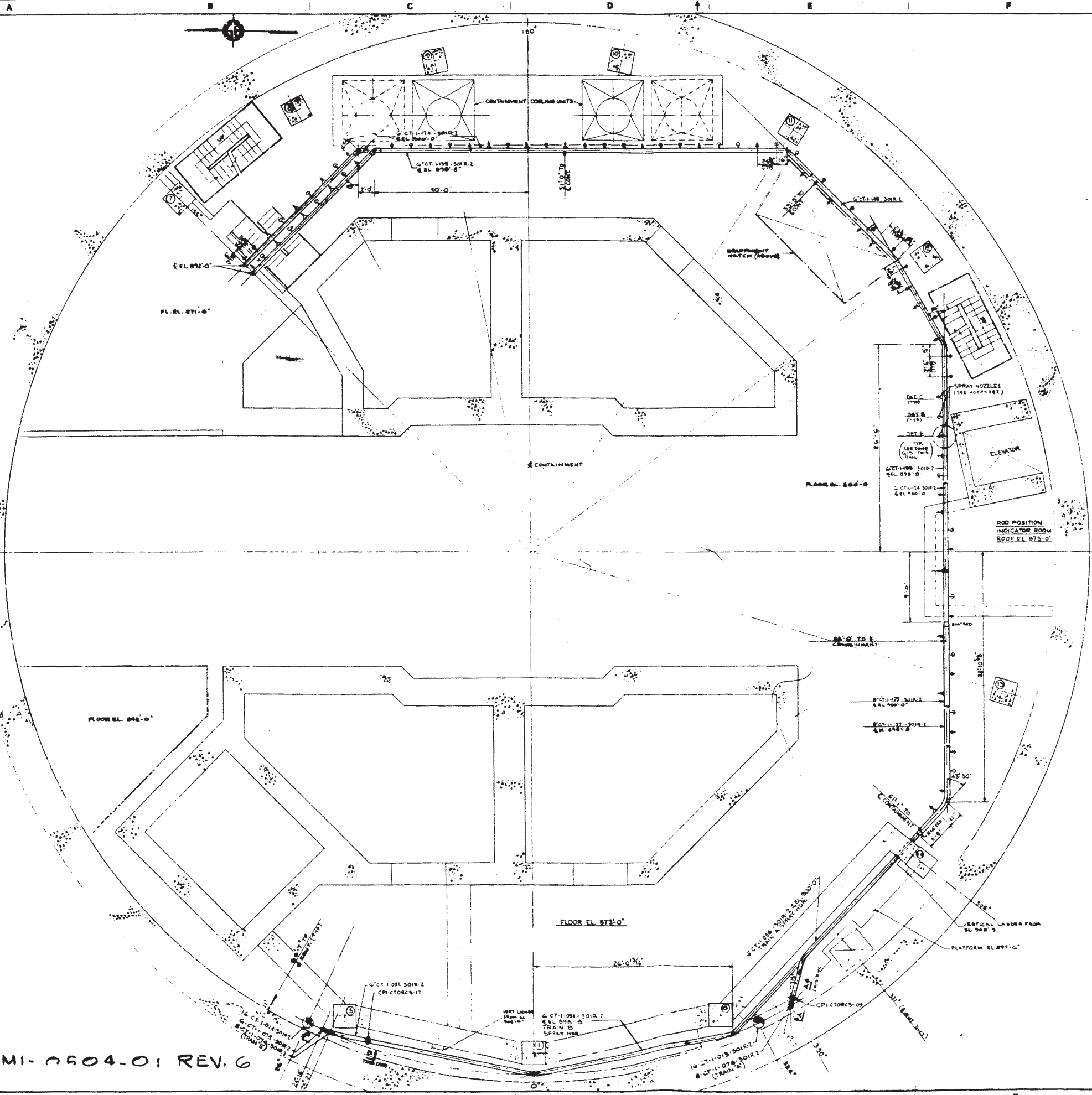


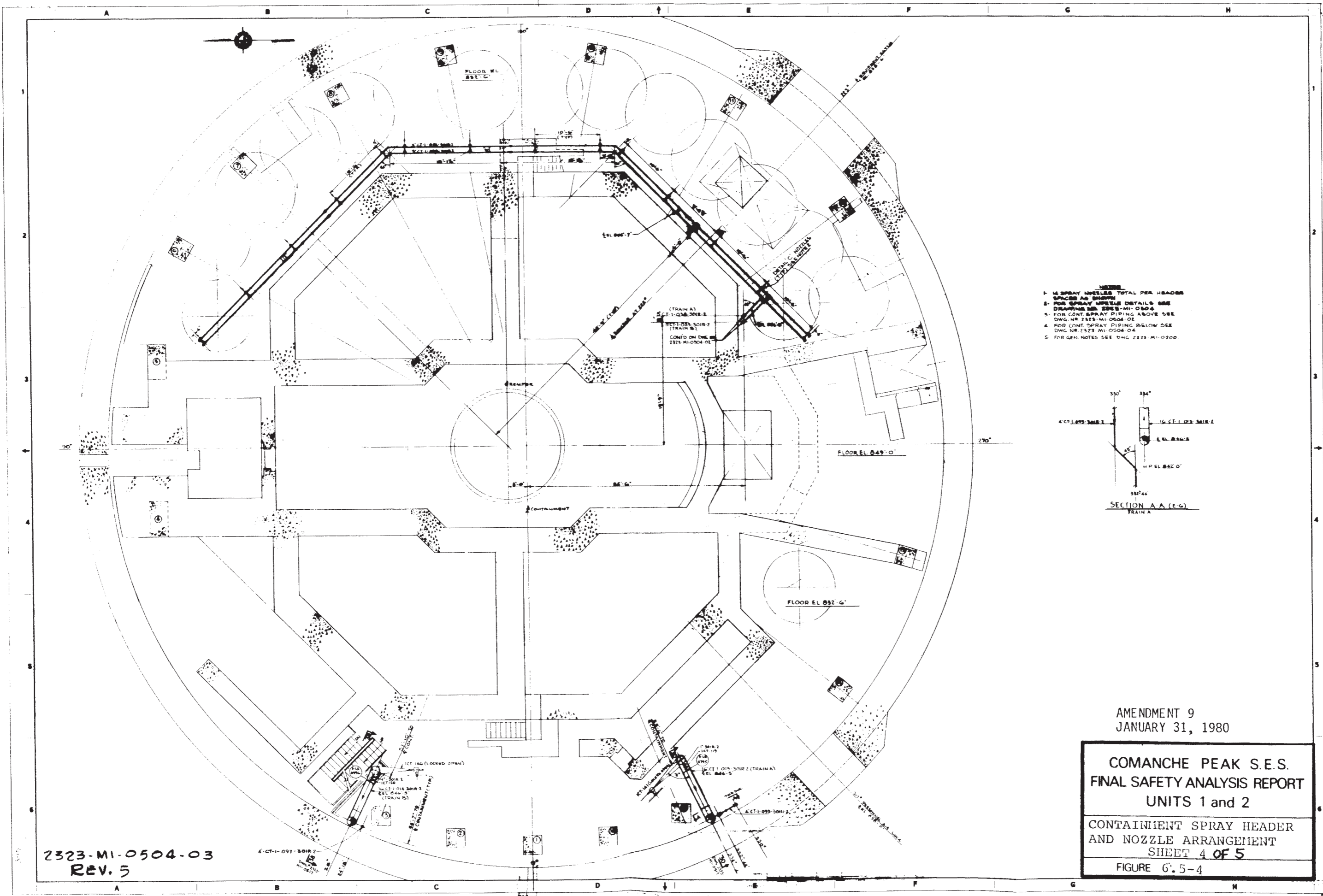
Amendment 96  
August 2, 1999

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

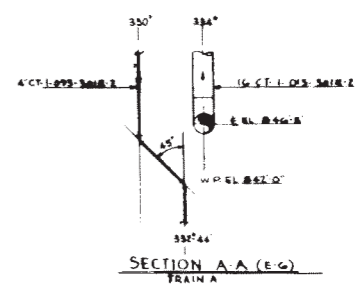
CONTAINMENT SPRAY HEADER  
AND NOZZLE ARRANGEMENT  
SHEET 3 OF 5

FIGURE 6.5-4





- NOTES
1. 14 SPRAY NOZZLES TOTAL PER HEADER SPACES 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

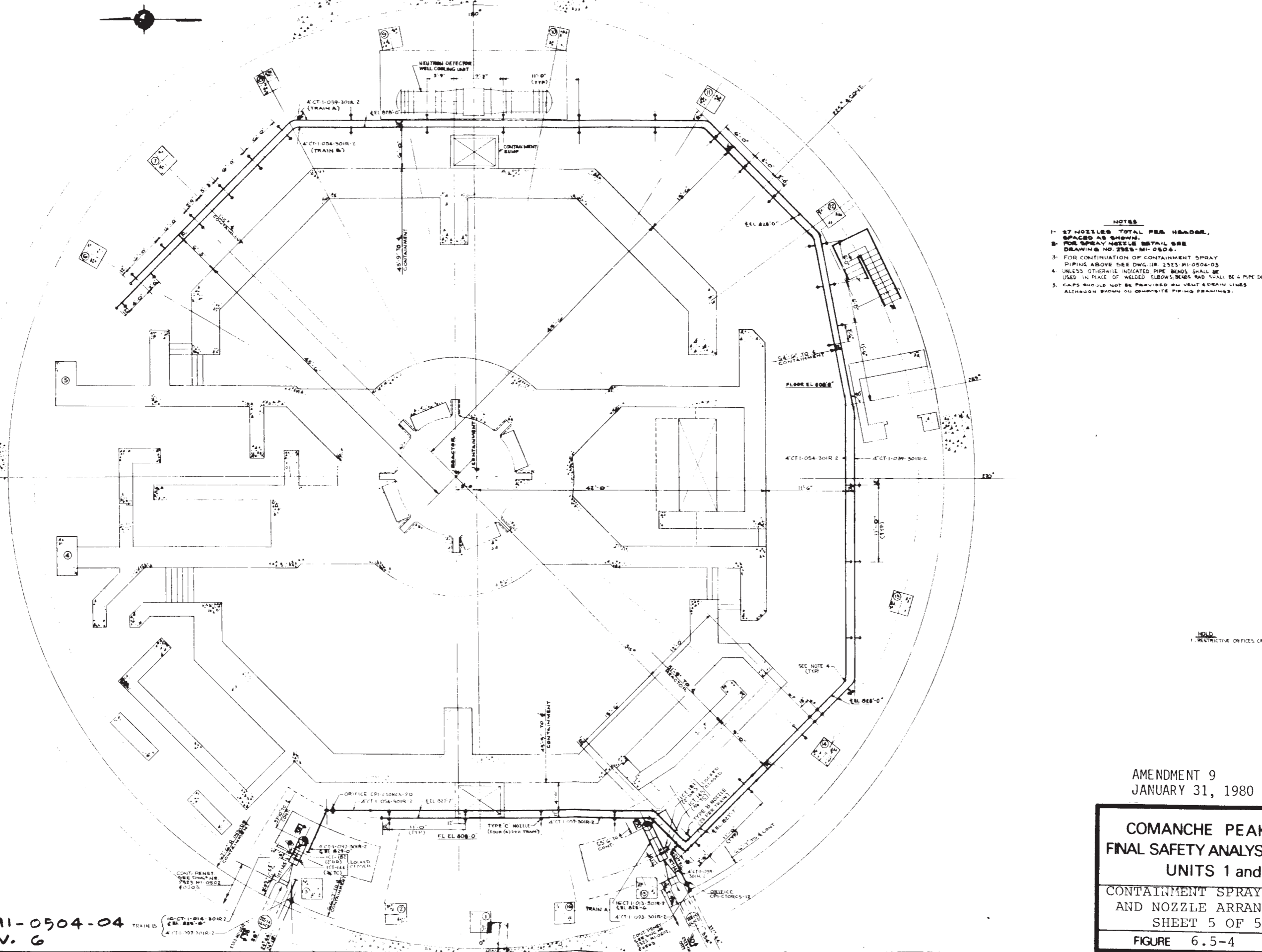


AMENDMENT 9  
JANUARY 31, 1980

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

2323-MI-0504-03  
REV. 5

A B C D E F G H



- NOTES**
- 1- 27 NOZZLES TOTAL PER HEADER, SPACED AS SHOWN.
  - 2- FOR SPRAY NOZZLE DETAIL SEE DRAWING NO. 2323-MI-0504.
  - 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. BENDS RAD SHALL BE 4 PIPE DIA.
  - 5- CAPS SHOULD NOT BE PROVIDED ON VENT & DRAIN LINES ALTHOUGH SHOWN ON PREVIOUS PIPING DRAWINGS.

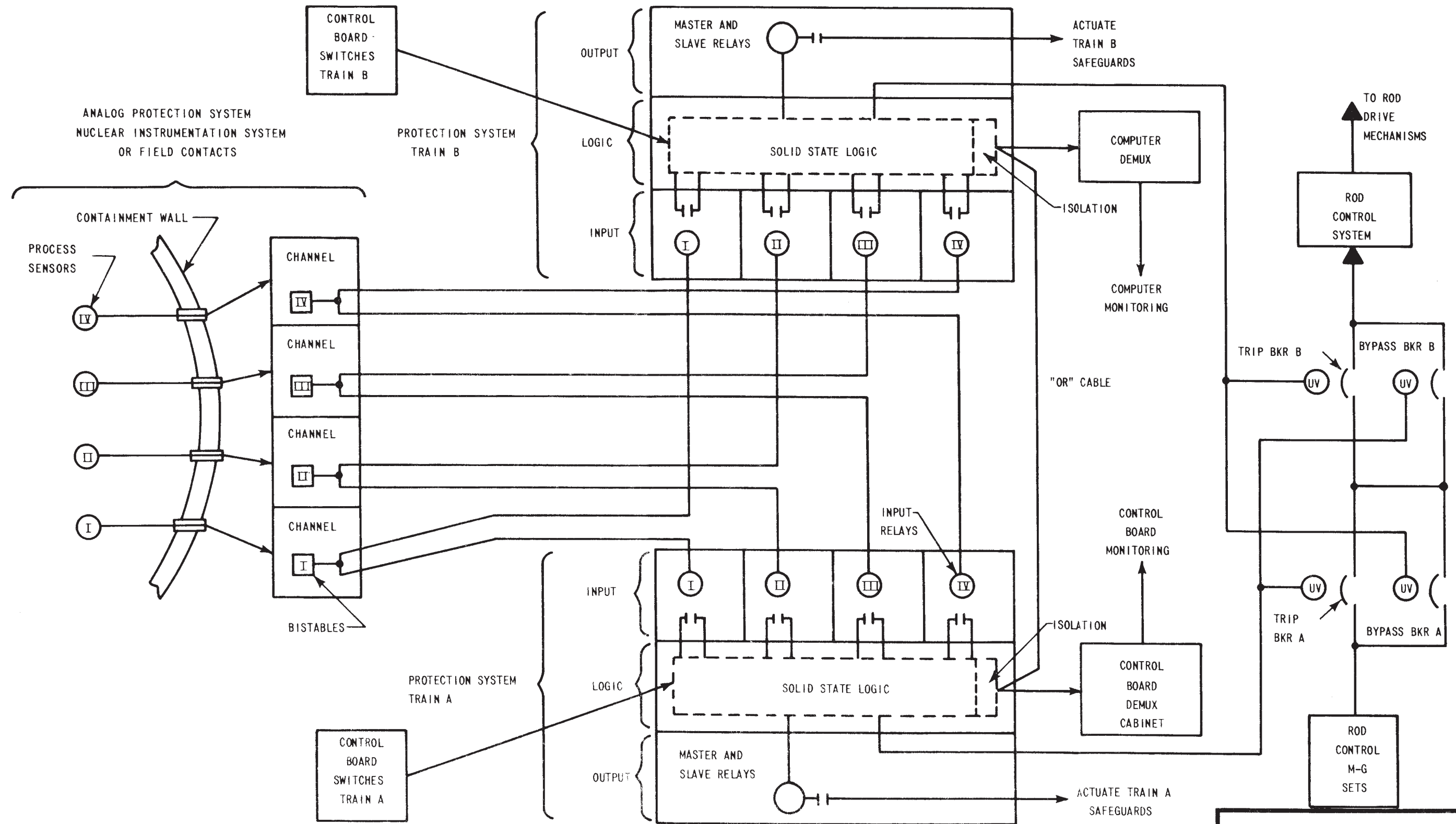
**HOLD**  
 1. RESTRICTIVE ORIFICES ON CHOCORES-12 & CHOCORES-20

AMENDMENT 9  
 JANUARY 31, 1980

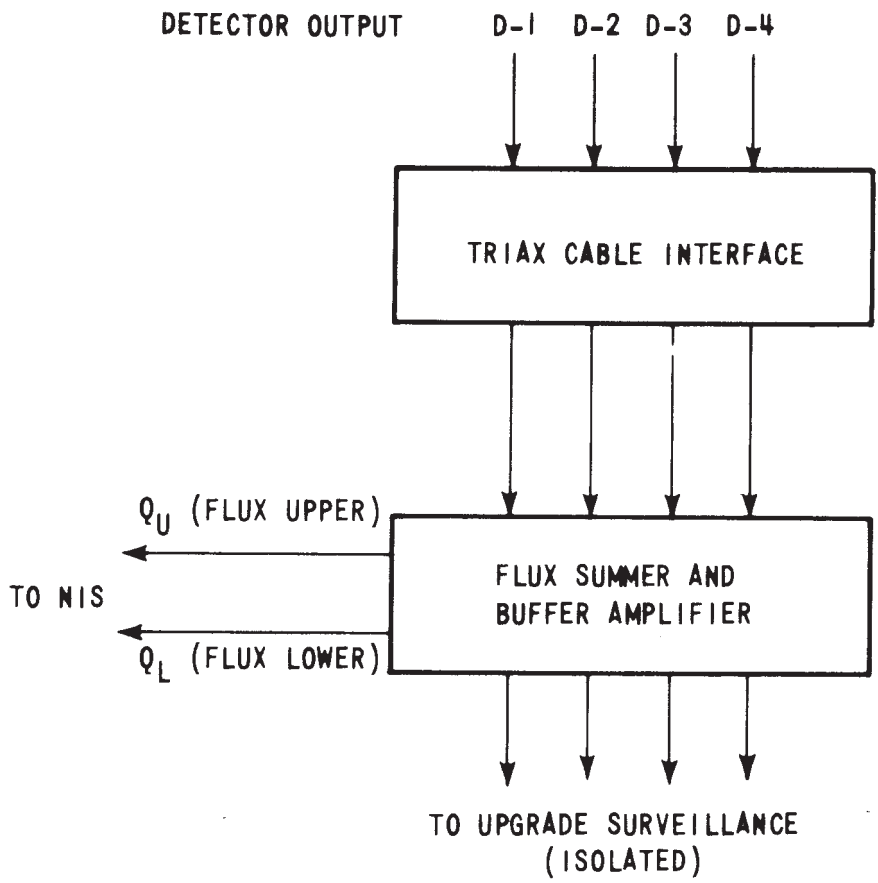
**COMANCHE PEAK S.E.S.  
 FINAL SAFETY ANALYSIS REPORT  
 UNITS 1 and 2  
 CONTAINMENT SPRAY HEADER  
 AND NOZZLE ARRANGEMENT  
 SHEET 5 OF 5  
 FIGURE 6.5-4**

2323-MI-0504-04  
 REV. 6

A B C D E F G H



COMANCHE PEAK S.E.S.  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 and 2  
Protection System Block Diagram  
FIGURE 7.1-1



AMENDMENT 5  
 MARCH 30, 1979

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.

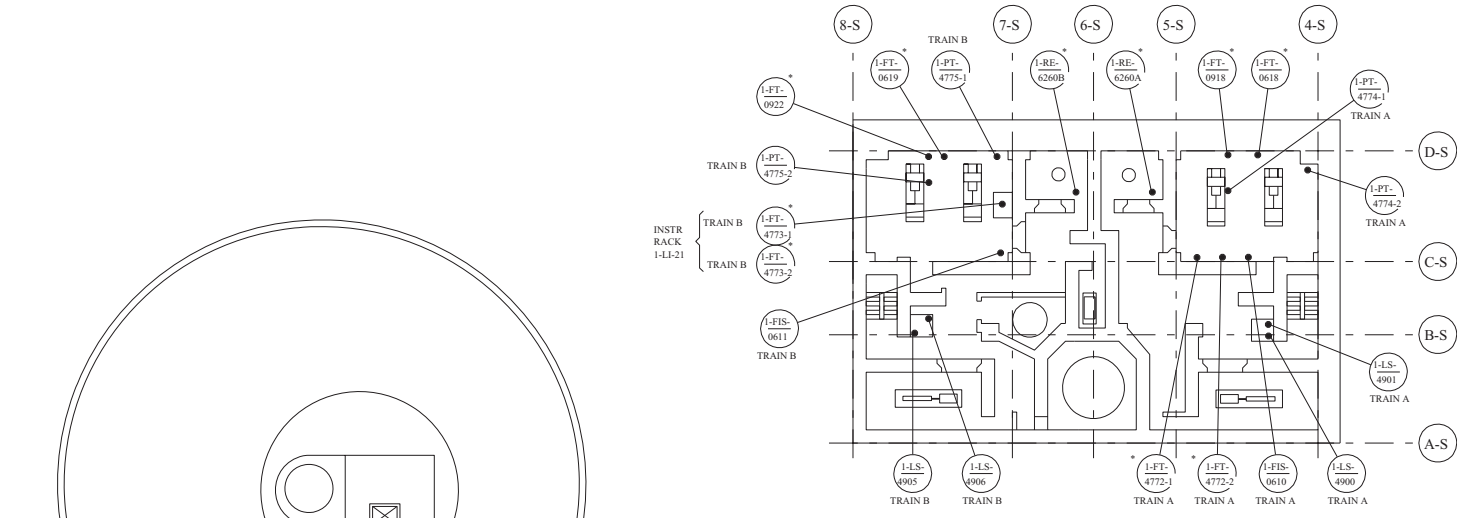
Amendment 66  
January 15, 1988

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

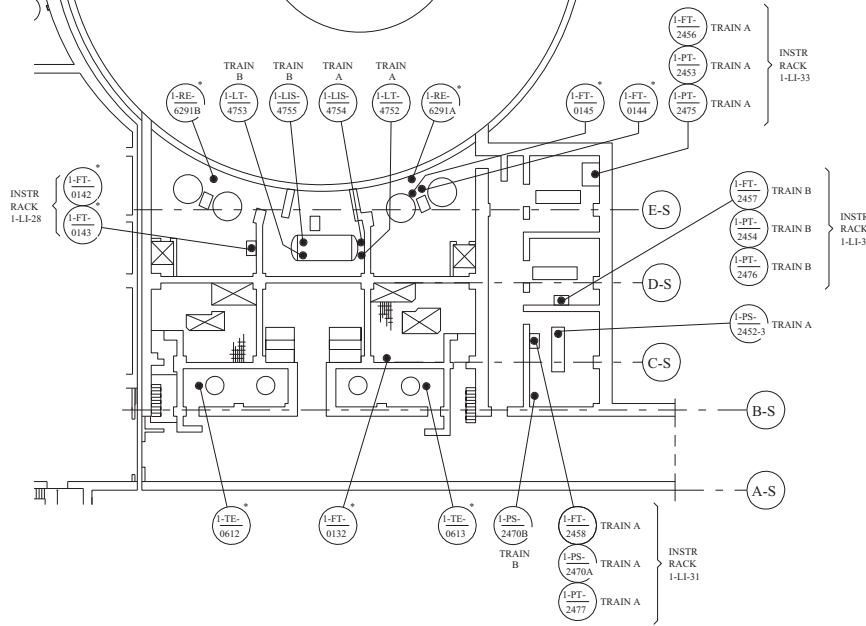
Location of Class 1E Instrs.  
and Accident Monitoring Instrs.

Explanatory Notes

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



PLAN AT EL 773'-0"



PLAN AT EL 790'-6"

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 PMP 01 DISCH
- 1-PT-2454 MTR DRIVEN AFW PMP 01 DISCH
- 1-PT-2456 MTR DRIVEN AFW PMP 01 DISCH
- 1-FT-2457B MTR DRIVEN AFW PMP 02 DISCH
- 1-FT-2458 TURB DRIVEN AFW PMP DISCH
- 1-PS-2470A TURB DRIVEN AFW PMP SCT HDR PRESS LO
- 1-PS-2470B TURB DRIVEN AFW PMP SCT HDR PRESS LO
- 1-PT-2475 MTR DRIVEN AFW PMP 02 SUCT HDR
- 1-PT-2477 TURB DRIVEN AFW PMP SUCT HDR
- 1-LT-4752 CHEM ADD TANK
- 1-LT-4753 CHEM ADD TANK
- 1-LIS-4754 CHEM ADD TANK LEVEL LO
- 1-LIS-4755 CHEM ADD TANK LEVEL LO
- 1-RE-6291A HIGH RANGE AREA MONITOR ISOL VLV TANK TRN A
- 1-RE-6291B HIGH RANGE AREA MONITOR ISOL VLV TANK TRN B

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

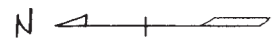
- 1-FIS-0610 RHR PMP 1 MIN FLOW
- 1-FIS-0611 RHR PMP 2 MIN FLOW
- 1-FT-0618 RHR HX 1 BYP CONT
- 1-FT-0619 RHR HX 2 BYP CONT
- 1-FT-0918 SI PMP 1 DISCH
- 1-FT-0922 SI PMP 2 DISCH
- 1-FT-0988 RHR PMP DISCH
- 1-FT-4772-1 CONTMT SPRAY PMP 1 DISCH
- 1-FT-4772-2 CONTMT SPRAY PMP 3 DISCH
- 1-FT-4773-1 CONTMT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

AMENDMENT 78  
January 15, 1990

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 AND  
SAFEGUARD BUILDINGS

FIGURE NO 7.1-3 (SH 02 OF 36)



PROT. I (1-FT 434)

PROT. III (1-FT 436)

PROT. II (1-FT 435)

PROT. III (1-FT 426)

PROT. I (1-FT 424)

(1-LT 470)\*

PROT. II (1-FT 445)

(1-PT 469)\*

(1-LT 1003)\*

PROT. I (1-FT 444)

(1-TE 468)\*

PROT. III (1-FT 446)

(1-TE 605)\*

(1-LT 4779)\* TRAIN A

(1-LT 4781)\* TRAIN B

(1-FT 425) PROT. II

(1-FT 415) PROT. II

(1-RE 6292)\*

(1-FT 416) PROT. III

(1-FT 414) PROT. I

(1-RE 6261)\*

(1-RE 6259 B)\*

(1-RE 4200)\*

(1-RE 6259 A)\*

(1-TE 604)\*

Plan at EL. 808'-0" and 810'-6"

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

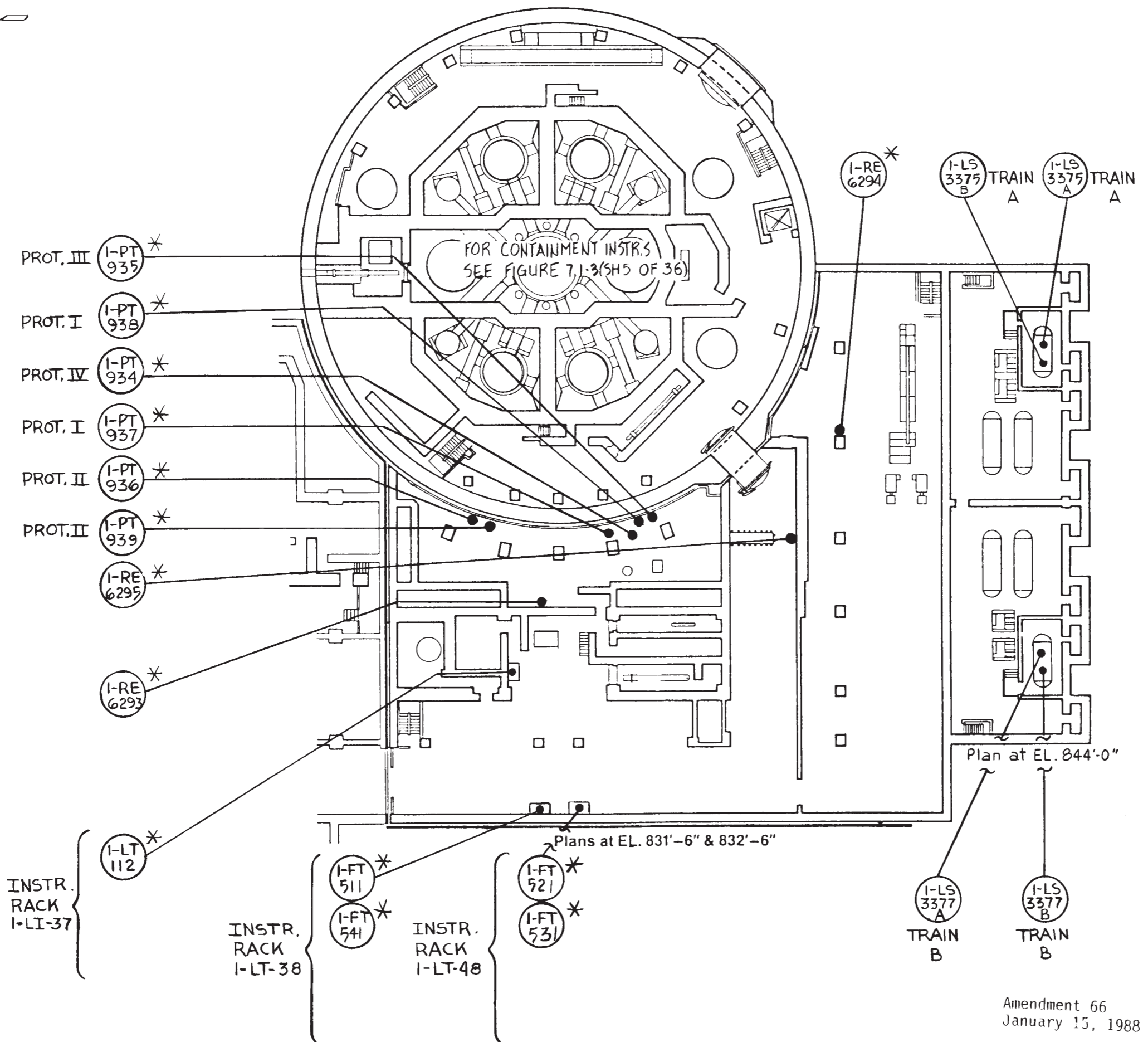
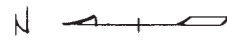
COMANCHE PEAK S.E.S.  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 and 2

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)

Amendment 66  
January 15, 1988



**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.
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
1-TE-050	Core Exit Temp
1-NE-31	Source Range I
1-NE-32	Source Range II
1-NE-35	Interm Range I
1-NE-36	Interm 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)

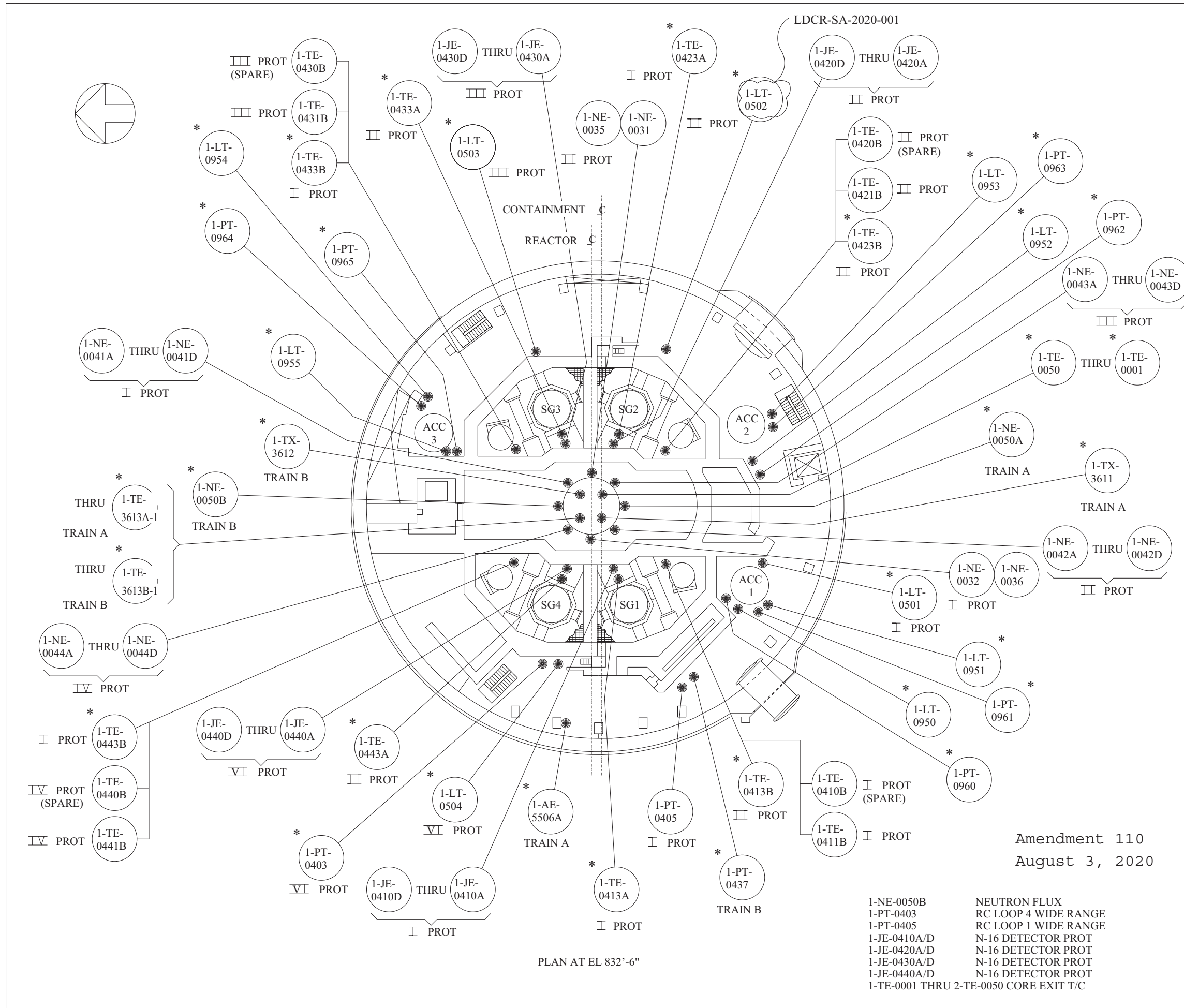
**COMANCHE PEAK S.E.S.**  
**FINAL SAFETY ANALYSIS REPORT**  
**UNITS 1 and 2**

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

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

Amendment 66  
January 15, 1988

04-06-20



PLAN AT ELEVATIONS 832'-6" AND 842'-0"

- 1-TE-0410B (SPARE)
- 1-TE-0411B NARROW RNG TEMP COLD LEG
- 1-TE-0413A WIDE RNG TEMP HOT LEG
- 1-TE-0413B WIDE RNG TEMP COLD LEG
- 1-TE-0420B (SPARE)
- 1-TE-0421B NARROW RNG TEMP COLD LEG
- 1-TE-0423A WIDE RNG TEMP HOT LEG
- 1-TE-0423B WIDE RNG TEMP COLD LEG
- 1-TE-0430B (SPARE)
- 1-TE-0431B NARROW RNG TEMP COLD LEG
- 1-TE-0433A WIDE RNG TEMP HOT LEG
- 1-TE-0433B WIDE RNG TEMP COLD LEG
- 1-TE-0440B (SPARE)
- 1-TE-0441B NARROW RNG TEMP COLD LEG
- 1-TE-0443A WIDE RNG TEMP HOT LEG
- 1-TE-0443B WIDE RNG TEMP COLD LEG
- 1-LT-0501 SG LOOP 1 WIDE RANGE
- 1-LT-0502 SG LOOP 2 WIDE RANGE
- 1-LT-0503 SG LOOP 3 WIDE RANGE
- 1-LT-0504 SG LOOP 4 WIDE RANGE
- 1-LT-0950 ACCUM TANK 1
- 1-LT-0951 ACCUM TANK 1
- 1-LT-0952 ACCUM TANK 2
- 1-LT-0953 ACCUM TANK 2
- 1-LT-0954 ACCUM TANK 3
- 1-LT-0955 ACCUM TANK 3
- 1-PT-0960 ACCUM TANK 1
- 1-PT-0961 ACCUM TANK 1
- 1-PT-0962 ACCUM TANK 2
- 1-PT-0963 ACCUM TANK 2
- 1-PT-0964 ACCUM TANK 3
- 1-PT-0965 ACCUM TANK 3
- 1-TX-3611 REACTOR COOLANT SUBCOOLING
- 1-TX-3612 REACTOR COOLANT SUBCOOLING
- 1-TE-3613A-1 REACTOR VESSEL LEVEL
- 1-TE-3613A-2 REACTOR VESSEL LEVEL
- 1-TE-3613A-3 REACTOR VESSEL LEVEL
- 1-TE-3613A-4 REACTOR VESSEL LEVEL
- 1-TE-3613A-5 REACTOR VESSEL LEVEL
- 1-TE-3613A-6 REACTOR VESSEL LEVEL
- 1-TE-3613A-7 REACTOR VESSEL LEVEL
- 1-TE-3613A-8 REACTOR VESSEL LEVEL
- 1-TE-3613B-1 REACTOR VESSEL LEVEL
- 1-TE-3613B-2 REACTOR VESSEL LEVEL
- 1-TE-3613B-3 REACTOR VESSEL LEVEL
- 1-TE-3613B-4 REACTOR VESSEL LEVEL
- 1-TE-3613B-5 REACTOR VESSEL LEVEL
- 1-TE-3613B-6 REACTOR VESSEL LEVEL
- 1-TE-3613B-7 REACTOR VESSEL LEVEL
- 1-TE-3613B-8 REACTOR VESSEL LEVEL
- 1-AE-5506A H2 MONITOR EL 836'-0"
- 1-PT-0437 RC LOOP 1 WIDE RANGE
- 1-NE-0031 SOURCE RANGE
- 1-NE-0032 SOURCE RANGE
- 1-NE-0035 INTERM RANGE
- 1-NE-0036 INTERM RANGE
- 1-NE-0041A/D POWER RANGE
- 1-NE-0042A/D POWER RANGE
- 1-NE-0043A/D POWER RANGE
- 1-NE-0044A/D POWER RANGE
- 1-NE-0050A NEUTRON FLUX

Amendment 110  
August 3, 2020

**LDCR-SA-2020-001**

**COMANCHE PEAK N P P**

**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"

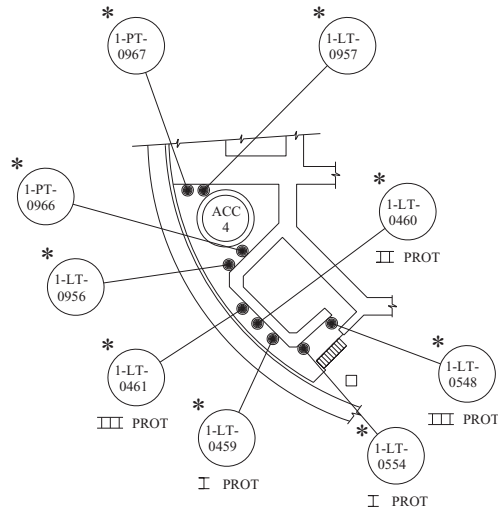
---

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



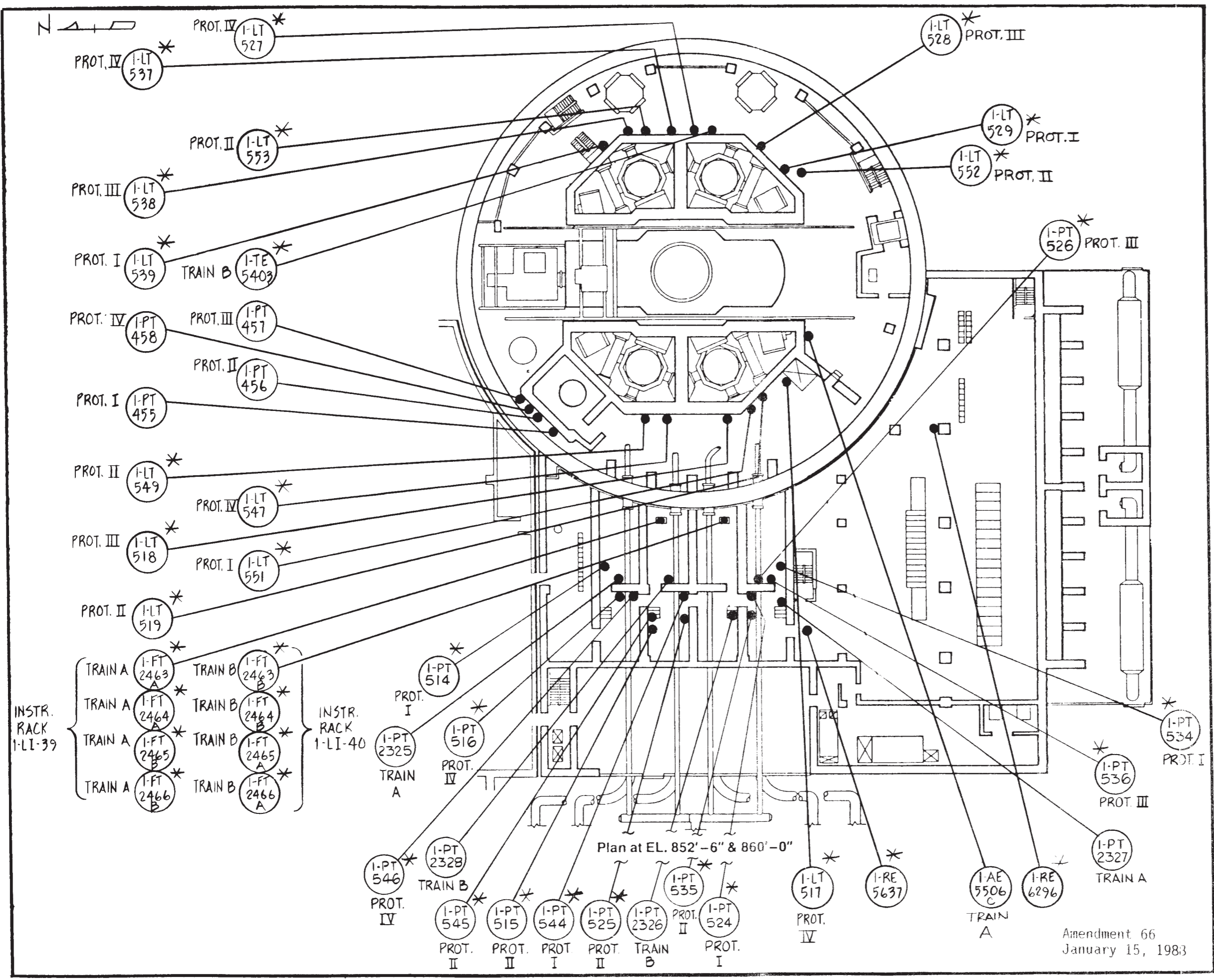
PLAN AT EL 842'-0"

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 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 H<sub>2</sub> 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

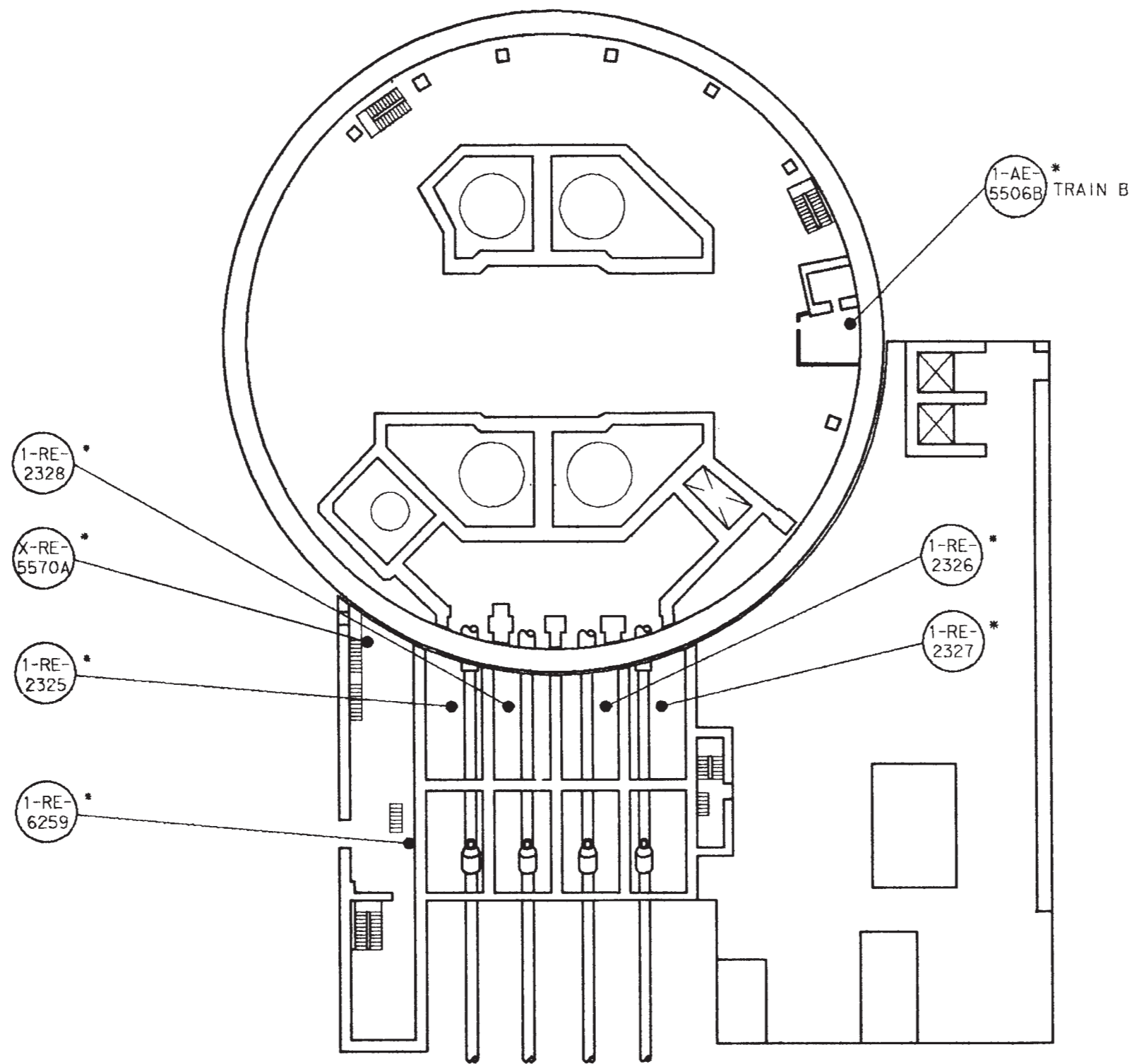
**COMANCHE PEAK S.E.S.  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 and 2**

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)

Amendment 66  
January 15, 1983



Plan at EL. 873'-6"

PLANS AT ELEVATIONS 873'-6"

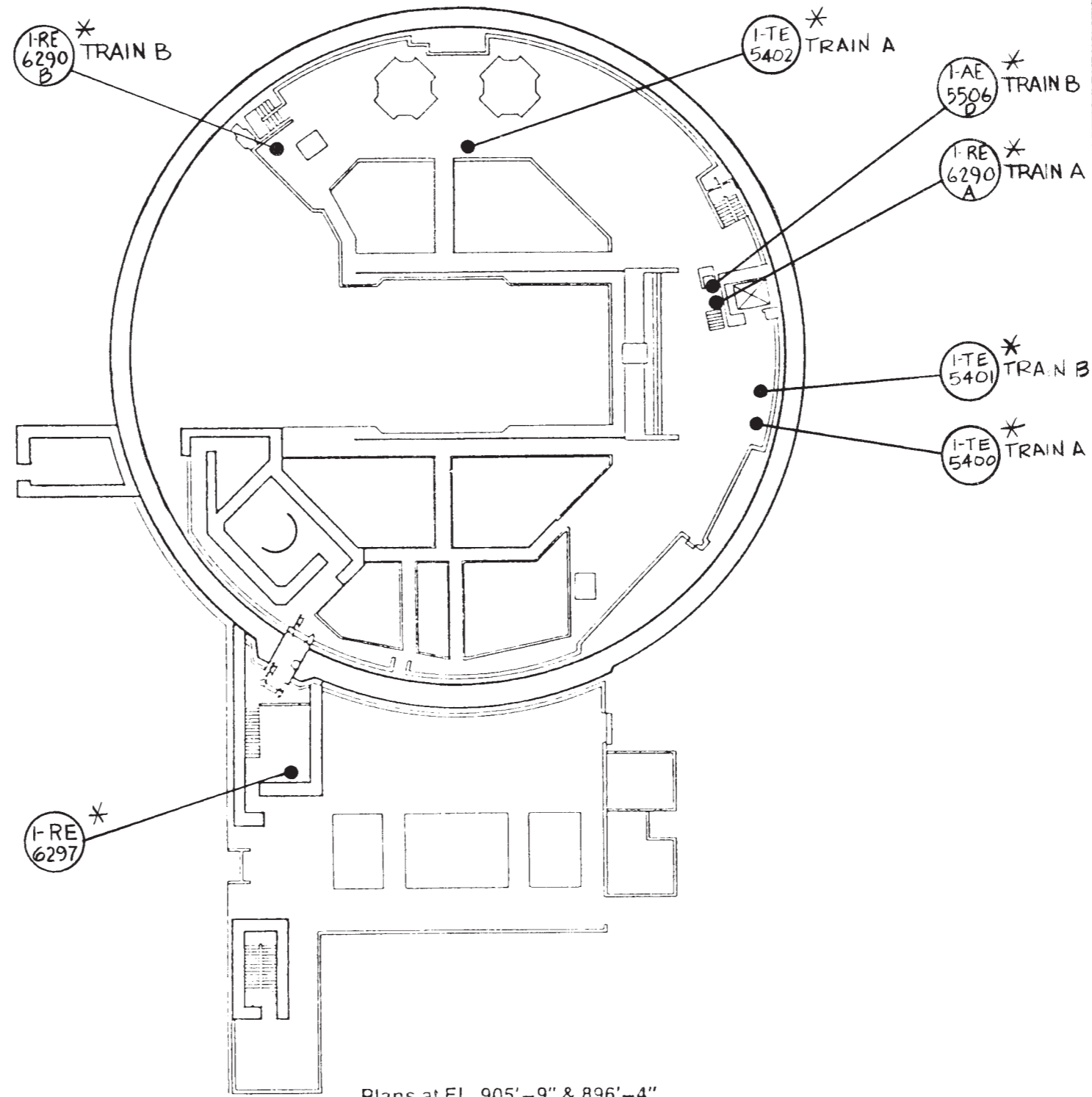
- 1-RE-2325 MSL MONITOR NUMBER 1
- 1-RE-2326 MSL MONITOR NUMBER 2
- 1-RE-2327 MSL MONITOR NUMBER 3
- 1-RE-2328 MSL MONITOR NUMBER 4
- X-RE-5570A WIDE RANGE GAS MONITOR  
S PLANT VENT STACK
- 1-RE-6259 LOW RANGE AREA MONITOR  
PLANT VENT STACK SAMPLE
- 1-AE-5506B H<sub>2</sub> MONITOR EL 877'-0"

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"

AMENDMENT 78  
JANUARY 15, 1990





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<br>CNTMT EL Area 905 |
| 1-RE-6290B | High Range Radiation Monitor<br>CNTMT E. Wall     |
| 1-RE-6297  | High Range Area Monitor<br>Emer Air Lock          |

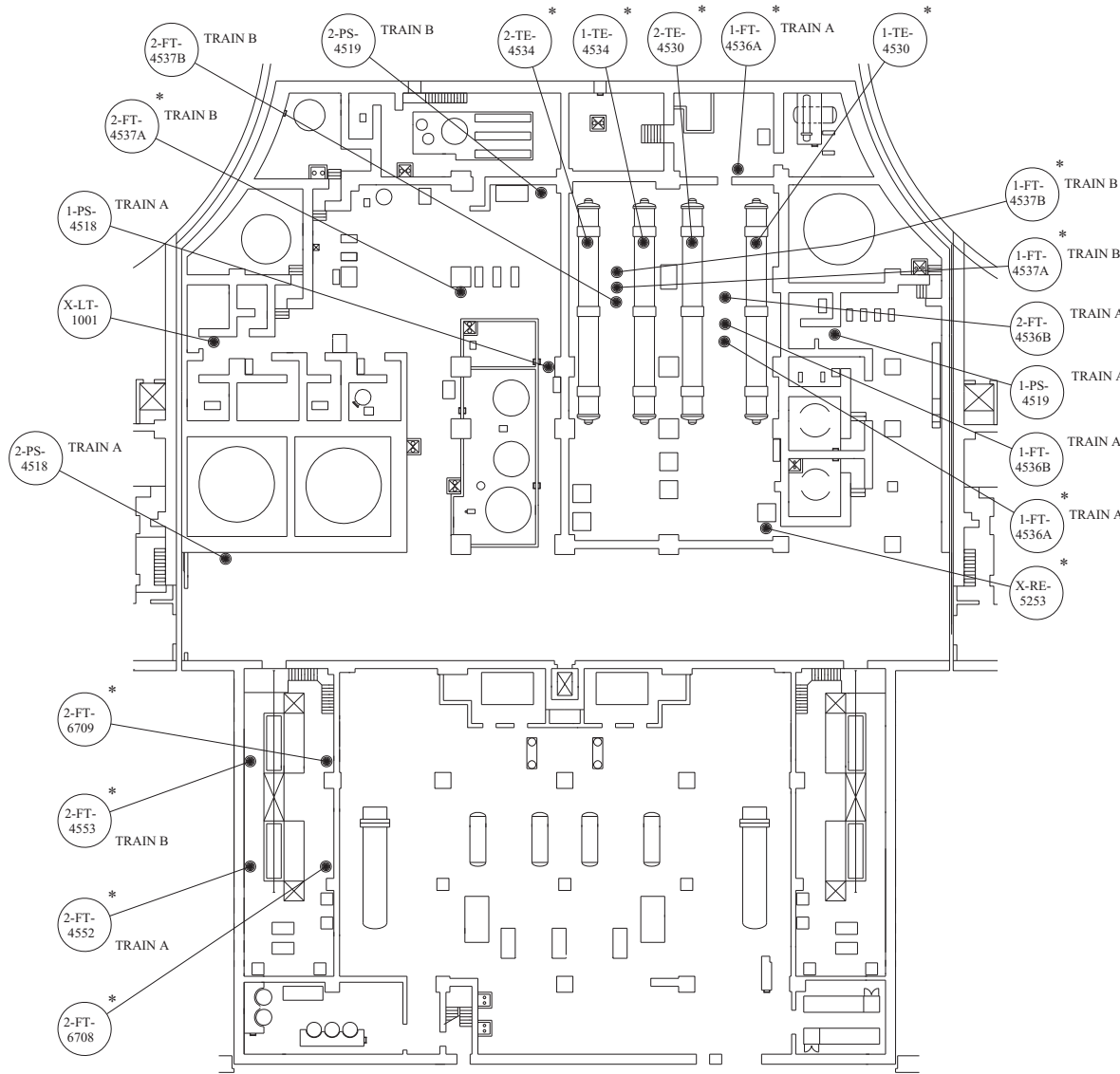
COMANCHE PEAK S.E.S.  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 and 2

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. B of 36)

Amendment 66  
January 15, 1983



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

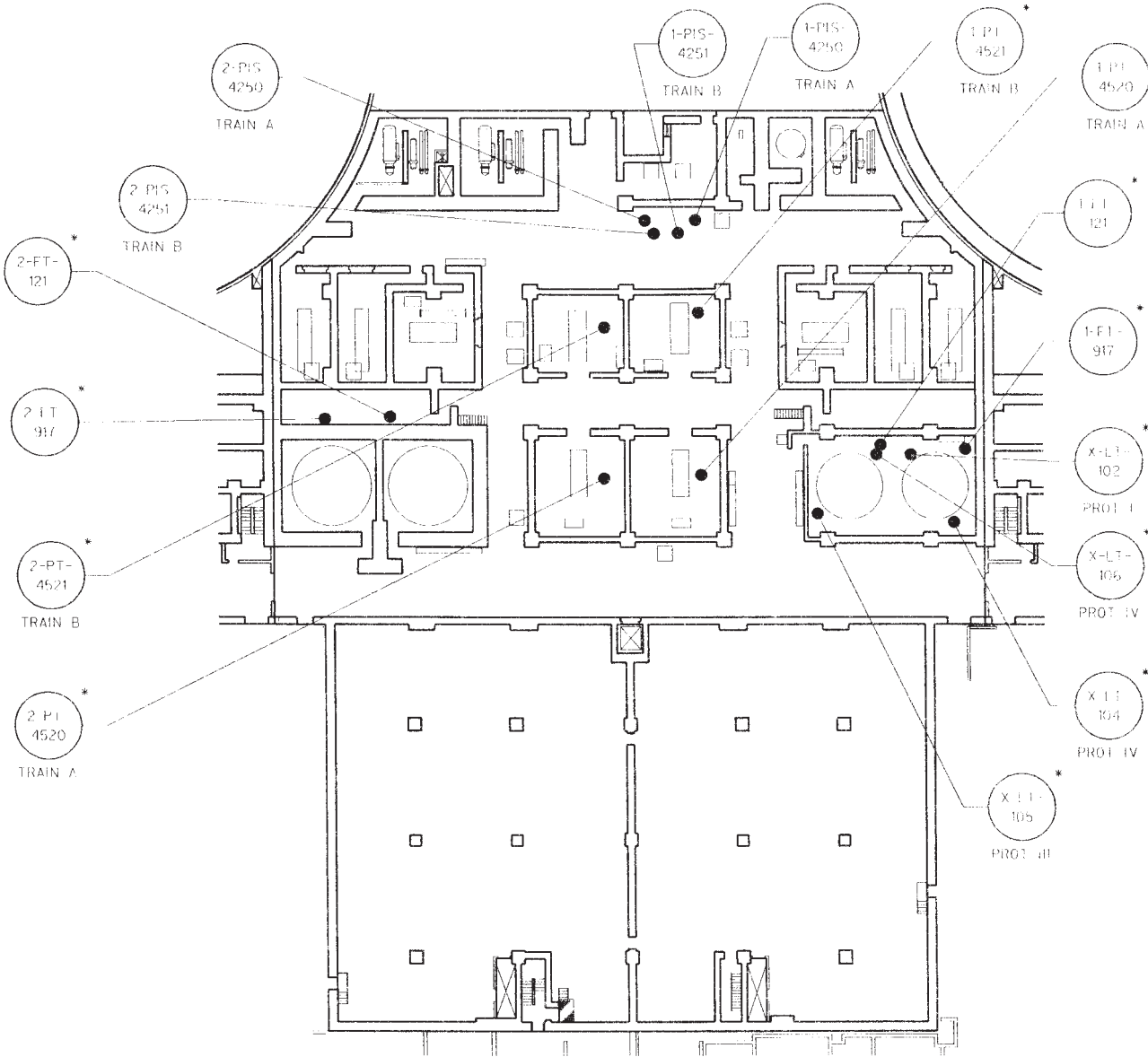
AMENDMENT 94

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

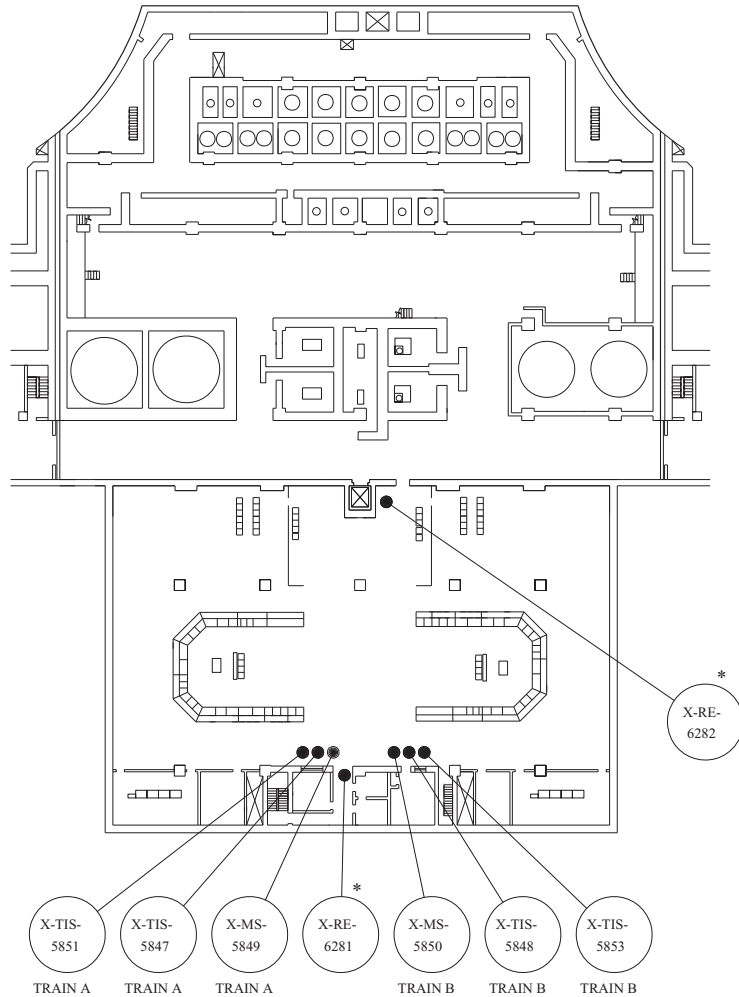
- X-LT-102 BORIC ACID TANK #1
- X-LT-104 BORIC ACID TANK #1
- X-LT-105 BORIC ACID TANK #2
- X-LT-106 BORIC ACID TANK #2
  
- 1-FT-121 CHARGING LINE
- 1-FT-917 CHARGING PMP DISCHARGE
- 1-PIS-4250 SW TRN SPLY HDR PRESS I/O
- 1-PIS-4251 SW TRN A SPLY HDR PRESS I/O
- 1-PT-4520 CW PMP NUMBER 1 DISCH
- 1-PT-4521 CW PMP NUMBER 2 DISCH
  
- 2-FT-012 CHARGING LINE
- 2-FT-0917 CHARGING PUMP DISCHARGE
- 2-PIS-4250 SW TRN B SPLY HDR PRESS
- 2-PIS-4251 SW TRN A SPLY HDR PRESS
- 2-PT-4520 CW PUMP NUMBER 1 DISCH
- 2-PT-4521 CW PUMP NUMBER 2 DISCH

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

AMENDMENT 57  
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"



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

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

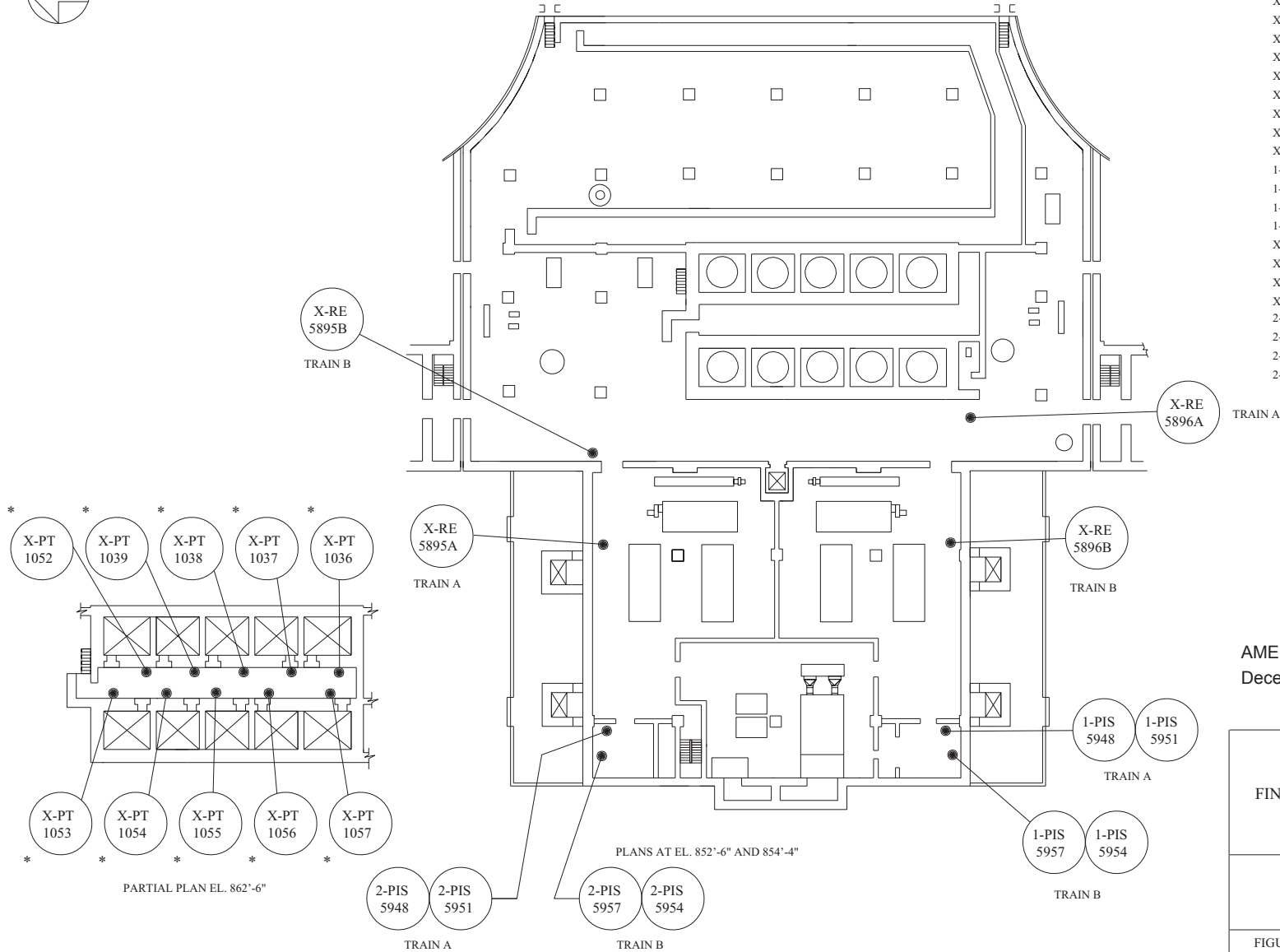
AMENDMENT 100  
December 18, 1992

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	(SH 11 OF 36)



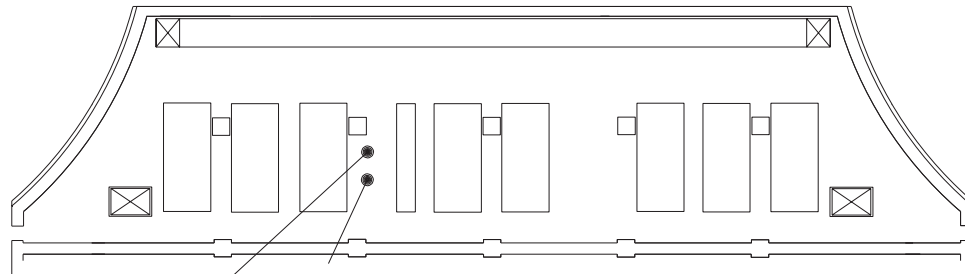
PLAN AT ELEVATIONS 852'-6" AND 854'-4"

- X-PT-1036 GAS DECAY TANK 1
- X-PT-1037 GAS DECAY TANK 2
- X-PT-1038 GAS DECAY TANK 3
- X-PT-1039 GAS DECAY TANK 4
- X-PT-0152 GAS DECAY TANK 5
- X-PT-1053 GAS DECAY TANK 6
- X-PT-1054 GAS DECAY TANK 7
- X-PT-1055 GAS DECAY TANK 8
- X-PT-1056 GAS DECAY TANK 9
- X-PT-1057 GAS DECAY TANK 10
- 1-PIS-5948 BATT RM 1-1 EX FAN 07 LO
- 1-PIS-5951 BATT RM 1-1 EX FAN 08 LO
- 1-PIS-5954 BATT RM 1-2 EX FAN 09 LO
- 1-PIS-5957 BATT RM 1-2 EX FAN 10 LO
- X-RE-5895A CR VENT N. INTK MON
- X-RE-5895B CR VENT N. INTK MON
- X-RE-5896A CR VENT S. INTK MON
- X-RE-5896B CR VENT S. INTK MON
- 2-PIS-5948 BATT RM 2-1 EX FAN 07 LO
- 2-PIS-5951 BATT RM 2-1 EX FAN 08 LO
- 2-PIS-5954 BATT RM 2-2 EX FAN 09 LO
- 2-PIS-5957 BATT RM 2-2 EX FAN 10 LO



AMENDMENT 100  
December 18, 1992

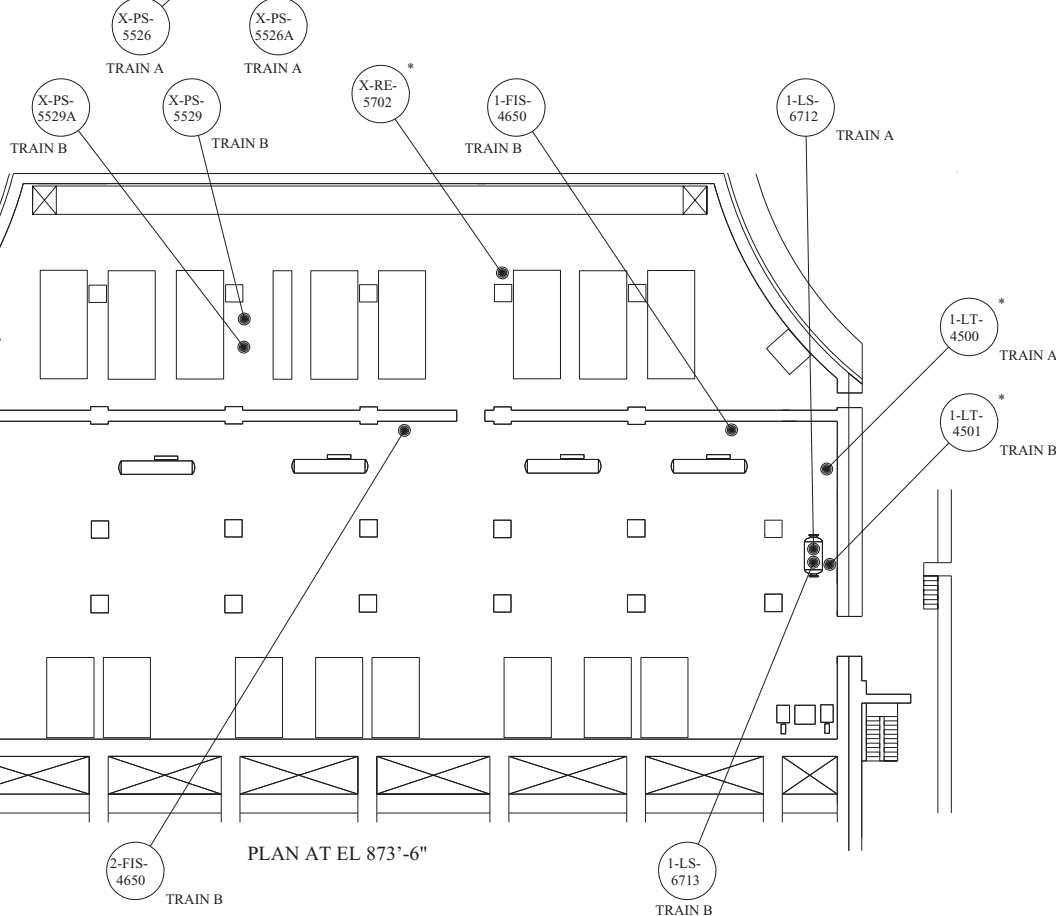
<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2</p>	
<p>LOCATION OF CLASS 1E INSTRS. AND ACCIDENT MONITORING INSTRS. AUXILIARY AND ELECTRICAL CONTROL BUILDINGS PLANS AT EL. 852'-6" AND 854'-4"</p>	
FIGURE 7.1-3	(SH 12 OF 36)



PARTIAL PLAN AT ELEVATION 886'-6"

- PLAN AT ELEVATION 873'-6"
- 1-LT-4500 CCW SURGE TANK
  - 1-LT-4501 CCW SURGE TANK
  - 1-FIS-4650 VENT CHILLERS CCW FLO HI
  - X-PS-5529 CNTMT HYDRO PURGE AIR EXH TO FAN 2 PRESS HI
  - X-PS-5529A CNTMT HYDRO PURGE AIR EXH TO FAN 2 PRESS HI-HI

- 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



PLAN AT EL 873'-6"

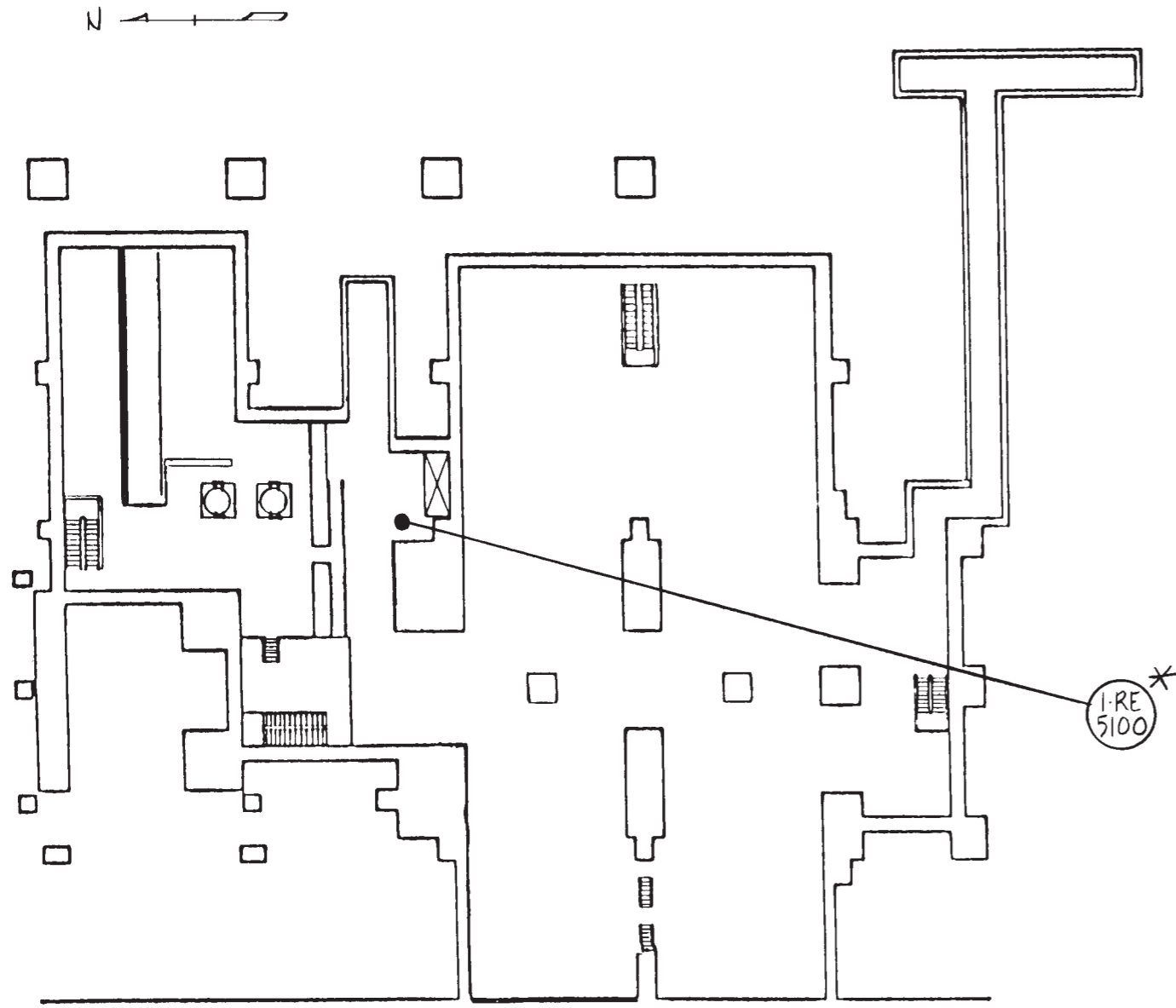
- PARTIAL PLAN AT ELEVATION 886'-6"
- X-PS-5526 CNTMT H PURGE AIR EXH TO FAN 01 HI
  - X-PS-5526A CNTMT H PURGE AIR EXH TO FAN 01 HI-HI

Amendment 99

<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2</p>
<p>LOCATION OF CLASS 1E INSTRUMENTS AND ACCIDENT MONITORING INSTRUMENTS AUXILIARY BUILDING PLANS AT EL 873'-6" AND 886'-6"</p>
<p>FIGURE 7.1-3 (SH 13 OF 36)</p>

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

1-RE-5100 Turbine Building Drains Monitor



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

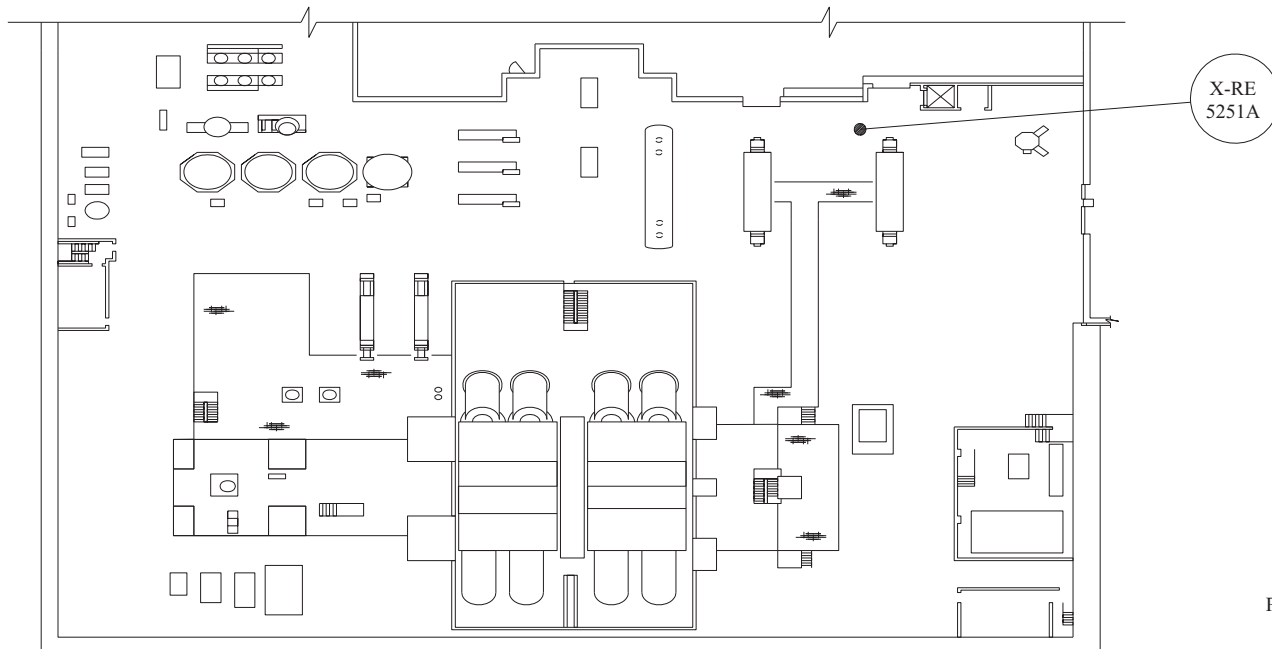
Amendment 66  
January 15, 1988

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)



X-RE  
5251A

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

PLAN AT ELEVATION 778'-0"

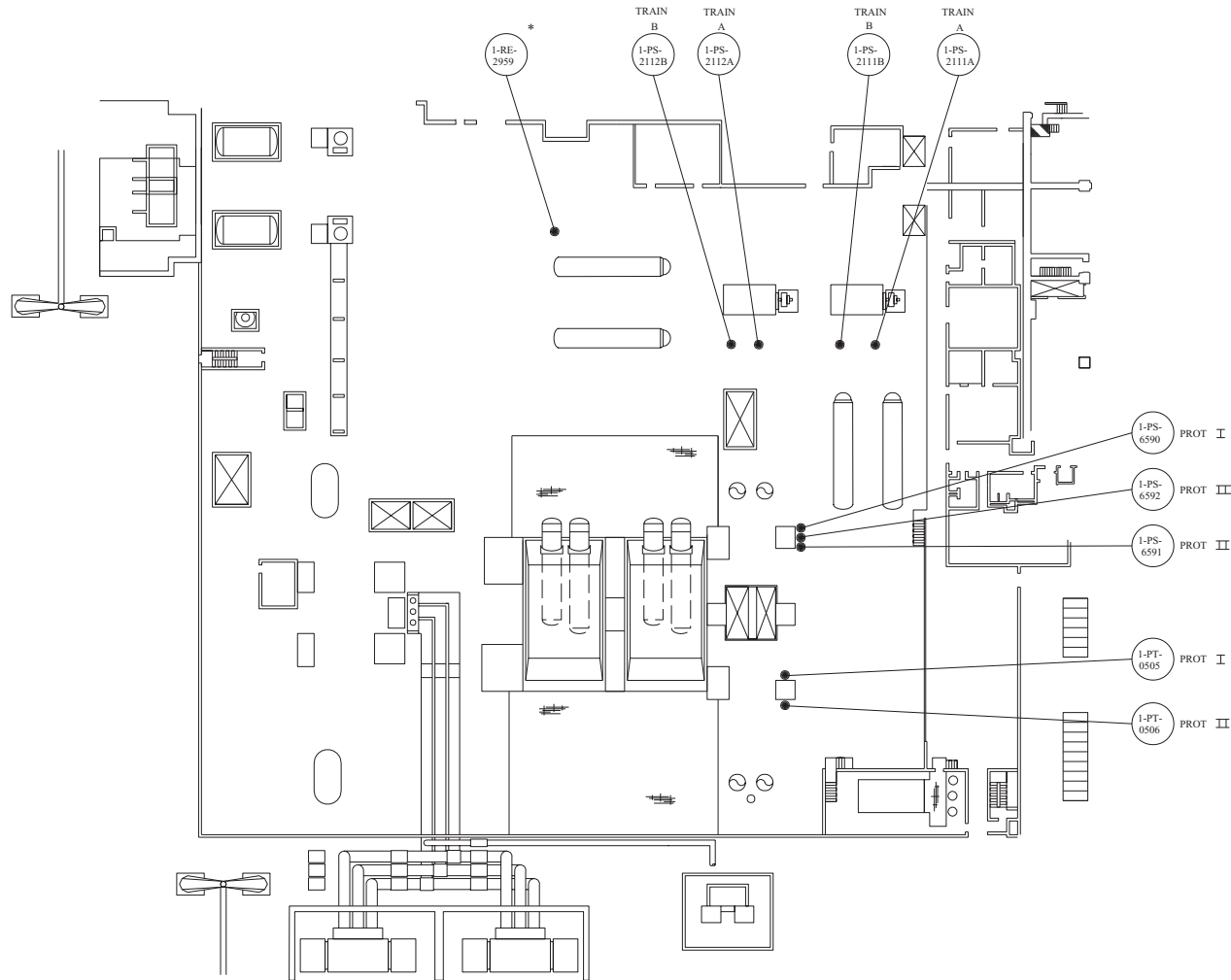
- 1. X-RE-5251A      LIQUID WASTE MONITOR

AMENDMENT 96

August 2, 1999

<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2</p>
<p>LOCATION OF CLASS 1E INSTRS. AND ACCIDENT MONITORING INSTRS. UNIT 1 TURBINE BUILDING PLAN AT EL 778'-0"</p>
<p>FIGURE 7.1-3 (SH 15 OF 36)</p>





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

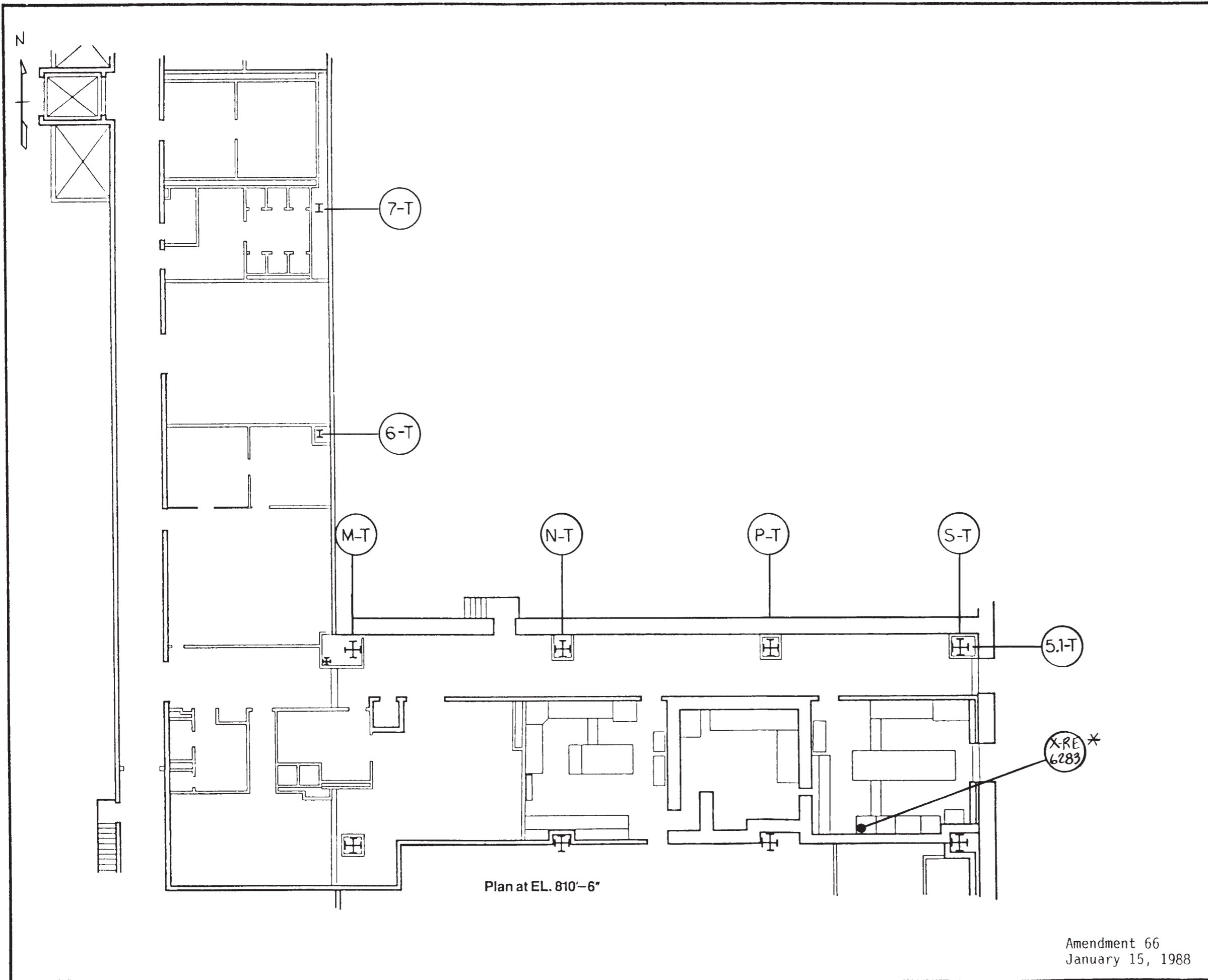
PLAN AT EL 803'-0" AND 810'-6"  
(MEZZANINE FLOOR PLAN)

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)



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"

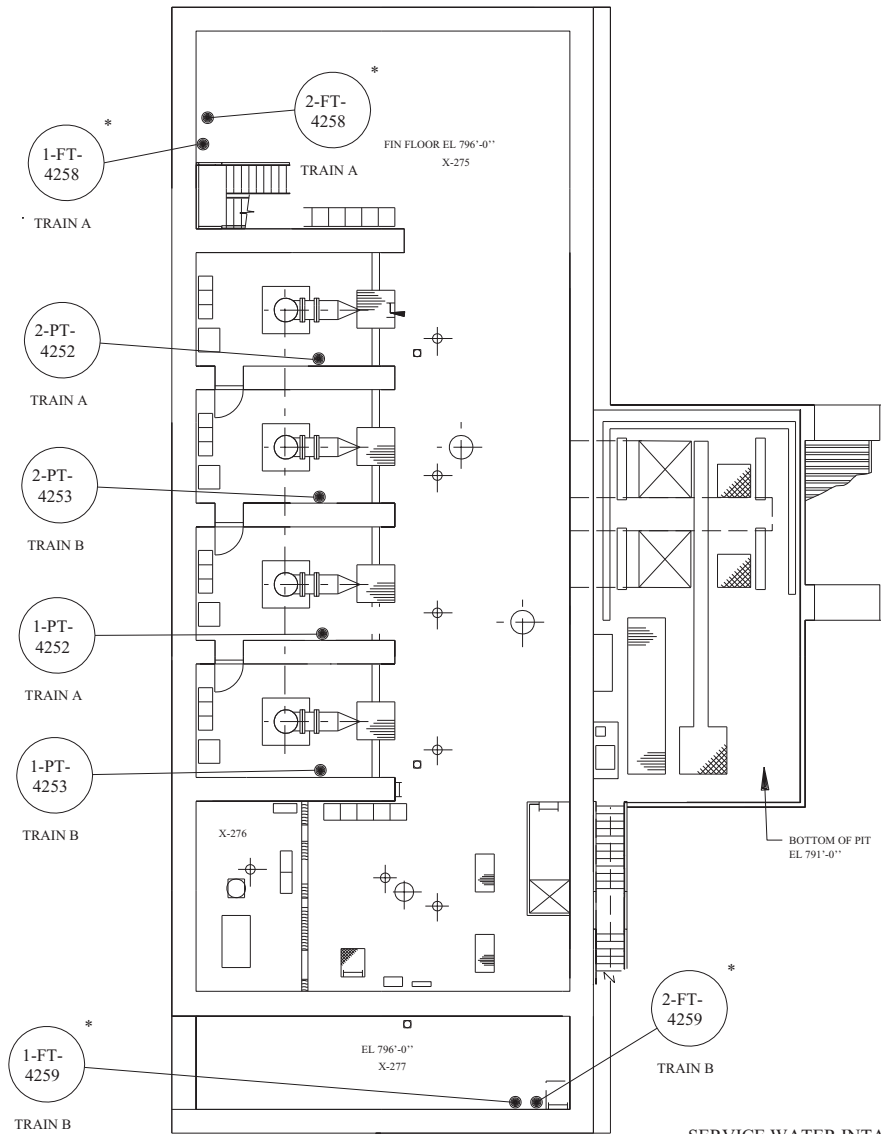
Figure No. 7.1-3 (Sh. 17 of 36)

Amendment 66  
 January 15, 1988

CPSSES/FSAR  
FIGURE 7.1-3  
(SHEET 18 OF 36)

78

THIS FIGURE HAS BEEN DELETED



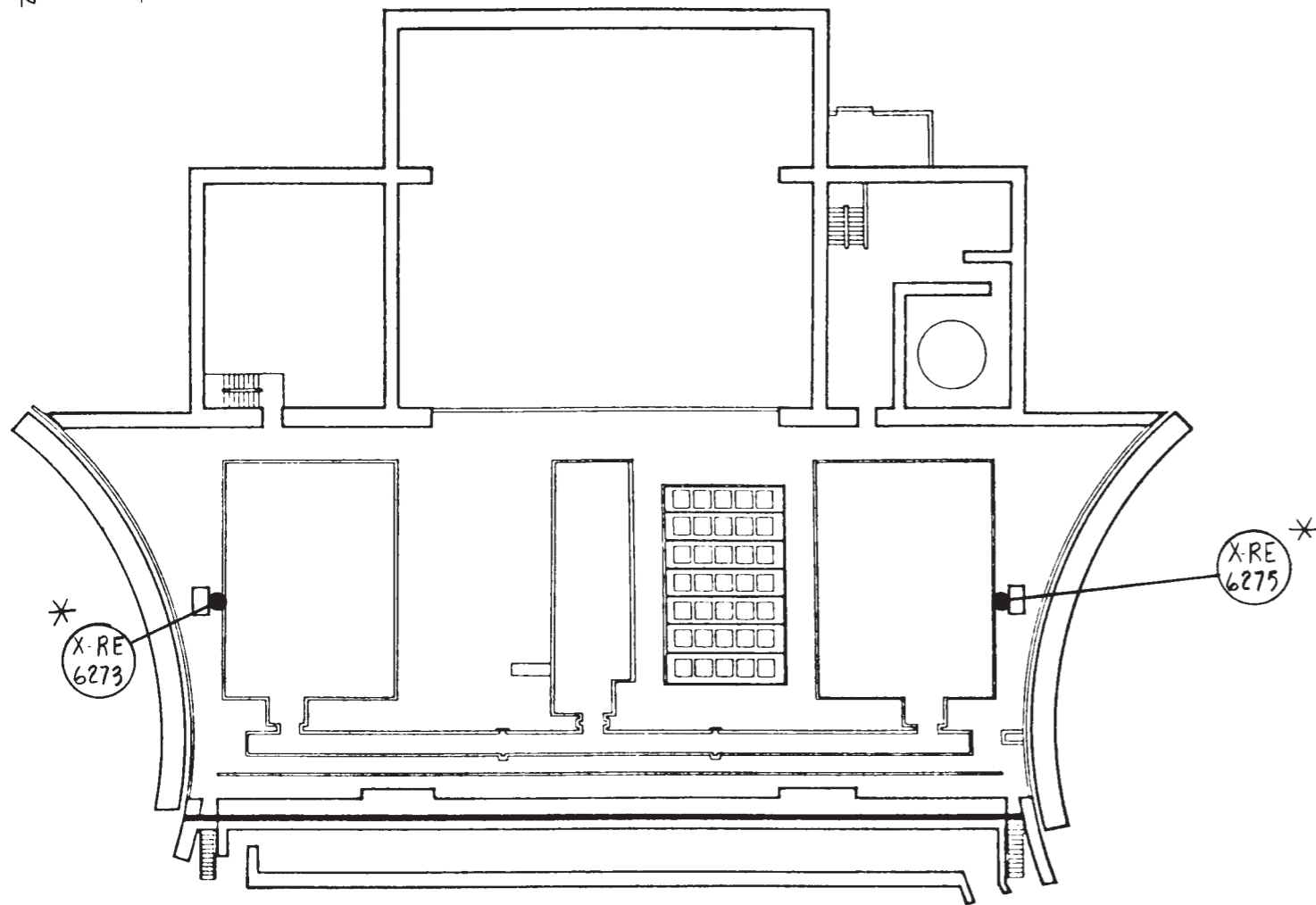
SERVICE WATER INTAKE PLAN AT EL 796'-0"

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

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



Plan at EL. 860'-0"

**Plan at Elevation 860'-0"**

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

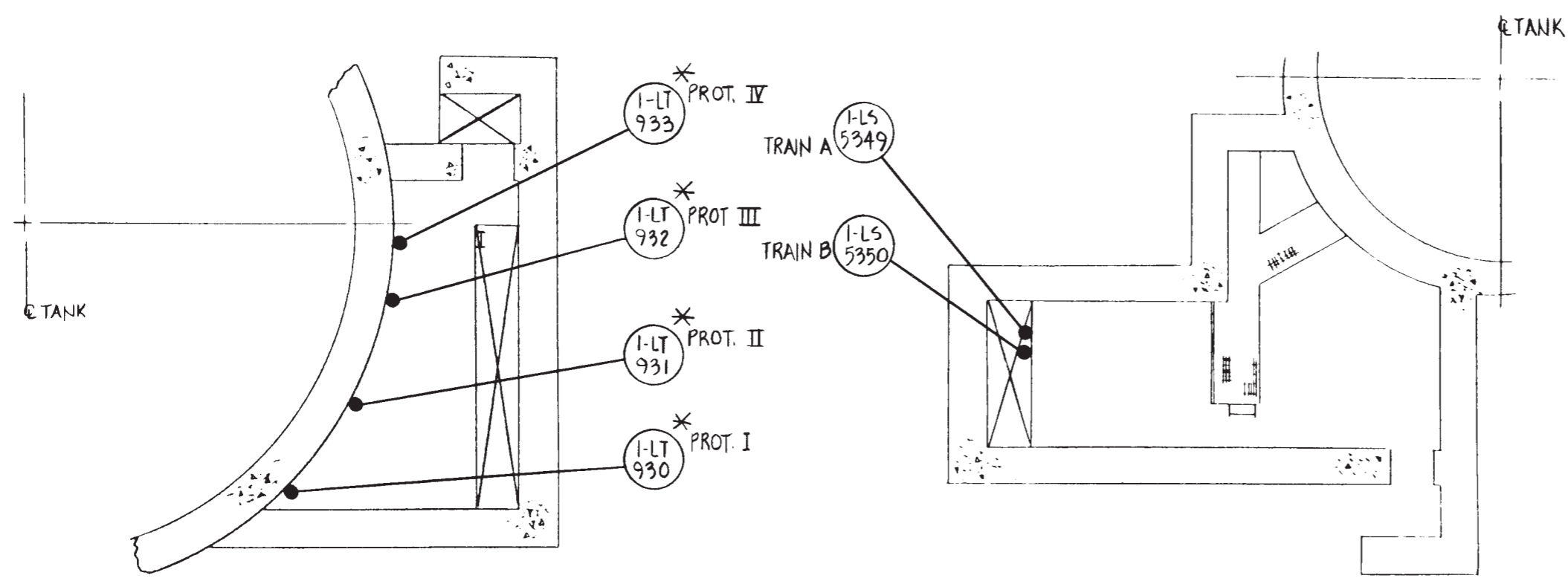
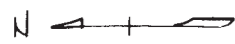
COMANCHE PEAK S.E.S.  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 and 2

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)

Amendment 66  
January 15, 1988



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"

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

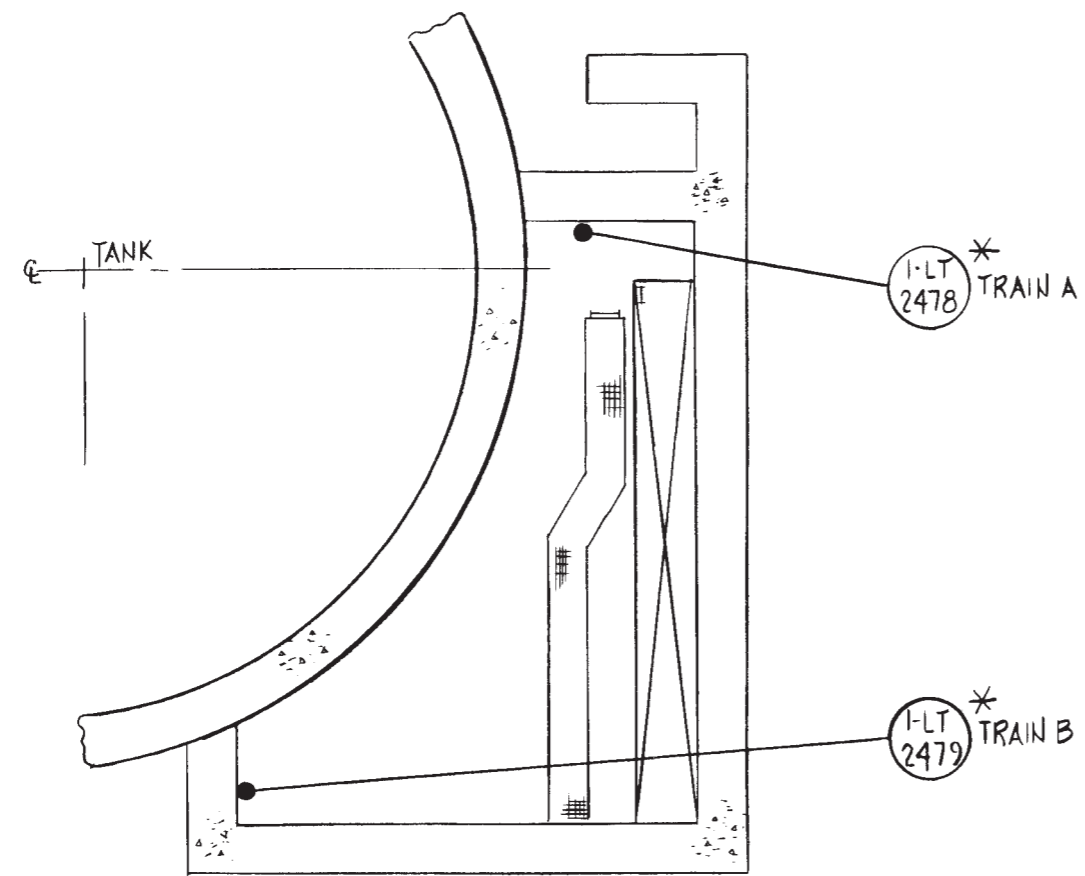
COMANCHE PEAK S.E.S.  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 and 2

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)

Amendment 66  
January 15, 1988



Condensate Water Storage Tank

CPI-AFATCS-01

**Plan at Elevation 810'-6"**

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

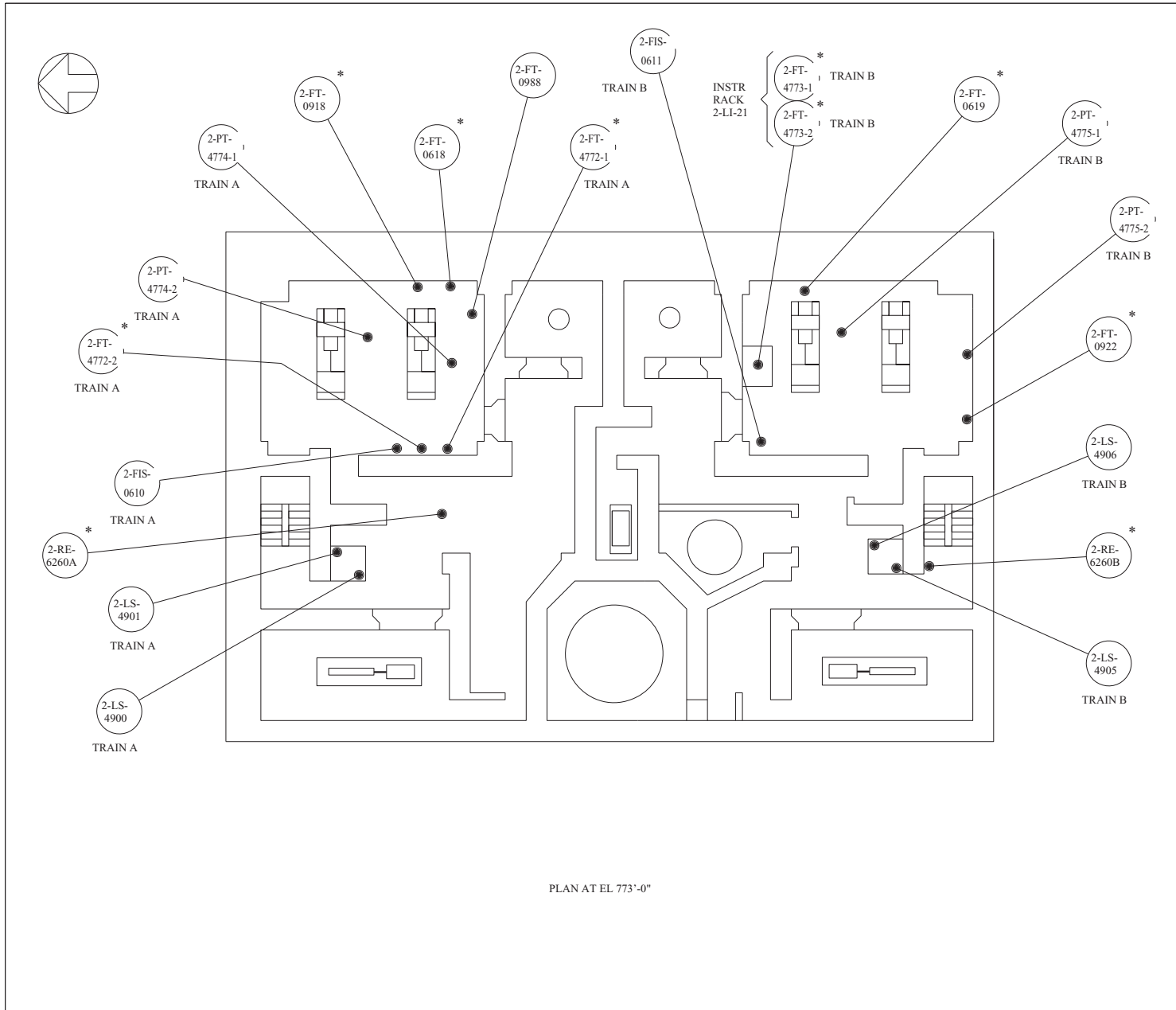
**COMANCHE PEAK S.E.S.  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 and 2**

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 66  
January 15, 1988



PLAN AT ELEVATION 773'-0"

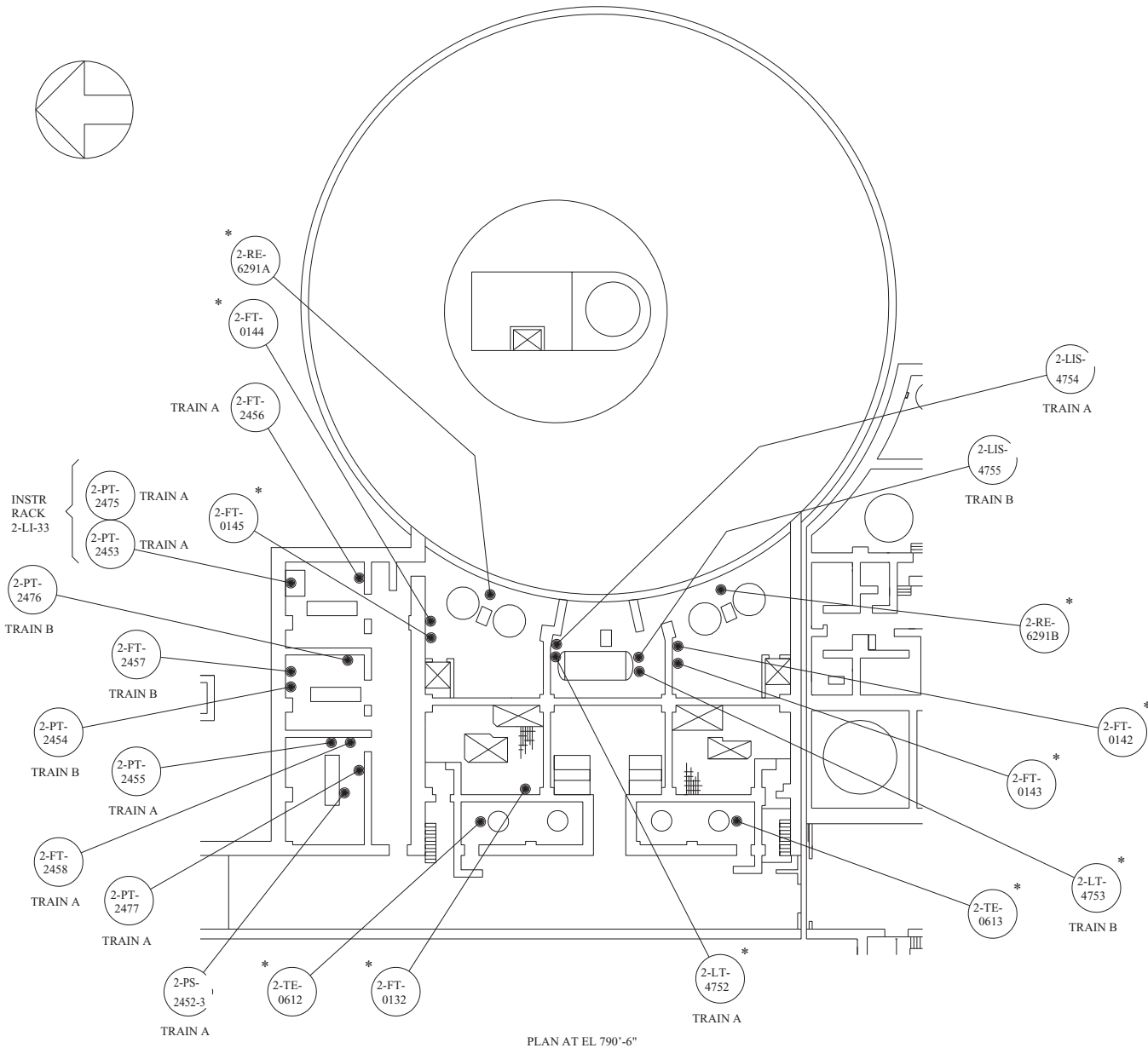
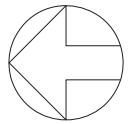
2-FIS-0610	RHR PMP 1 MIN FLOW
2-FIS-0611	RHR PMP 2 MIN FLOW
2-FT-0618	RHR HX 1 BYP CONT
2-FT-0619	RHR HX 2 BYP CONT
2-FT-0918	SI PMP 1 DISCH
2-FT-0922	SI PMP 2 DISCH
2-FT-0988	RHR PMP DISCH
2-FT-4772-1	CONTMT SPRAY PMP 1 DISCH
2-FT-4772-2	CONTMT SPRAY PMP 3 DISCH
2-FT-4773-1	CONTMT SPRAY PMP 2 DISCH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

PLAN AT EL 773'-0"

**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 SAFEGUARD BUILDING PLAN AT EL 773'-0"
FIGURE 7.1-3 (SH 23 OF 36)





PLAN AT EL 790'-6"

PLAN AT ELEVATION 790'-6"

- 2-FT-0132 RCS HI PRESS LETDOWN FLOW
- 2-FT-0142 RCP 4 SEAL WATER INJ FLOW
- 2-FT-0143 RCP 3 SEAL WATER INJ FLOW
- 2-FT-0144 RCP 2 SEAL WATER INJ FLOW
- 2-FT-0145 RCP 1 SEAL WATER INJ FLOW
- 2-TE-0612 RHR DISCH TEMP (PUMP 1)
- 2-TE-0613 RHR DISCH TEMP (PUMP 2)
- 2-PS-2452-3 AFW PMP TURB LUB OIL PRESS
- 2-PT-2453 MTR DRIVEN AFW PMP 01 DISCH
- 2-PT-2454 MTR DRIVEN AFW PMP 01 DISCH
- 2-PT-2455 TURB DRIVEN AFW PMP DISCH
- 2-FT-2456 MTR DRIVEN AFW PMP 01 DISCH
- 2-FT-2457 MTR DRIVEN AFW PMP 01 DISCH
- 2-FT-2458 MTR DRIVEN AFW PMP DISCH
- 2-PT-2475 MTR DRIVEN AFW PMP 01 SUCT HDR
- 2-PT-2476 MTR DRIVEN AFW PMP 02 SUCT HDR
- 2-PT-2477 TURB DRIVEN AFW PMP SUCT HDR
- 2-LT-4752 CHEM ADD TANK
- 2-LT-4753 CHEM ADD TANK
- 2-LIS-4754 CHEM ADD TANK LEVEL LO
- 2-LIS-4755 CHEM ADD TANK LEVEL LO
- 2-RE-6291A HIGH RANGE AREA MONITOR ISOL VLV TANK TRN A
- 2-RE-6291B HIGH RANGE AREA MONITOR ISOL VLV TANK TRN B

AMENDMENT 100

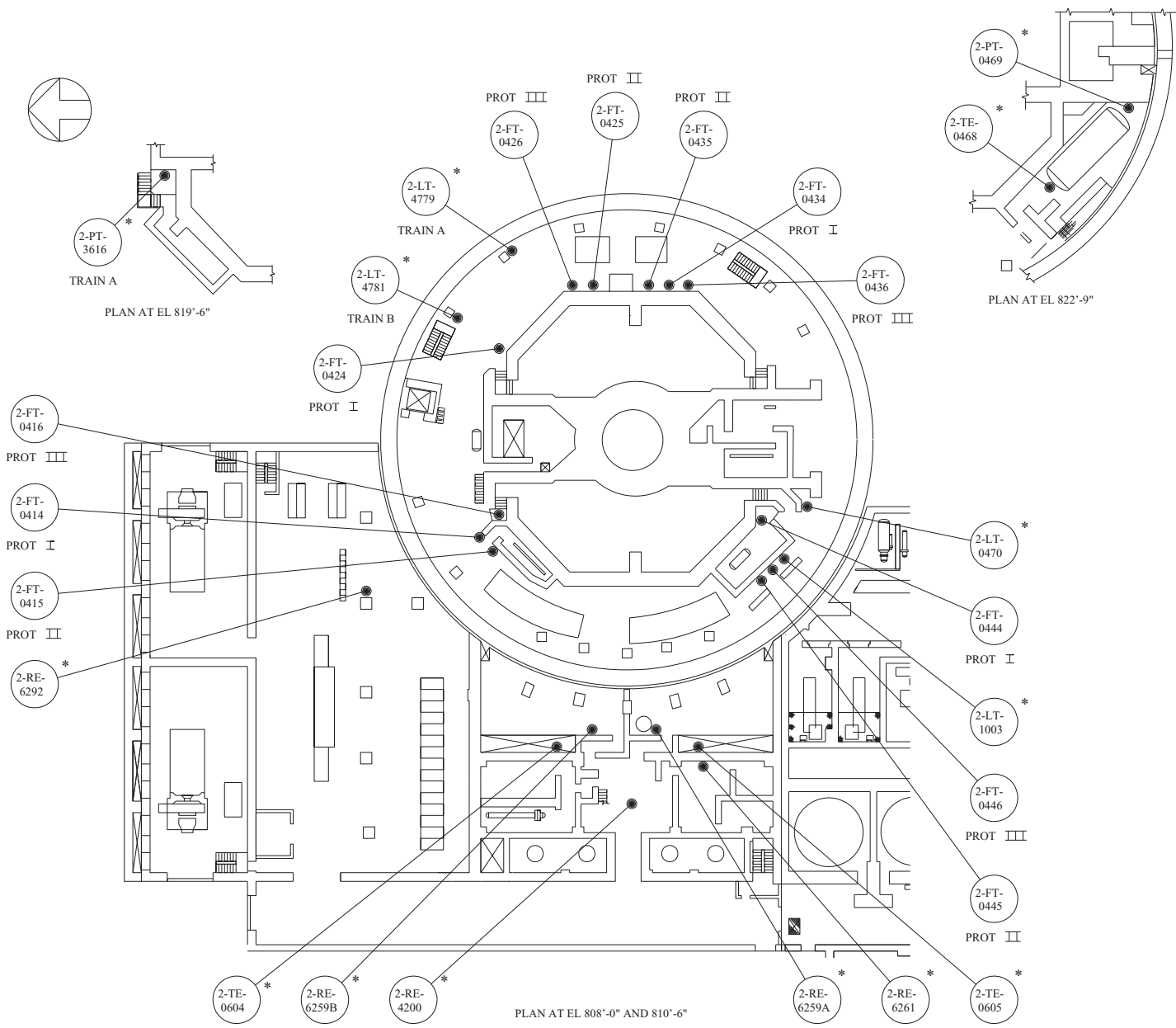
COMANCHE PEAK S E S  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 AND 2

---

LOCATION OF CLASS 1E INSTRUMENTS  
AND ACCIDENT MONITORING INSTRUMENTS  
UNIT 2 SAFEGUARD BUILDING  
PLAN AT EL 790'-6"

---

FIGURE 7.1-3 (SH 23A OF 36)



2-FT-0414	RC FLOW LOOP 1
2-FT-0415	RC FLOW LOOP 1
2-FT-0416	RC FLOW LOOP 1
2-FT-0424	RC FLOW LOOP 2
2-FT-0425	RC FLOW LOOP 2
2-FT-0426	RC FLOW LOOP 2
2-LT-0434	RC FLOW LOOP 3
2-FT-0435	RC FLOW LOOP 3
2-FT-0436	RC FLOW LOOP 3
2-FT-0444	RC FLOW LOOP 4
2-FT-0445	RC FLOW LOOP 4
2-FT-0446	RC FLOW LOOP 4
2-TE-0468	PRZR RELIEF TANK
2-PT-0469	PRZR RELIEF TANK
2-LT-0470	PRZR RELIEF TANK
2-TE-0604	RESIDUAL HX 1 RETURN
2-TE-0605	RESIDUAL HX 2 RETURN
2-LT-1003	RC DRAIN TANK
2-LT-4779	CNTMT LEVEL WIDE RANGE
2-LT-4781	CNTMT LEVEL WIDE RANGE
2-RE-4200	SG BLO DWN MON
2-RE-6259A	HIGH RANGE AREA MONITOR
	PIPE PENET S
2-RE-6259B	HIGH RANGE AREA MONITOR
	PIPE PENET N
2-RE-6261	LOW RANGE AREA MONITOR
	SB SAMPLING RM
2-RE-6292	HIGH RANGE AREA MONITOR
	SWGR RM TRN A
2-PT-3616	RCS WIDE RANGE PRESS

AMENDMENT 100  
December 18, 1992

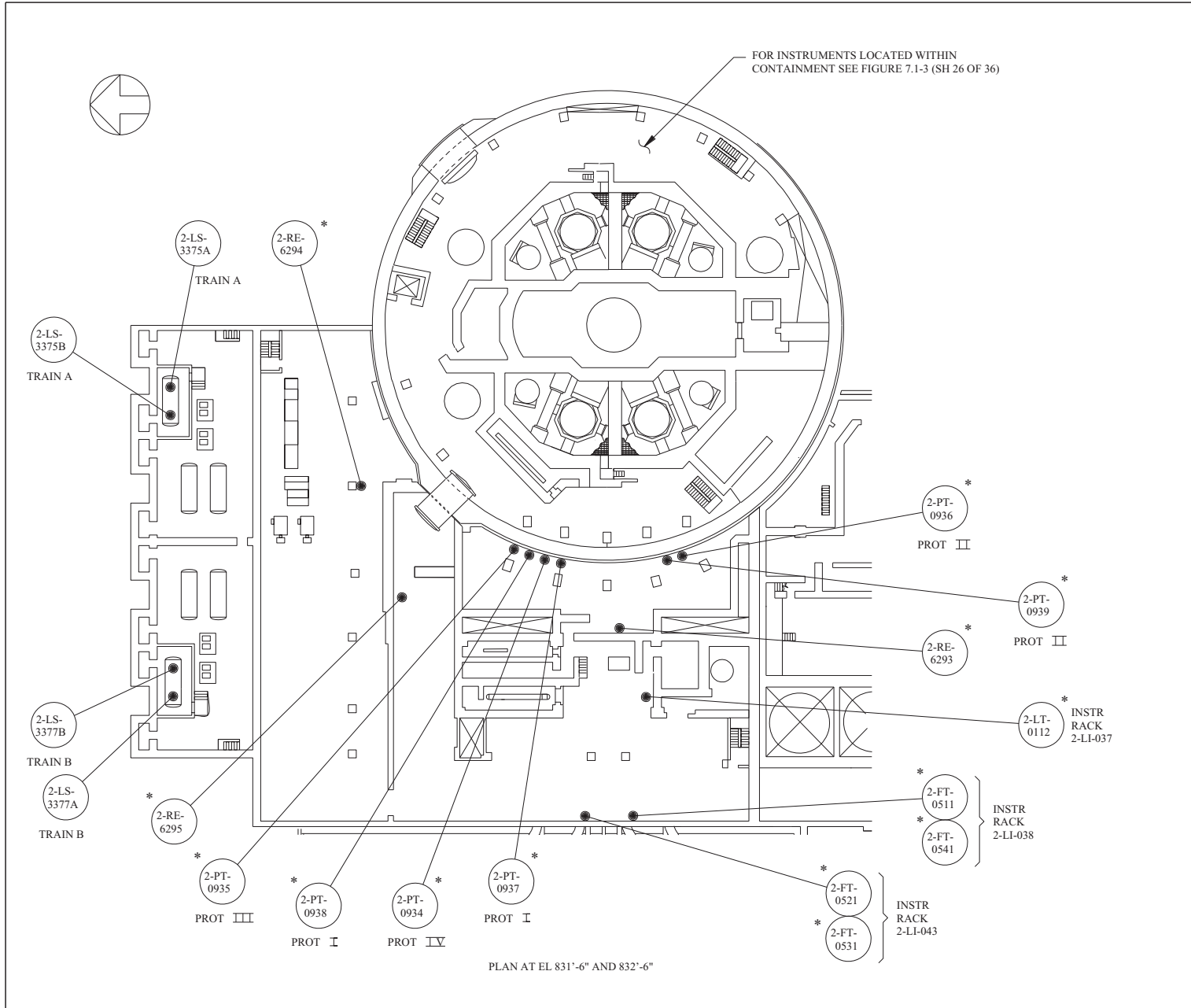
COMANCHE PEAK S E S  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 AND 2

---

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 ELEVATION 831'-6"  
SAFEGUARD BUILDING

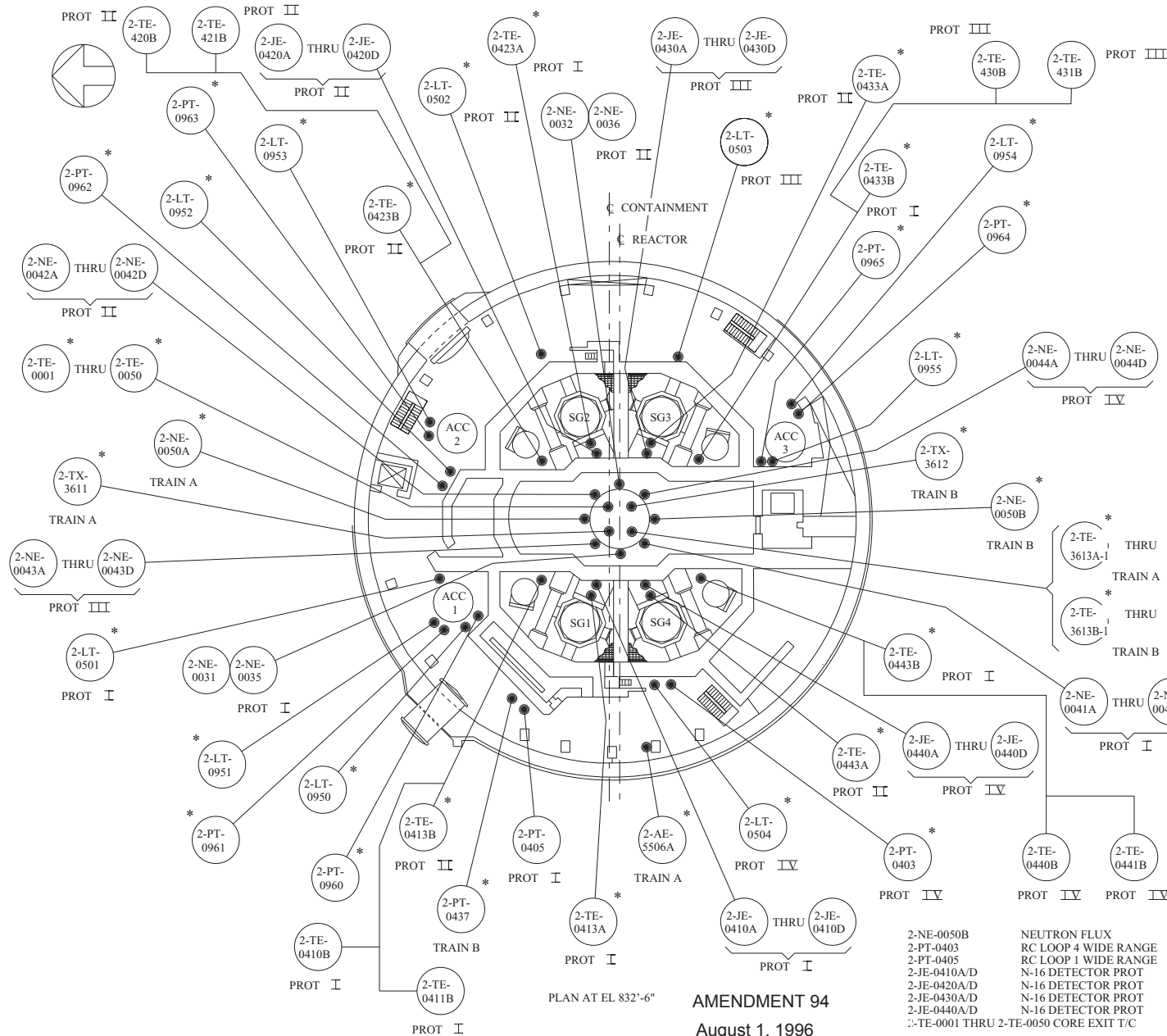
2-LT-0112	VOL CONTROL
2-FT-0511	STM GEN FW FLOW LOOP 1
2-FT-0521	STM GEN FW FLOW LOOP 2
2-FT-0531	STM GEN FW FLOW LOOP 3
2-FT-0541	STM GEN FW FLOW LOOP 4
2-PT-0934	CONTAINMENT PRESS (IR)
2-PT-0935	CONTAINMENT PRESS (IR)
2-PT-0936	CONTAINMENT PRESS (IR)
2-PT-0937	CONTAINMENT PRESS (IR)
2-PT-0938	CONTAINMENT PRESS (WR)
2-PT-0939	CONTAINMENT PRESS (WR)
2-RE-6293	HIGH RANGE AREA MONITOR PIPE PENETRATION
2-RE-6294	HIGH RANGE AREA MONITOR ELEC EQUIP ROOM
2-RE-6295	HIGH RANGE AREA MONITOR CONTAINMENT ACCESS HALL

PLAN AT ELEVATION 844'-0"  
DIESEL GENERATOR BUILDING

2-LS-3375A	D F O DAY TK 1 LVL HI/LO
2-LS-3375B	D F O DAY TK 1 LVL HI/LO
2-LS-3377A	D F O DAY TK 2 LVL HI/LO
2-LS-3377B	D F O DAY TK 2 LVL HI/LO

AMENDMENT 100  
December 18, 1992

<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2</p>
<p>LOCATION OF CLASS 1E INSTRUMENTS AND ACCIDENT MONITORING INSTRUMENTS UNIT 2 SAFEGUARD AND DIESEL GENERATOR BLDG PLANS AT EL 831'-6" AND 844'-0"</p>
<p>FIGURE 7.1-3 (SH 25 OF 36)</p>



PLAN AT ELEVATIONS 832'-6" AND 842'-0"

- 2-TE-0410B SPARE
- 2-TE-0411B NARROW RNG TEMP COLD LEG
- 2-TE-0413A WIDE RNG TEMP HOT LEG
- 2-TE-0413B WIDE RNG TEMP COLD LEG
- 2-TE-0420B SPARE
- 2-TE-0421B NARROW RNG TEMP COLD LEG
- 2-TE-0423A WIDE RNG TEMP HOT LEG
- 2-TE-0423B WIDE RNG TEMP COLD LEG
- 2-TE-0430B SPARE
- 2-TE-0431B NARROW RNG TEMP COLD LEG
- 2-TE-0433A WIDE RNG TEMP HOT LEG
- 2-TE-0433B WIDE RNG TEMP COLD LEG
- 2-TE-0440B SPARE
- 2-TE-0441B NARROW RNG TEMP COLD LEG
- 2-TE-0443A WIDE RNG TEMP HOT LEG
- 2-TE-0443B WIDE RNG TEMP COLD LEG
- 2-LT-0501 SG LOOP 1 WIDE RANGE
- 2-LT-0502 SG LOOP 2 WIDE RANGE
- 2-LT-0503 SG LOOP 3 WIDE RANGE
- 2-LT-0504 SG LOOP 4 WIDE RANGE
- 2-LT-0950 ACCUM TANK 1
- 2-LT-0951 ACCUM TANK 1
- 2-LT-0952 ACCUM TANK 2
- 2-LT-0953 ACCUM TANK 2
- 2-LT-0954 ACCUM TANK 3
- 2-LT-0955 ACCUM TANK 3
- 2-PT-0961 ACCUM TANK 1
- 2-PT-0962 ACCUM TANK 2
- 2-PT-0963 ACCUM TANK 2
- 2-PT-0964 ACCUM TANK 3
- 2-PT-0965 ACCUM TANK 3
- 2-TX-3611 REACTOR COOLANT SUBCOOLING
- 2-TX-3612 REACTOR COOLANT SUBCOOLING
- 2-TE-3613A-1 REACTOR VESSEL LEVEL
- 2-TE-3613A-2 REACTOR VESSEL LEVEL
- 2-TE-3613A-3 REACTOR VESSEL LEVEL
- 2-TE-3613A-4 REACTOR VESSEL LEVEL
- 2-TE-3613A-5 REACTOR VESSEL LEVEL
- 2-TE-3613A-6 REACTOR VESSEL LEVEL
- 2-TE-3613A-7 REACTOR VESSEL LEVEL
- 2-TE-3613A-8 REACTOR VESSEL LEVEL
- 2-TE-3613B-1 REACTOR VESSEL LEVEL
- 2-TE-3613B-2 REACTOR VESSEL LEVEL
- 2-TE-3613B-3 REACTOR VESSEL LEVEL
- 2-TE-3613B-4 REACTOR VESSEL LEVEL
- 2-TE-3613B-5 REACTOR VESSEL LEVEL
- 2-TE-3613B-6 REACTOR VESSEL LEVEL
- 2-TE-3613B-7 REACTOR VESSEL LEVEL
- 2-TE-3613B-8 REACTOR VESSEL LEVEL
- 2-AE-5506A H2 MONITOR EL 836'-0"
- 2-PT-0437 RC LOOP 1 WIDE RANGE
- 2-NE-0031 SOURCE RANGE
- 2-NE-0032 SOURCE RANGE
- 2-NE-0033 INTERM RANGE
- 2-NE-0036 INTERM RANGE
- 2-NE-0041A/D POWER RANGE
- 2-NE-0042A/D POWER RANGE
- 2-NE-0043A/D POWER RANGE
- 2-NE-0044A/D POWER RANGE
- 2-NE-0050A NEUTRON FLUX

**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 832'-6"

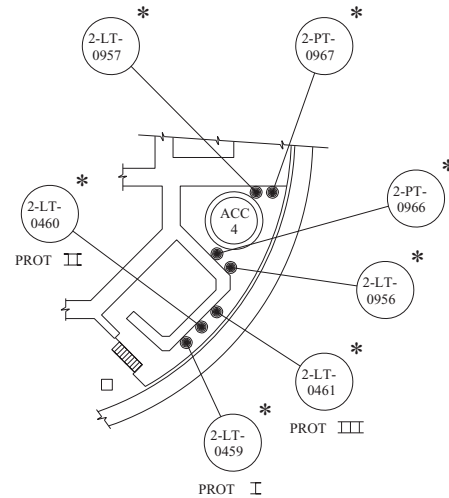
---

FIGURE 7.1-3 (SH 26 OF 36)



PLAN AT ELEVATION 842'-0"

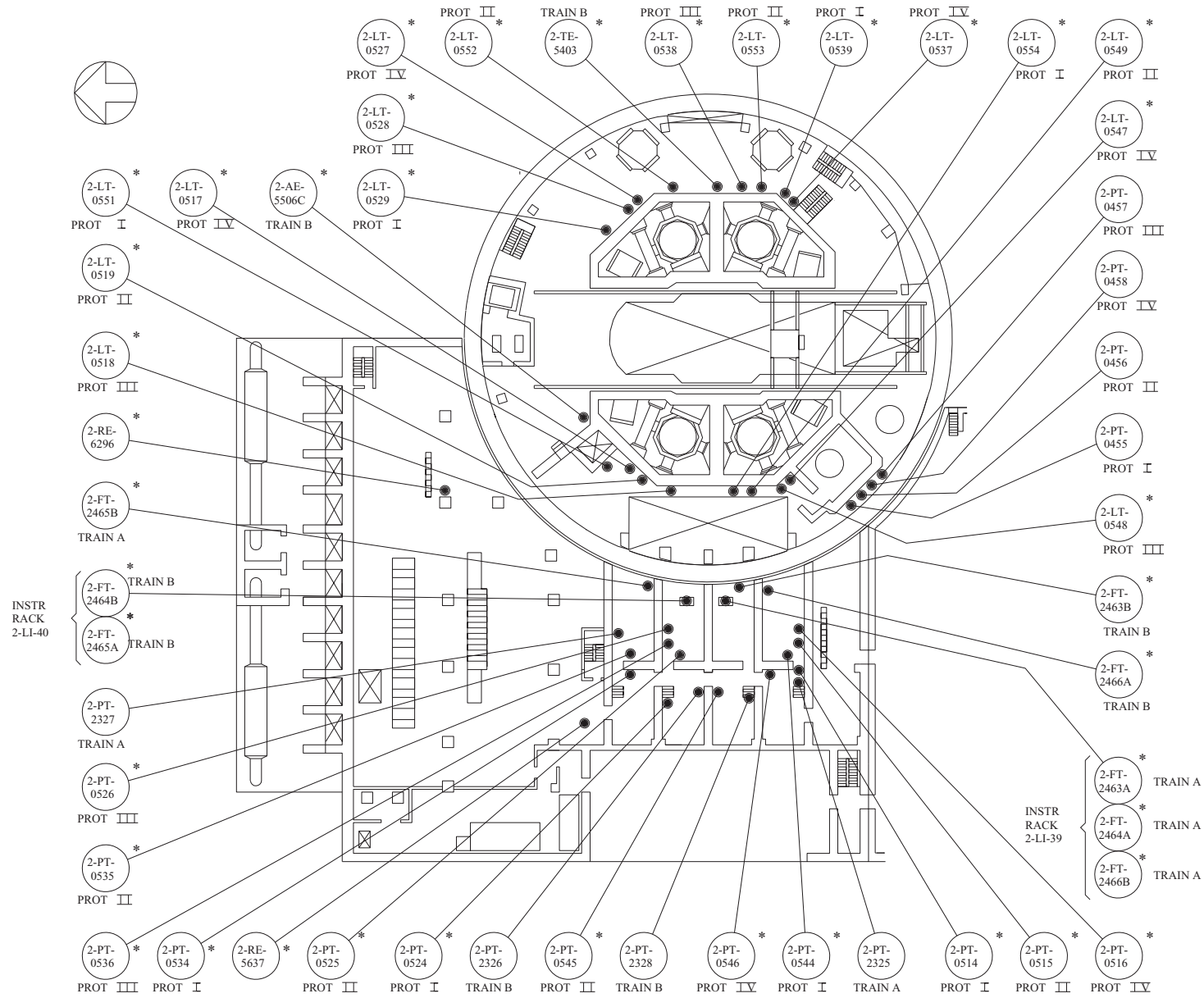
2-LT-0459	PRZR LEVEL
2-LT-0460	PRZR LEVEL
2-LT-0461	PRZR LEVEL
2-LT-0956	ACCUM TANK 4
2-LT-0957	ACCUM TANK 4
2-PT-0966	ACCUM TANK 4
2-PT-0967	ACCUM TANK 4



PLAN AT EL 842'-0"

AMENDMENT 100  
December 18, 1992

<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2</p>
<p>LOCATION OF CLASS 1E INSTRUMENTS AND ACCIDENT MONITORING INSTRUMENTS UNIT 2 CONTAINMENT BUILDING PLAN AT EL 842'-0"</p>
<p>FIGURE 7.1-3 (SH 26A OF 36)</p>

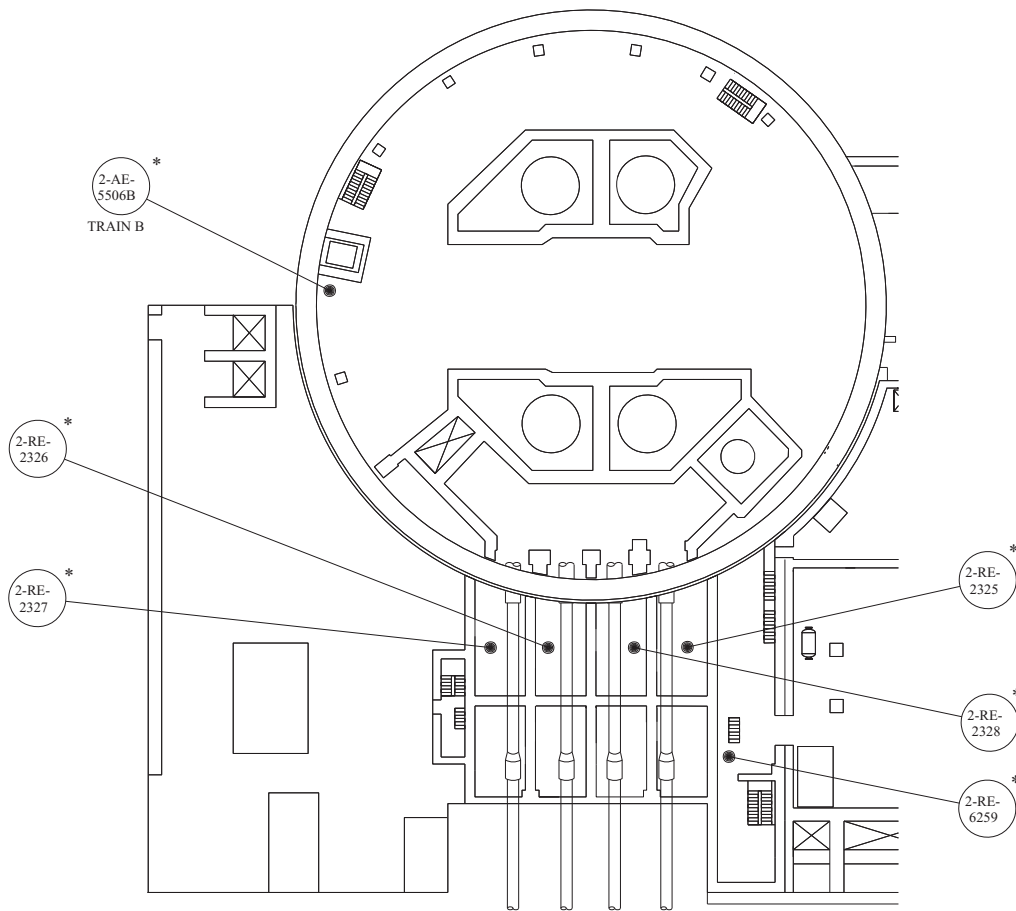


- 2-LT-0527 \* PROT IIV
- 2-LT-0528 \* PROT IIII
- 2-LT-0519 \* PROT III
- 2-LT-0518 \* PROT IIII
- 2-RE-6296 \*
- 2-FT-2465B \* TRAIN A
- 2-FT-2464B \* TRAIN B
- 2-FT-2465A \* TRAIN B
- 2-PT-2327 \* TRAIN A
- 2-PT-0526 \* PROT IIII
- 2-PT-0535 \* PROT III
- 2-PT-0536 \* PROT IIII
- 2-PT-0534 \* PROT I
- 2-RE-5637 \*
- 2-PT-0525 \* PROT III
- 2-PT-0524 \* PROT I
- 2-PT-2326 \* TRAIN B
- 2-PT-0545 \* PROT III
- 2-PT-2328 \* TRAIN B
- 2-PT-0546 \* PROT IIV
- 2-PT-0544 \* PROT I
- 2-PT-2325 \* TRAIN A
- 2-PT-0514 \* PROT I
- 2-PT-0515 \* PROT III
- 2-PT-0516 \* PROT IIV
- 2-LT-0529 \* PROT I
- 2-PT-0457 \* PROT IIII
- 2-PT-0458 \* PROT IIV
- 2-PT-0456 \* PROT III
- 2-PT-0455 \* PROT I
- 2-LT-0548 \* PROT IIII
- 2-FT-2463B \* TRAIN B
- 2-FT-2466A \* TRAIN B
- 2-PT-2463A \* TRAIN A
- 2-PT-2464A \* TRAIN A
- 2-PT-2466B \* TRAIN A
- 2-LT-0551 \* PROT I
- 2-LT-0552 \* PROT III
- 2-LT-0537 \* PROT IIV
- 2-LT-0549 \* PROT I
- 2-LT-0547 \* PROT IIV
- 2-PT-0457 \* PROT IIII
- 2-PT-0458 \* PROT IIV
- 2-PT-0456 \* PROT III
- 2-PT-0455 \* PROT I
- 2-LT-0548 \* PROT IIII
- 2-FT-2463B \* TRAIN B
- 2-FT-2466A \* TRAIN B
- 2-PT-2463A \* TRAIN A
- 2-PT-2464A \* TRAIN A
- 2-PT-2466B \* TRAIN A

AMENDMENT 100  
December 18, 1992

<p>COMANCHE PEAK S E S</p> <p>FINAL SAFETY ANALYSIS REPORT</p> <p>UNITS 1 AND 2</p>
<p>LOCATION OF CLASS 1E INSTRUMENTS AND ACCIDENT MONITORING INSTRUMENTS UNIT 2 CONTAINMENT AND SAFEGUARD BLDG PLANS AT EL 852'-6\"/&gt; </p>

FIGURE 7.1-3 (SH 27 OF 36)

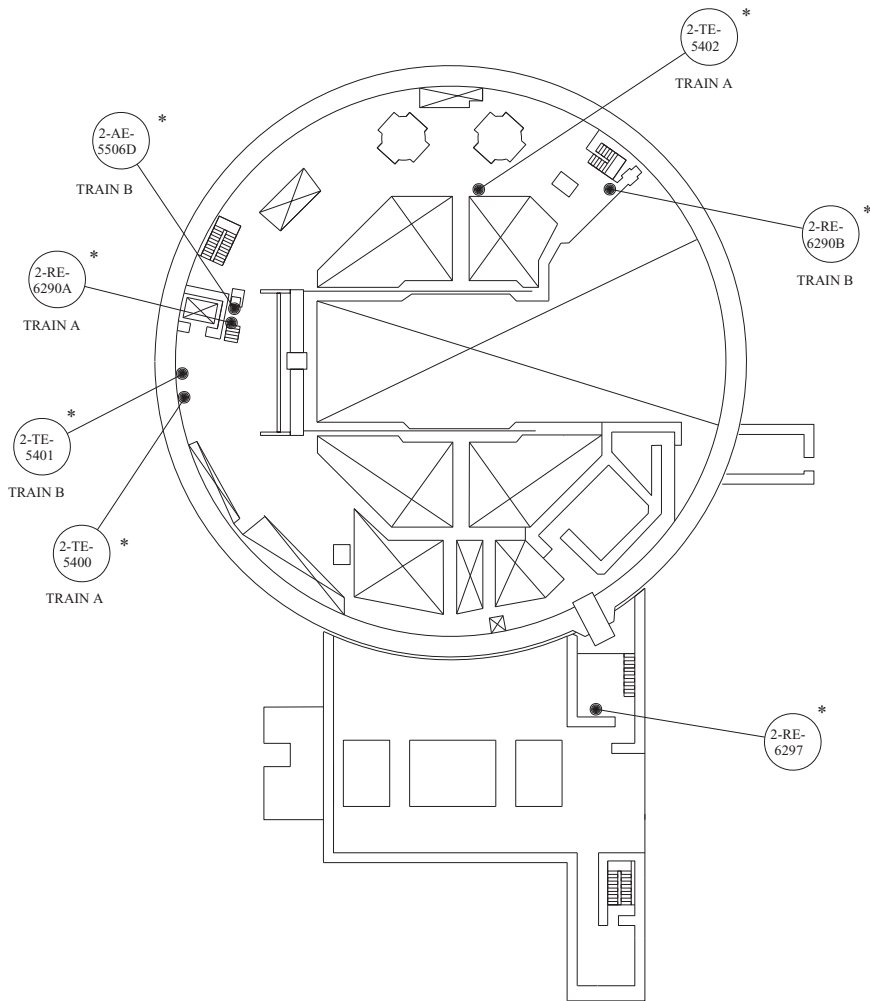


PLAN AT EL 873'-6"

- 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 H<sub>2</sub> MONITOR EL 877'-0"

AMENDMENT 100  
December 18, 1992

<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2</p>
<p>LOCATION OF CLASS 1E INSTRUMENTS AND ACCIDENT MONITORING INSTRUMENTS UNIT 2 CONTAINMENT AND SAFEGUARD BLDG PLANS AT EL 873'-6"</p>
<p>FIGURE 7.1-3 (SH 28 OF 36)</p>



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 <sub>2</sub> 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

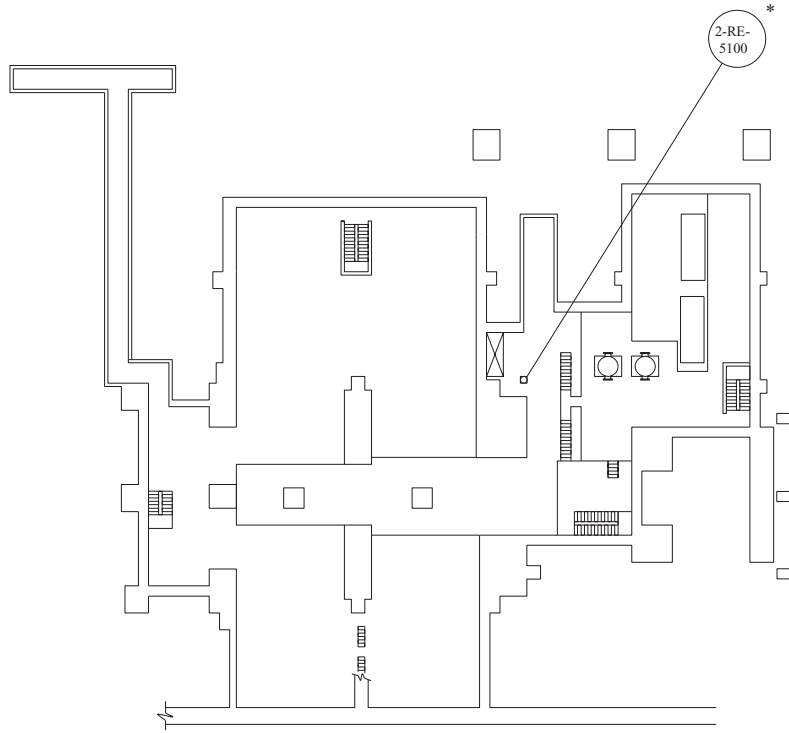
PLANS AT EL 905'-9" AND 896'-4"

AMENDMENT 100  
December 18, 1992

<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2</p>
<p>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"</p>
<p>FIGURE 7.1-3 (SH 29 OF 36)</p>



2-RE-5100 TB SUMP 2-04 RADIATION  
DETECTOR



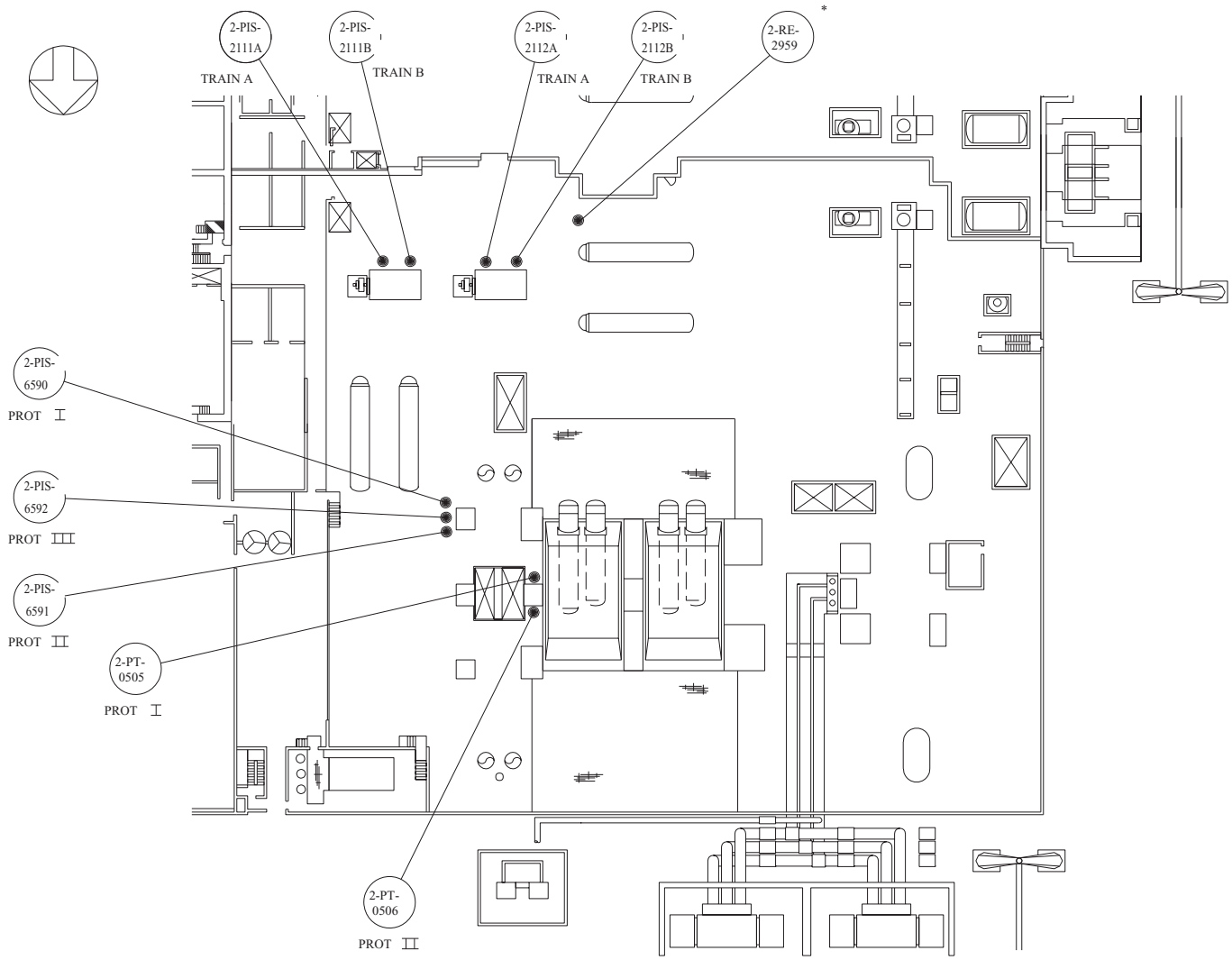
PLAN AT EL 755'-4" & 758'-3"

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 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

This sheet has been deleted.

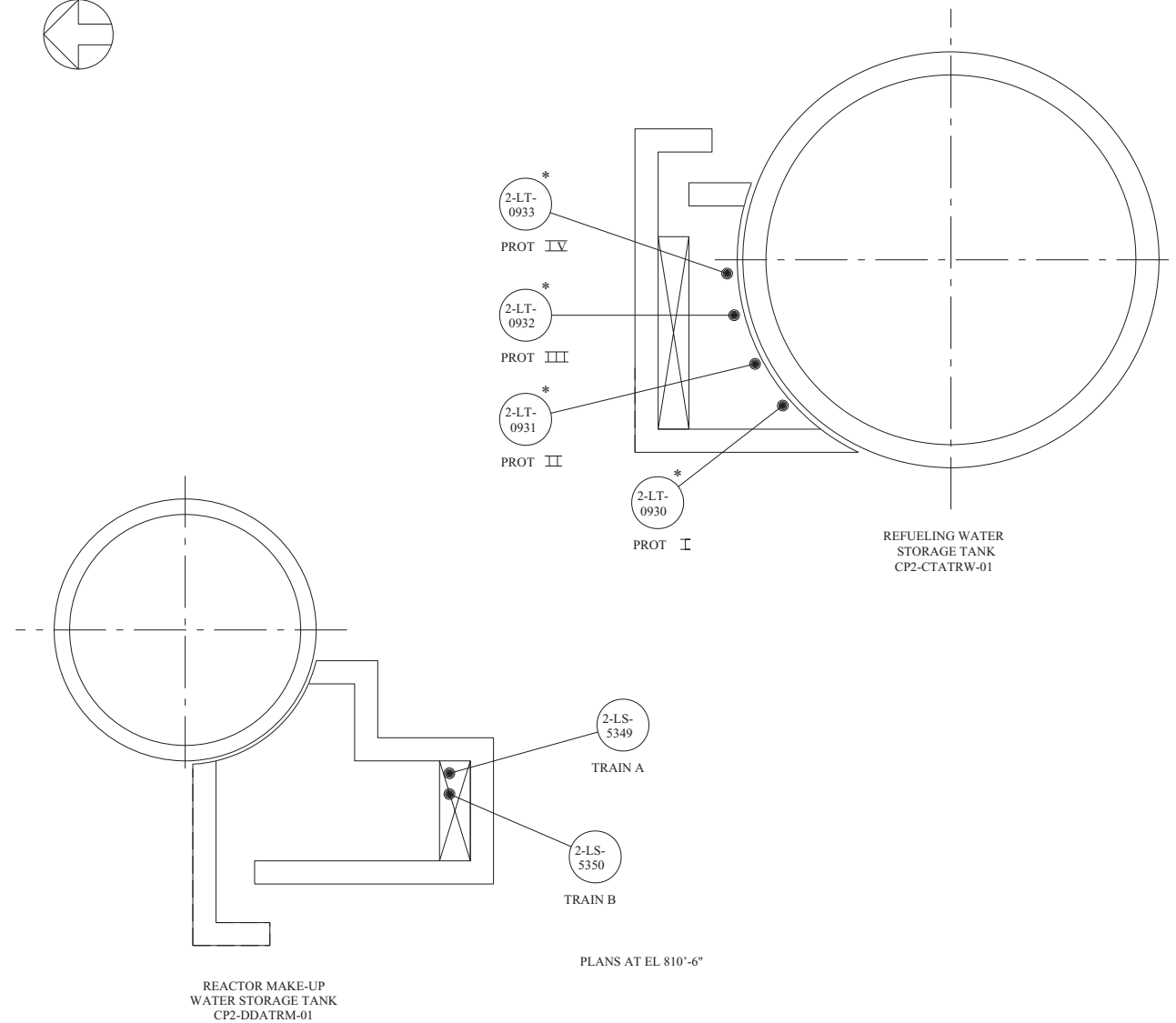


2-PIS-6590	TURBINE GEN HYDRO
2-PIS-6591	TURBINE GEN HYDRO
2-PIS-6592	TURBINE GEN HYDRO
2-PIS-2111A	FW PUMP 2-A OIL PRESS LO
2-PIS-2111B	FW PUMP 2-A OIL PRESS LO
2-PIS-2112A	FW PUMP 2-B OIL PRESS LO
2-PIS-2112B	FW PUMP 2-B OIL PRESS LO
2-PT-0505	TURBINE IMPULSE PRESS
2-PT-0506	TURBINE IMPULSE PRESS
2-RE-2959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

PLAN AT EL 803'-0" AND 810'-6"  
(MEZZANINE FLOOR PLAN)

AMENDMENT 96  
August 2, 1999

<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2</p>
<p>LOCATION OF CLASS 1E INSTRUMENTS AND ACCIDENT MONITORING INSTRUMENTS UNIT 2 TURBINE BUILDING PLANS AT EL 803'-0" AND 810'-6"</p>
<p>FIGURE 7.1-3 (SH 32 OF 36)</p>



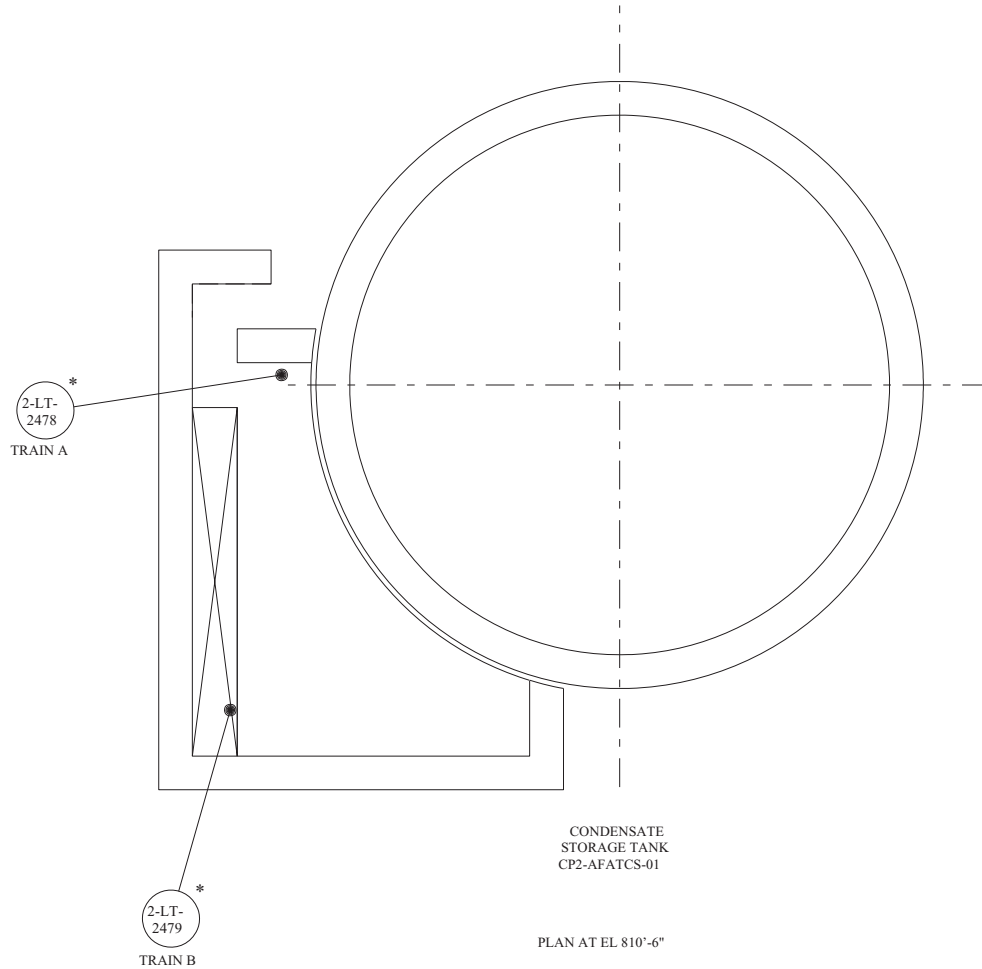
- 2-LT-0930 REFUELING WTR STORAGE TK
- 2-LT-0931 REFUELING WTR STORAGE TK
- 2-LT-0932 REFUELING WTR STORAGE TK
- 2-LT-0933 REFUELING WTR STORAGE TK
- 2-LS-5349 REACTOR MAKE-UP WTR STORAGE TK
- 2-LS-5350 REACTOR MAKE-UP WTR STORAGE TK

AMENDMENT 100  
December 18, 1992

<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2</p>
<p>LOCATION OF CLASS 1E INSTRUMENTS AND ACCIDENT MONITORING INSTRUMENTS UNIT 2 YARD PLAN AT EL 810'-6"</p>
<p>FIGURE 7.1-3 (SH 33 OF 36)</p>

2-LT-2478  
2-LT-2479

CONDENSATE STORAGE TANK  
CONDENSATE STORAGE TANK



AMENDMENT 100  
December 18, 1992

<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2</p>
<p>LOCATION OF CLASS 1E INSTRUMENTS AND ACCIDENT MONITORING INSTRUMENTS UNIT 2 YARD PLAN AT EL 810'-6"</p>
<p>FIGURE 7.1-3 (SH 34 OF 36)</p>

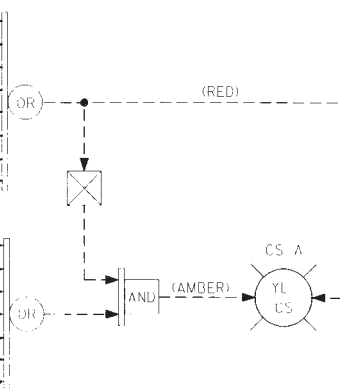
CONTAINMENT SPRAY SYSTEM

PRIMARY

- MANUAL VALVE SI-0047 NOT OPEN
- CNTMT SPRAY HEADER VALVE SW HS 4776 IN LOCKOUT POSITION
- CNTMT SPRAY PUMPS RM COOLER SW HS 5680A-1 IN LOCKOUT POSITION
- CNTMT SPRAY PUMPS RM COOLER SW HS 5680B-1 IN LOCKOUT POSITION
- CNTMT SPRAY P1 SW HS 4764 LOCKOUT
- CNTMT SPRAY P2 SW HS 4765 LOCKOUT
- \* OPERATOR MANUAL ACTION (BACKLIT) PUSHBUTTON CS A PUSHED IN
- RWS: ISO VALVE HV 4758 LIMIT SW ISO NOT OPEN

SECONDARY

- SCH W UNAVAILABLE
- CFW 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 3A OPEN



TYPICAL FOR:

	TRAIN	MANUAL VALVE	HEADER VALVE SW HS	RM COOLER SW HS	PMP 01/02 SW HS	PMP 01/02 SW HS	RWS: ISO VALVE	TIE BKR	BACKLIT 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 APPROPRIATE BACKLIT PUSHBUTTON FOR ANY OTHER BYPASS NOT INCLUDED IN THE ABOVE MENTIONED AUTOMATIC TRIP. IN THIS CASE THE ALARM CAN ONLY BE RESET BY PUSHING IN AGAIN THE SAME BUTTON. OPERATOR MANUAL RESETS SHALL NOT TURN OFF THE INDICATOR IF ANY OF THE AUTOMATIC INPUTS ARE ON.

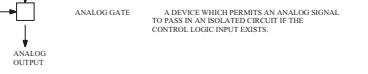
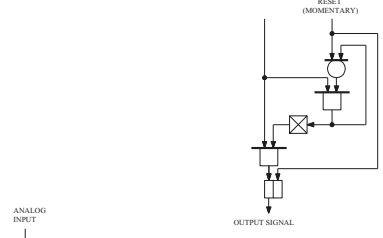
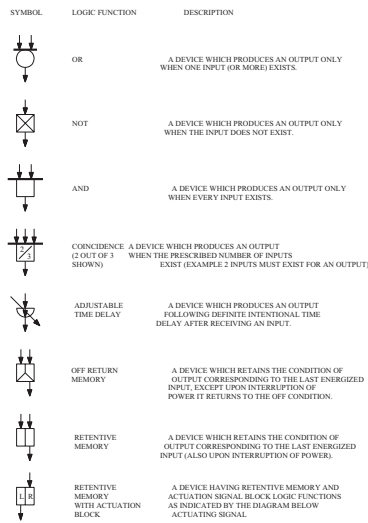
AMENDMENT 86  
AUGUST 31, 1992

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

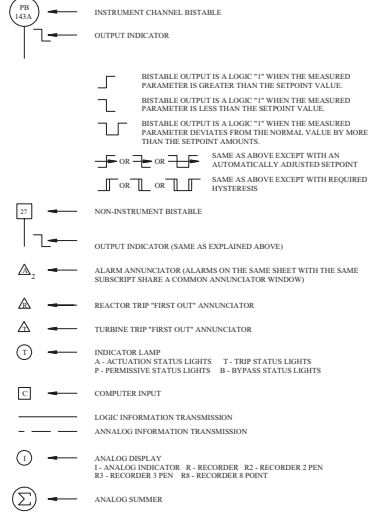
SAFETY SYSTEM  
INOPERABLE INDICATOR LOGIC  
FOR CONTAINMENT SPRAY SYSTEM (TYP)

FIGURE 7.1-4

LOGIC SYMBOLS



ADDITIONAL SYMBOLS



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 NON-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.

DEVICE FUNCTION LETTERS AND NUMBERS

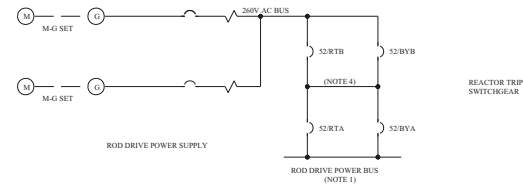
- |                |                         |
|----------------|-------------------------|
| FB             | FLOW CHANNEL            |
| LB             | LEVEL CHANNEL           |
| NC             | NUCLEAR CHANNEL         |
| PB             | PRESSURE CHANNEL        |
| RC             | RADIATION 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            |
| bc, to         | TORQUE SWITCH           |
- 
- POSITION SWITCH DEVELOPMENTS
- 
- 
- |                |                      |
|----------------|----------------------|
| 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 |

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 BUMP 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
TURBINE TRIPS, RUNBACKS AND OTHER SIGNALS	16
SOURCE RANGE FLUX-DOUBLING ALGORITHM	17
AMSAC SIGNALS	18

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

AMENDMENT 76  
 May 1, 1989

ROD DRIVE SUPPLY ONE LINE DIAGRAM

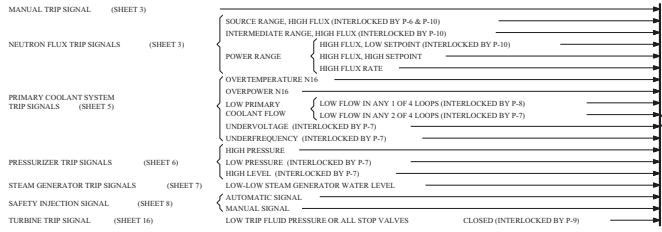


- NOTES:
- TRIPPING THE REACTOR TRIP BREAKERS S2RTA AND S2BYB REDUNDANTLY DE-ENERGIZES THE ROD DRIVES. ALL FULL LENGTH CONTROL RODS AND SHUT-DOWNS RODS ARE THEREBY RELEASED FOR GRAVITY INSERTION INTO THE REACTOR CORE.
  - NORMAL REACTOR OPERATION IS TO BE WITH REACTOR TRIP BREAKERS S2RTA AND S2BYB IN SERVICE AND BY-PASS BREAKERS S2BYA AND S2BYB 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.

