RCS TEMPORARY

WATER LEVEL SYSTEM

FOR INFORMATION ONLY

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1.0 PURPOSE

1.1 The purpose of this procedure is to provide instructions for Installation, Channel Calibration and Removal of RCS Temporary Water Level System.

1.2 SCOPE

1.2.1 When this procedure is performed for the Installation of RCS Temporary Water Level System, the following sections shall be used: 1.0, 2.0, 3.0, 5.0 and subsection 4.1.

1.2.2 When this procedure is performed for Channel Calibration, the following sections shall be used: 1.0, 2.0, 3.0, 5.0 and subsections 4.2, 4.3, 4.4 and 4.6.

1.2.3 When this procedure is performed for the Removal of RCS Temporary Water Level System, the following sections shall be used: 1.0, 2.0, 3.0, 5.0 and subsections 4.5 and 4.6.

1.2.4 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 steps, 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 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. [ ]

2.5 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". [ ]

2.6 This procedure shall only be performed in modes 5 and 6, when plant operating pressure is less than 100 psig. (100 psig rating applies only if tygon tubing is used) []

2.7 Upon removal of RCS Temporary Water Level System, Procedure 24766-1, "Accumulator Tank #1 Level 1L-950 Channel Calibration" and 24773-1, "Accumulator Tank #4 Level 1L-957 Channel Calibration" shall be performed to verify correct operation of Loops 1L-950 and 1L-957. []

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

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

2.8.2 Any test exceeds specified limits. []

2.9 Incorrect isolation/restoration of transmitter 1LT-950 during performance of this procedure may adversely affect Loop 1P-960. []

2.10 Incorrect isolation/restoration of transmitter 1LT-957 during performance of this procedure may adversely affect Loop 1P-967. []

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

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) that the following may be erratic or inoperable during performance of this procedure and obtain RO signature: []

3.2.1 Annunciator 06A03 "ACCUM TANK 1 HI/LO LEVEL". []

3.2.2 Annunciator 06D03 "ACCUM TANK 4 HI/LO LEVEL". []

3.2.3	Indicator 1LI-950.	[]
3.2.4	Indicator 1LI-957.	[]
3.2.5	Loops 1P-960 and 1P-967 (Common Reference Leg)	[]
3.2.6	PSMS RVLIS Indications, Train A and Train B	[]
3.2.7	Recorder 1LR-1310	[]
3.2.8	Indicator 1PI-408	[]
3.2.9	Indicator 1PI-418	[]
3.2.10	Indicator 1PI-428	[]
3.2.11	Indicator 1PI-438	[]
3.2.12	Indicator 1PI-405	[]
3.2.13	Indicator 1PI-405A	[]
3.2.14	Computer Point P0408 (Proteus)	[]
3.2.15	Computer Point P0418 (Proteus)	[]
3.2.16	Computer Point P0428 (Proteus)	[]
3.2.17	Computer Point P0438 (Proteus)	[]
3.2.18	Computer Point P5408 (ERF)	[]
3.2.19	Computer Point P5418 (ERF)	[]
3.2.20	Computer Point P5428 (ERF)	[]
3.2.21	Computer Point P5438 (ERF)	[]
3.2.22	Recorder 1PR-428	[]
3.2.23	PSMS Indications for RCS Wide Range Pressure	[]
3.2.24	RJR Valve Interlocks for valves 1HV-8701A, 1HV-8701B, 1HV-8702A and 1HV-8702B	[]
3.3	TEST EQUIPMENT REQUIRED	
3.3.1	Two (2) Ronan X85 Calibrator, or equivalent.	[]
3.3.2	Four (4) Fluke Model 8050A Digital Multimeters (DMM), or equivalent.	[]

3.3.3 Westinghouse 7300 Card Extender. []

3.3.4 Variable Pressure Source. []

3.3.5 Heise Digital Pressure Indicator, 0-300 "H_2O, (±0.25% accuracy), or equivalent. []

3.3.6 Two (2) 250 Ohm Test Resistors []

3.4 TEMPORARY EQUIPMENT REQUIRED

3.4.1 Heise Pressure Test Gauge, 0-30 Psia []

3.4.2 Two (2) Rosemount Differential Pressure Transmitter, Model #1153DB4RA (0-30 and 0-105" H_2O Range) with valve manifold. []

3.4.3 3/8" Poly Flow Tubing []

3.4.4 3/8" Swagelock Fittings []

3.5 Request RO to ensure the following alarm indication ILLUMINATES by performance of a lamp test:

Annunciator 06A03 "ACCUM TANK 1 HI/LO LEVEL" []

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

4.0 MAIN BODY

4.1 WATER LEVEL SYSTEM INSTALLATION

4.1.1 Install temporary RCS (Narrow Range) level transmitter adjacent (below) to RVLIS isolator 1LX-1310 (Location: Containment Bldg., 14AB/14.5). []

4.1.2 Install temporary RCS (Wide Range) level transmitter adjacent (below) to RVLIS isolator 1LX-1320. (Location: Containment Bldg., 14DB/17.5) []

NOTE

Tubing to be installed with continuous slope, routed away from or protected in traffic areas and positively identified along route.

