Attachment 2

DUKE ENERGY CORPORATION

Oconee Nuclear Station Units 1, 2, and 3
McGuire Nuclear Station Units 1 and 2
Catawba Nuclear Station Units 1 and 2

Uncontrolled Copy of Catawba Unit 1 Procedure
#PT/1/A/4200/001 E
"Upper Containment Personnel Air Lock Leak Rate Test"

Duke Power Company
Catawba Nuclear Station

Upper Containment Personnel Air Lock Leak Rate Test

Continuous Use

Procedure No.
PT/1/A/4200/001 E

Revision No.
046

Electronic Reference No.
CN005G15

PERFORMANCE

* * * * * * * * * * * * * * * * * UNCONTROLLED FOR PRINT * * * * * * * * * * * * * * * *

(ISSUED)

Compare with Control Copy every 14 calendar days while work is being performed.

Compared with Control Copy _____ Date _____

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Date(s) Performed	Work Order/Task Number (WO#)

COMPLETION

Yes	NA	
☐	☐	Checklists and/or blanks properly initialed, signed, dated, or filled in NA, as appropriate?
☐	☐	Listed enclosures attached?
☐	☐	Data sheets attached, completed, dated, and signed?
☐	☐	Charts, graphs, etc. attached and properly dated, identified, and marked?
☐	☐	Procedure requirements met?

Verified By _____ Date _____

Procedure Completion Approved _____ Date _____

Remarks (*attach additional pages, if necessary*)

Upper Containment Personnel Air Lock Leak Rate Test

1. Purpose

1.1 To verify the personnel door interlocks.

1.2 To verify the integrity of the door electrical penetrations.

1.3 To verify the integrity of the door seals, air tanks, associated tubing and valves.

1.4 To determine the leak rate of the door seal annulus.

1.5 To determine the overall leakage of the containment personnel air lock.

1.6 To verify the integrity of the door view ports.

2. References

2.1 CNM-1144.13-15, Personnel Air Lock Air Schematic

2.2 CNM-1144.13-18, Personnel Air Lock Air Schematic

2.3 CNM-1144.13-40, Personnel Air Lock General Arrangements

2.4 Technical Specifications

2.4.1 Section 3.6.1.3

2.4.2 Section 4.6.1.3

2.5 Catawba Nuclear Site Directive 3.1.2, Access to Containment or Annulus

3. Time Required

3.1 Manpower --Two OTG technicians

3.2 Time --20 hours

3.3 Frequency --As Required.

4. Prerequisite Tests

None

5. Test Equipment

NOTE:	Volumetric Leak Rate monitor used is at the Test Coordinators discretion providing that the instrument error is < 1% Full Scale of range selected.

5.1 2-2000 SCCM Volumetric Leak Rate Monitor

- Low Range, ± 1.0 SCCM
- Medium Range, ± 2 SCCM
- High Range, ± 20 SCCM

5.2 10-10,000 Volumetric Leak Rate Monitor

- Low Range, ± 1 SCCM
- Medium Range, ± 10 SCCM
- High Range, ± 100 SCCM

5.3 20-20,000 Volumetric Leak Rate Monitor

- Low Range, ± 2 SCCM
- Medium Range, ± 20 SCCM
- High Range, ± 200 SCCM

5.4 20-200 Volumetric Leak Rate Monitor ± 2 SCCM

NOTE:	A more accurate or narrower range pressure gauge may be used providing total error is ≤ ± 0.25 psig.

5.5 Pressure Gauge: 0 - 100 psig. Accuracy ±0.25% Full Scale

6. Limits And Precautions

6.1 Only one enclosure in Section 13.0 can be performed at a time to prevent breaching containment integrity when containment integrity is required, except as specified in Enclosure 13.7 (Upper Personnel Air Lock Integrity and Emergency Air Penetration Leak Rate Test).

6.2 If unable to complete a procedure step, subsequent steps may be N/A'd, initialed, and dated to perform those steps that return the system to its "As Found" condition.

6.3 To prevent damage to door seals, do not exceed 90 psig when leak testing seals.

6.4 Test equipment should be set at 85 psig ± 5 psig and checked for leakage prior to performing door seal test.

6.5 Do not exceed 15.7 psig on the personnel air lock, emergency air penetration seal and the electrical penetration seals.

6.6 At least three strong backs shall be installed via Model W.O. #91002194 before Enclosure 13.7, (Upper Personnel Air Lock Integrity and Emergency Air Penetration Leak Rate Test) is performed.

6.7 The containment side door latching pins shall be removed prior to the Overall Personnel Lock Integrated Leak Rate test to prevent damage to the latching pin drive mechanism.

6.8 The Annulus cad door shall not be secured open during this test. Except for personnel entry and exit, the annulus door shall remain closed to provide pressure-boundary for VE operability.

NOTE: Steps in Sections 7 and 8 not required for the sections being performed can be N/A'd, initialed and dated.

7. Required Unit Status

____ 7.1 Instrument air is available.

____ 7.2 Reactor Building is accessible.

____ 7.3 All test instruments to be used in this test have been signed out specifically to this test. Traceability is assured through the instrument history files. N/A, initial and date this step if only performing Enclosure 13.5 (Upper Personnel Air Lock Containment and Auxiliary Door Seal Annulus Leak Rate Test Using Volumetrics Autodoor Monitor).

____ 7.4 Verify that the upper personnel airlocks are in service per OP/0/A/6700/006 (Personnel Airlock Operations).

____ 7.5 If containment integrity is required, verify that the "DOOR INTERLOCK" keyswitch on "PUSHBUTTON STATION C" is in "ACTIVE" position to ensure only one door can be opened at one time. If containment integrity is NOT required, or if only performing Enclosure 13.5 (Upper Personnel Air Lock Containment and Auxiliary Door Seal Annulus Leak Rate Test Using Volumetrics Autodoor Monitor) or 13.6 (Personnel Air Lock Containment and Auxiliary Door Seal Annulus Leak Rate Test Using Test Instrumentation) and not performing the annulus instrumentation flow test of that enclosure, this step shall be N/A'd, initialed and dated.

8. Prerequisite System Conditions

—— If performing Enclosure 13.5 (Upper Personnel Air Lock Containment and Auxiliary Door Seal Annulus Leak Rate Test Using Volumetrics Autodoor Monitor), Volumetrics Autodoor Leak Rate Monitor Model 14430 is in service and has current calibration documentation.

9. Test Method

9.1 The door interlocks are verified by ensuring only one door can open at a time from each pushbutton station.

9.2 The door seals, air tanks, viewports, valves, associated tubing and door seal annulus are pressurized and test fittings are bubble checked for leaks. Leak rate is measured using the Volumetrics Leak Rate Method.

9.3 The air lock, emergency air penetration flange and view ports are pressurized to 15.4 psig to determine the overall air lock leakage rate.

10. Data Required

10.1 Door interlocks verification.

10.2 Electrical penetrations leakage rates.

10.3 Door seals and door seal annulus leakage rates.

10.4 Personnel lock integrated leakage rate.

10.5 Emergency air penetration leakage rate.

10.6 Auxiliary and containment side door view port leakage rates.

11. Acceptance Criteria

11.1 If performing Enclosure 13.1 (Upper Personnel Airlock Interlock Verification), door interlocks operate as designed.

11.2 If performing Enclosure 13.3 (Upper Personnel Air Lock Auxiliary Door Large and Small Seal Leak Rate Test) or 13.4 (Upper Personnel Air Lock Containment Door Large and Small Seal Leak Rate Test), door seals leakage is less than 15 SCCM per door seal.

11.3 If performing Enclosure 13.5 (Personnel Air Lock Containment and Auxiliary Door Seal Annulus Leak Rate Test Using Volumetrics Auto door Monitor) or Enclosure 13.6 (Personnel Air Lock Containment and Auxiliary Door Seal Annulus Leak Rate Test Using Test Instrumentation) door seal annulus leakage is less than 1383 SCCM.

11.4 If performing Enclosure 13.7 (Upper Personnel Airlock Integrity and Emergency Air Penetration leak Rate Test), personnel airlock integrated leakage and emergency air penetration leakage are less than or equal to 6915 SCCM at P_a.

12. Procedure

NOTE:

1. Enclosures 13.1 (Upper Personnel Airlock Interlock Verification) through Enclosure 13.10 (Overall Personnel Airlock Leakage Rate Reverification) are independent of each other and may be performed in any order at the discretion of Test Coordinator.
2. Only those Enclosures performed will be attached to the completed test procedure.
3. Enclosure 13.2 (Upper Personnel Air Lock Containment Side Door and Auxiliary Side Door Electrical Penetration Leak Rate Test) is required to be performed only when maintenance or repair has been performed on the containment side door or auxiliary side door electrical penetrations.
4. Enclosure 13.8 (Upper Personnel Air Lock Auxiliary Side Door View Port Leak Rate Test) is required to be performed only when maintenance or repair has been performed on the auxiliary side door view port.
5. Enclosure 13.9 (Upper Personnel Air Lock Containment Side Door View Port Leak Rate Test) is required to be performed only when maintenance or repair has been performed on the containment side door view port.
6. The enclosures referred to in Notes 3, 4, and 5 may also be also performed at the discretion of the Test Coordinator as troubleshooting support in the event that Enclosure 13.7 (Upper Personnel Air Lock Integrity and Emergency Air Penetration Leak Rate Test) fails to meet its acceptance criteria.

