

8-2 500 KV SWITCHYARD SINGLE LINE METER AND RELAY DIAGRAM

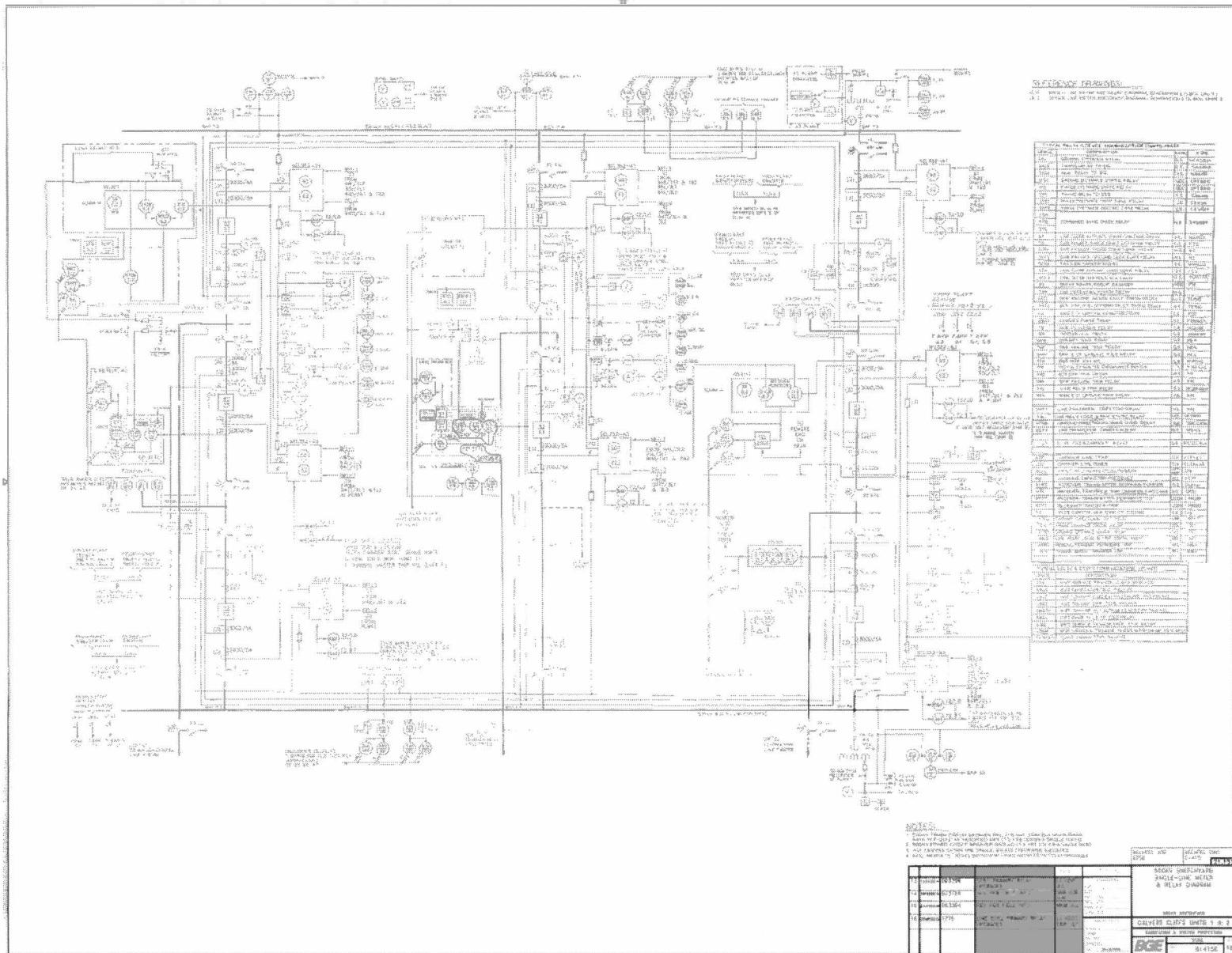
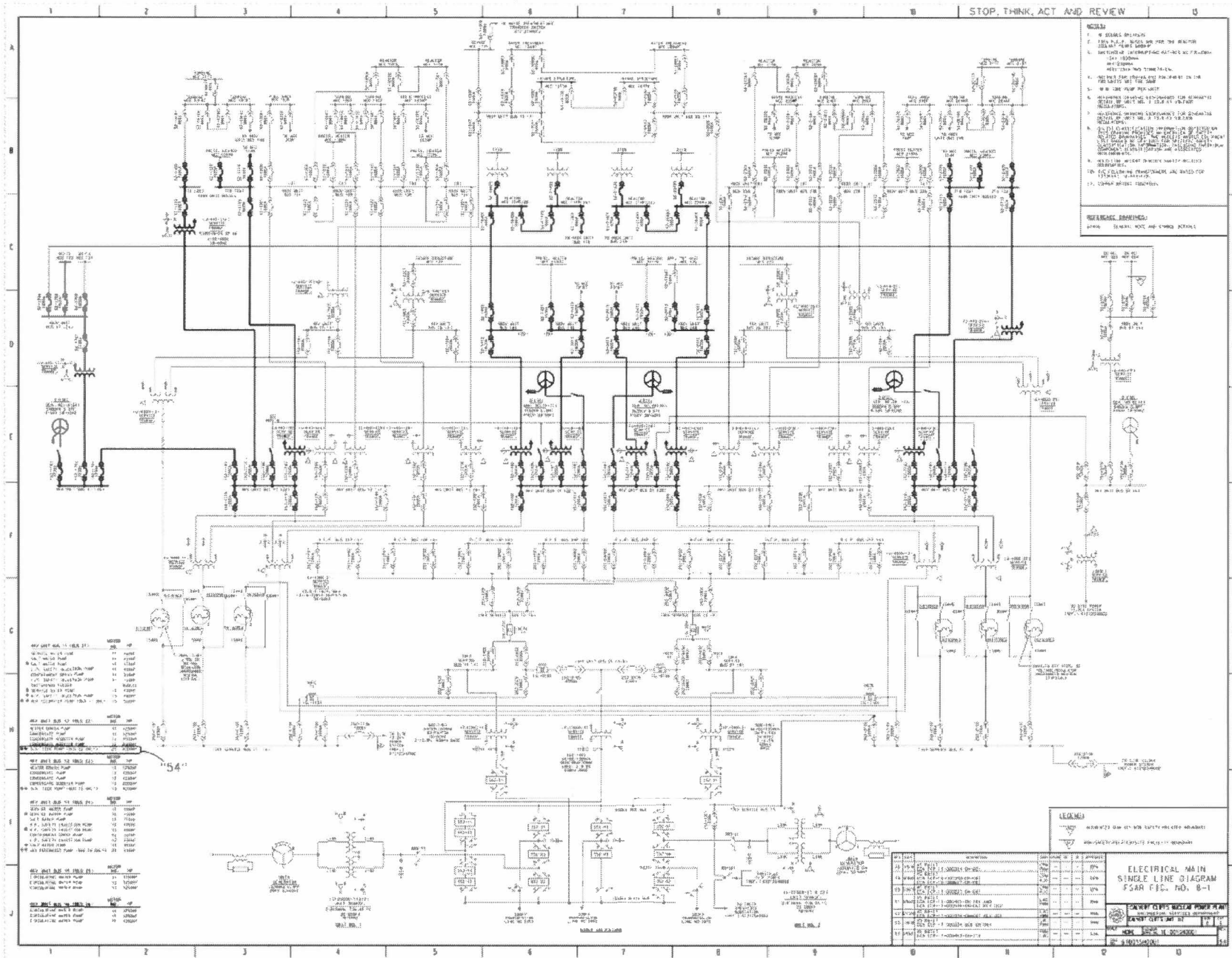
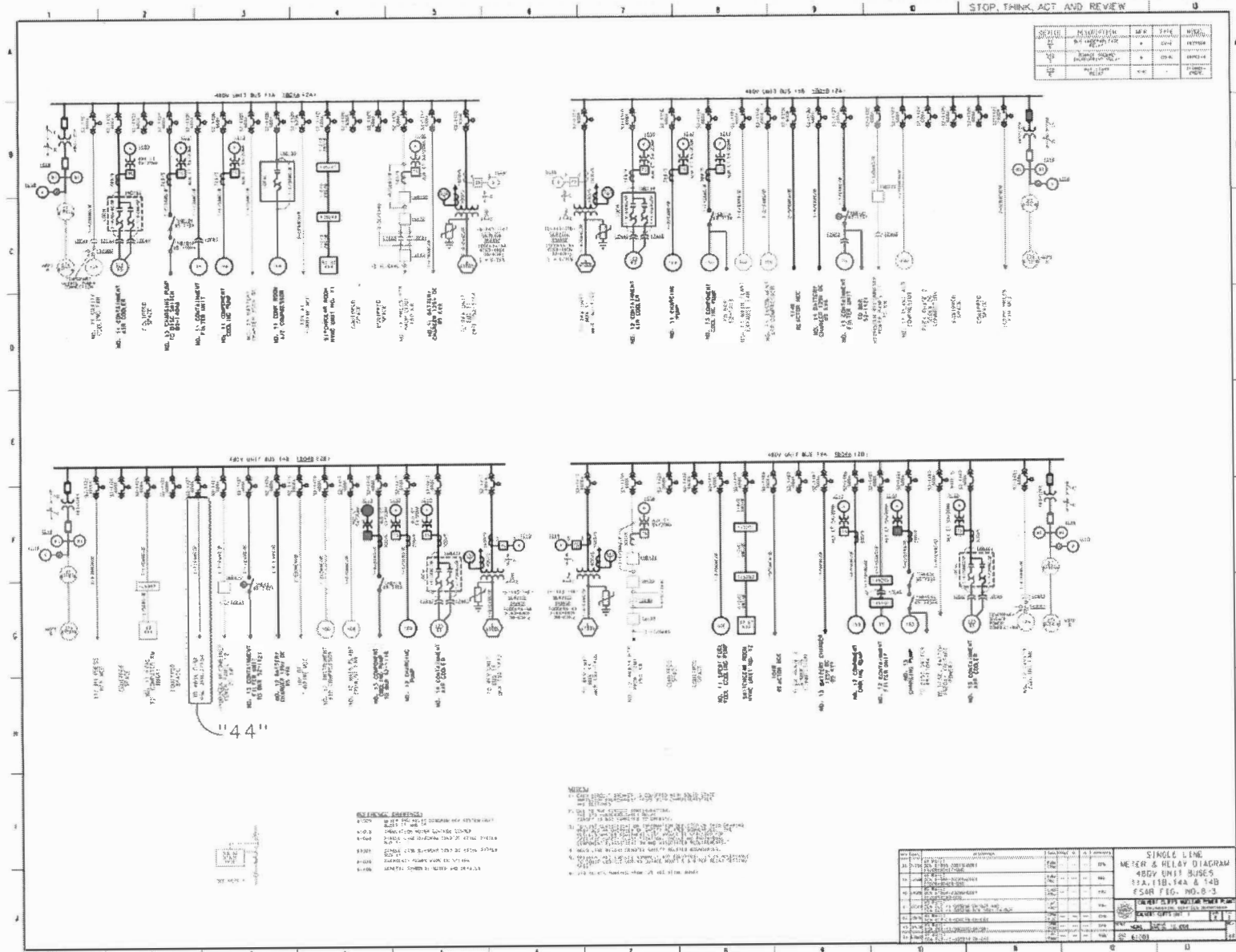


