FOR INFORMATION ONLY

SAFETY FEATURES SEQUENCER

TRAIN B

ANALOG CHANNEL

OPERATIONAL TEST

AND

CHANNEL CALIBRATION

TABLE OF CONTENTS

1.0 PURPOSE

1.1 The purpose of this procedure is to provide instructions for Analog Channel Operational Test and Channel Calibration of Safety Features Sequencer Train B.

1.2 Performance of this procedure satisfies the Safety Features Sequencer Train B Analog Channel Operational Test and/or Channel Calibration Surveillance Requirement of Technical Specification 4.3.2.1, Table 4.3-2, functional Unit 6d, 8a and 8b.

1.3 This procedure shall be performed at a minimum test interval of 18 months for Channel Calibration and 31 days for Analog Channel Operational Test.

1.4 SCOPE

1.4.1 When this procedure is performed for scheduled Analog Channel Operational Test, the following sections shall be used: 1.0, 2.0, 3.0, 5.0 and subsections 4.1, 4.2.1 and 4.3.

1.4.2 When this procedure is performed for scheduled Channel Calibration, the following sections shall be used: 1.0, 2.0, 3.0, 5.0 and subsections 4.1, 4.2.2 thru 4.2.23 and 4.3.

1.4.3 When this procedure is performed for unscheduled maintenance, the following sections shall be used: 1.0, 2.0, 3.0, 5.0, and appropriate subsections of 4.0.

2.0 PRECAUTIONS AND LIMITATIONS

2.1 All steps in this procedure are to be performed in sequence except as noted. []

2.2 Performance of procedure step, as identified by a double asterisk (*/*), shall be initialed on "Checklist" except when recording data on applicable Data Sheet. []

2.3 The instrument may be located in a radiation area, service a contaminated process fluid, or be contaminated. If so, follow instructions on "Radiation Work Permit". []

2.4 For Safety-Related systems, an Independent Restoration Verification shall be performed, after completion of Test/Calibration, and initialed in "Restoration Verification" section of "Checklist". [ ]

2.5 Any calculations necessary for the performance of this procedure shall be shown on "Calculation Sheet". [ ]

2.6 Ensure that each lead (wire) to be lifted is marked with a completed and installed jumper and lifted wire tag. Instead of "Control No.", the "Procedure No." should be identified on the tag. [ ]

2.7 If this procedure is completed and temporary jumper(s) must remain installed and/or lifted wire(s) cannot be reconnected, a Jumper and Lifted Wire Clearance must be obtained per Procedure 00306-C, "Temporary Jumper And Lifted Wire Control". [ ]

2.8 This procedure may be performed in any plant operational mode. [ ]

2.9 If, during performance of this procedure, any of the following occur, immediately notify I&C Foreman:

2.9.1 Any personnel error, procedure inadequacy, or malfunction is identified which could prevent fulfillment of "Acceptance Criteria". [ ]

2.9.2 Any test exceeds specified limits. [ ]

3.0 PREREQUISITES OR INITIAL CONDITIONS

3.1 */* Notify Shift Supervisor, or designee, of work to be performed and obtain signature authorization. [ ]

3.2 */* Notify Reactor Operator (RO) the following may be erratic or inoperable during performance of this procedure and obtain RO signature. [ ]

3.2.1 Sequencer Train B [ ]

3.2.2 Annunciator 37A01 "4160V SWGR 1BA03 TROUBLE" [ ]

3.2.3 Annunciator 37A04 "SEQ B TROUBLE" [ ]

3.2.4 Annunciator 37B03 "SEQ B PNL DOORS OPEN" [ ]

3.2.5 Annunciator 37B04 "SEQ B SAFETY EQUIP FAILED TO START" [ ]

3.2.6 Annunciator 37C04 "RAT FDR BRKR TRN B FAILED TO OPEN" [ ]

3.2.7 Annunciator 37D04 "SEQ B IN MANUAL TEST" [ ]

3.3 TEST EQUIPMENT REQUIRED

3.3.1 Four (4) Fluke Model 8050A Digital Multimeters (DMM) or equivalent [ ]

3.3.2 Transducer Calibrator Model 6444 or equivalent [ ]

3.3.3 HP 5315A Frequency Counter or equivalent. [ ]

3.3.4 Tektronix 2235 Ocilloscope or equivalent. [ ]

3.4 Request RO to ensure the following alarm indications ILLUMINATE by performance of a lamp test:

a. Annunciator 36A01 - "4160 SWGR 1AA02 TROUBLE" [ ]

b. Annunciator 36A04 - "SEQ A TROUBLE" [ ]

c. Annunciator 36B03 - "SEQ A PNL DOORS OPEN" [ ]

d. Annunciator 36B04 - "SEQ A SAFETY EQUIP FAILED TO START" [ ]

e. Annunciator 36C04 - "RAT FDR BRKR TRN A FAILED TO OPEN" [ ]

f. Annunciator 36D04 - "SEQ A IN MANUAL TEST" [ ]

g. Annunciator 37A04 - "SEQ B TROUBLE" [ ]

3.5 */* Verify all Prerequisites or Initial Conditions are met. [ ]

4.0 MAIN BODY

4.1 REMOVE FROM SERVICE

4.1.1 */* Verify that annunciators listed below are EXTINGUISHED. If an annunciator is ILLUMINATED notify I&C Foreman.

NOTE

When in modes 5 and 6, the annunciators listed below may be ILLUMINATED.

a. 36A01 - "4160 SWGR 1AA02 TROUBLE" []

b. 36A04 - "SEQ A TROUBLE" []

c. 36B03 - "SEQ A PNL DOORS OPEN" []

d. 36B04 - "SEQ A SAFETY EQUIP FAILED TO START" []

e. 36C04 - "RAT FDR BRKR TRN A FAILED TO OPEN" []

f. 36D04 - "SEQ A IN MANUAL TEST" []

4.2 CHANNEL CALIBRATION
(Commitments 000732, 000734 and 007950)

NOTE

Refer to Figure 1 and 2
for test connection points.

4.2.1 Analog Channel Operational Test
(Commitments 000728, 000733 and 000735)

4.2.1.1 Verify the following lamps ILLUMINATE when "Lamp Test" toggle switch on panel A3 is depressed. (refer to Figure 1)

a. "SI Signal" []

b. "U/V Signal" []

c. "Undervoltage" []

d. "Seq Logic Failure" []

4.2.1.2 Verify the following lamps are EXTINGUISHED:

a. "SI Signal" []

b. "U/V Signal" []

c. "Undervoltage" []

d. "Seq Logic Failure" []

4.2.1.3 Connect a DMM to A-1, TB1, terminals 1(+) and 2(-). []

4.2.1.4 Position and hold panel A1 "Operate/Test" switch in "Test" position. (refer to Figure 1) []

NOTE

While adjusting the "Cal Adjust" pot the "Audible Alarm" will sound, the "Under Voltage Alarm" and "Seq. Logic Failure" bistables will ILLUMINATE on panel A3. The "Audible Alarm" can be silenced by pressing the ILLUMINATED bistable "Pushbutton".

4.2.1.5 */* Adjust "Cal Adjust" pot on A1 to the point at which DS1 on A3-1 ILLUMINATES and record input reading in "As Found" section of "Analog Channel Operational Test Data Sheet 1". (refer to Figure 2) []

4.2.1.6 */* Adjust "Cal Adjust" pot on A1 and record input reading at point bistable can be reset in "As Found" section of "Analog Channel Operational Test Data Sheet 1". []

4.2.1.7 */* Adjust "Cal Adjust" pot on A1 to the point DS1 on A3-2 ILLUMINATES and record input reading in "As Found" section of "Analog Channel Operational Test Data Sheet 1". []

4.2.1.8 */* Adjust "Cal Adjust" pot on A1 and record input reading at point bistable can be reset in "As Found" section of "Analog Channel Operational Test Data Sheet 1". []

4.2.1.9 */* Adjust "Cal Adjust" pot on A1 to point at which DS1 on A3-3 ILLUMINATES and record input reading in "As Found" section of "Analog Channel Operational Test Data Sheet 1". []

4.2.1.10 */* Adjust "Cal Adjust" on A1 and record input reading at point bistable can be reset in "As Found" section of "Analog Channel Operational Test Data Sheet 1". []

4.2.1.11 Release A1 "Operate/Test" switch. []

4.2.1.12 */* Verify annunciator 37A04 "SEQ B TROUBLE" is ILLUMINATED. []

NOTE

Each bistable can be reset by depressing its ILLUMINATED pushbutton. When resetting bistables toggle switch "AT1 Reset" on card A5-16 must be depressed before "Seq. Logic Failure" bistable pushbutton can be reset.

4.2.1.13 Reset all bistables. [ ]
/

4.2.1.14 Connect a DMM to A-2, TB1, terminals 1(+) and 2(-). [ ]

4.2.1.15 Position and hold A2 "Operate/Test" switch in "Test" position. [ ]

4.2.1.16 Adjust "Cal Adjust" pot on A2 to point at which DS1 on
/ A3-5 ILLUMINATES and record input reading in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]

4.2.1.17 Adjust "Cal Adjust" on A2 and record input reading at
/ point bistable can be reset in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]

4.2.1.18 Adjust "Cal Adjust" pot on A2 to point at which DS1 on
/ A3-6 ILLUMINATES and record input reading in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]

4.2.1.19 Adjust "Cal Adjust" on A2 and record input reading at
/ point bistable can be reset in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]

4.2.1.20 Adjust "Cal Adjust" pot on A2 to point at which DS1 on
/ A3-7 ILLUMINATES and record input reading in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]

4.2.1.21 Adjust "Cal Adjust" on A2 and record input reading at
/ point bistable can be reset in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]

4.2.1.22 Release A2 "Operate/Test" switch. [ ]

4.2.1.23 Reset all bistables. [ ]
/

4.2.1.24 Connect a DMM to A-4, TB1, terminals 1(+) and 2(-). [ ]

4.2.1.25 Position and hold A4 "Operate/Test" switch in "Test" position. [ ]

4.2.1.26 Adjust "Cal Adjust" pot on A4 to point at which DS1 on
/ A3-9 ILLUMINATES and record input reading in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]

4.2.1.27 Adjust "Cal Adjust" on A4 and record input reading at point bistable can be reset in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]
/

4.2.1.28 Adjust "Cal Adjust" pot on A4 to point at which DS1 on A3-10 ILLUMINATES and record input reading in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]
/

4.2.1.29 Adjust "Cal Adjust" on A4 and record input reading at point bistable can be reset in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]
/

4.2.1.30 Adjust "Cal Adjust" pot on A4 to point at which DS1 on A3-11 ILLUMINATES and record input reading in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]
/

4.2.1.31 Adjust "Cal Adjust" on A4 and record input reading at point bistable can be reset in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]
/

4.2.1.32 Release A4 "Operate/Test" switch. [ ]

4.2.1.33 Reset all bistables. [ ]
/

4.2.1.34 Connect a DMM to A-5, TB1, terminals 1(+) and 2(-). [ ]

4.2.1.35 Position and hold A5 "Operate/Test" switch in "Test" position. [ ]

4.2.1.36 Adjust "Cal Adjust" pot on A5 to point at which DS1 on A3-13 ILLUMINATES and record input reading in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]
/

4.2.1.37 Adjust "Cal Adjust" on A5 and record input reading at point bistable can be reset in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]
/

4.2.1.38 Adjust "Cal Adjust" pot on A5 to point at which DS1 on A3-14 ILLUMINATES and record input reading in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]
/

4.2.1.39 Adjust "Cal Adjust" on A5 and record input reading at point bistable can be reset in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]
/

4.2.1.40 */* Adjust "Cal Adjust" pot on A5 to point at which DS1 on A3-15 ILLUMINATES and record input reading in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]

4.2.1.41 */* Adjust "Cal Adjust" on A5 and record input reading at point bistable can be reset in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]

4.2.1.42 Release A5 "Operate/Test" switch. [ ]

4.2.1.43 */* Reset all bistables. [ ]

4.2.1.44 Connect frequency counter to pins 52(+) and 81(-) at rear of A4-7 card (6N368-1). [ ]

4.2.1.45 */* Record clock output value in "As Found" section of "Analog Channel Operational Test Data Sheet 1". [ ]

4.2.1.46 */* If As Found readings are within limits specified on "Analog Channel Operational Test Data Sheet 1" and more accurate readings are not desired, record readings in "As Left" section of "Analog Channel Operational Test Data Sheet 1" and proceed to subsection 4.3. [ ]

4.2.1.47 If As Found readings are not within limits specified on "Analog Channel Operational Test Data Sheet 1" or more accurate values are desired, proceed as directed below:

a. If Technical Specifications Allowable Limits have been exceeded notify OSOS and I&C Foreman, then proceed as directed. [ ]

b. If Calibration Limits have been exceeded or more accurate values are desired, proceed to appropriate subsections. [ ]

4.2.1.48 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. [ ]

4.2.1.49 When individual calibration(s) is(are) complete, repeat subsection 4.2.1 "Analog Channel Operational Test" to obtain As Left readings. [ ]

4.2.2 Channel Status Check (As Found)

4.2.2.1 Connect DMM to A-1, TB1, terminals 1 (+) and 2(-). [ ]

4.2.2.2 Position and hold A1 "Operate/Test" switch in "Test" position. []

NOTE

While adjusting the "Cal Adjust" pot the "Audible Alarm" will sound, the "Under Voltage Alarm" and "Seq. Logic Failure" bistables will ILLUMINATE on panel A3. The "Audible Alarm" can be silenced by pressing the ILLUMINATED bistable "Pushbutton".

4.2.2.3 */* Adjust "Cal Adjust" pot on A1 to the point at which DS1 on A3-1 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 2". (refer to Figure 1 & 2) []

4.2.2.4 */* Adjust "Cal Adjust" on A1 and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 2". []

4.2.2.5 */* Adjust "Cal Adjust" pot on A1 to the point at which DS1 on A3-2 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 2". []

4.2.2.6 */* Adjust "Cal Adjust" on A1 and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 2". []

4.2.2.7 */* Adjust "Cal Adjust" pot on A1 to the point at which DS1 on A3-3 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 2". []

4.2.2.8 */* Adjust "Cal Adjust" on A1 and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 2". []

4.2.2.9 Release A1 "Operate/Test" switch. []

NOTE

Each bistable can be reset by depressing its ILLUMINATED pushbutton. When resetting bistables toggle switch "AT1 Reset" on card A5-16 must be depressed before "Seq. Logic Failure" bistable pushbutton can be reset.

4.2.2.10 Verify annunciator 37A04 "SEQ B TROUBLE" is ILLUMINATED. [ ]
/

4.2.2.11 Reset all bistables. [ ]
/

4.2.2.12 Connect a DMM to A-2, TB1, terminals 1 (+) and 2 (-). [ ]

4.2.2.13 Position and hold A2 "Operate/Test" switch in "Test" position. [ ]

4.2.2.14 Adjust "Cal Adjust" pot on A2 to the point at which DS1 on A3-5 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.15 Adjust "Cal Adjust" on A2 and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.16 Adjust "Cal Adjust" pot on A2 to the point at which DS1 on A3-6 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.17 Adjust "Cal Adjust" on A2 and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.18 Adjust "Cal Adjust" pot on A2 to the point at which DS1 on A3-7 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.19 Adjust "Cal Adjust" on A2 and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.20 Release A2 "Operate/Test" switch. [ ]

4.2.2.21 Reset all bistables. [ ]
/

4.2.2.22 Connect a DMM to A-4, TB1, terminals 1 (+) and 2 (-). [ ]

4.2.2.23 Position and hold A4 "Operate/Test" switch in "Test" position. [ ]

4.2.2.24 Adjust "Cal Adjust" pot on A4 to the point at which DS1 on A3-9 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.25 Adjust "Cal Adjust" on A4 and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.26 Adjust "Cal Adjust" pot on A4 to the point at which DS1 on A3-10 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.27 Adjust "Cal Adjust" on A4 and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.28 Adjust "Cal Adjust" pot on A4 to the point at which DS1 on A3-11 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.29 Adjust "Cal Adjust" on A4 and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.30 Release A4 "Operate/Test" switch. [ ]

4.2.2.31 Reset all bistables. [ ]
/

4.2.2.32 Connect a DMM to A-5, TB1, terminals 1 (+) and 2 (-). [ ]

4.2.2.33 Position and hold A5 "Operate/Test" switch in "Test" position. [ ]

4.2.2.34 Adjust "Cal Adjust" pot on A5 to the point at which DS1 on A3-13 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.35 Adjust "Cal Adjust" on A5 and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.36 Adjust "Cal Adjust" pot on A5 to the point at which DS1 on A3-14 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.37 Adjust "Cal Adjust" on A5 and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.38 Adjust "Cal Adjust" pot on A5 to the point at which DS1 on A3-15 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.39 Adjust "Cal Adjust" on A5 and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 2". [ ]
/

4.2.2.40 Release A5 "Operate/Test" switch. []

4.2.2.41 Reset all bistables. []
/

4.2.2.42 Connect frequency counter to pins 52(+) and 81(-) at rear of A4-7 card (6N368-1). []

4.2.2.43 Record clock output value is "As Found" section of
/ "Data Sheet 2". []

4.2.3 Analog Isolator 1 Calibration
Location: A1

NOTE

Refer to Figure 1.

4.2.3.1 Open links AJ 4 and 5 in 1BA0300. []
/ (Independent Verification required)

4.2.3.2 Connect a DMM to the output of Analog Isolator terminals 8(+) and 9(-), and to input Analog Isolator terminals 12(+) and 11(-). []

4.2.3.3 Connect transducer calibrator to A-1, TB3, terminals 2 and 3. []

4.2.3.4 Adjust trarsducer calibrator to apply inputs listed
/ and record output readings in "As Found" section of "Data Sheet 3". []

4.2.3.5 If As Found readings are within limits specified
/ on "Data Sheet 3", and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 3" and proceed to appropriate subsection. []

4.2.3.6 QC Hold Point
/

Obtain QC authorization to proceed before continuing with procedure. []

4.2.3.7 If As Found readings are not within limits specified on "Data Sheet 3", or more accurate readings are desired, proceed as follows:

a. Apply zero percent input and adjust "Zero" screw for 1.000V DC output []

b. Apply 100 percent input and adjust "Span" screw for 5.000V DC output. []

c. Repeat "Zero" and "Span" adjustments until no further adjustments are needed. []

4.2.3.8 */* Adjust transducer calibrator to apply inputs listed and record output readings in "As Left" section of "Data Sheet 3". []

4.2.4 AC Transmitter 1 Calibration
Location: A1

NOTE

Refer to Figure 1.

4.2.4.1 Connect a DMM to the input of AC transmitter terminals 1 and 2. []

4.2.4.2 */* Adjust transducer calibrator to apply inputs listed and record output readings in "As Found" section of "Data Sheet 4". []

4.2.4.3 */* If As Found readings are within limits specified on "Data Sheet 4", and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 4" and proceed to step 4.2.4.7. []

4.2.4.4 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. []

4.2.4.5 If As Found readings are not within limits specified on "Data Sheet 4", or more accurate readings are desired, proceed as follows:

a. Apply zero percent input and adjust "Zero" screw for 1.000V DC output. []

b. Apply 100 percent input and adjust "Span" screw for 5.000V DC output. []

c. Repeat "Zero" and "Span" adjustments until no further adjustments are needed. []

4.2.4.6 */* Adjust transducer calibrator to apply inputs listed and record output readings in "As Left" section of "Data Sheet 4". []

4.2.4.7 Remove all test equipment. []

4.2.4.8 Close links AJ 4 and 5 in 1BA0300. []

4.2.4.9 */* Reset all bistables. []

4.2.5 Analog Isolator 2 Calibration
Location: A2

NOTE

Refer to Figure 1.

4.2.5.1 */* Open links AJ 6 and 7 in 1BA0300. (Independent Verification required) []

4.2.5.2 Connect a DMM to the output of Analog Isolator terminals 15(+) and 16(-), and to input of Analog Isolator terminals 12(+) and 11(-). []

4.2.5.3 Connect transducer calibrator to A-2, TB3 terminals 2 and 3. []

4.2.5.4 */* Adjust transducer calibrator to apply inputs listed and record output readings in "As Found" section of "Data Sheet 5". []

4.2.5.5 */* If As Found readings are within limits specified on "Data Sheet 5", and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 5" and proceed to appropriate subsection. []

4.2.5.6 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. []

4.2.5.7 If As Found readings are not within limits specified on "Data Sheet 5", or more accurate readings are desired, proceed as follows:

a. Apply zero percent input and adjust "Zero" screw for 1.000V DC output. []

b. Apply 100 percent input and adjust "Span" screw for 5.000V DC output. []

c. Repeat "Zero" and "Span" adjustments until no further adjustments are needed. []

4.2.5.8 */* Adjust transducer calibrator to apply inputs listed and record output readings in "As Left" section of "Data Sheet 5". []

4.2.6 AC Transmitter 2 Calibration
Location: A2

NOTE

Refer to Figure 1.

4.2.6.1 Connect a DMM to the input of AC transmitter terminals 1 and 2. [ ]

4.2.6.2 */* Adjust transducer calibrator to apply inputs listed and record output readings in "As Found" section of "Data Sheet 6". [ ]

4.2.6.3 */* If As Found readings are within limits specified on "Data Sheet 6", and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 6" and proceed to step 4.2.6.7. [ ]

4.2.6.4 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. [ ]

4.2.6.5 If As Found readings are not within limits specified on "Data Sheet 6", or more accurate readings are desired, proceed as follows:

a. Apply zero percent input and adjust "Zero" screw for 1.000V DC output. [ ]

b. Apply 100 percent input and adjust "Span" screw for 5.000V DC output. [ ]

c. Repeat "Zero" and "Span" adjustments until no further adjustments are needed. [ ]

4.2.6.7 */* Adjust transducer calibrator to apply inputs listed and record output readings in "As Left" section of "Data Sheet 6". [ ]

4.2.6.7 Remove all test equipment. [ ]

4.2.6.8 Close links AJ 6 and 7 in 1BA0300. [ ]

4.2.6.9 */* Reset all bistables. [ ]

4.2.7 Analog Isolator 3 Calibration
Location: A4

NOTE

Refer to Figure 1.

4.2.7.1 */* Open links AJ 7 and 8 in 1BA0302. (Independent Verification required) [ ]

4.2.7.2 Connect a DMM to the output of Analog Isolator terminals 8(+) and 9(-), and to the input of Analog Isolator terminals 12(+) and 11(-). [ ]

4.2.7.3 Connect transducer calibrator to A-4, TB3 terminals 2 and 3. [ ]

4.2.7.4 */* Adjust transducer calibrator to apply inputs listed and record output readings in "As Found" section of "Data Sheet 7". [ ]

4.2.7.5 */* If As Found readings are within limits specified on "Data Sheet 7", and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 7" and proceed to appropriate subsection. [ ]

4.2.7.6 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. [ ]

4.2.7.7 If As Found readings are not within limits specified on "Data Sheet 7", or more accurate readings are desired, proceed as follows:

a. Apply zero percent input and adjust "Zero" screw for 1.000V DC output. [ ]

b. Apply 100 percent input and adjust "Span" screw for 5.000V DC output. [ ]

c. Repeat "Zero" and "Span" adjustments until no further adjustments are needed. [ ]

4.2.7.8 */* Adjust transducer calibrator to apply inputs listed and record output readings in "As Left" section of "Data Sheet 7". [ ]

4.2.8 AC Transmitter 3 Calibration
Location: A4

NOTE

Refer to Figure 1.

4.2.8.1 Connect a DMM to the input of AC transmitter terminals 1 and 2. [ ]

4.2.8.2 */* Adjust transducer calibrator to apply inputs listed and output record readings in "As Found" section of "Data Sheet 8". [ ]

4.2.8.3 */* If As Found readings are within limits specified on "Data Sheet 8", and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 8", and proceed to step 4.2.8.7 [ ]

4.2.8.4 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. [ ]

4.2.8.5 If As Found readings are not within limits specified on "Data Sheet 8", or more accurate readings are desired, proceed as follows:

a. Apply zero percent input and adjust "Zero" screw for 1.000V DC output. [ ]

b. Apply 100 percent input and adjust "Span" screw for 5.000V DC output. [ ]

c. Repeat "Zero" and "Span" adjustments until no further adjustments are needed. [ ]

4.2.8.6 */* Adjust transducer calibrator to apply inputs listed and record output readings on "As Left" section of "Data Sheet 8". [ ]

4.2.8.7 Remove all test equipment. [ ]

4.2.8.8 Close links AJ 7 and 8 in 1BA0302. [ ]

4.2.8.9 */* Reset all bistables. [ ]

4.2.9 Analog Isolator 4 Calibration
Location: A5

NOTE

Refer to Figure 1.

4.2.9.1 */* Open links AJ 9 and 10 in 1BA0302. [ ]
(Independent Verification required)

4.2.9.2 Connect a DMM to the output of Analog Isolator terminals 15(+) and 16(-), and to input of Analog Isolator terminals 12(+) and 11(-). [ ]

4.2.9.3 Connect transducer calibrator to A-5, TB3 terminals 2 and 3. [ ]

4.2.9.4 */* Adjust transducer calibrator to apply inputs listed and record output readings in "As Found" section of "Data Sheet 9". [ ]

4.2.9.5 */* If As Found readings are within limits specified on "Data Sheet 9", and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 9" and proceed to appropriate subsection. [ ]

4.2.9.6 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. [ ]

4.2.9.7 If As Found readings are not within limits specified on "Data Sheet 9", or more accurate readings are desired, proceed as follows:

a. Apply zero percent input and adjust "Zero" screw for 1.000V DC output. [ ]

b. Apply 100 percent input and adjust "Span" screw for 5.000V DC output. [ ]

c. Repeat "Zero" and "Span" adjustments until no further adjustments are needed. [ ]

4.2.9.8 */* Adjust transducer calibrator to apply inputs listed and record output readings in "As Left" section of "Data Sheet 9". [ ]

4.2.10 AC Transmitter 4 Calibration
Location: A5

NOTE

Refer to Figure 1.

4.2.10.1 Connect a DMM to the input of AC transmitter terminals 1 and 2. [ ]

4.2.10.2 */* Adjust transducer calibrator to apply inputs listed and record output readings in "As Found" section of "Data Sheet 10". [ ]

4.2.10.3 */* If As Found readings are within limits specified on "Data Sheet 10", and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 10" and proceed to step 4.2.10.7. [ ]

4.2.10.4 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. [ ]

4.2.10.5 If As Found readings are not within limits specified on "Data Sheet 10", or more accurate readings are desired, proceed as follows:

a. Apply zero percent input and adjust "Zero" screw for 1.000V DC output. [ ]

b. Apply 100 percent input and adjust "Span" screw for 5.000V DC output. [ ]

c. Repeat "Zero" and "Span" adjustments until no further adjustments are needed. [ ]

4.2.10.6 */* Adjust transducer calibrator to apply inputs listed and record output readings in "As Left" section of "Data Sheet 10". [ ]

4.2.10.7 Remove all test equipment. [ ]

4.2.10.8 Close links AJ 9 and 10 in 1BA0302. [ ]

4.2.10.9 */* Reset all bistables. [ ]

4.2.11 A3-1 Bistable Module Calibration -

4.2.11.1 Connect a DMM to A-1, TB1, terminals 1(+) and 2(-). []

4.2.11.2 Position and hold A1 "Operate/Test" switch in "Test" position. []

4.2.11.3 */* Adjust "Cal Adjust" on A1, to the point at which DS1 on A3-1 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 11". []

4.2.11.4 */* Adjust "Cal Adjust" on A1 and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 11". []

4.2.11.5 */* If As Found readings are within limits specified on "Data Sheet 11" and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 11" and proceed to step 4.2.11.8. []

4.2.11.6 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. []

4.2.11.7 If As Found readings are not within limits specified on "Data Sheet 11", or more accurate readings are desired, proceed as follows:

NOTE

Refer to Figure 2 for adjustments.

a. INCREASE or DECREASE R40 for trip point. []

b. Adjust "Cal Adjust", note point which DS1 ILLUMINATES and reset bistable. []

c. */* If value is within limits specified on "Data Sheet 11", record in "As Left" section of "Data Sheet 11" and proceed to step 4.2.11.7e. []

d. */* If value is not within limits specified on "Data Sheet 11", repeat steps 4.2.11.7a and 4.2.11.7b until an acceptable value is obtained and record in "As Left" section of "Data Sheet 11". []

e. INCREASE input with "Cal Adjust" point at which bistable can be reset and trip the bistable []

f. */* If value is within limits specified on "Data Sheet 11" and a more accurate value is not desired, record in "As Left" (Reset) section of "Data Sheet 11" and proceed to step 4.2.11.8. [ ]

g. */* If value is not within limits specified on "Data Sheet 11", adjust R44 and repeat step 4.2.11.7e and record final value obtained in "As Left" section of "Data Sheet 11". [ ]

4.2.11.8 Connect DMM to A3-1, terminals J4(+) and J5(-). [ ]

4.2.11.9 Adjust R33 to 0.500V DC under trip point voltage. [ ]

4.2.11.10 Connect DMM to A3-1, terminals J3(+) and J5(-). [ ]

4.2.11.11 Adjust R34 to 0.500V DC over trip point voltage. [ ]

4.2.12 A3-2 Bistable Module Calibration

4.2.12.1 */* Adjust "Cal Adjust" on A1 to the point at which DS1 on A3-2 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 12". [ ]

4.2.12.2 */* Adjust "Cal Adjust" and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 12". [ ]

4.2.12.3 */* If As Found readings are within limits specified on "Data Sheet 12" and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 12" and proceed to step 4.2.12.6. [ ]

4.2.12.4 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. [ ]

4.2.12.5 If As Found readings are not within limits specified on "Data Sheet 12", or more accurate readings are desired, proceed as follows:

NOTE

Refer to Figure for adjustments.

a. INCREASE or DECREASE R40 for trip point. [ ]

b. Adjust "Cal Adjust", note point which DS1 ILLUMINATES and reset bistable. [ ]

c. */* If value is within limits specified on "Data Sheet 12", record in "As Left" section of "Data Sheet 12" and proceed to step 4.2.12.5e. []

d. */* If value is not within limits specified on "Data Sheet 12", repeat steps 4.2.12.5a and 4.2.12.5b until an acceptable value is obtained and record in "As Left" section of "Data Sheet 12". []

e. INCREASE input with "Cal Adjust", note point at which bistable can be reset and trip the bistable. []

f. */* If value is within limits specified on "Data Sheet 12" and a more accurate value is not desired, record in "As Left" (Reset) section of "Data Sheet 12" and proceed to step 4.2.12.6. []

g. */* If value is not within limits specified on "Data Sheet 12", adjust R44 and repeat step 4.2.12.5e and record final value obtained in "As Left" section of "Data Sheet 12". []

4.2.12.6 Connect DMM to A3-2, terminals J4(+) and J5(-). []

4.2.12.7 Adjust R33 to 0.500V DC below trip point voltage. []

4.2.12.8 Connect DMM to A3-2, terminals J3(+) and J5(-). []

4.2.12.9 Adjust R34 to 0.500V DC above trip point voltage. []

4.2.13 A3-3 Bistable Module Calibration

4.2.13.1 */* Adjust "Cal Adjust" on A1 to the point at which DS1 on A3-3 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 13". []

4.2.13.2 */* Adjust "Cal Adjust" and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 13". []

4.2.13.3 */* If As Found readings are within limits specified on "Data Sheet 13" and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 13" and proceed to step 4.2.13.6. []

4.2.13.4 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. []

4.2.13.5 If As Found readings are not within limits specified on "Data Sheet 13", or more accurate readings are desired, proceed as follows:

NOTE

Refer to Figure 2 for adjustments.

a. INCREASE or DECREASE R40 for trip point. []

b. Adjust "Cal Adjust", note point which DS1 ILLUMINATES and reset bistable. []

c. */* If value is within limits specified on "Data Sheet 13", record in "As Left" section of "Data Sheet 13" and proceed to step 4.2.13.5e. []

d. */* If value is not within limits specified on "Data Sheet 13", repeat steps 4.2.13.5a and 4.2.13.5b until an acceptable value is obtained and record in "As Left" section of "Data Sheet 13". []

e. INCREASE "Cal Adjust", note point at which bistable can be reset and trip the bistable. []

f. */* If value is within limits specified on "Data Sheet 13" and a more accurate value is not desired, record in "As Left" (Reset) section of "Data Sheet 13" and proceed to step 4.2.13.6. []

g. */* If value is not within limits specified on "Data Sheet 13", adjust R44 and repeat step 4.2.13.5e and record final value obtained in "As Left" section of "Data Sheet 13". []

4.2.13.6 Connect DMM to A3-3, terminals J4(+) and J5(-). []

4.2.13.7 Adjust R33 to 0.500V DC below trip point voltage. []

4.2.13.8 Connect DMM to A3-3, terminals J3(+) and J5(-). []

4.2.13.9 Adjust R34 to 0.500V DC above trip point voltage. []

4.2.13.10 */* Release A1 "Operate/Test" switch and reset all bistables. []

4.2.14 A3-5 Bistable Module Calibration

4.2.14.1 Connect a DMM to A-2, TB1, terminals 1(+) and 2(-). []

4.2.14.2 Position and hold A2 "Operate/Test" switch in "Test" position. []

4.2.14.3 */* Adjust "Cal Adjust" on A2 to the point at which DS1 on A3-5 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 14". []

4.2.14.4 */* INCREASE "Cal Adjust" on A2 and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 14". []

4.2.14.5 */* If As Found readings are within limits specified on "Data Sheet 14" and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 14" and proceed to step 4.2.14.8. []

4.2.14.6 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. []

4.2.14.7 If As Found readings are not within limits specified on "Data Sheet 14", or more accurate readings are desired, proceed as follows:

NOTE

Refer to Figure 2 for adjustments.

a. INCREASE or DECREASE R40 for trip point. []

b. Adjust "Cal Adjust", note point at which DS1 ILLUMINATES and reset bistable. []

c. */* If value is within limits specified on "Data Sheet 14", record in "As Left" section of "Data Sheet 14" and proceed to step 4.2.14.7e. []

d. */* If value is not within limits specified on "Data Sheet 14", repeat steps 4.2.14.7a and 4.2.14.7b until an acceptable value is obtained and record in "As Left" section of "Data Sheet 14". []

e. INCREASE input with "Cal Adjust" ,note point bistable can be reset and trip the bistable []

f. */* If value is within limits specified on "Data Sheet 14" and a more accurate value is not desired, record in "As Left" (Reset) section of "Data Sheet 14" and proceed to step 4.2.14.8. []

g. */* If value is not within limits specified on "Data Sheet 14", adjust R44 and repeat step 4.2.14.7e and record final value obtained in "As Left" section of "Data Sheet 14". []

4.2.14.8 Connect DMM to A3-5, terminals J4(+) and J5(-). []

4.2.14.9 Adjust R33 to 0.500V DC under trip point voltage. []

4.2.14.10 Connect DMM to A3-5, terminals J3(+) and J5(-). []

4.2.14.11 Adjust R34 to 0.500V DC above trip point voltage. []

4.2.15 A3-6 Bistable Module Calibration

4.2.15.1 */* Adjust "Cal Adjust" on A2 to the point at which DS1 on A3-6 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 15". []

4.2.15.2 */* INCREASE "Cal Adjust" and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 15". []

4.2.15.3 */* If As Found readings are within limits specified on "Data Sheet 15" and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 15" and proceed to step 4.2.15.6. []

4.2.15.4 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. []

4.2.15.5 If As Found readings are not within limits specified on "Data Sheet 15", or more accurate readings are desired, proceed as follows:

NOTE

Refer to Figure 2 for adjustments.

a. INCREASE or DECREASE R40 for trip point []

b. Adjust "Cal Adjust", note point at which DS2 ILLUMINATES and reset bistable. []

c. */* If value is within limits specified on "Data Sheet 15", record in "As Left" section of "Data Sheet 15" and proceed to step 4.2.15.5e. []

d. If value is not within limits specified on "Data */* Sheet 15", repeat steps 4.2.15.5a and 4.2.15.5b until an acceptable value is obtained and record in "As Left" section of "Data Sheet 15". []

e. INCREASE input with "Cal Adjust", note point bistable can be reset and trip the bistable. []

f. If value is within limits specified on "Data */* Sheet 15" and a more accurate value is not desired, record in "As Left" (Reset) section of "Data Sheet 15" and proceed to step 4.2.15.6. []

g. If value is not within limits specified on "Data */* Sheet 15", adjust R44 and repeat step 4.2.15.5e and record final value obtained in "As Left" section of "Data Sheet 15". []

4.2.15.6 Connect DMM to A3-6, terminals J4(+) and J5(-). []

4.2.15.7 Adjust R33 to 0.500V DC below trip point voltage. []

4.2.15.8 Connect DMM to A3-6, terminals J3(+) and J5(-). []

4.2.15.9 Adjust R34 to 0.500V DC above trip point voltage. []

4.2.16 A3-7 Bistable Module Calibration

4.2.16.1 */* Adjust "Cal Adjust" on A2 to the point at which DS1 on A3-7 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 16". []

4.2.16.2 */* INCREASE "Cal Adjust" and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 16". []

4.2.16.3 */* If As Found readings are within limits specified on "Data Sheet 16", and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 16" and proceed to step 4.2.16.6. []

4.2.16.4 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. []

4.2.16.5 If As Found readings are not within limits specified on "Data Sheet 16", or more accurate readings are desired, proceed as follows:

NOTE

Refer to Figure 2 for adjustments.

a. INCREASE or DECREASE R40 for trip point. [ ]

b. Adjust "Cal Adjust", note point at which DS1 ILLUMINATES and reset bistable. [ ]

c. */* If value is within limits specified on "Data Sheet 16", record in "As Left" section of "Data Sheet 16" and proceed to step 4.2.16.5e. [ ]

d. */* If value is not within limits specified on "Data Sheet 16", repeat steps 4.2.16.5a and 4.2.16.5b until an acceptable value is obtained and record in "As Left" section of "Data Sheet 16". [ ]

e. INCREASE input with "Cal Adjust", note point at which bistable can be reset and trip the bistable. [ ]

f. */* If value is within limits specified on "Data Sheet 16" and a more accurate value is not desired, record in "As Left" (Reset) section of "Data Sheet 16" and proceed to step 4.2.16.6. [ ]

g. */* If value is not within limits specified on "Data Sheet 16" adjust R44 and repeat step 4.2.16.5e and record final value obtained in "As Left" section of "Data Sheet 16". [ ]

4.2.16.6 Connect DMM to A3-7, terminals J4(+) and J5(-). [ ]

4.2.16.7 Adjust R33 to 0.500V DC below trip point voltage. [ ]

4.2.16.8 Connect DMM to A3-7, terminals J3(+) and J5(-). [ ]

4.2.16.9 Adjust R34 to 0.500V DC above trip point voltage. [ ]

4.2.16.10 */* Release A2 "Operate/Test" switch and reset all bistables. [ ]

4.2.17 A3-9 Bistable Module Calibration

4.2.17.1 Connect a DMM and to A-4, TB1, terminals 1(+) and 2(-). [ ]

4.2.17.2 Position and hold A4 "Operate/Test" switch in "Test" position. [ ]

4.2.17.3 */* Adjust "Cal Adjust" on A4 to the point at which DS1 on A3-9 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 17". [ ]

4.2.17.4 */* INCREASE input with "Cal Adjust" and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 17". [ ]

4.2.17.5 */* If As Found readings are within limits specified on "Data Sheet 17" and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 17" and proceed to step 4.2.17.8. [ ]

4.2.17.6 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. [ ]

4.2.17.7 If As Found readings are not within limits specified on "Data Sheet 17", or more accurate readings are desired, proceed as follows:

NOTE

Refer to Figure 2 for adjustments.

a. INCREASE or DECREASE R40 for trip point. [ ]

b. Adjust "Cal Adjust", note point at which DS1 ILLUMINATES and reset bistable. [ ]

c. */* If value is within limits specified on "Data Sheet 17", record in "As Left" section of "Data Sheet 17" and proceed to step 4.2.17.7e. [ ]

d. */* If value is not within limits specified on "Data Sheet 17", repeat steps 4.2.17.7a and 4.2.17.7b until an acceptable value is obtained and record in "As Left" section of "Data Sheet 17". [ ]

e. INCREASE input with "Cal Adjust", point at which bistable can be reset and trip the bistable. [ ]

f. */* If value is within limits specified on "Data Sheet 17" and a more accurate value is not desired, record in "As Left" (Reset) section of "Data Sheet 17" and proceed to step 4.2.17.8. [ ]

g. */* If value is not within limits specified on "Data Sheet 17", adjust R44 and repeat step 4.2.17.7e and record final value obtained in As Left" section of "Data Sheet 17". [ ]

4.2.17.8 Connect DMM to A3-9, terminals J4(+) and J5(-). []

4.2.17.9 Adjust R33 to 0.500V DC below trip point voltage. []

4.2.17.10 Connect DMM to A3-9, terminals J3(+) and J5(-). []

4.2.17.11 Adjust R34 to 0.500V DC above trip point voltage. []

4.2.18 A3-10 Bistable Module Calibration

4.2.18.1 */* Adjust "Cal Adjust" on A4 to the point at which DS1 on A3-10 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 18". []

4.2.18.2 */* INCREASE input with "Cal Adjust" and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 18". []

4.2.18.3 */* If As Found readings are within limits specified on "Data Sheet 18", and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 18" and proceed to step 4.2.18.6. []

4.2.18.4 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. []

4.2.18.5 If As Found readings are not within limits specified on "Data Sheet 18", or more accurate readings are desired, proceed as follows:

NOTE

Refer to Figure 2 for adjustments.

a. INCREASE or DECREASE R40 for trip point. []

b. Adjust "Cal Adjust", note point at which DS1 ILLUMINATES and reset bistable. []

c. */* If value is within limits specified on "Data Sheet 18", record in "As Left" section of "Data Sheet 18" and proceed to step 4.2.18.5e. []

d. */* If value is not within limits specified on "Data Sheet 18", repeat steps 4.2.18.5a and 4.2.18.5b until an acceptable value is obtained and record in "As Left" section of "Data Sheet 18". []

e. INCREASE input with "Cal Adjust", note point at which bistable can be reset and trip the bistable. []

f. */* If value is within limits specified on "Data Sheet 18" and a more accurate value is not desired, record in "As Left" (Reset) section of "Data Sheet 18" and proceed to step 4.2.18.6. []

g. */* If value is not within limits specified on "Data Sheet 18", adjust R44 and repeat step 4.2.18.5e and record final value obtained in As Left" section of "Data Sheet 18". []

4.2.18.6 Connect DMM to A3-10, terminals, J4(+) and J5(-). []

4.2.18.7 Adjust R33 to 0.500V DC below trip point voltage. []

4.2.18.8 Connect DMM to A3-10, terminals J3(+) and J5(-). []

4.2.18.9 Adjust R34 to 0.500V DC above trip point voltage. []

4.2.19 A3-11 Bistable Module Calibration

4.2.19.1 */* Adjust "Cal Adjust" on A4 to the point at which DS1 on A3-11 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 19". []

4.2.19.2 */* INCREASE input with "Cal Adjust" and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 19". []

4.2.19.3 */* If As Found readings are within limits specified on "Data Sheet 19" and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 19" and proceed to step 4.2.19.6. []

4.2.19.4 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. []

4.2.19.5 If As Found readings are not within limits specified on "Data Sheet 19", or more accurate readings are desired, proceed as follows:

NOTE

Refer to Figure 2 for adjustments.

a. INCREASE or DECREASE R40 for trip point. []

b. Adjust "Cal Adjust", note point at which DS1 ILLUMINATES and reset bistable. []

c. If value is within limits specified on "Data */* Sheet 19", record in "As Left" section of "Data Sheet 19" and proceed to step 4.2.19.5e. []

d. If value is not within limits specified on */* "Data Sheet 19", repeat steps 4.2.19.5a and 4.2.19.5b until an acceptable value is obtained and record in "As Left" section of "Data Sheet 19". []

e. INCREASE input with "Cal Adjust", note point at which bistable can be reset and trip the bistable. []

f. If value is within limits specified on "Data */* Sheet 19" and a more accurate value is not desired, record in "As Left" (Reset) section of "Data Sheet 19" and proceed to step 4.2.19.6. []

g. If value is not within limits specified on "Data */* Sheet 19", adjust R44 and repeat step 4.2.19.5e and record final value obtained in "As Left" section of "Data Sheet 19". []

4.2.19.6 Connect DMM to A3-11, terminals J4(+) and J5(-). []

4.2.19.7 Adjust R33 to 0.500V DC below trip point voltage. []

4.2.19.8 Connect DMM to A3-11, terminals J3(+) and J5(-). []

4.2.19.9 Adjust R34 to 0.500V DC above trip point voltage. []

4.2.19.10 Release A4 "Operate/Test" switch and reset all */* bistables. []

4.2.20 A3-13 Bistable Module Calibration

4.2.20.1 Connect a DMM to A-5, TB1, terminals 1(+) and 2(-). []

4.2.20.2 Position and hold A5 "Operate/Test" switch in "Test" position. []

4.2.20.3 Adjust "Cal Adjust" on A5 to the point at which DS1 on */* A3-13 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 20". []

4.2.20.4 INCREASE input with "Cal Adjust" and record input */* reading at point bistable can be reset in "As Found" section of "Data Sheet 20". []

4.2.20.5 If As Found readings are within limits specified */* on "Data Sheet 20" and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 20" and proceed to step 4.2.20.8. []

4.2.20.6 QC Hold Point
/

Obtain QC authorization to proceed before continuing with procedure. []

4.2.20.7 If As Found readings are not within limits specified on "Data Sheet 20", or more accurate readings are desired, proceed as follows:

NOTE

Refer to Figure 2 for adjustments.

a. INCREASE or DECREASE R40 for trip point. []

b. Adjust "Cal Adjust", note point at which DS1 ILLUMINATES and reset bistable. []

c. */* If value is within limits specified on "Data Sheet 20", record in "As Left" section of "Data Sheet 20" and proceed to step 4.2.20.7e. []

d. */* If value is not within limits specified on "Data Sheet 20", repeat steps 4.2.20.7a and 4.2.20.7b until an acceptable value is obtained and record in "As Left" section of "Data Sheet 20". []

e. INCREASE input with "Cal Adjust", note point at which bistable can be reset and trip the bistable. []

f. */* If value is within limits specified on "Data Sheet 20" and a more accurate value is not desired, record in "As Left" (Reset) section of "Data Sheet 20" and proceed to step 4.2.20.8. []

g. */* If value is not within limits specified on "Data Sheet 20", adjust R44 and repeat step 4.2.20.7e and record final value obtained in "As Left" section of "Data Sheet 20". []

4.2.20.8 Connect DMM to A3-13, terminals J4(+) and J5(-). []

4.2.20.9 Adjust R33 to 0.500V DC below trip point voltage. []

4.2.20.10 Connect DMM to A3-13, terminals J3(+) and J5(-). []

4.2.20.11 Adjust R34 to 0.500V DC above trip point voltage. []

4.2.21 A3-14 Bistable Module Calibration -

4.2.21.1 */* Adjust "Cal Adjust" on A5 to the point at which DS1 on A3-14 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 21". [ ]

4.2.21.2 */* INCREASE input with "Cal Adjust" and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 21". [ ]

4.2.21.3 */* If As Found readings are within limits specified on "Data Sheet 21" and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 21" and proceed to step 4.2.21.6. [ ]

4.2.21.4 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. [ ]

4.2.21.5 If As Found readings are not within limits specified on "Data Sheet 21", or more accurate readings are desired proceed as follows:

NOTE

Refer to Figure 2 for adjustments.

a. INCREASE or DECREASE R40 for trip point. [ ]

b. Adjust "Cal Adjust", note point at which DS1 ILLUMINATES and reset bistable. [ ]

c. */* If value is within limits specified on "Data Sheet 21", record in "As Left" section of "Data Sheet 21" and proceed to step 4.2.21.5e. [ ]

d. */* If value is not within limits specified on "Data Sheet 21", repeat steps 4.2.21.5a and 4.2.21.5b until an acceptable value is obtained and record in "As Left" section of "Data Sheet 21". [ ]

e. INCREASE input with "Cal Adjust", note point at which bistable can be reset and trip the bistable. [ ]

f. */* If value is within limits specified on "Data Sheet 21" and a more accurate value is not desired, record in "As Left" (Reset) section of "Data Sheet 21" and proceed to step 4.2.21.6. [ ]

g. */* If value is not within limits specified on "Data Sheet 21", adjust R44 and repeat step 4.2.21.5e and record final value obtained in "As Left" section of "Data Sheet 21". [ ]

4.2.21.6 Connect DMM to A3-14, terminals J4(+) and J5(-). [ ]

4.2.21.7 Adjust R33 to 0.500V DC below trip point voltage. [ ]

4.2.21.8 Connect DMM to A3-14, terminals J3(+) and J5(-). [ ]

4.2.21.9 Adjust R34 to 0.500V DC above trip point voltage. [ ]

4.2.22 A3-15 Bistable Module Calibration

4.2.22.1 */* Adjust "Cal Adjust" on A5 to the point at which DS1 on A3-15 ILLUMINATES and record input reading in "As Found" section of "Data Sheet 22". [ ]

4.2.22.2 */* INCREASE input with "Cal Adjust" and record input reading at point bistable can be reset in "As Found" section of "Data Sheet 22". [ ]

4.2.22.3 */* If As Found readings are within limits specified on "Data Sheet 22" and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 22" and proceed to step 4.2.22.6. [ ]

4.2.22.4 */* QC Hold Point

Obtain QC authorization to proceed before continuing with procedure. [ ]

4.2.22.5 If As Found readings are not within limits specified on "Data Sheet 22, or more accurate readings are desired, proceed as follows:

NOTE

Refer to Figure 2 for adjustments.

a. INCREASE or DECREASE R40 for trip point. [ ]

b. Adjust "Cal Adjust", note point at which DS1 ILLUMINATES and reset bistable. [ ]

c. */* If value is within limits specified on "Data Sheet 22", record in "As Left" section of "Data Sheet 22" and proceed to step 4.2.22.5e. [ ]

d. If value is not within limits specified on "Data Sheet 22", repeat steps 4.2.22.5a and 4.2.22.5b until an acceptable value is obtained and record in "As Left" section of "Data Sheet 22". */* []

e. INCREASE input with "Cal Adjust", note point at which bistable can be reset and trip bistable. []

f. If value is within limits specified on "Data Sheet 22" and a more accurate value is not desired, record in "As Left" (Reset) section of "Data Sheet 22" and proceed to step 4.2.22.6. */* []

g. If value is not within limits specified on "Data Sheet 22", adjust R44 and repeat step 4.2.22.5e and record final value obtained in "As Left" section of "Data Sheet 22". */* []

4.2.22.6 Connect DMM to A3-15, terminals J4(+) and J5(-). []

4.2.22.7 Adjust R33 to 0.500V DC below trip point voltage. []

4.2.22.8 Connect DMM to A3-15, terminals J3(+) and J5(-). []

4.2.22.9 Adjust R34 to 0.500V DC above trip point voltage. []

4.2.22.10 Release A5 "Operate/Test" switch and reset all bistables. */* []

4.2.23 Channel Status Check (As Left)

4.2.23.1 QC Hold Point */*

Obtain QC authorization to proceed before continuing with procedure. (Only if As Found readings on "Channel Status Check" are not within limits) []

4.2.23.2 Repeat subsection 4.2.2, "Channel Status Check", to obtain As Left readings. []

4.3 RESTORE TO SERVICE

4.3.1 Remove all test equipment connected during the course of this procedure. */* []

4.3.2 */* If not already performed, reset all-bistables. [ ]

4.3.3 */* If not already performed, place the following "Operate/Test" switches to "Operate" position:

a. A1 [ ]

b. A2 [ ]

c. A4 [ ]

d. A5 [ ]

4.3.4 */* If not already performed, close the following links:

a. 1BA0302 AJ 7,8,9 and 10 [ ]

b. 1BA0300 AJ 4,5,6 and 7 [ ]

4.3.5 */* Toggle switch "AT1 Reset" on card A5-16 and verify that AT1 continues to cycle from 00 to 71. [ ]

4.3.6 */* Verify Annunciator 37A04 "SEQ B TROUBLE" is EXTINGUISHED. [ ]

4.3.7 */* Verify sequencer reflects current plant conditions after it is restored to service. [ ]

4.3.8 */* Have an Independent Restoration Verification performed by designated personnel. [ ]

4.3.9 Notify RO, Train B sequencer has been returned to service. [ ]

4.3.10 */* Notify Shift Supervisor, or designee, of completion of work including test results and obtain signature on completion sheet. [ ]

5.0 ACCEPTANCE CRITERIA

5.1 The Acceptance Criteria for this procedure is that all devices listed in the appropriate subsection below are within limits specified on applicable Data Sheets.

5.1.1 Analog Channel Operational Test -

Bistable A3-1
Bistable A3-2
Bistable A3-3
Bistable A3-5
Bistable A3-6
Bistable A3-7
Bistable A3-9
Bistable A3-10
Bistable A3-11
Bistable A3-13
Bistable A3-14
Bistable A3-15

5.1.2 Channel Calibration

Bistable A3-1
Bistable A3-2
Bistable A3-3
Bistable A3-5
Bistable A3-6
Bistable A3-7
Bistable A3-9
Bistable A3-10
Bistable A3-11
Bistable A3-13
Bistable A3-14
Bistable A3-15
AC Transmitter 1
Analog Isolator 1
AC Transmitter 2
Analog Isolator 2
AC Transmitter 3
Analog Isolator 3
AC Transmitter 4
Analog Isolator 4

5.2 Satisfactory completion of this procedure has been met when I&C Foreman has evaluated data obtained per "Acceptance Criteria" of this procedure, reviewed, and signed Data Sheets provided.

6.0 REFERENCES

6.1 Elementary, 1X3D-BA-D03E

6.2 One Line, 1X3D-AA-D03A

6.3 Annunciator Engraving, 1X6AV01-263

6.4 Logic Diag. of Safety Features Sequencer Board, AX3AE03-94, 10-4

6.5 Field Connected Terminal Arrangement 1X3AE03-66, 78, 79, 80, 81, 82

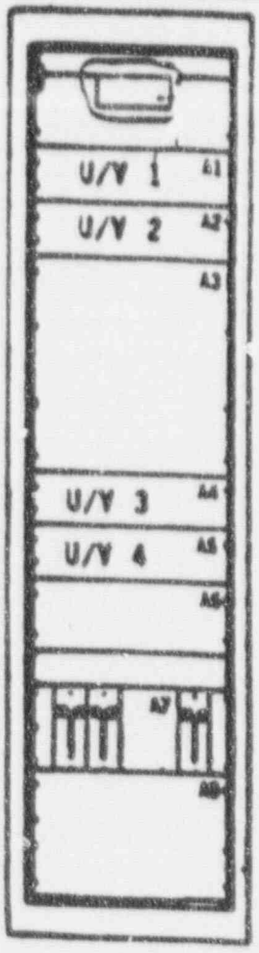
6.6 Technical Manual, AX3AE03-365

6.7 VEGP Technical Specification

6.8 Procedure 00306-C, "Temporary Jumper And Lifted Wire Control"

6.9 VEGP Final Safety Analysis Report

END OF PROCEDURE TEXT



FRONT VIEW

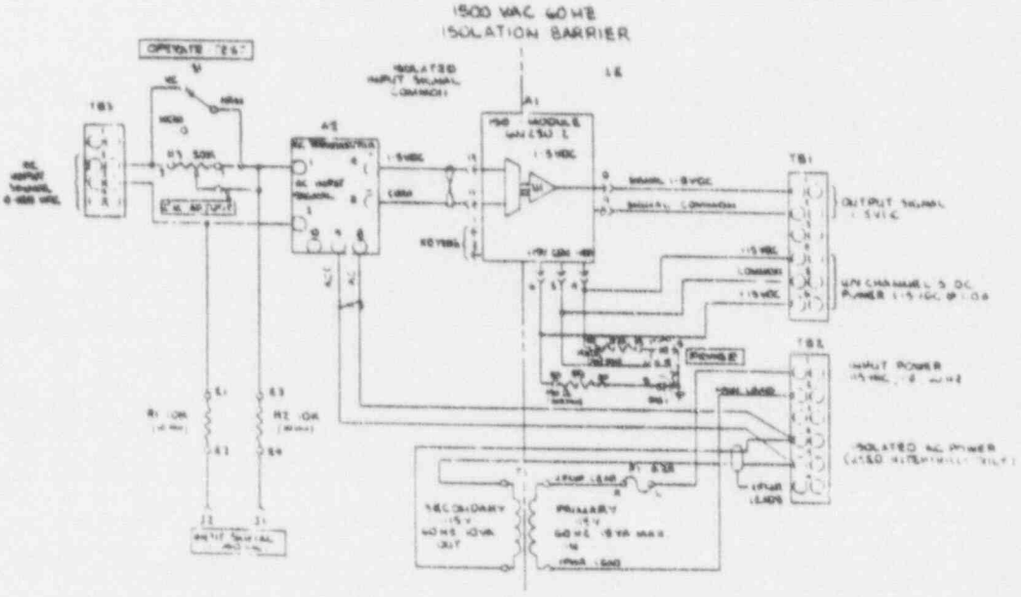


FIGURE 1

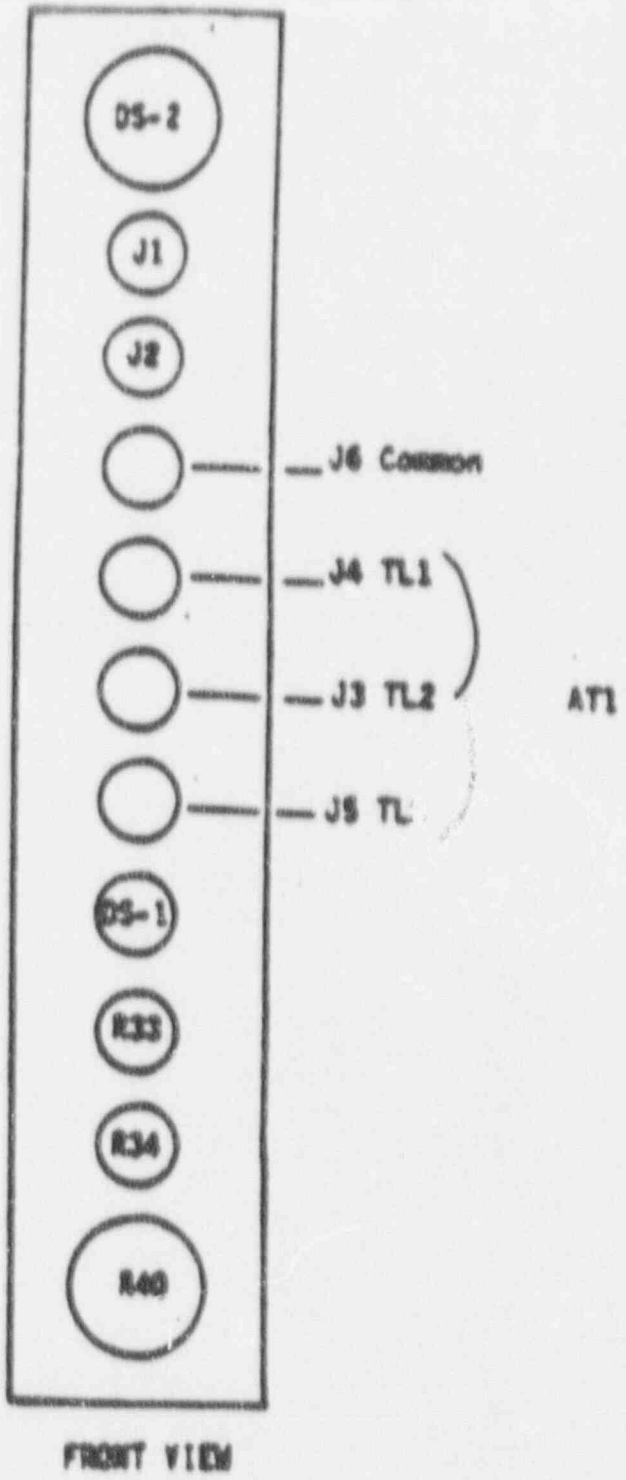

DS-2
J1
J2
J6 COMMON
J4 TL1
J3 TL2
J5 TL
AT1
DS-1
R33
R34
R40
FRONT VIEW

FIGURE 2

ANALOG CHANNEL OPERATIONAL TEST DATA SHEET 1 SHEET 1 OF 3

NOTES: N/A

	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	
CLOCK OUTPUT	Hz	1000	1000	1050			
ACTION Bistable A3-1	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Setpoint	V DC	3.950	3.910	3.990			N/A
Reset	V DC	3.990	3.950	4.030			N/A
ACTION Bistable A3-2	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Setpoint	V DC	3.854	3.814	3.894			$\geq$ 3.806
Reset	V DC	3.894	3.854	3.934			N/A
ACTION Bistable A3-3	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Setpoint	V DC	3.267	3.227	3.307			$\geq$ 3.219
Reset	V DC	3.307	3.267	3.347			N/A
ACTION Bistable A3-5	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Setpoint	V DC	3.950	3.910	3.990			N/A
Reset	V DC	3.990	3.950	4.030			N/A
ACTION Bistable A3-6	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Setpoint	V DC	3.854	3.814	3.894			$\geq$ 3.806
Reset	V DC	3.894	3.854	3.934			N/A
ACTION Bistable A3-7	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Setpoint	V DC	3.267	3.227	3.307			$\geq$ 3.219
Reset	V DC	3.307	3.267	3.347			N/A

COMMENTS:

CHANNEL OPERATIONAL TEST DATA SHEET 1

SHEET 2 OF 3

ble A3-9							
Setpoint	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Reset	V DC	3.950	3.910	3.990			N/A
ACTION Bistable A3-10	V DC	3.990	3.950	4.030			N/A
Setpoint	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Reset	V DC	3.854	3.814	3.894			≥3.806
ACTION Bistable A3-11	V DC	3.894	3.854	3.934			N/A
Setpoint	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Reset	V DC	3.267	3.227	3.307			≥3.219
CTION Bistable A3-13	V DC	3.307	3.267	3.347			N/A
Setpoint	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Reset	V DC	3.950	3.910	3.990			N/A
N Bistable A3-14	V DC	3.990	3.950	4.030			N/A
Setpoint	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Reset	V DC	3.854	3.814	3.894			≥3.806
Bistable A3-15	V DC	3.894	3.854	3.934			N/A
Setpoint	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
eset	V DC	3.267	3.227	3.307			≥3.219
		3.307	3.267	3.347			N/A

ANALOG CHANNEL OPERATIONAL TEST DATA SHEET 1 SHEET 2 OF 3

NOTES: N/A

ACTION	Bistable A3-9	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
	Setpoint	V DC	3.950	3.910	3.990			N/A
	Reset	V DC	3.990	3.950	4.030			N/A
ACTION	Bistable A3-10	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
	Setpoint	V DC	3.854	3.814	3.894			$\geq$ 3.806
	Reset	V DC	3.894	3.854	3.934			N/A
ACTION	Bistable A3-11	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
	Setpoint	V DC	3.267	3.227	3.307			$\geq$ 3.219
	Reset	V DC	3.307	3.267	3.347			N/A
ACTION	Bistable A3-13	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
	Setpoint	V DC	3.950	3.910	3.990			N/A
	Reset	V DC	3.990	3.950	4.030			N/A
ACTION	Bistable A3-14	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
	Setpoint	V DC	3.854	3.814	3.894			$\geq$ 3.896
	Reset	V DC	3.894	3.854	3.934			N/A
ACTION	Bistable A3-15	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
	Setpoint	V DC	3.267	3.227	3.307			$\geq$ 3.219
	Reset	V DC	3.307	3.267	3.347			N/A

COMMENTS:

ANALOG CHANNEL OPERATIONAL TEST DATA SHEET 1 SHEET 3 OF 3

COMMENTS:

TEST EQUIPMENT		
I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY:	DATE
REVIEWED BY:	DATE
APPROVED BY:	DATE

DATA SHEET 2

NOTES: N/A

SHEET 1 OF 3

ACTION		UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Bistable A3-1	CLOCK OUTPUT	HZ	1000	1000	1050			N/A
	Setpoint	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
ACTION	Reset	V DC	3.950	3.910	3.990			N/A
Bistable A3-2		V DC	3.990	3.950	4.030			≥ 3.806
	Setpoint	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
ACTION	Reset	V DC	3.854	3.814	3.894			N/A
Bistable A3-3		V DC	3.894	3.854	3.934			≥ 3.219
	Setpoint	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
ACTION	Reset	V DC	3.267	3.227	3.307			N/A
Bistable A3-5		V DC	3.307	3.267	3.347			N/A
	Setpoint	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
	Reset	V DC	3.950	3.910	3.990			N/A
		V DC	3.990	3.950	4.030			N/A

TEST EQUIPMENT

I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

COMMENTS:

DATA SHEET 2

SHEET 1 OF 3

NOTES: N/A

		UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	
CLOCK OUTPUT		HZ	1000	1000	1050			
ACTION		UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Bistable A3-1	Setpoint	V DC	3.950	3.910	3.990			N/A
	Reset	V DC	3.990	3.950	4.030			N/A
ACTION		UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Bistable A3-2	Setpoint	V DC	3.854	3.814	3.894			≥ 3.806
	Reset	V DC	3.894	3.854	3.934			N/A
ACTION		UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Bistable A3-3	Setpoint	V DC	3.267	3.227	3.307			≥ 3.219
	Reset	V DC	3.307	3.267	3.347			N/A
ACTION		UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW.
Bistable A3-5	Setpoint	V DC	3.950	3.910	3.990			N/A
	Reset	V DC	3.990	3.950	4.030			N/A

TEST EQUIPMENT

I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

COMMENTS:

DATA SHEET 2

SHEET 2 OF 3

NOTES: N/A

ACTION		UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW
Bistable A3-6	Setpoint	V DC	3.854	3.814	3.894			≥ 3.806
	Reset	V DC	3.894	3.854	3.934			N/A
ACTION		UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW
Bistable A3-7	Setpoint	V DC	3.267	3.227	3.307			≥ 3.219
	Reset	V DC	3.307	3.267	3.347			N/A
ACTION		UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW
Bistable A3-9	Setpoint	V DC	3.950	3.910	3.990			N/A
	Reset	V DC	3.990	3.950	4.030			N/A
ACTION		UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW
Bistable A3-10	Setpoint	V DC	3.854	3.814	3.894			≥ 3.806
	Reset	V DC	3.894	3.854	3.934			N/A

TEST EQUIPMENT

I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

COMMENTS:

DATA SHEET 2

SHEET 3 OF 3

NOTES: N/A

ACTION		UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW
Bistable A3-11	Setpoint	V DC	3.267	3.227	3.307			≥ 3.219
	Reset	V DC	3.307	3.267	3.347			N/A
ACTION		UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW
Bistable A3-13	Setpoint	V DC	3.950	3.910	3.990			N/A
	Reset	V DC	3.990	3.950	4.030			N/A
ACTION		UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW
Bistable A3-14	Setpoint	V DC	3.854	3.814	3.894			≥ 3.806
	Reset	V DC	3.894	3.854	3.934			N/A
ACTION		UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	TECH. SPEC. ALLOW
Bistable A3-15	Setpoint	V DC	3.267	3.227	3.307			≥ 3.219
	Reset	V DC	3.307	3.267	3.347			N/A

TEST EQUIPMENT

I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

COMMENTS:

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

SHEET 3
A1

Page No. 50 of 74

Manufacturer Consolidated Controls Serial No. SHEET 1 OF 1

Model No.

100	5.000	4.000	1.998	2.002			
75	4.000	3.000	0.998	1.002			
50	3.000	2.000					
25	2.000	1.000					
0	1.000						

NO.	TEST EQUIPMENT MODEL NO.	CALIBRATION DUE DATE

COMMENTS:

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

DATA SHEET 3 SHEET 1 OF 1

Instr. No. N/A Location A1 Serial No. _____

Description Analog Isolator 1 Manufacturer Consolidated Controls Model No. _____

NOTES: N/A

	INPUT	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
%	V DC	V DC	V DC	V DC	V DC	V DC
0	1.000	1.000	0.998	1.002		
25	2.000	2.000	1.998	2.002		
50	3.000	3.000	2.998	3.002		
75	4.000	4.000	3.998	4.002		
100	5.000	5.000	4.998	5.002		
75	4.000	4.000	3.998	4.002		
50	3.000	3.000	2.998	3.002		
25	2.000	2.000	1.998	2.002		
0	1.000	1.000	0.998	1.002		

COMMENTS:

TEST EQUIPMENT

I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

DATA SHEET 4 SHEET 1 OF 1

Instr. No. N/A Location A1 Serial No. _____

Description AC Transmitter 1 Manufacturer Consolidated Controls Model No. _____

NOTES: N/A

	INPUT	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
%	V AC	V DC	V DC	V DC	V DC	V DC
0	0.0	1.000	0.992	1.008		
25	37.5	2.000	1.992	2.008		
50	75.0	3.000	2.992	3.008		
75	112.5	4.000	3.992	4.008		
100	150.0	5.000	4.992	5.008		
75	112.5	4.000	3.992	4.008		
50	75.0	3.000	2.992	3.008		
25	37.5	2.000	1.992	2.008		
0	0.0	1.000	0.992	1.008		

TEST EQUIPMENT

I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

COMMENTS:

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

DATA SHEET 5 SHEET 1 OF 1

Instr. No. N/A Location A2 Serial No. ____

Description Analog Isolator 2 Manufacturer Consolidated Controls Model No. ____

NOTES: N/A

	INPUT	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
%	V DC	V DC	V DC	V DC	V DC	V DC
0	1.000	1.000	0.998	1.002		
25	2.000	2.000	1.998	2.002		
50	3.000	3.000	2.998	3.002		
75	4.000	4.000	3.998	4.002		
100	5.000	5.000	4.998	5.002		
75	4.000	4.000	3.998	4.002		
50	3.000	3.000	2.998	3.002		
25	2.000	2.000	1.998	2.002		
0	1.000	1.000	0.998	1.002		

COMMENTS:

TEST EQUIPMENT

I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

DATA SHEET 6 SHEET 1 OF 1

Instr. No. N/A Location A2 Serial No. _____

Description AC Transmitter 2 Manufacturer Consolidated Controls Model No. _____

NOTES: N/A

INPUT		EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
%	V AC	V DC	V DC	V DC	V DC	V DC
0	0.0	1.000	0.992	1.008		
25	37.5	2.000	1.992	2.008		
50	75.0	3.000	2.992	3.008		
75	112.5	4.000	3.992	4.008		
100	150.0	5.000	4.992	5.008		
75	112.5	4.000	3.992	4.008		
50	75.0	3.000	2.992	3.008		
25	37.5	2.000	1.992	2.008		
0	0.0	1.000	0.992	1.008		

COMMENTS:

TEST EQUIPMENT

I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

Procedure No. VECP 24614-1

Instr. No. N/A

Description Analog Isolator 3

Manufacturer Consolidated

Location DATA SHEET 7 A4

Revision

NOTES: N/A

INPUT	EXPECTED	LO LIMIT	AS FOUND	HI LIMIT	AS LEFT
0	1.000 V DC	0.998 V DC	1.002 V DC		V DC
25	2.000	1.998	2.002		
50	3.000	2.998	3.002		
75	4.000	3.998	4.002		
100	5.000	4.998	5.002		
125	6.000	5.998	6.002		

CALIBRATION DUE DATE

COMMENTS:

DATA SHEET 7 SHEET 1 OF 1

Instr. No. N/A Location A4 Serial No. _____

Description Analog Isolator 3 Manufacturer Consolidated Controls Model No. _____

NOTES: N/A

	INPUT	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
%	V DC	V DC	V DC	V DC	V DC	V DC
0	1.000	1.000	0.998	1.002		
25	2.000	2.000	1.998	2.002		
50	3.000	3.000	2.998	3.002		
75	4.000	4.000	3.998	4.002		
100	5.000	5.000	4.998	5.002		
75	4.000	4.000	3.998	4.002		
50	3.000	3.000	2.998	3.002		
25	2.000	2.000	1.998	2.002		
0	1.000	1.000	0.998	1.002		

COMMENTS:

TEST EQUIPMENT

I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

DATA SHEET 8 SHEET 1 OF 1

Instr. No. N/A Location A4 Serial No. _____

Description AC Transmitter 3 Manufacturer Consolidated Controls Model No. _____

NOTES: N/A

	INPUT	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
%	V AC	V DC	V DC	V DC	V DC	V DC
0	0.0	1.000	0.992	1.008		
25	37.5	2.000	1.992	2.008		
50	75.0	3.000	2.992	3.008		
75	112.5	4.000	3.992	4.008		
100	150.0	5.000	4.992	5.008		
75	112.5	4.000	3.992	4.008		
50	75.0	3.000	2.992	3.008		
25	37.5	2.000	1.992	2.008		
0	0.0	1.000	0.992	1.008		

COMMENTS:

TEST EQUIPMENT

I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

DATA SHEET 9 SHEET 1 OF 1

Instr. No. N/A Location A5 Serial No. _____

Description Analog Isolator 4 Manufacturer Consolidated Controls Model No. _____

NOTES: N/A

	INPUT	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
%	V DC	V DC	V DC	V DC	V DC	V DC
0	1.000	1.000	0.998	1.002		
25	2.000	2.000	1.998	2.002		
50	3.000	3.000	2.998	3.002		
75	4.000	4.000	3.998	4.002		
100	5.000	5.000	4.998	5.002		
75	4.000	4.000	3.998	4.002		
50	3.000	3.000	2.998	3.002		
25	2.000	2.000	1.998	2.002		
0	1.000	1.000	0.998	1.002		

COMMENTS:

TEST EQUIPMENT

I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

DATA SHEET 10 SHEET 1 OF 1

Instr. No. N/A Location A5 Serial No. _____

Description AC Transmitter 4 Manufacturer Consolidated Controls Model No. _____

NOTES: N/A

INPUT		EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
%	V AC	V DC	V DC	V DC	V DC	V DC
0	0.0	1.000	0.992	1.008		
25	37.5	2.000	1.992	2.008		
50	75.0	3.000	2.992	3.008		
75	112.5	4.000	3.992	4.008		
100	150.0	5.000	4.992	5.008		
75	112.5	4.000	3.992	4.008		
50	75.0	3.000	2.992	3.008		
25	37.5	2.000	1.992	2.008		
0	0.0	1.000	0.992	1.008		

TEST EQUIPMENT

I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

COMMENTS:

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

DATA SHEET 11 SHEET 1 OF 1

Inst. No. N/A Location A3-1 Serial No. _____

Description Bistable Manufacturer Condec Model No. _____

NOTES: N/A

SWITCH NO.	ACTION	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
A3-1	Setpoint	V DC	3.950	3.910	3.990		
	Reset	V DC	3.990	3.950	4.030		

COMMENTS

TEST EQUIPMENT		
I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: Date

REVIEWED BY: Date

APPROVED BY: Date

DATA SHEET 12 SHEET 1 OF 1

Inst. No. N/A Location A3-2 Serial No. _____

Description Bistable Manufacturer Condec Model No. _____

NOTES: N/A

SWITCH NO.	ACTION	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
A3-2	Setpoint	V DC	3.854	3.814	3.894		
	Reset	V DC	3.894	3.854	3.934		

COMMENTS

TEST EQUIPMENT		
I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: Date

REVIEWED BY: Date

APPROVED BY: Date

DATA SHEET 13 SHEET 1 OF 1

Inst. No. N/A Location A3-3 Serial No. _____

Description Bistable Manufacturer Condec Model No. _____

NOTES: N/A

SWITCH NO.	ACTION	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
A3-3	Setpoint	V DC	3.267	3.227	3.307		
	Reset	V DC	3.307	3.267	3.347		

COMMENTS

TEST EQUIPMENT		
I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: Date

REVIEWED BY: Date

APPROVED BY: Date

DATA SHEET 14 SHEET 1 OF 1

Inst. No. N/A Location A3-5 Serial No. _____

Description Bistable Manufacturer Condec Model No. _____

NOTES: N/A

SWITCH NO.	ACTION	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
A3-5	Setpoint	V DC	3.950	3.910	3.990		
	Reset	V DC	3.990	3.950	4.030		

COMMENTS:

TEST EQUIPMENT		
I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: Date

REVIEWED BY: Date

APPROVED BY: Date

DATA SHEET 15 SHEET 1 OF 1

Inst. No. N/A Location A3-6 Serial No. _____

Description Bistable Manufacturer Condec Model No. _____

NOTES: N/A

SWITCH NO.	ACTION	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
A3-6	Setpoint	V DC	3.854	3.814	3.894		
	Reset	V DC	3.894	3.854	3.934		

COMMENTS:

TEST EQUIPMENT		
I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: Date

REVIEWED BY: Date

APPROVED BY: Date

DATA SHEET 16 SHEET 1 OF 1

Inst. No. N/A Location A3-7 Serial No. _____

Description Bistable Manufacturer Condec Model No. _____

NOTES: N/A

SWITCH NO.	ACTION	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
A3-7	Setpoint	V DC	3.267	3.227	3.307		
	Reset	V DC	3.307	3.267	3.347		

COMMENTS:

TEST EQUIPMENT		
I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: Date

REVIEWED BY: Date

APPROVED BY: Date

DATA SHEET 17 SHEET 1 OF 1

Inst. No. N/A Location A3-9 Serial No. _____

Description Bistable Manufacturer Condec Model No. _____

NOTES: N/A

SWITCH NO.	ACTION	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
A3-9	Setpoint	V DC	3.950	3.910	3.990		
	Reset	V DC	3.990	3.950	4.030		

COMMENTS:

TEST EQUIPMENT

I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: Date

REVIEWED BY: Date

APPROVED BY: Date

DATA SHEET 18

SHEET 1 OF 1

Inst. No. N/A Location A3-10 Serial No. _____

Description Bistable Manufacturer Condec Model No. _____

NOTES: N/A

SWITCH NO.	ACTION	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
A3-10	Setpoint	V DC	3.854	3.814	3.894		
	Reset	V DC	3.894	3.854	3.934		

COMMENTS:

TEST EQUIPMENT

I.D. No.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: Date

REVIEWED BY: Date

APPROVED BY: Date

DATA SHEET 19 SHEET 1 OF 1

Inst. No. N/A Location A3-11 Serial No. _____

Description Bistable Manufacturer Condec Model No. _____

NOTES: K, A

SWITCH NO.	ACTION	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
A3-11	Setpoint	V DC	3.267	3.227	3.307		
	Reset	V DC	3.307	3.267	3.347		

COMMENTS:

TEST EQUIPMENT		
I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: Date

REVIEWED BY: Date

APPROVED BY: Date

DATA SHEET 20 SHEET 1 OF 1

Inst. No. N/A Location A3-13 Serial No. _____

Description Bistable Manufacturer Condec Model No. _____

NOTES: N/A

SWITCH NO.	ACTION	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
A3-13	Setpoint	V DC	3.950	3.910	3.990		
	Reset	V DC	3.990	3.950	4.030		

COMMENTS:

TEST EQUIPMENT		
I D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: Date

REVIEWED BY: Date

APPROVED BY: Date

DATA SHEET 21 SHEET 1 OF 1

Inst. No. N/A Location A3-14 Serial No. _____

Description Bistable Manufacturer Condec Model No. _____

NOTES: N/A

SWITCH NO.	ACTION	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
A3-14	Setpoint	V DC	3.854	3.814	3.894		
	Reset	V DC	3.894	3.854	3.934		

COMMENTS:

TEST EQUIPMENT		
I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: Date

REVIEWED BY: Date

APPROVED BY: Date

DATA SHEET 22 SHEET 1 OF 1

Inst. No. N/A Location A3-15 Serial No. _____

Description Bistable Manufacturer Condec Model No. _____

NOTES: N/A

SWITCH NO.	ACTION	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
A3-15	Setpoint	V DC	3.267	3.227	3.307		
	Reset	V DC	3.307	3.267	3.347		

COMMENTS:

TEST EQUIPMENT		
I.D. NO.	MODEL NO.	CALIBRATION DUE DATE

PERFORMED BY: Date

REVIEWED BY: Date

APPROVED BY: Date

Sheet 1 of 1

CALCULATION SHEET

Show all calculations performed during course of this procedure in the space below.

Completed by: _____ Date _____

Reviewed by: _____ Date _____

Approved by: _____ Date _____

CHECKLIST SHEET 1 OF 3

3.1 Shift Supervisor Authorization

_____ _____
Signature Date

3.2 Reactor Operator (RO) Notified

_____ _____
Signature Date

Step Verification

Step/Substep		Initial
3.5	Prerequisites met	_____
4.1.1	Train A annunciators not ILLUMINATED	_____
4.2.1.12	ALB37A04 ILLUMINATED	_____
4.2.1.13	Bistables reset	_____
4.2.1.23	Bistables reset	_____
4.2.1.33	Bistables reset	_____
4.2.1.43	Bistable reset	_____
4.2.1.48	QC Notified	_____
4.2.2.10	ALB37A04 ILLUMINATED	_____
4.2.2.11	Bistables reset	_____
4.2.2.21	Bistables reset	_____
4.2.2.31	Bistables reset	_____
4.2.2.41	Bistables reset	_____
4.2.3.1	Links open 1BA0300 AJ 4 AJ 5	_____ _____
4.2.3.1	Independent Verification	_____
4.2.3.6	QC Notified	_____
4.2.4.4	QC Notified	_____
4.2.4.9	Bistables reset	_____
4.2.5.1	Links open 1BA0300 AJ 6 AJ 7	_____ _____
4.2.5.1	Independent Verification	_____
4.2.5.6	QC Notified	_____
4.2.6.4	QC Notified	_____
4.2.6.9	Bistables reset	_____
4.2.7.1	Links open 1BA0302 AJ 7 AJ 8	_____ _____
4.2.7.1	Independent Verification	_____
4.2.7.6	QC Notified	_____
4.2.8.4	QC Notified	_____
4.2.8.9	Bistables reset	_____
4.2.9.1	Links open 1BA0302 AJ 9 AJ 10	_____ _____
4.2.9.1	Independent Verification	_____
4.2.9.6	QC Notified	_____
4.2.10.4	QC Notified	_____
4.2.10.9	Bistable reset	_____
4.2.11.6	QC Notified	_____
4.2.12.4	QC Notified	_____
4.2.13.4	QC Notified	_____
4.2.13.10	Bistables reset	_____
4.2.14.6	QC Notified	_____

CHECKLIST SHEET 2 OF 3

Step Verification

Step/Substep		Initial
4.2.15.4	QC Notified	
4.2.16.4	QC Notified	
4.2.16.10	Bistables reset	
4.2.17.6	QC Notified	
4.2.18.4	QC Notified	
4.2.19.4	QC Notified	
4.2.19.10	Bistables reset	
4.2.20.6	QC Notified	
4.2.21.4	QC Notified	
4.2.22.4	QC Notified	
4.2.22.10	Bistables reset	
4.2.23.1	QC Notified	
4.3.1	Test equipment removed	
4.3.2	Bistables reset as follows:	
	A3-1	
	A3-2	
	A3-3	
	A3-5	
	A3-6	
	A3-7	
	A3-9	
	A3-10	
	A3-11	
	A3-13	
	A3-14	
	A3-15	
4.3.3	"Operate/Test" switches in "Operate" position	
	A1	
	A2	
	A4	
	A5	
4.3.4	Links closed as follows:	
	a. 1BA0302	
	AJ 7	
	AJ 8	
	AJ 9	
	AJ 10	
	b. 1BA0300	
	AJ 4	
	AJ 5	
	AJ 6	
	AJ 7	
4.3.5	AT1 continues to cycle	
4.3.6	ALB3704 EXTINGUISHED	
4.3.7	Reflect current plant conditions	

SHEET 3 OF 3

RESTORATION VERIFICATION -

	Initial		Initial
1. Following Bistables reset		2. Links closed	
A3-1		a. 1BA0302	
A3-2		AJ7	
A3-3		AJ8	
A3-5		AJ9	
A3-6		AJ10	
A3-7			
A3-9		b. 1BA0300	
A3-10		AJ4	
A3-11		AJ5	
A3-13		AJ6	
A3-14		AJ7	
A3-15			

Performed by: _____ Date: _____

Reviewed by: _____ Date: _____

Sheet 1 of 1

COMPLETION SHEET

PROCEDURE TITLE SAFETY FEATURES SEQUENCER TRAIN B ANALOG CHANNEL OPERATIONAL TEST AND CHANNEL CALIBRATION

TIME TEST STARTED _____ BY _____ DATE _____

DEFICIENCIES OCCURRED AND ACTIONS TAKEN

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

TEST RESULTS: ACCEPTABLE [] UNACCEPTABLE []

CHANNEL RESTORED TO SERVICE []

CHANNEL COMMITTED TO REPAIR []

TEST COMPLETED BY _____ TIME _____ DATE _____

SHIFT SUPERVISOR NOTIFIED _____ _____ _____
Signature Time Date

REVIEWED BY: _____ DATE _____

APPROVED BY: _____ DATE _____

Southern Company Services, Inc
Post Office Box 2625
Birmingham, Alabama 35202
Telephone 205 870-6011

NRC
SON-P20

Southern Company Services
the southern electric system

W. C. Ramsey, Jr.
Project Engineering Manager—Vogtle

05-52-90

Plant Vogtle Units 1 & 2
Response to REA VG-9010
Loss of Decay Heat Removal
File: X7BD112 Log: SG-8011
Security Code: NC

Mr. J. P. Kane
Georgia Power Company
Inverness 40, 4th Floor
Birmingham, Ala.

Dear Mr. Kane,

Attached please find our response to the subject REA.

Attachment 1 provides our technical response and Attachment 2 provides engineering cost and schedule estimates for each item identified in the REA.

Per agreement with Mr. James Mintz of your organization, only engineering manhours are included in Attachment 2. Implementation cost estimates are not included. This was done to minimize the cost of developing this response. If you desire detailed implementation estimates for any of the items in the REA, we will be pleased to provide these under separate cover.

If you have any questions or require additional information, please contact James Bingham at extension 7127.

W. C. Ramsey, Manager
Nuclear Plant Support - Vogtle

W328
JRB/WRN/WCR/dl
Attachment *

xc: A. L. Mosbaugh *
C. R. Myer *
D. P. Wilson
J. W. Wheless
R. J. Gross
W. Nicholson *
NPS-B Reading Files
J. A. Bailey
S. Pietrzyk *
J. Lowery
R. D. Kies
J. Mintz *
GPC Reading Files *
NORMS *
W. C. Ramsey
D. K. Searcy
R. E. Patrick
S. K. Owen
J. Bingham *
NPS-B Files *
7-8011

ATTACHMENT 1

TECHNICAL RESPONSE TO

REA VG-9010

This response consists of three sections. Section I provides an evaluation of the four methods listed in Item 1 of the REA to measure Reactor Coolant System (RCS) level during mid-loop operation. Section II looks at meaningful Residual Heat Removal (RHR) system parameters which can be utilized to detect impending or actual loss of RHR function. Section III evaluates the merits of an intelligent man-machine interface to monitor Decay Heat Removal function during mid-loop operation.

Section I: Reactor Coolant System Level Measurement.

Mid-Loop Operation is a mode of operation typified by the following conditions. The RCS has been cooled and depressurized to Cold Shutdown (Mode 5) conditions. The inventory in the RCS must be reduced to allow maintenance or inspection of the Reactor Head, Steam Generators or Reactor Coolant Pump Seals. The level in the primary system is lowered to one foot above the midline of the hot and cold legs. At this water level the air/water interface is at close proximity to the RHR suction nozzles located on the hot legs of Loops 1 and 4, and care must be taken to avoid air entrainment into the RHR pump suction. Air ingestion by the RHR pump can cause loss of pump function and possible pump damage, therefore it is extremely important for the operator to ensure that the water level is at or above the midline of the hot legs.

The level measurement system currently used during RCS draining and mid-loop operation is described in plant procedures (References 1, 2, and 3) and is shown in the attached Figure 1. This system conrists of two temporary differential pressure transmitters connected to the RCS hot legs via the connections for instruments LX-1310 and LX-1320. The wide range transmitter has a span 96 inches water gage and the narrow range transmitter has a span of 30 inches water gage. The signals from the wide range and narrow range transmitters are used to provide indication on the Main Control Board. The signal from the narrow range transmitter is also used to provide a low level alarm on a Main Control Board Annunciator. Clear plastic "Tygon" tubing is installed between an RCS drain line and the pressurizer vent line. This tygon tubing serves as a sight glass for the RCS Loop 1 cold leg. The tygon tubing and the Main Control Board Indicators are comparison checked at regular intervals during RCS draining and mid-loop operation.

With the current system, several factors can be identified which can lead to inaccuracies in the level indication. Differential pressure transmitters sense head and as such are subject to density differences between the sensing line fill fluid and the density

of the process fluid. In addition, temperature gradients within the process and within the surrounding environment will have an effect on the accuracy of the measurement. Static pressure changes will have no effect on the current configurations as the transmitters also sense the pressure in the pressurizer (and thus the hot leg air space pressure) and subtract this from the pressure sensed from the water space in the hot leg. The tygon tube is also a head sensing measurement device and suffers from density induced inaccuracies. Parallax error in reading the meniscus of the fluid in the tube can also cause measurement inaccuracies in the tygon tube. Because of the RCS drain line location used for sensing, the tygon tube shows cold leg level which may not be exactly the hot leg level under certain conditions, such as cold leg pressurization due to RHR system air ingestion.

Measuring level using large displacement head sensors, such as the tygon tube or a sight glass (option 1(b) of the REA), or a thermal dispersion level transmitter (option 1(c) of the REA) has an inherent drawback in that due to the piping runs necessary to satisfy ALARA concerns, time lags are built into the system. Time lags will also occur if the core becomes hydraulically dynamic (such as from boiling). This will tend to isolate the cold legs from the hot legs. These time delays will tend to reduce the time in which the operator can respond to decreases in the RCS level.

