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CRYSTAL RIVER UNIT 3

PLANT OPERATING MANUAL

SP-178

CONTAINMENT LEAKAGE TEST-TYPE "A" INCLUDING LINER PLATE

01 39

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1.0 PURPOSE

1.1 Intent

1.1.1 This procedure establishes the requirements to assure that leakage through the primary reactor containment, and systems and components penetrating the primary containment does not exceed the allowable leakage rate values as specified in Technical Specification 5.6.2.20 and 10CFR50, Appendix J, Option B.

1.1.2 Testing shall be performed using the methods and provisions of:

Total-time method using the provisions of BN-TOP-1
OR
Mass-point method as specified in ANSI/ANS-56.8-1994.

1.1.3 This test satisfies the Type A test requirements of 10CFR50, Appendix J. Type A tests (overall integrated containment leakage rate) shall be conducted during shutdown at a frequency specified in TS 5.6.2.20 and the Containment Leakage Rate Testing Program.

1.2 Equipment Database (EDB)

1.2.1 The following tags are listed in the EDB as being affected by this procedure:
See Attachments 3 and 4.

2.0 REFERENCES

2.1 Commitment Documents

2.1.1 Title 10, Code of Federal Regulations, Part 50, Appendix J, Option B

2.1.2 "Containment System Leakage Testing Requirements" American National Standard ANSI/ANS 56.8-1994.

2.1.3 "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J" NEI 94-01, July 26, 1995.

2.1.4 "Performance-Based Containment Leak-Test Program," USNRC Regulatory Guide 1.163, September 1995.

2.1.5 Technical Specification 5.6.2.20, Containment Leakage Rate Testing Program

2.1.6 Containment Leakage Rate Testing Program, Crystal River Unit 3

2.1.7 Technical Specification References

Applicable References	Surv. Perf. During Modes	LCO/Other Requirements During Modes	Surv. Freq.	Freq. Notes
3.6.1.1	5, 6	1 thru 4	SP-1	
5.6.2.20	5, 6	1 thru 4	SP-1	

SURVEILLANCE FREQUENCY:

SP-1 In accordance with the Containment Leakage Rate Testing Program

FREQUENCY NOTES:

None

2.2 **Reference Documents**

2.2.1 Bechtel report "Testing Criteria for Integrated Leakage Rate Testing of Primary Containment Structures for Nuclear Power Plants" BN-TOP-1, Rev. 1, November 1, 1972.

2.2.2 USNRC IN Notice 85-71.

2.2.3 AI-550, Infrequently Performed Tests and Evolutions

2.2.4 AI-607, Pre Job and Post Job Briefings

2.2.5 SP-112, Calibration of the Reactor Protection System

2.2.6 SP-132A, Engineered Safeguards Channel Calibration

2.2.7 SP-179B, Containment Leakage Test -Type B

2.2.8 SP-179C, Containment Leakage Test - Type C

2.2.9 SP-430, Containment Air Locks Seal Leakage Test

2.2.10 FPC Drawing P-304-723, Test and Drain Lines at Fuel Transfer Tubes

2.2.11 FPC Drawing 1C-308-696, Leak Rate Temperature Element Locations

2.2.12 FPC Drawing 1C-308-697, Leak Rate Humidity Element Locations

2.2.13 29 CFR 1926.804, Subchapter S, Appendix A

2.2.14 OP-417, Containment Operating Procedure

2.2.15 NDEP-0620, VT-1 and VT-3 Visual Examination of ASME Section XI, Subsection IWE Components of Nuclear Power Plants

2.2.16 EGR-NGGC-0351, Condition Monitoring of Structures

3.0 PERSONNEL INDOCTRINATION

3.1 Description

3.1.1 The purpose of the R14 ILRT is to measure the total leakage through the CR3 primary containment boundary after pressurizing our 2,000,000 ft3 reactor building to 52.1 psig in accordance with 10CFR50 Appendix J, Option B.

3.1.2 To attain test pressure, a total air mass of 690,000 lbs will have been pumped into containment.

3.1.3 This air will be pumped into containment utilizing the following (estimated) equipment located outside of the protected area in the CR1/2 parking lot:

- Twenty 1,500 cfm air compressors
- Two 5,400 cfm desiccant air dryers
- Four 3,000 cfm desiccant air dryers
- One 10,000 cfm refrigerated dryer
- Two 60 ton chiller and associated after-coolers
- Two temporary 8" pipe/hose lines via IB-119 to PEN-216 and PEN-217
- Two 300kw Diesel Generators (twinpack)

3.1.4 The ILRT measurement system will utilize vendor supplied and installed digital instruments that enable us to accurately calculate the weight of the contained air mass and utilize statistics to determine the leak rate over time.

3.1.5 The test acceptance criteria is 75% of La (allowed leakage), or 0.1875 wt% per day of the initial mass. This equates to an allowable leakage of 53.9 lbm/hr (approx 1/8" diameter air leak).

3.1.6 Maintaining stable plant conditions is critical to the success of this test. During testing, mass changes from pressure fluctuations, volume changes, and plant temperature changes, make it difficult to identify actual leakage trends.

3.1.7 The test duration for each of the five phases was developed based on recent industry OE and validated based on the size of CR3 containment and the number of compressors and pipe sizes.

- **Pressurization phase (10 hrs critical path / 7 hrs stretch)**
  The containment vessel is sealed and pressurized to approximately peak accident pressure via rented diesel air compressors. Past data indicates approximately ten hours to pressurize containment to the desired test pressure.

- **Temperature stabilization phase (8 hrs critical path / 6 hrs stretch)**
  Once the test pressure is reached, the stabilization phase begins. Temperatures are required to stabilize for a minimum of four (4) hours although past data indicates stabilization can last up to twenty (20) hours.
- **Integrated leak rate data collection phase (8 hrs critical path)**
  Following the temperature stabilization period, containment leak rate data is collected using installed test instrumentation for a minimum of eight (8) hours. This data collection phase may take longer if the leak rate changes.
- **Leak rate verification phase (4 hrs critical path)**
  At the end of the test data collection phase, the leak rate verification phase begins by introducing a known leak and verifying proper operation of the test instrumentation. This phase of the test has a four (4) hour minimum requirement.
- **Depressurization phase (10 hrs critical path / 6 hrs stretch)**
  Containment is depressurized in a controlled manner and systems are returned to their normal status. Past data indicates the depressurization phase lasts 8 – 10 hours.

3.2 **Definitions**

3.2.1 As Found Leakage Rate: Leakage rate testing after some period of normal service conditions, performed prior to any repairs or adjustments.

As Left Leakage Rate: The leakage rate following any repairs or adjustments to the barrier being tested.

3.2.2 Containment Atmosphere Volume Weighted Average Temperature: The temperature derived from weighing each temperature sensor reading by the volume it represents.

3.2.3 La (weight %/24h). The maximum allowable Type A test leakage rate at pressure Pac.

3.2.4 Lam (weight %/24h). Estimate of leakage rate, derived as a function of the least squares slope and intercept, for the Type A test at pressure Pac obtained from testing the primary containment by simulating some of the conditions that would exist under DBA conditions (e.g. vented, drained, flooded, or pressurized).

3.2.5 Lc (weight %/24h). The composite primary containment leakage rate measured using the CILRT instruments after Lo is superimposed.

3.2.6 Lo (weight %/24h). The known leakage rate superimposed on the containment during the verification test.

3.2.7 Measurement System: The entire system from sensor to display inclusive.

3.2.8 Pac (psig or KPa) The calculated peak containment internal pressure related to the DBA

3.2.9 Upper Confidence Limit (UCL): A calculated value constructed from test data which places a statistical upper bound on the true leakage rate (%/24h).

3.2.10 Verification Test: A test to confirm the capability of the Type A test method and equipment to measure La.

3.3 Responsibilities

3.3.1 Engineering Manager

Responsible for the overall implementation of the 10CFR50 Appendix J Program. Management designee for performing AI-550, Infrequently Performed Test and Evolution briefings.

3.3.2 Appendix J Engineer

Responsible for the Type A, B, and C portions of the containment leakage rate test program. He or she will act as the final decision maker in matters concerning test conduct, deferring to Operations as required in matters of plant safety. This individual may use inputs from other plant personnel or a consultant to form decisions that meet the regulatory requirements from documents listed in the reference section. Reports to Engineering Manager.

3.3.3 Test Supervisor

Acts in the capacity of the Appendix J Engineer during his or her shift during the conduct of the ILRT.

The Test Supervisor will evaluate the reported leakage and direct corrective action. No corrective action should occur without this evaluation with the exception of safety issues.

3.3.4 Operations Lead

Located primarily in Control Room and responsible for interface between Control Room and ILRT Test Supervisor. Monitors plant conditions and keeps Test Table informed.

3.3.5 Local Leakage Rate Testing (LLRT) Technicians

Technicians responsible for the conduct of the Type B and Type C portions of the containment leakage rate testing program.

3.3.6 Computer Technician(s)

Responsible for data reduction and analysis computer operation.

3.3.7 Equipment Technician(s)

Responsible for air compressor mechanical and operational tasks, as directed by the Test Engineer.

3.3.8 Consulting Engineer

Provides general test oversight, as well as technical direction and guidance for conduct of test, including issues involving regulatory compliance, test coordination, test instrumentation, computer programs and software, troubleshooting assistance, compressors and development of test report.

3.3.9 Leak Hunt Team

Responsible for locating existing leakage paths that effects the Type A test and reporting these to the Test Supervisor.

3.3.10 Recommended Personnel

The following list of recommended personnel is provided to aid the test performers in preparation and is only a guideline:

Personnel Listing (Per Shift)	Number
Test Supervisor	1
Test Engineer	1
Operations Lead	1
Consulting Engineer	1
Computer Technician	1
Equipment Technician (pressurization only)	1
Leak Hunt Team	8

3.4 **Prerequisites**

3.4.1 Test Equipment required for test is addressed in:

3.4.1.1 Attachment 4, Containment Building Pressurization/Depressurization System Installation and Checkout

3.4.1.2 Attachment 5, ILRT Measurement System Installation and Checkout

3.4.1.3 Attachment 17, Gauge Installation/Removal Sheet

NOTE

The following tasks should be performed in support of ILRT after entering Mode 5 from power operation (sequence non-critical) unless specifically approved by the Shift Outage Director.

PRELIMINARY STEPS

3.4.2 Obtain Work Controls authorization to begin test preparation activities.

_____ / _____

Work Controls Signature/Date

3.4.3 An organization chart describing Testing Organization, including names, phone numbers and email addresses of personnel supporting preparation, implementation, and restoration activities has been developed and communicated to project team supporting ILRT.

_____ / _____

Initials/Date

3.4.4 A "Test Desk" has been designated for control of testing activities during implementation of Section 4.0, activities and phone numbers for the center have been communicated to the SSO, Outage Management, and Work Controls.

_____/_____
Initials/Date

3.4.5 As part of ILRT, Test Supervisor(s) SHALL maintain an active log with CR3 Autolog and/or per Attachment 1 (Test Supervisor's Log). The Log SHALL be initiated upon commencement of performance of this procedure. The Log SHALL be used to document those activities NOT documented on existing data sheets/ attachments and should include shift turnovers, ILRT instrumentation/ computer failures, compressor failures, fuel oil orders and deliveries, recommendations for procedure enhancements, and any significant events.

_____/_____
Initials/Date

3.4.6 Rented portions of ILRT Pressurization System have been received and installed per Attachment 4 (Containment Building Pressurization / Depressurization System Installation and Checkout) at Test Supervisor's direction.

_____/_____
Initials/Date

INSTRUMENTATION & CONTROLS PREREQUISITES

3.4.7 Plant instrumentation required for conduct of ILRT (e.g. tank/sump level instrumentation) listed in Attachment 14 (Control Room Log) is calibrated per calibration program and is available for ILRT.

- ____Pressurizer level (RC-001-LIR1)
- ____Pressurizer level (RC-001-LIR3)
- ____Reactor Building Sump level (WD-222-LI)
- ____Reactor Building Sump level (WD-302-LI)
- ____OTSG A level (SP-1A-LI1)
- ____OTSG B level (SP-1B-LI1)
- ____RCDT level (WD-23-LI1)
- ____Core Flood Tank A level (CF-2-LI1)
- ____Core Flood Tank B level (CF-2-LI3)

_____/_____
Initials/Date

3.4.8 Prepare RB instrumentation and equipment for Integrated Containment Leak Rate Test by completing items listed on RB Preparation Checklist, Attachment 2, (Containment Preparation Checklist).

_____ /
Initials/Date

3.4.9 Termination of ILRT sensor instrument strings inside containment have been completed per Attachment 5, (ILRT Measurement System Installation and Checkout). Circuit terminations have been "rung out" or otherwise verified to be correct.

_____ /
Initials/Date

3.4.10 Modify LR system tubing to allow adequate flow for the verification test by removing LRV-63 and LRV-69 and installing a tubing jumper.

_____ /
Initials/Date

3.4.11 Secure Radiation Monitors RM-G16, RM-G17 and RM-G18 and associated Radiation Monitoring System) and remove G-M tubes per Attachment 2.

_____ /
Initials/Date

3.4.12 DISCONNECT H2 Analyzer Calibration (Span) Gas bottles (4)

_____ /
Initials/Date

3.4.13 Installation of temporary calibrated pressure gauges is complete per Attachment 17.

_____ /
Initials/Date

MECHANICAL PREREQUISITES

3.4.14 The following Temporary Alterations have been performed in accordance with Attachments listed:

Maintenance support of penetration preparations described in Attachments 3 and 4, (e.g. flange removal, temporary pipe hookup, etc.).

_____ /
Initials/Date

3.4.15 Temporary pressurization header has been installed and rented pressurization equipment attached per Work Order instructions and Attachment 4 of this procedure.

_____ /
Initials/Date

3.4.16 Plant mechanical equipment protection activities inside containment per Attachment 2, (Containment Preparation Checklist) are complete.

_____ /
Initials/Date

ELECTRICAL PREREQUISITES

3.4.17 Plant electrical equipment protection activities inside the containment per Attachment 2 are complete.

_____ /
Initials/Date

3.4.18 Temporary power and lighting requirements at temporary portions of Pressurization System per Attachment 4 are met.

_____ /
Initials/Date

TEST SUPERVISOR PREPARATIONS

3.4.19 Verify all permits required for Test Desk and Pressurization Laydown areas have been obtained and posted.

_____ /
Initials/Date

3.4.20 Temporary communications have been provided as determined by Test Supervisor. Record numbers on Attachment 1, (Test Supervisor's Log).

_____ /
Initials/Date

3.4.21 Tables, chairs, portable ventilation equipment, uninterruptible power supplies have been provided as determined by Test Supervisor.

_____ /
Initials/Date

3.4.22 Provide a listing of materials/equipment that should NOT be brought into or left in RB to Containment Coordinator and Shift Outage Director.

_____ /
Initials/Date

3.4.23 VERIFY that all required Environmental Permits/Notifications associated with running the rented diesel-driven air compressors have been dispositioned.

_____ /
Initials/Date

3.4.24 VERIFY installation and checkout portions of Attachment 4, (Containment Building Pressurization/Depressurization System Installation and Checkout) are complete and satisfactory.

_____ /
Initials/Date

3.4.25 VERIFY that installation and calibration of instrumentation for ILRT is completed and properly documented in Attachment 5, (ILRT Measurement System Installation and Checkout).

_____ /
Initials/Date

3.4.26 VERIFY "as-installed" certification of ILRT Data Management computer program is completed. Include certification package in Attachment 16, (Computer Printouts and Attachments).

_____ /
Initials/Date

3.4.27 A general inspection of accessible interior and exterior surfaces of containment structures and components has been performed. Any irregularities such as cracking, peeling, delamination, corrosion, and structural deterioration SHALL be recorded and evaluated or repaired as required, prior to conduct of ILRT. Document results in Attachment 10, Containment Building Visual Inspection.

_____ /
Initials/Date

3.4.28 Establish controls (signs) limiting access to periphery of containment during test at RCA Access Points. Access should be limited to personnel authorized by Test Supervisor or Work Controls.

_____ /
Initials/Date

3.4.29 Collect available local leak rate test results completed prior to ILRT. Record as-found and as-left results in Attachment 9, Containment Penetration Summary for calculations.

_____ /
Initials/Date

ILRT CONSULTANT PREREQUISITES

3.4.30 The test preparation portions of Attachment 5, ILRT Measurement System Installation and Checkout are complete:

_____ /
Initials/Date

3.4.31 The installed ILRT Measurement System meets performance and quality specifications of Attachment 5, Section 1.0.

_____ /
Initials/Date

3.4.32 Calibration and pre-test check information has been entered into Attachment 5, Section 4.0, reviewed and found acceptable. Copies of sensor calibration sheets have been included in Attachment 16, Computer Printouts and Attachments.

_____ /
Initials/Date

3.4.33 ILRT Measurement System cabling has been terminated per Section 5.0 of Attachment 5. Documentation of cable lead landings may be on form in Section 5.0 or using standard plant form such as Enclosure 1 of CP-113A, Maintenance Work Performance. If WO related form is used, attach copy to Attachment 16 of this procedure.

_____ /
Initials/Date

3.4.34 ILRT Measurement System dry-bulb and RH sensors have been placed in containment per Section 6.0 of Attachment 5.

_____ /
Initials/Date

3.4.35 ILRT Measurement System outside containment has been installed and functionally checked per Attachments 5 and 6.

_____ /
Initials/Date

3.4.36 ILRT software program has been installed and "As-installed" Certification Package is complete. Attach certification package to Attachment 16.

_____ /
Initials/Date

3.4.37 Beginning at least 24 hours prior to scheduled start of pressurization, perform a tour of containment once a shift to verify containment readiness for testing. Walk-down should catalog remaining items to be removed from containment, or items that must be protected from test pressure. Provide a list of discrepancies to Shift Outage Director and Containment Coordinator.

_____ /
Initials/Date

3.4.38 Provide a set of marked-up Flow Diagrams (FD-302) to Work Controls organization illustrating test valve lineups/boundaries. Review drawings with affected coordinators.

_____ /
Initials/Date

3.4.39 Review of all work orders, clearances, and temporary alterations outstanding or planned for release during ILRT window (plus 24 hours) has been completed. Review should identify existing and/or potential infringement on test boundaries, equipment operations/losses that could impact plant conditions/stability during ILRT, and ensure Work Control provisions/communication channels are adequate.

_____ /
Initials/Date

3.4.40 Verify that compressors and associated air handling equipment are setup per Attachment 4, Containment Building Pressurization/Depressurization System Installation and Checkout.

_____ /
Initials/Date

OPERATIONS PREREQUISITES

3.4.41 Setup a Trend Report on plant computer to monitor levels in MCR Log per Attachment 14, Control Room Log every 15 minutes during test. Set plant computer to collect data on 15 minute intervals, and print reports on the hour.

_____ /
Initials/Date

3.4.42 Verify pressurizer level between 100 to 140 inches prior to performing ILRT to compensate for level changes during pressurization. Pressurizer level must be within indicating range during ILRT.

_____ /
Initials/Date

3.4.43 Verify RCDT (WDT-5) is pumped below < 95inches. Use OP-407J, Operations of the Reactor Coolant Drain Tank as necessary.

_____ /
Initials/Date

3.4.44 Plant stability is critical during the ILRT. Avoid any activity that changes containment volume during Stabilization, Hold Test and Verification Test phases.

_____ /
Initials/Date

NOTE
For the purpose of the ILRT, Steam Generator levels are acceptable anywhere from the normal range to the 400" mark specified below.

3.4.45 The Steam Generator's (RCSG 1A / 1B) secondary side may be placed in the following ILRT Layup condition:

3.4.45.1 Steam Generators drained to just below the Main Steam lines (approximately 400" on the full range instrument).

_____ /
Initials/Date

3.4.45.2 Main Steam Lines A1, A2, B1, and B2 drained.

_____ /
Initials/Date

3.4.46 Reactor coolant temperature is being controlled via Decay Heat to within ± 2°F of any temperature selected by the Control Room Supervisor when pressurization starts.

_____ /
Initials/Date

3.4.47 Perform the following system alignments as soon as practical prior to their related phases:

3.4.47.1 Attachment 3A, ILRT Valve Lineup Prior to Pressurization.

_____ /
Initials/Date

3.4.47.2 Attachment 3B, ILRT Valve Lineup Prior to Stabilization (NOT required prior to starting compressors).

_____ /
Initials/Date

3.4.47.3 Attachment 3C, ILRT Special Valve Lineups. Completion REQUIRED before starting compressors.

_____ /
Initials/Date

3.4.47.4 Attachment 3D, Supplementary ILRT Valve Lineups.

_____ /
Initials/Date

3.4.47.5 Attachment 3E, Breaker List.

_____ /
Initials/Date

3.4.48 Secure Reactor Building Cooling Units per OP-417.

_____ /
Initials/Date

3.4.49 Record Decay Heat Removal Loop in operation: _____

_____ /
Initials/Date

FINAL PREPARATIONS

3.4.50 Inspect Personnel and Equipment Hatch air lock doors. Door seals and mating surfaces SHALL be clean and in acceptable condition. Close inner doors of personnel and equipment air locks. Outer doors will remain open to prevent excessive equalization time if there is a small leak into air lock.

_____ /
Initials/Date

3.4.51 HPI is tagged out and the system has been bypassed to prevent actuation from an inadvertent RBIC signal during containment pressurization.

_____ /
Initials/Date

NOTE

AI-504, Shutdown Guidelines requires one Reactor Building Cooling Unit to be available in Shutdown Condition 4. Due to the higher density of compressed air during ILRT conditions, the cooling unit is required to be temporarily modified with flow baffles and 129 Amp overloads for it to be considered available. Reference ED 62366.

3.4.52 Ensure one Reactor Building Cooling Unit has been temporarily modified per Attachment 2 such that it remains available per AI-504, Shutdown Guidelines. Indicate below which unit has been modified and NOTIFY the SSO which cooling unit is considered available.

AHF-1A (ES-MCC-3A2, Unit 1B) _____ [ ] N/A

AHF-1B (ES-MCC-3B3-Unit 6AN) _____ [ ] N/A

AHF-1C (ES-MCC-3AB, Unit 1B) _____ [ ] N/A

SSO Notified _____

_____ /
Initials/Date

3.4.53 All electrical equipment should be de-energized within containment, except for those services required. Refer to Attachment 3E.

_____ /
Initials/Date

3.4.54 VERIFY that a review of on-going work and clearances on or around RB with Outage Work Control organization has been completed by the Test Supervisor AND ILRT Consultant, and any potential interferences with the test or breaches of testing lineups have been resolved.

_____ /
Initials/Date

3.4.55 REVIEW Attachment 8, Valve Lineup Alteration Log. Verify any lineup alterations have been satisfactorily resolved.

_____ /
Initials/Date

3.4.56 REVIEW Attachment 9, Containment Penetration Summary to verify actual penetration status entering ILRT is accurately reflected.

_____ /
Initials/Date

3.4.57 Conduct a phase-specific briefing for Control Room personnel prior to commencement of Pressurization Phase.

_____ /
Initials/Date

3.4.58 A final closeout inspection has been made by ILRT Test Supervisor or Designee to ensure:

3.4.58.1 All containment temporary equipment that contains supplies of compressed gases has been removed or vented.

_____ /
Initials/Date

3.4.58.2 NO significant fire hazards have been identified in containment.

_____ /
Initials/Date

3.4.58.3 Any water standing on Containment Building floors or low spots has been removed and areas left dry if practical.

_____ /
Initials/Date

3.4.59 The RB sump has been pumped down to its minimum level within the indicating range of WD-222-LI.

_____ /
Initials/Date

3.4.60 Align Leak Rate Test System air compressor discharge header for Pressurization per Table 1 of Attachment 4. START compressors when notified by ILRT Test Supervisor.

_____ /
Initials/Date

3.4.61 Pressurization may begin prior to completion of valve alignments providing Test Supervisor has verified:

3.4.61.1 Component manipulations and/or visual verifications associated with components inside containment on Attachments 3A, 3C, 3D and 3E are complete.

_____ /
Initials/Date

3.4.61.2 Attachment 3C, (SYSTEM: NG, N2 to NUCLEAR EQUIPMENT) system piping venting is complete.

_____ /
Initials/Date

3.4.61.3 Attachment 3C, (SYSTEM: IA, INSTRUMENT AIR) depressurizing Instrument Air header is complete.

_____ /
Initials/Date

3.4.61.4 Containment portions of Attachment 2 are complete.

_____ /
Initials/Date

3.4.61.5 Installation of ILRT Measurement System inside RB is complete per Attachment 5.

_____ /
Initials/Date

3.4.61.6 Containment Inspection is complete in its entirety, or intent of containment inspection requirements as stated in Containment Leakage Rate Testing Program have been met.

_____ /
Initials/Date

3.4.61.7 Test Supervisor has reviewed Attachment 8, Valve Lineup Alteration Log to ensure that all components inside containment are in their Test Position, or have been satisfactorily dispositioned.

_____ /
Initials/Date

3.4.61.8 Review of all outstanding work orders, clearances and temporary alterations have been completed at least to the extent that Test Supervisor, Outage Management or Operations interface are satisfied that NO obstacles to closing out of containment/performing the test exist.

_____ /
Initials/Date

3.4.62 Final walkdown/closeout inspection of containment has been satisfactorily completed.

_____ /
Initials/Date

3.4.63 Notify Chemistry to take RB air sample e.g. RM-A6 prior to pressurization. This sample is to be used to prepare release permit for the verification (imposed) leak test and depressurizing containment after ILRT.

_____ /
Initials/Date

3.4.64 Establish communications between ILRT Test Desk, Main Control Room, and air compressors.

_____ /
Initials/Date

3.4.65 Verify containment temporary power/lighting has been isolated.

_____ /
Initials/Date

3.4.66 Verify all personnel are clear of the RB. Evacuate all personnel from RB by making the following announcement twice:

"ATTENTION ALL PERSONNEL IN THE REACTOR BUILDING ATTENTION ALL PERSONNEL IN THE REACTOR BUILDING, ILRT PREPARATIONS ARE COMPLETE. ALL PERSONNEL EXIT THE CONTAINMENT AT THIS TIME."

_____ /
Initials/Date

3.4.67 Prior to RB pressurization, have Operations Department sound the RB evacuation alarm, Health Physics review all sign-in sheets and Security review computer logs to verify reactor containment has been evacuated by all personnel. Have each department Initial/Date below:

	INITIALS / DATE
Operation Department Sound Evacuation Alarm	_____
Health Physics Dept. Sign-in Sheet ./ Computer Logs Verification	_____
Security Review of Containment Access Computer Logs	_____

3.4.68 Close out the Containment Building as follows:

3.4.68.1 Equipment Hatch Resilient Seals

a. Verify RB Equipment Hatch is installed.

_____ /
Initials/Date

b. Verify RB Equipment Hatch seal test (SP-179B, Pen-222) following installation was acceptable.

_____ /
Initials/Date

3.4.68.2 Equipment Hatch Air Lock.

a. Verify outer door OPEN

_____ /
Initials/Date

b. Close and lock inner door of Airlock.

_____ /
Initials/Date

3.4.68.3 Personnel Airlock.

a. Verify outer door OPEN.

_____ /
Initials/Date

b. Close and lock inner door of Airlock.

_____ /
Initials/Date

NOTE

Seal testing of airlock doors can occur as soon as the door is secured to traffic/locked (e.g., the Equipment Hatch Lock). Testing of the Personnel Hatch Door Seals can occur 12-18 hours earlier at the ILRT Supervisor's direction, and need not be repeated if the pre-closing inspection of the seals/seating surface shows no signs of damage. IF there is any reason to suspect the performance of the door seals, THEN perform the leak test.

3.4.69 SP-430, Containment Airlock Seal Leakage Test has been successfully performed for the inner door seal.

_____ /
Initials/Date

3.5 **Limits and Precautions**

3.5.1 The Containment Integrated Leak Rate Test is considered an Infrequently Performed Test or Evolution (IPTE). This test will require additional oversight to promote event free operation through a heightened level of awareness. Shift briefings must be conducted prior to actual test commencement in accordance with AI-550, Infrequently Performed Tests and Evolutions.

3.5.2 For performance of this critical infrequently performed test the Manager, Engineering or designee has overall responsibility for the oversight of this test, including briefing the operating and test personnel with management expectations prior to performance of the infrequently performed test.

3.5.3 Containment isolation valves that will be tested by the ILRT shall be closed using the normal mode of force without any preliminary exercising or adjustments. (No manual tightening of automatic valves after closure by normal means.) Alternate means of closure may be used provided they are documented and are equivalent to normal means. This precaution does not apply to valves in penetrations for which a Type C penalty is being applied to the ILRT results.

3.5.4 If the test results exceed the performance criteria (La) as defined in TS, those exceedances must be assessed for Emergency Notification System reporting under 10 CFR 50.72.

3.5.5 Work to be performed in Auxiliary or Intermediate Building during the ILRT must be coordinated through the Shift Outage Director.

3.5.6 No instrument or logic tests that could affect the ILRT or supporting systems should be performed during the ILRT. If required, the Shift Outage Director and the Test Supervisor shall review the work activity to determine if it could affect the ILRT test.

3.5.7 Containment Building pressure is to be increased or decreased only at the direction of the ILRT Test Supervisor.

3.5.8 Test pressure during the Stabilization and ILRT phases must equal or exceed 0.96 Pa ($\geq$ 52.1 psig). Containment pressure shall NOT exceed Pd (55.0 psig) during any test phase. Pressure may drop below this limit during the Verification Test phase.

3.5.9 The pressurization/depressurization rate shall be regulated to limit pressure changes to not more than 15 psig/hr. This is to prevent a large differential pressure across RB components such as insulation, electrical box covers, light bulbs, paint, etc.

3.5.10 During pressurization of the containment, periodic surveillance of the containment and penetrations should be maintained. Any unusual conditions noted SHALL be immediately reported to the ILRT Test Supervisor. A determination of the condition will then be made.

3.5.11 NO leakage path SHALL be isolated without the approval of the ILRT Test Supervisor. Prior to or during the test any leaks which are repaired or valve lineups which are altered SHALL be listed in Attachment 7, (Test Exceptions Log). Any leakage penalties for the above will be documented on Attachment 9, (Containment Penetration Summary). Additional guidance is provided in Section 2.0 of Attachment 11.

3.5.12 During pressurization for the ILRT the outer airlock doors on the Personnel Hatch (RAX-1) and Equipment Hatch (RAX-2) are left open. If leakage checks of the inner doors indicates excessive leakage into the airlocks it is permissible to accelerate airlock pressurization by closing the outer doors and pressurizing the airlock with air as directed in SP-181, Containment Air Lock Test to within 0.5 psig below the planned final test pressure, accounting for gauge accuracy per Section 6.0 of Attachment 11, CONTINGENCIES. If pressurization of the airlock is chosen, leak check the outer doors and outboard boundary components using a soap bubble test solution such as Leaktec. If tight, isolate and remove air source once pressure has been reached. If excessive leakage is observed proceed per the guidance in Step 3.5.13.