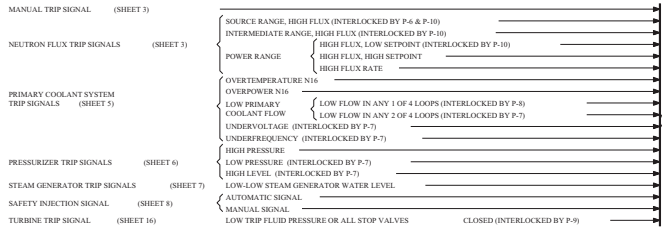
TRAIN A REACTOR SHUNT TRIP SIGNALS

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

LOGIC TRAIN A REACTOR TRIP SIGNALS

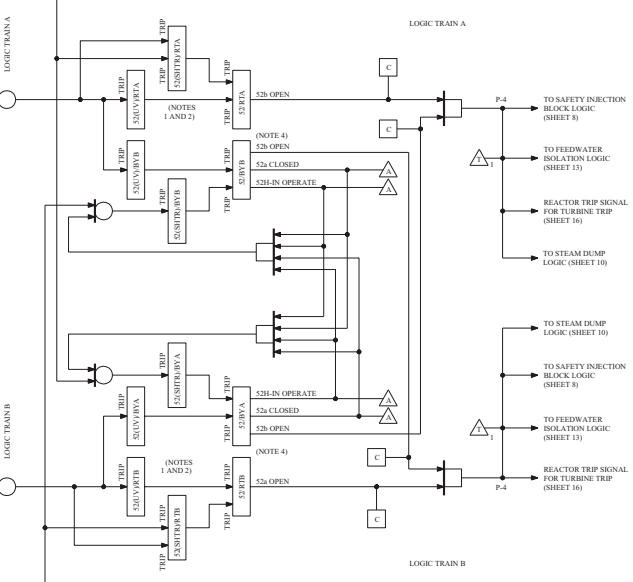


LOGIC TRAIN B REACTOR TRIP SIGNALS



TRAIN B REACTOR SHUNT TRIP SIGNALS

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

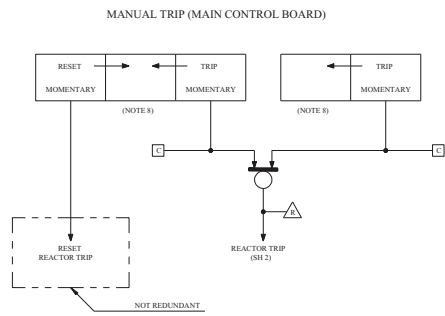
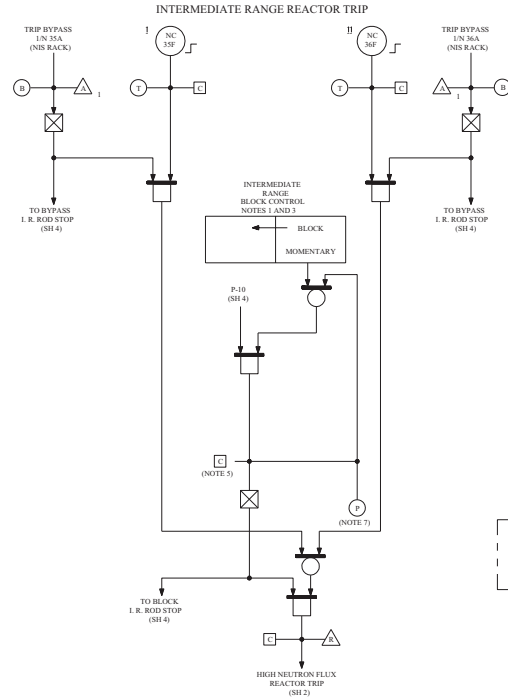
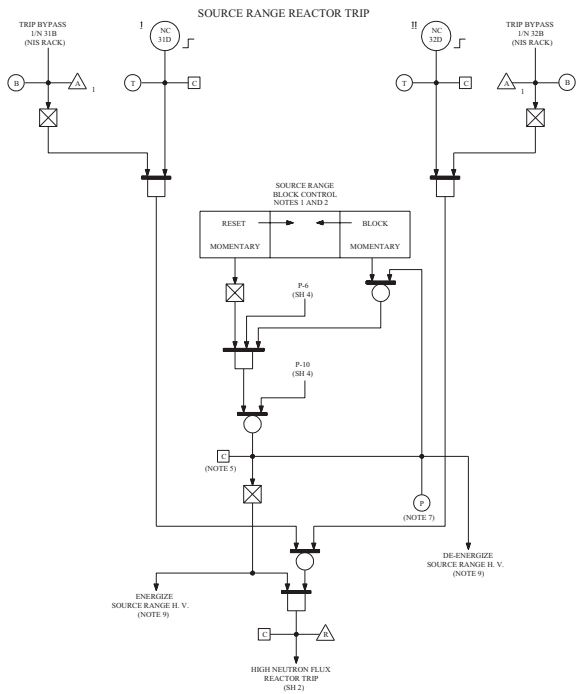


AMENDMENT 100

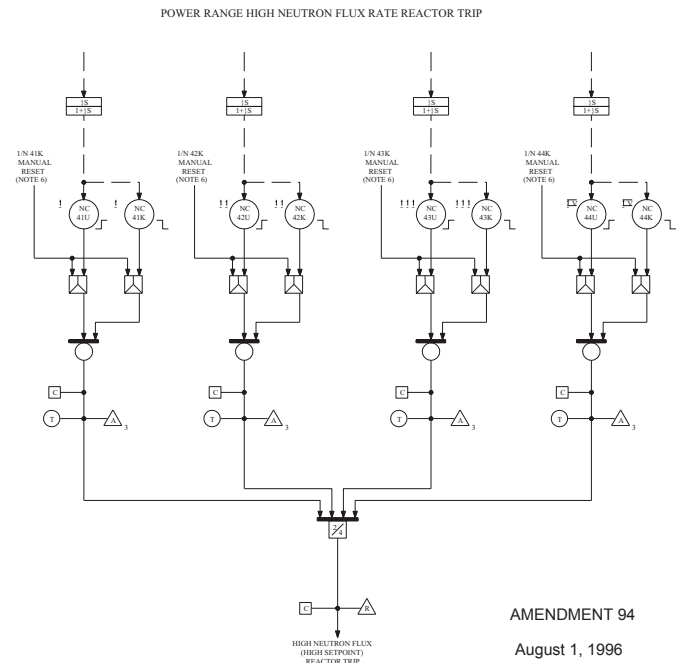
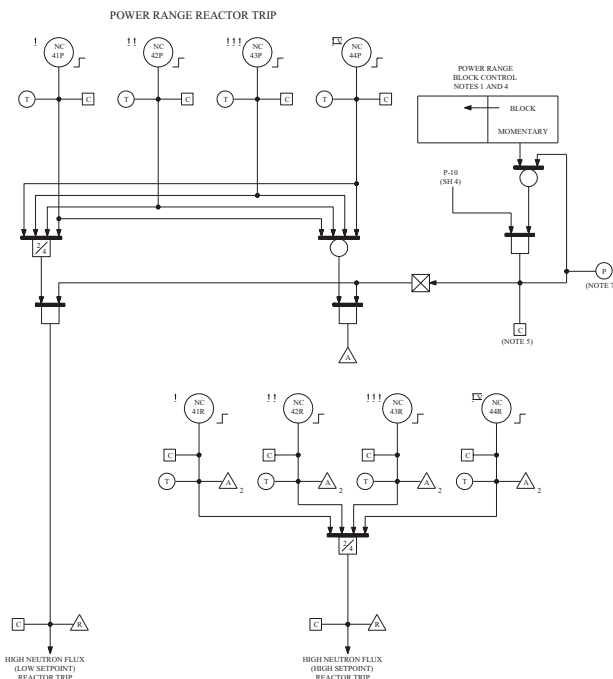
September 8, 1989

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 7.2-1 SH 2



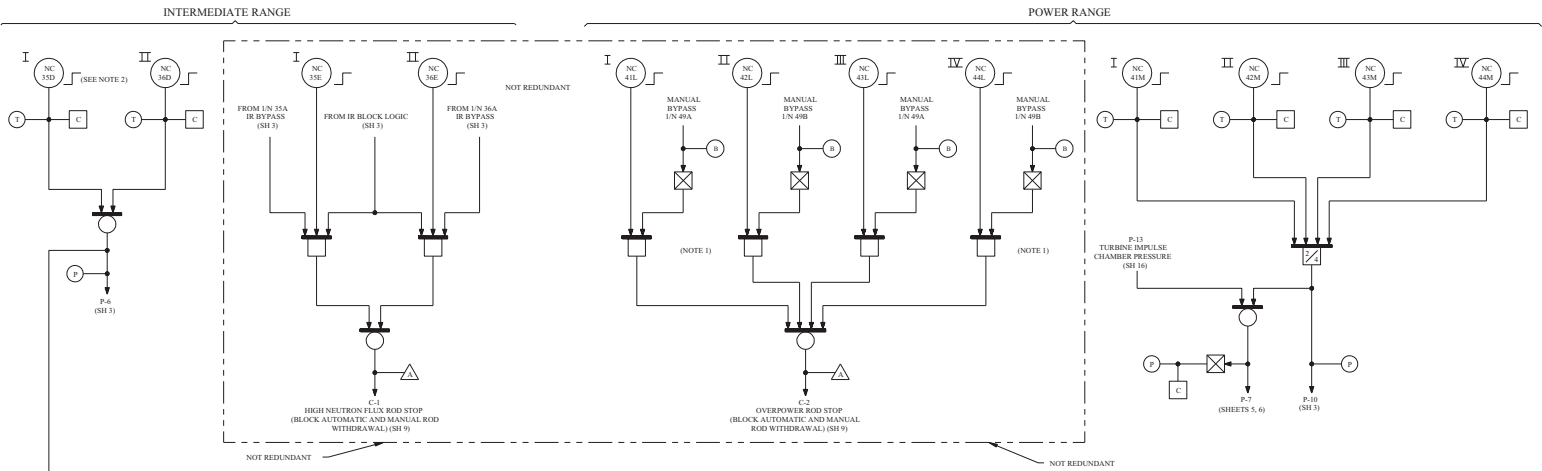


- NOTES:
1. THE REDUNDANT MANUAL BLOCK CONTROLS CONSIST OF TWO CONTROLS ON THE CONTROL BOARD FOR EACH RANGE, ONE FOR EACH TRAIN, SUPPLIED BY OTHERS.
  2. 1/N 31A IS IN LOGIC TRAIN A.  
1/N 31B IS IN LOGIC TRAIN B.
  3. 1/N 32A IS IN LOGIC TRAIN A.  
1/N 32B IS IN LOGIC TRAIN B.
  4. 1/N 47A IS IN LOGIC TRAIN A.  
1/N 47B IS IN LOGIC TRAIN B.
  5. TWO COMPUTER INPUTS ARE CONNECTED TO THIS CIRCUIT, INDIVIDUAL FOR EACH TRAIN.
  6. MANUAL RESET CONTROLS CONSIST OF FOUR MOMENTARY CONTROLS IN THE CONTROL ROOM, ONE CONTROL FOR EACH INSTRUMENT CHANNEL.
  7. TWO PERMISSIVE STATUS LIGHTS ARE CONNECTED TO THIS CIRCUIT, INDIVIDUAL FOR EACH TRAIN.
  8. SUPPLIED BY OTHERS.
  9. 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.

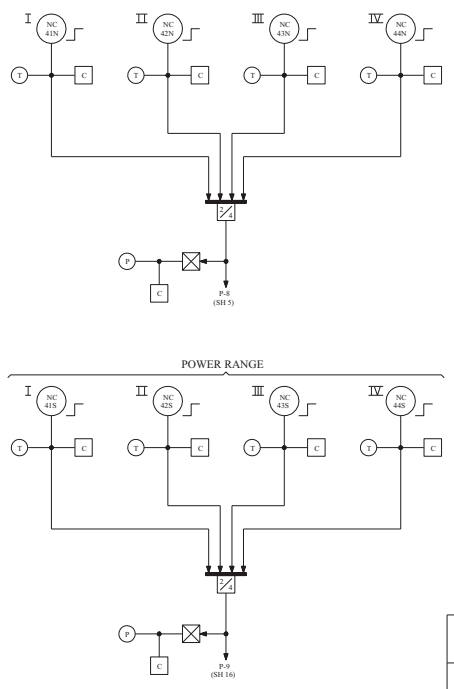
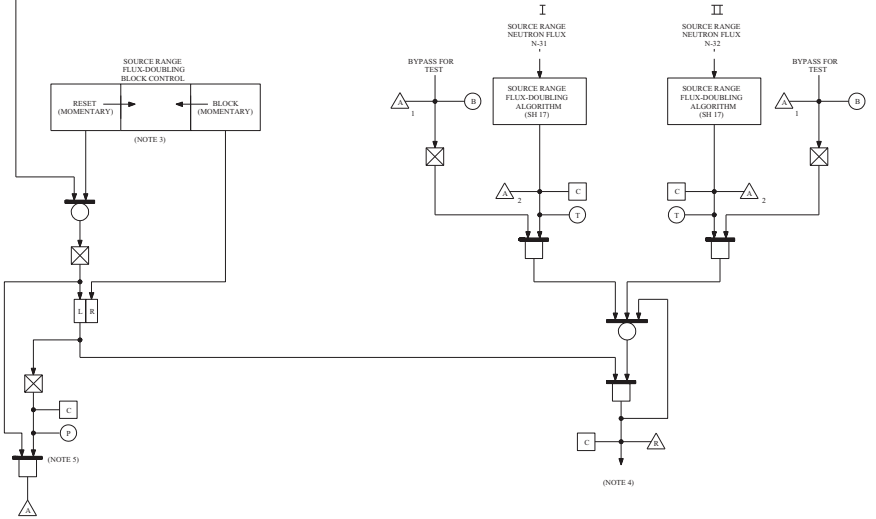


AMENDMENT 94  
August 1, 1996

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 7.2-1 SH 3

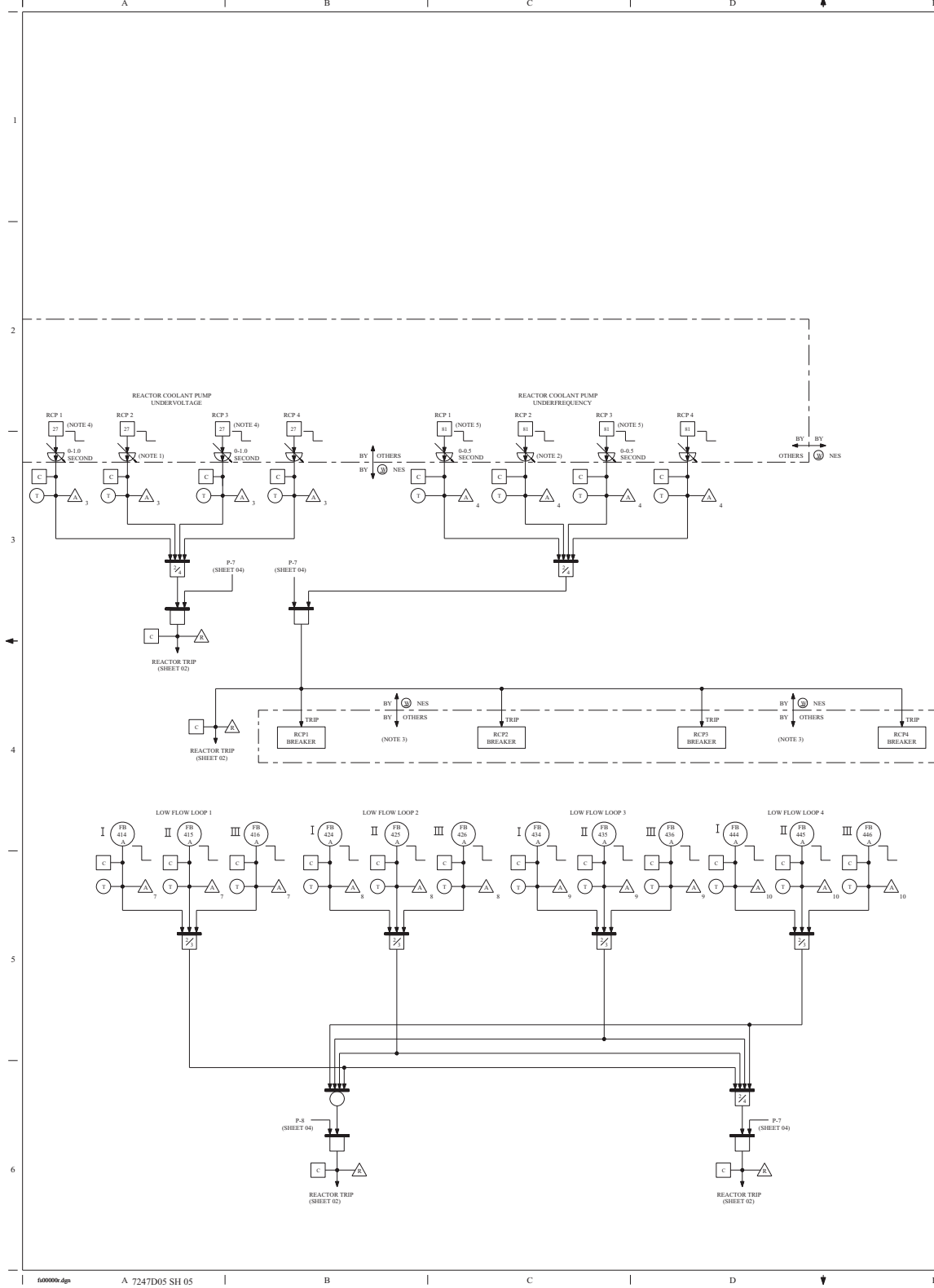


- NOTES:
1. THE BYPASS SIGNALS ARE MADE UP BY MEANS OF TWO THREE-POSITION SWITCHES ON A NIS RACK. SWITCH I/N 40A BYPASSES EITHER NC-41L OR NC-41L. SWITCH I/N 40B BYPASSES EITHER NC-42L OR NC-42L.
  2. THE TWO P-6 BISTABLE NUMBERS NC-35D AND NC-36D ARE "SENSORIZED TO ACTUATE" SUCH THAT A LOGIC 1 SIGNAL IS DEFINED TO BE PRESENT WHEN THE BISTABLE OUTPUT VOLTAGE IS ON.
  3. THE REDUNDANT MANUAL BLOCK CONTROL CONSISTS OF TWO CONTROLS ON THE CONTROL BOARD, ONE FOR EACH TRAIN. SUPPLIED BY OTHERS.
  4. FLUX DOUBLING LOGIC IS DISCONNECTED FROM VALVES LCV-12BC.
  5. TWO PERMISSIVE STATUS LIGHTS ARE CONNECTED TO THIS CIRCUIT, INDIVIDUAL FOR EACH TRAIN.



AMENDMENT 100

FIGURE GENERATED FOR FSAR ONLY  
 BASED ON DRAWING  
 7247D05 SH 4  
 COMANCHE PEAK S.E.S.  
 FINAL SAFETY ANALYSIS REPORT  
 UNITS 1 AND 2  
 FUNCTIONAL DIAGRAMS  
 FIGURE 7.2-1 SH 4



- 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.

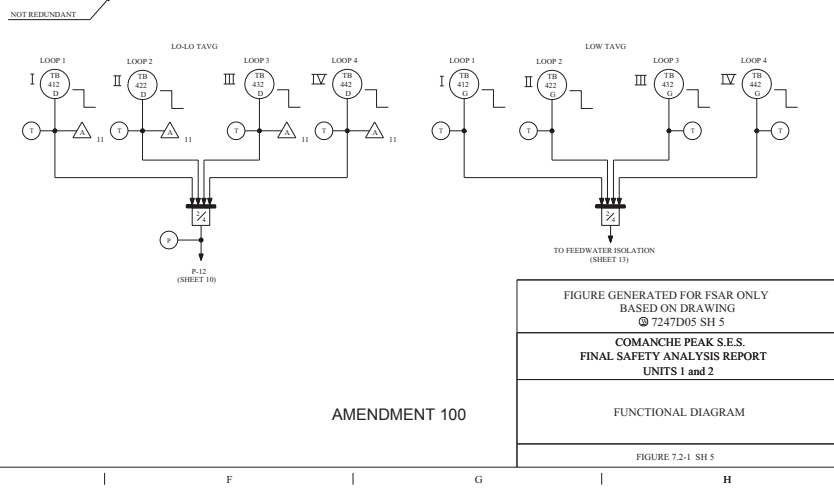
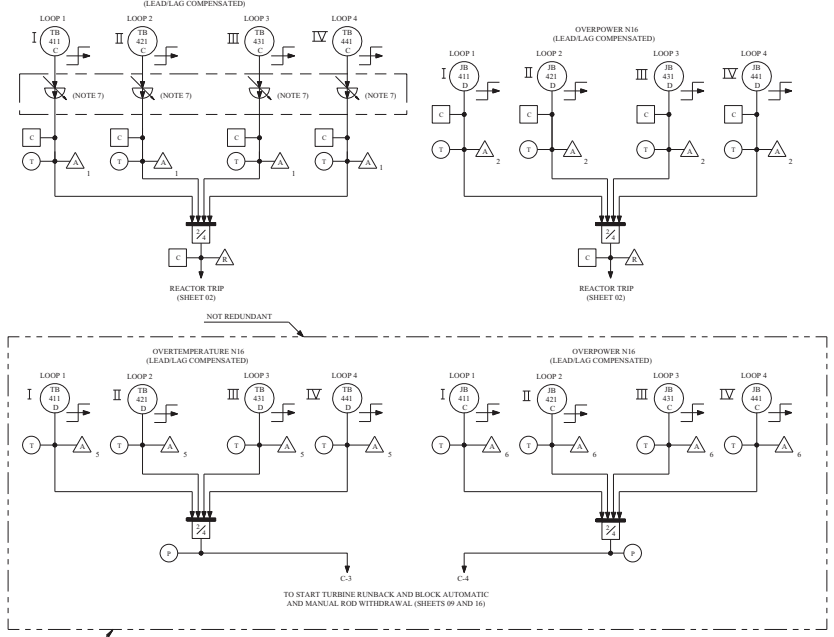


FIGURE GENERATED FOR FSAR ONLY  
 BASED ON DRAWING  
 7247D05 SH 5

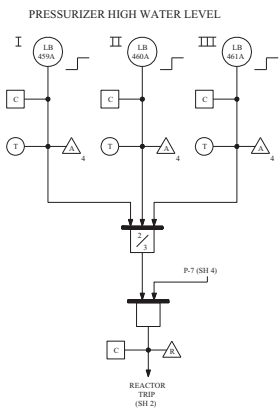
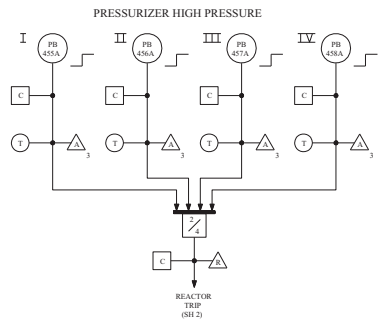
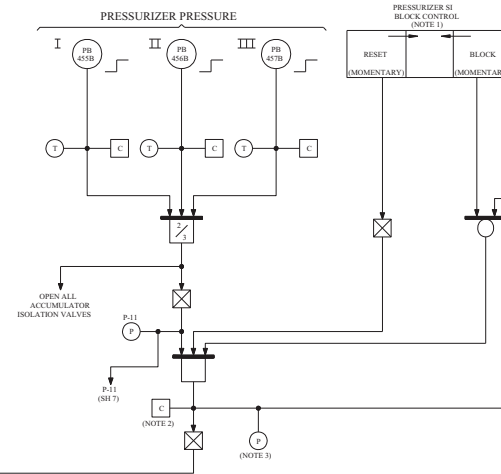
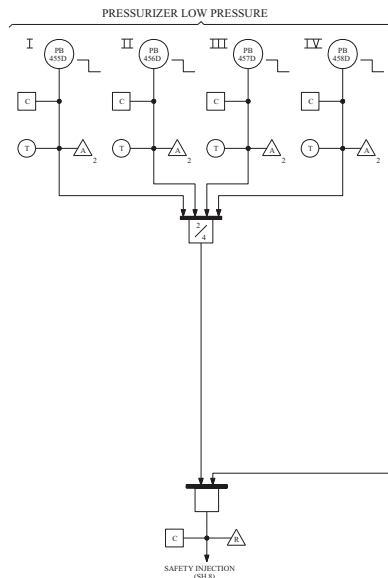
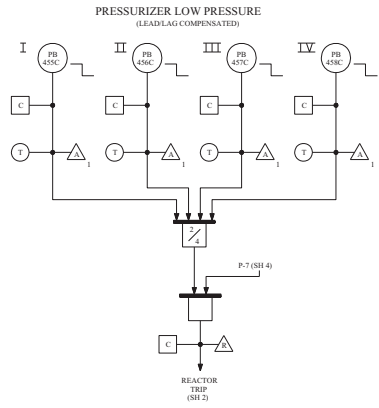
COMANCHE PEAK S.E.S.  
 FINAL SAFETY ANALYSIS REPORT  
 UNITS 1 and 2

FUNCTIONAL DIAGRAM

FIGURE 7.2-1 SH 5

AMENDMENT 100

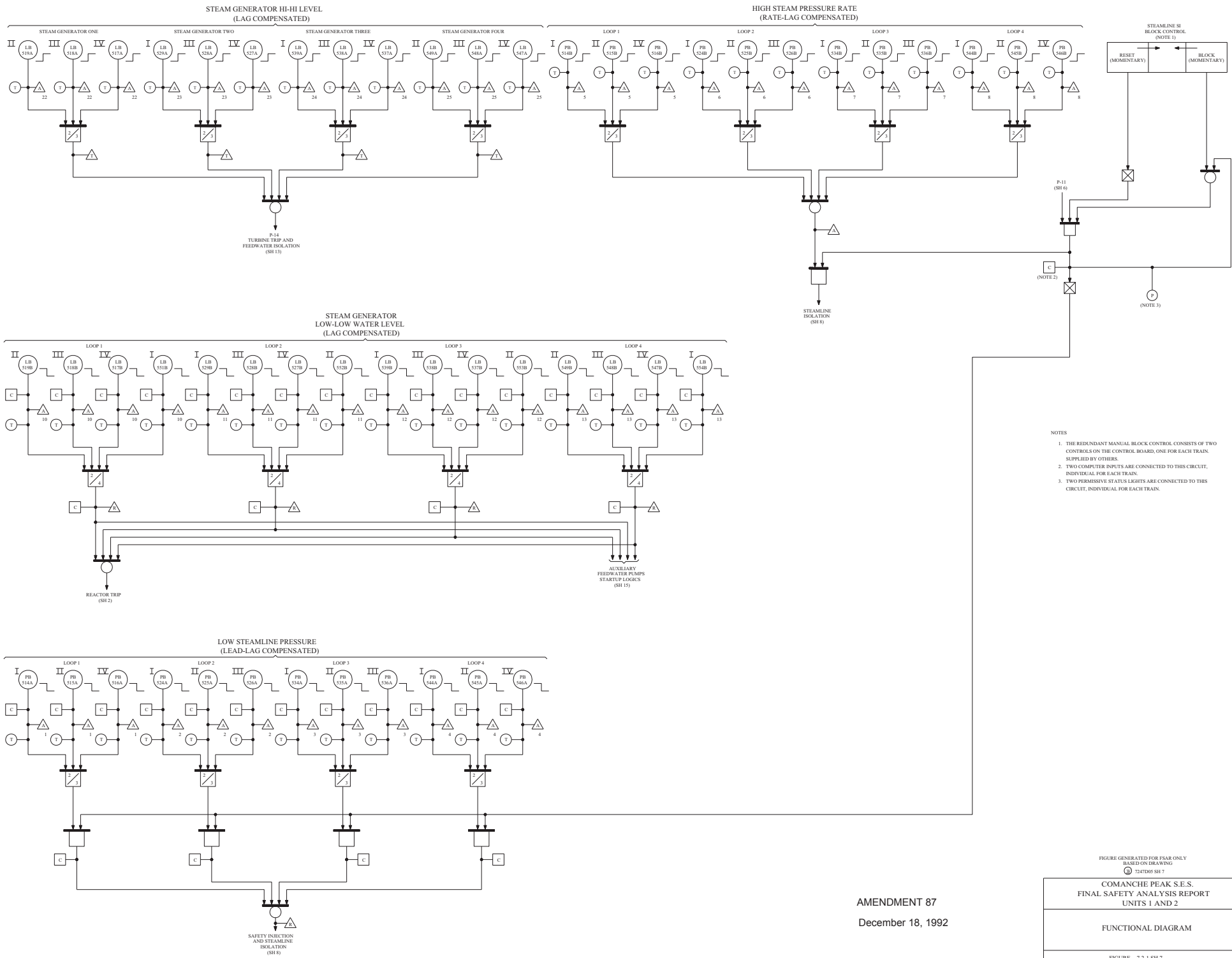
REFCAD:UTWS



- NOTES
1. THE REDUNDANT MANUAL BLOCK CONTROL CONSISTS OF TWO CONTROLS ON THE CONTROL BOARD, ONE FOR EACH TRAIN, INDIVIDUAL FOR EACH TRAIN.
  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 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.

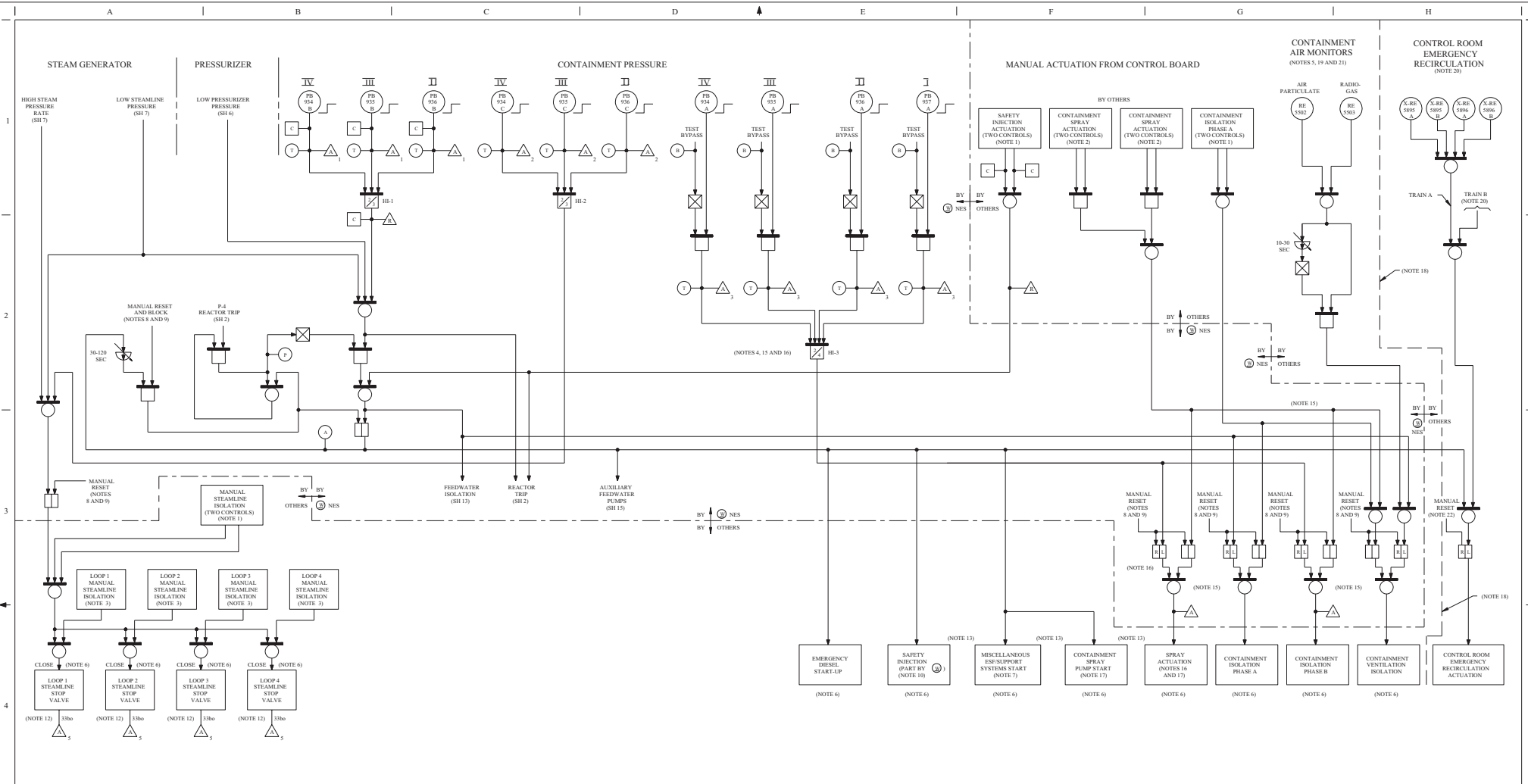
AMENDMENT 87  
December 18, 1992

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



NOTES

- TWO MOMENTARY CONTROLS ON THE CONTROL BOARD. OPERATING EITHER CONTROL WILL ACTUATE.
- THE MANUAL SPRAY ACTUATION CONSIST OF FOUR MOMENTARY CONTROLS. ACTUATION WILL OCCUR ONLY IF TWO ASSOCIATED CONTROLS ARE OPERATED SIMULTANEOUSLY.
- ONE MOMENTARY CONTROL PER LOOP ON THE CONTROL BOARD.
- CONTAINMENT PRESSURE BISTABLES ARE ENERGIZED TO ACTUATE (OTHER BISTABLES ARE DE-ENERGIZED TO ACTUATE).
- CONTAINMENT AIR MONITORS CONTROL CIRCUITRY IS NOT PART OF ESF SYSTEM AND IS TRAIN C.
- COMPONENTS ARE ALL INDIVIDUALLY SEALED IN (LATCHED), SO THAT LOSS OF THE ACTUATION SIGNAL WILL NOT CAUSE THESE COMPONENTS TO RETURN TO THE CONDITION PRIOR TO THE ADVENT OF THE ACTUATION SIGNAL.
- MISCELLANEOUS ESF/SUPPORT SYSTEMS INCLUDE STATION SERVICE WATER, COMPONENT COOLING WATER AND ESSENTIAL VENTILATION (SAFETY CHILLED WATER, ELECTRICAL AREA FANS, PRIMARY PLANT ESF EXHAUST FANS AND UPS VENTILATION).
- THE REDUNDANT MANUAL RESET CONSIST OF TWO MOMENTARY CONTROLS ON THE CONTROL BOARD. ONE FOR EACH TRAIN, SUPPLIED BY OTHERS.
- SAFETY INJECTION SEQUENCE REQUIREMENTS (IF SEQUENCING IS NECESSARY) ARE SPECIFIED BY OTHERS.
- LIGHTS SHOULD BE PROVIDED IN THE CONTROL ROOM FOR EACH STEAMLINE STOP VALVE TO INDICATE WHEN THE VALVE IS FULLY CLOSED OR FULLY OPEN.
- THE ACTUATION 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 EACH SYSTEM.
- TWO CONTROLS ON THE CONTROL BOARD. OPERATING EITHER CONTROL WILL ACTUATE.
- SOME ENGINEERED SAFEGUARDS FUNCTIONS ARE NOT WITHIN THE FUNCTIONAL DESIGN SCOPE OF THIS AIR ENERGY SYSTEMS BUT ONLY SHOWS ON THIS SHEET AS THE FUNCTIONS ARE BUILT IN THE SUPPLY EQUIPMENT.
- THE 2 OUT OF 4 COINCIDENCE MEMORY, AND "OR" LOGIC ARE DUPLICATED WITHIN EACH TRAIN. SEPARATE OUTPUT RELAYS ARE ALSO PROVIDED IN EACH TRAIN. TO MINIMIZE FALSE CONTAINMENT SPRAY, ONE OUTPUT RELAY SHOULD START THE PUMPS WHILE ANOTHER SHOULD OPEN THE SYSTEM VALVES.
- CONTAINMENT SPRAY PUMP START IS INCLUDED IN THE SAFETY INJECTION SEQUENCE. SPRAY ACTUATION SIGNAL CONFIRMS SPRAY PUMP START AND OPENS SYSTEM VALVES. IF CONDITIONS OF NOTE 13 APPLY, THE SEQUENCE INTERLOCK SHOULD BE SUCH THAT SPRAY WILL START WITHIN THE REQUIRED TIME INDEPENDANT OF THE SAFETY INJECTION SIGNAL STATUS.
- THE ENCLOSED CIRCUITRY IS COMMON TO BOTH UNITS 1 AND 2. ALL OTHER CIRCUITS ARE APPLICABLE TO EITHER UNIT 1 OR 2.
- CONTAINMENT AIR MONITOR HDNNE CHANNEL RE-5866 IS NOT REQUIRED FOR CONTAINMENT VENTILATION ISOLATION.
- EACH OF THE FOUR MONITORS WILL, UPON DETECTION OF HIGH RADIATION, PROVIDE SIGNALS TO BOTH TRAINS OF THE CONTROL ROOM EMERGENCY RECIRCULATION. ACTUATION. CROSS TRAIN TRIPPING IS ACCOMPLISHED VIA QUALIFIED ISOLATION DEVICES.
- CONTAINMENT AIR MONITORS SHOWN PROVIDE SIGNALS TO BOTH TRAINS.
- THE CONTROL ROOM EMERGENCY RECIRCULATION ACTUATION RESET SWITCHES ARE MOUNTED ON THE HVAC PANEL BEHIND THE NIS RACKS.

AMENDMENT 76  
May 1, 1989

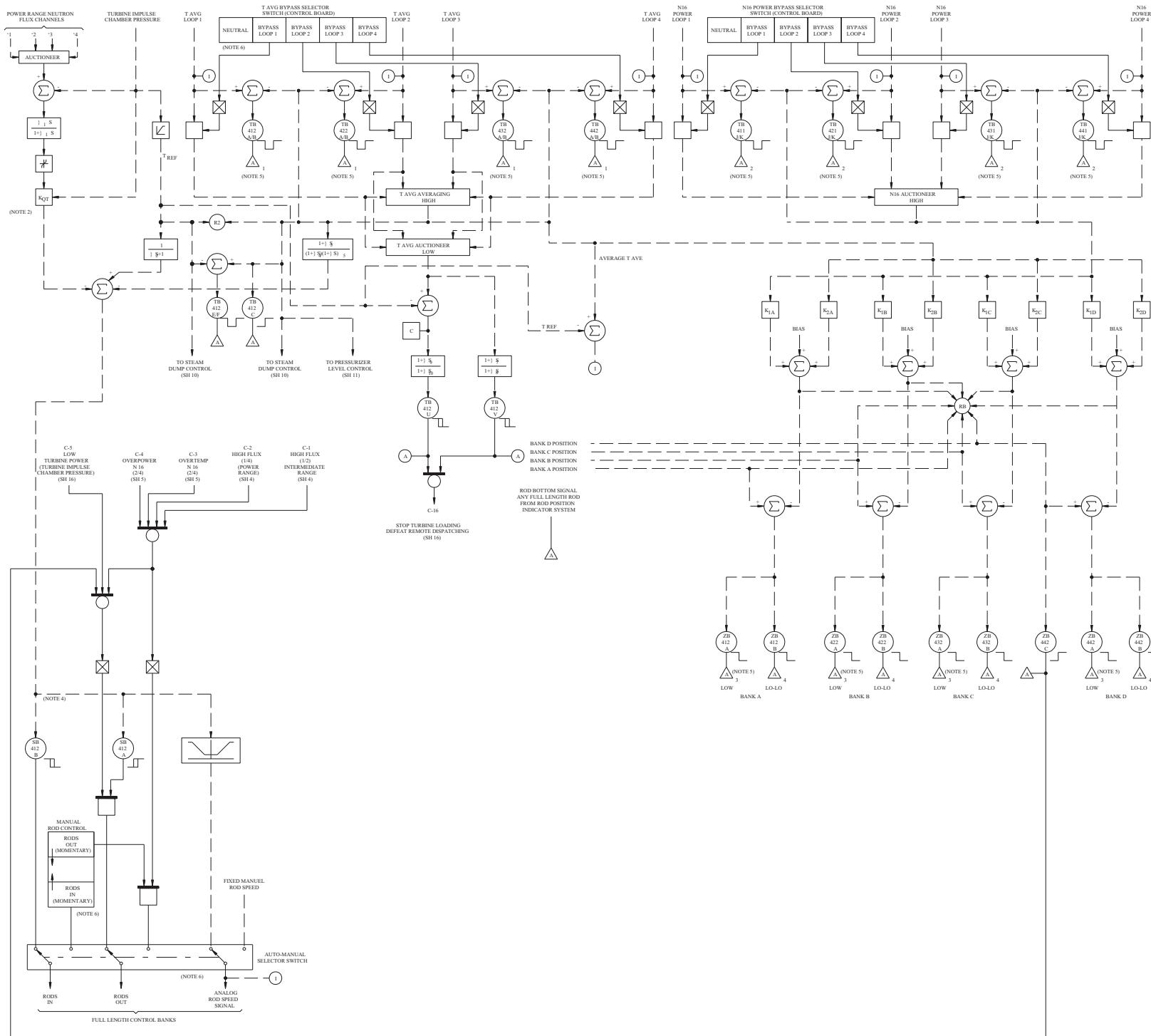
7247D05 SH 8  
COMANCHE PEAK S.E.S.  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 and 2

---

FUNCTIONAL DIAGRAM

---

7.2-1 SH 8



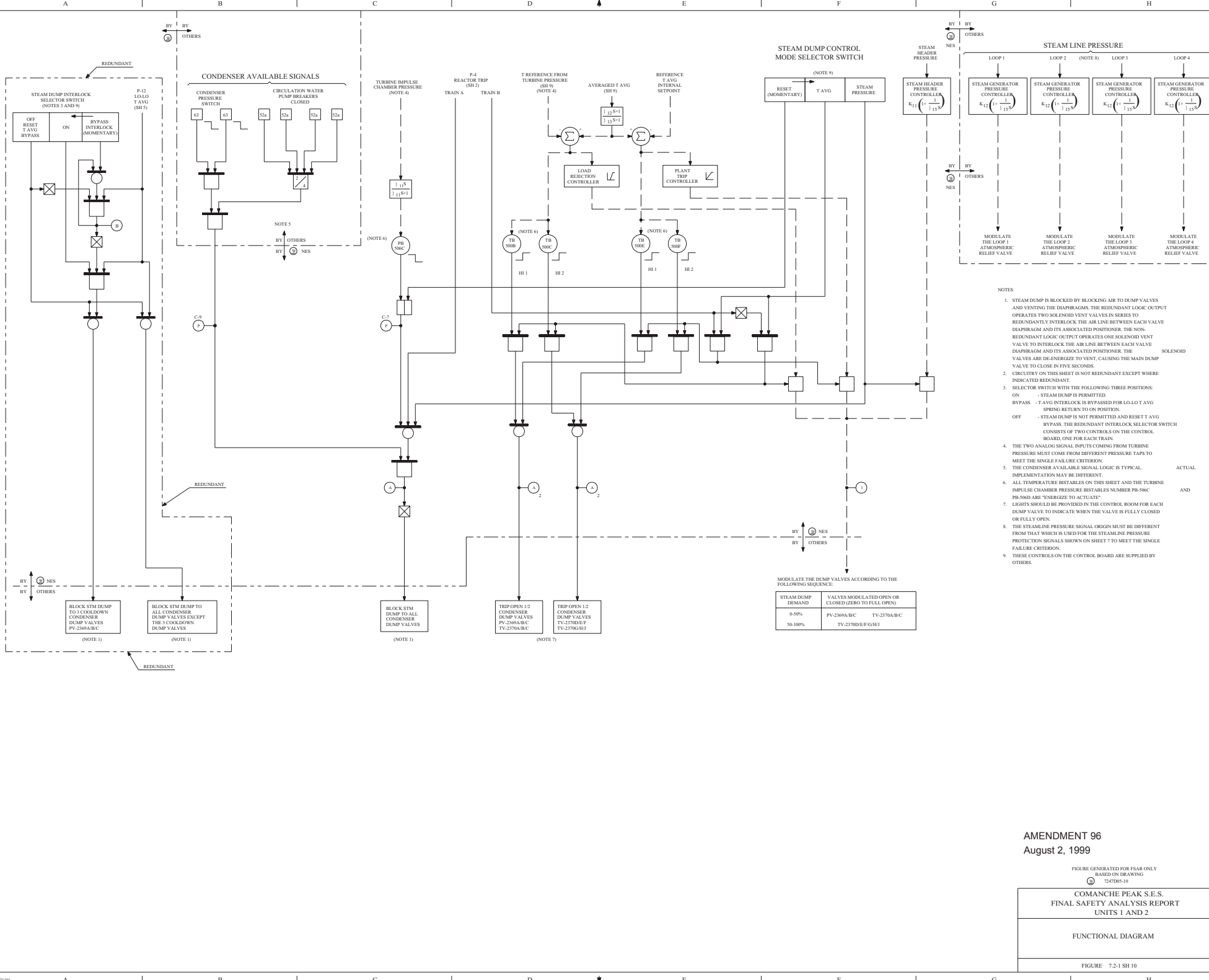
- NOTES
1. ALL CIRCUITS ON THIS SHEET ARE NOT REDUNDANT.
  2. KQT MAY VARY INVERSELY PROPORTIONAL TO LOAD WITH A FIXED LIMIT OR MAY VARY IN TWO DISCRETE STEPS WITH BREAK POINTS AT 30-50% AND 60-80% TURBINE LOAD.
  3. THE SUMMER OUTPUTS HAVE FIXED MANUALLY ADJUSTABLE UPPER LIMITS.
  4. THE ROD DIRECTION HISTABLES SB-412A AND SB-412B ARE ENERGIZED TO ACTIVATE.
  5. ALARM 1, ALARM 2, ALARM 3 AND ALARM 4 MUST HAVE REFRESH CAPABILITY.
  6. THESE CONTROLS ON THE CONTROL BOARD ARE SUPPLIED BY OTHERS.

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



- NOTES
- STEAM DUMP IS BLOCKED BY BLOCKING AIR TO DUMP VALVES AND VENTING THE DIAPHRAGMS. THE REDUNDANT LOGIC OUTPUT OPERATES TWO SOLENOID VENT VALVES IN SERIES TO REDUNDANTLY INTERLOCK THE AIR LINE BETWEEN EACH VALVE DIAPHRAGM AND ITS ASSOCIATED POSITIONER. THE NON-REDUNDANT LOGIC OUTPUT OPERATES ONE SOLENOID VENT VALVE TO INTERLOCK THE AIR LINE BETWEEN EACH VALVE DIAPHRAGM AND ITS ASSOCIATED POSITIONER. THE SOLENOID VALVES ARE DE-ENERGIZE TO VENT, CAUSING THE MAIN DUMP VALVE TO CLOSE IN FIVE SECONDS.
  - CIRCUITRY ON THIS SHEET IS NOT REDUNDANT EXCEPT WHERE INDICATED REDUNDANT.
  - SELECTOR SWITCH WITH THE FOLLOWING THREE POSITIONS:  
ON - STEAM DUMP IS PERMITTED.  
BYPASS - T AVG INTERLOCK IS BYPASSED FOR LO-LO T AVG SPIG. RETURNS TO ON POSITION.  
OFF - STEAM DUMP IS NOT PERMITTED AND RESET T AVG BYPASS. THE REDUNDANT INTERLOCK SELECTOR SWITCH CONSISTS OF TWO CONTROLS ON THE CONTROL BOARD, ONE FOR EACH TRAIN.
  - THE TWO ANALOG SIGNAL INPUTS COMING FROM TURBINE PRESSURE MUST COME FROM DIFFERENT PRESSURE TAPS TO MEET THE SINGLE FAILURE CRITERION.
  - THE CONDENSER AVAILABLE SIGNAL LOGIC IS TYPICAL IMPLEMENTATION MAY BE DIFFERENT.
  - ALL TEMPERATURE BISTABLES ON THIS SHEET AND THE TURBINE IMPULSE CHAMBER PRESSURE BISTABLES NUMBER PB-506C AND PB-506D ARE "ENERGIZE TO ACTUATE".
  - LIGHTS SHOULD BE PROVIDED IN THE CONTROL ROOM FOR EACH DUMP VALVE TO INDICATE WHEN THE VALVE IS FULLY CLOSED OR FULLY OPEN.
  - THE STEAMLINE PRESSURE SIGNAL ORIGIN MUST BE DIFFERENT FROM THAT WHICH IS USED FOR THE STEAMLINE PRESSURE PROTECTION SIGNALS SHOWN ON SHEET 7 TO MEET THE SINGLE FAILURE CRITERION.
  - THESE CONTROLS ON THE CONTROL BOARD ARE SUPPLIED BY OTHERS.

MODULATE THE DUMP VALVES ACCORDING TO THE FOLLOWING SEQUENCE:

STEAM DUMP DEMAND	VALVES MODULATED OPEN OR CLOSED (ZERO TO FULL OPEN)
0-50%	PV-2360A/B/C      TV-2370A/B/C
50-100%	TV-2370D/E/F/G/H/J

AMENDMENT 96  
August 2, 1999

FIGURE GENERATED FOR FSAR ONLY  
BASED ON DRAWING  
7247D05-10

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

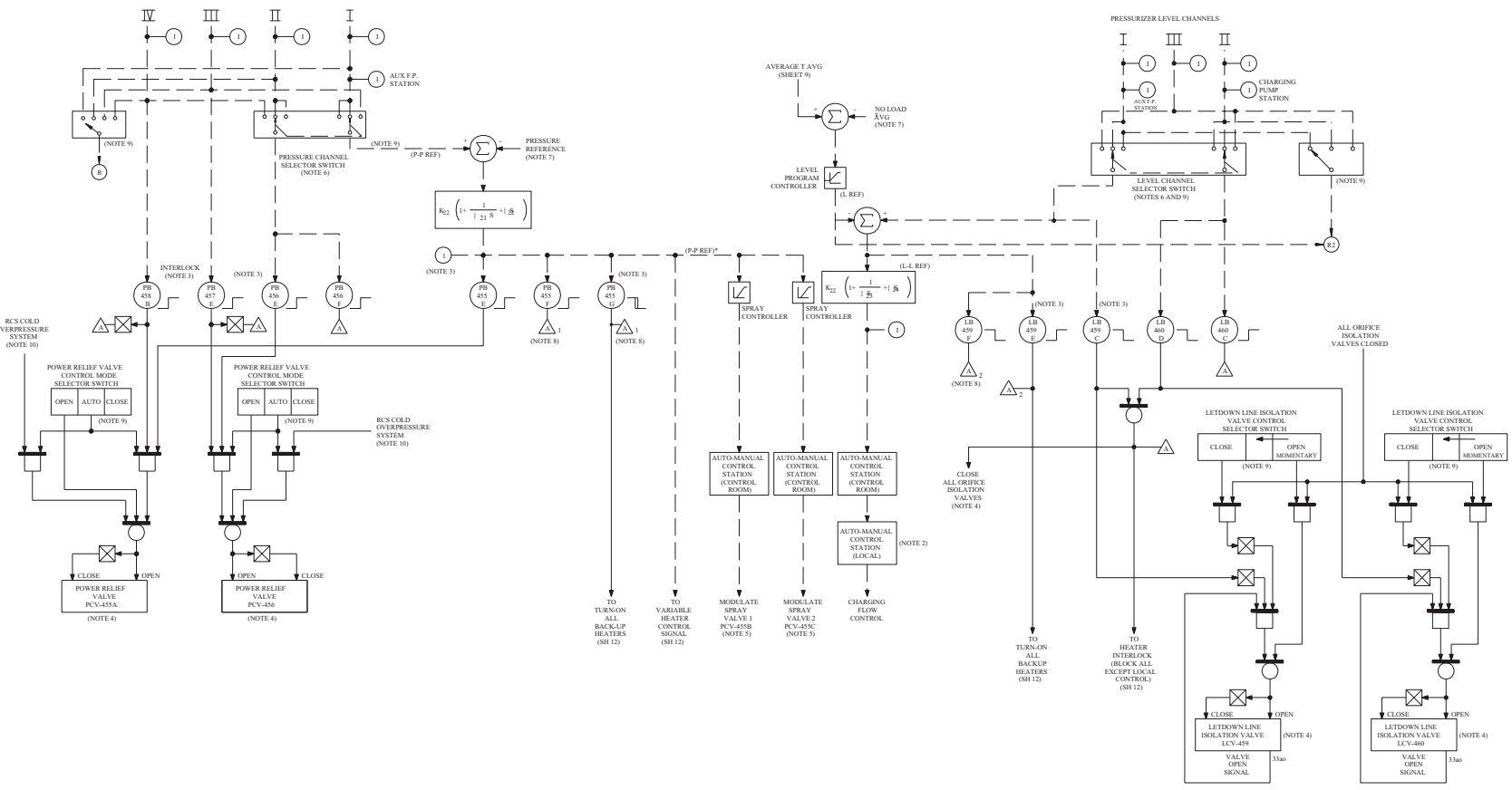
FUNCTIONAL DIAGRAM

FIGURE 72-1 SH 10



PRESSURIZER PRESSURE CHANNELS

PRESSURIZER LEVEL CHANNELS

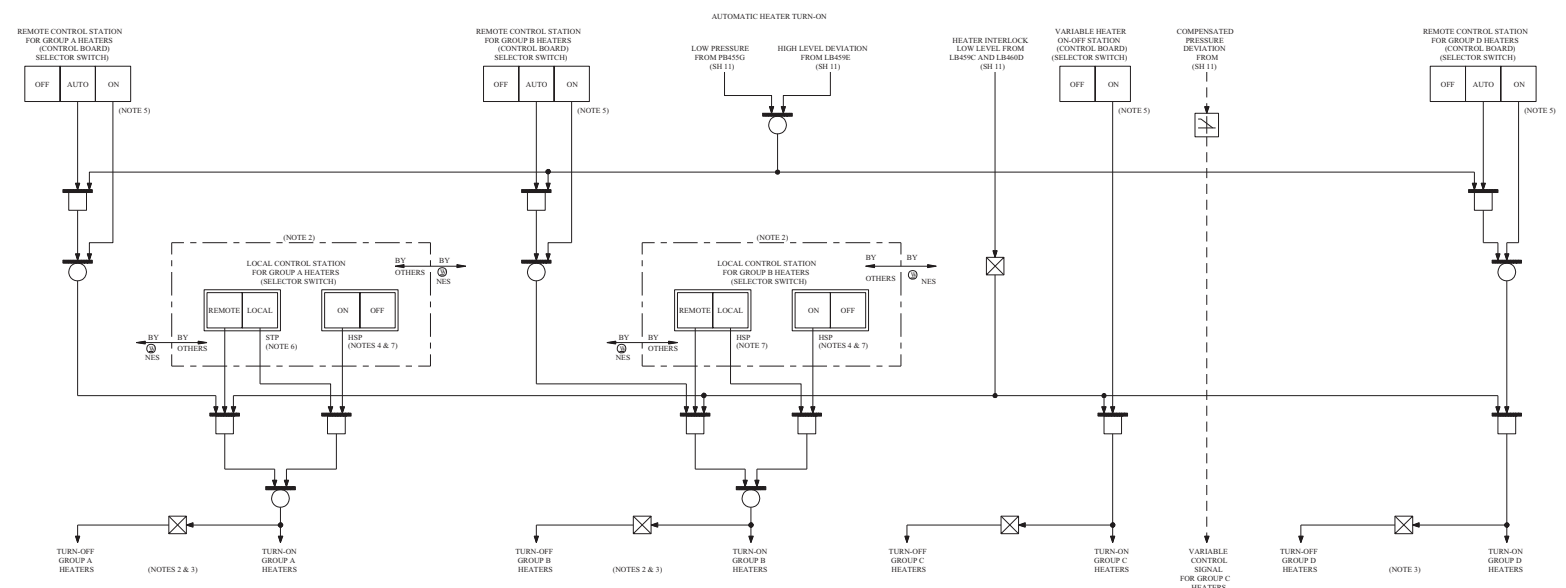


- NOTES
1. ALL CIRCUITS ON THIS SHEET ARE NOT REDUNDANT.
  2. LOCAL CONTROL OVERRIDES ALL OTHER SIGNALS. LOCAL OVERRIDE ACTUATES ALARM IN CONTROL ROOM.
  3. PRESSURE BISTABLES NO. PB-456, PB-457, PB-458, PB-459, PB-459C, PB-459E AND LEVEL BISTABLES NO. LB-459C, LB-459E AND LB-460D ARE ENERGIZED TO ACTIVATE.
  4. OPEN/SHUT INDICATION IN CONTROL ROOM.
  5. A LIGHT SHIELD 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 FLASH 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

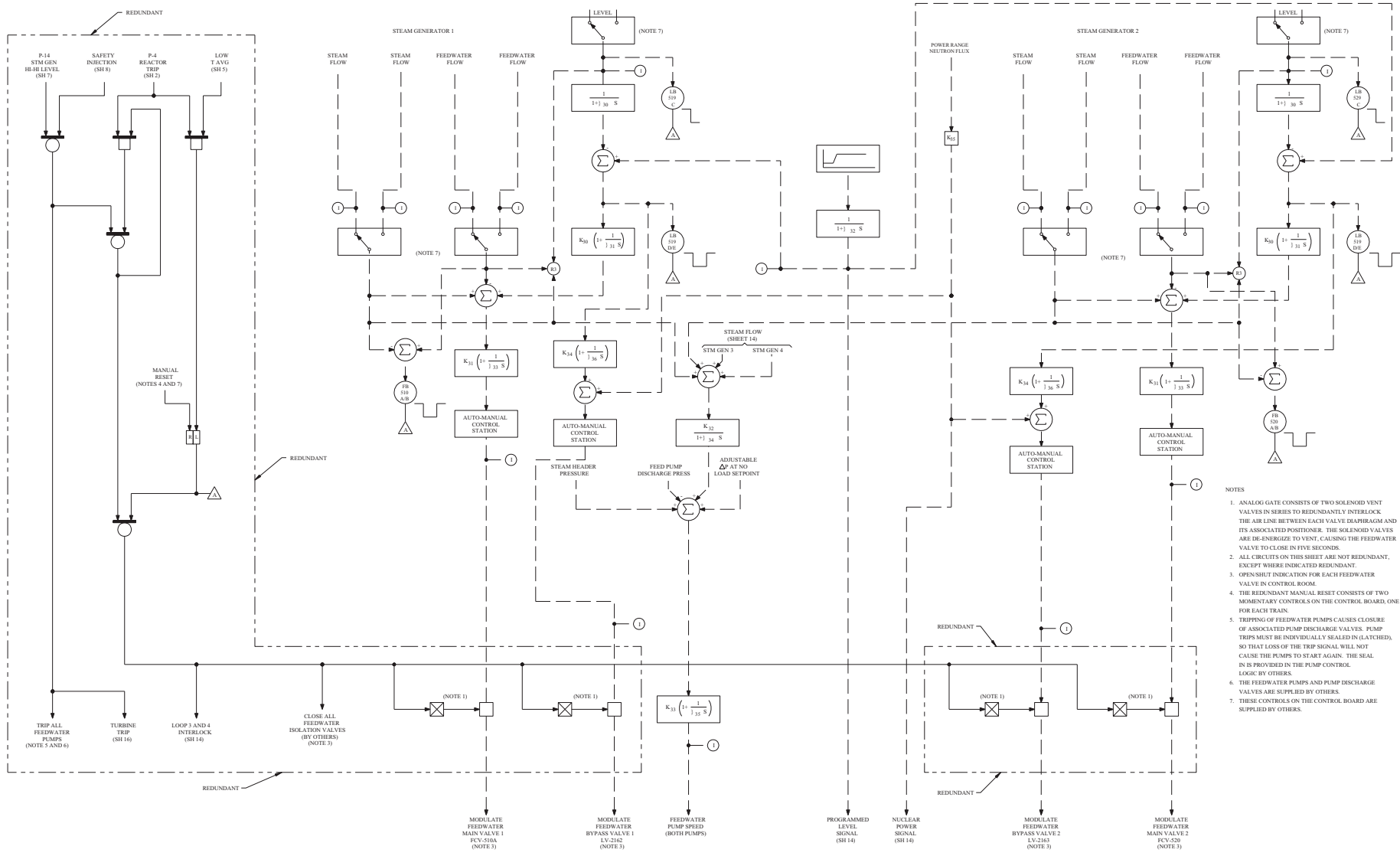
© 7247D05 SH 11 COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
FUNCTIONAL DIAGRAM
7.2-1 SH 11

- NOTES
1. ALL CIRCUITS ON THIS SHEET ARE NOT REDUNDANT.
  2. GROUP A AND GROUP B HEATERS MUST BE ON SEPARATE VITAL POWER SUPPLIES WITH THE LOCAL CONTROL SEPARATED SO THAT ANY SINGLE FAILURE DOES NOT DEFEAT BOTH.
  3. BACK-UP HEATER STATUS INDICATION IN CONTROL ROOM.
  4. PRECAUTIONS SHOULD BE TAKEN TO AVOID MANUAL HEATER OPERATION, WHICH WOULD CAUSE HEATER DAMAGE, IF THE WATER LEVEL UNCOVERS THE HEATERS.
  5. SUPPLIED BY OTHERS.
  6. STP - SHUTDOWN TRANSFER PANEL.
  7. HSP - HOT SHUTDOWN PANEL.



AMENDMENT 76  
May 1, 1989

FIGURE GENERATED FOR FSAR ONLY BASED ON DRAWING 724D05 SH 12
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUNCTIONAL DIAGRAM
FIGURE 72-1 SH 12



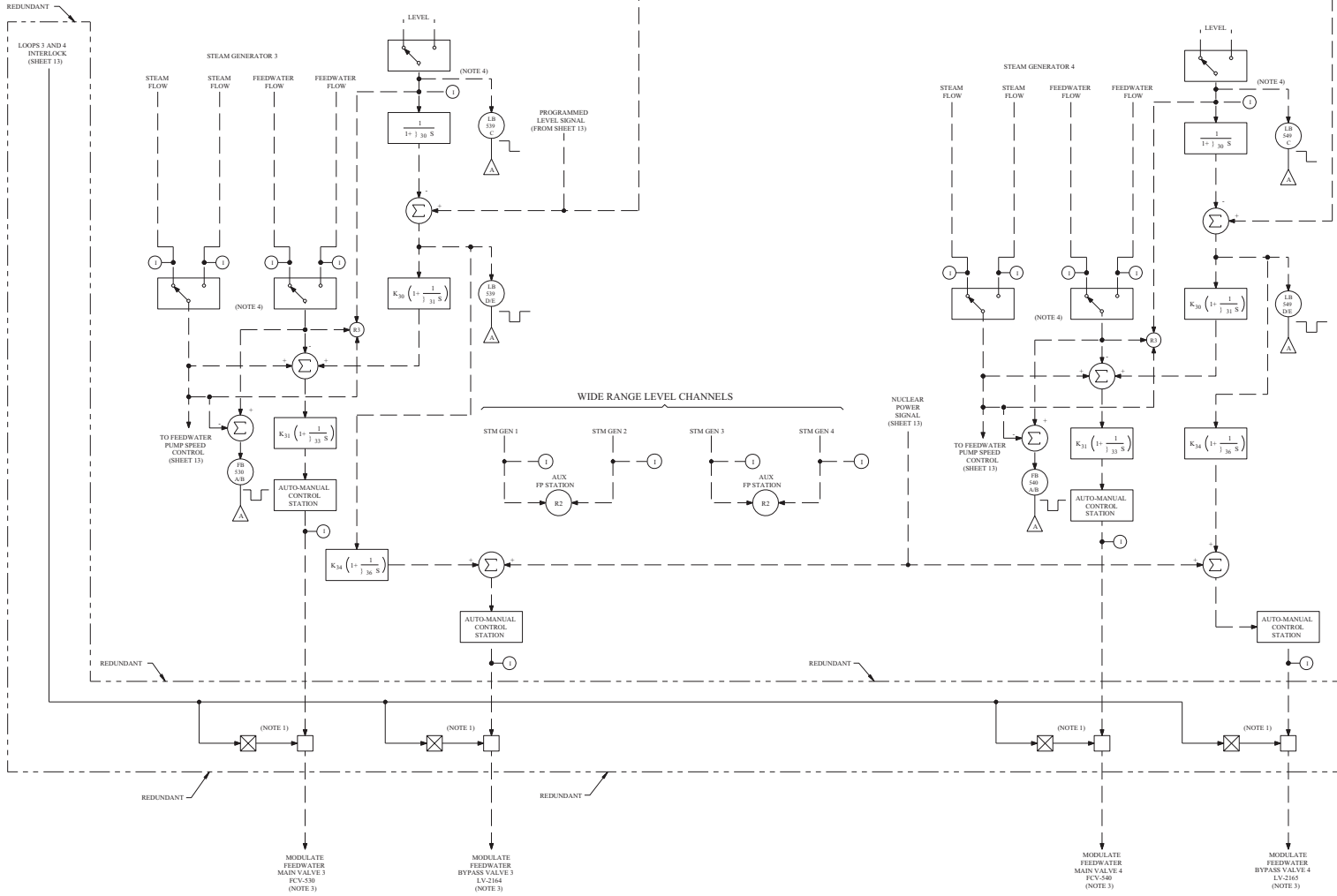
- NOTES
1. ANALOG GATE CONSISTS OF TWO SOLENOID VENT VALVES IN SERIES TO REDUNDANTLY INTERLOCK THE AIR LINE BETWEEN EACH VALVE DIAPHRAGM AND ITS ASSOCIATED POSITIONER. THE SOLENOID VALVES ARE DE-ENERGIZE TO VENT, CAUSING THE FEEDWATER VALVE TO CLOSE IN FIVE SECONDS.
  2. ALL CIRCUITS ON THIS SHEET ARE NOT REDUNDANT, EXCEPT WHERE INDICATED REDUNDANT.
  3. OPENSIGHT INDICATION FOR EACH FEEDWATER VALVE IN CONTROL ROOM.
  4. THE REDUNDANT MANUAL RESET CONSISTS OF TWO MOMENTARY CONTROLS ON THE CONTROL BOARD, ONE FOR EACH TRAIN.
  5. TRIPPING OF FEEDWATER PUMPS CAUSES CLOSURE OF ASSOCIATED PUMP DISCHARGE VALVES. PUMP TRIPS MUST BE INDIVIDUALLY SEALED IN (LATCHED), SO THAT LOSS OF THE TRIP SIGNAL WILL NOT CAUSE THE PUMPS TO START AGAIN. THE SEAL IN IS PROVIDED IN THE PUMP CONTROL LOGIC BY OTHERS.
  6. THE FEEDWATER PUMPS AND PUMP DISCHARGE VALVES ARE SUPPLIED BY OTHERS.
  7. THESE CONTROLS ON THE CONTROL BOARD ARE SUPPLIED BY OTHERS.

AMENDMENT 96  
 August 2, 1999

© 7247D05 SH 13  
 COMANCHE PEAK S.E.S.  
 FINAL SAFETY ANALYSIS REPORT  
 UNITS 1 and 2

FUNCTIONAL DIAGRAM

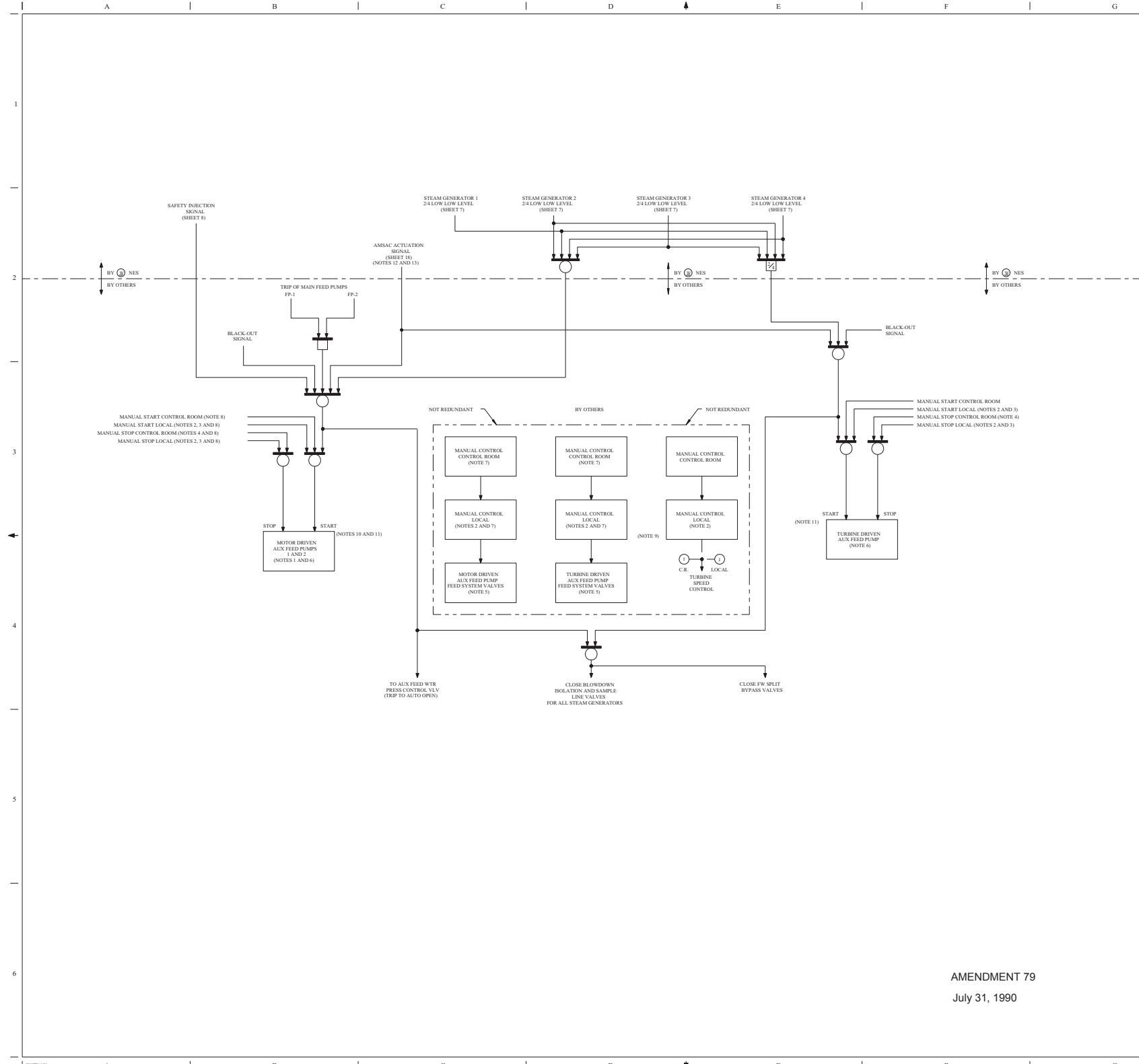
7.2-1 SH 13



- NOTES:
1. ANALOG GATE CONSISTS OF TWO SOLENOID VENT VALVES IN SERIES TO REDUNDANTLY INTERLOCK THE AIR LINE BETWEEN EACH VALVE DIAGRAM 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 IS IN CONTROL ROOM.
  4. THESE CONTROLS ON THE CONTROL BOARD ARE SUPPLIED BY OTHERS.

AMENDMENT 76  
May 1, 1989

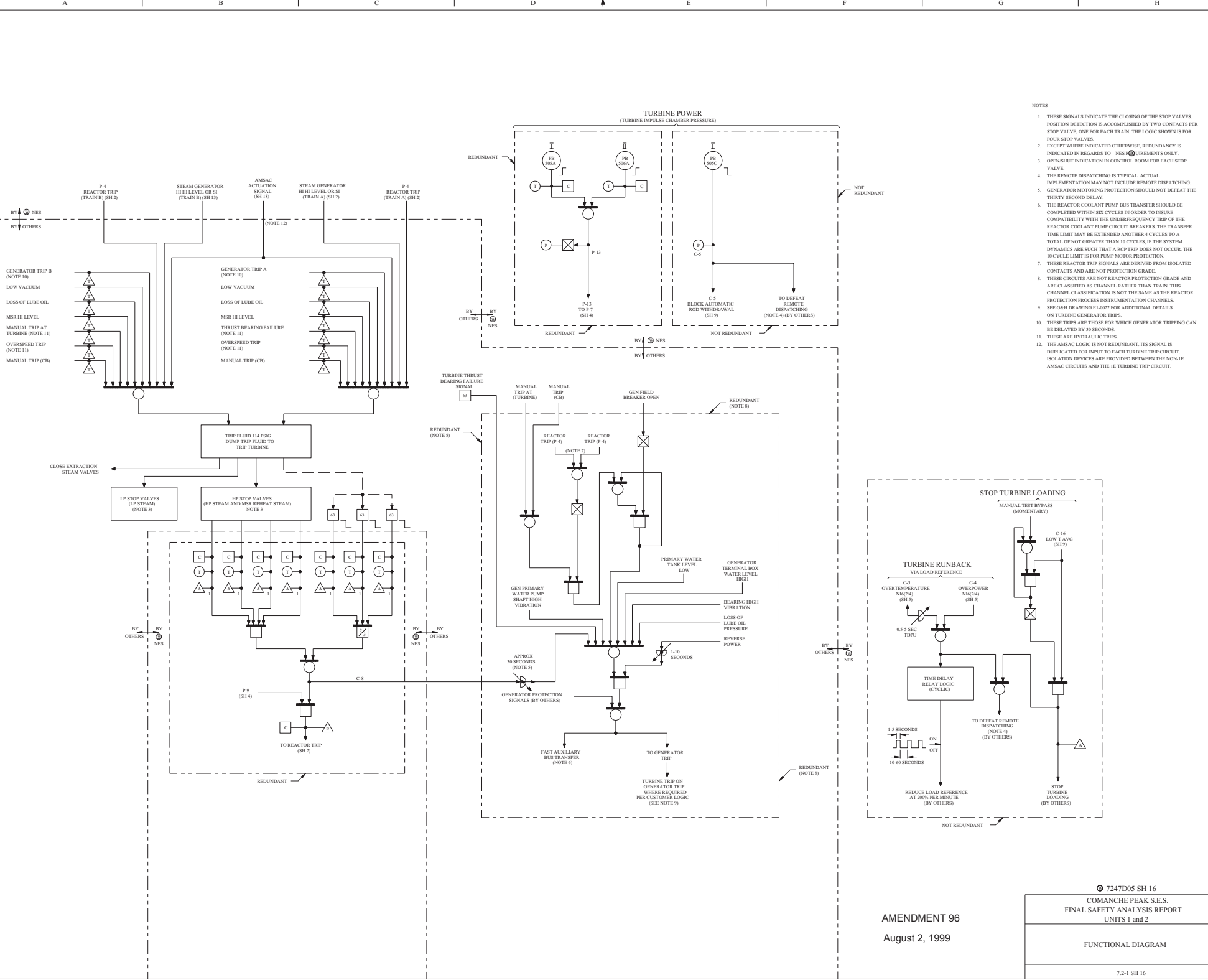
FIGURE GENERATED FOR FSAR ONLY BASED ON DRAWING 7247D05 SH 14 COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUNCTIONAL DIAGRAM
FIGURE 7.2-1 SH 14



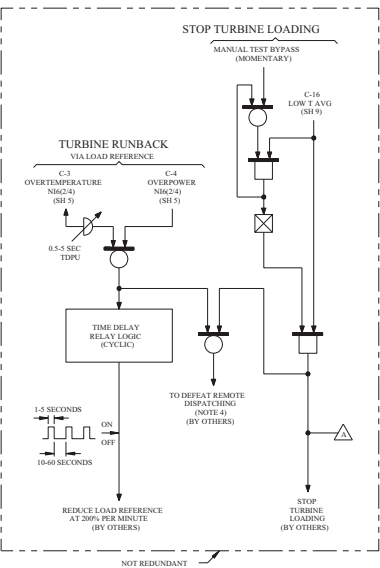
- NOTES
1. TRAIN A CONTROLS MAFP 1: BREAKER NUMBER. TRAIN B CONTROLS MAFP 2: BREAKER NUMBER.
  2. LOCAL CONTROL OVERRIDES ALL OTHER SIGNALS.
  3. LOCAL OVERRIDE ACTUATES ALARM IN CONTROL ROOM.
  4. MANUAL STOP AND PULL OVERRIDES THE AUTOMATIC START. MANUAL STOP OVERRIDE ACTUATES ALARM IN CONTROL ROOM.
  5. OPENSHEET 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 ② 7247D05 SH 15
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUNCTIONAL DIAGRAM
FIGURE 72-1 SH 15

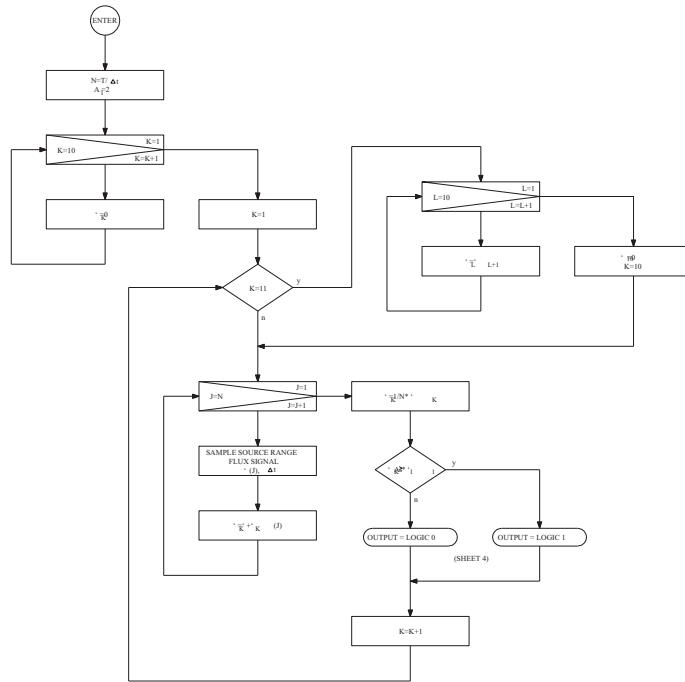


- NOTES
1. THESE SIGNALS INDICATE THE CLOSING OF THE STOP VALVES. POSITION DETECTION IS ACCOMPLISHED BY TWO CONTACTS FOR STOP VALVE, ONE FOR EACH TRAIN. THE LOGIC SHOWN IS FOR FOUR STOP VALVES.
  2. EXCEPT WHERE INDICATED OTHERWISE, REDUNDANCY IS INDICATED IN REGARDS TO NES REQUIREMENTS ONLY.
  3. OPEN/SHUT 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 RCP 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 G48 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

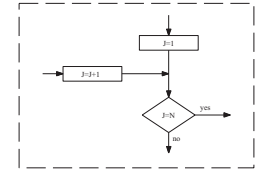
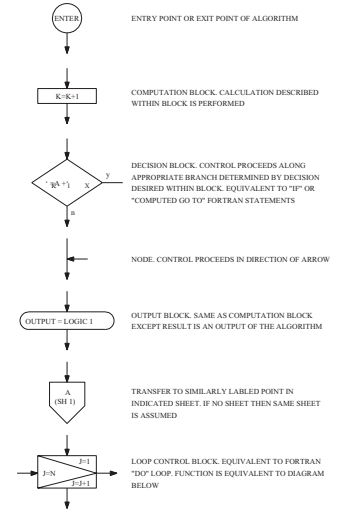
SOURCE RANGE FLUX - DOUBLING ALGORITHM



DEFINITIONS OF VARIABLES

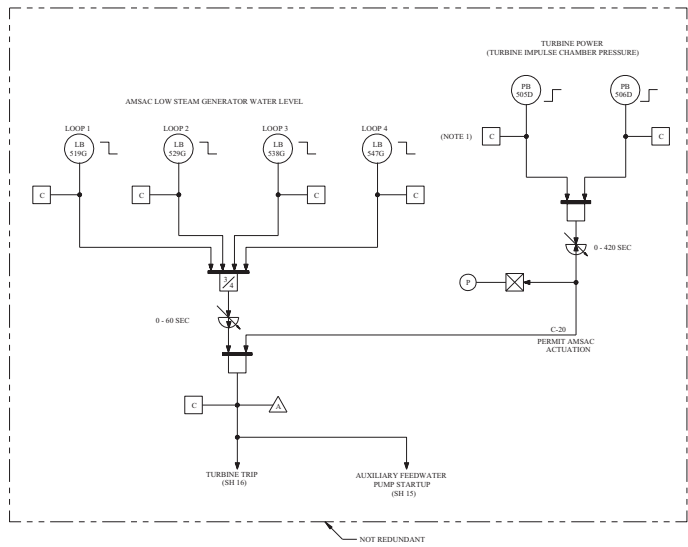
SYMBOL	DEFINITION	TYPE
$\bar{Q}_k$	FLUX AVERAGE	REAL VARIABLE
T	TIME INTERVAL OVER WHICH AVERAGE IS TAKEN	REAL ADDRESSABLE CONSTANT
$\Delta t$	SAMPLING PERIOD	REAL ADDRESSABLE CONSTANT
N	# SAMPLES IN AVERAGING INTERVAL	INTEGER
$A_j$	COEFFICIENT IN FLUX AVERAGE COMPARISON	INTEGER

FLOW CHART SYMBOLS



AMENDMENT 76  
May 1, 1989

FIGURE GENERATED FOR FSAR ONLY BASED ON DRAWING Q 7247D05 SH 17
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUNCTIONAL DIAGRAM
FIGURE 7.2-1 SH 17

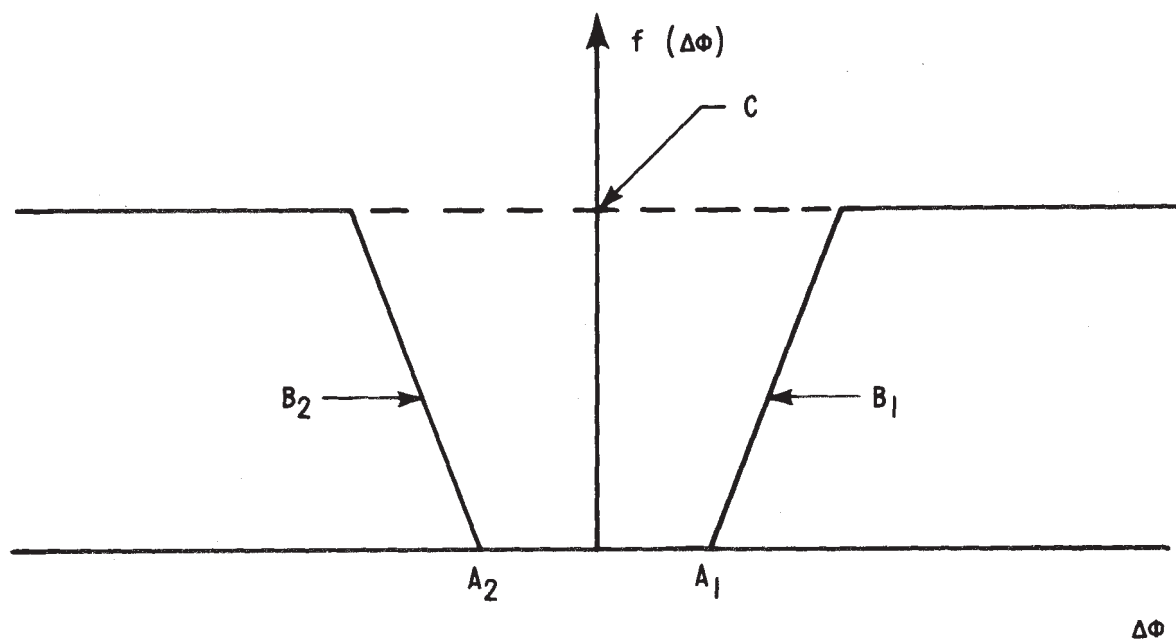


NOTES  
 1. AMSAC MAY BE REMOVED FROM SERVICE FOR TEST PURPOSES.

AMENDMENT 76  
 May 1, 1989

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





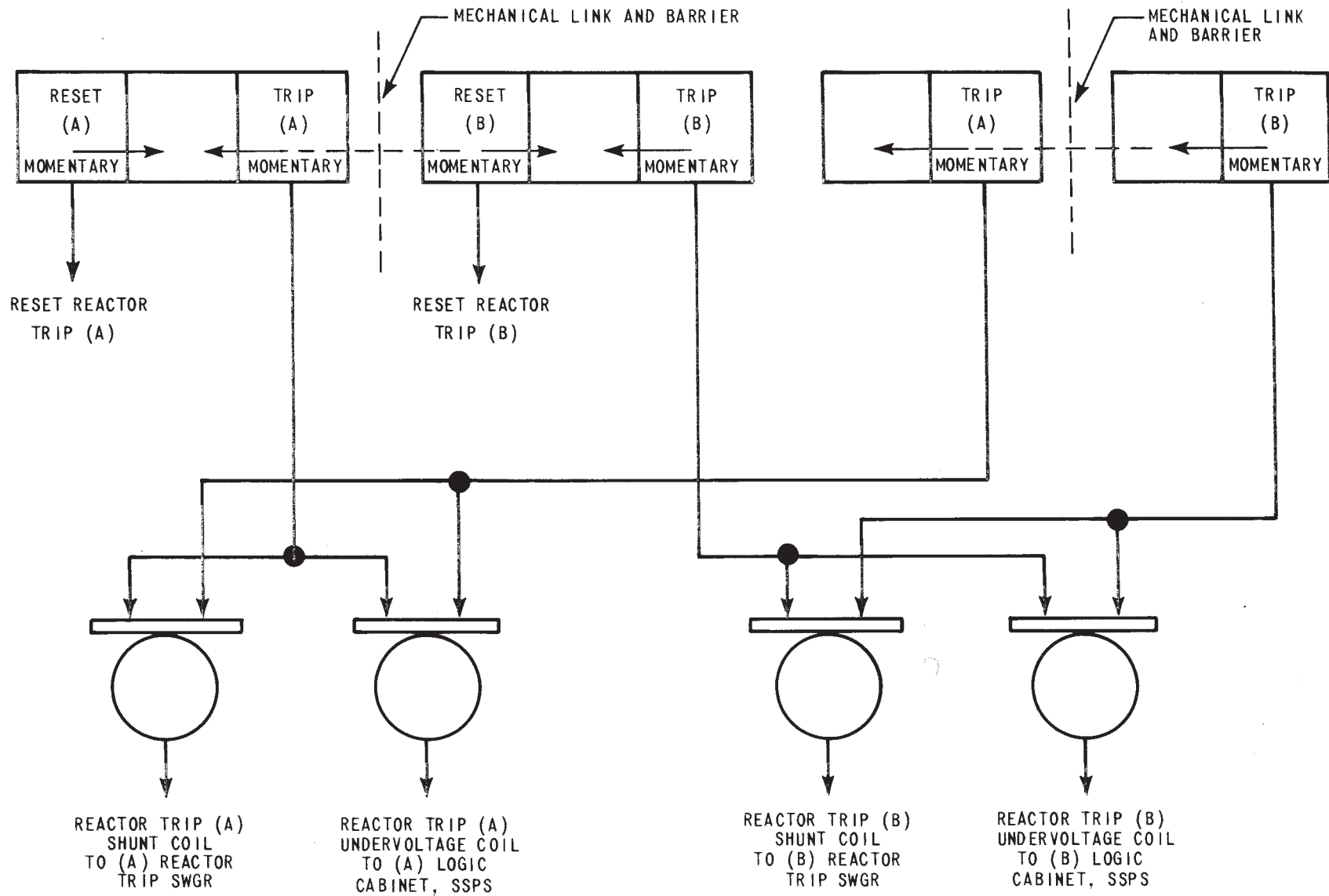
- $\Delta\phi$  - NEUTRON FLUX DIFFERENCE BETWEEN UPPER AND LOWER LONG ION CHAMBERS
- $A_1, A_2$  - LIMIT OF  $F(\Delta\phi)$  DEADBAND
- $B_1, B_2$  - SLOPE OF RAMP: DETERMINES RATE AT WHICH FUNCTION REACHES IT'S MAXIMUM VALUE ONCE DEADBAND IS EXCEEDED
- $C$  - MAGNITUDE OF MAXIMUM VALUE THE FUNCTION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

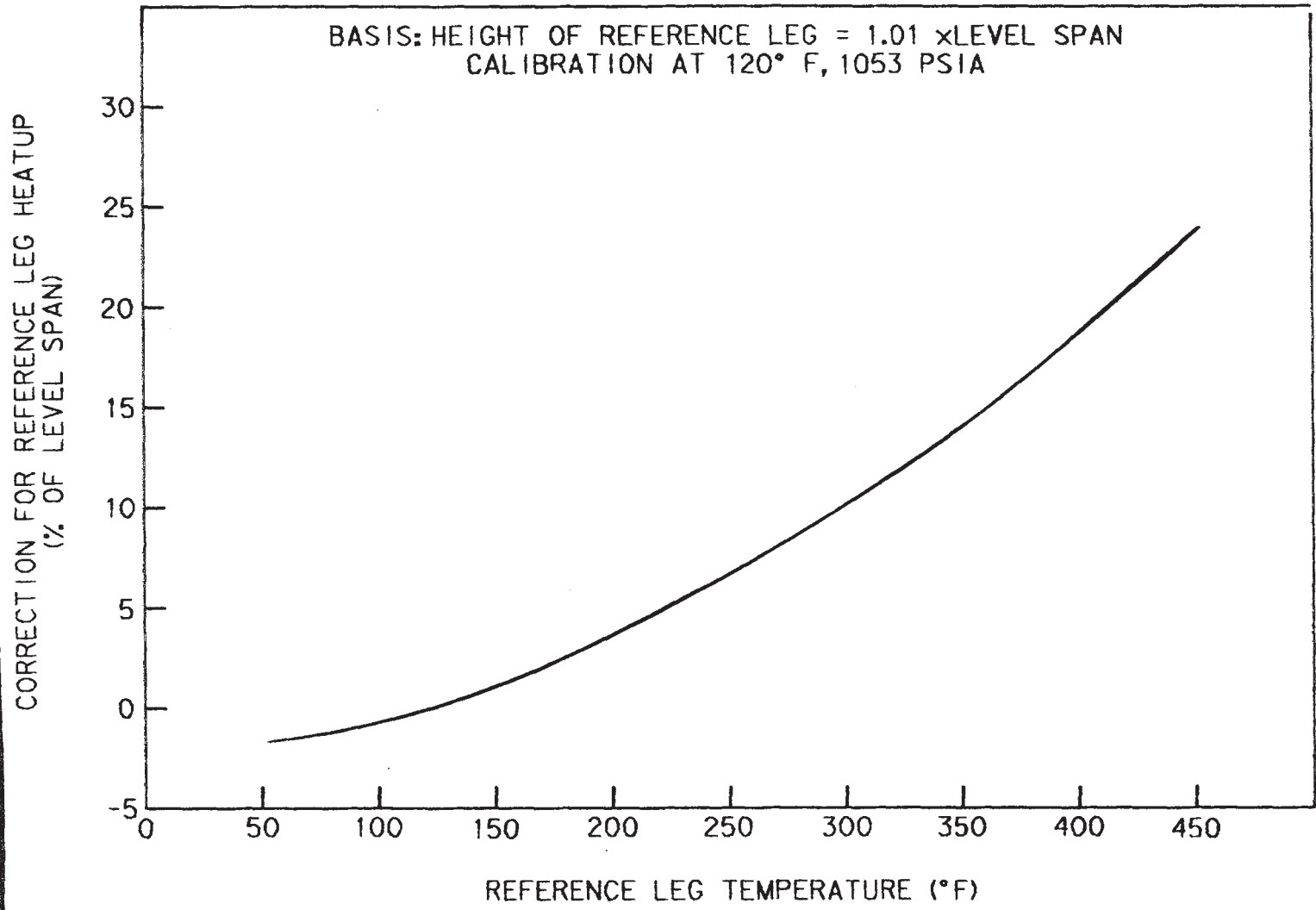


COMANCHE PEAK S.E.S.  
 FINAL SAFETY ANALYSIS REPORT  
 UNITS 1 and 2

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

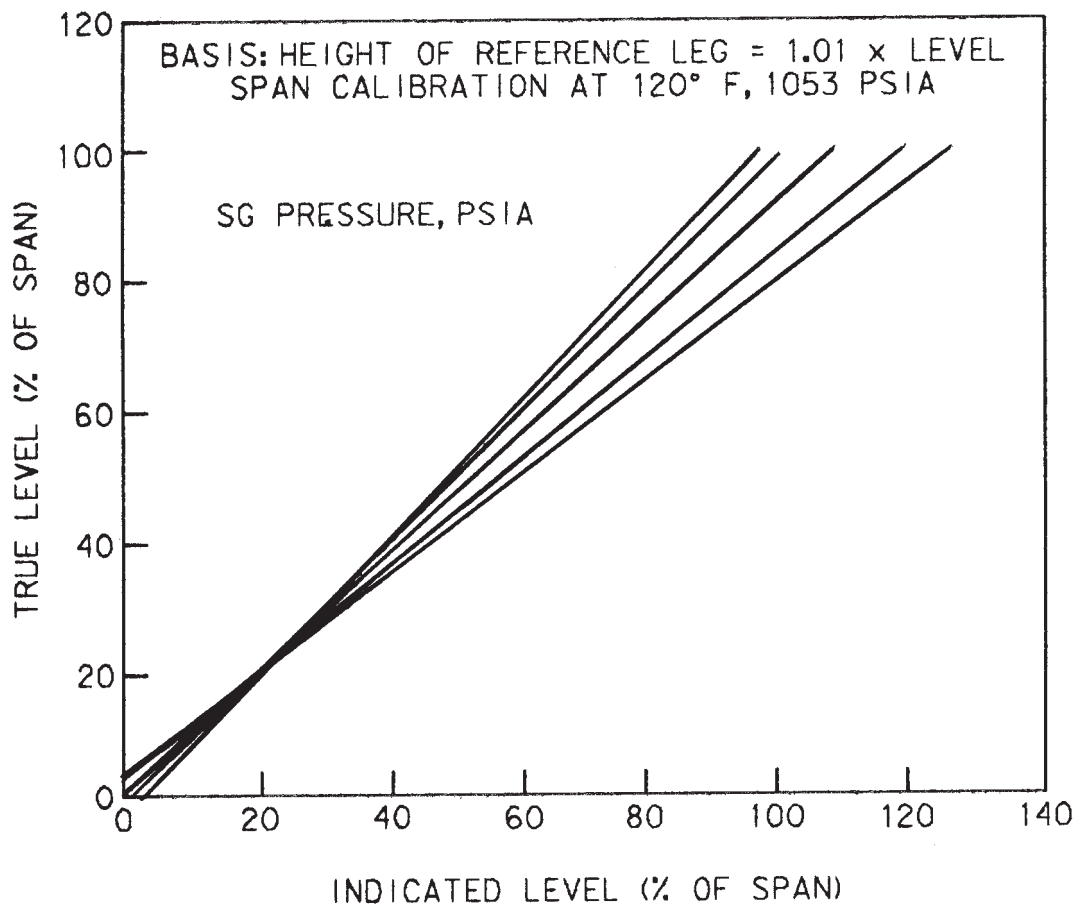
REFERENCE LEG TEMPERATURE (°F)

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

BIAS DUE TO STEAM GENERATOR  
REFERENCE LEG HEATUP

FIGURE 7.2.4

Amendment 91  
April 15, 1994

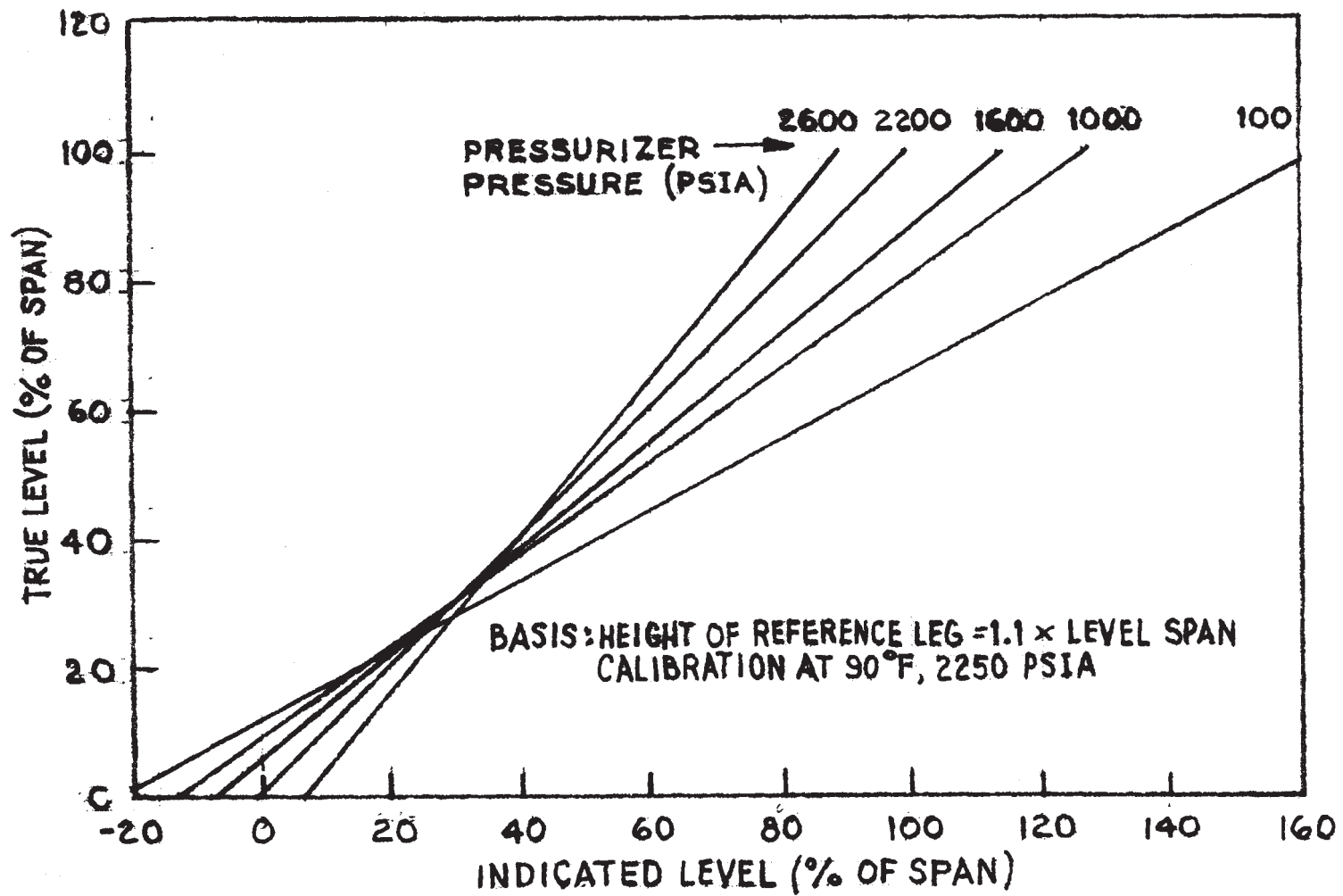


COMANCHE PEAK S.E.S.  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 and 2

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

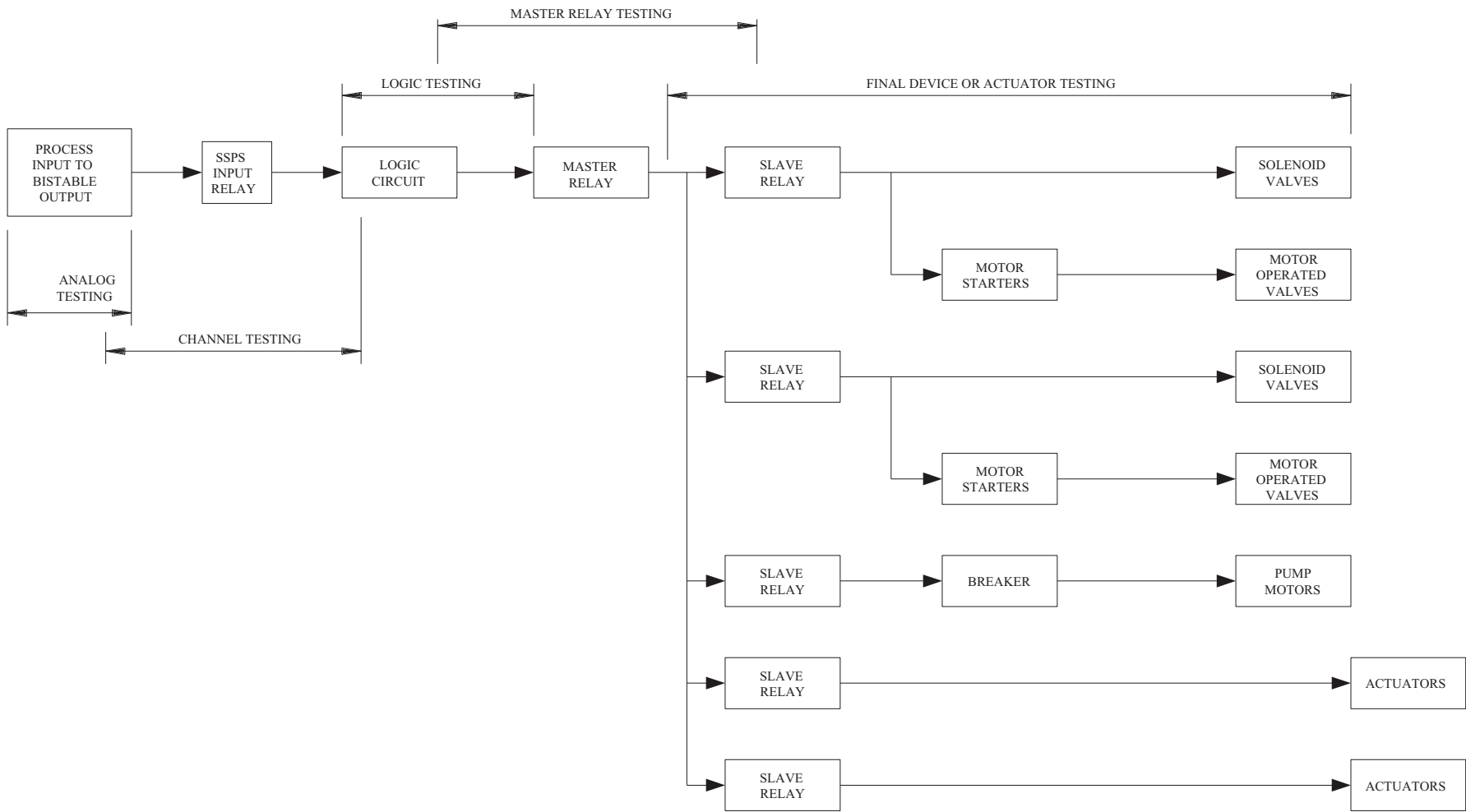
Amendment 91  
April 15, 1994

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

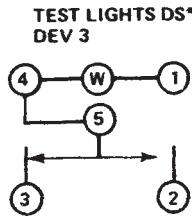
FIGURE 7.3-2

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.

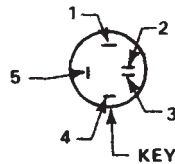
LOCATION LEGEND

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



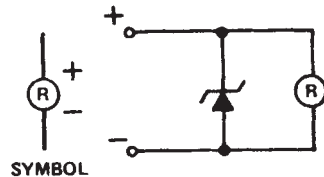
ILLUMINATED PUSHBUTTON SWITCH WITH 28V LAMP NO. 3327 (EXCEPT AS NOTED)

REAR OF PANEL



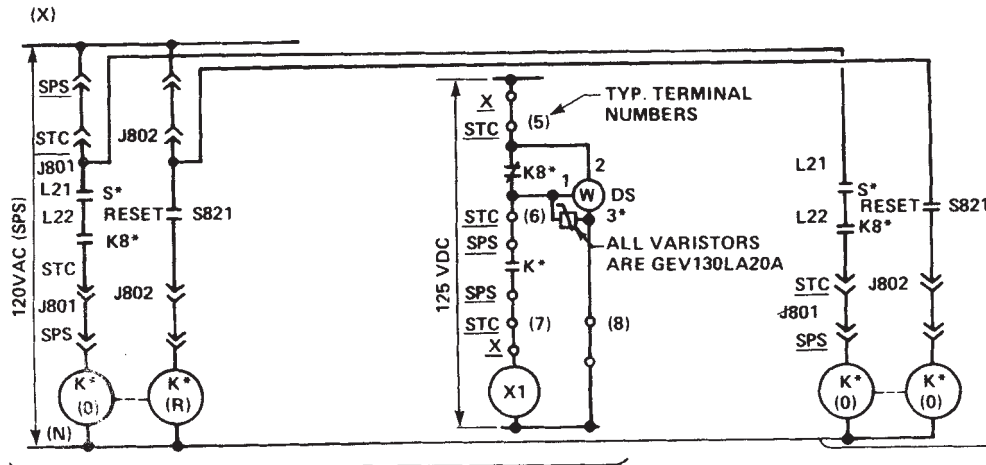
CONTACT LOCATION SCHEME

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

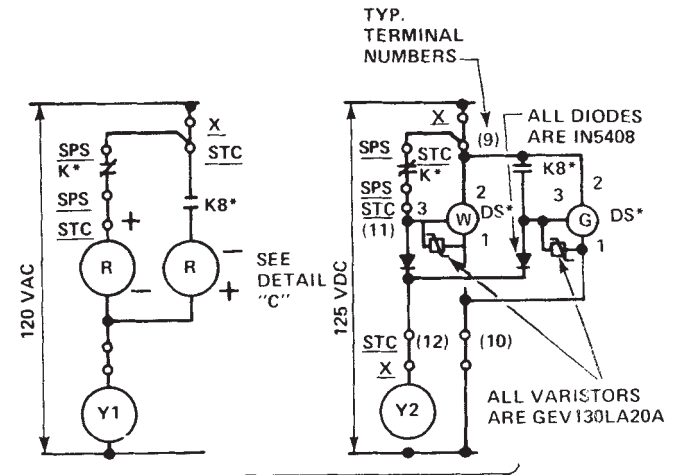


SYMBOL

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

---

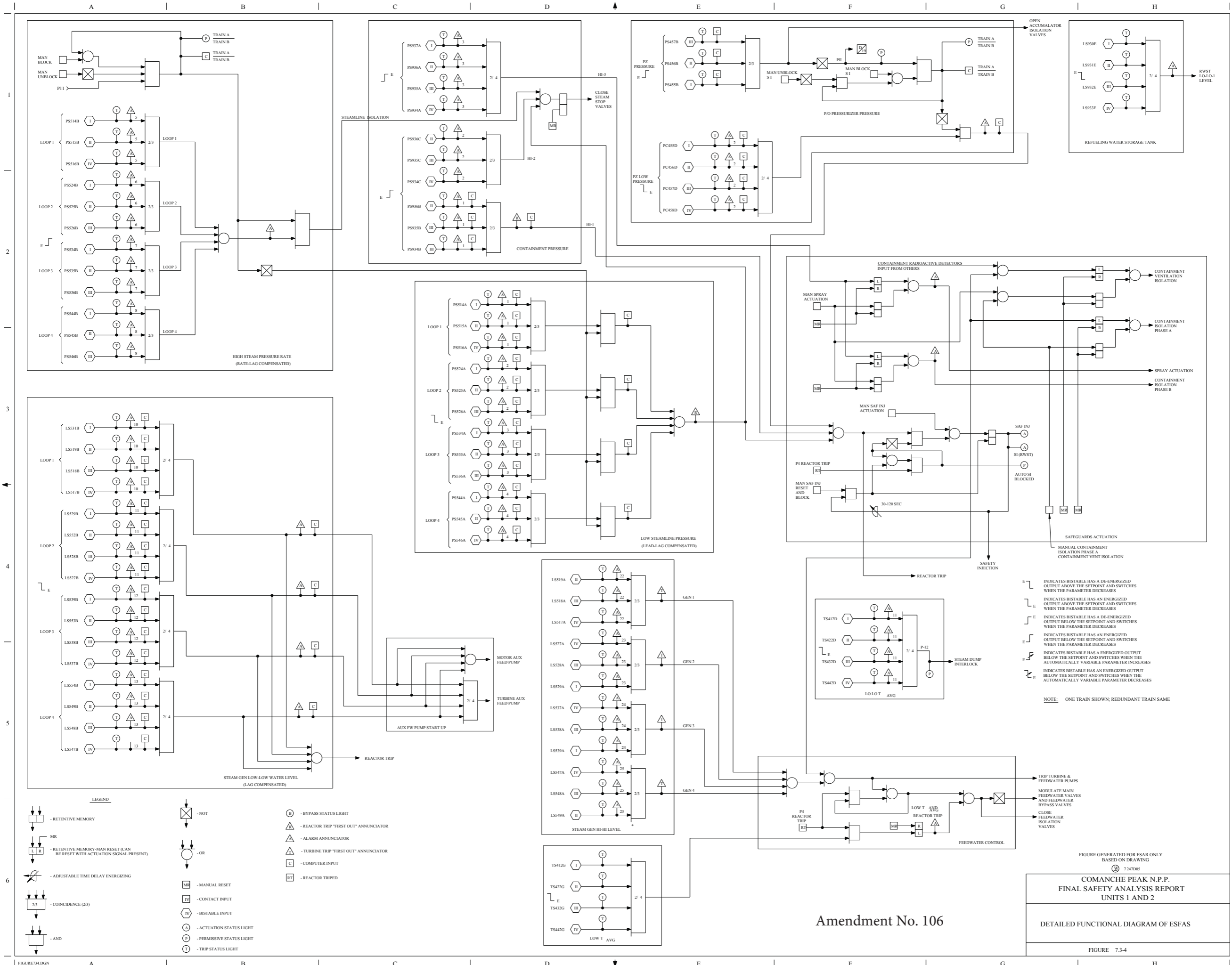
Engineered Safeguards Test  
 Cabinet, Index, Notes  
 and Legend\*

---

FIGURE 7.3-3.

AMENDMENT 11  
 JULY 31, 1980





INDICATES BISTABLE HAS A DE-ENERGIZED OUTPUT ABOVE THE SETPOINT AND SWITCHES WHEN THE PARAMETER DECREASES

INDICATES BISTABLE HAS AN ENERGIZED OUTPUT ABOVE THE SETPOINT AND SWITCHES WHEN THE PARAMETER DECREASES

INDICATES BISTABLE HAS A DE-ENERGIZED OUTPUT BELOW THE SETPOINT AND SWITCHES WHEN THE PARAMETER DECREASES

INDICATES BISTABLE HAS AN ENERGIZED OUTPUT BELOW THE SETPOINT AND SWITCHES WHEN THE PARAMETER DECREASES

INDICATES BISTABLE HAS AN ENERGIZED OUTPUT BELOW THE SETPOINT AND SWITCHES WHEN THE AUTOMATICALLY VARIABLE PARAMETER INCREASES

INDICATES BISTABLE HAS AN ENERGIZED OUTPUT BELOW THE SETPOINT AND SWITCHES WHEN THE AUTOMATICALLY VARIABLE PARAMETER DECREASES

NOTE: ONE TRAIN SHOWN, REDUNDANT TRAIN SAME

REACTOR TRIP

SAFETY INJECTION

MANUAL CONTAINMENT ISOLATION PHASE A

CONTAINMENT VENT ISOLATION

CONTAINMENT ISOLATION PHASE A

CONTAINMENT ISOLATION PHASE B

SPRAY ACTUATION

MAN SAF INJ ACTUATION

MAN SAF INJ RESET AND BLOCK

30-120 SEC

SAF INJ

SI (RWST)

AUTO SI BLOCKED

SAFEGUARDS ACTUATION

MANUAL CONTAINMENT ISOLATION PHASE A

CONTAINMENT VENT ISOLATION

STEAM DUMP INTERLOCK

TS412D

TS422D

TS432D

TS442D

LO LO T AVG

P-12

FEEDWATER CONTROL

LOW T AND AVG

TRIP TURBINE & FEEDWATER PUMPS

MODULATE MAIN FEEDWATER VALVES AND FEEDWATER BYPASS VALVES

CLOSE FEEDWATER ISOLATION VALVES

FIGURE GENERATED FOR FSAR ONLY  
BASED ON DRAWING  
7247005

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

DETAILED FUNCTIONAL DIAGRAM OF ESFAS

FIGURE 7.3-4

Amendment No. 106

- LEGEND**
- RETENTIVE MEMORY
  - RETENTIVE MEMORY-MAN RESET (CAN BE RESET WITH ACTUATION SIGNAL PRESENT)
  - ADJUSTABLE TIME DELAY ENERGIZING
  - COINCIDENCE (2/3)
  - AND
  - NOT
  - OR
  - BYPASS STATUS LIGHT
  - REACTOR TRIP "FIRST OUT" ANNUNCIATOR
  - ALARM ANNUNCIATOR
  - TURBINE TRIP "FIRST OUT" ANNUNCIATOR
  - COMPUTER INPUT
  - REACTOR TRIPPED
  - MANUAL RESET
  - CONTACT INPUT
  - BISTABLE INPUT
  - ACTUATION STATUS LIGHT
  - PERMISSIVE STATUS LIGHT
  - TRIP STATUS LIGHT

- DELETED -

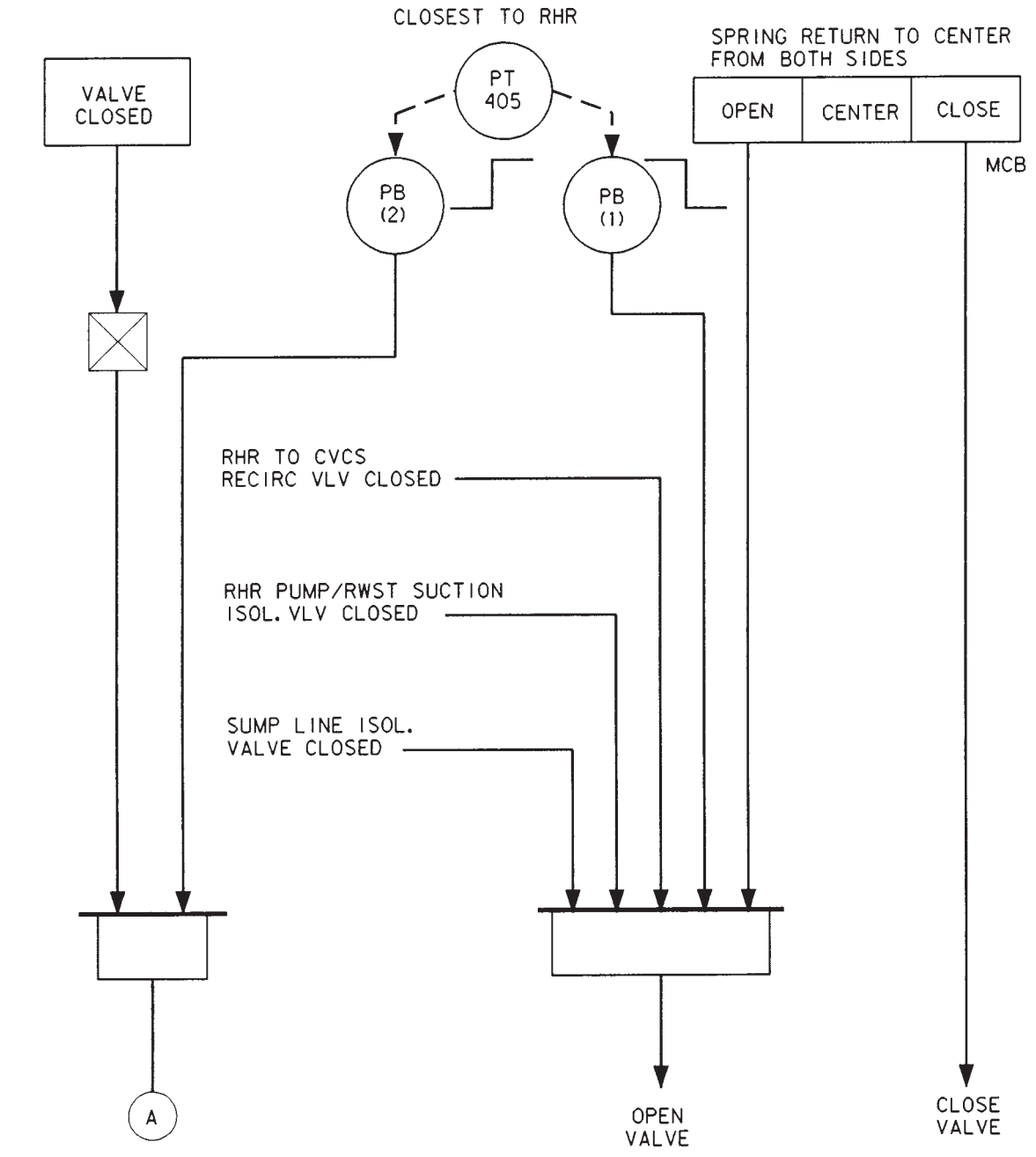
See FSAR Figure 8.3-15

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



THIS DRAWING CREATED ELECTRONICALLY

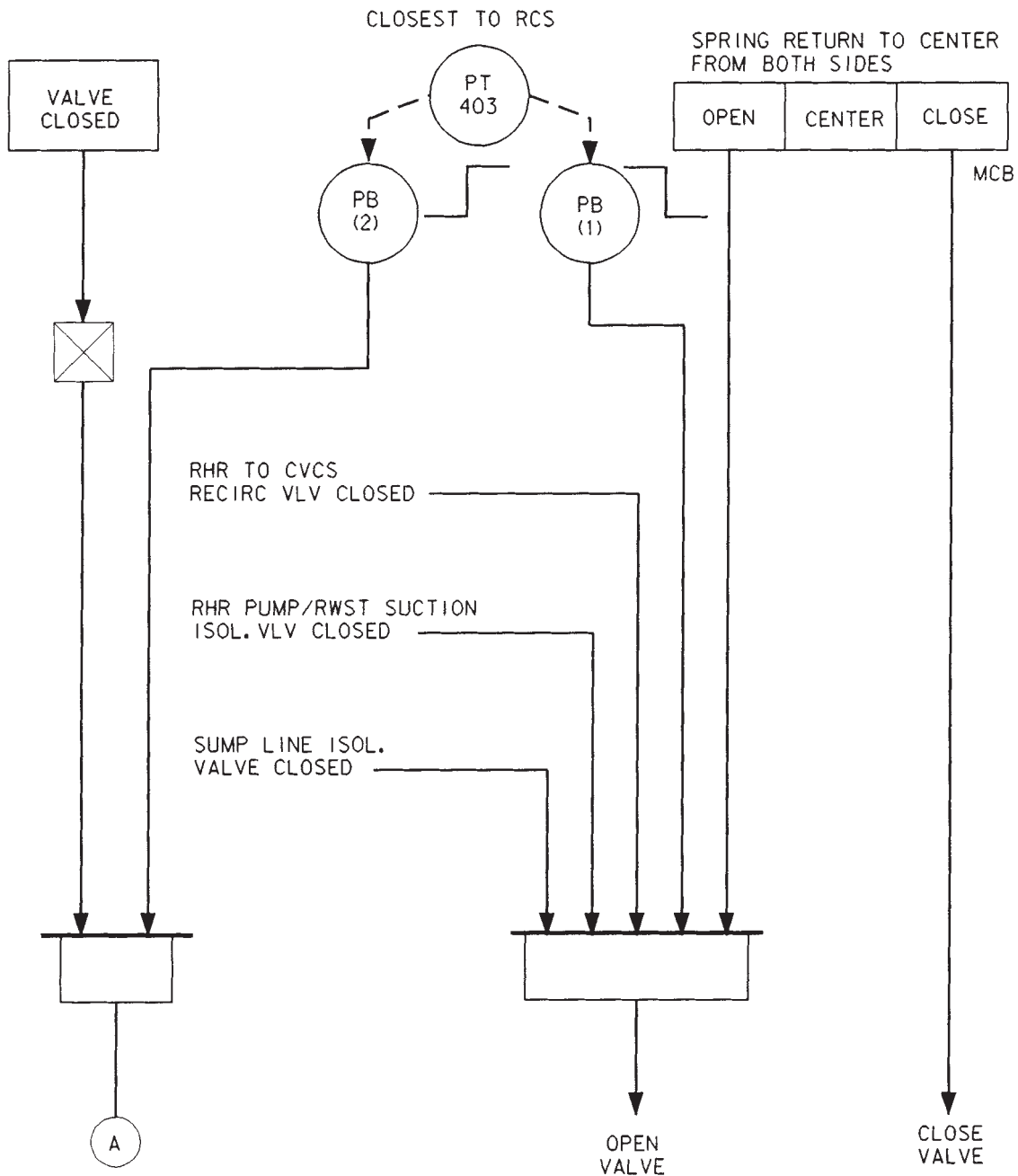
(1) DE-ENERGIZED AT LOW SETPOINT  
 (2) ENERGIZED AT HIGH PRESSURE SETPOINT

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) RHR ISOLATION VALVE
FIGURE 7.6-2, SHEET 1



AMENDMENT 83  
 DECEMBER 13, 1991



THIS DRAWING CREATED ELECTRONICALLY

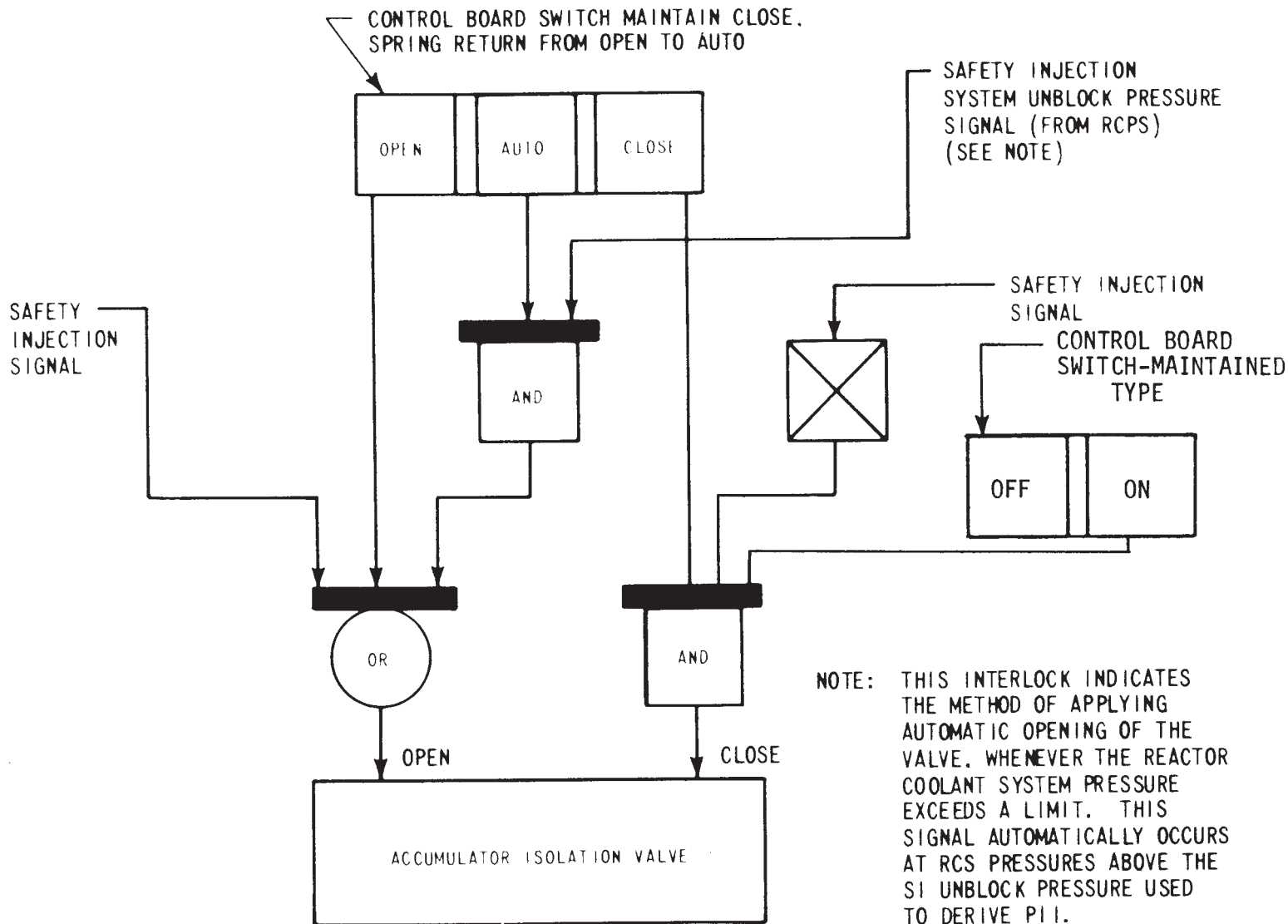
(1) DE-ENERGIZED AT LOW SETPOINT  
 (2) ENERGIZED AT HIGH PRESSURE SETPOINT

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 (INNER) RHR ISOLATION VALVE
FIGURE 7.6-2, SHEET 2

AMENDMENT 83  
 DECEMBER 13, 1991



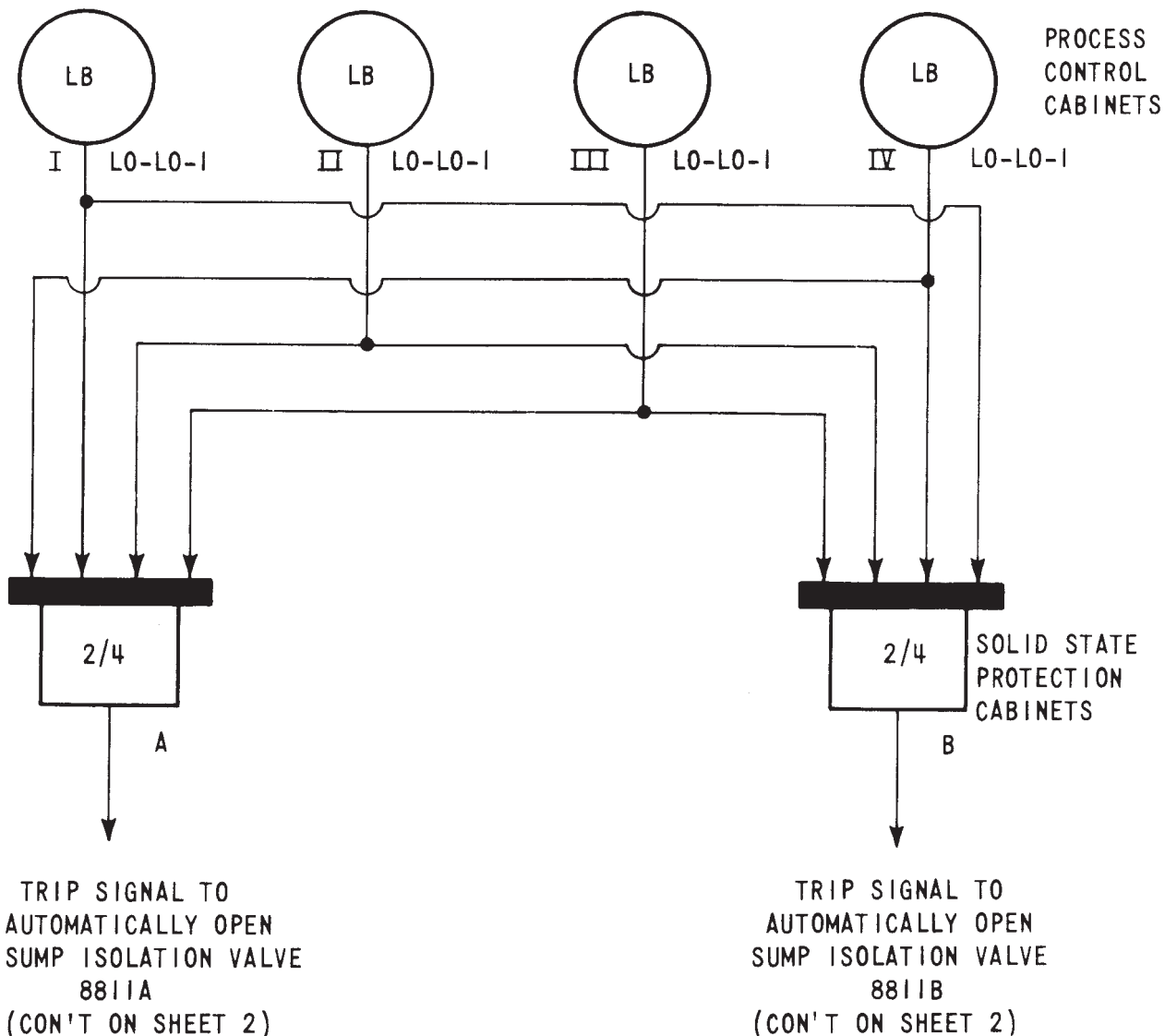
COMANCHE PEAK S.E.S.  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 and 2

Functional Block Diagram  
of Accumulator Isolation Valve

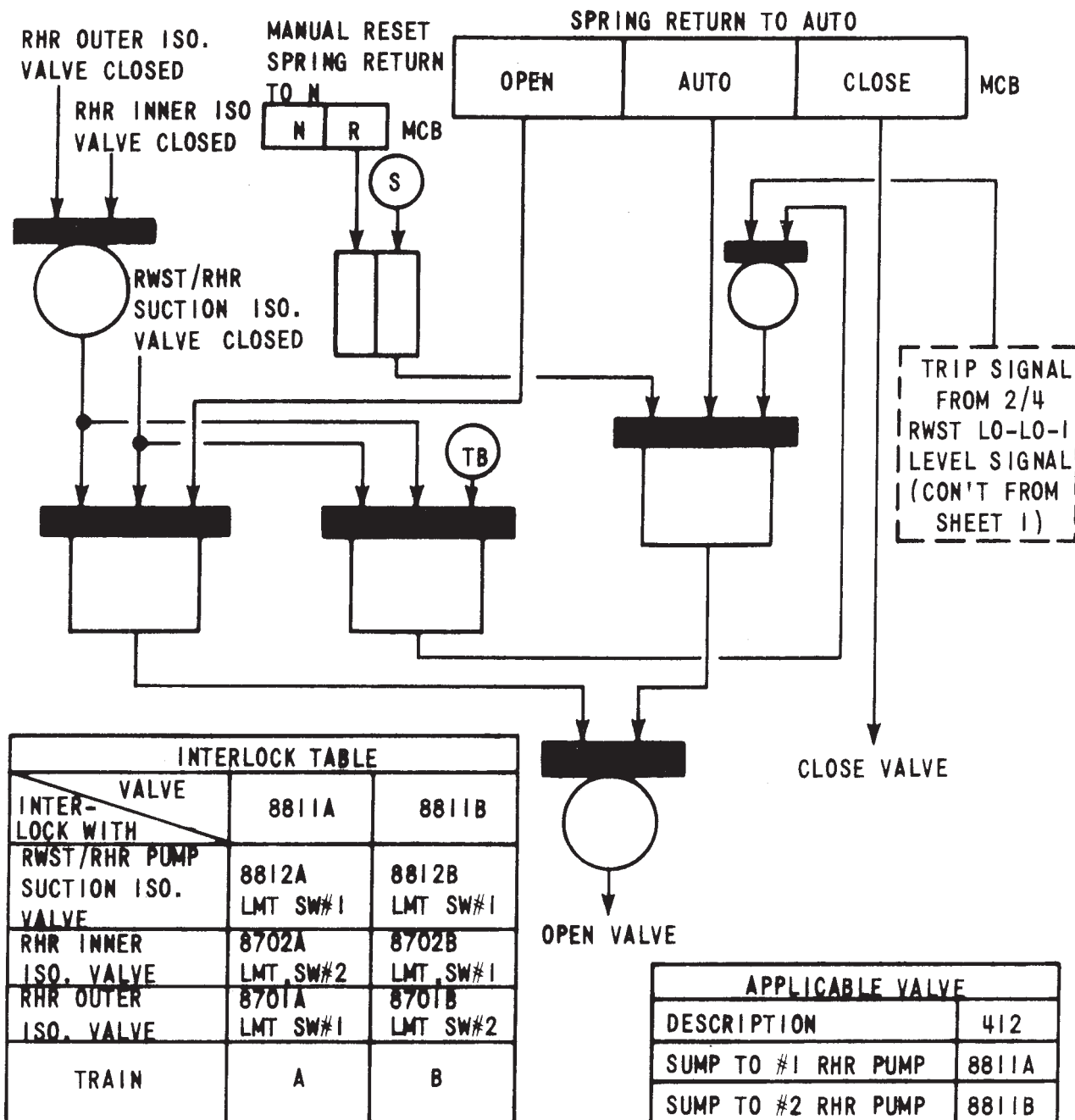
FIGURE 7.6-3

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

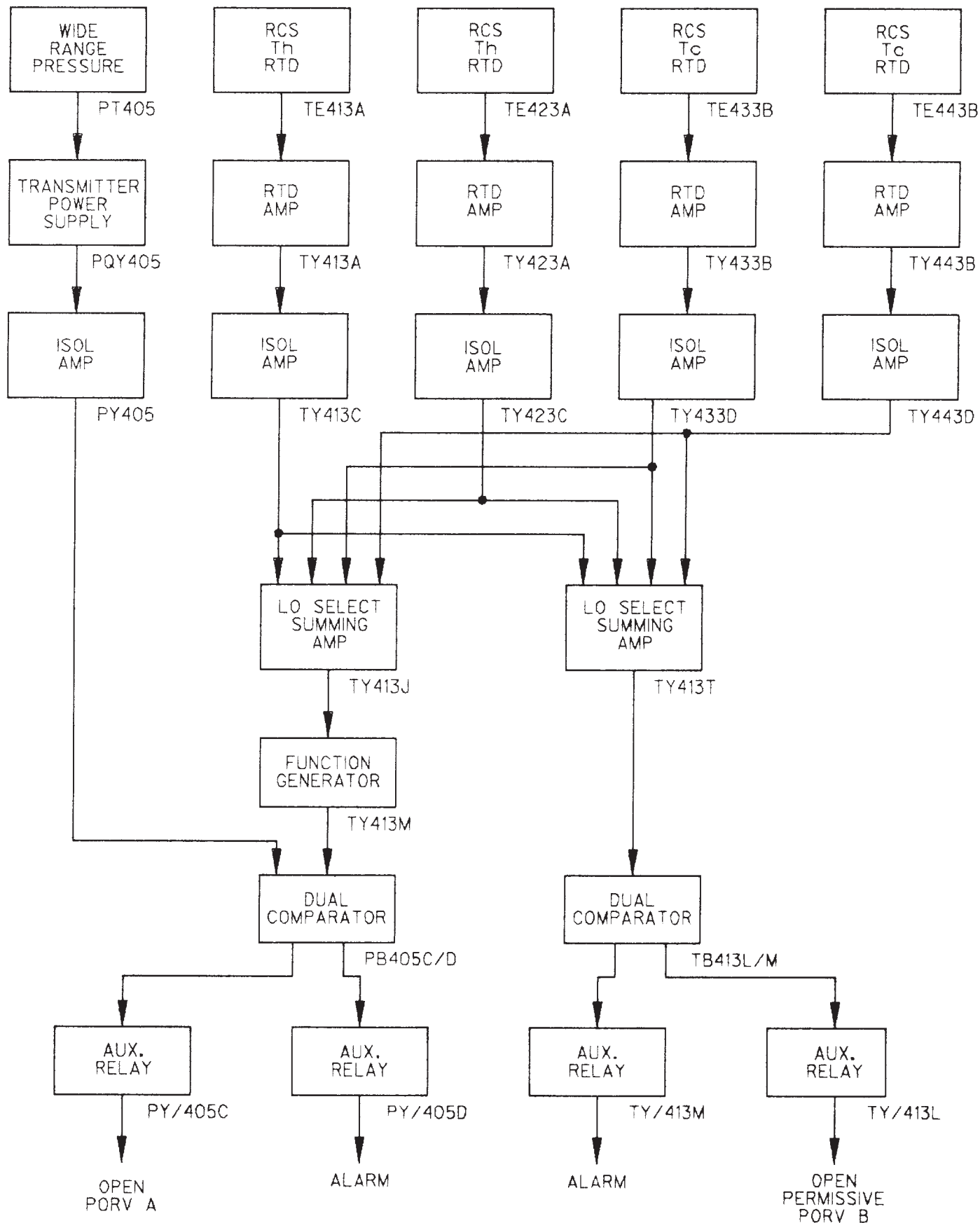


COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
Safety Injection System Recirculation Sump Isolation Valves
FIGURE 7.6-4, Sheet 1



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

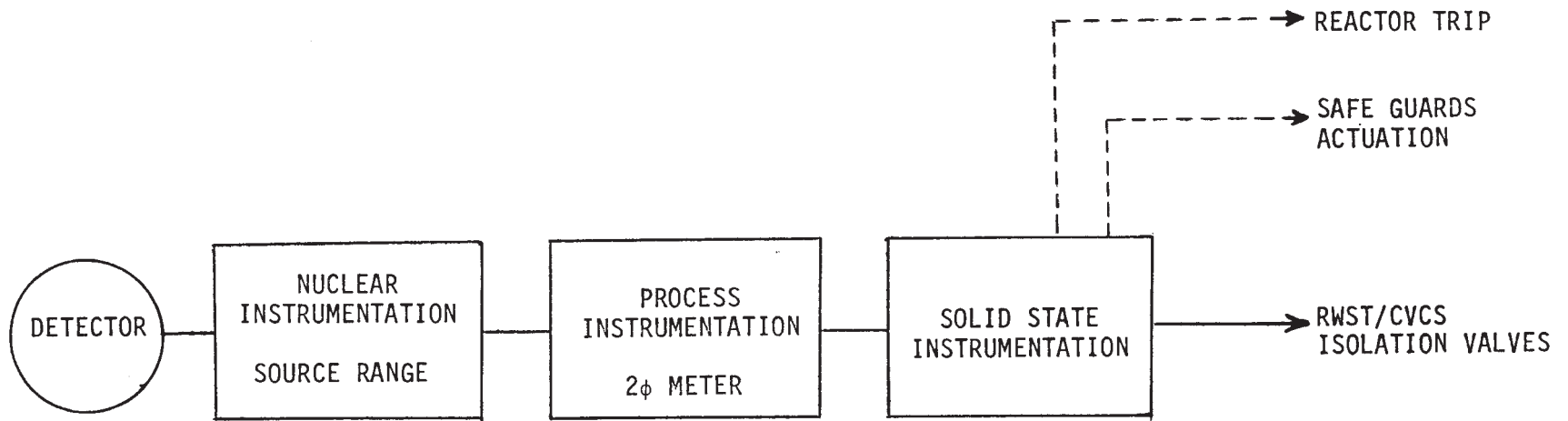
COMANCHE PEAK S E S  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 AND 2

PRESSURIZER PORV  
LOW TEMPERATURE OVERPRESSURE  
CONTROL LOGIC

FIGURE T.6-5



CPSSES/FSAR

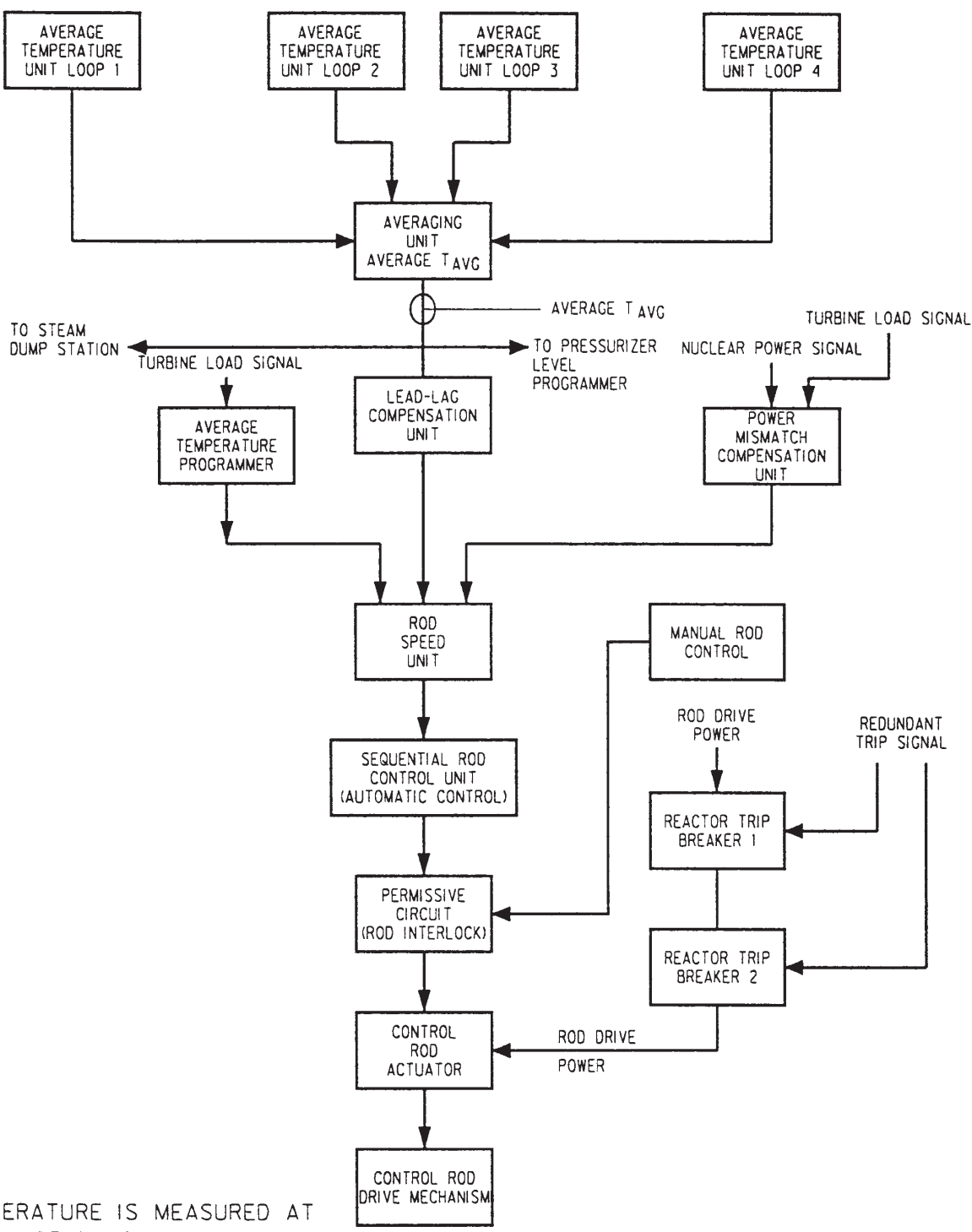


AMENDMENT 15  
FEBRUARY 20, 1981

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

INSTRUMENTATION FOR PROTECTION  
AGAINST INADVERTENT BORON  
DILUTION

FIGURE 7.6-6

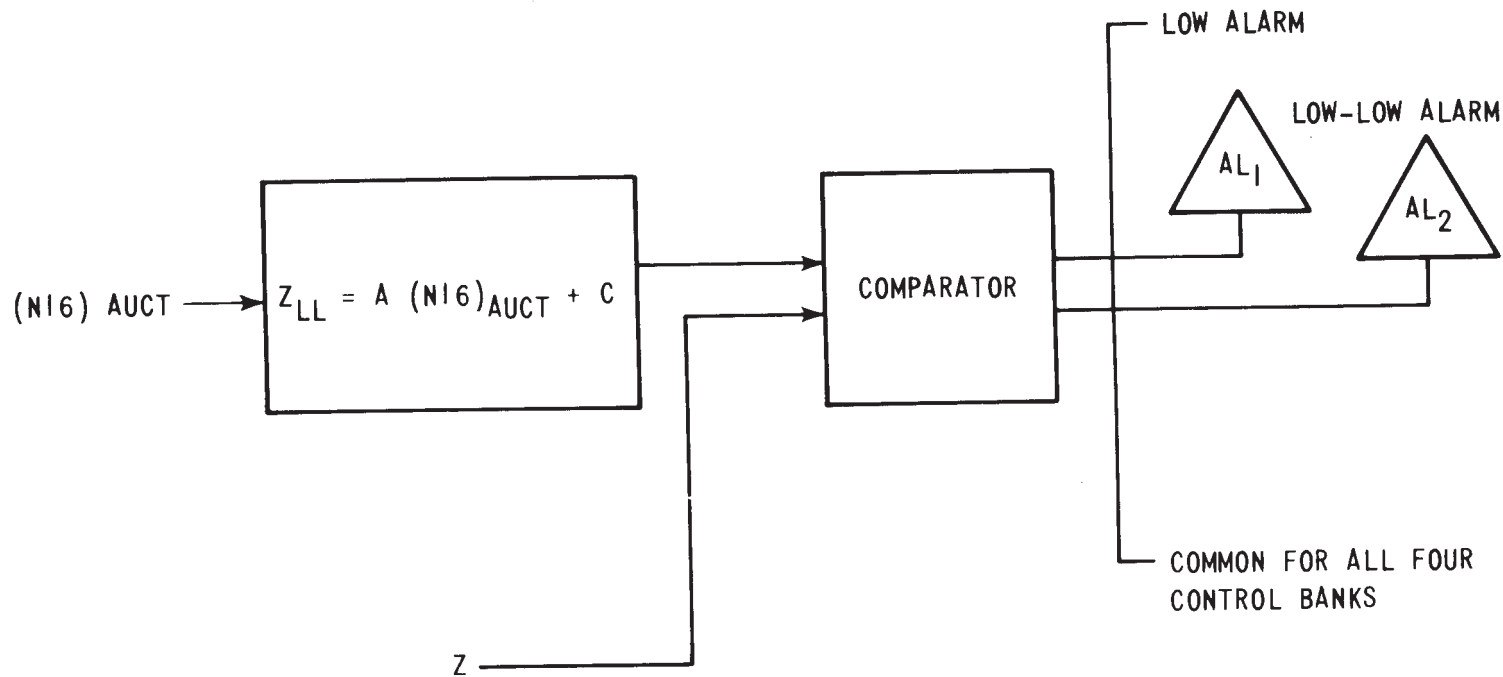


NOTES:

1. TEMPERATURE IS MEASURED AT STEAM GENERATOR'S OUTLET.
2. PRESSURE IS MEASURED AT THE PRESSURIZER.
3. T<sub>AVG</sub> 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
<b>SIMPLIFIED BLOCK DIAGRAM OF REACTOR CONTROL SYSTEM</b>
FIGURE 7.7-1



DEMAND BANK  
SIGNAL

TYPICAL OF ONE CONTROL BANK

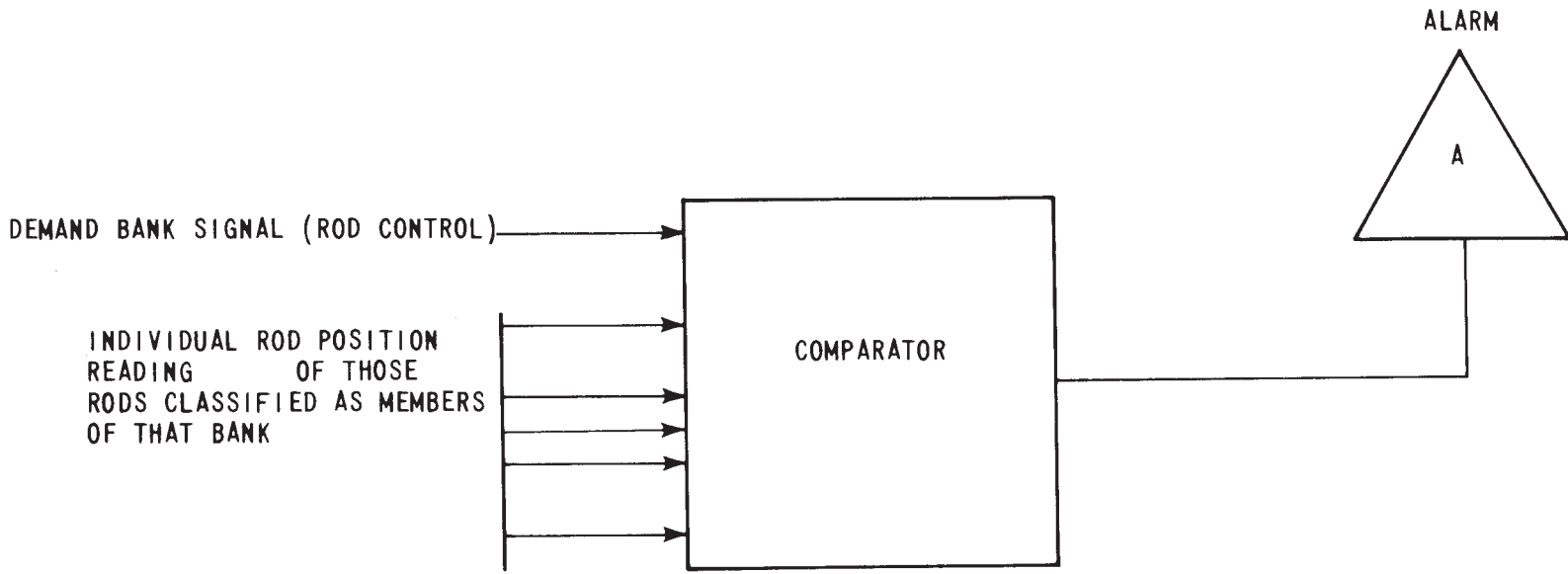
NOVEMBER 30, 1979

- 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

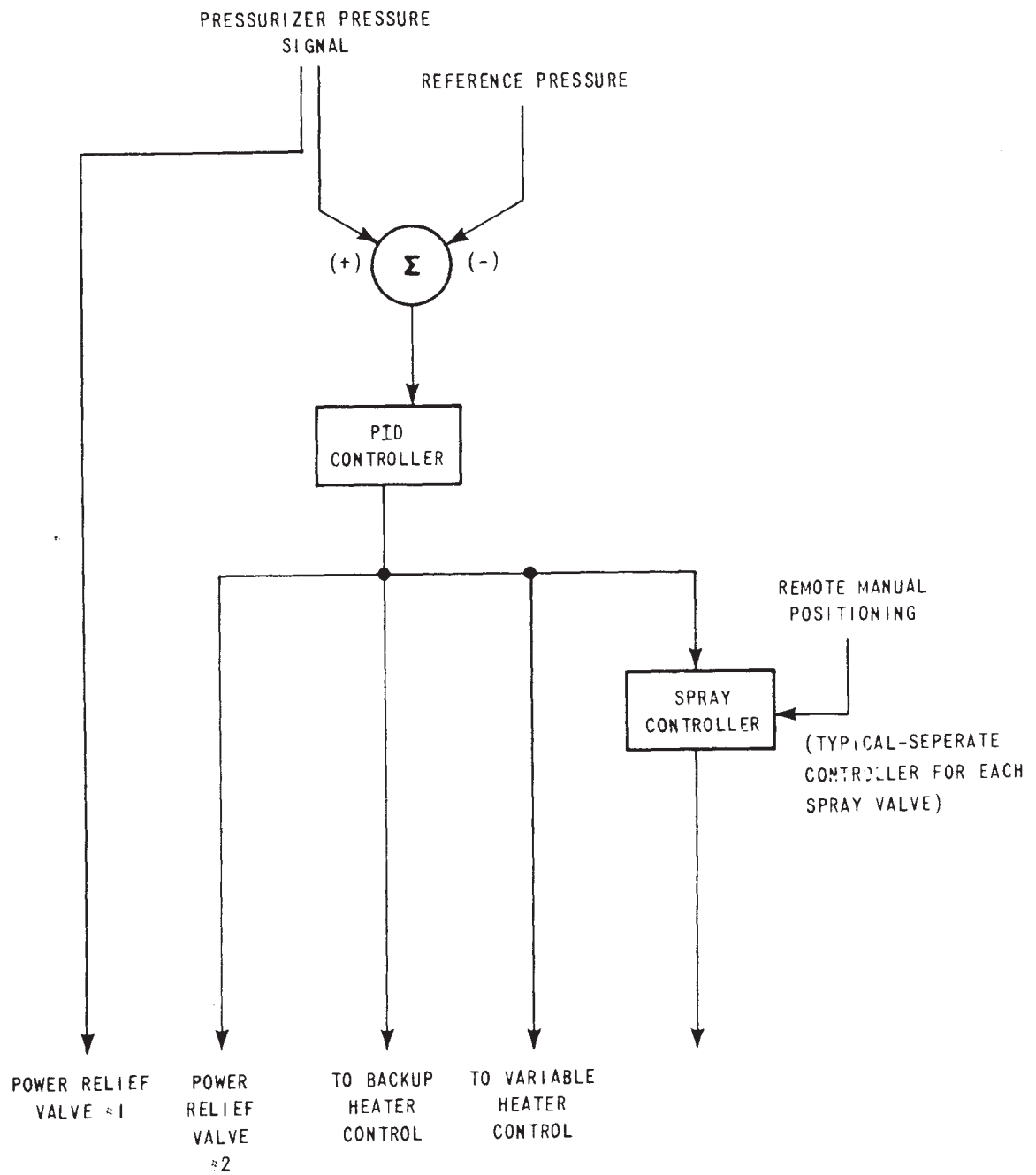
Control Bank Rod  
Insertion Monitor

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.

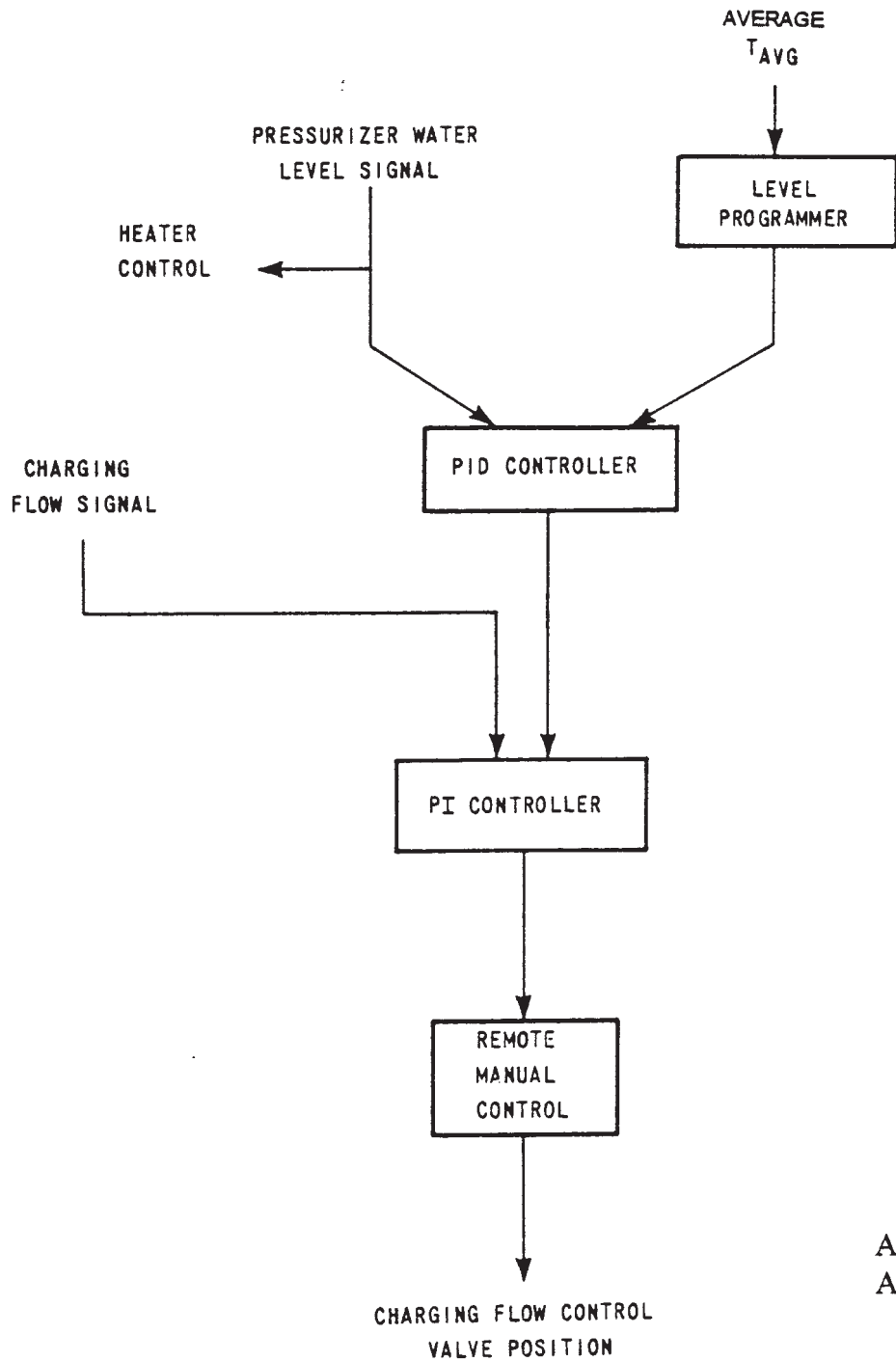
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
Rod Deviation Comparator
FIGURE 7.7-3



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

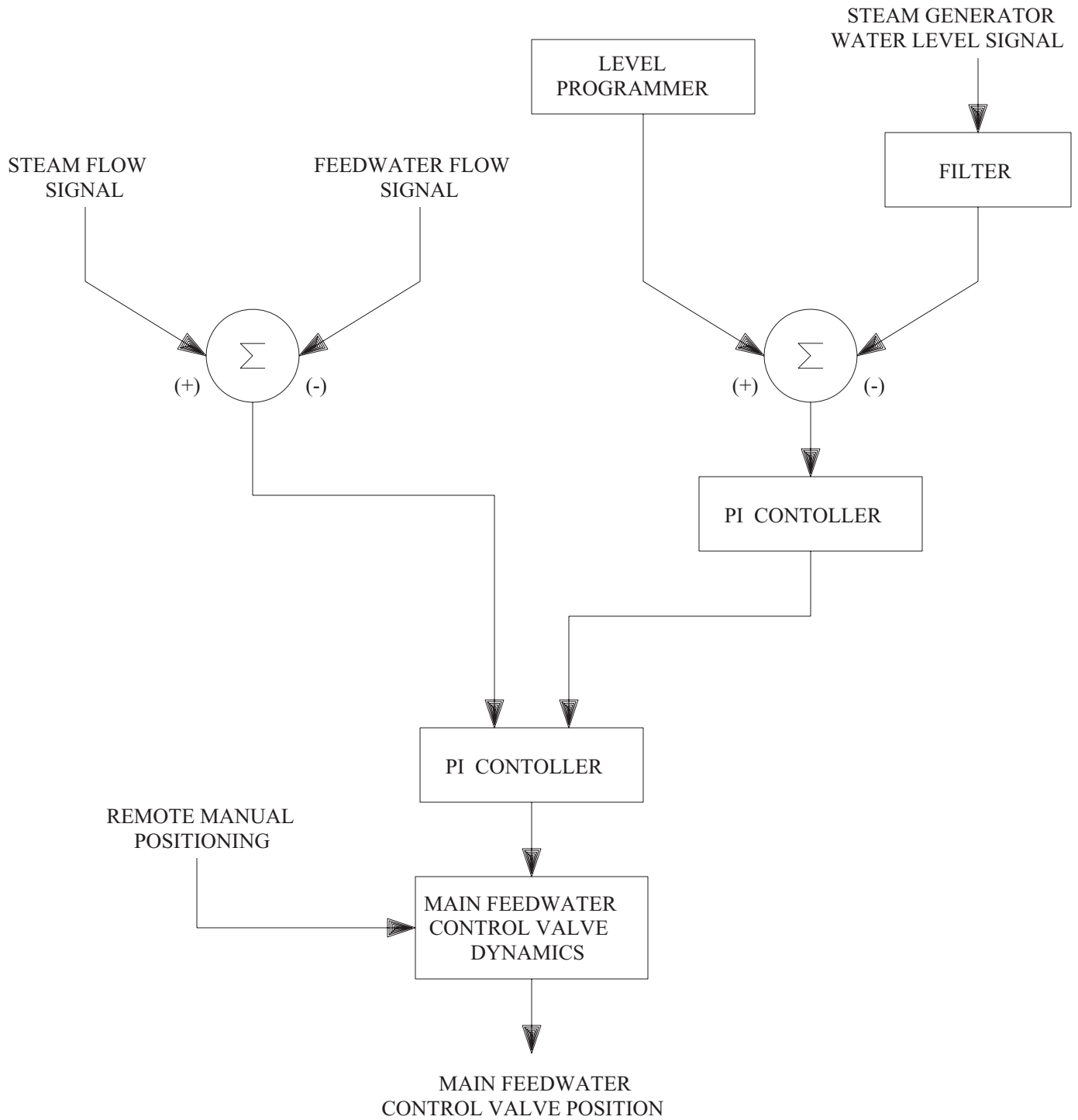
Block Diagram of Pressurizer  
Pressure Control System

FIGURE 7.7-4

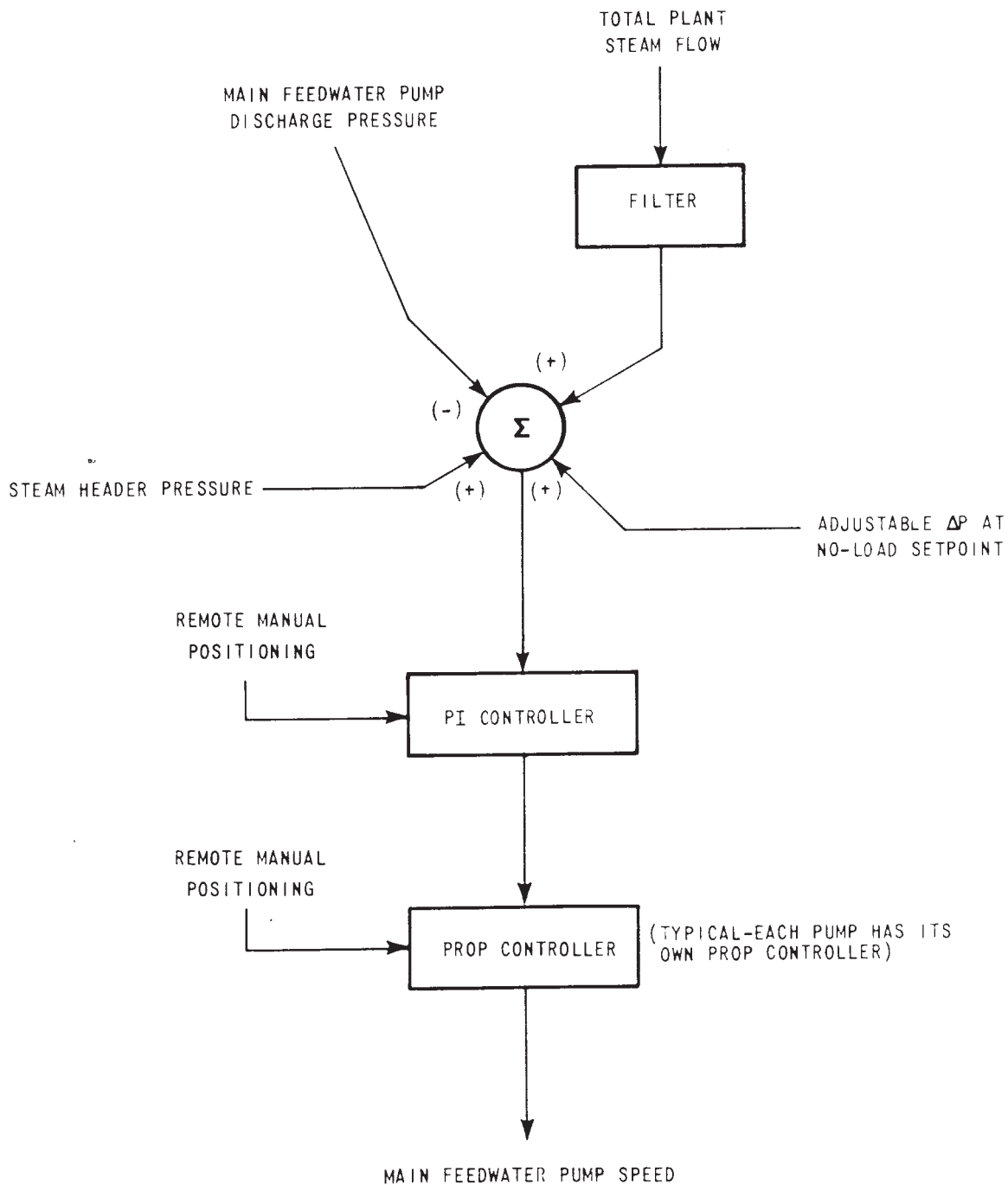


Amendment 96  
August 2, 1999

COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
Block Diagram of Pressurizer Water Level Control System
FIGURE 7.7-5



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

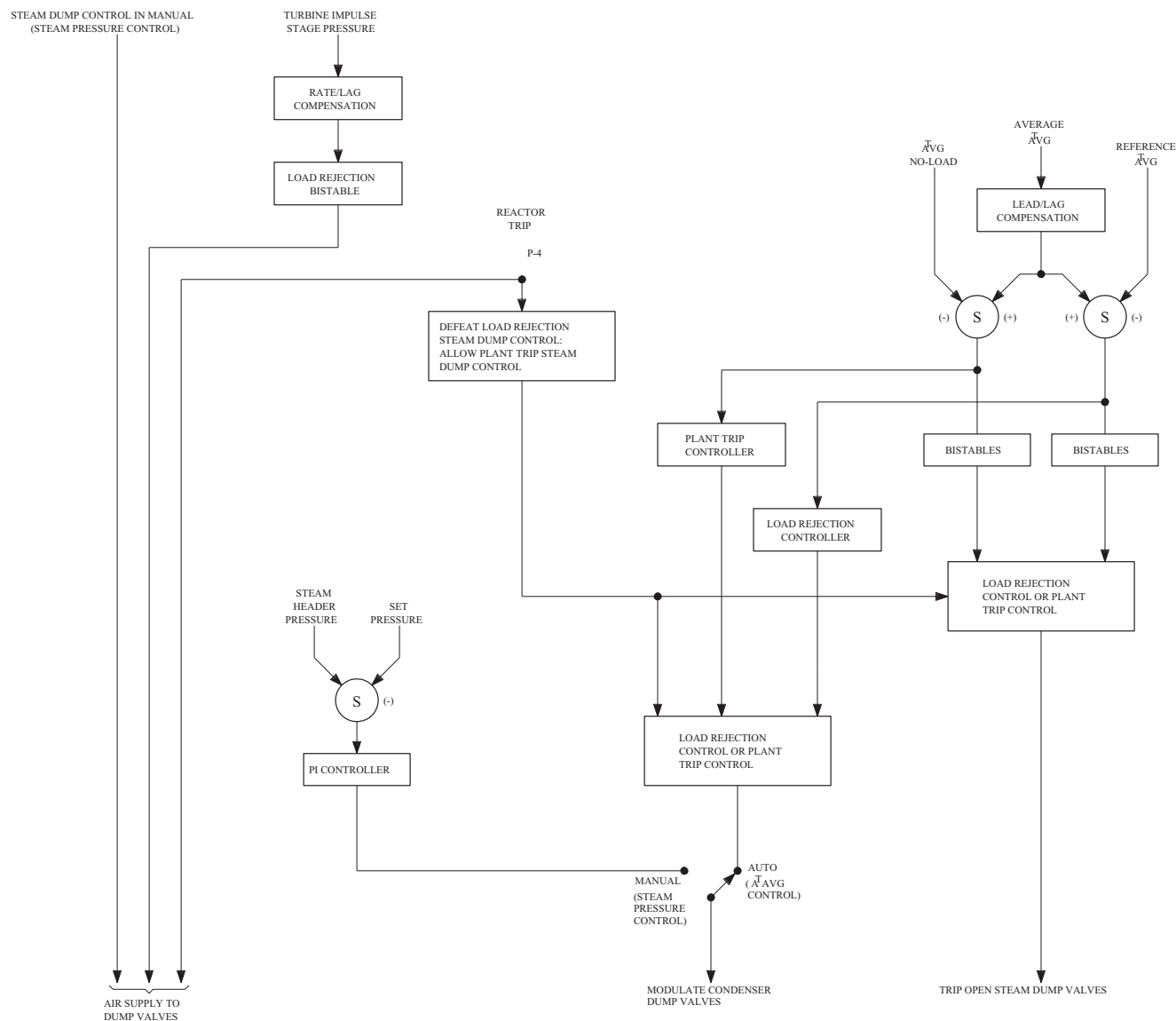
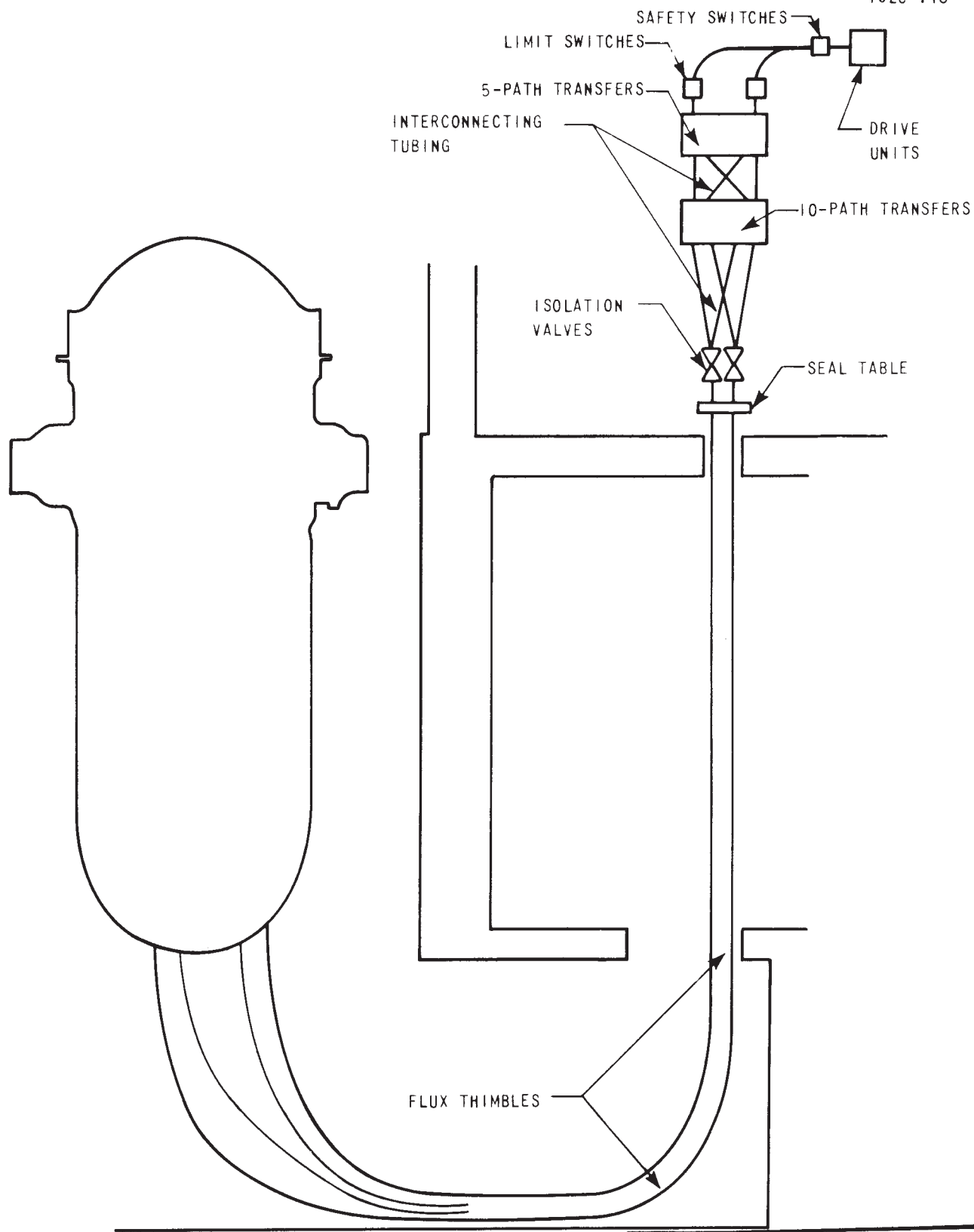


FIGURE GENERATED FOR FSAR ONLY  
 BASED ON DRAWING  
 47D05 SH 01  
 COMANCHE PEAK S.E.S.  
 FINAL SAFETY ANALYSIS REPORT  
 UNITS 1 and 2  
 BLOCK DIAGRAM OF STEAM  
 DUMP CONTROL SYSTEM  
 FIGURE 7.7-8 SH 01



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

Basic Flux-Mapping System

FIGURE 7.7-9

CPSES/FSAR

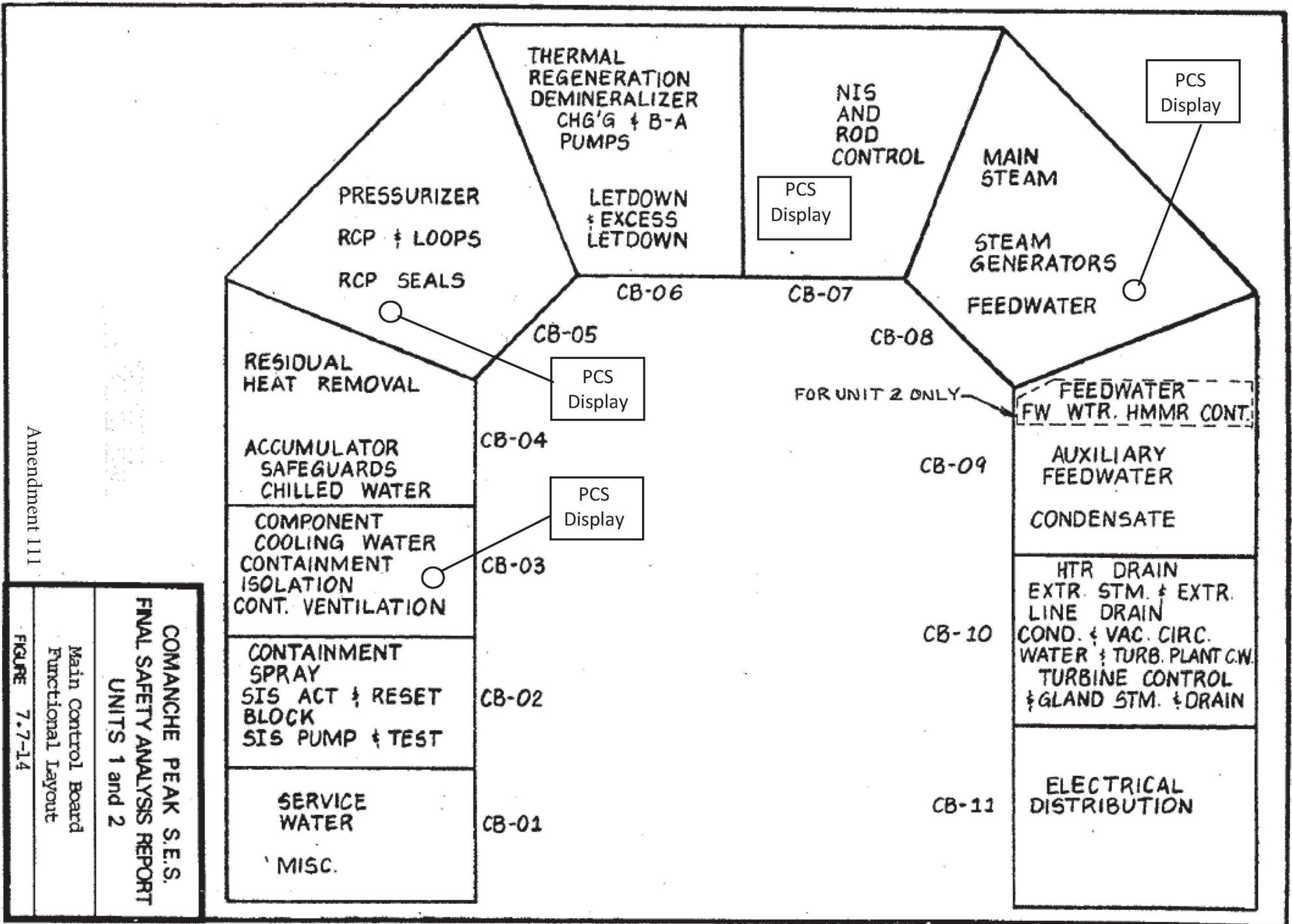
FIGURE 7.7-10

This figure has been deleted.

