WBN2Public Resource

From: Boyd, Desiree L [dlboyd@tva.gov]
Sent: Wednesday, February 08, 2012 9:35 AM
To: Epperson, Dan; Poole, Justin; Raghavan, Rags; Milano, Patrick; Campbell, Stephen
Cc: Arent, Gordon; Boyd, Desiree L; Hamill, Carol L
Subject: TVA letter to NRC_02-07-12_2-PTI-030J-02; 2-PTI-063-02; 2-PTI-099-08 transmittal to NRC
Attachments: 02-07-12_2-PTI-030J-02; 2-PTI-063-02; 2-PTI-099-08 transmittal to NRC_Final.pdf

Please see attached TVA letter that was sent to the NRC today.

Thank You,

~*~*~*~*~*~*~*~*~*~*~*~

Désireé L. Boyd
WBN Unit 2 Licensing
dlboyd@tva.gov
423-365-8764

Hearing Identifier: Watts_Bar_2_Operating_LA_Public
Email Number: 649

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From: Boyd, Desiree L

Created By: dlboyd@tva.gov

Recipients:
"Arent, Gordon" <garent@tva.gov>
Tracking Status: None
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February 7, 2012

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Watts Bar Nuclear Plant, Unit 2
NRC Docket No. 50-391

Subject: **Watts Bar Nuclear Plant (WBN) Unit 2 - Submittal of Pre-op Test Instructions**

The following approved WBN Unit 2 Pre-op Test Instructions (PTIs) are enclosed:

PTI NUMBER	Rev.	TITLE
2-PTI-030J-02	0	Containment Purge Filter Test
2-PTI-063-02	0	System 063 - Safety Injection System SIS Accumulators
2-PTI-099-08	0	Safeguards System Test Panel

If you have any questions, please contact Pete Olson at (423) 365-3294.

Respectfully,

David Stinson
Watts Bar Unit 2 Vice President

Enclosures

cc (Enclosures):

U. S. Nuclear Regulatory Commission
Region II
Marquis One Tower
245 Peachtree Center Ave., NE Suite 1200
Atlanta, Georgia 30303-1257

NRC Resident Inspector Unit 2
Watts Bar Nuclear Plant
1260 Nuclear Plant Road
Spring City, Tennessee 37381

bcc (Enclosures):

Stephen Campbell
U.S. Nuclear Regulatory Commission
MS 08H4A
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852-2738

Patricia Holahan, Acting Deputy Regional Administrator for Construction
U. S. Nuclear Regulatory Commission
Region II
Marquis One Tower
245 Peachtree Center Ave., NE Suite 1200
Atlanta, Georgia 30303-1257

WATTS BAR NUCLEAR PLANT
UNIT 2 PREOPERATIONAL TEST

TITLE: Containment Purge Filter Test

Instruction No: 2-PTI-030J-02
Revision No: 0000

PREPARED BY: Keith Jones [signature] DATE: 10-7-11
PRINT NAME / SIGNATURE

REVIEWED BY: Sam Linginfelter [signature] DATE: 10-10-11
PRINT NAME / SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING No: 2-12-003

JTG CHAIRMAN: [signature] DATE: ~~2/12/12~~ 2/2/12

APPROVED BY : [signature] DATE: 2/2/12
PREOPERATIONAL STARTUP MANAGER

TEST RESULTS APPROVAL

JTG MEETING No: ____________

JTG CHAIRMAN: ____________ DATE: ____________

APPROVED BY : ____________ DATE: ____________
PREOPERATIONAL STARTUP MANAGER

Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0000	2/2/12.	ALL	New procedure written using Unit 1 PTI-030D-02 and procedures 1-SI-30-11-A & -B and TI-5.01 as a guide.

Table of Contents

Table of Contents (continued)

Date ________

1.0 INTRODUCTION

1.1 Test Objectives

Demonstrate the proper operation of the Unit 2 Containment Purge Air Cleanup System.

1.2 Scope

This test demonstrates the operability of the Unit 2 Containment Purge Air Cleanup System by demonstrating the following for each train:

A. Filter banks and housing visual inspection is satisfactory.

B. Laboratory test of charcoal adsorbent shows a methyl iodide penetration of less than 10%.

C. Air Cleanup Unit maintains required air flows.

D. Pressure drop across entire filtration unit is less than 4.7 inH_2O at design flow.

E. Air Cleanup Unit meets Air Flow distribution requirements

F. Air Cleanup Unit meets air/aerosol mixing uniformity requirements. This will validate the design and placement of the injection manifolds.

