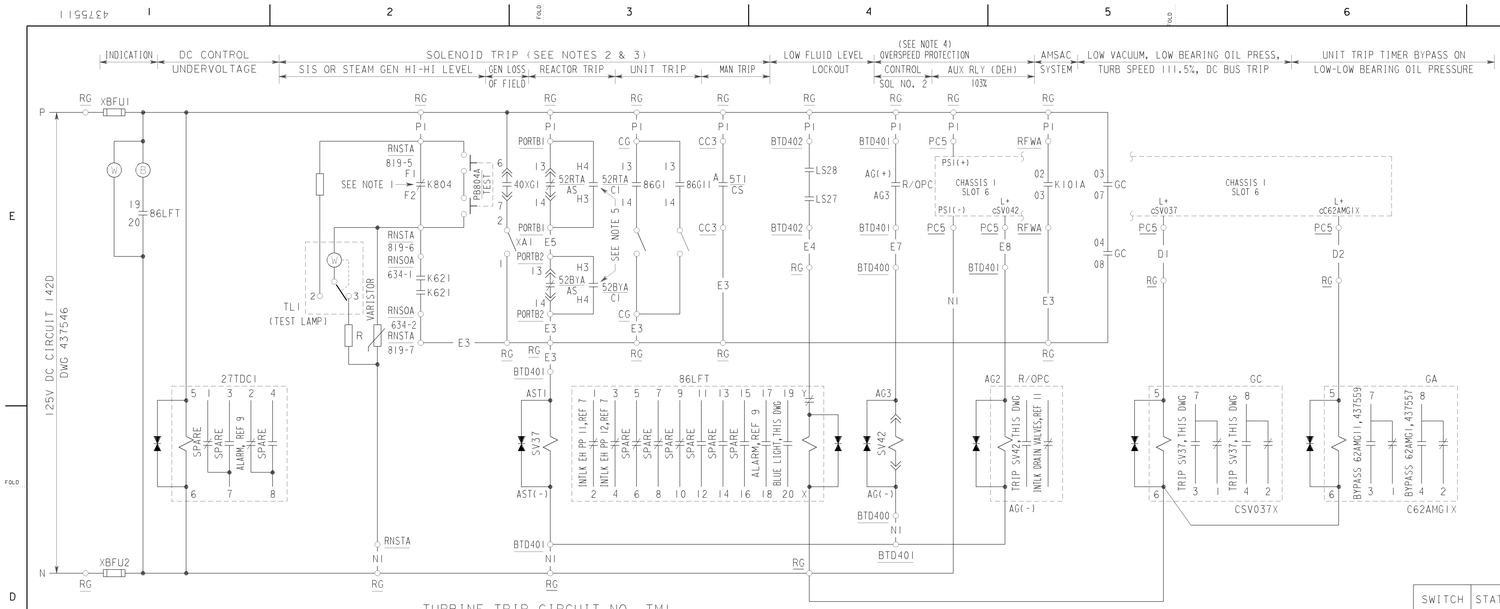
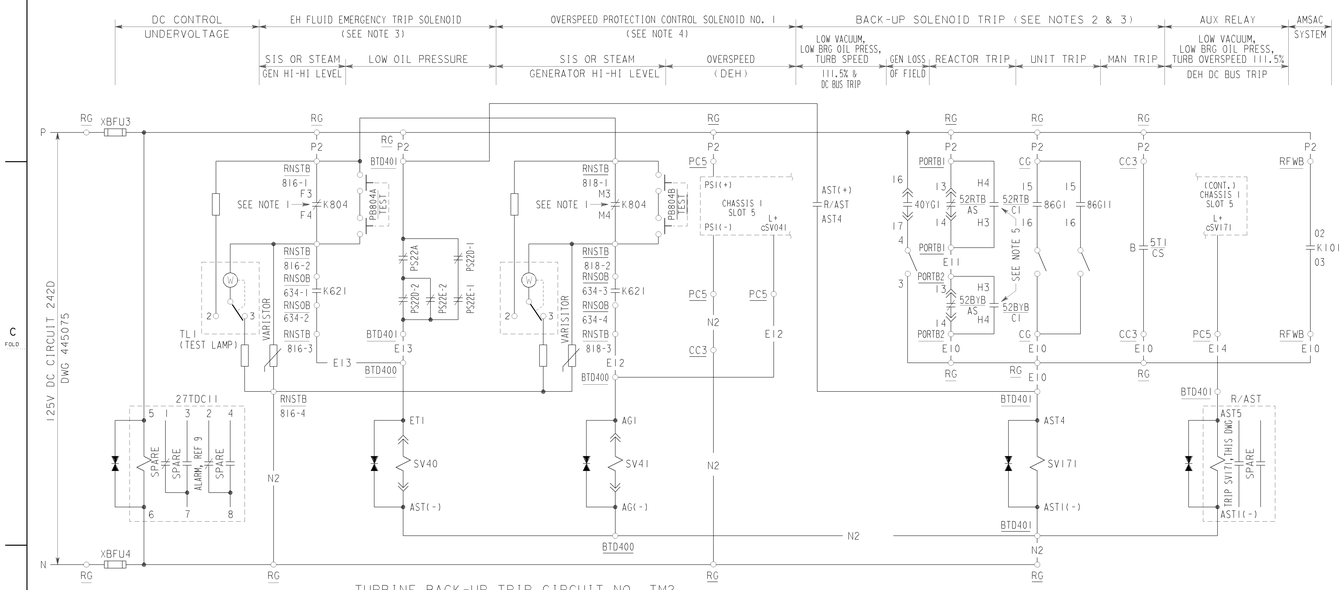