This figure has been deleted.

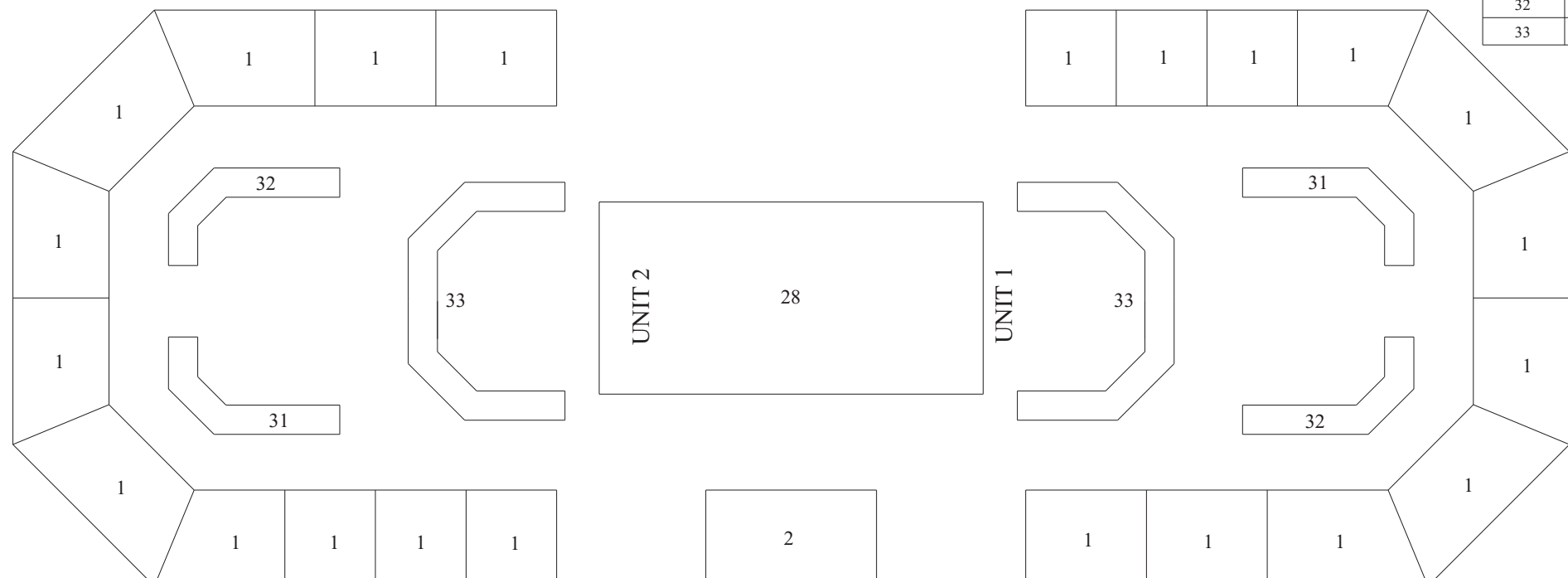
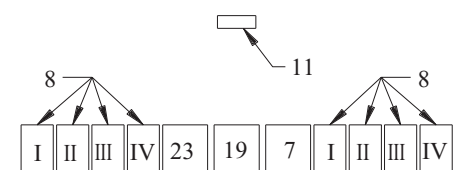
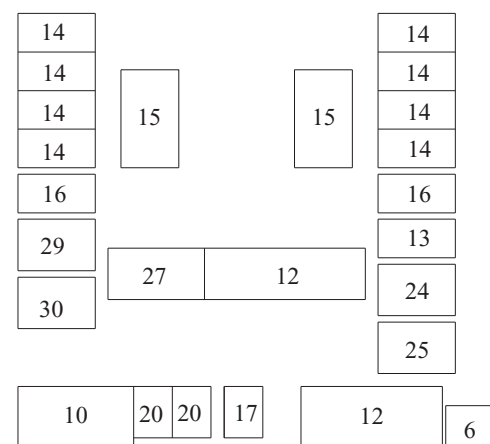
This figure has been deleted.

This figure has been deleted.



Amendment 111

COMANCHE PEAK S.E.S.  
 FINAL SAFETY ANALYSIS REPORT  
 UNITS 1 and 2  
 Main Control Board  
 Functional Layout  
 FIGURE 7.7-14



PANEL	SERVICE	SAFETY RELATED		NOTES
		IEEE 344	IEEE 323	
1	MAIN CONTROL BOARDS	YES	YES	SEE FIGURE 7.7-14
2	SWITCHYARD CONSOLE	NO	NO	
4	INTENTIONALLY LEFT BLANK	N/A	N/A	
6	METEOROLOGICAL PANEL	NO	NO	COMMON FOR UNITS 1 & 2
7	RMS EQUIPMENT RACK (SEISMIC)	YES	NO	COMMON FOR UNITS 1 & 2
8	NUCLEAR INSTR SYS (NIS) RACKS	YES	YES	
10	FIRE DETECTION SYSTEM PANEL	YES	NO	COMMON FOR UNITS 1 & 2
11	MCC STATUS LIGHT PNL	YES	YES	COMMON FOR UNITS 1 & 2
12	HVAC VERT PANEL	YES	YES	COMMON FOR UNITS 1 & 2
13	SEISMIC INSTR SYSTEM PANEL	YES	NO	COMMON FOR UNITS 1 & 2
14	MOVABLE INCORE FLUX MONITORING PANEL	NO	NO	
15	RECORDER PANEL	NO	NO	
16	LOOSE PARTS MONITORING SYS PANEL	NO	NO	
17	RAD MONITORING SYSTEM (RMS) PRINTERS	NO	NO	
19	RMS EQUIPMENT RACK (1E)	YES	YES	COMMON FOR UNITS 1 & 2
20	RMS EQUIPMENT	NO	NO	COMMON FOR UNITS 1 & 2
23	LEADING EDGE FLOW METER	NO	NO	COMMON FOR UNITS 1 & 2
24	H2 ANALYZER & CORE EXIT T/C (TRAIN A)	YES	YES	NOTE 1
25	H2 ANALYZER & CORE EXIT T/C (TRAIN B)	YES	YES	NOTE 1
27	HVAC VERT PANEL	YES	YES	UNIT 2 ONLY
28	CENTRAL WORK STATION	NO	NO	
29	CORE EXIT T/C (TRAIN A)	YES	YES	UNIT 2 ONLY
30	CORE EXIT T/C (TRAIN B)	YES	YES	UNIT 2 ONLY
31	OPERATOR CONSOLE A	NO	NO	INCLUDES RMS REMOTE VIEW NODE AND PROCESS COMPUTER
32	OPERATOR CONSOLE B	NO	NO	
33	SUPERVISOR CONSOLE C	NO	NO	

NOTES:  
 1. PANELS 24 AND 25 CONTAIN UNIT 1 CORE EXIT T/C'S AND AN H2 ANALYZER COMMON FOR BOTH UNIT 1 AND UNIT 2.

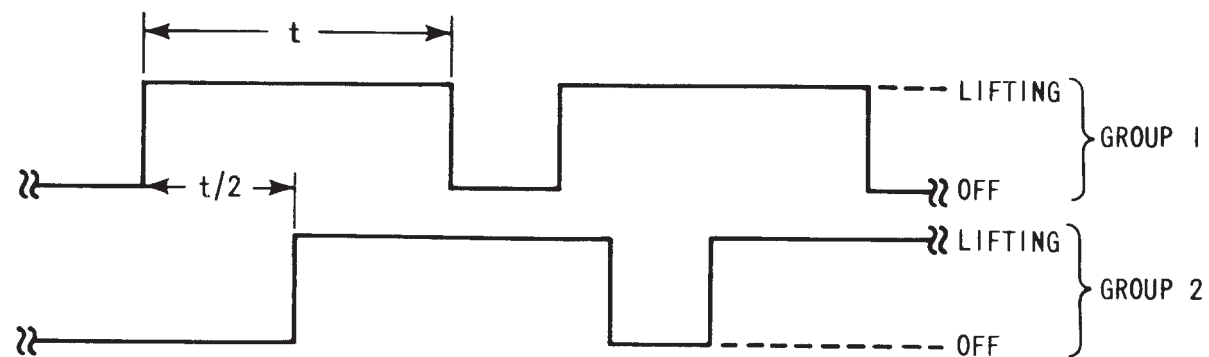
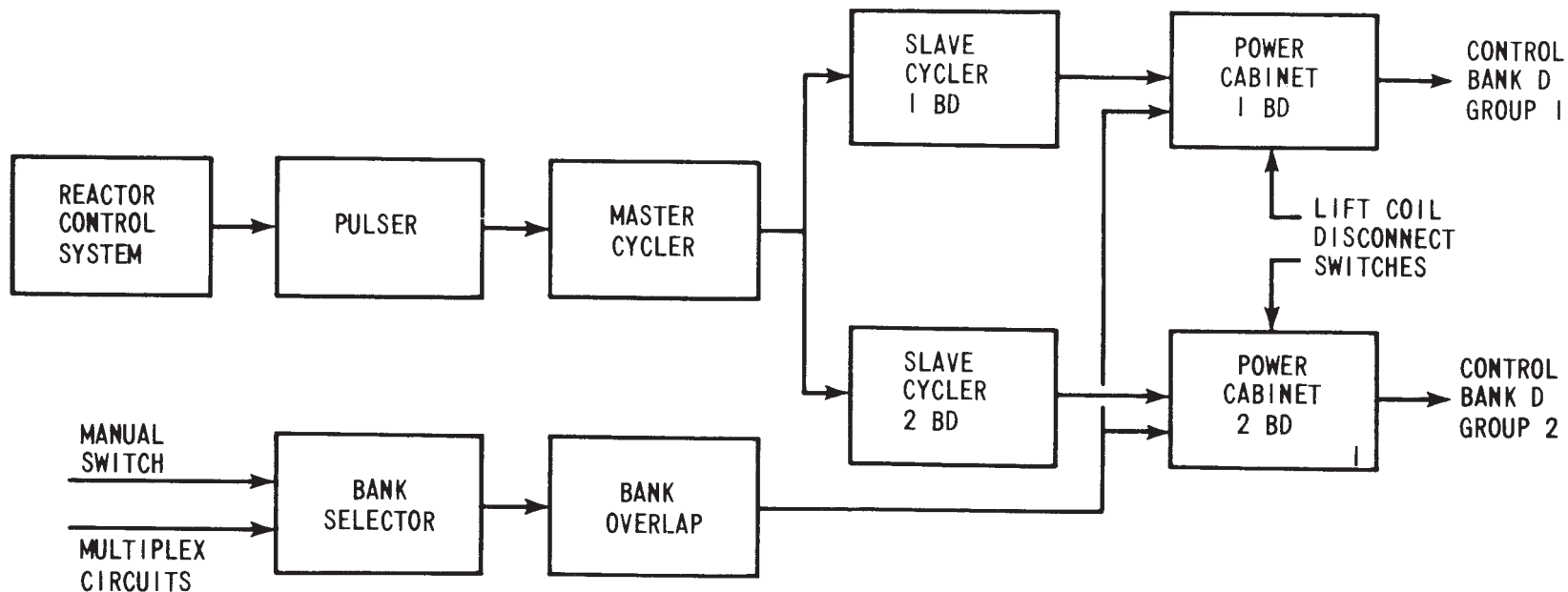
**AMENDMENT 76**

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

**CONTROL ROOM  
 PANEL ARRANGEMENT**

FIGURE 7.7-14A

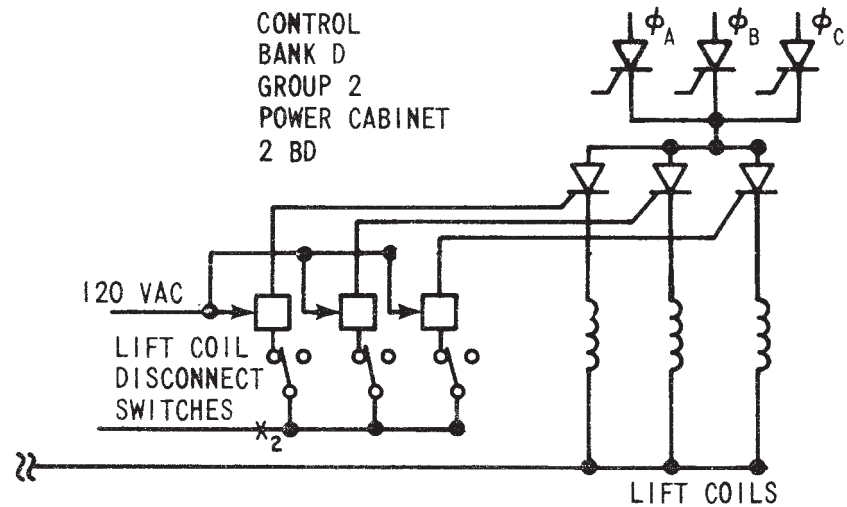
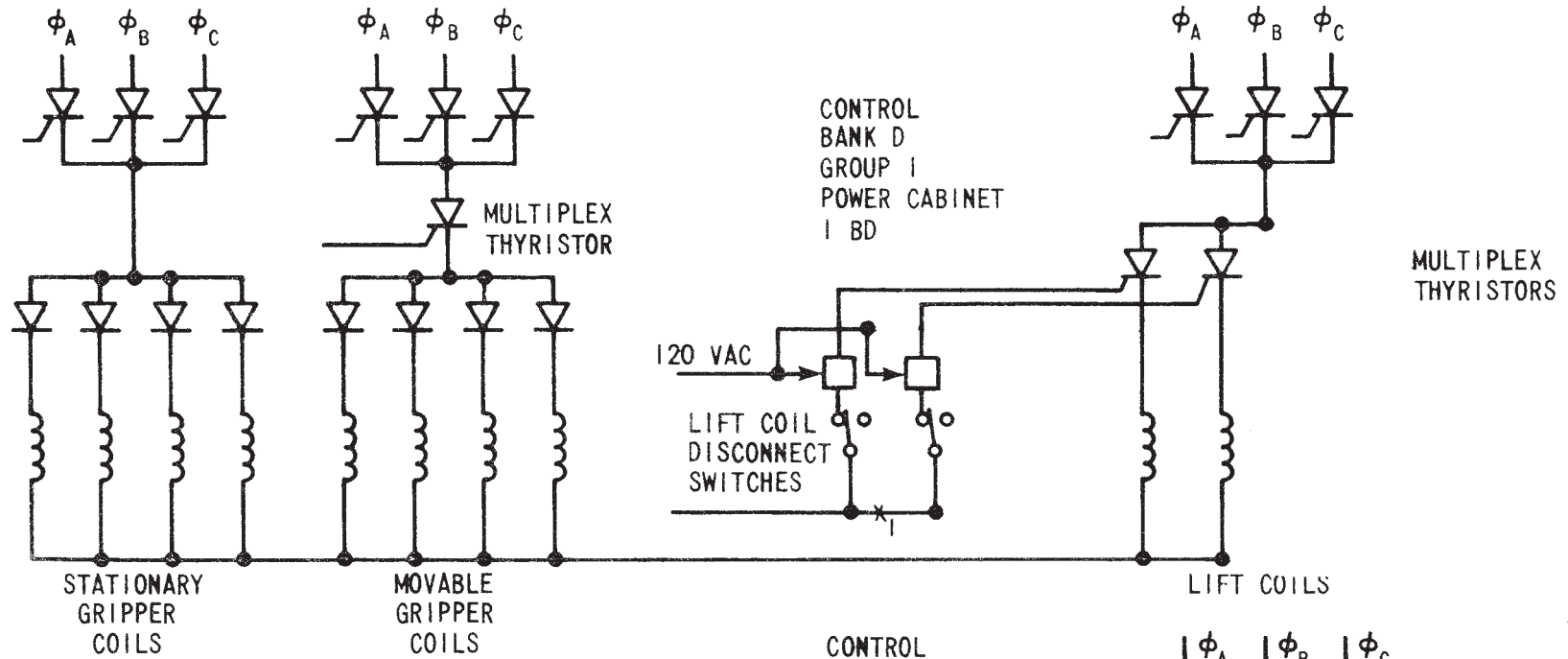




NORMAL SEQUENCING OF GROUPS WITHIN BANK

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

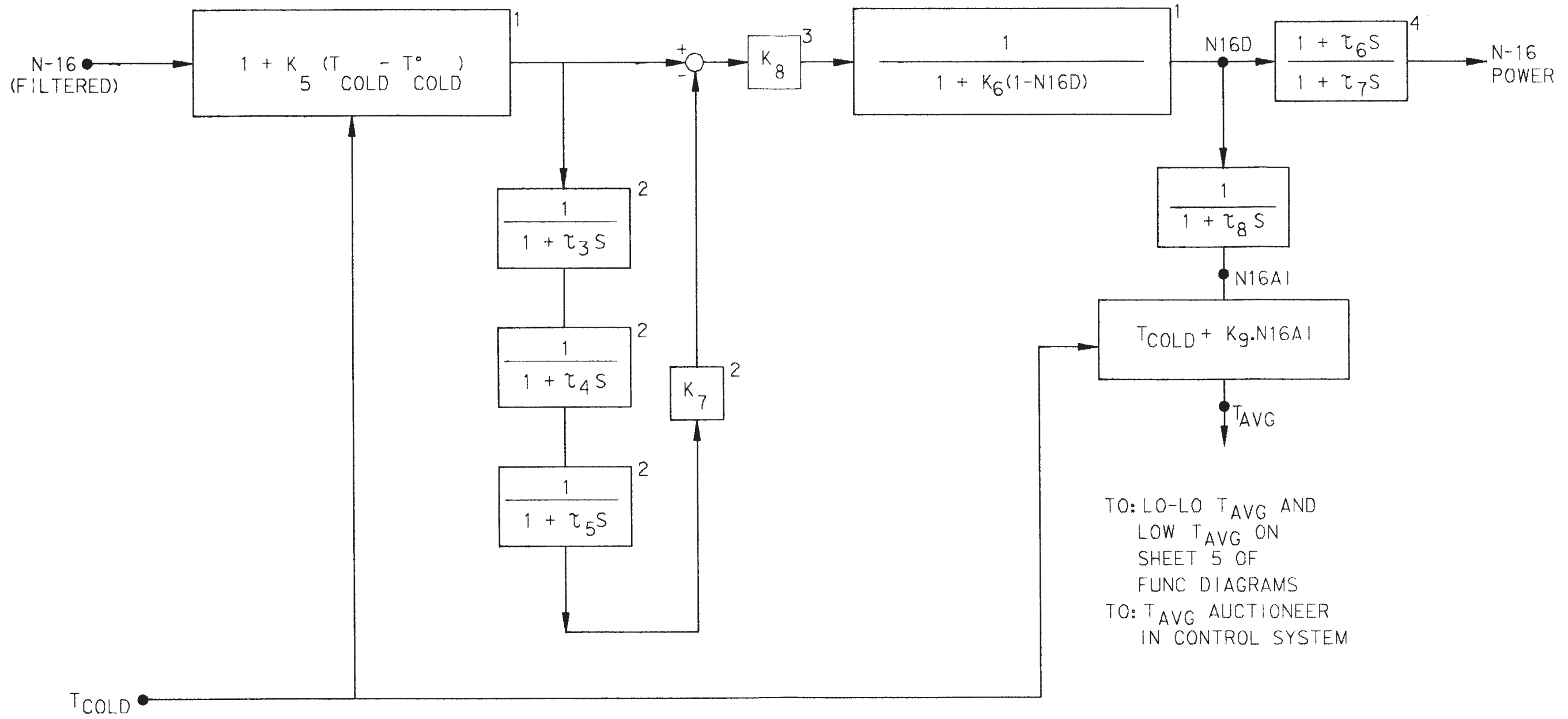
COMANCHE PEAK S.E.S.  
 FINAL SAFETY ANALYSIS REPORT  
 UNITS 1 and 2

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

FIGURE 7.7-16

FIGURE 7.7-17

This figure has been deleted.



TO: LO-LO T<sub>AVG</sub> AND  
 LOW T<sub>AVG</sub> ON  
 SHEET 5 OF  
 FUNC DIAGRAMS  
 TO: T<sub>AVG</sub> AUCTIONEER  
 IN CONTROL SYSTEM

- 1. TEMPERATURE COMPENSATION TERM
- 2. BUILD-UP EFFECT COMPENSATION TERM
- 3. CALIBRATION CONSTANT
- 4. LEAD/LAG TERM ACCOUNTS FOR TRANSIT TIME DELAY

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

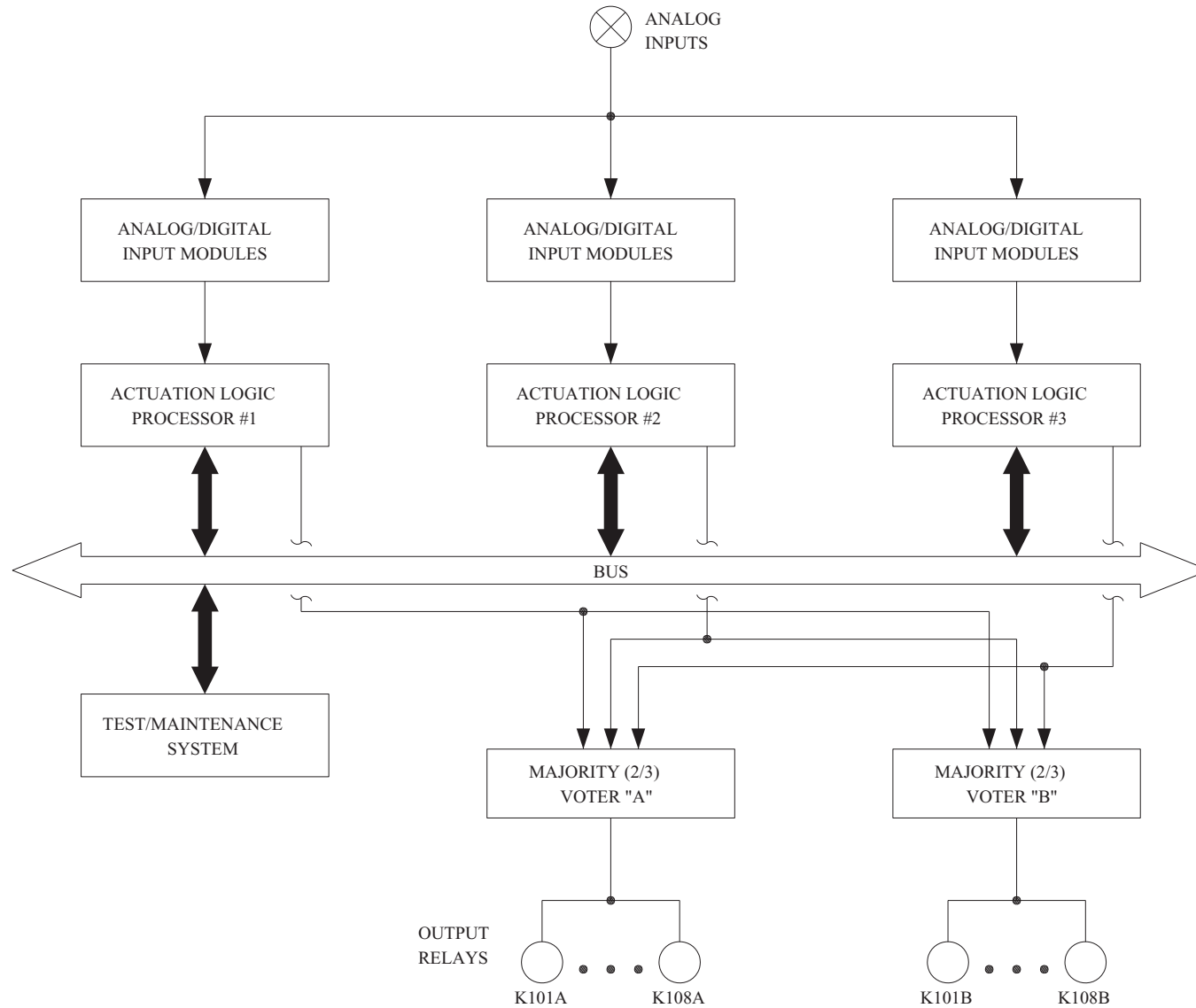
---

COMPUTATION OF T<sub>AVG</sub> VIA N<sub>16</sub>  
 POWER SYSTEM

---

FIGURE 7.7-18

AMENDMENT 78  
 JANUARY 15, 1990



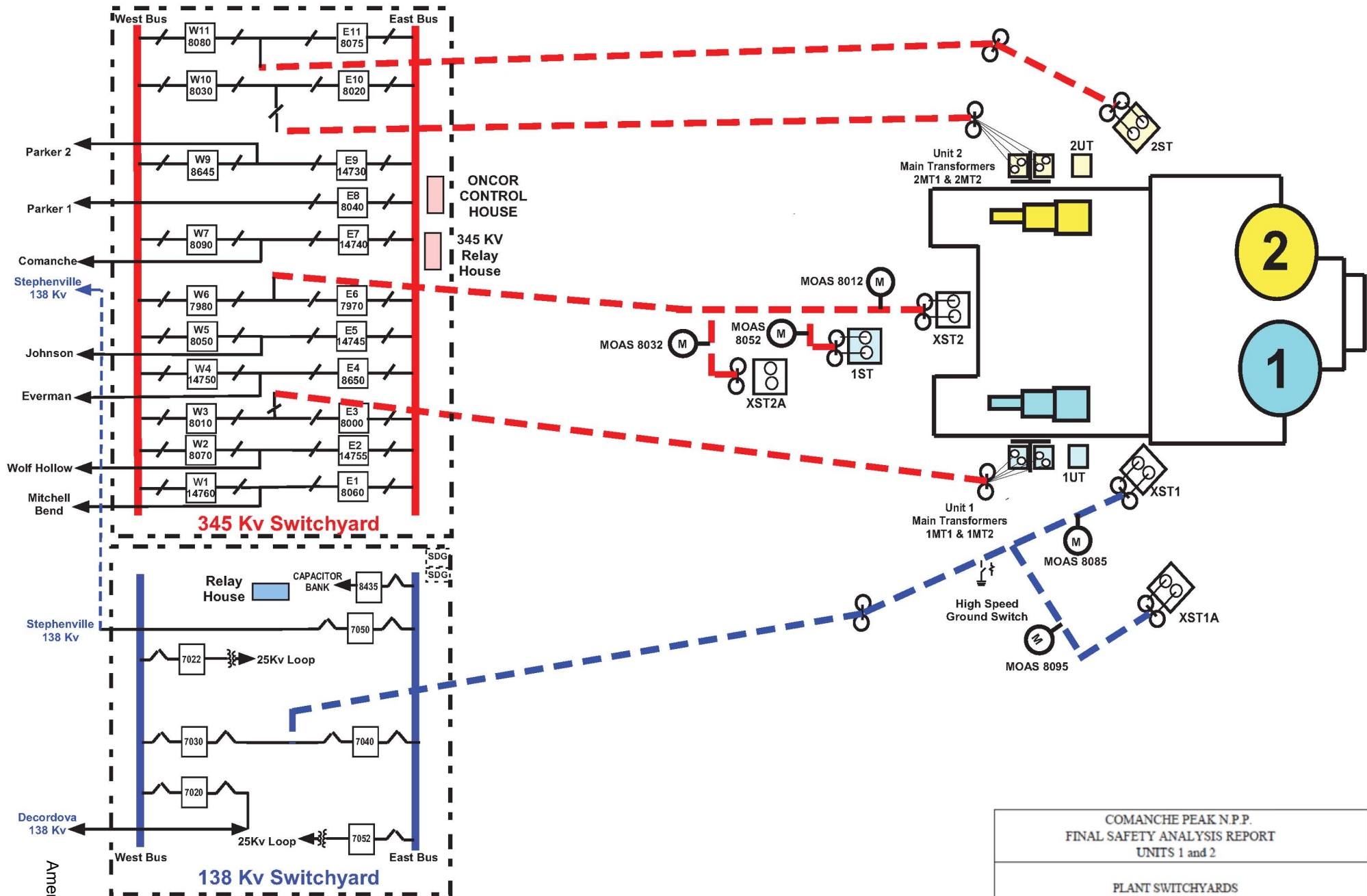
COMANCHE PEAK S E S  
 FINAL SAFETY ANALYSIS REPORT  
 UNITS 1 AND 2

---

ACTUATION LOGIC  
 SYSTEM ARCHITECTURE

---

FIGURE 7.8-1



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

PLANT SWITCHYARDS  
 AND  
 TRANSMISSION LINE CONNECTIONS

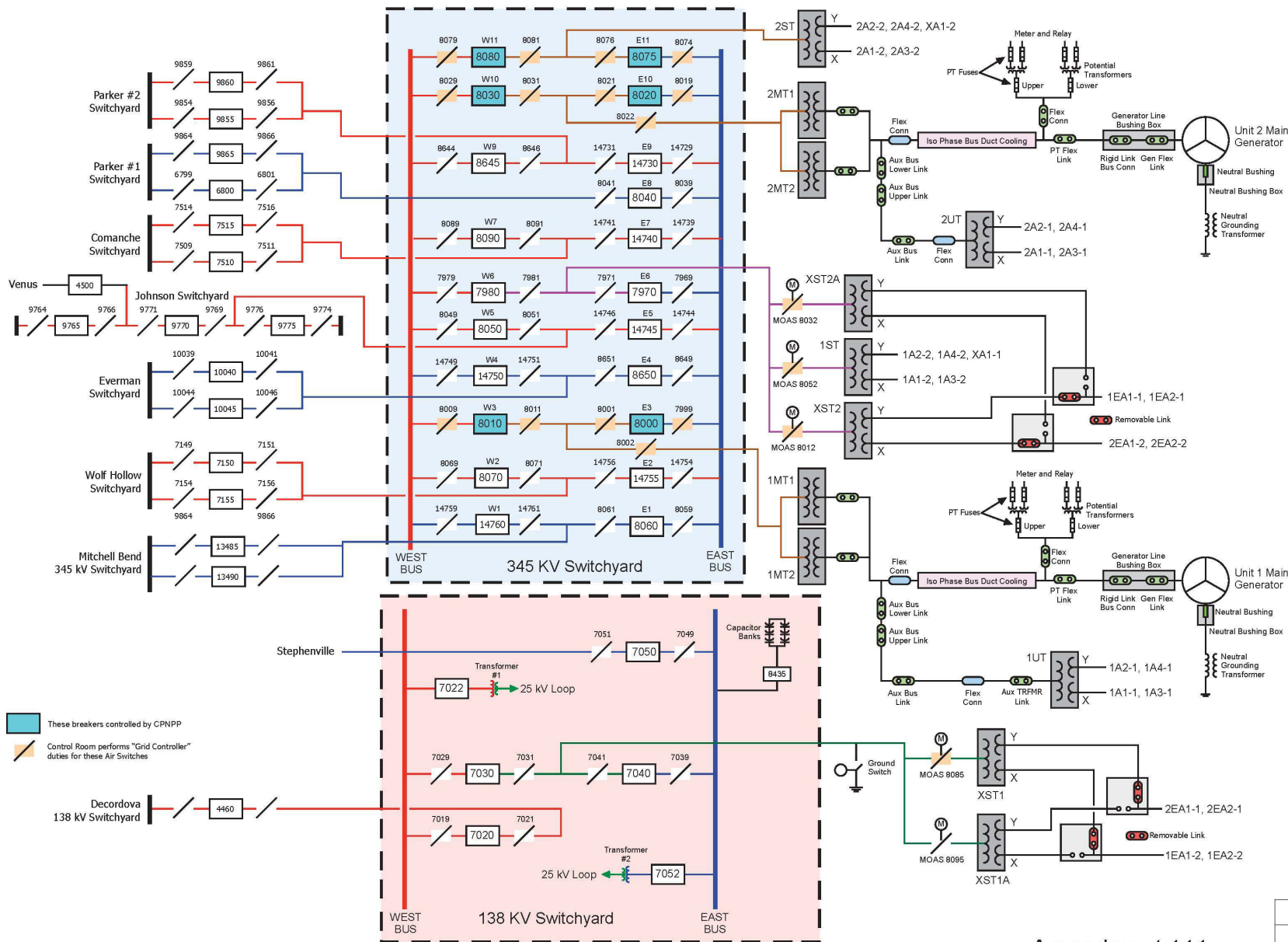
FIGURE 8.2-1

Amendment 110

Amendment No. 109

Figure 8.2-2

This figure has been deleted



Amendment 111

COMANCHE PEAK 6 E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
ELECTRICAL NETWORK INTERCONNECTIONS
FIGURE 6.2-4



Figure 8.2-6

This figure has been deleted

CPSES/FSAR

UNITS 1 & 2

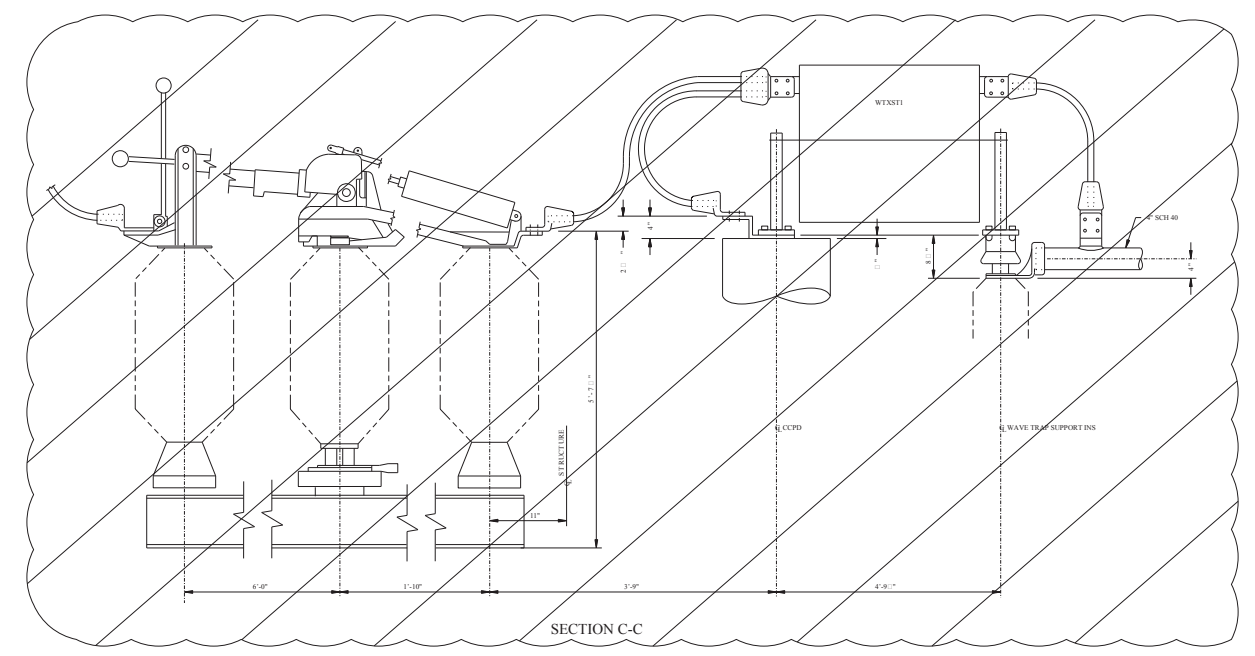
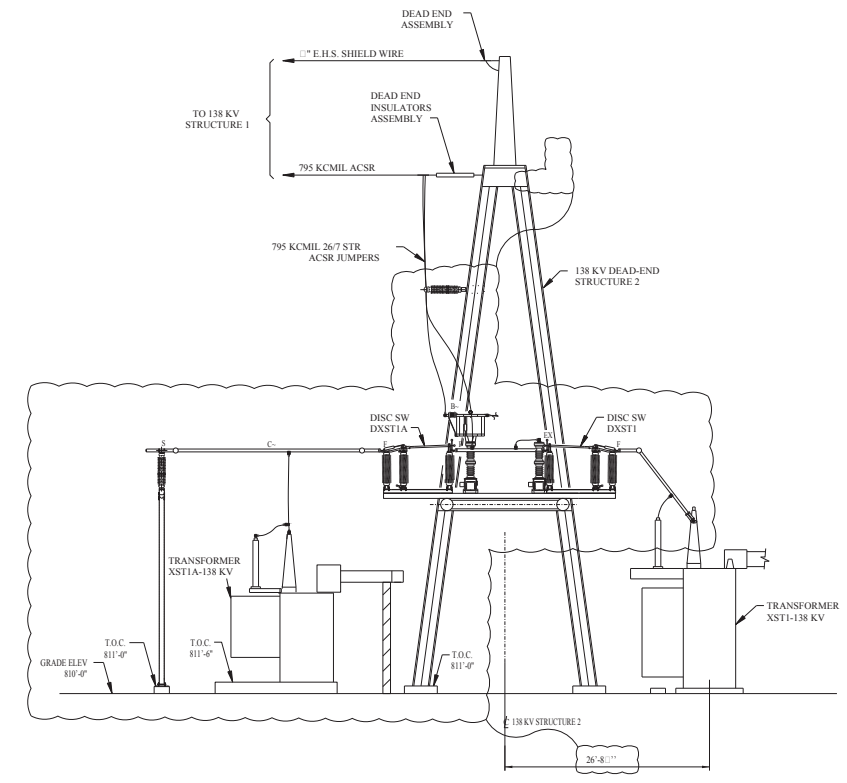
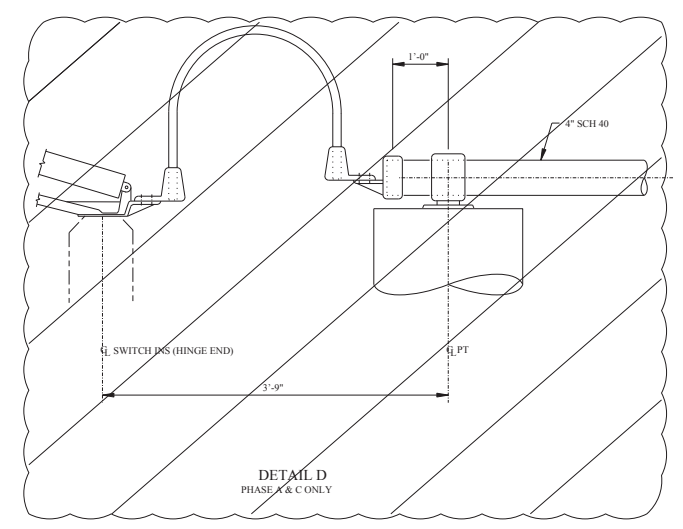
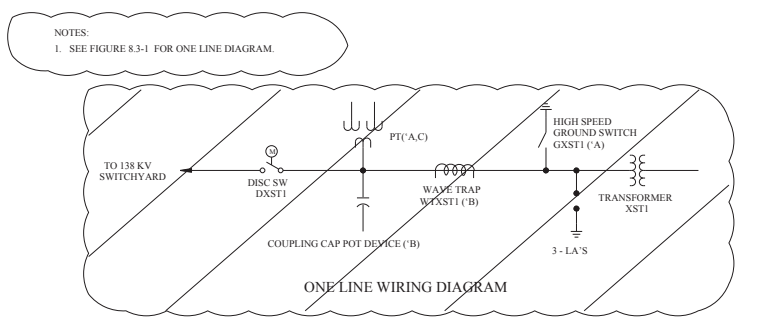
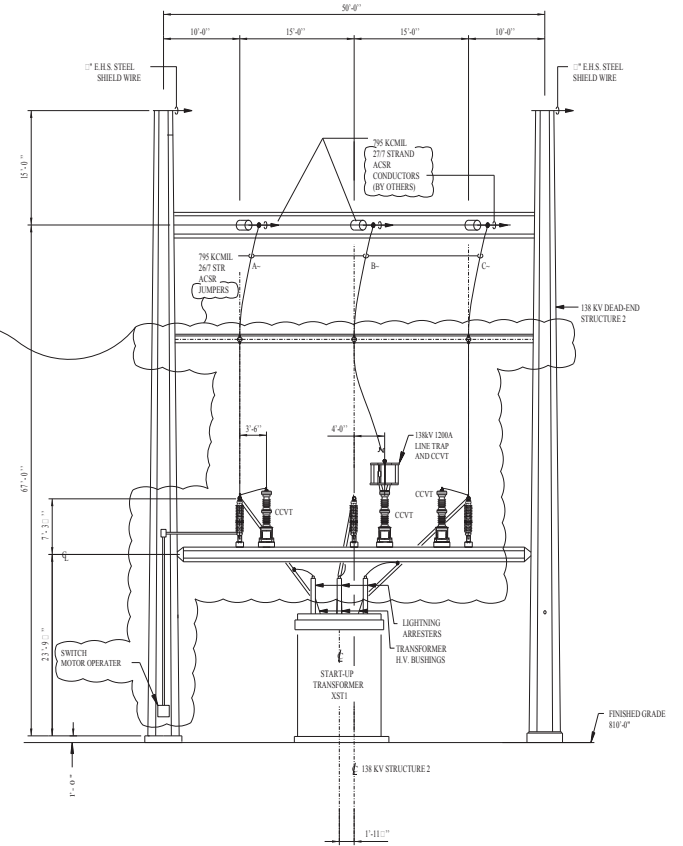
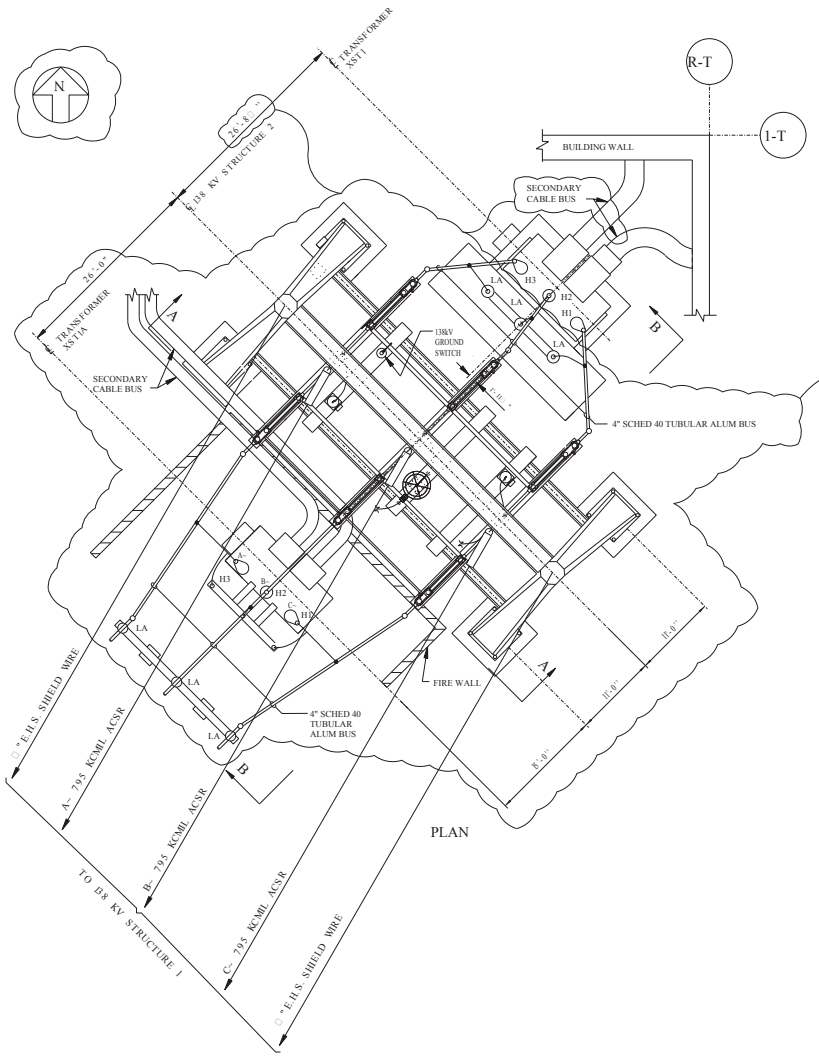
FIGURE 8.2-8 IS DELETED

| 95

CPSSES/FSAR

UNITS 1 & 2

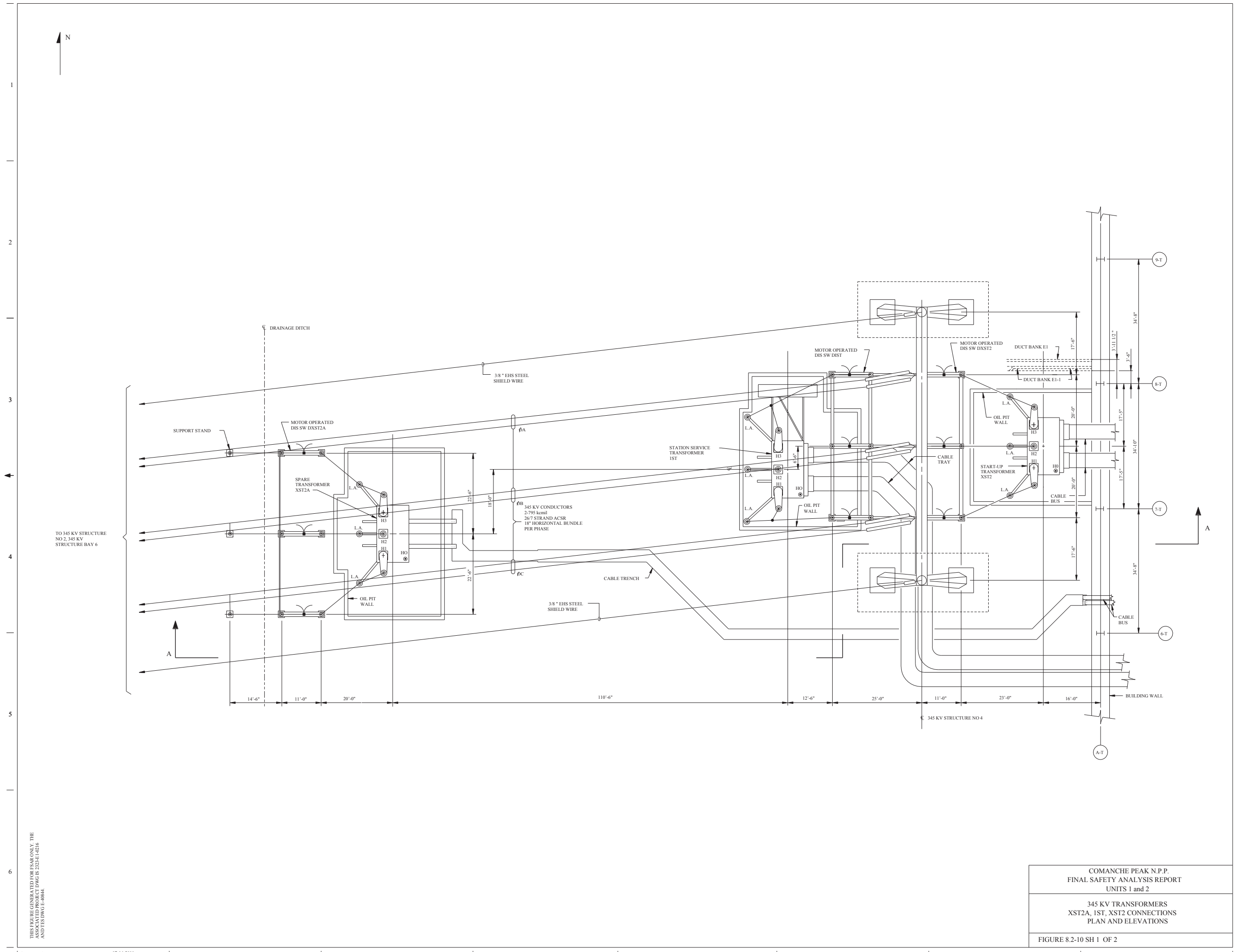
FIGURE 8.2-8a IS DELETED



THIS FIGURE GENERATED FOR ESAR ONLY. THE ASSOCIATED PROJECT DWG IS E1-0213

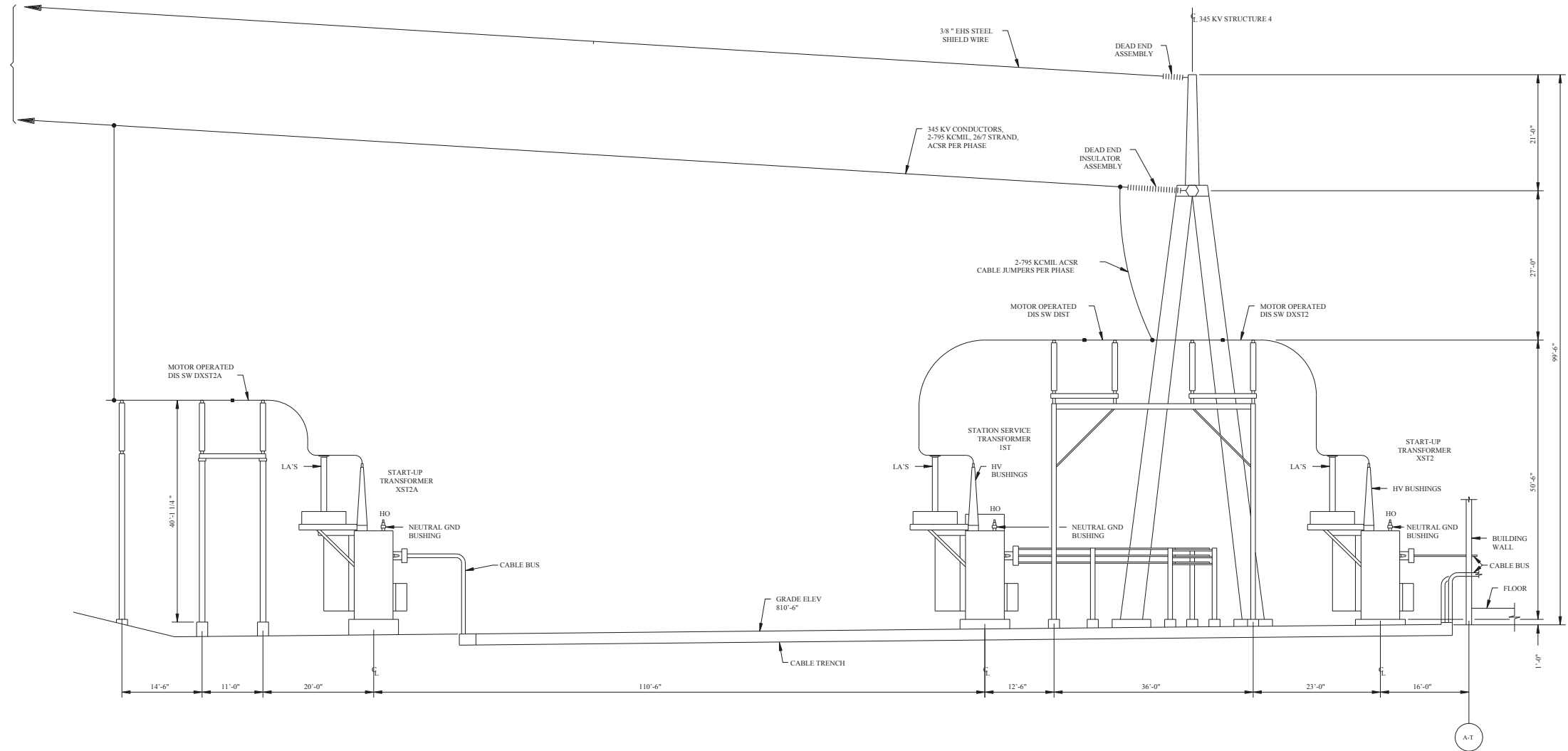
Amendment No. 106

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



THIS FIGURE GENERATED FOR FS&M ONLY. THE ASSOCIATED PROJECT DWG IS 2323E1-0216 AND THE DWG E-4084.

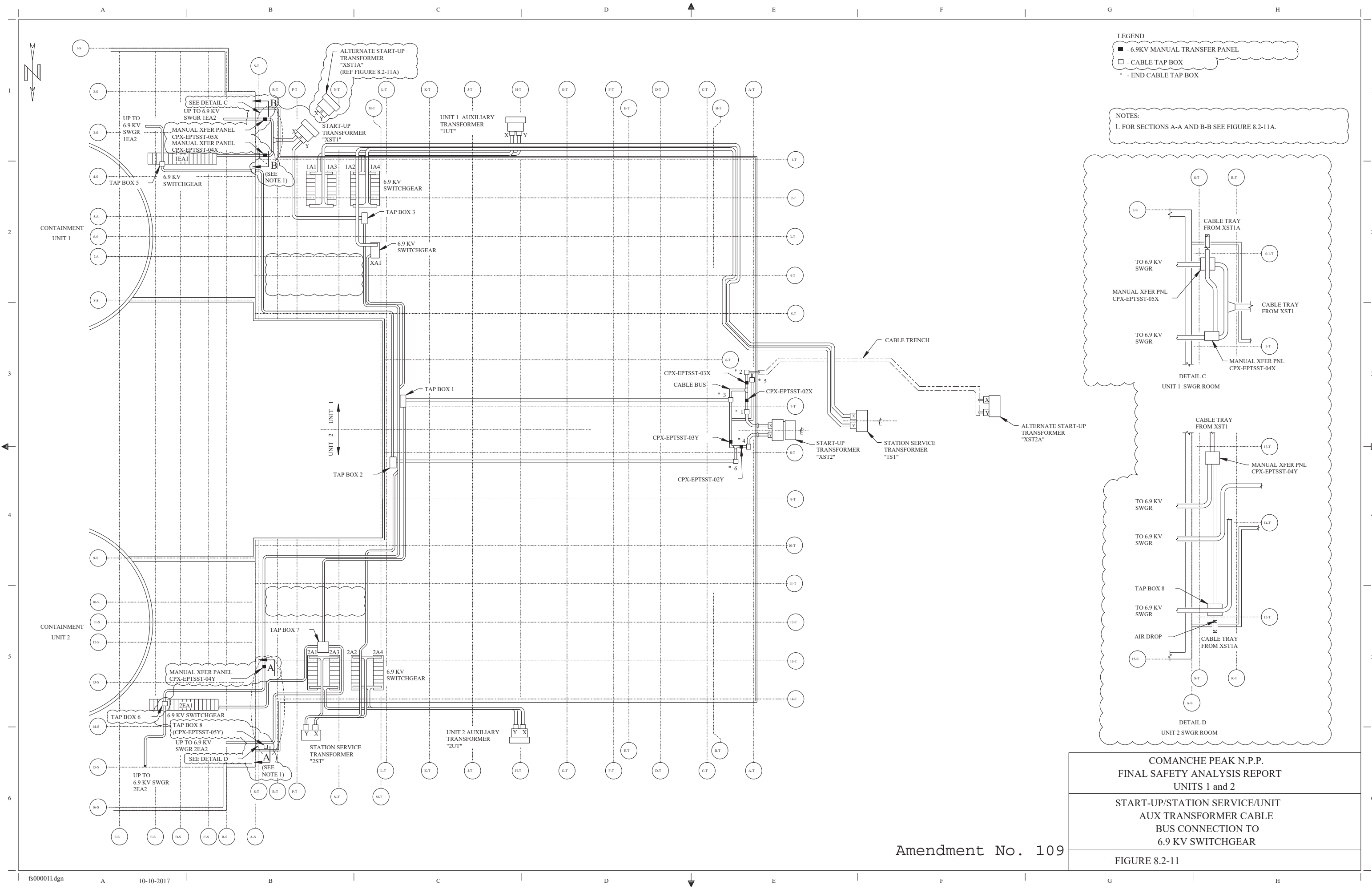
COMANCHE PEAK N.P.P. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
345 KV TRANSFORMERS XST2A, 1ST, XST2 CONNECTIONS PLAN AND ELEVATIONS
FIGURE 8.2-10 SH 1 OF 2



SECTION A-A

THIS FIGURE GENERATED FOR IFSAR ONLY. THE  
 DATE OF THIS FIGURE IS 07-14-2011  
 AND THE DWG ID IS 40844

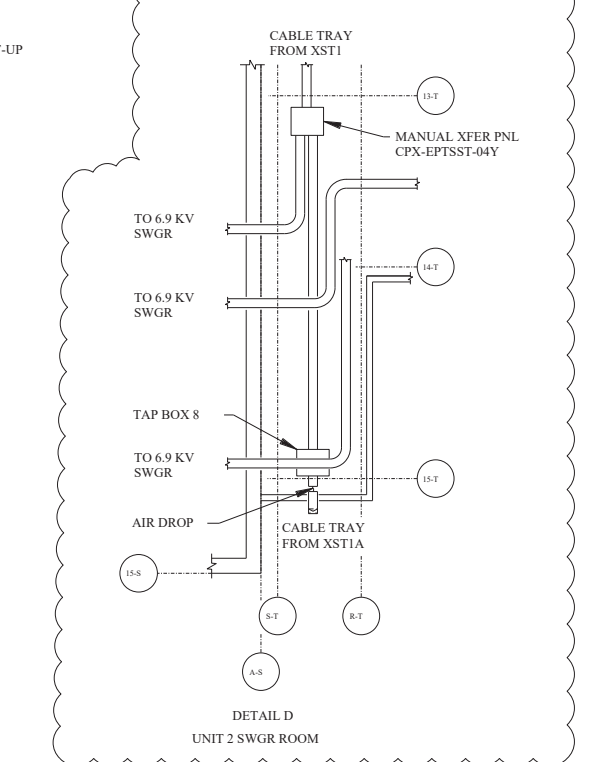
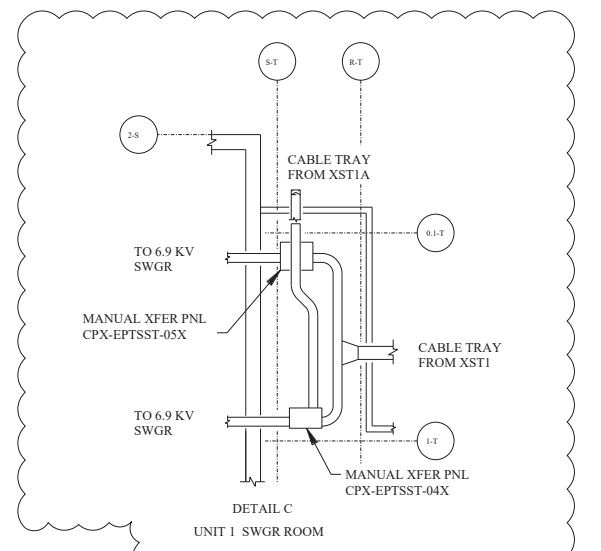
COMANCHE PEAK N.P.P. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
345 KV TRANSFORMERS XST2A, 1ST AND XST2 CONNECTIONS PLAN AND ELEVATIONS
FIGURE 8.2-10 SH 2 OF 2



**LEGEND**

- - 6.9KV MANUAL TRANSFER PANEL
- - CABLE TAP BOX
- \* - END CABLE TAP BOX

**NOTES:**  
 1. FOR SECTIONS A-A AND B-B SEE FIGURE 8.2-11A.

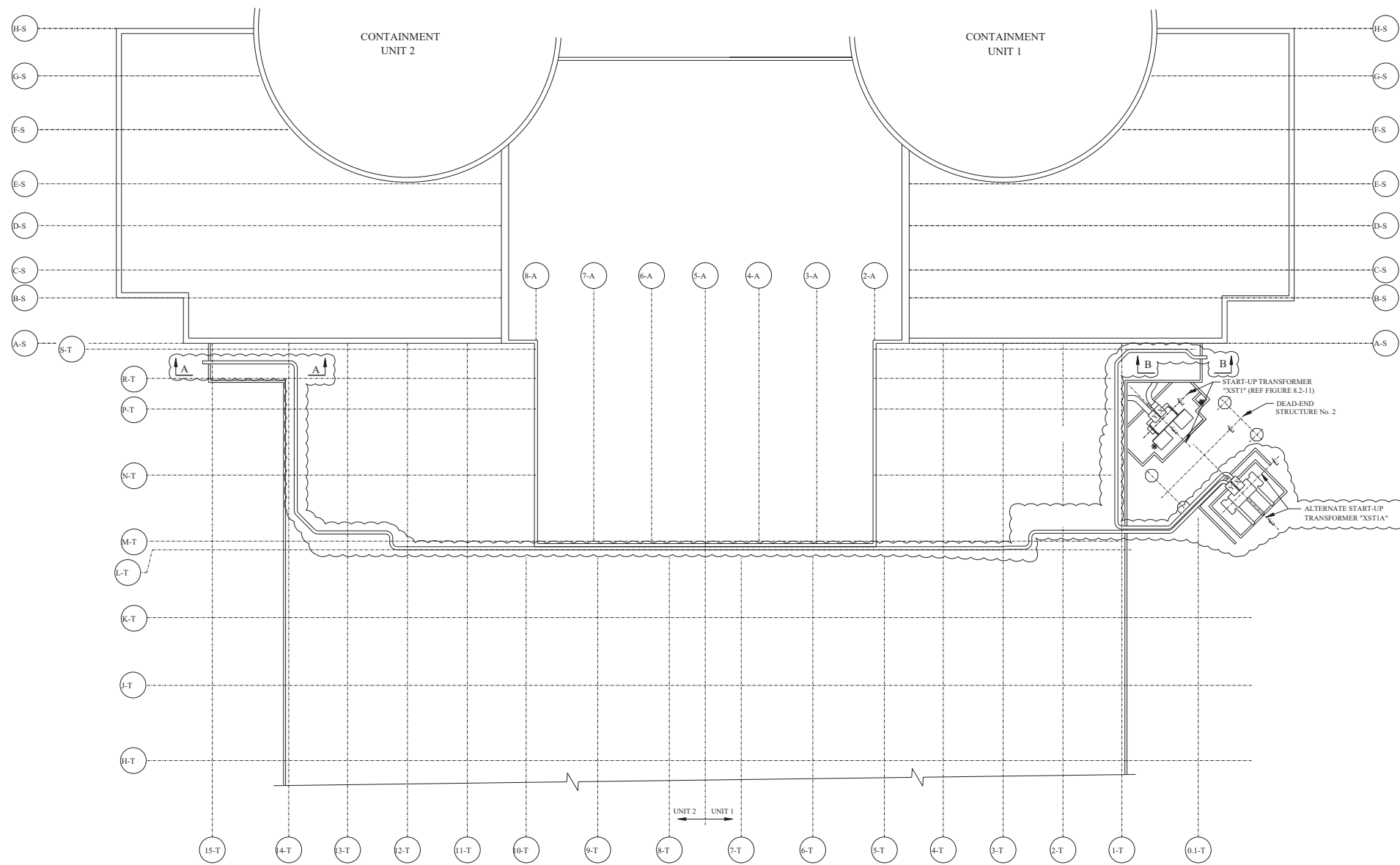


COMANCHE PEAK N.P.P.  
 FINAL SAFETY ANALYSIS REPORT  
 UNITS 1 and 2

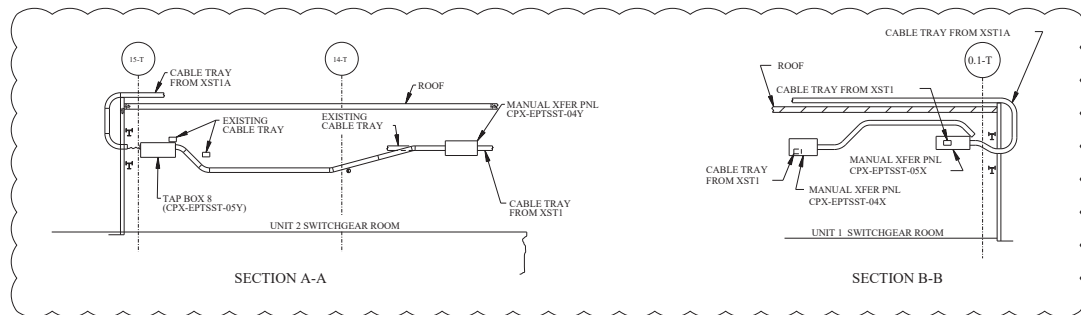
START-UP/STATION SERVICE/UNIT  
 AUX TRANSFORMER CABLE  
 BUS CONNECTION TO  
 6.9 KV SWITCHGEAR

FIGURE 8.2-11

Amendment No. 109



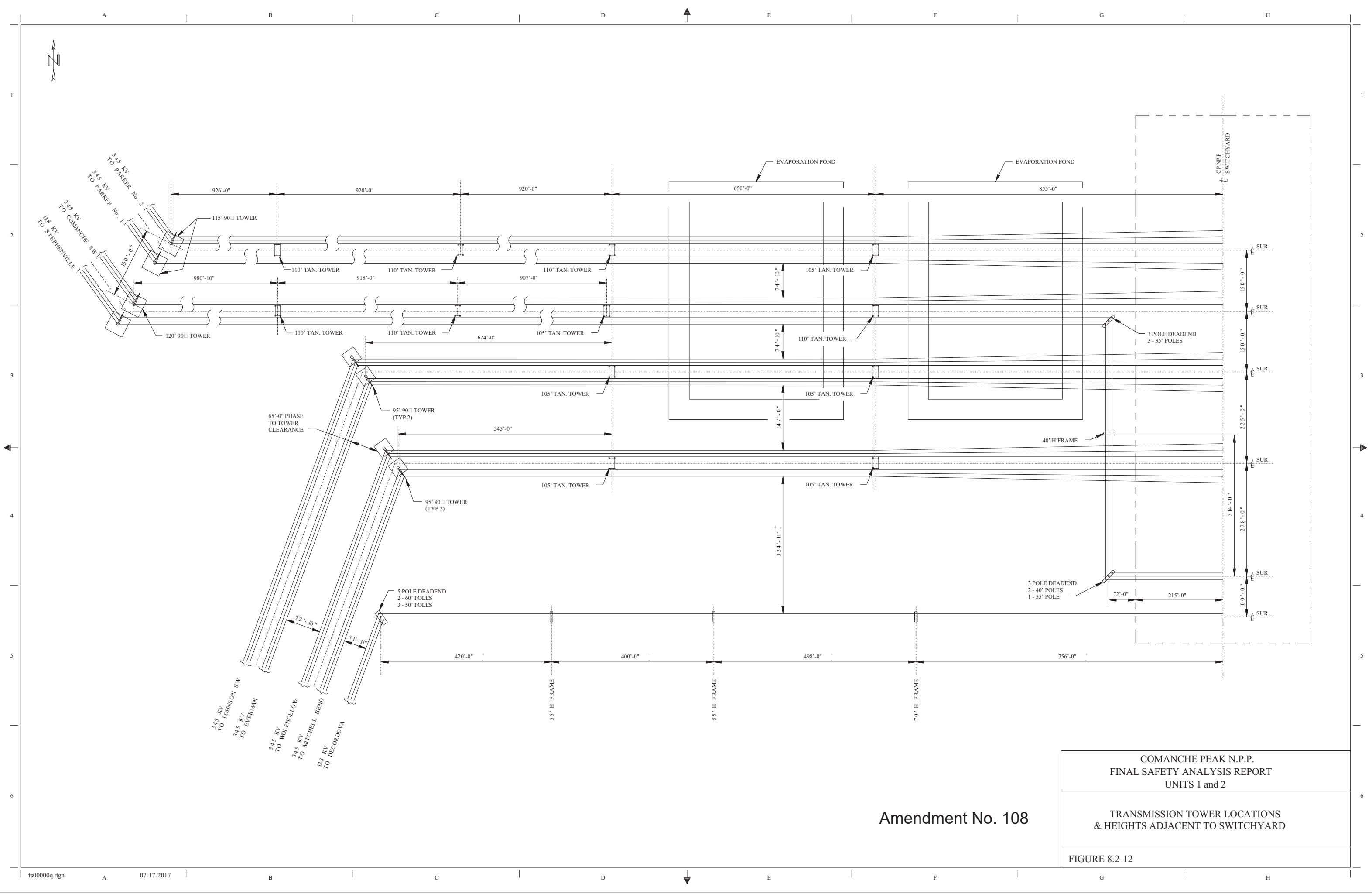
PARTIAL PLAN VIEW



Amendment No. 109

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



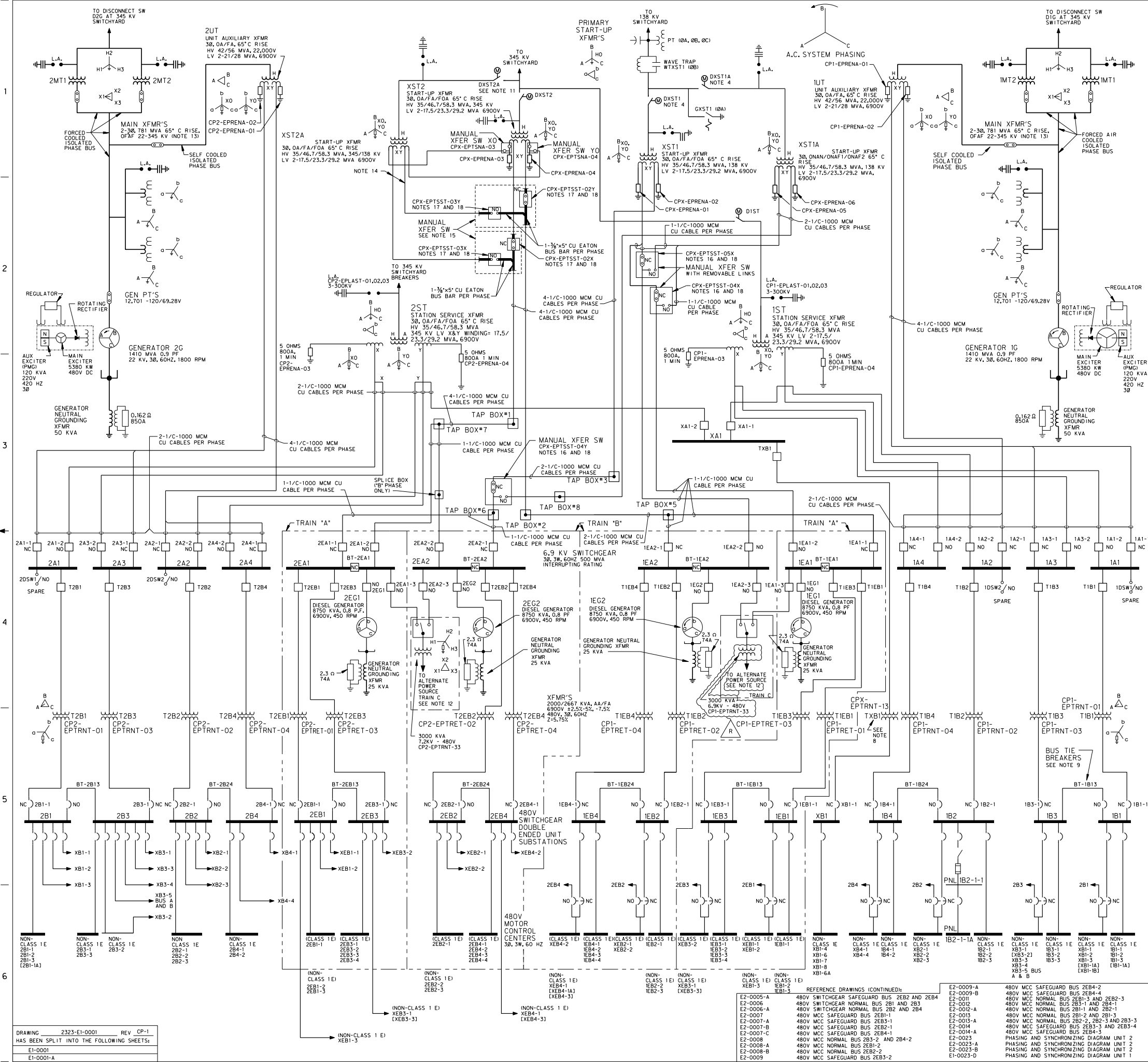


COMANCHE PEAK N.P.P.  
 FINAL SAFETY ANALYSIS REPORT  
 UNITS 1 and 2

TRANSMISSION TOWER LOCATIONS  
 & HEIGHTS ADJACENT TO SWITCHYARD

FIGURE 8.2-12

Amendment No. 108



**REV** **DATE** **BY** **CHKD** **APPV** **REMARKS**

CP-35 06-27-06 2009 2009 THIS DRAWING REVISION TO INCORPORATE DESIGN CHANGE PER 58-0001-19-000078-01-00.

**FSAR FIGURE 8.3-1**

**LEGEND:**

- ( ) - NC (NORMALLY CLOSED LINK) MANUAL XFMR SWITCH
- ( ) - NO (NORMALLY OPEN LINK) BUS CONNECTION LINKS
- ( ) - CIRCUIT BREAKER MEDIUM VOLTAGE ELECTRICAL OPERATED, DISCONNECT, DRAW-OUT TYPE
- ( ) - DISCONNECT SWITCH THREE POLE, SINGLE THROW
- ( ) - BUS TIE DISCONNECT SWITCH, THREE POLE, SINGLE THROW, GANG OPERATED AIR INTERRUPTER SWITCH
- ( ) - VALVE TYPE LIGHTNING ARRESTER
- ( ) - HIGH SPEED GROUND SWITCH
- ( ) - AIR CIRCUIT BREAKER, STORED ENERGY ELECTRICALLY OPERATED, LOW VOLTAGE THREE POLES.
- ( ) - AUTOMATIC TRANSFER UNIT
- ( ) - ISOPHASE BUS
- ( ) - NEUTRAL GROUNDING RESISTOR
- ( ) - FUSIBLE SWITCH
- ( ) - AS NOTED - TAP BOX OR JUNCTION BOX

**NOTES:**

- EQUIPMENT AND WIRING ENCLOSED IN DASHED LINE IS CLASS 1E.
- CIRCUIT BREAKERS ARE THREE POLE UNLESS OTHERWISE NOTED.
- BREAKERS WITHOUT POSITION INDICATED ARE ASSUMED TO BE NORMALLY CLOSED.
- DISCONNECT SWITCHES DXST1 AND DXST2A FOR TRANSFORMERS XST1 AND XST2A ARE CONTROLLED FROM X-CB-12 DEPENDING UPON WHICH TRANSFORMER IS ALIGNED.
- MCC'S ENCLOSED IN BRACKETS INDICATES THE SUPPLY IS FROM ANOTHER MCC RATHER THAN 480V SWITCHGEAR. (SEE DIMS E1-0007 THRU E1-0017-01, E1-0021, AND E1-0021A FOR ADDITIONAL DETAILS).
- DELETED
- FOR OTHER LOADS ON AC AND DC BUSES NOT SHOWN ON THIS DRAWING SEE REFERENCE DWGS FOR DETAILS.
- TRANSFORMER TXB1 IS SIMILAR TO OTHER TRANSFORMERS EXCEPT IT IS 1500/2000 KVA.
- ELECTRICAL INTERLOCK SHALL PRECLUDE PARALLELING OF TWO SOURCE TRANSFORMERS.
- FOR UNIT 2 AC AND DC PANEL ONE LINE DIAGRAM SEE DWG E2-0001-A PLANT ONE LINE DIAGRAM UNIT 1 AND 2 SHEET 2.
- THE DISCONNECT SWITCH FOR TRANSFORMER XST2A IS ONLY CONTROLLED LOCALLY.
- TRANSFORMERS (CP1/2) EPRTRNT-33 (ARE) PART OF THE ADPG SYSTEM.
- IF MAIN TRANSFORMERS 1M1/2 OR 2M1/2 ARE REPLACED WITH SPARE TRANSFORMERS 1M1/2, THE TRANSFORMER RATING WILL CHANGE TO 650 MVA, F04, 20.3-39.6 KV.
- THE LIMITING AMPACITY FOR THE 4-1000 KCMIL/Ø IS 14714 DUE TO ROUTING IN TRENCH. REFERENCE CALCULATION 12048420-E-0001 REV 0.
- REMOVABLE LINK BOXES CPX-EPTSST-03X, CPX-EPTSST-03Y, CPX-EPTSST-02Y, CPX-EPTSST-03Y) AND EATON BUS BAR CONNECTIONS OF THESE BOXES CONSTITUTES THE TRANSFER SWITCH FOR WINDING (XY) OF XST2 AND XST2A.
- MANUAL TRANSFER SWITCHES CPX-EPTSST-04X, CPX-EPTSST-04Y AND CPX-EPTSST-05X ARE SHOWN FOR ALIGNMENT WITH START-UP TRANSFORMER XST1. HOWEVER, THE 138KV OFF-SITE POWER SOURCE CAN BE ALIGNED TO XST1A AS DEEMED NECESSARY BY PLANT CONDITIONS.
- MANUAL TRANSFER SWITCHES CPX-EPTSST-02X, CPX-EPTSST-02Y, CPX-EPTSST-03X AND CPX-EPTSST-03Y ARE SHOWN FOR ALIGNMENT WITH START-UP TRANSFORMER XST2. HOWEVER, THE 345KV OFF-SITE POWER SOURCE CAN BE ALIGNED TO XST2A AS DEEMED NECESSARY BY PLANT CONDITIONS.
- X-WINDING MANUAL TRANSFER SWITCH LINKS SHALL NOT BE CONNECTED TO XST2 AND XST2A. WINDING MANUAL TRANSFER SWITCH LINKS SHALL NOT BE CONNECTED TO XST1 AND XST1A SIMULTANEOUSLY.

**REFERENCE DRAWINGS:**

- E1-0001-A PLANT SUPPORT POWER ONE LINE DIAGRAM
- E1-0002 MAIN ONE LINE METER AND RELAY DIAGRAM
- E1-0002-A MAIN ONE LINE METER AND RELAY DIAGRAM
- E1-0002-B 6.9 KV SWITCHGEAR NORMAL BUS 1A2 AND 1A4
- E1-0003-A 6.9 KV SWITCHGEAR NORMAL BUS 1A1 AND 1A3
- E1-0003-B 6.9 KV SWITCHGEAR NORMAL BUS XA1
- E1-0004-A 6.9 KV SWITCHGEAR SAFEGUARD BUS 1E1
- E1-0004-B 6.9 KV SWITCHGEAR SAFEGUARD BUS (RELAY TABLE)
- E1-0005 480V SWITCHGEAR SAFEGUARD BUS 1E1 AND 1E3
- E1-0006-A 480V SWITCHGEAR SAFEGUARD BUS 1E2 AND 1E4
- E1-0006-B 480V SWITCHGEAR SAFEGUARD BUS 1E1 AND 1E3
- E1-0007 480V MCC SAFEGUARD BUS 1E1-1
- E1-0007-A 480V MCC SAFEGUARD BUS 1E3-1
- E1-0007-B 480V MCC SAFEGUARD BUS 1E2-1
- E1-0007-C 480V MCC SAFEGUARD BUS 1E4-1
- E1-0008 480V MCC NORMAL BUS XE1-1 AND XE4-1
- E1-0008-A 480V MCC SAFEGUARD BUS 1E2-2
- E1-0008-B 480V MCC SAFEGUARD BUS 1E3-2
- E1-0008-C 480V MCC SAFEGUARD BUS 1E4-2
- E1-0009-A 480V MCC SAFEGUARD BUS 1E1-2
- E1-0009-B 480V MCC SAFEGUARD BUS 1E2-2
- E1-0009-C 480V MCC SAFEGUARD BUS 1E3-2 AND 1E4-2
- E1-0010-A 480V MCC SAFEGUARD BUS 1E1-1 AND XE1-3
- E1-0010-B 480V MCC SAFEGUARD BUS 1E1-2 AND XE1-4
- E1-0010-C 480V MCC SAFEGUARD BUS 1E3-1 AND XE1-5
- E1-0011 480V MCC NORMAL BUS 1E1-1 AND 1E1-3
- E1-0012 480V MCC NORMAL BUS 1E1-2 AND 1E1-4
- E1-0013 480V MCC NORMAL BUS 1E1-1, 1E1-1A, 1E1-1B, 1E1-1C, 1E1-1D, 1E1-1E, 1E1-1F, 1E1-1G, 1E1-1H, 1E1-1I, 1E1-1J, 1E1-1K, 1E1-1L, 1E1-1M, 1E1-1N, 1E1-1O, 1E1-1P, 1E1-1Q, 1E1-1R, 1E1-1S, 1E1-1T, 1E1-1U, 1E1-1V, 1E1-1W, 1E1-1X, 1E1-1Y, 1E1-1Z
- E1-0013-A 480V MCC NORMAL BUS 1E1-1, 1E1-1A, 1E1-1B, 1E1-1C, 1E1-1D, 1E1-1E, 1E1-1F, 1E1-1G, 1E1-1H, 1E1-1I, 1E1-1J, 1E1-1K, 1E1-1L, 1E1-1M, 1E1-1N, 1E1-1O, 1E1-1P, 1E1-1Q, 1E1-1R, 1E1-1S, 1E1-1T, 1E1-1U, 1E1-1V, 1E1-1W, 1E1-1X, 1E1-1Y, 1E1-1Z
- E1-0014 480V MCC SAFEGUARD BUS 1E3-3 AND 1E3-4
- E1-0014-A 480V MCC SAFEGUARD BUS 1E3-3
- E1-0014-B 480V MCC SAFEGUARD BUS 1E3-4
- E1-0015 480V MCC SAFEGUARD BUS 1E3-2, 1E4-2, AND XE3-2
- E1-0015-A 480V MCC NORMAL BUS XE1-3 AND XE1-2
- E1-0015-B 480V MCC NORMAL BUS XE2-2 AND XE7-3
- E1-0016 480V MCC NORMAL BUS XE1-2 AND XE7-3
- E1-0016-A 480V MCC NORMAL BUS XE1-2
- E1-0016-B 480V MCC NORMAL BUS XE7-3
- E1-0017 480V MCC NORMAL BUS XE1-1 AND XE3-3
- E1-0017-A 480V MCC NORMAL BUS XE1-1
- E1-0017-B 480V MCC NORMAL BUS XE3-3
- E1-0018 480V MCC NORMAL BUS XE3-1, XE4-1, XE3-4 & XE4-4
- E1-0018-A 480V MCC NORMAL BUS XE3-1
- E1-0018-B 480V MCC NORMAL BUS XE4-1
- E1-0018-C 480V MCC NORMAL BUS XE3-4
- E1-0018-D 480V MCC NORMAL BUS XE4-4
- E1-0019 480V MCC SAFEGUARD BUS 2E1, 2E2, AND 2E3
- E1-0019-A 480V MCC SAFEGUARD BUS 2E1
- E1-0019-B 480V MCC SAFEGUARD BUS 2E2
- E1-0019-C 480V MCC SAFEGUARD BUS 2E3
- E1-0020 480V MCC SAFEGUARD BUS 2E1, 2E2, AND 2E3
- E1-0020-A 480V MCC SAFEGUARD BUS 2E1
- E1-0020-B 480V MCC SAFEGUARD BUS 2E2
- E1-0020-C 480V MCC SAFEGUARD BUS 2E3
- E1-0021 480V MCC SAFEGUARD BUS 2E1, 2E2, AND 2E3
- E1-0021-A 480V MCC SAFEGUARD BUS 2E1
- E1-0021-B 480V MCC SAFEGUARD BUS 2E2
- E1-0021-C 480V MCC SAFEGUARD BUS 2E3
- E1-0022 480V MCC SAFEGUARD BUS 2E1, 2E2, AND 2E3
- E1-0022-A 480V MCC SAFEGUARD BUS 2E1
- E1-0022-B 480V MCC SAFEGUARD BUS 2E2
- E1-0022-C 480V MCC SAFEGUARD BUS 2E3
- E1-0023 480V MCC SAFEGUARD BUS 2E1, 2E2, AND 2E3
- E1-0023-A 480V MCC SAFEGUARD BUS 2E1
- E1-0023-B 480V MCC SAFEGUARD BUS 2E2
- E1-0023-C 480V MCC SAFEGUARD BUS 2E3
- E1-0024 480V MCC SAFEGUARD BUS 2E1, 2E2, AND 2E3
- E1-0024-A 480V MCC SAFEGUARD BUS 2E1
- E1-0024-B 480V MCC SAFEGUARD BUS 2E2
- E1-0024-C 480V MCC SAFEGUARD BUS 2E3
- E1-0025 480V MCC SAFEGUARD BUS 2E1, 2E2, AND 2E3
- E1-0025-A 480V MCC SAFEGUARD BUS 2E1
- E1-0025-B 480V MCC SAFEGUARD BUS 2E2
- E1-0025-C 480V MCC SAFEGUARD BUS 2E3

**CLASS 1E**

(NUCLEAR SAFETY-RELATED)  
 SAFETY CLASS 1E SEISMIC CATEGORY I  
 SAFETY CLASS 1E ASSOCIATED CATEGORIES

**LUMINANT CPNPP  
 GLEN ROSE, TEXAS**

**PLANT ONE LINE DIAGRAM  
 UNITS 1 AND 2**

**REFERENCE DRAWINGS (CONTINUED):**

- E2-0009-A 480V MCC SAFEGUARD BUS 2E4-2
- E2-0009-B 480V MCC SAFEGUARD BUS 2E4-4
- E2-0010 480V MCC SAFEGUARD BUS 2E1-3 AND 2E2-3
- E2-0011 480V MCC SAFEGUARD BUS 2E1-1 AND 2E2-1
- E2-0012-A 480V MCC SAFEGUARD BUS 2E1-1 AND 2E2-1
- E2-0012-B 480V MCC SAFEGUARD BUS 2E1-2 AND 2E2-2
- E2-0013 480V MCC SAFEGUARD BUS 2E1-1 AND 2E2-1
- E2-0013-A 480V MCC SAFEGUARD BUS 2E1-1 AND 2E2-1
- E2-0013-B 480V MCC SAFEGUARD BUS 2E1-2 AND 2E2-2
- E2-0013-C 480V MCC SAFEGUARD BUS 2E1-3 AND 2E2-3
- E2-0014 480V MCC SAFEGUARD BUS 2E4-3
- E2-0014-A 480V MCC SAFEGUARD BUS 2E4-3
- E2-0014-B 480V MCC SAFEGUARD BUS 2E4-3
- E2-0015 480V MCC SAFEGUARD BUS 2E1-2 AND 2E2-2
- E2-0015-A 480V MCC SAFEGUARD BUS 2E1-2
- E2-0015-B 480V MCC SAFEGUARD BUS 2E2-2
- E2-0015-C 480V MCC SAFEGUARD BUS 2E1-2
- E2-0016 480V MCC SAFEGUARD BUS 2E3-2
- E2-0016-A 480V MCC SAFEGUARD BUS 2E3-2
- E2-0016-B 480V MCC SAFEGUARD BUS 2E3-2

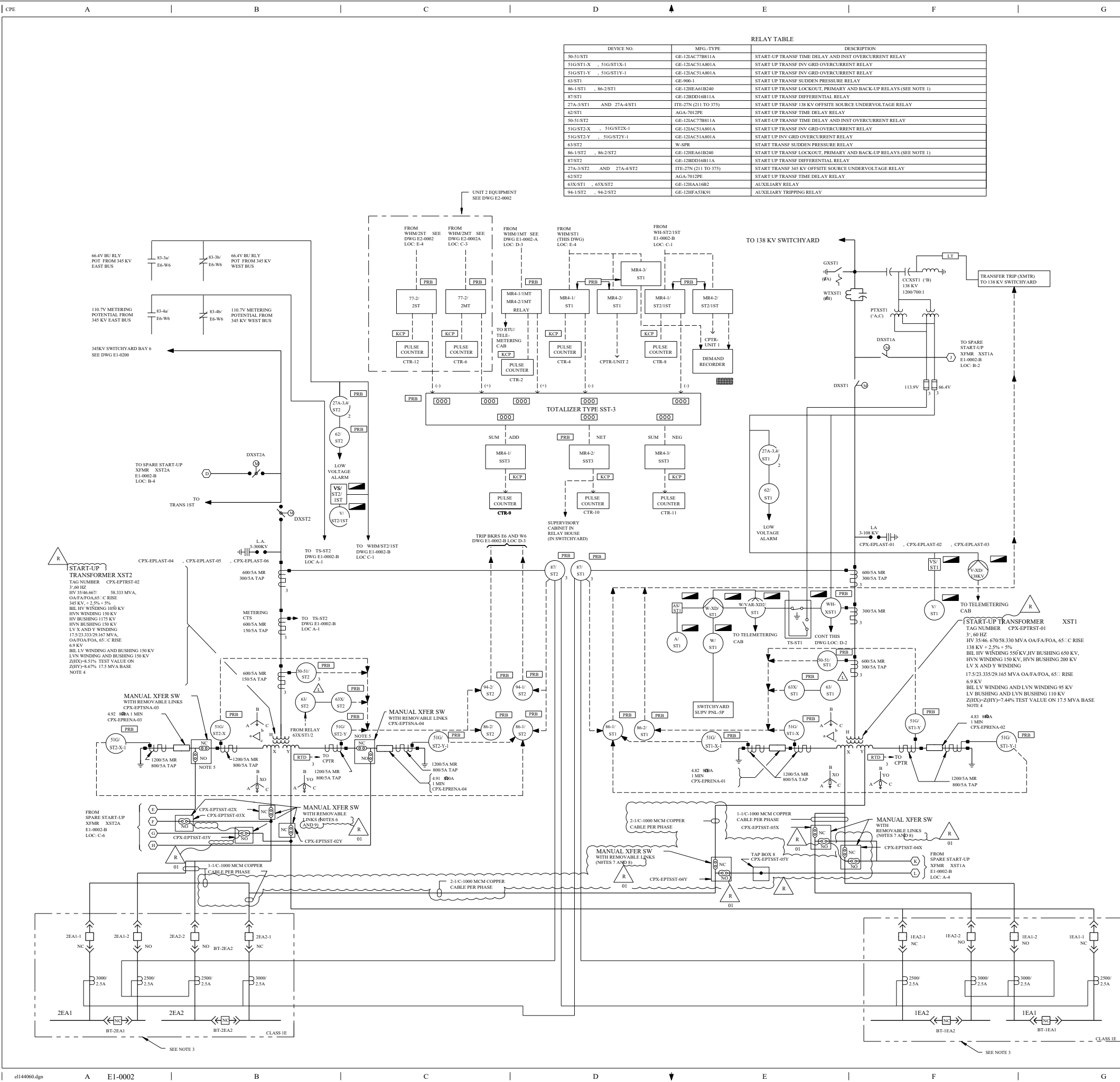
**DWG. NO.** E1-0001 **SH. NO. REV.** CP-35

**FINAL IMPRINT**

DRAWING 2323-EI-0001 REV CP-1  
 HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E1-0001  
 E1-0001-A

THIS DRAWING CREATED ELECTRONICALLY



DEVICE NO.	MFG. TYPE	DESCRIPTION
50-51/ST1	GE-12AC77B811A	START-UP TRANSF. TIME DELAY AND INST. OVERCURRENT RELAY
51G/ST1-X, 51G/ST1-X-1	GE-12AC51A801A	START-UP TRANSF. INV. GRD. OVERCURRENT RELAY
51G/ST1-Y, 51G/ST1-Y-1	GE-12AC51A801A	START-UP TRANSF. INV. GRD. OVERCURRENT RELAY
63/ST1	GE-900-1	START-UP TRANSF. SUDDEN PRESSURE RELAY
86-1/ST1, 86-2/ST1	GE-12HEA61B240	START-UP TRANSF. LOCKOUT, PRIMARY AND BACK-UP RELAYS (SEE NOTE 1)
87/ST1	GE-12BDD16B11A	START-UP TRANSF. DIFFERENTIAL RELAY
27A-3/ST1 AND 27A-4/ST1	ITE-27N (211 TO 375)	START-UP TRANSF. 138 KV OFFSITE SOURCE UNDERVOLTAGE RELAY
62/ST1	AGA-7012PE	START-UP TRANSF. TIME DELAY RELAY
50-51/ST2	GE-12AC77B811A	START-UP TRANSF. TIME DELAY AND INST. OVERCURRENT RELAY
51G/ST2-X, 51G/ST2-X-1	GE-12AC51A801A	START-UP TRANSF. INV. GRD. OVERCURRENT RELAY
51G/ST2-Y, 51G/ST2-Y-1	GE-12AC51A801A	START-UP TRANSF. INV. GRD. OVERCURRENT RELAY
63/ST2	W-SPR	START-UP TRANSF. SUDDEN PRESSURE RELAY
86-1/ST2, 86-2/ST2	GE-12HEA61B240	START-UP TRANSF. LOCKOUT, PRIMARY AND BACK-UP RELAYS (SEE NOTE 1)
87/ST2	GE-12BDD16B11A	START-UP TRANSF. DIFFERENTIAL RELAY
27A-3/ST2 AND 27A-4/ST2	ITE-27N (211 TO 375)	START-UP TRANSF. 345 KV OFFSITE SOURCE UNDERVOLTAGE RELAY
62/ST2	AGA-7012PE	START-UP TRANSF. TIME DELAY RELAY
65X/ST1, 65X/ST2	GE-12HAA16B2	AUXILIARY RELAY
94-1/ST2, 94-2/ST2	GE-12HPA5K91	AUXILIARY TRIPPING RELAY

**FSAR FIGURE 8.3-2**

REV: 27, DWN: 2017, CHG: 2017, DATE: 2017. THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDR 2012-00073-11-01 PER SR-002-12-00073-11-01.

**LEGEND:**


**NOTES:**

- FOR TRIP, CLOSE AND BLOCK FUNCTIONS PERFORMED BY LOCKOUT RELAY 86-1/ST2 AND 86-2/ST2 SEE DWG E1-0002-B FOR RELAYS 86-1/ST1 AND 86-2/ST1 SEE DWG E2-0002 (UNIT 2)
- IN CASE OF PARKER (DECOROVA) LINE FAULT, TRANSFORMER (XST1) LOWSIDE BREAKERS ARE TRIPPED VIA 94 RELAYS.
- EQUIPMENT ENCLOSED INSIDE DASHED LINE IS CLASS I ELECTRICAL EQUIPMENT.
- THIS TRANSFORMER MAY BE REPLACED BY SPARE TRANSFORMER XST2A.
- NEUTRAL GROUNDING RESISTOR SHALL NOT BE CONNECTED TO XST2 AND XST2A SIMULTANEOUSLY.
- MANUAL TRANSFER SWITCH LINKS SHALL NOT BE CONNECTED TO XST2 AND XST2A SIMULTANEOUSLY.
- MANUAL TRANSFER SWITCH LINKS SHALL NOT BE CONNECTED TO XST1 AND XST1A SIMULTANEOUSLY.
- MANUAL TRANSFER SWITCHES CPX-EPTST-04X, CPX-EPTST-04Y AND CPX-EPTST-05X ARE SHOWN FOR ALIGNMENT WITH START-UP TRANSFORMER XST1. HOWEVER, THE 138KV OFF-SITE POWER SOURCE CAN BE ALIGNED TO XST1A AS DEEMED NECESSARY BY PLANT CONDITIONS.
- MANUAL TRANSFER SWITCHES CPX-EPTST-02X, CPX-EPTST-02Y, CPX-EPTST-03X AND CPX-EPTST-03Y ARE SHOWN FOR ALIGNMENT WITH START-UP TRANSFORMER XST2. HOWEVER, THE 345KV OFF-SITE POWER SOURCE CAN BE ALIGNED TO XST2A AS DEEMED NECESSARY BY PLANT CONDITIONS.

**REFERENCE DRAWINGS:**

E1-0001	PLANT ONE LINE DIAGRAM (UNITS 1 AND 2)
E1-0001-A	PLANT ONE LINE DIAGRAM UNIT 1 AND COMMON
E1-0001-01	PLANT ONE LINE DIAGRAM (UNIT 2)
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	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

DRAWING 2223-E1-0002 REV CP-2  
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:  
E1-0002  
E1-0002-A

DRAWING E1-0002 REV CP-5  
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:  
E1-0002  
E1-0002-B

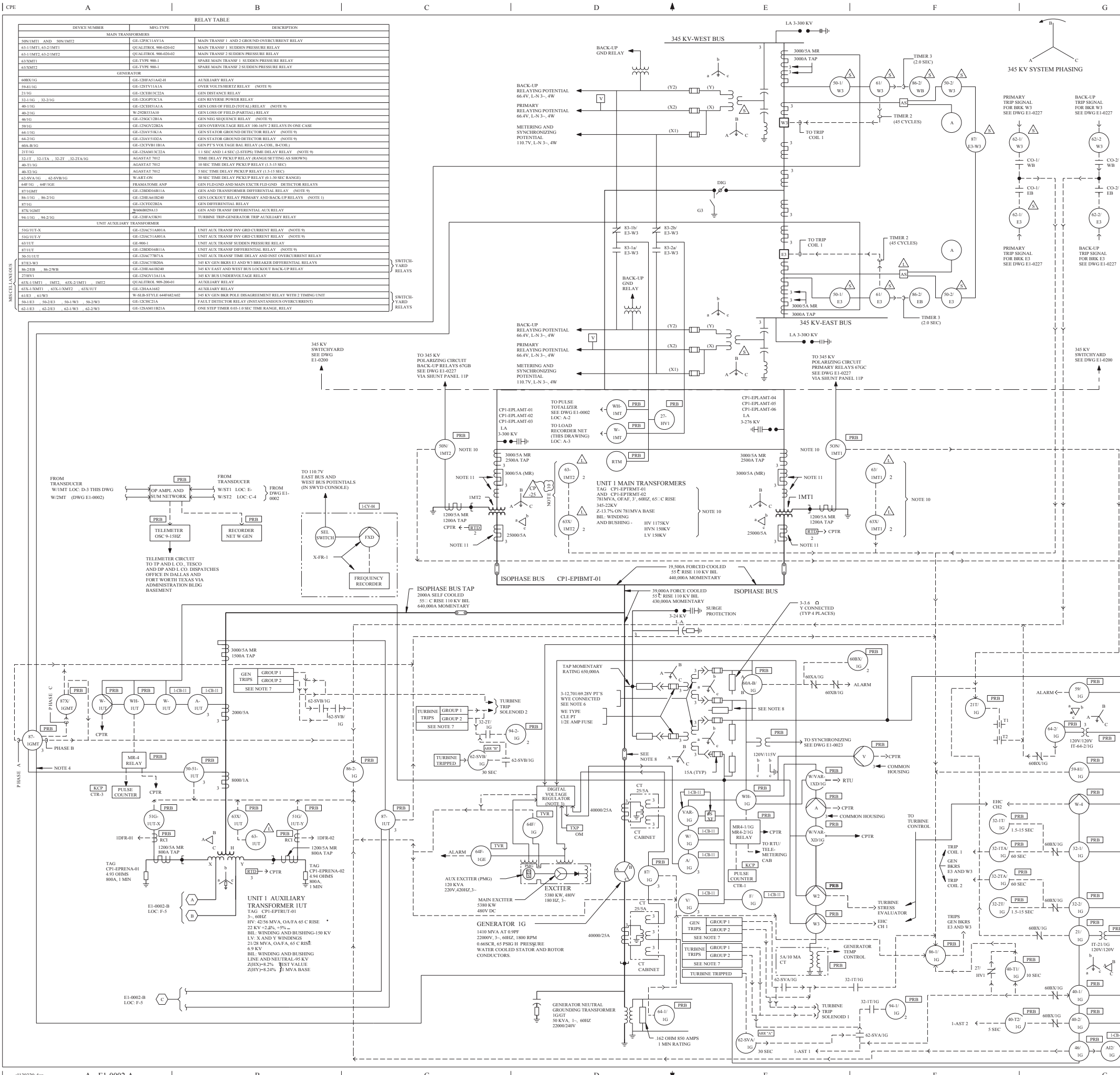
**CLASS I**  
(NUCLEAR SAFETY-RELATED)  
SAFETY CLASS 1 SERVICE CATEGORY 1  
SAFETY CLASS 2 CLASS 3 ASSOCIATED CIRCUITS

**LUMINANT CPNPP**  
GLEN ROSE, TEXAS

**MAIN ONE LINE METER AND RELAY DIAGRAM**

DWG. NO. E1-0002 SH. NO. - REV. CP-27

**FINAL PRINT**



REV	DATE	BY	CHKD	APV	REMARKS
1	08/11/01				THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGE AS NOTED PER 64-2013010012-1.

### FSAR FIGURE 8.3-2

**LEGEND**

[ARR]	AUXILIARY RELAY RACK	[EHC]	ELECTRO HYDRAULIC CONTROL
[1-CB-11]	CONTROL ROOM PANEL 1-CB-11	[TXP]	TELETYPE XP
[SW]	SWITCHYARD RELAY HOUSE	[AS]	AMMETER SWITCH
[TVR]	THYRISTOR VOLTAGE REGULATOR (TVR) CABINET	[1-CV-04]	RECORDER PANEL IN CONTROL ROOM (1-CV-04)
[R]	FIXED RESISTOR	[3]	3 CTS WYE CONNECTED
[CPD]	COUPLING CAPACITOR POTENTIAL DEVICE (CPD)	[DT]	DRAWOUT DISCONNECT FOR BREAKER OR POTENTIAL TRANSFORMER
[XD]	TRANSDUCER (XD)	[IB]	ISOPHASE BUS DISCONNECT LINK
[3-CTS-DELTA]	3 CTS DELTA CONNECTED	[CPR]	COMPUTER
[KCP]	ELECTRONIC KW/H COUNTER PANEL IN CONTROL ROOM	[W]	WATTMETER
[MDS]	MANUAL DISCONNECT SWITCH WITH GROUND SWITCH	[V]	VOLTMETER
[RTD]	RES TEMP DETECTOR FOR TRANSFORMERS, ONE FOR EACH LOW VOLTAGE WINDINGS HOT SPOT AND ONE FOR OIL TEMP	[W/M]	WATT HOUR METER
[A]	AMMETER	[OM]	OPERATING AND MONITORING STATION
[V]	VOLTMETER	[RMT]	RUNNING TIME METER

**NOTES**

- FOR TRIP CLOSE AND BLOCK FUNCTIONS PERFORMED BY LOCKOUT RELAY 86-1/IG AND 86-2/IG SEE DWG E1-0022 AND E1-0022-A.
- DELETED
- GENERATOR VOLTAGE REGULATOR CUBICLE INCLUDES:
  - a) VOLTAGE LIMITER
  - b) MINIMUM EXCITATION LIMITER
  - c) MAXIMUM EXCITATION LIMITER
- CONNECTED TO DIFFERENTIAL RELAY TERMINAL 7 WHICH HAS NO THRU CURRENT RESTRAINT.
- ITEMS MARKED WITH \* ARE SUPPLIED BY ACPSI.
- GENERATOR POTENTIAL TRANSFORMERS HAVE SUFFICIENT IRON TO PREVENT SATURATION WITH 1.05 X 2,000 = 2,100 VOLTS IMPRESSED ON THE PT PRIMARY.
- GROUP 1 TG TRIPS ARE THOSE WHERE GENERATOR TRIP IS DELAYED FOR 30 SECONDS SUBSEQUENT TO A REACTOR TRIP. GROUP 2 TG TRIPS DO NOT PERMIT SUCH A DELAY. SEE DWG E1-0022 FOR DETAILS.
- PRIOR TO ENERGIZING THE 22 KV SYSTEM, THE FOLLOWING MUST BE VERIFIED:
  - FOR GENERATOR LINKS IN PLACE, GENERATOR POTENTIAL TRANSFORMER SECONDARY RESISTORS ARE DISCONNECTED AND VICE VERSA.
  - TARGET RESET MECHANISM FOR THE RELAY IS REMOVED.
- IF MAIN TRANSFORMERS 1M1/2 (CP1-EPTRM-01, -02) ARE REPLACED WITH SPARE TRANSFORMERS XMT 1/2 (CPX-EPTRM-01, -02) THE FOLLOWING CHANGES APPLY:
  - A. RATING OF TRANSFORMERS WILL CHANGE AS FOLLOWS:
    - TAG CPX-EPTRM-01 AND CPX-EPTRM-02
    - 650MVA, F0A, 3, 60HZ, 65-C RISE
    - 345KV/208KV
    - 2.9% ON 650MVA BASE
    - BIL WINDING - HV 1050KV HVN 150KV LV 150KV
  - B. SUDDEN PRESSURE RELAYS 63-1, -2/MT1 WILL BE REPLACED BY RELAY 63XMT2.
  - SUDDEN PRESSURE RELAYS 63-1, -2/MT2 WILL BE REPLACED BY RELAY 63XMT2.
  - C. AUXILIARY RELAYS 63X-1, -2/MT1 WILL BE REPLACED BY RELAY 63X-1/UMT2 (IN PRB).
  - AUXILIARY RELAYS 63X-1, -2/MT2 WILL BE REPLACED BY RELAY 63X-1/UMT2 (IN PRB).
- THESE CTS ARE ONLY INSTALLED ON MAIN TRANSFORMERS 1M1/2 AND NOT ON XMT 1/MT2.

**NON-SAFETY**

LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

MAIN ONE LINE  
METER & RELAY DIAGRAM

DWG. NO.	E1-0002	SH. NO.	A	REV.	CP-25
----------	---------	---------	---	------	-------

REV	DWN	CHK	APPV	REMARKS
CP-17	09/11/2014	09/11/2014	09/11/2014	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2014-000077-01-00 PER SK-0006-14-000077-01-00

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

**NOTES:**

1. FOR METER/RELAY REPRESENTATIONS THE UNDERBAR IS EQUIVALENT TO A SLASH (e.g. 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
  - CA41364N1 TRANSFORMER XST1A NAMEPLATE

DRAWING E1-0002	REV CP-5
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E1-0002	
E1-0002-B	

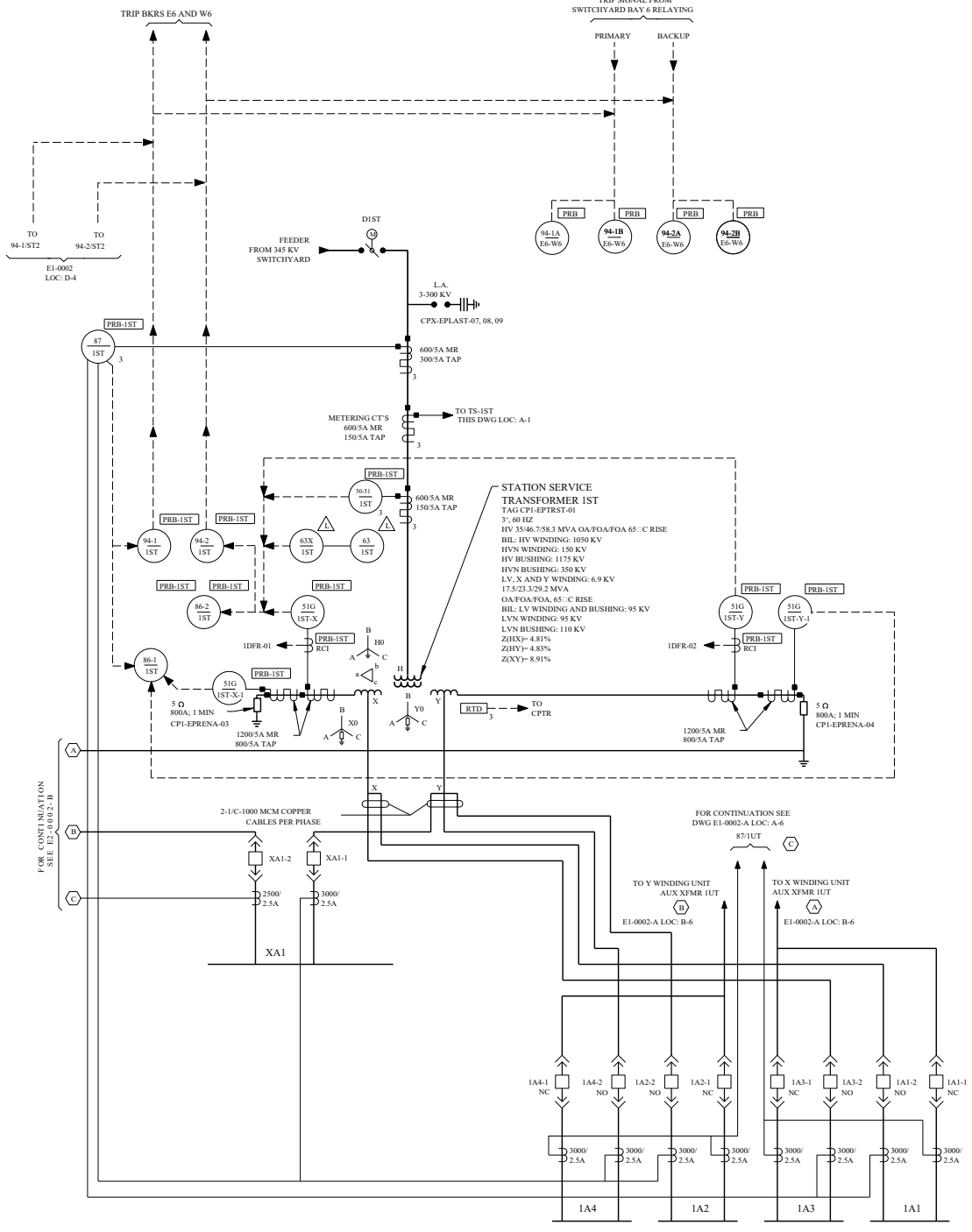
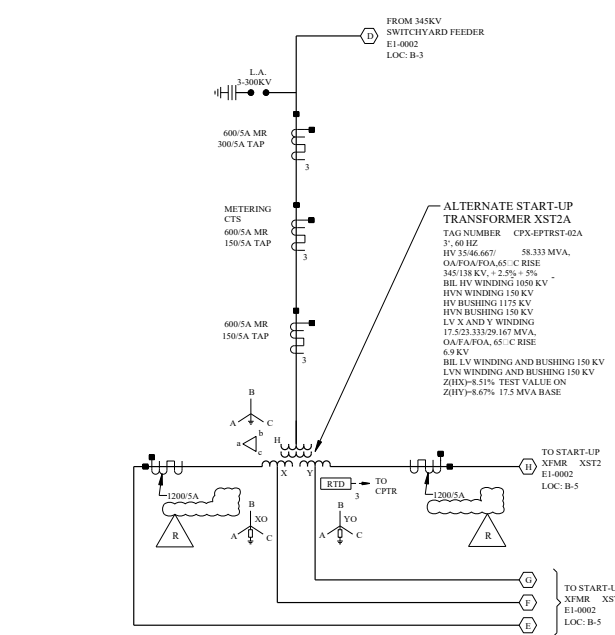
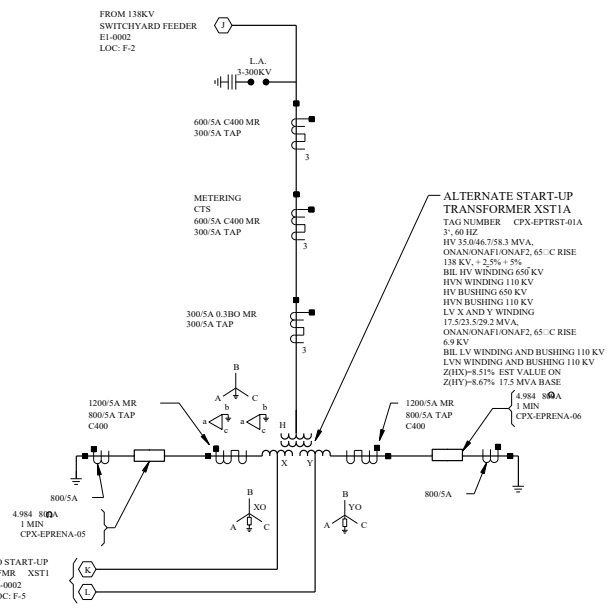
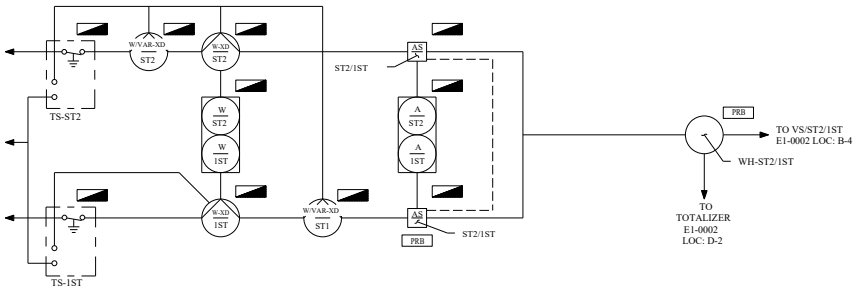
**NON-SAFETY**

LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

MAIN ONE LINE METER AND  
RELAY DIAGRAM

**RELAY TABLE**

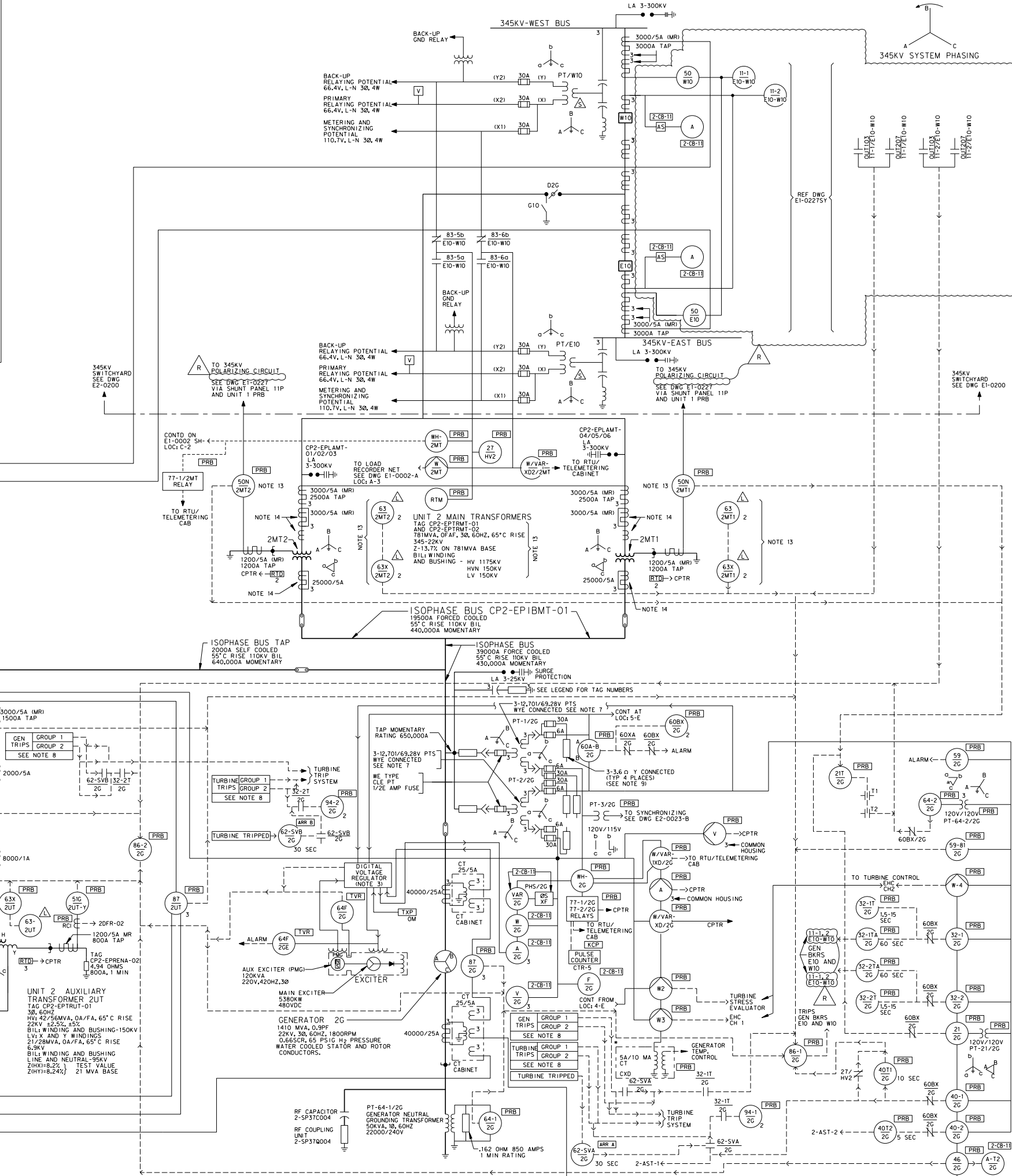
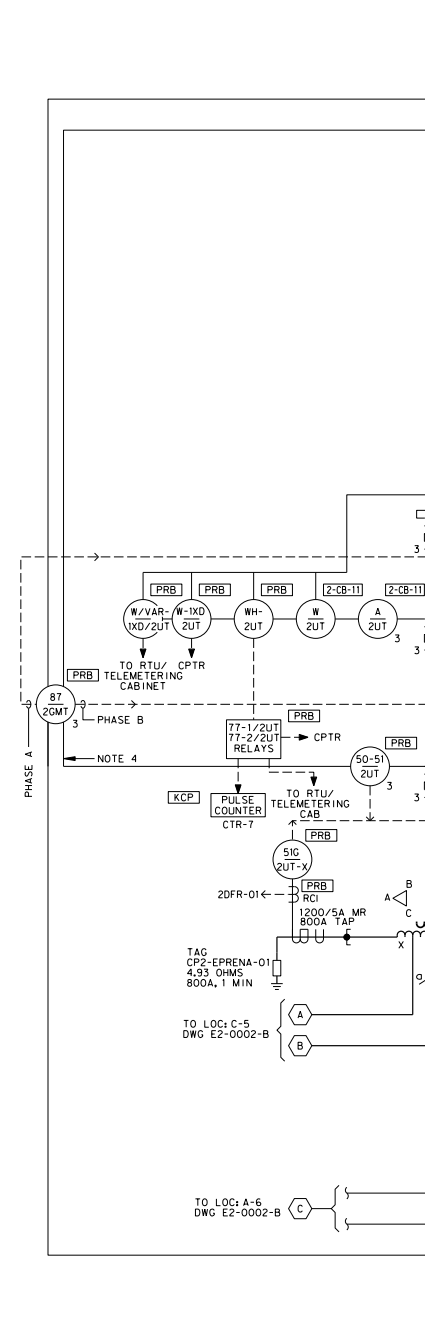
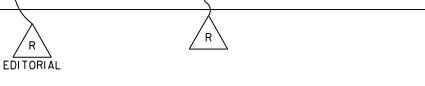
DEVICE NO.	MFG. TYPE	DESCRIPTION
50-51/1ST	GE-12AC77B81A	STA SERV TRANSF TIME DELAY AND INST OVERCURRENT RELAY
51G/1ST-X, 51G/1STX-1	GE-12IAC51A801A	STA SERV TRANSF INV GRD OVERCURRENT RELAY
51G/1ST-Y, 51G/1STY-1	GE-12IAC51A801A	STA SERV TRANSF INV GRD OVERCURRENT RELAY
63/1ST	QUALTRON 900	STA SERV TRANSF SUDDEN PRESSURE RELAY
86-1/1ST, 86-2/1ST	GE-12H8G18240	STA SERV TRANSF LOCKOUT, PRIMARY AND BACK-UP RELAYS
87/1ST	GE-12HDD16H11A	STA SERV TRANSF DIFFERENTIAL RELAY
41X/1ST	GE-12HAA1662	AUXILIARY RELAY
94-1/1ST, 94-2/1ST	GE-12HFA53K91	AUXILIARY TRIPPING RELAY
94-1A/E6-W6, 94-1B/E6-W6, 94-2A/E6-W6, 94-2B/E6-W6	GE-12HFA53K91	AUXILIARY TRIPPING RELAY



NOTES: (CONTINUED)

13. IF MAIN TRANSFORMERS, 2MT1/2 (CP2-EPTMT-01, -02) ARE REPLACED WITH SPARE TRANSFORMERS, XMT1/2 (CPX-EPTMT-01, -02) THE FOLLOWING CHANGES APPLY:
- A. RATING OF TRANSFORMERS WILL CHANGE AS FOLLOWS:  
 TAG CPX-EPTMT-01 AND CPX-EPTMT-02  
 650MVA, F.O.A. 30, 60HZ, 65°C RISE  
 345KV-20.9KV  
 Z-9.0% ON 650MVA BASE  
 BIL: WINDING - HV 1050KV  
 HVN 150KV  
 LV 150KV  
 BUSHING - HV 1175KV  
 HVN 150KV  
 LV 150KV
- B. SUDDEN PRESSURE RELAYS 63-1, -2/2MT1 WILL BE REPLACED BY RELAY 63/XMT1.  
 SUDDEN PRESSURE RELAYS 63-1, -2/2MT2 WILL BE REPLACED BY RELAY 63/XMT2.
- C. AUXILIARY RELAYS 63X-1, -2/2MT1 WILL BE REPLACED BY RELAY 63X/XMT1 (IN PRB).  
 AUXILIARY RELAYS 63X-1, -2/2MT2 WILL BE REPLACED BY RELAY 63X/XMT2 (IN PRB).
14. THESE CTS ARE ONLY INSTALLED ON MAIN TRANSFORMERS 2MT1/2 AND NOT ON XMT1/XMT2.

- 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)
  - E1-0002-B MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)
  - E2-0001-A PLANT ONE LINE DIAGRAM (UNIT 2)
  - E2-0001-B MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 2)
  - E2-0002-A PLANT ONE LINE DIAGRAM (UNIT 2)
  - E2-0002-B MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 2)
  - E1-0227SY 345KV SWITCHYARD RELAY FUNCTIONAL DIAGRAM



REV	DATE	BY	CHKD	APPV	REMARKS
CP-22	09-14-09	09-14-09			THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2010-00025-19-00 PER SK-0141-10-00025-19-00. EDITORIAL CHANGE AS NOTED.

FSAR FIGURE 8.3-2

- LEGEND:
- PRB PROTECTIVE RELAY BOARD
  - 2-CR-10 2-CR-10
  - LOCAL LOCAL
  - OM OPERATING AND MONITORING STATION
  - COUPLING CAPACITOR POTENTIAL DEVICE (CCPD)
  - DISCONNECT LINK
  - RTM RUNNING TIME METER
  - DRAWOUT DISCONNECT POTENTIAL TRANSFORMER
  - LOCATION
  - ARR AUXILIARY RELAY RACK 2-CR-03 AND 2-CR-04
  - LA LIGHTNING ARRESTER
  - CONTROL ROOM PANEL 2-CB-11
  - FIXED RESISTOR
  - SWITCHYARD RELAY HOUSE
  - A-AMMETER V-VOLTMETER W-WATTMETER WH-WATT HOURMETER
  - VS VOLT METER SWITCH
  - AS AMMETER SWITCH
  - 30A FUSE 30A - FUSE RATING FOR FUSE TYPE SEE NOTE 12
  - COUPLING UNIT
  - RADIO FREQUENCY CAPACITOR TAG NUMBERS
  - RADIO FREQUENCY COUPLING UNIT TAG NUMBERS
  - NOTES:

- FOR TRIP, CLOSE AND BLOCK FUNCTIONS PERFORMED BY LOCKOUT RELAYS 86-1/2G AND 86-2/2G SEE DRAWING E2-0022 AND E2-0022-A.
  - DELETED
  - GENERATOR VOLTAGE REGULATOR CUBICLE INCLUDES:
    - a) VOLTS/HERTZ LIMITER
    - b) MINIMUM EXCITATION LIMITER
    - c) MAXIMUM EXCITATION LIMITER
  - CONNECTED TO DIFFERENTIAL RELAY TERMINAL 7 WHICH HAS NO THRU CURRENT RESTRAINT.
  - EQUIPMENT ENCLOSED INSIDE DASHED LINE IS CLASS 1E ELECTRICAL EQUIPMENT.
  - ITEMS MARKED WITH \* ARE SUPPLIED BY ACP51.
  - GENERATOR POTENTIAL TRANSFORMERS HAVE SUFFICIENT IRON TO PREVENT SATURATION, WITH (1.05 X 22,000) 23,100 VOLTS IMPRESSED ON THE PT PRIMARY.
  - GROUP 1 T/C TRIPS ARE THOSE WHERE GENERATOR TRIP IS DELAYED FOR 30 SECONDS AFTER TURBINE TRIP FROM REACTOR CONSIDERATIONS. GROUP 2 T/C TRIPS DO NOT PERMIT SUCH A DELAY. SEE DWG E2-0022 FOR DETAILS.
  - PRIOR TO ENERGIZING THE 22KV SYSTEM, THE FOLLOWING MUST BE VERIFIED FOR GENERATOR LINKS IN PLACE, GENERATOR POTENTIAL TRANSFORMER SECONDARY RESISTORS ARE DISCONNECTED AND VICE VERSA.
  - FOR RELAY TABLE SEE DWG. E2-0002
  - 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. 1/2ST1). FOR THOSE METER/RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE UNDERBAR IS EQUIVALENT TO A SLASH (e.g. 61/10) IS EQUIVALENT TO 61/10.1.
  - PT SECONDARY FUSES FOR (I) PT/W10 AND PT/E10 ARE BUSSMAN NON-30 TYPE (II) PT-2/2C AND PT-2/2C-6A FUSES ARE BUSSMAN NON-6 TYPE AND 30A FUSES ARE GOULD OT-30 TYPE.
- FOR CONTINUATION SEE DWG LOC: A-1.

DRAWING	2323-E2-0002	REV	CP-1
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E2-0002			
E2-0002-A			

NON-SAFETY

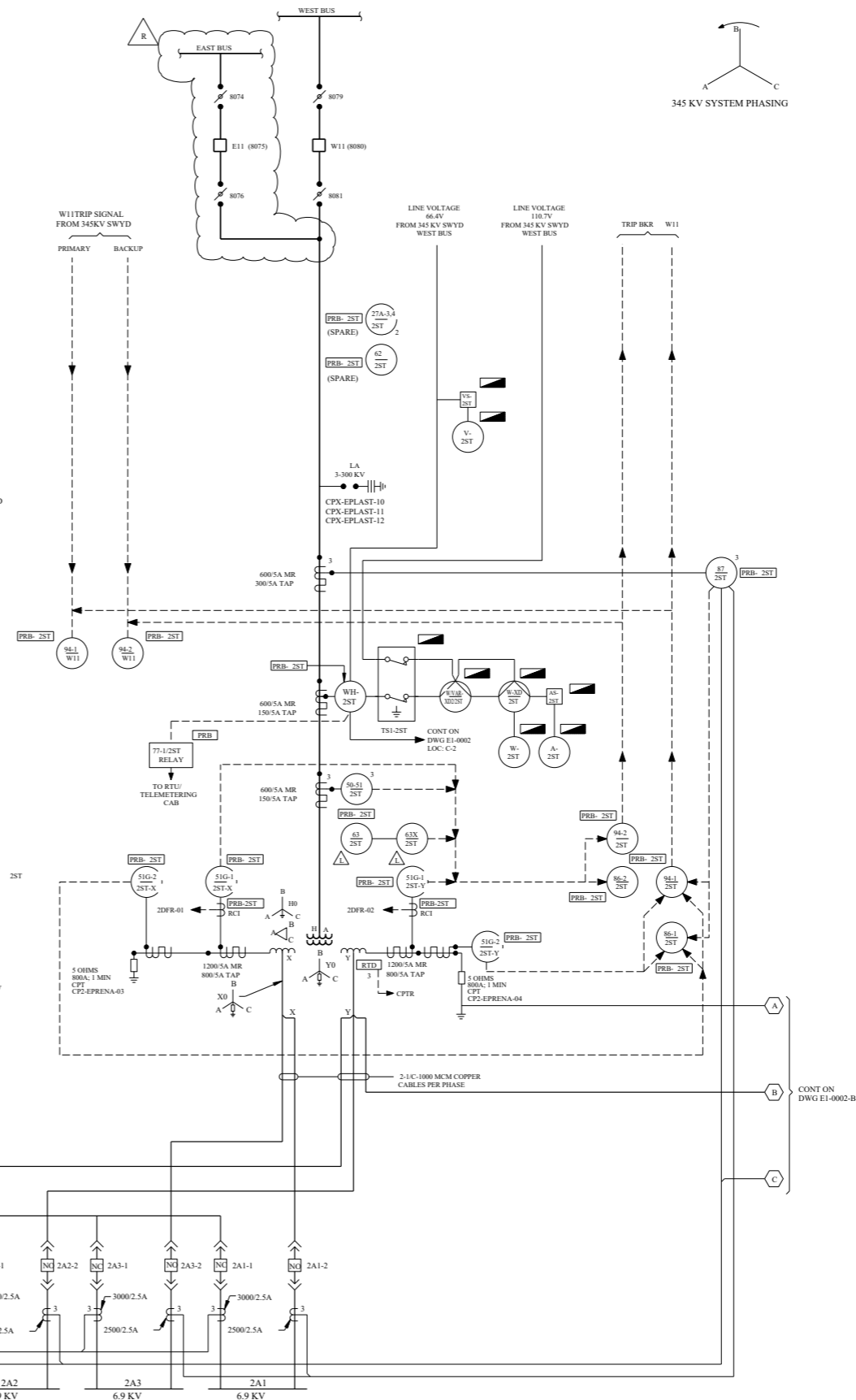
LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

MAIN ONE LINE  
METER AND RELAY DIAGRAM

DWG. NO.	E2-0002	SH. NO.	A	REV.	CP-22
----------	---------	---------	---	------	-------

DEVICE NUMBER	MFG-TYPE	DESCRIPTION
<b>RELAY TABLE</b>		
<b>MAIN TRANSFORMERS</b>		
50N/2MT1 , 50N/2MT2	GE-12P9C11A1A	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
63X/MT1	GE-TYPE 900-1	SPARE MAIN TRANSF 1 SUDDEN PRESSURE RELAY
63X/MT2	GE-TYPE 900-1	SPARE MAIN TRANSF 2 SUDDEN PRESSURE RELAY
<b>GENERATOR</b>		
60B/2G	GE-12HFAS1A42H	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-12GGP53C1A	GEN REVERSE POWER RELAY
40-1/2G	GE-12CEH51A1A	GEN LOSS OF FIELD (TOTAL) RELAY (SEE NOTE 2)
40-2/2G	W-292B33A10	GEN LOSS OF FIELD (PARTIAL) RELAY
46/2G	GE-12SGC2B1A	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-12CFV1B1B1A	GEN PTS VOLTAGE BAL RELAY (A-COIL, B-COIL)
21T/2G	GE-12SAM13C22A	1.1 SEC AND 1.4 SEC (2-STEPS) 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-T1/2G	AGASTAT 7012	10 SEC TIME DELAY PICKUP RELAY (1.5-15 SEC RANGE)
40-T2/2G	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	FRAMATOME 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-12CTD22B2A	GEN DIFFERENTIAL RELAY
87X/2GMT	W-408B029A13	GEN AND TRANSF DIFFERENTIAL AUX RELAY
94-1/2G , 94-2/2G	GE-12HFA53K91	TURBINE TRIP-GENERATOR TRIP AUXILIARY RELAY
<b>UNIT AUXILIARY TRANSFORMER</b>		
51G-2UT-X	GE-12IACS1A801A	UNIT AUX TRANSF INV GRD CURRENT RELAY (SEE NOTE 2)
51G-2UT-Y	GE-12IACS1A801A	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-12IAC77B11A	UNIT AUX TRANSF TIME DELAY AND INST OVERCURRENT RELAY (SEE NOTE 2)
<b>MISCELLANEOUS</b>		
27/HV2	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-12SAM11B21A	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-12IACS1A801A	STATION SERVICE TRANSF INV GRD OVER CURRENT RELAY
51G-1/2ST-Y , 51G-2/2ST-Y	GE-12IACS1A801A	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

SWITCHYARD RELAYS



REV	DATE	BY	CHKD	APV	REMARKS
CP-9	02-20-2002				THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2010-0012-06-00 PER 36-000-10-0012-06-00

**FSAR FIGURE 8.3-2**

- LEGEND:**
- PRB-2ST PROTECTIVE RELAY BOARD 2-CR-10
  - LOCAL
  - DRAWOUT DISCONNECT FOR BREAKER
  - LOCATION
  - QUANTITY (NO NUMBER INDICATES ONE)
  - TRANSUCER (XD)
  - MANUAL DISCONNECT SWITCH
  - LIGHTNING ARRESTER
  - RES TEMP DETECTOR FOR TRANSFORMERS ONE FOR EACH LOW VOLTAGE WINDINGS HOT SPOT AND ONE FOR OIL TEMP
  - FIXED RESISTOR
  - SWITCHYARD CONSOLE (CONTROL ROOM) X-CB-12
  - CIRCUIT BREAKER NO-NORMALLY OPEN NC-NORMALLY CLOSED
  - V VOLTMETER
  - AMMETER
  - VOLTMETER SWITCH
  - AMMETER SWITCH
  - REMOTE CURRENT ISOLATOR
  - PROTECTIVE RELAY BOARD 2-CR-40 TRANSFORMER 2ST

- NOTES**
- SEE DWG E1-0002 FOR SWGR BUS 2EA1 AND 2EA2
  - TARGET RESET MECHANISM FOR THE RELAY IS REMOVED
  - 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 A SLASH (eg IS 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.	SH. NO.	REV.
E2-0002	B	CP-9

**FINAL PRINT**

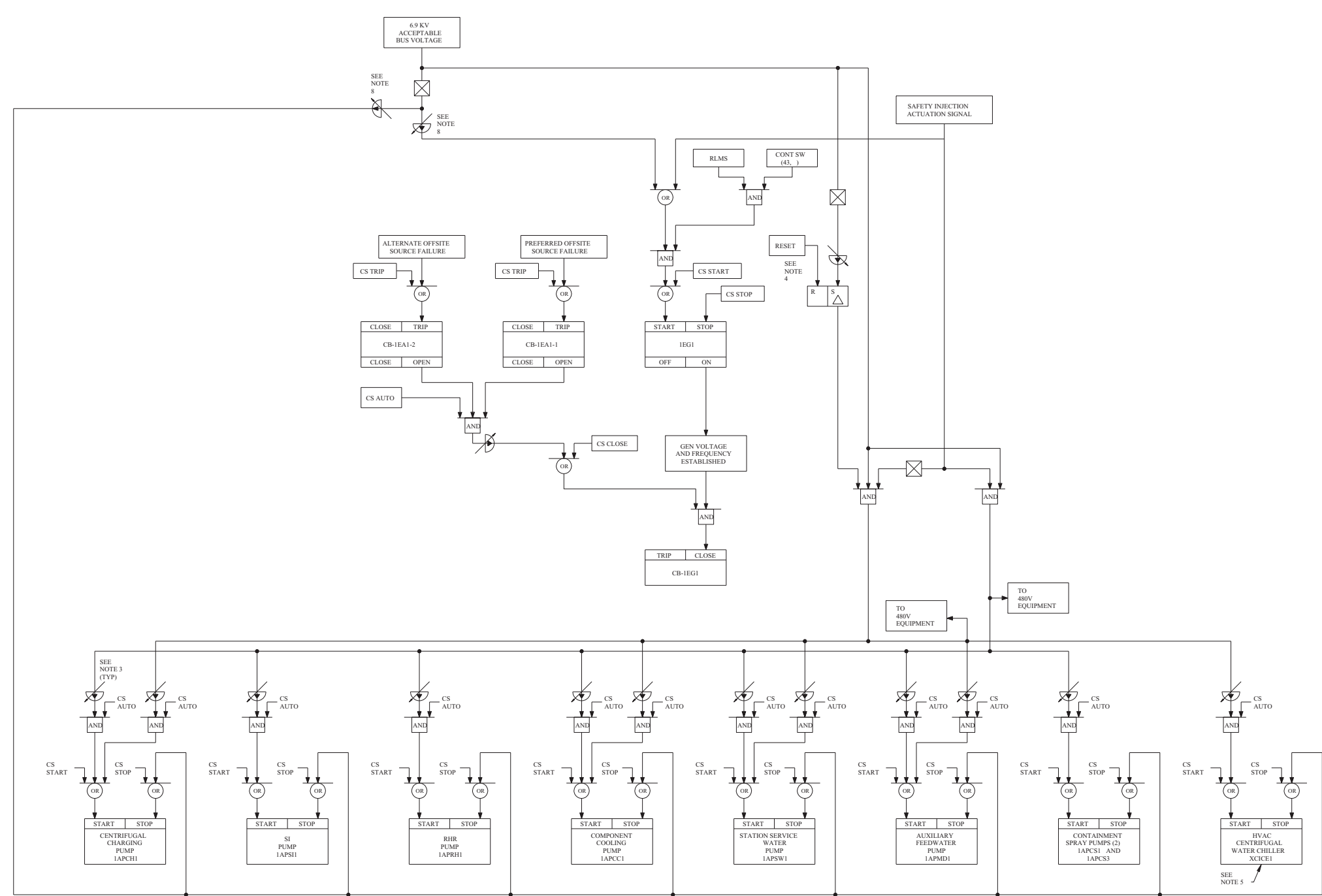
REV	DWN	CHK	APPV	REMARKS
CP-1	12/01/2001	12/02/2001		THIS DRAWING CREATED TO INCORPORATE DESIGN CHANGE FDA-2002-003579-01-00 PER 96-0005-02-003579-01-00

FSAR FIGURE 8.3-3

- LEGEND
- AND - INDICATES A DEVICE WHICH PRODUCES AN OUTPUT ONLY WHEN EVERY INPUT IS ENERGIZED
  - OR - INDICATES A DEVICE WHICH PRODUCES AN OUTPUT WHEN ONE INPUT (OR MORE) IS ENERGIZED
  - Time Delay Relay - INDICATES A DEVICE WHICH PRODUCES AN OUTPUT FOLLOWING DEFINITE INTENTIONAL TIME DELAY AFTER RELAY RECEIVING AN INPUT (ADJUSTABLE TIME DELAY RELAY-ENERGIZING)
  - R/S - A DEVICE WHICH RETAINS THE CONDITION OF OUTPUT CORRESPONDING TO THE LAST ENERGIZED INPUT.  $\Delta$  INDICATES THE OUTPUT THAT WILL PREVAIL UNDER SIMULTANEOUS SET AND RESET INPUTS
  - NOT ENERGIZED - 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 THRU 100 DIAGRAMS



Amendment 104

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1      SEMIC CATEGORY 1  
SAFETY CLASS 2      CLASS 1  
SAFETY CLASS 3      ASSOCIATED CIRCUITS

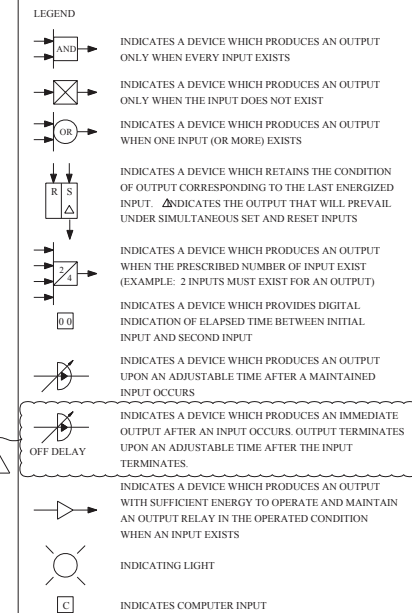
TXU POWER  
CPSES  
GLEN ROSE, TEXAS

DIESEL GENERATOR AUTOMATIC  
STARTING AND LOADING  
SEQUENCE DIAGRAM

DWG NO. E1-0022	SH. NO. 02	REV. CP-1
--------------------	---------------	--------------



**FSAR FIGURE 8.3-4**



- ABBREVIATIONS**
- SIS - SAFETY INJECTION SEQUENCER
  - SIS/AL - SAFETY INJECTION SEQUENCER/AUTO LOCKOUT
  - SIS/OL - SAFETY INJECTION SEQUENCER/OPERATOR LOCKOUT
  - BOS - BLACKOUT SEQUENCER
  - BOS/AL - BLACKOUT SEQUENCER/AUTO LOCKOUT
  - BOS/OL - BLACKOUT SEQUENCER/OPERATOR LOCKOUT

- NOTES**
1. BLOCK SWITCHES HAVE MAINTAINED CONTACTS ALL OTHER TEST SWITCHES AND PUSHBUTTONS HAVE MOMENTARY CONTACTS.
  2. SIS AND BOS OPERATOR LOCKOUTS SHALL EACH PROVIDE 30 INDEPENDENT CONTACT OPENING OUTPUTS.
  3. SAFETY INJECTION SEQUENCER AND BLACKOUT SEQUENCER SHALL EACH PROVIDE (11) ELEVEN INDEPENDENTLY ADJUSTABLE TIME STEPS.
  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.
  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.
  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.
  7. SEQUENCER OUTPUT RELAY INDICATING LIGHTS SHALL BE TURNED ON WHEN ASSOCIATED RELAY IS FIRST ENERGIZED AND REMAIN ON UNTIL RELAY CHANGES STATE.
  8. AN ALARM CONTACT SHALL BE PROVIDED TO ACTUATE REMOTE ANNUNCIATOR UPON LOSS OF SUPPLY POWER TO SEQUENCER.
  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.
  10. SOLID STATE SAFEGUARD SEQUENCER LOGIC FOR 1EA2, 2EA1, AND 2EA2 IS SIMILAR TO 1EA1 SHOWN ON THIS DRAWING.

- REFERENCE DRAWINGS**
1. E1-0022-04 UNDER/OVER VOLTAGE RELAY PROTECTION FOR CLASS 1E 6.9KV/480V BUSES
  2. E2-0022-04 UNDER/OVER VOLTAGE RELAY PROTECTION FOR CLASS 1E 6.9KV/480V BUSES

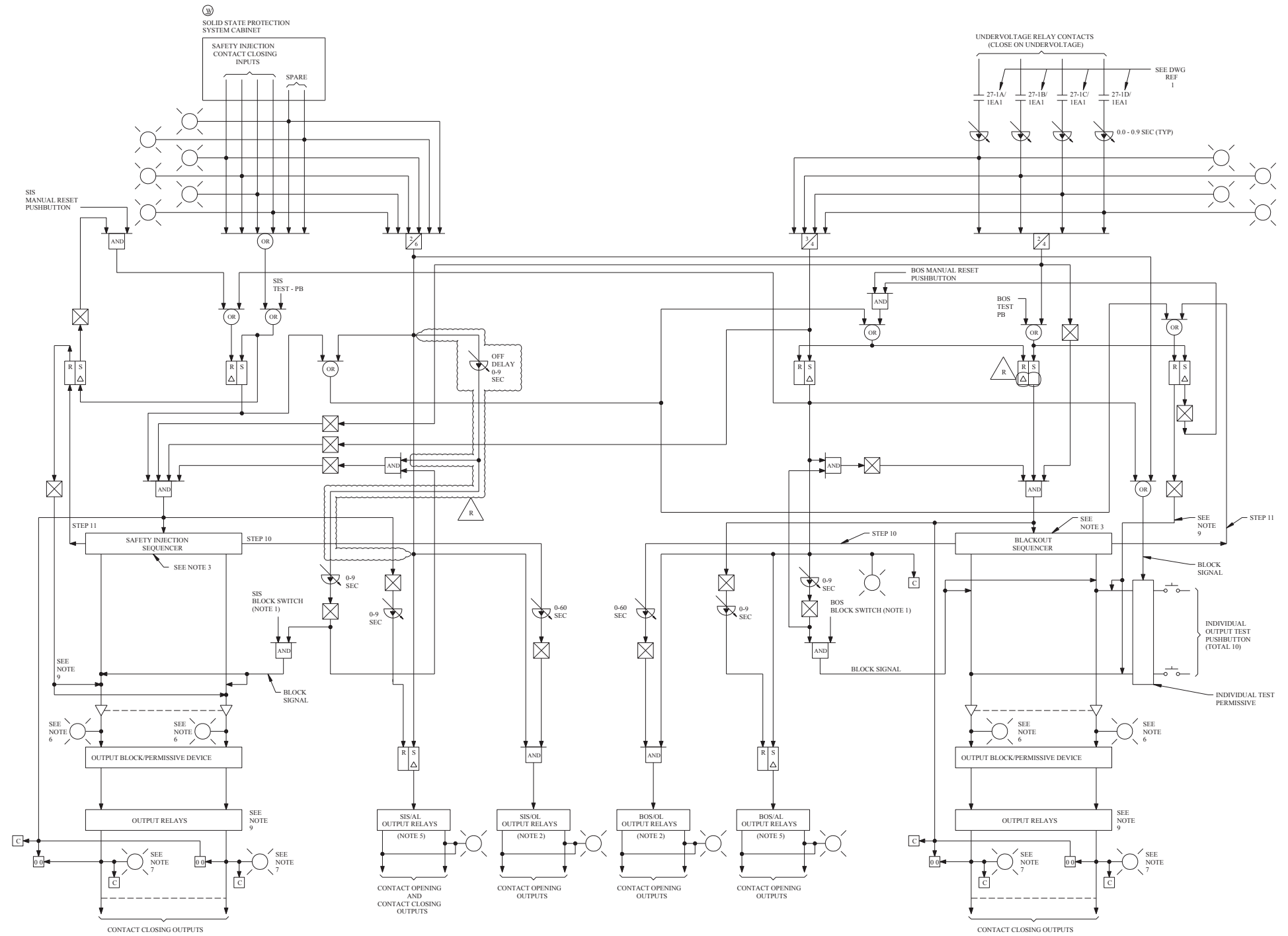
**Amendment 104**

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

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

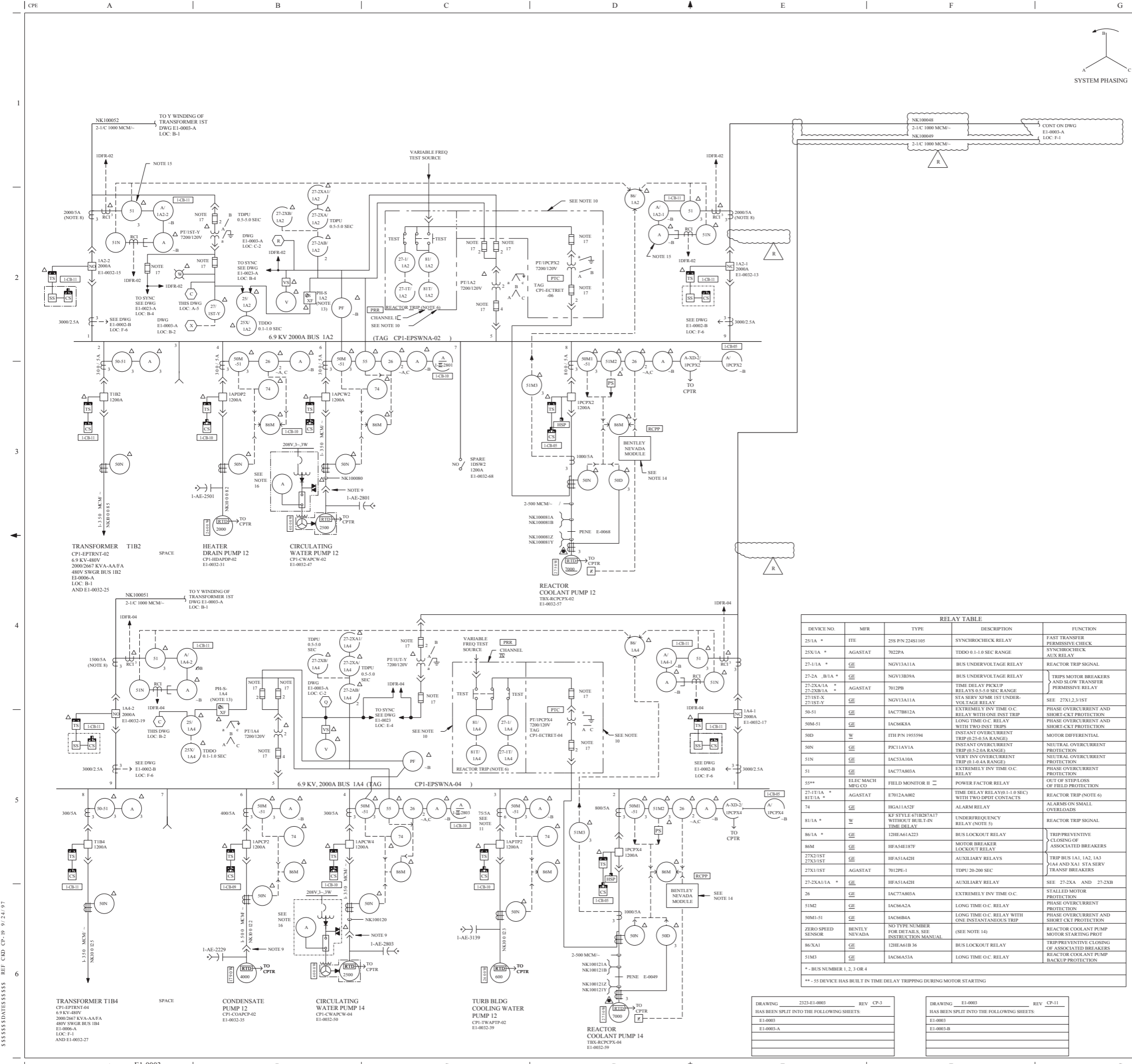
**LUMINANT CPSES**  
GLEN ROSE, TEXAS

**SOLID STATE SAFEGUARD SEQUENCER LOGIC DIAGRAM**



1  
2  
3  
4  
5  
6

THIS DRAWING CREATED ELECTRONICALLY



REV 10/2004

THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE  
 FDA-2014-00222-02-00 PER SK-0004-14-00222-02-00

### FSAR FIGURE 8.3-5

**LEGEND**

**SYMBOLS:**

- ⊙ LOCATION
- 3 QUANTITY (NO NUMBER INDICATES ONE)
- ⊗ PHASE SHIFTING TRANSFORMER
- SS SYNCHRONIZING SWITCH
- IS PERMISSIVE SWITCH WITH LIGHTS
- CS CONTROL SWITCH WITH LIGHTS
- GL GREEN LIGHT
- RL 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 TEST PUSH BUTTON, LOCKABLE IN EXTENDED POSITION
- MOTOR SPACE HEATER (WATTS LATER)
- DRAWN/OT DISCONNECT 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
- PRR CLASS 1E PROTECTIVE RELAY RACK
- RCPV FEEDWATER TURBINE AND REACTOR COOLANT PUMP SUPERVISORY PANEL 1-CV-07
- PTC POTENTIAL TRANSFORMER CABINET
- HSP HOT SHUTDOWN PANEL 1-LV-01
- RCI REMOTE CURRENT ISOLATOR

**NOTES**

- SWITCHGEAR CLASS: 500 MVA IC
- ALL NEUTRAL OVERCURRENT CT'S ON CABLE FEEDERS ARE TYPE BYZ WITH 50:5A RATIO.
- CT'S SHOWN AT MOTOR ARE  $\odot$  SENSORS, BYZ WITH 50:5A RATIO
- QUANTITY, WHERE NOT SHOWN, IS ONE.
- TYPE KF UNDERFREQUENCY RELAY HAS A FREQUENCY RANGE OF 50-59.5HZ.
- PER  $\odot$  FUNCTIONAL DIAGRAM DWG 7247D05 SH 5 REACTOR TRIP OCCURS ON SIGNAL FROM TWO OUT OF FOUR BUSES UNDERVOLTAGE OR FREQUENCY.
- CABLE SIZE: WHERE NOT SHOWN IS 40 AWG.
- THESE CT'S SHALL HAVE RELAYING ACCURACY OF 10:400.
- CABLE QUICK DISCONNECT TYPE CONNECTORS ARE PROVIDED FOR VERTICAL MOTORS AND ARE LOCATED IN THE MOTOR TERMINAL BOX.
- PCPMP AND WIRING ENCLOSED INSIDE DASHED LINE IS CLASS 1E ELECTRICAL EQUIPMENT AND WIRING.
- TWO 55A CURRENT TRANSFORMERS ARE CONNECTED IN SERIES TO ACHIEVE 10C50 ACCURACY CLASS.
- DELETED
- PHASE SHIFTING TRANSFORMER OSXF SECONDARY VOLTAGE LAGS PRIMARY VOLTAGE BY 30 DEGREES.
- NEUTRAL OVERCURRENT PROTECTION
- NEUTRAL OVERCURRENT PROTECTION
- EXTREMELY INV TIME O.C. RELAY
- FIELD MONITOR II
- POWER FACTOR RELAY
- OUT OF STEP LOSS OF FIELD PROTECTION
- TIME DELAY RELAY(0.1-1.0 SEC) WITH TWO DPDT CONTACTS
- REACTOR TRIP (NOTE 6)
- ALARMS ON SMALL OVERLOADS
- TRIP PREVENTIVE CLOSING OF ASSOCIATED BREAKERS
- TRIP BUS 1A1, 1A2, 1A3 1A4 AND XA1 STA SERV TRANS BREAKERS
- MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)
- TRIP BUS 1A1, 1A2, 1A3 1A4 AND XA1 STA SERV TRANS BREAKERS
- MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)
- 6.9 KV THREE LINE DIAGRAM
- NORMAL 6.9 KV SWGR BREAKER SCHEMATICS AND CONNECTION DIAGRAM INDEX

**REFERENCE DRAWINGS**

- E1-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2
- E1-0001-A PLANT ONE LINE DIAGRAM UNIT 1 AND COMMON MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)
- E1-0002-A TRIP PREVENTIVE CLOSING OF ASSOCIATED BREAKERS AND RELAY DIAGRAM (UNIT 1)
- E1-0002-B TRIP BUS 1A1, 1A2, 1A3 1A4 AND XA1 STA SERV TRANS BREAKERS AND RELAY DIAGRAM (UNIT 1)
- E1-0026-02, 02A MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1) 6.9 KV THREE LINE DIAGRAM
- 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

**LUMINANT CPNPP**  
GLEN ROSE, TEXAS

**6.9 KV AUXILIARIES ONE LINE DIAGRAM NORMAL BUSES**

DWG NO: E1-0003 SH NO: - REV: CP-30

DEVICE NO.	MFR	TYPE	DESCRIPTION	FUNCTION
25/1A *	ITE	25S P/N 224S1105	SYNCHROCHECK RELAY	FAST TRANSFER PERMISSIVE CHECK
25X/1A *	AGASTAT	7022PA	TDDO 0.1-1.0 SEC RANGE	SYNCHROCHECK AUX RELAY
27-1/1A *	GE	NGV13A11A	BUS UNDERVOLTAGE RELAY	REACTOR TRIP SIGNAL
27-2A, 1B/1A *	GE	NGV13B39A	BUS UNDERVOLTAGE RELAY	TRIPS MOTOR BREAKERS AND SLOW TRANSFER PERMISSIVE RELAY
27-2XA/1A * 27-2XB/1A *	AGASTAT	7012PB	TIME DELAY PICKUP RELAYS 0.5-5.0 SEC RANGE	PERMISSIVE RELAY
27-1ST-X 27-1ST-Y	GE	NGV13A11A	STA SERV XFMR 1ST UNDERVOLTAGE RELAY	SEE 27X1.2.3/1ST
50-51	GE	IAC778B12A	EXTREMELY INV TIME O.C. RELAY WITH ONE INST TRIP	PHASE OVERCURRENT AND SHORT-CKT PROTECTION
50M-51	GE	IAC66K8A	LONG TIME O.C. RELAY WITH TWO INST TRIPS	PHASE OVERCURRENT AND SHORT-CKT PROTECTION
50D	W	ITH P/N 1955594	INSTANT OVERCURRENT TRIP (0.25-0.5A RANGE)	MOTOR DIFFERENTIAL
50N	GE	PCI11A11A	NEUTRAL OVERCURRENT PROTECTION	NEUTRAL OVERCURRENT PROTECTION
51	GE	IAC53A10A	VERY INV OVERCURRENT TRIP (0.1-0.4A RANGE)	NEUTRAL OVERCURRENT PROTECTION
51N	GE	IAC77A80A	EXTREMELY INV TIME O.C. RELAY	PHASE OVERCURRENT PROTECTION
55**	ELEC MACH MFG CO	FIELD MONITOR II	POWER FACTOR RELAY	OUT OF STEP LOSS OF FIELD PROTECTION
27-1T/1A 81T/1A *	AGASTAT	E7012A-002	TIME DELAY RELAY(0.1-1.0 SEC) WITH TWO DPDT CONTACTS	REACTOR TRIP (NOTE 6)
74	GE	HGA11A52F	ALARM RELAY	ALARMS ON SMALL OVERLOADS
81/1A *	W	KF STYLE 67B287A17 WITHOUT BUILT-IN TIME DELAY	UNDERFREQUENCY RELAY (NOTE 5)	REACTOR TRIP SIGNAL
86/1A *	GE	I2HEA61A223	BUS LOCKOUT RELAY	TRIP PREVENTIVE CLOSING OF ASSOCIATED BREAKERS
86M	GE	HFAS4E187F	MOTOR BREAKER LOCKOUT RELAY	TRIP PREVENTIVE CLOSING OF ASSOCIATED BREAKERS
27X2/1ST 27X3/1ST	GE	HFAS1A42H	AUXILIARY RELAY	TRIP BUS 1A1, 1A2, 1A3 1A4 AND XA1 STA SERV TRANS BREAKERS
27X1/1ST	AGASTAT	7012PE-1	TDDO 20-200 SEC	MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)
27-2XA1/1A *	GE	HFAS1A42H	AUXILIARY RELAY	SEE 27-2XA AND 27-2XB
26	GE	IAC77A80A	EXTREMELY INV TIME O.C. RELAY	STALLED MOTOR PROTECTION
51M2	GE	IAC66A2A	LONG TIME O.C. RELAY	PHASE OVERCURRENT PROTECTION
50M1-51	GE	IAC66B4A	LONG TIME O.C. RELAY WITH ONE INSTANTANEOUS TRIP	PHASE OVERCURRENT AND SHORT-CKT PROTECTION
ZERO SPEED SENSOR	BENTLEY NEVADA	NO TYPE NUMBER FOR DETAILS, SEE INSTRUCTION MANUAL (SEE NOTE 14)	REACTOR COOLANT PUMP MOTOR STARTING PROT	REACTOR COOLANT PUMP MOTOR STARTING PROT
86/XA1	GE	I2HEA61B 36	BUS LOCKOUT RELAY	TRIP PREVENTIVE CLOSING OF ASSOCIATED BREAKERS
51M3	GE	IAC66A53A	LONG TIME O.C. RELAY	REACTOR COOLANT PUMP BACKUP PROTECTION

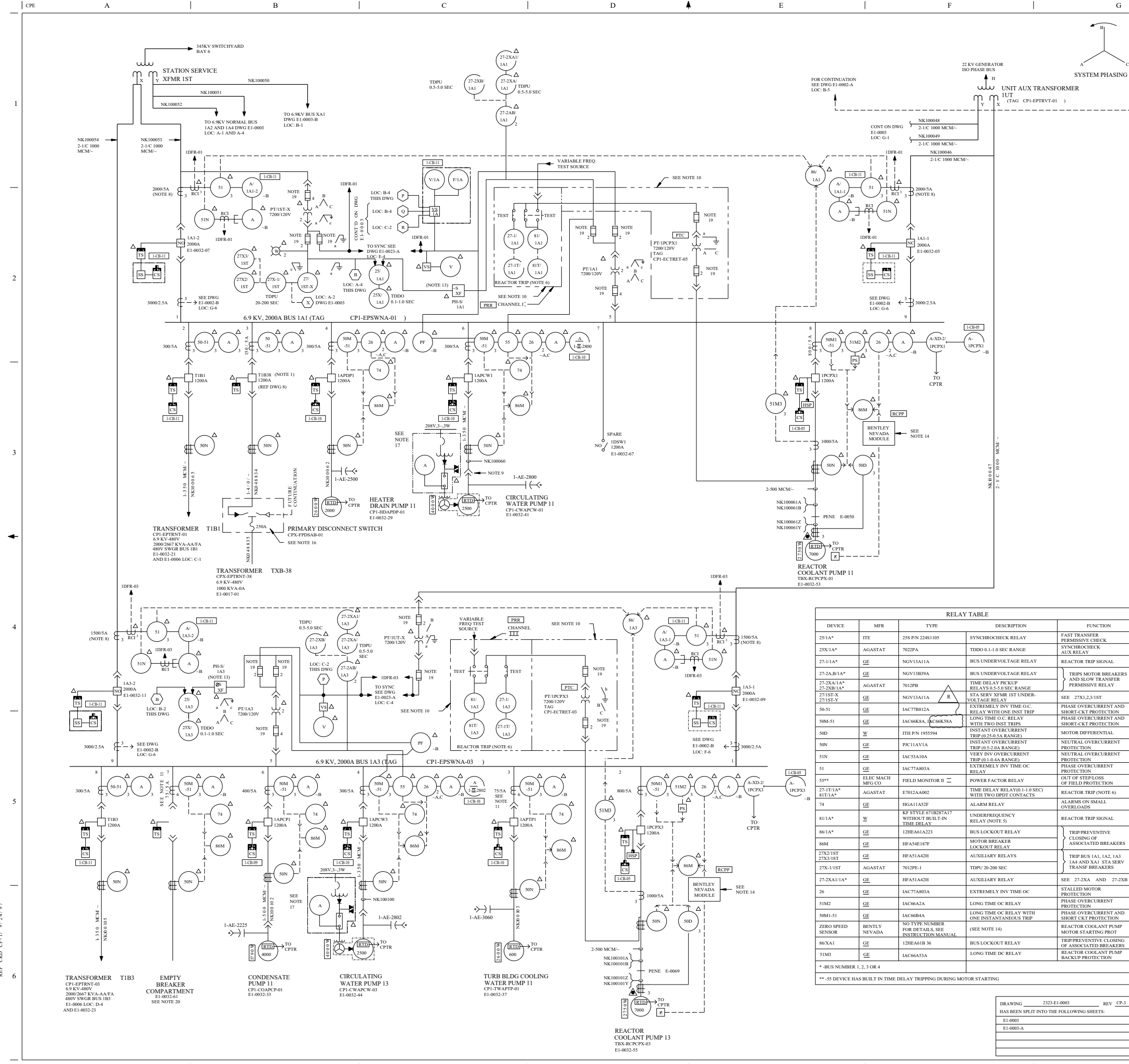
\* - BUS NUMBER 1, 2, 3 OR 4  
 \*\* - 55 DEVICE HAS BUILT IN TIME DELAY TRIP DURING MOTOR STARTING

DRAWING 2322-E1-0003 REV CP-3  
 HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:  
 E1-0003  
 E1-0003-A

DRAWING E1-0003 REV CP-11  
 HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:  
 E1-0003  
 E1-0003-B

REF CUD CP-19 9/24/97

THIS DRAWING RELATED ELECTRONICALLY



### FSAR FIGURE 8.3-5

**LEGEND**

RC1 - 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
- ⊗ RED LIGHT
- ⊗ WINDOW OR THIRU TYPE CURRENT TRANSFORMER
- ⊗ DISCONNECT SWITCH
- ⊗ PARTIAL DISCHARGE COUPLING CAPACITOR/TEST POINT
- ⊗ SYNCHRONOUS MOTOR WITH BRUSHLESS EXCITER
- ⊗ EXCITER
- ⊗ AUTO TRANSFORMER RECTIFIER
- ⊗ SURGE SUPPRESSOR
- ⊗ TEST
- ⊗ MOTOR SPACE HEATER
- ⊗ DRAWOUT DISCONNECT FOR BREAKER OR POTENTIAL TRANSFORMER; CABLE DISCONNECT
- ⊗ SHUNT FOR DC AMMETER

FOR OTHER SYMBOLS SEE DWG E1-0001

**LOCATIONS**

- ⊗ CONTROL ROOM PANEL NUMBER \*
- ⊗ IN 6.9 KV SWITCHGEAR
- ⊗ AT MOTOR
- ⊗ CPTR INDICATES COMPUTER
- ⊗ PRR CLASS 1E PROTECTIVE RELAY RACK
- ⊗ FEEDWATER TURBINE AND REACTOR COOLANT PUMP SUPERVISORY PANEL
- ⊗ POTENTIAL TRANSFORMER CABINET
- ⊗ HOT SHUTDOWN PANEL

**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 7247D05 S1 5 REACTOR TRIP OCCURS ON SIGNAL FROM TWO OUT OF FOUR BUSES UNDERVOLTAGE OR FREQUENCY.
7. CABLE SIZE, WHERE NOT SHOWN IS 4/0 AWG.
8. THESE CT'S SHALL HAVE RELAYING ACCURACY OF 100/400.
9. CABLE QUICK DISCONNECT TYPE CONNECTORS ARE PROVIDED FOR VERTICAL MOTORS AND ARE LOCATED IN THE MOTOR TERMINAL BOX.
10. **FIELD EXCITER 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 100/5A ACCURACY CLASS.
12. KIRK KEY INTERLOCK IS PROVIDED BETWEEN BREAKER AND ELECTRICAL START-UP BOILER HIGH VOLTAGE COMPARTMENT.
13. PHASE SHIFTING TRANSFORMER OSXF SECONDARY VOLTAGE LAGS PRIMARY VOLTAGE BY 90 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. 51/1A3-1, 51/1A3-2).
16. FUSE SIZE 250 AMPS, WESTINGHOUSE TYPE RBA-RDB-400.
17. EXCITER POWER SUPPLY IS LOCATED IN CURBICLE 5.
18. DELETED
19. FOR FUSE INFORMATION SEE THREE LINE DIAGRAMS, REF DWG 6.
20. BREAKER HAS BEEN PERMANENTLY REMOVED FROM SWITCHGEAR CURBICLE.