G. HEPA filter penetration is less than 1.00% at design flow

H. Charcoal adsorber penetration is less than 1.00% at design flow.

Date ________

2.0 REFERENCES

2.1 Performance References

A. SMP-9.0, Conduct of Test

2.2 Developmental References

A. Final Safety Analysis Report, Amendment 107

1. Section 9.4.6, Reactor Building Purge Ventilating System (RBPVS)

2. Table 14.2-1, Sheets 38 & 39, Containment Ventilation System Test Summary

B. Drawings

1. Flow Diagrams

a. 2-47W866-1, Rev 4, HEATING AND VENTILATION AIR FLOW

b. 1-47W866-1A, Rev 9, HEATING AND VENTILATION AIR FLOW
DCA 55050-052, Rev 0

2. Logic/Control

a. 2-47W610-30-1, Rev 1, ELECTRICAL CONTROL DIAGRAM VENTILATION SYSTEM
FCR 55809-A, Rev AA-10

Date ________

2.2 Developmental References (continued)

3. Electrical

   a. 2-45W760-30-16, Rev 0 ,VENTILATING SYSTEM SCHEMATIC DIAGRAMS
      FCR 56625-A, Rev AA-02

   b. 1-45W600-30-4, Rev 27, VENTILATING SYSTEM SCHEMATIC DIAGRAM
      DCA 56414-009, Rev 0
      DCA 56414-012, Rev 0

   c. 1-45W600-90-1, Rev 22, RADIATION MONITORING SYSTEM SCHEMATIC DIAGRAMS
      DCA 53037-016, Rev 0
      DCA 53037-031, Rev 0

   d. 0-45B2755-16D, Rev 0, 480V REACTOR VENT BD 2A-A CONN DIAG - COMPT 16D
      FCR 56625-A, Rev AA-02

   e. 2-45B2756-16D, Rev 0, 480V REACTOR VENT BD 2B-B CONN DIAG - COMPT 16D
      FCR 56625-A, Rev AA-02

   f.

4. Mechanical

   a. 47W915-1, Rev 32, MECHANICAL HEATING AND VENTILATING

   b. 47W920-4, Rev 47, MECHANICAL HEATING, VENTILATING AND AIR CONDITIONING

5. Vendor Drawings

   a. 27383-1, Rev 902, FILTER ASSEMBLY PURGE AIR EXHAUST SYSTEM TVA WATTS BAR 1 & 2.

Date ________

2.2 Developmental References (continued)

C. Documents

1. WBN2-30RB-4002, Rev 1, Reactor Building Ventilation System
2. 2-TSD-30J-2, Rev 0, Containment Building Purge Air Filter Test
3. Unit 2 Technical Specifications (Draft)
   a. Section 3.9.8, Reactor Building Purge Air Cleanup Units
   b. Section 5.7.2.14, Ventilation Filter Testing Program (VFTP)
4. G-37, Rev 4, Testing and Balancing of HVAC Systems During Installation, Modification, and Maintenance
5. GTM-05, Rev 0, HVAC Air Balance
6. 2-PTI-030J-01, Rev 0, Containment Purge
7. DCN 31688-A, M&TE Accuracy Corrections
8. TI-5, Rev 6, Ventilation Testing Program
9. TI-5.01, Rev 20, Test Methods for Nuclear Air Cleanup Systems
10. 1-SI-30-11-A, Rev 10, Containment Purge Air Cleanup System Train-A Test
11. 1-SI-30-11-B, Rev 9, Containment Purge Air Cleanup System Train-B Test
12. VTD-C733-0020, Rev 1, Instruction Manual for the Containment Purge Air Exhaust System Filter Assemblies
13. Regulatory Guide 1.52, Rev 2, March 1978, *Design, Testing, And Maintenance Criteria For Post Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration And Adsorption Units Of Light-Water-Cooled Nuclear Power Plants*
14. ASME N510-1989, *Testing of Nuclear Air Treatment Systems*

Date ________

3.0 PRECAUTIONS AND LIMITATIONS

A. Standard precautions shall be followed for working around energized electrical equipment in accordance with TVA Safety Manual Procedure 1021.

B. Steps may be repeated if all components cannot be tested in a step. However, if the test has been exited, prerequisite steps must be re-verified and a Chronological Test Log (CTL) entry made.

C. Discrepancies between component ID tags and the description in a procedure/instruction if the UNIDs match, exclusive of place keeping zeros and train designators (e.g. 2-HS-31-468 vs. 2-HS-031-0468) and the noun description is sufficient to identify a component. This condition does not require a Test Deficiency Notice (TDN) in accordance with SMP-14.0. If the component label needs to be changed, a Tag Request Form (TR Card) should be processed in accordance with TI-12.14. Make an entry in the CTL and continue testing.

