

| PUMP VALVE & CONTROL TABULATION |                                   |              |            |     |     |              |                           |
|---------------------------------|-----------------------------------|--------------|------------|-----|-----|--------------|---------------------------|
| REF DESIG                       | DEVICE FUNCTION                   | SWITCH DESIG | IND. LAMPS |     |     | LOCATION     | SEP. DIV. INBD 2/ OUTBD 1 |
|                                 |                                   |              | RED        | GRN | OTH |              |                           |
| B21-F022A                       | MAIN STEAM LINE DRAIN ISLN        | S1B          | X          | X   |     | H13-P601-18C | 13 IN                     |
| B21-F022B                       | MAIN STEAM LINE DRAIN ISLN        | S1F          | X          | X   |     | H13-P601-18C | 13 IN                     |
| B21-F022C                       | MAIN STEAM LINE DRAIN ISLN        | S1K          | X          | X   |     | H13-P601-18C | 13 IN                     |
| B21-F022D                       | MAIN STEAM LINE DRAIN ISLN        | S1P          | X          | X   |     | H13-P601-18C | 13 IN                     |
| B21-F022A                       | MAIN STEAM LINE DRAIN ISLN        | S1A          | X          | X   |     | H13-P601-18C | 14 IN                     |
| B21-F022B                       | MAIN STEAM LINE DRAIN ISLN        | S1E          | X          | X   |     | H13-P601-18C | 14 IN                     |
| B21-F022C                       | MAIN STEAM LINE DRAIN ISLN        | S1J          | X          | X   |     | H13-P601-18C | 14 IN                     |
| B21-F022D                       | MAIN STEAM LINE DRAIN ISLN        | S1N          | X          | X   |     | H13-P601-18C | 14 IN                     |
| B21-F022A                       | MAIN STEAM LINE (TEST) DRAIN ISLN | S3B          |            |     |     | H13-P601-18C | 13 IN                     |
| B21-F022B                       | MAIN STEAM LINE (TEST) DRAIN ISLN | S3F          |            |     |     | H13-P601-18C | 13 IN                     |
| B21-F022C                       | MAIN STEAM LINE (TEST) DRAIN ISLN | S3K          |            |     |     | H13-P601-18C | 13 IN                     |
| B21-F022D                       | MAIN STEAM LINE (TEST) DRAIN ISLN | S3P          |            |     |     | H13-P601-18C | 13 IN                     |
| B21-F022A                       | MAIN STEAM LINE (TEST) DRAIN ISLN | S3A          |            |     |     | H13-P601-18C | 14 IN                     |
| B21-F022B                       | MAIN STEAM LINE (TEST) DRAIN ISLN | S3E          |            |     |     | H13-P601-18C | 14 IN                     |
| B21-F022C                       | MAIN STEAM LINE (TEST) DRAIN ISLN | S3J          |            |     |     | H13-P601-18C | 14 IN                     |
| B21-F022D                       | MAIN STEAM LINE (TEST) DRAIN ISLN | S3N          |            |     |     | H13-P601-18C | 14 IN                     |
| B21-F018                        | MAIN STEAM LINE DRAIN ISLN        | S5           | X          | X   |     | H13-P601-18C | 11 IN                     |
| B21-F019                        | MAIN STEAM LINE DRAIN ISLN        | S6           | X          | X   |     | H13-P601-18C | 11 OUT                    |
| B21-F018                        | REACTOR WATER SAMPLE              | S7           | X          | X   |     | H13-P601-18C | 12 IN                     |
| B21-F020                        | REACTOR WATER SAMPLE              | S8           | X          | X   |     | H13-P601-18C | 12 OUT                    |
| B21-F009                        | RHR SUCTION COOLING ISLN          | S8           | X          | X   |     | H13-P601-20C | 11 IN                     |
| B21-F008                        | RHR SUCTION COOLING ISLN          | S10          | X          | X   |     | H13-P601-20C | 11 OUT                    |
| B21-F023                        | RHR REACTOR HEAD SPRAY ISLN       | S12          | X          | X   |     | H13-P601-20C | 11 OUT                    |
| B21-F049                        | RHR DISCHARGE TO RADWASTE ISLN    | S13          | X          | X   |     | H13-P601-20C | 11 IN                     |
| B21-F040                        | RHR DISCHARGE TO RADWASTE ISLN    | S14          | X          | X   |     | H13-P601-20C | 11 OUT                    |
| B21-F001                        | REACTOR WATER CLEAN-UP SYS ISLN   | S15          | X          | X   |     | H13-P601-17C | 11 IN                     |
