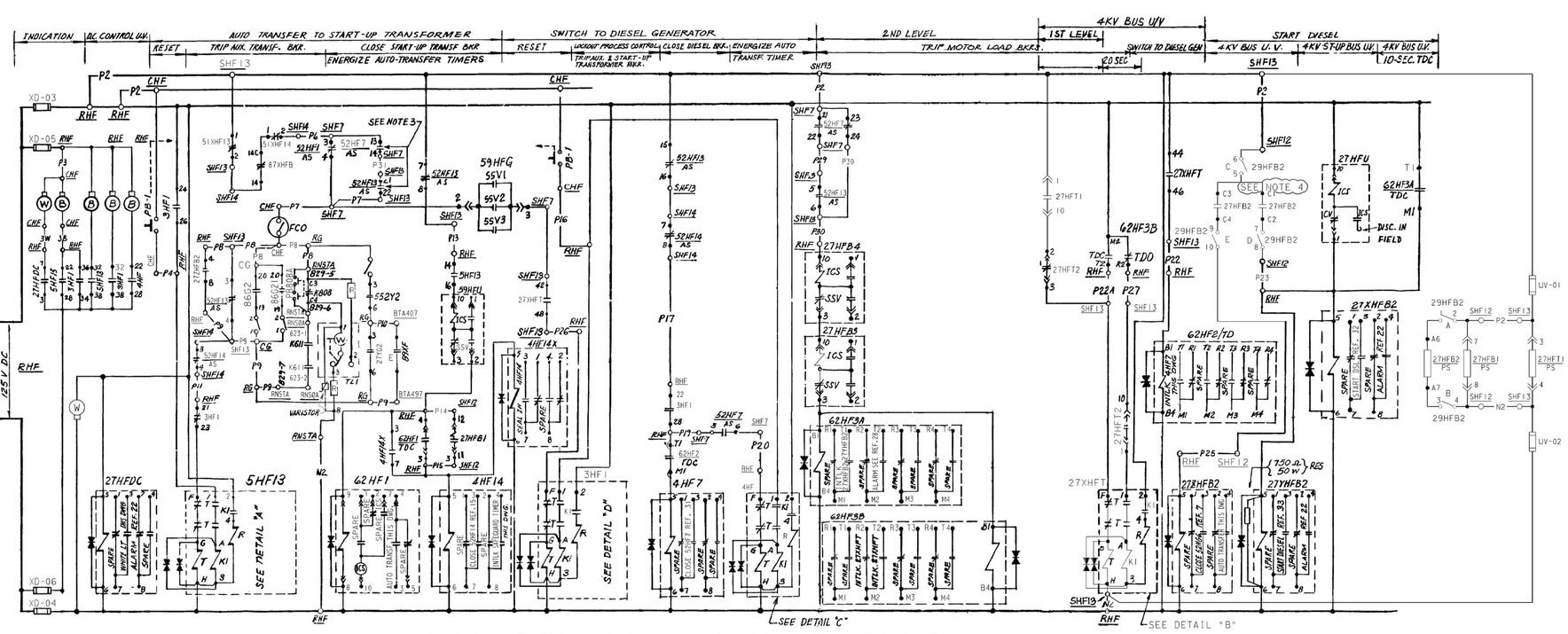


SCHEMATIC DIAGRAM 4160 V. BUS SECTION "F" AUTOMATIC TRANSFER CKT. NO. FATH

TABLE OF DEVICES

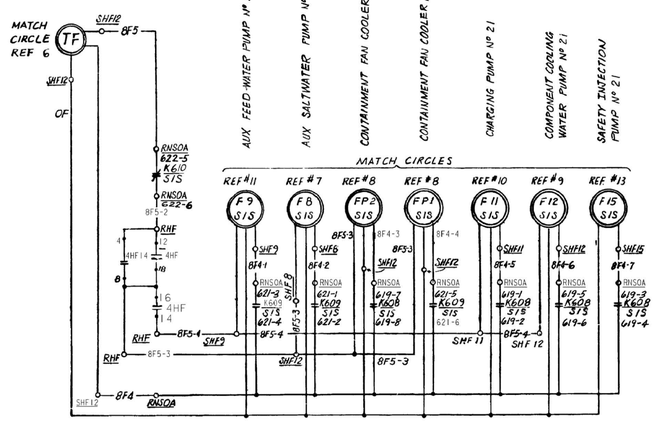
DEVICE Nº	FUNCTION	RATING OR RANGE		MFR.	TYPE	CAT. Nº OR REF. DWG	REMARKS
3HF1	DIESEL AUTO TRANSFER INTERLOCKING RELAY	125 VDC		ELECTRO SWITCH	LORTER SERIES 24	782500	ELECTRIC RESET
4HF	DIESEL AUTO TRANSFER CONTROL RELAY			ELECTRO SWITCH	LORTER SERIES 24	782300	ELECTRIC RESET
4HFT	DIESEL AUTO TRANSFER CLOSE RELAY			W	SG	1342925	
4HF14	START-UP AUTO TRANSFER CLOSE RELAY			W	SG	1342925	
5HF13	START-UP AUTO TRANSFER TRIP RELAY			ELECTRO SWITCH	LORTER SERIES 24	782500	ELECTRIC RESET
27HFDC	DC CONTROL BUS UNDERVOLTAGE RELAY			W	SG	1342925	
27HFB1	4 KV BUS F AUTO TRANSFER UNDERVOLTAGE RELAY	—		—	—	(2 & 6)	
27HFB2	4KV BUS F START DIESEL UNDERVOLTAGE RELAY	—		—	—	(2 & 6)	1-30, RESIDUAL VOLTAGE DECAY
27XHFB2	4KV BUS F START DIESEL UNDERVOLTAGE AUX RELAY	125 VDC		W	SG	1342925	
27YHFB2	4KV BUS F START DIESEL UNDERVOLTAGE AUX. RELAY	1		W	SG	1342925	
27HFT1	4 KV BUS F UNDERVOLTAGE TRIP RELAY (1ST LEVEL)	—		—	—	(2 & 6)	
27HFT2	4 KV BUS F UNDERVOLTAGE TRIP RELAY (1ST LEVEL)	—		—	—	(2 & 6)	INSTANTANEOUS
27HFU	4 KV BUS F UNDERVOLTAGE RELAY (ST-UP TRANSF.)	—		—	—	(2 & 6)	
27HFB3, B4	4 KV BUS F U/V TRIP RELAY (2ND LEVEL)	—		—	—	(2 & 6)	REF. 30
29HFB2	27HFB2 FLUR CUTOUT SWITCH					(34)	10 POLE SW ASSY.
4HF14X	START-UP AUTO TRANSFER CLOSE AUX. RL	125 VDC		W	SG	1342925	