FIGURE 08-01-01 – ELECTRICAL MAIN SINGLE LINE DIAGRAM FSAR FIG NO. 8-1



REVISION 52

FIGURE 08-03-01 SINGLE LINE METER & RELAY DIAGRAM 480V UNIT BUSES 11A, 11B, 14A, & 14B FSAR FIG NO. 8-3



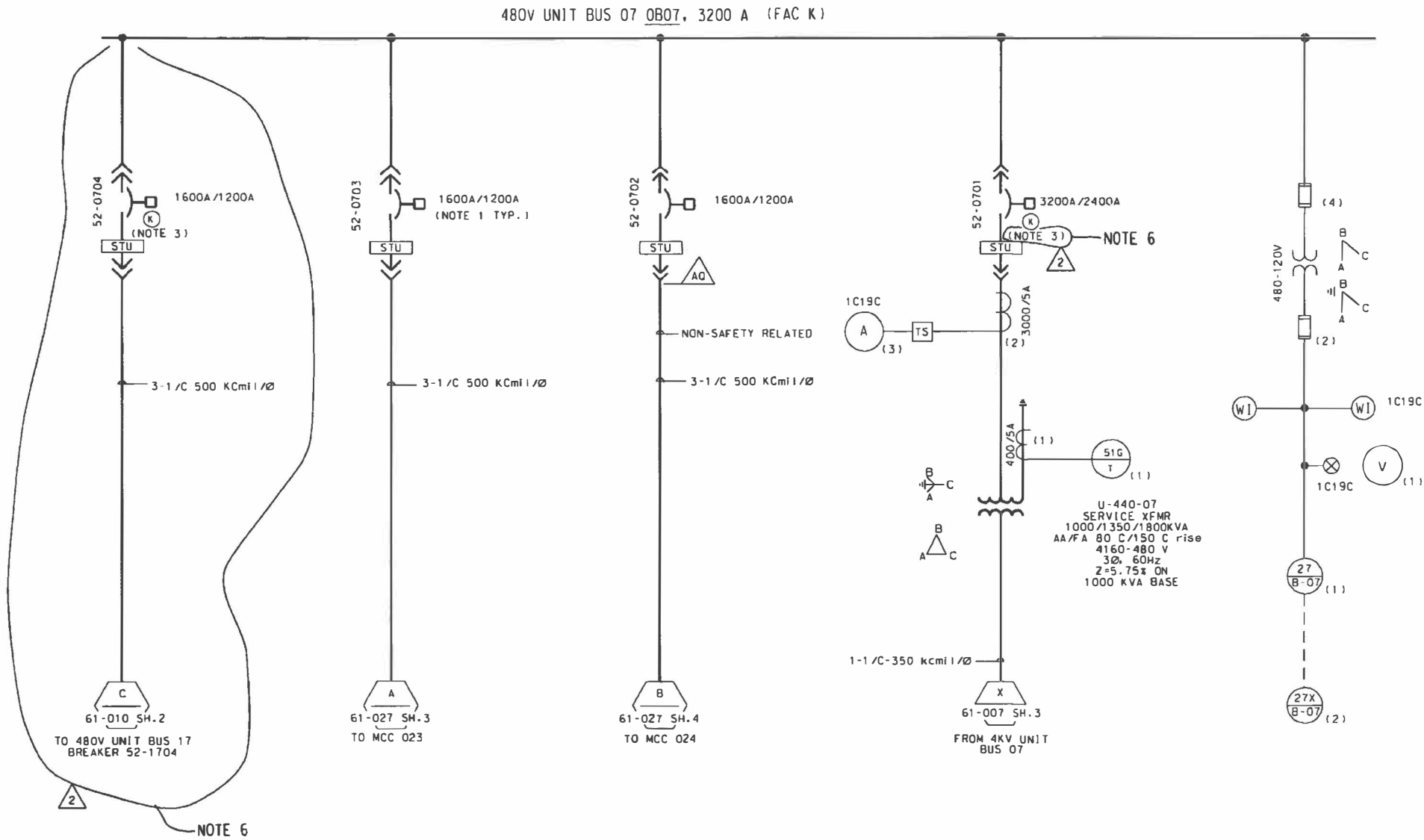


1. EACH UNIT IS EQUIPPED WITH SOLID STATE 24VDC CURRENT LIMIT ISSU WITH 100G AND 500G TIME DELAY WITH INTEGRAL CROCODAL FUEL PROTECTION CHARACTERISTICS.
2. BATTERY UNITING 12VDC 100AH 55% MAXIMUM SIZE SENSOR RATING.
3. BATTERY UNITING ON 55% SENSING.
4. MONITORING IN MANHOLE RIT : 1) DOWEL THE QUANTITY OF DEVICES REQUIRED.
5. MECHANICAL INTEGRITY RIT: INTERFACES ARE PROVIDED SUCH THAT EITHER MANUAL FEED BACK OR 2) 100 OR 200 OR 300 OR 400 OR 500 OR 600 OR 700 OR 800 OR 900 OR 1000 OR 1100 OR 1200 OR 1300 OR 1400 OR 1500 OR 1600 OR 1700 OR 1800 OR 1900 OR 2000 OR 2100 OR 2200 OR 2300 OR 2400 OR 2500 OR 2600 OR 2700 OR 2800 OR 2900 OR 3000 OR 3100 OR 3200 OR 3300 OR 3400 OR 3500 OR 3600 OR 3700 OR 3800 OR 3900 OR 4000 OR 4100 OR 4200 OR 4300 OR 4400 OR 4500 OR 4600 OR 4700 OR 4800 OR 4900 OR 5000 OR 5100 OR 5200 OR 5300 OR 5400 OR 5500 OR 5600 OR 5700 OR 5800 OR 5900 OR 6000 OR 6100 OR 6200 OR 6300 OR 6400 OR 6500 OR 6600 OR 6700 OR 6800 OR 6900 OR 7000 OR 7100 OR 7200 OR 7300 OR 7400 OR 7500 OR 7600 OR 7700 OR 7800 OR 7900 OR 8000 OR 8100 OR 8200 OR 8300 OR 8400 OR 8500 OR 8600 OR 8700 OR 8800 OR 8900 OR 9000 OR 9100 OR 9200 OR 9300 OR 9400 OR 9500 OR 9600 OR 9700 OR 9800 OR 9900 OR 10000 OR 10100 OR 10200 OR 10300 OR 10400 OR 10500 OR 10600 OR 10700 OR 10800 OR 10900 OR 11000 OR 11100 OR 11200 OR 11300 OR 11400 OR 11500 OR 11600 OR 11700 OR 11800 OR 11900 OR 12000 OR 12100 OR 12200 OR 12300 OR 12400 OR 12500 OR 12600 OR 12700 OR 12800 OR 12900 OR 13000 OR 13100 OR 13200 OR 13300 OR 13400 OR 13500 OR 13600 OR 13700 OR 13800 OR 13900 OR 14000 OR 14100 OR 14200 OR 14300 OR 14400 OR 14500 OR 14600 OR 14700 OR 14800 OR 14900 OR 15000 OR 15100 OR 15200 OR 15300 OR 15400 OR 15500 OR 15600 OR 15700 OR 15800 OR 15900 OR 16000 OR 16100 OR 16200 OR 16300 OR 16400 OR 16500 OR 16600 OR 16700 OR 16800 OR 16900 OR 17000 OR 17100 OR 17200 OR 17300 OR 17400 OR 17500 OR 17600 OR 17700 OR 17800 OR 17900 OR 18000 OR 18100 OR 18200 OR 18300 OR 18400 OR 18500 OR 18600 OR 18700 OR 18800 OR 18900 OR 19000 OR 19100 OR 19200 OR 19300 OR 19400 OR 19500 OR 19600 OR 19700 OR 19800 OR 19900 OR 20000 OR 20100 OR 20200 OR 20300 OR 20400 OR 20500 OR 20600 OR 20700 OR 20800 OR 20900 OR 21000 OR 21100 OR 21200 OR 21300 OR 21400 OR 21500 OR 21600 OR 21700 OR 21800 OR 21900 OR 22000 OR 22100 OR 22200 OR 22300 OR 22400 OR 22500 OR 22600 OR 22700 OR 22800 OR 22900 OR 23000 OR 23100 OR 23200 OR 23300 OR 23400 OR 23500 OR 23600 OR 23700 OR 23800 OR 23900 OR 24000 OR 24100 OR 24200 OR 24300 OR 24400 OR 24500 OR 24600 OR 24700 OR 24800 OR 24900 OR 25000 OR 25100 OR 25200 OR 25300 OR 25400 OR 25500 OR 25600 OR 25700 OR 25800 OR 25900 OR 26000 OR 26100 OR 26200 OR 26300 OR 26400 OR 26500 OR 26600 OR 26700 OR 26800 OR 26900 OR 27000 OR 27100 OR 27200 OR 27300 OR 27400 OR 27500 OR 27600 OR 27700 OR 27800 OR 27900 OR 28000 OR 28100 OR 28200 OR 28300 OR 28400 OR 28500 OR 28600 OR 28700 OR 28800 OR 28900 OR 29000 OR 29100 OR 29200 OR 29300 OR 29400 OR 29500 OR 29600 OR 29700 OR 29800 OR 29900 OR 30000 OR 30100 OR 30200 OR 30300 OR 30400 OR 30500 OR 30600 OR 30700 OR 30800 OR 30900 OR 31000 OR 31100 OR 31200 OR 31300 OR 31400 OR 31500 OR 31600 OR 31700 OR 31800 OR 31900 OR 32000 OR 32100 OR 32200 OR 32300 OR 32400 OR 32500 OR 32600 OR 32700 OR 32800 OR 32900 OR 33000 OR 33100 OR 33200 OR 33300 OR 33400 OR 33500 OR 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44700 OR 44800 OR 44900 OR 45000 OR 45100 OR 45200 OR 45300 OR 45400 OR 45500 OR 45600 OR 45700 OR 45800 OR 45900 OR 46000 OR 46100 OR 46200 OR 46300 OR 46400 OR 46500 OR 46600 OR 46700 OR 46800 OR 46900 OR 47000 OR 47100 OR 47200 OR 47300 OR 47400 OR 47500 OR 47600 OR 47700 OR 47800 OR 47900 OR 48000 OR 48100 OR 48200 OR 48300 OR 48400 OR 48500 OR 48600 OR 48700 OR 48800 OR 48900 OR 49000 OR 49100 OR 49200 OR 49300 OR 49400 OR 49500 OR 49600 OR 49700 OR 49800 OR 49900 OR 50000 OR 50100 OR 50200 OR 50300 OR 50400 OR 50500 OR 50600 OR 50700 OR 50800 OR 50900 OR 51000 OR 51100 OR 51200 OR 51300 OR 51400 OR 51500 OR 51600 OR 51700 OR 51800 OR 51900 OR 52000 OR 52100 OR 52200 OR 52300 OR 52400 OR 52500 OR 52600 OR 52700 OR 52800 OR 52900 OR 53000 OR 53100 OR 53200 OR 53300 OR 53400 OR 53500 OR 53600 OR 53700 OR 53800 OR 53900 OR 54000 OR 54100 OR 54200 OR 54300 OR 54400 OR 54500 OR 54600 OR 54700 OR 54800 OR 54900 OR 55000 OR 55100 OR 55200 OR 55300 OR 55400 OR 55500 OR 55600 OR 55700 OR 55800 OR 55900 OR 56000 OR 56100 OR 56200 OR 56300 OR 56400 OR 56500 OR 56600 OR 56700 OR 56800 OR 56900 OR 57000 OR 57100 OR 57200 OR 57300 OR 57400 OR 57500 OR 57600 OR