4.1.3 Using poly flow tubing, connect low pressure input of temporary transmitters (Wide and Narrow Range) to Pressurizer level transmitter 1LT-459 low pressure input test port (Location: Containment Bldg., 14DB/18.5). []

4.1.4 Connect a 0-30 psia pressure test gauge inline with poly flow tubing at 1LT-459. []

4.1.5 If required, close temporary transmitters (Wide and Narrow Range) input test ports. []

4.1.6 If required, close temporary transmitters (Wide and Narrow Range) high and low pressure isolation valves. []

4.1.7 Open temporary transmitters (Wide and Narrow Range) equalizing valve. []

4.1.8 Slowly open 1LT-459 low pressure input test port. []

4.1.9 Slowly open temporary transmitter low pressure isolation valves. []

WARNING

ANY TRAPPED FLUID VENTED DURING THIS PROCEDURE MAY BE CONTAMINATED. A SUITABLE CONTAINER, AS RECOMMENDED BY THE HEALTH PHYSICS DEPARTMENT, SHALL BE USED TO ENTRAP THIS FLUID. THE FLUID SHOULD BE DISPOSED OF IN ACCORDANCE WITH HEALTH PHYSICS DEPARTMENT PROCEDURES.

NOTE

The temporary level systems (narrow and wide range) should be completely backfilled for correct operation.

4.1.10 */* Using vent screws, vent all air and fill temporary transmitters and poly tubing as required. []

4.1.11 Close temporary transmitters low pressure isolation valves. []

4.1.12 Request RO to close valve 1-1201-X4-153. []

4.1.13 Using poly flow tubing, connect high pressure input of temporary (Narrow Range) transmitter to 1LX-1310 vent port. [ ]

4.1.14 Request RO to open valve 1-1201-X4-153. [ ]

4.1.15 Slowly open narrow range temporary transmitter high pressure isolation valve. [ ]

4.1.16 */* Using vent screws, vent all air and fill narrow range temporary transmitter and poly tubing as required. [ ]

4.1.17 Close narrow range temporary transmitter equalizing valve. [ ]

4.1.18 Slowly open narrow range temporary transmitter low pressure isolation valve. [ ]

4.1.19 Request RO to close valve 1-1201-X4-155. [ ]

4.1.20 Using poly flow tubing, connect high pressure input of temporary (Wide Range) transmitter to 1LX-1320 vent port. [ ]

4.1.21 Request RO to open valve 1-1201-X4-155. [ ]

4.1.22 Slowly open wide range temporary transmitter high pressure isolation valve. [ ]

4.1.23 */* Using vent screws, vent all air and fill wide range temporary transmitter and poly tubing as required. [ ]

4.1.24 Close wide range temporary transmitter equalizing valve. [ ]

4.1.25 Slowly open wide range temporary transmitter low pressure isolation valve. [ ]

4.1.26 */* Loosen NLP 1 card, 1LQY-950 (QPC1-0321) locking screws and remove card from rack. [ ]

4.1.27 */* Loosen NLP 1 card, 1LQY-957 (QPC4-0325) locking screws and remove card from rack. [ ]

4.1.28 */* At 1LT-950, disconnect transmitter output leads I1 (black +) and I2 (white -). [ ]

4.1.29 Connect temporary (Narrow Range) transmitter output leads to I1 (black +) and I2 (white -). [ ]

4.1.30 */* At 1LT-957, disconnect transmitter output leads I1 (black +) and I2 (white -). [ ]

4.1.31 Connect temporary (Wide Range) transmitter output leads to I1 (black +) and I2 (white -). [ ]

4.1.32 */* Install NLP 1 card, 1LQY-950 (QPC1-0321) in rack and secure with locking screws. [ ]

4.1.33 */* Install NLP 1 card, 1LQY-957 (QPC4-0325) in rack and secure with locking screws. [ ]

4.1.34 */* Install a jumper to allow actuation of annunciator 06A03 from temporary (Narrow Range) level loop (Annunciator has 4 initiating devices) at cabinet QAR3, TB3/L, terminals 24 and 26. [ ]

4.1.35 */* Install a jumper to allow actuation of annunciator 06D03 from Loop 1L-956 (Annunciator has 4 initiating devices) at cabinet QAR5, TB5/9, terminals 01 and 03. [ ]

4.1.36 */* Install a jumper at cabinet QAR4, TB4/L terminals 28 and 29. (To disable High alarm condition, 1LB-950A) [ ]

4.2 CHANNEL CALIBRATION

4.2.1 Test Set-Up

4.2.1.1 Disconnect field leads from cabinet QPC1, TBA, terminals 10 and 11. [ ]

4.2.1.2 Connect a transmitter simulator, with an external 250 ohm test resistor in series with the negative lead, to cabinet QPC1, TBA, terminals 10 (+) and 11 (-). [ ]

4.2.1.3 Connect a DMM across external 250 ohm test resistor. [ ]

4.2.1.4 Disconnect field leads from cabinet QPC4, TBA, terminals 16 and 17. [ ]

4.2.1.5 Connect a transmitter simulator, with an external 250 ohm test resistor in series with the negative lead, to cabinet QPC4, TBA, terminals 16 (+) and 17 (-). [ ]

