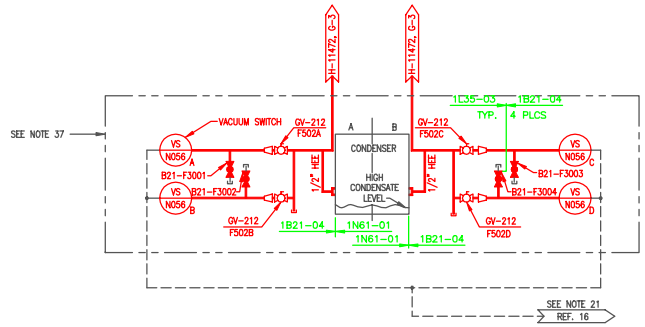
HL-16145

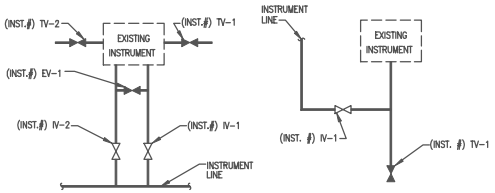
TABLE 3

JET PUMP	ISOLATION VALVE	EFCV
J1	F058B	F059B
J2	F058D	F059D
J3	F058F	F059F
J4	F058H	F059H
J5	F050B F052B	F051B F053B
J6	F058M	F059M
J7	F058P	F059P
J8	F058S	F059S
J9	F058U	F059U
J10	F050D F052D	F051D F053D
J11	F058A	F059A
J12	F058C	F059C
J13	F058E	F059E
J14	F058G	F059G
J15	F050A F052A	F051A F053A
J16	F058L	F059L
J17	F058N	F059N
J18	F058R	F059R
J19	F058T	F059T
J20	F050C F052C	F051C F053C

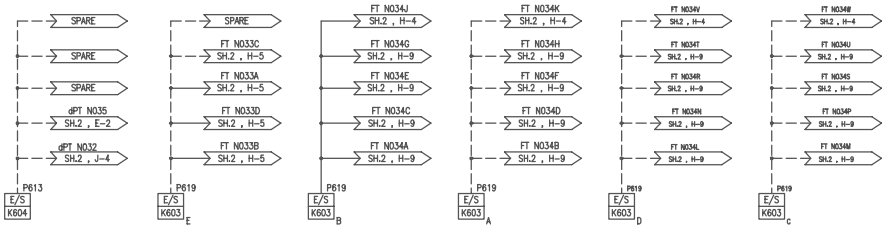
TABLE 4

TYPE T THERMOCOUPLE TAG Nos.	
B21–N030A1	B21–N030J2
B21–N030A2	B21–N030J3
B21–N030A3	B21–N030K1
B21–N030B1	B21–N030K2
B21–N030B2	B21–N030K3
B21–N030B3	B21–N030L1
B21–N030D1	B21–N030L2
B21–N030D2	B21–N030L3
B21–N030E1	B21–N030M1
B21–N030E2	B21–N030M2
B21–N030F1	B21–N030M3
B21–N030F2	B21–N028A1
B21–N030F3	B21–N028A2
B21–N030H1	B21–N028B1
B21–N030H2	B21–N028B2
B21–N030H3	B21–N029A1
B21–N030J1	B21–N029A2

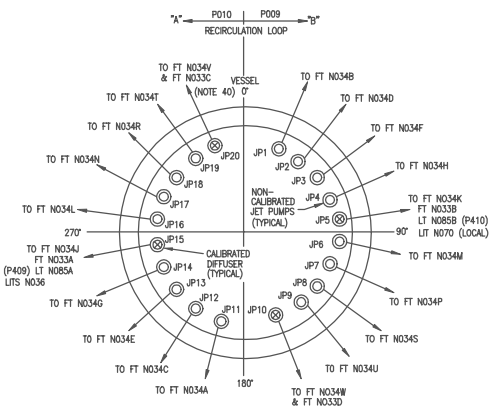




DETAIL "A" DETAIL "B"



POWER DISTRIBUTION



PLAN "X"
JET PUMP & TRANSMITTER MATCHING

TABLE 2
ELEVATION CORRELATION CHART (SEE NOTE 5)

