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Lawrence Coyle
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NL-15-068

June 8, 2015

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

SUBJECT: Response to Request for Additional Information Regarding License Amendment to Permanently Extend the Frequency of the Containment Integrated Leak Rate Test (TAC NO. MF3369)
Indian Point Unit Number 2
Docket No. 50-247
License No. DPR-26

REFERENCES:
1. NRC Letter to Entergy, Request for Additional Information Regarding the Proposed License Amendment to Permanently Extend the Containment Type A Leak Rate Test Frequency to 15 years (TAC NO. MF5382), dated April 28, 2015
2. Entergy Letter NL-14-128 to NRC Regarding Proposed License Amendment Regarding Extending the Containment Type A Leak Rate Testing Frequency to 15 years, dated December 9, 2014 (ML14353A015)

Dear Sir or Madam:

Entergy Nuclear Operations, Inc., (Entergy) is hereby providing the attached response to the NRC request for additional information, Reference 1, associated with the proposed changes to the Indian Point 2 Technical Specifications (TS) in Reference 2. The responses to the request for additional information are provided in Attachment 1.

No new Regulatory Commitment is made in this submittal.

A copy of this response and the associated Attachments is being submitted to the designated New York State official in accordance with 10 CFR 50.91.

A017
NRR

If you have any questions or require additional information, please contact Mr. Robert Walpole, Manager, Regulatory Assurance at (914) 254-6710.

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 8, 2015.

Sincerely,

JE Pollock for LC

LC/sp

Attachment: Response to Request for Additional Information Regarding the Extension of the Containment Type A Leak Rate Testing Frequency to 15 years

Enclosure: Documents Provided in Support of The Response to Request for Additional Information Regarding the Extension of the Containment Type A Leak Rate Testing Frequency to 15 years

cc: Mr. Douglas Pickett, Senior Project Manager, NRC NRR DORL
Mr. Daniel Dorman, Regional Administrator, NRC Region 1
NRC Resident Inspectors Office
Mr. Francis J. Murray, Jr., President and CEO, NYSERDA
Ms. Bridget Frymire, New York State Dept. of Public Service

ATTACHMENT TO NL-15-068

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING THE EXTENSION OF THE CONTAINMENT TYPE A LEAK RATE TESTING FREQUENCY TO 15 YEARS

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
DOCKET NO. 50-247

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING THE EXTENSION OF THE CONTAINMENT TYPE A LEAK RATE TESTING FREQUENCY TO 15 Years

In order for the NRC staff to complete their review of the Entergy request for Technical Specification Amendment to extend the Containment Type A leak test, the NRC Containment and Ventilation Branch (SCVB) has requested additional information. These requests and Entergy's responses follow:

SCVB RAI-1

License Amendment Request (LAR) Section 4.3.1 "Integrated Leak Rate Test (ILRT) Test Results" (pages 5&6 of 19, Attachment 1, Reference 1) details all test pressures in the absolute pressure scale of "psia" [pounds per square inch absolute]. Without providing the corresponding atmospheric pressure for each test pressure, the U.S. Nuclear Regulatory Commission (NRC) staff cannot confirm that the "calculated peak containment internal pressure for the Design-Basis-Loss-Of-Coolant accident, P_a, ..." of 47 psig [pounds per square inch gauge] was satisfied during ILRT test performance (Reference Indian Point Nuclear Generating Unit No. 2 (IP2) Technical Specification (TS) 5.5.14.b), consistent with the direction of Nuclear Energy Institute (NEI), Revision 2-A (Reference 2) and the test methodology of American National Standards Institute/American Nuclear Society (ANSI/ANS) 56.8–2002 (Reference 3).

For example an excerpt from Section 4.3.1 reads:

> "The last two tests were:
>
> 1. The last ILRT in April 2006 had a measured containment leak rate (Ltm) at the test pressure of 60.5 psia was 0.0636 % containment air weight / day with a 95% confidence level."

Since P_a equals 47 psig, a test pressure of 60.5 psia prompts concern that the test pressure was not greater than P_a.

The staff requests that the licensee provide the corresponding recorded atmospheric pressures from each of the five ILRT test results recorded in Section 4.3.1

Response

The minimum allowable containment pressure during a Type A test is established in paragraph 3.2.12 of ANSI/ANS-56.8-2002 "Containment System Leakage Testing Requirements," which states that "The Type A test pressure shall not be less than 0.96 Pa for the duration of the Type A test". For the IP2 containment the Pa is 47 psig resulting in a minimum allowed containment pressure during the Type A test of 45.12 psig.

The IP2 Integrated Leak Rate Test procedure 2-PT-10Y001 used for the 2006 ILRT states that the lowest pressure reading during the ILRT was 60.5 psig when the outside atmospheric pressure was 14.848 psig yielding a minimum test pressure of 45.652 psig. Since the minimum test pressure of 45.652 psig was greater than the minimum required pressure of 45.12 psig, the requirements of ANSI/ANS-56.8-2002 were satisfied.

The five tests identified in NL-14-128, Section 4.3.1 are the ILRTs performed in August 1979, September 1984, December 1987, June 1991 and April 2006. The lowest recorded test pressures and the highest atmospheric pressures are recorded below. No recorded atmospheric pressures are available from the August 1979 test.

Year	Lowest Containment Pressure (psia)	Highest Atmospheric Pressure (psia)	Pressure Differential
1979	No data		
1984	65.285	14.904	50.381
1987	62.913	14.7*	48.213
1991	61.562	14.7*	46.862

*The atmospheric pressure was not measured but assumed to be 14.7 psia.

SCVB RAI-2

The last sentence of page 6 of 19, Attachment 1 (Reference 1) from LAR Section 4.3.2 "Type B and C testing" reads "Notes are provided for test failures." However, no notes in Table 4.3-2 or subsequent pages of the LAR were provided that detail: (a) which Type B and Type C local leak rate tests (LLRTs) failed; (b) what corrective actions were performed; and (c) what historical test failures have been repetitive from the total population of Type B penetrations and Type C isolation valves.

The staff requests that the licensee provide this missing information.

Response

The LLRT failures, corrective actions and historical test failures as repetitive from the total population of Type B penetrations and Type C isolation valves follow:

During the 2R21 refueling outage in 2014 the leak rate through PRT Nitrogen Supply Line Check Valve 518 (3/4") was 1387.5 cc/min which exceeded the acceptance criterion of 300 cc/min. The acceptance criterion is an administrative limit and a higher value can be accepted without repair on an individual case basis when the overall containment leakage remains within the 10CFR50, Appendix J limit. This failure was documented in the IPEC Corrective Action program. Since an evaluation demonstrated that this leak rate did not adversely impact the ability of the containment to perform its design function (i.e. meet the leak rate limits of 10CFR50, Appendix J), this valve was accepted and a repair has been scheduled for the 2016 2R22 refueling outage. This was not a repetitive failure since this valve had not previously exceeded its leak rate limit.

Also during the 2R21 refueling outage, the leak rate through RCDT Nitrogen Supply Line CIV 1616 (1") was 21,000 cc/min, which exceeded the acceptance criteria of 400 cc/min. This failure to meet the acceptance criteria was accepted because the overall leakage remained within the 10CFR50, Appendix J limit even though a repair was ineffective. This was documented in the IPEC Corrective Action program. An evaluation of this valve indicated that this was a repetitive failure. During 2R20, the prior outage in 2012, valve 1616 failed the leak rate test with a leakage rate of 6,000 cc/min. This failure to meet the acceptance criterion was accepted since the overall containment leakage was below the allowable limit and a repair was scheduled for 2R21 in 2014.

The repair in 2R21 changed the valve design from a hard seat to a soft seat valve, however, the post work test indicated that the leak rate remained elevated. An investigation indicated that the likely cause of the excessive leakage during the 2R21 post work test was damage to the valve internals caused by the welding process during the repair. Since the higher leak rate did not adversely impact the ability of the containment to perform its design function (i.e. meet the leak rate limits of 10CFR50, Appendix J), valve 1616 was accepted and corrective actions have been implemented to ensure that the repair currently scheduled for the 2016 refueling outage 2R22 will not result in similar damage.

SCVB RAI-3

The staff notes that the use of NEI TR 94-01, Rev 2-A (Reference 2) is acceptable for referencing by licensees proposing to amend their Technical Specifications (TSs) to permanently extend the ILRT surveillance interval to 15 years, provided six specific conditions are satisfied.

Condition 1 from Section 4.1 of NEI TR 94-01, Revision 2-A reads:

> For calculating the Type A leakage rate, the licensee should use the definition in the NEI TR 94-01, Rev 2-A, in lieu of that in ANSI/ANS-56.8-2002. (Refer to SE Section 3.1.1.1).

Section 5.0 of the SE for NEI 94-01, Revision 2-A reads:

> The performance leakage rate is calculated as the sum of the Type A upper confidence limit (UCL) and as-left minimum pathway leakage rate (MNPLR) leakage rate for all Type B and Type C pathways that were in service, isolated, or not lined up in their test position (i.e., drained and vented to containment atmosphere) prior to performing the Type A test. In addition, leakage pathways that were isolated during performance of the test because of excessive leakage must be factored into the performance determination. The performance criterion for Type A tests is a performance leak rate of less than $1.0L_a$.

Section 3.2.9 "Type A test performance criterion" of ANSI/ANS-56.8-2002 (Reference 3) defines the "performance leakage rate" and reads in part:

> "The performance criterion for a Type A test is met if the performance leakage rate is less than L_a. The performance leakage rate is equal to the sum of the measured Type A test UCL and the total as-left MNPLR of all Type B or Type C pathways isolated during performance of the Type A test.

Attachment 1, Page 4 of 19 of Entergy's LAR (Reference 1) for IP2 Compliance with Condition 1 reads:

> Implementation of NEI 94-01 Rev 2-A will require use of the definition of "performance leakage rate" defined in Section 5.0 for calculating the Type A leakage rate when performing Type A tests.

The NRC staff notes that the "As found Leakage" is on a continuous trend towards eclipsing the

IP2 TS 5.5.14.d.1 leakage rate acceptance criteria of less than or equal to (≤) 0.75La (i.e. 0.075 percent containment weight per day) as reflected in SCVB RAI-4 (below). The staff needs to develop a better understanding of why this phenomenon is occurring to make its regulatory decision. The staff notes that IP2's statement of compliance indicates future tense (i.e. "will require"). To make its regulatory decision, the staff needs to understand whether IP2's Type A ILRT plant test procedures currently reflect NEI 94-01, Revision 2-A's definition of "performance leakage rate". If the IRLT test procedures currently reflect the requisite definition, the staff requests historical information as to when the requisite NEI 94-01, Revision 2-A definition was adopted into IRLT test procedures. In addition the staff requests that Entergy Nuclear Operations, Inc. (Entergy) provide a copy of the current IP2 IRLT test procedures, plant drawings, etc. (or procedural excerpts from these documents) to aid the staff in understanding why this phenomenon is occurring.

Response

The IP2 ILRT is performed under procedure 2-PT-10Y001, "Integrated Leak rate Test". The current revision of this procedure is revision 2, dated 8/22/06. Since an ILRT has not been performed since 2006, this procedure has not been updated since 2006.

Revision 2-A of NEI Topical Report 94-01 was approved by the NRC based on a Safety Evaluation Report dated June 26, 2008 and then issued for use by NEI in a letter dated November 19, 2008. Since this topical report was issued after the IP2 ILRT procedure was last revised, the current version of 2-PT-10Y001 does not include the requirements of NEI 94-01, Revision 2-A. Therefore, Entergy will revise 2-PT-10Y001 prior to the next ILRT and will include the NEI 94-01, Revision 2-A requirements as provided in the NRC safety evaluation dated June 25, 2008. A copy of the current version of 2-PT-10Y001 is attached to this RAI response for information.

The definition of performance leakage rate in NEI Topical Report 94-01, Revision 2A, is more detailed than that of ANSI/ANS-56.8-2002 as shown by the quoted portions of those documents in the above question. Performance leakage as defined in 2-PT-10Y001 is "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." The "UCL" is the upper confidence leakage rate and "Lam" is the measured leakage rate. Therefore, there are few practical effects that result from revising the definition of performance leakage rate since the definitions are substantially similar.

The response to RAI-4 below discusses the projected ILRT leakage rate at the end of the 15 year interval based on the previous ILRT results.

SCVB RAI-4

LAR Section 4.3.1 "ILRT Test Results" (pages 5 & 6 of 19, Attachment 1, Reference 1) summarizes the IP2 Type A ILRT test results since August, 1979. These test results are summarized in the following Table:

Date	As found Leakage (% Containment weight per day)	Test Pressure (psia)
April, 2006	0.0636	60.5

June, 1991	0.0478	61.7
December, 1987	0.0342	62.9
September, 1984	0.0320	65.6
August, 1979	0.0260	62.7

The staff notes that the historical trend indicates that consistently, for all five historical ILRTs, the "As found Leakage" is on a continuous trend towards eclipsing the IP2 TS 5.5.14.d.1 leakage rate acceptance criteria of ≤ $0.75L_a$ (i.e. 0.075% Containment weight per day).

Given the above ILRT results trend, the NRC staff requests that:

(1) The licensee explain why this phenomenon is occurring at IP2. More importantly, what is IP2's long term corrective action plan to arrest or reverse this trend?

Response

Entergy does not believe that the IP2 Type A ILRT test results since August 1979 indicate that the IP2 containment is degrading or constitutes an adverse trend requiring corrective action. Past ILRT tests performed across the industry have shown that the "as found leakages" measured during ILRTs can vary from performance to performance (as demonstrated, for example, by the Indian Point 3 historical test results). An ILRT is performed to test the containment boundary as well as leakage from Type B penetrations and Type C penetrations. The "as found" ILRT is the leakage from the Containment and the Type B and C penetrations tested as part of the ILRT as well as the leakage through the Type B and C penetrations not tested as part of the ILRT. The Type B and C tests results can vary from ILRT to ILRT depending on the systems that are vented, drained, and open to atmosphere for the ILRT. The leakage from the Type B and C components cannot be used for trending of results since the ILRT does not pinpoint the source of leakage. In addition, visual inspections of the internal and the external containment surfaces will continue to be performed as required by the ASME Section XI Code. These visual inspections are capable of identifying any potential degradation if any were to occur prior to the next ILRT.

All of the IP2 ILRT "as found" test results have met the 10 CFR 50 Appendix J criterion of 1.0La. This demonstrates that the overall containment leakage (Type A, Type B and Type C) has been maintained at leakage rates less than the assumed leakage rate in the plant accident analysis. The "as left" criterion for the containment leakage (Type A, Type B and Type C) is 0.75La, a lower value that assures that that there is margin for potential degradation that could increase the containment leakage rate before the next ILRT is performed. Such degradation historically has occurred primarily in Type B and C penetrations, which is why these penetrations are tested at a greater frequency than the ILRT.

Even if the past ILRT results are extrapolated through 2021, this would still not exceed the "as found" acceptance criteria of 1.0La. Furthermore, the IP2 Containment Leakage Rate Testing Program would require the "as left" criteria to be met prior to plant restart. Note that the approved program also provides for the case where an unacceptable (i.e., "as found" leakage >1.0La) ILRT were to be performed. NEI 94-01, Revision 2-A states: "If the

Type A performance leakage rate is not acceptable, the performance criterion is not met, and a determination should be performed to identify the cause of unacceptable performance and determine appropriate corrective actions. Once completed, acceptable performance should be reestablished by demonstrating an acceptable performance leakage rate during a subsequent Type A test before resuming operation and by performing another successful Type A test within 48 months following the unsuccessful Type A test."

As noted above, Entergy does not believe that the IP2 containment is degrading or that the IP2 Type A ILRT test results since August 1979 constitute an adverse trend requiring corrective action. Therefore, Entergy is not planning to implement any further corrective actions because the Type A, B and C leakage rates continue to meet the 10CFR50, Appendix J limits. If the limits are not met, the program requires corrective actions and more frequent Type A, Type B or Type C testing.

(2) Entergy should include in its response a discussion of any IP2 containment modifications (major or minor) that may have affected containment integrity since August, 1979.

Response

There have been no modifications to the IP2 containment since 1979 that are considered major (I.e., of the type that would require separate testing per Appendix J, Section IV). Some minor modifications have been made to the containment structure since 1979, such as isolating portions of the weld channel system, replacement of liner insulation panels to support liner inspections, and repairing delamination on the outside wall of the containment inside the electrical penetration tunnel. None of these minor modifications or maintenance activities would adversely affect the leak integrity of containment.

(3) For each ILRT, the licensee provide the individual cumulative MNPLR leakage rate for all Type B and Type C pathway test values that constitute a part of the total performance leakage rate (i.e. "As found Leakage") values identified in the table above.

Response

The following is the MNPLR leakage rate information available for each of the ILRT tests (additional details on As Found leakage are attached):

a) 2006 ILRT

WCPS* Zone 1	– 18,689.02 cc/min
WCPS Zone 2	– 19,255.36 cc/min
Containment Spray Header	– 69 cc/min
Containment Spray Header	– 139 cc/min
Purge Supply	– 2,574.23 cc/min
Purge Exhaust	– 5,502.82 cc/min
Pressure Relief	– 364.5 cc/min

Total MNPLR added = 46,593.93 cc/min

*WCPS – Weld Channel Pressurization System

b) 1991 ILRT

Total MNPLR added = 0 cc/min

c) 1987 ILRT

Penetration U-U and V-V – 42.28 cc/min
Other penetrations Isolated during ILRT – 851.81 cc/min

Total MNPLR added = 894.09 cc/min

d) 1984 ILRT

80' Airlock – 16,194.66 cc/min
22 Fan Cooler Unit – 60.76 cc/min
Air Ejector Discharge – 25.86 cc/min
Penetration U-U – 59.32 cc/min
Penetration V-V – 49.88 cc/min

Total MNPLR added = 16,390.48 cc/min

(4) Additional information about how IP2 plant programs satisfy the guidance of Regulatory Position 3 "Element 3: Define Implementation and Monitoring Program" of RG 1.174, Revision 2 (Reference 4)

Response: Position 3, Element 3 of RG 1.174 states, in part that "The licensee should propose monitoring program(s) that include a means to adequately track the performance of equipment that, when degraded, can affect the conclusions of the licensee's engineering evaluation and integrated decision making that support the change to the LB. The program should be capable of trending equipment performance after a change has been implemented to demonstrate that performance is consistent with the assumptions in the traditional engineering and probabilistic analyses conducted to justify the change".

The overall containment leakage includes leakage through containment penetrations and through containment isolation valves (CIVs) (i.e. Type B and C testing). The Type B and C leak rate testing is a quality program implemented per the requirements of IP2 Technical Specification section 5.5.14. This program ensures that Type B and C leak rates are measured on a periodic basis and the results are trended to ensure that degradation is identified and corrected prior to exceeding the corresponding regulatory limits. This program ensures that the requirements of position 3, element 3 of RG 1.174 are satisfied for the containment leak rate test.

REFERENCES:

1. Letter NL-14-128, dated December 9, 2014, from Lawrence Coyle, Entergy Nuclear Operations to U.S. Nuclear Regulatory Commission regarding the Proposed License

Amendment Regarding Extending the Containment Type A Leak Rate Testing Frequency to 15 Years, (ADAMS Accession No. ML14353A015)

2. NEI 94-01, Revision 2-A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," October 2008 (ADAMS Accession No. ML100620847)

3. ANSI/ANS-56.8-2002, Reaffirmed August 9, 2011, "Containment System Leakage Testing Requirements"

4. Regulatory Guide (RG) 1.174, Revision 2, dated May, 2011, "An Approach For Using Probabilistic Risk Assessment on Plant-Specific Changes To The Licensing Basis" (ADAMS Accession No. ML 100910006).

ENCLOSURE TO NL-15-068

DOCUMENTS PROVIDED IN SUPPORT OF THE RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING THE EXTENSION OF THE CONTAINMENT TYPE A LEAK RATE TESTING FREQUENCY TO 15 YEARS

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
DOCKET NO. 50-247

MATERIALS FOR REQUEST FOR INFORMATION SCVB RAI-3

1. 2PT-10Y001 Integrated Leak Rate Test

Entergy

Nuclear Northeast

One Site, One Team, One Fleet

Indian Point Energy Center

Procedure Use Is:	Control Copy: ________
☑ Continuous	Effective Date: 8/28/2006
☐ Reference	
☐ Information	Page 1 of 208

2-PT-10Y001, Revision: 02
INTEGRATED LEAK RATE TEST

Indian Point Operations

Approved By:

P E Gaudin , 8/22/06

Procedure Sponsor, RPO / Designee Date

Team 2A

Procedure Owner

PARTIAL REVISION

REVISION SUMMARY
(Page 1 of 1)

1.0 REASON FOR REVISION

1.1 Incorporate comments from Lessons Learned, CRs, Feedbacks and TPC.

2.0 SUMMARY OF CHANGES

2.1 Added step 3.38 and step to Attachment 2 per Feedback IP2-7306.

2.2 Added step 3.58 per Feedback IP2-7372.

2.3 Deleted previous Revision 1 step 3.65.5 to eliminate confusion as pressurization step immediately follows. Guidance for installing test gauges in Attachment 17. No Rev bar.

2.4 Added step 4.7.4 and substeps per feedbacks IP2-7304, IP2-7390.

2.5 Attachment 3B, Page 5 of 13, MOV-958 Location:
Revised from "80' PAB SENTRY PANEL" to "98' PAB MCC ROOM".
Incorporates Advance TPC / DRN 06-01920.

2.6 Attachment 3E, Page 1 of 4, 21, 22 & 23 B/U Heater Group Test L/U's:
Revised from "Pullout" to "Off". Incorporates Advance TPC / DRN 06-01920.

2.7 Attachment 13, Page 10 of 12, MOV-958 Location:
Revised from "80' PAB SENTRY PANEL" to "98' PAB MCC ROOM".
Incorporates Advance TPC / DRN 06-01920.

2.8 Attachment 17 Step 2.2: Added guidance to install test gauges at WCP-118 and WCP-119 for the 1170's AND open valves to place gauges in service. (CR-IP2-2006-02049 CA# 00006)

2.9 Attachment 17: Revised to enhance documentation of gauge data, installation and removal of all test gauges used for contingency purposes.

TABLE OF CONTENTS

1.0 PURPOSE

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 accordance with Technical Specification 5.5.14, Containment Leakage Rate Testing Program.

1.2 The requirements of 10CFR50.59 apply to this procedure.

2.0 PRECAUTIONS AND LIMITATIONS

2.1 Precautions and Limitations

2.1.1 Section 4.0 SHALL be performed WHEN the Reactor is in MODE 5.

2.1.2 READ the entire procedure prior to performing this test. A special evolution briefing SHALL be conducted as a Prerequisite PRIOR to actual test commencement. Brief in accordance with OAP-030 Infrequently Performed Tests and Evolutions SHALL be performed.

2.1.3 For performance of this critical infrequently performed test, the Manager, Site Operations, or his 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.

2.1.4 Communications between the Test Command Center and the Control Room SHALL be available at all times during the test. (The test, for this purpose, SHALL be considered to start when the personnel air lock is secured.)

2.1.5 Work activities near the Containment Building area while this test is being conducted will be stopped for the duration of the test. Access to roped off areas during the test will be approved by the Shift Manager.

2.1.6 Valve positions are to be controlled by this procedure and applicable operating procedures.

2.1.7 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.

2.1.8 The ILRT Test Supervisor SHALL verify PRIOR to the test that there is NO significant fire hazard in containment. To compensate for the smoke detectors whose alarms may be inadvertently actuated during this test, additional heat detectors will be installed at locations determined by the Fire Protection Engineer.

2.1.9 Containment Building pressure is to be raised OR lowered only at the direction of the ILRT Test Supervisor.

2.1.10 Test pressure during the Stabilization and ILRT Phases must equal or exceed 0.96Pa (45.12 psig), but must NOT exceed Pd (52.0 psig). Pressure may drop below this limit during the Verification Test Phase.

2.1.11 Containment Building will be pressurized, and stabilized at a pressure below 47.0 psig (+0, -1.0). Pressurization may proceed within the reasonable limits of the equipment, but pressurization and depressurization should be controlled to ≤ 10 psi per hour for pressurization and ≤ 15 psi per hour for depressurization.

2.1.12 NO leakage path SHALL be isolated without the approval of the ILRT Test Supervisor. Refer to Attachment 11, Contingencies for guidance handling leaks. 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.

2.1.13 Approved hearing protection is required in certain areas (adjacent to the air compressors, air charging piping, pressurization lines, and depressurization lines) during Pressurization AND Depressurization operations.

2.1.14 During pressurization for the ILRT the outer 80' and 95' airlock doors 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 2-PT-2Y016A, 80' Containment Air Lock Test and 2-PT-2Y016B, 95' Containment Airlock Test to within 0.5 psig below the planned final test pressure, accounting for gauge accuracy.
IF pressurization of the airlock is chosen, THEN snoop the outer doors and outboard boundary components. IF tight, THEN isolate and remove air source once pressure has been reached. IF excessive leakage is observed, THEN proceed per the guidance in step 2.1.21.

2.1.15 **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. (Step 2.1.16).

2.1.16 **SAFE CONDITIONS & TEST ABORT CRITERIA:**
Operations, ILRT Test Supervisor, OR ILRT Test Coordinator 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.

2.1.17 Deviations from this test direction that can have an influence on the test results, SHALL be handled in accordance with the Corrective Action Program.

2.1.18 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.

2.1.19 At the direction of the Test Supervisor, valve alignment may be performed out of order. Any deviation SHALL be documented on Attachment 8, Valve Lineup Alteration Log.

2.1.20 Preparation for ILRT begins PRIOR to the plant entering Mode 5. Containment Integrity SHALL be maintained in Modes 1, 2, 3 and 4 in accordance with the applicable portions of Technical Specification 3.6.

2.1.21 **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, Contingencies.

2.1.22 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.

2.1.23 Temperature limits for Vapor Containment atmosphere SHALL NOT be exceeded. Limits are ≥ 50°F and ≤ 130°F.

2.1.24 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.

2.1.25 Containment entry is permissible per OAP-007, Containment Entry, Egress, and Inspection.

2.1.25.1 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 General Manager Plant Operation. IF entries at pressure are required, THEN Safety SHALL be called to ensure compliance with requirements of OSHA regulations (29CFR1926).

2.1.26 IF the RCS is NOT full with "Loops Filled" as defined by Tech Specs, THEN a check for Reactor Vessel Head voiding must be performed on a periodic basis. **{Reference 9.2.7}**

2.2 General Information

2.2.1 Personnel performing this test SHALL read it in its entirety prior to the start of testing.

2.2.2 Personnel performing this test SHALL complete Sections 3.0, 4.0, 5.0, 6.0, 7.0 and 8.0, as applicable.

2.2.3 Any discrepancies found SHALL be identified in Section 5.0 Comments.

2.2.4 An upper case "V" used as a column header in lineup tables or beneath an initial line for a step denotes the requirement for verification by a second individual. This verification may be performed concurrently OR independently at the discretion of the SM/Designee.

2.2.5 Test instruments may be installed OR removed out of the sequence specified in the test and in parallel with other test preparation or completion steps.

Initials

3.0 PREREQUISITES

3.1 Equipment required for test is addressed in Attachment 5, ILRT Measurement System Installation and Checkout.
For installed instrumentation used in determination of Acceptance Criteria, VERIFY NO overdue calibration PMs OR surveillances exist AND document this in Section 5.0, Comments. ________

3.2 OBTAIN a calibrated pressure device to measure outside ambient pressure which reads out in PSIA. ________

3.3 Reason for Test – CHECK applicable listing:

☐ Normal Surveillance WR #________________

☐ Post Maintenance Test WR #________________

WR #________________

WR #________________

☐ Increased Test Frequency WR #________________

☐ Other ________________________________ ________

NOTE

The following tasks should be performed in support of the ILRT PRIOR to entering MODE 5 from power operation (sequence non-critical). Maintain Containment Integrity per step 2.1.20

PRELIMINARY STEPS

3.4 Manager, Site Operations OR his designee SHALL complete briefing per step 2.1.2 ________

3.5 SM authorization to begin test preparation activities.

________________________ / ________________
Shift Manager / Date ________

Initials

3.6 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. ______

3.7 A "Test Command Center" has been designated for control of testing activities during implementation of Section 4.0 activities. Phone numbers for the Test Command Center have been communicated to CCR, Plant Management and Outage Management. ______

3.8 As part of ILRT, Test Supervisor(s) SHALL maintain a log 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. ______

3.9 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. ______

3.10 Termination of ILRT sensor instrument strings outside 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. ______

3.11 With permission of Manager, Site Operations OR his designee, Sensors may be installed inside containment per direction of the ILRT Test Supervisor/ILRT Consultant. (N/A step IF NOT applicable) ______

3.12 Setup of ILRT Measurement System outside containment is complete with exception of leak checks/valve alignments of pressure sensing line and superimposed leak lines (flow sensing line). ______

Initials

> **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 SM.

INSTRUMENTATION & CONTROLS PREREQUISITES

3.13 To prevent actuation of a Containment Spray signal, place associated Bistable trip switches in "TRIP" position. This will prevent associated relays from energizing, while allowing operators to maintain indication of VC pressure on supervisory panel. Reference Attachment 2, Containment Preparation Checklist. ______

3.14 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. ______

3.15 Prepare VC instrumentation and equipment for ILRT by completing items listed on Attachment 2, Containment Preparation Checklist. ______

3.16 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

MECHANICAL PREREQUISITES

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

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

3.17.2 Temporary pressurization header has been installed and rented pressurization equipment attached per Work Order instructions and Attachment 4, Containment Building Pressurization / Depressurization System Installation and Checkout. ______

3.18 Plant mechanical equipment protection activities inside containment per Attachment 2, Containment Preparation Checklist are complete. ______

ELECTRICAL PREREQUISITES

3.19 Plant electrical equipment protection activities inside the containment per Attachment 2, Containment Preparation Checklist are complete. ______

3.20 Temporary power and lighting requirements at temporary portions of Pressurization System per Attachment 4, Containment Building Pressurization / Depressurization System Installation and Checkout are met. ______

Initials

PROGRAMS & COMPONENTS PREPARATIONS

3.21 VERIFY all permits required for Data Collection and Pressurization Laydown area have been obtained and posted.

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

3.23 Tables, chairs, work benches, table lamps, portable ventilation equipment, uninterruptible power supplies have been provided as determined by Test Coordinator.

3.24 Provide a listing of materials/equipment that should NOT be brought into OR left in VC to Containment Coordinator AND Outage Manager.

3.25 VERIFY installation and checkout portions of Attachment 4, Containment Building Pressurization/Depressurization System Installation and Checkout are complete and satisfactory, including check of air quality.

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

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

Initials

NOTE

Completed portions of 2-PI-R002, Internal Containment Structural Visual Inspection and 2-PI-2Y001, External Containment Structural Visual Inspection may be used to meet this requirement OR portions of this requirement. IF the above tests have NOT been performed for a portion of containment structure, THEN a visual inspection as described in paragraph 3.2.1 of ANSI/ANS 56.8-1994 SHALL be performed AND results documented in Attachment 10, Containment Building Visual Inspection.

3.28 A general inspection of accessible interior AND exterior surfaces of containment structures and components has been performed. Any irregularities such as cracking, peeling, de-lamination, 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. ____

3.29 Establish controls (signs) limiting access to periphery of containment during test at RCA Access Points. Access should be limited to personnel authorized by the Test Coordinator. These areas do NOT include the Fuel Storage Building and the Primary Auxiliary Building (except electrical penetration and piping penetration rooms). ____

3.30 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. ____

NOTE

The activity limit provided will be used at Step 4.6.1 to determine the use of the contingency depressurization method in Section 3.0.Attachment 11, Contingencies.

CHEMISTRY PREREQUISITES

3.31 PROVIDE an Iodine activity limit at which the High Containment Activity Vent Path would be used per Attachment 11 Section 3.0 RECORD value below.

Containment Vent Path Activity Limit:________________ ____

Initials

ILRT CONSULTANTS PREREQUISITES

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

3.32.1 ILRT Measurement System installed meets performance and quality specifications of Attachment 5, Section 5.0. ____

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

3.32.3 ILRT Measurement System cabling has been terminated per Section 5.0 of Attachment 5, ILRT Measurement System Installation and Checkout. Documentation of cable lead landings may be on form in Section 5.0 <u>OR</u> using standard plant form controlled through the Work Control process. <u>IF</u> a Work Order related form is used, <u>THEN</u> attach a copy to Attachment 16, Computer Printouts and Attachments of this procedure. ____

3.32.4 ILRT Measurement System dry-bulb and RH sensors have been placed in containment per Section 5.0 of Attachment 5, ILRT Measurement System Installation and Checkout. ____

3.32.5 ILRT Measurement System outside containment has been installed and functionally checked per Attachments 5, ILRT Measurement System Installation and Checkout <u>AND</u>
Attachment 6, Containment Building Leak Rate Test System Leak Rate Testing. ____

3.33 ILRT software program has been installed and "As-installed" Certification Package is complete. Attach certification package to Attachment 16, Computer Printouts and Attachments. ____

Initials

3.34 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 the Outage Manager AND the Containment Coordinator. ______

3.35 Provide a set of marked-up P&IDs to Work Control organization illustrating test valve lineups/boundaries. Review drawings with affected coordinators. ______

3.36 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 focus on ensuring Work Control provisions and communication channels are adequate. ______

3.37 VERIFY that Compressors and associated air handling equipment are setup per Attachment 4, Containment Building Pressurization/Depressurization System Installation and Checkout. ______

Initials

OPERATIONS PREREQUISITES

3.38 Reactor Vessel Cooling Support Blocks temperature Indicators TI-1259, TI-1260, TI-1261 and TI-1262 were damaged during the last ILRT in 2006. These gauges SHALL be removed PRIOR to the Pressurization Phase. Attachment 2, Containment Preparation Checklist. ____

3.39 INSTALL test gauges to monitor potential leak paths as directed in Attachment 17, Gauge Installation / Removal Sheet. ____

3.40 Setup a Trend Report on plant computer to monitor levels in CCR Log, per Attachment 14, Control Room Log every 15 minutes during test. SET Plant Computer to print reports on the hour. ____

3.41 Depressurize IVSWS Tank AND IVSWS gas header per 2-OSP-10.4.1, Support Procedure - Isolation Valve Seal Water System Operation. ____

3.42 Depressurize WCCPPS zones using single zone section of 2-SOP-10.5.1, Weld Channel and Containment Penetration Pressurization System Operation as directed by the Test Supervisor. Do NOT depressurize Zone 2 UNTIL directed. ____

3.43 Secure Radiation Monitors R-41/42 per 2-SOP-12.3.2, Digital Radiation Monitoring System Operation (Local or SRD). ____

3.44 VERIFY Pressurizer level between 75% and 80% PRIOR to performing ILRT to compensate for level changes during pressurization. Pressurizer level SHALL remain within indicating range during ILRT. ____

3.45 VERIFY PRT is drained below the sparging line (< 10%). Use 2-SOP-1.6, Pressurizer Relief Tank Operations as necessary. ____

Initials

3.46 Plant stability is critical during the ILRT. Avoid any activities that changes VC volume during Stabilization, Hold Test and Verification Test Phases. ______

3.47 RCS temperature is being controlled via RHR to within ± 1°F of any temperature selected by CRS WHEN pressurization starts. ______

NOTES

As a minimum, the following procedures should be used to secure systems PRIOR to isolating them in the following Attachments:

- 2-SOP-5.4.1, VC Pressure Reliefs.
- 2-SOP-10.5.1, Weld Channel And Containment Penetration Pressurization System Operation.
- 2-OSP-10.4.1, Support Procedure - Isolation Valve Seal Water System Operation.
- 2-SOP-10.3, Containment Cooling System Operation.
- 2-SOP-3.1, Charging, Seal Water and Letdown Control.
- 2-SOP-12.3.2, Digital Radiation Monitoring System Operation (Local or SRD).

The ILRT Test Supervisor may specify the use of NA in steps as well as partial sections. Attachment 3E, Breaker List SHALL be reviewed for applicability PRIOR to isolating equipment to prevent equipment damage.

3.48 PERFORM the following system alignments as soon as practical PRIOR to their related phases:

3.48.1 Attachment 3A, ILRT Valve Lineups Prior to Pressurization. ______

3.48.2 Attachment 3B, ILRT Valve Lineups Prior to Stabilization [NOT required prior to starting compressors]. ______

3.48.3 Attachment 3C, ILRT Special Valve Lineups. ______

3.48.4 Attachment 3D, Supplementary ILRT Valve Lineups. ______

3.48.5 Attachment 3E, Breaker List. ______

3.48.6 Attachment 6, Containment Building Leak Rate Test System Leak Rate Testing. ______

Initials

3.49 PLACE Pesonnel & Equipment Hatch Solenoids in INCIDENT MODE on panel SM. ______

3.50 RECORD RHR Cooling Loop in operation: _________ ______

FINAL PREPARATIONS

3.51 INSPECT 80' AND 95' air lock doors. Door seals AND mating surfaces SHALL be clean and free of discontinuities. CLOSE inner doors of 80' AND 95' air locks. Outer doors SHALL remain OPEN to prevent excessive equalization time IF there is a small leak into air lock. ______

3.52 Place Manual SI Defeat switches in "DEFEAT" position to prevent actuation of Phase "A" signal during containment pressurization. ______

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

3.54 VERIFY that a review of on-going work and clearances on or around VC 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. ______

3.55 REVIEW Attachment 8, Valve Lineup Alteration Log. VERIFY any lineup alterations have been satisfactorily resolved. ______

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

3.57 CONDUCT a phase-specific briefing for Control Room personnel PRIOR to commencement of Pressurization Phase. ______

Initials

3.58 One hour PRIOR to ILRT Pressurization AND every ten minutes thereafter, the following announcement SHALL be made twice over the plant paging system:

> **"ATTENTION ALL PERSONNEL IN THE UNIT 2 VAPOR CONTAINMENT. ATTENTION ALL PERSONNEL IN THE UNIT 2 VAPOR CONTAINMENT. THE ILRT PRESSURIZATION PHASE WILL COMMENCE IN ________ MINUTES. ALL NON-ILRT PERSONNEL EXIT THE VAPOR CONTAINMENT AT THIS TIME."**.

____

3.59 A final closeout inspection has been made by ILRT Test Supervisor OR Designee to ENSURE:

3.59.1 All containment temporary equipment that contains supplies of compressed gases has been removed OR vented. ________

3.59.2 NO significant fire hazards have been identified in containment. ________

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

3.60 All Containment sumps have been pumped down to their minimum on-scale level. ________

3.61 Align Leak Rate Test System air compressor discharge header for Pressurization per Section 4.0 of Attachment 4, Containment Building Pressurization/Depressurization System Installation and Checkout. ________

3.62 Pressurization may begin PRIOR to completion of valve alignments providing Test Supervisor has verified the following:

3.62.1 Component manipulations and/or visual verifications associated with components inside containment on Attachments 3A, 3D and 3E are complete AND the following on Attachment 3C as follows: ________

- Attachment 3C, System: N2 to Nuclear Equipment is complete. ________

____

Initials

- Attachment 3C, System: Instrument Air is complete.

- Attachment 3C, System: Reactor Coolant is complete.