27XHFT	4 KV BUS UNDERVOLTAGE TRIP AUX. RELAY	125 VDC		ELECTRO SWITCH	LORTER SERIES 24	782500	ELECTRIC RESET
27XHFB2	4 KV BUS F START DIESEL U/V AUX. RELAY			W	SG	1342925	
27YG2	GENERATOR UNDERVOLTAGE AUX. RELAY	—		—	—	(17)	
51XHF13	4 KV BUS F FDR. O/C AUX. RELAY (AUX. TRANSFORMER)	—		—	—	(16)	
51XHF14	4KV BUS F FDR. O/C AUX. RELAY (START-UP TRANSFORMER)	—		—	—	(15)	
52HF7	4 KV. BUS F FDR. CKT. BKR (DIESEL GENERATOR)	—		—	—	(2 & 16)	
52HF13	4 KV. BUS F FDR. CKT. BKR. (AUX. TRANSFORMER)	—		—	—	(2 & 15)	
52HF14	4 KV BUS F FDR. CKT. BKR (START-UP TRANSFORMER)	—		—	—	(2 & 15)	
59HFU	4KV BUS F FDR. O/V AUX. RELAY (START-UP TRANSFORMER)	—		—	—	(2 & 6)	INSTANTANEOUS
59HFG	4 KV BUS F FDR. O/V RELAY (DIESEL GENERATOR)	—		—	—	(2 & 6)	"
62HF1	START-UP AUTO TRANSFER TIMER BUS F	48/125DC		W	TDS	2938301A15	0.2 TO 4 SEC.
62HF2	DIESEL AUTO TRANSFER TIMER BUS F	120 V. DC		AGASTAT	ETR	ETR14D3B	0.55-15 SEC.
86G2	UNIT TRIP LOCKOUT RELAY	—		—	—	(17)	
86G21	UNIT TRIP LOCKOUT RELAY	—		—	—	(18)	
	87 X HFB	—		—	—	(12)	
55Z12	500 KV F.C.B. AUX. RELAY	—		—	—	(18)	CONTACT IS CLOSED WHEN BREAKER SHOWN ARE OPEN
62HF3A	START DIESEL TIME DELAY BUS F	125 VDC		AGASTAT	ETR	ETR-140 38-003	TIMER SET @ 10 SEC.
62HF3B	XFR TO DIESEL TIME DELAY BUS F	125 VDC		AGASTAT	ETR	ETR-140 38-003	TIMER SET @ 20 SEC.
89XF	25 KV MOTOR OP. DISC. AUX. SW.	—		—	—	(20)	CONTACT IS CLOSED WHEN DISC. SW. IS OPEN
K608/SIS	SAFETY INJECTION AUX. RELAY	—		—	—	(29)	
K609/SIS		—		—	—	(29)	
K610/SIS		—		—	—	(29)	
K611/SIS		—		—	—	(29)	