4.2.1.6 Connect a DMM across external 250 ohm test resistor. [ ]

4.2.2 Channel Status Check (As Found)

4.2.2.1 */* Adjust transmitter simulator (QPC1) to final output device indications listed and record input DMM readings in "As Found" section of "Data Sheet 1". [ ]

4.2.2.2 Adjust transmitter simulator to point at which annunciator 06A03 "ACCUM TANK 1 HI/LO LEVEL" is EXTINGUISHED. [ ]

4.2.2.3 */* DECREASE transmitter simulator to point at which annunciator ILLUMINATES and record reading in "As Found" section of "Data Sheet 1". []

4.2.2.4 */* INCREASE transmitter simulator to point at which annunciator EXTINGUISHES and record reading in "As Found" section of "Data Sheet 1". []

4.2.2.5 */* Adjust transmitter simulator (QPC4) to final output device indications listed and record input DMM readings in "As Found" section of "Data Sheet 1". []

4.2.3 Loop Power Supply (NLP 1) Card Calibration (1LQY-950)
Location: Cabinet QPC1, slot 0321

4.2.3.1 Connect a DMM to "Output 0-10V" and "Sig Com" of 1LQY-950. []

4.2.3.2 */* Adjust transmitter simulator (QPC1) to apply inputs listed and record output readings in "As Found" section of "Data Sheet 2". []

4.2.3.3 */* If As Found readings are within limits specified on "Data Sheet 2", and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet 2" and proceed to appropriate subsection. []

4.2.3.4 If As Found readings are not within limits specified on "Data Sheet 2", or more accurate readings are desired, proceed to Procedure 23300-C, "Field Calibration Procedure". []

4.2.3.5 */* Adjust transmitter simulator to apply inputs listed and record output readings in "As Left" section of "Data Sheet 2". []

4.2.4 Signal Comparator (NAL 2) Card Calibration (1LB-950A/B)
Location: Cabinet QPC1, slot 0322

4.2.4.1 Adjust transmitter simulator (QPC1) to point at which comparator #2 is reset (Output LED ON). []

4.2.4.2 */* DECREASE transmitter simulator to point at which comparator #2 trips (Output LED OFF) and record reading in "As Found" section of "Data Sheet 3". []

4.2.4.3 */* INCREASE transmitter simulator to point at which comparator #2 resets (Output LED ON) and record reading in "As Found" section of "Data Sheet 3". []

4.2.4.4 */* 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. []

4.2.4.5 If As Found readings are not within limits specified on "Data Sheet 3", or more accurate readings are desired, proceed to Procedure 23300-C, "Field Calibration Procedure". []

4.2.4.6 Adjust transmitter simulator to point at which comparator #2 is reset (Output LED ON). []

4.2.4.7 */* DECREASE transmitter simulator to point at which comparator #2 trips (Output LED OFF) and record reading in "As Left" section of "Data Sheet 3". []

4.2.4.8 */* INCREASE transmitter simulator to point at which comparator #2 resets (Output LED ON) and record reading in "As Left" section of "Data Sheet 3". []

4.2.5 Indicator Calibration (1LI-950)
Location: QMCB

4.2.5.1 */* Adjust transmitter simulator (QPC1) to indications listed and record input DMM readings in "As Found" section of "Data Sheet 4". []

4.2.5.2 */* 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 appropriate subsection. []

4.2.5.3 If As Found readings are not within limits specified on "Data Sheet 4", or more accurate readings are desired, proceed to Procedure 23300-C, "Field Calibration Procedure". []

4.2.5.4 */* Adjust transmitter simulator to indications listed and record input DMM readings in "As Left" section of "Data Sheet 4". []

4.2.6 Loop Power Supply (NLP 1) Card Calibration (1LQY-957)
Location: Cabinet QPC4, slot 0325

4.2.6.1 Connect a DMM to "Output 0-10V" and "Sig Com" of 1LQY-957. []

4.2.6.2 */* Adjust transmitter simulator (QPC4) to apply inputs listed and record output readings in "As Found" section of "Data Sheet 5". []

4.2.6.3 */* 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. [ ]

4.2.6.4 If As Found readings are not within limits specified on "Data Sheet 5", or more accurate readings are desired, proceed to Procedure 23300-C, "Field Calibration Procedure". [ ]

4.2.6.5 */* Adjust transmitter simulator to apply listed and record output readings in "As Left" section of "Data Sheet 5". [ ]

4.2.7 Indicator Calibration (1LI-957)
Location: QMCB

4.2.7.1 */* Adjust transmitter simulator (QPC4) to indications listed and record input DMM readings in "As Found" section of "Data Sheet 6". [ ]

4.2.7.2 */* 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 appropriate subsection. [ ]

4.2.7.3 If As Found readings are not within limits specified on "Data Sheet 6", or more accurate readings are desired, proceed to Procedure 23300-C, "Field Calibration Procedure". [ ]

4.2.7.4 */* Adjust transmitter simulator to indications listed and record input DMM readings in "As Left" section of "Data Sheet 6". [ ]