3.62.2 Containment portions of Attachment 2, Containment Preparation Checklist are complete.

3.62.3 Installation of ILRT Measurement System inside VC is complete per Attachment 5, ILRT Measurement System Installation and Checkout.

3.62.4 Containment Inspection is complete in its entirety per Attachment 10, Containment Building Visual Inspection OR the intent of containment inspection requirements as stated in Containment Leakage Rate Testing Program have been met.

3.62.5 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.

3.62.6 Review of all outstanding Work Orders, Clearances and Temporary Alterations have been completed at least to the extent that Test Supervisor, Work Management or Operations interface are satisfied that NO obstacles to closing out of containment/performing the test exist.

3.62.7 Final walkdown/closeout inspection of containment has been satisfactorily completed. VERIFY ALL personnel have been evacuated from the Containment Building. Confer with Health Physics department that ALL personnel in the Containment Building have been evacuated.

3.63 ESTABLISH communications between Test Command Center, CCR, and air compressor operator(s).

Initials

3.64 VERIFY containment temporary power and lighting has been isolated. (e.g. Duralines, etc.) ______

3.65 VERIFY ALL personnel are clear of the VC. EVACUATE ALL personnel from VC by making the following announcement twice: ______

> **"ATTENTION ALL PERSONNEL IN THE UNIT 2 VAPOR CONTAINMENT. ATTENTION ALL PERSONNEL IN THE UNIT 2 VAPOR CONTAINMENT. ILRT PREPARATIONS ARE COMPLETE. ALL PERSONNEL EXIT THE VAPOR CONTAINMENT AT THIS TIME."**

3.66 PRIOR to VC pressurization, Operations sounds VC Evacuation alarm:

3.66.1 VC Evacuation Alarm sounded:________/________/________

INITIALS / DATE / TIME

Initials

3.67 CLOSE OUT the Containment Building as follows:

3.67.1 Equipment Hatch for 95' Air Lock.

3.67.1.1 VERIFY VC Equipment Hatch is installed. ______

3.67.1.2 VERIFY VC Equipment Hatch's last test following installation was acceptable. ______

3.67.2 95' Air Lock.

3.67.2.1 VERIFY outer door OPEN. ______

3.67.2.2 CLOSE AND LOCK inner door of Airlock. Use locking device that would allow VC egress IF available. ______

3.67.2.3 Pressurized to 47 psig or greater as indicated on PI-7478, following closure. ______

3.67.3 80' Airlock.

3.67.3.1 VERIFY outer door OPEN. ______

3.67.3.2 CLOSE AND LOCK inner door of Airlock. Use locking device that would allow VC egress IF available. ______

3.67.3.3 Pressurized to 47 psig or greater as indicated on PI-7482, following closure. ______

3.67.4 ISOLATE AND depressurize Zone 2 Weld Channel using Attachment 3C, ILRT Special Valve Lineups. ______

Initials

4.0 PROCEDURE

4.1 Initial Conditions

4.1.1 Plant is shutdown, in MODE 5.

4.1.2 OBTAIN permission from SM OR Designated Alternate to perform this test.

_____________________ / __________
SM OR Designated Alternate Signature / Date

4.1.3 OAP-030 Infrequently Performed Tests and Evolutions briefing has been completed:

_____________________ / __________
SM OR Designated Alternate Signature / Date

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

_____________________ / __________
Test Coordinator / Date

4.2 Pressurization of Vapor Containment

4.2.1 Data Collection:

4.2.1.1 RECORD outside ambient pressure at the start of pressurization:

_________ PSIA

Gauge Serial No: _________ Cal due date: _________

4.2.1.2 RECORD initial pressure on test gauges listed In Attachment 17, Guage Installation / Removal Sheet on Attachment 18, Test Gauge Pressure Readings. RECORD pressures every thirty minutes until containment reaches 12 psig. WHEN > 12 psig, THEN RECORD at one hour intervals thereafter until end of pressurization AND stabilization OR as directed by the Test Supervisor. _________

Initials

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

4.2.1.4 VERIFY Trend Report on Plant Computer setup to monitor levels in Attachment 14, Control Room Log is running. ______

4.2.1.5 Record Initial Water Levels on Attachment 14, Control Room Log page 1 of 1. ______

4.2.2 ANNOUNCE the following 2 times over the plant page:

"ATTENTION ALL UNIT 2 PERSONNEL. ATTENTION ALL UNIT 2 PERSONNEL. VAPOR CONTAINMENT PRESSURIZATION IS ABOUT TO COMMENCE. ALL NON ESSENTIAL PERSONNEL STAND CLEAR OF ROPED OFF AREAS ASSOCIATED WITH THE INTEGRATED LEAK RATE TEST." ______

4.2.3 INITIATE Pressurization by OPENING pressurization isolation valves upstream of penetration "U U" and "V V".
CONTINUE to pressurize until containment air pressure reaches the criteria specified in Step 2.1.11 ______

> **NOTE**
>
> Test pressure SHALL NOT fall below 45.12 psig OR exceed 52 psig at anytime during ILRT. Test pressure may fall below 45.12 psig during Verification Test.

4.2.3.1 MAINTAIN moisture AND oil content as low as possible when pressurizing Vapor Containment Building. ______

4.2.3.2 Containment inlet air temperature should be monitored during Pressurization Phase of test to ensure containment weighted average temperature is above 50°F and below 130°F. ______

Initials

NOTE

Report any apparent leakage to the ILRT Test Supervisor. Do NOT isolate OR adjust any leakage found during leak checks. Excessive leakage is to be dispositioned per step 2.1.21.

4.2.3.3 INSPECT containment boundary for leakage at containment pressures of approximately 20 psig AND 40 psig using Attachment 13, Containment Building Penetration Walkdown as a guideline. ______

4.2.4 NOTIFY chemistry to obtain an air sample (Iodine and Noble Gas) from containment PRIOR to the end of pressurization. This sample will be used to prepare a release permit for depressurizing containment after ILRT. ______

4.2.5 WHEN equal to OR greater than 40 psig, THEN VERIFY adequate flow can be obtained through each verification test flowmeter AND CHECK connections for leakage. ______

4.2.6 WHEN desired pressure is achieved, THEN:

4.2.6.1 ISOLATE Containment by CLOSING the five (5) three-inch isolation valves on EACH of the penetration manifolds at U U and V V. ______

4.2.6.2 SHUTDOWN remaining compressors. ______

4.2.6.3 ISOLATE compressors at compressor outlets and yard manifold. ______

4.2.6.4 OPEN vent(s) on compressor manifold to vent pressurization lines. ______

4.2.6.5 WHEN lines are depressurized, THEN check vent for evidence of leakage past the penetration manifold isolations. ______

Initials

NOTE

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

4.2.7 IF pressurization was begun prior to completion of all valve alignments, THEN VERIFY the following: ______

4.2.7.1 Component manipulations/visual verifications associated with components outside containment in Attachment 3B, ILRT Valve Lineups Prior to Stabilization are complete. ______

4.2.7.2 ILRT Test Supervisor AND ILRT Consultant has reviewed Attachment 8, Valve Lineup Alteration Log to ensure that all components listed are in their "TEST L/U". Any unresolved component positions must be listed as Test Exceptions in Attachment 7, Test Exceptions Log AND the impact on penetration status listed in Attachment 9, Containment Penetration Summary SHALL be assessed. ______

4.2.8 RECORD the lowest reading ILRT pressure gauge on line 1. RECORDthe outside atmospheric pressure on line 2. Subtract line 2 from line 1. Enter the result on line 3. VERIFY Line 3 value is greater than 45.12 psig.

1. Lowest Reading ILRT Pressure Gauge ____________ psia

2. Outside Atmospheric Pressure ____________ psia

____________ - ____________ = ____________ psig

Line 1 Line 2 Line 3

3. Line 3 value ________ > 45.12 psig ______

Initials

4.3 Stabilization Phase

4.3.1 Data Collection:

4.3.1.1 RECORD ambient pressure at the start of stabilization:

_________ Psia

Gauge Serial No.: _________

Cal due date: _________ _________

4.3.1.2 RECORD the Start of the Stabilization Phase:

Time (24 hr clock) ____:___

Date _____/_____/_____ _________

4.3.1.3 RECORD pressure readings from test gauges installed in Attachment 17, Gauge Installation / Removal Sheet on Attachment 18, Test Gauge Pressure Readings every hour until the end of stabilization OR as directed by Test Supervisor. _________

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

4.3.1.5 VERIFY Trend Report on Plant Computer setup to monitor levels in Attachment 14, Control Room Log is still running. _________

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

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 PRIOR to start of Type A Test,
VERIFY the following stabilization criteria for containment atmosphere are met. Stabilization occurs WHEN: ______

4.3.3.1 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

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).

4.3.3.2 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 L_{2h} and L_{1h} SHALL be less than or equal to $0.25L_a$

L_{1h} = ______; L_{2h} =________

_____ (L_{2h}) - _____ (L_{1h}) = _____ ≤ (0.025% wt/day) ________

Criterion (2)

L_{1h} SHALL be greater than or equal to zero and SHALL be less than L_a, ________

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 L_{1h} 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

4.3.4 ILRT Test Coordinator SHALL judge IF containment is stabilized AND declare the 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 steps 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

Number of Hours for Stabilization: ____________________
Hours

Start of ILRT: ____________________
Time / Date

4.4 Hold Test Phase

NOTE

Perform ILRT calculations in accordance with Section 4.4.3 for BN-TOP-1 test OR Section 4.4.4 for an ANSI/ANS 56.8-1994 test.

4.4.1 Data Collection:

4.4.1.1 RECORD ambient outside pressure at the start of the Hold Test:

_________ PSIA

Gauge Serial No: _________ Cal due date: _________

4.4.1.2 IF there has been NO indication of rising pressure on any of the test gauges, THEN discontinue collecting pressure data on the test gauges on Attachment 18, Test Gauge Pressure Readings OR as directed by the Test Supervisor. ______

Initials

4.4.1.3 CONTINUE recording containment atmospheric data at 15 minute intervals using ILRT Measurement System. ______

4.4.1.4 VERIFY Trend Report on Plant Computer is setup to monitor levels in Attachment 14, Control Room Log is running. ______

4.4.1.5 Record Initial Water Levels on Attachment 14, Control Room Log page 2 of 2. ______

4.4.1.6 Record end-of-test Water Levels on Attachment 14, Control Room Log page 2 of 2. ______

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. Document reasons for sensor deletion and volume fraction reassignment in Attachment 1, Test Supervisor's Log. ______

4.4.3 **BN-TOP-1 TEST**
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 an N/A in space provided below:

BN-TOP-1 Test ____________________ ______

4.4.3.1 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. ______

4.4.3.2 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.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. ______

Initials

4.4.3.3 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. ______

4.4.3.4 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. ______

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

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

4.4.3.7 The minimum test duration is six (6) hours. ______

4.4.3.8 The following minimum number of sensors were working properly at end of 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

NOTE

Known Type B and C penalties and leakage savings SHALL 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 4.4.3.9c) is below the Acceptance Criteria, the verification test may be started PRIOR to completing all of the calculations required by Attachment 15, ILRT Results Summary.

4.4.3.9 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 ________

____________________ / __________

Test Engineer Verification / Date

4.4.4 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_________________________ ________

4.4.4.1 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. ________

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

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

Initials

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

a) CONTINUE the test, until the criteria is met, ______

OR

b) Consider performing a BN-TOP-1 test. ______

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

d) IF test results appear unacceptable due to excessive leakage, THEN refer to Step 2.1.21. ______

4.4.4.5 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). ______

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

c) Limits on curvature and data scatter above 4.4.4.5a) and 4.4.4.5b) were met for at least the last hour or the last four consecutive data sets (whichever is longer). ______

d) ATTACH ILRT computer program printout stating Termination Criteria has been met AND Termination Criteria Report printout to Attachment 16, Computer Printouts and Attachments of this procedure. ______

4.4.4.6 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

NOTE

Known Type B and C penalties and leakage savings SHALL 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 4.4.4.7c) is below acceptance criteria, THEN verification test may be started PRIOR to completing all calculations required by Attachment 15, ILRT Results Summary.

4.4.4.7 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 ________

_____________________/___________

Test Engineer Verification/Date

CAUTION

Notify Health Physics Department and Operations at least two hours PRIOR to starting the Verification Test.

4.4.5 ENSURE release permit has been completed AND portable air monitoring equipment has been setup. ________

Initials

> **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 4.4.4.7 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: __________ ________

4.5.1.2 Record Verification Test Phase Initial Water Levels on Attachment 14, Control Room Log page 2 of 2. ________

4.5.1.3 VERIFY Trend Report on Plant Computer is setup to monitor levels in Attachment 14, Control Room Log is still running. ________

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. ________

4.5.1.5 CONTINUE data acquisition after completion of ILRT through completion of Verification Test. ________

4.5.2 ESTABLISH a flow (L_o) through Verification Test rotometer of approximately 7.0 scfm (acceptable band is 5.25 to 8.75 scfm). RECORD rotometer readings at approximately equal intervals NOT to exceed one (1) hour in Attachment 12, ILRT Verification Test and Flow Data. ________

4.5.2.1 IF a rotometer is used to measure imposed leak, THEN correct its reading to actual conditions in Step A of Attachment 12, ILRT Verification Test and Flow Data.

Corrected Flow value: __________ scfm ________

4.5.2.2 ENTER corrected flow value into ILRT computer program:

Value entered: __________ scfm ________

Initials

4.5.3 CONTINUE the Verification Test until the following criteria are met:

4.5.3.1 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. ______

b) Record time and date:

Time (24 hr clock): ____:____ Date: _________ ______

c) Verification Test SHALL continue for one half the duration of the ILRT per BN-TOP-1, Rev. 1. RECORD duration:

DETERMINE duration in hours of Verification Test. Subtract step 4.5.1.1 from 4.5.3.1b):

_________ - __________ = (A) _________ (hrs)
4.5.3.1b) 4.5.1.1

OBTAIN duration of ILRT from Attachment 15, ILRT Results Summary step 1.2

ILRT Duration: _______ (hrs)

Divide ILRT duration by 2.

____________ ÷ 2 = (B) ___________ (hrs)
ILRT duration

IF value of (A) [Verification Test Duration] is greater than or equal to (B) [1/2 ILRT duration], THEN Verification test time is sufficient.

(A) _______ hrs. ≥ (B) ________ hrs. ______

Initials

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

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

(____________) < ____ < (_______________)
Lower Limit L_c Upper Limit

____

4.5.3.2 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)

____

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

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

(____________) ≤ ____ ≤ (_______________)
Lower Limit L_c Upper Limit

____

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

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

4.5.4 IF calculation indicated that Integrated Leak Rate Test is substantiated by Verification Test, THEN record acceptance in Attachment 1, Test Supervisor's Log AND proceed to Step 4.6. ________

4.5.5 IF calculation indicates that Integrated Leak Rate Test is NOT substantiated by Verification Test, THEN PERFORM the following (N/A unused steps): ________

4.5.5.1 CONTINUE data acquisition until data stabilizes within acceptance criteria band (if appropriate). ________

4.5.5.2 RECHECK verification flow meters AND ILRT measurement system, raw data and leak rate calculations for errors. ________

Initials

4.5.5.3 IF errors are found and corrected, THEN continue Verification Test data acquisition until requirements of 4.5.3.1 OR 4.5.3.2 are met. ______

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

4.5.6 WHEN Verification Test acceptance criteria has been met, THEN PERFORM the following: ______

4.5.6.1 RECORD the time and date for the start of the Verification Test:

Time (24 hr clock): ____:____ Date: _________ ______

4.5.6.2 RECORD end of Verification Test Phase Water Levels on Attachment 14, Control Room Log page 2 of 2. ______

4.5.6.3 Trend Report on Plant Computer is setup to monitor levels in Attachment 14, Control Room Log can be discontinued. ______

4.5.6.4 SECURE imposed leak, L_o by isolating the flowmeter. ______

NOTE

- Restoration of plant and containment from ILRT may begin at SM's / Test Supervisor's discretion (Attachment 3B, ILRT Valve Lineups Prior to Stabilization 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 IF Iodine levels from samples taken during pressurization OR during depressurization exceed the limit provided in Step 3.31, THEN NOTIFY Outage Management, Health Physics and use the High Containment Activity Vent Path contingency in Section 3.0 of Attachment 11, Contingencies. ______

Initials

4.6.2 ANNOUNCE the following 2 times over the plant page.

"ATTENTION ALL UNIT 2 PERSONNEL. ATTENTION ALL UNIT 2 PERSONNEL. VAPOR CONTAINMENT DEPRESSURIZATION IS ABOUT TO COMMENCE. ALL NON ESSENTIAL PERSONNEL STAND CLEAR OF ROPED OFF AREAS ASSOCIATED WITH THE INTEGRATED LEAK RATE TEST." ______

4.6.3 WHEN permission is granted from the Test Coordinator, THEN SLOWLY OPEN depressurization path blowdown valves AND RELEASE air from containment, maintaining a maximum depressurization rate NOT to exceed 15 psi/hr as follows:

4.6.3.1 ENSURE flanges on top of both Yard manifolds are removed. ______

4.6.3.2 SLOWLY OPEN all Yard manifold pentration stops:

	(✔)		(✔)
• UU-6, UU Manifold Stop	____	• V V-6, V V Manifold Stop	____
• UU-7, UU Manifold Stop	____	• V V-7, V V Manifold Stop	____
• UU-8, UU Manifold Stop	____	• V V-8, V V Manifold Stop	____
• UU-9, UU Manifold Stop	____	• V V-9, V V Manifold Stop	____
• UU-10, UU Manifold Stop	____	• V V-10, V V Manifold Stop	____

______

Initials

4.6.3.3 SLOWLY THROTTLE all Penetration manifold stops one at time as necessary until fully OPEN OR 15 psi/hr depressurization rate has been achieved:

	(✔)		(✔)
• UU-1, UU Manifold Stop	____	• V V-1, V V Manifold Stop	____
• UU-2, UU Manifold Stop	____	• V V-2, V V Manifold Stop	____
• UU-3, UU Manifold Stop	____	• V V-3, V V Manifold Stop	____
• UU-4, UU Manifold Stop	____	• V V-4, V V Manifold Stop	____
• UU-5, UU Manifold Stop	____	• V V-5, V V Manifold Stop	____

______

4.6.3.4 Throttle OPEN MV-X, Manifold vents as necessary until all fully OPEN OR 15 psi/hr depressurization rate has been achieved ______

4.6.4 WHEN primary depressurization path throttle valve is full OPEN, AND depressurization rate has fallen below 15 psi/hr, THEN OPEN secondary depressurization path throttle valve(s). MAINTAIN a maximum depressurization rate NOT to exceed 15 psi/hr. ______

4.6.5 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. ______

4.6.6 IF the 80' OR 95' airlock doors were locked with a chain or physical block to the hand wheels, THEN ENSURE all locks or blocking devices are removed to allow passage from inside containment. **{Reference 9.2.8}** ______

Initials

4.7 Restoration

4.7.1 INFORM SM VC depressurization is complete. ______

4.7.2 REMOVE all instrumentation specified under Attachment 17, Gauge Installation / Removal Sheet. ______

4.7.3 REMOVE instrumentation installed from Attachment 5, ILRT Measurement System Installation and Checkout. ______

4.7.4 PRIOR to restoring power to Reactor Coolant Drain Tank Pumps in Attachment 3E, PERFORM the following:

4.7.4.1 REMOVE cap on LT-1003. ______

4.7.4.2 OPEN WDS-7038. ______

4.7.4.3 WHEN vented, THEN SHUT WDS-7038. ______

4.7.4.4 RE-INSTALL cap on LT-1003. ______

4.7.4.5 IF RCDT level column and LI-1003 on the Waste Disposal Panel are NOT approximately equal, THEN vent and fill RCDT level column. ______

4.7.4.6 VENT RCDT pump casings by cracking OPEN each RCDT pump volute drain UNTIL only water escapes. ______

4.7.4.7 VENT RCDT pump casings by cracking OPEN each RCDT upper casing vent plugs UNTIL only water escapes. ______

4.7.4.8 OPERATE only one pump in AUTO during initial WDS operation by placing either 21 RCDT Pump OR 22 RCDT Pump selector switch in VLV523 CLOSED RCDT AUTO LEVEL DEFEAT position. ______

4.7.4.9 IF RCDT pressure and Containment Vent Header pressure are NOT equalized, THEN REMOVE loop seal on RCDT pumps per 2-SOP-5.1.1, Liquid Waste Disposal System Operation. ______

Initials

NOTE

System restorations should be performed concurrently with the Attachments.
Refer to procedures identified in NOTE prior to step 3.48 as well as other applicable procedures.

4.7.5 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 SM requires use of Check-Off List (COL), THEN document COLs used in Section 5.0 Comments. ATTACH all COLs to this procedure. ______

4.7.5.1 COMPLETE Attachment 2, Containment Preparation CheckList returning all equipment which could be damaged by high pressure to its pre-test condition OR as required by CRS OR SM. ______

4.7.6 PLACE Pesonnel & Equipment Hatch Solenoids in NORMAL MODE on panel SM. ______

4.7.7 INFORM the SM that the ILRT is completed. ______

Initials

4.8 Final ILRT Results

NOTE

Only the "AS LEFT" leakage calculated in step 4.8.1.1 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 (CLRTP), step 5.4 of Reference 9.2.6 and the CR process.

4.8.1 WHEN all local leakage rate additions AND corrections to ILRT are known, THEN CALCULATE Final ILRT leakage rates using Attachment 15, ILRT Results Summary as guidance.

4.8.1.1 "AS LEFT" Leakage:
Sum of above reported L_{am} & UCL "AS LEFT" (on Attachment 15, ILRT Results Summary) ________

4.8.1.2 "AS FOUND" Leakage:
Sum of above reported L_{am} & UCL "AS FOUND" (on Attachment 15, ILRT Results Summary) ________

4.8.1.3 PERORMANCE LEAKAGE:
Sum of above report L_{am} & UCL "AS LEFT" and as-left minimum pathway leakage rate of any pathway isolated during ILRT due to excessive leakage. ________

5.0 COMMENTS

Comments continued:

Test Performers:

Print Name:	Initials:	Signature/Date:

6.0 ACCEPTANCE CRITERIA

6.1 Technical Specification & IST Requirements:

Required Containment Leak Rate SR 3.6.1.1 & TS 5.5.14.d						
Component	**Surveillance Requirement**	**Attachment 15 Step 8.6**	**Acceptance Criteria**	**Actual**	**Acceptable (YES / No)**	**Initials**
Containment Building	Containment Leak Rate Testing Program		$\leq 0.75\ L_a$			

7.0 TEST ACCEPTANCE

7.1 Technical Specifications Acceptance Criteria

7.1.1 Based on recorded data, are all Acceptance Criteria of 6.1 satisfied.

YES NO

7.1.2 IF the required Acceptance Criteria is NOT met,
THEN:

- NOTIFY CRS/SM.
- INITIATE a WRT AND a CR.
- TAKE action in accordance with LCO 3.6.1

7.2 IF NO is circled in Step 7.1.1,
THEN LIST Corrective Actions taken AND comments:

Comments: ______________________________

____

____

____

____

Reviewed By: ______________________________

SM OR Designated Alternate / Date

8.0 EVALUATION

8.1 PROGRAMS AND COMPONENTS REVIEW

Comments: ______________________________

Reviewed By: ______________________________

Programs and Components Review / Date

9.0 REFERENCES

9.1 Commitment Documents

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

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

9.1.3 NRC Commitment NL-02-075-C01, Ensure abandoned portions of WCCPPS are subjected to VC atmospheric pressure during ILRT.

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

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

9.2 Development Documents

9.2.1 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.

9.2.2 USNRC INE Notice 85-71.

9.2.3 Improved Technical Specifications, Section 3.6

9.2.4 "Testing Containment Systems used with Light-Water-Cooled Power Reactors" Frank Zapp, et al, ORNL - NSIC - 26 UC 80 Reactor Technology.

9.2.5 Containment Leakage Rate Testing Program, PFM109 Rev.7

9.2.6 Primary Containment Leakage Rate Testing (Appendix J), ENN-DC-334

9.2.7 LO-OEN-2005-00276-CA6 from Waterford condition report CR-WF3-2005-2461 concerning voiding in the Rx head during depressurization of the Vapor Containment.

9.2.8 CR IP3-2005-01165-CA10 regarding 95' Airlock door being operated at the end of the ILRT from inside the VC with the handwheels locked and chained outside.

9.2.9 3-PT-10Y001, Integrated Leak Rate Test.

9.2.10 CRs IP2-2006-03052, IP2-2006-02129, IP2-2006-02049, LO-OLI-2006-00092.

9.3 Interface Documents

9.3.1 OAP-007, Containment Entry and Egress.

9.3.2 OAP-030, Infrequently Performed Tests and Evolutions.

9.3.3 2-OSP-10.4.1, Support Procedure - Isolation Valve Seal Water System Operation.

9.3.4 2-PI-2Y001, External Containment Structural Visual Inspection.

9.3.5 2-PI-R002, Internal Containment Structural Visual Inspection.

9.3.6 2-PT-2Y016A, 80' Containment AirLock Test.

9.3.7 2-PT-2Y016B, 95' Containment AirLock Test.

9.3.8 2-SOP-1.1, Filling and Venting Reactor Coolant System.

9.3.9 2-SOP-1.6, Pressurizer Relief Tank Operations.

9.3.10 2-SOP-3.1, Charging, Seal Water and Letdown Control.

9.3.11 2-SOP-5.4.1, VC Pressure Reliefs.

9.3.12 2-SOP-10.3, Containment Cooling System Operation.

9.3.13 2-SOP-10.5.1, Weld Channel and Containment Penetration Pressurization System.

9.3.14 2-SOP-11.1, Ventilation System Operation.

9.3.15 2-SOP-12.3.2, Digital Radiation Monitoring System Operation (Local or SRD).

10.0 RECORDS AND DOCUMENTATION

10.1 Records

The following required records are generated by this procedure and SHALL be maintained in accordance with IPEC Records Retention Schedule:

10.1.1 WHEN completed,
THEN this Performance Procedure becomes a Quality Record.

10.2 Documentation

The following documentation resulting from this procedure are NOT required to be controlled and maintained in accordance with the IPEC Records Retention Schedule.

None.

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

DATE:_____/_____/_____

TIME:	REMARKS:

NOTE: (1): MAKE ADDITIONAL SHEETS AS REQUIRED

ATTACHMENT 2
CONTAINMENT PREPARATION CHECKLIST
(Page 1 of 4)

- **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.

N/A Requirements to "restore" components simply verified as having unobstructed vent holes.

OPERATIONS (REFUELING TEAM):

EQUIPMENT	PROTECTION	VERIFICATION SIGNATURE & DATE	
		COMPLETED	RESTORED
Complete Refueling Head Procedure sections for ILRT Preparation.	As required by procedure.		
Internals Lifting Rig Instrumentation; load cell readout unit.	Remove from containment (if required).		

OPERATIONS

EQUIPMENT	PROTECTION	VERIFICATION SIGNATURE & DATE	
		COMPLETED	RESTORED
Rx Vessel Cooling Support Blocks Temperature Indicators TI-1259, TI-1260, TI-1261 and TI-1262	Apply protection as required and remove guages from VC to prevent damage. Apply protection as required and restore gauges to VC when ILRT is completed.		

ATTACHMENT 2
CONTAINMENT PREPARATION CHECKLIST
(Page 2 of 4)

MECHANICAL MAINTENANCE:

EQUIPMENT	PROTECTION	VERIFICATION SIGNATURE & DATE	
		COMPLETED	RESTORED
Polar crane hyd. reservoir, gear boxes	Vent to containment (if required).		
CO2 Bottles from Flux Drive units	Remove from containment.		
Nitrogen, argon oxygen/acetylene, (etc.) bottles	Remove from containment.		
Gang boxes	Vent boxes, remove aerosol cans, tubes of lubricant.		
891A, B, C, D	Blocked OPEN.		
Fan Cooler Units	Block OPEN Fan Cooler Motor Duct Access Plate.		
Fan Cooler Units	Block all plenum doors OPEN.		
21 Recirculation Pump Motor	VENT 21 Recirc Pump Motor Equalizing Device (rubber flapper on bottom side of motor housing) by blocking OPEN (IF Required).		
22 Recirculation Pump Motor	VENT 22 Recirc Pump Motor Equalizing Device (rubber flapper on bottom side of motor housing) by blocking OPEN (IF Required).		

ATTACHMENT 2
CONTAINMENT PREPARATION CHECKLIST
(Page 3 of 4)

INSTRUMENTATION & CONTROLS:

EQUIPMENT	PROTECTION	VERIFICATION SIGNATURE & DATE	
		COMPLETED	RESTORED
Manipulator Crane position readout transducer units	Remove from containment (assist Refuel Team operators if required).		
RE-2 (Containment Radiation Monitor)	Remove G-M tubes.		
RE-7 (In-Core Instrumentation Area Radiation Monitors)	Remove G-M tubes.		
"Bistable trip" switches for SPRAY INIT. On containment pressure. Location: CCR, panel B-9 ch. 4, yellow, Loop 1	Place both "bistable trip" switches in the TRIP position		
"Bistable trip" switches for SPRAY INIT. On containment pressure. Location: CCR, panel A-9 ch. 2, white, Loop 3	Place both "bistable trip" switches in the TRIP position		
"Bistable trip" switches for SPRAY INIT. On containment pressure. Location: CCR, panel B-1 ch.3, blue, Loop 2	Place both "bistable trip" switches in the TRIP position		

ATTACHMENT 2
CONTAINMENT PREPARATION CHECKLIST
(Page 4 of 4)

OTHER WORK GROUPS:

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.		
Tool Room	Remove air conditioners, ANY aerosol cans, paint/solvent cans, lubricants tubes, bottles.		
Reactor Cavity Radiation Monitor	Remove G-M tubes (if required).		
Computer monitors, CCTV monitors, test equipment with tube-based displays	Remove from containment.		

ATTACHMENT 3
ILRT VALVE LINEUP INSTRUCTIONS
(Page 1 of 4)

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 Shift Manager, 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.

CAUTION

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

Issue the ILRT Valve Line up Checklists to Operations AND attach a copy of these instructions.

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

ATTACHMENT 3
ILRT VALVE LINEUP INSTRUCTIONS
(Page 2 of 4)

Informational Tagging is used sparingly to save time, and minimize demand on resources. ILRT 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 may not hung).

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

PERFORM Attachment 3C, ILRT Special Valve Lineups in the order written for systems to be vented/opened to simplify proper venting of the system.

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

MOST penetrations in Attachment 3A, ILRT Valve Lineups Prior to Pressurization AND Attachment 3B, ILRT Valve Lineups Prior to Stabilization will NOT be vented.
Their line-ups may be performed in any order, provided all piping is depressurized.

GENERAL INSTRUCTIONS:

IF a Containment Isolation Valve (CIV) in Penetrations that will be vented/tested by the ILRT (See Attachment 9, Containment Penetration Summary) has NOT been closed via normal means, THEN stroke valve PRIOR to closure per the ILRT Valve L/U Attachments to demonstrate they were closed by their normal mode of force. RECORD any Containment Isolation Valve (CIV) closure NOT by normal means on Attachment 7, Test Exceptions 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 Coordinator AND the Test Supervisor. Any variation from this lineup SHALL be documented in Attachment 7, Test Exceptions 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 L/U 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 Coordinator AND be dispositioned as stated in the previous paragraph above via Attachments 7 and 9.

ATTACHMENT 3
ILRT VALVE LINEUP INSTRUCTIONS
(Page 3 of 4)

ILRT "Test L/U 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 column to facilitate identification of verifications performed in this manner.

Components that have their "Test L/U Position" different than their normal position for the ILRT SHALL be verified in the field. 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.

ILRT TAG LOCATION (WHEN USED):

For all remotely operated valves, hang ILRT Tag on the control switch only.

For all manual valves, hang ILRT Tag on valve handwheel only IF tags are to be used.

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 ILRT Valve Lineup Attachment, all drain hoses are to be removed.

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

DEFINITIONS:

ILRT Tag CLOSED	Position the valve in the CLOSED position AND attach an ILRT Tag at the appropriate location.
ILRT Tag OPEN	Position the valve in the OPEN position AND attach an ILRT Tag at the appropriate location.
V	Independent OR Concurrent Verification.

ATTACHMENT 3
ILRT VALVE LINEUP INSTRUCTIONS
(Page 4 of 4)

PENETRATION RESTORATION CHECKLIST INSTRUCTIONS:

Components NOT returned to their AS FOUND condition SHALL be authorized by either the 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.

Re-issue the ILRT Valve Lineup Attachment Checklists to complete penetration restoration to Operations AND attach a copy of these instructions.

Except for portions of the valve lineup accomplished via clearance, the restoration may be signed off in any order. Restore vented/drained penetrations per Test Supervisor 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 ILRT Information Tags, bags, etc. in the appropriate manner.

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
(Page 1 of 14)

SYSTEM: CHEMICAL & VOLUME CONTROL (9321-2736, 208168)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
201 / 202	LETDOWN LINE ISOL VLVS	CCR SNF		CLOSE				
MOV-205	CHARGING LINE TO RCS CIV	98' PAB MCC ROOM		SHUT				
MOV-226	CHARGING LINE TO RCS CIV	98' PAB MCC ROOM		SHUT				
MOV-227	HCV-142 BYPASS	98' PAB MCC ROOM		SHUT				
MOV-250A	21 RCP SEAL INJECTION CIV	98' PAB MCC ROOM		SHUT				
MOV-4925	21 RCP SEAL INJECTION CIV	98' PAB MCC ROOM		SHUT				
MOV-250B	22 RCP SEAL INJECTION CIV	98' PAB MCC ROOM		SHUT				
MOV-4926	22 RCP SEAL INJECTION CIV	98' PAB MCC ROOM		SHUT				
MOV-250C	23 RCP SEAL INJECTION CIV	98' PAB MCC ROOM		SHUT				
MOV-4927	23 RCP SEAL INJECTION CIV	98' PAB MCC ROOM		SHUT				
MOV-250D	24 RCP SEAL INJECTION CIV	98' PAB MCC ROOM		SHUT				
MOV-4928	24 RCP SEAL INJECTION CIV	98' PAB MCC ROOM		SHUT				
MOV-222	SEAL WATER RETURN ISOL VLV	CCR SNF		SHUT				
272A	21 SEAL WTR HX INLET STOP	98' PAB		SHUT				
221B	21 SEAL WTR HX BYPASS STOP	98' PAB		SHUT				

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
(Page 2 of 14)

SYSTEM: POST ACCIDENT VC H2 CONCENTRATION SAMPLING (208479)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
SOV-5018	CONTAINMENT AIR SAMPLE CH-1 CIV	98' PAB MCC ROOM		SHUT				
SOV-5019	CONTAINMENT AIR SAMPLE CH-1 CIV	98' PAB MCC ROOM		SHUT				
SOV-5020	CONTAINMENT AIR SAMPLE CH-2 CIV	98' PAB MCC ROOM		SHUT				
SOV-5021	CONTAINMENT AIR SAMPLE CH-2 CIV	98' PAB MCC ROOM		SHUT				
SOV-5022	CHANNEL1 H2-O2 ANALYZER RETURN STOP TO VC CIV	98' PAB MCC ROOM		SHUT				
SOV-5023	CONTAINMENT AIR SAMPLE RETURN CH-1 CIV	98' PAB MCC ROOM		SHUT				
SOV-5024	CHANNEL2 H2-O2 ANALYZER RETURN STOP TO VC CIV	98' PAB MCC ROOM		SHUT				
SOV-5025	CONTAINMENT AIR SAMPLE RETURN CH-2 CIV	98' PAB MCC ROOM		OPEN				
CAP	CAP DOWNSTREAM OF 5130	80' PAB OLD SAMPLE CELL		REMOVED				
5130	CHANNEL-2 CROSS TIE DRAIN STOP	80' PAB OLD SAMPLE CELL		OPEN				
CAP	CAP DOWNSTREAM OF 5131	80' PAB OLD SAMPLE CELL		REMOVED				
5131	CHANNEL-1 CROSS TIE DRAIN STOP	80' PAB OLD SAMPLE CELL		OPEN				
CAP	CAP DOWNSTREAM OF 5129	68' MEZZANINE		REMOVED				
5129	TEST CONNECTION UPSTREAM OF SOV-5024	68' MEZZANINE		OPEN				

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
(Page 3 of 14)

SYSTEM: WASTE DISPOSAL SYSTEM (9321-2719)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
1723 / 1728	CNTMT SUMP DISCH ISOL VALVES	CCR SNF		CLOSE				
1702 / 1705	RCDT PUMP DISCH ISOL VALVES	CCR SNF		CLOSE				
1788 / 1789	RCDT GAS ANAL ISOL VALVES	CCR SNF		CLOSE				
1786 / 1787	CNTMT VENT HDR ISOL VALVES	CCR SNF		CLOSE				
1717	RCDT TO GAS ANALYZER SAMPLE STOP	46' VC		OPEN				
1713	RCDT MANUAL VENT STOP	46' VC		OPEN				
1711	REFUELING CANAL DRAIN STOP TO RCDT	46' VC		OPEN				
1708	REFUELING CANAL DRAIN STOP TO RCDT	46' VC		OPEN				
1716	RCDT N2 SUPPLY & VENT HEADER STOP	46' VC		OPEN				

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
(Page 4 of 14)

SYSTEM: MAIN STEAM (9321-2017 & 9321-2041)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
MS-1-21	21 SG MAIN STEAM STOP VLV	CCR SBF-1		SHUT				
MS-1-22	22 SG MAIN STEAM STOP VLV	CCR SBF-1		SHUT				
MS-1-23	23 SG MAIN STEAM STOP VLV	CCR SBF-1		SHUT				
MS-1-24	24 SG MAIN STEAM STOP VLV	CCR SBF-1		SHUT				
MS-91D	24 SG MST-4 INLET ROOT STOP	65' ABFP BLDG		SHUT				
MS-94D	24 SG MST-4 DRIP POT DRAIN STOP	65' ABFP BLDG		SHUT				
MS-91A	21 SG MST-1 INLET ROOT STOP	65' ABFP BLDG		SHUT				
MS-94A	21 SG MST-1 DRIP POT DRAIN STOP	65' ABFP BLDG		SHUT				
MS-91B	22 SG MST 2 INLET ROOT STOP	65' ABFP BLDG		SHUT				
MS-94B	22 SG MST-2 DRIP POT DRAIN STOP	65' ABFP BLDG		SHUT				
MS-56D	24 SG MS-1-24 SAMPLE AND VENT ROOT STOP	65' ABFP BLDG		SHUT				
MS-55D	24 MAIN STEAM ISOL VLV MS-1-24 BYPASS	65' ABFP BLDG		SHUT				
MS-58D-1	24 SG MST-4 ROOT STOP	65' ABFP BLDG		SHUT				
MS-58D-2	24 SG MST-18 ROOT STOP	65' ABFP BLDG		SHUT				
MS-3D	24 SG PCV-1137 INLET STOP	65' ABFP BLDG		SHUT				
MS-42	23 SG TO 22 AFP TURBINE	65' ABFP BLDG		SHUT				
MS-41	22 SG TO 22 AFP TURBINE	65' ABFP BLDG		SHUT				
MS-3B	22 SG PCV-1135 INLET STOP	65' ABFP BLDG		SHUT				
MS-56B	22 SG MS-1-22 SAMPLE AND VENT ROOT STOP	65' ABFP BLDG		SHUT				

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
(Page 5 of 14)

SYSTEM: MAIN STEAM (9321-2017 & 9321-2041) (continued)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
MS-55B	22 MAIN STEAM ISOL VLV MS-1-22 BYPASS STOP	65' ABFP BLDG		SHUT				
MS-58B-1	22 SG MST-12 ROOT STOP	65' ABFP BLDG		SHUT				
MS-58B-2	22 SG MST-10 ROOT STOP	65' ABFP BLDG		SHUT				
MS-56C	23 SG MS-1-23 SAMPLE AND VENT ROOT STOP	77' ABFP BLDG		SHUT				
MS-55C	23 MAIN STEAM ISOL VLV MS-1-23 BYPASS	77' ABFP BLDG		SHUT				
MS-58C-1	23 SG MST-13 ROOT STOP	77' ABFP BLDG		SHUT				
MS-58C-2	23 SG MST-14 ROOT STOP	77' ABFP BLDG		SHUT				
MS-3C	23 SG PCV-1136 INLET	77' ABFP BLDG		SHUT				
MS-91C	23 SG MST-3 INLET ROOT STOP	77' ABFP BLDG		SHUT				
MS-94C	23 SG MST-3 DRIP POT DRAIN STOP	77' ABFP BLDG		SHUT				
MS-3A	21 SG PCV-1134 INLET	77' ABFP BLDG		SHUT				
MS-56A	21 SG MS-1-21 SAMPLE AND VENT ROOT STOP	77' ABFP BLDG		SHUT				
MS-55A	21 MAIN STEAM ISOL VLV MS-1-21 BYPASS	77' ABFP BLDG		SHUT				
MS-58A-1	21 SG MST-5 ROOT STOP	77' ABFP BLDG		SHUT				
MS-58A-2	21 SG MST-6 ROOT STOP	77' ABFP BLDG		SHUT				

This system is lined up prior to pressurization solely to ensure S/G's are "bottled up" so pressure gauges might detect in-leakage during pressurization. This lineup is a candidate for early restoration (the beginning of depressurization).