3.5.13 EXCESSIVE LEAKAGE:
Leakage discovered during leak searches or routine operations while containment is at pressure must be reported to ILRT Test Supervisor for evaluation, AND unless leakage is a personnel safety hazard, it must NOT be adjusted or isolated without specific direction from ILRT Test Supervisor. ANY adjustment to a leaking containment boundary may result in test failure, therefore when leakage is identified, ILRT Test Supervisor will consider the options listed on Attachment 11.

3.5.14 UNEXPECTED RESPONSE:
ILRT is a complex evolution involving temporary test equipment and several plant systems. Unexpected responses/alarms/plant indications can include sensor failure or erratic behavior; fire/smoke alarms, misleading indications of excessive leakage; loss of or erratic level indication; unplanned rapid depressurization through a failed component, or failure to pressurize due to valve/flange alignment problems. IF any of these conditions are encountered during the test, THEN establish the Safe Condition for the test mode and assess plant/test conditions. Refer to Attachment 11.

3.5.15 SAFE CONDITIONS & TEST ABORT CRITERIA:
Operations, or ILRT Test Supervisor may decide to abort ILRT if plant conditions, test conditions, or test results warrant. Attachment 11, Contingencies addresses actions for various phases of the test, safe conditions for each, and appropriate abort plans.

3.5.16 Maintain the Reactor Coolant System level and temperature stable. Containment leakage rate results are sensitive to factors which change the net free volume of the containment. Changes in level and temperature may affect containment leakage rates during critical portions of the ILRT, impacting results and/or test schedule.

3.5.17 The ILRT Test Supervisor shall be notified of any RB sump high level alarms to assist in analysis of leakage sources.

3.5.18 Communications must be established between key ILRT locations prior to the start of pressurization, and shall be available between the ILRT Test Desk and the Control Room at all times during the test.

3.5.19 Preparation for ILRT may begin prior to the plant entering Mode 5. Containment integrity SHALL be maintained in Modes 1, 2, 3 and 4 in accordance with applicable portions of Technical Specification 3.6.

3.5.20 Do not leave any portion of the secondary system inside containment vented to the containment atmosphere.

3.5.21 Do NOT use any jumper leads without insulated connections.

3.5.22 The ILRT Test Supervisor SHALL verify prior to the test that there is NO significant fire hazard in containment.

3.5.23 Temperature limits for Reactor Containment atmosphere SHALL NOT be exceeded. Limits are ≥ 60°F and ≤ 130°F.

3.5.24 Test Tags may be used on plant equipment. These tags are used to indicate that a component has been aligned to a certain configuration in support of ILRT.

3.5.25 Individual steps may be omitted or performed out of order at discretion of ILRT Test Supervisor, marked N/A, and explained in Attachment 7, Test Exception Log.

3.5.26 At the direction of the Operations Lead, valve alignment may be performed out of order. Any deviation SHALL be documented on Attachment 8.

3.5.27 CR3 Safety Representative will specify approved hearing protection in test areas (adjacent to the air compressors, air charging piping, pressurization lines, and depressurization lines) during pressurization AND depressurization operations.

3.5.28 NO data point is to be rejected on a purely statistical basis. Apparent outliers will be investigated for physical or measurement system problems. Individual sensor performance graphs and sensor deviation/failure criteria, provided by ILRT computer program, will be used to evaluate sensor performance and to provide basis for sensor deletion. Raw data for deleted sensors will continue to be recorded if possible, but NOT used, throughout the test.

3.5.29 Containment entry is permissible when containment is pressurized per OP-417, Containment Operating Procedure.

3.5.30 IF a containment entry is required prior to 12 psig,
THEN an EMT SHALL be available. NO personnel SHALL be allowed to enter containment above 12 psig without permission of the Plant General Manager.

IF entries at pressure are required,
THEN Safety SHALL be contacted to ensure compliance with requirements of OSHA regulations (29CFR1926.804, Subpart S, Appendix A).

3.6 **Acceptance Criteria**

3.6.1 As-Found Type A test leakage rate must be less than the acceptance criterion of 1.0 La given in Plant Technical Specifications
AND
As-Left Type A test results at the 95% UCL are less than or equal to 75%La.

3.6.2 Test results exceeding 0.25 wt%/day (1.0 La) must be referred to the Engineering Manager for assessment under the Emergency Notification System reporting requirements of 10CFR 50.72.

3.7 **Setpoints**

None

4.0 **INSTRUCTIONS**

4.1 **Initial Conditions**

4.1.1 Plant is shutdown in Mode 5.

_____ /
Initials/Date

4.1.2 Perform an IPTE briefing in accordance with AI-550, Infrequently Performed Tests and Evolutions. IPTE briefing has been completed for each new shift.

_____ / _____
Shift IPTE or Designee/Date

_____ / _____
Shift IPTE or Designee/Date

_____ / _____
Shift IPTE or Designee/Date

_____ / _____
Shift IPTE or Designee/Date

4.1.3 OBTAIN permission from SSO or Designee to perform test.

_____ / _____
SSO/Designee / Date

4.1.4 The Test Supervisor has verified all Prerequisites and Precautions and Limitations have been reviewed and/or satisfactorily completed.

_____ / _____
Test Supervisor / Date

4.2 **Pressurization of Reactor Containment**

4.2.1 Data Collection:

4.2.1.1 Record ambient pressure at the start of pressurization:

Ambient pressure = _____ psia

Gauge serial #: _____ Cal due date:_____

_____ /
Initials/Date

4.2.1.2 Record initial pressure on test gauges listed on Attachment 17 and Attachment 18. Record pressure readings from test gauges installed on plant equipment in Attachment 17 every thirty minutes until containment reaches 12 psig, at one hour intervals thereafter until end of pressurization, and stabilization, or as directed by Test Supervisor.

_____ /
Initials/Date

4.2.1.3 Start recording containment atmospheric data at 15 minute intervals using the ILRT Measurement System.

_____ /
Initials/Date

4.2.1.4 Verify Trend Report on plant computer setup to monitor levels in, Attachment 14 (Control Room Log) is running. Data should be recorded at 15 minute intervals, printed hourly.

_____ /
Initials/Date

4.2.1.5 Record Initial Water Levels on Attachment 14, (Control Room Log).

_____ /
Initials/Date

4.2.2 Announce the following 3 times over plant page.

"ATTENTION ALL PERSONNEL, ATTENTION ALL PERSONNEL, REACTOR BUILDING PRESSURIZATION IS ABOUT TO COMMENCE. ALL NON-ESSENTIAL PERSONNEL SHALL STAND CLEAR OF REACTOR BUILDING AREAS ASSOCIATED WITH THE INTEGRATED LEAK RATE TEST."

_____ /
Initials/Date

4.2.3 Initiate Pressurization by opening Penetration 216 and 217 test valves and start pressurization. Continue to pressurize until containment air pressure reaches 54.0 psig + 1.0, - 0 psig (the target pressure is 54.5). Maximum pressurization rate should NOT exceed 15 psi per hour.

4.2.3.1 **Pen-216 (8")**

- ___OPEN PEN216-TV3 (compressor isolation valve)
- ___CLOSE PEN216-TV4 (muffler isolation valve)
- ___OPEN PEN216-TV1 (penetration isolation valve)
- ___OPEN PEN216-TV2 (throttle valve) as necessary to maintain a maximum pressurization rate NOT to exceed 15 psi/hr

_____/_____
Initials/Date

4.2.3.2 **Pen-217 (8")**

- ___OPEN PEN217-TV7 (compressor isolation valve)
- ___CLOSE PEN217-TV8 (muffler isolation valve)
- ___OPEN PEN217-TV5 (penetration isolation valve)
- ___OPEN PEN217-TV6 (throttle valve) as necessary to maintain a maximum pressurization rate not to exceed 15 psi/hr

_____/_____
Initials/Date

NOTE
Test pressure SHALL NOT fall below 52.1 psig or exceed 55 psig at anytime during ILRT. Test pressure may fall below 52.1 psig during verification test.

4.2.3.3 Maintain moisture and oil content as low as possible when pressurizing Reactor Containment Building.

_____/_____
Initials/Date

4.2.3.4 Containment inlet air temperature should be monitored during pressurization phase of test to ensure containment weighted average temperature is above 60°F and below 130°F.

/
Initials/Date

NOTE

Report any apparent leakage to ILRT Test Supervisor. DO NOT isolate or adjust any leakage found during leak checks. Excessive leakage is to be dispositioned per Attachment 11.

4.2.3.5 Inspect containment boundary for leakage at containment pressures of approximately 20 psig and 40 psig.

/
Initials/Date

4.2.4 Notify Chemistry that this is the final opportunity to obtain an air sample from containment prior to end of pressurization phase. This sample may be used to prepare a release permit for depressurizing containment after ILRT. Following pressurization, samples will not be allowed until depressurization phase of ILRT.

/
Initials/Date

NOTE

Evolutions such as changing tank/sump and pressurizer levels can destabilize the containment atmosphere and put the ILRT schedule at risk. It is highly desirable to make any such adjustments prior to commencing data taking in the Stabilization Phase.

4.2.5 As the containment nears test pressure assess plant conditions, e.g. pressurizer and/or sump levels, pump sumps or make additions to the RCS as required prior to entering the stabilization phase.

/
Initials/Date

4.2.6 At equal to or greater than 40 psig, verify adequate flow can be obtained through each verification test flowmeter and check connections for leakage. IF required minimum flowrate cannot be obtained individually or in parallel, refer to Attachment 11, Contingencies, Section 7.0.

/
Initials/Date

4.2.7 The ILRT Test Supervisor will direct compressor operator to isolate compressors in groups as pressure exceeds 45 psig. The number of compressors secured and isolated at a given time is at the discretion of the ILRT Test Supervisor.

/
Initials/Date

NOTE

At 50 psig, alert Operations that an Operator will need to be stationed to CLOSE the ILRT test isolation valves as soon as test pressure is reached. The ILRT Test Supervisor may direct additional test valves to be repositioned.

4.2.8 WHEN desired pressure is achieved, THEN:

4.2.8.1 Isolate containment by closing the two (2) eight-inch isolation valves upstream of penetrations 216 and 217.

- ___CLOSE PEN216-TV1 (penetration isolation valve)
- ___CLOSE PEN217-TV5 (penetration isolation valve)

_____ /
Initials/Date

4.2.8.2 Shutdown remaining compressors.

_____ /
Initials/Date

4.2.8.3 Isolate compressors at compressor outlets and pressurization system manifold

_____ /
Initials/Date

4.2.8.4 Open a vent on compressor manifold to vent pressurization lines.

_____ /
Initials/Date

NOTE

At any time after it has been verified that NO leakage is present at the two 8" isolation valves at Penetrations 216 and 217, the ILRT Test Supervisor, with the concurrence of the ILRT Consultant, may direct partial disassembly of the Pressurization System outside the Protected Area fence.

4.2.8.5 After lines are depressurized, THEN check vent for evidence of leakage past the two (2) closed eight-inch isolation valves at penetrations 216 and 217.

_____ /
Initials/Date

NOTE
ILRT Data Management computer program may be placed in Stabilization Mode while administrative review of remaining sections of this step is completed.

4.2.9 IF pressurization was begun prior to completion of all valve alignments, THEN verify the following:

4.2.9.1 Component manipulations/visual verifications associated with components outside containment in Attachment 3B, Lineup Prior to Stabilization are complete.

_____ /
Initials/Date

4.2.9.2 ILRT Test Supervisor and ILRT Consultant has reviewed Attachment 8, (Valve Lineup Alteration Log) to ensure that all components listed are in their "TEST POSITION". Any unresolved component positions must be listed as Test Exceptions in Attachment 7, and the impact on penetration status listed in Attachment 9, (Containment Penetration Summary) must be assessed.

_____ /
Initials/Date

4.2.10 RECORD lowest reading ILRT pressure gauge on line 1 and outside atmospheric pressure on line 2 below. Subtract line 2 from line 1. Enter the result on line 3. Verify Line 3 value is greater than 52.1 psig.

(1) Lowest Reading ILRT Pressure Gauge _____ psia

(2) Outside Atmospheric Pressure _____ psia

(1)_____ - (2) _____ = (3)_____ psig

(3) Containment Gauge Pressure _____ psig

Line (3) value _____ > 52.10 psig

_____ /
Initials/Date

4.3 **Stabilization Phase**

4.3.1 Data Collection:

4.3.1.1 Record ambient pressure at the start of stabilization:

Ambient pressure_____ psia

Gauge serial #: _____ Cal due date:_____

_____/_____
Initials/Date

4.3.1.2 Record the Start of the Stabilization Phase:

Time (24 hr clock) _____ Date _____/_____/_____

_____/_____
Initials/Date

4.3.1.3 Record pressure readings from test gauges installed on plant equipment in Attachment 17 every hour until the end of stabilization, or as directed by Test Supervisor.

_____/_____
Initials/Date

4.3.1.4 Continue recording containment atmospheric data at 15 minute intervals using ILRT Measurement System.

_____/_____
Initials/Date

4.3.1.5 Verify Trend Report on plant computer setup to monitor levels in Attachment 14 is still running.

_____/_____
Initials/Date

4.3.2 Allow containment atmosphere to stabilize for a minimum of four hours after time recorded in step 4.3.1.2 THEN record time and date.

Time (24 hr clock) _____ Date _____/_____/_____

_____/_____
Initials/Date

NOTE

Stabilization criteria for performing ILRTs under both the BN-TOP-1 and ANSI 56.8-1994 methodologies are included. Leakage stabilization criteria of ANSI 56.8-1994 is more difficult to meet. At least one method's criteria must be met in order to enter Hold Test Phase. Both criteria should be met before starting Type A Test in order to provide the most options during Hold Test Phase. Note that failing to meet a methodology's stabilization criteria may preclude its use as a means to perform ILRT.

4.3.3 During pressure stabilization period, check for leaks at RB Pressure Sensing Cabinets 3A1, 3A2, 3A3, 3A4, 3B1, 3B2, and 3B3

_____ /
Initials/Date

4.3.4 Prior to start of Type A Test, verify the following stabilization criteria for containment atmosphere are met. Stabilization occurs when:

4.3.4.1 BN-TOP-1

a. Rate of change of average temperature is less than 1.0°F/Hour averaged over the last two hours. (BN-TOP-1 requirement).

OR

b. Rate of change of temperature changes less than 0.5°F/Hour/Hour averaged over the last two hours. (BN-TOP-1 requirement).

c. BN-TOP-1 stabilization criteria met. Attach a screen-print from the Stabilization Phase screen of ILRT Data Management Program stating criteria has been met to Attachment 16, (Computer Printouts and Attachments).

_____ /
Initials/Date

NOTE

L1h = estimate of leakage rate, derived from least squares slope and intercept using mass data over the last hour (in % wt/day).

L2h = estimate of leakage rate, derived from least squares slope and intercept using mass data over the last two hours (in % wt/day).

4.3.4.2 ANSI/ANS 56.8-1994

a. Primary containment atmosphere is assumed to be stabilized for Type A test purposes when the following criteria are simultaneously met (ANSI 56.8-1994):

Criterion (1)
The absolute value of difference between L2h and L1h SHALL be less than or equal to 0.25La.

L1h = _____

L2h =_____

_____ (L2h) - _____ (L1h) = _____≤ (0.0625% wt/day)

Criterion (2)
L1h SHALL be greater than or equal to zero and SHALL be less than La.

NOTE

Per ANSI/ANS 56.8-1994, paragraph 5.6, If one or more leakage pathways require isolation, repair or adjustment in order to meet criterion (2), criterion (1) need NOT be re-verified provided this criterion was met prior to time of isolation, repair, or adjustment. The change in L1h should be demonstrated to be a direct result of this isolation, repair, or adjustment.

b. ANSI/ANS 56.8-1994 leakage stabilization criteria met. Attach a screen-print from Stabilization Phase screen of ILRT Data Management Program stating criteria has been met to Attachment 16, (Computer Printouts and Attachments).

_____/_____
Initials/Date

4.3.5 ILRT Test Supervisor SHALL judge if containment is stabilized and declare start of test based on a review of temperature vs. time, pressure vs. time graphs, available mass change and leakage data, as well as meeting criteria of 4.3.1 and 4.3.2 or 4.3.3. RECORD below the number of hours of stabilization, the time and date of the end of stabilization and the time and date of the start of the ILRT.

Stabilization Declared:

_____
Time / Date

No. of Hours for Stabilization:

_____
Hours

Start of ILRT Hold Test Phase:

_____
Time / Date

_____ /
Initials/Date

4.4 **Hold Test Phase**

NOTE
Perform ILRT calculations in accordance with Section 4.4.4 for BN-TOP-1 test or Section 4.4.5 for an ANSI/ANS 56.8-1994 test.

4.4.1 Data Collection:

Record ambient pressure at the start of the Hold Test:

Ambient pressure_____ psia

Gauge serial #: _____ Cal due date:_____

_____ /
Initials/Date

4.4.1.1 IF there has been NO indication of rising pressure on any of the test gauges, THEN discontinue recording the pressure on test gauges listed on Attachment 17.

_____ /
Initials/Date

4.4.1.2 Continue recording containment atmospheric data at 15 minute intervals using ILRT Measurement System.

_____ /
Initials/Date

4.4.1.3 Verify Trend Report on plant computer setup to monitor levels in Attachment 14, is running.

_____ /
Initials/Date

4.4.1.4 Record Initial Water Levels on Attachment 14, (Control Room Log).

_____ /
Initials/Date

4.4.2 Monitor performance of temperature, humidity, and pressure sensors during conduct of test. Delete any non-operable sensors from calculation and modify weighing factors, if necessary per Attachment 5 Section 3.0. Document reasons for sensor deletion and volume fraction reassignment in the test log, Attachment 1. Record new weighing factors in table in Section 6.0 of Attachment 5.

_____ /
Initials/Date

NOTE

Notify Nuclear Chemistry Group and Operations at least two hours prior to starting the Verification test.

4.4.3 VERIFY that the Nuclear Chemistry Group has generated a release permit.

_____ /
Initials/Date

4.4.4 **BN-TOP-1 TEST** (per Bechtel Topical Report BN-TOP-1, Rev.1)
In order to perform a BN-TOP-1 test, the following criteria SHALL be met.

IF a BN-TOP-1 test is NOT performed, THEN place a N/A in space provided below:

BN-TOP-1 Test _____

_____ /
Initials/Date

4.4.4.1 After a minimum of six (6) hours of acceptable data is obtained, determine if "Preliminary as Left" leakage rate, including known B & C additions from Attachment 15 using Total Time 95% Upper Confidence Level (UCL) as reported by ILRT computer program is < 0.075% wt/day.

_____ /
Initials/Date

4.4.4.2 BN-TOP-1 based on total-time calculations indicates that the magnitude of the calculated leakage rate is tending to stabilize at a value less than 75% of the maximum allowable leakage rate.

_____ /
Initials/Date

NOTE

The magnitude of calculated leakage rate may be increasing slightly as it tends to stabilize. In this case, the average rate of increase of the calculated leakage rate SHALL be determined from accumulated data over the last five (5) hours or last twenty (20) data points, which ever provides more points. Using this average rate, the calculated leakage rate is then linearly extrapolated to the 24th hour data point. This extrapolated value of the calculated leakage rate must be less than 75% of the maximum allowable leakage rate.

4.4.4.3 The mean of measure leak rates based on Total Time Calculations over the last five (5) hours of test or last twenty (20) data points, whichever provides the most data, SHALL be less than 75% of the maximum allowable leak rate.

_____ /
Initials/Date

4.4.4.4 The end of test upper 95% confidence limit for calculated leak rate based on Total Time calculations, plus all known additions SHALL be less than 75% of maximum allowable leak rate.

_____ /
Initials/Date

4.4.4.5 Data SHALL be recorded at approximately equal intervals and in NO case at intervals greater than one (1) hour.

_____ /
Initials/Date

4.4.4.6 At least twenty (20) data points SHALL be provided for proper statistical analysis.

_____/_____
Initials/Date

4.4.4.7 The minimum test duration is six (6) hours.

_____/_____
Initials/Date

4.4.4.8 The following minimum number of sensors was working properly at end of the test:

a. At least twenty (20) drybulb temperature sensors

b. At least four (4) relative humidity sensors

c. At least one (1) pressure gauge

_____/_____
Initials/Date

NOTE

Known Type B and C penalties and leakage savings must be taken into account and added to the Upper Confidence Level (UCL) Leakage Rate. If additional penalties may be required due to leakage paths isolated during the test, an adequate margin between the UCL Leakage Rate and the acceptance criteria should be maintained to accommodate the additional values. If Step 4.4.4.10c is below the acceptance criteria, the verification test may be started prior to completing all of the calculations required by Attachment 15.

4.4.4.9 Record actual duration of ILRT:

_____duration in hours

_____/_____
Initials/Date

4.4.4.10 Calculate leakage rates via ILRT computer program. Record ILRT leakage below:

a. Leakage Measured (Lam) _____wt%/day

b. Leakage Measured at 95% UCL _____ wt%/day

c. Preliminary As-Left Leakage _____wt%/day

_____
Consultant / Date

_____
Test Supervisor Verification / Date

4.4.5 **ANSI/ANS 56.8-1994 TEST**

PERFORM ILRT measurements using mass point data analysis method until data indicates the following criteria is met.

IF an ANSI/ANS 56.8-1994 test is NOT performed, THEN place N/A in space provided below.

ANSI/ANS 56.8-1994 Test_____

4.4.5.1 End of test upper 95% confidence limit for calculated leak rate based on mass point data analysis, plus all known additions SHALL be less than 75% of maximum allowable leak rate.

_____ /
Initials/Date

4.4.5.2 Data SHALL be recorded at approximately equal intervals and in NO case at intervals greater than one (1) hour.

_____ /
Initials/Date

4.4.5.3 At least thirty (30) data points SHALL be provided for proper statistical analysis.

_____ /
Initials/Date

4.4.5.4 Minimum test duration is eight (8) hours. IF Termination Criteria are NOT met, THEN:

a. Continue the test, until the criteria is met,

_____ /
Initials/Date

OR

b. Consider reporting the Total Time results if the criteria for a BN-TOP-1 test can be met.

_____ /
Initials/Date

c. Consider restarting Hold Test if adequate pressure and stable conditions exist.

_____ /
Initials/Date

d. IF test results appear unacceptable due to excessive leakage, THEN refer to Step 3.0 of Attachment 11.

_____ /
Initials/Date

4.4.5.5 At end of 8 hours verify the two termination limits of ANSI 56.8-1994 have been met as follows:

a. Limit on curvature met by meeting any one of three inequalities described by ANSI 56.8-1994, as calculated by ILRT computer program (FTEST<1 or CP>0 or Quad<1).

_____ /
Initials/Date

b. Limit on data scatter met (COD>1).

_____ /
Initials/Date

c. Limits on curvature and data scatter above 4.4.5.5a and 4.4.5.5b were met for at least the last hour or the last four consecutive data sets (whichever is longer).

_____ /
Initials/Date

d. Attach ILRT computer program printout stating Termination Criteria has been met AND Termination Criteria Report printout to ATTACHMENT 16 of this procedure.

_____ /
Initials/Date

4.4.5.6 The following minimum number of sensors were working properly at end of test:

a. At least one (1) pressure gauge

b. At least ten (10) drybulb temperature sensors

c. At least three (3) relative humidity sensors

_____ /
Initials/Date

NOTE

Known Type B and C penalties and leakage savings must be taken into account and added to the Upper Confidence Level (UCL) Leakage Rate. IF additional penalties may be required due to leakage paths isolated during the test, THEN an adequate margin between UCL Leakage Rate and acceptance criteria should be maintained to accommodate additional values. IF Step 4.4.5.7c is below acceptance criteria, THEN verification test may be started prior to completing all calculations required by Attachment 15.

4.4.5.7 Calculate leakage rates via ILRT computer program. Record ILRT leakage below:

a. Leakage Measured (Lam) _____ wt%/day

b. Leakage Measured at 95% UCL _____ wt%/day

c. Preliminary As-Left Leakage _____ wt%/day

_____
Consultant / Date

_____
Test Supervisor Verification / Date

4.4.5.8 Record end-of-test Water Levels on Attachment 14, (Control Room Log).

_____ /
Initials/Date

NOTE

If a preliminary assessment of test additions/corrections was made prior to ending the ILRT and these additions were determined to have minimal impact on test acceptability, Step 4.5 may be completed after the superimposed leak is imposed and the Verification Test has begun.

4.5 **Verification Test**

4.5.1 Data collection:

4.5.1.1 Record time and date for start of Verification Test:

Time (24 hr clock): _____ Date: _____

_____ /
Initials/Date

4.5.1.2 Record Verification Test Phase Initial Water Levels on Attachment 14, (Control Room Log).

_____ /
Initials/Date

4.5.1.3 Verify Trend Report on plant computer setup to monitor levels in, Attachment 14 is still running.

_____ /
Initials/Date

4.5.1.4 Start recording containment atmospheric data in Verification Test Mode of ILRT Data Management Program at 15 minute intervals using ILRT Measurement System.

_____ /
Initials/Date

4.5.1.5 Continue data acquisition after completion of ILRT through completion of Verification Test.

_____ /
Initials/Date

4.5.2 OPEN the following valves:

4.5.2.1 LRV-45

_____ /
Initials/Date

4.5.2.2 LRV-46

_____ /
Initials/Date

4.5.2.3 LRV-64 (N/A if not chosen)

_____ /
Initials/Date

4.5.2.4 LRV-65 (N/A if not chosen)

_____ /
Initials/Date

4.5.3 Throttle valve LRV-64 or LRV-65 to establish a flow (Lo) through chosen rotameter of approximately 16.0 scfm (acceptable band is 12.0 – 20.0 scfm). Record rotameter readings at approximately equal intervals NOT to exceed one (1) hour in Attachment 12.

_____ /
Initials/Date

4.5.3.1 IF a rotometer is used to measure imposed leak, THEN correct its reading to actual conditions in Attachment 12;.
Rotameter M&TE Number: _____
Corrected Flow value: _____ scfm

_____ /
Initials/Date

4.5.3.2 Enter corrected flow value into ILRT computer program:

Value entered: _____ scfm

_____ /
Initials/Date

4.5.4 Continue the verification test until the following criteria are met:

4.5.4.1 IF ILRT was performed per BN-TOP-1, Rev.1 (N/A if ILRT per ANSI 56.8-1994), THEN perform the following:

a. IF a short duration test was performed, THEN allow leak to stabilize for a period NOT to exceed one (1) hour from end of ILRT. Data acquisition is to continue throughout stabilization period. IF a 24 hour test or an ILRT under ANSI 56.8-1994 was performed, THEN a leak stabilization period is NOT required.

_____ /
Initials/Date

b. Verification test SHALL continue for one half the duration of the ILRT per BN-TOP-1, Rev. 1. Record duration:

Obtain duration of ILRT from Step 4.4.3.9:
ILRT Duration: _____ (hrs)

Divide ILRT duration by 2.

_____ ÷ 2 = _____ (hrs)
ILRT duration

_____ /
Initials/Date

c. Determine duration of Verification Test:

Current Time/Date: _____/_____

Subtract current time from start time recorded in Step 4.5.1.1:

_____ - _ _____ = _____
Current time Time from 4.5.1.1 Duration

IF value of (c) [Verification Test Duration] is greater than (b) [1/2 ILRT duration], THEN Verification test time is sufficient.

(c) _____ hrs. > (b) _____ hrs.

_____ /
Initials/Date

d. Composite Leakage Rate (Lc), as measured by ILRT computer using Total Time data analysis technique results, SHALL satisfy the following (show calculations on Attachment 12):

(L0 + Lam - 0.25 La) ≤ Lc ≤ (Lo + Lam+ 0.25. La)

(_____) < ____ < (_____)
Lower Limit Lc Upper Limit

_____ /
Initials/Date

4.5.4.2 IF ILRT was performed per ANSI 56.8-1994 (N/A if ILRT per BN-TOP-1), THEN:

a. Verification test SHALL continue for a minimum of four (4) hours. Record duration:

Verification Test Duration: _____ (hrs)

_____ /
Initials/Date

b. Composite Leakage Rate (Lc), as measured by ILRT computer using Mass Point data analysis technique results, SHALL satisfy the following (show calculations on Attachment 12):

(L0 + Lam - 0.25 La) ≤ Lc ≤ (Lo + Lam+ 0.25. La)

(_____)≤ ____ ≤ (_____)
Lower Limit Lc Upper Limit

_____ /
Initials/Date

c. Lc value was within criteria above for the final hour or last four data points (whichever is longer).

_____ /
Initials/Date

d. At least 15 data sets were included in Verification Test result.

_____ /
Initials/Date

4.5.5 IF calculation indicated that Integrated Leak Rate Test is substantiated by verification test, THEN record acceptance in Attachment 1 AND proceed to Step 0.

_____ /
Initials/Date

4.5.6 IF calculation indicates that Integrated Leak Rate Test is NOT substantiated by verification test, THEN perform the following (N/A unused steps):

4.5.6.1 Continue data acquisition until data stabilizes within acceptance criteria band (if appropriate).

_____ /
Initials/Date

4.5.6.2 Recheck verification flow meters AND ILRT measurement system, raw data and leak rate calculations for errors.

_____ /
Initials/Date

4.5.6.3 IF errors are found and corrected, THEN continue verification test data acquisition until requirements of 4.5.4.1 or 4.5.4.2 are met.

_____ /
Initials/Date

4.5.6.4 IF NO errors can be found AND test pressure is still above 0.96Pa, THEN consider securing superimposed leak and re-measuring Lam (restart ILRT) per Section 4.4.

_____ /
Initials/Date

4.5.7 WHEN Verification Test acceptance criteria has been met, THEN perform the following:

4.5.7.1 Record the time and date for the start of the Verification Test:

Time (24 hr clock): _____ Date: _____

_____ /
Initials/Date

4.5.7.2 Record end of Verification Test Phase Water Levels on Attachment 14, (Control Room Log).

_____ /
Initials/Date

4.5.7.3 Trend Report on plant computer is setup to monitor levels in Attachment 14, (Control Room Log) can be discontinued.

/
Initials/Date

4.5.7.4 Secure imposed leak, Lo by isolating the flowmeter. CLOSE LRV-64 or LRV-65

/
Initials/Date

NOTE

Restoration of plant and containment from ILRT may begin at SSO's / test supervisor's discretion (Attachment 3B may provide a safe place to start).
Notify Maintenance Support and Compressor vendor that break-down and removal of pressurization system compressors may begin.
Wear appropriate hearing protection in all areas so designated.