4.2.8 Channel Status Check (As Left)

4.2.8.1 Repeat steps 4.2.2.1 through 4.2.2.5 to obtain As Left values. [ ]

4.3 SENSOR VERIFICATION/CALIBRATION (Narrow Range)
Location: Containment Bldg., 14AB/14.5

4.3.1 Disconnect test equipment connected to cabinet QPC1, TBA, terminals 10 and 11. [ ]

4.3.2 Connect field lead to cabinet QPC1, TBA, terminal 10. [ ]

4.3.3 Connect field lead in series with 250 ohm test resistor to terminal 11. [ ]

4.3.4 Connect a DMM across the 250 ohm test resistor. [ ]

4.3.5 Close temporary transmitter high pressure isolation valve. [ ]

4.3.6 Open temporary transmitter equalizing valve. [ ]

4.3.7 Close temporary transmitter low pressure isolation valve. [ ]

WARNING

ANY TRAPPED FLUID VENTED DURING ISOLATION FROM OR RESTORING TO SERVICE MAY BE CONTAMINATED. A SUITABLE CONTAINER, AS RECOMMENDED BY THE HEALTH PHYSICS DEPARTMENT, SHALL BE USED TO ENTRAP THIS FLUID. THE FLUID SHOULD BE DISPOSED OF IN ACCORDANCE WITH HEALTH PHYSICS DEPARTMENT PROCEDURES.

4.3.8 Open temporary transmitter input test ports. [ ]

4.3.9 Connect a variable pressure source and test gauge to transmitter low pressure input test port. [ ]

4.3.10 */* Apply inputs listed and record transmitter output readings in "As Found" section of "Data Sheet 7". [ ]

4.3.11 */* 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 step 4.3.16. [ ]

4.3.12 If As Found readings are not within limits specified on "Data Sheet 7", or more accurate readings are desired, apply zero percent input and adjust transmitter "Zero" adjustment to obtain Expected output value listed on "Data Sheet 7". [ ]

4.3.13 Apply 100 percent input and adjust transmitter "Span" adjustment to obtain Expected output value listed on "Data Sheet 7". [ ]

4.3.14 Repeat transmitter "Zero" and "Span" adjustments until no further adjustments are necessary. [ ]

4.3.15 */* Apply inputs listed and record transmitter output readings in "As Left" section of "Data Sheet 7". [ ]

4.3.16 */* Reduce test pressure to zero "H_2O and remove pressure source and test gauge from transmitter. [ ]

4.3.17 */* Close transmitter input test ports. [ ]

4.3.18 */* Open transmitter equalizing valve. [ ]

4.3.19 */* Slowly open transmitter low pressure isolation valve. [ ]

4.3.20 */* Close transmitter equalizing valve. [ ]

NOTE

Air must be vented from all transmitters used in liquid service.

4.3.21 */* Slowly open transmitter high pressure isolation valve. [ ]

4.3.22 */* Inspect valves, tubing, and instrument for leaks. Immediate action shall be taken to correct any leaks found. [ ]

4.4 SENSOR VERIFICATION/CALIBRATION (Wide Range)
Location: Containment Bldg., 14DB/17.5

4.4.1 Disconnect test equipment connected to cabinet QPC4, TBA, terminals 16 and 17. [ ]

4.4.2 Connect field lead to cabinet QPC4, TBA, terminal 16. [ ]

4.4.3 Connect field lead in series with 250 ohm test resistor to terminal 17. [ ]

4.4.4 Connect a DMM across the 250 ohm test resistor. [ ]

4.4.5 Close temporary transmitter high pressure isolation valve. [ ]

4.4.6 Open temporary transmitter equalizing valve. [ ]

4.4.7 Close temporary transmitter low pressure isolation valve. [ ]

WARNING

ANY TRAPPED FLUID VENTED DURING ISOLATION FROM OR RESTORING TO SERVICE MAY BE CONTAMINATED. A SUITABLE CONTAINER, AS RECOMMENDED BY THE HEALTH PHYSICS DEPARTMENT, SHALL BE USED TO ENTRAP THIS FLUID. THE FLUID SHOULD BE DISPOSED OF IN ACCORDANCE WITH HEALTH PHYSICS DEPARTMENT PROCEDURES.

4.4.8 Open temporary transmitter input test ports. []

4.4.9 Connect a variable pressure source and test gauge to transmitter low pressure input test port. []

4.4.10 */* Apply inputs listed and record transmitter output readings in "As Found" section of "Data Sheet 8". []

4.4.11 */* 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 4.4.16. []

4.4.12 If As Found readings are not within limits specified on "Data Sheet 8", or more accurate readings are desired, apply zero percent input and adjust transmitter "Zero" adjustment to obtain Expected output value listed on "Data Sheet 8". []

4.4.13 Apply 100 percent inout and adjust transmitter "Span" adjustment to obtain Expected output value listed on "Data Sheet 8". []

4.4.14 Repeat transmitter "Zero" and "Span" adjustments until no further adjustments are necessary. []

4.4.15 */* Apply inputs listed and record transmitter output readings in "As Left" section of "Data Sheet 8". []

4.4.16 */* Reduce test pressure to zero "H_2O and remove pressure source and test gauge from transmitter. []

4.4.17 */* Close transmitter input test ports. []

4.4.18 */* Open transmitter equalizing valve. []

4.4.19 */* Slowly open transmitter low pressure isolation valve. [ ]

4.4.20 */* Close transmitter equalizing valve. [ ]

NOTE

Air must be vented from all transmitters used in liquid service.