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
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SYSTEM: SAFETY INJECTION (9321-2735 & 235296)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
MOV-866A / MOV-866B	21 CNTMT SPRAY DISCH STOP VALVES	CCR SBF-1		CLOSE				
MOV-866C / MOV-866D	22 CNTMT SPRAY DISCH STOP VALVES	CCR SBF-1		CLOSE				
MOV-888A / MOV-888B	RHR HX OUTLET TO SI PUMPS	CCR SBF-1		CLOSE				
MOV-885A	CNTMT SUMP TO RHR PUMP SUCT	CCR SBF-1		CLOSE				
MOV-885B	CNTMT SUMP TO RHR PUMP SUCT	CCR SBF-1		CLOSE				
MOV-1805	CNTMT SUMP DISCH TO RHR PUMP SUCT	CCR SBF-1		OPEN				
MOV-851A	22 SI PUMP TIE VALVE TO DISCHARGE OF 21 SI PUMP	CCR SBF-2		CLOSE				
MOV-851B	22 SI PUMP TIE VALVE TO DISCHARGE OF 23 SI PUMP	CCR SBF-2		CLOSE				
*891A	ACCUM 21 N2 FILL LINE	CCR SMF		BLOCKED OPEN				
*891B	ACCUM 22 N2 FILL LINE	CCR SMF		BLOCKED OPEN				
*891C	ACCUM 23 N2 FILL LINE	CCR SMF		BLOCKED OPEN				
*891D	ACCUM 24 N2 FILL LINE	CCR SMF		BLOCKED OPEN				

*891A through D SHALL be BLOCKED OPEN by Maintenance. 4313 will be OPEN and 4315 will be OPEN with the flange removed in Attachment 3C, ILRT Special Valve Lineups to provide SIS Accumulator protection.

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
(Page 7 of 14)

SYSTEM: SAFETY INJECTION (9321-2735 & 235296) (Continued)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
MOV-850A	21 SAFETY INJECTION PUMP DISCHARGE STOP	98' PAB MCC ROOM		SHUT				
MOV-850B	23 SAFETY INJECTION PUMP DISCHARGE STOP	98' PAB MCC ROOM		SHUT				
MOV-869A	21 SPRAY PUMP DISCHARGE TO SPRAY HEADER STOP	98' PAB MCC ROOM		SHUT				
MOV-869B	22 SPRAY PUMP DISCHARGE TO SPRAY HEADER STOP	98' PAB MCC ROOM		SHUT				
878A	21 CONTAINMENT SPRAY PUMP TEST LINE STOP	68' PAB		SHUT				
878B	22 CONTAINMENT SPRAY PUMP TEST LINE STOP	68' PAB		SHUT				
859A	SI TEST LINE CIV	51' PIPE PEN		SHUT				
859C	SI TEST LINE CIV	51' PIPE PEN		SHUT				

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
(Page 8 of 14)

SYSTEM: FUEL TRANSFER TUBE (208486)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
FLANGE	FUEL TRANSFER TUBE	VC		INSTALLED				
FCCH-001	FUEL TRANSFER TUBE GATE VALVE	FSB		SHUT				

SYSTEM: CONDENSER AIR REMOVAL (9321-2025)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
SJAE BLOWER	CONTROL SWITCH FOR SJAE BLOWER	CCR SBF-2		PULLOUT				
PCV-1229	SJAE EFFLUENT ISOL VLV	CCR SNF		CLOSE				
PCV-1230	SJAE EFFLUENT ISOL VLV	CCR SNF		CLOSE				
VENT	3/4" BLOWER DOWNSTREAM CAP	36' TH		REMOVED				

SYSTEM: STATION AIR (9321-2035)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
SA-24	STATION AIR TO CONTAINMENT ISOLATION	51' PIPE PEN		SHUT				
SA-24-1	STATION AIR TO CONTAINMENT ISOLATION	51' PIPE PEN		SHUT				
SA-24-2	STATION AIR TO CONTAINMENT ISOLATION	51' PIPE PEN		SHUT				
SA-24-3	STATION AIR TO CONTAINMENT ISOLATION	51' PIPE PEN		OPEN				
CAP	VENT PIPE BETWEEN SA-24-2 AND SA-24-3	51' PIPE PEN		REMOVED				
*SA-21-20	STATION AIR HOSE CONNECTION ISOLATION	68' VC		OPEN				

*Ensure pipe is vented to VC atmosphere. Remove any fittings IF necessary.

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
(Page 9 of 14)

SYSTEM: POST ACCIDENT CONTAINMENT VENTING (208879)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
E-2	CB ATMOSPHERE TO PA VENT	98' PAB MCC ROOM		SHUT				
E-1	IA TO CB PA VENT	98' PAB MCC ROOM		SHUT				
E-3	PRI VENT ISO STOP	98' PAB MCC ROOM		SHUT				
E-5	SECONDARY VENT ISO STOP	98' PAB MCC ROOM		SHUT				
EA-1	IA TO CB, PA VENT	98' PAB MCC ROOM		SHUT				
CAP	REMOVE CAP DOWNSTREAM OF E-8 (BETWEEN PI-1396 AND E-8)	51' SGBD ROOM		REMOVED				
E-8	PI-1396 STOP	51' SGBD ROOM		OPEN				
CAP	REMOVE CAP DOWNSTREAM OF E-9 (BETWEEN PI-1397 AND E-9)	51' SGBD ROOM		REMOVED				
E-9	PI-1397 STOP	51' SGBD ROOM		OPEN				

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
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SYSTEM: SAFE SHUTDOWN TRANSMITTERS (308762)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
IIP-540	LT-3101 OUTPUT STOP TO LI-3101 & LT-3101-1	68' VC RACK 19A		SHUT				
IIP-536	PT-3105 OUTPUT STOP TO PI-3105 & PI-3105-1	68' VC RACK 19A		SHUT				
IIP-518	LT-5001 OUTPUT STOP TO LI-5001 AND LI-5001-1	68' VC RACK 21A		SHUT				
IIP-526	LT-5002 OUTPUT STOP TO LI-5002 AND LI-5002-1	68' VC RACK 21A		SHUT				
CAP	CAP DOWNSTREAM OF IIP-543	80' VC		REMOVED				
IIP-543	LI-3101 BLOWDOWN STOP	80' VC		OPEN				
CAP	CAP DOWNSTREAM OF IIP-539	80' VC		REMOVED				
IIP-539	PI-3105 BLOWDOWN STOP	80' VC		OPEN				
CAP	CAP DOWNSTREAM OF IIP-521	80' VC		REMOVED				
IIP-521	SG 21 LI-5001 STOP	80' VC		OPEN				
CAP	CAP DOWNSTREAM OF IIP-529	80' VC		REMOVED				
IIP-529	SG 22 LI-5002 STOP	80' VC		OPEN				
IIP-542	LI-3101 STOP	80'VC		OPEN				
IIP-538	PI-3105 STOP	80' VC		OPEN				
IIP-520	SG 21 LI-5001 STOP	80' VC		OPEN				
IIP-528	STEAM GENERATOR 22 LI-5002 STOP	80' VC		OPEN				

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
(Page 11 of 14)

SYSTEM: SAFE SHUTDOWN TRANSMITTERS (308762) (Continued)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
IIP-500	22SG LEVEL INDICATOR LI-5002-1 CIV STOP	51' PIPE PEN		SHUT				
IIP-501	22SG LEVEL INDICATOR LI-5002-1 CIV STOP	51' PIPE PEN		SHUT				
IIP-502	21SG LEVEL INDICATOR LI-5001-1 CIV STOP	51' PIPE PEN		SHUT				
IIP-503	21SG LEVEL INDICATOR LI-5002-1 CIV STOP	51' PIPE PEN		SHUT				
IIP-504	PRESSURIZER LI-3101-1	51' PIPE PEN		SHUT				
IIP-505	PRESSURIZER LI-3101-1	51' PIPE PEN		SHUT				
IIP-506	PRESSURIZER PI-3105-1	51' PIPE PEN		SHUT				
IIP-507	PRESSURIZER PI-3105-1	51' PIPE PEN		SHUT				
IIP-508	22SG LEVEL INDICATOR LI-5002-1 TEST CONN STOP	51' PIPE PEN		SHUT				
IIP-510	21SG LEVEL INDICATOR LI-5001-1 TEST CONN STOP	51' PIPE PEN		SHUT				
IIP-512	PRESSURIZER LI-3101-1 T.C.	51' PIPE PEN		SHUT				
IIP-514	PRESSURIZER PI-3105-1 T.C.	51' PIPE PEN		SHUT				

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
(Page 12 of 14)

SYSTEM: SAFE SHUTDOWN TRANSMITTERS (308762) (Continued)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
CAP	CAP DOWNSTREAM IIP-509	51' PIPE PEN		REMOVED				
IIP-509	22SG LEVEL INDICATOR LI-5002-1 TEST CONN STOP	51' PIPE PEN		OPEN				
CAP	CAP DOWNSTREAM IIP-511	51' PIPE PEN		REMOVED				
IIP-511	21SG LEVEL INDICATOR LI-5001-1 TEST CONN STOP	51' PIPE PEN		OPEN				
CAP	CAP DOWNSTREAM IIP-513	51' PIPE PEN		REMOVED				
IIP-513	PRESSURIZER LI-3101-1 T.C.	51' PIPE PEN		OPEN				
CAP	CAP DOWNSTREAM IIP-515	51' PIPE PEN		REMOVED				
IIP-515	PRESSURIZER PI-3105-1 T.C.	51' PIPE PEN		OPEN				

SYSTEM: CONTAINMENT VENTILATION PURGE / RELIEF (9321-4022, 242688)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
PCV-1190	CONT BLDG PRESS RELIEF ISOL VLVS (INSIDE VC)	80' PAB		CLOSED				
PCV-1191/1192	CONT BLDG PRESS RELIEF ISOL VLVS (OUTSIDE VC)	CCR SLF		CLOSED				
IA-774	IA TO PCV-1190 STOP	46' VC		SHUT				
VENT	VENT PCV-1190 VOLUME TANK BY DISCONNECTING FITTING	46' VC		FITTING DISCONNECTED				

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
(Page 13 of 14)

SYSTEM: AIRLOCK GAUGES (9321-7052)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
WCPS-1193	PI-1352 HI SIDE STOP	VC 95' Air Lock		SHUT				
WCPS-1194	PI-1352 LO SIDE STOP	VC 95' Air Lock		SHUT				
WCPS-1195	PI-1351 LO SIDE STOP	VC 95' Air Lock		SHUT				
INSTALL CAP	CAP LINE DOWNSTREAM OF WCPS-1195	VC 95' Air Lock		INSTALLED				
PI-1351	CONTAINMENT PRESSURE	VC 95' Air Lock		REMOVED				
PI-1352	HATCH PRESSURE	VC 95' Air Lock		REMOVED				
PI-7477	EQUIPMENT HATCH/PERSONNEL LOCK STUB PRESSURE. (CB INT)	VC 95' Air Lock		REMOVED				
INSTALL CAP	CAP LINE WERE PI-7477 WAS REMOVED	VC 95' Air Lock		INSTALLED				
WCPS-1197	PI-1346 HI SIDE STOP	VC 80' Air Lock		SHUT				
WCPS-1198	PI-1346 LO SIDE STOP	VC 80' Air Lock		SHUT				
WCPS-1199	PI-1345 LO SIDE STOP	VC 80' Air Lock		SHUT				
INSTALL CAP	CAP LINE DOWNSTREAM OF WCPS-1199	VC 80' Air Lock		INSTALLED				

ATTACHMENT 3A
ILRT VALVE LINEUPS PRIOR TO PRESSURIZATION
(Page 14 of 14)

SYSTEM: AIRLOCK GAUGES (9321-7052) (Continued)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
PI-1345	CONTAINMENT PRESSURE	VC 80' Air Lock		REMOVED				
PI-1346	80'AIRLOCK PRESSURE GAUGE	VC 80' Air Lock		REMOVED				
PI-7481	PERSONNEL LOCK STUB PRESSURE	VC 80' Air Lock		REMOVED				
INSTALL CAP	CAP LINE WERE PI-7481 WAS REMOVED	VC 80' Air Lock		INSTALLED				

SYSTEM: CONTAINMENT VENTILATION FAN COOLER UNIT EXHAUST (9321-4022)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
FCV-21	21CRF NORMAL MODE OUTLET	CCR SBF-2		OPEN				
FCV-22	22CRF NORMAL MODE OUTLET	CCR SBF-2		OPEN				
FCV-23	23CRF NORMAL MODE OUTLET	CCR SBF-2		OPEN				
FCV-24	24CRF NORMAL MODE OUTLET	CCR SBF-2		OPEN				
FCV-25	25CRF NORMAL MODE OUTLET	CCR SBF-2		OPEN				

SYSTEM: WELD CHANNEL & PENETRATION PRESSURIZATION (9321-2726)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
PCV-1101-1321B	PRESSURE SWITCH 1321 LOWER ROOT STOP	68' VC (RACK 16)		SHUT				
PCV-1101-1318B	PRESSURE SWITCH 1318 LOWER ROOT STOP	68' VC (RACK 16)		SHUT				

ATTACHMENT 3B
ILRT VALVE LINEUPS PRIOR TO STABILIZATION
(Page 1 of 13)

SYSTEM: WELD CHANNEL & PENETRATION PRESSURIZATION* (9321-2726)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
PCV-1110-1	ZONE 1 - N2 BACKUP SUPPLY REGULATOR INLET STOP	80' PAB		SHUT				
PCV-1110-22	ZONE 1 REGULATOR [PCV-1193] INLET STOP	80' PAB		SHUT				
PCV-1110-23	ZONE 1 REGULATOR [PCV-1193] OUTLET STOP	80' PAB		SHUT				
PCV-1101-1	REGULATOR PCV-1193 BYPASS STOP	80' PAB		SHUT				
CAP	REMOVE CAP DOWNSTREAM OF WCP-99	80' PAB		REMOVED				
WCP-99	TEST CONNECTION PAB ZONE NORMAL SUPPLY	80' PAB		OPEN				
PCV-1110-9	WELD CHANNEL ZONE 3 - N2 B/U SUPPLY REGULATOR INLET STOP	80' PAB		SHUT				
PCV-1110-26	ZONE 3 REGULATOR [PCV-1197] INLET STOP	80' PAB		SHUT				
PCV-1110-27	ZONE 3 REGULATOR [PCV-1197] OUTLET STOP	80' PAB		SHUT				
PCV-1101-3	REGULATOR PCV-1197 BYPASS STOP	80' PAB		SHUT				
CAP	REMOVE CAP DOWNSTREAM OF WCP-107	80' PAB		REMOVED				
WCP-107	TEST CONNECTION PAB ZONE 3 NORMAL SUPPLY	80' PAB		OPEN				

* Secure zones using 2-SOP-10.5.1, Weld Channel and Containment Penetration Pressurization System Operation individual zone depressurization section.

ATTACHMENT 3B
ILRT VALVE LINEUP PRIOR TO STABILIZATION
(Page 2 of 13)

SYSTEM: WELD CHANNEL & PENETRATION PRESSURIZATION (9321-2726) (Continued)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
PCV-1110-21	WCPS ZONE 4 - N2 BACKUP SUPPLY REGULATOR INLET STOP	80' PAB		SHUT				
PCV-1110-28	ZONE 4 REGULATOR [PCV-1199] INLET STOP	80' PAB		SHUT				
PCV-1110-29	ZONE 4 REGULATOR [PCV-1199] OUTLET STOP	80' PAB		SHUT				
PCV-1101-4	REGULATOR PCV-1199 BYPASS STOP	80' PAB		SHUT				
CAP	REMOVE CAP DOWNSTREAM OF WCP-111	80' PAB		REMOVED				
WCP-111	WCPS ZONE 4 NORMAL SUPPLY TEST CONNECTION STOP	80' PAB		OPEN				
PCV-1111-1	ZONE 3 SUPPLY TO RACKS 16 & 17 (PENETRATION "Y")	51' PIPE PEN		OPEN				
PCV-1111-2	ZONE 4 SUPPLY TO RACKS 14 & 18 (PENETRATION "Y")	51' PIPE PEN		OPEN				
SOV-EW-1	POST ACCIDENT VC ISOLATION	98' PAB MCC ROOM		SHUT				
SOV-EW-2	POST ACCIDENT VC ISOLATION	98' PAB MCC ROOM		SHUT				
*PCV-1231	SJAE OUTLET HDR CONT ISOL VALVE WCCPPS STOP	51' PIPE PEN		SHUT				
**PCV-1233	SJAE SEAL AIR SUPPLY	51' PIPE PEN		SHUT				

* PCV-1231 INSTALL a mechanical spider on relay 33-1X behind panel SN to actuate relay and maintain PCV-1231 CLOSED.
**PCV-1233 INSTALL a mechanical spider on relay 33-2X behind panel SN to actuate relay and maintain PCV-1233 CLOSED.

ATTACHMENT 3B
ILRT VALVE LINEUP PRIOR TO STABILIZATION
(Page 3 of 13)

SYSTEM: WELD CHANNEL & PENETRATION PRESSURIZATION (9321-2726 & 201128) (Continued)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
PCV-1240, 1239, 1238, 1241	CNTMT RAD MON WCPS VALVES	CCR SNF		CLOSE				

NOTES: Depressurize the following valve interspaces:

- Post Accident Containment Air Sample (PCV-1236 & PCV-1237)
- Condenser air removal (PCV-1229 & PCV-1230)

ATTACHMENT 3B
ILRT VALVE LINEUP PRIOR TO STABILIZATION
(Page 4 of 13)

SYSTEM: CONTAINMENT PRESSURE TRANSMITTERS (235296)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
1814A	CONTAINMENT PRESSURE INSTRUMENTS CHANNEL 1 CIV	51' PIPE PEN		OPEN				
1814B	CONTAINMENT PRESSURE INSTRUMENTS CHANNEL 2 CIV	51' PIPE PEN		OPEN				
1814C	CONTAINMENT PRESSURE INSTRUMENTS CHANNEL 3 CIV	51' PIPE PEN		OPEN				
5182	PT-3300 INLET ROOT STOP	51' PIPE PEN		OPEN				
6557	PI-948A ISOLATION	51' PIPE PEN		OPEN				
6558	PT-949A ISOLATION	51' PIPE PEN		OPEN				
4385	PT-3300 INLET STOP	51' PIPE PEN		OPEN				
5181	PT-3301 INLET ROOT STOP	51' PIPE PEN		OPEN				
6559	PT-948B ISOLATION	51' PIPE PEN		OPEN				
6560	PT-949B ISOLATION	51' PIPE PEN		OPEN				
4387	PT-3301 INLET STOP	51' PIPE PEN		OPEN				
6561	PT-948C ISOLATION	51' PIPE PEN		OPEN				
6562	PT-949C ISOLATION	51' PIPE PEN		OPEN				

ATTACHMENT 3B
ILRT VALVE LINEUP PRIOR TO STABILIZATION
(Page 5 of 13)

SYSTEM: PRIMARY SAMPLING (9321-2745 & 227178 for HRSS)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
956ABCDEF	RCS SAMPLES ISOL VALVES	CCR SNF		CLOSE				
956A	PRESSURIZER STM SPACE SAMPLE VC ISO VALVE	80' PAB SENTRY PANEL		SHUT				
956B	PRESSURIZER STM SPACE SAMPLE	80' PAB SENTRY PANEL		SHUT				
956C	PRESSURIZER LIQUID SPACE SAMPLE VC ISO VALVE	80' PAB SENTRY PANEL		SHUT				
956D	PRESSURIZER LIQUID SPACE SAMPLE VC ISO VALVE	80' PAB SENTRY PANEL		SHUT				
MOV-990A	RECIRC PUMPS SAMPLE TO RCS SAMPLE HX	80' PAB SENTRY PANEL		SHUT				
MOV-990B	RECIRC PUMPS SAMPLE TO RCS SAMPLE HX	80' PAB SENTRY PANEL		SHUT				
MOV-956E	RCS HOT LEG SAMPLE CONTAINMENT ISOLATION	80' PAB SENTRY PANEL		SHUT				
MOV-956F	RCS HOT LEGS 1&3 SAMPLE LINE ISOLATION	80' PAB SENTRY PANEL		SHUT				
956GH	ACCUM SAMPLE LINE ISOL VALVES	CCR SNF		CLOSE				
956G	ACCUM'S SAMPLE VC ISO VALVE	80' PAB SENTRY PANEL		SHUT				
956H	ACCUM'S SAMPLE VC ISO VALVE	80' PAB SENTRY PANEL		SHUT				
MOV-958	RHR SAMPLE ISOLATION STOP	98' PAB MCC ROOM		SHUT				
MOV-959	RHR SAMPLE TO RCS SAMPLE HX	80' PAB SENTRY PANEL		SHUT				
990D	RHR SAMPLE ISOLATION 959 BYPASS	68' PAB MEZZANINE		SHUT				
MOV-5132	HRSS SAMPLE RETURN TO CONTAINMENT SUMP LINE ISOLATION	80' PAB SENTRY PANEL		SHUT				
MOV-4399	HRSS SAMPLE RETURN TO CONTAINMENT SUMP LINE ISOLATION	80' PAB SENTRY PANEL		SHUT				

ATTACHMENT 3B
ILRT VALVE LINEUP PRIOR TO STABILIZATION
(Page 6 of 13)

SYSTEM: ISOLATION VALVE SEAL WATER (9321-2746)*

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
1435	IVSW BACKUP N2 BOTTLE STOP	80' PAB		SHUT				
1436	IVSW BACKUP N2 BOTTLE STOP	80' PAB		SHUT				
1437	IVSW PRIMARY N2 BOTTLE SUPPLY HEADER STOP	80' PAB		SHUT				
SOV-3505	MOV-990 A&B RECIRC PUMP DISCH SAMP LINE	80' PAB SENTRY PANEL		SHUT				
SOV-3500	N2 SEAL LINE 10 TO 732 RHR LOOP OUT	98' PAB MCC ROOM		SHUT				
SOV-3506	N2 SEAL LINE 9 TO MOV-744 RHR RETURN	98' PAB MCC ROOM		SHUT				
SOV-3507	N2 SEAL LINE 60 TO MOV-888A RHR LOOP TO SI PUMP	98' PAB MCC ROOM		SHUT				
SOV-3508	N2 SEAL LINE 60 TO MOV 888B RHR LOOP TO SI PUMP	98' PAB MCC ROOM		SHUT				
SOV-3509	N2 SEAL LINE 294 TO MOV 958 RHR SAMP VALVE	98' PAB MCC ROOM		SHUT				
SOV-3510	N2 SEAL LINE 337 TO MOV 1870 & 743 RHR MINIFLOW TEST VALVE	98' PAB MCC ROOM		SHUT				
GAUGE	PI-1089 GAUGE REMOVED	80' PAB		REMOVED				
1445	N2 HDR PRESS GAUGE PI-1089 STOP	80' PAB		OPEN				
1442	N2 PCV-1090 PRESSURE REG INLET STOP	80' PAB		SHUT				
1444	N2 PCV-1090 PRESSURE REGULATOR BYPASS STOP	80' PAB		SHUT				
1438	N2 PRESS REG PCV-1076 INLET STOP SEAL WTR TNK	98' PAB		SHUT				
1440	N2 PRESS REG PCV-1076 BYPASS STOP SEAL WTR TNK	98' PAB		SHUT				
1441	N2 PRESS REG PCV--1076A INLET STP SEAL WTR TNK	98' PAB		SHUT				

*Depressurize IVSW Tank and IVSW gas header per 2-OSP-10.4.1, Support Procedure – Isolation Valve Seal Water System.

ATTACHMENT 3B
ILRT VALVE LINEUP PRIOR TO STABILIZATION
(Page 7 of 13)

SYSTEM: ISOLATION VALVE SEAL WATER (9321-2746) (Continued)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
CAP	CAP FOR 1462 REMOVED	98' PAB		REMOVED				
1462	LOCAL TNK GASEOUS SAMPLE STOP SEAL WTR TNK	98' PAB		OPEN				
1414	FLOW CONTROL VLV 1413 OUTLET STOP CONTAMINATED HDR	98' PAB		SHUT				
1411	FLOW CONTROL VLV 1410 OUTLET STOP CONTAMINATED HDR	98' PAB		SHUT				
1415	FLOW CONTROL VLV BYPASS STOP CONTAMINATED HDR	98' PAB		SHUT				
1455	PRIMARY WATER FILL STOP SEAL WATER TANK	98' PAB		SHUT				
1453	CITY WATER FILL STOP SEAL WATER TANK	98' PAB		SHUT				
5625	CLEAN HDR INLET STOP CLEAN HDR AUTO SEAL WTR HDR'S	98' PAB		SHUT				
1400	SUPPLY STOP MANUAL SEAL WTR HDR	98' PAB		SHUT				

ATTACHMENT 3B
ILRT VALVE LINEUP PRIOR TO STABILIZATION
(Page 8 of 13)

SYSTEM: SERVICE WATER (209762)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
MOV-SWN-41-1A	FAN 21 COIL INBOARD INLET VALVE	98'PAB MCC ROOM		SHUT				
MOV-SWN-44-1A	FAN 21 COIL INBOARD DISCHARGE VALVE	98'PAB MCC ROOM		SHUT				
MOV-SWN-71-1A	21CRF MOTOR COOLER DISCHARGE ISOLATION VLV FROM FCU-21	98'PAB MCC ROOM		SHUT				
MOV-SWN-41-2A	FAN 22 COIL INBOARD INLET VALVE	98'PAB MCC ROOM		SHUT				
MOV-SWN-44-2A	FAN 22 COIL INBOARD DISCHARGE VALVE	98'PAB MCC ROOM		SHUT				
MOV-SWN-71-2A	22CRF MOTOR COOLER DISCHARGE ISOLATION VLV FROM FCU-22	98'PAB MCC ROOM		SHUT				
MOV-SWN-41-3A	FAN 23 COIL INBOARD INLET VALVE	98'PAB MCC ROOM		SHUT				
MOV-SWN-44-3A	FAN 23 COIL INBOARD DISCHARGE VALVE	98'PAB MCC ROOM		SHUT				
MOV-SWN-71-3A	23CRF MOTOR COOLER DISCHARGE ISOLATION VLV FROM FCU-23	98'PAB MCC ROOM		SHUT				
MOV-SWN-41-4A	FAN 24 COIL INBOARD INLET VALVE	98'PAB MCC ROOM		SHUT				
MOV-SWN-44-4A	FAN 24 COIL INBOARD DISCHARGE VALVE	98'PAB MCC ROOM		SHUT				

ATTACHMENT 3B
ILRT VALVE LINEUP PRIOR TO STABILIZATION
(Page 9 of 13)

SYSTEM: SERVICE WATER (209762) (*Continued*)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
MOV-SWN-71-4A	24CRF MOTOR COOLER DISCHARGE ISOLATION VLV FROM FCU-24	98'PAB MCC ROOM		SHUT				
MOV-SWN-41-5A	FAN 25 COIL INBOARD INLET VALVE	98'PAB MCC ROOM		SHUT				
MOV-SWN-44-5A	FAN 25 COIL INBOARD DISCHARGE VALVE	98'PAB MCC ROOM		SHUT				
MOV-SWN-71-5A	25CRF MOTOR COOLER DISCHARGE ISOLATION VLV FROM FCU-25	98'PAB MCC ROOM		SHUT				
SWN-43-1	21 FCU SUPPLY DRAIN STOP	51' PIPE PEN		SHUT				
SWN-638	FCU-21 INLET VENT STOP	51' PIPE PEN		SHUT				
SWN-43-2	22 FCU SUPPLY DRAIN STOP	51' PIPE PEN		SHUT				
SWN-641	FCU-22 INLET VENT STOP	51' PIPE PEN		SHUT				
SWN-43-3	23 FCU SUPPLY DRAIN STOP	51' PIPE PEN		SHUT				
SWN-639	FCU-23 INLET VENT STOP	51' PIPE PEN		SHUT				
SWN-43-4	24 FCU SUPPLY DRAIN STOP	51' PIPE PEN		SHUT				
SWN-640	FCU-24 INLET VENT STOP	51' PIPE PEN		SHUT				
SWN-43-5	25 FCU SUPPLY DRAIN STOP	51' PIPE PEN		SHUT				
SWN-642	FCU 25 INLET VENT STOP	51' PIPE PEN		SHUT				

ATTACHMENT 3B
ILRT VALVE LINEUP PRIOR TO STABILIZATION
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SYSTEM: STEAM GENERATOR BLOWDOWN (9321-2729, 9321-2723)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
PCV-1214	21 SG ISOL VLV 1	CCR SCF		CLOSE				
PCV-1214A	21 SG ISOL VLV 2	CCR SCF		CLOSE				
PCV-1215	22 SG ISOL VLV 1	CCR SCF		CLOSE				
PCV-1215A	22 SG ISOL VLV 2	CCR SCF		CLOSE				
PCV-1216	23 SG ISOL VLV 1	CCR SCF		CLOSE				
PCV-1216A	23 SG ISOL VLV 2	CCR SCF		CLOSE				
PCV-1217	24 SG ISOL VLV 1	CCR SCF		CLOSE				
PCV-1217A	24 SG ISOL VLV 2	CCR SCF		CLOSE				
SGN-5	S/G 22 HDR QUICK CLOSE N2 SPARGING	80' PAB		SHUT				
SGN-6	S/G 21 HDR QUICK CLOSE N2 SPARGING	80' PAB		SHUT				
SGN-7	S/G 23 HDR QUICK CLOSE N2 SPARGING	80' PAB		SHUT				
SGN-8	S/G 24 HDR QUICK CLOSE N2 SPARGING	80' PAB		SHUT				

ATTACHMENT 3B
ILRT VALVE LINEUP PRIOR TO STABILIZATION
(Page 11 of 13)

SYSTEM: AUXILIARY COOLANT (9321-2720 & 227781)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
MOV-769 / MOV-797	ISOL VLV RCPS-CLG INLET PHASE B	CCR SNF		CLOSE				
MOV-784 / MOV-786	RCP BEARING DISCH ISOL LVL PHASE B	CCR SNF		CLOSE				
MOV-625 / MOV-789	ISOL VALVES RCP THERM BARRIER DISCH PHASE B	CCR SNF		CLOSE				
791 / 798	EX LETDOWN HX INLET CCW ISOL VALVES	CCR SNF		CLOSE				
793 / 796	EX LETDOWN HX OUTLET CCW ISOL VALVES	CCR SNF		CLOSE				
753H	AUX CCW PUMPS TO RECIRC. PUMPS HDR STOP	51' PIPE PEN		SHUT				
753G	RECIRC. PUMPS RETURN HDR STOP	51' PIPE PEN		SHUT				
A-500	EXCESS LETDOWN HX CCW INLET VENT STOP	51' PIPE PEN		SHUT				
A-501	EXCESS LETDOWN HX CCW OUTLET VENT STOP	51' PIPE PEN		SHUT				

NOTE: Penetrations J-9 (Residual Heat Removal Return), Penetration K-10 (Residual Heat Removal Loop Out), KK-53 (Residual Heat Removal Heat Exchanger Cooling Water In), JJ-52 (Residual Heat Removal Cooling Water Return) are lined up for shutdown cooling per Operations department procedures.

ATTACHMENT 3B
ILRT VALVE LINEUP PRIOR TO STABILIZATION
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SYSTEM: BOILER FEEDWATER (9321-2019 and 9321-2038)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
BFD-1130	21 STEAM GENERATOR WET LAY UP ISOLATION VALVE	32' ABFP BLDG		SHUT				
BFD-7	FCV-417 OUTLET STOP	43' ABFP BLDG		SHUT				
FCV-405A	AUX BFP 22 DISCH TO STM GEN 21	CCR SCF		SHUT				
FCV-406A	AUX BFP 21 DISCH TO STM GEN 21	CCR SCF		SHUT				
BFD-1132	22 STEAM GENERATOR WET LAY UP ISOLATION VALVE	32' ABFP BLDG		SHUT				
BFD-7-1	FCV-427 OUTLET STOP	43' ABFP BLDG		SHUT				
FCV-405B	AUX BFP-22 DISCH TO STM GEN 22	CCR SCF		SHUT				
FCV-406B	AUX BFP 21 DISCH TO STM GEN 22	CCR SCF		SHUT				
BFD-1134	23 STEAM GENERATOR WET LAY UP ISOLATION VALVE	32' ABFP BLDG		SHUT				
BFD-7-2	FCV-437 OUTLET STOP	43' ABFP BLDG		SHUT				
FCV-405C	AUX BFP-22 DISCH TO STM GEN 23	CCR SCF		SHUT				
FCV-406C	AUX BFP-23 DISCH TO STM GEN-23	CCR SCF		SHUT				
BFD-1136	24 STEAM GENERATOR WET LAY UP ISOLATION VALVE	32' ABFP BLDG		SHUT				
BFD-7-3	FCV-447 OUTLET STOP	43' ABFP BLDG		SHUT				
FCV-405D	AUX BFP-22 DISCH TO STM GEN 24	CCR SCF		SHUT				
FCV-406D	AUX BFP-23 DISCH TO STM GEN-24	CCR SCF		SHUT				

ATTACHMENT 3B
ILRT VALVE LINEUP PRIOR TO STABILIZATION
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SYSTEM: PRIMARY MAKEUP WATER (9321-2724)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
519	PW TO VC ISOL	CCR SAF		SHUT				
552	PW TO VC ISOL	CCR SAF		SHUT				

SYSTEM: AUXILIARY STEAM SUPPLY (9321-2027)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
UH-43	AUX STEAM TO VC STOP	51' PIPE PEN		SHUT				
UH-44	AUX CONDENSATE FROM VC STOP	51' PIPE PEN		SHUT				

SYSTEM: CITY WATER (9321-2018)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
MW-17	CITY WATER TO VC STOP	51' PIPE PEN		SHUT				
MW-17-1	CITY WATER TO VC STOP	51' PIPE PEN		SHUT				

ATTACHMENT 3C
ILRT SPECIAL VALVE LINEUPS
(Page 1 of 11)

SYSTEM: N2 to NUCLEAR EQUIPMENT (9321-2719, 9321-2723, 9321-2738, 235306, 235296)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
1811A	ACCUMULATOR N2 SUPPLY ROOT STOP (NORTH BANK)	80' PAB		SHUT				
1811B	ACCUMULATOR N2 SUPPLY ROOT STOP (SOUTH BANK)	80' PAB		SHUT				
1809	SI ACCUMULATOR BACKUP N2 REGULATOR PCV-7726 OUTLET STOP	80' PAB		SHUT				
1655	N2 INLET STOP TO PCV-473 TO PRT	51' PIPE PEN		SHUT				
1659	N2 INLET STOP TO PCV-1014 TO RCDT	51' PIPE PEN		SHUT				
1699	SRST N2 TO BOTTOM INLET STOP	80' PAB SRST PANEL		SHUT				
1692	SRST N2 TO TOP INLET STOP	80' PAB SRST PANEL		SHUT				

This system continued on the next page.

This nitrogen system lineup SHALL be completed PRIOR to pressurization.

ATTACHMENT 3C
ILRT SPECIAL VALVE LINEUPS
(Page 2 of 11)

SYSTEM: N2 to NUCLEAR EQUIPMENT (9321-2719, 9321-2723, 9321-2738, 235306, 235296) (Continued)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
4314	N2 SUPPLY HEADER VENT STOP	46' VC		SHUT				
*FLANGE	REMOVE FLANGE DOWNSTREAM OF 4315	46' VC		REMOVED				
*4315	N2 SUPPLY HEADER VENT STOP	46' VC		OPEN				
*4313	N2 SUPPLY TO SIS ACCUMULATORS AND PORV ACCUMULATORS STOP	46' VC		OPEN				
4109	N2 SUPPLY STOP TO PCV-455C AND PCV-456	46' VC		OPEN				
*4117	N2 STOP TO PCV-455C ACCUM	95' VC		OPEN				
*FLANGE	DOWNSTREAM OF 4118	95' VC		REMOVED				
*4118	PCV-455C N2 ACCUM VENT STOP	95' VC		OPEN				
CAP	REMOVE CAP DOWNSTREAM OF 4120	95' VC		REMOVED				
4120	PCV-455C ACCUM DRAIN STOP	95' VC		OPEN				
CAP	REMOVE CAP DOWNSTREAM OF 4113	95' VC		REMOVED				
4113	PCV-456 ACCUM DRAIN STOP	95' VC		OPEN				

*These valves will vent most of the nitrogen pressure in the VC and PAB. This will be part of the SIS Accumulator protection.

This system continued on the next page.

This nitrogen system lineup SHALL be completed PRIOR to pressurization.

ATTACHMENT 3C
ILRT SPECIAL VALVE LINEUPS
(Page 3 of 11)

SYSTEM: N2 to NUCLEAR EQUIPMENT (9321-2719, 9321-2723, 9321-2738, 235306, 235296) (Continued)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
PCV-863	ISOL VALVE ACCUMULATOR NITROGEN SUPPLY LINE	CCR SMF		CLOSE				
N-783	PI-942-2 STOP	80' PAB		OPEN				
CAP	REMOVE CAP DOWNSTREAM OF N-784	80' PAB		REMOVED				
N-784	PI-942-2 TEST STOP	80' PAB		OPEN				
SOV-3416	NITROGEN SUPPLY TO RCDT	98' PAB MCC ROOM		SHUT				
SOV-3417	NITROGEN SUPPLY TO RCDT	98' PAB MCC ROOM		SHUT				
SOV-3418	NITROGEN SUPPLY TO PRT	98' PAB MCC ROOM		SHUT				
SOV-3419	NITROGEN SUPPLY TO PRT	98' PAB MCC ROOM		SHUT				
SOV-3405	N2 PURGE VALVE FOR PRT	98' PAB MCC ROOM		SHUT				
SOV-3406	N2 PURGE VALVE FOR RCDT	98' PAB MCC ROOM		SHUT				
4831	SOV-3406 BYPASS STOP	72' FAN HOUSE		SHUT				
4834	SOV-3405 BYPASS STOP	72' FAN HOUSE		SHUT				

This system continued on the next page.