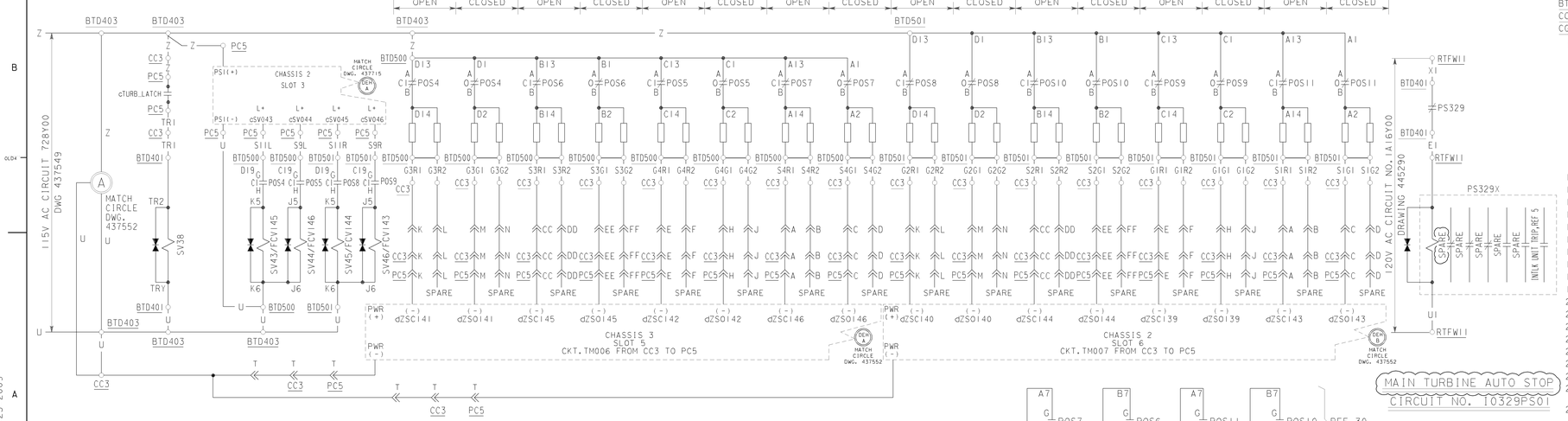