D. IF/THEN steps may be marked N/A if stated condition does not exist.

E. All open problems are to be tracked by a corrective action document and entered on the appropriate system punchlist.

F. Problems identified during the test shall be annotated on the Chronological Test Log (CTL) from SMP-9.0 including a description of the problem, the procedure step when/where the problem was identified, corrective action steps taken to resolve the problem, and the number of the corrective action document, if one was required.

G. Observe all Radiation Protection (RP) requirements when working in or near radiological areas.

H. Ensure there are no adverse effects to the operation of Unit 1 structures, systems, or components.

I. Care shall be taken to keep the system clean during testing.

J. When taking air flow measurements, test personnel should position themselves away from the anemometer to minimize their impact on air flow velocity profiles in the area of air flow measurement.

K. Entry into the Containment Purge filter housing may constitute an entry into a confined space. Refer to TVA Safety Procedure 801.

Date ________

3.0 PRECAUTIONS AND LIMITATIONS (continued)

L. This test instruction is written to use certified contract personnel in performance of the in-place HEPA filter and charcoal adsorber testing, which includes their own test equipment and procedures for operating that test equipment. If needed, applicable developmental references may be used as a guide to perform tests.

M. Dioctyl phthalate (DOP) and Refrigerant R-11 (trichlororfluoromethane) are the challenge agents used for inplace testing of the HEPA filters and charcoal adsorbers. Read and follow appropriate precautions specified in the Material Safety Data Sheets (MSDS) for these substances.

Date ________

4.0 PREREQUISITE ACTIONS

NOTE

Prerequisite steps may be performed in any order, unless otherwise stated, and should be completed as close in time as practicable to the start of the instruction subsection to which they apply

4.1 Preliminary Actions

[1] **VERIFY** the test/performance copy of this Preoperational Test Instruction (PTI) is the current revision, including any change notices, and as needed, each test person assisting in this test has the current revision, including any change notices. ________

[2] **OBTAIN** copies of the applicable forms from the latest revision of SMP-9.0 **AND**

ATTACH to this PTI for use during the performance of this PTI. ________

[3] **VERIFY** the supporting Contracting personnel are certified per ASME NQA-1 (They must be Level II or III if the non-mandatory guidance of ASME NQA-1 is used by their certification program), **AND**

ATTACH a copy of their certification to this data package. ________

[4] **ENSURE** changes to the references listed on Appendix A, have been reviewed and determined NOT to adversely affect the test performance. ________

[5] **VERIFY** current revisions and change paper for referenced drawings have been reviewed and determined NOT to adversely affect the test performance, **AND**

ATTACH documentation of the current drawing revision numbers and change paper that were reviewed to the data package. ________

Date ________

4.1 Preliminary Actions (continued)

[6] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) and/or Plant Operations. ________

[7] **EVALUATE** open items in Watts Bar Integrated Task Equipment List (WITEL) **AND**

ENSURE they will NOT adversely affect the test performance or results.

A. Section 6.1 ________

B. Section 6.2 ________

[8] **ENSURE** required Component Testing has been completed prior to start of test.

A. Section 6.1 ________

B. Section 6.2 ________

[9] **ENSURE** GTM-05, HVAC Air Balance Package for system 30J has been completed. ________

[10] **ENSURE** 2-PTI-030J-01, Containment Purge has been completed. ________

[11] **ENSURE** Containment Purge filter housings have been satisfactorily pressure tested in accordance with the requirements in ASME N510-1989.

A. Train A (Section 6.1)

WO or Test Instruction: ________________ ________

B. Train B (Section 6.2)

WO or Test Instruction: ________________ ________

[12] **ENSURE** outstanding Design Change Notices (DCNs), Engineering Document Construction Releases (EDCRs), or Temporary Alterations (TAs) do NOT adversely impact testing, **AND**

ATTACH documentation of DCNs, EDCRs, and TAs that were reviewed to the data package. ________

Date ________

4.1 Preliminary Actions (continued)

[13] **ENSURE** a review of outstanding Clearances has been coordinated with Unit 2 Operations for impact to the test performance, **AND**

RECORD in Appendix B, Temporary Condition Log if required. ________

[14] **VERIFY** plant instruments required for test performance have been placed in service and are within their calibration interval, **AND**

RECORD in Appendix C, Permanent Plant Instrumentation Log. ________

[15] **REVIEW** Preventive Maintenance (PM) records for equipment within the scope of this test, **AND**

VERIFY no conditions exist that will impact test performance.

