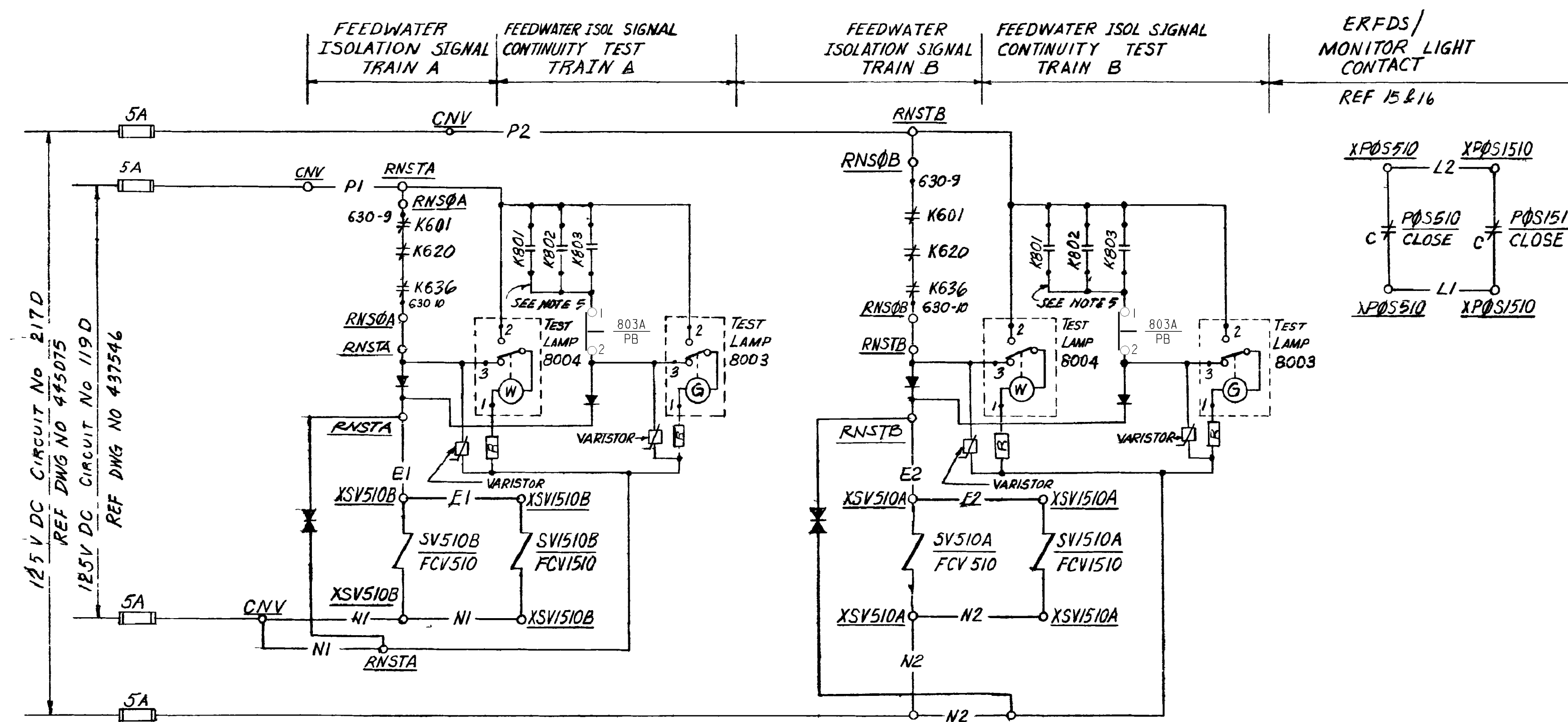


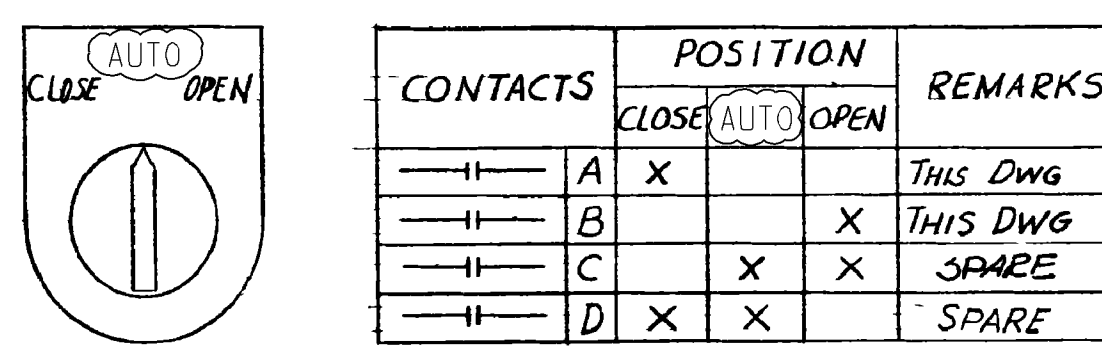
120 V AC CONTROL SCHEMATIC
 FCV 438 STEAM GEN I FEEDWATER IN ISOLATION VALVE CKT N° F24P00
 ISOLATION VALVES SIMILAR EXCEPT AS SHOWN IN TABLE

VALVE NO	DESCRIPTION	CIRCUIT BKR N°	CIRCUIT N°	BUS SECT	NORMAL POSITION	ENGINEER SAFETY VITAL FUNCTION	VALVE POSITION SWITCH NO	BYPASS INTLK	MONITOR LIGHT	SG HI-HI LEVEL or S.I.S. TRIP RELAY	LOC	CONTACT CLOSE VALVE	ALARM CKT N° OVER CURRENT	ERFDS INPUT	MOTOR LOC	CNT ISOL PH A MOTOR OC BYPASS DEVICE CONTACT	SSPS TEST PUSHBUTTON PB SW#	TERM BLOCK	TRAIN A
▲ FCV 438	STM GEN I FW IN ISOLATION VALVE	52 IF 24	F24P00	IF	OPEN	F	POS 214	POS 214-9	POS 214-16	K621	RNS2A	438-1-1-438-6	A14408DF	MUX05-221	MPE24	CIAX-F	PB804B	B15-1,2	RNSTA
▲ FCV 439	3	52-16-41	G47P00	IG	OPEN	F	POS 216	POS 216-9	POS 216-16	K621	RNS2A	439-1-1-439-6	A14308DF	MUX06-19-1	MPE27	CIAX-G	PB804C	B16-1,2	RNSTA
▲ FCV 440	4	52-1H-28	H28P00	1H	OPEN	F	POS 218	POS 218-16	POS 218-9	K621	RNS2A	440-1-1-440-6	A14208DF	MUX07-17-4	MPE28	CIAX-H	PB804D	B17-1,2	RNSTA
▲ FCV 441	4	52-1F-22	F22P00	1F	OPEN	F	POS 220	POS 220-16	POS 220-9	K621	RNS2A	441-1-1-441-6	A14408DF	MUX05-224	MPE22	CIAX-3	PB804E	B18-1,2	RNSTA