13. Enclosures

13.1 Upper Personnel Air Lock Door Interlock Verification

13.2 Upper Personnel Air Lock Containment Side Door and Auxiliary Side Door Electrical Penetration Leak Rate Test

13.2.1 Upper Personnel Air Lock Leak Rate Data of Enclosure 13.2.

13.3 Upper Personnel Air Lock Auxiliary Door Large and Small Seal Leak Rate Test

13.3.1 Upper Personnel Air Lock Leak Rate Data of Enclosure 13.3.

13.4 Upper Personnel Air Lock Containment Door Large and Small Seal Leak Rate Test

13.4.1 Upper Personnel Air Lock Leak Rate Data of Enclosure 13.4.

13.5 Upper Personnel Air Lock Containment and Auxiliary Door Seal Annulus Leak Rate Test Using Volumetrics Autodoor Monitor

13.6 Upper Personnel Air Lock Containment and Auxiliary Door Seal Annulus Leak Rate Test Using Test Instrumentation

13.6.1 Upper Personnel Air Lock Leak Rate Data of Enclosure 13.6.

13.7 Upper Personnel Air Lock Integrity and Emergency Air Penetration Leak Rate Test

13.7.1 Upper Personnel Air Lock Leak Rate Data of Enclosure 13.7.

13.8 Upper Personnel Air Lock Auxiliary Side Door View Port Leak Rate Test

13.8.1 Upper Personnel Air Lock Leak Rate Data of Enclosure 13.8.

13.9 Upper Personnel Air Lock Containment Side Door View Port Leak Rate Test

13.9.1 Upper Personnel Air Lock Leak Rate Data of Enclosure 13.9.

13.10 Overall Personnel Air Lock Leak Rate Reverification

13.10.1 Overall Personnel Air Lock Leak Rate Reverification Data

13.11 Outer PAL - Auxiliary Building Side

13.12 Inner PAL - Containment Building Side

NOTE: The Unit/WCC SRO and the NCO shall be notified if this enclosure is to be suspended for greater than 12 hours or upon completion of this procedure.

1. Procedure

_____ 1.1 Verify the following:

☐ Unit/WCC SRO's permission has been obtained to perform this test.

☐ NCO has been notified that this test is to be performed.

_____ 1.2 Ensure that the following sections have been satisfied as required for this procedure:

☐ Section 7

☐ Section 8

_____ 1.3 Station someone at "PUSHBUTTON STATION A" or "PUSHBUTTON STATION B" to shut Containment Side Door in Step 1.5.12 of this Enclosure

_____ 1.4 Verify the following air lock doors are closed with all seals inflated:

☐ Auxiliary Side Airlock Door

☐ Containment Side Airlock Door

1.5 Perform the following to test interlocks of Auxiliary Side Door "PUSHBUTTON STATION C":

NOTE: The substeps of Step 1.5 are performed at "PUSHBUTTON STATION C" with the exception of Substep 1.5.12, which is performed at "PUSHBUTTON STATION B" inside airlock.

_____ 1.5.1 Ensure that "DOOR INTERLOCK" keyswitch is in "ACTIVE" position on "PUSHBUTTON STATION C".

_____ 1.5.2 Depress Auxiliary Side Door (DOOR NO.2) "OPEN" pushbutton.

_____ 1.5.3 Verify that the following lights go off.

☐ "SEAL NO. 2 INFLATED"

☐ "SEAL NO. 2A INFLATED"

_____ 1.5.4 Depress Containment Side Door "OPEN" pushbutton in an attempt to open door.

_____ 1.5.5 Verify that the following lights remain on:

☐ "SEAL NO. 1 INFLATED"

☐ "SEAL NO. 1A INFLATED"

_____ 1.5.6 Depress Auxiliary Side Door "CLOSE" pushbutton.

_____ 1.5.7 Verify that the following lights come on:

☐ "SEAL NO. 2 INFLATED"

☐ "SEAL NO. 2A INFLATED"

_____ 1.5.8 Depress Containment Side Door "OPEN" pushbutton.

_____ 1.5.9 Verify that the following lights go off:

☐ "SEAL NO. 1 INFLATED"

☐ "SEAL NO. 1A INFLATED"

_____ 1.5.10 Depress Auxiliary Side Door "OPEN" pushbutton in an attempt to open door.

_____ 1.5.11 Verify that the following lights remain on:

☐ "SEAL NO. 2 INFLATED"

☐ "SEAL NO. 2A INFLATED"

_____ 1.5.12 Depress Containment Side Door "CLOSE" pushbutton.

_____ 1.5.13 Verify that the following lights come on:

☐ "SEAL NO. 1 INFLATED"

☐ "SEAL NO. 1A INFLATED"

1.6 Perform the following to test interlocks of "PUSHBUTTON STATION B":

NOTE: The substeps of Step 1.6 will be performed at "PUSHBUTTON STATION B" inside airlock.

_____ 1.6.1 Ensure "DOOR INTERLOCK" keyswitch is in "ACTIVE" position.

_____ 1.6.2 Depress Auxiliary Side Door "OPEN" pushbutton.

_____ 1.6.3 Verify that the following lights go off:

☐ "SEAL NO. 2 INFLATED"

☐ "SEAL NO. 2A INFLATED"

_____ 1.6.4 Depress Containment Side Door "OPEN" pushbutton in an attempt to open door.

_____ 1.6.5 Verify that the following lights remain on:

☐ "SEAL NO. 1 INFLATED"

☐ "SEAL NO. 1A INFLATED"

_____ 1.6.6 Depress Auxiliary Side Door "CLOSE" pushbuton.

_____ 1.6.7 Verify that the following lights come on:

☐ "SEAL NO. 2 INFLATED"

☐ "SEAL NO. 2A INFLATED"

_____ 1.6.8 Depress Containment Side Door "OPEN" pushbutton.

_____ 1.6.9 Verify that the following lights go off:

☐ "SEAL NO. 1 INFLATED"

☐ "SEAL NO. 1A INFLATED"

_____ 1.6.10 Depress Auxiliary Side Door "OPEN" pushbutton in an attempt to open door.

_____ 1.6.11 Verify that the following lights remain on:

☐ "SEAL NO. 2 INFLATED"

☐ "SEAL NO. 2A INFLATED"

1.7 Perform the following to test interlocks of "PUSHBUTTON STATION A":

NOTE: The substeps of Step 1.7 will be performed at "PUSHBUTTON STATION A" inside containment, with the exception of Substep 1.7.10, which will be performed at "PUSHBUTTON STATION B" or "PUSHBUTTON STATION C".

_____ 1.7.1 Station someone at "PUSHBUTTON STATION B" or "PUSHBUTTON STATION C" to shut Auxiliary Side Door in Step 1.7.10.

_____ 1.7.2 Depress Auxiliary Side Door "OPEN" pushbutton in an attempt to open door.

_____ 1.7.3 Verify that the following lights remain on:

☐ "SEAL NO. 2 INFLATED"

☐ "SEAL NO. 2A INFLATED"

_____ 1.7.4 Depress Containment Side Door "CLOSE" pushbutton.

_____ 1.7.5 Verify that the following lights come on:

☐ "SEAL NO. 1 INFLATED"

☐ "SEAL NO. 1A INFLATED"

_____ 1.7.6 Depress Auxiliary Side Door "OPEN" pushbutton.

_____ 1.7.7 Verify that the following lights go off:

☐ "SEAL NO. 2 INFLATED"

☐ "SEAL NO. 2A INFLATED"

_____ 1.7.8 Depress Containment Side Door "OPEN" pushbutton in an attempt to open door.

_____ 1.7.9 Verify that the following lights remain on:

☐ "SEAL NO. 1 INFLATED"

☐ "SEAL NO. 1A INFLATED"

_____ 1.7.10 Depress Auxiliary Side Door "CLOSE" pushbutton on "PUSHBUTTON STATION B" or "PUSHBUTTON STATION C".

_____ 1.7.11 Verify that the following lights come on:

☐ "SEAL NO. 2 INFLATED"

☐ "SEAL NO. 2A INFLATED"

_____ 1.8 If NOT proceeding directly to another subsection of this procedure, verify, after exiting the air lock, that the seal inflated lights for both Air Lock doors are illuminated on "PUSHBUTTON STATION C".

_____ 1.9 If Acceptance Criteria 11.1 has not been met, notify the Unit/WCC SRO and the System Engineer. Refer to Technical Specification 4.6.1.3 for conditions of operability.

_____ 1.10 If Acceptance Criteria 11.1 has been met, notify the Unit/WCC SRO that this enclosure has been successfully completed and all acceptance criteria for this enclosure has been met.

Upper Containment Personnel Air Lock Containment Side Door And Auxiliary Side Door Electrical Penetration Leak Rate Test

NOTE: The Unit/WCC SRO and the NCO shall be notified if this enclosure is to be suspended for greater than 12 hours or upon completion of this procedure.

1. Procedure

_____ 1.1 Verify the following:

☐ Unit/WCC SRO's permission has been obtained to perform this test.

☐ NCO has been notified that this test is to be performed.

_____ 1.2 Ensure that the following sections have been satisfied as required for this procedure:

☐ Section 7

☐ Section 8

_____ _____ 1.3 Remove Test Port Plug from the Electrical Penetration Assembly on the Containment Side Door bulkhead.

_____ 1.4 Pressurize Containment Side Door Electrical Penetration Assembly to 15.1 - 15.7 psig with dry air.

_____ 1.5 Check and repair any test connection leaks.

_____ 1.6 Accurately establish test pressure at 15.1 - 15.7 psig.

_____ 1.7 After reading stabilizes to less than 5 SCCM deviation per minute, record the leakage through Volumetrics Leak Rate Monitor in Column "A" of Enclosure 13.2.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.2) using the two lowest ranges of monitor (if possible).

_____ 1.8 Complete Columns "B", and "C" on Enclosure 13.2.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.2) using the lowest measured leakage rate range to obtain Total Leakage.