A. Section 6.1 ________

B. Section 6.2 ________

[16] **PERFORM** a pretest walkdown on equipment to be tested to ensure no conditions exist that will impact test performance.

A. Section 6.1 ________

B. Section 6.2 ________

[17] **OBTAIN** Radiation Work Permit (RWP), if required (N/A if not required). ________

[18] **OBTAIN** a Confined Space Permit, if required (N/A if not required). ________

[19] **CONDUCT** a pretest briefing with Test and Operations personnel in accordance with SMP-9.0. ________

[20] **ENSURE** that communications are available for areas where testing is to be conducted. ________

Date ________

4.2 Special Tools, Measuring and Test Equipment, Parts, and Supplies

[1] **OBTAIN** the following M&TE, or equivalent, **AND**

RECORD on the M&TE log:

DESCRIPTION	MINIMUM RANGE	REQUIRED ACCURACY
Barometer	27 - 31 inHg	±0.126 inHg
Pocket Thermometer	35 - 120°F	±2°F
Inclined Manometer*	0 - 5 inH_2O	±0.01 inH_2O for 0-1 inH_2O range ±0.1 inH_2O for 1-5 inH_2O range
U-Tube Manometer	0-18 inH_2O	±0.1 inH_2O
Hotwire Anemometer	0-1500 FPM	±5% of reading (more stringent than normal calibration)

* Incline Manometers are calibrated one time only and do not require recalibration

____

[2] **ENSURE** the following are available:

A. Pitot tube (24” minimum length) ________

B. Tubing for connecting pitot tube to manometer ________

C. Permanent Marker (e.g. Sharpie) ________

D. Label for placing on run time meter [2] ________

E. Smoke Test Kit ________

[3] **ATTACH** a copy of the Contractor’s M&TE pre-use calibration reports to this data package. ________

[4] **VERIFY** M&TE calibration due dates will support the completion of this test performance.

A. Subsection 6.1 ________

B. Subsection 6.2 ________

Date ________

4.3 Field Preparations

[1] **ENSURE** all applicable permits for Aromatic or Ester Hydrocarbon Releases have been cleared per TI-215, **AND** NO permits (which may affect Unit 2 Containment Purge Air Cleanup System) will be issued during performance of this Instruction. ________ SM/US

[2] **OBTAIN** key(s) for entry into filter housing, if applicable. ________

[3] **VERIFY** the following systems are operational and have been placed in service to the extent necessary to perform this test:

A. System 32, Control Air ________

B. System 90, Radiation Monitoring ________

C. System 232, 480V AC Reactor Vent Power ________

D. System 235, 120V AC Vital Power System

E. System 236, 125V DC Vital Power System

[4] **ENSURE** the following Radiation Monitors are in service:

A. 2-RE-90-400, SHIELD BLDG VT MON SYS SAMPLE DETECTION SKID ________

B. 2-RE-90-130, CNTMT PURGE AIR EXH RADIATION MONITOR ________

C. 2-RE-90-131, CNTMT PURGE AIR EXH RADIATION MONITOR ________

[5] **VERIFY** there is no Auxiliary Building Isolation (ABI) or High Radiation in Refuel Area signals present by:

A. The ABI window NOT lit on either the TR-A or TR-B MASTER ISOL SIGNAL STATUS PNLs (Window 5 on 2-XX-55-6C and 2-XX-55-6D) on 2-M-6 ________

B. No high rad alarm for 0-RM-90-102 and -103, annunciator window 184B on 0-M-12 ________

Date ________

4.3 Field Preparations (continued)

[6] **VERIFY** there are no Unit 2 Containment Vent Isolation (CVI) signals present by the CVI window NOT lit on either the TR-A or TR-B MASTER ISOL SIGNAL STATUS PNLs (Window 2 on 2-XX-55-6C and 2-XX-55-6D) on 2-M-6. ________

[7] **ENSURE** the Unit 2 SSPS is providing ABI function to the Unit 2 Containment Purge system, **AND**

ENSURE the following handswitches are in REFUEL:

A. 2-HS-90-410, HI RAD ABSCE ISOL DURING REFUELING LOGIC SW (TR-A) [2-R-73] ________

B. 2-HS-90-415, HI RAD ABSCE ISOL DURING REFUELING LOGIC SW (TR-B) [2-R-78] ________

[8] **ENSURE** Containment Purge Air Cleanup System is NOT running.

A. Train A (Section 6.1) ________

B. Train B (Section 6.2) ________

[9] **OBTAIN** a Containment Purge Release Package from Chemistry, if needed.