DEVICE	MFR	TYPE	DESCRIPTION	FUNCTION
25T1A*	ITE	25S P/N 22481105	SYNCHROCHECK RELAY	FAST TRANSFER PERMISSIVE CHECK
25X/1A*	AGASTAT	7022PA	TDDO 0.1-1.0 SEC RANGE	SYNCHROCHECK AUX RELAY
27-1/1A*	GE	NGV13A11A	BUS UNDERVOLTAGE RELAY	REACTOR TRIP SIGNAL
27-2A/1A*	GE	NGV13B39A	BUS UNDERVOLTAGE RELAY	TRIPS MOTOR BREAKERS AND SLOW TRANSFER PERMISSIVE RELAY
27-2X/1A*	AGASTAT	7012PB	TIME DELAY PICKUP RELAYS 0.5-0.9 SEC RANGE	STA SERV XFMR 1ST UNDERVOLTAGE RELAY
27-1T/1A*	GE	NGV13A11A	EXTRMELY INV TIME OC RELAY WITH ONE INST TRIP	SEE 27X1.2/3/1ST
27-2T/1A*	GE	IAC77B812A	LONG TIME OC RELAY WITH TWO INST TRIPS	PHASE OVERCURRENT AND SHORT-CKT PROTECTION
50M-51	GE	IAC66K8A, IAC66K8SA	INSTANT OVERCURRENT TRIP (0.25-0.5A RANGE)	MOTOR DIFFERENTIAL
50D	W	ITH P/N 1955594	VERY INV OVERCURRENT TRIP (0.1-0.4A RANGE)	NEUTRAL OVERCURRENT PROTECTION
50N	GE	PC11A1V1A	EXTRMELY INV TIME OC RELAY	PHASE OVERCURRENT PROTECTION
51N	GE	IAC53A10A	VERY INV OVERCURRENT TRIP (0.1-0.4A RANGE)	NEUTRAL OVERCURRENT PROTECTION
51	GE	IAC77A803A	EXTRMELY INV TIME OC RELAY	PHASE OVERCURRENT PROTECTION
55**	ELEC MACH MFG CO	FIELD MONITOR II	POWER FACTOR RELAY	OUT OF STEP LOSS OF FIELD PROTECTION
27-1T/1A*	AGASTAT	E7012AA002	TIME DELAY RELAY (0.1-1.0 SEC) WITH TWO PDDT CONTACTS	REACTOR TRIP (NOTE 6)
811A*	W	KF STYIE 6718257A17	WITHOUT BUILT-IN TIME DELAY	ALARMS ON SMALL OVERLOADS
811A*	W	IF5A1A223	UNDERFREQUENCY RELAY (NOTE 5)	REACTOR TRIP SIGNAL
86/1A*	GE	I2HEA61A223	BUS LOCKOUT RELAY	TRIP/PREVENTIVE CLOSING OF ASSOCIATED BREAKERS
86M	GE	HF45A187F	MOTOR BREAKER LOCKOUT RELAY	TRIP BUS 1A1, 1A2, 1A3 1A4 AND XA1 STA SERV TRANS BREAKERS
27X2/1ST	GE	HF451A42H	AUXILIARY RELAYS	TRIP BUS 1A1, 1A2, 1A3 1A4 AND XA1 STA SERV TRANS BREAKERS
27X-1/1ST	AGASTAT	7012PE-1	TDDO 20-200 SEC	TRIP BUS 1A1, 1A2, 1A3 1A4 AND XA1 STA SERV TRANS BREAKERS
27-2X/1A*	GE	HF451A42H	AUXILIARY RELAY	SEE 27-2XA AND 27-2XB
26	GE	IAC77A803A	EXTRMELY INV TIME OC	STALLED MOTOR PROTECTION
51M2	GE	IAC66A2A	LONG TIME OC RELAY	PHASE OVERCURRENT PROTECTION
50M1-51	GE	IAC66B4A	LONG TIME OC RELAY WITH ONE INSTANTANEOUS TRIP	PHASE OVERCURRENT AND SHORT-CKT PROTECTION
ZERO SPEED SENSOR	BENTLEY NEVADA	NO TYPE NUMBER FOR DETAILS. SEE INSTRUCTION MANUAL	(SEE NOTE 14)	REACTOR COOLANT PUMP MOTOR STARTING PROT
86XA1	GE	I2HEA61B 36	BUS LOCKOUT RELAY	TRIP/PREVENTIVE CLOSING OF ASSOCIATED BREAKERS
51M3	GE	IAC66A53A	LONG TIME DC RELAY	REACTOR COOLANT PUMP BACKUP PROTECTION

\* BUS NUMBER 1, 2, 3 OR 4

\*\* 55 DEVICE HAS BUILT IN TIME DELAY TRIPPING DURING MOTOR STARTING

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1      SEMICATEGORY 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. **E1-0003**

REV. **A**

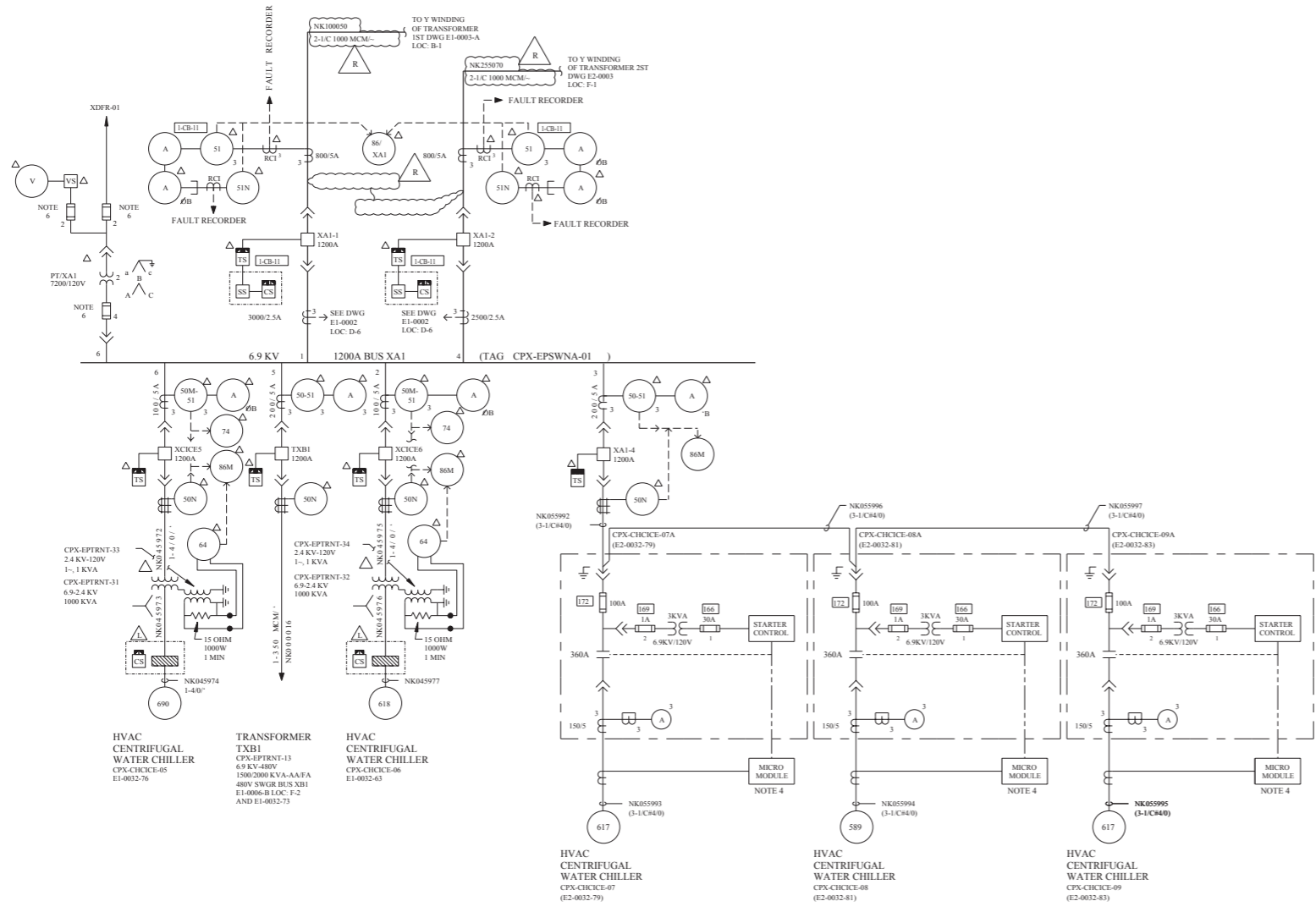
SH. NO. **CP-33**

REV. **CP-33**

REV	DWN	CHK	APP	DATE	REMARKS
28-14	DL	DL	DL	2014	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2014-00022-01-00 PER SK-0003-12-00022-01-00

### FSAR FIGURE 8.3-5

- LEGEND**
- SYMBOLS-**
- RCT REMOTE CURRENT ISOLATOR
  - △ LOCATION
  - 3 QUANTITY (NO NUMBER INDICATES ONE)
  - SS SYNCHRONIZING SWITCH
  - TS PERMISSIVE SWITCH WITH LIGHTS
  - CS CONTROL SWITCH WITH LIGHTS
  - VS VOLTAGE SWITCH
  - LS LOCAL STARTER
  - W WINDOW OR THRU TYPE CURRENT TRANSFORMER (SEE NOTE 1)
  - ⋈ DRAWOUT DISCONNECT FOR BREAKER OR POTENTIAL TRANSFORMER, CABLE DISCONNECT
  - INDICATES SPLICE
- LOCATIONS**
- △ LOCAL NEAR CHILLER
  - △ IN 6.9 KV SWITCHGEAR
- NOTES**
- ALL NEUTRAL OVERCURRENT CT'S ON CABLE FEEDERS ARE W TYPE BYZ WITH 50:5A RATIO.
  - CT'S SHOWN AT MOTOR ARE W GROUND SENSORS, BYZ WITH 50:5A RATIO.
  - QUANTITY, WHERE NOT SHOWN, IS ONE.
  - MICRO MODULES ARE LOCATED IN THEIR RESPECTIVE CHILLER CONTROL PANELS.
  - 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. 51/1A2-1, 51/1A2-2).
  - FOR FUSE INFORMATION SEE THREE LINE DIAGRAM E1-0026-02B.
- REFERENCE DRAWINGS**
- 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)
  - E1-0024-04 FUSE BILL OF MATERIAL
  - E1-0026-01, 01A, 02, 02A AND 02B 6.9 KV THREE LINE DIAGRAM



CPX-EPRNT-33  
2.4 KV-120V  
1-, 1 KVA

CPX-EPRNT-31  
6.9-2.4 KV  
1000 KVA

CPX-EPRNT-34  
2.4 KV-120V  
1-, 1 KVA

CPX-EPRNT-32  
6.9-2.4 KV  
1000 KVA

HVAC CENTRIFUGAL WATER CHILLER  
CPX-CHICE-05  
E1-0032-76

TRANSFORMER  
TXB1  
CPX-EPRNT-13  
6.9 KV-480V  
1500/2000 KVA-AA/FA  
480V SWGR BUS XBI  
E1-0006-B LOC. F-2  
AND E1-0032-73

HVAC CENTRIFUGAL WATER CHILLER  
CPX-CHICE-06  
E1-0032-63

CPX-CHICE-07A  
(E2-0032-79)

CPX-CHICE-08A  
(E2-0032-81)

CPX-CHICE-09A  
(E2-0032-83)

HVAC CENTRIFUGAL WATER CHILLER  
CPX-CHICE-07  
(E2-0032-79)

HVAC CENTRIFUGAL WATER CHILLER  
CPX-CHICE-08  
(E2-0032-81)

HVAC CENTRIFUGAL WATER CHILLER  
CPX-CHICE-09  
(E2-0032-83)

DRAWING	E1-0003	REV	CP-11
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0003			
E1-0003-B			

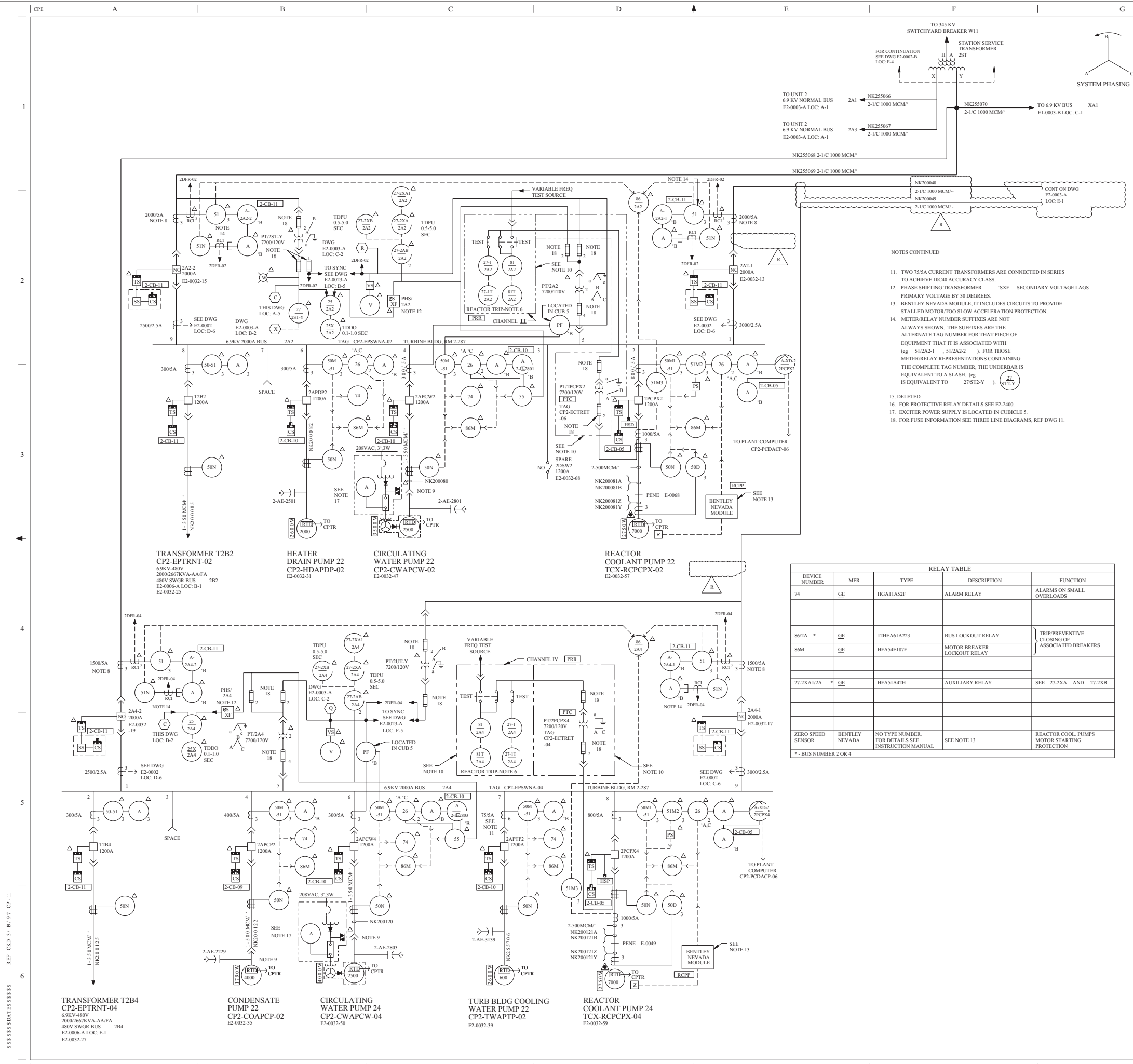
## NON-SAFETY

LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

6.9 KV AUXILIARIES  
ONE LINE DIAGRAM  
NORMAL BUSES

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

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APPV	REMARKS
27	11/11/2014				THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDN 2014-000223-00 PER SR-0009-14-000223-00

**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)
  - ΦS XF - PHASE SHIFTING TRANSFORMER
  - SS - SYNCHRONIZING SWITCH
  - TS - PERMISSIVE SWITCH WITH LIGHTS
  - CS - CONTROL SWITCH WITH LIGHTS
  - PS - PROTECTION SWITCH
  - VZ - VOLTMETER SWITCH
  - SP - SPEED PROBE
  - - WHITE LIGHT
  - - RED LIGHT
  - - AMBER 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 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 E1-0001
- \* - CONTROL ROOM PANEL NUMBER \*
  - △ - IN 6KV SWITCHGEAR
  - △ - AT MOTOR
  - CPTR - INDICATES COMPUTER
  - PRR - CLASS IE PROTECTIVE RELAY RACK 2-CR-11
  - RCPP - FEEDWATER TURBINE AND REACTOR COOLANT PUMP SUPERVISORY PANEL 2-CV-07
  - PTC - POTENTIAL TRANSFORMER CABINET
  - HSP - HOT SHUTDOWN PANEL 2-LV-01
  - - FUSE
  - 2 - NUMBER OF FUSES, NO NUMBER MEANS (1) FUSE

- NOTES CONTINUED**
11. TWO 75/5A CURRENT TRANSFORMERS ARE CONNECTED IN SERIES TO ACHIEVE 100% ACCURACY CLASS.
  12. PHASE SHIFTING TRANSFORMER 'SXF' SECONDARY VOLTAGE LAGS PRIMARY VOLTAGE BY 30 DEGREES.
  13. BENTLEY NEVADA MODULE, IT INCLUDES CIRCUITS TO PROVIDE STALLED MOTOR TOO SLOW ACCELERATION PROTECTION.
  14. 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 (eg 51/2A2-1, 51/2A2-2). FOR THOSE METER/RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE UNDERBAR IS EQUIVALENT TO A SLASH. (eg 27/2XA1/2A IS EQUIVALENT TO 27/2T-Y)
  15. DELETED
  16. FOR PROTECTIVE RELAY DETAILS SEE E2-2400.
  17. EXCITER POWER SUPPLY IS LOCATED IN CUBICLE 5.
  18. FOR FUSE INFORMATION SEE THREE LINE DIAGRAMS, REF DWG 11.

DEVICE NUMBER	MFR	TYPE	DESCRIPTION	FUNCTION
74	GE	HGA11A52F	ALARM RELAY	ALARMS ON SMALL OVERLOADS
86/2A *	GE	12HEA61A223	BUS LOCKOUT RELAY	TRIP/PREVENTIVE CLOSING OF ASSOCIATED BREAKERS
86M	GE	HFA54E187F	MOTOR BREAKER LOCKOUT RELAY	
27-2XA1/2A *	GE	HFA51A42H	AUXILIARY RELAY	SEE 27-2XA AND 27-2XB
ZERO SPEED SENSOR	BENTLEY NEVADA	NO TYPE NUMBER. FOR DETAILS SEE INSTRUCTION MANUAL	SEE NOTE 13	REACTOR COOL PUMPS MOTOR STARTING PROTECTION

\* - BUS NUMBER 2 OR 4

- 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. E1-0001 PLANT ONE DIAGRAM (UNITS 1 AND 2)
  2. E1-0002, 0002A, 0002B MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)
  3. E1-0004, -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. E1-0003, -0003A 6.9KV ONE LINE NORMAL BUSES (UNIT 1)
  7. E2-0004, 0004-A 6.9KV ONE LINE SAFEGUARD BUSES (UNIT 2)
  8. E1-0023, -0023A, -0023B PHASING AND SYNCHRONIZING DIAGRAM (UNIT 1)
  9. E2-0023, 0023-A, 0023B PHASING AND SYNCHRONIZING DIAGRAM (UNIT 2)
  10. E1-0026-01, 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

DWG NO	2323-E2-0003	REV	CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E2-0003			
E2-0003-A			

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

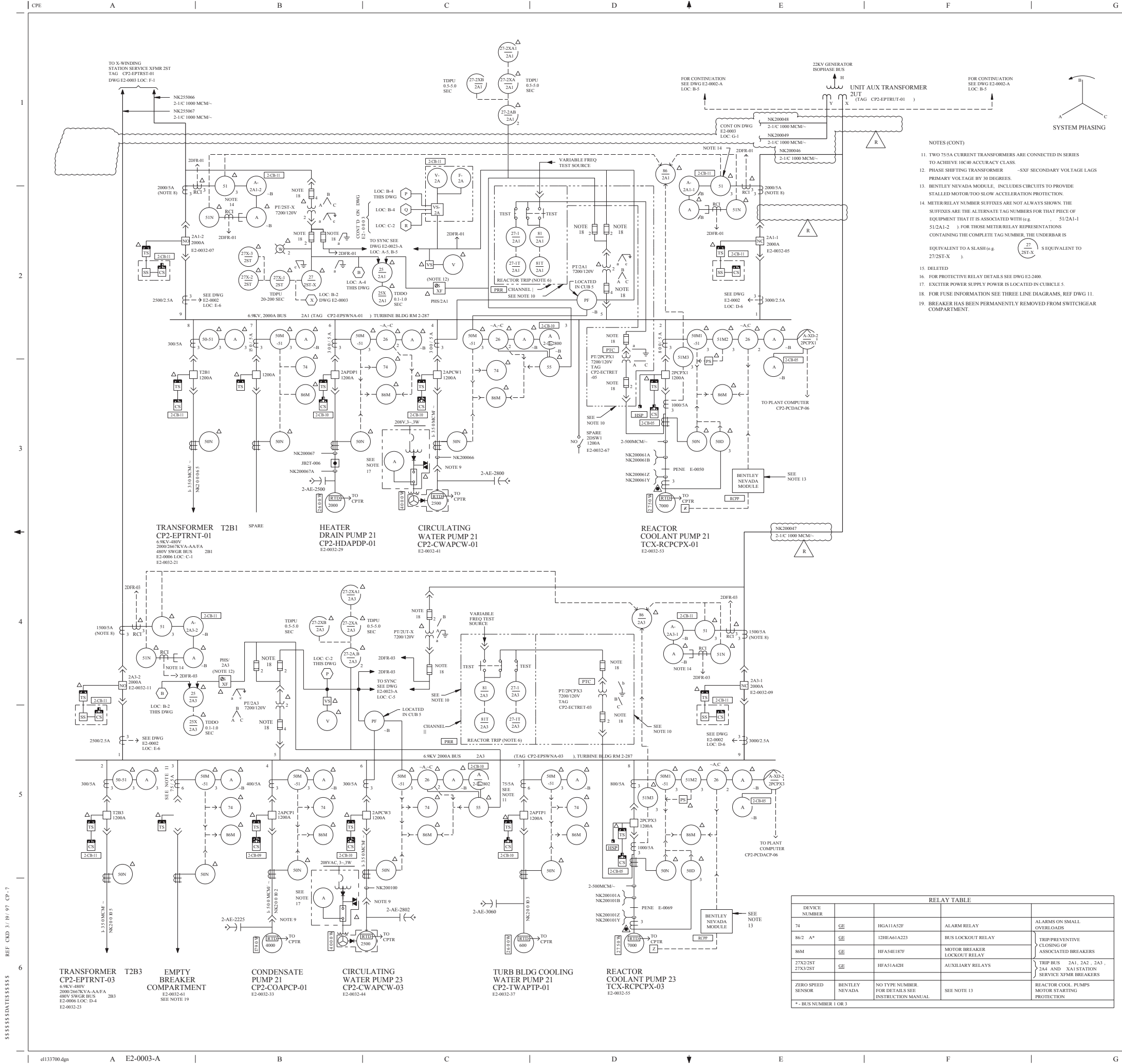
SAFETY CLASS 1	SEISMIC CATEGORY	1
SAFETY CLASS 2	CLASS II	
SAFETY CLASS 3	ASSOCIATED CIRCUITS	

**LUMINANT**  
CPNPP  
GLEN ROSE, TEXAS

**6.9 KV AUXILIARIES**  
ONE LINE DIAGRAM  
NORMAL BUSES

REF: CKD 3 / 8 / 97 / CP-11

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APPV	REMARKS
CP-24	01/11/2004	01/11/2004			THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2014-000222-02-50 PER SK-0010-14-000222-02-50

### FSAR FIGURE 8.3-5

**LEGEND:**

**SYMBOLS:**

- △ LOCATION
- SI - DEVICE NUMBER, SEE RELAY TABLE
- A - AMMETER
- V - VOLTMETER
- PF - POWER FACTOR METER
- 3 QUANTITY (NO NUMBER INDICATES ONE)

**PHASE SHIFTING TRANSFORMER**

- SS - SYNCHRONIZING SWITCH
- TS - PERMISSIVE SWITCH WITH LIGHTS
- CS - CONTROL SWITCH WITH LIGHTS
- PS - PROTECTION SWITCH
- VS - VOLTMETER SWITCH
- Z - SPEED PROBE

**NOTES (CONT)**

- TWO 755A CURRENT TRANSFORMERS ARE CONNECTED IN SERIES TO ACHIEVE 1000 ACCURACY CLASS.
- PHASE SHIFTING TRANSFORMER - SXF SECONDARY VOLTAGE LAGS PRIMARY VOLTAGE BY 30 DEGREES.
- BENTLEY NEVADA MODULE, INCLUDES CIRCUITS TO PROVIDE STALLED MOTOR/TWO SLOW ACCELERATION PROTECTION.
- METER/RELAY NUMBER SUFFIXES ARE NOT ALWAYS SHOWN. THE SUFFIXES ARE THE ALTERNATE TAG NUMBERS FOR THAT PIECE OF EQUIPMENT THAT IT IS ASSOCIATED WITH (e.g. S1/2A1-1 S1/2A1-2 ) FOR THOSE METER/RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE UNDERBAR IS EQUIVALENT TO A SLASH (e.g. 27/2ST-X ) EQUIVALENT TO 27/2ST-X ).
- DELETED.
- FOR PROTECTIVE RELAY DETAILS SEE DWG E2-2400.
- EXCITER POWER SUPPLY POWER IS LOCATED IN CUBICLE 5.
- FOR FUSE INFORMATION SEE THREE LINE DIAGRAMS, REF DWG 11.
- BREAKER HAS BEEN PERMANENTLY REMOVED FROM SWITCHGEAR COMPARTMENT.

**FOR OTHER SYMBOLS SEE DWG E1-0001**

- \* - CONTROL ROOM PANEL NUMBER \*
- △ - IN 6.9KV SWITCHGEAR
- △ - AT MOTOR
- CPTR - INDICATES COMPUTER
- PRR - CLASS 1E PROTECTIVE RELAY RACK
- RCP - FEEDWATER TURBINE AND REACTOR COOLANT PUMP SUPERVISORY PANEL
- PTC - POTENTIAL TRANSFORMER CABINET
- HSP - HOT SHUTDOWN PANEL
- F - FUSE
- 2 - NUMBER OF FUSES-NO NUMBER MEANS (1) FUSE
- - - - - SPLICE

**NOTES**

- SWITCHGEAR CLASS: 500 MVA IC
- ALL NEUTRAL OVERCURRENT CT'S ON CABLE FEEDERS ARE WESTINGHOUSE TYPE BYZ WITH 50:5A RATIO
- CT'S SHOWN AT MOTOR ARE WESTINGHOUSE GROUND SENSORS, BYZ WITH 50:5A RATIO
- QUANTITY, WHERE NOT SHOWN, IS ONE
- TYPE KF UNDERFREQUENCY RELAY HAS A FREQUENCY RANGE OF 55.59-5 HZ
- PER WESTINGHOUSE FUNCTIONAL DIAGRAM DWG 7247D05 SH 5 REACTOR TRIP OCCURS ON SIGNAL FROM TWO OUT OF FOUR BUSES UNDERVOLTAGE OR FREQUENCY.
- CABLE SIZE WHERE NOT SHOWN IS 4/0 AWG.
- THESE CT'S SHALL HAVE RELAYING ACCURACY OF 10C400.
- CABLE QUICK DISCONNECT TYPE CONNECTORS ARE PROVIDED FOR VERTICAL MOTORS AND ARE LOCATED IN THE MOTOR TERMINAL BOX.
- EQUIPMENT AND WIRING ENCLOSED INSIDE DASHED LINE IS CLASS 1E ELECTRICAL EQUIPMENT AND WIRING.

**REFERENCE DRAWINGS**

1. E1-0001	PLANT ONE DIAGRAM (UNITS 1 AND 2)
2. E1-0002, 0002-A, 0002-B	MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1)
3. E1-0004, 0004-A, 0004-B	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. E1-0003, 0003-A	6.9KV ONE LINE NORMAL BUSES (UNIT 1)
7. E2-0004, 0004-A	6.9KV ONE LINE SAFEGUARD BUSES (UNIT 2)
8. E1-0023, 0023-A, 0023-B	PHASING AND SYNCHRONIZING DIAGRAM (UNIT 1)
9. E2-0023, 0023-A, 0023-B	PHASING AND SYNCHRONIZING DIAGRAM (UNIT 2)
10. E1-0026-01, 01A, 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 SEVERE 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

DEVICE NUMBER	MANUFACTURER	DESCRIPTION	NOTES
74	GE	HGA11A52F	ALARM RELAY
862 A*	GE	12HEA61A223	BUS LOCKOUT RELAY
86M	GE	HFAS4E187F	MOTOR BREAKER LOCKOUT RELAY
27X2/2ST 27X3/2ST	GE	HFAS1A42H	AUXILIARY RELAYS
ZERO SPEED SENSOR	BENTLEY NEVADA	NO TYPE NUMBER FOR DETAILS SEE INSTRUCTION MANUAL	SEE NOTE 13

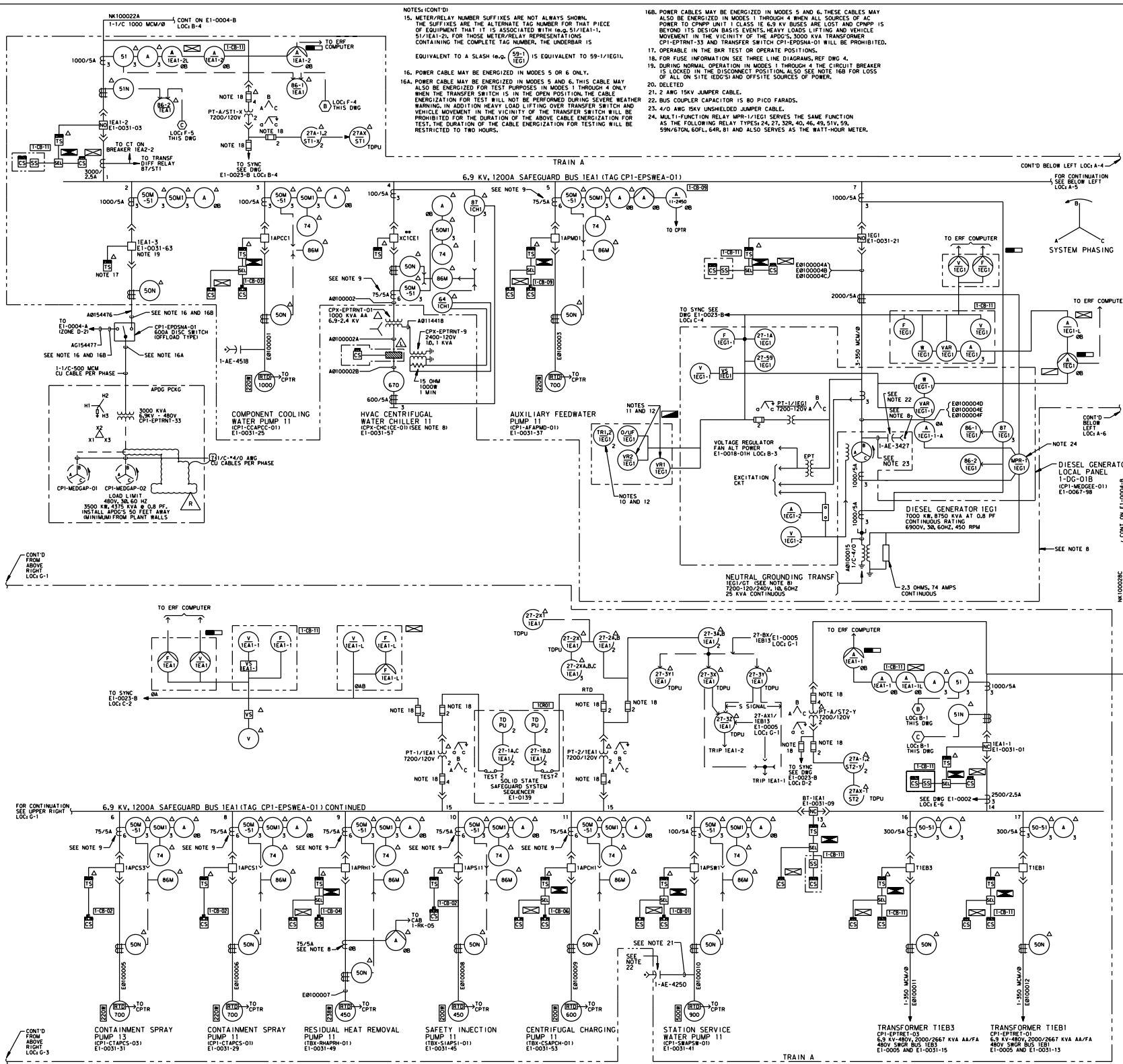
\* - BUS NUMBER 1 OR 3

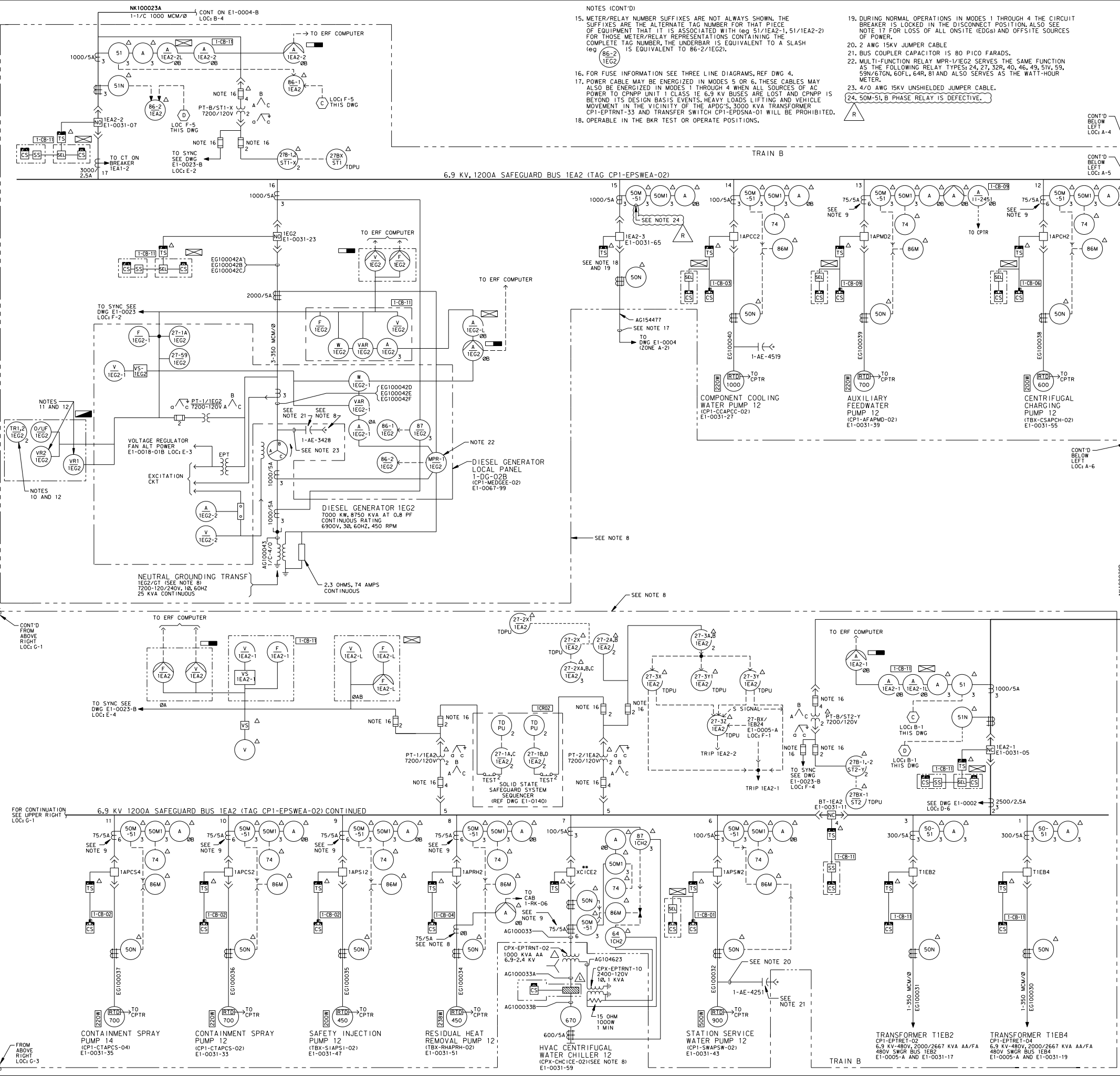
DWG NO: E2-0003 SH NO: A REV: CP-24

< FINAL PRINT >

FSAR FIGURE 8.3-6

- LEGEND:
- LOCATION
  - QUANTITY (NO NUMBER INDICATES ONE)
  - CONTROL SWITCH WITH LIGHTS
  - PERMISSIVE SWITCH WITH LIGHTS
  - GREEN LIGHT □ WHITE LIGHT ● BLUE LIGHT
  - RED LIGHT ■ AMBER LIGHT
  - ⊕ VOLT METER 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 (XDI)
  - LR LINEAR REACTOR RESISTANCE+0.015 OHM HEAVY 164V MAX 310 AMPS
  - ⊕ THYRISTOR SCR
  - ⊖ GOVERNOR RESISTOR BOX
  - ⊕ EXCITER POWER TRANSFORMER 30 153 KVA 6900V 3200VA 3.3V 1E4V
  - ⊖ OTHER SYMBOLS SEE DWG E1-0001
- LOCATIONS:
- CONTROL ROOM PANEL NUMBER #
  - DIESEL GENERATOR-LOCAL GENERATOR PANEL
  - DIESEL GENERATOR-LOCAL ENGINE PANEL
  - NOT SHUTDOWN PANEL (NSP)
  - SHUTDOWN TRANSFER PANEL (STP)
  - ERF TRANSFER PANEL CPI-ICPRLV-16
  - 6900V SWITCHGEAR
  - LOCAL NEAR CHILLER
  - CPTR - INDICATES COMPUTER
  - ⊕ BUS COUPLER CAPACITOR/TEST POINT FOR PARTIAL DISCHARGE MONITORING
- NOTES:
1. SWITCHGEAR CLASS 500 MVA IC ALL BREAKERS ARE 12000A.
  2. GROUND SENSOR (ITE TYPE CS5) TO BE USED WITH GROUND OVERCURRENT RELAYS 50N AND 51N-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 \* 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 IEG1 IS NON-CLASS 1E. POWER CABLING FOR HVAC CENTRIFUGAL WATER CHILLER 11 IS ASSOCIATED CLASS 1E, TRAIN AA, ALSO ON THE LOAD SIDE OF BRK IAPRH1, THE 0B 75/5A CT'S SECONDARY IS NON CLASS 1E. IAPRH1/IEG1.
  9. TEST POINT FOR PARTIAL DISCHARGE MONITORING.
  10. TWO 75/5A CURRENT TRANSFORMERS ARE CONNECTED IN SERIES TO ACHIEVE THE REQUIRED ACCURACY.
  11. TACHOMETER RELAY SET AT APPX. 94.5% SPEED.
  12. UNDERVOLTAGE 3 PHASE RELAY WILMAR MODEL 401-45, RANGE 85-120, SET AT 103.5 190 % 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. E1-0002-A AND E1-0002-B 6.9 KV THREE LINE DIAGRAMS SAFEGUARD SYSTEM SCHEMATICS AND CONNECTION DIAGRAM INDEX
  5. E1-0003-0
- DRAWING: 2323-E1-0004 REV CP-5 HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:
- E1-0004
  - E1-0004-A
  - E1-0004-B





NOTES (CONT'D)

15. 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. 51/1EA2-1, 51/1EA2-2) FOR THOSE METER/RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE UNDERBAR IS EQUIVALENT TO A SLASH (e.g. 86-2/1EG2).

16. FOR FUSE INFORMATION SEE THREE LINE DIAGRAMS, REF DWG. 4.

17. POWER CABLE MAY BE ENERGIZED IN MODES 5 OR 6. THESE CABLES MAY ALSO BE ENERGIZED IN MODES 1 THROUGH 4 WHEN ALL SOURCES OF AC POWER TO CPNPP UNIT 1 CLASS 1E 6.9 KV BUSES ARE LOST AND CPNPP IS BEYOND ITS DESIGN BASIS EVENTS, HEAVY LOADS LIFTING AND VEHICLE MOVEMENT IN THE VICINITY OF THE APDGS, 3000 KVA TRANSFORMER CP1-EPRNT-33 AND TRANSFER SWITCH CP1-EPSWA-01 WILL BE PROHIBITED.

18. OPERABLE IN THE BKR TEST OR OPERATE POSITIONS.

19. DURING NORMAL OPERATIONS IN MODES 1 THROUGH 4 THE CIRCUIT BREAKER IS LOCKED IN THE DISCONNECT POSITION, ALSO SEE NOTE 17 FOR LOSS OF ALL ONSITE (EDGS) AND OFFSITE SOURCES OF POWER.

20. 2 AWG 15KV JUMPER CABLE

21. BUS COUPLER CAPACITOR IS 80 PICO FARADS.

22. MULTI-FUNCTION RELAY MPR-1/IEG2 SERVES THE SAME FUNCTION AS THE FOLLOWING RELAY TYPES: 24, 27, 32R, 40, 46, 49, 51V, 53, 59N/67GN, 60FL, 64R, 81AND ALSO SERVES AS THE WATT-HOUR METER.

23. 4/0 AWG 15KV UNSHIELDED JUMPER CABLE.

24. 50M-51, B PHASE RELAY IS DEFECTIVE.

REV	DATE	CHK'D BY	REMARKS
CP-32	05-29-95	209	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-209-00072-01-00 PER SK-0001-19-000072-01-00.

- FSAR FIGURE 8.3-6
- LEGEND:
- LOCATION
  - 3 → QUANTITY (NO NUMBER INDICATES ONE)
  - CS CONTROL SWITCH WITH LIGHTS
  - TS PERMISSIVE SWITCH WITH LIGHTS
  - GREEN LIGHT □ WHITE LIGHT ■ BLUE LIGHT
  - RED LIGHT ■ AMBER LIGHT
  - VS VOLTMETER SWITCH
  - SS SELECTOR SWITCH
  - SS SYNCHRONIZING SWITCH
  - W WINDOW OR THRU TYPE CURRENT TRANSFORMER, SEE NOTE 2
  - DRAWOUT DISCONNECT FOR BREAKER OR POTENTIAL TRANSFORMER
  - LOCAL STARTER
  - 500W MOTOR SPACE HEATER (500 WATTS)
  - DC SHUNT 400A 50mV
  - TRANSDUCER (XD)
  - LR LINEAR REACTOR RESISTANCE=.0015 OHM HEAVY 164V MAX 310 AMPS
  - THYRISTOR SCR
  - GR GOVERNOR RESISTOR BOX
  - EPT EXCITER POWER TRANSFORMER 3Ø 153 KVA 6900V (3Ø331)-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-ECRPLV-17
  - △ 6900V SWITCHGEAR
  - △ LOCAL NEAR CHILLER
  - △ CPTR INDICATES COMPUTER
  - CIRCUIT BREAKER
  - PARTIAL DISCHARGE COUPLING CAPACITOR/TEST POINT

- NOTES:
- SWITCHGEAR CLASS 500 MVA (C. ALL BREAKERS ARE 1200A.
  - GROUND SENSOR (ITE TYPE GSS) TO BE USED WITH GROUND OVERCURRENT RELAYS 50N AND 51N. 5-50A PRIMARY RANGE.
  - CABLE SIZE, WHERE NOT SHOWN, IS 4/0 AWG.
  - QUANTITY, WHERE NOT SHOWN, IS ONE (1).
  - ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOAD IS PROVIDED BY THE LOAD CIRCUIT BREAKERS, COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKERS, INDICATED BY \*\* NEXT TO THE LOAD CIRCUIT BREAKER, AND THE BREAKER TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL.
  - DELETED
  - DELETED
  - ELECTRICAL EQUIPMENT ENCLOSED INSIDE DASHED LINE IS CLASS 1E EQUIPMENT EXCEPT THE FOLLOWING: GROUNDING TRANSFORMER FOR DC 1EG2 IS NON-CLASS 1E. POWER CABLING FOR HVAC CENTRIFUGAL WATER CHILLER 12 IS ASSOCIATED CLASS 1E. TRAIN BB, ALSO ON THE LOAD SIDE OF BKR 1APRH2, THE ØØ 75/5A CT'S SECONDARY IS NON CLASS 1E. MPR-1/IEG2 TEST POINT FOR PARTIAL DISCHARGE MONITORING.
  - TWO 75/5A CURRENT TRANSFORMERS ARE CONNECTED IN SERIES TO ACHIEVE THE REQUIRED ACCURACY.
  - TACHOMETER RELAY SET AT APP. 94.5% SPEED.
  - UNDERVOLTAGE 3 PHASE RELAY WILMAR MODEL 401-45, RANGE 85-120, SET AT 103.5 (90% RATED) VOLTS.
  - GENERATOR BREAKER CLOSING PERMITTED WHEN VOLTAGE AND SPEED ABOVE THE SET VALUES.
  - FOR RELAY TABLE DATA, SEE DWG E1-0004-B.
  - MOTOR SPACE HEATERS ARE NON-CLASS 1E.

REFERENCE DRAWINGS:

- E1-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2
- E1-0001-A PLANT ONE LINE DIAGRAM UNIT 1 AND COMMON
- E1-0002, E1-0002-A AND E1-0002-B MAIN ONE LINE METER AND RELAY DIAGRAMS
- E1-0027-02, 02A 6.9 KV THREE LINE DIAGRAMS
- 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 SEISMIC CATEGORY I SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT CPNPP GLEN ROSE, TEXAS

6.9 KV AUXILIARIES ONE LINE DIAGRAM SAFEGUARD BUSES

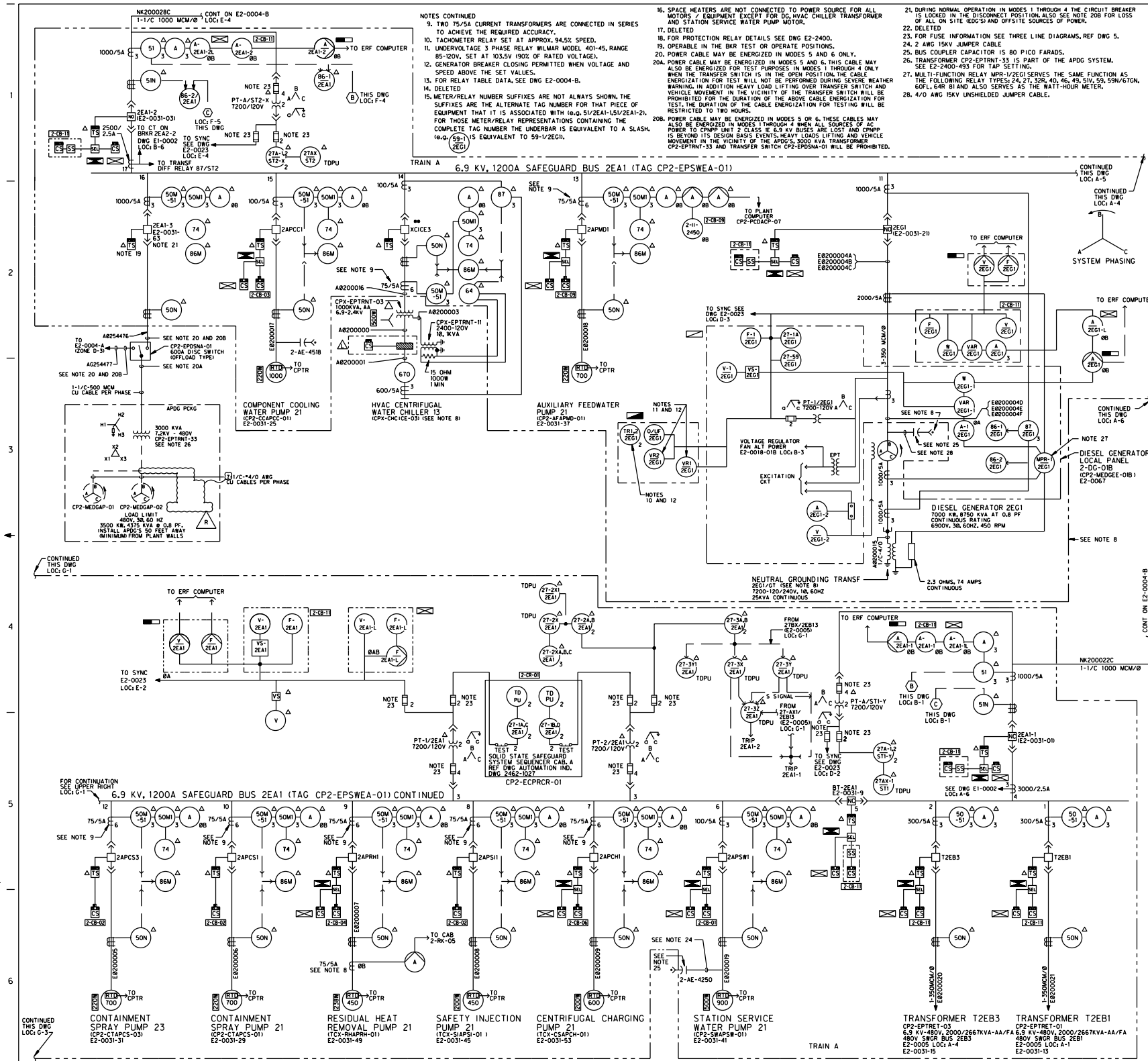
CP-32

REF. DWD 5/24/95 CP-13

el145150.dgn

THIS DRAWING CREATED ELECTRONICALLY





- NOTES CONTINUED
9. TWO 75/5A CURRENT TRANSFORMERS ARE CONNECTED IN SERIES TO ACHIEVE THE REQUIRED ACCURACY.
  10. TACHOMETER RELAY SET AT APPROX. 94.5% SPEED.
  11. UNDERVOLTAGE 3 PHASE RELAY WILLAMR MODEL 401-45, RANGE 85-120V, SET AT 103.5V 190% OF RATED VOLTAGE.
  12. GENERATOR BREAKER CLOSING PERMITTED WHEN VOLTAGE AND SPEED ABOVE THE SET VALUES.
  13. FOR RELAY TABLE DATA, SEE DWG E2-0004-B.
  14. DELETED.
  15. MOTOR/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. 51/2EA1-151/2EA1-2). FOR MOTORS/RELAY IDENTIFICATIONS CONTAINING THE COMPLETE TAG NUMBER THE UNDERBAR IS EQUIVALENT TO A SLASH. (e.g. 51-1/2EA1 IS EQUIVALENT TO 51-1/2EA1).
  16. SPACE HEATERS ARE NOT CONNECTED TO POWER SOURCE FOR ALL MOTORS / EQUIPMENT EXCEPT FOR DG HVAC CHILLER TRANSFORMER AND STATION SERVICE WATER PUMP MOTOR.
  17. DELETED.
  18. FOR PROTECTION RELAY DETAILS SEE DWG E2-2400.
  19. OPERABLE IN THE BRN TEST OR OPERATE POSITIONS.
  20. POWER CABLE MAY BE ENERGIZED IN MODES 5 AND 6 ONLY.
  - 20A. POWER CABLE MAY BE ENERGIZED IN MODES 5 AND 6. THIS CABLE MAY ALSO BE ENERGIZED FOR TEST PURPOSES IN MODES 1 THROUGH 4 ONLY WHEN THE TRANSFER SWITCH IS IN THE OPEN POSITION. THE CABLE ENERGIZATION FOR TEST WILL NOT BE PERFORMED DURING SEVERE WEATHER WARNING. IN ADDITION HEAVY LOAD LIFTING OVER TRANSFER SWITCH AND VEHICLE MOVEMENT IN THE VICINITY OF THE TRANSFER SWITCH WILL BE PROHIBITED FOR THE DURATION OF THE ABOVE CABLE ENERGIZATION FOR TEST. THE DURATION OF THE CABLE ENERGIZATION FOR TESTING WILL BE RESTRICTED TO TWO HOURS.
  - 20B. POWER CABLES MAY BE ENERGIZED IN MODES 1 THROUGH 4 WHEN ALL SOURCES OF AC POWER ARE SHUT OFF. CLASS B 6.9 KV BUSES ARE NOT TO CHOMP IS BEYOND ITS DESIGN BASIS EVENTS. HEAVY LOADS LIFTING AND VEHICLE MOVEMENT IN THE VICINITY OF THE 3000 KVA TRANSFORMER CP2-EPTPT-33 AND TRANSFER SWITCH CP2-EPTRM-10 WILL BE PROHIBITED.
  21. DURING NORMAL OPERATION IN MODES 1 THROUGH 4 THE CIRCUIT BREAKER IS LOCKED IN THE DISCONNECT POSITION, ALSO SEE NOTE 20B FOR LOSS OF ALL ON SITE (E0051) AND OFF-SITE SOURCES OF POWER.
  22. DELETED.
  23. FOR FUSE INFORMATION SEE THREE LINE DIAGRAMS, REF DWG 5.
  24. 2 AWG 15KV JUMPER CABLE.
  25. BUS COUPLER CAPACITOR IS 80 PICO FARADS.
  26. TRANSFORMER CP2-EPTPT-33 IS PART OF THE APDG SYSTEM. SEE E2-2400-493 FOR TAP SETTING.
  27. MULTI-FUNCTION RELAY MPR-1/2CGI SERVES THE SAME FUNCTION AS THE FOLLOWING RELAY TYPES: 24, 27, 32R, 40, 46, 49, 51V, 55, 59M/67CN, 60FL, 64R AND ALSO SERVES AS THE WATT-HOUR METER.
  28. 4/0 AWG 15KV UNSHEATHED JUMPER CABLE.

REV	DATE	DESCRIPTION	REVISIONS
1	12/14/97	THIS DRAWING REVISION TO INCORPORATE DESIGN CHANGE FOR 2000-2000-01-00 PER SA-0003-9-000025-01-00.	

FSAR FIGURE 8.3-6

- LEGEND:
- → LOCATION
  - → QUANTITY (NO NUMBER INDICATES ONE)
  - → CONTROL SWITCH WITH LIGHTS
  - → PERMISSIVE SWITCH WITH LIGHTS
  - → GREEN LIGHT □ → WHITE LIGHT ■ → BLUE LIGHT
  - → RED LIGHT □ → AMBER LIGHT
  - V → VOLT-METER SWITCH
  - → SELECTOR SWITCH
  - → SYNCHRONIZING SWITCH
  - RTM → RUNNING TIME METER
  - → WINDOW OR THRU TYPE CURRENT TRANSFORMER, SEE NOTE 2
  - → DRAWOUT DISCONNECT FOR BREAKER OR POTENTIAL TRANSFORMER
  - → LOCAL STARTER
  - → MOTOR SPACE HEATER (WATTS) KW = KILOWATTS, SEE NOTE
  - → DC SHUNT, 400A, 50mv
  - → TRANSDUCER (X/D)
  - LR → LINEAR REACTOR RESISTANCE 0.015 OHMS HEAVY, 164V MAX, 310 AMP
  - ⚡ → THYRISTOR (SCR)
  - → GOVERNOR RESISTOR BOX
  - EPT → EXCITER POWER TRANSFORMER 30, 15KV A 6900V (4398311-284.3V 164V)
  - → DIESEL GENERATOR LOCAL GENERATOR PANEL
  - → DIESEL GENERATOR-LOCAL ENGINE PANEL
  - → DIESEL SHUTDOWN PANEL (HSD)
  - → SHUTDOWN TRANSFER PANEL (STP)
  - → ERF TRANSDUCER PANEL CP2-ECPRLY-16
  - → ERF TRANSDUCER PANEL CP2-ECPRLY-17
  - → 6900V SWITCHGEAR
  - → LOCAL NEAR CHILLER
  - CPTR → INDICATES COMPUTER
  - IE → 16A
  - → FUSE
  - 6A → FUSE RATING
  - 2 → NUMBER OF FUSES, NO NUMBER MEANS (1) FUSE
  - → BUS COUPLER CAPACITOR/TEST POINT FOR PARTIAL DISCHARGE MONITORING

- NOTES:
1. SWITCHGEAR CLASS 500V/VA IC ALL BREAKERS ARE 1000A.
  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 IE BUS AND NON-CLASS IE LOAD IS PROVIDED BY THE LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKER, 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 IE ELECTRICAL EQUIPMENT EXCEPT THE FOLLOWING: GROUNDING TRANSFORMER FOR DG, 2CGI IS NON-CLASS IE. POWER CABLING FOR HVAC CENTRIFUGAL WATER CHILLER 13 IS ASSOCIATED CLASS IE TRAIN AA. ALSO ON THE LOAD SIDE OF BREAKER 2APRH, THE 0B 75/5A CT'S SECONDARY IS NON-CLASS IE. TEST POINT FOR PARTIAL DISCHARGE MONITORING. MPR-1/2CGI.

- REFERENCE DRAWINGS:
1. E1-0001 PLANT ONE LINE DIAGRAM (UNIT 1 AND 2)
  2. E1-0002 MAIN ONE LINE METER AND RELAY (DIAGRAM UNIT 1 SAFEGUARD)
  3. E2-0004-A AND E2-0004-B 6.9 KV ONE LINE BUS (UNIT 2)
  4. E2-0005 480V ONE LINE SAFEGUARD BUS (UNIT 2)
  5. E2-0027-01 AND E2-0027-01A (6.9 KV THREE LINE DIAGRAM - SAFEGUARD BUSES (UNIT 2))
  6. E2-0002 AND E2-0002-A (MAIN ONE LINE METER AND RELAY (DIAGRAM UNIT 2))
  7. E2-0003 PHASING AND SYNCHRONIZING DIAGRAM (UNIT 2)
  8. E2-0031 AND E2-0067 (SERIES) SCHEMATIC DRAWINGS
  9. 2462-1027 AUTOMATIC IND (SOLID STATE SEQUENCER)
  10. E2-2400-301 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 CLASS 4  
 SAFETY CLASS 5  
 SAFETY CLASS 6  
 SAFETY CLASS 7  
 SAFETY CLASS 8  
 SAFETY CLASS 9  
 SAFETY CLASS 10  
 SAFETY CLASS 11  
 SAFETY CLASS 12  
 SAFETY CLASS 13  
 SAFETY CLASS 14  
 SAFETY CLASS 15  
 SAFETY CLASS 16  
 SAFETY CLASS 17  
 SAFETY CLASS 18  
 SAFETY CLASS 19  
 SAFETY CLASS 20  
 SAFETY CLASS 21  
 SAFETY CLASS 22  
 SAFETY CLASS 23  
 SAFETY CLASS 24  
 SAFETY CLASS 25  
 SAFETY CLASS 26  
 SAFETY CLASS 27  
 SAFETY CLASS 28  
 SAFETY CLASS 29  
 SAFETY CLASS 30  
 SAFETY CLASS 31  
 SAFETY CLASS 32  
 SAFETY CLASS 33  
 SAFETY CLASS 34  
 SAFETY CLASS 35  
 SAFETY CLASS 36  
 SAFETY CLASS 37  
 SAFETY CLASS 38  
 SAFETY CLASS 39  
 SAFETY CLASS 40  
 SAFETY CLASS 41  
 SAFETY CLASS 42  
 SAFETY CLASS 43  
 SAFETY CLASS 44  
 SAFETY CLASS 45  
 SAFETY CLASS 46  
 SAFETY CLASS 47  
 SAFETY CLASS 48  
 SAFETY CLASS 49  
 SAFETY CLASS 50  
 SAFETY CLASS 51  
 SAFETY CLASS 52  
 SAFETY CLASS 53  
 SAFETY CLASS 54  
 SAFETY CLASS 55  
 SAFETY CLASS 56  
 SAFETY CLASS 57  
 SAFETY CLASS 58  
 SAFETY CLASS 59  
 SAFETY CLASS 60  
 SAFETY CLASS 61  
 SAFETY CLASS 62  
 SAFETY CLASS 63  
 SAFETY CLASS 64  
 SAFETY CLASS 65  
 SAFETY CLASS 66  
 SAFETY CLASS 67  
 SAFETY CLASS 68  
 SAFETY CLASS 69  
 SAFETY CLASS 70  
 SAFETY CLASS 71  
 SAFETY CLASS 72  
 SAFETY CLASS 73  
 SAFETY CLASS 74  
 SAFETY CLASS 75  
 SAFETY CLASS 76  
 SAFETY CLASS 77  
 SAFETY CLASS 78  
 SAFETY CLASS 79  
 SAFETY CLASS 80  
 SAFETY CLASS 81  
 SAFETY CLASS 82  
 SAFETY CLASS 83  
 SAFETY CLASS 84  
 SAFETY CLASS 85  
 SAFETY CLASS 86  
 SAFETY CLASS 87  
 SAFETY CLASS 88  
 SAFETY CLASS 89  
 SAFETY CLASS 90  
 SAFETY CLASS 91  
 SAFETY CLASS 92  
 SAFETY CLASS 93  
 SAFETY CLASS 94  
 SAFETY CLASS 95  
 SAFETY CLASS 96  
 SAFETY CLASS 97  
 SAFETY CLASS 98  
 SAFETY CLASS 99  
 SAFETY CLASS 100

LUMINANT  
 CNPP  
 GLEN ROSE, TEXAS

6.9 KV AUXILIARIES  
 ONE LINE DIAGRAM  
 SAFEGUARD BUSES

DWG NO: E2-0004  
 SHEET NO: CP-32

ref ckd 12/14/97 cp-12

NOTES CONTINUED

- 9. TWO 75/5A CURRENT TRANSFORMERS ARE CONNECTED IN SERIES TO ACHIEVE THE REQUIRED ACCURACY.
- 10. TACHOMETER RELAY SET AT APPROX. 94.5% SPEED.
- 11. UNDERVOLTAGE 3 PHASE RELAY WILLMAR MODEL 401-45, RANGE 85-120V. SET AT 103.5V (90% OF RATED VOLTAGE).
- 12. GENERATOR BREAKER CLOSING PERMITTED WHEN VOLTAGE AND SPEED ABOVE THE SET VALUES.
- 13. FOR RELAY TABLE DATA, SEE DWG E2-0004-B.
- 14. DELETED.
- 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. 51/2EA2-1, 51/2EA2-2). FOR THOSE METER/RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER THE UNDERBAR IS EQUIVALENT TO A SLASH (E.G. 51/2EA2-1 IS EQUIVALENT TO 51-1/2EG2).

- 16. SPACE HEATERS ARE NOT CONNECTED TO POWER SOURCE FOR ALL MOTORS/EQUIPMENT EXCEPT FOR DC, CHILLER TRANSFORMER AND STATION SERVICE WATER PUMP MOTOR.
- 17. DELETED.
- 18. FOR PROTECTION RELAY DETAILS SEE DWG E2-2400.
- 19. OPERABLE IN THE BKR TEST OR OPERATE POSITIONS.
- 20. POWER CABLE MAY BE ENERGIZED IN MODES 5 OR 6. THESE CABLES MAY ALSO BE ENERGIZED IN MODES 1 THROUGH 4 WHEN ALL SOURCES OF AC POWER TO CPNPP UNIT 2 CLASS 1E 6.9 KV BUSES ARE LOST AND CPNPP IS BEYOND ITS DESIGN BASIS EVENTS. HEAVY LOADS LIFTING AND VEHICLE MOVEMENT IN THE VICINITY OF THE APD/S, 3000 KVA TRANSFORMER CP2-EPRINT-33 AND TRANSFER SWITCH CP2-EPNSA-01 WILL BE PROHIBITED.

- 21. DURING NORMAL OPERATIONS IN MODES 1 THROUGH 4 THE CIRCUIT BREAKER IS LOCKED IN THE DISCONNECT POSITION. ALSO SEE NOTE 20 FOR LOSS OF ALL ONSITE (EDG)S AND OFFSITE SOURCES OF POWER.
- 22. FOR FUSE INFORMATION SEE THREE LINE DIAGRAMS, REF DWG 5.
- 23. 2 AWG 15KV JUMPER CABLE.
- 24. BUS COUPLER CAPACITOR IS 80 PICO FARADS.
- 25. 40 AWG 15KV UNSHIELDED JUMPER CABLE.
- 26. MULTI-FUNCTION RELAY MPR-1/2EG2 SERVES THE SAME FUNCTION AS THE FOLLOWING RELAY TYPES: 24, 27, 32R, 40, 46, 49, 51V, 59, 59N/67GN, 60FL, 64R, 81 AND ALSO SERVES AS THE WATT-HOUR METER.

REV	DATE	CHK	APP	REMARKS
1	2015	2015	2015	THIS DRAWING REVISED TO INCORPORATE ALCR-2015-00037.1 TO EDITORIALY CORRECT CONDUIT NUMBER FROM EG200042E TO EG200042C.

### FSAR FIGURE 8.3-6

- LEGEND:
- LOCATION
  - QUANTITY (NO NUMBER INDICATES ONE)
  - CONTROL SWITCH WITH LIGHTS
  - PERMISSIVE SWITCH WITH LIGHTS
  - GREEN LIGHT □ WHITE LIGHT □ BLUE LIGHT
  - RED LIGHT □ 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)
  - LR - LINEAR REACTOR RESISTANCE=0015 OHMS
  - W - HEAVY, 164V MAX, 310 AMPS
  - W - THYRISTOR (SCR)
  - GR - GOVERNOR RESISTOR BOX
  - EPT - EXCITER POWER TRANSFORMER 3-1, 153KV A 6900V (3983Y)-284.3V (164Y) (FOR OTHER SYMBOLS SEE DWG E1-0001)
  - D - DIESEL GENERATOR-LOCAL ENGINE PANEL
  - D - DIESEL GENERATOR-LOCAL GENERATOR PANEL
  - HSD - HOT SHUTDOWN PANEL (HSD)
  - STP - SHUTDOWN TRANSFER PANEL (STP)
  - ERF - ERF TRANSDUCER PANEL CP2-ECRPLV-16
  - ERF - ERF TRANSDUCER PANEL CP2-ECRPLV-17
  - △ - 6900V SWITCHGEAR
  - △ - LOCAL NEAR CHILLER
  - CPTR - INDICATES COMPUTER
  - IE-6A - FUSE
  - 2 - IE-6A-FUSE RATING
  - 2 - NUMBER OF FUSES, NO NUMBER MEANS (1) FUSE
  - W - BUS COUPLER CAPACITOR/TEST POINT FOR PARTIAL DISCHARGE MONITORING

- NOTES:
- SWITCHGEAR CLASS 500MVA IC ALL BREAKERS ARE 1200A.
  - GROUND SENSORS TO BE USED WITH GROUND OVERCURRENT (ITE TYPE GS-5, 5-50A) RELAYS 50N AND 51N.
  - CABLE SIZE, WHERE NOT SHOWN, IS 40 AWG.
  - QUANTITY, WHERE NOT SHOWN, IS ONE (1).
  - 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.
  - DELETED.
  - DELETED.
  - EQUIPMENT ENCLOSED INSIDE DASHED LINE IS CLASS 1E ELECTRICAL EQUIPMENT EXCEPT THE FOLLOWING: GROUNDING TRANSFORMER FOR 2EG2 IS 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. MPR-1/2EG2.

- REFERENCE DRAWINGS:
- E1-0001 PLANT ONE LINE DIAGRAM (UNIT 1 AND 2)
  - E1-0002, E1-0002-A AND E1-0002-B MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 1 SAFEGUARD)
  - E2-0000, E2-0005 AND E2-0005-A 6.9 KV ONE LINE SAFEGUARD BUS (UNIT 2) 480V ONE LINE SAFEGUARD BUS (UNIT 2)
  - E2-0005-A 6.9 KV THREE LINE DIAGRAM- SAFEGUARD BUSES (UNIT 2)
  - E2-0027-02 AND E2-0027-04 MAIN ONE LINE METER AND RELAY DIAGRAM (UNIT 2)
  - E2-0002 AND E2-0002-A PHASING AND SYNCHRONIZING DIAGRAM (UNIT 2)
  - E2-0023 (SERIES)
  - E2-0031 AND E2-0067 (SERIES)
  - 2462-1027 AUTOMATIC IND (SOLID STATE SEQUENCER)
  - E2-2400-301 PROTECTIVE DEVICE SETTING SYSTEM INDEX

DRAWING NO.	2323-E2-0004	REV	CP-1
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E2-0004			
E2-0004-A			
E2-0004-B			

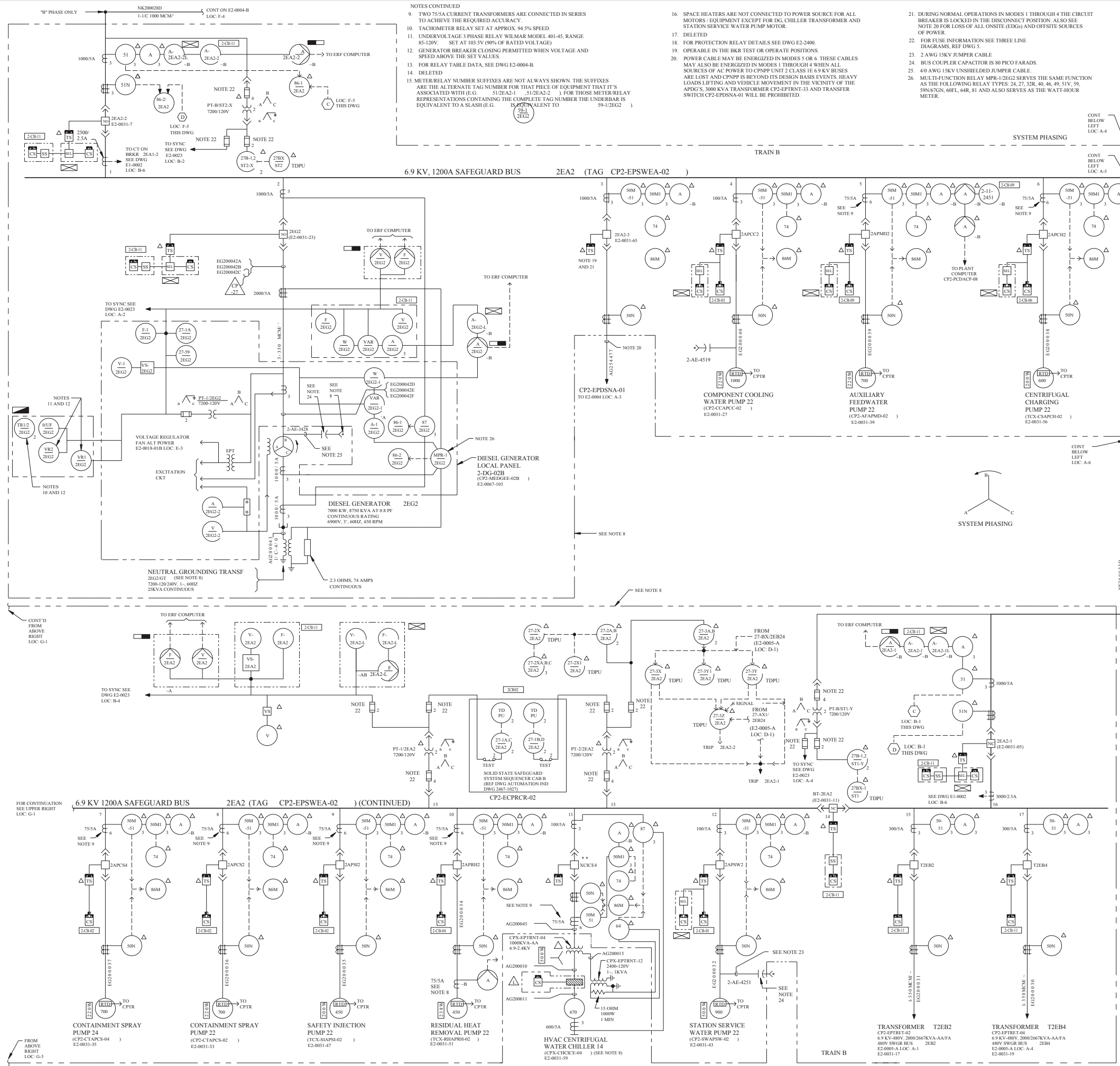
### CLASS I

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

LUMINANT  
 CPNPP  
 GLEN ROSE, TEXAS

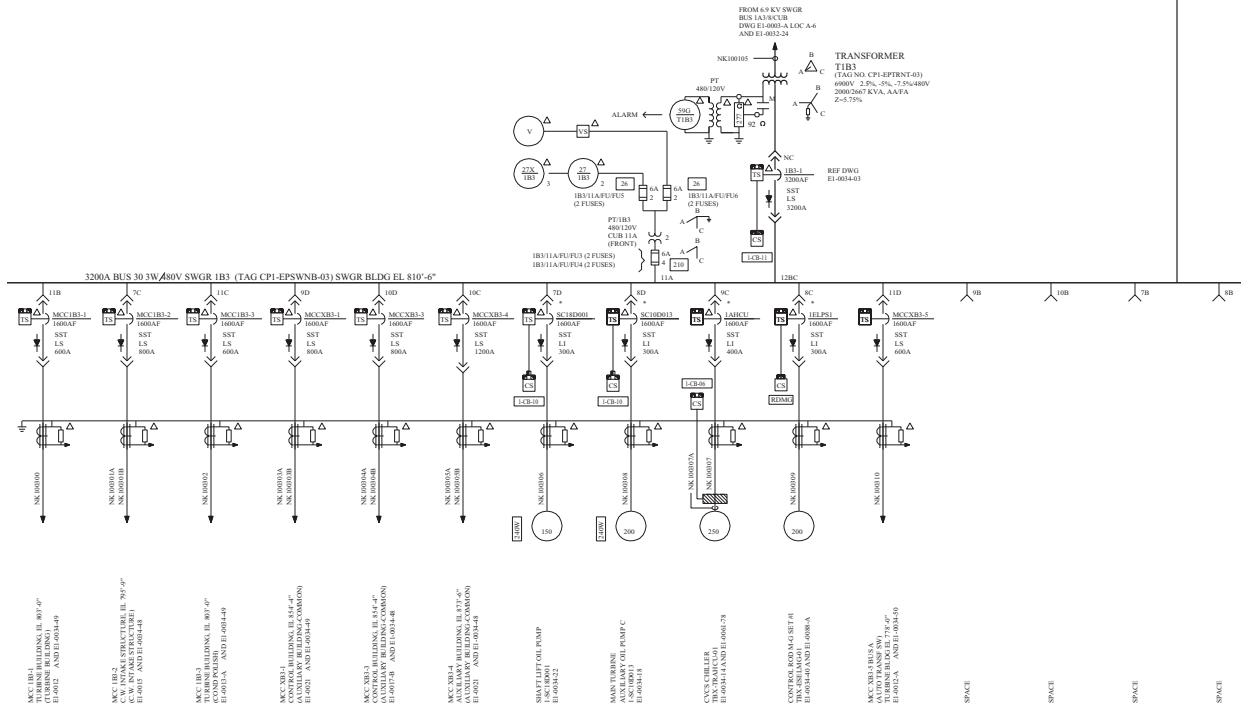
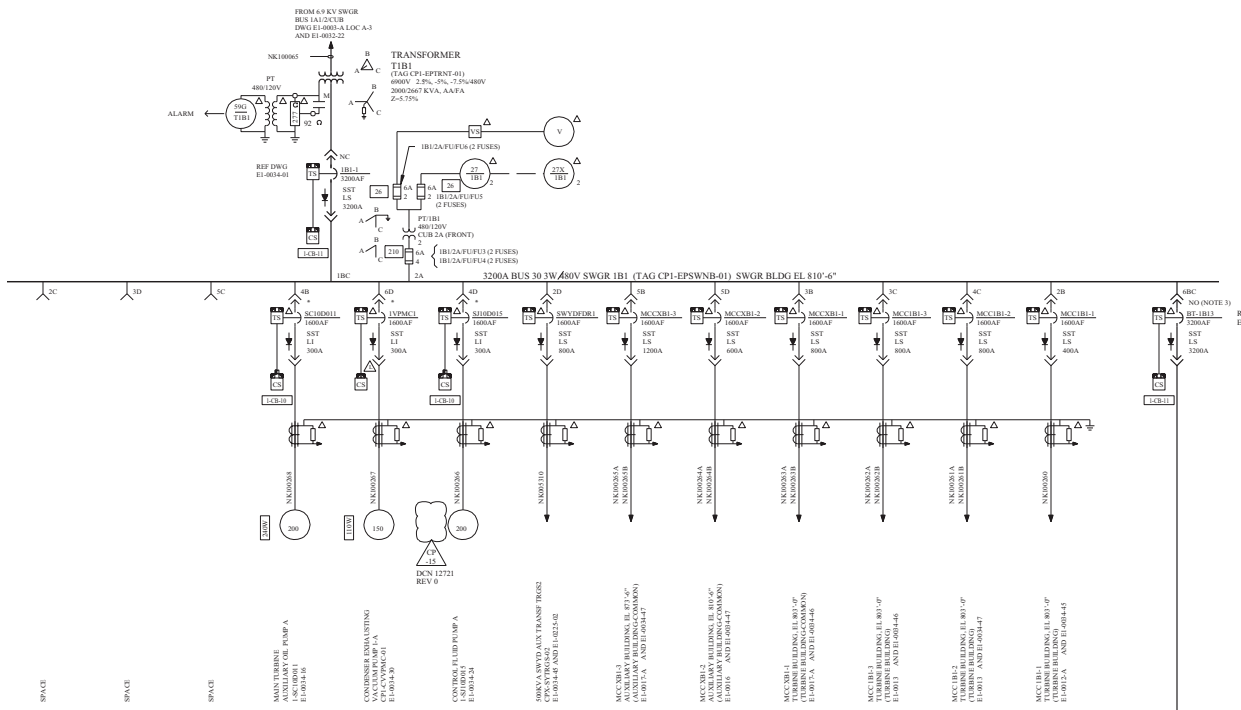
6.9 KV AUXILIARIES  
 ONE LINE DIAGRAM  
 SAFEGUARD BUSES

DWG NO.	E2-0004	SHEET NO.	A	REV.	CP-27
---------	---------	-----------	---	------	-------



THIS DRAWING CREATED ELECTRONICALLY

< FINAL PRINT >



FSAR FIGURE 8.3-7

- LEGEND
- SYMBOLS
- DRAWOUT BREAKER DISCONNECT
  - AIR CIRCUIT BREAKER, STORED ENERGY
  - ELECTRICALLY OPERATED, DRAWOUT TYPE
  - SSET - SOLID STATE TRIP
  - L1 - LONG TIME, SHORT TIME
  - L2 - LONG TIME, INSTANTANEOUS
  - LOCATION
  - QUANTITY (NO NUMBER INDICATES ONE)
- CONTROL SWITCH WITH LIGHTS
- CLOSE TRIP PUSHBUTTONS WITH LIGHTS
  - GREEN LIGHT
  - WHITE LIGHT
  - RED LIGHT
  - AMBER LIGHT
- VOLTMETER SELECTOR SWITCH
- LOCAL STARTER
- MOTOR SPACE HEATER WITH "W" WATT RATING
- WINDOW TYPE C.T. TYPE BV/SZ 5 AMP RATIO RESISTOR 1/2 WATT TO GRID PULSE DETECTION SCHEM, REF DWG 4
- 277 OHM GROUNDING RESISTOR TAPPED AT 92
- M - CONTACT OF PULSING CONTACTOR
- V - VOLTMETER
- SEE NOTE 2

LOCATIONS

  - ROD DRIVE M.G. SET CONTROL PANEL
  - 480V SWITCHGEAR
  - CONTROL ROOM PANEL NUMBER "X"
  - LOCAL

RELAYS

  - UNDER VOLTAGE "G" TYPE NOV11A11A OR EQUAL
  - 27X - TIME DELAY PICK-UP AUX RELAY 0.1-1.0 SEC AGASTAT TYPE 7012 PA
  - 89G - OVERVOLTAGE, 110VPE CV-K-67 VOLTS RANGE
  - FUSE B/M ITEM NUMBER, REF DWG 5

- NOTES
- ALL MOTOR AND FEEDER RATINGS ARE GIVEN IN HP UNLESS OTHERWISE NOTED.
  - FEEDER BREAKERS MARKED WITH \* ARE TRIPPED ON BUS UNDERVOLTAGE 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.
  - 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. V1B1) FOR THOSE METER/RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER. THE "UNDERBAR" IS EQUIVALENT TO A "SLASH" (e.g. IS EL10010/27) B1).
  - MANUAL CLOSE INTERLOCK SCREWS ARE REMOVED TO ALLOW LOCAL OPERATION OF 480V SWITCHGEAR BREAKERS.
  - DELETED
- DCN 12721 REV 0

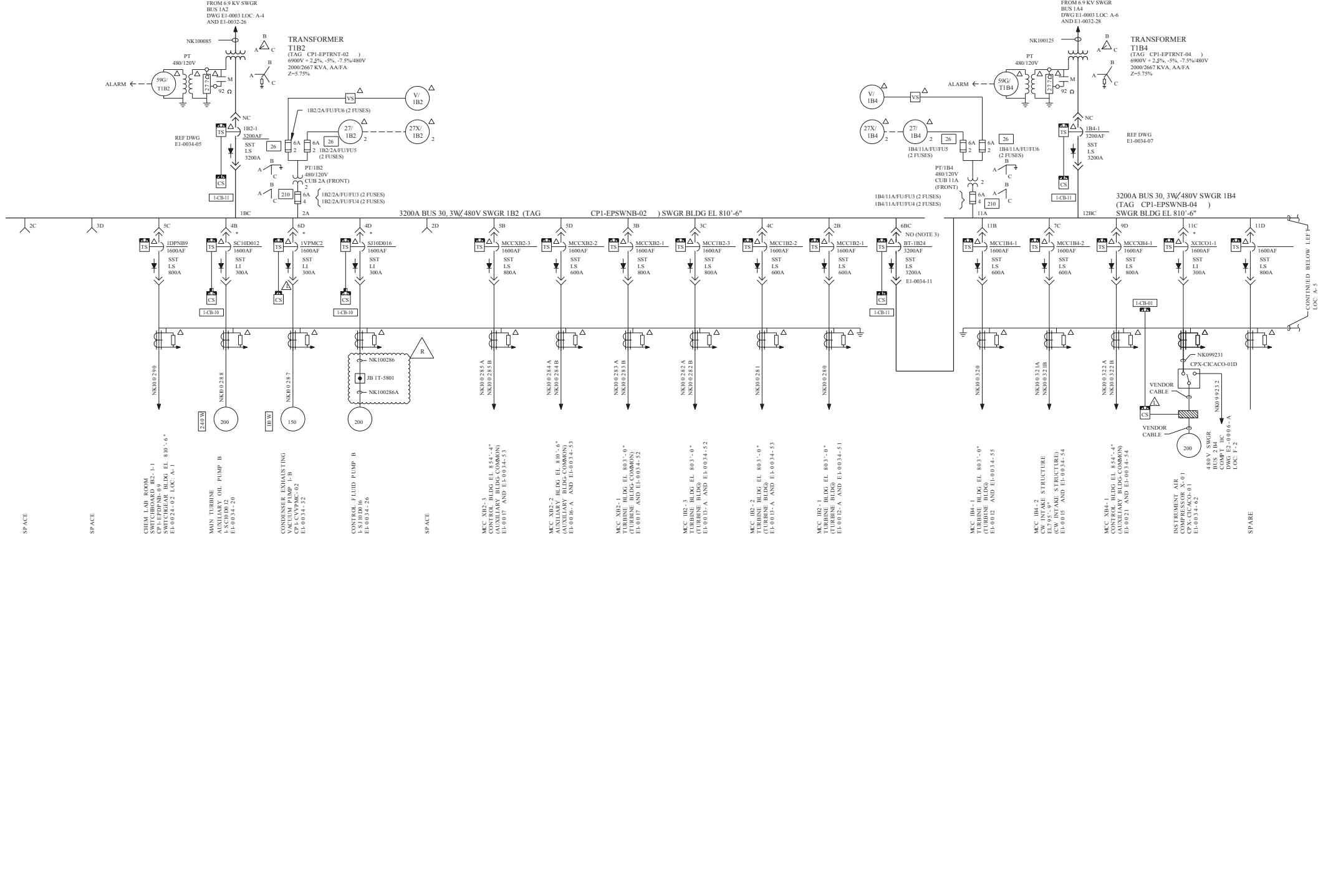
- REFERENCE DRAWINGS
- EI-0001 PLANT ONE-LINE DIAGRAM UNITS 1 AND 2
  - EI-0001-A PLANT ONE-LINE DIAGRAM UNITS 1 AND COMMON
  - EI-0004-0 NORMAL 480V WIRE SCHEMATIC AND CONNECTION DIAGRAM INDEX
  - 144270-0 AND 144270-3 BUS 1E2 AND 1H4 ONE LINE AND SCHEMATIC DIAGRAMS
  - EI-0024-04 FUSE BILL OF MATERIAL

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

NON-SAFETY

TXU ELECTRIC  
CPSE  
GLEN ROSE, TEXAS

480V AUXILIARIES  
ONE LINE DIAGRAM  
NORMAL BUSES



REV	DWG	CHKD	APVD	REMARKS
CP-27	2012	2012		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2012-00078-01-00 PER SK-00012-00078-01-00

### 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
- LOCATION
- QUANTITY (NO NUMBER INDICATES ONE)
- CONTROL SWITCH WITH LIGHTS
- CLOSE-TRIP PUSH BUTTONS WITH LIGHTS
- GREEN LIGHT
- WHITE LIGHT
- RED LIGHT
- AMBER LIGHT
- VOLTMETER SELECTOR SWITCH
- MOTOR SPACE HEATER WITH X WATT RATING
- WINDOW TYPE CT
- RESISTOR 1 Ω, 5 WATT TO GRD PULSE DETECTION SCHEME, REF DWGS 4 AND 6.
- 27 Ω GROUNDING RESISTOR TAPPED AT 92
- M - CONTACT OF PULSING CONTACTOR
- VOLTMETER
- SEE NOTE 2
- LOCAL STARTER
- INDICATING LIGHTS

**LOCATIONS**

- ROD DRIVE MG SET CONTROL PANEL
- 480V SWITCHGEAR
- CONTROL ROOM PANEL NUMBER X
- LOCAL

**RELAYS**

- 27 - UNDER VOLTAGE GE TYPE NGV13A11A OR EQUAL
- 27X - TIME DELAY PICK-UP AUX RELAY 0.1-1.0 SEC AGASTAT TYPE 7012 PA.
- 59G - OVERVOLTAGE, TYPE CV-8, 67 VOLTS RANGE.

- FUSE B/M ITEM NUMBER REF DWG 8

- INDICATES SPLICE PER 2323-ES-100

**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.
- MANUAL CLOSE INTERLOCK SCREWS ARE REMOVED TO ALLOW LOCAL OPERATION OF 480V SWITCHGEAR BREAKERS.
- DELETED

**REFERENCE DRAWINGS**

- E1-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2
- E1-0001-A PLANT ONE LINE DIAGRAM UNIT 1 AND COMMON
- E1-0034-0 NORMAL 480V SWGR BKR SCHEMATIC AND CONNECTION DIAGRAM INDEX
- 1442F02 BUS 1B2 AND 1B4 ONE LINE DIAGRAM SCHEMATIC DIAGRAM
- 1442F03 BUS 1B1 ONE LINE DIAGRAM SCHEMATIC DIAGRAM
- 9284D85 BUS XBI ONE LINE DIAGRAM
- 14330-B1, D2, D3 AND D4 BUS XBI ADDITION, POWELL DRAWINGS
- E1-0024-04 FUSE BILL OF MATERIAL

DRAWING	E1-0006-A	REV	CP-8
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0006-A			
E1-0006-B			
DRAWING	2323-E1-0006	REV	CP-5
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0006			
E1-0006-A			

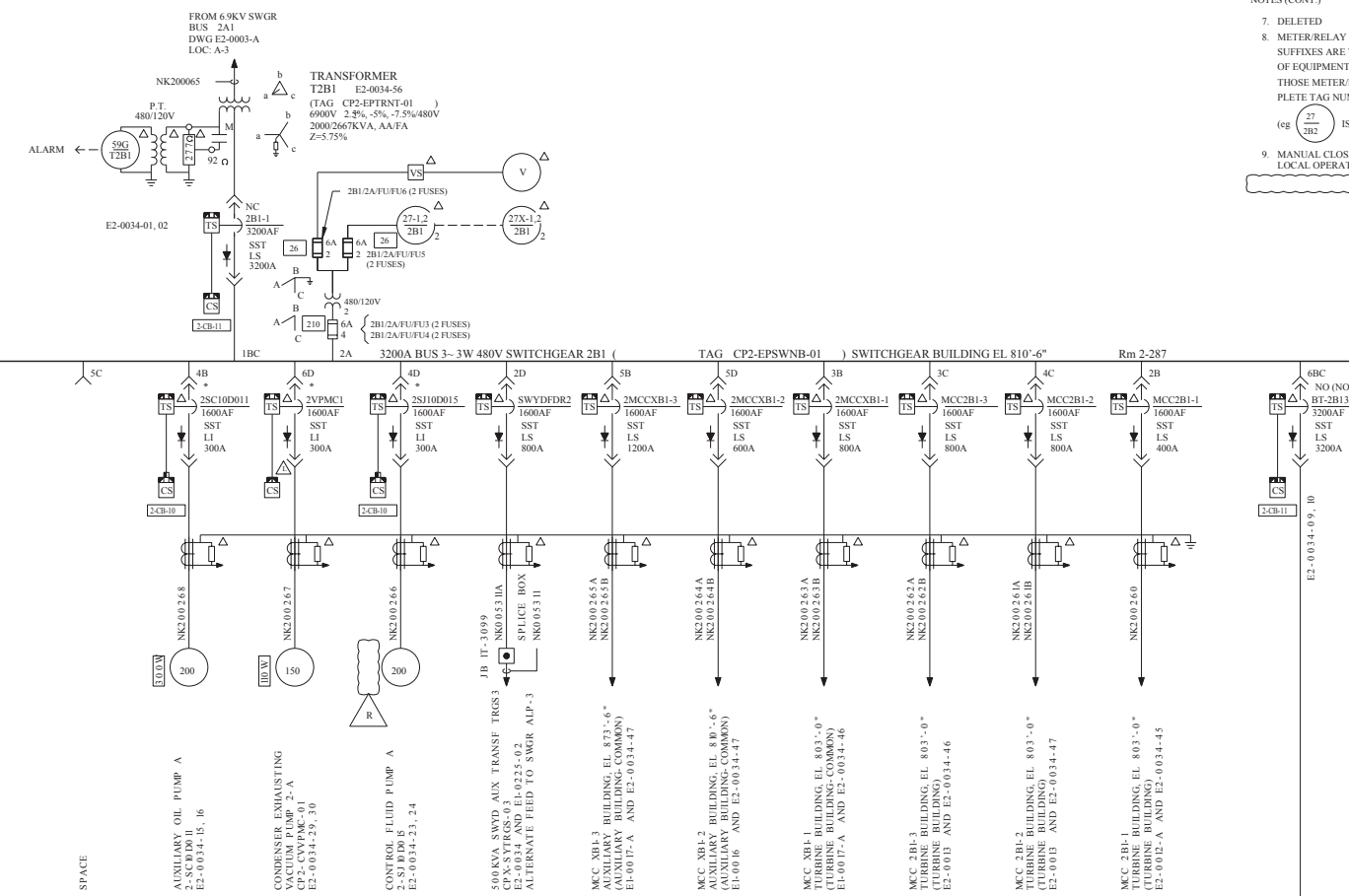
## NON-SAFETY

### LUMINANT CPNP

#### GLEN ROSE, TEXAS

### 480V AUXILIARIES ONE LINE DIAGRAM NORMAL BUSES

DWG NO: E1-0006      SHEET NO: A      REV: CP-27



NOTES (CONT.)

7. DELETED

8. METER RELAY NUMBER SUFFIXES ARE NOT ALWAYS SHOWN. THE SUFFIXES ARE THE ALTERNATE TAG NUMBERS FOR THAT PIECE OF EQUIPMENT THAT IT IS ASSOCIATED WITH, (eg V/2B1 ) FOR THOSE METER RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE UNDERBAR IS EQUIVALENT TO A SLASH, (eg 27 IS EQUIVALENT TO 27/2B1 ).

9. MANUAL CLOSE INTERLOCK SCREWS ARE REMOVED TO ALLOW LOCAL OPERATION OF 480V SWITCHGEAR BREAKERS.

REV	DATE	BY	APPV	REMARKS
CP-11	06/01/2011	E2-00	2011	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA:2011-000015-01-00 PER SK-000115-000015-01-00

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
  - LOCATION
  - 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
  - LOCAL STARTER
  - MOTOR SPACE HEATER WITH "X" WATT RATING
  - WINDOW TYPE C.T. RESISTOR 1.0, 5 WATT TO GRD PULSE DETECTION SCHEME, REF DWG 2
  - 277 Ω - GROUNDING RESISTOR TAPPED AT 92 Ω
  - M - CONTACT OF PULSING CONTACTOR
  - SEE NOTE 2
  - RDMG - ROD DRIVE M.G. SET CONTROL PANEL

- LOCATIONS
- 480V SWITCHGEAR
  - CONTROL ROOM PANEL NUMBER "X"
  - LOCAL
  - FUSE B/M ITEM NUMBER REF DWG 8
- RELAYS
- 27 - UNDER VOLTAGE "GE" TYPE NGV13A11A OR EQUAL
  - 27X - TIME DELAY PICK-UP AUXILIARY RELAY 0.1-1.0 SEC AGASTAT TYPE 7014 PA
  - 59G - OVERVOLTAGE, TYPE CV-8, 67 VOLTS RANGE
- 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
- E1-0001 PLANT ONE LINE DIAGRAM-UNITS 1 AND 2
  - 1442F29 BUS 2BAND 2B3 ONE LINE DIAGRAM
  - E2-0003A 6.9KV AUXILIARIES ONE LINE DIAGRAM
  - E2-0008 MCC ONE LINE DIAGRAMS E2-0012 AND -12A E2-0013 AND -13A E1-0015 E1-0016 E1-0017A AND -17B E1-0021
  - E1-0225-02
  - E2-0034 SERIES - SCHEMATIC DRAWINGS
  - E2-2400-211 - PROTECTIVE DEVICE SETTINGS SYSTEM INDEX
  - E2-0024-04 FUSE BILL OF MATERIAL

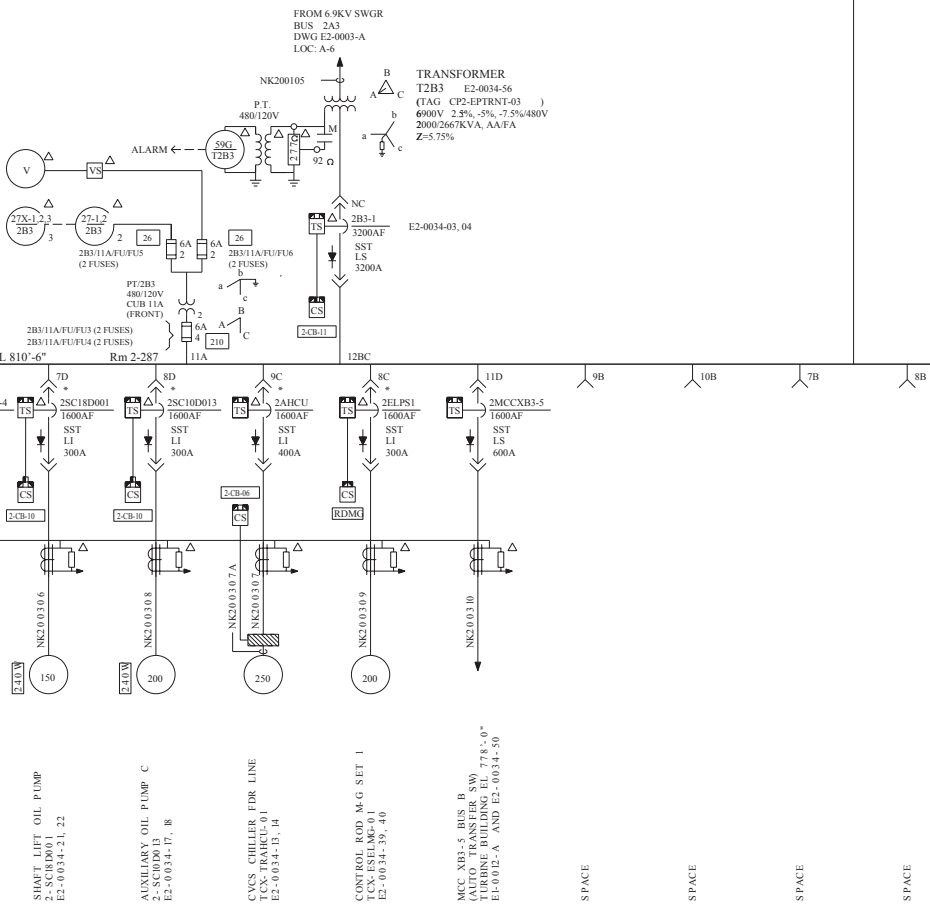
DWG NO	REV
E2-0006	CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E2-0006	
E2-0006-A	

NON-SAFETY

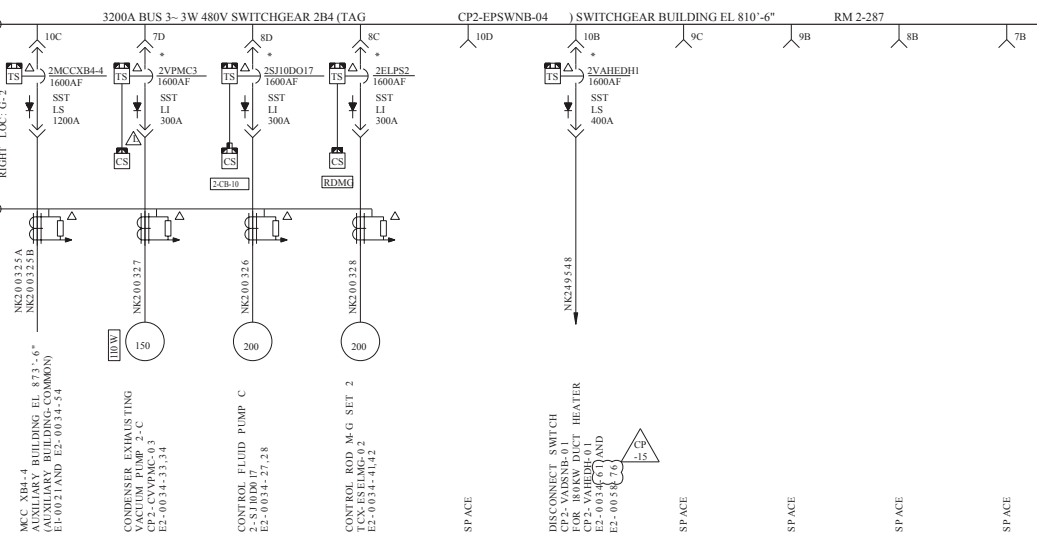
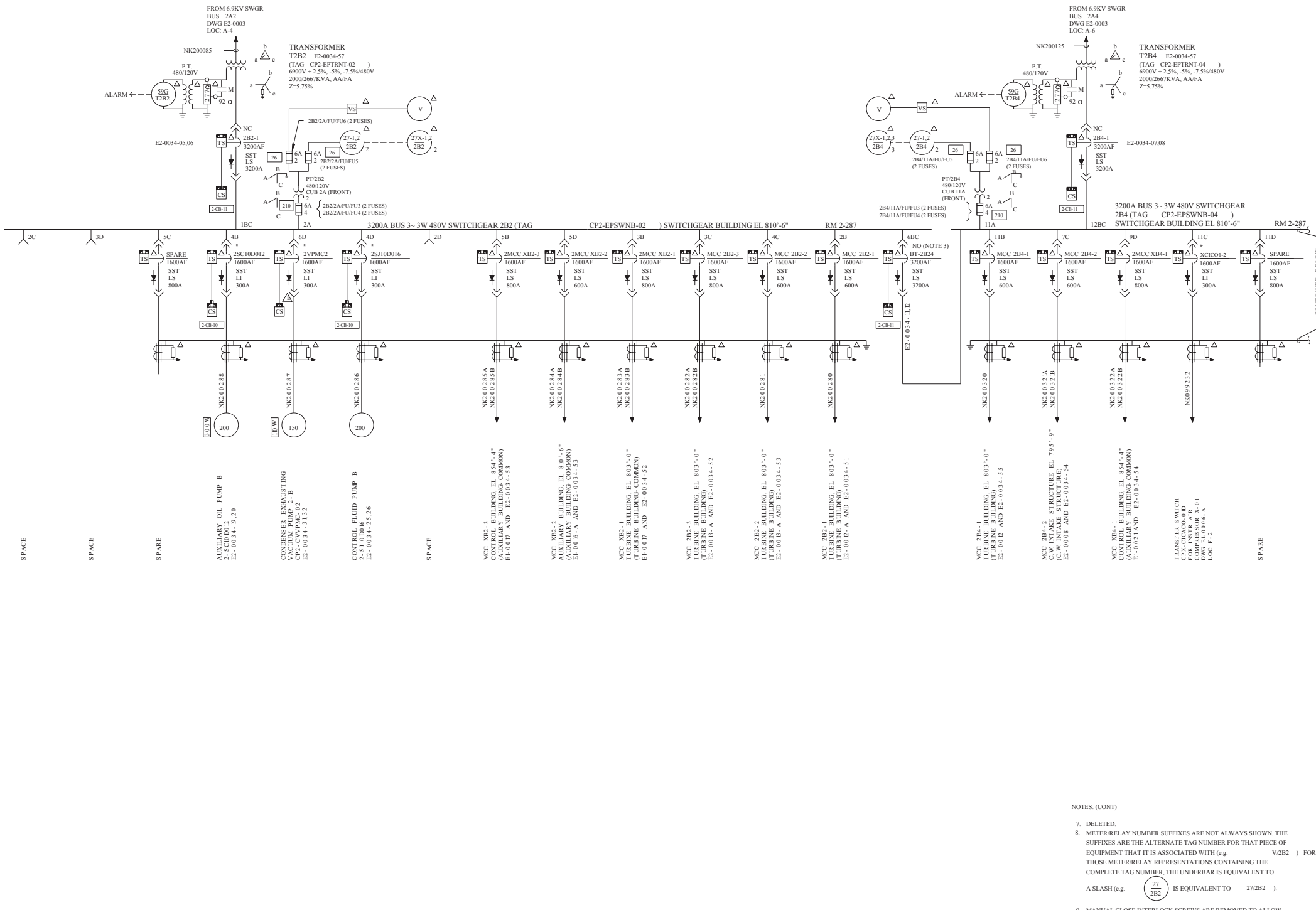
LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

480V AUXILIARIES  
ONE LINE DIAGRAM  
NORMAL BUSES

DWG NO	SHEET NO	REV
E2-0006	-	CP-11



THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APPD	REMARKS
27-15	06.26.2011	06.26.2011	06.26.2011	06.26.2011	THIS DRAWING REVISED TO INCORPORATE ALCR.2015.010091.1 TO CORRECTLY CORRECT THE DRAWING CONSTITUTIONS FROM E2-0034 AND E2-0058 TO E2-0034-61 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
- LOCATION
- 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 BYZ 50S 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 BM ITEM NUMBER REF DWG 7

RELAYS:

- 27 - UNDER VOLTAGE "GE" TYPE NGV13A11A OR EQUAL
- 27X - TIME DELAY PICK-UP AUXILIARY RELAY 0.1-1.0 SEC AGASTAT TYPE 7014 PA
- 59G - OVERVOLTAGE, TYPE CV-8, 67 VOLTS RANGE

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:

- E1-0001 PLANT ONE LINE DIAGRAM - UNITS 1 AND 2
- WESTINGHOUSE DRAWINGS
  - 1442F30 BUS 2B2 AND 2B4 ONE LINE DIAGRAM
- E2-0003 6.9KV AUXILIARIES ONE LINE DIAGRAM
- E2-0008 MCC ONE LINE DIAGRAMS
  - E2-0012 AND-12A
  - E2-0013-A
  - E1-0015 AND-15A
  - E1-0016-A
  - E1-0017
  - E1-0021
- E2-0034 SERIES, SCHEMATIC DIAGRAMS
- E2-2400-211 - PROTECTIVE DEVICE SETTINGS SYSTEM INDEX
- E2-0024-04 - FUSE BILL OF MATERIAL

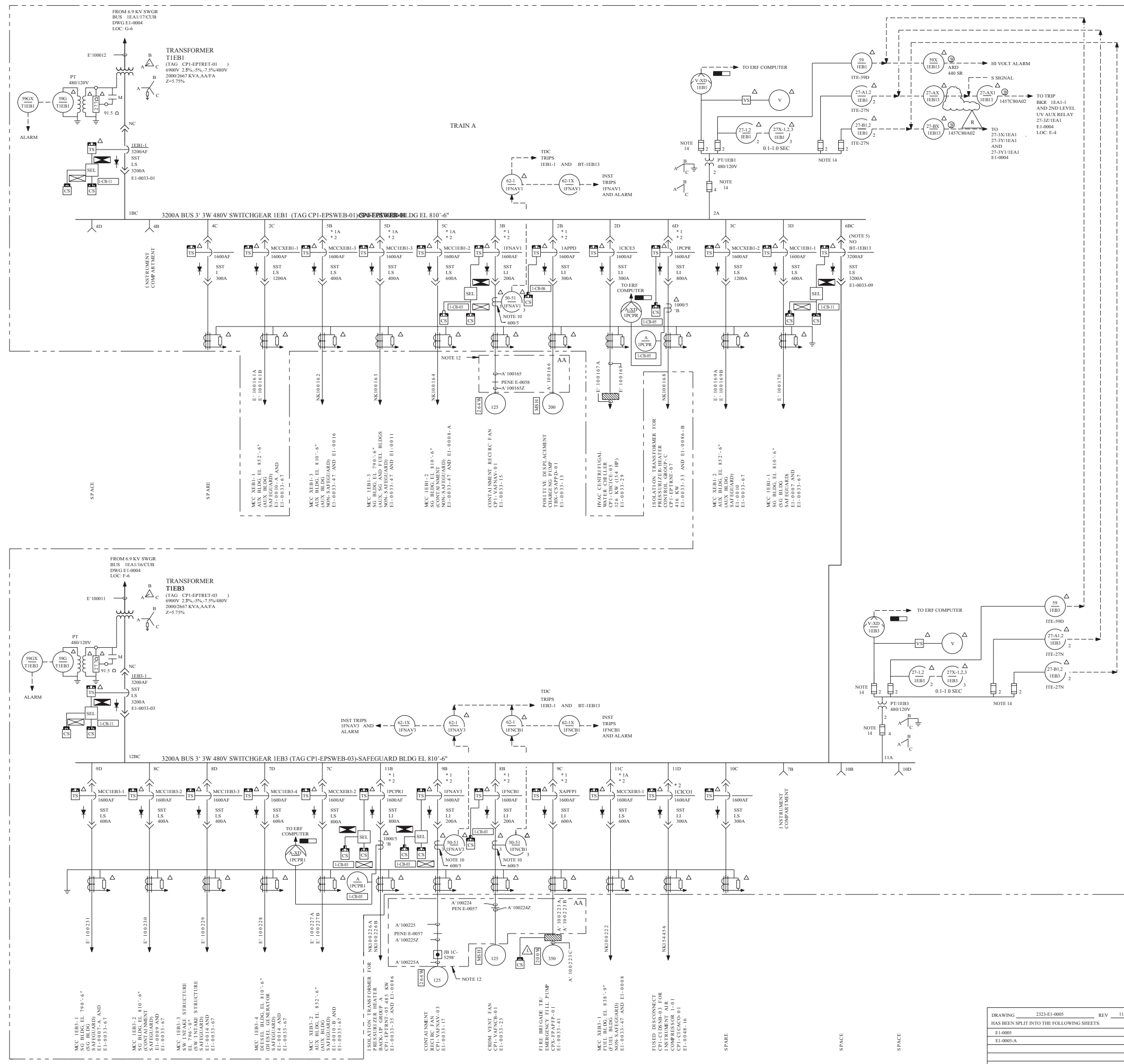
DRAWING	2323-E2-0006	REV	CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E2-0006			
E2-0006-A			

**NON-SAFETY**

**LUMINANT  
CPNPP  
GLEN ROSE, TEXAS**

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

DWG. NO.	E2-0006	SH. NO.	A	REV.	CP-15
----------	---------	---------	---	------	-------



REV	DATE	BY	CHKD	APPV	REMARKS
P-27	08-29-2009	08-29-2009			THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FSA-2005-001066-01-00 PER SK-005-05-00366-05-00

### FSAR FIGURE 8.3-8

**LEGEND**

**SYMBOLS:**

- DRAWOUT BREAKER DISCONNECT
- AIR CIRCUIT BREAKER, STORED ENERGY ELECTRICALLY OPERATED, DRAWOUT TYPE
- SST-SOLID STATE TRIP  
L=LONG TIME, SHORT TIME  
I=LONG TIME, INSTANTANEOUS  
I=INSTANTANEOUS
- QTY - QUANTITY (NO NUMBER INDICATES ONE)
- SEL - SELECTOR SWITCH
- CS - CONTROL SWITCH WITH LIGHTS
- IS - CLOSE-TRIP PUSH BUTTONS WITH LIGHTS  
NO - GREEN LIGHT  
ON - WHITE LIGHT  
M - AMBER LIGHT
- VS - VOLTMETER SELECTOR SWITCH
- LS - LOCAL STARTER
- M - MOTOR SPACE HEATER WITH X WATT RATING
- W - WINDOW TYPE CT, T - BYZ 50.5 AMP RATIO RESISTOR 1.5 WATT TO GRD PULSE DETECTION SCHEME, REF DWG-3
- 277 - GROUNDING RESISTOR, TAPPED AT 91.5
- V - VOLTMETER
- CT - CURRENT TRANSFORMER CLASS C-100
- NS - NON-FUSE DISCONNECT SWITCH
- SP - INDICATES SPLICE

**LOCATIONS:**

- 480V SWITCHGEAR
- LOCAL
- CONTROL ROOM PANEL X
- HOT SHUTDOWN PANEL (HSP)
- SHUTDOWN TRANSFER PANEL (STP)
- ERF TRANSDUCER PANEL CP1-ECRPLY-16

**RELAYS:**

- 27 - UNDERVOLTAGE GE TYPE NGV31A1A OR EQUAL
- 27X - TIME DELAY PICK-UP AUXILIARY RELAY 0.1-1.0 SEC AGASTAT TYPE E7012PA
- 59G - OVERVOLTAGE, PE CV-8, 67 VOLT RANGE
- 51 - ITE RELAY TYPE ITES1L, STYLE 22385340
- 50-51 - ITE RELAY TYPE ITES1M, STYLE 22388541
- 62 - TIME DELAY PICK UP AUXILIARY RELAY 0.1-1.0 SEC AGASTAT TYPE E7012PA

**NOTES:**

- ALL MOTOR AND FEEDER RATINGS GIVEN IN HP UNLESS OTHERWISE NOTED
- EQUIPMENT ENCLOSED INSIDE DASHED LINE IS CLASS II ELECTRICAL EQUIPMENT EXCEPT AS FOLLOWS: GROUND PULSING AND FAULTED FEEDER LOCATION SCHEME IS NOT REQUIRED TO REMAIN FUNCTIONAL DURING OR AFTER A DESIGN BASIS EVENT.
- FEEDER BREAKERS MARKED WITH \* 1 ARE TRIPPED ON BUS UNDERVOLTAGE BY 27X RELAYS. FEEDER BREAKERS MARKED WITH \* 1A ARE TRIPPED ON BUS UNDERVOLTAGE BY 27 RELAYS, OR BY DIESEL GENERATOR BREAKER \* 4 CONTACT ONLY AFTER THE DIESEL GENERATOR IS CONNECTED TO THE 6.9 KV SAFEGUARD BUS.
- ISOLATION BETWEEN CLASS IE BUS AND NON-CLASS IE LOAD IS PROVIDED BY THE LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKERS, INDICATED BY \* 2 NEXT TO THE LOAD CIRCUIT BREAKER, AND THE BREAKER TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL. LOAD CIRCUITS ARE ASSOCIATED CLASS IE TRAIN AA, BB OR NON CLASS IE TRAIN C AS APPLICABLE.
- ELECTRICAL INTERLOCK SHALL PRECLUDE PARALLELING OF TWO SOURCE TRANSFORMERS.
- NOT USED
- 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.
- TWO CT'S ARE ON THE BUS SIDE AND ONE CT IS ON THE LOAD SIDE.
- 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. V/IEB1). FOR THOSE METER RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE "UNDERBAR" IS EQUIVALENT TO A "SLASH" (e.g. 59/IEB1) IS EQUIVALENT TO 59/IEB1).
- CABLES ENCLOSED INSIDE DASHED LINE ARE ASSOCIATED CLASS IE, TRAIN AA AND EQUIPMENT IS NON-IE.
- MANUAL CLOSE INTERLOCK SCREWS ARE REMOVED TO ALLOW LOCAL OPERATION OF 480V SWITCHGEAR BREAKERS.
- FOR FUSE INFORMATION SEE THREE LINE DIAGRAMS, E1-0033-63, -71.

**REFERENCE DRAWINGS:**

- E1-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2
- E1-0001-A PLANT ONE LINE DIAGRAM UNIT 1 AND COMMON
- E1-0033-0 SAFEGUARD 480V SWGR BRK SCHEMATIC AND CONNECTION DIAGRAM INDEX
- 1442F57, 57A WESTINGHOUSE 480V SWGR BUS IEB1 AND IEB3 ONE LINE DIAGRAMS
- 1442F59, 89A, 89B WESTINGHOUSE 480V SWGR SWITCH DEVELOPMENT AND UNDERVOLTAGE SCHEMATIC DIAGRAMS

**CLASS I**  
(NUCLEAR SAFETY-RELATED)  
SAFETY CLASS 1 - SBEMC CATEGORY I  
SAFETY CLASS 2  
SAFETY CLASS 3 - ASSOCIATED CIRCUITS

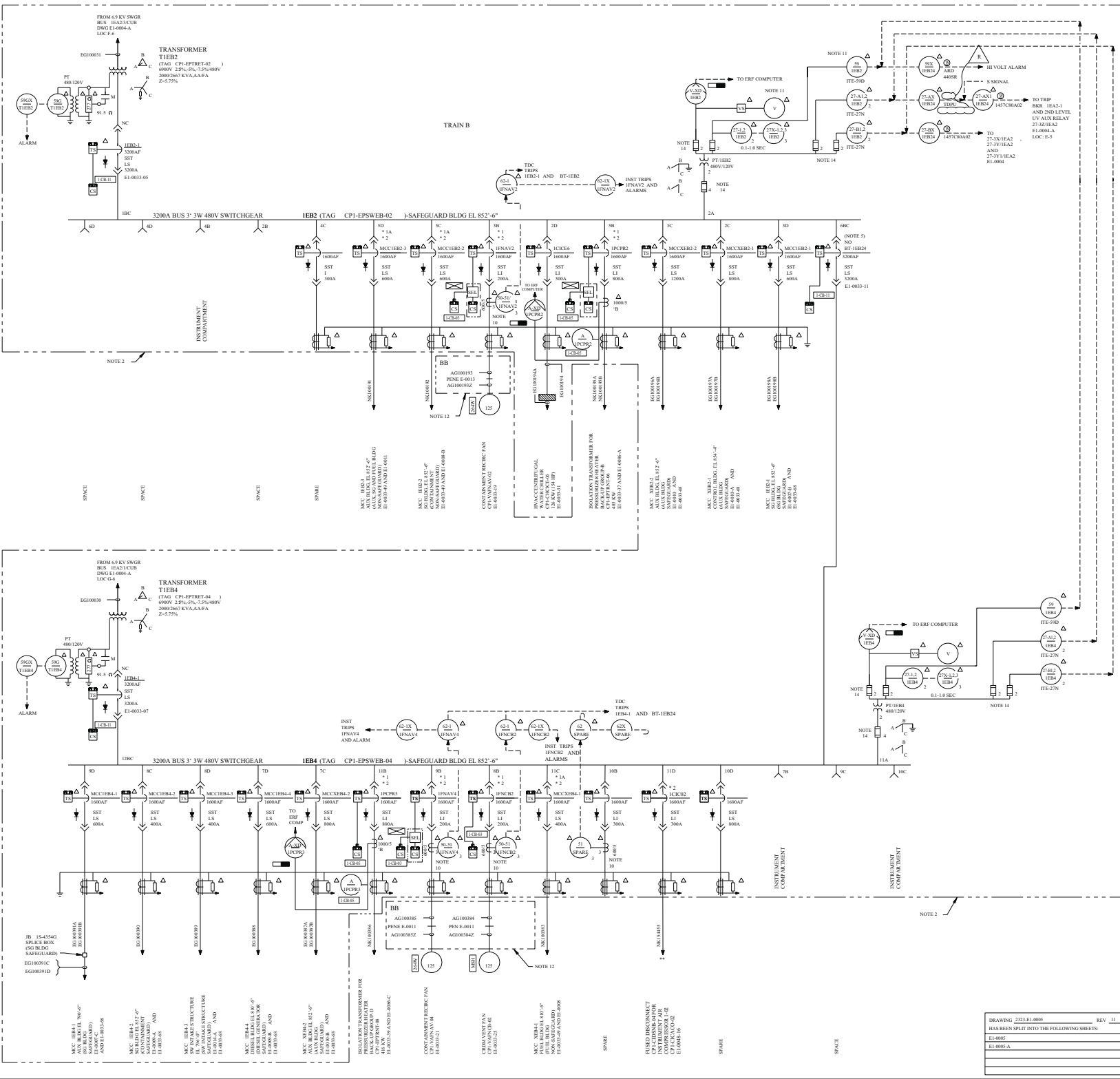
**LUMINANT**  
CPNPP  
GLEN ROSE, TEXAS

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

DWG NO. **E1-0005** SH - REV. CP-27

DRAWING 2323-E1-0005 REV 11  
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:  
E1-0005  
E1-0005-A

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APPV	REMARKS
001	08/11/00	...	...	...	...
002	08/11/00	...	...	...	...
003	08/11/00	...	...	...	...

- ### FSAR FIGURE 8.3-8
- LEGEND
- DRAWOUT BREAKER DISCONNECT
  - AIR CIRCUIT BREAKER STORED ENERGY ELECTRICALLY OPERATED, DRAWOUT TYPE
  - SOLID STATE TRIP
  - 1.5-LONG TIME, SHORT TIME
  - 1.5-LONG TIME, INSTANTANEOUS
  - INSTANTANEOUS
  - LOCATION
  - QUANTITY (NO NUMBER INDICATES ONE)
  - SELECTOR SWITCH
  - CONTROL SWITCH WITH LIGHTS
  - CLOSE-TRIP PUSH BUTTONS WITH LIGHTS
  - GREEN LIGHT
  - WHITE LIGHT
  - AMBER LIGHT
  - VOLTMETER SELECTOR SWITCH
  - LOCAL STARTER
  - MOTOR SPACE HEATER WITH X WATT RATING
  - WINDOW TYPE CT TV 50/5 AMP RATIO RESISTOR 1/2 OHM
  - TO GROUND FUSING DETECTION SCHEME, REF DWG-3
  - 277 OHM GROUNDING RESISTOR, TAPPED AT 91.5
  - CONTACT OF PULSING CONTACTOR
  - VOLTMETER
  - TRANSUCER
  - \* 1 OR 1A
  - \*\* SEE NOTE 3, \* 2 SEE NOTE 4
  - CURRENT TRANSFORMER CLASS C-100
  - NON-FUSE DISCONNECT SWITCH

- ### LOCATIONS
- 480V SWITCHGEAR
  - LOCAL
  - CONTROL ROOM PANEL X
  - HOT SHUTDOWN PANEL (HSP)
  - SHUTDOWN TRANSFER PANEL (STP)
  - ERF TRANSUCER PANEL CP-EPCLP-17
- ### RELAYS
- 27 — UNDERVOLTAGE TYPE NOV11A1A OR EQUAL
  - 27X — TIME DELAY PICK UP AUXILIARY RELAY 0.1-1.0 SEC AGASTAT TYPE E7012PA
  - 59G — OVERVOLTAGE, TYPE CV-8, 67 VOLT RANGE
  - 51 — JTE RELAY TYPE TESTIL, STYLE 238540
  - 50-51 — JTE RELAY TYPE TESTIL, STYLE 238541
  - 62 — TIME DELAY PICK UP AUXILIARY RELAY 0.1-1.0 SEC AGASTAT TYPE E7012PA

- ### NOTES
- ALL MOTOR AND FEEDER RATINGS GIVEN IN HP UNLESS OTHERWISE NOTED
  - \* \* \* — DRAWING SYMBOLS MARKED INSIDE DASHED LINE IS CLASS I ELECTRICAL EQUIPMENT EXCEPT AS FOLLOWS: GROUND PULSING AND FAULTED FEEDER LOCATION SCHEMES NOT REQUIRED TO REMAIN FUNCTIONAL DURING OR AFTER A DESIGN BASIS EVENT
  - FEEDER BREAKERS MARKED WITH \* 1 ARE TRIPPED ON BUS UNDERVOLTAGE BY 27X RELAYS. FEEDER BREAKERS MARKED WITH \* 1A ARE TRIPPED ON BUS UNDERVOLTAGE BY 27 RELAYS, OR BY BREAKER GENERATOR BREAKER CONTACT ONLY AFTER THE DIESEL GENERATOR IS CONNECTED TO THE 6.9 KV SAFEGUARD BUS
  - ISOLATION BETWEEN CLASS I BUS AND NON-CLASS I LOAD IS PROVIDED BY THE LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKER, INDICATED BY \* 2 NEXT TO THE LOAD CIRCUIT BREAKER, AND THE BREAKER TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL. LOAD CIRCUITS ARE ASSOCIATED CLASS IE TRAIN A-A, BB OR NON CLASS IE TRAIN C AS APPLICABLE
  - 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
  - DELETED
  - BREAKER TRIP RATINGS ARE ADJUSTABLE BETWEEN 50% TO 125% OF SENSOR RATING
  - PHOTO CT ARE ON THE BUS SIDE AND ONE CT IS ON THE LOAD SIDE
  - METER RELAY NUMBER SUFFIXES ARE NOT ALWAYS SHOWN. THE SUFFIXES ARE THE ALTERNATE TAG NUMBER FOR THAT PRICE OF EQUIPMENT THAT IS ASSOCIATED WITH THE VENDOR. FOR THOSE METER RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE "TAG NUMBER" IS EQUIVALENT TO A "SLASH" LOG IS EQUIVALENT TO 59 (IEB2 3)
  - — — — — CABLES ENCLOSED INSIDE DASHED LINE ARE LOCAL
  - ASSOCIATED CLASS IE TRAIN AND EQUIPMENT IS NOT I.E.
  - MANUAL CLOSE INTERLOCK SCHEMES ARE REMOVED TO ALLOW LOCAL OPERATION OF 480V SWITCHGEAR BREAKERS
  - FOR FUSE INFORMATION SEE THREE LINE DIAGRAMS, E1-003-64, -73

### REFERENCE DRAWINGS

E1-001	PLANT ONE LINE DIAGRAM UNITS 1 AND 2
E1-001-A	PLANT ONE LINE DIAGRAM UNIT 1 AND COMMON
E1-006	PRESSURIZED HEATER WIRING AND INTERCONNECTION DIAGRAM
E1-003-0	SAFEGUARD 480V SWGR BKR SCHEMATIC AND CONNECTION DIAGRAM INDEX
142378, 80A	WESTINGHOUSE 480V SWGR BUS IEB2 AND IEB4 ONE LINE DIAGRAMS
142379, 80A, 80B	WESTINGHOUSE 480V SWGR SWITCH DEVELOPMENT AND UNDERVOLTAGE SCHEMATIC DIAGRAMS

### TRAIN B

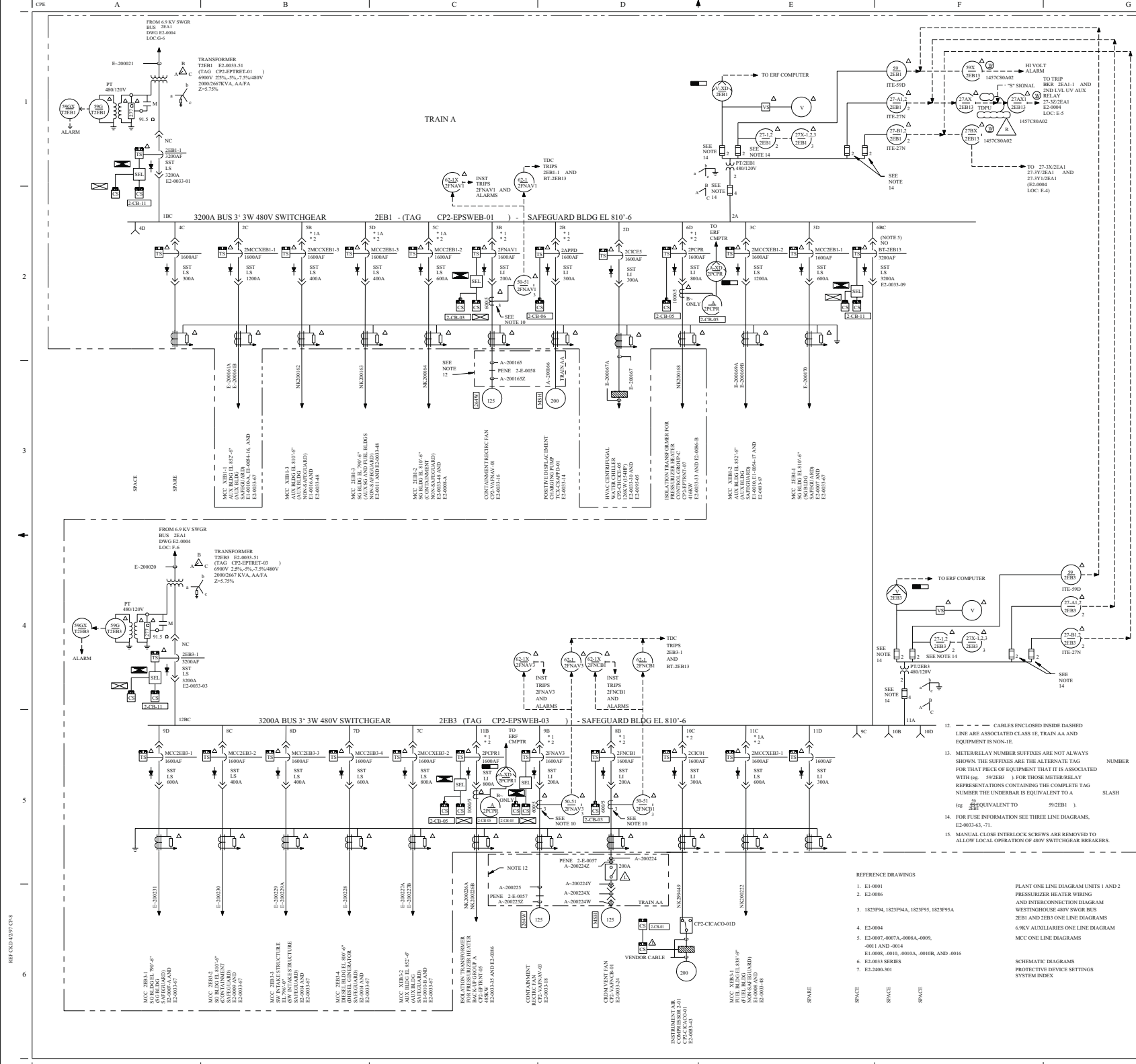
<b>CLASS I</b> (NUCLEAR SAFETY-RELATED)	
SAFETY CLASS 1	CLASS I
SAFETY CLASS 2	CLASS I
SAFETY CLASS 3	ASSOCIATED CIRCUITS
<b>LUMINANT</b> CPNPP GLEN ROSE, TEXAS	
480V AUXILIARIES ONE LINE DIAGRAM SAFEGUARD BUSES	

DRAWING 222A-E1-005	REV 11
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E1-005	
E1-005-A	

REF DWG 225P/CP-14

THIS DRAWING CANNOT BE ELECTRONICALLY





**FSAR FIGURE 8.3-8**

**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
  - LI - INSTANTANEOUS
- ⊙ - LOCATION
  - 27 - INDICATES DEVICE NUMBER
  - ⊙ - QUANTITY (NO NUMBER INDICATES ONE)
- ⊙ - SELECTOR SWITCH
- ⊙ - CONTROL SWITCH WITH LIGHTS
- ⊙ - PERMISSIVE SWITCH WITH LIGHTS
  - ⊙ - GREEN LIGHT
  - ⊙ - RED LIGHT
  - ⊙ - WHITE LIGHT
  - ⊙ - AMBER LIGHT
- ⊙ - LOCAL STARTER
- ⊙ - MOTOR SPACE HEATER (\* WATT)
- ⊙ - WINDOW TYPE CT
- ⊙ - RESISTOR 1 \* WATT
- ⊙ - TO GROUND PULSE DETECTION SCHEME, REF DWG 1
- ⊙ - 277 OHM GROUNDING RESISTOR, TAPPED AT 91.5
- ⊙ - CONTACT OF PULSING CONTACTOR
- ⊙ - V-VOLTMETER
- ⊙ - A-AMMETER
- \*1, \*2 - SEE NOTE 3, \*2 - SEE NOTE 4
- ⊙ - CURRENT TRANSFORMER CLASS C-100
- ⊙ - 480V SWITCHGEAR
- ⊙ - CONTROL ROOM PANEL NUMBER \*
- ⊙ - HOT SHUTDOWN PANEL (HSP)
- ⊙ - LOCAL
- ⊙ - SHUTDOWN TRANSFER PANEL (STP)
- ⊙ - ERF TRANSDUCER PANEL CP2-ECRPL-16
- ⊙ - NON FUSED DISCONNECT SWITCH
- ⊙ - FUSE: 4 - NUMBER OF FUSES
- RELAYS
  - 27 - UNDERVOLTAGE TYPE NGV13A11A OR EQUAL
  - 27-1
  - 27-2
  - 27-3
  - 27-1A, 27-1B
  - 59 - UNDERVOLTAGE RELAY ITC 59D, CAT 2110715
  - 59 - OVERVOLTAGE RELAY ITC 59D, CAT 211C175
  - 59C - OVERVOLTAGE, PPE CV3, 67 VOLT RANGE
  - 59I1 - ITE RELAY TYPE ITC51M, STYLE 2258541
  - 62-1 - 0.1-10 SEC AGAGAT TYPE E702PA
  - 27X-1 - 0.2-2.0 SEC AGAGAT TYPE E704PA
  - 27X-2
  - 27X-3
  - 62-1X - TIME DELAY DROP-OUT AUXILIARY RELAY, 20-200 SEC AGAGAT AT TYPE E702PE
  - 96CX - AUXILIARY RELAY

**NOTES:**

- ALL MOTOR AND FEEDER RATINGS GIVEN IN HP UNLESS OTHERWISE NOTED.
- ⊙ - EQUIPMENT ENCLOSED INSIDE DASHED LINE IS CLASS II ELECTRICAL EQUIPMENT EXCEPT AS FOLLOWS: GROUND PULSING AND FAULTED FEEDER LOCATION SCHEME IS NOT REQUIRED TO REMAIN FUNCTIONAL DURING OR AFTER A DESIGN BASIS EVENT.
- FEEDER BREAKERS MARKED WITH \* ARE TRIPPED ON BUS UNDERVOLTAGE BY 27 RELAYS OR BY DIESEL GENERATOR BREAKER CONTACT ONLY AFTER THE DIESEL GENERATOR IS CONNECTED TO THE 6.9KV SAFEGUARD BUS.
- ISOLATION BETWEEN CLASS II AND NON-CLASS II LOAD IS PROVIDED BY THE LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS FEEDER CIRCUIT BREAKERS, INDICATED BY \* NEXT TO THE LOAD CIRCUIT BREAKER, AND THE BREAKER TRIPPED BY SAFETY PANEL SIGNAL. NON-SIGNAL LOAD CIRCUITS ARE ASSOCIATED CLASS II; TRAIN AA, BB OR NON-CLASS II TRAIN C ARE APPLICABLE.
- ELECTRIC INTERLOCK SHALL PRECLUDE PARALLELING OF TWO SOURCE TRANSFORMERS.
- FOR REMOTELY CONTROLLED BREAKERS LOCAL CONTROL IS NOT EFFECTIVE WHEN THE BREAKER IS OPERATING POSITION.
- DELETED
- DELETED
- BREAKER TRIP RATINGS ARE ADJUSTABLE BETWEEN 50% TO 125% OF SENSOR RATING.
- TWO CT'S ARE ON THE BUS SIDE AND ONE CT IS ON THE LOAD SIDE.

**REFERENCE DRAWINGS:**

- E1-0001
- E2-0006
- 1823P94, 1823P94A, 1823P95, 1823P95A
- E2-0004
- E2-0007, 0007A, 0008A, 0009, 0011 AND 0014
- E1-0008, 0010, 0010A, 0010B, AND 0016
- E2-0033 SERIES
- E2-2403-301

**PLANT ONE LINE DIAGRAM UNITS 1 AND 2 PRESSURIZER HEATER WIRING AND INTERCONNECTION DIAGRAM WESTINGHOUSE 480V SWGR BUS 2E1B AND 2E1B ONE LINE DIAGRAM 6.9KV AUXILIARIES ONE LINE DIAGRAM MCC ONE LINE DIAGRAM**

**SCHMATIC DIAGRAMS PROTECTIVE DEVICE SETTINGS SYSTEM POWER.**

**TRAIN A CLASS I (NUCLEAR SAFETY-RELATED)**

**SAFETY CLASS 1**    **RESUME CATEGORY I**

**CLASS II**    **CLASS II**

**SAFETY CLASS 2**    **CLASS II**

**SAFETY CLASS 3**    **CLASS II**

**LUMINANT CPSES**

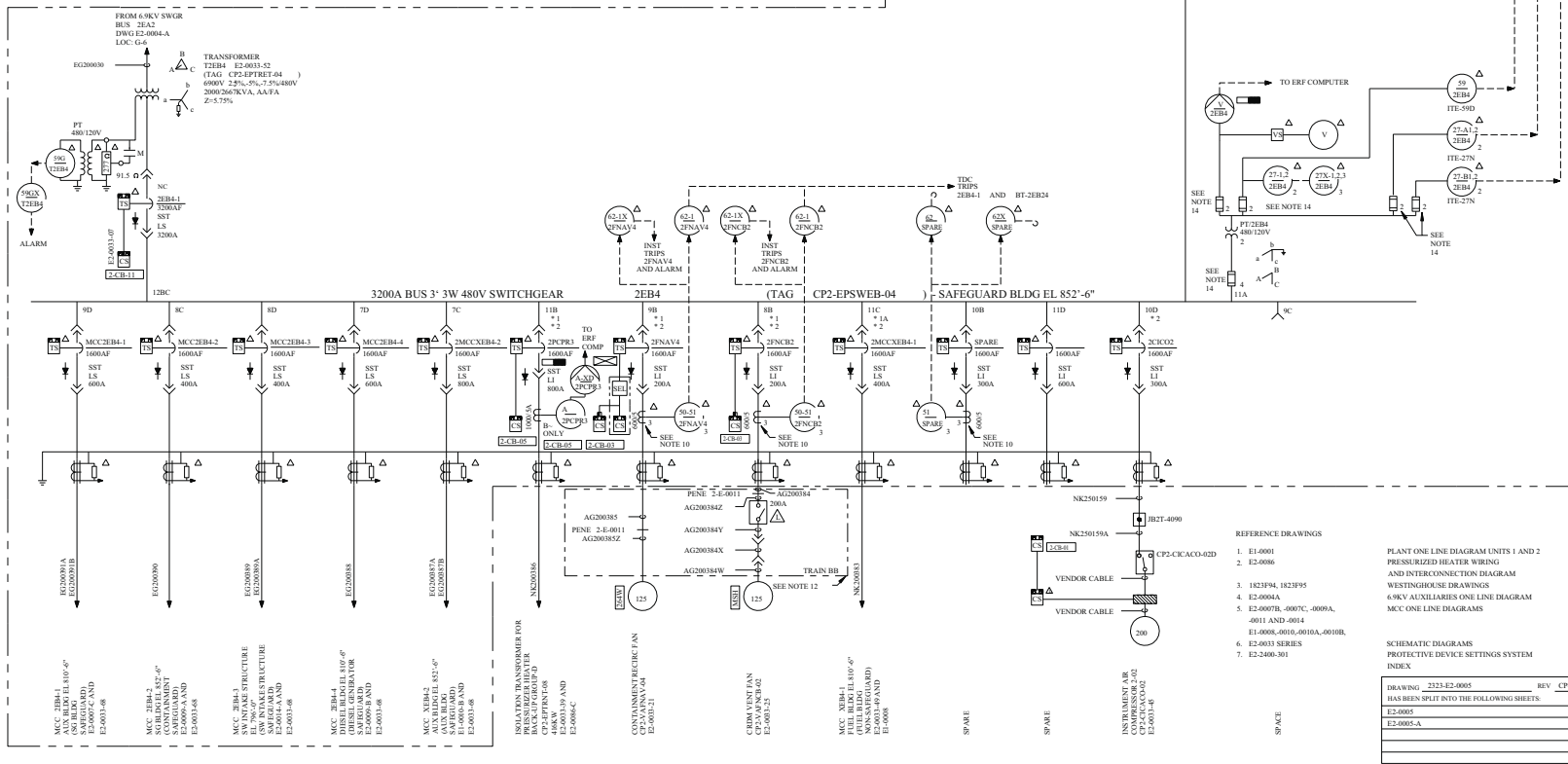
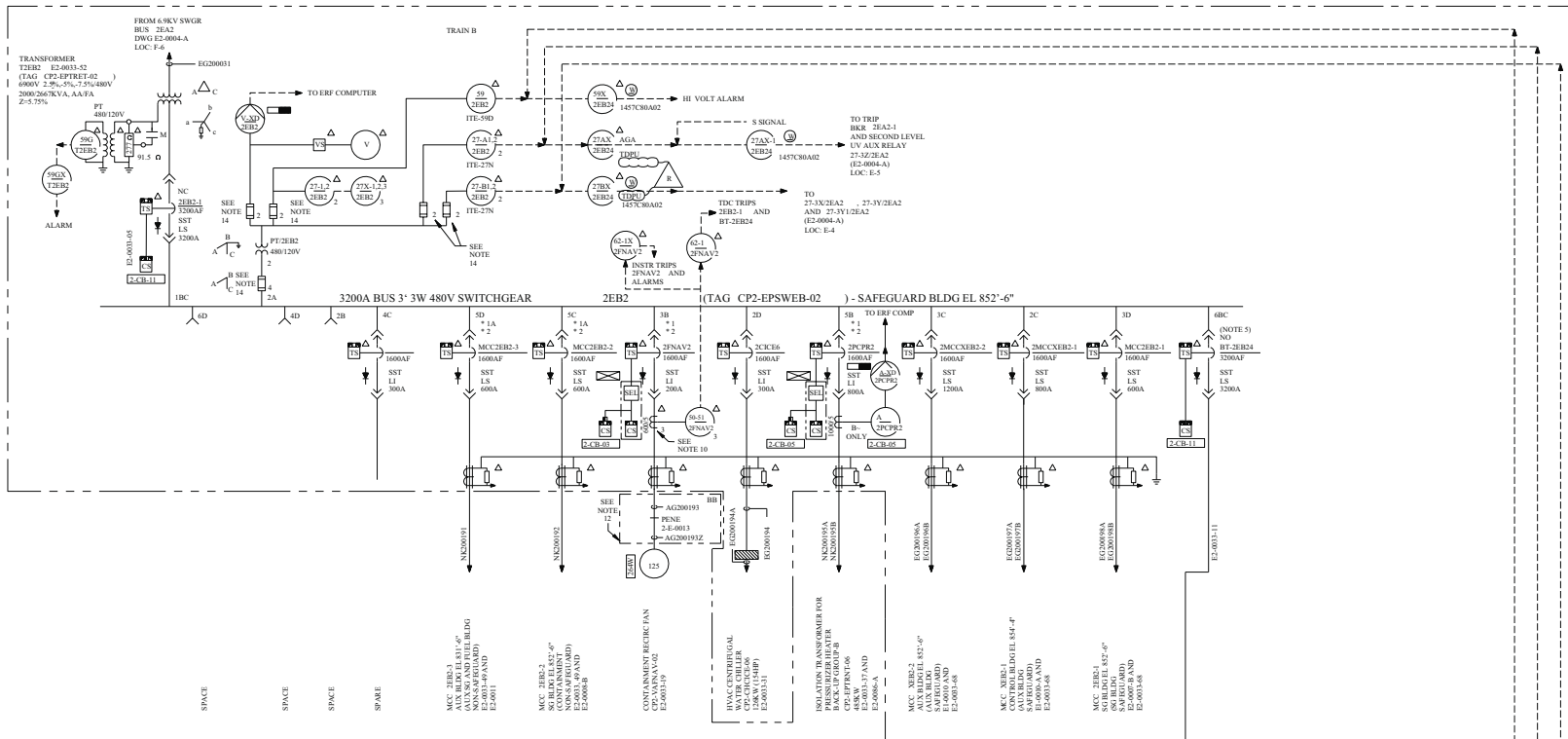
**GLEN ROSE, TEXAS**

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

DRAWING: 2323-E2-0005    REV: CP-1  
 HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:  
 E2-0005  
 E2-0005-A

DWG NO: E2-0005    SHE NO: CP-15    REV: CP-15

FINAL PRINT



**FSAR FIGURE 8.3-8**

**LEGEND:**

- DRAWOUT BREAKER DISCONNECT
- AIR CIRCUIT BREAKER, STORED ENERGY ELECTRICALLY OPERATED DRAWOUT TYPE
- SST-SOLID STATE TRIP
- L1-LONG TIME, SHORT TIME, L1-LONG TIME, INSTANTANEOUS
- LOCATION (NO NUMBER INDICATES ONE)
- NON FUSED DISCONNECT SWITCH
- FUSE: 4- NUMBER OF FUSES
- SELECTOR SWITCH
- CONTROL SWITCH WITH LIGHTS
- CLOSE-TRIP PUSH BUTTONS WITH LIGHTS
- GREEN LIGHT
- WHITE LIGHT
- RED LIGHT
- AMBER LIGHT
- LOCAL STARTER
- MOTOR SPACE HEATER (\* WATTS)
- WINDOW TYPE CT (BYZ 50% AMP RATIO)
- RESISTOR ( WATT TO GND PULSE DETECTION SCHEME, REF DWG.)
- 277 GROUNDING RESISTOR, TAPPED AT 91.5
- M-CONTACT OF PULSING CONTACTOR
- V - VOLTMETER
- A - AMMETER
- (XD) - TRANSDUCER (XD)
- \*1- \*1 SEE NOTE 1 \*2- \*2 SEE NOTE 4
- CT - CURRENT TRANSFORMER CLASS C-100
- 480V SWITCHGEAR
- CONTROL ROOM PANEL NUMBER \*
- HOT SHUTDOWN PANEL (HSP)
- LOCAL
- SHUTDOWN TRANSFER PANEL (STP)
- ERF TRANSDUCER PANEL CP2-ECPLV-17

**RELAYS:**

- 27 - UNDERVOLTAGE GE TYPE NOV11A11A OR EQUAL
- 27-2
- 27-2A
- 27-2A1A - UNDER VOLTAGE RELAY, AGASTAT E701PE
- 27-2A1A2 - UNDERVOLTAGE RELAY ITE 27N, CAT 2110375
- 59 - OVERVOLTAGE RELAY ITE 59D, CAT 21104175
- 59G - OVERVOLTAGE (PE C.V. 67 VOLT RANGE)
- 62 - ITI RELAY TYPE ITI101 STYLE 225850
- 62-1 - ITI RELAY TYPE ITI101 STYLE 225850
- 62-2 - TIME DELAY PICKUP AGASTAT E701PA 0.1-1.0 SEC RELY
- 62-3 - 0.1-1.0 SEC AGASTAT TYPE E702PA
- 62-4 - 0.2-2.0 SEC AGASTAT TYPE E701PA
- 27X-1
- 27X-2
- 27X-3
- 62-X - TIME DELAY DROP-OUT AUXILIARY RELAY, 20-200 SEC AGASTAT TYPE E702PE
- 59X - AUXILIARY RELAY
- 62X - AUXILIARY RELAY (EAR147C00A0)

**NOTES:**

- ALL MOTOR AND FEEDER RATINGS GIVEN IN HP UNLESS OTHERWISE NOTED.
- CLASS I ELECTRICAL EQUIPMENT EXCEPT AS FOLLOWS: GROUND PULSING AND FAULTED FEEDER LOCATION SCHEME IS NOT REQUIRED TO REMAIN FUNCTIONAL DURING OR AFTER A DESIGN BASIS EVENT.
- FEEDER BREAKER MARKED WITH \* ARE TRIPPED ON BUS UNDERVOLTAGE BY 27X RELAYS. FEEDER BREAKERS MARKED WITH \*1A ARE TRIPPED ON BUS UNDERVOLTAGE BY 27 RELAYS OR BY DIESEL GENERATOR BREAKER CONTACT ONLY AFTER THE DIESEL GENERATOR IS CONNECTED TO THE 69KV SAFEGUARD BUS.
- ISOLATION BETWEEN CLASS I BUS AND NON-CLASS I LOADS PROVIDED BY THE LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS TRIPPER ACTUATION SIGNAL. LOAD CIRCUITS ARE ASSOCIATED CLASS I TRAIN A, B, OR NON-CLASS I TRAIN C AS APPLICABLE.
- 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
- DELETED
- BREAKER TRIP RATINGS ARE ADJUSTABLE FROM 50% TO 125% OF SENSOR RATING.
- TWO CT'S ARE ON THE BUS/SIDE AND ONE CT IS ON THE LOAD SIDE.
- DELETED
- DELETED
- CABLES ENCLOSED INSIDE DASHED LINE ARE ASSOCIATED CLASS I, TRAIN BB AND EQUIPMENT IS NON-IE.
- METER FEEDER 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., 59-2EB2-1). FOR THOSE METER RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER THE UNDERBAR IS EQUIVALENT TO A.S.A.M. (E.G., IS EQUIVALENT TO 59-2EB2-1-2EB2).
- FOR FUSE INFORMATION SEE THREE LINE DIAGRAMS, E2-0003-44, -74, -77.
- MANUAL CLOSE INTERLOCK SCREWS ARE REMOVED TO ALLOW LOCAL OPERATION OF 480V SWITCHGEAR BREAKERS.

**TRAIN B**

**CLASS I**

**ONE LINE DIAGRAM SAFEGUARD BUSES**

**LUMINANT**

**CPNP**

**GLEN ROSE, TEXAS**

**REFERENCE DRAWINGS**

- 1. E1-0001
- 2. E2-0086
- 3. 1823194, 1823195
- 4. E2-0005A
- 5. E2-0007B, 0007C, 0009A, 0011 AND 0014
- 6. E1-0006, 0010, 0010A, 0010B, 0010C
- 7. E2-0003 SERIES
- 8. E2-2400-301

**SCHMATIC DIAGRAMS**

**PROTECTIVE DEVICE SETTINGS SYSTEM INDEX**

DRAWING	2323-E2-0005	REV	CP-1
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E2-0005			
E2-0005-A			

**PLANT ONE LINE DIAGRAM UNITS 1 AND 2 PRESSURIZED HEATER WIRING AND INTERCONNECTION DIAGRAM WESTINGHOUSE DRAWINGS 69KV AUXILIARIES ONE LINE DIAGRAM MCC ONE LINE DIAGRAMS**

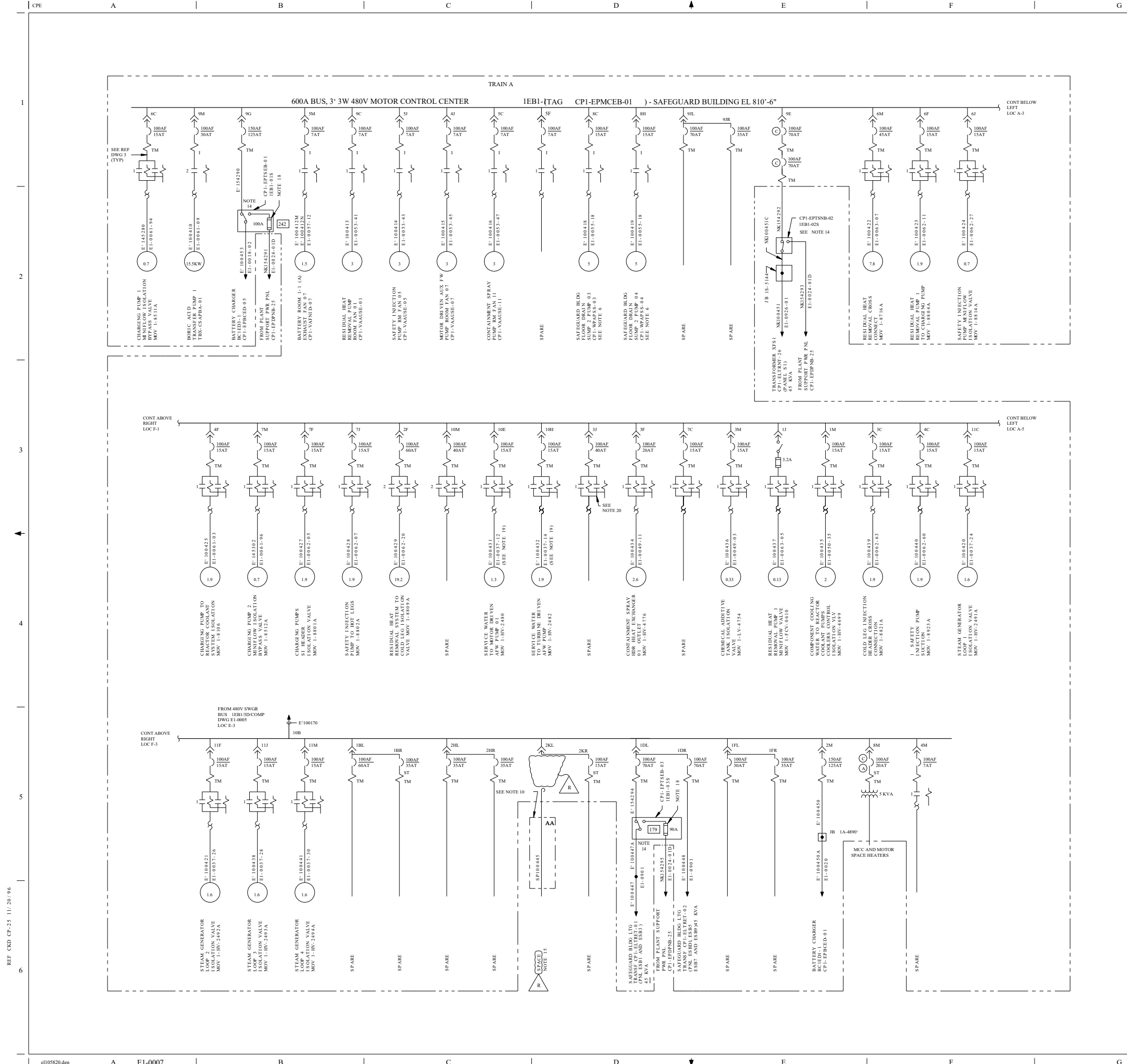
**SCHMATIC DIAGRAMS PROTECTIVE DEVICE SETTINGS SYSTEM INDEX**

DWG NO.	E2-0005	REV	CP-17
DATE			

**FINAL PRINT**

REF: CKD21497 CP-0

THIS DRAWING IS CLASSIFIED UNCLASSIFIED



REV	CHKD	APPV	REMARKS
CP-36	MM	MM	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2014-000118-01 PER SK-0001-14-0001-18-01-05

**FSAR FIGURE 8.3-9**

**LEGEND:**

- 4C - MCC COMPARTMENT NUMBER
- DRAWOUT BREAKER DISCONNECT
- 3 - CIRCUIT BREAKER
- AF - BREAKER FRAME SIZE
- AT - BREAKER TRIP RATING
- 3.2A - 3.2 AMP FUSED SWITCH WITH GROUND SHAWMUT TYPE TRI-ONIC FUSES
- 3.2A - 3.2 AMP FUSE RATING
- MAGNETIC TRIP ELEMENT
- ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SEE NOTE 12
- THERMAL MAGNETIC TRIP ELEMENT
- ST - INDICATES BREAKER WITH SHUNT TRIP DEVICE
- ST - MOTOR STARTER COIL AND CONTACT (NON REVERSING)
- THERMAL OVERLOAD RELAY
- MOTOR STARTER COIL AND CONTACTS (REVERSING)
- 2 - INDICATES MOTOR 2 HORSEPOWER
- INDICATES DISTRIBUTION TRANSFORMER 480-200/120V-1 PHASE (FOR SPACE HEATERS)
- INDICATES SPLICE
- SEE NOTE 16
- SEE NOTE 16 AND 17
- 90A - FUSE
- 90A - FUSE RATING
- 159 - FUSE ITEM NUMBER REF DWG 5

**NOTES:**

1. DELETED
2. --- EQUIPMENT CABLE ENCLOSED INSIDE DASHED LINE IS CLASS IIE, TRAIN A AND TRAIN B AS NOTED.
3. DELETED
4. DELETED
5. THERMAL OVERLOAD RELAYS FOR CLASS IIE MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.
6. SAFEGUARD BUILDING FLOOR DRAIN SUMP 1 AND SUMP 2 PUMPS CP1-WPAPSS-01.02 AND CP1-WPAPSS-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 IIE, TRAIN AA OR TRAIN BB AS NOTED.
11. DELETED
12. FOR BREAKERS-04H 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 PREREQUISITES FOR TRANSFER OF POWER ARE STATED IN DHD EE-041 480V AND 120V AC ELECTRICAL POWER SYSTEM.
15. ASSOCIATED SPARE CABLE SP1045 IS DETERMINATED AT BOTH ENDS i.e., AT THE MCC AND AT THE MOTOR STARTER LOCATED IN PANEL CP1-EPTSNB-48.
16. ISOLATION BETWEEN CLASS IIE BUS AND NON-CLASS IIE 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:  
(C) - TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (SIAS).
17. ISOLATION BETWEEN CLASS IIE BUS AND NON-CLASS IIE 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) (C) TO THE BREAKER/FUSE.
18. FUSES ARE NON-CLASS IIE.
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. EI-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2
2. EI-2400 PROTECTIVE DEVICE SETTINGS
3. EI-0007-D CONTROL POWER XMR FUSE & CONTROL CIRCUIT LOADING DATA
4. EI-0066-74 LOAD SHEDDING SCHEMATIC DIAGRAM
5. EI-0024-04 FUSE BILL OF MATERIAL

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

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1	SERIAL CATEGORY I
CLASS IIE	ASSOCIATED CIRCUITS

**LUMINANT**  
**CPNPP**  
**GLEN ROSE, TEXAS**

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

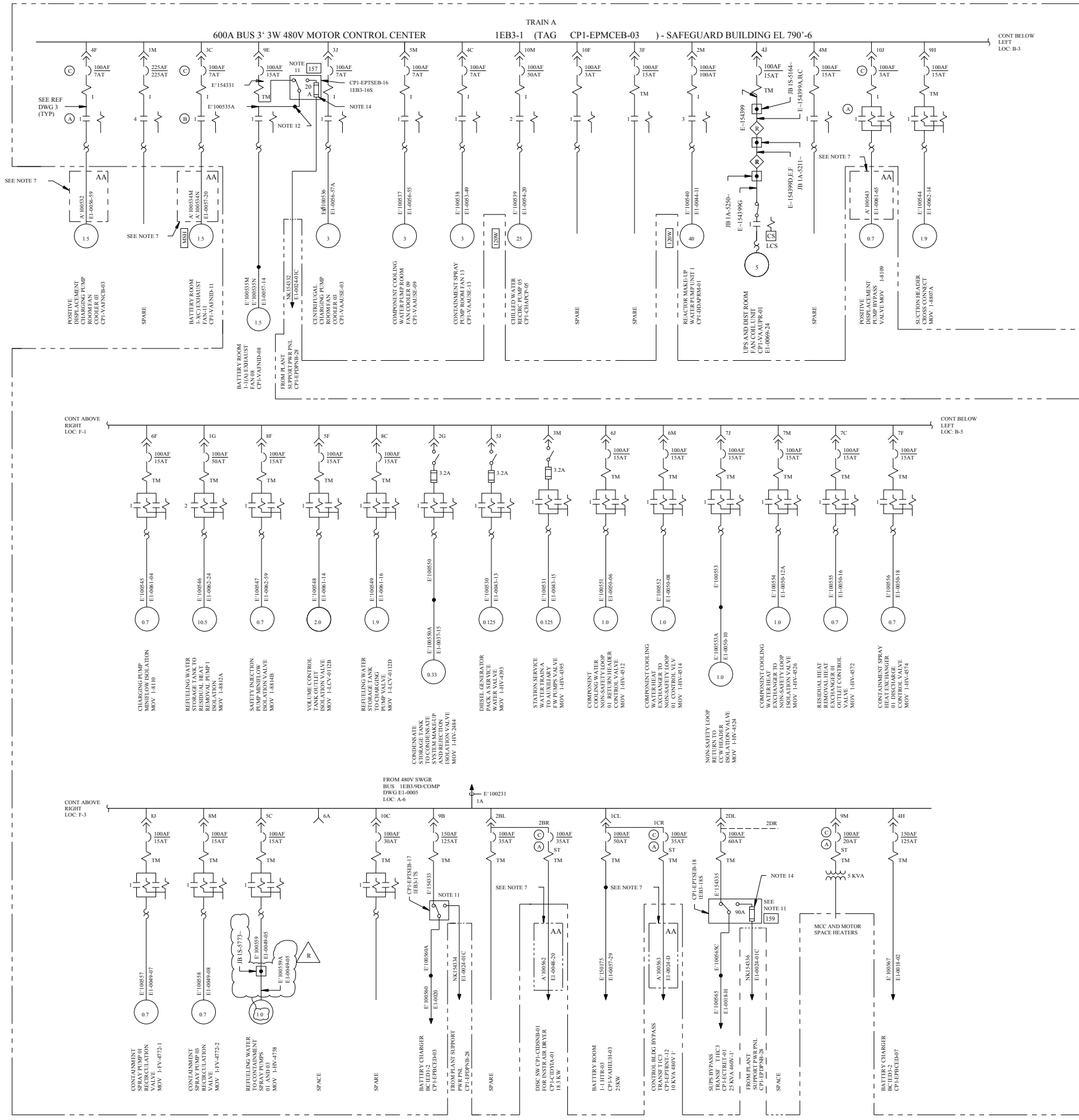
DWG. NO. EI-0007	SHEET NO. -	REV. CP-36
------------------	-------------	------------

**FINAL PRINT**

REF. CKD CP-25 11/20/96

THIS DRAWING CREATED ELECTRONICALLY

FSAR FIGURE 8.3-9



- LEGEND**
- ⬡ - INDICATES FIREZONE R CABLE INSTALLED TO PROVIDE A ONE HOUR FIRE BARRIER REQUIRED TO MEET FIRE SAFE SHUTDOWN ANALYSIS REQUIREMENTS
  - 4C - 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
  - ST - INDICATES BREAKER WITH SHUNT TRIP DEVICE
  - ⎓ - 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
  - X - MOTOR SPACE HEATER WITH "X" WATT RATING
  - ⎓ - INDICATES DISTRIBUTION TRANSFORMER 480-240/120V-1 PHASE (FOR SPACE HEATERS)
  - ⎓ - INDICATES SPLICE
  - MSH - MOTOR SPACE HEATER
  - A - SEE NOTE 13
  - B - SEE NOTE 13
  - C - SEE NOTE 13
  - 90A - FUSE RATING
  - 159 - FUSE B/M ITEM NUMBER REF DWG 5

- NOTES**
1. DELETED
  2. ARE CLASS IE, TRAIN A OR TRAIN BB AS NOTED. EQUIPMENT OUTSIDE THE DASHED LINE IS NON-CLASS IE, UNLESS OTHERWISE NOTED.
  3. DELETED
  4. DELETED
  5. THERMAL OVERLOAD RELAYS FOR CLASS IE 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 IE, TRAIN AA OR TRAIN BB AS NOTED.
  8. DELETED
  9. FOR BREAKER/OLH SETTINGS SEE REFERENCE DRAWING 2
  10. 100AF BREAKER TO BE REPLACED WITH 150AF BREAKER WHEN REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED.
  11. THIS TRANSFER SWITCH IS AN "OFF-LOAD TYPE" AND IS NORMALLY ALIGNED TO THE MCC. IT CAN ONLY BE ALIGNED TO PLANT SUPPORT POWER DRIVING OUTAGES. REQUIREMENTS AND PRIORITIES FOR TRANSFER OF POWER ARE STATED IN DBO EE-047 "480V AND 120V AC ELECTRICAL POWER SYSTEM".
  12. SPLICE #4 AWG ONTO CABLE IN TRANSFER SWITCH ENCLOSURE. TERMINATE #4 AWG ONTO TRANSFER SWITCH.
  13. ISOLATION BETWEEN CLASS IE BUS AND NON-CLASS IE LOAD IS PROVIDED BY LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS UPSTREAM 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 (SISIAL)
  14. FUSES ARE NON-CLASS IE.

**REFERENCE DRAWINGS**

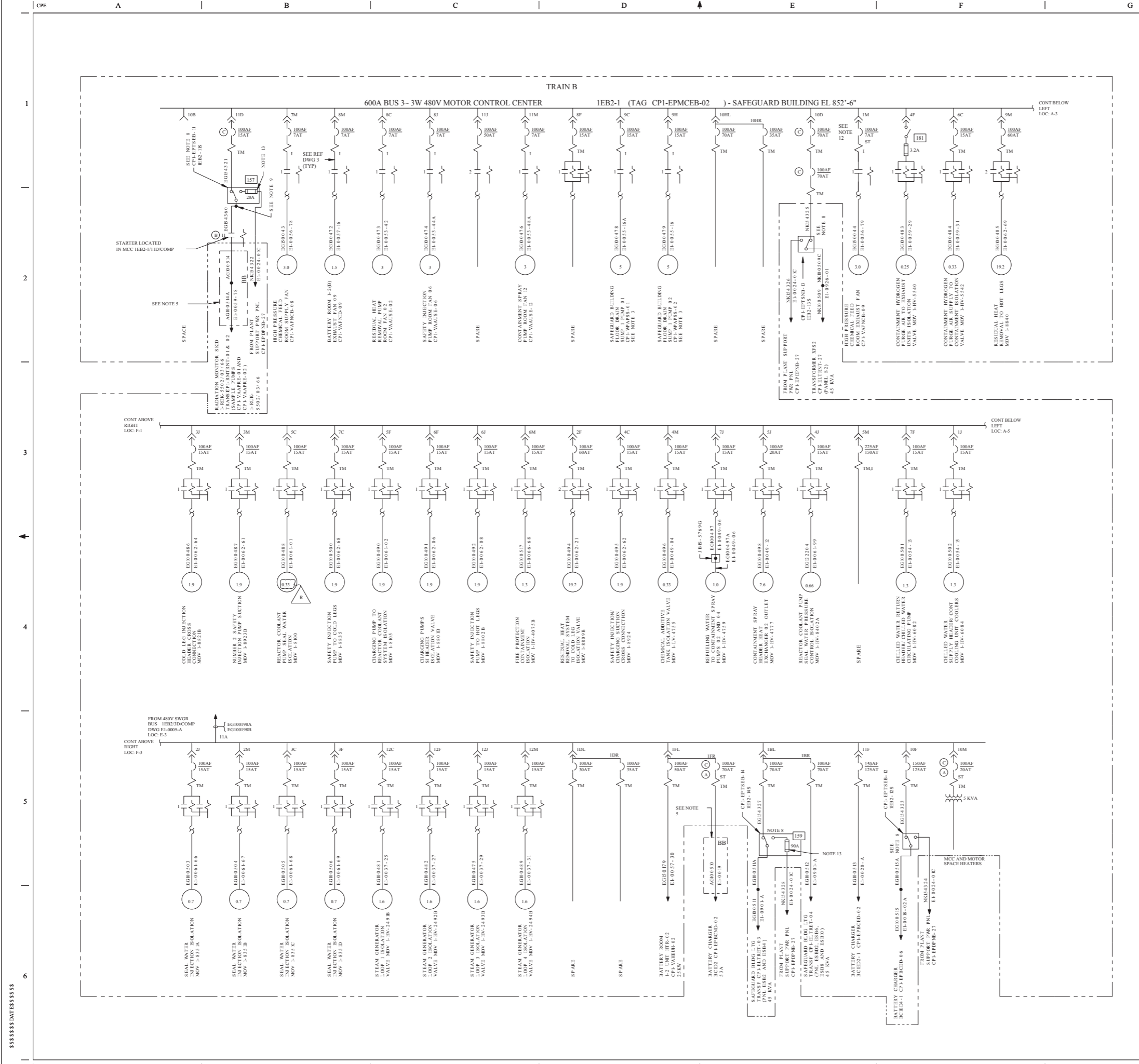
E1-0001	PLANT ONE LINE DIAGRAM UNITS 1 AND 2
E1-2400	PROTECTIVE DEVICE SETTINGS
E1-0007-D	CONTROL POWER XFMR FUSE & CONTROL CIRCUIT LOADING DATA
E1-0066-74	LOAD SHEDDING SCHEMATIC DIAGRAM
E1-0024-04	FUSE BILL OF MATERIAL

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

**LUMINANT**  
 CPSES  
 GLEN ROSE, TEXAS

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

DWG NO.	REV.	SH NO.	REV.
E1-0007	A		CP-35



REV	DATE	BY	CHKD	APPD	REMARKS
P-17	06/11/2011	GAW	06/11/2011		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2010-00172-75-00 PER SK-0004-10-00172-75-00.

**FSAR FIGURE 8.3-9**

**LEGEND**

- MCC COMPARTMENT NUMBER
- DRAWOUT BREAKER DISCONNECT
- CIRCUIT BREAKER (UNLESS OTHERWISE NOTED)
- AF-BREAKER FRAME SIZE
- AT-BREAKER TRIP RATING
- 3-30 AMP FUSED SWITCH WITH GOULD SHAWMUT TYPE TRIPONIC FUSES 3.2 AMP FUSE TRIP RATING
- MAGNETIC TRIP ELEMENT
- ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SEE NOTE 6
- THERMAL MAGNETIC TRIP ELEMENT
- INDICATES BREAKER WITH SHUNT TRIP DEVICE
- MOTOR STARTER COIL AND CONTACT (NON REVERSING) NEMA SIZE 2 STARTER
- THERMAL OVERLOAD RELAY
- MOTOR STARTER COIL AND CONTACTS (REVERSING) NEMA SIZE 1 STARTER
- INDICATES MOTOR 2 HORSEPOWER
- INDICATES DISTRIBUTION TRANSFORMER 480-240/120V-1 PHASE (FOR SPACE HEATERS)
- INDICATES SPLICE
- FUSE RATING
- FUSE BM ITEM NUMBER REF DWG 4
- SEE NOTE 10
- SEE NOTE 10
- SEE NOTE 10 AND 11

**NOTES**

- EQUIPMENT CABLES ENCLOSED INSIDE DASHED LINE ARE CLASS I.E. TRAIN A OR TRAIN B AS NOTED. EQUIPMENT OUTSIDE THE DASHED LINE IS NON-I.E. UON.
- THERMAL OVERLOAD RELAYS FOR CLASS I.E. MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.
- SAFEGUARD BUILDING FLOOR DRAIN SUMP 1 AND SUMP 2 PUMPS CPl-WPAPSS-01 AND CPl-WPAPSS-02 WILL HAVE ELECTRIC ALTERNATORS LOCATED IN THE MCCS.
- 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 I.E. TRAIN A OR TRAIN BB AS NOTED.
- FOR BREAKER/OLI 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 EE-041 548V AND 120V AC ELECTRICAL POWER SYSTEM.
- SPLICE #4 AWG ONTO CABLE IN TRANSFER SWITCH ENCLOSURE. TERMINATE #4 AWG ONTO TRANSFER SWITCH.
- ISOLATION BETWEEN CLASS I.E. BUS AND NON-CLASS I.E. LOAD IS PROVIDED BY LOAD CIRCUIT BREAKER, COORDINATED WITH THE BUS UPSTREAM CIRCUIT BREAKER, INDICATED BY NEXT TO THE BUS UPSTREAM 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 (SISAL)
- ISOLATION BETWEEN CLASS I.E. BUS AND NON-CLASS I.E. 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.
- THE BREAKER IS TRIPPED BY SHUNT TRIP ACTUATION IF THE EXHAUST FAN CPl-VAFNCB-09 IS RUNNING AND SUPPLY FAN CPl-VAFNCB-48 IS TRIPPED. THE BREAKER IS REQUIRED TO BE MANUALLY CLOSED AFTER SHUNT TRIP.
- FUSES ARE NON-CLASS I.E.