- ⊗ VOLTMETR SWITCH
- ⊗ TEST SWITCH
- ⊗ INDICATING LIGHT
- ⊗ KIPK KEY INTERLOCK
- ⚠ INDICATES SAFETY HOLD/ON SAFETY RELATED BOUNCANT

61-006 A	ENGINEERING DESIGN STANDARDS
61-007 F, SH.1	HFIRF & RELAY DIAGRAM, 400 SYSTEM UNIT BUS 17
61-007 L, SH.1	SINGLE LINE DIAGRAM, 400 TO 480V MCC 123
61-007 F, SH.2	SINGLE LINE DIAGRAM, 400 TO 480V MCC 124
61-010 L, SH.3	HFIRF AND RELAY DIAGRAM, 480V SYSTEM UNIT BUS
21-464-007002-009	LAYOUT DIAGRAM, 480V SYSTEM UNIT BUS 17
21-464-007002-005	SINGLE LINE DIAGRAM, 480V SYSTEM UNIT BUS 17

Rev. 26



DEVICE	DESCRIPTION	REF	TYPE	MODEL	FUNCTION
27AB-D1	BUS UNDERVOLTAGE RELAY	Y	CV 2	1875508	OPERATE 27AB-D1
51G/T	TRIP GROUND OVER CURRENT RELAY	4	CO 6	254C888A05	TRIP BUS 52-0701
52U	STATIC TRIP UNIT	W	AMP/SEC	6998002004	TRIP BUS
27A-B-07	AUXILIARY RELAY	CL	HA 100	12HF A151A7H	ALARM

NOTE 6

1. EACH BREAKER IS EQUIPPED WITH SOLID STATE OVERCURRENT TRIP UNIT (STU) WITH 1200 AND 5000 TIME DELAY WITH INTEGRAL GROUND FAULT PROTECTION CHANNELS. THESE ARE BUILT INTO THE STU AND ARE NOT SEPARATE DEVICES.
2. NUMBERS IN PARENTHESES 1 & 2 DENOTE THE QUANTITY OF DEVICES REQUIRED.
3. MECHANICAL TRIP TEST INTERLOCKS ARE PROVIDED WHICH SHALL EITHER NORMAL TRIP OR TRIP ON 52-0701 MUST BE OBTAINED BEFORE MAINTENANCE CROSS TIE BREAKERS 52-0704 AND 52-1704 CAN BE CLOSED.
4. ALL EQUIPMENT ON THIS DRAWING IS DOCUMENTED QUALITY UNLESS NOTED OTHERWISE.
5. ALARM INPUTS ARE NON SAFETY RELATED.
6. THE POSITION OF THE DRAWING IS IDENTIFIED BY THE BUBBLE IS ON WORK. THE BUBBLE WILL BE REMOVED AND THIS POSITION OF THE DRAWING WILL BE RELEASED FOR IMPROVEMENT TO THE PLANT AT THE 1996 UNIT 1 SURVEY BY A DCN IN THE APPROPRIATE FOR SUPPLEMENT.

LEGEND:

- ⊗ VOLT METER SWITCH
- ⊞ TEST SWITCH
- ⊙ INDICATING LIGHT
- ⊕ ALARM KEY ENERGIZER
- ⊠ AUGMENTED QUALITY/DOCUMENTED QUALITY

REFERENCE (REVISIONS):

- 61-006-4 ENGINEERING DESIGN CHANGES
- 61-007-1 SH.3 METER & RELAY DIAGRAM, SYSTEM UNIT BUS 07
- 61-027-1 SH.3 SINGLE LINE DIAGRAM, TO 480V MCC 023
- 61-027-1 SH.4 SINGLE LINE DIAGRAM, TO 480V MCC 024
- 61-010-1 SH.2 METER AND RELAY DIAGRAM, 480V SYSTEM UNIT BUS 17
- 21464-BG/0002-022 VENDOR DIAGRAMS, 480V SYSTEM UNIT BUS 07
- 21464-BG/0002-023