_____ _____ 1.9 Reduce pressure to 0.0 psig and remove test connector.

_____ _____ 1.10 Reinstall Test Port Plug removed in Step 1.3.
SV

_____ _____ 1.11 Remove Test Port Plug from Auxiliary Side Door Electrical Penetration Assembly.

_____ 1.12 Pressurize Auxiliary Side Door Electrical Penetration Assembly to 15.1 - 15.7 psig with dry air.

Upper Containment Personnel Air Lock Containment Side Door And Auxiliary Side Door Electrical Penetration Leak Rate Test

____ 1.13 Check and repair any test connection leaks.

____ 1.14 Accurately establish test pressure at 15.1 - 15.7 psig.

____ 1.15 After reading stabilizes to less than 5 SCCM deviation per minute, record the leakage through Volumetrics Leak Rate Monitor in Column "A" of Enclosure 13.2.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.2) using the two lowest ranges of monitor (if possible).

____ 1.16 Complete Columns "B", and "C" on Enclosure 13.2.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.2) using the lowest measured leakage rate range to obtain Total Leakage.

____ ____ 1.17 Reduce pressure to 0.0 psig and remove test connector.

____ ____ 1.18 Reinstall Test Port Plug removed in Step 1.11.
SV

____ 1.19 If not proceeding directly to another enclosure, verify after exiting the air lock, that the seal inflated lights for both air lock doors are illuminated on "PUSHBUTTON STATION C".

____ 1.20 Calculate the leak rates for Containment Door Side Electrical Penetration and Auxiliary Door Side Electrical Penetration using data recorded on Enclosure 13.2.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.2).

____ 1.21 If Containment Side Door or Auxiliary Side Door electrical penetration leakage is greater than 20.0 SCCM, notify the responsible System Engineer so that appropriate corrective action can be determined.

____ 1.22 If this enclosure is performed for a retest requirement, perform Enclosure 13.10 (Overall Personnel Air Lock Leakage Rate Reverification) to determine the New Overall Personnel Airlock Leakage Rate.

NOTE: The following step shall be N/A'd, initialed and dated if this enclosure cannot be successfully completed.

____ 1.23 If Containment Side Door and Auxiliary Side Door electrical penetration leakages are both less than or equal to 20.0 SCCM, notify Unit/WCC SRO that this enclosure has been successfully completed.

Enclosure 13.2.1

Upper Personnel Air Lock Leak Rate Data Of Enclosure 13.2

NOTE:	For obtaining "Total Leakage", use the lowest recorded leakage rate indicated in Column "A" with its corresponding instrument error.

Vol. Leak Rate Monitor Instrument No. ___
Vol. Leak Rate Monitor Calibration Due Date _

Containment Door Side Electrical Penetration Leakage Rate

"A" (Step 1.7) "B""C = A + B"

Cont. Door Side Elect. Penetration Leakage Rate (SCCM) | Instrument Error | Total Leakage For Cont. Side El. Pen.

_____SCCM (Low Range) _____SCCM _____SCCM

_____SCCM (Medium Range) _____SCCM _____SCCM

Calculations Performed By _____ Date _____

Calculations Verified By _____ Date _____

Auxiliary Door Side Electrical Penetration Leakage Rate

"A" (Step 1.15) "B""C = A + B"

Aux. Door Side Elect. Penetration Leakage Rate (SCCM) | Instrument Error | Total Leakage For Aux. Side El. Pen.

_____SCCM (Low Range) _____SCCM _____SCCM

_____SCCM (Medium Range) _____SCCM _____SCCM

Calculations Performed By _____ Date _____

Calculations Verified By _____ Date _____

Upper Personnel Air Lock Auxiliary Door Large And Small Seal Leak Rate

NOTE: The Unit/WCC SRO and the NCO shall be notified if this enclosure is to be suspended for greater than 12 hours or upon completion of this procedure.

NOTE: Enclosure 13.5 (Upper Personnel Air Lock Containment and Auxiliary Door Seal Annulus Leak Rate Test Using Volumetrics Autodoor Monitor) or Enclosure 13.6 (Upper Personnel Air Lock Containment and Auxiliary Door Seal Annulus Leak Rate Test Using Test Instrumentation) shall be performed immediately following retest of one, or both, Auxiliary Door seal(s) when verification of containment integrity is required.

1. Procedure

—— 1.1 Verify the following:

☐ Unit/WCC SRO's permission has been obtained to perform this test.

☐ NCO has been notified that this test is to be performed.

—— 1.2 Ensure that the following sections have been satisfied as required for this procedure:

☐ Section 7

☐ Section 8

—— 1.3 Inspect the following Auxiliary Side Door components for defects and obvious problems:

☐ Seals

☐ Sealing Surfaces

☐ Air Tanks

☐ Manual Airlock Valves

☐ Latching Pins

☐ Associated Auxiliary Door Tubing and Fittings

—— —— 1.4 Close manual valve 1VI-3105 (VI Isolation to Auxiliary Door Regulator Inlet Supply) (located above CAD door).

—— —— 1.5 Bleed pressure off door inlet supply line downstream of the regulator by disconnecting flexible hose from Auxiliary Door Emergency Air Tanks.

1.6 Perform the following substeps if VI is to be used as the test air supply:

_____ _____ 1.6.1 Connect test air supply tubing to downstream end of flexible hose that was disconnected from Auxiliary Door Emergency Air Tanks.

_____ _____ 1.6.2 Open 1VI-3105 (VI Isolation to Auxiliary Door Regulator Inlet Supply).

_____ 1.7 Close Auxiliary Door from "PUSHBUTTON STATION B".

_____ 1.8 Verify that emergency air tanks pressurize door seals by observing the following lights are illuminated on "PUSHBUTTON STATION B".

☐ "SEAL NO. 2 INFLATED"

☐ "SEAL NO. 2A INFLATED"

NOTE: Step 1.10 may be performed prior to Step 1.9.

1.9 If Auxiliary Door large seal is to be leak tested, perform the following:

_____ 1.9.1 Close or verify closed auxiliary side door.

_____ _____ 1.9.2 Close Auxiliary Door Large Seal Manual Isolation Valve (Valve #3 on Enclosure 13.11 (Outer Personnel Air Lock - Auxiliary Building Side) located on inner side of Auxiliary Door between large seal and top Emergency Air Tank.

CAUTION: Exercise caution when cracking open test tee tubing plug in following step, as there is approximately 90 psi pressure on test tee tubing plug.

_____ 1.9.3 Slowly crack open test tee tubing plug from test tee tubing (located between large door seal and manual isolation valve for large door seal, test tee "C" on Enclosure 13.11) (Outer Personnel Air Lock - Auxiliary Building Side) to vent large door seal pressure.

_____ _____ 1.9.4 Remove test tee tubing plug from test tee connection.

NOTE: The range lower limit of the Volumetrics Leak Rate Monitor used in this enclosure must be less than or equal to the acceptance leakage value for this door seal.

_____ 1.9.5 Connect test equipment to test tee connection "C".

_____ _____ 1.9.6 Open Auxiliary Door Large Seal Manual Isolation Valve (Valve #3).

Upper Personnel Air Lock Auxiliary Door Large And Small Seal Leak Rate

_____ _____ 1.9.7 Pressurize the Auxiliary Door large seal and air tank to 80 - 90 psig using dry filtered air or nitrogen.

_____ _____ 1.9.8 Check for any fitting leaks. Repair any leaks found.

_____ 1.9.9 After reading stabilizes to less than 5 SCCM deviation per minute, record the leakage through Volumetrics Leak Rate Monitor on Enclosure 13.3.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.3), Column "A" using the two lowest ranges of monitor (if possible).

_____ 1.9.10 Complete Columns "B", and "C" on Enclosure 13.3.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.3) using the lowest measured leakage rate range to obtain Total Leakage for large seal.

_____ 1.9.11 Isolate Volumetrics from large door seal by either disconnecting quick-connect or by closing isolation valve on Volumetrics outlet.

_____ 1.9.12 Open Auxiliary Door from "PUSHBUTTON STATION B", in order to bleed pressure off seal.

_____ 1.9.13 Remove test equipment from test tee connection.

_____ _____ 1.9.14 Reinstall test tee plug on test tee connection.
SV

1.10 If Auxiliary Door small seal is to be leak tested, perform the following:

_____ 1.10.1 Close or verify closed auxiliary side door.

_____ _____ 1.10.2 Close Auxiliary Door Small Seal Manual Isolation Valve (Valve #4 on Enclosure 13.11 (Outer Personnel Air Lock - Auxiliary Building Side) located on Auxiliary Building side of Auxiliary Door.

CAUTION: Exercise caution when cracking open test tee tubing plug in following step, as there is approximately 90 psi pressure on test tee tubing plug.

_____ 1.10.3 Slowly crack open test tee tubing plug from test tee tubing (located between small door seal and manual isolation valve for small door seal, test tee "D" on Enclosure 13.11) (Outer Personnel Air Lock - Auxiliary Building Side) to vent small door seal pressure.

_____ _____ 1.10.4 Remove test tee tubing plug from test tee connection.

NOTE: The range lower limit of the Volumetrics Leak Rate Monitor used in this enclosure shall be less than or equal to the acceptance leakage value for this door seal.

_____ 1.10.5 Connect test equipment to test tee connection "D".

_____ _____ 1.10.6 Open Auxiliary Door Small Seal Manual Isolation Valve (Valve #4).

_____ _____ 1.10.7 Pressurize the Auxiliary Door small seal and air tank to 80 - 90 psig using dry filtered air or nitrogen.

_____ _____ 1.10.8 Check for any fitting leaks. Repair any leaks found.

_____ 1.10.9 After reading stabilizes to less than 5 SCCM deviation per minute, record the leakage through Volumetrics Leak Rate Monitor on Enclosure 13.3.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.3), Column "A" using the two lowest ranges of monitor (if possible).