EQUIPMENT LOCATION

BTH106	TERMINAL BOX H106
RHF	ENG. SAFEGUARD RELAY BOARD BUS F
CHF	CONTROL BOARD ENG SAFEGUARD BUS F
CG	CONTROL BOARD MAIN GENERATOR
RG	GENERATOR RELAY BOARD
SHF7	SWGR 4KV BUS F CUBICLE 7
RNSQA	RACK NU SAFEGD OUTPUT A
RNSTA	RACK NU SAFEGD TEST A
BTA407	TERM BOX A407 FOR DEVICE 89XF

NOTES:

1. TEST RELAY CONTACT OPENS DURING TEST.
2. CONTACTS ARE SHOWN IN RESET POSITION.
3. THESE CONTACTS PERMIT TRIPPING OF THE UNIT AUX. TRANSF. BKR. ON 2nd LEVEL U/V WHEN THE DSL GEN. AND THE UNIT AUX. TRANSF. ARE PARALLELED.
4. CONTACT C1-C2 MAY ALLOW VOLTAGE READING ACROSS AN INTERNAL HIGH IMPEDANCE TRIP CIRCUIT MONITOR (TCM) WHERE NO VOLTAGE IS EXPECTED DURING POST MAINTENANCE TESTING. THE TCM FUNCTION IS NOT USED WITH AUTO TRANSFER SCHEME TO START D/G NOR WILL IT AFFECT ITS FUNCTION. (REF: 663332-220 PAGES 12-11, 6-17)

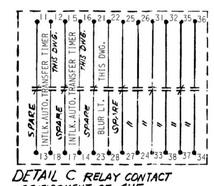


POTENTIAL FOR AUTO-TRANSFER & ENGINEERED SAFEGUARD TIMERS

CKT. NO. FATH

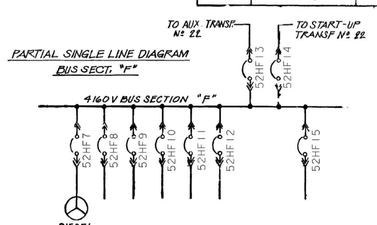
ALARM CIRCUIT TABLE

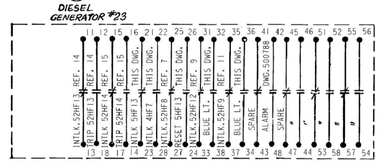
	4 KV BUS SECT. F UNDERVOLTAGE	4KV BUS SECT. F AUTOMATIC TRANSFER		4KV BUS SECT. F BUS OR START-UP FOR BUS U.V.		D.C. CONTROL UNDERVOLTAGE
DEVICE	27XHFT	5HF13	3HF1	27XHFB2	27YHFB2	27HFDC, 27HFB2 & 27HFT1
CKT. Nº	AV4403DF	AY4412DF		AV4404DF		AV4406 DF



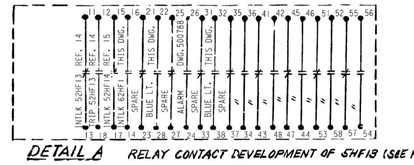
DETAIL C RELAY CONTACT DEVELOPMENT OF 4HF (SEE NOTE 2)

PARTIAL SINGLE LINE DIAGRAM BUS SECT. "F"

