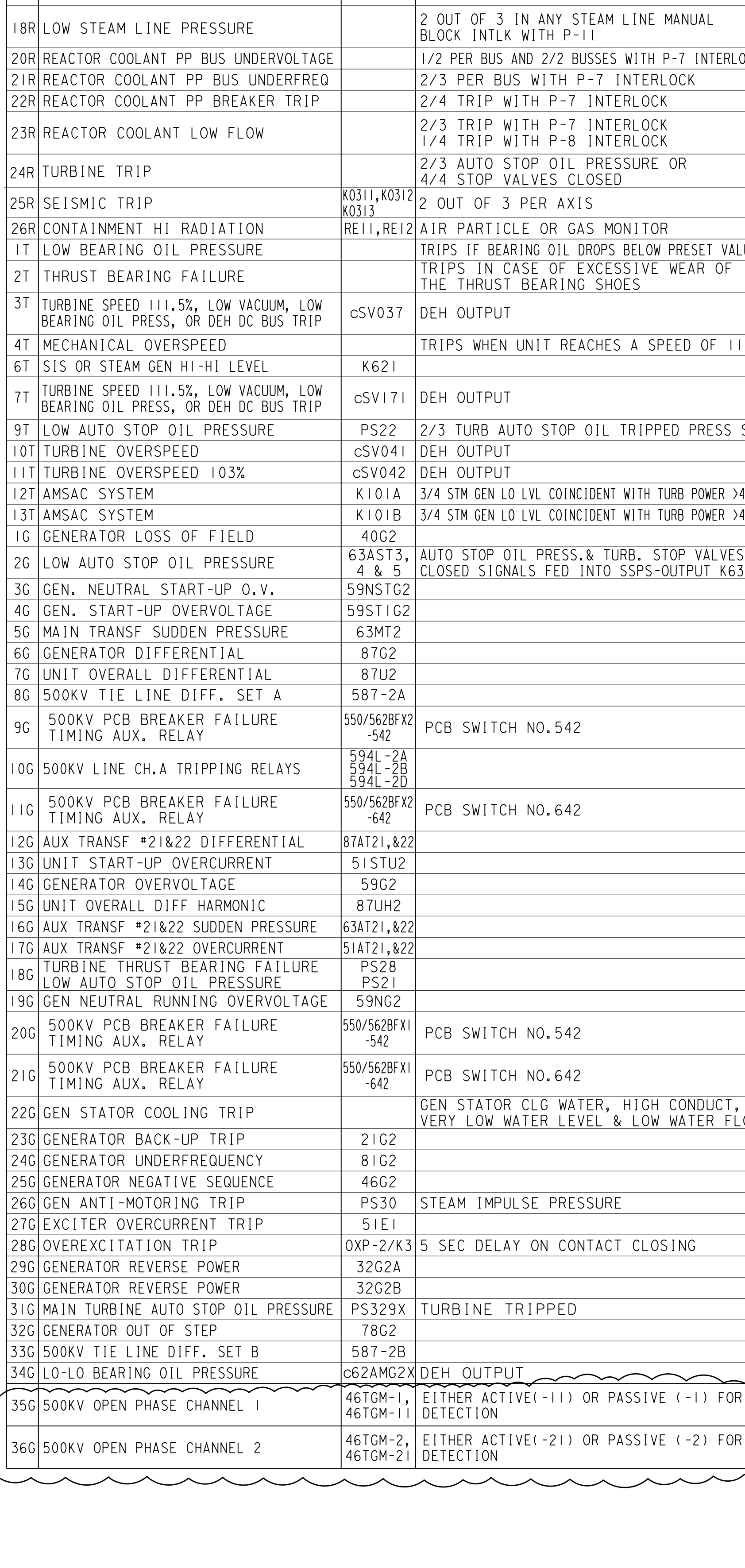


PERMISSIVES		REFERENCES		DWG NO.		KEY DWG. SECTION 3	
P-6	1/2 NEUTRON FLUX (INTERMEDIATE RANGE) ABOVE SET POINT	1.	FUNCTIONAL DIAGRAM BY WESTINGHOUSE	495871	THRU	495888	
P-7	2/4 NEUTRON FLUX (POWER RANGE) ABOVE SET POINT (P-10) OR 1/2 FIRST STAGE TURBINE PRESSURE ABOVE SET POINT						
P-8	2/4 NEUTRON FLUX (POWER RANGE) ABOVE SET POINT						
P-9	2/4 NEUTRON FLUX (POWER RANGE) ABOVE SET POINT						
P-10	2/4 NEUTRON FLUX (POWER RANGE) ABOVE SET POINT						
P-11	2/3 PZR CHANNELS BELOW SET POINT						
P-12	2/4 TAVG BELOW SET POINT						