STEAM GENERATOR 1-1 MAIN FEEDWATER SUPPLY - CIRCUIT No 10510SV01
 STEAM GENERATOR MAIN FEEDWATER SUPPLY VALVES SIMILAR EXCEPT AS SHOWN IN TABLE

VALVE No	DESCRIPTION	DC CKT No	CIRCUIT No	VALVE LOC	SOL VLV TRAIN A		SOL VLV TRAIN B		FEEDWATER ISOLATION SIGNAL TRAIN A		FEEDWATER ISOLATION SIGNAL TRAIN B		VALVE POS N°	SSPS TEST PUSH BUTTON						POS MON. NO. (SEE NOTE 7)
					No	LOC	No	LOC	Device	LOC	CONTACT	Device		LOC	CONTACT	NO.	CONTACT	LOC.	NO.	
FCV510	STM GEN 1-1 FDW MAIN / BYPASS VALVE	217D	10510SV01	KCV510	510B1	KSV510B1	510A1	KSV510A1	RNS2A	630-9	RNS2B	630-9	P8510 / P8510	PB803A	1-2	RNSTA	PB803A	1-2	RNSIB	P8M1510
FCV520	STM GEN 1-2 FDW MAIN / BYPASS VALVE	217D	10520SV01	KCV520	520B1	KSV520B1	520A1	KSV520A1	RNS2A	631-5	RNS2B	631-5	P8520 / P8520	PB803A	3-4	RNSTA	PB803A	3-4	RNSIB	P8M1520
FCV530	STM GEN 1-3 FDW MAIN / BYPASS VALVE	217D	10530SV01	KCV530	530B1	KSV530B1	530A1	KSV530A1	RNS2A	648-1	RNS2B	648-1	P8530 / P8530	PB803B	1-2	RNSTA	PB803B	1-2	RNSIB	P8M1530
FCV540	STM GEN 1-4 FDW MAIN / BYPASS VALVE	217D	10540SV01	KCV540	540B1	KSV540B1	540A1	KSV540A1	RNS2A	649-2	RNS2B	649-2	P8540 / P8540	PB803B	3-4	RNSTA	PB803B	3-4	RNSIB	P8M1540