4.6 Depressurization

4.6.1 Announce the following 3 times over plant page.

"ATTENTION ALL PERSONNEL, ATTENTION ALL PERSONNEL, REACTOR CONTAINMENT BUILDING DEPRESSURIZATION IS ABOUT TO COMMENCE. ALL NON ESSENTIAL PERSONNEL STAND CLEAR OF THE SOUTHWEST TURBINE BLDG 119 EL AND WEST BERM AREA BETWEEN CONDENSATE STORAGE TANK AND FIRE SERVICE TANKS."

/
Initials/Date

CAUTION

WHEN a depressurization path throttle valve is full open, AND depressurization rate has fallen below 15 psi, THEN begin to OPEN a secondary depress path throttle valve. Maintain a maximum depressurization rate NOT to exceed 15 psi/hr. The depressurization rate will be monitored minute-by-minute from the ILRT test table, and directions to open/close valves will originate there to enable controlling the depressurization rate.

4.6.2 IF either of the airlocks are pressurized at the end of the ILRT take steps to depressurize the airlock(s) to prevent damaging the inner door by inappropriately applied d/p. The airlock must be depressurized or always at a pressure below containment pressure.

/
Initials/Date

4.6.3 WHEN permission from Test Supervisor is given, THEN SLOWLY OPEN a depressurization path blowdown valves and release air from containment, maintaining a maximum rate of 15 psi/hr. The following penetrations are listed in order of preference, however, they may be selected as a depressurization path in any order.

4.6.3.1 **Pen-305/306 (6")**

4.6.3.1.1 NOTIFY Chemistry to generate GRWRP for RB purge (batch type)

- __ ENSURE Chemistry submits GRWRP to Operations when sampling and analysis are completed

_____ /
Initials/Date

4.6.3.1.2 ENSURE RB exhaust fans are aligned to normal operation

- PLACE "PERMISSIVE BYPASS" switch in "NORMAL" and KEY REMOVED
  - __ AHF-7A vent MCC-3A, Unit 10C
  - __ AHF-7B vent MCC-3B, Unit 9C

_____ /
Initials/Date

4.6.3.1.3 ENSURE RB exhaust dampers are aligned to normal operation

- Both 3 way valves on Air Handling Panel 13 pointing to left (Normal Operation)
  - __ AHV-77 SELECTED to Normal operation of AHD-95, AHD-96, and AHD-94
  - __ AHV-78 SELECTED to Normal operation of AHD-97, AHD-98, and AHD-94

_____ /
Initials/Date

4.6.3.1.4 ENSURE Particulate, Iodine, and Gaseous Channels of Reactor Bldg. Purge Duct Monitor are operating prior to and during purge operation

1. __ WHEN energization of RM-A1 is required, THEN PERFORM Enclosure 7 of OP-417, Startup/Shutdown of RM-A1
2. __ PERFORM all sections of SP-335E, RM-A1 Interlock with LRV Valves

_____ /
Initials/Date

NOTE

The "Reactor Bldg Purge Air Flow Low" alarm is expected to come in when AHF-7A or AHF-7B is started. As long as Step 4.6.3.1.6 (flow requirement) is met, no actions are required.

4.6.3.1.5 START Reactor Bldg Purge Exhaust Fan

1. __ NOTIFY Chemistry prior to start of purge
2. __ START AHF-7A

   OR

   __ START AHF-7B
3. __ NOTIFY HP that RB purge has started
4. __ RECORD Start Time and Date on "Permit Completion" section of GRWRP

_____ /
Initials/Date

4.6.3.1.6 PERFORM Channel Check on AH-1003-TIR (FE) (Channel 4) ensuring >20,000 scfm and at least once per 12 hours during purge operation

- __ RECORD Channel Check on Enclosure 9 of OP-417, RB Purge Channel Check Log

_____ /
Initials/Date

4.6.3.1.7 PERFORM RM-A1 gas Channel Checks every 12 hours

- __ RECORD Channel Check on Enclosure 9 of OP-417, RB Purge Channel Check Log

_____ /
Initials/Date

4.6.3.1.8 PERFORM RB depressurization

1. __ CLOSE LRV-121
   __ CLOSE LRV-123
   __ OPEN LRV-119
   __ OPEN LRV-120
2. __ OPEN LRV-70
   __ OPEN LRV-71
   __ OPEN LRV-72
   __ OPEN LRV-73
3. __ OPEN or THROTTLE LRV-122, as necessary to maintain a maximum depressurization rate NOT to exceed 15 psi/hr
4. __ NOTIFY HP and CHEMISTRY when flow is established, so they can obtain required samples

_____/_____
Initials/Date

4.6.3.2 **Pen-216 (8")**

- ___CLOSE PEN216-TV3 (compressor isolation valve)
- ___OPEN PEN216-TV4 (muffler isolation valve)
- ___OPEN PEN216-TV1 (penetration isolation valve)
- ___OPEN or THROTTLE PEN216-TV2 (throttle valve) as necessary to maintain a maximum depressurization rate NOT to exceed 15 psi/hr

_____/_____
Initials/Date

4.6.3.3 **Pen-217 (8")**

- ___CLOSE PEN217-TV7 (compressor isolation valve)
- ___OPEN PEN217-TV8 (muffler isolation valve)
- ___OPEN PEN217-TV5 (penetration isolation valve)
- ___OPEN or THROTTLE PEN217-TV6 (throttle valve) as necessary to maintain a maximum depressurization rate not to exceed 15 psi/hr

_____/_____
Initials/Date

4.6.3.4 **Pen-122 (3")**

- ___ENSURE removal of blind flange downstream of LRV-99
- ___CLOSE LRV-98
- ___OPEN LRV-87
- ___OPEN LRV-88

_____/_____
Initials/Date

4.6.3.5 **Pen-121 (3")**

- ___ENSURE removal of blind flange downstream of LRV-101
- ___CLOSE LRV-100
- ___OPEN LRV-89
- ___OPEN LRV-90

_____/_____
Initials/Date

4.6.3.6 **Pen-125 (3")**

- ___ENSURE removal of blind flange downstream of LRV-105
- ___CLOSE LRV-104
- ___OPEN LRV-93
- ___OPEN LRV-94

_____/_____
Initials/Date

4.6.3.7 **Pen-125 (3")**

- ___ENSURE removal of blind flange downstream of LRV-103
- ___CLOSE LRV-102
- ___OPEN LRV-91
- ___OPEN LRV-92

_____/_____
Initials/Date

4.6.4 WHEN containment pressure is less than 2 psig, THEN containment atmosphere SHALL be sampled by Health Physics followed by containment entry and final walk through prior to allowing personnel access.

_____ /
Initials/Date

4.7 Final ILRT Results

NOTE

Only the "As Left" leakage calculated in step 4.7.1.1 below must be met prior to entering a mode of operation that requires containment integrity. Unacceptable "As Found" or "Performance" leakage rates may be dispositioned per the Containment Leak Rate Testing Program and CAP-NGGC-0200, Corrective Action Program.

4.7.1 WHEN all local leakage rate additions AND corrections to ILRT are known, THEN CALCULATE Final ILRT leakage rates in Attachment 15, (ILRT Results Summary).

4.7.1.1 "AS LEFT" Leakage:

Sum of above reported Lam & UCL "AS LEFT"

(from Attachment 15 Section 8): _____%wt/day < 0.1875%wt/day

_____ /
Initials/Date

4.7.1.2 "AS FOUND" Leakage:

Sum of above reported Lam & UCL "AS FOUND" (from Attachment 15 Section 9).

(from Attachment 15 Section 9): _____%wt/day < 0.25%wt/day

_____ /
Initials/Date

4.7.1.3 PERFORMANCE Leakage:

Sum of above report Lam & UCL "AS LEFT" and as-left minimum pathway leakage rate of any pathway isolated during ILRT due to excessive leakage (from "As-Left" results Attachment 15 Section 8)

(from Attachment 15 Section 8): _____%wt/day < 0.25%wt/day

/

Initials/Date

5.0 FOLLOW UP ACTIONS

5.1 Contingencies

See Attachment 11

6.0 RESTORATION

6.1 Restoration Instructions

6.1.1 Inform SSO RB depressurization is complete.

_____ /
Initials/Date

6.1.2 Restore depressurization paths:

6.1.2.1 **Pen-305/306**

6.1.2.1.1 ENSURE CLOSED:

__ LRV-70 __ LRV-71
__ LRV-72 __ LRV-73
__ LRV-119 __ LRV-120
__ LRV-122

_____ /
Initials/Date

6.1.2.1.2 RECORD Stop Time and Date on "Permit Completion" section of GRWRP

_____ /
Initials/Date

6.1.2.1.3 STOP Reactor Bldg Purge Exhaust Fans

- __ STOP AHF-7A

  AND

- __ STOP AHF-7B

_____ /
Initials/Date

6.1.2.1.4 COMPLETE GRWRP

1. __ COMPLETE Permit Completion section.
2. __ ATTACH Enclosure 9 of OP-417, RB Purge Channel Check Log, to GRWRP
3. __ RETURN original Permit to Chemistry Department
4. __ DE-ENERGIZE RM-A1 using Enclosure 7 of OP-417, Startup/Shutdown of RM-A1

_____ /
Initials/Date

6.1.2.2 **Pen-216 (8")**

- ___REMOVE PEN216-TV1 (penetration isolation valve)
- ___REMOVE test flange
- ___ENSURE permanent flange is reinstalled

_____ /
Initials/Date

6.1.2.3 **Pen-217 (8")**

- ___REMOVE PEN217-TV5 (penetration isolation valve)
- ___REMOVE test flange
- ___ENSURE permanent flange is reinstalled

_____ /
Initials/Date

6.1.2.4 **Pen-122 (3")**

- ___ENSURE reinstallation of blind flange downstream of LRV-99
- ___CLOSE LRV-87
- ___CLOSE LRV-88

_____ /
Initials/Date

6.1.2.5 **Pen-121 (3")**

- ___ENSURE reinstallation of blind flange downstream of LRV-101
- ___CLOSE LRV-89
- ___CLOSE LRV-90

_____/_____
Initials/Date

6.1.2.6 **Pen-125 (3")**

- ___ENSURE reinstallation of blind flange downstream of LRV-105
- ___CLOSE LRV-93
- ___CLOSE LRV-94

_____/_____
Initials/Date

6.1.2.7 **Pen-125 (3")**

- ___ENSURE reinstallation of blind flange downstream of LRV-103
- ___CLOSE LRV-91
- ___CLOSE LRV-92

_____/_____
Initials/Date

6.1.3 REINSTALL LRV-69 and LRV-63 and associated tubing removed in Step 3.4.10.

_____/_____
Initials/Date

6.1.4 REMOVE all instrumentation specified under Attachment 17.

_____/_____
Initials/Date

6.1.5 REMOVE instrumentation installed from Attachment 5.

_____/_____
Initials/Date

6.1.6 COMPLETE removal of temporary pressurization/depressurization system piping and components and restoration of permanent plant components per Attachment 4.

_____ /
Initials/Date

6.1.7 RESTORE all valves and breakers to correct Post Test position as outlined in Attachments 3A, 3B, 3C, 3D, 3E, 4, 6 ,7 and 8 or as required by CRS. IF CRS or SSO requires use of check-off list (COL), THEN document COLs used in Comments Section. Attach all COLs to this procedure.

_____ /
Initials/Date

6.1.8 COMPLETE Attachment 2, returning all equipment which could be damaged by high pressure to its pre-test condition, or as required by CRS or SSO.

_____ /
Initials/Date

6.1.9 REMOVE the jumpers installed and close the sliding links opened in Attachment 2.

_____ /
Initials/Date

6.1.10 Independently verify jumper removal and closing of sliding links in Attachment 2.

_____ /
Initials/Date

6.1.11 Recalibrate per SP-112R, RPS Reactor Building Pressure Trip Calibration, and SP-132A/B/C, Engineered Safeguards Channel 1/2/3 Calibration, the following instruments:

o _____ BS-18-PS	o ___ BS-26-PS
o _____ BS-19-PS	o ___ BS-27-PS
o _____ BS-20-PS	o ___ BS-28-PS
o _____ BS-21-PS	o ___ BS-29-PS
o _____ BS-22-PS	o ___ BS-59-PS
o _____ BS-23-PS	o ___ BS-60-PS
o _____ BS-24-PS	o ___ BS-61-PS
o _____ BS-25-PS	o ___ BS-62-PS

_____ /
Initials/Date

6.1.12 Restore Radiation Monitors RM-G16, RM-G17 and RM-G18 and associated Radiation Monitoring System), and restore G-M tubes per Attachment 2.

_____ / _____
Initials/Date

6.1.13 RESTORE Reactor Building Cooling Unit, AHF-1A, 1B or 1C as indicated in step 3.4.52, per Attachment 2.

_____ / _____
Initials/Date

6.1.14 NOTIFY SSO the ILRT is complete.

_____ / _____
Initials/Date

7.0 COMMENTS

Page ____ of ____

Comments continued: Page ____ of ____

Make additional copies as necessary

Test Performer Signatures:

Print Name:	Initials:	Signature/Date:

8.0 EVALUATION

8.1 Equipment Performance Review

Comments: _____

Reviewed By: _____

Programs and Components Review / Date

ATTACHMENT 1
TEST SUPERVISOR'S LOG
(Page 1 of 1)

DATE:____/____/____
Page ____ of ____

TIME:	REMARKS:

NOTE: MAKE ADDITIONAL SHEETS AS NECESSARY. AUTOLOG IS AN ACCEPTABLE LOG METHOD.

ATTACHMENT 2
CONTAINMENT PREPARATION CHECKLIST
MECHANICAL MAINTENANCE:

EQUIPMENT PROTECTION/PREPARATION

Any equipment which may be damaged when subjected to high pressure should be removed from containment or vented. NOT included is any instrumentation associated with containment isolation or monitoring of accident conditions. Use blank lines to document any items removed or vented NOT already listed in this attachment. Removed equipment SHALL be properly stored.

EQUIPMENT	PROTECTION	VERIFICATION SIGNATURE & DATE	
		COMPLETED	RESTORED
Main Bridge Fuel Handling Hoist (2)	Ensure that the vents are clear for the gear box oil reservoirs		
Main Bridge Trolley Travel Gear Box	Ensure that the vents are clear for the gear box oil reservoir		
Aux Bridge Trolley Travel Gear Box	Ensure that the vents are clear for the gear box oil reservoir		
Upender Gear Box (FACR-4A)	Ensure that the vents are clear for the gear box oil reservoir		
Upender Gear Box (FACR-4B)	Ensure that the vents are clear for the gear box oil reservoir		
Main Bridge Travel Gear Box	Remove the vent plugs from the gear box oil reservoir		
Aux Bridge Travel Gear Box	Remove the vent plugs from the gear box oil reservoir		
Nitrogen, argon oxygen/acetylene, (etc.) bottles	Remove from containment		
RB cooling unit AHF-1A, 1B, or 1C temporarily modified with flow baffle Cat ID# 52700753 (only one unit required, as indicated in step 3.4.52).	Ensure that fan will operate if needed due to higher density of compressed air during ILRT.		

ATTACHMENT 2
CONTAINMENT PREPARATION CHECKLIST
INSTRUMENTATION & CONTROLS

EQUIPMENT PROTECTION/PREPARATION

Any equipment which may be damaged when subjected to high pressure should be removed from containment or vented. NOT included is any instrumentation associated with containment isolation or monitoring of accident conditions. Use blank lines to document any items removed or vented NOT already listed in this attachment. Removed equipment SHALL be properly stored.

EQUIPMENT	PROTECTION	VERIFICATION SIGNATURE & DATE	
		COMPLETED	RESTORED
Nuclear Services Closed Cycle Cooling System flow indicator SW-209-FI	Loosen front cover, insert a 1/8-in. paper wedge between the cover's seating surfaces, then tighten the cover loosely. The switch should be covered with plastic to prevent entry of dirt and moisture.		
AH-656-FIS, a Brooks Model #1110 flow switch	Loosen front cover, insert a 1/8-in. paper wedge between the cover's seating surfaces, then tighten the cover loosely. The switch should be covered with plastic to prevent entry of dirt and moisture.		
AH-657-FIS, a Brooks Model #1110 flow switch	Loosen front cover, insert a 1/8-in. paper wedge between the cover's seating surfaces, then tighten the cover loosely. The switch should be covered with plastic to prevent entry of dirt and moisture.		
AH-658-FIS, a Brooks Model #1110 flow switch	Loosen front cover, insert a 1/8-in. paper wedge between the cover's seating surfaces, then tighten the cover loosely. The switch should be covered with plastic to prevent entry of dirt and moisture.		
MU-31-FT1, Brooks rotameter transmitter	Loosen front cover, insert a 1/8-in. paper wedge between the cover's seating surfaces, then tighten the cover loosely. The switch should be covered with plastic to prevent entry of dirt and moisture.		
MU-31-FT2, Brooks rotameter transmitter	Loosen front cover, insert a 1/8-in. paper wedge between the cover's seating surfaces, then tighten the cover loosely. The switch should be covered with plastic to prevent entry of dirt and moisture.		

ATTACHMENT 2
CONTAINMENT PREPARATION CHECKLIST
INSTRUMENTATION & CONTROLS

EQUIPMENT	PROTECTION	VERIFICATION SIGNATURE & DATE	
		COMPLETED	RESTORED
MU-31-FT3, Brooks rotameter transmitter	Loosen front cover, insert a 1/8-in. paper wedge between the cover's seating surfaces, then tighten the cover loosely. The switch should be covered with plastic to prevent entry of dirt and moisture.		
MU-31-FT4, Brooks rotameter transmitter	Loosen front cover, insert a 1/8-in. paper wedge between the cover's seating surfaces, then tighten the cover loosely. The switch should be covered with plastic to prevent entry of dirt and moisture.		
DW-23-FIC, Brooks rotameter transmitter	Loosen front cover, insert a 1/8-in. paper wedge between the cover's seating surfaces, then tighten the cover loosely. The switch should be covered with plastic to prevent entry of dirt and moisture.		
DW-24-FIC, Brooks rotameter transmitter	Loosen front cover, insert a 1/8-in. paper wedge between the cover's seating surfaces, then tighten the cover loosely. The switch should be covered with plastic to prevent entry of dirt and moisture.		
DW-25-FIC, Brooks rotameter transmitter	Loosen front cover, insert a 1/8-in. paper wedge between the cover's seating surfaces, then tighten the cover loosely. The switch should be covered with plastic to prevent entry of dirt and moisture.		
DW-26-FIC, Brooks rotameter transmitter	Loosen front cover, insert a 1/8-in. paper wedge between the cover's seating surfaces, then tighten the cover loosely. The switch should be covered with plastic to prevent entry of dirt and moisture.		
NOTE: TSI Material must be removed at preamplifier NI-002-B4 to permit access to box covers.			

ATTACHMENT 2
CONTAINMENT PREPARATION CHECKLIST
INSTRUMENTATION & CONTROLS

EQUIPMENT	PROTECTION	VERIFICATION SIGNATURE & DATE	
		COMPLETED	RESTORED
NI-001-A4 Nuclear instrumentation preamplifier	Loosen both the inner and outer box covers. Insert a 1/8-in. paper wedge and retighten the covers loosely. The outer box should be covered with plastic to prevent entry of dirt and moisture.		
NI-002-B4 Nuclear instrumentation preamplifiers	Loosen both the inner and outer box covers. Insert a 1/8-in. paper wedge and retighten the covers loosely. The outer box should be covered with plastic to prevent entry of dirt and moisture.		
RB cooling unit AHF-1A, 1B, or 1C temporarily modified with 129 Amp overload (only one unit required, as indicated in step 3.4.52).	Ensures fan will operate if needed due to higher density of compressed air during ILRT.		
Radiation Monitor RM-G16, RM-G17 and RM-G18 GM Tubes	Remove G-M tubes (if required) RM-G16, RM-G17 and RM-G18		

ATTACHMENT 2
CONTAINMENT PREPARATION CHECKLIST
OTHER WORK GROUPS

- **OPERATIONS (REFUELING TEAM)**

EQUIPMENT	PROTECTION	VERIFICATION SIGNATURE & DATE	
		COMPLETED	RESTORED
TV monitor	Remove from containment (if required)		
Position readout units	Remove from containment (if required)		
Load meters and power supply	Remove from containment (if required)		
Refueling Bridge Controls	Remove any controls containing electrolytic capacitors that could leak from exposure to the pressure		

- **ELECTRICAL MAINTENANCE**

EQUIPMENT	PROTECTION	VERIFICATION SIGNATURE & DATE	
		COMPLETED	RESTORED
Polar Crane normal lighting.	Remove		
Polar Crane emergency lighting.	Remove		
Polar Crane Controls	Remove any controls containing electrolytic capacitors that could leak from exposure to the pressure		

ATTACHMENT 2
CONTAINMENT PREPARATION CHECKLIST
OTHER WORK GROUPS

- **OTHER WORK GROUPS: CONTAINMENT COORDINATOR OVERSEES**

EQUIPMENT	PROTECTION	VERIFICATION SIGNATURE & DATE	
		COMPLETED	RESTORED
Nitrogen, argon oxygen/ acetylene, (etc.) bottles	Remove from containment		
Fire extinguishers	Remove from containment		
Wooden scaffolding	Remove from containment		
Gang boxes	Vent boxes, remove aerosol cans, tubes of lubricant		
Temporary Fluorescent & incandescent lights	Remove from containment		
Computer monitors, CCTV monitors, test equipment with tube-based displays	Remove from containment		
55 gallon storage drums	Vent drum by removing bunge hole cover or popping lid		
Spray Units	Vent any spray units that are pressure tight (e.g. those used for de-contamination)		

ATTACHMENT 3
ILRT VALVE LINEUP INSTRUCTIONS

CHECKLIST CONTENTS:

ATTACHMENT 3A: ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
Checklist consists of penetration alignments that must be completed prior to start of pressurization either because they include components to check while access is available to containment, OR to avoid potential closure problems once pressurization has started. NO penetration containing liquid is vented OR drained by this procedure, AND lineups are NOT sequence critical.

ATTACHMENT 3B: ILRT VALVE LINEUPS PRIOR TO STABILIZATION
Checklist consists of penetration alignments that may be completed after pressurization has started because they include NO components to position inside containment, or those components are remotely operated in closed systems NOT exposed to test pressure. A penalty addition is planned for all of these penetrations so closure method and closure sequence is NOT critical.

ATTACHMENT 3C: ILRT SPECIAL VALVE LINEUPS Checklist consists of penetration alignments that must be completed prior to the start of pressurization, and are considered to be sequence critical.

CHECKLIST COMPLETION:

CAUTION
Unless otherwise instructed by the Superintendent Shift Operations, IF line will be opened/vented OR CIVs must be opened DO NOT perform the Penetration Line Up when containment integrity is required. Penetration lineups that do NOT entail opening lines, venting/draining systems may be performed anytime as directed by the Test Supervisor.

Issue the Line up Checklists to Operations and attach a copy of these instructions

CAUTION
Do NOT change Clearance Tagout boundaries without first obtaining approval from ILRT Test Supervisor AND Test Supervisor.

Clearance Tagouts will only be used when already in place for maintenance when a system's piping is opened for the test (e.g. vented to atmosphere), or for personnel safety.

Caution or Test Tagging if required is used sparingly to save time, and minimize demand on resources. Caution or Test Tags are information tags placed on valves/components moved from their NORMAL position for the ILRT (i.e. if the "Test Position" is the same as the component's normal position, a tag is not hung).

NO liquid filled penetrations are being vented/drained as part of this line-up.

Perform ATTACHMENT 3C in the order written for systems to be vented/opened to simplify proper venting of the system.

ATTACHMENT 3
ILRT VALVE LINEUP INSTRUCTIONS

Except in cases where a penetration will be vented, the lineup is organized (sorted) by location to facilitate its completion.

Most penetrations in Attachments 3A will NOT be vented, AND none in Attachment 3B. Their line-ups may be performed in any order, providing all piping is depressurized.

GENERAL INSTRUCTIONS:

IF a containment isolation valve in Penetrations that will be vented/tested by the ILRT (See Attachment 9) has NOT been closed via normal means THEN stroke valve prior to closure per the Line Up Checklist to demonstrate they were closed by their normal mode of force. Record any Containment Isolation Valve closure NOT by normal means in the Test Exception Log.

Lineups in Attachments 3A and 3B are suggested lineups, intended to disposition a penetration for the ILRT. These lineups may be modified if required with the concurrence of the ILRT Test Director and the Test Supervisor. Any variation from this lineup MUST be documented in Attachment 7, (Test Exception Log), AND testing status of the penetration reviewed and updated (if changed) in Attachment 9, (Containment Penetration Summary).

Modifications to component line-ups may be required during the preparations for the ILRT. Attachment 8, (Valve Lineup Alteration Log) will be used to track changes requested to a system/penetration lineup once signed off as completed for the ILRT. The component position MUST be returned to the "Test Position" prior to starting compressors or stabilization as appropriate (reviews are cued by the procedure). Any temporary valve lineup alteration that can NOT be restored prior to the test must be accepted by the ILRT Test Director, and be dispositioned as stated in the previous paragraph above via Test Exception Log.

ILRT "Test Position" may be verified through review of administrative controls documents (e.g. a completed Containment Integrity Checklist OR Equipment Tagout Log, Locked Valve Log, etc.) at the sole discretion of the Test Supervisor. Components verified through review or acceptance of administrative controls will be denoted with a printed "A" for "Admin." in the initials/date block to facilitate identification of verifications performed in this manner.

Component positions verified by Visual Verification will be initialed per normal practice. A Functional Verification will be documented as described in AI-500, Appendix 10.

Component position may also be accepted if the component is part of a Clearance that will remain in force throughout the ILRT window. In these cases the Test Supervisor will sign-on to the applicable Clearance.

FLANGES/PIPE CAPS:

The drain/vent flange and bolts may be left attached as long as flange is swung to the side. The bolts must be installed finger-tight so that flange can NOT block vent OR drain path during the ILRT.

At completion of each Checklist all drain hoses need to be evaluated for removal. Determine if future activities need (scheduled clearance or maintenance) a drain hose.

ATTACHMENT 3
ILRT VALVE LINEUP INSTRUCTIONS

Do NOT obstruct pipe vents/drains inside OR outside containment, this will invalidate the ILRT for this penetration.

DEFINITIONS:

Test Tag Closed. Position the valve in the closed position and attach a Test Tag at the appropriate location.

Test Tag Open. Position the valve in the open position and attach a Test Tag at the appropriate location.

ORC. Outside Reactor Containment

IRC. Inside Reactor Containment

PENETRATION RESTORATION CHECKLIST INSTRUCTIONS:

Components NOT returned to their AS FOUND condition shall be authorized by either the ILRT Test Supervisor OR CRS. Documentation for the reason the component was NOT returned to the AS FOUND condition shall be annotated or attached to the applicable Attachment.

Independent Verification of valve restoration may be "N/A" if the test lineup position is the same as the restored position.

Re-issue the lineup checklists for completion of penetration restoration to Operations and attach a copy of these instructions.

Except for portions of the lineup accomplished via clearance, the restoration may be signed off in any order. Restore vented/drained penetrations per Operations Lineup Coordinator/Clearance to prevent inadvertent release of fluids through the ILRT test boundary.

Instrument Air penetrations must be restored prior to restoring any penetrations containing AOVs.

Dispose of all In ILRT Information Tags, bags, etc. in the appropriate manner.