_____ 1.10.10 Complete Columns "B", and "C" on Enclosure 13.3.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.3) using the lowest measured leakage rate range to obtain Total Leakage for small seal.

_____ 1.10.11 Isolate Volumetrics from small door seal by either disconnecting quick-connect or by closing isolation valve on Volumetrics outlet.

_____ 1.10.12 Open Auxiliary Door from "PUSHBUTTON STATION B", in order to bleed pressure off seal.

_____ 1.10.13 Remove test equipment from test tee connection.

_____ _____ 1.10.14 Reinstall test tee plug on test tee connection.
SV

1.11 If VI was used as the test air supply, perform the following substeps.

_____ _____ 1.11.1 Close manual valve 1VI-3105 (VI Isolation to Auxiliary Door Regulator Inlet Supply).

_____ 1.11.2 Disconnect test air supply tubing from downstream end of flexible hose that was disconnected from Auxiliary Door Emergency Air Tanks.

_____ _____ 1.12 Reconnect flexible hose to Auxiliary Door Emergency Air Tanks.
SV

_____ _____ 1.13 Open 1VI-3105 (VI Isolation to Auxiliary Door Regulator Inlet Supply).

_____ 1.14 Close Auxiliary Side Door.

_____ _____ 1.15 Visually verify that Auxiliary Door large and small seals are inflated.

Upper Personnel Air Lock Auxiliary Door Large And Small Seal Leak Rate

_____ 1.16 Verify that the following lights are illuminated:

☐ "SEAL NO. 2 INFLATED"

☐ "SEAL NO. 2A INFLATED"

_____ 1.17 If no more leak testing is to be done for this procedure, exit the air lock and verify that the seal inflated lights for both Air Lock Doors are illuminated on "PUSHBUTTON STATION C".

CAUTION: When containment integrity is required and leakage values for any personnel air lock door seal are found unacceptable, ensure that the door NOT under test remains closed and operable, further testing is stopped, and the Test Supervisor is immediately contacted.

_____ 1.18 If Acceptance Criteria 11.2 has not been met, perform the following actions:

_____ 1.18.1 Notify the Unit/WCC SRO and System Engineer.

_____ 1.18.2 Submit a Technical Specification Operability Notification Sheet to declare the Auxiliary Air Lock Door Inoperable.

_____ 1.18.3 Initiate and record below Work Request number to restore the system to operable status.

W.R. _____

_____ 1.18.4 Log applicable sections in TSAIL.

_____ 1.19 If Acceptance Criteria 11.2 has been met, notify the Unit/WCC SRO that this enclosure has been successfully completed.

Enclosure 13.3.1

Upper Personnel Air Lock Leak Rate Data Of Enclosure 13.3

Vol. Leak Rate Monitor Instrument No. ___
Vol. Leak Rate Monitor Calibration Due Date _

Auxiliary Door Large Seal Leakage Rate

"A" (Step 1.9.9)	"B"	"C = A + B"
Aux Door Large Seal Leakage Rate (SCCM)	Instrument Error	Total Leakage For aux door large seal.
_____SCCM (Low Range)	_____SCCM	_____SCCM
_____SCCM (Medium Range)	_____SCCM	_____SCCM

Calculations Performed By _____ Date _____

Calculations Verified By _____ Date _____

Auxiliary Door Small Seal Leakage Rate

"A" (Step 1.10.9)	"B"	"C = A + B"
Aux Door Small Seal Leakage Rate (SCCM)	Instrument error	Total leakage for aux door small seal
_____SCCM (Low Range)	_____SCCM	_____SCCM
_____SCCM (Medium Range)	_____SCCM	_____SCCM

Calculations Performed By _____ Date _____

Calculations Verified By _____ Date _____

Upper Personnel Air Lock Containment Door Large And Small Seal Leak Rate Test

NOTE: The Unit/WCC SRO and the NCO shall be notified if this enclosure is to be suspended for greater than 12 hours or upon completion of this procedure.

NOTE: Enclosure 13.5 (Upper Personnel Air Lock Containment and Auxiliary Door Seal Annulus Leak Rate Test Using Volumetrics Autodoor Monitor) or Enclosure 13.6 (Upper Personnel Air Lock Containment and Auxiliary Door Seal Annulus Leak Rate Test Using Test Instrumentation) shall be performed immediately following retest of one, or both, Containment Door seal(s) when verification of containment integrity is required.

1. Procedure

_____ 1.1 Verify the following:

☐ Unit/WCC SRO's permission has been obtained to perform this test.

☐ NCO has been notified that this test is to be performed.

_____ 1.2 Ensure that the following sections have been satisfied as required for this procedure:

☐ Section 7

☐ Section 8

_____ 1.3 Open Containment Side Door (Door No.1).

_____ 1.4 Inspect the following Containment Side Door components for defects and obvious problems:

☐ Seals

☐ Sealing Surfaces

☐ Air Tanks

☐ Manual Airlock Valves

☐ Latching Pins

☐ Associated Auxiliary Door Tubing and Fittings

_____ _____ 1.5 Close manual valve 1VI-3393 (VI Isolation to Containment Door Regulator Inlet Supply) (located 5 feet off floor, near the ice condenser transformer).

_____ _____ 1.6 Bleed pressure off door inlet supply line downstream of the regulator by disconnecting flexible hose from Containment Door Emergency Air Tanks.

_____ 1.7 Close Containment Door from "PUSHBUTTON STATION A".

Upper Personnel Air Lock Containment Door Large And Small Seal Leak Rate Test

_____ 1.8 Verify that emergency air tanks pressurize door seals by observing the following lights are illuminated on "PUSHBUTTON STATION B".

☐ "SEAL NO. 1 INFLATED"

☐ "SEAL NO. 1A INFLATED"

NOTE: Step 1.10 may be performed prior to Step 1.9.

1.9 If Containment Door large seal is to be leak tested, perform the following:

_____ 1.9.1 Close or verify closed containment side door.

_____ _____ 1.9.2 Close Containment Door Large Seal Manual Isolation Valve (Valve #3 on Enclosure 13.12 (Inner Personnel Air Lock - Containment Building Side) located on containment side of Containment Door between large seal and top Emergency Air Tank.

CAUTION: Exercise caution when cracking open test tee tubing plug in following step, as there is approximately 90 psi pressure on test tee tubing plug.

_____ 1.9.3 Slowly crack open test tee tubing plug from test tee tubing (located between large door seal and manual isolation valve for large door seal, test tee "C" on Enclosure 13.12) (Inner Personnel Air Lock - Containment Building Side) to vent large door seal pressure.

_____ _____ 1.9.4 Remove test tee tubing plug from test tee connection.

NOTE: The range lower limit of the Volumetrics Leak Rate Monitor used in this enclosure must be less than or equal to the acceptance leakage value for this door seal.

_____ 1.9.5 Connect test equipment to test tee connection "C".

_____ _____ 1.9.6 Open Containment Door Large Seal Manual Isolation Valve (Valve #3).

_____ _____ 1.9.7 Pressurize the Containment Door large seal and air tank to 80 - 90 psig using dry filtered air or nitrogen.

_____ _____ 1.9.8 Check for any fitting leaks. Repair any leaks found.

_____ 1.9.9 After reading stabilizes to less than 5 SCCM deviation per minute, record the leakage through Volumetrics Leak Rate Monitor on Enclosure 13.4.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.4), Column "A" using the two lowest ranges of monitor (if possible).

_____ 1.9.10 Complete Columns "B", and "C" on Enclosure 13.4.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.4) using the lowest measured leakage rate range to obtain Total Leakage for large seal.

_____ 1.9.11 Isolate Volumetrics from large door seal by either disconnecting quick-connect or by closing isolation valve on Volumetrics outlet.

_____ 1.9.12 Open Containment Door from "PUSHBUTTON STATION B", in order to bleed pressure off seal.

_____ 1.9.13 Remove test equipment from test tee connection.

_____ _____ 1.9.14 Reinstall test tee plug on test tee connection.
SV

1.10 If Containment Door small seal is to be leak tested, perform the following:

_____ 1.10.1 Close or verify closed containment side door.

_____ _____ 1.10.2 Close Containment Door Small Seal Manual Isolation Valve (Valve #4 on Enclosure 13.12 (Inner Personnel Air Lock - Containment Building Side) (located on inner personnel side of Containment Door).

CAUTION: Exercise caution when cracking open test tee tubing plug in following step, as there is approximately 90 psi pressure on test tee tubing plug.

_____ 1.10.3 Slowly crack open test tee tubing plug from test tee tubing (located between small door seal and manual isolation valve for small door seal, test tee "D" on Enclosure 13.12) (Inner Personnel Air Lock - Containment Building Side) to vent small door seal pressure.

_____ _____ 1.10.4 Remove test tee tubing plug from test tee connection "D".

NOTE: The range lower limit of the Volumetrics Leak Rate Monitor used in this enclosure shall be less than or equal to the acceptance leakage value for this door seal.

_____ 1.10.5 Connect test equipment to test tee connection "D".

_____ _____ 1.10.6 Open Containment Door Small Seal Manual Isolation Valve (Valve #4).

Upper Personnel Air Lock Containment Door Large And Small Seal Leak Rate Test

_____ _____ 1.10.7 Pressurize the Containment Door small seal and air tank to 80 - 90 psig using dry filtered air or nitrogen.

_____ _____ 1.10.8 Check for any fitting leaks. Repair any leaks found.

_____ 1.10.9 After reading stabilizes to less than 5 SCCM deviation per minute, record the leakage through Volumetrics Leak Rate Monitor on Enclosure 13.4.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.4), Column "A" using the two lowest ranges of monitor (if possible).

