



- NOTES**
- ANALOG GATE CONSISTS OF 2 SOLENOID VENT VALVES IN SERIES TO REDUNDANTLY INTERLOCK THE AIR LINE BETWEEN EACH VALVE DIAPHRAM AND ITS ASSOCIATED POSITIONER. THE SOLENOID VALVES ARE DE-ENERGIZED TO VENT, CAUSING THE MAIN FEEDWATER VALVE TO CLOSE IN 7 SECONDS.
 - ALL CIRCUITS IN THIS SHEET ARE NOT REDUNDANT EXCEPT WHERE INDICATED "REDUNDANT".
 - DELETED
 - THE REDUNDANT MANUAL RESET CONSISTS OF TWO MOMENTARY CONTROLS ON THE CONTROL BOARD, ONE OF EACH TRAIN.
 - OPEN/SHUT INDICATION FOR EACH FEEDWATER CONTROL VALVE IN CONTROL ROOM.
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 - FEEDWATER PUMPS ARE TRIPPED BY TRAIN "B" ONLY.
 - FEEDWATER ISOLATION VALVES ARE CLOSED BY TRAIN "A" ONLY.
 - 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.
 - BOARD INDICATION IS FROM A DFWS OUTPUT. ALL OTHER INDICATIONS ON THIS DRAWING ARE PROVIDED ON THE DFWS HMI.
 - RESETS WHEN PI CONTROLLER OUTPUT REACHES 100%. ALSO SETS PUMP BIASES TO 0.
 - TRACKS HIGHER FWP A/M STATION DEMAND WHEN BOTH PUMPS ARE IN MANUAL.
 - SWITCHES TO MANUAL WHEN BOTH FWP A/M STATIONS ARE IN MANUAL.
 - RAMPS PUMP 2 DEMAND TO 0%. ONCE PUMP 2 IS AT 0%, SWITCHES ITS A/M STATION TO MANUAL.
 - TRACKS ACTUAL PUMP SPEED WHEN WOODWARD FPSCS IS IN LOCAL MANUAL OR PRESSURE LIMITING. A/M GOES TO MANUAL WHEN IT COMES OUT OF TRACK MODE WITH DEMAND = ACTUAL SPEED AT TIME OF TRANSITION.
 - REFER TO THE DFWS FUNCTIONAL REQUIREMENTS DOCUMENT DRAWING 663195-27 FOR LOGIC DESCRIPTION.

REFERENCES (NOTE 9)

WE DWG	PG&E DWG
1. FUNCTIONAL LOGIC DIAGRAM INDEX AND SYMBOLS	5653074-1 495841
2. FUNCTIONAL LOGIC DIAGRAM REACTOR TRIP SIGNALS	5653074-2 495842
3. FUNCTIONAL LOGIC DIAGRAM NUCLEAR INSTR AND MANUAL TRIP SIGNALS	5653074-3 495843
4. FUNCTIONAL LOGIC DIAGRAM NUCLEAR INSTR PERMISSIVES AND BLOCKS	5653074-4 495844
5. FUNCTIONAL LOGIC DIAGRAM PRIMARY COOLANT SYSTEM TRIP SIGNALS	5653074-5 495845
6. FUNCTIONAL LOGIC DIAGRAM PRESSURIZER TRIP SIGNALS	5653074-6 495846
7. FUNCTIONAL LOGIC DIAGRAM STEAM GENERATOR TRIP SIGNALS	5653074-7 495847
8. FUNCTIONAL LOGIC DIAGRAM SAFEGUARDS ACTUATION SIGNALS	5653074-8 495848
9. FUNCTIONAL LOGIC DIAGRAM ROD CONTROLS AND ROD BLOCKS	5653074-9 495849
10. FUNCTIONAL LOGIC DIAGRAM STEAM DUMP CONTROL	5653074-10 495850
11. FUNCTIONAL LOGIC DIAGRAM PRESSURIZER PRESSURE AND LEVEL CONTROL	5653074-11 495851
12. FUNCTIONAL LOGIC DIAGRAM PRESSURIZER HEATER CONTROL	5653074-12 495852
13. FUNCTIONAL LOGIC DIAGRAM FEEDWATER CONTROL AND ISOLATION	5653074-13 495853
14. FUNCTIONAL LOGIC DIAGRAM FEEDWATER CONTROL AND ISOLATION	5653074-14 495854
15. FUNCTIONAL LOGIC DIAGRAM AUXILIARY FEEDWATER PUMPS STARTUP	5653074-15 495855
16. FUNCTIONAL LOGIC DIAGRAM TURBINE TRIPS, RUNBACKS & SIGNALS	5653074-16 495856
17. FUNCTIONAL LOGIC DIAGRAM AMSAC SIGNALS	5653074-17 495857
18. FUNCTIONAL LOGIC DIAGRAM SEISMIC TRIP	8759077 495858
19. FUNCTIONAL LOGIC DIAGRAM DIGITAL FW CONT SYS INPUT SIGNAL VALIDATION	5653074-18 495859
20. FUNCTIONAL LOGIC DIAGRAM DIGITAL FW CONT SYS FW FLOW CONTROLLER & C _v DEMAND	5653074-19 495860
21. FUNCTIONAL LOGIC DIAGRAM DIGITAL FW CONT SYS CONT VCV SEQ & TRACKING LOGIC	5653074-20 495861
22. FUNCTIONAL LOGIC DIAGRAM DIGITAL FW CONT SYS SIGNAL SELECTOR LOGIC	5653074-21 495862
23. DRAWING INDEX SOLID STATE PROTECTION SYS INTERCONNECTION & SCHEM. DIAGRAM	108D442-1 458826

NUCLEAR SAFETY RELATED

KEY DWG. SECTION 3

DATE 05-04-2009	REVISION DESCRIPTION REVISED PER DFC-3+244-1	DWG SCALE: BILL OF MATL: SUPDS: 663195-13 SUPSD BY:
D.D. R×G2		DRAWING SHEET PAGE REV 495853 1 0 5
R.E. F×C2		
L.V.		
P.E. LAL3		

UNIT 1
J & C
FUNCTIONAL LOGIC DIAGRAM
FEEDWATER CONTROL & ISOLATION

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

U2 - 495883

R:\SL\PR-495853.dgn
 Date: 05-04-2009
 User: R×G2