REACTOR, TURBINE & GENERATOR TRIPS			
NO.	FUNCTION	DEVICE NO.	REMARKS
1R	HI NEUTRON FLUX RATE POSITIVE		2 OUT OF 4 OF ANY COMBINATION OF POS RATE TRIP NOT FROM THE SAME CHANNEL
3R	HI NEUTRON FLUX POWER RANGE		HIGH SET POINT - 2 OUT OF 4
4R	HI NEUTRON FLUX POWER RANGE		LOW SET POINT - 2 OUT OF 4
5R	HI NEUTRON FLUX INTERMEDIATE RANGE		1 OUT OF 2
6R	HI NEUTRON FLUX SOURCE RANGE		1 OUT OF 2
9R	STEAM GENERATOR LOW-LOW WTR LEVEL		2 OUT OF 3 PER LOOP 1 OUT OF 4 LOOPS
10R	PRESSURIZER HIGH WATER LEVEL		2 OUT OF 3 WITH P-7 INTERLOCK
11R	PRESSURIZER LOW PRESSURE		2 OUT OF 4 WITH P-7 INTERLOCK
12R	PRESSURIZER HIGH PRESSURE		2 OUT OF 4
13R	OVER TEMPERATURE ΔT		2 OUT OF 4
14R	OVER POWER ΔT		2 OUT OF 4
15R	PRESSURIZER LOW LOW PRESSURE		2 OUT OF 4 MANUAL BLOCK INTLK WITH P-11
16R	HIGH CONTAINMENT PRESSURE		2 OUT OF 4
18R	LOW STEAM LINE PRESSURE		2 OUT OF 3 IN ANY STEAM LINE MANUAL BLOCK INTLK WITH P-11
20R	REACTOR COOLANT PP BUS UNDERVOLTAGE		1/2 PER BUS AND 2/2 BUSES WITH P-7 INTERLOCK
21R	REACTOR COOLANT PP BUS UNDERFREQ		2/3 PER BUS WITH P-7 INTERLOCK
22R	REACTOR COOLANT PP BREAKER TRIP		2/4 TRIP WITH P-7 INTERLOCK
23R	REACTOR COOLANT LOW FLOW		2/3 TRIP WITH P-7 INTERLOCK 1/4 TRIP WITH P-8 INTERLOCK
24R	TURBINE TRIP		2/3 AUTO STOP OIL PRESSURE OR 4/4 STOP VALVES CLOSED
25R	SEISMIC TRIP	K031,K0312,K0313	2 OUT OF 3 PER AXIS
26R	CONTAINMENT HI RADIATION	RE11,RE12	AIR PARTICLE OR GAS MONITOR
1T	LOW BEARING OIL PRESSURE		TRIPS IF BEARING OIL DROPS BELOW PRESET VALUE
2T	THRUST BEARING FAILURE		TRIPS IN CASE OF EXCESSIVE WEAR OF THE THRUST BEARING SHOES
3T	TURBINE SPEED 111.5%, LOW VACUUM, LOW BEARING OIL PRESS, OR DEH DC BUS TRIP	c5V037	DEH OUTPUT
4T	MECHANICAL OVERSPEED		TRIPS WHEN UNIT REACHES A SPEED OF 110%
6T	SIS OR STEAM GEN HI-HI LEVEL	K621	
7T	TURBINE SPEED 111.5%, LOW VACUUM, LOW BEARING OIL PRESS, OR DEH DC BUS TRIP	c5V171	DEH OUTPUT
9T	LOW AUTO STOP OIL PRESSURE	PS22	2/3 TURB AUTO STOP OIL TRIPPED PRESS SW
10T	TURBINE OVERSPEED	c5V041	DEH OUTPUT
11T	TURBINE OVERSPEED 103%	c5V042	DEH OUTPUT
12T	AMSAC SYSTEM	K101A	3/4 SIM GEN LO LVL COINCIDENT WITH TURB POWER >40%
13T	AMSAC SYSTEM	K101B	3/4 SIM GEN LO LVL COINCIDENT WITH TURB POWER >40%
1G	GENERATOR LOSS OF FIELD	40G2	
2G	LOW AUTO STOP OIL PRESSURE	63AST3, 4 & 5	AUTO STOP OIL PRESS. & TURB. STOP VALVES CLOSED SIGNALS FED INTO SSPS-OUTPUT K635
