



REFERENCES (NOTE 8)

REF. NO.	DESCRIPTION	WE DWG	PG&E DWG
1.	FUNCTIONAL LOGIC DIAGRAM INDEX AND SYMBOLS	5653D74-1	495841
2.	FUNCTIONAL LOGIC DIAGRAM REACTOR TRIP SIGNALS	5653D74-2	495842
3.	FUNCTIONAL LOGIC DIAGRAM NUCLEAR INSTR AND MANUAL TRIP SIGNALS	5653D74-3	495843
4.	FUNCTIONAL LOGIC DIAGRAM NUCLEAR INSTR PERMISSIVES AND BLOCKS	5653D74-4	495844
5.	FUNCTIONAL LOGIC DIAGRAM PRIMARY COOLANT SYSTEM TRIP SIGNALS	5653D74-5	495845
6.	FUNCTIONAL LOGIC DIAGRAM PRESSURIZER TRIP SIGNALS	5653D74-6	495846
7.	FUNCTIONAL LOGIC DIAGRAM STEAM GENERATOR TRIP SIGNALS	5653D74-7	495847
8.	FUNCTIONAL LOGIC DIAGRAM SAFEGUARDS ACTUATION SIGNALS	5653D74-8	495848
9.	FUNCTIONAL LOGIC DIAGRAM ROD CONTROLS AND ROD BLOCKS	5653D74-9	495849
10.	FUNCTIONAL LOGIC DIAGRAM STEAM DUMP CONTROL	5653D74-10	495850
11.	FUNCTIONAL LOGIC DIAGRAM PRESSURIZER PRESSURE AND LEVEL CONTROL	5653D74-11	495851
12.	FUNCTIONAL LOGIC DIAGRAM PRESSURIZER HEATER CONTROL	5653D74-12	495852
13.	FUNCTIONAL LOGIC DIAGRAM FEEDWATER CONTROL AND ISOLATION	5653D74-13	495853
14.	FUNCTIONAL LOGIC DIAGRAM FEEDWATER CONTROL AND ISOLATION	5653D74-14	495854
15.	FUNCTIONAL LOGIC DIAGRAM AUXILIARY FEEDWATER PUMPS STARTUP	5653D74-15	495855
16.	FUNCTIONAL LOGIC DIAGRAM TURBINE TRIPS, RUNBACKS & SIGNALS	5653D74-16	495856
17.	FUNCTIONAL LOGIC DIAGRAM AMSAC SIGNALS	5653D74-17	495857
18.	FUNCTIONAL LOGIC DIAGRAM SEISMIC TRIP	8759D77	495858
19.	FUNCTIONAL LOGIC DIAGRAM DIGITAL FW CONT SYS INPUT SIGNAL VALIDATION	5653D74-18	495859
20.	FUNCTIONAL LOGIC DIAGRAM DIGITAL FW CONT SYS FW FLOW CONTROLLER & C ₀ DEMAND	5653D74-19	495860
21.	FUNCTIONAL LOGIC DIAGRAM DIGITAL FW CONT SYS CONT VCV SEQ & TRACKING LOGIC	5653D74-20	495861
22.	FUNCTIONAL LOGIC DIAGRAM DIGITAL FW CONT SYS SIGNAL SELECTOR LOGIC	5653D74-21	495862
23.	FUNCTION DIAGRAM - REACTOR - TURBINE - GENERATOR PROTECTION		500825
24.	ATWS MITIGATION SYSTEM ACTUATION CIRCUITRY (AMSAC)		6008434
25.	SCHEMATIC DIAGRAM TURBINE CONTROL		437551
26.	INTERCONNECTING WIRING DIAGRAM		663224-24

- NOTES**
- THESE SIGNALS INDICATE THE CLOSING OF THE STOP VALVES.
 - REDUNDANCY IS INDICATED IN REGARDS TO (W) REQUIREMENTS ONLY.
 - DELETED
 - GENERATOR MOTORING PROTECTION SHOULD NOT DEFEAT THE THIRTY SECOND DELAY. THE 30 SECOND TIME DELAY IS DEFEATED IF BEARING OIL PRESSURE IS LO-LO AFTER LOSS OF AUTO STOP OIL PRESSURE.
 - WESTINGHOUSE STEAM TURBINE DIVISION REQUIRES THE 30 SECOND TIME DELAY TO BE REDUNDANT. ONE TIMER IS CONNECTED TO THE TRAIN "A" OUTPUT OF THE PROTECTION LOGIC SYSTEM AND THE OTHER TIMER IS CONNECTED TO THE TRAIN "B" OUTPUT. THE TIMER OUTPUTS ARE WIRED SO THAT EITHER WILL ACTUATE A GENERATOR TRIP.
 - THE "AND" LOGIC AND THE ASSOCIATED PRESSURE SWITCHES (63/TB AND 63/AST) MUST BE TESTED PERIODICALLY, WHILE ON LINE AT POWER, WITHOUT PLANT TRIP. TEST VALVES AND TEST LIGHTS ARE REQUIRED TO PROVIDE THOROUGH TESTING AND TO VERIFY PRESSURE SWITCH CONTACT STATUS.
 - THE AMSAC LOGIC IS NOT REDUNDANT SINCE THE SAME INPUTS ARE USED FOR THE LOGIC OF VOTER "A" AND VOTER "B" (SEE REF. 17). ITS SIGNAL OUTPUTS ARE DUPLICATED FOR INPUT TO EACH TURBINE TRIP CIRCUIT. ISOLATION DEVICES ARE REQUIRED BETWEEN THE NON-IE AMSAC CIRCUITS AND THE TURBINE TRIP CIRCUITS.
 - SHEET NUMBERS REFER TO THE REFERENCE NUMBERS BELOW.
 - WHENEVER A PROCESS SIGNAL IS USED FOR CONTROL AND IS DERIVED FROM A PROTECTION CHANNEL, ISOLATION MUST BE PROVIDED.
 - THIS DRAWING ILLUSTRATES THE FUNCTIONAL REQUIREMENTS OF THE REACTOR CONTROL AND PROTECTION SYSTEM. THIS DRAWING DOES NOT REPRESENT ACTUAL HARDWARE IMPLEMENTATION. FOR HARDWARE IMPLEMENTATION, REFER TO THE APPLICABLE SCHEMATIC DIAGRAM(S).

NUCLEAR SAFETY RELATED

KEY DWG. SECTION 3

DATE	REVISION DESCRIPTION	DWG SCALES
06-19-2014	REVISD PER DFT-T*2580	BILL OF MATL:
D.O. MNRU		SUPDS#:
R.E. Fx2		SUPSD BY:
I.V. FAZ1		DRAWING SHEET PAGE REV
P.E. N/A		495856 1 0 11

UNIT 1
I & C
TURBINE TRIPS, RUNBACKS &
OTHER SIGNALS FUNCTIONAL LOGIC

PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

RASTER=495856.DGN
 DWG=495856.DWG
 CADD=5653D74-16
 Date: 06-19-2014

DRAWING NUMBER
 495856