Measuring level on the hot legs using the differential pressure transmitters (option 1(a) of the REA) or using the ultrasonic level transmitter (option 1(d) of the REA) is impacted by the formation of vortices at the RHR pump suction nozzles. The vortices will cause erratic and erroneous level indications.

Because the operating range is small (within a few feet), it is extremely important that the reactor operator understand the limitations of particular level measurement system used and have confidence in the indications. Here, the sight glass or tygon tube shows its merits as a positive indication of level. Boiling in the core (and subsequent hydraulic isolation of the hot and cold legs) is not probable prior to a loss of RHR system function. The sight glass or tygon tube will not, however, indicate the presence of vortexing in the hot legs. Since differential pressure is used in a wide variety of level measurement applications throughout the plant, the operators are very familiar with the limitations of this type of measurement. An uncertainty analysis should be performed for these loops similar to Technical Specification indicator loops to establish the expected measurement inaccuracies. The thermal dispersion type level transmitter will have merits similar to the sight glass and can in fact

be incorporated into a configuration with a sight glass. The ultrasonic level transmitter is the most complex of the four options and is likely to find some operator concern over accuracy based on past operational problems with an ultrasonic level measurement device in the Back-flushable Filter System (BFS). The ultrasonic level measurement system being considered for this application does not have a configuration which would lead to problems similar to those associated with the BFS.

It appears from our evaluation that all four options are technically feasible. The differential pressure transmitters (option 1(a)) and the tygon tube (described in Reference 3) offer the least impact to existing procedures and plant hardware. In reference 4, section 3.1.2.1, the NRC staff states, "...ordinary plastic tubing [tygon] does not meet our concept of reliable instrumentation, and its use may not be accepted as a component in instrumentation systems." We concur with the staff position and recommend that a sight glass (option 1(b)) be used instead. We find that the separate hot leg taps for the differential pressure transmitters (one on Loop 1 and one on Loop 4) meet the intent of independence as described in Reference 4. Options 1(c) and 1(d) do not appear to have sufficient technical merits to justify their use on Plant Vogtle.

Section II: RHR System Performance Monitoring

Air ingestion in the RHR pumps can cause erratic pump behavior, loss of capacity, loss of flow and ultimately loss of RCS cooling with the potential for fuel damage and release of radioactivity.

The relative functional strengths of various RHR system parameters can be described as follows:

Pump motor current: This parameter is a very strong indicator of air entrainment in the pump. This parameter is particularly useful when trended due to the dynamic nature of instantaneous motor current readings. Indication and trending of RHR pump motor current is not available at the present time in the Main Control Room.

Pump noise: This parameter can be measured by acoustically reading the cavitation processes occurring inside the pump casing. This can be done fairly easily by mounting acoustic transducers on the pump casing or support structure. This parameter is also a strong indication of air entrainment in the system.

Pump suction and discharge pressure magnitude and flowrate: The magnitude of these parameters is only a weak indication of air entrainment; however, the time history of these parameters can provide a moderately strong indication that air entrainment has occurred. Pump suction pressure indication is currently only available on local pressure gages in the pump rooms. Pump discharge pressure and flowrate are available in the Main Control Room and are currently trended on the ERF Computer during RCS draining and mid-loop operation per Reference 1.

Unfortunately, the parameters listed above are only sufficient to indicate the presence of air already in the system. A system to detect the approach to conditions which are favorable to entraining air in the RHR system requires more than just these parameters, and will be discussed in the next section.

Of these parameters, it is noted that pump motor current (which provides one of the strongest indications of air ingestion) is not currently available in the Main Control Room. We feel it would be prudent engineering design to add the capability to monitor and trend this parameter on the ERF Computer. The motor current could then be trended alongside pump discharge pressure and flowrate measurements. The trends of these three parameters would be sufficient to alert the operator to take appropriate action in accordance with plant procedures (see Reference 5). We feel that pump noise monitoring and pump suction pressure indications are secondary indications and are not required to adequately monitor the system performance.

Section III: Decay Heat Removal Monitoring System (DHRMS).

This system is envisioned to consist of a man-machine interface with the capability to take several parameters associated with mid-loop operation and provide the operator with intelligent information regarding impending or actual loss of RHR system function. The primary purpose would be to alert the operator to take corrective action prior to significant air ingestion.

The DHRMS should provide additional time for operator action which will result in a decrease in the potential for loss of RHR transients, improved operator control of the primary system during draining and mid-loop operation and improved recovery from loss of RHR transients.

The improved and more consistent information displays may well lead to better operator trust of the instrumentation. The DHRMS can also provide historical trending for post-analysis of mid-loop transients.

The parameters that we recommend for inclusion in the DHRMS are RCS temperature, RCS level, RHR pump motor current, RHR pump discharge pressure and RHR system flowrate.

The development of the DHRMS can take many forms. The most cost effect approach seems to be to purchase functional algorithms which Westinghouse has developed for analyzing impending loss of RHR and implement these algorithms on the ERF Computer System. The software development should most probably be performed by the Georgia Power Company Engineering and Construction Services Department, which developed the ERF Computer operating system. As demonstrated on past software upgrades, this group this very qualified to develop the DHRMS. The DHRMS should be designed to be functional only during Mode 5 and only when requested by the Unit Shift Supervisor.

We feel that the DHRMS is a very useful plant upgrade, however, we do not feel that the implementation of this system is required at this time to meet technical or regulatory requirements. We feel it might be beneficial to model this type of system on the Plant Vogtle simulator on a trial basis in order to refine the specifications for the informational displays and alarms.

Section IV: Summary.

This section summarizes our response to this REA.

We feel that the most appropriate way to measure RCS level during draining and mid-loop operation is to implement item 1(a), differential pressure transmitters and item 1(b), sight glass at the earliest practical time. We do not recommend implementing item 1(c), thermal dispersion level transmitter or item 1(d), ultrasonic level transmitter at any time.

We recommend adding item 2(a), pump motor current indication and trending to the Main Control Room at the earliest practical time. We do not feel it is necessary to implement item 2(b), pump noise monitoring or item 2(c), pump suction pressure at any time.

We recommend that item 2(d), Decay Heat Removal Monitoring System (DHRMS) be implemented at some future date, perhaps after initial operator response testing utilizing the Plant Vogtle simulator.

References:

1. Plant Vogtle Procedure 13005-1, Reactor Coolant System Draining.

2. Plant Vogtle Procedure 23985-1, RCS Temporary Water Level System.

3. Plant Vogtle Procedure 54840-1, Installation and Removal Instructions for the RCS Temporary Level Indication Tygon Tube.

4. Nuclear Regulatory Commission, Generic Letter 88-17, Enclosure 2.

5. Plant Vogtle Abnormal Operating Procedure 18019-C, Loss of Residual Heat Removal.

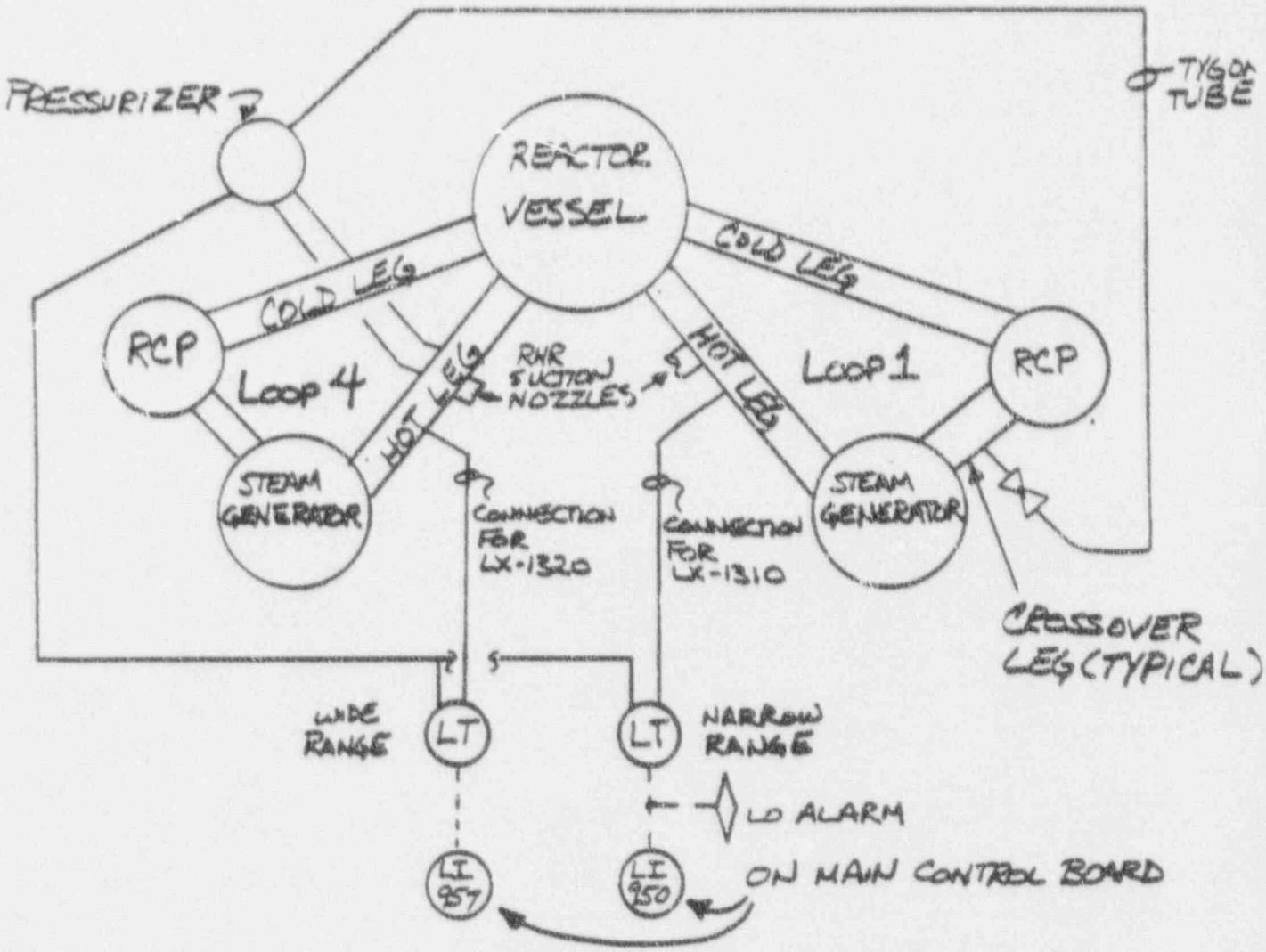


FIGURE 1 (LOOPS 2 AND 3 OMITTED)

CURRENTLY UTILIZED MID-LOOP LEVEL INSTRUMENTATION

ATTACHMENT 2

ENGINEERING ESTIMATES FOR

REA VG-9010

WORK AUTORIZATION REQUEST

VOGTLE UNIT 1
1989 OFF-SITE ENGINEERING
FILE: X7BB11

DATE : 5/24/89

FROM : W. C. RAMSEY

TO : S. H. CHESNUT

[X] INITIAL

[ ] CHANGE

OBK: GPC J. D. HATHAWAY, J. B. ALTMAN-BLAKE; SOE D. P. BROWN, D. K. BEARDY

DCR/REA	EWO/RCE	DESCRIPTION
VG-9010	3073-DU	NRC Generic Letter 88-17 Decay Heat Removal

WORK BY: [X] SOE [ ] GPC

CURRENT AUTHORIZATION	REQUESTED CHANGE	TOTAL REQUESTED AUTHORIZATION
$	$	$

DESCRIPTION OF WORK:

Determine cost and schedule for item 1 (a) of the subject REA. This item is summarized below:

Provide permanent mounting, conduit and tubing for temporary RCS Mid-loop Level Transmitters.

REQUESTED CHANGE MANHOURS:

CIVIL	274
ELECT	96
M&S	176
LABOR	432
OTHERS	4
TOTAL	982

WAS 5/24/89	RAP 5/30/89	QB7 5/31/89	—	APPROVED: PROJ. ENGR. MGR. DATE
SOE	SOE	SOE	SOE	

RESPONSE TO WORK AUTHORIZATION REQUEST

FROM : S. H. CHESNUT

TO : W. C. RAMSEY

[ ] APPROVED AS REQUESTED

[ ] APPROVED WITH FOLLOWING CHANGES:

CHANGE APPROVED $ _____ NEW TOTAL AUTHORIZATION: $ _____

[ ] ADDITIONAL JUSTIFICATION REQUIRED

[ ] DISAPPROVED

BUDGET FOR THIS WORK SHOULD BE ALLOCATED FROM: _____

COMMENTS:

CC:
SOE:
J. B. HATHAWAY
J. B. ALTMAN-BLAKE
ENGR FILE
SOE FILE
REA FILE
DCR FILE
CO-WORKER
SOE:
D. P. BROWN
D. K. BEARDY

SUBMITTED: _____ DATE _____

APPROVED: _____ DATE _____

ORIGINATOR

SCOPE SUMMARY

REFERENCE DOCUMENT (~~DGR~~/REA) VG-9010, ITEM 1(a) REV 0

REFERENCE RER(IF APPL) N/A

DATE INITIATED 5/24/89

SUMMARY DESCRIPTION THIS SCOPE SUMMARY APPLIES TO ITEM 1(a) OF THE SUBJECT REA. THIS ITEM INVOLVES ADDING PERMANENT SUPPORTS, TUBING AND CONDUIT IN THE CONTAINMENT FOR USE WITH THE TEMPORARY LEVEL TRANSMITTERS CURRENTLY USED DURING MID-LOOP OPERATION. THIS ITEM ALSO INCLUDES PERFORMING AN UNCERTAINTY ANALYSIS FOR THESE TRANSMITTER LOOPS.

ATTACHMENTS:

- [X] SCOPE DESCRIPTION
- [X] SCHEDULE DESCRIPTION
- [X] BUDGET SUMMARY

APPROVALS:

	SIGNATURE	DATE
LDEGS	WR Nichols	5/26/89
NPS-V MGR		

JH-147

SCOPE DESCRIPTION SUMMARY

I. SCOPE TYPE:

[X] INITIAL SCOPE

[ ] SCOPE REVISION

II. REFERENCE DOCUMENT (DCR/REA/RER):

REA VG-9010

III. DESCRIPTION: THIS SUMMARY DISCUSSES ITEM 1(a) OF THE SUBJECT REA: ADD PERMANENT SUPPORTS, TUBING AND CONDUIT FOR THE MID-LOOP TEMPORARY LEVEL TRANSMITTERS. PERFORM AN UNCERTAINTY ANALYSIS FOR THESE TRANSMITTER LOOPS.

IV. LIST OF DESIGN ACTIVITIES/WORK ITEMS:

[X] ATTACHED

[ ] N/A

V. LIST OF MATERIALS:

[X] ATTACHED

[ ] N/A

VI. SPECIAL ITEMS:

[ ] ATTACHED

[X] N/A

TMM34

LIST OF DESIGN ACTIVITIES

This item consists of providing two differential pressure transmitters located inside the Secondary Shield wall. These transmitters will require instrument supports. The instruments will not be installed during normal operation (due to radiation exposure) and therefore, the support design should allow for easy removal. The supports should be Seismic Category I, however the attachment of the instruments to the supports does not need to be Seismic Category I.

Permanent wiring will be provided between the location of the transmitters and the location of two of the accumulator level transmitters. A junction box will be provided for easy connection of the signals from the new transmitters to the loops for the accumulator level transmitters. None of the new wiring will penetrate Containment.

Permanent tubing will be installed between the RVLIS hot leg isolators (LX-1310 and LX-1320), the low pressure test port for instrument LT-459 and the 5-valve manifolds for the new transmitters. This tubing will be Project Class 424. The supports for this tubing must be Seismic Category I due to its location. The tubing design should incorporate adequate isolation of the Project Class 424 tubing from the Project Class 212 tubing connection points when not in mid-loop operation.

LIST OF MATERIALS

2 each	Differential Pressure Transmitters, Project Class 62J.
140 L.F.	3/8 inch O.D. tubing, seamless, 0.065 inch min. wall thickness, ASTM A-213, Gr. 304L or 316L, Project Class 424.
1 lot	Various tube fittings, 1500# compression and threaded, Project Class 424.
2 each	Instrument manifold valve, 5-way, Mark No. 5M15S1K.
23 each	Tubing supports.
2 each	Instrument supports.
18 each	Conduit supports.
100 L.F.	3/4 inch diameter, rigid steel conduit.
100 L.F.	Cable, Type CL67.
2 each	Pull boxes.
4 each	Junction boxes.

BUDGET SUMMARY

[X] INITIAL BUDGET [ ] BUDGET REVISION

REFERENCE DOCUMENT (DCR/REA/RER) REA VC-9010, ITEM 1(a)

REFERENCE CHANGE NOTICE NUMBER N/A

MANHOUR BUDGET CHANGES:

DISCIPLINE	EXISTING	NEW ESTIMATE	CHANGE
ELEC	N/A	96	N/A
MECH		432	
I & C		176	
P/D		274	
NUC		N/A	
EQ		N/A	
MGT/ADM		4	
TOTAL		982	

EXPENSE RELATED CHANGES (TRAVEL, COMPUTER CHARGES, ETC.):

EXPENSE TYPE	EXISTING	NEW ESTIMATE	CHANGE

x IMPLEMENTATION BUDGET CHANGES: CHANGE ($)

[ ] EQUIPMENT & MATERIALS

[ ] INSTALLATION LABOR

[ ] PLANT SUPPORT

x Completed by Project Cost Estimator Only

JH-141

COST ESTIMATE SUMMARY

RELATED DOCUMENT (~~DCR~~/REA) REA VG-9010 Item 1(a) PLANT VOGTLE-UNIT NO. 1&2

RER/ACTION ITEM NUMBER N/A

SCOPE DESCRIPTION: (ATTACHED)

TYPE OF ESTIMATE:

[ ] CONCEPTUAL ESTIMATE

[X] INITIAL COST ESTIMATE

[ ] REVISED COST ESTIMATE

BUDGET CATEGORY:

[ ] CAPITAL

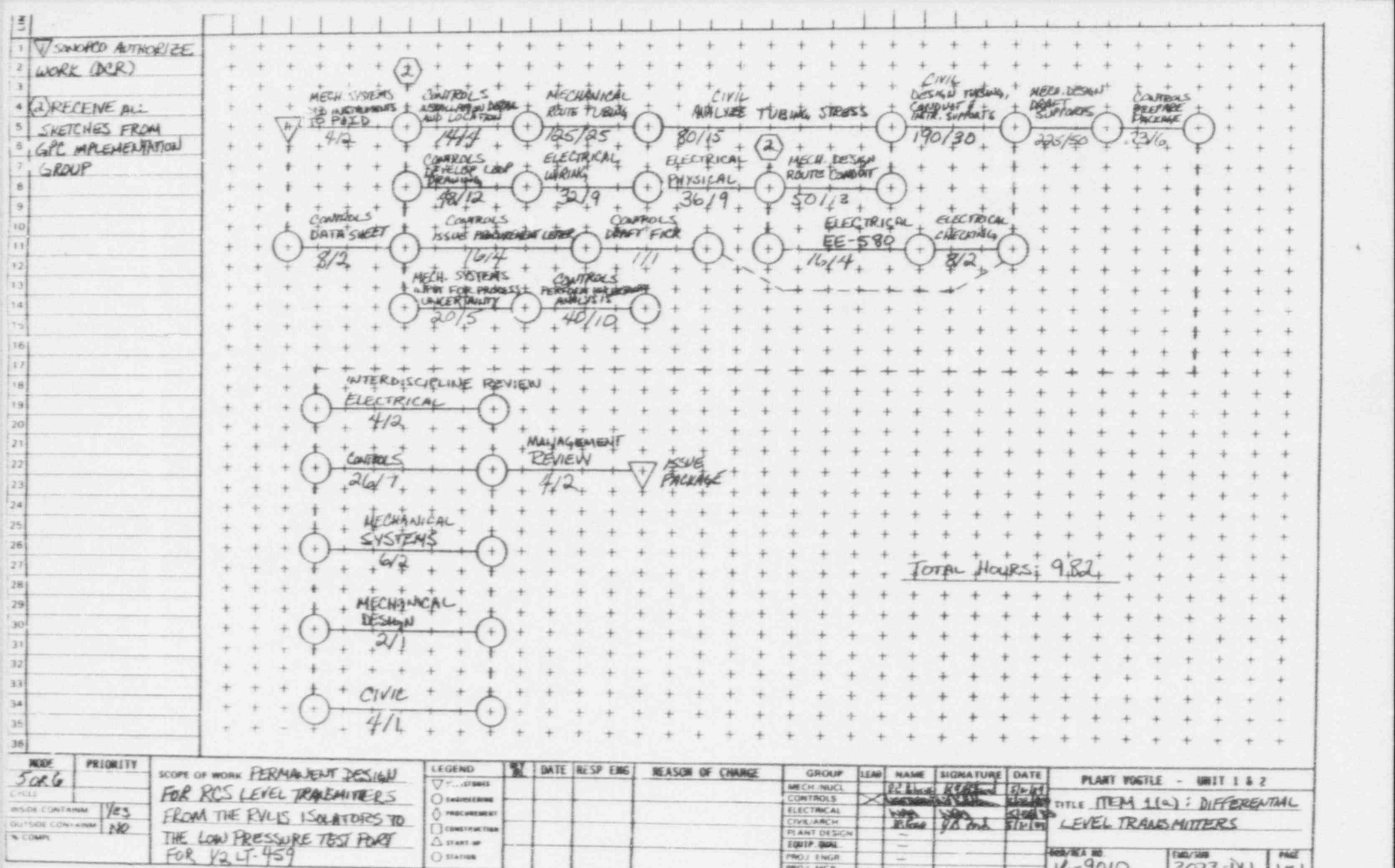
[ ] O&M

IMPLEMENTATION SCHEDULE _____ DESIGN DURATION _____

APPROVAL _____ DATE _____
NPS-V MANAGER

ITEM	DESCRIPTION	AMOUNT
1.	EQUIPMENT & MATERIALS	$
2.	INSTALLATION LABOR	$
3.	PLANT SUPPORT (GPC-ON SITE)	$
4.	SUBTOTAL (Total of Lines 1-3)	$
5.	GPC IMPLEMENTATION CONTINGENCY @ ___%	$
6.	NPS-V ENGINEERING (INCLUDES: DIRECTS $_____ INDIRECTS $_____)	$
7.	SUBTOTAL (Total of Lines 4-6)	$
8.	GPC OVERHEADS @ ___% of line 7 (CAPITAL ONLY)	$
9.	TOTAL PROJECT ESTIMATE (Total of Lines 7 & 8)	$

JH-124



MODE	PRIORITY
5 or 6	
CYCLE	
INSIDE CONTAINM	Yes
OUTSIDE CONTAINM	NO
% COMP.	

SCOPE OF WORK: PERMANENT DESIGN FOR RCS LEVEL TRANSMITTERS FROM THE RVLIS ISOLATORS TO THE LOW PRESSURE TEST PORT FOR V2 LT-459

LEGEND: ▽ ...STUBS; ○ ENGINEERING; ◇ PROCUREMENT; □ CONSTRUCTION; △ START-UP; ○ STATION

REV NO.	DATE	RESP ENG	REASON OF CHANGE

GROUP	LEAD	NAME	SIGNATURE	DATE
MECH./NUCL				
CONTROLS				
ELECTRICAL				
CIVIL/ARCH				
PLANT DESIGN		—		
EQUIP. QUAL.		—		
PROJ. ENGR		—		
PROJ. MGR		—		

PLANT FOSTLE - UNIT 1 & 2

TITLE: ITEM 1(a): DIFFERENTIAL LEVEL TRANSMITTERS

WORK REQ NO	ENG/JOB	PAGE
V2-9010	3073-DU	1 of 1

WORK AUTHORIZATION REQUEST

NUCLEAR PLANT SUPPORT - VOGTLE
UNIT NO. 1
FILE: X78811 LOR: _____

DATE: 5/24/89

[X] INITIAL REQUEST
[ ] CHANGE REQUEST

FROM : W. C. RAMSEY, JR.
TO : J. P. KANE

VG-9010	3073-DU	NRC Generic Letter 88-17 Decay Heat Removal

[X] WO [ ] WPC	$	$	$

Determine cost and schedule for item 1(b) of the subject REA. This item is summarized below:

Replace temporary tygon tubing with a permanent pipe/sight glass configuration to measure RCS level during mid-loop operation.

LEVEL	129
ELECT	4
MECH	93
DESIGN	170
PROJECT	4
TOTAL	400

WRA 5/25/89	REP 5/30/89	QA 5-31-89	—	

RESPONSE TO WORK AUTHORIZATION REQUEST

FROM : J. P. KANE
TO : W. C. RAMSEY, JR.

[ ]
[ ]

[ ]
[ ]

[ ]
[ ]

cc:
WRL
J. D. WOODARD
J. E. [illegible]
FILES

WRL
D. [illegible]
D. E. [illegible]
PROJECT FILE

SCOPE SUMMARY

REFERENCE DOCUMENT (~~DCR~~/REA) REA YG-9010, ITEM 1(b) REV 0

REFERENCE RER(IF APPL) N/A

DATE INITIATED 5/24/89

SUMMARY DESCRIPTION THIS SCOPE SUMMARY APPLIES TO ITEM 1(b) OF THE SUBJECT REA. THIS ITEM INVOLVES REPLACING THE TEMPORARY TYGON TUBING CURRENTLY USED IN DETERMING RCS LEVEL DURING MID-LOOP OPERATION WITH A PERMANENTLY PIPED SIGHT GLASS CONFIGURATION.

ATTACHMENTS:

- ⋈ SCOPE DESCRIPTION
- ⋈ SCHEDULE DESCRIPTION
- ⋈ BUDGET SUMMARY

APPROVALS:

	SIGNATURE	DATE
LDEGS	W R Nichols	5/26/89
NPS-V MGR		

SCOPE DESCRIPTION SUMMARY

I. SCOPE TYPE:

[X] INITIAL SCOPE

[ ] SCOPE REVISION

II. REFERENCE DOCUMENT (~~DCN~~/REA/~~DSR~~):

REA VG-9010

III. DESCRIPTION: THIS SUMMARY DISCUSSES ITEM 1(b) OF THE SUBJECT REA: REPLACE TEMPORARY TYGON TUBING WITH PERMANENT PIPING AND A PERMANENT SIGHT GLASS FOR USE DURING RCS MID-LOOP OPERATIONS.

IV. LIST OF DESIGN ACTIVITIES/WORK ITEMS:

[X] ATTACHED

[ ] N/A

V. LIST OF MATERIALS:

[X] ATTACHED

[ ] N/A

VI. SPECIAL ITEMS:

[ ] ATTACHED

[X] N/A

TMM34

LIST OF DESIGN ACTIVITIES

This option involves replacing the temporary tygon tubing level gage with permanent hard piping and a permanent level glass. The hard piping will run between the tygon tubing connections shown on P&ID's 1/2X4DB111 and 1/2X4DB112. The piping should be Project Class 424 and must allow for positive isolation from the 212 piping system. The piping and supports must meet Seismic Category II over I criteria. There is no electrical work required for this item.

LIST OF MATERIALS

1 each	Level Glass, Project Class 424.
110 L.F.	1 inch diameter pipe, seamless, sch.40S, ASTM A-312, Gr. TP304L, Project Class 424.
1 lot	Various pipe fittings, 3000#, Socket Weld, ASTM A-182, Gr. F304L, Project Class 424.
4 each	Flanges with gaskets, bolts and nuts, 150# RFSW, ASTM A-182, Gr. F316L, Project Class 424.
15 each	Miscellaneous pipe supports.

COST ESTIMATE SUMMARY

RELATED DOCUMENT (~~DGR~~/REA) REA VG-9010 ITEM 1(b) PLANT VOGTLE-UNIT NO. 1&2.

RER/ACTION ITEM NUMBER N/A

SCOPE DESCRIPTION: (ATTACHED)

TYPE OF ESTIMATE:

[ ] CONCEPTUAL ESTIMATE

[X] INITIAL COST ESTIMATE

[ ] REVISED COST ESTIMATE

BUDGET CATEGORY:

[ ] CAPITAL

[ ] O&M

IMPLEMENTATION SCHEDULE _____ DESIGN DURATION _____

APPROVAL _____ DATE _____
NPS-V MANAGER

ITEM	DESCRIPTION	AMOUNT
1.	EQUIPMENT & MATERIALS	$
2.	INSTALLATION LABOR	$
3.	PLANT SUPPORT (GPC-ON SITE)	$
4.	SUBTOTAL (Total of Lines 1-3)	$
5.	GPC IMPLEMENTATION CONTINGENCY @ ___ %	$
6.	NPS-V ENGINEERING (INCLUDES: DIRECTS $_____ INDIRECTS $_____)	$
7.	SUBTOTAL (Total of Lines 4-6)	$
8.	GPC OVERHEADS @ ___ % of line 7 (CAPITAL ONLY)	$
9.	TOTAL PROJECT ESTIMATE (Total of Lines 7 & 8)	$

JE-124

BUDGET SUMMARY

[X] INITIAL BUDGET [ ] BUDGET REVISION

REFERENCE DOCUMENT (DCR/REA/RER) REA VG-9010, ITEM 1(b)

REFERENCE CHANGE NOTICE NUMBER N/A

MANHOUR BUDGET CHANGES:

DISCIPLINE	EXISTING	NEW ESTIMATE	CHANGE
ELEC	N/A	4	N/A
MECH	N/A	170	N/A
I & C	N/A	93	N/A
P/D	N/A	129	N/A
NUC	N/A	N/A	N/A
EQ	N/A	N/A	N/A
MGT/ADM	N/A	4	N/A
TOTAL	N/A	400	N/A

EXPENSE RELATED CHANGES (TRAVEL, COMPUTER CHARGES, ETC.):

EXPENSE TYPE	EXISTING	NEW ESTIMATE	CHANGE

x IMPLEMENTATION BUDGET CHANGES:

	CHANGE ($)
[ ] EQUIPMENT & MATERIALS	
[ ] INSTALLATION LABOR	
[ ] PLANT SUPPORT	

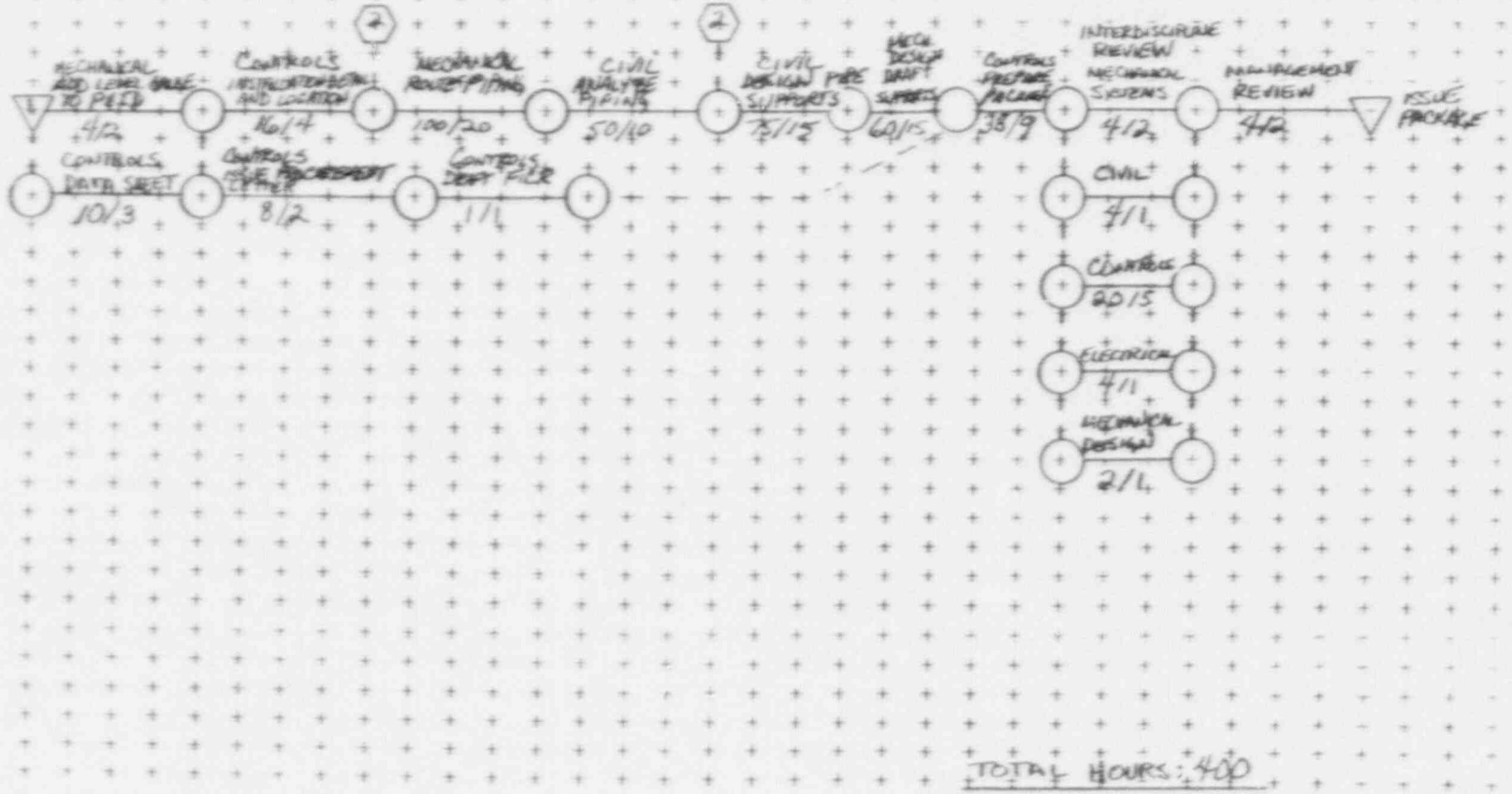
x Completed by Project Cost Estimator Only

JH-141

LEAD DISCIPLINE	RESPONSIBLE ENGINEER	EXTENSION	LOCATION
CONTROLS	J.R. BUNGHAM	3712	SITE

DESCRIPTION

1. ⓐ SGWOCD AUTHORIZE WORK (DCR)
2. ⓑ RECEIVE ALL SKETCHES FROM GPC IMPLEMENTATION GROUP



MODE	PRIORITY
5 OR 6	
INVOLVES CONTAINMENT	YES

SCOPE OF WORK: PERMANENT DESIGN FOR A LEVEL GAUGE (SIGHT GLASS) IN LIEU OF THE TYGON

LEGEND: ▽ MILESTONE; ○ ENGINEERING; ◇ PROCUREMENT; □ CONSTRUCTION

REV NO	DATE	RESP ENG	REASON OF CHANGE

GROUP	LEAD	NAME	SIGNATURE	DATE
MECH. NUCL.				
CONTROLS				
ELECTRICAL				
CIVIL/ARCH.				
PLANT DESIGN				

PLANT VOGTLE - UNIT 1 & 2

TITLE: ITEM 1(b) PERMANENT SITE GLASS

WORK AUTHORIZATION REQUEST

NUCLEAR PLANT SUPPORT - VOGTLE
UNIT NO. 1
FILE: X78B11 LDR: _____

DATE: 5/24/89

[X] INITIAL REQUEST
[ ] CHANGE REQUEST

FROM: N. C. RAMSEY, JR.
TO : J. P. KANE

VG-9010	3073-DU	NRC Generic Letter 88-17 Decay Heat Removal
[X] NEW [ ] EXP	$ N/A	$ N/A

DESCRIPTION OF WORK:

Determine cost and schedule for item 1 of the subject REA. This item is summarized below:

Add two thermal dispersion type level transmitters to measure RCS level during mid-loop operations.

CIVIL	418
E&I	98
NSS	142
BOP	528
OPERS	4
TOTAL	1,190

[illegible] 5/25/89	REP 5/30/89	[illegible] 5/31/89	—	APPROVED: _____ DATE: _____

RESPONSE TO WORK AUTHORIZATION REQUEST

FROM: J. P. KANE
TO : N. C. RAMSEY, JR.

[ ] APPROVED AS REQUESTED
[ ] APPROVED WITH FOLLOWING MODIFICATIONS:

APPROVED CHANGE $: _____ NEW TOTAL APPROPRIATION $: _____

[ ] ADDITIONAL JUSTIFICATION REQUIRED
[ ] DISAPPROVED

BUDGET FOR THIS WORK SHOULD BE ALLOCATED FROM: _____

COMMENTS:

CC:
E&I
J. A. BUCKNER
J. E. APPLEGATE
[illegible]

NSS
A. WILSON
A. L. SOBOLEWSKI
PROJECT FILE

DIRECTED: _____ DATE: _____

APPROVED: _____ DATE: _____

SCOPE SUMMARY

REFERENCE DOCUMENT (~~DCR~~/REA) REA VG-9010, ITEM 1(c) REV 0

REFERENCE RER(IF APPL) N/A

DATE INITIATED 5/24/89

SUMMARY DESCRIPTION THIS SCOPE SUMMARY APPLIES TO ITEM 1(c) OF THE SUBJECT REA. THIS ITEM INVOLVES ADDING TWO THERMAL DISPERSION TYPE LEVEL TRANSMITTERS TO MEASURE RCS LEVEL DURING MID-LOOP OPERATIONS.

ATTACHMENTS:

- [X] SCOPE DESCRIPTION
- [X] SCHEDULE DESCRIPTION
- [X] BUDGET SUMMARY

APPROVALS:

	SIGNATURE	DATE
LDEGS	W.R. Nielsen	5/25/89
NPS-V MGR		

JH-147

SCOPE DESCRIPTION SUMMARY

I. SCOPE TYPE:

[X] INITIAL SCOPE

[ ] SCOPE REVISION

II. REFERENCE DOCUMENT (DCR/REA/RER):

REA VG-9010

III. DESCRIPTION: THIS SUMMARY DISCUSSES ITEM 1(C) OF THE SUBJECT REA: ADD TWO THERMAL DISPERSION TYPE LEVEL TRANSMITTERS TO MEASURE RCS LEVEL DURING MID-LOOP OPERATIONS.

IV. LIST OF DESIGN ACTIVITIES/WORK ITEMS:

[X] ATTACHED

[ ] N/A

V. LIST OF MATERIALS:

[X] ATTACHED

[ ] N/A

VI. SPECIAL ITEMS:

VENDOR LITERATURE FOR THERMAL DISPERSION TYPE LEVEL TRANSMITTERS.

[X] ATTACHED

[ ] N/A

LIST OF DESIGN ACTIVITIES

This option involves adding 3/4 inch O.D. tubing from two of the RCS drain lines to the pressurizer vent line. Installed in these lines will be Fluid Components Inc. CL-86 model thermal dispersion level transmitters. Cable and conduit will be provided to router the signal from these two devices to the accumulator level transmitters. The tubing should be Project Class 424 with adequate isolation from the Project Class 212 mainline piping. The piping and support system must meet Seismic Category II over I criteria. The level transmitters will be installed in 2 inch piping as shown on the e attached vendor information sheets.

LIST OF MATERIALS

2 each	CL-86 Continuous Level Monitoring System, Project Class 424/62J.
2 each	Sight glass for calibration of CL-86.
280 L.F.	3/4 inch O.D. tubing, seamless, 0.065 inch wall thickness min., ASTM A-213, Gr. 304L or 316L, Project Class 424.
6 L.F.	2 inch diameter pipe, seamless, sch.40S, ASTM A-312, Gr. TP304L, Project Class 424.
1 lot	Various tube fittings, 1500#, compression or threaded, Project Class 424.
2 each	Flanges with gaskets, bolts and nuts, 600# RFSW, ASTM A-182, Gr. F316L, Project Class 424.
40 each	Miscellaneous pipe supports.

LIST OF MATERIALS (cont.)

18 each Conduit supports.

2 each Junction boxes.

100 L.F. 3/4 inch diameter rigid steel conduit.

100 L.F. Cable, Type CL67.

FCI Nuclear Generator

October 1988 | Nuclear Power Industry Newsletter | Issue IX

The FCI CL86 Thermal Dispersion Continuous Level Sensor for RCS Mid-Loop Operation

In response to Generic Letter 87-12 and NRC Guidance on RCS Mid-Loop Operation while using Residual Heat Removal or Decay Heat Removal Systems, FCI is offering the CL86 Continuous Level Sensor in two installation configurations to satisfy RCS Mid-Loop Level Gauging requirements. Both configurations will provide independent indication of Hot Leg level in the control room. Redundant installations of either CL86 configuration or one of each type will satisfy NRC Guidance.

The CL86 Sensor Assembly

The model CL86 Continuous Level Sensor utilizes FCI's field-proven, proprietary Thermal Dispersion Operating Principle and No-Moving-Parts Design.

All sensing and heating elements on the CL86 are contained within mineral insulated stainless steel sheathed cable. The cable can be as small as 0.03 inch (0.76 mm) but typically has an 0.06 to 0.093 inch (1.5 to 2.4 mm) outside diameter. The cable is drawn in lengths up to several hundred feet but is ordinarily purchased in 100-foot lengths. A heater wire and a platinum resistance temperature detector (RTD) wire are encased in the stainless steel sheath and electrically insulated from the sheath and from each other with magnesium or aluminum oxide.

Two such mineral insulated cables are mounted within a nominal 2-inch diameter supporting stilling well assembly, though both cables - 0.06 inch (1.5 mm) or less in diameter - can be mounted inside a 0.25 inch (6.35 mm) diameter tube if desired (See Figure 1).

In one of the cables, constant electrical power is applied to the heater so that in air, the heated RTD is nominally 100°F (38.7°C) hotter than the unheated cable. The electronic power supply also employs detector circuits to measure and compare the electrical resistance of the heated and reference RTDs. In addition, the electronic assembly employs signal conditioning devices to convert the differential resistance signals to 4 to 20 mA or other customary output signals.

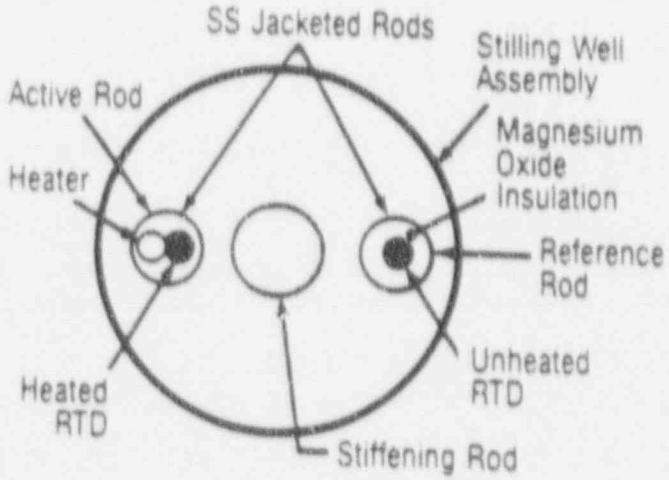
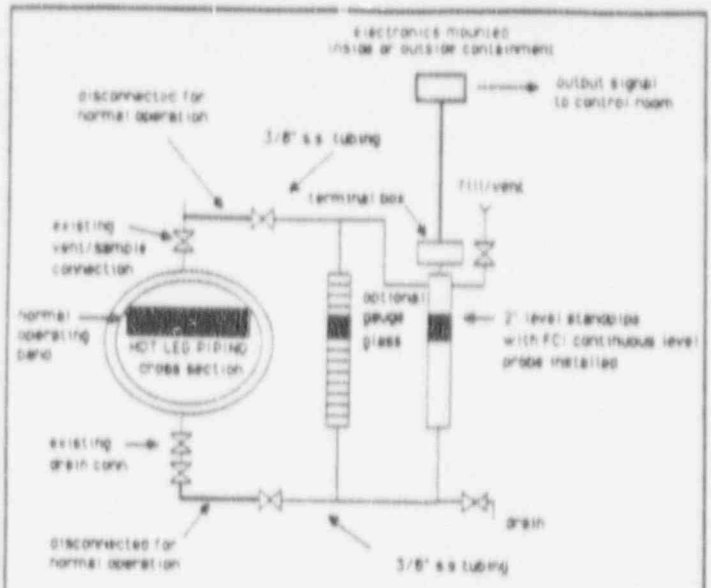


Figure 1. Cross sectional view, CL86 Sensor Assembly.

Thermal Dispersion Continuous Level Sensing

As noted above, the heated RTD is approximately 100°F (38.7°C) hotter than the reference RTD when in air or gas. If part of the sensing array is immersed in liquid, the liquid rapidly disperses the heat from the heater so that the two RTDs are at the same temperature (and resistance) over the immersed lengths. The change in resistance as a function of the immersed length is calibrated at the factory so the output signal shows a linear relationship with the amount of immersion. The simplified version described above is suitable for most applications. However, if the temperature and pressure of the vapor/gases and liquid media change, special compensators can be added as necessary to correct for these process variations.

FCI FLUID COMPONENTS INC.
1755 La Costa Meadows Dr., San Marcos, CA 92069 USA • (800)854-1993 • (619)744-6950 • TLX 695092 • FAX (619)744-6950



TYPICAL
MID-LOOP RCS LEVEL INSTALLATION
DETAIL

Ordinarily, the reference RTD applies sufficient compensation for the variable physical conditions of the process and added special compensators are not required.

In-Core Guide Tube Installation

FCI's Continuous Level Sensor is designed for installation in a spare guide tube which has the thimble removed and a vent path added to the pressurizer and/or reactor vessel head. This allows the media level in the reactor vessel to equalize with the media level in the guide tube. The level in the reactor vessel and guide tube is closely approximated to the level in the hot legs.

With this design, the level in the reactor vessel can be monitored during draindown operation from the seal table elevation to the lowest hot leg elevation. During this critical draining process, the control room operators will have continuous level indication displayed per plant design. The active length of the continuous level sensor is designed per customer specifications.

The connections on the FCI Continuous Level Sensor are designed to interface with existing seal table pressure connections. The vent isolation valves are closed during normal operation to isolate the vent lines. Calibration of the continuous level probe prior to draindown can be accomplished in place using a positive pressure to change the water level in the guide tube.

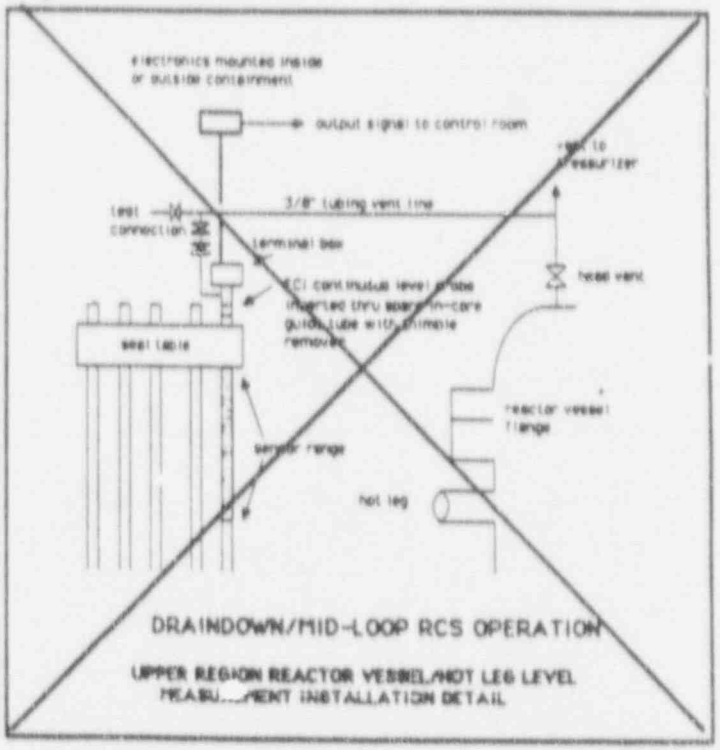
Advantages of In-Core Guide Tube Installations

- Wide range of level indication during draindown
- Ease of installation
- "Smart" performance
- Reduced radiation exposure (ALARA) on installation and operation
- Ease of calibration
- Accurate indication of level
- Reliable service-proven design
- 1E Safety-Related Qualification

Hot Leg Standpipe Installation

The FCI Continuous Level Sensor is designed to be installed in a standpipe configuration to provide level indication in the hot leg portion of the RCS. This design allows continuous level in the control room as well as local indication on the standpipe gauge glass. Functional and calibration testing on the sensor assembly and electronics can be performed using the gauge glass and drain and fill connections prior to draindown.

Vent lines to the pressurizer/reactor head are unnecessary with this installation configuration as the level in the standpipe will equalize with the hot leg level regardless of RCS pressure. During all operation modes other than draindown, the standpipe and gauge glass will be disconnected from the RCS loop.



DRAINDOWN/MID-LOOP RCS OPERATION

UPPER REGION REACTOR VESSEL/HOT LEG LEVEL MEASUREMENT INSTALLATION DETAIL

Advantages of Hot Leg Standpipe Installations

- Reliable local and remote indication
- Ease of calibration
- Accurate media level indication
- Bubbles and gas pocket errors eliminated
- "Smart" performance
- Reliable service-proven design
- IE Safety-Related Qualification

Call FCI today at **(800)854-1993** or **(619)744-6950** for more information on the FCI CL86 Continuous Level Sensor for Mid-Loop Level Gauging requirements.

FCI's CL86 is manufactured in accordance with one or more of the following patents: US patent Number 3,898,638 and patents pending.

Doc. No. 11219

BUDGET SUMMARY

[X] INITIAL BUDGET [ ] BUDGET REVISION

REFERENCE DOCUMENT (DCR/REA/RER) REA VG-9010, ITEM 1(c)

REFERENCE CHANGE NOTICE NUMBER N/A

MANHOUR BUDGET CHANGES:

DISCIPLINE	EXISTING	NEW ESTIMATE	CHANGE
ELEC	N/A	98	N/A
MECH		528	
I & C		142	
P/D		418	
NUC		N/A	
EQ		N/A	
MGT/ADM		4	
TOTAL		1190	

EXPENSE RELATED CHANGES (TRAVEL, COMPUTER CHARGES, ETC.):

EXPENSE TYPE	EXISTING	NEW ESTIMATE	CHANGE

x IMPLEMENTATION BUDGET CHANGES:

	CHANGE ($)
[ ] EQUIPMENT & MATERIALS	
[ ] INSTALLATION LABOR	
[ ] PLANT SUPPORT	

x Completed by Project Cost Estimator Only

JH-141

COST ESTIMATE SUMMARY

RELATED DOCUMENT (~~DCR~~/REA) REA VG-9010 ITEM 1(C) PLANT VOGTLE-UNIT NO. #2

RER/ACTION ITEM NUMBER N/A

SCOPE DESCRIPTION: (ATTACHED)

TYPE OF ESTIMATE:

[ ] CONCEPTUAL ESTIMATE

[X] INITIAL COST ESTIMATE

[ ] REVISED COST ESTIMATE

BUDGET CATEGORY:

[ ] CAPITAL

[ ] O&M

IMPLEMENTATION SCHEDULE _____ DESIGN DURATION _____

APPROVAL _____ DATE _____
NPS-V MANAGER

ITEM	DESCRIPTION	AMOUNT
1.	EQUIPMENT & MATERIALS	$
2.	INSTALLATION LABOR	$
3.	PLANT SUPPORT (GPC-ON SITE)	$
4.	SUBTOTAL (Total of Lines 1-3)	$
5.	GPC IMPLEMENTATION CONTINGENCY @ ___%	$
6.	NPS-V ENGINEERING (INCLUDES: DIRECTS $_____ INDIRECTS $_____)	$
7.	SUBTOTAL (Total of Lines 4-6)	$
8.	GPC OVERHEADS @ ___% of line 7 (CAPITAL ONLY)	$
9.	TOTAL PROJECT ESTIMATE (Total of Lines 7 & 8)	$

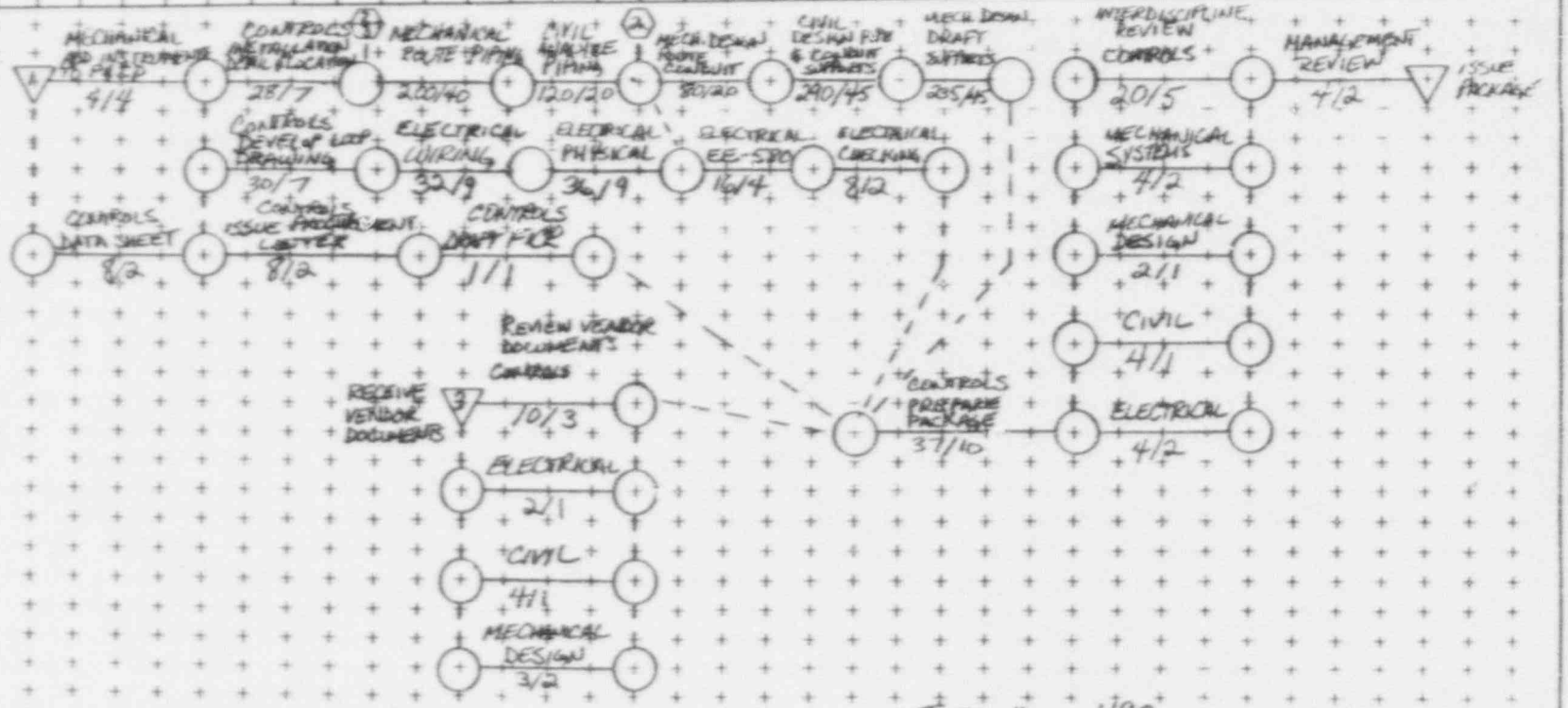
JH-124

LINE NO	DESCRIPTION	LEAD DISCIPLINE	RESPONSIBLE ENGINEER	EXTENSION	LOCATION
		CONTROLS	JIM BINGHAM	3712	SITE

1 ▽ SONOPCO AUTHORIZE WORK (NCR)

2 ② RECEIVE ALL SKETCHES FROM GPC IMPLEMENTATION GROUP

3 ▽ RECEIVE ALL VENDOR DRAWINGS AND DOCUMENTS



MODE	PRIORITY
5&6	

INSIDE CONTAINMENT: YES / NA

SCOPE OF WORK: PROVIDE A THERMAL DISPERSION LEVEL MEASUREMENT SYSTEM

LEGEND: ▽ MILESTONES; ○ ENGINEERING; ◇ PROCUREMENT; □ CONSTRUCTION

REV	DATE	RESP ENG	REASON OF CHANGE

GROUP	LEAD	NAME	SIGNATURE	DATE
MECH./NUCL		R.E. Pollard	R.E. Pollard	6-1-10
CONTROLS	X	[illegible]	[illegible]	5-31-10
ELECTRICAL		J.R. Gard	[illegible]	5-31-10
CIVIL/ARCH		[illegible]	[illegible]	5-31-10
PLANT DESIGN				

PLANT VOGTLE - UNIT 1 & 2

TITLE: ITEM 1(c): THERMAL DISPERSION CONTINUOUS LEVEL MEASUREMENT SYSTEM

WORK AUTORIZATION REQUEST

VOGTLE UNIT 1
1989 OFF-SITE ENGINEERING
FILE: X7B11

DATE: 5/24/89

FROM: W. C. RAMSEY

TO: S. H. CHESNUT

[X] INITIAL

[ ] CHANGE

GM: MPG - A. D. HAIZLIP
- A. S. ALPDOGAN
BOB: D. P. BROWN
D. K. BEARDY

DOC/REA	BWO/BLM	DESCRIPTION
VG-9010	3073-DU	NRC Generic Letter 88-17 Decay Heat Removal

WORK BY:	CLAIMANT AUTHORIZATION	REQUESTED CHANGE	TOTAL REQUESTED AUTHORIZATION
[X] BOB [ ] MPG	$	$	$

DESCRIPTION OF WORK

Determine cost and schedule for item 1 (d) of the subject REA. This item is summarized below:

Add Ultrasonic Level Transmitters to the RCS Hot Legs.

REQUESTED CHANGES APPROVED

CIVIL	118
ELECT	221
I&C	175
MECH	182
OTHERS	4
TOTAL	700

WRD	RCP			APPROVED
5/30/89	5/30/89	5-24-89	—	PROJ. MGR. MPG — DATE
MPG	MPG	MPG	MPG	

RESPONSE TO WORK AUTHORIZATION REQUEST

FROM: S. H. CHESNUT

TO: W. C. RAMSEY

[ ] APPROVED AS REQUESTED

[ ] APPROVED WITH FOLLOWING CHANGES:

CHANGE APPROVED: $ _____ NEW TOTAL AUTHORIZATION: $ _____

[ ] ADDITIONAL JUSTIFICATION REQUIRED

[ ] DISAPPROVED

BUDGET FOR THIS WORK SHOULD BE ALLOCATED FROM: _____

COMMENTS:

CC:
MPG
A. D. HAIZLIP
A. S. ALPDOGAN
ENGR FILE
ENG FILE
REA FILE
DCN FILE
NO-NAMES
BOB
D. P. BROWN
D. K. BEARDY

SUBMITTED: _____ DATE: _____

APPROVED: _____ DATE: _____

DISTRIBUTION:

SCOPE SUMMARY

REFERENCE DOCUMENT (~~SOR~~/REA) REA VG-9010, ITEM 1(d) REV 0

REFERENCE RER (IF APPL) N/A

DATE INITIATED 5/24/89

SUMMARY DESCRIPTION THIS SCOPE SUMMARY APPLIES TO ITEM 1(d) OF THE SUBJECT REA. THIS ITEM INVOLVES ADDING ULTRASONIC LEVEL TRANSMITTERS ON THE RCS HOT LEGS.

ATTACHMENTS:

- [X] SCOPE DESCRIPTION
- [X] SCHEDULE DESCRIPTION
- [X] BUDGET SUMMARY

APPROVALS:

	SIGNATURE	DATE
LDEGS	W.R. Nicholson	5/26/89
NPS-V MGR		

JH-147

SCOPE DESCRIPTION SUMMARY

I. SCOPE TYPE:

[X] INITIAL SCOPE
[ ] SCOPE REVISION

II. REFERENCE DOCUMENT (DCR/REA/RER):

REA VG-9010

III. DESCRIPTION: THIS SUMMARY DISCUSSES ITEM 1(d) OF THE SUBJECT REA: ADD ULTRASONIC LEVEL TRANSMITTERS TO THE RCS HOT LEGS.

IV. LIST OF DESIGN ACTIVITIES/WORK ITEMS:

[X] ATTACHED
[ ] N/A

V. LIST OF MATERIALS:

[X] ATTACHED
[ ] N/A

VI. SPECIAL ITEMS:

VENDOR LITERATURE

[X] ATTACHED
[ ] N/A

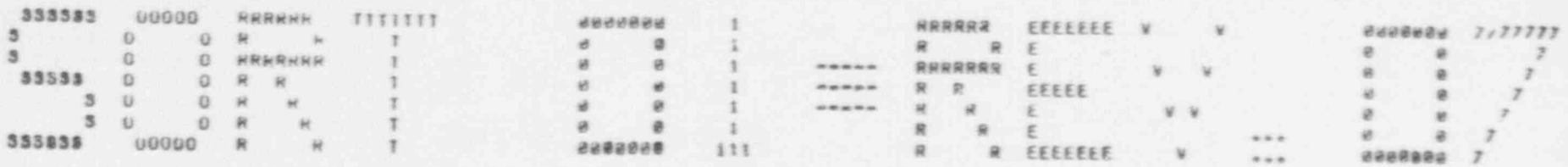
TMM34

LIST OF DESIGN ACTIVITIES

This would add strap-on ultasonic level transducers to the bottom of two of the RCS hot legs. The transducers are fed by a triaxial cable from a pre-amplifier assembly and a signal conditioner. The output of the signal conditioner (4 - 20 milliamps) will be routed to the accumulator level transmitters where it will be connected during mid-loop operation. The pre-amplifiers and signal conditioners will require Seismic Category I supports for Seismic Category II over I considerations. Due to radiation degradation, the pre-amplifiers and signal conditioners should either be mounted in a low radiation field or designed for easy removal prior to power operation of the NSSS.

LIST OF MATERIALS

2 each	Westinghouse Ultrasonic Level Measurement System, Project Class 61J.
150 L.F.	3/4 inch diameter rigid steel conduit.
100 L.F.	Cable, Type CL67.
100 L.F.	Cable, Tri-axial.
2 each	Junction boxes.
2 each	Pull boxes.
18 each	Conduit supports.
4 each	Instrument supports.



GEORGIA POWER COMPANY

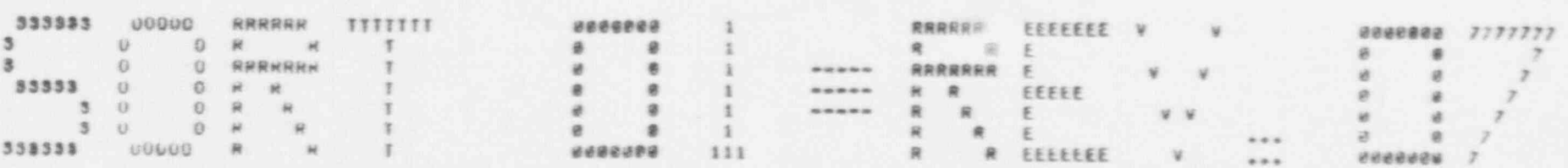
ENGINEERING & CONSTRUCTION SERVICES

05-53-90

VOGTLE UNIT 1 EMERGENCY RESPONSE FACILITIES INPUT LIST

REVISION 87.05 12/11/88

SORT 01 - ERF SYMBOL,ALPHA-NUMERIC SEQUENCE



REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG VAR	1.97 CLASS	INPUT VIA	SYSTEM	SPDS
	A7501	A2501	CONTAINMENT LEVEL 2 MOISTURE XDUCER: 4-20MA SCALE: 0 > 100 PERCENT	MTSM-2564	B 1383	FLD	NNS	--	-	MULT	1501	
	A7502	A2502	CONTAINMENT LEVEL B-AREA C MOISTURE XDUCER: 4-20MA SCALE: 0 > 100 PERCENT	MTSM-2614	B 1384	FLD	NNS	--	-	MULT	1501	
	A7503	A2503	CONTAINMENT LEVEL B-AREA D MOISTURE XDUCER: 4-20MA SCALE: 0 > 100 PERCENT	MTSM-2615	B 1385	FLD	NNS	--	-	MULT	1501	
	B9872	--	RCS BORON SAMPLE STATUS (1V=OFF,2V=ON) XDUCER: 0-5V SCALE: 0 > 5 VOLTS	LATER	B 1423	PASS	NNS	--	-	MUX	2702	
	B9873	--	RCS LIQUID PH SAMPLE STATUS (1V=OFF,2V=ON) XDUCER: 0-5V SCALE: 0 > 5 VOLTS	LATER	B 1424	PASS	NNS	--	-	MUX	2702	
	B9874	--	RCS DH2 SAMPLE STATUS (1V=OFF,2V=ON) XDUCER: 0-5V SCALE: 0 > 5 VOLTS	LATER	B 1425	PASS	NNS	--	-	MUX	2702	
*	B9875	--	RCS DO2 SAMPLE STATUS (1V=OFF,2V=ON) XDUCER: 0-5V SCALE: 0 > 5 VOLTS	LATER	B 1426	PASS	NNS	--	-	MUX	2702	
	B9876	--	RCS DO2 SAMPLE SIGNAL RANGE XDUCER: 0-5V SCALE: 0 > 5 VOLTS	LATER	B 1427	PASS	NNS	--	-	MUX	2702	
								(.5V=0>20 1V=0>200 1.5V=0>2000 2V=0>2E4)				
	B9877	--	RCS CHLORIDE SAMPLE STATUS (1V=OFF,2V=ON) XDUCER: 0-5V SCALE: 0 > 5 VOLTS	LATER	B 1428	PASS	NNS	--	-	MUX	2702	
	B9878	--	RCS CHLORIDE SAMPLE STATUS (1V=CALIB,2V=SAMPLE) XDUCER: 0-5V SCALE: 0 > 5 VOLTS	LATER	B 1429	PASS	NNS	--	-	MUX	2702	
	B9879	--	RCS CHLORIDE ANAL STATUS (1V=STANDBY,2V=START) XDUCER: 0-5V SCALE: 0 > 5 VOLTS	LATER	B 1430	PASS	NNS	--	-	MUX	2702	
	C7501	--	CONTAINMENT HYDROGEN CONCENTRATION-TRAIN A XDUCER: 4-20MA SCALE: 0 > 10 PERCENT	AIT-12979	B 1142	QPCP	I	5.2.06-0 01		RPU A2	1513	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	C7982	--	CONTAINMENT HYDROGEN CONCENTRATION-TRAIN B XDUCER: 4-20MA SCALE: 0 > 10 PERCENT	AIT-12980	B 1143	QPCP	II	5.2.06-D	B1 RPU B2	1513	X
	C9257	--	RCS SAMPLING BORON CONTENT XDUCER: 4-20MA SCALE: 0 > 6000 PPM	LATER	B 1148	PASS	NNS	6.2.01-C	C3 MUX	2702	
*	C9258	--	RCS SAMPLING CHLORIDE CONTENT XDUCER: 0-1V SCALE: 0 > 20 PPM	LATER	B 1149	PASS	NNS	6.2.01-C	C3 MUX	2702	
	C9259	--	RCS SAMPLING DISSOLVED HYDROGEN (DH2) XDUCER: 4-20MA SCALE: 0 > 2000 CC/KG	LATER	B 1150	PASS	NNS	6.2.01-C	C3 MUX	2702	
	C9260	--	RCS SAMPLING DISSOLVED OXYGEN (DO2) XDUCER: 4-20MA SCALE: 0 > 2.00E04 PPB	LATER	B 1151	PASS	NNS	6.2.01-C	C3 MUX	2702	
	C9886	--	CTB AIR HYDROGEN CONCENTRATION XDUCER: 4-20MA SCALE: 0 > 10 PCT VOL	LATER	B 1431	PASS	NNS	--	- MUX	2702	
*	C9881	--	CTB AIR OXYGEN CONCENTRATION XDUCER: 4-20MA SCALE: 0 > 30 PCT VOL	LATER	B 1432	PASS	NNS	--	- MUX	2702	
*	F5100	--	PLANT VENT SAMPLE FLOW XDUCER: 4-20MA SCALE: 3.20E03 > 1.60E05	FT-12835 SCFM	B 1441	PERMS	NNS	8.2.04	E2 MUX	1609	
	F8125	F0125	RCP 4 SEAL INJECTION WATER FLOW XDUCER: 0-10V SCALE: 0 > 20 GPM	FT-0142	M 1166	PCS	NNS	7.2.03-D	D2 MULT	1208	
	F5127	F0127	RCP 3 SEAL INJECTION WATER FLOW XDUCER: 0-10V SCALE: 0 > 20 GPM	FT-0143	M 1165	PCS	NNS	7.2.03-D	D2 MULT	1208	
	F8128	F0128	MAKEUP (CVCS) FLOW XDUCER: 0-10V SCALE: 0 > 200 GPM	FT-0121	M 1157	PCS	NNS	7.2.03-A	D2 MULT	1208	X
	F5129	F0129	RCP 2 SEAL INJECTION WATER FLOW XDUCER: 0-10V SCALE: 0 > 20 GPM	FT-0144	M 1164	PCS	NNS	7.2.03-D	D2 MULT	1208	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
*	F5131	F0131	RCP 1 SEAL INJECTION WATER FLOW XDUCER: 0-10V SCALE: 0 > 20 GPM	FT-0145	M 1163	PCS	NNS	7.2.03-D	D2 MULT	1208	
	F5134	F0134	LETDOWN HEAT EXCH OUTLET FLOW XDUCER: 0-10V SCALE: 0 > 200 GPM	FT-0132	M 1159	PCS	NNS	7.2.03-B	D2 MULT	1208	X
	F5400	F0400	PRIMARY COOLANT LOOP 1 FLOW (CH 1) XDUCER: 0-10V SCALE: 0 > 120 PERCENT	FT-0414	M 1251	PCS	NNS	--	- MULT	1201	
	F5403	F0403	SG1 FW FLOW XDUCER: 0-10V SCALE: 0 > 4000 KBH	FT-0510	M 1179	PCS	NNS	7.2.04-G	D2 MULT	1305	X
	F5404	F0404	SG1 FW FLOW XDUCER: 0-10V SCALE: 0 > 4000 KBH	FT-0511	M 1175	PCS	NNS	7.2.04-G	D2 MULT	1305	X
	F5405	F0405	SG1 STEAM LINE FLOW 1 XDUCER: 0-10V SCALE: 0 > 4000 KBH	FT-0512	M 1167	PCS	NNS	7.2.04-C	D2 MULT	1301	X
	F5406	F0406	SG1 STEAM LINE FLOW 2 XDUCER: 0-10V SCALE: 0 > 4000 KBH	FT-0513	M 1171	PCS	NNS	7.2.04-C	D2 MULT	1301	X
	F5421	F0421	PRIMARY COOLANT LOOP 2 FLOW (CH 2) XDUCER: 0-10V SCALE: 0 > 120 PERCENT	FT-0425	M 1252	PCS	NNS	--	- MULT	1201	
	F5423	F0423	SG2 FW FLOW XDUCER: 0-10V SCALE: 0 > 4000 KBH	FT-0520	M 1180	PCS	NNS	7.2.04-G	D2 MULT	1305	X
	F5424	F0424	SG2 FW FLOW XDUCER: 0-10V SCALE: 0 > 4000 KBH	FT-0521	M 1176	PCS	NNS	7.2.04-G	D2 MULT	1305	X
	F5425	F0425	SG2 STEAM LINE FLOW 1 XDUCER: 0-10V SCALE: 0 > 4000 KBH	FT-0522	M 1172	PCS	NNS	7.2.04-C	D2 MULT	1301	X
	F5426	F0426	SG2 STEAM LINE FLOW 2 XDUCER: 0-10V SCALE: 0 > 4000 KBH	FT-0523	M 1168	PCS	NNS	7.2.04-C	D2 MULT	1301	X

REV	EMF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	F5442	F0442	PRIMARY COOLANT LOOP 3 FLOW (CH 3) XDUCER: 0-10V SCALE: 0 > 120 PERCENT	FT-0436	M 1253	PCS	NNS	--	-	MULT	1201	
	F5443	F0443	SG3 FW FLOW XDUCER: 0-10V SCALE: 0 > 4800 KBH	FT-0530	M 1181	PCS	NNS	7.2.04-C	D2	MULT	1305	X
	F5444	F0444	SG3 FW FLOW XDUCER: 0-10V SCALE: 0 > 4800 KBH	FT-0531	M 1177	PCS	NNS	7.2.04-C	D2	MULT	1305	X
	F5445	F0445	SG3 STEAM LINE FLOW 1 XDUCER: 0-10V SCALE: 0 > 4800 KBH	FT-0532	M 1173	PCS	NNS	7.2.04-C	D2	MULT	1301	X
	F5446	F0446	SG3 STEAM LINE FLOW 2 XDUCER: 0-10V SCALE: 0 > 4800 KBH	FT-0533	M 1169	PCS	NNS	7.2.04-C	D2	MULT	1301	X
	F5460	F0460	PRIMARY COOLANT LOOP 4 FLOW (CH 4) XDUCER: 0-10V SCALE: 0 > 120 PERCENT	FT-0444	M 1254	PCS	NNS	--	-	MULT	1201	
	F5463	F0463	SG4 FW FLOW XDUCER: 0-10V SCALE: 0 > 4800 KBH	FT-0540	M 1182	PCS	NNS	7.2.04-C	D2	MULT	1305	X
	F5464	F0464	SG4 FW FLOW XDUCER: 0-10V SCALE: 0 > 4800 KBH	FT-0541	M 1178	PCS	NNS	7.2.04-C	D2	MULT	1305	X
	F5465	F0465	SG4 STEAM LINE FLOW 1 XDUCER: 0-10V SCALE: 0 > 4800 KBH	FT-0542	M 1170	PCS	NNS	7.2.04-C	D2	MULT	1301	X
	F5466	F0466	SG4 STEAM LINE FLOW 2 XDUCER: 0-10V SCALE: 0 > 4800 KBH	FT-0543	M 1174	PCS	NNS	7.2.04-C	D2	MULT	1301	X
	F5626	F0626	RHR TRAIN A COOLANT FLOW XDUCER: 0-10V SCALE: 0 > 5000 GPM	FT-0618	M 1219	PCS	NNS	7.2.10-C	D2	MULT	1205	X
	F5627	F0627	RHR TRAIN B COOLANT FLOW XDUCER: 0-10V SCALE: 0 > 5000 GPM	FT-0619	M 1220	PCS	NNS	7.2.10-C	D2	MULT	1205	X

REV	ERF SYMBOL	PHOTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	F5918	F0918	SAFETY INJECTION PUMP TRAIN A FLOW XDUCER: 0-10V SCALE: 0 > 800 GPM	FT-0918	M 1183	PCS	III	7.2.05-C	D2 RPU A3 1204		
	F5920	F0920	CHARGING PMPS FLOW TO BIT TANK XDUCER: 0-10V SCALE: 0 > 1000 GPM	FT-0917	M 1185	PCS	IV	7.2.03-A	D2 RPU B3 1204		
	F5922	F0922	SAFETY INJECTION PUMP TRAIN B FLOW XDUCER: 0-10V SCALE: 0 > 800 GPM	FT-0922	M 1184	PCS	II	7.2.05-C	D2 RPU B2 1204		
*	F6410	--	FT-0018 WASTE LIQUID EFFLUENT FLOW XDUCER: RS-232C SCALE: 0 > 2.25E02	FI-0018 GPM	M 1382	PERMS	-	--	- PERMS 1609 (PERMS DOC. SHOWS ORG. DEVICE OF FE-,NOT FT-)		
	F6411	--	FT-0021 STEAM GEN BLOWDOWN LIQUID FLOW XDUCER: RS-232C SCALE: 1.25E02 > 1.25E03	FT-0021 GPM	M 1383	PERMS	-	--	- PERMS 1609 (PERMS DOC. SHOWS ORG. DEVICE OF FE-,NOT FT-)		
*	F6415	--	AFT-0014 WGPB GAS DISCHARGE FLOW XDUCER: RS-232C SCALE: 2.00E-01 > 2.00E00	AFT-0014 SCFH	M 1386	PERMS	-	--	- PERMS 1902 (UNIT 1 INPUT ONLY;PERMS DOC. SHOWS FE-,NOT FT-)		
	F6417	--	FT-12442 PLANT VENT EFFLUENT LOW RANGE FLOW XDUCER: RS-232C SCALE: 0 > 3.00E05	FT-12442 SCFM	M 1229	PERMS	-	8.2.04	E2 PERMS 1609 (PERMS DOC. SHOWS ORG. DEVICE OF FE-,NOT FT-)		
	F6419	--	AFT-026 WASTE SOLIDIFICATION BLDG EFFLUENT FLOW XDUCER: RS-232C SCALE: 0 > 4.00E04	AFT-026 SCFM	M 1230	PERMS	-	--	- PERMS 1609 (UNIT 1 INPUT ONLY;PERMS DOC. SHOWS FE-,NOT FT-)		
	F6420	--	FT-2565 CONTAINMENT VENT EFFLUENT FLOW XDUCER: RS-232C SCALE: 0 > 2.07E04	FI-2565 SCFM	M 1387	PERMS	-	--	- PERMS 1609 (PERMS DOC. SHOWS ORG. DEVICE OF FE-,NOT FT-)		
	F6421	--	FT-12639 CNDSR AIR EJCTR-SIM PKG EFFLUENT FLOW XDUCER: RS-232C SCALE: 0 > 5.07E03	FT-12839 SCFM	M 1231	PERMS	-	--	- PERMS 1609 (PERMS DOC. SHOWS ORG. DEVICE OF FE-,NOT FT-)		
	F7326	F2326	SG1 AUX FW FLOW XDUCER: 0-10V SCALE: 0 > 600 GPM	FT-5152	M 1062	PCS-60P	I	4.2.12	A1 RPU A2 1302		X
	F7327	F2327	SG2 AUX FW FLOW XDUCER: 0-10V SCALE: 0 > 600 GPM	FT-5151	M 1063	PCS-60P	II	4.2.12	A1 RPU B2 1302		X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION		ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	F7328	F2328	SG3 AUX FW FLOW XDUCER: 0-10V SCALE:	0 > 600 GPM	FT-5153	M 1064	PCS-80P	II	4.2.12 A1	RPU 02	1302	X
	F7329	F2329	SG4 AUX FW FLOW XDUCER: 0-10V SCALE:	0 > 600 GPM	FT-5158	M 1065	PCS-80P	I	4.2.12 A1	RPU A2	1302	X
	F7391	F2391	FW PUMP A SUCTION FLOW XDUCER: 0-10V SCALE:	0 > 2.00E04	FT-5208 GPM	M 1376	PCS-80P	NNS	-- -	MULT	1305	
	F7411	F2411	FW PUMP B SUCTION FLOW XDUCER: 0-10V SCALE:	0 > 2.00E04	FT-5201 GPM	M 1377	PCS-80P	NNS	-- -	MULT	1305	
	F7475	F2475	CONDENSATE PUMPS FLOW XDUCER: 0-10V SCALE:	0 > 2.50E04	FT-4486 GPM	M 1373	PCS-80P	NNS	-- -	MULT	1305	
	F7601	F2601	NSCW TRAIN A SUPPLY HEADER FLOW XDUCER: 0-10V SCALE:	0 > 2.50E04	FIT-16408 GPM	M 1195	PCS-80P	NNS	7.2.09-A D2	RPU N1	1202	
	F7602	F2602	NSCW TRAIN B SUPPLY HEADER FLOW XDUCER: 0-10V SCALE:	0 > 2.50E04	FIT-16418 GPM	M 1196	PCS-80P	NNS	7.2.09-A D2	RPU N1	1202	
	F7603	F2603	NSCW TRAIN A RETURN HEADER FLOW XDUCER: 0-10V SCALE:	0 > 2.50E04	FIT-1640A GPM	M 1349	PCS-80P	NNS	-- -	RPU N1	1202	
	F7604	F2604	NSCW TRAIN B RETURN HEADER FLOW XDUCER: 0-10V SCALE:	0 > 2.50E04	FIT-1641A GPM	M 1350	PCS-80P	NNS	-- -	RPU N1	1202	
	F7671	F2671	CCW FLOW TRAIN A XDUCER: 0-10V SCALE:	0 > 1.50E04	FT-1876 GPM	M 1193	PCS-80P	NNS	7.2.08-D D2	RPU N1	1203	
	F7672	F2672	CCW FLOW TRAIN B XDUCER: 0-10V SCALE:	0 > 1.50E04	FT-1877 GPM	M 1194	PCS-80P	NNS	7.2.08-D D2	RPU N1	1203	
	F7710	--	ACCW FLOW XDUCER: 4-20MA SCALE:	0 > 1.00E04	FT-1976 GPM	B 1358	FLO	NNS	-- -	MUX	1217	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
*	F9268	--	CHARGING PUMP A FLOW XDUCER: 0-10V SCALE: 0 > 150 GPM	FT-0138	M 1158	PCS	NNS	7.2.03-A	D2 MULT	1208	
	F9269	--	REACTOR HEAD VENT LETDOWN LINE FLOW XDUCER: 0-10V SCALE: 0 > 80 GPM	FT-0406	M 1160	PCS	NNS	7.2.03-B	D2 MULT	1208	
	F9270	--	REACTOR HEAD VENT LETDOWN LINE FLOW XDUCER: 0-10V SCALE: 0 > 80 GPM	FT-0407	M 1161	PCS	NNS	7.2.03-B	D2 MULT	1208	
	F9489	--	SPRAY ADDITIVE TANK OUTLET FLOW XDUCER: 0-5V SCALE: 0 > 300 GPM	FT-0930	M 1186	PCS	NNS	7.2.07-A	D2 RPU N1	1206	
	F9627	--	SG1 AUX FW FLOW XDUCER: 4-20MA SCALE: 0 > 600 GPM	FT-15152	B 1066	FLD	II	4.2.12	A1 RPU B2	1302	x
	F9628	--	SG2 AUX FW FLOW XDUCER: 4-20MA SCALE: 0 > 600 GPM	FT-15151	B 1067	FLD	I	4.2.12	A1 RPU A2	1302	x
	F9629	--	SG3 AUX FW FLOW XDUCER: 4-20MA SCALE: 0 > 600 GPM	FT-15153	B 1068	FLD	I	4.2.12	A1 RPU A2	1302	x
	F9630	--	SG4 AUX FW FLOW XDUCER: 4-20MA SCALE: 0 > 600 GPM	FT-15150	B 1069	FLD	II	4.2.12	A1 RPU B2	1302	x
	F9641	--	AFT-2532 FUEL HANDLING BLDG VENT EFFLUENT FLOW XDUCER: RS-232C SCALE: 0 > 1.34E04	AFT-2532 CFM	M 1388	PERMS	-	--	- PERMS 1609 (UNIT 1 INPUT ONLY;PERMS DOC. SHOWS FE-,NOT FT-)		
	F9642	--	AFT-2533 FUEL HANDLING BLDG VENT EFFLUENT FLOW XDUCER: RS-232C SCALE: 0 > 1.34E04	AFT-2533 CFM	M 1389	PERMS	-	--	- PERMS 1609 (UNIT 1 INPUT ONLY;PERMS DOC. SHOWS FE-,NOT FT-)		
	M5190	M0190	CHARGING PUMP TRAIN A THROTTLE VALVE XDUCER: 0-10V SCALE: 0 > 100 PERCENT	MV-0190A	M 1133	PCS	NNS	7.2.03-E	D2 MUX (SEPERATE INPUT SIGNAL TO PROTEUS)	1208	
	M5191	M0191	CHARGING PUMP TRAIN B THROTTLE VALVE XDUCER: 0-10V SCALE: 0 > 100 PERCENT	MV-0190B	M 1134	PCS	NNS	7.2.03-E	D2 MUX (SEPERATE INPUT SIGNAL TO PROTEUS)	1208	

K E Y	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	S F D S
	H5442	H0442	LETDOWN TO PRT TRN A THROTTLE VLV XDUCER: 0-10V SCALE: 0 > 100 PERCENT	HV-0442A	M 1147	PCS	NNS	7.2.05-E D2 MUX (SEPERATE INPUT SIGNAL TO PROTEUS)		1208	
*	H5443	H0443	LETDOWN TO PRT TRN B THROTTLE VLV XDUCER: 0-10V SCALE: 0 > 100 PERCENT	HV-0442B	M 1197	ASI	NNS	7.2.05-E D2 MUX (SEPERATE INPUT SIGNAL TO PROTEUS)		1208	
	H5943	H0943	SI ACCUM TANK N2 HDR VENT VLV TRN A XDUCER: 0-10V SCALE: 0 > 100 PERCENT	HV-0943A	M 1198	PCS	NNS	7.2.05-E D2 MUX (SEPERATE INPUT SIGNAL TO PROTEUS)		1204	
	H5944	H0944	SI ACCUM TANK N2 HDR VENT VLV TRN B XDUCER: 0-10V SCALE: 0 > 100 PERCENT	HV-0943B	M 1199	ASI	NNS	7.2.05-E D2 MUX (SEPERATE INPUT SIGNAL TO PROTEUS)		1208	
	J7835	--	PRESSURIZER HEATER NB01#5 CURRENT XDUCER: 0-1MA SCALE: 0 > 800 AMPS	XDCR-A	B 1442	SMGR	NNS	7.2.02-C	D2 MUX	1201	
	J7836	--	PRESSURIZER HEATER NB1#05 CURRENT XDUCER: 0-1MA SCALE: 0 > 500 AMPS	XDCR-A	B 1443	SMGR	NNS	7.2.02-C	D2 MUX	1201	
	J8501	--	RCP 1 AMPS XDUCER: 0-1MA SCALE: 0 > 400 AMPS	XDRA	B 1318	SMGR E/D1-BD-B01A	NNS	--	- MUX	1825	
	J8502	--	RCP 2 AMPS XDUCER: 0-1MA SCALE: 0 > 400 AMPS	XDRA	B 1319	SMGR E/D1-BD-B01B	NNS	--	- MUX	1825	
	J8503	--	RCP 3 AMPS XDUCER: 0-1MA SCALE: 0 > 400 AMPS	XDRA	B 1320	SMGR E/D1-BD-B01C	NNS	--	- MUX	1825	
*	J8504	--	RCP 4 AMPS XDUCER: 0-1MA SCALE: 0 > 400 AMPS	XDRA	B 1321	SMGR E/D1-BD-B01D	NNS	--	- MUX	1825	
	J9613	--	4KV 1E BUS 1AA#2 OFFSITE NORM LINE CURRENT XDUCER: 0-1MA SCALE: 0 > 2000 AMPS	XCDR-A	B 12#8	GEAB E/D1-BA-D02B	I	7.2.12	D2 RPU A2	1804	
	J9614	--	4KV 1E BUS 1AA#2 OFFSITE EMERGENCY LINE CURRENT XDUCER: 0-1MA SCALE: 0 > 2000 AMPS	XCDR-A	B 1201	GEAB E/D1-BA-D02C	I	7.2.12	D2 RPU A2	1804	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	BPDS
	J9615	--	4KV 1E BUS 1BA03 OFFSITE NORM LINE CURRENT XDUCER: 0-1MA SCALE: 0 > 2000 AMPS	XCDR-A	B 1203	GEAB E/D1-BA-D03B	II	7.2.12	D2	RPU B2	1804	
	J9617	--	4KV 1E BUS 1BA03 OFFSITE EMERGENCY LINE CURRENT XDUCER: 0-1MA SCALE: 0 > 2000 AMPS	XCDR-A	B 1204	GEAB E/D1-BA-D03C	II	7.2.12	D2	RPU B2	1804	
*	J9619	--	CLASS 1E 125VDC BATTERY 1AD1? CURRENT XDUCER: 4-20MA SCALE: -800 > 2000 AMPS	XCDR-A	B 1206	BMGR E/D1-BA-H01A	I	7.2.12	D2	RPU A2	1806	
*	J9620	--	CLASS 1E 125VDC BATTERY 1BD1B CURRENT XDUCER: 4-20MA SCALE: -800 > 2000 AMPS	XCDR-A	B 1207	BMGR E/D1-BA-H02A	II	7.2.12	D2	RPU B2	1806	
*	J9621	--	CLASS 1E 125VDC BATTERY 1CD1B CURRENT XDUCER: 4-20MA SCALE: -600 > 600 AMPS	XCDR-A	B 1208	BMGR E/D1-BA-H03A	III	7.2.12	D2	RPU A3	1808	
*	J9622	--	CLASS 1E 125VDC BATTERY 1DD1B CURRENT XDUCER: 4-20MA SCALE: -400 > 400 AMPS	XCDR-A	B 1209	BMGR E/D1-BA-H04A	IV	7.2.12	D2	RPU B3	1806	
	L5112	L0112	VCT LEVEL CH 1 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0112	M 1344	PCS	NNS	--	-	MUL:	1200	
	L5400	L0400	SG1 LEVEL NARROW RANGE CH 4 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0517	M 1012	PCS	IV	4.2.05	A1	RPU B3	1301	X
	L0401	L0401	SG1 LEVEL NARROW RANGE CH 3 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0518	M 1013	PCS	III	4.2.05	A1	RPU A3	1301	X
	L5402	L0402	SG1 LEVEL NARROW RANGE CH 2 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0519	M 1014	PCS	II	4.2.05	A1	RPU B2	1301	X
	L5403	L0403	SG1 LEVEL NARROW RANGE CH 1 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0501	M 1045	PCS	I	4.2.05	A1	RPU A2	1301	X
	L5404	L0404	SG1 LEVEL WIDE RANGE CH 1 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0501	M 1008	PCS	I	4.2.04	A1	RPU A2	1301	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION		ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	L5420	L0420	SG2 LEVEL NARROW RANGE CH 4 XDUCER: 0-10V SCALE:	0 > 100 PERCENT	LT-0527	M 1015	PCS	IV	4.2.05	A1 RPU B3	1301	X
	L5421	L0421	SG2 LEVEL NARROW RANGE CH 3 XDUCER: 0-10V SCALE:	0 > 100 PERCENT	LT-0528	M 1016	PCS	III	4.2.05	A1 RPU A3	1301	X
	L5422	L0422	SG2 LEVEL NARROW RANGE CH 1 XDUCER: 0-10V SCALE:	0 > 100 PERCENT	LT-0529	M 1017	PCS	I	4.2.05	A1 RPU A2	1301	X
	L5423	L0423	SG2 LEVEL NARROW RANGE CH 2 XDUCER: 0-10V SCALE:	0 > 100 PERCENT	LT-0552	M 1046	PCS	II	4.2.05	A1 RPU B2	1301	X
	L5424	L0424	SG2 LEVEL WIDE RANGE CH 2 XDUCER: 0-10V SCALE:	0 > 100 PERCENT	LT-0502	M 1009	PCS	II	4.2.04	A1 RPU B2	1301	X
	L5440	L0440	SG3 LEVEL NARROW RANGE CH 4 XDUCER: 0-10V SCALE:	0 > 100 PERCENT	LT-0537	M 1018	PCS	IV	4.2.05	A1 RPU B3	1301	X
	L5441	L0441	SG3 LEVEL NARROW RANGE CH 3 XDUCER: 0-10V SCALE:	0 > 100 PERCENT	LT-0538	M 1019	PCS	III	4.2.05	A1 RPU A3	1301	X
	L5442	L0442	SG3 LEVEL NARROW RANGE CH 1 XDUCER: 0-10V SCALE:	0 > 100 PERCENT	LT-0539	M 1020	PCS	I	4.2.05	A1 RPU A2	1301	X
	L5443	L0443	SG3 LEVEL NARROW RANGE CH 2 XDUCER: 0-10V SCALE:	0 > 100 PERCENT	LT-0553	M 1129	PCS	II	4.2.05	A1 RPU B2	1301	X
	L5444	L0444	SG3 LEVEL WIDE RANGE CH 3 XDUCER: 0-10V SCALE:	0 > 100 PERCENT	LT-0503	M 1010	PCS	III	4.2.04	A1 RPU B2	1301	X
	L5460	L0460	SG4 LEVEL NARROW RANGE CH 4 XDUCER: 0-10V SCALE:	0 > 100 PERCENT	LT-0547	M 1021	PCS	IV	4.2.05	A1 RPU B3	[illegible]	X
	L5461	L0461	SG4 LEVEL NARROW RANGE CH 3 XDUCER: 0-10V SCALE:	0 > 100 PERCENT	LT-0548	M 1022	PCS	III	4.2.05	A1 RPU A3	1301	X