**REFERENCE DRAWINGS**

- E1-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2
- E1-2400 PROTECTIVE DEVICE SETTING
- E1-0007-E CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA
- E2-0024-04 FUSE BILL OF MATERIAL
- E1-0066-76 LOAD SHEDDING SCHEMATIC DIAGRAM

DRAWING NO.	2323-E1-0007	REV	CP-6
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0007			
E1-0007-A			
E1-0007-B			
E1-0007-C			

**TRAIN B CLASS I (NICKEL SAFETY-RELATED)**

**LUMINANT CPNPP GLEN ROSE, TEXAS**

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

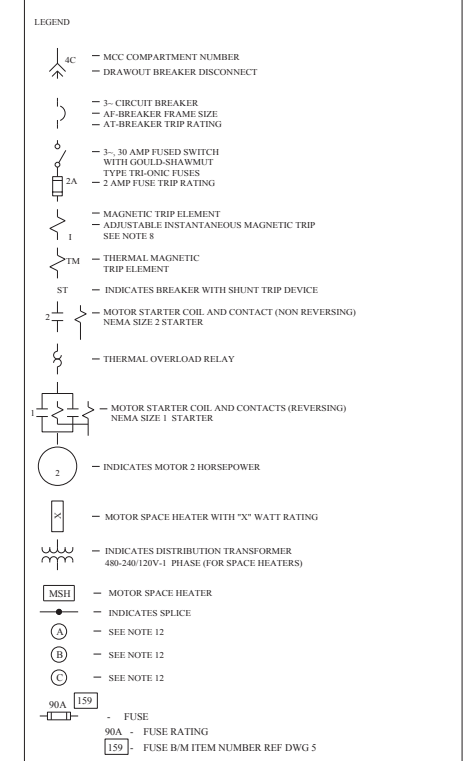
DWG NO.	E1-0007	SH NO.	B	REV.	CP-37
---------	---------	--------	---	------	-------

**< FINAL PRINT >**

THIS DRAWING CREATED ELECTRONICALLY

REV	DATE	BY	CHKD	APPD	REMARKS
CP-42	SEP 2003	SEP 2003			THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2010-000172-82-01 PER SK-0002-10-000172-82-01

### FSAR FIGURE 8.3-9



- 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, UOON.
  - 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.
  - CABLE(S) ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS 1E, TRAIN AA OR TRAIN BB AS NOTED.
  - 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 E1-041 "480V AND 120V AC ELECTRICAL POWER SYSTEM".
  - SPLICE #4 AWG ONTO CABLE IN TRANSFER SWITCH ENCLOSURE.
  - 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 (SIAS)  
 (B) - TRIPPED BY SAFETY INJECTION SEQUENCER AUTO LOCKOUT CONTACT (SS/AI)
  - FUSES ARE NON-CLASS 1E.
  - DELETED

**REFERENCE DRAWING**

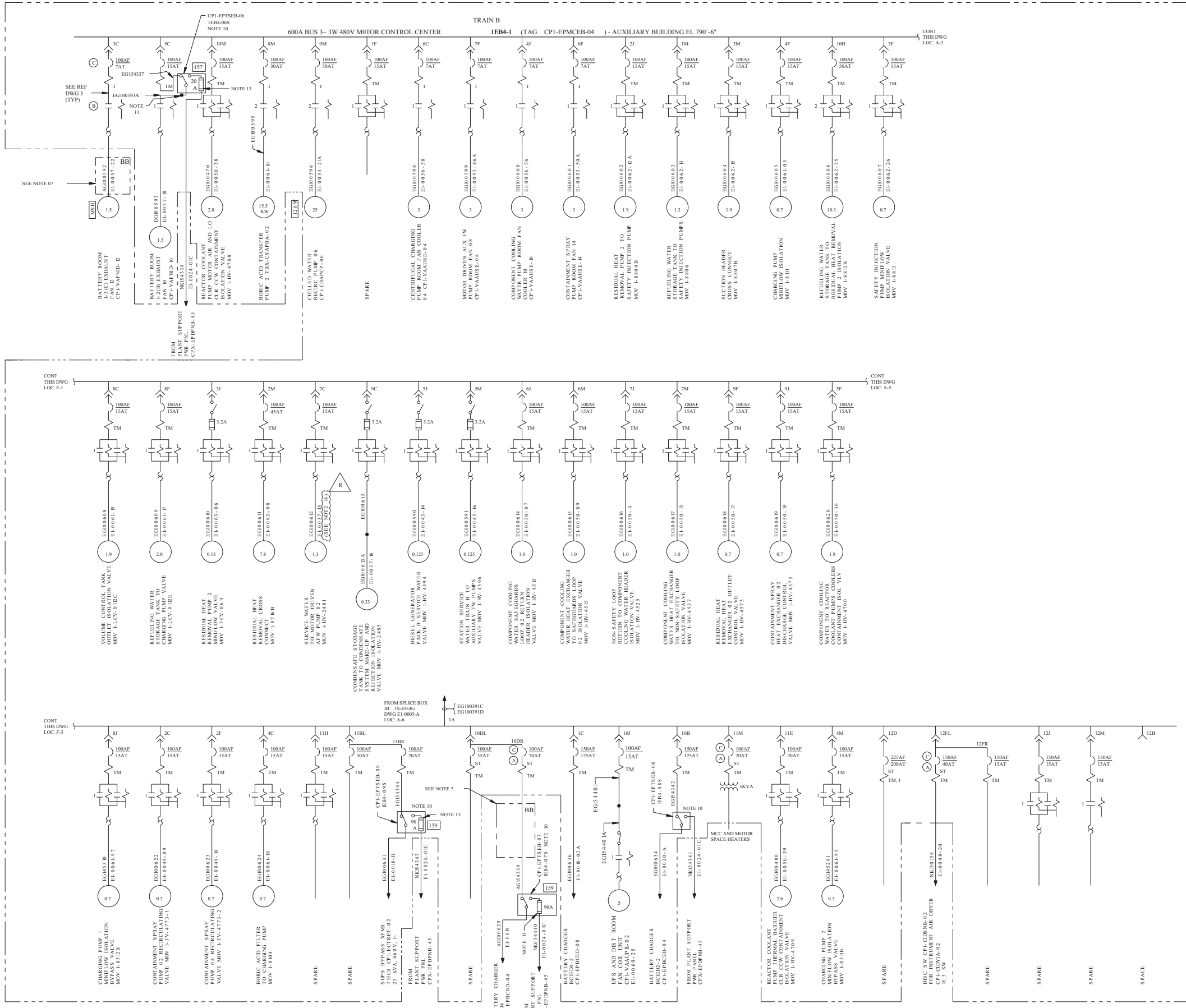
1. E1-0001	PLANT ONE LINE DIAGRAM UNITS 1 AND 2
2. E1-2400	PROTECTIVE DEVICE SETTINGS
3. E1-0007-E	CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA
4. E1-0066-76	LOAD SHEDDING SCHEMATIC DIAGRAM
5. E1-0024-04	FUSE BILL OF MATERIAL

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	

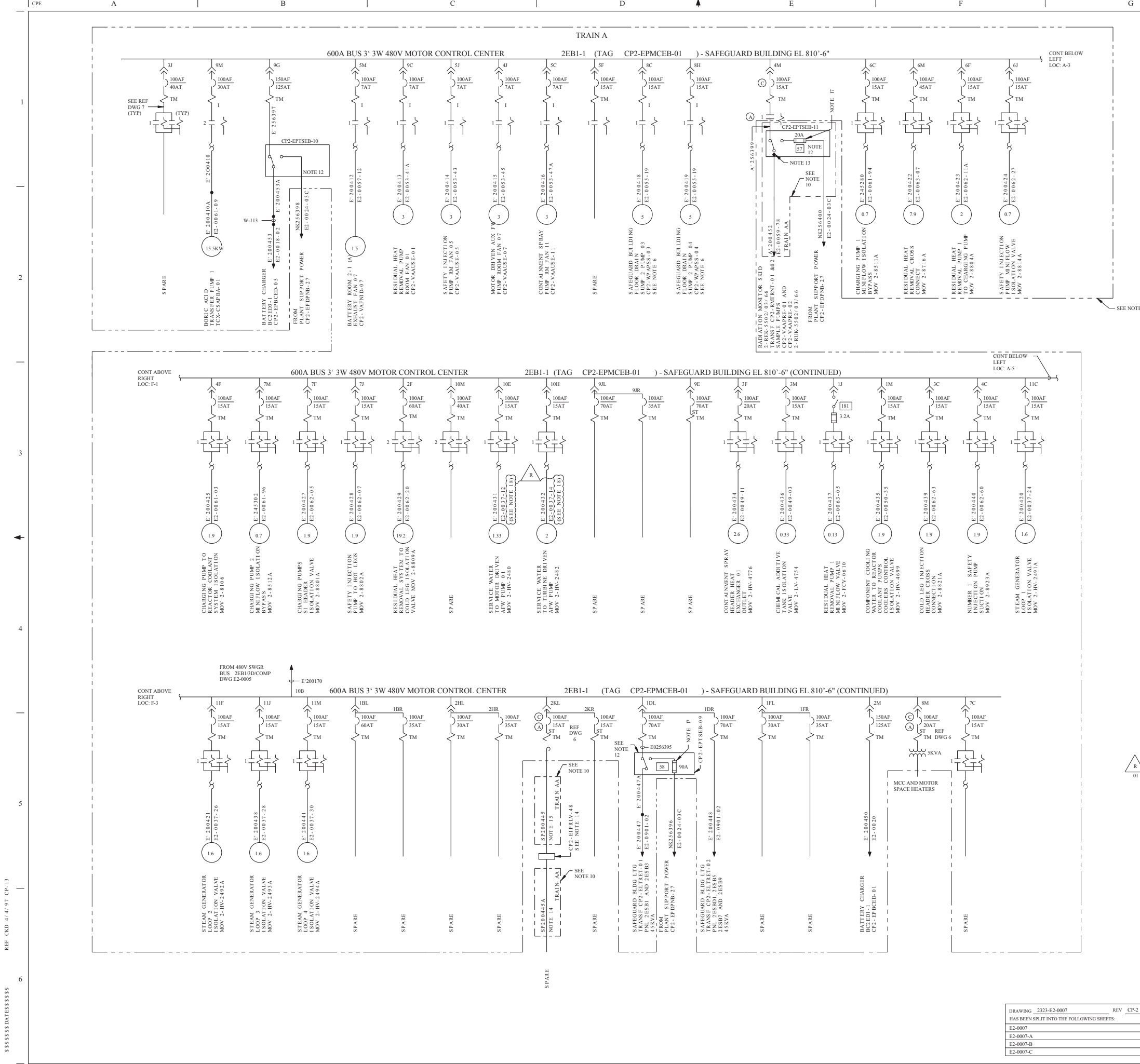
**CLASS I**  
(NUCLEAR SAFETY RELATED)  
SAFETY CLASS 1 SYSTEM CATEGORY I  
SAFETY CLASS 2 CLASS 1E  
SAFETY CLASS 3 ASSOCIATED CIRCUITS

**LUMINANT**  
**CPNPP**  
**GLEN ROSE, TEXAS**

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



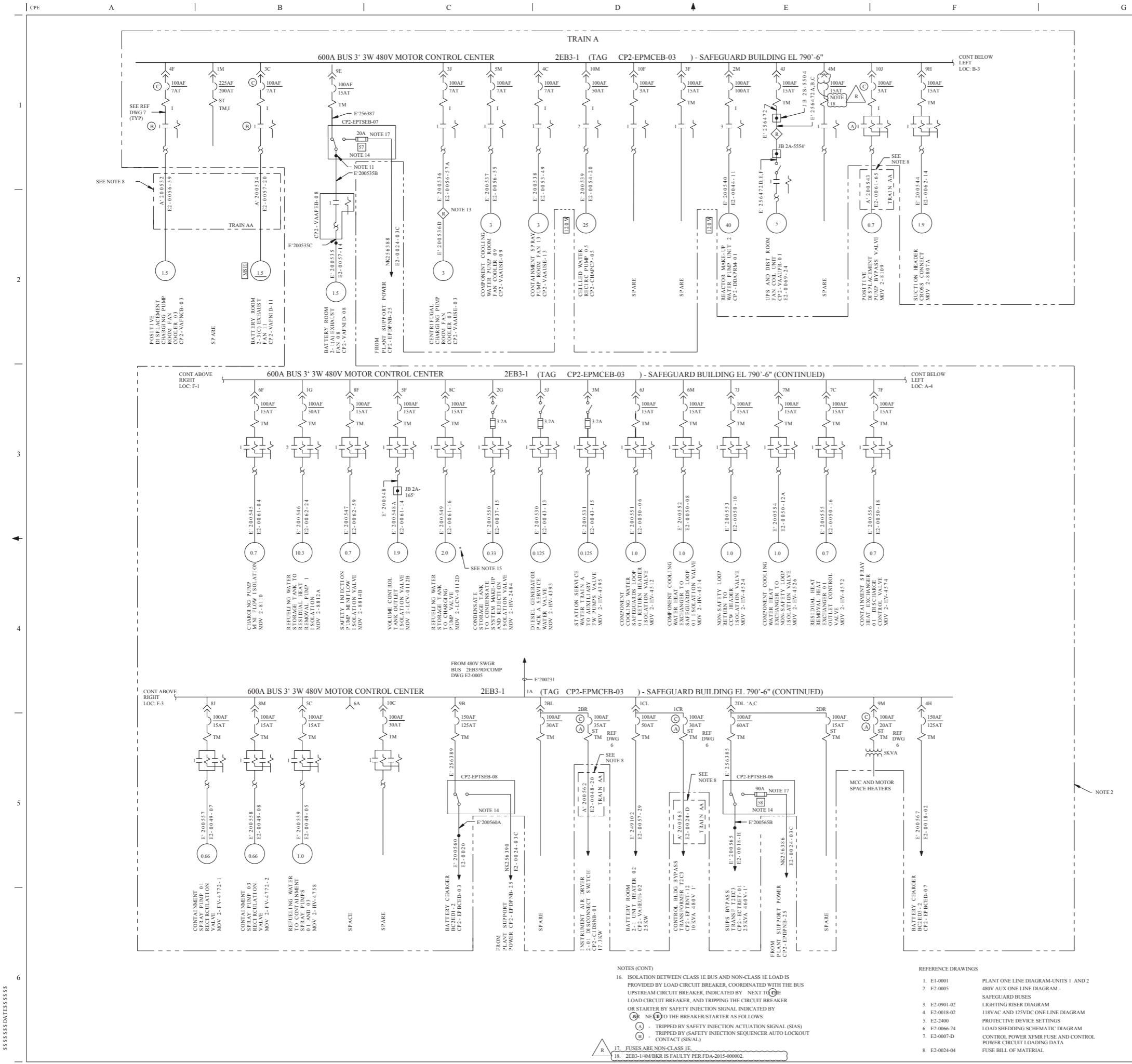
DRAWING	E1-0007-C	REV	CP-15
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0007-C			
E1-0007-D			
E1-0007-E			



REV	DWN	CHK	HAPVD	REMARKS
CP-27	1/4	1/2	1/3	THIS DRAWING REVISION TO INCORPORATE DESIGN CHANGE FDA-2010-000172-01 PER 98.0004-10-000172-01
<b>FSAR FIGURE 8.3-9</b>				
LEGEND:				
●	INDICATES SPLICE			
2C	MCC COMPARTMENT NUMBER 2C DRAWOUT BREAKER DISCONNECT			
3	3" CIRCUIT BREAKER			
AF	AF - BREAKER FRAME SIZE			
AT	AT - BREAKER TRIP RATING			
1	MAGNETIC TRIP ELEMENT ADJUSTABLE INSTANTANEOUS MAGNETIC 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	MOTOR STARTER COIL AND CONTACTS (REVERSING) NEMA SIZE 1 STARTER			
2	INDICATES MOTOR 2 HORSEPOWER			
20A	INDICATES DISTRIBUTION TRANSFORMER 480-240/120V-1 PHASE (FOR SPACE HEATERS)			
20A	FUSE			
20A	FUSE RATING			
57	FUSE BM ITEM NUMBER REF DWG 8			
A	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. SAFEGUARD BUILDING FLOOR DRAIN SUMP 1 AND SUMP 2 PUMPS CP2-WPAPSS-03 AND CP2-WPAPSS-04 WILL HAVE ELECTRIC ALTERNATORS LOCATED IN THE MCCS.				
7. DELETED				
8. FOR BREAKER/OLH SETTINGS SEE REFERENCE DRAWING 5.				
9. INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25,000 RMS SYMMETRICAL AMPERES.				
10. IS (ARE) CABLE(S) ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS 1E, TRAIN AA OR TRAIN BB AS NOTED.				
11. DELETED				
12. TRANSFER SWITCH NORMALLY ALIGNED TO MCC AND ONLY ALIGNED TO PLANT SUPPORT POWER DURING OUTAGE. PRE-REQUISITES AND REQUIREMENTS FOR ALIGNING TO PLANT SUPPORT POWER ARE IN DBD-EE-041 "480V AND 120V AC ELECTRICAL POWER SYSTEM."				
13. SPLICE #4 AWG ONTO CABLE IN TRANSFER SWITCH ENCLOSURE. TERMINATE #4 AWG ONTO TRANSFER SWITCH.				
14. ASSOCIATED SPARE CABLE SP200445A IS DETERMINATED AT THE STARTER LOCATED IN PANEL CP2-EIPRLV-48 AND AT THE MOTOR TERMINAL.				
15. ASSOCIATED SPARE CABLE SP200445 IS DETERMINATED AT BOTH ENDS 1/2 AT MCC AND AT MOTOR STARTER LOCATED IN PANEL CP2-EIPRLV-48.				
16. ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOAD IS PROVIDED BY LOAD CIRCUIT BREAKER, INDICATED BY NEXT TO THE LOAD CIRCUIT BREAKER AND TRIPPING THE CIRCUIT BREAKER OR STARTER BY SAFETY INJECTION SIGNAL INDICATED BY (X) TO THE BREAKER/STARTER AS FOLLOWS:				
17. FUSES ARE NON-CLASS 1E.				
18. CIRCUIT BREAKER NORMALLY OPEN (ONLY REQUIRED IN MODES 1 THROUGH 4) PER ISA MODIFICATION REFERENCE: FDA-2010-000172-01				
REFERENCE DRAWINGS:				
1. E1-0001 PLANT ONE LINE DIAGRAM-UNITS 1 AND 2				
2. E2-0005 480V AUX ONE LINE DIAGRAM - SAFEGUARD BUSES				
3. E2-0901-02 LIGHTING RISER DIAGRAM				
4. E2-0018-02 118VAC AND 125VDC ONE LINE DIAGRAM PROTECTIVE DEVICE SETTINGS				
5. E2-2400 LOAD SHEDDING SCHEMATIC DIAGRAM				
6. E2-0066-74 CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA				
7. E2-0007-D FUSE BILL OF MATERIAL				
8. E2-0024-04				
<b>TRAIN A</b>				
<b>CLASS I</b>				
(NUCLEAR SAFETY-RELATED)				
SAFETY CLASS 1		SEISMIC CATEGORY 1		
SAFETY CLASS 2		ASSOCIATED CLASS 1		
SAFETY CLASS 3		ASSOCIATED CLASS 1		
<b>LUMINANT</b>				
<b>CPNPP</b>				
<b>GLEN ROSE, TEXAS</b>				
<b>SAFEGUARD AND AUXILIARY BUILDINGS</b>				
<b>SAFEGUARD 480V MCC'S</b>				
<b>ONE LINE DIAGRAM</b>				
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				
DWG NO: E2-0007				
SHE NO: -				
REV: CP-27				

REF CKD 4/1/97 CP-13

THIS DRAWING CREATED ELECTRONICALLY



REV	OWN	CHK	APPV	REMARKS
CP-27	106	106	106	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FSA-2015-00002-01-08 PER 36-0001-15-00002-01-08

FSAR FIGURE 8.3-9

**LEGEND**

- INDICATES SPLICE
- MCC COMPARTMENT NUMBER 2C DRAWOUT BREAKER DISCONNECT
- 3" CIRCUIT BREAKER
- AF - BREAKER FRAME SIZE
- AT - BREAKER TRIP RATING
- 3", 30 AMP FUSED SWITCH WITH 2 AMP FUSE TRIP RATING
- MAGNETIC TRIP ELEMENT, ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP (SEE NOTE 10)
- THERMAL MAGNETIC TRIP ELEMENT
- INDICATES BREAKER WITH SHUNT TRIP DEVICE
- MOTOR STARTER COIL AND CONTACT (NON REVERSING) NEMA SIZE 2 STARTER
- THERMAL OVERLOAD RELAY
- MOTOR STARTER COIL AND CONTACTS (REVERSING) NEMA SIZE 1 STARTER
- INDICATES MOTOR 2 HORSEPOWER
- INDICATES DISTRIBUTION TRANSFORMER 480-240/120V-1 PHASE (FOR SPACE HEATERS)
- FUSE
- 10A - FUSE RATING
- 57 - FUSE B/M ITEM NUMBER REF DWG 8
- INDICATES FIRE ZONE R CABLE INSTALLED TO PROVIDE A ONE HOUR FIRE BARRIER REQUIRED TO MEET FIRE SAFE SHUTDOWN ANALYSIS REQUIREMENTS
- MOTOR SPACE HEATER WITH "X" WATT RATING
- MOTOR SPACE HEATER
- FEEDER TO LOCAL PANEL, STARTER OR CONTACTOR AT EQUIPMENT
- SEE NOTE 16
- SEE NOTE 16
- 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 FEEDER CABLES 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 2233-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)

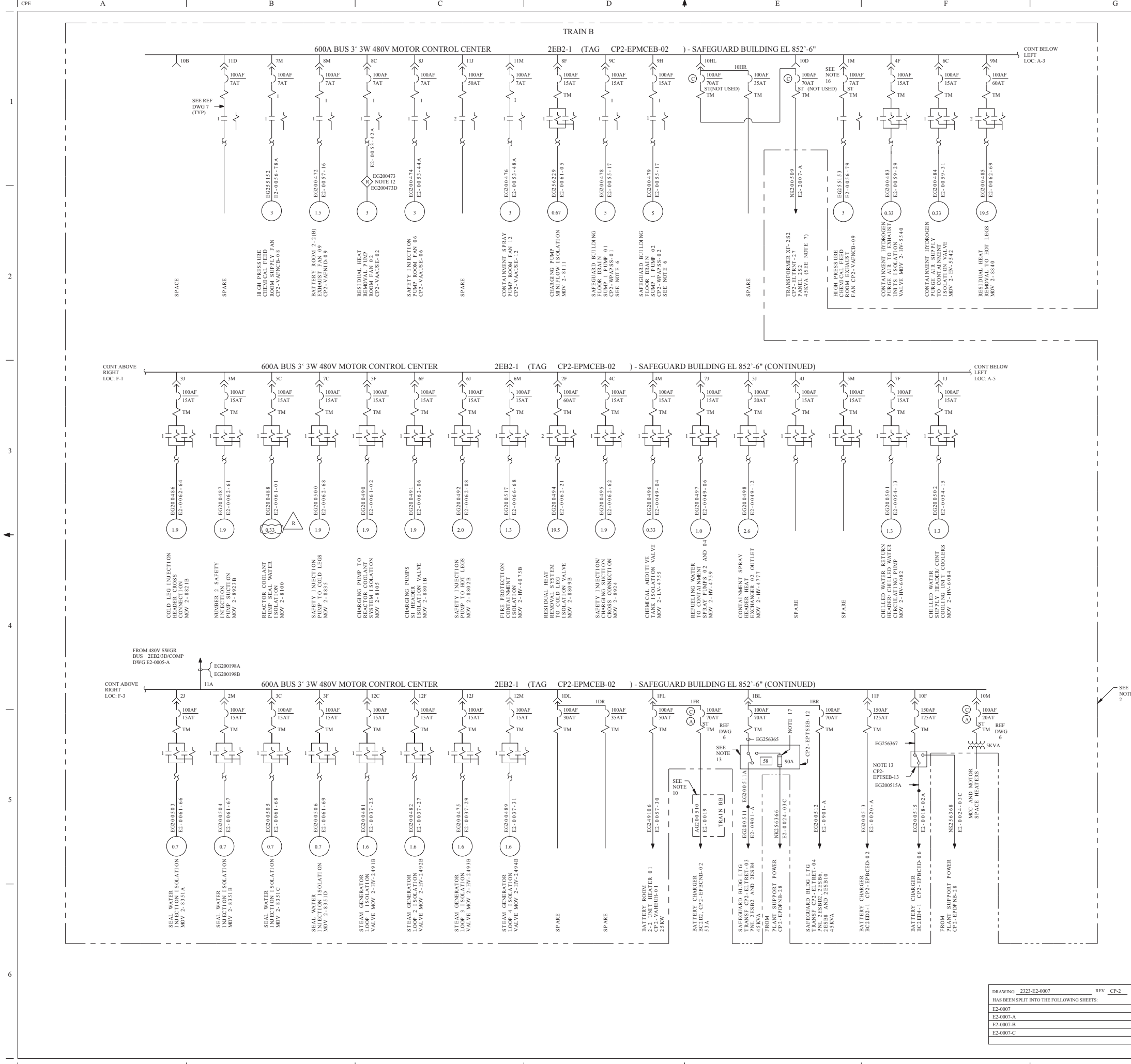
SAFETY CLASS 1	SEVERITY CATEGORY I
SAFETY CLASS 2	CLASS 1E
SAFETY CLASS 3	ASSOCIATED CIRCUITS

LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

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

DWG. NO. E2-0007      SHEET NO. A      REV. CP-27





REV	DWN	CHK	APPV	REMARKS												
CP-21	EIS 06/23/2011	MJP 06/23/2011		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2010-000172-76-00 PER 38-0004-10-000172-76-00												
<b>FSAR FIGURE 8.3-9</b>																
<p><b>LEGEND</b></p> <ul style="list-style-type: none"> <li> - MCC COMPARTMENT NUMBER 2C DRAWOUT BREAKER DISCONNECT</li> <li> - 3" CIRCUIT BREAKER</li> <li> AF - BREAKER FRAME SIZE</li> <li> AT - BREAKER TRIP RATING</li> <li> - INDICATES FIREZONE "R" CABLE INSTALLED TO PROVIDE A ONE HOUR FIRE BARRIER REQUIRED TO MEET FIRE SAFE SHUTDOWN ANALYSIS REQUIREMENTS</li> <li> - MAGNETIC TRIP ELEMENT, ADJUSTABLE</li> <li> - INSTANTANEOUS MAGNETIC (SEE NOTE 11)</li> <li> - THERMAL MAGNETIC TRIP ELEMENT</li> <li> ST - INDICATES BREAKER WITH SHUNT TRIP DEVICE</li> <li> - MOTOR STARTER COIL AND CONTACT (NON REVERSING) NEMA SIZE 2 STARTER</li> <li> - MOTOR STARTER COIL AND CONTACTS (REVERSING) NEMA SIZE 1 STARTER</li> <li> - INDICATES MOTOR 2 HORSEPOWER</li> <li> - INDICATES DISTRIBUTION TRANSFORMER 480-240/120V-1 PHASE (FOR SPACE HEATERS)</li> <li> - INDICATES SPLICE</li> <li> - FUSE</li> <li> 90A - FUSE RATING</li> <li> [58] - FUSE B/M ITEM NUMBER, REF DWG 8</li> <li> - SEE NOTE 14</li> <li> - SEE NOTE 14 AND 15</li> </ul> <p><b>NOTES</b></p> <ol style="list-style-type: none"> <li>1. ALL MOTOR AND FEEDER RATINGS ARE GIVEN IN HORSEPOWER UNLESS OTHERWISE NOTED.</li> <li>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.</li> <li>3. DELETED.</li> <li>4. DELETED.</li> <li>5. THERMAL OVERLOAD RELAYS FOR CLASS 1E MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.</li> <li>6. SAFEGUARD BUILDING FLOOR DRAIN SUMP 1 AND SUMP 2 PUMPS CP2-WPAPSS-01 AND CP2-WPAPSS-02 WILL HAVE ELECTRICAL ALTERNATORS LOCATED IN THE MCCS.</li> <li>7. THE FIELD POWER CABLE SHALL BE ROUTED IN CONDUIT UP TO THE BREAKER TERMINALS WHERE DESIGNATED BY NOTE 7.</li> <li>8. DELETED.</li> <li>9. INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25,000 RMS SYMMETRICAL AMPERES.</li> <li>10. - - - - - CABLE(S) ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS 1E, TRAIN AA OR TRAIN BB AS NOTED.</li> <li>11. FOR BREAKER/OLH SETTINGS SEE REFERENCE DRAWING 5.</li> <li>12. FIREZONE "R" CABLES (EG200473A, B AND C) SPLICED IN TWO PLACES. SEE DWG EG-2005-42A FOR DETAILS.</li> <li>13. 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".</li> <li>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 (SIAS) NEXT TO THE BREAKER/STARTER AS FOLLOWS:             <ul style="list-style-type: none"> <li>(SIAS) - TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (SIAS)</li> </ul> </li> <li>15. 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 NEXT TO THE BREAKER/FUSE.</li> <li>16. THE BREAKER IS TRIPPED BY SHUNT TRIP ACTUATION IF THE EXHAUST FAN CP2-VAFNCRB-09 IS RUNNING AND SUPPLY FAN CP2-VAFNCRB-08 IS TRIPPED. THE BREAKER IS REQUIRED TO BE MANUALLY CLOSED AFTER SHUNT TRIP.</li> <li>17. FUSES ARE NON-CLASS 1E.</li> </ol> <p><b>REFERENCE DRAWING</b></p> <ol style="list-style-type: none"> <li>1. E1-0001 PLANT ONE LINE DIAGRAM-UNITS 1 AND 2</li> <li>2. E2-0005-A 480V AUX ONE LINE DIAGRAM - SAFEGUARD BUSES</li> <li>3. E2-0901-02 LIGHTING RISER DIAGRAM</li> <li>4. E2-0018-02 118VAC AND 125VDC ONE LINE DIAGRAM</li> <li>5. E2-2400 PROTECTIVE DEVICE SETTINGS</li> <li>6. E2-0066-76 LOAD SHEDDING SCHEMATIC DIAGRAM</li> <li>7. E2-0007-E CONTROL POWER FEED FUSE AND CONTROL CIRCUIT LOADING DATA</li> <li>8. E2-0024-04 FUSE BILL OF MATERIAL</li> </ol>																
<b>CLASS I</b> (NUCLEAR SAFETY-RELATED) SAFETY CLASS 1      SEMI-CATEGORY I SAFETY CLASS 2      CLASS II SAFETY CLASS 3      ASSOCIATED CIRCUITS																
<b>LUMINANT</b> CPNPP GLEN ROSE, TEXAS																
SAFEGUARD AND AUXILIARY BUILDINGS SAFEGUARD 480V MCC'S ONE LINE DIAGRAM																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">DRAWING 2323-E2-0007</td> <td style="width: 40%;">REV CP-2</td> </tr> <tr> <td colspan="2">HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:</td> </tr> <tr> <td>E2-0007</td> <td></td> </tr> <tr> <td>E2-0007-A</td> <td></td> </tr> <tr> <td>E2-0007-B</td> <td></td> </tr> <tr> <td>E2-0007-C</td> <td></td> </tr> </table>					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	
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																
DWG. NO. E2-0007	SH. NO. B	REV. CP-21														

5555555555555555

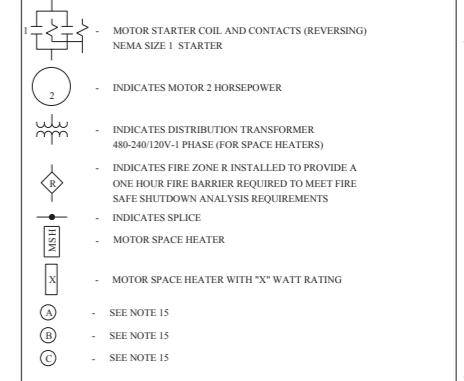
THIS DRAWING CREATED ELECTRONICALLY

REV	OWN	CHKD	APVD	REMARKS
CP-29	SAW	MBP	MBP	THIS DRAWING REVISION TO INCORPORATE DESIGN CHANGE FDA-2010-000172-02-01 PER SK-0005-10-000172-02-01

FSAR FIGURE 8.3-9

**LEGEND**

- 20A FUSE - FUSE RATING
- 57 FUSE BOM ITEM NUMBER REF DWG 6
- 2C MCC COMPARTMENT NUMBER
- 3C DRAWOUT BREAKER DISCONNECT
- 3' AT 3' CIRCUIT BREAKER
- AF - BREAKER FRAME SIZE
- AT - BREAKER TRIP RATING
- 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
- 2 - THERMAL OVERLOAD RELAY
- 2 - MOTOR STARTER COIL AND CONTACTS (REVERSING) NEMA SIZE 1 STARTER
- 2 - INDICATES MOTOR 2 HORSEPOWER
- 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
- INDICATES SPLICE
- NSH - MOTOR SPACE HEATER
- X - MOTOR SPACE HEATER WITH "X" WATT RATING
- A - SEE NOTE 15
- B - SEE NOTE 15
- C - SEE NOTE 15



- NOTES**
- ALL MOTOR AND FEEDER RATINGS ARE GIVEN IN HORSEPOWER 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.
  - 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 REFERENCE DRAWING 3.
  - FIELD SHALL SPLICE CABLES EG200606 AND EG200606A AT JB 2S-4705G 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 324442) IN LIEU OF BOLTING RING-TONGUE LUGS. USE OF NOTED LUGS (SLEEVES) IS A ONE-TIME DEVIATION TO SPEC 2323-ES-100.
  - 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	

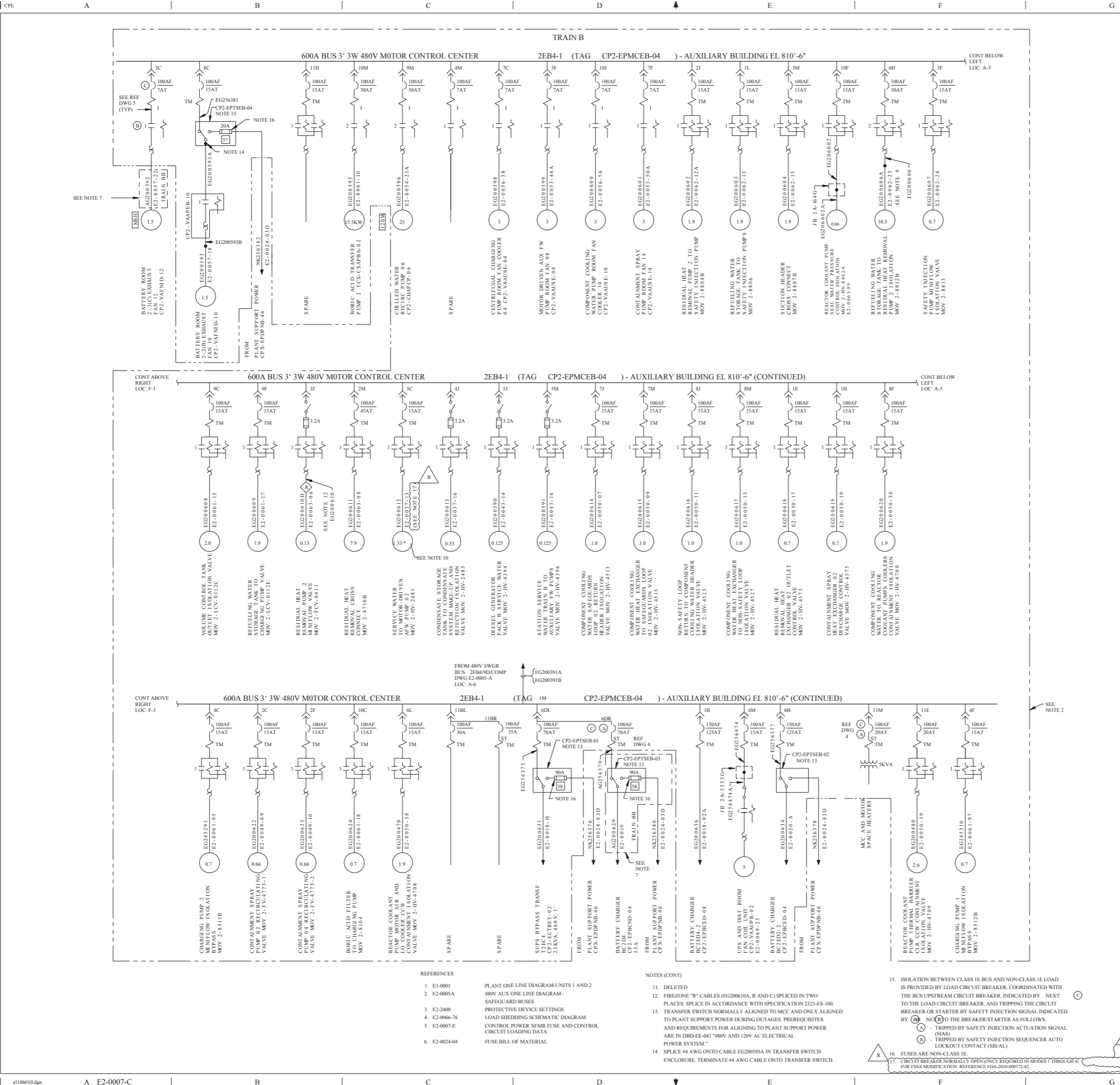
DRAWING E2-0007	REV CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E2-0007	
E2-0007-A	
E2-0007-B	
E2-0007-C	

CLASS I (NUCLEAR SAFETY-RELATED)

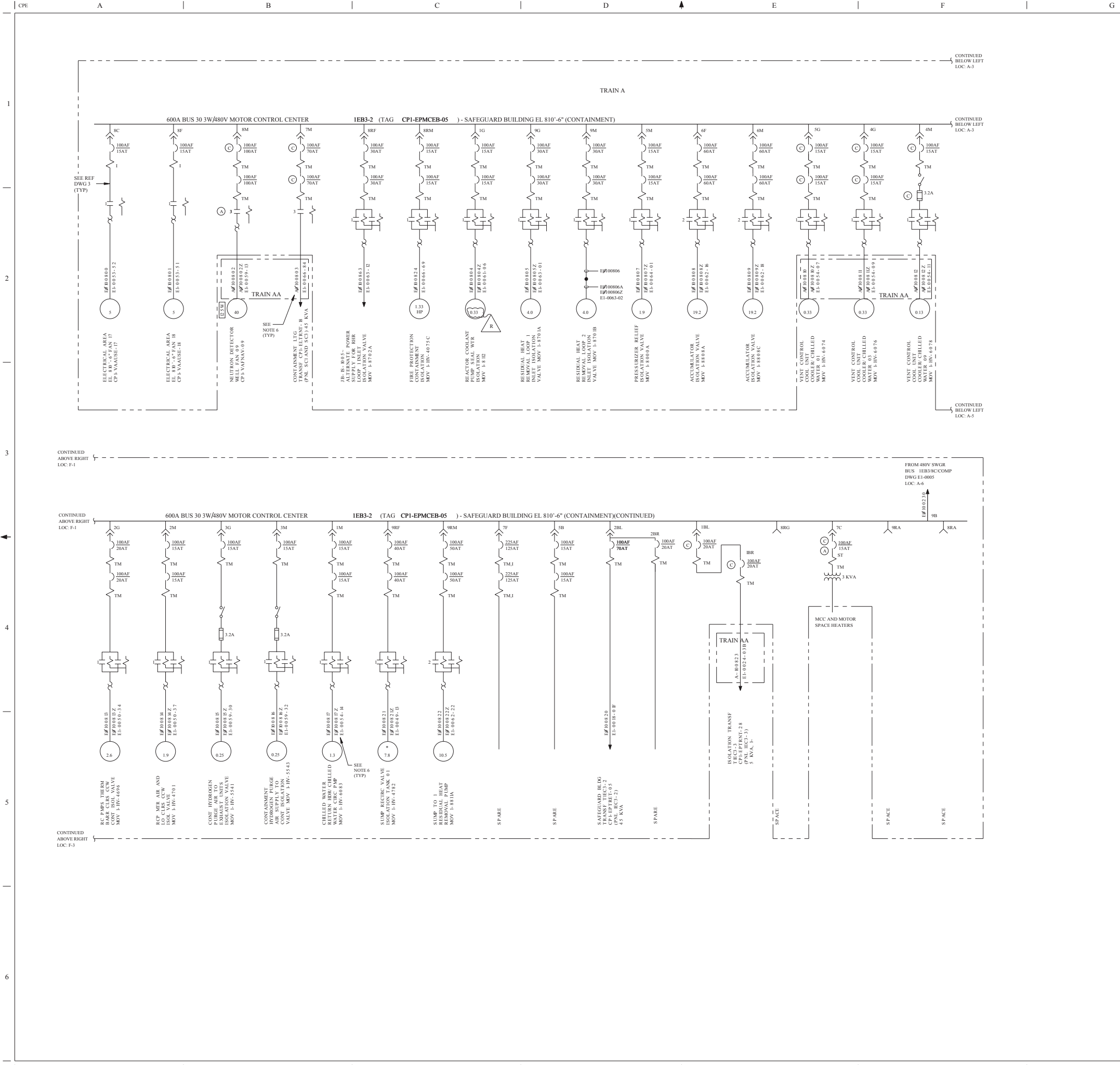
LUMINANT CPNPP GLEN ROSE, TEXAS

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

1 2 3 4 5 6



1 2 3 4 5 6



REV	OWN	CHK	APPV	REMARKS
CP-27	SM	GAW	10/31/2011	THIS DRAWING REVISION TO INCORPORATE DESIGN CHANGE: FDA-2010-000172-75-00 PER SK-0001-10-000172-75-00

**FSAR FIGURE 8.3-10**

**LEGEND**

- 2M - MCC COMPARTMENT NUMBER
- DRAWOUT BREAKER DISCONNECT
- 3/30 AMP FUSED SWITCH WITH GOULD SHAWMUT TYPE TRI-ONIC FUSES 3.2 AMP FUSE TRIP RATING
- 3.2A
- AF - 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)
- 2 - NEMA SIZE 2 STARTER
- 1 - THERMAL OVERLOAD RELAY
- 2 - MOTOR STARTER COILS AND CONTACTS (REVERSING)
- 1 - NEMA SIZE 1 STARTER
- 2 - INDICATES MOTOR 2 HORSEPOWER
- 1 - INDICATES DISTRIBUTION TRANSFORMER 480-240/120V 1 PHASE (FOR SPACE HEATER)
- X - MOTOR SPACE HEATER WITH "X" WATT RATING
- INDICATES SPLICE
- ST - INDICATES BREAKER WITH SHUNT TRIP DEVICE
- A - SEE NOTE 13
- C - SEE NOTE 13 AND 14

**NOTES**

- DELETED
- 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.
- DELETED
- DELETED
- THERMAL OVERLOAD RELAYS FOR CLASS IE MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.
- NUMBERS SHOWN ON LINES BETWEEN MCC AND THE LOAD IT IS SUPPLYING ARE CABLE NUMBERS (eg A-10080). CABLE NUMBERS HAVING Z SUFFIX (eg E-100817Z) 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 IE, TRAIN AA OR TRAIN BB AS NOTED.
- DELETED
- FOR BREAKER/OLH SETTING SEE REFERENCE DRAWING 2.
- 100AF BREAKER TO BE REPLACED WITH 150AF BREAKER WHEN REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED.
- ALL MOTORS ARE RATED 460 VAC EXCEPT FOR MOTORS MARKED WITH \* SIGN WHICH HAVE 480 VAC VOLTAGE RATING.
- 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)
- 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**

- EI-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2
- EI-2400 PROTECTIVE DEVICE SETTINGS
- EI-0009-B CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA
- 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 II ASSOCIATED CIRCUITS

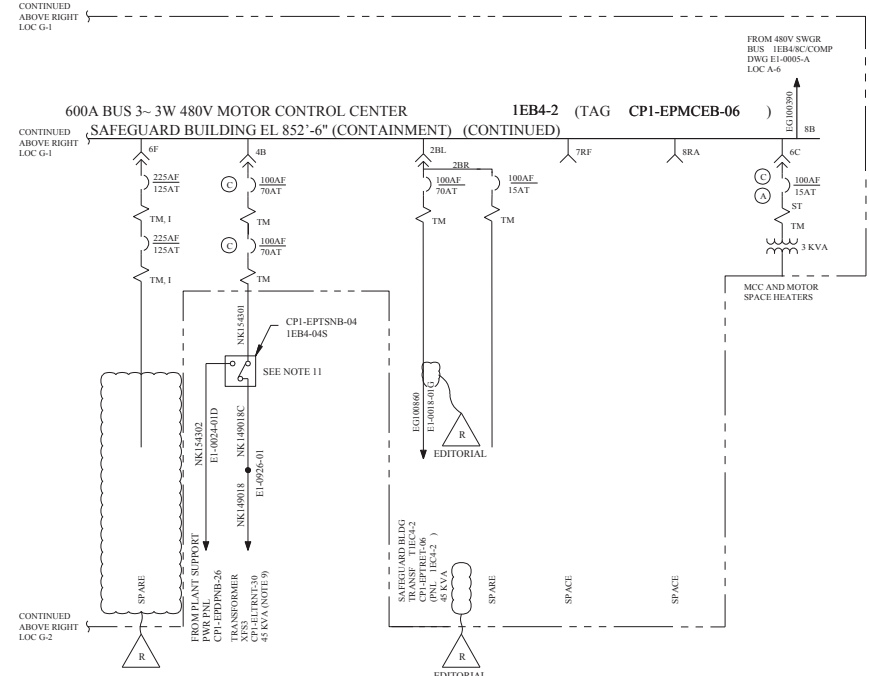
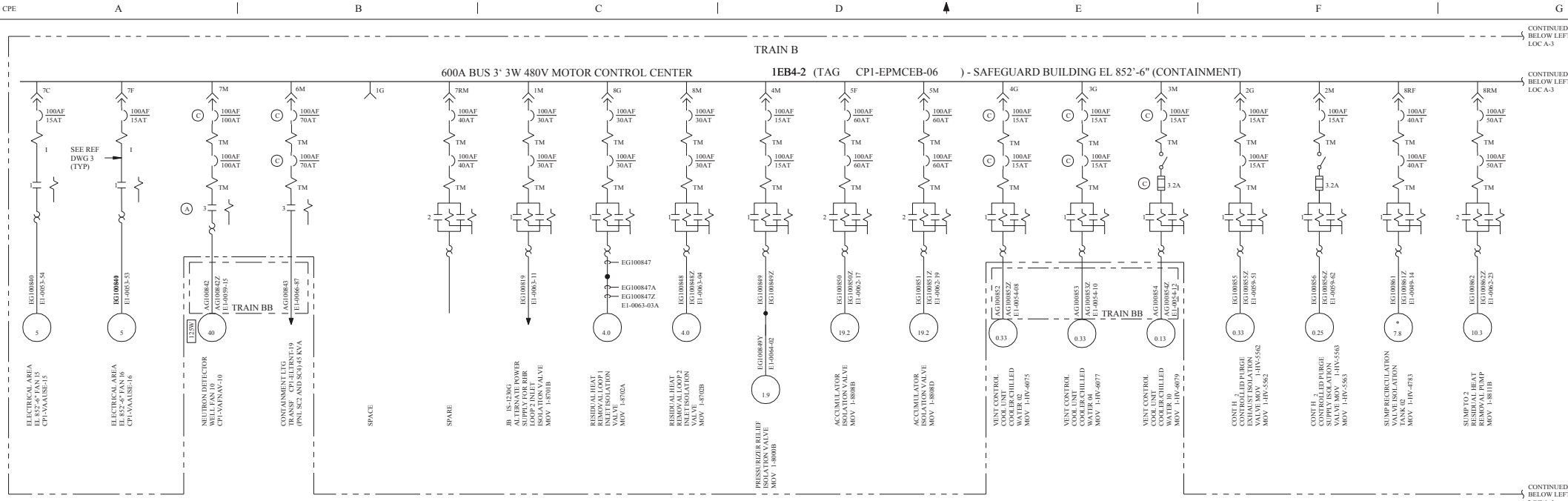
**LUMINANT  
CPNPP  
GLEN ROSE, TEXAS**

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

DWG. NO. E1-0009	SH. NO. -	REV. CP-27
---------------------	--------------	---------------

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

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APPVD	REMARKS
CP-24	01-22-2008	DL	RSK	DL	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2004-002063-01-00 PER SC-0006-04-002063-01-00 EDITORIAL CHANGES AS NOTED

**FSAR FIGURE 8.3-10**

- LEGEND**
- MCC COMPARTMENT NUMBER
  - DRAWOUT BREAKER DISCONNECT
  - 30 AMP 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
  - ST - INDICATES BREAKER WITH SHUNT TRIP DEVICE
  - INDICATES SPLICE
  - SEE NOTE 14
  - SEE NOTE 14 AND 15

- 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. 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. CABLES ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS 1E, TRAIN A 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 OIL 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. \* - ALL MOTORS ARE RATED 460 VAC EXCEPT FOR MOTORS MARKED WITH " \* " SIGN WHICH HAVE 480 VAC VOLTAGE RATING.
  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 NEXT TO THE BREAKER/STARTER AS FOLLOWS:  
 - TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (SIAS)
  15. 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 NEXT TO THE BREAKER/FUSE.

**REFERENCE DRAWINGS**

1. E1-0001	PLANT ONE LINE DIAGRAM UNITS 1 AND 2
2. E1-2400	PROTECTIVE DEVICE SETTINGS
3. E1-0009-C	CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA
4. E1-0066-76	LOAD SHEDDING SCHEMATIC DIAGRAM
5. E1-0066-82	LOAD SHEDDING SCHEMATIC DIAGRAM
6. E1-0067-38	AUX RELAYS SCHEMATIC DIAGRAM

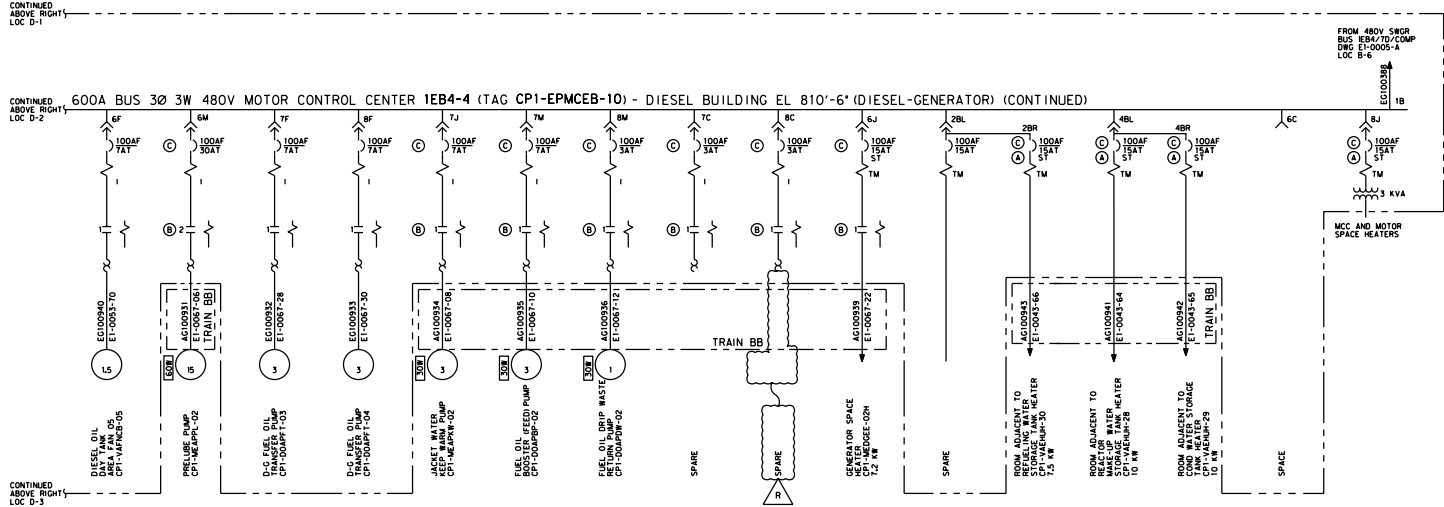
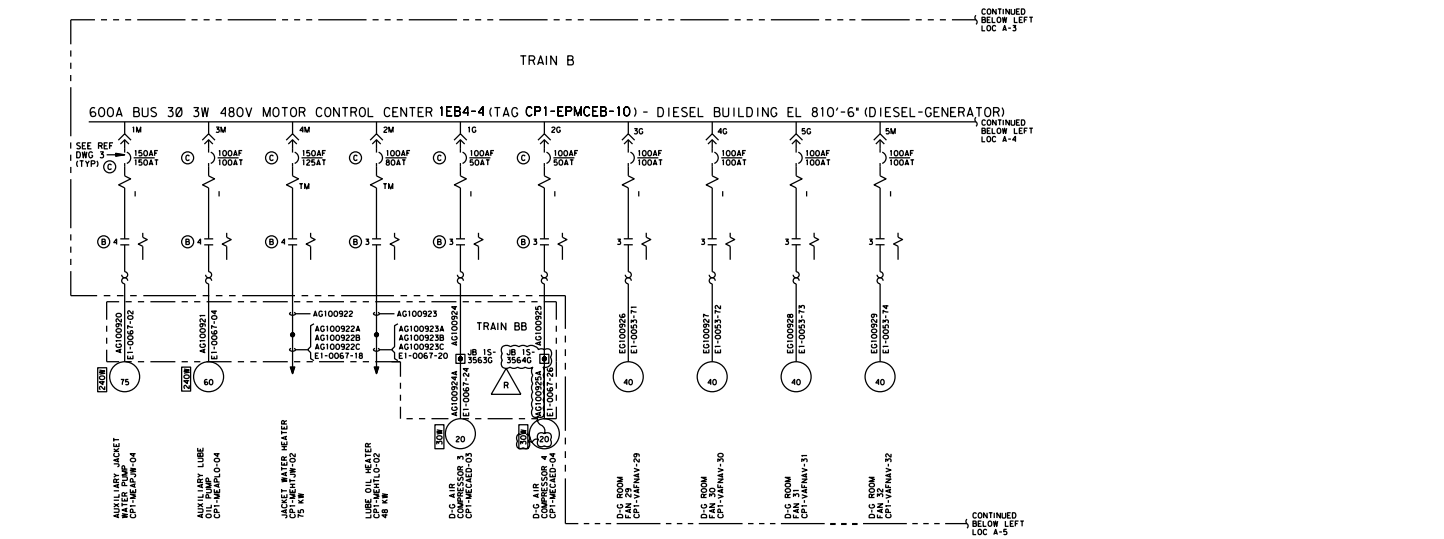
DRAWING 2323-E1-0009 REV CP-3	
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E1-0009	
E1-0009-A	
DRAWING E1-0009-A REV CP-11	
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E1-0009-A	
E1-0009-B	
E1-0009-C	

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

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

**LUMINANT CPNPP**  
GLEN ROSE, TEXAS

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



**FSAR FIGURE 8.3-10**

**LEGEND:**

- MCC COMPARTMENT NUMBER
- DRAWOUT BREAKER DISCONNECT
- 3Ø 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 W/SPACE HEATER
- MOTOR SPACE HEATER WITH "X" WATT RATING
- ST - INDICATES BREAKER WITH SHUNT TRIP DEVICE
- INDICATES SPLICE PER 2323-ES-100
- SEE NOTE 14
- SEE NOTE 14
- SEE NOTE 14

**NOTES:**

1. DELETED
2. --- EQUIPMENT/CABLES ENCLOSED INSIDE DASHED LINE ARE CLASS I.E. TRAIN A OR TRAIN B AS NOTED. EQUIPMENT OUTSIDE THE DASHED LINE IS NON-I.E. NON.
3. DELETED
4. DELETED
5. THERMAL OVERLOAD RELAYS FOR CLASS I.E. 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. A010003); CABLE NUMBERS HAVING 'S' SUFFIX (E.G. A010003S) 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. --- CABLES ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS I.E. 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-150, OR INSTALL A FLEX PER 2323-ES-100 APPENDIX F SKETCH 16345-E-119.
10. FOR BREAKER/OLM 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 ODD EE-041 480V AND 120V AC ELECTRICAL POWER SYSTEM.
13. DELETED
14. ISOLATION BETWEEN CLASS I.E. BUS AND NON-CLASS I.E. 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 (S) (C) NEXT TO THE BREAKER/STARTER AS TO FOLLOW:
- (S) - TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (ISA/IS)
- (C) - TRIPPED BY SAFETY INJECTION SEQUENCER AUTO LOCKOUT CONTACT (S15/4L)

- REFERENCE DRAWINGS:**
1. E1-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2
  2. E1-2400 PROTECTIVE DEVICE SETTINGS
  3. E1-0009-C CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA
  4. E1-0066-76 LOAD SHEDDING SCHEMATIC DIAGRAM
  5. E1-0066-82 LOAD SHEDDING SCHEMATIC DIAGRAM
  6. E1-0067-38 AUX RELAYS SCHEMATIC DIAGRAM
  7. 212B1150 SH TC

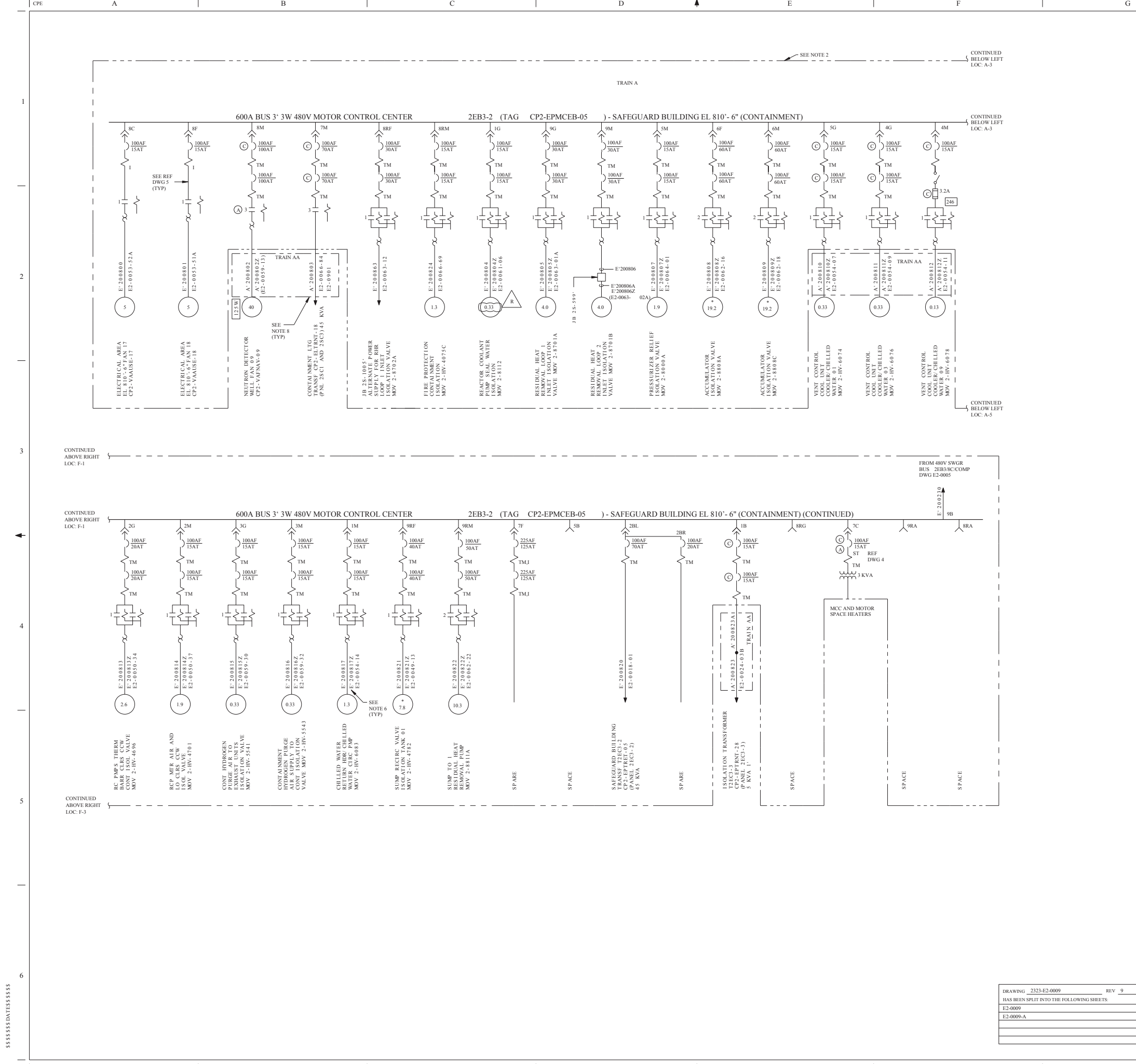
DRAWING: E1-0009-A      REV CP-11  
 HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E1-0009-A
E1-0009-B
E1-0009-C

**CLASS I**  
 (NUCLEAR SAFETY-RELATED)  
 SAFETY CLASS 1  
 DESIGN CATEGORY I  
 ASSOCIATED CIRCUITS

**LUMINANT**  
 CPNPP  
 GLEN ROSE, TEXAS

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



REV	DWN	CHK	APPV	REMARKS
CP-17	188	188	2011	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA, 2010.000172.76-00 PER SR-0001-10.000172.76-00

**FSAR FIGURE 8.3-10**

**LEGEND**

- 2M - MCC COMPARTMENT NUMBER
- ⊖ - DRAWOUT BREAKER DISCONNECT
- ⊖ - 3' 30 AMP FUSED SWITCH
- 3.2A - 3.2 AMP FUSE RATING
- 246 - FUSE BOM ITEM NUMBER REF DWG 6
- AF - 3' CIRCUIT BREAKER
- AT - 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
- 2 - MOTOR STARTER COIL AND CONTACT (NON-REVERSING) NEMA SIZE 2 STARTER
- ⊖ - THERMAL OVERLOAD RELAY
- ⊖ - MOTOR STARTER COILS AND CONTACTS (REVERSING) NEMA SIZE 1 STARTER
- 2 - INDICATES MOTOR 2 HORSEPOWER
- ⊖ - INDICATES DISTRIBUTION TRANSFORMER 480-240/120V 1 PHASE (FOR SPACE HEATER)
- X - MOTOR SPACE HEATER WITH X WATT RATING
- - INDICATES SPLICE PER 2323-ES-100
- \* - ALL MOTORS ARE RATED 460V EXCEPT FOR MOTORS MARKED WITH \* SIGN WHICH HAVE RATED VOLTAGE OF 480V.
- ⊖ - SEE NOTE 10
- ⊖ - SEE NOTE 10 AND 11

**NOTES**

- ALL MOTOR AND FEEDER RATINGS 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 DWG 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  $\text{MI}$  TO THE BREAKER/STARTER AS FOLLOWS:  
  - ⊖ - TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (SIAS)
- 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 NEXT TO THE BREAKER/FUSE.

**REFERENCE DRAWINGS**

- E1-0001 PLANT ONE LINE DIAGRAM-UNITS 1 AND 2
- E2-0005 480V AUXILIARIES ONE LINE DIAGRAM-SAFEGUARD BUSES
- E2-2400 PROTECTIVE DEVICE SETTING
- E2-0066-74 LOAD SHEDDING SCHEMATIC DIAGRAM
- E2-0009-C CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA
- E2-0024-04 FUSE BILL OF MATERIAL

**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

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

DWG NO	SH NO	REV
E2-0009	-	CP-17

DRAWING 2323-E2-0009 REV 9  
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:  
E2-0009  
E2-0009-A

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

THIS DRAWING CREATED ELECTRONICALLY



REV	DWN	CHKD	APVD	REMARKS
CP-18	1	1	1	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2019-000075-01-00 PER SK-000119-000075-01-00.

FSAR FIGURE 8.3-10

**LEGEND:**

- 2M - MCC COMPARTMENT NUMBER
- AF - DRAWOUT BREAKER DISCONNECT
- 3Ø 30 AMP FUSED SWITCH WITH 3.2 AMP FUSE TRIP RATING
- 3Ø AF - 3Ø CIRCUIT BREAKER
- AT - BREAKER FRAME SIZE
- AT - BREAKER TRIP RATING
- ST - BREAKER WITH SHUNT TRIP DEVICE
- 1 - MAGNETIC TRIP ELEMENT ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SEE NOTE 9
- TM - THERMAL MAGNETIC TRIP ELEMENT
- 2 - MOTOR STARTER COIL AND CONTACT (NON-REVERSING) NEMA SIZE 2 STARTER
- 1 - THERMAL OVERLOAD RELAY
- 2 - MOTOR STARTER COIL AND CONTACT (REVERSING) NEMA SIZE 1 STARTER
- 2 - INDICATES MOTOR 2 HORSEPOWER
- 480-240/120V 1 PHASE (FOR SPACE HEATERS)
- - FEEDER TO LOCAL PANEL, STARTER OR CONTACTOR AT EQUIPMENT
- X - MOTOR SPACE HEATER WITH X WATT RATING

**NOTES:**

1. ALL MOTOR AND FEEDER LOADS GIVEN IN HP 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. NUMBERS SHOWN ON LINES BETWEEN MCC AND THE LOAD IT IS SUPPLYING ARE CABLE NUMBERS (i.e. AG200803). CABLE NUMBERS HAVING 2 SUFFIX (i.e. EG200817Z) 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. FOR BREAKER/OLH SETTING SEE REF DRAWING 3.
10. 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)
11. 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 (C) NEXT TO THE BREAKER/FUSE.

12. SPARE BREAKER 2 IS BROKEN (REF FDA-2019-000075-01-00).

**REFERENCE DRAWING:**

1. E1-0001 PLANT ONE LINE DIAGRAMS-UNITS 1 AND 2
2. E2-0005A 480V AUXILIARIES ONE LINE DIAGRAM-SAFEGUARD BUSES
3. E2-2400 PROTECTIVE DEVICE SETTING
4. E2-0066-76 LOAD SHEDDING SCHEMATIC DIAGRAM
5. E2-0009-D CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA

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

DRAWING 2323-E2-0009	REV 9
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E2-0009	
E2-0009-A	

CLASS I

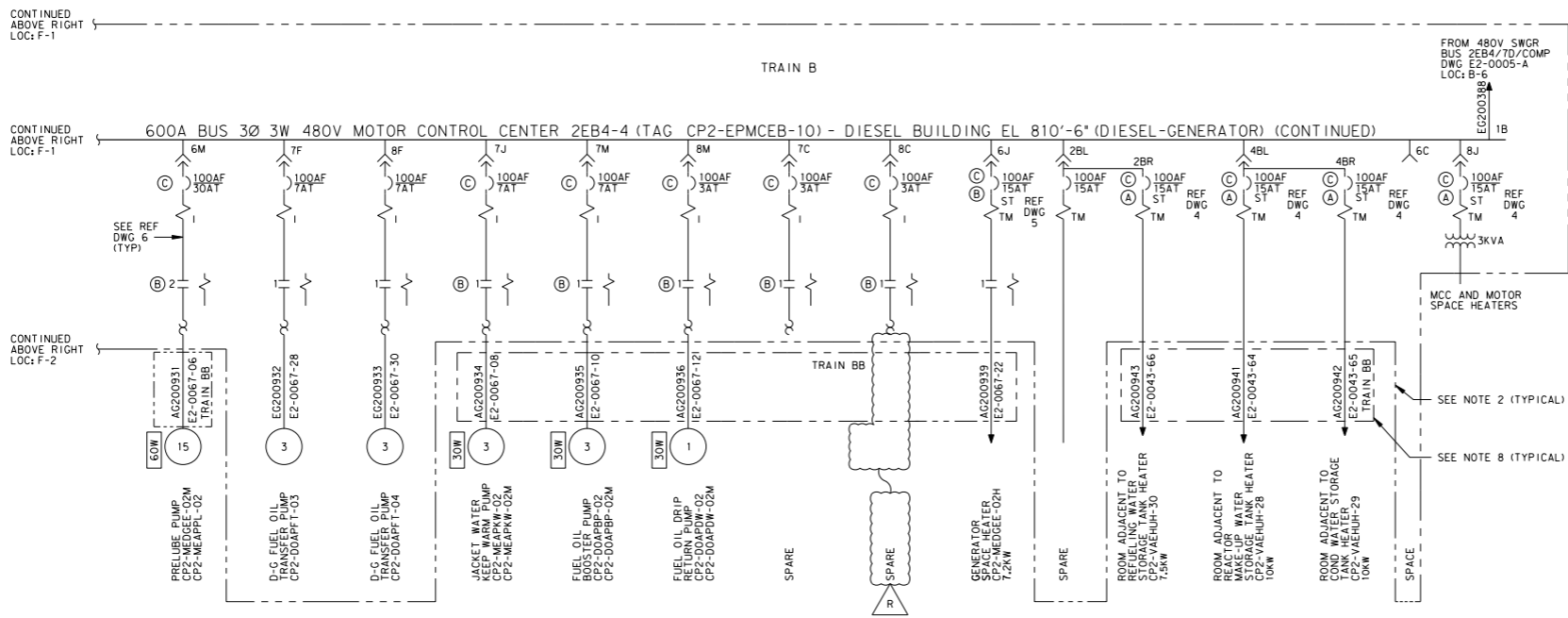
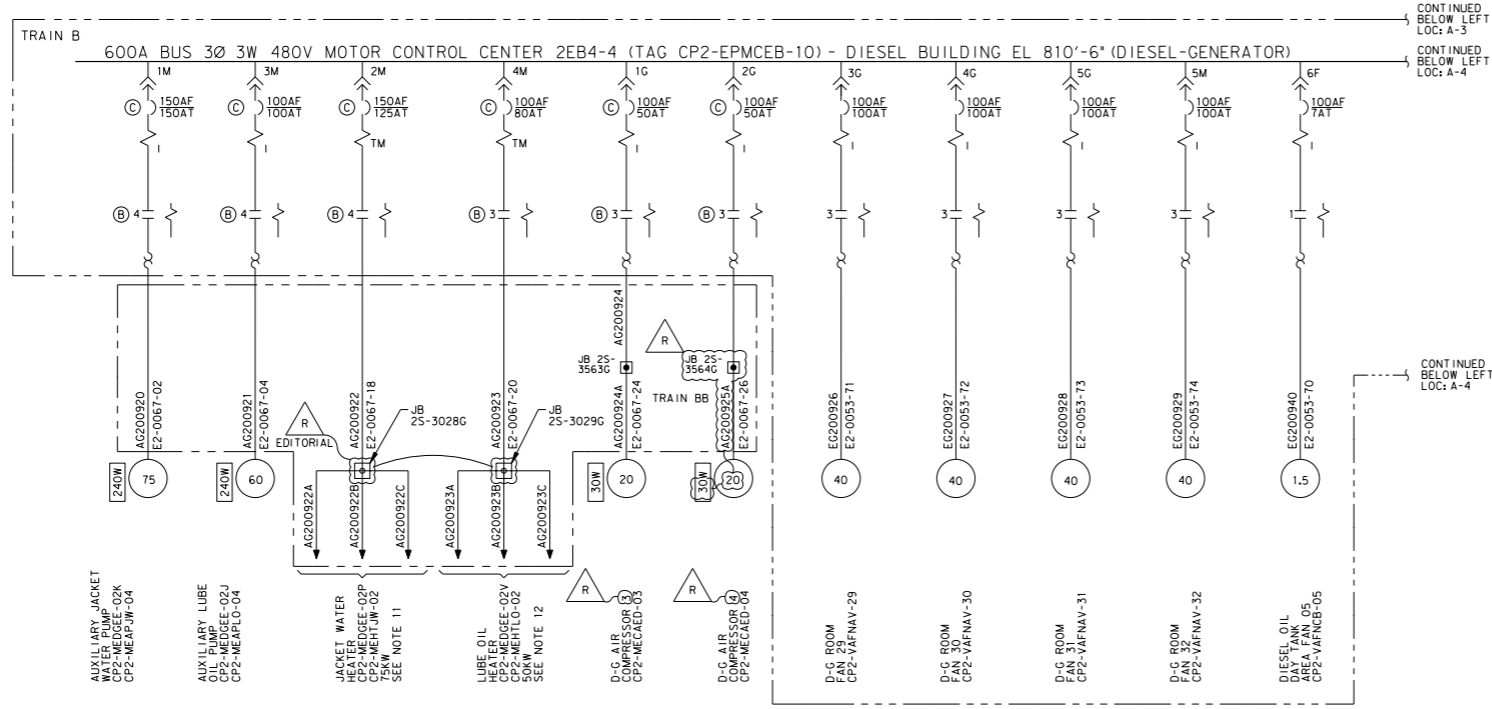
(NUCLEAR SAFETY-RELATED)  
 SAFETY CLASS 1 SEISMIC CATEGORY I  
 SAFETY CLASS 2 CLASS 1E  
 SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT  
 CPNPP  
 GLEN ROSE, TEXAS

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

DRG. NO. E2-0009	SH. NO. REV. A CP-18
---------------------	-------------------------

FINAL IPRINT



REV	DATE	BY	CHKD	APPV	REMARKS
CP-16	08-09-08	009	009		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FSA-2011-000082-01-00 PER SA-09-17-000092-01-00. EDITORIAL CHANGES AS NOTED.

FSAR FIGURE 8.3-10

- LEGEND:
- 2M - MCC COMPARTMENT NUMBER
  - DRAWOUT BREAKER DISCONNECT
  - AF - 3Ø CIRCUIT BREAKER
  - AT - 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
  - ZT - MOTOR STARTER COIL AND CONTACT (NON-REVERSING) NEMA SIZE 2 STARTER
  - THERMAL OVERLOAD RELAY
  - 2 - INDICATES MOTOR 2 HORSEPOWER
  - INDICATES DISTRIBUTION TRANSFORMER, 480-240/120V 1 PHASE (FOR SPACE HEATERS)
  - X - MOTOR SPACE HEATER WITH X WATT RATING
  - A - SEE NOTE 10
  - B - SEE NOTE 10
  - C - SEE NOTE 10
  - INDICATES SPLICE BOX PER 2323-ES-100

- NOTES:
1. ALL MOTOR AND FEEDER LOADS GIVEN IN HP 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. NUMBERS SHOWN ON LINES BETWEEN MCC AND THE LOAD IT IS SUPPLYING ARE CABLE NUMBERS (I.e. A0200803). CABLE NUMBERS HAVING Z SUFFIX (I.e. E0200817Z) 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. FOR BREAKER/OLH SETTING SEE REF DRAWING 3.
  10. 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) OR (B) 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)
  11. THIS IS A 3-3Ø HEATER. FOR CONNECTION DETAILS SEE REF DRAWING 7.
  12. THIS IS A 3-3Ø HEATER. FOR CONNECTION DETAILS SEE REF DRAWING 8.

- REFERENCE DRAWINGS:
1. E1-0001 PLANT ONE LINE DIAGRAMS-UNITS 1 AND 2
  2. E2-0005A 480V AUXILIARIES ONE LINE DIAGRAM-SAFEGUARD BUSES
  3. E2-2400 PROTECTIVE DEVICE SETTING
  4. E2-0066-82 LOAD SHEDDING SCHEMATIC DIAGRAM
  5. E2-0067-38 LOAD SHEDDING SCHEMATIC DIAGRAM
  6. E2-0009-D CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA
  7. E2-0067-18 JACKET WATER HEATER TAG CP2-MEHTJW-02
  8. E2-0067-20 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 CLASS I SAFETY SYSTEMS  
 SAFETY CLASS 2 CLASS II SAFETY SYSTEMS  
 SAFETY CLASS 3 CLASS III SAFETY SYSTEMS  
 ASSOCIATED CIRCUITS

LUMINANT  
 CPNPP  
 GLEN ROSE, TEXAS

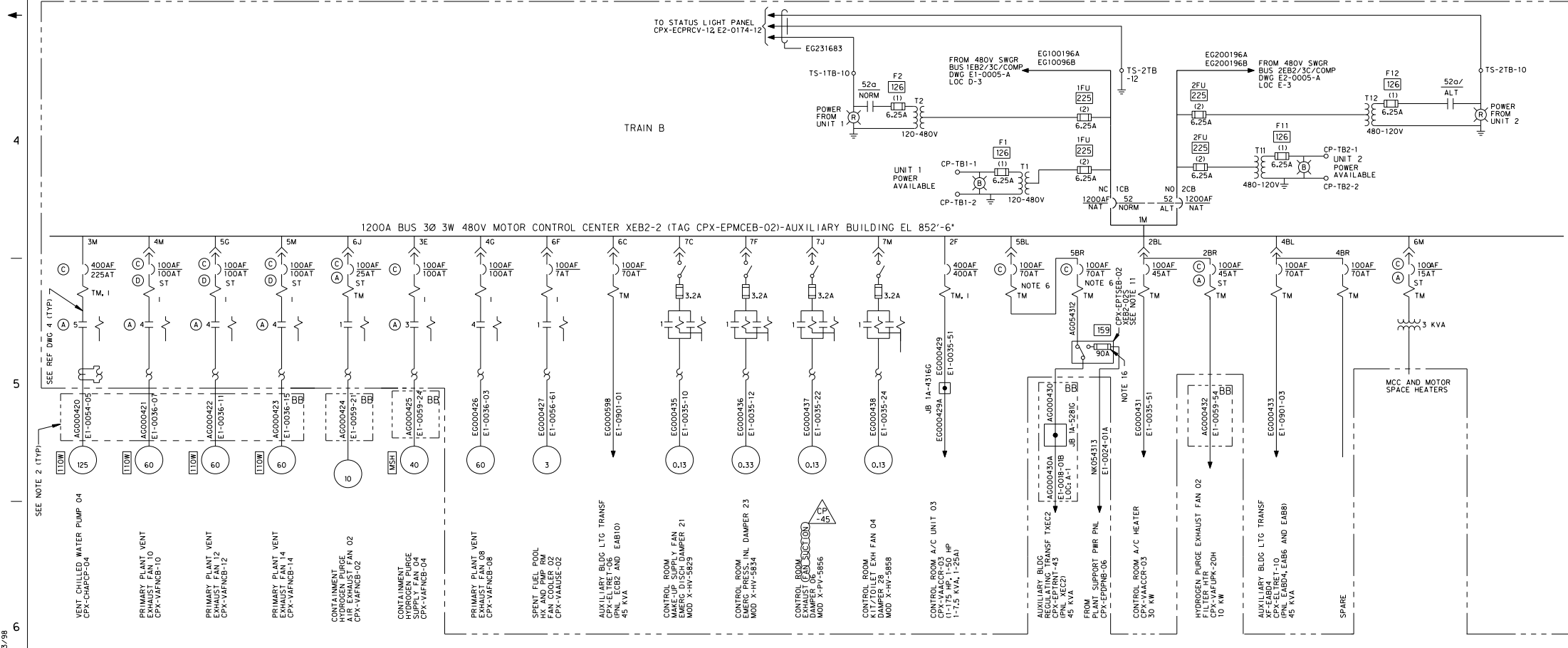
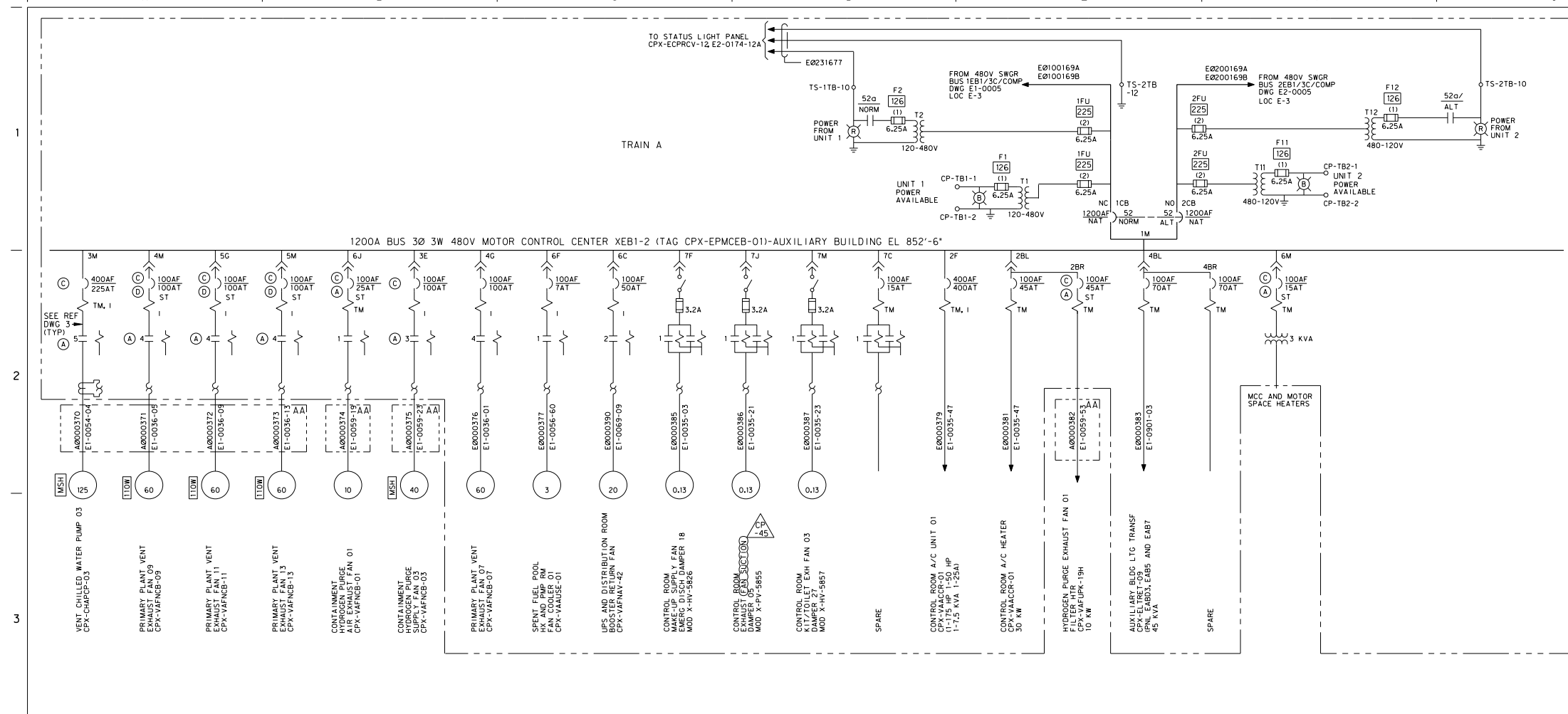
CONTAINMENT & DIESEL GENERATOR  
 SAFEGUARD 480V MCC'S  
 ONE LINE DIAGRAM

DWG. NO.	SH. NO.	REV.
E2-0009	B	CP-16

FINAL IMPRINT

REF CHK 01/30/18





REV	OWN	CHK	APPV	REMARKS
CP-45				THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGES PER AI-CR-2019-00366-1.

FSAR FIGURE 8.3-11

- LEGEND:
- 4G - MCC COMPARTMENT NUMBER
  - DRAWOUT BREAKER DISCONNECT
  - AUTOMATIC TRANSFER UNIT WITH TWO, 3Ø CIRCUIT BREAKERS
  - AUTOMATIC TRANSFER UNIT WITH TWO, 3Ø CIRCUIT BREAKERS
  - NAT - NON AUTOMATIC TRIP
  - AF - 3Ø CIRCUIT BREAKER
  - 3Ø - BREAKER FRAME SIZE
  - 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
  - TM - THERMAL MAGNETIC TRIP ELEMENT
  - MAGNETIC TRIP ELEMENT
  - ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SEE NOTE 10
  - THERMAL OVERLOAD RELAY
  - CURRENT TRANSFORMER
  - MOTOR SPACE HEATER WITH "X" WATT RATING
  - 2 - INDICATES MOTOR 2 HORSEPOWER
  - INDICATES DISTRIBUTION TRANSFORMER 480V-240/120V 1 PHASE (FOR SPACE HEATER)
  - 3Ø, 3Ø AMP FUSED SWITCH WITH COIL/SWAMUT TYPE TRS, TRI-ONIC FUSES 3.2 AMP FUSE TRIP RATING
  - INDICATES SPLICE PER 2323-ES-100 UNLESS OTHERWISE NOTED
  - - INDICATES TERMINAL IN 480V MCC
  - MSH - MOTOR SPACE HEATER
  - 1CB - AUTOMATIC TRANSFER UNIT CIRCUIT BREAKER 1
  - 1C - CIRCUIT BREAKER WITH SHUNT TRIP DEVICE
  - - INDICATING LIGHT B-BLUE, R-RED
- 151 (2) FUSE  
6.25A
- 151 FUSE B/M ITEM NUMBER (REF DWG 5)
- (2) - FUSE QUANTITY  
6.25A FUSE RATING
- (A) - SEE NOTE 13  
(C) - SEE NOTE 13 AND 14  
(D) - SEE NOTE 15

- NOTES:
1. - - - - - 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.
  2. - - - - - CABLE(S) ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS 1E, TRAIN AA OR TRAIN BB AS NOTED.
  3. DELETED
  4. DELETED
  5. INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25,000 RMS SYMMETRICAL AMPERES.
  6. TO INSURE PROTECTION OF CABLES DEBATED FOR TFAA, DO NOT INCREASE THE TRIP SETTING OF THIS PROTECTIVE DEVICE.
  7. DELETED
  8. DELETED
  9. DELETED
  10. FOR BREAKER/OLM SETTINGS SEE REFERENCE DRAWING 2.
  11. 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 DBE EE-041 480V AND 120V AC ELECTRICAL POWER SYSTEM.
  12. 100AF BREAKER TO BE REPLACED WITH 150AF BREAKER WHEN REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED.
  13. 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) FROM EITHER UNIT
  14. 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 (C) NEXT TO THE BREAKER/FUSE.
  15. TO ASSURE SINGLE ACTIVE FAILURE PROOF TRIP OF THE FAN THE BREAKER IS TRIPPED OR CONTACTOR OPENED BY ACCIDENT SIGNAL INDICATED NEXT TO THE DEVICE AS FOLLOWS:
    - (D) - OPPOSITE TRAIN SIAS (SAFETY INJECTION ACTUATION SIGNAL) FROM EITHER UNIT.
  16. FUSES ARE NON-CLASS 1E.

CLASS I  
(INCLAS SAFETY-RELATED)  
SAFETY CLASS 1 SEISMIC CATEGORY I  
SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

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

REFERENCES

1. E1-0001
2. E1-2400
3. E1-0010-C
4. E1-0010-D

PLANT ONE LINE DIAGRAM UNITS 1 AND 2 PROTECTIVE DEVICE SETTINGS

TRAIN A CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA

TRAIN B CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA

REFERENCES CONTINUED:

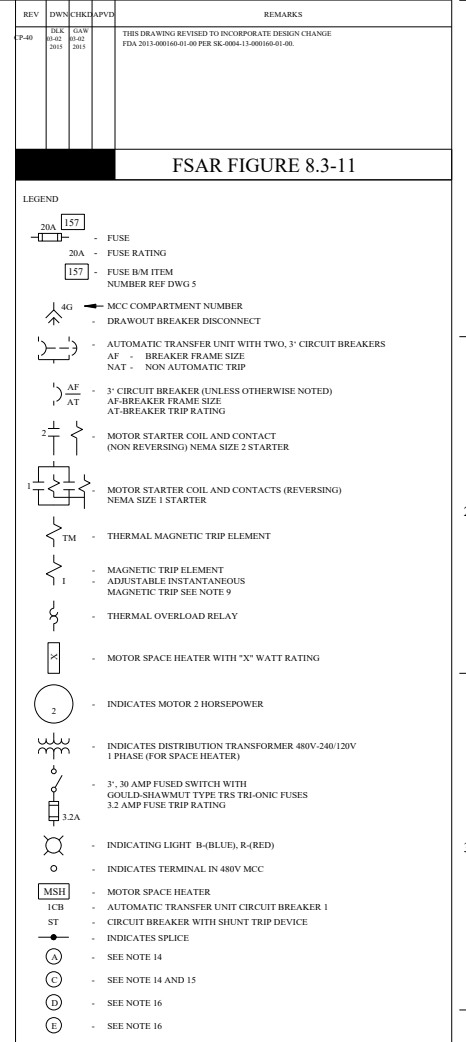
5. E1-0024-04
6. E1-0066-78
7. E1-0066-80

DEVICE LEVEL ONE LINE DIAGRAM FUSE/BREAKER BILL OF MATERIAL LOAD SHEDDING SCHEMATIC DIAGRAM LOAD SHEDDING SCHEMATIC DIAGRAM

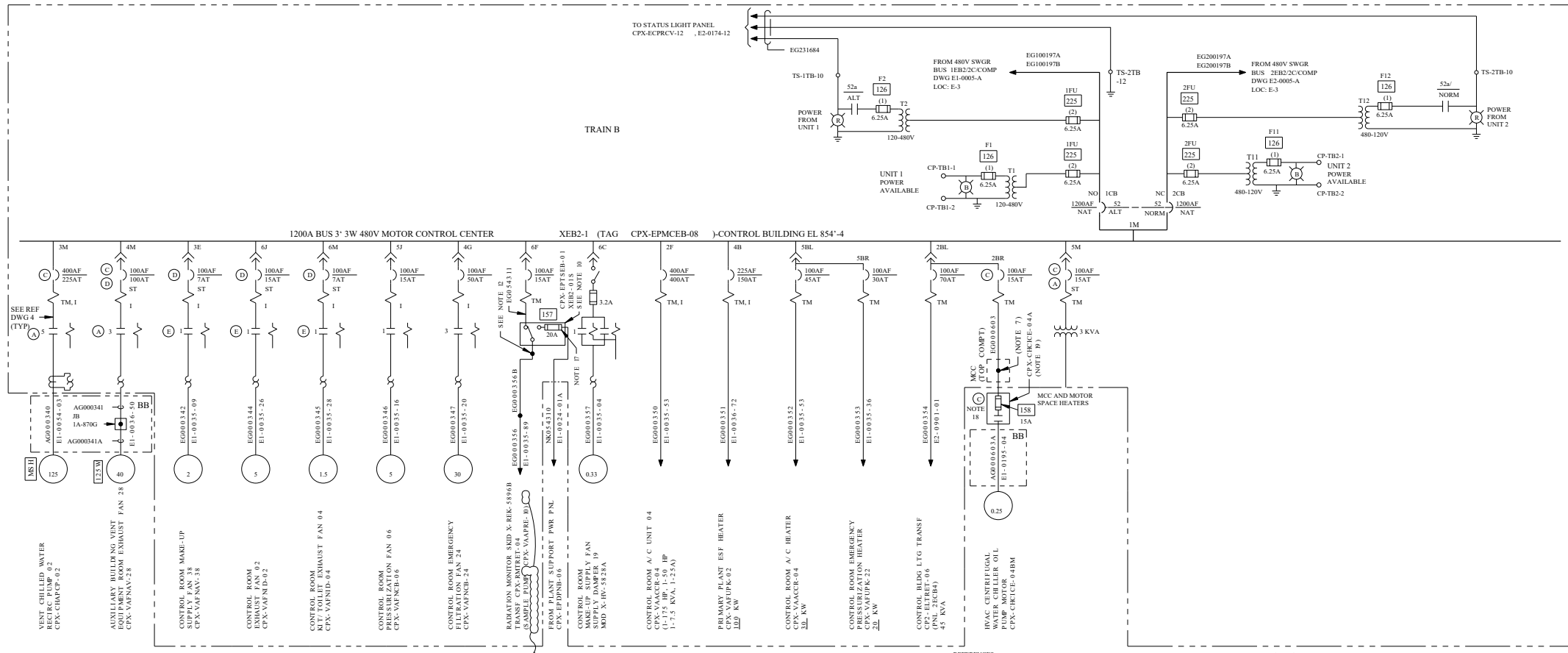
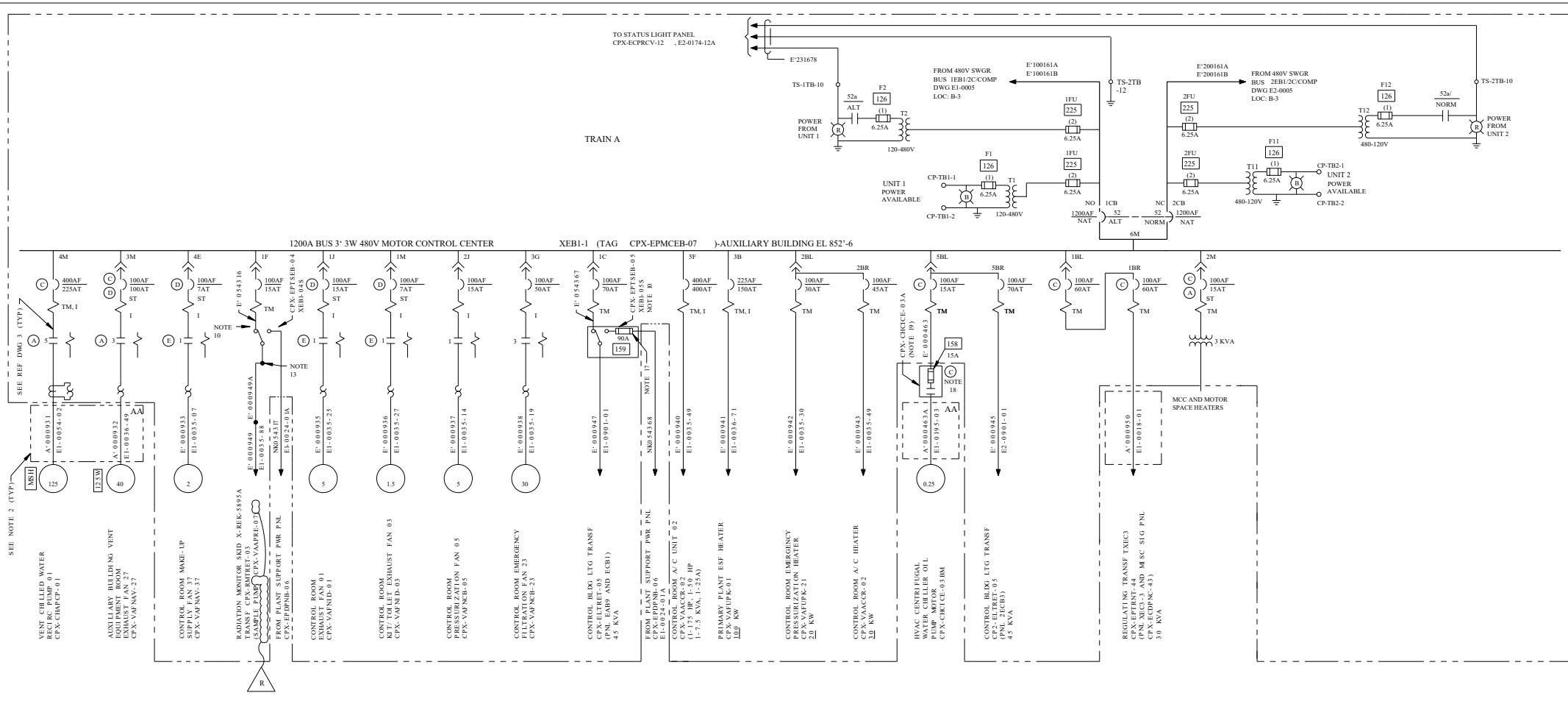
DRAWING 2323-EI-0010 REV \_\_\_\_\_ HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

EI-0010	
EI-0010-A	
EI-0010-B	

DWG. NO. EI-0010 SH. NO. REV. CP-45



FSAR FIGURE 8.3-11



REFERENCES

1.	E1-001
2.	E1-2400
3.	E1-0010-C
4.	E1-0010-D
5.	E1-0024-04
6.	E1-0066-78
7.	E1-0066-80

DRAWING 2323-E1-0010 REV CP-7  
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E1-0010
E1-0010-A
E1-0010-B

PLANT ONE LINE DIAGRAM-UNITS 1 AND 2 PROTECTIVE DEVICE SETTINGS

TRAIN A CONTROL POWER XMR FUSE AND CONTROL CIRCUIT LOADING DATA

TRAIN B CONTROL POWER XMR FUSE AND CONTROL CIRCUIT LOADING DATA

FUSE BILL OF MATERIALS

LOAD SHEDDING SCHEMATIC DIAGRAM

LOAD SHEDDING SCHEMATIC DIAGRAM

18. THE 15A TYPE KTK-R FUSES IN THE STARTER ARE COORDINATED WITH THE MCC CIRCUIT BREAKER. THE FUSES ARE QUALIFIED FOR SAFETY RELATED CLASS IE USE AND ARE ACCEPTABLE TO BE USED AS AN ISOLATION DEVICE.

19. STARTER IS SEISMICALLY MOUNTED.

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1	SAFETY CATEGORY	I
SAFETY CLASS 2	CLASS IE	
SAFETY CLASS 3	ASSOCIATED CIRCUITS	

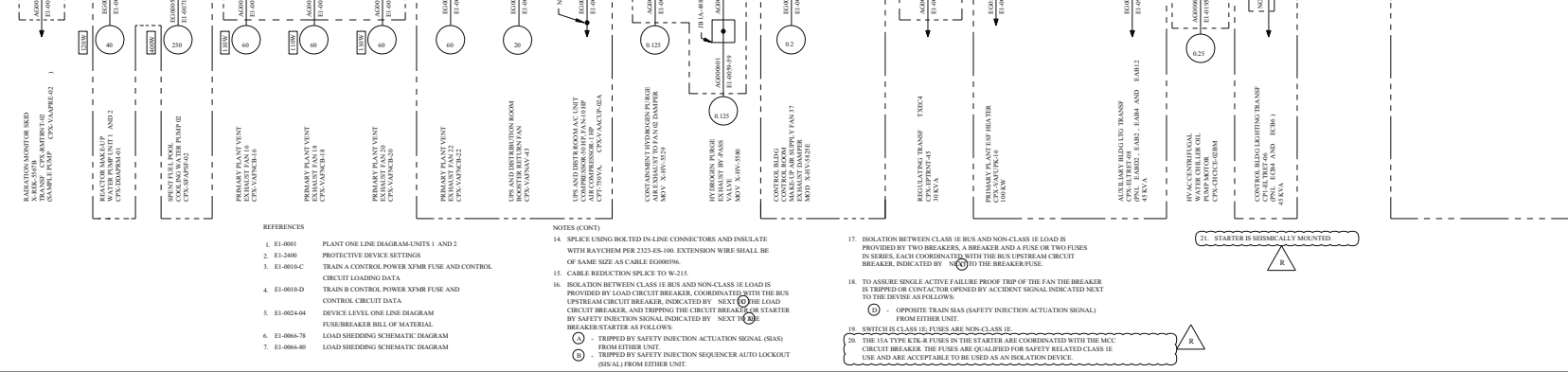
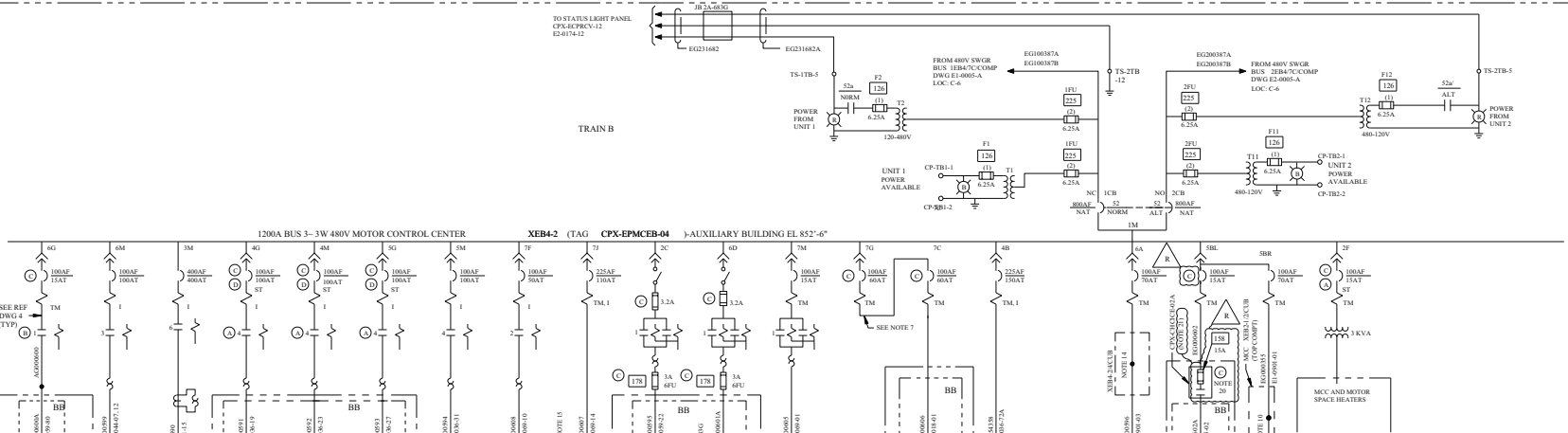
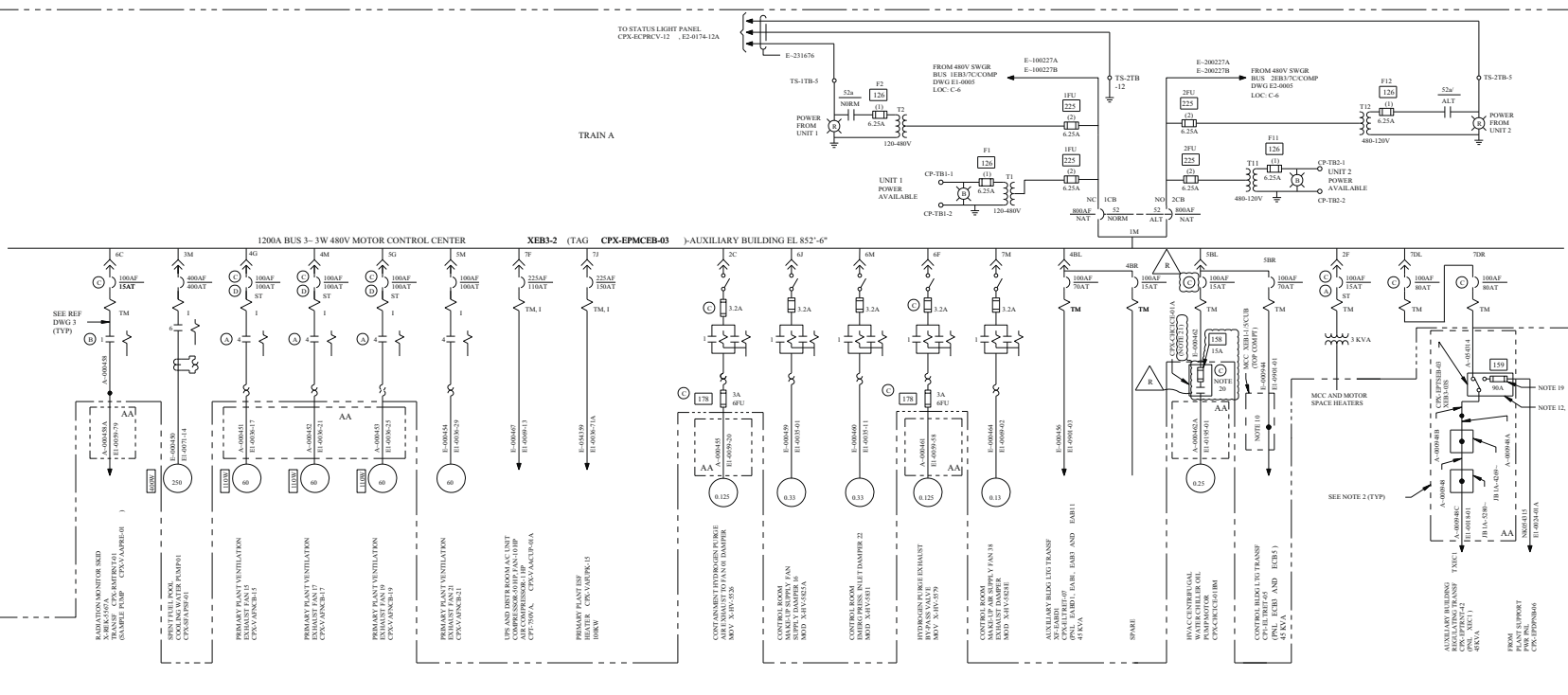
**LUMINANT CPNPP**  
GLEN ROSE, TEXAS

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

DWG NO: E1-0010  
SH. NO: A  
REV: CP-40

REF CDD 10/11/01 CP-34

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHK	APPV	REMARKS
7-0					ISSUE DRAWING (REVISED) FOR NON-REWORK DESIGN CHANGE FILE: 2005-00074-00-00 PER ISL 00-00-000475-00-00

### FSAR FIGURE 8.3-11

**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-SHAFT TYP TRIP TRC-00C 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 SPUR PER 2323-ES-100 UNLESS  
OTHERWISE NOTED

**NOTES**

1. --- EQUIPMENT CABLES ENCLOSED INSIDE DASHED LINE
2. --- CABLES EXPOSED INSIDE THE DASHED LINE IS (ARE)
3. --- CABLES EXPOSED INSIDE THE DASHED LINE IS (ARE)
4. DELETED
5. INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER  
CIRCUIT BREAKERS IS 25,000 RMS SYMMETRICAL AMPERES.
6. DELETED
7. SIZE AND TYPE OF JUMPER BETWEEN BREAKER COMPT  
"G" AND "X" SHALL BE SAME AS LOAD SIDE.
8. DELETED
9. SPUR CABLES E-00044 AND E-00051 USING COMPRESSION SPLICE  
SLEEVES AND INSULATE WITH RAYCHEM TUBING PER 2323-ES-100.
10. FOR BREAKER/OLH SETTINGS SEE REFERENCE DRAWING 2.
11. 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 DIBD IE-644 "480V AND 240V AC  
ELECTRICAL POWER SYSTEM".
12. 100AF BREAKER TO BE REPLACED WITH 100AF 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-E1-0010	REV: CP-7
E1-0010	
E1-0010-A	
E1-0010-B	

### CLASS I

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS: CLASS I  
SAFETY CLASS: CLASS I  
SAFETY CLASS: CLASS I

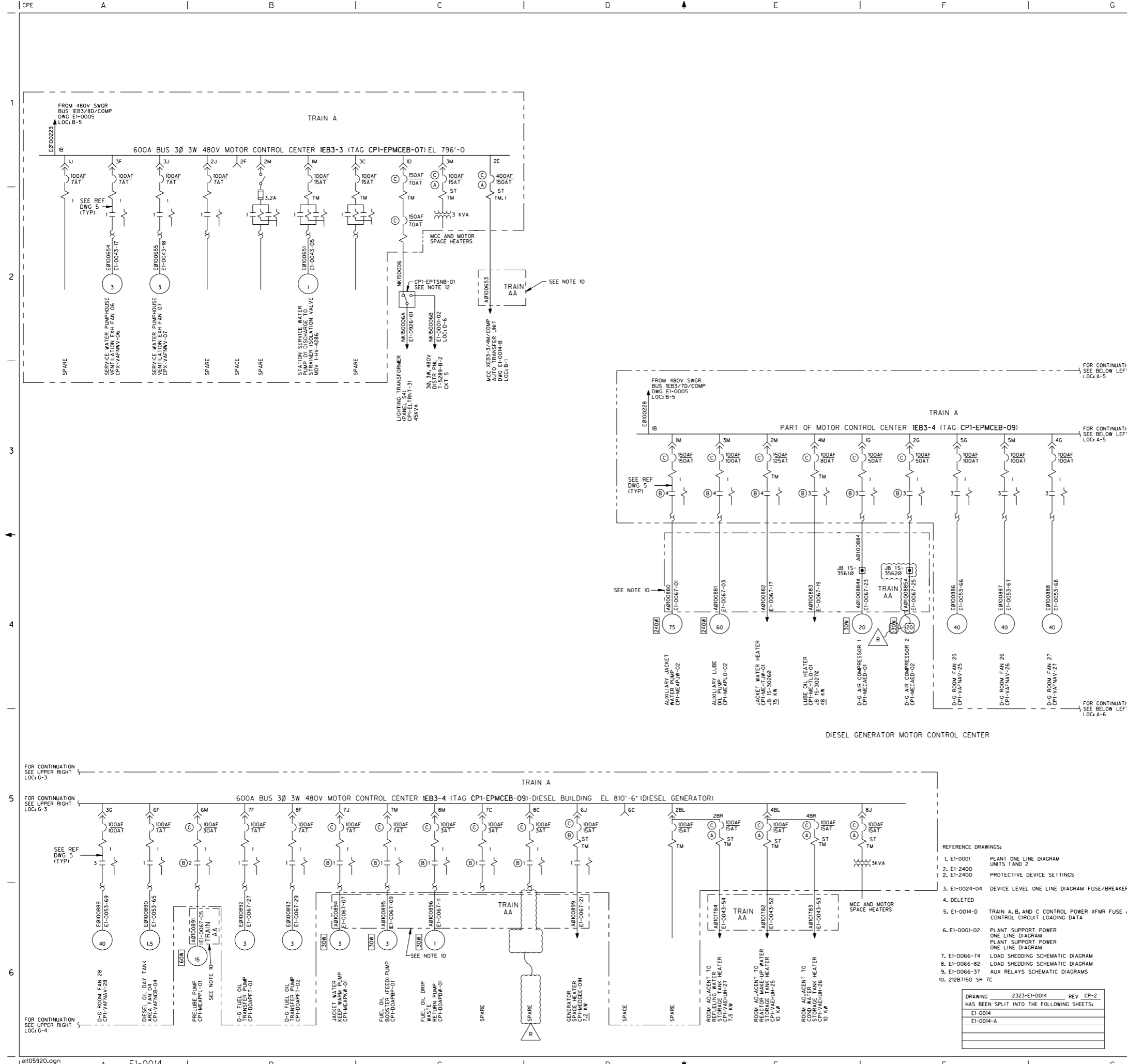
**TXU POWER**  
CPSES  
GLEN ROSE, TEXAS

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

DWG NO: E1-0010	SHEET NO: B	REV: CP-42	DATE: H
--------------------	----------------	---------------	------------

REF: CSD CP-27-151596

THIS DRAWING IS ELECTRONICALLY



- LEGEND:**
- 2M - MCC COMPARTMENT NUMBER
  - DRAWOUT BREAKER DISCONNECT
  - AF - 30 CIRCUIT BREAKER
  - AT - AF-BREAKER FRAME SIZE
  - AT - BREAKER TRIP RATING
  - ST - INDICATES BREAKER WITH SHUNT TRIP DEVICE
  - 30 - 30, FUSED DISCONNECT SWITCH
  - 25 - BOM ITEM NO REF DWG 3
  - THERMAL OVERLOAD RELAY
  - MAGNETIC TRIP ELEMENT
  - ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SEE NOTE 15
  - THERMAL MAGNETIC ELEMENT
  - 2 - MOTOR STARTER COIL AND CONTACT (NON REVERSING)
  - 1 - MOTOR STARTER COILS AND CONTACTS (REVERSING)
  - 2 - INDICATES MOTOR, 2 HORSEPOWER
  - INDICATES DISTRIBUTION TRANSFORMER
  - 480-240/120V-1 PHASE (FOR SPACE HEATERS)
  - 6.25A - FUSE RATING
  - 151 - FUSE/BKR B/M ITEM NUMBER REF DWG 3
  - MOTOR SPACE HEATER WITH 'X' WATT RATING
  - MSH - MOTOR SPACE HEATER
  - A - SEE NOTE 16
  - B - SEE NOTE 16
  - C - SEE NOTE 16 AND 17
  - INDICATES SPLICE PER 2323-ES-100

- 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, UNON.
  3. DELETED
  4. DELETED
  5. DELETED
  6. THERMAL OVERLOAD RELAYS FOR CLASS 1E MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.
  7. DELETED
  8. DELETED
  9. INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25000 RMS SYMMETRICAL AMPERES.
  10. --- CABLE(S) ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS 1E, TRAIN AA OR TRAIN BB AS NOTED.
  11. FIELD POWER CABLE SHALL BE ROUTED IN CONDUIT, CONSTRUCTION TO WRAP CLASS PER 2323-ES-100 SPEC, APPENDIX F SKETCHES 16345-E-129 OR 16345-E-130 OR INSTALL FLEX PER 2323-ES-100 SPEC APPENDIX F SKETCH 16345-E-119.
  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 DDB EE-041-480V AND 120V AC ELECTRICAL POWER SYSTEM.
  13. SEE REFERENCE DRAWING 2 FOR BREAKER/OLH SETTINGS.
  14. DELETED
  15. 100AF BREAKER TO BE REPLACED WITH 150AF BREAKER WHEN REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED.
  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) OR (B) NEXT TO THE BREAKER/STARTER AS FOLLOWS:  
 (A) - TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (SIAS)  
 (B) - TRIPPED BY SAFETY INJECTION SEQUENCER AUTO LOCKOUT CONTACT (SIIS/AL)
  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 (C) NEXT TO THE BREAKER/FUSE.

- 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
  4. DELETED
  5. E1-0014-D TRAIN A, B, AND C CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA
  6. E1-0001-02 PLANT SUPPORT POWER ONE LINE DIAGRAM
  7. E1-0066-74 LOAD SHEDDING SCHEMATIC DIAGRAM
  8. E1-0066-82 LOAD SHEDDING SCHEMATIC DIAGRAM
  9. E1-0066-37 AUX RELAYS SCHEMATIC DIAGRAMS
  10. 212B7150 SH 7C

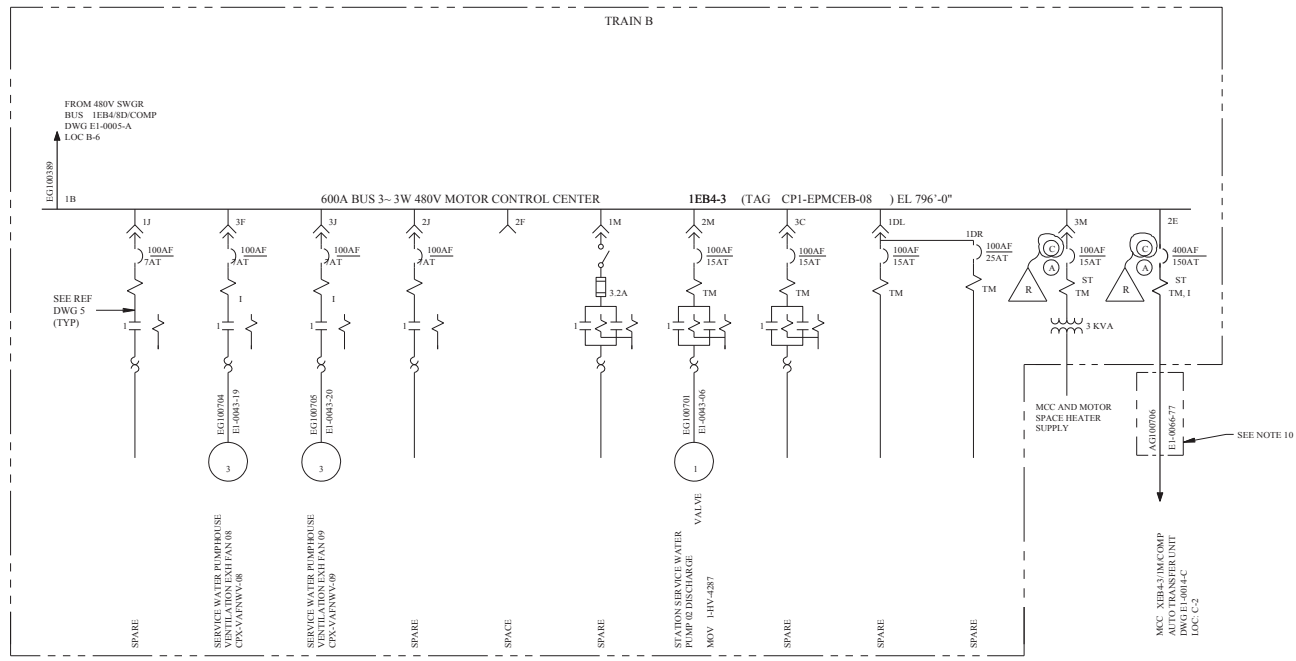
DRAWING	2323-E1-0014	REV	CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0014			
E1-0014-A			

**CLASS I**  
 (NUCLEAR SAFETY-RELATED)  
 SAFETY CLASS 1 - SAFETY CATEGORY I  
 SAFETY CLASS 2 - SAFETY CATEGORY II  
 SAFETY CLASS 3 - SAFETY CATEGORY III  
 SAFETY CLASS 4 - SAFETY CATEGORY IV  
 ASSOCIATED CIRCUITS

LUMINANT  
 CPNPP  
 GLEN ROSE, TEXAS

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

DWG. NO. E1-0014 SH. NO. REV. CP-33



REV	DWN	CHK	APP'D	REMARKS
CP-21	SM	DE		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 AF AT - 3" CIRCUIT BREAKER  
AF-BREAKER FRAME SIZE  
AT-BREAKER TRIP RATING
  - ST - INDICATES BREAKER WITH SHUNT TRIP DEVICE
  - 3.2 - 3", 30 AMP FUSED SWITCH WITH GOULD-SHAWMUT TYPE THERMO FUSES  
3.2 AMP FUSE TRIP RATING
  - THERMAL OVERLOAD RELAY
  - MAGNETIC TRIP ELEMENT  
ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP-SEE NOTE 11
  - TM - THERMAL-MAGNETIC ELEMENT
  - MOTOR STARTER COIL AND CONTACT (NON REVERSING)  
NEMA SIZE 2 STARTER
  - MOTOR STARTER COILS AND CONTACTS (REVERSING)  
NEMA SIZE 1 STARTER
  - 2 - INDICATES MOTOR, 2 HORSEPOWER (NOTE 3)
  - INDICATES DISTRIBUTION TRANSFORMER  
480-240/120V-1 PHASE (FOR SPACE HEATERS)
  - 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, UON.
  3. DELETED
  4. DELETED
  5. DELETED
  6. THERMAL OVERLOAD RELAYS FOR CLASS 1E MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.
  7. MCC STARTER IS USED ONLY TO BLOCK PUMP START DURING BLACKOUT SEQUENCE.
  8. DELETED
  9. INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25000 RMS SYMMETRICAL AMPERES
  10. - - - - - CABLE(S) ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS 1E, TRAIN AA OR TRAIN BB AS NOTED.
  11. SEE REFERENCE DRAWING 2 FOR BREAKER/OLH SETTINGS
  12. DELETED
  13. 100AF BREAKER TO BE REPLACED WITH 150AF BREAKER WHEN REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED
  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 NEXT TO THE BREAKER/STARTER AS FOLLOWS:  
    - (A) - TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (SIAS)
    - (R) - 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)

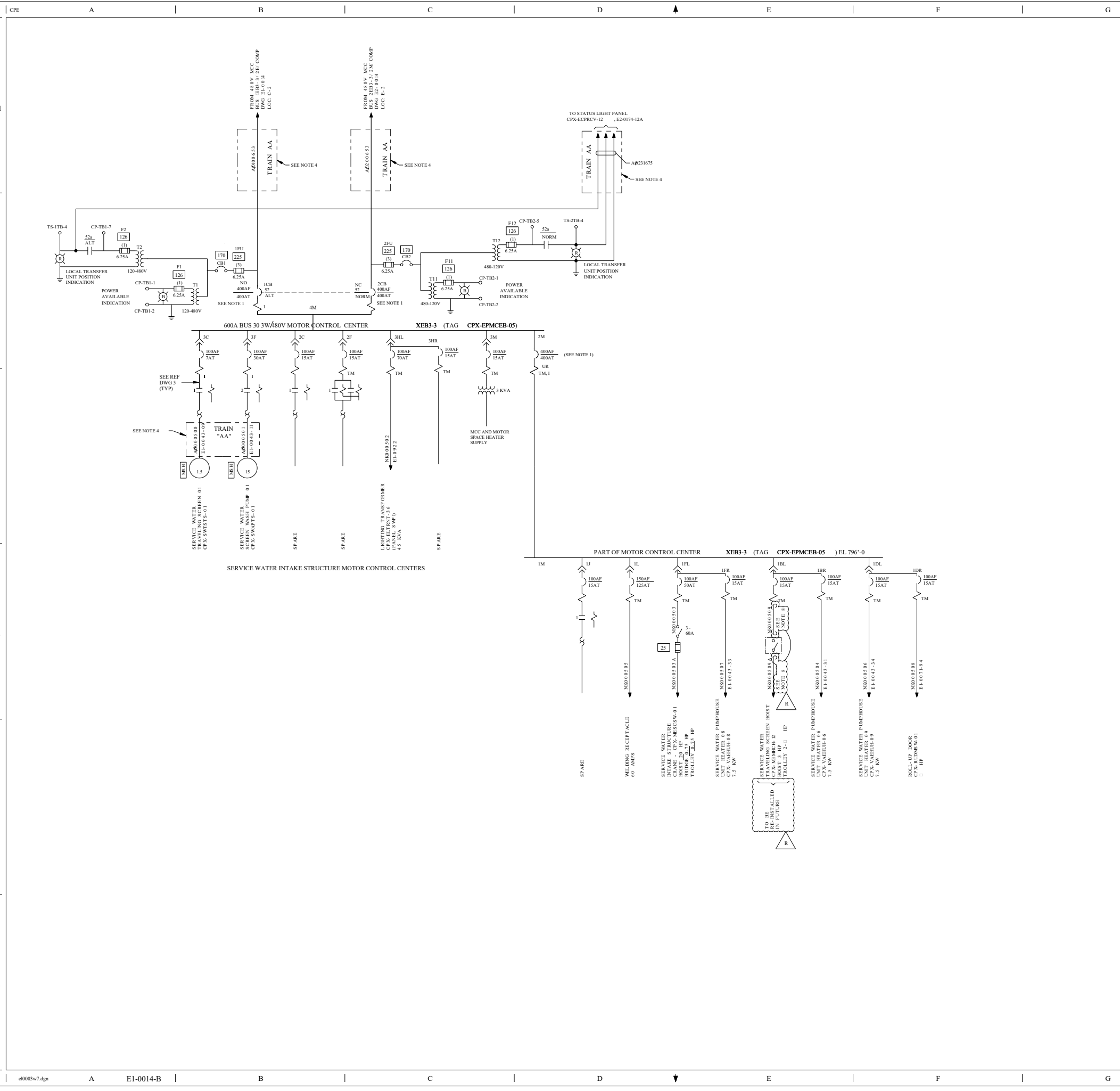
SAFETY CLASS 1      SEISMIC CATEGORY      I  
SAFETY CLASS 2      CLASS 1E  
SAFETY CLASS 3      ASSOCIATED CIRCUITS

**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
---------	---------	--------	---	------	-------

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APPD	REMARKS
CP-10	06-11-2017	MM	MM	MM	THIS DRAWING REVISION TO INCORPORATE DESIGN CHANGE FDA 2014.00151-01.00 PER SR-0006-14.00151-01.00.

FSAR FIGURE 8.3-12

**LEGEND:**

- 2M — MCC COMPARTMENT NUMBER
- DRAWOUT BREAKER DISCONNECT
- 3M — 3M CIRCUIT BREAKER
- AF — BREAKER FRAME SIZE
- AT — BREAKER TRIP RATING
- UR — INDICATES BREAKER WITH UNDER VOLTAGE RELEASE DEVICE
- AUTOMATIC TRANSFER UNIT
- NON-FUSE DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH
- 25 — BOM ITEM NO REF DWG 3
- THERMAL OVERLOAD RELAY
- MAGNETIC TRIP ELEMENT
- ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SEE NOTE 13
- TM — THERMAL MAGNETIC ELEMENT
- MOTOR STARTER COIL AND CONTACT (NON REVERSING) NEMA SIZE 2 STARTER
- MOTOR STARTER COILS AND CONTACTS (REVERSING) NEMA SIZE 1 STARTER
- 2 — INDICATES MOTOR, 2 HORSEPOWER
- INDICATES DISTRIBUTION TRANSFORMER 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
- INDICATES TERMINAL AT 480V MCC
- MSH — MOTOR SPACE HEATER
- INDICATING LIGHT B-(BLUE), R-(RED)
- ICB — AUTOMATIC TRANSFER UNIT CIRCUIT BREAKER 1

- NOTES:**
- BREAKER XEB3-12M/BKR 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.
  - 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 25000 RMS SYMMETRICAL AMPERES.
  - ALL EQUIPMENT AND CABLES SHOWN ON THIS DRAWING ARE NON-CLASS 1E TRAIN C EXCEPT THE CABLES ENCLOSED INSIDE THE DASHED LINES ARE ASSOCIATED CLASS 1E, TRAIN AA.
  - FIELD POWER CABLE SHALL BE ROUTED IN CONDUIT, CONSTRUCTION TO WRAP CABLE PER 2323-ES-100 SPEC, APPENDIX F SKETCHES 16345-E-129 OR 16345-E-130 OR INSTALL FLEX PER 2323-ES-100 SPEC APPENDIX F SKETCH 16345-E-119.
  - SEE REFERENCE DRAWING 2 FOR BREAKER-OLH SETTINGS.
  - 100AF BREAKER TO BE REPLACED WITH 150AF BREAKER WHEN REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED.
  - FOR RESTORATION CONTACT ENGINEERING.

- REFERENCE DRAWINGS:**
- E1-0001 PLANT ONE LINE DIAGRAM UNITS 1 AND 2
  - E1-2400 PROTECTIVE DEVICE SETTINGS
  - E1-0024-04 DEVICE LEVEL ONE LINE DIAGRAM FUSE/BREAKER BILL OF MATERIAL
  - E1-0014-D TRAIN A, B, AND C CONTROL POWER XFMR FUSE AND CONTROL CIRCUIT LOADING DATA
  - E1-0001-02 PLANT SUPPORT POWER ONE LINE DIAGRAM

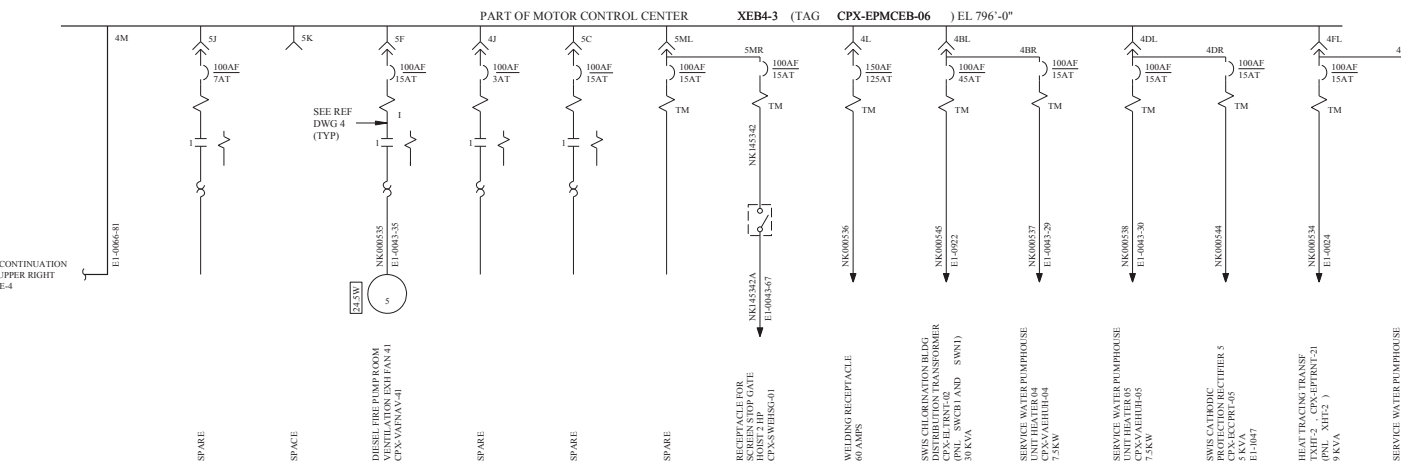
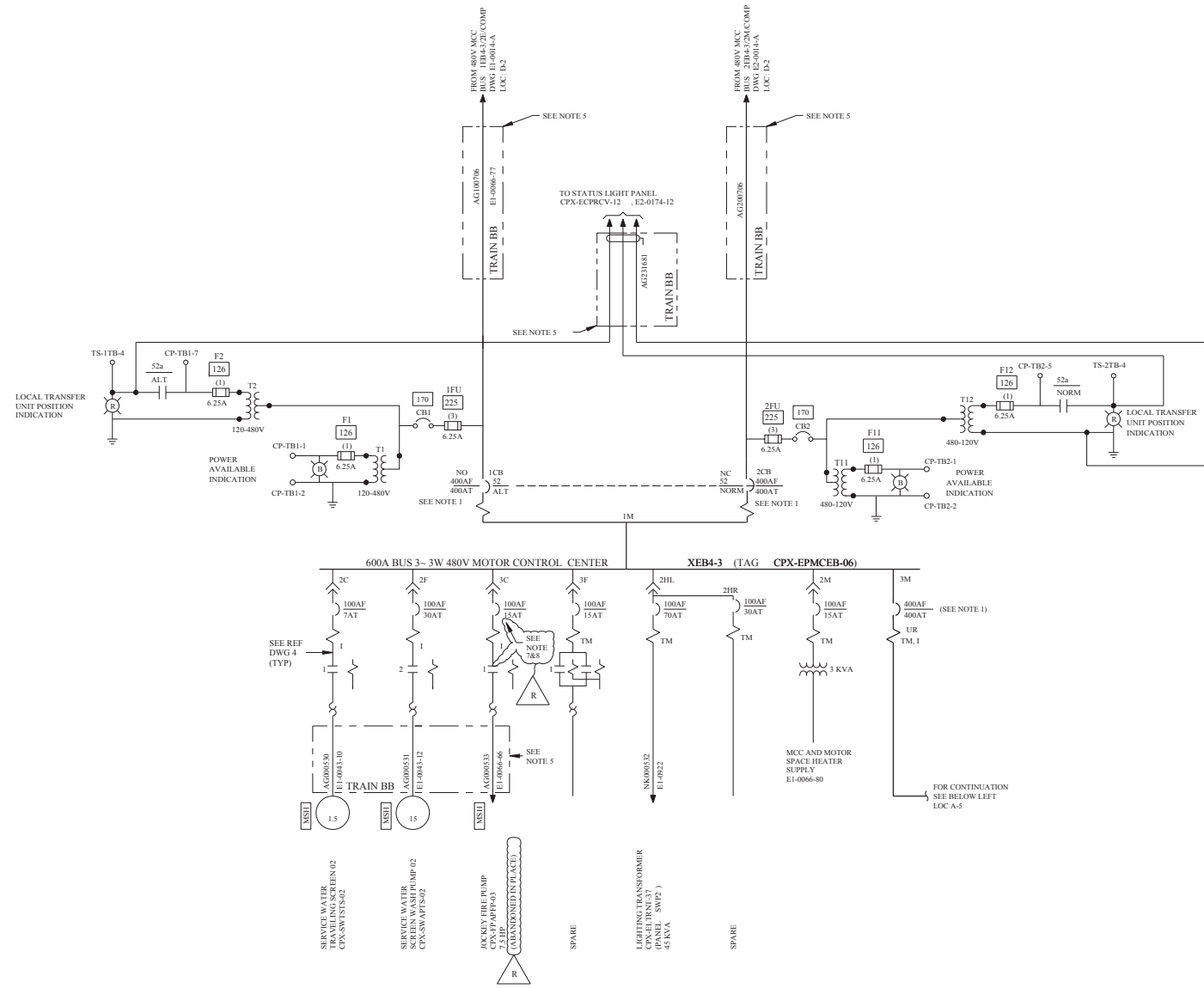
**CLASS I**  
(NUCLEAR SAFETY-RELATED)

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

**LUMINANT**  
**CPNPP**  
**GLEN ROSE, TEXAS**

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

THIS DRAWING CREATED ELECTRONICALLY



**FSAR FIGURE 8.3-12**

**LEGEND**

- 2M - MCC COMPARTMENT NUMBER
- DRAWOUT BREAKER DISCONNECT
- 3' - 3' CIRCUIT BREAKER
- AF - AF-BREAKER FRAME SIZE
- AT - AT-BREAKER TRIP RATING
- UR - INDICATES BREAKER WITH UNDER VOLTAGE RELEASE DEVICE
- AUTOMATIC TRANSFER UNIT
- THERMAL OVERLOAD RELAY
- MAGNETIC TRIP ELEMENT
- ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP-SEE NOTE 11
- TM - THERMAL MAGNETIC ELEMENT
- MOTOR STARTER COIL AND CONTACT (NON REVERSING) NEMA SIZE 2 STARTER
- MOTOR STARTER COILS AND CONTACTS (REVERSING) NEMA SIZE 1 STARTER
- 2 - INDICATES MOTOR, 2 HORSEPOWER (NOTE 3)
- INDICATES DISTRIBUTION TRANSFORMER 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 BM ITEM NUMBER REF DWG 3
- 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**

- 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.
- 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.
- INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 2500 RMS SYMMETRICAL AMPERES.
- 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.
- SEE REFERENCE DRAWING 2 FOR BREAKER/OLH SETTINGS.
- 100AF BREAKER TO BE REPLACED WITH 150AF BREAKER WHEN REPLACEMENT OF BREAKER IS NEEDED UNLESS OTHERWISE NOTED.
- BREAKER TO BE MAINTAINED IN THE "OFF" POSITION. JOCKEY PUMP X-03 IS ABANDONED IN PLACE.

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

<b>CLASS I</b> (NUCLEAR SAFETY-RELATED)	
SAFETY CLASS 1	SEISMIC CATEGORY I
SAFETY CLASS 2	CLASS 1E ASSOCIATED CIRCUITS

**TXU POWER**  
CPSES  
GLEN ROSE, TEXAS

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

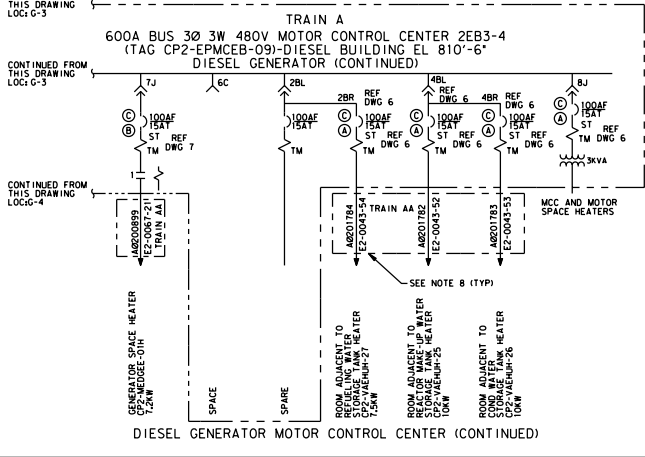
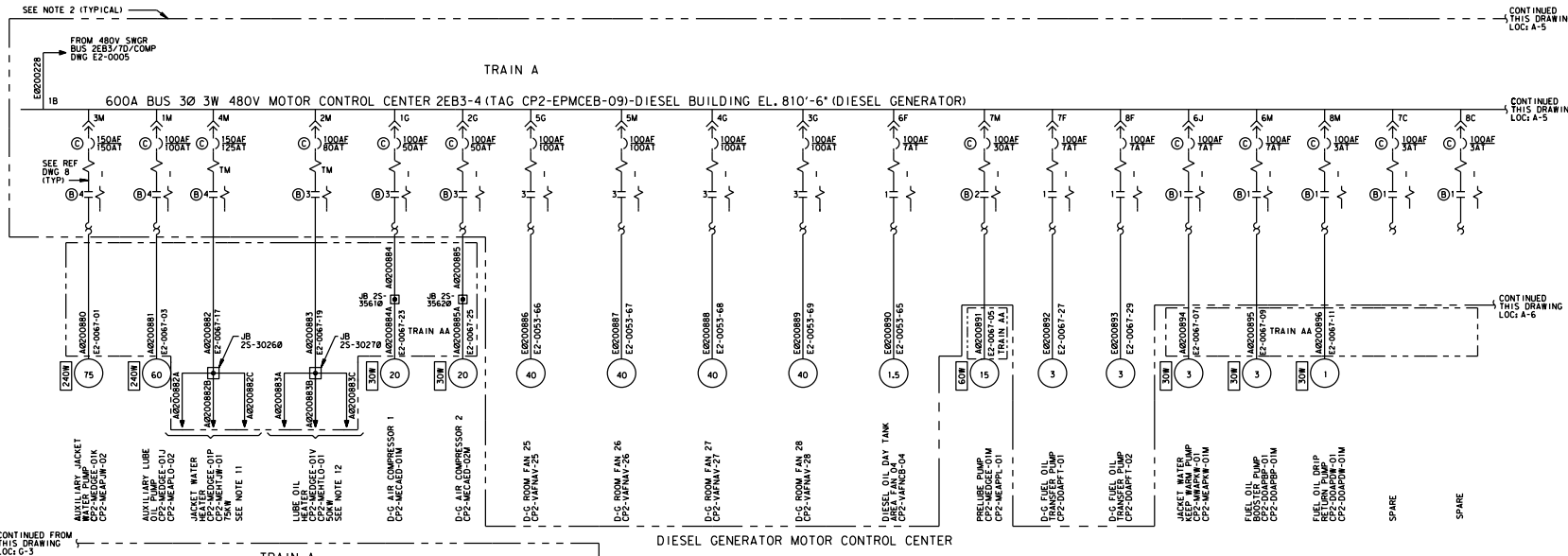
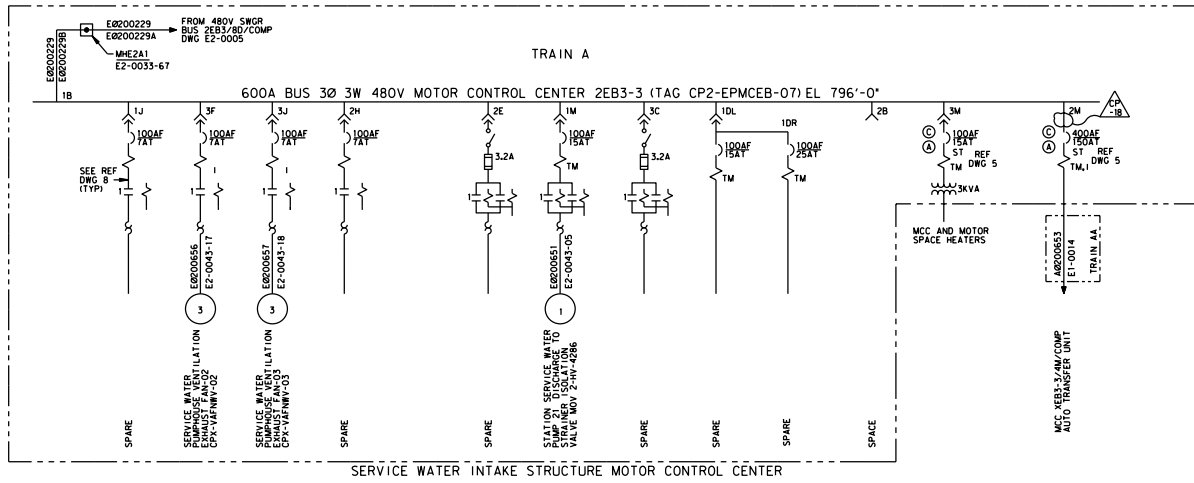
DWG NO. E1-0014	REV. CP-10
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E1-0014-A	
E1-0014-B	
E1-0014-C	
E1-0014-D	

REV	DRW	DESCRIPTION	REMARKS
1	001		
2	002		
3	003		
4	004		
5	005		
6	006		
7	007		
8	008		
9	009		
10	010		

THIS DRAWING REVISION TO INCORPORATE AN EDITORIAL CHANGE PER AI-TR-2001-00408-L

FSAR FIGURE 8.3-12

- LEGEND:
- 2M - MCC COMPARTMENT NUMBER
  - DR - DRAWOUT BREAKER DISCONNECT
  - 30 - 3Ø CIRCUIT BREAKER
  - AF - BREAKER FRAME SIZE
  - AT - BREAKER TRIP RATING
  - ST - INDICATES BREAKER WITH SHUNT TRIP DEVICE
  - 30 30 - 3Ø 30 AMP FUSED SWITCH
  - 3.2 - 3.2 AMP FUSE TRIP RATING
  - TL - THERMAL OVERLOAD RELAY
  - TM - MAGNETIC TRIP ELEMENT ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SEE NOTE 9
  - TM - THERMAL MAGNETIC ELEMENT
  - MS - MOTOR STARTER COIL AND CONTACT (NON REVERSING) NEMA SIZE 2 STARTER
  - MR - MOTOR STARTER COILS AND CONTACTS (REVERSING) NEMA SIZE 1 STARTER
  - 2 - INDICATES MOTOR (2 HORSEPOWER)
  - DT - INDICATES DISTRIBUTION TRANSFORMER 480-240/120V-1 PHASE (FOR SPACE HEATERS)
  - X - MOTOR SPACE HEATER WITH X WATT RATING
  - - FEEDER TO LOCAL STARTER OR CONTACTOR AT EQUIPMENT
  - ⑩ - SEE NOTE 10
  - ⑪ - SEE NOTE 10
  - ⊙ - SEE NOTE 10
  - ⊕ - JUNCTION BOX
  - ⊞ - INDICATES SPLICE BOX PER 2323-ES-100
- NOTES:
- ALL MOTOR AND FEEDER RATINGS GIVEN IN HP UNLESS OTHERWISE NOTED.
  - CABLES ENCLOSED INSIDE DASHED LINE ARE CLASS 1E, TRAIN A OR TRAIN B AS NOTED, EQUIPMENT OUTSIDE THE DASHED LINE IS NON-1E, ION.
  - DELETED
  - 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 25000 RMS SYMMETRICAL AMPERES.
  - CABLES ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS 1E TRAIN AA OR TRAIN BB AS NOTED.
  - FOR BREAKER/OLM SETTING SEE REFERENCE DRAWING 4.
  - 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) OR (R) NEXT TO THE BREAKER/STARTER AS FOLLOWS:
    - (A) - TRIPPED BY SAFETY INJECTION ACTUATION SIGNAL (SIAS)
    - (R) - TRIPPED BY SAFETY INJECTION SEQUENCER AUTO LOCKOUT CONTACT (SIS/LA)
  - THIS IS A 3-3Ø HEATER, FOR CONNECTION DETAILS SEE REF DRAWING 10.
  - THIS IS A 3-3Ø HEATER, FOR CONNECTION DETAILS SEE REF DRAWING 10.



- REFERENCE DRAWINGS:
- E1-0014 480V AUXILIARIES ONE LINE-SAFEGUARD BUSES
  - E1-0001 PLANT ONE LINE DIAGRAM - UNITS 1 AND 2
  - E2-0005 480V AUXILIARIES ONE LINE-SAFEGUARD BUSES
  - E2-2400 PROTECTIVE DEVICE SETTINGS
  - E2-0066-74 LOAD SHEDDING SCHEMATIC DIAGRAM
  - E2-0066-82 LOAD SHEDDING SCHEMATIC DIAGRAM
  - E2-0067-37 AUX RELAY SCHEMATIC AND CONNECTION DIAGRAM
  - E2-0014-B CONTROL POWER XFMR FUSE & CONTROL CIRCUIT LOADING DATA
  - E2-0067-17 JACKET WATER HEATER TAG CP2-MEHTLW-01
  - E2-0067-19 LUBE OIL HEATER TAG CP2-MEHTLO-01

DRAWING E2-0014 REV CP-1 HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E2-0014
E2-0014-A

**CLASS I**  
(NUCLEAR SAFETY-RELATED)  
SAFETY CLASS 1, 2 & 3  
CLASS 1 CATEGORY 1  
SAFETY RELATED CIRCUITS

LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

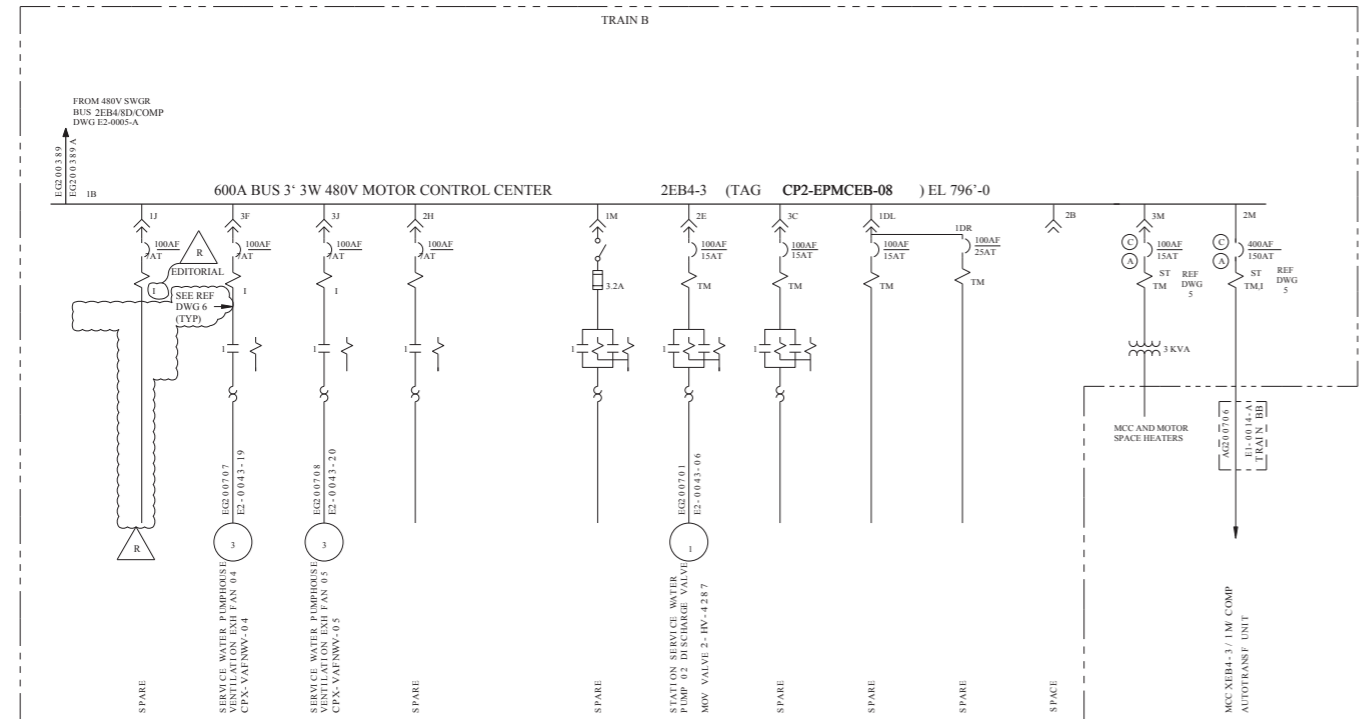
SERVICE WATER INTAKE  
STRUCTURE & DIESEL GENERATOR  
SAFEGUARD 480V MCC'S  
ONE LINE DIAGRAM

DRG. NO. E2-0014 SHE. NO. REV. H CP-1B



REV	DWN	CHKD	APVD	REMARKS
20-13	09-11-2013	09-11-2013		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2013-000279-01-00 PER SR-0002-13-000279-01-00 EDITORIAL CHANGE AS NOTED

**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
- TM - THERMAL MAGNETIC ELEMENT
- 3.2 - 3" 30 AMP FUSED SWITCH
- 3.2 - 3.2 AMP FUSE TRIP RATING
- — — — — THERMAL OVERLOAD RELAY
- — — — — MAGNETIC TRIP ELEMENT ADJUSTABLE
- 1 - INSTANTANEOUS MAGNETIC TRIP (SEE NOTE 9)
- 2 - MOTOR STARTER COIL AND CONTACT (NON REVERSING)
- 2 - NEMA SIZE 2 STARTER
- 1 - MOTOR STARTER COILS AND CONTACTS (REVERSING)
- 1 - NEMA SIZE 1 STARTER
- 2 - INDICATES MOTOR LOAD RATED 2 HORSEPOWER
- — — — — INDICATES DISTRIBUTION TRANSFORMER
- 480-240/120V-1 PHASE (FOR SPACE HEATERS)
- A - SEE NOTE 10
- C - SEE NOTE 10

- NOTES**
1. ALL MOTOR AND FEEDER RATINGS GIVEN IN HP 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. DELETED
  6. THERMAL OVERLOAD RELAYS FOR CLASS 1E MOTOR OPERATED VALVES ARE USED FOR ALARM ONLY.
  7. INTERRUPTING RATING OF MCC COMBINATION STARTERS AND FEEDER CIRCUIT BREAKERS IS 25000 RMS SYMMETRICAL AMPERES
  8. — — — — — CABLES ENCLOSED INSIDE THE DASHED LINE IS (ARE) ASSOCIATED CLASS 1E TRAIN AA OR TRAIN BB AS NOTED.
  9. FOR BREAKER/OLH SETTING SEE REFERENCE DRAWING 4
  10. 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. E1-0014 480V AUXILIARIES ONE LINE-SAFEGUARD BUSES (UNITS 1 AND 2)
  2. E1-0001 PLANT ONE LINE DIAGRAM (UNITS 1 AND 2)
  3. E2-0005 480V AUXILIARIES ONE LINE-SAFEGUARD BUSES
  4. E2-2400 PROTECTIVE DEVICE SETTINGS
  5. E2-0066-76 LOAD SHEDDING SCHEMATIC DIAGRAM
  6. E2-0014-C CONTROL POWER XTMR FUSE AND CONTROL CIRCUIT LOADING DATA

DRAWING E2-0014-A	REV CP-3
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E2-0014-A	
E2-0014-B	

DRAWING E2-0014-A	REV CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E2-0014-A	
E2-0014-C	

DRAWING 2323-E2-0014	REV CP-1
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E2-0014	
E2-0014-A	

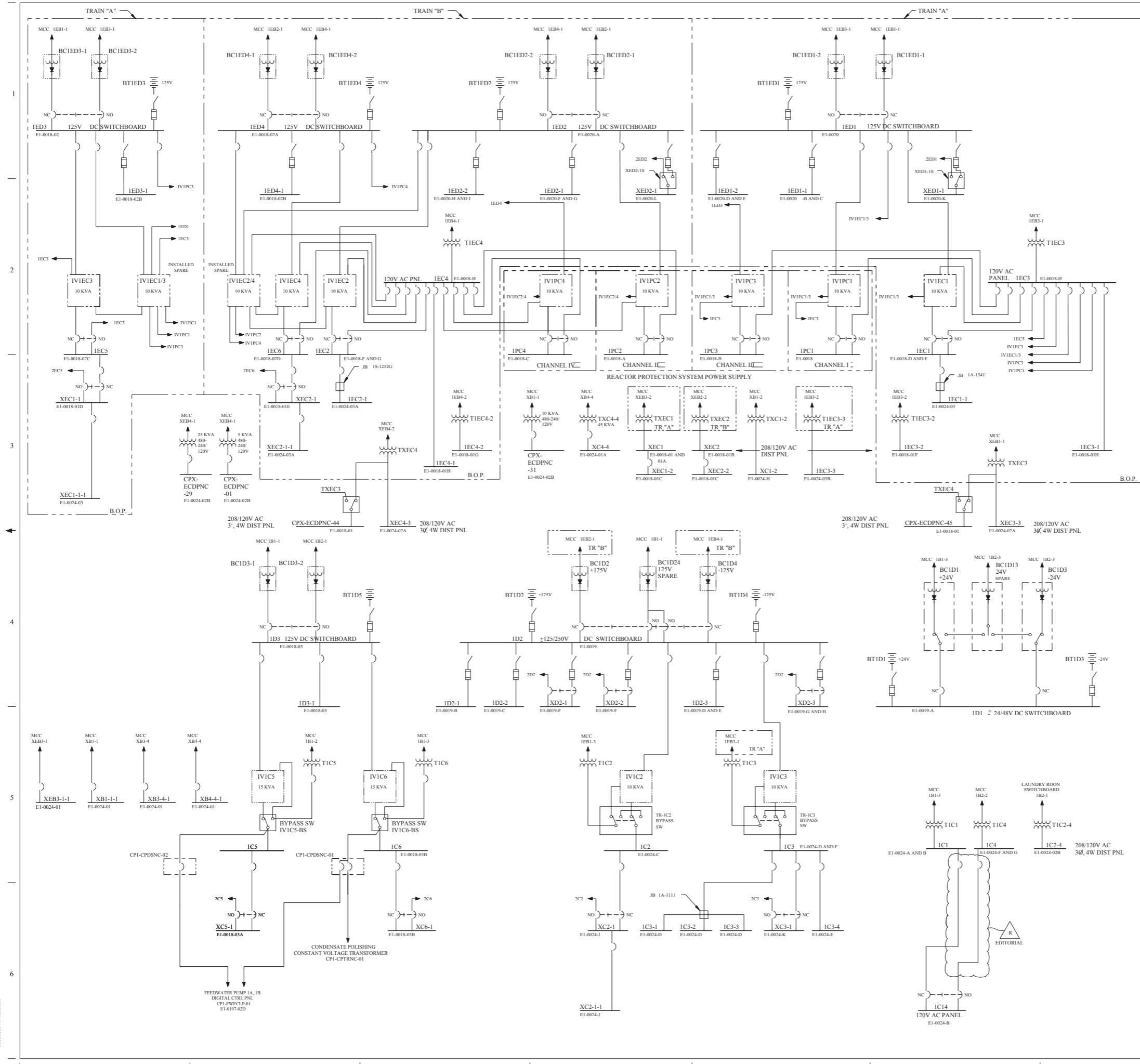
**CLASS I**  
(NUCLEAR SAFETY-RELATED)  
SAFETY CLASS 1 SEISMIC CATEGORY I  
SAFETY CLASS 2 CLASS II  
SAFETY CLASS 3 ASSOCIATED CIRCUITS

**LUMINANT**  
CPNPP  
GLEN ROSE, TEXAS

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

DWG. NO. E2-0014	SHEET NO. A	REV. CP-13
---------------------	----------------	---------------

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



REV	DWN	CHKD	APVD	REMARKS
CP-18	E1-001	2008	2008	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FROM 2006-07-08 16:40 PER SAC 0012-06-00000-16-00 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**

1. --- EQUIPMENT AND WIRING ENCLOSED IN DASHED LINE IS CLASS IIE.
2. THOSE BREAKERS WITHOUT POSITION INDICATED ARE NORMALLY IN CLOSED POSITION.
3. DELETED.
4. FOR OTHER LOADS ON AC AND DC BUSES NOT SHOWN ON THIS DRAWING SEE REFERENCE DWGS BELOW FOR DETAILS.
5. 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      REV CP-1  
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:  
E1-0001  
E1-0001-A

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

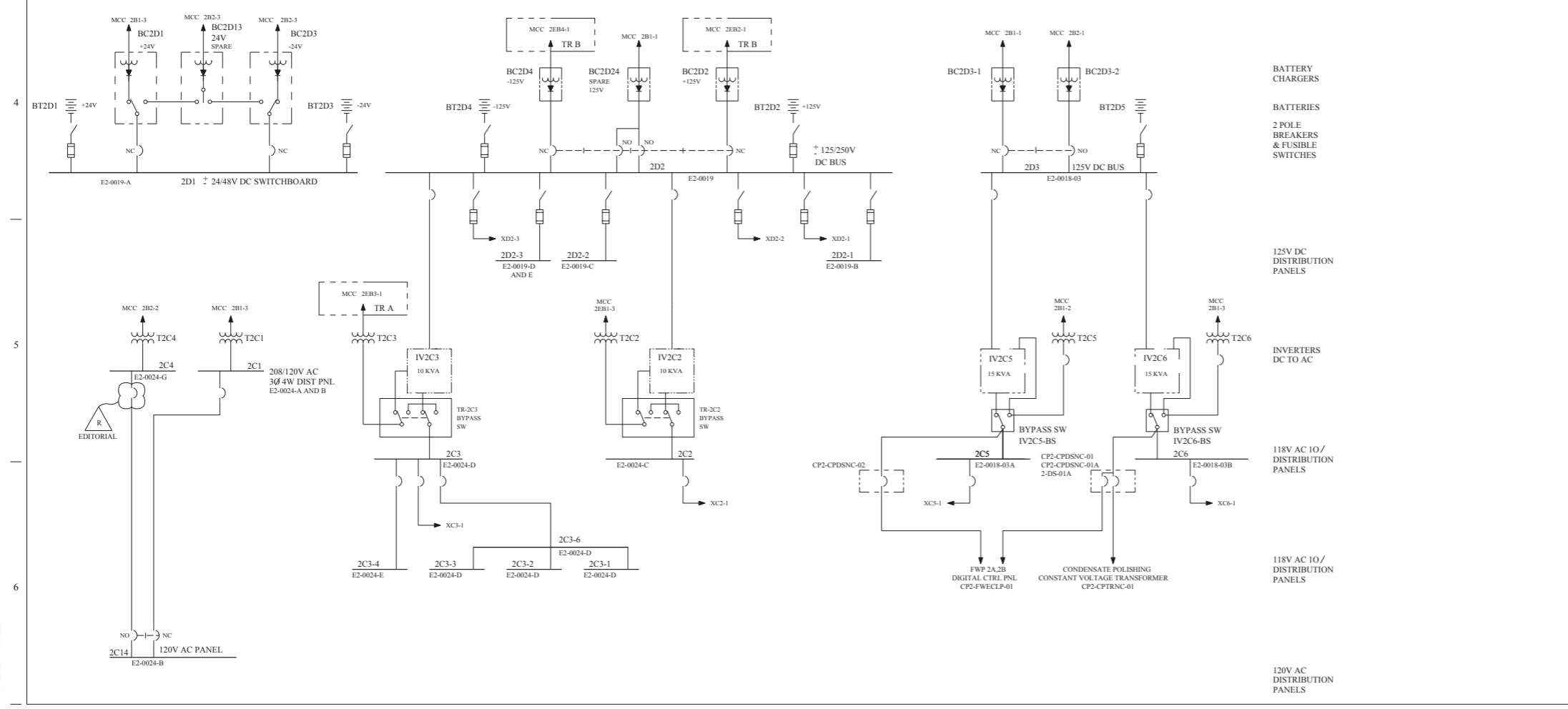
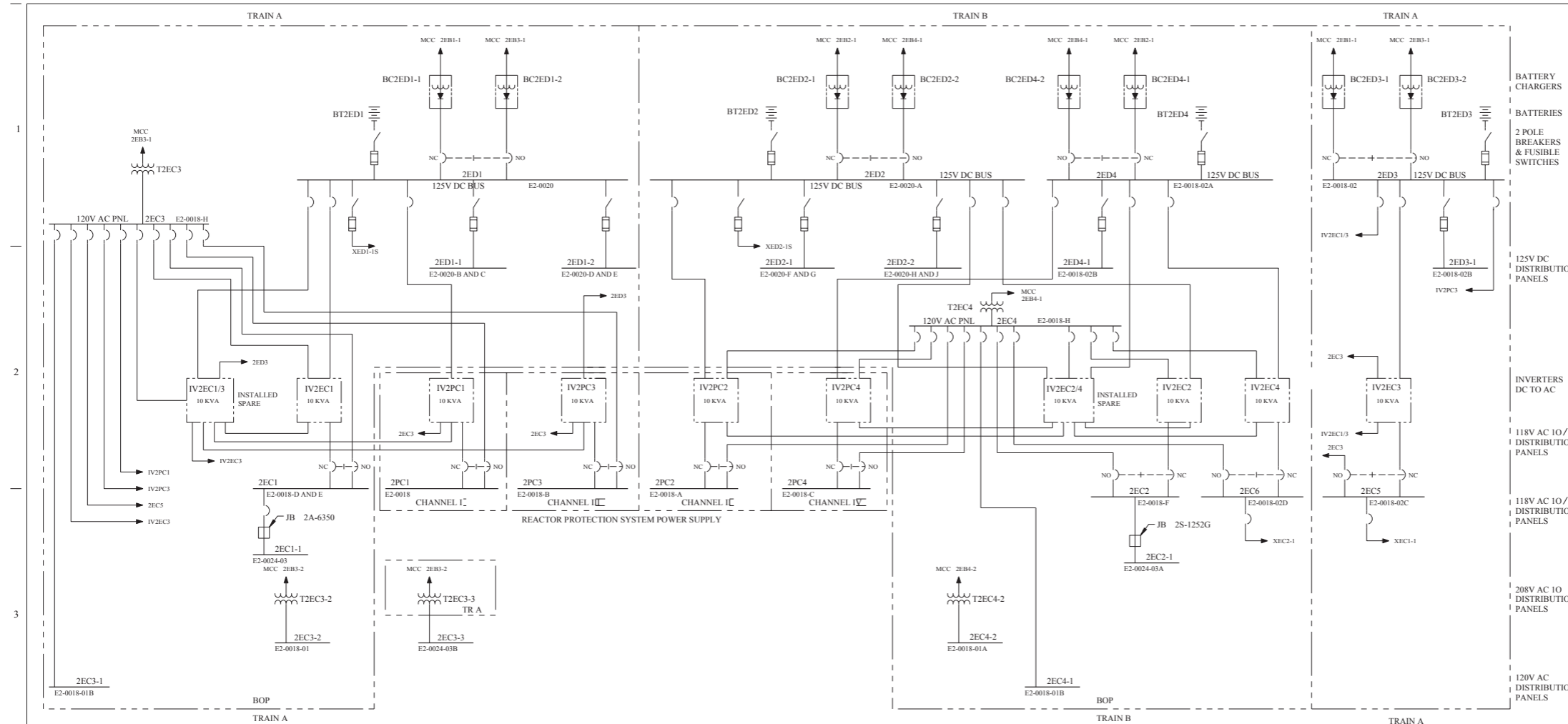
LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

PLANT ONE LINE DIAGRAM  
UNIT 1 AND COMMON  
DISTRIBUTION PANELS

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

SSSSSDA/SSSSSS

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APPV	REMARKS
CP-4	08/21/2009	08/21/2009			THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FEA-2006-001086.21-00 PER SK-0071-06-001086.21-00. EDITORIAL CHANGE AS NOTED.

**FSAR FIGURE 8.3-13**

**LEGEND**

- CIRCUIT BREAKER
- AUTOMATIC TRANSFER SWITCH
- BATTERY
- MECHANICALLY INTERLOCKED BREAKERS
- MANUAL TRANSFER SWITCH
- BATTERY CHARGER SOLID-STATE
- BYPASS SWITCH
- BYPASS SWITCH, MAKE BEFORE BREAK
- FUSIBLE SWITCH
- AS NOTED-TAP BOX OR JUNCTION BOX
- BOP - BALANCE OF PLANT
- NO - NORMALLY OPEN
- NC - NORMALLY CLOSED
- MCC - MOTOR CONTROL CENTER

**NOTES**

- EQUIPMENT AND WIRING ENCLOSED IN DASHED LINE IS CLASS 1E.
- BREAKERS WITHOUT POSITION INDICATED ARE ASSUMED TO BE NORMALLY CLOSED.

**REFERENCES**

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

**BATTERY CHARGERS**

**BATTERIES**

**2 POLE BREAKERS & FUSIBLE SWITCHES**

**125V DC DISTRIBUTION PANELS**

**INVERTERS DC TO AC**

**118V AC 10 / DISTRIBUTION PANELS**

**118V AC 10 / DISTRIBUTION PANELS**

**120V AC DISTRIBUTION PANELS**

THIS DRAWING CREATED ELECTRONICALLY

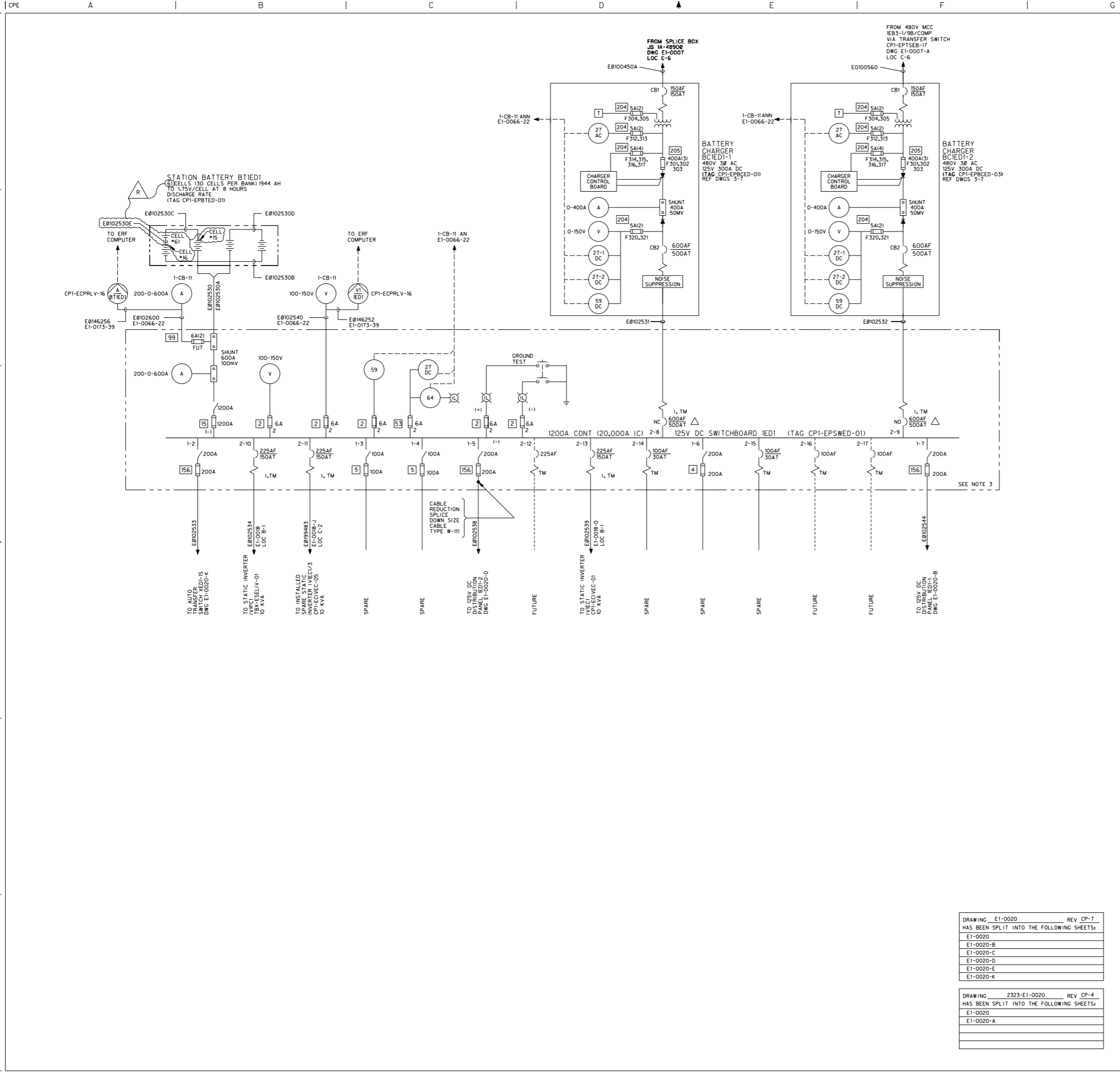
**CLASS I**  
(NUCLEAR SAFETY-RELATED)

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

**LUMINANT  
CPNPP  
GLEN ROSE, TEXAS**

**PLANT ONE LINE DIAGRAM**

DWG. NO. E2-0001	SHEET NO. A	REV. CP-4
---------------------	----------------	--------------



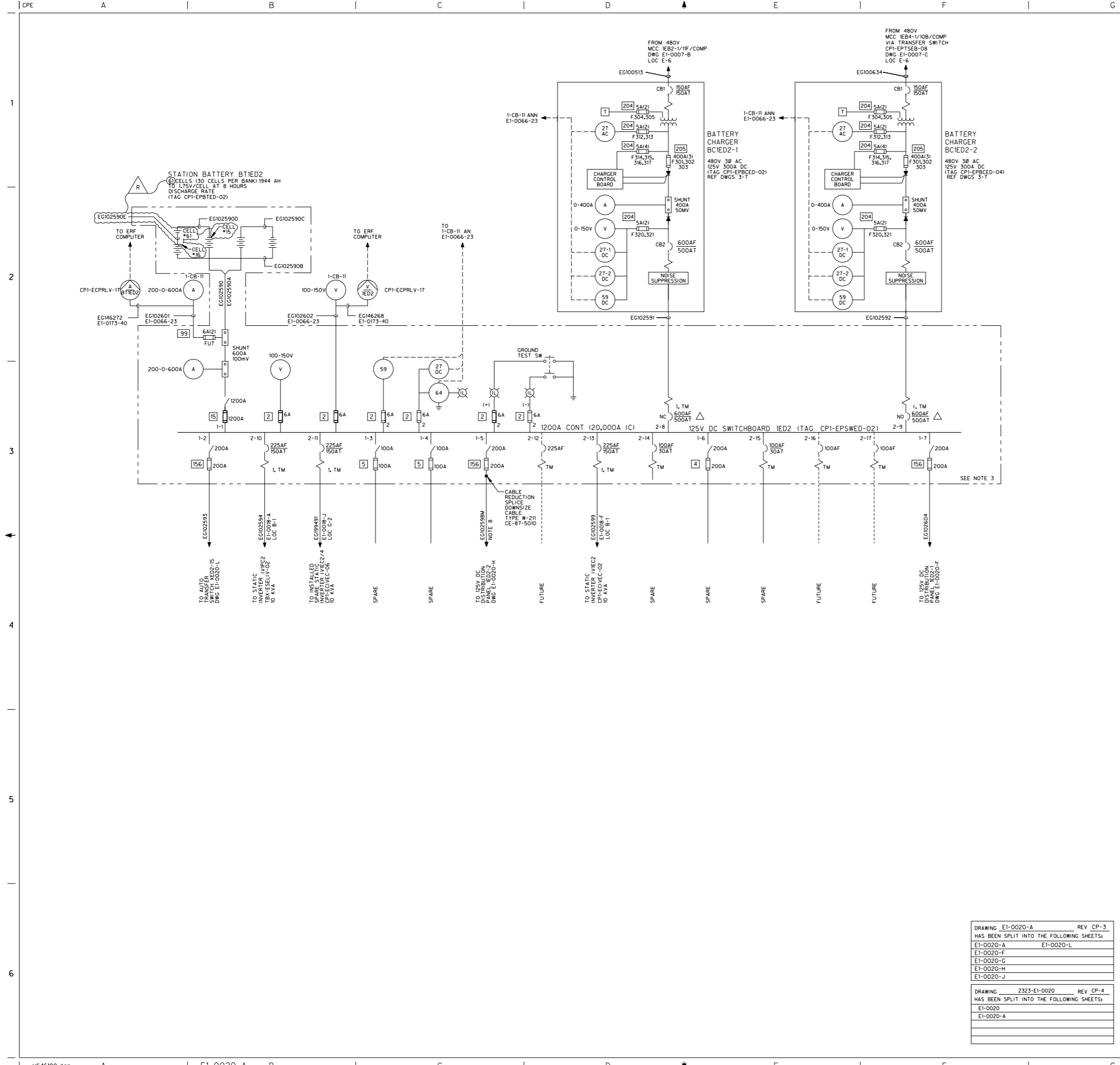
REV	CHKD	APPVD	REMARKS
CP-23	DLK	DLK	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE 208-0003-01 208-0003-01
<b>FSAR FIGURE 8.3-14</b>			
<b>LEGEND:</b>			
	DC	VOLTMETER	
	OVERVOLTAGE	RELAY	
	UNDERVOLTAGE	RELAY, AC	
	UNDERVOLTAGE	RELAY, DC	
	DC	AMMETER	
	GROUND	RELAY	
	TRANSDUCER		
	INDICATING	LIGHT	
	EQUALIZING	CHARGE TIMER	
	DC	SWITCHBOARD	
	ANNUNCIATOR		
	MAIN	CONTROL BOARD	
	FUSIBLE	SWITCH (NOTE 6)	
	FUSE	B/M ITEM NUMBER REF DWG 2	
	SWITCHBOARD	COMPT 2-10, CIRCUIT BREAKER 10 MOUNTED IN SWBD SEC 2	
	FRAME	SIZE	
	TRIP	RATING	
	INSTANTANEOUS	MAGNETIC TRIP DEVICE	
	THERMAL	MAGNETIC TRIP ELEMENT	
	FUSE	200A	
<b>NOTES:</b>			
1. ALL EQUIPMENT AND DEVICES SHOWN ON THIS DRAWING ARE CLASS 1E, TRAIN A UNLESS OTHERWISE NOTED.			
2. ALL CIRCUIT BREAKERS ARE 2-POLE THERMAL MAGNETIC UNLESS OTHERWISE NOTED.			
3. INOPERABLE/BYPASS LIGHT INDICATION IN THE CONTROL ROOM WILL INDICATE IF ANY OF THE NC BREAKERS OR FUSIBLE SWITCHES ARE OPEN OR POWER FUSE IS BLOWN. FOR INDICATING LIGHT SCHEMATIC, SEE E1-0071 SERIES.			
4.  INDICATES BREAKERS MECHANICALLY INTERLOCKED TO PREVENT PARALLELING.			
5. EACH CIRCUIT BREAKER PROVIDED WITH ONE SET OF FORM C AUXILIARY CONTACTS.			
6. ALL FUSIBLE SWITCHES ARE 3-POLE, ONE POLE BEING USED TO MONITOR SWITCH STATUS. BLOWN FUSE INDICATION IS PROVIDED BY TRIGGER FUSES WIRED IN PARALLEL WITH EACH POWER FUSE.			
7. FOR SELECTIVE COORDINATION WITH THE SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING: 40AT FOR TM, NON-ADJUSTABLE TRIP. 100AT FOR TM, INST ADJUSTABLE TRIP.			
8. 225A FRAME AND LARGER FRAME SIZE BREAKERS HAVE AN INTERCHANGEABLE TRIP UNIT WITH ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP. FOR SETTING SEE REF DWG 1.			
9. 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 (eg 27AC/BCIED1-1, 64/IED1). FOR THOSE METER/RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE "UNDERBAR" IS EQUIVALENT TO A 'SLASH' (eg  IS EQUIVALENT TO A/8TIED1).			
<b>REFERENCE DRAWINGS:</b>			
1. E1-2400-361			
2. E1-0024-04			
3. 10-102733 SH.1			
4. 10-102734 SH.1			
5. 10-102735 SH.1			
6. 20-103542 SH.1			
7. 20-103543 SH.1			
<b>TRAIN A</b>			
<b>CLASS I</b>			
(NUCLEAR SAFETY-RELATED)			
SAFETY CLASS 1 SEISMIC CATEGORY I			
SAFETY CLASS 3 CLASS 1E ASSOCIATED CIRCUITS			
<b>LUMINANT</b>			
<b>CPNPP</b>			
<b>GLEN ROSE, TEXAS</b>			
<b>125V DC</b>			
<b>ONE LINE DIAGRAM</b>			
<b>DWG. NO.</b> E1-0020			<b>SH. NO. REV.</b> - CP-23

DRAWING E1-0020	REV CP-7
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E1-0020	
E1-0020-B	
E1-0020-C	
E1-0020-D	
E1-0020-E	
E1-0020-K	

DRAWING 2323-E1-0020	REV CP-4
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E1-0020	
E1-0020-A	

THIS DRAWING CREATED ELECTRONICALLY



REV	CHKD	APPVD	REMARKS
CP-17	DLK	DLK	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2018-00023-03-00 PER SK-0003-B-000023-03-00.

FSAR FIGURE 8.3-14

- LEGEND:
- DC VOLTMETER
  - OVERVOLTAGE RELAY
  - UNDERVOLTAGE RELAY, AC
  - UNDERVOLTAGE RELAY, DC
  - DC AMMETER
  - GROUND RELAY
  - TRANSDUCER
  - INDICATING LIGHT
  - EQUALIZING CHARGE TIMER
  - DC SWITCHBOARD
  - ANNUNCIATOR
  - MAIN CONTROL BOARD
  - FUSIBLE SWITCH (NOTE 6)
  - CIRCUIT BREAKER (NOTE 2 AND 5)
  - SWITCHBOARD COMPT 2-10, CIRCUIT BREAKER 10 MOUNTED IN SWBD SEC 2
  - FRAME SIZE
  - TRIP RATING
  - INSTANTANEOUS MAGNETIC TRIP DEVICE
  - THERMAL MAGNETIC TRIP ELEMENT
- NOTES:
- ALL EQUIPMENT AND DEVICES SHOWN ON THIS DWG ARE CLASS 1E TRAIN B UNLESS OTHERWISE NOTED.
  - ALL CIRCUIT BREAKERS ARE 2-POLE THERMAL MAGNETIC UNLESS OTHERWISE NOTED.
  - INOPERABLE/BYPASS LIGHT INDICATION IN THE CONTROL ROOM WILL INDICATE IF ANY OF THE CB BREAKERS OR FUSIBLE SWITCHES ARE OPEN OR POWER FUSE IS BLOWN. FOR INDICATING LIGHT SCHEMATIC SEE E1-0071 SERIES.
  - INDICATES BREAKERS MECHANICALLY INTERLOCKED TO PREVENT PARALLELING.
  - EACH CIRCUIT BREAKER PROVIDED WITH ONE SET OF FORM C AUXILIARY CONTACTS.
  - ALL FUSIBLE SWITCHES ARE 3-POLE, ONE POLE BEING USED TO MONITOR SWITCH STATUS. BLOWN FUSE INDICATION IS PROVIDED BY TRIGGER FUSES WIRED IN PARALLEL WITH EACH POWER FUSE.
  - FOR SELECTIVE COORDINATION WITH THE SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:  
400A FOR TM, NON-ADJUSTABLE TRIP,  
100A FOR TM, INST ADJUSTABLE TRIP.
  - CABLE NUMBERS WITH SUFFIX (M) ARE THE SAME AS CORRESPONDING CABLE NUMBERS WITH SUFFIX (N) ON RESPECTIVE DRAWINGS.
  - 225A FRAME AND LARGER FRAME SIZE BREAKERS HAVE AN INTERCHANGEABLE TRIP UNIT WITH ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP, FOR SETTING SEE REF DWG 1.
  - 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/BCIED2-1, 64/IED2). FOR THOSE METER/RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE "UNDERBAR" IS EQUIVALENT TO A "SLASH" (e.g., IS EQUIVALENT TO ).