4.4.21 */* Slowly open transmitter high pressure isolation valve. [ ]

4.4.22 */* Inspect valves, tubing, and instrument for leaks. Immediate action shall be taken to correct any leaks found. [ ]

4.5 WATER LEVEL SYSTEM REMOVAL

4.5.1 */* Loosen NLP 1 card, 1LQY-950 (QPC1-0321) locking screws and remove card from rack. [ ]

4.5.2 */* Loosen NLP 1 card, 1LQY-957 (QPC4-0325) locking screws and remove card from rack. [ ]

4.5.3 Request RO to close valve 1-1201-X4-153. [ ]

4.5.4 Request RO to close valve 1-1201-X4-155. [ ]

4.5.5 Open temporary (Wide and Narrow Range) transmitters equalizing valve. [ ]

4.5.6 */* Close Pressurizer level transmitter 1LT-459 low pressure input test port. [ ]

WARNING

ANY TRAPPED FLUID DRAINED AT THIS TIME MAY BE CONTAMINATED. A SUITABLE CONTAINER, AS RECOMMENDED BY THE HEALTH PHYSICS DEPARTMENT, SHALL BE USED TO ENTRAP THIS FLUID. THE FLUID SHOULD BE DISPOSED OF IN ACCORDANCE WITH HEALTH PHYSICS DEPARTMENT PROCEDURES.

4.5.7 Vent and drain all liquid from poly flow tubing and temporary (Wide and Narrow Range) transmitters as required. [ ]

4.5.8 */*	Disconnect temporary (Narrow Range) transmitter output leads at 1LT-950.	[]
4.5.9 */*	Connect 1LT-950 output leads to I1 (black +) and I2 (white -).	[]
4.5.10 */*	Disconnect temporary (Wide Range) transmitter output leads at 1LT-957.	[]
4.5.11 */*	Connect 1LT-957 output leads to I1 (black +) and I2 (white -).	[]
4.5.12	Remove temporary (Narrow and Wide Range) transmitters.	[]
4.5.13	Disconnect poly flow tubing and test gauge from 1LX-1310, 1LX-1320 and 1LT-459.	[]
4.5.14 */*	Install vent plugs on 1LX-1310 and 1LX-1320.	[]
4.5.15 */*	Request RO to open valve 1-1201-X4-153.	[]
4.5.16 */*	Request RO to open valve 1-1201-X4-155.	[]
4.5.17 */*	Install NLP 1 card, 1LQY-950 (QPC1-0321) in rack and secure with locking screws.	[]
4.5.18 */*	Install NLP 1 card, 1LQY-957 (QPC4-0325) in rack and secure with locking screws.	[]
4.5.19 */*	Remove jumper connected at cabinet QAR3, TB3/L, terminals 24 to 26.	[]
4.5.20 */*	Remove jumper connected at cabinet QAR5, TB5/9, terminals 01 to 03.	[]
4.5.21 */*	Remove jumper connected at cabinet QAR4, TB4/L, terminals 28 to 29.	[]
4.5.22 */*	Perform Procedure 24766-1, "Accumulator Tank #1 Level 1L-950 Channel Calibration" to verify correct calibration of loop 1L-950.	[]
4.6	RESTORE TO SERVICE	
4.6.1 */*	Remove all test equipment connected during the course of this procedure.	[]
4.6.2 */*	If not already performed, connect field leads to cabinet QPC1, TBA, terminals 10 and 11.	[]

4.6.3 */* If not already performed, connect field leads to cabinet QPC4, TBA, terminals 16 and 17. [ ]

4.6.4 */* If not already performed, install any cards removed during performance of Procedure 23300-C, "Field Calibration Procedure" in rack and secure with locking screws. [ ]

4.6.5 */* Verify loops reflect current plant conditions after they are restored to service. [ ]

4.6.6 Notify RO that temporary Loops 1L-950 and 1L-957 have been returned to service. [ ]

4.6.7 */* 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 below are within limits specified on applicable Data Sheets.

5.1.1 Channel Calibration

a. Indicator 1LI-950

b. NAL Card 1LB-950A/B

c. NLP Card 1LQY-950

d. NLP Card 1LQY-957

e. Indicator 1LI-957

5.1.2 Sensor Verification/Calibration

a. Narrow Range

b. Wide Range

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 Instruction Manual for Process Instrumentation and Control, 1X6AU01-526.