*** SORT BY = ERF SYMBOL ***

GEORGIA POWER COMPANY-ENGINEERING & CONSTRUCTION SERVICES REVISION 87.05 12/11/86 PAGE 1051
VOGTLE 1 REG GUIDE T/ERF INPUT LIST

R E V	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	S P D S
	L5462	L0462	SG4 LEVEL NARROW RANGE CH 2 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0549	M 1023	PCS	II	4.2.05	A1 RPU B2	1301	X
	L5463	L0463	SG4 LEVEL NARROW RANGE CH 1 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0554	M 1130	PCS	I	4.2.05	A1 RPU A2	1301	X
	L5464	L0464	SG4 LEVEL WIDE RANGE CH 4 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0584	M 1011	PCS	IV	4.2.04	A1 RPU A3	1301	X
	L5480	L0480	PRESSURIZER LEVEL (CH 1) XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0459	M 1024	PCS	I	4.2.00	A1 RPU A2	1201	X
	L5481	L0481	PRESSURIZER LEVEL (CH 2) XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0460	M 1025	PCS	II	4.2.0A	A1 RPU B2	1201	X
	L5482	L0482	PRESSURIZER LEVEL (CH 3) XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0461	M 1026	PCS	III	4.2.06	A1 RPU A3	1201	X
	L5485	L0485	PRESSURIZER RELIEF TANK LEVEL XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0470	M 1259	PCS	NNS	--	- MULT	1201	
*	L6130	--	RWST LEVEL CHANNEL 1 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0990	M 1043	PCS	I	4.2.09	A1 RPU A2	1204	X
*	L6131	--	RWST LEVEL CHANNEL 2 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0991	M 1044	PCS	II	4.2.09	A1 RPU B2	1204	X
*	L6132	--	RWST LEVEL CHANNEL 3 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0992	M 1047	PCS	III	4.2.09	A1 RPU A3	1204	X
*	L6133	--	RWST LEVEL CHANNEL 4 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0993	M 1048	PCS	IV	4.2.09	A1 RPU B3	1204	X
	L6175	--	PRIMARY MET TOWER PRECIPITATION XDUCER: 0-5V SCALE: 0 > 1 INCHES	MET TOWER	B 1237	MET TOWER	NNS	8.2.08 (UNIT 1 INPUT ONLY)	E3 MUX	2001	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDB
	L6308	--	VCT LEVEL CH 4 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LI-0185	M 1162	P.S	NNS	7.2.03-C	D2 MULT	1208	
	L6320	--	BORIC ACID STORAGE TANK LEVEL CH 4 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0184	M 1398	PCS	IV	--	- RPU B3	1208	
	L6321	--	BORIC ACID STORAGE TANK LEVEL CH 1 XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-0182	M 1399	PCS	I	--	- RPU A2	1208	
*	L7409	L2489	CONDENSATE STORAGE TANK 1 LEVEL XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-5111	M 1858	PCS-BOP	I	4.2.1[illegible]	A1 RPU A2	1302	X
*	L7490	L2490	CONDENSATE STORAGE TANK 2 LEVEL XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-5116	M 1859	PCS-BOP	I	4.2.11	A1 RPU A2	1302	X
*	L7501	--	REACTOR CAVITY SUMP LEVEL XDUCER: 4-20MA SCALE: 0 > 48 INCHES	LT-7776	B 1853	FLD	I	--	- RPU A3	1214	X
*	L7502	--	CONTAINMENT SOUTH SUMP LEVEL XDUCER: 4-20MA SCALE: 0 > 48 INCHES	LT-7777	B 1854	FLD	I	4.2.10	A1 RPU A2	1214	
*	L7503	--	CONTAINMENT NORTH SUMP LEVEL XDUCER: 4-20MA SCALE: 0 > 48 INCHES	LT-7789	B 1855	FLD	II	4.2.10	A1 RPU B2	1214	
	L7601	L2601	NSCW BASIN LEVEL TOWER A XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-1606	M 1351	PCS-BOP	NNS	--	- MULT	1202	
	L7602	L2602	NSCW BASIN LEVEL TOWER B XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-1607	M 1352	PCS-BOP	NNS	--	- MULT	1202	
	L7671	L2671	CCW SURGE TANK LEVEL TRAIN A XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LIT-1846	M 1191	PCS-BOP	NNS	7.2.08-C	D2 RPU N1	1203	
	L7672	L2672	CCW SURGE TANK LEVEL TRAIN B XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LIT-1847	M 1192	PCS-BOP	NNS	7.2.08-C	D2 RPU N1	1203	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	L7700	L2700	ACCW SURGE TANK LEVEL XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LIT-1953	M 1357	PCS-BOP	NNS	-- -	MULT	1217	
*	L9003	--	CONTAINMENT EMERG FLOOR DRAINS LEVEL-TRAIN A XDUCER: 0-10V SCALE: 0 > 120 INCHES	LT-0764	M 1056	PCS-BOP	I	4.2.10	A1 RPU A2	1205	X
*	L9004	--	CONTAINMENT EMERG FLOOR DRAINS LEVEL-TRAIN B XDUCER: 0-10V SCALE: 0 > 120 INCHES	LT-0765	M 1057	PCS-BOP	II	4.2.10	A1 RPU B2	1205	X
*	L9005	--	CONDENSATE STORAGE TANK 1 LEVEL XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-5101	M 1060	PCS-BOP	II	4.2.11	A1 RPU B2	1302	X
*	L9006	--	CONDENSATE STORAGE TANK 2 LEVEL XDUCER: 0-10V SCALE: 0 > 100 PERCENT	LT-5104	M 1061	PCS-BOP	II	4.2.11	A1 RPU B2	1302	X
*	L9659	--	RVLIS UPPER RANGE DP TRAIN A XDUCER: 4-20MA SCALE: -7 > -1 IN WATER	LT-1310	M 1240	FLD	III	5.2.03-B B1 RPU A3 (RANGE=-7.986>-1.361)		1201	
*	L9660	--	RVLIS FULL RANGE DP TRAIN A XDUCER: 4-20MA SCALE: -19 > -1 IN WATER	LT-1311	M 1241	FLD	III	5.2.03-B B1 RPU A3 (RANGE=-19.224>-1.361)		1201	
*	L9661	--	RVLIS DYNAMIC HEAD DP TRAIN A XDUCER: 4-20MA SCALE: -19 > 39 IN WATER	LT-1312	M 1138	FLD	III	5.2.03-B B1 RPU A3 (RANGE=-19.224>39.773)		1201	
*	L9662	--	RVLIS UPPER RANGE DP TRAIN B XDUCER: 4-20MA SCALE: -7 > -1 IN WATER	LT-1320	M 1139	FLD	IV	5.2.03-B B1 RPU B3 (RANGE=-7.986>-1.361)		1201	
*	L9663	--	RVLIS FULL RANGE DP TRAIN B XDUCER: 4-20MA SCALE: -19 > -1 IN WATER	LT-1321	M 1140	FLD	IV	5.2.03-B B1 RPU B3 (RANGE=-19.224>-1.361)		1201	
*	L9664	--	RVLIS DYNAMIC HEAD DP TRAIN B XDUCER: 4-20MA SCALE: -19 > 39 IN WATER	LT-1322	M 1141	FLD	IV	5.2.03-B B1 RPU B3 (RANGE=-19.224>39.773)		1201	
	L9861	--	RVLIS STATIC HEAD UPPER RANGE TRAIN A XDUCER: RS-422 SCALE: 60 > 120 % LEVEL	CALC-DPUA	M 1218	-	-	8.2.01-B C2 DPUA		1201	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	L9862	--	RVLIS STATIC HEAD FULL RANGE TRAIN A XDUCER: RS-422 SCALE: 0 > 120 % LEVEL	CALC-DPUA	M 1256	-	-	6.2.01-B	C2	DPUA	1201	X
	L9863	--	RVLIS DYNAMIC HEAD TRAIN A XDUCER: RS-422 SCALE: 0 > 120 % LIQUID	CALC-DPUA	M 1258	-	-	6.2.01-B	C2	DPUA	1201	X
	L9864	--	RVLIS STATIC HEAD UPPER RANGE TRAIN B XDUCER: RS-422 SCALE: 60 > 120 % LEVEL	CALC-DPUB	M 1255	-	-	6.2.01-B	C2	DPUB	1201	X
	L9865	--	RVLIS STATIC HEAD FULL RANGE TRAIN B XDUCER: RS-422 SCALE: 0 > 120 % LEVEL	CALC-DPUB	M 1257	-	-	6.2.01-B	C2	DPUB	1201	X
	L9866	--	RVLIS DYNAMIC HEAD TRAIN B XDUCER: RS-422 SCALE: 0 > 120 % LIQUID	CALC-DPUB	M 1331	-	-	6.2.01-B	C2	DPUB	1201	X
*	N5031	N0031	NEUTRON FLUX SOURCE RANGE 1 COUNT RATE XDUCER: 0-5V SCALE: 1.00E00 > 1.00E06	NM-031F CPS	M 1245	NIS	NNS	--	-	MULT	1602	X
*	N5032	N0032	NEUTRON FLUX SOURCE RANGE 2 COUNT RATE XDUCER: 0-5V SCALE: 1.00E00 > 1.00E06	NM-032F CPS	M 1246	NIS	NNS	--	-	MULT	1602	X
*	N5035	N0035	NEUTRON FLUX INTERMEDIATE RANGE 1 COUNT RATE XDUCER: 0-5V SCALE: 1.00E-11 > 1.00E-03	NM-35B AMPS	M 1243	NIS	NNS	--	-	MULT	1602	X
*	N5036	N0036	NEUTRON FLUX INTERMEDIATE RANGE 2 COUNT RATE XDUCER: 0-5V SCALE: 1.00E-11 > 1.00E-03	NM-36B AMPS	M 1244	NIS	NNS	--	-	MULT	1602	X
	N5049	N0049	NEUTRON FLUX POWER RANGE (CH 1) XDUCER: 0-5V SCALE: 0 > 120 PERCENT	NM-41F	M 1242	NIS	NNS	--	-	MULT	1602	X
	N5050	N0050	NEUTRON FLUX POWER RANGE (CH 2) XDUCER: 0-5V SCALE: 0 > 120 PERCENT	NM-42F	M 1407	NIS	NNS	--	-	MULT	1602	X
	N5051	N0051	NEUTRON FLUX POWER RANGE (CH 3) XDUCER: 0-5V SCALE: 0 > 120 PERCENT	NM-43F	M 1408	NIS	NNS	--	-	MULT	1602	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
*	N5052	N0052	NEUTRON FLUX POWER RANGE (CH 4) XDUCER: 0-5V SCALE: 0 > 120 PERCENT	NM-44F	M 1409	NIS	NNS	--	-	MULT	1602	X
*	N9643	--	NEUTRON FLUX HIGH RANGE-TRN A XDUCER: 0-10V SCALE: 1.00E-03 > 2.00E02	RE-13135A2 PERCENT	M 1136	NIS	I	5.2.01-A	B1	RPU A2	1602	X
*	N9653	--	NEUTRON FLUX LOW RANGE-TRN A XDUCER: 0-10V SCALE: 1.00E-01 > 1.00E06	RE-13135A1 CPS	M 1131	NIS	I	5.2.01-A	B1	RPU A2	1602	X
*	N9658	--	NEUTRON FLUX HIGH RANGE-TRN B XDUCER: 0-10V SCALE: 1.00E-03 > 2.00E02	RE-1313582 PERCENT	M 1137	NIS	II	5.2.01-A	B1	RPU B2	1602	X
*	N9668	--	NEUTRON FLUX LOW RANGE-TRN B XDUCER: 0-10V SCALE: 1.00E-01 > 1.00E06	RE-1313581 CPS	M 1132	NIS	II	5.2.01-A	B1	RPU B2	1602	X
	N9867	--	NEUT FLUX STARTUP RATE LOW RANGE-TRAIN A XDUCER: 0-10V SCALE: -1.00E00 > 5.00E00	RE-13135A3 DKCM	M 1335	NIS	I	--	-	RPU A2	1602	
	N9868	--	NEUT FLUX STARTUP RATE HIGH RANGE-TRAIN A XDUCER: 0-10V SCALE: -1.00E00 > 5.00E00	RE-13135A4 DKCM	M 1337	NIS	I	--	-	RPU A2	1602	
	N9869	--	NEUT FLUX STARTUP RATE LOW RANGE-TRAIN B XDUCER: 0-10V SCALE: -1.00E00 > 5.00E00	RE-1313583 DKCM	M 1339	NIS	II	--	-	RPU B2	1602	
	N9870	--	NEUT FLUX STARTUP RATE HIGH RANGE-TRAIN B XDUCER: 0-10V SCALE: -1.00E00 > 5.00E00	RE-1313584 DKCM	M 1340	NIS	II	--	-	RPU B2	1602	
	P5135	P0135	LETDOWN HEAT EXCH OUTLET PRESS XDUCER: 0-10V SCALE: 0 > 600 PSIG	PT-0131	M 1363	PCS	NNS	--	-	MULT	1208	
	P5142	P0142	CHARGING PUMPS DISCHARGE PRESSURE XDUCER: 0-10V SCALE: 0 > 3500 PSIG	PT-0120	M 1343	PCS	NNS	--	-	MULT	1208	
*	P5398	P0398	MAIN TURBINE FIRST STAGE PRESSURE XDUCER: 0-10V SCALE: 0 > 120 PCT POWER	PT-0505	M 1221	PCS	I	7.2.14	D2	RPU A2	1301	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
*	P5399	P0399	MAIN TURBINE FIRST STAGE PRESSURE XDUCER: 0-10V SCALE: 0 > 120 PCT POWER	PT-0506	M 1222	PCS	II	7.2.14	D2 RPU B2 1301		
	P5400	P0400	SG1 PRESSURE OUT (CH 1) XDUCER: 0-10V SCALE: 0 > 1300 PSIG	PT-0514	M 1031	PCS	I	4.2.08	A1 RPU A2 1301		X
	P5401	P0401	SG1 PRESSURE OUT (CH 2) XDUCER: 0-10V SCALE: 0 > 1300 PSIG	PT-0515	M 1032	PCS	II	4.2.08	A1 RPU B2 1301		X
	P5402	P0402	SG1 PRESSURE OUT (CH 4) XDUCER: 0-10V SCALE: 0 > 1300 PSIG	PT-0516	M 1033	PCS	IV	4.2.08	A1 RPU B3 1301		X
	P5408	P0408	RCS PRESS WIDE RANGE CH 3 XDUCER: 0-10V SCALE: 0 > 3000 PSIG	PT-0408	M 1051	PCS	III	4.2.01	A1 RPU A3 1201		X
	P5418	P0418	RCS PRESS WIDE RANGE CH 4 XDUCER: 0-10V SCALE: 0 > 3000 PSIG	PT-0418	M 1052	PCS	IV	4.2.01	A1 RPU B3 1201		X
	P5420	P0420	SG2 PRESSURE OUT (CH 1) XDUCER: 0-10V SCALE: 0 > 1300 PSIG	PT-0524	M 1034	PCS	I	4.2.08	A1 RPU A2 1301		X
	P5421	P0421	SG2 PRESSURE OUT (CH 2) XDUCER: 0-10V SCALE: 0 > 1300 PSIG	PT-0525	M 1035	PCS	II	4.2.08	A1 RPU B2 1301		X
	P5422	P0422	SG2 PRESSURE OUT (CH 3) XDUCER: 0-10V SCALE: 0 > 1300 PSIG	PT-0526	M 1036	PCS	III	4.2.08	A1 RPU A3 1301		X
	P5428	P0428	RCS PRESS WIDE RANGE CH 2 XDUCER: 0-10V SCALE: 0 > 3000 PSIG	PT-0428	M 1050	PCS	II	4.2.01	A1 RPU B2 1201		X
	P5438	P0438	RCS PRESS WIDE RANGE CH 1 XDUCER: 0-10V SCALE: 0 > 3000 PSIG	PT-0438	M 1049	PCS	I	4.2.01	A1 RPU A2 1201		X
	P5440	P0440	SG3 PRESSURE OUT (CH 1) XDUCER: 0-10V SCALE: 0 > 1300 PSIG	PT-0534	M 1037	PCS	I	4.2.08	A1 RPU A2 1301		X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION		ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	P5441	P0441	SG3 PRESSURE OUT (CH 2) XDUCER: 0-10V SCALE:	0 > 1300 PSIG	PT-0535	M 1038	PCS	II	4.2.08	A1 RPU B2	1301	X
	P5442	P0442	SG3 PRESSURE OUT (CH 3) XDUCER: 0-10V SCALE:	0 > 1300 PSIG	PT-0536	M 1039	PCS	III	4.2.08	A1 RPU A3	1301	X
	P5460	P0460	SG4 PRESSURE OUT (CH 1) XDUCER: 0-10V SCALE:	0 > 1300 PSIG	PT-0544	M 1040	PCS	I	4.2.08	A1 RPU A2	1301	X
	P5461	P0461	SG4 PRESSURE OUT (CH 2) XDUCER: 0-10V SCALE:	0 > 1300 PSIG	PT-0545	M 1041	PCS	II	4.2.08	A1 RPU B2	1301	X
	P5462	P0462	SG4 PRESSURE OUT (CH 4) XDUCER: 0-10V SCALE:	0 > 1300 PSIG	PT-0546	M 1042	PCS	IV	4.2.08	A1 RPU B3	1301	X
	P5480	P0480	PRESSURIZER PRESSURE (CH 1) XDUCER: 0-10V SCALE:	1700 > 2500 PSIG	PT-0455	M 1247	PCS	NNS	7.2.02-F	D2 MULT	1201	X
	P5481	P0481	PRESSURIZER PRESSURE (CH 2) XDUCER: 0-10V SCALE:	1700 > 2500 PSIG	PT-0456	M 1248	PCS	NNS	7.2.02-F	D2 MULT	1201	X
	P5482	P0482	PRESSURIZER PRESSURE (CH 3) XDUCER: 0-10V SCALE:	1700 > 2500 PSIG	PT-0457	M 1249	PCS	NNS	7.2.02-F	D2 MULT	1201	X
	P5483	P0483	PRESSURIZER PRESSURE (CH 4) XDUCER: 0-10V SCALE:	1700 > 2500 PSIG	PT-0458	M 1250	PCS	NNS	7.2.02-F	D2 MULT	1201	X
	P5485	P0485	PRESSURIZER RELIEF TANK PRESSURE XDUCER: 0-10V SCALE:	0 > 100 PSIG	PT-0469	M 1260	PCS	NNS	--	- MULT	1201	
	P6000	P1000	CONTAINMENT PRESSURE CH 2 XDUCER: 0-10V SCALE:	0 > 75 PSIG	PT-0936	M 1028	PCS	II	4.2.07	A1 RPU B2	1206	X
	P6001	P1001	CONTAINMENT PRESSURE CH 3 XDUCER: 0-10V SCALE:	0 > 75 PSIG	PT-0935	M 1029	PCS	III	4.2.07	A1 RPU A3	1206	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	P6002	P1002	CONTAINMENT PRESSURE CH 4 XDUCER: 0-10V SCALE: 0 > 75 PSIG	PT-0934	M 1030	PCS	IV	4.2.07	A1	RPU B3	1206	X
	P6003	--	CONTAINMENT PRESSURE CH 1 XDUCER: 0-10V SCALE: 0 > 75 PSIG	PT-0937	M 1027	PCS	I	4.2.07	A1	RPU A2	1206	X
*	P6194	--	MAIN STEAM LINE PRESSURE XDUCER: 0-10V SCALE: 0 > 1500 PSIG	PT-0507	M 1322	PCS	NNS	--	-	MULT	1301	
	P6270	--	SAFETY INJECTION PUMP TRAIN A PRESSURE XDUCER: 1-5V SCALE: 0 > 2000 PSIG	PT-0919	M 1329	PCS	NNS	--	-	MULT	1204	
*	P6271	--	SAFETY INJECTION PUMP TRAIN B PRESSURE XDUCER: 1-5V SCALE: 0 > 2000 PSIG	PT-0923	M 1330	PCS	NNS	--	-	MULT	1204	
	P6273	--	SIS ACCUMULATOR PRESSURE (LOOP 1) XDUCER: 0-10V SCALE: 0 > 700 PSIG	PT-0960	M 1332	PCS	NNS	7.2.05-F	D3	MULT	1204	
	P6275	--	SIS ACCUMULATOR PRESSURE (LOOP 2) XDUCER: 0-10V SCALE: 0 > 700 PSIG	PT-0962	M 1334	PCS	NNS	7.2.05-F	D3	MULT	1204	
	P6277	--	SIS ACCUMULATOR PRESSURE (LOOP 3) XDUCER: 0-10V SCALE: 0 > 700 PSIG	PT-0964	M 1336	PCS	NNS	7.2.05-F	D3	MULT	1204	
	P6279	--	SIS ACCUMULATOR PRESSURE (LOOP 4) XDUCER: 0-10V SCALE: 0 > 700 PSIG	PT-0966	M 1338	PCS	NNS	7.2.05-F	D3	MULT	1204	
	P6310	--	RHR PUMP A DISCH PRESS XDUCER: 0-10V SCALE: 0 > 800 PSIG	PT-0614	M 1345	PCS	NNS	--	-	MULT	1205	
	P6311	--	RHR PUMP B DISCH PRESS XDUCER: 0-10V SCALE: 0 > 800 PSIG	PT-0615	M 1346	PCS	NNS	--	-	MULT	1205	
	P7011	P2011	MAIN STEAM PRESSURE XDUCER: 0-10V SCALE: 0 > 1200 PSIG	PT-6193	M 1364	PCS-BUP	NNS	--	-	MULT	1301	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
	P7025	P2025	EHC FLUID PRESSURE XDUCER: 0-10V SCALE: 0 > 2000 PSIG	PT-6338	M 1365	PCS-80P	NNS	--	-	MULT	1615	
	P7095	P2095	LP TURBINE A EXHAUST HOOD PRESSURE XDUCER: 0-10V SCALE: 0 > 30 IN HG VAC	PT-6292	M 1367	PCS-80P	NNS	--	-	MULT	1301	
	P7097	P2097	LP TURBINE B EXHAUST HOOD PRESSURE XDUCER: 0-10V SCALE: 0 > 30 IN HG VAC	PT-6293	M 1368	PCS-80P	NNS	--	-	MULT	1301	
	P7099	P2099	LP TURBINE C EXHAUST HOOD PRESSURE XDUCER: 0-10V SCALE: 0 > 30 IN HG VAC	PT-6294	M 1369	PCS-80P	NNS	--	-	MULT	1301	
	P7327	P2327	TURBINE DRIVEN AUX FW PUMP DISCH PRESS XDUCER: 0-10V SCALE: 0 > 2000 PSIG	PT-5107	M 1366	PCS-80P	NNS	--	-	RPU N1	1302	X
	P7329	P2329	MOTOR DRIVEN AUX FW PUMP A DISCH PRESS XDUCER: 0-10V SCALE: 0 > 2000 PSIG	PT-5141	M 1362	PCS-80P	NNS	--	-	RPU N1	1302	X
	P7330	P2330	MOTOR DRIVEN AUX FW PUMP B DISCH PRESS XDUCER: 0-10V SCALE: 0 > 2000 PSIG	PT-5148	M 1361	PCS-80P	NNS	--	-	RPU N1	1302	X
	P7340	P2340	CIRCULATING WATER PRESSURE XDUCER: 0-10V SCALE: 0 > 100 PSIG	PT-7176	M 1400	PCS-80P	NNS	--	-	MULT	1401	
	P7392	P2392	MFW PUMP A DISCHARGE PRESSURE XDUCER: 0-10V SCALE: 0 > 2000 PSIG	PT-5234	M 1374	PCS-80P	NNS	--	-	MULT	1305	
	P7412	P2412	MFW PUMP B DISCHARGE PRESSURE XDUCER: 0-10V SCALE: 0 > 2000 PSIG	PT-5235	M 1375	PCS-80P	NNS	--	-	MULT	1305	
	P7471	P2471	CONDENSATE PUMPS DISCHARGE HEADER PRESSURE XDUCER: 0-10V SCALE: 0 > 750 PSIG	PT-4482	M 1372	PCS-80P	NNS	--	-	MULT	1305	
	P7671	P2671	CCW PUMPS TRAIN A DISCH PRESSURE XDUCER: 0-10V SCALE: 0 > 200 PSIG	PT-1874	M 1187	PCS-80P	NNS	7.2.88-A	D2	RPU N1	1203	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	P7672	P2572	CCW PUMPS TRAIN B DISCH PRESSURE XDUCER: 0-10V SCALE: 0 > 200 PSIG	PT-1875	W 1188	PCS-BOP	NNS	7.2.08-A	D2	RPU N1	1203	
	P7742	P2742	INSTRUMENT AIR HEADER PRESSURE XDUCER: 0-10V SCALE: 0 > 150 PSIG	PT-9361	W 1397	PCS-BOP	NNS	--	-	MULT	2420	
	P7931	--	FIRE MAIN PRESSURE XDUCER: 4-20MA SCALE: 0 > 200 PSIG	PT-7918	B 1262	FLD	NNS	--	-	MUX (UNIT 1 INPUT ONLY)	2301	
	P9253	--	CONTAINMENT PRESS EXTENDED RANGE CH 1 XDUCER: 0-10V SCALE: -5 > 160 PSIG	PT-10942	B 1144	PCS-BOP	I	6.2.03-A	C1	RPU A2	1206	X
	P9254	--	CONTAINMENT PRESS EXTENDED RANGE CH 2 XDUCER: 0-10V SCALE: -5 > 160 PSIG	PT-10943	B 1145	PCS-BOP	II	6.2.03-A	C1	RPU B2	1206	X
*	P9871	--	CONTAINMENT PRESSURE NARROW RANGE XDUCER: 4-20MA SCALE: -1.50E00 > 3.00E00	PT-10944 PSIG	B 1341	FLD	NNS	--	-	MUX	1206	X
	PD7821	PD2821	EHC LOW ETS PRESSURE TURBINE TRIP ALM ON CONTACT: CLSD ALM/NML: TRIPPED / RESET	TM2-15	B 2266	QEAC	NNS	--	-	MULT	1615	
	Q7791	Q2791	DIESEL GENERATOR A KW XDUCER: 0-10V SCALE: 0 > 1.05E04	XDCR-E-2A KW	W 1216	PCS-BOP	NNS	7.2.12	D2	MULT	1804	
	Q7792	Q2792	DIESEL GENERATOR B KW XDUCER: 0-10V SCALE: 0 > 1.05E04	XDCR-E-2B KW	W 1217	PCS-BOP	NNS	7.2.12	D2	MULT	1804	
*	Q7838	Q2838	GENERATOR OUTPUT NET POWER XDUCER: 0-1MA SCALE: 0 > 1458 MW	XDCR-E9,10	B 1371	QPRP E/D1-AA-B04E	NNS	--	-	MULT	1802	
*	Q7831	Q2831	GENERATOR OUTPUT GROSS POWER XDUCER: 0-1MA SCALE: 0 > 1458 MW	XDCR-E1	B 1378	QPRP E/D1-AA-B04E	NNS	--	-	MULT	1802	
	Q9882	--	MET TWR INSTR POWER (0V=ON,5V=OFF) XDUCER: 0-5V SCALE: 0 > 5 VOLTS	MW TWR	B 1146	MET TOWER	NNS	--	-	MUX (UNIT 1 INPUT ONLY)	2001	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	TERMINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
*	R6200	--	RE-001 CONTROL ROOM AREA RAD (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E03	RE-001 MR/H	M 1223	PERMS	-	6.2.07	E3	PERMS	1600	X
*	R6201	--	RE-002 CNMT BLDG OPER LEV RAD-LOW RANGE (TS) XDUCER: RS-232C SCALE: 0 > 5.40E03	RE-002 MR/H	M 1070	RPAMS	-	--	-	PERMS	1600	X
*	R6202	--	RE-003 CNMT BLDG OPER LEV RAD-LOW RANGE (TS) XDUCER: RS-232C SCALE: 0 > 5.40E03	RE-003 MR/H	M 1071	RPAMS	-	--	-	PERMS	1600	X
*	R6203	--	RE-005 CNMT BLDG OPER LEV RAD-HIGH RANGE (TS) XDUCER: RS-232C SCALE: 0 > 1.00E11	RE-005 MR/H	M 1072	RPAMS	-	4.2.13	A1	PERMS	1600	X
*	R6204	--	RE-006 CNMT BLDG OPER LEV RAD-HIGH RANGE (TS) XDUCER: RS-232C SCALE: 0 > 1.00E11	RE-006 MR/H	M 1073	RPAMS	-	4.2.13	A1	PERMS	1600	X
*	R6205	--	RE-004 CNMT BLDG ACCESS HATCH AREA RAD (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E04	RE-004 MR/H	M 1266	PERMS	-	--	-	PERMS	1600	X
*	R6206	--	RE-011 CNMT BLDG INCORE INSTR ROOM RAD (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E04	RE-011 MR/H	M 1267	PERMS	-	--	-	PERMS	1600	X
*	R6207	--	ARE-007A RADIOCHEMISTRY LAB AREA RAD (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E04	ARE-007A MR/H	M 1268	PERMS	-	6.2.07 (UNIT 1 INPUT ONLY)	E3	PERMS	1600	X
*	R6208	--	ARE-007B SAMPLING ROOM AREA RAD (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E04	ARE-007B MR/H	M 1269	PERMS	-	6.2.07 (UNIT 1 INPUT ONLY)	E3	PERMS	1600	X
*	R6209	--	RE-008 FUEL HANDLING BLDG AREA RAD (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E04	RE-008 MR/H	M 1224	PERMS	-	6.2.07	E3	PERMS	1600	X
*	R6210	--	ARE-009A LARGE PARTS DECON STA AREA RAD (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E04	ARE-009A MR/H	M 1270	PERMS	-	6.2.07 (UNIT 1 INPUT ONLY)	E3	PERMS	1600	X
*	R6211	--	ARE-009B SMALL PARTS DECON STA AREA RAD (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E04	ARE-009B MR/H	M 1271	PERMS	-	6.2.07 (UNIT 1 INPUT ONLY)	E3	PERMS	1600	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
*	R6212	--	ARE-0089C HOT INSTR DECON STA AREA RAD (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E04	ARE-0089C MR/H	M 1272	PERMS	-	8.2.87 (UNIT 1 INPUT ONLY)	E3	PERMS	1689	X
*	R6215	--	RE-2562A CNMT ATMOS PROCESS AIR PART (TS) XDUCER: RS-232C SCALE: 0 > 2.30E-07	RE-2562A UCI/CC	M 1273	PERMS	-	--	-	PERMS	1689	X
*	R6216	--	RE-2562C CNMT ATMOS PROCESS RADIOGAS (TS) XDUCER: RS-232C SCALE: 0 > 5.00E-02	RE-2562C UCI/CC	M 1274	PERMS	-	--	-	PERMS	1689	X
*	R6217	--	RE-12442A PLANT VENT EFFL PART-LOW RANGE (TS) XDUCER: RS-232C SCALE: 0 > 2.30E-07	RE-12442A UCI/CC	M 1153	PERMS	-	--	-	PERMS	1689	X
*	R6218	--	RE-12442B PLANT VENT EFFL IODINE-LOW RANGE (TS) XDUCER: RS-232C SCALE: 0 > 2.30E-05	RE-12442B UCI/CC	M 1154	PERMS	-	--	-	PERMS	1689	X
*	R6219	--	RE-12442C PLANT VENT EFFL RAD-LOW RANGE (TS) XDUCER: RS-232C SCALE: 0 > 5.00E-02	RE-12442C UCI/CC	M 1155	PERMS	-	--	-	PERMS	1689	X
*	R6220	--	ARE-13133A VRS ROOM AIR PARTICULATE (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E-06	ARE-13133A UCI/CC	M 1277	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1689	X
*	R6221	--	ARE-13133B VRS ROOM IODINE (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E-06	ARE-13133B UCI/CC	M 1278	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1689	X
*	R6222	--	ARE-13133C VRS ROOM RADIOGAS (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E-03	ARE-13133C UCI/CC	M 1279	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1689	X
*	R6223	--	RE-2565A CNMT VENT EFFLUENT AIR PART (TS) XDUCER: RS-232C SCALE: 0 > 2.30E-07	RE-2565A UCI/CC	M 1280	PERMS	-	--	-	PERMS	1689	X
*	R6224	--	RE-2565B CNMT VENT EFFL IODINE (TS) XDUCER: RS-232C SCALE: 0 > 2.30E-05	RE-2565B UCI/CC	M 1281	PERMS	-	--	-	PERMS	1689	X
*	R6225	--	RE-2565C CNMT VENT EFFL RADIOGAS (TS) XDUCER: RS-232C SCALE: 0 > 1.00E-01	RE-2565C UCI/CC	M 1282	PERMS	-	--	-	PERMS	1689	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	S T	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
*	R6227	--	RE-0024A SELECTIVE CUBICLE AIR PART (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E-05	RE-0024A UCI/CC	M 1226	PERMS	-	--	-	PERMS	1600	X
*	R6228	--	RE-0024B SELECTIVE CUBICLE AIR RADIOGAS (NTS) XDUCER: RS-232C SCALE: 0 > 5.00E-02	RE-0024B UCI/CC	M 1227	PERMS	-	--	-	PERMS	1600	X
*	R6229	--	ARE-0026A WASTE SOLID BLDG EFFL AIR PART (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E-06	ARE-0026A UCI/CC	M 1239	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1600	X
*	R6230	--	ARE-0026B WASTE SOLID BLDG EFFL IODINE (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E-06	ARE-0026B UCI/CC	M 1228	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1600	X
*	R6231	--	ARE-0026C WASTE SOLID BLDG EFFL RADIOGAS (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E-03	ARE-0026C UCI/CC	M 1225	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1600	X
*	R6232	--	ARE-0016 BORON RECYCLE LIQ PROCESS RAD (NTS) XDUCER: RS-232C SCALE: 0 > 4.00E-02	ARE-0016 UCI/CC	M 1284	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1600	X
*	R6233	--	RE-0017A CCW PROCESS RAD (NTS) XDUCER: RS-232C SCALE: 0 > 4.00E-02	RE-0017A UCI/CC	M 1285	PERMS	-	--	-	PERMS	1600	X
*	R6234	--	RE-0017B CCW PROCESS RAD (NTS) XDUCER: RS-232C SCALE: 0 > 4.00E-02	RE-0017B UCI/CC	M 1286	PERMS	-	--	-	PERMS	1600	X
*	R6235	--	RE-0018 WASTE LIQUID EFFLUENT RAD (TS) XDUCER: RS-232C SCALE: 0 > 1.00E-01	RE-0018 UCI/CC	M 1287	PERMS	-	--	-	PERMS	1600	X
*	R6236	--	RE-0019 STM GEN SAMPLE LIQ PROCESS RAD (NTS) XDUCER: RS-232C SCALE: 0 > 4.00E-02	RE-0019 UCI/CC	M 1288	PERMS	-	--	-	PERMS	1600	X
*	R6237	--	RE-0020A NSCW PROCESS RAD (TS) XDUCER: RS-232C SCALE: 0 > 4.00E-02	RE-0020A UCI/CC	M 1289	PERMS	-	--	-	PERMS	1600	X
*	R6238	--	RE-0020B NSCW PROCESS RAD (TS) XDUCER: RS-232C SCALE: 0 > 4.00E-02	RE-0020B UCI/CC	M 1290	PERMS	-	--	-	PERMS	1600	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
*	R6239	--	RE-0021 STM GEN BLOWDOWN LIQ PROC RAD (TS) XDUCER: RS-232C SCALE: 0 > 4.00E-02	RE-0021 UCI/CC	M 1291	PERMS	-	--	-	PERMS	1600	X
*	R6240	--	RE-0048 TURB BLDG DRAIN LIW EFFL RAD (TS) XDUCER: RS-232C SCALE: 0 > 4.00E-02	RE-0048 UCI/CC	M 1292	PERMS	-	--	-	PERMS	1600	X
*	R6241	--	ARE-025 ELECT BLR COND RTN PROCESS RAD (NTS) XDUCER: RS-232C SCALE: 0 > 4.00E-02	ARE-025 UCI/CC	M 1293	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1600	X
*	R6242	--	RE-1950 ACCW PROCESS RAD (NTS) XDUCER: RS-232C SCALE: 0 > 4.00E-02	RE-1950 UCI/CC	M 1294	PERMS	-	--	-	PERMS	1600	X
*	R6244	--	RE-12116 CR AIR INTAKE PROC RADIOGAS (TS) XDUCER: RS-232C SCALE: 0 > 1.00E-01	RE-12116 UCI/CC	M 1296	PERMS	-	--	-	PERMS	1600	X
*	R6245	--	RE-12117 CR AIR INTAKE PROC RADIOGAS (TS) XDUCER: RS-232C SCALE: 0 > 1.00E-01	RE-12117 UCI/CC	M 1297	PERMS	-	--	-	PERMS	1600	X
*	R6246	--	RE-039A WASTE GAS DECAY TANK EFFL RAD (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E-01	RE-039A UCI/CC	M 1298	PERMS	-	--	-	PERMS	1600	X
*	R6247	--	RE-039B WASTE GAS CMPSR VENT EFFL RAD (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E-01	RE-039B UCI/CC	M 1299	PERMS	-	--	-	PERMS	1600	X
*	R6248	--	ARE-2532A FUEL HAND BLDG EFFL RADIOGAS (TS) XDUCER: RS-232C SCALE: 0 > 1.00E-01	ARE-2532A UCI/CC	M 1310	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1600	X
*	R6249	--	ARE-2532B FUEL HAND BLDG EFFL RADIOGAS (TS) XDUCER: RS-232C SCALE: 0 > 1.00E-01	ARE-2532B UCI/CC	M 1311	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1600	X
*	R6250	--	ARE-2533A FUEL HAND BLDG EFFL RADIOGAS (TS) XDUCER: RS-232C SCALE: 0 > 1.00E-01	ARE-2533A UCI/CC	M 1312	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1600	X
*	R6251	--	ARE-2533B FUEL HANDLING BLDG EFFL RADIOGAS (TS) XDUCER: RS-232C SCALE: 0 > 1.00E-01	ARE-2533B UCI/CC	M 1313	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1600	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
*	R6252	--	RE-013 WASTE GAS PROC SYS PROC RADIOGAS (NTS) XDUCER: RS-232C SCALE: 0 > 2.50E03	RE-013 UCI/CC	M 1314	PERMS	-	--	-	PERMS	1689	X
*	R6253	--	ARE-014 WASTE GAS PROC SYS EFFL RADIOGAS (TS) XDUCER: RS-232C SCALE: 0 > 1.00E04	ARE-014 UCI/CC	M 1315	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1689	X
*	R6374	--	RE-48000 CVCS LETDOWN RAD (NTS) XDUCER: RS-232C SCALE: 0 > 4.00E01	RE-48000 UCI/CC	M 1381	PERMS	-	--	-	PERMS	1689	X
*	R6377	--	RE-12444C PLANT VENT RADIOGAS-LOW RANGE (TS) XDUCER: RS-232C SCALE: 0 > 3.40E-03	RE-12444C UCI/CC	M 1156	PERMS	-	6.2.03-C	C2	PERMS	1689	X
*	R6378	--	RE-12444D PLANT VENT RADIOGAS-MID RANGE (TS) XDUCER: RS-232C SCALE: 0 > 4.00E01	RE-12444D UCI/CC	M 1444	PERMS	-	6.2.03-C	C2	PERMS	1689	X
*	R6379	--	RE-12444E PLANT VEN RADIOGAS-HI RANGE (TS) XDUCER: RS-232C SCALE: 0 > 5.00E04	RE-12444E UCI/CC	M 1445	PERMS	-	6.2.03-C	C2	PERMS	1689	X
*	R6381	--	RE-12839E CNDSR AIR EJCTR/STM RAD-HI RANGE (TS) XDUCER: RS-232C SCALE: 0 > 5.00E05	RE-12839E UCI/CC	M 1447	PERMS	-	8.2.05	E3	PERMS	1689	X
*	R6382	--	RE-12839D CNDSR AIR EJCTR/STM RAD-MID RNGE (TS) XDUCER: RS-232C SCALE: 0 > 4.00E01	RE-12839D UCI/CC	M 1446	PERMS	-	8.2.05	E3	PERMS	1689	X
*	R6383	--	RE-12839C CNDSR AIR EJCTR/STM RAD-LOW RNGE (TS) XDUCER: RS-232C SCALE: 0 > 3.40E-03	RE-12839C UCI/CC	M 1074	RPAMS	-	8.2.05	E3	PERMS	1689	X
*	R6385	--	RE-13119 STM GEN 4 MAIN STM LINE MONITOR (TS) XDUCER: RS-232C SCALE: 0 > 1.00E03	RE-13119 UCI/CC	M 1075	RPAMS	-	4.2.14	A1	PERMS	1689	X
*	R6386	--	RE-13120 STM GEN 1 MAIN STM LINE MONITOR (TS) XDUCER: RS-232C SCALE: 0 > 1.00E03	RE-13120 UCI/CC	M 1076	RPAMS	-	4.2.14	A1	PERMS	1689	X
*	R6387	--	RE-13121 STM GEN 2 MAIN STM LINE MONITOR (TS) XDUCER: RS-232C SCALE: 0 > 1.00E03	RE-13121 UCI/CC	M 1077	RPAMS	-	4.2.14	A1	PERMS	1689	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
*	R6386	--	RE-13122 STM GEN 3 MAIN STM LINE MONITOR (TS) XDUCER: RS-232C SCALE: 0 > 1.00E03	RE-13122 UCI/CC	M 1078	RPAMS	-	4.2.14	A1	PERMS	1689	X
*	R9631	--	ARE-500#2A TSC CH' DISP ROOM AREA RAD (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E03	ARE-500#2A MR/H	M 1275	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1689	X
*	R9632	--	ARE-500828 TSC WORK AREA-AREA RAD (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E03	ARE-500828 MR/H	M 1276	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1689	X
*	R9633	--	ARE-50003 TSC VENT EFFL RADIOGAS (NTS) XDUCER: RS-232C SCALE: 0 > 1.00E-01	ARE-50003 UCI/CC	M 1283	PERMS	-	-- (UNIT 1 INPUT ONLY)	-	PERMS	1689	X
	36178	--	PRIMARY MET TOWER 10 METER WIND SPEED XDUCER: 0-5V SCALE: 0 > 100 MPH	MM TWR	B 1232	MET TOWER	NNS	6.2.08 (UNIT 1 INPUT ONLY)	E3	MUX	2001	
	36438	--	PRIMARY MET TOWER 60 METER WIND SPEED XDUCER: 0-5V SCALE: 0 > 100 MPH	MM TWR	B 1316	MET TOWER	NNS	6.2.08 (UNIT 1 INPUT ONLY)	E3	MUX	2001	
	36436	--	SECONDARY MET TOWER 10 METER WIND SPEED XDUCER: 0-5V SCALE: 0 > 100 MPH	MM TWR	B 1415	MET TOWER	NNS	6.2.08 (UNIT 1 INPUT ONLY)	E3	MUX	2001	
*	37011	32011	MAIN TURBINE SPEED XDUCER: 2-10V SCALE: 0 > 2500 RPM	SS-6299	B 1366	ATSI	NNS	--	-	MULT	1301	
*	T5001	T0001	INCORE THERMOCOUPLE A06 TEMP, TRAIN A, QUAD 4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10001	M 1079	T/C (FLD)	III	4.2.15	A1	RPU A3	1612	X
*	T5002	T0002	INCORE THERMOCOUPLE A10 TEMP, TRAIN B, QUAD 3 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10002	M 1080	T/C (FLD)	IV	4.2.15	A1	RPU B3	1612	X
	T5003	T0003	INCORE THERMOCOUPLE C04 TEMP, TRAIN B, QUAD 4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10003	M 1081	T/C (FLD)	IV	4.2.15	A1	RPU B3	1612	X
	T5004	T0004	INCORE THERMOCOUPLE C08 TEMP, TRAIN A, QUAD 3&4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10004	M 1082	T/C (FLD)	III	4.2.15	A1	RPU A3	1612	X

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	T5005	T0005	INCORE THERMOCOUPLE C12 TEMP, TRAIN A, QUAD 3 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10005	M 1083	T/C (FLD)	III	4.2.15	A1 RPU A3	1612	x
	T5006	T0006	INCORE THERMOCOUPLE E#2 TEMP, TRAIN B, QUAD 4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10006	M 1084	T/C (FLD)	IV	4.2.15	A1 RPU B3	1612	x
	T5007	T0007	INCORE THERMOCOUPLE E06 TEMP, TRAIN A, QUAD 4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10007	M 1085	T/C (FLD)	III	4.2.15	A1 RPU A3	1612	x
	T5008	T0008	INCORE THERMOCOUPLE E10 TEMP, TRAIN B, QUAD 3 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10008	M 1086	T/C (FLD)	IV	4.2.15	A1 RPU B3	1612	x
	T5009	T0009	INCORE THERMOCOUPLE E14 TEMP, TRAIN B, QUAD 3 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10009	M 1087	T/C (FLD)	IV	4.2.15	A1 RPU B3	1612	x
	T5010	T0010	INCORE THERMOCOUPLE G04 TEMP, TRAIN B, QUAD 4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10010	M 1088	T/C (FLD)	IV	4.2.15	A1 RPU B3	1612	x
	T5011	T0011	INCORE THERMOCOUPLE G08 TEMP, TRAIN B, QUAD 3&4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10011	M 1089	T/C (FLD)	IV	4.2.15	A1 RPU B3	1612	x
	T5012	T0012	INCORE THERMOCOUPLE G12 TEMP, TRAIN B, QUAD 3 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10012	M 1090	T/C (FLD)	IV	4.2.15	A1 RPU B3	1612	x
	T5013	T0013	INCORE THERMOCOUPLE H01 TEMP, TRAIN A, QUAD 1&4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10013	M 1091	T/C (FLD)	III	4.2.15	A1 RPU A3	1612	x
	T5014	T0014	INCORE THERMOCOUPLE J02 TEMP, TRAIN B, QUAD 1 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10014	M 1092	T/C (FLD)	IV	4.2.15	A1 RPU B3	1612	x
	T5015	T0015	INCORE THERMOCOUPLE J06 TEMP, TRAIN A, QUAD 1 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10015	M 1093	T/C (FLD)	III	4.2.15	A1 RPU A3	1612	x
	T5016	T0016	INCORE THERMOCOUPLE J10 TEMP, TRAIN B, QUAD 2 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10016	M 1094	T/C (FLD)	IV	4.2.15	A1 RPU B3	1612	x

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	T5017	T0017	INCORE THERMOCOUPLE J14 TEMP, TRAIN B, QUAD 2 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10017	M 1095	T/C (FLD)	IV	4.2.15	A1 RPU B3 1612		X
	T5018	T0018	INCORE THERMOCOUPLE L04 TEMP, TRAIN B, QUAD 1 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10018	M 1096	T/C (FLD)	IV	4.2.15	A1 RPU B3 1612		X
	T5019	T0019	INCORE THERMOCOUPLE L08 TEMP, TRAIN B, QUAD 1&2 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10019	M 1097	T/C (FLD)	IV	4.2.15	A1 RPU B3 1612		X
	T5020	T0020	INCORE THERMOCOUPLE L12 TEMP, TRAIN A, QUAD 2 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10020	M 1098	T/C (FLD)	III	4.2.15	A1 RPU A3 1612		X
	T5021	T0021	INCORE THERMOCOUPLE N02 TEMP, TRAIN B, QUAD 1 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10021	M 1099	T/C (FLD)	IV	4.2.15	A1 RPU B3 1612		X
	T5022	T0022	INCORE THERMOCOUPLE N06 TEMP, TRAIN B, QUAD 1 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10022	M 1100	T/C (FLD)	IV	4.2.15	A1 RPU B3 1612		X
	T5023	T0023	INCORE THERMOCOUPLE N10 TEMP, TRAIN B, QUAD 2 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10023	M 1101	T/C (FLD)	IV	4.2.15	A1 RPU B3 1612		X
	T5024	T0024	INCORE THERMOCOUPLE N14 TEMP, TRAIN B, QUAD 2 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10924	M 1102	T/C (FLD)	IV	4.2.15	A1 RPU B3 1612		X
	T5025	T0025	INCORE THERMOCOUPLE R08 TEMP, TRAIN B, QUAD 1&2 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10025	M 1103	T/C (FLD)	IV	4.2.15	A1 RPU B3 1612		X
	T5026	T0026	INCORE THERMOCOUPLE A08 TEMP, TRAIN B, QUAD 3&4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10026	M 1104	T/C (FLD)	IV	4.2.15	A1 RPU B3 1612		X
	T5027	T0027	INCORE THERMOCOUPLE C02 TEMP, TRAIN A, QUAD 4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10027	M 1105	T/C (FLD)	III	4.2.15	A1 RPU A3 1612		X
	T5028	T0028	INCORE THERMOCOUPLE C06 TEMP, TRAIN B, QUAD 4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10028	M 1106	T/C (FLD)	IV	4.2.15	A1 RPU B3 1612		X

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	T0029	T0029	INCORE THERMOCOUPLE C10 TEMP, TRAIN A, QUAD 3 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10029	M 1107	T/C (FLD)	III	4.2.15	A1 RPU A3 1612		X
	T0038	T0038	INCORE THERMOCOUPLE C14 TEMP, TRAIN A, QUAD 3 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10038	M 1108	T/C (FLD)	III	4.2.15	A1 RPU A3 1612		X
	T0031	T0031	INCORE THERMOCOUPLE E04 TEMP, TRAIN A, QUAD 4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10031	M 1109	T/C (FLD)	III	4.2.15	A1 RPU A3 1612		X
	T0032	T0032	INCORE THERMOCOUPLE E08 TEMP, TRAIN A, QUAD 3&4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10032	M 1110	T/C (FLD)	III	4.2.15	A1 RPU A3 1612		X
	T0033	T0033	INCORE THERMOCOUPLE E12 TEMP, TRAIN A, QUAD 3 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10033	M 1111	T/C (FLD)	III	4.2.15	A1 RPU A3 1612		X
	T0034	T0034	INCORE THERMOCOUPLE G02 TEMP, TRAIN B, QUAD 4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10034	M 1112	T/C (FLD)	IV	4.2.15	A1 RPU B3 1612		X
	T0035	T0035	INCORE THERMOCOUPLE G06 TEMP, TRAIN A, QUAD 4 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10035	M 1113	T/C (FLD)	III	4.2.15	A1 RPU A3 1612		X
	T0036	T0036	INCORE THERMOCOUPLE G10 TEMP, TRAIN B, QUAD 3 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10036	M 1114	T/C (FLD)	IV	4.2.15	A1 RPU B3 1612		X
	T0037	T0037	INCORE THERMOCOUPLE G14 TEMP, TRAIN B, QUAD 3 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10037	M 1115	T/C (FLD)	IV	4.2.15	A1 RPU B3 1612		X
	T0038	T0038	INCORE THERMOCOUPLE H15 TEMP, TRAIN A, QUAD 2&3 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10038	M 1116	T/C (FLD)	III	4.2.15	A1 RPU A3 1612		X
	T0039	T0039	INCORE THERMOCOUPLE J04 TEMP, TRAIN A, QUAD 1 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10039	M 1117	T/C (FLD)	III	4.2.15	A1 RPU A3 1612		X
	T0040	T0040	INCORE THERMOCOUPLE J08 TEMP, TRAIN B, QUAD 1&2 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10040	M 1118	T/C (FLD)	IV	4.2.15	A1 RPU B3 1612		X

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	T5041	T0041	INCORE THERMOCOUPLE J12 TEMP, TRAIN A, QUAD 2 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10041	M 1119	T/C (FLD)	III	4.2.15	A1 RPU A3	1612	X
	T5042	T0042	INCORE THERMOCOUPLE L02 TEMP, TRAIN A, QUAD 1 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10042	M 1120	T/C (FLD)	III	4.2.15	A1 RPU A3	1612	X
	T5043	T0043	INCORE THERMOCOUPLE L06 TEMP, TRAIN A, QUAD 1 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10043	M 1121	T/C (FLD)	III	4.2.15	A1 RPU A3	1612	X
	T5044	T0044	INCORE THERMOCOUPLE L10 TEMP, TRAIN A, QUAD 2 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10044	M 1122	T/C (FLD)	III	4.2.15	A1 RPU A3	1612	X
	T5045	T0045	INCORE THERMOCOUPLE L14 TEMP, TRAIN A, QUAD 2 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10045	M 1123	T/C (FLD)	III	4.2.15	A1 RPU A3	1612	X
	T5046	T0046	INCORE THERMOCOUPLE N04 TEMP, TRAIN A, QUAD 1 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10046	M 1124	T/C (FLD)	III	4.2.15	A1 RPU A3	1612	X
	T5047	T0047	INCORE THERMOCOUPLE N08 TEMP, TRAIN A, QUAD 2 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10047	M 1125	T/C (FLD)	III	4.2.15	A1 RPU A3	1612	X
	T5048	T0048	INCORE THERMOCOUPLE N12 TEMP, TRAIN A, QUAD 2 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10048	M 1126	T/C (FLD)	III	4.2.15	A1 RPU A3	1612	X
	T5049	T0049	INCORE THERMOCOUPLE R06 TEMP, TRAIN A, QUAD 1 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10049	M 1127	T/C (FLD)	III	4.2.15	A1 RPU A3	1612	X
	T5050	T0050	INCORE THERMOCOUPLE R10 TEMP, TRAIN B, QUAD 2 XDUCER: TYPE K TC SCALE: 0 > 2300 DEG F	TE-10050	M 1128	T/C (FLD)	IV	4.2.15	A1 RPU B3	1612	X
	T5122	T0122	EXCESS LETDOWN HEAT EXCH OUTLET TEMP XDUCER: 0-10V SCALE: 50 > 250 DEG F	TE-0122	M 1361	PCS	NNS	--	- MULT	1200	
	T5145	T0145	LETDOWN HEAT EXCH OUTLET TEMP XDUCER: 0-10V SCALE: 50 > 200 DEG F	TE-0130	M 1362	PCS	NNS	--	- MULT	1200	

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*	T5406	T0406	LOOP 1 WIDE RANGE T-COLD XDUCER: 0-10V SCALE:	0 >	700	DEG F	TE-0413B	M 1004	PCS	II	4.2.03	A1	RPU B2	1201	X
	T5419	T0419	LOOP 1 WIDE RANGE T-HOT XDUCER: 0-10V SCALE:	0 >	700	DEG F	TE-0413A	M 1000	PCS	I	4.2.02	A1	RPU A2	1201	X
*	T5426	T0426	LOOP 2 WIDE RANGE T-COLD XDUCER: 0-10V SCALE:	0 >	700	DEG F	TE-0423B	M 1005	PCS	II	4.2.03	A1	RPU B2	1201	X
	T5439	T0439	LOOP 2 WIDE RANGE T-HOT XDUCER: 0-10V SCALE:	0 >	700	DEG F	TE-0423A	M 1001	PCS	I	4.2.02	A1	RPU A2	1201	X
*	T5446	T0446	LOOP 3 WIDE RANGE T-COLD XDUCER: 0-10V SCALE:	0 >	700	DEG F	TE-0433B	M 1006	PCS	II	4.2.03	A1	RPU B2	1201	X
	T5459	T0459	LOOP 3 WIDE RANGE T-HOT XDUCER: 0-10V SCALE:	0 >	700	DEG F	TE-0433A	M 1002	PCS	I	4.2.02	A1	RPU A2	1201	X
*	T5466	T0466	LOOP 4 WIDE RANGE T-COLD XDUCER: 0-10V SCALE:	0 >	700	DEG F	TE-0443B	M 1007	PCS	II	4.2.03	A1	RPU B2	1201	X
	T5479	T0479	LOOP 4 WIDE RANGE T-HOT XDUCER: 0-10V SCALE:	0 >	700	DEG F	TE-0443A	M 1003	PCS	I	4.2.02	A1	RPU A2	1201	X
	T5480	T0480	PRESSURIZER TEMPERATURE (WATER) XDUCER: 0-10V SCALE:	100 >	700	DEG F	TE-0453	M 1323	PCS	NNS	--	-	MULT	1201	
	T5481	T0481	PRESSURIZER TEMPERATURE (STEAM) XDUCER: 0-10V SCALE:	100 >	700	DEG F	TE-0454	M 1324	PCS	NNS	--	-	MULT	1201	
	T5485	T0485	PRESSURIZER RELIEF TANK TEMPERATURE XDUCER: 0-10V SCALE:	50 >	350	DEG F	TE-0468	M 1261	PCS	NNS	--	-	MULT	1201	
	T5627	T0627	RHR HEAT EXCH TRAIN A OUTLET TEMP XDUCER: 0-10V SCALE:	50 >	400	DEG F	TE-0604	M 1214	PCS	NNS	7.2.10-A	D2	MULT	1205	

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	T5628	T0628	RHR HEAT EXCH TRAIN B OUTLET TEMP XDUCER: 0-10V SCALE: 50 > 400 DEG F	TE-0605	M 1215	PCS	NNS	7.2.10-A	D2 MULT	1205	
	T5630	T0630	RHR HEAT EXCH TRAIN A INLET TEMP XDUCER: 0-10V SCALE: 50 > 400 DEG F	TE-0612	M 1347	PCS	NNS	--	- MULT	1205	
	T5631	T0631	RHR HEAT EXCH TRAIN B INLET TEMP XDUCER: 0-10V SCALE: 50 > 400 DEG F	TE-0613	M 1348	PCS	NNS	--	- MULT	1205	
*	T6172	--	PRIMARY MET TOWER 10 METER AMBIENT TEMPERATURE XDUCER: 0-5V SCALE: -10 > 120 DEG F	MM TWR	B 1234	MET TOWER	NNS	8.2.08 (UNIT 1 INPUT ONLY)	E3 MUX	2001	
	T6173	--	PRIMARY MET TOWER 10 METER DEW POINT TEMP XDUCER: 0-5V SCALE: -10 > 120 DEG F	MM TWR	B 1235	MET TOWER	NNS	8.2.08 (UNIT 1 INPUT ONLY)	E3 MUX	2001	
	T6174	--	PRIMARY MET TOWER 60-10 METER DELTA TEMP XDUCER: 0-5V SCALE: -5 > 10 DEG F	MM TWR	B 1236	MET TOWER	NNS	8.2.08 (UNIT 1 INPUT ONLY)	E3 MUX	2001	
	T6262	--	PRESSURIZER PORV PV0456A OUTLET TEMP XDUCER: 0-10V SCALE: 50 > 400 DEG F	TE-0463	M 1325	PCS	NNS	--	- MULT	1201	
	T6263	--	PRESSURIZER SAFETY VALVE PSV-0010A OUTLET TEMP XDUCER: 0-10V SCALE: 50 > 400 DEG F	TE-0466	M 1326	PCS	NNS	--	- MULT	1201	
	T6264	--	PRESSURIZER SAFETY VALVE PSV-0010B OUTLET TEMP XDUCER: 0-10V SCALE: 50 > 400 DEG F	TE-0465	M 1327	PCS	NNS	--	- MULT	1201	
	T6265	--	PRESSURIZER SAFETY VALVE PSV-0010C OUTLET TEMP XDUCER: 0-10V SCALE: 50 > 400 DEG F	TE-0464	M 1328	PCS	NNS	--	- MULT	1201	
	T6438	--	SECONDARY MET TOWER 10 METER AMBIENT TEMP XDUCER: 0-5V SCALE: -10 > 120 DEG F	MM TWR	B 1417	MET TOWER	NNS	8.2.08 (UNIT 1 INPUT ONLY)	E3 MUX	2001	
	T7317	T2317	FEEDWATER HEATER 6A OUTLET TEMPERATURE XDUCER: TYPE T TC SCALE: 0 > 600 DEG F	TE-5222	M 1378	PCS-BOP	NNS	--	- MULT	1305	

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	T7322	T2322	FEEDWATER HEATER 6B OUTLET TEMPERATURE XDUCER: TYPE T TC SCALE: 0 > 600 DEG F	TE-5223	M 1379	PCS-80P	NNS	--	-	MULT	1305	
	T7501	T2501	CONTAINMENT LEVEL 2 TEMPERATURE XDUCER: TYPE T TC SCALE: 0 > 500 DEG F	TE-2563	B 1263	T/C (FLD)	NNS	--	-	MULT	1501	X
	T7502	T2502	CONTAINMENT LEVEL C TEMPERATURE XDUCER: TYPE T TC SCALE: 0 > 500 DEG F	TE-2612	B 1264	T/C (FLD)	NNS	--	-	MULT	1501	X
	T7503	T2503	CONTAINMENT LEVEL B TEMPERATURE XDUCER: TYPE T TC SCALE: 0 > 500 DEG F	TE-2613	B 1265	T/C (FLD)	NNS	--	-	MULT	1501	X
	T7506	T2506	REACTOR CAVITY AREA B CONCRETE TEMPERATURE XDUCER: 0-10V SCALE: 32 > 200 DEG F	TE-12258	B 1387	T/T (FLD)	NNS	--	-	MULT	1511	
	T7507	T2507	REACTOR CAVITY AREA D CONCRETE TEMPERATURE XDUCER: 0-10V SCALE: 32 > 200 DEG F	TE-12260	B 1388	T/T (FLD)	NNS	--	-	MULT	1511	
	T7508	T2508	REACTOR CAVITY AREA A CONCRETE TEMPERATURE XDUCER: 0-10V SCALE: 32 > 200 DEG F	TE-12259	B 1389	T/T (FLD)	NNS	-	[illegible]	[illegible]	1511	
*	T7509	T2509	REACTOR CAVITY AREA C CONCRETE TEMPERATURE XDUCER: 0-10V SCALE: 32 > 200 DEG F	TE-12261	B 1390	T/T (FLD)	NNS	--	-	MULT	1511	
	T7511	T2511	REACTOR CAVITY UPPER NORTH AIR TEMP XDUCER: TYPE T TC SCALE: 0 > 500 DEG F	TE-2664	B 1391	T/C (FLD)	NNS	--	-	MULT	1512	
	T7512	T2512	REACTOR CAVITY UPPER EAST AIR TEMP XDUCER: TYPE T TC SCALE: 0 > 500 DEG F	TE-2667	B 1392	T/C (FLD)	NNS	--	-	MULT	1512	
	T7513	T2513	REACTOR CAVITY UPPER SOUTH AIR TEMP XDUCER: TYPE T TC SCALE: 0 > 500 DEG F	TE-2665	B 1393	T/C (FLD)	NNS	--	-	MULT	1512	
	T7514	T2514	REACTOR CAVITY UPPER WEST AIR TEMP XDUCER: TYPE T TC SCALE: 0 > 500 DEG F	TE-2666	B 1394	T/C (FLD)	NNS	--	-	MULT	1512	

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	T7515	T2515	REACTOR CAVITY LOWER A AIR TEMP XDUCER: TYPE T TC SCALE: 0 > 500 DEG F	TE-2668	B 1395	T/C (FLD)	NNS	--	-	MULT	1511	
	T7516	T2516	REACTOR CAVITY LOWER B AIR TEMP XDUCER: TYPE T TC SCALE: 0 > 500 DEG F	TE-2669	B 1396	T/C (FLD)	NNS	--	-	MULT	1511	
*	T7601	T2601	NSCW SUPPLY HEADER TEMP TRAIN A XDUCER: TYPE T TC SCALE: 0 > 300 DEG F	TE-1642	B 1353	T/C (FLD)	NNS	--	-	MULT	1202	
*	T7602	T2602	NSCW SUPPLY HEADER TEMP TRAIN B XDUCER: TYPE T TC SCALE: 0 > 300 DEG F	TE-1643	B 1354	T/C (FLD)	NNS	--	-	MULT	1202	
	T7603	T2603	NSCW RETURN HEADER TEMP TRAIN A XDUCER: TYPE T TC SCALE: 0 > 200 DEG F	TE-1676	M 1355	PCS-BOP	NNS	--	-	MULT	1202	
	T7604	T2604	NSCW RETURN HEADER TEMP TRAIN B XDUCER: TYPE T TC SCALE: 0 > 200 DEG F	TE-1677	M 1356	PCS-BOP	NNS	--	-	MULT	1202	
	T7671	T2671	CCW HEAT EXCH OUTLET TEMP TRAIN A XDUCER: TYPE T TC SCALE: 0 > 300 DEG F	TE-1866	B 1189	T/C (FLD)	NNS	7.2.08-B	D2	RPU N1	1203	
	T7672	T2672	CCW HEAT EXCH OUTLET TEMP TRAIN B XDUCER: TYPE T TC SCALE: 0 > 300 DEG F	TE-1867	B 1190	T/C (FLD)	NNS	7.2.08-B	D2	RPU N1	1203	
	T7701	T2701	ACCW HEAT EXCH 1 OUTLET TEMP XDUCER: TYPE T TC SCALE: 0 > 300 DEG F	TE-1967	B 1359	T/C (FLD)	NNS	--	-	MULT	1217	
	T7702	T2702	ACCW HEAT EXCH 2 OUTLET TEMP XDUCER: TYPE T TC SCALE: 0 > 300 DEG F	TE-1970	B 1360	T/C (FLD)	NNS	--	-	MULT	1217	
	T9644	--	RCS SUBCOOLING-TRAIN A XDUCER: RS-422 SCALE: -600 > 350 DEG F	CALC-DPUA	M 1135	-	-	4.2.16	A1	DPUA	1201	X
	T9645	--	RCS SUBCOOLING-TRAIN B XDUCER: RS-422 SCALE: -600 > 350 DEG F	CALC-DPUB	M 1333	-	-	4.2.16	A1	DPUB	1201	X

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	T9847	--	RVLIS HEAD TEMP COMP AT RV TRAIN A XDUCER: 100 OHM SCALE: 50 > 420 DEG F	TE-1313	M 1342	T/C	(FLD) III	5.2.03-B	B1 RPU A3	1201	
	T9848	--	RVLIS HEAD TEMP COMP AT ISOL TRAIN A XDUCER: 100 OHM SCALE: 50 > 420 DEG F	TE-1314	M 1386	T/C	(FLD) III	5.2.03-B	B1 RPU A3	1201	
	T9849	--	RVLIS HOT LEG TEMP COMP AT RV TRAIN A XDUCER: 100 OHM SCALE: 50 > 420 DEG F	TE-1315	M 1401	T/C	(FLD) III	5.2.03-B	B1 RPU A3	1201	
	T9850	--	RVLIS HOT LEG TEMP COMP AT ISOL TRAIN A XDUCER: 100 OHM SCALE: 50 > 420 DEG F	TE-1316	M 1402	T/C	(FLD) III	5.2.03-B	B1 RPU A3	1201	
	T9851	--	RVLIS SEAL TBL TEMP COMP AT RV TRAIN A XDUCER: 100 OHM SCALE: 50 > 420 DEG F	TE-1317	M 1403	T/C	(FLD) III	5.2.03-B	B1 RPU A3	1201	
	T9852	--	RVLIS SEAL TBL TEMP COMP AT SEAL TBL TRAIN A XDUCER: 100 OHM SCALE: 50 > 420 DEG F	TE-1318	M 1404	T/C	(FLD) III	5.2.03-B	B1 RPU A3	1201	
	T9853	--	RVLIS SEAL TBL TEMP COMP AT ISOL TRAIN A XDUCER: 100 OHM SCALE: 50 > 420 DEG F	TE-1319	M 1405	T/C	(FLD) III	5.2.03-B	B1 RPU A3	1201	
	T9854	--	RVLIS HEAD TEMP COMP AT RV TRAIN B XDUCER: 100 OHM SCALE: 50 > 420 DEG F	TE-1323	M 1406	T/C	(FLD) IV	5.2.03-B	B1 RPU B3	1201	
	T9855	--	RVLIS HEAD TEMP COMP AT ISOL TRAIN B XDUCER: 100 OHM SCALE: 50 > 420 DEG F	TE-1324	M 1410	T/C	(FLD) IV	5.2.03-B	B1 RPU B3	1201	
	T9856	--	RVLIS HOT LEG TEMP COMP AT RV TRAIN B XDUCER: 100 OHM SCALE: 50 > 420 DEG F	TE-1325	M 1418	T/C	(FLD) IV	5.2.03-B	B1 RPU B3	1201	
	T9857	--	RVLIS HOT LEG TEMP COMP AT ISOL TRAIN B XDUCER: 100 OHM SCALE: 50 > 420 DEG F	TE-1326	M 1419	T/C	(FLD) IV	5.2.03-B	B1 RPU B3	1201	
	T9858	--	RVLIS SEAL TBL TEMP COMP AT RV TRAIN B XDUCER: 100 OHM SCALE: 50 > 420 DEG F	TE-1327	M 1420	T/C	(FLD) IV	5.2.03-B	B1 RPU B3	1201	

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	T9859	--	RVLIS SEAL TBL TEMP COMP AT SEAL TBL TRAIN B XDUCER: 100 OHM SCALE: 50 > 420 DEG F	TE-1328	M 1421	T/C (FLD)	IV	5.2.03-B B1	RPU B3	1201	
	T9860	--	RVLIS SEAL TBL TEMP COMP AT ISOL TRAIN B XDUCER: 100 OHM SCALE: 30 > 420 DEG F	TE-1329	M 1422	T/C (FLD)	IV	5.2.03-B B1	RPU B3	1201	
	T9882	--	MET TWR EQUIP BLDG TEMP (0V=NORM,5V=HI-LO) XDUCER: 0-5V SCALE: 0 > 5 VOLTS	MET TWR	B 1238	MET TOWER	NNS	-- (UNIT 1 INPUT ONLY)	- MUX	2001	
	T9883	--	STEAM GEN 1 BLOWDOWN TEMP XDUCER: TYPE T TC SCALE: 0 > 600 DEG F	TE-5734	B 1434	T/C (FLD)	NNS	--	- MULT	1301	
	T9884	--	STEAM GEN 2 BLOWDOWN TEMP XDUCER: TYPE T TC SCALE: 0 > 600 DEG F	TE-5735	B 1435	T/C (FLD)	NNS	--	- MULT	1301	
	T9885	--	STEAM GEN 3 BLOWDOWN TEMP XDUCER: TYPE T TC SCALE: 0 > 600 DEG F	TE-5736	B 1436	T/C (FLD)	NNS	--	- MULT	1301	
	T9886	--	STEAM GEN 4 BLOWDOWN TEMP XDUCER: TYPE T TC SCALE: 0 > 600 DEG F	TE-5737	B 1437	T/C (FLD)	NNS	--	- MULT	1301	
	T9887	--	TURBINE DRIVEN AUX FW PUMP 1 TRAIN C DISCH TEMP XDUCER: TYPE T TC SCALE: 0 > 300 DEG F	TE-5166	B 1438	T/C (FLD)	NNS	--	- MULT	1302	
	T9888	--	MOTOR DRIVEN AUX FW PUMP 3 TRAIN A DISCH TEMP XDUCER: TYPE T TC SCALE: 0 > 300 DEG F	TE-5218	B 1439	T/C (FLD)	NNS	--	- MULT	1302	
	T9889	--	MOTOR DRIVEN AUX FW PUMP 2 TRAIN B DISCH TEMP XDUCER: TYPE T TC SCALE: 0 > 300 DEG F	TE-5211	B 1440	T/C (FLD)	NNS	--	- MULT	1302	
	TD9528	--	RHR PUMP ROOM TRAIN A TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12206	B 2516	MCC E/01-BG-D05G	I	7.2.11-B D2	RPU A2	1555	
	TD9528	--	RHR PUMP ROOM TRAIN B TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12212	B 2019	MCC E/01-BG-D05H	II	7.2.11-B D2	RPU B2	1555	

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	TD9530	--	CNMT SPRAY PUMP ROOM TRAIN A TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12207	B 2015	MCC E/D1-BG-D05J	I	7.2.11-B D2	RPU A2	1555	
	TD9532	--	CNMT SPRAY PUMP ROOM TRAIN B TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12213	B 2009	MCC E/D1-BG-D05K	II	7.2.11-B D2	RPU B2	1555	
	TD9534	--	CCW PUMP ROOM TRAIN A TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12208	B 2007	MCC E/D1-BG-D05E	I	7.2.11-B D2	RPU A2	1555	
	TD9536	--	CCW PUMP ROOM TRAIN B TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12214	B 2384	MCC E/D1-BG-D05F	II	7.2.11-B D2	RPU B2	1555	
	TD9538	--	CHARGING PUMP ROOM TRAIN A TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12209	B 2382	MCC E/D1-BG-D05N	I	7.2.11-B D2	RPU A2	1555	
	TD9540	--	CHARGING PUMP ROOM TRAIN B TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12215	B 2002	MCC E/D1-BG-D05P	II	7.2.11-B D2	RPU B2	1555	
	TD9542	--	ELEC SWGR & MCC RM LEVEL D TRAIN A TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12200	B 2509	MCC E/D1-BG-D05A	I	7.2.11-B D2	RPU A2	1555	
	TD9544	--	ELEC SWGR & MCC RM LEVEL 2 TRAIN B TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12201	B 2379	MCC E/D1-BG-D05B	II	7.2.11-B D2	RPU B2	1555	
	TD9546	--	ELEC SWGR & MCC RM LEVEL C TRAIN A TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12202	B 2000	MCC E/D1-BG-D05C	I	7.2.11-B D2	RPU A2	1555	
	TD9548	--	ELEC SWGR & MCC RM LEVEL B TRAIN B TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12203	B 2076	MCC E/D1-BG-D05D	II	7.2.11-B D2	RPU B2	1555	
	TD9550	--	ELEC SWGR & MCC RM LEVEL 1 TRAIN A TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12204	B 2596	MCC E/D1-BG-D05E	I	7.2.11-B D2	RPU A2	1555	
	TD9552	--	ELEC SWGR & MCC RM LEVEL 1 TRAIN B TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12205	B 2415	MCC E/D1-BG-D05F	II	7.2.11-B D2	RPU B2	1555	

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	TD9554	--	SIS PUMP ROOM TRAIN A TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12218	B 2411	MCC E/D1-BG-D05R	I	7.2.11-B D2	RPU A2	1555	
	TD9556	--	SIS PUMP ROOM TRAIN B TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12216	B 2417	MCC E/D1-BG-D05Q	II	7.2.11-B D2	RPU B2	1555	
	TD9558	--	BFP HEAT EXCH & PUMP RM TRAIN A TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12211	B 2413	MCC E/D1-BG-D05U	I	7.2.11-B D2	RPU A2	1555	
	TD9560	--	BFP HEAT EXCH & PUMP RM TRAIN B TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISH-12217	B 2811	MCC E/D1-BG-D05V	II	7.2.11-B D2	RPU B2	1555	
	TD9572	--	AUX FW PUMP HOUSE TRAIN A TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TIS-12006	B 2335	FLD E/D1-BG-G03A	I	7.2.11-B D2	RPU A2	1593	
	TD9576	--	AUX FW PUMP HOUSE TRAIN B TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TIS-12005	B 2244	FLD E/D1-BG-G03B	II	7.2.11-B D2	RPU B2	1593	
	TD9665	--	DIESEL GEN BUILDING TEMP TRAIN B ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISML-12057A	B 2435	FLD	NNS	7.2.11-B D2	SDE	1566	
	TD9666	--	DIESEL GEN BUILDING TEMP TRAIN A ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TISML-12056A	B 2517	FLD	NNS	7.2.11-B D2	SDE	1566	
	TD9667	--	AUX FW PUMP HOUSE TRAIN C TEMP ALM ON CONTACT: CLSD ALM/NML: HIGH / NORMAL	TIS-12004	B 2022	FLD E/D1-BG-G03C	NNS	--	-	RPU N1	1593
	UC9257	--	LATEST PASS BORON SAMPLE SCALE: 0 > 6000 PPM	CALC VALUE	GPC 0168	-	-	6.2.01-C C3	CALC	2702	
	UC9258	--	LATEST PASS CHLORIDE SAMPLE SCALE: 0 > 20 PPM	CALC VALUE	GPC 0170	-	-	6.2.01-C C3	CALC	2702	
	UC9259	--	LATEST PASS DISSOLVED HYDROGEN SAMPLE SCALE: 0 > 2000 CC/KG	CALC VALUE	GPC 0181	-	-	6.2.01-C C3	CALC	2702	

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	UC9260	--	LATEST PASS DISSOLVED OXYGEN SAMPLE SCALE: B > 2.00E+4	CALC VALUE PPB	GPC 0182	-	-	6.2.01-C	C3	CALC	2702	
	UD5000	--	REACTOR	CALC VALUE	GPC 0317	-	-	7.2.14	D2	CALC	1000	X
	UD5190	--	CHARGING PMP TRN A THROTTLE VLV (SEE H5190)	CALC VALUE	GPC 0325	-	-	7.2.03-E	D2	CALC	1208	
	UD5191	--	CHARGING PMP TRN B THROTTLE VLV (SEE H5191)	CALC VALUE	GPC 0326	-	-	7.2.03-E	D2	CALC	1208	
	UD5442	--	LETDOWN TO PRT TRN A THROTTLE VLV (SEE H5442)	CALC VALUE	GPC 0321	-	-	7.2.05-E	D2	CALC	1208	
	UD5443	--	LETDOWN TO PRT TRN B THROTTLE VLV (SEE H5443)	CALC VALUE	GPC 0322	-	-	7.2.05-E	D2	CALC	1208	
	UD5943	--	BI ACCUM TANK N2 HDR VENT VLV TRN A (SEE H5943)	CALC VALUE	GPC 0323	-	-	7.2.05-E	D2	CALC	1204	
	UD5944	--	BI ACCUM TANK N2 HDR VENT VLV TRN B (SEE H5944)	CALC VALUE	GPC 0324	-	-	7.2.05-E	D2	CALC	1204	
*	UD6626	--	RHR TROUBLE	CALC VALUE	GPC 0329	-	-	--	-	CALC	1205	X
*	UD6001	--	ADVERSE CONTAINMENT CONDITIONS	CALC VALUE	GPC 0328	-	-	--	-	CALC	1206	X
	UD6150	--	SAFETY INJECTION SIGNAL	CALC VALUE	GPC 0314	-	-	7.2.14	D2	CALC	1204	X
	UD6160	--	CONTAINMENT ISOLATION SIGNAL	CALC VALUE	GPC 0316	-	-	7.2.14	D2	CALC	2415	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	IN-JT VIA	SYSTEM	SPDS
	UD6161	--	CONTAINMENT ISOLATED -	CALC VALUE	GPC 0313	-	-	7.2.14	D2	CALC	2415	X
	UD7001	--	TURBINE	CALC VALUE	GPC 0315	-	-	7.2.14	D2	CALC	1301	X
	UD7002	--	MAIN TURB STOP VALVE SV1	XV-6001	GPC 0387	-	-	7.2.14	D2	CALC	1301	X
	UD7004	--	MAIN TURB STOP VALVE SV2	XV-6002	GPC 0389	-	-	7.2.14	D2	CALC	1301	X
	UD7006	--	MAIN TURB STOP VALVE SV3	XV-6003	GPC 0391	-	-	7.2.14	D2	CALC	1301	X
	UD7008	--	MAIN TURB STOP VALVE SV4	XV-6004	GPC 0393	-	-	7.2.14	D2	CALC	1301	X
	UD7010	--	MAIN TURB CONTROL VALVE CV1	XV-6005	GPC 0428	-	-	--	-	CALC	1301	
	UD7012	--	MAIN TURB CONTROL VALVE CV2	XV-6006	GPC 0430	-	-	--	-	CALC	1301	
	UD7014	--	MAIN TURB CONTROL VALVE CV3	XV-6007	GPC 0432	-	-	--	-	CALC	1301	
	UD7016	--	MAIN TURB CONTROL VALVE CV4	XV-6008	GPC 0411	-	-	--	-	CALC	1301	
	UD7042	--	MAIN TURB INTERMEDIATE STOP VLV ISV1	CALC VALUE	GPC 0413	-	-	--	-	CALC	1301	
	UD7044	--	MAIN TURB INTERMEDIATE STOP VLV ISV2	CALC VALUE	GPC 0415	-	-	--	-	CALC	1301	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG VAR	1.97 CLASS	INPUT VIA	SYSTEM	SPDB
	UD7046	--	MAIN TURB INTERMEDIATE STOP VLV ISV3	CALC VALUE	GPC 0417	-	-	--	-	CALC	1301	
	UD7048	--	MAIN TURB INTERMEDIATE STOP VLV ISV4	CALC VALUE	GPC 0419	-	-	--	-	CALC	1301	
	UD7050	--	MAIN TURB INTERMEDIATE STOP VLV ISV5	CALC VALUE	GPC 0421	-	-	--	-	CALC	1301	
	UD7052	--	MAIN TURB INTERMEDIATE STOP VLV ISV6	CALC VALUE	GPC 0439	-	-	--	-	CALC	1301	
	UD7054	--	MAIN TURBINE INTERCEPT VALVE IV1	CALC VALUE	GPC 0441	-	-	--	-	CALC	1301	
	UD7056	--	MAIN TURBINE INTERCEPT VALVE IV2	CALC VALUE	GPC 0443	-	-	--	-	CALC	1301	
	UD7058	--	MAIN TURBINE INTERCEPT VALVE IV3	CALC VALUE	GPC 0445	-	-	--	-	CALC	1301	
	UD7060	--	MAIN TURBINE INTERCEPT VALVE IV4	CALC VALUE	GPC 0447	-	-	--	-	CALC	13P1	
	UD7062	--	MAIN TURBINE INTERCEPT VALVE IV5	CALC VALUE	GPC 0449	-	-	--	-	CALC	1301	
	UD7064	--	MAIN TURBINE INTERCEPT VALVE IV6	CALC VALUE	GPC 0451	-	-	--	-	CALC	1301	
	UD7101	--	SG1 MAIN STM ISOL VLV UPSTREAM TRAIN A	HV-3006A	GPC 0464	-	-	5,2,05-F	02	CALC	1301	
	UD7103	--	SG2 MAIN STM ISOL VLV UPSTREAM TRAIN A	HV-3016A	GPC 0481	-	-	5,2,05-F	02	CALC	1301	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	UD7105	--	SG3 MAIN STM ISOL VLV UPSTREAM TRAIN A	HV-3026A	GPC 0526	-	-	5.2.05-F	B2	CALC	1301	
	UD7107	--	SG4 MAIN STM ISOL VLV UPSTREAM TRAIN A	HV-3036A	GPC 0524	-	-	5.2.05-F	B2	CALC	1301	
	UD7111	--	SG1 MAIN STM ISOL VLV DNSTRM TRAIN B	HV-3006B	GPC 0483	-	-	5.2.05-F	B2	CALC	1301	
	UD7113	--	SG2 MAIN STM ISOL VLV DNSTRM TRAIN B	HV-3016B	GPC 0528	-	-	5.2.05-F	B2	CALC	1301	
	UD7115	--	SG3 MAIN STM ISOL VLV DNSTRM TRAIN B	HV-3026B	GPC 0525	-	-	5.2.05-F	B2	CALC	1301	
	UD7117	--	SG4 MAIN STM ISOL VLV DNSTRM TRAIN B	HV-3036B	GPC 0523	-	-	5.2.05-F	B2	CALC	1301	
	UD7131	--	SG1 OUTLET VALVE TO TDAFW TRAIN B	HV-3009	GPC 0482	-	-	7.2.06-C	D2	CALC	1301	
	UD7133	--	SG2 OUTLET VALVE TO TDAFW TRAIN C	HV-3019	GPC 0527	-	-	7.2.06-C	D2	CALC	1301	
	UD7146	--	STM DUMP TV-5000A TO CONDENSER A	TV-0500A	GPC 0503	-	-	--	-	CALC	1301	
	UD7148	--	STM DUMP TV-5000B TO CONDENSER B	TV-0500B	GPC 0502	-	-	--	-	CALC	1301	
	UD7150	--	STM DUMP TV-5000C TO CONDENSER C	TV-0500C	GPC 0501	-	-	--	-	CALC	1301	
	UD7152	--	STM DUMP TV-5000D TO CONDENSER A	TV-0500D	GPC 0500	-	-	--	-	CALC	1301	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDB
	UD7154	--	STM DUMP -500E TO CONDENSER	TV-0500E	GPC 0499	-	-	--	-	CALC	1301	
	UD7156	--	STM DUMP TV-500F TO CONDENSER C	TV-0500F	GPC 0498	-	-	--	-	CALC	1301	
	UD7158	--	STM DUMP TV-500G TO CONDENSER A	TV-0500G	GPC 0497	-	-	--	-	CALC	1301	
	UD7160	--	STM DUMP TV-500H TO CONDENSER B	TV-0500H	GPC 0496	-	-	--	-	CALC	1301	
	UD7162	--	STM DUMP TV-500J TO CONDENSER C	TV-0500J	GPC 0495	-	-	--	-	CALC	1301	
	UD7164	--	STM DUMP PV-507A TO CONDENSER A	PV-0507A	GPC 0464	-	-	--	-	CALC	1301	
	UD7166	--	STM DUMP PV-507B TO CONDENSER B	PV-0507B	GPC 0463	-	-	--	-	CALC	1301	
	UD7168	--	STM DUMP PV-507C TO CONDENSER C	PV-0507C	GPC 0462	-	-	--	-	CALC	1301	
	UD7331	--	TDAFW DISCH VLV TO SG4	HV-5128	GPC 0522	-	-	7.2.06-C	D2	CALC	1302	
	UD7333	--	TDAFW DISCH VLV TO SG1	HV-5122	GPC 0521	-	-	7.2.06-C	D2	CALC	1302	
	UD7335	--	TDAFW DISCH VLV TO SG2	HV-5125	GPC 0520	-	-	7.2.06-C	D2	CALC	1302	
	UD7337	--	TDAFW DISCH VLV TO SG3	HV-5127	GPC 0519	-	-	7.2.06-C	D2	CALC	1302	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	UD7339	--	MD AFW-B DISCH VLV TO SG2	HV-5132	GPC #518	-	-	7.2.06-C	D2	CALC	1302	
	UD7341	--	MD AFW-B DISCH VLV TO SG3	HV-5134	GPC #517	-	-	7.2.06-C	D2	CALC	1302	
	UD7343	--	MD AFW-A DISCH VLV TO SG4	HV-5137	GPC #516	-	-	7.2.06-C	D2	CALC	1302	
	UD7345	--	MD AFW-A DISCH VLV TO SG1	HV-5139	GPC #515	-	-	7.2.06-C	D2	CALC	1302	
	UD7351	--	MD AFW-A INLET VALVE	HV-5119	GPC #414	-	-	7.2.06-C	D2	CALC	1302	
	UD7353	--	MD AFW-B INLET VALVE	HV-5118	GPC #412	-	-	7.2.06-C	D2	CALC	1302	
	UD7355	--	TDAFW INLET VALVE	HV-5113	GPC #410	-	-	7.2.06-C	D2	CALC	1302	
	UD7357	--	TDAFW STEAM INLET VALVE	HV-5106	GPC #409	-	-	7.2.06-C	D2	CALC	1302	
	UD7396	--	TDAFW PUMP TRAIN C	CALC VALUE	GPC #327	-	-	7.2.14	D2	CALC	1302	
	UD7527	--	SG LOOP 1 FW ISOLATION - MFIV	HV-5227	GPC #418	-	-	7.2.04-F	D2	CALC	1305	
	UD7529	--	SG LOOP 2 FW ISOLATION - MFIV	HV-5228	GPC #420	-	-	7.2.04-F	D2	CALC	1306	
	UD7531	--	SG LOOP 3 FW ISOLATION - MFIV	HV-5229	GPC #422	-	-	7.2.04-F	D2	CALC	1307	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDB
	UD7533	--	SG LOOP 4 FW ISOLATION - MFIV	HV-5238	GPC 0423	-	-	7.2.04-F	D2 CALC	1305	
	UD7537	--	SG1 BLOWDOWN ISOLATION	HV-7603A	GPC 0513	-	-	7.2.04-K	D2 CALC	1301	
	UD7539	--	SG2 BLOWDOWN ISOLATION	HV-7603B	GPC 0512	-	-	7.2.04-K	D2 CALC	1301	
	UD7541	--	SG3 BLOWDOWN ISOLATION	HV-7603C	GPC 0511	-	-	7.2.04-K	D2 CALC	1301	
	UD7543	--	SG4 BLOWDOWN ISOLATION	HV-7603D	GPC 0510	-	-	7.2.04-K	D2 CALC	1301	
	UD7603	--	NSCW COOLING TOWER RTN VALVE TRAIN A	HV-1668A	GPC 0468	-	-	7.2.09-B	D2 CALC	1202	
	UD7604	--	NSCW COOLING TOWER BYPASS VLV TRAIN A	HV-1668B	GPC 0397	-	-	7.2.09-B	D2 CALC	1202	
	UD7605	--	NSCW COOLING TOWER RTN VALVE TRAIN B	HV-1669A	GPC 0489	-	-	7.2.09-B	D2 CALC	1202	
	UD7606	--	NSCW COOLING TOWER BYPASS VLV TRAIN B	HV-1669B	GPC 0395	-	-	7.2.09-B	D2 CALC	1202	
*	UD7701	--	ACCW RETURN TRAIN A	HV-1975	GPC 0487	-	-	--	- CALC	1217	
*	UD7703	--	ACCW RETURN TRAIN B	HV-1974	GPC 0488	-	-	--	- CALC	1217	
*	UD7705	--	ACCW SUPPLY TRAIN A	HV-1979	GPC 0485	-	-	--	- CALC	1217	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
*	UD7707	--	ACCm SUPPLY TRAIN B	HV-1978	GPC 0486	-	-	--	-	CALC	1217	
	UD8418	--	CNMT BLDG AIR COOLING UNIT 1	CALC VALUE	GPC 0359	-	-	7.2.07-E	D2	CALC	1501	
	UD8420	--	CNMT BLDG AIR COOLING UNIT 2	CALC VALUE	GPC 0360	-	-	7.2.07-E	D2	CALC	1501	
	UD8422	--	CNMT BLDG AIR COOLING UNIT 5	CALC VALUE	GPC 0363	-	-	7.2.07-E	D2	CALC	1501	
	UD8424	--	CNMT BLDG AIR COOLING UNIT 6	CALC VALUE	GPC 0364	-	-	7.2.07-E	D2	CALC	1501	
	UD8458	--	CNMT BLDG AIR COOLING UNIT 3	CALC VALUE	GPC 0361	-	-	7.2.07-E	D2	CALC	1501	
	UD8460	--	CNMT BLDG AIR COOLING UNIT 4	CALC VALUE	GPC 0362	-	-	7.2.07-E	D2	CALC	1501	
	UD8462	--	CNMT BLDG AIR COOLING UNIT 7	CALC VALUE	GPC 0365	-	-	7.2.07-E	D2	CALC	1501	
	UD8464	--	CNMT BLDG AIR COOLING UNIT 8	CALC VALUE	GPC 0366	-	-	7.2.07-E	D2	CALC	1501	
	UD8511	--	ACCUM ISOLATION LOOP 1 HV-8808A	HV-8808A	GPC 0536	-	-	7.2.05-E	D2	CALC	1204	
	UD8513	--	ACCUM ISOLATION LOOP 2 HV-8808B	HV-8808B	GPC 0535	-	-	7.2.05-E	D2	CALC	1204	
	UD8515	--	ACCUM ISOLATION LOOP 3 HV-8808C	HV-8808C	GPC 0534	-	-	7.2.05-E	D2	CALC	1204	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	UD8517	--	ACCUM ISOLATION LOOP 4 HV-8808D	HV-8808D	GPC 0533	-	-	7.2.05-E	D2 CALC	1204	
	UD8541	--	PORV-455A BLOCK VLV HV-8808A	HV-8808A	GPC 0509	-	-	7.2.02-A	D2 CALC	1201	
	UD8543	--	PORV-456B BLOCK VLV HV-8####	HV-8####	GPC 0508	-	-	7.2.02-A	D2 CALC	1201	
	UD8545	--	PRESSURIZER PORV-456A TRAIN B	PV-8456A	GPC 0465	-	-	7.2.02-A	D2 CALC	1201	
	UD8547	--	PRESSURIZER PORV-455A TRAIN A	PV-8455A	GPC 0466	-	-	7.2.02-A	D2 CALC	1201	
	UD8561	--	SI PUMPS INLET VALVE	HV-8806	GPC 0537	-	-	7.2.05-E	D2 CALC	1204	
	UD8630	--	CHARGING PATH VLV TO REGEN HX TRAIN B	HV-8105	GPC 0544	-	-	7.2.03-E	D2 CALC	1208	
	UD8638	--	CHARGING PATH VLV TO REGEN HX TRAIN A	HV-8106	GPC 0543	-	-	7.2.03-E	D2 CALC	1208	
	UD8641	--	CHARGING PATH VALVE TO RCS TRAIN A	HV-8146	GPC 0542	-	-	7.2.03-E	D2 CALC	1208	
	UD8643	--	CHARGING PATH VALVE TO RCS TRAIN B	HV-8147	GPC 0454	-	-	7.2.03-E	D2 CALC	1208	
	UD8646	--	RHR PUMP A TO CVCS PUMP SUCTION VALVE	HV-8804A	GPC 0371	-	-	7.2.10-B	D2 CALC	1205	
	UD8648	--	RHR PUMP B TO SIS PUMP SUCTION VALVE	HV-8804B	GPC 0378	-	-	7.2.10-B	D2 CALC	1205	