CALVERT CLIFFS NUCLEAR POWER PLANT

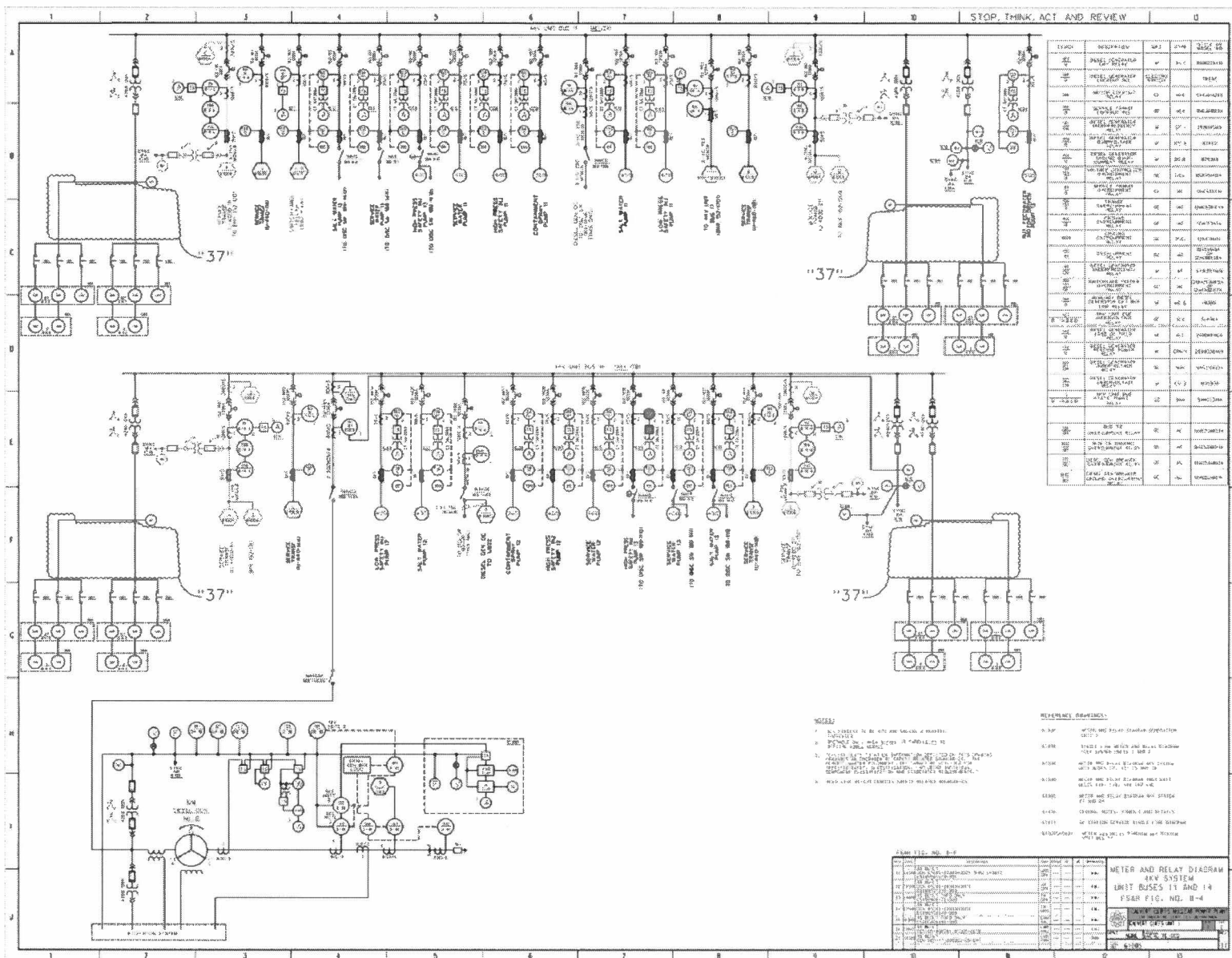
UFSAR FIGURE 8-3SH0003

DIESEL GENERATOR PROJECT

METER AND RELAY DIAGRAM
480V SYSTEM UNIT BUS 07

BGE DRAWING 61010SH0003, REV.3

FIGURE 08-04-01 METER & RELAY DIAGRAM 4KV SYSTEM UNIT BUSES 11 AND 14 FSAR FIG NO. 8-4



1. GENERATOR SHOULD OVERCURRENT TWO OUT OF THREE LOGIC
2. VOLTAGE IS FREQUENTLY COMBINED WITH DELAYS
3. 4 INDICATES NON EMERGENT INPUT TO LOGIC BREAKER TRIP LOGIC
4. 4 INDICATES TRIP WHEN LOGIC IN PARALLEL MODE
5. PROVISION FOR MORE LOGIC REASSESSMENT
6. ALL EQUIPMENT ON THIS CHASSIS IS SAIBLY RELATED UNLESS NOTED OTHERWISE.
7. ALARM AND RTU INPUTS ARE NON SAFETY RELATED.
8. OCELEO

9. POWLEN FACTOR ME IFR DISCONNECTED, RELIMU IN UCALL AND IARFED
"NOT USED"

X	2-12 MHz
FM	0.5 kHz width
DWAR	DIGITAL VAR MEAS
TRM	TRANSFORM
WNG	WAVE PULSE S COUNT IN
	HOLD MEAS
HTM	HOT MEAS. ALTHOUGH UNST
FILE	FILE SWITCH
②	SYNCHROSCOPE 1 AMP
③	INDICATING LIGHT
④	SIGNAL AMPLIFIER
⑤	SYNCHROSCOPE
⑥	POWER KEY INTERLOCK
⑦	INDICATES SCREW BEARING IN YOUR PRIVATE BOUNDAR

[illegible]

REVISION 26

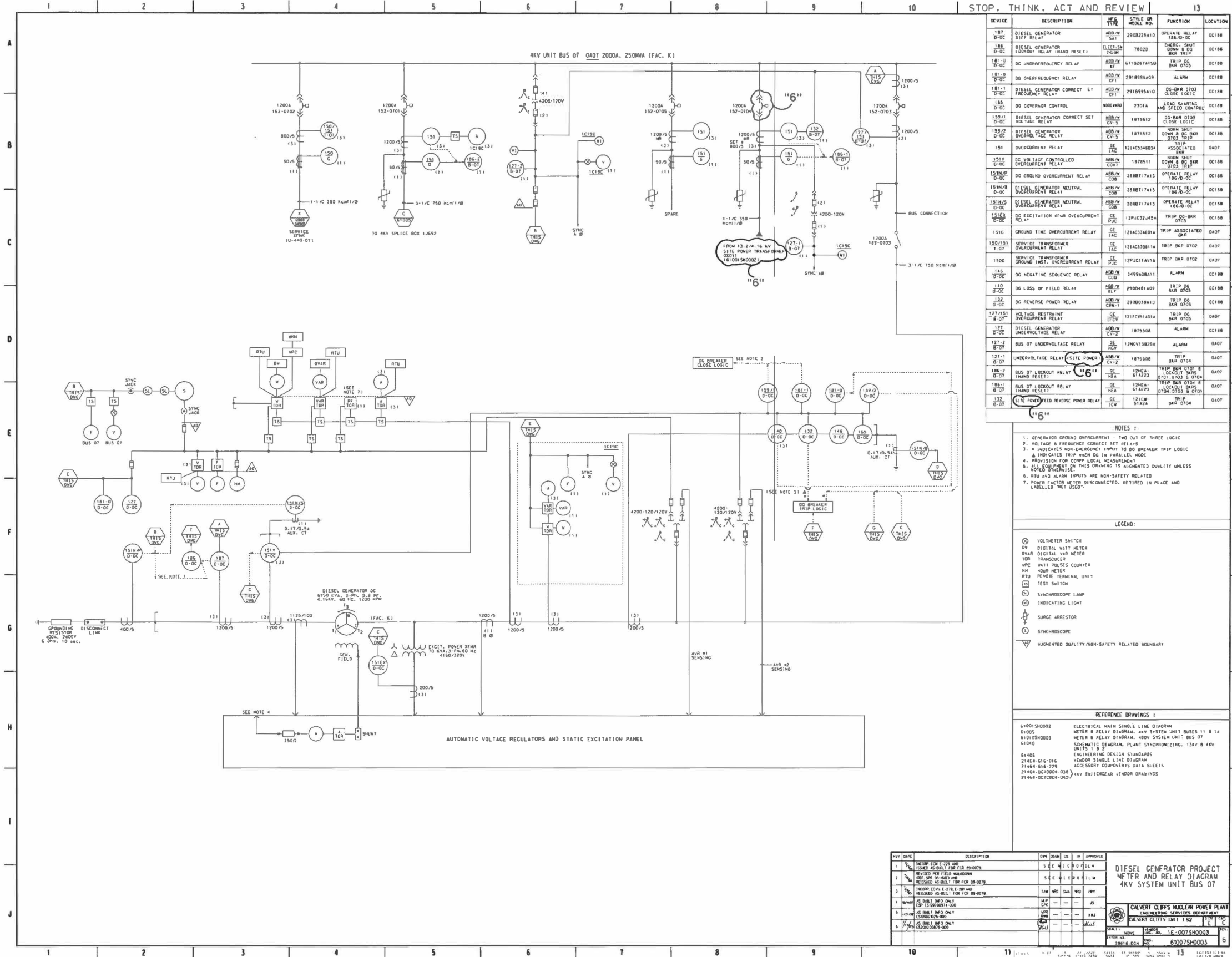
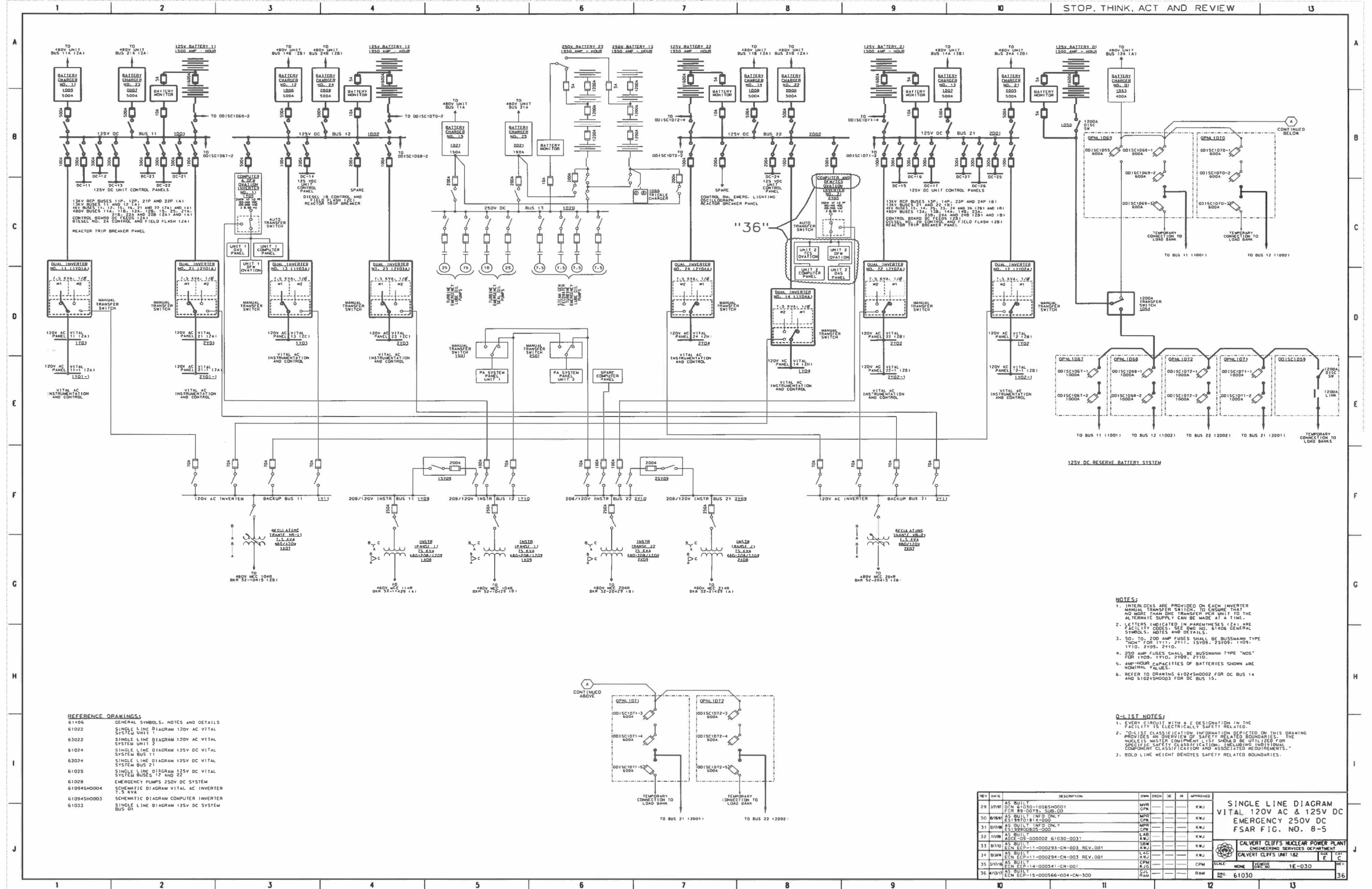