6.2 Instruction Manual for Westinghouse Series 252 Indicator, 1X6AV02-286

6.3 Instruction Manual for Rosemount D.P. Transmitters, 1X5AD04-66

6.4 Wiring Diagrams, 1X3D-CH-J19H, 1X3D-CE-F01G, 1X3D-CE-F01E and 1X3D-CE-F01J

6.5 P&ID Diagrams, 1X4DB113, 1X4DB112

6.6 Interconnecting Wiring Diagrams, 1X6AU01-378 and 1X6AU01-469

6.7 PROCEDURES

6.7.1 23300-C, "Field Calibration Procedure"

6.7.2 24766-1, "Accumulator Tank #1 Level 1L-950 Channel Calibration"

6.7.3 00306-C, "Temporary Jumper And Lifted Wire Control"

6.7.4 13005-1, "Reactor Coolant System Draining"

6.7.5 24773-1, "Accumulator Tank #4 Level 1L-957 Channel Calibration"

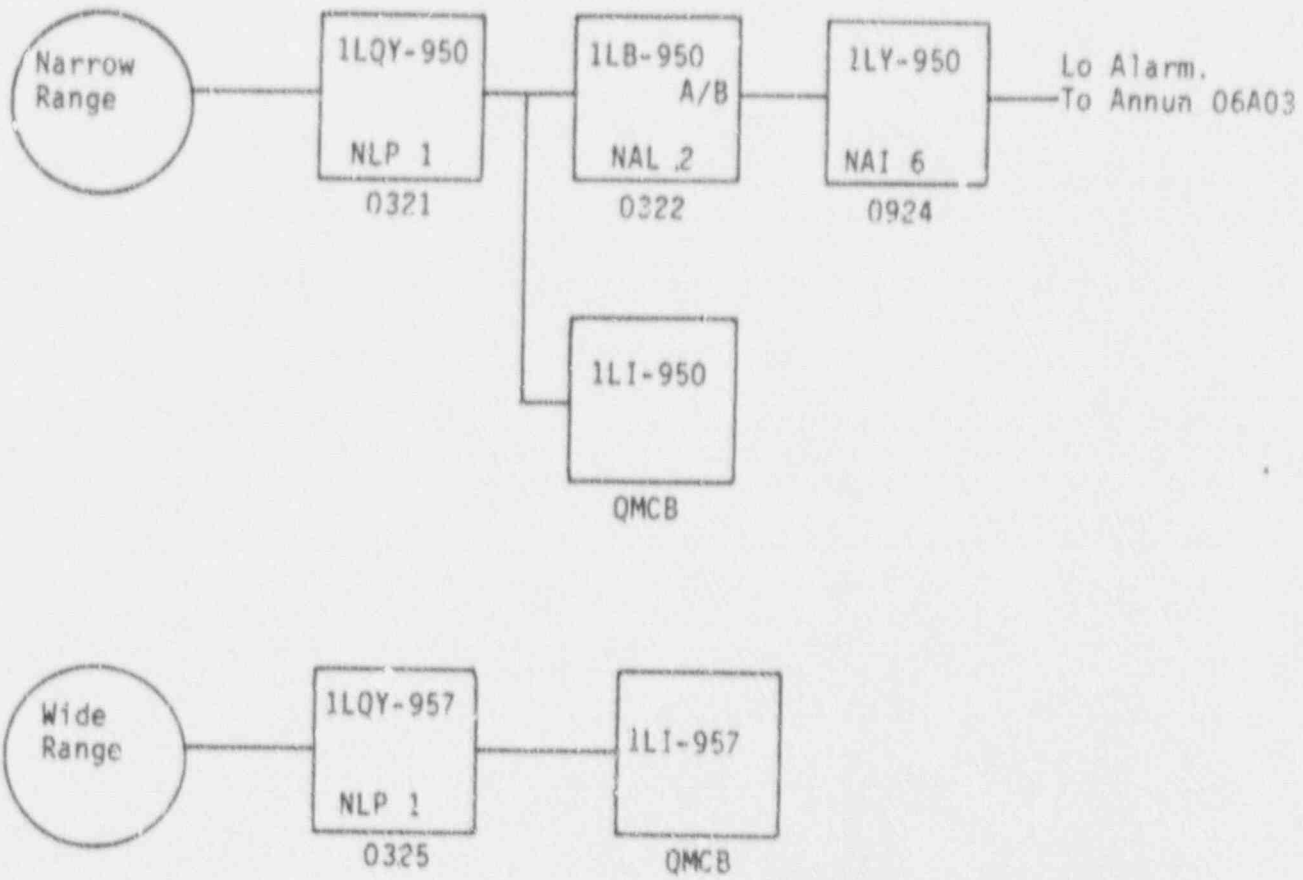
6.7.6 54840-1, "Installation And Removal Instructions For The RCS Temporary Level Indication Tygon Tube"

6.8 Annunciator Engraving And System Information, 1X6AV01-242

6.9 Indicator Specification Sheet - 1X6AA02-500

6.10 Transmitter Location Drawings - 1X5DS4D06, 1X5DS4A06

END OF PROCEDURE TEXT



LOOP DESCRIPTION:

Temporary (Narrow Range) transmitter senses Reactor Coolant System level and sends this signal to Loop 1L-950 in cabinet QPC1 where it is converted for use as an input to indicator 1LI-950 and Annunciator 06A03 "ACCUM TANK 1 HI/LO LEVEL" for temporary (Low Level) alarm indication. Temporary (Wide Range) transmitter senses Reactor Coolant System level and sends this signal to Loop 1L-957 in cabinet QPC4 where it is converted for use as an input to indicator 1LI-957.