REV	ERF SYMBOL	PHOTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	UD8651	--	CHARGING PUMP (TRAIN A) DISCH V/ ~F	HV-8116	GPC 0455	-	-	7.2.03-E	D2 CALC	1208	
	UD8653	--	CHARGING PUMP (TRAIN A) DISCH VALVE	HV-8485A	GPC 0539	-	-	7.2.03-E	D2 CALC	1208	
	UD8655	--	CHARGING PUMP (TRAIN B) DISCH VALVE	HV-8485B	GPC 0538	-	-	7.2.03-E	D2 CALC	1208	
	UD8666	--	CHARGING PUMP (TRAIN A) SUCTION VALVE	HV-8471A	GPC 0541	-	-	7.2.03-E	D2 CALC	1208	
	UD8668	--	CHARGING PUMP (TRAIN B) SUCTION VALVE	HV-8471B	GPC 0540	-	-	7.2.03-E	D2 CALC	1208	
	UD8671	--	RWST TO CHARGING PUMPS TRAIN A VALVE	LV-0112D	GPC 0475	-	-	7.2.03-E	D2 CALC	1208	
	UD8673	--	RWST TO CHARGING PUMPS TRAIN B VALVE	LV-0112E	GPC 0474	-	-	7.2.03-E	D2 CALC	1208	
	UD8676	--	VCT TO CHARGING PUMPS TRAIN A VALVE	LV-0112B	GPC 0532	-	-	7.2.03-E	D2 CALC	1208	
	UD8678	--	VCT TO CHARGING PUMPS TRAIN B VALVE	LV-0112C	GPC 0531	-	-	7.2.03-E	D2 CALC	1208	
	UD8681	--	RHR PUMP TRAIN A SUCTION VALVE 8701A	HV-8701A	GPC 0375	-	-	7.2.10-B	D2 CALC	1205	X
	UD8683	--	RHR PUMP TRAIN A SUCTION VALVE 8701B	HV-8701B	GPC 0377	-	-	7.2.10-B	D2 CALC	1205	X
	UD8685	--	RHR PUMP TRAIN B SUCTION VALVE 8702A	HV-8702A	GPC 0379	-	-	7.2.10-B	D2 CALC	1205	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	UD8687	--	RHR PUMP TRAIN B SUCTION VALVE 87028	HV-87028	GPC 0381	-	-	7.2.10-B	D2	CALC	1205	X
	UD8691	--	RHR PUMP TRAIN A RECIRC VALVE	FV-8618	GPC 0383	-	-	7.2.10-B	D2	CALC	1205	
	UD8693	--	RHR PUMP TRAIN B RECIRC VALVE	FV-8611	GPC 0385	-	-	7.2.10-B	D2	CALC	1205	
	UD8696	--	RHR HEAT EXCH TRAIN A BYPASS VALVE	FV-8618	GPC 0386	-	-	--	-	CALC	1205	
	UD8698	--	RHR HEAT EXCH TRAIN B BYPASS VALVE	FV-8619	GPC 0388	-	-	--	-	CALC	1205	
	UD8701	--	RHR HEAT EXCH TRAIN A DISCH VALVE	HV-8606	GPC 0390	-	-	--	-	CALC	1205	
	UD8703	--	RHR HEAT EXCH TRAIN B DISCH VALVE	HV-8607	GPC 0392	-	-	--	-	CALC	1205	
	UD8706	--	RHR PUMP A SUCTION VALVE (RWST)	HV-8812A	GPC 0394	-	-	7.2.10-B	D2	CALC	1205	
	UD8708	--	RHR PUMP B SUCTION VALVE (RWST)	HV-8812B	GPC 0396	-	-	7.2.10-B	D2	CALC	1205	
	UD8711	--	RHR VALVE TO COLD LEGS 1 & 2 TRAIN A	HV-8809A	GPC 0398	-	-	7.2.10-B	D2	CALC	1204	X
	UD8713	--	RHR VALVE TO COLD LEGS 3 & 4 TRAIN B	HV-8809B	GPC 0400	-	-	7.2.10-B	D2	CALC	1204	X
	UD8727	--	BORIC ACID VALVE TO CHARGING PUMPS	HV-8104	GPC 0380	-	-	7.2.03-E	D2	CALC	1208	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	S SYSTEM	SPDS
*	UD8793	--	ELEC PEN RM FLTR TRN A OUT DAMPER	HV-12561	GPC 0476	-	-	7.2.11-A D2 CALC (UNIT 1 INPUT ONLY)		1562	
*	UD8795	--	ELEC PEN RM FLTR TRN A VENT DAMPER	HV-12555	GPC 0478	-	-	7.2.11-A D2 CALC (UNIT 1 INPUT ONLY)		1562	
*	UD8799	--	ELEC PEN RM FLTR TRN B OUT DAMPER	HV-12560	GPC 0477	-	-	7.2.11-A D2 CALC (UNIT 1 INPUT ONLY)		1562	
*	UD8801	--	ELEC PEN RM FLTR TRN B VENT DAMPER	HV-12554	GPC 0479	-	-	7.2.11-A D2 CALC (UNIT 1 INPUT ONLY)		1562	
	UD9075	--	SI PUMP B TO HOT LEGS 2&3	HV-8802B	GPC 0551	-	-	7.2.05-E D2 CALC		1204	
	UD9079	--	BORON INJECTION TANK DISCH TRAIN A	HV-8801A	GPC 0450	-	-	7.2.05-E D2 CALC		1204	
	UD9081	--	BORON INJECTION TANK DISCH TRAIN B	HV-8801B	GPC 0448	-	-	7.2.05-E D2 CALC		1204	
	UD9085	--	SI PUMP A TO HOT LEGS 1&4	HV-8802A	GPC 0552	-	-	7.2.05-E D2 CALC		1204	
	UD9089	--	RHR PUMP A CNMT SUMP SUCTION ISOL VALVE	HV-8811A	GPC 0402	-	-	7.2.10-B D2 CALC		1205	
	UD9091	--	RHR PUMP B CNMT SUMP SUCTION ISOL VALVE	HV-8811B	GPC 0404	-	-	7.2.10-B D2 CALC		1205	
	UD9137	--	RHR PUMP DISCH TO HOT LEG LOOPS 1&4	HV-8840	GPC 0550	-	-	7.2.10-B D2 CALC		1204	
	UD9262	--	PRESSURIZER SAFETY VALVE A	PSV-8010A	GPC 0318	-	-	7.2.02-B D2 CALC		1201	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDB
	UD9264	--	PRESSURIZER SAFETY VALVE B	PSV-8819B	GPC 0319	-	-	7.2.02-B	D2 CALC	1201	
	UD9266	--	PRESSURIZER SAFETY VALVE C	PSV-8819C	GPC 0320	-	-	7.2.02-B	D2 CALC	1201	
	UD9289	--	SEAL FLOW CONTROL-THROTTLES CHG FLOW	HV-8182	GPC 0487	-	-	--	- CALC	1208	
	UD9291	--	CCP A MINIFLOW VALVE TO VCT	HV-8111A	GPC 0431	-	-	7.2.03-E	D2 CALC	1208	
	UD9293	--	CCP B MINIFLOW VALVE TO VCT	HV-8111B	GPC 0456	-	-	7.2.03-E	D2 CALC	1208	
	UD9295	--	CCP COMMON MINIFLOW VALVE TO VCT	HV-8110	GPC 0429	-	-	7.2.03-E	D2 CALC	1208	
	UD9305	--	RCP 1 SEAL WATER INLET	HV-8103A	GPC 0507	-	-	7.2.03-E	D2 CALC	1208	
	UD9307	--	RCP 2 SEAL WATER INLET	HV-8103B	GPC 0508	-	-	7.2.03-E	D2 CALC	1208	
	UD9309	--	RCP 3 SEAL WATER INLET	HV-8103C	GPC 0505	-	-	7.2.03-E	D2 CALC	1208	
	UD9311	--	RCP 4 SEAL WATER INLET	HV-8103D	GPC 0545	-	-	7.2.03-E	D2 CALC	1208	
	UD9325	--	CHARGING PUMPS DISCHARGE XCONN	HV-8438	GPC 0453	-	-	7.2.03-E	D2 CALC	1208	
	UD9327	--	BORIC ACID TO CHARGING PUMP B	HV-8439	GPC 0452	-	-	7.2.03-E	D2 CALC	1208	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	UD9329	--	CHARGING PUMP SUCT HDR TU/FROM STB PMP A	HV-8924	GPC 0369	-	-	7.2.05-E	D2 CALC	1208	
	UD9335	--	SG1 MAIN FEED REG VALVE - MFRV	FV-0510	GPC 0494	-	-	7.2.04-E	D2 CALC	1305	
	UD9337	--	SG2 MAIN FEED REG VALVE - MFRV	FV-0520	GPC 0493	-	-	7.2.04-E	D2 CALC	1305	
	UD9339	--	SG3 MAIN FEED REG VALVE - MFRV	FV-0530	GPC 0492	-	-	7.2.04-E	D2 CALC	1305	
	UD9341	--	SG4 MAIN FEED REG VALVE - MFRV	FV-0540	GPC 0491	-	-	7.2.04-E	D2 CALC	1305	
	UD9343	--	SG1 BYPASS FEED REG VALVE - BFRV	LV-5243	GPC 0472	-	-	7.2.04-E	D2 CALC	1305	
	UD9345	--	SG2 BYPASS FEED REG VALVE - BFRV	LV-5244	GPC 0471	-	-	7.2.04-E	D2 CALC	1305	
	UD9347	--	SG3 BYPASS FEED REG VALVE - BFRV	LV-5245	GPC 0470	-	-	7.2.04-E	D2 CALC	1305	
	UD9349	--	SG4 BYPASS FEED REG VALVE - BFRV	LV-5242	GPC 0473	-	-	7.2.04-E	D2 CALC	1305	
	UD9351	--	SG1 ATMOSPHERIC RELIEF VALVE (CH 1)	PV-3000	GPC 0459	-	-	7.2.04-A	D2 CALC	1301	
	UD9353	--	SG2 ATMOSPHERIC RELIEF VALVE (CH 2)	PV-3010	GPC 0458	-	-	7.2.04-A	D2 CALC	1301	
	UD9355	--	SG3 ATMOSPHERIC RELIEF VALVE (CH 1)	PV-3020	GPC 0457	-	-	7.2.04-A	D2 CALC	1301	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	UD9367	--	3&4 ATMOSPHERIC RELIEF VALVE (CH 2)	PV-3030	GPC 0384	-	-	7.2.04-A	D2 CALC	1301	
	UD9371	--	SI PUMP A INLET VALVE	HV-8923A	GPC 0372	-	-	7.2.05-E	D2 CALC	1204	
	UD9373	--	SI PUMP B INLET VALVE	HV-8923B	GPC 0370	-	-	7.2.05-E	D2 CALC	1204	
	UD9375	--	SI PUMP A TO COLD LEGS 1&4	HV-8821A	GPC 0376	-	-	7.2.05-E	D2 CALC	1204	
	UD9377	--	SI PUMP B TO COLD LEGS 2&3	HV-8821B	GPC 0374	-	-	7.2.05-E	D2 CALC	1204	
	UD9379	--	SIS COLD LEG LOOP INLET HEADER	HV-8835	GPC 0373	-	-	7.2.05-E	D2 CALC	1204	
	UD9391	--	SI PUMP B MINIFLOW VALVE (TRAIN A ISOL)	HV-8920	GPC 0436	-	-	7.2.05-E	D2 CALC	1204	
	UD9393	--	SI PUMPS MINIFLOW VALVE (TRAIN B ISOL)	HV-8813	GPC 0442	-	-	7.2.05-E	D2 CALC	1204	
	UD9395	--	SI PUMP A MINIFLOW	HV-8814	GPC 0440	-	-	7.2.05-E	D2 CALC	1204	
	UD9399	--	MAIN STEAM LINE DRAIN TO CONDENSER	HV-5179	GPC 0399	-	-	--	- CALC	1301	
	UD9401	--	AUX FW TRB STM LINE DRAIN TO CONDENSER	HV-5178	GPC 0416	-	-	--	- CALC	1301	
	UD9405	--	MD AUX FEED PUMP B MINIFLOW VALVE	FV-5154	GPC 0382	-	-	7.2.06-C	D2 CALC	1302	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	UD9407	--	MD AUX FEED PUMP A MINIFLOW VALVE	FV-5158	GPC 0384	-	-	7.2.06-C	D2 CALC	1302	
	UD9410	--	CNMT SPRAY PUMP A RWST SUCTION	MV-08017A	GPC 0368	-	-	7.2.07-C	D2 CALC	1206	
	UD9412	--	CNMT SPRAY PUMP B RWST SUCTION	MV-08017B	GPC 0367	-	-	7.2.07-C	D2 CALC	1206	
	UD9414	--	CNMT SPRAY PUMP A DISCHARGE TO SPRAY HDR	MV-08001A	GPC 0435	-	-	7.2.07-C	D2 CALC	1206	
	UD9416	--	CNMT SPRAY PUMP B DISCHARGE TO SPRAY HDR	MV-08001B	GPC 0434	-	-	7.2.07-C	D2 CALC	1206	
	UD9418	--	SPRAY ADDITIVE TANK OUTLET TRAIN A	MV-08994A	GPC 0437	-	-	7.2.07-C	D2 CALC	1206	
	UD9420	--	SPRAY ADDITIVE TANK OUTLET TRAIN B	MV-08994B	GPC 0436	-	-	7.2.07-C	D2 CALC	1206	
	UD9422	--	CS PUMP A CNMT SUMP SUCTION VALVE IRC	MV-08802A	GPC 0549	-	-	7.2.07-C	D2 CALC	1206	
	UD9424	--	CS PUMP B CNMT SUMP SUCTION VALVE IRC	MV-08802B	GPC 0548	-	-	7.2.07-C	D2 CALC	1206	
	UD9426	--	CS PUMP A CNMT SUMP SUCTION VALVE ORC	MV-08803A	GPC 0547	-	-	7.2.07-C	D2 CALC	1206	
	UD9428	--	CS PUMP B CNMT SUMP SUCTION VALVE ORC	MV-08803B	GPC 0546	-	-	7.2.07-C	D2 CALC	1206	
	UD9454	--	PIPING PEN RM HVAC TRN A TU LOADS	PV-25604A	GPC 0538	-	-	7.2.11-A	D2 CALC	1561	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	UD9456	--	PIPING PEN RM HVAC TRN B TU LOADS	PV-25518A	GPC 0529	-	-	7.2.11-A	D2 CALC	1561	
	UD9458	--	PIPING PEN RM HVAC TRN A TU ATMOS	PV-25508	GPC 0461	-	-	7.2.11-A	D2 CALC	1561	
	UD9460	--	PIPING PEN RM HVAC TRN B TU ATMOS	PV-25518	GPC 0460	-	-	7.2.11-A	D2 CALC	1561	
	UD9466	--	CONTROL ROOM HVAC 85A INTAKE TRAIN A	HV-12114	GPC 0433	-	-	7.2.11-A	D2 CALC	1531	
	UD9468	--	CONTROL ROOM HVAC 85A INTAKE TRAIN B	HV-12115	GPC 0480	-	-	7.2.11-A	D2 CALC	1531	
	UD9594	--	RHR PUMP A TO HOT LEG ISOLATION VALVE	HV-8716A	GPC 0486	-	-	7.2.10-B	D2 CALC	1205	
	UD9596	--	RHR PUMP B TO HOT LEG ISOLATION VALVE	HV-8716B	GPC 0488	-	-	7.2.10-B	D2 CALC	1205	
*	UD9604	--	ATWT SIGNAL	CALC VALUE	GPC 0330	-	-	--	- CALC	1626	X
	UD9801	--	CHARGING PUMP A MINIFLOW ISOL VLV	HV-8508A	GPC 0353	-	-	7.2.03-E	D2 CALC	1208	
	UD9803	--	CHARGING PUMP B MINIFLOW ISOL VLV	HV-8508B	GPC 0354	-	-	7.2.03-E	D2 CALC	1208	
	UD9805	--	CHARGING PUMP B MINIFLOW ISOL VLV	HV-8509A	GPC 0355	-	-	7.2.03-E	D2 CALC	1208	
	UD9807	--	CHARGING PUMP A MINIFLOW ISOL VLV	HV-8509B	GPC 0356	-	-	7.2.03-E	D2 CALC	1208	

KEY	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	UD9809	--	SI/CHARGING PUMPS SUCTION FRM A TIE VLV	MV-8807A	GPC #357	-	-	7.2.05-E	D2	CALC	1204	
	UD9811	--	SI/CHARGING PUMPS SUCTION FRM B TIE VLV	MV-8807B	GPC #358	-	-	7.2.05-E	D2	CALC	1204	
	UD9817	--	SG1 MSIV UPSTREAM TRAIN A BYPASS	MV-13005A	GPC #345	-	-	5.2.05-F	B2	CALC	1301	
	UD9819	--	SG1 MSIV UPSTREAM TRAIN B BYPASS	MV-13005B	GPC #349	-	-	5.2.05-F	B2	CALC	1301	
	UD9821	--	SG4 MSIV UPSTREAM TRAIN A BYPASS	MV-13006A	GPC #346	-	-	5.2.05-F	B2	CALC	1301	
	UD9823	--	SG4 MSIV UPSTREAM TRAIN B BYPASS	MV-13006B	GPC #350	-	-	5.2.05-F	B2	CALC	1301	
	UD9825	--	SG2 MSIV UPSTREAM TRAIN A BYPASS	MV-13007A	GPC #347	-	-	5.2.05-F	B2	CALC	1301	
	UD9827	--	SG2 MSIV UPSTREAM TRAIN B BYPASS	MV-13007B	GPC #351	-	-	5.2.05-F	B2	CALC	1301	
	UD9829	--	SG3 MSIV UPSTREAM TRAIN A BYPASS	MV-13008A	GPC #348	-	-	5.2.05-F	B2	CALC	1301	
	UD9831	--	SG3 MSIV UPSTREAM TRAIN B BYPASS	MV-13008B	GPC #352	-	-	5.2.05-F	B2	CALC	1301	
	UF5403	--	TOTAL FEEDWATER FLOW (FW + AUX FW) SCALE: 0 > 4.30E04	CALC VALUE GPM	GPC #215	-	-	--	-	CALC	1305	X
	UF5404	--	SG1 TOTAL FW FLOW (FW + AUX FW) SCALE: 0 > 5300 KBM	CALC VALUE	GPC #207	-	-	--	-	CALC	1305	X

*** SORT #1 - ERF SYMBOL ***

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
	UF5485	--	TOTAL STEAM GENERATOR STEAM LINE FLOW SCALE: 0 > 1.92E04 KBH	CALC VALUE	GPC 0258	-	-	7.2.84-C	02	CALC	1301	
	UF5424	--	SG2 TOTAL FW FLOW (FW + AUX FW) SCALE: 0 > 5300 KBH	CALC VALUE	GPC 0208	-	-	--	-	CALC	1305	X
	UF5425	--	CALC LO LIMIT (MODES 1,2) FOR SG1-4 STEAM FLOW SCALE: 0 > 5500 KBH	CALC VALUE	GPC 0213	-	-	--	-	CALC	1301	X
	UF5426	--	CALC HI LIMIT (MODES 1,2) FOR SG1-4 STEAM FLOW SCALE: 0 > 5500 KBH	CALC VALUE	GPC 0214	-	-	--	-	CALC	1301	X
	UF5444	--	SG3 TOTAL FW FLOW (FW + AUX FW) SCALE: 0 > 5300 KBH	CALC VALUE	GPC 0209	-	-	--	-	CALC	1305	X
	UF5464	--	SG4 TOTAL FW FLOW (FW + AUX FW) SCALE: 0 > 5300 KBH	CALC VALUE	GPC 0210	-	-	--	-	CALC	1305	X
	UF7326	--	CALC LO LIMIT (MODES 1,2) FOR SG TOTAL FW FLOW SCALE: 0 > 5500 KBH	CALC VALUE	GPC 0211	-	-	--	-	CALC	1305	X
	UF7327	--	CALC HI LIMIT (MODES 1,2) FOR SG TOTAL FW FLOW SCALE: 0 > 5500 KBH	CALC VALUE	GPC 0212	-	-	--	-	CALC	1305	X
	UF7601	--	NSCW TRAIN A SUPPLY/RETURN DIFFE[illegible]NTIAL FLOW SCALE: 0 > 2.50E04	CALC VALUE GPM	GPC 0256	-	-	--	-	CALC	1202	
	UF7602	--	NSCW TRAIN B SUPPLY/RETURN DIFFERENTIAL FLOW SCALE: 0 > 2.50E04	CALC VALUE GPM	GPC 0255	-	-	--	-	CALC	1202	
	UF9627	--	TOTAL AUXILIARY FEEDWATER FLOW SCALE: 0 > 2400 GPM	CALC VALUE	GPC 0201	-	-	--	-	CALC	1302	X
	UJ9619	--	CLASS 1E 125VDC BATTERY 1AD18 CUMULATIVE DISCH SCALE: 0 > 9999 AMP HOURS	CALC VALUE	GPC 0184	-	-	--	-	CALC	1000	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
	UJ9620	--	CLASS 1E 125VDC BATTERY 1BD1B CUMULATIVE DISCH SCALE: 0 > 9999 AMP HOURS	CALC VALUE	GPC #285	-	-	--	-	CALC	1886	
	UJ9621	--	CLASS 1E 125VDC BATTERY 1CD1C CUMULATIVE DISCH SCALE: 0 > 9999 AMP HOURS	CALC VALUE	GPC #286	-	-	--	-	CALC	1886	
	UJ9622	--	CLASS 1E 125VDC BATTERY 1DD1D CUMULATIVE DISCH SCALE: 0 > 9999 AMP HOURS	CALC VALUE	GPC #286	-	-	--	-	CALC	1886	
*	UL5480	--	CALC LO LIMIT (MODE 1-2) FOR PRESSURIZER LEVEL SCALE: 15 > 55 PERCENT	CALC VALUE	GPC #229	-	-	--	-	CALC	1201	X
	UL5481	--	CALC HI LIMIT (MODE 1-2) FOR PRESSURIZER LEVEL SCALE: 25 > 65 PERCENT	CALC VALUE	GPC #230	-	-	--	-	CALC	1201	X
*	UL6175	--	PRI MET TWR PRECIPITATION (15 MIN AVG) SCALE: 0 > 1 INCHES	CALC VALUE	GPC #194			8.2.08	EJ	CALC (UNIT 1 INPUT ONLY)	2001	
*	UL9003	--	CONTAINMENT WATER LEVEL SCALE: 0 > 860 KGAL	CALC VALUE	GPC #247	-	-	4.2.10	A1	CALC	1205	X
*	UM5000	--	CPU ACTIVITY SCALE: 0 > 100 PERCENT	CALC VALUE	GPC #288	-	-	--	-	CALC	1618	
	UM5001	--	PLANT OPERATING MODE SCALE: 0 > 6	CALC VALUE	GPC #289	-	-	--	-	CALC	1606	X
	UM5626	--	RMR LOOPS IN OPERATION SCALE: 0 > 2 LOOP(S)	CALC VALUE	GPC #264	-	-	--	-	CALC	1205	X
	UM8501	--	NUMBER OF RCPS RUNNING SCALE: 0 > 4	CALC VALUE	GPC #264	-	-	7.2.01-0	D2	CALC	1201	X
	UP5400	--	CALC LO LIMIT (MODE 1-4) FOR SG PRESSURE OUT SCALE: 0 > 3000 PSIG	CALC VALUE	GPC #219	-	-	--	-	CALC	1301	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	UP5408	--	CALC LO LIMIT (MODE 4)-RCS HR PRESS (PSAT+30) SCALE: 0 > 3200 PSIG	CALC VALUE	GPC #231	-	-	--	-	CALC	1201	X
	UP5409	--	CALC HI LIMIT (MODE 4)-RCS HR PRESS (PSAT+100) SCALE: 0 > 3200 PSIG	CALC VALUE	GPC #232	-	-	--	-	CALC	1201	X
	UP5420	--	CALC HI LIMIT (MODE 1-4) FOR SG PRESSURE OUT SCALE: 0 > 3000 PSIG	CALC VALUE	GPC #220	-	-	--	-	CALC	1301	X
	UR5031	--	SOURCE RANGE STARTUP RATE SCALE: -2.00E02 > 7.00E00	CALC VALUE DPM	GPC #284	-	-	--	-	CALC	1602	X
	UR5035	--	INTERMEDIATE RANGE STARTUP RATE SCALE: -2.00E02 > 7.00E00	CALC VALUE DPM	GPC #285	-	-	--	-	CALC	1602	X
*	UR5112	--	VCT 2 HOUR VOLUME CHANGE (GROSS LEAKAGE) SCALE: -1920 > 1920 GALLONS	CALC VALUE	GPC #174	-	-	--	-	CALC	1201	
*	UR5419	--	RCS 2 HOUR VOLUME CORRECTION FOR TEMPERATURE SCALE: -2.00E04 > 2.00E04	CALC VALUE GALLONS	GPC #175	-	-	--	-	CALC	1201	
	UR5467	--	COOLDOWN RATE (1 MINUTE AVERAGE) SCALE: -9998 > 9998 DEG F/HR	CALC VALUE	GPC #266	-	-	--	-	CALC	1201	X
	UR5468	--	COOLDOWN RATE (10 MIN AVERAGE) SCALE: -9998 > 9998 DEG F/HR	CALC VALUE	GPC #221	-	-	--	-	CALC	1201	
*	UR5480	--	PRZR 2 HOUR VOLUME CHANGE (GROSS LEAKAGE) SCALE: -7560 > 7560 GALLONS	CALC VALUE	GPC #176	-	-	--	-	CALC	1201	
*	UR5481	--	TOTAL LEAK RATE DUE TO VCT, PZR, RCS TEMP SCALE: -319 > 319 GPM	CALC VALUE	GPC #177	-	-	--	-	CALC	1201	
*	UR5482	--	PRELIMINARY UNIDENTIFIED LEAK RATE SCALE: -418 > 418 GPM	CALC VALUE	GPC #173	-	-	--	-	CALC	1201	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
*	UR5485	--	PRT 2 HOUR INLEAKAGE RATE SCALE: -100 > 100 GPM	CALC VALUE	GPC #172	-	-	--	-	CALC	1201	
*	UH6248	--	AUCTIUNEERED FUEL HAND BLDG EFFL RADIOGAS (TS) SCALE: 0 > 1.00E-01	CALC VALUE UCI/CC	GPC #199	-	-	-- (UNIT 1 INPUT ONLY)	-	CALC	1609	x
*	US6170	--	PRI MET TWR 10 METER WIND SPEED (15 MIN AVG) SCALE: 0 > 100 MPH	CALC VALUE	GPC #186	-	-	6.2.08 (UNIT 1 INPUT ONLY)	E3	CALC	2001	
*	US6430	--	PRI MET TWR 60 METER WIND SPEED (15 MIN AVG) SCALE: 0 > 100 MPH	CALC VALUE	GPC #191	-	-	6.2.08 (UNIT 1 INPUT ONLY)	E3	CALC	2001	
*	US6436	--	SEC MET TWR 10 METER WIND SPEED (15 MIN AVG) SCALE: 0 > 100 MPH	CALC VALUE	GPC #196	-	-	6.2.08 (UNIT 1 INPUT ONLY)	E3	CALC	2001	
	UT5001	--	MAXIMUM IN CORE THERMOCOUPLE TEMPERATURE SCALE: 0 > 2300 DEG F	CALC VALUE	GPC #257	-	-	4.2.15	A1	CALC	1612	x
	UT5002	--	AVERAGE OF HIGHEST 5 IN CORE T/C TEMPERATURES SCALE: 0 > 2300 DEG F	CALC VALUE	GPC #246	-	-	4.2.15	A1	CALC	1612	x
	UT5003	--	MINIMUM IN CORE THERMOCOUPLE TEMPERATURE SCALE: 0 > 2300 DEG F	CALC VALUE	GPC #233	-	-	4.2.15	A1	CALC	1612	
	UT5004	--	CALC LO LIMIT (MODE 0-6) FOR IN CORE T/C TEMPS SCALE: 0 > 2300 DEG F	CALC VALUE	GPC #227	-	-	--	-	CALC	1612	x
	UT5005	--	CALC HI LIMIT (MODE 0-6) FOR IN CORE T/C TEMPS SCALE: 0 > 2300 DEG F	CALC VALUE	GPC #228	-	-	--	-	CALC	1612	x
	UT5110	--	MAXIMUM IN CORE THERMOCOUPLE TEMP-QUADRANT 1 SCALE: 0 > 2300 DEG F	CALC VALUE	GPC #234	-	-	4.2.15	A1	CALC	1612	
	UT5111	--	AVERAGE IN CORE THERMOCOUPLE TEMP-QUADRANT 1 SCALE: 0 > 2300 DEG F	CALC VALUE	GPC #238	-	-	4.2.15	A1	CALC	1612	

REV	EMF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	UT5112	--	MINIMUM IN CORE THERMOCOUPLE TEMP-QUADRANT 1 SCALE: 0 > 2300 DEG F	CALC VALUE	GPC 0242	-	-	4.2.15	A1 CALC	1612	
	UT5220	--	MAXIMUM IN CORE THERMOCOUPLE TEMP-QUADRANT 2 SCALE: 0 > 2300 DEG F	CALC VALUE	GPC 0235	-	-	4.2.15	A1 CALC	1612	
	UT5221	--	AVERAGE IN CORE THERMOCOUPLE TEMP-QUADRANT 2 SCALE: 0 > 2300 DEG F	CALC VALUE	GPC 0239	-	-	4.2.15	A1 CALC	1612	
	UT5222	--	MINIMUM IN CORE THERMOCOUPLE TEMP-QUADRANT 2 SCALE: 0 > 2300 DEG F	CALC VALUE	GPC 0243	-	-	4.2.15	A1 CALC	1612	
	UT5330	--	MAXIMUM IN CORE THERMOCOUPLE TEMP-QUADRANT 3 SCALE: 0 > 2300 DEG F	CALC VALUE	GPC 0236	-	-	4.2.15	A1 CALC	1612	
	UT5331	--	AVERAGE IN CORE THERMOCOUPLE TEMP-QUADRANT 3 SCALE: 0 > 2300 DEG F	CALC VALUE	GPC 0240	-	-	4.2.15	A1 CALC	1612	
	UT5332	--	MINIMUM IN CORE THERMOCOUPLE TEMP-QUADRANT 3 SCALE: 0 > 2300 DEG F	CALC VALUE	GPC 0244	-	-	4.2.15	A1 CALC	1612	
*	UT5406	--	AUCTIONEERED (LOW) WIDE RANGE T-COLD SCALE: 0 > 700 DEG F	CALC VALUE	GPC 0267	-	-	4.2.03	A1 CALC	1201	X
	UT5419	--	AUCTIONEERED (HIGH) WIDE RANGE T-HOT SCALE: 0 > 700 DEG F	CALC VALUE	GPC 0268	-	-	4.2.02	A1 CALC	1201	X
*	UT5426	--	AVERAGE WIDE RANGE T-COLD SCALE: 0 > 700 DEG F	CALC VALUE	GPC 0178	-	-	4.2.03	A1 CALC	1201	
	UT5439	--	CALC LO LIMIT (MODE 1-2) FOR HOT LEG TEMPS SCALE: 551 > 626 DEG F	CALC VALUE	GPC 0225	-	-	--	- CALC	1201	X
	UT5440	--	MAXIMUM IN CORE THERMOCOUPLE TEMP-QUADRANT 4 SCALE: 0 > 2300 DEG F	CALC VALUE	GPC 0237	-	-	4.2.15	A1 CALC	1612	

KEY	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
	UT5441	--	AVERAGE IN CORE THERMOCOUPLE TEMP-QUADRANT 4 SCALE: 0 > 2300 DEG F	CALC VALUE	GPC #241	-	-	4.2.15	A1	CALC	1612	
	UT5442	--	MINIMUM IN CORE THERMOCOUPLE TEMP-QUADRANT 4 SCALE: 0 > 2300 DEG F	CALC VALUE	GPC #245	-	-	4.2.15	A1	CALC	1612	
	UT5459	--	CALC HI LIMIT (MODE 1-2) FOR HOT LEG TEMPS SCALE: 582 > 637 DEG F	CALC VALUE	GPC #226	-	-	--	-	CALC	1201	X
	UT5467	--	AUCTIONEERED HIGH WIDE RANGE DELTA T SCALE: -700 > 700 DEG F	CALC VALUE	GPC #185	-	-	--	-	CALC	1201	
	UT5468	--	AUCTIONEERED HIGH WIDE RANGE T-AVG SCALE: 0 > 700 DEG F	CALC VALUE	GPC #265	-	-	--	-	CALC	1201	X
	UT5511	--	LOOP 1 WIDE RANGE T-AVG SCALE: 0 > 700 DEG F	CALC VALUE	GPC #260	-	-	--	-	CALC	1201	X
	UT5512	--	LOOP 1 WIDE RANGE DELTA T SCALE: -700 > 700 DEG F	CALC VALUE	GPC #252	-	-	--	-	CALC	1201	
	UT5531	--	LOOP 2 WIDE RANGE T-AVG SCALE: 0 > 700 DEG F	CALC VALUE	GPC #261	-	-	--	-	CALC	1201	X
	UT5532	--	LOOP 2 WIDE RANGE DELTA T SCALE: -700 > 700 DEG F	CALC VALUE	GPC #251	-	-	--	-	CALC	1201	
	UT5551	--	LOOP 3 WIDE RANGE T-AVG SCALE: 0 > 700 DEG F	CALC VALUE	GPC #262	-	-	--	-	CALC	1201	X
	UT5552	--	LOOP 3 WIDE RANGE DELTA T SCALE: -700 > 700 DEG F	CALC VALUE	GPC #250	-	-	--	-	CALC	1201	
	UT5571	--	LOOP 4 WIDE RANGE T-AVG SCALE: > 700 DEG F	CALC VALUE	GPC #263	-	-	--	-	CALC	1201	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
	UT5572	--	LOOP 4 WIDE RANGE DELTA T SCALE: -700 > 700 DEG F	CALC VALUE	GPC 0249	-	-	--	-	CALC	1201	
	UT5627	--	RHR HEAT EXCH TRAIN A INL/OUT DIFF TEMP SCALE: 0 > 400 DEG F	CALC VALUE	GPC 0310	-	-	--	-	CALC	1205	
	UT5628	--	RHR HEAT EXCH TRAIN B INL/OUT DIFF TEMP SCALE: 0 > 400 DEG F	CALC VALUE	GPC 0311	-	-	--	-	CALC	1206	
*	UT6172	--	PRI MET TWR 10 METER AMBIENT TEMP (15 MIN AVG) SCALE: -10 > 120 DEG F	CALC VALUE	GPC 0188	-	-	0.2.08 (UNIT 1 INPUT ONLY)	E3 CALC	2001		
*	UT6173	--	PRI MET TWR 10 METER DEW PNT TEMP (15 MIN AVG) SCALE: -10 > 120 DEG F	CALC VALUE	GPC 0189	-	-	0.2.08 (UNIT 1 INPUT ONLY)	E3 CALC	2001		
*	UT6174	--	PRI MET TWR 60-10 METER DELTA TEMP (15 MIN AVG) SCALE: -5 > 10 DEG F	CALC VALUE	GPC 0195	-	-	0.2.08 (UNIT 1 INPUT ONLY)	E3 CALC	2001		
*	UT6438	--	SEC MET TWR 10 METER AMBIENT TEMP (15 MIN AVG) SCALE: -10 > 120 DEG F	CALC VALUE	GPC 0198	-	-	0.2.08 (UNIT 1 INPUT ONLY)	E3 CALC	2001		
	UT7317	--	FEEDWATER AVG TEMPERATURE SCALE: 0 > 600 DEG F	CALC VALUE	GPC 0248	-	-	--	-	CALC	1305	
	UT7501	--	AVERAGE CONTAINMENT TEMPERATURE SCALE: 0 > 500 DEG F	CALC VALUE	GPC 0283	-	-	--	-	CALC	1501	X
	UT7601	--	NSCW TRAIN A SUPPLY/RETURN DIFFERENTIAL TEMP SCALE: 0 > 300 DEG F	CALC VALUE	GPC 0254	-	-	--	-	CALC	1202	
	UT7602	--	NSCW TRAIN B SUPPLY/RETURN DIFFERENTIAL TEMP SCALE: 0 > 300 DEG F	CALC VALUE	GPC 0253	-	-	--	-	CALC	1202	
*	UT8644	--	CALC HI LIMIT FOR RCS SUBCOOLING (NODES 3-6) SCALE: 320 > 400 DEG F	CALC VALUE	GPC 0200	-	-	--	-	CALC	1201	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
*	UV5031	--	VALIDATED NEUTRON FLUX SOURCE RANGE SCALE: 1.00E00 > 1.00E06	CALC VALUE CPS	GPC 0309	-	-	--	-	CALC	1602	X
*	UV5035	--	VALIDATED NEUTRON FLUX INTERMEDIATE RANGE SCALE: 1.00E-11 > 1.00E-03	CALC VALUE AMPS	GPC 0283	-	-	--	-	CALC	1602	X
*	UV5049	--	VALIDATED NEUTRON FLUX POWER RANGE SCALE: 0 > 120 PERCENT	CALC VALUE	GPC 0307	-	-	--	-	CALC	1602	X
*	UV5112	--	VALIDATED VCT LEVEL SCALE: 0 > 100 PERCENT	CALC VALUE	GPC 0309	-	-	--	-	CALC	1208	
*	UV5398	--	VALIDATED MAIN TURBINE FIRST STAGE PRESSURE SCALE: 0 > 120 PCT POWER	CALC VALUE	GPC 0271	-	-	7.2.14	D2	CALC	1301	
*	UV5400	--	VALIDATED SG1 PRESSURE OUT SCALE: 0 > 1300 PSIG	CALC VALUE	GPC 0301	-	-	4.2.08	A1	CALC	1301	X
*	UV5401	--	VALIDATED SG1 NARROW RANGE LEVEL SCALE: 0 > 100 PERCENT	CALC VALUE	GPC 0297	-	-	4.2.05	A1	CALC	1301	X
*	UV5403	--	VALIDATED SG1 FW FLOW SCALE: 0 > 4800 KBH	CALC VALUE	GPC 0293	-	-	7.2.04-G	D2	CALC	1305	X
*	UV5405	--	VALIDATED SG1 STEAM LINE FLOW SCALE: 0 > 4800 KBH	CALC VALUE	GPC 0272	-	-	7.2.04-C	D2	CALC	1301	X
*	UV5408	--	VALIDATED RCS WIDE RANGE PRESSURE SCALE: 0 > 3000 PSIG	CALC VALUE	GPC 0306	-	-	4.2.01	A1	CALC	1201	X
*	UV5420	--	VALIDATED SG2 PRESSURE OUT SCALE: 0 > 1300 PSIG	CALC VALUE	GPC 0300	-	-	4.2.08	A1	CALC	1301	X
*	UV5421	--	VALIDATED SG2 NARROW RANGE LEVEL SCALE: 0 > 100 PERCENT	CALC VALUE	GPC 0296	-	-	4.2.05	A1	CALC	1301	X

*** SORT BY = ERF SYMBOL ***

KEY	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION			ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
*	UV5423	--	VALIDATED SG2 FW FLOW SCALE:	0 > 4800	KBH	CALC VALUE	GPC 0292	-	-	7.2.04-C	D2 CALC	1305	X
*	UV5425	--	VALIDATED SG2 STEAM LINE FLOW SCALE:	0 > 4800	KBH	CALC VALUE	GPC 0273	-	-	7.2.04-C	D2 CALC	1301	X
*	UV5440	--	VALIDATED SG3 PRESSURE OUT SCALE:	0 > 1300	PSIG	CALC VALUE	GPC 0299	-	-	4.2.08	A1 CALC	1301	X
*	UV5441	--	VALIDATED SG3 NARROW RANGE LEVEL SCALE:	0 > 100	PERCENT	CALC VALUE	GPC 0295	-	-	4.2.05	A1 CALC	1301	X
*	UV5443	--	VALIDATED SG3 FW FLOW SCALE:	0 > 4800	KBH	CALC VALUE	GPC 0291	-	-	7.2.04-C	D2 CALC	1305	X
*	UV5445	--	VALIDATED SG3 STEAM LINE FLOW SCALE:	0 > 4800	KBH	CALC VALUE	GPC 0274	-	-	7.2.04-C	D2 CALC	1301	X
*	UV5460	--	VALIDATED SG4 PRESSURE OUT SCALE:	0 > 1300	PSIG	CALC VALUE	GPC 0298	-	-	4.2.08	A1 CALC	1301	X
*	UV5461	--	VALIDATED SG4 NARROW RANGE LEVEL SCALE:	0 > 100	PERCENT	CALC VALUE	GPC 0294	-	-	4.2.05	A1 CALC	1301	X
*	UV5463	--	VALIDATED SG4 FW FLOW SCALE:	0 > 4800	KBH	CALC VALUE	GPC 0290	-	-	7.2.04-C	D2 CALC	1305	X
*	UV5465	--	VALIDATED SG4 STEAM LINE FLOW SCALE:	0 > 4800	KBH	CALC VALUE	GPC 0275	-	-	7.2.04-C	D2 CALC	1301	X
*	UV5480	--	VALIDATED PRESSURIZER LEVEL SCALE:	0 > 100	PERCENT	CALC VALUE	GPC 0305	-	-	4.2.05	A1 CALC	1201	X
*	UV5481	--	VALIDATED PRESSURIZER PRESSURE SCALE:	1700 > 2500	PSIG	CALC VALUE	GPC 0277	-	-	7.2.02-F	D2 CALC	1291	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
*	UV6001	--	VALIDATED CONTAINMENT PRESSURE SCALE: -5 > 160 PSIG	CALC VALUE	GPC #202	-	-	--	-	CALC	1206	X
*	UV6003	--	VALIDATED CNMT PRESS (RG 1.97 A INPUTS ONLY) SCALE: 0 > 75 PSIG	CALC VALUE	GPC #304	-	-	4.2.07	A1	CALC	1206	X
*	UV6130	--	VALIDATED RWST LEVEL SCALE: 0 > 100 PERCENT	CALC VALUE	GPC #302	-	-	4.2.09	A1	CALC	1204	X
*	UV6320	--	VALIDATED BORIC ACID STORAGE TANK LEVEL SCALE: 0 > 100 PERCENT	CALC VALUE	GPC #207	-	-	--	-	CALC	1209	
*	UV7326	--	VALIDATED SG1 AUX FW FLOW SCALE: 0 > 600 GPM	CALC VALUE	GPC #278	-	-	4.2.12	A1	CALC	1302	X
*	UV7327	--	VALIDATED SG2 AUX FW FLOW SCALE: 0 > 600 GPM	CALC VALUE	GPC #279	-	-	4.2.12	A1	CALC	1302	X
*	UV7328	--	VALIDATED SG3 AUX FW FLOW SCALE: 0 > 600 GPM	CALC VALUE	GPC #280	-	-	4.2.12	A1	CALC	1302	X
*	UV7329	--	VALIDATED SG4 AUX FW FLOW SCALE: 0 > 600 GPM	CALC VALUE	GPC #281	-	-	4.2.12	A1	CALC	1302	X
*	UV7489	--	VALIDATED CONDENSATE STORAGE TANK 1 LEVEL SCALE: 0 > 100 PERCENT	CALC VALUE	GPC #270	-	-	4.2.11	A1	CALC	1302	X
*	UV7490	--	VALIDATED CONDENSATE STORAGE TANK 2 LEVEL SCALE: 0 > 100 PERCENT	CALC VALUE	GPC #269	-	-	4.2.11	A1	CALC	1302	X
*	UV7501	--	VALIDATED CONTAINMENT HYDROGEN CONCENTRATION SCALE: 0 > 10 PERCENT	CALC VALUE	GPC #303	-	-	5.2.06-D	B1	CALC	1513	X
*	UV9003	--	VALIDATED CONTAINMENT WATER LEVEL SCALE: 0 > 120 INCHES	CALC VALUE	GPC #259	-	-	4.2.10	A1	CALC	1205	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	TYP	SIGNAL CLASS	R.G 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
*	UV9253	--	VALIDATED CONTAINMENT PRESS EXTENDED RANGE SCALE: -5 > 160 PSIG	CALC VALUE	GPC #0282			03-A C1 CALC	1206	X
*	UV9269	--	VALIDATED REACTOR HEAD VENT LETDOWN LINE FLOW SCALE: 0 > 80 GPM	CALC VALUE	GPC #0278	-		4.2.03-B D2 CALC	1208	
*	UV9644	--	VALIDATED RCS SUBCOOLING SCALE: -600 > 350 DEG F	CALC VALUE	GPC #0312	-	-	4.2.16 A1 CALC	1201	X
*	UV9659	--	VALIDATED RVLIS UPPER RANGE DP SCALE: -7 > -1 IN WATER	CALC VALUE	GPC #0224	-	-	5.2.03-B B1 CALC (RANGE=-7.986>-1.361)	1201	
*	UV9660	--	VALIDATED RVLIS FULL RANGE DP SCALE: -19 > -1 IN WATER	CALC VALUE	GPC #0223	-	-	5.2.03-B B1 CALC (RANGE=-19.224>-1.361)	1201	
*	UV9661	--	VALIDATED RVLIS DYNAMIC HEAD DP SCALE: -19 > 39 IN WATER	CALC VALUE	GPC #0222	-	-	5.2.03-B B1 CALC (RANGE=-19.224>39.773)	1201	
*	UV9861	--	VALIDATED RVLIS STATIC HEAD UPPER RANGE SCALE: 60 > 120 % LEVEL	CALC VALUE	GPC #0218	-	-	6.2.01-B C2 CALC	1201	X
*	UV9862	--	VALIDATED RVLIS STATIC HEAD FULL RANGE SCALE: 0 > 120 % LEVEL	CALC VALUE	GPC #0217	-	-	6.2.01-B C2 CALC	1201	X
*	UV9863	--	VALIDATED RVLIS DYNAMIC HEAD SCALE: 0 > 120 % LIQUID	CALC VALUE	GPC #0216	-	-	6.2.01-B C2 CALC	1201	X
*	UY6171	--	PRI MET TWR 10 METER WIND DIRECT (15 MIN AVG) SCALE: 0 > 540 DEGREES	CALC VALUE	GPC #0187	-	-	8.2.08 E3 CALC (UNIT 1 INPUT ONLY)	2001	
*	UY6431	--	PRI MET TWR 60 METER WIND DIRECT (15 MIN AVG) SCALE: 0 > 540 DEGREES	CALC VALUE	GPC #0192	-	-	8.2.08 E3 CALC (UNIT 1 INPUT ONLY)	2001	
*	UY6432	--	PRI MET TWR 10 METER SIGMA THETA (15 MIN AVG) SCALE: 0 > 100 DEGREES	CALC VALUE	GPC #0190	-	-	8.2.08 E3 CALC (UNIT 1 INPUT ONLY)	2001	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
*	UY6433	--	SEC MET TWR 10 METER SIGMA THETA (15 MIN AVG) SCALE: 0 > 100 DEGREES	CALC VALUE	GPC 0193	-	-	6.2.08 (UNIT 1 INPUT ONLY)	E3 CALC	2001	
*	UY6435	--	SEC MET TWR 10 METER WIND DIRECT (15 MIN AVG) SCALE: 0 > 540 DEGREES	CALC VALUE	GPC 0197	-	-	6.2.08 (UNIT 1 INPUT ONLY)	E3 CALC	2001	
	UY9261	--	LATEST PASS PM SAMPLE SCALE: 0 > 14 PM	CALC VALUE	GPC 0183	-	-	6.2.01-C	C3 CALC	2702	
	V9615	--	4.16KV 1E BUS 1AA02 VOLTAGE XDUCER: 0-1MA SCALE: 0 > 5250 VOLTS	XCDR-V	B 1202	SWGR E/D1-BA-D02E	I	7.2.12	D2 RPU A2	1004	X
	V9618	--	4.16KV 1E BUS 1BA03 VOLTAGE XDUCER: 0-1MA SCALE: 0 > 5250 VOLTS	XCDR-V	B 1205	SWGR E/D1-BA-D03E	II	7.2.12	D2 RPU B2	1004	X
	V9623	--	CLASS 1E 125VDC LOADCENTER 1AD1 BUS VOLTAGE XDUCER: 4-20MA SCALE: 0 > 150 VOLTS	XCDR-V	B 1 1#	SWGR E/D1-BA-H01A	I	7.2.12	D2 RPU A2	1005	
	V9624	--	CLASS 1E 125VDC LOADCENTER 1BD1 BUS VOLTAGE XDUCER: 4-20MA SCALE: 0 > 150 VOLTS	XCDR-V	B 1211	SWGR E/D1-BA-H02A	II	7.2.12	D2 RPU B2	1006	
	V9625	--	CLASS 1E 125VDC LOADCENTER 1CD1 BUS VOLTAGE XDUCER: 4-20MA SCALE: 0 > 150 VOLTS	XCDR-V	B 1212	SWGR E/D1-BA-H03A	III	7.2.12	D2 RPU A3	1006	
	V9626	--	CLASS 1E 125VDC LOADCENTER 1DD1 BUS VOLTAGE XDUCER: 4-20MA SCALE: 0 > 150 VOLTS	XCDR-V	B 1213	SWGR E/D1-BA-H04A	IV	7.2.12	D2 RPU B3	1006	
	VD9604	--	DIESEL GENERATOR A VOLTAGE ALM ON CONTACT: CLSD ALM/NML: LOW / NOT LOW	127X	B 2177	PARSB E/D1-BA-D02D	I	7.2.12	D2 RPU A1	1004	
	VD9610	--	DIESEL GENERATOR B VOLTAGE ALM ON CONTACT: CLSD ALM/NML: LOW / NOT LOW	127X	B 2179	PAR7C E/D1-BA-D03D	II	7.2.12	D2 RPU B1	1004	
	Y6171	--	PRIMARY MET TOWER 10 METER WIND DIRECTION XDUCER: 0-5V SCALE: 0 > 540 DEGREES	MM TWR	B 1233	MET TOWER NNS		6.2.08 (UNIT 1 INPUT ONLY)	E3 MUX	2001	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.9/ VAR CLASS	INPUT VIA	SYSTEM	SPDS
	Y6431	--	PRIMARY MET TOWER 60 METER WIND DIRECTION XDUCER: 0-5V SCALE: 0 > 540 DEGREES	MM TWR	B 1317	MET TOWER	NNS	8.2.08 (UNIT 1 INPUT ONLY)	E3 MUX	2001	
*	Y6432	--	PRIMARY MET TOWER 10 METER SIGMA THETA XDUCER: 0-5V SCALE: 0 > 100 DEGREES	MM TWR	B 1412	MET TOWER	NNS	8.2.08 (UNIT 1 INPUT ONLY)	E3 MUX	2001	
*	Y6433	--	SECONDARY MET TOWER 10 METER SIGMA THETA XDUCER: 0-5V SCALE: 0 > 100 DEGREES	MM TWR	B 1413	MET TOWER	NNS	8.2.08 (UNIT 1 INPUT ONLY)	E3 MUX	2001	
	Y6435	--	SECONDARY MET TOWER 10 METER WIND DIRECTION XDUCER: 0-5V SCALE: 0 > 540 DEGREES	MM TWR	B 1414	MET TOWER	NNS	8.2.08 (UNIT 1 INPUT ONLY)	E3 MUX	2001	
	Y9261	--	RCS SAMPLING PH XDUCER: 4-20MA SCALE: 0 > 14 PH	LATER	B 1152	PASS	NNS	6.2.01-C	C3 MUX	2702	
	Y9882	--	MET TWR ASPIRATOR (0V=NOT FAILED,5V=FAILED) XDUCER: 0-5V SCALE: 0 > 5 VOLTS	MM TWR	B 1433	MET TOWER	NNS	-- (UNIT 1 INPUT ONLY)	- MUX	2001	
	YD5##6	YD#### REACTOR TRIP BRKR TRAIN A ALM ON CONTACT: OPEN ALM/NML: TRIP / NOT TRIPPED		X5A	M 2498	RTSG E/D1-CD-M01A	NNS	7.2.14	D2 MULT	1006	X
	YD5##7	YD#### REACTOR TRIP BRKR TRAIN B ALM ON CONTACT: OPEN ALM/NML: TRIP / NOT TRIPPED		X5B	M 2502	RTSG E/D1-CD-M01A	NNS	7.2.14	D2 MULT	1006	X
	YD5#26	YD#026 REACTOR TRIP BY-PASS BRKR TRAIN A ALM ON CONTACT: CLSD ALM/NML: NOT TRIPPED / TRIPPED		X2A	M 2499	RTSG	NNS	7.2.14	D2 BDE	1006	X
	YD5#27	YD#027 REACTOR TRIP BY-PASS BRKR TRAIN B ALM ON CONTACT: CLSD ALM/NML: NOT TRIPPED / TRIPPED		X2B	M 2503	RTSG	NNS	7.2.14	D2 BDE	1006	X
	YD51##	YD#1## POSITIVE DISPLACMENT CHARGING PUMP 1 BRKR ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED		52B-NB2108	B 2542	BmGR E/D1-BD-C01C	NNS	--	- MULT	1200	
	YD5101	YD#101 CENTRIFIGAL CHARGING PUMP TRAIN A BRKR ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED		52B-AAB213	B 2262	1BD PNL E/D1-BD-C01A	NNS	7.2.03	D2 MULT	1200	

R E M	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
	YD5102	YD0102 CENTRIFIGAL CHARGING PUMP TRAIN B BRKR ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED		52B-BA0313	B 2263	I8D PNL E/D1-6D-C018	NNS	7.2.03	D2	MULT	1200	
	YD5600	YD0600 RHR PUMP A BRKR ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED		52B-AA0209	B 2021	I8D PNL E/D1-8D-E01A	NNS	7.2.10	D2	MULT	1205	
	YD5601	YD0601 RHR PUMP B BRKR ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED		52B-BA0318	B 2018	I8D PNL E/D1-8D-E01B	NNS	7.2.10	D2	MULT	1200	
	YD9606	-- DIESEL GENERATOR A FREQUENCY ALM ON CONTACT: OPEN ALM/NML: LOW / NOT LOW		334B	B 2181	PDG2 E/D1-BA-D02D	I	7.2.12	D2	RPU A2	1004	
	YD9612	-- DIESEL GENERATOR B FREQUENCY ALM ON CONTACT: OPEN ALM/NML: LOW / NOT LOW		334B	B 2183	PDG4 E/D1-BA-D03D	II	7.2.12	D2	RPU B2	1004	
	YD9643	-- NFMS NEUT DET POWER TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF NORMAL / NORMAL		NEUTRA	M 2023	NFMS	I	--	-	RPU A2	1002	
	YD9658	-- NFMS NEUT DET POWER TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF NORMAL / NORMAL		NEUTRB	M 2025	NFMS	II	--	-	RPU B2	1002	
	ZD6150	-- SI ACTUATION TRAIN A ALM ON CONTACT: CLSD ALM/NML: ACTUATED / NORMAL		K001A	M 2053	SSPS E/D1-8D-K04L	I	7.2.14	D2	RPU A2	1204	X
	ZD6151	-- SI ACTUATION TRAIN B ALM ON CONTACT: CLSD ALM/NML: ACTUATED / NORMAL		K001B	M 2051	SSPS E/D1-8D-K04Q	II	7.2.14	D2	RPU B2	1204	X
	ZD6160	-- CONTAINMENT ISOL SIGNAL PHASE A TRAIN A ALM ON CONTACT: CLSD ALM/NML: ISOLATED / NORMAL		K031A	M 2091	SSPS E/D1-8D-C03L	I	7.2.14	D2	RPU A2	2415	X
	ZD6161	-- CONTAINMENT ISOL SIGNAL PHASE A TRAIN B ALM ON CONTACT: CLSD ALM/NML: ISOLATED / NORMAL		K031B	M 2340	SSPS E/D1-8D-C03D	II	7.2.14	D2	RPU B2	2415	X
*	ZD7002	ZD2002 MAIN TURB STOP VALVE SV1 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN		XV-5001	B 2018	VALVE	NNS	7.2.14	D2	MULT	1301	X

REV	ERF SYMBOL	PHOTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	ZD7003	ZD2003	MAIN TURB STOP VALVE SV1 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6001	B 2842	VALVE	NNS	7.2.14	D2	MULT	1301	X
	ZD7004	ZD2004	MAIN TURB STOP VALVE SV2 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6002	B 2820	VALVE	NNS	7.2.14	D2	MULT	1301	X
	ZD7005	ZD2005	MAIN TURB STOP VALVE SV2 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6002	B 2844	VALVE	NNS	7.2.14	D2	MULT	1301	X
	ZD7006	ZD2006	MAIN TURB STOP VALVE SV3 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6003	B 2822	VALVE	NNS	7.2.14	D2	MULT	1301	X
	ZD7007	ZD2007	MAIN TURB STOP VALVE SV3 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6003	B 2846	VALVE	NNS	7.2.14	D2	MULT	1301	X
	ZD7008	ZD2008	MAIN TURB STOP VALVE SV4 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6004	B 2824	VALVE	NNS	7.2.14	D2	MULT	1301	X
	ZD7009	ZD2009	MAIN TURB STOP VALVE SV4 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6004	B 2848	VALVE	NNS	7.2.14	D2	MULT	1301	X
	ZD7010	ZD2010	MAIN TURB CONTROL VALVE CV1 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6005	B 2883	VALVE	NNS	--	-	MULT	1301	
	ZD7011	ZD2011	MAIN TURB CONTROL VALVE CV1 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6005	B 2907	VALVE	NNS	--	-	MULT	1301	
	ZD7012	ZD2012	MAIN TURB CONTROL VALVE CV2 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6006	B 2885	VALVE	NNS	--	-	MULT	1301	
	ZD7013	ZD2013	MAIN TURB CONTROL VALVE CV2 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6006	B 2909	VALVE	NNS	--	-	MULT	1301	
	ZD7014	ZD2014	MAIN TURB CONTROL VALVE CV3 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6007	B 2887	VALVE	NNS	--	-	MULT	1301	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
	ZD7015	ZD2015	MAIN TURB CONTROL VALVE CV3 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6007	B 2911	VALVE	NNS	--	-	MULT	1301	
	ZD7016	ZD2016	MAIN TURB CONTROL VALVE CV4 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6008	B 2866	VALVE	NNS	--	-	MULT	1301	
	ZD7017	ZD2017	MAIN TURB CONTROL VALVE CV4 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6008	B 2898	VALVE	NNS	--	-	MULT	1301	
	ZD7042	ZD2042	MAIN TURB INTERMEDIATE STOP VLV ISV1 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6009	B 2868	VALVE	NNS	--	-	MULT	1301	
	ZD7043	ZD2043	MAIN TURB INTERMEDIATE STOP VLV ISV1 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6009	B 2892	VALVE	NNS	--	-	MULT	1301	
	ZD7044	ZD2044	MAIN TURB INTERMEDIATE STOP VLV ISV2 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6010	B 2870	VALVE	NNS	--	-	MULT	1301	
	ZD7045	ZD2045	MAIN TURB INTERMEDIATE STOP VLV ISV2 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6010	B 2894	VALVE	NNS	--	-	MULT	1301	
	ZD7046	ZD2046	MAIN TURB INTERMEDIATE STOP VLV ISV3 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6011	B 2872	VALVE	NNS	--	-	MULT	1301	
	ZD7047	ZD2047	MAIN TURB INTERMEDIATE STOP VLV ISV3 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6011	B 2896	VALVE	NNS	--	-	MULT	1301	
	ZD7048	ZD2048	MAIN TURB INTERMEDIATE STOP VLV ISV4 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6012	B 2874	VALVE	NNS	--	-	MULT	1301	
	ZD7049	ZD2049	MAIN TURB INTERMEDIATE STOP VLV ISV4 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6012	B 2898	VALVE	NNS	--	-	MULT	1301	
	ZD7050	ZD2050	MAIN TURB INTERMEDIATE STOP VLV ISV5 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6013	B 2876	VALVE	NNS	--	-	MULT	1301	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	ZD7851	ZD2851	MAIN TURB INTERMEDIATE STOP VLV ISV5 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6813	B 2900	VALVE	NNS	--	-	MULT	1301	
	ZD7852	ZD2852	MAIN TURB INTERMEDIATE STOP VLV ISV6 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6814	B 2918	VALVE	NNS	--	-	MULT	1301	
	ZD7853	ZD2853	MAIN TURB INTERMEDIATE STOP VLV ISV6 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6814	B 2942	VALVE	NNS	--	-	MULT	1301	
	ZD7854	ZD2854	MAIN TURBINE INTERCEPT VALVE IV1 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6809	B 2920	VALVE	NNS	--	-	MULT	1301	
	ZD7855	ZD2855	MAIN TURBINE INTERCEPT VALVE IV1 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6809	B 2944	VALVE	NNS	--	-	MULT	1301	
	ZD7856	ZD2856	MAIN TURBINE INTERCEPT VALVE IV2 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6810	B 2922	VALVE	NNS	--	-	MULT	1301	
	ZD7857	ZD2857	MAIN TURBINE INTERCEPT VALVE IV2 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6810	B 2946	VALVE	NNS	--	-	MULT	1301	
	ZD7858	ZD2858	MAIN TURBINE INTERCEPT VALVE IV3 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6811	B 2924	VALVE	NNS	--	-	MULT	1301	
	ZD7859	ZD2859	MAIN TURBINE INTERCEPT VALVE IV3 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6811	B [illegible]	VALVE	NNS	--	-	MULT	1301	
	ZD7860	ZD2860	MAIN TURBINE INTERCEPT VALVE IV4 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6812	B 2926	VALVE	NNS	--	-	MULT	1301	
	ZD7861	ZD2861	MAIN TURBINE INTERCEPT VALVE IV4 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6812	B 2950	VALVE	NNS	--	-	MULT	1301	
	ZD7862	ZD2862	MAIN TURBINE INTERCEPT VALVE IV5 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6813	B 2928	VALVE	NNS	--	-	MULT	1301	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	ZD7063	ZD2063	MAIN TURBINE INTERCEPT VALVE IV5 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6013	B 2952	VALVE	NNS	--	-	MULT	1301	
	ZD7064	ZD2064	MAIN TURBINE INTERCEPT VALVE IV6 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	XV-6014	B 2930	VALVE	NNS	--	-	MULT	1301	
	ZD7065	ZD2065	MAIN TURBINE INTERCEPT VALVE IV5 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	XV-6014	B 2954	VALVE	NNS	--	-	MULT	1301	
	ZD7101	--	SG1 MAIN STM ISOL VLV UPSTREAM TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-3006A	B 3011	VALVE I E/D1-BC-Q01S		5.2.05-F	B2	RPU	A1	1301
	ZD7102	--	SG1 MAIN STM ISOL VLV UPSTREAM TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	HV-3008A	B 3035	VALVE I E/D1-BC-Q01B		5.2.05-F	B2	RPU	A1	1301
	ZD7103	--	SG2 MAIN STM ISOL VLV UPSTREAM TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-3016A	B 3008	VALVE I E/D1-BC-Q01M		5.2.05-F	B2	RPU	A1	1301
	ZD7104	--	SG2 MAIN STM ISOL VLV UPSTREAM TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	HV-3018A	B 3032	VALVE I E/D1-BC-Q01M		5.2.05-F	B2	RPU	A1	1301
	ZD7105	--	SG3 MAIN STM ISOL VLV UPSTREAM TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-3026A	B 3077	VALVE I E/D1-BC-Q02A		5.2.05-F	B2	RPU	A1	1301
	ZD7106	--	SG3 MAIN STM ISOL VLV UPSTREAM TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	HV-3026A	B 3101	VALVE I E/D1-BC-Q02A		5.2.05-F	B2	RPU	A1	1301
	ZD7107	--	SG4 MAIN STM ISOL VLV UPSTREAM TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-3036A	B 3075	VALVE I E/D1-BC-Q02E		5.2.05-F	B2	RPU	A1	1301
	ZD7108	--	SG4 MAIN STM ISOL VLV UPSTREAM TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	HV-3038A	B 3099	VALVE I E/D1-BC-Q02E		5.2.05-F	B2	RPU	A1	1301
	ZD7111	--	SG1 MAIN STM ISOL VLV DNSTRM TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-3006B	B 3010	VALVE II E/D1-BC-Q01T		5.2.05-F	B2	RPU	B1	1301

R E V	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B T	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	S P D S
	ZD7112	--	SG1 MAIN STM ISOL VLV DNSTRM TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-30868	B 3034	VALVE E/D1-BC-001T	II	5.2.05-F	B2 RPU	B1 1301	
	ZD7113	--	SG2 MAIN STM ISOL VLV DNSTRM TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-30168	B 3079	VALVE E/D1-BC-001X	II	5.2.05-F	B2 RPU	B1 1301	
	ZD7114	--	SG2 MAIN STM ISOL VLV DNSTRM TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-30168	B 3103	VALVE E/D1-BC-001X	II	5.2.05-F	B2 RPU	B1 1301	
	ZD7115	--	SG3 MAIN STM ISOL VLV DNSTRM TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-30268	B 3076	VALVE E/D1-BC-0028	II	5.2.05-F	B2 RPU	B1 1301	
	ZD7116	--	SG3 MAIN STM ISOL VLV DNSTRM TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-30258	B 3100	VALVE E/D1-BC-0028	II	5.2.05-F	B2 RPU	B1 1301	
	ZD7117	--	SG4 MAIN STM ISOL VLV DNSTRM TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-30368	B 3074	VALVE E/D1-BC-002F	II	5.2.05-F	B2 RPU	B1 1301	
	ZD7118	--	SG4 MAIN STM ISOL VLV DNSTRM TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-30368	B 3098	VALVE E/D1-BC-002F	II	5.2.05-F	B2 RPU	B1 1301	
	ZD7131	--	SG1 OUTLET VALVE TO TDAFW TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-3009	B 3009	VALVE E/D1-BC-001U	II	7.2.06-C	D2 RPU	B1 1301	
	ZD7132	--	SG1 OUTLET VALVE TO TDAFW TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-3009	B 3033	VALVE E/D1-BC-001U	II	7.2.06-C	D2 RPU	B1 1301	
	ZD7133	--	SG2 OUTLET VALVE TO TDAFW TRAIN C ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-3019	B 3078	VALVE E/D1-BC-001Y	I	7.2.06-C	D2 RPU	A1 1301	
	ZD7134	--	SG2 OUTLET VALVE TO TDAFW TRAIN C ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-3019	B 3102	VALVE E/D1-BC-001Y	I	7.2.06-C	D2 RPU	A1 1301	
*	ZD7146	ZD2146	STM DUMP TV-500A TO CONDENSER A ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	TV-0500A	N 3038	VALVE E/D1-BC-003A	NNS	--	- RPU	N1 1301	

REV	EHF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
*	ZD7147	ZD2147	STM DUMP TV-500A TO CONDENSER A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	TV-0500A	M 3054	VALVE	NNS	--	-	RPU N1	1301	
	ZD7148	ZD2148	STM DUMP TV-500B TO CONDENSER B ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	TV-0500B	M 3029	VALVE	NNS	--	-	RPU N1	1301	
	ZD7149	ZD2149	STM DUMP TV-500B TO CONDENSER B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	TV-0500B	M 3053	VALVE	NNS	--	-	RPU N1	1301	
	ZD7150	ZD2150	STM DUMP TV-500C TO CONDENSER C ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	TV-0500C	M 3028	VALVE	NNS	--	-	RPU N1	1301	
	ZD7151	ZD2151	STM DUMP TV-500C TO CONDENSER C ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	TV-0500C	M 3052	VALVE	NNS	--	-	RPU N1	1301	
	ZD7152	ZD2152	STM DUMP TV-500D TO CONDENSER A ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	TV-0500D	M 3027	VALVE	NNS	--	-	RPU N1	1301	
	ZD7153	ZD2153	STM DUMP TV-500D TO CONDENSER A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	TV-0500D	M 3051	VALVE	NNS	--	-	RPU N1	1301	
	ZD7154	ZD2154	STM DUMP TV-500E TO CONDENSER B ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	TV-0500E	M 3026	VALVE	NNS	--	-	RPU N1	1301	
	ZD7155	ZD2155	STM DUMP TV-500E TO CONDENSER B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	TV-0500E	M 3050	VALVE	NNS	--	-	RPU N1	1301	
	ZD7156	ZD2156	STM DUMP TV-500F TO CONDENSER C ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	TV-0500F	M 3025	VALVE	NNS	--	-	RPU N1	1301	
	ZD7157	ZD2157	STM DUMP TV-500F TO CONDENSER C ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	TV-0500F	M 3049	VALVE	NNS	--	-	RPU N1	1301	
	ZD7158	ZD2158	STM DUMP TV-500G TO CONDENSER A ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	TV-0500G	M 3024	VALVE	NNS	--	-	RPU N1	1301	

*** SORT 01 = ERF SYMBOL ***

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	ZD7159	ZD2159	STM DUMP TV-500G TO CONDENSER A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	TV-0500G	R 3046	VALVE E/D1-BC-Q03G	NNS	--	-	RPU N1	1301	
	ZD7160	ZD2160	STM DUMP TV-500H TO CONDENSER B ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	TV-0500H	R 3023	VALVE E/D1-BC-Q03H	NNS	--	-	RPU N1	1301	
	ZD7161	ZD2161	STM DUMP TV-500H TO CONDENSER B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	TV-0500H	R 3047	VALVE E/D1-BC-Q03H	NNS	--	-	RPU N1	1301	
	ZD7162	ZD2162	STM DUMP TV-500J TO CONDENSER C ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	TV-0500J	R 3022	VALVE E/D1-BC-Q03J	NNS	--	-	RPU N1	1301	
	ZD7163	ZD2163	STM DUMP TV-500J TO CONDENSER C ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	TV-0500J	R 3046	VALVE E/D1-BC-Q03J	NNS	--	-	RPU N1	1301	
	ZD7164	ZD2164	STM DUMP PV-507A TO CONDENSER A ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PV-0507A	R 2967	VALVE E/D1-BC-Q03K	NNS	--	-	RPU N1	1301	
	ZD7165	ZD2165	STM DUMP PV-507A TO CONDENSER A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PV-0507A	R 2991	VALVE E/D1-BC-Q03K	NNS	--	-	RPU N1	1301	
	ZD7166	ZD2166	STM DUMP PV-507B TO CONDENSER B ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PV-0507B	R 2966	VALVE E/D1-BC-Q03L	NNS	--	-	RPU N1	1301	
	ZD7167	ZD2167	STM DUMP PV-507B TO CONDENSER B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PV-0507B	R 2990	VALVE E/D1-BC-Q03L	NNS	--	-	RPU N1	1301	
	ZD7168	ZD2168	STM DUMP PV-507C TO CONDENSER C ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PV-0507C	R 2965	VALVE E/D1-BC-Q03M	NNS	--	-	RPU N1	1301	
	ZD7169	ZD2169	STM DUMP PV-507C TO CONDENSER C ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PV-0507C	R 2989	VALVE E/D1-BC-Q03M	NNS	--	-	RPU N1	1301	
	ZD7331	ZD2331	TDAFW DISCH VLV TO SG4 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-5128	B 3073	ISO PNL E/D1-BC-F89A	NNS	7.2.86-C	D2 MULT		1302	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	b Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	BPDS
	ZD7332	ZD2332	TDAFW DISCH VLV TO SG4 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-5128	B 3097	ISO PNL E/D1-BC-F09A	NNS	7.2.06-C	D2 MULT	1302	
	ZD7333	ZD2333	TDAFW DISCH VLV TO SG1 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-5122	B 3072	ISO PNL E/D1-BC-F09B	NNS	7.2.06-C	D2 MULT	1302	
	ZD7334	ZD2334	TDAFW DISCH VLV TO SG1 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-5122	B 3096	ISO PNL E/D1-BC-F09B	NNS	7.2.06-C	D2 MULT	1302	
	ZD7335	ZD2335	TDAFW DISCH VLV TO SG2 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-5125	B 3071	ISO PNL E/D1-BC-F09C	NNS	7.2.06-C	D2 MULT	1302	
	ZD7336	ZD2336	TDAFW DISCH VLV TO SG2 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-5125	B 3095	ISO PNL E/D1-BC-F09C	NNS	7.2.06-C	D2 MULT	1302	
	ZD7337	ZD2337	TDAFW DISCH VLV TO SG3 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-5127	B 3070	ISO PNL E/D1-BC-F09D	NNS	7.2.06-C	D2 MULT	1302	
	ZD7338	ZD2338	TDAFW DISCH VLV TO SG3 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-5127	B 3094	ISO PNL E/D1-BC-F09D	NNS	7.2.06-C	D2 MULT	1302	
	ZD7339	ZD2339	MD AFW-B DISCH VLV TO SG2 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-5132	B 3069	ISO PNL E/D1-BC-F08A	NNS	7.2.06-C	D2 MULT	1302	
	ZD7340	ZD2340	MD AFW-B DISCH VLV TO SG2 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-5132	B 3093	ISO PNL E/D1-BC-F08A	NNS	7.2.06-C	D2 MULT	1302	
	ZD7341	ZD2341	MD AFW-B DISCH VLV TO SG3 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-5134	B 3068	ISO PNL E/D1-BC-F08B	NNS	7.2.06-C	D2 MULT	1302	
	ZD7342	ZD2342	MD AFW-B DISCH VLV TO SG3 ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-5134	B 3092	ISO PNL E/D1-BC-F08B	NNS	7.2.06-C	D2 MULT	1302	
	ZD7343	ZD2343	MD AFW-A DISCH VLV TO SG4 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-5137	B 3067	ISO PNL E/D1-BC-F08C	NNS	7.2.06-C	D2 MULT	1302	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD7344	ZD2344 MD AFW-A DISCH VLV TO SG4		HV-5137	B	ISO PNL	NNS	7.2.06-C	D2 MULT	1382	
		ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED			3091	E/D1-8C-F08C					
	ZD7345	ZD2345 MD AFW-A DISCH VLV TO SG1		HV-5139	B	ISO PNL	NNS	7.2.06-C	D2 MULT	1382	
		ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN			3066	E/D1-8C-F08D					
	ZD7346	ZD2346 MD AFW-A DISCH VLV TO SG1		HV-5139	B	ISO PNL	NNS	7.2.06-C	D2 MULT	1382	
		ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED			3090	E/D1-8C-F08D					
	ZD7351	-- MD AFW-A INLET VALVE		HV-5119	B	VALVE	I	7.2.06-C	D2 RPU A1	1382	
		ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN			2869	E/D1-8C-F02D					
	ZD7352	-- MD AFW-A INLET VALVE		HV-5119	B	VALVE	I	7.2.06-C	D2 RPU A1	1382	
		ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED			2893	E/D1-8C-F02D					
	ZD7353	-- MD AFW-B INLET VALVE		HV-5118	B	VALVE	II	7.2.06-C	D2 RPU B1	1382	
		ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN			2867	E/D1-8C-F02C					
	ZD7354	-- MD AFW-B INLET VALVE		HV-5118	B	VALVE	II	7.2.06-C	D2 RPU B1	1382	
		ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED			2891	E/D1-8C-F02C					
	ZD7355	-- TDAFW INLET VALVE		HV-5113	B	VALVE	I	7.2.06-C	D2 RPU A3	1382	
		ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN			2865	E/D1-8C-F028					
	ZD7356	-- TDAFW INLET VALVE		HV-5113	B	VALVE	I	7.2.06-C	D2 RPU A3	1382	
		ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED			2889	E/D1-8C-F028					
	ZD7357	-- TDAFW STEAM INLET VALVE		HV-5106	B	VALVE	I	7.2.06-C	D2 RPU A3	1382	
		ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN			2864	E/D1-8C-F02A					
	ZD7358	-- TDAFW STEAM INLET VALVE		HV-5106	B	VALVE	I	7.2.06-C	D2 RPU A3	1382	
		ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED			2888	E/D1-8C-F02A					
	ZD7361	ZD2361 CIRCULATING WATER PUMP 1		528-NA005	W	SWGR	NNS	--	MULT	1401	
		ALM ON CONTACT: CLSD ALM/NML: STOPPED / RUNNING			2652	E/D1-8C-005A					

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
	ZD7366	ZD2366 CIRCULATING WATER PUMP 2 ALM ON CONTACT: CLSD ALM/NML: STOPPED / RUNNING		528-NAA04	M 2650	SNGR E/D1-BC-B06A	NNS	--	-	MULT	1401	
	ZD7381	ZD2381 MAIN FEED PUMP TURBINE A ALM ON CONTACT: CLSD ALM/NML: TRIP / RESET		PSL-5346X	M 2548	FLD	NNS	--	-	MULT	1305	
	ZD7396	ZD2396 TDAFW PUMP TRN C TRIP/THROTTLE VLV ALM ON CONTACT: CLSD ALM/NML: TRIPPED / NOT TRIPPED		PV-15129	B 2291	ISO PNL E/D1-BC-F02X	NNS	7.2.14	D2	MULT	1302	
	ZD7397	ZD2397 MOTOR DRIVEN AUX FW PUMP B ALM ON CONTACT: CLSD ALM/NML: STOPPED / RUNNING		528-BA0321	B 2506	ISO PNL E/D1-BC-F06A	NNS	7.2.14	D2	MULT	1302	
	ZD7398	ZD2398 MOTOR DRIVEN AUX FW PUMP A ALM ON CONTACT: CLSD ALM/NML: STOPPED / RUNNING		528-AA0217	B 2507	ISO PNL E/D1-BC-F04A	NNS	7.2.14	D2	MULT	1302	
	ZD7401	ZD2401 MAIN FEED PUMP TURBINE B ALM ON CONTACT: CLSD ALM/NML: TRIP / RESET		PSL-5347X	M 2538	FLD	NNS	--	-	MULT	1305	
	ZD7451	ZD2451 CONDENSATE PUMP 1 ALM ON CONTACT: CLSD ALM/NML: STOPPED / RUNNING		528-NAA05	M 2293	SNGR	NNS	--	-	MULT	1305	
	ZD7456	ZD2456 CONDENSATE PUMP 2 ALM ON CONTACT: CLSD ALM/NML: STOPPED / RUNNING		528-NAA06	M 2449	SNGR	NNS	--	-	MULT	1305	
	ZD7461	ZD2461 CONDENSATE PUMP 3 ALM ON CONTACT: CLSD ALM/NML: STOPPED / RUNNING		528-NAB04	M 2447	SNGR	NNS	--	-	MULT	1305	
	ZD7501	ZD2501 CONTAINMENT SPRAY PUMP A ALM ON CONTACT: OPEN ALM/NML: RUNNING / STOPPED		528-AA0214	B 2522	ISO PNL E/D1-BD-J01A	NNS	7.2.07	D2	MULT	1206	
	ZD7502	ZD2502 CONTAINMENT SPRAY PUMP B ALM ON CONTACT: OPEN ALM/NML: RUNNING / STOPPED		528-BA0314	B 2523	ISO PNL E/D1-BD-J01B	NNS	7.2.07	D2	MULT	1206	
	ZD7527	ZD2527 SG LOOP 1 FW ISOLATION - MFIV ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN		HV-5227	B 2873	VALVE I E/D1-BC-C06C	NNS	7.2.04-F	D2	RPU A2	1305	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD7528	ZD2528	SG LOOP 1 FW ISOLATION - MFIV ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-5227	B 2897	VALVE E/D1-BC-C006	I	7.2.04-F	D2 RPU	A2 1305	
	ZD7529	ZD2529	SG LOOP 2 FW ISOLATION - MFIV ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-5228	B 2875	VALVE E/D1-BC-C007C	I	7.2.04-F	D2 RPU	A2 1305	
	ZD7530	ZD2530	SG LOOP 2 FW ISOLATION - MFIV ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-5228	B 2899	VALVE E/D1-BC-C007C	I	7.2.04-F	D2 RPU	A2 1305	
	ZD7531	ZD2531	SG LOOP 3 FW ISOLATION - MFIV ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-5229	B 2877	VALVE E/D1-BC-C008C	I	7.2.04-F	D2 RPU	A2 1305	
	ZD7532	ZD2532	SG LOOP 3 FW ISOLATION - MFIV ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-5229	B 2901	VALVE E/D1-BC-C008C	I	7.2.04-F	D2 RPU	A2 1305	
	ZD7533	ZD2533	SG LOOP 4 FW ISOLATION - MFIV ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-5230	B 2878	VALVE E/D1-BC-C009C	I	7.2.04-F	D2 RPU	A2 1305	
	ZD7534	ZD2534	SG LOOP 4 FW ISOLATION - MFIV ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-5230	B 2902	VALVE E/D1-BC-C009C	I	7.2.04-F	D2 RPU	A2 1305	
	ZD7537	ZD2537	SG1 BLOWDOWN ISOLATION ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-7603A	B 3064	PAR6 E/D1-BC-Q001A	NNS	7.2.04-K	D2 MULT	1301	
	ZD7538	ZD2538	SG1 BLOWDOWN ISOLATION ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-7603A	B 3088	PAR6 E/D1-BC-Q001A	NNS	7.2.04-K	D2 MULT	1301	
	ZD7539	ZD2539	SG2 BLOWDOWN ISOLATION ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-7603B	B 3063	PAR7D E/D1-BC-Q001B	NNS	7.2.04-K	D2 MULT	1301	
	ZD7540	ZD2540	SG2 BLOWDOWN ISOLATION ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-7603B	B 3087	PAR7D E/D1-BC-Q001B	NNS	7.2.04-K	D2 MULT	1301	
	ZD7541	ZD2541	SG3 BLOWDOWN ISOLATION ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-7603C	B 3062	PAR6 E/D1-BC-Q001C	NNS	7.2.04-K	D2 MULT	1301	

NEW	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	ZD7542	ZD2542 SG3 BLOWDOWN ISOLATION ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED		HV-7603C	B 3086	PAR6 E/D1-BC-Q01C	NNS	7.2.04-K	D2	MULT	1301	
	ZD7543	ZD2543 SG4 BLOWDOWN ISOLATION ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN		HV-7603D	B 3061	PAR7D E/D1-BC-Q01D	NNS	7.2.04-K	D2	MULT	1301	
	ZD7544	ZD2544 SG4 BLOWDOWN ISOLATION ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED		HV-7603D	B 3085	PAR7D E/D1-BC-Q01D	NNS	7.2.04-K	D2	MULT	1301	
	ZD7571	ZD2571 NSCW PUMP 1 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON		528-AA0204	B 2582	ISO PNL E/D1-BD-K04A	NNS	7.2.14	D2	MULT	1202	
	ZD7576	ZD2576 NSCW PUMP 2 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON		528-BA0307	B 2585	ISO PNL E/D1-BD-K04B	NNS	7.2.14	D2	MULT	1202	
	ZD7581	ZD2581 NSCW PUMP 3 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON		528-AA0208	B 2583	ISO PNL E/D1-BD-K04C	NNS	7.2.14	D2	MULT	1202	
	ZD7586	ZD2586 NSCW PUMP 4 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON		528-BA0311	B 2586	ISO PNL E/D1-BD-K04D	NNS	7.2.14	D2	MULT	1202	
	ZD7591	ZD2591 NSCW PUMP 5 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON		528-AA0212	B 2584	ISO PNL E/D1-BD-K04E	NNS	7.2.14	D2	MULT	1202	
	ZD7596	ZD2596 NSCW PUMP 6 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON		528-BA0315	B 2587	ISO PNL E/D1-BD-K04F	NNS	7.2.14	D2	MULT	1202	
	ZD7603	ZD2603 NSCW COOLING TOWER RTN VALVE TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN		HV-1668A	B 3017	ISO PNL E/D1-BD-K05U	NNS	7.2.09-B	D2	MULT	1202	
	ZD7604	ZD2604 NSCW COOLING TOWER BYPASS VLV TRAIN A ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN		HV-1668B	B 2828	ISO PNL E/D1-BD-K05V	NNS	7.2.09-B	D2	MULT	1202	
	ZD7605	ZD2605 NSCW COOLING TOWER RTN VALVE TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN		HV-1669A	B 3018	ISO PNL E/D1-BD-K05W	NNS	7.2.09-B	D2	MULT	1202	