FIGURE 8-5 SINGLE LINE DIAGRAM VITAL 120 V AC AND 125 V DC, EMERGENCY 250 V DC (Sheet 1)





- [illegible]

LEGEND :







-  AMMETER
-  VOLTMETER
-  NON AUTOMATIC WOUND CAST SWITCH
-  SAFETY PRELIMINARY SAFETY WARNING BOUNDARY
-  WIND INDICATING LIGHT ARM TYPE
-  DENOTES A SPACE

PLATE 10

- [illegible]

CALVERT CLIFFS NUCLEAR POWER PLANT

UFSAR FIGURE 8-5SH0002

DIESEL GENERATOR PROJECT
SINGLE LINE DIAGRAM
DG1A 125V DC SYSTEM
BUS 14

BGE DRAWING 61024SH0002, REV.3

REVISION 26

FIGURE 8-5 DIESEL GENERATOR PROJECT SINGLE LINE DIAGRAM DG0C 124V DC SYSTEM BUS 15 (Sheet 3)

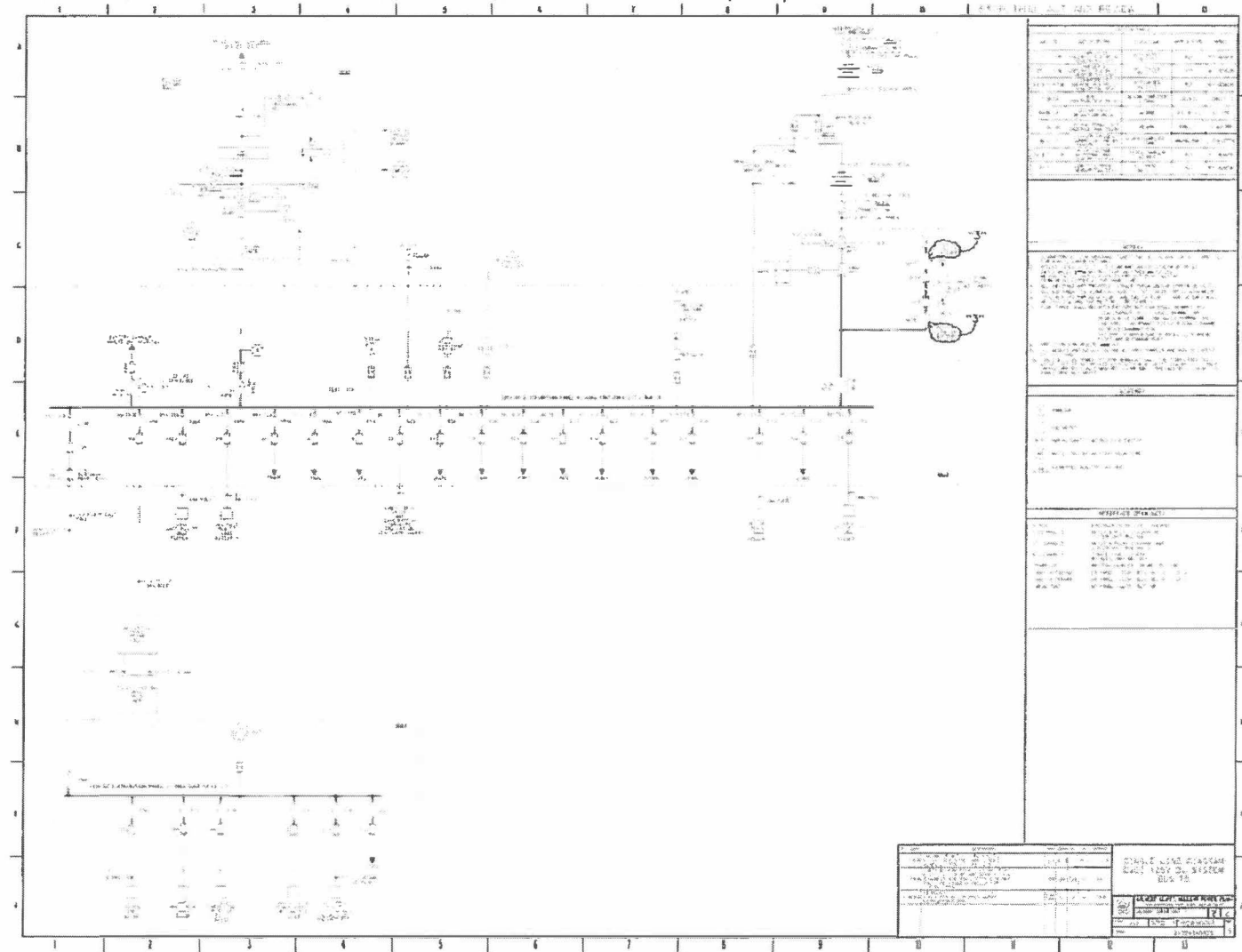


FIGURE 8-7 PLANT PROTECTION BLOCK DIAGRAM (SHEET 1)
DELETED DWG#61029SH001

FIGURE 8-7 PLANT PROTECTION BLOCK DIAGRAM UNIT NO. 1 (Sheet 2)