This nitrogen system lineup SHALL be completed PRIOR to pressurization.

ATTACHMENT 3C
ILRT SPECIAL VALVE LINEUPS
(Page 4 of 11)

SYSTEM: N2 to NUCLEAR EQUIPMENT (9321-2719, 9321-2723, 9321-2738, 235306, 235296) (Continued)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
1610	RCDT NITROGEN ISO STOP	51' PIPE PEN		OPEN				
5491	RCDT NITROGEN TEST STOP	51' PIPE PEN		SHUT				
5458	NITROGEN STOP FROM VALVE SOV-3417	51' PIPE PEN		OPEN				
5459	RCDT NITROGEN SUPPLY LINE CIV BYPASS	51' PIPE PEN		SHUT				
5460	SOV-3416/3417 INLET STOP	51' PIPE PEN		OPEN				
1610-1	NITROGEN TEST VENT CONNECTION	51' PIPE PEN		SHUT				
VENT	BREAK SWAGELOCK CONNECTION DOWNSTREAM OF PCV-1014	51' PIPE PEN		DISCONNECTED				
550	NITROGEN ISOLATION VALVE TO PRT	51' PIPE PEN		OPEN				
4161	NITROGEN SUPPLY TO PRT TEST STOP	51' PIPE PEN		SHUT				
4137	NITROGEN SUPPLY TO PRT OUTLET FROM SOV-3418 AND SOV-3419	51' PIPE PEN		OPEN				
4136	NITROGEN SUPPLY TO PRT BYPASS FROM SOV-3418 AND SOV-3419	51' PIPE PEN		SHUT				
4135	NITROGEN SUPPLY TO PRT INLET TO SOV-3418 AND SOV-3419	51' PIPE PEN		OPEN				
CAP	CAP FOR 4160	51' PIPE PEN		REMOVED				
4160	NITROGEN SUPPLY TO PRT TEST STOP	51' PIPE PEN		OPEN				

This nitrogen system lineup SHALL be completed PRIOR to pressurization.

ATTACHMENT 3C
ILRT SPECIAL VALVE LINEUPS
(Page 5 of 11)

SYSTEM: REACTOR COOLANT (9321-2738 & 9321-2719)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
PCV-455C	PRESSURIZER PORV TRAIN-B	CCR FBF		BLOCKED OPEN				
MOV-535	PRESSURIZER RELIEF LINE TRAIN B BLOCK VALVE	CCR FBF		OPEN				
PCV-456	PRESSURIZER PORV TRAIN-A	CCR FBF		BLOCKED OPEN				
MOV-536	PRESSURIZER RELIEF LINE TRAIN A BLOCK VALVE	CCR FBF		OPEN				
548/549	PRT GAS ANALYZER ISOL VLV	CCR SNF		SHUT				
SA-501	PRT EXHAUSTER SA INLET STOP	95' VC		SHUT				
500-1	PRT N2 TEST STOP	46' VC		SHUT				
EDUCTOR	EDUCTOR NEEDLE VALVE	95' VC		OPEN				
4401	PRESSURIZER RELIEF TANK INLET TO EDUCTOR	95' VC		OPEN				
528	PRT N2 INLET STOP	46' VC		OPEN				
4178	RCS DRAINDOWN LEVEL INDICATOR TYGON HOSE UPPER STOP	95' VC		OPEN				
CAP	CAP DOWNSTREAM OF RCS-6021	130' VC		REMOVED				
RCS-6021	REACTOR COLD SHUTDOWN LEVEL TEST VALVE	130' VC		OPEN				
4" FLANGE	4" VACUUM FILL CONNECTION FLANGE	95' VC		REMOVED				
580A	OLD DEADWEIGHT TESTER ISOLATION	51' PIPE PEN		SHUT				

ATTACHMENT 3C
ILRT SPECIAL VALVE LINEUPS
(Page 6 of 11)

SYSTEM: RADIATION MONITORING AIR SAMPLE (238106)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
**IA-1782	IA TO SOV-1536	51' PIPE PEN		SHUT				
PETCOCK	PCV-1236 REGULATOR PETCOCK	51' PIPE PEN		OPEN				
**IA-1781	IA TO SOV-1537	51' PIPE PEN		SHUT				
PETCOCK	PCV-1237 REGULATOR PETCOCK	51' PIPE PEN		OPEN				
RAS-522	R-41 SAMPLE INLET ROOT STOP	51' PIPE PEN		OPEN				
RAS-521	R-41/R-42 INLET ROOT STOP	51' PIPE PEN		SHUT				
RAS-523	R-41/42 SAMPLE OUT TO VC VENT STOP	51' PIPE PEN		OPEN				
RAS-524	R-41/R-42 OUTLET ROOT STOP	51' PIPE PEN		SHUT				
CAP	CAP FOR RAS-559	68' MEZZ		REMOVED				
*RAS-559	R-41/42 SAMPLE OUT TO VC VENT STOP	68' MEZZ		SHUT				
CAP	CAP FOR RAS-558	68' MEZZ		REMOVED				
**RAS-558	R-41/42 SAMPLE IN FROM VC VENT STOP	68' MEZZ		OPEN				
***PCV-1236, 1237, 1234, 1235	CNTMT RAD MON ISOL VALVES	CCR SNF		CLOSE				

* RAS-559 to be used as Test Flow connection. See Attachment 6, Containment Building Leak Rate Test System Leak Rate Testing for further operation.

** These valves will be manipulated as a contingency IF test taps are required by ILRT coordinator OR Chemistry. Inform Test Supervisor PRIOR to use.

***ENSURE PCV-1236 and PCV-1237 remain CLOSED unless needed for contingency in ** above. Inform Test Supervisor IF OPENED during test.

ATTACHMENT 3C
ILRT SPECIAL VALVE LINEUPS
(Page 7 of 11)

SYSTEM: INSTRUMENT AIR (242688 [inside VC], 9321-2036 [outside VC])

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
*PCV-1228	INSTRUMENT AIR ISOL VLV	CCR SNF		CLOSE				
*IA-501	IA CONTAINMENT STOP	51' PIPE PEN		SHUT				
*CAP	REMOVE CAP DOWNSTREAM OF IA-503	51' PIPE PEN		REMOVED				
*IA-503	IA TEST STOP	51' PIPE PEN		OPEN				
*IA-502	IA TEST STOP	51' PIPE PEN		SHUT				
*IA-500	IA CONTAINMENT STOP	51' PIPE PEN		OPEN				
*CAP	REMOVE CAP DOWNSTREAM OF IA-1441	46' VC		REMOVED				
*IA-1441	I.A. TO V.C. RING HEADER TEST CONNECTION ISOLATION	46' VC		OPEN				

*Refer to Attachment 19, VC AOV Failure Position List for valve failure positions.

ATTACHMENT 3C
ILRT SPECIAL VALVE LINEUPS
(Page 8 of 11)

SYSTEM: PENETRATION AND LINER WELD JOINT CHANNEL PRESSURIZATION SYSTEM (9321-2726) *

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
*PCV-1110-5	ZONE 2 N2 BACKUP SUPPLY REGULATOR INLET STOP	80' PAB		SHUT				
*PCV-1110-24	PCV-1195 INLET STOP	80' PAB		SHUT				
*PCV-1110-25	PCV-1195 OUTLET STOP	80' PAB		SHUT				
*PCV-1101-2	PCV-1195 BYPASS STOP	80' PAB		SHUT				
*CAP	REMOVE CAP DOWNSTREAM OF WCP-103	80' PAB		REMOVED				
*WCP-103	TEST CONNECTION ZONE 2 NORMAL SUPPLY	80' PAB		OPEN				

* Secure Zone 2 using 2-SOP-10.5.1, Weld Channel and Containment Penetration Pressurization System Operation Individual Zone Depressurization Section.

ATTACHMENT 3C
ILRT SPECIAL VALVE LINEUPS
(Page 9 of 11)

SYSTEM: PENETRATION AND LINER WELD JOINT CHANNEL PRESSURIZATION SYSTEM (9321-2726) (Continued)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
WCP-90	WCCPP SUPPLY TO 95' AIRLOCK ISOLATION	95' MOB		SHUT				
WCP-83	WCCPP SUPPLY TO 80' AIRLOCK ISOLATION	80' PAB		SHUT				
PCV-1110-3	WCCPP SUPPLY ISOLATION TO VC PURGE SUPPLY VALVES	80' PURGE ENCLOSURE		SHUT				
*CAP	CAP DOWNSTREAM OF WCP-119	80' PAB		NA				
**WCP-119	ZONE 2 NORMAL SUPPLY TEST CONNECTION STOP	80' PAB		NA				
*CAP	CAP DOWNSTREAM OF WCP-118	80' PAB		NA				
**WCP-118	ZONE 2 NORMAL SUPPLY TEST CONNECTION STOP	80' PAB		NA				
PCV-1110-4	WCCPP SUPPLY ISOLATION TO VC PURGE EXHAUST VALVES	80' PURGE ENCLOSURE		SHUT				

*Use vents as necessary to vent valve interspaces <u>WHEN</u> associated CIV's are shut <u>AND</u> WCCPP isolations are shut.

**WCP-119 and WCP-118 to be used in Attachment 17, Gauge Installation / Removal Sheet for test pressure taps.

ATTACHMENT 3C
ILRT SPECIAL VALVE LINEUPS
(Page 10 of 11)

SYSTEM: PENETRATION AND LINER WELD JOINT CHANNEL PRESSURIZATION SYSTEM (9321-2726) (Continued)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
PCV-1110-8	WCCPP SUPPLY ISOLATION TO PRESSURE RELIEF LINE BETWEEN PCV-1190 AND PCV-1191	51' PIPE PEN		SHUT				
PCV-1110-7	WCCPP SUPPLY ISOLATION TO PRESSURE RELIEF LINE BETWEEN PCV-1191 AND PCV-1192	51' PIPE PEN		SHUT				
*CAP	CAP DOWNSTREAM OF WCP-117	51' PIPE PEN		INSTALLED				
*WCP-117	TEST CONNECTION ISOLATION VALVE	51' PIPE PEN		SHUT				
*CAP	CAP DOWNSTREAM OF WCP-82	51' PIPE PEN		INSTALLED				
*WCP-82	TEST CONNECTION STOP	51' PIPE PEN		SHUT				

*Use vents as necessary to vent valve interspaces WHEN associated CIV's are shut AND WCCPP isolations are shut.

**WCP-119 and WCP-118 to be used in Attachment 17, Gauge Installation / Removal Sheet for test pressure taps.

ATTACHMENT 3C
ILRT SPECIAL VALVE LINEUPS
(Page 11 of 11)

SYSTEM: CONTAINMENT VENTILATION PURGE / RELIEF (9321-4022)

VALVE	DESCRIPTION	LOCATION	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
FCV-1171/1173	CONT BLDG PURGE VALVES	CCR SJF		SHUT				
FCV-1170/1172	CONT BLDG PURGE VALVES	80' PAB		SHUT				

NOTES: Depressurize the following valve interspaces:

- Containment Purge Supply (FCV-1170 & FCV-1171)
- Containment Purge Exhaust (FCV-1172 & FCV-1173)
- Pressure Relief (PCV-1190 & PCV-1191; PCV-1191 & PCV-1192)

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
(Page 1 of 4)

	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
CCR CONTROL SWITCHES						
21 RCP		PULLOUT				
22 RCP		PULLOUT				
23 RCP		PULLOUT				
24 RCP		PULLOUT				
21 SAFETY INJECTION PUMP		PULLOUT				
22 SAFETY INJECTION PUMP 2A		PULLOUT				
22 SAFETY INJECTION PUMP 3A		PULLOUT				
23 SAFETY INJECTION PUMP		PULLOUT				
21 CONTAINMENT SPRAY		PULLOUT				
22 CONTAINMENT SPRAY		PULLOUT				
21 RECIRCULATION PUMP		PULLOUT				
22 RECIRCULATION PUMP		PULLOUT				
21 FAN COOLER UNIT		PULLOUT				
22 FAN COOLER UNIT		PULLOUT				
23 FAN COOLER UNIT		PULLOUT				
24 FAN COOLER UNIT		PULLOUT				
25 FAN COOLER UNIT		PULLOUT				
PZR MODULATING HEATERS		PULLOUT				
21 BACKUP HEATER GROUP		OFF				
22 BACKUP HEATER GROUP		OFF				
23 BACKUP HEATER GROUP		OFF				
21 CHARGING PUMP		PULLOUT				
22 CHARGING PUMP		PULLOUT				
23 CHARGING PUMP		PULLOUT				

ATTACHMENT 3E
BREAKER LIST
(Page 2 of 4)

	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
6900 VOLTS						
RCP #21 BUS 1		RACKED OUT				
RCP #22 BUS 4		RACKED OUT				
RCP #23 BUS 3		RACKED OUT				
RCP #24 BUS 2		RACKED OUT				
480 VOLTS BUS 5A						
21 SAFETY INJECTION PUMP		RACKED OUT/TEST				
21 CONTAINMENT SPRAY PUMP		RACKED OUT/TEST				
21 FAN COOLER UNIT		RACKED OUT/TEST				
23 BACKUP HEATERS		RACKED OUT/TEST				
MCC 28		RACKED OUT/TEST				
22 FAN COOLER UNIT		RACKED OUT/TEST				
480 VOLTS BUS 2A						
MCC 28A		RACKED OUT/TEST				
22 BACKUP HEATERS		RACKED OUT/TEST				
22 SAFETY INJECTION PUMP		**RACKED IN**				
23 FAN COOLER UNIT		RACKED OUT/TEST				

ATTACHMENT 3E
BREAKER LIST
(Page 3 of 4)

	AS FOUND	TEST L/U	INIT	AS LEFT	INIT	V
480 VOLTS BUS 3A						
24 FAN COOLER UNIT		RACKED OUT/TEST				
21 BACKUP HEATER GROUP		RACKED OUT/TEST				
22 SAFETY INJECTION PUMP		RACKED OUT/TEST				
480 VOLTS BUS 6A						
PZR MODULATING HEATERS		RACKED OUT/TEST				
23 SAFETY INJECTION PUMP		RACKED OUT/TEST				
25 FAN COOLER UNIT		RACKED OUT/TEST				
22 CONTAINMENT SPRAY PUMP		RACKED OUT/TEST				
MCC 27						
CB PRESS RELIEF FAN [3MR]		OFF				
CB PURGE SUPPLY FAN [2E]		OFF				
ACCUMULATOR TOPPING PUMP [3E]		OFF				
MCC 26A						
21 AUX COMP COOLING PUMP [6KR]		OFF				
MCC 26B						
22 AUX COMP COOLING PUMP [5KR]		OFF				
ELECTRICAL PENETRATION AREA DURALINE KNIFE SWITCHES						
EDX 27		OFF				
EDX 28		OFF				
EDX 29		OFF				
EDX 30		OFF				
EDX 31		OFF				
EDX 32		OFF				

ATTACHMENT 3E
BREAKER LIST
(Page 4 of 4)

LIGHTING	AS FOUND	TEST L/U	INITIALS	AS LEFT	INITIALS	V
*LP #215 CKTS 1-14, 16-28, 30, 31, 33, 36		OFF				
*LP #216 CKTS 1-14, 16, 19, 21-24, 27, 29, 30, 31, 33, 36		OFF				
*LP #217 MAIN DISCONNECT		OFF				
*LP #218 MAIN DISCONNECT		OFF				
*LP #221 MAIN DISCONNECT		OFF				

* IF VC entry is required,
THEN operate breaker(s) in accordance with OAP-007, Containment Entry and Egress.

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. 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 21,000 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. Req'd	No. Used	Description
16		Air Compressor - Portable Engine Driven Screw Type, Capacity of 1500 scfm, 100% oil free, 100 psi. Total capacity: 22,500 cfm.
4		Air Dryer – desiccant, -40°F dewpoint out, approx. capacity of 5,400 cfm. Individual capacities (and number provided) may vary to support total capacity.
40		3" bull hoses – 50' long - to inter-connect the compressors, after coolers, air dryers and supply manifolds
As required		3" bull hoses – 25' long - to inter-connect the compressors, after coolers, air dryers and supply manifolds
3		Connection manifolds – to connect air supply via 3" bull hoses to containment/Leak rate system piping. (6" 150 lb flange pattern line)
		Miscellaneous:

ATTACHMENT 4
CONTAINMENT BUILDING PRESSURIZATION/DEPRESSURIZATION SYSTEM INSTALLATION AND CHECKOUT

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, 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.

Component Description/Need	Quantity	Voltage	Load (Amps)	Total Amps
Air Compressors; engine block heaters (temp. < 50° F)	2/unit x 15	120 vac	15 ea	15x2x15 = 450
Spare Compressor	2/unit x 1	120 vac	15 ea	30
Miscellaneous: Security light strings	16	120 vac	15	240

ATTACHMENT 4
CONTAINMENT BUILDING PRESSURIZATION/DEPRESSURIZATION SYSTEM INSTALLATION AND CHECKOUT
(Page 3 of 9)

3.0 PRESSURIZATION SYSTEM INSTALLATION

3.1 TIMELINE:

- Delivery, security inspection, transport into protected area, 1 day (Start of pressurization -3 days)
- Set-up and check out pressurization system, connect to plant piping, 1 day (Start of pressurization -2 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)

ATTACHMENT 4
CONTAINMENT BUILDING PRESSURIZATION/DEPRESSURIZATION SYSTEM INSTALLATION AND CHECKOUT
(Page 4 of 9)

4.0 PRESSURIZATION SYSTEM CHECKOUT/LINE FLUSH

4.1 TEST EQUIPMENT

4.1.1 Fine mesh cloth for cleanliness check may be used during blowing lines out prior to installation.

4.2 PROCEDURE

Initials

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

4.2.2 VERIFY air vendor has inspected lines for absence of foreign material, debris and oil. ________

4.2.3 CLOSE the following WCCPP valves:

- PCV-1101-U U A, RACK 11 PIPING PENETRATION U U PI-1189-UU STOP
- PCV-1101-U U B, RACK 11 PIPING PENETRATION U U AIR SUPPLY STOP
- PCV-1101-V V A, RACK 11 PIPING PENETRATION V V PI-1189-V V STOP
- PCV-1101-V V B, RACK 11 PIPING PENETRATION V V AIR SUPPLY STOP

____

4.2.4 DIRECT Maintenance Department to install penetration manifold(s) to penetration "U U" and "V V". ENSURE manifold penetration(s) have required isolation valves to accept ample 3" supply hoses. (Leave flanges ON inside the Containment Building). ________

4.2.5 VERIFY 3" valves upstream of penetration "U U" and "V V" have been bench tested for leak tightness <u>OR</u> PERFORM a leak test of each valve after installation. ________

ATTACHMENT 4
CONTAINMENT BUILDING PRESSURIZATION/DEPRESSURIZATION SYSTEM INSTALLATION AND CHECKOUT
(Page 5 of 9)

Initials

4.2.6 DIRECT Maintenace Department to install 3" hoses from the manifold(s) in the yard to the 3" valves on the penetration manifold(s) in the pipe pen area at U U and V V. This will completely connect pressurization line from compressors to VC. ________

4.2.7 Label air hoses in PAB to respective 3" isolation valve on either end to facilitate repairs to hose leaks easier during pressurization. ________

4.2.8 PERFORM the following to verify pressurization line integrity:

4.2.8.1 ALIGN system piping to pressurize system from compressors to VC penetration flanges to allow leak checks. ________

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

4.2.8.2 START one diesel air compressor. ________

4.2.8.3 SLOWLY RAISE pressure in system to 50 psig. ________

4.2.8.4 HOLD pressure for ten (10) minutes (or as required to complete walkdown/leak checks). ________

4.2.8.5 INSPECT each connection for leakage. IF required, REPAIR any leakage AND retest. ________

4.2.8.6 WHEN pressurization system has been verified to be leak free, THEN DIRECT ILRT Vendor to DEPRESSURIZE lines through available vent paths. ________

4.2.8.7 SECURE the compressors used for leak check. ________

ATTACHMENT 4
CONTAINMENT BUILDING PRESSURIZATION/DEPRESSURIZATION SYSTEM INSTALLATION AND CHECKOUT
(Page 6 of 9)

Initials

4.2.9. Place pressurization system in Pressurization System Standby lineup described in Table 1 of this Attachment. ______

4.2.9.1 START each individual compressor one at a time to verify operability. It is NOT necessary to load compressors. ______

4.2.9.2 SECURE the compressors. ______

4.2.9.3 FILL compressors with fuel as necessary to be prepared for the ILRT. ______

4.2.10 ENSURE the following isolation valves are CLOSED:

Valve	Description	Position	Initials	V
U U-1	U U Penetration Stop	CLOSED		
U U-2	U U Penetration Stop	CLOSED		
U U-3	U U Penetration Stop	CLOSED		
U U-4	U U Penetration Stop	CLOSED		
U U-5	U U Penetration Stop	CLOSED		
V V-1	V V Penetration Stop	CLOSED		
V V-2	V V Penetration Stop	CLOSED		
V V-3	V V Penetration Stop	CLOSED		
V V-4	V V Penetration Stop	CLOSED		
V V-5	V V Penetration Stop	CLOSED		

CAUTION

Pressure may be trapped inside penetration manifold.

4.2.11 DIRECT Maintenance to slowly REMOVE flanges from containment side of penetrations "U U" and "V V". ______

ATTACHMENT 4
CONTAINMENT BUILDING PRESSURIZATION/DEPRESSURIZATION SYSTEM INSTALLATION AND CHECKOUT
(Page 7 of 9)

Initials

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 WHEN directed by ILRT Test Supervisor, OR his designee THEN lineup pressurization system to pressurize containment per "Pressurization of Vapor Containment" line of Table 1. ______

5.3 As VC pressure rises, SECURE compressors/pressurization system as directed by the ILRT Test Supervisor OR his designee. ______

5.4 FILL 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). ______

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 OPEN the following WCCPP valves:

- PCV-1101-U U A, RACK 11 PIPING PENETRATION U U PI-1189-UU STOP
- PCV-1101-U U B, RACK 11 PIPING PENETRATION U U AIR SUPPLY STOP
- PCV-1101-V V A, RACK 11 PIPING PENETRATION V V PI-1189-V V STOP
- PCV-1101-V V B, RACK 11 PIPING PENETRATION V V AIR SUPPLY STOP

______

ATTACHMENT 4
CONTAINMENT BUILDING PRESSURIZATION/DEPRESSURIZATION SYSTEM INSTALLATION AND CHECKOUT
(Page 8 of 9)

*OPENED and CLOSED as directed by the ILRT Test Coordinator

TABLE 1 PRESSURIZATION SYSTEM ALIGNMENT	Pressurization System Components - Compressors	Air Supply to Manifold Bull Hoses	Pressurization System Supply Manifold Hose Isolation Valves	Desiccant Dryers	Compressor Outlet Valves	3" Temporary Valves to Penetration U U	3" Temporary Valves to Penetration V V	"U U" Pressurization Line Vents / Test Conn.	"V V" Pressurization Line Vents / Test Conn.
Pressurization System Standby	OFF	Installed	Closed	OFF	Closed	Closed	Closed	Closed	Closed
Pressurization of Vapor Containment	ON	Installed	Open	ON	O*	O*	O*	C*	C*
Containment at Pressure	OFF	Installed	Closed	OFF	Closed	Closed	Closed	O/C*	O/C*
During ILRT'	OFF	Installed	Closed	OFF	Closed	Open	Closed	O/C*	O/C*
During Verification Test	OFF	Installed	Closed	OFF	Closed	Open	Closed	Closed	Closed
During Depressurization	Removed	Removed	Open	OFF	Closed	Throt Open	Throt Open	Closed	Closed

ATTACHMENT 4

CONTAINMENT BUILDING PRESSURIZATION/DEPRESSURIZATION SYSTEM INSTALLATION AND CHECKOUT

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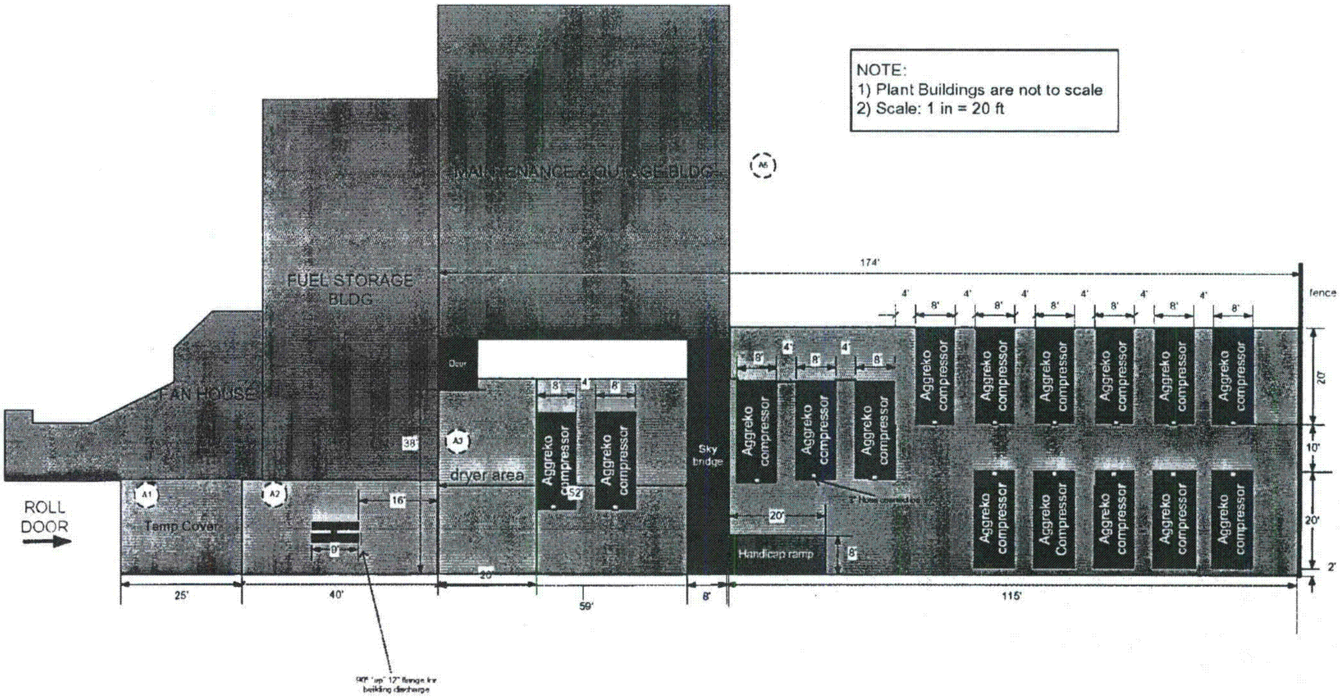
FIGURE 1: PRESSURIZATION SYSTEM LAYOUT PLAN (TYPICAL)



ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

1.0 SPECIAL EQUIPMENT AND/OR INSTRUMENTATION REQUIREMENTS

1.1 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 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 to 100 psia
Accuracy	± 0.020% Full Scale (+ 0.02 psia)
Repeatability	± 0.005% Full Scale (+ 0.005 psia)
Resolution	0.0001 psi

1.1.2 Drybulb Temperature

Quantity	30
Manufacturer	Graftel
Type	Model 9202 Thermistors
Range	50 to 150°F
Accuracy	+ /- 2.0°F
Repeatability	+ / - 0.01°F
Resolution	+ / - 0.001°F

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
(Page 2 of 19)

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	+ / - 3.5% RH
Repeatability	+ / - 0.10% RH

1.1.4 Verification Flow

Quantity	2 (1 primary, 1 backup)
Manufacturer	Brooks
Type	Mechanical tube and float
Range	1 to 10 scfm
Accuracy	+ / - 2% full scale
Repeatability	+ / - 0.2% full scale

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT

1.1.5 Ambient Pressure

Quantity	1
Manufacturer	Bell & Howell (or equivalent)
Type	CEC-402 (Strain Gauge)
Range	0 to 25 psia
Accuracy	+ / - 0.25% full scale
Repeatability	+ / - 0.1% full scale

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

Visalla hand held hygrometer = 1

Sensor locations are described in Section 6.0 of this Attachment.

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
(Page 4 of 19)

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.

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
(Page 5 of 19)

4.0 CALIBRATION INFORMATION

4.1 Test instrumentation have been calibrated within six months of start of ILRT, or at interval specified by 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.

4.3 Test instrumentation is installed at locations provided.

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

Plant Instrument Designator	S/N Address	Calibration Date	Verified By/Date Calibration	Sensor Positioned	Standard Reading	Sensor Reading	Difference	Acceptance Criteria	Calibration Check Verified By/Date
TE1								± 2.0°F	
TE2								± 2.0°F	
TE3								± 2.0°F	
TE4								± 2.0°F	
TE5								± 2.0°F	

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
(Page 6 of 19)

Plant Instrument Designator	S/N Address	Calibration Date	Verified By/Date Calibration	Sensor Positioned	Standard Reading	Sensor Reading	Difference	Acceptance Criteria	Calibration Check Verified By/Date
TE6								± 2.0°F	
TE7								± 2.0°F	
TE8								± 2.0°F	
TE9								± 2.0°F	
TE10								± 2.0°F	
TE11								± 2.0°F	
TE12								± 2.0°F	
TE13								± 2.0°F	
TE14								± 2.0°F	
TE15								± 2.0°F	

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
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Plant Instrument Designator	S/N Address	Calibration Date	Verified By/Date Calibration	Sensor Positioned	Standard Reading	Sensor Reading	Difference	Acceptance Criteria	Calibration Check Verified By/Date
TE16								± 2.0°F	
TE17								± 2.0°F	
TE18								± 2.0°F	
TE19								± 2.0°F	
TE20								± 2.0°F	
TE21								± 2.0°F	
TE22								± 2.0°F	
TE23								± 2.0°F	
TE24								± 2.0°F	
TE25								± 2.0°F	

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
(Page 8 of 19)

Plant Instrument Designator	S/N Address	Calibration Date	Verified By/Date Calibration	Sensor Positioned	Standard Reading	Sensor Reading	Difference	Acceptance Criteria	Calibration Check Verified By/Date
TE26								± 2.0°F	
TE27								± 2.0°F	
TE28								± 2.0°F	
TE29								± 2.0°F	
TE30								± 2.0°F	
HE1								± 5%RH	
HE2								± 5%RH	
HE3								± 5%RH	
HE4								± 5%RH	
HE5								± 5%RH	

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
(Page 9 of 19)

Plant Instrument Designator	S/N Address	Calibration Date	Verified By/Date Calibration	Sensor Positioned	Standard Reading	Sensor Reading	Difference	Acceptance Criteria	Calibration Check Verified By/Date
HE6								± 5%RH	
HE7								± 5%RH	
HE8								± 5%RH	
HE9								± 5%RH	
HE10								± 5%RH	
PT-1									
PT-2									
FT-1									
FT-2									

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
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NOTES

- 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.
- 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.
- 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 proceeded 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 L_0 to verify that tubing size is adequate to pass the desired flow rate with existing bends, valves, and pressure drops.

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
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5.0 INSTRUMENTATION INSTALLATION: SENSOR STRING TERMINATION RECORD

STRING #	Pin/ LD	OUTSIDE WIRE #/ Terminal #	INSTALLED INIT/DATE	REMOVED INIT/DATE	INSIDE WIRE #/ Terminal #	Pin/ LD	INSTALLED INIT/DATE	REMOVEDI NIT/DATE
#1 IN	A					A		
	B					B		
	D Shld					D Shld		
	E (+)					E (+)		
	F (-)					F (-)		
STRING #	Pin/ LD	OUTSIDE WIRE #/ Terminal #	INSTALLED INIT/DATE	REMOVED INIT/DATE	INSIDE WIRE #/ Terminal #	Pin/ LD	INSTALLED INIT/DATE	REMOVEDI NIT/DATE
#1 OUT	A					A		
	B					B		
	D Shld					D Shld		
	E (+)					E (+)		
	F (-)					F (-)		

Pigtail leads should be labeled to match amphenol pinout.

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
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5.0 INSTRUMENTATION INSTALLATION: SENSOR STRING TERMINATION RECORD

STRING #	Pin/ LD	OUTSIDE WIRE #/ Terminal #	INSTALLED INIT/DATE	REMOVED INIT/DATE	INSIDE WIRE #/ Terminal #	Pin/ LD	INSTALLED INIT/DATE	REMOVEDI NIT/DATE
#2 IN	A					A		
	B					B		
	D Shld					D Shld		
	E (+)					E (+)		
	F (-)					F (-)		
STRING #	Pin/ LD	OUTSIDE WIRE #/ Terminal #	INSTALLED INIT/DATE	REMOVED INIT/DATE	INSIDE WIRE #/ Terminal #	Pin/ LD	INSTALLED INIT/DATE	REMOVEDI NIT/DATE
#2 OUT	A					A		
	B					B		
	D Shld					D Shld		
	E (+)					E (+)		
	F (-)					F (-)		

Pigtail leads should be labeled to match amphenol pinout.

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
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5.0 INSTRUMENTATION INSTALLATION: SENSOR STRING TERMINATION RECORD

STRING #	Pin/ LD	OUTSIDE WIRE #/ Terminal #	INSTALLED INIT/DATE	REMOVED INIT/DATE	INSIDE WIRE #/ Terminal #	Pin/ LD	INSTALLED INIT/DATE	REMOVEDI NIT/DATE
#3 IN	A					A		
	B					B		
	D Shld					D Shld		
	E (+)					E (+)		
	F (-)					F (-)		
STRING #	Pin/ LD	OUTSIDE WIRE #/ Terminal #	INSTALLED INIT/DATE	REMOVED INIT/DATE	INSIDE WIRE #/ Terminal #	Pin/ LD	INSTALLED INIT/DATE	REMOVEDI NIT/DATE
#3 OUT	A					A		
	B					B		
	D Shld					D Shld		
	E (+)					E (+)		
	F (-)					F (-)		

Pigtail leads should be labeled to match amphenol pinout.

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
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5.0 INSTRUMENTATION INSTALLATION: SENSOR STRING TERMINATION RECORD

STRING #	Pin/ LD	OUTSIDE WIRE #/ Terminal #	INSTALLED INIT/DATE	REMOVED INIT/DATE	INSIDE WIRE #/ Terminal #	Pin/ LD	INSTALLED INIT/DATE	REMOVEDI NIT/DATE
#4 IN	A					A		
	B					B		
	D Shld					D Shld		
	E (+)					E (+)		
	F (-)					F (-)		
STRING #	Pin/ LD	OUTSIDE WIRE #/ Terminal #	INSTALLED INIT/DATE	REMOVED INIT/DATE	INSIDE WIRE #/ Terminal #	Pin/ LD	INSTALLED INIT/DATE	REMOVEDI NIT/DATE
#4 OUT	A					A		
	B					B		
	D Shld					D Shld		
	E (+)					E (+)		
	F (-)					F (-)		

Pigtail leads should be labeled to match amphenol pinout.

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
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5.0 INSTRUMENTATION INSTALLATION: SENSOR STRING TERMINATION RECORD

STRING #	Pin/ LD	OUTSIDE WIRE #/ Terminal #	INSTALLED INIT/DATE	REMOVED INIT/DATE	INSIDE WIRE #/ Terminal #	Pin/ LD	INSTALLED INIT/DATE	REMOVEDI NIT/DATE
#___ IN	A					A		
	B					B		
	D Shld					D Shld		
	E (+)					E (+)		
	F (-)					F (-)		
STRING #	Pin/ LD	OUTSIDE WIRE #/ Terminal #	INSTALLED INIT/DATE	REMOVED INIT/DATE	INSIDE WIRE #/ Terminal #	Pin/ LD	INSTALLED INIT/DATE	REMOVEDI NIT/DATE
#___ OUT	A					A		
	B					B		
	D Shld					D Shld		
	E (+)					E (+)		
	F (-)					F (-)		

Pigtail leads should be labeled to match amphenol pinout.

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
(Page 16 of 19)

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 the evaluation documented in Attachment 7, Test Exceptions Log.

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.

SENSOR LOCATIONS AND VOLUME FRACTIONS									
TEST EQUIPMENT	PLND ELEV.	INSTL'D ELEV.	PLND AZ.	INSTL'D AZ.	PLND RADIUS	INSTL'D RADIUS	ORIGINAL VWF	AS TESTED VWF	SENSOR S/N
TE1	210'		0°		8'		0.032220		
TE2	190'		270°		19'		0.032220		
TE3	210'		90°		8'		0.032220		
TE4	175'		90°		27'		0.038390		
TE5	210'		180°		8'		0.032220		
TE6	175'		270°		27'		0.038390		
TE7	190'		180°		19'		0.032220		
TE8	160'		270°		37'		0.038390		
TE9	210'		270°		8'		0.032220		

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
(Page 17 of 19)

6.0 INSTRUMENT LOCATIONS

SENSOR LOCATIONS AND VOLUME FRACTIONS									
TEST EQUIPMENT	PLND ELEV.	INSTL'D ELEV.	PLND AZ.	INSTL'D AZ.	PLND RADIUS	INSTL'D RADIUS	ORIGINAL VWF	AS TESTED VWF	SENSOR S/N
TE10	190'		0°		19'		0.032220		
TE11	160'		90°		37'		0.038390		
TE12	160'		90°		19'		0.032220		
TE13	175'		180°		27'		0.038390		
TE14	160'		180°		37'		0.038390		
TE15	120'		270°		50'		0.042503		
TE16	120'		0°		50'		0.042503		
TE17	160'		0°		37'		0.038390		
TE18	120'		90°		50'		0.042503		
TE19	98'		180°		55'		0.019671		
TE20	120'		180°		50'		0.042503		
TE21	98'		0°		55'		0.019671		
TE22	98'		270°		55'		0.019671		
TE23	98'		216°		50'		0.019671		
TE24	98'		144°		50'		0.019671		
TE25	98'		90°		50'		0.019671		

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
(Page 18 of 19)

6.0 INSTRUMENT LOCATIONS

SENSOR LOCATIONS AND VOLUME FRACTIONS									
TEST EQUIPMENT	**PLND ELEV.**	**INSTL'D ELEV.**	**PLND AZ.**	**INSTL'D AZ.**	**PLND RADIUS**	**INSTL'D RADIUS**	**ORIGINAL VWF**	**AS TESTED VWF**	**SENSOR S/N**
TE26	71'		72°		50'		0.037095		
TE27	71'		144°		50'		0.037095		
TE28	71'		216°		50'		0.037094		
TE29	71'		288°		50'		0.037094		
TE30	71'		0°		50'		0.037094		
						VWF TOTAL:	**1.00**		

ATTACHMENT 5
ILRT MEASUREMENT SYSTEM INSTALLATION AND CHECKOUT
(Page 19 of 19)

6.0 INSTRUMENT LOCATIONS

SENSOR LOCATIONS AND VOLUME FRACTIONS									
TEST EQUIPMENT	PLND ELEV.	INSTL'D ELEV.	PLND AZ.	INSTL'D AZ.	PLND RADIUS	INSTL'D RADIUS	ORIGINAL VWF	AS TESTED VWF	SENSOR S/N
HE1	210'		0°		8'		0.090490		
HE2	210'		90°		8'		0.090490		
HE3	175'		270°		27'		0.090490		
HE4	190'		180°		19'		0.090490		
HE5	120'		270°		50'		0.119204		
HE6	160'		0°		37'		0.119204		
HE7	120'		90°		50'		0.119204		
HE8	71'		72°		50'		0.093476		
HE9	71'		216°		50'		0.093476		
HE10	71'		0°		50'		0.093476		

ATTACHMENT 6
CONTAINMENT BUILDING LEAK RATE TEST SYSTEM LEAK RATE TESTING
(Page 1 of 3)

1.0 TEST SAMPLE LINES

> **NOTE**
>
> IF installing test sensing & flow lines during Pre-Outage THEN ENSURE Electrical Penetration door is NOT blocked open until Unit is in MODE 4 OR below.