R t V	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD7606	ZD2606	NSCW COOLING TOWER BYPASS VLV TRAIN B ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-16698	B 2826	ISO PNL E/D1-BD-K05X	NNS	7.2.09-B	D2 MULT	1202	
	ZD7607	ZD2607	NSCW COOLING TOWER RTN VALVE TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-1668A	B 3041	ISO PNL E/D1-BD-K05U	NNS	7.2.09-B	D2 MULT	1202	
	ZD7608	ZD2608	NSCW COOLING TOWER BYPASS VLV TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-16688	B 2852	ISO PNL E/D1-BD-K05V	NNS	7.2.09-B	D2 MULT	1202	
	ZD7609	ZD2609	NSCW COOLING TOWER RTN VALVE TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-1669A	B 3040	ISO PNL E/D1-BD-K05M	NNS	7.2.09-B	D2 MULT	1202	
	ZD7610	ZD2610	NSCW COOLING TOWER BYPASS VLV TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-16698	B 2850	ISO PNL E/D1-BD-K05X	NNS	7.2.09-B	D2 MULT	1202	
	ZD7611	ZD2611	NSCW FAN 1 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON	528-AB1505	B 2588	ISO PNL E/D1-BD-K03A	NNS	7.2.09-C	D2 MULT	1202	
	ZD7612	ZD2612	NSCW FAN 2 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON	528-AB1506	B 2589	ISO PNL E/D1-BD-K03B	NNS	7.2.09-C	D2 MULT	1202	
	ZD7613	ZD2613	NSCW FAN 3 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON	528-AB1513	B 2598	ISO PNL E/D1-BD-K03C	NNS	7.2.09-C	D2 MULT	1202	
	ZD7614	ZD2614	NSCW FAN 4 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON	528-AB1508	B 2591	ISO PNL E/D1-BD-K03D	NNS	7.2.09-C	D2 MULT	1202	
	ZD7616	ZD2616	NSCW FAN 1 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON	528-BB1605	B 2592	ISO PNL E/D1-BD-K03E	NNS	7.2.09-C	D2 MULT	1202	
	ZD7617	ZD2617	NSCW FAN 2 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON	528-BB1606	B 2593	ISO PNL E/D1-BD-K03F	NNS	7.2.09-C	D2 MULT	1202	
	ZD7618	ZD2618	NSCW FAN 3 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON	528-BB1613	B 2594	ISO PNL E/D1-BD-K03G	NNS	7.2.09-C	D2 MULT	1202	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	ZD7619	ZD2619 NSCW FAN 4 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON		52B-BB1608	B 2595	ISO PNL E/D1-BD-K03H	NNS	7.2.09-C	D2	MULT	1202	
	ZD7631	ZD2631 CCW PUMP 1 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON		52B-AA0203	B 2576	ISO PNL E/D1-BD-L01A	NNS	7.2.14	D2	MULT	1203	
	ZD7636	ZD2636 CCW PUMP 2 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON		52B-BA0308	B 2579	ISO PNL E/D1-BD-L01B	NNS	7.2.14	D2	MULT	1203	
	ZD7641	ZD2641 CCW PUMP 3 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON		52B-AA0207	B 2577	ISO PNL E/D1-BD-L01C	NNS	7.2.14	D2	MULT	1203	
	ZD7646	ZD2646 CCW PUMP 4 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON		52B-BA0312	B 2580	ISO PNL E/D1-BD-L01D	NNS	7.2.14	D2	MULT	1203	
	ZD7651	ZD2651 CCW PUMP 5 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON		52B-AA0211	B 2578	ISO PNL E/D1-BD-L01E	NNS	7.2.14	D2	MULT	1203	
	ZD7656	ZD2656 CCW PUMP 6 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON		52B-BA0316	B 2581	ISO PNL E/D1-BD-L01F	NNS	7.2.14	D2	MULT	1203	
	ZD7681	ZD2681 ACCW PUMP 1 ALM ON CONTACT: CLSD ALM/NML: OFF / ON		52B-AA0215	B 2448	ISO PNL E/D1-BD-L03A	NNS	--	-	MULT	1217	
	ZD7691	ZD2691 ACCW PUMP 2 (SPARE) ALM ON CONTACT: CLSD ALM/NML: OFF / ON		52B-BA0320	B 2445	ISO PNL E/D1-BD-L03B	NNS	--	-	MULT	1217	
*	ZD7701	ZD2701 ACCW RETURN TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN		HV-1975	B 3014	ISO PNL E/D1-BD-L03C	NNS	--	-	MULT	1217	
*	ZD7702	ZD2702 ACCW RETURN TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED		HV-1975	B 3038	ISO PNL E/D1-BD-L03G	NNS	--	-	MULT	1217	
*	ZD7703	ZD2703 ACCW RETURN TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN		HV-1974	B 3015	ISO PNL E/D1-BD-L03F	NNS	--	-	MULT	1217	

KEY	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
*	ZD7704	ZD2704	ACCW RETURN TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-1974	B 3039	ISO PNL E/D1-BD-L03F	NNS	--	-	MULT	1217	
*	ZD7705	ZD2705	ACCW SUPPLY TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-1979	B 3012	ISO PNL E/D1-BD-L03J	NNS	--	-	MULT	1217	
*	ZD7706	ZD2706	ACCW SUPPLY TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-1979	B 3036	ISO PNL E/D1-BD-L03J	NNS	--	-	MULT	1217	
*	ZD7707	ZD2707	ACCW SUPPLY TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-1978	B 3013	ISO PNL E/D1-BD-L03H	NNS	--	-	MULT	1217	
*	ZD7708	ZD2708	ACCW SUPPLY TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-1978	B 3037	ISO PNL E/D1-BD-L03H	NNS	--	-	MULT	1217	
	ZD7793	ZD2793	4.16KV BUS 1AA02 DG BRKR 19 ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED	52B-AA0219	B 2039	ISO PNL E/D1-BA-D02D	NNS	--	-	MULT	1804	
	ZD7794	ZD2794	4.16KV BUS 1BA03 DG BRKR 19 ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED	52B-BA0319	B 2041	ISO PNL E/D1-BA-D03D	NNS	--	-	MULT	1804	
	ZD7851	ZD2851	GENERATOR BREAKER 161710 ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED	4528	M 2264	TERM18	NNS	--	-	MULT	1802	
	ZD7852	ZD2852	GENERATOR BREAKER 161810 ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED	4528	M 2341	TERM18	NNS	--	-	MULT	1802	
	ZD7901	ZD2901	13.8KV BUS 1NAA NORMAL INCOMING BRKR 03 ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED	52B-NAA03	B 2445	SMGR E/D1-BA-C01B	NNS	--	-	MULT	1925	
	ZD7902	ZD2902	13.8KV BUS 1NAB NORMAL INCOMING BRKR 03 ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED	52B-NAB03	B 2453	SMGR E/D1-BA-C02B	NNS	--	-	MULT	1825	
	ZD7903	ZD2903	13.8KV BUS 1NAA ALTERNATE INCOMING BRKR 01 ALM ON CONTACT: OPEN ALM/NML: CLOSED / OPEN	52B-NAA01	B 2443	SMGR E/D1-BA-C01C	NNS	--	-	MULT	1825	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
	ZD7904	ZD2904	13.8KV BUS 1NAB ALTERNATE INCOMING BRKR 01 ALM ON CONTACT: OPEN ALM/NML: CLOSED / OPEN	52B-NAB01	B 2277	BMGR E/D1-BA-C02C	NNS	--	-	MULT	1825	
	ZD7905	ZD2905	4.16KV BUS 1AA02 NORMAL INCOMING BRKR 05 ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED	52B-AA0205	B 2285	ISO PNL E/D1-BA-D028	NNS	--	-	MULT	1804	X
	ZD7906	ZD2906	4.16KV BUS 1NA05 NORMAL INCOMING BRKR 03 ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED	52B-NA0503	B 2269	BMGR E/D1-BA-D058	NNS	--	-	MULT	1804	
	ZD7907	ZD2907	4.16KV BUS 1NA01 NORMAL INCOMING BRKR 03 ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED	52B-NA0103	B 2265	BMGR E/D1-BA-D018	NNS	--	-	MULT	1804	
	ZD7908	ZD2908	4.16KV BUS 1NA04 NORMAL INCOMING BRKR 03 ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED	52B-NA0403	B 2543	BMGR E/D1-BA-D048	NNS	--	-	MULT	1804	
	ZD7909	ZD2909	4.16KV BUS 1BA03 NORMAL INCOMING BRKR 01 ALM ON CONTACT: CLSD ALM/NML: OPEN / CLOSED	52B-BA0301	B 2539	ISO PNL E/D1-BA-D038	NNS	--	-	MULT	1804	X
	ZD7910	ZD2910	4.16KV BUS 1AA02 EMERGENCY INCOMING BRKR 01 ALM ON CONTACT: OPEN ALM/NML: CLOSED / OPEN	52B-AA0201	B 2283	ISO PNL E/D1-BA-D02C	NNS	--	-	MULT	1804	X
	ZD7911	ZD2911	4.16KV BUS 1NA05 ALTERNATE INCOMING BRKR 01 ALM ON CONTACT: OPEN ALM/NML: CLOSED / OPEN	52B-NA0501	B 2267	BMGR E/D1-BA-D05C	NNS	--	-	MULT	1804	
	ZD7912	ZD2912	4.16KV BUS 1NA01 ALTERNATE INCOMING BRKR 01 ALM ON CONTACT: OPEN ALM/NML: CLOSED / OPEN	52B-NA0101	B 2342	BMGR E/D1-BA-D01C	NNS	--	-	MULT	1804	
	ZD7913	ZD2913	4.16KV BUS 1NA04 ALTERNATE INCOMING BRKR 01 ALM ON CONTACT: OPEN ALM/NML: CLOSED / OPEN	52B-NA0401	B 2541	BMGR E/D1-BA-D04C	NNS	--	-	MULT	1804	
	ZD7914	ZD2914	4.16KV BUS 1BA03 EMERGENCY INCOMING BRKR 05 ALM ON CONTACT: OPEN ALM/NML: CLOSED / OPEN	52B-BA0305	B 2537	ISO PNL E/D1-BA-D03C	NNS	--	-	MULT	1804	X
	ZD8417	ZD3417	CNMT BLDG AIR COOLING UNIT 1 ALM ON CONTACT: CLSD ALM/NML: NOT LOW SPEED / LOW SPEED	52B-AB0405	B 2766	ISO PNL E/D1-BG-B03F	NNS	7.2.8/-E 02	MULT		1501	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD8418	ZD3418	CNMT BLDG AIR COOLING UNIT 1 ALM ON CONTACT: CLSD ALM/NML: NOT HIGH SPEED / HIGH SPEED	52B-AB0404	B 2742	ISO PNL E/D1-BG-B01A	NNS	7.2.07-E	D2 MULT	1501	
	ZD8419	ZD3419	CNMT BLDG AIR COOLING UNIT 2 ALM ON CONTACT: CLSD ALM/NML: NOT LOW SPEED / LOW SPEED	52B-AB0409	B 2767	ISO PNL E/D1-BG-B03G	NNS	7.2.07-E	D2 MULT	1501	
	ZD8420	ZD3420	CNMT BLDG AIR COOLING UNIT 2 ALM ON CONTACT: CLSD ALM/NML: NOT HIGH SPEED / HIGH SPEED	52B-AB0408	B 2743	ISO PNL E/D1-BG-B01B	NNS	7.2.07-E	D2 MULT	1501	
	ZD8421	ZD3421	CNMT BLDG AIR COOLING UNIT 5 ALM ON CONTACT: CLSD ALM/NML: NOT LOW SPEED / LOW SPEED	52B-AB0413	B 2794	ISO PNL E/D1-BG-B03K	NNS	7.2.07-E	D2 MULT	1501	
	ZD8422	ZD3422	CNMT BLDG AIR COOLING UNIT 5 ALM ON CONTACT: CLSD ALM/NML: NOT HIGH SPEED / HIGH SPEED	52B-AB0412	B 2770	ISO PNL E/D1-BG-B01E	NNS	7.2.07-E	D2 MULT	1501	
	ZD8423	ZD3423	CNMT BLDG AIR COOLING UNIT 6 ALM ON CONTACT: CLSD ALM/NML: NOT LOW SPEED / LOW SPEED	52B-AB0417	B 2795	ISO PNL E/D1-BG-B03L	NNS	7.2.07-E	D2 MULT	1501	
	ZD8424	ZD3424	CNMT BLDG AIR COOLING UNIT 6 ALM ON CONTACT: CLSD ALM/NML: NOT HIGH SPEED / HIGH SPEED	52B-AB0416	B 2771	ISO PNL E/D1-BG-B01F	NNS	7.2.07-E	D2 MULT	1501	
	ZD8438	ZD3438	DG/ESF SUPPLY FAN 1 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON	52B-AB0812	B 2437	ISO PNL E/D1-BG-F01B	NNS	7.2.11-B	D2 MULT	1566	
	ZD8439	ZD3439	DG/ESF SUPPLY FAN 3 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON	52B-AB0813	B 2383	ISO PNL E/D1-BG-F01C	NNS	7.2.11-B	D2 MULT	1566	
	ZD8441	--	CB ESF BATTERY ROOM EXH FAN 1 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON	42B-ABC05	B 2444	MCC E/D1-BG-C04N	I	7.2.11-B	D2 RPU A2	1532	
	ZD8442	--	CB ESF BATTERY ROOM EXH FAN 2 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON	42B-BBC05	B 2452	MCC E/D1-BG-C04P	II	7.2.11-B	D2 RPU B2	1532	
	ZD8443	--	CB ESF BATTERY ROOM EXH FAN 3 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON	42B-ABC06	B 2442	MCC E/D1-BG-C04Q	I	7.2.11-B	D2 RPU A2	1532	

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	ZD8444		-- CB ESF BATTERY ROOM EXH FAN 4 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON	428-B8C86	B 2276	MCC E/D1-BG-C04R	II	7.2.11-B D2	RPU B2	1532	
	ZD8446		-- CB ESF ELEC EQUIP ROOM COOLER UNIT 1 ALM ON CONTACT: CLSD ALM/NML: OFF / ON	428-A8C29	B 2274	MCC E/D1-BG-C04A	I	7.2.11-B D2	RPU B2	1532	
	ZD8447		-- CB ESF ELEC EQUIP ROOM COOLER UNIT 2 ALM ON CONTACT: CLSD ALM/NML: OFF / ON	428-B8C29	B 2284	MCC E/D1-BG-C04B	II	7.2.11-B D2	RPU B2	1532	
	ZD8448		-- CB ESF CHILLED WATER PUMP 1 TRAIN A ALM ON CONTACT: CLSD ALM/NML: OFF / ON	428-A8A15	B 2282	MCC E/D1-BG-G02C	I	--	- RPU A2	1532	
	ZD8449		-- CB ESF CHILLED WATER PUMP 2 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON	428-B8A15	B 2208	MCC E/D1-BG-G02D	II	--	- RPU B2	1532	
	ZD8457	ZD3457	CNMT BLDG AIR COOLING UNIT 3 ALM ON CONTACT: CLSD ALM/NML: NOT LOW SPEED / LOW SPEED	528-B8B605	B 2792	ISO PNL E/D1-BG-B03M	NNS	7.2.07-E D2	MULT	1501	
	ZD8458	ZD3458	CNMT BLDG AIR COOLING UNIT 5 ALM ON CONTACT: CLSD ALM/NML: NOT HIGH SPEED / HIGH SPEED	528-B8B604	B 2768	ISO PNL E/D1-BG-B01C	NNS	7.2.07-E D2	MULT	1501	
	ZD8459	ZD3459	CNMT BLDG AIR COOLING UNIT 4 ALM ON CONTACT: CLSD ALM/NML: NOT LOW SPEED / LOW SPEED	528-B8B609	B 2793	ISO PNL E/D1-BG-B03J	NNS	7.2.07-E D2	MULT	1501	
	ZD8460	ZD3460	CNMT BLDG AIR COOLING UNIT 6 ALM ON CONTACT: CLSD ALM/NML: NOT HIGH SPEED / HIGH SPEED	528-B8B606	B 2769	ISO PNL E/D1-BG-B01D	NNS	7.2.07-E D2	MULT	1501	
	ZD8461	ZD3461	CNMT BLDG AIR COOLING UNIT 7 ALM ON CONTACT: CLSD ALM/NML: NOT LOW SPEED / LOW SPEED	528-B8B613	B 2796	ISO PNL E/D1-BG-B03M	NNS	7.2.07-E D2	MULT	1501	
	ZD8462	ZD3462	CNMT BLDG AIR COOLING UNIT 7 ALM ON CONTACT: CLSD ALM/NML: NOT HIGH SPEED / HIGH SPEED	528-B8B612	B 2772	ISO PNL E/D1-BG-B01G	NNS	7.2.07-E D2	MULT	1501	
	ZD8463	ZD3463	CNMT BLDG AIR COOLING UNIT 8 ALM ON CONTACT: CLSD ALM/NML: NOT LOW SPEED / LOW SPEED	528-B8B617	B 2797	ISO PNL E/D1-BG-B03N	NNS	7.2.07-E D2	MULT	1501	

REV	EMF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD8464		ZD3464 CNMT BLDG AIR COOLING UNIT B ALM ON CONTACT: CLSD ALM/NML: NOT HIGH SPEED / HIGH SPEED	52B-BB0616	B 2773	ISO PNL E/D1-BG-B01H	NNS	7.2.07-E D2 MULT		1501	
	ZD8479		ZD3479 DG/ESF SUPPLY FAN 4 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON	52B-BB0713	B 2337	ISO PNL E/D1-BG-F01F	NNS	7.2.11-B D2 MULT		1566	
	ZD8480		ZD3480 DG/ESF SUPPLY FAN 2 TRAIN B ALM ON CONTACT: CLSD ALM/NML: OFF / ON	52B-BB0712	B 2221	ISO PNL E/D1-BG-F01E	NNS	7.2.11-B D2 MULT		1566	
	ZD8501		ZD3501 RCP 1 ALM ON CONTACT: CLSD ALM/NML: STOPPED / RUNNING	52B-NAA08	B 2247	SMGR E/D1-BD-B01A	NNS	7.2.01-B D2 MULT		1201	X
	ZD8502		ZD3502 RCP 2 ALM ON CONTACT: CLSD ALM/NML: STOPPED / RUNNING	52B-NAB06	B 2245	SMGR E/D1-BD-B01B	NNS	7.2.01-B D2 MULT		1201	X
	ZD8503		ZD3503 RCP 3 ALM ON CONTACT: CLSD ALM/NML: STOPPED / RUNNING	52B-NAA07	B 2441	SMGR E/D1-BD-B01C	NNS	7.2.01-B D2 MULT		1201	X
	ZD8504		ZD3504 RCP 4 ALM ON CONTACT: CLSD ALM/NML: STOPPED / RUNNING	52B-NAB07	B 2439	SMGR E/D1-BD-B01D	NNS	7.2.01-B D2 MULT		1201	X
	ZD8511		-- ACCUM ISOLATION LOOP 1 HV-8808A ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8808A	B 3111	VALVE E/D1-BD-D02R	NNS	7.2.05-E D2 RPU N1 (NON 1E SWITCH)		1204	
	ZD8512		-- ACCUM ISOLATION LOOP 1 HV-8808A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8808A	B 3135	VALVE E/D1-BD-D02R	NNS	7.2.05-E D2 RPU N1 (NON 1E SWITCH)		1204	
	ZD8513		-- ACCUM ISOLATION LOOP 2 HV-8808B ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8808B	B 3110	VALVE E/D1-BD-D02S	NNS	7.2.05-E D2 RPU N1 (NON 1E SWITCH)		1204	
	ZD8514		-- ACCUM ISOLATION LOOP 2 HV-8808B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8808B	B 3134	VALVE E/D1-BD-D02S	NNS	7.2.05-E D2 RPU N1 (NON 1E SWITCH)		1204	
	ZD8515		-- ACCUM ISOLATION LOOP 3 HV-8808C ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8808C	B 3109	VALVE E/D1-BD-D02T	NNS	7.2.05-E D2 RPU N1 (NON 1E SWITCH)		1204	

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	ZD8516	--	ACCUM ISOLATION LOOP 3 HV-8808C ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8808C	B 3133	VALVE E/D1-BD-D02T	NNS	7.2.05-E (NON 1E SWITCH)	D2 RPU	N1 1204	
	ZD8517	--	ACCUM ISOLATION LOOP 4 HV-8808D ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8808D	B 3108	VALVE E/D1-BD-D02U	NNS	7.2.05-E (NON 1E SWITCH)	D2 RPU	N1 1204	
	ZD8518	--	ACCUM ISOLATION LOOP 4 HV-8808D ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8808D	B 3132	VALVE E/D1-BD-D02U	NNS	7.2.05-E (NON 1E SWITCH)	D2 RPU	N1 1204	
	ZD8521	ZD3521	SAFETY INJECTION PUMP TRAIN A ALM ON CONTACT: OPEN ALM/NML: RUNNING / STOPPED	52B-AA8216	B 2458	1&O PNL E/D1-BD-D01C	NNS	7.2.14	D2 MULT	1204	
	ZD8522	ZD3522	SAFETY INJECTION PUMP TRAIN B ALM ON CONTACT: OPEN ALM/NML: RUNNING / STOPPED	52B-BAB317	B 2451	1&O PNL E/D1-BD-D01D	NNS	7.2.14	D2 MULT	1204	
	ZD8541	--	PORV-455A BLOCK VLV HV-8000A ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8000A	B 3000	VALVE E/D1-BD-B02A	I	7.2.02-A	D2 RPU	A1 1201	
	ZD8542	--	PORV-455A BLOCK VLV HV-8000A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8000A	B 3004	VALVE E/D1-BD-B02A	I	7.2.02-A	D2 RPU	A1 1201	
	ZD8543	--	PORV-456B BLOCK VLV HV-8000B ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8000B	B 3059	VALVE E/D1-BD-B02B	II	7.2.02-A	D2 RPU	B1 1201	
	ZD8544	--	PORV-456B BLOCK VLV HV-8000B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8000B	B 3003	VALVE E/D1-BD-B02B	II	7.2.02-A	D2 RPU	B1 1201	
	ZD8545	--	PRESSURIZER PORV-456A TRAIN B ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PV-8456A	B 2968	VALVE E/D1-BD-B03F	II	7.2.02-A	D2 RPU	B1 1201	
	ZD8546	--	PRESSURIZER PORV-456A TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PV-8456A	B 2992	VALVE E/D1-BD-B03F	II	7.2.02-A	D2 RPU	B1 1201	
	ZD8547	--	PRESSURIZER PORV-455A TRAIN A ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PV-8455A	B 2969	VALVE E/D1-BD-B03H	I	7.2.02-A	D2 RPU	A1 1201	

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	ZD8548	--	PRESSURIZER PORV-455A TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PV-8455A	B 2993	VALVE E/D1-BD-B03H	I	7.2.02-A	D2 RPU	A1 1201	
	ZD8551	--	PRESSURIZER HEATERS CONTROL GROUP C ALM ON CONTACT: CLSD ALM/NML: OFF / ON	52B-NB0812	B 2292	BKGR E/D1-BD-B01J	NNS	--	- SOE	1201	
	ZD8552	--	PRESSURIZER HEATERS BACKUP GROUP A ALM ON CONTACT: CLSD ALM/NML: OFF / ON	52B-NB0105	B 2258	BKGR E/D1-BD-B01K	NNS	7.2.02-C	D2 SOE	1201	
	ZD8553	--	PRESSURIZER HEATERS BACKUP GROUP B ALM ON CONTACT: CLSD ALM/NML: OFF / ON	52B-NB1005	B 2259	BKGR E/D1-BD-B01L	NNB	7.2.02-C	D2 SOE	1201	
	ZD8554	--	PRESSURIZER HEATERS BACKUP GROUP D ALM ON CONTACT: CLSD ALM/NML: OFF / ON	52B-NB0912	B 2298	BKGR E/D1-BD-B01M	NNS	--	- SOE	1201	
	ZD8561	--	SI PUMPS INLET VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8806	B 3112	VALVE E/D1-BD-D02N	NNS	7.2.05-E	D2 RPU	N1 1204	
	ZD8562	--	SI PUMPS INLET VALVE ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8806	B 3136	VALVE E/D1-BD-D02N	NNS	7.2.05-E	D2 RPU	N1 1204	
	ZD8572	--	SIS ACCUM N2 VLV TRAIN A LOOP 1 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8875A	B 2459	VALVE E/D1-BD-D04H	I	7.2.05-E	D2 RPU	A1 1204	
	ZD8574	--	SIS ACCUM N2 VLV TRAIN A LOOP 2 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8875B	B 2461	VALVE E/D1-BD-D04H	I	7.2.05-E	D2 RPU	A1 1204	
	ZD8576	--	SIS ACCUM N2 VLV TRAIN A LOOP 3 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8875C	B 2463	VALVE E/D1-BD-D04H	I	7.2.05-E	D2 RPU	A1 1204	
	ZD8578	--	SIS ACCUM N2 VLV TRAIN A LOOP 4 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8875D	B 2465	VALVE E/D1-BD-D04H	I	7.2.05-E	D2 RPU	A1 1204	
	ZD8632	--	CVCS AUX SPRAY VALVE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8145	B 2261	VALVE E/D1-BD-B03K	NNS	7.2.03-E	D2 SOE	1201	

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	ZD8636	--	CHARGING PATH VLV TO REGEN HX TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8105	B 3119	VALVE E/D1-BD-C#3G	II	7.2.#3-E	D2	RPU B1 12**	
	ZD8637	--	CHARGING PATH VLV TO REGEN HX TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8105	B 3143	VALVE E/D1-BD-C#3G	II	7.2.#3-E	D2	RPU B1 1288	
	ZD8638	--	CHARGING PATH VLV TO REGEN HX TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8106	B 3118	VALVE E/D1-BD-C#3H	I	7.2.#3-E	D2	RPU A1 1288	
	ZD8639	--	CHARGING PATH VLV TO REGEN HX TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8106	B 3142	VALVE E/D1-BD-C#3H	I	7.2.#3-E	D2	RPU A1 1288	
	ZD8641	--	CHARGING PATH VALVE TO RCS TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8146	B 3117	VALVE E/D1-BD-C#3T	I	7.2.#3-E	D2	RPU A1 1288	
	ZD8642	--	CHARGING PATH VALVE TO RCS TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8146	B 3141	VALVE E/D1-BD-C#3T	I	7.2.#3-E	D2	RPU A1 1288	
	ZD8643	--	CHARGING PATH VALVE TO RCS TRAIN B ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8147	B 2933	VALVE E/D1-BD-C#3U	II	7.2.#3-E	D2	RPU B1 1288	
	ZD8644	--	CHARGING PATH VALVE TO RCS TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8147	B 2957	VALVE E/D1-BD-C#3U	II	7.2.#3-E	D2	RPU B1 1288	
	ZD8646	--	RHR PUMP A TO CVCS PUMP SUCTION VALVE ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8804	[illegible]	VALVE E/D1-BD-D#2L	I	7.2.1#-B	D2	RPU A1 1285	
	ZD8647	--	RHR PUMP A TO CVCS PUMP SUCTION VALVE ALM ON CONTACT: CLSD ALM/NML: NOT CLOSED / CLOSED	HV-8804A	B 2802	VALVE E/D1-BD-D#2L	I	7.2.1#-B	D2	RPU A1 1285	
	ZD8648	--	RHR PUMP B TO SIS PUMP SUCTION VALVE ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8804B	B 2785	VALVE E/D1-BD-D#2M	II	7.2.1#-B	D2	RPU B1 1285	
	ZD8649	--	RHR PUMP B TO SIS PUMP SUCTION VALVE ALM ON CONTACT: CLSD ALM/NML: NOT CLOSED / CLOSED	HV-8804B	B 2809	VALVE E/D1-BD-D#2M	II	7.2.1#-B	D2	RPU B1 1285	

R E V	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	S P D S
	ZD8651	--	CHARGING PUMP (TRAIN A) DISCH VALVE ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8116	B 2934	VALVE E/D1-BD-C05E	I	7.2.03-E	D2	RPU A1	1208
	ZD8652	--	CHARGING PUMP (TRAIN A) DISCH VALVE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8116	B 2958	VALVE E/D1-BD-C05E	I	7.2.03-E	D2	RPU A1	1208
	ZD8653	--	CHARGING PUMP (TRAIN A) DISCH VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8485A	B 3114	VALVE E/D1-BD-C05A	I	7.2.03-E	D2	RPU A1	1208
	ZD8654	--	CHARGING PUMP (TRAIN A) DISCH VALVE ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8485A	B 3138	VALVE E/D1-BD-C05A	I	7.2.03-E	D2	RPU A1	1208
	ZD8655	--	CHARGING PUMP (TRAIN B) DISCH VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8485B	B 3113	VALVE E/D1-BD-C05B	II	7.2.03-E	D2	RPU B1	1208
*	ZD8656	--	CHARGING PUMP (TRAIN B) DISCH VALVE ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	HV-8485B	B 3137	VALVE E/D1-BD-C05B	II	7.2.03-E	D2	RPU B1	1208
	ZD8666	--	CHARGING PUMP (TRAIN A) SUCTION VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8471A	B 3116	VALVE E/D1-BD-C05C	I	7.2.03-E	D2	RPU A1	1208
	ZD8667	--	CHARGING PUMP (TRAIN A) SUCTION VALVE ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8471A	B 3140	VALVE E/D1-BD-C05C	I	7.2.03-E	D2	RPU A1	1208
	ZD8668	--	CHARGING PUMP (TRAIN B) SUCTION VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8471B	B 3115	VALVE E/D1-BD-C05D	II	7.2.03-E	D2	RPU B1	1208
*	ZD8669	--	CHARGING PUMP (TRAIN B) SUCTION VALVE ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	HV-8471B	B 3139	VALVE E/D1-BD-C05D	II	7.2.03-E	D2	RPU B1	1208
	ZD8671	--	RWST TO CHARGING PUMPS TRAIN A VALVE ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	LV-81120	B 2978	VALVE E/D1-BD-C02H	I	7.2.03-E	D2	RPU A1	1208
	ZD8672	--	RWST TO CHARGING PUMPS TRAIN A VALVE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	LV-81120	B 3002	VALVE E/D1-BD-C02H	I	7.2.03-E	D2	RPU A1	1208

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	ZD8673	--	RWST TO CHARGING PUMPS TRAIN B VALVE ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	LV-8112E	6 2977	VALVE E/D1-BD-C#2J	II	7.2.#3-E	D2	RPU B1	1208	
	ZD8674	--	RWST TO CHARGING PUMPS TRAIN B VALVE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	LV-8112E	8 3##1	VALVE E/D1-BD-C#2J	II	7.2.#3-E	D2	RPU B1	1208	
	ZD8676	--	VCT TO CHARGING PUMPS TRAIN A VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	LV-8112B	8 3187	VALVE E/D1-BD-C#2F	I	7.2.#3-E	D2	RPU A1	1208	
	ZD8677	--	VCT TO CHARGING PUMPS TRAIN A VALVE ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	LV-8112B	8 3131	VALVE E/D1-BD-C#2F	I	7.2.#3-E	D2	RPU A1	1208	
	ZD8678	--	VCT TO CHARGING PUMPS TRAIN B VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	LV-8112C	8 3186	VALVE E/D1-BD-C#2G	II	7.2.#3-E	D2	RPU B1	1208	
	ZD8679	--	VCT TO CHARGING PUMPS TRAIN B VALVE ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	LV-8112C	8 313#	VALVE E/D1-BD-C#2G	II	7.2.#3-E	D2	RPU B1	1208	
	ZD8681	--	RHR PUMP TRAIN A SUCTION VALVE 8701A ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8701A	8 2782	VALVE E/D1-BD-E#2G	I	7.2.1#-B	D2	RPU A1	12#5	X
	ZD8682	--	RHR PUMP TRAIN A SUCTION VALVE 8701A ALM ON CONTACT: CLSD ALM/NML: NOT CLOSED / CLOSED	HV-8701A	8 2806	VALVE E/D1-BD-E#2G	I	7.2.1#-B	D2	RPU A1	1205	X
	ZD8683	--	RHR PUMP TRAIN A SUCTION VALVE 8701B ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8701B	8 2784	VALVE E/D1-BD-E#2H	III	7.2.1#-B	D2	RPU A3	1205	X
	ZD8684	--	RHR PUMP TRAIN A SUCTION VALVE 8701B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8701B	8 2808	VALVE E/D1-BD-E#2H	III	7.2.1#-B	D2	RPU A3	1205	X
	ZD8685	--	RHR PUMP TRAIN B SUCTION VALVE 8702A ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8702A	8 2786	VALVE E/D1-BD-E#2J	IV	7.2.1#-B	D2	RPU B3	1205	X
	ZD8686	--	RHR PUMP TRAIN B SUCTION VALVE 8702A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8702A	8 281#	VALVE E/D1-BD-E#2J	IV	7.2.1#-B	D2	RPU B3	1205	X

REV	ERF SYMBOL	PRUTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B TY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD8687	--	RHR PUMP TRAIN B SUCTION VALVE 87028 ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-87028	B 2788	VALVE E/D1-BD-E#2K	II	7.2.1#-B D2	RPU B1	1285	X
	ZD8683	--	RHR PUMP TRAIN B SUCTION VALVE 87028 ALM ON CONTACT: CLSD ALM/NML: NOT CLOSED / CLOSED	HV-87028	B 2812	VALVE E/D1-BD-E#2K	II	7.2.1#-B D2	RPU B1	1285	X
	ZD8691	--	RHR PUMP TRAIN A RECIRC VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	FV-8618	B 2798	VALVE E/D1-BD-E#2C	I	7.2.1#-B D2	RPU A1	1285	
	ZD8692	--	RHR PUMP TRAIN A RECIRC VALVE ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	FV-8618	B 2814	VALVE E/D1-BD-E#2C	I	7.2.1#-B D2	RPU A1	1285	
	ZD8693	--	RHR PUMP TRAIN B RECIRC VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	FV-8611	B 2816	VALVE E/D1-BD-E#2D	II	7.2.1#-B D2	RPU B1	1288	
	ZD8694	--	RHR PUMP TRAIN B RECIRC VALVE ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	FV-8611	B 284#	VALVE E/D1-BD-E#2D	II	7.2.1#-B D2	RPU B1	12#5	
	ZD8696	--	RHR HEAT EXCH TRAIN A BYPASS VALVE ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	FV-8618	B 2817	VALVE	NNS	--	-	SOE	1285
	ZD8697	--	RHR HEAT EXCH TRAIN A BYPA VALVE ALM ON CONTACT: CLSD ALM/NML: NOT CLOSED / CLOSED	FV-8618	B 2841	VALVE	NNS	--	-	SOE	1285
	ZD8698	--	RHR HEAT EXCH TRAIN B BYPASS VALVE ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	FV-8619	B 2819	VALVE	NNS	--	-	SOE	1288
	ZD8699	--	RHR HEAT EXCH TRAIN B BYPASS VALVE ALM ON CONTACT: CLSD ALM/NML: NOT CLOSED / CLOSED	FV-8619	B 2843	VALVE	NNS	--	-	SOE	1285
	ZD8701	--	RHR HEAT EXCH TRAIN A DISCH VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8686	B 2821	VALVE E/D1-BD-E#2Q	NNS	--	-	SOE	1285
	ZD8702	--	RHR HEAT EXCH TRAIN A DISCH VALVE ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	HV-8686	B 2845	VALVE E/D1-BD-E#2Q	NNS	--	-	SOE	1285

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B T	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDB
	ZD8703	--	RHR HEAT EXCH TRAIN B DISCH VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	MV-8807	B 2823	VALVE E/D1-BD-E#2Q	NNS	--	-	SOE	1205	
	ZD8704	--	RHR HEAT EXCH TRAIN B DISCH VALVE ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	MV-8807	B 2847	VALVE E/D1-BD-E#2Q	NNS	--	-	SOE	1205	
	ZD8706	--	RHR PUMP A SUCTION VALVE (HMST) ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	MV-8812A	B 2825	VALVE E/D1-BD-E#2E	I	7.2.1#-B	D2	RPU	A1	1205	
	ZD8707	--	RHR PUMP A SUCTION VALVE (HMST) ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	MV-8812A	B 2849	VALVE E/D1-BD-E#2E	I	7.2.1#-B	D2	RPU	A1	1205	
	ZD8708	--	RHR PUMP B SUCTION VALVE (HMST) ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	MV-8812B	B 2827	VALVE E/D1-BD-E#2F	II	7.2.1#-B	D2	RPU	B1	1205	
	ZD8709	--	RHR PUMP B SUCTION VALVE (HMST) ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	MV-8812B	B 2851	VALVE E/D1-BD-E#2F	II	7.2.1#-B	D2	RPU	B1	1205	
	ZD8711	--	RHR VALVE TO COLD LEGS 1 & 2 TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	MV-8809A	B 2829	VALVE E/D1-BD-D#2V	I	7.2.1#-B	D2	RPU	A1	1204	X
	ZD8712	--	RHR VALVE TO COLD LEGS 1 & 2 TRAIN A ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	MV-8809A	B 2853	VALVE E/D1-BD-D#2V	I	7.2.1#-B	D2	RPU	A1	1204	X
	ZD8713	--	RHR VALVE TO COLD LEGS 3 & 4 TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	MV-8809B	B 2831	VALVE E/D1-BD-D#2M	II	7.2.1#-B	D2	RPU	B1	1204	X
	ZD8714	--	RHR VALVE TO COLD LEGS 3 & 4 TRAIN B ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	MV-8809B	B 2855	VALVE E/D1-BD-D#2M	II	7.2.1#-B	D2	RPU	B1	1204	X
	ZD8722	--	EXCESS LETDOWN ISOLATION VALVE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8153	B 2298	VALVE E/D1-BD-C#3Z	NNB	--	-	SOE	1206	
	ZD8724	--	EXCESS LETDOWN ISOLATION VALVE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8154	B 2299	VALVE E/D1-BD-C#1Q	NNS	--	-	SOE	1205	

REV	ERF SYMBOL	PHOTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD8725	--	BORIC ACID TRANSFER PUMP TRAIN A ALM ON CONTACT: OPEN ALM/NML: RUNNING / STOPPED	428-ABD47	B 2886	MCC E/D1-BD-C01F	I	-- -	RPU A2	1288	
	ZD8726	--	BORIC ACID TRANSFER PUMP TRAIN B ALM ON CONTACT: OPEN ALM/NML: RUNNING / STOPPED	428-BBD47	B 2892	MCC E/D1-BD-C01G	II	-- -	RPU B2	1288	
	ZD8727	--	BORIC ACID VALVE TO CHARGING PUMPS ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8104	B 2787	VALVE E/D1-BD-C03F	NN3	7.2.03-E D2	BDE	1288	
	ZD8728	--	BORIC ACID VALVE TO CHARGING PUMPS ALM ON CONTACT: CLSD ALM/NML: NOT CLOSED / CLOSED	HV-8104	B 2811	VALVE E/D1-BD-C03F	NN3	7.2.03-E D2	BDE	1288	
	ZD8751	--	FHB POST ACCIDENT FLTR TRN A INL DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	AHV-12518	B 2618	VALVE E/DA-BG-E02A	I	7.2.11-A D2	RPU A1	1542 (UNIT 1 INPUT ONLY)	
	ZD8753	--	FHB POST ACCIDENT FLTR TRN A OUT DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	AHV-12512	B 2611	VALVE E/DA-BG-E02A	I	7.2.11-A D2	RPU A1	1542 (UNIT 1 INPUT ONLY)	
	ZD8755	--	FHB POST ACCIDENT FLTR TRN B INL DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	AHV-12511	B 2612	VALVE E/DA-BG-E02A	II	7.2.11-A D2	RPU B1	1542 (UNIT 1 INPUT ONLY)	
	ZD8757	--	FHB POST ACCIDENT FLTR TRN B OUT DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	AHV-12513	B 2613	VALVE E/DA-BG-E02A	II	7.2.11-A D2	RPU B1	1542 (UNIT 1 INPUT ONLY)	
	ZD8761	--	PIPING PEN RM FLTR-EXH TRN A INLET ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12614	B 2618	VALVE E/D1-BG-D03J	I	7.2.11-A D2	RPU A1	1561	
	ZD8765	--	PIPING PEN RM FLTR-EXH TRN B INLET ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12616	B 2619	VALVE E/D1-BG-D04J	II	7.2.11-A D2	RPU B1	1561	
	ZD8771	--	CNTL BLDG CNTL RM FLTR TRN A INL DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12118	B 2622	VALVE E/D1-BG-C01X	I	7.2.11-A D2	RPU A1	1531	
	ZD8773	--	CNTL BLDG CNTL RM FLTR TRN A OUT DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12120	B 2623	VALVE E/D1-BG-C01X	I	7.2.11-A D2	RPU A1	1531	

KEY	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B T	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD8775	--	CNTL BLDG CNTL RM FLTR INN B INL DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12119	B 2436	VALVE E/D1-BG-C01Z	II	7.2.11-A	D2 RPU	B1 1531	
	ZD8777	--	CNTL BLDG CNTL RM FLTR INN B OUT DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12129	B 2434	VALVE E/D1-BG-C01Z	II	7.2.11-A	D2 RPU	B1 1531	
	ZD8779	--	CNTL BLDG RTN AIR FAN INN A INL DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12130	B 2626	VALVE E/D1-BG-C01X	I	7.2.11-A	D2 RPU	A1 1531	
	ZD8781	--	CNTL BLDG RTN AIR FAN INN B INL DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12131	B 2627	VALVE E/D1-BG-C01Z	II	7.2.11-A	D2 RPU	B1 1531	
*	ZD8784	--	ELEC PEN RM FLTR INN A INL ISOL DAMPER ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	HV-26364	B 2634	VALVE E/D1-BG-D01P	I	7.2.11-A	D2 RPU	A1 1562 (UNIT 1 INPUT ONLY)	
*	ZD8786	--	ELEC PEN RM FLTR INN A OUT ISOL DAMPER ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	HV-26368	B 2635	VALVE E/D1-BG-D01P	I	7.2.11-A	D2 RPU	A1 1562 (UNIT 1 INPUT ONLY)	
*	ZD8788	--	ELEC PEN RM FLTR INN B INL ISOL DAMPER ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	HV-26368	B 2636	VALVE E/D1-BG-D01P	II	7.2.11-A	D2 RPU	B1 1562 (UNIT 1 INPUT ONLY)	
*	ZD8790	--	ELEC PEN RM FLTR INN B OUT ISOL DAMPER ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	HV-26388	B 2637	VALVE E/D1-BG-D01P	II	7.2.11-A	D2 RPU	B1 1562 (UNIT 1 INPUT ONLY)	
*	ZD8791	--	ELEC PEN RM FLTR INN A INL DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12563	B 2638	VALVE E/D1-BG-D06A	I	7.2.11-A	D2 RPU	A1 1562 (UNIT 1 INPUT ONLY)	
*	ZD8793	--	ELEC PEN RM FLTR INN A OUT DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12561	B 2979	VALVE E/D1-BG-D06J	I	7.2.11-A	D2 RPU	A1 1562 (UNIT 1 INPUT ONLY)	
*	ZD8794	--	ELEC PEN RM FLTR INN A OUT DAMPER ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-12561	B 3003	VALVE E/D1-BG-D06J	I	7.2.11-A	D2 RPU	A1 1562 (UNIT 1 INPUT ONLY)	
*	ZD8795	--	ELEC PEN RM FLTR INN A VENT DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12585	B 2581	VALVE E/D1-BG-D06J	I	7.2.11-A	D2 RPU	A1 1562 (UNIT 1 INPUT ONLY)	

R E V	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B T	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	S P D S
*	ZD8796	--	ELEC PEN RM FLTR TRN A VENT DAMPER ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-12585	B 3005	VALVE E/D1-BG-D06J	I	7.2.11-A (UNIT 1 INPUT ONLY)	D2 RPU A1	1562	
*	ZD8797	--	ELEC PEN RM FLTR TRN B INL DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12562	B 2641	VALVE E/D1-BG-D06A	II	7.2.11-A (UNIT 1 INPUT ONLY)	D2 RPU B1	1562	
*	ZD8799	--	ELEC PEN RM FLTR TRN B OUT DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12560	B 2988	VALVE E/D1-BG-D06K	II	7.2.11-A (UNIT 1 INPUT ONLY)	D2 RPU B1	1562	
*	ZD8800	--	ELEC PEN RM FLTR TRN B OUT DAMPER ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-12560	B 3004	VALVE E/D1-BG-D06K	II	7.2.11-A (UNIT 1 INPUT ONLY)	D2 RPU B1	1562	
*	ZD8801	--	ELEC PEN RM FLTR TRN B VENT DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12554	B 2982	VALVE E/D1-BG-D06K	II	7.2.11-A (UNIT 1 INPUT ONLY)	D2 RPU B1	1562	
*	ZD8802	--	ELEC PEN RM FLTR TRN B VENT DAMPER ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-12554	B 3006	VALVE E/D1-BG-D06K	II	7.2.11-A (UNIT 1 INPUT ONLY)	D2 RPU B1	1562	
	ZD9812	--	MFT LAYUP CHEM ADD BLOWDOWN GEN 1 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-5278	B 2824	VALVE E/D1-BC-D04A	NNS	--	-	SOE	1411
	ZD9814	--	MFT LAYUP CHEM ADD BLOWDOWN GEN 2 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-5279	B 2826	VALVE E/D1-BC-D04A	NNS	--	-	SOE	1411
	ZD9816	--	MFT LAYUP CHEM ADD BLOWDOWN GEN 3 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-5280	B 2828	VALVE E/D1-BC-D04A	NNS	--	-	SOE	1411
	ZD9818	--	MFT LAYUP CHEM ADD BLOWDOWN GEN 4 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-5281	B 2830	VALVE E/D1-BC-D04A	NNS	--	-	SOE	1411
	ZD9820	--	STEAM GEN 1 BLOWDOWN SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9451	B 2832	VALVE E/D1-BC-D07E	II	7.2.04-L	D2 RPU A1	1311	
	ZD9822	--	STEAM GEN 2 BLOWDOWN SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9452	B 2834	VALVE E/D1-BC-D07E	II	7.2.04-L	D2 RPU B1	1311	

KEY	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDB
	ZD9824	--	STEAM GEN 3 BLOWDOWN SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9453	B 2836	VALVE E/D1-BC-0087F	I	7.2.04-L	D2	RPU B1	1311	
	ZD9826	--	STEAM GEN 4 BLOWDOWN SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9454	B 2838	VALVE E/D1-BC-0087F	I	7.2.04-L	D2	RPU A1	1311	
	ZD9828	--	STEAM GEN 1 SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9553A	B 2840	VALVE E/D1-BC-0038	NNS	--	-	SOE	1311	
	ZD9830	--	STEAM GEN 1 BLOWDOWN LINE SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9553B	B 2842	VALVE E/D1-BC-0037	NNS	--	-	SOE	1311	
	ZD9832	--	STEAM GEN 2 SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9554A	B 2844	VALVE E/D1-BC-0038	NNS	--	-	SOE	1311	
	ZD9834	--	STEAM GEN 2 BLOWDOWN LINE SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9554B	B 2846	VALVE E/D1-BC-0037	NNS	--	-	SOE	1311	
	ZD9836	--	STEAM GEN 3 SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9555A	B 2848	VALVE E/D1-BC-0035	NNS	--	-	SOE	1311	
	ZD9838	--	STEAM GEN 3 BLOWDOWN LINE SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9555B	B 2850	VALVE E/D1-BC-0037	NNS	--	-	SOE	1311	
	ZD9840	--	STEAM GEN 4 SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9556A	B 2852	VALVE E/D1-BC-0038	NNS	--	-	SOE	1311	
	ZD9842	--	STEAM GEN 4 BLOWDOWN LINE SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9556B	B 2854	VALVE E/D1-BC-0037	NNS	--	-	SOE	1311	
	ZD9844	--	CONTAINMENT AIR RAD MONITOR INL TRN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-12975	B 2856	VALVE E/D1-BC-0044M	I	6.2.03-D	C2	RPU A1	1609	X
	ZD9846	--	CONTAINMENT AIR RAD MONITOR INL TRN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-12976	B 2858	VALVE E/D1-BC-0044N	II	6.2.03-D	C2	RPU B1	1609	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	ZD9848	--	CONTAINMENT AIR RAD MONITOR OUT TRN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-12977	B 2868	VALVE E/D1-BG-B84P	II	6.2.83-D	C2	RPU B1	1489	X
	ZD9850	--	CONTAINMENT AIR RAD MONITOR OUT TRN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-12978	B 2862	VALVE E/D1-BG-B84Q	I	6.2.83-D	C2	RPU A1	1489	X
	ZD9852	--	STM GEN 1 WET LAYUP CHEM ADDITION ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-5194	B 2864	VALVE E/D1-BC-C84N	NNS	--	-	SOE	1305	
	ZD9854	--	STM GEN 2 WET LAYUP CHEM ADDITION ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-5195	B 2866	VALVE E/D1-BC-C84N	NNS	--	-	SOE	1305	
	ZD9856	--	STM GEN 3 WET LAYUP CHEM ADDITION ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-5196	B 2868	VALVE E/D1-BC-C84N	NNS	--	-	SOE	1305	
	ZD9858	--	STM GEN 4 WET LAYUP CHEM ADDITION ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-5197	B 2870	VALVE E/D1-BC-C84N	NNS	--	-	SOE	1305	
	ZD9860	--	RCS HOT LEG SAMPLE LINE LOOP 1 TRN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-3582	B 2872	VALVE E/D1-BD-N81C	I	6.2.83-D	C2	RPU A1	1212	X
	ZD9862	--	RCS HOT LEG SAMPLE LINE LOOP 3 TRN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-3548	B 2874	VALVE E/D1-BD-N81D	II	6.2.83-D	C2	RPU B1	1212	X
	ZD9874	--	SAFETY INJECTION PUMPS RECIRC TEST ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8823	B 2884	VALVE E/D1-BD-D84T	II	6.2.83-D	C2	RPU B1	1284	X
	ZD9875	--	SI PUMP B TO HOT LEGS 2&3 ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	HV-88828	B 3126	VALVE E/D1-BC-D82H	II	7.2.85-E	D2	RPU B1	1284	
	ZD9876	--	SI PUMP B TO HOT LEGS 2&3 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-88828	B 3150	VALVE E/D1-BD-D82H	II	7.2.85-E	D2	RPU B1	1284	
	ZD9878	--	SIS RECIRC TEST TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8824	B 2868	VALVE E/D1-BD-D84T	II	6.2.83-D	C2	RPU B1	1284	X

N E V	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	S P D S
	ZD9079	--	BORON INJECTION TANK DISCH TRAIN A ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8801A	B 2929	VALVE	I	7.2.05-E	D2 RPU	A1 1204	
	ZD9080	--	BORON INJECTION TANK DISCH TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8801A	B 2953	VALVE	I	7.2.05-E	D2 RPU	A1 1204	
	ZD9081	--	BORON INJECTION TANK DISCH TRAIN B ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8801B	B 2927	VALVE	II	7.2.05-E	D2 RPU	B1 1204	
	ZD9082	--	BORON INJECTION TANK DISCH TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8801B	B 2951	VALVE	II	7.2.05-E	D2 RPU	B1 1204	
	ZD9084	--	SIS TEST LINE BYPASS ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8843	B 2894	VALVE	II	6.2.03-D	C2 RPU	B1 1204	X
	ZD9085	--	SI PUMP A TO HOT LEGS 1&4 ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	HV-8802A	B 3127	VALVE	I	7.2.05-E	D2 RPU	A1 1204	
	ZD9086	--	SI PUMP A TO HOT LEGS 1&4 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8802A	B 3151	VALVE	I	7.2.05-E	D2 RPU	A1 1204	
	ZD9088	--	SI PUMP ACCUM FILL ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8881	B 2894	VALVE	II	6.2.03-D	C2 RPU	B1 1204	X
	ZD9089	--	RHR PUMP A CNMT SUMP SUCTION ISOL VALVE ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	HV-8811A	B 2853	VALVE	I	7.2.10-B	D2 RPU	A1 1205	
	ZD9090	--	RHR PUMP A CNMT SUMP SUCTION ISOL VALVE ALM ON CONTACT: CLSD ALM/NML: NOT CLSD / CLSD	HV-8811A	B 2857	VALVE	I	7.2.10-B	D2 RPU	A1 1205	
	ZD9091	--	RHR PUMP B CNMT SUMP SUCTION ISOL VALVE ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	HV-8811B	B 2835	VALVE	II	7.2.10-B	D2 RPU	B1 1205	
	ZD9092	--	RHR PUMP B CNMT SUMP SUCTION ISOL VALVE ALM ON CONTACT: CLSD ALM/NML: NOT CLSD / CLSD	HV-8811B	B 2859	VALVE	II	7.2.10-B	D2 RPU	B1 1205	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B T	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD9102	--	FIRE PROTECTION HEADER IRC ISOLATION ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-27981	B 2096	VALVE E/D1-BM-F013M	NNB	6.2.03-D C2 SOE		2381	X
	ZD9104	--	ACCUMULATOR MOLD TANKS TEST TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8871	B 2098	VALVE E/D1-BD-D003K	I	6.2.03-D C2 RPU A1		1204	X
	ZD9106	--	ACCUMULATOR MOLD TANKS TEST TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8964	B 2100	VALVE E/D1-BD-D004G	II	6.2.03-D C2 RPU B1		1204	X
	ZD9108	--	SAFETY INJECTION PUMPS ACCUM TEST ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8888	B 2102	VALVE E/D1-BD-D004B	II	6.2.03-D C2 RPU B1		1204	X
	ZD9110	--	N2 SUPPLY TO ACCUMULATOR ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8808	B 2104	VALVE E/D1-BD-D003Y	II	6.2.03-D C2 RPU A1		2402	X
	ZD9112	--	NSCW TO REACTOR CNTY COOLERS TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-2134	B 2106	VALVE E/D1-BD-K004L	I	7.2.09-B D2 RPU A1		1202	
	ZD9114	--	NSCW TO REACTOR CNTY COOLERS TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-2135	B 2220	VALVE E/D1-BD-K004Q	II	7.2.09-B D2 RPU B1		1202	
	ZD9116	--	NSCW FROM REACTOR CNTY COOLERS TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	HV-2138	B 2108	VALVE E/D1-BD-K004M	I	7.2.09-B D2 RPU A1		1202	
	ZD9118	--	NSCW FROM REALTOR CNTY COOLERS TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	HV-2139	B 2110	VALVE E/D1-BD-K004R	II	7.2.09-B D2 RPU B1		1202	
	ZD9137	--	RHR PUMP DISCH TO HOT LEG LOOPS 1&4 ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	HV-8840	B 3125	VALVE E/D1-BD-D003J	II	7.2.10-B D2 RPU B1		1204	
	ZD9138	--	RHR PUMP DISCH TO HOT LEG LOOPS 1&4 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8840	B 3129	VALVE E/D1-BD-D003J	II	7.2.10-B D2 RPU B1		1204	
	ZD9140	--	RHR TO HOT LEG TEST LINE HV-8825 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8825	B 2235	VALVE E/D1-BD-D004T	II	6.2.03-D C2 RPU B1		1204	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION		ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD9146	--	SIS RECIRC TEST COLD LEG LOOPS 1 & 2 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED	/ CLOSED	MV-8809A	B 2112	VALVE E/D1-8D-D#4T	II	6.2.#3-D	C2 RPU B1	1204	X
	ZD9148	--	SIS RECIRC TEST COLD LEG LOOPS 3 & 4 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED	/ CLOSED	MV-8809B	B 2114	VALVE E/D1-8D-D#4T	II	6.2.#3-D	C2 RPU B1	1204	X
	ZD9150	--	PRESSURIZER RELIEF TANK VENT TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED	/ CLOSED	MV-8847	B 2116	VALVE E/D1-8D-8#3E	I	6.2.#3-D	C2 RPU A1	1201	X
	ZD9152	--	PRESSURIZER RELIEF TANK VENT TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED	/ CLOSED	MV-8833	B 2118	VALVE E/D1-8D-8833D	II	6.2.#3-D	C2 RPU B1	1201	X
	ZD9154	--	PRESSURIZER RELIEF TANK PRIM WATER ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED	/ CLOSED	MV-8828	B 2120	VALVE E/D1-8D-8#2X	II	6.2.#3-D	C2 RPU B1	1201	X
	ZD9156	--	PRESSURIZER STEAM SPACE SAMPLE TRN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED	/ CLOSED	MV-3514	B 2122	VALVE E/D1-8D-N#1C	I	6.2.#3-D	C2 RPU A1	1212	X
	ZD9158	--	PRESSURIZER STEAM SPACE SAMPLE TRN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED	/ CLOSED	MV-3513	B 2124	VALVE E/D1-8D-N#1D	II	6.2.#3-D	C2 RPU B1	1212	X
	ZD9160	--	PRESSURIZER LIQUID SPACE SAMPLE TRN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED	/ CLOSED	MV-3508	B 2126	VALVE E/D1-8D-N#1C	I	6.2.#3-D	C2 RPU A1	1212	X
	ZD9162	--	PRESSURIZER LIQUID SPACE SAMPLE TRN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED	/ CLOSED	MV-3507	B 2128	VALVE E/D1-8D-N#1D	II	6.2.#3-D	C2 RPU B1	1212	X
	ZD9164	--	CNMT H2 TRAIN B MONITOR SUPPLY ORC ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED	/ CLOSED	MV-2791A	B 2130	VALVE E/D1-8G-808E	I	--	- RPU A1	1513	
	ZD9166	--	CNMT H2 TRAIN A MONITOR SUPPLY IRC ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED	/ CLOSED	MV-2792A	B 2132	VALVE E/D1-8G-8#5E	I	--	- RPU A1	1513	
	ZD9168	--	CNMT H2 TRAIN A MONITOR SUPPLY IRC ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED	/ CLOSED	MV-2792B	B 2134	VALVE E/D1-8G-8#5E	I	--	- RPU A1	1513	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD9170	--	CNMT H2 TRAIN B MONITOR RETURN ORC ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-2793A	B 2136	VALVE E/D1-BG-B05E	I	-- -	RPU A1	1313	
	ZD9172	--	CNMT H2 TRAIN B MONITOR SUPPLY IRC ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-2790A	B 2138	VALVE E/D1-BG-B05B	II	-- -	RPU B1	1313	
	ZD9174	--	CNMT H2 TRAIN B MONITOR SUPPLY IRC ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-2790B	B 2140	VALVE E/D1-BG-B05B	II	-- -	RPU B1	1313	
	ZD9176	--	CNMT H2 TRAIN A MONITOR SUPPLY ORC ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-2791B	B 2142	VALVE E/D1-BG-B05B	II	-- -	RPU B1	1313	
	ZD9178	--	CNMT H2 TRAIN A MONITOR RETURN ORC ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-2793B	B 2144	VALVE E/D1-BG-B05B	II	-- -	RPU B1	1313	
	ZD9180	--	ACCUMULATOR TANK 1 SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-10950	B 2146	VALVE E/D1-BD-B04M	I	6.2.03-D C2	RPU A1	1204	X
	ZD9182	--	ACCUMULATOR TANK 2 SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-10951	B 2148	VALVE E/D1-BD-B04X	II	6.2.03-D C2	RPU B1	1204	X
	ZD9184	--	ACCUMULATOR TANK 3 SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-10952	B 2150	VALVE E/D1-BD-B04M	I	6.2.03-D C2	RPU A1	1204	X
	ZD9186	--	ACCUMULATOR TANK 4 SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-10953	B 2152	VALVE E/D1-BD-B04X	II	6.2.03-D C2	RPU B1	1204	X
	ZD9188	--	RC DRAIN TANK ISOLATION VLV IRN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-7699	B 2154	VALVE E/D1-BD-G02M	I	6.2.03-D C2	RPU A1	1901	X
	ZD9190	--	RC DRAIN TANK PUMPS DISCH TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-7136	B 2156	VALVE E/D1-BD-G02G	II	6.2.03-D C2	RPU B1	1901	X
	ZD9192	--	REACT CVTY/CNMT SUMP DRAIN PMP MON TRN A ALM ON CONTACT: OPEN ALM/NML: NOT CLSD / CLSD	HV-8708	B 2158	VALVE E/D1-BD-P01E	I	6.2.03-D C2	RPU A1	1214	X

REV	ERF SYMBOL	PHOTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	BPD #
	ZD9194	--	REACT CVTY/CNMT SUMP DRAIN PMP HDR TRN B ALM ON CONTACT: OPEN ALM/NML: NOT CLSD / CLSD	HV-8781	B 2160	VALVE E/D1-BD-P001E	II	6.2.03-D C2	RPU B1	1214	X
	ZD9196	--	RC DRAIN TANK VENT TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-7126	B 2162	VALVE E/D1-BD-G002E	I	6.2.03-D C2	RPU A1	1901	X
	ZD9198	--	RC DRAIN TANK VENT TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-7158	B 2164	VALVE E/D1-BD-G002C	II	6.2.03-D C2	RPU B1	1901	X
	ZD9200	--	CONTAINMENT SERVICE AIR ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9385	B 2166	VALVE E/D1-BM-H001M	I	6.2.03-D C2	RPU A1	2401	X
	ZD9202	--	CONTAINMENT INSTRUMENT AIR ISOLATION VLV ALM ON CONTACT: OPEN ALM/NML: NOT CLSD / CLSD	HV-9378	B 2168	VALVE E/D1-BM-R001G	II	6.2.03-D C2	RPU B1	2420	X
	ZD9204	--	CNMT PREACCESS PURGE SUPPLY TRN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-2626A	B 2170	VALVE E/D1-BG-B004E	I	6.2.03-D C2	RPU A1	1505	X
	ZD9206	--	CONTAINMENT MINI PURGE SUPPLY TRN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-2626B	B 2172	VALVE E/D1-BG-B005M	I	6.2.03-D C2	RPU A1	1505	X
	ZD9208	--	CNMT PREACCESS PURGE SUPPLY TRN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-2627A	B 2174	VALVE E/D1-BG-B004F	II	6.2.03-D C2	RPU B1	1505	X
	ZD9210	--	CONTAINMENT MINI PURGE SUPPLY TRN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-2627B	B 2176	VALVE E/D1-BG-B005Y	II	6.2.03-D C2	RPU B1	1505	X
	ZD9212	--	CONTAINMENT PREACCESS PURGE EXH TRN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-2628A	B 2178	VALVE E/D1-BG-B004G	I	6.2.03-D C2	RPU A1	1506	X
	ZD9214	--	CONTAINMENT MINI PURGE EXH TRN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-2628B	B 2180	VALVE E/D1-BG-B005X	I	6.2.03-D C2	RPU A1	1506	X
	ZD9216	--	CONTAINMENT PREACCESS PURGE EXH TRN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-2629A	B 2182	VALVE E/D1-BG-B004H	II	6.2.03-D C2	RPU B1	1506	X

R E V	EMF SYMBOL	PRUTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B T	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	S P D S
	ZD9218	--	CONTAINMENT MINI PURGE EXH TRN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-26298	B 2184	VALVE E/D1-BG-D05Z	II	6.2.03-D	C2 RPU B1	1500	X
	ZD9219	--	NSCW TO CONTAINMENT COOLERS 1 & 2 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-1000	B 2185	VALVE E/D1-BD-K04N	I	7.2.09-B	D2 RPU A1	1202	
	ZD9221	--	NSCW TO CONTAINMENT COOLERS 3 & 4 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-1007	B 2187	VALVE E/D1-BD-K04M	II	7.2.09-B	D2 RPU B1	1202	
	ZD9223	--	NSCW TO CONTAINMENT COOLERS 5 & 6 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-1008	B 2189	VALVE E/D1-BD-K04U	I	7.2.09-B	D2 RPU A1	1202	
	ZD9225	--	NSCW TO CONTAINMENT COOLERS 7 & 8 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-1009	B 2191	VALVE E/D1-BD-K04S	II	7.2.09-B	D2 RPU B1	1202	
	ZD9227	--	NSCW FROM CONTAINMENT COOLERS 1 & 2 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-1022	B 2193	VALVE E/D1-BD-K04P	I	7.2.09-B	D2 RPU A1	1202	
	ZD9229	--	NSCW FROM CONTAINMENT COOLERS 3 & 4 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-1023	B 2195	VALVE E/D1-BD-K04X	II	7.2.09-B	D2 RPU B1	1202	
	ZD9231	--	NSCW FROM CONTAINMENT COOLERS 5 & 6 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-1030	B 2197	VALVE E/D1-BD-K04V	I	7.2.09-B	D2 RPU A1	1202	
	ZD9233	--	NSCW FROM CONTAINMENT COOLERS 7 & 8 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-1031	B 2199	VALVE E/D1-BD-K04T	II	7.2.09-B	D2 RPU B1	1202	
	ZD9236	--	CTB POST LOCA PURGE EXHAUST TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-26248	B 2202	VALVE E/D1-BG-B04A	I	6.2.03-D	C2 RPU A1	1500	X
	ZD9238	--	CTB POST LOCA PURGE EXHAUST TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-26248	B 2204	VALVE E/D1-BG-B04B	II	6.2.03-D	C2 RPU B1	1500	X
	ZD9242	--	PASS GAS SAMPLE RETURN TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8212	B 2208	VALVE E/D1-BM-Y02C	I	6.2.03-D	C2 RPU A1	2702	X

REV	EMF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INP VI.	SYSTEM	SPDS
	ZD9244	--	PASS GAS SAMPLE RETURN TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8211	B 2218	VALVE E/D1-BH-T#2D	II	6.2.#3-D	C2	RPU B1	2782	X
	ZD9246	--	PASS CONTAINMENT SAMPLE SUMPS TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8986A	B 2212	VALVE E/D1-BD-E#2L	I	--	-	RPU A1	2782	X
	ZD9248	--	PASS CONTAINMENT SAMPLE SUMPS TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8986B	B 2214	VALVE E/D1-BD-E#2M	II	--	-	RPU B1	2782	X
	ZD9250	--	PASS LIQUID SAMPLE RETURN TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8208	B 2216	VALVE E/D1-BH-T#2C	I	6.2.#3-D	C2	RPU A1	2782	X
	ZD9252	--	PASS LIQUID SAMPLE RETURN TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8209	B 2218	VALVE E/D1-BH-T#2D	II	6.2.#3-D	C2	RPU B1	2782	X
	ZD9262	--	PRESSURIZER SAFETY VALVE A TRAIN A ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PSV-8#1#A	B 2236	VALVE E/D1-BD-B#3J	I	7.2.#2-B	D2	RPU A1	1281	
	ZD9263	--	PRESSURIZER SAFETY VALVE A TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PSV-8#1#A	B 2237	VALVE E/D1-BD-B#3J	I	7.2.#2-B	D2	RPU A1	1281	
	ZD9264	--	PRESSURIZER SAFETY VALVE B TRAIN A ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PSV-8#1#B	B 2388	VALVE E/D1-BD-B#3J	I	7.2.#2-B	D2	RPU A1	1281	
	ZD9265	--	PRESSURIZER SAFETY VALVE B TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PSV-8#1#B	B 2389	VALVE E/D1-BD-B#3J	I	7.2.#2-B	D2	RPU A1	1281	
	ZD9266	--	PRESSURIZER SAFETY VALVE C TRAIN A ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PSV-8#1#C	B 2428	VALVE E/D1-BD-B#3J	I	7.2.#2-B	D2	RPU A1	1281	
	ZD9267	--	PRESSURIZER SAFETY VALVE C TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PSV-8#1#C	B 2429	VALVE E/D1-BD-B#3J	I	7.2.#2-B	D2	RPU A1	1281	
	ZD9272	--	PRESSURIZER SAFETY VALVE A TRAIN B ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PSV-8#1#A	B 2238	VALVE E/D1-BD-B#3J	II	7.2.#2-B	D2	RPU B1	1281	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
	ZD9273	--	PRESSURIZER SAFETY VALVE A TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PSV-8010A	B 2239	VALVE E/D1-BD-B03J	II	7.2.02-B	D2	RPU B1	1201	
	ZD9274	--	PRESSURIZER SAFETY VALVE B TRAIN B ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PSV-8010B	B 2310	VALVE E/D1-BD-B03J	II	7.2.02-B	D2	RPU B1	1201	
	ZD9275	--	PRESSURIZER SAFETY VALVE B TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PSV-8010B	B 2311	VALVE E/D1-BD-B03J	II	7.2.02-B	D2	RPU B1	1201	
	ZD9276	--	PRESSURIZER SAFETY VALVE C TRAIN B ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PSV-8010C	B 2430	VALVE E/D1-BD-B03J	II	7.2.02-B	D2	RPU B1	1201	
	ZD9277	--	PRESSURIZER SAFETY VALVE C TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PSV-8010C	B 2431	VALVE E/D1-BD-B03J	II	7.2.02-B	D2	RPU B1	1201	
	ZD9282	--	CVCS LETDOWN ISOLATION ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8160	B 2312	VALVE E/D1-BD-C004A	I	6.2.03-D	C2	RPU A1	1208	X
	ZD9284	--	CVCS LETDOWN ISOLATION OUTSIDE CNMT ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8152	B 2314	VALVE E/D1-BD-C003Y	II	6.2.03-D	C2	RPU B1	1208	X
	ZD9289	--	SEAL FLOW CONTROL-THROTTLES CHG FLOW ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8102	B 2838	VALVE	NNS	--	-	SOE	1208	
	ZD9290	--	SEAL FLOW CONTROL-THROTTLES CHG FLOW ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	HV-8102	B 2862	VALVE	NNS	--	-	SOE	1208	
	ZD9291	--	CCP A MINIFLOW VALVE TO VCT ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8111A	B 2886	VALVE E/D1-BD-C003K	II	7.2.03-E	D2	RPU B1	1208	
*	ZD9292	--	CCP A MINIFLOW VALVE TO VCT ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	HV-8111A	B 2910	VALVE E/D1-BD-C003K	II	7.2.03-E	D2	RPU B1	1208	
	ZD9293	--	CCP B MINIFLOW VALVE TO VCT ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8111B	B 2935	VALVE E/D1-BD-C005L	II	7.2.03-E	D2	RPU B1	1208	

R t V	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	S P D B
*	ZD9294	--	CCP B MINIFLOW VALVE TO VCT ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	HV-8111B	B 2959	VALVE E/D1-BD-C05L	II	7.2.03-E	D2 RPU	B1	1208
	ZD9295	--	CCP COMMON MINIFLOW VALVE TO VCT ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8110	B 2884	VALVE E/D1-BD-C03J	I	7.2.03-E	D2 RPU	A1	1208
	ZD9296	--	CCP COMMON MINIFLOW VALVE TO VCT ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8110	B 2908	VALVE E/D1-BD-C03J	I	7.2.03-E	D2 RPU	A1	1208
	ZD9298	--	REACTOR HEAD VENT LINE TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8005A	B 2049	VALVE E/D1-BD-C05G	I	7.2.05-E	D2 RPU	A1	1208
	ZD9300	--	REACTOR HEAD VENT LINE TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8005B	B 2051	VALVE E/D1-BD-C05F	II	7.2.05-E	D2 RPU	B1	1208
	ZD9302	--	REACTOR HEAD VENT LINE TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8006A	B 2053	VALVE E/D1-BD-C05G	I	7.2.05-E	D2 RPU	A1	1208
	ZD9304	--	REACTOR HEAD VENT LINE TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8006B	B 2055	VALVE E/D1-BD-C05F	II	7.2.05-E	D2 RPU	B1	1208
	ZD9305	--	RCP 1 SEAL WATER INLET ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8103A	B 3058	VALVE E/D1-BD-C04L	II	7.2.03-E	D2 RPU	B1	1208
	ZD9306	--	RCP 1 SEAL WATER INLET ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8103A	B 3082	VALVE E/D1-BD-C04L	II	7.2.03-E	D2 RPU	B1	1208
	ZD9307	--	RCP 2 SEAL WATER INLET ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8103B	B 3057	VALVE E/D1-BD-C04M	II	7.2.03-E	D2 RPU	B1	1208
	ZD9308	--	RCP 2 SEAL WATER INLET ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8103B	B 3081	VALVE E/D1-BD-C04M	II	7.2.03-E	D2 RPU	B1	1208
	ZD9309	--	RCP 3 SEAL WATER INLET ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8103C	B 3056	VALVE E/D1-BD-C04J	II	7.2.03-E	D2 RPU	B1	1208

R E V	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	B P D
	ZD9310	--	RCP 3 SEAL WATER INLET ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	MV-8103C	B 3088	VALVE E/D1-8D-C#4J	II	7.2.#3-E	D2 RPU #1	1208	
	ZD9311	--	RCP 4 SEAL WATER INLET ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	MV-8103D	B 3128	VALVE E/D1-8D-C#4U	II	7.2.#3-E	D2 RPU #1	1208	
	ZD9312	--	RCP 4 SEAL WATER INLET ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	MV-8103D	B 3144	VALVE E/D1-8D-C#4U	II	7.2.#3-E	D2 RPU #1	1208	
	ZD9314	--	RCP 1 SEAL LEAK ISOLATION ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	MV-8141A	B 2344	VALVE E/D1-8D-C#3M	NN3	--	- 3OE	1208	
	ZD9316		RCP 2 SEAL LEAK ISOLATION ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	MV-8141B	B 2345	VALVE E/D1-8D-C#3M	NN3	--	- 8OE	1208	
	ZD9318	--	RCP 3 SEAL LEAK ISOLATION ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	MV-8141C	B 2346	VALVE E/D1-8D-C#3M	NN3	--	- 3OE	1208	
	ZD9320	--	RCP 4 SEAL LEAK ISOLATION ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	MV-8141D	B 2358	VALVE E/D1-8D-C#3M	NN3	--	- 3OE	1208	
	ZD9322	--	RCP SEAL WATER ISOLATION TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	MV-8112	B 2352	VALVE E/D1-8D-C#3L	I	6.2.#3-D	C2 RPU A1	1208	X
	ZD9324	--	RCP SEAL WATER ISOLATION TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	MV-8100	B 2354	VALVE E/D1-8D-C#3D	II	6.2.#3-D	C2 RPU #1	1208	X
	ZD9325	--	CHARGING PUMPS DISCHARGE XCONN ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	MV-8438	B 2932	VALVE E/D1-8D-C#5P	II	7.2.#3-E	D2 RPU #1	1208	
*	ZD9326	--	CHARGING PUMPS DISCHARGE XCONN ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	MV-8438	B 2956	VALVE E/D1-8D-C#5P	II	7.2.#3-E	D2 RPU #1	1208	
	ZD9327	--	BORIC ACID TO CHARGING PUMP B ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	MV-8439	B 2931	VALVE E/D1-8D-C#5Q	II	7.2.#3-E	D2 RPU #1	1208	

KEY	EMF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPD B
	ZD9328	--	BORIC ACID TO CHARGING PUMP B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	MV-8439	5 2955	VALVE E/D1-BD-C#5B	II	7.2.#3-E	D2 RPU	B1	1288
	ZD9329	--	CHARGING PUMP SUCT HDR TO/FROM SIS PMP A ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	MV-8924	B 2776	VALVE E/D1-BD-C#4V	I	7.2.#5-E	D2 RPU	A1	12##
	ZD9330	--	CHARGING PUMP SUCT HDR TO/FROM SIS PMP A ALM ON CONTACT: OPEN ALM/NML: CLSD / NOT CLSD	MV-8924	B 28##	VALVE E/D1-BD-C#4V	I	7.2.#5-E	D2 RPU	A1	12##
	ZD9335	--	SG1 MAIN FEED REG VALVE - MFRV ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	FV-#51#	B 3#21	VALVE E/D1-BC-C#4H	NNS	7.2.#4-E	D2 SOE		13#5
	ZD9336	--	SG1 MAIN FEED REG VALVE - MFRV ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	FV-#51#	B 3#45	VALVE E/D1-BC-C#4H	NNS	7.2.#4-E	D2 SOE		13#5
	ZD9337	--	SG2 MAIN FEED REG VALVE - MFRV ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	FV-#52#	B 3#2#	VALVE E/D1-BC-C#4E	NNS	7.2.#4-E	D2 SOE		13#5
	ZD9339	--	SG2 MAIN FEED REG VALVE - MFRV ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	FV-#52#	B 3#44	VALVE E/D1-BC-C#4E	NNS	7.2.#4-E	D2 SOE		13#5
	ZD9339	--	SG3 MAIN FEED REG VALVE - MFRV ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	FV-#53#	B 3#19	VALVE E/D1-BC-C#4F	NNS	7.2.#4-E	D2 SOE		13#5
	ZD9340	--	SG3 MAIN FEED REG VALVE - MFRV ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	FV-#53#	B 3#43	VALVE E/D1-BC-C#4F	NNS	7.2.#4-E	D2 SOE		13#5
	ZD9341	--	SG4 MAIN FEED REG VALVE - MFRV ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	FV-#54#	B 3#18	VALVE E/D1-BC-C#4G	NNS	7.2.#4-E	D2 SOE		13#5
	ZD9342	--	SG4 MAIN FEED REG VALVE - MFRV ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	FV-#54#	B 3#42	VALVE E/D1-BC-C#4G	NNS	7.2.#4-E	D2 SOE		13#5
	ZD9343	--	SG1 BYPASS FEED REG VALVE - BFRV ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	LV-5243	B 2975	VALVE E/D1-BC-C#4K	NNS	7.2.#4-E	D2 SOE		13#5

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD9344		-- SG1 BYPASS FEED REG VALVE - BFRV ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	LV-5243	B 2999	VALVE E/D1-BC-C04K	NNS	7.2.04-E	D2	SOE	1385	
	ZD9345		-- SG2 BYPASS FEED REG VALVE - BFRV ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	LV-5244	B 2974	VALVE E/D1-BC-C04L	NNS	7.2.04-E	D2	SOE	1385	
	ZD9346		-- SG2 BYPASS FEED REG VALVE - BFRV ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	LV-5244	B 2998	VALVE E/D1-BC-C04L	NNS	7.2.04-E	D2	SOE	1385	
	ZD9347		-- SG3 BYPASS FEED REG VALVE - BFRV ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	LV-5245	B 2973	VALVE E/D1-BC-C04M	NNS	7.2.04-E	D2	SOE	1385	
	ZD9348		-- SG3 BYPASS FEED REG VALVE - BFRV ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	LV-5245	B 2997	VALVE E/D1-BC-C04M	NNS	7.2.04-E	D2	SOE	1385	
	ZD9349		-- SG4 BYPASS FEED REG VALVE - BFRV ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	LV-5242	B 2976	VALVE E/D1-BC-C04J	NNS	7.2.04-E	D2	SOE	1385	
	ZD9350		-- SG4 BYPASS FEED REG VALVE - BFRV ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	LV-5242	B 3000	VALVE E/D1-BC-C04J	NNS	7.2.04-E	D2	SOE	1385	
	ZD9351		-- SG1 ATMOSPHERIC RELIEF VALVE (CH 1) ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PV-3000	B 2962	VALVE E/D1-BC-G03P	NNS	7.2.04-A	D2	RPU N1	1381	
	ZD9352		-- SG1 ATMOSPHERIC RELIEF VALVE (CH 1) ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PV-3000	B 2986	VALVE E/D1-BC-G03P	NNS	7.2.04-A	D2	RPU N1	1381	
	ZD9353		-- SG2 ATMOSPHERIC RELIEF VALVE (CH 2) ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PV-3010	B 2961	VALVE E/D1-BC-G03P	NNS	7.2.04-A	D2	RPU N1	1381	
	ZD9354		-- SG2 ATMOSPHERIC RELIEF VALVE (CH 2) ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PV-3010	B 2985	VALVE E/D1-BC-G03P	NNS	7.2.04-A	D2	RPU N1	1381	
	ZD9355		-- SG3 ATMOSPHERIC RELIEF VALVE (CH 1) ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PV-3020	B 2960	VALVE E/D1-BC-G03P	NNS	7.2.04-A	D2	RPU N1	1381	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPD S
	ZD9356	--	863 ATMOSPHERIC RELIEF VALVE (CH 1) ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PV-3020	B 2984	VALVE E/D1-BC-G03P	NNS	7.2.04-A	D2 RPU	N1	1301
	ZD9357	--	864 ATMOSPHERIC RELIEF VALVE (CH 2) ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	PV-3030	B 3031	VALVE E/D1-BC-G03P	NNS	7.2.04-A	D2 RPU	N1	1301
	ZD9358	--	864 ATMOSPHERIC RELIEF VALVE (CH 2) ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	PV-3030	B 3055	VALVE E/D1-BC-G03P	NNS	7.2.04-A	D2 RPU	N1	1301
	ZD9371	--	SI PUMP A INLET VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8923A	B 2779	VALVE E/D1-BD-D03F	I	7.2.05-E	D2 RPU	A1	1204
	ZD9372	--	SI PUMP A INLET VALVE ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	HV-8923A	B 2803	VALVE E/D1-BD-D03F	I	7.2.05-E	D2 RPU	A1	1204
	ZD9373	--	SI PUMP B INLET VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8923B	B 2777	VALVE E/D1-BD-D03G	II	7.2.05-E	D2 RPU	B1	1204
	ZD9374	--	SI PUMP B INLET VALVE ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	HV-8923B	B 2801	VALVE E/D1-BD-D03G	II	7.2.05-E	D2 RPU	B1	1204
	ZD9375	--	SI PUMP A TO COLD LEGS 1&4 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8821A	B 2783	VALVE E/D1-BD-D03D	I	7.2.05-E	D2 RPU	A1	12[illegible]
	ZD9376	--	SI PUMP A TO COLD LEGS 1&4 ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	HV-8821A	B 2807	VALVE E/D1-BD-D03D	I	7.2.05-E	D2 RPU	A1	1204
	ZD9377	--	SI PUMP B TO COLD LEGS 2&3 ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8821B	B 2781	VALVE E/D1-BD-D03E	II	7.2.05-E	D2 RPU	B1	1204
	ZD9378	--	SI PUMP B TO COLD LEGS 2&3 ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	HV-8821B	B 2805	VALVE E/D1-BD-D03E	II	7.2.05-E	D2 RPU	B1	1204
	ZD9379	--	813 COLD LEG LOOP INLET HEADER ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8835	B 2780	VALVE E/D1-BD-D03H	I	7.2.05-E	D2 RPU	A1	1204

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDB
	ZD9380	--	SIS COLD LEG LOOP INLET HEADER ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	HV-8835	B 2004	VALVE E/D1-BD-D03M	I	7.2.05-E D2	RPU A1	1204	
	ZD9384	--	SIS ACCUM N2 VLV TRAIN B LOOP 1 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8875E	B 2485	VALVE E/D1-BD-D05M	II	7.2.05-E D2	RPU B1	1204	
	ZD9386	--	SIS ACCUM N2 VLV TRAIN B LOOP 2 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8875F	B 2487	VALVE E/D1-BD-D05M	II	7.2.05-E D2	RPU B1	1204	
	ZD9388	--	SIS ACCUM N2 VLV TRAIN B LOOP 3 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8875G	B 2489	VALVE E/D1-BD-D05M	II	7.2.05-E D2	RPU B1	1204	
	ZD9390	--	SIS ACCUM N2 VLV TRAIN B LOOP 4 ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8875H	B 2491	VALVE E/D1-BD-D05M	II	7.2.05-E D2	RPU B1	1204	
	ZD9391	--	SI PUMP B MINIFLOW VALVE (TRAIN A ISOL) ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8928	B 2917	VALVE E/D1-BD-D02B	I	7.2.05-E D2	RPU A1	1204	
	ZD9392	--	SI PUMP B MINIFLOW VALVE (TRAIN A ISOL) ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	HV-8928	B 2941	VALVE E/D1-BD-D02B	I	7.2.05-E D2	RPU A1	1204	
*	ZD9393	--	SI PUMPS MINIFLOW VALVE (TRAIN B ISOL) ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8813	B 2921	VALVE E/D1-BD-D03B	II	7.2.05-E D2	RPU B1	1204	
*	ZD9394	--	SI PUMPS MINIFLOW VALVE (TRAIN B ISOL) ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	HV-8813	B 2945	VALVE E/D1-BD-D03B	II	7.2.05-E D2	RPU B1	1204	
	ZD9395	--	SI PUMP A MINIFLOW ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8814	B 2919	VALVE E/D1-BD-D03C	I	7.2.05-E D2	RPU A1	1204	
	ZD9396	--	SI PUMP A MINIFLOW ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	HV-8814	B 2943	VALVE E/D1-BD-D03C	I	7.2.05-E D2	RPU A1	1204	
	ZD9399	--	MAIN STEAM LINE DRAIN TO CONDENSER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-5179	B 2836	VALVE E/D1-BC-F02H	NNS	--	- RPU A1	1301	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD9400	--	MAIN STEAM LINE DRAIN TO CONDENSER ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-5179	B 2854	VALVE E/D1-BC-F002H	NNS	--	-	RPU N1 1301	
	ZD9401	--	AUX FW TRB STM LINE DRAIN TO CONDENSER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-5178	B 2871	VALVE E/D1-BC-F002M	NNS	--	-	RPU N1 1301	
	ZD9402	--	AUX FW TRB STM LINE DRAIN TO CONDENSER ALM ON CONTACT: OPEN ALM/NML: NOT CLSD / CLSD	HV-5178	B 2895	VALVE E/D1-BC-F002M	NNS	--	-	RPU N1 1301	
	ZD9405	--	MD AUX FEED PUMP B MINIFLOW VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	FV-5154	B 2789	VALVE E/D1-BC-F058	II	7.2.06-C	D2 RPU B1	1302	
	ZD9406	--	MD AUX FEED PUMP B MINIFLOW VALVE ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	FV-5154	B 2813	VALVE E/D1-BC-F058	II	7.2.06-C	D2 RPU B1	1302	
	ZD9407	--	MD AUX FEED PUMP A MINIFLOW VALVE ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	FV-5155	B 2791	VALVE E/D1-BC-F048	I	7.2.06-C	D2 RPU A1	1302	
	ZD9408	--	MD AUX FEED PUMP A MINIFLOW VALVE ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	FV-5155	B 2815	VALVE E/D1-BC-F048	I	7.2.06-C	D2 RPU A1	1302	
	ZD9410	--	CNMT SPRAY PUMP A RWST SUCTION ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-9817A	B 2775	VALVE E/D1-BD-J026	I	7.2.07-C	D2 RPU A1	1206	
	ZD9411	--	CNMT SPRAY PUMP A RWST SUCTION ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	HV-9817A	B 2799	VALVE E/D1-BD-J026	I	7.2.07-C	D2 RPU A1	1206	
	ZD9412	--	CNMT SPRAY PUMP B RWST SUCTION ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-9817B	B 2774	VALVE E/D1-BD-J002M	II	7.2.07-C	D2 RPU B1	1206	
	ZD9413	--	CNMT SPRAY PUMP B RWST SUCTION ALM ON CONTACT: OPEN ALM/NML: CLOSED / NOT CLOSED	HV-9817B	B 2798	VALVE E/D1-BD-J002M	II	7.2.07-C	D2 RPU B1	1206	
	ZD9414	--	CNMT SPRAY PUMP A DISCHARGE TO SPRAY HDR ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-9001A	B 2914	VALVE E/D1-BD-J026	I	7.2.07-C	D2 RPU A1	1206	

N E W	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	S F D S
	ZD9415	--	CNMT SPRAY PUMP A DISCHARGE TO SPRAY HDR ALM ON CONTACT: OPEN ALM/NML: NOT CLSD / CLSD	MV-98018A	B 2938	VALVE E/D1-BD-J02C	I	7.2.07-C	D2 RPU	A1	1206
	ZD9416	--	CNMT SPRAY PUMP B DISCHARGE TO SPRAY HDR ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	MV-98018B	B 2913	VALVE E/D1-BD-J02D	II	7.2.07-C	D2 RPU	B1	1206
	ZD9417	--	CNMT SPRAY PUMP B DISCHARGE TO SPRAY HDR ALM ON CONTACT: OPEN ALM/NML: NOT CLSD / CLSD	MV-98018B	B 2937	VALVE E/D1-BD-J02D	II	7.2.07-C	D2 RPU	B1	1206
	ZD9418	--	SPRAY ADDITIVE TANK OUTLET TRAIN A ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	MV-88948A	B 2916	VALVE E/D1-BD-J02A	I	7.2.07-C	D2 RPU	A1	1206
	ZD9419	--	SPRAY ADDITIVE TANK OUTLET TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	MV-88948A	B 2940	VALVE E/D1-BD-J02A	I	7.2.07-C	D2 RPU	A1	1206
	ZD9420	--	SPRAY ADDITIVE TANK OUTLET TRAIN B ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	MV-88948B	B 2915	VALVE E/D1-BD-J02B	II	7.2.07-C	D2 RPU	B1	1206
*	ZD9421	--	SPRAY ADDITIVE TANK OUTLET TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	MV-88948B	B 2939	VALVE E/D1-BD-J02B	II	7.2.07-C	D2 RPU	B1	1206
	ZD9422	--	CS PUMP A CNMT SUMP SUCTION VALVE IRC ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	MV-98002A	B 3124	VALVE E/D1-BD-J02E	I	7.2.07-C	D2 RPU	A1	1206
	ZD9423	--	CS PUMP A CNMT SUMP SUCTION VALVE IRC ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	MV-98002A	B 3148	VALVE E/D1-BD-J02E	I	7.2.07-C	D2 RPU	A1	1206
	ZD9424	--	CS PUMP B CNMT SUMP SUCTION VALVE IRC ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	MV-98002B	B 3123	VALVE E/D1-BD-J02F	II	7.2.07-C	D2 RPU	B1	1206
	ZD9425	--	CS PUMP B CNMT SUMP SUCTION VALVE IRC ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	MV-98002B	B 3147	VALVE E/D1-BD-J02F	II	7.2.07-C	D2 RPU	B1	1206
	ZD9426	--	CS PUMP A CNMT SUMP SUCTION VALVE ORC ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	MV-98003A	B 3122	VALVE E/D1-BD-J02J	I	7.2.07-C	D2 RPU	A1	1206