| B21-F004                        | REACTOR WATER CLEAN-UP SYS ISLN   | S16          | X          | X   |     | H13-P601-17C | 11 OUT                    |
| B21-F060                        | REACTOR WATER CLEAN-UP SYS ISLN   | S22          | X          | X   |     | H13-P601-17C | 11 IN                     |
| B21-F039                        | REACTOR WATER CLEAN-UP SYS ISLN   | S23          | X          | X   |     | H13-P601-18C | 11 OUT                    |
| B21-F032                        | ISOLATION RESET                   | S32          |            |     |     | H13-P601-18C | 12 OUT                    |
| B21-F033                        | ISOLATION RESET                   | S33          |            |     |     | H13-P601-18C | 12 IN                     |
| B21-F034                        | RWCU ISOLATION TEST               |              |            |     |     | H13-P623     | 10 IN                     |
| B21-F035                        | RWCU ISOLATION TEST               |              |            |     |     | H13-P623     | 10 OUT                    |
| B21-F077A                       | MAIN STEAM LINE DRAIN ISLN        | S35          | X          | X   |     | H13-P601-18C | 11 OUT                    |
| B21-F077B                       | MAIN STEAM LINE DRAIN ISLN        | S36          | X          | X   |     | H13-P601-18C | 11 OUT                    |
| B21-F077C                       | MAIN STEAM LINE DRAIN LOGIC TEST  |              |            |     |     | H13-P622     | 10 IN                     |
| B21-F077D                       | MAIN STEAM LINE DRAIN LOGIC TEST  |              |            |     |     | H13-P622     | 10 OUT                    |
| B21-F060A                       | RHR SAMPLE LINE                   | S17          | X          | X   |     | H13-P601-20C | 12 IN                     |
| B21-F075A                       | RHR SAMPLE LINE                   | S18          | X          | X   |     | H13-P601-20C | 12 OUT                    |
| B21-F060B                       | RHR SAMPLE LINE                   | S69          | X          | X   |     | H13-P601-17C | 12 IN                     |
| B21-F0783                       | RHR SAMPLE LINE                   | S70          | X          | X   |     | H13-P601-17C | 12 OUT                    |
| B21-F0783                       | MAIN STEAM LINE LOGIC             |              |            |     |     | H13-P622     | 13 IN                     |
| B21-F0783                       | MAIN STEAM LINE LOGIC             |              |            |     |     | H13-P623     | 14 IN                     |
| B21-F067C                       | MAIN STEAM LINE DRAIN ISLN        | S37          | X          | X   |     | H13-P601-18C | 11 OUT                    |
| B21-F067D                       | MAIN STEAM LINE DRAIN ISLN        | S38          | X          | X   |     | H13-P601-18C | 11 OUT                    |
| B21-F067E                       | ISOL LOGIC TEST                   | S19A         |            |     |     | H13-P691     | 10 IN                     |
| B21-F067F                       | ISOL LOGIC TEST                   | S19B         |            |     |     | H13-P692     | 10 IN                     |
| B21-F067G                       | ISOL LOGIC TEST                   | S19C         |            |     |     | H13-P693     | 10 OUT                    |
| B21-F067H                       | ISOL LOGIC TEST                   | S19D         |            |     |     | H13-P694     | 10 IN                     |
| B21-F067I                       | MAIN STEAM LINE DRAIN LOGIC TEST  | S20A         |            |     |     | H13-P691     | 10 OUT                    |
| B21-F067J                       | MAIN STEAM LINE DRAIN LOGIC TEST  | S20B         |            |     |     | H13-P692     | 10 IN                     |
| B21-F067K                       | MAIN STEAM LINE DRAIN LOGIC TEST  | S20C         |            |     |     | H13-P693     | 10 OUT                    |
| B21-F067L                       | MAIN STEAM LINE DRAIN LOGIC TEST  | S20D         |            |     |     | H13-P694     | 10 IN                     |
| B21-F067M                       | RHR SYSTEM                        | S21A         |            |     |     | H13-P691     | 15 OUT                    |
| B21-F067N                       | RHR SYSTEM                        | S21B         |            |     |     | H13-P692     | 15 IN                     |
| B21-F067O                       | RHR SYSTEM                        | S21C         |            |     |     | H13-P693     | 15 OUT                    |
| B21-F067P                       | RHR SYSTEM                        | S21D         |            |     |     | H13-P694     | 15 IN                     |