1.1 REMOVE cap from valve 5128, Test Connection Downstream SOV-5024 (PACAS) on 68' Mezzanine. ________

1.2 INSTALL test sensing line (3/8" or better) from 5128 to the ILRT Vendor control station in the Electrical Penetration area. ________

1.3 INSTALL test valve at Elec Pen end of test sensing line. ________

1.4 INSTALL test flow line (1/2" or better) from RAS-559, VC AIR SAMPLE FLOW OUT FROM VC, (68' Mezzanine) to the ILRT Vendor control station in the Electrical Penetration area. Split line to accommodate Vendor Flow Verification Test and Chemistry Dept Sample. ________

1.5 INSTALL two test valves at Elec Pen end of test flow lines. ________

1.6 At the ILRT control station, pressurize the two (2) sensing lines to 50 psig, +5 psig, -0 psig. INSPECT all connections for leakage on each sensing line and repair any indications. Retest, IF required. VERIFY by initialing below.

____
Sensing Line / Initials / Date

____
Flow Verification Line / Initials / Date

ATTACHMENT 6
CONTAINMENT BUILDING LEAK RATE TEST SYSTEM LEAK RATE TESTING
(Page 2 of 3)

1.7 ALIGN the following instrumentation valves at the direction of the ILRT consultant.

- 5128, TEST CONNECTION DOWNSTREAM SOV-5024 (PACAS). ______
- RAS-529, VC AIR SAMPLE FLOW OUT FROM VC. ______
- LRT-1, ILRT Sensing Line Isolation. ______
- LRT-2, ILRT Flow Line Isolation. ______

1.8 ALIGN CHEM-1, ILRT Chem Sample Isolation as directed by Chemistry to permit Containment sampling ______

2.0 RESTORATION

2.1 ENSURE the following valves are CLOSED:

- 5128, Test Connection Downstream SOV-5024 (PACAS). ______ ______ V
- RAS-529, VC Air Sample Flow Out From VC ______ ______ V
- LRT-1, ILRT Sensing Line Isolation. ______ ______ V
- LRT-2 ILRT Flow Line Isolation. ______ ______ V
- CHEM-1, ILRT Chem Sample Isolation. ______ ______ V

ATTACHMENT 6
CONTAINMENT BUILDING LEAK RATE TEST SYSTEM LEAK RATE TESTING
(Page 3 of 3)

2.2 REMOVE test sensing & flow lines from valves 5128 and RAS-559.

____

____

V

2.3 REPLACE cap at 5128.

____

____

V

2.4 ENSURE Electrical Penetration door is <u>NOT</u> blocked open for ILRT purposes.

____

____

V

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? YES/NO	TEST L/U	RE-POSITIONED BY (Name / Extension)	RESTORED TO TEST L/U (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
(Page 1 of 15)

PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
80 ft Lock		80' Airlock	80' Airlock	.6La-B	Tested by ILRT				
95 ft Lock		95' Airlock	95' Airlock	.6La-B	Tested by ILRT				
LL	369	PT- 948B/949B	Containment Pressure Transmitter	.6La-B	Tested by ILRT				
O	370	PT-948C/949C	Containment Pressure Transmitter	.6La-B	Tested by ILRT				
RR	368	PT- 948A/949A	Containment Pressure Transmitter	.6La-B	Tested by ILRT				
UU		SPARE	Gasketed Spare Pentrations (ILRT)	.6La-B	Take Penalty				
VV		SPARE	Gasketed Spare Pentrations (ILRT)	.6La-B	Take Penalty				
		Rack #11	Rack # 11	.6La-B	Vented				
		Rack #14/18	Weld Channels; Dome, Bottom	.6La-B	Vented				
		Rack #16	Fuel transfer tube double gasketed seal	.6La-B	Vented				

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY
(Page 2 of 15)

PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
		Rack #16	Equipment hatch double gasketed seal	.6La-B	Vented				
		Rack #12	Rack #12 Electrical Penetrations	.6La-B	Vented				
		Rack #13	Rack #13 Electrical Penetrations	.6La-B	Vented				
		Rack #10/15	WCCPP pressurization air [43] [9321-2726] ZONE 2	.6La-B	Vented				
		PT-3300	Containment Pressure Transmitter	.6La-B	Tested by ILRT				
		PT-3301	Containment Pressure Transmitter	.6La-B	Tested by ILRT				
			Electrical Penetrations [-] [9321-2726]	.6La-B	Tested by ILRT				

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY
(Page 3 of 15)

PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
80 ft Lock		85C	80 Ft Airlock Isolation Spring Loaded Check Valves	.6La-C	Tested by ILRT				
80 ft Lock		85D	80 Ft Airlock Isolation Spring Loaded Check Valves	.6La-C	Tested by ILRT				
80 ft Lock		85A	80 Ft Airlock Inner Door Equalizing Valve	.6La-C	Tested by ILRT				
80 ft Lock		85B	80 Ft Airlock Inner Door Equalizing Valve	.6La-C	Tested by ILRT				
95 ft Lock		95C	95 Ft Airlock Isolation Spring Loaded Check Valves	.6La-C	Tested by ILRT				
95 ft Lock		95D	95 Ft Airlock Isolation Spring Loaded Check Valves	.6La-C	Tested by ILRT				
95 ft Lock		95A	95 Ft Airlock Inner Door Equalizing Valve	.6La-C	Tested by ILRT				
95 ft Lock		95B	95 Ft Airlock Inner Door Equalizing Valve	.6La-C	Tested by ILRT				
EE	49	FCV-1170/1171	VC Purge Air Supply Isolation	.6La-C	Tested by ILRT				
FF	50	FCV-1172/1173	VC Purge Exhaust	.6La-C	Tested by ILRT				
GG	51	867A/878A	Containment Spray Header CIV	.6La-C	Take Penalty				

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY
(Page 4 of 15)

PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
LL	608	SOV-5018/5019	FCU Hydrogen Sampling [57] [208479]	.6La-C	Tested by ILRT				
LL	629	E-1, E-2, E-3, E-5	Post Accident Venting System [65] [208879]	.6La-C	Tested by ILRT				
O	572	SOV-5024	FCU Hydrogen Sampling [57] [208479]	.6La-C	Tested by ILRT				
O	605	SOV-5020/5021	FCU Hydrogen Sampling [57] [208479]	.6La-C	Tested by ILRT				
P	15	867B	Containment Spray Pump Header CIV [14] [9321-2735]	.6La-C	Take Penalty				
PP	58	PCV-1190/1191/1192	Pressure Relief Isolation	.6La-C	Tested by ILRT				
R	28	PCV-1229/1230	Air from SJAE to CB [34] [9321-2025]	.6La-C	Tested by ILRT				
R	557	SOV-5022/5023	FCU Hydrogen Sampling [57] [208479]	.6La-C	Tested by ILRT				
R	606	SOV-5018/5019	FCU Hydrogen Sampling [57] [208479]	.6La-C	Tested by ILRT				

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY
(Page 5 of 15)

PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
RR	65	PCV-1234/1235	Radiation Monitor Sample [32] [9321-2726]	.6La-C	Take Penalty				
RR	66	PCV-1236/1237	Radiation Monitor Sample [33] [9321-2726]	.6La-C	Tested by ILRT				
RR	68	863/4312	N_2 Supply to PORV and SI Accumulators [17] [235296]	.6La-C	Tested by ILRT				
TT	607	SOV-5018/5019	FCU Hydrogen Sampling [57] [208479]	.6La-C	Tested by ILRT				
V	67	SOV-3416/SOV-3417 /1616/5459	N_2 to RCDT [19] [9321-2719]	.6La-C	Tested by ILRT				
Y	32	SOV-3418/SOV-3419 /518/4136	N_2 to PRT [2] [9321-2738]	.6La-C	Tested by ILRT				
Y	39	IA-39/PCV-1228	Instrument Air to VC [64] [9321-2036]	.6La-C	Take Penalty				
Z	630	SOV-5020/5021	FCU Hydrogen Sampling [57] [208479]	.6La-C	Tested by ILRT				
		IIP-500 through IIP-507	Safe Shutdown Transmitters	.6La-C	Tested by ILRT				

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY
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PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
AA	45	PCV-1215/1215A	32 S/G Blowdown Upstream Containment Isolation	IVSW	NO				
BB	46	PCV-1214/1214A	31 S/G Blowdown Upstream Containment Isolation	IVSW	NO				
CC	47	PCV-1216/1216A	33 S/G Blowdown Upstream Containment Isolation	IVSW	NO				
DD	48	PCV-1217/1217A	34 S/G Blowdown Upstream Containment Isolation	IVSW	NO				
GG	51	869A	Containment Spray Pump Header VC Isolation	IVSW	NO				
J	9	741/744	RHR Pumps Discharge Header Stop	IVSW	NO				
N	13	769/797	CCW to RCS Pump Seals and Motor Cooling [22] [227781]	IVSW	NO				
NN	56	850A/851A	Safety Injection Pump Discharge Stop	IVSW	NO				
O	14a	MOV-789/FCV-625	CCW RCP Cooling from Seals to CCW Pumps [24] [227781]	IVSW	NO				
P	15	869B	Containment Spray Pump to Header [14] [9321-2735]	IVSW	NO				

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY
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PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
Q	16	850B/851B	SI Discharge [15] [9321-2735]	IVSW	NO				
R	17	222	Seal Water Return from RCP [11] [9321-2736]	IVSW	NO				
R	18	793/796	CCW from Excess Letdown HX to CCW Pumps [30] [227781]	IVSW	NO				
R	19	205/226/227	Charging Water from Charging Pumps [9] [9321-2736]	IVSW	NO				
RR	788	5132/4399	High Rad Sample Sys Return to Cntmnt Sump Isol [31a] [227178]	IVSW	NO				
S	20	UH-43	Aux Steam Supply to VC [45] [9321-2027]	IVSW	NO				
T	21	UH-44	Aus Steam Cond Return [46] [9321-2027]	IVSW	NO				
U	22	791/798	CCW to Excess Letdown Heat Exchanger [29] [227781]	IVSW	NO				
V	23	1786/1787	RCDT to Waste Gas Header [19] [9321-2719]	IVSW	NO				
V	24	548/549	PRT Gas Analyzer Containment Isolation	IVSW	NO				

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY
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PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
V	30	1788/1789	RCDT Gas Analyzer Sample Isolation	IVSW	NO				
W	25	956A/956B	Pressurizer Steam Sample Isolation	IVSW	NO				
W	26	956C/956D	Pressurizer Liquid Sample Isolation	IVSW	NO				
W	59	956E/956F	Hot Leg Loop 1&3 Sample Isolation	IVSW	NO				
RR	69	956G/956H	Accumulators Sample Isolation	IVSW	NO				
X	27	201/202	Reactor Coolant System Letdown [8] [9321-2736]	IVSW	NO				
Y	31	859A/859C	Test Line from RC Cold Leg to RWST [16] [9321-2735]	IVSW	NO				
Y	33	519/552	Primary Water Containment Isolation	IVSW	NO				
Y	34	SA-24-1/SA-24	Station Air Supply to VC [41] [9321-2035]	IVSW	NO				
Y	35	MW-17/MW-17-1	City Water Header to CB [47] [9321-2018]	IVSW	NO				
Y	338	1723/1728	Containment Sump Pumps Isolation	IVSW	NO				

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY
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PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
Z	40	1702/1705	RCDT Pumps Discharge Containment Isolation	IVSW	NO				
Z	41	250A/4925	Seal Water Injection to RCP [10] [9321-2736]	IVSW	NO				
Z	42	250B/4926	Seal Water Injection to RCP [10] [9321-2736]	IVSW	NO				
Z	43	250C/4927	Seal Water Injection to RCP [10] [9321-2736]	IVSW	NO				
Z	44	250D/4927	Seal Water Injection to RCP [10] [9321-2736]	IVSW	NO				
JJ	52	760A/822A, 760B/822B	CCW Return RHR HX [26] [227781]	NO	NO				
K	10	732/743	RHR from RC hot leg [6] [251783]	NO	NO				
K	294	958/959/990D	RHR Loop Sample [5] [9321-2745]	NO	NO				

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY
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PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
La	11a	SWN-41-1A/ SWN-42-1/SWN-43-1	Service Water Supply to FCU 21 [39] [209762]	NO	NO				
Lb	11b	SWN-43-1A/ SWN-42-3/SWN-43-3	Service Water Supply to FCU 23 [39] [209762]	NO	NO				
Lc	11c	SWN-43-4A/ SWN-42-4/SWN-43-4	Service Water Supply to FCU 24 [39] [209762]	NO	NO				
Ld	11b	SWN-43-2A/ SWN-42-2/SWN-43-2	Service Water Supply to FCU 22 [39] [209762]	NO	NO				
Le	11e	SWN-43-5A/ SWN-42-5/SWN-43-5	Service Water Supply to FCU 25 [39] [209762]	NO	NO				
LL	54	753H	CCW/Aux CCW to Recirculation Pumps Supply Header Stop [227781]	NO	NO				
LL	55	753G	Recirculation Pumps CCW Return Header Stop Valve [227781]	NO	NO				
LL	369	1814B	Containment Pressurization Sensing Instrumentation Stop	NO	NO				
Ma	12a	SWN-44-3A/SWN-51-3A	Service Water from FCU 23 to River [40] [209762	NO	NO				

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY
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PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
Mb	12b	SWN-44-1A/SWN-51-1A	Service Water from FCU 21 to River [40] [209762	NO	NO				
Mc	12c	SWN-44-4A/SWN-51-4A	Service Water from FCU 24 to River [40] [209762	NO	NO				
Md	12d	SWN-44-2A/SWN-51-2A	Service Water from FCU 22 to River [40] [209762	NO	NO				
Me	12e	SWN-44-5A/SWN-51-5A	Service Water from FCU 25 to River [40] [209762	NO	NO				
O	370	1814C	Containment Pressurization Sensing Instrumentation Stop	NO	NO				
OO	57	885A/885B	Containment Sump Recirc Line [7] [9321-2735]	NO	NO				
QQ	60	888A/888B	Low Head to High Head Safety Injection Recirc. Stop	NO	NO				
RR	368	1814A	Containment Pressurization Sensing Instrumental Stop	NO	NO				

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY
(Page 12 of 15)

PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
SS	495	SWN-71-4A	Service Water Motor Cooler Return FCU 24 [40a] [209762]	NO	NO				
SS	496	SWN-71-3A	Service Water Motor Cooler Return FCU 23 [40a] [209762]	NO	NO				
SS	497	SWN-71-1A	Service Water Motor Cooler Return FCU 21 [40a] [209762]	NO	NO				
SS	498	SWN-71-2A	Service Water Motor Cooler Return FCU 22 [40a] [209762]	NO	NO				
SS	499	SWN-71-5A	Service Water Motor Cooler Return FCU 25 [40a] [209762]	NO	NO				
TT	595	990A/990B	Recirculation Pump Sample Isolation	NO	NO				
Y	36	PCV-1111-1	WCCPP pressurization air [43] [9321-2726]	NO	NO				
Y	37	PCV-1111-2	WCCPP pressurization air [43] [9321-2726]	NO	NO				
		1870	RHR LoopMini Flow Test Line Stop	NO	NO				

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY
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PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
E	6	FCV-417, FCV-417L	Main Feed Line [36] [9321-2019]	Type A	NO				
F	5	FCV-427, FCV-427L	Main Feed Line [36] [9321-2019]	Type A	NO				
G	8	FCV-447, FCV-447L	Main Feed Line [36] [9321-2019]	Type A	NO				
H	7	FCV-437, FCV-437L	Main Feed Line [36] [9321-2019]	Type A	NO				
K	337		RHR Miniflow [5] [251783]	Type A	NO				
KK	53	CCW HX	CCW Supply [25] [227781]	Type A	NO				
LL		LL-LIS-1311	Reactor Vessel Level Inst [-] [208798]	Type A	NO				
LL		LL-LIS-1312	Reactor Vessel Level Inst [-] [208798]	Type A	NO				
O	14	784	CCW RCP Cooling from Seals to CCW Pumps [23] [227781]	Type A	NO				

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY
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PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
RR	474	580A	Old Dead Weight Tester Penetration [44] [9321-2738]	Type A	NO				
RR	529	PIS-403	Instrument PE-403 [-] [9321-2738]	Type A	NO				
RR		LL-LIS-1321	Reactor Vessel Level Inst [-] [208798]	Type A	NO				
RR		LL-LIS-1322	Reactor Vessel Level Inst [-] [208798]	Type A	NO				
W	364		Spare [38] [9321-2714]	Type A	NO				
W	365	PIS-402	PE-402 [-] [9321-2738]	Type A	NO				
W	366		Spare [38] [9321-2714]	Type A	NO				
W	367		Spare [38] [9321-2714]	Type A	NO				
Z	1A		Steam Generator Level [70] [9321-2019]	Type A	NO				
Z	1B		Steam Generator Level [70] [9321-2019]	Type A	NO				

ATTACHMENT 9
CONTAINMENT PENETRATION SUMMARY
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PENETRATION STATUS DURING ILRT

Pen. No.	Line #	Component	Description [FSAR Fig #] [Drawing]	App J Prgrm?	Penalty Addition? (IF yes = value)	Last Test Date	As-Left MNPLR	As-Found MNPLR	Leakage Savings
Z	2A		Pressurizer Level [70] [9321-2738]	Type A	NO				
Z	3A		Pressurizer Pressure [70] [9321-2738]	Type A	NO				
				TOTALS:					

Initials

ATTACHMENT 10
CONTAINMENT BUILDING VISUAL INSPECTION
(Page 1 of 6)

1.0 CONTAINMENT VISUAL INSPECTION

1.1 10CFR50, Appendix J and Regulatory Guide 1.163 require a visual inspection of accessible areas of the internal and external surfaces of the vapor containment building. This inspection requirement may be met in part OR its entirety by completing 2-PI-R002, Internal Containment Structural Visual Inspection and 2-PT-2Y001, External Containment Structural Visual Inspection OR by walking down the Containment per the instructions in this Attachment.
N/A any Section below that is met by accepting a satisfactorily completed 2-PI-R002 OR 2-PT-2Y001 inspection result.

2.0 EXTERIOR INSPECTION

2.1 INSPECT all pipe and electrical penetration areas, 80' and 95' 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 WRT #'s for corrective action:

____

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

____

ATTACHMENT 10
CONTAINMENT BUILDING VISUAL INSPECTION
(Page 2 of 6)

EXTERIOR INSPECTION (continued) **Initials**

80' AND 95' AIRLOCKS (OUTSIDE)	
ABNORMALITIES	**WRT #**
1.	
2.	
3.	
4.	
5.	
6.	

____

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

____

ATTACHMENT 10
CONTAINMENT BUILDING VISUAL INSPECTION
(Page 3 of 6)

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 WRT #'s for corrective action:

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

ATTACHMENT 10
CONTAINMENT BUILDING VISUAL INSPECTION
(Page 4 of 6)

INTERIOR INSPECTION (continued) **Initials**

80' AND 95' AIRLOCKS (INSIDE)	
ABNORMALITIES	**WRT #**
1.	
2.	
3.	
4.	
5.	
6.	

______

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

______

ATTACHMENT 10
CONTAINMENT BUILDING VISUAL INSPECTION
(Page 5 of 6)

INTERIOR INSPECTION (continued) **Initials**

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

______

CAUTION

Watch Health Physics Tech SHALL be informed PRIOR to inspecting the Reactor Sump.

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

______

ATTACHMENT 10
CONTAINMENT BUILDING VISUAL INSPECTION
(Page 6 of 6)

COMMENTS:

TEST PERFORMERS:

Print Name:	Initials:	Signature/Date:

ATTACHMENT 11
CONTINGENCIES
(Page 1 of 16)

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, SM, Test Supervisor. Document all manipulations on Attachment 8, Valve Lineup Alteration Log.
Pressurization	• Close pressurization valve(s). • Unload and stop compressors.	From SAFE condition: • Proceed to Procedure Section 4.6, 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 SM if required. • Monitor depressurization rate closely.

ATTACHMENT 11
CONTINGENCIES
(Page 2 of 16)

2.0 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
(Page 3 of 16)

2.0 EXCESSIVE LEAKAGE (Continued)

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 Leak Scenario 1 response. • 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 SM, 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, THEN modify penetration's test status as reflected in Attachment 9, Containment Penetration Summary if appropriate.
Pressurization Continued:	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.

ATTACHMENT 11
CONTINGENCIES
(Page 4 of 16)

2.0 EXCESSIVE LEAKAGE (Continued)

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 Leak 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).

ATTACHMENT 11
CONTINGENCIES
(Page 5 of 16)

2.0 EXCESSIVE LEAKAGE (Continued)

TEST PHASE	LEAK SCENARIO	RESPONSE
Stabilization Continued.	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 Leak Scenario 1. • 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 SM, 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.
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.

ATTACHMENT 11
CONTINGENCIES
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2.0 EXCESSIVE LEAKAGE (Continued)

TEST PHASE	LEAK SCENARIO	RESPONSE
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 Leak 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 Leak Scenario 1 response. • 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 SM, 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
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2.0 EXCESSIVE LEAKAGE (Continued)

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 Leak 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, NOT Locally Leak Rate Testable	• Apply Leak 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.

ATTACHMENT 11
CONTINGENCIES
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2.0 EXCESSIVE LEAKAGE (Continued)

TEST PHASE	LEAK SCENARIO	RESPONSE
Verification Test Continued	12. Test Boundary	• Apply Leak 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.

ATTACHMENT 11
CONTINGENCIES
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Initials

3.0 HIGH CONTAINMENT ACTIVITY VENT PATH

3.1 VERIFY the following valves on the penetration manifold are CLOSED:

Valve	Description	Location	Position	Initials
U U-1	UU Penetration Stop	51' PIPE PEN	CLOSED	
U U-2	UU Penetration Stop	51' PIPE PEN	CLOSED	
U U-3	UU Penetration Stop	51' PIPE PEN	CLOSED	
U U-4	UU Penetration Stop	51' PIPE PEN	CLOSED	
U U-5	UU Penetration Stop	51' PIPE PEN	CLOSED	
V V-1	V V Penetration Stop	51' PIPE PEN	CLOSED	
V V-2	V V Penetration Stop	51' PIPE PEN	CLOSED	
V V-3	V V Penetration Stop	51' PIPE PEN	CLOSED	
V V-4	V V Penetration Stop	51' PIPE PEN	CLOSED	
V V-5	V V Penetration Stop	51' PIPE PEN	CLOSED	
U U-6	U U Manifold Stop	YARD	CLOSED	
U U-7	U U Manifold Stop	YARD	CLOSED	
U U-8	U U Manifold Stop	YARD	CLOSED	
U U-9	U U Manifold Stop	YARD	CLOSED	
U U-10	U U Manifold Stop	YARD	CLOSED	
V V-6	V V Manifold Stop	YARD	CLOSED	
V V-7	V V Manifold Stop	YARD	CLOSED	
V V-8	V V Manifold Stop	YARD	CLOSED	
V V-9	V V Manifold Stop	YARD	CLOSED	
V V-10	V V Manifold Stop	YARD	CLOSED	

3.2 DISCONNECT all 3" air hoses at the Yard Manifold end. ________

3.3 CLOSE Fan House Roll-Up Door #220. ________

3.4 BLOCK OPEN VC Exhaust Plenum door. (72' Fan House) ________

3.5 ROUTE open end of 3" air hoses to the VC Purge Exhaust Plenum. ________

ATTACHMENT 11
CONTINGENCIES
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Initials

3.6 START both PAB Exhaust Fans per 2-SOP-11.1, Ventilation System Operation. Do NOT start the PAB Supply Fan. ______

3.7 WHEN permission from HP is received,
THEN SLOWLY OPEN depressurization path blowdown valves and release air from containment. Maintain maximum depressurization rate less than 15 psi/hr AND PAB at a negative pressure as follows:

Valve	Description	Position	Initials
U U-1	U U Penetration Stop	OPEN	
U U-2	U U Penetration Stop	OPEN	
U U-3	U U Penetration Stop	OPEN	
U U-4	U U Penetration Stop	OPEN	
U U-5	U U Penetration Stop	OPEN	
V V-1	V V Penetration Stop	OPEN	
V V-2	V V Penetration Stop	OPEN	
V V-3	V V Penetration Stop	OPEN	
V V-4	V V Penetration Stop	OPEN	
V V-5	V V Penetration Stop	OPEN	

3.7.1 ENSURE PAB pressure remains negative. ______

3.7.2 GO TO step 4.6.5 in the main body of this procedure. ______

ATTACHMENT 11
CONTINGENCIES
(Page 11 of 16)

Initials

4.0 RCS FILLING OR BORATION

CAUTION

- **USE OF THIS SECTION MAY VOID THE ILRT DATA.**
- **ENSURE ADEQUATE RCS VENT PATH ESTABLISHED PRIOR TO RUNNING SI OR CHARGING PUMPS.**

NOTE

This section provides direction for the following while considering any abnormal plant configurations due to ILRT lineups:

- Restores each of the three available boration paths.
- Provides a method of makeup from the RWST via valve 882.
- Provides some added guidance if loss of RHR occurs and steam generators are needed.

The SI system, via 22 SI Pump is the only available path without the need for field operations.
IF time permits, the preferred method for RCS addition is Charging.

The designated boration paths listed have been evaluated for the duration of the ILRT:

- o CHARGING using the BAST – Most control, Field operations required.
- o CHARGING using the RWST – Controllable, Field operations required.
- o 22 SI PUMP using the RWST – Least controllable, ONLY CCR operations needed.

4.1 IF RCS conditions warrant make up OR boration AND time permits field operations, THEN restore Charging as follows:

4.1.1 DISPATCH an operator to OPEN the following valves:

- 205, CHARGING LINE STOP. ______
- 226, CHARGING LINE STOP. ______

ATTACHMENT 11
CONTINGENCIES
(Page 12 of 16)

Initials

4.1.2 ALIGN a Charging Pump suction path:

4.1.2.1 To align CHARGING with BAST:

- IF plant conditions are such that VCT overpressure alone will produce adequate charging flow, THEN adjust HCV-142 as necessary.
- IF desired, THEN start charging pump(s) using 2-SOP-3.1, Charging Seal Water and Letdown Control, Section 4.2.2, NORMAL CHARGING PUMP STARTUP AND operate system as required.

______

OR

4.1.2.2 To align CHARGING with RWST:

a) START Charging Pump(s) using 2-SOP-3.1, Charging Seal Water and Letdown Control, Section 4.2.2, NORMAL CHARGING PUMP STARTUP.

b) OPEN LCV-112B, Emergency RWST Make-up Stop.

c) CLOSE LCV -112C, VCT Outlet stop.

d) PLACE RCS Make-up Control to stop.

e) OPERATE system as required.

______

4.2 IF RCS conditions warrant make up or boration AND time does NOT permit field operations, THEN *fill using the RWST through 22 Safety* Injection Pump as follows:

4.2.1 VERIFY the follwing valves are OPEN:

- 1810, Refueling Water to SI Pumps Suction. (SBF-1)
- 887A, 22 SI Pump Suction. (SBF-2)
- 887B, 22 SI Pump Suction. (SBF-2)

______

ATTACHMENT 11
CONTINGENCIES
(Page 13 of 16)

Initials

> **CAUTION**
>
> To prevent possible pump runout conditions, do NOT run 22 SI Pump with both 851A and 851B open.

4.2.2 OPEN only **ONE** of the following valves:

- 851A, 22 SI Pump Tie Valve to Discharge of 21 SI Pump. (SBF-2)

OR

- 851B, 22 SI Pump Tie Valve to Discharge of 21 S3 Pump. (SBF-2)

____

4.2.3 ESTABLISH the desired fill rate by OPENING / CLOSING the appropriate combination of SI Cold Leg Branch stops:

4.2.3.1 IF 851A is OPEN, THEN :

- 856A, Loop 21 Cold Leg SI Line. (SBF-2)
- 856E, Loop 23 Cold Leg SI Line. (SBF-2)

4.2.3.2 IF 851B is OPEN, THEN

- 856C, Loop 24 Cold Leg SI Line (SBF-2)
- 856D, Loop 22 Cold Leg SI Line (SBF-2)

____

ATTACHMENT 11
CONTINGENCIES
(Page 14 of 16)

Initials

NOTE

22 SI Pump 2A Breaker is Racked In as the dedicated power source to restore a boration path from the CCR. (i.e. 22 SIP from 2A is the preferred Pump and Breaker)

4.2.4 IF directed by CRS,
THEN START 22 Safety Injection Pump. ______

4.2.4.1 IF 22 Safety Injection Pump can NOT be started from Bus 2A, THEN PERFORM the following:

- ESTABLISH conditions to START 22 SIP from Bus 3A.

  OR

- ESTABLISH conditions AND START 21 OR 23 SI Pump. ______

4.2.5 WHEN filling the RCS through Safety Injection System is no longer necessary, THEN PERFORM the following:

4.2.5.1 ENSURE Safety Injection Pump is secured. ______

4.2.5.2 CLOSE the following valves as applicable:

- 856A
- 856C
- 856D
- 856E ______

ATTACHMENT 11
CONTINGENCIES
(Page 15 of 16)

Initials

4.2.5.3 ALIGN the following valves as directed by the CRS:

- 851A
- 851B
- 887A
- 887B
- 1810

______

NOTE

This method will only be feasible IF the RCS is depressurized and the RCS physical level is below the RWST level.

4.3 IF desired to provide RCS make up or boration using the RWST through valve 882 AND conditions exist between the RWST and RCS that flow would be induced, THEN PERFORM the following:

4.3.1 ENERGIZE AND OPEN valve 882, RHR Pump Suction From the RWST.

4.3.2 MONITOR RCS level rise and RWST level reduction.

4.3.3 MONITOR RHR flow AND adjust IF necessary.

4.3.4 WHEN desired RCS level is reached OR IF directed by the CRS, THEN terminate makeup by CLOSING AND DE-ENERGIZING valve 882, RHR Pump Suction From the RWST.

______

ATTACHMENT 11
CONTINGENCIES

Initials

4.4 IF RHR cooling is lost AND conditions warrant using the Steam Generators for RCS cooling, PERFORM The following:

4.4.1 IF necessary to create an INTACT RCS, THEN CLOSE the following:

- MOV-535, Pressurizer Relief Line Train B Block Valve
- MOV-536, Pressurizer Relief Line Train A Block Valve

4.4.2 ENSURE the desired Atmospheric Dump Inlet Stop(s) are OPEN. (✓)

- MS-3A ____
- MS-3B ____
- MS-3C ____
- MS-3D ____ ________

4.4.3 GO TO 2-AOP-RHR-1, Loss of RHR. ________

5.0 UNEXPECTED ALARMS / INDICATIONS / CONDITIONS

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

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	INITIALS

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

The goal is to set and maintain 8 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 to 6 hours. Make additional copies of this sheet as necessary.

ATTACHMENT 12
ILRT VERIFICATION TEST AND FLOW DATA
(Page 2 of 3)

CALCULATE L_o AS FOLLOWS:

A. IF a rotometer is used to measure the imposed leak,
THEN 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 (IFI07304 or IFI07305).
Pm	=	back pressure at rotometer during test (IPI07313).
Tm	=	temperature of flow through rotometer during verification test (ITI07314).
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 = __________ °R

Pc = __________ psia

Tc = __________ °R

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

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

NOTE

The ILRT Inc Data Management program automatically calculates L_o in % wt/day based on an input of atmospheric pressure on corrected flow (F_c). 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_o value imposed in weight % day using the following formula:

1. F_c (in SCF/m) x 0.07517 lbs/SCF x 1440 min/day = L_o in lbs/day.
2. F_c (in lbm/day): _______+
3. L_o (in lbs/day)/Wt of Containment Air Mass at End of ILRT x 100 = L_o (in % wts/day).
4. Mass value used: _________________lbm
5. L_o = ___________%wt/day

D. The Composite Leakage Rate (L_c), 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:

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

(____________) ≤ ____ ≤ (______________)
Lower Limit L_c Upper Limit

Where:

L_o = _________%wt/day (value from Section C step 5 above)

L_{am} = ________%wt/day (from Step 4.4.3.9a)

ATTACHMENT 13
CONTAINMENT BUILDING PENETRATION WALKDOWN
(Page 1 of 12)

RISK	COMPONENT	AREA	FIELD LOCATION	CONTROL LOCATION	TEST POSITION	ATTACH	CHECK FOR:	SYSTEM
VLO	201	51' PIPE PEN	Section 5 Below red sample valves	CCR SNF	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
VLO	202	51' PIPE PEN	Section 5 Below red sample valves	CCR SNF	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
VLO	MOV-205	51' PIPE PEN	Section 2 by red valves 1229/1230	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
VLO	MOV-226	51' PIPE PEN	Section 2 in archway	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
VLO	MOV-227	51' PIPE PEN	Section 2 in archway	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
VLO	MOV-250A	51' PIPE PEN	Section 3 center under SGBD lines	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
VLO	MOV-4925	51' PIPE PEN	Section 3 center under SGBD lines	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
VLO	MOV-250B	51' PIPE PEN	Section 3 center under SGBD lines	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
VLO	MOV-4926	51' PIPE PEN	Section 3 center under SGBD lines	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
VLO	MOV-250C	51' PIPE PEN	Section 3 center under SGBD lines	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
VLO	MOV-4927	51' PIPE PEN	Section 3 center under SGBD lines	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
VLO	MOV-250D	51' PIPE PEN	Section 3 center under SGBD lines	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
VLO	MOV-4928	51' PIPE PEN	Section 3 center under SGBD lines	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)

ATTACHMENT 13
CONTAINMENT BUILDING PENETRATION WALKDOWN
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RISK	COMPONENT	AREA	FIELD LOCATION	CONTROL LOCATION	TEST POSITION	ATTACH	CHECK FOR:	SYSTEM
VLO	MOV-222	51' PIPE PEN	Section 5 by red valves 1229/1330	CCR SNF	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
VLO	272A	98' PAB	98' PAB Seal Return HX Cell	98' PAB	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
VLO	221B	98' PAB	98' PAB Seal Return HX Cell	98' PAB	SHUT	3A	Bonnet, Packing Leakage, water	CVCS (9321-2736)
MED	PCV-1234	51' PIPE PEN	Section 1 in corner by Rack 11	CCR	SHUT	3C	Packing Leakage	PACAS (238106)
MED	PCV-1235	51' PIPE PEN	Section 1 in corner by Rack 11	CCR	SHUT	3C	Packing Leakage	PACAS (238106)
MED	PCV-1236	51' PIPE PEN	Section 1 in corner by Rack 11	CCR	SHUT	3C	Packing Leakage	PACAS (238106)
MED	PCV-1237	51' PIPE PEN	Section 1 in corner by Rack 11	CCR	SHUT	3C	Packing Leakage	PACAS (238106)
HI	RAS-558	68' MEZZ	In corner at top of stairs	68' MEZZ	OPEN	3C	Air coming from vent at Pa	PACAS (238106)

ATTACHMENT 13
CONTAINMENT BUILDING PENETRATION WALKDOWN
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RISK	COMPONENT	AREA	FIELD LOCATION	CONTROL LOCATION	TEST POSITION	ATTACH	CHECK FOR:	SYSTEM
MED	SOV-5018	68' MEZZ	Across from phone	98' PAB MCC ROOM	SHUT	3A	Packing Leakage	PAH2S (208479)
MED	SOV-5019	68' MEZZ	Across from phone	98' PAB MCC ROOM	SHUT	3A	Packing Leakage	PAH2S (208479)
HI	5131	80' PAB SAMPLE CELL	Back left corner	80' PAB SAMPLE CELL	OPEN	3A	Air coming from vent at Pa	PAH2S (208479)
MED	SOV-5020	68' MEZZ	Across from phone	98' PAB MCC ROOM	SHUT	3A	Packing Leakage	PAH2S (208479)
MED	SOV-5021	68' MEZZ	Across from phone	98' PAB MCC ROOM	SHUT	3A	Packing Leakage	PAH2S (208479)
HI	5130	80' PAB SAMPLE CELL	Back left corner	80' PAB SAMPLE CELL	OPEN	3A	Air coming from vent at Pa	PAH2S (208479)
MED	SOV-5022	68' MEZZ	Across from phone	98' PAB MCC ROOM	SHUT	3A	Packing Leakage	PAH2S (208479)
MED	SOV-5023	68' MEZZ	Across form phone	98' PAB MCC ROOM	SHUT	3A	Packing Leakage	PAH2S (208479)
HI	5129	68' MEZZ	Across from phone	68' MEZZ	OPEN	3A	Air coming from vent at Pa	PAH2S (208479)
MED	SOV-5024	68' MEZZ	Across from phone	98' PAB MCC ROOM	SHUT	3A	Packing Leakage	PAH2S (208479)

ATTACHMENT 13
CONTAINMENT BUILDING PENETRATION WALKDOWN
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RISK	COMPONENT	AREA	FIELD LOCATION	CONTROL LOCATION	TEST POSITION	ATTACH	CHECK FOR:	SYSTEM
MED	1728	51' PIPE PEN	Section1 below 1190's	CCR SNF	SHUT	3A	Seat Leakage into WDS piping	WDS (9321-2719)
MED	1723	51' PIPE PEN	Section1 below 1190's	CCR SNF	SHUT	3A	Seat Leakage into WDS piping	WDS (9321-2719)
LO	1702	51' PIPE PEN	Section 3 Right side of ladder	CCR SNF	SHUT	3A	Packing Leakage	WDS (9321-2719)
LO	1705	51' PIPE PEN	Section 3 Right side of ladder	CCR SNF	SHUT	3A	Packing Leakage	WDS (9321-2719)
MED	1788	51' PIPE PEN	Section 5 Above letdown pen	CCR SNF	SHUT	3A	Packing Leakage	WDS (9321-2719)
MED	1789	51' PIPE PEN	Section 5 Above letdown pen	CCR SNF	SHUT	3A	Packing Leakage	WDS (9321-2719)
LO	1786	51' PIPE PEN	Section 5 Above letdown pen	CCR SNF	SHUT	3A	Packing Leakage	WDS (9321-2719)
LO	1787	51' PIPE PEN	Section 5 Above letdown pen	CCR SNF	SHUT	3A	Packing Leakage	WDS (9321-2719)
VLO	859A	51' PIPE PEN	Section 1 By Alt Seal Inj Filter	51' PIPE PEN	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	859C	51' PIPE PEN	Section 1 By Alt Seal Inj Filter	51' PIPE PEN	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)