- REFERENCE DRAWINGS:
- E1-2400-361
  - E1-0024-04
  - 10-102733 SH.1
  - 10-102734 SH.1
  - 10-102735 SH.1
  - 20-103542 SH.1
  - 20-103543 SH.1

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

LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

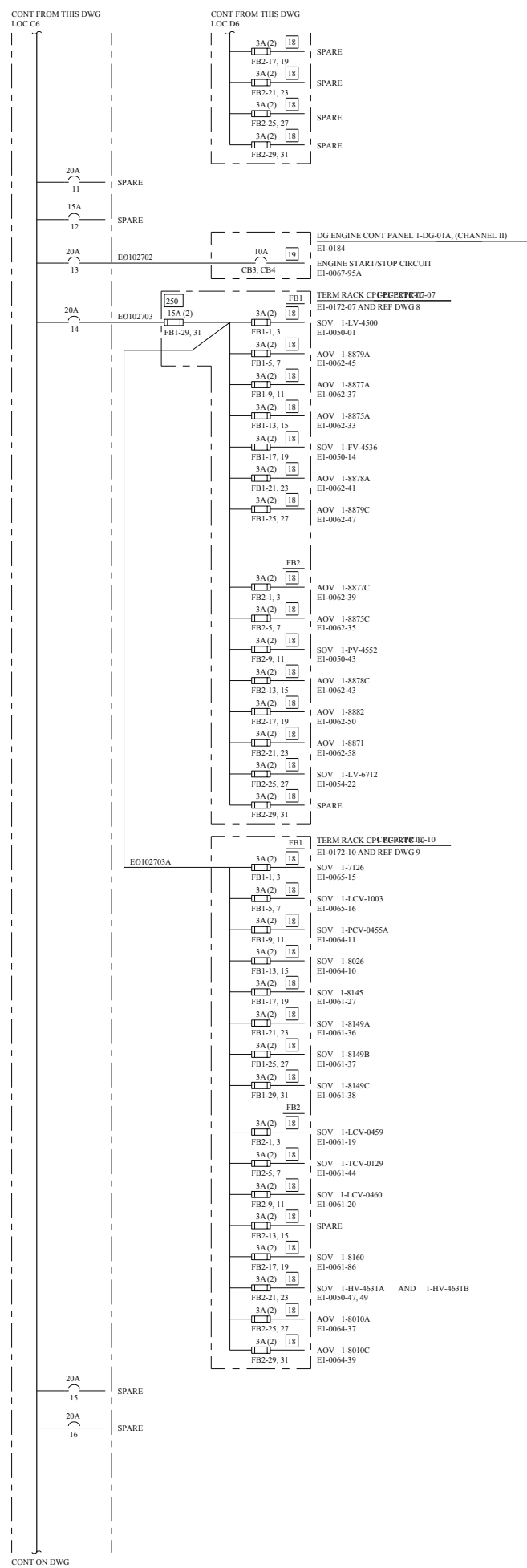
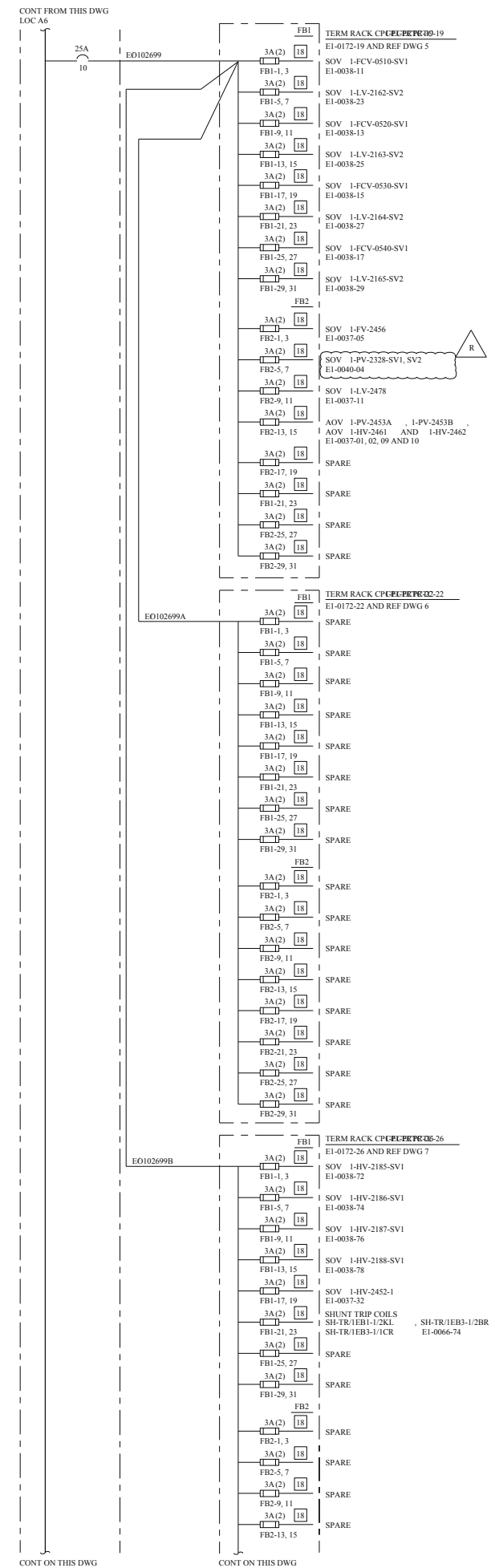
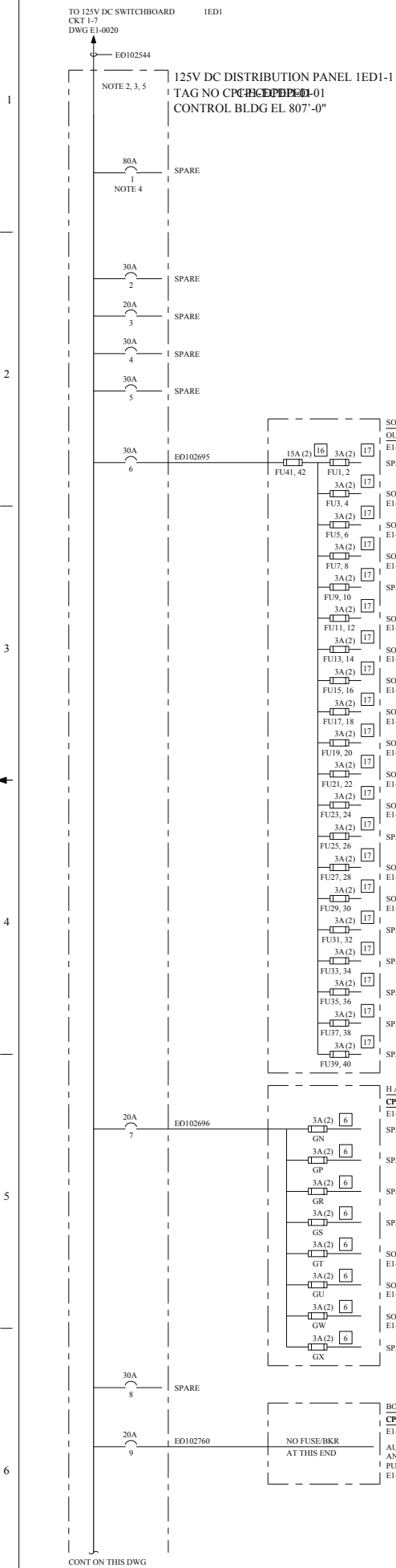
125V DC  
ONE LINE DIAGRAM

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

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	

DRAWING 2323-E1-0020	REV CP-4
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E1-0020	
E1-0020-A	



REV 128 3087 3087 3087

DWN CHKD APVD

REVISIONS

THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE  
FDA-2001-002426-01-01 PER SK-0009-01-002426-01-00

REMARKS

**FSAR FIGURE 8.3-14**

LEGEND

80A - CIRCUIT BREAKER

1 - CIRCUIT BREAKER RATING

17 - CIRCUIT NUMBER

3A(2) - FUSE

3A - FUSE RATING

(2) - QUANTITY

FU1 - FUSE LOCATION MARKER

17 - FUSE B/M ITEM NUMBER REF DWG 11

NOTES

- ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS I, TRAIN A.
- ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 100AF, 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
- EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.
- 225AF CIRCUIT BREAKER WITH AN ADJUSTABLE INSTANTANEOUS TRIP. FOR SETTING SEE REF DWG 10.
- FOR SELECTIVE COORDINATION WITH THE SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:
  - 40AT FOR THERMAL MAGNETIC NON-ADJUSTABLE TRIP
  - 100AT FOR THERMAL MAGNETIC INSTANTANEOUS ADJUSTABLE TRIP

REFERENCE DRAWINGS

- 1084H6 SH 28
- W-CV01701-F-SH 12
- E-5468 SH 2
- 102456D SH 1
- W-TC19701-D-SH 1, 2
- W-TC22701-D-SH 1, 2
- W-1TC26825-D-SH 1, 2
- W-TC07701-D-SH 1, 2
- W-TC10701-D-SH 1, 2
- E1-2400-361
- E1-0024-04

DRAWING E1-0020 REV CP-7

HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E1-0020	E1-0020-K
E1-0020-B	E1-0020-L
E1-0020-C	E1-0020-M
E1-0020-D	E1-0020-N
E1-0020-E	E1-0020-O

TRAIN A

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

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

LUMINANT  
CPSES  
GLEN ROSE, TEXAS

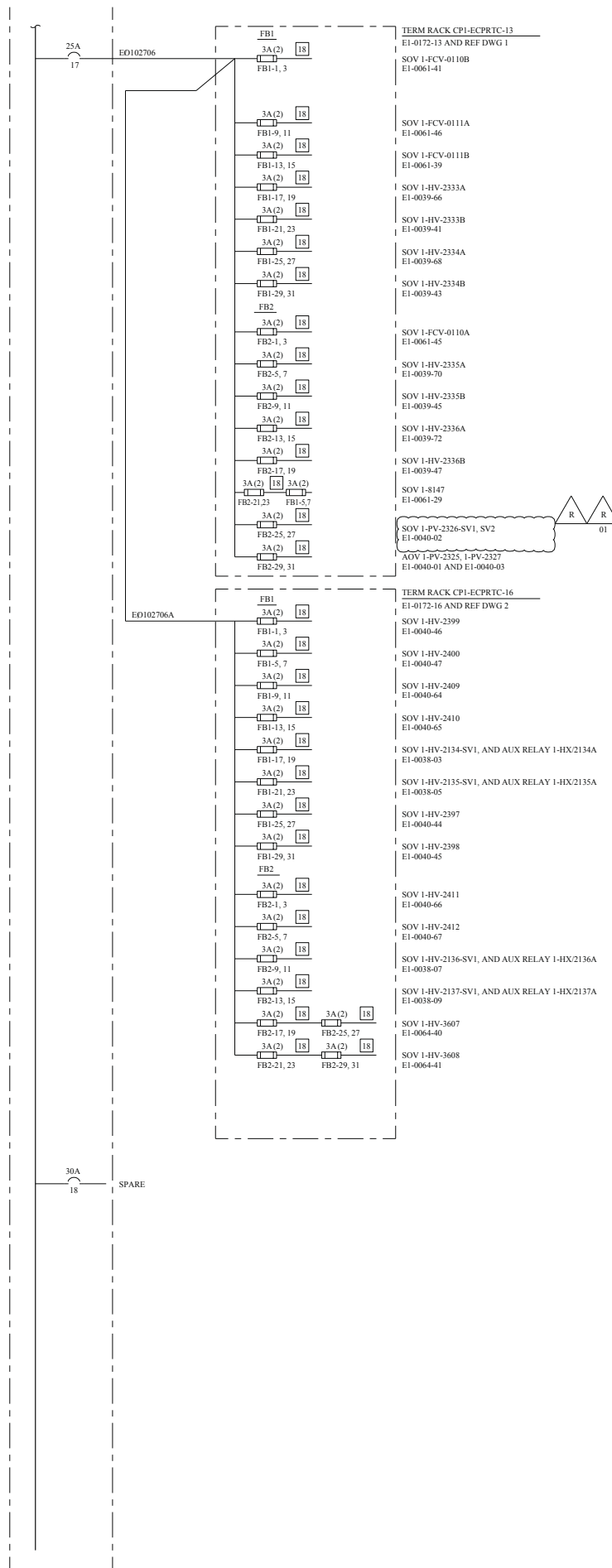
125V DC  
ONE LINE DIAGRAM

DWG NO. E1-0020 SH NO. REV. CP-18

THIS DRAWING CREATED ELECTRONICALLY

FINAL PRINT

125V DC DISTRIBUTION PANEL 1ED1-1  
CONT FROM DWG E1-0020-B LOC E6



REV	DWN	CHK	APPV	REMARKS
CP-8	12/01/2009	12/01/2009		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2001-002426-01-01 PER SK-001-01-002426-01-01

FSAR FIGURE 8.3-14

- LEGEND
- CIRCUIT BREAKER
  - 80A - CIRCUIT BREAKER RATING
  - 1 - CIRCUIT NO
  - FUSE
  - (2) - QUANTITY
  - FB1-1 - FUSE LOCATION MARKER
  - 18 - FUSE B/M ITEM NUMBER REF DWG 4

- NOTES
1. ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS 1E TRAIN A.
  2. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 100AF, 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
  3. EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.

REFERENCE DRAWINGS

1. W-TC13701-D SH 1, 2
2. W-TC16701-D SH 1, 2
3. M-99X0701-D SH 1
4. E1-0024-04

DRAWING	E1-0020	REV	CP-7
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0020	E1-0020-K		
E1-0020-B			
E1-0020-C			
E1-0020-D			
E1-0020-E			

TRAIN A

CLASS I

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

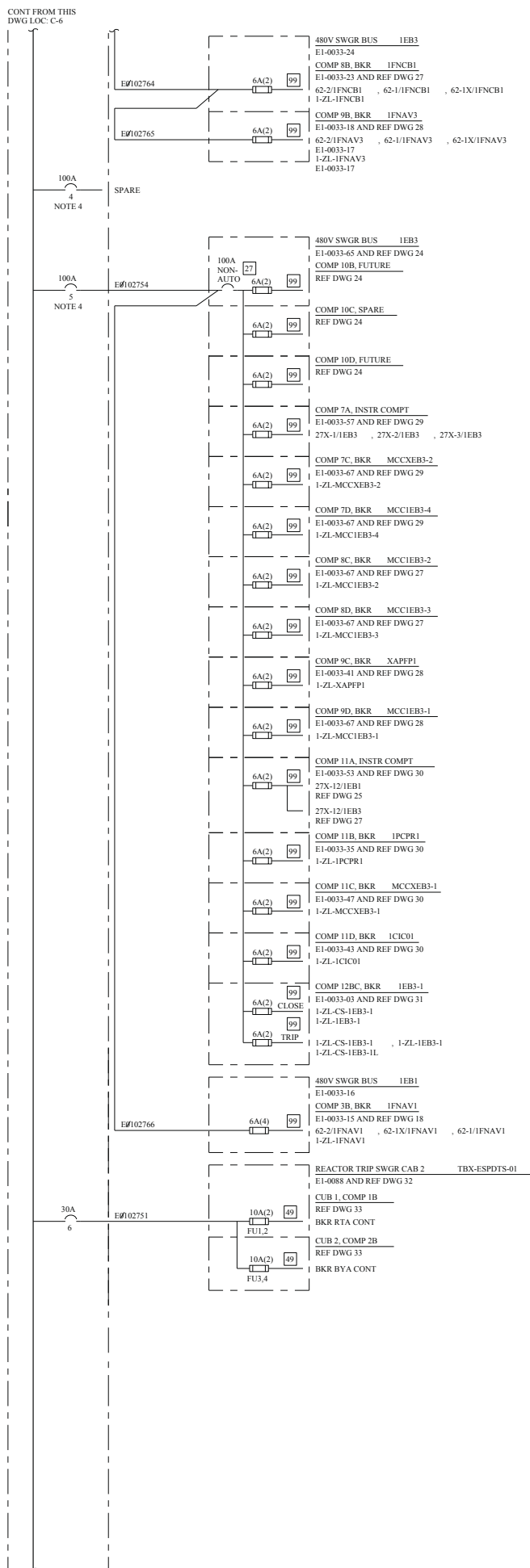
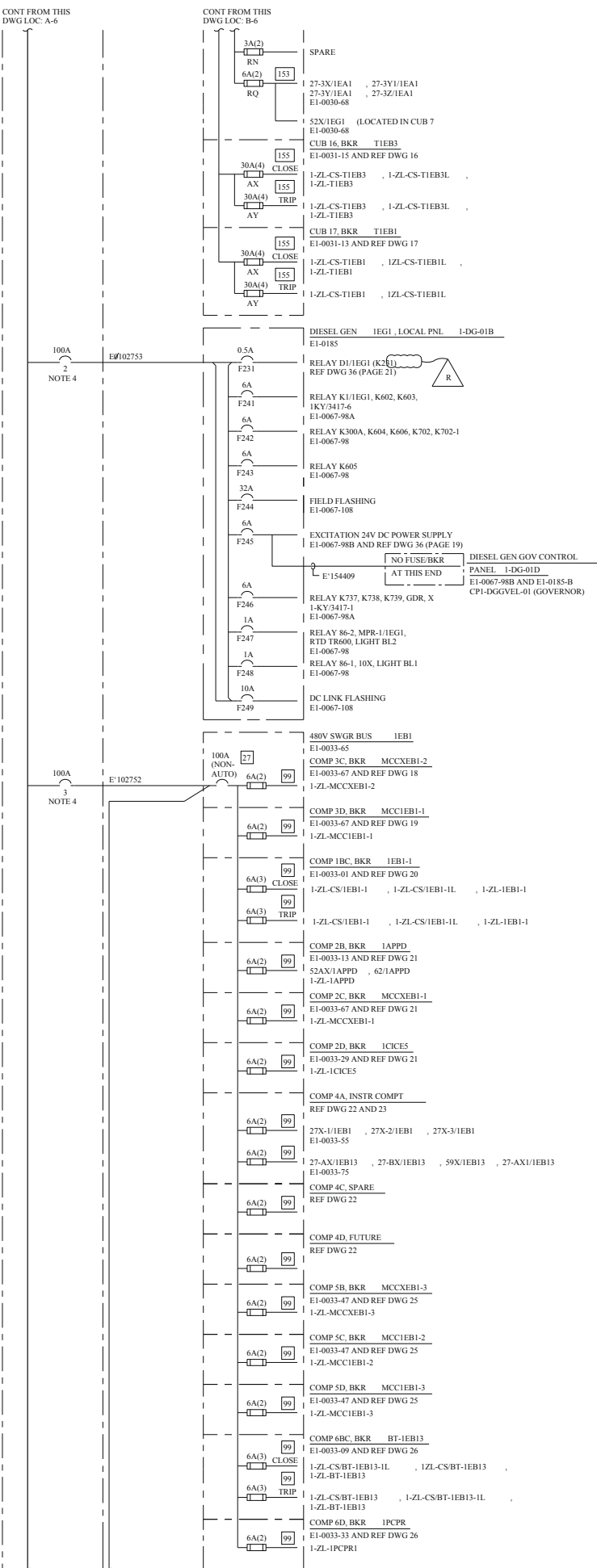
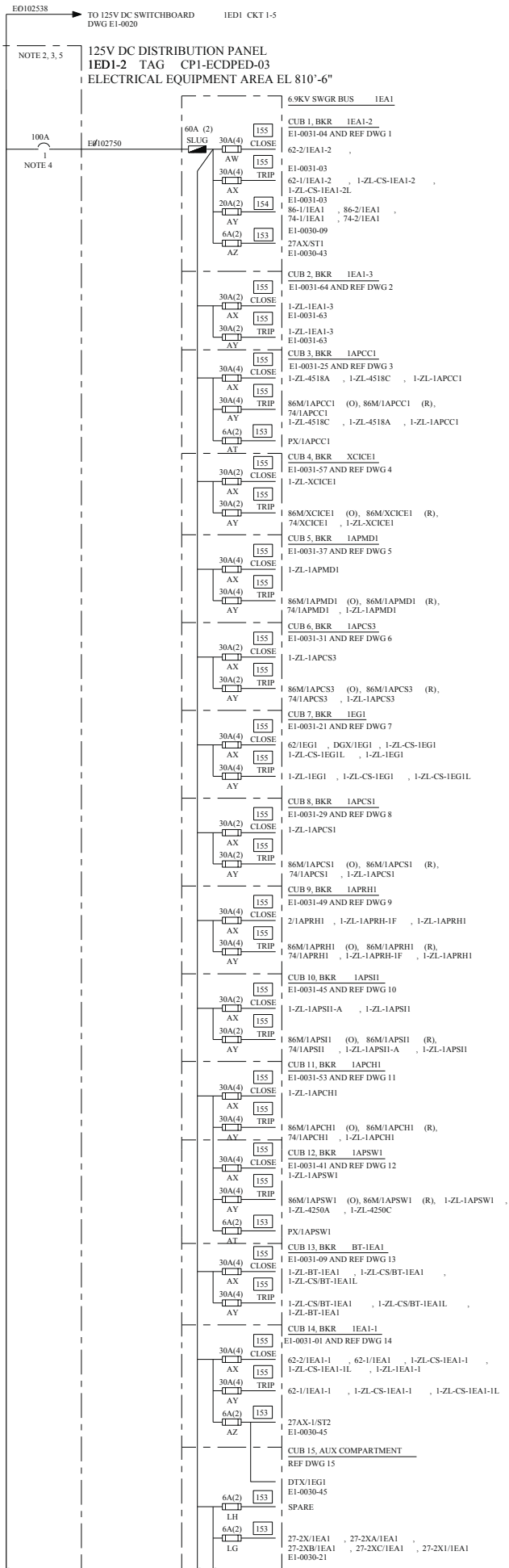
LUMINANT  
CPSES  
GLEN ROSE, TEXAS

125V DC  
ONE LINE DIAGRAM

DWG NO.	E1-0020	SH. NO.	C	REV.	CP-8
---------	---------	---------	---	------	------

FINAL PRINT

THIS DRAWING CREATED ELECTRONICALLY



REV	DWN	CHK	APPV	REMARKS
CP-18	10/26/00	10/26/00	10/26/00	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2001-001255-06-01 PER 98-0011-01-001255-06-00

**FSAR FIGURE 8.3-14**

**LEGEND**

- 100A - CIRCUIT BREAKER
- 100A - CIRCUIT BREAKER RATING
- 1 - CIRCUIT NO
- 30A(4) - FUSE
- AW - FUSE RATING
- 30A - QUANTITY
- (4) - QUANTITY
- AW - FUSE LOCATION MARKER
- CLOSE - BKR CLOSE CKT
- TRIP - BKR TRIP CKT
- 20 - FUSE B/M ITEM NUMBER REF DWG 35

**NOTES**

- ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS 1E TRAIN A.
- ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 100AF, 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
- EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.
- INDICATES 225AF CIRCUIT BREAKER WITH AN ADJUSTABLE INSTANTANEOUS TRIP. FOR SETTING SEE REF DWG 34.
- FOR SELECTIVE COORDINATION WITH THE SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:
  - 40AT FOR THERMAL MAGNETIC NON-ADJUSTABLE TRIP
  - 100AT FOR THERMAL MAGNETIC INSTANTANEOUS ADJUSTABLE TRIP

**REFERENCE DRAWINGS**

- 33-51261-E483
- 33-51261-D484
- 33-51261-E485
- 33-51261-E486
- 33-51261-E487
- 33-51261-E488
- 33-51261-E489
- 33-51261-E490
- 33-51261-E491
- 33-51261-E492
- 33-51261-E493
- 33-51261-E494
- 33-51261-D495
- 33-51261-E496
- 33-51261-E497, 55097-E0276
- 33-51261-E498
- 1442F64
- 1442F59
- 1442F62
- 1442F63
- 1442F65
- 1442F89
- 1442F71
- 1442F66
- 1442F67
- 1442F69
- 1442F70
- 1442F68
- 1442F72
- 1442F73
- 7026D77, 7026D78
- 7026D76
- E1-2400-361
- E1-0024-04
- FANP DWG 38-1290428-\*\*

**TRAIN A**

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1      SEMIC CATEGORY I  
SAFETY CLASS 2      CLASS 3  
SAFETY CLASS 3      ASSOCIATED CIRCUITS

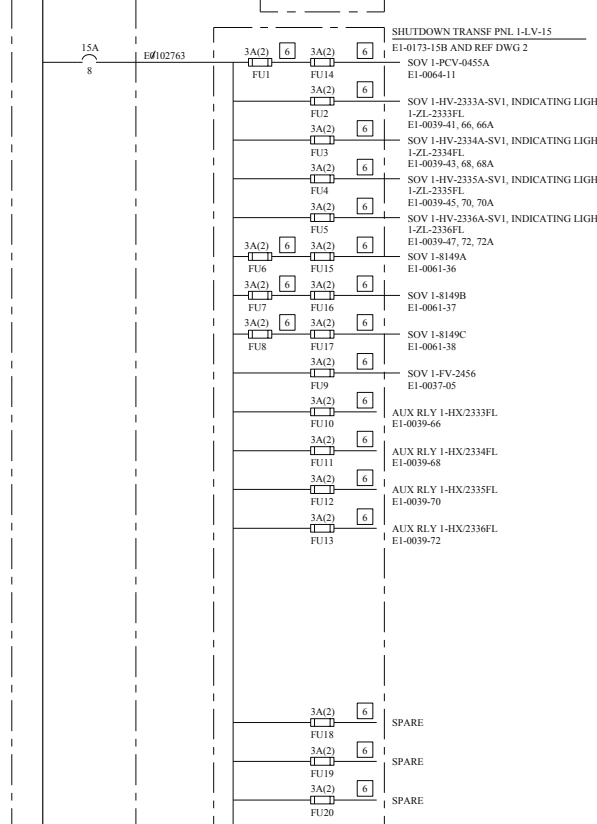
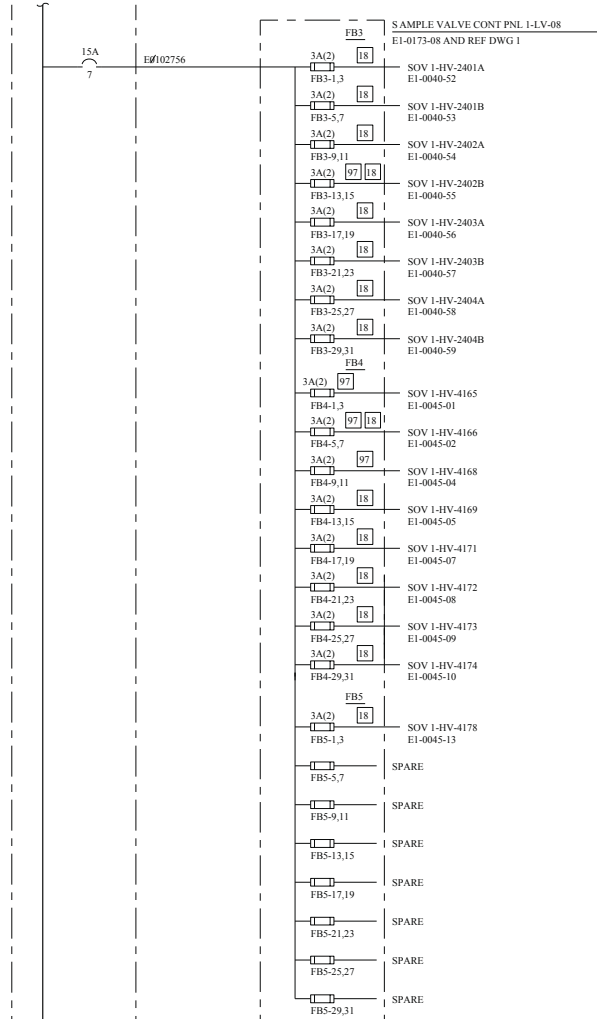
**TXU POWER**  
**CPSES**  
**GLEN ROSE, TEXAS**

**125V DC**  
**ONE LINE DIAGRAM**

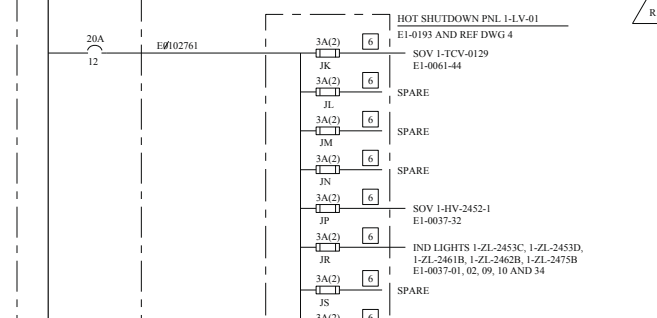
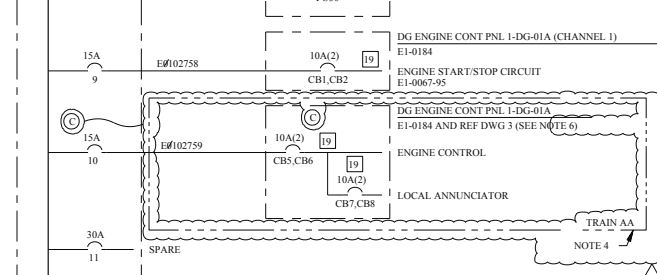
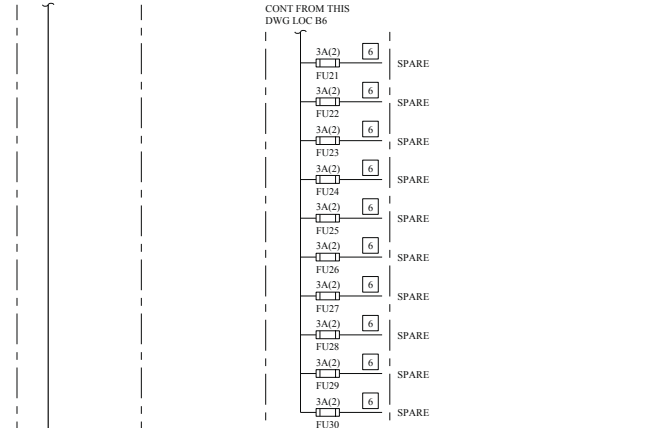
DWG NO	REV
E1-0020	CP-18



125V DC DISTRIBUTION PANEL 1ED1-2  
CONT FROM DWG E1-0020-D LOC E6



CONT FROM THIS DWG LOC A6



**FSAR FIGURE 8.3-14**

**LEGEND**

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

3A(2) 6 - FUSE  
JK - FUSE RATING  
(2) - QUANTITY  
JK - FUSE LOCATION MARKER  
6 - FUSE B/M ITEM NUMBER REF DWG 5

CLOSE - BKR CLOSE CKT  
TRIP - BKR TRIP CKT  
C - SEE NOTE 5

**NOTES**

- ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS 1E, TRAIN A.
- ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 100AF, 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
- EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.
- ALL WIRING AND CABLING ENCLOSED BY DASHED LINES IS ASSOCIATED CLASS 1E, TRAIN AA. THE FUNCTION OF THE LOAD IS NOT SAFETY RELATED AND THE LOAD CIRCUIT BREAKER IS CLASS 1E.
- 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.
- ALL INTERNALS, COMPONENTS AND WIRING SUPPLIED BY THE FEEDER CIRCUIT BREAKERS ARE NON-CLASS 1E, TRAIN C.

- REFERENCE DRAWINGS**
- W-1V08805-F SH 1, 2, 3
  - W-1LV152861-F SH 2, 4
  - 09-500-76001 SH 4, 6, 7
  - W-99X03934-F SH 7, 8, 9
  - E1-0024-04

DRAWING	E1-0020	REV	CP-7
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0020	E1-0020-K		
E1-0020-B			
E1-0020-C			
E1-0020-D			
E1-0020-E			

**TRAIN A**

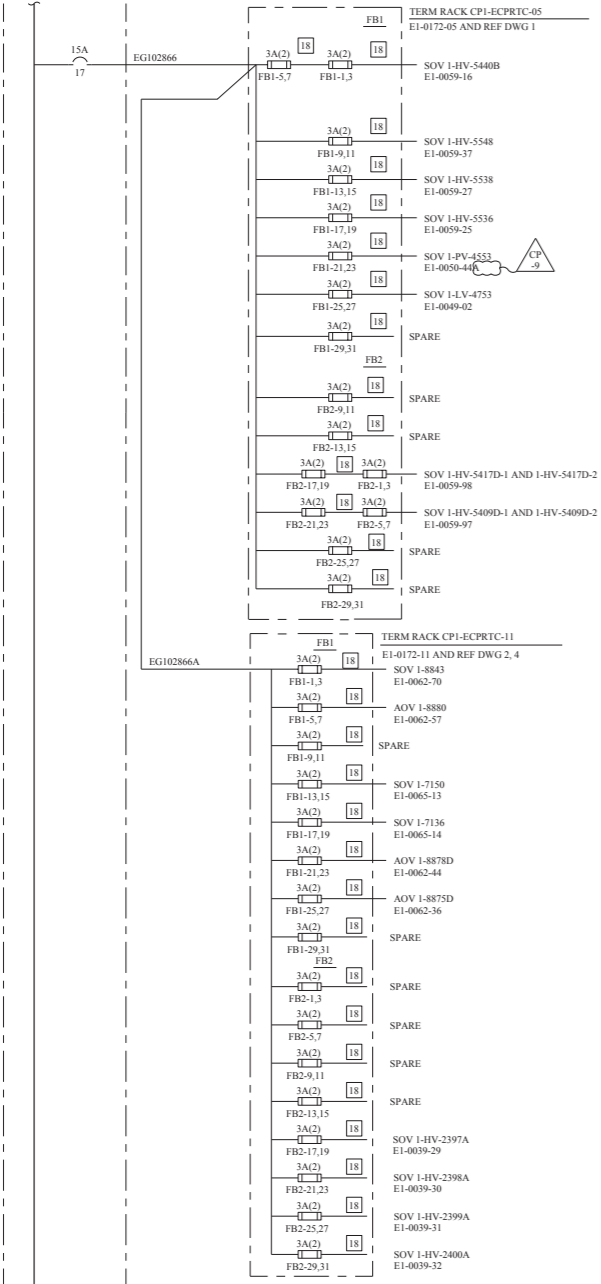
**CLASS I**  
(NUCLEAR SAFETY-RELATED)  
SAFETY CLASS 1 SEISMIC CATEGORY 1  
SAFETY CLASS 2 CLASS 1E  
SAFETY CLASS 3 ASSOCIATED CIRCUITS

**TXU POWER**  
CPSES  
GLEN ROSE, TEXAS

**125V DC**  
**ONE LINE DIAGRAM**



125V DC DISTRIBUTION PANEL 1ED2-1  
CONT FROM DWG E1-0020-F LOC E6



REV	DATE	BY	CHKD	APPV	REMARKS
CP-9	05-14-2015				THIS DRAWING REVISED TO INCORPORATE ALCR-2015-06601-1 TO EDITORIALY CORRECT REFERENCE DRAWING NUMBER FROM E1-0020-44 TO E1-0020-4A.

FSAR FIGURE 8.3-14

- LEGEND:
- CIRCUIT BREAKER
  - CIRCUIT BREAKER RATING
  - CIRCUIT NO
  - FUSE
  - FUSE RATING
  - QUANTITY
  - FUSE LOCATION MARKER
  - FUSE BM ITEM NUMBER REF DWG 3

- NOTES:
- ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS 1E.
  - ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
  - EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.

- REFERENCE DRAWINGS:
- W-TC05701-D SH 1
  - W-TC11701-D SH 1, 2
  - E1-0024-04
  - VE1-TC11701-D SH 2

DRAWING	REV
E1-0020-A	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 SEISMIC CATEGORY I  
SAFETY CLASS 2 CLASS 1E  
SAFETY CLASS 3 ASSOCIATED CIRCUITS

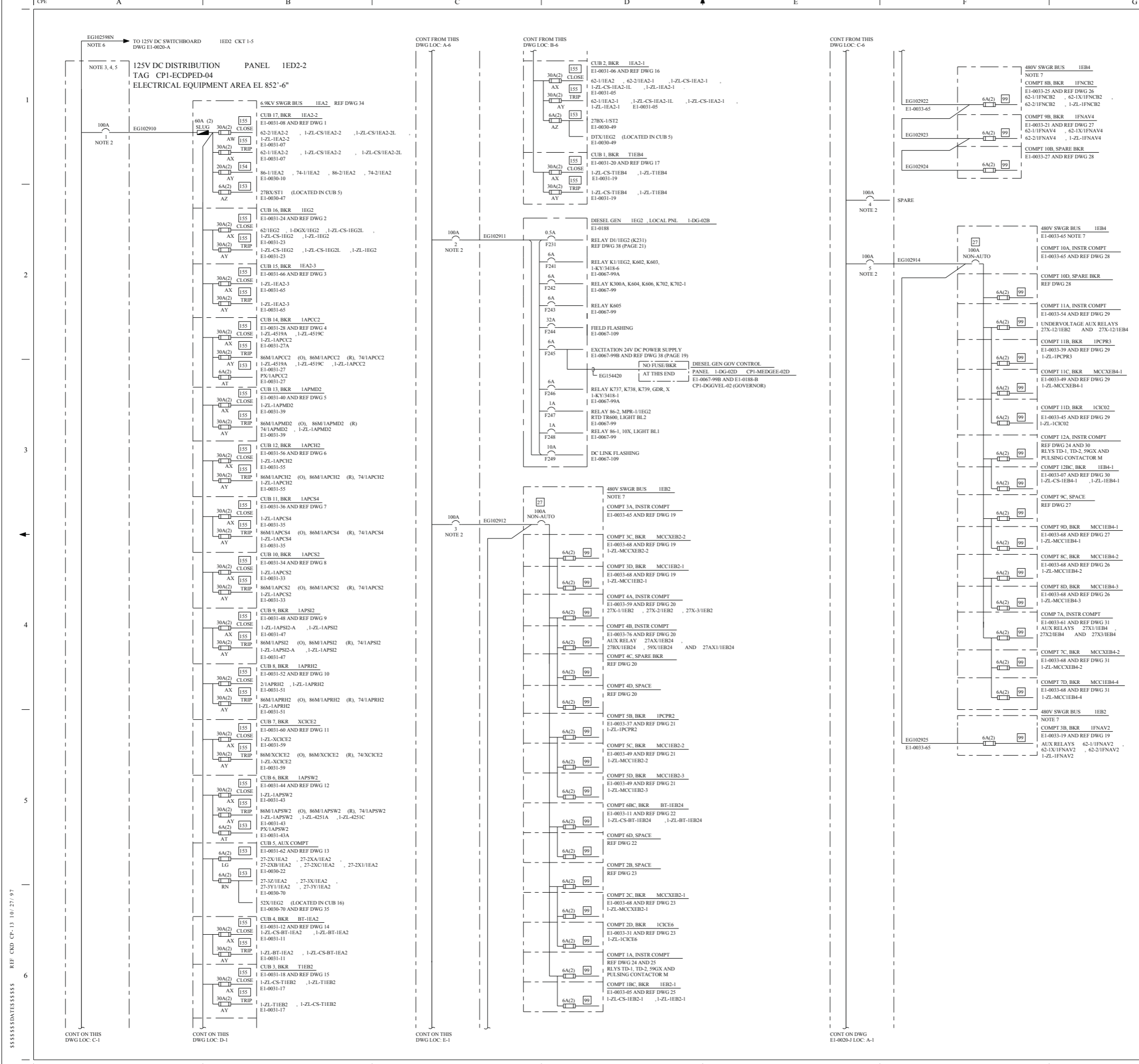
LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

125V DC  
ONE LINE DIAGRAM

DWG NO. E1-0020	SU. NO. G	REV. CP-9
--------------------	--------------	--------------

THIS DRAWING CREATED ELECTRONICALLY

SSSSSSSSSSSSSSSSSS



REV	BY	CHKD	DATE	REMARKS
CP-17	BM		2014	THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGE PER ALCKR-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:
  - 40AT FOR THERMAL MAGNETIC NON-ADJUSTABLE TRIP
  - 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
- FAN 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    SERVIC CATEGORY I  
SAFETY CLASS 2    CLASS I.E.  
SAFETY CLASS 3    ASSOCIATED CIRCUITS

**LUMINANT**  
**CPNPP**  
**GLEN ROSE, TEXAS**

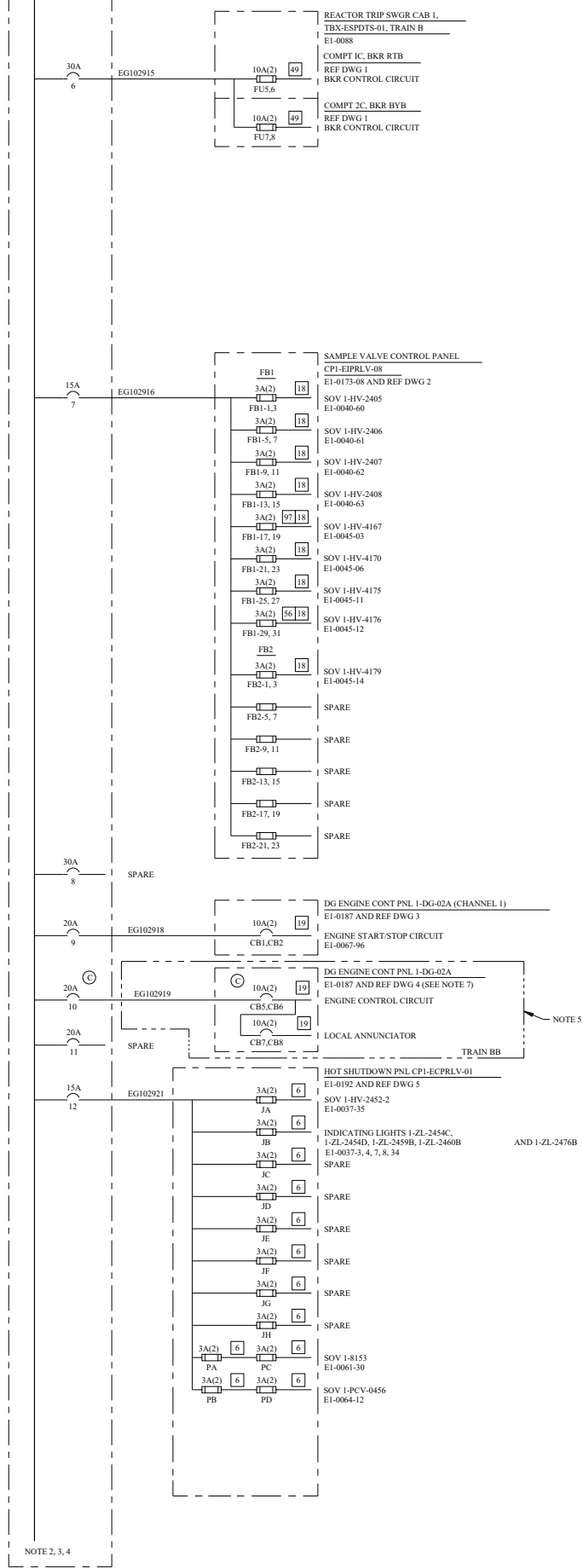
**125V DC**  
**ONE LINE DIAGRAM**

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

REF CKD CP-13 10/27/97

THIS DRAWING CREATED ELECTRONICALLY

125V DC DISTRIBUTION PANEL IED2-2  
CONT FROM DWG E1-0020-H LOC E6



REV	DWN	CHK	APVD	REMARKS
CP-12	SKK 06-16 2004	GAW 06-21 2004	MA 06-21 2004	THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGES PER A1-TR-2014-09526-1.

FSAR FIGURE 8.3-14

- LEGEND:
- 100A - CIRCUIT BREAKER
  - 100A - CIRCUIT BREAKER RATING
  - 1 - CIRCUIT NUMBER
  - 3A(2) 18 - FUSE
  - 3A - FUSE RATING
  - (2) - QUANTITY
  - JA - FUSE LOCATION MARKER
  - 18 - FUSE B/M ITEM NUMBER
  - REF DWG 6
  - SEE NOTE 6

- NOTES:
- ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS 1E.
  - ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
  - FOR SELECTIVE COORDINATION WITH THE SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:
    - 40AT FOR THERMAL MAGNETIC NON-ADJUSTABLE TRIP
    - 100AT FOR THERMAL MAGNETIC INSTANTANEOUS ADJUSTABLE TRIP
  - EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.
  - 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.
  - 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.
  - ALL INTERNALS, COMPONENTS AND WIRING SUPPLIED BY THE FEEDER CIRCUIT BREAKERS ARE NON-CLASS 1E, TRAIN C.

- REFERENCE DRAWINGS:
- 7026D76, 7026D77, 7026D78
  - W-4V08805-F SH 1, 2, 3
  - 09-500-76001 SH 08, 08A, 08A
  - 09-500-76001 SH 04A, 04A, 08A
  - W-99X03934-F SH 7, 9, 14
  - E1-0024-04

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

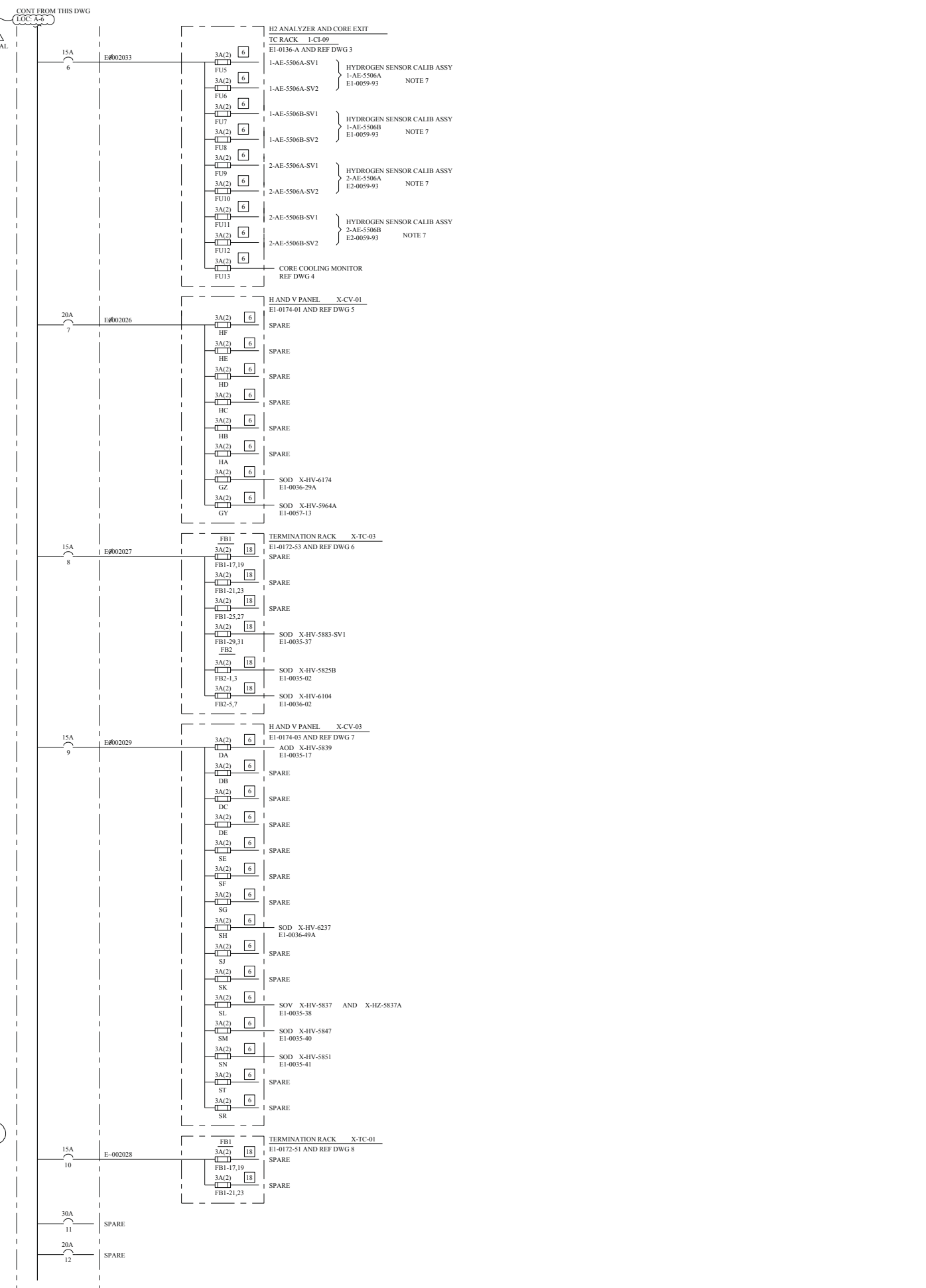
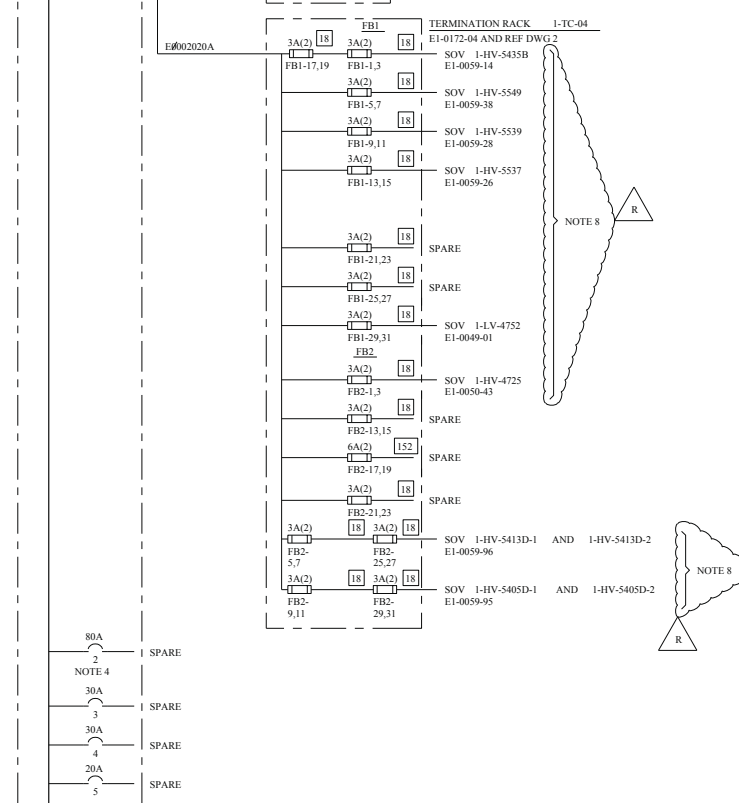
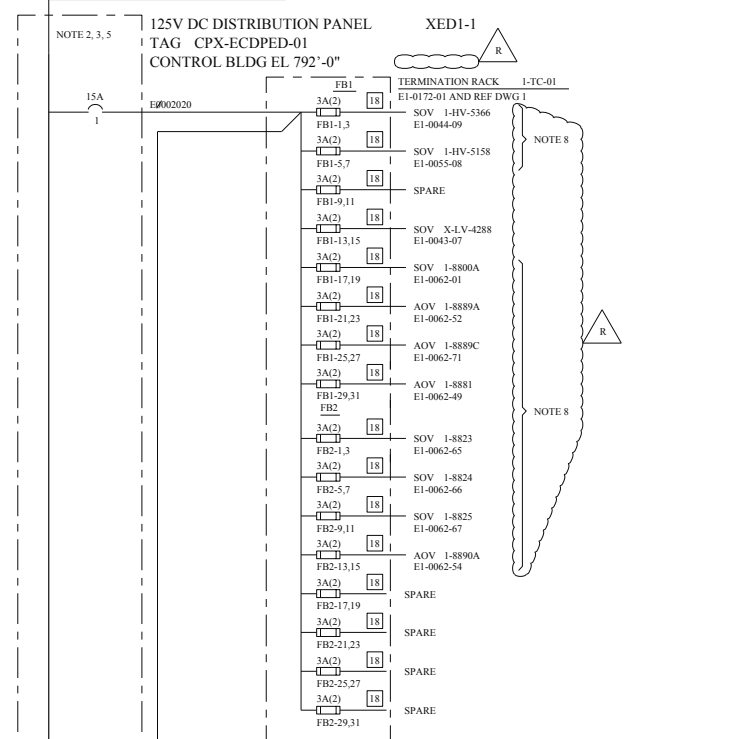
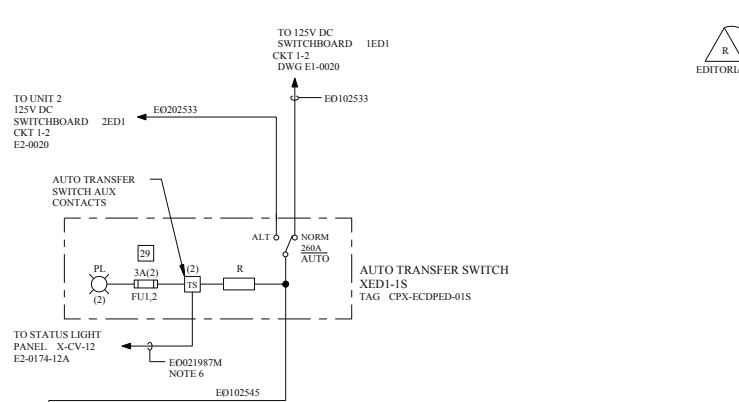
CLASS I

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

LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

125V DC  
ONE LINE DIAGRAM

DWG. NO.	E1-0020	SHEET NO.	J	REV.	CP-12
----------	---------	-----------	---	------	-------



### FSAR FIGURE 8.3-14

**LEGEND**

- CIRCUIT BREAKER  
 - FUSE  
 1 - CIRCUIT BREAKER RATING  
 1 - CIRCUIT NUMBER  
 3A(2) - FUSE RATING  
 FBI-1 - FUSE LOCATION MARKER  
 (2) - QUANTITY  
 FBI-1 - FUSE LOCATION MARKER  
 - FUSE BM ITEM NUMBER REF DWG 10

**NOTES**

- ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS I, TRAIN A.
- ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 100AF, 2-POLE THERMAL-MAGNETIC UNLESS NOTED OTHERWISE.
- EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.
- INDICATES 225AF CIRCUIT BREAKER WITH AN ADJUSTABLE INSTANTANEOUS TRIP. FOR SETTING SEE REF DWG 9.
- FOR SELECTIVE COORDINATION WITH THE SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:
  - 40AT FOR THERMAL MAGNETIC NON-ADJUSTABLE TRIP
  - 100AT FOR THERMAL MAGNETIC INSTANTANEOUS ADJUSTABLE TRIP
- CABLE NUMBERS WITH SUFFIX M ARE THE SAME AS THE CORRESPONDING CABLE NUMBER WITH SUFFIX N ON THE RESPECTIVE DRAWING.
- 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 UNINITIALIZED 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.
- THESE UNIT 1 LOADS HAVE BEEN ANALYZED AND ACCEPTED PER FDA-2000-000142-02-02.
- THE ONLY UNINITIALIZED ACCEPTABLE LOADS ON PANEL XED1-1 ARE SHOWN IN NOTES 7 AND 8. NO NEW UNIT 1 OR UNIT 2 LOADS SHALL BE ADDED ON PANEL XED1-1.

**REFERENCE DRAWINGS**

- W-TC01701-D SH 1, 2 WIRING DIAGRAM TERM CABINET CP1-ECPRC-01
- W-TC04701-D SH 1 WIRING DIAGRAM TERM CABINET CP1-ECPRC-04 AND 2
- 105D017 WIRING DIAGRAM TERM CABINET CP1-EIPRC-09
- 112D003 SH 2 WIRING AND CONN DIAGRAM CORE COOLING MONITOR
- W-CV01701-F SH 5, 12 AND 13 WIRING DIAG MAIN CONT RM PNL VERT CPX-ECPRCV-01
- W-TC03832-D SH 1, 2 WIRING DIAG TERM CABINET CPX-ECPRC-03
- W-CV03701-F SH 5, 10, 12, 13 AND 14 WIRING DIAGRAM MAIN CONTROL RM VENTILATION CPX-ECPRCV-03
- W-TC01832-D SH 1 WIRING DIAGRAM TERM CAB CPX-ECPRC-01 AND 2
- EI-2400-361 PROTECTIVE DEVICE SETTINGS DC SYSTEM
- EI-0024-04 DEVICE LEVEL ONE LINE DIAGRAM FUSE/BREAKER BILL OF MATERIAL

DRAWING	EI-0020	REV	CP-7
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
EI-0020	EI-0020-K		
EI-0020-B			
EI-0020-C			
EI-0020-D			
EI-0020-E			

**TRAIN A**

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

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

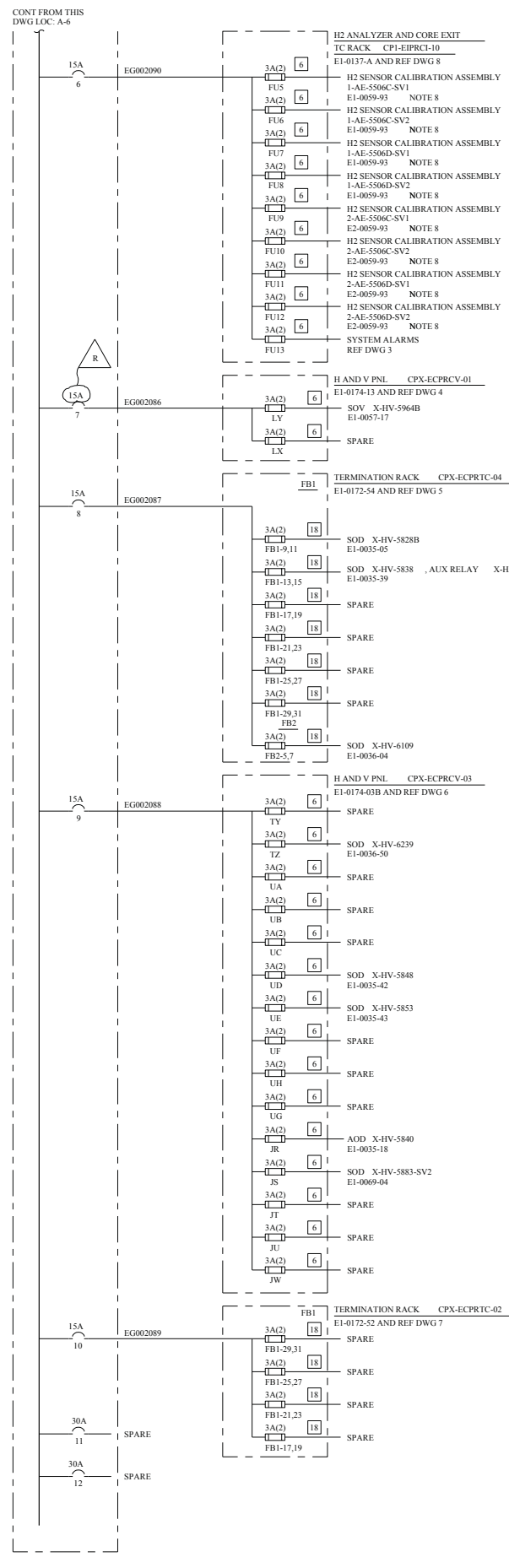
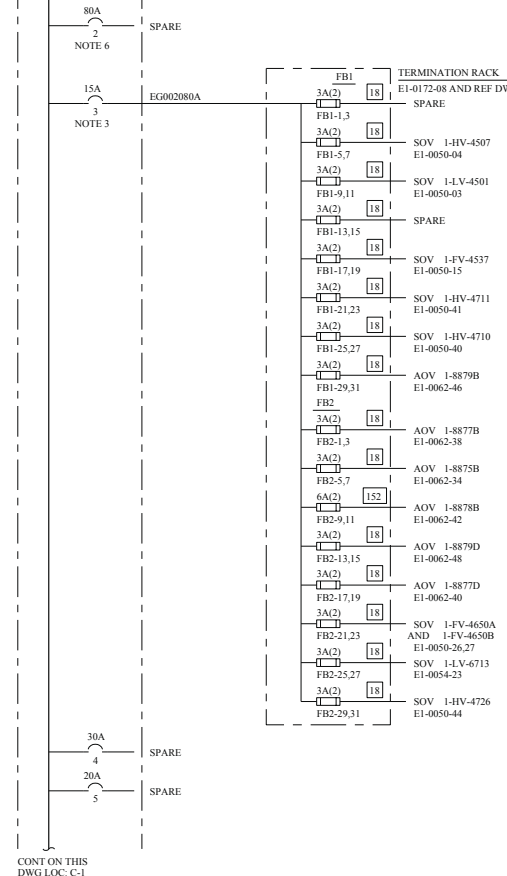
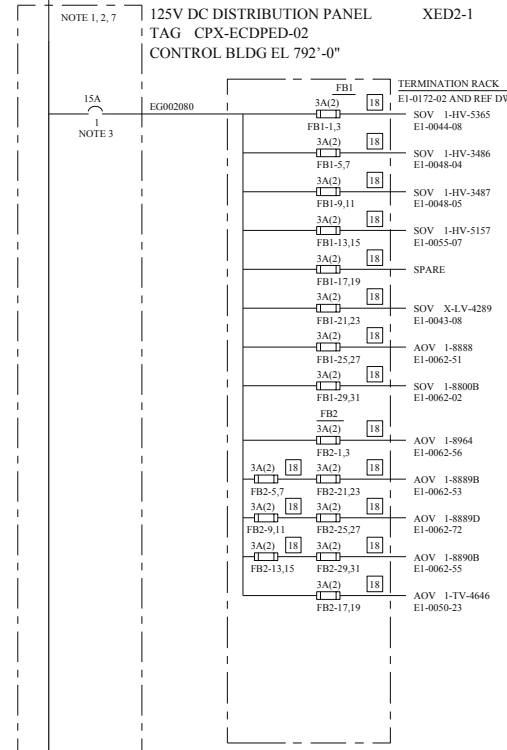
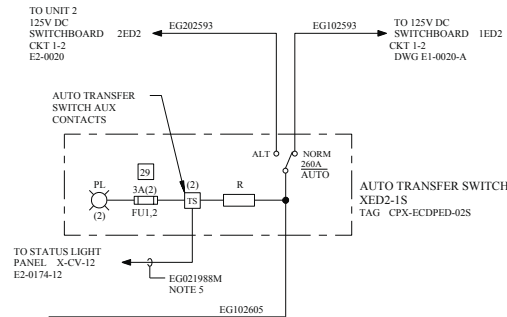
**LUMINANT CPSES**  
GLEN ROSE, TEXAS

**125V DC ONE LINE DIAGRAM**

DWG NO.	EI-0020	SH NO.	K	REV.	CP-24
---------	---------	--------	---	------	-------

REF CKD CP-171-29-98

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APPD	REMARKS
CP-23	06-02-2009	SM	SM		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2001-002265-04-01 PER 98-0001-01-002265-04-00

**FSAR FIGURE 8.3-14**

**LEGEND**

20A - CIRCUIT BREAKER  
 20A - CIRCUIT BREAKER RATING  
 1 - CIRCUIT NUMBER  
 3A(2) - FUSE  
 3A - FUSE RATING  
 (2) - QUANTITY  
 FB1-1 - FUSE LOCATION MARKER  
 18 - FUSE BM ITEM NUMBER  
 REF DWG 9

- NOTES**
- ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
  - EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT. DERATED FOR THFA, DO NOT INCREASE THE AMPACITY OF THIS CIRCUIT BREAKER.
  - ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS 1E.
  - CABLE NUMBERS WITH SUFFIX M ARE THE SAME AS THE CORRESPONDING CABLE NUMBER WITH SUFFIX N ON THE RESPECTIVE DRAWING.
  - 225 AMP FRAME BREAKER WITH ADJUSTABLE INSTANTANEOUS TRIP. SEE REF DWG 10.
  - FOR SELECTIVE COORDINATION WITH THE SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:
    - 40AT FOR THERMAL MAGNETIC NON-ADJUSTABLE TRIP
    - 100AT FOR THERMAL MAGNETIC INSTANTANEOUS ADJUSTABLE TRIP
  - 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 UNUTILIZED 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.
  - THESE UNIT 1 LOADS HAVE BEEN ANALYZED AND ACCEPTED PER FDA-2000-000142-02-02.
  - THE ONLY UNUTILIZED 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**
- W-TC02701-D SH 1, 2 WIRING DIAGRAM TERMINATION CABINET
  - W-TC08701-D SH 1, 2 WIRING DIAGRAM TERMINATION CABINET
  - 112D003 SH 2 WIRING AND CONN DIAG CORE COOLING MONITOR
  - W-CV01701-F SH 7, 16 WIRING DIAG MAIN CONT RM PNL VERT
  - W-TC04832-D SH 1, 2 WIRING DIAG TERM CAB CPX-ECPRTC-04 WD TERM CAB TRAIN B
  - W-CV03701-F SH 7, 10, 13 WIRING DIAG CONT RM VERT BD V PNL CPX-ECPRCV-03 WD MN CONT RM VV
  - W-TC02832-D SH 1, 2 WIRING DIAGRAM TERM CAB CPX-ECPRTC-02 WD TERM CAB TR B
  - 105D017 WIRING AND CONNECTION DIAGRAM
  - E1-0024-04 DEVICE LEVEL ONE LINE DIAGRAM FUSE-BREAKER BILL OF MATERIAL
  - E1-2400-361 PROTECTIVE DEVICE SETTINGS DC SYSTEM

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)

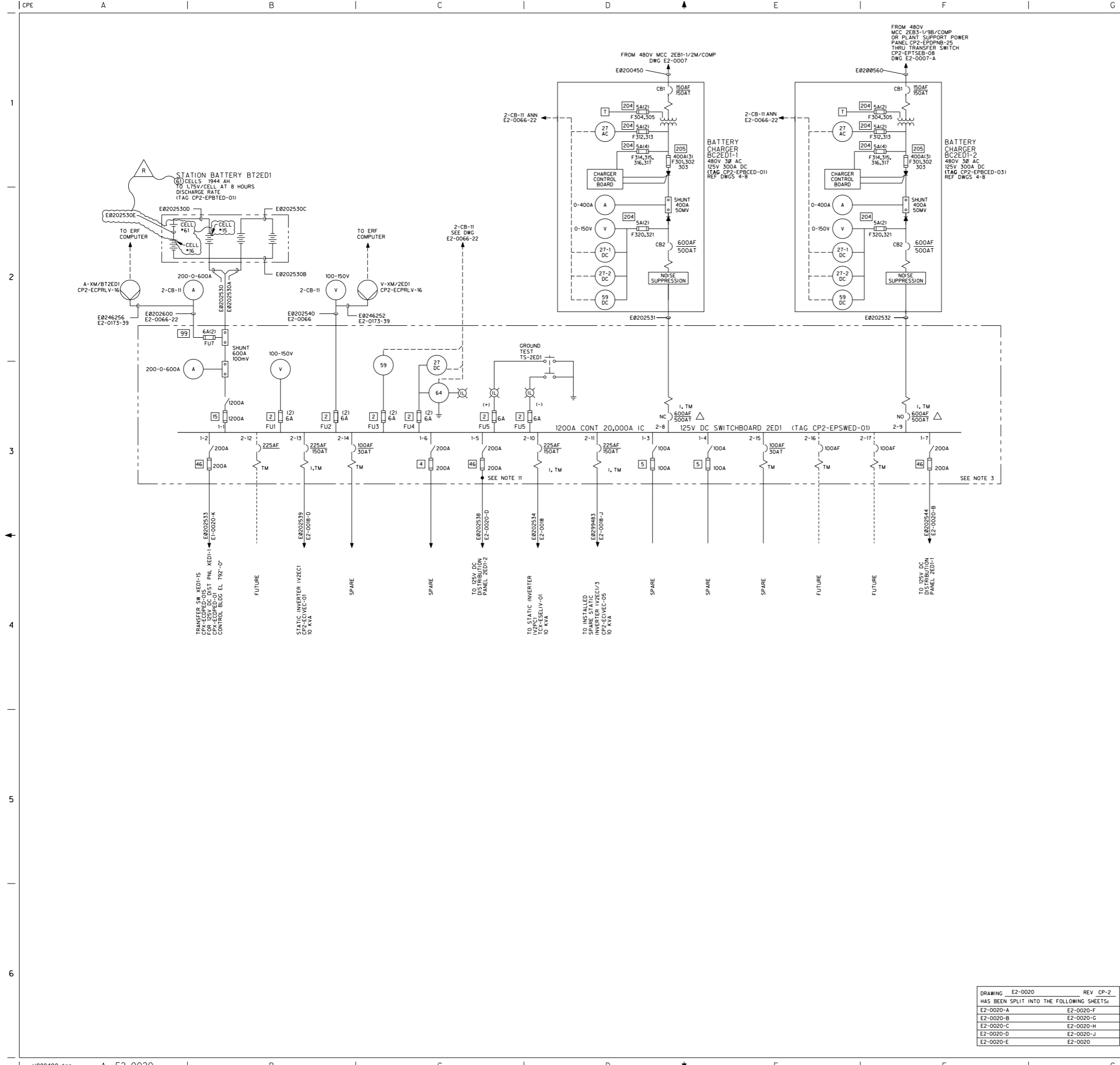
SAFETY CLASS I SEISMIC CATEGORY I  
SAFETY CLASS 2 CLASS II  
SAFETY CLASS 3 ASSOCIATED CIRCUITS

**LUMINANT**  
**CPNPP**  
**GLEN ROSE, TEXAS**

**125V DC**  
**ONE LINE DIAGRAM**

DWG NO.	E1-0020	SH NO.	L	REV.	CP-23
---------	---------	--------	---	------	-------

THIS DRAWING CREATED ELECTRONICALLY



REV: CP-14, DWG: E2-0020, DATE: 08-02-02, BY: JWH, CHECKED: JWH, APPROVED: JWH

REMARKS: THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2018-000023-01-00 PER SK-0003-18-1000023-01-00.

FSAR FIGURE 8.3-14

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

LUMINANT  
 CPNPP  
 GLEN ROSE, TEXAS

125V DC  
 ONE LINE DIAGRAM

DWG. NO. E2-0020, SH. NO. REV. CP-14

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

THIS DRAWING CREATED ELECTRONICALLY

FINAL IPRINT



REV	DATE	BY	CHKD	APPVD	REMARKS
CP-9	08-02-02	CPW	CPW		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2018-00023-01-00 PER SK-0004-18-00023-01-00.

FSAR FIGURE 8.3-14

- LEGEND:
- DC VOLTMETER
  - OVERVOLTAGE RELAY
  - UNDERVOLTAGE RELAY, AC
  - UNDERVOLTAGE RELAY, DC
  - DC AMMETER
  - GROUND RELAY
  - TRANSMITTER
  - INDICATING LIGHT
  - EQUALIZING CHARGE TIMER
  - DC SWITCHBOARD
  - ANNUNCIATOR
  - MAIN CONTROL BOARD
  - FUSIBLE SWITCH 200A (NOTE 6)
  - CIRCUIT BREAKER (NOTE 2 AND 5)
  - SWITCHBOARD COMPT 2-10, CIRCUIT BREAKER 10 MOUNTED IN SWBD SEC 2
  - FRAME SIZE
  - TRIP RATING
  - ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SETTING
  - THERMAL MAGNETIC TRIP ELEMENT
  - FUSE 6A
  - FUSE B/M ITEM NUMBER REF DWG 2
  - INDICATES SPLICE

- NOTES:
1. ALL EQUIPMENT/DEVICES SHOWN ON THIS DWG ARE CLASS 1E, TRAIN B UNLESS OTHERWISE NOTED.
  2. ALL DC CIRCUIT BREAKERS ARE 2 POLE THERMAL MAGNETIC UNLESS OTHERWISE NOTED.
  3. INOPERABLE/BYPASS LIGHT INDICATION IN THE CONTROL ROOM WILL INDICATE IF ANY OF THE NC BREAKERS OR FUSIBLE SWITCHES ARE OPEN OR POWER FUSE IS BLOWN.
  4.  $\Delta$  - INDICATES BREAKERS MECHANICALLY INTERLOCKED TO PREVENT PARALLELING.
  5. EACH CIRCUIT BREAKER PROVIDED WITH ONE SET OF FORM C AUXILIARY CONTACTS.
  6. ALL FUSIBLE SWITCHES ARE 3-POLE, ONE POLE BEING USED TO MONITOR SWITCH STATUS. BLOWN FUSE INDICATION IS PROVIDED BY TRIGGER FUSES WIRED IN PARALLEL WITH EACH POWER FUSE.
  7. FOR SELECTIVE COORDINATION WITH THE SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING: 40AT FOR TM, NON-ADJUSTABLE TRIP; 100AT FOR TM, INST ADJUSTABLE TRIP.
  8. DELETED.
  9. 225A FRAME AND LARGER FRAME SIZE BREAKERS HAVE INTERCHANGEABLE TRIP UNIT WITH ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP. FOR SETTING SEE REF DWG 1.
  10. METER/RELAY NUMBER SUFFIXES ARE NOT ALWAYS SHOWN. SUFFIXES ARE ALTERNATE TAG NUMBER FOR THAT PIECE OF EQUIPMENT THAT IS ASSOCIATED WITH (e.g. 27AC/BC2ED2-1, 64/2ED2) FOR THOSE METER/RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE "UNDERBAR" IS EQUIVALENT TO A "/SLASH" (e.g.  $\frac{V}{2ED2}$  IS EQUIVALENT TO V/2ED2).
  11. SPLICE IN ACCORDANCE WITH SPECIFICATION 2323-ES-100. REDUCTION SPLICE TO 2-1/C-4/0.

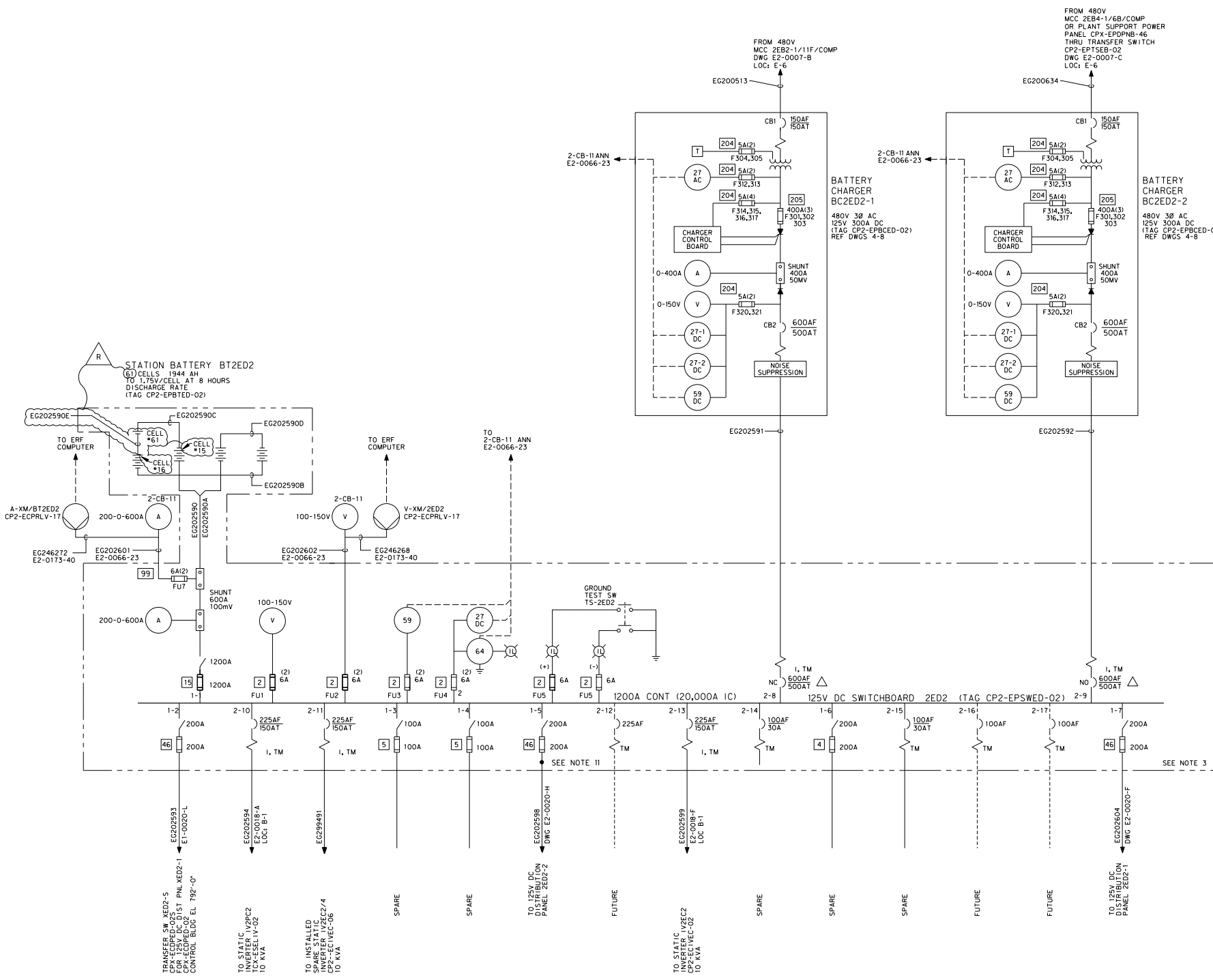
- REFERENCE DRAWINGS:
1. E2-2400-361
  2. E2-0024-04
  3. 182C79225 SH 4
  4. 10-102733 SH 1
  5. 10-102734 SH 1
  6. 10-102735 SH 1
  7. 20-103542 SH 1
  8. 20-103543 SH 1

TRAIN B  
CLASS I  
(NUCLEAR SAFETY-RELATED)  
SAFETY CLASS 1 SEISMIC CATEGORY 1  
CLASS 1 ASSOCIATED CIRCUITS  
LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

125V DC  
ONE LINE DIAGRAM

DRAWING 2323-E2-0020		REV CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:		
E2-0020	E2-0020-F	
E2-0020-A	E2-0020-G	
E2-0020-B	E2-0020-H	
E2-0020-C	E2-0020-I	
E2-0020-D	E2-0020-J	
E2-0020-E		

DWG. NO.	SH. NO.	REV.
E2-0020	A	CP-9



TRANSFER SW XED2-5  
CPN-EGPFD-025  
CPN-EGPFD-02  
CONTROL BLDG EL 792-0-0

TO STATIC  
INVERTER 1V2PC2  
PANEL 2ED2-1  
TO KVA

TO INSTALLED  
SPARE STATIC  
INVERTER 1V2EC2/4  
PANEL 2ED2-1  
TO KVA

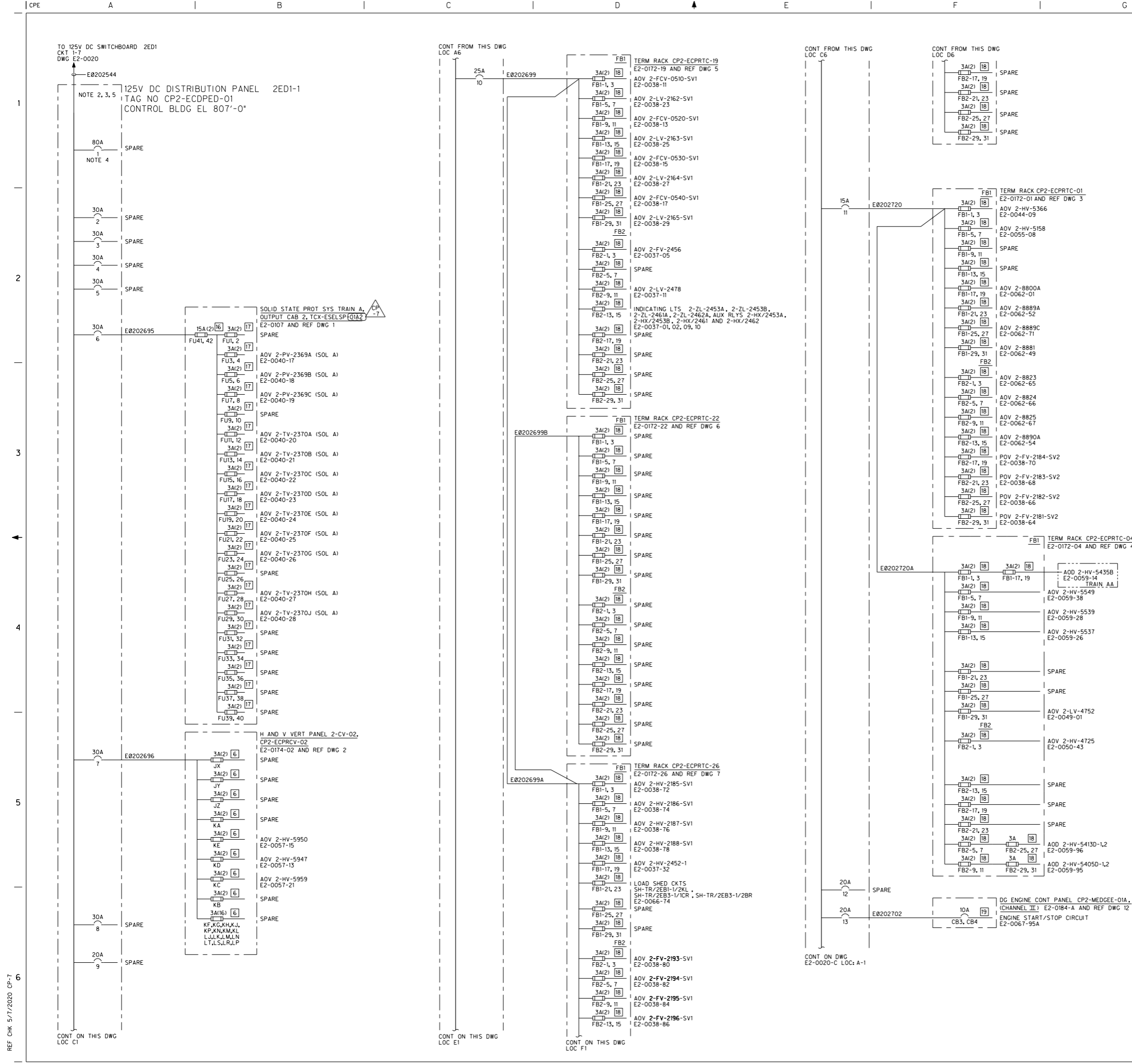
TO 125V DC  
PANEL 2ED2-2  
DWG E2-0020-H

TO STATIC  
INVERTER 1V2EC2  
PANEL 2ED2-1  
TO KVA

FROM 480V  
MCC 2EB4-1/6B/COMP  
OR PLANT SUPPORT POWER  
PANEL CPN-EPDPMB-46  
THRU TRANSFER SWITCH  
CP2-EPTSEB-02  
DWG E2-0007-C  
LOC: E-6

BATTERY  
CHARGER  
BC2ED2-1  
480V 30 AC  
125V 300A DC  
(TAG CP2-EPBCED-02)  
REF DWGS 4-8

BATTERY  
CHARGER  
BC2ED2-2  
480V 30 AC  
125V 300A DC  
(TAG CP2-EPBCED-04)  
REF DWGS 4-8



REV	DWN	CHKD	APPV	REMARKS
CP-7				THIS DRAWING REVISED TO INCORPORATE AN EDITORIAL CHANGE PER AI-CR-2020-003398-1

FSAR FIGURE 8.3-14

**LEGEND:**

- 80A - CIRCUIT BREAKER
- 80A - CIRCUIT BREAKER RATING
- 17 - CIRCUIT NUMBER
- 3A(2) - FUSE
- FU1 - FUSE LOCATION MARKER
- 17 - FUSE B/M ITEM NUMBER REF DWG 10

**NOTES:**

1. ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS IE, TRAIN A.
2. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 100AF, 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
3. EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.
4. ADJUSTABLE INSTANTANEOUS TRIP-SET AT "LO".
5. 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
6. DELETED
7. WIRING AND CABLING ENCLOSED WITHIN DASHED LINES IS ASSOCIATED CLASS IE TRAIN AA.

**REFERENCE DRAWINGS:**

1. 1084H36 SH 28
2. W-CV02821-F SH 1-13
3. W-TC0702-D SH 1,2
4. W-TC04702-D SH 1,2
5. W-TC19702-D SH 1,2
6. W-TC22702-D SH 1,2
7. W-TC26825-D SH 1,2
8. W-TC07702-D SH 1,2
9. W-TC10702-D SH 1,2
10. E2-0024-04 (LATER)
11. 182-79225-3
12. 09-500-76001 SH 8

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

TRAIN A

CLASS I

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

LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

125V DC  
ONE LINE DIAGRAM

Dwg. No. E2-0020	Sh. No. Rev. B CP-7
------------------	---------------------

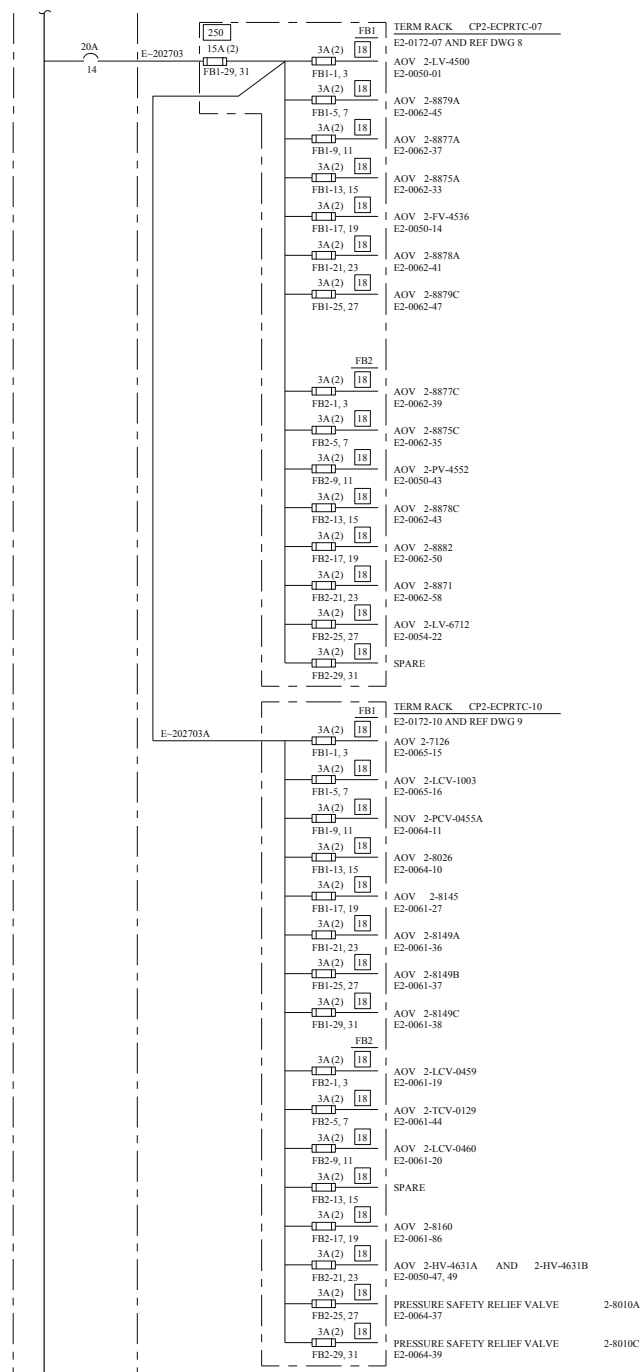
REF. CHK. 5/17/2020 CP-7

THIS DRAWING CREATED ELECTRONICALLY

125V DC DISTRIBUTION PANEL

2ED1-1

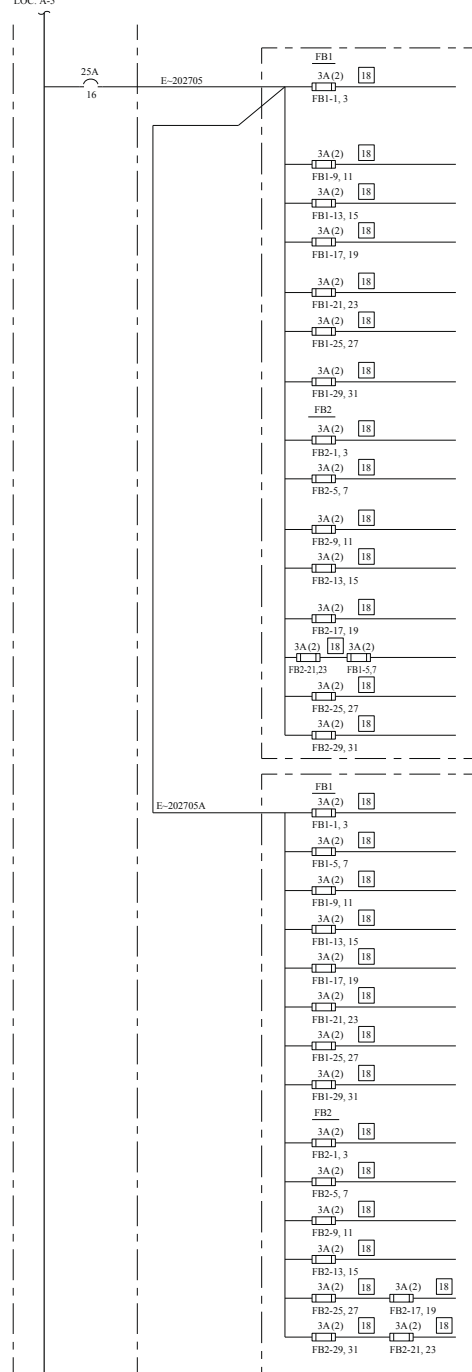
CONT FROM DWG E2-0020-B LOC: F-6



15A  
15

CONT ON THIS DWG  
LOC: C-1

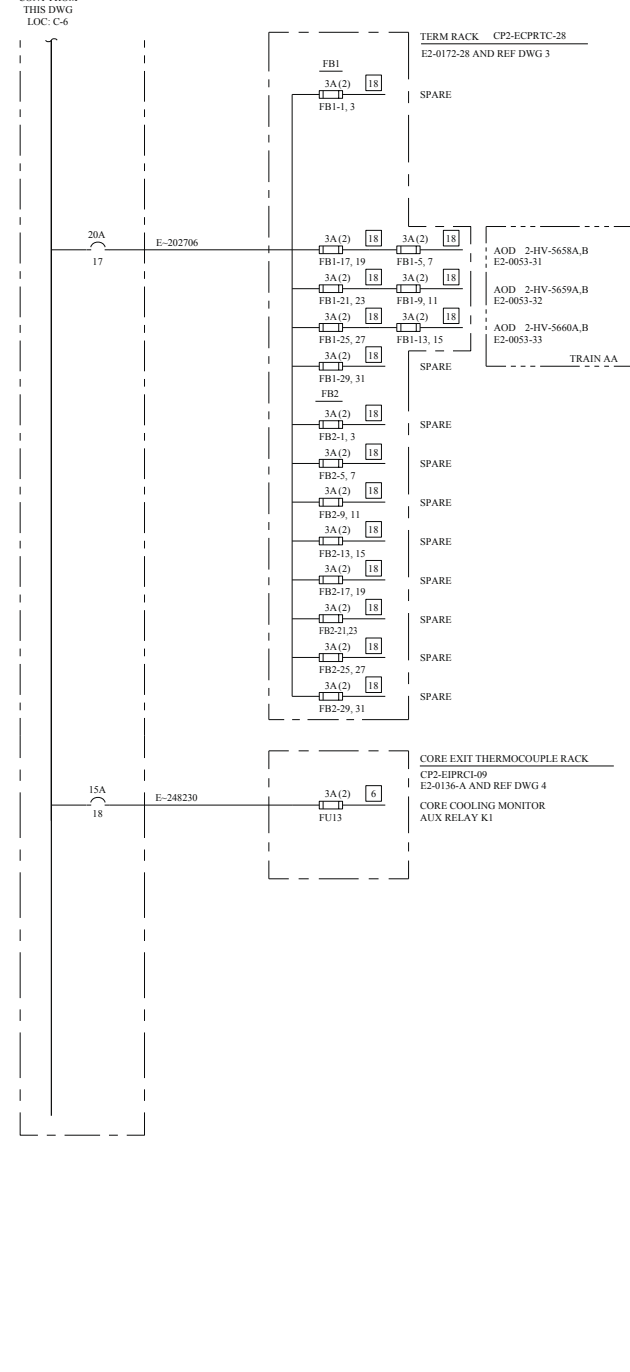
CONT FROM THIS DWG  
LOC: A-5



25A  
16

CONT TO  
LOC: E1  
THIS DWG

CONT FROM  
THIS DWG  
LOC: C-6



15A  
18

REV	DWN	CHK	APPV	REMARKS
CP-8	10/27/2006	10/27/2006		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2004-00181-02-00 PER 98-0001-04-00181-02-00 EDITORIAL CHANGE AS NOTED

FSAR FIGURE 8.3-14

- LEGEND
- CIRCUIT BREAKER
  - 80A - CIRCUIT BREAKER RATING
  - 1 - CIRCUIT NO
  - FUSE
  - (2) - QUANTITY
  - FBI-1 - FUSE LOCATION MARKER
  - 18 - FUSE B/M ITEM NUMBER REF DWG 6

- NOTES
1. ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS 1E TRAIN A UNLESS OTHERWISE NOTED.
  2. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 100AF, 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. FOR SELECTIVE COORDINATION WITH THE SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:  
40AT FOR TM, NON-ADJUSTABLE TRIP  
100AT FOR TM, INSTANTANEOUS ADJUSTABLE TRIP.
  6. ALL WIRING AND CABLING ENCLOSED IN DASHED LINES IS ASSOCIATED CLASS 1E TRAIN AA.

- REFERENCE DRAWINGS
1. W-TC13702-D SH 1, 2
  2. W-TC16702-D SH 1, 2
  3. W-TC28702-D SH 1, 2
  4. 112P003 SH 1, 2
  5. E2-0024-04
  6. 182-79225-3

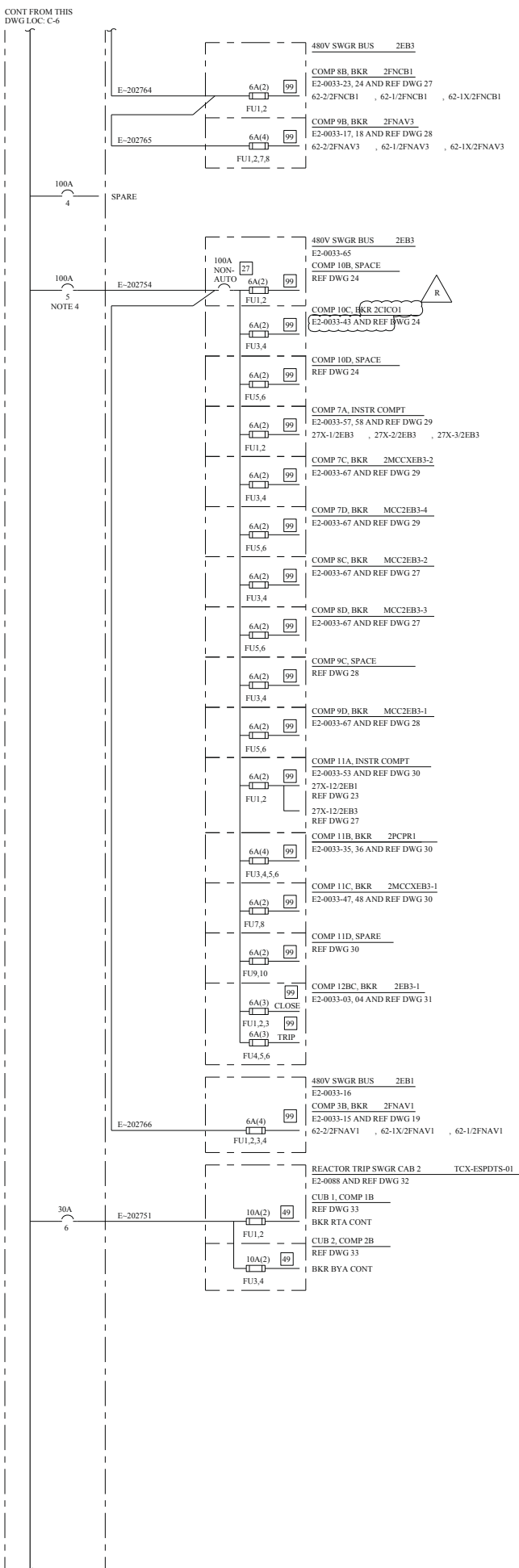
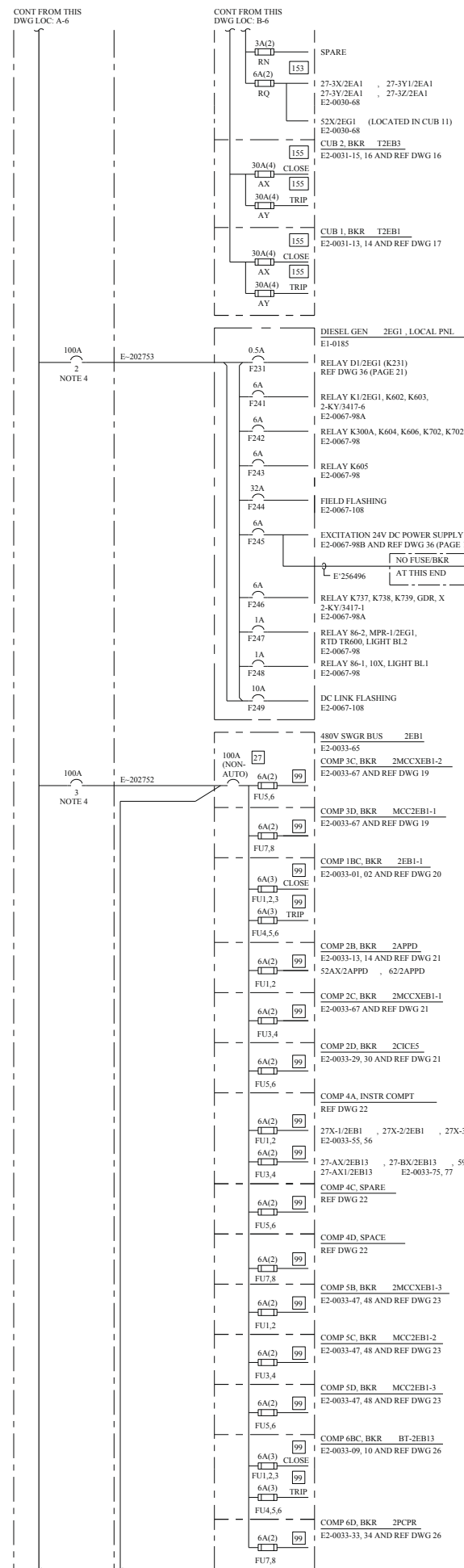
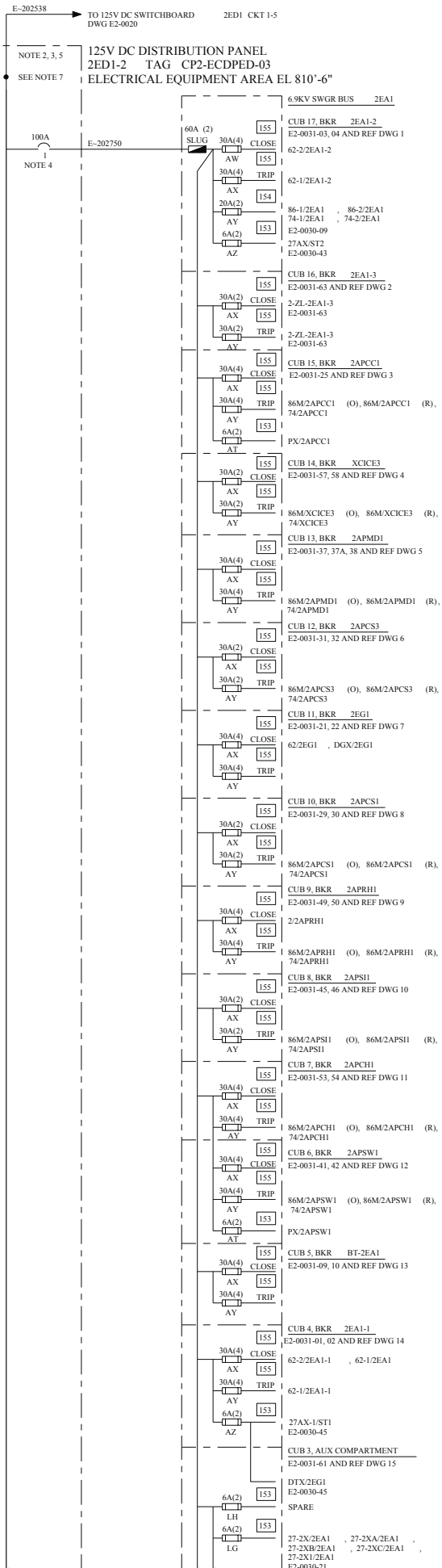
DRAWING	E2-0020	REV	CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E2-0020		E2-0020-G	
E2-0020-A		E2-0020-H	
E2-0020-B		E2-0020-J	
E2-0020-C			
E2-0020-D			
E2-0020-E			
E2-0020-F			

TRAIN A  
**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

125V DC  
ONE LINE DIAGRAM

DWG NO.	SH NO.	REV.
E2-0020	C	CP-8



REV	DATE	CHKD	APPD	REMARKS
CP-9	11-22-2001			THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2001-000158-00 PER SR-001-01-000158-00

**FSAR FIGURE 8.3-14**

**LEGEND**

100A - CIRCUIT BREAKER  
 1 - CIRCUIT NO  
 30A(4) AW - FUSE  
 30A - FUSE RATING  
 (4) - QUANTITY  
 AW - FUSE LOCATION MARKER  
 CLOSE - BKR CLOSE CKT  
 TRIP - BKR TRIP CKT  
 20 - FUSE BM ITEM NUMBER REF DWG 34

INDICATES SPLICE

**NOTES**

- ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS I TRAIN A.
- ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 100AF, 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
- EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.
- ADJUSTABLE INSTANTANEOUS TRIP SET AT "LO".
- 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.
- DELETED
- SPLICE IN ACCORDANCE WITH SPECIFICATION 2323-ES-100. REDUCTION SPLICE 350 MCM TO 40.

**REFERENCE DRAWINGS**

- 33-51261-E2514
- 33-51261-E2515
- 33-51261-E2516
- 33-51261-E2517
- 33-51261-E2518
- 33-51261-E2519
- 33-51261-E2520
- 33-51261-E2521
- 33-51261-E2522
- 33-51261-E2523
- 33-51261-E2524
- 33-51261-E2525
- 33-51261-E2526
- 33-51261-E2527
- 33-51261-E2528
- 33-51261-E2529
- 33-51261-E2530
- DELETED
- 1619F64
- 1619F64
- 1619F65
- 1619F67
- 1619F68
- 1619F73
- DELETED
- 1619F69
- 1619F72
- 1619F70
- 1619F74
- 1619F75
- 7026D78
- 7026D76
- E2-0024-04
- 182-79225-7
- FANP DWG 38-1290428-\*\*

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

**TRAIN A**  
**CLASS I**  
 (NUCLEAR SAFETY-RELATED)  
 SAFETY CLASS 1 SBEMC CATEGORY I  
 SAFETY CLASS 2 CLASS II  
 SAFETY CLASS 3 ASSOCIATED CIRCUITS

**TXU POWER  
 CPSES  
 GLEN ROSE, TEXAS**

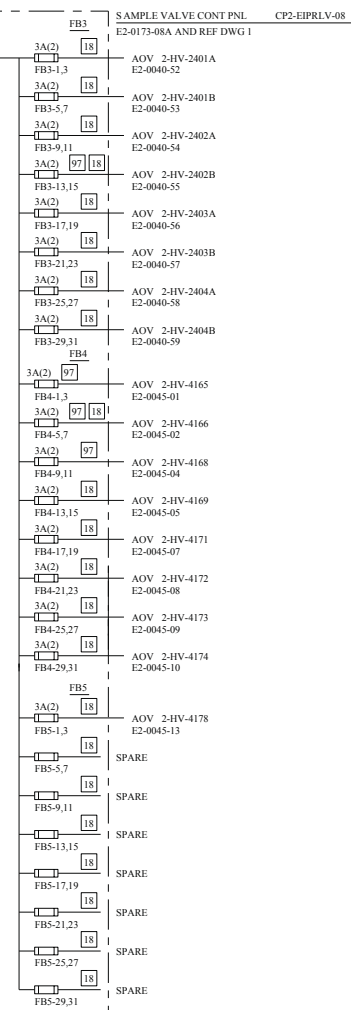
**125V DC  
 ONE LINE DIAGRAM**

DWG NO	SHEET	REV
E2-0020	D	CP-9

DRAWING CREATED ELECTRONICALLY

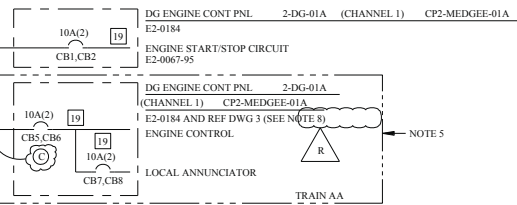
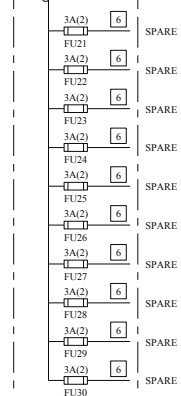
125V DC DISTRIBUTION PANEL  
CONT FROM DWG E2-0020-D LOC: E-6

2ED1-2

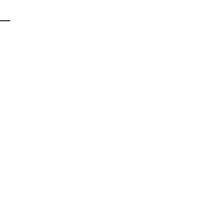
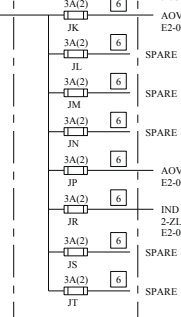


CONT FROM THIS DWG LOC: A-6

CONT FROM THIS DWG LOC: B-6



HOT SHUTDOWN PNL 2-LV-01 CP2-ECPRLV-01



CONT ON THIS DWG LOC: C-1

CONT ON THIS DWG LOC: D-1

CONT FROM THIS DWG LOC: A-6

REV	DWN	CHK	APPV	REMARKS
CP-5	03-19-2004	03-20-2004		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE TDA 1999-02206-02-01 PER SK-0017-99-02206-02-00

FSAR FIGURE 8.3-14

**LEGEND**

- 100A - CIRCUIT BREAKER
- 100A - CIRCUIT BREAKER RATING
- 1 - CIRCUIT NUMBER
- 3A(2) 6 - FUSE
- 3A - FUSE RATING
- (2) - QUANTITY
- JK - FUSE LOCATION MARKER
- 6 - FUSE B/M ITEM NUMBER REF DWG 5
- - - - - INDICATES SPLICE PER 2323-ES-100
- (C) - SEE NOTE 6
- (R) - DASHED

- NOTES**
- ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS 1E, TRAIN AA UNLESS NOTED OTHERWISE.
  - ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 100AF, 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
  - EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.
  - DELETED.
  - ALL WIRING AND CABLING ENCLOSED BY LINE IS ASSOCIATED CLASS 1E, TRAIN AA. THE FUNCTION OF THE LOAD IS NOT SAFETY RELATED AND THE LOAD CIRCUIT BREAKER IS CLASS 1E.
  - 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.
  - THE CABLE BETWEEN THE TWO CIRCUIT BREAKERS PROVIDING ISOLATION FROM THE CLASS 1E BUS IS SAFETY RELATED, THOUGH TAGGED AS ASSOCIATED CLASS 1E.
  - ALL INTERNALS, COMPONENTS AND WIRING SUPPLIED BY THE FEEDER CIRCUIT BREAKERS ARE NON-CLASS 1E, TRAIN C.

- REFERENCE DRAWINGS**
- W-LV08807-F SH 1, 2, 3
  - W-2LV152861-F SH 1-6
  - 09-500-76001 SH 1-8
  - W-99X00404-F SH 1-14
  - E2-0024-04(LATER)
  - 182-79225-7

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

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

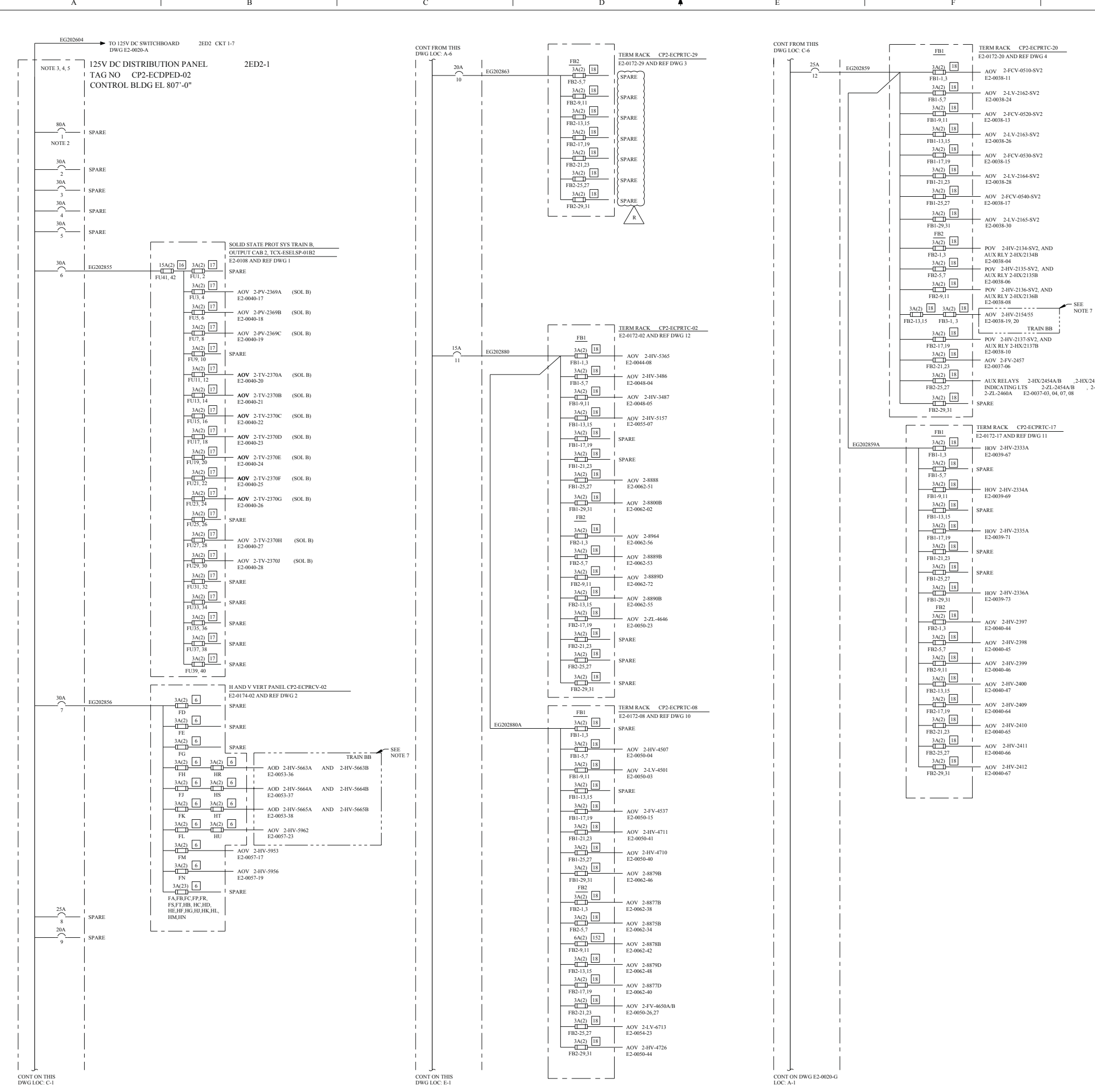
TXU POWER  
CPSES  
GLEN ROSE, TEXAS

125V DC  
ONE LINE DIAGRAM

DWG NO. E2-0020	SH NO. E	REV. CP-5
--------------------	-------------	--------------

THIS DRAWING CREATED ELECTRONICALLY

+ Approved LDCRs



REV	DATE	BY	CHK	APPD	REMARKS
7-10	04/18/20	04/18/20	04/18/20		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2010-000153.01-00 PBR SR.0001.10.000153.01-00.

### FSAR FIGURE 8.3-14

- LEGEND**
- 80A --- CIRCUIT BREAKER
  - 80A --- CIRCUIT BREAKER RATING
  - 1 --- CIRCUIT NUMBER
  - 3A(2) --- FUSE
  - 3A --- FUSE RATING
  - (2) --- QUANTITY
  - LK --- FUSE LOCATION MARKER
  - 18 --- FUSE BM ITEM NUMBER, REF DWG 9

- NOTES**
1. ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS 1E.
  2. INDICATES 225AF CIRCUIT BREAKER WITH ADJUSTABLE INSTANTANEOUS TRIP. FOR SETTING SEE REFERENCE DRAWING 8.
  3. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
  4. 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
  5. EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.
  6. DELETED.
  7. ALL WIRING AND CABLING ENCLOSED IN DASHED LINES IS ASSOCIATED CLASS 1E TRAIN BB.

- REFERENCE DRAWINGS**
1. 27JC366
  2. W-CV02821-F SH 1-13
  3. W-TC2970D-D SH 1, 2
  4. W-TC2070D-D SH 1, 2
  5. DELETED
  6. DELETED
  7. DELETED
  8. E2-2400-361
  9. E2-0024-04
  10. W-TC0870D-D SH 1 AND 2
  11. W-TC1770D-D SH 1 AND 2
  12. W-TC0270D-D SH 1 AND 2
  13. 182-79225-4

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-I		

**TRAIN B**

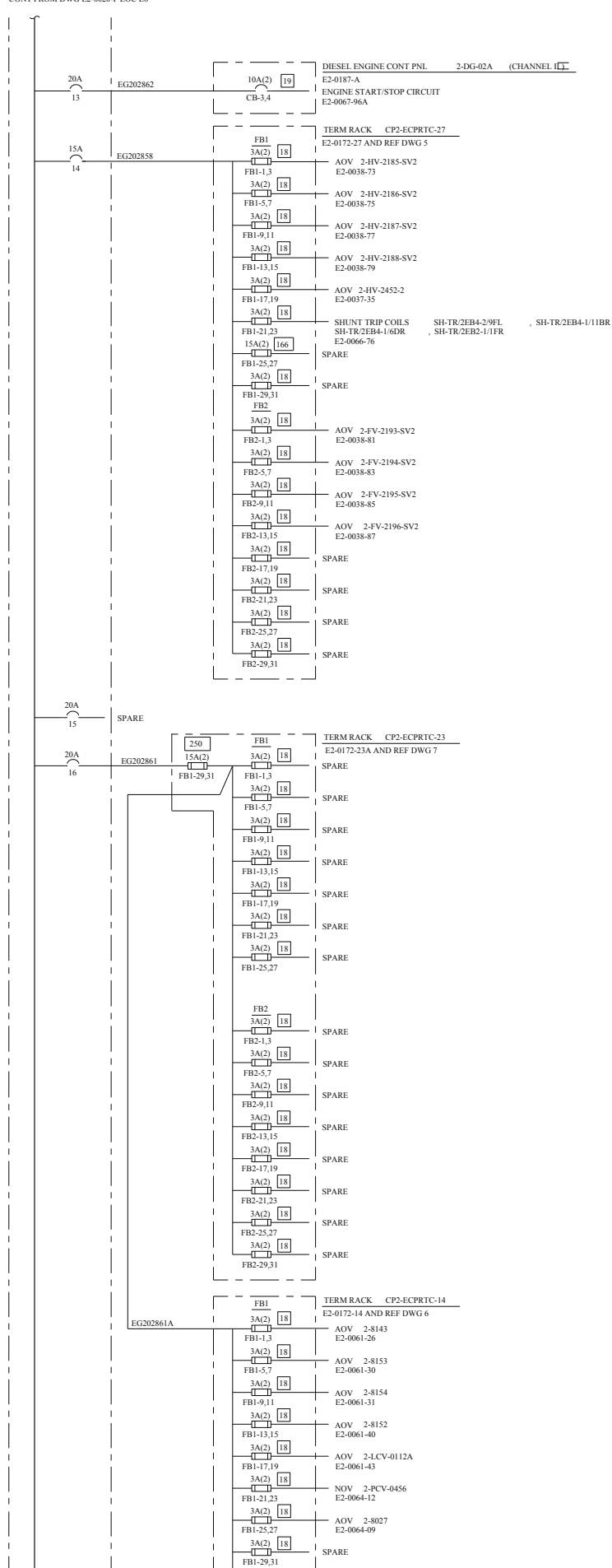
**CLASS I**  
(NUCLEAR SAFETY-RELATED)

**LUMINANT  
CPNPP  
GLEN ROSE, TEXAS**

125VDC  
ONE LINE DIAGRAM

125V DC DISTRIBUTION PANEL  
CONT FROM DWG E2-0020-F LOC E6

2ED2-1



CONT FROM THIS  
DWG LOC: A-6

CONT FROM THIS  
DWG LOC: B-6

CONT FROM THIS  
DWG LOC: C-6

CONT ON THIS  
DWG LOC: E-1

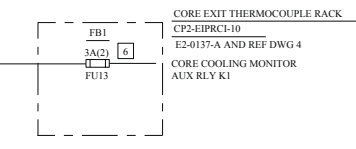
TERM RACK CP2-ECPRTC-11  
E2-0172-11 AND REF DWG 2

- FB2
- 3A(2) 18
- FB2-1,3
- 3A(2) 18
- FB2-5,7
- 3A(2) 18
- FB2-9,11
- 3A(2) 18
- FB2-13,15
- 3A(2) 18
- FB2-17,19
- 3A(2) 18
- FB2-21,23
- 3A(2) 18
- FB2-25,27
- 3A(2) 18
- FB2-29,31
- 3A(2) 18

- FB1
- 3A(2) 18
- FB1-1,3
- 3A(2) 18
- FB1-5,7
- 3A(2) 18
- FB1-9,11
- 3A(2) 18
- FB1-13,15
- 3A(2) 18
- FB1-17,19
- 3A(2) 18
- FB1-21,23
- 3A(2) 18
- FB1-25,27
- 3A(2) 18
- FB1-29,31
- 3A(2) 18

- FB1
- 3A(2) 18
- FB1-1,3
- 3A(2) 18
- FB1-5,7
- 3A(2) 18
- FB1-9,11
- 3A(2) 18
- FB1-13,15
- 3A(2) 18
- FB1-17,19
- 3A(2) 18
- FB1-21,23
- 3A(2) 18
- FB1-25,27
- 3A(2) 18
- FB1-29,31
- 3A(2) 18
- FB2-9,11
- 3A(2) 18
- FB2-13,15
- 3A(2) 18
- FB2-17,19
- 3A(2) 18
- FB2-21,23
- 3A(2) 18
- FB2-25,27
- 3A(2) 18
- FB2-29,31
- 3A(2) 18

- FB1
- 3A(2) 18
- FB1-1,3
- 3A(2) 18
- FB1-5,7
- 3A(2) 18
- FB1-9,11
- 3A(2) 18
- FB1-13,15
- 3A(2) 18
- FB1-17,19
- 3A(2) 18
- FB1-21,23
- 3A(2) 18
- FB1-25,27
- 3A(2) 18
- FB1-29,31
- 3A(2) 18
- FB2-1,3
- 3A(2) 18
- FB2-5,7
- 3A(2) 18
- FB2-9,11
- 3A(2) 18
- FB2-13,15
- 3A(2) 18
- FB2-17,19
- 3A(2) 18
- FB2-21,23
- 3A(2) 18
- FB2-25,27
- 3A(2) 18
- FB2-29,31
- 3A(2) 18



REV	DWN	CHK	APPV	REMARKS
CP-7	10/27/2006	10/29/2006		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2004-00181-02-00 PER 98-001-04-00181-02-00 EDITORIAL CHANGE AS NOTED

**FSAR FIGURE 8.3-14**

**LEGEND**

- 80A - CIRCUIT BREAKER
- 80A - CIRCUIT BREAKER RATING
- 1 - CIRCUIT NO
- 3A(2) 18 - FUSE
- 3A - FUSE RATING
- (2) - QUANTITY
- FB2-1 - FUSE LOCATION MARKER
- 18 - FUSE B/M ITEM NUMBER REF DWG 3

**NOTES**

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

**REFERENCE DRAWINGS**

- W-TC05702-D SH 1, 2
- W-TC1702-D SH 1, 2
- E2-0020-A
- 112D003 SH 1, 2
- W-2TC27825-D SH 1, 2
- W-TC14702-D SH 1, 2
- W-TC23702-D SH 1, 2

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**

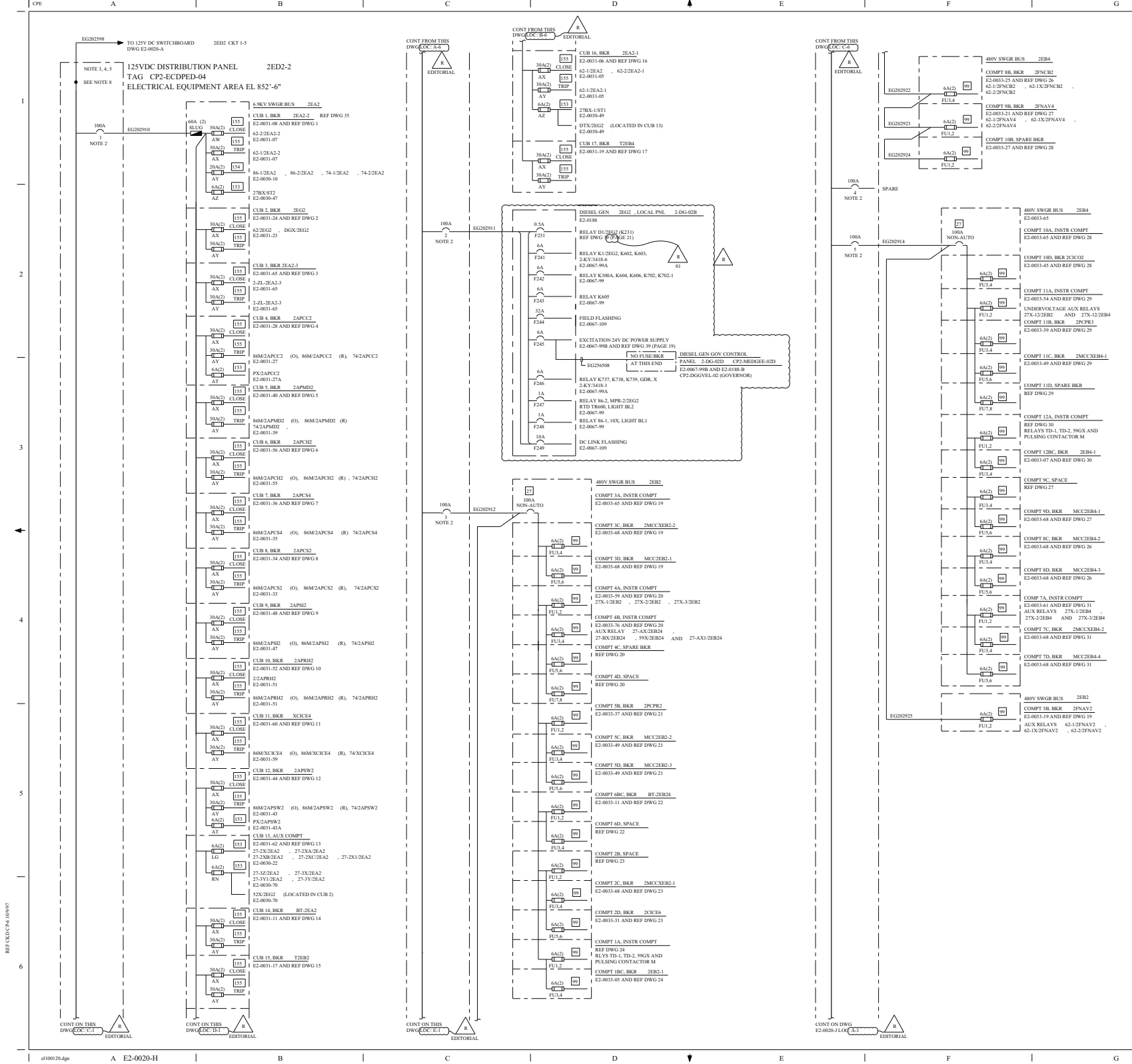
**CLASS I**  
(NUCLEAR SAFETY-RELATED)  
SAFETY CLASS 1 SEMIC CATEGORY I  
SAFETY CLASS 2 CLASS 1E  
SAFETY CLASS 3 ASSOCIATED CIRCUITS

**TXU POWER  
CPSES  
GLEN ROSE, TEXAS**

**125VDC  
ONE LINE DIAGRAM**

DWG NO. <b>E2-0020</b>	SH NO. <b>G</b>	REV. <b>CP-7</b>
---------------------------	--------------------	---------------------

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHK	APP	REMARKS
2413					THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE CP2-0003-04 PER EC2-0001-01 (01/20/04) EDITORIAL CHANGES AS NOTED

**FSAR FIGURE 8.3-14**

**LEGEND**

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

30A(2)    CL - CLOSE/TRIP  
 AX    F - FUSE  
 30A    R - FUSE RATING  
 (2)    Q - QUANTITY  
 AX    L - AUXILIARY CONTACT  
 CL    C - CIRCUIT CLOSURE  
 TRIP    C - CIRCUIT TRIP  
 F    F - FUSE RATING NUMBER  
 REF DWG 33

**NOTES**

- ALL EQUIPMENT DEVICES CABLES SHOWN ON THIS DRAWING ARE CLASSIFIED.
- 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:
  - 400V FOR THERMAL MAGNETIC NON-ADJUSTABLE TRIP
  - 100AF FOR THERMAL MAGNETIC INSTANTANEOUS ADJUSTABLE TRIP
- EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C    AUXILIARY CONTACT.
- DELETED
- SPLICE IN ACCORDANCE WITH SPECIFICATION 2325-ES-10 REDUCTION SPLICE TO 2:1 C:4:0.
- FUSES IN 480V SWITCHGEAR ARE LOCATED IN COMPT A UNLESS OTHERWISE NOTED.

**REFERENCE DRAWINGS**

- 33-51261-E2552
- 33-51261-E2551
- 33-51261-D2550
- 33-51261-E2549
- 33-51261-E2548
- 33-51261-E2547
- 33-51261-E2565
- 33-51261-E2564
- 33-51261-E2563
- 33-51261-E2562
- 33-51261-E2561
- 33-51261-E2560
- 33-51261-E2559
- 33-51261-D2581
- 33-51261-E2587
- 33-51261-E2556
- 33-51261-E2555
- DELETED
- 1619978 SH A
- 1619978 SH A
- 1619987 SH A
- 1619987
- 1619978
- DELETED
- 1619983 SH A
- 1619984 SH A
- 1619988 SH A
- 1619986
- 1619987
- 1619982 SH A
- 1619981
- E2-0005-A
- 182-99222-S
- 33-51261-E2553, A
- E2-0004-A
- E2-0005-A
- E2-0007-02, 02A
- FAN DWG 38-125042-S\*

DRAWING	E2-0020	REV	CP-2
100A BRN (SPRT 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-I		

**TRAIN B**

**CLASS I**

(NON-CLEAR SAFETY RELATED)

SAFETY CLASS 1	SEVERITY CATEGORY	I
SAFETY CLASS 2	ASSOCIATED ELEMENTS	

**TXU POWER**  
**CPSES**  
**GLEN ROSE, TEXAS**

**125V DC**  
**ONE LINE DIAGRAM**

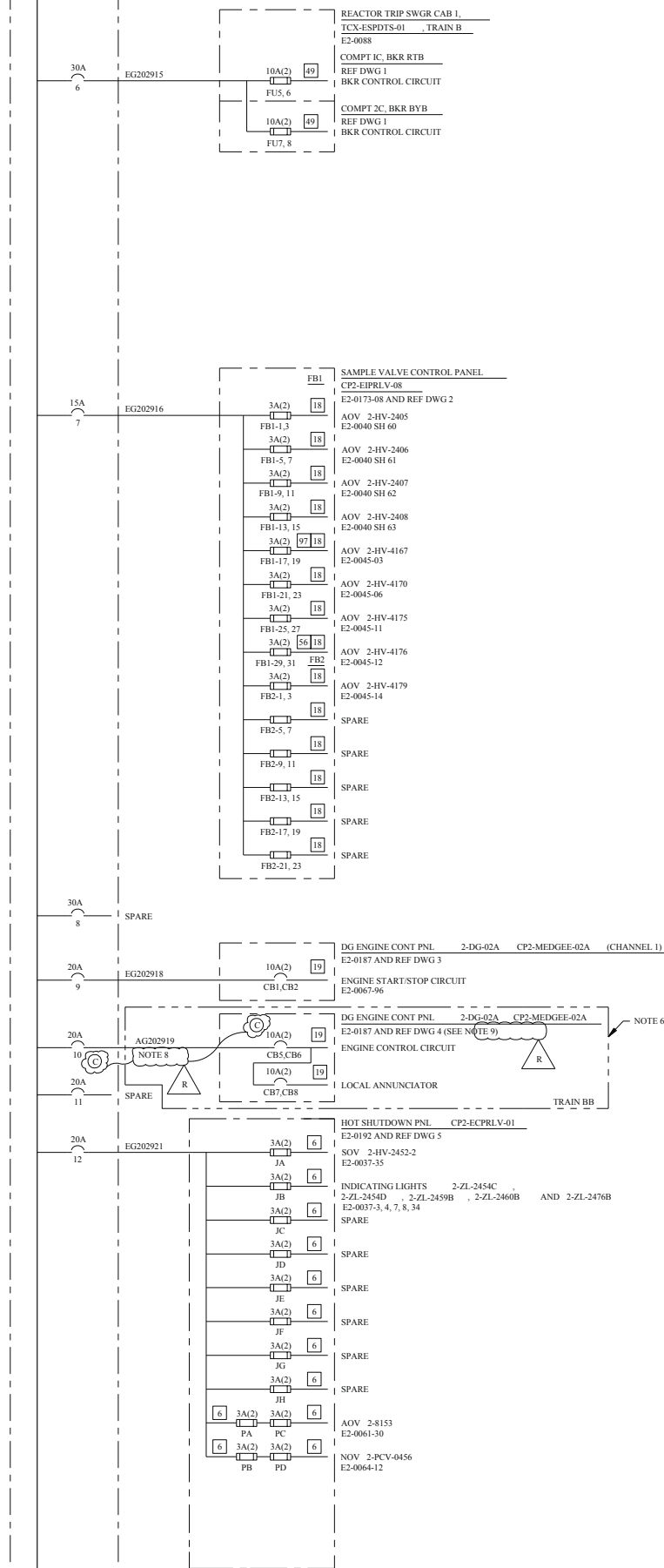
DWG NO.	REV	BY	CHK	APP	REV	BY
E2-0020	H					CP-13

**FINAL PRINT**



125V DC DISTRIBUTION PANEL  
CONT FROM DWG E2-0020-H LOC: E-6

2ED2-2



+ Approved LDCRs

REV	DWN	CHK	APPV	REMARKS
CP-5	03-19-2004	03-20-2004		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE TXU-1999-02206-02-01 PER SK-0018-99-02206-02-01

FSAR FIGURE 8.3-14

**LEGEND**

- CIRCUIT BREAKER  
 - CIRCUIT BREAKER RATING  
 - CIRCUIT NUMBER  
 - FUSE  
 - FUSE RATING  
 - QUANTITY  
 - FUSE LOCATION MARKER  
 - FUSE B/M ITEM NUMBER  
 - REF DWG 6  
 - SEE NOTE 7  
 - REF DWG 6

**NOTES**

- ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DRAWING ARE CLASS 1E.
- ALL CIRCUIT BREAKERS IN DISTRIBUTION PANELS ARE 2-POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
- FOR SELECTIVE COORDINATION WITH THE SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:
  - 40AT FOR THERMAL MAGNETIC NON-ADJUSTABLE TRIP
  - 100AT FOR THERMAL MAGNETIC INSTANTANEOUS ADJUSTABLE TRIP
- EACH CIRCUIT BREAKER IN DISTRIBUTION PANEL IS PROVIDED WITH A FORM C AUXILIARY CONTACT.
- DELETED.
- ALL WIRING AND CABLING ENCLOSED BY DASHED LINE IS ASSOCIATED CLASS 1E, TRAIN BB. THE FUNCTION OF THE LOAD IS NOT SAFETY RELATED AND THE LOAD CIRCUIT BREAKER IS CLASS 1E.
- 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.
- THE CABLE BETWEEN THE TWO CIRCUIT BREAKERS PROVIDING ISOLATION FROM THE CLASS 1E BUS IS SAFETY RELATED, THOUGH TAGGED AS ASSOCIATED CLASS 1E.
- ALL INTERNALS, COMPONENTS AND WIRING SUPPLIED BY THE FEEDER CIRCUIT BREAKERS ARE NON-CLASS 1E, TRAIN C.

**REFERENCE DRAWINGS**

- 7026D76, 7026D77, 7026D78
- W-1V08807-F SH 1, 2, 3
- 09-500-76001 SH 8
- 09-500-76001 SH 8
- W-99X00404-F SH 1-14
- E2-0024-04
- 182-79225-8

TRAIN B

CLASS I

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

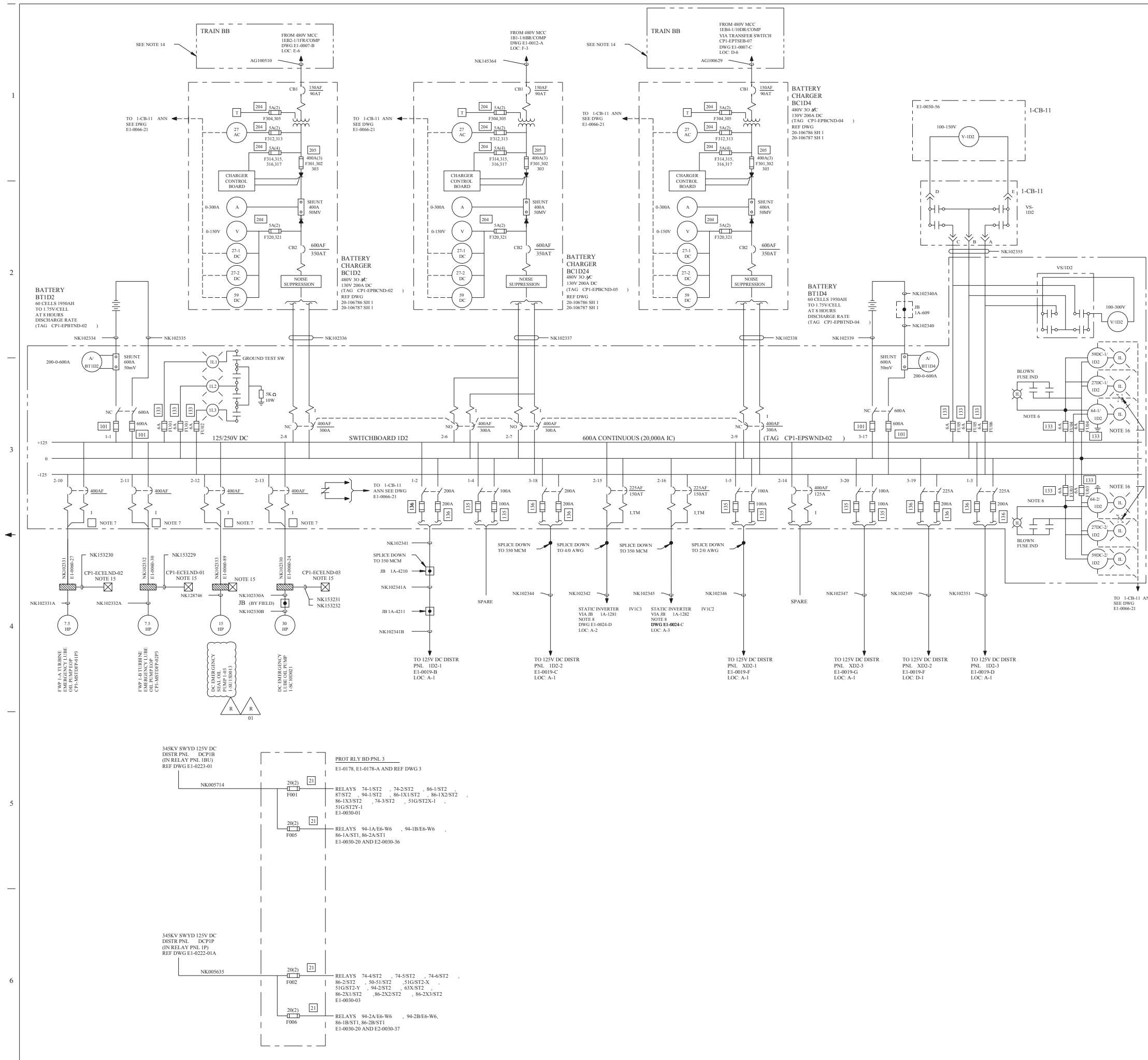
TXU POWER  
CPSES  
GLEN ROSE, TEXAS

125VDC  
ONE LINE DIAGRAM

DWG NO. <b>E2-0020</b>	SH NO. <b>J</b>	REV. <b>CP-5</b>
---------------------------	--------------------	---------------------

FINAL PRINT

THIS DRAWING CREATED ELECTRONICALLY



REV	DWN	CHK	APPV	REMARKS
CP-27	MM	MM	MM	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2004-00285-01-01 PER 98-0023-04-00205-01-01

### FSAR FIGURE 8.3-14A

**LEGEND**

- MECHANICALLY INTERLOCKED BREAKERS
- ANN - ANNUNCIATOR
- TM - THERMAL MAGNETIC
- CB - MAIN CONTROL BOARD
- SB - DC SWITCH BOARD
- V - DC VOLTMETER
- 27 AC - UNDERVOLTAGE RELAY AC
- 27 DC - UNDERVOLTAGE RELAY DC
- A - DC AMMETER
- 59 DC - OVERVOLTAGE RELAY DC
- 64 - GROUND RELAY
- 90 - VOLTAGE REGULATOR
- T - EQUALIZING CHARGE TIMER
- LOCAL MOTOR STARTER
- 2-10 - SWITCHBOARD CIRCUIT BREAKER
- 10 - SWITCHBOARD SECTION 2, CIRCUIT BREAKER
- AT - FRAME SIZE
- ADJUSTABLE MAGNETIC TRIP RATING
- IL - INDICATING LIGHT (WHITE)
- FUSIBLE SWITCH
- 46 - FUSE B/M ITEM NUMBER REF DWG 2

**NOTES**

- ALL POWER FUSES ARE PROVIDED WITH CONTACTS FOR BLOWN FUSE INDICATION.
- DELETED
- INDICATES MAGNETIC (INST) TRIP ONLY.
- DELETED
- DELETED
- CONTACTS ARE FROM HUSSMANN KAZ ACTUATOR 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.
- 225A FRAME AND LARGER SIZE BREAKERS HAVE AN INTERCHANGEABLE TRIP UNIT WITH ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP. FOR SETTING SEE REF DRAWING 1.
- DELETED
- DELETED
- ALL EQUIPMENT/DEVICES AND CABLES SHOWN ON THIS DRAWING ARE NON-CLASS I, UNLESS OTHERWISE NOTED.
- DELETED
- DELETED
- ALL CABLES INSIDE THESE DASHED LINES ARE ASSOCIATED CLASS I, TRAIN BB.
- INDICATES ADDED SHUNT AND 3A FUSES FOR MEASURING MOTOR CURRENT AND VOLTAGE RESPECTIVELY.
- N.O. CONTACT FROM GND DETECTION ANNUNCIATION DEFEAT SWITCH (SWITCH IS SHOWN IN DEFEAT POSITION)

**REFERENCE DRAWING**

- E1-2400-361
- E1-0024-04
- E-3813-03

DRAWING	E1-0019	REV	CP-5
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0019	E1-0019-A	E1-0019-B	E1-0019-C
E1-0019-C	E1-0019-D	E1-0019-E	

DRAWING	E1-0019	REV	CP-3
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0019	E1-0019-A		

### CLASS I

(NUCLEAR SAFETY-RELATED)

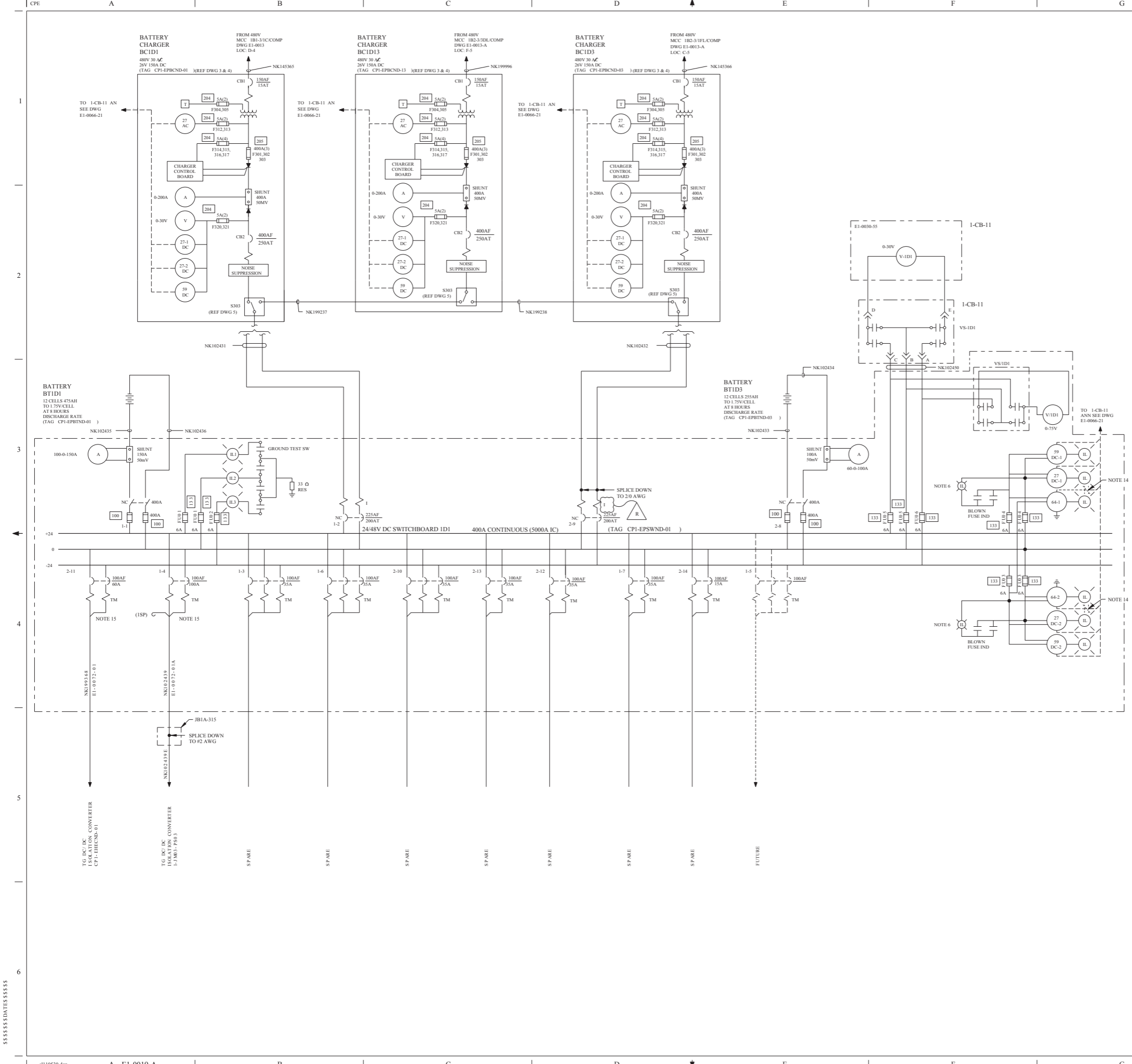
SAFETY CLASS 1	SEISMIC CATEGORY 1
SAFETY CLASS 2	SAFETY CLASS 3
SAFETY CLASS 3	ASSOCIATED CIRCUITS

### LUMINANT

CPSES  
GLEN ROSE, TEXAS

### 125/250V DC SWITCHBOARD ID2 ONE LINE DIAGRAM

DWG NO. **E1-0019** SH. NO. - REV. CP-27



REV	DATE	BY	CHKD	APPD	REMARKS
CP-16	06/17/2014	MI	06/17/2014	MI	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
- ANN - ANNUNCIATOR
- CB - THERMAL MAGNETIC
- CB - MAIN CONTROL BOARD
- DC - DC SWITCHBOARD
- SP - SPLICE
- V - DC VOLTMETER
- 27 AC - UNDERVOLTAGE RELAY, AC
- 27 DC - UNDERVOLTAGE RELAY, DC
- A - DC AMMETER
- 59 DC - OVERVOLTAGE RELAY, DC
- 64 - GROUND RELAY
- T - EQUALIZING CHARGE TIMER
- SW - SWITCHBOARD CIRCUIT BREAKER
- SW - SWITCHBOARD SECTION 2, CIRCUIT BREAKER 10
- AF - FRAME SIZE
- A - CONTINUOUS RATING
- IL - INST MAGNETIC TRIP DEVICE SEE NOTE 4
- IL - INDICATING LIGHT (WHITE)
- F - FUSIBLE SWITCH
- 74 - 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 KAZ ACTUATOR 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 II, 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**

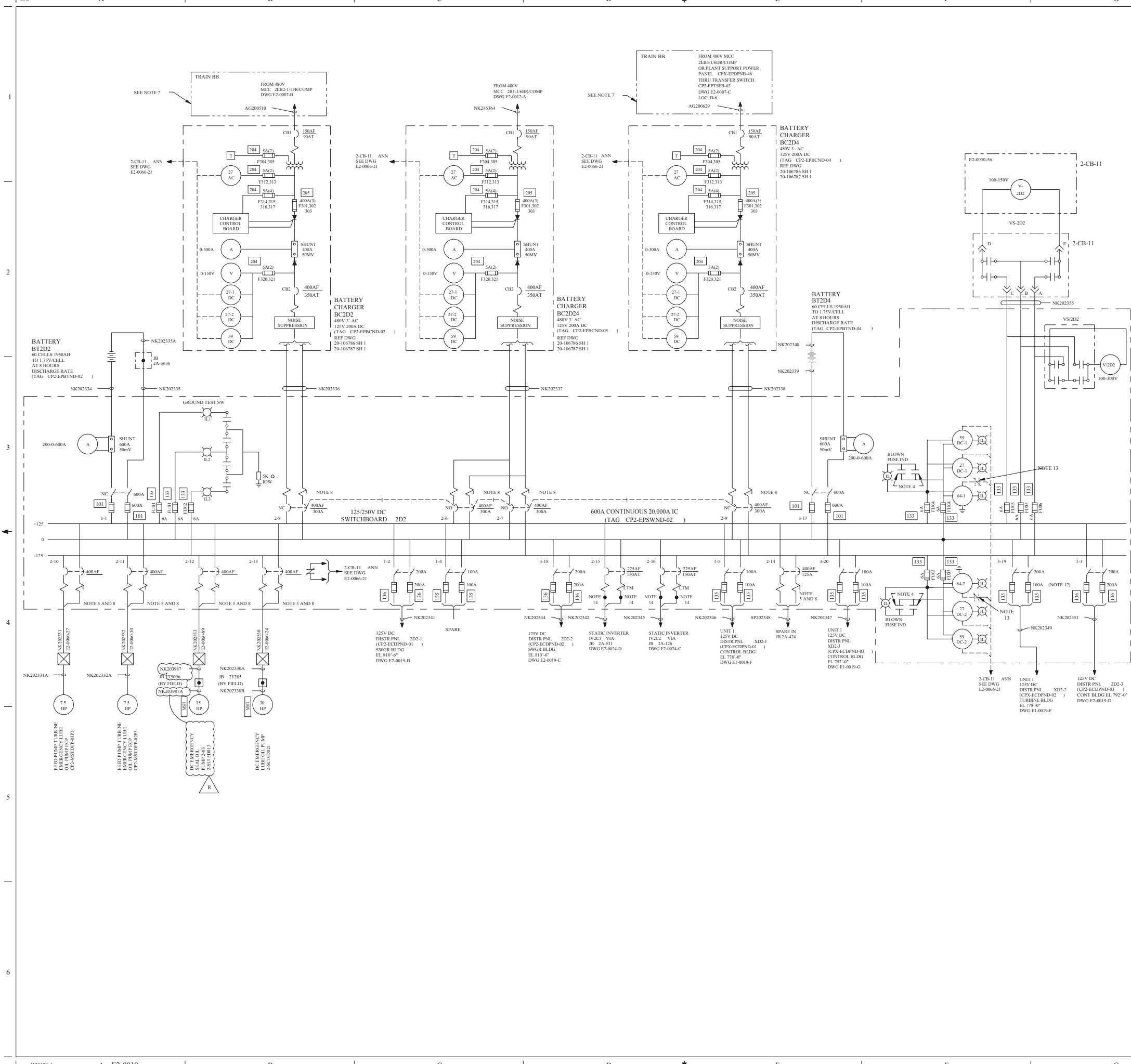
LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

24/48V DC  
ONE LINE DIAGRAM

DRG. NO. E1-0019 SHE. NO. A REV. CP-16

**< FINAL PRINT >**

THIS DRAWING CREATED ELECTRONICALLY



REV	CHKD	APVD	REMARKS
CP-18	MM	LSA	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2004-00255-06-00 PER SC-0024-04-00255-06-00

FSAR FIGURE 8.3-14A

**LEGEND:**

- MECHANICALLY INTERLOCKED BREAKERS
- ANN - ANNUNCIATOR
- TM - THERMAL-MAGNETIC
- CB - MAIN CONTROL BOARD
- SB - DC SWITCHBOARD
- - INDICATES SPLICE (SEE NOTE 11)
- DC VOLTMETER
- UNDERVOLTAGE RELAY AC
- UNDERVOLTAGE RELAY DC
- DC AMMETER
- OVERVOLTAGE RELAY DC
- VOLTAGE REGULATOR
- EQUALIZING CHARGE TIMER
- LOCAL MOTOR STARTER

**SWITCHBOARD CIRCUIT BREAKER**

- 2-10 - SWITCHBOARD SECTION 2, CIRCUIT BREAKER 10
- AF - FRAME SIZE
- AT - CONTINUOUS RATING
- I - ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP SETTING
- TM - THERMAL-MAGNETIC TRIP ELEMENT

**INDICATING LIGHT (WHITE)**

- FUSIBLE SWITCH
- DISCONNECT RATING
- FUSE B/M ITEM NUMBER REF DWG 1
- FUSE B/M ITEM NUMBER REF DWG 1
- FUSE LOCATION MARKER

**NOTES**

1. ALL POWER FUSES ARE PROVIDED WITH CONTACTS FOR BLOWN FUSE INDICATION.
2. ALL CIRCUIT BREAKERS ARE 2-POLE, THERMAL-MAGNETIC UNLESS OTHERWISE NOTED.
3. POWER FUSES ARE BUSSMANN TYPE FRS (600V).
4. CONTACTS ARE FROM BUSSMANN KAZ ACTUATOR WITH TRIGGER FUSE.
5. CIRCUIT BREAKER IS 4-POLE, 2 POLES ARE CONNECTED IN SERIES SUCH THAT EACH LINE TO LOAD CONNECTION IS MADE THROUGH 2 POLES.
6. ALL EQUIPMENT, DEVICES AND CABLES SHOWN ON THIS DRAWING ARE NON-CLASS 1E, UNLESS OTHERWISE NOTED.
7. **AL-GAR** INSIDE THESE DASHED LINES ARE ASSOCIATED CLASS 1E, TRAIN BB AS SHOWN.
8. 225A FRAME AND LARGER SIZE BREAKERS HAVE AN INTERCHANGEABLE TRIP UNIT WITH ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP. FOR TRIP SETTING SEE REF DRAWING 2.
9. SWITCHBOARD CIRCUIT BREAKER SHALL BE INSTALLED IN THE FIELD.
10. 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).
11. SPLICES MADE IN SPLICE BOXES PER 2323-ES-100.
12. FUSE REDUCERS REQUIRED - BUSSMANN PART NUMBER 2621-R.
13. N.O. CONTACT FROM GND DETECTION ANNUNCIATION DEFEAT SWITCH (SWITCH IS SHOWN IN DEFEAT POSITION).
14. INDICATES TRANSITION SPLICE TO A 4/0 AWG CABLE PER 2323-ES-100.

**REFERENCE DRAWINGS**

1. E2-0024-04
2. E2-2090-361
3. 182C79225 SH 1 AND 8A

DRAWING E2-0019	REV CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E2-0019	
E2-0019-A	
E2-0019-B	
E2-0019-C	
E2-0019-D	

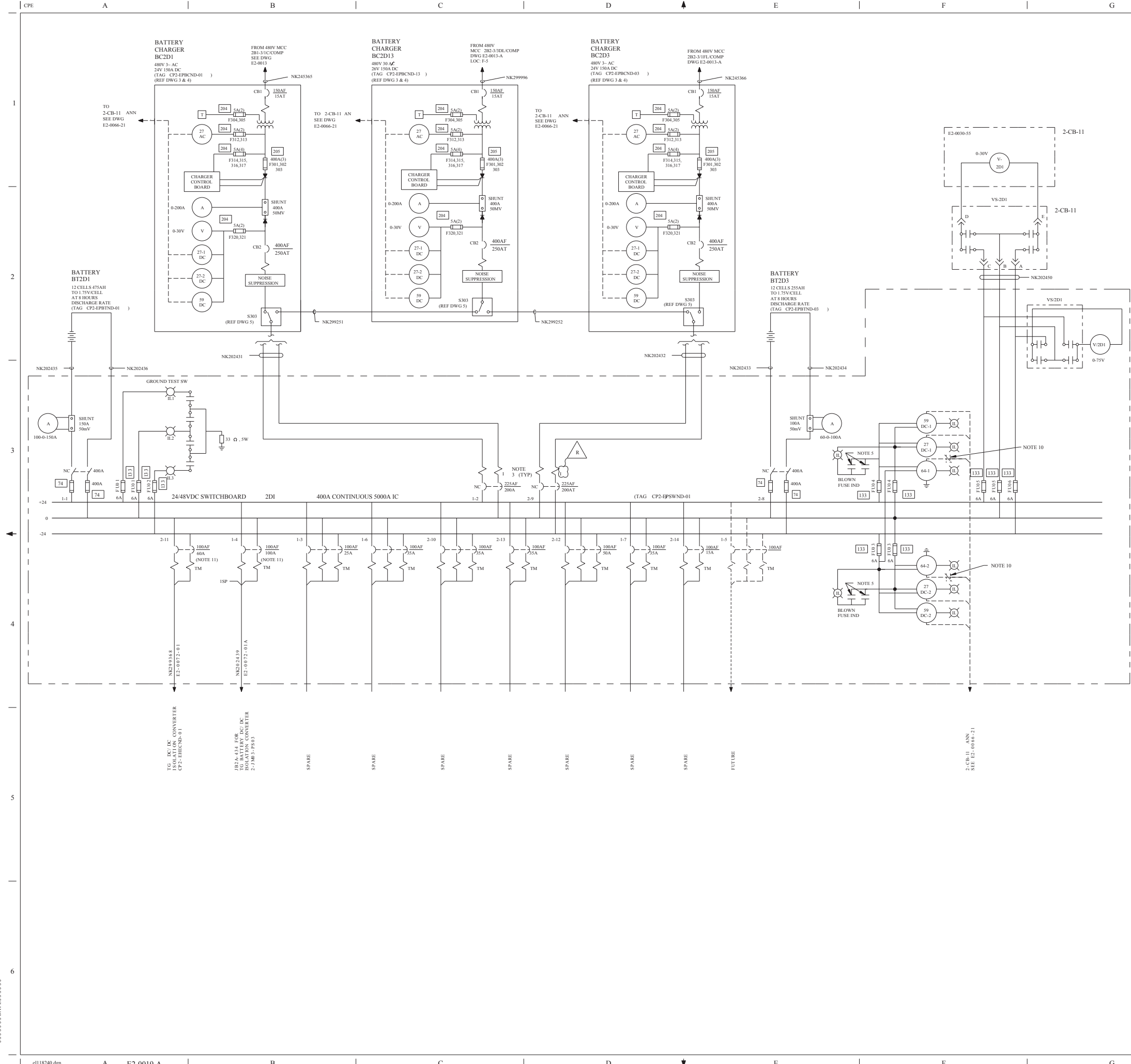
CLASS I  
(NUCLEAR SAFETY-RELATED)

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

LUMINANT  
CPSES  
GLEN ROSE, TEXAS

125/250V DC  
ONE LINE DIAGRAM

DWG NO. E2-0019	SH. NO. -
	REV. CP-18



**FSAR FIGURE 8.3-14A**

THIS DRAWING REVISD TO INCORPORATE DESIGN CHANGE  
 FDA-2014-000118-01-00 PFR SK-0094-14-000118-01-00

REMARKS

REV. DATE BY

CP-11 06/17/2014 MHI

THIS DRAWING CREATED ELECTRONICALLY

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 >**

REV	OWN	CHKD	APVD	REMARKS
CP-25	WJ	WJ	WJ	THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGES PER A1-TR-2019-001367-1.

FSAR FIGURE 8.3-15

- LEGEND:
- MANUAL TRANSFER SWITCH
  - CIRCUIT BREAKER  
15A - CIRCUIT BREAKER RATING  
1 - CIRCUIT NUMBER
  - FUSE  
5A - 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 SPLICE  
(SPLICE PER SPEC ES-100)
  - SEE NOTE 8

- NOTES:
1. BREAKERS 1PC1/00/BKR-1 AND -2 USED FOR 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 EQUIPPED WITH 1-NO AND 1-NC CONTACT. FOR SS11 SCHEMATICS SEE E1-0071 SERIES DRAWINGS.
  3. THE MECHANICAL BREAKER INTERLOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES. SEE DBD-EE-043 FOR DETAILS.
  4. DELETED
  5. EQUIPMENT AND CABLES ENCLOSED BY DASHED LINES ARE NON-CLASS 1E.
  6. THE ISOLATION BETWEEN THE CLASS 1E SOURCE AND THE NON-CLASS 1E LOAD IS PROVIDED BY TWO FUSES IN SERIES INDICATED (B) NEXT 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. 6094063 SH 1
  3. 6089033 SH 3
  4. 6065099 SH 3
  5. 6089033 SH 1
  6. 8760065 SH 2 AND 8810055
  7. 1084436 SH 30 (TRAIN A) AND SH 30A (TRAIN B)
  8. 1196396 SH 1, 2, 3, 4
  9. 271C336 SH 115
  10. 271C336 SH 116
  11. DELETED
  12. 271C336 SH 125
  13. 271C336 SH 126
  14. 271C336 SH 130
  15. E-3814E
  16. 9555015 SH 4
  17. 8833042 SH 1, 2 AND 8833028 SH 1
  18. E-6604
  19. W-CB05701-F SH 1, 2, 5
  20. W-CB06701 SH 1, 3
  21. W-CB07701-F SH 1, 3
  22. W-CB08701-F SH 6
  23. W-CB09701-F SH 1, 2, 5
  24. 8760065 SH 6 AND 8810059
  25. E1-0024-04
  26. 4D04921
  27. 10-102723 SH 1
  28. 10-102724 SH 1
  29. 20-103521 SH 1, 2
  30. 20-103522 SH 1
  31. 20-103523 SH 1

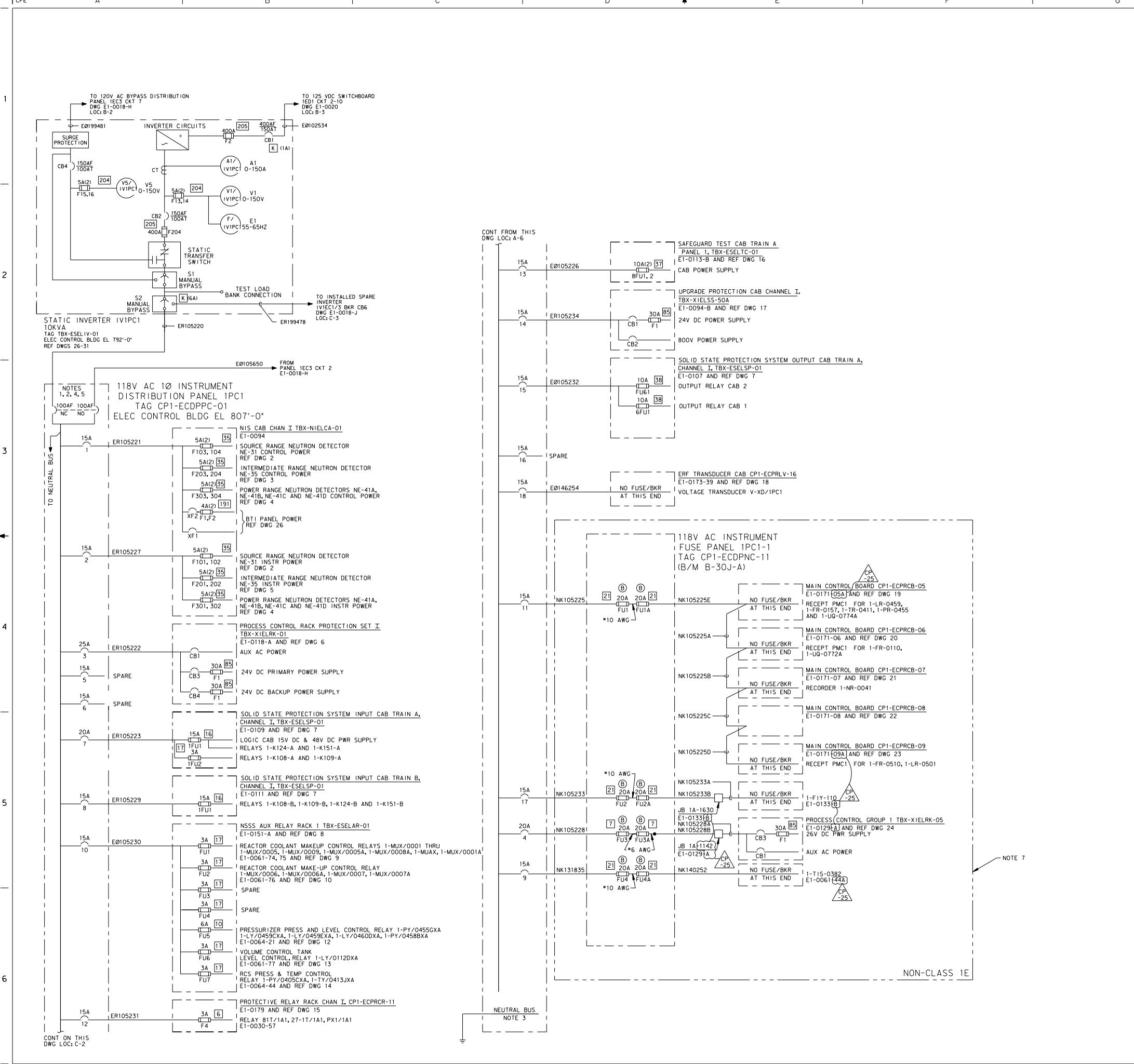
DRAWING	REV
E1-0018	CP-6
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E1-0018	E1-0018-E
E1-0018-A	E1-0018-F
E1-0018-B	E1-0018-G
E1-0018-C	E1-0018-H
E1-0018-D	

CHANNEL I  
**CLASS I**  
 (NUCLEAR SAFETY-RELATED)  
 SAFETY CLASS 1 SEISMIC CATEGORY I  
 SAFETY CLASS 3 CLASSIFIED CIRCUITS

LUMINANT  
 CPNPP  
 GLEN ROYE, TEXAS

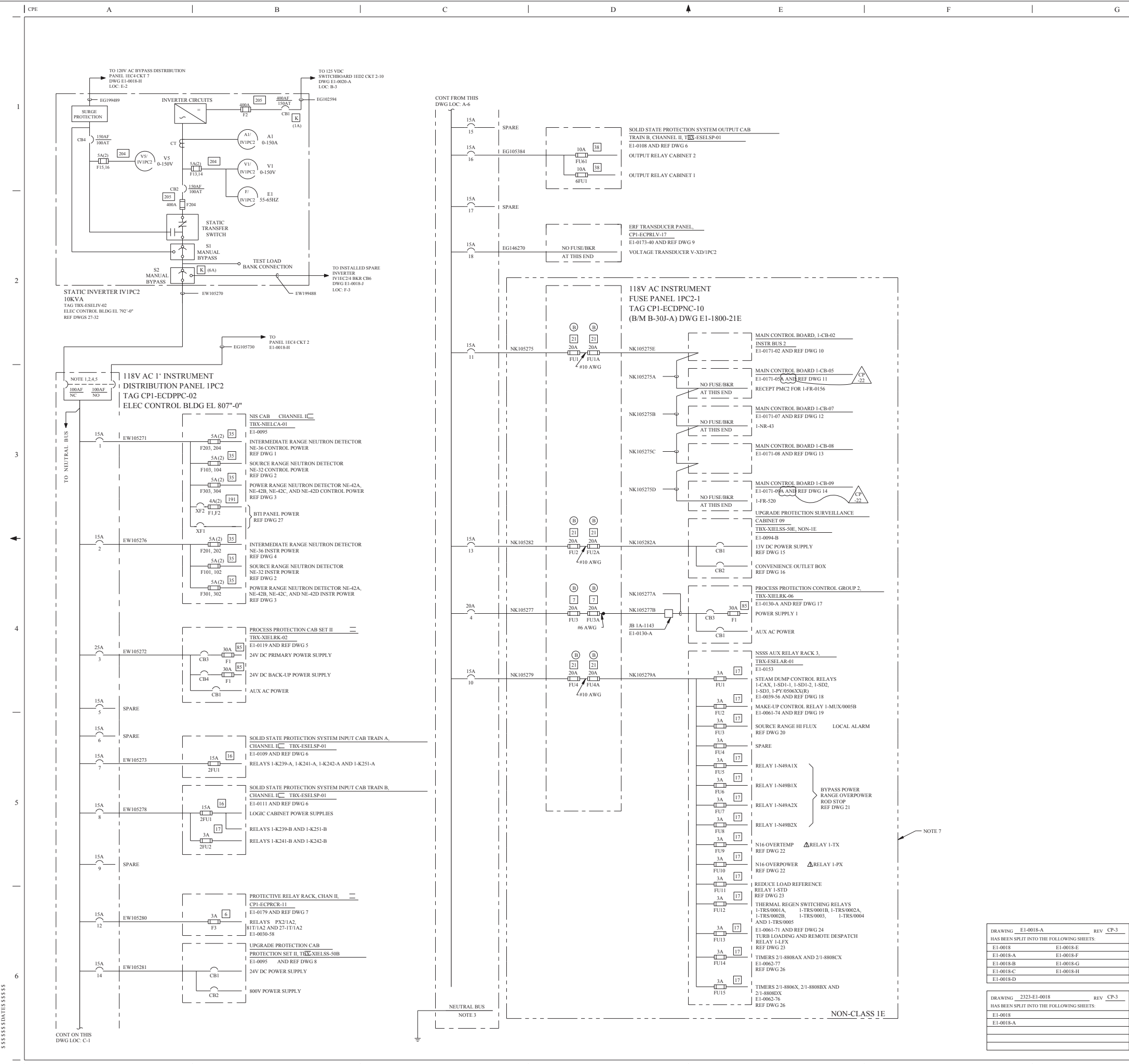
118V AC  
 INSTRUMENT BUS DISTRIBUTION  
 ONE LINE DIAGRAM

DWG. NO.	SH. NO.	REV.
E1-0018	-	CP-25



REF CHK 6/13/2019 CP-25

THIS DRAWING CREATED ELECTRONICALLY



REV	DWN	CHK	APPV	REMARKS
CP-22	SH 2011			THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGES AS NOTED PER AI-CR-2011-000706-1

**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
- F203 - 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 SPLICE (SPLICE PER SPEC ES-100)
- SEE NOTE 11

**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 SSI 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.
- DELETED
- BUSSMAN NON-20
- 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. 2AM/IVIPC2).
- THE ISOLATION BETWEEN THE CLASS 1E SOURCE AND THE NON-CLASS 1E LOAD IS PROVIDED BY TWO FUSES IN SERIES INDICATED (CP) 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**

- 6089D33 SH 3
- 6094D63 SH 1
- 6065D99 SH 3
- 6089D33 SH 1
- 8810D56
- 1084H36 SH 30
- E-3814E
- 8833D43 SH 01, 8833D29 SH 1
- E-6603, E-6606
- W-CB02701-F SH 02, 05
- W-CB05701-F SH 02, 05
- W-CB07701-F SH 01, 01A, 03
- W-CB08701-F SH 01-07
- W-CR09701-F SH 02, 05
- 8833D28 SH 1
- 8833D42, 8833D43
- 8760D65 SH 7
- 271C336 SH 110
- 271C336 SH 114
- 271C336 SH 118
- 271C336 SH 120
- 271C336 SH 122
- 271C336 SH 123
- 271C336 SH 127
- E1-0024-04
- 1196E96 SH 10
- 4D04921
- 10-102723 SH 1
- 10-102724 SH 1
- 20-103251 SH 1, 2
- 20-103252 SH 1
- 20-103253 SH 1

**CHANNEL II**

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

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			

**LUMINANT CPNPP**  
GLEN ROSE, TEXAS

**118V AC INSTRUMENT BUS DISTRIBUTION ONE LINE DIAGRAM**

DWG NO	SH NO	REV
E1-0018	A	CP-22

DRAWING E1-0018-A REV CP-3  
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E1-0018
E1-0018-A
E1-0018-B
E1-0018-C
E1-0018-D

DRAWING 2323-E1-0018 REV CP-3  
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:

E1-0018
E1-0018-A

DRAWING CREATED ELECTRONICALLY

REV	DWN	CHKD	APVD	REMARKS
7-16	04/20	10/20		THIS DRAWING REVISION TO INCORPORATE DESIGN CHANGE EIA-200-00002-01-00 PER 96-001-10-00002-01-00 EDITORIAL CHANGE AS NOTED.