| PUMP VALVE & CONTROL TABULATION |                                      |              |            |     |     |              |                           |
|---------------------------------|--------------------------------------|--------------|------------|-----|-----|--------------|---------------------------|
| REF DESIG                       | DEVICE FUNCTION                      | SWITCH DESIG | IND. LAMPS |     |     | LOCATION     | SEP. DIV. INBD 2/ OUTBD 1 |
|                                 |                                      |              | RED        | GRN | OTH |              |                           |
| B21-F028                        | COND LOW VAC BYPASS                  | S24A         |            |     |     | H13-P601-18B | 8 OUT                     |
| B21-F029                        | COND LOW VAC BYPASS                  | S24B         |            |     |     | H13-P601-18B | 9 IN                      |
| B21-F030                        | COND LOW VAC BYPASS                  | S24C         |            |     |     | H13-P601-18B | 9 OUT                     |
| B21-F031                        | COND LOW VAC BYPASS                  | S24D         |            |     |     | H13-P601-18B | 9 IN                      |
| B21-F032                        | CHART SPEED RESET                    | S26A         |            |     |     | H13-P601-18B | 16 OUT                    |
| B21-F033                        | CHART SPEED RESET                    | S26B         |            |     |     | H13-P601-18B | 16 IN                     |
| B21-F034                        | MANUAL ISOLATION                     | S25A         |            |     |     | H13-P680-7D  | 5 OUT                     |
| B21-F035                        | MANUAL ISOLATION                     | S25B         |            |     |     | H13-P680-7D  | 5 IN                      |
| B21-F036                        | MANUAL ISOLATION                     | S25C         |            |     |     | H13-P680-7D  | 5 OUT                     |
| B21-F037                        | MANUAL ISOLATION                     | S25D         |            |     |     | H13-P680-7D  | 5 IN                      |
| B21-F038                        | REAC WATER SAMPLE VLV LOGIC TEST     | S71A         |            |     |     | H13-P691     | 15 OUT                    |
| B21-F039                        | REAC WATER SAMPLE VLV LOGIC TEST     | S71B         |            |     |     | H13-P692     | 15 IN                     |
| B21-F040                        | REAC WATER SAMPLE VLV LOGIC TEST     | S71C         |            |     |     | H13-P693     | 15 OUT                    |
| B21-F041                        | REAC WATER SAMPLE VLV LOGIC TEST     | S71D         |            |     |     | H13-P694     | 15 IN                     |
| B21-F042                        | SYSTEM OUT OF SERVICE                | S74          |            |     |     | H13-P601-18B | 6 OUT                     |
| B21-F043                        | SYSTEM OUT OF SERVICE                | S75          |            |     |     | H13-P601-18B | 6 IN                      |
| B21-F044                        | PRV OFF OR THERMAL OVLD OF ANY VALVE |              |            |     |     | H13-P601-18B | 6 IN                      |
| B21-F045                        | PRV OFF OR THERMAL OVLD OF ANY VALVE |              |            |     |     | H13-P601-18B | 6 IN                      |
| B21-F046                        | REACTOR WATER CLEAN-UP               | S39          | X          | X   |     | H13-P601-17C | 12 IN                     |
| B21-F047                        | REACTOR WATER CLEAN-UP               | S40          | X          | X   |     | H13-P601-17C | 12 OUT                    |
| B21-F048                        | REACTOR WATER CLEAN-UP               | S41          | X          | X   |     | H13-P601-17C | 12 IN                     |
| B21-F049                        | REACTOR WATER CLEAN-UP               | S42          | X          | X   |     | H13-P601-17C | 12 OUT                    |
| B21-F050                        | BOP ISOLATION LOGIC TEST             |              |            |     |     | H13-P622     | 10 IN                     |
| B21-F051                        | BOP ISOLATION LOGIC TEST             |              |            |     |     | H13-P623     | 10 OUT                    |
| B21-F052                        | TRIP UNIT IN CAL OR GROSS FAILURE    |              |            |     |     | H13-P601-18B | 6 IN                      |
| B21-F053                        | TRIP UNIT IN CAL OR GROSS FAILURE    |              |            |     |     | H13-P601-18B | 6 IN                      |
| B21-F054                        | RHR LOGIC TEST                       |              |            |     |     | H13-P622     | 10 IN                     |
| B21-F055                        | RHR LOGIC TEST                       |              |            |     |     | H13-P623     | 10 OUT                    |
| B21-F056                        | RW SAMPLE LOGIC TEST                 |              |            |     |     | H13-P622     | 10 IN                     |
| B21-F057                        | RW SAMPLE LOGIC TEST                 |              |            |     |     | H13-P623     | 10 OUT                    |
| B21-F058                        | RWCU SYS ISOLATION VLV CONT          | S76A         |            |     |     | H13-P691     | 15 OUT                    |
| B21-F059                        | RWCU SYS ISOLATION VLV CONT          | S76B         |            |     |     | H13-P692     | 15 IN                     |
| B21-F060                        | RWCU SYS ISOLATION VLV CONT          | S76C         |            |     |     | H13-P693     | 15 OUT                    |
| B21-F061                        | RWCU SYS ISOLATION VLV CONT          | S76D         |            |     |     | H13-P694     | 15 IN                     |