3G	GEN. NEUTRAL START-UP O.V.	59NSTG2	
4G	GEN. START-UP OVERVOLTAGE	59ST1G2	
5G	MAIN TRANSF SUDDEN PRESSURE	63MT2	
6G	GENERATOR DIFFERENTIAL	87G2	
7G	UNIT OVERALL DIFFERENTIAL	87U2	
8G	500KV TIE LINE DIFF. SET A	587-2A	
9G	500KV PCB BREAKER FAILURE TIMING AUX. RELAY	550/562BFX2-542	PCB SWITCH NO.542
10G	500KV LINE CH. A TRIPPING RELAYS	594L-2A, 594L-2B, 594L-2D	
11G	500KV PCB BREAKER FAILURE TIMING AUX. RELAY	550/562BFX2-642	PCB SWITCH NO.642
12G	AUX TRANSF *21&22 DIFFERENTIAL	87AT21,822	
13G	UNIT START-UP OVERCURRENT	51STU2	
14G	GENERATOR OVERVOLTAGE	59G2	
15G	UNIT OVERALL DIFF HARMONIC	87UH2	
16G	AUX TRANSF *21&22 SUDDEN PRESSURE	63AT21,822	
17G	AUX TRANSF *21&22 OVERCURRENT	51AT21,822	
18G	TURBINE THRUST BEARING FAILURE LOW AUTO STOP OIL PRESSURE	PS28, PS21	
19G	GEN NEUTRAL RUNNING OVERVOLTAGE	59NG2	
20G	500KV PCB BREAKER FAILURE TIMING AUX. RELAY	550/562BFX1-542	PCB SWITCH NO.542
21G	500KV PCB BREAKER FAILURE TIMING AUX. RELAY	550/562BFX1-642	PCB SWITCH NO.642
22G	GEN STATOR COOLING TRIP	21G2	GEN STATOR CLG WATER, HIGH CONDUCT., VERY LOW WATER LEVEL & LOW WATER FLOW
23G	GENERATOR BACK-UP TRIP	81G2	
24G	GENERATOR UNDERFREQUENCY	46G2	
25G	GENERATOR NEGATIVE SEQUENCE	51E1	STEAM IMPULSE PRESSURE
26G	GEN ANTI-MOTORSING TRIP	PS30	
27G	EXCITER OVERCURRENT TRIP	51E1	
28G	OVEREXCITATION TRIP	0XP-2/3	5 SEC DELAY ON CONTACT CLOSING
29G	GENERATOR REVERSE POWER	32G2A	
30G	GENERATOR REVERSE POWER	32G2B	
31G	MAIN TURBINE AUTO STOP OIL PRESSURE	PS329X	TURBINE TRIPPED
32G	GENERATOR OUT OF STEP	78G2	
33G	500KV TIE LINE DIFF. SET B	587-2B	
34G	LO-LO BEARING OIL PRESSURE	062AMG2	DEH OUTPUT
35G	500KV OPEN PHASE CHANNEL 1	46TGM-1, 46TGM-11	EITHER ACTIVE(-11) OR PASSIVE (-1) FOR DETECTION
36G	500KV OPEN PHASE CHANNEL 2	46TGM-2, 46TGM-21	EITHER ACTIVE(-21) OR PASSIVE (-2) FOR DETECTION



LEGEND

- - ELECTRICAL CONTROL
- - MECHANICAL CONTROL
- ⊞ - AND
- ⊞ - OR
- ⊞ - TIME DELAY

AMSAC - ATWS MITIGATION SYSTEM ACTUATION CIRCUITRY
ATWS - ANTICIPATED TRANSIENT WITHOUT SCRAM

NUCLEAR SAFETY RELATED

UNIT 2		DWG SCALE:	
I & C		BILL OF MATL:	
FUNCTIONAL DIAGRAM		SUPDS:	
REACTOR - TURBINE - GENERATOR		SUPSD BY:	
PROTECTION		DRAWING SHEET PAGE REV	
PACIFIC GAS AND ELECTRIC COMPANY		500800 1 0 19	