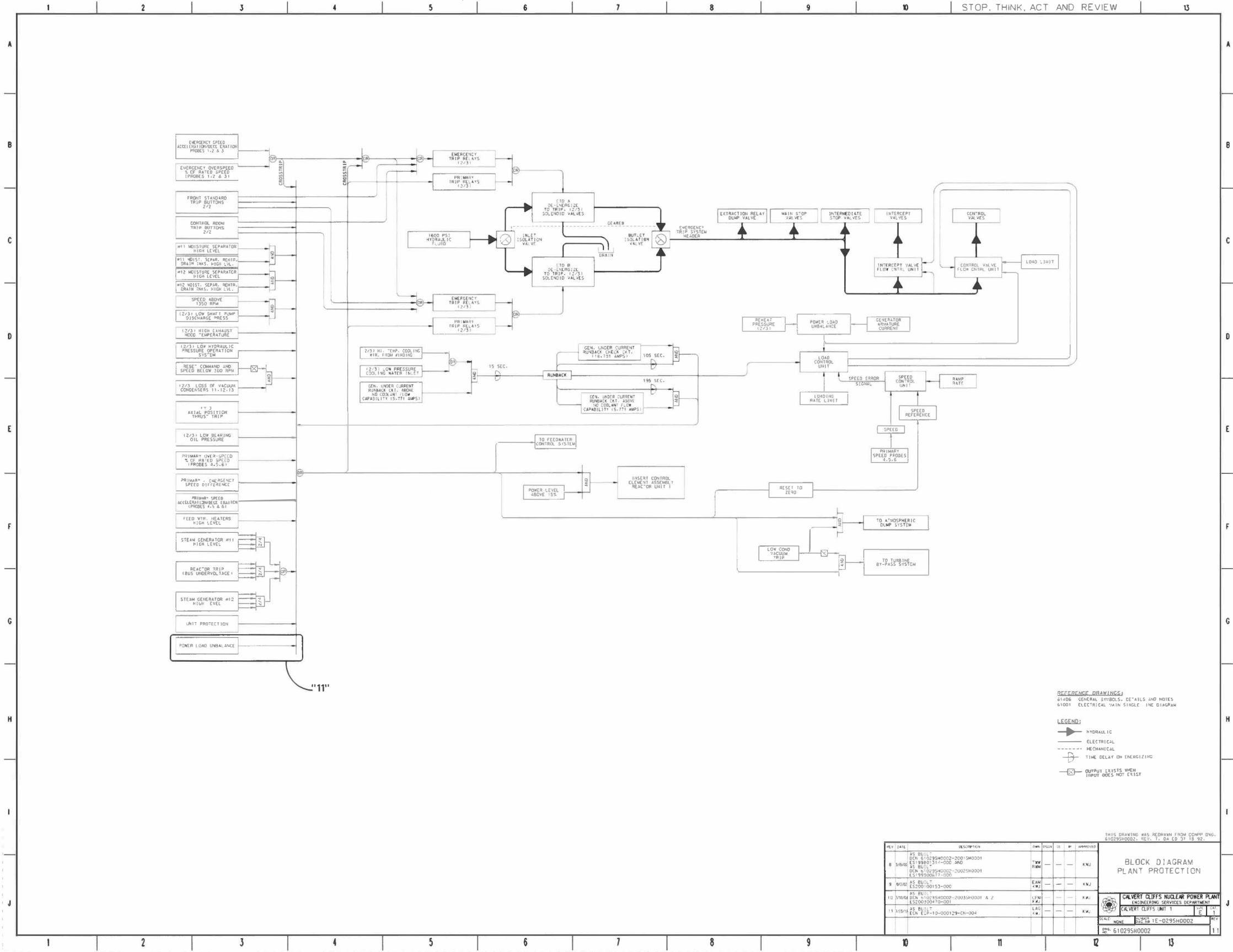


FIGURE 8-8B SIMPLIFIED SYSTEM DRAWINGS DIESEL NO. 18 STARTING AIR, FUEL & LUBE OIL SL-069B

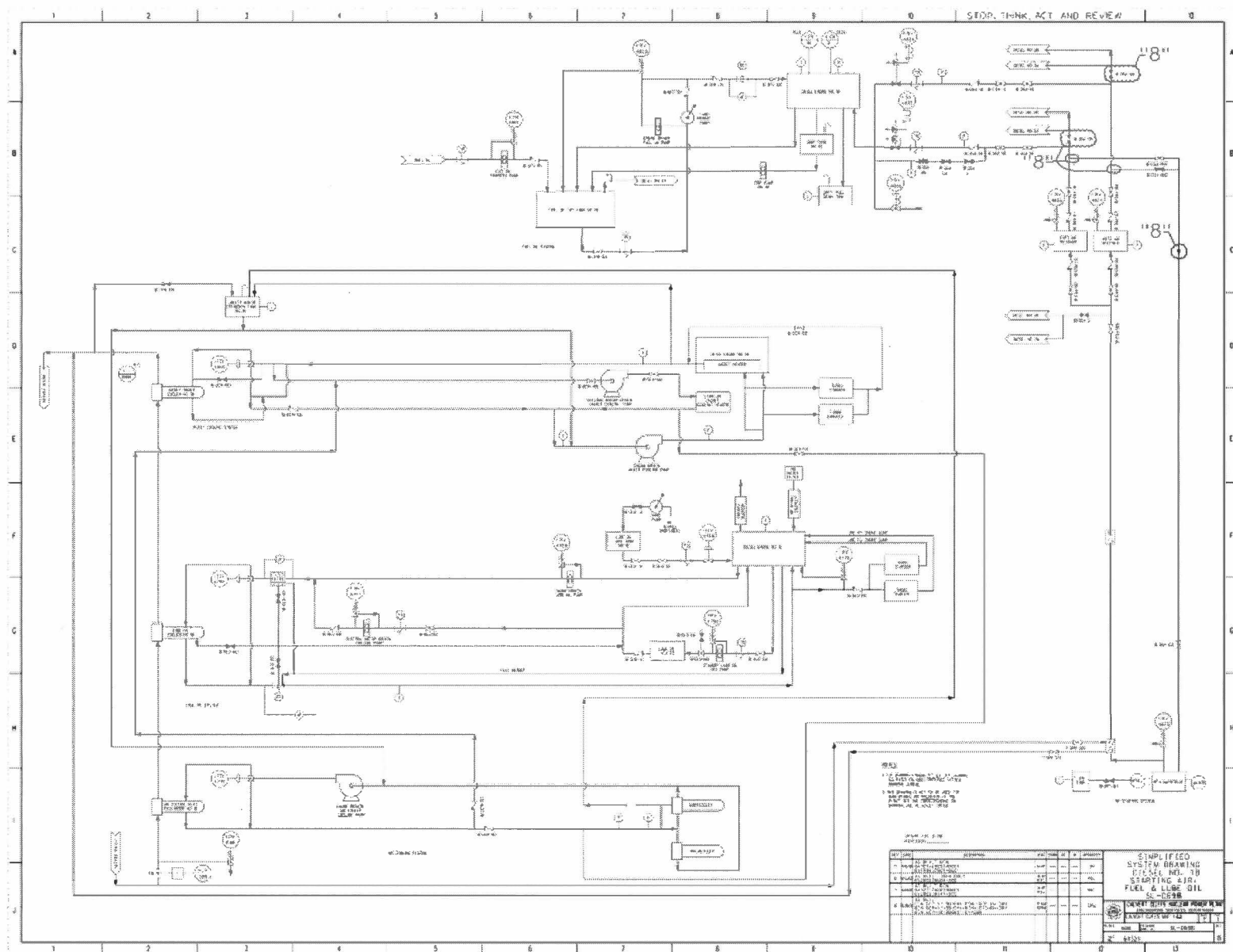
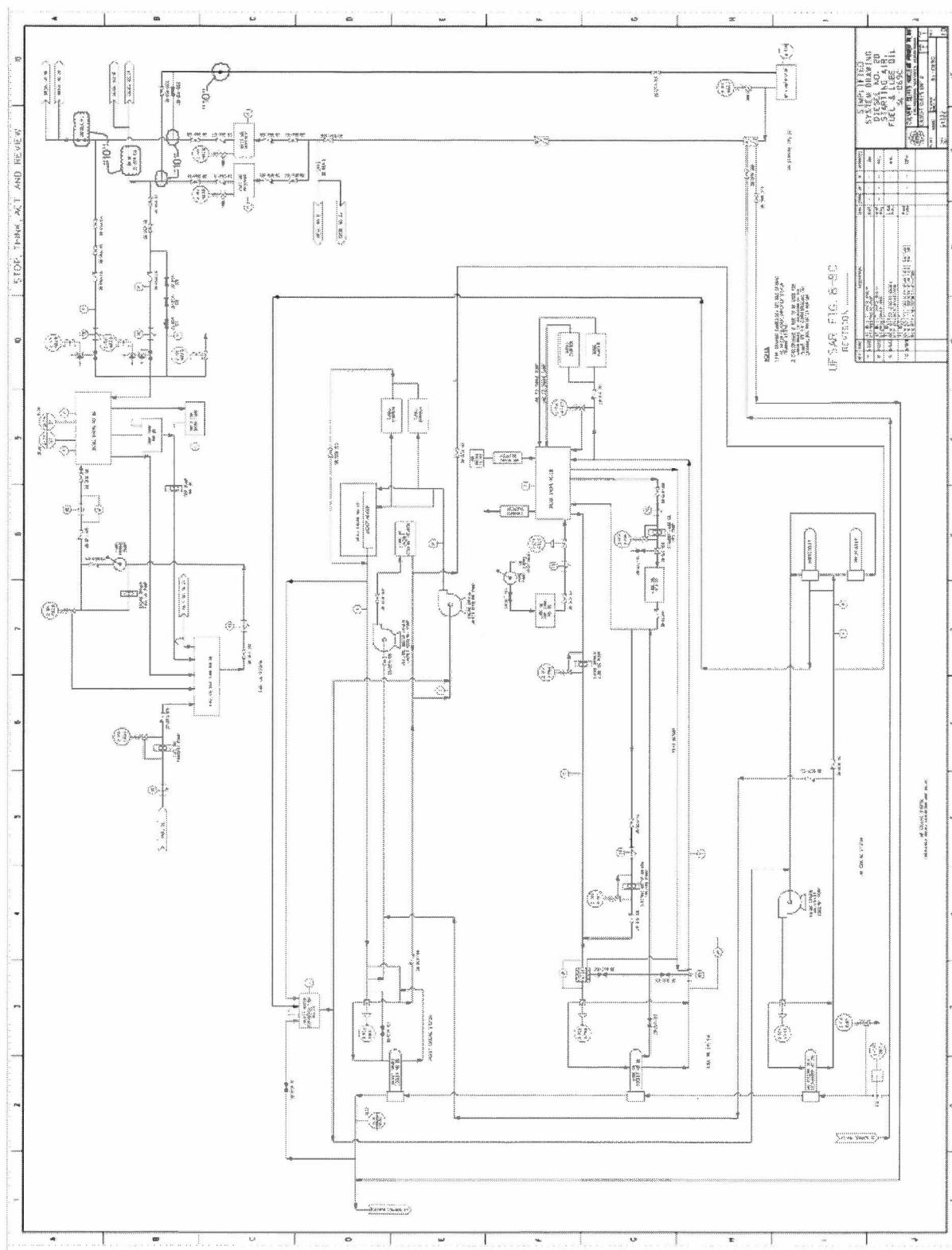
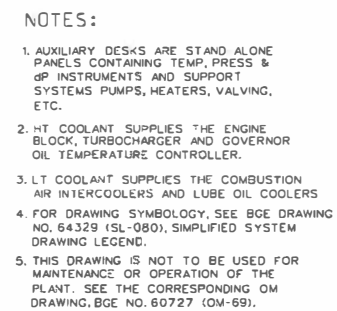


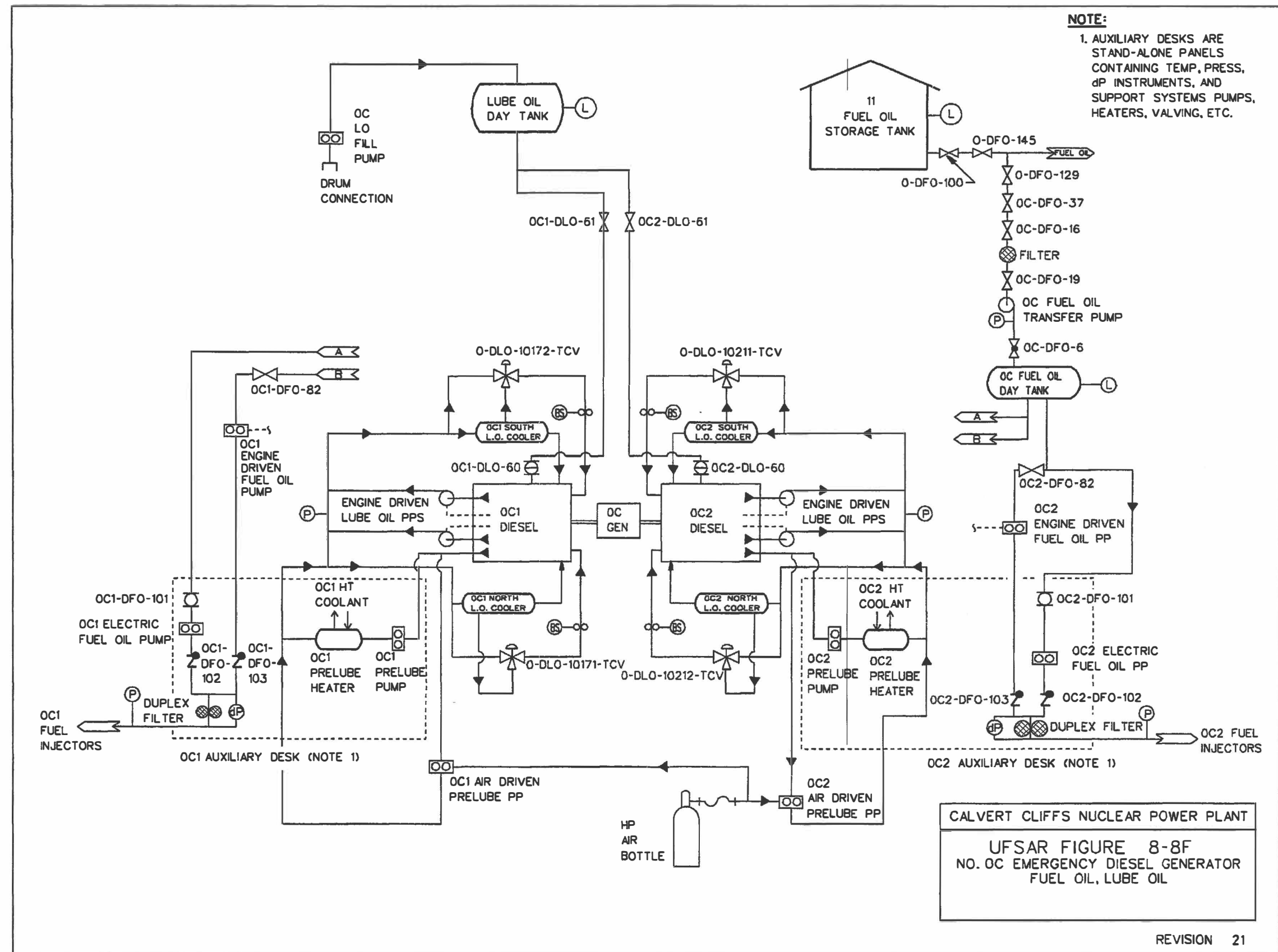
FIGURE 8-8C SIMPLIFIED SYSTEM DRAWING DIESEL NO. 2B STARTING AIR, FUEL & LUBE OIL SL-069C