ATTACHMENT 13
CONTAINMENT BUILDING PENETRATION WALKDOWN
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RISK	COMPONENT	AREA	FIELD LOCATION	CONTROL LOCATION	TEST POSITION	ATTACH	CHECK FOR:	SYSTEM
VLO	MOV-850A	59' PAB	SI Pump Cell	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	MOV-850B	59' PAB	SI Pump Cell	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	MOV-851A	59' PAB	SI Pump Cell	CCR SBF-2	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	MOV-851B	59' PAB	SI Pump Cell	CCR SBF-2	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	MOV-869A	68' MEZZ	Section 1 Overhead	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	MOV-869B	68' MEZZ	Section 1 Overhead	98' PAB MCC ROOM	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	MOV-866A	68' PAB	21 CS PUMP	CCR SBF-1	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	MOV-866B	68' PAB	21 CS PUMP	CCR SBF-1	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	878A	68' PAB	By Spray Pumps	68' PAB	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	878B	68' PAB	By Spray Pumps	68' PAB	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)

ATTACHMENT 13
CONTAINMENT BUILDING PENETRATION WALKDOWN
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RISK	COMPONENT	AREA	FIELD LOCATION	CONTROL LOCATION	TEST POSITION	ATTACH	CHECK FOR:	SYSTEM
VLO	MOV-866C	68' PAB	22 CS PUMP	CCR SBF-1	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	MOV-866D	68' PAB	22 CS PUMP	CCR SBF-1	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	MOV-888A	51' PIPE PEN'	Light Blue valve by HP camera	CCR SBF-1	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	MOV-888B	51' PIPE PEN'	Light Blue valve by HP camera	CCR SBF-1	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	MOV-885A	35' PAB SWC	Right at bottom	CCR SBF-1	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VLO	MOV-885B	35' PAB SWC	Right at bottom	CCR SBF-1	SHUT	3A	Bonnet, Packing Leakage, water	SI (9321-2735)
VHI	863	80' PAB	By doors to Fan House	CCR	SHUT	3C	Packing Leakage	N2 (9321-2723)
LO	1809	80' PAB	By doors to Fan House	80' PAB	SHUT	3C	Packing Leakage	N2 (9321-2723)
VHI	N-784	80' PAB	By doors to Fan House	80' PAB	OPEN	3C	Air coming from vent at Pa	N2 (9321-2723)
LO	1811-A	80' PAB	Bank isolation in overhead	80' PAB	SHUT	3C	Test Boundary; Seat Leakage of system pressure	N2 (9321-2723)
LO	1811-B	80' PAB	Bank isolation in overhead	80' PAB	SHUT	3C	Test Boundary; Seat Leakage of system pressure	N2 (9321-2723)

ATTACHMENT 13
CONTAINMENT BUILDING PENETRATION WALKDOWN
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RISK	COMPONENT	AREA	FIELD LOCATION	CONTROL LOCATION	TEST POSITION	ATTACH	CHECK FOR:	SYSTEM
LO	1655	51' PIPE PEN	Section 2 ¾" blue valve	Section 2 ¾" blue valve	SHUT	3C	Test Boundary; Seat Leakage of system pressure	N2 (9321-2723)
MED	SOV-3418	51' PIPE PEN	Section1 By Alt Seal Inj Filter	98' PAB MCC ROOM	SHUT	3C		N2 (9321-2738)
MED	SOV-3419	51' PIPE PEN	Section1 By Alt Seal Inj Filter	98' PAB MCC ROOM	SHUT	3C		N2 (9321-2738)
MED	4136	51' PIPE PEN	Section1 By Alt Seal Inj Filter	51' PIPE PEN	SHUT	3C	Packing Leakage	N2 (9321-2738)
HI	4160	51' PIPE PEN	Section1 By Alt Seal Inj Filter	51' PIPE PEN	OPEN	3C	Air coming from vent at Pa	
LO	1659	51' PIPE PEN	Section 2 ¾" blue valve	Section 2 ¾" blue valve	SHUT	3C	Packing Leakage	N2 (9321-2719), (9321-2723)
MED	SOV-3416	51' PIPE PEN	Section 5 Above FCU, column	98' PAB MCC ROOM	SHUT	3C		N2 (9321-2738), (9321-2723)
MED	SOV-3417	51' PIPE PEN	Section 5 Above FCU, column	98' PAB MCC ROOM	SHUT	3C		N2 (9321-2738), (9321-2723)
MED	5459	51' PIPE PEN	Section 5 Above FCU, column	Section 5 Above FCU, column	SHUT	3C	Packing Leakage	N2 (9321-2738), (9321-2723)
VHI	VENT	51' PIPE PEN	AT PCV-1014	AT PCV-1014	OPEN	3C	Air coming from break in Swagelok at Pa	N2 (9321-2719), (9321-2723)
LO	548	51' PIPE PEN	Section 5 above letdown pen	CCR SNF	SHUT	3C	Packing Leakage	RCS (9321-2738)
LO	549	51' PIPE PEN	Section 5 above letdown pen	CCR SNF	SHUT	3C	Packing Leakage	RCS (9321-2738)

ATTACHMENT 13
CONTAINMENT BUILDING PENETRATION WALKDOWN
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RISK	COMPONENT	AREA	FIELD LOCATION	CONTROL LOCATION	TEST POSITION	ATTACH	CHECK FOR:	SYSTEM
LO	519	51' PIPE PEN	*Section 1* Near Seal Inj Filter	CCR SAF	SHUT	3B	Packing Leakage	RCS (9321-2738)
LO	552	51' PIPE PEN	Section 1 Near Seal Inj Filter	CCR SAF	SHUT	3B	Packing Leakage	RCS (9321-2738)
LO	SA-24	51' PIPE PEN	Section 1 Near Seal Inj Filter	Section 1 Near Seal Inj Filter	SHUT	3C	Packing Leakage	SA (9321-2035)
LO	SA-24-1	51' PIPE PEN	Section 1 Near Seal Inj Filter	Section 1 Near Seal Inj Filter	SHUT	3C	Packing Leakage	SA (9321-2035)
VLO	VENT	51' PIPE PEN	Section 1 Near Seal Inj Filter	Section 1 Near Seal Inj Filter	OPEN	3C	Air coming from vent at Pa	SA (9321-2035)
HI	PCV-1228	51' PIPE PEN	Section 1 Below 1190's	CCR SNF	SHUT	3C	Packing Leakage	IA (9321-2036)
LO	IA-501	51' PIPE PEN	Section 1 Below 1190's	Section 1 Below 1190's	SHUT	3C	Test Boundary; Seat Leakage of system pressure	IA (9321-2036)
VHI	IA-503	51' PIPE PEN	Section 1 Below 1190's	Section 1 Below 1190's	OPEN	3C	Air coming from vent at Pa	IA (9321-2036)
VHI	FCV-1171	80' PAB	1170's Room Outside by 80' Airlock	CCR SLF	SHUT	3C	Packing Leakage, seat leakage	VENTILATION (9321-4022)
MED	PCV-1110-3	80' PAB	1170's Room Outside by 80' Airlock	1170's Room Outside by 80' Airlock	SHUT	3C	Packing Leakage	VENTILATION (9321-4022)
VHI	FCV-1173	80' PAB	1170's Room Outside by 80' Airlock	CCR SLF	SHUT	3C	Packing Leakage, seat leakage	VENTILATION (9321-4022)
MED	PCV-1110-4	80' PAB	1170's Room Outside by 80' Airlock	1170's Room Outside by 80' Airlock	SHUT	3C	Packing Leakage	VENTILATION (9321-4022)

ATTACHMENT 13
CONTAINMENT BUILDING PENETRATION WALKDOWN
(Page 9 of 12)

RISK	COMPONENT	AREA	FIELD LOCATION	CONTROL LOCATION	TEST POSITION	ATTACH	CHECK FOR:	SYSTEM
MED	PCV-1191	51' PIPE PEN	Section 1 By VC wall	CCR SLF	SHUT	3A	Packing Leakage, seat leakage	VENTILATION (9321-4022)
MED	PCV-1192	51' PIPE PEN	Section 1 By VC wall	CCR SLF	SHUT	3A	Packing Leakage, seat leakage	VENTILATION (9321-4022)
MED	PCV-1110-7	51' PIPE PEN	Section 1 By VC wall	Section 1 On VC wall	SHUT	3A	Packing Leakage	VENTILATION (9321-4022)
LO	PCV-1110-8	51' PIPE PEN	Section 1 By VC wall	Section 1 On VC wall	SHUT	3A	Packing Leakage	VENTILATION (9321-4022)
VLO	MOV-956A	51' PIPE PEN	Section 5 Above 888's	CCR SNF	SHUT	3B	Packing Leakage	NSSS SAMPLING (9321-2745)
VLO	MOV-956B	51' PIPE PEN	Section 5 Above 888's	CCR SNF	SHUT	3B	Packing Leakage	NSSS SAMPLING (9321-2745)
VLO	956C	51' PIPE PEN	Section 5 Above 888's	CCR SNF	SHUT	3B	Packing Leakage, water	NSSS SAMPLING (9321-2745)
VLO	956D	51' PIPE PEN	Section 5 Above 888's	CCR SNF	SHUT	3B	Packing Leakage, water	NSSS SAMPLING (9321-2745)
VLO	MOV-990A	68' MEZZ	Acorss from phone	80' SENTRY PANEL	SHUT	3B	Packing Leakage, water	NSSS SAMPLING (9321-2745)
VLO	MOV-990B	68' MEZZ	Across from phone	80' SENTRY PANEL	SHUT	3B	Packing Leakage, water	NSSS SAMPLING (9321-2745)

ATTACHMENT 13
CONTAINMENT BUILDING PENETRATION WALKDOWN
(Page 10 of 12)

RISK	COMPONENT	AREA	FIELD LOCATION	CONTROL LOCATION	TEST POSITION	ATTACH	CHECK FOR:	SYSTEM
VLO	956E	68' MEZZ	Across from phone	CCR SNF	SHUT	3B	Packing Leakage, water	NSSS SAMPLING (9321-2745)
VLO	956F	68' MEZZ	Across from phone	CCR SNF	SHUT	3B	Packing Leakage, water	NSSS SAMPLING (9321-2745)
VLO	956G	51' PIPE PEN	Section 1 Across from Rack 11	CCR SNF	SHUT	3B	Packing Leakage, water	NSSS SAMPLING (9321-2745)
VLO	956H	51' PIPE PEN	Section 1 Across from Rack 11	CCR SNF	SHUT	3B	Packing Leakage, water	NSSS SAMPLING (9321-2745)
VLO	MOV-958	51' PIPE PEN	Section 5 Under EL-51	98' PAB MCC ROOM	SHUT	3B	Packing Leakage, water	NSSS SAMPLING (9321-2745)
VLO	MOV-959	68' MEZZ	Across from phone	80' PAB SENTRY PANEL	SHUT	3B	Packing Leakage, water	NSSS SAMPLING (9321-2745)
VLO	990D	68' MEZZ	Across from phone	68' MEZZ	SHUT	3B	Packing Leakage, water	NSSS SAMPLING (9321-2745)
HI	PCV-1229	51' PIPE PEN	Section 5 Big Red Valve	CCR SNF	SHUT	3A	Packing Leakage	COND AIR REMOVAL (9321-2025)
HI	PCV-1230	51' PIPE PEN	Section 5 Big Red Valve	CCR SNF	SHUT	3A	Packing Leakage	COND AIR REMOVAL (9321-2025)
HI	VENT	36' 9" TH	20 ft downstream of Blower	20 ft downstream of Blower	OPEN	3A	Air coming from vent at Pa	COND AIR REMOVAL (9321-2025)
HI	E-2	51' PIPE PEN	Section 3 Right Off Ladder on Left	98' PAB MCC ROOM	SHUT	3A	Packing Leakage	PACV (208879)

ATTACHMENT 13
CONTAINMENT BUILDING PENETRATION WALKDOWN
(Page 11 of 12)

RISK	COMPONENT	AREA	FIELD LOCATION	CONTROL LOCATION	TEST POSITION	ATTACH	CHECK FOR:	SYSTEM
HI	E-1	51' PIPE PEN	Section 3 Right Off Ladder on Left	98' PAB MCC ROOM	SHUT	3A	Packing Leakage	PACV (208879)
HI	E-3	51' PIPE PEN	Section 3 Right Off Ladder on Left	98' PAB MCC ROOM	SHUT	3A	Packing Leakage	PACV (208879)
HI	E-5	51' PIPE PEN	Section 3 Right Off Ladder on Left	98' PAB MCC ROOM	SHUT	3A	Packing Leakage	PACV (208879)
HI	EA-1	51' PIPE PEN	Section 3 6" prior to ladder on Left	98' PAB MCC ROOM	SHUT	3A	Packing Leakage	PACV (208879)
VHI	E-8	51' SGBD ROOM	51' SGBD Room	51' SGBD Room	OPEN	3A	Air coming from vent at Pa	PACV (208879)
VHI	E-9	51'SGBD ROOM	51' SGBD Room	51' SGBD Room	OPEN	3A	Air coming from vent at Pa	PACV (208879)
VLO	4399	51' PIPE PEN	Section 1 Understairs from Mezz	80' PAB Sentry Panel	SHUT	3B	Packing Leakage	Samp (227178)
VLO	5132	51' PIPE PEN	Section 1 Understairs from Mezz	80' PAB Sentry Panel	SHUT	3B	Packing Leakage	Samp (227178)
LO	UH-43	51' PIPE PEN	Section 3 Across from ladder	51' PIPE PEN	SHUT	3B	Packing Leakage	Aux Stm and Cond (9321-2027)
LO	UH-44	51' PIPE PEN	Section 3 Across from ladder	51' PIPE PEN	SHUT	3B	Packing Leakage	Aux Stm and Cond (9321-2027)
HI	IIP-500	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	SHUT	3A	Packing Leakage	SSD Xmtr (308762)
HI	IIP-501	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	SHUT	3A	Packing Leakage	SSD Xmtr (308762)

ATTACHMENT 13
CONTAINMENT BUILDING PENETRATION WALKDOWN
(Page 12 of 12)

RISK	COMPONENT	AREA	FIELD LOCATION	CONTROL LOCATION	TEST POSITION	ATTACH	CHECK FOR:	SYSTEM
HI	IIP-502	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	SHUT	3A	Packing Leakage	SSD Xmtr (308762)
HI	IIP-503	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	SHUT	3A	Packing Leakage	SSD Xmtr (308762)
HI	IIP-504	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	SHUT	3A	Packing Leakage	SSD Xmtr (308762)
HI	IIP-505	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	SHUT	3A	Packing Leakage	SSD Xmtr (308762)
HI	IIP-506	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	SHUT	3A	Packing Leakage	SSD Xmtr (308762)
HI	IIP-507	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	SHUT	3A	Packing Leakage	SSD Xmtr (308762)
HI	IIP-508	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	SHUT	3A	Packing Leakage	SSD Xmtr (308762)
HI	IIP-510	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	SHUT	3A	Packing Leakage	SSD Xmtr (308762)
HI	IIP-512	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	SHUT	3A	Packing Leakage	SSD Xmtr (308762)
HI	IIP-514	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	SHUT	3A	Packing Leakage	SSD Xmtr (308762)
VHI	IIP-509	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	OPEN	3A	Air coming from vent at Pa	SSD Xmtr (308762)
VHI	IIP-511	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	OPEN	3A	Air coming from vent at Pa	SSD Xmtr (308762)
VHI	IIP-513	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	OPEN	3A	Air coming from vent at Pa	SSD Xmtr (308762)
VHI	IIP-515	51' PIPE PEN	Section 3 Against VC Wall (Fire Blanket)	51' PIPE PEN	OPEN	3A	Air coming from vent at Pa	SSD Xmtr (308762)

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 the Plant Computer. IF manual readings are taken, THEN RECORD hourly. ATTACH Trend Report printouts to Attachment 16, Computer Printouts and Attachments.

	Rx Sump Level	**Containment Sump**	**Recirc Sump**	**PRT Level**	**PZR / MLMS Level**	**RCDT Level**
Initial Value						
TIME						

Make additional copies if necessary.

ATTACHMENT 14
CONTROL ROOM LOG
(Page 2 of 2)

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, ILRT Results Summary 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)
RX SUMP LEVEL (FT):				
CONTAINMENT SUMP (FT):				
RECIRC SUMP (FT):				
PRT LEVEL (%):				
PZR (%) / MLMS (FT IN):				
RCDT (%):				
			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)
RX SUMP LEVEL (FT):				
CONTAINMENT SUMP (FT):				
RECIRC SUMP (FT):				
PRT LEVEL (%):				
PZR (%) MLMS (FT IN):				
RCDT (%):				
			TOTAL CHANGE (TG):	

Conversion Factors:
1 inch change in RX SUMP level = ____________ gallons
1 inch change in CONTAINMENT SUMP level = ____________ gallons
1 inch change in RECIRC SUMP level = ____________ gallons
1% change in PRT level = ____________ gallons
1% change in PRESSURIZER level = ____________ gallons
1 inch change in MLMS = _______ ___ gallons
1% change in RCDT 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 reduction in tank level is NEGATIVE, conversely a rise 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 FT^3 CHANGES:

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

Calculate net volume change in ft^3/day:

dV = (TG/t) (24 hrs/day) (1ft^3 / 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 ft^3 / gallon)

dV = ____________ ft^3 / day

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 2 of 8)

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 ft^3 / day from Step 1.2

Pt is the average containment pressure during the ILRT in psia

C is the conversion factor, 144 in^2 / ft^2

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

T is the average containment temperature in °R

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

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 3 of 8)

NOTE

Reference Step 1.1.1 of this Attachment 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) = ___________

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 4 of 8)

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 air mass (lbm)
Step 3.2

Leakage Savings
Addition (%wt/day) = ___________

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

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 5 of 8)

4.0 FINAL TYPE B & C PENALTY ADDITIONS

4.1 The ILRT is being performed at the beginning of the outage. 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 air mass (lbm)
Step 4.2

Penalty
Addition (%wt/day) = ___________

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 6 of 8)

5.0 FINAL LEAKAGE SAVINGS CALCULATION

5.1 The ILRT is being performed at the beginning of the outage. 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 air mass (lbm)
Step 5.2

Leakage Savings
Addition (%wt/day) = ___________

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

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 7 of 8)

6.0 PRELIMINARY AS-LEFT ILRT RESULTS:

CHECK box for results used to accept ILRT

	MASS POINT (ANSI 56.8-11994) ☐	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:		

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 8 of 8)

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%L_a)		

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:

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Make additional copies if needed.

ATTACHMENT 17
GAUGE INSTALLATION / REMOVAL SHEET
(Page 1 of 5)

Test gauges are used in various locations to monitor pressure in various 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 Cal Due data, installation and removal of these test gauges.

1.0 DOCUMENT GAUGE DATA:

GAUGE SERIAL#	CAL DUE	RANGE (1)	LOCATION/PURPOSE	INSTALLED (Initials/Date)	REMOVED (Initials/Date)	V
		0-60 psig	Monitor S/G #21 for in-leakage at valve			
		0-60 psig	Monitor S/G #22 for in-leakage at valve			
		0-60 psig	Monitor S/G #23 for in-leakage at valve			
		0-60 psig	Monitor S/G #24 for in-leakage at valve			
		0-60 psig	Monitor space between PCV-1170 & 1171 at WCP-119			
		0-60 psig	Monitor space between PCV-1172 & 1173 at WCP-118.			

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

ATTACHMENT 17
GAUGE INSTALLATION / REMOVAL SHEET
(Page 2 of 5)

2.0 INSTALL GAUGES:

2.1 To INSTALL Steam Generator pressure gauges perform the following:

	INIT
21 Steam Generator	
1. CLOSE MS-74A, Test PI Stop on Stm Line 21.	____
2. REMOVE downstream plug.	____
3. INSTALL test gauge downstream of MS-74A.	____
4. OPEN MS-74A.	____
22 Steam Generator	
1. CLOSE MS-74B, Test PI Stop on Stm Line 22.	____
2. REMOVE downstream plug.	____
3. INSTALL test gauge downstream of MS-74B.	____
4. OPEN MS-74B.	____
23 Steam Generator	
1. CLOSE MS-74C, Test PI Stop on Stm Line 23.	____
2. REMOVE downstream plug.	____
3. INSTALL test gauge downstream of MS-74C.	____
4. OPEN MS-74C.	____
24 Steam Generator	
1. CLOSE MS-74D, Test PI Stop on Stm Line 24.	____
2. REMOVE downstream plug.	____
3. INSTALL test gauge downstream of MS-74D	____
4. OPEN MS-74D.	____

ATTACHMENT 17
GAUGE INSTALLATION / REMOVAL SHEET
(Page 3 of 5)

2.2 To INSTALL 1170's pressure gauges perform the following:

INIT

Space Between PCV-1170 & 1171 at WCP-119

1. REMOVE cap from test connection WCP-119. ____
2. INSTALL test gauge on test tap at WCP-119. ____
3. OPEN WCP-119. ____

Space Between PCV-1172 & 1173 at WCP-118

1. REMOVE cap from test connection WCP-118. ____
2. INSTALL test gauge on test tap at WCP-118. ____
3. OPEN WCP-118. ____

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

Troubleshoot Gauge Installation

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. ____
5. RECORD gauge info on data on Gauge Data table. ____

ATTACHMENT 17
GAUGE INSTALLATION / REMOVAL SHEET
(Page 4 of 5)

3.0 REMOVE GAUGES:

3.1 To REMOVE Steam Generator pressure gauges PERFORM the following:

INIT

21 Steam Generator

1. CLOSE MS-74A, Test PI Stop on Stm Line 21 _____ _____(V)
2. REMOVE test gauge downstream of MS-74A. _____ _____(V)
3. REINSTALL plug. _____ _____(V)

22 Steam Generator

1. CLOSE MS-74B, Test PI Stop on Stm Line 22. _____ _____(V)
2. REMOVE test gauge downstream of MS-74B. _____ _____(V)
3. REINSTALL plug. _____ _____(V)

23 Steam Generator

1. CLOSE MS-74C, Test PI Stop on Stm Line 23. _____ _____(V)
2. REMOVE test gauge downstream of MS-74C. _____ _____(V)
3. REINSTALL plug. _____ _____(V)

24 Steam Generator

1. CLOSE MS-74D, Test PI Stop on Stm Line 24. _____ _____(V)
2. REMOVE test gauge downstream of MS-74D. _____ _____(V)
3. REINSTALL plug. _____ _____(V)

ATTACHMENT 17
GAUGE INSTALLATION / REMOVAL SHEET
(Page 5 of 5)

3.2 To REMOVE 1170's pressure gauges perform the following:

INIT

Space Between PCV-1170 & 1171 at WCP-119

1. CLOSE WCP-119. _____ _____(V)
2. REMOVE test gauge downstream of WCP-119. _____ _____(V)
3. REINSTALL cap. _____ _____(V)

Space Between PCV-1172 & 1173 at WCP-118

1. CLOSE WCP-118. _____ _____(V)
2. REMOVE test gauge downstream of WCP-118. _____ _____(V)
3. REINSTALL cap. _____ _____(V)

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

Troubleshoot Gauge Removal

1. CLOSE root stop OR gauge isolation. _____ _____(V)
2. REMOVE any installed instrumentation. _____ _____(V)
3. INSTALL instrumentation removed during installation. _____ _____(V)
4. IF required, THEN OPEN valve closed in step 1. _____ _____(V)

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

TIME	21 S/G	22 S/G	23 S/G	24 S/G	1170/71	1172/73
Initial value						

Copy as needed for additional sheets.

ATTACHMENT 19
VC AOV FAILURE POSITION LIST
(Page 1 of 1)

VALVE	DESCRIPTION	FAIL POSITION
Valves Expected to Remain AS IS		
PCV-455A, B	Pressurizer Spray Valve	FAILS CLOSED
LCV-459	Letdown Isolation Valve	
HCV-133	RHR Loop Bypass to Demin Flow Control Valve	
246	RCP #1 Seal Bypass	
213	Excess Letdown Stop Valve	
HCV-123	Excess Letdown Flow Control Valve	
212	Auxiliary Spray	
891s*, 896s, 890s	SI Accumulator Valves	
839A-H	SI Test Valves	
HCV-943	Accumulator Vent	
FCV-1170, 1172	Inside VC Purge & Exhaust Valves	
PCV-1190	Pressure Relief Valve	
516	PRT Vent to Vent Header	
523	Pressurizer Relief Tank Drain	
560	Primary Water Isolation to PRT	
1609	RCDT to VC Sump Drain	
215	Excess Letdown Diversion Valve	FAILS TO VCT
**FCV-21, 22, 23, 24, 25	CNTMT Recirc Fan Norm Outlets	FAILS OPEN
Valves Expected to REPOSITION		
200A, B, C	Letdown Control Valves	FAILS CLOSED
955C-F, 951, 953	Accumulator and RCS PZR Samples	
553A, B, C, D	Primary Water To RCP Standpipes	
204A, B	Alternate & Normal Charging Isolations	FAILS OPEN
261A, B, C, D	RCP Seal Return Isolation	
544	Flange Seal Leak Detector Isolation	

*891A through D will be blocked OPEN for SIS Accumulator protection.
**CRF Normal Outlets will be positioned to OPEN per Attachment 3A.

MATERIALS FOR REQUEST FOR INFORMATION SCVB RAI-4

1. ILRT 1984 – As found Type B and C
2. ILRT 1987 – As found total
3. ILRT 1991 – As found total
4. ILRT 2006 – As found Information

9.0 Comments: (Include any MWR Numbers with descriptions, if issued).

LISTED below IS A SUMMARY OF ADDITIONAL LEAKAGE MEASUREMENTS to be Added to ILRT "AS Found" And "AS LEFT. ATTACHED ARE DATA Sheets For Those Penetrations ISOLATED during TEST

	"AS FOUND"		"AS LEFT"	
	SCFM	%/DAY	SCFM	%/DAY
80' AIRLOCK	4.76	.0626	.6	.00789
22 FAN cooler unit	4.91	.0646	.00225	.0000296
ELECT PENT H-32	4.426	.05823	—	—
AIR EJECT DISCH.	.353	.00464	.000958	.0000126
ILRT PENT U-U.	—	—	.0022001	.0000289
ILRT PENT. V-V	—	—	.0018469	.0000243
TOTALS	14.449	.1901	.607253	.00799
CALC. "AS Found" ILRT	—	.0275	—	.0275
TOTAL "AS Found" →		.3176	TOTAL "AS LEFT" →	.03549

Subject to Review by Nuclear ENGINEERING JCA

12.0 Equipment Operability and Acceptance Criteria

Operability Criteria

The Integrated Leak Rate Test shall be considered satisfactory if as recorded in the Test Results the "As Found" condition meets the criteria required in the test results.

The following is to be completed by the Senior Watch Supervisor:

12.1 Based on a review of the Test Results, are the Operability Criteria satisfied?

YES NO see below

12.2 If the Operability Criteria are not satisfied:

a) Take the required Technical Specification action.

b) An SOR shall be prepared. SOR # NOT WRITTEN

4

12.3 Comments: 4 hour Report to NRC on 9/19/84 OF possible Failure of ILRT.

Senior Watch Supervisor / Date 10/4/84

12.4 If Operability Criteria are not satisfied, COE Review required.

N/A

COE Review / Date

RETURN COMPLETED TEST TO THE TEST ENGINEER

AFTER REVIEW OF Results by EBASCO, AND Nuclear ENGINEERING PENT H-32, AIR LOCK, AND 22 FLU were not included in AS Found leakage. Therefore TEST Results are.

Tom "AS Found" UCL = 0.032% day
Tom "AS Left" UCL = 0.028% day

11/4/84

8.3 Post-Test Conditions (Order of accomplishment to be determined by ILRT Project Manager).

8.3.1 Disconnect and remove air compressors.

8.3.2 Drain aftercoolers, and refigerant dryers and lay-up per the manufacturer's recommendations.

8.3.3 Close all the valves in the pressurization system and instrumentation system.

8.3.4 Disconnect and store all components of the pressurization and instrumentation system for future testing. Take all necessary precautions for laying-up instrumentation and equipment for use on the next ILRT.

8.3.5 De-energize all test electrical circuits.

8.3.6 Remove RHDs and RTDs. Service the units for long term storage and put them in storage. Disconnect RTD and RHD electrical leads at penetrations H65 and H66. Remove and store temporary wiring, RTD and RHD extensions cables inside and outside containment.

R

8.3.7 Remove the instrument sensing isolation valves, the sensing lines from penetration Z.

8.3.8 Remove the containment pressurization isolation valves and elbow from penetrations UU and VV. Blind flange the penetrations inside and outside of containment.

8.3.9 Local leak test penetrations UU and VV using Test Procedure No. PT-V28. Results of this test must be added to the "As Found" and "As Left" ILRT leak rate.

8.3.10 Local leak test sensor lines at penetration Z using test procedure PT-R27, data sheet 23. Results of this test must be added to "As Found" and "As Left" ILRT leak rate.

8.3.11 Perform "As Found" and "As Left" local leak rate tests on any leakage paths that were isolated during the ILRT. Results of both tests must be added to the ILRT.

8.3.12 Local leak test all systems that were configured with artificial leakage barriers (Precaution 4.11). Results of these tests must be added to the ILRT leak rate.

8.3.13 Close all vents inside containment that were opened to simulate potential post accident conditions. Record that vents are closed in the appropriate column of Attachment I.

8.3.14 Restore the equipment and instrumentation protected in Attachment 1 to their original condition and record same.

8.3.15 Remove portable Copus blowers and electrical lines, and store for next ILRT.

8.3.16 Remove temporary communications set up used for the test.

8.3.17 Inspect for and remove any oil that may have been deposited inside containment by the compressors, record findings in Comments Section.

8.3.18 Restore WCCPPS to normal operating condition.

8.3.19 Review Attachment I to verify that all items listed have been restored to normal.

8.3.20 Remove the blocks from the automatic high and high-high pressure signals as per Attachment 6 and log in the SRO log.

Removed By: John C. Thielf 12/26/87
Signature / Date

Verified By QA: D. Tkercak 3/10/88
Signature / Date

Steps 8.3.12 thru 8.3.20

Accepted By: John C. Thielf 1/1/88
Signature / Date

R

10.0 TEST RESULTS

10.1 Record the "As Found" value, in the table below:

CRITERIA	REQUIRED	ACTUAL
10.1.1 "As Found" ILRT leakage rate at the 95% upper confidence level	≤0.075 wt%/day (.75La)*	0.033752 (8.2.18)
		+0.0000206 (8.3.9)
		+ 0 (8.3.10)
		+0.0000415 (8.3.11)
		+ 0 (8.3.12)
	TOTAL:	0.0341876

* Must include ILRT results through penetrations described in the "As Found" condition. (Steps 8.3.9 thru 8.3.12).

10.2 Any actual value in the Table above that is not found satisfactory shall be brought to the attention of the duty Senior Watch Supervisor immediately. Record below that the SWS was notified.

N/A
SWS Notified

Test Performed By:

[signature] 4/27/88
Signature /Date

SRO Informed of Field Work and Calculation Completion: Completion: [signature] 4-27-88
SRO /Date

R

11.0 SUPERVISOR REVIEW:

11.1 The test is complete and the Test Results Section is completed accurately. If any error is found in the Test Results Section that would cause a Required Value not to be satisfied, the SWS shall be notified immediately. Complete Step 12.1 of the Operability Criteria and initiate an SOR for any Required Values in the Test Results Section that are not satisfied.

[signature] 4/27/88
Cognizant Supervisor or Designee /Date

Date: Monday, 1 July 1991 12:19pm ET
To: BAR.A, CONRAD.V, QUIRK.J
From: BAR.A
Subject: ILRT Pressure Gauge Line Leak

I was infirmed that ILRT Press.Gauge Line Local Leakage test indicates 220 cc/min. This is very small leak that cannot affect the results of A-type containment test performed on 6-23-91 for the following reasons:

- The pressure line leakage is accounted by the A-test results and must not be added the ILRT test leakage.
- The A-type containment leak test calculations are based on containment-- pressure change rather then on the accuracy of the absolute pressure measured by the gauge. Therefore any pressure drop in the line does not affect the test result.
- The ILRT test accuracy was successfully verified by the CLRT. This fact confirms the above statements.

Based on the above Pressure Line Maximum Local Leakage Rate of 10 cc/min can be changed to actual measured leak rate or deleted as a requirement for the test in the ILRT procedure.

A.Bar

4.0 TEST RESULTS

4.1 Record the value, in the table below:

CRITERIA - As Left	REQUIRED	ACTUAL
4.1.1 ILRT leakage rate at the 95% upper confidence level	0.075 wt%/day or 0.75 La	.047791 (3.2.18) + 0.0 (3.3.9) + 0.0 (3.3.10) + 0.0 (3.3.11) + 0.0 (3.3.12)
	TOTAL:	0.047791

See Bar E. Mail
None
None

* Shall include ILRT results through penetrations described in the "As Found" condition. (Steps 3.3.9 THROUGH 3.3.12).

4.2 ANY actual value in the Table above that is NOT found satisfactory shall be brought to the attention of the duty Senior Watch Supervisor IMMEDIATELY. Record below that the SWS was notified.

— N/R —
SWS Notified

4.3 Test Performed By:

John Quick Jay Bald 7/26/91
Signature /Date

4.4 SRO Informed of Field Work and Calculation Completion:

[signature] 7/26/91
SRO /Date

5.0 SUPERVISOR REVIEW:

5.1 The test is complete and the Test Results Section is completed accurately. IF ANY error is found in the Test Results Section that would cause a Required Value NOT to be satisfied, the SWS shall be notified IMMEDIATELY. Complete Step 6.2 of the Operability Criteria AND initiate an SOR for ANY Required Values in the Test Results Section that are NOT satisfied.

Jay Bald 7/26/91
Cognizant Supervisor or Designee /Date

Initials

4.8 Final ILRT Results

> **NOTE**
>
> Only the "AS LEFT" leakage calculated in step 4.8.1.1 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 (CLRTP), step 5.4 of Reference 9.2.6 and the CR process.

4.8.1 WHEN all local leakage rate additions AND corrections to ILRT are known, THEN CALCULATE Final ILRT leakage rates using Attachment 15, ILRT Results Summary as guidance.

4.8.1.1 "AS LEFT" Leakage:
Sum of above reported L_{am} & UCL "AS LEFT" (on Attachment 15, ILRT Results Summary) CJB 6/1/06 0.06304 ~~0.0684~~

4.8.1.2 "AS FOUND" Leakage:
Sum of above reported L_{am} & UCL "AS FOUND" (on Attachment 15, ILRT Results Summary) CJB 6/1/06 0.0636 ~~0.0674~~

4.8.1.3 PERORMANCE LEAKAGE:
Sum of above report L_{am} & UCL "AS LEFT" and as-left minimum pathway leakage rate of any pathway isolated during ILRT due to excessive leakage. CJB 6/1/06 0.06304 ~~0.0084~~

5.0 COMMENTS

① No overdue surveillance and PM's exist at IPEC at this time. MLF 4/?/06

② VC INTERNAL / EXTERNAL INSPECTIONS PERFORMED "SAT" - STEP 3.28

③ IV-1445 Shut due to water leakage. Annotated in Att 7

④ PCV-1236, 1237, 1234, 1235 Control Switch removed from ~~Att 3C~~ MD 4/22/06 pg 93, Att 3C & added to Att 3D in Open Position

⑤ PACKING LEAKS FOUND ON PCV-1229 AND PCV 1234. FIXED WITH WORKORDERS IP2-06-18073 AND IP2-06-18074.

⑥ WCP-118 UNISOLATED - 46 PSIG FOUND ON TESTGAGE ⑥* SPACE BETWEEN 1170 & 1171 AND 1171 & 1172 PRESSURIZED WITH STATION AIR TO 45 psig to AIR BLOCK THE VALVES

⑦ Restoration positions N/A'd per OAP-~~001~~ 115 MD 4/26/06 Step 4.4.4.1

⑧ Position restored per CRS direction

⑨ 1811A LEFT SHUT DUE TO REGULATOR 942 MAINTAINING PRESSURE ABOVE RELIEF VALVE SETPOINT. UNABLE TO ADJUST 942.

⑩ No Cap exists for IA-1441.

⑪ Ckts 14 & 24 on LP-216 PTO'd (00587 & 00588)

⑫ Att 14 Log Readings Not Required, Points will be reported by PICS history.

⑬ Att 14 Log Readings Suspended attentions Turned toward problems with Stabilization & finding Sources of possible leakage. Att 18 reading changed to Once/Shift

⑭ Att 14 Log Readings Suspended MLMS verified to be trending with P2R level which is on PICS AND RCDT level greater than indicated. P2R level used for RCS level on Att 14

Comments continued:

(15) WCP-118 & WCP-119 Restoration Documented on Pg 96 in Att 3C.

(16) Due to MOB Yard interferences Vendor equipment Could not be shipped. Step not to hold up Procedure Close out. Project lead will ensure return of Vendor equipment.

(17) Rx Sump Conversion factor is documented on Attached E-Mail from Engineering (Dean Shah) ~~behind~~ ~~behind~~ behind Pg 191.

(18) PCV-1101-UU-B Shut per PTO 2R17-00405.

(19) Steam Generator Pressure Readings discontinued, No Change in pressure.

(20) Pages 4 of 8 & 6 of 8 of Att 15 N/A'ed. No leakage Savings per ILRT Vendor.

(21) Restoration of 95' Air Lock will be performed by Tag Out 2-R17 2-WCPS-95' Air lock ILRT Restoration.

(22) MS-41, 42 Remain Shut for Preps for COL-4.2.2 Containment Closure. BFD-7's also.

(23) Valves Positioned Per Tagging Order.

(24) Valves Positioned per COL vs As found

(25) Service Water to FCU's drained per SOP-24.1.2 section 4.10

(26) Weld Channel System Shutdown per procedure & to remain so for Current Plant Conditions

(27) CONTAINMENT SUMP WAS ISOLATED FOR SUMP MODS - THEREFORE LEVEL INDICATION NOT USED - Change in SUMP level Calculated FROM PRE-TEST & POST-TEST OBSERVATIONS.