CONTROL SWITCH - 42 IF 24, 42 IG 41, 42-1H-28, 42 IF 22
 CS CS CS CS
 USED AT LOCATION CB
 SPRING RETURN TO (AUTO) OPERATOR OT2Y6

CONTACTS	POSITION		REMARKS
	CLOSE	AUTO/OPEN	
A	X		THIS DWG
B		X	THIS DWG
C	X	X	SPARE
D	X	X	SPARE

CONTACTS	VALVE POSITION		FUNCTION	FUNCTION POS 218, POS 220
	FULL OPEN	FULL CLOSED		
1			SPARE	SPARE
2			SPARE	SPARE
3			GREEN LIGHT	GREEN LIGHT
4			OPEN LIMIT	OPEN LIMIT
5			BYPASS INTLK	BYPASS INTLK
6			SPARE	SPARE
7			SPARE	SPARE
8			CLOSE LIMIT	CLOSE LIMIT
9			BYPASS INTLK	MONITOR LT
10			SPARE	SPARE
11			SPARE	SPARE
12			SPARE	SPARE
13			SPARE	SPARE
14			SPARE	SPARE
15			RED LIGHT	RED LIGHT
16			MONITOR LT	BYPASS INTLK

TYPICAL VALVE POSITION SW. CONTACT DEVELOPMENT
 POS214, POS216, POS218, POS220
 ACTUAL SETPOINTS ARE IN PIMS

CONTACTS	POSITIONS		REMARKS
	CLOSE	OPEN	
A		X	SPARE
B	X		SPARE
C	X	X	MONITOR LT
D	X		SPARE

VALVE CLOSE POSITION SW
 P8510, P8510, P8510, P8510

CONTACTS	POSITIONS		REMARKS
	CLOSE	OPEN	
A		X	SPARE
B	X		SPARE
C	X	X	MONITOR LT
D	X		SPARE

LEGEND:
 ▲ MOV'S PROVIDED WITH FIELD INSTALLED "QUICKEST" CABLE ASSEMBLIES SEE APPLICABLE DIAGRAM OF CONNECTIONS.

TABLE OF DEVICES

DEVICE NO	FUNCTION	RATING	MFR	TYPE	CAT/DWG#	REMARKS
42 IF 24, 42 IG 41, 42-1H-28	480V AC MOTOR STARTER				REF DWG 1, 2, 3	
49 IF 24, 49-15-47, 49-1H-28	MOTOR OVERLOAD RELAY		WE CORP			PART OF MOTOR STARTER
49X IF 24, 49X-16-47, 49X-1H-28	MOTOR OVERLOAD AUX RELAY		WE CORP			PART OF MOTOR STARTER
52 IF 24, 52-16-47, 52-1H-28	480V AC AIR CIRCUIT BKR				REF DWG 1, 2, 3	
CIAX-F, CIAX1-G, FCV	CNT ISOL PHA AUX RELAY MOTOR OC BYPASS FLOW CONTROL VALVE				(H)	CLOSES ON PHA ISOL & SIS ACTUATION SEE TABLE FOR VALVE NOS
POS	FCV POSITION SWITCH					SEE TABLE FOR SW NOS
PB-803A	SSPS "GO" PUSHBUTTON TRAIN A		WE CORP		OT2B IN	
PB-803B	SSPS "GO" PUSHBUTTON TRAIN B		WE CORP		OT2B IN	
TS	TORQUE SWITCH					
K601, K602, K603	FEEDWATER VALVE TRIP RELAYS				(11) (12) (13)	
K621	SG HI HI LEVEL or S I S TRIP RELAY				(11) (12) (13)	
K801, K802, K803	SAFEGUARD TEST RELAY				(12)	SEE NOTE 5
K804	SAFEGUARD TEST RELAY				(12)	SEE NOTE 4