REFERENCE	(COLD VESSEL) INCHES ABOVE VESSEL ZERO	DESCRIPTION OF TRIPS	INSTRUMENT(S) PROVIDING TRIP	REACTOR VESSEL LEVELS REF. 25	INDICATED LEVEL (NOTE 44) SAFEGUARDS LI–R604A, B L/PR–R603A, B	INDICATED LEVEL (NOTE 44) FEEDWATER C23–L/PR–R606
NOZZLE N3A, B, C, D	640.0					
NOZZLE N12A, B	586.25					
FEEDWATER SYSTEM & REACTOR PROTECTION SYSTEM FULL SCALE	577.0				+60	+60
		1. TRIP HPCI TURBINE 1. TRIP RCIC TURBINE	LIS N693B LS N693D LIS N693A LS N693C	8		
		1. TRIP REACTOR FEED PUMPS 2. CLOSE MAIN TURBINE STOP VALVES	C32–FY–K624A–C			
		1. HIGH LEVEL ALARM	C32–L/PR–R606	7		
		1. NORMAL LEVEL	FEEDWATER LEVEL CONT. SYS C32	5.6	+37.0	+37.0
		1. LOW LEVEL ALARM	C32–L/PR–R606	4		
		1. SCRAM 2. CLOSE PCIS VALVES (SEE NOTE 47) 3. CLOSE RHR SHUTDOWN COOLING ISOLATION VALVES 1. AUTO DEPRESSURIZATION SYS.(ADS) PERMISSIVE	LIS–N680A–D LIS–N695A, B	3		
FEEDWATER SYSTEM & REACTOR PROTECTION SYSTEM INSTRUMENT ZERO BOTTOM OF DRYER SKIRT	517.0				0	0
NOZZLE N11A, B	509.0	1. INITIATE HPCI 2. INITIATE RCIC 3. INITIATE ATWS–ARI	LS N692A–D	2		
		1. CLOSE RWCU ISOL VALVES 2. START SBGT SYSTEM HNP–1 & 2 3. CLOSE REACTOR BLDG. VENTILATION SYSTEM DAMPERS 4. CLOSE REF. FLR. VENTILATION SYSTEM DAMPERS HNP–1 & 2	LS N682A–D			
		1. TRIP RECIRCULATION PUMPS	LS N694A–D	ATWS/RPT		
		1. INITIATE RHR SYSTEM 2. INITIATE CORE SPRAY SYSTEM 3. CONTRIBUTE TO ADS 4. START STANDBY DIESEL	LIS N691A–D	1		
		1. CLOSE MSIV'S 2. CLOSE MSL DRAIN ISOL VALVES 3. CLOSE REACTOR WATER SAMPLE ISOL. VALVES	LIS N681A–D			
REACTOR PROTECTION SYSTEM FULL SCALE	367.0				–150.0	
NOZZLE N16A, B	358.0					
TOP OF ACTIVE FUEL	352.56					
		1. CONTAINMENT SPRAY PERMISSIVE	LIS N685A, B	0	–203.5	
LOWER JET PUMP TAP	143.0					
NOZZLE N8A, B	132.0					

NOTES : CONTINUED

39. PX TO BE 1", INSTALLED IN A STRAIGHT RUN OF 12" FEEDWATER PIPE 6'–0" FORM ℄ OF ELBOWS ETC. AND LOCATED SO THAT △P'S FROM TAPS TO THE VESSEL NOZZLES ARE EQUAL. TAPS TO MEET ASME PTC 6, 1964 STEAM TURBINE PARA. 4.74. TWELVE WIRES ARE TO BE PROVIDED PENETRATING THE DRYWELL FOR READOUT OF TEMPORARY PRESSURE TRANSMITTERS DURING START–UP.

40. SOLENOID VALVE F113 IS LOCATED IN L2. CONNECTION OF SENSING LINE TO B21–FT–N033C AND B21–FT–N034L.

41. COMPUTER INPUT TO SOLENOID VALVE FOR AUTOMATIC CONTROL.

42. ~~NUMBER WITHIN ⊖ INDICATE ANALOG INPUT NUMBER AS DESCRIBED IN THE FUNCTIONAL DESIGN CRITERIA FOR EMERGENCY RESPONSE FACILITY TABLE "B" UNIT 1 ANALOG INPUT SIGNALS TO THE 9999/999 COMPUTER SYSTEM.~~

43. THE AIR ACCUMULATOR AND AIR LINE VALVES ASSOCIATED WITH EACH SAFETY RELIEF VALVE ARE ASSIGNED THE SAME SUFFIX AS THE SAFETY RELIEF VALVE.

44. FOR TRIP SETTINGS SEE HNP–1 INSTRUMENT SETPOINT INDEX.

45. INITIATE CLOSURE OF RECIRCULATION PUMP DISCHARGE VALVE.

46. RHR PERMISSIVE (SHUTDOWN COOLING MODE)

47. SCRAM (REF 18) AND CLOSE PRIMARY CONTAINMENT ISOLATION SYSTEM (PCIS) VALVES EXCEPT FOR THE FOLLOWING:
    A) MSIV'S
    B) MSL DRAIN ISOLATION VALVES
    C) REACTOR WATER SAMPLE ISOLATION VALVES
    D) RWCU ISOLATION VALVES

48. ALL INSTRUMENTS HAVE VALVE ARRANGEMENTS TYPICAL OF DETAIL "A".

49. ALL INSTRUMENTS HAVE VALVE ARRANGEMENTS TYPICAL OF DETAIL "B".

50. FLOW TRANSMITTERS REFERENCED IN PLAIN X HAVE VALVE ARRANGEMENTS TYPICAL OF DETAIL "A".

51. THE BREAKER FEEDING THE MOTOR OPERATOR FOR VALVE B21–F021 IS LOCKED IN THE OPEN POSITION WHEN THE VALVE IS CLOSED PREVENTING THE VALVE OPERATED ELECTRICALLY FOR H–LOW PROTECTION PURPOSES.