ATTACHMENT 3
ILRT VALVE LINEUP INSTRUCTIONS

L/U ATTACH.	SYSTEM	PEN#	PEN. DESCRIPTION	TEST STATUS	APP. J PRGM STATUS	L/U SEQ.	RESTORE SEQ.
3A	Main Steam	105	MSL A-2	Normal Standby L/U	N/R		
3A	Main Steam	106	MSL A-1	Normal Standby L/U	N/R		
3A	Main Steam	107	MSL B-2	Normal Standby L/U	N/R		
3A	Main Steam	201	MSL B-1	Normal Standby L/U	N/R		
3A, 3B	Main Steam	314	RCSG 1-B Drain	Normal Standby L/U, Bottled Up for PI	N/R		
3B	Main Steam	316	RCSG 1-A Sec Vent	Normal Standby L/U	N/R		
3A, 3B	Main Steam	318	RCSG 1-A Drain	Normal Standby L/U, Bottled Up for PI	N/R		
3B	Main Steam	320	RCSG 1-B Sec Vent	Normal Standby L/U	N/R		
3B	Main Steam	427	RCSG 1-B Drain	Normal Standby L/U	N/R		
3B	Main Steam	428	RCSG 1-A Drain	Normal Standby L/U	N/R		
3A, 3B	Feedwater & Emerg. FW	108	Main FW "B"	Normal Standby L/U	N/R		
3A, 3B	Feedwater & Emerg. FW	109	EFW "B"	Normal Standby L/U	N/R		
3A, 3B	Feedwater & Emerg. FW	423	Main FW "A"	Normal Standby L/U	N/R		
3A, 3B	Feedwater & Emerg. FW	424	EFW "A"	Normal Standby L/U	N/R		

ATTACHMENT 3
ILRT VALVE LINEUP INSTRUCTIONS

L/U ATTACH.	SYSTEM	PEN#	PEN. DESCRIPTION	TEST STATUS	APP. J PRGM STATUS	L/U SEQ.	RESTORE SEQ.
3A, 3B	Condensate & Demin Water	117	Demin Wtr to CNTMNT	Take Penalty	Type C		
3C	Instrument & Station Air	110	Station Air	ILRT is Testing	Type C		
3C	Instrument & Station Air	111	Instrument Air	ILRT is Testing	Type C		
3C	Instrument & Station Air	112	Instrument Air	ILRT is Testing	Type C		
3B	Nuclear Services Closed Cycle Cooling	321	Letdown Clr 3B Supply	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	322	Letdown Clr 3B Return	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	360	Letdown Clr 3A/3C Supply	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	361	Letdown Clr 3A/3C Return	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	330	CRDMS Supply	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	331	CRDMS Return	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	358	RB Vent Fan 3C Supply	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	359	RB Vent Fan 3C Return	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	368	RB Vent Fan 3A Supply	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	369	RB Vent Fan 3A Return	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	370	RB Vent Fan 3B Supply	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	371	RB Vent Fan 3B Return	Normal Standby L/U	N/R		

ATTACHMENT 3
ILRT VALVE LINEUP INSTRUCTIONS

L/U ATTACH.	SYSTEM	PEN#	PEN. DESCRIPTION	TEST STATUS	APP. J PRGM STATUS	L/U SEQ.	RESTORE SEQ.
3B	Nuclear Services Closed Cycle Cooling	326	RCP 1C Return	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	325	RCP 1C Supply	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	363	RCP 1D Return	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	362	RCP 1D Supply	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	324	RCP 1A Return	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	323	RCP 1A Supply	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	365	RCP 1B Return	Normal Standby L/U	N/R		
3B	Nuclear Services Closed Cycle Cooling	364	RCP 1B Supply	Normal Standby L/U	N/R		
3A, 3B	Spent Fuel Cooling	347	Fuel Trnsfr Clg Purification	Take Penalty	Type C		
3A	Spent Fuel Cooling	348	Fuel Transfer Tube	ILRT is Testing	Type B		
3A	Spent Fuel Cooling	436	Fuel Transfer Tube	ILRT is Testing	Type B		
3B	Decay Heat Removal	329	PZR Sprayline	Take Penalty	Type C		
OP L/U	Decay Heat Removal	345	RB Sump Recirc	Normal Standby L/U	N/R		
OP L/U	Decay Heat Removal	346	RB Sump Recirc	Normal Standby L/U	N/R		
3A	Reactor Coolant	N/A					
3B	Makeup & Purification	333	Letdown to Purif Demin	Take Penalty	Type C		

ATTACHMENT 3
ILRT VALVE LINEUP INSTRUCTIONS

L/U ATTACH.	SYSTEM	PEN#	PEN. DESCRIPTION	TEST STATUS	APP. J PRGM STATUS	L/U SEQ.	RESTORE SEQ.
3B	Makeup & Purification	353	HPI to RB Sump	Take Penalty	Type C		
3A, 3B	Makeup & Purification	377	RCP Seal Bleedoff	Take Penalty	Type C		
3B	Makeup & Purification	338	RCP Seal Supply	Normal Standby L/U	N/R		
3B	Makeup & Purification	434	HPCI	Normal Standby L/U	N/R		
3B	Makeup & Purification	435	Makeup & HPCI	Normal Standby L/U	N/R		
3B	Makeup & Purification	336	HPCI	Normal Standby L/U	N/R		
3B	Makeup & Purification	337	HPCI	Normal Standby L/U	N/R		
3B	Liquid Sampling	425	PASS	Take Penalty	Type C		
3B	Liquid Sampling	439	PZR & RCS Sample	Take Penalty	Type C		
3B	Liquid Sampling	440	SG 3A Sample	Take Penalty	Type C		
3B	Liquid Sampling	441	SG 3B Sample	Take Penalty	Type C		
3C	Nitrogen	317	N2 to SG Secondary	Take Penalty	Type C		
3C	Nitrogen	355	N2 to RCS	Take Penalty	Type C		
3C	Nitrogen	372	N2 to RCDT	Take Penalty	Type C		
3C	Core Flood	123	N2 to CFT 1A	Take Penalty	Type C		
3C	Core Flood	124	N2 to CFT 1B	Take Penalty	Type C		

ATTACHMENT 3
ILRT VALVE LINEUP INSTRUCTIONS

L/U ATTACH.	SYSTEM	PEN#	PEN. DESCRIPTION	TEST STATUS	APP. J PRGM STATUS	L/U SEQ.	RESTORE SEQ.
3A	Core Flood	350	CFT M/U	Take Penalty	Type C		
3A	Core Flood	351	CFT Vent	Take Penalty	Type C		
3A, 3B	Core Flood	352	CFT Sample/Bleed	Take Penalty	Type C		
3B	Core Flood	373	CFT M/U	Take Penalty	Type C		
3B	Liquid Waste Disposal	339	RB Sump	Take Penalty	Type C		
3B	Liquid Waste Disposal	349	RCDT Vent	Take Penalty	Type C		
3B	Liquid Waste Disposal	374	RCDT Drain	Take Penalty	Type C		
3A, 3B	Gas Waste Disposal	354	RCS Equipment Vents	Take Penalty	Type C		
3C	Containment Monitoring	306	PASS	ILRT is Testing	Type C		
3C	Containment Monitoring	315	RB Air Sample	ILRT is Testing	Type C		
3C	Containment Monitoring	332	RB Air Sample Return	ILRT is Testing	Type C		
3C	Containment Monitoring	356	RB Air Sample	ILRT is Testing	Type C		
3C	Containment Monitoring	376	Cntmnt. Mon. Sample Return	ILRT is Testing	Type C		
3A, 3B	Reactor Building Spray	340	RB Spray	Normal Standby L/U	N/R		
3A, 3B	Reactor Building Spray	341	RB Spray	Normal Standby L/U	N/R		
3B	RB Press Sensing & Testing, IA	426	RB Press Sensing	ILRT is Testing	N/R		

ATTACHMENT 3
ILRT VALVE LINEUP INSTRUCTIONS

L/U ATTACH.	SYSTEM	PEN#	PEN. DESCRIPTION	TEST STATUS	APP. J PRGM STATUS	L/U SEQ.	RESTORE SEQ.
3B	RB Press Sensing & Testing, IA	442	RB Press Sensing	ILRT is Testing	N/R		
3B	RB Press Sensing & Testing, IA	429	RB Press Sensing	ILRT is Testing	N/R		
3B	RB Press Sensing & Testing, IA	319	RB Press Sensing	ILRT is Testing	N/R		
3B	Leak Rate & Post Accident H2 Purge	116	RB Leak Rate	Take Penalty	Type C		
3B	Leak Rate & Post Accident H2 Purge	121	RB Leak Rate, H2 Recombiner	ILRT is Testing	Type C		
3B	Leak Rate & Post Accident H2 Purge	122	RB Leak Rate, H2 Recombiner	ILRT is Testing	Type C		
3B	Leak Rate & Post Accident H2 Purge	125	H2 Recombiner Return	ILRT is Testing	Type C		
3B	Leak Rate & Post Accident H2 Purge	202	RB Leak Rate	Take Penalty	Type C		
3B	Leak Rate & Post Accident H2 Purge	305	PASS	ILRT is Testing	Type C		
3B	Leak Rate & Post Accident H2 Purge	306	PASS	ILRT is Testing	Type C		
3A	Containment Purge	113	RB Purge Supply	ILRT is Testing	Type C		
3A	Containment Purge	357	RB Purge Exhaust	ILRT is Testing	Type C		
3A, 3B	Industrial Cooler	206	RBICW Supply	Take Penalty	Type C		
3A, 3B	Industrial Cooler	207	RBICW Return	Take Penalty	Type C		
3A, 3B	Industrial Cooler	366	RBICW Supply	Take Penalty	Type C		
3A, 3B	Industrial Cooler	367	RBICW Return	Take Penalty	Type C		

ATTACHMENT 3
ILRT VALVE LINEUP INSTRUCTIONS

L/U ATTACH.	SYSTEM	PEN#	PEN. DESCRIPTION	TEST STATUS	APP. J PRGM STATUS	L/U SEQ.	RESTORE SEQ.
3A, 3B	Fire Service	430	FSW to CNTMNT	ILRT is Testing	Type C		
3A	RB Airlock	433	RB Personnel Airlock	Outer Door OPEN	Type B		
3A	RB Airlock	222	RB Equipment Hatch Airlock	Outer Door OPEN	Type B		

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION

SYSTEM: MAIN STEAM

PEN. NO.: 105,106,107,201,314,316,318,320,427,428 **Dwg: FD-302-011 Sht.4**

VALVE NO.	VALVE DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
MSV-297	Main Steam Line A2 Drain Trap Root Isolation	105		CLOSED		OPEN		
MSV-411	Main Steam Line A2 Iso.	105		CLOSED		CLOSED		
MSV-299	Main Steam Line A1 Drain Trap Root Isolation	106		CLOSED		OPEN		
MSV-55	Main Steam Supply EFP-2 Iso.	106		CLOSED		If RCS < 270° - CLOSED If RCS > 270° - OPEN		
MSV-412	RCSG Main Steam Line A1 Iso.	106		CLOSED		CLOSED		
MSV-301	Main Steam Line B1 Drain Trap Root Isolation	201		CLOSED		OPEN		
MSV-413	Main Steam Line B1 Iso.	201		CLOSED		CLOSED		
MSV-27	Atmo. Dump Isolation	106		CLOSED		If RCS < 240° - CLOSED If RCS > 240° - OPEN		
MSV-28	Atmo. Dump Isolation	107		CLOSED		If RCS < 240° - CLOSED If RCS > 240° - OPEN		
MSV-303	MSDT 25 Root Iso	107		CLOSED		OPEN		
MSV-56	Main Steam Supply EFP-2 Iso.	107		CLOSED		If RCS < 270° - CLOSED If RCS > 270° - OPEN		
MSV-414	Main Steam Line B2 Iso.	107		CLOSED		CLOSED		
MSV-185	RCSG-1A Drain Iso.	318		CLOSED		LOCKED CLOSED		
MSV-130	RCSG-1A Drain Iso.	427		CLOSED		CLOSED		
MSV-148	RCSG-1B Drain Iso.	428		CLOSED		CLOSED		
MSV-93	MS 106 + MS 108 + MS 115 PT Isolation	105		OPEN		OPEN		
MSV-95	MS 111 + MS 113 + MS 116 PT Isolation	201		OPEN		OPEN		

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION

SYSTEM: MAIN STEAM

PEN. NO.: 105,106,107,201,314,316,318,320,427,428 **Dwg: FD-302-011 Sht.4**

VALVE NO.	VALVE DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
MSV-94	MS 107 + MS 109 + MS 114 PT Iso.	106		OPEN		OPEN		
MSV-96	MS 110 + MS 112 + MS 117 PT Iso.	107		OPEN		OPEN		
MSV-504	MS 107 + MS 109 PT Iso.	106		OPEN		OPEN		
MSV-508	MS 110 + MS 112 PT Iso.	107		OPEN		OPEN		
MSV-505	Main Steam Line A1 Vent	106		OPEN UNCAPPED (GAUGE INSTALLED)		SEALED CLOSED CAPPED		
MSV-509	Main Steam Line B2 Vent	107		OPEN UNCAPPED (GAUGE INSTALLED)		SEALED CLOSED CAPPED		
MSV-443	RCSG-1A Drain Iso.	318		CLOSED		CLOSED		
MSV-120	RCSG-1A Drain Iso.	318		CLOSED		CLOSED		
MSV-121	RCSG-1A Drain Iso.	318		CLOSED		CLOSED		
MSV-446	RCSG-1B Drain Iso.	314		CLOSED		CLOSED		
MSV-138	RCSG-1B Drain Iso.	314		CLOSED		CLOSED		
MSV-139	RCSG-1B Drain Iso.	314		CLOSED		CLOSED		
MSV-116	RCSG-1A Sec Vent	318		CLOSED		CLOSED		
MSV-117	N2 Supply to RCSG-1A	318		CLOSED		CLOSED		
MSV-400	Pen 318 Vent	318		CLOSED		CLOSED		
MSV-184	RCSG-1B to RB Sump Iso.	314		CLOSED		LOCKED CLOSED		
MSV-115	RCSG-1A Sec Vent	318		CLOSED		SEALED CLOSED		
MSV-447	Main Steam Line A2 Vent	105		CLOSED		SEALED CLOSED		
MSV-448	Main Steam Line A1 Vent	106		CLOSED		SEALED CLOSED		
MSV-449	Main Steam Line B1 Vent	201		CLOSED		CLOSED		

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION

SYSTEM: MAIN STEAM

PEN. NO.: 105,106,107,201,314,316,318,320,427,428 **Dwg: FD-302-011 Sht.4**

VALVE NO.	VALVE DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
MSV-450	Main Steam Line B2 Vent	107		CLOSED		CLOSED		
MSV-134	N2 Supply to RCSG-1B	320		CLOSED		CLOSED		
MSV-135	N2 Supply to RCSG-1B	320		CLOSED		SEALED CLOSED		
MSV-133	N2 Supply to RCSG-1B	320		CLOSED		CLOSED		
MSV-503	MS 106 + MS 108 PT Vent	105		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
MSV-507	MS 111 + MS 113 PT Vent	201		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CGV-38	Main Steam Line A2 Drain	105		LOCKED CLOSED		LOCKED CLOSED		
CGV-37	Main Steam Line A1 Drain	106		LOCKED CLOSED		LOCKED CLOSED		
CGV-36	Main Steam Line B1 Drain	201		LOCKED CLOSED		LOCKED CLOSED		
CGV-35	Main Steam Line B2 Drain	107		LOCKED CLOSED		LOCKED CLOSED		
CGV-1	RCSG-1A Drain Iso To Chem Clng Sys	318		SEALED CLOSED		SEALED CLOSED		

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION

SYSTEM: FEEDWATER & EMERGENCY FEEDWATER

PEN. NO.: 108,109,423,424 **Dwg: FD-302-081, Shts 1, 3, & 4; FD-302-082 Sht 1**

VALVE NO.	VALVE DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
FWV-135	RCSG-1A Emerg Supply Drain	424		CLOSED		SEALED CLOSED		
FWV-134	RCSG-1A Emerg Supply Vent	424		CLOSED		SEALED CLOSED		
FWV-169	RCSG-1A Main Supply Drain	423		CLOSED CAPPED		SEALED CLOSED & CAPPED		
FWV-85	RCSG-1A Main Supply Vent	423		CLOSED		SEALED CLOSED		
FWV-136	RCSG-1B Emerg Supply Drain	109		CLOSED		SEALED CLOSED		
FWV-137	RCSG-1B Emerg Supply Vent	109		CLOSED		SEALED CLOSED		
FWV-86	RCSG-1B Main Supply Vent	108		CLOSED		CLOSED		
FWV-170	RCSG-1B Main Supply Drain	108		CLOSED & CAPPED		SEALED CLOSED & CAPPED		

SYSTEM: CONDENSATE & DEMINERALIZED WATER

PEN. NO.: 117

VALVE NO.	VALVE DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
DWV-161	Pen 117 Drain & Test	117		*CLOSED FLANGED		SEALED CLOSED & FLANGED		

*If a test flange has been installed for venting/draining/testing, installation of the test flange cap or plug satisfies the test lineup flange installation requirement.

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION

SYSTEM: SPENT FUEL COOLING
PEN. NO.: 347, 348, 436 **Dwg: FD-302-621 Sht. 3**

VALVE NO.	VALVE DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
----	Transfer Tube Blind Flange, SFFG-436-2A	436		INSTALLED		INSTALLED		
----	Transfer Tube Blind Flange, SFFG-348-2A	348		INSTALLED		INSTALLED		
SFV-18	FTC Iso	347		CLOSED		LOCKED CLOSED		

Check that pipe caps or plugs are installed on the following taps:

NOTE: Refer to FPC Dwg. No. P-304-723 for location of Test Taps for Fuel Transfer Tube flanges.

	INITIALS
Fuel Transfer Tube 3A Test Tap Inside RB	_____
Fuel Transfer Tube 3B Test Tap Inside RB	_____

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION

SYSTEM: REACTOR COOLANT
PEN. NO.: N/A **Dwg: FD-302-651 Sht. 1**

VALVE NO.	VALVE DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
RCV-6	Press N2 Supply/WD Vent	N/A		CLOSED		OPEN		
RCV-157	High Point Vent	N/A		OPEN		CLOSED		
RCV-138	Press Vent	N/A		OPEN		LOCKED OPEN (1)		
RCV-158	High Point Vent	N/A		OPEN		CLOSED		
RCV-159	High Point Vent	N/A		OPEN		CLOSED		
RCV-18	RCSG-1A N2 Supply/WD Vent	N/A		OPEN		LOCKED OPEN		
RCV-160	High Point Vent	N/A		OPEN		CLOSED		
RCV-163	High Point Vent	N/A		OPEN		CLOSED		
RCV-164	High Point Vent	N/A		OPEN		CLOSED		
RCV-41	RCSG-1B N2 Supply/WD Vent	N/A		OPEN		LOCKED OPEN		

(1) Normal High Dose area, consider alternate means to determine status of valve (camera, binoculars)

SYSTEM: MAKEUP & PURIFICATION
PEN. NO.:377 **Dwg: FD-302-661, Sheet 5**

VALVE NO.	VALVE DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
MUV-418	Bleedoff Drain	377		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
MUV-407	Bleedoff Vent	377		CLOSED & CAPPED		SEALED CLOSED & CAPPED		

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION

SYSTEM: LIQUID WASTE DISPOSAL
PEN. NO.: 339,349,374 **Dwg.: FD-302-681 Sheet 6**

VALVE NO.	VALVE DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
WDV-60	RC Drain Tank Iso	349		CLOSED		CLOSED		
WDV-61	RC Drain Tank Iso	349		CLOSED		CLOSED		
WDV-94	RC Drain Tank Pump Iso	374		CLOSED		CLOSED		
WDV-62	RC Drain Tank Pump Iso	374		CLOSED		CLOSED		
----	Waste Gas Header Aux Bldg Exhaust	OP-412A		OP-412A		OP-412A		

NOTE: Perform core flood lineup prior to performing gas waste disposal lineup.
SYSTEM: GAS WASTE DISPOSAL
PEN. NO.: 354 **Dwg.: FD-302-691 Sheet 3**

VALVE NO.	VALVE DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
WDV-406	RB Vent Header Iso	354		CLOSED		OPEN		
WDV-405	RB Vent Header Iso	354		CLOSED		OPEN		

SYSTEM: REACTOR BUILDING SPRAY
PEN. NO.: 340,341 **Drawing: FD-302-711 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
BSV-82	Pen 341 Drain & Test	341		CLOSED		LOCKED CLOSED		
BSV-4	RB Spray Header Iso	341		CLOSED		REMOTE/AUTO		
BSV-81	Pen 340 Drain & Test	340		CLOSED		LOCKED CLOSED		
BSV-3	RB Spray Header Iso	340		CLOSED		REMOTE/AUTO		

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION

SYSTEM: LEAK RATE & POST ACCIDENT HYDROGEN PURGE
PEN. NO.: 116,121,122,125,202,305,306 **Drawing: FD-302-722, Sheet 1**

VALVE NO.	VALVE/COMPONENT DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
LRV-42	PI-1 Test	202		CLOSED & CAPPED		CLOSED & CAPPED		
LRV-43	PI-2 Test	202		CLOSED & CAPPED		CLOSED & CAPPED		
LRV-44	Press Sensing Inlet	202		UNLOCKED OPEN		LOCKED CLOSED		
LRV-39	PI-1 Inlet	202		OPEN		CLOSED		
LRV-40	PI-2 Inlet	202		OPEN		CLOSED		
LRV-41	PI-3 Inlet	202		OPEN		CLOSED		
LRV-45	FI-4 & FI-5 Inlet	116		UNLOCKED CLOSED		LOCKED CLOSED		
LRV-115	Test & Drain	202		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
LRV-116	Test & Drain	116		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
LRV-117	Test & Drain	116		CLOSED		SEALED CLOSED		
LRV-118	Test & Drain	116		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
LRV-130	Test Conn Pent 216	216		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
LRV-131	Test Conn Pent 217	217		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
LRFG-1-1B	LRX-1 (Line Blind)	122		INSTALLED		INSTALLED		
LRFG-122-2A	Atmos. Vent inside RB 8" Flange	122		REMOVED		REMOVED		
LRFG-121-2A	FMR Pressurization Line 8" Flange	121		REMOVED		REMOVED		
LRFG-125-2A	Tertiary Depress Path 8" Flange	125		REMOVED		REMOVED		
LRFG-202-2A	ILRT Pressure Sensing, 2" Flange/Blind	202		REMOVED		INSTALLED		

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION

SYSTEM: LEAK RATE & POST ACCIDENT HYDROGEN PURGE

PEN. NO.: 116,121,122,125,202,305,306 **Drawing: FD-302-722, Sheet 1**

VALVE NO.	VALVE/COMPONENT DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
LRFG-116-2A	ILRT Verification Test Flow Line, 2" Flange	116		REMOVED		REMOVED		
LRFG-305-2B	Mini-Purge, 6" Flange	305		REMOVED		REMOVED		
LRFG-306-2B	Mini-Purge, 6" Flange	306		REMOVED		REMOVED		
LRFG-216-2C	2005 ILRT Pressurization Path 12" Flange/Blind	216		REMOVED		INSTALLED		
LRFG-217-2C	2005 ILRT Pressurization Path 12" Flange/Blind	217		REMOVED		INSTALLED		

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION

SYSTEM: CONTAINMENT PURGE

PEN. NO.: 113,357 **Drawing: FD-302-751, Sheet 1**

VALVE NO.	VALVE DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
AHV-1A	Purge Exhaust	357		CLOSED		*OPEN/CLOSED		
AHV-1B	Purge Exhaust	357		CLOSED		*OPEN/CLOSED		
AHV-1C	Purge Supply	113		CLOSED		*OPEN/CLOSED		
AHV-1D	Purge Supply	113		CLOSED		*OPEN/CLOSED		
AHV-25	Test Connection AHV-1A & AHV-1B	357		OPEN, UNCAPPED GAUGE INSTALLED		SEALED CLOSED & CAPPED		
AHV-24	Test Connection AHV-1D & AHV-1C	113		OPEN, UNCAPPED GAUGE INSTALLED		SEALED CLOSED & CAPPED		

*Open only for RB Purge per OP-417. Shall not be open in Modes 1 thru 4.

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION

SYSTEM: INDUSTRIAL COOLER
PEN. NO.: 206,207,366,367 **Drawing: FD-302-762 Sheet 4**

VALVE NO.	VALVE DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
CIV-35	Outlet Iso	367		CLOSED		*OPEN/CLOSED		
CIV-97	AHHE-14A Drain	367		CLOSED		SEALED CLOSED		
CIV-90	AHHE-14A Vent	367		CLOSED		SEALED CLOSED		
CIV-98	AHHE-14A Drain	366		CLOSED		SEALED CLOSED		
CIV-34	Inlet Iso	366		CLOSED		*OPEN/CLOSED		
CIV-40	Outlet Iso	207		CLOSED		*OPEN/CLOSED		
CIV-95	AHHE-14B Drain	207		CLOSED		SEALED CLOSED		
CIV-91	AHHE-14B Vent	206		CLOSED		SEALED CLOSED		
CIV-96	AHHE-14B Drain	206		CLOSED		SEALED CLOSED		
CIV-41	Inlet Iso	206		CLOSED		*OPEN/CLOSED		

*Open if associated cavity pump is in service.

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION

SYSTEM: REACTOR BUILDING AIRLOCKS
PEN NO.: N/A

VALVE NO.	VALVE DESCRIPTION	PEN .#	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERIF. INITIAL/DATE
RAX-1	Inner Door	433		CLOSED		CLOSED		
RAX-1	Outer Door	433		OPEN		CLOSED		
RAX-2	Inner Door	222		CLOSED		CLOSED		
RAX-2	Outer Door	222		OPEN		CLOSED		

* Outer Door can be closed, and airlock pressurized to test pressure -0.5 psig if snooping inner door seals/equalizing valves (handwheel packing glands indicates leakage.

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: MAIN STEAM

PEN. NO.: 105,106,107,201,314,316,318,320,427,428 **Dwg: FD-302-011 Sht.4**

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
MSV-409	Drain & Test Pen 316	316		CLOSED & CAPPED		* OPEN / OR SEALED CLOSED & CAPPED		
MSV-114	RCSG-1A Sec Vent	316		LOCKED CLOSED		LOCKED CLOSED		
MSV-410	RCSG-1B Test & Drain	320		CLOSED & CAPPED		* OPEN / OR SEALED CLOSED & CAPPED		
MSV-132	RCSG-1B Sec Vent	320		LOCKED CLOSED		LOCKED CLOSED		
MSV-401	Drain & Test Pen 318	318		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
MSV-128	RCSG-1B Drain To Misc Waste Tank	318		LOCKED CLOSED		LOCKED CLOSED		
MSV-403	RCSG-1A To Atmos Drain Tank Vent	427		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
MSV-404	Drain & Test Pen 314	314		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
MSV-146	RCSG-1B Drain To Misc Waste Tank	314		LOCKED CLOSED		LOCKED CLOSED		
MSV-406	RCSG-1B To Atmos Drain Tank Vent	428		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
MSV-405	Drain & Test Pen 428	428		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
MSV-402	Drain & Test Pen 427	427		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		

* OPEN if N2 Required on OTSG

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: FEEDWATER & EMERGENCY FEEDWATER

PEN. NO.: 108,109,423,424 **Dwgs: FD-302-081 Sht.s 1, 3, & 4; FD-302-082 Sht. 1**

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
FWV-138	Pen 109 Drain & Test	109		SEALED CLOSED		SEALED CLOSED		
FWV-163	RCSG-1B Main Supply Vent	108		CLOSED		CLOSED		
EFV-69	EFW RCSG-1A Vent	424		CLOSED		CLOSED		
FWV-132	Drain & Test Pen 424	424		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
FWV-171	Drain & Test Pen 423	423		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
FWV-111	Drain & Test Pen 108	108		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
FWV-112	Drain & Test Pen 423	423		CLOSED		CLOSED		
FWV-205	Drain & Test Pen 424	424		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
FWV-206	Pen 424 Vent	424		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
FWV-203	Drain & Test Pen 109	109		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
FWV-204	Pen 109 Vent	109		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CGV-17	Chem Clean A OTSG	424		SEALED CLOSED		SEALED CLOSED		
CGV-18	Chem Clean B OTSG	109		SEALED CLOSED		SEALED CLOSED		
EFV-68	Vent & N_2 Blanket Iso.	424		CLOSED		SEALED CLOSED		
EFV-72	EF to SG 3A Drain	424		CLOSED		CLOSED		
EFV-62	EF to SG 3B Drain	109		CLOSED		CLOSED		
EFV-65	EF to SG 3B Drain	109		CLOSED		CLOSED		
EFV-61	Vent & N_2 Blanket Iso.	109		CLOSED		SEALED CLOSED		
EFV-11	Emer FW to OTSG 3A Iso.	424		CLOSED		AUTO		
EFV-14	Emer FW to OTSG 3A Iso.	424		CLOSED		AUTO		
EFV-32	Emer FW to OTSG 3B	109		CLOSED		AUTO		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: FEEDWATER & EMERGENCY FEEDWATER

PEN. NO.: 108,109,423,424 **Dwgs: FD-302-081 Sht.s 1, 3, & 4; FD-302-082 Sht. 1**

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
	Iso.							
EFV-33	Emer FW to OTSG 3B Iso.	109		CLOSED		AUTO		

SYSTEM: CONDENSATE & DEMINERALIZED WATER

PEN. NO.: 117 **Dwg.: FD-302-182 Sht. 3**

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
DWV-160	Demin Water Iso	117		CLOSED		CLOSED		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: NUCLEAR SERVICES CLOSED CYCLE COOLING

PEN. NO.: 321,322,360,361,330,331,358,359,368,369,370,371,326,325,363,362,324,323,365,364 **Dwg: FD-302-601 Sht. 5**

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
SWV-50	Letdown Clr 3A/3C Return Iso	361		CLOSED		OPEN		
SWV-49	Letdown Cooler 3B Return Iso	322		CLOSED		OPEN		
SWV-48	Letdown Cooler 3B Supply Iso	321		CLOSED		OPEN		
SWV-47	Letdown Clr 3A/3C Supply Iso	360		CLOSED		OPEN		
SWV-109	CRDMS Supply Iso	330		CLOSED		OPEN		
SWV-110	CRDMS Return Iso	331		CLOSED		OPEN		
SWV-86	RCP-1C Return Iso	326		CLOSED		OPEN		
SWV-82	RCP-1C Supply Iso	325		CLOSED		OPEN		
SWV-85	RCP-1D Return Iso	363		CLOSED		OPEN		
SWV-81	RCP-1D Supply Iso	362		CLOSED		OPEN		
SWV-84	RCP-1A Return Iso	324		CLOSED		OPEN		
SWV-80	RCP-1A Supply Iso	323		CLOSED		OPEN		
SWV-83	RCP-1B Return Iso	365		CLOSED		OPEN		
SWV-79	RCP-1B Supply Iso	364		CLOSED		OPEN		
SWV-35	RB Vent Fan 3A Supply Iso	368		CLOSED		OPEN		
SWV-41	RB Vent Fan 3A Return Iso	369		CLOSED		*OPEN/CLOSED		
SWV-37	RB Vent Fan 3B Supply Iso	370		CLOSED		OPEN		
SWV-43	RB Vent Fan 3B Return Iso	371		CLOSED		*OPEN/CLOSED		
SWV-39	RB Vent Fan 3C Supply Iso	358		CLOSED		OPEN		
SWV-45	RB Vent Fan 3C Return Iso	359		CLOSED		*OPEN/CLOSED		

*Valve must be open when associated fan is running.

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: SPENT FUEL COOLING
PEN. NO.: 347, 348, 436

Dwg: FD-302-621 Sht. 3

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
SFV-140	Transfer Tube Gasket Drain	348		CLOSED		CLOSED		
SFV-141	Transfer Tube Gasket Drain	436		CLOSED		CLOSED		
SFV-142	Transfer Tube Test	348		CLOSED		CLOSED		
SFV-143	Transfer Tube Test	436		CLOSED		CLOSED		
SFV-144	Transfer Tube Test	348		CLOSED		CLOSED		
SFV-145	Transfer Tube Test	436		CLOSED		CLOSED		
SFV-19	FTC Iso	347		CLOSED		LOCKED CLOSED		
SFV-132	Pen 347 Drain & Test	347		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
SFV-190	Pen 347 Drain & Test	347		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: DECAY HEAT REMOVAL

PEN. NO.: 329 **Dwg: FD-302-641, Sht. 3**

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
DHV-91	DH to Press Iso	329		CLOSED		CLOSED		
DHV-95	Pen 329 Drain & Test	329		SEALED CLOSED		SEALED CLOSED		
DHV-127	Pen 329 Drain & Test	329		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
DHV-128	Pen 329 Drain & Test	329		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		

*A nitrogen pressure of approximately 20 PSIG may be connected to aid in draining.