A. Section 6.1 ________

B. Section 6.2 ________

[10] **VERIFY** Measuring and Test Equipment (M&TE) required for test performance has been (as required) filled, vented, place in service and recorded on Measuring and Test Equipment Log in SMP-9.0.

A. Section 6.1 ________

B. Section 6.2 ________

Date ________

4.4 Approvals and Notifications

[1] **OBTAIN** permission of the Preoperational Startup Manager to start the test.

______________________________	____________
Preoperational Startup Manager Signature	Date

[2] **OBTAIN** the Unit 2 Supervisor's (US/SRO) or Shift Manager's (SM) authorization.

______________________________	____________
Unit 2 US/SRO/SM Signature	Date

[3] **NOTIFY** Chemistry (Chem Lab) that a Containment Purge Release Package will be needed to perform this test. ________

Date ________

5.0 ACCEPTANCE CRITERIA

A. Air Cleanup Unit (ACU) visual inspection is satisfactory

Train A	Train B
Subsection 6.1.1	Subsection 6.2.1

B. ACU filter housing access doors seal properly and do not leak.

Train A	Train B
6.1.8[4]	6.2.8[4]

C. A laboratory test of the Charcoal Adsorbent shows a methyl iodide penetration of < 10% at ≤ 30°C and ≥ 95% Relative Humidity (2 inch bed depth).

Train A	Train B
6.1.2[5]	6.2.2[5]

D. ACU provides an airflow capacity of 14,000 CFM ±10% (12,600 - 15,400)[1].

Train A	Train B
6.1.3[8]	6.2.3[8]

[1] Air flow acceptance criteria already includes expected deviations due to instrument error and does not need to be corrected for instrument inaccuracy.

E. Pressure drop at design flow across the entire filtration unit is < 4.6 inH_2O[2].

Train A	Train B
6.1.3[10]	6.2.3[10]

[2] Required value of 4.7 inH_2O reduced by 0.1 inH_2O to account for instrument inaccuracy

Date ________

5.0 ACCEPTANCE CRITERIA (continued)

F. Airflow distribution test shows that no individual measured velocity exceeds ±20% of the average velocity through the ACU.

Train A	Train B
6.1.4[5]	6.2.4[5]

G. Air/Aerosol Mixing Uniformity test shows that no individual measured relative concentration exceeds ±20% of the average relative concentration in the ACU.

Train A	Train B
6.1.5[7]	6.2.5[7]

H. An inplace test of the HEPA Filters shows a penetration and system bypass leakage of < 1.00% at rated air flow.

Train A	Train B
6.1.6[5]	6.2.6[5]

I. An inplace test of the Charcoal Adsorbers shows a penetration and system bypass leakage of < 1.00% at rated air flow.

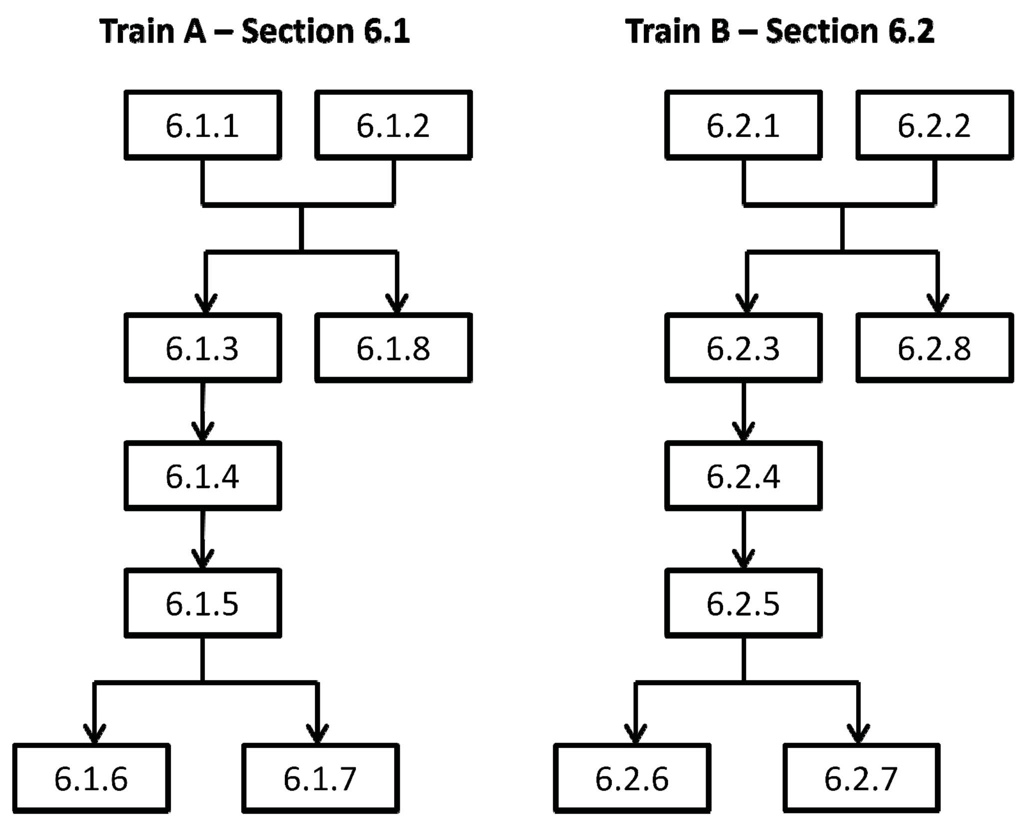
Train A	Train B
6.1.7[5]	6.2.7[5]