52. INITIATES ARI SYSTEM (REF. 1)

53. B21–N024 A & B AND B21–N025A & B ARE USED AS LOCAL INDICATORS FOR REACTOR LEVEL IN REMOTE SHUTDOWN PROCEDURES.

54. ELECTRICAL CONNECTIONS ARE NOT UTILIZED ON THIS EXCESS FLOW CHECK VALVE.

NOTES:

1. ALL EQUIPMENT & INSTRUMENTS ARE PRECEDED BY MPL NO. B21 UNLESS OTHERWISE NOTED.
2. STEAM LINES, ENCLOSED IN BOXES SHALL HAVE PART NOS. CORRESPONDING TO ITS RESPECTIVE LINE NO. UNLESS OTHERWISE NOTED. EXAMPLE: 100B IS ON LINE "B". 100C IS ON LINE "C".
3. WHERE GV–NUMBERS ARE SHOWN THE VALVES ARE TAGGED WITH THESE NUMBERS; WHERE GV–NUMBERS ARE NOT SHOWN THE VALVES ARE TAGGED WITH THE MPL NUMBER.
4. HIGH POINT VENTS AND LOW POINT DRAINS ARE TO BE PROVIDED WHERE NECESSARY AS PROVIDED BY PHYSICAL ROUTING OF PIPE. ANY ADDITIONAL HIGH POINT VENTS AND LOW POINT DRAINS TO BE ADDED BY FIELD AS REQUIRED.
5. LEVEL TRIP SETTINGS VERSUS ACTUAL LEVEL INSIDE DRYER SEAL SKIRT IS BASED UPON:
   A. CALIBRATION OF DEVICES AT 1000 PSIG REACTOR DOME PRESSURE & 135° F, DRYWELL AMBIENT TEMPERATURE.
   B. ΔP_D=DRYER PRESSURE DROP AT RATED LOAD=10" HOT WATER.
   C. CARRY–UNDER CORRECTION (BASED ON 0.3% BY WEIGHT CARRY–UNDER) =–5.5% DENSITY.
   D. FEEDWATER LEVEL SENSOR ERROR BAND ±2% RANGE.
   E. SAFEGUARDS LEVEL SENSOR ERROR BAND ±3% RANGE.
6. T/C JUNCTION BOX LOCALLY MOUNTED (BY OTHERS) EACH T/C JUNCTION BOX TO HAVE OWN SET OF TERMINALS.
7. DELETED
8. AN EXPANSION LEG SHALL BE PROVIDED IN INSTRUMENT SENSING LINE BETWEEN POT (PART D002) AND THE WATER–TIGHT PENETRATION SEAL THROUGH BOTTOM OF REACTOR WELL. THE EXPANSION LEG & PIPING INSTALLATION SHALL BE DESIGNED TO ALLOW FOR MAXIMUM CHANGE OF VESSEL LENGTH WITH TEMPERATURE TO AVOID OVERSTRESSING THE PIPING ON THE SEAL OR DAMAGE TO THE INSULATION AROUND THE VESSEL.
9. FOR LOCATION & IDENTIFICATION OF INSTRUMENTS SEE INSTRUMENT DATA SHEET LISTED IN MPL FOR EACH INSTRUMENT.
10. ALL RELIEF AND SAFETY VALVE DISCHARGE THERMOCOUPLES SHALL BE CONNECTED TO TEMPERATURE RECORDER R614.
11. INSTRUMENTS, INSTRUMENT PIPING AND VALVING MUST COMPLY WITH THE REQUIREMENTS OF REF 19.
12. ALL MOTOR AND SOLENOID OPERATED VALVES ARE NORMAL AC UNLESS OTHERWISE NOTED.
13. LINES TO DIFFERENTIAL PRESSURE TRANSMITTERS SHOULD BE AS SHORT AS PRACTICAL.
14. INSTALL TEMPERATURE EQUALIZING COLUMN AND LEVEL INSTRUMENT PIPING AS DIRECTED BY VENDORS INSTALLATION DRAWING.
15. ALARMS ASSOCIATED WITH THE SYSTEMS INITIATED BY THE REACTOR PROTECTION SYSTEM OR SAFEGUARD SYSTEM LEVEL AND PRESSURE SWITCHES ARE SHOWN ON THE P&ID FOR THE PARTICULAR SYSTEM.
16. TRIP RCIC AND HPCI TURBINES ON HIGH LEVEL (REF. 13 & 15)
17. SEE NOTE 47
18. CORE SPRAY AND RHR SYSTEM VALVE OPENING PERMISSIVE (REF. 14 & 17)