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: MAKEUP & PURIFICATION

PEN. NO.: 333, 336, 337, 338, 353, 377, 434, 435 **Dwg: FD-302-661 Sht. 5**

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
MUV-276	Letdown Cooler Vent	333		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
MUV-49	Letdown Cooler Iso	333		CLOSED		OPEN/CLOSED (5)		
MUV-268	Pen 333 Drain & Test	333		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
MUV-537	Pen 333 Drain & Test	333		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
MUV-567	Letdown Inside Containment Isolation (MCB)	333		CLOSED		OPEN		
MUV-543	HPI to RB Sump Solenoid Valve	353		CLOSED		CLOSED (Note 3)		
MUV-545	HPI to RB Sump Solenoid Valve	353		CLOSED		CLOSED (Note 4)		
MUV-539	HPI to RB Sump Aux. Bldg. Maintenance Valve	353		OPEN		LOCKED OPEN		
MUV-548	HPI to RB Sump Drain	353		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
MUV-561	HPI to RB Sump AB Vent	353		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
MUV-547	HPI to RB Sump Vent	353		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
MUV-269	Pen 377 Drain & Test	377		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
MUV-261	RCP-1D Bleedoff Iso	377		CLOSED		OPEN/CLOSED (5)		
MUV-260	RCP-1C Bleedoff Iso	377		CLOSED		OPEN/CLOSED (5)		
MUV-259	RCP-1B Bleedoff Iso	377		CLOSED		OPEN/CLOSED (5)		
MUV-258	RCP-1A Bleedoff Iso	377		CLOSED		OPEN/CLOSED (5)		
MUV-253	Bleedoff Iso	377		CLOSED		OPEN/CLOSED (5)		
MUV-538	Pen 377 Drain & Test	377		SEALED		SEALED CLOSED		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: MAKEUP & PURIFICATION

PEN. NO.: 333, 336, 337, 338, 353, 377, 434, 435 **Dwg: FD-302-661 Sht. 5**

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
				CLOSED & CAPPED		& CAPPED		
MUV-18	RCP Seal Iso	338		CLOSED		OPEN		
MUV-23	HPI Loop A	434		CLOSED		CLOSED		
MUV-24	HPI Loop A	435		CLOSED		CLOSED		
MUV-27	Loop A Makeup Iso	435		CLOSED		OPEN		
MUV-25	HPI Loop B	336		CLOSED		CLOSED		
MUV-26	HPI Loop B	337		CLOSED		CLOSED		

NOTES: 1. Valve electrical power ON - DPDP-8A, Switch 4 CLOSED 3. Valve electrical power OFF - DPDP-8A,Switch 4 OPEN 5. OPEN when in service;
2. Valve electrical power ON - DPDP-8B, Switch 8 CLOSED 4. Valve electrical power OFF - DPDP-8A, Switch 8 OPEN CLOSED when NOT in service.

** Two of three letdown coolers in service.

*Nitrogen/Air may be used, if assist draining. Refer to SP-179C, CONTAINMENT LEAKAGE TEST-TYPE "C", Enclosure 16 for guidance.

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: LIQUID SAMPLING
PEN. NO.: 425,439,440,441 **Dwg.: FD-302-672, Sheet 1**

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
CAV-133	Pen 439 Drain & Test	439		CLOSED **FLANGE INSTALLED		SEALED CLOSED & FLANGED		
CAV-126	RC Letdown Sample	439		CLOSED		CLOSED		
CAV-1	PZR Steam Space Sample	439		CLOSED		CLOSED		
CAV-3	PZR Water Space Sample	439		CLOSED		CLOSED		
CAV-2	Sample Iso	439		CLOSED		CLOSED		
CAV-619	Pen 439 Test Conn.	439		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CAV-622	Pen 439 Test Conn	439		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CAV-4	SG 3A Sample Iso	440		CLOSED		CLOSED		
CAV-154	Pen 440 Drain & Test	440		CLOSED & *FLANGE INSTALLED		SEALED CLOSED & FLANGED		
CAV-6	SG 3A Sample Iso	440		CLOSED		CLOSED		
CAV-5	SG 3B Sample Iso	441		CLOSED		CLOSED		
CAV-155	Pen 441 Drain & Test	441		CLOSED & *FLANGE INSTALLED		SEALED CLOSED & FLANGED		
CAV-7	SG 3B Sample Iso	441		CLOSED		CLOSED		
CAV-433	RB Sump Sample Iso	425		CLOSED		CLOSED PWR/OFF		
CAV-434	RB Sump Sample Iso	425		CLOSED		CLOSED PWR/OFF		
CAV-435	Pass Iso	425		CLOSED		CLOSED PWR/OFF		
CAV-436	Pass Iso	425		CLOSED		CLOSED PWR/OFF		
CAV-429	RCP-1A Disch Iso	439		CLOSED		CLOSED PWR/OFF		
CAV-430	RCP-1C Suction Sample Iso	439		CLOSED		CLOSED PWR/OFF		
CAV-431	Sample Iso	439		CLOSED		CLOSED		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: LIQUID SAMPLING

PEN. NO.: 425,439,440,441 **Dwg.: FD-302-672, Sheet 1**

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
CAV-432	Sample Iso	439		CLOSED		CLOSED PWR/OFF		
CAV-725	Pen. 425 Drain & Test	425		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CAV-730	Pen. 425 Drain & Test	425		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CAV-726	Pen. 425 Drain & Test	425		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CAV-731	Pen. 425 Drain & Test	425		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CAV-727	Pen. 439 Drain & Test	439		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CAV-732	Pen. 439 Drain & Test	439		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CAV-733	Pen. 440 Drain & Test	440		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CAV-734	Pen. 441 Drain & Test	441		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		

* A nitrogen pressure of approximately 20 PSIG may be used to aid in draining

**If a test flange has been installed for venting/draining/testing, removal of the test flange cap or plug will satisfy flange removal requirement and installation of test flange cap or plug will satisfy the flange installation requirement.

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: LIQUID WASTE DISPOSAL

PEN. NO.: 339,349,374 **Dwg.: FD-302-681 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
WDV-807	Pen 349 Drain & Test	349		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
WDV-808	Pen 374 Drain & Test	374		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
WDV-3	RB Sump Pump Iso	339	MCB	CLOSED		OPEN		
WDV-809	Pen 339 Drain & Test	339		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
WDV-4	RB Sump Pump Iso	339	MCB	CLOSED		OPEN		
WDV-810	WDV-4 Downstream Vent (RB Sump Disch Vent)	339		OPEN, UNCAPPED GAUGE INSTALLED		CLOSED		
WDV-1242	WDV-4 Downstream Isolation (RB Sump Manual Iso)	339		CLOSED		OPEN		

NOTE: Perform core flood lineup prior to performing gas waste disposal lineup.

SYSTEM: GAS WASTE DISPOSAL

PEN. NO.: 354 **Drawing: FD-302-691 Sheet 3**

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
WDV-371	Pen 354 Drain & Test	354		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
WDV-1022		354	MCB	OPEN		CLOSED		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: RB PRESSURE SENSING & TESTING / INSTRUMENT AIR
PEN. NO.: 319, 426, 429, 442 **Drawing: FD-302-712 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
IAV-725	Instrument Air Isolation Valve to Cabinet ESPSC-3B1	CLOSED		CLOSED		OPEN		
IAV-726	Instrument Air Isolation Valve to Cabinet ESPSC-3B1	CLOSED		CLOSED		OPEN		
IAV-727	Instrument Air Isolation Valve to Cabinet ESPSC-3A1	CLOSED		CLOSED		OPEN		
IAV-728	Instrument Air Isolation Valve to Cabinet ESPSC-3A1	CLOSED		CLOSED		OPEN		
BSV-147	Pen 426 Iso.	LOCKED OPEN		LOCKED OPEN		LOCKED OPEN		
BSV-64	BS-17-PT Iso.	LOCKED OPEN		LOCKED OPEN		LOCKED OPEN		
BSV-254	Isolation Valve for BS-91-PT	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-255	Isolation Valve for BS-93-PT	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-241	Isolation Valve for BS-91-PT	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-252	Isolation Valve for BS-17-PT	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-236	BS-91-PT Test Valve	SEALED CLOSED AND CAPPED		SEALED CLOSED AND CAPPED		SEALED CLOSED AND CAPPED		
BSV-237	BS-93-PT Test Valve	SEALED CLOSED AND CAPPED		SEALED CLOSED AND CAPPED		SEALED CLOSED AND CAPPED		
BSV-238	BS-17-PT Test Valve	SEALED CLOSED AND CAPPED		SEALED CLOSED AND CAPPED		SEALED CLOSED AND CAPPED		
BSV-229	BS-18-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: RB PRESSURE SENSING & TESTING / INSTRUMENT AIR

PEN. NO.: 319, 426, 429, 442 **Drawing: FD-302-712 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
BSV-242	BS-24-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-243	BS-59-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-230	BS-21-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-248	BS-27-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-181	Reactor Building Pressure Switch (BS-59-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		
BSV-182	Reactor Building Pressure Switch (BS-59-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-183	Reactor Building Pressure Switch (BS-59-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		
BSV-184	Reactor Building Pressure Switch (BS-24-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		
BSV-185	Reactor Building Pressure Switch (BS-24-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-186	Reactor Building Pressure Switch (BS-24-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: RB PRESSURE SENSING & TESTING / INSTRUMENT AIR

PEN. NO.: 319, 426, 429, 442 **Drawing: FD-302-712 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
BSV-187	Reactor Building Pressure Switch (BS-18-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		
BSV-188	Reactor Building Pressure Switch (BS-18-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-189	Reactor Building Pressure Switch (BS-18-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		
BSV-190	Reactor Building Pressure Switch (BS-27-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		
BSV-191	Reactor Building Pressure Switch (BS-27-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-192	Reactor Building Pressure Switch (BS-27-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		
BSV-193	Reactor Building Pressure Switch (BS-21-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: RB PRESSURE SENSING & TESTING / INSTRUMENT AIR

PEN. NO.: 319, 426, 429, 442 **Drawing: FD-302-712 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
BSV-194	Reactor Building Pressure Switch (BS-21-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-195	Reactor Building Pressure Switch (BS-21-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		
IAV-733	Instrument Air Isolation Valve to Cabinet ESPSC-3B3	CLOSED		CLOSED		OPEN		
IAV-734	Instrument Air Isolation Valve to Cabinet ESPSC-3B3	CLOSED		CLOSED		OPEN		
IAV-735	Instrument Air Isolation Valve to Cabinet ESPSC-3A3	CLOSED		CLOSED		OPEN		
IAV-736	Instrument Air Isolation Valve to Cabinet ESPSC-3A3	CLOSED		CLOSED		OPEN		
BSV-131	Pen 442 Iso.	LOCKED OPEN		LOCKED OPEN		LOCKED OPEN		
BSV-233	BS-20-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-246	BS-26-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-247	BS-61-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-234	BS-23-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-250	BS-29-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: RB PRESSURE SENSING & TESTING / INSTRUMENT AIR

PEN. NO.: 319, 426, 429, 442 **Drawing: FD-302-712 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
BSV-211	Reactor Building Pressure Switch (BS-61-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		
BSV-212	Reactor Building Pressure Switch (BS-61-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-213	Reactor Building Pressure Switch (BS-61-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		
BSV-214	Reactor Building Pressure Switch (BS-26-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		
BSV-215	Reactor Building Pressure Switch (BS-26-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-216	RB Pressure Switch (BS-26-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		
BSV-217	Reactor Building Pressure Switch (BS-20-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		
BSV-218	Reactor Building Pressure Switch (BS-20-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: RB PRESSURE SENSING & TESTING / INSTRUMENT AIR

PEN. NO.: 319, 426, 429, 442 **Drawing: FD-302-712 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
BSV-219	RB Pressure Switch (BS-20-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		
BSV-220	Reactor Building Pressure Switch (BS-29-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		
BSV-221	Reactor Building Pressure Switch (BS-29-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-222	RB Pressure Switch (BS-29-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		
BSV-223	Reactor Building Pressure Switch (BS-23-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		
BSV-224	Reactor Building Pressure Switch (BS-23-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-225	Reactor Building Pressure Switch (BS-23-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		
IAV-729	Instrument Air Isolation Valve to Cabinet ESPSC-3B2	CLOSED		CLOSED		OPEN		
IAV-730	Instrument Air Isolation Valve to Cabinet ESPSC-3B2	CLOSED		CLOSED		OPEN		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: RB PRESSURE SENSING & TESTING / INSTRUMENT AIR

PEN. NO.: 319, 426, 429, 442 **Drawing: FD-302-712 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
IAV-731	Instrument Air Isolation Valve to Cabinet ESPSC-3A2	CLOSED		CLOSED		OPEN		
IAV-732	Instrument Air Isolation Valve to Cabinet ESPSC-3A2	CLOSED		CLOSED		OPEN		
BSV-130	Pen 429 Iso.	LOCKED OPEN		LOCKED OPEN		LOCKED OPEN		
BSV-244	BS-25-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-231	BS-19-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-232	BS-22-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-249	BS-28-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-245	BS-60-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-196	Reactor Building Pressure Switch (BS-60-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		
BSV-197	Reactor Building Pressure Switch (BS-60-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-198	Reactor Building Pressure Switch (BS-60-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		
BSV-199	Reactor Building Pressure Switch (BS-25-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: RB PRESSURE SENSING & TESTING / INSTRUMENT AIR

PEN. NO.: 319, 426, 429, 442 **Drawing: FD-302-712 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
BSV-200	Reactor Building Pressure Switch (BS-25-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-201	RB Pressure Switch (BS-25-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		
BSV-202	Reactor Building Pressure Switch (BS-19-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		
BSV-203	Reactor Building Pressure Switch (BS-19-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-204	RB Pressure Switch (BS-19-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		
BSV-205	Reactor Building Pressure Switch (BS-28-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		
BSV-206	Reactor Building Pressure Switch (BS-28-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-207	RB Pressure Switch (BS-28-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: RB PRESSURE SENSING & TESTING / INSTRUMENT AIR

PEN. NO.: 319, 426, 429, 442 **Drawing: FD-302-712 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
BSV-208	Reactor Building Pressure Switch (BS-22-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		
BSV-209	Reactor Building Pressure Switch (BS-22-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-210	RB Pressure Switch (BS-22-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		
IAV-737	Instrument Air Isolation Valve to Cabinet ESPSC-3A4	CLOSED		CLOSED		OPEN		
BSV-132	Pen 319 Iso.	LOCKED OPEN		LOCKED OPEN		LOCKED OPEN		
BSV-61	BS-16-PT Iso.	LOCKED OPEN		LOCKED OPEN		LOCKED OPEN		
BSV-235	BS-62-PS Isolation Valve	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-251	Isolation Valve for BS-16-PT	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-253	Isolation Valve for BS-90-PT	SEALED OPEN		SEALED OPEN		SEALED OPEN		
BSV-239	BS-90-PT Test Valve	SEALED CLOSED AND CAPPED		SEALED CLOSED AND CAPPED		SEALED CLOSED AND CAPPED		
BSV-240	BS-16-PT Test Valve	CLOSED AND CAPPED		CLOSED AND CAPPED		SEALED CLOSED AND CAPPED		
BSV-226	Reactor Building Pressure Switch (BS-62-PS) Cntnmnt Boundary Isolation Valve	CLOSED		CLOSED		SEALED CLOSED		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: RB PRESSURE SENSING & TESTING / INSTRUMENT AIR

PEN. NO.: 319, 426, 429, 442 **Drawing: FD-302-712 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
BSV-227	Reactor Building Pressure Switch (BS-62-PS) Cntnmnt Boundary Isolation Valve	OPEN		CLOSED		SEALED CLOSED		
BSV-228	Reactor Building Pressure Switch (BS-62-PS) Instrument Air Test Valve	UNCAPPED AND OPEN		UNCAPPED AND OPEN		CLOSED AND CAPPED		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: LEAK RATE & POST ACCIDENT HYDROGEN PURGE
PEN. NO.: 116,121,122,125,202,305,306 **Dwg.:FD-302-722, Sht. 1**

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
LRV-35	Discharge Iso	122		CLOSED		LOCKED CLOSED		
LRV-47	PA H2 Purge	122		CLOSED		LOCKED CLOSED		
LRV-51	Discharge Iso	122		CLOSED		CLOSED		
LRV-57	Discharge Drain	122		CLOSED		SEALED CLOSED AND CAPPED		
LRV-37	Supply Line Vent	121		CLOSED		SEALED CLOSED AND CAPPED		
LRV-52	PA H2 Purge	122		CLOSED		CLOSED		
LRV-38	Discharge Iso	122		CLOSED		CLOSED		
LRV-49	Discharge Iso	122		CLOSED		CLOSED		
LRV-46*	Flowmeter Inlet	116		CLOSED*		SEALED CLOSED		
LRV-88	H2 Recombiner Iso	122		CLOSED		LOCKED CLOSED		
LRV-90	H2 Recombiner Iso	121		CLOSED		LOCKED CLOSED		
LRV-64	Flowmeter Inlet Control	116		CLOSED		CLOSED		
LRV-92	H2 Recombiner Iso	125		CLOSED		LOCKED CLOSED		
LRV-65	Flowmeter Inlet Control	116		CLOSED		CLOSED		
LRV-94	H2 Recombiner Iso	125		CLOSED		LOCKED CLOSED		
LRV-70	PA H2 Purge Filter Iso	306		CLOSED		CLOSED		
CAV-415	RB Atmos Sample	116		CLOSED*		CLOSED		
CAV-417	RB Atmos Sample	116		CLOSED		CLOSED		
LRV-71	PA H2 Purge Filter Iso	306		CLOSED		CLOSED		
LRV-72	PA H2 Purge Filter Iso	305		CLOSED		CLOSED		
LRV-73	PA H2 Purger Filter Iso	305		CLOSED		CLOSED		

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: LEAK RATE & POST ACCIDENT HYDROGEN PURGE

PEN. NO.: 116,121,122,125,202,305,306 **Dwg.:FD-302-722, Sht. 1**

VALVE NO.	VALVE DESCRIPTION	PEN #	LOCATION	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
LRV-36	Supply Iso	121		LOCKED CLOSED		LOCKED CLOSED		
LRV-50	Supply Iso	121		LOCKED CLOSED		LOCKED CLOSED		
LRV-98	Test & Drain	122		OPEN & UNCAPPED		CLOSED & CAPPED		
LRV-100	Test & Drain	121		OPEN & UNCAPPED		CLOSED & CAPPED		
LRV-102	Test & Drain	125		OPEN & UNCAPPED		CLOSED & CAPPED		
LRV-104	Test & Drain	125		OPEN & UNCAPPED		CLOSED & CAPPED		
LRV-87	H2 Recombiner Iso	122		CLOSED		LOCKED CLOSED		
LRV-89	H2 Recombiner Iso	121		LOCKED CLOSED		LOCKED CLOSED		
LRV-91	H2 Recombiner Iso	125		LOCKED CLOSED		LOCKED CLOSED		
LRV-93	H2 Recombiner Iso	125		LOCKED CLOSED		LOCKED CLOSED		
LRV-121	H2 Purge Iso	305/ 306		OPEN		CLOSED		
LRV-123	H2 Purge Iso	305 /306		OPEN		CLOSED		

*May be opened for RB air sample.

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION

SYSTEM: INDUSTRIAL COOLER
PEN. NO.: 206,207,366,367

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
CIV-89	Pen 367 Drain & Test	OPEN & UNCAPPED		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CIV-86	Pen 366 Drain & Test	OPEN & UNCAPPED		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CIV-93	Pen 207 Drain & Test	OPEN & UNCAPPED		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CIV-87	Pen 206 Drain & Test	OPEN & UNCAPPED		CLOSED & CAPPED		SEALED CLOSED & CAPPED		

*Open if associated cavity pump is in service.

ATTACHMENT 3C
SPECIAL ILRT VALVE LINEUPS

SYSTEM: INSTRUMENT & STATION SERVICE AIR

PEN. NO.: 110,111, 112

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
IAV-77	IA to RB Spray Iso	CLOSED		CLOSED		CLOSED		
IAV-62	IA to RB Spray Iso	CLOSED		CLOSED		LOCKED CLOSED		
IAV-16	Turb Bldg Loop Iso	CLOSED		CLOSED		OPEN		
IAV-90	IA to RB Spray Iso	CLOSED		CLOSED		CLOSED		
IAV-61	IA to RB Spray Iso	CLOSED		CLOSED		LOCKED CLOSED		
IAV-28	IA to RB Spray Iso	UNLOCKED OPEN		CLOSED		LOCKED CLOSED		
IAV-29	IA to RB Spray Iso	UNLOCKED OPEN		CLOSED		LOCKED CLOSED		
IAV-360	Dirt Trap	OPEN & UNCAPPED		OPEN & UNCAPPED		CLOSED & CAPPED		
IAV-361	Dirt Trap	OPEN & UNCAPPED		OPEN & UNCAPPED		CLOSED & CAPPED		
IAV-364	Dirt Trap	OPEN		OPEN		CLOSED		
IAV-365	Dirt Trap	OPEN		OPEN		CLOSED		
IAV-362	Pen 111 Drain & Test	CLOSED & CAPPED		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
IAV-363	Pen 112 Drain & Test	CLOSED & CAPPED		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
SAV-128	Turb Bldg Loop Iso	CLOSED		CLOSED		CLOSED		
CAV-416	RB Atmos Sample Station Iso	CLOSED		CLOSED*		CLOSED		
SAV-21	SA to RB Iso	OPEN		OPEN		OPEN		
SAV-130	SA to RB Sample Station	CLOSED		CLOSED		CLOSED		
SAV-61	Pen 110 Drain & Test	CLOSED & CAPPED		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
SAV-24	SA to RB Iso	UNLOCKED & OPEN		UNLOCKED CLOSED*		LOCKED CLOSED		
SAV-23	SA to RB Iso	UNLOCKED & OPEN		CLOSED (once vented)		LOCKED CLOSED		
IAV-293	IA Dirt Trap	OPEN		OPEN		CLOSED		
SAV-122	SA to RB Sample Sta Iso	UNLOCKED & OPEN		UNLOCKED CLOSED*		LOCKED CLOSED		
SAV-131	SA Vent	OPEN		OPEN		CLOSED		

ATTACHMENT 3C
SPECIAL ILRT VALVE LINEUPS

SYSTEM: INSTRUMENT & STATION SERVICE AIR

PEN. NO.: 110,111, 112

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
(1)	RB Service Air Receptacle	OPEN		OPEN		CLOSED		
SAV-69	SA to PAL Seal Iso	CLOSED		CLOSED		SEALED CLOSED		
SAV-71	SA to EAL Seal Iso	CLOSED		CLOSED		SEALED CLOSED		
SAV-73	SA to EH Seal Iso	CLOSED		CLOSED		SEALED CLOSED		
SAV-70	SA to EAL Seal Iso	CLOSED		CLOSED		CLOSED		
SAV-45	SA to PAL Seal Iso	CLOSED		CLOSED		CLOSED		
SAV-46	SA to EAL Seal Iso	CLOSED		CLOSED		OPEN		
SAV-601	SA to PAL O.D. Seal	OPEN		OPEN		OPEN		
SAV-602	SA to PAL I.D. Seal	OPEN		CLOSED		OPEN		
SAV-603	SA to EAL O.D. Seal	OPEN		OPEN		OPEN		
SAV-604	SA to EAL I.D. Seal	OPEN		CLOSED		OPEN		
SAV-78	SA to EH Seal	OPEN		OPEN		SEALED CLOSED		
SAV-77**	EH Seal Test	OPEN		OPEN		SEALED CLOSED & CAPPED		
SAV-64	PAL Seal Vent	OPEN		OPEN		CLOSED		
SAV-65	EAL Seal Vent	OPEN		OPEN		CLOSED		
SAV-68	EH Seal Vent	OPEN UNCAPPED		OPEN UNCAPPED		CLOSED		

*May be opened for air sample

**Pressure gauge installed

(1) Record selected valve number

ATTACHMENT 3C
SPECIAL ILRT VALVE LINEUPS

SYSTEM: NITROGEN
PEN. NO.: 317,355,372 **Dwg.: FD-302-011 Sht.s 2, 4; FD-302-673 Sht. 4**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
NGV-89	N2 Supply to RCDT	CLOSED		CLOSED		OPEN		
NGV-193	N2 Supply to RCSG-1B	CLOSED		CLOSED		CLOSED		
CSV-38	N2 Supply to RCSG-1B	CLOSED		CLOSED		CLOSED		
NGV-64	N2 Supply to RCSG-1A	CLOSED		CLOSED		SEALED CLOSED		
NGV-194	N2 Supply to RCSG-1A	CLOSED		CLOSED		CLOSED		
NGV-275	N2 Supply to RCSG-1B	CLOSED		CLOSED		CLOSED		
NGV-278	N2 Supply to Press	CLOSED		CLOSED		CLOSED		
NGV-281	N2 Supply to RCSG-1A	CLOSED		CLOSED		CLOSED		
NGV-8	N2 to RB Iso	CLOSED		CLOSED		CLOSED		
NGV-92	NG-78-PI Iso	OPEN		OPEN		OPEN		
NG-78-PI	Pressure Gauge	**REMOVED		INSTALLED		INSTALLED		
NGV-93	N2 Iso to RCDT	OPEN		CLOSED		SEALED CLOSED		
NGV-182	Pen 372 Drain & Test	CLOSED & CAPPED		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
NGV-82	N2 Iso to Press/RCDT	UNLOCKED & OPEN		CLOSED		LOCKED CLOSED		
NGV-209	N2 Supply to RB Vent	OPEN & UNCAPPED		OPEN & UNCAPPED		CLOSED CAPPED		
NGV-78	NG-42-PI Iso	OPEN		***OPEN		CLOSED		
NG-42-PI	Pressure Gauge	**REMOVED		INSTALLED		INSTALLED		
NGV-79	N2 Supply to RCSG-1B	OPEN		CLOSED		SEALED CLOSED		
NGV-181	Pen 317 Drain & Test	CLOSED & CAPPED		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
NGV-81	N2 Supply to SG Iso	UNLOCKED & OPEN		CLOSED		LOCKED CLOSED		

ATTACHMENT 3C
SPECIAL ILRT VALVE LINEUPS

SYSTEM: NITROGEN

PEN. NO.: 317,355,372 **Dwg.: FD-302-011 Sht.s 2, 4; FD-302-673 Sht. 4**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
NGV-65	NG-38-PI ISO.	OPEN		***OPEN		CLOSED		
NG-38-PI	Pressure Gauge	**REMOVED		INSTALLED		INSTALLED		
NGV-284	N2 Primary Supply Drain	OPEN & UNCAPPED		CLOSED & CAPPED		CLOSED & CAPPED		
NGV-268	NGV-265 Control Valve Iso	OPEN		OPEN		CLOSED		
NGV-283	NGV-265 Control Valve Bypass	OPEN		OPEN		CLOSED		
NGV-262	N2 Primary Supply Iso	OPEN		SEALED CLOSED		SEALED CLOSED		
NGV-183	Pen 355 Drain & Test	CLOSED & CAPPED		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
NGV-62	N2 Supply to SG Iso	UNLOCKED & OPEN		CLOSED		LOCKED CLOSED		

*Open if N2 required on OTSG, closed if N2 not required on OTSG.
**REMOVE gauge to vent line ONLY if indicated pressure on gauge exceeds 40 psig
***IF associated gauge was removed to vent header, CLOSE isolation valve for test.

ATTACHMENT 3C
SPECIAL ILRT VALVE LINEUPS

SYSTEM: CORE FLOOD
PEN. NO.: 123,124,350,351,352,373 **Dwg.: FD-302-702 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
NGV-4	Alt N2 CF Tanks Iso	CLOSED		CLOSED		LOCKED CLOSED		
NGV-9	N2 CF Tanks Iso	CLOSED		CLOSED		CLOSED		
NGV-220	N2 Supply	CLOSED		CLOSED		CLOSED		
NGV-1	CFT 1A N2 Supply	OPEN		OPEN		OPEN		
NGV-2	CFT 1B N2 Supply	OPEN		OPEN		OPEN		
NG-51-PI	Press Indicator	REMOVED		REMOVED		INSTALLED		
NGV-13	NG-51-PI-Iso	OPEN		OPEN		OPEN		
CFV-78	CFT 1B N2 Iso	OPEN		OPEN		OPEN		
CFV-76	CFT 1A N2 Iso	OPEN		OPEN		OPEN		
CFV-75	CFT 1A N2 Supply Vent	OPEN & UNCAPPED		CLOSED & CAPPED		CLOSED & CAPPED		
CFV-48	Pen 373 Drain & Test	OPEN & UNCAPPED		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CFV-25	CFT 1A Fill Iso	OPEN		CLOSED		CLOSED		
CFV-49	Pen 123 Drain & Test	OPEN & UNCAPPED*		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CFV-28	CFT 1A N2 Supply	OPEN		CLOSED		CLOSED		
CFV-77	CFT 1B N2 Supply Vent	OPEN & UNCAPPED		CLOSED & CAPPED		CLOSED & CAPPED		
CFV-47	Pen 350 Drain & Test	OPEN & UNCAPPED		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CFV-26	CFT 1B Fill Iso	OPEN		CLOSED		CLOSED		
CFV-27	CFT 1B N2 Supply	OPEN		CLOSED		CLOSED		
CFV-46	Pen 124 Drain & Test	OPEN & UNCAPPED*		CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CFV-15	CFT 1B WD Vent	OPEN		CLOSED		CLOSED		
CFV-16	CFT 1A WD Vent	OPEN		CLOSED		CLOSED		
CFV-29	CFT WD Iso	OPEN		CLOSED		CLOSED		
CFV-50	Pen 351 Drain & Test	OPEN & UNCAPPED		CLOSED & CAPPED		SEALED CLOSED & CAPPED		

ATTACHMENT 3C
SPECIAL ILRT VALVE LINEUPS

SYSTEM: CORE FLOOD

PEN. NO.: 123,124,350,351,352,373 **Dwg.: FD-302-702 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
CFV-45	Pen 352 Drain & Test	SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		SEALED CLOSED & CAPPED		
CFV-11	CFT 1A Sample	OPEN		CLOSED		CLOSED		
CFV-12	CFT 1B Sample	OPEN		CLOSED		CLOSED		
CFV-42	CFT Sample/WD	OPEN		CLOSED		CLOSED		
NGV-11	CFT Elec Heater N2 Iso	OPEN		OPEN		OPEN		
CFV-5	CF Tank 1A Outlet Iso	CLOSED		CLOSED		**CLOSED		
CFV-6	CF Tank 1B Outlet Iso	CLOSED		CLOSED		**CLOSED		
CFV-7	CF Tank 1B to RC Drain Tank	CLOSED		CLOSED		CLOSED		
CFV-10	CF Tank 1A to RC Drain Tank	CLOSED		CLOSED		CLOSED		

*A nitrogen pressure of approximately 20 PSIG may be used to aid draining.

**Valves closed with breaker Red Tagged in Locked Off position when RCS < 650 psi
Valves open with breaker Red Tagged in Locked Off position when RCS > 700 psi

NOTE: Perform core flood lineup prior to performing gas waste disposal lineup Attachments 3A, 3B.