12 E15 IDENT: NUC ST SUPPLY SHUTOFF SYS GENERAL @ DELTA 828E4-5AA  
 NUCLEAR SAFETY SHUTOFF SYSTEM  
 DIVISION 1 THRU 4

- REFERENCE DOCUMENTS:
1. A62-4050 SPECIFICATION FOR SEPARATION, ISOLATION & IDENT OF ENGINEERING SAFEGUARDS WIRING.
  2. B21-1010 NUCLEAR BOILER, P&ID.
  3. E3-1010 LEAK DETECTION SYS., IER.
  4. B21-1030 NUCLEAR BOILER FCD.
  5. C71-1010 REACTOR PROTECT SYS., I.E.O.
  6. C71-1050 REACTOR PROTECTION SYSTEM, ELEM DIAG (C71A).
  7. B21-1050 NUCLEAR BOILER SYSTEM ELEM DIAG (B21A).
  8. E12-1010 RHR SYSTEM, P&ID.
  9. E12-1030 STAND BY LIQUID CONT SYS., ELEM DIAG (C41A).
  10. C41-1050 REACTOR WATER CLEANUP SYS., P&ID.
  11. C33-1010 REACTOR WATER CLEANUP SYS., FCD.
  12. E12-1050 RESIDUAL HEAT REMOVAL SYS., ELEM DIAG (E12A).
  13. C71-1050 RPS SEPARATION SCHEME.
  14. C71-1070 LEAK DETECTION SYSTEM, ELEM DIAG (C31A).
  15. C31-1050 REACTOR WTR CLEANUP SYS, ELEM DIAG (C31A).
  16. C31-1050 REMOTE SHUTDOWN SYSTEM, ELEM DIAG (C61A).
  17. C31-1050 SDC ST SUPPLY SHUTOFF SYS., DESIGN SPEC.
  18. C31-1050 PROC. COMPUTER I/O LISTING.
  19. C31-1050 HW AND SWC STANDARD (FOR REF ONLY).
  20. A42-1070 LOW PRESSURE CORRS. SPRAY SYSTEM ELEM DIAG (E21A).
  21. E21-1050 PROCESS RADIATION MONITORING SYSTEM, ELEM DIAG (C01A).
  22. D17-1050 REACTOR PROTECTION SYS. MG SET ELEM DIAG (C11B).
  23. E33-1050 RHR POSITIVE LEAKAGE CONTROL SYS ELEM DIAG (E33A).
  24. C95-1050 ERIS ELEMENTARY DIAGRAM.
  25. A62-4050 SPECIAL WIRE & CABLE.

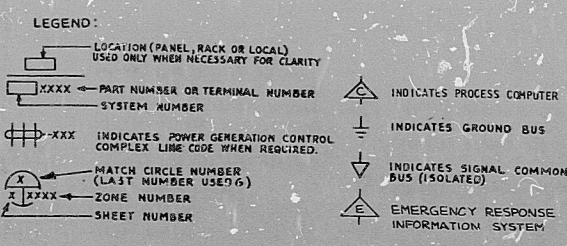
- NOTES (CONT)
- AC MOTOR OPERATED VALVES WITH SEAL-IN WHICH ARE REQUIRED TO CLOSE FOR SAFETY.
  - AC MOTOR OPERATED VALVES WITH SEAL-IN WHICH ARE REQUIRED TO BOTH OPEN AND CLOSE FOR SAFETY.
  - AC MOTOR OPERATED VALVES WITHOUT SEAL-IN WHICH ARE REQUIRED TO CLOSE FOR SAFETY.
  - AC MOTOR OPERATED VALVES WITHOUT SEAL-IN WHICH ARE REQUIRED TO BOTH OPEN AND CLOSE FOR SAFETY.
  - CUSTOMER AE TO PROVIDE JUMPER WIRES BETWEEN LIMIT SWITCHES.
  - THE TOP LIMIT SWITCH IS THE LIMIT SWITCH CLOSEST TO THE AIR OPERATOR VALVE IS SHOWN IN THE CLOSED POSITION.