REV	EHF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B T	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD9427	--	CS PUMP A CNMT SUMP SUCTION VALVE ORC ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9003A	B 3140	VALVE E/D1-BD-J02J	I	7.2.07-C	D2 RPU	A1 1206	
	ZD9428	--	CS PUMP B CNMT SUMP SUCTION VALVE ORC ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	HV-9003B	B 3121	VALVE E/D1-BD-J02K	II	7.2.07-C	D2 RPU	B1 1206	
	ZD9429	--	CS PUMP B CNMT SUMP SUCTION VALVE ORC ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-9003B	B 3145	VALVE E/D1-BD-J02K	II	7.2.07-C	D2 RPU	B1 1206	
	ZD9430	--	CTB COOLING UNIT 1 OUTLET DAMPER ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-2582A	B 2560	VALVE E/D1-BG-B03V	I	7.2.07-D	D2 RPU	A1 1501	
	ZD9432	--	CTB COOLING UNIT 2 OUTLET DAMPER ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-2582B	B 2562	VALVE E/D1-BG-B03V	I	7.2.07-D	D2 RPU	A1 1501	
	ZD9434	--	CTB COOLING UNIT 3 OUTLET DAMPER ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-2583A	B 2564	VALVE E/D1-BG-B03W	II	7.2.07-D	D2 RPU	B1 1501	
	ZD9436	--	CTB COOLING UNIT 4 OUTLET DAMPER ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-2583B	B 2566	VALVE E/D1-BG-B03W	II	7.2.07-D	D2 RPU	B1 1501	
	ZD9438	--	CTB COOLING UNIT 5 OUTLET DAMPER ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-2584A	B 2566	VALVE E/D1-BG-B03X	I	7.2.07-D	D2 RPU	A1 1501	
	ZD9440	--	CTB COOLING UNIT 6 OUTLET DAMPER ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-2584B	B 2570	VALVE E/D1-BG-B03X	I	7.2.07-D	D2 RPU	A1 1501	
	ZD9442	--	CTB COOLING UNIT 7 OUTLET DAMPER ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-2585A	B 2572	VALVE E/D1-BG-B03Y	II	7.2.07-D	D2 RPU	B1 1501	
	ZD9444	--	CTB COOLING UNIT 8 OUTLET DAMPER ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-2585B	B 2574	VALVE E/D1-BG-B03Y	II	7.2.07-D	D2 RPU	B1 1501	
	ZD9449	--	NSCW TOWER A BLOWDOWN ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	CV-9446	B 2004	VALVE E/D1-BD-B04J	I	7.2.09-B	D2 RPU	A1 1202	

REV	ENF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	BPD S
	ZD9451	--	NSCM TUNER B BLOWDOWN ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	CV-9447	B 2686	VALVE E/D1-BG-K04K	II	7.2.09-B	D2 RPU	B1 1282	
	ZD9454	--	PIPING PEN RM HVAC TRN A TO LOADS ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	PV-2558A	B 3105	VALVE E/D1-BG-D01L	I	7.2.11-A	D2 RPU	A1 1561	
	ZD9455	--	PIPING PEN RM HVAC TRN A TO LOADS ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	PV-2558A	B 3129	VALVE E/D1-BG-D01L	I	7.2.11-A	D2 RPU	A1 1561	
	ZD9456	--	PIPING PEN RM HVAC TRN B TO LOADS ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	PV-2551A	B 3104	VALVE E/D1-BG-D01M	II	7.2.11-A	D2 RPU	B1 1561	
	ZD9457	--	PIPING PEN RM HVAC TRN B TO LOADS ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	PV-2551A	B 3128	VALVE E/D1-BG-D01M	II	7.2.11-A	D2 RPU	B1 1561	
	ZD9458	--	PIPING PEN RM HVAC TRN A TO ATMOS ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	PV-2558B	B 2964	VALVE E/D1-BG-D01J	I	7.2.11-A	D2 RPU	A1 1561	
	ZD9459	--	PIPING PEN RM HVAC TRN A TO ATMOS ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	PV-2558B	B 2988	VALVE E/D1-BG-D01J	I	7.2.11-A	D2 RPU	A1 1561	
	ZD9460	--	PIPING PEN RM HVAC TRN B TO ATMOS ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	PV-2551B	B 2963	VALVE E/D1-BG-D01K	II	7.2.11-A	D2 RPU	B1 1561	
	ZD9461	--	PIPING PEN RM HVAC TRN B TO ATMOS ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	PV-2551B	B 2987	VALVE E/D1-BG-D01K	II	7.2.11-A	D2 RPU	B1 1561	
	ZD9463	--	CONTROL ROOM NORMAL HVAC INTAKE TRN A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	AHV-12153	B 2659	VALVE E/D1-BG-C01L	I	7.2.11-A	D2 RPU (UNIT 1 INPUT ONLY)	A1 1531	
	ZD9465	--	CONTROL ROOM NORMAL HVAC INTAKE TRN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	AHV-12152	B 2661	VALVE E/D1-BG-C01M	II	7.2.11-A	D2 RPU (UNIT 1 INPUT ONLY)	B1 1531	
	ZD9466	--	CONTROL ROOM HVAC 85A INTAKE TRAIN A ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-12114	B 2912	VALVE E/D1-BG-C01G	I	7.2.11-A	D2 RPU	A1 1531	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	V7 VAR	V7 CLASS	V7 INPUT VIA	V7 INPUT SYSTEM	SPDS
	ZD9467	--	CONTROL ROOM HVAC 85A INTAKE TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-12114	B 2936	VALVE E/D1-BG-C016	I	7.2.11-A	D2 RPU	A1	1531	
	ZD9468	--	CONTROL ROOM HVAC 85A INTAKE TRAIN B ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-12115	B 2983	VALVE E/D1-BG-C016	II	7.2.11-A	D2 RPU	B1	1831	
	ZD9469	--	CONTROL ROOM HVAC 85A INTAKE TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-12115	B 3007	VALVE E/D1-BG-C016	II	7.2.11-A	D2 RPU	B1	1531	
	ZD9471	--	CR KIT,TOIL,CONF RM EXH FAN INL TRN A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	AHV-12162	B 2667	VALVE E/D1-BG-C010	I	7.2.11-A (UNIT 1 INPUT ONLY)	D2 RPU	A1	1531	
	ZD9473	--	CR KIT,TOIL,CONF RM EXH FAN INL TRN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	AHV-12163	B 2669	VALVE E/D1-BG-C016	II	7.2.11-A (UNIT 1 INPUT ONLY)	D2 RPU	B1	1531	
	ZD9475	--	CR NORMAL COOLER UNITS SUPPLY TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-12146	B 2671	VALVE E/D1-BG-C078	I	7.2.11-A	D2 RPU	A1	1531	
	ZD9477	--	CR NORMAL COOLER UNITS SUPPLY TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-12147	B 2483	VALVE E/D1-BG-C07C	II	7.2.11-A	D2 RPU	B1	1531	
	ZD9479	--	CR NORMAL COOLER UNITS RETURN TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-12149	B 2395	VALVE E/D1-BG-C078	I	7.2.11-A	D2 RPU	A1	1531	
	ZD9481	--	CR NORMAL COOLER UNITS RETURN TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-12148	B 2387	VALVE E/D1-BG-C07C	II	7.2.11-A	D2 RPU	B1	1531	
	ZD9482	--	SAFETY FEATURE BAT RM EXH FAN 1 TO ATMOS ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12742	B 2377	VALVE E/D1-BG-C048	I	7.2.11-A	D2 RPU	A1	1532	
	ZD9484	--	SAFETY FEATURE BAT RM EXH FAN 2 TO ATMOS ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12727	B 2388	VALVE E/D1-BG-C04T	II	7.2.11-A	D2 RPU	B1	1532	
	ZD9486	--	SAFETY FEATURE BAT RM EXH FAN 3 TO ATMOS ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12748	B 2508	VALVE E/D1-BG-C04U	I	7.2.11-A	D2 RPU	A1	1532	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	BPD S
	ZD9488	--	SAFETY FEATURE BAT RM EXH FAN 4 TO ATMOS ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12749	B 2888	VALVE E/D1-BG-C84V	II	7.2.11-A D2 RPU B2 1532			
	ZD9511	--	FHB HVAC NORMAL EXHAUST TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	AHV-12479	B 2378	VALVE E/DA-BG-E02L	I	7.2.11-A D2 RPU A1 1541 (UNIT 1 INPUT ONLY)			
	ZD9513	--	FHB HVAC NORMAL EXHAUST TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	AHV-12480	B 2081	VALVE E/DA-BG-E02K	II	7.2.11-A D2 RPU B1 1541 (UNIT 1 INPUT ONLY)			
	ZD9515	--	FHB NML COOLER UNIT OUT (AHV-2529) TRN A ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	AHV-2529	B 2879	VALVE E/DA-BG-E026	I	7.2.11-A D2 RPU A1 1541 (UNIT 1 INPUT ONLY)			
	ZD9517	--	FHB NML COOLER UNIT OUT (AHV-2528) TRN B ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	AHV-2528	B 2877	VALVE E/DA-BG-E02H	II	7.2.11-A D2 RPU B1 1541 (UNIT 1 INPUT ONLY)			
*	ZD9519	--	FHB NML COOLER UNIT OUT (AHV-2535) TRN A ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	AHV-2535	B 2875	VALVE E/DA-BG-E026	I	7.2.11-A D2 RPU A1 1541 (UNIT 1 INPUT ONLY)			
	ZD9521	--	FHB NML COOLER UNIT OUT (AHV-2534) TRN B ALM ON CONTACT: CLSD ALM/NML: CLSD / NOT CLSD	AHV-2534	B 2597	VALVE E/DA-BG-E02H	II	7.2.11-A D2 RPU B1 1541 (UNIT 1 INPUT ONLY)			
	ZD9523	--	FHB NORMAL EXH UNITS OUTLET TRAIN A ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	AHV-12481	B 2609	VALVE E/DA-BG-E02L	I	7.2.11-A D2 RPU A1 1541 (UNIT 1 INPUT ONLY)			
	ZD9525	--	FHB NORMAL EXH UNITS OUTLET TRAIN B ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	AHV-12482	B 2399	VALVE E/DA-BG-E02K	II	7.2.11-A D2 RPU B1 1541 (UNIT 1 INPUT ONLY)			
	ZD9527	--	RHR PUMP ROOM TRAIN A COOLER UNIT ALM ON CONTACT: CLSD ALM/NML: ON / OFF	428-A8D53	B 2828	MCC E/D1-BG-D05G	I	7.2.11-B D2 RPU A2 1555			
	ZD9529	--	RHR PUMP ROOM TRAIN B COOLER UNIT ALM ON CONTACT: CLSD ALM/NML: ON / OFF	428-B8D53	B 2816	MCC E/D1-BG-D05H	II	7.2.11-B D2 RPU B2 1555			
	ZD9531	--	CNMT SPRAY PUMP ROOM TRAIN A COOLER UNIT ALM ON CONTACT: CLSD ALM/NML: ON / OFF	428-A8D52	B 2818	MCC E/D1-BG-D05J	I	7.2.11-B D2 RPU A2 1555			

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDB
	ZD9533	--	CNMI SPRAY PUMP ROOM TRAIN B COOLER UNIT ALM ON CONTACT: CLSD ALM/NML: ON / OFF	42B-B8D52	B 2008	MCC E/D1-BG-D05K	II	7.2.11-B D2 RPU B2 1555			
	ZD9535	--	CCW PUMP ROOM TRAIN A COOLER UNIT ALM ON CONTACT: OPEN ALM/NML: ON / OFF	42B-A8D28	B 2005	MCC E/D1-BG-D05E	I	7.2.11-B D2 RPU A2 1555			
	ZD9537	--	CCW PUMP ROOM TRAIN B COOLER UNIT ALM ON CONTACT: OPEN ALM/NML: ON / OFF	42B-B8D28	B 2003	MCC E/D1-BG-D05F	II	7.2.11-B D2 RPU B2 1555			
	ZD9539	--	CHARGING PUMP ROOM TRAIN A COOLER UNIT ALM ON CONTACT: OPEN ALM/NML: ON / OFF	42B-A8D22	B 2510	MCC E/D1-BG-D05N	I	7.2.11-B D2 RPU A2 1555			
	ZD9541	--	CHARGING PUMP ROOM TRAIN B COOLER UNIT ALM ON CONTACT: OPEN ALM/NML: ON / OFF	42B-B8D22	B 2381	MCC E/D1-BG-D05P	II	.2.11-B D2 RPU B2 1555			
	ZD9543	--	ELEC SWGR & MCC RM LEVEL D TRAIN A COOLER ALM ON CONTACT: OPEN ALM/NML: ON / OFF	42B-A8D49	B 2001	MCC E/D1-BG-D05A	I	7.2.11-B D2 RPU A2 1555			
	ZD9545	--	ELEC SWGR & MCC RM LEVEL 2 TRAIN B COOLER ALM ON CONTACT: OPEN ALM/NML: ON / OFF	42B-B8D49	B 2002	MCC E/D1-BG-D05B	II	7.2.11-B D2 RPU B2 1555			
	ZD9547	--	ELEC SWGR & MCC RM LEVEL C TRAIN A COOLER ALM ON CONTACT: OPEN ALM/NML: ON / OFF	42B-A8D58	B 2078	MCC E/D1-BG-D08C	I	7.2.11-B D2 RPU A2 1555			
	ZD9549	--	ELEC SWGR & MCC RM LEVEL B TRAIN B COOLER ALM ON CONTACT: OPEN ALM/NML: ON / OFF	42B-B8D58	B 2598	MCC E/D1-BG-D05D	II	7.2.11-B D2 RPU B2 1555			
	ZD9551	--	ELEC SWGR & MCC RM LEVEL 1 TRAIN A COOLER ALM ON CONTACT: OPEN ALM/NML: ON / OFF	42B-A8823	B 2417	MCC E/D1-BG-D05E	I	7.2.11-B D2 RPU A2 1555			
	ZD9553	--	ELEC SWGR & MCC RM LEVEL 1 TRAIN B COOLER ALM ON CONTACT: OPEN ALM/NML: ON / OFF	42B-B8823	B 2413	MCC E/D1-BG-D05F	II	7.2.11-B D2 RPU B2 1555			
	ZD9555	--	SIS PUMP ROOM TRAIN A COOLER UNIT ALM ON CONTACT: OPEN ALM/NML: ON / OFF	42B-A8D23	B 2407	MCC E/D1-BG-D05R	I	7.2.11-B D2 RPU A2 1555			

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD9557	--	SIS PUMP ROOM TRAIN B COOLER UNIT ALM ON CONTACT: OPEN ALM/NML: ON / OFF	428-B8D23	B 2814	MCC E/D1-BG-D050	II	7.2.11-B D2 RPU B2 1555			
	ZD9559	--	SFP HEAT EXCH & PUMP RM TRAIN A COOLER UNIT ALM ON CONTACT: CLSD ALM/NML: ON / OFF	428-A8B29	B 2812	MCC E/D1-BG-D05U	I	7.2.11-B D2 RPU A2 1555			
	ZD9561	--	SFP HEAT EXCH & PUMP RM TRAIN B COOLER UNIT ALM ON CONTACT: CLSD ALM/NML: ON / OFF	428-B8B29	B 2806	MCC E/D1-BG-D05V	II	7.2.11-B D2 RPU B2 1555			
	ZD9562	--	DG SUPPLY FAN 1 TRAIN A DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12050	B 2385	VALVE E/D1-BG-F01M	I	7.2.11-A D2 RPU A1 1566			
	ZD9564	--	DG SUPPLY FAN 3 TRAIN A DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12051	B 2804	VALVE E/D1-BG-F01M	I	7.2.11-A D2 RPU A1 1566			
	ZD9566	--	DG SUPPLY FAN 2 TRAIN B DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12053	B 2511	VALVE E/D1-BG-F01M	II	7.2.11-A D2 RPU B2 1566			
	ZD9568	--	DG SUPPLY FAN 4 TRAIN B DAMPER ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-12054	B 2339	VALVE E/D1-BG-F01M	II	7.2.11-A D2 RPU B2 1566			
	ZD9573	--	AUX FW PUMP HOUSE TRAIN A SUPPLY FAN ALM ON CONTACT: OPEN ALM/NML: OFF / ON	428-A8F89	B 2246	MCC E/D1-BG-G03A	I	7.2.11-B D2 RPU A2 1593			
	ZD9577	--	AUX FW PUMP HOUSE TRAIN B SUPPLY FAN ALM ON CONTACT: OPEN ALM/NML: OFF / ON	428-B8F89	B 2448	MCC E/D1-BG-G03B	II	7.2.11-B D2 RPU B2 1593			
	ZD9583	--	AUX BLDG VENT SYSTEM TRN A SUPPLY ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-12604	B 2391	VALVE E/D1-BG-D04A	I	7.2.11-A D2 RPU A1 1561			
	ZD9585	--	AUX BLDG VENT SYSTEM TRN B SUPPLY ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-12607	B 2405	VALVE E/D1-BG-D04B	II	7.2.11-A D2 RPU B2 1561			
	ZD9587	--	AUX BLDG VENT SYSTEM TRN A RETURN ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-12605	B 2397	VALVE E/D1-BG-D04A	I	7.2.11-A D2 RPU A1 1561			

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	BY	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD9589	--	AUX BLDG VENT SYSTEM TRN B RETURN ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-12006	B 2389	VALVE E/D1-B6-D048	II	7.2.11-A	D2 RPU B2	1561	
	ZD9594	--	RHR PUMP A TO HOT LEG ISOLATION VALVE ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8716A	B 2837	VALVE E/D1-BD-E02N	I	7.2.10-B	D2 RPU A1	1205	
	ZD9595	--	RHR PUMP A TO HOT LEG ISOLATION VALVE ALM ON CONTACT: CLSD ALM/NML: NOT CLOSED / CLOSED	HV-8716A	B 2861	VALVE E/D1-BD-E02N	I	7.2.10-B	D2 RPU A1	1205	
	ZD9596	--	RHR PUMP B TO HOT LEG ISOLATION VALVE ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8716B	B 2839	VALVE E/D1-BD-E02P	II	7.2.10-B	D2 RPU B2	1205	
	ZD9597	--	RHR PUMP B TO HOT LEG ISOLATION VALVE ALM ON CONTACT: CLSD ALM/NML: NOT CLOSED / CLOSED	HV-8716B	B 2863	VALVE E/D1-BD-E02P	II	7.2.10-B	D2 RPU B2	1205	
*	ZD9600	--	AMSAC LOW FW FLOW SG1 ALM ON CONTACT: CLSD ALM/NML: ACTUATED / NORMAL	FB-510C	B 2250	AMSAC	NNS	--	SOE	1626	X
*	ZD9601	--	AMSAC LOW FW FLOW SG2 ALM ON CONTACT: CLSD ALM/NML: ACTUATED / NORMAL	FB-520C	B 2251	AMSAC	NNS	--	SOE	1626	X
*	ZD9602	--	AMSAC LOW FW FLOW SG3 ALM ON CONTACT: CLSD ALM/NML: ACTUATED / NORMAL	FB-530C	B 2252	AMSAC	NNS	--	SOE	1626	X
*	ZD9603	--	AMSAC LOW FW FLOW SG4 ALM ON CONTACT: CLSD ALM/NML: ACTUATED / NORMAL	FB-540C	B 2253	AMSAC	NNS	--	SOE	1626	X
*	ZD9604	--	AMSAC ACTUATION ALM ON CONTACT: CLSD ALM/NML: ACTUATED / NORMAL	AMSAC	B 2254	AMSAC	NNS	--	SOE	1626	X
*	ZD9605	--	AMSAC 1ST STG TRB IMP CHMBR PRES CHAN 1 LO ALM ON CONTACT: CLSD ALM/NML: ACTUATED / NML	PB-505D	B 2255	AMSAC	NNS	--	SOE	1626	X
*	ZD9606	--	AMSAC 1ST STG TRB IMP CHMBR PRES CHAN 2 LO ALM ON CONTACT: CLSD ALM/NML: ACTUATED / NML	PB-506D	B 2256	AMSAC	NNS	--	SOE	1626	X

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	CLASS	INPUT VIA	SYSTEM	SPDS
*	ZD9687	--	AMSAC GENERAL WARNING ALM ON CONTACT: CLSD ALM/NML: ACTUATED / NORMAL	AMSAC	B 2267	AMSAC	NNS	--	-	SOE	1626	X
	ZD9670	--	SG1 FW BYP BLOC VALVE - OPEN ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-15196	B 2223	VALVE E/D1-BC-C04P	NNS	7.2.04-F	D2	SOE	1302	
	ZD9672	--	SG2 FW BYP BLOC VALVE - OPEN ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-15197	B 2225	VALVE E/D1-BC-C04P	NNS	7.2.04-F	D2	SOE	1302	
	ZD9674	--	SG3 FW BYP BLOC VALVE - OPEN ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-15198	B 2226	VALVE E/D1-BC-C04P	NNS	7.2.04-F	D2	SOE	1302	
	ZD9676	--	SG4 FW BYP BLOC VALVE - OPEN ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-15199	B 2228	VALVE E/D1-BC-C04P	NNS	7.2.04-F	D2	SOE	1302	
	ZD9678	--	RCS HOT LEG SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8228	B 2232	VALVE E/D1-BD-NW1M	I	6.2.03-D	C2	RPU A2	1212	X
	ZD9680	--	CONTAINMENT ATMOSPHERE SAMPLE ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8221	B 2234	VALVE	NNS	--	-	RPU N1	1513	
	ZD9881	--	CHARGING PUMP A MINIFLOW ISOL VLV ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8508A	B 2736	ISO PNL	NNS	7.2.03-E	D2	SOE	1208	
	ZD9882	--	CHARGING PUMP A MINIFLOW ISOL VLV ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8508A	P 2760	ISO PNL	NNS	7.2.03-E	D2	SOE	1208	
	ZD9883	--	CHARGING PUMP B MINIFLOW ISOL VLV ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8508B	B 2737	ISO PNL	NNS	7.2.03-E	D2	SOE	1208	
	ZD9884	--	CHARGING PUMP B MINIFLOW ISOL VLV ALM ON CONTACT: OPEN ALM/NML: NOT CLOSED / CLOSED	HV-8508B	B 2761	ISO PNL	NNS	7.2.03-E	D2	SOE	1208	
	ZD9885	--	CHARGING PUMP B MINIFLOW ISOL VLV ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8509A	B 2738	ISO PNL	NNS	7.2.03-E	D2	SOE	1208	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD9806	--	CHARGING PUMP B MINIFLOW ISOL VLV ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8809A	B 2762	ISO PNL	NNS	7.2.03-E	D2 SOE	1208	
	ZD9807	--	CHARGING PUMP A MINIFLOW ISOL VLV ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-8809B	B 2739	ISO PNL	NNS	7.2.03-E	D2 SOE	1208	
	ZD9808	--	CHARGING PUMP A MINIFLOW ISOL VLV ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-8809B	B 2763	ISO PNL	NNS	7.2.03-E	D2 SOE	1208	
	ZD9805	--	SI/CHARGING PUMPS SUCTION FRM A TIE VLV ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8807A	B 2748	ISO PNL	NNS	7.2.05-E	D2 SOE	1204	
	ZD9810	--	SI/CHARGING PUMPS SUCTION FRM A TIE VLV ALM ON CONTACT: OPEN ALM/NML: NOT CLSD / CLSD	HV-8807A	B 2764	ISO PNL	NNS	7.2.05-E	D2 SOE	1204	
	ZD9811	--	SI/CHARGING PUMPS SUCTION FRM B TIE VLV ALM ON CONTACT: CLSD ALM/NML: OPEN / NOT OPEN	HV-8807B	B 2741	ISO PNL	NNS	7.2.05-E	D2 SOE	1204	
	ZD9812	--	SI/CHARGING PUMPS SUCTION FRM B TIE VLV ALM ON CONTACT: OPEN ALM/NML: NOT CLSD / CLSD	HV-8807B	B 2765	ISO PNL	NNS	7.2.05-E	D2 SOE	1204	
	ZD9813	--	POST LOCA RX CAVITY PURGE UNIT B7001 ALM ON CONTACT: OPEN ALM/NML: ON / OFF	428-ABE29	B 2165	ISO PNL E/D1-BG-B02X	NNS	7.2.11-B	D2 SOE	1516	
	ZD9814	--	POST LOCA RX CAVITY PURGE UNIT B7002 ALM ON CONTACT: OPEN ALM/NML: ON / OFF	428-BBE29	B 2167	ISO PNL E/D1-BG-B02Y	NNS	7.2.11-B	D2 SOE	1516	
	ZD9815	--	CB AUX RELAY ROOM ESF COOLER UNIT A7001 ALM ON CONTACT: CLSD ALM/NML: ON / OFF	428-ABC22	B 2169	ISO PNL E/D1-BG-C07M	NNS	7.2.11-B	D2 SOE	1539	
	ZD9816	--	CB AUX RELAY ROOM ESF COOLER UNIT A7002 ALM ON CONTACT: CLSD ALM/NML: ON / OFF	428-BBA17	B 2171	ISO PNL E/D1-BG-C07N	NNS	7.2.11-B	D2 SOE	1539	
	ZD9817	--	SG1 MSIV UPSTREAM TRAIN A BYPASS ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-13005A	B 2728	VALVE E/D1-BC-W02H	I	5.2.05-F	B2 RPU	A1 1301	

KEY	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	D Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD9818	--	861 MSIV UPSTREAM TRAIN A BYPASS ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-13005A	B 2752	VALVE E/D1-BC-002H	I	5.2.05-F	B2 RPU A1	1301	
	ZD9819	--	861 MSIV UPSTREAM TRAIN B BYPASS ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-13006B	B 2732	VALVE E/D1-BC-002J	II	5.2.05-F	B2 RPU B1	1301	
	ZD9820	--	861 MSIV UPSTREAM TRAIN B BYPASS ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-13006B	B 2756	VALVE E/D1-BC-002J	II	5.2.05-F	B2 RPU B1	1301	
	ZD9821	--	864 MSIV UPSTREAM TRAIN A BYPASS ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-13006A	B 2729	VALVE E/D1-BC-002H	I	5.2.05-F	B2 RPU A1	1301	
	ZD9822	--	864 MSIV UPSTREAM TRAIN A BYPASS ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-13006A	B 2753	VALVE E/D1-BC-002H	I	5.2.05-F	B2 RPU A1	1301	
	ZD9823	--	864 MSIV UPSTREAM TRAIN B BYPASS ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-13006B	B 2733	VALVE E/D1-BC-002J	II	5.2.05-F	B2 RPU B1	1301	
	ZD9824	--	864 MSIV UPSTREAM TRAIN B BYPASS ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-13006B	B 2757	VALVE E/D1-BC-002J	II	5.2.05-F	B2 RPU B1	1301	
	ZD9825	--	862 MSIV UPSTREAM TAIN A BYPASS ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-13007A	B 2736	VALVE E/D1-BC-002H	I	5.2.05-F	B2 RPU A1	1301	
	ZD9826	--	862 MSIV UPSTREAM TRAIN A BYPASS ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-13007A	B 2754	VALVE E/D1-BC-002H	I	5.2.05-F	B2 RPU A1	1301	
	ZD9827	--	862 MSIV UPSTREAM TRAIN B BYPASS ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-13007B	B 2734	VALVE E/D1-BC-002J	II	5.2.05-F	B2 RPU B1	1301	
	ZD9828	--	862 MSIV UPSTREAM TRAIN B BYPASS ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	HV-13007B	B 2758	VALVE E/D1-BC-002J	II	5.2.05-F	B2 RPU B1	1301	
	ZD9829	--	863 MSIV UPSTREAM TRAIN A BYPASS ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	HV-13008A	B 2731	VALVE E/D1-BC-002H	I	5.2.05-F	B2 RPU A1	1301	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR CLASS	INPUT VIA	SYSTEM	SPDS
	ZD9830	--	363 MSIV UPSTREAM TRAIN A BYPASS ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	MV-13008A	B 2755	VALVE E/D1-BC-W02H	I	5.2.B5-F	B2 RPU A1	1301	
	ZD9831	--	363 MSIV UPSTREAM TRAIN B BYPASS ALM ON CONTACT: OPEN ALM/NML: NOT OPEN / OPEN	MV-13008B	B 2735	VALVE E/D1-BC-W02J	II	5.2.B5-F	B2 RPU B1	1301	
	ZD9832	--	363 MSIV UPSTREAM TRAIN B BYPASS ALM ON CONTACT: CLSD ALM/NML: CLOSED / NOT CLOSED	MV-13008B	B 2759	VALVE E/D1-BC-W02J	II	5.2.B5-F	B2 RPU B1	1301	
	ZD9841	--	MVLIS MV HOT LEG ISOLATION TRAIN A ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	ZIS-1310	M 2827	FLD	NNS	--	- RPU N1	1201	
									(WESTINGHOUSE ORG DEVICE SHOWS LIS,NOT ZIS)		
	ZD9842	--	MVLIS MV HEAD ISOLATION TRAIN A ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	ZIS-1311	M 2829	FLD	NNS	--	- RPU N1	1201	
									(WESTINGHOUSE ORG DEVICE SHOWS LIS,NOT ZIS)		
	ZD9843	--	MVLIS SEAL TABLE ISOLATION TRAIN A ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	ZIS-1312	M 2831	FLD	NNS	--	- RPU N1	1201	
									(WESTINGHOUSE ORG DEVICE SHOWS LIS,NOT ZIS)		
	ZD9844	--	MVLIS MV HOT LEG ISOLATION TRAIN B ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	ZIS-1320	M 2833	FLD	NNS	--	- RPU N1	1201	
									(WESTINGHOUSE ORG DEVICE SHOWS LIS,NOT ZIS)		
	ZD9845	--	MVLIS MV HEAD ISOLATION TRAIN B ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	ZIS-1321	M 2835	FLD	NNS	--	- RPU N1	1201	
									(WESTINGHOUSE ORG DEVICE SHOWS LIS,NOT ZIS)		
	ZD9846	--	MVLIS MV SEAL TABLE ISOLATION TRAIN B ALM ON CONTACT: OPEN ALM/NML: OPEN / NOT OPEN	ZIS-1322	M 2837	FLD	NNS	--	- RPU N1	1201	
									(WESTINGHOUSE ORG DEVICE SHOWS LIS,NOT ZIS)		
*	ZD9994	--	SOE CARD 1 FLIP-FLOP POINT ALM ON CONTACT: OPEN ALM/NML: OPEN / CLOSED	TEST POINT	GPC 2857	-	-	--	- SOE	1618	
*	ZD9995	--	SOE CARD 2 FLIP-FLOP POINT ALM ON CONTACT: OPEN ALM/NML: OPEN / CLOSED	TEST POINT	GPC 2859	-	-	--	- SOE	1618	
*	ZD9996	--	SOE CARD 3 FLIP-FLOP POINT ALM ON CONTACT: OPEN ALM/NML: OPEN / CLOSED	TEST POINT	GPC 2861	-	-	--	- SOE	1618	

REV	ERF SYMBOL	PROTEUS SYMBOL	SIGNAL DESCRIPTION	ORIGINATING DEVICE	B Y	SIGNAL SOURCE	SIGNAL CLASS	RG 1.97 VAR	RG 1.97 CLASS	INPUT VIA	SYSTEM	SPDS
	ZU9997	--	SOE CARD 1 TEST POINT ALM ON CONTACT: OPEN ALM/NML: OPEN / CLOSED	TEST POINT	GPC 2043	-	-	--	-	SOE	1618	
	ZD9998	--	SOE CARD 2 TEST POINT ALM ON CONTACT: OPEN ALM/NML: OPEN / CLOSED	TEST POINT	GPC 2045	-	-	--	-	SOE	1618	
	ZD9999	--	SOE CARD 3 TEST POINT ALM ON CONTACT: OPEN ALM/NML: OPEN / CLOSED	TEST POINT	GPC 2047	-	-	--	-	SOE	1618	

Approval	Vogtle Electric Generating Plant	Procedure No.
W 7 Kitchens	NUCLEAR OPERATIONS	14406-1
Date		Revision No.
2/6/89	Unit 1	3
	Georgia Power	Page No. 1 of 5

05-54-90

MANUAL SET NO. 7

BORON INJECTION FLOW PATH VERIFICATION - SHUTDOWN

1.0 PURPOSE

1.1 The purpose of this procedure is to verify that the valves in one operable boron injection flow path described in Technical Specification 3.1.2.1 are in the required position.

1.2 This surveillance satisfies Technical Specification 4.1.2.1b.

1.3 The frequency of this surveillance is at least once every 31 days.

2.0 APPLICABILITY

This surveillance is required for Modes 5 and 6.

3.0 PRECAUTIONS AND LIMITATIONS

NONE

INITIALS

4.0 PREREQUISITES OR INITIAL CONDITIONS

The Unit Shift Supervisor (USS) shall ensure this surveillance test does not affect other tests presently in progress or jeopardize plant operation prior to granting approval to perform this surveillance test.

USS APPROVAL

INFORMATION ONLY

INITIALS

5.0 INSTRUCTIONS

TEST STARTED _____ _____ _____
DATE TIME MODE

NOTES

a. Power operated valves (motor, air or solenoid) will be considered in the proper position if valves have power available and are capable of being repositioned to establish flow.

b. Valves or breakers should not be repositioned unless directed to do so by USS.

5.1 SELECT the operable borated water source(s) and circle same below.

BORIC ACID STORAGE TK REFUELING WATER STORAGE TK

5.2 For the selected boric acid source(s) VERIFY that 14225-1 "Operations Weekly Surveillance Logs" are active. INITIAL Figure 1.

5.3 If the Refueling Water Storage Tank (RWST) is the operable source, CHECK 14000-1 "Operations Shift & Daily Surveillance Logs" to verify RWST temperature is within limits. INITIAL Figure 1.

5.4 If the Positive Displacement Pump is utilized, VERIFY 14705-1, "Boron Injection Flow Rate Verification" is active, for the Positive Displacement Pump. INITIAL Figure 1.

5.5 If the Boric Acid Transfer Pump(s) are utilized VERIFY 14811-1, "Boric Acid Transfer Pumps and Discharge Check Valves Inservice Test" is active. INITIAL Figure 1.

5.6 If the Centrifugal Charging Pump(s) is utilized, VERIFY 14808-1, "Centrifugal Charging Pump And Check Valve Inservice Test" is active. INITIAL Figure 1.

5.7 COMPLETE Figure 1 by placing initials in the appropriate blocks for the boron injection flow path. Power operated valves must be operable and local manual valves must be open.

5.8 Using Figure 1, ENSURE a complete flow path from borated water source through operable pump to RCS exists.

6.0 ACCEPTANCE CRITERIA

The valves in the boron injection flow path shown on Figure 1 were found to be in the required status to provide at least one flow path of borated water to the RCS. All required surveillances are active.

7.0 EVALUATION AND REVIEW

7.1 TEST PURPOSE

[ ] Surveillance

[ ] Maintenance Retest

[ ] Other (explain) _____

7.2 Results obtained through performance of this procedure meet ACCEPTANCE CRITERIA of Section 6.0.

[ ] YES [ ] NO

7.2.1 If NO was checked, NOTIFY the USS and REFER to Technical Specification 3.1.2.1.

7.2.2 Comments (include any abnormal conditions and corrective actions taken): _____

_____

_____

_____

_____

USS notified of Test Completion and Results

_____ / / _____
Initials Date Time

Test Completed By:

_____ / / _____
Signature Date Time

Supervisory Review:

_____ / / _____
Signature Date Time

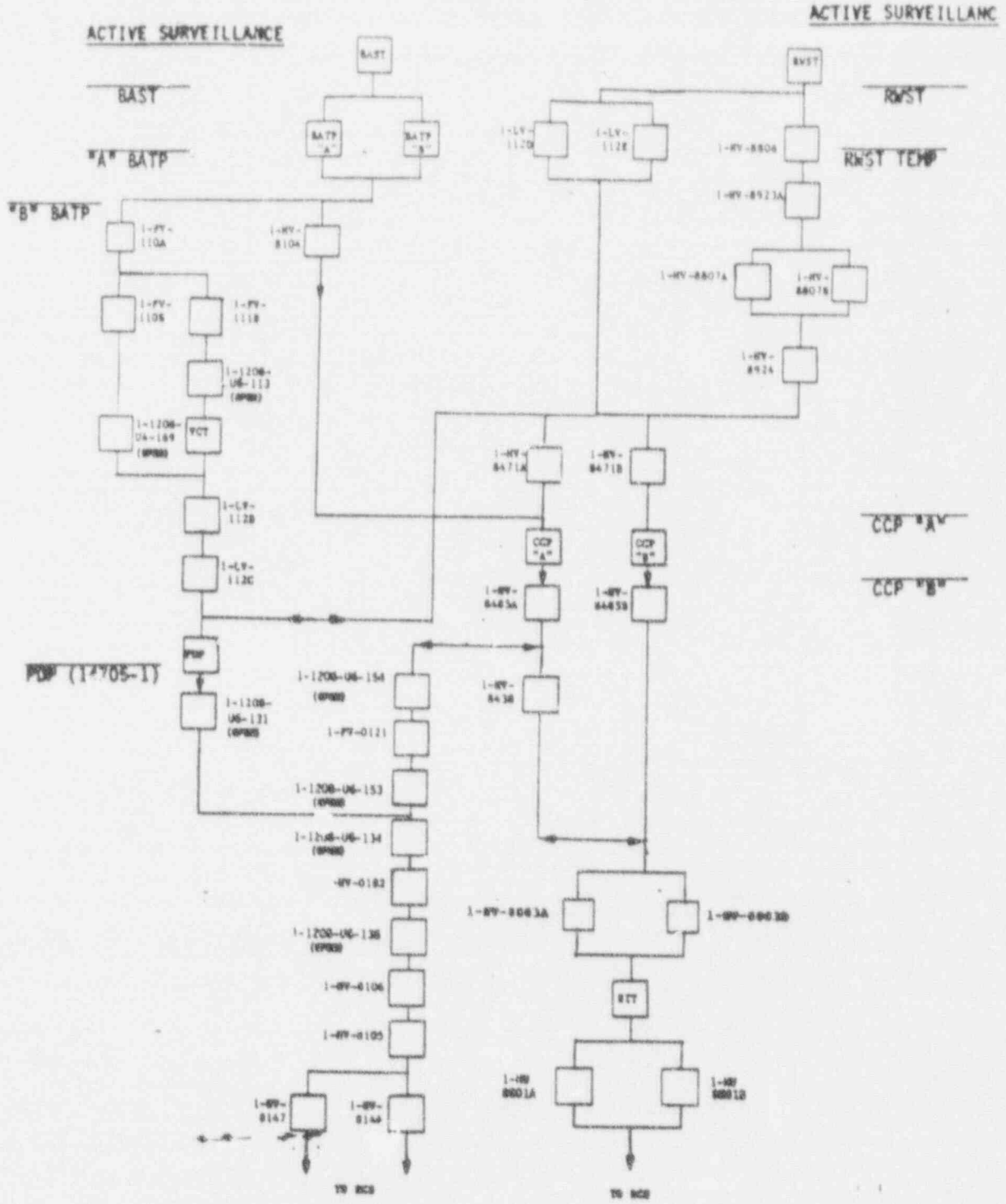
8.0 REFERENCES

8.1 P&ID's

8.1.1	1X4DB114	Chemical and Volume Control System
8.1.2	1X4DB116-1	Chemical and Volume Control System
8.1.3	1X4DB116-2	Chemical and Volume Control System
8.1.4	1X4DB118	Chemical and Volume Control System
8.1.5	1X4DB119	Safety Injection System
8.1.6	1X4DB121	Safety Injection System

8.2 VEGP Technical Specifications

END OF PROCEDURE TEXT



NOTE: Initial in appropriate box to indicate correct status. (OPERABLE for power operated valves OPEN for manual valves)

Completed by _____

Date _____

FIGURE 1

Date Issued:	Standing Order VOGTLE ELECTRIC GENERATING PLANT	Order No.:
3-1-90		1-90-05
	Unit 1 Georgia Power	Procedure Ref.:

Title: EMERGENCY BORATION FLOWPATH 05-55-90

Approved: _____ Operations Supervisor _____ Operations Superintendent

During the outage extensive work and clearances on CVCS will require special attention to our required Emergency Boration Flow Path.

In Mode 5 and 6 keep a laminated figure from 14406-1 at the RO desk. Mark-up each time you change the flowpath you are maintaining and copy the figure to the SSS.

Approval	Vogtle Electric Generating Plant NUCLEAR OPERATIONS	Procedure 27563-C
Date 3/25/90	Unit COMMON Georgia Power	Revision No. 2
		Page No. 1 of 75

J-52

FOR INFORMATION ONLY

GENERATOR AND ENGINE CONTROL PANEL FUNCTIONAL TEST PROCEDURE

REV.	REASONS FOR REVISION	DATE
0	New Procedure	11/02/89
1	Correct Typos	02/20/90
2	Correct Typos, Correct completion Sheet	

DUPE OF

1.0 PURPOSE

The purpose of this procedure is to verify the control system functions. This procedure is not intended to verify the calibration of the devices within the panel.

2.0 PRECAUTIONS AND LIMITATIONS

2.1 If only portions of the procedure are required:

2.1.1 Contact the Maintenance Foreman.

2.1.2 Use only the steps that apply.

2.1.3 Document the steps used in the comments section of the "Completion" or "Data" sheet.

2.1.4 N/A the steps that were not used.

2.2 Steps in this Procedure may be performed out of sequence only:

2.2.1 With prior approval of the Maintenance Foreman.

2.2.2 If they do not violate the intent of the Procedure.

2.2.3 Are documented in the "Comments" section of the "Completion" Sheet.

2.3 Maintenance area cleanliness in accordance with Procedure 21427-C, "Maintenance Cleanliness And Housekeeping Control".

3.0 PREREQUISITES AND INITIAL CONDITIONS

3.1 Prior to beginning work, notify QC if:

3.1.1 Hold points are indicated on the "Completion" AND/OR "Data Sheet".

3.1.2 The MWO/Work Package has a QC hold point.

3.2 Starting air pressure must be available to the control panel.

3.3 AC and DC power to the panel must be available.

3.4 Fuel supply to the engine is isolated and tagged out.

3.5 DG breaker is racked out to prevent inadvertent closure.

3.6 Local/Remote switch is in the remote position.

3.7 Both starting air receiver are above the low alarm set point.

4.0 TEST SET-UP MAINTENANCE MODE AND ENGINE ROLL CHECKOUT

4.1 TEST SET-UP

4.1.1 */* Verify all prerequisites and Initial conditions have been met.

4.1.2 */* Notify Shift supervisor of work to be performed.

4.1.3 */* Verify all applicable equipment is fully isolated and tagged in accordance with procedure 00304-C, "Equipment clearance and tagging".

4.1.4 */* Disconnect and lift instrument, control and power leads from the equipment as required.

a. Ensure each wire is marked so that it can be uniquely identified with its termination point.

b. Record their removal by wire number and termination point in the "Power and Signal Removal/Replacement Data" Sheet.

c. To install jumpers or lift wires, other than those directly associated with the equipment tag number(s) or scheme number(s) listed on the Work Order.

(1) Notify Shift Supervisor.

(2) Comply with his instructions.

NOTE

The following procedural steps are intended to prepare the engine control system for actual functional tests. All numbers shown in ( ) are wire numbers.

4.1.5 Trip - "Low Pressure Lube Oil":

4.1.5.1 */* Disconnect incoming tubing at bulkhead fitting E10-A in panel and cap bulkhead fitting.

4.1.5.2 */* Disconnect incoming tubing at bulkhead fitting E-10B in panel and cap bulkhead fitting.

4.1.5.3 */* Disconnect incoming tubing at bulkhead fitting E-10C in panel and cap bulkhead fitting.

4.1.6 Trip - "Low Pressure Turbocharger Lube oil":

4.1.6.1 */* Disconnect incoming tubing at bulkhead fitting E-92 in panel and cap bulkhead fitting.

4.1.7 Trip - "Low Pressure Jacket Water":

4.1.7.1 */* Disconnect incoming tubing at bulkhead fitting E-14 in panel and cap bulkhead fitting.

4.1.8 Open the following sliding link terminals:

4.1.8.1 */* A-Bank Starting Air Valve.
Terminals E5 (4) and E4 (2).

4.1.8.2 */* B-Bank Starting Air Valve.
Terminals L5 (105) and L4 (102).

4.1.8.3 Field Flash, Exciter Reg Enable.
Terminals E19 (53), E22 (56), E17 (51), and E21 (55).

4.1.8.4 */* Preset V.R. and Gov.:
Terminals E23 (57), E18 (52), and E24 (59).

4.1.8.5 */* Ready to Load, DG Brkr.:
Terminals F5 (77) and F6 (78).

4.1.8.6 */* Ready to Load, HVAC Sys.:
Terminals E57 (46) and E58 (47).

4.1.8.7 */* Ready to Load, Spare.
Terminals E59 (48) and E60 (49).

4.1.8.8 */* Start, Spare.
Terminals F1 (73) and F2 (74).

4.1.8.9 Stop, Spare.
/ Terminals F3 (75) and F4 (76).

4.1.8.10 Pre-position Gov and V.R.
/ Terminals L30 (170) and L31 (171).

4.1.8.11 186C Trip Delay
Terminals L32 (172) and L33 (173).

4.1.8.12 Field Flash, Exciter Reg Enable.
/ Terminals L23 (153), L20 (141), L21 (144), and L24 (155).

4.1.8.13 Trip 52G.
/ Terminals L51 (159) and L52 (160).

4.1.8.14 Emergency Stop.
/ Terminals L53 (164) and L54 (165).

4.1.8.15 Running, Spare.
/ Terminals L55 (166) and L56 (167).

4.1.8.16 Running, Spare.
/ Terminals L57 (168) and L58 (169).

4.1.8.17 Overspeed, Spare.
/ Terminals L59 (179) and L60 (180).

4.1.8.18 Running W/Delay.
/ Terminals L35 (175) and L36 (176).

4.1.8.19 Ready to Load - HVAC System.
/ Terminals L9 (137) and L10 (138).

4.1.8.20 Ready to Load - Spare.
/ Terminals L11 (139) and L12 (140).

4.1.8.21 Emergency Stop.
/ Terminals L14 (336) and L15 (337).

4.1.8.22 ERF Computer.
/ Terminals L49 (S4B1) and L50 (S4B2).

4.1.8.23 Emergency Stop Annunciation.
/ Terminals L25 (79-180) and L26 (90-180).

4.1.8.24 CC Fan #1.
/ Terminals C3 (244) and C9 (245).

4.1.8.25 CC Fan #2.
/ Terminals C5 (246) and C11 (247).

4.1.8.26 Generator Space Heater Control.
/ Terminals C7 (239) and C8 (240).

4.1.8.27 Running Contacts.
/ Terminals G3 (253), G4 (254), G5 (255), G6 (256), G7 (257), G8 (258), G9 (259), G10 (260), G11 (161), and G12 (162).

4.1.8.28 Running W/Delay Contacts.
/ Terminals G13 (263), G14 (264), G15 (265), G16 (266), G17 (267), G18 (268), G19 (269), G20 (270), G21 (271), G22 (272), G23 (273) and G24 (274).

4.1.8.29 Loss of DC Annunciation.
/ Terminals H1 (275) and H2 (276).

4.1.8.30 Mechanical Trouble Alarm.
/ Terminals H19 (298) and H20 (299).

4.1.8.31 Lockout Alarm.
/ Terminals H3 (277) and H4 (278).

4.1.8.32 Failed to Start.
/ Terminals H7 (281) and H8 (282).

4.1.8.33 Unit Available Local Control.
/ Terminals H9 (283) and H10 (284).

4.1.8.34 Unit Available.
/ Terminals H11 (285), H12 (286), H13 (287), H14 (288), H15 (289), and H16 (290).

4.1.8.35 Alarm.
/ Terminals H17 (296) and H18 (297).

4.1.8.36 Loss of DC Power.
/ Terminals A35 (612) and A36 (613).

4.1.8.37 DG Brkr Inop.
/ Terminals F7 (79) and F8 (80).

4.1.9 Open toggle switches to de-energize hourmeter.
/

4.1.10 A-Bank Starting Air Valve:

4.1.10.1 */* At on-engine "EJBA" Junction Box, disconnect engine wire number 4 and tape wire end.

4.1.11 B-Bank Starting Air Valve:

4.1.11.1 */* At on-engine "EJBB" Junction Box, disconnect engine wire number 105 and tape wire end.

4.1.12 */* Verify that all circuit breakers are closed.

4.1.13 */* Verify 60 psi at control air pressure gauge.

4.1.14 */* Verify 125 vdc across circuit breakers CB-1 and CB-2, CB-3 and CB-4.

4.1.15 Manual Permissive Start - "A" Side:

4.1.15.1 Jumper terminals E49 (3) and E50 (11).

4.1.16 Manual Permissive Start - "B" Side:

4.1.16.1 Jumper terminals L37 (106) and L42 (110).

4.2 MAINTENANCE MODE AND ENGINE ROLL CHECKOUT

4.2.1 */* Jumper terminals L45 (101) and L48 (129), Control Room permissive for maintenance mode.

4.2.2 Lockout Alarm & Unit Available.

4.2.2.1 */* Disconnect jumper across terminals H4 (278) and H12 (286) and verify:

4.2.2.2 */* Open contact across terminals H3 (277) and H4 (278).

4.2.2.3 */* Open contact across terminals H9 (283) and H10 (284).

4.2.2.4 */* Open contact across terminals H11 (285) and H12 (286).

4.2.2.5 */* Contact closure across terminals H13 (287) and H14 (288).

4.2.2.6 */* Contact closure across terminals H15 (289) and H16 (290).

4.2.3 Depress maintenance mode pushbutton and verify:

4.2.3.1 */* Engine shutdown cylinder is extended.

4.2.3.2 */* Maintenance lockout alarm is energized.

4.2.3.3 */* Unit available emergency status light is deenergized.

4.2.3.4 */* Group I pressure gauge indicates 0 psi.

4.2.3.5 */* The engine barring device lockout pin can be removed.

4.2.3.6 The stopping light is energized.

4.2.3.7 */* Contact closure across terminals B21 (565) and B22 (566).

4.2.3.8 */* Contact closure across terminals H3 (277) and H4 (278).

4.2.3.9 */* Contact closure across terminals H9 (283) and H10 (284).

4.2.3.10 */* Contact closure across terminals H11 (285) and H12 (286).

4.2.3.11 */* Open contact across terminals H13 (287) and H14 (288).

4.2.3.12 */* Open contact across terminals H15 (289) and H16 (290).

4.2.4 */* Reconnect jumper across H4 (278) and H12 (286).

4.2.5 Push engine roll pushbutton and verify:

4.2.5.1 */* 125 vdc across terminal E4 (2) and E5 (4), "A" side starting valve.

4.2.6 Push normal start pushbutton and verify:

4.2.6.1 */* No voltage across terminals E4 (2) and E5 (4), "A" side starting air valve.

4.2.6.2 */* No voltage across terminals L4 (102) and L5 (105), "B" side starting air valve.

4.2.7 */* Disconnect wire 564 (tape wire) at PS-46N and verify:

4.2.7.1 */* Relay R35 is de-energized.

4.2.7.2 */* Open contact across terminals B21 (565) and B22 (566).

4.2.7.3 */* Maintenance lockout alarm is de-energized.

4.2.8 Release engine barring device and verify:

4.2.8.1 */* Barring device engaged alarm energized.

4.2.8.2 */* Contact closure across terminals B27 (590) and B28 (591).

4.2.8.3 */* Relay R35 is energized.

4.2.9 Push return to operational pushbutton:

4.2.9.1 Push engine roll pushbutton and verify:

4.2.9.1.1 */* 125 vdc across terminals E4 (2) and E5 (4), "A" side starting valve.

4.2.9.2 Push normal start pushbutton and verify:

4.2.9.2.1 */* No voltage across terminals E4 (2) and E5 (4), "A" side starting air valve.

4.2.9.2.2 */* No voltage across terminals L4 (102) and L5 (105), "B" side starting air valve.

4.2.10 Lockout engine barring device and verify:

4.2.10.1 */* Barring device engaged alarm is de-energized.

4.2.10.2 */* Open contact across terminals B27 (590) and B28 (591).

4.2.10.3 Relay R35 is de-energized.
/

4.2.11 Reconnect wire 564 at pressure switch PS-46N, Maintenance lockout alarm and verify:
/

4.2.11.1 Relay R35 is energized.
/

4.2.11.2 Maintenance Lockout alarm is energized.
/

4.2.12 Push return to operational pushbutton and verify:

4.2.12.1 Engine shutdown cylinder is retracted.
/

4.2.12.2 Group I pressure gauge indicates 60 psi.
/

4.2.12.3 Maintenance lockout alarm is de-energized.
/

4.2.12.4 Unit available emergency status light is energized.
/

4.2.12.5 The engine barring device lockout pin is in the locked position.
/

4.2.12.6 The stopping light is de-energized.
/

4.2.12.7 Ensure barring device is retracted.
/

4.2.12.8 Locking pin is installed.
/

4.2.13 Push engine roll pushbutton and verify:

4.2.13.1 No voltage across terminals E4 (2) and E5 (4), "A" side starting air valve.
/

4.2.14 Open circuit breakers CB-1 and CB-2 and verify:

4.2.14.1 No voltage across solenoid valve Sol 202-6A ("A" circuit DC Power Solenoid), wires 1 and 2.
/

4.2.14.2 "A" power available light is de-energized.
/

4.2.14.3 */* Engine control panel "A" failure (pos 8-2) alarm is energized.

4.2.14.4 */* Contact closure across terminals A17 (466) and A18 (467).

4.2.15 */* Remove timer TD-1B from relay socket, field flash timer.

4.2.16 Push normal start push button and verify:

4.2.16.1 */* 125 vdc across terminals L4 (102) and L5 (105), starting air valve for 5 seconds.

4.2.16.2 */* Failure to start alarm is energized after 5 seconds.

4.2.16.3 */* Relay R1 is de-energized.

4.2.16.4 */* Contact closure across terminals H7 (281) and H8 (282).

4.2.16.5 */* Contact closure across terminals K33 (581) and K34 (582).

4.2.16.6 */* Relay R35 is energized.

4.2.16.7 */* Horn is energized.

4.2.17 Push the annunciator silent, acknowledge and reset pushbutton and verify:

4.2.17.1 */* Horn is de-energized.

4.2.17.2 */* Open contact across terminals H7 (281) and H8 (282).

4.2.17.3 */* Relay R35 is de-energized.

4.2.17.4 */* Failed to start alarm is de-energized.

4.2.18 Connect frequency generator to terminals L7 (118) and L8 (119). Push normal start pushbutton again and within 5 seconds turn on generator to 490 Hz (450 RPM) and verify:

4.2.18.1 Contact closure across terminals L35 (175) and L36 (176) after approx. 60 sec delay.
/

4.2.18.2 Contact closure across terminals L32 (172) and L33 (173) after approx. 60 sec delay.
/

4.2.18.3 No voltage across terminal L4 (102) and L5 (105), starting air valve.
/

4.2.18.4 Contact closure across terminals L55 (166) and L56 (167).
/

4.2.18.5 Open contact across terminals L57 (168) and L58 (169).
/

4.2.18.6 Unit running light is energized.
/

4.2.18.7 Failed to start alarm remains de-energized.
/

4.2.18.8 Closure across terminals L23 (153) and L21 (144), field flash pressure switch.
/

4.2.18.9 Open circuit across terminal L24 (155) and L23 (153), exciter reg enamble.
/

4.2.18.10 Contact closure across terminals L49 (S4B1) and L50 (S4B2), ERF computer.
/

4.2.18.11 Relays R1, R1AUX1, R2, R2AUX2 and R8 are energized.
/

4.2.18.12 Contact closure across terminals C3 (244) and C9 (245), CC Fan #1.
/

4.2.18.13 Contact closure across terminals C5 (246) and C11 (247), CC Fan #2.
/

4.2.18.14 Contact closure across terminals G3 (253) and G4 (254).
/

4.2.18.15 Contact closure across terminals G5 (255) and G6 (256).
/

4.2.18.16 Open contact across terminals G7 (257) and G8 (258).
/

4.2.18.17 Open contact across terminals G9 (259) and G10 (260).
/

4.2.18.18 Open contact across terminals G11 (261) and G12 (262).
/

4.2.18.19 Contact closure across terminals G13 (263) and G14 (264).
/

4.2.18.20 Contact closure across terminals G15 (265) and G16 (266).
/

4.2.18.21 Contact closure across terminals G17 (267) and G18 (268).
/

4.2.18.22 Open contact across terminals G19 (269) and G20 (270).
/

4.2.18.23 Open contact across terminals G21 (271) and G22 (272).
/

4.2.18.24 Open contact across terminals G23 (273) and G24 (274).
/

4.2.19 Push Maintenance Pushbutton and verify:
/

4.2.19.1 Maintenance mode alarm remains de-energized.
/

4.2.20 Push local stop push button and turn off frequency generstor and verify:

4.2.20.1 Open circuit across terminals L23 (153) and L21 (144), field flash pressure switch.
/

4.2.20.2 Engine shutdown cylinder is extended and verify that there is no air leakage at the pneumatic cylinder.
/

4.2.20.3 After approx. 120 sec, verify engine shutdown cylinder is retracted and vented.
/

4.2.20.4 Open contact across terminals L55 (166) and L56 (167).
/

4.2.20.5 Contact closure across terminals L57 (168) and L58 (169).
/

4.2.20.6 Unit running light is de-energized.
/

4.2.20.7 Open contact across terminals L35 (175) and L36 (176).
/

4.2.20.8 */* Open contact across terminals L32 (172) and L33 (173).

4.2.20.9 */* Open contact across terminals L49 (S4B1) and L50 (S4B2), ERF computer.

4.2.21 Push maintenance pushbutton and verify:

4.2.21.1 */* Maintenance mode alarm is energized.

4.2.22 Push return to operational pushbutton and verify:

4.2.22.1 */* Maintenance mode alarm is de-energized.

4.2.23 Install timer TD-1B into Relay Socket, field flash timer.

4.2.24 Momentarily jumper terminals L37 (106) and L43 (104), remote emergency start and verify:

4.2.24.1 */* 125 VDC across terminals L4 (102) and L5 (105), starting air solenoid.

4.2.24.2 Push maintenance mode pushbutton and verify:

4.2.24.2.1 */* Maintenance mode alarm indication remains de-energized.

4.2.24.3 */* Contact closure across terminals L23 (153) and L21 (144), field flash.

4.2.24.4 */* Turn on frequency generator (setting should be at 490 Hz). Check that relays R1, R1A and R2 are energized, if not, manually set relays.

4.2.24.5 */* Closure across Terminals L23 (153) and L21 (144), field flash pressure switch.

4.2.24.6 */* Safety injection signal light is energized.

4.2.24.7 */* Shutdown system active light de-energized.

4.2.24.8 */* No voltage across terminal L4 (102) and L5 (105), starting air solenoid.

4.2.24.9	*/*	Verify jumper across terminals L37 (106) and L43 (104)is removed.
4.2.24.10	*/*	Emergency start alarm is energized.
4.2.24.11	*/*	Contact closure across terminals B33 (601) and B34 (602), emergency start remote annunciator.
4.2.24.12	*/*	Contact closure across terminals L22 (151) and L24 (155), exciter reg enable.
4.2.25		Push normal stop push button and verify:
4.2.25.1	*/*	The stopping light remains de-energized.
4.2.26		Disconnect incoming tubing at bulkhead fitting E-18, high temp lube oil shutdown, after 60 seconds from completing step 24 above and verify:
4.2.26.1	*/*	Group I pressure gauge reads below 25 psi.
4.2.26.2	*/*	Engine shutdown cylinder is not extended.
4.2.26.3	*/*	Trip high temp lube oil alarm is energized.
4.2.26.4	*/*	The stopping light is not energized.
4.2.26.5	*/*	Contact closure across terminals J9 (426) and J10 (427), trip high temp lube oil remote annunciator.
4.2.26.6	*/*	Contact closure across terminals 6 and 7 at annunciator pos 5-1, trip high temp lube oil, spare contact.
4.2.27	*/*	Re-connect incoming tubing at bulkhead fitting E-18, high temp lube oil shutdown and verify:
4.2.27.1	*/*	Group I pressure gauge reads 60 PSI.
4.2.27.2	*/*	Trip high temp lube oil alarm is de-energized.
4.2.27.3	*/*	Open contact across terminals J9 (426) and J10 (427), trip high temp lube oil remote annunciator.

4.2.27.4 */* Open contact across terminals 6 and 7 at annunciator pos 5-1.

4.2.28 Push reset from loca pushbutton. Remove plug from bulkhead fitting E-92, trip low pressure turbo oil and turn off frequency generator and verify:

4.2.28.1 */* The stopping light is energized.

4.2.28.2 */* Trip low Pressure turbo oil alarm is energized.

4.2.28.3 */* Contact closure across terminals J21 (457) and J22 (458). Trip low press turbo oil remote annunciator.

4.2.28.4 */* Contact closure across terminals 10 and 11 at annunciator pos 5-2, trip low press turbo oil spare contact.

4.2.28.5 */* Engine shutdown cylinder is extended.

4.2.29 Manually transfer R10B relay contacts at the same time, push maintenance pushbutton and verify:

4.2.29.1 */* Maintenance mode alarm indication remains de-energized.

4.2.30 */* Reinstall plug on bulkhead fitting E-92. Trip low pressure turbo oil and jumper contact SS3B wires 101 and 123, ready to load, at "B: side speed transmitter and jumper wires 123 and 124 at relay UVR1B, under voltage relay and verify:

4.2.30.1 */* Relay R-11B is energized.

4.2.30.1.1 */* Contact closure across terminals L9 (137) and L10 (138), running-HVAC system.

4.2.30.1.2 */* Contact closure across terminals L11 (139) and L12 (140), running-spare.

4.2.30.1.3 */* Contact closure across terminals F5 (77) and F6 (78), ready to load - DG breaker.

4.2.30.1.4 */* Ready to load light is energized.

4.2.30.2 */* Remove jumper at SS3B contact, wires 101 and 123, ready to load at "B: side speed transmitter and remove jumper across wires 123 and 124 and verify:

4.2.30.2.1 */* Open contact across terminals L9 (137) and L10 (138), running-HVAC system.

4.2.30.2.2 */* Open contact across terminals L11 (139) and L12 (140), running-spare.

4.2.30.2.3 */* Open contact across terminals F5 (77) and F6 (78), ready to load-DG breaker.

4.2.30.2.4 */* Ready to load light is de-energized.

4.2.31 Release Emergency Start Button and turn on frequency generator and verify:

4.2.31.1 */* No voltage across terminal L4 (102) and L5 (105), starting air solenoid.

4.2.31.2 */* Relay R5B is energized.

4.2.32 Trip overspeed trip valves on engine and then turn off frequency generator and verify:

4.2.32.1 */* Relay R23B is energized.

4.2.32.2 */* Contact closure across terminals L51 (159) and L52 (160), trip 52G.

4.2.32.3 */* Contact closure across terminals L53 (164) and L54 (165), emergency stop.

4.2.32.4 */* Contact closure across terminals L59 (179) and L60 (180), overspeed-spare.

4.2 32.5 */* Contact closure across terminals L14 (336) and L15 (337), emergency stop.

4.2.32.6 */* Emergency stop light energized.

4.2.32.7 */* The stopping light energized.

4.2.32.8 */* Pressure at cylinder port of solenoid 3B.

4.2.32.9 */* Unit available emergency status light is de-energized.

4.2.32.9.1 */* Momentarily jumper pressure switch PS-23N, wires 225 and 226 and note no change in light status.

4.2.32.10 */* Overspeed trip alarm is energized.

4.2.32.11 */* Contact closure across terminal A9 (442) and A10 (443), overspeed remote annunciator.

4.2.32.12 */* Relay R35 is energized, locked out alarm.

4.2.32.12.1 Momentarily open sliding link F11 (79) and reset annunciator and verify:

4.3.32.12.1.1 */* Relay R35 remains energized, locked out alarm.

4.2.32.12.1.2 */* Disabled non-reset of emergency trip alarm is de-energized.

4.2.32.13 Push normal start pushbutton and verify:

4.2.32.13.1 */* No voltage across terminals E5 (4) and E4 (2), A-Bank starting air valve.

4.2.32.13.2 */* No voltage across terminals L5 (105) and L4 (102), B-Bank starting air valve.

4.2.33 */* Verify that break glass cover is reinstalled on emergency start pushbutton.

4.2.34 Depress reset from LOCA pushbutton.

4.2.35 Reset overspeed trip valves located on engine and verify:

4.2.35.1 */* Open contact across terminals L59 (179) and L60 (180), overspeed-spare.

4.2.35.2 */* Overspeed Trip alarm is de-energized.

4.2.35.3 */* Open contact across terminals A9 (442) and A10 (443).

4.2.36 Push emergency stop reset pushbutton and verify:

4.2.36.1 */* Relay R23B is de-energized.

4.2.36.2 */* Open contact across terminals L51 (159) and L52 (160), trip 52G.

4.2.36.3 */* Open contact across terminals L53 (164) and L54 (165), emergency stop.

4.2.36.4 */* Open contact across terminals L14 (336) and L15 (337), emergency stop.

4.2.36.5 */* Emergency stop light light de-energized.

4.2.36.6 The stopping light de-energized.

4.2.36.7 */* Relay R35 is de-energized, locked out alarm.

4.2.37 Jumper across terminals L39 (101) and L38 (113), loss of offsite power and verify:

4.2.37.1 */* 125 VDC across terminals L4 (102) and L5 (105), starting air solenoid.

4.2.37.2 */* DG auto start signal light is energized.

4.2.38 Remove jumper across terminals L39 (101) and L38 (113), loss of offsite power and verify:

4.2.38.1 */* No voltage across terminals L4 (102) and L5 (105), starting air solenoid.

4.2.38.2 */* DG auto start singal light is de-energized.

4.2.39 Manually transfer R6B relay contacts and at the same time push emergency stop reset button and verify:

4.2.39.1 */*	Contact closure across terminals L51 (159) and L52 (160).
4.2.39.2 */*	Release emergency stop reset button and then R6B relay contacts and verify:
4.2.39.2.1 */*	Relay R23B is energized.
4.2.39.2.2 */*	Contact closure across terminals L51 (159) and L52 (160).
4.2.39.2.3 */*	Contact closure across terminals L53 (164) and L54 (165).
4.2.40	Push emergency stop reset button to reset relay R23B.
4.2.41	Push emergency stop pushbutton and verify:
4.2.41.1 */*	Disabled non-reset of emergency trip alarm is energized.
4.2.41.2 */*	Contact closure across terminals A33 (503) and A34 (504), emergency trip-remote annunciator.
4.2.41.3 */*	Relay R35 is energized, locked out alarm.
4.2.42	Push emergency stop reset pushbutton and verify:
4.2.42.1 */*	Disabled non-reset of emergency trip alarm is de-energized.
4.2.42.2 */*	Open contact across terminals A33 (503) and A34 (504), emergency trip-remote annunciator.
4.2.42.3 */*	Relay R35 is de-energized, locked out alarm.
4.2.43	Disconnect frequency generator from terminals L7 (118) and L8 (119).
4.2.44 */*	Disconnect jumper across terminals L45 (101) and L48 (129), control room permissive for maintenance mode:
4.2.45	Close Circuit Breakers CB-1 and CB-2, and verify:

4.2.45.1	*/*	125 vdc across solenoid valve Sol 202-6A, "A" circuit DC power, wires 1 and 2.
4.2.45.2	*/*	"A" power available light is energized.
4.2.45.3	*/*	Reset annunciator and verify at engine control power A failure (pos 8-2) alarm is de-energized.
4.2.45.4	*/*	Open contact across terminals A17 (466) and A18 (467).
4.2.46		Open circuit breakers CB-3 and CB-4 and verify:
4.2.46.1	*/*	No voltage across solenoid valve Sol 202-6B, "B" circuit DC power, wires 101 and 102.
4.2.46.2	*/*	"B" power available light is de-energized.
4.2.46.3	*/*	Engine control power B Failure (pos 9-2) alarm is energized.
4.2.46.4	*/*	Contact closure across terminals A19 (469) and A 20 (470).
4.2.47		Remove timer TD-1A from socket, field flash timer:
4.2.48		Push normal start pushbutton and verify:
4.2.48.1	*/*	125 vdc across terminal E4 (2) and E5 (4), solenoid for 5 seconds.
4.2.48.2	*/*	Failure to start alarm is energized after 5 seconds.
4.2.49		Connect frequency generator to terminals E7 (20) and E8 (21). Push normal start pushbutton again and within 5 sec turn on generator to 490 Hz (450 RPM) and verify:
4.2.49.1	*/*	No voltage across terminal E4 (2) and E5 (4), starting air solenoid.
4.2.49.2	*/*	Closure across panel terminals E19 (53) and E17 (51), field flash pressure switch.
4.2.49.3	*/*	Open circuit across terminals E21 (55) and E19 (53), exciter reg enable.

4.2.49.4 */* Contact closure across terminals F1 (73) and F2 (74), start singal for customer's use.

4.2.49.5 */* Starting light is energized, for 5 seconds.

4.2.49.6 */* Relay R1 is energized, run/stop relay.

4.2.49.7 */* The running light is energized.

4.2.50 Disconnect incoming tubing line E-19, high temperature main bearing shutdown, to allow the system to shutdown, then turn off frequency generator and verify:

4.2.50.1 */* Engine shutdown cylinder is extended for approximately 2 minutes.

4.2.50.2 */* Closure across terminals E21 (55) and E19 (53), exciter reg enable after approx 2 minutes.

4.2.50.3 */* Trip high temperature engine main bearing alarm is energized.

4.2.50.4 */* Open circuit across terminals E19 (53) and E17 (51), field flash pressure switch.

4.2.50.5 */* Relays R1, R1 aux, and R2 are reset.

4.2.50.6 */* Contact closure across terminals L30 (170) and L31 (171) for approximately 2 minutes, pre-position gov and V.R.

4.2.50.7 */* Contact closure across terminals F3 (75) and F4 (76) for approximately 2 minutes, stop signal.

4.2.50.8 */* Unit running light is de-energized.

4.2.50.9 */* Unit stopping light is energized for approximately 2 minutes.

4.2.50.10 */* Contact closure across terminals A3 (432) and A4 (433), main bearing trip-remote annunciator.

4.2.50.11 */* Contact closure across terminals 6 and 7 at annunciator pos. 7-1, main bearing Trip.

4.2.51	After reconnecting line E-19, main bearing trip, verify:
4.2.51.1 */*	Trip high temp engine bearings alarm is de-energized.
4.2.51.2 */*	Contact is open across terminals A3 (432) and A4 (433), main bearing trip-remote annunciator.
4.2.51.3 */*	Contact is open across terminals 6 and 7 at annunciator pos 7-1, main bearing trip.
4.2.52	Install timer TD-1A into relay socket, field flash timer.
4.2.53	Momentarily jumper terminals E49 (3) and E51 (7) for remote emergency start and verify:
4.2.53.1 */*	125 vdc across terminals E4 (2) and E5 (4), starting air solenoid.
4.2.53.2 */*	Closure across terminals E19 (53) and E17 (51), field flash pressure switch.
4.2.53.3 */*	Turn on frequency generator (setting should still be at 490 Hz). Check that relays R1, R1A, and R2 are energized, if not , manually set relay.
4.2.53.4 */*	Shutdown system active light is de-energized.
4.2.53.5 */*	No voltage across terminals E4 (2) and E5 (4), starting air solenoid.
4.2.53.6 */*	Verify jumper across terminals E49 (3) and E51 (7) is removed.
4.2.53.7 */*	Contact closure across terminals E23 (57) and E18 (52), preset V.R. and gov.
4.2.54	Disconnect incoming tubing line E68, trip high pressure crankcase and verify:
4.2.54.1 */*	Trip high pressure crankcase alarm is energized.
4.2.54.2 */*	The engine shutdown cylinder is not extended.

4.2.54.3	*/*	Contact closure across terminals A5 (435) and A6 (436), high pressure crankcase remote annunciator.
4.2.54.4	*/*	Contact closure across terminals 6 and 7 at annunciator pos 8-1, high pressure crankcase spare contact.
4.2.55	*/*	Reconnect incoming tubing line E-68, trip high pressure crankcase shutdown and verify:
4.2.55.1	*/*	Trip high pressure crankcase alarm is de-energized.
4.2.55.2	*/*	Open contact across terminals A5 (435) and A6 (436) high pressure crankcase remove annunciator.
4.2.55.3	*/*	Open contact across terminals 6 and 7 at annunciator pos 8-1, high pressure crankcase spare contact.
4.2.55.4	*/*	Engine shutdown cylinder is not extended.
4.2.56		Push reset from loca pushbutton and disconnect incoming tubing line E-23H, high engine vibration shutdown. Turn off frequency generator and verify:
4.2.56.1	*/*	No voltage across terminals E4 (2) and E5 (4), starting air solenoid.
4.2.56.2	*/*	Closure across terminals E21 (55) and E19 (53, exciter reg. enable, after approximately 2 minutes.
4.2.56.3	*/*	Engine shutdown cylinder is extended for approx 2 minutes.
4.2.56.4	*/*	Trip vibration alarm is energized.
4.2.56.5	*/*	Contact closure across terminals A7 (439) and A8 (440), trip vibration remote annunciator.
4.2.56.6	*/*	Contact closure across terminals 6 and 7 and annunciator pos 9-1, trip vibration spare contact.
4.2.56.7	*/*	Open contact across terminals E23 (57) and E18 (52), preset V.R. and gov.

4.2.57 */*	Reconnect incoming tubing line E-23-H, trip engine vibration and verify	
4.2.57.1 */*	Trip vibration alarm is de-energized.	
4.2.57.2 */*	Open contact across terminals A7 (439) and A8 (440), trip vibration remote annunciator.	
4.2.57 3 */*	Open contact across terminals 6 and 7 at annunciator pos 9-1, trip vibration spare contact.	
4.2.58	Release emergency start pushbutton and turn on frequency generator. After 60 seconds, depress and install glass in the emergency start pushbutton push reset from loca pushbutton and disconnect plugged tubing line E-14, low pressure jacket water shutdown, and verify:	
4.2.58.1 */*	Trip low pressure jacket water alarm is energized.	
4.2.58.2 */*	Engine shutdown cylinder is extended for approximately 2 minutes.	
4.2.58.3 */*	Contact closure across terminals A27 (494) and A28 (495), trip low pressure jacket water remote annunciator.	
4.2.58.4 */*	Contact closure across terminals 6 and 7 at annunciator pos 17-1, low pressure jacket water spare contact.	
4.2.58.5 */*	Contact closure across terminals L51 (159) and L52 (160), for approximately 2 minutes.	
4.2.58.6 */*	Contact closure across terminals L23 (153) and L20 (141), exciter reg lockout, for approximately 2 minutes.	
4.2.58.7 */*	Contact closure across terminals E19 (53) and E22 (56), exciter reg lockout, for approximately 2 minutes.	
4.2.59 */*	Reconnect plug to panel tubing line E14, trip low pressure jacket water. Turn off frequency generator and verify:	

4.2.59.1	*/*	Trip low pressure jacket water alarm is de-energized.
4.2.59.2	*/*	Open contact across terminals A27 (494) and A28 (495), trip low pressure jacket water remote annunciator.
4.2.59.3	*/*	Open contact across terminals 6 and 7 at annunciator pos 17-1, low pressure jacket water spare contact
4.2.60		Jumper contact SS3A, wires 1 and 27, ready to load, at "A" side speed transmitter, jumper wires 27 and 28 at relay UVR1A, under voltage relay and verify:
4.2.60.1	*/*	Relay R-11A is energized and remove jumper after verification of R-11A and completion of steps 60.2, 3 and 4.
4.2.60.2	*/*	Contact closure across terminals E57 (46) and E58 (47), ready to load, HVAC system.
4.2.60.3	*/*	Contact closure across terminals E59 (48) and E60 (49), ready to load-spare.
4.2.60.4	*/*	Ready to load lights energized.
4.2.60.5	*/*	Open contact across terminals E57 (46) and E58 (47) ready to load - HVAC system.
4.2.60.6	*/*	Open contact across terminal E59 (48) and E60 (49) ready to load - HVAC system.
4.2.60.7	*/*	Ready to load light is de-energized.
4.2.60.8	*/*	Remove Jumper contact SS-3A, wires 1 and 27, ready to load, at "A: side speed transmitter and jumper at wires 27 and 28 at relay UVR1A, under voltage relay.
4.2.61		Jumper across terminals E54 (1) and E52 (15), loss of Off-site power.
4.2.61.1	*/*	125 VDC Across terminals E4 (2) and E5 (4), starting air solenoid.
4.2.61.2	*/*	Contact closure across terminals E23 (57) and E18 (52), preset V.R. and gov.

4.2.61.3 */*	DG auto start signal light is energized.
4.2.62 */*	Remove jumper across terminals E54 (1) and E52 (15), loss of Off-site power and verify:
4.2.62.1 */*	No voltage across terminals E4 (2) and E5 (4), starting air solenoid.
4.2.62.2 */*	Open contact across terminals E23 (57) and E18 (52), preset V.R. and gov.
4.2.62.3 */*	DG auto start singal light is de-energized.
4.2.63	Open circuit breakers CB-1 and CB-2 and verify:
4.2.63.1 */*	Unit available emergency status light is de-energized.
4.2.63.2 */*	Disabled D.C. start power failure alarm energized, energized, pos 24-2.
4.2.63.3 */*	Contact closure across terminals K31 (578) and K32 (579), disabled D.C. start power failure-remote annunciation.
4.2.64	Close circuit breakers CB-1, 2, 3, and 4 and verify:
4.2.64.1 */*	Unit available emergency status light is energized.
4.2.64.2 */*	Disabled D.C. start power failure alarm de-energized, pos. 24-2.
4.2.64.3 */*	Open contact across terminals K31 (578) and K32(79), disabled DC start power failure-remote annunciation.
4.2.65	Release emergency start pushbutton and turn on frequency generator. After approx 60 seconds, disconnect plug at tubing line E-10A and verify:
4.2.65.1 */*	Low oil pressure sensor malfunction alarm energized.
4.2.65.2 */*	Contact closure across terminals A15 (463) and A16 (464), low oil pressure sensor malfunction, remote annunciator.

4.2.65.3 */* Disconnect plug at tubing line E-10B.

4.2.65.4 */* Trip low pressure lube oil alarm is energized.

4.2.65.5 */* Low oil pressure sensor malfunction alarm de-energized.

4.2.65.6 */* Contact closure across terminals J15 (448) and J16 (449), low pressure lube oil trip-remote annunciator.

4.2.65.7 */* Contact closure across terminals 10 and 11 at annunciator pos 2-2, pressure lube oil trip spare contact.

4.2.65.8 */* Open contact across terminals A15 (463) and A16 (464), low oil pressure sensor malfunction remote annunciator.

4.2.65.9 */* Relay R23B is energized - emergency stop.

4.2.66 Depress emergency start pushbutton and install glass, push reset from loca, turn off frequency generator and reconnect plugs to tubing line E-10A and B, trip low pressure lube oil, depress emergency stop reset and verify:

4.2.66.1 */* Emergency stop relay R-23B is de-energized.

4.2.66.2 */* Open contact across terminals J15 (448) and J16 (449), low press lube oil trip - remote annunciator.

4.2.66.3 */* Open contact across terminals 10 and 11 at annunciator pos 2-2, pressure lube oil trip - spare contact.

4.2.67 Push normal start pushbutton and turn on frequency generator. After approx 60 seconds, disconnect plug from tubing line E10-B and verify:

4.2.67.1 */* Low oil pressure sensor malfunction alarm energized.

4.2.67.2 */* Disconnect plug from tubing line E10-C and verify.

4.2.67.2.1	*/*	Low oil pressure sensor malfunction alarm de-energized.
4.2.67.2.2	*/*	Trip low pressure lube oil shutdown alarm energized.
4.2.67.2.3	*/*	Contact closure across terminals L51 (159) and L52 (160), trip 52G, for approximately 2 minutes.
4.2.68		Turn off frequency generator and reconnect plugs to tubing lines E-10B and C.
4.2.69		Push normal start pushbutton and turn on frequency generator. After approx 60 seconds, disconnect plug from tubing line E10-C and verify:
4.2.69.1	*/*	Low oil pressure sensor malfunction alarm energized.
4.2.69.2	*/*	Disconnect plug from tubing line E10-A and verify.
4.2.69.2.1	*/*	Low oil pressure lube oil shutdown alarm energized.
4.2.70	*/*	Turn off frequency generator and reconnect plugs to tubing lines E10-A and C.
4.2.71		Push normal start pushbutton and turn on frequency generator. After approx 60 seconds, disconnect tubing line E16-A and verify:
4.2.71.1	*/*	High jacket water temp sensor malfunction alarm light is energized.
4.2.71.2	*/*	Contact closure across terminals A31 (500) and A32 (501), high jacket water temp sensor malfunction remote annunciator.
4.2.71.3	*/*	Disconnect tubing line E16-B, high temp jacket water and verify:
4.2.71.3.1	*/*	High jacket water temp sensor malfunction alarm de-energized.
4.2.71.3.2	*/*	High jacket water temp shutdown alarm energized.
4.2.71.3.3	*/*	Contact closure across terminals J33 (488) and J34 (489), high temp jacket water remote annunicator.

4.2.71.3.4	*/*	Contact closure across terminals 6 and 7 at annunciator pos 15-1, high temp jacket water - spare contact.
4.2.72	*/*	Turn off frequency generator and reconnect tubing lines E16-A and B and verify:
4.2.73	*/*	Push normal start pushbutton and turn on frequency generator. After approx 60 seconds, disconnect tubing line E16-B and verify:
4.2.73.1	*/*	Trip high temp jacket water alarm is de-energized.
4.2.73.2	*/*	Open contact across terminals J33 (488) and J34 (489), trip high temp jacket water - remote annunciator.
4.2.73.3	*/*	Open contact across terminals 6 and 7 at annunciator pos 15-1, high temp jacket water - spare contact.
4.2.73.4	*/*	High jacket water temp sensor malfunction alarm.
4.2.73.5	*/*	Disconnect tubing line E16-C and verify:
4.2.73.5.1	*/*	High temp jacket water shutdown alarm energized.
4.2.74	*/*	Turn off frequency generator and reconnect tubing lines E16-B and C.
4.2.75	*/*	Push normal start pushbutton and turn on frequency generator. After approximately 60 seconds, disconnect tubing line E16-C and verify.
4.2.75.1	*/*	High jacketwater temp sensor malfunction alarm.
4.2.75.2	*/*	Disconnect tubing line E16-A and verify.
4.2.75.2.1	*/*	High jacketwater temp shutdown alarm.
4.2.76	*/*	Turn off frequency generator and reconnect tubing line E16-A and C.

4.2.77	Test bypass. Release emergency start pushbutton after 60 seconds, and then push the test bypass pushbutton to verify.
4.2.77.1 */*	Group I pressure gauge is less than 25 PSI.
4.2.77.2 */*	Bypass test failure light is de-energized.
4.2.77.3	After Group I pressure gauge pressure returns to 60 PSI, depress emergency start pushbutton and install glass, push reset from loca and then push the test bypass pushbutton and verify.
4.2.77.3.1 */*	Bypass test failure light is energized.
4.2.78	Lube oil sump tank level. Push lube oil sump tank level pushbutton and verify:
4.2.78.1 */*	Sump tank level indicator is reading correctly by comparing it with the sump tank dip stick. Acceptance criteria: Indicator reading plus or minus 1/8 of full scale.
4.2.79	Day tank level. Push day tank level pushbutton and verify:
4.2.79.1 */*	Day tank level indicator is reading correctly by comparing it with the day tank dip stick. Acceptance criteria: indicator reading plus or minus 1/8 of full scale.
4.2.80	Annunciator. Push annunciator test button and verify:
4.2.80.1 */*	All alarm indicators are energized.
4.2.80.2 */*	Disconnect horn by disconnecting wire No. 402 at relay R-15 and tape wire end.
4.2.81	Push silence, back and Reset to reset annunciator.

4.2.82 Latch R2 relay, Group II Lockout, manually. Observe the annunciator board and determine if conditions displayed are valid. If conditions, either alarmed or cleared, are in the opposite state from what they should be, advise foreman for document and disposition. Then energize each individual alarm as listed below by momentarily either jumpering the sensor, pressure switch, relay or terminal, or disconnect the wire. Remove relays R16, R17, R18 and R20, also lift wire 437 at PS 22N and tape wire end.

4.2.82.1 Lube oil filter differential high, PS-4N, pos 6-2.
/

4.2.82.1.1 Contact closure across terminals A13 (460) and A14 (461) when alarm is energized and contact open when alarm is de-energized.
/

4.2.82.1.2 Relay R38, mechanical trouble alarm is energized at the same time as alarm.
/

4.2.82.1.3 Contact closure across terminals H19 (298) and H20 (299), mechanical trouble alarm at the same time as alarm is energized.
/

4.2.82.2 Turbo oil pressure low, right, PS 43N, pos 3-2.

4.2.82.2.1 Contact closure across terminals J17 (451) and J18 (452) when alarm is energized and contact open when alarm is de-energized.
/

4.2.82.2.2 Relay R38, mechanical trouble alarm is energized at the same time as alarm.
/

4.2.82.3 Turbo oil pressure low, left, PS 20N, pos 4-2.

4.2.82.3.1 Contact closure across terminals J19 (454) and J20 (455), when alarm is energized and contact open when alarm is de-energized.
/

4.2.82.3.2 Relay R38, mechanical trouble alarm is energized at the same time as alarm.
/

4.2.82.4 Lube oil pressure low, PS-25N, pos 1-2.

4.2.82.4.1 Contact closure across terminals J13 (445) and J14 (466) when alarm is energized and contact open when alarm is de-energized.
/

4.2.82.4.2 */*	Relay R38, mechanical trouble alarm is energized at the same time as alarm.
4.2.82.5	Loss of generator DC control power, terminals F11 (79) and F10 (89).
4.2.82.5.1 */*	Contact closure across terminals A21 (472) and A22 (473) when alarm is energized and contact open when alarm is de-energized.
4.2.82.6	High F.O. leak tank alarm, terminals C29 (411) and C30 (512) pos 13-2.
4.2.82.6.1 */*	Contact closure across terminals K5 (513) and K6 (514) when alarm is energized and contact open when alarm is de-energized.
4.2.82.7	Lube oil tank level low, terminal C25 (411) and C26 (428) pos 6-1.
4.2.82.7.1 */*	Contact closure across terminals A1 (429) and A2 (430) when alarm is energized and contact open when alarm is de-energized.
4.2.82.8	High level main tank, terminal C31 (411) and C32 (515) pos 14-2.
4.2.82.8.1 */*	Contact closure across terminals K7 (516) and K8 (517) when alarm is energized and contact open when alarm is de-energized.
4.2.82.9	Lube oil inlet temperature low, R16, pins 10 (411) and 9 (412) pos 1-1.
4.2.82.9.1 */*	Contact closure across terminals J1 (414) and J2 (415) when alarm is energized and contact open when alarm is de-energized.
4.2.82.9.2 */*	Relay R38, mechanical trouble alarm is energized at the same time as alarm.
4.2.82.10	Lube oil outlet temperature low, R17, pins 10 (411) and 9 (416) pos 2-1.
4.2.82.10.1 */*	Contact closure across terminals J3 (417) and J4 (418) when alarm is energized and contact open when alarm is de-energized.
4.2.82.10.2 */*	Relay R38, mechanical trouble alarm is energized at the same time as alarm.

4.2.82.11		Lube oil outlet temperature low, R16, pins 6 (419) and 7 (437) pos 3-1.
4.2.82.11.1	*/*	Contact closure across terminals J5 (420) and J6 (421) when alarm is energized and contact open when alarm is de-energized.
4.2.82.11.2	*/*	Relay R38, mechanical trouble alarm is energized at the same time as alarm.
4.2.82.12		Lube oil outlet temperature high, R17, pins 6 (422) and 7 (437) pos 4-1.
4.2.82.12.1	*/*	Contact closure across terminals J7 (423) and J8 (424) when alarm is energized and contact open when alarm is de-energized.
4.2.82.12.2	*/*	Relay R38, mechanical trouble alarm is energized at the same time as alarm.
4.2.82.13		Low level main tank, terminals D13 (411) and D14 (518) pos 15-2.
4.2.82.13.1	*/*	Contact closure across terminals K9 (519) and K10 (520) when alarm is energized and contact open when alarm is de-energized.
4.2.82.14		Generator under frequency, terminals F7 (79) and F9 (81) pos 16-2.
4.2.82.14.1	*/*	Contact closure across terminals B1 (522) and B2 (523) when alarm is energized and contact open when alarm is de-energized.
4.2.82.15		Spare alarm, terminals D19 (411) and D20 (527) pos 18-2.
4.2.82.15.1	*/*	Contact closure across terminals B5 (528) and B6 (529) when alarm is energized and contact open when alarm is de-energized.
4.2.82.16		Spare alarm, terminals D21 (411) and D22 (530) pos 19-2.
4.2.82.16.1	*/*	Contact closure across terminals B7 (531) and B8 (532) when alarm is energized and contact open when alarm is de-energized.
4.2.82.17		Disabled D.G. circuit breaker inoperable, terminals F7 (79) and F8 (80) pos 20-2.

4.2.82.17.1	*/*	Contact closure across terminals B9 (534) and B10 (535) when alarm is energized and contact open when alarm is de-energized.
4.2.82.17.2	*/*	Relay R35, locked out alarm is energized at the same time as alarm is energized.
4.2.82.18		Fuel oil day tank level high/low, terminals D17 (411) and D18 (524) pos 17-2.
4.2.82.18.1	*/*	Contact closure across terminals B3 (525) and B4 (526) when alarm is energized and contact open when alarm is de-energized.
4.2.82.19		Generator trouble, terminals E28 (79) and E29 (82) pos 21-1.
4.2.82.19.1	*/*	Contact closure across terminals K13 (538) and K14 (539) when alarm is energized and contact open when alarm is de-energized.
4.2.82.20		Fuel filter differential pressure high, PS-5N, pos 12-1.
4.2.82.20.1	*/*	Contact closure across terminals K3 (510) and K4 (511) when alarm is energized and contact open when alarm is de-energized.
4.2.82.20.2	*/*	Relay R38, mechanical trouble alarm is energized at the same time as alarm.
4.2.82.21		Low voltage, terminals E28 (79) and E30 (83) pos 22-1.
4.2.82.21.1	*/*	Contact closure across terminals K15 (541) and K16 (542) when alarm is energized and contact open when alarm is de-energized.
4.2.82.22		Fuel oil pressure low, PS-28N, pos 11-2.
4.2.82.22.1	*/*	Contact closure across terminals K1 (507) and K2 (508) when alarm is energized and contact open when alarm is de-energized.
4.2.82.22.2	*/*	Relay R38, mechanical trouble alarm is energized at the same time as alarm.
4.2.82.23		Jacket water pressure low, PS-22N, pos 16-1.