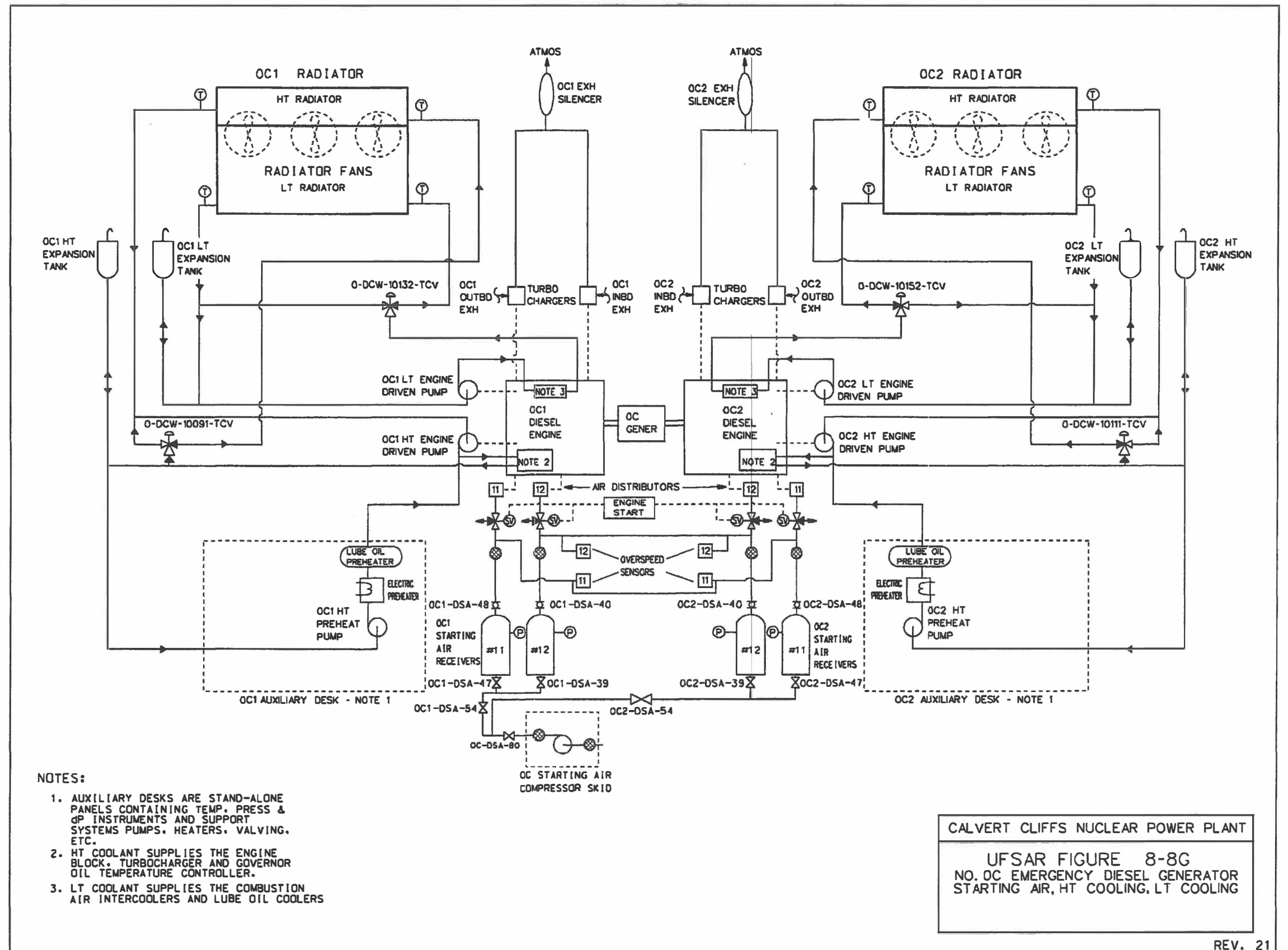


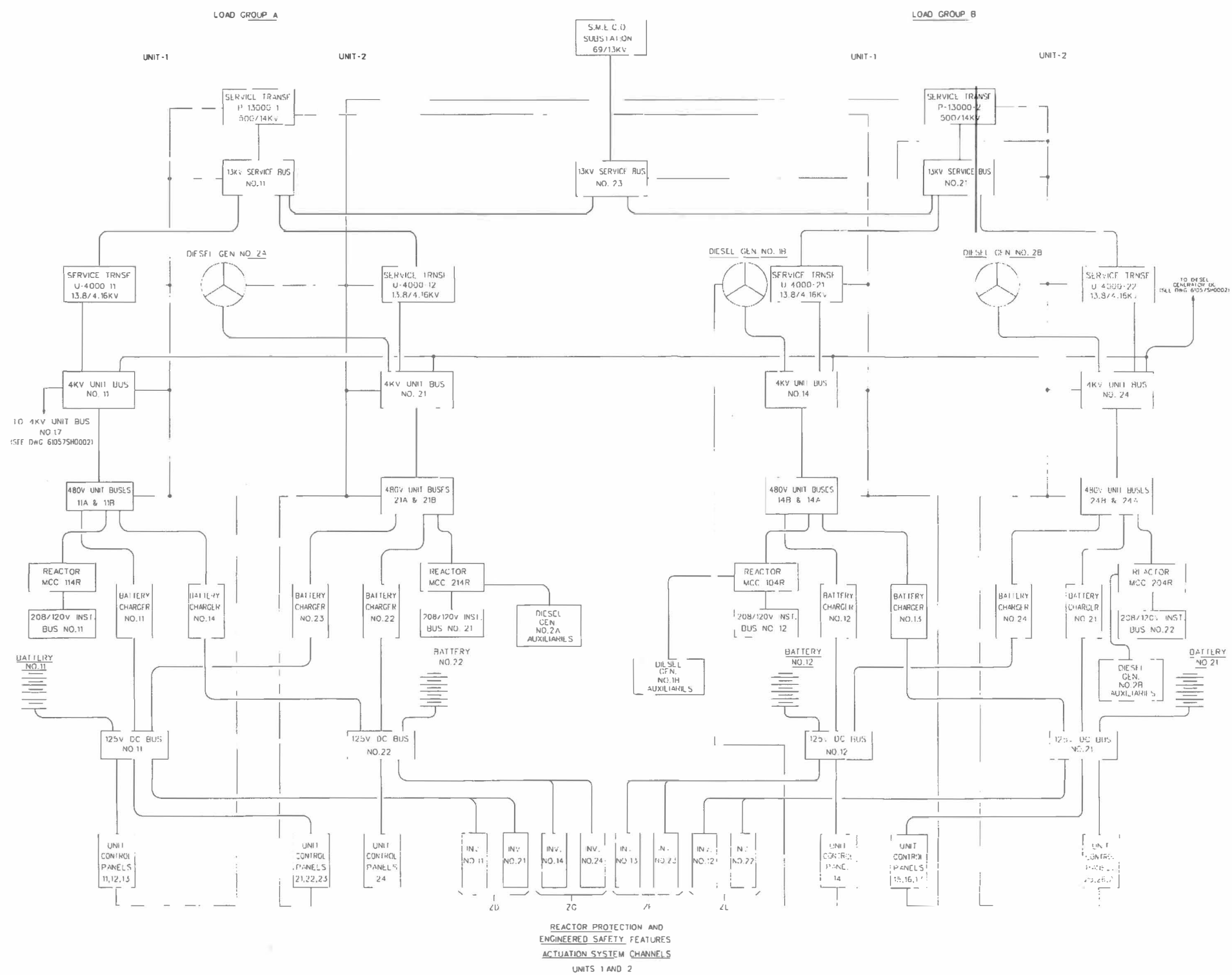




REV	DATE	DESCRIPTION	DWN	JCAN	BK	TIN	APPROVED
0	6/8	AS BUILT DWG TO ONE Y ESP ESI99700070-000	246	---	---	---	Gm
DRAWN S-FRAGER							
DESIGNED ---							
CIVIL ENGR.							
ELECT. ENGR.							
I. & C ENGR.							
MECH. ENGR.							
BALTIMORE GAS AND ELECTRIC COMPANY NUCLEAR ENGINEERING DEPARTMENT							
S-I-P.							
CALVERT CLIFFS UNIT 1							
ELECTRIC PROTECTION PLAN							
SCALE: SHEET NO. SL-069E							
DATE: 6/18/64 DGN: 64333SH0001							