Date ________

6.0 PERFORMANCE

NOTES

1) Section 6.1 and 6.2 may be performed in either order but not in parallel. The Subsections of each section shall be performed in accordance with the flow chart below:



2) Within each Section, Subsections 1 and 2 shall be performed first (in either order or concurrently) followed by Subsections 3, 4, and 5, in that order. Subsections 6 and 7 shall be performed last (in either order). Subsection 8 may be performed concurrently with Subsection 3 and/or any subsequent Subsection thereafter or it may be performed last, after all previous Subsections are completed.

3) This test instruction is written to use certified contract personnel in performance of the in-place HEPA filter and charcoal adsorber testing, which includes their own test equipment.

Date ________

6.1 Train A Containment Purge Air Cleanup Unit

6.1.1 Visual Inspection/Setup

NOTES

1) The Visual Inspection applies to those components which are accessible. The inspection of components inside the filter housing verifies that no damage has been incurred by the filter or adsorber media or the structural components which would impair the performance of the system. Proper installation of filters, adsorbers, and the physical integrity of the hold down or clamping devices is also verified. The inspection of components outside the filter housing verifies that no damage has been incurred to the housing or duct work which would impair the performance of the system. All accessible items on the checklist should be visually inspected for signs of wear and abuse. All unsatisfactory conditions relating to the physical integrity of the filter housing, duct, HEPA bank, or adsorber bank is to be repaired before further testing. Other unsatisfactory items should be repaired if practical before further testing or a WO initiated for corrective action. Document all unsatisfactory conditions and corrective actions taken/initiated in the CTL.
2) The remaining steps in this Subsection may be performed in any order.
3) Subsection 6.1.2 may be performed concurrently with this Subsection.

[1] **ENSURE** all prerequisites listed in Section 4.0 for Section 6.1 have been completed. ________

[2] **ENSURE** all interior light bulbs within the filter housing are functional and have a vapor-tight globe and shield. ________

NOTE

Steps 6.1.1[3] through 6.1.1[9] may be completed in any order or in parallel.

[3] **INSPECT** Prefilters, **AND**

INDICATE condition of the following:

	SAT	UNSAT
A. No unacceptable damage to filter media or frame	☐	☐
B. No excessive dirt loading or debris	☐	☐
C. Proper installation	☐	☐