ATTACHMENT 3C
SPECIAL ILRT VALVE LINEUPS

SYSTEM: CONTAINMENT MONITORING

PEN. NO.: 306,315,332,356,376 **Drawing: FD-302-693 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
WSV-1	PA H2 Sample Iso	UNLOCKED & OPEN		CLOSED		LOCKED CLOSED		
WSV-2	PA H2 Sample Iso	UNLOCKED & OPEN		CLOSED		LOCKED CLOSED		
WSV-3	Cont Monitor Iso	OPEN		CLOSED		OPEN		
WSV-4	Cont Monitor Iso	OPEN		CLOSED		OPEN		
WSV-111	Alt. Sample Iso	OPEN		OPEN		OPEN		
WSV-5	Cont Monitor Iso	OPEN		CLOSED		OPEN		
WSV-6	Cont Monitor Iso	OPEN		CLOSED		OPEN		
WSV-9	Port H2 Anal Sample Bypass	CLOSED		CLOSED		OPEN		
WSV-26 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-27 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-28 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-29 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-30 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-31 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-123	RM-A6 Inlet	CLOSED		CLOSED		OPEN		
WSV-122	RM-A6 Outlet	CLOSED		CLOSED		OPEN		
WSV-32 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-33 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-34 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-35 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-36	PA H2 Sample Iso	OPEN		OPEN		CLOSED		
WSV-37	PA H2 Sample Iso	CLOSED		CLOSED		CLOSED		
WSV-38 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-39 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-40 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-41 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-42 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-43 *	PA H2 Sample Iso	OPEN		CLOSED		CLOSED PWR/OFF		
WSV-663	H2 Analyzer B Iso	CLOSED		CLOSED		OPEN		
WSV-664	H2 Analyzer A Iso	CLOSED		CLOSED		OPEN		
WSV-109	Aim Detector Iso	CLOSED		CLOSED		OPEN		

ATTACHMENT 3C
SPECIAL ILRT VALVE LINEUPS

SYSTEM: CONTAINMENT MONITORING

PEN. NO.: 306,315,332,356,376 **Drawing: FD-302-693 Sheet 1**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
	H2 Analyzer Cal Gas Bottles (4)	DISCONNECTED		DISCONNECTED		RECONNECT		
WSV-7	Port H2 Anal Sample Iso	OPEN & UNCAPPED		OPEN & UNCAPPED		CLOSED & CAPPED		
WSV-21	Pen 332 Drain & Test	OPEN & UNCAPPED		OPEN & UNCAPPED		CLOSED & CAPPED		
WSV-44	Test Conn	OPEN & UNCAPPED		OPEN & UNCAPPED		CLOSED & CAPPED		
WSV-45	Test Conn	OPEN & UNCAPPED		OPEN & UNCAPPED		CLOSED & CAPPED		
WSV-46	Test Conn	OPEN & UNCAPPED		OPEN & UNCAPPED		CLOSED & CAPPED		
WSV-47	Test Conn	OPEN & UNCAPPED		OPEN & UNCAPPED		CLOSED & CAPPED		
WSV-48	Test Conn	OPEN & UNCAPPED		OPEN & UNCAPPED		CLOSED & CAPPED		
WSV-47	Test Conn FLEX HOSE	DISCONNECTED		DISCONNECTED		DISCONNECTED		
WSV-48	Test Conn FLEX HOSE	DISCONNECTED		DISCONNECTED		DISCONNECTED		

* Cycle the following breakers for valve position verification. Restore per OP-700E
  DPDP-5A BKR 2 for WSV-29, 31, 35, & 43
  DPDP-8A BKR 14 for WSV-28, 30, 34, & 42
  DPDP-5B BKR 27 for WSV-27, 33, 39, & 40
  DPDP-8B BKR 21 for WSV-26, 32, 38, & 41

ATTACHMENT 3C
SPECIAL ILRT VALVE LINEUPS

SYSTEM: FIRE SERVICE

PEN. NO.: 430 **Drawing: FD-302-231 Sheet 5 of 7**

VALVE NO.	VALVE DESCRIPTION	VENT LINEUP	INITIAL/DATE	TEST LINEUP	INITIAL/DATE	RESTORED POSITION	TAG PULLED INITIAL/DATE	IND. VERF. INIT/DATE
FSV-263	RB Iso	CLOSED		CLOSED		SEALED OPEN		
FSV-261	RB Iso	UNLOCKED & OPEN		CLOSED		*OPEN/LOCKED CLOSED		
FSV-274	Vent	OPEN		OPEN		CLOSED		
FSV-275	Drain & Test	OPEN		CLOSED		CLOSED		
FSV-278	Drain & Test	OPEN & UNCAPPED		CLOSED & CAPPED		SEALED CLOSED CAPPED		
FSV-264	Branch Iso	OPEN		CLOSED		OPEN		
FSV-277	Drain & Test	OPEN UNCAPPED		OPEN UNCAPPED		CLOSED CAPPED		
FSV-265	Branch Iso	CLOSED		CLOSED		OPEN		

*FSV-261 will be open to charge the fire service standpipe only when work which introduces ignition sources or transient fire loads is being performed within the Reactor Building during Mode 5 or Mode 6. FSV-261 will be closed at all other times to maintain containment integrity.

ATTACHMENT 3D
SUPPLEMENTARY ILRT VALVE LINEUPS
(Page 1 of 1)

SYSTEM:

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V

Use this form to document additional lineups. Make additional copies as needed.

ATTACHMENT 3E
BREAKER LIST

		Action Completed Initial/Date			Returned to Normal Initial/Date		Returned to Normal Independent Verification Initial/Date
1.	Ensure following breakers are racked out IAW OP-209, OP-209A or OP-405:						
	4160V ES Bus 3A, Unit 3A8 (BSP-1A)	/			/		/
	4160V ES Bus 3B, Unit 3B7 (BSP-1B)	/			/		/
2.	Install a jumper at the following locations:		Conc. Verif.				
	ES Press. SW Cab 3A1 TB2-11, TB2-12 (RPS Ch. "A" Dwg 210-602)	/	/		/		/
	ES Press. SW Cab 3A1 TB1-1, TB1-2 (ES-A Ch 1 Dwg 210-602, 208-028 ES-A44)	/	/		/		/
	ES Press. SW Cab 3A2 TB2-11, TB2-12 (RPS Ch. "B" Dwg 210-603)	/	/		/		/
	ES Press. SW Cab 3A2 TB1-1, TB1-2 (ES-A Ch 2 Dwg 210-603, 208-028 ES-A45)	/	/		/		/
	ES Press. SW Cab 3A3 TB2-1, TB2-2 (RPS Ch. "C" Dwg 210-604)	/	/		/		/
	ES Press. SW Cab 3A3 TB1-1, TB1-2 (ES-A Ch 3 Dwg 210-604, 208-028 ES-A46)	/	/		/		/
	ES Press. SW Cab 3A4 TB2-1, TB2-2 (RPS Ch. "D" Dwg 210-605)	/	/		/		/
	ES Press. SW Cab 3B1 TB2-1, TB2-2 (ES-B Ch. 1 Dwg 210-606, 208-028 ES-B44)	/	/		/		/
	ES Press. SW Cab 3B2 TB2-1, TB2-2 (ES-B Ch 2 Dwg 210-607, 208-028 ES-B45)	/	/		/		/
	ES Press. SW Cab 3B3 TB2-1, TB2-2 (ES-B Ch 3 Dwg 210-608, 208-028 ES-B46)	/	/		/		/

ATTACHMENT 3E
BREAKER LIST

		Action Completed Initial/Date		Returned to Normal Initial/Date		Returned to Normal Independent Verification Initial/Date
3.	Open the following sliding links:		Conc. Verif.			
	ES Press. SW Cab 3A1 TB1-3 (ES-A Ch 1 Dwg 210-602, 208-028 ES-A44)	/	/	/		/
	ES Press. SW Cab 3A2 TB1-3 (ES-A Ch 2 Dwg 210-603, 208-028 ES-A45)	/	/	/		/
	ES Press. SW Cab 3A3 TB1-3 (ES-A Ch 3 Dwg 210-604, 208-028 ES-A46)	/	/	/		/
	ES Press. SW Cab 3B1 TB2-3 (ES-B Ch. 1 Dwg 210-606, 208-028 ES-B44)	/	/	/		/
	ES Press. SW Cab 3B2 TB2-3 (ES-B Ch 2 Dwg 210-607, 208-028 ES-B45)	/	/	/		/
	ES Press. SW Cab 3B3 TB2-3 (ES-B Ch 3 Dwg 210-608, 208-028 ES-B46)	/	/	/		/

4.	De-energize the following components, place the listed breakers in the lock reset position:			
	a. ENSURE "HPI Valve Emerg Power Sel" switches are SELECT to "OFF" position IAW OP-209 or OP-209A			
	MUV-23 and MUV-24 selected to "OFF", on ES-A panel	/	/	/
	MUV-25 and MUV-26 selected to "OFF", on ES-A panel	/	/	/
	MUV-23 and MUV-24 selected to "OFF", on ES-B panel	/	/	/
	MUV-25 and MUV-26 selected to "OFF", on ES-B panel	/	/	/

ATTACHMENT 3E
BREAKER LIST

		Action Completed Initial/Date	Returned to Normal Initial/Date	Returned to Normal Independent Verification Initial/Date
	b. ES-MCC-3A1			
	Breaker 4A (BSV-3)	/	/	/
	Breaker 1D (CFV-11)	/	/	/
	Breaker 2C (CFV-12)	/	/	/
	Breaker 2D (CFV-15)	/	/	/
	Breaker 3B (CFV-16)	/	/	/
	Breaker 6A (AHV-1B)	/	/	/
	Breaker 8A (AHV-1C)	/	/	/
	c. ES-MCC-3A2			
	Breaker 5D (CAV-1)	/	/	/
	Breaker 6C (CAV-3)	/	/	/
	Breaker 9A (CAV-126)	/	/	/
	Breaker 8C (MUV-260)	/	/	/
	Breaker 10B (MUV-261)	/	/	/
	Breaker 8A (MUV-258)	/	/	/
	Breaker 8B (MUV-259)	/	/	/
	Breaker 9B (WDV-3)	/	/	/
	Breaker 9C (WDV-60)	/	/	/
	Breaker 10C (WDV-94)	/	/	/
	Breaker 10A (WDV-406)	/	/	/
	Breaker 6D (CAV-4)	/	/	/
	Breaker 5C (CAV-5)	/	/	/
	d. ES-MCC-3A3			
	Unit 2 EG (MUV-567)	/	/	/
	e. ES-MCC-3B2			
	Breaker 2A (MUV-27)	/	/	/
	Breaker 2C (BSV-4)	/	/	/

ATTACHMENT 3E
BREAKER LIST

			Action Completed Initial/Date		Returned to Normal Initial/Date		Returned to Normal Independent Verification Initial/Date
	Breaker 5C (WDV-405)		/		/		/
	f. ES-MCC-3B3						
	Breaker 3EG (MUV-18)		/		/		/
	g. ES-MCC-3AB						
	Breaker 2D (MUV-18)		/		/		/
	Breaker 5C (DHV-91)		/		/		/
	Breaker 7D (DWV-160)		/		/		/
5.	The following components are aligned to support the ILRT. Contact the ILRT Test Supervisor prior to manipulating these components. If Tags are required to identify components perform this step.						
	Valve	Location					
	AHV-1A	CB-ESFB	/		/		/
	AHV-1D	CB-ESFB	/		/		/
	CAV-2	CB-ESFB	/		/		/
	CFV-29	CB-ESFAB	/		/		/
	CFV-42	CB-ESFAB	/		/		/
	CFV-42	CB-ESFAB	/		/		/
	CIV-34	CB-ESFAB	/		/		/
	CIV-35	CB-ESFAB	/		/		/
	CIV-40	CB-ESFAB	/		/		/
	CIV-41	CB-ESFAB	/		/		/
	MUV-49	CB-ESFAB	/		/		/
	MUV-543	CB-ESFA	/		/		/
	MUV-545	CB-ESFB	/		/		/
	MUV-253	CB-ESFB	/		/		/

ATTACHMENT 3E
BREAKER LIST

			Action Completed Initial/Date		Returned to Normal Initial/Date		Returned to Normal Independent Verification Initial/Date
	Valve	Location					
	SWV-47	CB-ESFAB	/		/		/
	SWV-48	CB-ESFAB	/		/		/
	SWV-49	CB-ESFAB	/		/		/
	SWV-50	CB-ESFAB	/		/		/
	SWV-79	CB-ESFAB	/		/		/
	SWV-80	CB-ESFAB	/		/		/
	SWV-81	CB-ESFAB	/		/		/
	SWV-82	CB-ESFAB	/		/		/
	SWV-83	CB-ESFAB	/		/		/
	SWV-84	CB-ESFAB	/		/		/
	SWV-85	CB-ESFAB	/		/		/
	SWV-86	CB-ESFAB	/		/		/
	SWV-109	CB-ESFAB	/		/		/
	SWV-110	CB-ESFAB	/		/		/
	WDV-4	CB-ESFB	/		/		/
	WDV-61	CB-ESFB	/		/		/
	WDV-62	CB-ESFB	/		/		/
	WSV-3	CB-ESFA	/		/		/
	WSV-4	CB-ESFB	/		/		/
	WSV-5	CB-ESFA	/		/		/
	WSV-6	CB-ESFB	/		/		/
	WDP-2A	MCB PTL	/		/		/
	WDP-2B	MCB PTL	/		/		/
	CIP-3A	MCB VENT PAN.	/		/		/
	CIP-3B	MCB VENT PAN.	/		/		/

ATTACHMENT 3E
BREAKER LIST

			Action Completed Initial/Date		Returned to Normal Initial/Date		Returned to Normal Independent Verification Initial/Date
	Valve	Location					
	WDP-3A	RAD WAS. PAN. PTL	/		/		/
	WDP-3B	RAD WAS. PAN. PTL	/		/		/
	WDP-4A	RAD WAS. PAN. PTL	/		/		/
	WDP-4B	RAD WAS. PAN. PTL	/		/		/
	CGP-2	LOCAL CONTROL STATION 119' ELEV IB	/		/		/

COMMENTS: _____

_____

_____

_____

_____

ATTACHMENT 3F
LEAK DETECTION DEVICE TRACKING SHEET
(Page 1 of 1)

SYSTEM:

AREA	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V

Use this form to document additional lineups for gauge placements or to troubleshooting efforts. Make additional copies as needed.

ATTACHMENT 4
CONTAINMENT BUILDING PRESSURIZATION/DEPRESSURIZATION SYSTEM
INSTALLATION AND CHECKOUT

1.0 EQUIPMENT RECORD

Much of the pressurization system equipment will be rented for the ILRT. The contract with the vendor provides for supplying 30,000 cfm capacity, and the necessary equipment to dry and cool the air. The exact number and types of components supplied by the vendor to meet these requirements may vary. The major components of the pressurization system are described below. Record actual equipment used:

No. Planned	No. Used	Description
20		Air Compressor - Portable Engine(Diesel) Driven Screw Type, Capacity of 1500 scfm, 100% oil free, 100 psi. Total capacity: 30,000 cfm.
4		3000 cfm Dryer LowPres Desciccant
2		5400 cfm Dryer LowPres Desciccant
7		Heat Exchangers (Aftercoolers)
1		10,000 cfm Dryer LowPres Refrigerate
2		Air Manifold
2		60 ton Chiller LowTemp Air-Cool
2		750 gpm Pump End Suction
1		Surge Tank for Chillers
14		2 IN Quick-Connect Hose 25 FT
10		48 ft Fifth Wheel Dropdeck Trailer 2Ax
700'		Hard piping; lengths of 8" diameter hard piping (8" 150# bolt pattern) as needed to reach from designated Laydown area to Penetration 216/217 area. A portion of piping/hose is being borrowed from Plant Vogtle for 2005 ILRT.
30		3" bull hoses – 50' long - to inter-connect the compressors, after coolers, air dryers and supply manifolds
40		3" bull hoses – 25' long - to inter-connect the compressors, after coolers, air dryers and supply manifolds
		Miscellaneous:

* Actual Number required will depend on final choice of set-up area.

2.0 POWER REQUIREMENTS

Temporary electrical power must be supplied to the pressurization system components. The types, quantities and ultimate load will vary based on the weather conditions expected during the test and test preparation periods and the actual equipment supplied by the vendor. The table below lists typical requirements. Mark the table up to reflect actual requirements as needed.

No. Planned	No. Used	Description
1		300x2 kW Generator Twinpack
1		200 amp Window Panel
1		800 amp Distribution Panel
8		Quad Box String 20 FT
8		4/0 Cam-Lok - 50 FT
1		75 kVA Transformer LowVolt Fram

ATTACHMENT 4
CONTAINMENT BUILDING PRESSURIZATION/DEPRESSURIZATION SYSTEM INSTALLATION AND CHECKOUT

3.0 PRESSURIZATION SYSTEM INSTALLATION

3.1 TIMELINE:

- Delivery, security inspection, transport into Owner-Controlled area, 1 day (Start of pressurization -4 days)
- Set-up and check out pressurization system, connect to plant piping, 1-2 days (Start of pressurization -3 days)
- Resolve any compressor or component performance issues, perform flush/checkout if NOT previously completed (Start of pressurization -1 days)
- Compressor vendor Operator/mechanic support of pressurization (Start of pressurization -2 hrs + pressurization cycle, 8-12 hrs)
- Refuel Compressors (Start of pressurization + 6hrs). Refueling can be performed while operating. Top off at end of pressurization.
- Vent manifold line and/or compressor bull hoses, release Vendor operator (End of Pressurization, beginning of Stabilization Phase)
- Plant personnel monitor pressurization line for leaks. (through Stabilization Phase)
- Breakdown pressurization equipment – air dryers, compressors, chiller (if used), hose bibs to manifold (end of Verification Test). Schedule vendor pickup.
- Disconnect rented manifold from plant piping (end of Depressurization)
- Remove equipment from site, stage to parking lot, load onto vendor's flatbeds, ship (end of Depressurization + 1 day)

4.0 PRESSURIZATION SYSTEM CHECKOUT/LINE FLUSH

4.1 TEST EQUIPMENT

4.1.1 Fine mesh cloth for cleanliness check may be used during flushing.

4.2 PROCEDURE

Initials

4.2.1 **Pressurization System Setup**

4.2.1.1 Rented portions of Pressurization System are connected to each other per ILRT Test Supervisor's directions to the manifolds. _____

4.2.1.2 Have Maintenance Department remove blind flanges outside Reactor Containment at penetrations 216 and 217. _____

4.2.1.3 Have Maintenance Department install 12" to 8" reducing elbow and penetration isolation valve (PEN216-TV1 and PEN217-TV5) on both penetrations 216 and 217. Ensure penetration isolation valves PEN216-TV1 and PEN217-TV5 are closed. _____

4.2.1.4 Have Maintenance Department install test flanges on the containment side of Penetrations 216 and 217. _____

4.2.1.5 Perform (information only) LLRT of PEN216-TV1 and PEN217-TV5. Perform LLRT of PEN216-TV2 and PEN217-TV6, if directed by ILRT Test Supervisor. _____

4.2.1.6 Have Maintenance Department remove test flanges on the containment side of Penetrations 216 and 217. _____

CAUTION
Prior to pressurizing supply lines, remove all personnel from area with signs posted and area roped off.

4.2.2 Perform the following steps to verify pressurization line integrity.

4.2.2.1 Install loop-back hose inside the Turbine building between Penetration 216 8" supply line and Penetration 217 8" supply line. _____

4.2.2.2 Align pressurization system, per Table 1 Step 4.2.2.2, for test of Penetration 216 air supply line. _____

4.2.2.3 Start one diesel air compressor connected to Penetration 216 and slowly increase pressure in the test line via valve manifold to 100 psig. _____

4.2.2.4 Hold pressure for ten (10) minutes (or as required to complete walkdown/leak checks). Inspect each connection for gross leakage. Repair any gross leakage. Small leakage is acceptable. _____

4.2.2.5 Ensure personnel are clear of exhaust muffler and slowly open PEN217-TV8. _____

4.2.2.6 Start remaining air compressors on Penetration 216 header one at a time until all compressors are running. Monitor exhaust muffler and piping continuously for vibration or excessive movement. _____

4.2.2.7 Open air sampling valve on Penetration 216 piping and notify Chemistry to perform an air sample. Also notify HP to perform a noise evaluation of the area. After air sample is complete, close air sample valve. _____

4.2.2.8 Secure all compressors for Penetration 216 after flush is complete. _____

4.2.2.9 Align pressurization system, per Table 1 Step 4.2.2.9, for test of Penetration 217 air supply line.. _____

4.2.2.10 Start one diesel air compressor connected to penetration 217 and slowly increase pressure in test line via valve manifold to 100 psig. _____

4.2.2.11 Hold pressure for ten (10) minutes (or as required to complete walkdown/leak checks). Inspect each connection for gross leakage. Repair any gross leakage. Small leakage is acceptable. _____

4.2.2.12 Ensure personnel are clear of exhaust muffler and slowly open PEN216-TV4. _____

4.2.2.13 Start remaining air compressors on Penetration 217 header one at a time until all compressors are running. Monitor exhaust muffler and piping continuously for vibration or excessive movement. _____

4.2.2.14 Open air sampling valve on Penetration 217 piping and notify Chemistry to perform an air sample. Also notify HP to perform a noise evaluation of the area. After air sample is complete, close air sample valve. _____

4.2.2.15 Secure all compressors for Penetration 217 after flush is complete. _____

4.2.2.16 Remove loop-back hose installed in Step 4.2.2.1. _____

4.2.2.17 Install remaining piping/hose for both Penetrations 216 and 217. _____

4.2.2.18 Place pressurization system in Pressurization System Standby lineup described in Table 1 of this attachment. _____

4.2.2.19 Top off compressors with fuel as necessary to be prepared for the ILRT. _____

5.0 PRESSURIZATION SYSTEM OPERATION

5.1 During ILRT rented portions of pressurization system will be operated by vendor-supplied personnel. These personnel will take direction from the ILRT Test Supervisor or his designee. _____

5.2 Permanent plant valves and components will be manipulated by plant operating or test unit personnel as directed by the ILRT Test Supervisor. _____

5.3 WHEN directed by ILRT Test Supervisor, THEN lineup pressurization system to pressurize containment per "Pressurize Containment" line of Table 1. _____

5.4 During Pressurization, SECURE compressors/pressurization system as directed by the ILRT Test Supervisor. _____

5.5 Top off air compressors fuel tanks before return to vendor (compressors are to be returned with the same fuel level as received or there will be an additional refueling charge). _____

5.6 When Pressurization is complete, the pressurization header will be isolated at the 8" isolation valves, PEN216-TV1, PEN216-TV2, PEN217-TV5, and PEN217-TV6. Once isolated, vent the pressurization headers through spare bib connections on the Pressurization System manifolds. _____

5.7 When directed by the ILRT Test Supervisor, disconnect the temporary piping from the "compressor-side" of the outboard 8" isolation valves at Penetrations 216 and 217 (remove piping from 216-2 and 217-2) in preparation for depressurization through this path. _____

6.0 PRESSURIZATION SYSTEM RESTORATION

6.1 WHEN directed by ILRT Test Supervisor, THEN various components of pressurization system may be disconnected from each other, and from pressurization system manifold (e.g., dryers, compressors, aftercoolers, chiller, etc,. as applicable). _____

6.2 Pressurization system manifold may NOT be removed until directed by ILRT Test Supervisor. _____

6.3 Rented portions of pressurization system will be disconnected, prepared for shipment and moved to a staging area outside Protected Area for pickup by vendor's freight carrier. _____

6.4 Temporary piping from Penetrations 216 and 217 to valves PEN216-TV1, PEN216-TV2, PEN217-TV5, PEN217-TV6 may be disassembled when the containment has been completely depressurized. _____

ATTACHMENT 4
CONTAINMENT BUILDING PRESSURIZATION/DEPRESSURIZATION SYSTEM INSTALLATION AND CHECKOUT

TABLE 1

PRESSURIZATION SYSTEM ALIGNMENT	Pressurization System Components - Compressors	Air Supply to Manifold Bull Hoses	Pressurization System Supply Manifold Hose Bib-Isolation Valves	Desiccant Dryers	Compressor Outlet Valves	8" Temporary Valve from Pen. 216, PEN216-TV1	8" Temporary Valve from Pen. 216, PEN216-TV2	8" Temporary Valve from Pen. 216, PEN216-TV3	8" Temporary Valve from Pen. 216, PEN216-TV4	8" Temporary Valve from Pen. 217, PEN217-TV5	8" Temporary Valve from Pen. 217, PEN217-TV6	8" Temporary Valve from Pen. 216, PEN217-TV7	8" Temporary Valve from Pen. 216, PEN217-TV8
Attach. 4, Step 4.2.2 Pressurization System Flush PEN 216	OFF**	Instl'd	O	ON	O*	C	-	0	C	C	-	C	C*
Attach. 4, Step 4.2.2.9 Pressurization System Flush PEN 217	OFF**	Instl'd	O	ON	O*	C	-	C	C*	C	-	O	C
Attach. 4, Step 4.2.2.18 Press. System Standby	OFF	Instl'd	C	OFF	C	C	C	C	C	C	C	C	C
Procedure Step 5.3 Pressurize Containment	ON**	Instl'd	O	ON	O*	O*	O*	O*	C	O*	O*	O*	C
Containment at Pressure	OFF	Instl'd	C	OFF	C	C	C	C	C	C	C	C	C
During ILRT	OFF	Instl'd	C	OFF	C	C	C	C	C	C	C	C	C
During Verification Test	OFF	Instl'd	C	OFF	C	C	C	C	C	C	C	C	C
During Depressurization	Rmv'd	Rmv'd	C	OFF	C	O	Thrtl Open	C	O	O	Thrtl Open	C	O

*Opened and closed as directed by the ILRT Test Supervisor
**Started and Stopped as directed by the ILRT Test Supervisor

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

1.0 SPECIAL EQUIPMENT AND/OR INSTRUMENTATION REQUIREMENTS

The following instrumentation or equivalent are required for the Integrated Leak Rate Test and are recently calibrated (within 6 months of test or in accordance with the plant's/supplier's Test Equipment program) and the calibration dates are properly documented in this appendix.

1.1.1 Absolute Pressure

Quantity	2
Manufacturer	Paroscientific Inc.
Type	Precision pressure gauge Model 760-100A with Direct Pressure Readout and RS-232
Range	0 - 100 psia
Accuracy	± 0.010% Full Scale (+ 0.01 psia)
Repeatability	± 0.005% Full Scale (+ 0.005 psia)
Resolution	0.0001 psi

1.1.2 Drybulb Temperature

Quantity	30 planned (6 more than 1991 ILRT to minimize stabilization time)
Manufacturer	Graftel
Type	Model 9202 Thermistors
Range	50 - 150°F
Accuracy	±2.0°F
Repeatability	±0.01°F
Resolution	±0.001°F

1.1.3 Relative Humidity

Quantity	10
Manufacturer	Graftel
Type	Model 9203 Relative Humidity Sensors (Temperature compensated bulk polymer chip)
Range	10 - 90% RH
Accuracy	± 2.0% RH
Repeatability	± 0.10% RH
Resolution	0.5 %RH

1.1.4 Verification Flow

Quantity	2 (1 primary, 1 backup)
Manufacturer	Brooks
Type	Mechanical tube and float
Range	2.57-25.6 scfm (< 0-32 scfm)
Accuracy	± 2% full scale
Repeatability	± 0.2% full scale
Resolution	2% FS

1.1.5 Ambient Pressure

Quantity	1
Range	0 – 25 psia
Accuracy	± .1 psi

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

2.0 GENERAL

2.1 Sensors should be located in the middle of the air volume they are monitoring, away from structural steel and other heat sources or sinks wherever possible, to minimize thermal lag.

Drybulb Temperature Sensors = 30
Dewcells or Humidity Sensors = 10
Precision Pressure Sensors = 2
Flow Meters = 1 with 1 backup

Sensor locations are described in Step 6.0

3.0 SENSOR REJECTION INSTRUCTIONS

NOTE

Raw sensor data on functionally dependent parameters such as temperature, pressure and humidity should NOT be rejected solely based on statistical rejection techniques. Rather, sensor data may be rejected and NOT used in final calculation of air mass provided a good physical reason exists, such as loss of instrument power or erratic signal.

3.1 IF a sensor is rejected during the Type A test, THEN:

3.1.1 Which Sensor(s) rejected and cause SHALL be recorded in log of events.

3.1.2 The sensor's volume fraction SHALL be re-assigned the other sensors using volume fractions provided in the Sensor Failure Analysis, Table 1

3.1.3 All data points for Type A test, including those taken prior to rejection of sensor(s), SHALL be re-calculated with the sensor's input deleted. Use Single Failure Recommendations in Instrumentation Recommendations for Integrated Leak Rate Testing.

3.1.4 IF practical, THEN data from rejected sensor(s) should continue to be recorded for duration of both Type A test AND Verification Test.

3.1.5 IF a sensor is rejected during verification test, Type A test leakage rate, Verification Test leakage rate, and verification leakage rate limits SHALL be recalculated.

3.1.6 A sensor SHALL NOT be removed solely because its removal improves leakage rate result.

4.0 CALIBRATION INFORMATION

4.1 Test instrumentation have been calibrated within six months of start of ILRT, or at interval specified by the applicable Test Equipment QA program. Calibration SHALL be traceable to NIST

4.2 A calibration check has been completed at ambient conditions within 1 month of start of ILRT. Calibration of Field Standards SHALL be traceable to NIST.

Sensor S/N	MTE#	Cal. Date	Cal. Due Date	Verified By/Date Calibration	Std. Rdg.	Sensor Rdg.	Dev. from Std.	Cal. Check Verified By/Date	Accept. Criteria	Used As During ILRT:
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

Sensor S/N	MTE#	Cal. Date	Cal. Due Date	Verified By/Date Calibration	Std. Rdg.	Sensor Rdg.	Dev. from Std.	Cal. Check Verified By/Date	Accept. Criteria	Used As During ILRT:
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

Sensor S/N	MTE#	Cal. Date	Cal. Due Date	Verified By/Date Calibration	Std. Rdg.	Sensor Rdg.	Dev. from Std.	Cal. Check Verified By/Date	Accept. Criteria	Used As During ILRT:
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 2.0°F	
									+ 5%RH	
									+ 5%RH	
									+ 5%RH	
									+ 5%RH	

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

Sensor S/N	MTE#	Cal. Date	Cal. Due Date	Verified By/Date Calibration	Std. Rdg.	Sensor Rdg.	Dev. from Std.	Cal. Check Verified By/Date	Accept. Criteria	Used As During ILRT:
									+ 5%RH	
									+ 5%RH	
									+ 5%RH	
									+ 5%RH	
									+ 5%RH	
									+ 5%RH	
									+ 5%RH	
									+ 5%RH	
									+ 5%RH	
									+ 5%RH	
									+ 5%RH	

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

Sensor S/N	MTE#	Cal. Date	Cal. Due Date	Verified By/Date Calibration	Std. Rdg.	Sensor Rdg.	Dev. from Std.	Cal. Check Verified By/Date	Accept. Criteria	Used As During ILRT:

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

NOTES:

1. ALL sensing line tubing (pressure and flow) should be pressurized to test pressure and snooped for leaks. This can be done during pressurization if sensing line can be isolated for repairs.

2. The acceptance criteria for the calibration check for the pressure gauges is a limitation on the variance between the two corrected (if applicable) gauge readings when compared against each other. The check can be performed at atmospheric pressure or test pressure. A comparison is made because most plants do NOT possess field standards of equivalent or better accuracy to use during a calibration check due to the extremely high accuracy of the ILRT gauges.