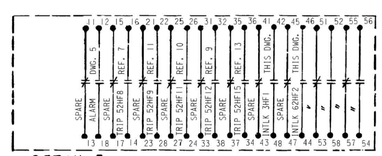




DETAIL "D" RELAY CONTACT DEVELOPMENT OF 3HF1 (SEE NOTE 2)



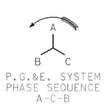
DETAIL A RELAY CONTACT DEVELOPMENT OF 5HF13 (SEE NOTE 2)



DETAIL B RELAY CONTACT DEVELOPMENT OF 27XHFT (SEE NOTE 2)

REFERENCES

1.	DESCRIPTION OF ELECT. SCHEMATIC DIAG. SYMBOLS & CIRCUIT DESIGNATIONS	DWG Nº 050003
2.	SINGLE LINE METER & RELAY DIAG. 4160 V SYSTEM (BUS SECT. F.)	441229
3.	SCHEMATIC DIAG. 4 KV SYSTEM AUTOMATIC TRANSFER (BUS SECT. D & E)	441351
4.	(BUS SECT G)	441353
5.	(BUS SECT H)	441354
6.	4 KV BUS POTENTIAL & SYNCHRONIZING SH 2 (BUS SECT F, G & H)	441340
7.	AUX. SALT WATER PUMPS	441287
8.	CONTAINMENT FAN COOLERS	441313
9.	COMPONENT COOLING WATER PUMPS	441311
10.	CHARGING PUMPS	441312
11.	AUX. FEEDWATER PUMPS	441302
12.	4160 V BUS DIFFERENTIAL SH 2	441343
13.	SAFETY INJECTION PUMPS	441315
14.	AUX. TRANSFORMER Nº 22 & ASSOCIATED CKT BKRS, SH 2	441343
15.	START-UP TRANSFORMER Nº 22 & ASSOCIATED CKT BKRS, SH 2	441345
16.	DIESEL GENERATORS & ASSOCIATED CKT. BKRS, SH 2	441356
17.	GENERATOR CONTROL SHEET Nº 1	441245
18.	GENERATOR CONTROL SHEET Nº 2	441246
19.	4KV DIESEL GENERATORS CONTROL SH 1	437667
20.	25KV 1 0/PHASE BUS MOTOR OP. DISC. SW	441267
21.	LOGIC DIAG 4160 V. BUS SECTIONS F AUTO TRANSFER	441286
22.	SCHEMATIC DIAG. MAIN ANNUNCIATOR SH 18	500788
23.	SINGLE LINE METER & RELAY DIAG. 125V DC SYSTEM	441240
24.	SCHEMATIC DIAG GEN CONTROL SHEET Nº 3	441247
25.	LIST OF EQUIPMENT LOCATION CODES	103013
26	SOLID STATE PROTECTION SYSTEM MFR. DWG.	REC. NO. 663231
27.	FUNCTIONAL DIAGRAMS MFR DWGS	663135
28.	SCHEM. DIAG. MAIN ANNUNCIATOR SH. 26	DWG. NO. 502092
29.	SCHEM. DIAG. SSPS OUTPUT RELAYS, TRAIN A	503089
30.	LIST OF ELECTRICAL DEVICES	DWG. No. 050011
31.	S/D 4160V DIESEL GEN. CONTROL NO. 23 & ASSOC. CKT. BKR	DWG. NO. 496276
32.	SHT. 1	DWG Nº 496277
33.	SHT. 2	" 496278
34.	WIRING DIAGRAM - 4KV SWITCHGEAR BUS "F"	441570



P.G.&E. SYSTEM PHASE SEQUENCE A-C-B

NUCLEAR SAFETY RELATED

KEY DWG. SECTION 2

DATE	
07-14-2010	
D.D.	JBMX
R.E.	FxCZ
I.V.	
P.E.	R2M5

REVISION DESCRIPTION: REVISED PER DFT-7x788

UNIT 2

ELECTRICAL
SCHEMATIC DIAGRAM
4160V BUS SECTION "F"
AUTOMATIC TRANSFER

DIABLO CANYON POWER PLANT
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

DRAWING	SHEET	PAGE	REV
441352	1	0	26

DWG SCALE:
BILL OF MATL:
SUPSDS:
SUPSD BY:

UI-437625

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DGN=441352.dgn
CAD User: JBMX Date: 07-14-2010