4.2.82.23.1 */* Contact closure across terminals A25 (491) and A26 (492) when alarm is energized and contact open when alarm is de-energized.

4.2.82.23.2 */* Relay R38, mechanical trouble alarm is energized at the same time as alarm.

4.2.82.24 High temperature gen control panel, terminals E28 (79) and E31 (84) pos 23-1.

4.2.82.24.1 */* Contact closure across terminals K17 (544) and K18 (545) when alarm is energized and contact open when alarm is de-energized.

4.2.82.25 Jacket water level low, terminals C27 (411) and C28 (496) pos 18-1.

4.2.82.25.1 */* Contact closure across terminals A29 (497) and A30 (498) when alarm is energized and contact open when alarm is de-energized.

4.2.82.26 Jacket water in temperature low, R18, pins 10 (411) and 9 (474) pos 11-1.

4.2.82.26.1 */* Contact closure across terminals J25 (476) and J26 (477) when alarm is energized and contact open when alarm is de-energized.

4.2.82.26.2 */* Relay R38, mechanical trouble alarm is energized at the same time as alarm.

4.2.82.27 Jacket water out temperature low, R21, pins 10 (411) and 9 (478) pos 12-1.

4.2.82.27.1 */* Contact closure across terminals J27 (479) and J28 (480) when alarm is energized and contact open when alarm is de-energized.

4.2.82.27.2 */* Relay R38, mechanical trouble alarm is energized at the same time as alarm.

4.2.82.28 Jacket water in temperature high, R18, pins 6 (481) and 7 (437) pos 13-1.

4.2.82.28.1 */* Contact closure across terminals J29 (482) and J30 (483) when alarm is energized and contact open when alarm is de-energized.

4.2.82.28.2 */* Relay R38, mechanical trouble alarm is energized at the same time as alarm.

4.2.82.29	Jacket water out temperature low, R21, pins 6 (484) and 7 (437) pos 14-1.
4.2.82.29.1 */*	Contact closure across terminals J31 (485) and J32 (486) when alarm is energized and contact open when alarm is de-energized.
4.2.82.29.2 */*	Relay R38, mechanical trouble alarm is energized at the same time as alarm.
4.2.82.30	Low excitation, terminals E28 (79) and E32 (85) pos 24-1.
4.2.82.30.1 */*	Contact closure across terminals K19 (547) and K20 (548) when alarm is energized and contact open when alarm is de-energized.
4.2.82.31	Engine control in local, terminals E28 (79) and E33 (86) pos 25-1.
4.2.82.31.1 */*	Contact closure across terminals K21 (550) and K22 (551) when alarm is energized and contact open when alarm is de-energized.
4.2.82.31.2 */*	With R-20 relay energized, verify contact closure across terminals H9 (283) and H10 (284) as long as alarm is energized.
4.2.82.32	Control air pressure low, PS-39N. Pos 21-2.
4.2.82.32.1 */*	Contact closure across terminals K25 (568) and K26 (569) when alarm is energized and contact open when alarm is de-energized.
4.2.82.33	Diesel start air pressure low, PS-3N1, and PS-4N1, pos 22-2.
4.2.82.33.1 */*	Contact closure across terminals K27 (572) and K28 (573) when alarm is energized and contact open when alarm is de-energized.
4.2.82.33.2 */*	Unit available emergency status light de-energized as long as alarm is energized.
4.2.82.34	Diesel start air pressure high, PS-3N2, and PS-4N2, pos 22-2.
4.2.82.34.1 */*	Contact closure across terminals K29 (575) and K30 (576) when alarm is energized and contact open when alarm is de-energized.

4.2.82.35	Generator fault, terminals E28 (79) and E34 (87) pos 26-1.
4.2.82.35.1 */*	Contact closure across terminals B13 (553) and B14 (554) when alarm is energized and contact open when alarm is de-energized.
4.2.82.35.2 */*	Contact closure across terminals 6 and 7 at annunciator pos 26-1 as long as alarm is energized.
4.2.82.36	Trip generator diff, terminals E28 (79) and E35 (88) pos 27-1.
4.2.82.36.1 */*	Contact closure across terminals B15 (556) and B16 (557) when alarm is energized and contact open when alarm is de-energized.
4.2.82.36.2 */*	Contact closure across terminals 6 and 7 at annunciator pos 27-1 as long as alarm is energized.
4.2.82.37	High generator bearing temp, terminals D31 (411) and D32 (558) pos 28-1.
4.2.82.37.1 */*	Contact closure across terminals B17 (559) and B18 (560) when alarm is energized and contact open when alarm is de-energized.
4.2.82.38	Spare alarm, terminals D33 (411) and D34 (561) pos 29-1.
4.2.82.38.1 */*	Contact closure across terminals B19 (562) and B20 (563) when alarm is energized and contact open when alarm is de-energized.
4.2.82.39	Switch not in auto, terminals D11 (411) and D12 (586) also E55 (79) and E56 (91) pos 26-2.
4.2.82.39.1 */*	Contact closure across terminals B25 (587) and B26 (588) when alarm is energized and contact open when alarm is de-energized.
4.2.82.40	Panel intrusion, pos 28-2.
4.2.82.40.1 */*	Contact closure across terminals B29 (595) and B30 (596) when alarm is energized and contact open when alarm is de-energized.
4.2.82.41	High temp engine control panel, pos 29-2.

4.2.82.41.1 */*	Contact closure across terminals B31 (598) and B32 (599) when alarm is energized and contact open when alarm is de-energized.
4.2.82.42 */*	Install relays R16, R17, R18 and R20. Also reconnect lifted wire 437 to PS22N.
4.2.83 */*	Reset R2 relay, Group II lockout, manually.
4.2.84	Close shutoff valve tubing connection E31L and vent pressure, starting air pressure L.B. and verify: Trip low pressure lube oil -
4.2.84.1 */*	No pressure at starting air pressure L.B. gauge.
4.2.84.2	Momentarily jumper terminals L37 (106) and L43 (104), remote emergency start and verify.
4.2.84.2.1 */*	120 volt D.C. across terminal L4 (102) and L5 (105), starting air solenoid.
4.2.84.3	Momentarily jumper terminals E49 (3) and E51 (7), remote emergency start and verify.
4.2.84.3.1 */*	120 volt A.C. across terminal E5 (4) and E4 (2) starting air solenoid.
4.2.85	Close shutoff valve tubing connection E31R and vent Pressure Below 150 PSIG starting air pressure R.B. and verify:
4.2.85.1 */*	Pressure Below 150 PSIG at starting air pressure R.B. gauge.
4.2.85.2 */*	No pressure at starting air pressure L.B. gauge.
4.2.85.3	Momentarily jumper terminals L37 (106) and L43 (104), remote emergency start and verify:
4.2.85.3.1 */*	No voltage across terminals L4 (102) and L5 (105), starting air solenoid.
4.2.85.4	Momentarily jumper terminals E49 (3) and E51 (7) remote emergency start and verify:
4.2.85.4.1 */*	No voltage across terminals E5 (4) and E4 (2), starting air solenoid.

4.2.86	Open shutoff valve E31R and E31L and verify jumpers are removed across terminals L37 (106) and L43 (104) and L4 (102) and L5 (105).
4.2.87	Open circuit breaker CB-9 and CB-10 and verify:
4.2.87.1 */*	Contact closure across terminals H1 (275) and H2 (276).
4.2.87.2 */*	Contact closure across terminals A35 (612) and A36 (613).
4.2.88	Close circuit breaker CB-9 and CB-10 and verify:
4.2.88.1 */*	Open contact closure across terminals H1 (275) and H2 (276).
4.2.88.2 */*	Open contact closure across terminals A35 (612) and A36 (613).
4.2.89	Trip low pressure lube oil.
4.2.89.1 */*	Trip low pressure lube oil - remove plug at bulkhead fitting E-10A and connect incoming tubing line.
4.2.89.2 */*	Trip low pressure lube oil - remove plug at bulkhead fitting E-10B and connect incoming tubing line.
4.2.89.3 */*	Trip low pressure lube oil - remove plug at bulkhead fitting E-10C and connect incoming tubing line.
4.2.90 */*	Trip - low pressure turbo oil. Remove plug at bulkhead fitting E92 and connect incoming tubing line.
4.2.91 */*	Trip - low pressure jacket water. Remove plug at bulkhead fitting E-14 and connect incoming tubing line.
4.2.92	Close the following sliding link terminals:
4.2.92.1 */*	A-Bank starting air valve. Terminals E5 (4) and E4 (2).
4.2.92.2 */*	B-Bank starting air valve. Terminals L5 (105) and L4 (102).

4.2.92.3 */* Field flash, exciter reg enable. Terminals E19 (53), E22 (56), E17 (51), and E21 (55).

4.2.92.4 * Preset V.R. and Gov. Terminals E23 (57), E18 (52), and E24 (59).

4.2.92.5 */* Ready to load, DG brkr. Terminals F5 (77) and F6 (78).

4.2.92.6 */* Ready to load, HVAC sys. Terminals E57 (46) and E58 (47).

4.2.92.7 */* Ready to load, spare. Terminals E59 (48) and E60 (49).

4.2.92.8 */* Start, spare. Terminals F1 (73) and F2 (74).

4.2.92.9 Stop, spare. Terminals F3 (75) and F4 (76).

4.2.92.10 */* Pre-position Gov and V.R. Terminals L30 (172) and L32 (171).

4.2.92.11 */* 186C Trip delay. Terminals L32 (172) and L33 (173).

4.2.92.12 */* Field flash, exciter reg enable. Terminals L23 (153), L20 (141), L21 (144), and L24 (155).

4.2.92.13 */* Trip 52G. Terminals L51 (159) and L52 (160).

4.2.92.14 */* Emergency stop. Terminals L53 (164) and L54 (165).

4.2.92.15 */* Running, spare. Terminals L55 (166) and L56 (167).

4.2.92.16 */* Running, spare. Terminals L57 (168) and L58 (169).

4.2.92.17 */* Overspeed, spare. Terminals L59 (179) and L60 (180).

4.2.92.18 */* Running W/Delay. Terminals L35 (175) and L36 (176).

4.2.92.19 */* Ready to load - HVAC system. Terminals L9 (137) and L10 (138).

4.2.92.20 */* Ready to load - spares. Terminals L11 (139) and L12 (140).

4.2.92.21 */* Emergency stop Terminals L14 (336) and L15 (337).

4.2.92.22 */* ERF computer. Terminals L49 (S4B1) and L50 (S4B2).

4.2.92.23 */* Emergency stop annunciation. Terminals L25 (no wire number) and L26 (no wire number).

4.2.92.24 */* CC Fan #1. Terminals C3 (244) and C9 (245).

4.2.92.25 */* CC Fan #2. Terminals C5 (246) and C11 (242).

4.2.92.26 */* Generator space heater control. Terminals C7 (239) and C8 (240).

4.2.92.27 */* Running contacts. Terminals G3 (253), G4 (254), G5 (255), G6 (256), G7 (257), G8 (258), G9 (259), G10 (260), G11 (161), and G12 (162).

4.2.92.28 */* Running W/Delay contacts. Terminals G13 (263), G14 (264), G15 (265), G16 (266), G17 (267), G18 (268), G19 (269), G20 (270), G21 (271), G22 (272), G23 (273), and G24 (274).

4.2.92.29 */* Loss of DC annunciation. Terminals H1 (275) and H2 (276).

4.2.92.30 */* Mechanical trouble alarm. Terminals H19 (298) and H20 (299).

4.2.92.31 */* Lockout alarm. Terminals H3 (277) and H4 (278).

4.2.92.32 */* Failed to start. Terminals H7 (281) and H8 (282).

4.2.92.33 */* Unit available local control. Terminals H9 (283) and H10 (284).

4.2.92.3 */* Unit available. Terminals H11 (285), H12 (286), H13 (287), H14 (288), H15 (289), and H16 (290).

4.2.92.35 */* Alarm. Terminals H17 (296) and H18 (297).

4.2.92.36 */* Loss of DC power. Terminals A35 (612) and A36 (613).

4.2.92.37 */* DG Brkr inop. Terminals F7 (75) and F8 (80).

4.2.93 */* Open toggle switches to allow hourmeter to be energized.

4.2.94 */* A-Bank starting air valve. Reconnect engine wire number 4 at engine "EJBA" junction box.

4.2.95 */* B-Bank starting air valve. Reconnect engine wire number 105 at engine "EJBB" junction box.

4.2.96 */* Reconnect the horn by reconnecting wire No. 402 at relay R-15, connection is across from wire No. 401A.

4.2.97 */* Manual permissive start "A" side, remove jumper across terminals E49 (3) and E50 (11).

4.2.98 */* Manual permissive start "B" side, remove jumper across terminals L37 (106) and L42 (110).

4.2.99 */* Disconnect frequency generator from terminals E7 (20) and E8 (21).

4.2.100 */* Panel check. Check for disconnected/plugged tubing or fittings. Check for any jumper/disconnected wires. Check for any open terminal links. Control panel should now be operational for engine start.

4.2.101 */* Notify Shift Supervisor that required maintenance is complete.

5.0 ACCEPTANCE CRITERIA

5.1 Maintenance performed using this procedure is acceptable when:

5.1 1 The "Completion" Sheet is properly filled out.

5.1.2 Deviations from the Procedure data and recommended settings have been reviewed on a case-by-case basis with the Maintenance Foreman.

5.1.3 Divations have been identified in the "Comments" section of the "Completion" Sheet.

5.1.4 The "Completion" Sheet has been approved.

5.1.5 Maintenance Work Orders have been written and submitted for conditions evaluated as needing attention.

6.0 REFERENCES

6.1 00304-C, "Equipment Clearance And Tagging"

6.1.1 20407-C, "Maintenance Cleanliness And Housekeeping Control"

6.2 AX4AK01-509 "Transamerica Deleval Instruction Manual"

Sheet 1 of 1

POWER AND SIGNAL REMOVAL/REPLACEMENT DATA SHEET

[ ] Safety Related/QC Holdpoints [ ] Non-Safety Related

NOTES

a. To install jumpers and/or lift wires, other than those directly associated with the equipment tag(s)/scheme number(s) listed on the Work Order, notify the Shift Supervisor and comply with his instructions.

b. Ensure that each lead (wire) is marked so it can be uniquely identified with its termination point.

c. Independent verification is only required on safety related equipment. Place N/A in independent verification block for non-safety related equipment.

d. If the worker leaves the immediate proximity of the work or the work is interrupted, complete and install a "Jumper and Lifted Wire" tag per 00306-C, "Temporary Jumper And Lifted Wire Control". Instead of Control Number use the Procedure number on the tag.

e. If holdpoints do not apply, NA QC Verification block.

f. If applicable, tags shall remain intact and will only be removed by the independent verifier.

REMOVAL					RECONNECTION		
IDENTIFY LEADS LIFTED, JUMPERS INSTALLED, LINES OPEN, ETC.	LOCATION PANEL OR JUNCTION BOX	PERFORMED BY/DATE	INDEPENDENT VERIFICATION BY/DATE	QC VER.F. BY/DATE	PERFORMED BY/DATE	INDEPENDENT VERIFICATION BY/DATE	QC VERIF. BY/DATE

COMPLETION SHEET

PROCEDURE	REVISION	SHEET
27563-C	2	1 OF 30
TAG NO.	DESCRIPTION	
SERIAL NO.	MANUFACTURER	MODEL
TEST EQUIPMENT USED	M&TE #	[] Safety Related/QC Hold Point [] Non-Safety Related

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.1.1	Prerequisites met	___/___	___	___/___
4.1.2	Shift Supervisor notified	___/___	___	___/___
4.1.5.1	Tubing E-10A disconnected	___/___	___	___/___
4.1.5.2	Tubing E-10B disconnected	___/___	___	___/___
4.1.5.3	Tubing E-10C disconnected	___/___	___	___/___
4.1.6.1	Tubing E-92 disconnected	___/___	___	___/___
4.1.7.1	Tubing E-14 disconnected	___/___	___	___/___
4.1.8.1	A-Bank Starting Air Valve. Terminals E5 (4) and E4 (2).	___/___	___	___/___
4.1.8.2	B-Bank Starting Air Valve. Terminals L5 (105) and L4 (102).	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.1.8.3	Field Flash, Exciter Reg Enable. Terminals E19 (53), E22 (56), E17 (51), and E21 (55).	/		/
4.1.8.4	Preset V.R. and Gov.: Terminals E23 (57), E18 (52), and E24 (59).	/		/
4.1.8.5	Ready to Load, DG Brkr.: Terminals F5 (77) and F6 (78).	/		/
4.1.8.6	Ready to Load, HVAC Sys.: Terminals E57 (46) and E58 (47).	/		/
4.1.8.7	Ready to Load, Spare. Terminals E59 (48) and E60 (49).	/		/
4.1.8.8	Start, Spare. Terminals F1 (73) and F2 (74).	/		/
4.1.8.9	Stop, Spare. Terminals F3 (75) and F4 (76).	/		/
4.1.8.10	Pre-position Gov and V.R. Terminals L30 (170) and L31 (171).	/		/
4.1.8.11	186C Trip Delay Terminals L32 (172) and L33 (173).	/		/
4.1.8.12	Field Flash, Exciter Reg Enable. Terminals L23 (153), L20 (141), L21 (144), and L24 (155).	/		/
4.1.8.13	Trip 52G. Terminals L51 (159) and L52 (160).	/		/
4.1.8.14	Emergency Stop. Terminals L53 (164) and L54 (165).	/		/

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.1.8.15	Running, Spare. Terminals L55 (166) and L56 (167).	___/___	___	___/___
4.1.8.16	Running, Spare. Terminals L57 (168) and L58 (169).	___/___	___	___/___
4.1.8.17	Overspeed, Spare. Terminals L59 (179) and L60 (180).	___/___	___	___/___
4.1.8.18	Running W/Delay. Terminals L35 (175) and L36 (176).	___/___	___	___/___
4.1.8.19	Ready to Load - HVAC System. Terminals L9 (137) and L10 (138).	___/___	___	___/___
4.1.8.20	Ready to Load - Spare. Terminals L11 (139) and L12 (140).	___/___	___	___/___
4.1.8.21	Emergency Stop. Terminals L14 (336) and L15 (337).	___/___	___	___/___
4.1.8.22	ERF Computer. Terminals L49 (S4B1) and L50 (S4B2).	___/___	___	___/___
4.1.8.23	Emergency Stop Annunciation. Terminals L25 (79-180) and L26 (90-180).	___/___	___	___/___
4.1.8.24	CC Fan #1. Terminals C3 (244) and C9 (245).	___/___	___	___/___
4.1.8.25	CC Fan #2. Terminals C5 (246) and C11 (247).	___/___	___	___/___
4.1.8.26	Generator Space Heater Control. Terminals C7 (239) and C8 (240).	___/___	___	___/___
4.1.8.27	Running Contacts. Terminals G3 (253), G4 (254), G5 (255), G6 (256), G7 (257), G8 (258), G9 (259), G10 (260), G11 (161), and G12 (162).	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.1.8.28	Running W/Delay Contacts. Terminals G13 (263), G14 (264), G15 (265), G16 (266), G17 (267), G18 (268), G19 (269), G20 (270), G21 (271). G22 (272), G23 (273) and G24 (274).	___/___	___	___/___
4.1.8.29	Loss of DC Annunciation. Terminals H1 (275) and H2 (276).	___/___	___	___/___
4.1.8.30	Mechanical Trouble Alarm. Terminals H19 (298) and H20 (299).	___/___	___	___/___
4.1.8.31	Lockout Alarm. Terminals H3 (277) and H4 (278).	___/___	___	___/___
4.1.8.32	Failed to Start. Terminals H7 (281) and H8 (282).	___/___	___	___/___
4.1.8.33	Unit Available Local Control. Terminals H9 (283) and H10 (284).	___/___	___	___/___
4.1.8.34	Unit Available. Terminals H11 (285), H12 (286), H13 (287), H14 (288), H15 (289), and H16 (290).	___/___	___	___/___
4.1.8.35	Alarm. Terminals H17 (296) and H18 (297).	___/___	___	___/___
4.1.8.36	Loss of DC Power. Terminals A35 (612) and A36 (613).	___/___	___	___/___
4.1.8.37	DG Brkr Inop. Terminals F7 (79) and F8 (80).	___/___	___	___/___
4.1.9	Toggle switches to hourmeter open.	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.1.10.1	At on-engine "EJBA" Junction Box, disconnect engine wire number 4 and tape wire end.	___/___	___	___/___
4.1.11.1	At on-engine "EJBb" Junction Box, disconnect engine wire number 105 and tape wire end.	___/___	___	___/___
4.1.12	Verify that all circuit breakers are closed.	___/___	___	___/___
4.1.13	Verify 60 psi at control air pressure gauge.	___/___	___	___/___
4.1.14	Verify 125 vdc across circuit breakers CB-1 and CB-2, CB-3 and CB-4.	___/___	___	___/___
4.2.1	Jumper terminals L45 (101) and L48 (129), Control Room permissive for maintenance mode.	___/___	___	___/___
4.2.2.1	Disconnect jumper across terminals H4 (278) and H12 (286) and verify:	___/___	___	___/___
4.2.2.2	Open contact across terminals H3 (277) and H4 (278).	___/___	___	___/___
4.2.2.3	Contact OPEN	___/___	___	___/___
4.2.2.4	Contact OPEN	___/___	___	___/___
4.2.2.5	Contact CLOSED	___/___	___	___/___
4.2.2.6	Contact CLOSED	___/___	___	___/___
4.2.3.1	Shutdown Cylinder EXTENDED	___/___	___	___/___
4.2.3.2	Lockout alarm ENERGIZED	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.3.3	Light De-Energized	/		/
4.2.3.4	Gauge indicates 0 PSI	/		/
4.2.3.5	Lockout Pin REMOVED	/		/
4.2.3.6	STOPPING light ENERGIZED	/		/
4.2.3.7	Contact CLOSED	/		/
4.2.3.8	Contact CLOSED	/		/
4.2.3.9	Contact CLOSED	/		/
4.2.3.10	Contact CLOSED	/		/
4.2.3.11	Contact OPEN	/		/
4.2.3.12	Contact OPEN	/		/
4.2.4	Jumper Removed	/		/
4.2.5.1	125VDC present	/		/
4.2.6.1	No voltage present	/		/
4.2.6.2	No voltage present	/		/
4.2.7	Wire disconnected	/		/
4.2.7.1	Relay R-35 De-energized	/		/
4.2.7.2	Contact OPEN	/		/
4.2.7.3	Lockout alarm de-energized	/		/
4.2.8.1	Barring device engaged alarm ENERGIZED	/		/

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.8.2	Contact CLOSED	___/___	___	___/___
4.2.8.3	Relay R-35 ENERGIZED	___/___	___	___/___
4.2.9.1.1	125VDC Present	___/___	___	___/___
4.2.9.2.1	No voltage present	___/___	___	___/___
4.2.9.2.2	No voltage present	___/___	___	___/___
4.2.10.1	Barring device engaged alarm ENERGIZED	___/___	___	___/___
4.2.10.2	Contact OPEN	___/___	___	___/___
4.2.10.3	Relay R-35 DE-ENERGIZED	___/___	___	___/___
4.2.11	Wire Reconnected	___/___	___	___/___
4.2.11.1	Relay R-35 DE-ENERGIZED	___/___	___	___/___
4.2.11.2	Lockout alarm ENERGIZED	___/___	___	___/___
4.2.12.1	Shutdown cylinder RETRACTED	___/___	___	___/___
4.2.12.2	Pressure Gauge reads 60PSI	___/___	___	___/___
4.2.12.3	Lockout alarm DE-ENERGIZED	___/___	___	___/___
4.2.12.4	Emergency status light ENERGIZED	___/___	___	___/___
4.2.12.5	Lockout pin in LOCKED position	___/___	___	___/___
4.2.12.6	STOPPING light DE-ENERGIZED	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.12.7	BARRING device RETRACTED	/		/
4.2.12.8	Locking pin INSTALLED	/		/
4.2.13.1	No voltage PRESENT	/		/
4.2.14.1	No voltage PRESENT	/		/
4.2.14.2	"A" power light DE-ENERGIZED	/		/
4.2.14.3	Panel "A" failure alarm ENERGIZED	/		/
4.2.14.4	Contact CLOSED	/		/
4.2.15	Timer REMOVED	/		/
4.2.16.1	125VDC PRESENT	/		/
4.2.16.2	Alarm ENERGIZED	/		/
4.2.16.3	Relay DE-ENERGIZED	/		/
4.2.16.4	Contact CLOSED	/		/
4.2.16.5	Contact CLOSED	/		/
4.2.16.6	Relay R-35 ENERGIZED	/		/
4.2.16.7	Horn ENERGIZED	/		/
4.2.17.1	Horn DE-ENERGIZED	/		/
4.2.17.2	Contact OPEN	/		/
4.2.17.3	Relay R-35 DE-ENERGIZED	/		/

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.17.4	Failed to start alarm DE-ENERGIZED	/		/
4.2.18.1	Contact CLOSED	/		/
4.2.18.2	Contact CLOSED	/		/
4.2.18.3	No voltage PRESENT	/		/
4.2.18.4	Contact CLOSED	/		/
4.2.18.5	Contact CLOSED	/		/
4.2.18.6	Running light ENERGIZED	/		/
4.2.18.7	Failed to start alarm DE-ENERGIZED	/		/
4.2.18.8	Contact CLOSED	/		/
4.2.18.9	Contact OPEN	/		/
4.2.18.10	Contact CLOSED	/		/
4.2.18.11	Relay R 1 ENERGIZED	/		/
4.2.18.12	Contact CLOSED	/		/
4.2.18.13	Contact CLOSED	/		/
4.2.18.14	Contact CLOSED	/		/
4.2.18.15	Contact CLOSED	/		/
4.2.18.16	Contact OPEN	/		/
4.2.18.17	Contact OPEN	/		/
4.2.18.18	Contact OPEN	/		/
4.2.18.19	Contact CLOSED	/		/
4.2.18.20	Contact CLOSED	/		/

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.18.21	Contact CLOSED	/		/
4.2.18.22	Contact OPEN	/		/
4.2.18.23	Contact OPEN	/		/
4.2.18.24	Contact OPEN	/		/
4.2.19	Maintenance Button Pushed	/		/
4.2.19.1	Maintenance mode alarm DE-ENERGIZED	/		/
4.2.20.1	Contact OPEN	/		/
4.2.20.2	Shutdown cylinder EXTENDED	/		/
4.2.20.3	Cylinder retracted and VENTED	/		/
4.2.20.4	Contact OPEN	/		/
4.2.20.5	Contact CLOSED	/		/
4.2.20.6	Unit running light DE-ENERGIZED	/		/
4.2.20.7	Contact OPEN	/		/
4.2.20.8	Contact OPEN	/		/
4.2.20.9	Contact OPEN	/		/
4.2.21.1	Maintenance mode alarm ENERGIZED	/		/
4.2.22.1	Maintenance mode alarm DE-ENERGIZED	/		/
4.2.24.1	125VDC PRESENT	/		/
4.2.24.2.1	Maintenance mode alarm DE-ENERGIZED	/		/

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.24.3	Contact CLOSED	___/___	___	___/___
4.2.24.4	Relays ENERGIZED	___/___	___	___/___
4.2.24.5	Contact CLOSED	___/___	___	___/___
4.2.24.6	Safety injection signal light ENERGIZED	___/___	___	___/___
4.2.24.7	Shutdown light DE-ENERGIZED	___/___	___	___/___
4.2.24.8	No voltage on solenoid	___/___	___	___/___
4.2.24.9	Jumper REMOVED	___/___	___	___/___
4.2.24.10	EMERGENCY start alarm ENERGIZED	___/___	___	___/___
4.2.24.11	Contact CLOSED	___/___	___	___/___
4.2.24.12	Contact CLOSED	___/___	___	___/___
4.2.25.1	Stopping light DE-ENERGIZED	___/___	___	___/___
4.2.26.1	Pressure gauge below 25 PSI	___/___	___	___/___
4.2.26.2	Shutdown cylinder NOT EXTENDED	___/___	___	___/___
4.2.26.3	Hi temp lube oil alarm ENERGIZED	___/___	___	___/___
4.2.26.4	Stopping light NOT ENERGIZED	___/___	___	___/___
4.2.26.5	Contact CLOSED	___/___	___	___/___
4.2.26.6	Contact CLOSED annunciator "ON"	___/___	___	___/___
4.2.27	Tubing E-18 RECONNECTED	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.27.1	Group 1 pressure gauge 60 PSI	___/___	___	___/___
4.2.27.2	Hi temp alarm DE-ENERGIZED	___/___	___	___/___
4.2.27.3	Contact OPEN	___/___	___	___/___
4.2.27.4	Contact OPEN	___/___	___	___/___
4.2.28.1	Stopping light ENERGIZED	___/___	___	___/___
4.2.28.2	Lo pressure alarm ENERGIZED	___/___	___	___/___
4.2.28.3	Contact CLOSED	___/___	___	___/___
4.2.28.4	Contact CLOSED	___/___	___	___/___
4.2.28.5	Engine shutdown Cylinder EXTENDED	___/___	___	___/___
4.2.29.1	Maintenance mode alarm DE-ENERGIZED	___/___	___	___/___
4.2.30	Plug installed on E-92	___/___	___	___/___
4.2.30.1	Relay R11B ENERGIZED	___/___	___	___/___
4.2.30.1.1	Contact CLOSED	___/___	___	___/___
4.2.30.1.2	Contact CLOSED	___/___	___	___/___
4.2.30.1.3	Contact CLOSED	___/___	___	___/___
4.2.30.1.4	Ready to load light ENERGIZED	___/___	___	___/___
4.2.30.2	Jumper Removed	___/___	___	___/___
4.2.30.2.1	Contact OPEN	___/___	___	___/___
4.2.30.2.2	Contact OPEN	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.30.2.3	Contact OPEN	___/___	___	___/___
4.2.30.2.4	Ready to load light ENERGIZED	___/___	___	___/___
4.2.31.1	No voltage PRESENT	___/___	___	___/___
4.2.31.2	Relay R-5B ENERGIZED	___/___	___	___/___
4.2.32.1	Relay R-23B ENERGIZED	___/___	___	___/___
4.2.32.2	Contact CLOSED	___/___	___	___/___
4.2.32.3	Contact CLOSED	___/___	___	___/___
4.2.32.4	Contact CLOSED	___/___	___	___/___
4.2.32.5	Contact CLOSED	___/___	___	___/___
4.2.32.6	Emergency Stop ENERGIZED	___/___	___	___/___
4.2.32.7	Stopping light ENERGIZED	___/___	___	___/___
4.2.32.8	Pressure at Solenoid 3B	___/___	___	___/___
4.2.32.9	Unit available light DE-ENERGIZED	___/___	___	___/___
4.2.32.9.1	No change in status light	___/___	___	___/___
4.2.32.10	Overspeed alarm ENERGIZED	___/___	___	___/___
4.2.32.11	Contact CLOSED	___/___	___	___/___
4.2.32.12	Relay R-35 ENERGIZED	___/___	___	___/___
4.2.32.12.1.1	Relay R-35 ENERGIZED	___/___	___	___/___
4.2.32.12.1.2	Emergency trip DE-ENERGIZED	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.32.13.1	No voltage present	/		/
4.2.32 13.2	No voltage present	/		/
4.2.33	Cover INSTALLED	/		/
4.2.35.1	Contact OPEN	/		/
4.2.35.2	Overspeed trip DE-ENERGIZED	/		/
4.2.35.3	Contact OPEN	/		/
4.2.36.1	Relay R23B DE-ENERGIZED	/		/
4.2.36.2	Contact OPEN	/		/
4.2.36.3	Contact OPEN	/		/
4.2.36.4	Contact OPEN	/		/
4.2.36.5	Emergency stop light DE-ENERGIZED	/		/
4.2.36.6	Stopping light DE-ENERGIZED	/		/
4.2.36.7	Relay R-35 DE-ENERGIZED	/		/
4.2.37.1	125VDC present	/		/
4.2.37.2	DG Auto start signal ENERGIZED	/		/
4.2.38.1	No voltage present	/		/
4.2.38.2	DG Auto start signal DE-ENERGIZED	/		/
4.2.39.1	Concact CLOSED	/		/
4.2.39.2.1	Relay R23B ENERGIZED	/		/
4.2.39.2.2	Contact CLOSED	/		/

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.39.2.3	Contact CLOSED	___/___	___	___/___
4.2.41.1	Emergency trip alarm is ENERGIZED	___/___	___	___/___
4.2.41.2	Contact CLOSED	___/___	___	___/___
4.2.41.3	Relay R-35 ENERGIZED	___/___	___	___/___
4.2.42.1	Emergency trip alarm DE-ENERGIZED	___/___	___	___/___
4.2.42.2	Contact OPEN	___/___	___	___/___
4.2.42.3	Relay R-35 DE-ENERGIZED	___/___	___	___/___
4.2.44	Jumper Disconnected	___/___	___	___/___
4.2.45.1	125VDC across solenoid 202-6A	___/___	___	___/___
4.2.45.2	Power available light ENERGIZED	___/___	___	___/___
4.2.45.3	Annunciator DE-ENERGIZED	___/___	___	___/___
4.2.45.4	Contact OPEN	___/___	___	___/___
4.2.46.1	No voltage across solenoid 202-6B	___/___	___	___/___
4.2.46.2	Power availuble light DE-ENERGIZED	___/___	___	___/___
4.2.46.3	Power "B" failure ALARM ENERGIZED	___/___	___	___/___
4.2.46.4	CONTACT CLOSED	___/___	___	___/___
4.2.48.1	125VDC PRESENT	___/___	___	___/___
4.2.48.2	FAILURE TO START ALARM ENERGIZED	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.49.1	No voltage present	___/___	___	___/___
4.2.49.2	CONTACT CLOSED	___/___	___	___/___
4.2.49.3	OPEN CIRCUIT	___/___	___	___/___
4.2.49.4	CONTACT CLOSED	___/___	___	___/___
4.2.49.5	STARTING LIGHT ENERGIZED	___/___	___	___/___
4.2.49.6	Relay R1 ENERGIZED	___/___	___	___/___
4.2.49.7	RUNNING LIGHT ENERGIZED	___/___	___	___/___
4.2.50.1	SHUTDOWN CYLINDER EXTENDED	___/___	___	___/___
4.2.50.2	Contact Closure	___/___	___	___/___
4.2.50.3	High Temperature trip ENERGIZED	___/___	___	___/___
4.2.50.4	OPEN CIRCUIT	___/___	___	___/___
4.2.50.5	Relay R1, R1AUX, and R2 are reset	___/___	___	___/___
4.2.50.6	Contact Closed	___/___	___	___/___
4.2.50.7	Contact closed	___/___	___	___/___
4.2.50.8	Unit running light DE-ENERGIZED	___/___	___	___/___
4.2.50.9	Stopping light ENERGIZED	___/___	___	___/___
4.2.50.10	Contact CLOSED	___/___	___	___/___
4.2.50.11	CONTACT CLOSED	___/___	___	___/___
4.2.51.1	Hi bearing temp ALARM DE-ENERGIZED	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.51.2	CONTACT OPEN	/		/
4.2.51.3	CONTACT OPEN	/		/
4.2.53.1	125V DC PRESENT	/		/
4.2.53.2	CONTACT CLOSED	/		/
4.2.53.3	RELAYS R1, R1A R2, ENERGIZED	/		/
4.2.53.4	SHUTDOWN SYSTEM ACTIVE Light DE-ENERGIZED	/		/
4.2.53.5	NO VOLTAGE PRESENT	/		/
4.2.53.6	Jumper Removed	/		/
4.2.53.7	Contact CLOSED	/		/
4.2.54.1	Hi Pressure Alarm ENERGIZED	/		/
4.2.54.2	ENGINE SHUTDOWN CYLINDER NOT EXTENDED	/		/
4.2.54.3	CONTACT CLOSED	/		/
4.2.54.4	CONTACT CLOSED	/		/
4.2.55	TUBING E-68 RECONNECTED	/		/
4.2.55.1	Hi Pressure Alarm DE-ENERGIZED	/		/
4.2.55.2	CONTACT OPEN	/		/
4.2.55.3	CONTACT OPEN	/		/
4.2.55.4	SHUTDOWN CYLINDER NOT EXTENDED	/		/
4.2.56.1	No voltage present	/		/

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.56.2	CONTACT CLOSED	/		/
4.2.56.3	SHUTDOWN CYLINDER EXTENDED	/		/
4.2.56.4	VIBRATION ALARM ENERGIZED	/		/
4.2.56.5	CONTACT CLOSED	/		/
4.2.56.6	CONTACT CLOSED	/		/
4.2.56.7	CONTACT OPEN	/		/
4.2.57	TUBING E-23-H RECONNECTED	/		/
4.2.57.1	VIBRATION ALARM DE-ENERGIZED	/		/
4.2.57.2	CONTACT OPEN	/		/
4.2.57.3	CONTACT OPEN	/		/
4.2.58.1	Jacket Water Lo PRESSURE ENERGIZED	/		/
4.2.58.2	ENGINE SHUTDOWN CYLINDER EXTENDED	/		/
4.2.58.3	CONTACT CLOSED	/		/
4.2.58.4	CONTACT CLOSED	/		/
4.2.58.5	CONTACT CLOSED	/		/
4.2.58.6	CONTACT CLOSED	/		/
4.2.58.7	CONTACT CLOSED	/		/
4.2.59	TUBING E-14 RECONNECTED	/		/
4.2.59.1	JACKET WATER ALARM DE-ENERGIZED	/		/

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.59.2	CONTACT OPEN	/		/
4.2.59.3	CONTACT OPEN	/		/
4.2.60.1	RELAY R-11A ENERGIZED	/		/
4.2.60.2	CONTACT CLOSED	/		/
4.2.60.3	CONTACT CLOSED	/		/
4.2.60.4	READY TO LOAD LIGHT ENERGIZED	/		/
4.2.60.5	CONTACT OPEN	/		/
4.2.60.6	CONTACT OPEN	/		/
4.2.60.7	READY TO LOAD LIGHT DE-ENERGIZED	/		/
4.2.60.8	JUMPER REMOVED	/		/
4.2.61.1	125VDC PRESENT	/		/
4.2.61.2	CONTACT CLOSED	/		/
4.2.61.3	AUTO START LIGHT ENERGIZED	/		/
4.2.62	REMOVE JUMPER	/		/
4.2.62.1	NO VOLTAGE PRESENT	/		/
4.2.62.2	CONTACT OPEN	/		/
4.2.62.3	AUTO START	/		/
4.2.63.1	UNIT AVAILABLE LIGHT DE-ENERGIZED	/		/
4.2.63.2	POWER FAILURE ALARM ENERGIZED	/		/
4.2.63.3	CONTACT CLOSED	/		/

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.64.1	UNIT AVAILABLE STATUS LIGHT ENERGIZED	___/___	___	___/___
4.2.64.2	START POWER FAILURE ALARM DE-ENERGIZED	___/___	___	___/___
4.2.64.3	CONTACT OPEN	___/___	___	___/___
4.2.65.1	PRESSURE SENSOR MALFUNCTION ALARM ENERGIZED	___/___	___	___/___
4.2.65.2	CONTACT CLOSED	___/___	___	___/___
4.2.65.3	TUBING E-10B DISCONNECTED	___/___	___	___/___
4.2.65.4	LUBE OIL ALARM ENERGIZED	___/___	___	___/___
4.2.65.5	PRESSURE SENSOR MALFUNCTION ALARM DE-ENERGIZED	___/___	___	___/___
4.2.65.6	CONTACT CLOSED	___/___	___	___/___
4.2.65.7	CONTACT CLOSED	___/___	___	___/___
4.2.65.8	CONTACT OPEN	___/___	___	___/___
4.2.65.9	RELAY R23D DEENERGIZED	___/___	___	___/___
4.2.66.1	RELAY R23D DEENERGIZED	___/___	___	___/___
4.2.66.2	CONTACT OPEN	___/___	___	___/___
4.2.66.3	CONTACT OPEN	___/___	___	___/___
4.2.67.1	MALFUNCTION ALARM ENERGIZED	___/___	___	___/___
4.2.67.2.	PLUG REMOVED FROM TUBING E-10C	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.67.2.1	LO OIL PRESSURE ALARM DE-ENERGIZED	___/___	___	___/___
4.2.67.2.2	LUBE OIL SHUTDOWN ALARM ENERGIZED	___/___	___	___/___
4.2.67.2.3	CONTACT CLOSED	___/___	___	___/___
4.2.69.1	MALFUNCTION ALARM ENERGIZED	___/___	___	___/___
4.2.69.2	PLUG E-10A DISCONNECTED	___/___	___	___/___
4.2.69.2.1	LUBE OIL SHUTDOWN ALARM ENERGIZED	___/___	___	___/___
4.2.70	PLUGS RECONNECTED TO TUBING E10A and E10C	___/___	___	___/___
4.2.71.1	JACKET WATER TEMP SENSOR MALFUNCTION ALARM ENERGIZED	___/___	___	___/___
4.2.71.2	CONTACT CLOSED	___/___	___	___/___
4.2.71.3	Disconnect Tubing E-16B	___/___	___	___/___
4.2.71.3.1	TEMP SENSOR MALFUNCTION ALARM DE-ENERGIZED	___/___	___	___/___
4.2.71.3.2	JACKET WATER TEMP SHUTDOWN ALARM ENERGIZED	___/___	___	___/___
4.2.71.3.3	CONTACT CLOSED	___/___	___	___/___
4.2.71.3.4	CONTACT OPEN	___/___	___	___/___
4.2.72	TUBING E-16 and RECONNECTED	___/___	___	___/___
4.2.73	E16-B Disconnected	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.73.1	Hi Temp. JACKET WATER ALARM DE-ENERGIZED	___/___	___	___/___
4.2.73.2	CONTACT OPEN	___/___	___	___/___
4.2.73.3	CONTACT OPEN	___/___	___	___/___
4.2.73.4	TEMP. SENSOR MALFUNCTION ALARM	___/___	___	___/___
4.2.73.5	TUBING E16-C Disconnected	___/___	___	___/___
4.2.73.5.1	Jacket Water Shutdown ALARM ENERGIZED	___/___	___	___/___
4.2.74	TUBING LINES E16-B AND C RECONNECTED	___/___	___	___/___
4.2.75	Disconnect Tubing E16-C	___/___	___	___/___
4.2.75.1	SENSOR MALFUNCTION ALARM	___/___	___	___/___
4.2.75.2	TUBING E16-A Disconnected	___/___	___	___/___
4.2.75.2.1	JACKETWATERS SHUTDOWN ALARM	___/___	___	___/___
4.2.76	TUBING E16-A and C RECONNECTED	___/___	___	___/___
4.2.77.1	PRESSURE GAUGE READING LESS THAN 25PSI	___/___	___	___/___
4.2.77.2	BYPASS TEST FAILURE LIGHT DE-ENERGIZED	___/___	___	___/___
4.2.77.3.1	BYPASS TEST FAILURE LIGHT ENERGIZED	___/___	___	___/___
4.2.78.1	SUMP TANK READING O.K.	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.79.1	DAY TANK READING O.K.	/		/
4.2.80.1	ALARMS ENERGIZED	/		/
4.2.80.2	Horn Disconnected	/		/
4.2.82.1	LUBE OIL FILTER DIFFERENTIAL HIGH FUNCTIONS	/		/
4.2.82.1.1	ALARM FUNCTIONS Correctly	/		/
4.2.82.1.2	RELAY R38 ENERGIZED	/		/
4.2.82.1.3	CONTACT CLOSED	/		/
4.2.82.2.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.2.2	RELAY R38 ENERGIZED	/		/
4.2.82.3.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.3.2	RELAY R38 ENERGIZED	/		/
4.2.82.4.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.4.2	RELAY R38 ENERGIZED	/		/
4.2.82.5.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.6.1	ALARM FUNCTION CORRECTLY	/		/
4.2.82.7.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.8.1	ALARM FUNCTIONS CORRECTLY	/		/

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.82.9.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.9.2	RELAY R38 ENERGIZED	___/___	___	___/___
4.2.82.10.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.10.2	RELAY R38 ENERGIZED	___/___	___	___/___
4.2.82.11.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.11.2	RELAY R38 ENERGIZED	___/___	___	___/___
4.2.82.12.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.12.2	RELAY R38 ENERGIZED	___/___	___	___/___
4.2.82.13.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.14.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.15.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.16.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.17.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.17.2	RELAY R35 ENERGIZED	___/___	___	___/___
4.2.82.18.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.82.19.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.20.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.20.2	RELAY R38 ENERGIZED	/		/
4.2.82.21.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.22.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.22.2	RELAY R38 ENERGIZED	/		/
4.2.82.23.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.23.2	RELAY R38 ENERGIZED	/		/
4.2.82.24.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.25.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.26.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.26.2	RELAY R38 ENERGIZED	/		/
4.2.82.27.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.27.2	RELAY R38 ENERGIZED	/		/
4.2.82.28.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.28.2	RELAY R38 ENERGIZED	/		/

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.82.29.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.29.2	RELAY R38 ENERGIZED	___/___	___	___/___
4.2.82.30.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.31.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.31.2	RELAY R20 ENERGIZED CONTACT CLOSED	___/___	___	___/___
4.2.82.32.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.33.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.33.2	EMERGENCY STATUS LIGHT DE-ENERGIZED	___/___	___	___/___
4.2.82.34.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.35.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.35.2	CONTACT CLOSED	___/___	___	___/___
4.2.82.36.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.36.2	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.37.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.38.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___
4.2.82.39.1	ALARM FUNCTIONS CORRECTLY	___/___	___	___/___

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.82.40.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.41.1	ALARM FUNCTIONS CORRECTLY	/		/
4.2.82.42	RELAYS INSTALLED	/		/
4.2.83	RELAY RESET	/		/
4.2.84.1	NO PRESSURE AT L.B. GAUGE	/		/
4.2.84.2.1	120 VDC PRESENT	/		/
4.2.84.3.1	120 VDC PRESENT	/		/
4.2.85.1	PRESSURE AT R.B.GAUGE	/		/
4.2.85.2	NO PRESSURE AT LB GAUGE	/		/
4.2.85.3.1	NO VOLTAGE PRESENT	/		/
4.2.85.4.1	NO VOLTAGE PRESENT	/		/
4.2.87.1	CONTACT CLOSED	/		/
4.2.87.2	CONTACT CLOSED	/		/
4.2.88.1	CONTACT OPEN	/		/
4.2.88.2	CONTACT OPEN	/		/
4.2.89.1	TUBING RECONNECTED	/		/
4.2.89.2	TUBING RECONNECTED	/		/
4.2.89.3	TUBING RECONNECTED	/		/
4.2.90	TUBING RECONNECTED	/		/
4.2.91	TUBING RECONNECTED	/		/

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.92.1	LINKS CLOSED	/		/
4.2.92.2	LINKS CLOSED	/		/
4.2.92.3	LINKS CLOSED	/		/
4.2.92.4	LINKS CLOSED	/		/
4.2.92.5	LINKS CLOSED	/		/
4.2.92.6	LINKS CLOSED	/		/
4.2.92.7	LINKS CLOSED	/		/
4.2.92.8	LINKS CLOSED	/		/
4.2.92.9	LINKS CLOSED	/		/
4.2.92.10	LINKS CLOSED	/		/
4.2.92.11	LINKS CLOSED	/		/
4.2.92.12	LINKS CLOSED	/		/
4.2.92.13	LINKS CLOSED	/		/
4.2.92.14	LINKS CLOSED	/		/
4.2.92.15	LINKS CLOSED	/		/
4.2.92.16	LINKS CLOSED	/		/
4.2.92.17	LINKS CLOSED	/		/
4.2.92.18	LINKS CLOSED	/		/
4.2.92.19	LINKS CLOSED	/		/
4.2.92.20	LINKS CLOSED	/		/
4.2.92.21	LINKS CLOSED	/		/
4.2.92.22	LINKS CLOSED	/		/

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.92.23	LINKS CLOSED	/		/
4.2.92.24	LINKS CLOSED	/		/
4.2.92.25	LINKS CLOSED	/		/
4.2.92.26	LINKS CLOSED	/		/
4.2.92.27	LINKS CLOSED	/		/
4.2.92.28	LINKS CLOSED	/		/
4.2.92.29	LINKS CLOSED	/		/
4.2.92.30	LINKS CLOSED	/		/
4.2.92.31	LINKS CLOSED	/		/
4.2.92.32	LINKS CLOSED	/		/
4.2.92.33	LINKS CLOSED	/		/
4.2.92.34	LINKS CLOSED	/		/
4.2.92.35	LINKS CLOSED	/		/
4.2.92.36	LINKS CLOSED	/		/
4.2.92.37	LINKS CLOSED	/		/
4.2.93	TOGGLE SWITCHES OPEN	/		/
4.2.94	ENGINE WIRE RECONNECTED	/		/
4.2.95	ENGINE WIRE RECONNECTED	/		/
4.2.96	WIRE 402 RECONNECTED	/		/
4.2.97	JUMPER REMOVE	/		/

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.2.98	JUMPER REMOVE	/		/
4.2.99	FREQUENCY GENERATOR REMOVED	/		/
4.2.100	EQUIPMENT RESTORED TO OPERATIONAL CONDITION	/		/
4.2.101	SHIFT SUPERVISOR NOTIFIED	/		/

Comments/Additional Hold Points _____

QC has reviewed this procedure for Hold Points _____
SIGNATURE

APPROVED() DISAPPROVED ()	
FOREMAN	DATE

COMPLETED BY	DATE

EMERGENCY DIRECTOR CHECKLIST

SUBSEQUENT ACTIONS

Transfer of Responsibilities

1. Review with the ED:

   a. Summary of events

   b. Plant status

   c. Equipment status

   d. Emergency classification

   e. Status of notifications of offsite authorities

   f. Protective and corrective actions

   g. Completed checklist items

   h. Status of facilities activation

   i. Any noted deficiencies

   j. Status of assembly and accountability, if initiated

   k. Outstanding orders

   l. Recovery plan of action, if known

CAUTION

Assure that initial actions in Procedure 91001-C, "Emergency Classification And Implementing Instructions", have been completed as necessary prior to proceeding with this checklist.

2. Review facility readiness with facility managers.

3. Assure that logkeeper maintains a log of ED actions and records any transfer of responsibility.

4. Formally assume from the OSOS the position of ED, using the following message format:

AT 1822 (Central Time) ON 8/23/90 (Date) I AM ASSUMING THE EMERGENCY DIRECTOR POSITION AND HEREBY RELIEVE YOU OF ALL EMERGENCY DIRECTOR RESPONSIBILITIES.

CHECKLIST 1

EMERGENCY DIRECTOR NOTIFICATION CHECKLIST

RESPONSIBILITIES

NOTE
Ensure NOUE, Alert, or Site Area/General Emergency Classification check list in Procedure 91001-C has been initiated.

1. This checklist must be completed by the Emergency Director (1) upon the declaration of any emergency condition (NOUE., ALERT, SITE AREA EMERGENCY, or GENERAL EMERGENCY), (2) the change in the level of classification of the emergency condition declared, or (3) a change in protective action recommendations.

2. The Emergency Director will complete Checklist 2 and sign the completed form.

3. The Emergency Director will supervise completion of notification and insure completion within the time limits.

4. When the notification responsibilities have been transferred to the EOF or TSC, the EOF Support Coordinator or the TSC Support Coordinator will supervise the preparation and transmission of Notification Messages.

5. The assigned Communicator will perform the notification.

IMMEDIATE ACTIONS

1. Direct the ENN Communicator (Shift Clerk in the Control Room) to establish communications and complete roll call in accordance with Step 8 of Checklist 2.

2. Complete the Notification Form Checklist 2, for Initial Notification.

3. Direct the designated ENN Communicator to make the notification in accordance with Checklist 2 within 15 minutes of the declaration.

CHECKLIST 1

EMERGENCY DIRECTOR NOTIFICATION CHECKLIST

✓ 5. Supervise completion of the notifications to state and local agencies insuring that notification is made within 15 minutes of the emergency declaration.

✓ 6. Complete the Event Notification Worksheet, Checklist 3, and direct a plant knowledgeable individual to notify the NRC.

✓ 7. Direct a Communicator to perform the Georgia Power Company Notification per Checklist 4.

✓ 8. Direct VEGP Security to notify the Visitor Center, Training Center, Recreation Park, GPC Vogtle Co .rol Warehouse, Corporate Garage, Administrat've Support Building, and Projects and Facility Services.

✓ 9. After normal working hours, for an ALERT or higher classification, direct Security to recall Emergency Response Personnel per EPIP 91704-C, "Actions For Security During A Radiological Emergency". On Shift Supervisory personnel in the maintenance, operations and security departments shall recall additional personnel as needed since these departments are not included in the plant recall system.

FOLLOW-UP ACTIONS

✓ 1. For Alert and higher classifications maintain communications with offsite agencies (Georgia, South Carolina, Savannah River Site, Burke County, Allendale County, Barnwell County, and Aiken County). Shift to alternate state and county notification locations, as requested.

✓ 2. Provide emergency follow-up status messages every 30-minutes incorporating new information as available. All follow-up messages are made utilizing Checklist 2. Follow-up status is not required for a NOUE.

✓ 3. Complete and transmit an Emergency Notification Message whenever the emergency classification or the protective action recommendation is changed utilizing Checklist 2.

✓ 4. Keep the NRC updated with all changes. Inform the NRC immediately of any further degradation in the plant conditions, any change from one emergency class to another, or of the termination of an emergency utilizing the Event Notification Worksheet (Checklist 3). Upon activation of the TSC, the TSC Manager assumes the responsibility of communicating with the NRC.

CHECKLIST 1

EMERGENCY DIRECTOR NOTIFICATION CHECKLIST

TERMINATION ACTIONS

1. At Alert or higher classification, reduce a classification or terminate an emergency after coordination with offsite authorities followed by a written summary within 8 hours of termination or class reduction.

2. For a NOUE close out with verbal summary to offsite authorities; followed by written summary within 24 hours.

3. Complete and transmit termination messages in accordance with Checklist 2 for Georgia and South Carolina, and Checklist 3 of this procedure for the NRC.

Sheet 1 of 1

NOTIFICATION OF UNUSUAL EVENT CHECKLIST

1. Maintain a log of the incident (this may be delegated to other personnel, as available).

2. Make an announcement over the public address system for all areas as follows:

NOTE
Wording in [ ] may not be applicable in all situations.

"ATTENTION ALL PERSONNEL - THIS IS NOT A DRILL - A NOTIFICATION OF UNUSUAL EVENT HAS BEEN DECLARED [FOR UNIT 1]."

(Include brief description of the event)

~~Shutdown required by Tech Spec due to 3 of 3 entry on Lock Loop 4 reactor trip~~ JW 4/22/16

(Repeat Announcement)

3. Implement notifications in accordance with Checklist 1, Emergency Director Notification Checklist, in Procedure 91002-C, Emergency Notifications".

4. If a radiological release is involved, request offsite dose projections be performed (see Procedure 91304-C, "Computerized And Manual Back-Up Methods For Release Rate And Dose Calculations").

5. As necessary, make protective action recommendations per Procedure 91305-C, "Protective Action Guidelines".

6. Continue with subsequent actions per the Emergency Director Checklist in Procedure 91102-C, "Duties Of The Emergency Director".

Signature _____
Emergency Director

Date/Central Time 4/22/16 1655

Sheet 1 of 1

DATA SHEET 1

CLASSIFICATION DETERMINATION

1. Evaluate status of fission product barriers:

		Breached/Challenged	
a.	Fuel Cladding Integrity (See Figure 1)	YES ____	NO ✓
b.	Reactor Coolant System Integrity (See Figure 2)	YES ____	NO ✓
c.	Containment Integrity (See Figure 3)	YES ____	NO ✓

2. Determine the highest emergency classification level for present plant conditions (See Figure 4).

Check One:

✓ Notification of Unusual Event

____ Alert

____ Site Area Emergency

____ General Emergency

Comments: Shift town required by Tech Spec + Extend 30's time to both trains if 18 outstanding

3. Assume the position of Emergency Director.

Signature _____
Emergency Director

Date 2/23/90

Central Time 1455

4. Proceed to Notification of Unusual Event, Alert, Site Area Emergency/General Emergency Checklist of this procedure.

CHECKLIST 2

EMERGENCY NOTIFICATION MESSAGE FOR STATE AND LOCAL RESPONSE AGENCIES

A. INSTRUCTIONS:

1. Complete as much of the information on this form as possible.
2. Have the Emergency Director sign the form to authorize release.
3. These notifications MUST be made within 15 minutes of event classification.
4. Use communication circuits in the following order of priority:
   a. ENN (broadcast to all stations simultaneously)
   b. SC Backup ENN (Two digit phone numbers found in VEGP Emergency Response Telephone Directory)
   c. Commercial telephones (Phone numbers in VEGP Emergency Response Telephone Directory)
   d. Radios:
      1. Use SRS radio in TSC (Freq. 1, ask SRS to notify other South Carolina agencies).
      2. Use Burke County radio in TSC (ask Burke County to notify the Georgia Emergency Management Agency).

B. INITIAL ROLL CALL: State the following:

THIS ~~IS~~/IS NOT A DRILL! (Cross out one)
HELLO, THIS IS (Name) Teresa Jones AT THE VOGTLE ELECTRIC GENERATING PLANT. PLEASE OBTAIN A COPY OF THE EMERGENCY NOTIFICATION FORM. STANDBY TO RECEIVE A MESSAGE. (Proceed with roll call in the following order, check box for responding agencies)

- ☑ Savannah River Site
- ☑ State of South Carolina
- ☑ Georgia Emergency Management Agency
- ☑ Burke County
- ☑ Aiken County
- ☑ Allendale County Notified by Commercial Phone
- ☑ Barnwell County

C. NOTIFICATION MESSAGE TRANSMISSION: Transmit complete notification form, obtain roll call and record acknowledgements.

NOTE
The Emergency Notification Message for State and Local Response Agencies (Sheet 2 and 3 of 3) Checklist 2, of this procedure is a reproduction of the actual form. The actual form should be used, although reproduction of the form in this procedure is authorized.

EMERGENCY NOTIFICATION

Number 90-001

1. [A] THIS IS A DRILL [X] THIS IS AN ACTUAL EMERGENCY
2. AUTHENTICATION: 13 (Number) SEA OATS (Codeword)
3. TIME/DATE: 1759 (Eastern) / 02 mm / 23 dd / 90 yy REPORTED BY: Teresa Jones (Name)
4. SITE: VOGTLE UNIT: 1 CONFIRMATION PHONE NUMBER: 1-404-554-6762
5. EMERGENCY CLASSIFICATION:
   [X] NOTIFICATION OF UNUSUAL EVENT [B] ALERT [C] SITE AREA EMERGENCY [D] GENERAL EMERGENCY
6. [X] EMERGENCY DECLARATION AT: TIME/DATE: 1759 (Eastern) / 02 mm / 23 dd / 90 yy
   [B] EMERGENCY TERMINATION AT: TIME/DATE: ____ (Eastern) / ____ mm / ____ dd / ____ yy (If B, go to item 16.)
7. EMERGENCY DESCRIPTION: Figured shutdown by Tech Spec. ~~due to entry 2. the Tech Spec 3.0.3~~ @ 1/23/90
8. PLANT CONDITION: [A] IMPROVING [X] STABLE [C] DEGRADING [D] UNDETERMINED
9. ENERGENCY INVOLVES:
   [X] NO RELEASE (If A, go to item 14.) [C] A RELEASE IS OCCURRING: Started ____ Expected Duration ____
   [B] POTENTIAL RELEASE [D] A RELEASE HAS OCCURRED: Started ____ Stopped ____
10. TYPE OF RELEASE: [ ] ELEVATED [X] GROUND LEVEL
    [A] RADIOACTIVE GASES [C] RADIOACTIVE PARTICULATES
    [B] RADIOACTIVE LIQUIDS [D] OTHER ____
11. RELEASE: [ ] CURIES PER SEC. [ ] CURIES
    [A] NOBLE GASES ____ [C] IODINES ____
    [B] IODINE/NOBLE GAS RATIO (If available) ____ [D] OTHER ____
12. REACTOR STATUS: [A] SHUTDOWN: TIME/DATE: ____ (Eastern) / ____ mm / ____ dd / ____ yy [X] 82 % POWER
13. ESTIMATE OF PROJECTED OFFSITE DOSE: NEW [ ] UNCHANGED DURATION: ____ HRS.

Distance	Wholebody DOSE RATE (mrem/hr)	Child Thyroid DOSE RATE (mrem/hr)	Wholebody (mrem)	Child Thyroid (mrem)
SITE BOUNDARY				
2 MILES				
5 MILES				
10 MILES				

14. METEOROLOGICAL DATA: [X] NOT AVAILABLE
    [A] WIND DIRECTION (from) ____ ° [C] STABILITY CLASS ____
    [B] WIND SPEED (mph) ____ [D] PRECIPITATION (type) None
15. RECOMMENDED PROTECTIVE ACTIONS:
    [X] NO RECOMMENDED PROTECTIVE ACTIONS
    [B] SHELTER ____
    [C] EVACUATE ____
    [D] OTHER ____
16. APPROVED BY: [signature] (Name) EMERGENCY DIRECTOR (Title) TIME/DATE: 1733 (Eastern) 1-23-90 / 02 mm / 23 dd / 90 yy

8031.0.9

CHECKLIST 3

NRC NOTIFICATION CHECKLIST

Initiate contact on the ENS line. When contact is made, the caller shall state:

"THIS IS/IS NOT (cross out one) A DRILL"

"HELLO, THIS IS (NAME): [redacted] AT THE VOGTLE ELECTRIC GENERATING PLANT. PLEASE OBTAIN A COPY OF THE EVENT NOTIFICATION WORKSHEET AND STAND BY TO RECEIVE A MESSAGE".

NOTES

a. If no response on the ENS is obtained, use a commercial line and one of the following numbers:

(301) 951-0550 (301) 427-4259
(301) 492-8893 (301) 427-4056

b. The Event Notification Worksheet (NRC Form 361) in this procedure is a reproduction of the actual NRC form. The actual NRC Form 361 should be used, although reproduction of the form in this procedure is authorized.

NRC FORM 361
(6-1)

U.S. NUCLEAR REGULATORY COMMISSION
OPERATIONS CENTER

EVENT NOTIFICATION WORKSHEET

NOTIFICATION TIME	FACILITY OR ORGANIZATION	UNIT	CALLER'S NAME	CALL BACK # - ENS
1641 EST	PLANT NINE MILE	1	JAMES WILLIAMS	OR (315) 366-2660

EVENT TIME & ZONE	EVENT DATE
1655 CST	2/27/90
POWER MODE BEFORE	POWER MODE AFTER
M4 / 1	MC / 1

EVENT CLASSIFICATIONS

	GENERAL EMERGENCY	GEN/AAEC
	SITE AREA EMERGENCY	SIT/AAEC
	ALERT	ALE/AAEC
✓	UNUSUAL EVENT	UNU/AAEC
	50.72 NON-EMERGENCY	(see next columns)
	PHYSICAL SECURITY (73.71)	D???
	TRANSPORTATION	NTRA
	20.403 MATERIAL/EXPOSURE	B???
	OTHER NDAM,NLCO,NBNI,NINF,NLTR,NONR	
	CDEF, FLOM, EIRR, GCON	

1 Hr Non-Emergency 10 CFR 50.72(b)(1)

(i)(A)	TS Required S/D	ASHU
(i)(B)	TS Deviation	ADEV
(ii)	Degraded Condition	ADEG
(ii)(A)	Unanalyzed Condition	AUNA
(ii)(B)	Outside Design Basis	AOUT
(ii)(C)	Not Covered by OPs/EPs	ACNC
(iii)	Earthquake	ANEA
(iii)	Flood	ANFL
(iii)	Hurricane	ANHU
(iii)	Ice/Hail	ANIC
(iii)	Lightning	ANLI
(iii)	Tornado	ANTO
(iii)	Oth. Natural Phenomenon	ANOT
(iv)	ECCS Discharge to RCS	ACCS
(v)	Lost ENS	AENS
(v)	Lost Emerg. Assessment	AARC
(vi)	Lost Offsite Comms	AESS
(vii)	Fire	AFIR
(vii)	Toxic Gas	ACHE
(ix)	Rad Release	ARAD
(x)	Oth. Hampering Safe Op	AHIN

4 Hr Non-Emergency 10 CFR 50.72(b)(2)

(i)	Degrade While S/D	ADAS
(ii)	RPS Actuation (scram)	ARPS
(iii)	ESF Actuation	AESF
(iii)(A)	Safe S/D Capability	AINA
(iii)(B)	RHR Capability	AINB
(iii)(C)	Control of Rad Release	AINC
(iii)(D)	Accident Mitigation	AIND
(iv)(A)	Air Release > 2X App B	AAIR
(iv)(B)	Liq Release > 2X App B	ALIQ
(v)	Offsite Medical	AMED
(vi)	Offsite Notification	APRE

DESCRIPTION

DECLARED NUE @ 1655 CST DUE TO INITIATING A PLANT SHUTDOWN DUE TO PLANT TECH SPECS. DEENERGIZED SWGR 1NPE4 WHICH RENDERED A CNMT PEN. INOPERABLE. PLANT EXCEEDED THE 4 HRS AVAILABLE TO REENERGIZE 1AB04. COMMENCED A PLANT S/D. (SHUTDOWN CONCURRED WITH S/D - SCHEDULED OUTAGE).

1605 STANSKY (OPS CENTER, NRC)
1707 STATE/LOCAL NOTS CENT. CLIFF ALLENDALE
1711 ALLENDALE NOTIFIED
1710 REN MEILLO NOTIFIED

Include: Systems affected, actuations & their initiating signals, causes, effect of event on plant, actions taken or planned, etc.

NOTIFICATIONS	YES	NO	WILL BE	ANYTHING UNUSUAL OR NOT UNDERSTOOD?	YES (Explain above)	NO
NRC RESIDENT	/					/
STATE(s)	/			DID ALL SYSTEMS FUNCTION AS REQUIRED?	YES	NO (Explain above)
LOCAL	/				/	
OTHER GOV AGENCIES	✗	NRC 2/28/90		MODE OF OPERATION UNTIL CORRECTED: 1	ESTIMATE FOR RESTART DATE: NA	ADDITIONAL INFO ON BACK?
MEDIA/PRESS RELEASE						

NRC FORM 361 (6-89)

CHECKLIST 4

GEORGIA POWER COMPANY NOTIFICATION CHECKLIST

NOTE

This checklist to be completed by a Control Room Communicator following completion of initial notifications to State and Local authorities.

IMMEDIATE ACTION

1. Obtain the latest approved version of Checklist 2.

2. If any individual cannot be reached, proceed to the next person and repeat notification steps later.

3. Make the notifications below and inform the Emergency Director of any problems encountered.

   (1) Notify each individual below when any emergency class is declared or changed. Inform each of the:

   (a) time of classification
   (b) the emergency classification
   (c) the description of the event

   Utilize the information in the latest version of Checklist 2.

	Primary Number	Alternate Number	Beeper	Central Time/Initials
Security (PESB)	3737	4111	312	1706
VEGP General Manager	3118	3119	001	1705
Plant Wilson Manager	8-526-3140	8-526-3129		/

NOTE

Request Vogtle Duty Manager to notify the On Call Project Manager

Vogtle Duty Manager	[see PLAN OF THE DAY]	1708

CHECKLIST 4

GEORGIA POWER COMPANY NOTIFICATION CHECKLIST

	Primary Number	Alternate Number	Beeper	Central Time/Initials
NRC Resident Inspector(s) VEGP	4116	4249	293 009 303	1201 [illegible]
Assistant General Manager Plant Operations	3140	404/592-2867	002	[illegible]
Manager Operations	3618		044	1791 [illegible]
Assistant General Manager Plant Support	3143		200	1751 [illegible]
Manager Training and Emergency Preparedness	3901	3903	303	1725 / EMT

CHECKLIST 2

EMERGENCY NOTIFICATION MESSAGE FOR STATE AND LOCAL RESPONSE AGENCIES

A. INSTRUCTIONS:

1. Complete as much of the information on this form as possible.
2. Have the Emergency Director sign the form to authorize release.
3. These notifications MUST be made within 15 minutes of event classification.
4. Use communication circuits in the following order of priority:
   a. ENN (broadcast to all stations simultaneously)
   b. SC Backup ENN (Two digit phone numbers found in VEGP Emergency Response Telephone Directory)
   c. Commercial telephones (Phone numbers in VEGP Emergency Response Telephone Directory)
   d. Radios:
      1. Use SRS radio in TSC (Freq. 1, ask SRS to notify other South Carolina agencies).
      2. Use Burke County radio in TSC (ask Burke County to notify the Georgia Emergency Management Agency).

B. INITIAL ROLL CALL: State the following:

THIS ~~IS~~/IS NOT A DRILL! (Cross out one)
HELLO, THIS IS (Name) _____ AT THE VOGTLE ELECTRIC GENERATING PLANT. PLEASE OBTAIN A COPY OF THE EMERGENCY NOTIFICATION FORM. STANDBY TO RECEIVE A MESSAGE. (Proceed with roll call in the following order, check box for responding agencies)

- [x] Savannah River Site
- [x] State of South Carolina
- [x] Georgia Emergency Management Agency
- [x] Burke County
- [x] Aiken County
- [x] Allendale County 304 306
- [x] Barnwell County

C. NOTIFICATION MESSAGE TRANSMISSION: Transmit complete notification form, obtain roll call and record acknowledgements.

NOTE
The Emergency Notification Message for State and Local Response Agencies (Sheet 2 and 3 of 3) Checklist 2, of this procedure is a reproduction of the actual form. The actual form should be used, although reproduction of the form in this procedure is authorized.

2354, 2304

EMERGENCY NOTIFICATION

Number CC2

1. [A] THIS IS A DRILL [X] THIS IS AN ACTUAL EMERGENCY

2. AUTHENTICATION: 92 (Number) SAILOR (Codeword)

3. TIME/DATE: 2354 (Eastern) / 2 mm / 23 dd / 90 yy REPORTED BY: Mary Morris (Name)

4. SITE: VOGTLE UNIT: 1 CONFIRMATION PHONE NUMBER: 1-404-554-6762

5. EMERGENCY CLASSIFICATION:
[X] NOTIFICATION OF UNUSUAL EVENT [B] ALERT [C] SITE AREA EMERGENCY [D] GENERAL EMERGENCY

6. [A] EMERGENCY DECLARATION AT: TIME/DATE: ____ (Eastern) / ____ mm / ____ dd / ____ yy

[X] EMERGENCY TERMINATION AT: TIME/DATE: 2353 (Eastern) / 2 mm / 23 dd / 90 yy (If B, go to item 16.)

7. EMERGENCY DESCRIPTION: _____

8. PLANT CONDITION: [A] IMPROVING [B] STABLE [C] DEGRADING [D] UNDETERMINED

9. EMERGENCY INVOLVES:

[A] NO RELEASE (If A, go to item 14.)
[B] POTENTIAL RELEASE
[C] A RELEASE IS OCCURRING: Started ____ Expected Duration ____
[D] A RELEASE HAS OCCURRED: Started ____ Stopped ____

10. TYPE OF RELEASE: [ ] ELEVATED [X] GROUND LEVEL

[A] RADIOACTIVE GASES
[B] RADIOACTIVE LIQUIDS
[C] RADIOACTIVE PARTICULATES
[D] OTHER _____

11. RELEASE: [ ] CURIES PER SEC [ ] CURIES

[A] NOBLE GASES _____
[B] IODINE/NOBLE GAS RATIO (If available) _____
[C] IODINES _____
[D] OTHER _____

12. REACTOR STATUS: [A] SHUTDOWN: TIME/DATE: ____ (Eastern) / ____ mm / ____ dd / ____ yy [B] ____ % POWER

13. ESTIMATE OF PROJECTED OFFSITE DOSE: [ ] NEW [ ] UNCHANGED DURATION: ____ HRS.

Distance	Wholebody DOSE RATE (mrem/hr)	Child Thyroid DOSE RATE (mrem/hr)	Wholebody (mrem)	Child Thyroid (mrem)
SITE BOUNDARY				
2 MILES				
5 MILES				
10 MILES				

14. METEOROLOGICAL DATA: [ ] NOT AVAILABLE

[A] WIND DIRECTION (from) ____ °
[B] WIND SPEED (mph) ____
[C] STABILITY CLASS ____
[D] PRECIPITATION (type) ____

15. RECOMMENDED PROTECTIVE ACTIONS:

[A] NO RECOMMENDED PROTECTIVE ACTIONS
[B] SHELTER _____
[C] EVACUATE _____
[D] OTHER _____

16. APPROVED BY: Blackly Coley (Name) EMERGENCY DIRECTOR (Title) TIME/DATE: 2353 (Eastern) / 2 mm / 23 dd / 90 yy

80310.9

NRC FORM 361
(6-89)

U.S. NUCLEAR REGULATORY COMMISSION
OPERATIONS CENTER

EVENT NOTIFICATION WORKSHEET

Corrected

NOTIFICATION TIME	FACILITY OR ORGANIZATION	UNIT	CALLER'S NAME	CALL BACK # / ENS
2310 CST	VEGP	1	B. D. Carter	or (404) 526-6762

EVENT TIME & ZONE	EVENT DATE
1755 CST	2/23/90
POWER/MODE BEFORE: 84% power Mode 1	POWER/MODE AFTER: Cold Mode 3

EVENT CLASSIFICATIONS

	GENERAL EMERGENCY	GEN/AAEC
	SITE AREA EMERGENCY	SIT/AAEC
	ALERT	ALE/AAEC
	UNUSUAL EVENT	UNU/AAEC
	50.72 NON-EMERGENCY	(see next columns)
	PHYSICAL SECURITY (73.71)	D???
	TRANSPORTATION	NTRA
	20.403 MATERIAL EXPOSURE	B???
	OTHER: NDAM,NLOD,NBNL,NINF,NLTR,NONR	
	CDEF, FLOM, EIRR, GCON	

1-Hr Non-Emergency 10 CFR 50.72(b)(1)

(i)(A)	TS Required S/D	ASHU
(i)(B)	TS Deviation	ADEV
(ii)	Degraded Condition	ADEG
(iii)(A)	Unanalyzed Condition	AUNA
(iii)(B)	Outside Design Basis	AOUT
(iii)(C)	Not Covered by OPs/EPs	ANNC
(iv)	Earthquake	ANEA
(iv)	Flood	ANFL
(iv)	Hurricane	ANHU
(iv)	Ice/Hail	ANIC
(iv)	Lightning	ANLI
(iv)	Tornado	ANTO
(iv)	Oth Natural Phenomenon	ANOT
(v)	ECCS Discharge to RCS	ACCS
(v)	Lost ENS	AENS
(v)	Lost Emerg. Assessment	AARC
(v)	Lost Offsite Comms	AESS
(vi)	Fire	AFIR
(vi)	Toxic Gas	ACHE
(vi)	Rad Release	ARAD
(vi)	Oth Hampering Safe Op	AHIN

4-Hr Non-Emergency 10 CFR 50.72(b)(2)

(i)	Degrade While S/D	ADAS
(ii)	RPS Actuation (scram)	ARPS
(ii)	ESF Actuation	AESF
(iii)(A)	Safe S/D Capability	AINA
(iii)(B)	RHR Capability	AINB
(iii)(C)	Control of Rad Release	AINC
(iii)(D)	Accident Mitigation	AIND
(iv)(A)	Air Release > 2X App B	AAIR
(iv)(B)	Liq Release > 2X App B	ALIQ
(v)	Offsite Medical	AMED
(vi)	Offsite Notification	APRE

DESCRIPTION

Termination of the Notification of Unusual Event ~~#5~~ 2/23/90
Shutdown no longer required by Tech. Specs. Seismic holddown bolts installed in 1AB04 and 1AB05 and all safety related electrical distribution re energized.

Include: Systems affected, actuations & their initiating signals, causes, effect of event on plant, actions taken or planned, etc.

NOTIFICATIONS	YES	NO	WILL BE	ANYTHING UNUSUAL OR NOT UNDERSTOOD?		YES (Explain above)		NO
NRC RESIDENT			✓				✓	
STATE(s)	✓			DID ALL SYSTEMS FUNCTION AS REQUIRED?	✓	YES		NO (Explain above)
LOCAL	✓							
OTHER GOV AGENCIES	✓			MODE OF OPERATION UNTIL CORRECTED	ESTIMATE FOR RESTART DATE			ADDITIONAL INFO ON BACK?
MEDIA/PRESS RELEASE		✓						

TABLE 1

GUIDELINES FOR RECOMMENDED PROTECTIVE ACTIONS FOR GASEOUS PLUME EXPOSURE

CONDITION	RECOMMENDED ACTION*
NON-ESSENTIAL STATION PERSONNEL AND GENERAL POPULATION	
1. A General Emergency has been declared.	Recommend a 2-mile precautionary evacuation in all sectors and out to 5 miles in potentially affected sectors. Shelter the remainder of the plume EPZ.
2. A General Emergency has been declared and large amounts of fission products are in the reactor coolant but not in containment atmosphere.	Recommend a 2-mile precautionary evacuation in all sectors and out to 5-miles in potentially affected sectors. Shelter the remainder of the plume EPZ.
3a. A General Emergency has been declared and large amounts of fission products in addition to noble gases are in the containment atmosphere.	Recommend a precautionary evacuation to 5 miles in all sectors and a downwind evacuation to 10 miles in potentially affected sectors. Shelter the remainder of the plume EPZ.
3b. A General Emergency has been declared and substantial core damage has occurred or is likely and containment failure is judged imminent or has occurred.	Recommend precautionary evacuation to 5 miles in all sectors and evacuation to 10 miles in potentially affected sectors. Shelter the remainder of the plume EPZ.

NOTE: References for this table are a combination of Table 5.1, page 5.31, Rev. 6/79 - Manual of Protective Actions for Nuclear Incidents and NUREG-0654, dated 1/80. Affected sectors include, as a minimum, the downwind sector(s) and adjacent sectors.

*Use enclosed EPZ Map (Figure 1) to identify potentially affected sectors for Georgia and zones for South Carolina.

TABLE 1 (Cont'd.)

GUIDELINES FOR RECOMMENDED PROTECTIVE ACTIONS FOR GASEOUS PLUME EXPOSURE

CONDITION		RECOMMENDED ACTION*
NON-ESSENTIAL STATION PERSONNEL AND GENERAL POPULATION		
4. An actual release has occurred or is imminent and the projected dose to individuals in the population is calculated to be:		
a. Whole Body: b. Thyroid:	0.2 rem to 1 rem 1 rem to 5 rem	No planned protective action necessary. Consider sheltering as precautionary measure for all affected sectors.
c. Whole Body: d. Thyroid:	0.005 rem to 0.2 rem 0.025 rem to 1 rem	Continue field monitoring.
e. Whole Body: f. Thyroid:	Less than 0.005 rem Less than 0.025 rem	Increase frequency of environmental monitoring.
5. An actual release has occurred or is imminent and the projected dose to individuals in the population is calculated to be:		Recommend evacuation to 5 miles in all sectors and evacuation to 10 miles in potentially affected sectors. Shelter the remainder of the plume EPZ.
a. Whole Body: b. Thyroid:	Greater than 1 rem Greater than 5 rem	

*Use enclosed EPZ (Figure 1) Map to identify potentially affected sectors for Georgia and zones for South Carolina.

TABLE 1 (Cont'd.)

GUIDELINES FOR RECOMMENDED PROTECTIVE ACTIONS FOR GASEOUS PLUME EXPOSURE

CONDITION	RECOMMENDED ACTION*
EMERGENCY TEAM PERSONNEL	
6. An actual release has occurred or is imminent and the projected dose to Emergency Team workers is calculated to be: a. Whole Body: 5 rem to 25 rem b. Thyroid: 25 rem to 125 rem	Control exposure of Emergency Team members to ensure doses will be less than 25 rem whole body and 125 rem thyroid except for lifesaving missions. (Appropriate controls for Emergency Team workers include time limitations and respiratory protection and potassium iodide.)
7. An actual release has occurred or is imminent and the projected dose to Emergency Team workers performing lifesaving missions is calculated to be: a. Whole Body: 25 rem to 75 rem b. Thyroid: greater than 125 rem	Control exposures of Emergency Emergency Team members performing lifesaving missions to ensure whole body dose is less than 75 rem. (Control of time of exposure will be most effective.) Although respiratory protection and potassium iodide should be used where effective to control dose to Emergency Team workers, thyroid dose may not be a limiting factor for lifesaving missions.

*Use enclosed EPZ (Figure 1) Map to identify potentially affected sectors for Georgia and zones for South Carolina.

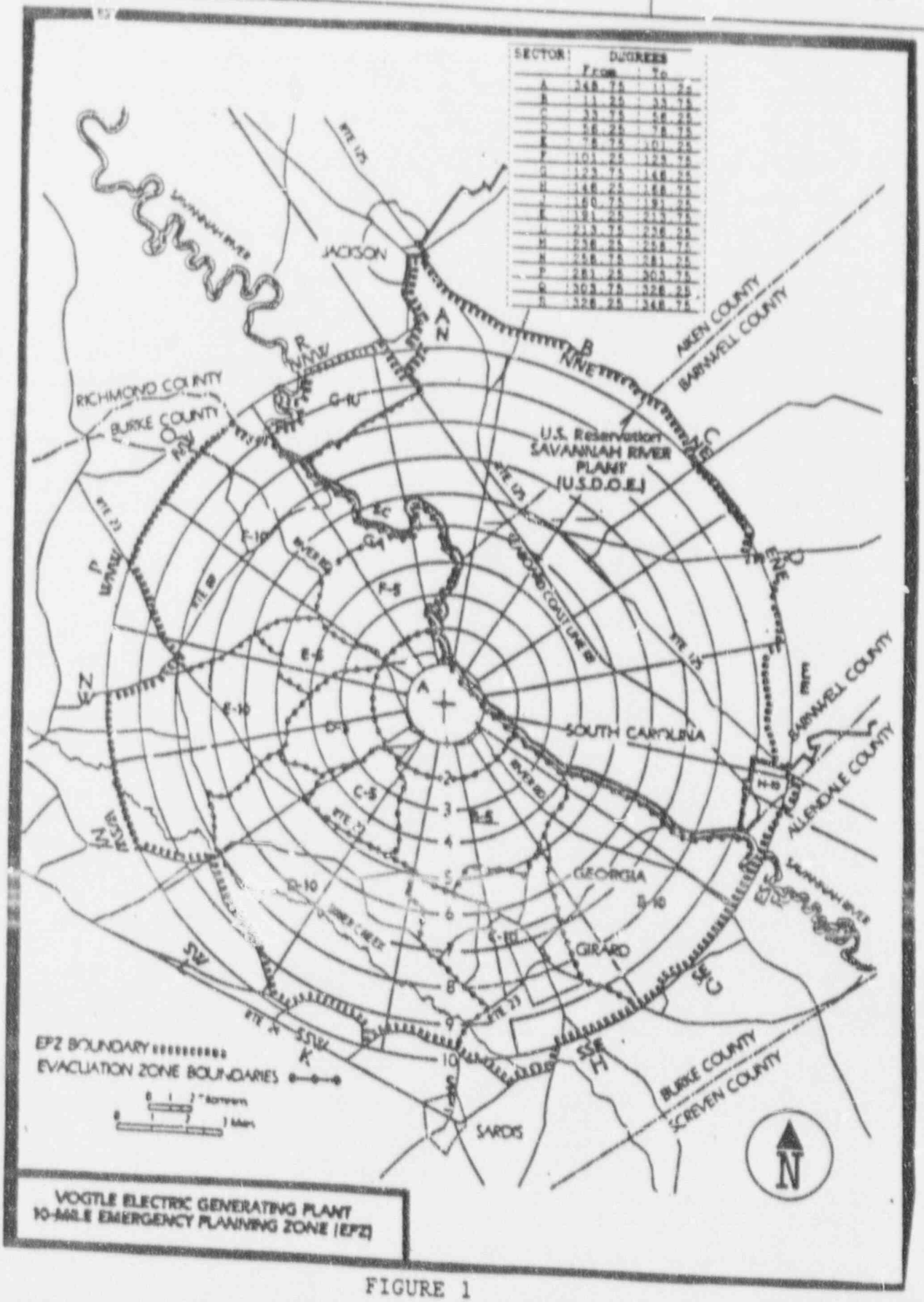

SECTOR
DEGREES
From
To
JACKSON
RICHMOND COUNTY
BURKE COUNTY
AIKEN COUNTY
BARNWELL COUNTY
U.S. Reservation
SAVANNAH RIVER
PLANT
(U.S.D.O.E.)
SOUTH CAROLINA
GEORGIA
ALLENDALE COUNTY
GIRARD
SARDIS
BURKE COUNTY
SCREVEN COUNTY
EPZ BOUNDARY
EVACUATION ZONE BOUNDARIES
VOGTLE ELECTRIC GENERATING PLANT
10-MILE EMERGENCY PLANNING ZONE (EPZ)

FIGURE 1

DEFICIENCY CARD

CARD # 1-90-0085 UNIT 1 [X] UNIT 2 ( ) COMMON ( )

COMPLETED BY INITIATOR

1. DESCRIPTION OF DEFICIENCY (ADDITIONAL SHEETS ATTACHED? YES NO)

~~1ABB4X, 1ABB6X, 1BB54X, 1BB56X~~ 2-23-90

SWGRs 1AB04X, 1AB06X, 1BB54X, and 1BB07X are missing steel hold down wedges which provide seismic support for the transformer cores.

LOCATION OF THE DEFICIENCY? Control Bldg. Level R

WHAT IS AFFECTED BY THE DEFICIENCY? Switchgear Seismic Integrity

HOW WAS THE DEFICIENCY DISCOVERED? During inspection of transformers due to PC 1-90-0074

EVENT TIME Unknown DATE Unknown DISCOVERY TIME 1:30 pm DATE 2-23-90

DISCOVERED BY? Ron Burris WORK # 3176 DEPT. Engr Supp-ST

COMPLETED BY SS WITHIN 2 HOURS

2. SHIFT SUPERVISOR REVIEW

NAME OF SS REPORTED TO? E.M. Thornton Jr. TIME 1310 DATE 2/23/90

PLANT MODE/CONDITION: Mode 1 87%

IS IMMEDIATE NOTIFICATION REQUIRED? (YES) (NO)

IF YES, 1 HOUR, 2 HOUR, OR 24 HOUR EMT 2/23/90 REPORTED: DATE TIME

TECH. SPEC. REQUIRED ACTION TAKEN? YES NO N/A

LIST APPLICABLE TECH. SPEC. SECTION(S) ~~3.0.3~~ EMT 2/23/90 3.8.3.1

SUMMARIZE COMPENSATORY ACTION TAKEN: Engineering to evaluate. SEE attached letters (LCO generated) previously.

LCO INITIATED: NO (YES) # 1-90-92 TYPE: INFO (LCO) FIRE

WRT INITIATED: NO (YES) # 3218

SUPERVISOR'S SIGN

05-2-65-0

MAY 11, 1990.

"EMERGENCY ORGANIZATION STRUCTURE"

TO: MR. AL CHAFFEE (301) 492-8802

FROM: HERB BEACHER (404) 826-3769 BEEPER 138

I) TECHNICAL SUPPORT CENTER (TSC)

TSC Manager	WF Kitchens
OPERATIONS Supervisor	J.F. CASH
Engineering Supervisor	T. Aufdenkampe
Health Physics Supervisor	G. Brenenborg
Chemistry Supervisor	D.F. Hallman
Support Coordinator	B. Quick
Maintenance Supervisor	M. Hobbs
Security Coordinator	G. Grimes
ENN Communicators	E.L. Pickett
	J.B. Stanchy

II.) OPERATION SUPPORT CENTER (OSC)

OSC MANAGER	H. Handfinger
Assistant OSC Mgr.	D. Gustafson

Support Personnel from:

Maintenance (Electrical, Mechanical, & I+C)
Telecommunication
Health Physics & Dosimetry
Chemistry
Operations
Rad Waste
Document Control
Engineering

III EMERGENCY OPERATION Facility (EOF) (NOT ACTIVATED - IN STANDBY)

EOF Manager	M.B. Lackey
NRC Liason	K.R. Holmes
Dose Assessment Mgr.	Indira Kochery
Security Coordinator	Tom McQuillen
Support Coordinator	V. Agro
Public Information Mgr.	R. Harris

IF YOU HAVE ANY QUESTIONS PLEASE CONTACT JIM ROBERTS EXT. 3416 OR HERB BEACHER EXT. 3769.

2-66

SECURITY EMERGENCY RESPONSE ORGANIZATION PERSONNEL

The following personnel were involved in the Emergency Operations Facility activities during the VEGP emergency of 3/20/90.

ERO SECURITY QUALS

03/21/90

GE-001 = Badge Training
RE-110 = Recall & Notification
RE-080 = Mgt. of Rad Emergencies

DAATES LISTED ARE DROP DEAD DATES
* RENEW QUAL 3 MO. PRIOR TO EXPIR.