Figure 1

DATA SHEET 1

Loop No. 1L-950 Cabinet No. QPC1 SHEET 1 OF 3

Title RCS Temporary Water Level System

NOTES: Narrow Range input

DEVICE	INST. NO. 1LI-950				
INDICATION	UNITS V DC				
%	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
0.0	1.000	0.940	1.060		
24.0	1.960	1.900	2.020		
50.0	3.000	2.940	3.060		
76.0	4.040	3.980	4.100		
100.0	5.000	4.940	5.060		
76.0	4.040	3.980	4.100		
50.0	3.000	2.940	3.060		
24.0	1.960	1.900	2.020		
0.0	1.000	0.940	1.060		

COMMENTS:

DATA SHEET 1

Loop No. 1L-957 Cabinet No. QPC4 SHEET 2 OF 3

Title RCS Temporary Water Level System

NOTES: Wide Range input

DEVICE	INST. NO. 1LI-957				
INDICATION	UNITS V DC				
%	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
0.0	1.000	0.940	1.060		
24.0	1.960	1.900	2.020		
50.0	3.000	2.940	3.060		
76.0	4.040	3.980	4.100		
100.0	5.000	4.940	5.060		
76.0	4.040	3.980	4.100		
50.0	3.000	2.940	3.060		
24.0	1.960	1.900	2.020		
0.0	1.000	0.940	1.060		

COMMENTS:

DATA SHEET 1 SHEET 3 OF 3

Inst. No. 1L-950 Cabinet No. QPC1

Title RCS Temporary Water Level System

NOTES: Narrow Range input

ACTION	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
Annun. 06A03 ILLUMINATED	V DC	3.400	3.370	3.430		
Annun. 06A03 EXTINGUISHED	V DC	3.440	3.410	3.470		

TEST EQUIPMENT

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

COMMENTS:

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

DATA SHEET 2 SHEET 1 OF 1

Instr. No. 1LQY-950 Location QPC1-0321 Serial No. _____

Description NLP 1 Card Manufacturer Westinghouse Model No. 2837A12G01

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	0.000	-0.050	0.050		
25	2.000	2.500	2.450	2.550		
50	3.000	5.000	4.950	5.050		
75	4.000	7.500	7.450	7.550		
100	5.000	10.000	9.950	10.050		
75	4.000	7.500	7.450	7.550		
50	3.000	5.000	4.950	5.050		
25	2.000	2.500	2.450	2.550		
0	1.000	0.000	-0.050	0.050		

TEST EQUIPMENT

T.E. NO.	MODEL NO.	CALIBRATION DUE DATE

COMMENTS:

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

DATA SHEET 3 SHEET 1 OF 1

Inst. No. 1LB-950A/B Location QPC1-0322 Serial No. _____

Description NAL 2 Card Manufacturer Westinghouse Model No. 2837A13G02

NOTES: Expected Jumpers: Circuit #2 NE and L
Circuit #1 not used in temporary level loop

ACTION	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
Output 2 LED OFF	V DC	3.400	3.370	3.430		
Output 2 LED ON	V DC	3.440	3.410	3.470		

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

Inst. No. 1LI-950 Location QMCB Serial No. _____

Description Indicator Manufacturer Westinghouse Model No. 252

NOTES: N/A

INDICATION	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
%	V DC	V DC	V DC	V DC	V DC
0.0	1.000	0.940	1.060		
24.0	1.960	1.900	2.020		
50.0	3.000	2.940	3.060		
76.0	4.040	3.980	4.100		
100.0	5.000	4.940	5.060		
76.0	4.040	3.980	4.100		
50.0	3.000	2.940	3.060		
24.0	1.960	1.900	2.020		
0.0	1.000	0.940	1.060		

COMMENTS:

TEST EQUIPMENT

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

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

DATA SHEET 5 SHEET 1 OF 1

Instr. No. 1LQY-957 Location QPC4-0325 Serial No. _____

Description NLP 1 Card Manufacturer Westinghouse Model No. 2837A12G01

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	0.000	-0.050	0.050		
25	2.000	2.500	2.450	2.550		
50	3.000	5.000	4.950	5.050		
75	4.000	7.500	7.450	7.550		
100	5.000	10.000	9.950	10.050		
75	4.000	7.500	7.450	7.550		
50	3.000	5.000	4.950	5.050		
25	2.000	2.500	2.450	2.550		
0	1.000	0.000	-0.050	0.050		

COMMENTS.