Comments continued:

Test Performers:

Print Name:	Initials:	Signature/Date:
Vin DeClemente	[illegible]	[illegible] 4/19/06
T. Buchal	TJB	[illegible] 4-21-2006
Ray LaFever	[illegible]	[illegible] 4/21/06
DAVE POWELL	D	[illegible] 4/21/06
Anthony Williams	[illegible]	[illegible] 4/21/06
GEORGE C. VAN WERT	[illegible]	[illegible] 4/21/06
MARK LEONS	[illegible]	[illegible] 4/21/06
Lou Merlino	[illegible]	[illegible] 4/21/06
Mike Tesoriero	MWT	[illegible] 4/21/06
SCOTT H. CUVELIER	SHC	Scott H. Cuvelier 4/21/06
MICHAEL RUH	M	[illegible] 4/24/06
ROBERT M. CAREY	[illegible]	Robert M. Carey 4/24/06
PHIL QUESNEL	PQ	[illegible] 4/24/06
JOSEPH VARGA	JV	[illegible] 4/24/06
Dustin Martin	[illegible]	[illegible] 4-24-06
R Alexander	[illegible]	[illegible] 4/24/06
D PARKER	[illegible]	[illegible] 4/24/06
Amy A. Callo	[illegible]	[illegible] 4/24/06
John Balletta	JB	[illegible] 4/25/06
Art Singer	[illegible]	[illegible] 4/25/06
Jeff Closhne	[illegible]	[illegible] 4/25/06
Tom Feenan	TF	[illegible] 4/25/06
Jess Williams	JW	[illegible] 4/25/06

Test Performers:

Print Name:	Initials:	Signature/Date:
MARK LEWIS	ML	4/25/06
Corey Munz	CJM	4/25/06
KEITH BROWN	KB	4-25-6
Chris Bergren	CJB	4/27/06
Ben Kage	K	4/27/05
Ross Rohr	R	5/10/6

6.0 ACCEPTANCE CRITERIA

6.1 Technical Specification & IST Requirements:

Required Containment Leak Rate SR 3.6.1.1 & TS 5.5.14.d						
Component	Surveillance Requirement	Attachment 15 Step 8.6	Acceptance Criteria	Actual	Acceptable (YES / No)	Initials
Containment Building	Containment Leak Rate Testing Program	~~0.0684~~ ~~0.0684~~ wt%/day CJ 0.06304 %wt/day	≤ 0.75 L_a 0.075 %wt/day	~~0.0684~~ wt%/day CJ 0.06304 %wt/day	YES	CJB

CJ 5/31/06

7.0 TEST ACCEPTANCE

7.1 Technical Specifications Acceptance Criteria

7.1.1 Based on recorded data, are all Acceptance Criteria of 6.1 satisfied.

YES NO

7.1.2 IF the required Acceptance Criteria is NOT met, THEN:

- NOTIFY CRS/SM.
- INITIATE a WRT AND a CR.
- TAKE action in accordance with LCO 3.6.1

7.2 IF NO is circled in Step 7.1.1, THEN LIST Corrective Actions taken AND comments:

Comments: See CR IP2-2006-02113 for As found UNSAT results. As left results sat based upon identified & corrected leakage.

Reviewed By: [signature] 5.12.06

SM OR Designated Alternate / Date

8.0 EVALUATION

8.1 PROGRAMS AND COMPONENTS REVIEW

Comments: SEE ATTACHED PAGE.

Reviewed By: [signature] 8/1/06

Programs and Components Review / Date

The ILRT was performed in 2R17 with leakage within specification as documented in the test. The test was a challenge for the facility in several ways from a project management point of view: the setup area in the transformer yard was not available which resulted in staging in the FSB/MO building yard, this staging required manufacture of special containment penetration manifolds and use of a very large number of small 3" hoses, the hose arrangement partially blocked normal building access/egress and, due to an important temporary power supply installed across the center of the FSB/MO building yard, the removal of air compressors was delayed resulting in project cost overrun. The resistance offered by the long lengths of numerous 3" hoses was able to be overcome during pressurization but greatly increased the time required for depressurization.

During the ILRT, difficulties were encountered in temperature stabilization and Weld Channel System leakage. The temperature control problems were the result of tidal changes which cascaded through Service Water, Component Cooling and Residual Heat Removal. Although these changes were expected based on the experience at IP3 in 2005 ILRT, we were unable to completely control the reactions to these temperature changes. This was a major concern for meeting stability criteria and proved a significant handicap when troubleshooting leakage rates.

A problem arose generally in the WCPS which resulted in closing all four WCPS Zones. For Zones 3 and 4, the containment isolation valves WCP-1111-1 and WCP-1111-2 were closed due to leakage from the distribution system in containment. These valves are exempt from Type C testing similar to CCW valves which are the boundary for a closed system outside containment. This was an unexpected event since the pre-outage values for the two Zones were low. It was later demonstrated that the leakage increased from less than 2 scfm to approximately 8 scfm in the few days between plant shutdown and the start of the ILRT. These Zones were left depressurized upstream resulting in the ILRT pressure challenging the containment welds directly. (See condition reports IP2 2006 2049 and 2062 for documentation of isolated Zones 3 and 4.) Thus, the leakage for Zones 3 and 4 as well as the WCP-1111-1 and WCP-1111-2 were included in the ILRT leakage results (i.e. part of 95% UCL Leakage). The isolation of Zones 1 and 2 resulted in the inclusion and resolution of large leakage penalties. I have attached a complete discussion of the penalty resolution issue in Attachment 16 for condition report IP2 2006 02113. The net result for Zones 1 and 2 was that the actual leakage for those Zones is very small. If Zones 1 and 2 had not been isolated, or if the precise containment leakage for the these Zones had been obtained prior to the test, then the ILRT Preliminary Results would not have included the large penalty and condition report IP2 2006 02113 would not have been required.

Finally, the results of all Type B&C tests performed in 2R17 were tabulated. These results were used for the final As Found and As Left leakage values. I have included tables for these values in Attachment 16.

Chris Bergren June 1, 2006

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 reduction in tank level is NEGATIVE, conversely a rise 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: 55.13 GALLONS

1.2 CONVERT GALLONS TO FT^3 CHANGES:

Record ILRT duration (hours) = (t) Duration = 11.75 hrs

Calculate net volume change in ft^3/day:

dV = (TG/t) (24 hrs/day) ($1ft^3$ / 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 = (55.13 gallons/11.75 hours) (24) (0.13367 ft^3 / gallon)

dV = 15.05 ft^3 / day

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 2 of 8)

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 ft^3 / day from Step 1.2

Pt is the average containment pressure during the ILRT in psia

C is the conversion factor, 144 in^2 / ft^2

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

T is the average containment temperature in °R

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

LV = (15.05 * 60.522 * 144 * 100) / (53.35 * 543.11 * 782743)
(Step B; Pt; T; W)

LV = 0.0006 %wt/day
(ROUNDED UP FROM 0.00059 - CJB 5-10-06)

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 3 of 8)

NOTE

Reference Step 1.1.1 of this Attachment 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): 12262.3

2.2 Convert the MNPLR Penalty Addition to lbm/day:

Penalty Addition = (12262.3 sccm)(1scf/28,317scc)(0.07517 lbm/scf)(1440 min/day)

Penalty Addition (in lbm/day) = 46.8741

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

Penalty Addition (in lbm/day) = (46.8741 lbm/day * 100) / 782743 initial containment air mass (lbm)
Step 2.2

Penalty Addition (%wt/day) = 0.00599

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 4 of 8)

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 air mass (lbm)
Step 3.2

Leakage Savings
Addition (%wt/day) = __________

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

Not Applicable
20 CJW 5/10/06

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 5 of 8)

4.0 FINAL TYPE B & C PENALTY ADDITIONS

4.1 The ILRT is being performed at the beginning of the outage. 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): 7659.82

4.2 Convert the MNPLR Penalty Addition to lbm/day:

Penalty
Addition = (7659.82 sccm)(1scf/28,317scc)(0.07517 lbm/scf)(1440 min/day

Penalty
Addition (in lbm/day) = 29.28

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

Penalty
Addition (in lbm/day) = (29.28 lbm/day * 100) / 782743 initial containment air mass (lbm)
Step 4.2

Penalty
Addition (%wt/day) = 0.00374

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 6 of 8)

5.0 FINAL LEAKAGE SAVINGS CALCULATION

5.1 The ILRT is being performed at the beginning of the outage. 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): 1147

5.2 Convert the Leakage Savings Addition to lbm/day:

Leakage Savings
Addition = (1174 sccm)(1scf/28,317scc)(0.07517 lbm/scf)(1440 min/day)

Leakage Savings
Addition (in lbm/day) = 4.384

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

Leakage Savings
Addition (in lbm/day) = (4.384 lbm/day * 100) / 782 743 initial containment air mass (lbm)
Step 5.2

Leakage Savings
Addition (%wt/day) = 0.00056

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

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 7 of 8)

6.0 PRELIMINARY AS-LEFT ILRT RESULTS:

CHECK box for results used to accept ILRT

	MASS POINT (ANSI 56.8-11994) ✓	TOTAL TIME (BN-TOP-1) N/A
6.1 MEASURED LEAKAGE:	N/A	N/A
6.2 REGRESSION LINE LEAKAGE Lam:	0.0563	N/A
6.3 LEAKAGE AT 95%UCL:	0.0587	N/A
6.4 MNPLR Penalty Additions (from 2.3)	0.00599	N/A
6.5 Volume Change Correction (from 1.3)	0.0006	N/A
6.6 PRELIMINARY AS-LEFT ILRT Result:	0.06529	N/A

7.0 PRELIMINARY AS-FOUND ILRT RESULTS

USE results used to accept ILRT

	MASS POINT (ANSI 56.8-1994) ✓	TOTAL TIME (BN-TOP-1) N/A
7.1 AS-LEFT ILRT RESULT (from 6.6):	N/A	N/A
7.2 LEAKAGE SAVINGS (from 3.3):	N/A	N/A
7.3 PRELIMINARY AS-FOUND ILRT Result:	0.06529	N/A

ATTACHMENT 15
ILRT RESULTS SUMMARY
(Page 8 of 8)

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) N/A
8.1 MEASURED LEAKAGE:	N/A	N/A
8.2 REGRESSION LINE LEAKAGE Lam:	0.0563	N/A
8.3 LEAKAGE AT 95%UCL:	0.0587	N/A
8.4 MNPLR Penalty Additions (from 4.3)	0.00374	N/A
8.5 Volume Change Correction (from 1.3)	0.0006	N/A
8.6 FINAL AS-LEFT ILRT Result:(<75%L_a)	0.06304	N/A

9.0 FINAL AS-FOUND ILRT RESULTS

USE results used to accept ILRT

	MASS POINT (ANSI 56.8-1994) ✓	TOTAL TIME (BN-TOP-1) N/A
9.1 AS-LEFT ILRT RESULT (from 8.6):	N/A	N/A
9.2 LEAKAGE SAVINGS (from 5.3):	0.00056	N/A
9.3 FINAL AS-FOUND ILRT Result:	0.0636	N/A

CR IP2 2006 02113 PENALTY RESOLUTION

INCLUDES THE FOLLOWING DOCUMENTS:

- CR IP2 2006 02113 (6 Pgs)
- ILRT INC. PRELIMINARY TEST REPORT (3 Pgs)
- 217 ILRT PENALTY RESOLUTION (Recovery Plan) (4 Pgs)
- ZONE 1 WORK ORDER IP2 06 18693 (14 Pgs)
- ZONE 2 WORK ORDER IP2 06 18694 (17 Pgs)

Entergy	CONDITION REPORT	CR-IP2-2006-02113

Originator: Bergren,Christopher J
ginator Group: P&C Eng Codes Staff
Supervisor Name: Azevedo,Nelson F
Discovered Date: 04/24/2006 13:13

Originator Phone: 7216
Operability Required: Y
Reportability Required: N
Initiated Date: 04/24/2006 13:37

Condition Description:

The Integrated Leak Rate Test had actual test results of 0.0587 %wt/day which is meets the acceptance criteria of <0.075 %wt/day. However, certain known leakage paths were isolated for the test. When this is done, penalties are taken based on the known leakage amounts. For this test, when the known leakage amounts are added, the total leakage is administratively changed to 0.0799 %wt/day which is not acceptable for Mode change for startup. These known leakages must be reduced by a minimum of 10,136.7 sccm prior to startup. This is not an issue at this time because the value of 0.075 %wt/day is applicable to the design basis leakage at accident conditions (above cold shutdown).

Immediate Action Description:

Notified plant management and the shift manager.

Suggested Action Description:

This is a mode hold item for cold shudown.

REFERENCE ITEMS:

Type Code	Description
TSN	2-PT-10Y001

TRENDING (For Reference Purposes Only):

Trend Type	Trend Code
EL	ESPC
KEYWORDS	KW-OUTAGE LESSONS LEARNED
WE	ESPC
KEYWORDS	KW-LEAKS-AIR
REPORT WEIGHT	1

Entergy	OPERABILITY	CR-IP2-2006-02113

OperabilityVersion: 1

Operability Code: EQUIPMENT INOPERABLE

Immediate Report Code: NOT REPORTABLE

Performed By: Kich,Frank M 04/24/2006 20:12

Approved By: McCarthy,Brian P 04/24/2006 21:10

Operability Description:

Due to failure of the ILRT the containment is inoperable when in modes 1,2,3,4. Until repairs are completed on leaking components the plant cannot enter Mode 4. Discussed with Licensing and there is no immediate reportability required per LI-108.

Approval Comments:

Approved

Entergy	REPORTABILITY	CR-IP2-2006-02113

Reportability Version: 1

Report Number:

Report Code: NOT REPORTABLE

Boilerplate Code:

Performed By : Janicki,John W 04/25/2006 11:06

Reportability Description:

Appropriate corrective actions initiated to resolve the reasons for the surveillance failures which are to be completed prior to mode change. This aspect of VC integrity not required in the current mode. Also, the test results are bounded by the accident analysis and as such there is no past operability concern (results were only .75 of La). Not reportable per IP-SM-LI-108.

Entergy	CORRECTIVE ACTION	CR-IP2-2006-02113

CA Number: 1

	Group	Name
Assigned By:	Operations Watch Staff	Brooks,Kevin L
Assigned To:	P&C Eng Component Mgmt	Tesoriero,Michael V
Subassigned To :	P&C Eng Codes Staff	Bergren,Christopher J

Originated By:	Brooks,Kevin L	4/24/2006 14:44:18
Performed By:	Tesoriero,Michael V	5/9/2006 03:10:43
Subperformed By:	Bergren,Christopher J	5/8/2006 15:07:25
Approved By:		
Closed By:	Brooks,Kevin L	5/9/2006 05:31:04

Current Due Date: 05/10/2006 **Initial Due Date:** 05/10/2006

CA Type: ACTION

Plant Constraint: MODE 4/HOT SHUTDOWN

CA Description:

NOTE MODE 4 HOLD: document required corrective actions complete prior to mode 4

Response:

See sub-response. The ILRT has passed satisfactorily with the penalties reduced to acceptable levels. There is no longer a mode 4 issue with the ILRT. MVT

Subresponse :

Summary:

The following corrective actions were completed.

The combination of Zone 1 and Zone 2 Weld Channel System leakage was tested using local leak rate test methods and equipment under work orders IP2-06-18693 and IP2-06-18694 respectively. The tests demonstrated that the actual penetration leakage was reduced from the value reported in the previous 2-PT-R11 Sensitive Leak Rate for Zones 1 and 2. This is a substantial reduction in the overall penetration penalty and is well in excess of the 14000 cc/min reduction required for meeting the Technical Specification requirement of leakage less than or equal to 75% La. Therefore, the ILRT is satisfactory and there is no further Mode Change Hold attributable to penalty values at this time.

Data:

The vendor, ILRT Inc, was supplied with the following pre-ILRT values for those penetrations which could not be tested by the ILRT or were isolated during the ILRT:

WCPS Zone 1 (From 2-PT-R11 performed 12/05) - 18689.02 cc/min
WCPS Zone 2 (From 2-PT-R11 performed 12/05) - 19255.36 cc/min
Containment Spray Header - 69 cc/min
Containment Spray Header - 139 cc/min
Purge Supply - 2574.23 cc/min
Purge Exhaust - 5502.82 cc/min
Pressure Relief - 364.5 cc/min

Sum Total = 46593.93 cc/min.

Reduction of this Sum Total necessary for meeting the criteria of less than or equal to 75% La = 14000 cc/min.

Note that the original value of 10136.7 cc/min was revised upward to 14000 cc/min based on determining that the changes in pressurizer level observed during the test did not represent liquid leaving containment.

The test 2-PT-R11 is normally conducted by reading Zone flow from installed instrumentation and is conservative with respect to actual leakage through the penetrations. Zone 1 and Zone 2 were tested at the racks with the Zone depressurized upstream. The results of the test were as follows

Zone 1 - 1417.5 cc/min
Zone 2 - 1292.7 cc/min
The Zone 2 value includes a 1000 cc/min penalty for penetrations UU and VV which were tagged out at the time of the work order testing. This tag out was performed in such a way that the particular WCPS penetrations UU and VV were left pressurized with an indicated pressure value which did not change over a period of at least seven days even though the upstream Zone was depressurized. From this it was concluded that the penetration does not leak; however, because the penetration was tagged out, a penalty of 1000 cc/min was conservatively assumed to apply.

The difference between the Zone leakage from 2-PT-R11 and the work step lists is 37944.38 cc/min - 2710.2 cc/min = 35234.18 cc/min.

The new Sum Total is 46593.93 - 35234.18 = 11359.75. Note that exact values will change slightly based on final valve testing which is currently scheduled. Careful monitoring will prevent exceeding 75% La based on those outstanding tests.

Based on these values the ILRT leakage is less than 75% La and, therefore, there is no Mode Change Hold due to ILRT associated penalties in 2R17 at this time.

See attached completed work order steplists.

Closure Comments:

agree and close

Attachments:

Subresp Description
Zone 2 Work Order

Entergy	CORRECTIVE ACTION	CR-IP2-2006-02113

Attachments:

Zone 1 Work Order

ILRT Inc.
29 Talisman Te.
Oswego, NY 13126
http://www.ILRT.com
(315) 402-5599

April 15, 2006
II-PTR-2006002
GCVW-L060415A

Mr. Christopher Bergren
Entergy Nuclear Northeast
Indian Point Unit 2
Broadway & Bleakley Aves.
Buchanan NY 10511

Subject: Preliminary Test Report, 2006 ILRT

Dear Chris:

The ILRT (including Verification Test) at the Indian Point Power Station, Unit 2 was completed at 10:00 on April 24, 2006. The preliminary leakage rate results based solely on computer results were acceptable. However, the ILRT results must be corrected for:

- volume changes
- penetrations not aligned during the test during test preparations
- and penetrations isolated during the test itself

These alignment corrections are known as "B&C Penalties", and are made using "As Left" minimum pathway local leakage rate results in most cases. These additions are currently not known due to local leakage rate testing and repairs that will have to occur during the 2R17 outage. Based on currently known data (outdated LLRT results that were scheduled to be performed after the ILRT totaling ~ 46,593 sccm or 0.0227%wt/day) the Preliminary As Left ILRT results do NOT appear to be acceptable, however, sufficient margin exists between the computer reported results and the technical specification acceptance criteria to allow reporting an acceptable Final As Left ILRT Result at the end of the outage. Please note that the penalty additions may change based on post-test "as-left" LLRT results. The computer test results (sans additions) are shown in the table below:

Analysis Technique	Test Result	Acceptance Criteria
Mass Point (Calculated Leakage)	0.0563 %wt/day	$\leq$ 75%L_a = 0.075%wt/day
Mass Point (Leakage at 95%UCL)	0.0587 %wt/day	$\leq$ 75%L_a = 0.075%wt/day

CR IP2 2006 02113

ILRT Inc.
29 Talisman Te.
Oswego, NY 13126
http://www.ILRT.com
(315) 402-5599

As the ILRT was performed per ANSI 56.8-1994, the official test results are those obtained using the Mass Point data analysis technique. With known additions, (penalties, level corrections) the Preliminary "As Left" ILRT leakage results **were unacceptable at ~0.0799 %wt/day**. The results will be improved by further local leakage rate testing results.

After Entergy Management permission was obtained, the ILRT computer reported leakage was then validated by the successful completion of the verification test required by 10 CFR 50 App J using the Mass Point data analysis technique. An imposed leakage of 7.0 scfm (6.9 scfm after correction back to calibrated conditions) was set. The imposed leakage equated to 0.0954 %wt/day. The results are listed below:

Analysis Technique	Verification Results	Acceptance Criteria
		Lam + Lo + 25%La 0.1767 %wt/day (Upper Limit)
Mass Point (L_c)	0.1313 % wt/day	
		Lam + Lo – 25%La 0.1267 %wt/day (Lower Limit)

A copy of the complete set of the individual data sets for the test and verification phases as well as parameter graphs will be provided in the final test report. The draft of the final test report will be submitted within four weeks after receipt of local leakage rate data for penetrations not included in the ILRT, and a copy of the executed procedure, (including all appendices and attachments).

Dr. Howard T. Hill, Mr. Robert M. Carey, Mr. George C. Van Wert and Mr. Jerime Cornell provided consulting services and performed the ILRT's data reduction and calculation tasks. If you have any questions concerning the interpretation of the ILRT Data, please contact me at 315-402-5599 or Robert Carey at 813-571-9981. ILRT Inc appreciates the opportunity to work with FENOC, and looks forward to doing so again.

Sincerely yours,
ILRT Inc

Robert M. Carey
Robert M. Carey,
Vice President

NOTES:	NOTES:	NOTES:
1. Many of the leakage additions used to calculate the 0.0227% wt/day value are over four years old, and were simply used as placeholders. The outdated LLRTs were already scheduled for 2R17 2. The -0.0015% wt/day value was an assumption based on data available at the time. RCDT levels were unreliable and Sump levels were not functional during the test. The dropping Pzr. level made the leakage appear larger than it actually was, and a subtraction for its impact would have been allowed ***IF*** the lost water volume had ended up outside the containment. Measurements after access was restored indicated the RCDT overflowed and ended up in the trenches of the 46' elevation because the sump had been blocked for mod work. A calculation by Dr. Howard Hill of ILRT Inc accounted for the lost Pzr. volume within the containment, so no subtraction is allowed. 3. The ILRT procedure, 2-PT-10Y001, steps 4.4.4.1 and 4.4.4.7 require that prior to terminating the test, the leakage rate from the computer be adjusted with "all known additions". The 0.0587%wt/day leakage at the 95%UCL was acceptable alone, but would not be result in an acceptable ILRT when all known additions were made. Entergy Outage Management was informed of the fact, and the fact that the numbers ultimately added would be "as left" (***after*** repairs/adjustments). Entergy management approved ending the test at 11.75 hours with a Preliminary As Left value of 0.0799% wt/day. 4. The -0.0015% volume change corrections were revised to zero once access to the VC confirmed lost PZR inventory remained within the containment. REVISED preliminary As Left is now **0.0814%wt/day**. To attain a FINAL As Left result of 0.070%wt/day an improvement of **23,500** sccm (through repairs or updated, lower LLRT values).	1. The WCCPP reading prior to opening the Purge valves to support outage activities (and Radon concerns) would provide a better (though conservative) "as found" evaluation of the 1170 valves initial condition. 2. An as found LLRT prior to any repairs is still desirable to correlate the leakage during the ILRT with the LLRT result. IF the valves have been cycled before the LLRT can be accomplished, the LLRT will probably not reflect the valves' leakage during the ILRT.	1. To fail the Performance Criteria the excessive leakage of the isolated paths had to be from components NOT included in the Type B or C program, or that are not testable. ALL pathways isolated during this ILRT are currently monitored with Appendix J tests except WCCPP Zones 3 & 4 which meet separate testing criteria included in the plant's Technical Specifications (Section 3.6.10) 2. The volume change corrections were ultimately determined to be zero.

Condition Report Number: CR-IP2-2006-02113	Assigned Department: Programs & Components Engineering

PROBLEM STATEMENT: (The **WHAT**) (see Procedure step 5.4[2](a))

The Integrated Leak Rate Test (2-PT-10Y001) performed in 2R17 had actual test results of 0.0587 %wt/day which meets the acceptance criteria of <0.075 %wt/day. However, certain suspected leakage paths were isolated as procedurally controlled contingency actions during the test. When this was done, penalties were taken based on previously recorded Type B and Type C leakage results for those isolated portions. When these penalty amounts were added to the actual leakage, the total leakage was administratively changed to 0.0799 %wt/day which exceeded the acceptance criteria. These known leakages had to be reduced prior to startup to meet the 0.075 %wt/day requirement.

EXPLANATION OF PROBLEM: (The **HOW**) (see Procedure step 5.4[2](b))
The penalty addition process is part of the ILRT procedure. The process uses leakages from the most recent Type B and Type C testing results for any containment penetration which can not be tested by the ILRT or is isolated during the ILRT. Several penetrations were isolated during the ILRT due to suspected leakage. Weld Channel System (WCPS) Zones 1 and 2 were among those isolated. Therefore, the last Type B testing results for those Zones were added to the ILRT.

Type B testing for Zones 1 and 2 was last performed in test 2-PT-R11 in December, 2005 with a combined documented leakage of approximately 38,000 cc/min. Penalty addition from these zones was sufficient in themselves to exceed the acceptance criteria as stated in the condition report. Although the penalty addition was procedurally controlled, a condition report was deemed appropriate to ensure that the technique was identified to outage management as a restraint to mode change pending resolution.

The test 2-PT-R11 has a comparatively large acceptance criteria of 0.2 %wt/day and is performed in a manner which provides information about the total WCPS leakage rather than exact values for each individual system rack or penetration. The result is that the reported system leakage is in excess of actual leakage at each welded penetration sleeve. A plan was immediately implemented to test and identify the actual penetration leakage for the two zones. The intent of the plan was to replace the overly conservative values taken in 2-PT-R11 with actual penetration leakage. This plan was successful as documented in CA 00001 of this condition report (See attached Recovery Plan). The resulting actual values replaced the values from 2-PT-R11 resulting in a satisfactory preliminary ILRT result.

The identified problem is the use of overly conservative leakage values for WCPS Zones 1 and 2 as penalties in the 2R17 ILRT. The use of the overly conservative values resulted in a temporary mode restraint that could potentially have been avoided.

One method of avoiding the use of the penalty would have been to un-isolate WCPS Zone 1 and Zone 2 prior to the end of the ILRT. This action was rejected during the test because the

actual leakage was not known and there was a desire to limit entering and exiting contingency actions since the containment air mass takes time to react to each specific change. This could have added substantially to test time.

A better method would have been to know the actual penetration leakage before the test so that, when the penalties were added, the result would not have exceeded the acceptance criteria. An action to verify actual leakage might still have been implemented but the mode restraint would not have been required.

When testing for system leakage in 2-PT-R11, Zones 1 and 2 are evaluated for contribution to Type B leakage because those zones protect containment penetrations. The test is conducted by excluding leakage from Type C sources (such as containment purge or pressure relief valves) since those sources have their own tests and penalties. The remaining leakage is totaled against the overall technical specification limit of 0.06 wt%/day. This leakage is evaluated on the basis of system usage rather than by performing a local leak rate test at the rack penetrations. A similar method applies to Zones 3 and 4 in that a system leakage is obtained in 2-PT-R11 rather than a rack-specific leakage. Zones 3 and 4, exclusive of the specific tests (such as fuel transfer tube and post accident containment venting), are used to provide a cover gas to liner welds in the containment structure. Based on suspected leakage, Zones 3 and 4 were isolated by closure of valves PCV-1111-1 and PCV-1111-2 against ILRT pressure. The ILRT pressurized and tested the liner welds directly and that leakage is included in the actual test result of 0.0587 wt%/day. Zones 3 and 4, after exclusion of specific tests mentioned above are not applicable to Type B or Type C testing and are not counted against the 0.06 wt%/day limit. Therefore, the existing methodology of 2-PT-R11 results in two test result values. The total of all four zones is tested against the criteria of 0.2 wt%/day and the portions of Zones 1 and 2 which do not have a specific Type C test are added to the running total for 0.06 wt%/day. These values are system-oriented and overly conservative when applied to specific penetration leakage.

Therefore, the values used for the Zones 1 and 2 penalties were overly conservative because they include system leakage in excess of actual leakage through the containment penetrations.

APPARENT/CONTRIBUTING CAUSE(S): (The **WHY**) (see Procedure step 5.4[2](c))

Why were overly conservative values from 2-PT-R11 used as penalties in the ILRT?
Because no specific racks or penetration testing was done before the ILRT.
Why was no specific rack or penetration testing done before the ILRT?
Because the effect of adding the overly conservative value was not anticipated.

Therefore, the apparent cause of this condition was the failure to anticipate the result of a contingency action.

The cause could be removed by revising 2-PT-R11 to provide a method to obtain specific rack or penetration test results for those portions of the test used as Type B test results.

EXTENT OF CONDITION: (see Procedure step 5.4[2](d))
The use of penalties to formulate preliminary results is not normally used in surveillance testing and is unique to the ILRT procedure. Therefore, based on review of a sample of completed 2R17 surveillance tests, there are no other procedures to which the use of penalties applies.

CORRECTIVE ACTION(S): (see Procedure step 5.4[2](e))
1. Revise 2-PT-R11 to include a method to obtain rack or penetration specific values for those portions of Zones 1 and 2 which are applicable to Type B testing.

ISSUE / PROBELM	**SOLUTION / RESOLUTION / ACTION / COMPLETED** [note any Work Orders, MODs, other]
Example: Cords are currently a trip hazard.	*Example: Cords were removed or raised out of the pathway.*

PROPOSED/ASSIGNED CORRECTIVE ACTIONS

ITEM #	**ISSUE/CAUSE**	**SOLUTION / RESOLUTION** [note any Work Orders, MODs, other]	**TYPE CA**	**Assigned Department**	**Due Date**	**PCRS CA#**
Ex: (AC-1)	*The previous work packages did not specify guidance for placement of electrical extension cords.*	*Electrical conduit will be run and outlets installed per work order number XXXXXX. On 1/1/01 the CRG approved closure to this WO#.*	CA	Maintenance	0/0/0	00
AC-1	Overly conservative values were placed into the test to address potential Zone 1 and 2 leak rates, rather than performing actual leak rate testing for these zones.	Revise 2-PT-R11 to include a methodology provided by IST Engineer to determine best leak rates for these zones so that actual values are obtained for ILRT(vice penalty estimates) to support more accurate test result conclusions.	CA	Operations Procedure Group	9/14/06	04

EVALUATOR (Print Name)	Date report completed	Phone Extension of Investigator
Chris Bergren	5/16/06	271-7216

Indian Point Energy Center IP2

Information Copy - Rev 0

WORK ORDER # IP2-06-18694

05/02/2006 16:07

Problem / Work Requested:
INVESTIGATE / TROUBLESHOOT AIR LEAKAGE FROM WELD CHANNEL ZONE 2

Location: WCPS-ZONE-2

Loc.Descrip: WELD CHANNEL PRESSURIZATION ZONE 2

Building / Elevation: N/A

Equipment:	OTHR2008-002	Description:			
Model #	UNK-	Serial #	UNK		
Reported By:	AMIHALI	Date:	04/27/2006		
Planner:	SBYRNE	Supervisor:	<none>	Loop:	<none>
Priority:	8				
System:	WCPS	QA Class:	A	Work Type:	P OTHER
EQ:	N	Outage ID:	17E		
Week/Mode:	MODE4	Status:	INPROG	Project No:	<none>
Response Dep:	MFIN				

Change of Scope YES / NO (circle one): ____________________

Release for Work

Supervisor to verify WO in progress : ____________ Date: ________

LCO / AOT #: ____________________

Tagout#(s):

Work Complete / Closeout

Supervisor / Lead: ____________________ Date: ________

Retest Reqd? Yes / No In Scope of Work ____________________
Signature/Date

WRT Loc: No tag hung

Work Accepted (WCC) Yes / No

New WO Number: ____________________ ____________________
Signature/Date

Work Order Hierarchy

WO#	Description	Parent WO
IP2-06-18694	Investigate / troubleshoot air leakage from Weld Channel Zone	IP2-06-19352

Controlled Documents and Records

Document	Description	Revision

References:

Z95X Per CR 2006-02113 This is a mode hold item for cold shudown.

Plant Impact Matrix

PIMX Desc.:

OPS Impact Summary:

Prepared By:

Prepared Date:

Independent Review:

2nd SRO:

LCO/AOT/TRM/ODCM:

LCO 2nd SRO:

LCO(Admin)Reference:

LCO(Admin)Ref Duration:

LCO Ref Duration 2nd SRO:

Equipment to Protect:

Equip to Protect IR:

Special Entergy Power Mktg Notify:

Special Entergy Notify IR:

OPS Proc Refs:

OPS Proc IR:

OD/TFC/TPC/Caution Tag:

OD/TFC IR:

Precautions or Removal Plan:

Prec or Remove IR:

Contingency Plans Required:

Cont Plans Req IR:

CCR Brief Required:

CCR Brief IR:

On-Line Risks:

Instrument Bus Spike:

Instrument Bus IR:

Proximity Risk:

Proximity Risk IR:

Reactor Trip:

Reactor Trip IR:

Feedwater Transient:

Feedwater Trans IR:

Loss of Offsite Power:

Loss of Offsite IR:

Reactivity:

Reactivity IR:

On-Line PRA:

On-Line PRA IR:

ShutDown Risks:

Decay Heat Removal:

Decay Heat IR:

RCS Inventory:

RCS Inventory IR:

Power Availability:

Power Availability IR:

Reactivity:

Reactivity IR:

RCS/VC Integrity:

RCS/VC IR:

SFP,Rad Mon,HVAC:

SFP,Rad Mon,HVAC IR:

ShutDown PRA:

ShutDown PRA IR:

CCR Impact:

CCR Impact IR:

Activity Location:

Activity Location IR:

Estimated Alarm Severity(#per Hour):

Estimated Alarm IR:

Estimated # of Personnel in CCR:

Estimated # of Personnel IR:

Restoration Plan Required:

Restoration Plan IR:

Unnecessary Entry into LCO:

Challenge to VC Integrity:

Chem/Rad Release/Spill:

Loss of Configuration Ctrl:

New Sys Components from DCP:

OPS Proc Refs and Verify Rev:

OPS Proc Refs IR:

PWT Printed:

PWT Correct for Plant Cond:

PWT Correct Plant Cond IR:

Is LCO Info in LCO DB:

Is LCO Info in LCO DB IR:

Tag-Out Review Complete:

Tag-Out Review Complete IR:

WORK ORDER # IP2-06-18694

05/02/2006 16:07

Job Details

Job Plan:	<none>	Work Class:	<none>	IST Related:	<none>
Rep Task ID:	<none>	Task Type:	<none>	SectionXI/Qual Grp:	*
PWT:	Y	Defic Type:	<none>	Risk Significant:	<none>
PCRS #:	2006-2113	Engineer:	<none>	Maint Rule:	*

Department Billed: V32   GL Account: NEV32-7A000-IP2-CROT-F3PC5MTCRO-095

Permits and Support

Job Plan # <none>

Notifications

RWP: <none> -
Safety Group: <none> -
Radwaste: <none> -
Fire Protection: <none> -
Quality Control: <none> -
Other Notifications: <none> -
Health Physics: <none> -

Requirements

Fall Protection: <none> -
FME Clean Level: <none> -
Cleanliness: <none> -

Support

Chemistry Department: <none> -
Crane / Forklift Required: <none> -
Scaffold Required: <none> -
Temporary Power Required: <none> -
Security Coordination: <none> -
Cutting, Burning, Welding permit: <none> -
Insulation Removal Required: <none> -
Other Support Required: <none> -

Precautions / Hazards

Flammable / Explosion Concerns: <none> -
Heat Stress Requirements: <none> -
Hazardous Chemical: <none> -
Asbestos: <none> -
Lead Abatement: <none> -
Electrical High Voltage: <none> -
Respiratory Requirements: <none> -
Confined Space Permit: <none> -
Other Precautions / Hazards: <none> -

Work Instructions

Actions Taken

4/28/06 - 17E Mode4 per scope #366- Bengis as sysadm

As-Found
Condition:

(i) RACK 11 Penetrations VV & VV closed on PTO

Parts Used	Class Stock Number	Green Tag Number

M & TE	Calibration / Due Date	Step Used
CED-BLRM-2	2/15/2007	

NO Planned Materials

PWT Plans
PWT PreImplementation Review

Issued By: ______________________________

WILL BE TESTED UNDER 2-PT-R11 ==> IP2-06-19352

PWT Completion Review

WE: SAT UNSAT ______________________________/__________
SM: SAT UNSAT ______________________________/__________
OPS PPMIS ENTRY ______________________________/__________
TEST ENG: SAT UNSAT ______________________________/__________

ATTACHMENT 1
WORK STEP LIST
(Page 1 of 2)

WSL Number: ______________________
(Use "year / Month / day / time" as the number - Example 01040712:31)

Date: __/__/__ Page 1 of ___

System / Component affected: Weld Channel Zone 2

Purpose of Step list: Perform LLRT of Weld Channel Zone 2 Racks, 10, 11 & 15.

References used in step list development: 9321-F-2726, SOP-10.5.1

Prepared By: A. Mihalik

Reviewed By: K Brown

Approved By: ______________________
OM / AOM / GSM / SM

Rad Engineer: ______________________
(Required IF there is a potential for a Radiological problem.)

> **NOTE**
>
> It MAY be acceptable to perform some steps concurrently OR NOT in the sequence presented provided the SM approval is obtained.

Prerequisites:

1. Briefing held outlining Precautions, Limitations, Safety concerns, Scope of work etc..
2. Verification that equipment status is as expected prior to performance of Work Step List..

1.6 Leakage Test for WCPS Rack #15

PERFORM Pre-Test lineup per Attachment 2 Section B, WCPS Rack #15 Test Valve Lineup.

NOTE
WCPS Zone 2 is isolated and depressurized to preclude possible inleakage through PS-PCV-1110-10, PS-PCV-1110-11 and PS-PCV-1110-15 during test. WCPS Zone 2 air receiver may remain pressurized during this test.

NOTE
Test pressure must be applied to maintain a minimum of 53 psig across zone being tested.

PERFORM setup for applicable leak rate test rig per 0-OSP-IST-001, Leak Rate Test Rig Operation.

If Rack #15 is depressurized, repressurize using bypass on Leak Rate Test Rig or equivalent as follows:

CLOSE a penetration gauge isolation valve.

RECORD number of penetration gauge valve closed in Step above

Valve No: PCV-1101-EA

Slowly REMOVE test connection cap for gauge isolated.

CONNECT test rig outlet to test connection.

Open gauge isolation valve.

Increase Rack #15 pressure to 49 psig using bypass on Leak Rate Test Rig or equivalent.

If Rack #15 is pressurized to greater than 49 psig, then: REDUCE Rack #15 pressure to less than 49 psig as follows:

CLOSE a penetration gauge isolation valve.

RECORD number of penetration gauge valve closed in Step above

Valve No: PCJ-1101-1EA

Slowly REMOVE test connection cap for gauge isolated.

Slowly OPEN gauge isolation valve to reduce Rack #15 pressure to less than 49 psig, THEN:

CLOSE gauge isolation valve.

CONNECT test rig outlet to test connection.

OPEN gauge isolation valve.

NOTE

Test pressure must be applied to maintain a minimum of 53 psid across zone being tested.

OPERATE applicable leak rate test rig per 0-OSP-IST-001, Leak Rate Test Rig Operation to maintain 53 psid across Zone 2 Rack #15.

WHEN pressure and flow stabilize, THEN RECORD data below as required:

WCCPPS Rack #15			
TIME (minutes)	PRESSURE (psig)	TEMP * (°F)	FLOW READING (sccm)
0	54.02	N/A	15.6
5	53.84		16.3
10	53.80		15.8
15	53.60		16.9
AVERAGE READING	53.82		16.2

IF desired to identify leaking penetration(s), perform Attachment 1.

CLOSE gauge isolation valve on Rack #15.

CLOSE test rig inlet valve.

DEPRESSURIZE test rig through test rig vent.