CAS/SAS OPERATOR / SUPERVISOR

NAME	GE-001	RE-110
BECKER, H.L.	5/5/91	4/24/90*
BELL, D.L.	8/1/90	5/6/990 *
BLACKMON, B.L.	11/28/90	11/29/90
BRADDY, R.	11/14/90	5/6/990 *
BRONSTEIN, S.G.	11/25/90	5/13/90*
CHESTNUT, P.	6/21/90*	11/29/90
CROOMS, H.R.	9/16/90	11/16/90
DUNCAN, B.A.	8/15/90	6/13/90*
DUNCAN, J.L.	7/7/90	5/6/990 *
DYE, P.B.	8/30/90	11/14/90
FERGUSON H.H.	5/12/91	5/13/90*
GLOTH, B. .	9/5/90	12/13/90
GRAHAM, J.F.	5/12/91	5/6/990 *
GRIMES, H.G.	11/28/90	11/29/90
GRUBBS, R.J.	11/14/90	4/24/90*
GUNN, R.L.	3/1/91	6/13/90*
HILLIARD, C.V.	6/3/90 *	4/24/90*
JOHNSON, W.J.	6/27/90	4/24/90*
JUKES, W.A.	9/30/90	5/6/990 *
KENT, D.P.	8/1/90	6/13/90*
LARISCY, T.H.	5/26/91	11/14/90
LENDRUM, T.L.	11/7/90	5/6/990 *
LEWIS, S.F.	6/31/90	5/13/90*
LOVETT, T.	10/31/90	5/13/90*
MCCAFFERTY, T.D.	10/31/90	5/13/90*
MCGEE, R.L.	8/15/90	6/13/90*
MCVAY, J.E.	9/16/90	11/16/90
OGDEN, W.F.	8/26/90	5/13/90*
ONEIL. P.M.	11/28/90	11/29/90
PELL, D.W.	10/10/90	5/6/990 *
PIPER, D.E.	8/30/90	4/24/90*
RIDGDILL, J.M.	6/27/90	6/13/90*
SMITH, A. Jr	9/16/90	11/16/90
STEWART, W.A.	10/10/90	5/13/90*
TAYLOR, B.K.	6/31/90	5/13/90*
TAYLOR, W.K.	5/13/90*	4/24/90*
THOMPSON, T.D.	5/26/91	4/24/90*
VAKOC, V.J.	10/17/90	12/13/90
VON PLINSKY, J.A.	8/15/90	6/13/90*
WILLIAMS, S.M.	5/12/91	4/24/90*
WILLIFORD, R.A.	9/16/90	11/16/90
WILLIFORD, W.S.	9/16/90	11/16/90
WILLIS, D.S.	7/5/90	11/29/90
WINTER, L.V.	8/15/90	6/13/90*
WRIGHT, K.	5/26/91	11/14/90

ERO SECURITY QUALS

NAME	SECURITY OFFICER GE-001	
ADCOX, J.W.	8/30/90	
AGEE, R.L.	7/28/90	
ALLEN, R.	8/30/90	
ALLSUP, D.S.	11/7/90	
ATKINS, J.W.	7/24/90	
BAILEY, J.M.	7/24/90	
BARBOUR, S.L.	10/10/90	
BARGERON, C.	9/30/90	
BARRETT, C.A.	EXP'D	UNQUALIFIED
BATES, C.B.	8/30/90	
BECKER, H.L.	5/5/91	
BERRY, R.O.	9/16/90	
BLACKMON, B.L.	11/28/90	
BOWEN, P.W.	9/5/90	
BRADDY, R.	11/14/90	
BURKE, L.	5/8/90 *	
BUSSEY, P.W.	9/16/90	
BYRD, C.E.	8/30/90	
CARPENTER, W.	9/16/90	
CASON, D.	9/16/90	
CHANCE, T.W.	6/7/91	
CHESTNUT, P.	6/21/90*	
CLARKE, L.M.	11/14/90	
COOPER, M.E.	1/30/91	
CROOMS, H.R.	9/16/90	
DAVIS, B.Y.	6/1/90 *	
DINKINS, E.D.	9/16/90	
DIXON, R.M.	7/24/90	
DIXON, R.W.	6/5/91	
DUKES, D.R.	8/30/90	
DYCHES, P.H.	1/3/91	
DYE, P.B.	8/30/90	
ELLOITT, J.L.	7/24/90	
ENGLETT, J.P.	10/17/90	
FERGUSON, H.H.	5/12/91	
FIELDING, D.L.	9/5/90	
FIELDING, L.	5/26/91	
FLOURNEY, B.	5/22/90*	
FOSTER, J.A.	11/7/90	
FRANCIS, D.A.	9/16/90	
GIESBER, H.G.	9/16/90	
GILLIS, W.J.	9/5/90	
GLOTH, B.J.	9/5/90	
GODBEE, J.M.	10/26/90	

ERO SECURITY QUALS

GRAHAM, H.E.	8/1/90	
GRAHAM, J.F.	5/12/91	
GREENE, A.R.	7/24/90	
GREENE, D.F.	11/9/90	
- HARRIS, J.A.	9/5/90	
HERRINGTON, L.W.	9/26/90	
- HILLIARD, C.V.	6/3/90 *	
- HILLIS, M.M.	11/28/90	
HOLLEY, T.S.	11/25/90	
- HOWELL, C.	10/17/90	
IVEY, W.D.	6/1/90 *	
- JACKSON, C.	5/13/90*	
JENKINS, G.G.	6/27/90	
- JENKINS, J.C.	9/5/90	
JOHNSON, N.R.	6/12/91	
JONES, C.L.	5/5/91	
- KELLY, J.L.	8/30/90	
KITCHENS, D.P.	9/5/90	
LEWIS, E.E.	6/31/90	
LEWIS, R.	5/26/91	
LEWIS, S.F.	6/31/90	
MCGEE, R.L.	8/15/90	
MCKINNEY, F.	5/27/90*	
MILLER, H.	7/28/90	
MILLER, J.P.	6/1/90 *	
MILLS, F.L.	8/5/90	
MORRIS, B.K.	7/28/90	
NEAL, T.W.	6/13/90*	
NEWSOME, M.	9/30/90	
OGDEN, W.F.	8/26/90	
OLIVER, J.W.	5/5/91	
OWENS, D.E.	9/21/90	
PFEIFER, C.E.	8/1/90	
POWELL, D.G.	5/12/91	
PREVATT, W.R.	10/17/90	
RHODES, R.L.	12/25/90	
ROBERTS, G.A.	8/26/90	
ROBERTSON, T.L.	5/15/90*	
RUIZ, L.M.	9/30/90	
RUSSELL, J.P.	8/5/90	
SEWELL, J.M.	5/26/91	
SHAFFER, H.J.	4/31/91	
SHIPES, W.O.	11/25/90	
SMITH, A. Jr	9/16/90	
SMITH, D.A.	EXP'D	
SMITH, E.A.	12/22/90	UNQUALIFIED
STEPHENS, L.E.	6/1/90 *	
STEWART, W.A.	10/10/90	
STOKES, R.	5/5/91	
STROBRIDGE, G.E.	5/21/91	

ERO SECURITY QUALS

TAPLEY, B.F.	10/17/90
TAYLOR, B.K.	6/31/90
TEBEAU, B.L.	11/25/90
THOMPSON, T.D.	5/26/91
TITUS, J.A.	11/25/90
TODD, W.	5/12/91
TOKARSKA, J.P.	10/7/90
TURNER, V.D.	5/13/90*
VAKOC, V.J.	10/17/90
WATERS, L.F.	11/7/90
WESTERMAN, A.P.	9/16/90
WHITE, A.L.	5/27/90*
WHITFIELD, M.	9/16/90
WILLIAMS, D.E.	5/26/91
WILLIAMS, S.M.	5/12/91
WILLIFORD, W.S.	9/16/90
WILLIFORD, R.A.	9/16/90
WILLIS, D.S.	7/5/90
WOODS, D.M.	9/16/90
WRIGHT, D.P.	3/11/91
WRIGHT, K.	5/26/91
YOUMANS, J.	11/25/90

The following personnel were available for support in the Security Emergency Response Organization.

SECURTIY EMERGENCY RESPONSE ORGANIZATION

GUTHRIE W
HUYCK D
KITCHENS C
WALKER S

TECHNICAL SUPPORT CENTER PERSONNEL

The following personnel were involved in the Emergency Operations Facility activities during the VEGP emergency of 3/20/90.

TSC POSITION QUALS

03/21/90

GE-001 = Badge Training
RE-020 = Off-site Dose Assessment
RE-030 = Rad Emerg Team/ In-plant
RE-040 = Field Monitoring Team
RE-060 = Repair and Corrective Action
RE-070 = Commun. and Records
RE-080 = Mgt. of Rad Emergencies
RE-090 = Core Damage Assessment
RE-008 = Medical Support of Rad Emerg
RE-057 or CH-413 = Post Acc. Sampling

DATES LISTED ARE DROP DEAD DATES
* RENEW QUAL 3 MO. PRIOR TO EXPIR.

GE-099 = SCBA Training
RE-200 = Physical Exam
RE-201 = Resp. Fit Test
RE-111 = Security Coord. Train

TSC MANAGER

NAME	GE--001	RE-080	GE-099	RE-200	RE-201	
BOCKHOLD, G.	11/[illegible]28/90	10/26/90	1/16/91	12/31/90	12/31/90	
BURMEISTER, W.	5/[illegible]7/91	7/21/90	5/5/91	03/31/91	02/28/91	
KITCHENS, W.F.	4/[illegible]31/91	10/26/90	4/29/91	03/31/91	09/30/90	
MOSBAUGH, A.L.	2/[illegible]20/91	7/21/90	8/11/90	NO REC.	NO REC.	UNQUA
SWARTZWELDER,	4/[illegible]24/91	10/6/90	4/24/91	03/31/91	02/28/91	

OPERATIONS SUPERVISOR

NAME	GE--001	RE-080	GE-099	RE-200	RE-201	
BRINKLEY, R.K.	5/[illegible]14/91	7/21/90	5/14/91	03/31/91	08/31/90	
BURMEISTER, W.	5/[illegible]7/91	7/21/90	5/5/91	03/31/91	02/28/91	
CARTER, B.D.	5/[illegible]7/91	7/12/90	5/5/91	03/31/91	08/31/90	
CASH, J.P.	5/[illegible]14/91	7/21/90	5/14/91	03/31/91	EXP'D	UNQUA
DUNN, W.R.	5/[illegible]7/91	7/6/90	5/5/91	03/31/91	11/30/90	
GASSER, J.T.	5/[illegible]14/91	10/26/90	5/14/91	03/31/90*	08/31/90	
HARGIS, T.S.	5/[illegible]7/91	7/21/90	5/5/91	03/31/91	03/31/91	
HOPKINS, J.D.	4/[illegible]24/91	6/29/90	4/24/91	03/31/91	09/30/90	
KOZINSKY, E.J.	4/[illegible]21/91	6/29/90	4/29/91	03/31/91	10/31/90	
SWARTZWELDER,	4/[illegible]24/91	10/6/90	4/24/91	03/31/91	02/28/91	
WILLIAMS, C.H.	4/[illegible]21/91	7/24/90	4/29/91	04/30/90*	10/31/90	
WILLIAMS, J.D.	4/[illegible]17/91	10/26/90	4/17/91	03/31/90*	09/30/90	

SUPPORT COORDINATOR

NAME	GE-001	RE-070
DRAUDY, P.H.*	9/6/90	8/1/90
HUBER, V.J.	4/8/91	6/8/90 *
QUICK, B.K.	9/30/90	8/11/90

TSC POSITION QUALS

ENGINEERING SUPERVISOR

NAME	GE-001	RE-090	GE-099	RE-200	RE-201
AUFDENKAMPE, J	8/26/90	7/28/90	8/26/90	03/31/91	12/31/90
HORTON, W.W.	12/22/90	6/16/90*	5/12/91	03/31/91	01/31/91
MANSFIELD, R.L	10/31/90	4/18/91	4/25/91	03/31/91	02/28/91
WILLIAMS, J.G.	6/31/90	4/18/91	6/31/90	01/31/91	01/31/91

ELECTRICAL ENGINEER

NAME	GE-001
BURNS, J.M.	8/26/90
CHANDLER, M.E.	12/29/90
RALICK, R.M.	1/3/91

MECHANICAL ENGINEER

NAME	GE-001
BURWINKEL, P.H.	12/22/90
COVER, W.J.	12/27/90
STEELE, T.D.	1/30/91

REACTOR ENGINEER

NAME	GE-001	RE-090
BRADLEY, S.A.	5/7/91	4/18/91
CHRISTIANSEN,	2/27/91	9/30/90
WENDT, T.L.	7/28/90	9/30/90

MAINTENANCE SUPERVISOR

NAME	GE-001	RE-060	GE-099	RE-200	RE-201	
ADAMS, D.E. JR	8/15/90	8/15/90	8/15/90	03/31/90*	05/31/90*	
BARNETT, D.P.	12/29/90	12/29/90	12/29/90	03/31/91	11/30/90	
COURSEY, C.L.	9/16/90	9/16/90	9/16/90	03/31/91	EXP'D	UNQUA
HOBBS, M.L.	6/27/90	6/27/90	6/27/90	03/31/91	NO REC.	UNQUA
HUDSON, P.R.	10/31/90	10/31/90	10/31/90	03/31/91	11/30/90	
KELLUM, E.L.	7/24/90	7/24/90	7/24/90	03/31/90*	05/31/90*	
LAVENDER, J.E.	10/31/90	10/31/90	10/31/90	03/31/90*	08/31/90	

TSC POSITION QUALS

	NORWOOD, L.	9/2/90	9/2/90	9/2/90	03/31/91	06/30/90	
	PHILLIPS, S.A.	11/28/90	EXP'D	1/3/91	03/31/90*	10/31/90	UNQUA
✓	SEYMOUR, M.E.	11/25/90	11/25/90	11/25/90	03/31/90*	11/30/90	
	WOLFE, E.I.	2/3/91	2/3/91	2/3/91	03/31/91	12/31/90	

HP SUPERVISOR

NAME	GE-001	RE-020 GE-099	RE-030 RE-200	RE-008 RE-201	
ARNOLD, H.F.	4/15/91	4/17/91	4/16/91	4/16/91	
✓ BRENNEMAN, G.A.	5/12/91	4/15/91	03/31/90*	01/31/91	
		5/14/91	5/13/91	5/13/91	
BRETT, H.M.	5/12/91	5/12/91	03/31/90*	02/28/91	
		5/14/91	5/13/91	5/13/91	
BROWN, K.M.	5/12/91	5/12/91	03/31/90*	04/30/90*	
		5/14/91	5/13/91	5/13/91	
BURRIS, F.R.	5/5/91	5/12/91	05/31/90*	08/31/90	
		5/7/91	5/6/91	5/6/91	
BUSH, T.E.	4/29/91	5/5/91	03/31/90*	02/28/91	
		4/31/91	4/30/91	4/30/91	
✓ CARSWELL, J.A.	4/15/91	4/29/91	03/31/91	01/31/91	
		4/17/91	4/16/91	4/16/91	
DIXON, J.R.	5/5/91	4/15/91	03/31/90*	01/31/91	
		4/31/91	4/30/91	4/30/91	
KHERA, S.S.	4/8/91	5/5/91	03/31/90*	07/31/90	
		4/10/91	4/9/91	4/9/91	
LUCOT, J.F.	4/8/91	4/8/91	03/31/91	01/31/91	
		4/10/91	4/9/91	4/9/91	
MATTLAGE, G.G.	5/12/91	4/8/91	05/31/90*	01/31/91	
		5/14/91	5/13/91	5/13/91	
PETERS, C.E.	5/12/91	5/12/91	03/31/91	10/31/90	
		5/14/91	5/13/91	5/13/91	
PETROSKY, K.T.	4/22/91	5/12/91	03/31/90*	03/31/90*	
		4/24/91	4/23/91	4/23/91	
TURPIN, B.	11/14/90	4/22/91	03/31/91	01/31/91	
		5/7/91	EXP'D	EXP'D	
		11/14/90	03/31/91	07/31/90	UNQUALIFIED

CHEMISTRY SUPERVISOR

NAME	GE-001	RE-090 GE-099	RE-057 RE-200	CH-413 RE-201	
✓ HALIMAN, D.F.	7/24/90	10/18/90	2/8/91		
		7/24/90	03/31/91	06/30/90	
✓ HAND, R.C.*	6/12/91	8/3/90	EXP'D	NO REC.	
		6/12/91	03/31/91	06/30/90	UNQUALIFIED

* available at DSC

TSC POSITION QUALS

LEE, D.R.	4/8/91	4/18/91	4/18/91	
		4/8/91	03/31/90*	07/31/90
SILLS, J.E.B.	4/29/91	7/28/90	6/2/91	
		4/29/91	03/31/90*	06/30/90

SUPPORT STAFF

NAME	GE-001
CLARKE, P.P.C.	5/21/91
DIXON, [illegible]	4/29/91
DRAKE, B.I.T.	9/28/90
HUBER, [illegible]	4/8/91
JOHNSON, [illegible]	4/8/91
JOHNSON, V.V.S.	5/13/90*
[illegible]	5/5/91
[illegible]	3/29/91
MOORE, T.D.D.	12/25/90
PEARCE, [illegible]	9/6/90
ROBERTS, R.R.	7/26/90

STATUS LOOP COMMUNICATOR

NAME	GE-001
BISHOP, H.K.	4/17/91
BIALOCK, A.L.	5/14/91
BUCHANAN, W.A.	4/17/91
COVINGTON, J.W	4/31/91
DRAWDY, K.E.	4/17/91
DURRENCE, G.J.	4/17/91
DYER, S.N.	5/14/91
GENTRY, M.A.	4/24/91
GUNN, G.W.	4/17/91
HIGHTOWER, M.L	5/7/91
HOWARD, F.W. J	4/17/91
HUMPHREY, P.A.	4/24/91
JENKINS, D.R.	4/31/91
JOHNS, K.A.	4/17/91
KIRBY, J.E.	4/31/91
LEWIS, M.	4/17/91
MATHESON, B.B.	4/31/91
OUELLETTE, G.A	4/24/91
PREWITT, S.E.	4/17/91
SALTER, C.D.	4/24/91
SMITH, A.K.	4/31/91
SMITH, R.P.	4/24/91
THOMPSON, T.N.	4/17/91

TSC POSITION QUALS

TUCKER, P.L.	4/17/91
VANNIER, L.P.	4/24/91
WAINWRIGHT, G.	4/31/91
WHITLEY, G.L.	5/10/90*
WHITTEMORE, B.	4/31/91

ENN COMMUNICATOR

NAME	GE-001	RE-070
[redacted] D.	1/30/91	2/16/91
[redacted]	2/6/91	7/13/90
[redacted]	8/1/90	10/19/90
[redacted]	3/11/91	2/16/91

SECURITY COORDINATOR

NAME	GE-001	RE-111	
[redacted]	11/28/90	4/26/90*	
GUNN, R.L.	3/1/91	EXP'D	UNQUALIFIED
HUYCK, D.G.	8/30/90	7/24/90	
JOHNSON, W.J.	6/27/90	5/21/90*	
JUKES, W.A.	9/30/90	5/21/90*	
KENT, D.P.	8/1/90	8/15/90	
LARISCY, T.H.	5/26/91	8/15/90	
LOVETT, T.	10/31/90	5/24/90*	
MCCAFFERTY, T.	10/31/90	9/30/90	
MCVAY, J.E.	9/16/90	7/24/90	
MOORE, J.W.	8/30/90	4/26/90*	
[redacted]	11/28/90	4/26/90*	
PIPER, D.E.	8/30/90	5/21/90*	
RIDGDILL, J.M.	6/27/90	6/3/90 *	
TAYLOR, W.K.	5/13/90*	5/21/90*	

The following personnel were available for support in the

TECHNICAL SUPPORT CENTER

GIESBER, HG
JAQUES JH
LONG JA
ODOM M
ROBERSON AM
SAMMONS R
WALKER GW

CONTROL ROOM PERSONNEL

The following personnel were involved in the Emergency Operations Facility activities during the VEGP emergency of 3/20/90.

03/21/90

ERO CONTROL ROOM QUALS

GE-001 = Badge Training
RE-070 = Commun. and Records
RE-080 = Mgt. of Rad Emergencies
GE-099 = SCBA Training
RE-200 = Physical Exam
RE-201 = Resp. Fit Test

DATES LISTED ARE DROP DEAD DATES
* RENEW QUAL 3 MO. PRIOR TO EXPIR.

OSOS

NAME	GE-001	RE-080	GE-099	RE-200	RE-201	
BRINKLEY, R.K.	5/14/91	7/21/90	5/14/91	03/31/91	08/31/90	
BURMEISTER, W.	5/7/91	7/21/90	5/5/91	03/31/91	02/28/91	
CARTER, B.D.	5/7/91	7/12/90	5/5/91	03/31/91	08/31/90	
CASH, J.P.	5/14/91	7/21/90	5/14/91	03/31/91	EXP'D	UNQUA
DUNN, W.R.	5/7/91	7/6/90	5/5/91	03/31/91	11/30/90	
GASSER, J.T.	5/14/91	10/26/90	5/14/91	03/31/90*	05/31/90	
HARGIS, T.S.	5/7/91	7/21/90	5/5/91	03/31/91	03/31/91	
HOPKINS, J.D.	4/24/91	6/29/90	4/24/91	03/31/91	09/30/90	
KOZINSKY, E.J.	4/31/91	6/29/90	4/29/91	03/31/91	10/31/90	
WILLIAMS, C.H.	4/31/91	7/24/90	4/29/91	04/30/90*	10/31/90	
WILLIAMS, J.D.	4/17/91	10/26/90	4/17/91	03/31/90*	09/30/90	

SHIFT SUPERVISOR

NAME	GE-001	RE-080	GE-099	RE-200	RE-201	
BARGERON, W.L.	4/24/91	10/11/90	4/24/91	03/31/91	01/31/91	
BOWLES, J.E.	4/31/91	7/6/90	4/29/91	03/31/90*	01/31/91	
CHRISTIANSEN,	4/24/91	7/21/90	4/24/91	03/31/91	01/31/91	
DIEHL, K.B.	5/7/91	7/21/90	5/5/91	03/31/91	02/28/91	
DOUGLAS, S.M.	5/14/91	EXP'D	5/14/91	03/31/91	EXP'D	UNQUA
HALE, F.E.	5/14/91	7/24/90	5/14/91	03/31/91	05/31/90*	
HART, S.C. JR	4/17/91	10/11/90	4/17/91	03/31/91	10/31/90	
LADD, C.R.	5/7/91	7/24/90	5/5/91	03/31/91	EXP'D	UNQUA
MOORE, G.A.	4/24/91	7/12/90	4/24/91	03/31/91	01/31/91	
POLITO, T.A.	5/14/91	7/[illegible]/90	5/14/91	03/31/91	EXP'D	UNQUA
ROBINSON, J.C.	5/7/91	7/21/90	5/5/91	03/31/91	EXP'D	UNQUA
RYAN, W.T.	4/27/90*	7/21/90	4/24/90*	03/31/90*	EXP'D	UNQUA
SNIDER, R.B.	5/7/91	8/9/90	5/5/91	03/31/91	02/28/91	
STEPHENS, W.P.	4/17/91	7/24/90	4/17/91	03/31/91	01/31/91	
THORNTON, E.M.	4/17/91	7/6/90	4/17/91	03/31/90*	01/31/91	
VINEYARD, D.R.	4/17/91	7/6/90	4/17/91	03/31/91	01/31/91	
WHITTEMORE, B.	4/31/91	7/21/90	4/29/91	03/31/91	EXP'D	UNQUA
WOODFIN, D.T.	4/31/91	7/12/90	4/29/91	04/30/90*	01/31/91	

REACTOR OPERATOR

NAME	GE-001	GE-099	RE-200	RE-201
BISHOP, H.K.	4/17/91	4/17/91	03/31/90*	03/31/90*

ERO CONTROL ROOM QUALS

BLALOCK, A.L.	5/14/91	5/14/91	03/31/91	EXP'D	UNQUALIFIED
BROWN, E.H.	5/7/91	5/5/91	03/31/91	09/30/90	
COVINGTON, J.W	4/31/91	4/29/91	03/31/90*	09/30/90	
DRAWDY, K.E.	4/17/91	4/17/91	03/31/90*	01/31/91	
DURRENCE, G.J.	4/17/91	4/17/91	03/31/91	01/31/91	
DYER, S.N.	5/14/91	5/14/91	03/31/91	EXP'D	UNQUALIFIED
GENTRY, M.A.	4/24/91	4/24/91	03/31/91	01/31/91	
HARRIS, T.L.	5/5/91	5/5/91	03/31/91	02/28/91	
HIGHTOWER, M.L	5/7/91	5/5/91	03/31/90*	03/31/91	
HOWARD, F.W. J	4/17/91	4/17/91	03/31/91	10/31/90	
HUMPHREY, P.A.	4/24/91	4/24/91	03/31/90*	02/28/91	
JENKINS, D.R.	4/31/91	4/29/91	03/31/91	03/31/90*	
JOHNS, K.A.	4/17/91	4/17/91	03/31/90*	01/31/91	
KIRBY, J.E.	4/31/91	4/29/91	03/31/90*	09/30/90	
LEWIS, M.L.	4/17/91	4/17/91	03/31/91	03/31/91	
MANEY, W.D.	5/14/91	5/14/91	03/31/91	10/31/90	
MATHESON, B.B.	4/31/91	4/29/91	03/31/90*	10/31/90	
OUELLETTE, G.A	4/24/91	4/24/91	03/31/91	01/31/91	
OVERBY, L.M.	5/7/91	5/5/91	03/31/90*	10/31/90	
ROWLAND, R.R.	5/7/91	5/5/91	03/31/91	09/30/90	
SALTER, C.D.	4/24/91	4/24/91	03/31/90*	10/31/90	
SHUMAN, W.H.	5/14/91	5/14/91	03/31/91	10/31/90	
SMITH, A.K.	4/31/91	4/29/91	03/31/91	01/31/91	
SMITH, R.P.	4/24/91	4/24/91	03/31/90*	01/31/91	
SWEAT, A.Q.	5/14/91	5/14/91	03/31/91	11/30/90	
VANNIER, L.P.	4/24/91	4/24/91	03/31/91	01/31/91	
WAINWRIGHT, G.	4/31/91	4/29/91	03/31/90*	08/31/90	

ENN COMMUNICATOR

NAME	GE-001	RE-070	GE-099	RE-200	RE-201	
ALLEN, R.	8/30/90	5/20/90*	EXP'D	03/31/90*	NO REC.	UNQUA
ALLSUP, D.S.	11/7/90	3/15/91	3/14/91	NO REC.	NO REC.	UNQUA
ANDERSON, A.J.	1/6/91	11/21/90	1/6/91	03/31/91	10/31/90	
ATKINS, J.W.	7/24/90	7/13/90	7/24/90	NO REC.	12/31/90	UNQUA
BLACKBURN, H.N	12/8/90	7/13/90	12/8/90	03/31/91	09/30/90	
BYRD, C.E.	8/30/90	5/20/90*	11/4/90	12/31/90	01/31/91	
DAVIS, B.Y.	6/1/90 *	8/11/90	EXP'D	12/31/90	NO REC.	UNQUA
DEWBRE, N.N.	5/12/91	7/11/90	5/12/91	03/31/91	02/28/91	
DINKINS, E.D.	9/16/90	5/2/90 *	9/16/90	EXP'D	12/31/90	UNQUA
DIXON, R.M.	7/24/90	7/13/90	7/24/90	NO REC.	12/31/90	UNQUA
DYCHES, P.H.	1/3/91	6/9/91	EXP'D	NO REC.	NO REC.	UNQUA
ENGLETT, J.P.	10/17/90	10/19/90	10/13/90	01/31/91	NO REC.	UNQUA
GLOTH, B.J.	9/5/90	5/14/90*	10/31/90	EXP'D	NO REC.	UNQUA
GRAHAM, H.E.	8/1/90	10/19/90	10/13/90	01/31/91	01/31/91	
GREENE, A.R.	7/24/90	5/20/90*	11/4/90	12/31/90	NO PEC.	UNQUA
HARRIS, J.A.	9/5/90	10/19/90	11/4/90	EXP'D	NO REC.	UNQUA
HOLLEY, T.S.	11/25/90	6/8/90 *	10/13/90	01/31/91	NO REC.	UNQUA

ERO CONTROL ROOM QUALS

HULL, S.D.	EXP'D	7/11/90	4/26/90*	NO REC.	NO REC.	UNQUA
JENKINS, P.W.	9/5/90	7/11/90	9/16/90	03/31/90*	05/31/90*	
JONES, T.B.	2/6/91	7/10/90	2/6/91	03/31/91	05/31/90*	
LANE, L.P.	1/11/91	7/13/90	1/6/91	03/31/91	EXP'D	UNQUA
MCKINNEY, F.	5/27/90*	5/2/90 *	7/10/90	12/31/90	01/31/91	
MILES, D.	11/28/90	7/11/90	5/6/90 *	04/30/90*	05/31/90*	
MILLER, H.	7/28/90	10/19/90	10/13/90	01/31/91	01/31/91	
MILLS, F.L.	8/5/90	3/15/91	3/14/91	12/31/90	02/28/91	
MORRIS, B.K.	7/28/90	4/26/90*	7/10/90	01/31/91	01/31/91	
MORRIS, M.J.L.	5/1/90 *	7/13/90	5/2/90 *	NO REC.	NO REC.	UNQUA
PFEIFER, C.E.	8/1/90	6/8/90 *	10/13/90	01/31/91	01/31/91	
RHODES, R.L.	12/25/90	5/14/90*	7/24/90	NO REC.	12/31/90	UNQUA
ROBERTSON, T.L	5/15/90*	8/11/90	3/1/91	EXP'D	NO REC.	UNQUA
STEPHENS, L.E.	6/1/90 *	5/20/90*	10/31/90	02/28/91	02/28/91	
TOKARSKA, J.P.	10/7/90	5/2/90 *	7/10/90	01/31/91	01/31/91	
WESTERMAN, A.P	9/16/90	4/26/90*	9/16/90	01/31/91	01/31/91	
WILLIAMS, D.E.	5/26/91	5/14/90*	2/6/91	12/31/90	NO REC.	UNQUA

PLANT EQUIPMENT OPERATOR

NAME	GE-001	GE-099	RE-200	RE-201
ADAMS, L.A.	4/29/91	4/29/91	07/31/90	06/30/90
ANDERSON, J.R.	5/5/91	5/5/91	03/31/91	02/28/91
BAREFIELD, M.C	5/5/91	5/5/91	03/31/91	02/28/91
BEARD, J.C.	5/5/91	5/5/91	03/31/91	02/28/91
BOUCHARD, R.	10/10/90	10/10/90	05/31/90*	08/31/90
BRACE, W.E.	1/6/91	1/6/91	03/31/91	03/31/90*
BRANTLEY, D.M.	4/13/91	4/22/91	03/31/91	03/31/91
BROWN, S.R.	4/29/91	4/29/91	03/31/91	01/31/91
CHANCE, R.D.	5/5/91	5/5/91	03/31/91	02/28/91
CLIFTON, J.C.	5/12/91	5/12/91	03/31/91	10/31/90
COBB, J.H. JR	6/27/90	6/27/90	03/31/91	04/30/90*
COLLINS, C.M.	5/12/91	5/12/91	03/31/91	09/30/90
CRABE, R.E.	5/5/91	5/5/91	03/31/91	02/28/91
DAVIS, T.	5/12/91	5/12/91	04/30/90*	05/31/90*
DELOACH, D.A.	5/5/91	5/5/91	03/31/90*	02/28/91
DUNN, L.B.	4/13/91	4/22/91	03/31/91	05/31/90*
EAVES, E.P.	6/27/90	6/27/90	03/31/91	05/31/90*
FORTNEY, L.A.	4/29/91	4/29/91	03/31/91	07/31/90
GANDY, D.L.	4/13/91	4/22/91	03/31/91	03/31/91
GATLIFF, J.A.	4/15/91	4/15/91	03/31/91	03/31/90*
GOODRUM, J.L.	4/13/91	4/22/91	03/31/91	03/31/91
GRAHAM, N.F.	4/29/91	4/29/91	03/31/91	01/31/91
GRANT, W.C.	4/13/91	4/22/91	03/31/91	05/31/90*
HAWES, D.H.	4/15/91	4/15/91	03/31/91	06/30/90
HENRY, M.C.	4/29/91	4/29/91	03/31/91	12/31/90
HUNT, P.M.	4/15/91	4/15/91	03/31/91	05/31/90*
HUTTON, C.E.	5/12/91	5/12/91	03/31/91	12/31/90

ERO CONTROL ROOM QUALS

JACKSON, J.C.	4/13/91	4/22/91	03/31/91	04/30/90*	
JACKSON, M.T.	5/12/91	5/12/91	03/31/90*	02/28/91	
JENKINS, A.C.	4/26/91	4/30/90*	03/31/91	04/30/90*	
JOSEY, J.W.	1/30/91	1/30/91	03/31/91	03/31/90*	
JUNTUNEN, J.A.	3/11/91	EXP'D	03/31/91	03/31/91	UNQUALIFIED
KAISER, S.	5/26/91	5/30/91	03/31/90*	02/28/91	
KEADLE, R.V.	4/13/91	4/22/91	03/31/90*	02/28/91	
KESLER, S.B.	5/5/91	5/5/91	03/31/90*	02/28/91	
LEWIS, W.H.	4/15/91	4/15/91	03/31/91	04/30/90*	
MANLEY, E.V.	6/5/91	6/5/91	03/31/90*	05/31/90*	
MANLEY, L.W.	1/30/91	1/30/91	03/31/90*	10/31/90	
MARTINEZ, B.A.	3/11/91	EXP'D	03/31/91	03/31/91	UNQUALIFIED
MASON, F.L.	5/28/91	7/28/90	05/31/90*	06/30/90	
MCBRIDE, T.T.	5/5/91	5/5/91	04/30/90*	02/28/91	
MCDANIEL, E.S.	4/13/91	4/22/91	03/31/91	03/31/91	
MIMS, E.L.	4/29/91	4/29/91	03/31/91	01/31/91	
MITCHELL, W.R.	4/13/91	4/22/91	03/31/91	03/31/90*	
MOORE, R.S.	4/13/91	4/22/91	03/31/91	01/31/91	
MORRIS, T.L.	4/13/91	4/22/91	03/31/91	03/31/91	
MORTON, R.R.	5/5/91	5/5/91	03/31/91	02/28/91	
MOXLEY, G.G.	5/26/91	6/5/91	03/31/90*	05/31/90*	
MULLINS, S.C.	5/12/91	5/12/91	03/31/90*	03/31/90*	
MYLER, J.K.	5/5/91	5/5/91	03/31/91	02/28/91	
NEWSOME, J.M.	4/29/91	4/27/90*	03/31/90*	06/30/90	
NIX, H.A.	4/15/91	4/15/91	03/31/90*	05/31/90*	
POST, R.L.	4/15/91	4/15/91	03/31/91	04/30/90*	
POWERS, C.F.	4/15/91	4/15/91	03/31/90*	01/31/91	
PROCTOR, S.D.	5/5/91	5/5/91	03/31/91	02/28/91	
PRUITT, P.S.	4/29/91	4/29/91	03/31/91	09/30/90	
PURVIS, D.A.	4/29/91	4/29/91	03/31/90*	10/31/90	
QUICK, D.K.	6/27/90	6/27/90	05/31/90*	05/31/90*	
SAXON, G.R.	5/5/91	5/5/91	03/31/91	02/28/91	
SHARKEY, J.P.	5/5/91	5/5/91	04/30/90*	02/28/91	
SHEFFIELD, G.A	4/15/91	4/15/91	03/31/91	04/30/90*	
SMITH, R. III	4/15/91	4/15/91	03/31/91	07/31/90	
SONNEDECKER, G	5/12/91	5/12/91	03/31/91	08/31/90	
SOWELL, D.F.	4/29/91	4/29/91	03/31/90*	08/31/90	
THOMPSON, R.L.	4/13/91	5/12/91	03/31/91	02/28/91	
TOLBERT, T.S.	5/12/91	5/12/91	03/31/91	06/30/90	
WALDEN, W.T.	2/27/91	2/27/91	03/31/91	12/31/90	
WALKER, M.W.	4/29/91	4/29/91	03/31/91	11/30/90	
WATERS, L.F.	5/26/91	6/5/91	03/31/90*	09/30/90	
WEAVER, S.H.	5/12/91	5/12/91	03/31/91	03/31/90*	
WHITE, I.B.	4/29/91	4/29/91	03/31/90*	01/31/91	
WHITMAN, S.L.	4/13/91	4/22/91	03/31/90*	04/30/90*	
WILLIAMS, R.E.	5/12/91	5/12/91	03/31/91	07/31/90	
WOOD, G.F.	4/15/91	4/15/91	03/31/91	05/31/90*	
WOOD, L.L.	4/29/91	4/29/91	03/31/91	01/31/91	

ERO CONTROL ROOM QUALS

SHIFT TECHNICAL ADVISOR

NAME	GE-001	GE-099	RE-200	RE-201	
BARGERON, W.L.	4/24/91	4/24/91	03/31/91	01/31/91	
BOWLES, J.E.	4/31/91	4/29/91	03/31/90*	01/31/91	
BURMEISTER, W.	5/7/91	5/5/91	03/31/91	02/28/91	
CARTER, B.D.	5/7/91	5/5/91	03/31/91	08/31/90	
CASH, J.P.	5/14/91	5/14/91	03/31/91	EXP'D	UNQUALIFIED
CHRISTIANSEN,	4/24/91	4/24/91	03/31/91	01/31/91	
DIEHL, W.B.	5/7/91	5/5/91	03/31/91	02/28/91	
DOUGLAS, S.M.	5/14/91	5/14/91	03/31/91	EXP'D	UNQUALIFIED
GASSER, J.T.	5/14/91	5/14/91	03/31/90*	08/31/90	
HARGIS, T.S.	5/7/91	5/5/91	03/31/91	03/31/91	
HART, S.C. JR	4/17/91	4/17/91	03/31/91	10/31/90	
KOZINSKY, E.J.	4/31/91	4/29/91	03/31/91	10/31/90	
LADD, C.R.	5/7/91	5/5/91	03/31/91	EXP'D	UNQUALIFIED
LOFTIN, R.A.	4/31/91	4/30/91	03/31/90*	01/31/91	
POLITO, T.A.	5/14/91	5/14/91	03/31/91	EXP'D	UNQUALIFIED
RYAN, W.T.	6/27/90*	4/24/90*	03/31/90*	EXP'D	UNQUALIFIED
SLIVKA, M.A.	10/17/90	1/27/91	03/31/91	10/31/90	
SNIDER, R.B.	5/7/91	5/5/91	03/31/91	02/28/91	
THORNTON, E.M.	4/17/91	4/17/91	03/31/90*	01/31/91	
WHITTEMORE, B.	4/31/91	4/29/91	03/31/91	EXP'D	UNQUALIFIED
WILLIAMS, J.L.	4/17/91	4/17/91	03/31/90*	09/30/90	
WOODFIN, D.T.	4/31/91	4/29/91	04/30/90*	01/31/91	

The following personnel were available for support in the control room.

CONTROL ROOM

BOCKHOLD G
CHESNUT SH
DIGBY JW
ECKERT, CC
MANSFIELD RL
PETTITT SD
POPE RK
RHULAND JE
SWARTZWELDER JE
WILLIAMS HG
WHITENER H

OPERATIONS SUPPORT CENTER PERSONNEL

The following personnel were involved in the Emergency Operations Facility activities during the VEGP emergency of 3/20/90.

OSC POSITION QUALS

03/21/90

GE-001 = Emerg Plan Overview
RE-030 = Rad Emerg Team /In-plant
RE-040 = Field Monitor Team
RE-060 = Repair & Corr. Action
RE-080 = Management of Rad Emerg
RE-056 or CH-413 = Post Acc Sampling
RE-008 = Medical Support of Rad Emerg
GE-005 = First Aid Training or
GE-155 = First Responder Course

DATES LISTED ARE DROP DEAD DATES
* RENEW QUAL 3 MO. PRIOR TO EXPIR.

GE-099 = SCBA Training
RE-200 = Physical Exam
RE-201 = Resp. Fit Test

OSC MANAGER

NAME	GE-001	RE-060	RE-080	
COURSEY, C.L.	9/16/90	9/16/90	5/14/91	
GRIFFIS, M.A.	12/8/90	1/23/91	7/5/90	
GUSTAFSON D.E.	1/27/91	3/15/91	3/4/91	
HANDFINGER, H.	12/29/90	8/17/90	10/26/90	
HOBBS, M.L.	6/27/90	6/27/90	4/10/91	
PHILLIPS, S.A.	11/28/90	EXP'D	4/10/91	
SUTPHIN, J.	5/3/90 *	5/20/91	10/26/90	UNQUA

ELECTRICAL FOREMAN

NAME	GE-001	RE-060	GE-099	RE-200	RE-201
ANSLEY, H.B.	8/1/90	8/1/90	8/1/90	03/31/90*	05/31/90*
BEASLEY, J.E.	5/12/91	5/12/91	5/12/91	03/31/91	02/28/91
BENNETT, M.O.	7/28/90	7/28/90	7/28/90	03/31/90*	05/31/90*
FIELDS, F.B.	5/13/90*	5/20/91	5/19/91	03/31/91	02/28/91
FRY, J.L.	6/27/90	5/20/91	5/19/91	03/31/90*	02/28/91
HODNETT, W.K.	11/4/90	11/4/90	11/4/90	03/31/91	09/30/90
HUNT, T.L.	5/5/91	5/5/91	5/5/91	03/31/91	03/31/90*
JONES, A.A.	11/28/90	11/28/90	11/28/90	03/31/91	11/30/90
JUSTICE, C.W.	9/30/90	11/28/90	11/28/90	03/31/91	03/31/90*
LANE, G.F.	9/26/90	9/26/90	9/26/90	03/31/91	09/30/90
LASSITER, D.L.	9/26/90	9/26/90	9/26/90	03/31/91	11/30/90
LEWIS, C.J.	11/7/90	11/7/90	11/7/90	03/31/91	06/30/90
PARHAM, E.W. J	8/1/90	8/1/90	8/1/90	03/31/90*	05/31/90*
SHEPHERD, R.G.	9/2/90	9/2/90	9/2/90	03/31/91	06/30/90
SILVA, M.P.	6/27/90	5/20/91	5/19/91	03/31/91	02/28/91
THOMPSON, G.H.	9/5/90	9/5/90	9/5/90	03/31/90*	05/31/90*
WILKES, I.D.	4/29/91	5/20/91	5/19/91	03/31/90*	02/28/91

MECHANICAL FOREMAN

NAME	GE-001	RE-060	GE-099	RE-200	RE-201	
ADAMS, M.C.	6/29/90	6/27/90	6/27/90	03/31/91	EXP'D	UNQUA
BURCHETT, M.G.	5/5/91	5/5/91	5/5/91	03/31/91	06/30/90	
EIDSON, M.S.	5/12/91	5/12/91	5/12/91	03/31/91	02/28/91	

OSC POSITION QUALS

GARRISON, J.M.	5/12/91	5/12/91	5/12/91	03/31/91	02/28/91
GODFREY, M.W.	5/27/90*	5/20/91	5/19/91	03/31/91	09/30/90
HOWARD, R.C.	4/29/91	5/13/90*	4/29/91	03/31/91	03/31/90*
MULLINAX, R.A.	11/14/90	11/14/90	11/14/90	02/28/91	05/31/90*
RICHARDSON, L.	5/12/91	5/12/91	5/12/91	03/31/91	07/31/90
SECKINGER, D.A	7/10/90	7/10/90	7/10/90	03/31/91	04/30/90*
WHEELER, H.M.	4/29/91	4/29/91	4/29/91	03/31/91	06/30/90
WHITFIELD, W.D	7/26/90	7/28/90	7/28/90	03/31/90*	05/31/90*

INST & CONTROLS FOREMAN

NAME	GE-001	RE-060	GE-099	RE-200	RE-201	
BOUTWELL, A.S.	6/27/90	6/27/90	6/27/90	03/31/91	12/31/90	
BRINEY, M.S.	6/13/90*	6/13/90*	6/13/90*	03/31/91	08/31/90	
COOK, T.W.	6/27/90	6/27/90	6/27/90	03/31/91	07/31/90	
CORLEY, C.W.	11/28/90	11/28/90	EXP'D	03/31/91	03/31/90*	UNQUA
DENT, M.L.	4/29/91	4/29/91	4/29/91	03/31/91	08/31/90	
DUNCAN, M.D.	1/30/91	1/30/91	1/30/91	03/31/91	02/28/91	
FAULKNER, J.W.	3/29/91	3/29/91	3/29/91	03/31/91	12/31/90	
FORTSON, G.B.	5/26/91	5/6/90 *	5/6/90 *	03/31/90*	EXP'D	UNQUA
HAMMOND, R.S.	7/10/90	7/10/90	7/10/90	03/31/91	08/31/90	
LAMB, T.G.	5/12/91	5/12/91	5/12/91	03/31/90*	EXP'D	UNQUA
NOBLETT, L.P.	4/29/91	4/29/91	4/29/91	03/31/91	02/28/91	
RUCKMAN, T.A.	6/12/91	6/12/91	6/12/91	EXP'D	NO REC.	UNQUA
WILLIS, T.L.	11/28/90	11/28/90	11/28/90	03/31/91	07/31/90	
WIMBURN, J.M.	11/25/90	12/1/90	11/25/90	03/31/91	08/31/90	

ELECTRICIANS

NAME	GE-001	RE-060	GE-099	RE-200	RE-201	
ALFORD, G.R.	10/17/90	10/17/90	10/17/90	03/31/91	10/31/90	
BAKER, C.R.	5/5/91	5/5/91	5/5/91	03/31/91	11/30/90	
BAKER, R.E.	5/12/91	5/6/90 *	5/12/91	03/31/91	10/31/90	
BATES, C.W.	1/30/91	1/30/91	1/30/91	03/31/91	10/31/90	
BLAIR, R.P.	9/6/90	9/5/90	9/5/90	03/31/90*	11/30/90	
BOYKIN, D.L.	9/6/90	9/5/90	9/5/90	03/31/91	11/30/90	
BROOKS, J.W.	8/3/90	8/1/90	8/1/90	03/31/91	05/31/90*	
BROWN, D.S.	4/29/91	4/29/91	4/29/91	03/31/91	01/31/91	
BROWN, R.	11/9/90	11/7/90	11/7/90	03/31/91	06/30/90	
BROWNLEE, J.W.	9/28/90	9/26/90	9/26/90	03/31/91	11/30/90	
BULLINS, K.W.	10/17/90	10/17/90	10/17/90	03/31/90*	09/30/90	
CHALKER, L.M.	11/28/90	11/28/90	11/28/90	03/31/91	10/31/90	
COOPER, C.D.	4/5/91	4/5/91	4/5/91	03/31/91	01/31/91	
DAVIS, III R.H	12/25/90	12/25/90	12/25/90	03/31/91	07/31/90	
DEISLEY, D.A.	12/29/90	12/29/90	12/29/90	03/31/91	EXP'D	UNQUA
DIXON, R.C.	11/7/90	11/7/90	11/7/90	03/31/91	11/30/90	

OSC POSITION QUALS

EASON, W.F.	7/12/90	7/10/90	7/10/90	03/31/91	04/30/90*	
ELROD, D.B.	10/12/90	10/10/90	10/10/90	03/31/90*	09/30/90	
FAIRES, J.E.	11/7/90	11/7/90	11/7/90	03/31/91	08/31/90	
FIEST, R.B.	8/26/90	8/26/90	8/26/90	03/31/91	07/31/90	
FRAZIER, M.A.	5/3/90 *	5/20/91	5/19/91	03/31/91	03/31/90*	
GRIGGS, J.L.	10/31/90	10/31/90	10/31/90	03/31/91	11/30/90	
HALE, R.D.	11/28/90	11/28/90	11/28/90	03/31/91	03/31/90*	
HARRELL, J.V.	5/15/90*	5/20/91	5/19/91	03/31/91	EXP'D	UNQUA
HEATH, A.N. JR	8/3/90	8/1/90	8/1/90	03/31/90*	11/30/90	
HEATH, J.W.	3/29/91	3/29/91	3/29/91	03/31/91	12/31/90	
HICKS, K.R.	4/29/91	4/29/91	4/29/91	03/31/91	01/31/91	
HOLIDAY, D.	11/28/90	11/28/90	11/28/90	03/31/91	09/30/90	
HOLLIDAY, R.M.	8/1/90	8/1/90	8/1/90	03/31/91	06/30/90	
HOOKS, W.H.	2/20/91	2/20/91	2/20/91	03/31/91	11/30/90	
HUTCHINS, D.E.	5/12/91	5/12/91	5/12/91	03/31/91	03/31/90*	
KITCHENS, J.M.	7/12/90	7/10/90	7/10/90	03/31/91	NO REC.	UNQUA
LING, R.W.	11/28/90	EXP'D	11/28/90	03/31/91	10/31/90	UNQUA
MACHAK, T.M.	5/12/91	5/12/91	5/12/91	03/31/91	02/28/91	
PARKER, S.R.	8/3/90	8/1/90	8/1/90	03/31/90*	EXP'D	UNQUA
RAYBURN, M.T.	5/12/91	5/12/91	5/12/91	03/31/91	05/31/90*	
RHODES, J.E.	7/10/90	7/10/90	7/10/90	03/31/91	05/31/90*	
ROBERSON, L.	4/8/91	4/8/91	4/27/90*	03/31/91	07/31/90	
ROGERS, F.K.	5/5/91	5/5/91	5/5/91	03/31/90*	06/30/90	
SANKEY, J.L.	3/11/91	EXP'D	EXP'D	03/31/91	12/31/90	UNQUA
SAUNDERS, R.B.	10/31/90	10/17/90	10/17/90	03/31/91	07/31/90	
SEAMONDS, M.E.	11/28/90	11/28/90	11/28/90	03/31/91	09/30/90	
SHUMAN, S.C.	3/11/91	EXP'D	EXP'D	03/31/91	11/30/90	UNQUA
SIENKIEWICZ, L	3/29/91	3/29/91	3/29/91	03/31/91	12/31/90	
TOWNSEND, D.W.	6/8/90 *	5/20/91	5/19/91	02/28/91	03/31/90*	
WALDRUP, W.A.	5/5/91	5/5/91	5/5/91	EXP'D	02/28/91	UNQUA
WEATHERSBEE, R	4/29/91	4/29/91	4/29/91	03/31/90*	11/30/90	
WILLIAMS, J.F.	12/22/90	12/22/90	12/22/90	03/31/90*	06/30/90	
WOLFE, D.W.	3/29/91	3/29/91	3/29/91	03/31/91	02/28/91	
WRIGHT, T.H.	5/5/91	5/5/91	5/5/91	03/31/91	02/28/91	

MECHANICS

NAME	GE-001	RE-060	GE-099	RE-200	RE-201
ALLEN, A.A.	4/10/91	4/5/91	4/5/91	03/31/91	01/31/91
ARCHER, R.L.	11/7/90	11/7/90	11/7/90	03/31/91	08/31/90
ATCHLEY, J.L.	8/3/90	8/1/90	8/1/90	03/31/91	11/30/90
AVRET, J.W.	7/12/90	7/10/90	7/10/90	03/31/91	11/30/90
BAREFIELD, R.I	4/8/91	4/8/91	4/8/91	03/31/91	05/31/90*
BARWICK, G.L.	7/5/90	5/20/91	5/19/91	03/31/90*	05/31/90*
BRAGG, R.M.	11/14/90	11/14/90	11/14/90	03/31/91	06/30/90
COLE, J.I. JR	5/5/91	5/5/91	5/5/91	03/31/91	03/31/90*
CONNER, L.L.	4/5/91	4/5/91	4/5/91	03/31/91	05/31/90*
COOK, L.T.	5/5/91	5/5/91	5/5/91	03/31/91	02/28/91

OSC POSITION QUALS

COSKREY, G.J.	11/14/90	11/14/90	11/14/90	03/31/91	05/31/90*	
CUCCI, T.B.	11/7/90	11/7/90	11/7/90	03/31/91	05/31/90*	
DAVIS, H.	4/5/91	4/5/91	4/5/91	03/31/91	01/31/91	
EDWARDS, G.L.	10/17/90	10/17/90	10/17/90	03/31/91	09/30/90	
EDWARDS, P.M.	4/29/91	4/29/91	4/29/91	03/31/91	05/31/90*	
ENGLE, F.H.	4/29/91	5/5/91	4/29/91	03/31/91	03/31/90*	
EUBANKS, W.M.	8/17/90	8/15/90	8/15/90	03/31/91	11/30/90	
FLANDERS, J.M.	4/29/91	4/29/91	4/29/91	03/31/91	01/31/91	
FOREHAND, K.R.	5/5/91	5/5/91	5/5/91	03/31/91	04/30/90*	
FOREHAND, R.G.	9/28/90	9/26/90	9/26/90	03/31/91	07/31/90	
GALLAGHER, D.E	10/17/90	10/17/90	10/17/90	03/31/91	03/31/90*	
GILES, D.M.	5/5/91	5/5/91	5/5/91	03/31/91	03/31/91	
GLOVER, C.E.	4/29/91	4/29/91	4/29/91	03/31/91	11/30/90	
HARLON, T.B.	3/1/91	3/1/91	3/1/91	03/31/90*	11/30/90	
HAWKINS, D.V.	3/1/91	3/1/91	3/1/91	03/31/91	05/31/90*	
HEATH, R.G.	1/11/91	2/10/91	1/12/91	03/31/91	EXP'D	UNQUA
HILL, R.E.	3/11/91	6/6/90 *	6/6/90 *	03/31/91	05/31/90*	
HODGES, B.	10/31/90	10/31/90	10/31/90	03/31/91	08/31/90	
HOLCOMB, W.B.	4/8/91	4/8/91	4/8/91	03/31/91	02/28/91	
JANOW, D.L.	4/8/91	4/8/91	4/27/90*	03/31/91	NO REC.	UNQUA
KEEN, J.R.	5/12/91	5/13/90*	5/12/91	03/31/91	03/31/90*	
KING, F.L.	3/29/91	3/29/91	3/29/91	03/31/91	05/31/90*	
LEONARD, D.W.	9/28/90	9/26/90	9/26/90	03/31/91	10/31/90	
LOLLAR, D.H.	4/8/91	4/8/91	4/8/91	03/31/91	01/31/91	
MARTIN, T.L.	9/6/90	9/5/90	9/5/90	03/31/91	07/31/90	
MCBRIDE, J.A.	4/5/91	4/5/91	4/5/91	03/31/91	02/28/91	
MEGGS, S.G.	3/11/91	5/24/90*	5/24/90*	03/31/91	06/30/90	
MOORE, J.V. II	11/28/90	11/28/90	11/28/90	03/31/91	08/31/90	
MORRIS, R.F.	5/12/91	5/12/91	5/12/91	03/31/90*	03/31/90*	
MURRAY, T.P.	11/28/90	11/28/90	11/28/90	03/31/90*	09/30/90	
PARKER, J.E.	12/1/90	12/1/90	12/1/90	03/31/90*	10/31/90	
PATTON, W.C.	5/12/91	6/27/90	5/12/91	03/31/91	02/28/91	
PENDERGROFT, R	12/25/90	12/25/90	12/25/90	03/31/91	10/31/90	
PHILLIPS, R.D.	5/15/90*	5/20/91	5/19/91	03/31/91	11/30/90	
POPE, L.W. SR	11/7/90	11/7/90	11/7/90	03/31/91	08/31/90	
RAYBURN, T.D.	9/26/90	9/26/90	9/26/90	03/31/91	07/31/90	
REMINGTON, R.A	11/14/90	11/14/90	11/14/90	03/31/91	11/30/90	
SAYLORS, S.E.	11/4/90	11/4/90	11/4/90	03/31/91	08/31/90	
SHEW, J.C.	9/6/90	9/5/90	9/5/90	03/31/90*	09/30/90	
SHIELDS, J.D.	9/28/90	9/26/90	9/26/90	03/31/91	09/30/90	
SLOOP, J.B.	11/4/90	11/4/90	11/4/90	03/31/91	08/31/90	
SPICER, M.W.	11/28/90	11/28/90	11/28/90	03/31/91	07/31/90	
STONE, J.B.	2/20/91	2/20/91	2/20/91	03/31/91	12/31/90	
STUTZ, T.L.	4/29/91	5/5/91	4/29/91	03/31/91	02/28/91	
THOMPSON, J.E.	6/29/90	6/27/90	6/27/90	03/31/91	08/31/90	
THOMPSON, R.D.	3/29/91	3/29/91	3/29/91	03/31/91	06/30/90	
TUGGLE, J.C.	5/12/91	5/12/91	5/12/91	03/31/91	03/31/90*	
WALKER, D.C.	11/7/90	11/7/90	11/7/90	03/31/91	06/30/90	
WEAVER, B.O.	11/7/90	11/7/90	11/7/90	03/31/91	08/31/90	
WEAVER, R.E.	6/29/90	6/27/90	6/27/90	03/31/91	12/31/90	

OSC POSITION QUALS

WEBB, W.L.	7/26/90	7/24/90	7/24/90	03/31/91	12/31/90
WHITE, B.K.	4/5/91	2/6/91	4/5/91	03/31/91	06/30/90
WITHROW, J.L.	5/5/91	5/5/91	5/5/91	03/31/91	03/31/90*
WOOTEN, W.M.	10/31/90	10/31/90	10/31/90	03/31/91	10/31/90

INSTR & CONTROLS TECHNICIANS

NAME	GE-001	RE-060	GE-099	RE-200	RE-201	
AQUINDE, D.N.	11/4/90	11/4/90	11/4/90	03/31/91	07/31/90	
BERRY, T.A.	5/5/91	5/20/91	5/5/91	03/31/91	02/28/91	
BIANCHI-ROSSI,	5/6/90 *	5/20/91	5/19/91	03/31/91	02/28/91	
BOERNER, A.M.	2/3/91	2/3/91	2/3/91	03/31/91	11/30/90	
BOYER, W.E.	9/16/90	9/16/90	9/16/90	03/31/91	07/31/90	
BURROUGHS, J.J	11/7/90	11/7/90	11/7/90	03/31/91	03/31/90*	
CLAYBURN, N.	5/5/91	5/5/91	5/5/91	03/31/91	EXP'D	UNQUA
CONTI, R.S.	6/5/91	6/5/91	6/5/91	03/31/91	03/31/90*	
CULLUM, J.C.	11/25/90	11/25/90	11/25/90	03/31/91	06/30/90	
CULPEPPER, R.E	6/12/90*	EXP'D	11/25/90	03/31/91	03/31/90*	UNQUA
DALIS, M.J.	4/15/91	4/15/91	4/15/91	03/31/91	03/31/90*	
DAVIS, J.D.	4/29/91	4/29/91	4/29/91	03/31/91	01/31/91	
DOMINGUEZ, P.A	2/17/91	2/27/91	2/27/91	03/31/91	07/31/90	
ERKENS, E.C.	4/5/91	4/5/91	4/5/91	03/31/91	04/30/90*	
FERRARO, D.G.	2/3/91	2/3/91	2/3/91	03/31/91	07/31/90	
FOWLER, A.V.	6/15/90*	6/13/90*	6/13/90*	03/31/91	05/31/90*	
FULLER, D.	5/12/91	5/12/91	5/12/91	03/31/91	02/28/91	
GILCHRIST, K.E	6/27/90	3/15/91	6/27/90	03/31/91	05/31/90*	
GODBEE, J.J.	5/26/91	5/26/91	5/26/91	03/31/91	02/28/91	
GOODWIN, G.B.	6/27/90	6/27/90	6/27/90	03/31/91	03/31/90*	
GRANDY, J.M.	5/12/91	5/12/91	5/12/91	03/31/91	02/28/91	
GUIDRY, M.J.	7/24/90	7/24/90	7/24/90	03/31/91	05/31/90*	
HARGROVE, R.A.	5/5/91	5/5/91	5/5/91	03/31/91	03/31/90*	
HEATH, J.H. JR	5/12/91	5/12/91	5/12/91	03/31/90*	02/28/91	
HELWIG, W.J.	5/5/91	5/5/91	5/5/91	03/31/91	EXP'D	UNQUA
HOWLAND, B.G.	4/29/91	4/29/91	4/29/91	03/31/91	03/31/91	
KIRCHNER, III	5/24/90*	5/20/91	5/19/91	03/31/91	08/31/90	
KNOX, P.J.	11/28/90	11/28/90	11/28/90	03/31/91	05/31/90*	
MCCANN, V.E.	4/29/91	4/29/91	4/29/91	03/31/91	02/28/91	
MCGRATH, M.E.	6/27/90	6/27/90	6/27/90	03/31/91	12/31/90	
MILLER, C.W.	4/29/91	5/5/91	4/29/91	03/31/91	02/28/91	
MORRIS, D.L.	12/29/90	12/29/90	12/29/90	03/31/91	08/31/90	
MORRIS, S.M.	7/10/90	7/10/90	7/10/90	03/31/90*	03/31/90*	
NEAL, III T.	7/10/90	7/10/90	7/10/90	03/31/91	01/31/91	
PALMER, D.L.	5/12/91	5/12/91	5/12/91	03/31/90*	EXP'D	UNQUA
REEVES, G.G.	2/17/91	12/15/90	2/20/91	03/31/91	11/30/90	
REYNOLDS, R.E.	6/15/90*	6/13/90*	6/13/90*	03/31/91	07/31/90	
SEVIGNY, W.E.	11/7/90	11/7/90	11/7/90	03/31/91	03/31/90*	
SHERROD, D.T.	1/30/91	1/30/91	1/30/91	03/31/91	11/30/90	
SKELLY, E.R.	7/10/90	7/10/90	7/10/90	03/31/91	04/30/90*	

OSC POSITION QUALS

SNEEDER, W.R.	6/27/90	6/27/90	6/27/90	03/31/91	04/30/90*	
STROUSE, J.L.	5/12/91	5/12/91	5/12/91	03/31/91	11/30/90	
THAMES, D.B.	4/15/91	4/15/91	4/15/91	03/31/91	02/28/91	
WALLACE, D.E.	6/27/90	6/27/90	6/27/90	03/31/91	08/31/90	
WATERS, K.T.	6/13/90*	6/13/90*	6/13/90*	03/31/91	02/28/91	
WHITTOM, D.E.	4/15/91	4/15/91	4/15/91	03/31/91	EXP'D	UNQUA
WILDER, L. JR	9/6/90	9/5/90	9/5/90	03/31/90*	03/31/90*	
WILKINS, M.C.	5/5/91	5/5/91	5/5/91	03/31/91	06/30/90	
WOODS, C.A.	5/12/91	5/20/91	5/12/91	03/31/91	02/28/91	

IN-PLANT SAMPLING

NAME	GE-001	GE-099	RE-200	RE-201		
BELL, B.C.	2/27/91	2/27/91	03/31/90*	07/31/90		
COFFEY, J.M.	7/19/90	7/20/90	03/31/91	07/31/90		
COLLINS, R.V.	10/17/90	10/17/90	03/31/91	07/31/90		
DOSSETT, J.	11/14/90	11/14/90	03/31/90*	08/31/90		
EDWARDS, S.M.	9/30/90	9/30/90	03/31/91	07/31/90		
EVANS, D.H.	2/3/91	2/3/91	08/31/90	08/31/90		
FLETCHER, E.B.	6/12/91	6/12/91	03/31/91	07/31/90		
GOODWIN, D.G.	5/5/91	5/5/91	03/31/90*	07/31/90		
HAMILTON, R.R.	2/27/91	2/27/91	03/31/90*	11/30/90		
HARRIS, G.W.	7/10/90	7/10/90	03/31/91	07/31/90		
HENDRIX, N.W.	2/20/91	2/20/91	03/31/91	11/30/90		
HICKS, A.B.	2/20/91	2/20/91	03/31/91	03/31/91		
HOLLINGSWORTH,	10/31/90	10/31/90	03/31/91	09/30/90		
JACOBS, M.K.	10/7/90	10/27/90	03/31/91	07/31/90		
KHERA, H.S.	12/1/90	12/29/90	03/31/91	07/31/90		
MALLARD, J.R.	2/8/91	2/9/91	03/31/91	11/30/90		
MOORE, P.E.	11/28/90	11/28/90	03/31/91	09/30/90		
ODOM, M.R.	1/27/91	1/27/91	03/31/90*	06/30/90		
PALMER, R.O.	8/26/90	8/26/90	03/31/91	07/31/90		
PORTER, A.M. J	7/10/90	7/10/90	03/31/91	EXP'D	UNQUAL'D	
REBSTOCK, D.E.	1/30/91	1/30/91	03/31/91	EXP'D	UNQUAL'D	
ROBERSON, A.M.	6/12/91	6/27/90	03/31/91	07/31/90		
RODRIQUEZ, E.	6/6/90 *	6/6/90 *	03/31/91	EXP'D	UNQUAL'D	
SAMPATHKUMAR,	2/20/91	2/20/91	03/31/91	11/30/90		
SMITH, R.E.	9/5/90	9/5/90	03/31/91	09/30/90		
THOMPSON, R.L.	1/31/91	1/27/91	03/31/91	07/31/90		
TRIPPE, K.H.	9/30/90	EXP'D	03/31/91	07/31/90		UNQUA
WHITTEMORE, S.	3/29/91	3/29/91	03/31/91	12/31/90		
WIDNER, D.G.	4/5/91	4/5/91	03/31/90*	01/31/91		
WILDER, R.A.	2/3/91	2/3/91	03/31/90*	06/30/90		
WOLFE, F.	2/27/91	2/27/91	03/31/90*	07/31/90		
WOOLEY, E.J.	10/17/90	10/17/90	03/31/90*	07/31/90		
WRIGHT, M.J.	9/2/90	9/2/90	03/31/91	07/31/90		

OSC POSITION QUALS

DOSIMETRY TEAM

NAME	GE-001
CLARK, B.A.	6/27/90
MILLER, R.H.	10/7/90
NEWTON, C.M.	11/25/90
TRESSLER, G.J.	11/28/90
UTLEY, M.G.	7/10/90

STATUS LOOP COMMUNICATOR

NAME	GE-001
BAKER, B.T.	11/28/90
DAVIS, H.H.	12/22/90
DAVIS, J.A.	1/27/91
HOLT, D.A.	12/22/90
JONES, R.E.	12/22/90
VAUGHT, H.R. J	7/24/90
WYRE, R.H.	12/1/90

SUPPORT STAFF

NAME	GE-001	
ATKINS, W.H.	9/16/90	
BROXTON, E.R.	6/27/90	
BRYSON, R.S.	8/15/90	
CIPOLLONE, J.B	7/10/90	
HALCOMB, J.B.	5/15/90*	
HAMMOCK, P.	6/15/90*	
HEATH, G.K.	5/12/91	
HERREN, R.T.	12/29/90	
HOPKINS, S.P.	12/29/90	
JANOW, D.L.	4/8/91	
MCBRIDE, J.J.	12/27/90	
MCCLELLAN, R.W	10/17/90	
MINOR, M.C.	EXP'D	UNQUAL'D
POLLOCK, J.E.	1/27/91	
PROUDFOOT, D.S	8/15/90	
PULLIAM, H.W.	EXP'D	UNQUAL'D
ROWELL, R.M.	6/8/90 *	
SHARKEY, F.P.	5/26/91	
SISTARE, J.H.	1/31/91	
TOY, D.M.	10/12/90	

OSC POSITION QUALS

VAUGHN, R.I	12/29/90
WILLIAMS, W.H.	6/12/91
ZACKERY, L.S.	9/1/90

POST ACCIDENT SAMPLING TEAM

NAME	GE-001	RE-056 GE-099	RE-200	CH-413 RE-201	
BELL, B.C.		2/27/91	6/30/90		
		2/27/91	03/31/90*	07/31/90	
COFFEY, J.M.		7/19/90	NO REC.	NO REC.	
		7/20/90	03/31/91	07/31/90	UNQUA
COLLINS, R.V.		10/17/90	6/30/90		
		10/17/90	03/31/91	07/31/90	
DOSSETT, J.		11/14/90	NO REC.	NO REC.	
		11/14/90	03/31/90*	08/31/90	UNQUA
DUVAL, R.A.		7/24/90	NO REC.	EXP'D	
		10/17/90	03/31/91	07/31/90	UNQUA
EDWARDS, S.M.		9/30/90	NO REC.	EXP'D	
		9/30/90	03/31/91	07/31/90	UNQUA
FLETCHER, E.B.		6/12/91	EXP'D	NO REC.	
		6/12/91	03/31/91	07/31/90	UNQUA
GOODWIN, D.G.		5/5/91	EXP'D	NO REC.	
		5/5/91	03/31/90*	07/31/90	UNQUA
HAMILTON, R.R.		2/27/91	NO REC.	NO REC.	
		2/27/91	03/31/90*	11/30/90	UNQUA
HARRIS, G.W.		7/10/90	NO REC.	NO REC.	
		7/10/90	03/31/91	07/31/90	UNQUA
HENDRIX, N.W.		2/20/91	NO REC.	NO REC.	
		2/20/91	03/31/91	11/30/90	UNQUA
HICKS, A.B.		2/20/91	6/30/90		
		2/20/91	03/31/91	03/31/91	
HOLLINGSWORTH,		10/31/90	NO REC.	NO REC.	
		10/31/90	03/31/91	09/30/90	UNQUA
JACOBS, M.K.		10/7/90	NO REC.	NO REC.	
		10/27/90	03/31/91	07/31/90	UNQUA
JAQUES, J.H.		7/24/90	NO REC.	EXP'D	
		8/1/90	03/31/90*	04/30/90*	UNQUA
KHERA, H.S.		12/1/90	6/30/90		
		12/29/90	03/31/91	07/31/90	
MALLARD, J.R.		2/8/91	NO REC.	NO REC.	
		2/9/91	03/31/91	11/30/90	UNQUA
MOORE, P.E.		11/28/90	6/30/90		
ODOM, M.R.	(Went directly to TSC	11/28/90	03/31/91	09/30/90	
		1/27/91	6/30/90		
		1/27/91	03/31/90*	06/30/90	
PALMER, R.O.		8/26/90	NO REC.	NO REC.	
		8/26/90	03/31/91	07/31/90	UNQUA

OSC POSITION QUALS

PORTER, A.M. J	7/10/90	NO REC.	NO REC.	
	7/10/90	03/31/91	EXP'D	UNQUAL'D
REBSTOCK, D.E.	1/30/91	NO REC.	NO REC.	
	1/30/91	03/31/91	EXP'D	UNQUAL'D
ROBERSON, A.M.	6/12/91	NO REC.	EXP'D	
	6/27/90	03/31/91	07/31/90	UNQUA
RODRIQUEZ, E.	6/6/90 *	NO REC.	NO REC.	
	6/6/90 *	03/31/91	EXP'D	UNQUAL'D
SAMPATHKUMAR,	2/20/91	NO REC.	NO REC.	
	2/20/91	03/31/91	11/30/90	UNQUA
SMITH, R.E.	9/5/90	NO REC.	NO REC.	
	9/5/90	03/31/91	09/30/90	UNQUA
THOMPSON, R.L.	1/31/91	NO REC.	NO REC.	
	1/27/91	03/31/91	07/31/90	UNQUA
TRIPPE, K.H.	9/30/90	6/30/90		
	EXP'D	03/31/91	07/31/90	UNQUA
WHITTEMORE, B.	3/29/91	NO REC.	NO REC.	
	3/29/91	03/31/91	12/31/90	UNQUA
WIDNER, D.G.	4/5/91	NO REC.	NO REC.	
	4/5/91	03/31/90*	01/31/91	UNQUA
WILDER, R.A.	2/3/91	NO REC.	NO REC.	
	2/3/91	03/31/90*	06/30/90	UNQUA
WOLFE, F.	2/27/91	NO REC.	NO REC.	
	2/27/91	03/31/90*	07/31/90	UNQUA
WOOLEY, E.J.	10/17/90	NO REC.	EXP'D	
	10/17/90	03/31/90*	07/31/90	UNQUA
WRIGHT, M.J.	9/2/90	6/30/90		
	9/2/90	03/31/91	07/31/90	

FIRST AID (SAFETY)

NAME	GE-001	GE-099	RE-008	RE-200	GE-005	RE-201	GE-155	
GREINER, T.B.		6/27/90		6/10/90*		02/05/93		
		6/27/90		03/31/90*		NO REC.		UNQUAL'D
JILES, J.D.		7/5/90		10/19/90		02/05/93		
		EXP'D		03/31/90*		NO REC.		UNQUAL'D
JOHNSON, P.L.		12/25/90		6/10/90*		02/05/93		
		12/25/90		09/30/90		EXP'D		UNQUAL'D

FIELD MONITORING TECHNICIAN

NAME	GE-001		RE-040
ADAMS, C.M.		3/11/91	2/15/91
ALLEN, B.P. JR		3/11/91	6/15/90*
ASKEW, M.D.		3/29/91	5/15/90*

OSC POSITION QUALS

BELL, B.C.	2/27/91	4/27/90*	
CANCER, A.G.	7/24/90	12/19/90	
CARSWELL, C.A.	6/27/90	5/22/90*	
CARTER, W.R. J	4/29/91	4/13/90*	
CLARK, L.L.	4/29/91	4/11/90*	
COFFEY, J.M.	7/19/90	12/19/90	
COLLINS, R.V.	10/17/90	5/2/90 *	
DOSSETT, J.	11/14/90	6/17/90*	
DUVAL, R.A.	7/24/90	4/20/90*	
EDWARDS, S.M.	9/30/90	12/19/90	
EVANS, D.H.	2/3/91	2/15/91	
FLETCHER, E.B.	6/12/91	5/2/90 *	
FREEMAN, T.E.	11/28/90	3/21/90*	
GARDNER, A.J.	2/27/91	5/8/90 *	
GOODWIN, D.G.	5/5/91	4/11/90*	
GOODWIN, D.P.	4/9/90 *	NO REC.	UNQUAL'D
HAMILTON, R.R.	2/27/91	6/17/90*	
HARPER, W.H.	4/13/91	5/1/90 *	
HARRELL, R.E.	6/27/90	11/22/90	
HARRIS, G.W.	7/10/90	5/10/90*	
HENDRIX, N.W.	2/20/91	6/17/90*	
HICKS, A.B.	2/20/91	4/11/90*	
HLAVIN, W.E.	11/25/90	5/15/90*	
HOLLINGSWORTH,	10/31/90	NO REC.	UNQUAL'D
HUTCHESON, W.J	11/28/90	9/6/90	
JACOBS, M.K.	10/7/90	6/23/90	
JAQUES, J.H.	7/24/90	4/27/90*	
KAY, M.L.	4/29/91	4/18/90*	
KHERA, R.S.	12/1/90	4/27/90*	
KLUTTZ, P.D.	5/12/91	4/25/90*	
LEFTWICH, B.C.	4/10/91	NO REC.	UNQUAL'D
MALLARD, J.R.	2/8/91	NO REC.	UNQUAL'D
MIDDLETON, E.L	5/5/91	9/6/90	
MOORE, P.E.	11/28/90	12/19/90	
ODOM, M.R.	1/27/91	5/22/90*	
PALMER, R.O.	8/26/90	NO REC.	UNQUAL'D
PARKER, W.K.	4/13/91	5/1/90 *	
PORTER, A.M. J	7/10/90	5/10/90*	
REBSTOCK, D.E.	1/30/91	4/27/90*	
REECE, R.E.	5/26/91	4/25/90*	
ROBERSON, A.M.	6/12/91	4/20/90*	
ROBINSON, H.L.	6/31/90	9/16/90	
RODRIQUEZ, E.	6/6/90 *	EXP'D	UNQUAL'D
SAMPATHKUMAR,	2/20/91	6/17/90*	
SAXON, T.W.	4/13/91	5/15/90*	
SMITH, R.E.	9/5/90	NO REC.	UNQUAL'D
THIGPEN, M.D.	5/12/91	5/8/90 *	
THOMPSON, R.L.	1/31/91	4/13/90*	
THORNTON, R.G.	1/6/91	9/6/90	
TRIPPE, K.H.	9/30/90	2/15/91	

OSC POSITION QUALS

WEBB, G.D.	4/13/91	5/1/90 *
WHITTEMORE, B.	3/29/91	6/23/90
WIDNER, D.G.	4/5/91	5/10/90*
WILCOX, R.C.	5/5/91	4/25/90*
WILDER, R.A.	2/3/91	6/17/90*
WILLIAMS, H.M.	11/28/90	3/21/90*
WOLFE, F.	2/27/91	6/17/90*
WOOLEY, E.J.	10/17/90	11/22/90
WRIGHT, M.J.	9/2/90	5/2/90 *

HP TECHNICIAN

NAME	RE-008	RE-030 GE-099	GE-001 RE-200	GE-005 RE-201	GE-155	
ARNOLD, H.F.		4/15/91 4/16/91	4/15/91 4/15/91	03/06/92 03/31/90*	01/31/91	
BAILEY, C.L. J		NO REC. EXP'D	1/27/91 1/27/91	NO REC. 05/31/90*	NO REC. 10/31/90	UNQUA
BELGE, A.L.		4/23/91 4/23/91	4/22/91 4/22/91	03/21/92 03/31/91	01/31/91	
BOAZMAN, D.J.		5/6/91 5/6/91	4/29/91 4/29/91	03/21/92 03/31/91	04/30/90*	
BRETT, H.M.		5/13/91 5/13/91	5/12/91 5/12/91	02/20/92 03/31/90*	04/30/90*	
BROWN, K.M.		5/13/91 5/13/91	5/12/91 5/12/91	03/14/92 05/31/90*	08/31/90	
BURRIS, S.R.		5/6/91 5/6/91	5/5/91 5/5/91	03/21/92 03/31/90*	02/28/91	
CARSWELL, J.A.		4/16/91 4/16/91	4/15/91 4/15/91	03/06/92 03/31/90*	01/31/91	
COLEMAN, B. II		5/13/91 5/13/91	5/12/91 5/12/91	02/28/92 03/31/90*	03/31/90*	
COLEMAN, N.K.		4/23/91 4/23/91	4/22/91 4/22/91	03/21/92 03/31/91	01/31/91	
DIXON, J.R.		4/30/91 4/30/91	5/5/91 5/5/91	03/06/92 03/31/90*	07/31/90	
DUNLAP, M.M.		5/13/91 5/13/91	5/12/91 5/12/91	03/06/92 03/31/91	02/28/91	
DUNMIRE, R.L.		4/23/91 4/23/91	4/22/91 4/22/91	03/14/92 03/31/91	01/31/91	
ETHEREDGE, J.W		4/3/91 4/3/91	4/2/91 4/2/91	03/14/92 03/31/90*	07/31/90	
GILLIARD, M.A.		4/3/91 4/3/91	4/2/91 4/2/91	04/04/92 03/31/90*	01/31/91	
GRIMSLEY, F.O.		4/16/91 4/16/91	4/15/91 4/15/91	10/03/92 02/28/91	01/31/91	
HALL, R.W.		4/9/91 4/9/91	4/8/91 4/8/91	03/21/92 03/31/91	01/31/91	

OSC POSITION QUALS

HARTFIELD, C.S	4/30/91	4/29/91	02/28/92		
	4/30/91	4/29/91	03/31/91	03/31/90*	
HERRING, J.H.	5/13/91	5/12/91	10/03/92		
	5/13/91	5/12/91	03/31/91	06/30/90	
HILL, F.	4/16/91	4/15/91	03/14/92		
	4/16/91	4/15/91	05/31/90*	01/31/91	
HOWE, T.D.	4/16/91	4/15/91	03/14/92		
	4/16/91	4/15/91	03/31/90*	01/31/91	
JOHNSON, M.L.	4/23/91	4/22/91	02/28/92		
	4/23/91	4/22/91	03/31/91	01/31/91	
KHERA, S.S.	4/9/91	4/8/91	02/20/92		
	4/9/91	4/8/91	03/31/91	01/31/91	
LUCOT, J.F.	4/9/91	4/8/91	03/21/92		
	4/9/91	4/8/91	05/31/90*	01/31/91	
LYDA, L.H.	4/16/91	4/15/91	10/03/92		
	4/16/91	4/15/91	03/31/90*	01/31/91	
MATTIAGE, G.G.	5/13/91	5/12/91	03/21/92		
	5/13/91	5/12/91	03/31/91	10/31/90	
MCCORKLE, G.L.	4/9/91	4/8/91	03/21/92		
	4/9/91	4/8/91	03/31/91	01/31/91	
MORGAN, V.R.	4/16/91	4/15/91	03/21/92		
	4/16/91	6/20/90*	03/31/91	01/31/91	
OGDEN, M.L.	4/9/91	4/8/91	02/28/92		
	4/9/91	4/8/91	03/31/91	01/31/91	
PETERS, C.E.	5/13/91	5/12/91	03/14/92		
	5/13/91	5/12/91	03/31/90*	03/31/90*	
PETROSKY, K.T.	4/23/91	4/22/91	02/28/92		
	4/23/91	4/22/91	03/31/91	01/31/91	
PITTMAN, B.W.	6/20/90*	5/5/91	03/21/92		
	6/21/90*	5/5/91	EXP'D	02/28/91	UNQUA
PRESTON, M.B.	4/9/91	4/8/91	03/14/92		
	4/9/91	4/8/91	EXP'D	01/31/91	UNQUA
RAYBURN, N.S.	5/13/91	5/12/91	03/14/92		
	5/13/91	5/12/91	03/31/91	10/31/90	
REES, W.S.	5/6/91	5/5/91	02/20/92		
	5/6/91	5/5/91	03/31/90*	04/30/90*	
REEVES, T. III	4/30/91	4/29/91	02/28/92		
	4/30/91	4/29/91	03/31/91	03/31/90*	
RILEY, R.L.	4/3/91	4/2/91	03/21/92		
	4/3/91	4/2/91	EXP'D	01/31/91	UNQUA
SCOGGINS, F.S.	5/6/91	5/5/91	02/28/92		
	5/6/91	5/5/91	03/31/90*	03/31/90*	
STANFORD, J.D.	4/16/91	4/22/91	10/03/92		
	4/16/91	4/22/91	EXP'D	01/31/91	UNQUA
STOKES, L.W.	4/23/91	4/22/91	04/04/92		
	4/23/91	4/22/91	03/31/91	01/31/91	
WEBB, T.D.	4/23/91	4/22/91	03/06/92		
	4/23/91	4/22/91	03/31/91	01/31/91	
WIGGINS, S.M.	4/23/91	4/22/91	03/14/92		
	4/23/91	4/22/91	03/31/91	01/31/91	

OSC POSITION QUALS

VEGP AMBULANCE CREW

NAME	GE-001	RE--008	
BENNETT, M.O.	7/28/90	10/ /19/90	
BRUCE, A.R.	EXP'D	10/ /19/90	UNQUA
CAIL, P.L.	4/31/91	10/ /19/90	
DUFFIELD, B.M.	10/17/90	NC REC.	UNQUAL'D
GLENN, S.M.	3/11/91	EXP'D	UNQUAL'D
GREINER, T.B.	6/27/90	6/ /10/90*	
HUTTON, C.E.	5/12/91	10/ /31/90	
JOHNSON, F L.	12/25/90	6/ /10/90*	
KWOLEK, J.	10/10/90	EXP'D	UNQUAL'D
MORRIS, B.K.	7/28/90	10/ /31/90	
PERKINS, M.E.	7/24/90	10/ /31/90	
WALKER, B.J.	11/28/90	EXP'D	UNQUAL'D
WILLIAMS, H.G.	3/11/91	EXP'D	UNQUAL'D
WIMBURN, J.M.	11/25/90	10/ /10/90	

The following personnel were available for support in the Operations Support Center.

OPERATIONS SUPPORT CENTER

ABSHER J
ACKER W
AILLOTT JD
ALLRED JJ
BARLOW R
BAYNES RL
BELLAIR E
BENTON T
BRADY CW
BURGESS J
CAMPBELL ML
CARPENTER A
CRIDER J
CROUCH D
DAVIS T
DEEN L
FEARRINGTON R
HALL PL
HANYOK, JR
HILL E
HUMPHRIES EJ
HUTCHERSON GA
JEFFERS HE
KICKLIGHTER WG
KINSEY A
KYLE C
MCKINNEY CD
MCLEOD SH
MERKEL R
PRICE J
SCHREIBER DW
SEYMOUR ME
TAYLOR J
WALLACE DE
WARD CE
WILSON J
YARNOLL R

2-70

03/21/90

EOF POSITION QUALS

GE-001 = Badge Training
RE-020 = Off-site Dose Assessment
RE-040 = Field Monitoring Team
RE-070 = Commun. and Records
RE-080 = Mgt. of Rad Emergencies
RE-111 = Security Coord. Training
GE-099 = SCBA Training

DATES LISTED ARE DROP DEAD DATES
* RENEW QUAL 3 MO. PRIOR TO EXPIR.

RE-200 = Physical Exam
RE-201 = Resp. Fit Test

EMERGENCY DIRECTOR (CORPORATE)

NAME	GE-001	RE-080
MCCOY, C.K.	6/7/91	10/6/90

EMERGENCY DIRECTOR

NAME	GE-001	RE-080	GE-099	RE-200	RE--201	
BOCKHOLD, G.	11/28/90	10/26/90	1/16/91	12/31/90	12/31/90	
KITCHENS, W.F.	4/31/91	10/26/90	4/29/91	03/31/91	09/30/90	
MOSBAUGH, A.L.	2/20/91	7/21/90	8/11/90	NO REC.	NO REC.	UNQUA

EOF MANAGER

NAME	GE-001	RE-080
HOLMES, K.R.	4/31/91	7/12/90
LACKEY, M.B.	5/14/91	10/26/90
LEGRAND, R.L.	5/7/91	1/26/91

DOSE ASSESSMENT MANAGER

NAME	GE-001	RE-020	
CURE, P.A.	7/28/90	8/25/90	
KOCHERY, I.A.	8/30/90	12/28/90	
LEGRAND, R.L.	5/7/91	NO REC.	UNQUALIFIED

DOSE ANALYST

NAME	GE-001	RE-020	
BOURNE, R.C.	3/29/91	6/6/91	
CLARKE, J.R. II	3/1/91	EXP'D	UNQUALIFIED
CONNOR, S.J.	4/8/91	8/25/90	
CORDELL, A.	12/22/90	EXP'D	UNQUALIFIED
CURE, P.A.	7/28/90	8/25/90	
DUQUETTE, K.W.	11/7/90	12/20/90	
HOUGHTALING, H.	6/27/90	EXP'D	UNQUALIFIED

EOF POSITION QUALS

KURTZMAN, M.J.	4/15/91	5/7/91
ROUSE, L.A.	1/31/91	4/4/91
SEEPE, M.C.	8/15/90	8/25/90

FIELD MONITORING TEAM COMMUNICATOR

NAME	GE-001	RE-040
ADAMS, C.M.	3/11/91	2/15/91
ALLEN, B.P.	3/11/91	6/15/90*
CANCER, A.G.	7/24/90	12/19/90
CARTER, W.R.	4/29/91	4/13/90*
DUVAL, R.A.	7/24/90	4/20/90*
GOODWIN, D.G. J	5/5/91	4/11/90*
JACKSON, S.M.	6/27/90	6/29/90
JAQUES, J.H.	7/24/90	4/27/90*
LEE, D.R.	4/8/91	2/15/91
WRIGHT, M.J.	9/2/90	5/2/90 *

SECURITY COORDINATOR

NAME	GE-001	RE-111
HUYCK, D.G.	8/30/90	7/24/90
KITCHENS, C.J.	5/12/91	4/26/90*
MCQUILLEN T.	1/6/91	6/3/90 *
MIDDLETON, A.L.	10/26/90	4/26/90*
WALKER, S.P.	4/29/91	2/20/91

SUPPORT COORDINATOR

NAME	GE-001	RE-070
AGRO, V.J.	2/3/91	5/1/91
AKIN, D.A.	6/27/90	6/8/90 *
HUGHES, J.R.	2/27/91	5/1/91

SUPPORT STAFF

NAME	GE-001
AKIN, D.A.	6/27/90
BELL, R.W.	6/27/90
BLACK, R.P.	6/27/90
CHANDLER, B.B.	8/24/90
CHANDLER, J.W.	9/14/90

EOF POSITION QUALS

DAVIS, B.B.	9/21/90
GRIFFIN, C.A.	11/14/90
HACKER, B.R.	2/27/91
JACKSON, E.G.	4/8/91
JOHNSON, V.S.	1/11/91
KICKLIGHTER, M.	11/14/90
MCDANIEL, M.C.	3/11/91
REEVES, J.	7/26/90
SMITH, H.M.	1/6/91
WALKER, G.W.	6/13/90*
WIMBERLY, M.K.	10/17/90
WOODS, C.B.	5/22/90*

ERF COMPUTER OPERATOR

NAME	GE-001
ALLISON, S.M.	4/31/91
BELL, H.R.	4/31/91
HALE, R.E.	5/14/91
RAY, L.F.	5/7/91
STUHANN, C.E.	5/14/91

NRC LIAISON

NAME	GE-001
HOLMES, K.R.	4/31/91
KURTZMAN, M.J.	4/15/91
ROBERTS, J.N.	9/26/90

ENN COMMUNICATOR

NAME	GE-001	RE-070
ADAMS, T.N.	12/22/90	10/19/90
BARRETT, W.R.	7/10/90	7/13/90
BOWLES, D.R.	8/15/90	7/13/90
CUPP, P.L.	3/11/91	7/13/90
MINYARD, D.L.	8/26/90	7/13/90
STANCIL, R.F.	11/4/90	7/13/90

EOF POSITION QUALS

HABITABILITY MONITOR

NAME	GE-001
BOURNE, R.C.	3/29/91
GREEN, L.E.	2/6/91
ROUSE, L.A.	1/31/91

STATUS LOOP COMMUNICATOR

NAME	GE-001
ALLISON, S.M.	4/31/91
BELL, H.R.	4/31/91
HALE, R.E.	5/14/91
RAY, L.F.	5/7/91
STUHANN, C.E.	5/14/91

TECHNICAL ASSISTANT TO THE EMERGENCY DIRECTOR

NAME	GE-001
KOZINSKY, E.J.	4/31/91
LEGRAND, R.L.	5/7/91
TYNAN, C.L.	11/28/90

The following personnel were available for support in the Emergency Operations Facility.

EMERGENCY OPERATIONS FACILITY

AJLUNI MJ
BRIGDON RD
CANADA J
DORMAN RE
DRAKE BT
HARRIS, GW
HILL, DS
JOHNSON P
JORDAN E
JORDAN EH
KLUTTZ PD
MAYO LE
PORTER AM
RUCKER S
SCUKANEC D
STINESPRING CP
THIGPEN MD
TURPIN B
VICKERY DO
WHITTEMORE BD

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