_____ 1.10.10 Complete Columns "B", and "C" on Enclosure 13.4.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.4) using the lowest measured leakage rate range to obtain Total Leakage for small seal.

_____ 1.10.11 Isolate Volumetrics from small door seal by either disconnecting quick-connect or by closing isolation valve on Volumetrics outlet.

_____ 1.10.12 Open Containment Side Door in order to bleed pressure off seal.

_____ 1.10.13 Remove test equipment from test tee connection.

_____ _____ 1.10.14 Reinstall test tee plug on test tee connection.
SV

_____ _____ 1.11 Reconnect flexible hose to Containment Door Emergency Air Tanks.
SV

_____ _____ 1.12 Open 1VI-3393 (VI Isolation to Containment Door Regulator Inlet Supply).

_____ 1.13 Close Containment Side Door.

_____ _____ 1.14 Visually verify that Containment Door large and small seals are inflated.

_____ 1.15 Verify that the following lights are illuminated:

☐ "SEAL NO. 1 INFLATED"

☐ "SEAL NO. 1A INFLATED"

_____ 1.16 If no more leak testing is to be done in this procedure, exit the air lock and verify that the seal inflated lights for both Air Lock Doors are illuminated on PUSHBUTTON STATION C".

CAUTION: When containment integrity is required and leakage values for any personnel air lock door seal are found unacceptable, ensure that the door NOT under test remains closed and operable, further testing is stopped, and the Test Supervisor is immediately contacted.

____ 1.17 If Acceptance Criteria 11.2 has not been met, perform the following actions:

____ 1.17.1 Notify the Unit/WCC SRO and System Engineer.

____ 1.17.2 Submit a Technical Specification Operability Notification Sheet to declare the Containment Air Lock Door Inoperable.

____ 1.17.3 Initiate and record below Work Request number to restore the system to operable status.

W.R. _____

____ 1.17.4 Log applicable sections in TSAIL.

____ 1.18 If Acceptance Criteria 11.2 has been met, notify the Unit/WCC SRO that this enclosure has been successfully completed.

Enclosure 13.4.1

Upper Personnel Air Lock Leak Rate Data Of Enclosure 13.4

Vol. Leak Rate Monitor Instrument No. ___
Vol. Leak Rate Monitor Calibration Due Date _

Containment Door Large Seal Leakage Rate

"A" (Step 1.9.9)	"B"	"C = A + B"
Cont Door Large Seal Leakage Rate (SCCM)	Instrument Error	Total Leakage For cont door large seal.
_____SCCM (Low Range)	_____SCCM	_____SCCM
_____SCCM (Medium Range)	_____SCCM	_____SCCM

Calculations Performed By _____ Date _____

Calculations Verified By _____ Date _____

Containment Door Small Seal Leakage Rate

"A" (Step 1.10.9)	"B"	"C = A + B"
Cont Door Small Seal Leakage Rate (SCCM)	Instrument Error	Total leakage for cont door small seal
_____SCCM (Low Range)	_____SCCM	_____SCCM
_____SCCM (Medium Range)	_____SCCM	_____SCCM

Calculations Performed By _____ Date _____

Calculations Verified By _____ Date _____

Upper Personnel Air Lock Containment And Auxiliary Door Seal Annulus Leak Rate Test Using Volumetrics Autodoor Monitor

NOTE: The Unit/WCC SRO and the NCO shall be notified if this enclosure is to be suspended for greater than 12 hours or upon completion of this procedure.

1. Procedure

_____ 1.1 Verify the following:

☐ Unit/WCC SRO's permission has been obtained to perform this test.

☐ NCO has been notified that this test is to be performed.

_____ 1.2 Ensure that the following sections have been satisfied as required for this procedure:

☐ Section 7

☐ Section 8

_____ _____ 1.3 Have NCO open 1IASV-5400 (Upper PAL Leak Test Containment Isolation).

_____ 1.4 Ensure switch on "UNIT 1 UPPER PAL PNEUMATIC MODULE" is in "NORM" position.

_____ 1.5 Open door on "UNIT 1 UPPER PAL TEST MODULE".

_____ 1.6 Depress "STOP/RESET" pushbutton for the 72 hour timer.

NOTE: Steps 1.7 and 1.8 may be performed in either order.

_____ 1.7 Perform the following to test containment door seal annulus leak rate:

_____ 1.7.1 Press "MANUAL" pushbutton on "OPERATION" panel.

_____ 1.7.2 Press "INNER DOOR" pushbutton on "OPERATION" panel.

_____ 1.7.3 Press "START" pushbutton on "OPERATION" panel.

NOTE: At this point, air pressure will begin to increase. When air pressure is between 14.9 psi to 16.25 psi on "PRESSURE - PSI" display, the test timer will automatically start.

NOTE: Timer has started when a value appears in the FLOW - SCCM display, and the "MIN/SEC." display starts counting down.

CAUTION: Regulator is very sensitive to adjustments.

_____ 1.7.4 If seal annulus pressure is not maintained between 14.9 and 16.25 psig, adjust regulator #2 (black knob) to either increase or decrease pressure as required.

_____ 1.7.5 If pressure was adjusted in previous step, perform the following at "UNIT 1 UPPER PAL TEST MODULE":

——— 1.7.5.1 Push "STOP/RESET" button.

——— 1.7.5.2 Push "CALIBRATE" button.

——— 1.7.5.3 Push "ENTER TRUE PRESSURE" button.

NOTE: Digital readout below is usually 0.2 PSI lower than reading obtained when leak test is performed.

——— 1.7.5.4 Verify that display "PRESSURE - PSI" indicates 15.1 - 15.6 PSI. Record pressure displayed below:

"PRESSURE - PSI" ___

——— 1.7.5.5 If test pressure cannot be properly adjusted, perform the following.

——— A. Write and record below Work Request number for IAE to investigate and repair regulator.

W.R. _____

——— B. Perform Enclosure 13.6 (Upper Personnel Air Lock Containment and Auxiliary Door Seal Annulus Leak Rate Test Using Test Instrumentation) of this procedure.

Upper Personnel Air Lock Containment And Auxiliary Door Seal Annulus Leak Rate Test Using Volumetrics Autodoor Monitor

NOTE: Leak Rate Flow may be obtained when either flow has stabilized to a change rate of less than 5 SCCM/M or when less than 30 seconds remain in the "MIN/SEC" display.

_____ 1.7.6 Record leak rate below per note above:

FLOW - SCCM (Leak Rate) __
Test Time:_____

_____ 1.7.7 If reading was obtained prior to expiration of the 4 minute timer, the test may be stopped by pressing "STOP/RESET" on the "OPERATION" panel.

_____ 1.7.8 If the leakage recorded in Step 1.7.6 is greater than 1000 SCCM (which is the error-adjusted leak rate value for 1383 SCCM), perform the following:

_____ 1.7.8.1 Notify Unit/WCC SRO and System Engineer.

_____ 1.7.8.2 Submit a Technical Specification Operability Notification Sheet to declare Containment Door Inoperable.

_____ 1.7.8.3 Ensure 1IASV-5400 (Upper PAL Leak Test C/I) is closed with power removed.

_____ 1.7.8.4 Initiate a Work Request to restore system to operable status. Record Work Request number below.

W.R. _____

_____ 1.7.8.5 Log applicable sections in TSAIL.

_____ 1.8 Perform the following to test auxiliary door seal annulus leak rate:

_____ 1.8.1 Press "MANUAL" pushbutton on "OPERATION" panel.

_____ 1.8.2 Press "OUTER DOOR" pushbutton on "OPERATION" panel.

_____ 1.8.3 Press "START" pushbutton on "OPERATION" panel.

Upper Personnel Air Lock Containment And Auxiliary Door Seal Annulus Leak Rate Test Using Volumetrics Autodoor Monitor

NOTE: At this point, air pressure will begin to increase. When air pressure is between 14.9 psi to 16.25 psi on "PRESSURE - PSI" display, the test timer will automatically start.

NOTE: Timer has started when a value appears in the FLOW - SCCM display, and the "MIN/SEC." display starts counting down.

CAUTION: Regulator is very sensitive to adjustments.

_____ 1.8.4 If seal annulus pressure is not maintained between 14.9 and 16.25 psig, adjust regulator #2 (black knob) to either increase or decrease pressure as required.

_____ 1.8.5 If pressure was adjusted in previous step, perform the following at "UNIT 1 UPPER PAL TEST MODULE":

_____ 1.8.5.1 Push "STOP/RESET" button.

_____ 1.8.5.2 Push "CALIBRATE" button.

_____ 1.8.5.3 Push "ENTER TRUE PRESSURE" button.

NOTE: Digital readout below is usually 0.2 PSI lower than reading obtained when leak test is performed.

_____ 1.8.5.4 Verify that display "PRESSURE - PSI" indicates 15.1 - 15.6 PSI. Record pressure displayed below:

"PRESSURE - PSI" ____

_____ 1.8.5.5 If test pressure cannot be properly adjusted, perform the following.

_____ A. Write and record below Work Request number for IAE to investigate and repair regulator.

W.R. _____

_____ B. Perform Enclosure 13.6 (Upper Personnel Air Lock Containment and Auxiliary Door Seal Annulus Leak Rate Test Using Test Instrumentation) of this procedure.

Upper Personnel Air Lock Containment And Auxiliary Door Seal Annulus Leak Rate Test Using Volumetrics Autodoor Monitor

NOTE: Leak Rate Flow may be obtained when either flow has stabilized to a change rate of less than 5 SCCM/M or when less than 30 seconds remain in the "MIN/SEC" display.