FSAR FIGURE 8.3-15

**LEGEND**

- MANUAL TRANSFER SWITCH
- CIRCUIT BREAKER  
15A - CIRCUIT BREAKER RATING  
1 - CIRCUIT NUMBER
- FUSE  
5A(2) - FUSE RATING  
(2) - QUANTITY  
F303 - FUSE LOCATION MARKER  
35 - FUSE B/M ITEM NUMBER REF DWG 12
- VOLTMETER
- AMMETER
- FREQUENCY METER
- KIBK 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 1PC30/BKR-1 AND 1PC30/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-NO AND 1-NC CONTACT. FOR SSIH 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.
  - FUSES FU1, IA, 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/VIP3).
  - 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
  - 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, 5
  - W-CB07701-F SH 1, 3
  - W-CB05701-F SH 2, 5
  - W-CB04701-F SH 1, 3
  - 8760D65 SH 8 AND 8810D61
  - EI-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	EI-0018-B	REV	CP-1
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
EI-0018-B			
EI-0018-C			

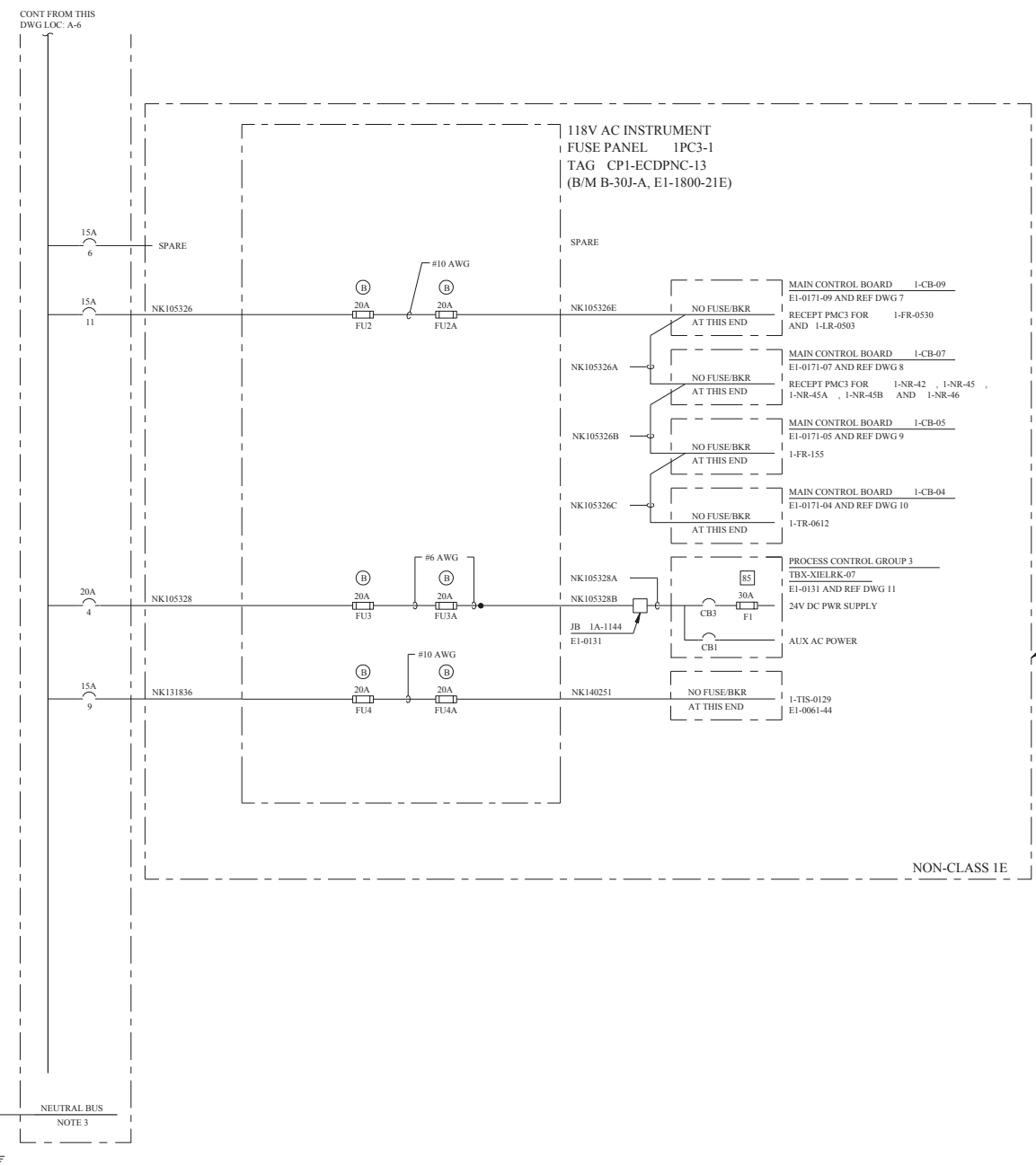
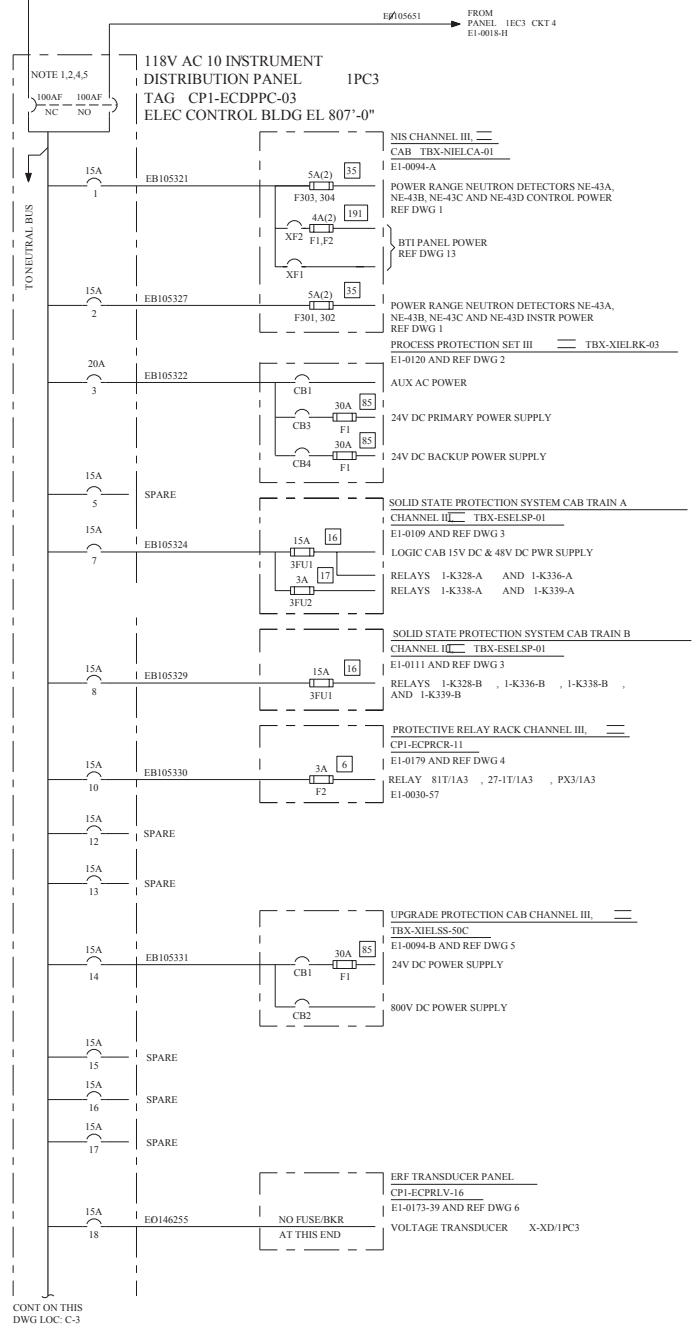
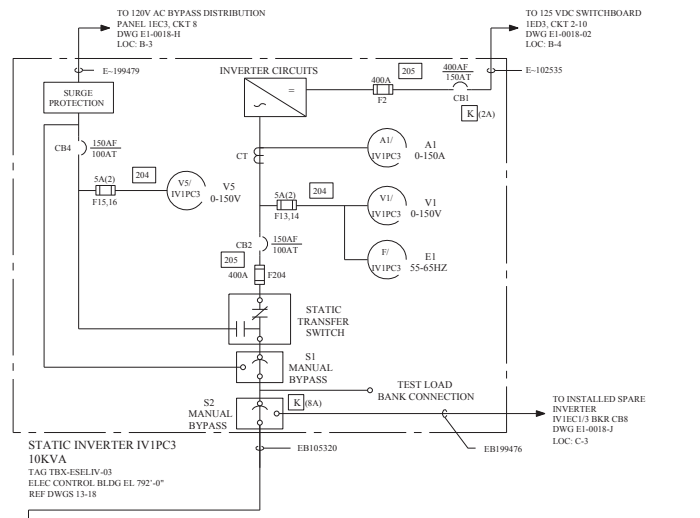
**CHANNEL III**

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

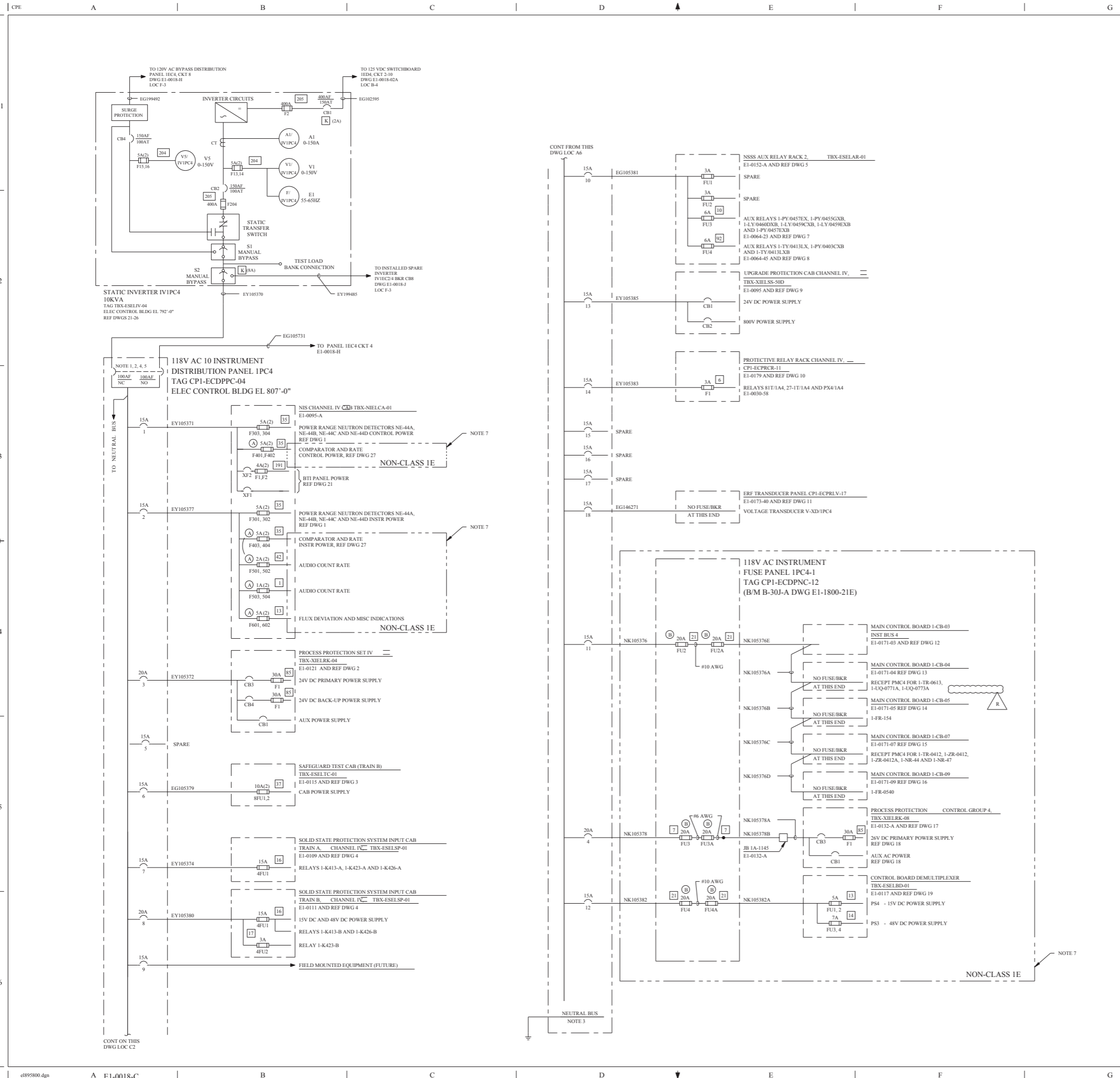
**LUMINANT**  
CPNPP  
GLEN ROSE, TEXAS

**118V AC INSTRUMENT BUS DISTRIBUTION ONE LINE DIAGRAM**

DWG NO	EI-0018	SH NO	B	REV	CP-16
--------	---------	-------	---	-----	-------







REV	DATE	BY	CHKD	APPV	REMARKS
CP-15	06-06-2014	06-06-2014			THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDIA-2010-000172-79-00 PER SR-0006-10-000172-79-00

### 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 20
- VOLTMETER
- AMMETER
- FREQUENCY METER
- KIRK KEY INTERLOCK  
(2A) - LOCK NUMBER
- MANUAL BYPASS SWITCH  
MAKE BEFORE BREAK, 2 POSITION
- SEE NOTE 11
- 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 SSI SCHEMATICS SEE E1-0071 SERIES DRAWINGS.
5. THE MECHANICAL BREAKER INTERLOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES. SEE DBD-EE-043 FOR DETAILS.
6. DELETED
7. --- EQUIPMENT AND CABLES ENCLOSED BY DASHED LINES ARE NON-CLASS 1E.
8. 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/IVIPC4).
9. DELETED
10. SPLICE PER SPEC 2323-ES-100.
11. WITHIN THE NIS CABINET ONLY, THE ISOLATION BETWEEN THE CLASS 1E SOURCE AND NON-CLASS 1E LOAD IS PROVIDED BY A SINGLE FUSE INDICATED THE ISOLATION DEVICE.
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 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. 606D99 SH 3	15. W-CB07701-F SH 1, 3
2. 8810D58, 8760D65 SH 5	16. W-CB07701-F SH 2, 5
3. 955D15 SH 1, 2, 3, 4	17. 8760D65 SH 9
4. 1084H36 SH 30	18. 8810D62
5. 1196E96 SH 6 AND 7	19. 1084H36 SH 26
6. 271C336 SH 132	20. E1-0024-04
7. 271C336 SH 129	21. 4DQ4921
8. 271C336 SH 130	22. 10-102723 SH 1
9. 8833D43 SH 1, 2, 8833D29 SH 2	23. 10-102724 SH 1
10. E-3814E	24. 20-103521 SH 1, 2
11. E-6603, E-6606	25. 20-103522 SH 1
12. W-CB03701-F SH 5	26. 20-103523 SH 1
13. W-CB04701-F SH 1, 3	27. 6051D74 SH 1
14. W-CB05701-F SH 2, 5	

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

E1-0018-B	
E1-0018-C	
E1-0018-D	

### CHANNEL IV

## CLASS I

(NUCLEAR SAFETY RELATED)

SAFETY CLASS 1	SERIEM CATEGORY	I
SAFETY CLASS 2	CLASS 1B	
SAFETY CLASS 3	ASSOCIATED CIRCUITS	

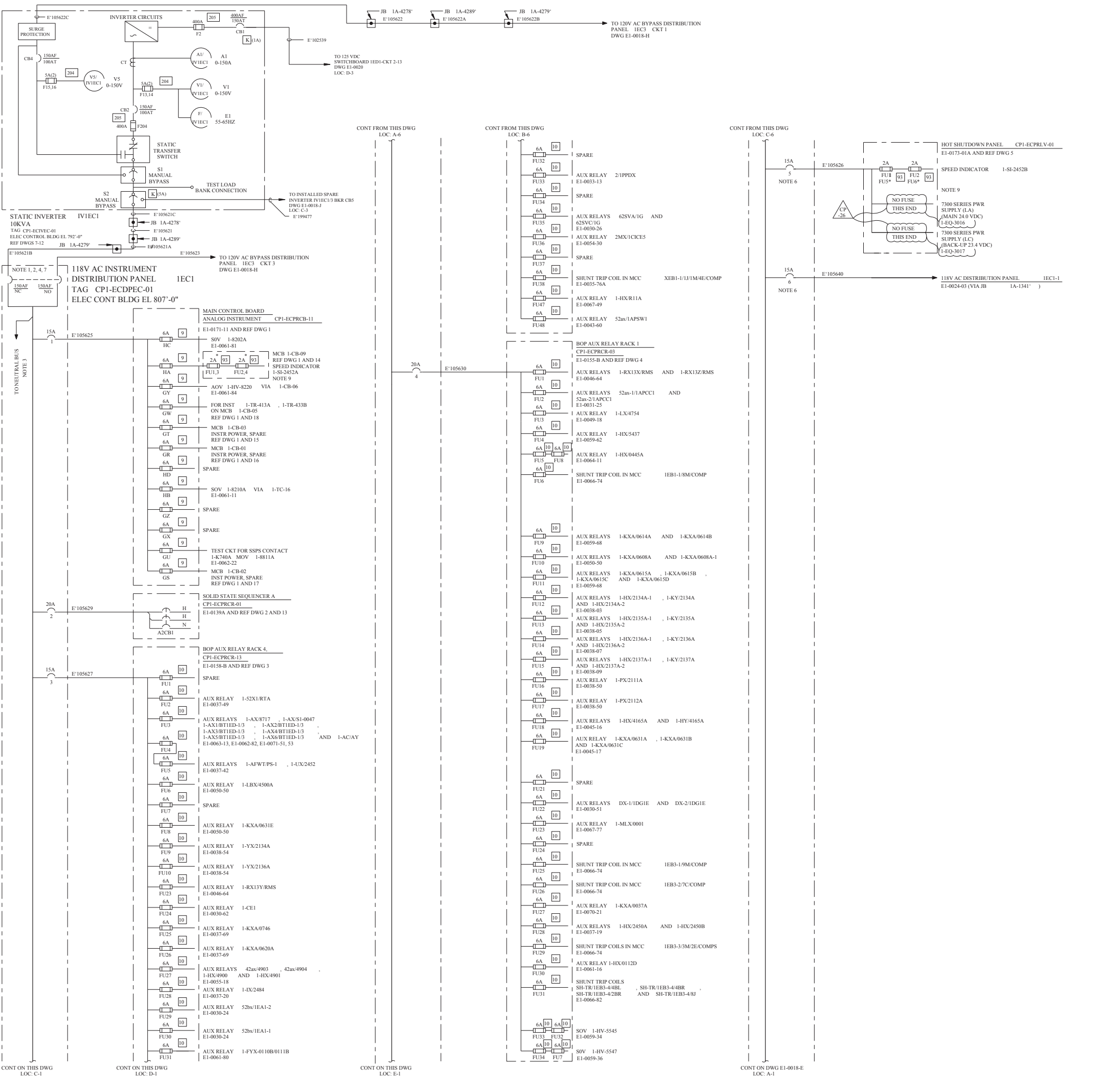
### LUMINANT CPNPP GLEN ROSE, TEXAS

### 118V AC INSTRUMENT BUS DISTRIBUTION ONE LINE DIAGRAM

DWG. NO. <b>E1-0018</b>	SH. NO. <b>C</b>	REV. <b>CP-15</b>	
----------------------------	---------------------	----------------------	--

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

THIS DRAWING CREATED ELECTRONICALLY



REV DWG CHK APPV

REMARKS

THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGES AS NOTED PER A.I.C.R.2011/011451-1.

**FSAR FIGURE 8.3-15**

**TRAIN A**

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1 SEISMIC CATEGORY 1  
SAFETY CLASS 2 CLASS IF  
SAFETY CLASS 3 ASSOCIATED CIRCUITS

**LUMINANT**  
CPNPP  
GLEN ROSE, TEXAS

**118V AC INSTRUMENT BUS DISTRIBUTION ONE LINE DIAGRAM**

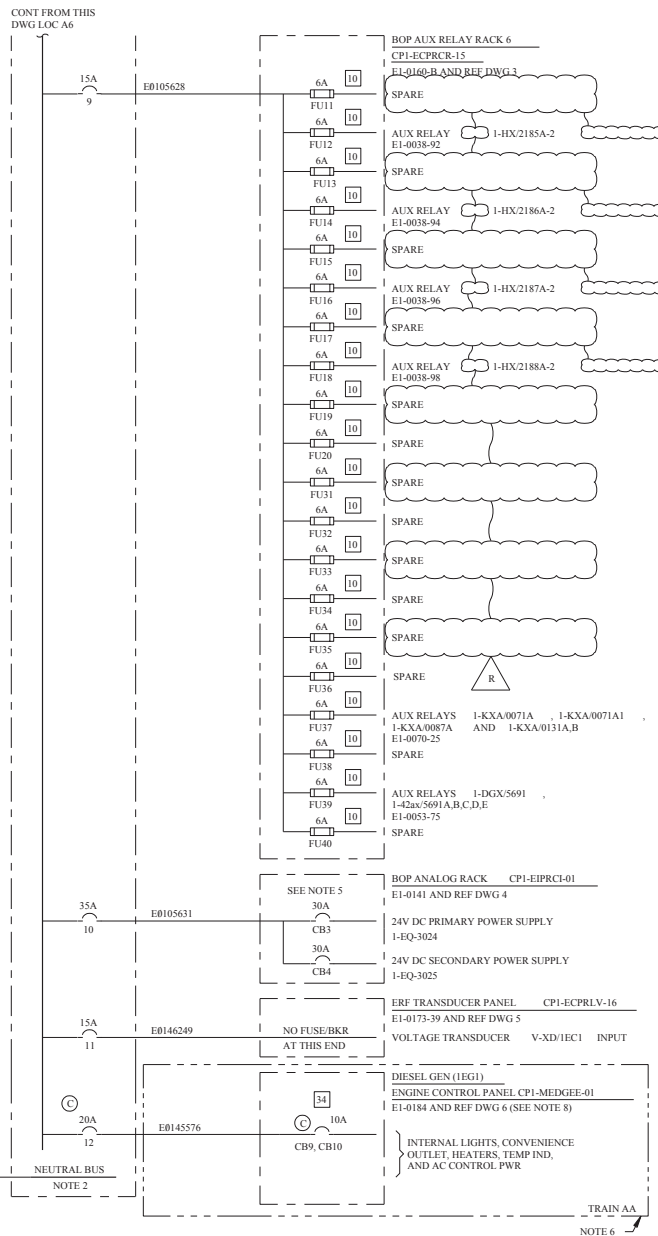
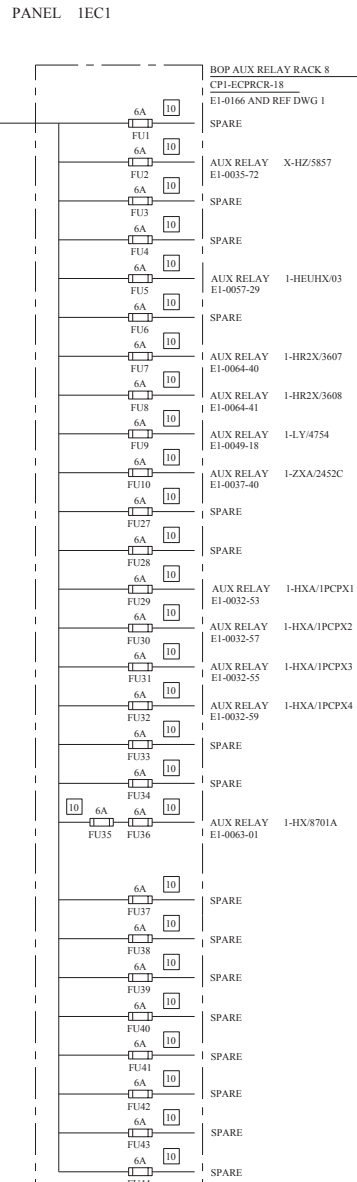
DWG NO	SH NO	REV
E1-0018	D	CP-26

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	E1-0018-I

THIS DRAWING CREATED ELECTRONICALLY

118V AC INSTR DISTR  
CONT FROM DWG E1-0018-D LOC E6



REV	DWN	CHK	APPV	REMARKS
CP-18	04-07	04-07	04-07	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2005-000224-06-00 PER 98-0115-05-000224-06-00

FSAR FIGURE 8.3-15

- LEGEND
- 20A - CIRCUIT BREAKER
  - 10A - CIRCUIT BREAKER RATING
  - 1 - CIRCUIT NUMBER
  - 6A - FUSE RATING
  - HC - FUSE LOCATION MARKER
  - 10 - FUSE B/M ITEM NUMBER REF DWG 7
  - ⊙ - SEE NOTE 7

- NOTES
1. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 100A FRAME SIZE, 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
  2. VERTICAL NEUTRAL BUS.
  3. ALL CIRCUIT BREAKERS INCLUDING MANUAL TRANSFER SWITCH IN DISTRIBUTION PANEL ARE EQUIPPED WITH 1-NO AND 1-NC CONTACT FOR SHH SCHEMATICS SEE E1-0071 SERIES DRAWINGS.
  4. DELETED
  5. CIRCUIT BREAKERS CB1 AND CB2 ARE 15A INSTALLED SPARES.
  6. ALL WIRING AND CABLING ENCLOSED BY DASHED LINES IS ASSOCIATED CLASS 1E, TRAIN AA. THE FUNCTION OF THE LOAD IS NOT SAFETY RELATED AND THE LOAD CIRCUIT BREAKER IS CLASS 1E.
  7. 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.
  8. ALL INTERNALS, COMPONENTS AND WIRING SUPPLIED BY THE FEEDER CIRCUIT BREAKERS ARE NON-CLASS 1E, TRAIN C.

- REFERENCE DRAWINGS
1. E-5972 SH 1 AND 4
  2. F-25238-ER, H-3845D-AC
  3. E-5593 SH 1 AND 2
  4. 8815D17, 8815D23 SH 1
  5. E-6604
  6. 09-500-76001 SH 5
  7. E1-0024-04

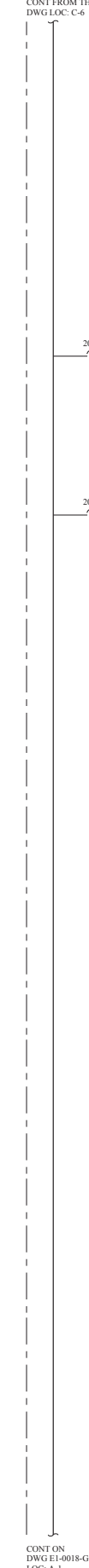
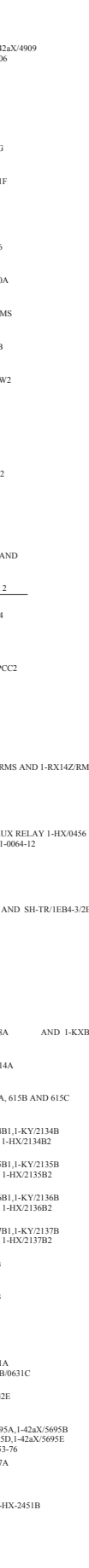
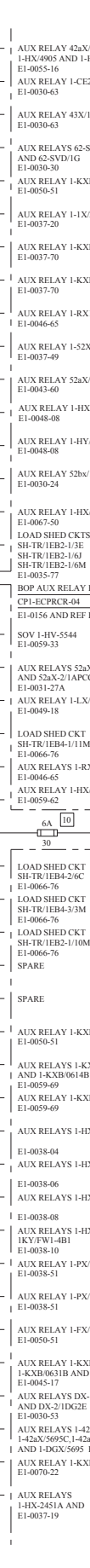
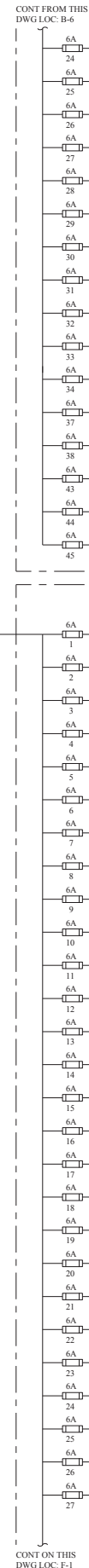
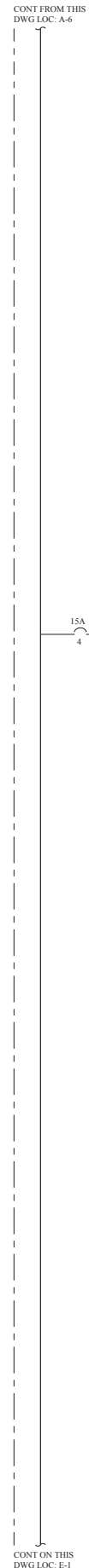
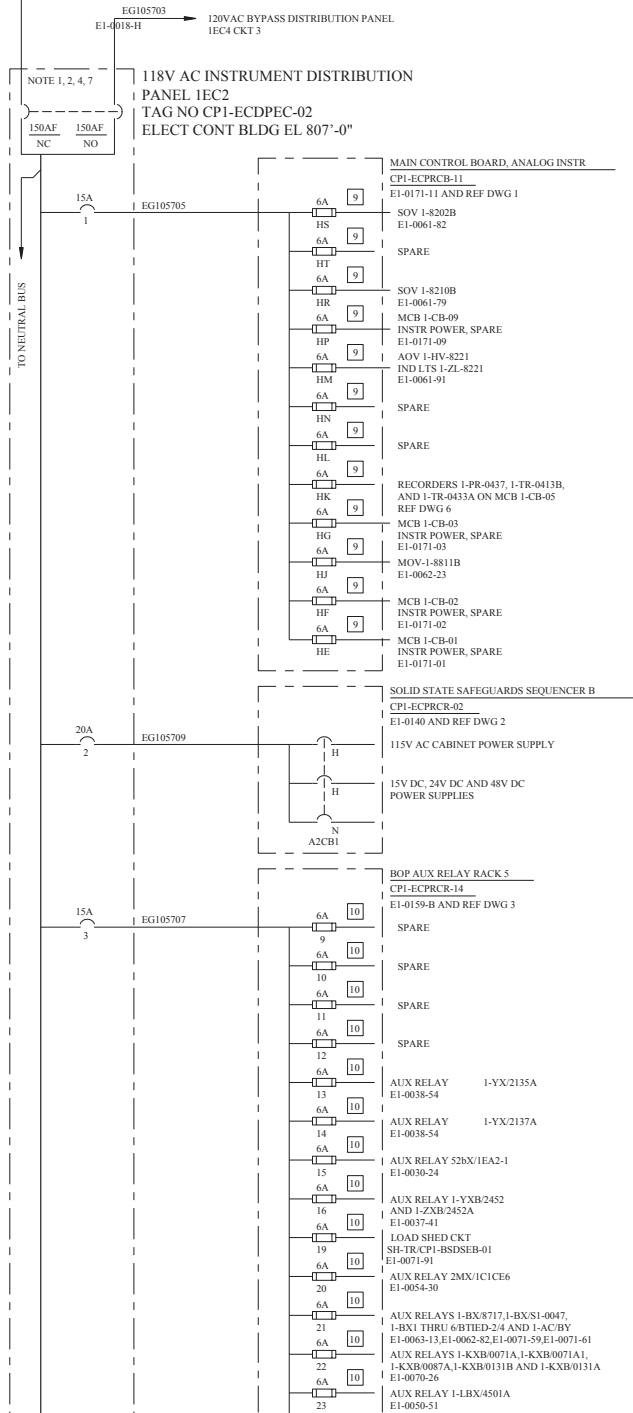
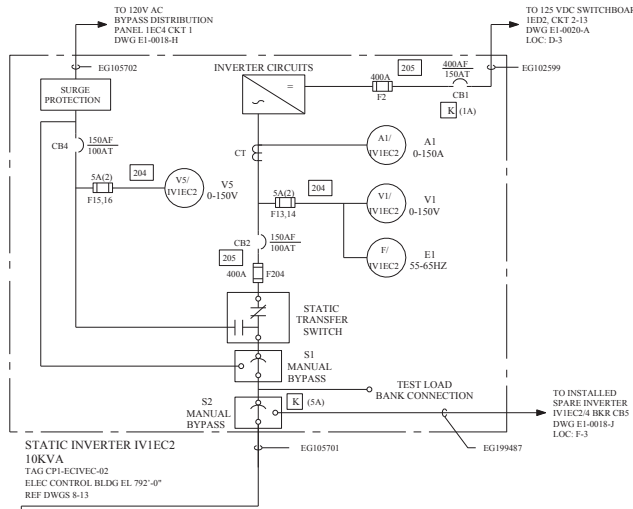
DRAWING	E1-0018-A	REV	CP-3
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0018	E1-0018-E		
E1-0018-A	E1-0018-F		
E1-0018-B	E1-0018-G		
E1-0018-C	E1-0018-H		
E1-0018-D			

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

LUMINANT  
CPSES  
GLEN ROSE, TEXAS

118V AC  
INSTRUMENT BUS DISTRIBUTION  
ONE LINE DIAGRAM

DWG NO.	E1-0018	SH NO.	E	REV.	CP-18
---------	---------	--------	---	------	-------



### FSAR FIGURE 8.3-15

**LEGEND**

- MANUAL TRANSFER SWITCH
- CIRCUIT BREAKER  
20A - CIRCUIT BREAKER RATING  
1 - CIRCUIT NUMBER
- FUSE  
6A - FUSE RATING  
HS - FUSE LOCATION MARKER  
9 - 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-CB1701-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     SEMIC CATEGORY I  
SAFETY CLASS 2     CLASS I  
SAFETY CLASS 3     ASSOCIATED CIRCUITS

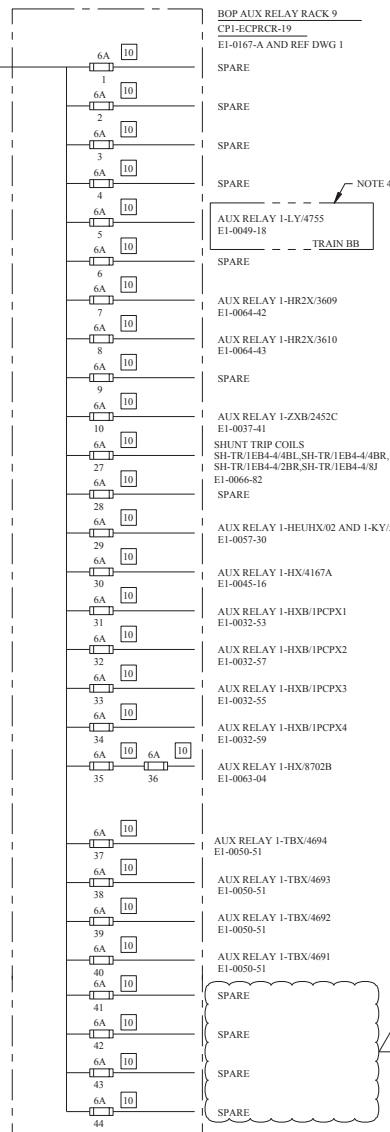
**LUMINANT**  
**CPNPP**  
**GLEN ROSE, TEXAS**

**118V AC**  
**INSTRUMENT DISTRIBUTION**  
**ONE LINE DIAGRAM**

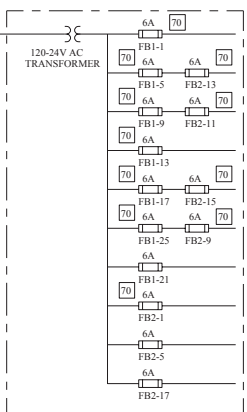
DWG NO	E1-0018	SH NO	F	REV	CP-19
--------	---------	-------	---	-----	-------

118V AC INSTR DISTR PANEL 1EC2

CPI-ECDEPC-02  
CONT FROM DWG E1-0018-F  
LOC: E-6



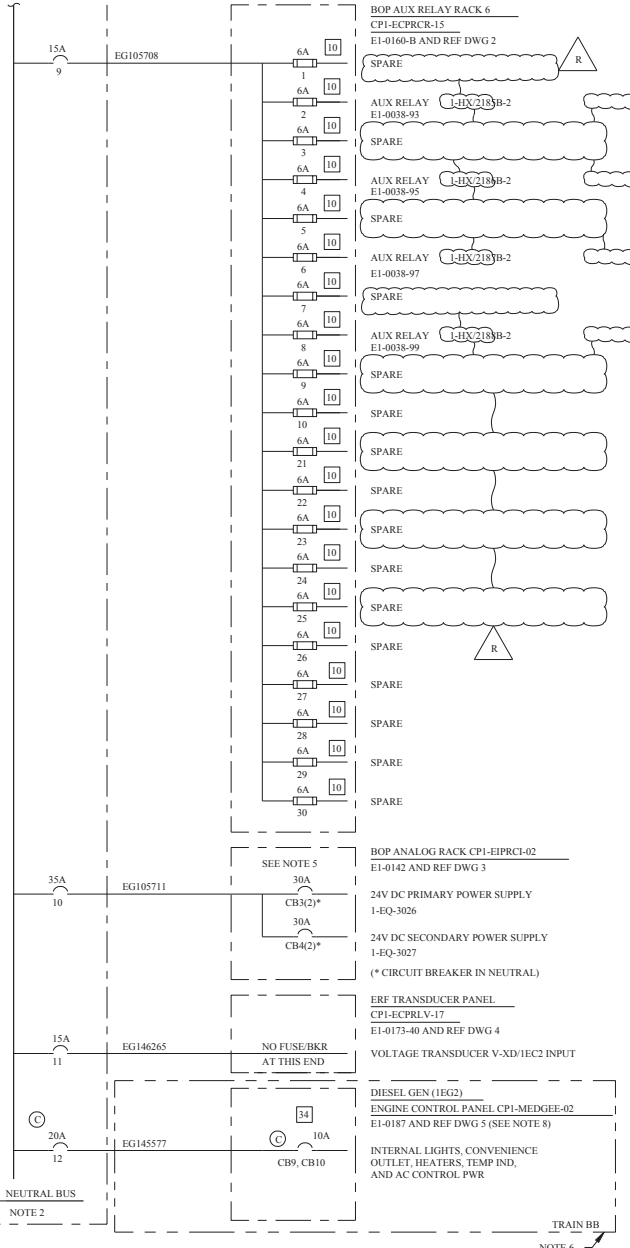
BOP AUX RELAY RACK 9  
CPI-ECPRCR-19  
E1-0167-A AND REF DWG 1  
SPARE  
SPARE  
SPARE  
SPARE  
NOTE 4  
AUX RELAY 1-LY/4755  
E1-0049-18  
SPARE  
AUX RELAY 1-HR2X/3609  
E1-0064-42  
AUX RELAY 1-HR2X/3610  
E1-0064-43  
SPARE  
AUX RELAY 1-ZXB/2452C  
E1-0037-41  
SHUNT TRIP COILS  
SH-TR/1EB4-4/4BL, SH-TR/1EB4-4/4BR,  
SH-TR/1EB4-4/2BR, SH-TR/1EB4-4/8J  
E1-0066-82  
SPARE  
AUX RELAY 1-HEUHX/02 AND 1-KY/5973  
E1-0057-30  
AUX RELAY 1-HX/4167A  
E1-0045-16  
AUX RELAY 1-HXB/1PCPX1  
E1-0032-53  
AUX RELAY 1-HXB/1PCPX2  
E1-0032-57  
AUX RELAY 1-HXB/1PCPX3  
E1-0032-55  
AUX RELAY 1-HXB/1PCPX4  
E1-0032-59  
AUX RELAY 1-HX/8702B  
E1-0063-04  
AUX RELAY 1-TBX/4694  
E1-0050-51  
AUX RELAY 1-TBX/4693  
E1-0050-51  
AUX RELAY 1-TBX/4692  
E1-0050-51  
AUX RELAY 1-TBX/4691  
E1-0050-51  
SPARE  
SPARE  
SPARE  
SPARE



TERMINAL RACK 1-TC-42  
E1-0172-42B AND REF DWG 7  
MONITOR LIGHT BOX 1-MLB-4B-1  
E1-0067-51 AND 61  
MONITOR LIGHT BOX 1-MLB-4B-2  
E1-0067-51 AND 62  
MONITOR LIGHT BOX 1-MLB-4B-3  
E1-0067-51 AND 63  
MONITOR LIGHT BOX 1-MLB-1B-1  
E1-0067-51 AND 59  
MONITOR LIGHT BOX 1-MLB-1B-2  
E1-0067-51 AND 60  
MONITOR LIGHT BOX 1-MLB-4SB  
E1-0067-51 AND 65  
SPARE  
MONITOR LIGHT BOX 1-MLB-10  
E1-0067-51 AND 90  
SPARE  
SPARE

CONT ON THIS DWG  
LOC: D-1

CONT FROM THIS DWG  
LOC: A-5



BOP AUX RELAY RACK 6  
CPI-ECPRCR-15  
E1-0160-B AND REF DWG 2  
SPARE  
AUX RELAY 1-HX/2183B-2  
E1-0038-93  
SPARE  
AUX RELAY 1-HX/2183B-2  
E1-0038-95  
SPARE  
AUX RELAY 1-HX/2183B-2  
E1-0038-97  
SPARE  
AUX RELAY 1-HX/2183B-2  
E1-0038-99  
SPARE  
AUX RELAY 1-HX/2183B-2  
E1-0038-99  
SPARE  
SPARE  
SPARE  
SPARE  
SPARE  
SPARE  
SPARE  
SPARE  
SPARE  
SPARE  
SPARE  
SPARE  
SPARE  
SPARE  
SPARE  
BOP ANALOG RACK CPI-EIPRCI-02  
E1-0142 AND REF DWG 3  
24V DC PRIMARY POWER SUPPLY  
1-EQ-3026  
CB3(2)\*  
30A  
24V DC SECONDARY POWER SUPPLY  
1-EQ-3027  
CB4(2)\*  
(\* CIRCUIT BREAKER IN NEUTRAL)  
ERF TRANSDUCER PANEL  
CPI-ECPLV-17  
E1-0173-40 AND REF DWG 4  
VOLTAGE TRANSDUCER V-XD/1EC2 INPUT  
DIESEL GEN (1EG2)  
ENGINE CONTROL PANEL CPI-MEDGEE-02  
E1-0187 AND REF DWG 5 (SEE NOTE 8)  
INTERNAL LIGHTS, CONVENIENCE  
OUTLET, HEATERS, TEMP IND,  
AND AC CONTROL PWR  
TRAIN BB  
NOTE 6

NEUTRAL BUS  
NOTE 2

REV	DWN	CHK	APPV	REMARKS
CP-17	SM	BSK	SA-07	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2005-000224-06-01 PER SK-0136-05-000224-06-01

FSAR FIGURE 8.3-15

- LEGEND
- CIRCUIT BREAKER
  - CIRCUIT BREAKER RATING
  - CIRCUIT NUMBER
  - FUSE
  - FUSE RATING
  - FUSE LOCATION MARKER
  - SEE NOTE 7

- NOTES
1. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 100A FRAME SIZE, 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
  2. VERTICAL NEUTRAL BUS.
  3. 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.
  4. ALL WIRING AND CABLING ENCLOSED INSIDE DASHED LINES ARE ASSOCIATED CLASS 1E, TRAIN BB.
  5. CIRCUIT BREAKERS CB1 AND CB2 ARE 15A INSTALLED SPARES.
  6. 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.
  7. 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.
  8. ALL INTERNALS, COMPONENTS AND WIRING SUPPLIED BY THE FEEDER CIRCUIT BREAKERS ARE NON-CLASS 1E, TRAIN C.

- REFERENCE DRAWINGS
1. E-5973 SH 1.4
  2. E-5593 SH 1.2
  3. 8815D24 SH 1, 8815D18
  4. E-6606
  5. 09-500-76001 SH 5
  6. E1-0024-04
  7. W-TC42701-D SH 1.2

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)

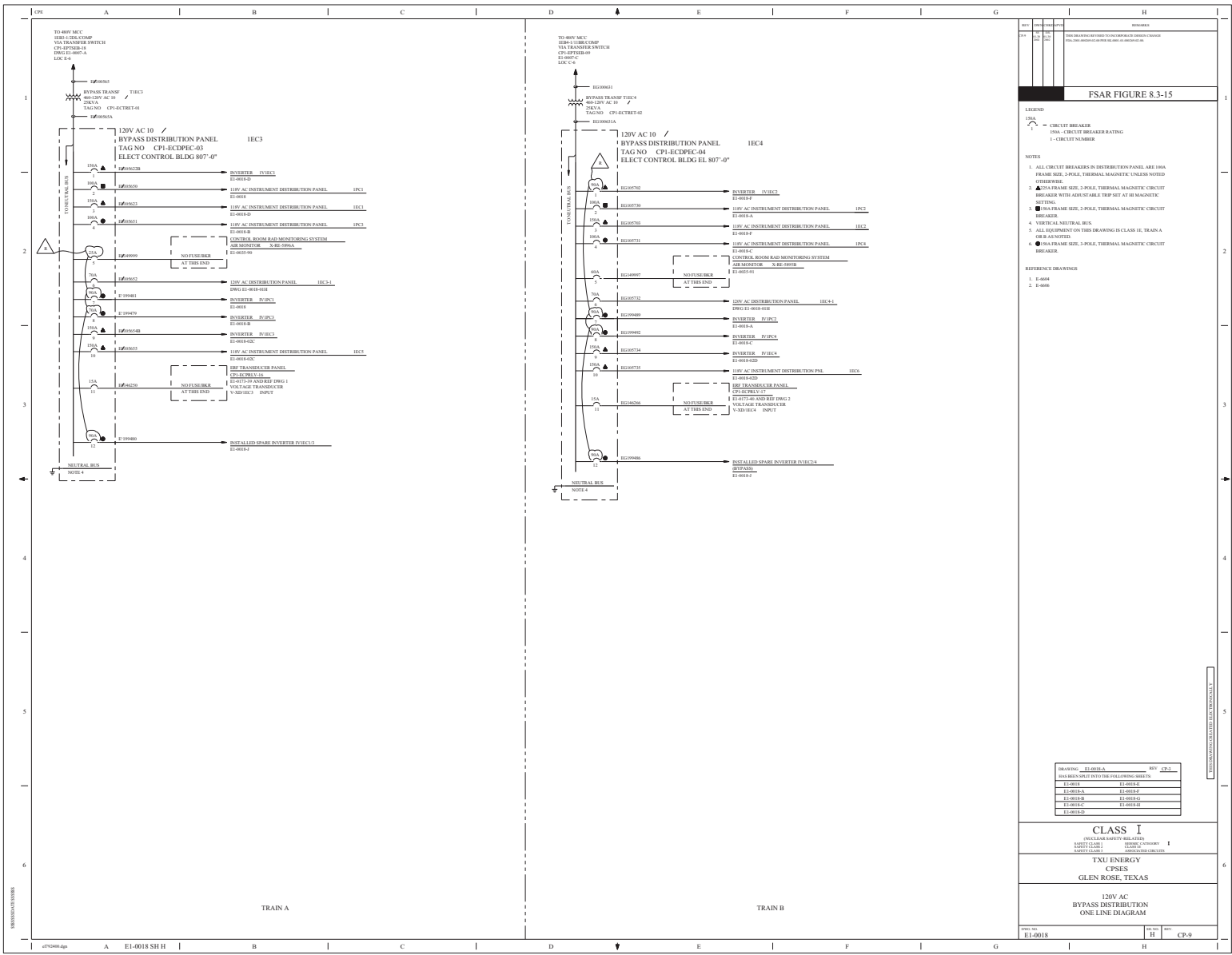
SAFETY CLASS 1 SEISMIC CATEGORY I  
SAFETY CLASS 2 CLASS IIE  
SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT  
CPSES  
GLEN ROSE, TEXAS

118V AC  
INSTRUMENT DISTRIBUTION  
ONE LINE DIAGRAM

DWG NO.	E1-0018	SH NO.	G	REV.	CP-17
---------	---------	--------	---	------	-------

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APP'D	DESCRIPTION
1	08/14/08	EL-0018	EL-0018	EL-0018	ISSUE FOR CONSTRUCTION
2	08/14/08	EL-0018	EL-0018	EL-0018	REVISED FOR CONSTRUCTION

FSAR FIGURE 8.3-15

- LEGEND**
- 10A - CIRCUIT BREAKER
  - 10A - CIRCUIT BREAKER RATING
  - 1 - CIRCUIT NUMBER

- NOTES**
- ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 10A FRAME SIZE, 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
  - 10A FRAME SIZE, 2-POLE, THERMAL MAGNETIC CIRCUIT BREAKER WITH ANTI-DRAWER TRIP SET AS MAGNETIC TRIP.
  - 10A FRAME SIZE, 2-POLE, THERMAL MAGNETIC CIRCUIT BREAKER.
  - VERTICAL NEUTRAL BUS.
  - ALL EQUIPMENT ON THIS DRAWING IS CLASS II, TRAIN A OR B AS NOTED.
  - 10A FRAME SIZE, 2-POLE, THERMAL MAGNETIC CIRCUIT BREAKER.

- REFERENCE DRAWING**
- E-4600
  - E-4606

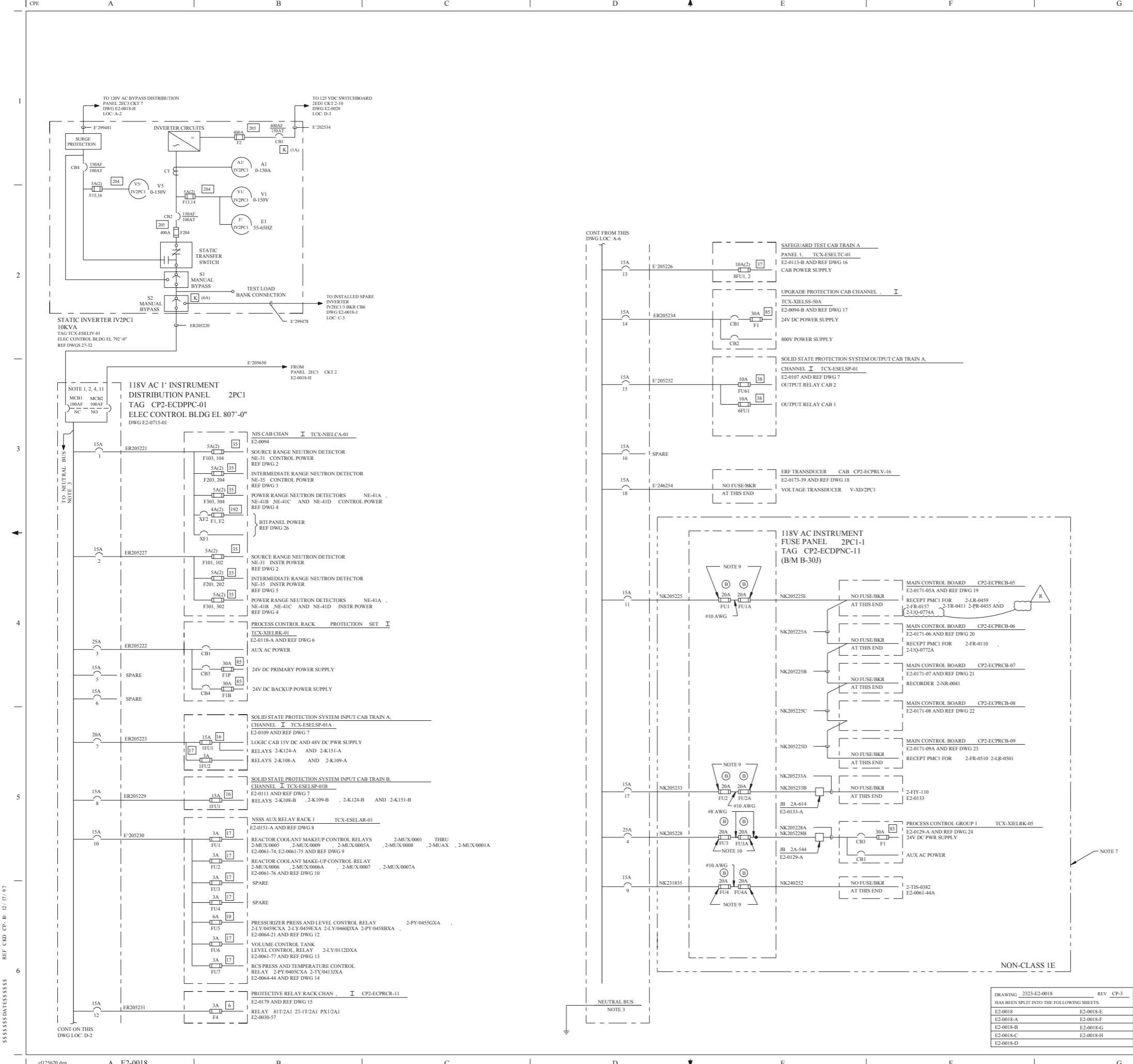
DRAWING	EL-0018-A	REV	003
DATE	08/14/08	BY	EL-0018
CHKD	EL-0018	APP'D	EL-0018
EL-0018-A	EL-0018-F		
EL-0018-B	EL-0018-G		
EL-0018-C	EL-0018-H		
EL-0018-D	EL-0018-I		
EL-0018-E	EL-0018-J		

**CLASS I**  
ONLY QUALIFIED PERSONNEL ARE TO BE PERMITTED TO WORK ON THIS EQUIPMENT. CONTACT THE SUPERVISOR FOR ASSISTANCE.

**TXU ENERGY**  
 CPSES  
 GLEN ROSE, TEXAS

**120V AC BYPASS DISTRIBUTION ONE LINE DIAGRAM**

DATE: 08/14/08  
 DRAWING: EL-0018  
 SHEET: H  
 TOTAL SHEETS: CP-9



### FSAR FIGURE 8.3-15

**LEGEND**

- MANUAL TRANSFER SWITCH
- CIRCUIT BREAKER { 15A - CIRCUIT BREAKER RATING, 1 - CIRCUIT NUMBER
- FUSE { 30A - FUSE RATING, F1 - FUSE LOCATION MARKER, 85 - FUSE BM ITEM NUMBER REF DWG 25
- VOLTMETER
- AMMETER
- FREQUENCY METER
- KIRK KEY INTERLOCK (IA) - 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 NISSS SCOPE OF SUPPLY. LINES ARE NON-CLASS 1E.
7. - DELETED.
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. 6089D33 SH 3
4. 6065D99 SH 3
5. 6089D33 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-CB0814-F SH 1, 2, 5
20. W-CB0815-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-E	118VAC INSTRUMENT DISTRIBUTION PANEL BOARD 2EC2
7. E2-0018-F	118VAC INSTRUMENT DISTRIBUTION PANEL BOARD 2EC3
8. E2-0018-G	118VAC INSTRUMENT DISTRIBUTION PANEL BOARD 2EC4

**CHANNEL I**

**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**

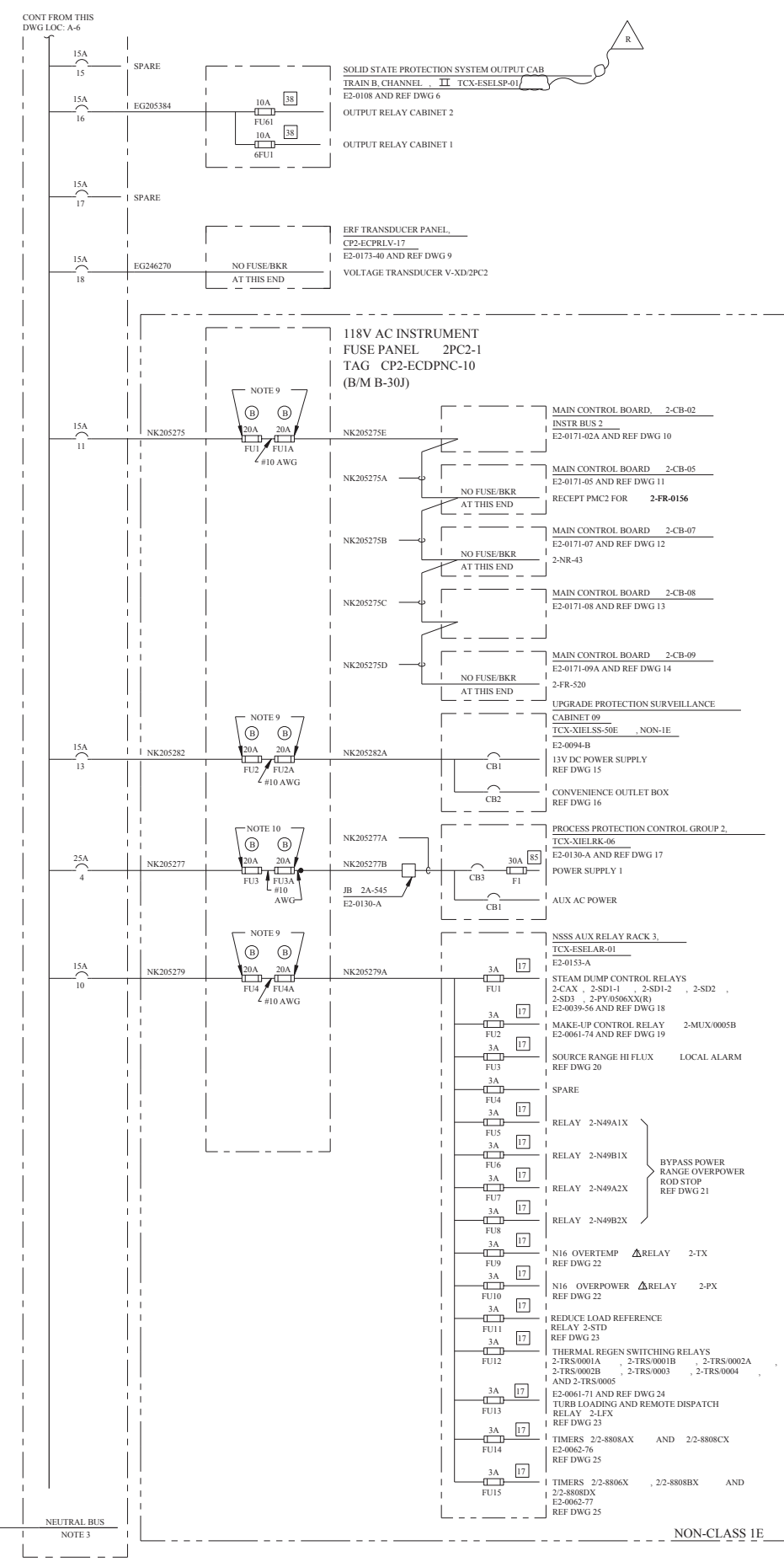
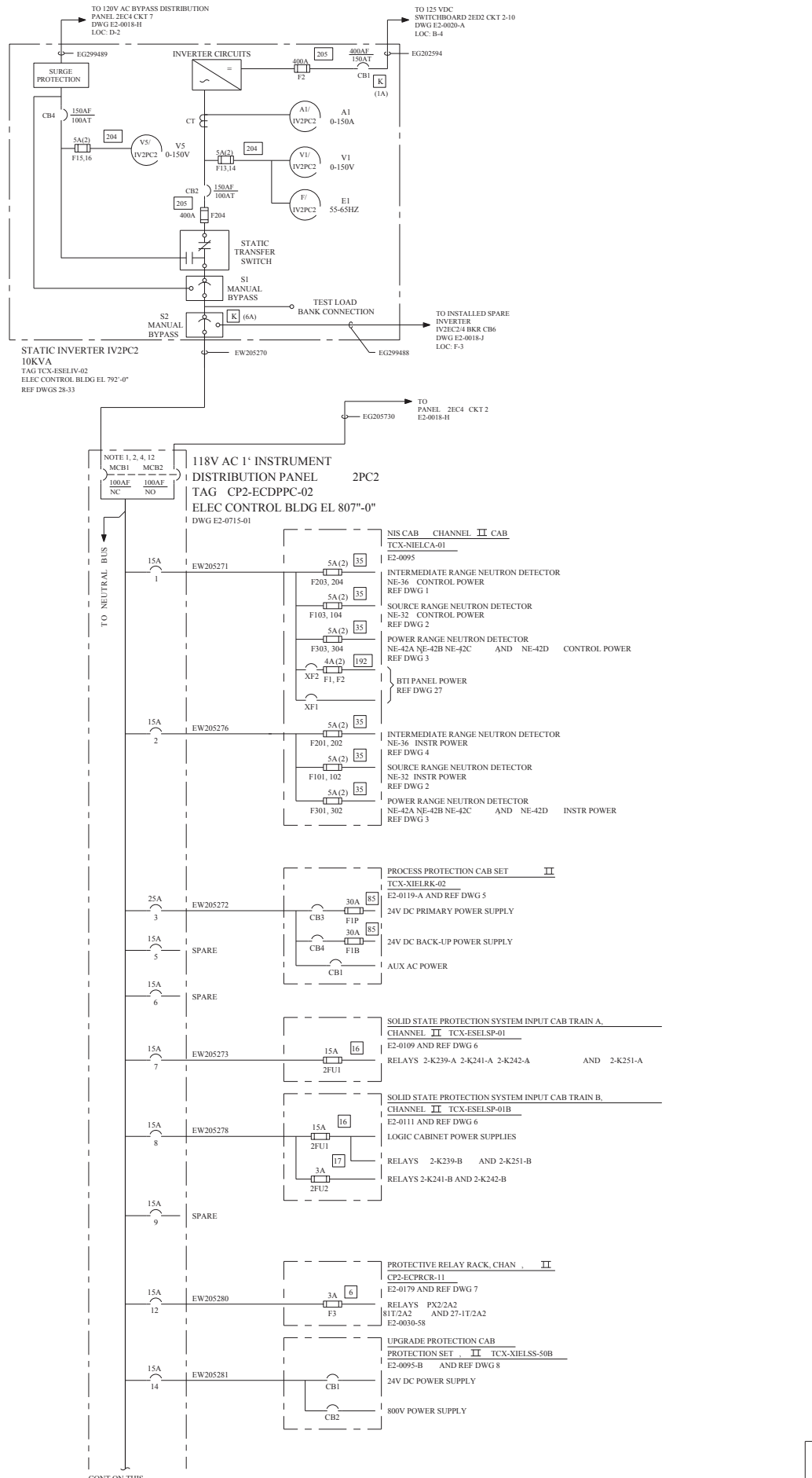
**118VAC INSTRUMENT BUS DISTRIBUTION ONE LINE DIAGRAM**

DWG NO. 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	

THIS DRAWING REVISSED TO INCORPORATE DESIGN CHANGE  
FDA-2010-000172-75-00 PER SK-0006-10-000172-75-00

REF. CND. CP-B. 12/17/97

THIS DRAWING CREATED ELECTRONICALLY



**FSAR FIGURE 8.3-15**

**LEGEND**

- MANUAL TRANSFER SWITCH
- CIRCUIT BREAKER
- 15A - CIRCUIT BREAKER RATING
- 1 - CIRCUIT NUMBER
- FUSE
- 5A - FUSE RATING
- (2) - QUANTITY
- F203 - FUSE LOCATION MARKER
- FUSE B/M ITEM NUMBER REF DWG 26
- 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 13

**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 SH SCHEMATICS SEE E2-0071 SERIES DRAWINGS.
5. DELETED.
6. EQUIPMENT WITHIN NSSS SCOPE OF SUPPLY.
7. EQUIPMENT AND CABLES ENCLOSED BY DASHED LINES ARE NON-CLASS 1E.
8. METER/FUSING 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. 2AM/IV2PC2).
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. DELETED.
12. THE MECHANICAL BREAKER INTERLOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES, SEE DBD-EE-043 FOR DETAILS.
13. 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 3.1.0.

**REFERENCE DRAWINGS**

1. 6089D33 SH 3	18. 271C336 SH 110
2. 6094D63 SH 1	19. 271C336 SH 114
3. 6065D99 SH 3	20. 271C336 SH 118
4. 6089D33 SH 1	21. 271C336 SH 120
5. 8810D56	22. 271C336 SH 122
6. 1084H36 SH 30	23. 271C336 SH 123
7. E-5812	24. 271C336 SH 127
8. 8833D43 SH 1, 8833D29 SH 1	25. 1196E96 SH 1-10
9. E-6603, E-6610	26. E2-0024-04
10. CB02811-F SH 1-5	27. 4D04921
11. W-CB05814-F SH 1-5	28. 20-102722 SH 1, 2
12. W-CB07816-F SH 1-7	29. 20-102723 SH 1
13. W-CB08817-F SH 1-3	30. 20-102724 SH 1
14. W-CB05818-F SH 1-5	31. 20-103521 SH 1, 2
15. 8833D2, SH 1	32. 20-103522 SH 1
16. 8833D42, 8833D43	33. 20-103523 SH 1
17. 8760D65 SH 7	

**CHANNEL**

**CLASS I**  
(NUCLEAR SAFETY-RELATED)  
SAFETY CLASS 1 SERVIC CATEGORY I  
SAFETY CLASS 2 SAFETY CLASS 3 ASSOCIATED CIRCUITS

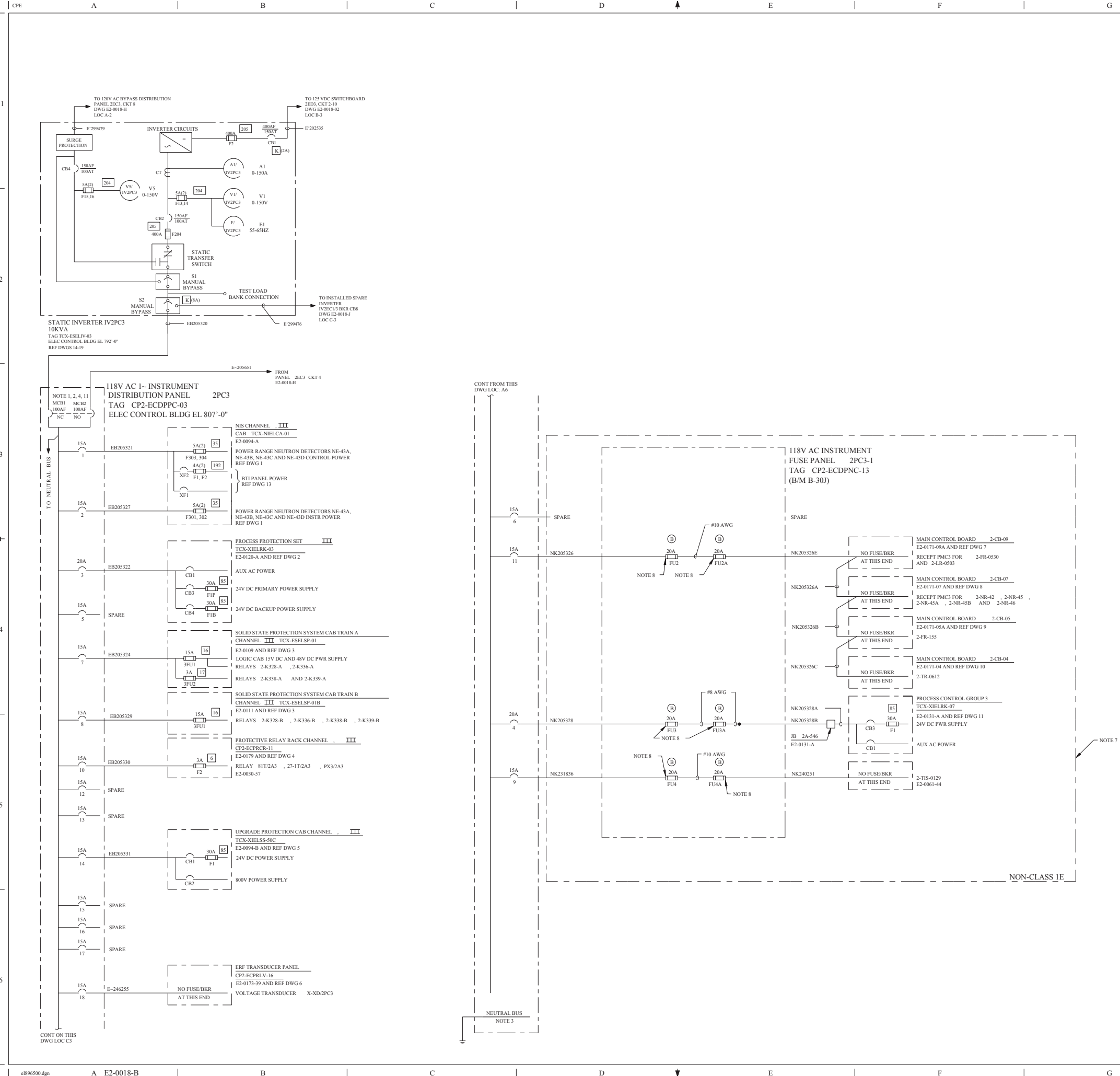
**LUMINANT CPNPP**  
GLEN ROSE, TEXAS

**118V AC INSTRUMENT BUS DISTRIBUTION ONE LINE DIAGRAM**

DWG NO. **E2-0018** REV. **CP-3**

THIS DRAWING CREATED ELECTRONICALLY





REV	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  
2 - 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.
  - BY DASHED LINES ARE NON-CLASS 1E
  - 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-3812
  - 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 SEISMIC CATEGORY 1  
SAFETY CLASS 2 CLASS II  
SAFETY CLASS 3 ASSOCIATED CIRCUITS

**LUMINANT**  
CPNPP  
GLEN ROSE, TEXAS

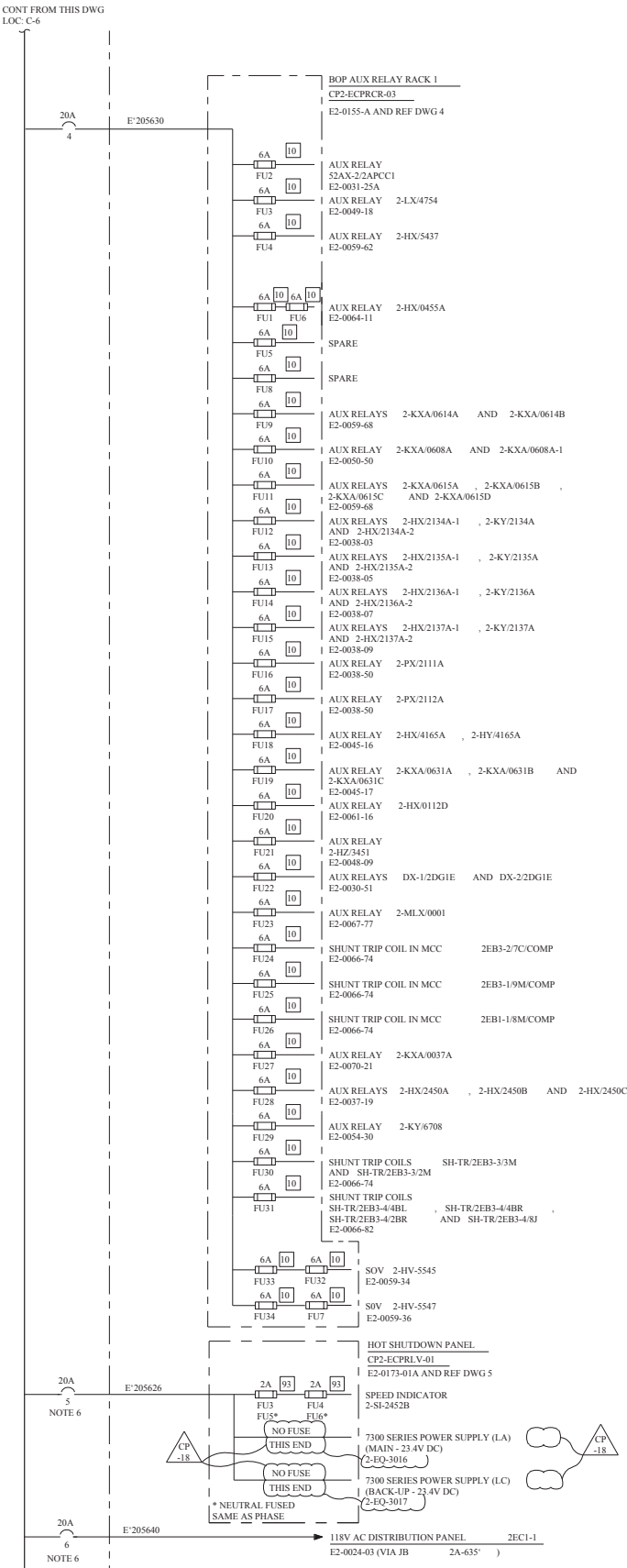
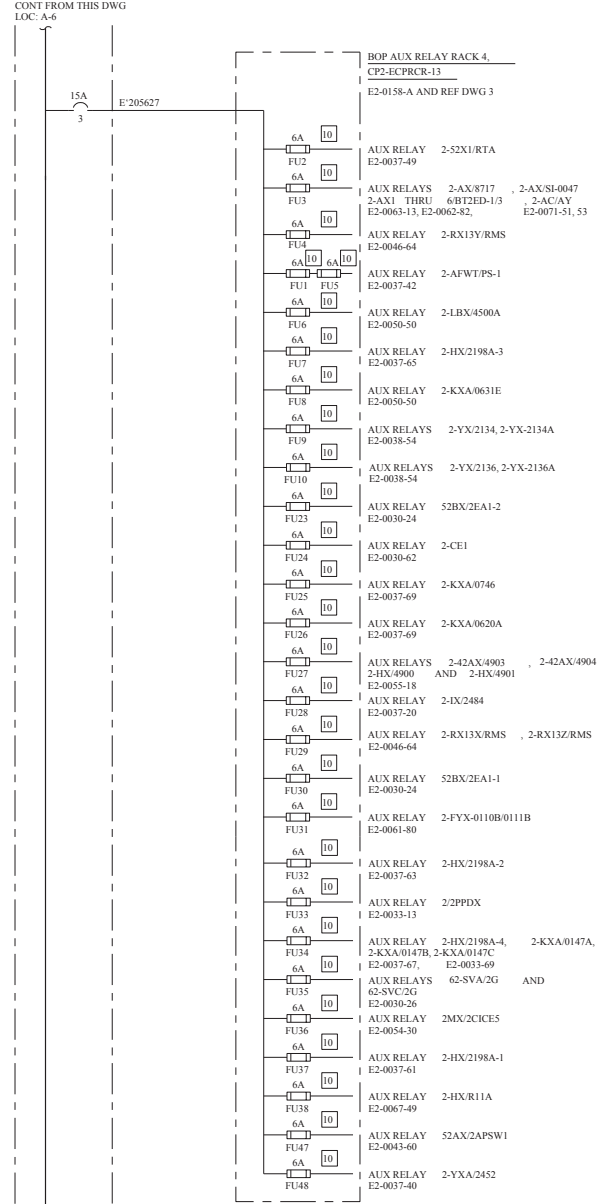
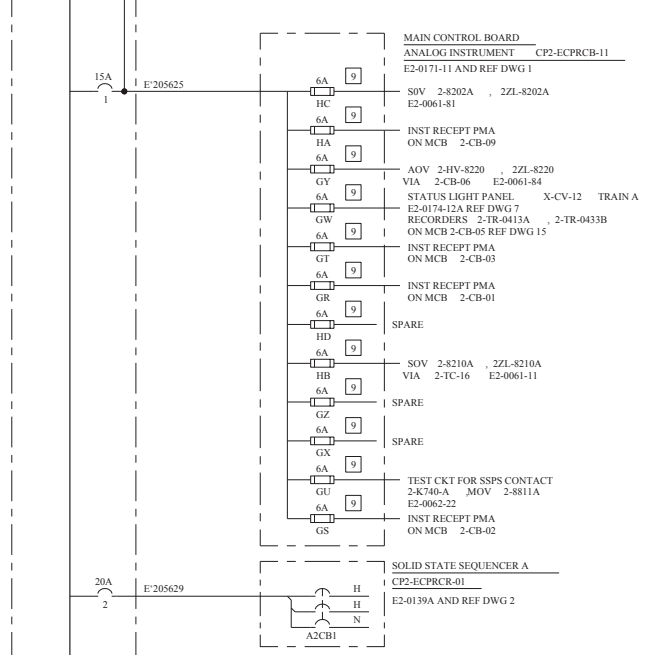
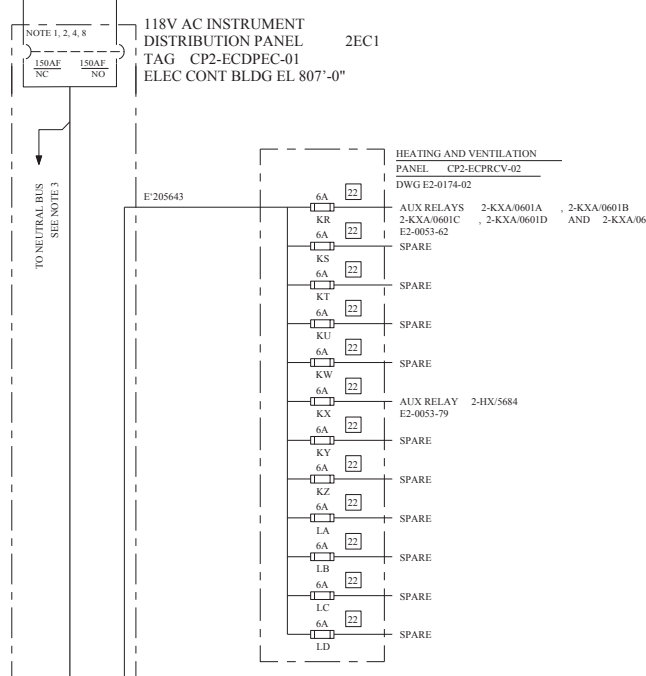
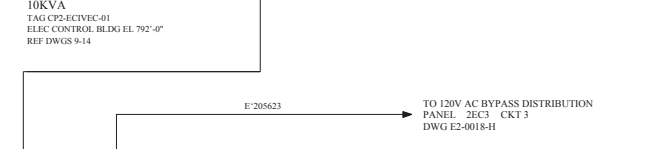
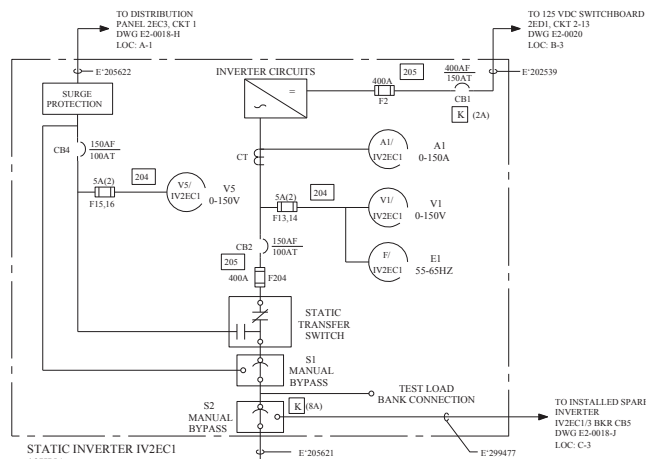
**118V AC INSTRUMENT BUS DISTRIBUTION ONE LINE DIAGRAM**

DWG NO	REV
E2-0018	B CP-12

REF CHD CP-8 12-17-97

THIS DRAWING CREATED ELECTRONICALLY





REV	DATE	CHKD	APPD	REMARKS
CP-18	11-11-2011			THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGES AS NOTED PER ACR-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
- VOLTMETER
- AMMETER
- FREQUENCY METER
- SPLICE PER SPEC 2323-ES-100
- 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 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.
- 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. AMI/IV2EC1, FMS/IV2EC1).
- TO ENSURE PROPER PROTECTION OF CABLES TFHA, DO NOT INCREASE THE AMPACITY OF THIS CIRCUIT BREAKER.
- DELETED.
- THE MECHANICAL BREAKER INTERLOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES. SEE DBD-EE-043 FOR DETAILS.

**REFERENCE DRAWINGS**

- W-CB11820-F SH 6 AND 8
- 2462-1004 SH 3, 2462-1027 SH 61
- E-5666 SH 1 THRU 4
- E-5663 SH 1 AND 2
- W-99000404-F SH 2 AND 12
- E2-0024-04
- W-CV12239S SH 1 AND 2
- DELETED
- 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
- W-CB051814-F SH 1, 2, 5

DWG NO	E2-0018	REV	CP-18
SH NO	D	REV	

**TRAIN A**

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

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

**LUMINANT CPNPP**  
**GLEN ROSE, TEXAS**

**118V AC INSTRUMENT BUS DISTRIBUTION ONE LINE DIAGRAM**

REF CKD CP-11 2/27/98

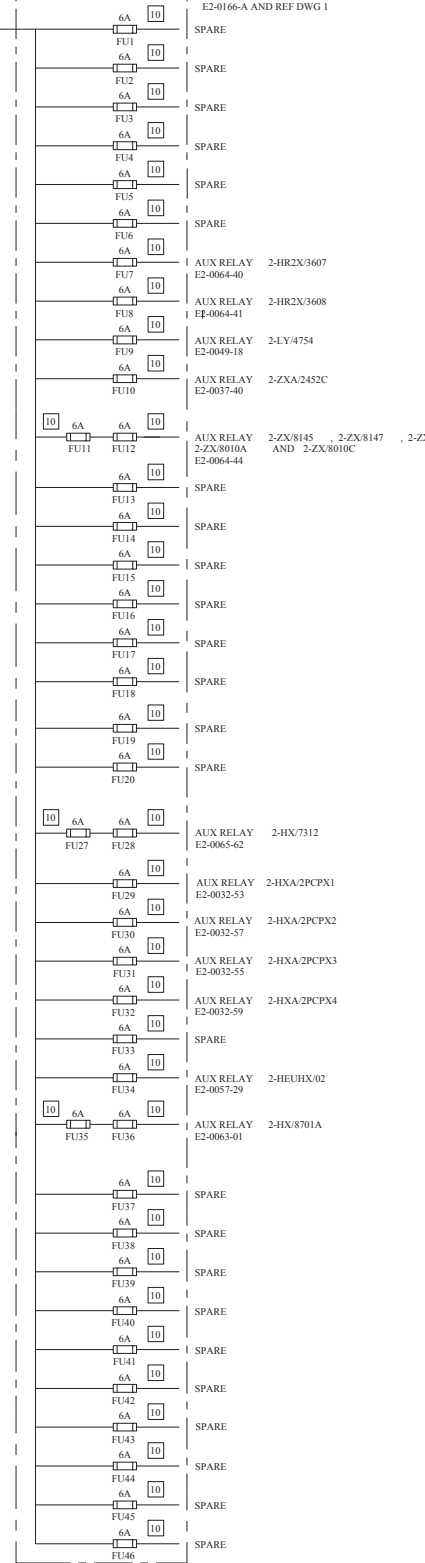
THIS DRAWING CREATED ELECTRONICALLY

118V AC INSTR DISTR  
CONT FROM DWG E2-0018-D LOC: E-6

PANEL 2EC1

**BOP AUX RELAY RACK 8**  
**CP2-ECPRCR-18**

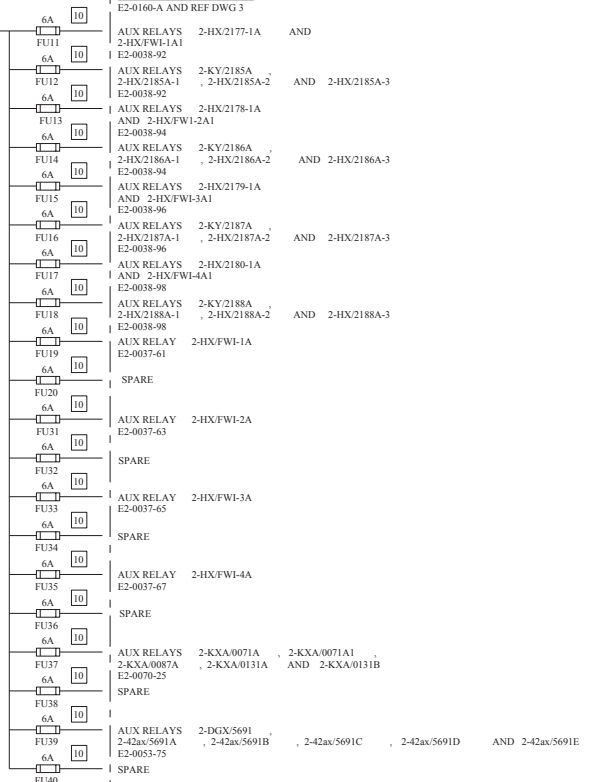
E2-0166-A AND REF DWG 1



CONT FROM THIS  
DWG LOC: A-6

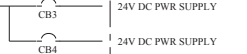
**BOP AUX RELAY RACK 6**  
**CP2-ECPRCR-15**

E2-0160-A AND REF DWG 3



**BOP ANALOG RACK CP2-EIPRCI-01**

E2-0141-A AND REF DWG 4



**ERF TRANSDUCER PANEL CP2-ECPRLV-16**

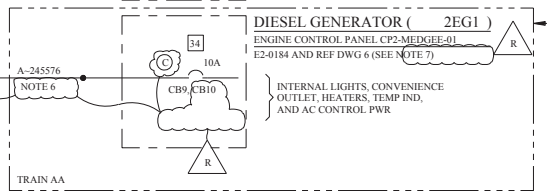
E2-0173-39 AND REF DWG 5



**DIESEL GENERATOR ( 2EG1 )**

ENGINE CONTROL PANEL CP2-MEDGEE-01

E2-0184 AND REF DWG 6 (SEE NOTE 7)



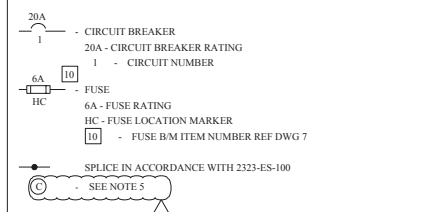
CONT ON THIS  
DWG LOC: C-1

+ Approved LDCRs

REV	DWN	CHKD	APPD	REMARKS
CP-11	MM	MM	MM	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-1999-002406-02-00 PER 98-0015-99-002406-02-00

**FSAR FIGURE 8.3-15**

**LEGEND**



**NOTES**

- 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 SSIH SCHEMATICS SEE E2-0071 SERIES DRAWINGS.
- ALL WIRING AND CABLING ENCLOSED BY DASHED LINES IS ASSOCIATED CLASS 1E. TRAIN AA. THE FUNCTION OF THE LOAD IS NOT SAFETY RELATED AND THE LOAD CIRCUIT BREAKER IS CLASS 1E.
- 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.
- THE CABLE BETWEEN THE TWO CIRCUIT BREAKERS PROVIDING ISOLATION FROM THE CLASS 1E BUS IS SAFETY RELATED, THOUGH TAGGED AS ASSOCIATED CLASS 1E.
- ALL INTERNALS, COMPONENTS AND WIRING SUPPLIED BY THE FEEDER CIRCUIT BREAKERS ARE NON-CLASS 1E, TRAIN C.

**REFERENCE DRAWINGS**

- E-5976 SH 1 AND 4
- F-25338-ER, H-38450-AC
- E-5668 SH 1 AND 2
- 8815D17, 8815D23 SH 1
- E-6608
- 09-500-76001 SH 5
- E2-0024-04

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	

**TRAIN A**

**CLASS I**

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

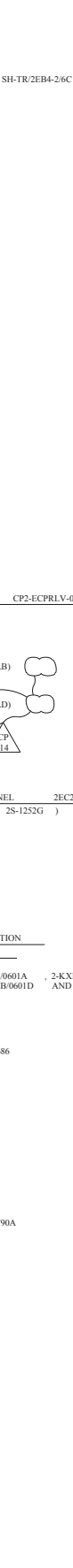
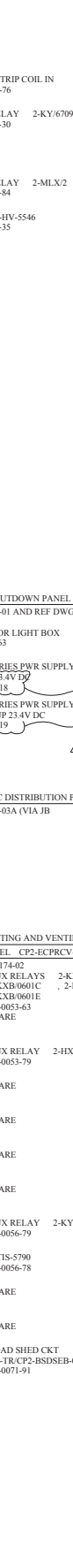
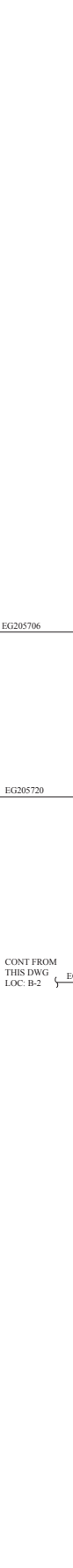
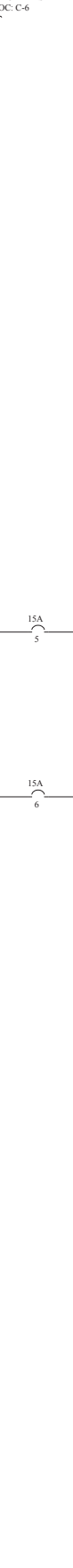
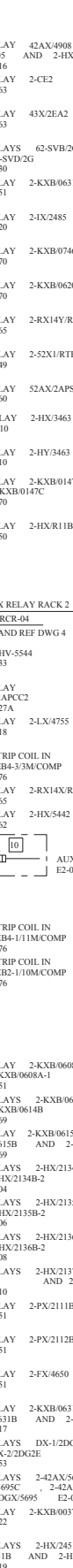
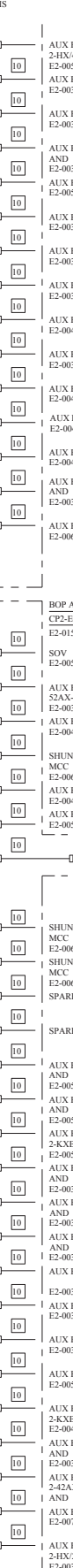
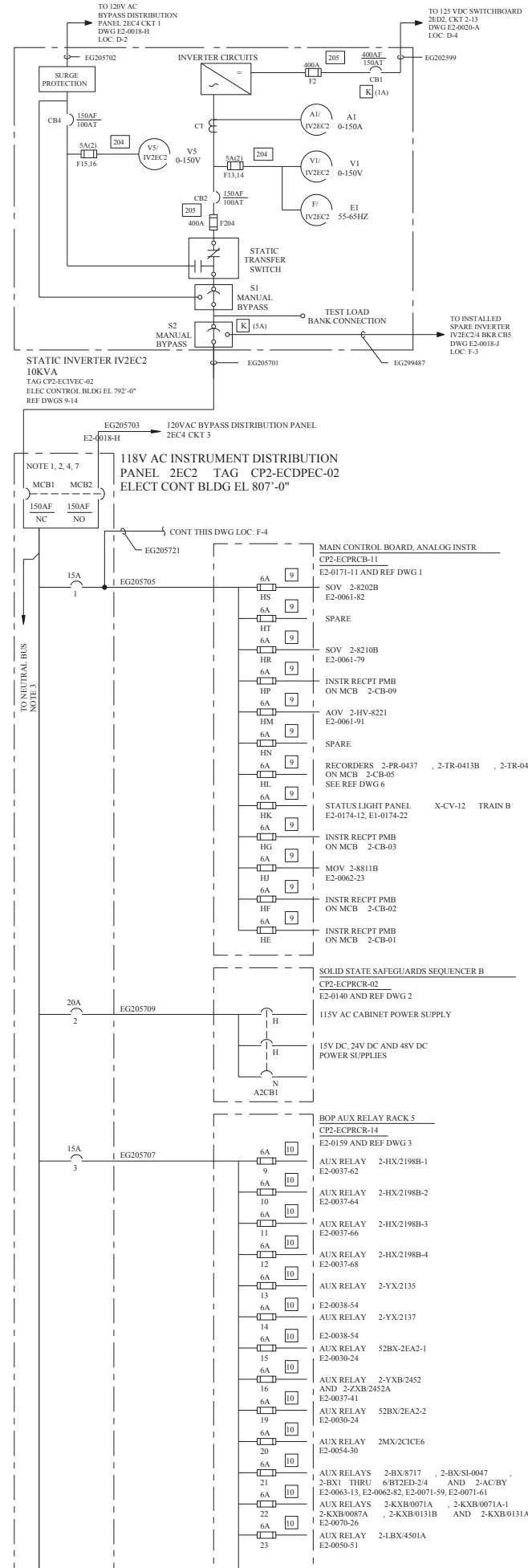
**TXU POWER**  
CPSES  
GLEN ROSE, TEXAS

**118V AC**  
**INSTRUMENT BUS DISTRIBUTION**  
**ONE LINE DIAGRAM**

DWG NO	REV	SH NO	REV
E2-0018	E		CP-11

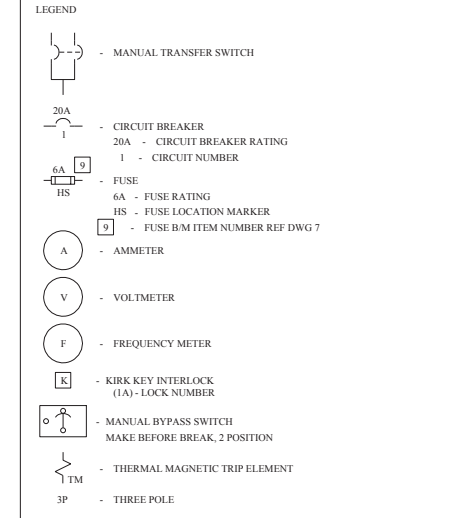
**FINAL PRINT**

THIS DRAWING CREATED ELECTRONICALLY



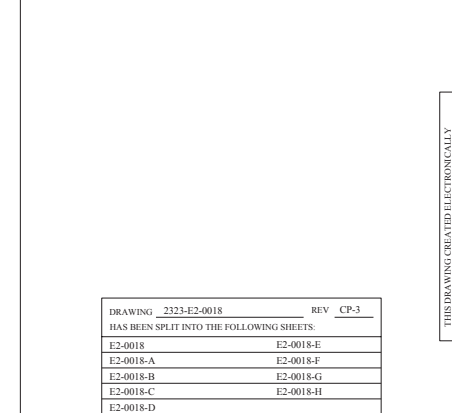
REV	DWN	CHKD	APVD	REMARKS
CP14	SM	11-11	2011	THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGES AS NOTED PER AICR-2011-011451-1.

**FSAR FIGURE 8.3-15**



- NOTES
- MANUAL TRANSFER SWITCH SHALL BE MOUNTED AT THE BOTTOM OF INSTR 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 E2-0071 SERIES DRAWINGS.
  - 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/IV2EC2).
  - DELETED.
  - THE MECHANICAL BREAKER INTERLOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES. SEE DBD-EE-043 FOR DETAILS.

- REFERENCE DRAWINGS
- W-CB11820-F SH 6,7
  - 2462-1027 SH 61, 62
  - E-5667 SH 1-4
  - E-5664 SH 1, 2
  - W-99X00404-F SH 12, 14
  - W-CB05814-F SH 1, 2, 5
  - E2-0024-04
  - DELETED
  - 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



**TRAIN B**

**CLASS I**

(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1	SEBMC CATEGORY 1
SAFETY CLASS 2	CLASS II
SAFETY CLASS 3	ASSOCIATED CIRCUITS

**LUMINANT**

**CPNPP**

**GLEN ROSE, TEXAS**

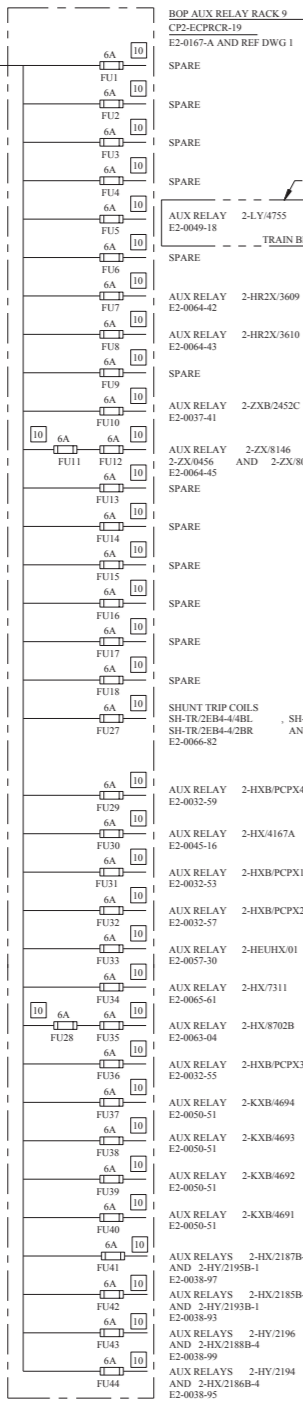
**118V AC INSTRUMENT DISTRIBUTION ONE LINE DIAGRAM**

DWG NO.	REV
E2-0018	CP-14

118V AC INSTR DISTR PANEL  
 CP2-ECDFEC-02  
 CONT FROM DWG E2-0018-F  
 LOC: E-6

2EC2

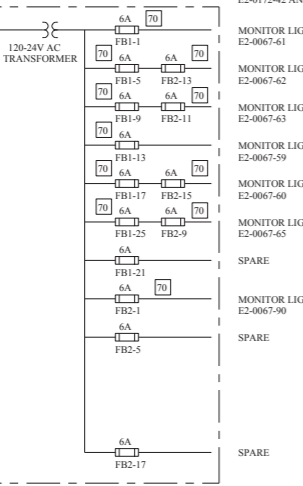
BOP AUX RELAY RACK 9  
 CP2-ECPRCR-19  
 E2-0167-A AND REF DWG 1



NOTE 4  
 AUX RELAY 2-LY/4755  
 E2-0049-18  
 TRAIN BB

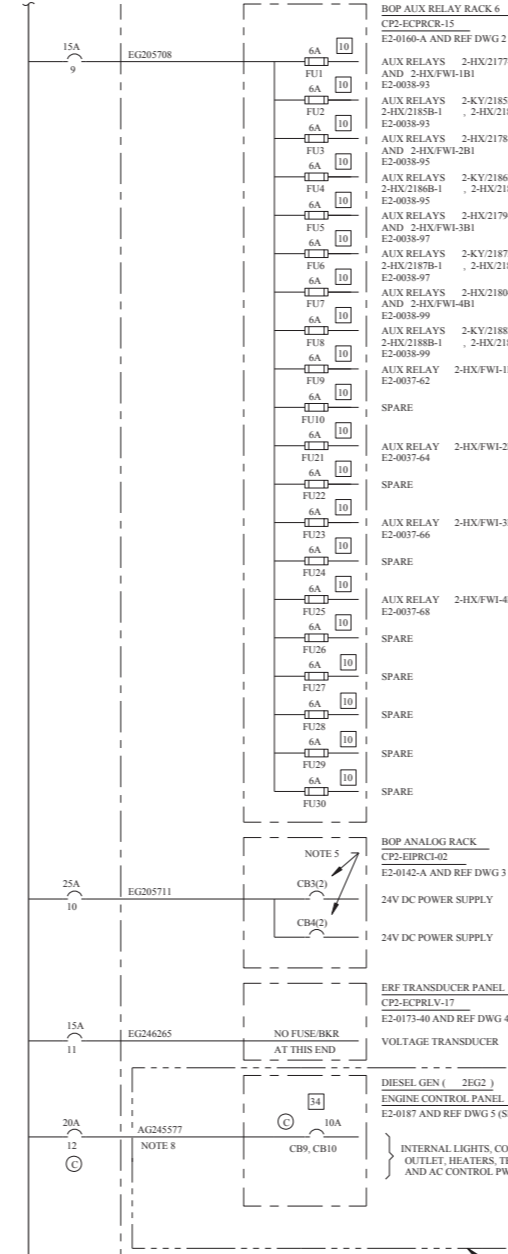
SHUNT TRIP COILS  
 SH-TR/2EB4-4/4BR  
 SH-TR/2EB4-4/4BL  
 SH-TR/2EB4-4/2BR  
 AND SH-TR/2EB4-4/8J  
 E2-0066-82

TERMINAL RACK CP2-ECPRTC-42  
 E2-0172-42 AND REF DWG 6



CONT FROM THIS DWG  
 LOC: A-5

BOP AUX RELAY RACK 6  
 CP2-ECPRCR-15  
 E2-0160-A AND REF DWG 2



NOTE 5  
 BOP ANALOG RACK  
 CP2-EIPRC1-02  
 E2-0142-A AND REF DWG 3  
 24V DC POWER SUPPLY  
 24V DC POWER SUPPLY

ERF TRANSDUCER PANEL  
 CP2-ECPRV-17  
 E2-0173-40 AND REF DWG 4  
 VOLTAGE TRANSDUCER V-XD/2EC2 INPUT

DIESEL GEN ( 2EG2 )  
 ENGINE CONTROL PANEL CP2-MEDGEE-02  
 E2-0187 AND REF DWG 5 (SEE NOTE 9)  
 INTERNAL LIGHTS, CONVENIENCE  
 OUTLET, HEATERS, TEMP IND,  
 AND AC CONTROL PWR

NEUTRAL BUS  
 NOTE 2

+ Approved LDCRS

REV	DWN	CHK	APPV	REMARKS
CP10	SH	0614	200	THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGES AS NOTED PER AL-CK-2010-00072-1

**FSAR FIGURE 8.3-15**

**LEGEND**

- 20A - CIRCUIT BREAKER
- 20A - CIRCUIT BREAKER RATING
- 1 - CIRCUIT NUMBER
- 6A 10 - FUSE
- 6A - FUSE RATING
- 1 - FUSE LOCATION MARKER
- 10 - FUSE B/M ITEM NUMBER REF DWG 7
- (C) - SEE NOTE 7

**NOTES**

- ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 100A FRAME SIZE, 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
- VERTICAL NEUTRAL BUS
- ALL CIRCUIT BREAKERS OF INSTR PANEL BOARD ARE EQUIPPED WITH 1-NO AND 1-NC AUX CONTACT. FOR SSII INDICATING LIGHT SCHEMATICS SEE E2-0071 SERIES DRAWINGS.
- ALL WIRING AND CABLING ENCLOSED INSIDE DASHED LINES ARE ASSOCIATED CLASS 1E, TRAIN BB. THE FUNCTION OF THE LOAD IS NOT SAFETY RELATED AND THE LOAD CIRCUIT BREAKER IS CLASS 1E.
- CIRCUIT BREAKERS CB3 AND CB4, LOCATED IN BOP ANALOG RACK 2-CI-02, ARE 2-POLE BREAKERS WHICH BREAK BOTH THE HOT AND NEUTRAL CIRCUIT WIRES.
- DELETED
- 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.
- THE CABLE BETWEEN THE TWO CIRCUIT BREAKERS PROVIDING ISOLATION FROM THE CLASS 1E BUS IS SAFETY RELATED, THOUGH TAGGED AS ASSOCIATED CLASS 1E.
- ALL INTERNALS, COMPONENTS AND WIRING SUPPLIED BY THE FEEDER CIRCUIT BREAKERS ARE NON-CLASS 1E, TRAIN C.

**REFERENCE DRAWINGS**

- E-5977 SH 1-4
- E-5668 SH 1, 2
- 882D07
- E-6603, E-6610
- 09-500-76001 SH 8, 5
- W-TC42702-D SH 1, 2
- E2-0024-04

THE FOLLOWING CABLE IS SPARED IN THIS DISTRIBUTION PANEL.

CP2-ECPRCB-11  
 SP205705A  
 E2-0171-11

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	

**TRAIN B**

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

**LUMINANT**  
 CPNPP  
 GLEN ROSE, TEXAS

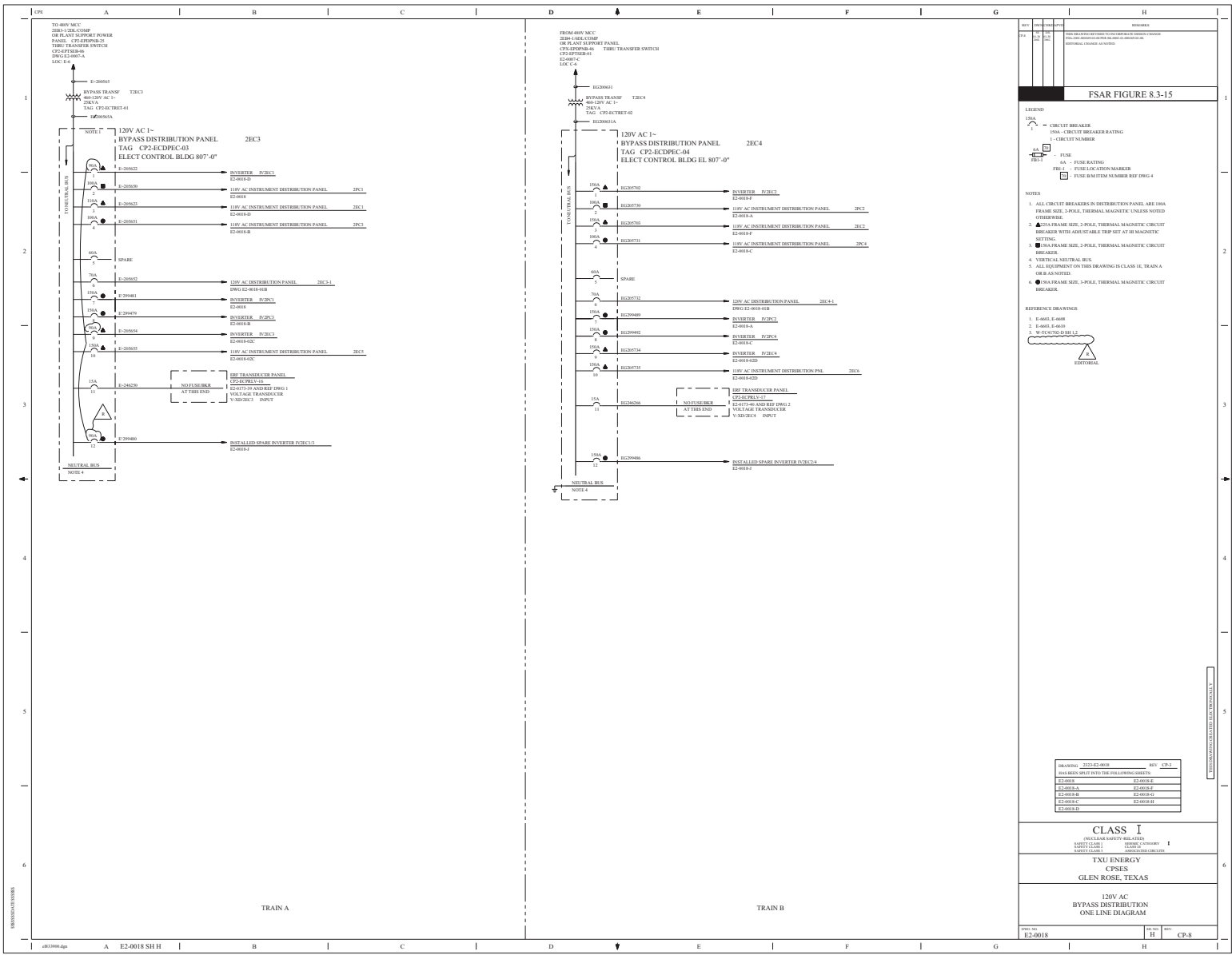
118V AC  
 INSTRUMENT DISTRIBUTION  
 ONE LINE DIAGRAM

DWG NO E2-0018	SH NO G	REV CP-10
-------------------	------------	--------------

**FINAL PRINT**

REF CKD CP-4 12/17/97

THIS DRAWING CREATED ELECTRONICALLY



FSAR FIGURE 8.3-15

- LEGEND
- 100A - CIRCUIT BREAKER
  - 100A - CIRCUIT BREAKER RATING
  - 100A - CIRCUIT NUMBER
  - 100A - FUSE
  - 100A - FUSE RATING
  - 100A - FUSE LOCATION MARKER
  - 100A - FUSE IN ITTEM NUMBER REF DRWG 4

- NOTES
1. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 100A FRAME SIZE, 3-POLE, THERMAL-MAGNETIC UNLESS NOTED OTHERWISE.
  2. 100A FRAME SIZE, 3-POLE, THERMAL-MAGNETIC CIRCUIT BREAKER WITH ADJUSTABLE TRIP SET AT 100 AMPERES.
  3. 100A FRAME SIZE, 3-POLE, THERMAL-MAGNETIC CIRCUIT BREAKER.
  4. VERTICAL NEUTRAL BUS.
  5. ALL EQUIPMENT ON THIS DRAWING IS CLASS 1L TRAIN A OR B AS NOTED.
  6. 100A FRAME SIZE, 3-POLE, THERMAL-MAGNETIC CIRCUIT BREAKER.

- REFERENCE DRAWING
1. E-6005, E-6006
  2. E-6005, E-6006
  3. W-3474 (NS) DRG 12

REVISION	DATE	BY	CHK'D
1	02/01/08	EJ	CP-3
2	02/01/08	EJ	CP-3
3	02/01/08	EJ	CP-3
4	02/01/08	EJ	CP-3
5	02/01/08	EJ	CP-3

**CLASS I**  
ONE LINE DIAGRAM OF 120V AC BYPASS DISTRIBUTION PANELS  
 TXU ENERGY  
 CPSES  
 GLEN ROSE, TEXAS  
 120V AC BYPASS DISTRIBUTION ONE LINE DIAGRAM

REV	DWN	CHKD	APVD	REMARKS
CP-16	MB	GW	MB	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2005-001364-18-07 PER SK.0006-05-001364-18-02

FSAR FIGURE 8.3-15

- LEGEND
- 3A - FUSE RATING
  - 2 - FUSE LOCATION MARKER
  - 8 - FUSE B/M ITEM NUMBER REF DWG 1
  - GROUND
  - [1] - INDICATES WIRE PREFIX 1EC11
  - [2] - INDICATES WIRE PREFIX XEC1-1-1

- NOTES
1. PANELBOARD ENCLOSURES SHALL BE GROUNDED BY MEANS OF EXTERNAL GROUND LUG, JUMPER FROM INTERNAL GROUND BUS TO EXTERNAL GROUND SHALL BE #10 AWG WIRE.
  2. - CABLES ENCLOSED INSIDE DASHED LINE ARE ASSOCIATED CLASS 1E, TRAIN AA.
  3. DIST PANEL XEC1-1-1 IS A COMMON PANEL, NO UTILIZED LOAD SHALL BE ADDED TO THIS PANEL.
  4. - CABLES ENCLOSED INSIDE DASHED LINE ARE NON-CLASS 1E, TRAIN C.

- REFERENCE DRAWINGS
1. E1-0024-04

DRAWING	E1-0024-03	REV	CP-4
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0024-03			
E1-0024-03A			
E1-0024-03B			

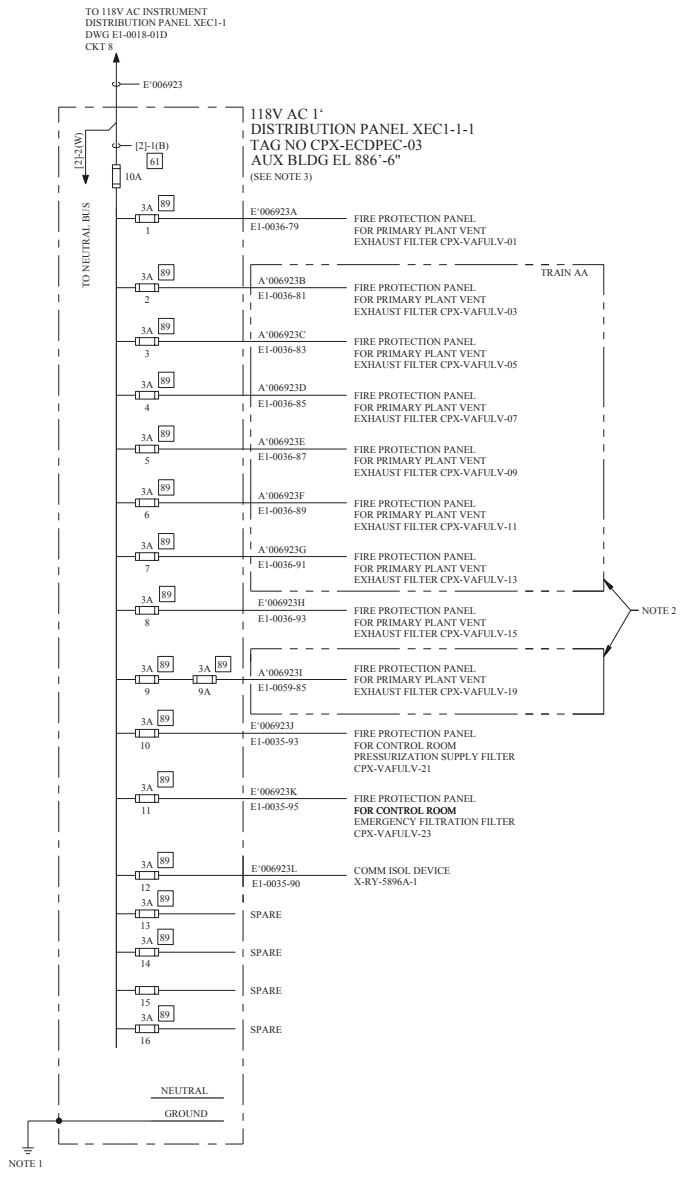
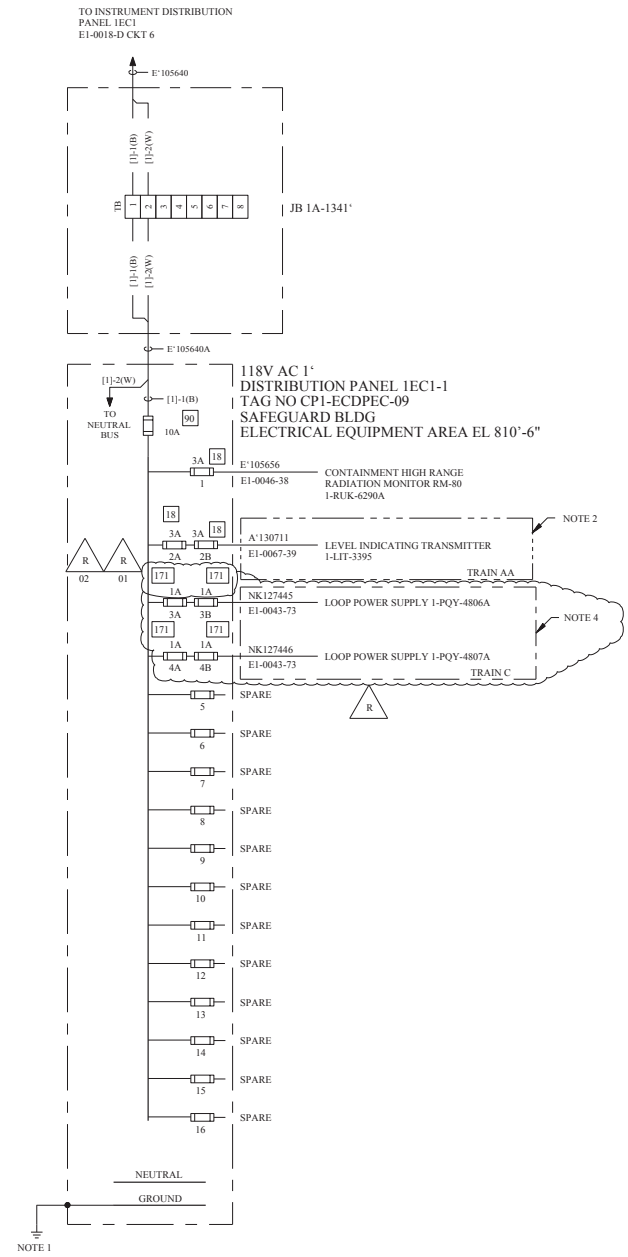
TRAIN A

**CLASS I**

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

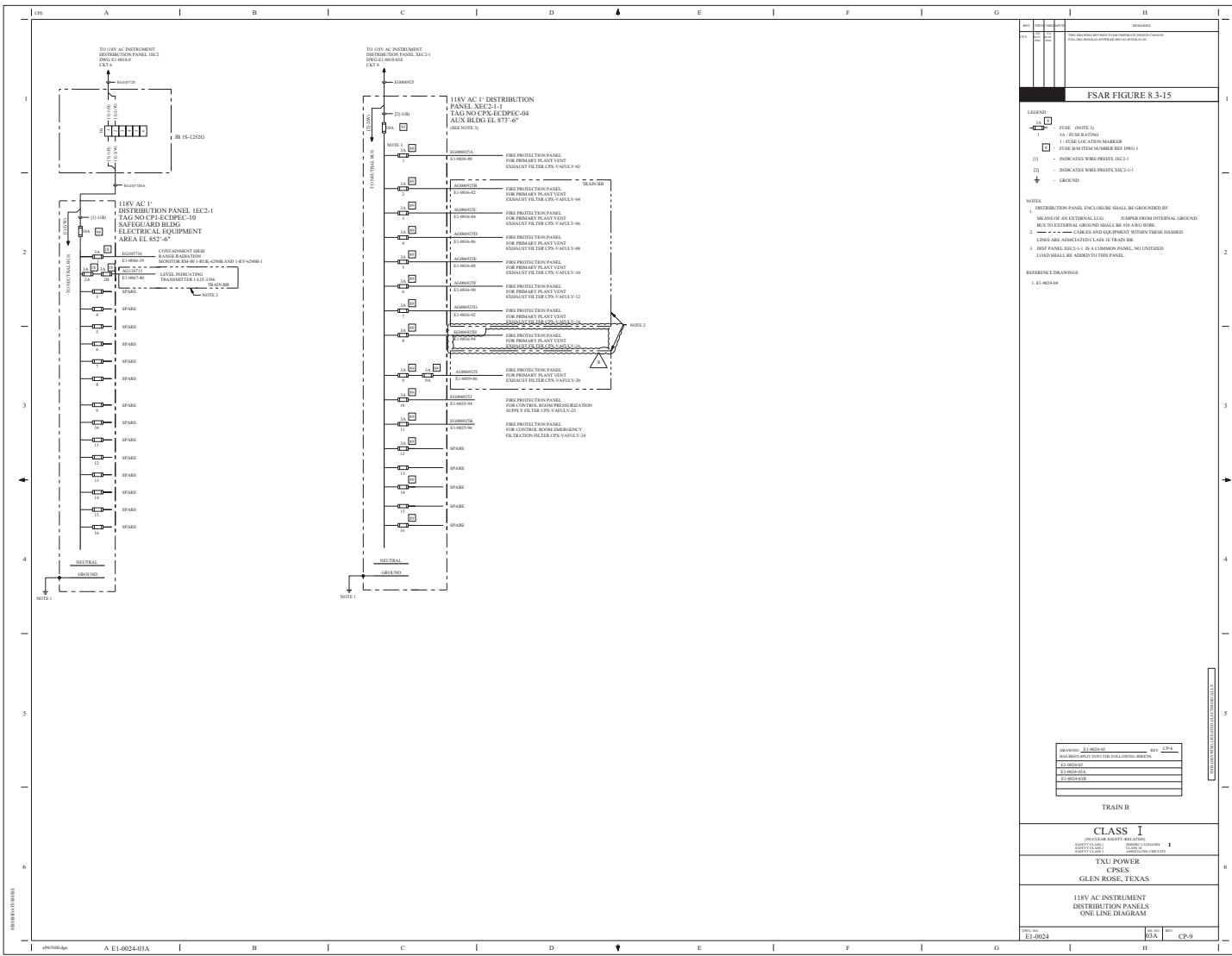
LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

118V AC  
COMMON AND UNIT 1  
INSTRUMENT DISTRIBUTION PANELS  
ONE LINE DIAGRAM



THIS DRAWING CREATED ELECTRONICALLY





REV	DATE	BY	CHKD	DESCRIPTION
1	01/20/24	EL	EL	ISSUED FOR CONSTRUCTION

**FSAR FIGURE 8.3-15**

**LEGEND**

- (with 1) FUSE (NOTE 2)
- (with 1A) WIRE ROUTING
- (with 1) FIRE LOCATION MARKER
- (with 1) FIRE ALARM NUMBER REF (NOTE 1)
- (1) - INDICATES WIRE PREFIX IEC2-1
- (2) - INDICATES WIRE PREFIX IEC2-1
- ⊕ - GROUND

**NOTES**

- DISTRIBUTION PANEL ENCLOSURE SHALL BE GROUNDED BY REASON OF INTERNAL LEAK. ISOLATE FROM EXTERNAL GROUND BY TO EXTERNAL GROUND SHALL BE 60 AWG WIRE.
- ALL CABLES AND CONDUITS WITH THESE CABLED LINES ARE ASSOCIATED CLASS II TRAIN B6.
- 118V PANEL IEC2-1 IS A CHARGE PANEL, NO UNLIMITED LOAD SHALL BE ADDED TO THIS PANEL.

**REFERENCE DRAWINGS**

- 1: E1-4024-06

DRAWING: E1-4024-06	REV: 001
DATE: 01/20/24	BY: EL
CHKD: EL	
EL	
EL	
EL	

TRAIN B

**CLASS 1**

CLASS 1 ELECTRICAL SYSTEM

EXEMPT FROM THE REQUIREMENTS OF 10 CFR 55.56

**TXU POWER**

CPSES

GLEN ROSE, TEXAS

118V AC INSTRUMENT DISTRIBUTION PANELS ONE-LINE DIAGRAM

DATE: 01/20/24

BY: EL

CHKD: CP-9

REV	DWN	CHKD	APPD	REMARKS
CP-8				THIS DRAWING REVISED TO INCORPORATE AL-CR-2016-00043-1 TO EDITORIALY RELOCATE NOTE 1 TO E2-0024-02.

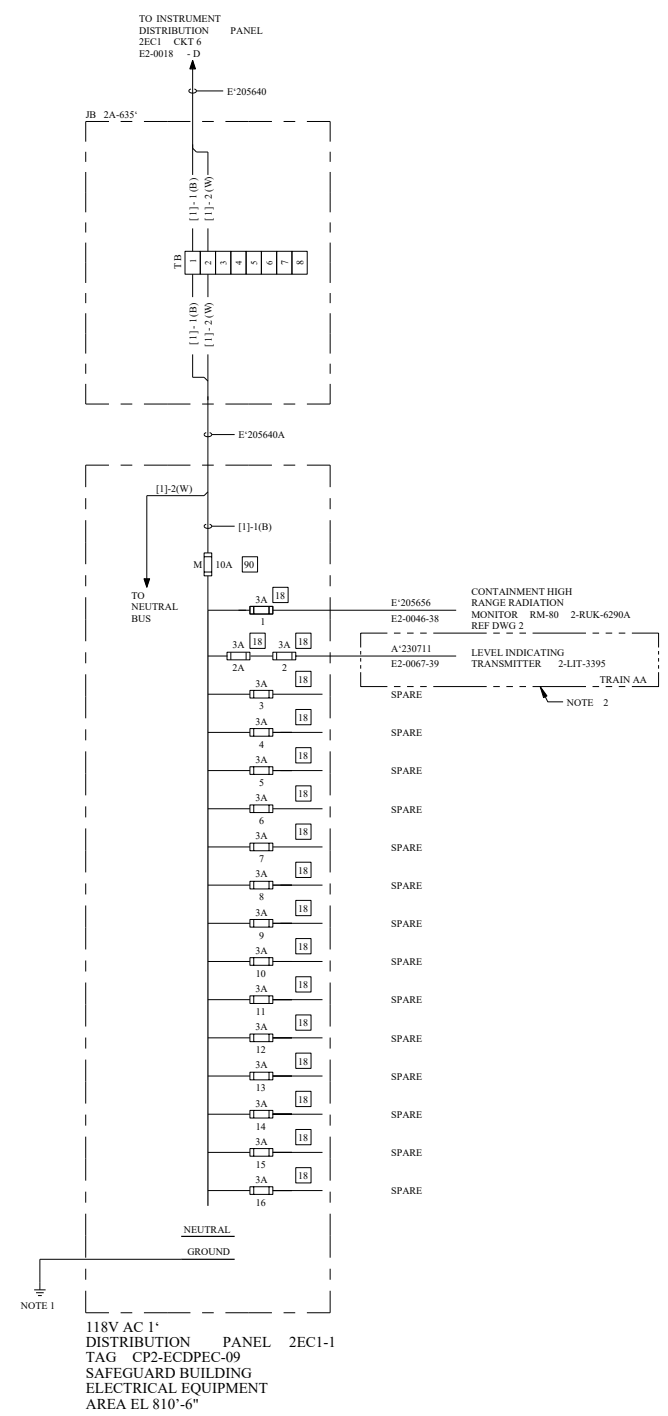
**FSAR FIGURE 8.3-15**

LEGEND:

	FUSE
3A	3A - FUSE RATING
2	2 - FUSE LOCATION MARKER
	FUSE BM ITEM NUMBER REF DWG 1
	GROUND
[1]	INDICATES WIRE PREFIX 2EC1-1

- NOTES:
- PANELBOARD ENCLOSURES SHALL BE GROUNDED BY MEANS OF EXTERNAL GROUND LUG. JUMPER FROM INTERNAL GROUND BUS TO EXTERNAL GROUND SHALL BE #10 AWG WIRE.
  - CABLES ENCLOSED INSIDE THESE DASHED LINES ARE ASSOCIATED CLASS 1E, TRAIN AA.
  - DELETED
  - ALL EQUIPMENT/DEVICES SHOWN ON THIS DWG ARE CLASS 1E AND CABLES ARE CLASS 1E, TRAIN A UNLESS OTHERWISE NOTED.
  - DELETED
  - EQUIPMENT ENCLOSED INSIDE THESE DASHED LINES ARE TRAIN C.

- REFERENCE DRAWINGS:
- E2-0024-04 (LATER)
  - 0360-4720



DRAWING	E2-0024-03	REV	CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E2-0024-03			
E2-0024-03A			
E2-0024-03B			

TRAIN A

**CLASS I**

(NUCLEAR SAFETY-RELATED)  
 SAFETY CLASS 1 SAFETY CLASS 2 SAFETY CLASS 3  
 SERVIC CATEGORY CLASS III ASSOCIATED CIRCUITS

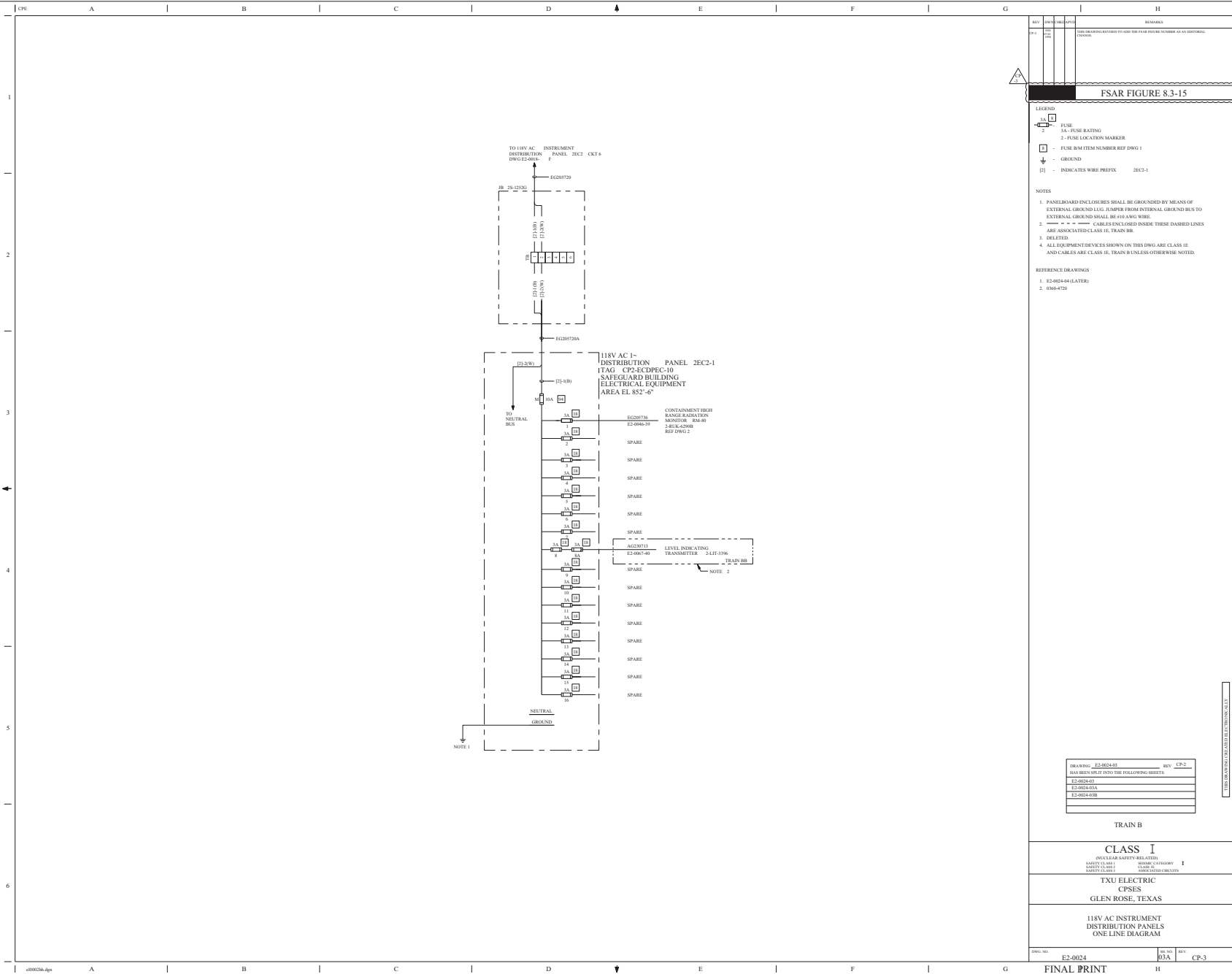
LUMINANT  
 CPNPP  
 GLEN ROSE, TEXAS

118V AC  
 INSTRUMENT FUSED DISTRIBUTION PANEL  
 ONE LINE DIAGRAM

DWG. NO.	E2-0024	SHEET NO.	03	REV.	CP-8
----------	---------	-----------	----	------	------

FINAL PRINT

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APPV	DESCRIPTION
1					THIS DRAWING INTENDED TO ADD THE FUSE RATING TO BE AN INSTRUMENT DRAWING.

**FSAR FIGURE 8.3-15**

- LEGEND**
- 1A-1R FUSE
  - 20 FUSE RATING
  - 24-225V FUSE LOCATION MARKER
  - 1 FUSE ITEM NUMBER REF DWG 1
  - ↓ GROUND
  - (2) INDICATES WIRE PREFIX 2EC2-1

- NOTES**
1. PANELBOARD ENCLOSURES SHALL BE GROUNDED BY MEANS OF EXTERNAL GROUNDING RIBBON FROM INTERNAL GROUND BUS TO EXTERNAL GROUND SHALL BE #10 AWG WIRE.
  2. --- CABLES ENCLOSED INSIDE THESE DASHED LINES ARE ASSOCIATED CLASS E, TRAIN B.
  3. DELETED.
  4. ALL EQUIPMENT DEVICES SHOWN ON THIS DWG ARE CLASS E AND CABLES ARE CLASS E, TRAIN B UNLESS OTHERWISE NOTED.

- REFERENCE DRAWINGS**
1. E2-0024-04 (LATER)
  2. 0306-070

DRAWING E2-0024-04	REV CP-2
HAS BEEN SPLT INTO THE FOLLOWING SHEETS:	
E2-0024-01	
E2-0024-03A	
E2-0024-03B	

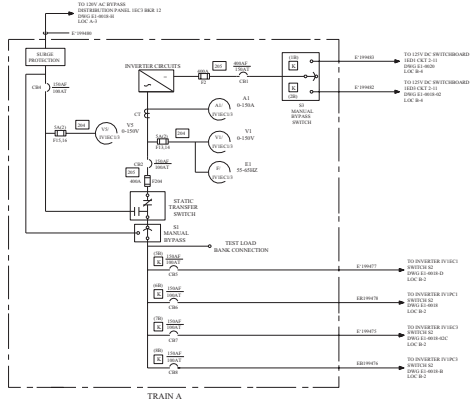
TRAIN B

**CLASS I**

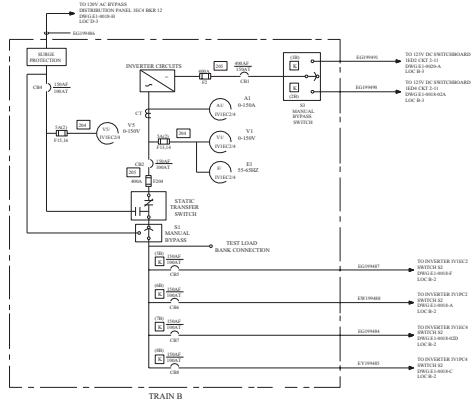
INCLUDE SAFETY RELATED  
 SAFETY CLASS 1 SHOWN CATEGORY I  
 SAFETY CLASS 2 SHOWN CATEGORY I  
 SAFETY CLASS 3 SHOWN CATEGORY I

**TXU ELECTRIC**  
 CPSES  
 GLEN ROSE, TEXAS

**118V AC INSTRUMENT DISTRIBUTION PANELS ONE LINE DIAGRAM**



INSTALLED SPARE STATIC  
INVERTER IV1EC1/3  
10KVA  
E1, E2, E3 - 118V AC  
E1E2, E1E3, E2E3 - 118V AC  
E1E2E3 - 118V AC  
NOTE 1



INSTALLED SPARE STATIC  
INVERTER IV1EC2/4  
10KVA  
E1, E2, E3 - 118V AC  
E1E2, E1E3, E2E3 - 118V AC  
E1E2E3 - 118V AC  
NOTE 1

FSAR FIGURE 8.3-15A

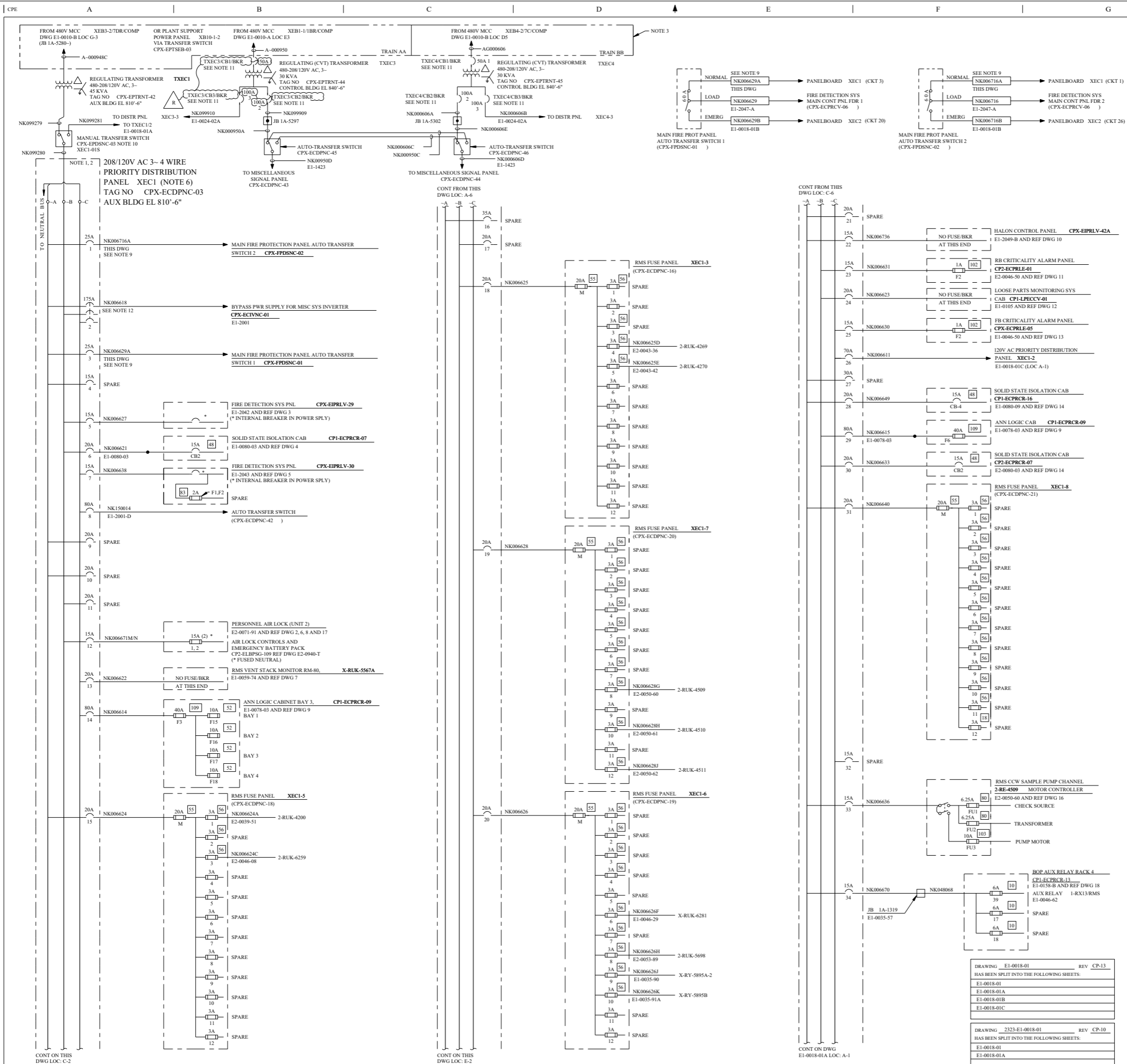
- LEGEND
- - - CIRCUIT BREAKER
  - AF - CIRCUIT BREAKER FRAME SIZE
  - AT - CIRCUIT BREAKER TOP RATING
  - 1 - CIRCUIT NUMBER
- FA - FUSE
  - FA - FUSE RATING
  - FA - FUSE LOCATION MARKER
  - FA - FUSE BA ITEM NUMBER REF DWG 6
- V - VOLTMETER
  - A - AMPMETER
  - F - FREQUENCY METER
- LS - LOCK KEY OVERLOCK
  - LS - LOCK NUMBER
- MS - MANUAL BYPASS SWITCH
  - MS - MARK BEFORE BREAK, 1 POSITION
  - MS - MANUAL BYPASS SWITCH
  - MS - BREAK BEFORE MARK, 1 POSITION

- NOTES
1. ALL EQUIPMENT ON THIS DRAWING IS CLASS 1E TRAIN A OR TRAIN B AS NOTED.
  2. PROGRAMMING AND PROGRAM TESTS FOR OPERATION OF INSTALLED SPARE INVERTER ARE STATED IN DWD 8140 (118V AC INVERTER FOR POWER BYPASS SYSTEM).
- REFERENCE DRAWINGS
1. 10-INSTR-101-1
  2. 10-INSTR-101-2
  3. 10-INSTR-101-3
  4. 10-INSTR-101-4
  5. 10-INSTR-101-5
  6. 10-INSTR-101-6

CLASS 1  
(OVERALL SAFETY RELATED)  
SAFETY CLASS: 1      HAZARD CATEGORY: 1  
SAFETY ELEMENT: 1      CLASS: 1  
SAFETY ELEMENT: 1      CLASS: 1

TXU ELECTRIC  
CPSES  
GLEN ROSE, TEXAS

118V AC  
INSTRUMENT BUS DISTRIBUTION  
ONE LINE DIAGRAM



REV: 01, DWG: CP-13, DATE: 01/13/98

REMARKS: THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2016-00096-01-00 PER SK.0114-16-00096-01-00.

**FSAR FIGURE 8.3-15A**

CLASS I (NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1 SEISMIC CATEGORY I

SAFETY CLASS 2 CLASS II ASSOCIATED CIRCUITS

**LUMINANT CPNPP**

GLEN ROSE, TEXAS

208/120V AC ONE LINE DIAGRAM

DWG NO: E1-0018-01, SHE NO: 01, REV: CP-15

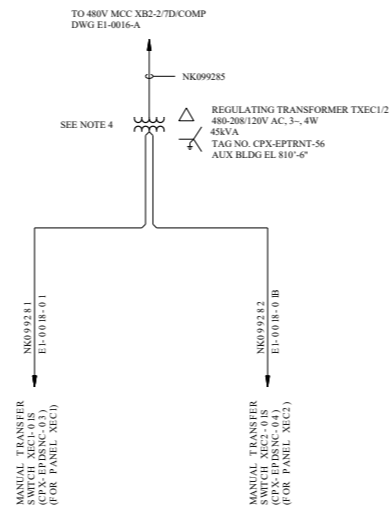
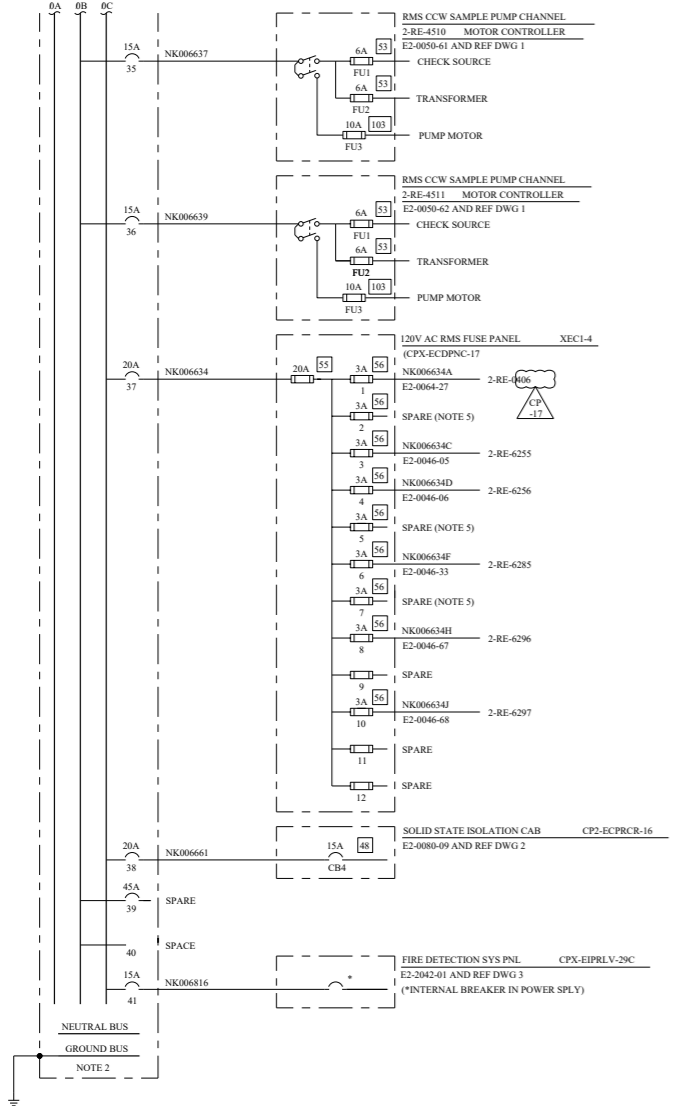
FINAL PRINT

REF: CKD CP 34 3/13/98

THIS DRAWING CREATED ELECTRONICALLY

208/120V AC DISTRIBUTION PANEL  
CONT FROM DWG E1-0018-01 LOC E6

XEC1



REV	DWN	CHK	APP	DATE	REMARKS
CP-17					THIS DRAWING REVISED TO INCORPORATE AN EDITORIAL CHANGE PER AJ-TR-2014-007066-1.

FSAR FIGURE 8.3-15A

- LEGEND:
- CIRCUIT BREAKER 1-POLE
  - 15A - BREAKER RATING
  - 1 - CIRCUIT NUMBER
  - FUSE
  - 3A - FUSE RATING
  - 1 - FUSE LOCATION MARKER
  - 56 - FUSE B/M ITEM NUMBER REF DWG 4
  - DISCONNECT SWITCH
  - INDICATES SPLICE (SPLICE PER 2323-ES-100)

- NOTES:
- DISTRIBUTION PANEL IS SEISMIC CATEGORY 1, NON-CLASS I.E.
  - EQUIPMENT GROUND BUS SHALL BE INSTALLED IN THE FIELD (B/M E1-1800-367 ITEM X-35A).
  - ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE THERMAL MAGNETIC.
  - THIS TRANSFORMER SHALL NOT BE CONNECTED TO BOTH PANELS XEC1 AND XEC2 SIMULTANEOUSLY.
  - THE FOLLOWING CABLES ARE SPARED IN RMS FUSE PANEL AS SHOWN BELOW:
- | CABLE No. | PANEL No. |
|-----------|-----------|
| SP006634B | XEC1-4    |
| SP006634E | XEC1-4    |
| SP006634G | XEC1-4    |

- REFERENCE DRAWINGS:
- 0353-2820
  - E-302775-01 SH 3
  - 52105E2 SH 1, 771575 SH 1
  - E1-0024-04

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			

DRAWING	E1-0018-01	REV	CP-13
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0018-01			
E1-0018-01A			
E1-0018-01B			
E1-0018-01C			

DRAWING	2323-E1-0018-01	REV	CP-10
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0018-01			
E1-0018-01A			

NON-SAFETY

LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

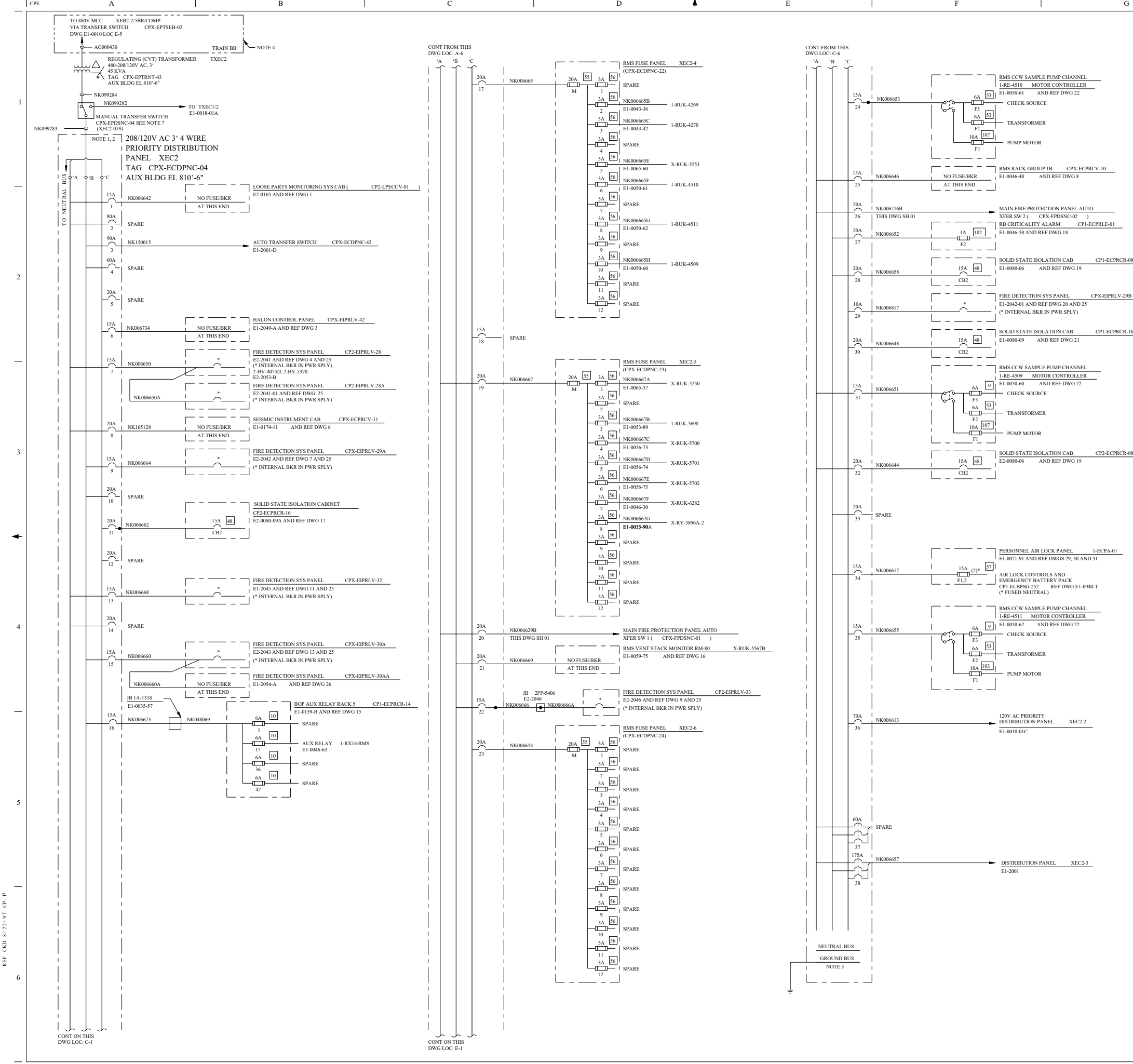
208/120V AC  
ONE LINE DIAGRAM

DWG. NO.	E1-0018	SH. NO.	01A	REV.	CP-17
----------	---------	---------	-----	------	-------

FINAL PRINT

REF CKD 12/4/97 CP-13

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APPD	REMARKS
CP-32	01/18/2016	01/18/2016	01/18/2016	01/18/2016	THIS DRAWING REVISED TO INCORPORATE ALCR-2016-0005-1 TO EDITORIALY CORRECT REFERENCE DRAWING LIST.

**FSAR FIGURE 8.3-15A**

**LEGEND:**

- CIRCUIT BREAKER 1-POLE
- 15A - CIRCUIT BREAKER RATING
- 1 - CIRCUIT NUMBER
- CIRCUIT BREAKER 3-POLE
- FUSE
- 6A - FUSE RATING
- 1 - FUSE LOCATION MARKER
- FUSE B/M ITEM NUMBER REF DWG 28
- DISCONNECT SWITCH
- INDICATES SPLICE PER SPEC 2523-ES-100

**NOTES:**

- INCOMING LUGS SHALL BE MOUNTED AT THE BOTTOM OF PANEL.
- DISTRIBUTION PANEL IS SEISMIC CATEGORY 1, NON-CLASS 1E.
- EQUIPMENT GROUND BUS SHALL BE INSTALLED IN THE FIELD (B/M E1-1800-367 ITEM X-35A).
- ALL EQUIPMENT DEVICES AND CABLES INSIDE THESE DASHED LINES ARE CLASS 1E, TRAIN BB. ALL OTHER EQUIPMENT DEVICES AND CABLES ARE NON-SAFETY RELATED.
- ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE THERMAL MAGNETIC.
- DELETED
- TRANSFER SWITCH CPX-EPDNC-04 SHALL BE ALIGNED TO TRANSFORMER TXEC2 ONLY DURING MAINTENANCE OF TRANSFORMER TXEC2 UNDER PROCEDURAL CONTROL. AT NO TIME SHALL BOTH TRANSFER SWITCHES CPX-EPDNC-03 AND CPX-EPDNC-04 BE ALIGNED TO TRANSFORMER TXEC1/2.

**REFERENCE DRAWINGS:**

- 1005924I LPMS INTERCONN DETAILS-FRAMES 1 AND 2
- DELETED
- E-81388-15-C CONTROL PANEL INTERNAL WIRING UNIT 1 AND 2 CABLE SPREADING RM
- VE1-771565 SH 01 LOCAL CONTROL PANEL CP1-EIPRLV-28
- DELETED
- 503135 SH 1 ASSEMBLY CABINET OUTLINE
- 771568 SH 01 LOCAL CONT PANEL SCHEM AND INTERCONN DIAGRAM
- 0353-0580 SH 1 CUSTOMER CONNECTION DIAGRAM CONTROL ROOM EQUIP RACK 2
- 771564 SH 01 LOCAL CONTROL PANEL CP2-EIPRLV-33
- DELETED
- 771573 SH 01 MODEL 8094 LOCAL CONTROL PANEL CPX-EIPRLV-32 SCHEMATIC AND INTERCONN DIAGRAM
- DELETED
- 771570 SH 01 MODEL 8091 LOCAL CONTROL PANEL CPX-EIPRLV-30A
- DELETED
- E-5592 SH 01 BOP AUX RELAY RK 5
- 0353-1820 SH 1 CONNECTION DIAGRAM GAS SAMPLER WITH PUMP
- E-302775-01 SH 03 SOLID STATE ISOL CAB WIRING
- 0353-1553 SH 01 CONTAIN CRIT ALARM SCHEM
- E-302714-01 SH 04 WIRING DIAGRAM S/S CAB
- 52105E1 SH 01 WIRING DIAGRAM AND INTERCONN A833 SYS
- E-302775-01 SH 04 SOLID STATE ISOL CAB WIRING
- 0353-2820 CONN DIAG LIQ MON. 5" PB WITH PUMP
- DELETED
- 803650 SH 1, 803647 WIRING DIAGRAM PWR DISTR PNL POWER DIST PANEL ASSY
- 771575 SH 1 POWER SUPPLY
- VE1-54522E SH 01 FIRE PROTECTION SYSTEM SCHEMATIC AND INTERCONNECTION
- 53920E-01 FIRE PROTECTION SYSTEM SCHEMATIC AND INTERCONNECTION DIAGRAM SINGLE ZONE DETECTION AND DAMPER CONTROL
- E1-0024-04 DEVICE LEVEL ONE LINE DIAGRAM FUSE-BREAKER BILL OF MATERIAL
- 74-2427-0120 SCHEMATIC UNIT 1 PERSONNEL AIR LOCK
- 74-2427-0130 WIRING DIAG UNIT 1 PERSONNEL AIR LOCK
- 74-2427-0131 WIRING DIAG UNIT 1 PERSONNEL AIR LOCK

DRAWING	E1-0018-01	REV	CP-13
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0018-01			
E1-0018-01A			
E1-0018-01B			
E1-0018-01C			

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

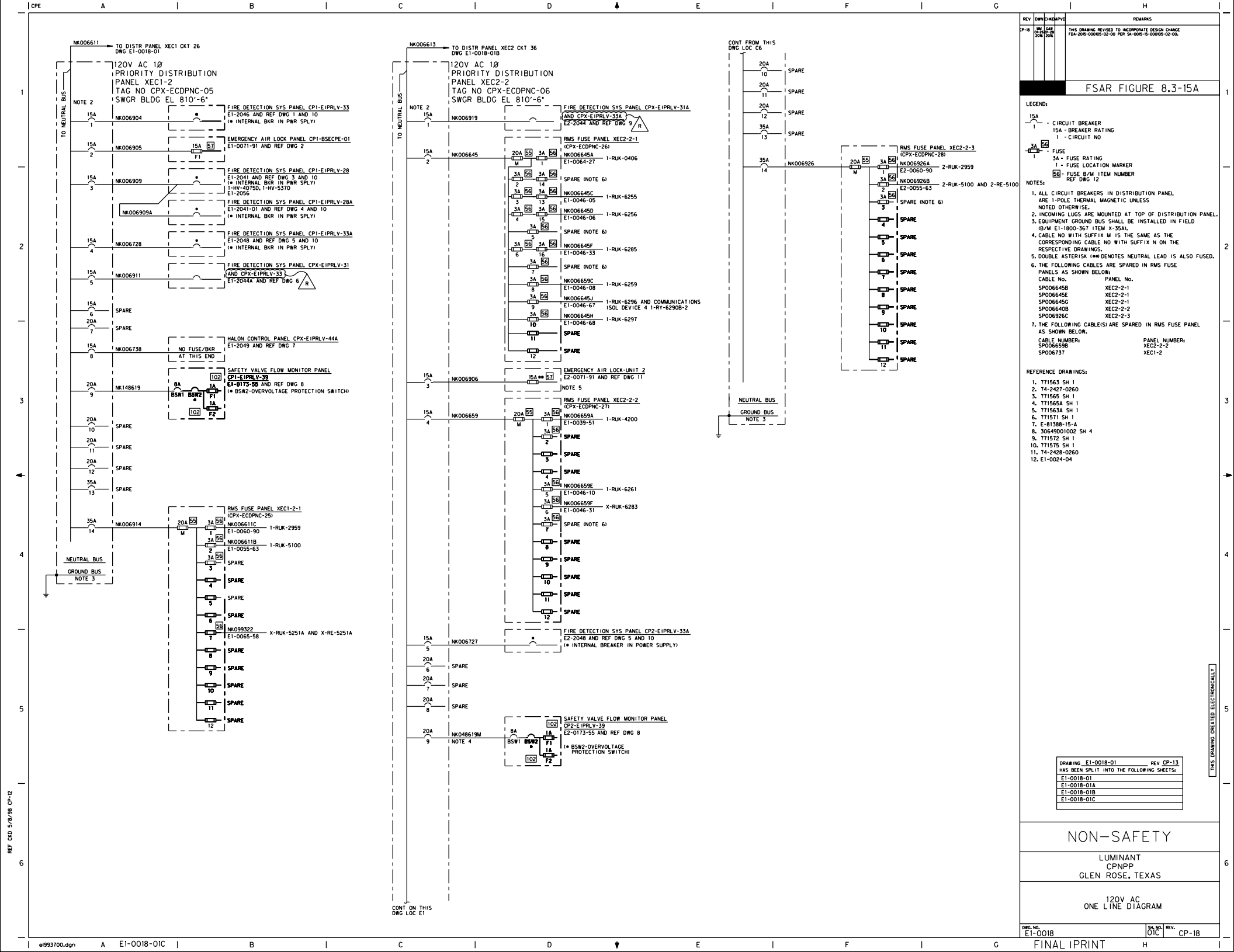
**LUMINANT  
CPNPP  
GLEN ROSE, TEXAS**

**208/120V AC  
ONE LINE DIAGRAM**

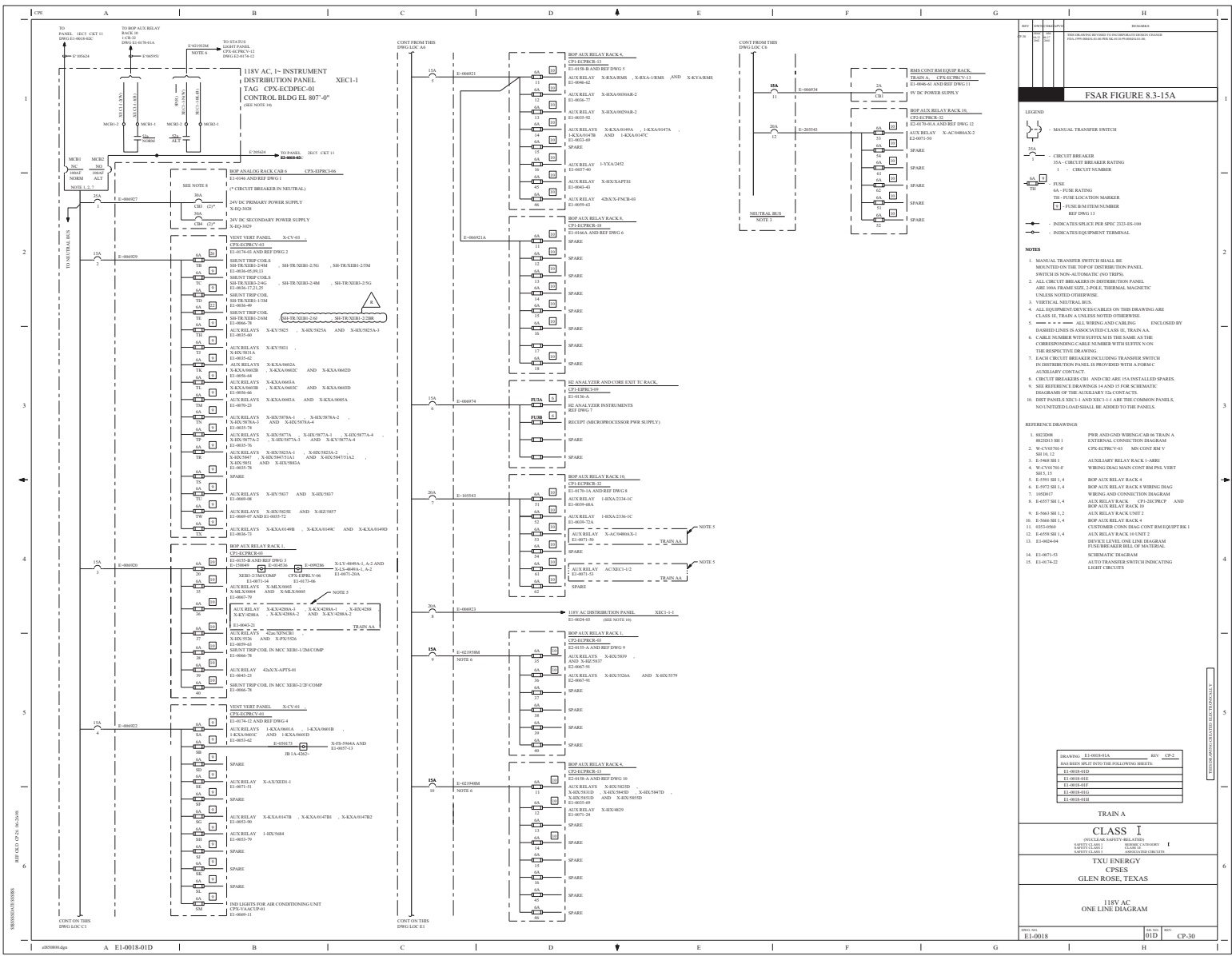
DWG. NO.	SH. NO.	REV.
E1-0018	01B	CP-32

THIS DRAWING CREATED ELECTRONICALLY

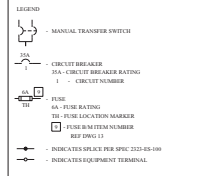
REF. CDD 8.22.97 CP-17







FSAR FIGURE 8.3-15A



- NOTES**
- MANUAL TRANSFER SWITCH SHALL BE MOUNTED ON THE TOP OF DISTRIBUTION PANEL SWITCH IS NON-AUTOMATIC CONTROL.
  - ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 30A FRAME SIZE, 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
  - VERTICAL NEUTRAL BUS.
  - ALL EQUIPMENT OVERCURRENTS ON THIS DRAWING ARE CLASS II, UNLESS NOTED OTHERWISE.
  - WIRE # \* \* \* = ALL WIRING AND CABLES ENCLOSED BY DASHED LINES IS ASSOCIATED CLASS II, TRAIN A.
  - CABLE NUMBER WITH LETTERS IN THE NAME AT THE CORRESPONDING CABLE NUMBER WITH LETTER N ON THE RESPECTIVE DRAWING.
  - EACH CIRCUIT BREAKER IN DISTRIBUTION TRANSFER SWITCH IN DISTRIBUTION PANEL IS PROVIDED WITH A BREAK-AUXILIARY CONTACT.
  - CIRCUIT BREAKERS ON AUXILIARY ARE INSTALLED SPARES.
  - SEE REFERENCE DRAWINGS A AND 15 FOR SCHEMATIC DIAGRAMS OF THE AUXILIARY 150 CONTROL PANELS.
  - DIST PANELS MECI-1 AND MECI-1-A ARE THE COMMON PANELS. NO UNTESTED LOAD SHALL BE ADDED TO THE PANELS.