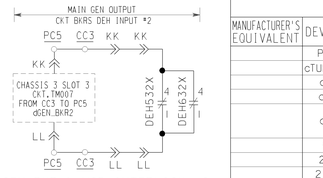
TURBINE TRIP CIRCUIT NO. TM1



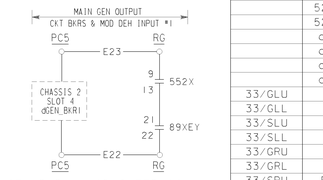
TURBINE BACK-UP TRIP CIRCUIT NO. TM2



GOVERNOR AND MAIN STEAM STOP VALVES CIRCUIT NO. TM3



GEN BKR & MOD INTERLOCK #2
CIRCUIT NO. TM007



GEN BKR & MOD INTERLOCK #1
CIRCUIT NO. TM5039

TABLE OF DEVICES

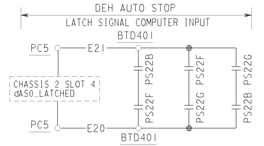
MANUFACTURER'S EQUIVALENT	DEVICE NO.	FUNCTION	RATING	MFR	TYPE	CATALOG OR REF DWG	REMARKS
	PS329X	TURB AUTO STOP OIL TRIPPED PRESS AUX RLY	120V AC	CH	AR	D40RR33A	
	cTURB_LATCH	COND. VACUUM TRIP LATCH				15,23 & 25	DEH COMPUTER
	cSV041	TURB OVERSPEED PROTECTION				15,23 & 25	DEH COMPUTER
	cSV042	TURB OVERSPEED PROTECTION				15,23 & 25	DEH COMPUTER
	cSV171	TURB OVERSPEED PROTECTION, LOW VACUUM, OR LOW BRG OIL PRESS (DEH) OR DC STOP TRIP				15,23 & 25	DEH COMPUTER
	552Y1	500KV PCB AUX RELAY				6	CONTACT CLOSED WHEN BOTH 500KV BKRS OPEN
	27TDC1	TURB CONT DC UNDERVOLTAGE	125V DC	WE	SG	1342925	
	27TDC11	TURB CONT BACK-UP DC UNDERVOLTAGE	125V DC	WE	SG	1342925	
	86G1	UNIT TRIP LOCKOUT RELAY				5	
	86G11	UNIT TRIP LOCKOUT RELAY				6	
86LFT	86LFT	EH LOW FLUID LEVEL TRIP LOCKOUT RLY	125V DC	WE	WL	422D949G65	HAND RESET
	52RTA,B	REACTOR TRIP BREAKERS				8	
	52BYA,B	REACTOR BYPASS BREAKER				8	
	cSV046	MAIN STEAM LEAD 1 STOP VALVE TEST				15,23 & 25	DEH COMPUTER
	cSV045	MAIN STEAM LEAD 2 STOP VALVE TEST				15,23 & 25	DEH COMPUTER
	cSV043	MAIN STEAM LEAD 3 STOP VALVE TEST				15,23 & 25	DEH COMPUTER
	cSV044	MAIN STEAM LEAD 4 STOP VALVE TEST				15,23 & 25	DEH COMPUTER
33/GLU	POS4	GOVERNOR VALVE LEFT UPPER LIMIT SW				13	
33/GLL	POS5	GOVERNOR VALVE LEFT LOWER LIMIT SW				13	
33/SLU	POS6	MAIN STEAM STOP VALVE LEFT UPPER LIMIT SW				13	
33/SLL	POS7	MAIN STEAM STOP VALVE LEFT LOWER LIMIT SW				13	
33/GRU	POS8	GOVERNOR VALVE RIGHT UPPER LIMIT SW				13	
33/GRL	POS9	GOVERNOR VALVE RIGHT LOWER LIMIT SW				13	
33/SRU	POS10	MAIN STEAM STOP VALVE RIGHT UPPER LIMIT SW				13	
33/SRL	POS11	MAIN STEAM STOP VALVE RIGHT LOWER LIMIT SW				13	
R/OPC	R/OPC	TURB OVERSPEED PROTECTION AUX RLY	120V DC				ENERGIZED BY DEH COMPUTER
R/AST	R/AST	TURB OVERSPEED TRIP AUX RLY	120V DC				ENERGIZED BY DEH COMPUTER