EQUIPMENT LOCATION NUMBERS
 SPF - 480V MOTOR CONT CENTER, BUS SECTION IF
 MPE24 - MOTOR OPERATED VALVE FCV 438
 CB - CONTROL BOARD CONDENSATE & FEEDWATER (SECT 1V B3)
 BTH110 - TERMINAL BLM AREA H NO 110
 RNS2B - RACK NU SAFEGUARD, OUTPUT B
 CNV - CONT BD CHEMICAL VOL CONT SYSTEM (SECT 1V B2)
 RNSTA - RACK NU SAFEGUARD, TEST A

- NOTES
 1 SWITCH OPENS ON MECHANICAL TORQUE DURING OPENING CYCLE (18)
 2 SWITCH OPENS ON MECHANICAL TORQUE DURING CLOSING CYCLE OR FULLY CLOSED VALVE (17)
 3 FIELD TO INSTALL JUMPER FOR TORQUE SEATING
 4 TEST RELAY CONTACTS OPEN DURING TEST
 5 TEST RELAY CONTACTS CLOSE DURING TEST
 6 TRAIN A TURBINE & FEEDWATER PUMP SIGNAL TRIPS FEEDWATER ISOLATION VALVE TRAIN B SIGNAL TRIPS MAIN FEEDWATER PUMPS
 7 FOR POS 1510, 1520, 1530 & 1540 - STM GEN FW BYPASS VALVES POSITION MONITORING & 120V AC CKT. NOS. SEE REF. 20.

- REFERENCE DRAWINGS
 1- SINGLE LINE METER & RELAY DIAGRAM 480V SYSTEM BUS SECT IF DWG # 437916
 2- 1G 437542
 3- 1H 437543
 4- DESCRIPTION OF ELECT SCHEMATIC DIAGS, SYMBOLS & CKT DESIGNATIONS 050003
 5- EQUIPMENT LOCATION NUMBER LIST 101900
 6- PIPING SCHEMATIC FEEDWATER SYSTEMS 102003
 7- INSTRUMENT SCHEMATIC FLOW INSTRUMENT SYSTEMS 102032
 8 SCHEMATIC DIAGRAM FEEDWATER TURBINE PUMP 437567
 9 SCHEMATIC DIAGRAM MAIN ANNUNCIATOR SH 1 501121
 10 INSTRUMENT SCHEMATIC MULTIVARIABLE INSTRUMENT SYSTEMS 102036
 11 FUNCTION DIAGRAMS REC # 663195
 12 SOLID STATE PROTECTION - 1/2" TEM REC # 663231
 13 SCHEMATIC DIAGRAM MONITOR LIGHT BOX C - DWG # 437698
 14 SCHEMATIC DIAGRAM SIS MOV'S DWG # 437606
 15 BLOCK DIAG. ERFDS & TECHNICAL SUPPORT CTR DWG # 445278
 16 SCHEM DIAG MON LIGHT AUX RLY 445287
 17 SINGLE LINE METER AND RELAY DIAG - 125V DC SYS 437546, 445075
 18 SCHEM DIAG SSPS OUTPUT RELAYS, TRAIN A, TRAIN B 501869, 503088
 19 SCHEM DIAG AUX FEEDWATER MOTOR OPERATED VALVES 437507
 20 FUNCTIONAL LOOP DIAG'S (LOOP 4-44B, 45B, 46B & 47B) 109804-69A, 65A, 66A & 67A
 21 FOR SWITCH WIRE/CONTACT NUMBERS, TRAIN A, TRAIN B 498040, 498094
 22 BYPASS TEST BUTTON, SAFEGUARDS TEST CABINET TRAIN A & B 495401, 495405

NUCLEAR SAFETY RELATED

KEY DWG. SECTION 6

UNIT 1

DATE 07-18-2011	REVISION DESCRIPTION REVISED PER DFT-71268	DWG SCALE: BILL OF MATL: SUPPDS: SUPSD BY:
D.D. AJFJ R.E. FXC2 I.V. P.E. AGB2		DRAWING SHEET PAGE REV 437585 1 0 23
ELECTRICAL SCHEMATIC DIAGRAM FEEDWATER MOTOR OPERATED ISOLATION VALVES PACIFIC GAS AND ELECTRIC COMPANY SAN FRANCISCO, CALIFORNIA		