NOTE:
DARK LINES ARE POWER FEEDERS
LIGHT LINES ARE DC CONTROL FEEDERS

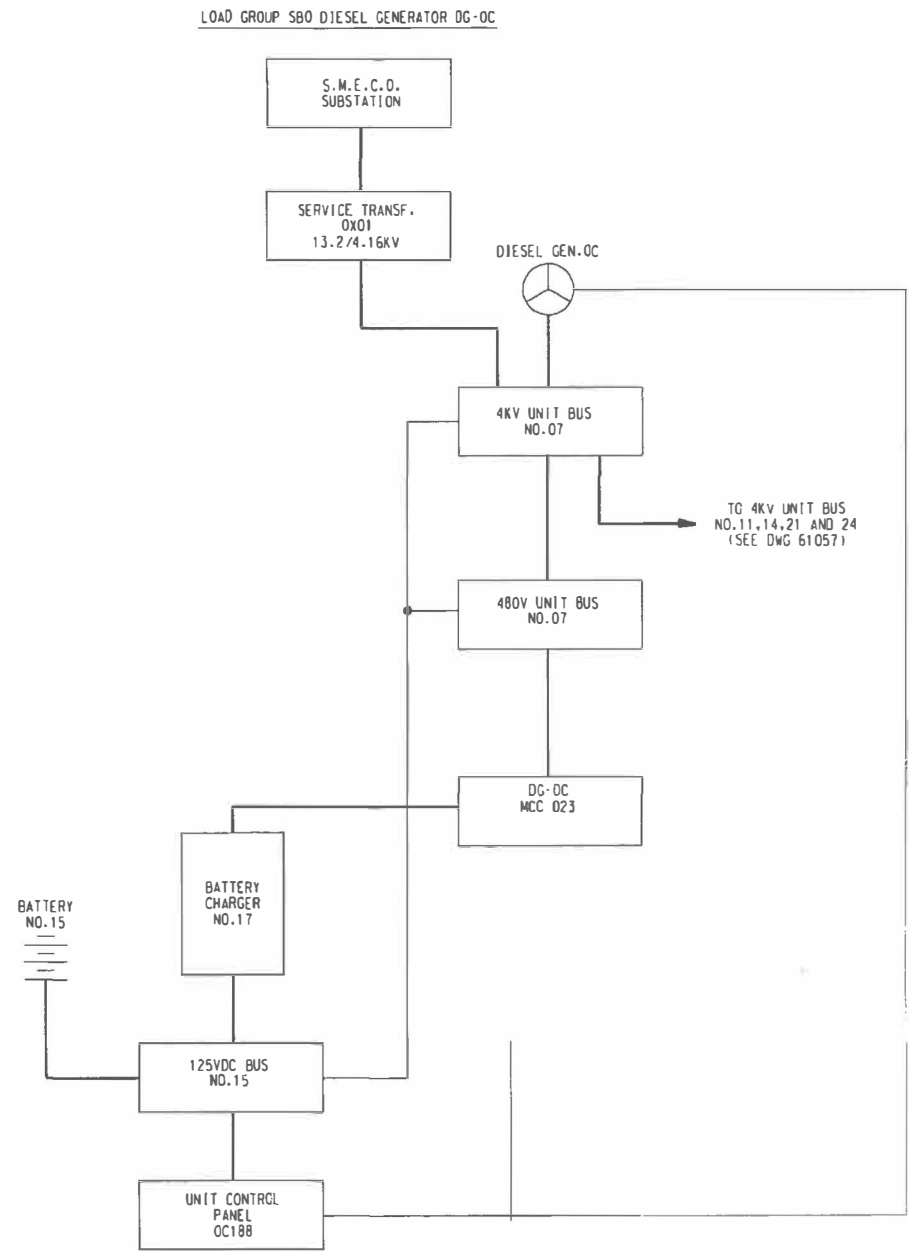
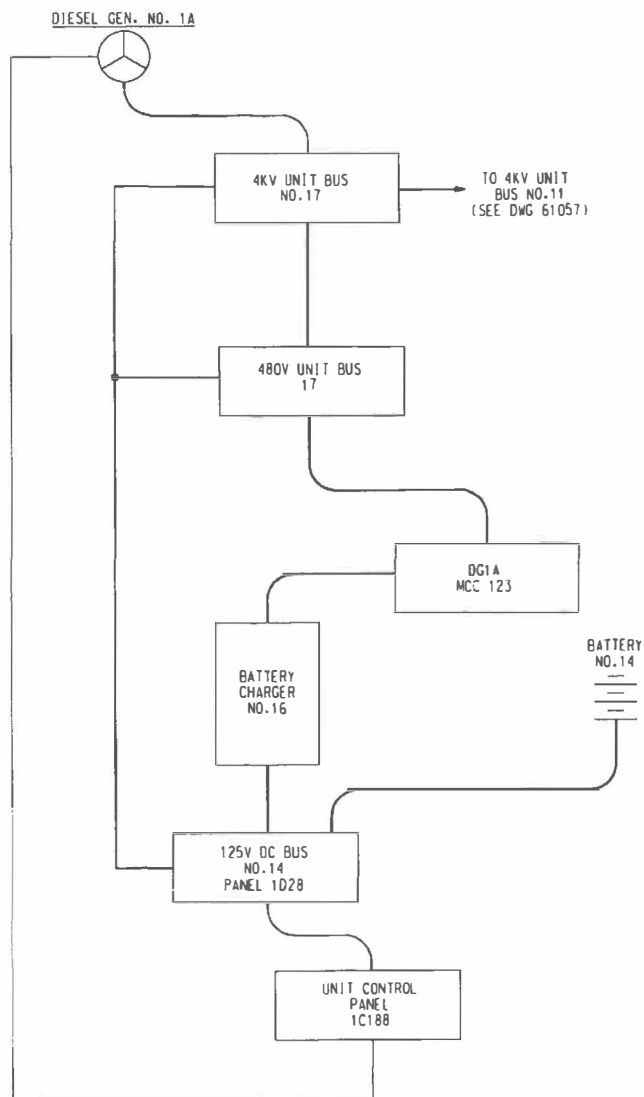
CALVERT CLIFFS NUCLEAR POWER PLANT

UFSAR FIGURE 8-9SH0001

BLOCK DIAGRAM
AUXILIARY SYSTEM
LOAD GROUPS
UNITS 1 & 2

BGE DRAWING 61057, REV.9

REVISION 26
5/2006



NOTES :

1. DARK LINES ARE POWER FEEDERS. LIGHT LINES ARE DC CONTROL FEEDERS.

2. DALL 118

3. BELL 110

REFERENCE DRAWINGS :

11027 BLOCK DIAGRAM AUXILIARY SYSTEM LOAD GROUPS, UNITS 1&2

CALVERT CLIFFS NUCLEAR POWER PLANT

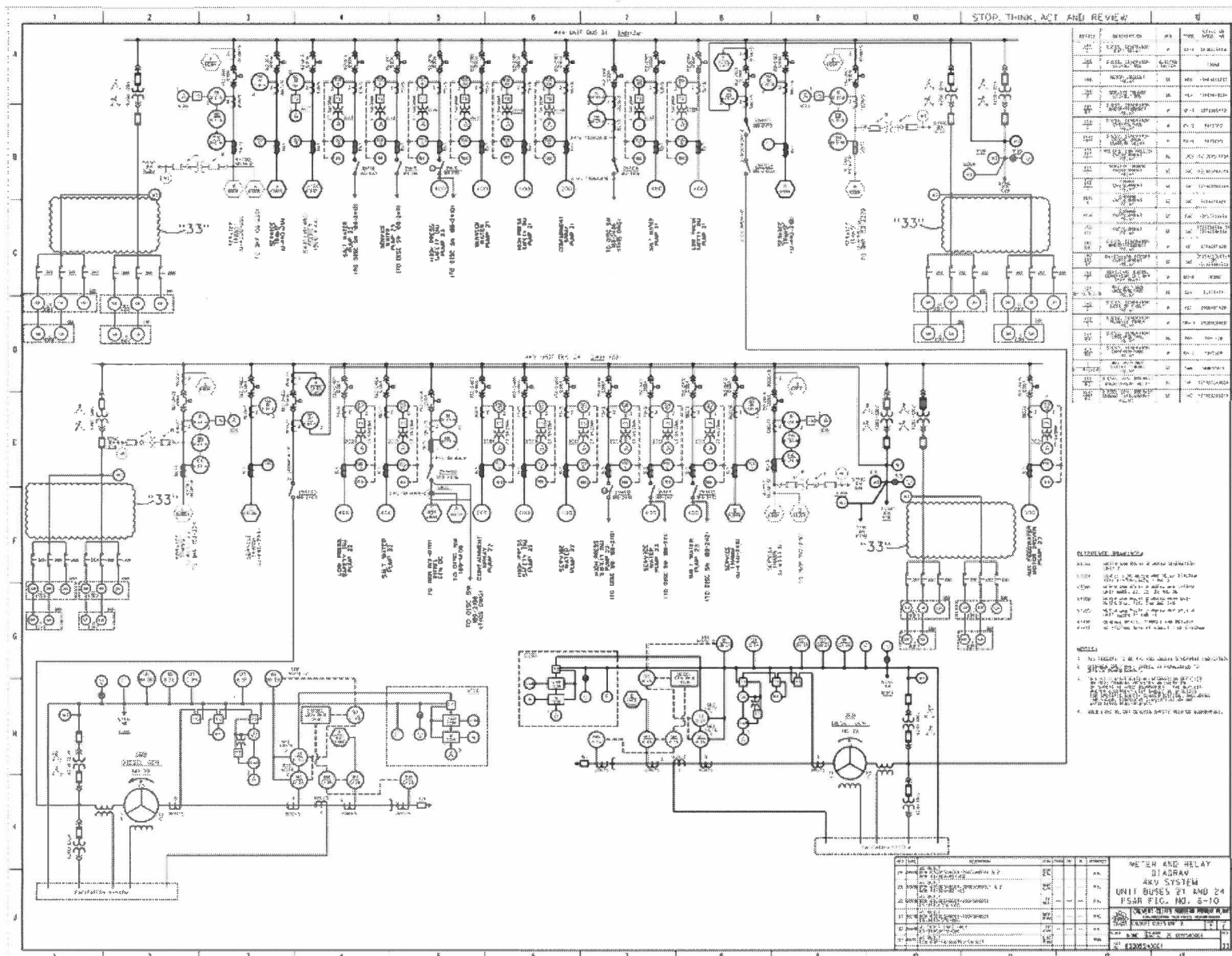
UFSAR FIGURE 8-9SH0002

BLOCK DIAGRAM
AUXILIARY SYSTEM
LOAD GROUPS
DG-0C SBO & DC1A
DIESEL GENERATORS

BGE DRAWING 61057SH0002, REV.5

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FIGURE 8-10 METER AND RELAY DIAGRAM 4 kV SYSTEM UNIT BUSSES 21 & 24



[illegible]

FIGURE 8-12 PLANT PROTECTION BLOCK DIAGRAM (SHEET 1)

DELETED DWG #63029SH001

FIGURE 8-12 PLANT PROTECTION BLOCK DIAGRAM (SHEET 2)

DELETED DWG #63029SH002