TEST EQUIPMENT

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

PERFORMED BY: _____

REVIEWED BY: _____ DATE

APPROVED BY: _____ DATE

DATA SHEET 6

SHEET 1 OF 1

Inst. No. 1LI-957 Location QMCB Serial No. _____

Description Indicator Manufacturer Westinghouse Model No. 252

NOTES: N/A

INDICATION	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
%	V DC	V DC	V DC	V DC	V DC
0.0	1.000	0.940	1.060		
24.0	1.960	1.900	2.020		
50.0	3.000	2.940	3.060		
76.0	4.040	3.980	4.100		
100.0	5.000	4.940	5.060		
76.0	4.040	3.980	4.100		
50.0	3.000	2.940	3.060		
24.0	1.960	1.900	2.020		
0.0	1.000	0.940	1.060		

COMMENTS:

TEST EQUIPMENT

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

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

DATA SHEET 7 SHEET 1 OF 1

Inst. No. Narrow Range Location 14Ab/14.5 Serial No. _____

Description Transmitter Manufacturer Rosemount Model No. 1153DB

NOTES: Input to low side with high side vented

INPUT		EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	COMMENTS:
%	"H_2O	V DC	V DC	V DC	V DC	V DC	
0	179.25	1.000	0.980	1.020			
25	171.75	2.000	1.980	2.020			
50	164.25	3.000	2.980	3.020			
75	156.75	4.000	3.980	4.020			
100	149.25	5.000	4.980	5.020			
75	156.75	4.000	3.980	4.020			
50	164.25	3.000	2.980	3.020			
25	171.75	2.000	1.980	2.020			
0	179.25	1.000	0.980	1.020			

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

Inst. No. Wide Range Location 14DB/17.5 Serial No. _____

Description Transmitter Manufacturer Rosemount Model No. 1153DB

NOTES: Input to low side with high side vented

INPUT		EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT	COMMENTS:
%	"H_2O	V DC	V DC	V DC	V DC	V DC	
0	179.25	1.000	0.980	1.020			
25	155.25	2.000	1.980	2.020			
50	131.25	3.000	2.980	3.020			
75	107.25	4.000	3.980	4.020			
100	83.25	5.000	4.980	5.020			
75	107.25	4.000	3.980	4.020			
50	131.25	3.000	2.980	3.020			
25	155.25	2.000	1.980	2.020			
0	179.25	1.000	0.980	1.020			

TEST EQUIPMENT

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

PERFORMED BY: DATE

REVIEWED BY: DATE

APPROVED BY: DATE

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	Step/Substep		Initial
3.6	Prerequisites met		4.1.35	Jumper installed QAR5, TB5/9, term 01 to 03	
4.1.10	Air vented from system		4.1.36	Jumper installed QAR4, TB4/L term 28 to 29	
4.1.16	Air vented		4.3.16	Remove test equipment	
4.1.23	Air vented		4.3.17	Input test ports closed	
4.1.26	1LQY-950 (QPC1-0321) removed from rack		4.3.18	Equalizing valve open	
4.1.27	1LQY-957 (QPC4-0325) removed from rack		4.3.19	Low pressure iso valve open	
4.1.28	1LT-950 leads disconnected (+) (-)		4.3.20	Equalizing valve closed	
4.1.30	1LT-957 leads disconnected (+) (-)		4.3.21	High pressure iso valve open	
4.1.32	1LQY-950 (QPC1-0321) installed and secure		4.3.22	Leak check ok	
4.1.33	1LQY-957 (QPC4-0325) installed and secure		4.4.16	Remove test equipment	
4.1.34	Jumper installed QAR3, TB3/L, term 24 to 26		4.4.17	Input ports closed	
			4.4.18	Equalizing valve open	

CHECKLIST SHEET 2 OF 3

Step/Substep		Initial
4.4.19	Low pressure iso valve open	
4.4.20	Equalizing valve closed	
4.4.21	High pressure iso valve open	
4.4.22	Leak check ok	
4.5.1	1LQY-950 (QPC1-0321) removed from rack	
4.5.2	1LQY-957 (QPC4-0325) removed from rack	
4.5.6	1LT-459 low pressure input test port closed	
4.5.8	Temporary transmitter leads disconnected (+)	
	(-)	
4.5.9	1LT-950 leads connected black (+)	
	white (-)	
4.5.10	Temporary transmitter leads disconnected (+)	
	(-)	
4.5.11	1LT-957 leads connected black (+)	
	white (-)	
4.5.14	Vent plugs installed 1LX-1310	
	1LX-1320	
4.5.15	1-1201-X4-153 open	
4.5.16	1-1201-X4-155 open	
4.5.17	1LQY-950 (QPC1-0321) installed and secure	
4.5.18	1LQY-957 (QPC4-0325) installed and secure	
4.5.19	Jumper removed QAR3, TB3/L, term 24 to 26	
4.5.20	Jumper removed QAR5, TB5/9 term 01 to 03	
4.5.21	Jumper removed QAR4, TB4/L term 28 to 29	
4.5.22	Procedure 24766-1 performed	

CHECKLIST SHEET 3 OF 3

Step/Substep		Initial	Step/Substep		Initial
4.6.1	Remove all test equipment		4.6.4	Cards installed and secured	
4.6.2	Field leads connected QPC1, TBA, term 10		4.6.5	Loops reflect current plant conditions	
	term 11				
4.6.3	Field leads connected QPC4, TBA, term 16				
	term 17				

Performed by: Date:

Reviewed by: Date:

Sheet 1 of 1

COMPLETION SHEET

PROCEDURE TITLE RCS TEMPORARY WATER LEVEL SYSTEM

ME 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 _____