63/AST-2	PS22A	TURB AUTO STOP OIL TRIPPED PRESS SW		CCS	646GZE	13	CONTACT CLOSES DECREASING
	PS22C	AUTO STOP OIL TO DRAIN VALVE INTERLOCK		CCS	646GZE	11 & 13	CONTACT OPENS DECREASING
	PS22D,E	TURB AUTO STOP OIL TRIPPED PRESS SW		CCS	646GZE	13	CONTACT CLOSES DECREASING
	PS22B,F,G	DEH AUTO STOP LATCH SIGNAL		CCS	646GZE	13 & 18	CONTACT OPENS DECREASING
71/FL2	LS27	EH RESERVOIR LOW FLUID TRIP LOCKOUT				13	CONTACT CLOSES @ 7.63 INCH DECREASING
20/AST-1	SV37	TURB AUTO STOP TRIP SOLENOID VALVE	125V DC			13	
20/AST-2	SV171	TURB AUTO STOP TRIP BACK-UP SOLENOID VALVE	125V DC			13	
20/ASR	SV38	TURB AUTO STOP RESET SOLENOID VALVE	115V AC			13	
20/ET	SV40	EH FLUID EMERGENCY TRIP SOLENOID VALVE	120V DC			13	
20-1/OPC	SV41	EH FLUID AUX GOVERNOR SOLENOID VALVE	120V DC			13	
20-2/OPC	SV42	EH FLUID AUX GOVERNOR SOLENOID VALVE	120V DC			13	
20/SLU	SV43	MAIN STEAM LEAD 3 STOP VALVE SV (ULH)	115V AC			13	
20/SLL	SV44	MAIN STEAM LEAD 4 STOP VALVE SV (LLH)	115V AC			13	
20/SRU	SV45	MAIN STEAM LEAD 2 STOP VALVE SV (URH)	115V AC			13	
20/SRL	SV46	MAIN STEAM LEAD 1 STOP VALVE SV (LRH)	115V AC			13	
	40XG1,40YG1	GENERATOR LOSS OF FIELD AUX RELAY				5	
63/AST-6	PS329	TURB AUTO STOP OIL TRIPPED PRESS SW				18	CONTACT CLOSES @ 5PSIG DECREASING
	K621	SIS OR STEAM GENERATOR HI-HI LEVEL AUX RLY				15,16,17,23	
	DEH532X	DEH GEN.BREAKER 532 AUX RLY				27	
	DEH632X	DEH GEN.BREAKER 632 AUX RLY				28	
	K101A	AMSAC SYSTEM (TRAIN A)		WE		20	
	K101B	AMSAC SYSTEM (TRAIN B)		WE		20	
71/FL1	LS28	EH RESERVOIR LOW FLUID TRIP LOCKOUT				13	CONTACT CLOSES @ 12.63 INCH DECREASING REF DWG 437551 FOR PRETRIP ALARM
	552X	500KV PCB'S 532 & 632 AUX RLY				6	
	89XEY	25KV ISO PHASE DISCONNECT SW AUX RLY				29	
	10TX	OVERTEMPERATURE △T				31	
	10PX	OVERPOWER △T				31	
	cSV037	TURB OVERSPEED PROTECTION, LOW VACUUM, OR LOW BRG OIL PRESS (DEH) OR DC BUS TRIP					DEH COMPUTER
	CSV037X	TURB OVERSPEED PROTECTION, LOW VACUUM, OR LOW BRG OIL PRESS (DEH) OR DC BUS TRIP AUX RELAY	125V DC	WE	SG	1342925	
	C62AMG1X	UNIT TRIP TIMER BYPASS AUX RLY	125V DC	WE	SG	1342925	
	cC62AMG1X	UNIT TRIP TIMER BYPASS					DEH COMPUTER