_____ 1.8.6 Record leak rate below per note above:

FLOW - SCCM (Leak Rate) __
Test Time:_____

_____ 1.8.7 If reading was obtained prior to expiration of the 4 minute timer, the test may be stopped by pressing "STOP/RESET" on the "OPERATION" panel.

_____ 1.8.8 If the leakage recorded in Step 1.8.6 is greater than 1000 SCCM (which is the error-adjusted leak rate value for 1383 SCCM), perform the following:

_____ 1.8.8.1 Notify Unit/WCC SRO and System Engineer.

_____ 1.8.8.2 Submit a Technical Specification Operability Notification Sheet to declare Containment Door Inoperable.

_____ 1.8.8.3 Ensure 1IASV-5400 (Upper PAL Leak Test C/I) is closed with power removed.

_____ 1.8.8.4 Initiate a Work Request to restore system to operable status. Record Work Request number below.

W.R. _____

_____ 1.8.8.5 Log applicable sections in TSAIL.

_____ 1.9 Close door on "UNIT 1 UPPER PAL TEST MODULE".

_____ 1.10 Have NCO close 1IASV-5400 (Upper PAL Leak Test C/I).

Upper Personnel Air Lock Containment And Auxiliary Door Seal Annulus Leak Rate Test Using Test Instrumentation

NOTE: The Unit/WCC SRO and the NCO shall be notified if this enclosure is to be suspended for greater than 12 hours or upon completion of this procedure.

CAUTION: When containment integrity is required and leakage values for either upper personnel air lock door seal are found unacceptable, ensure that the door NOT under test remains closed and operable, further testing is stopped, and the Test Supervisor is immediately contacted.

1. Procedure

____ 1.1 Verify the following:

☐ Unit/WCC SRO's permission has been obtained to perform this test.

☐ NCO has been notified that this test is to be performed.

____ 1.2 Ensure that the following sections have been satisfied as required for this procedure.

☐ Section 7

☐ Section 8

____ 1.3 Have NCO open 1IASV-5400 (Upper PAL Leak Test Containment Isolation).

____ 1.4 Have NCO verify open 1IASV-5080 (Upper PAL Air Supply Containment Isolation).

____ 1.5 Have NCO verify that the following doors are closed by use of control room status lights:

☐ Containment Side Door

☐ Auxiliary Side Door

____ 1.6 Close manual valve "UNIT 1 UPAL MANUAL VALVE V37A" near "UNIT 1 UPPER PAL PNEUMATIC MODULE".

____ ____ 1.7 Remove test tee cap from test connection adjacent to manual valve "UNIT 1 UPAL MANUAL VALVE V37A".

____ 1.8 Connect test equipment to test connection.

Upper Personnel Air Lock Containment And Auxiliary Door Seal Annulus Leak Rate Test Using Test Instrumentation

NOTE: Step 1.10 may be performed prior to Step 1.9.

1.9 If leak testing of Containment Door Seal Annulus is desired, perform the following:

1.9.1 If desired to verify flow to the Containment Door Seal Annulus Area perform the following:

_____ 1.9.1.1 Station personnel at the Containment Door.

_____ 1.9.1.2 Open Upper Containment door.

_____ 1.9.1.3 Select "TEST INNER" position on selector switch on "UNIT 1 UPPER PAL PNEUMATIC MODULE".

_____ 1.9.1.4 Initiate flow to Containment Door Seal area.

_____ 1.9.1.5 Verify flow to Containment Door Seal area.

_____ 1.9.1.6 Select "NORM" position on selector switch on "UNIT 1 UPPER PAL PNEUMATIC MODULE".

_____ 1.9.1.7 Close Upper Containment door.

_____ 1.9.2 Select "TEST INNER" position on selector switch on "UNIT 1 UPPER PAL PNEUMATIC MODULE".

_____ 1.9.3 Pressurize Containment Door Seal Annulus to 15.1 psig - 15.7 psig.

_____ 1.9.4 After reading stabilizes to less than 5 SCCM deviation per minute, record the leakage, through Volumetrics Leak Rate Monitor, using the two lowest ranges (if possible) of monitor in Column "A" of Enclosure 13.6.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.6).

_____ 1.9.5 Complete additional columns "B" and "C" using the lowest measured leakage rate range for "Total Leakage".

_____ 1.9.6 Record test time on Enclosure 13.6.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.6).

_____ 1.9.7 Select "NORM" position on selector switch located on "UNIT 1 UPPER PAL PNEUMATIC MODULE".

Upper Personnel Air Lock Containment And Auxiliary Door Seal Annulus Leak Rate Test Using Test Instrumentation

1.10 If leak testing of Auxiliary Door Seal Annulus is desired, perform the following:

1.10.1 If desired to verify flow to the Auxiliary Door Seal Annulus Area perform the following:

_____ 1.10.1.1 Station personnel at the Auxiliary Door.

_____ 1.10.1.2 Open Upper Auxiliary door.

_____ 1.10.1.3 Select "TEST OUTER" position on selector switch on "UNIT 1 UPPER PAL PNEUMATIC MODULE".

_____ 1.10.1.4 Initiate flow to Auxiliary Door Seal area.

_____ 1.10.1.5 Verify flow to Auxiliary Door Seal area.

_____ 1.10.1.6 Select "NORM" position on selector switch on "UNIT 1 UPPER PAL PNEUMATIC MODULE".

_____ 1.10.1.7 Close Upper Auxiliary door.

_____ 1.10.2 Select "TEST OUTER" position on selector switch located on "UNIT 1 UPPER PAL PNEUMATIC MODULE".

_____ 1.10.3 Pressurize Auxiliary Door Seal Annulus to 15.1 psig - 15.7 psig.

_____ 1.10.4 After reading stabilizes to less than 5 SCCM deviation per minute, record the leakage, through Volumetrics Leak Rate Monitor, using the two lowest ranges (if possible) of monitor in Column "A" of Enclosure 13.6.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.6).

_____ 1.10.5 Complete additional columns "B" and "C" using the lowest measured leakage rate range for "Total Leakage".

_____ 1.10.6 Record test time on Enclosure 13.6.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.6).

_____ 1.10.7 Select "NORM" position on selector switch located on "UNIT 1 UPPER PAL PNEUMATIC MODULE".

_____ 1.11 Remove test equipment.

_____ 1.12 Reinstall test tee cap removed in Step 1.7.

_____ 1.13 Open manual valve "UNIT 1 UPAL MANUAL VALVE V37A".

Upper Personnel Air Lock Containment And Auxiliary Door Seal Annulus Leak Rate Test Using Test Instrumentation

_____ 1.14 Open door on "UNIT 1 UPPER PAL TEST MODULE".

_____ 1.15 Depress "STOP/RESET" pushbutton.

_____ 1.16 Close door on "UNIT 1 UPPER PAL TEST MODULE".

_____ 1.17 If Acceptance Criteria 11.3 has not been met, perform the following actions:

_____ 1.17.1 Notify the Unit/WCC SRO and System Engineer.

_____ 1.17.2 Submit a Technical Specification Operability Notification Sheet to declare the Containment Air Lock Door Inoperable.

_____ 1.17.3 Initiate and record below Work Request number to restore the system to operable status.

W.R. _____

_____ 1.17.4 Log applicable sections in TSAID.

_____ 1.18 Have the NCO in Control Room close 1IASV-5400 (Upper PAL Leak Test Containment Isolation).

_____ 1.19 If Acceptance Criteria 11.3 has been met, Inform the Unit/WCC SRO that Enclosure 13.6 of this procedure has been successfully completed and all acceptance criteria for this enclosure has been met.

Enclosure 13.6.1

Upper Personnel Air Lock Leak Rate Data Of Enclosure 13.6

Vol. Leak Rate Monitor Instrument No. ___
Vol. Leak Rate Monitor Calibration Due Date _

Containment Door Seal Annulus Leakage Rate

Test Time: _____

"A" (Step 1.9.4)	"B"	"C = A + B"
Cont. Door Seal Annulus Leakage Rate (SCCM)	Instrument Error	Total Leakage, Cont. Door Seal Anul
_____SCCM (Low Range)	_____SCCM	_____SCCM
_____SCCM (Medium Range)	_____SCCM	_____SCCM
_____SCCM (High Range)	_____SCCM	_____SCCM

Calculations Performed By _____ Date _____

Calculations Verified By _____ Date _____

Auxiliary Door Seal Annulus Leakage Rate

Test Time: _____

"A" (Step 1.10.4)	"B"	"C = A + B"
Aux. Door Seal Annulus Leakage Rate (SCCM)	Instrument Error	Total Leakage, Aux. Door Seal Anul
_____SCCM (Low Range)	_____SCCM	_____SCCM
_____SCCM (Medium Range)	_____SCCM	_____SCCM
_____SCCM (High Range)	_____SCCM	_____SCCM

Calculations Performed By _____ Date _____

Calculations Verified By _____ Date _____

Upper Personnel Air Lock Integrity And Emergency Air Penetration Leak Rate Test

NOTE: The Unit/WCC SRO and the NCO shall be notified if this enclosure is to be suspended for greater than 12 hours or upon completion of this procedure.

1. Procedure

_____ 1.1 Verify the following:

☐ Unit/WCC SRO's permission has been obtained to perform this test.

☐ NCO has been notified that this test is to be performed.

_____ 1.2 Ensure that the following sections have been satisfied as required for this procedure:

☐ Section 7

☐ Section 8

1.3 Verify the conditions in the following substeps are met per Model Work Order 91002194:

_____ _____ 1.3.1 Containment Side Door is closed.

1.3.2 The following lights are illuminated:

☐ "SEAL NO. 1 INFLATED"

☐ "SEAL NO. 1A INFLATED"

_____ _____ 1.3.3 The Containment Door Latching Pins are removed to prevent damaging pins while performing this enclosure.