3. Per ANSI 56.8-1994, para. 4.2.1, Pretest checks are NOT required for mechanical flow rate device (e.g., rotameters), however they are highly recommended. Flow meter calibration checks are also a simple comparison, typically against a known valve position. The calibration check should be preceeded by a line "flush" with air to verify NO particulates or moisture exists in the sensing line. The calibration check should be performed at a flow rate equivalent to L0 to verify that tubing size is adequate to pass the desired flow rate with existing bends, valves, and pressure drops.

4. The Paroscientific precision pressure gauges are to be installed in the locations provided for by the client. They will assume the nomenclature PI-1 and PI-2, and be connected to plant tubing at LRV-39 and LRV-40 as per FD-302-722.

5. The two rotameters to be used for the Verification test will assume the nomenclature FE-4 and FE-5, and are to be connected at LRV-65 and LRV-64 per FD-302-722. Do NOT connect tubing from LRV-66 and LRV-67 to the outlets of the rotameters.

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

5.0 INSTRUMENTATION INSTALLATION

SENSOR STRING TERMINATION RECORD								
STRING #	INSIDE WIRE		INSTALLED INIT/DATE	REMOVED INIT/DATE	OUTSIDE WIRE #		INSTALLED INIT/DATE	REMOVED INIT/DATE
#1 IN	A				A			
	B				B			
	+				+			
	-				-			
	S				S			

SENSOR STRING TERMINATION RECORD								
STRING #	INSIDE WIRE		INSTALLED INIT/DATE	REMOVED INIT/DATE	OUTSIDE WIRE #		INSTALLED INIT/DATE	REMOVED INIT/DATE
#1 OUT	A				A			
	B				B			
	+				+			
	-				-			
	S				S			

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

SENSOR STRING TERMINATION RECORD								
STRING #	INSIDE WIRE		INSTALLED INIT/DATE	REMOVED INIT/DATE	OUTSIDE WIRE #		INSTALLED INIT/DATE	REMOVED INIT/DATE
#2 IN	A				A			
	B				B			
	+				+			
	-				-			
	S				S			

SENSOR STRING TERMINATION RECORD								
STRING #	INSIDE WIRE		INSTALLED INIT/DATE	REMOVED INIT/DATE	OUTSIDE WIRE #		INSTALLED INIT/DATE	REMOVED INIT/DATE
#2 OUT	A				A			
	B				B			
	+				+			
	-				-			
	S				S			

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

SENSOR STRING TERMINATION RECORD								
STRING #	INSIDE WIRE		INSTALLED INIT/DATE	REMOVED INIT/DATE	OUTSIDE WIRE #		INSTALLED INIT/DATE	REMOVED INIT/DATE
#3 IN	A				A			
	B				B			
	+				+			
	-				-			
	S				S			

SENSOR STRING TERMINATION RECORD								
STRING #	INSIDE WIRE		INSTALLED INIT/DATE	REMOVED INIT/DATE	OUTSIDE WIRE #		INSTALLED INIT/DATE	REMOVED INIT/DATE
#3 OUT	A				A			
	B				B			
	+				+			
	-				-			
	S				S			

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

SENSOR STRING TERMINATION RECORD								
STRING #	INSIDE WIRE		INSTALLED INIT/DATE	REMOVED INIT/DATE	OUTSIDE WIRE #		INSTALLED INIT/DATE	REMOVED INIT/DATE
#4 IN	A				A			
	B				B			
	+				+			
	-				-			
	S				S			

SENSOR STRING TERMINATION RECORD								
STRING #	INSIDE WIRE		INSTALLED INIT/DATE	REMOVED INIT/DATE	OUTSIDE WIRE #		INSTALLED INIT/DATE	REMOVED INIT/DATE
#4 OUT	A				A			
	B				B			
	+				+			
	-				-			
	S				S			

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

6.0 INSTRUMENT LOCATIONS

6.1 Instrument locations are approximate and may be changed at Test Supervisor discretion. New locations will be recorded below, evaluated and documented in Attachment 7.

6.2 Since temperature stratifies by elevation, azimuth and radius are NOT critical dimensions. Sensors should be placed away from heat sources and heat sinks such as concrete walls and steel I-beams.

6.3 Additional variations are permitted if existing location is in a high radiation field, inaccessible location, or near a heat sink or heat source.

6.4 Volume Weighting Fractions provided have been properly input into ILRT Software

SENSOR LOCATIONS AND VOLUME FRACTIONS									
TEST EQUIPMENT	ELEVATION		AZIMUTH		RADIUS		VWF		SENSOR S/N
	Original	Actual	Original	Actual	Original	Actual	Original	Actual	
TE1 (LR-20-TE)	105'		120o (ESE)		60'		0.0368		
TE2 (LR-21-TE)	105'		220o (SSW)		60'		0.0368		
TE3 (LR-22-TE)	105'		320o (WNW)		62'		0.0367		
TE4 (LR-23-TE)	108'		180o (S)		~40' - Outer D-Ring wall		0.0588		
TE5 (LR-24-TE)	140'		120o (ESE)		60'		0.0588		
TE6 (LR-25-TE)	140'		220o (SSW)		60'		0.0588		
TE7 (LR-26-TE)	140'		320o (WNW)		60'		0.0165		
TE8 (LR-27-TE)	140'		10o (N)		~40' - Outer D-Ring wall		0.0547		
TE9 (LR-28-TE)	186'		100o (E)		60'		0.0547		
TE10 (LR-29-TE)	180'		220o (SSW)		20' Off hndrl W-side, B D-ring		0.0638		
TE11 (LR-30-TE)	260'		290o (WNW)		~20'		0.0547		
TE12 (LR-31-TE)	180'		45o (NE)		~40'		0.0637		
TE13 (LR-32-TE)	260'		180o (S)		~20'		0.0361		
TE14 (LR-33-TE)	244'		50o (NE)		60'		0.0361		

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

SENSOR LOCATIONS AND VOLUME FRACTIONS									
TEST EQUIPMENT	ELEVATION		AZIMUTH		RADIUS		VWF		SENSOR S/N
	Original	Actual	Original	Actual	Original	Actual	Original	Actual	
TE15 (LR-34-TE)	220'		100o (E)		~45'		0.0361		
TE16 (LR-35-TE)	215'		225o (SSW)		55'		0.0361		
TE17 (LR-36-TE)	243'		180o (S)		65'		0.0361		
TE18 (LR-37-TE)	239'		280o (W)		65'		0.0361		
TE19 (LR-38-TE)	215'		320o (WNW)		60'		0.0360		
TE20 (LR-39-TE)	244'		0o (N)		65'		0.0360		
TE21 (LR-52-TE)	108'		10o (N)		~40' Inside, N end SG-A D-ring		0.0165		
TE22 (LR-53-TE)	140'		170o (S)		Outer Rx Wall SG-B D-Ring		0.0135		
TE23 (LR-54-TE)	180'		225o (SSW)		60'		0.0546		
TE24 (LR-55-TE)	180'		320o (WNW)		60'		0.0546		
TE25 (LR-20-TE)									
TE26 (LR-20-TE)									
TE27 (LR-20-TE)									
TE28 (LR-20-TE)									

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

SENSOR LOCATIONS AND VOLUME FRACTIONS									
TEST EQUIPMENT	ELEVATION		AZIMUTH		RADIUS		VWF		SENSOR S/N
	Original	Actual	Original	Actual	Original	Actual	Original	Actual	
TE29 (LR-20-TE)									
TE30 (LR-20-TE)									
						VWF TOTAL	1.00		
HE1 (LR-41-HE)	105'		170o (S)		~40' - Outer D-Ring wall		0.0270		
HE2 (LR-42-HE)	105'		270o (W)		62'		0.1103		
HE3 (LR-43-HE)	140'		270o (W)		~15'		0.1764		
HE4 (LR-44-HE)	140'		10o (N)		~40' - Outer D-Ring wall		0.0330		
HE5 (LR-45-HE)	244'		15o (N)		65'		0.1267		
HE6 (LR-46-HE)	215		320o (WNW)		60'		0.1267		
HE7 (LR-47-HE)	215		260o (W)		60'		0.1266		
HE8 (LR-48-HE)	200'		120o (ESE)		60'		0.0911		
HE9 (LR-49-HE)	180'		0o (N)		~20'		0.0911		
HE10 (LR-50-HE)	180'		170o (S)		Outer Rx Wall SG-B D-Ring		0.911		
						VWF TOTAL	1.00		

ATTACHMENT 6

INTENTIONALLY LEFT BLANK

ATTACHMENT 7
TEST EXCEPTIONS LOG
(Page 1 of 1)

TEST EXCEPTION LOG			PAGE ____ OF ____
Date/Time	Proc. Step	Initials	Description/Resolution

Make additional copies as necessary

ATTACHMENT 8
VALVE LINEUP ALTERATION LOG
(Page 1 of 1)

COMPONENT (Indiv. Comp.)	INSIDE CNTMNT?	ILRT POSITION	RE-POSITIONED BY (Name/Ext.)	RESTORED TO ILRT POSITION (Initials/Date)	COMMENTS/DISPOSITION

This form is used to provide a mechanism to track temporary modifications to "completed" valve lineups/component status necessitated by ongoing outage activities during ILRT preparation. The form is used because many lineups/components are positioned via administrative procedure, SOP or other means, without tags. The ILRT Test Supervisor may elect to leave certain components in the requested position after reviewing them for potential impact on the ILRT.

Make additional copies of this form as necessary.

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY

PENETRATION STATUS DURING ILRT

SYSTEM	PEN#	PEN. DESCRIPTION	TEST STATUS	APP. J PRGM STATUS	Penalty Addn.? (if yes = value)	LAST TEST DATENote 1	As-Left MPL	As-Found MPL	Leakage Savings
Main Steam	105	MSL A-2	Normal Standby L/U	N/R					
Main Steam	106	MSL A-1	Normal Standby L/U	N/R					
Main Steam	107	MSL B-2	Normal Standby L/U	N/R					
Main Steam	201	MSL B-1	Normal Standby L/U	N/R					
Main Steam	314	RCSG 1-B Drain	Normal Standby L/U, Bottled Up for PI	N/R					
Main Steam	316	RCSG 1-A Sec Vent	Normal Standby L/U	N/R					
Main Steam	318	RCSG 1-A Drain	Normal Standby L/U, Bottled Up for PI	N/R					
Main Steam	320	RCSG 1-B Sec Vent	Normal Standby L/U	N/R					
Main Steam	427	RCSG 1-B Drain	Normal Standby L/U	N/R					
Main Steam	428	RCSG 1-A Drain	Normal Standby L/U	N/R					
Feedwater & Emerg. FW	108	Main FW "B"	Normal Standby L/U	N/R					
Feedwater & Emerg. FW	109	EFW "B"	Normal Standby L/U	N/R					
Feedwater & Emerg. FW	423	Main FW "A"	Normal Standby L/U	N/R					
Feedwater & Emerg. FW	424	EFW "A"	Normal Standby L/U	N/R					
Condensate & Demin Water	117	Demin Wtr to CNTMNT	Take Penalty	Type C					
Instrument & Station Air	110	Station Air	ILRT is Testing	Type C					

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY

SYSTEM	PEN#	PEN. DESCRIPTION	TEST STATUS	APP. J PRGM STATUS	Penalty Addn.? (if yes = value)	LAST TEST DATENote 1	As-Left MPL	As-Found MPL	Leakage Savings
Instrument & Station Air	111	Instrument Air	ILRT is Testing	Type C					
Instrument & Station Air	112	Instrument Air	ILRT is Testing	Type C					
Nuclear Services Closed Cycle Cooling	321	Letdown Clr 3B Supply	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	322	Letdown Clr 3B Return	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	360	Letdown Clr 3A/3C Supply	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	361	Letdown Clr 3A/3C Return	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	330	CRDMS Supply	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	331	CRDMS Return	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	358	RB Vent Fan 3C Supply	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	359	RB Vent Fan 3C Return	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	368	RB Vent Fan 3A Supply	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	369	RB Vent Fan 3A Return	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	370	RB Vent Fan 3B Supply	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	371	RB Vent Fan 3B Return	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	326	RCP 1C Return	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	325	RCP 1C Supply	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	363	RCP 1D Return	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	362	RCP 1D Supply	Normal Standby L/U	N/R					

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY

SYSTEM	PEN#	PEN. DESCRIPTION	TEST STATUS	APP. J PRGM STATUS	Penalty Addn.? (if yes = value)	LAST TEST DATENote 1	As-Left MPL	As-Found MPL	Leakage Savings
Nuclear Services Closed Cycle Cooling	324	RCP 1A Return	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	323	RCP 1A Supply	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	365	RCP 1B Return	Normal Standby L/U	N/R					
Nuclear Services Closed Cycle Cooling	364	RCP 1B Supply	Normal Standby L/U	N/R					
Spent Fuel Cooling	347	Fuel Trnsfr Clg Purification	Take Penalty	Type C					
Spent Fuel Cooling	348	Fuel Transfer Tube	ILRT is Testing	Type B					
Spent Fuel Cooling	436	Fuel Transfer Tube	ILRT is Testing	Type B					
Decay Heat Removal	329	PZR Sprayline	Take Penalty	Type C					
Decay Heat Removal	345	RB Sump Recirc	Normal Standby L/U	N/R					
Decay Heat Removal	346	RB Sump Recirc	Normal Standby L/U	N/R					
Reactor Coolant	N/A								
Makeup & Purification	333	Letdown to Purif Demin	Take Penalty	Type C					
Makeup & Purification	353	HPI to RB Sump	Take Penalty	Type C					
Makeup & Purification	377	RCP Seal Bleedoff	Take Penalty	Type C					
Makeup & Purification	338	RCP Seal Supply	Normal Standby L/U	N/R					
Makeup & Purification	434	HPCI	Normal Standby L/U	N/R					
Makeup & Purification	435	Makeup & HPCI	Normal Standby L/U	N/R					
Makeup & Purification	336	HPCI	Normal Standby L/U	N/R					

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY

SYSTEM	PEN#	PEN. DESCRIPTION	TEST STATUS	APP. J PRGM STATUS	Penalty Addn.? (if yes = value)	LAST TEST DATENote 1	As-Left MPL	As-Found MPL	Leakage Savings
Makeup & Purification	337	HPCI	Normal Standby L/U	N/R					
Liquid Sampling	425	PASS	Take Penalty	Type C					
Liquid Sampling	439	PZR & RCS Sample	Take Penalty	Type C					
Liquid Sampling	440	SG 3A Sample	Take Penalty	Type C					
Liquid Sampling	441	SG 3B Sample	Take Penalty	Type C					
Nitrogen	317	N2 to SG Secondary	Take Penalty	Type C					
Nitrogen	355	N2 to RCS	Take Penalty	Type C					
Nitrogen	372	N2 to RCDT	Take Penalty	Type C					
Core Flood	123	N2 to CFT 1A	Take Penalty	Type C					
Core Flood	124	N2 to CFT 1B	Take Penalty	Type C					
Core Flood	350	CFT M/U	Take Penalty	Type C					
Core Flood	351	CFT Vent	Take Penalty	Type C					
Core Flood	352	CFT Sample/Bleed	Take Penalty	Type C					
Core Flood	373	CFT M/U	Take Penalty	Type C					
Liquid Waste Disposal	339	RB Sump	Take Penalty	Type C					
Liquid Waste Disposal	349	RCDT Vent	Take Penalty	Type C					
Liquid Waste Disposal	374	RCDT Drain	Take Penalty	Type C					
Gas Waste Disposal	354	RCS Equipment Vents	Take Penalty	Type C					

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY

SYSTEM	PEN#	PEN. DESCRIPTION	TEST STATUS	APP. J PRGM STATUS	Penalty Addn.? (if yes = value)	LAST TEST DATENote 1	As-Left MPL	As-Found MPL	Leakage Savings
Containment Monitoring	306	PASS	ILRT is Testing	Type C					
Containment Monitoring	315	RB Air Sample	ILRT is Testing	Type C					
Containment Monitoring	332	RB Air Sample Return	ILRT is Testing	Type C					
Containment Monitoring	356	RB Air Sample	ILRT is Testing	Type C					
Containment Monitoring	376	Cntmnt. Mon. Sample Return	ILRT is Testing	Type C					
Reactor Building Spray	340	RB Spray	Normal Standby L/U	N/R					
Reactor Building Spray	341	RB Spray	Normal Standby L/U	N/R					
RB Press Sensing & Testing, IA	426	RB Press Sensing	ILRT is Testing	N/R					
RB Press Sensing & Testing, IA	442	RB Press Sensing	ILRT is Testing	N/R					
RB Press Sensing & Testing, IA	429	RB Press Sensing	ILRT is Testing	N/R					
RB Press Sensing & Testing, IA	319	RB Press Sensing	ILRT is Testing	N/R					
Leak Rate & Post Accident H2 Purge	116	RB Leak Rate	Take Penalty	Type C					
Leak Rate & Post Accident H2 Purge	121	RB Leak Rate, H2 Recombiner	ILRT is Testing	Type C					
Leak Rate & Post Accident H2 Purge	122	RB Leak Rate, H2 Recombiner	ILRT is Testing	Type C					
Leak Rate & Post Accident H2 Purge	125	H2 Recombiner Return	ILRT is Testing	Type C					
Leak Rate & Post Accident H2 Purge	202	RB Leak Rate	Take Penalty	Type C					
Leak Rate & Post Accident H2 Purge	305	PASS	ILRT is Testing	Type C					
Leak Rate & Post Accident H2 Purge	306	PASS	ILRT is Testing	Type C					

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY

SYSTEM	PEN#	PEN. DESCRIPTION	TEST STATUS	APP. J PRGM STATUS	Penalty Addn.? (if yes = value)	LAST TEST DATENote 1	As-Left MPL	As-Found MPL	Leakage Savings
Containment Purge	113	RB Purge Supply	ILRT is Testing	Type C					
Containment Purge	357	RB Purge Exhaust	ILRT is Testing	Type C					
Industrial Cooler	206	RBICW Supply	Take Penalty	Type C					
Industrial Cooler	207	RBICW Return	Take Penalty	Type C					
Industrial Cooler	366	RBICW Supply	Take Penalty	Type C					
Industrial Cooler	367	RBICW Return	Take Penalty	Type C					
Fire Service	430	FSW to CNTMNT	ILRT is Testing	Type C					
RB Airlock	433	RB Personnel Airlock	Outer Door OPEN	Type B					
RB Airlock	222	RB Equipment Hatch Airlock	Outer Door OPEN	Type B					

ATTACHMENT 10
CONTAINMENT BUILDING VISUAL INSPECTION

Initials

1.0 CONTAINMENT VISUAL INSPECTION

1.1 10CFR 50, Appendix J and Regulatory Guide 1.163 require a visual inspection of accessible areas of the internal and external surfaces of the Reactor Containment building. This inspection requirement may be met in part or its entirety by completing EGR-NGGC-0351, Visual Inspection of Plant Structures, NDEP-0620, VT-1 and VT-3 Visual Examination of ASME Section XI, Subsection IWE Components of Nuclear Power Plants, or by walking down the containment per the instructions in this Attachment. N/A any section below met by accepting a completed EGR-NGGC-0351 or NDEP-0620 inspection result.

2.0 EXTERIOR INSPECTION

2.1 INSPECT all pipe and electrical penetration areas, Airlocks (outside), and all other accessible exterior surfaces for the following that might cause loss of Containment's function:

- cracks
- distortions
- loss of material
- any other unusual conditions

2.2 Using the following tables, RECORD the results of the inspection, making note of all abnormal findings, deteriorations, and WO #'s for corrective action:

ALL PIPE AND ELECTRICAL PENETRATION AREAS	
ABNORMALITIES	**WRT #**
1.	
2.	
3.	
4.	
5.	
6.	

_____ / _____
Initials / Date

EXTERIOR INSPECTION (continued) **Initials**

AIRLOCKS, EQUIPMENT HATCH (OUTSIDE)	
ABNORMALITIES	**WO #**
1.	
2.	
3.	
4.	
5.	
6.	

_____ /
Initials / Date

ALL OTHER ACCESSIBLE EXTERIOR SURFACES	
ABNORMALITIES	**WO #**
1.	
2.	
3.	
4.	
5.	
6.	

_____ /
Initials / Date

Initials

3.0 INTERIOR INSPECTION

3.1 INSPECT all pipe and electrical penetration areas, 80' and 95' Airlocks (inside), all other accessible interior surfaces, liner insulation, and Reactor Sump Pit area for the following that might cause loss of Containment's function:

- cracks
- distortions
- loss of material
- any other unusual conditions

3.2 Using the following tables, RECORD the results of this inspection, making note of all abnormal findings, deteriorations, and WO #'s for corrective action:

ALL PIPE AND ELECTRICAL PENETRATION AREAS	
ABNORMALITIES	**WO #**
1.	
2.	
3.	
4.	
5.	
6.	

INTERIOR INSPECTION (continued) **Initials**

PERSONNEL & EQUIPMENT HATCH AIRLOCKS (INSIDE)	
ABNORMALITIES	**WO #**
1.	
2.	
3.	
4.	
5.	
6.	

ALL OTHER ACCESSIBLE INTERIOR SURFACES	
ABNORMALITIES	**WO #**
1.	
2.	
3.	
4.	
5.	
6.	

INTERIOR INSPECTION (continued) **Initials**

INSPECT THE LINER INSULATION	
ABNORMALITIES	**WO #**
1.	
2.	
3.	
4.	
5.	
6.	

CAUTION

Radiation Protection SHALL be informed prior to inspecting the Reactor Sump.

REACTOR SUMP PIT AREA	
ABNORMALITIES	**WO #**
1.	
2.	
3.	
4.	
5.	
6.	

ATTACHMENT 10
CONTAINMENT BUILDING VISUAL INSPECTION

COMMENTS:

TEST PERFORMERS:

Print Name:	Initials:	Signature/Date:

ATTACHMENT 11
CONTINGENCIES

1.0 TEST ABORT

Test Phase	Safe Condition	Abort Plans
Preparation	Stop in progress alignments.	Place components in a safe condition as directed by CRS, SSO, Test Supervisor. Document all manipulations on Attachment 8.
Pressurization	• Close pressurization valve(s). • Unload and stop compressors.	From SAFE condition: • Proceed to Section 0, Depressurization Phase. • Release plant systems under Test organization control (tags). • Depressurize plant per procedure and any specific directions from operations/management. • Unless otherwise directed, continue collecting data during depressurization
Stabilization	• Stop leak survey activities. • Assess plant activities which may be in progress (sampling, stopping sump draining, etc.). • Continue data acquisition.	Same as above
Hold Test (ILRT)	• Inherently stable, NO active manipulation of plant equipment. • Stop leak survey activities. • Continue data acquisition.	Same as above
Verification Test	• Only activity is imposition of a known leak from containment. • Continue data acquisition. • If requested, stop imposed leak flow.	Same as above
Depressurization	• Isolate depressurization path until otherwise notified. • Update Test Supervisor/Ops on current pressures/conditions in containment.	• Continue with depressurization when so directed. • Alter depressurization path as directed by SSO if required. • Monitor depressurization rate closely.

2.0 VALVE LINEUP ERRORS

2.1 NOTIFY ILRT Test Supervisor, SSO

2.2 Test Supervisor/Consultant EVALUATE impact on test.

2.3 NOTIFY SSO of course of action chosen, reposition valve if appropriate, enter actions into Attachment 1, Test Log.

2.4 IF decision is made to leave valve in other than Attachment 3 desired test position, record actions and rationale in Attachment 7, Test Exceptions. This course of action is often acceptable if current results are acceptable, and re-positioning valve would require re-starting test phase. REVIEW penetration's final status against Attachment 9 status. Modify as appropriate.

IF the proposed correction of a valve lineup error could change the leakage rate being measured, the Test Supervisor must consider impact on the current test phase, the schedule, and the final acceptability of the test results.

NOTE

REPOSITIONING A VALVE THAT COULD IMPACT MEASURED LEAKAGE RATE COULD REQUIRE RESTARTING THE TEST.

Follow the guidance in Section 3.0 for errors causing excessive leakage. RECORD any actions taken in Attachment 1, Test Log.

3.0 EXCESSIVE LEAKAGE

TEST PHASE	LEAK SCENARIO	RESPONSE
Pressurization NOTE: Pressurization does NOT have to be stopped during leakage evaluation unless Shift/Test Management so orders.	1. Containment Boundary, Locally Leak Rate Testable.	• Verify LLRT procedure tests leaking barrier in Post-Accident direction, AND that a LLRT will measure observed leakage. • IF penalty addition is already being applied for barrier, THEN take steps to isolate leakage. • IF a penalty addition was NOT planned AND leakage can be measured later with a LLRT, THEN isolate penetration. • Continue pressurization to test pressure. • Record/explain action in Attachment 1, (Test Supervisor's Log) AND Attachment 7, (Test Exceptions Log), THEN modify penetration's test status in Attachment 9, (Containment Penetration Summary).

ATTACHMENT 11
CONTINGENCIES

TEST PHASE	LEAK SCENARIO	RESPONSE
Pressurization Continued:	2. Containment Boundary, NOT Locally Leak Rate Testable.	• Evaluate whether the leak can be later measured with an Appendix J leak test. IF YES, THEN proceed as described in scenario 1 above. • IF leakage can NOT be determined later with a local leakage rate style test, THEN evaluate whether leak can be isolated at test pressure. • IF leakage can be isolated with containment at pressure, THEN continue pressurization to final test pressure AND measure leakage in Stabilization Mode. • IF leakage can NOT be isolated once containment exceeds 12 psi, THEN STOP pressurization AND evaluate options (e.g. entry to close additional valves, correct a lineup, etc.). • IF necessary, THEN notify SSO, ILRT Test Supervisor AND request permission to depressurize to < 12 psi to effect repairs. • Record/explain action in Attachment 1, (Test Supervisor's Log); AND Attachment 7, (Test Exceptions Log), THEN modify penetration's test status as reflected in Attachment 9, (Containment Penetration Summary) if appropriate.
	3. Test Boundary	• IF observed leakage is from a line or component that is a Test Boundary, NOT a containment boundary as determined by ILRT Test Supervisor (e.g. such as a flange on the pressurization line), THEN take steps to isolate or correct leakage. • Continue pressurization. • Record/explain action in Attachment 1, (Test Supervisor's Log).
	4. MSIV	• IF leakage is excessive, and it appears to be flowing through a MSIV, consider breaking vacuum in the secondary plant.

ATTACHMENT 11
CONTINGENCIES

TEST PHASE	LEAK SCENARIO	RESPONSE
Stabilization NOTE: It is NOT unusual to experience what appears to be high leakage early in stabilization due to processes such as in-gassing and void equalization. It is imperative that NO action be taken until a full evaluation of a problem is complete.	4. Containment Boundary, Locally Leak Rate Testable	• Continue collecting data if leakage shows downward trend that can be projected to drop below acceptance criteria – take NO action. • IF leakage does NOT appear to be trending into an acceptable range, THEN apply scenario 1 response. • Verify containment pressure ≥ 96% Pa. • Reset Stabilization phase start time in ILRT computer (i.e. regenerate arrays from data point directly AFTER corrective action was taken).
	5. Containment Boundary, NOT Locally Leak Rate Testable	• Continue collecting data if leakage shows downward trend that can be projected to drop below acceptance criteria – take NO action. • Evaluate whether leak can be measured later with an Appendix J leak test. IF YES, THEN proceed as described in scenario 1 above. • IF leakage can NOT be determined later with a local leakage rate style test, THEN evaluate whether leak can be isolated at test pressure. • IF leakage can be isolated with containment at pressure, THEN remain in Stabilization Mode long enough to measure leakage, THEN isolate leak. • Verify containment pressure ≥ 96% Pa. • Reset array start time and quantify change once leak is isolated. • IF the leakage can NOT be isolated at test pressure, THEN quantify leakage using ILRT computer. Notify SSO, ILRT Test Management AND request permission to depressurize to < 12 psi to effect repairs. • Record/explain the action in Attachment 1, (Test Supervisor's Log) AND Attachment 7, (Test Exceptions Log). Modify penetration's test status in Attachment 9, (Containment Penetration Summary).

ATTACHMENT 11
CONTINGENCIES

TEST PHASE	LEAK SCENARIO	RESPONSE
Stabilization Continued	6. Test Boundary	• IF observed leakage is from a line or component that is a Test Boundary, NOT a containment boundary as determined by the ILRT Test Supervisor (e.g. such as a flange on the pressurization line), THEN take steps to isolate or correct leakage. • Verify containment pressure ≥ 96% Pa. • Restart data collection in Stabilization mode, continue test. • Record/explain action in Attachment 1, (Test Supervisor's Log).
Hold Test (ILRT)	7. Containment Boundary, Locally Leak Rate Testable	• Continue collecting data if leakage shows a downward trend that can be projected to drop below acceptance criteria – take NO action. • IF leakage is excessive and does NOT appear to be trending downward, THEN apply scenario 4 response. • Verify containment pressure ≥ 96% Pa. • Reset Test phase start time in ILRT computer (i.e. regenerate arrays from data point directly AFTER corrective action was taken).
NOTE: Typically excessive leakage will be detected and addressed during stabilization.	8. Containment Boundary, NOT Locally Leak Rate Testable	• Continue collecting data if leakage shows a downward trend that can be projected to drop below acceptance criteria – take NO action. • Evaluate whether leak can be measured later with an Appendix J leak test. IF YES, THEN proceed as described in scenario 1 above. • IF leakage can NOT be determined later with a local leakage rate style test, THEN evaluate whether leak can be isolated at test pressure. • IF leakage can be isolated with containment at pressure, THEN remain in Test Mode long enough to measure leakage, then isolate the leak. • Verify containment pressure ≥ 96% Pa. • Reset Test mode start and quantify change once leak is isolated (e.g. final measured leakage – measured leakage observed prior to action). • IF leakage can NOT be isolated at test pressure, THEN quantify leakage using ILRT computer, notify SSO, ILRT Test Management and request permission to depressurize to < 12 psi to effect repairs. • Record/explain action in Attachment 1, (Test Supervisor's Log) AND Attachment 7, (Test Exceptions Log). Modify penetration's test status in Attachment 9, (Containment Penetration Summary).