SWITCH	STATION	TERM MARK	VALVE POSITION OPEN	INTER	CLOSED	REMARKS
OPEN (O)		A-B		X	X	DEH
		C-D	X			SPARE
		E-F		X	X	SPARE
		G-H	X			SPARE
		J-K		X	X	SPARE
		L-M	X			SPARE
CLOSED (C)	1	A-B	X	X		DEH
		C-D			X	SPARE
		E-F	X	X		SPARE
		G-H			X	INTLK,THIS DWG
		J-K	X	X		SPARE
		L-M			X	SPARE
	2	A-B	X	X		SPARE
		C-D			X	SPARE
		E-F	X	X		SPARE
		G-H			X	SPARE
		J-K	X	X		SPARE
		L-M			X	SPARE

GOVERNOR VALVE LIMIT SWITCH
POS4, POS5, POS8 & POS9

SWITCH	STATION	TERM MARK	VALVE POSITION OPEN	INTER	CLOSED	REMARKS
OPEN (O)		A-B		X	X	DEH
		C-D	X			SPARE
		E-F		X	X	SPARE
		G-H	X			SPARE DEH INPUT THIS DWG
		J-K		X	X	SPARE
		L-M	X			SPARE
CLOSED (C)	1	A-B	X	X		DEH
		C-D			X	SPARE
		E-F	X	X		REACTOR TRIP LOGIC
		G-H			X	SPARE
		J-K	X	X		REACTOR TRIP LOGIC
		L-M			X	SPARE
	2	A-B	X	X		SPARE
		C-D			X	SPARE
		E-F	X	X		SPARE
		G-H			X	SPARE
		J-K	X	X		SPARE
		L-M			X	SPARE

MAIN STEAM STOP VALVE LIMIT SWITCH
POS6, POS7, POS10 & POS11



CONTACTS		POSITION TRIP	NORMAL	REMARKS
—||—	A	X		THIS DWG
—||—	B	X		THIS DWG
—||—	C	X		ALARM,REF 21
—||—	D	X		SPARE
—||—	E	X		SPARE
—||—	F	X		SPARE

TURBINE TRIP CONTROL SWITCH: 5TI CS
WITH RED OVAL HANDLE
SPRING RETURN TO NORMAL
USED AT LOCATION CC3

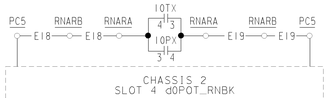
EQUIPMENT LOCATIONS

BTD400 - TURBINE EQUIPMENT TERMINAL BOX B
BTD401 - TURBINE EQUIPMENT TERMINAL BOX A
BTD402 - TURBINE EQUIPMENT TERMINAL BOX ER
BTD403 - TERMINAL BOX D 403
BTD500 - TURBINE EQUIPMENT TERMINAL BOX D
BTD501 - TURBINE EQUIPMENT TERMINAL BOX E
CC3 - GENERATOR CONTROL CONSOLE
CG - GENERATOR CONTROL BOARD
PC5 - MAIN TURBINE CONTROL SYSTEM CABINET
PORTB1 - CONTROL PANEL REACTOR TRIP BREAKERS
PORTB2 - CONTROL PANEL REACTOR BYPASS BREAKERS
RG - GENERATOR RELAY BOARD
RNSOA - NUCLEAR SAFEGUARD OUTPUT RACK A
RNSTA - NUCLEAR SAFEGUARD TEST RACK A
RTFW11 - FWP11 SPEED CONTROL PANEL