_____ _____ 1.3.4 At least three "Strongbacks" are installed onto inner personnel side of Containment Door.

_____ _____ 1.3.5 The Emergency Air Penetration Flange is removed.

_____ _____ 1.4 Install a "pipe plug" inside Personnel Air Lock, onto threaded end of Personnel Air Lock equalization line.

_____ 1.5 Attach test rig and test equipment to Emergency Air Penetration.

_____ 1.6 Close Auxiliary Side Door.

_____ 1.7 Verify the following lights illuminate:

☐ "SEAL NO. 2 INFLATED"

☐ "SEAL NO. 2A INFLATED"

_____ _____ 1.8 Close manual valve 1VI-3105 (VI Isolation to Auxiliary Door Regulator Inlet Supply).

_____ _____ 1.9 Bleed pressure off door inlet supply line by opening Auxiliary Door Regulator Moisture Drain Valve (located on bottom of Auxiliary Door Regulator).

_____ 1.10 Pressurize Personnel Lock to 15.1 - 15.7 psig.

_____ 1.11 Check for and repair any test connection leaks.

_____ 1.12 After reading stabilizes to less than 10 SCCM deviation per minute, record the leakage, through Volumetrics Leak Rate Monitor, using the two lowest ranges (if possible) of monitor in Column "A" of Enclosure 13.7.1c (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.7).

_____ 1.13 Complete additional columns "B" and "C" (using the lowest measured leakage rate range for "Total Leakage").

_____ 1.14 Reduce test volume pressure to 0.0 psig.

_____ 1.15 Remove test rig and test equipment.

_____ _____ 1.16 Close Auxiliary Door Regulator Moisture Drain Valve (located on bottom of Auxiliary Door Regulator).

_____ _____ 1.17 Open manual valve 1VI-3105 (VI Isolation to Auxiliary Door Regulator Inlet Supply).

_____ _____ 1.18 Remove "pipe plug" installed in Step 1.4.

> **NOTE:** It is preferable to complete Enclosure 13.3 (Upper Personnel Air Lock Auxiliary Door Large and Small Seal Leak Rate Test) prior to performing Step 1.19 if VI supply will be used to pressurize Auxiliary Door Large Seal.

_____ _____ 1.19 Reinstall Emergency Air Penetration Flange per Model W.O. 91002194.
SV

_____ _____ 1.20 Remove Test Port Plug from Emergency Air Penetration Flange.

1.21 Perform the following to test Emergency Air Penetration:

_____ 1.21.1 Connect test equipment to Emergency Air Penetration Test Connection.

_____ 1.21.2 Pressurize O-ring to 15.1 - 15.7 psig.

_____ 1.21.3 Check for and repair any fitting leaks.

_____ 1.21.4 After reading stabilizes to less than 5 SCCM deviation per minute, record the leakage, through Volumetrics Leak Rate Monitor, using the two lowest ranges (if possible) of monitor in Column "A" of Enclosure 13.7.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.7).

_____ 1.21.5 Complete additional columns "B" and "C" (using the lowest measured leakage rate range for "Total Leakage").

_____ 1.21.6 Reduce test volume pressure to 0.0 psig.

CAUTION: Do not operate air lock doors immediately after depressurizing personnel air lock, as damage could occur to door mechanisms due to pressure differential.

_____ 1.22 Remove test equipment.

_____ 1.23 Reinstall test port plug into Emergency Air Penetration Flange.

_____ 1.24 Add Personnel Lock Integrated Leak Rate Total Leakage (Column "C") and Emergency Air Penetration Leak Rate Total Leakage (Column "C") and record this value for Overall Personnel Airlock Leakage on Enclosure 13.7.1 (Upper Personnel Air Lock Leak Rate Data).

_____ 1.25 If Acceptance Criteria 11.4 has not been met, perform the following:

_____ 1.25.1 Notify Unit/WCC SRO and System Engineer.

_____ 1.25.2 Submit a Technical Specification Operability Notification Sheet to declare the Airlock Inoperable.

_____ 1.25.3 Initiate a Work Request to restore system to operable status. Record Work Request number below.

W.R. _____

_____ 1.25.4 Log applicable sections in TSAIL.

_____ _____ 1.26 Remove "Strongbacks" from Containment Door per Model W. O. 91002194.

_____ _____ 1.27 Reinstall Containment Door Latching Pins per Model W. O. 91002194.

SV

——— 1.28 If not proceeding directly to another enclosure of this procedure, verify, after exiting Airlock upon completion of this enclosure, that the seal inflated lights are illuminated for both air lock doors on "PUSHBUTTON STATION C".

——— 1.29 If Acceptance Criteria 11.4 has been met, inform Unit/WCC SRO that this enclosure has been completed and all acceptance criteria for this enclosure has been met.

——— 1.30 Update PT/1/A/4200/001L (Controlling Procedure for Type B and C Leak Rate Test) for the penetration tested.

Enclosure 13.7.1

Upper Personnel Air Lock Leak Rate Data Of Enclosure 13.7

Personnel Lock Integrated Leakage Rate

Vol. Leak Rate Monitor Instrument No. ___
Vol. Leak Rate Monitor Calibration Due Date _

"A" (Step 1.12)	"B"	"C = A + B"
Personnel Lock Leakage Rate (SCCM)	Instrument Error	Total Leakage, Personnel Lock
_____SCCM (Low Range)	_____SCCM	_____SCCM
_____SCCM (Medium Range)	_____SCCM	_____SCCM
_____SCCM (High Range)	_____SCCM	_____SCCM

Emergency Air Penetration Leakage Rate

Vol. Leak Rate Monitor Instrument No. ___
Vol. Leak Rate Monitor Calibration Due Date _

"A" (Step 1.21.4)	"B"	"C = A + B"
Emergency Air Penetration Leakage Rate (SCCM)	Instrument Error	Total Leakage, Emerg Air Penetration
_____SCCM (Low Range)	_____SCCM	_____SCCM
_____SCCM (Medium Range)	_____SCCM	_____SCCM
_____SCCM (High Range)	_____SCCM	_____SCCM

Overall Personnel Airlock Leakage Rate ("C" + "C"): = _____ SCCM (Integrated Leak Rate) + _____ SCCM (Emergency Air Penetration) = _____ SCCM

Calculations Performed By _____ Date _____

Calculations Verified By _____ Date _____

Upper Personnel Air Lock Auxiliary Side Door View Port Leak Rate Test

NOTE: The Unit/WCC SRO and the Nuclear Control Operator shall be notified if this enclosure is to be suspended for greater than 12 hours or upon completion of this procedure.

NOTE: The range lower limit of Volumetric Leak Rate Monitor used in this enclosure shall be less than or equal to the acceptable leakage value for this View Port.

1. Procedure

_____ 1.1 Verify the following:

☐ Unit/WCC SRO's permission has been obtained to perform this test.

☐ NCO has been notified that this test is to be performed.

_____ 1.2 Ensure that the following sections have been satisfied as required for this procedure:

☐ Section 7

☐ Section 8

_____ 1.3 Remove test connection plug from Auxiliary Side Door View Port.

_____ 1.4 Connect test equipment to View Port Test Connection.

_____ 1.5 Pressurize O-ring to 13.1 - 15.7 psig.

_____ 1.6 Soap bubble all fittings and repair any leaks on fittings.

_____ 1.7 After reading stabilizes to less than 5 SCCM deviation per minute, record the leakage, through Volumetrics Leak Rate Monitor, using the two lowest ranges (if possible) of monitor in Column "A' of Enclosure 13.8.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.8).

_____ 1.8 Complete additional columns "B" and "C" (using the lowest measured leakage rate range for "Total Leakage").

_____ 1.9 Reduce test pressure to 0.0 psig.

_____ 1.10 Remove test equipment.

_____ _____ 1.11 Reinstall test connection plug into Auxiliary Side Door View Port.

SV

_____ 1.12 If not proceeding directly to another enclosure of this procedure, verify, after exiting Airlock upon completion of this test, that the seal inflated lights are illuminated for both air lock doors on "PUSHBUTTON STATION C".

Upper Personnel Air Lock Auxiliary Side Door View Port Leak Rate Test

——— 1.13 If Auxiliary Side Door View Port Total Leakage, as indicated on Enclosure 13.8.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.8) is greater than 20.0 SCCM, notify System Engineer so that appropriate corrective action can be determined. Otherwise N/A, initial and date this step.

——— 1.14 Complete Enclosure 13.10 (Overall Personnel Air Lock Leakage Rate Reverification) to determine the New Overall Personnel Airlock Leakage Rate. This step shall be N/A'd, initialed and dated if this enclosure is performed for other than a retest requirement.

——— 1.15 If leakage is acceptable, inform Unit/WCC SRO that this enclosure has been successfully completed.

Enclosure 13.8.1

Upper Personnel Air Lock Leak Rate Data Of Enclosure 13.8

Auxiliary Door View Port Leakage Rate

Vol. Leak Rate Monitor Instrument No. ___
Vol. Leak Rate Monitor Calibration Due Date _

"A" (Step 1.1.7)	"B"	"C = A + B"
Aux. Door View Port Leakage Rate (SCCM)	Instrument Error	Total Leakage, Aux. Door View Port
_____SCCM (Low Range)	_____SCCM	_____SCCM
_____SCCM (Medium Range)	_____SCCM	_____SCCM

Calculations Performed By _____ Date _____

Calculations Verified By _____ Date _____

Upper Personnel Air Lock Containment Side Door View Port Leak Rate Test

NOTE: The Unit/WCC SRO and the Nuclear Control Operator shall be notified if this enclosure is to be suspended for greater than 12 hours or upon completion of this procedure.