____

Date ________

6.1.1 Visual Inspection/Setup (continued)

[4] **INSPECT** Prefilter clamping devices, **AND**

INDICATE condition of the following: SAT UNSAT

A. All clamping hardware complete ☐ ☐

B. General condition of clamping devices ☐ ☐

____

[5] **INSPECT** HEPA Filters, **AND**

INDICATE condition of the following: SAT UNSAT

A. No unacceptable damage to filter media or frame ☐ ☐

B. General conditions of separators (no visible damage) ☐ ☐

C. Filters properly installed with pleats vertical ☐ ☐

____

[6] **INSPECT** HEPA Filter clamping devices, **AND**

INDICATE condition of the following: SAT UNSAT

A. All clamping hardware complete ☐ ☐

B. General condition of clamping devices ☐ ☐

____

[7] **INSPECT** Adsorber cells, **AND**

INDICATE condition of the following SAT UNSAT

A. Adsorbers appear properly seated against frame ☐ ☐

B. No unacceptable damage to adsorbers ☐ ☐

____

Date ________

6.1.1 Visual Inspection/Setup (continued)

[8] **INSPECT** Adsorber cell clamping devices, **AND**

INDICATE condition of the following: SAT UNSAT

A. All clamping hardware complete ☐ ☐

B. General condition of clamping devices ☐ ☐

____

[9] **INSPECT** filter housing (plenum), **AND**

INDICATE condition of the following: SAT UNSAT

A. Door seals and door frame sealing surfaces ☐ ☐

B. Condition of latches on access doors ☐ ☐

C. Housekeeping in and around filter housing ☐ ☐

D. Condition of ΔP gauges and sense lines ☐ ☐

E. Fan discharge flexible duct connection ☐ ☐

F. General conditions of filter housing, associated test ports, conduit connections, and related devices ☐ ☐

____

[10] **INSTALL/ATTACH** test manifolds and required sampling connections at their respective locations as determined by test personnel. ________

[11] **VERIFY** successful completion of Subsection 6.1.1. **(Acc Crit)** ________

Date ________

6.1.2 Charcoal Sample Laboratory Test

[1] **ENSURE** all prerequisites listed in Section 4.0 for Section 6.1 have been completed. ________

NOTE

Elapsed Time Meter 2-II-30-1E records in hours and tenths of an hour and is located in the back of 480V Reactor Vent Board 2A-A, Compartment 16D.

[2] **RECORD** reading from Meter 2-II-30-1E, TIME TOTALIZING METER FAN A.

_________________ hours ________

[3] **RECORD** the date and the meter reading from Step 6.1.2[2] on a new label. ________

[4] **ATTACH** new label to Meter 2-II-30-1E, TIME TOTALIZING METER FAN A (to indicate meter reading and date when new charcoal was installed).

WO that installed new charcoal: _________________ ________

NOTE

Steps 6.1.2[5] and 6.1.2[6] shall be performed for each Lot/Batch of new charcoal installed. (N/A extra lines if not used)

[5] **RECORD** charcoal sample analysis results for each Lot/Batch number of new charcoal installed, **AND**

VERIFY they meet acceptance criteria (**Acc Crit:** < 10% penetration at ≤ 30°C & ≥ 95% relative humidity).

Lot/Batch	Date Lab Analysis Performed	% Penetration	Initials

[6] **ATTACH** a copy of the laboratory test report(s) to this data package. ________

Date ________

6.1.3 Air Flow Test

> **NOTE**
>
> Subsection 6.1.8 may be performed concurrently with this Subsection and/or any subsequent Subsection of Section 6.1 hereafter.

[1] **ENSURE** all test connections are in place and sealed if needed. ________

[2] **ENSURE** filter housing access doors are closed and properly secured by their normal closure mechanisms. ________

[3] **RECORD** as-found component and handswitch positions in Appendix D.
(N/A if this was previously performed in step 6.2.3[3]) ________

[4] **ENSURE** Containment Purge components are aligned in accordance with Appendix E. ________

[5] **START** Train-A Containment Purge Supply and Exhaust Fans using 2-HS-30-1A, CNTMT PURGE SUP & EXH FANS 2A AND FCO-30-1A & 1B, [2-M-9]. ________

[6] **VERIFY** stable fan operation (no surges or oscillations) for a period of at least 15 minutes. ________

[7] **MEASURE** air flow for Train-A Containment Purge Air Cleanup System in the 24’’ round duct in the annulus [EL 767 AZ 12°] using Data Sheet 1. ________

[8] **RECORD** air flow reading from Data Sheet 1, **AND**

VERIFY it meets acceptance criteria.

________________________ CFM

Acc Crit: 12,600 - 15,400 CFM

____

Date ________

6.1.3 Air Flow Test (continued)

[9] **INSTALL** a U-Tube manometer between the most upstream and most downstream test ports on the Train-A Purge Air Cleanup Filter Housing (upstream of the Prefilters and downstream of the Charcoal Adsorbers). ________

[10] **RECORD** the differential pressure across Train-A Purge Air Cleanup Filter Housing, **AND**

VERIFY it meets acceptance criteria.

______________________ inH_2O

Acc Crit: less than 4.6 inH_2O

____

[11] **REMOVE** the U-Tube manometer, **AND**

REINSTALL the test ports.

____
1st

____
CV

NOTE

The following step contains the recommended maximum ΔP for the filter unit's individual filter banks. For exceeded recommended maximum ΔP, record in the CTL, and initiate corrective actions as necessary.