ATTACHMENT 11
CONTINGENCIES

TEST PHASE	LEAK SCENARIO	RESPONSE
Hold Test (ILRT) Continued.	9. Test Boundary	• IF observed leakage is from a line or component that is a Test Boundary, NOT a containment boundary as determined by the ILRT Test Supervisor (e.g. such as a flange on the pressurization line), THEN take steps to isolate or correct leakage. • Verify containment pressure ≥ 96% Pa. • Restart data collection in Test mode, continue test. • Record/explain action in Attachment 1, (Test Supervisor's Log).
Verification Test (Leakage out of acceptance band HIGH)	10. Containment Boundary, Locally Leak Rate Testable	• Apply scenario 7 response. • Verify containment pressure ≥ 96% Pa. • Restart data collection in Test mode, complete another ILRT, then verify that test result. • Record/explain action in Attachment 1, (Test Supervisor's Log) AND Attachment 7, (Test Exceptions Log). Modify penetration's test status in Attachment 9, (Containment Penetration Summary).
NOTE: Leakage should have been identified earlier in the test. Changes in leakage at this point are typically due to plant system/lineup changes	11. Containment Boundary, <u>NOT</u> Locally Leak Rate Testable	• Apply scenario 8 response. • Verify containment pressure ≥ 96% Pa. • Restart data collection in Test mode, complete another ILRT, then verify that test result. • Record/explain action in Attachment 1, (Test Supervisor's Log) AND Attachment 7, (Test Exceptions Log). Modify penetration's test status in Attachment 9, (Containment Penetration Summary).

EXCESSIVE LEAKAGE continued

TEST PHASE	LEAK SCENARIO	RESPONSE
Verification Test Continued	12. Test Boundary	• Apply scenario 9 response. • Verify containment pressure ≥ 96% Pa. • Restart data collection in Test mode, complete another ILRT, then verify that test result. • Record/explain action in Attachment 1, (Test Supervisor's Log) AND Attachment 7, (Test Exceptions Log). Modify penetration's test status in Attachment 9, (Containment Penetration Summary).
Depressurization	13. ANY	• IF ILRT, Verification Test passed, and leakage is from a Test Boundary, THEN NO IMPACT to ILRT results. • IF leakage is through a containment boundary, THEN ILRT Supervisor, ILRT Management and Plant Management will evaluate leak path. • IF directed by Test Supervisor, THEN ISOLATE leak path. • IF leakage path can NOT be isolated and it represents a safety hazard, THEN it may be prudent to secure depressurization while additional boundaries/safety precautions are established. • Continue depressurization to atmospheric.

4.0 UNEXPECTED ALARMS / INDICATIONS / CONDITIONS

4.1 Any unexpected alarms, indications OR conditions SHALL be discussed with the ILRT supervisor and other departments / individuals as germane to the condition AND addressed as determined appropriate to the situation.

5.0 RCS FILLING OR BORATION

5.1 Use OP-301A, Refueling Outage RCS Drain and Fill Operations for draining and filling the RCS.

6.0 AIRLOCK LEAKAGE

6.1 PERSONNEL HATCH AIRLOCK RAX-1

IF the outer Personnel Airlock door is CLOSED to allow pressurization of the airlock due to excessive leakage from the inner door proceed as follows:

_____ /
Initials/Date

6.1.1 PRESSURIZE the airlock to within 0.5 psi of 54 psig, accounting for instrument error of gauge used, per guidance of SP-181.

_____ /
Initials/Date

6.1.2 ISOLATE air supply from airlock.

_____ /
Initials/Date

6.1.3 INSTALL a test gauge at RAV-5/6 per Attachment 17

_____ /
Initials/Date

6.1.4 CLOSE SAV-74

_____ /
Initials/Date

6.1.5 OPEN SAV-75 to vent air supply

_____ /
Initials/Date

6.2 EQUIPMENT HATCH AIRLOCK RAX-2

IF the outer Equipment Hatch Airlock door is CLOSED to allow pressurization of the airlock due to excessive leakage from the inner door proceed as follows:

_____ /
Initials/Date

6.2.1 PRESSURIZE the airlock to within 0.5 psi of 54 psig, accounting for instrument error of gauge used, per guidance of SP-181.

_____ /
Initials/Date

6.2.2 ISOLATE air supply from airlock.

_____ /
Initials/Date

6.2.3 INSTALL a test gauge at RAV-7/8 per Attachment 17

_____ /
Initials/Date

6.2.4 CLOSE SAV-72

_____ /
Initials/Date

6.2.5 OPEN SAV-76 to vent air supply

_____ /
Initials/Date

7.0 VERIFICATION TEST FLOWMETER CONTINGENCIES

7.1 INADEQUATE FLOWRATE AT STEP 4.2.6

IF the steps taken in 3.4.10 to improve flowrate to the Verification Test Flowmeters proved inadequate during step 4.2.6, proceed as follows:

7.1.1 CONNECT ½" I.D. hose (or greater) to the 1" tee at the inlets to LRV-64 and LRV-65.

_____ /
Initials/Date

7.1.2 Run the hose to Penetration #116 Test Connection Isolation Valve LRV-116 and **CONNECT** hose to outlet of valve (pipe cap threads).

_____ /
Initials/Date

7.1.3 Take necessary steps to ensure connection at LRV-116 is leak tight.

_____ /
Initials/Date

7.1.4 REPEAT step 4.2.6 to check for leaks and to verify adequate flow is available through the rotameters FE-4 and/or FE-5.

_____ /
Initials/Date

7.2 VERIFICATION TEST USING LRV-116:

7.2.1 **OPEN** LRV-45

_____ /
Initials/Date

7.2.2 **VERIFY** LRV-46 CLOSED

_____ /
Initials/Date

7.2.3 **OPEN** LRV-116

_____ /
Initials/Date

7.2.4 **OPEN** LRV-64 (N/A if not chosen)

_____ /
Initials/Date

7.2.5 OPEN LRV-65 (N/A if not chosen)

_____ /
Initials/Date

7.2.6 RETURN to Step 4.5.3 and complete Verification Test.

_____ /
Initials/Date

7.3 RESTORE ALTERNATE PATH (IF USED):

7.3.1 CLOSE LRV-116

_____ /
Initials/Date

7.3.2 REMOVE hose and fittings from LRV-116

_____ /
Initials/Date

7.3.3 CAP LRV-116

_____ /
Initials/Date

7.3.4 CLOSE LRV-45

_____ /
Initials/Date

7.3.5 **REINSTALL** LRV-69 and LRV-63 and associated tubing removed in Step 3.4.10 up to and including tee at LRV-64 & LRV-65.

_____ /
Initials/Date

7.3.6 **REINSTALL** LRV-66, LRV-67 and associated tubing if removed.

_____ /
Initials/Date

ATTACHMENT 12
ILRT VERIFICATION TEST AND FLOW DATA
(Page 1 of 3)

START TIME_____ END TIME_____ (Page of)

START DATE_____ END DATE_____

TIME	Serial#_____	Temperature	Ambient Pressure*	CORRECTED FLOW	INT.

*Ambient pressure reading is only required once - at beginning of Verification Phase.

The goal is to set and maintain 16 scfm for an imposed leak. Readings are taken at 15 minute intervals to match the data scan intervals on the ILRT computer.

The Verification Test typically lasts only 4-6 hours. Make additional copies of this sheet as necessary.

CALCULATE LO AS FOLLOWS:

A. If a rotometer is used to measure the imposed leak, correct its reading to actual conditions as follows:

$$Fc = Fr\sqrt{\frac{Pm}{Pc} X \frac{Tc}{Tm}}$$

Where

Fc = corrected flow.

Fr = reading from rotometer (LR-004-FI or LR-005-FI).

Pm = back pressure at rotometer during test (atmospheric).

Tm = temperature of flow through rotometer during verification test (LR-57-TI or Avg. Cntmnt Temp.).

Pc = pressure that rotometer calibration was performed at (from cal. sheet).

Tc = temperature rotometer calibration was performed at (from cal. sheet).

Instrument Used: _____ (Serial #)

Pm = _____ psia

Tm = _____ oR

Pc = _____ psia

Tc = _____ oR

Fr = _____ SCFM

B. Enter the corrected flow reading into the ILRT computer program. It will establish the acceptance criteria for the Verification Test results.

Fc value entered: _____ scfm

NOTE

The ILRT Inc Data Management program automatically calculates L_0 in % wt/day based on an input of atmospheric pressure on corrected flow (Fc). The following steps are performed solely to verify that the proper data was input into the computer program, and that the Upper and Lower Limits the computer displays are correct.

C. Calculate the L_0 value imposed in weight % day using the following formula:
1. Fc (in SCF/m) x 0.07517 lbs/SCF x 1440 min/day = L_0 in lbs/day.
2. Fc (in lbm/day): _____+
3. L_o (in lbs/day)/Wt of Containment Air Mass at End of ILRT x 100 = L_0 (in % wts/day).
4. Mass value used: _____lbm
5. L_o = _____%wt/day

D. The Composite Leakage Rate (Lc), as measured by the ILRT Measurement System and calculated using the same analysis technique used to calculate the ILRT acceptance criteria, SHALL satisfy the following:

$$(L_0 + L_{am} - 0.25\ L_a) \leq L_c \leq (L_o + L_{am} + 0.25.\ L_a)$$

(_____) < ____ < (_____)
Lower Limit L_c Upper Limit

Where:

L_o = _____ %wt/day (value from Section 2.0, C.3 above)

L_{am} = _____ %wt/day (from Step 6.4.6.A.2)

ATTACHMENT 13

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ATTACHMENT 14
CONTROL ROOM LOG
(Page 1 of 2)

HOURLY READINGS:

Record the following readings to provide potential correlations between any leakage change and changes in the containment net free volume. Manually recording these readings is NOT required if a Trend Report is established on plant computer. IF manual readings are taken, THEN record hourly. Attach Trend Report printouts to Attachment 16, Computer Printouts and Attachments. Trend reports should read every 15 minutes, print hourly.

TIME:	Przr Level RC-001-LIR1	Przr Level RC-001-LIR3	Rx Sump Level WD-222-LI	Rx Sump Level WD-302-LI	OTSG A LEVEL SP-1A-LI1	OTSG B LEVEL SP-1B-LI1	RCDT Level WD-23-LI1	Core Flood Tank A CF-2-LI1	Core Flood Tank B CF-2-LI3

Make additional copies if necessary

START AND END OF ILRT HOLD READINGS:

The following readings are required at the start and end of the ILRT Hold Test, and will be used in Attachment 15 to correct the ILRT results for any influence volume changes may have had on the leakage rate.

TANK/VOLUME DESCRIPTION	START	END	LEVEL CHANGE	CHANGE (Gallons)
RB SUMP LEVEL (FT):	_____	_____	_____	_____
PRESSURIZER (inches):	_____	_____	_____	_____
RCDT (inches):	_____	_____	_____	_____
CORE FLOOD TANK A (FT)	_____	_____	_____	_____
CORE FLOOD TANK B (FT)	_____	_____	_____	_____
		TOTAL CHANGE (TG):		_____

START AND END OF VERIFICATION TEST READINGS:

The following readings are required at the start and end of the Verification Test, and will be used to correct the Verification Test results for any influence volume changes may have had on the leakage rate.

TANK/VOLUME DESCRIPTION	START	END	LEVEL CHANGE	CHANGE (Gallons)
RB SUMP LEVEL (FT):	_____	_____	_____	_____
PRESSURIZER (inches):	_____	_____	_____	_____
RCDT (inches):	_____	_____	_____	_____
CORE FLOOD TANK A (FT)	_____	_____	_____	_____
CORE FLOOD TANK B (FT)	_____	_____	_____	_____
		TOTAL CHANGE (TG):		_____

Conversion Factors:

1 inch changes in RB SUMP level = _____ gallons

1 inch change in PRESSURIZER level = _____ gallons

1 inch change in RCDT level = _____ gallons

1 FT change in CFT A level = _____ gallons

1 FT change in CFT B level = _____ gallons

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 1 of 8)

1.0 VOLUME CHANGE CORRECTIONS

1.1 QUANTIFY VOLUME CHANGES:

1.1.1 Data comes from Attachment 14, (Control Room Log). Maintain the correct sign convention throughout this calculation, as we are correcting for the net change in free volume (i.e. some levels may go up, others may go down). A decrease in tank level is NEGATIVE, conversely an increase in a tank or sump level is POSITIVE. Ultimately, the changes will be converted to a %wt/day correction.

1.1.2 NET LEVEL DECREASE: If the net change was negative, the containment net free volume increased, causing the pressure to drop and the leakage to look larger than it should have. In this case a SUBTRACTION is allowed from the ILRT leakage rate results.

1.1.3 NET LEVEL INCREASE: Conversely, if the net level change was positive, the containment net free volume decreased, masking the actual leakage and an ADDITION is required.

Net volume change from Attachment 14 in gallons: _____GALLONS

1.2 CONVERT GALLONS TO FT3 CHANGES:

Record ILRT duration (hours) = (t) Duration = _____ hrs

Calculate net volume change in ft3/day:

dV = (TG/t) (24 hrs/day) (1ft3 / 7.48 gal.)

Where: dV = net containment volume change

TG = sum of level changes in gallons (from table above)

t = test duration in hours

dV = (____gallons/____hours) (24) (0.13367 ft3 / gallon)

dV = _____ ft3 / day

1.3 CALCULATE NET FREE VOLUME CHANGE IMPACT IN %WT/DAY:

LV = (dV * Pt * C * 100) / (R * T * W)

Where: LV is the volume change in %wt/day

dV is the net volume change in ft3 / day from Step 1.2 above

Pt is the average containment pressure during the ILRT in psia

C is the conversion factor, 144 in2 / ft2

R is the gas constant for air = 53.35 ft lbf / lbm oR

T is the average containment temperature in oR

W is the average weight of the containment air in lbm (use intercept of least squares fit line)

LV = (_____ * _____ * 144 * 100) / (53.35 * _____ * _____)
Step B Pt T W

LV = _____ %wt/day

NOTE

Reference Step 1.1 for guidance pertaining to sign convention and addition/subtraction requirements.

2.0 PRELIMINARY TYPE B & C PENALTY ADDITIONS

2.1 Total of as-left MNPLR for penalty additions from Attachment 9, Containment Penetration Summary:

Total Penalty Addition (sccm): _____

2.2 Convert the MNPLR Penalty Addition to lbm/day:

Penalty Addition = (_____sccm)(1scf/28,317scc)(0.07517 lbm/scf)(1440 min/day)

Penalty Addition (in lbm/day) = _____

2.3 Convert the lbm/day Penalty Addition to %wt/day value:

Penalty
Addition (in lbm/day) = (_____lbm/day * 100) / _____ initial containment
Step 2.2 air mass (lbm)

Penalty
Addition (%wt/day) = _____

3.0 PRELIMINARY LEAKAGE SAVINGS CALCULATION

3.1 Total of leakage savings for as-found ILRT calculation from Attachment 9, Containment Penetration Summary:

Leakage Savings Addition (sccm): _____

3.2 Convert the Leakage Savings Addition to lbm/day:

Leakage Savings
Addition = (_____sccm)(1scf/28,317scc)(0.07517 lbm/scf)(1440 min/day)

Leakage Savings
Addition (in lbm/day) = _____

3.3 Convert the lbm/day Leakage Savings Addition to %wt/day value:

Leakage Savings
Addition (in lbm/day) = (_____lbm/day * 100) / _____ initial containment
Step 3.2 air mass (lbm)

Leakage Savings
Addition (%wt/day) = _____

(This calculation will need to be repeated, COPY this page as necessary)

4.0 FINAL TYPE B & C PENALTY ADDITIONS

4.1 The preliminary ILRT results will be based on existing local leakage rate results, some of which may be replaced with tests performed after the ILRT. When all local leakage rate testing is completed, enter the results on Attachment 9, Containment Penetration Summary and calculate the total of as-left MNPLR for penalty additions:

Total Penalty Addition (sccm): _____

4.2 Convert the MNPLR Penalty Addition to lbm/day:

Penalty
Addition = (_____sccm)(1scf/28,317scc)(0.07517 lbm/scf)(1440 min/day

Penalty
Addition (in lbm/day) = _____

4.3 Convert the lbm/day Penalty Addition to %wt/day value:

Penalty
Addition (in lbm/day) = (_____lbm/day * 100) / _____ initial containment
Step 4.2 air mass (lbm)

Penalty
Addition (%wt/day) = _____

5.0 FINAL LEAKAGE SAVINGS CALCULATION

5.1 The preliminary ILRT results will be based on existing local leakage rate results, some of which may be replaced with tests performed after the ILRT. If maintenance is perfomed on components NOT exposed to the ILRT test pressure, any leakage savings must be included in the Final As-Found ILRT results. When all local leakage rate testing is completed, enter the results on Attachment 9, Containment Penetration Summary and calculate the total leakage savings for as-found ILRT calculation from Attachment 9, Containment Penetration Summary:

Leakage Savings Addition (sccm): _____

5.2 Convert the Leakage Savings Addition to lbm/day:

Leakage Savings
Addition = (_____sccm)(1scf/28,317scc)(0.07517 lbm/scf)(1440 min/day)

Leakage Savings
Addition (in lbm/day) = _____

5.3 Convert the lbm/day Leakage Savings Addition to %wt/day value:

Leakage Savings
Addition (in lbm/day) = (_____lbm/day * 100) / _____ initial containment
Step 5.2 air mass (lbm)

Leakage Savings
Addition (%wt/day) = _____

(This calculation may need to be repeated COPY this page as necessary)

6.0 PRELIMINARY AS-LEFT ILRT RESULTS:

CHECK box for results used to accept ILRT

	MASS POINT (ANSI 56.8-1994)	☐	TOTAL TIME (BN-TOP-1)	☐
6.1 MEASURED LEAKAGE:	N/A			
6.2 REGRESSION LINE LEAKAGE Lam:				
6.3 LEAKAGE AT 95%UCL:				
6.4 MNPLR Penalty Additions (from 2.3)				
6.5 Volume Change Correction (from 1.3)				
6.6 PRELIMINARY AS-LEFT ILRT Result:				

7.0 PRELIMINARY AS-FOUND ILRT RESULTS

USE results used to accept ILRT

	MASS POINT (ANSI 56.8-1994)	☐	TOTAL TIME (BN-TOP-1)	☐
7.1 AS-LEFT ILRT RESULT (from 6.6):	N/A			
7.2 LEAKAGE SAVINGS (from 3.3):				
7.3 PRELIMINARY AS-FOUND ILRT Result:				

8.0 FINAL AS-LEFT ILRT RESULTS

CHECK box for results used to accept ILRT

	MASS POINT (ANSI 56.8-1994) ☐	TOTAL TIME (BN-TOP-1) ☐
8.1 MEASURED LEAKAGE:	N/A	
8.2 REGRESSION LINE LEAKAGE Lam:		
8.3 LEAKAGE AT 95%UCL:		
8.4 MNPLR Penalty Additions (from 4.3)		
8.5 Volume Change Correction (from 1.3)		
8.6 FINAL AS-LEFT ILRT Result:(<75%La)		

9.0 FINAL AS-FOUND ILRT RESULTS

USE results used to accept ILRT

	MASS POINT (ANSI 56.8-1994) ☐	TOTAL TIME (BN-TOP-1) ☐
9.1 AS-LEFT ILRT RESULT (from 8.6):	N/A	
9.2 LEAKAGE SAVINGS (from 5.3):		
9.3 FINAL AS-FOUND ILRT Result:		

ATTACHMENT 16
COMPUTER PRINTOUTS AND ATTACHMENTS
(Page 1 of 1)

The purpose of this attachment is to provide a single location in the procedure for collecting computer printouts from the plant computer trend report, the ILRT data management computer and other sources

LIST OF PRINTOUTS AND ADDITIONAL ATTACHMENTS:

Make additional copies if needed

ATTACHMENT 17
GAUGE INSTALLATION / REMOVAL SHEET

Test gauges are used in various locations to monitor pressure in spaces/voids as an early indication of leakage from containment, or to indicate leakage between boundaries. The ILRT Test Supervisor may direct installation of additional test gauges when troubleshooting potential leakage paths. Use this attachment to document installation and removal of these test gauges.

GAUGE Serial#	CAL DUE	RANGE	MONITORED AREA/ PURPOSE	GAUGE LOCATION	INSTALLED (Initials/ Date)	REMOVED (Initials/ Date)	CONC VERIF (Initials / Date)
		0-60 psig	"PI-PS" Monitor space between Purge Supply Valves AHV-1C and AHV-1D	Purge Duct Outside RB , AHV-24			
		0-60 psig	"PI-PE" Monitor space between Purge Exhaust Valves AHV-1A and AHV-1B	Purge Duct Outside RB , AHV-25			
		0-60 psig	"PI-SGA" Main Steam Line	PX Conn. Vlv MSV-505			
		0-60 psig	"PI-SGB" Main Steam Line	PX Conn. Vlv MSV-509			
		0-60 psig	"PI-P" Between Personnel Lock RAX-1 Doors	Outer Door Pressurization Tap, RAV-5			
		0-60 psig	"PI-PHS" Personnel Hatch, RAX-1, Seal	PX Conn. Vlv SAV-75			
		0-60 psig	"PI-EHPS" Personnel Hatch, RAX-2, Personnel Seal	PX Conn. Vlv SAV-76			
		0-60 psig	"PI-EHS" Equipment Hatch, RAX-2, Seal	PX Conn. Vlv SAV-77			
		0-60 psig	"PI-E" Between Equipment Lock RAX-2 Doors	Outer Door Pressurization Tap, RAV-7			
		0-60 psig	Reactor Building Pressure	Leak Rate Test Panel, LRV-41			
		0-100 psig	RB Sump Isolation Valves	WDV-810 Test Connection			

IF Pressure Gages are directed to be installed to troubleshoot leakage, THEN the following guidance should be used for installation AND removal.

(1) A different gauge range may be used at the discretion of the Test Supervisor.

To Install

1. Close root stop OR gauge isolation.
2. Remove any installed instrumentation.
3. Install gauge as directed by Test Supervisor
4. Open valve closed in step 1

To Remove

1. Close root stop OR gauge isolation.
2. Remove any installed instrumentation.
3. Install instrumentation removed during installation
4. Open valve closed in step 1.

ATTACHMENT 17
GAUGE INSTALLATION / REMOVAL SHEET

To install Steam Generator and other space-monitoring pressure gauges perform the following:

INIT

PI-SGA @ A Main Steam Line
1. Close MSV-94/504/505. _____
2. Connect tubing downstream of MSV-505 _____
3. Install test gauge downstream of MSV-505 _____
4. Open MSV-94/504/505. _____

PI-SGB @ B Main Steam Line
1. Close MSV-96/508/509. _____
2. Connect tubing downstream of MSV-509 _____
3. Install test gauge downstream of MSV-509 _____
4. Open MSV-96/508/509.es press _____

PI-PS, Between Purge Supply Isolation Valves
1. Close AHV-24 (Purge Supply Test Connection). _____
2. Connect tubing downstream of AHV-24 _____
3. Install test gauge downstream of AHV-24 _____
4. Open AHV-24 (Purge Supply Test Connection). _____

PI-PE, Between Purge Exhaust Isolation Valves
1. Close AHV-25 (Purge Exhaust Test Connection). _____
2. Connect tubing downstream of AHV-25 _____
3. Install test gauge downstream of AHV-25 _____
4. Open AHV-25 (Purge Exhaust Test Connection). _____

*PI-P, Between Personnel Lock RAX-1 Doors
1. Close RAV-5 (Test Connection). _____
2. Connect tubing downstream of RAV-5 _____
3. Install test gauge downstream of RAV-5 _____
4. Open RAV-5 (Test Connection). _____

INIT

ATTACHMENT 17
GAUGE INSTALLATION / REMOVAL SHEET

INIT

*PI-E, Between Equipment Lock RAX-2 Doors
1. Close RAV-7 (Test Connection). _____
2. Connect tubing downstream of RAV-7 _____
3. Install test gauge downstream of RAV-7 _____
4. Open RAV-7 (Test Connection). _____

*These gauges are to be installed ONLY if associated Outer Door needs to be closed and the airlock pressurized.

PI-EHS, Equipment Hatch RAX-3 Seal
1. Close SAV-77 (Test Connection). _____
2. Connect tubing downstream of SAV-77 _____
3. Install test gauge downstream of SAV-77 _____
4. Open SAV-77 (Test Connection). _____

RB Sump Discharge Line
1. Close WDV-810 (Test Connection) _____
2. Remove cap at WDV-810 _____
3. Install test gauge at WDV-810 _____
4. Open WDV-810 (Test Connection) _____

PI-EHPS, Personal Hatch RAX-2 Seal
1. Close SAV-76 (Test Connection). _____
2. Connect tubing downstream of SAV-76 _____
3. Install test gauge downstream of SAV-76 _____
4. Open SAV-76 (Test Connection). _____

PIPHS, Personnell Hatch RAX-1 Seal
1. Close SAV-75 (Test Connection). _____
2. Connect tubing downstream of SAV-75 _____
3. Install test gauge downstream of SAV-75 _____
4. Open SAV-75 (Test Connection). _____

INIT

ATTACHMENT 17
GAUGE INSTALLATION / REMOVAL SHEET

INIT

Reactor Building Pressure
1. Close LRV-41 (Test Connection). _____
2. Connect tubing downstream of LRV-41 _____
3. Install test gauge downstream of LRV-41 _____
4. Open LRV-41 (Test Connection). _____

To remove Steam Generator/test monitoring pressure gauges perform the following:

PI-SGA @ A Main Steam Line
1. Close MSV-94/504/505. _____(V)
2. Disconnect tubing downstream of MSV-505 _____
3. Remove test gauge downstream of MSV-505 _____
4. Recap line downstream of MSV-505. _____
5. OPEN MSV-94/504. _____(V)

PI-SGB @ B Main Steam Line
1. Close MSV-96/508/509. _____(V)
2. Disconnect tubing downstream of MSV-509 _____
3. Remove test gauge downstream of MSV-509 _____
4. Recap the line downstream of MSV-509.
5. OPEN MSV-96/508 _____(V)

PI-PS, Between Purge Supply Isolation Valves
1. Close AHV-24 (Purge Supply Test Connection). _____(V)
2. Disconnect tubing downstream of AHV-24 _____
3. Remove test gauge downstream of AHV-24 _____
4. Replace cap downstream of AHV-24 (Purge Supply Test Connection). _____(V)

PI-PE, Between Purge Exhaust Isolation Valves
1. Close AHV-25 (Purge Exhaust Test Connection). _____(V)
2. Disconnect tubing downstream of AHV-25 _____
3. Remove test gauge downstream of AHV-25 _____
4. Replace cap downstream of AHV-25 (Purge Exhaust Test Connection). _____(V)

INIT

ATTACHMENT 17
GAUGE INSTALLATION / REMOVAL SHEET

	INIT
PI-P, Between Personnel Lock RAX-1 Doors	
1. Close RAV-5 (Test Connection).	_____(V)
2. Disconnect tubing downstream of RAV-5	_____
3. Remove test gauge downstream of RAV-5	_____
4. Replace cap downstream of RAV-5 (Test Connection).	_____(V)
PI-E, Between Equipment Lock RAX-2 Doors	
1. Close RAV-7 (Test Connection).	_____(V)
2. Disconnect tubing downstream of RAV-7	_____
3. Remove test gauge downstream of RAV-7	_____
4. Replace cap downstream of RAV-7 (Test Connection).	_____(V)
PI-EHS, Equipment Hatch RAX-2 Seal	
1. Close SAV-77 (Test Connection).	_____(V)
2. Disconnect tubing downstream of SAV-77	_____
3. Remove test gauge downstream of SAV-77	_____
4. Replace cap downstream of SAV-77 (Test Connection).	_____(V)
RB Sump Discharge Line	
1. Close WDV-810 (Test Connection)	_____(V)
2. Remove test gauge at WDV-810	_____
3. Replace cap downstream of WDV-810 (Test Connection)	_____(V)
PI-EHPS, Personal Hatch RAX-2 Seal	
1. Close SAV-76 (Test Connection).	_____(V)
2. Disconnect tubing downstream of SAV-76	_____
3. Remove test gauge downstream of SAV-76	_____
4. Replace cap downstream of SAV-76 (Test Connection).	_____(V)

ATTACHMENT 17
GAUGE INSTALLATION / REMOVAL SHEET

PIPHS, Personnell Hatch RAX-1 Seal

1. Close SAV-75 (Test Connection). _____(V)
2. Disconnect tubing downstream of SAV-75 _____
3. Remove test gauge downstream of SAV-75 _____
4. Replace cap downstream of SAV-75 (Test Connection). _____(V)

Reactor Building Pressure

1. Close LRV-41 (Test Connection). _____(V)
2. Disconnect tubing downstream of LRV-41 _____
3. Remove test gauge downstream of LRV-41 _____
4. Remove cap downstream of LRV-41 (Test Connection). _____(V)

ATTACHMENT 18
TEST GAUGE PRESSURE READINGS
(Page 1 of 1)

Page ___ of ___

TIME	PI-SGA A OTSG	PI-SGB B OTSG	PI-PS Purge Supply	PI-PE Purge Exhaust	PI-P, RAX-1 Doors	PI-PHS, RAX-1 Seal	PI-EHPS, RAX-2 Pers Htch Seal	PI-E, RAX-2 Doors	PI-EHS, RAX-2 Eq. Htch Seal
Initial value:									

Copy as needed for additional sheets

REVISION SUMMARY

SECTION	DESCRIPTION
Attachment 3A	Added valves MSV-93 & MSV-95 & associated transmitter isolation to valve checklist due to their absence in previous revision.
Attachment 3A	Added new transmitter isolations MS 114/115/116/117 due to the installation of EC 65629 (MUR Upgrade MS PTs) (PRR 246921)
4.6.3.1.6	Changed AH-032-FIR (Channel D) to AH-1003 TIR (FE) (Channel 4) to correspond to the new recorder that was installed per EC 52417.
Attachment 3E	Revised breaker list to match the breaker call outs in OP-700B for CFV-11, CFV-12, CFV-15, MUV-18, & MUV-27. (PRR 178147)
3.4.12	Deleted "and REMOVE" from the step. (PRR 178147)
Attachment 3C	Added notes to identify the breakers for the WSV's, Added "CAPED" to WSV-7, and changed the restoration position of WSV-47 & 48 Removed previous notes that were no longer applicable. (PRR 178147)
Attachment 17	Corrected the misidentification of RAV-7 as RAV-6. (PRR 178147)
Attachment 17	Added Instructions to install and remove pressure instruments for PI-EHPS, Personnel Hatch RAX-2 Seal; PI-PHS, Personnel Hatch RAX-1 Seal; and Reactor Building Pressure. (PRR 178147)
6.1.2.3	Corrected the misidentification of PEN217-TV5 as PEN216-TV5. (PRR 178147)
Attachment 4 Section 4.2.1.1 - 5.7 (pages 137-140)	Changed the steps for flushing the test piping/hose, due to their no longer being a need to flush Intermediate Building piping/hose. Corrected temporary valve naming. (PRR 178147)
Reference Documents & Attachment 10 Section 1.1	Replaced references to PM-156 with EGR-NGGC-0351, due to PM-156 being superseded by EGR-NGGC-0351. (PRR 254243)
Attachment 3B	Corrected the description for CAV-430 to read "RCP-1C Suction Sample Iso." (PRR 174465)