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- NOTES:
- POWER FOR OPERATION OF CORRESPONDING INBOARD/OUTBOARD VALVES SHALL BE FED BY DIFFERENT ROUTES FROM DIFFERENT RELIABLE SOURCES UNLESS OTHERWISE SPECIFIED HEREIN.
  - UNLESS OTHERWISE INDICATED, THE FOLLOWING REFERENCE DESIGNATIONS SHOWN ON THIS DIAGRAM ARE PREFIXED WITH B21H.
  - PROVIDE PHYSICAL SEPARATION AND ISOLATION OF REDUNDANT WIRING AND CLASSES TO PRECLUDE THE POSSIBILITY OF A SINGLE DESIGN BASIS EVENT CAUSING A FAILURE IN REDUNDANT EQUIPMENT.
  - THE INBOARD AND OUTBOARD ISOLATION VALVE CONTROL CABLES MUST BE PHYSICALLY SEPARATED FROM ALL NON-ESSENTIAL OTHER NUCLEAR SAFETY RELATED CONTROL CABLES OF THE SAME DIVISION PROVIDING THE CONDITIONS OF NOTE 3 ARE NOT VIOLATED (REF 11).
  - SAME AS NOTE 4 EXCEPT INDIVIDUAL CONTACTS MUST BE SEPARATELY ISOLATED (2 CONTACTMENT CAN).

- DEVICES AND WIRING SHALL BE INSTALLED IN CANS AND CONDUIT WITHIN THE PANEL IF REQUIRED BY THE DIVISIONAL ASSIGNMENT OF THE PANEL OR INSIDE THE PANEL FOR REMOTE SHUTDOWN REQUIREMENTS.
- THE LOADS SHOWN ARE ESTIMATED, NOT MEASURED, QUANTITIES. AC LOADS ARE BASED ON 60HZ (60-STEADY STATE) TRANSIENT STATE.
- SEE INDIVIDUAL VALVE CIRCUITS FOR APPLICATION TO REF. 20.
- THIS IS ESSENTIAL POWER WIRING IN CONTROL ROOM PANELS. IT SHALL BE SHORT CIRCUIT SEPARATED FROM ALL NON-ESSENTIAL REACTOR PROTECTION SYSTEM MOTOR-GENERATOR WIRING OF THE SAME DIVISION BY 6 INCHES OR GROUNDED TALKIE CABLES SEPARATE FROM EACH OTHER AND FROM ALL OTHER WIRING IN CABLE FILE.
- FOR LIGHTS SEE DWG 8512003. LIGHTS ARE SUPPLIED WITH INTEGRAL TEST SWITCH.
- ALL INDICATING LIGHTS (EXCEPT NOTES 12&13) ARE SUPPLIED WITH PANEL. SEE P&ID 13A6133 AND HOLDER 195B-0354.
- SEE TABLE ON SHIT, B REFS FOR ISOLATOR INFORMATION.
- DELETED.
- FUTURE TRANSIENT TEST POINT BY AE.
- NON-NUCLEAR SAFETY RELATED RPS MG POWER WIRES SHALL BE ROUTED IN GROUNDED METAL CONDUIT FROM DISTRIBUTION PANELS TO LOGIC PANELS. RPS MG POWER WIRES MUST BE KEPT SEPARATE FROM RPS MG POWER B WIRES.
- THESE LIGHTS ARE GE TYPE ETIG AND SUPPLIED WITH PANEL.
- DEVICES ARE WDR RELAY COIL & CONTACTS MUST BE PHYSICALLY ISOLATED BY METAL BARRIER.
- TERMINATION CABINET INTERFACE DEFINITION SHOWN ON SHIT 19.
- E15 SIGNAL LOADING ON B21-1090 SYSTEM SHALL NOT EXCEED 600 VOLTS.
- ALL ERIS SIGNAL WIRING SHALL BE PER REFERENCES 1&2&6.



LINE CODES: NONE THIS SHEET. LAST NO. USED 318.

|                          |         |            |         |          |         |          |
|--------------------------|---------|------------|---------|----------|---------|----------|
| RETRACE SHIP WITH CHANGE | 16      | 10/27/76   | 16      | 10/27/76 | 16      | 10/27/76 |
| CHK BY:                  | WJ57906 | WJ57906-01 | WJ57906 | WJ57906  | WJ57906 | WJ57906  |
|                          | WJ58908 | WJ58908    | WJ58908 | WJ58908  | WJ58908 | WJ58908  |
|                          | WJ58908 | WJ58908    | WJ58908 | WJ58908  | WJ58908 | WJ58908  |



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