IF Volumetrics Leak Rate Monitor was used, THEN CALCULATE average flow from data table and RECORD below:

Indicated Average Flow: 16.2 sccm

IF B&C Test Rig was used, THEN PERFORM leakrate calculations per 0-OSP-IST-001, Leak Rate Test Rig Operation. ATTACH completed calculation sheet to test package.

Calculated leakrate: N/A sccm

PERFORM restoration for applicable leak rate test rig per 0-OSP-IST-001, Leak Rate Test Rig Operation. JP

Install test connection cap. JP

IV

If desired to depressurize Rack #15, Then REDUCE Rack #15 pressure as follows or equivalent:

CLOSE a penetration gauge isolation valve. JP

RECORD number of penetration gauge valve closed in Step above

Valve No: PCV-1161-EA JP

Slowly REMOVE test connection cap for gauge isolated. JP

Slowly OPEN gauge isolation valve to depressurize Rack #15. JP

After depressurize complete, INSTALL test connection cap. JP

PERFORM Restoration lineup per Attachment 2 Section B, Rack #15 Post Test Valve Lineup. JP

1.7 Leakage Test for WCPS Rack #10

PERFORM Pre-Test lineup per Attachment 2 Section C, WCPS Rack #10 Test Valve Lineup.

NOTE
WCPS Zone 2 is isolated and depressurized to preclude possible inleakage through PS-PCV-1110-10, PS-PCV-1110-11 and PS-PCV-1110-15 during test. WCPS Zone 2 air receiver may remain pressurized during this test.

NOTE
Test pressure must be applied to maintain a minimum of 53 psig across zone being tested.

PERFORM setup for applicable leak rate test rig per 0-OSP-IST-001, Leak Rate Test Rig Operation.

If Rack #10 is depressurized, repressurize using bypass on Leak Rate Test Rig or equivalent as follows:

CLOSE a penetration gauge isolation valve.

RECORD number of penetration gauge valve closed in Step above

Valve No: PCV-1101-NN

Slowly REMOVE test connection cap for gauge isolated.

CONNECT test rig outlet to test connection.

Open gauge isolation valve. JP

Increase Rack #10 pressure to 49 psig using bypass on Leak Rate Test Rig or equivalent. JP

If Rack #10 is pressurized to greater than 49 psig, then: REDUCE Rack #10 pressure to less than 49 psig as follows:

CLOSE a penetration gauge isolation valve. JP

RECORD number of penetration gauge valve closed in Step above JP

Valve No: PGV - 1101 - NN

Slowly REMOVE test connection cap for gauge isolated. JP

Slowly OPEN gauge isolation valve to reduce Rack #10 pressure to less than 49 psig, THEN: JP

CLOSE gauge isolation valve. JP

CONNECT test rig outlet to test connection. JP

OPEN gauge isolation valve. JP

NOTE
Test pressure must be applied to maintain a minimum of 53 psid across zone being tested.

OPERATE applicable leak rate test rig per 0-OSP-IST-001, Leak Rate Test Rig Operation to maintain 53 psid across Zone 2 Rack #10. JP

WHEN pressure and flow stabilize, THEN RECORD data below as required: ____

WCPS Rack #10			
TIME (minutes)	**PRESSURE (psig)**	**TEMP * (°F)**	**FLOW READING (sccm)**
0	54.42	NA	327
5	54.40	NA	267
10	54.40	NA	252
15	54.39	NA	226
AVERAGE READING	54.40	NA	268

IF desired to identify leaking penetration(s), perform Attachment 1. ____

CLOSE gauge isolation valve on Rack #10. ____

CLOSE test rig inlet valve. ____

DEPRESSURIZE test rig through test rig vent. ____

IF Volumetrics Leak Rate Monitor was used, THEN CALCULATE average flow from data table and RECORD below:

Indicated Average Flow: 268 sccm ____

IF B&C Test Rig was used, THEN PERFORM leakrate calculations per 0-OSP-IST-001, Leak Rate Test Rig Operation. ATTACH completed calculation sheet to test package.

Calculated leakrate: NA sccm ____

PERFORM restoration for applicable leak rate test rig per 0-OSP-IST-001, Leak Rate Test Rig Operation.

Install test connection cap.

IV

CLOSE a penetration gauge isolation valve.

RECORD number of penetration gauge valve closed in Step above

Valve No: PCW - 1101 - MN

Slowly REMOVE test connection cap for gauge isolated.

Slowly OPEN gauge isolation valve to depressurize Rack #10.

After depressurize complete, INSTALL test connection cap.

PERFORM Restoration lineup per Attachment 2 Section C, Rack #10 Post Test Valve Lineup.

1.8 Leakage Test for WCPS Rack #11

PERFORM Pre-Test lineup per Attachment 2 Section D, WCPS Rack #11 Test Valve Lineup.

NOTE
WCPS Zone 2 is isolated and depressurized to preclude possible inleakage through PS-PCV-1110-10, PS-PCV-1110-11 and PS-PCV-1110-15 during test. WCPS Zone 2 air receiver may remain pressurized during this test.

NOTE
Test pressure must be applied to maintain a minimum of 53 psig across zone being tested.

PERFORM setup for applicable leak rate test rig per 0-OSP-IST-001, Leak Rate Test Rig Operation.

If Rack #11 is depressurized, repressurize using bypass on Leak Rate Test Rig or equivalent as follows:

CLOSE a penetration gauge isolation valve.

RECORD number of penetration gauge valve closed in Step above

Valve No: PCV-1101-LLA

Slowly REMOVE test connection cap for gauge isolated.

CONNECT test rig outlet to test connection.

Increase Rack #11 pressure to 49 psig using bypass on Leak Rate Test Rig or equivalent.

Open guage isolation valve.

If Rack #11 is pressurized to greater than 49 psig, then: REDUCE Rack #11 pressure to less than 49 psig as follows:

CLOSE a penetration gauge isolation valve.

RECORD number of penetration gauge valve closed in Step above

Valve No: PCU -1101-LLA

Slowly REMOVE test connection cap for gauge isolated.

Slowly OPEN gauge isolation valve to reduce Rack #11 pressure to less than 49 psig, THEN:

CLOSE gauge isolation valve.

CONNECT test rig outlet to test connection.

OPEN gauge isolation valve.

NOTE

Test pressure must be applied to maintain a minimum of 53 psid across zone being tested.

OPERATE applicable leak rate test rig per 0-OSP-IST-001, Leak Rate Test Rig Operation to maintain 53 psid across Zone 2 Rack #11.

WHEN pressure and flow stabilize, THEN RECORD data below as required:

WCPS Rack #11			
TIME (minutes)	PRESSURE (psig)	TEMP * (°F)	FLOW READING (sccm)
0	53.8	NA	14
5	54.2	NA	12
10	54.79	NA	5
15	54.9	NA	3
AVERAGE READING	54.42	NA	8.5

IF desired to identify leaking penetration(s), perform Attachment 1. NA

CLOSE gauge isolation valve on Rack #11.

CLOSE test rig inlet valve.

DEPRESSURIZE test rig through test rig vent.

IF Volumetrics Leak Rate Monitor was used, THEN CALCULATE average flow from data table and RECORD below:

Indicated Average Flow: 8.5 sccm

IF B&C Test Rig was used, THEN PERFORM leakrate calculations per 0-OSP-IST-001, Leak Rate Test Rig Operation. ATTACH completed calculation sheet to test package.

Calculated leakrate: NA sccm NA

ATTACHMENT 1

LEAKAGE IDENTIFICATION

Identify individual leaking penetration(s) by closing penetration isolation valve and subtracting from previously recorded total.

Rack/Isolation Vlv	Rack Total (A)	New total with valve closed (B)	Leakage of Isolated Line (A-B)

ATTACHMENT 2

SECTION A

WCPS TEST TEST VALVE LINEUP

(Page 1 of 1)

VALVE	DESCRIPTION	PRE-TEST			POST-TEST			
		AS FOUND	TEST L/U	INIT	NORM L/U	AS LEFT	INIT	IV
PCV-1110-15	WCPS Supply to Rack #15 Isolation	Open	CLOSED	[illegible]	OPEN	Open	[illegible]	[illegible]
PCV-1110-11	WCPS Supply to Rack #11 Isolation	Open	CLOSED	[illegible]	OPEN	Open	[illegible]	1 [illegible]
PCV-1110-10	WCPS Supply to Rack #10 Isolation	open	CLOSED	[illegible]	OPEN	open	[illegible]	[illegible]

1 Valves PCV-1101 UUB and PCV-1101VVB PTO'd Closed.

ATTACHMENT 2,
WCCPPS RACKS #15, #10 & #11 TEST VALVE LINEUP

SECTION B, Rack #15								
VALVE	DESCRIPTION	PRE-TEST			POST-TEST			
		AS FOUND	TEST L/U	INIT	NORM L/U	AS LEFT	INIT	INDEP VERIF
Penetration Supply Isolation Valves	WCPS Rack #15 Penetration Supply Isolations	all open [initials]	All Valves Open	[initials]	All Valves Open	All valves open	[initials]	[initials]
Gauge Isolation Valves	WCPS Rack #15 Gauge Isolations	all open [initials]	All Valves Open	[initials]	All Valves Open	All valves open	[initials]	[initials]

SECTION C, Rack #10								
VALVE	DESCRIPTION	PRE-TEST			POST-TEST			
		AS FOUND	TEST L/U	INIT	NORM L/U	AS LEFT	INIT	INDEP VERIF
Penetration Supply Isolation Valves	WCPS Rack #10 Penetration Supply Isolations	all open	All Valves Open	[initials]	All Valves Open	all open	[initials]	[initials]
Gauge Isolation Valves	WCPS Rack #10 Gauge Isolations	all open	All Valves Open	[initials]	All Valves Open	all open	[initials]	[initials]

ATTACHMENT 2,
WCCPPS RACKS #15, #10 & #11 TEST VALVE LINEUP

SECTION D, Rack #11									
		STEP 4.4.2			STEP 4.4.15				
		PRE-TEST			POST-TEST				
VALVE	DESCRIPTION	AS FOUND	TEST L/U	INIT	NORM L/U	AS LEFT	INIT	INDEP VERIF
Penetration Supply Isolation Valves	WCPS Rack #11 Penetration Supply Isolations		All Valves Open 1	[illegible]	All Valves Open 1	[illegible]		[illegible]
Gauge Isolation Valves	WCPS Rack #11 Gauge Isolations		All Valves Open	[illegible]	All Valves Open	[illegible]		[illegible]

1 Penetrations VV + VV isolated on PTO

Attachment Header

Document Name:

untitled

Document Location

Subresponse Description

Attach Title:

Zone 1 Work Order

Indian Point Energy Center IP2

Information Copy - Rev 0

WORK ORDER # IP2-06-18693

04/30/2006 09:49

Problem / Work Requested:
INVESTIGATE / TROUBLESHOOT AIR LEAKAGE FROM WELD CHANNEL ZONE 1

Location: WCPS-ZONE-1

Loc.Descrip: WELD CHANNEL PRESSURIZATION ZONE 1

Building / Elevation: N/A

Equipment:	OTHR2008-001	Description:			
Model #	UNK-	Serial #	UNK		
Reported By:	AMIHALI	Date:	04/26/2006		
Planner:	SBYRNE	Supervisor:	<none>	Loop:	<none>
Priority:	8				
System:	WCPS	QA Class:	A	Work Type:	P OTHER
EQ:	N	Outage ID:	17E		
Week/Mode:	MODE4	Status:	INPROG	Project No:	<none>
Response Dep:	MFIN				

Change of Scope YES / NO (circle one): ______________________

Release for Work

Supervisor to verify WO in progress : ______________ Date: __________

LCO / AOT #: ______________________

Tagout#(s):

Work Complete / Closeout

Supervisor / Lead: ______________________ Date: __________

Retest Reqd? Yes / No In Scope of Work ______________________
Signature/Date

WRT Loc: No tag hung

Work Accepted (WCC) Yes / No

New WO Number: ______________________ ______________________
Signature/Date

STOP THINK ACT REVIEW Set Your Teammates Up For Success

Work Order Hierarchy

WO#	Description	Parent WO
This Workorder Has NO Hierarchial Family		

Controlled Documents and Records

Document	Description	Revision

References:

As per CR 2006-02113 This is a mode hold item for cold shudown.

Plant Impact Matrix

PIMX Desc.:

OPS Impact Summary:

Prepared By:

Prepared Date:

Independent Review:

2nd SRO:

LCO/AOT/TRM/ODCM:

LCO 2nd SRO:

LCO(Admin)Reference:

LCO(Admin)Ref Duration:

LCO Ref Duration 2nd SRO:

Equipment to Protect:

Equip to Protect IR:

Special Entergy Power Mktg Notify:

Special Entergy Notify IR:

OPS Proc Refs:

OPS Proc IR:

OD/TFC/TPC/Caution Tag:

OD/TFC IR:

Precautions or Removal Plan:

Prec or Remove IR:

Contingency Plans Required:

Cont Plans Req IR:

CCR Brief Required:

CCR Brief IR:

On-Line Risks:

Instrument Bus Spike:

Instrument Bus IR:

Proximity Risk:

Proximity Risk IR:

Reactor Trip:

Reactor Trip IR:

Feedwater Transient:

Feedwater Trans IR:

Loss of Offsite Power:

Loss of Offsite IR:

Reactivity:

Reactivity IR:

On-Line PRA:

On-Line PRA IR:

ShutDown Risks:

Decay Heat Removal:

Decay Heat IR:

RCS Inventory:

RCS Inventory IR:

Power Availability:

Power Availability IR:

Reactivity:

Reactivity IR:

RCS/VC Integrity:

RCS/VC IR:

SFP,Rad Mon,HVAC:

SFP,Rad Mon,HVAC IR:

ShutDown PRA:

ShutDown PRA IR:

CCR Impact:

CCR Impact IR:

Activity Location:

Activity Location IR:

Estimated Alarm Severity(#per Hour):

Estimated Alarm IR:

Estimated # of Personnel in CCR:

Estimated # of Personnel IR:

Restoration Plan Required:

Restoration Plan IR:

Unnecessary Entry into LCO:

Challenge to VC Integrity:

Chem/Rad Release/Spill:

Loss of Configuration Ctrl:

New Sys Components from DCP:

OPS Proc Refs and Verify Rev:

OPS Proc Refs IR:

PWT Printed:

PWT Correct for Plant Cond:

PWT Correct Plant Cond IR:

Is LCO Info in LCO DB:

Is LCO Info in LCO DB IR:

Tag-Out Review Complete:

Tag-Out Review Complete IR:

Indian Point Energy Center IP2

Information Copy - Rev 0

WORK ORDER # IP2-06-18693

04/30/2006 09:49

Job Details

Job Plan:	<none>	Work Class:	<none>	IST Related:	<none>
Rep Task ID:	<none>	Task Type:	<none>	SectionXI/Qual Grp:	*
PWT:	<none>	Defic Type:	<none>	Risk Significant:	<none>
PCRS #:	2006-2113	Engineer:	<none>	Maint Rule:	*

Department Billed: V32 GL Account: NEV32-7A000-IP2-CROT-F3PC5MTCRO-095

Permits and Support

Job Plan # <none>

Notifications

RWP: <none> -
Safety Group: <none> -
Radwaste: <none> -
Fire Protection: <none> -
Quality Control: <none> -
Other Notifications: <none> -
Health Physics: <none> -

Requirements

Fall Protection: <none> -
FME Clean Level: <none> -
Cleanliness: <none> -

Support

Chemistry Department: <none> -
Crane / Forklift Required: <none> -
Scaffold Required: <none> -
Temporary Power Required: <none> -
Security Coordination: <none> -
Cutting, Burning, Welding permit: <none> -
Insulation Removal Required: <none> -
Other Support Required: <none> -

Precautions / Hazards

Flammable / Explosion Concerns: <none> -
Heat Stress Requirements: <none> -
Hazardous Chemical: <none> -
Asbestos: <none> -
Lead Abatement: <none> -
Electrical High Voltage: <none> -
Respiratory Requirements: <none> -
Confined Space Permit: <none> -
Other Precautions / Hazards: <none> -

Work Instructions

Actions Taken

4/28/06 - 17E Mode4 per scope #366- Bengis as sysadm

Found zone 1 secured. Placed zone 1 in service as per 2-sop 10.5.1. Allowed system to stabilize at pressure. Systematically did drop test on all points on racks 12 & 13. Found the following penterations leaking
RACK 12 H-25 & H-28 (very minor pressure drops on both)
RACK 13 H-20 & H63 (H-20 had signifgant pressure drops, H-63 had lesser pressure drop)

Need to go into VC to snoop the four penetrations for external leakage . Poplees/Mahalic 4/28/06

As-Found
Condition:

Found PCV 1110-12 (Rack 12 Isolation has a Large audible leak under the valve handle when the valve was opened. Wrote CRS IP2-06-2346 & workorder IP2-06-19313

Performed By Joseph Poplees 4-30-06

Parts Used	Class Stock Number	Green Tag Number

M & TE	Calibration / Due Date	Step Used

NO Planned Materials

ATTACHMENT 1
WORK STEP LIST
(Page 1 of 2)

WSL Number: 06 04 30 1605
(Use "year / Month / day / time" as the number - Example 01040712:31)

Date: 4 /30 /06

Page 1 of 13

System / Component affected: Weld Channel Zone 1

Purpose of Step list: Perform LLRT of Weld Channel Rack 12 and 13.

References used in step list development: 9321-F-2726, SOP-10.5.1

Prepared By: A. Mihalik [signature]

Reviewed By: [signature] 4/30/06

Approved By: [signature] 4-30-06
OM / AOM / GSM / SM

Rad Engineer:
(Required IF there is a potential for a Radiological problem.)

> **NOTE**
> It MAY be acceptable to perform some steps concurrently OR NOT in the sequence presented provided the SM approval is obtained.

Prerequisites:

1. Briefing held outlining Precautions, Limitations, Safety concerns, Scope of work etc..
2. Verification that equipment status is as expected prior to performance of Work Step List.

1.1 Precautions And Limitations

To prevent injury to personnel and/or damage to equipment, care SHALL be exercised when venting lines

Test pressure must be applied to maintain a minimum of 53 psid across zones being tested.

1.2 General Information

Personnel directing this test SHALL read it in its entirety prior to performing test. Personnel otherwise involved SHALL read applicable sections.

Any discrepancies found SHALL be identified in Comments section

Nitrogen or air may be used as a test medium.

Test apparatus and system boundaries SHALL be checked for leakage with Snoop or equivalent while pressurizing system. Tightening fittings, valve packing, etc. as required is allowable. Leakage from components other than penetrations being tested will result in erroneous data.

Pressure test gauges SHALL be a 1/4% gauge calibrated to ±1/4%. Gauge ranges may vary from those specified in Step 1.3 provided range on gauge does <u>NOT</u> exceed three times expected value.

1.3 Equipment required for test:

EQUIPMENT		SERIAL #	CAL DUE DATE	INITIALS
0-100 PSIG TEST GAUGE *		N/A	N/A	NA
B&C RIG THERMOMETER *		NA	N/A	NA
B & C	LOW *	NA	NA	N/A
TEST RIG	MEDIUM *	NA	NA	NA
FLOWMETERS	HIGH *	NA	NA	NA
VOLUMETRICS LEAK RATE MONITOR **		CED PC BLRM-2	2/28/07	[illegible]

* IF Volumetrics Leak Rate Monitor is used, THEN MARK N/A.

** IF B&C Test Rig is used, THEN MARK N/A.

PERFORM Pre-Test lineup per Section A, Test Valve Setup of Attachment 1, WCCPPS Racks #12 & 13 Test Valve Lineups. [illegible]

NOTE

WCCPPS Zone 1 is isolated and depressurized to preclude possible inleakage through PS-PCV-1110-12 and PS-PCV-1110-13 during performance of test.

WCCPPS Zone 1 air receiver may remain pressurized during this test.

DEPRESSURIZE WCCPPS Zone 1 per SOP-10.5.1, Weld Channel and Containment Penetration Pressurization System Operation. ✓

NOTE

Test pressure must be applied to maintain a minimum of 53 psid across zone being tested.

PERFORM setup for applicable leak rate test rig per 0-OSP-IST-001, Leak Rate Test Rig Operation.

Leakage Test for WCCPPS Rack #12

PERFORM Pre-Test lineup per Section B, Rack #12, of Attachment 1, WCCPPS Racks #12 & 13 Test Valve Lineups.

REDUCE Rack #12 pressure to less than 49 psig as follows:

CLOSE a penetration gauge isolation valve.

RECORD number of penetration gauge valve closed in Step above

Valve No: WC PS PCV-1101-451A

Slowly REMOVE test connection cap for gauge isolated.

Slowly OPEN gauge isolation valve to reduce Rack #12 pressure to less than 49 psig.

WHEN Rack #12 pressure is less than 49 psig, THEN:

CLOSE gauge isolation valve.

CONNECT test rig outlet to test connection.

OPEN gauge isolation valve.

NOTE
Test pressure must be applied to maintain a minimum of 53 psid across zone being tested.

OPERATE applicable leak rate test rig per 0-OSP-IST-001, Leak Rate Test Rig Operation.

WHEN pressure and flow stabilize, THEN RECORD data below as required:

WCCPPS Rack #12			
TIME (minutes)	PRESSURE (psig)	TEMP * (°F)	FLOW READING (sccm)
0	53.39	NA	12
5	53.34	NA	11
10	53.35	NA	11
15	53.35	NA	10
AVERAGE READING	53.357	NA	11

If desired to identify leaking penetration(s), perform Attachment 2 N/A

CLOSE gauge isolation valve on Rack #12.

CLOSE test rig inlet valve.

DEPRESSURIZE test rig through test rig vent.

IF Volumetrics Leak Rate Monitor was used, THEN CALCULATE average flow from data table and RECORD below:

Indicated Average Flow: ~~53.357~~ 11 sccm

IF B&C Test Rig was used, THEN: NA

PERFORM leakrate calculations per 0-OSP-IST-001, Leak Rate Test Rig Operation.

RECORD calculated leakrate from 0-OSP-IST-001, Leak Rate Test Rig Operation:

Calculated leakrate: N/A sccm — NA

ATTACH completed calculation sheet to test package. ____

DISCONNECT test rig from Rack #12 test connection. JP

REPLACE the test connection cap JP

IV

PERFORM Post-Test lineup per Section B, Rack #12, of Attachment 1, WCCPPS Racks #12 & 13 Test Valve Lineup. JP

Leakage Test for WCCPPS Rack #13

PERFORM Pre-Test lineup per Section B, Rack #13, of Attachment 1, WCCPPS Racks #12 & 13 Test Valve Lineups.

REDUCE Rack #13 pressure to less than 49 psig as follows:

CLOSE a penetration gauge isolation valve.

RECORD number of penetration gauge valve closed in Step above

Valve No: WCB-PCV-1101-1450A

Slowly REMOVE test connection cap for gauge isolated.

Slowly OPEN gauge isolation valve to reduce Rack #13 pressure to less than 49 psig.

WHEN Rack #13 pressure is less than 49 psig, THEN:

CLOSE gauge isolation valve.

CONNECT test rig outlet to test connection.

OPEN gauge isolation valve.

NOTE

Test pressure must be applied to maintain a minimum of 53 psid across zone being tested.

OPERATE applicable leak rate test rig per 0-OSP-IST-001, Leak Rate Test Rig Operation.

WHEN pressure and flow stabilize, THEN RECORD data below as required:

WCCPPS Rack #13			
TIME (minutes)	**PRESSURE (psig)**	**TEMP * (°F)**	**FLOW READING (sccm)**
0	53.62	N/A	1631
5	53.61	N/A	1472
10	53.60	N/A	1357
15	53.60	N/A	1166
AVERAGE READING	53.607	N/A	1406.5

Page 9 of

If desired to identify leaking penetration(s), perform Attachment 2

CLOSE gauge isolation valve on Rack #13. ______

CLOSE test rig inlet valve. ______

DEPRESSURIZE test rig through test rig vent. ______

IF Volumetrics Leak Rate Monitor was used, THEN CALCULATE average flow from data table and RECORD below:

Indicated Average Flow: 1406.5 sccm ______

IF B&C Test Rig was used, THEN:

PERFORM leakrate calculations per 0-OSP-IST-001, Leak Rate Test Rig Operation. N/A ______

RECORD calculated leakrate from 0-OSP-IST-001, Leak Rate Test Rig Operation:

Calculated leakrate:___________sccm N/A ______

ATTACH completed calculation sheet to test package. N/A ______

DISCONNECT test rig from Rack #13 test connection. ______

REPLACE the test connection cap ______

______
IV

PERFORM Post-Test lineup per Section B, Rack #13, of Attachment 1, WCCPPS Racks #12 & 13 Test Valve Lineup. ______

ATTACHMENT 1,
WCCPPS RACKS #12 & 13 TEST VALVE LINEUPS
(Page 1 of 1)

SECTION A, Test Setup								
VALVE	DESCRIPTION	PRE-TEST			POST-TEST			
		AS FOUND	TEST L/U	INIT	NORM L/U	AS LEFT	INIT	IV
PS-PCV-1110-12	WCCPPS Supply to Rack #12 Isolation	Closed	CLOSED	[illegible]	OPEN	Open	[illegible]	[illegible]
PS-PCV-1110-13	WCCPPS Supply to Rack #13 Isolation	Closed	CLOSED	[illegible]	OPEN	open	[illegible]	[illegible]

SECTION B, Rack #12								
VALVE	DESCRIPTION	PRE-TEST			POST-TEST			
		AS FOUND	TEST L/U	INIT	NORM L/U	AS LEFT	INIT	IV
Penetration Sup Isol Valves	WCCPPS Rack #12 Penetration Supply Isolations	Open	ALL VALVES OPEN	[illegible]	ALL VALVES OPEN	Open	[illegible]	[illegible]
Gauge Isol Vlvs	WCCPPS Rack #12 Gauge Isolations	Open	ALL VALVES OPEN	[illegible]	ALL VALVES OPEN	Open	[illegible]	[illegible]

SECTION C, Rack #13								
VALVE	DESCRIPTION	PRE-TEST			POST-TEST			
		AS FOUND	TEST L/U	INIT	NORM L/U	AS LEFT	INIT	IV
Penetration Sup Isol Valves	WCCPPS Rack #13 Penetration Supply Isolations	Open	ALL VALVES OPEN	[illegible]	ALL VALVES OPEN	Open	[illegible]	[illegible]
Gauge Isol Vlvs	WCCPPS Rack #13 Gauge Isolations	Open	ALL VALVES OPEN	[illegible]	ALL VALVES OPEN	Open	[illegible]	[illegible]

Attachment 2

To identify leaking penetration(s) close penetration isolation valve in sequence, as desired. Record below.

Penetration Supply Isolation Valve Closed	New Flow Rate (sccm)
H-20	778 ccm
H-63	505 ccm
Rack 12 without H-20 + H-63	292 ccm

Attachment 2

To identify leaking penetration(s) close penetration isolation valve in sequence, as desired. Record below.

Penetration Supply Isolation Valve Opened	New Flow Rate (sccm)

Entergy	**CORRECTIVE ACTION**	**CR-IP2-2006-02113**

CA Number: 2

	Group	Name
Assigned By:	CRG/CARB/OSRC	Reynolds,Joseph A
Assigned To:	P&C Eng Codes Mgmt	Azevedo,Nelson F
Subassigned To :	P&C Eng Codes Staff	Bergren,Christopher J

Originated By:	Reynolds,Joseph A	4/24/2006 20:59:35
Performed By:	Azevedo,Nelson F	5/22/2006 05:16:31
Subperformed By:	Bergren,Christopher J	5/18/2006 12:28:54
Approved By:		
Closed By:	Reynolds,Joseph A	5/22/2006 06:44:40

Current Due Date: 05/23/2006 **Initial Due Date:** 05/23/2006

CA Type: DISP - ACE/LT **CA Priority:**

Plant Constraint: #NONE

CA Description:

Please perform Lower-tier apparent cause evaluation of this ILRT unacceptable leakage issue and assign further corrective actions as required. Note a corrective action was assigned to CA&A to document the CARB presentation of your evaluation.

Response:

See sub response below.

Subresponse :

See attached report. CA 00004 issued after acceptance by Operations Procedure Group.

Closure Comments:

Per CA&A review, noted the response addressed all expected discussion points and was therefore accepted pending CARB review. CA# 3 assigned to document the results of the CARB review, therefore this CA completed and closed.

Attachments:

Subresponse Description
ILRT Penalty B Report

Attachment Header

Document Name:

untitled

Document Location

Subresponse Description

Attach Title:

ILRT Penalty B Report

Condition Report Number: CR-IP2-2006-02113	Assigned Department: Programs & Components Engineering

PROBLEM STATEMENT: (The **WHAT**) (see Procedure step 5.4[2](a))

The Integrated Leak Rate Test (2-PT-10Y001) performed in 2R17 had actual test results of 0.0587 %wt/day which meets the acceptance criteria of <0.075 %wt/day. However, certain suspected leakage paths were isolated as procedurally controlled contingency actions during the test. When this was done, penalties were taken based on previously recorded Type B and Type C leakage results for those isolated portions. When these penalty amounts were added to the actual leakage, the total leakage was administratively changed to 0.0799 %wt/day which exceeded the acceptance criteria. These known leakages had to be reduced prior to startup to meet the 0.075 %wt/day requirement.

EXPLANATION OF PROBLEM: (The **HOW**) (see Procedure step 5.4[2](b))
The penalty addition process is part of the ILRT procedure. The process uses leakages from the most recent Type B and Type C testing results for any containment penetration which can not be tested by the ILRT or is isolated during the ILRT. Several penetrations were isolated during the ILRT due to suspected leakage. Weld Channel System (WCPS) Zones 1 and 2 were among those isolated. Therefore, the last Type B testing results for those Zones were added to the ILRT.

Type B testing for Zones 1 and 2 was last performed in test 2-PT-R11 in December, 2005 with a combined documented leakage of approximately 38,000 cc/min. Penalty addition from these zones was sufficient in themselves to exceed the acceptance criteria as stated in the condition report. Although the penalty addition was procedurally controlled, a condition report was deemed appropriate to ensure that the technique was identified to outage management as a restraint to mode change pending resolution.

The test 2-PT-R11 has a comparatively large acceptance criteria of 0.2 %wt/day and is performed in a manner which provides information about the total WCPS leakage rather than exact values for each individual system rack or penetration. The result is that the reported system leakage is in excess of actual leakage at each welded penetration sleeve. A plan was immediately implemented to test and identify the actual penetration leakage for the two zones. The intent of the plan was to replace the overly conservative values taken in 2-PT-R11 with actual penetration leakage. This plan was successful as documented in CA 00001 of this condition report (See attached Recovery Plan). The resulting actual values replaced the values from 2-PT-R11 resulting in a satisfactory preliminary ILRT result.

The identified problem is the use of overly conservative leakage values for WCPS Zones 1 and 2 as penalties in the 2R17 ILRT. The use of the overly conservative values resulted in a temporary mode restraint that could potentially have been avoided.

One method of avoiding the use of the penalty would have been to un-isolate WCPS Zone 1 and Zone 2 prior to the end of the ILRT. This action was rejected during the test because the

actual leakage was not known and there was a desire to limit entering and exiting contingency actions since the containment air mass takes time to react to each specific change. This could have added substantially to test time.

A better method would have been to know the actual penetration leakage before the test so that, when the penalties were added, the result would not have exceeded the acceptance criteria. An action to verify actual leakage might still have been implemented but the mode restraint would not have been required.

When testing for system leakage in 2-PT-R11, Zones 1 and 2 are evaluated for contribution to Type B leakage because those zones protect containment penetrations. The test is conducted by excluding leakage from Type C sources (such as containment purge or pressure relief valves) since those sources have their own tests and penalties. The remaining leakage is totaled against the overall technical specification limit of 0.06 wt%/day. This leakage is evaluated on the basis of system usage rather than by performing a local leak rate test at the rack penetrations. A similar method applies to Zones 3 and 4 in that a system leakage is obtained in 2-PT-R11 rather than a rack-specific leakage. Zones 3 and 4, exclusive of the specific tests (such as fuel transfer tube and post accident containment venting), are used to provide a cover gas to liner welds in the containment structure. Based on suspected leakage, Zones 3 and 4 were isolated by closure of valves PCV-1111-1 and PCV-1111-2 against ILRT pressure. The ILRT pressurized and tested the liner welds directly and that leakage is included in the actual test result of 0.0587 wt%/day. Zones 3 and 4, after exclusion of specific tests mentioned above are not applicable to Type B or Type C testing and are not counted against the 0.06 wt%/day limit. Therefore, the existing methodology of 2-PT-R11 results in two test result values. The total of all four zones is tested against the criteria of 0.2 wt%/day and the portions of Zones 1 and 2 which do not have a specific Type C test are added to the running total for 0.06 wt%/day. These values are system-oriented and overly conservative when applied to specific penetration leakage.

Therefore, the values used for the Zones 1 and 2 penalties were overly conservative because they include system leakage in excess of actual leakage through the containment penetrations.

APPARENT/CONTRIBUTING CAUSE(S): (The **WHY**) (see Procedure step 5.4[2](c))

Why were overly conservative values from 2-PT-R11 used as penalties in the ILRT?
Because no specific racks or penetration testing was done before the ILRT.
Why was no specific rack or penetration testing done before the ILRT?
Because the effect of adding the overly conservative value was not anticipated.

Therefore, the apparent cause of this condition was the failure to anticipate the result of a contingency action.

The cause could be removed by revising 2-PT-R11 to provide a method to obtain specific rack or penetration test results for those portions of the test used as Type B test results.

EXTENT OF CONDITION: (see Procedure step 5.4[2](d))
The use of penalties to formulate preliminary results is not normally used in surveillance testing and is unique to the ILRT procedure. Therefore, based on review of a sample of completed 2R17 surveillance tests, there are no other procedures to which the use of penalties applies.

CORRECTIVE ACTION(S): (see Procedure step 5.4[2](e))
1. Revise 2-PT-R11 to include a method to obtain rack or penetration specific values for those portions of Zones 1 and 2 which are applicable to Type B testing.

ISSUE / PROBELM	SOLUTION / RESOLUTION / ACTION / COMPLETED [note any Work Orders, MODs, other]
Example: Cords are currently a trip hazard.	*Example: Cords were removed or raised out of the pathway.*

PROPOSED/ASSIGNED CORRECTIVE ACTIONS

ITEM #	ISSUE/CAUSE	SOLUTION / RESOLUTION [note any Work Orders, MODs, other]	TYPE CA	Assigned Department	Due Date	PCRS CA#
Ex: (AC-1)	*The previous work packages did not specify guidance for placement of electrical extension cords.*	*Electrical conduit will be run and outlets installed per work order number XXXXXX. On 1/1/01 the CRG approved closure to this WO#.*	CA	Maintenance	0/0/0	00
AC-1	Overly conservative values were placed into the test to address potential Zone 1 and 2 leak rates, rather than performing actual leak rate testing for these zones.	Revise 2-PT-R11 to include a methodology provided by IST Engineer to determine best leak rates for these zones so that actual values are obtained for ILRT(vice penalty estimates) to support more accurate test result conclusions.	CA	Operations Procedure Group	9/14/06	04

EVALUATOR (Print Name)	Date report completed	Phone Extension of Investigator
Chris Bergren	5/16/06	271-7216

Entergy	CA DUE DATE EXTENSION	CR-IP2-2006-02113

Corrective Action : CR-IP2-2006-02113 CA-00002

Version: 1 **Approved:** ✓

Requested Duedate: 05/23/2006 **Previous Duedate:** 05/17/2006

Requested By: Azevedo,Nelson F 05/12/2006

Approved By: Lewandowski,Paul R 05/12/2006

Request Description:

Please extend the due date to 5/23/06 to allow for additional review of the ILRT data which has been collected since this CR was first initiated. This extension has no impact on industrial or nuclear safety because all ILRT related issues have been resolved and the next ILRT will not occur for another 10 years. Supervisor concurrence has been obtained for this extension.

Approved Description:

Per CA&A review, the request does not pose a safety hazard, interim controls are not required, the requestor is Supervisor/Superintendent level, and the extension does not exceed the 30-day limit. Therefore, the extension is approved.

Entergy	**CORRECTIVE ACTION**	**CR-IP2-2006-02113**

CA Number: 3

	Group	Name
Assigned By:	CA&A Staff	Reynolds,Joseph A
Assigned To:	CA&A Staff	Tumicki,Michael L
Subassigned To :		

Originated By:	Reynolds,Joseph A	4/24/2006 21:00:56
Performed By:	Schmidt,George P	5/31/2006 09:43:27
Subperformed By:		
Approved By:		
Closed By:	Schmidt,George P	5/31/2006 09:43:27

Current Due Date: 06/07/2006 **Initial Due Date:** 06/07/2006

CA Type: CARB REVIEW **CA Priority:**

Plant Constraint: #NONE

CA Description:

Document the results of the apparent cause (LT) presentation to the CARB.

Response:

The CAT B / ACE report was presented to and accepted by the CARB on 5/30/2006 AS-IS.
This completes this assigned action, therefore this action is closed.

Subresponse :

Closure Comments:

Entergy	**CORRECTIVE ACTION**	**CR-IP2-2006-02113**

CA Number: 4

	Group	Name
Assigned By:	P&C Eng Codes Staff	Bergren,Christopher J
Assigned To:	Operations Procedure Mgmt	Miller,Mark J
Subassigned To :	Operations Procedure Staff	Lane,Betty J

Originated By:	Bergren,Christopher J	5/18/2006 12:22:24
Performed By:	Miller,Mark J	9/12/2006 14:48:08
Subperformed By:	Lane,Betty J	9/12/2006 14:35:14
Approved By:		
Closed By:	Miller,Mark J	9/12/2006 14:48:08

Current Due Date: 09/14/2006 **Initial Due Date:** 09/14/2006

CA Type: ACTION **CA Priority:**

Plant Constraint: #NONE

CA Description:

Revise 2-PT-R11 to include a methodology provided by IST Engineer to determine best leak rates for these zones so that actual values are obtained for ILRT(vice penalty estimates) to support more accurate test result conclusions.

Response:

Changes verified.

Subresponse :

Incorporated Eng. feedback

Closure Comments:

Entergy	**CORRECTIVE ACTION**	**CR-IP2-2006-02113**

CA Number: 5

	Group	Name
Assigned By:	CA&A Staff	Reynolds,Joseph A
Assigned To:	P&C Eng Codes Mgmt	Azevedo,Nelson F
Subassigned To :		

Originated By:	Schmidt,George P	9/13/2006 10:04:49
Performed By:	Azevedo,Nelson F	9/13/2006 10:29:43
Subperformed By:		
Approved By:		
Closed By:	Reynolds,Joseph A	9/13/2006 15:31:43

Current Due Date: 09/26/2006 **Initial Due Date:** 09/26/2006

CA Type: CR CLOSURE REVIEW **CA Priority:**

Plant Constraint: #NONE

CA Description:

CAT-B, ALL CORRECTIVE ACTIONS ARE CLOSED FOR THIS CR, THEREFORE THIS CR MAY BE READY TO CLOSE. REVIEW CR AND Approve OR Disapprove CLOSURE IN ACCORDANCE WITH EN-LI-102, SECTION 5.9.

Response:

This CR is ready for closure.

Subresponse :

Closure Comments:

Per CA&A review, noted the CR owner recommended and approved the CR for closure.