19. INITIATE CLOSURE OF RWCU ISOLATION VALVES, START SBGT SYSTEM HNP–1 & 2, INITIATE CLOSURE OF REACTOR BUILDING VENT SYSTEM DAMPERS, AND INITIATE CLOSURE OF REF FLOOR VENT SYSTEM DAMPERS HNP–1 & 2.
20. INITIATE HPCI SYSTEM (REF. 13), RCIC SYSTEM (REF. 15).
21. INITIATE CLOSURE OF MAIN STEAM LINE ISOLATION VALVES (REF. 16).
22. CONTRIBUTE TO AUTO BLOWDOWN (REF. 16). INITIATE CORE SPRAY (REF. 17) RHR SYSTEM (REF. 14) AND START STANDBY DIESEL GENERATOR (REF. 17).
23. WATER TIGHT JUNCTION BOX TO BE LOCATED INSIDE DRYWELL.
24. SUMMER K606 & K607 INPUTS SHALL BE INTERLOCKED WITH RECIRC. PUMP AND VALVES TO ADD INPUTS WHEN BOTH PUMPS ARE RUNNING AND THEIR DISCHARGE VALVES ARE OPEN OR SUBTRACT ONE INPUT WHEN THE CORRESPONDING PUMP IS STOPPED OR ITS DISCHARGE VALVE IS CLOSED.
25. NOZZLES 6A & 6B MAY BE INTERCHANGED.
26. TYPICAL FOR ALL (16) NON–CALIBRATED JET PUMPS EXCEPT FOR ASSIGNMENT LETTER SUFFIXES. FOR LETTER SUFFIX ASSIGNMENT SEE PLAN "X" AND TABLE 3.
27. TYPICAL FOR ALL (4) CALIBRATED JET PUMPS EXCEPT FOR ASSIGNMENT LETTER SUFFIXES. FOR LETTER SUFFIX ASSIGNMENT SEE PLAN "X" AND TABLE 3.
28. CONTAINMENT SPRAY MODE RHR INTERLOCK (REF. 14).
29. REACTOR PROTECTION SYS. SCRAM SIGNAL (REF. 18).
30. RHR INTERLOCK (LPCI MODE) (REF. 14).
31. LIS N685A & LR R615, LIS N685B & LI R610 SHALL CORRESPOND TO COLD SHUT DOWN CONDITIONS (125° F & ATMOS.)
32. INSTRUMENTS READ FULL SCALE WHEN JET PUMPS ARE IN OPERATION.
33. RECIRCULATION LINES TO HOTWELL TO COMPLY WITH REF. 20, WATER QUALITY SECTION 7.
34. SAMPLE PROBE(S) AND FEEDWATER SAMPLE STATION TO COMPLY WITH REF. 20, WATER SAMPLING SECTION 8.
35. ALTERNATE TAP SET ON FEEDWATER FLOW ELEMENT.
36. TRIP RECIRC. PUMP (REF. 21).
37. LOW CONDENSER VACUUM SWITCHES CONNECTED THROUGH SEPARATE CALIBRATION VLVS. TO OPPOSITE SIDES OF THE CONDENSER ABOVE THE HIGH CONDENSATE LEVEL. THE VACUUM SWITCHES MUST BE ACCESSIBLE DURING PLANT OPERATION.
38. AN ORIFICE (1/4" MIN.) IS TO BE PROVIDED, WITHIN THE PRIMARY CONTAINMENT IN EACH INSTRUMENT LINE WHICH CONNECTS TO THE REACTOR COOLANT PRESSURE BOUNDARY.

FOR REFERENCES SEE DWG. H–16062 (SHT. 1)
WORK THIS DRAWING WITH H–16062 (SHT. 1)
AND H–16063 (SHT. 2).

BOUNDARY DIAGRAM NO.:1B21–B02–03
FUNCTION(S) NO.: 1B21–04
PREPARED BY: Willie Jennings
DATE: 04/22/98
REVIEWED BY: William P. Evans
DATE: 05/18/98

Revision: A Date: 10–22–99
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TRM	RLM	ASK

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SOUTHERN COMPANY

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EDWIN I. HATCH NUCLEAR PLANT UNIT No.1
NUCLEAR BOILER SYSTEM P&ID
SHEET 3

DRAWN	DESIGNED	LOCATION	DOCUMENT NUMBER	REVISION
TRM	LCF	10-502	HL-16145	A
DATE	SCALE			
	None			