NOTE: The range upper limit of Volumetrics Leak Rate Monitor used in this enclosure shall be less than or equal to the acceptable range value for this View Port.

1. Procedure

____ 1.1 Verify the following:

☐ Unit/WCC SRO's permission has been obtained to perform this test.

☐ NCO has been notified that this test is to be performed.

____ 1.2 Ensure that the following sections have been satisfied as required for this procedure

☐ Section 7

☐ Section 8

____ 1.3 Remove test connection plug from Containment Side Door View Port.

____ 1.4 Connect test equipment to View Port Test Connection.

____ 1.5 Pressurize O-ring to 15.1 - 15.7 psig.

____ 1.6 Soap bubble all fittings and repair any leaks on fittings.

____ 1.7 After reading stabilizes to less than 5 SCCM deviation per minute, record the leakage, through Volumetrics Leak Rate Monitor, using the two lowest ranges (if possible) of monitor in Column "A" of Enclosure 13.9.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.9).

____ 1.8 Complete additional columns "B" and "C" (using the lowest measured leakage rate range for "Total Leakage").

____ 1.9 Reduce test pressure to 0.0 psig.

____ 1.10 Remove test equipment.

____ 1.11 Reinstall test connection plug into Containment Side Door View Port.

SV

____ 1.12 If not going directly to another enclosure of this procedure, verify, after exiting Airlock upon completion of this enclosure, that the seal inflated lights are illuminated for both air lock doors on "PUSHBUTTON STATION C".

Upper Personnel Air Lock Containment Side Door View Port Leak Rate Test

—— 1.13 If Containment Side Door View Port Total Leakage, as indicated on Enclosure 13.9.1 (Upper Personnel Air Lock Leak Rate Data of Enclosure 13.9) is greater than 20.0 SCCM, notify System Engineer so that appropriate corrective action can be determined. Otherwise N/A, initial and date this step.

—— 1.14 Complete Enclosure 13.10 (Overall Personnel Air Lock Leakage Rate Reverification) to determine the New Overall Personnel Airlock Leakage Rate. This step shall be N/A'd, initialed and dated if this enclosure is performed for other than a retest requirement.

—— 1.15 If leakage in this enclosure was acceptable, inform Unit/WCC SRO that this enclosure has been successfully completed and all acceptance criteria has been met.

Enclosure 13.9.1

Upper Personnel Air Lock Leak Rate Data Of Enclosure 13.9

Containment Door View Port Leakage Rate

Vol. Leak Rate Monitor Instrument No. ___
Vol. Leak Rate Monitor Calibration Due Date _

"A" (Step 1.1.7)	"B"	"C = A + B"
Cont. Door View Port Leakage Rate (SCCM)	Instrument Error	Total Leakage, Cont. Door View Port
_____SCCM (Low Range)	_____SCCM	_____SCCM
_____SCCM (Medium Range)	_____SCCM	_____SCCM

Calculations Performed By _____ Date _____

Calculations Verified By _____ Date _____

Overall Personnel Air Lock Leakage Rate Reverification

NOTE: This enclosure will only be performed as a result of a retest on Enclosures 13.2 (Containment Personnel Air Lock Containment Side Door and Auxiliary Side Door Electrical Penetration Leak Rate Test), 13.8 (Upper Personnel Air Lock Auxiliary Side Door View Port Leak Rate Test) or 13.9 (Upper Personnel Air Lock Containment Side Door View Port Leak Rate Test).

1. Procedure

_____ 1.1 Obtain results of most recent Overall Personnel Airlock Test from Enclosure 13.7 (Upper Personnel Air Lock Integrity and Emergency Air Penetration Leak Rate Test) and enter this on Enclosure 13.10.1 (Overall Personnel Air Lock Leak Rate Reverification Data). Record date that this test was performed.

_____ 1.2 Enter retest data from enclosure(s) that were performed in corresponding data blanks on Enclosure 13.10.1 (Overall Personnel Air Lock Leak Rate Reverification Data). N/A the corresponding data blanks for enclosures not performed.

_____ 1.3 Perform calculations as required by Enclosure 13.10.1 (Overall Personnel Air Lock Leak Rate Reverification Data) to determine New Overall Personnel Airlock Leakage Rate.

_____ 1.4 If Acceptance Criteria 11.4 has not been met, perform the following.

_____ 1.4.1 Notify Unit/WCC SRO and System Engineer.

_____ 1.4.2 Submit a Technical Specification Operability Notification Sheet to declare the Airlock Inoperable.

_____ 1.4.3 Initiate a Work Request to restore system to operable status. Record Work Request number below.

W.R. _____

_____ 1.4.4 Log applicable sections in TSAIL.

_____ 1.5 Update PT/1/A/4200/001L (Controlling Procedure for Type B and C Leak Rate Test) for the penetration tested.

Enclosure 13.10.1

Overall Personnel Air Lock Leakage Rate Reverification Data

NOTE: The corresponding data blanks for enclosures not performed shall be N/A'd.

Overall Personnel Airlock Leakage Rate (from Enclosure 13.7.1) _____ SCCM

Total Leakage for Cont. Side Elec. Pen. (from Enclosure 13.2.1) _____ SCCM

Total Leakage for Aux. Side Elec. Pen. (from Enclosure 13.2.1) _____ SCCM

Total Leakage for Aux. Side View Port (from Enclosure 13.8.1) _____ SCCM

Total Leakage for Cont. Side View Port (from Enclosure 13.9.1) _____ SCCM

New Overall Personnel Airlock Leakage Rate (add all above) _____ SCCM

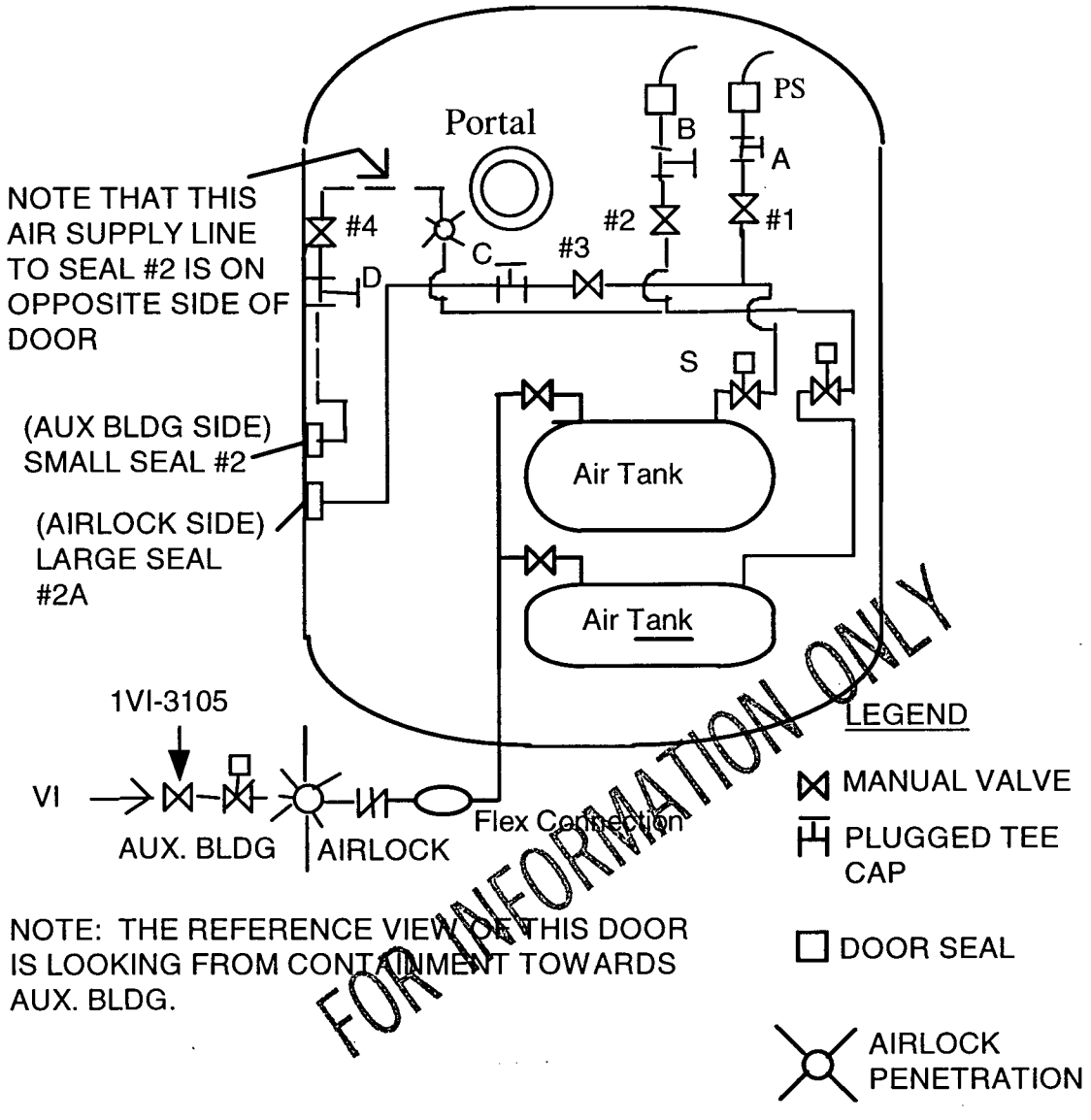
Latest Test Date (Enclosure 13.7.1) _____

Calculation Performed By _____ Date _____

Calculation Verified By _____ Date _____

Enclosure 13.11

Outer Personnel Air Lock - Auxiliary Building Side



NOTE: THE REFERENCE VIEW OF THIS DOOR IS LOOKING FROM CONTAINMENT TOWARDS AUX. BLDG.