- REFERENCE DRAWINGS**
- 8-0200 SHEET 01 PWR AND COND WIRING CAB IN TRAIN A EXTERNAL CONNECTION DIAGRAM
  - 8-0200 SHEET 02 CPX-ECPCB-01 MIN CONT RM V
  - 8-0400 SHEET 01 AUXILIARY RELAY RACK 1-SHEET 01
  - 8-0200 SHEET 02 WIRING DIAG MAIN CONT RM PWR VERT SHEET 1
  - 8-0200 SHEET 04 BOP AUX RELAY RACK 4
  - 8-0200 SHEET 05 BOP AUX RELAY RACK 5 WIRING DIAG
  - 8-0200 SHEET 06 WIRING AND CONNECTION DIAGRAM
  - 8-0400 SHEET 04 AUX RELAY RACK CPX-ECPCB-01 AND BOP RELAY RACK
  - 8-0400 SHEET 02 AUX RELAY RACK UNIT 2
  - 8-0400 SHEET 04 BOP AUX RELAY RACK 4
  - 8-0400 SHEET 06 CUSTOMER CONNECTION DIAGRAM EQUIPMENT 1
  - 8-0400 SHEET 04 AUX RELAY RACK UNIT 2
  - 8-0400 SHEET 04 POWER LINES ONE LINE DIAGRAM
  - 8-0400 SHEET 04 SCHEMATIC DIAGRAM
  - 8-0400 SHEET 02 AUTO TRANSFER SWITCH INDICATING CIRCUIT CIRCUITS

DRAWING	REVISION	REV	DATE
E1-00018	01		01/01/00
E1-00018	02		01/01/00
E1-00018	03		01/01/00
E1-00018	04		01/01/00
E1-00018	05		01/01/00
E1-00018	06		01/01/00

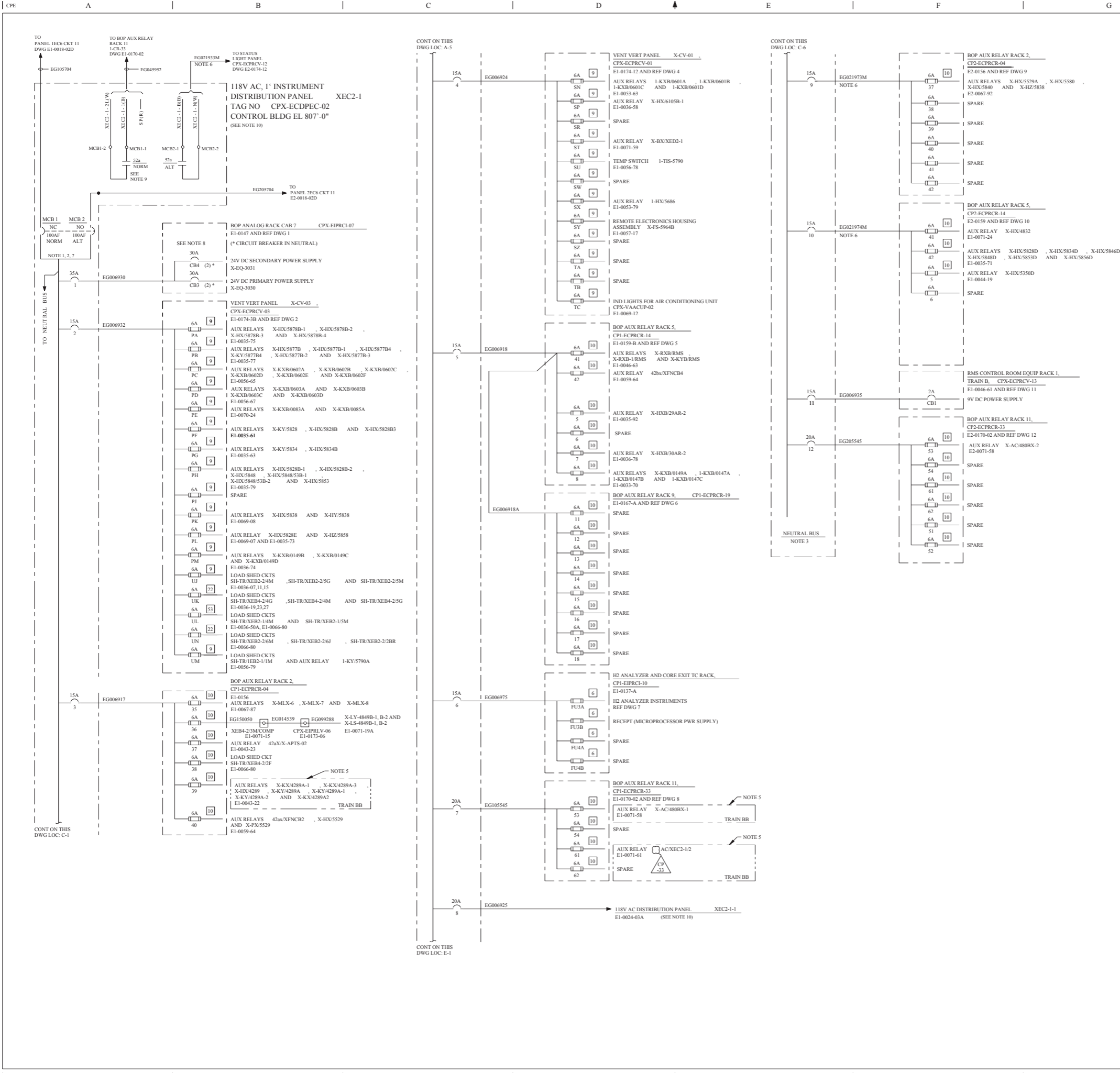
**TRAIN A**

**CLASS I**

118V AC ONE LINE DIAGRAM

TXU ENERGY  
CPSES  
GLEN ROSE, TEXAS

118V AC  
ONE LINE DIAGRAM



REV	DATE	BY	CHK	APPV	REMARKS
CP-33	04/04/2011				THIS DRAWING REVISION TO INCORPORATE AN EDITORIAL CHANGE PER AUCR-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
- REF DWG 13
- INDICATES SPLICE PER SPEC 2323-ES-100
- INDICATES EQUIPMENT TERMINAL

**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 UNUTILIZED LOAD SHALL BE ADDED TO THE PANELS.

**REFERENCE DRAWINGS**

1. 8823D09 8823D14 SH 1	PWR AND GND WIRING/CAB 07 TR B EXTERNAL CONNECTION DIAGRAM
2. W-CV03701-F SH 11, 12	CPX-EPCRCV-03 WD MN CONT RM VV
3. DELETED	
4. W-CV01701-F SH 7, 14	WIRING DIAG MAIN CONT RM PNL VERT
5. E-5592-1, -4	BOP AUX RELAY RK 5 WIRING DIAG
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	I-SSII-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 IIE  
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\$\$\$\$\$

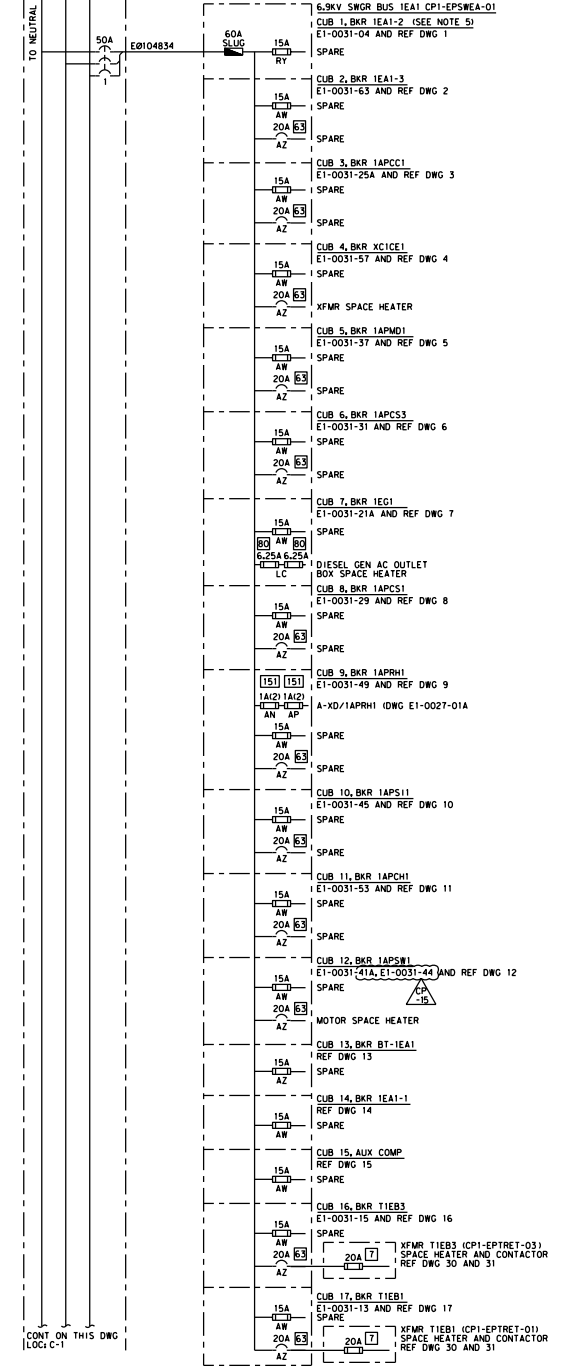
THIS DRAWING CREATED ELECTRONICALLY

TO 480V MCC 1EB3-2/2BL/COMP  
DWG E1-0009

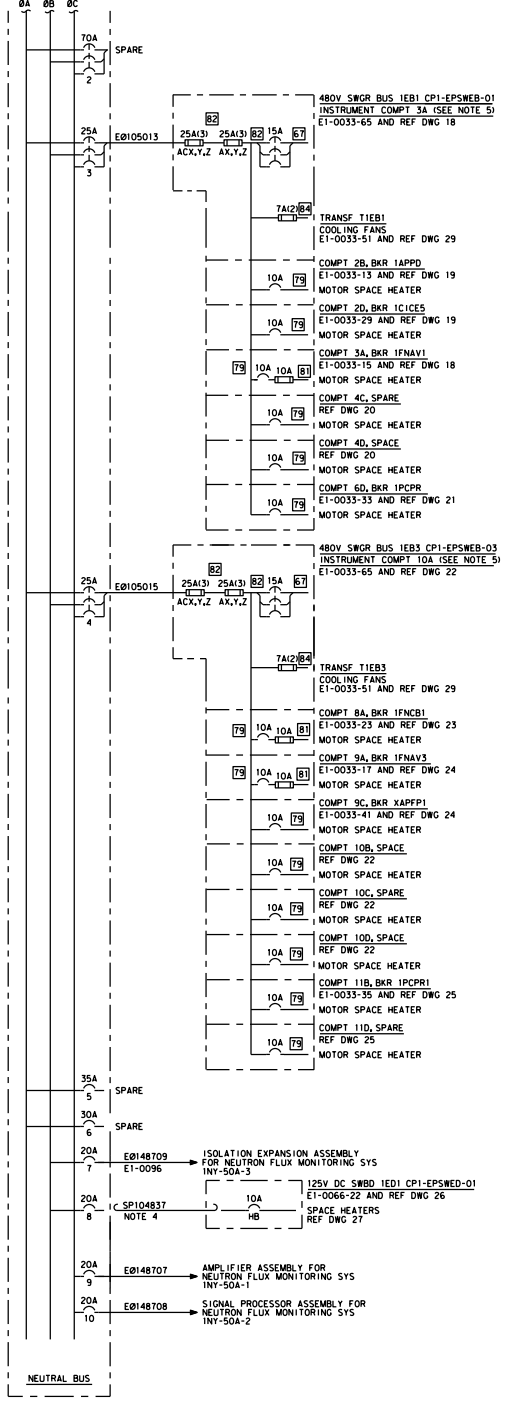


E0104832

NOTE 1  
208/120V AC, 3Ø, 4-WIRE  
DISTRIBUTION PANEL TIEC3-2  
TAG NO CP1-EPTRET-05  
ELEC EQUIP AREA EL 810'-6"

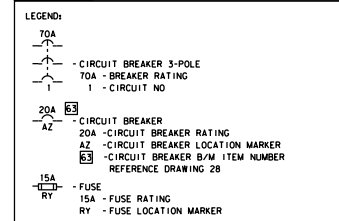


CONT FROM THIS DWG  
LOC: A-6



REV	DATE	BY	CHK	APP	REMARKS
01	02/19/19	CP-15			THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGE PER 15-00000-01

FSAR FIGURE 8.3-15A



- 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 E0104837 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 THE 6.9 KV SWITCHGEAR AND THE 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	REV	CP-2
E1-0018-01A		
E1-0018-01D		
E1-0018-01E		
E1-0018-01F		
E1-0018-01G		
E1-0018-01H		

TRAIN A

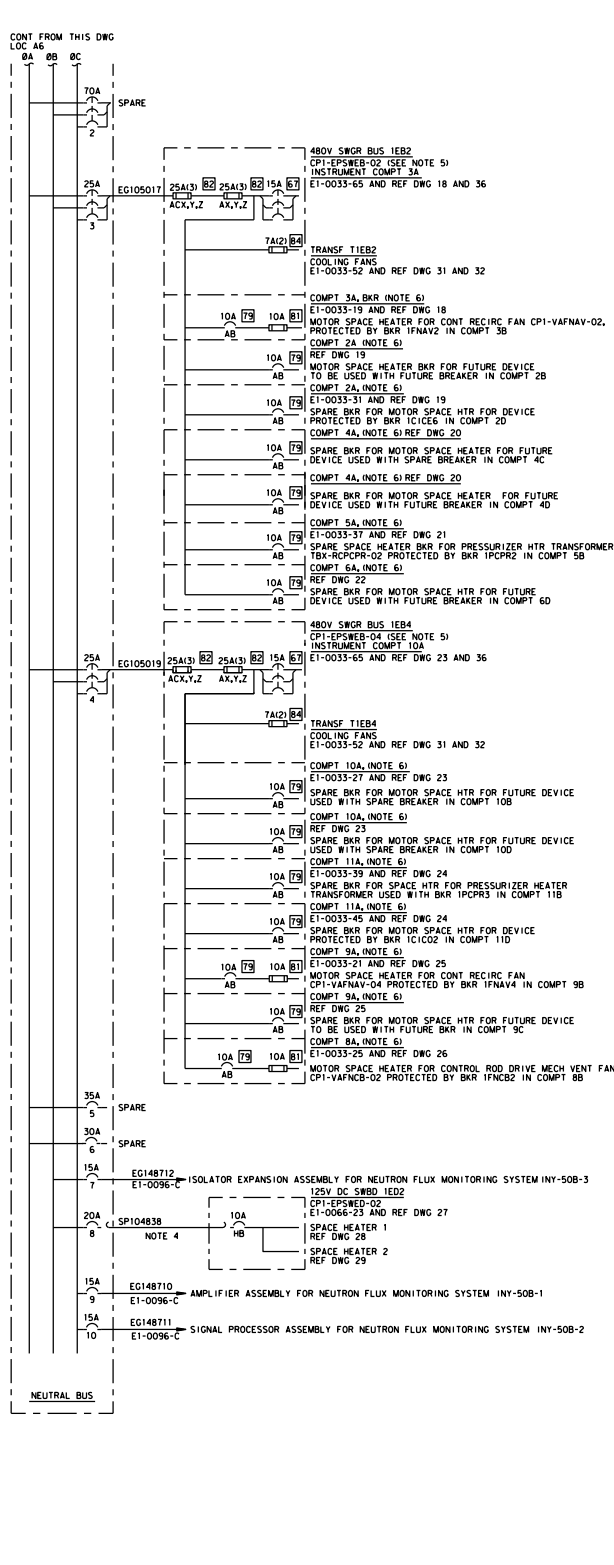
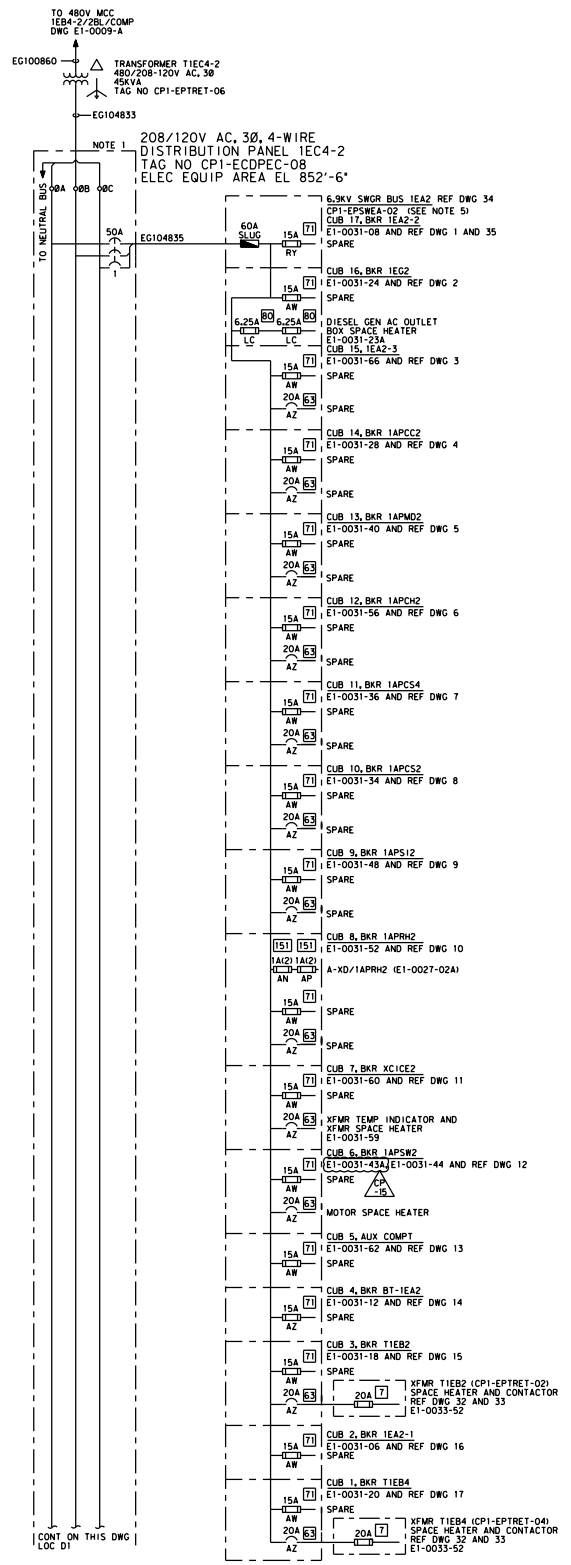
CLASS I  
(NUCLEAR SAFETY-RELATED)  
SAFETY CLASS 1  
CLASS I CATEGORY 1  
ASSOCIATED CIRCUITS

LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

208/120V AC  
ONE LINE DIAGRAM

THIS DRAWING CREATED ELECTRONICALLY

REF CHG 6/27/19 CP-13



REV: 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

THIS DRAWING REVISIONS TO INCORPORATE AN EDITORIAL CHANGE PER  
SI-CR-2021-00083-L

REVISIONS

FSAR FIGURE 8.3-15A

LEGEND:

50A  
CIRCUIT BREAKER 3-POLE  
50A - BREAKER RATING  
1 - CIRCUIT NO

15A (71)  
RY  
FUSE  
15A - FUSE RATING  
RY - FUSE LOCATION MARKER  
(71) - FUSE B/M ITEM NUMBER REF DWG 30

NOTES:

1. INCOMING LUGS SHALL BE MOUNTED AT THE TOP OF PANEL.
2. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE TWO POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE. ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DWG ARE CLASS 1E TRAIN B UNLESS NOTED OTHERWISE.
3. CABLE NUMBER EG104838 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 SP104838.
4. SPACE HEATERS IN THE 6.9 KV SWITCHGEAR AND IN THE 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 INSTALLED.
5. MOTOR SPACE HEATER BREAKERS, LOCATED IN COMPARTMENT A, ARE WIRED TO TERMINALS IN THE LOWER COMPARTMENT AS INDICATED ON THE REFERENCED SCHEMATIC DIAGRAM.

REFERENCE DRAWINGS:

1. 33-51261-ES77
2. 33-51261-ES76
3. 33-51261-0675
4. 33-51261-ES74
5. 33-51261-ES73
6. 33-51261-ES72
7. 33-51261-ES91
8. 33-51261-ES90
9. 33-51261-ES89
10. 33-51261-ES88
11. 33-51261-ES87
12. 33-51261-ES86
13. 33-51261-ES85
14. 33-51261-0584
15. 33-51261-ES83
16. 33-51261-ES82
17. 33-51261-ES81
18. 1442F76
19. 1442F75
20. 1442F74
21. 1442F78
22. 1442F79
23. 1442F83 SH A
24. 1442F84
25. 1442F82
26. 1442F81
27. 182C79225 SH 11
28. 182C79225 SH 11A
29. 182C79225 SH 11B
30. E1-0024-04
31. 1983C98
32. 0693D31
33. 1442F60
34. 33-51261-ES78, A
35. E1-0004-A
36. E1-0005-A

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  
CLASS 1 CATEGORY 1  
SAFETY-RELATED CIRCUITS

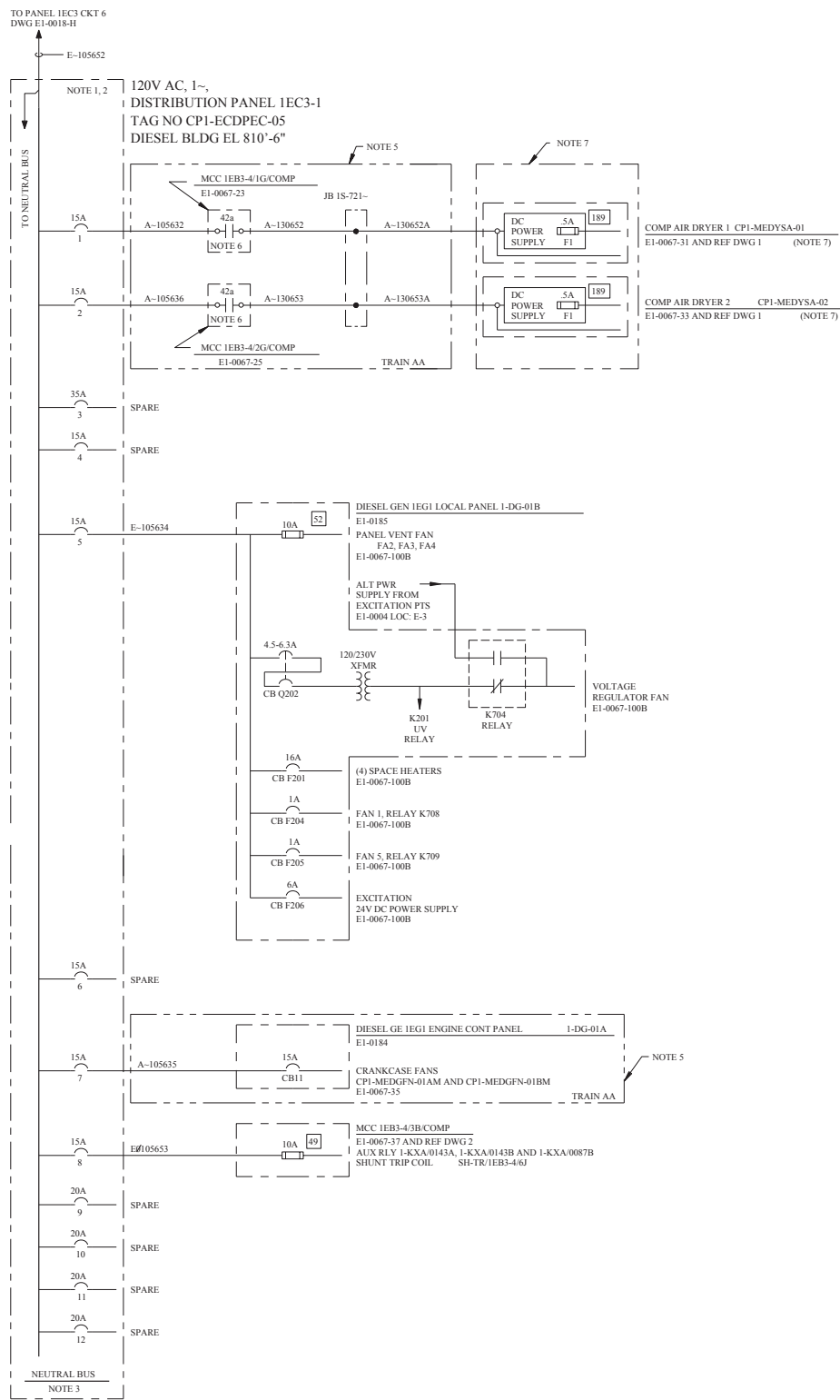
LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

208/120V AC  
ONE LINE DIAGRAM

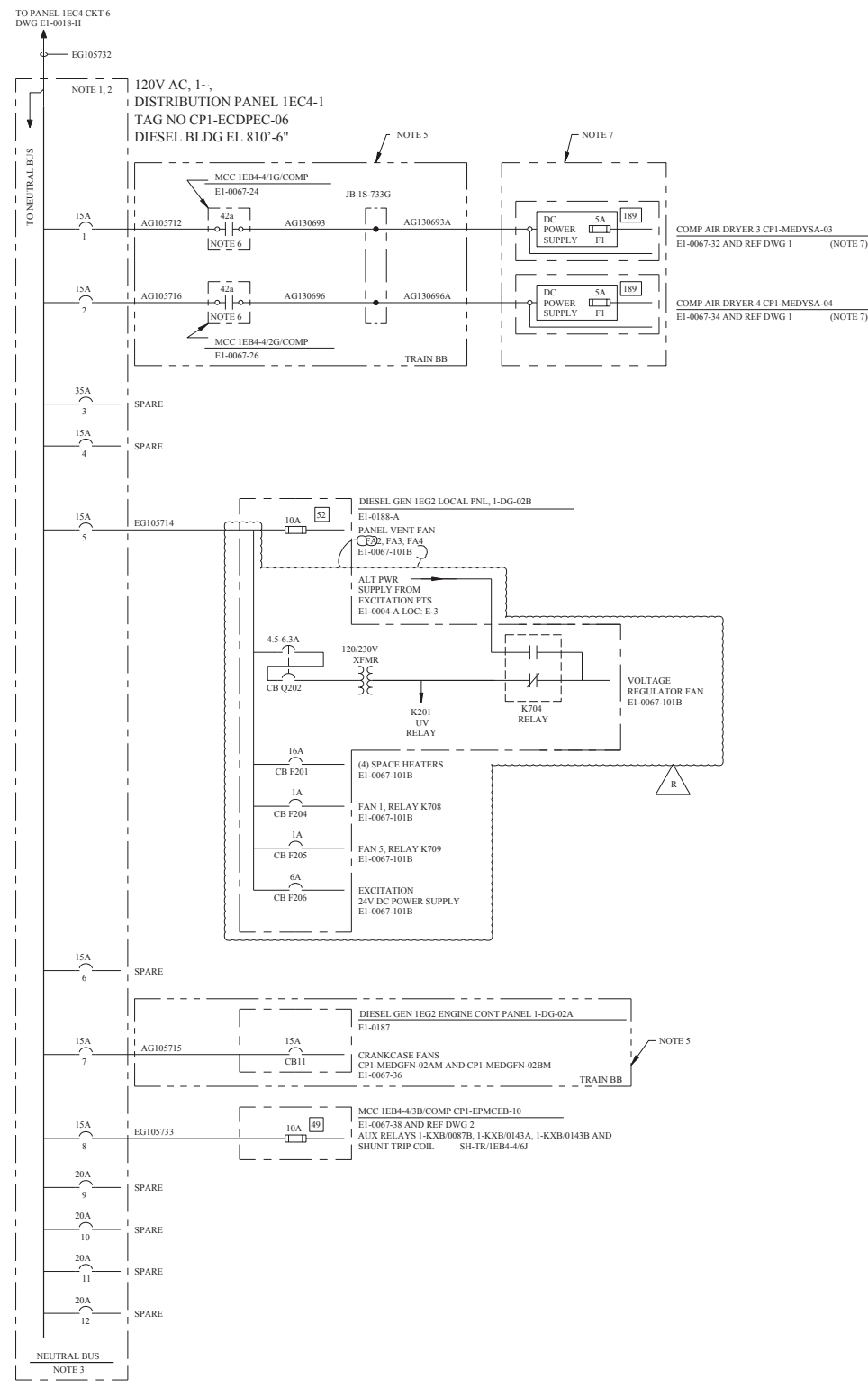
DWG NO: E1-0018  
REV: 01G  
SHEET NO: CP-15  
FINAL IPRINT

REF: CP-10 10/27/97

THIS DRAWING CREATED ELECTRONICALLY



TRAIN A



TRAIN B

REV	DWN	CHKD	APVD	REMARKS
CP-16	CA	DE		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2001-001255-06-00 PER 96-0001-01-001255-06-00

FSAR FIGURE 8.3-15A

- LEGEND
- CIRCUIT BREAKER
  - 15A - CIRCUIT BREAKER RATING
  - 1 - CIRCUIT NO
  - FUSE
  - 10A - FUSE RATING
  - 52 - FUSE B/M ITEM NUMBER REF DWG 3
  - INDICATES SPLICE PER 2323-ES-100.
  - INDICATES CONNECTION TO TERMINAL.

- NOTES
1. INCOMING LUGS SHALL BE MOUNTED AT THE TOP OF DISTRIBUTION PANEL.
  2. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
  3. VERTICAL NEUTRAL BUS.
  4. ALL EQUIPMENT/DEVICES/CABLES ON THIS DRAWING ARE CLASS 1E TRAIN A OR B AS NOTED.
  5. --- ALL WIRING AND CABLING ENCLOSED BY DASHED LINES IS ASSOCIATED CLASS 1E TRAIN AA OR BB AS NOTED.
  6. ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOADS IS PROVIDED BY OPENING THE CLASS 1E CONTACT ON SIAS.
  7. --- ALL EQUIPMENT/DEVICES INSIDE THESE DASHED LINES OR FED BY THESE CIRCUITS ARE NON-CLASS 1E.

- REFERENCE DRAWINGS
1. 104438-D2 SH 1 PNEUMATIC PRODUCTS CORP
  2. 212B7150 SH 15B-2
  3. E1-0024-04

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			

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

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

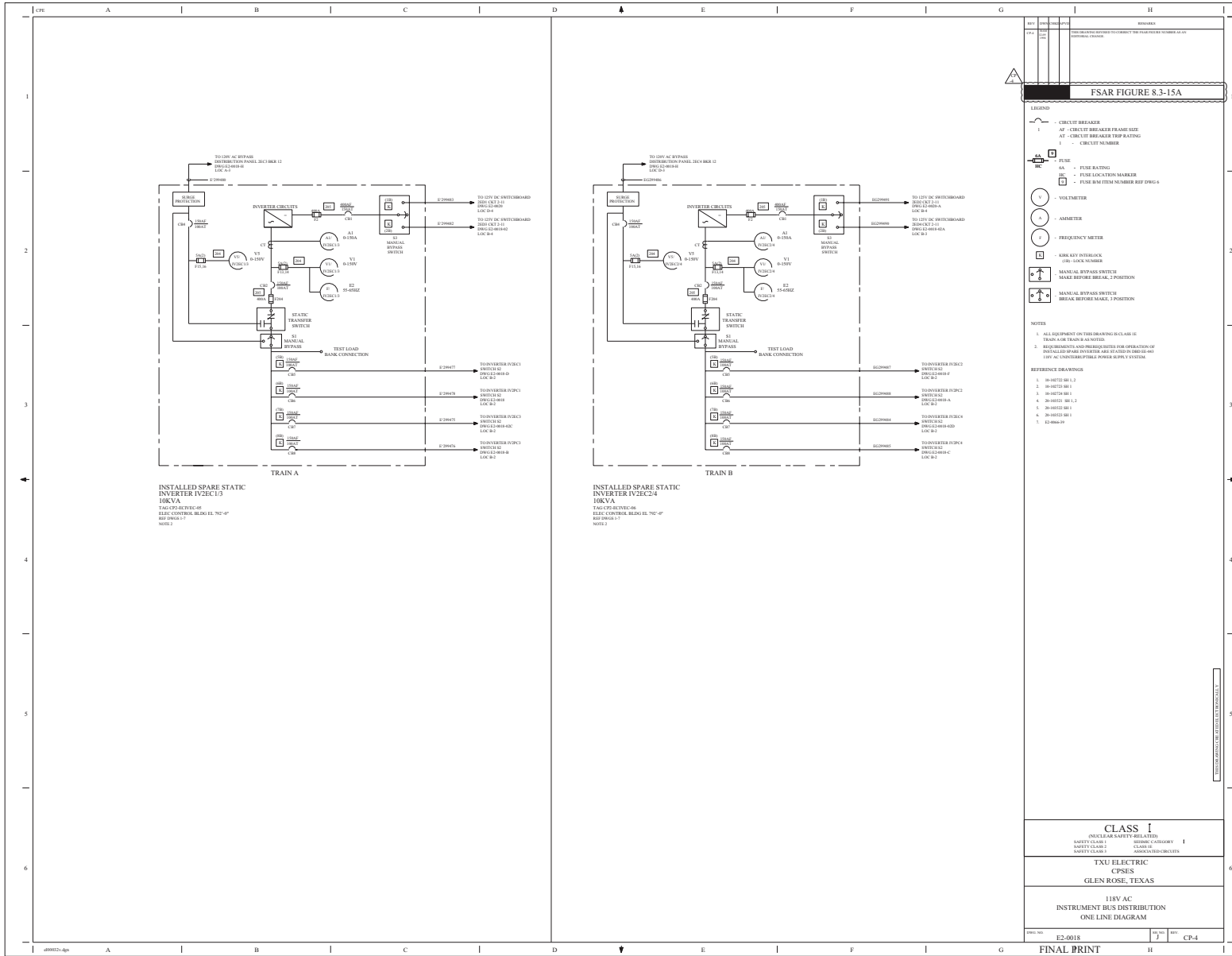
**TXU POWER**  
CPSES  
GLEN ROSE, TEXAS

120V AC  
ONE LINE DIAGRAM

DWG NO	E1-0018	SH NO	01H	REV	CP-16
--------	---------	-------	-----	-----	-------

REF CKD CP-9 4/28/98

THIS DRAWING CREATED ELECTRONICALLY



FSAR FIGURE 8.3-15A

- LEGEND**
- - 1 - CIRCUIT BREAKER
  - AT - CIRCUIT BREAKER FRAME SIZE
  - AT - CIRCUIT BREAKER TRIP RATING
  - 1 - CIRCUIT NUMBER
  - ⊕
  - FUSE
  - OA - FUSE RATING
  - LOC - FUSE LOCATION MARKER
  - 1 - FUSE ITEM NUMBER BUT DIFF. #
  - V
  - VOLTMETER
  - A
  - AMMETER
  - F
  - FREQUENCY METER
  - ⊗
  - KEY KEY INTERLOCK
  - FOR LOCK NUMBER
  - ⊕
  - MANUAL BYPASS SWITCH  
MAKE BEFORE BREAK, 2 POSITION
  - ⊕
  - MANUAL BYPASS SWITCH  
BREAK BEFORE MAKE, 3 POSITION

- NOTES**
1. ALL EQUIPMENT ON THIS DRAWING IS CLASS II
  - EXCEPT TRAIN B AS NOTED
  2. REQUIREMENTS AND REQUIREMENTS FOR OPERATION OF INSTALLED 115V AC BYPASS SWITCHES ARE LISTED IN 8.3-15B-00 115V AC UNDERSCRIPTIBLE POWER SUPPLY SYSTEM.
- REFERENCE DRAWINGS**
1. 80-0472Z 80-1.2
  2. 80-0472Z 80-1
  3. 80-0472Z 80-1
  4. 20-0452Z 80-1.2
  5. 20-0452Z 80-1
  6. 20-0452Z 80-1
  7. 82-0662-0

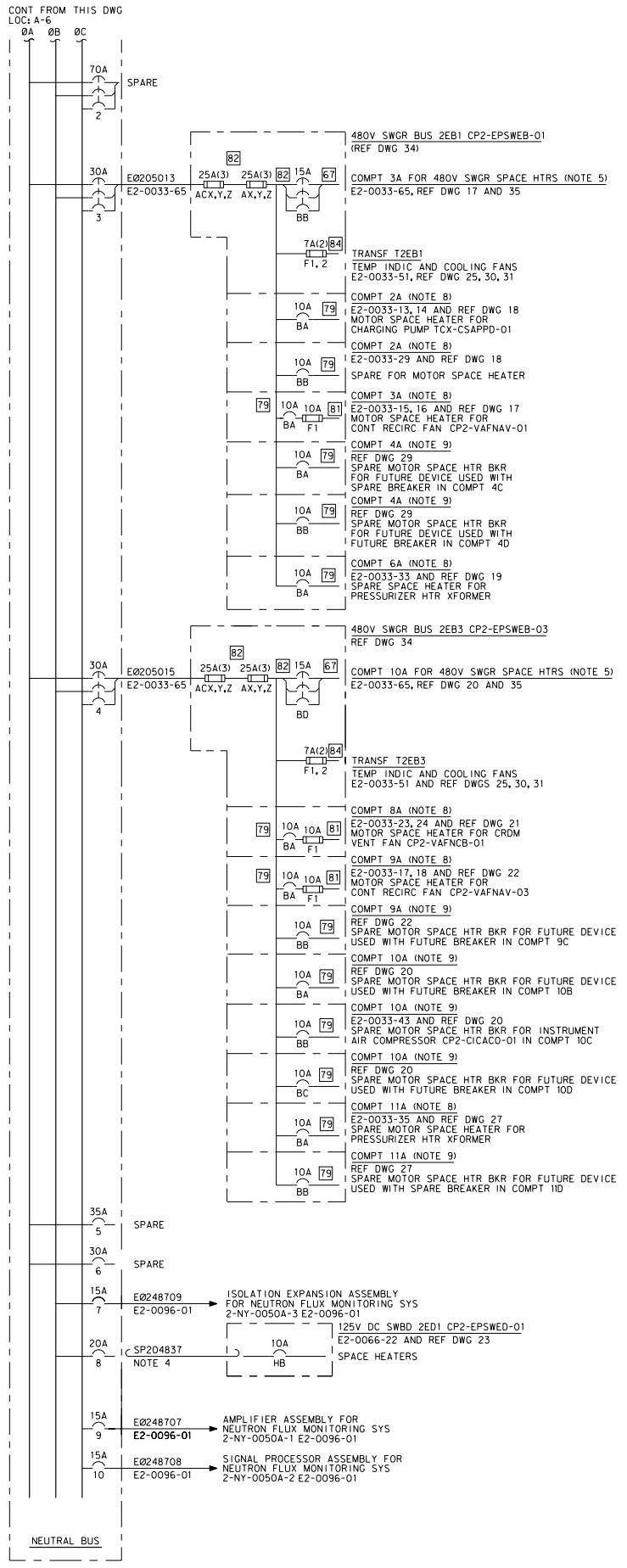
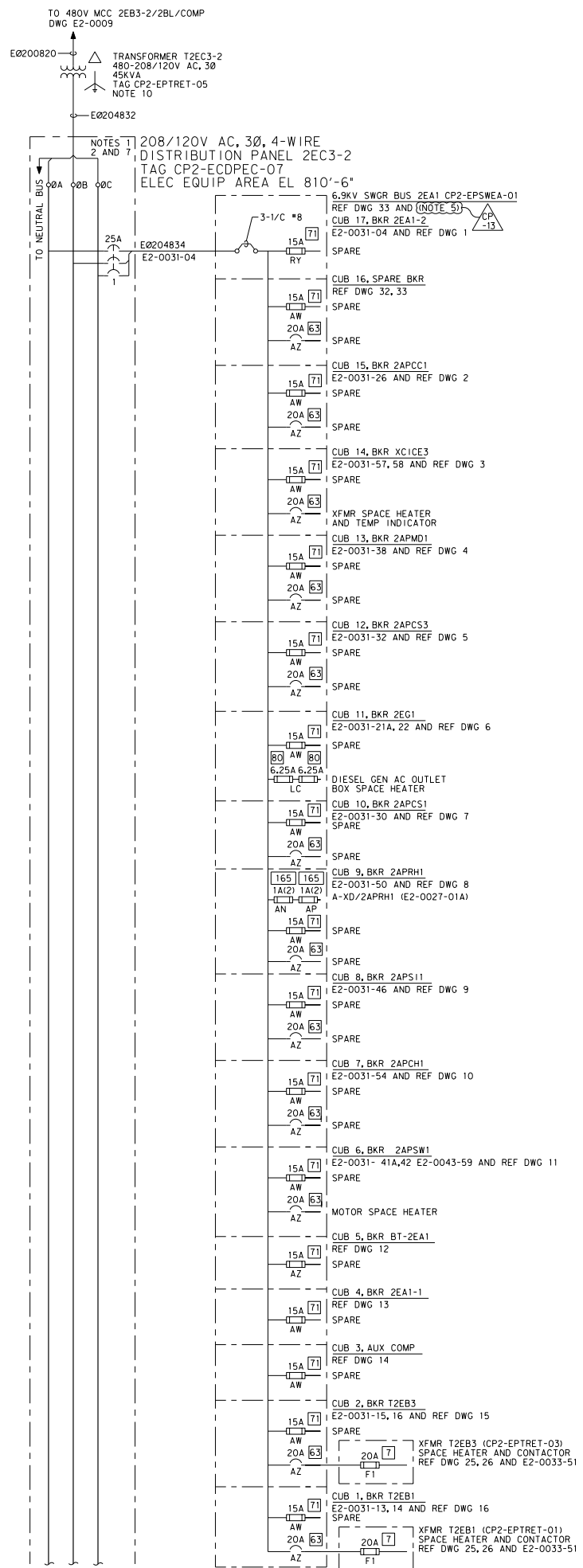
**CLASS I**  
NUCLEAR SAFETY RELATED  
SAFETY CLASS 1 - DESIGN CATEGORY I  
SAFETY CLASS 1 - DESIGN CATEGORY I  
SAFETY CLASS 1 - DESIGN CATEGORY I

**T XU ELECTRIC**  
CPSES  
GLEN ROSE, TEXAS

115V AC  
INSTRUMENT BUS DISTRIBUTION  
ONE LINE DIAGRAM

FIG. NO. E2-0018 REV. NO. 7 DATE 08/04/04

**FINAL PRINT**



REV	CHK	APP	DATE	REMARKS
CP-13			06-27-07	THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGES PER A1-CR-2019-004441-1.

FSAR FIGURE 8.3-15A

- LEGEND:
- CIRCUIT BREAKER 3-POLE
  - 70A - BREAKER RATING
  - 1 - CIRCUIT NUMBER
  - CIRCUIT BREAKER
  - 20A - CIRCUIT BREAKER RATING
  - AZ - CIRCUIT BREAKER LOCATION MARKER
  - 63 - CIRCUIT BREAKER B/M ITEM NUMBER REFERENCE DRAWING 28
  - FUSE
  - 25A - FUSE RATING
  - ACX,Y,Z - FUSE LOCATION MARKER
  - (3) - NUMBER OF FUSES
  - 82 - FUSE B/M ITEM NUMBER REFERENCE DRAWING 28

- NOTES:
1. INCOMING LUGS SHALL BE MOUNTED AT THE TOP OF PANEL.
  2. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 2 POLE 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 E0204837 IS DISCONNECTED AND CONDUCTORS TAPED AT BOTH ENDS. FUTURE USE OF THIS CABLE DURING OUTAGES REQUIRES AUTHORIZATION THROUGH A DCA. CABLE NUMBER HAS BEEN IDENTIFIED AS SP204837.
  5. SPACE HEATERS IN THE 480V SWGR BUS (AND) THE 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.
  6. DELETED
  7. ALL PANELBOARD CIRCUIT BREAKERS ARE EQUIPPED WITH ONE SINGLE POLE DOUBLE THROW AUXILIARY CONTACT.
  8. MOTOR SPACE HEATER BRKERS LOCATED IN COMPARTMENT A ARE WIRED TO TERMINALS IN THE LOWER COMPARTMENT AS INDICATED ON THE REFERENCED SCHEMATIC DIAGRAM.
  9. MOTOR SPACE HEATER BRKERS FOR FUTURE DEVICES ARE WIRED TO TERMINALS IN THE COMPARTMENTS INDICATED ON THIS DWG.
  10. INTERNAL TAP JUMPING WIRE SIZE FOR TRANSFORMER SHALL BE PER TABLE-1, DBD-EE-041.

- REFERENCE DRAWINGS:
1. 33-51261-E2514
  2. 33-51261-E2516
  3. 33-51261-E2517
  4. 33-51261-E2518
  5. 33-51261-E2519
  6. 33-51261-E2520
  7. 33-51261-E2521
  8. 33-51261-E2522
  9. 33-51261-E2523
  10. 33-51261-E2524
  11. 33-51261-E2525
  12. 33-51261-E2526
  13. 33-51261-E2527
  14. 33-51261-E2528
  15. 33-51261-E2529
  16. 33-51261-E2530
  17. 1619F66
  18. 1619F65
  19. 1619F69
  20. 1619F73
  21. 1619F71
  22. 1619F72
  23. 182C79225 SH 14A AND 14B
  24. 1983C98
  25. 8693D37
  26. 1823F97
  27. 1619F74
  28. E2-0024-04
  29. 1619F67
  30. 1983C98
  31. 8706D98
  32. 33-51261-D2515
  33. E2-0027-01
  34. E2-0005
  35. 1823F96

DRAWING E2-0018-01	REV CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E2-0018-01	
E2-0018-01A	
E2-0018-01B	

TRAIN A

CLASS I  
(NUCLEAR SAFETY RELATED)  
SAFETY CLASS 1 SEISMIC CATEGORY I  
SAFETY CLASS 1 ASSOCIATED CIRCUITS

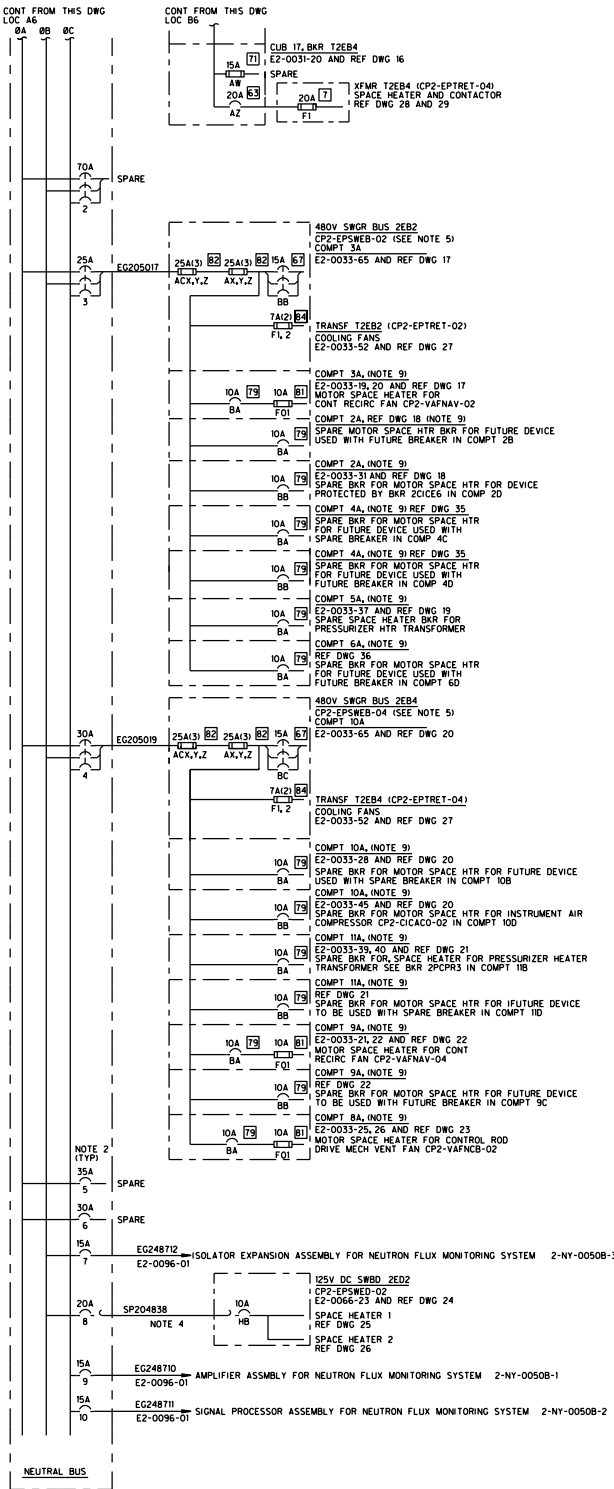
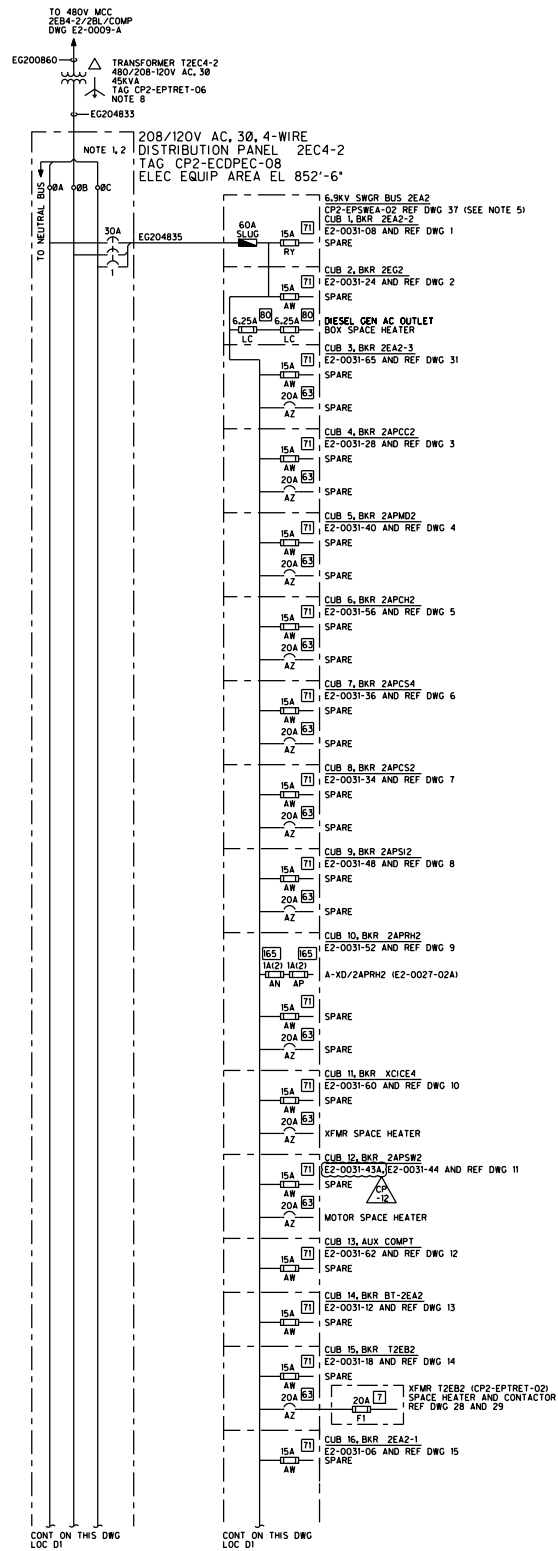
LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

208/120V AC  
ONE LINE DIAGRAM

DWG. NO. E2-0018	SH. NO. 01	REV. CP-13
---------------------	---------------	---------------

THIS DRAWING CREATED ELECTRONICALLY

REF CHD 2/23/97 CP-7



REV: 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

FSAR FIGURE 8.3-15A

LEGEND:  
50A - CIRCUIT BREAKER 3-POLE  
50A - CIRCUIT BREAKER NUMBER  
25A(3) - CIRCUIT BREAKER (NOTE 2)  
FUSE  
FUSE RATING  
FUSE LOCATION MARKER  
FUSE B/M ITEM NUMBER REF DWG 30  
NUMBER OF FUSES

NOTES:  
1. INCOMING LUGS SHALL BE MOUNTED AT THE TOP OF PANEL.  
2. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 2 POLE THERMAL MAGNETIC UNLESS NOTED OTHERWISE.  
3. ALL EQUIPMENT/DEVICES/CABLES SHOWN ON THIS DWG ARE CLASS I, TRAIN B UNLESS NOTED OTHERWISE.  
4. CABLE NUMBER EG204838 IS DISCONNECTED AND CONDUCTORS TAPPED AT BOTH ENDS. FUTURE USE OF THIS CABLE DURING OUTAGES REQUIRES AUTHORIZATION THROUGH A DCA. CABLE NUMBER HAS BEEN REIDENTIFIED AS SP204838.  
5. SPACE HEATERS IN THE 6.9KV SWITCHGEAR AND 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.  
6. DELETED  
7. ALL PANELBOARD CIRCUIT BREAKERS ARE EQUIPPED WITH ONE SINGLE POLE DOUBLE THROW AUXILIARY CONTACT.  
8. INTERNAL TAP JUMPERING WIRE SIZE FOR TRANSFORMER SHALL BE PER TABLE 1, 000-EE-041.  
9. MOTOR SPACE HEATER BREAKERS, LOCATED IN COMPARTMENT A, ARE WIRED TO TERMINALS IN THE LOWER COMPARTMENT AS INDICATED ON THE REFERENCED SCHEMATIC DIAGRAM.

- REFERENCE DRAWINGS:
- 1. 33-51261-E2552
  - 2. 33-51261-E2551
  - 3. 33-51261-E2549
  - 4. 33-51261-E2548
  - 5. 33-51261-E2547
  - 6. 33-51261-E2565
  - 7. 33-51261-E2564
  - 8. 33-51261-E2563
  - 9. 33-51261-E2562
  - 10. 33-51261-E2561
  - 11. 33-51261-E2560
  - 12. 33-51261-E2559
  - 13. 33-51261-E2581
  - 14. 33-51261-E2557
  - 15. 33-51261-E2556
  - 16. 33-51261-E2555
  - 17. 1619F78
  - 18. 1619F77
  - 19. 1619F80
  - 20. 1619F85 SH A
  - 21. 1619F86
  - 22. 1619F84 SH A
  - 23. 1619F83 SH A
  - 24. 182C79225 SH 04
  - 25. 182C79225 SH 11A
  - 26. 182C79225 SH 11B
  - 27. 1983C58
  - 28. 8693D37
  - 29. 1823F37
  - 30. E2-0024-04
  - 31. 33-51261-02550
  - 32. E2-0004-A
  - 33. E2-0005-A
  - 34. E2-0027-02, 02A
  - 35. 16199F79 SH A
  - 36. 1619F81
  - 37. 33-51261-E2553, A

DRAWING E2-0018-01 REV CP-2  
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:  
E2-0018-01  
E2-0018-01A  
E2-0018-01B

TRAIN B  
CLASS I  
NUCLEAR SAFETY-RELATED  
SAFETY CLASS 1  
SAFETY CATEGORY 1  
CONTROLLED CIRCUITS

LUMINANT  
CNPP  
GLEN ROSE, TEXAS

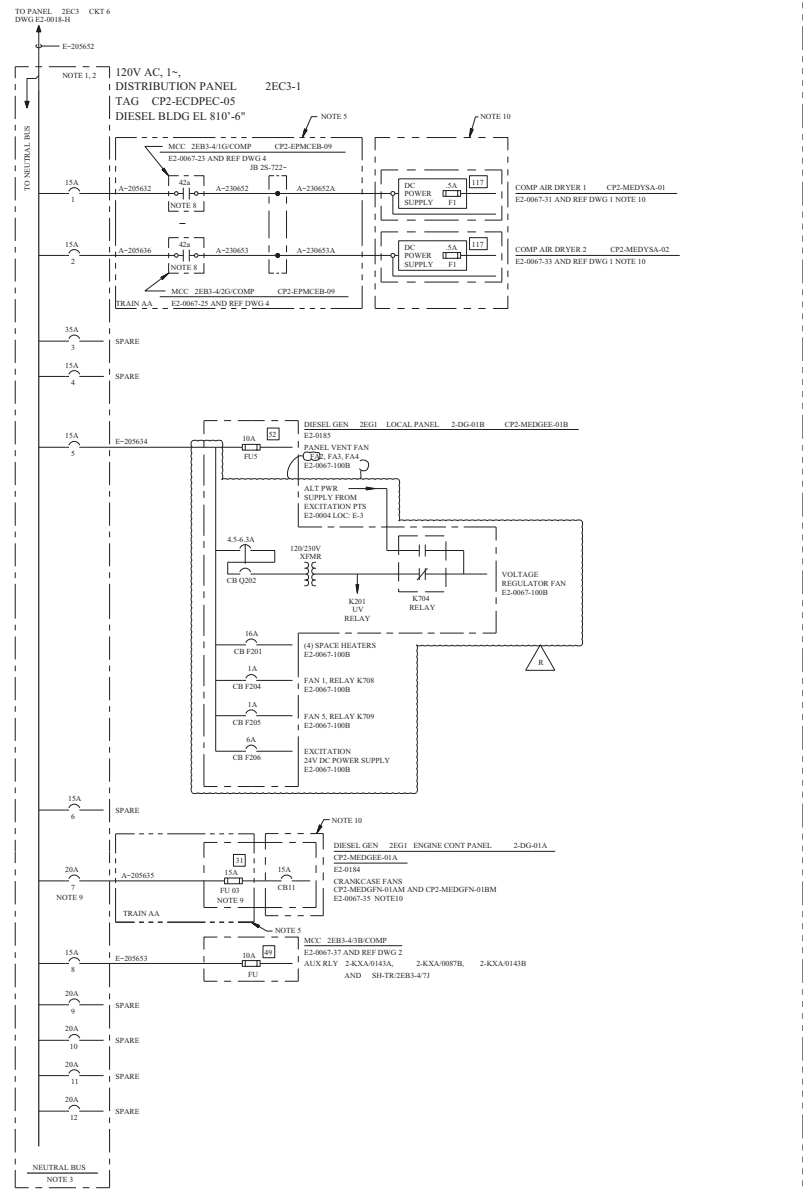
208/120V AC  
ONE LINE DIAGRAM

DWG NO. E2-0018  
REV. 01A  
CP-12

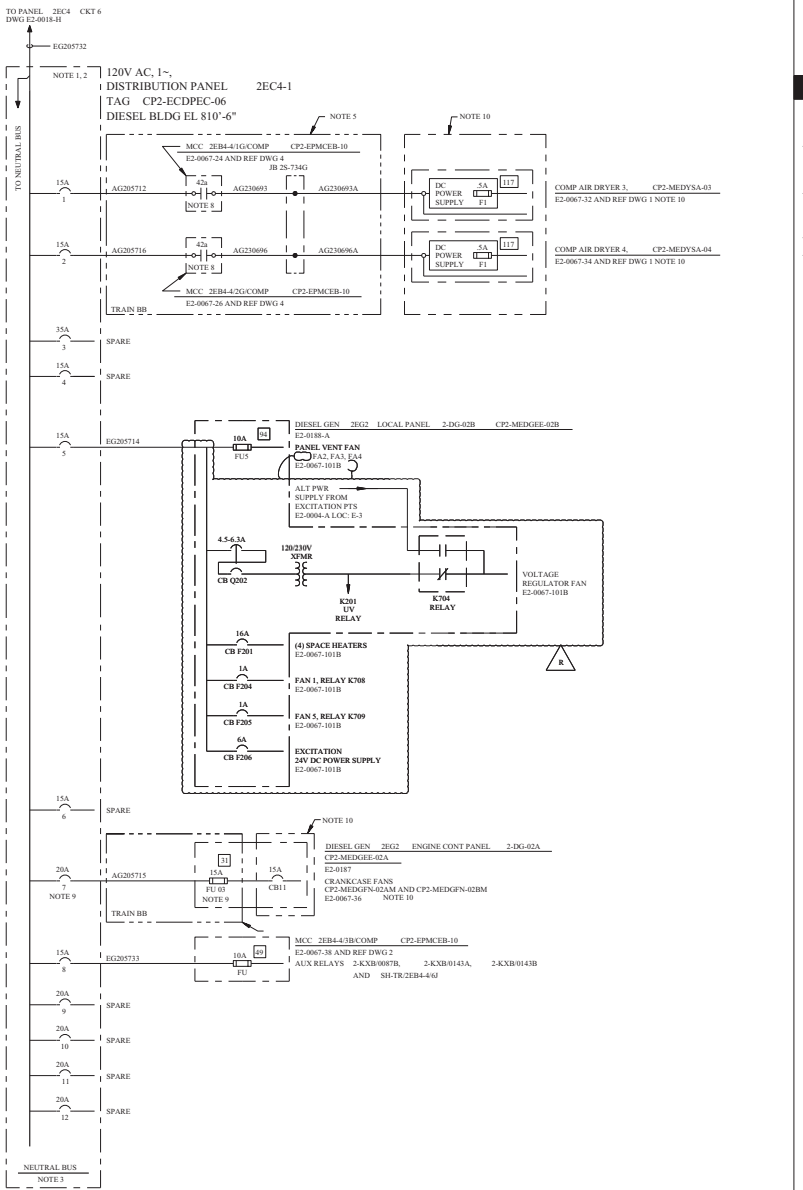
THIS DRAWING CREATED ELECTRONICALLY

REF: CGD CP-7, 10/29/97





TRAIN A



TRAIN B

REV	DATE	BY	CHKD	APPD	REMARKS
P-02	01/11/00	0000	0000	0000	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDN-2001-001275-04-00 PER SR-0094-01-001275-04-00

FSAR FIGURE 8.3-15A

- LEGEND
- 15A - CIRCUIT BREAKER
  - 15A - CIRCUIT BREAKER RATING
  - 1 - CIRCUIT NO
  - 10A - FUSE
  - 10A - FUSE RATING
  - 5A - FUSE B/M ITEM NUMBER REF DWG 3
  - - - - - INDICATES SPLICE PER 232-45-100
  - - INDICATES CONNECTION TO TERMINAL

- NOTES
1. INCOMING LUGS SHALL BE MOUNTED AT THE TOP OF DISTRIBUTION PANEL.
  2. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 2-POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
  3. VERTICAL NEUTRAL BUS.
  4. ALL EQUIPMENT DEVICES/CABLES ON THIS DRAWING ARE CLASS 1E, TRAIN A OR B AS NOTED.
  5. - - - - - ALL WIRING AND CABLING ENCLOSED BY DASHED LINES IS ASSOCIATED CLASS 1E, TRAIN AA OR BB AS NOTED UNLESS OTHERWISE IDENTIFIED.
  6. DELETED.
  7. ALL PANELBOARD CIRCUIT BREAKERS ARE EQUIPPED WITH ONE SINGLE POLE DOUBLE THROW AUXILIARY CONTACT.
  8. ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOADS IS PROVIDED BY OPENING THE CLASS 1E CONTACT ON SIAS.
  9. ISOLATION BETWEEN CLASS 1E BUS AND NON-CLASS 1E LOADS IS PROVIDED BY CLASS 1E FUSE AND BREAKER IN SERIES.
  10. - - - - - ALL EQUIPMENT DEVICES INSIDE THESE DASHED LINES OR FED BY THESE CIRCUITS ARE NON-CLASS 1E.

- REFERENCE DRAWINGS
1. PNEUMATIC PRODUCTS CORP DWG 104443K-D2 SH 1
  2. 212BT150 SH 15B-2
  3. E2-0024-04
  4. 212BT150 SH 20B-4

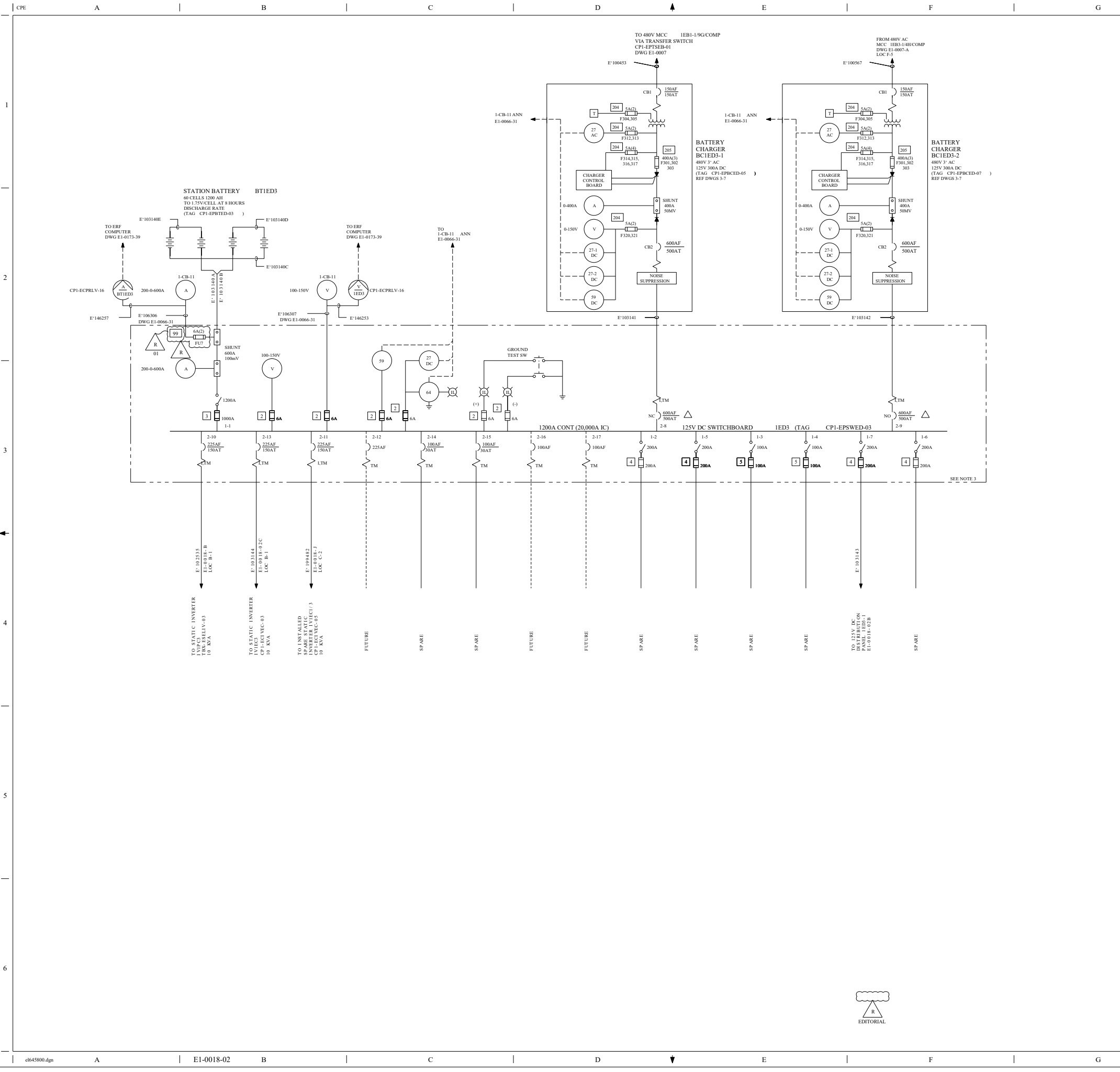
DRAWING E2-0018-01	REV CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E2-0018-01	
E2-0018-01A	
E2-0018-01B	

**CLASS I**  
(ONE CLEAR SAFETY RELATED)  
SAFETY CLASS 1 SERVIC CATEGORY I  
SAFETY CLASS 2 CLASS 1E  
SAFETY CLASS 3 ASSOCIATED CIRCUITS

TXU POWER  
CPSES  
GLEN ROSE, TEXAS

120V AC  
ONE LINE DIAGRAM

DWG. NO.	REV.
E2-0018	01B CP-12



REV	DWN	CHK	APPV	REMARKS
CP-19	02	02	02	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2014-000134-01 PER SR-0001-14-000134-01-01 EDITORIAL CHANGE AS NOTED.

**FSAR FIGURE 8.3-15B**

- LEGEND:**
- V — VOLTMETER
  - 59 — OVERVOLTAGE RELAY
  - 27 AC — UNDERVOLTAGE RELAY, AC
  - 27 DC — UNDERVOLTAGE RELAY, DC
  - A — AMMETER
  - 64 — GROUND RELAY
  - TRANSDUCER
  - INDICATING LIGHT
  - T — EQUALIZING CHARGE TIMER
  - ANN — ANNUNCIATOR
  - CB — MAIN CONTROL BOARD
  - FUSIBLE SWITCH (NOTE 4)
  - 1A — 1AMP FUSE TRIP RATING
  - FUSE/BM ITEM NUMBER REF DWG 2
  - SWITCHBOARD CIRCUIT BREAKER (NOTE 2 AND 3)
  - 2-10 — SWITCHBOARD SECTION 2, CIRCUIT BREAKER 10
  - AF — FRAME SIZE
  - AT — TRIP RATING
  - INSTANTANEOUS MAGNETIC TRIP DEVICE
  - TM — THERMAL MAGNETIC TRIP ELEMENT

- NOTES:**
- ALL EQUIPMENT/DEVICES SHOWN ON THIS DRAWING ARE CLASS 1E, TRAIN A UNLESS OTHERWISE NOTED.
  - 225A FRAME AND LARGER FRAME SIZE BREAKER HAVE INTERCHANGEABLE TRIP UNIT WITH ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP. FOR SETTING SEE REF DWG 1.
  - INOPERABLE/BYPASS LIGHT INDICATION IN THE CONTROL ROOM WILL INDICATE IF ANY OF THE NC BREAKERS OR FUSIBLE SWITCHES ARE OPEN OR POWER FUSE IS BLOWN. FOR INDICATING LIGHTS SCHEMATICS SEE E1-0071 SERIES DRAWINGS.
  - ALL FUSIBLE SWITCHES ARE 3-POLE, ONE POLE BEING USED TO MONITOR SWITCH STATUS. BLOWN FUSE INDICATING IS PROVIDED BY TRIGGER FUSES WIRED IN PARALLEL WITH EACH POWER FUSE.
  - INDICATES BREAKERS MECHANICALLY INTERLOCKED TO PREVENT PARALLELING.
  - FOR SELECTIVE COORDINATION WITH SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:  
40 AT FOR TM, NON ADJUSTABLE TRIP  
100 AT FOR TM, INST ADJUSTABLE TRIP
  - 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/BCIED3-1, 64/IED3). FOR THOSE METER RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE "UNDERBAR" IS EQUIVALENT TO A "SLASH" (e.g. EQUIVALENT TO V/IED3).
  - ALL SWBD CIRCUIT BREAKERS ARE 2-POLE THERMAL MAGNETIC TYPE.
  - EACH CIRCUIT BREAKER IS PROVIDED WITH ONE SET OF FORM C AUXILIARY CONTACTS.

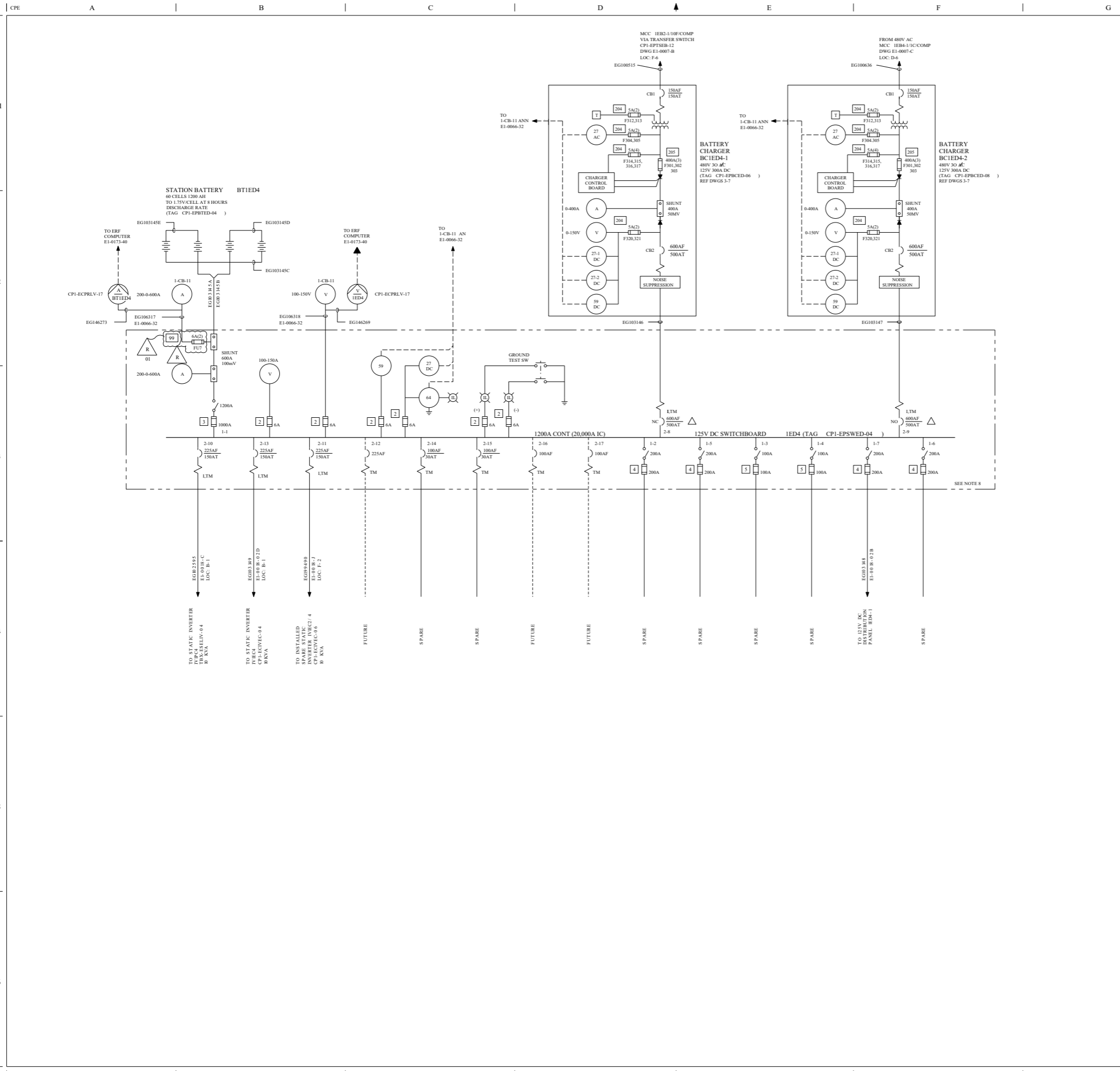
- REFERENCE DRAWINGS:**
- E1-2400-361
  - E1-0024-04
  - 10-102733 SH 1
  - 10-102734 SH 1
  - 10-102735 SH 1
  - 20-103542 SH 1
  - 20-103543 SH 1

DRAWING E1-0018-02	REV CP-6
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E1-0018-02	
E1-0018-02B	
E1-0018-02C	

DRAWING 2123-E1-0018-02	REV CP-3
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E1-0018-02	
E1-0018-02A	

**CLASS I**  
 (NUCLEAR SAFETY-RELATED)  
 SAFETY CLASS 1 SEISMIC CATEGORY I  
 SAFETY CLASS 1 CLASS III ASSOCIATED CIRCUITS  
**LUMINANT**  
 CPNPP  
 GLEN ROSE, TEXAS  
**125V DC SWITCHBOARD**  
 ONE LINE DIAGRAM

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APPD	REMARKS
CP-16	02/20/2018	02/20/2018	02/20/2018	02/20/2018	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2014-00134-01 PER SK.002-14-00134-01-01.

**FSAR FIGURE 8.3-15B**

- LEGEND:**
- V — VOLTMETER
  - 59 — OVERVOLTAGE RELAY
  - 27 AC — UNDERVOLTAGE RELAY, AC
  - 27 DC — UNDERVOLTAGE RELAY, DC
  - A — AMMETER
  - 64 — GROUND RELAY
  - ⊗ — TRANSDUCER
  - ⊕ — INDICATING LIGHT
  - T — EQUALIZING CHARGE TIMER
  - ANN — ANNUNCIATOR
  - CB — MAIN CONTROL BOARD
  - ⊗ — FUSIBLE SWITCH (NOTE 9)
  - IA — IAMP FUSE TRIP RATING
  - 1 — FUSE B/M ITEM NUMBER REF DWG 2
  - 2-10 — SWITCHBOARD CIRCUIT BREAKER (NOTE 2 AND 3)
  - SW — SWITCHBOARD SECTION 2, CIRCUIT BREAKER 10
  - AF — FRAME SIZE
  - AT — TRIP RATING
  - 1 — INSTANTANEOUS MAGNETIC TRIP DEVICE
  - TM — THERMAL MAGNETIC TRIP ELEMENT

- NOTES:**
1. ALL EQUIPMENT DEVICES SHOWN ON THIS DRAWING ARE CLASS I.E. TRAIN B UNLESS OTHERWISE NOTED.
  2. ALL SWBD CIRCUIT BREAKERS ARE 2-POLE THERMAL MAGNETIC TYPE.
  3. EACH CIRCUIT BREAKER IS PROVIDED WITH ONE SET OF FORM C AUXILIARY CONTACTS.
  4. NOT USED
  5. Δ INDICATES BREAKERS MECHANICALLY INTERLOCKED TO PREVENT PARALLELING.
  6. FOR SELECTIVE COORDINATION WITH SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:  
40 AT FOR TM, NON ADJUSTABLE TRIP  
100 AT FOR TM, INST ADJUSTABLE TRIP
  7. 225A FRAME AND LARGER FRAME SIZE BREAKER HAVE INTERCHANGEABLE TRIP UNIT WITH ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP. FOR SETTING SEE REF DWG 1.
  8. INOPERABLE/BYPASS LIGHT INDICATION IN THE CONTROL ROOM WILL INDICATE IF ANY OF THE NC BREAKERS OR FUSIBLE SWITCHES ARE OPEN OR POWER FUSE IS BLOWN. FOR INDICATING LIGHTS SCHEMATICS SEE E1-0071 SERIES DRAWINGS.
  9. ALL FUSIBLE SWITCHES ARE 3-POLE, ONE POLE BEING USED TO MONITOR SWITCH STATUS. BLOWN FUSE INDICATING IS PROVIDED BY TRIGGER FUSES WIRED IN PARALLEL WITH EACH POWER FUSE.
  10. 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/BCIED4-1, 64IED4). FOR THOSE METER/RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE "UNDERBAR" IS EQUIVALENT TO A "SLASH" (e.g.  $\frac{V}{VIED4}$  IS EQUIVALENT TO VIED4).

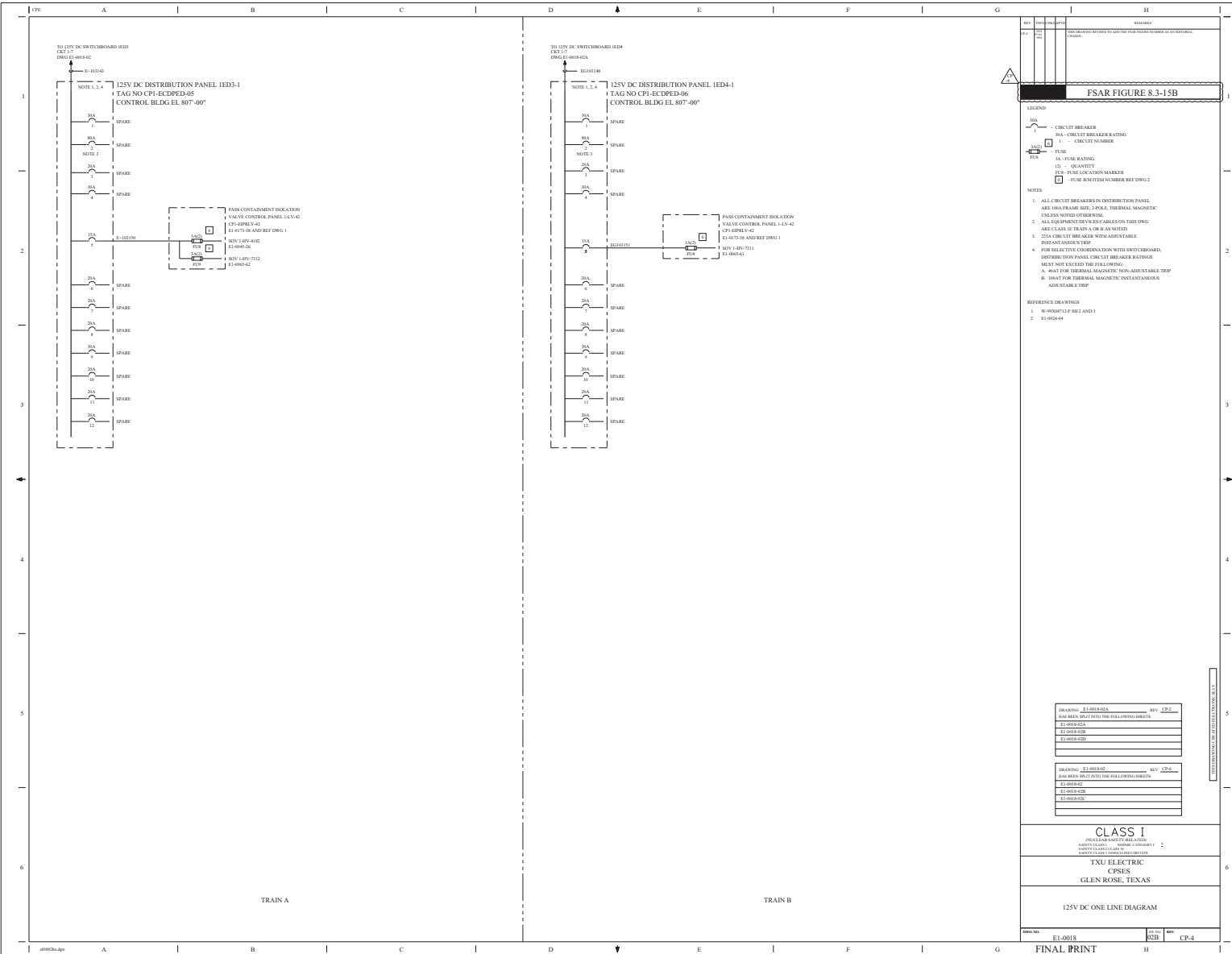
- REFERENCE DRAWINGS:**
1. E1-2400-361
  2. E1-0024-04
  3. 10-102733 SH 1
  4. 10-102734 SH 1
  5. 10-102735 SH 1
  6. 20-101542 SH 1
  7. 20-101543 SH 1

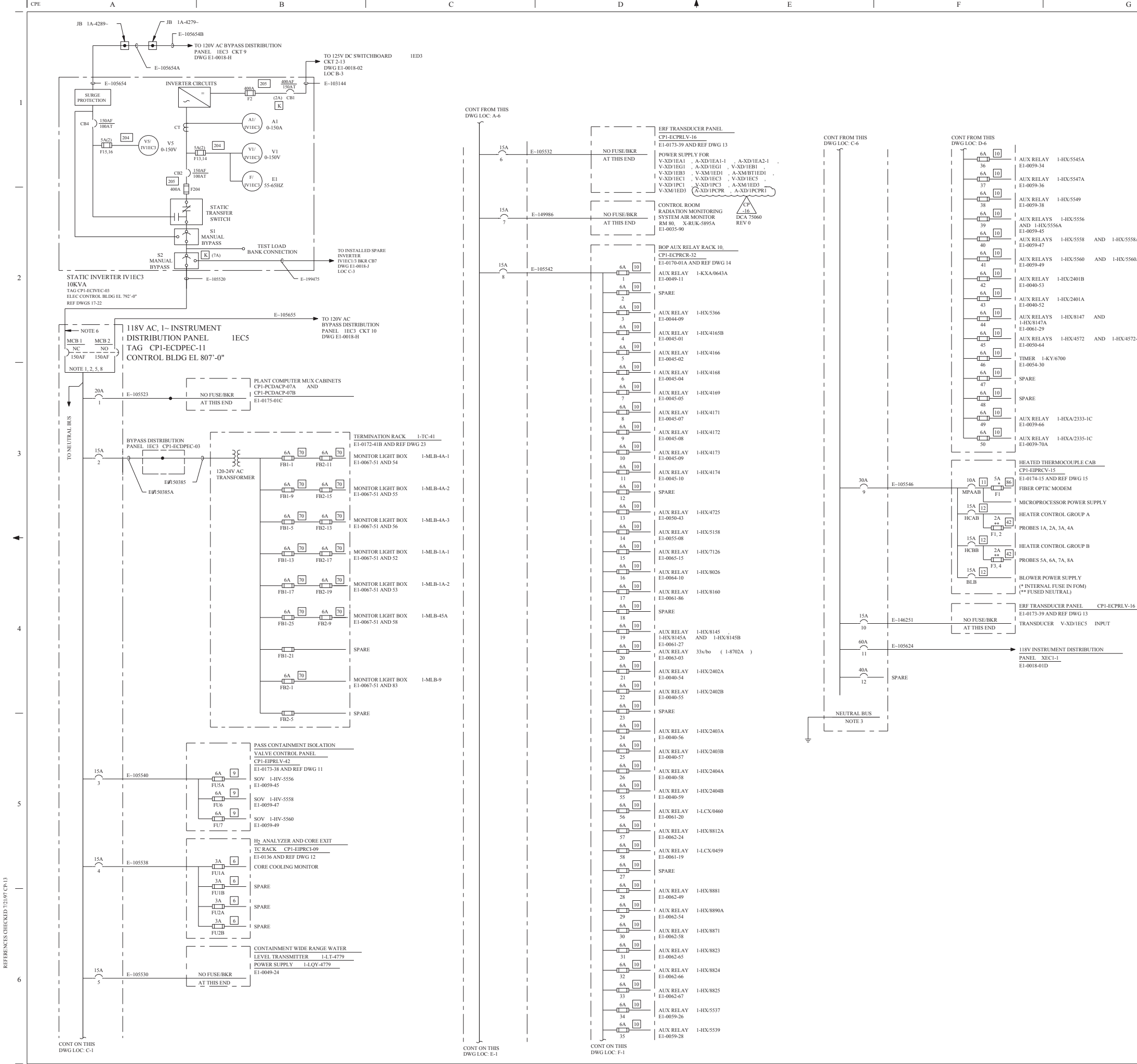
DRAWING	E1-0018-02A	REV	CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0018-02A			
E1-0018-02B			
E1-0018-02D			

DRAWING	2232-E1-0018-02	REV	CP-3
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0018-02			
E1-0018-02A			

TRAIN B  
**CLASS I**  
 (NUCLEAR SAFETY-RELATED)  
 SAFETY CLASS 1 SEISMIC CATEGORY I  
 SAFETY CLASS 2 CLASS I-E ASSOCIATED CIRCUITS  
 SAFETY CLASS 3  
**LUMINANT**  
**CPNPP**  
**GLEN ROSE, TEXAS**

125V DC SWITCHBOARD  
 ONE LINE DIAGRAM





REV	DWN	CHK	APPV	REMARKS
CP-16	SH	06/11	2010	THIS DRAWING REVISED TO PROPERLY INCORPORATE DESIGN CHANGE DCA 7500 REV 0 AND PER AL-CCR-2010-009206-1.

### FSAR FIGURE 8.3-15B

**LEGEND**

- MANUAL TRANSFER SWITCH
- THERMAL MAGNETIC TRIP CIRCUIT
- 3P - THREE POLE
- CIRCUIT BREAKER
- 20A - CIRCUIT BREAKER RATING
- 1 - CIRCUIT NO
- FUSE
- 6A - FUSE RATING
- FUS - FUSE LOCATION MARKER
- 9 - FUSE BM ITEM NUMBER, REF DWG 16
- VOLTMETER
- AMMETER
- FREQUENCY METER
- KIRK KEY INTERLOCK
- (2) - LOCK NUMBER
- MANUAL BYPASS SWITCH
- MAKE BEFORE BREAK, 2 POSITION
- INDICATES SPLICE (SPLICE PER SPEC ES-100)

**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.
- EQUIPMENT/DEVICES SHOWN ON THIS DRAWING ARE CLASS 1E, TRAIN A UNLESS NOTED OTHERWISE.
- ALL CIRCUIT BREAKERS INCLUDING MANUAL TRANSFER SWITCH ARE EQUIPPED WITH I-NO AND I-NC AUX CONTACT. FOR SSI INDICATING LIGHT SCHEMATICS SEE EI-0071 SERIES DRAWINGS.
- REDUCE CABLE AT THIS POINT FROM 4/0 TO 2/0 BY SPLICING PER DETAIL 13 OF DWG EI-1701.
- 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. VM4/IVIEC3, AM3/IVIEC3).
- THE MECHANICAL BREAKER INTERLOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES. SEE DBD-EE-043 FOR DETAILS.

**REFERENCE DRAWINGS**

- DELETED
- DELETED
- DELETED
- DELETED
- DELETED
- DELETED
- DELETED
- DELETED
- DELETED
- DELETED
- W-99X08712-F SH 1, 5 AND 6
- 112D003 SH 1 AND 2
- E-6604
- E-6557 SH 1, 4
- E-4182-422-103 SH 1, 2
- 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
- 20-103524 SH 1, 2

DRAWING	EI-0018-02	REV	CP-6
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
EI-0018-02			
EI-0018-02B			
EI-0018-02C			

**TRAIN A**

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

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

**LUMINANT**  
**CPNPP**  
**GLEN ROSE, TEXAS**

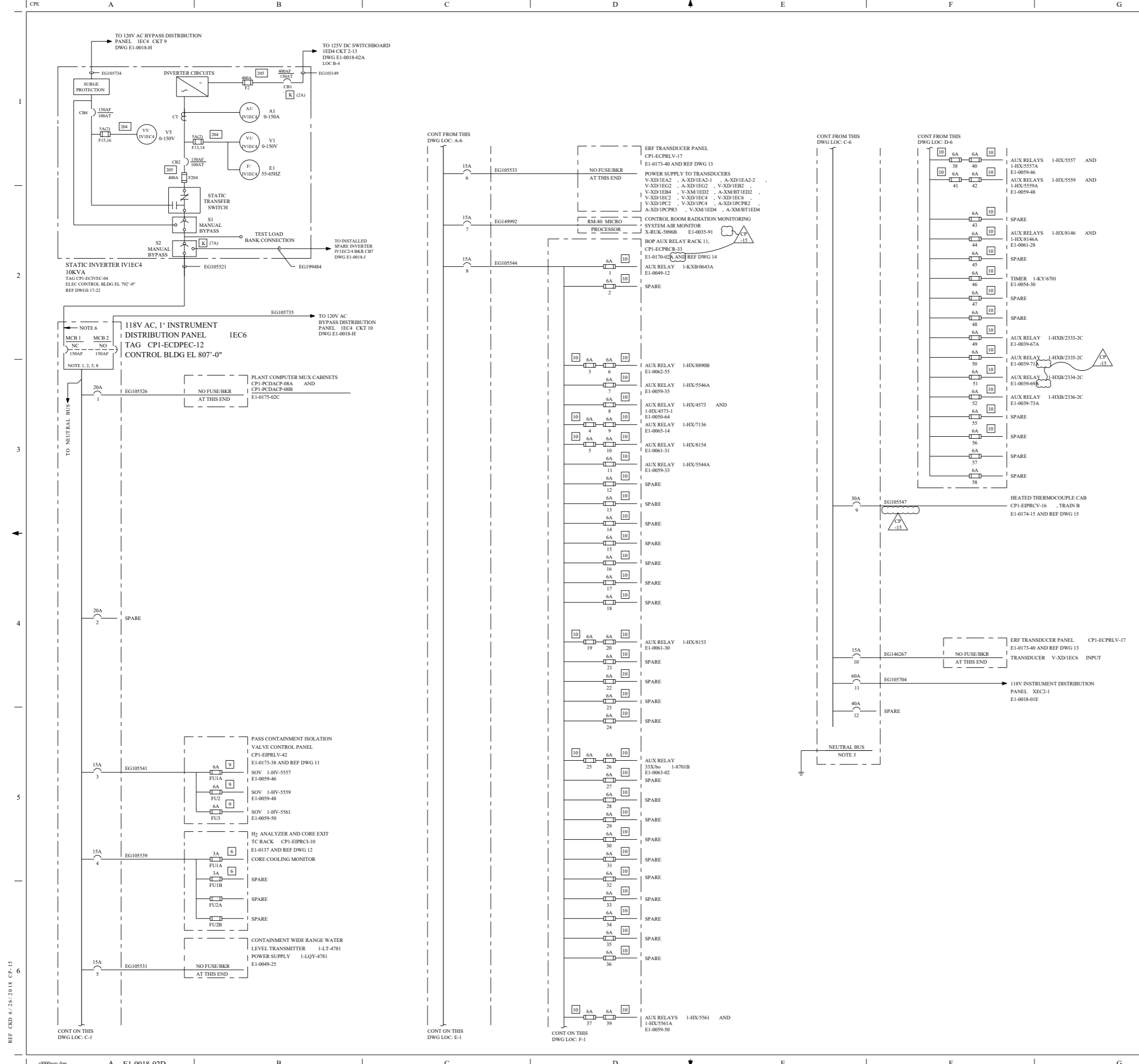
118V AC  
ONE LINE DIAGRAM

DWG. NO.	REV.
EI-0018	02C
	CP-16

FINAL PRINT

REFERENCES CHECKED 7/21/97 CP-13

THIS DRAWING CREATED ELECTRONICALLY



**FSAR FIGURE 8.3-15B**

**LEGEND:**

- MANUAL TRANSFER SWITCH
- THERMAL MAGNETIC TRIP ELEMENT
- THREE POLE
- CIRCUIT BREAKER
- CIRCUIT BREAKER RATING
- FUSE
- FUSE RATING
- FUSE LOCATION MARKER
- FUSE B/M ITEM NUMBER REF DWG 16
- VOLTMETER
- AMMETER
- FREQUENCY METER
- KIRK KEY INTERLOCK (2A) - LOCK NUMBER
- MANUAL BYPASS SWITCH MAKE BEFORE BREAK, 2 POSITION

**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.
- EQUIPMENT/DEVICES SHOWN ON THIS DRAWING ARE CLASS IIE, TRAIN B UNLESS NOTED OTHERWISE.
- ALL CIRCUIT BREAKERS INCLUDING MANUAL TRANSFER SWITCH ARE EQUIPPED WITH 1-NO AND 1-NC AUX CONTACT. FOR SSH INDICATOR LIGHT SCHEMATICS SEE E1-0071 SERIES DRAWINGS.
- REDUCE CABLE AT THIS POINT FROM 4/0 TO 2/0 BY SPLICING PER DETAIL 13 OF DWG E1-1701.
- 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. AM1/IVIEC4/FMS/IVIEC4).
- THE MECHANICAL BREAKER INTERLOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES. SEE DBD-EE-043 FOR DETAILS.

**REFERENCE DRAWINGS:**

- DELETED
- DELETED
- DELETED
- DELETED
- DELETED
- DELETED
- DELETED
- DELETED
- DELETED
- DELETED
- W-99X08712-F SH 2 AND 3
- 112D003 SH 1 AND 2
- E-6606
- E-6559 SH 1, 4
- E-4182-422-103 SH 3, 4
- 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

**TRAIN B**

**CLASS I**  
(NUCLEAR SAFETY RELATED)  
SAFETY CLASS 1      SERVIC CATEGORY      I  
SAFETY CLASS 2      CLASS IIF  
SAFETY CLASS 3      ASSOCIATED CIRCUITS

**LUMINANT**  
**CPNPP**  
**GLEN ROSE, TEXAS**

**118V AC**  
**ONE LINE DIAGRAM**

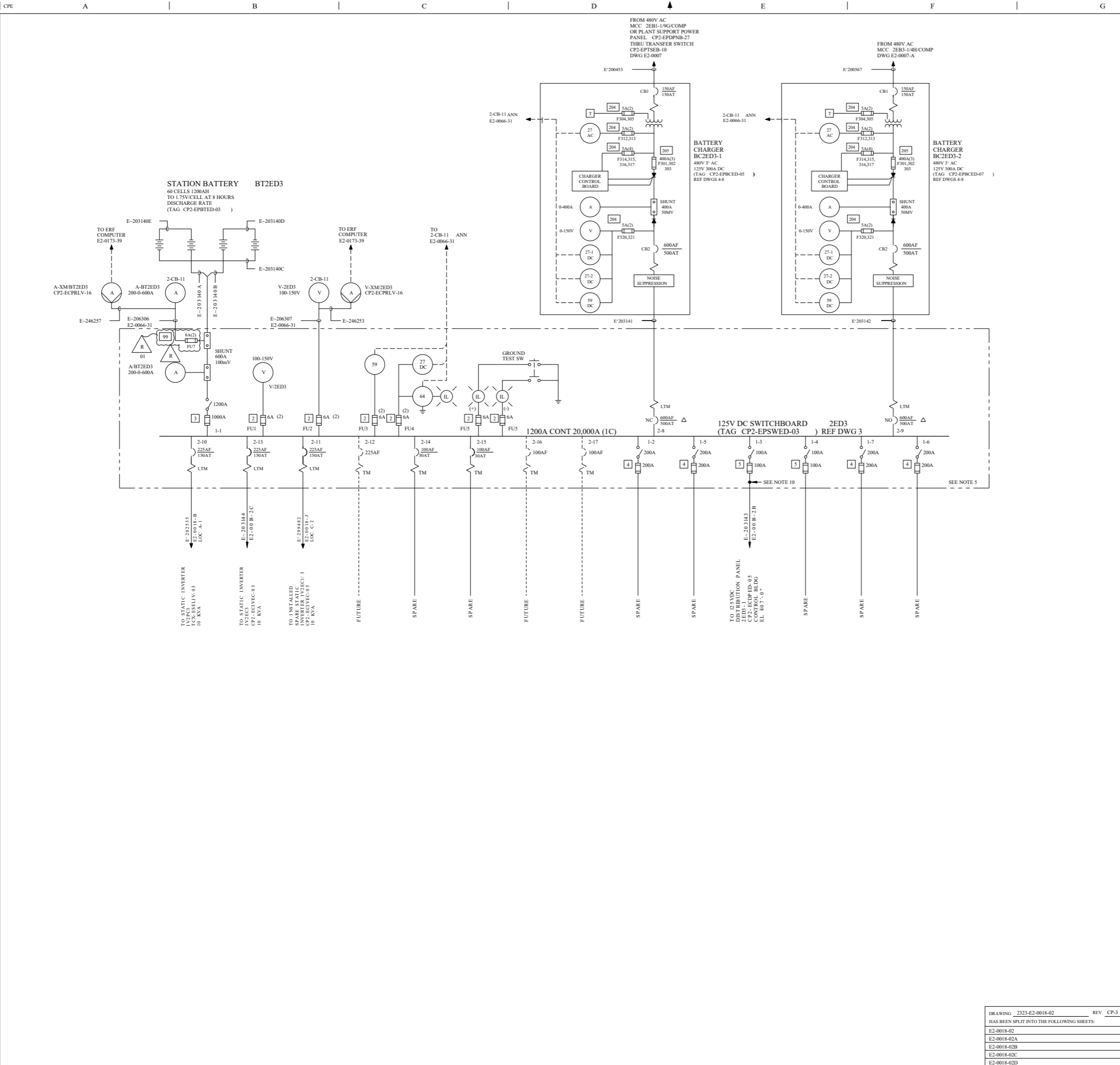
DRAWING E1-0018-02A	REV CP-2
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:	
E1-0018-02A	
E1-0018-02B	
E1-0018-02D	

DWG. NO. E1-0018	SH. NO. 02D	REV. CP-15
---------------------	----------------	---------------

**FINAL PRINT**

REF. CKD 6/26/2018 CP-15

THIS DRAWING CREATED ELECTRONICALLY



REV	DWN	CHKD	APVD	REMARKS
10	10/28/2013	10/28/2013	10/28/2013	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDM-2013-0001(14-01-05) PER SE-0094-14-0001(14-01-05) EDITORIAL CHANGES AS NOTED.

**FSAR FIGURE 8.3-15B**

- LEGEND:**
- (A) - TRANSMITTER
  - (V) - VOLTMETER
  - 59 - OVERVOLTAGE RELAY
  - 27 AC - UNDERVOLTAGE RELAY, AC
  - 27 DC - UNDERVOLTAGE RELAY, DC
  - (A) - AMMETER
  - 64 - GROUND RELAY
  - (IL) - INDICATING LIGHT
  - (T) - EQUALIZING CHARGE TIMER
  - SB - DC SWITCHBOARD
  - ANN - ANNUNCIATOR
  - CB - MAIN CONTROL BOARD
  - (S) - FUSE SWITCH (NOTE 6)
  - (S) - FUSE B/M ITEM NUMBER REF DWG 2
  - 2-10 - SWITCHBOARD CIRCUIT BREAKER (NOTE 2 AND 3)
  - AF - FRAME SIZE
  - AT - TRIP RATING
  - IM - INSTANTANEOUS MAGNETIC TRIP DEVICE
  - TM - THERMAL MAGNETIC TRIP ELEMENT

- NOTES:**
- ALL EQUIPMENT/DEVICES SHOWN ON THIS DWG ARE CLASS 1E TRAIN A UNLESS OTHERWISE NOTED.
  - ALL SWITCHBOARD BREAKERS ARE 2-POLE THERMAL MAGNETIC TYPE.
  - EACH CIRCUIT BREAKER IS PROVIDED WITH ONE SET OF FORM C AUXILIARY CONTACTS.
  - 25A FRAME AND LARGER FRAME SIZE BREAKERS HAVE INTERCHANGEABLE TRIP UNIT WITH ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP. FOR SETTING SEE REF DWG 1.
  - INOPERABLE BYPASS LIGHT INDICATION IN THE CONTROL ROOM WILL INDICATE IF ANY OF THE NC BREAKERS OR FUSIBLE SWITCHES ARE OPEN OR POWER FUSE IS BLOWN. FOR INDICATING LIGHTS SCHEMATIC SEE E2-0071 SERIES DRAWINGS.
  - ALL FUSIBLE SWITCHES ARE 3-POLE, ONE POLE BEING USED TO MONITOR SWITCH STATUS. BLOWN FUSE INDICATION IS PROVIDED BY TRIGGER FUSES WIRED IN PARALLEL WITH EACH POWER FUSE.
  - Δ - INDICATES BREAKERS MECHANICALLY INTERLOCKED TO PREVENT PARALLELING.
  - FOR SELECTIVE COORDINATION WITH SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER, RATINGS MUST NOT EXCEED THE FOLLOWING:  
40 AT FOR TM, NON ADJUSTABLE TRIP  
100 AT FOR TM, INST ADJUSTABLE TRIP
  - METER/RELAY NUMBER SUFFIXES ARE NOT ALWAYS SHOWN. THE SUFFIXES ARE THE ALTERNATE TAG NUMBERS FOR THAT PIECE OF EQUIPMENT THAT IS ASSOCIATED WITH (e.g. 27AC/BC2ED3-1, 64/2ED3). FOR THOSE METER/RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE UNDERBAR IS EQUIVALENT TO A SLASH (e.g. V /2ED3) IS EQUIVALENT TO V/2ED3.
  - REDUCTION SPLICE REQUIRED: SPLICE CONDUCTOR TAKEN FROM CABLE TYPE R-015 (1" LONG MAX) TO EXISTING CABLE PER E23-ES-100 AND INSULATE PER E2-1709.

- REFERENCE DRAWINGS:**
- E2-2400-361
  - E2-0024-04
  - 182C79225-2 SH 3
  - 10-102733 SH 1
  - 10-102734 SH 1
  - 10-102735 SH 1
  - 20-103542 SH 1
  - 20-103543 SH 1

TRAIN A  
**CLASS I**  
 (NUCLEAR SAFETY-RELATED)  
 SAFETY CLASS 1 SEISMIC CATEGORY 1  
 SAFETY CLASS 2 SAFETY CLASS 3 ASSOCIATED CIRCUITS

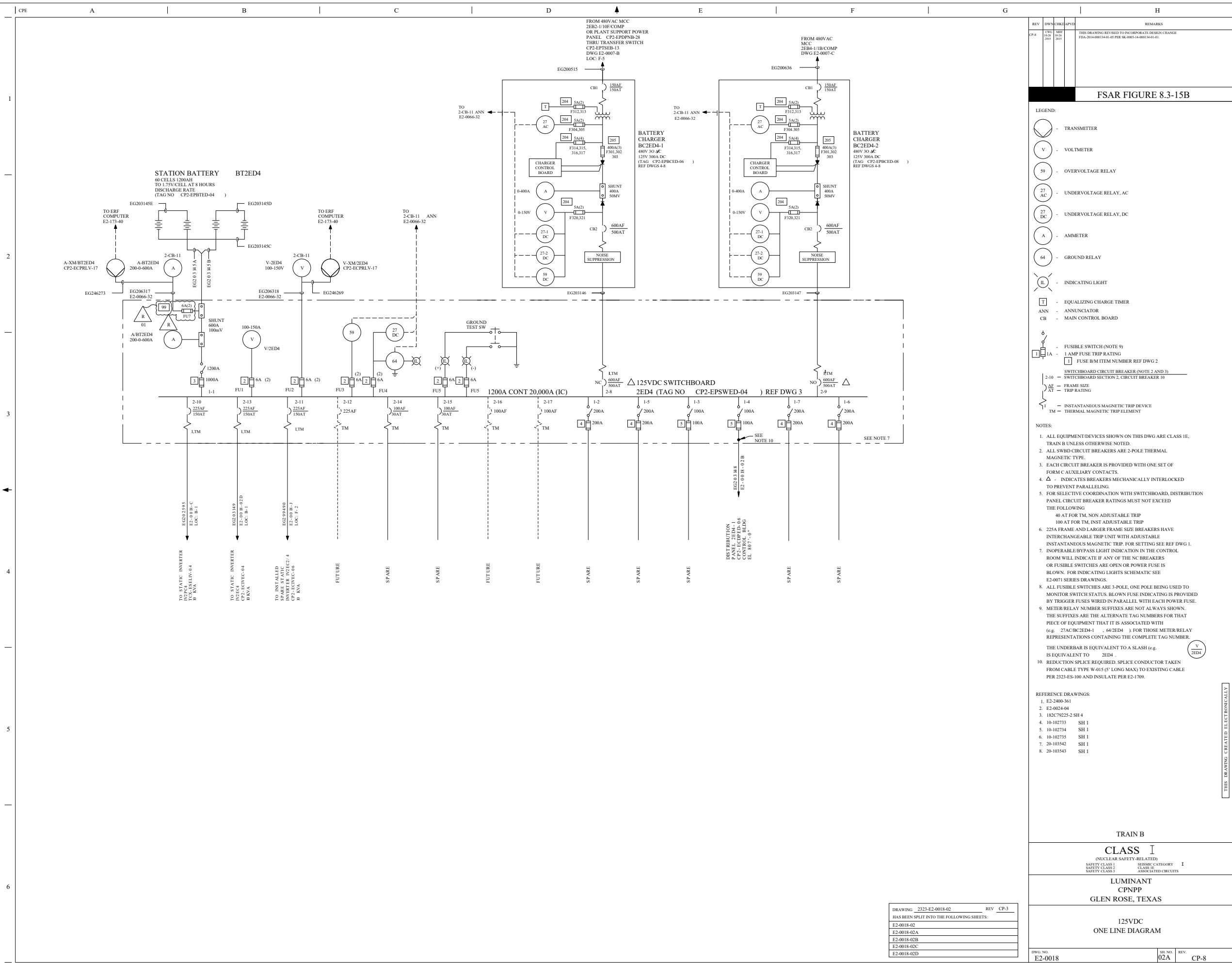
LUMINANT  
 CPNPP  
 GLEN ROSE, TEXAS

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	

DWG. NO.	SHEET NO.	REV.
E2-0018	02	CP-10

**FINAL PRINT**

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APPV	REMARKS
CP-8	10-24-2011	4807	10-24-2011		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2014-000134-01-05 PER SR-0005-14-000134-01-01.

**FSAR FIGURE 8.3-15B**

- LEGEND:**
- TRANSMITTER
  - VOLTMETER
  - OVERVOLTAGE RELAY
  - UNDERVOLTAGE RELAY, AC
  - UNDERVOLTAGE RELAY, DC
  - AMMETER
  - GROUND RELAY
  - INDICATING LIGHT
  - EQUALIZING CHARGE TIMER
  - ANNUNCIATOR
  - MAIN CONTROL BOARD
  - FUSIBLE SWITCH (NOTE 9)
  - 1 AMP FUSE TRIP RATING
  - FUSE BM ITEM NUMBER REF DWG 2
  - SWITCHBOARD CIRCUIT BREAKER (NOTE 2 AND 3)
  - SWITCHBOARD SECTION 2, CIRCUIT BREAKER 10
  - FRAME SIZE
  - TRIP RATING
  - INSTANTANEOUS MAGNETIC TRIP DEVICE
  - THERMAL MAGNETIC TRIP ELEMENT

- NOTES:**
- ALL EQUIPMENT DEVICES SHOWN ON THIS DWG ARE CLASS 1E, TRAIN B UNLESS OTHERWISE NOTED.
  - ALL SWBD CIRCUIT BREAKERS ARE 2-POLE THERMAL MAGNETIC TYPE.
  - EACH CIRCUIT BREAKER IS PROVIDED WITH ONE SET OF FORM C AUXILIARY CONTACTS.
  - Δ - INDICATES BREAKERS MECHANICALLY INTERLOCKED TO PREVENT PARALLELING.
  - FOR SELECTIVE COORDINATION WITH SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:  
40 AT FOR TM, NON ADJUSTABLE TRIP  
100 AT FOR TM, INST ADJUSTABLE TRIP
  - 225A FRAME AND LARGER FRAME SIZE BREAKERS HAVE INTERCHANGEABLE TRIP UNIT WITH ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP. FOR SETTING SEE REF DWG 1.
  - INOPERABLE BYPASS LIGHT INDICATION IN THE CONTROL ROOM WILL INDICATE IF ANY OF THE NC BREAKERS OR FUSIBLE SWITCHES ARE OPEN OR POWER FUSE IS BLOWN. FOR INDICATING LIGHTS SCHEMATIC SEE E2-0071 SERIES DRAWINGS.
  - ALL FUSIBLE SWITCHES ARE 3-POLE, ONE POLE BEING USED TO MONITOR SWITCH STATUS. BLOWN FUSE INDICATING IS PROVIDED BY TRIGGER FUSES WIRED IN PARALLEL WITH EACH POWER FUSE.
  - METER/RELAY NUMBER SUFFIXES ARE NOT ALWAYS SHOWN. THE SUFFIXES ARE THE ALTERNATE TAG NUMBERS FOR THAT PIECE OF EQUIPMENT THAT IT IS ASSOCIATED WITH (e.g. 27AC/BC2ED4-1, 64ZED4). FOR THOSE METER/RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER, THE UNDERBAR IS EQUIVALENT TO A SLASH (e.g. IS EQUIVALENT TO V/2ED4).
  - REDUCTION SPLICE REQUIRED. SPLICE CONDUCTOR TAKEN FROM CABLE TYPE W-015 (5' LONG MAX) TO EXISTING CABLE PER 2323-ES-100 AND INSULATE PER E2-1709.

- REFERENCE DRAWINGS:**
- E2-2400-361
  - E2-0024-04
  - 182C79225-2 SH 4
  - 10-102733 SH 1
  - 10-102734 SH 1
  - 10-102735 SH 1
  - 20-103542 SH 1
  - 20-103543 SH 1

TRAIN B

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

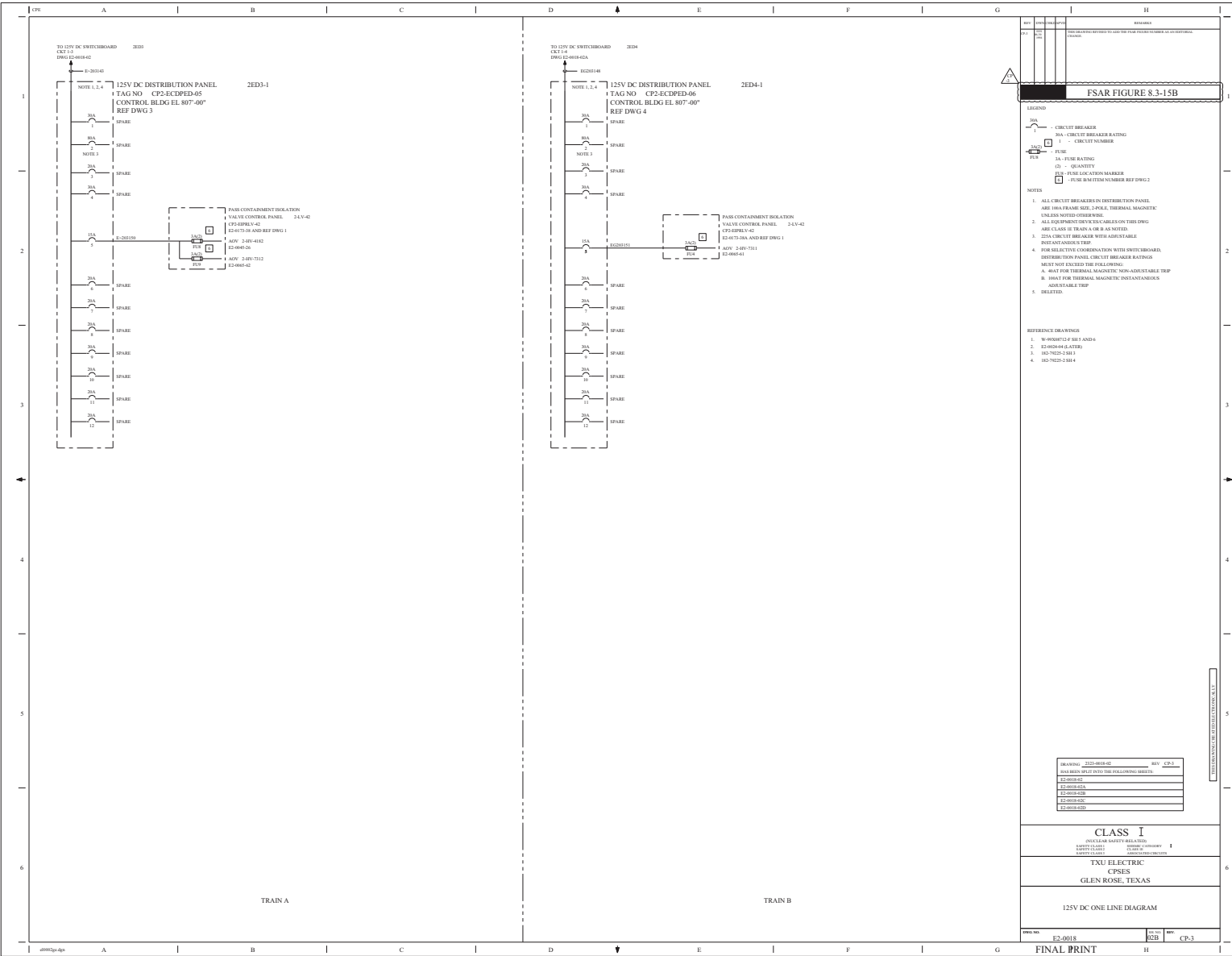
LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

125VDC  
ONE LINE DIAGRAM

DWG. NO. E2-0018 SH. NO. 02A REV. CP-8

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			





REV	DATE	BY	CHKD	DESCRIPTION
1				ISSUED FOR CONSTRUCTION TO BE USED FOR FIELD RECORDS TO BE MAINTAINED AS A REFERENCE
2				ISSUED FOR CONSTRUCTION TO BE USED FOR FIELD RECORDS TO BE MAINTAINED AS A REFERENCE

FSAR FIGURE 8.3-15B

- LEGEND
- CIRCUIT BREAKER
  - CIRCUIT BREAKER RATING
  - CIRCUIT NUMBER
  - FUSE
  - FUSE RATING
  - QUANTITY
  - FUSE LOCATION MARKER
  - FUSE NUMBER REF DWG 2

- NOTES
1. ALL CIRCUIT BREAKERS IN DISTRIBUTION PANEL ARE 1/2" FRAME SIZE, 2 POLE, THERMAL MAGNETIC UNLESS NOTED OTHERWISE.
  2. ALL EQUIPMENT MUST BE CABLED ON THIS DWG AND CLASSIFIED FOR USE AS NOTED.
  3. 25A CIRCUIT BREAKER WITH ADJUSTABLE INSTANTANEOUS TRIP.
  4. FOR SELECTIVE COORDINATION WITH SWITCHBOARD, DISTRIBUTION PANEL CIRCUIT BREAKER RATINGS MUST NOT EXCEED THE FOLLOWING:
    - A. 50A FOR THERMAL MAGNETIC NON-ADJUSTABLE TRIP
    - B. 100A FOR THERMAL MAGNETIC INSTANTANEOUS ADJUSTABLE TRIP
  5. SELECTED.

- REFERENCE DRAWINGS
1. W-900827-F 241 AND 6
  2. E-200446-LATED 1
  3. IS-70225-240 3
  4. IS-70225-240 4

DRAWING	E2-0018-02	REV	CP-1
SEE ALSO	DRAWINGS SHOWN ON THE FOLLOWING SHEETS:		
	E2-0018-01		
	E2-0018-03		
	E2-0018-04		
	E2-0018-05		

**CLASS I**

INTEGRAL SAFETY RELATED  
 SAFETY CLASSIFIED  
 SAFETY SIGNIFICANT  
 SAFETY CRITICAL

TXU ELECTRIC  
 CPSES  
 GLEN ROSE, TEXAS

125V DC ONE LINE DIAGRAM

REV	CHKD	APPV	REMARKS
REV 0	SM	2010	THIS DRAWING REVISED TO PROPERLY INCORPORATE DESIGN CHANGE DCA 10086 REV 9 AND PER AL-CR-2010-009206-1

**FSAR FIGURE 8.3-15B**

- LEGEND**
- MANUAL TRANSFER SWITCH
  - THERMAL MAGNETIC TRIP CIRCUIT
  - THREE POLE
  - CIRCUIT BREAKER
  - CIRCUIT BREAKER RATING
  - CIRCUIT NO
  - FUSE
  - FUSE RATING
  - FUSE LOCATION MARKER
  - FUSE/BM ITEM NUMBER, REF DWG 16
  - VOLTMETER
  - AMMETER
  - FREQUENCY METER
  - KIRK KEY INTERLOCK (IA) - 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 A UNLESS NOTED OTHERWISE.
  5. EACH CIRCUIT BREAKER IS PROVIDED WITH ONE SET OF FORM C AUXILIARY CONTACT.
  6. DELETED.
  7. 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. VM4IV2EC3, AM3IV2EC3).
  8. DELETED.
  9. SPLICE IN ACCORDANCE WITH SPECIFICATION CPES-E-2004.
  10. THE MECHANICAL BREAKER INTERLOCK MAY BE REMOVED UNDER CERTAIN CIRCUMSTANCES. SEE DBD-EE-043 FOR DETAILS.

**REFERENCE DRAWINGS**

11. W-99X08712-F SH 4 AND 5
12. 112D003 SH 1 AND 2
13. E-6608
14. E-6558 SH 1, 2, 3, 4
15. E-4182-422-103 SH 1, 2
16. E2-0024-04 (LATER)
17. DELETED
18. 182-79230-7-3
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 2323-0018-02	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	

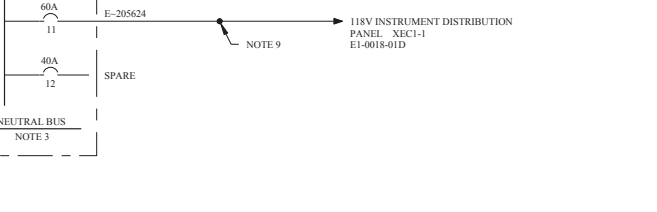
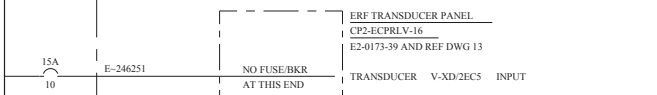
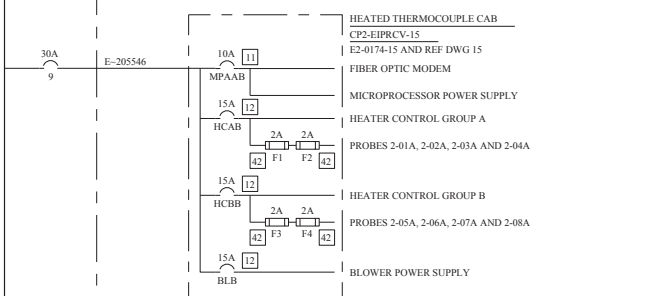
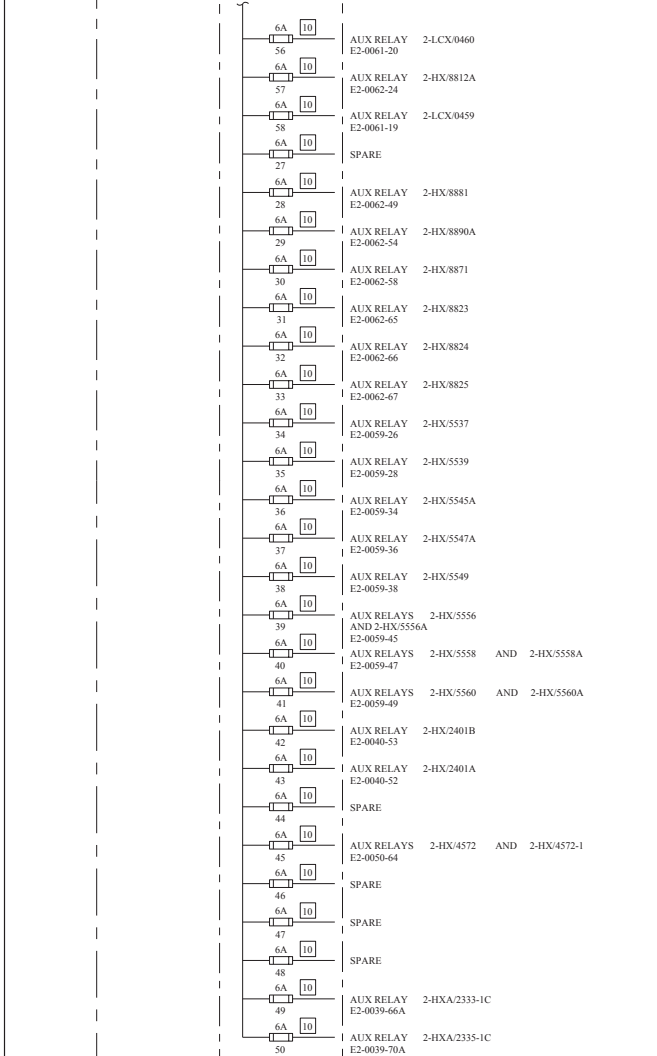
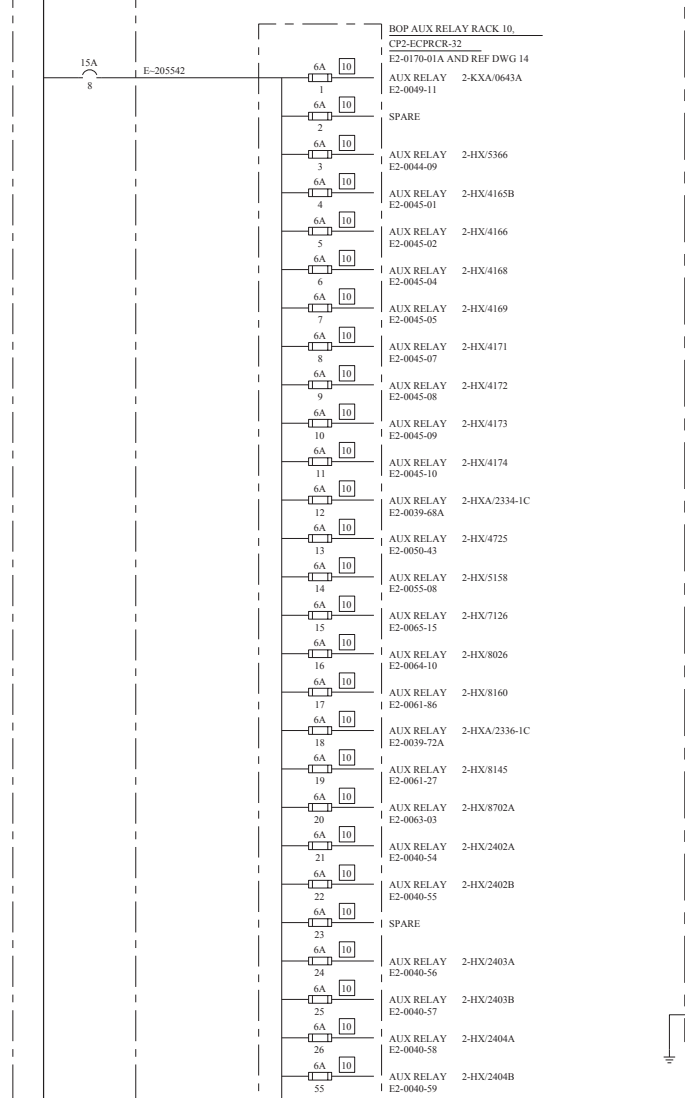
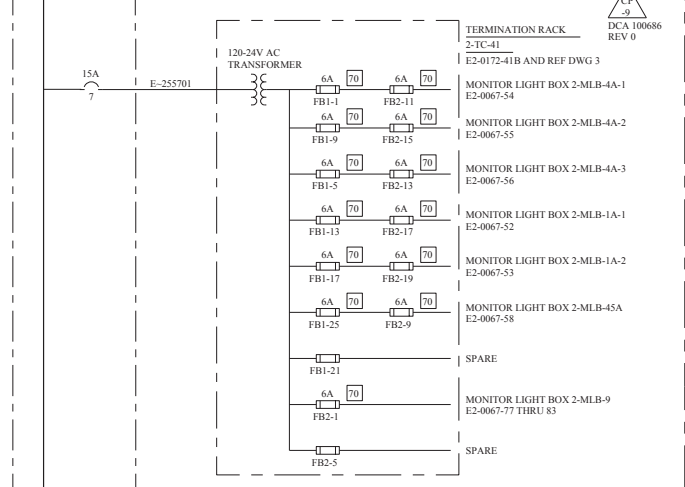
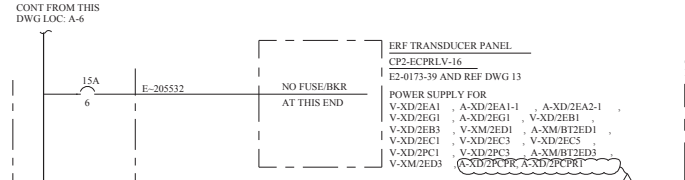
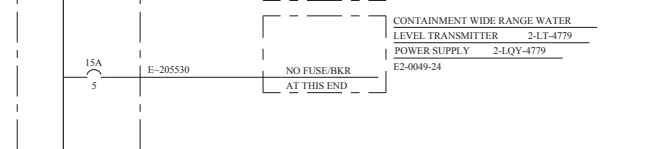
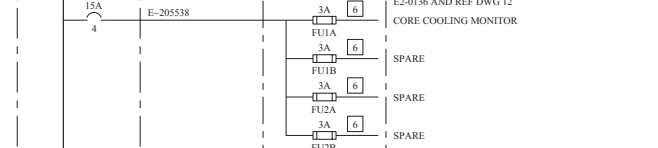
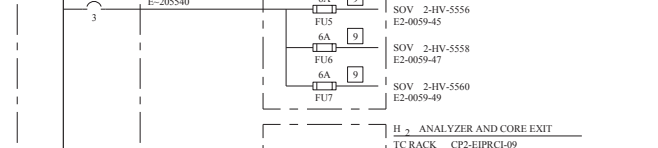
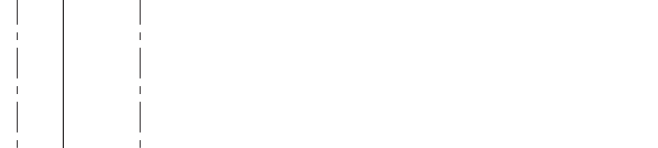
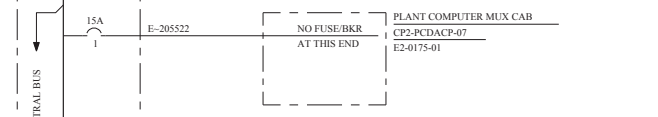
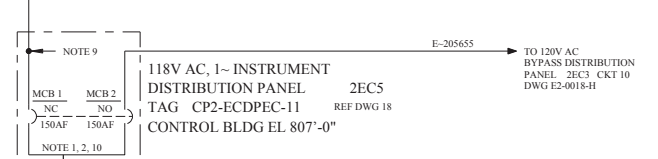
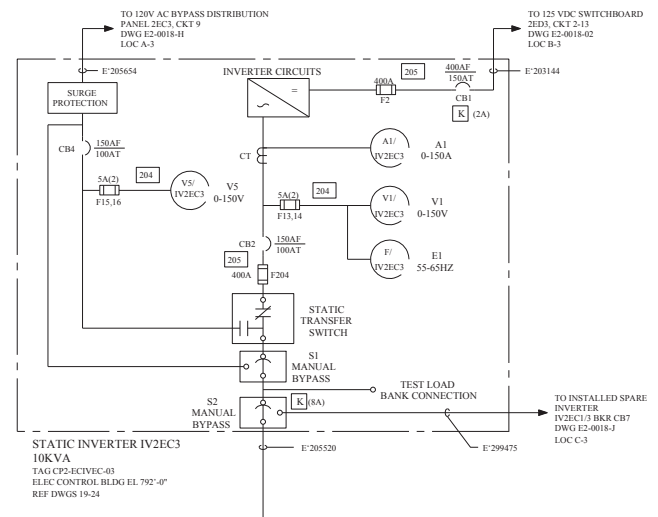
**TRAIN A**

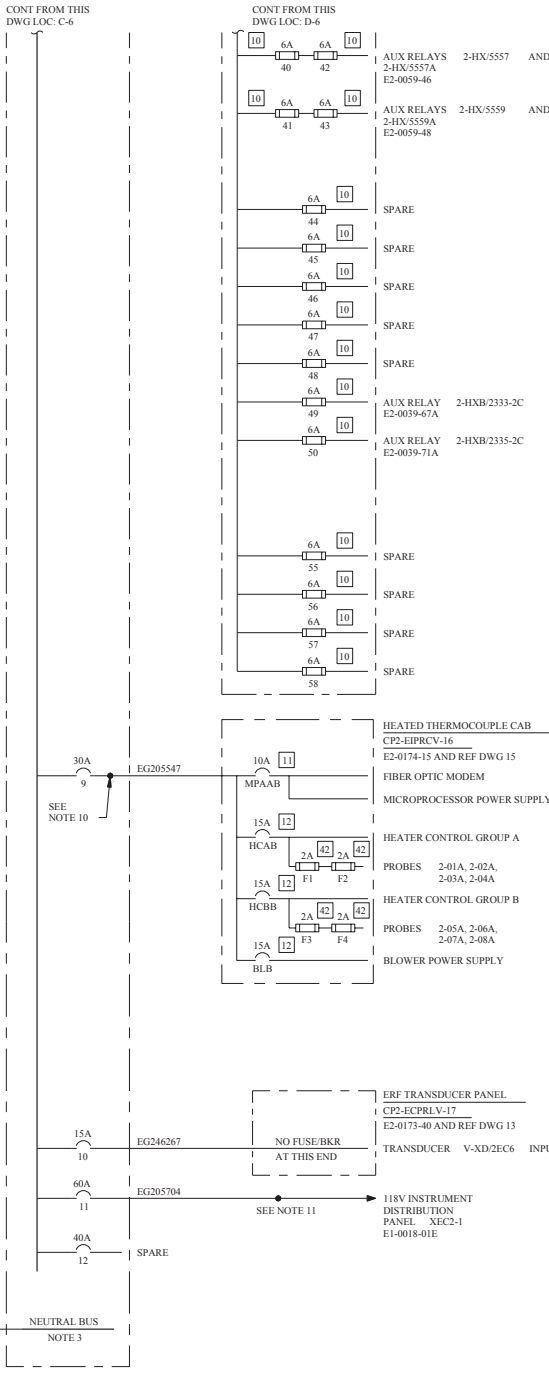
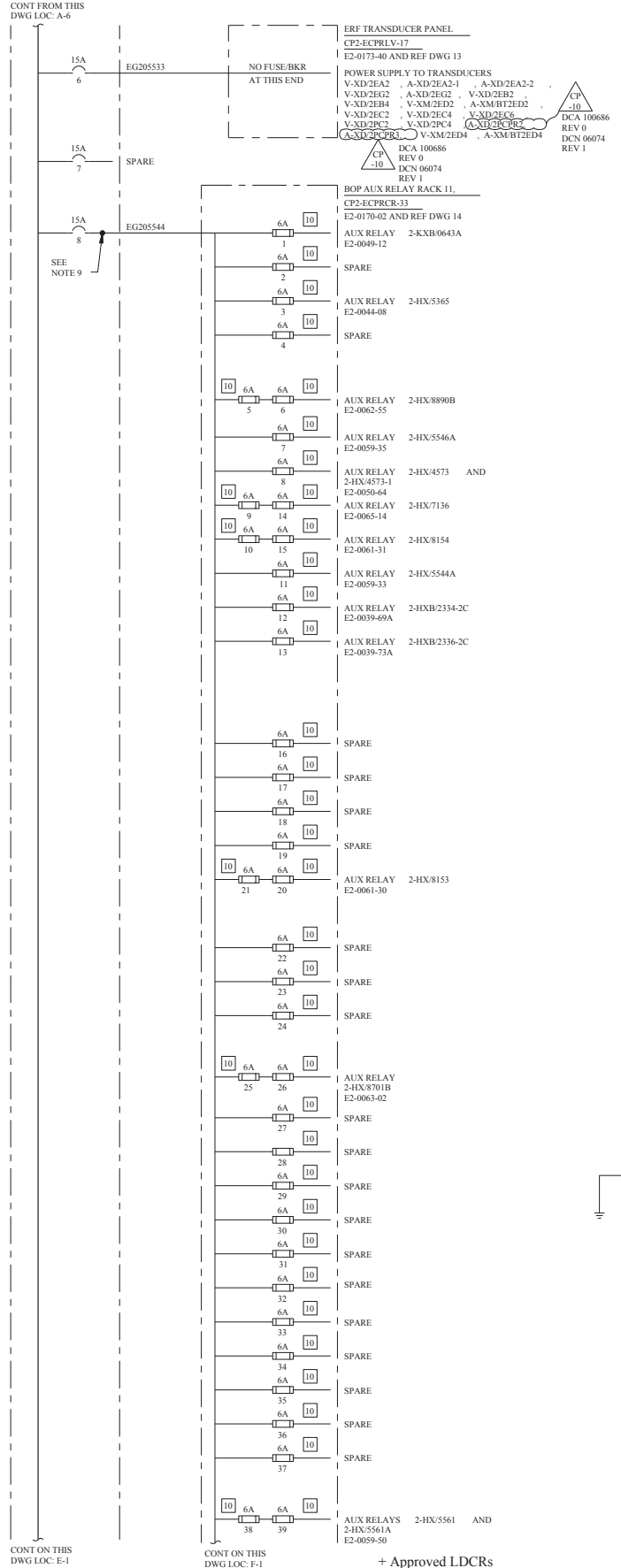
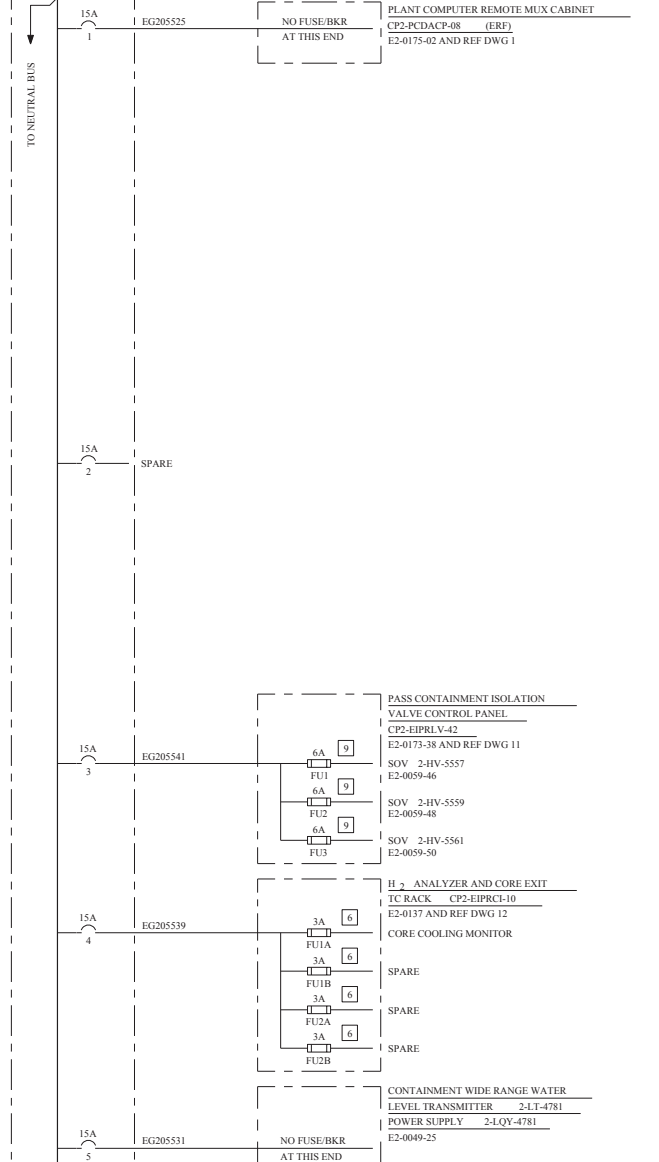
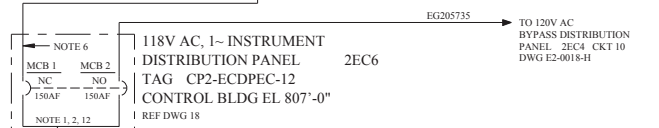
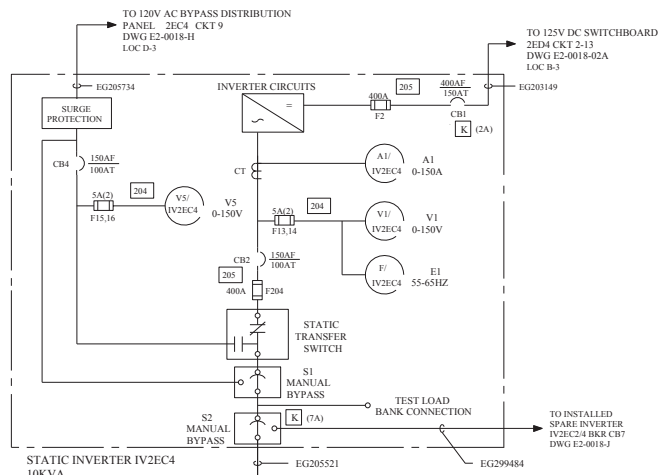
**CLASS I**

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

**LUMINANT**  
CPNPP  
GLEN ROSE, TEXAS

**118V AC**  
ONE LINE DIAGRAM





**FSAR FIGURE 8.3-15B**

**LEGEND**

- MANUAL TRANSFER SWITCH
- THERMAL MAGNETIC TRIP ELEMENT
- THREE POLE
- CIRCUIT BREAKER  
20A - CIRCUIT BREAKER RATING  
1 - CIRCUIT NUMBER
- FUSE  
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, FM5/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 REMOVED UNDER CERTAIN CIRCUMSTANCES. SEE DBD-EE-043 FOR DETAILS.

**REFERENCE DRAWINGS**

11. W-99X08712-F SH 2 AND 3
12. 112D903 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**

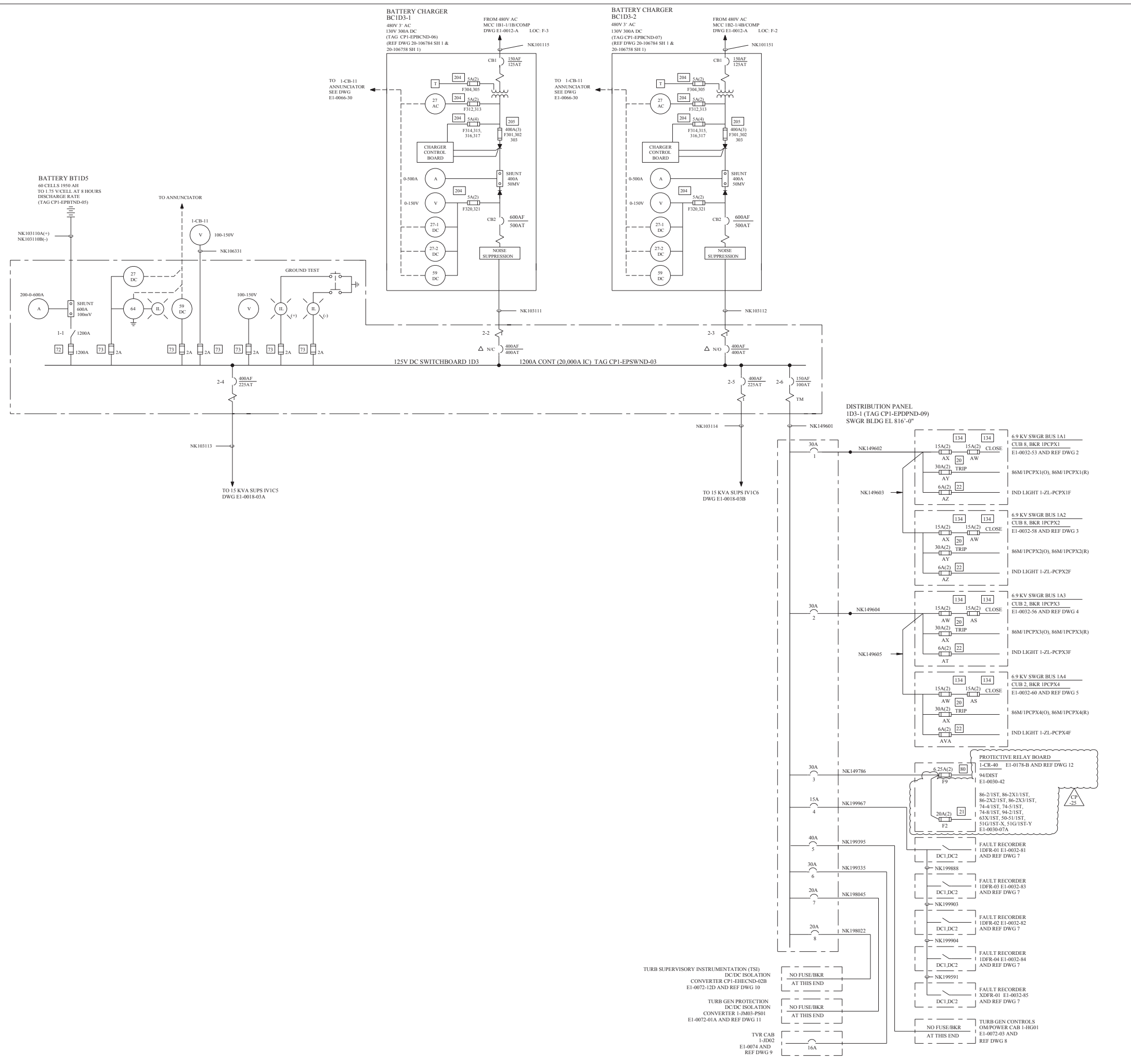
**CLASS I**  
(NUCLEAR SAFETY-RELATED)

SAFETY CLASS 1      SERVICE CATEGORY I  
SAFETY CLASS 2      CLASS II  
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
----------	---------	---------	-----	------	-------



REV	DWN	CHKD	APVD	REMARKS
CP-25	SM	11-02	2011	THIS DRAWING REVISED TO INCORPORATE EDITORIAL CHANGES AS NOTED PER A.I.C.R.2011-012261-1.

**FSAR FIGURE 8.3-15C**

**LEGEND**

	V	VOLTMETER
	59 DC	OVERVOLTAGE RELAY DC
	27 DC	UNDERVOLTAGE RELAY DC
	A	AMMETER
	27 AC	UNDERVOLTAGE RELAY AC
	64	GROUND DETECTION RELAY
	IL	INDICATING LIGHT
	T	EQUALIZING CHARGE TIMER
		FUSIBLE DISCONNECT SWITCH (SEE NOTE 2)
	AF AT	CIRCUIT BREAKER FRAME SIZE TRIP RATING
		ADJUSTABLE MAGNETIC TRIP
	TM	THERMAL MAGNETIC
	Δ	INDICATES BREAKERS MECHANICALLY INTERLOCKED TO PREVENT PARALLELING
	•	SPLICE
	30A(2) AX	FUSE 30A - FUSE RATING (2) - QUANTITY AX - FUSE LOCATION MARKER CLOSE - BREAKER CLOSE CIRCUIT 20 - FUSE B/M ITEM NUMBER (REF DWG 6)

- NOTES**
- ALL CIRCUIT BREAKERS ARE THERMAL MAGNETIC UNLESS OTHERWISE NOTED.
  - ALL FUSIBLE DISCONNECT SWITCHES ARE 3-POLE, ONE POLE BEING USED TO MONITOR SWITCH STATUS. BLOWN FUSE INDICATION IS PROVIDED BY TRIGGER FUSES WIRED IN PARALLEL WITH EACH POWER FUSE.
  - 225 FRAME AND LARGER FRAME SIZE BREAKERS HAVE INTERCHANGEABLE TRIP UNIT WITH ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP. FOR SETTING SEE REF DWG 1.
  - REFER TO DRAWING DI-HWEHC AND DI-HWTVR FOR SIEMENS REFERENCE DRAWINGS.

**REFERENCES**

1. E1-2400-361	
2. 33-51261-E508	
3. 33-51261-E528	
4. 33-51261-E543	
5. 33-51261-E563	
6. E1-0024-04	
7. P.O. #802820426D6	MEHTA TECH VENDOR MANUAL
8. DI-HWEHC (1HG01W002)	SIEMENS CONNECTION DIAGRAM
9. DI-HWTVR (YX-001)	SIEMENS CONNECTION DIAGRAM
10. DI-HWTSI	ZEEFAX REF DWG
11. DI-HWEHC (1JC42W002)	SIEMENS CONNECTION DIAGRAM
12. D-7460 SH 02	

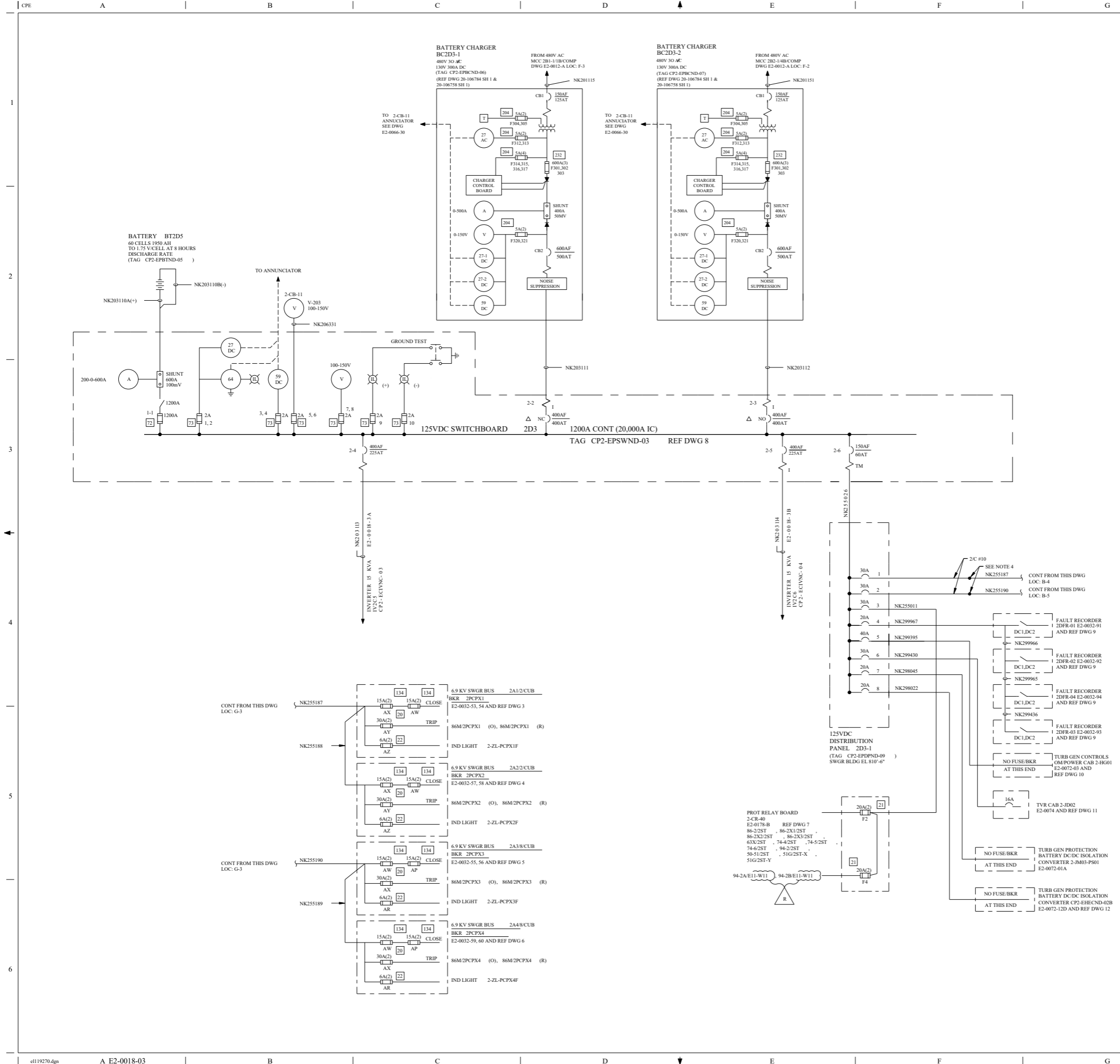
DRAWING	E1-0018-03	REV	CP-6
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
E1-0018-03			
E1-0018-03A			
E1-0018-03B			

**NON-SAFETY**

**LUMINANT**  
**CPNPP**  
**GLEN ROSE, TEXAS**

**125V DC SWITCHBOARD ID3**  
**ONE LINE DIAGRAM**

THIS DRAWING CREATED ELECTRONICALLY



REV	BY	CHKD	APPD	REMARKS
CP-15	SM	GAW	SM	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2010-00125-06-01 PER SR-0166-10-00125-06-00

**FSAR FIGURE 8.3-15C**

**LEGEND**

- (V) - VOLTMETER
- (59 DC) - OVERVOLTAGE RELAY, DC
- (27 DC) - UNDERVOLTAGE RELAY, DC
- (A) - AMMETER
- (27 AC) - UNDERVOLTAGE RELAY, AC
- (64) - GROUND DETECTION RELAY
- (IL) - INDICATING LIGHT
- (T) - EQUALIZING CHARGE TIMER
- (F) - FUSIBLE DISCONNECT SWITCH (SEE NOTE 2)
- (AF/AT) - CIRCUIT BREAKER FRAME SIZE / TRIP RATING
- (I) - ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP
- (E) - ELECTROSTATICALLY SHIELDED TRANSFORMER
- (TM) - THERMAL MAGNETIC
- (Δ) - INDICATES BREAKERS MECHANICALLY INTERLOCKED TO PREVENT PARALLELING
- (F7.8) - FUSE
- (1A) - FUSE RATING
- (1) - FUSE B/M ITEM NUMBER (REF DWG 2)
- (F7.8) - FUSE LOCATION MARKER

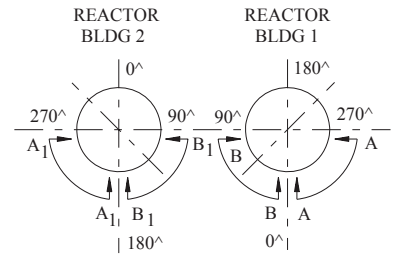
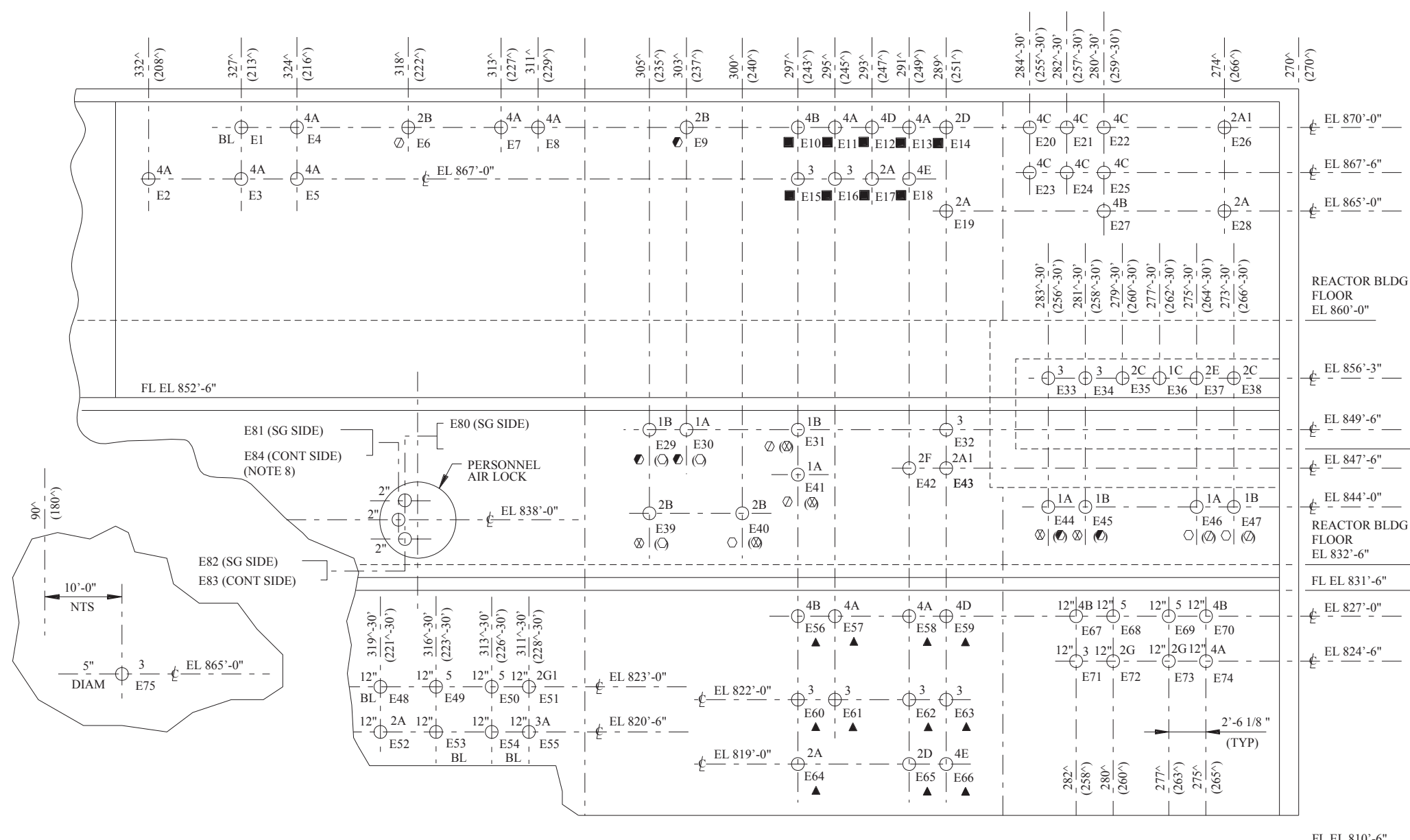
- NOTES**
- ALL CIRCUIT BREAKERS ARE THERMAL MAGNETIC UNLESS OTHERWISE NOTED.
  - ALL FUSIBLE DISCONNECT SWITCHES ARE 3-POLE, ONE POLE BEING USED TO MONITOR SWITCH STATUS. BLOWN FUSE INDICATION IS PROVIDED BY TRIGGER FUSES WIRED IN PARALLEL WITH EACH POWER FUSE.
  - 225 FRAME SIZE AND LARGER FRAME SIZE BREAKERS HAVE INTERCHANGEABLE TRIP UNIT WITH ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP. FOR SETTING SEE REFERENCE DWG 1.
  - CABLE CONDUCTOR SIZE SHALL BE REDUCED AT THE BREAKER PANEL, BY SPLICING CONDUCTORS WITH EXTENSION CONDUCTORS (2 FEET MAX LENGTH) STRIPPED FROM 2#10 AWG CABLE (W-027) ENABLING TERMINATIONS TO BE MADE AT 30A BREAKERS. THE SPLICES SHALL BE MADE IN ACCORDANCE WITH 2323-ES-100.
- REFERENCE DRAWINGS**
- E2-2400-361
  - E2-0024-04 (LATER)
  - 33-51261-E1584
  - 33-51261-E1561
  - 33-51261-E2487
  - 33-51261-E2508
  - D-7461 SH 1, 2 AND 3
  - DB2-18479-1
  - P.O.# S02820426D6.
  - 2H601W002-01
  - 35E-A33-959-9140.30-SP-2 SH 2
  - D2-4HWTSI
- MEHTA TECH VENDOR MANUAL  
SIEMENS CIRCUIT DIAGRAM  
SIEMENS CONNECTION DRAWING  
ZEEFAX DRAWING
- |   |           |
|---|-----------|
| DRAWING: 2323-E2-0018-03                  | REV: CP-4 |
| HAS BEEN SPLIT INTO THE FOLLOWING SHEETS: |           |
| E2-0018-03                                |           |
| E2-0018-03A                               |           |
| E2-0018-03B                               |           |

**NON-SAFETY**

LUMINANT  
CPNPP  
GLEN ROSE, TEXAS

PLANT COMPUTER  
125VDC  
ONE LINE DIAGRAM

DWG. NO. E2-0018	SHEET NO. 03	REV. CP-15
---------------------	-----------------	---------------



KEY PLAN

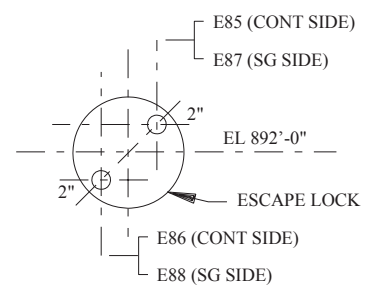
NOTES

1. OUTSIDE REACTOR BLDG  
1"=1'-3 1/16" (1.256').
2. INSIDE REACTOR BLDG  
1"=1'-2 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 VOLTAGE LEVEL IS NOT APPLICABLE FOR FIBER OPTIC CIRCUITS.

SECTION A-A FOR UNIT 1 AS SHOWN

(SECTION A -A FOR UNIT 2 OPPOSITE HAND)

PENETRATION TYPE	CONDUCTOR SIZE	VOLTAGE (SEE NOTE 9)	TRAIN		CHANNEL	BLANK	TOTAL	FUNCTION
			A	B				
5	500MCM 2/ ∅	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
	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
	G1 COAX	LOW SIGNAL			2		2	INSTRUMENTATION
1	A COAX & FIBER OPTIC	LOW SIGNAL			1		1	INSTRUMENTATION/FIBER OPTIC
	B TRIAX	LOW SIGNAL			4		4	NIS
	C TRIAX & #16	LOW SIGNAL			4		4	NIS
BLANK						4	4	INCOR
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

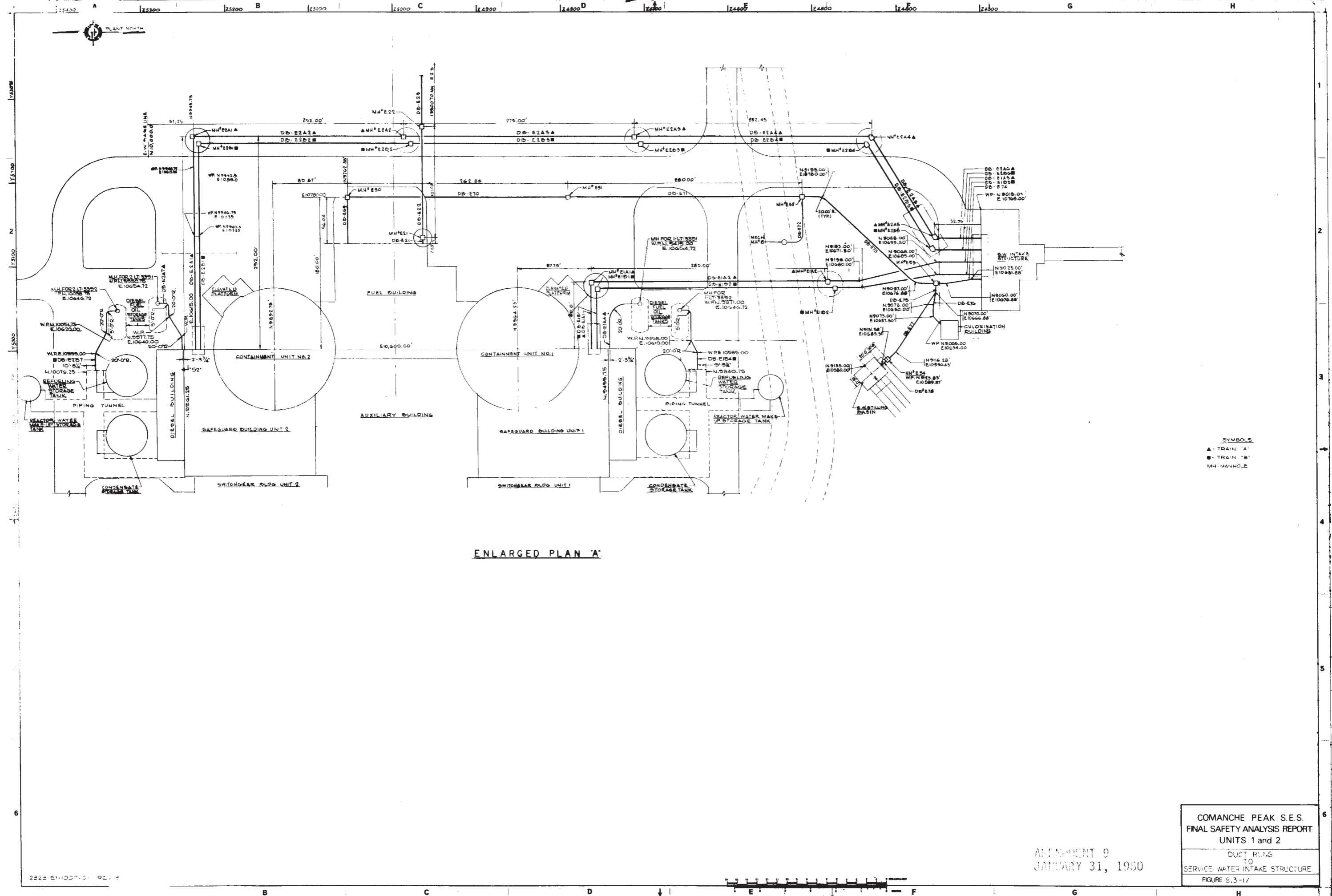
COMANCHE PEAK S.E.S.  
FINAL SAFETY ANALYSIS REPORT  
UNITS 1 and 2

---

CONTAINMENT ELECTRICAL  
PENETRATIONS

---

FIGURE 8.3-16



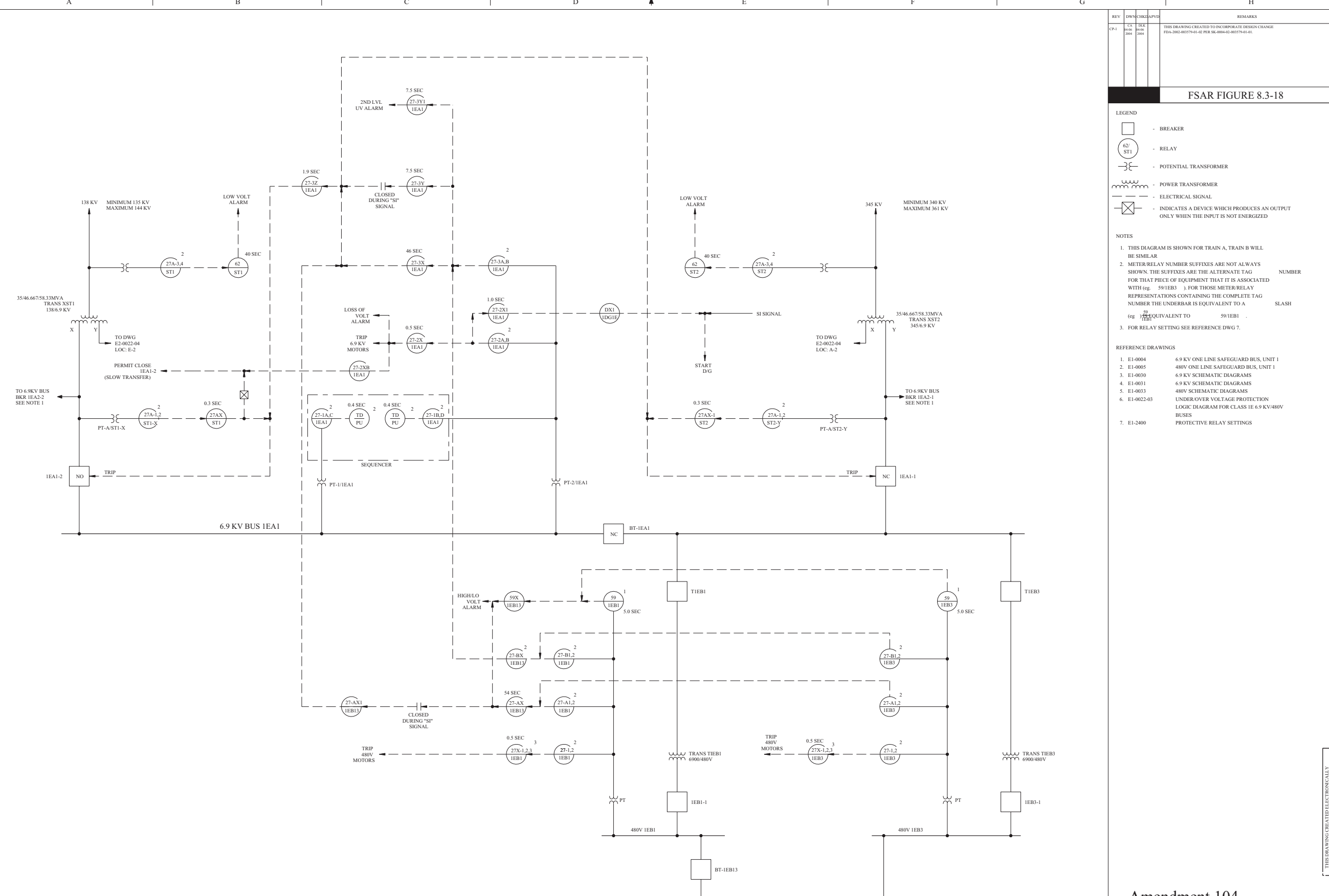
ENLARGED PLAN 'A'

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



REV	DWN	CHK	APP	REMARKS
CP-1	CA	TK	AP	THIS DRAWING CREATED TO INCORPORATE DESIGN CHANGE FDA-2002-003579-01-02 PER 96-0004-02-003579-01-01

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
- THIS DIAGRAM IS SHOWN FOR TRAIN A, TRAIN B WILL BE SIMILAR
  - 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 (eg. 59/IEB1) FOR THOSE METER RELAY REPRESENTATIONS CONTAINING THE COMPLETE TAG NUMBER THE UNDERBAR IS EQUIVALENT TO A SLASH (eg. 59/IEB1 EQUIVALENT TO 59/IEB1)
  - FOR RELAY SETTING SEE REFERENCE DWG 7.

- REFERENCE DRAWINGS
- E1-0004 6.9 KV ONE LINE SAFEGUARD BUS, UNIT 1
  - E1-0005 480V ONE LINE SAFEGUARD BUS, UNIT 1
  - E1-0030 6.9 KV SCHEMATIC DIAGRAMS
  - E1-0031 6.9 KV SCHEMATIC DIAGRAMS
  - E1-0033 480V SCHEMATIC DIAGRAMS
  - E1-0022-03 UNDER/OVER VOLTAGE PROTECTION LOGIC DIAGRAM FOR CLASS 1E 6.9 KV/480V BUSES
  - E1-2400 PROTECTIVE RELAY SETTINGS

Amendment 104

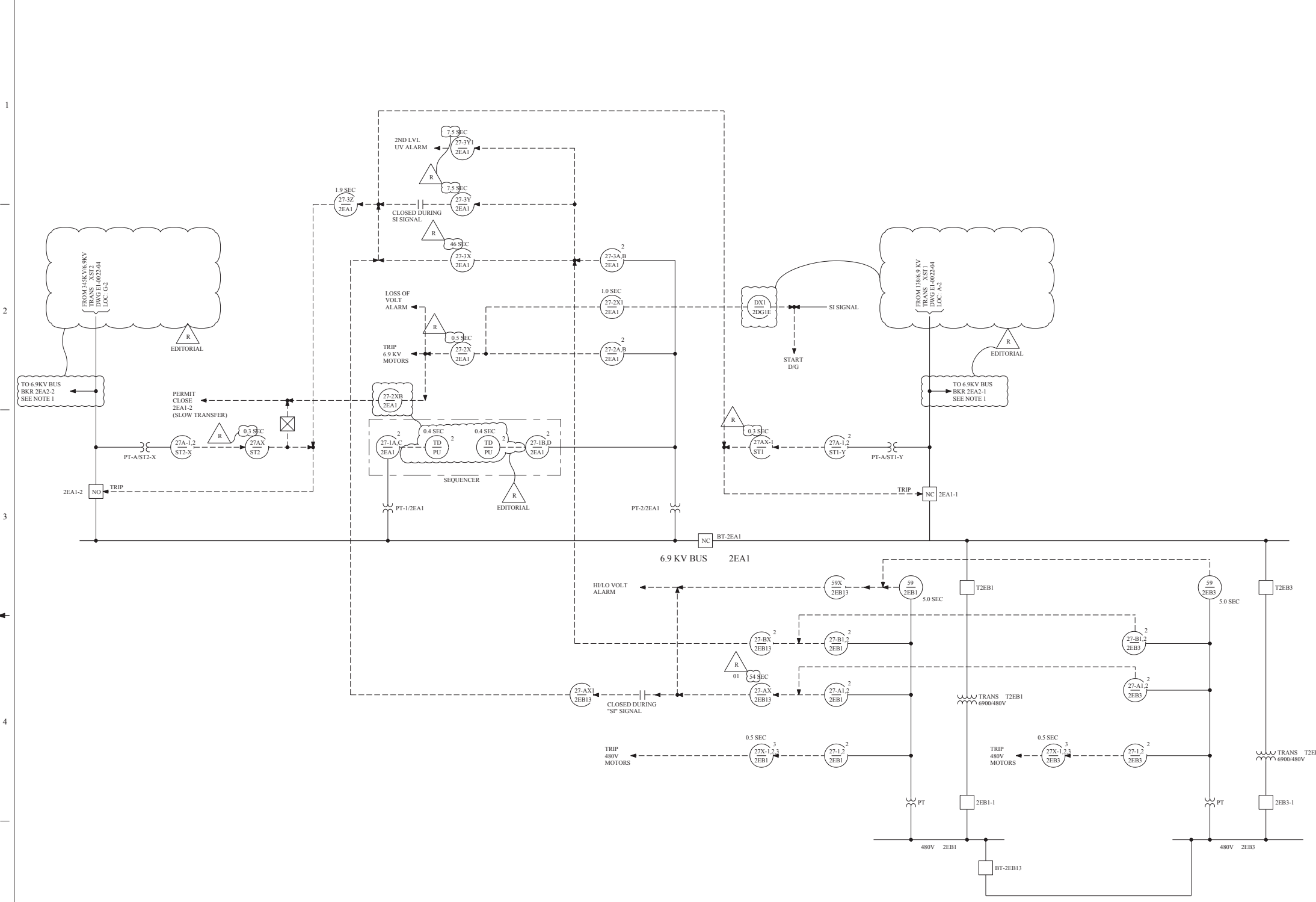
CLASS I  
(NUCLEAR SAFETY-RELATED)  
SAFETY CLASS 1 SEBIMC CATEGORY I  
SAFETY CLASS 2 CLASS 1E  
SAFETY CLASS 3 ASSOCIATED CIRCUITS

TXU POWER  
CPSES  
GLEN ROSE, TEXAS

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

DWG NO.	SH. NO.	REV.
E1-0022	04	CP-1





REV	DWN	CHK	APPV	REMARKS
CP-5	CA	TK	APV	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**
- THIS DIAGRAM IS SHOWN FOR TRAIN A, TRAIN B WILL BE SIMILAR
  - 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 )
  - FOR RELAY SETTING SEE REFERENCE DWG 7.

- REFERENCE DRAWINGS**
- E2-0004 6.9 KV ONE LINE SAFEGUARD BUS, UNIT 2
  - E2-0005 480V ONE LINE SAFEGUARD BUS, UNIT 2
  - E2-0030 6.9 KV SCHEMATIC DIAGRAMS
  - E2-0031 6.9 KV SCHEMATIC DIAGRAMS
  - E2-0033 480V SCHEMATIC DIAGRAMS
  - E2-0022-03 UNDER/OVER VOLTAGE PROTECTION LOGIC DIAGRAM FOR CLASS 1E 6.9 KV/480V BUSES
  - E2-2400 PROTECTIVE RELAY SETTINGS

THIS DRAWING CREATED ELECTRONICALLY

**Amendment 104**

**CLASS I**  
(NUCLEAR SAFETY-RELATED)

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

**TXU POWER**  
CPSES  
GLEN ROSE, TEXAS

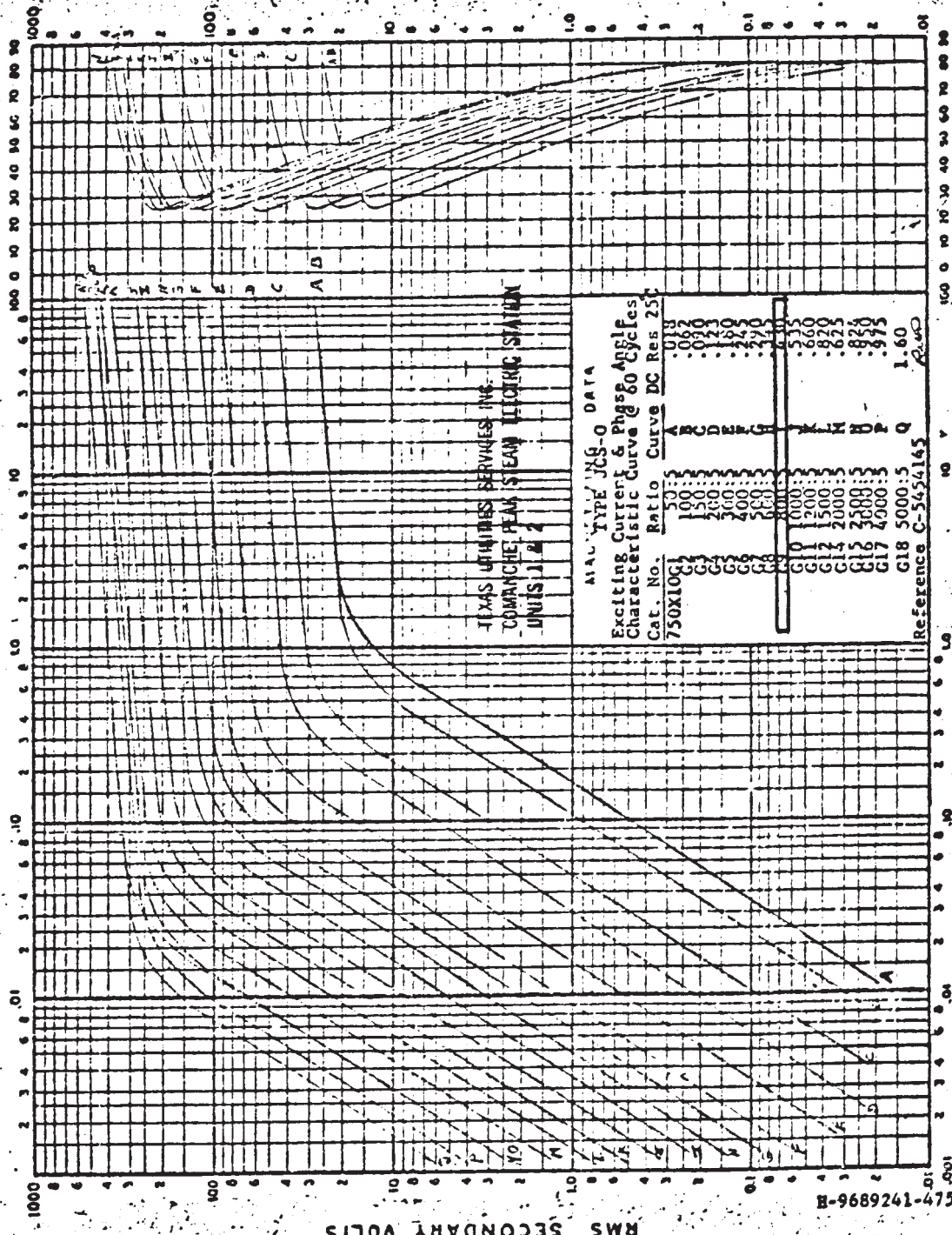
UNDER/OVER VOLTAGE RELAY  
PROTECTION FOR  
CLASS 1E 6.9 KV/480V BUSES

DWG NO. E2-0022	SH NO. 04	REV. CP-5
--------------------	--------------	--------------

9/15/66

R94

H-9689241-475



ISSUED SEP 1 1966 RMS SECONDARY AMPERES EXCITING CURRENT

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

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted



Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted



Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted



Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted

Figures 8.3-20 through 8.3-45 have been deleted