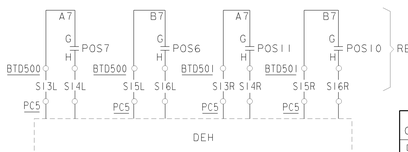
REFERENCES

	DWG NO.
1. DESCRIPTION OF ELEC SCHEM DIAG SYMBOLS & CKT DESIGNATIONS	050003
2. LIST OF EQUIPMENT LOCATION CODES	101900
3. SINGLE LINE METER & RELAY DIAG 125V DC SYSTEM	437546
4. SINGLE LINE METER & RELAY DIAG INSTRUMENT AC SYSTEM, SH 2	437549
5. SCHEM DIAG GENERATOR CONTROL, SH 1	437557
6. SCHEM DIAG GENERATOR CONTROL, SH 2	437558
7. SCHEM DIAG TURBINE LUBE OIL PUMPS, SH 1	437563
8. SCHEM DIAG REACTOR TRIP BREAKERS	437610
9. SCHEM DIAG MAIN ANNUNCIATOR	501132
10. DIAG OF CONN P250 COMPUTER TERMINAL	437864
11. SCHEM DIAG TURBINE CONTROL, SH 2	437552
12. SCHEM DIAG TURBINE CONTROL, SH 3	437553
13. INSTRUMENT REFERENCE	102038
14. SCHEM DIAG DDC HAND CONTROLLER MAN-AUTO STATIONS	437725
15. SCHEM DIAG SSPS OUTPUT RELAYS, TRAIN A	501869
16. SOLID STATE PROTECTION SYSTEM MANUFACTURER'S DWG	663231
17. FUNCTIONAL DIAGRAM MANUFACTURER'S DWG	495841
18. TURBINE ELECTRICAL SYSTEM MANUFACTURER'S DWG	663285-31,76
19. DELETED	
20. ADVANCE DIGITAL FEEDWATER SYSTEM (AMSAC)	6008434
21. SCHEM DIAG MAIN ANNUNCIATOR	501141
22. SINGLE LINE METER & RELAY DIAG INSTRUMENT AC SYSTEM, SH 2	445075
23. SCHEM DIAG SSPS OUTPUT RELAYS, TRAIN B	503088
24. SCHEM DIAG MAIN ANNUNCIATOR	501131
25. TURBINE CONTROL SYSTEM BASIS OF DESIGN DOCUMENT MANUAL	6020501-1
26. SCHEM DIAG TURBINE CONTROL	437715
27. SCHEM DIAG 125VDC MANUAL CONTROL & RELAY TRIP BAY-3 PCB 532 500KV SWITCHYARD	435807
28. SCHEM DIAG 125VDC MANUAL CONTROL & RELAY TRIP BAY-3 PCB 632 500KV SWITCHYARD	4012514
29. SCHEM DIAG GENERATOR CONTROL	437559
30. SCHEM STEAM VALVE TEST	663285-80
31. ELEMENTARY WIRING DIAG AUX RELAYS UNITS 1 & 2	663193-250

UNIT 1



OVERTEMPERATURE OVERPOWER △T RUNBACK
CIRCUIT TM5



MAIN STEAM STOP VALVES SPARE INPUTS INTO DEH
CIRCUIT TM5

MAIN TURBINE AUTO STOP
CIRCUIT NO. 10329PS01

KEY DWG. SECTION 5

NOTES

1. TEST RELAY OPEN DURING TEST.
2. TURBINE WILL ALSO TRIP MECHANICALLY UPON OPERATION OF THE FOLLOWING PROTECTIVE DEVICES: OVERSPEED, LOW BEARING OIL PRESSURE, THRUST BEARING FAILURE.
3. THIS SOLENOID VALVE WILL TRIP GOVERNOR, INTERCEPTOR, REHEAT STOP & MAIN STEAM STOP VALVES.
4. THIS SOLENOID VALVE WILL TRIP GOVERNOR & INTERCEPTOR VALVES ONLY.
5. CELL INTERLOCK SWITCHES ARE SHOWN WITH BREAKER IN OPERATING POSITION.

	DATE
	03-25-2009
D.D.	RxG2
R.E.	FxC2
I.V.	
P.E.	RWB7

REGISTERED PROFESSIONAL ENGINEER RICHARD WAYNE BEVEN E 9776 Exp. 9/30/09 ELECTRICAL STATE OF CALIFORNIA

REVISION DESCRIPTION
REVISED PER DDN-2*199 & DFC-3*568

ELECTRICAL
SCHEMATIC DIAGRAM
TURBINE CONTROL

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

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

DRAWING	SHEET	PAGE	REV
437551	1	0	23

DRAWING NUMBER 437551

RASTER=437551.dgn
DGN=437551.dgn
CAD User:RxG2 Date: 03-25-2009