[12] **RECORD** the ΔP for each filter bank using its associated ΔP gauge:

Filter Bank	Gauge	Measured ΔP	Recommended Maximum ΔP
Prefilter	2-IPDI-30-1015/A	____________ inH_2O	0.5 inH_2O
HEPA	2-IPDI-30-1016/A	____________ inH_2O	3.5 inH_2O
Charcoal	2-IPDI-30-1015/B	____________ inH_2O	≅ 1.0 inH_2O

____

[13] **IF** Train-A Containment Purge Supply and Exhaust Fans are to be secured (N/A step if testing is to continue), **THEN**

PLACE 2-HS-30-1A, CNTMT PURGE SUP & EXH FANS 2A AND FCO-30-1A & 1B in STOP PULL TO LOCK. ________

Date ________

6.1.4 Air Flow Distribution Test

NOTE

The Air Flow Distribution Test verifies that the air flow in the filter housing is evenly distributed across the face of the HEPA Filter bank. This ensures that one segment of the filter bank is not being excessively loaded relative to the rest of the bank.

[1] **VERIFY** the Air Flow Test of Subsection 6.1.3 has been successfully completed. ________

[2] **ENSURE** Fans 2-FAN-30-1 and 2-FAN-30-1E, CONTAINMENT PURGE AIR SUPPLY FAN 2A, and CONTAINMENT PURGE AIR EXHAUST FAN 2A, are ON. ________

NOTES

1) Only one test port shall be uncapped at a time.
2) A hotwire anemometer shall be used to take these air flow measurements due to low airflow velocities in the filter housing. When inserting the anemometer probe, be certain to cover the test port open area with hand, glove, or other suitable means.
3) Airflow measurements shall be taken on the downstream side of the HEPA filters.

[3] **MEASURE** and **RECORD** the velocity at each point identified on Data Sheet 3, which are at the center of each HEPA filter and at equal distances downstream from the filter. ________

[4] **CALCULATE** the average velocity and upper and lower limit acceptance criteria in accordance with Data Sheet 3. ________

[5] **RECORD** the following data from Data Sheet 3, **AND**

VERIFY the minimum and maximum measured air flow velocities are within the range of acceptance criteria.

Min. measured velocity: ________________ FPM

Max. measured velocity: ________________ FPM

Acc Crit: _________ - _________ FPM
(lower limit) (upper limit)

____

[6] **IF** Train-A Containment Purge Supply and Exhaust Fans are to be secured (N/A step if testing is to continue), **THEN**

PLACE 2-HS-30-1A, CNTMT PURGE SUP & EXH FANS 2A AND FCO-30-1A & 1B in STOP PULL TO LOCK. ________

Date ________

6.1.5 Air/Aerosol Mixing Uniformity Test

NOTE

The Air/Aerosol Mixing Uniformity Test verifies that the injections ports and manifolds are located and configured in a manner which allows proper and thorough mixing of the aerosol or tracer gas to adequately challenge the HEPA and Charcoal Adsorber banks.
For multibank testing, a separate test is required for each injection port/manifold.

[1] **VERIFY** the following Subsections have been completed:

A. Subsection 6.1.3, Air Flow Test ________

B. Subsection 6.1.4, Air Flow Distribution Test ________

[2] **ENSURE** Fans 2-FAN-30-1 and 2-FAN-30-1E, CONTAINMENT PURGE AIR SUPPLY FAN 2A, and CONTAINMENT PURGE AIR EXHAUST FAN 2A, are ON. ________

[3] **ENSURE** DOP generator is ON and the DOP detector is setup and calibrated. ________

NOTE

Only one test port shall be uncapped at a time.

[4] **MEASURE** and **RECORD** the relative concentration at each point identified on Data Sheet 5, which are at the center of each filter and approximately one (1) foot upstream of the filter. ________

NOTE

It is recommended to re-take the first concentration measurement after all the other measurements are taken to verify that the DOP generator output remained constant.

[5] **TURN OFF** the pressure to the DOP generator, **AND**

SECURE the DOP detector. ________

Date ________

6.1.5 Air/Aerosol Mixing Uniformity Test (continued)

[6] **CALCULATE** the average concentration and upper and lower limit acceptance criteria in accordance with Data Sheet 5. ________

NOTE

If acceptance criteria is not met, either the injection manifold must be modified or an additional means of mixing the air and aerosol provided.

[7] **RECORD** the following data from Data Sheet 5, **AND**

VERIFY the minimum and maximum measured concentrations are within the range of acceptance criteria.

Min. measured concentration: ______________________

Max. measured concentration: ______________________

Acc Crit: _________ - _________ FPM
(lower limit) (upper limit)

____

[8] **IF** Train-A Containment Purge Supply and Exhaust Fans are to be secured (N/A step if testing is to continue), **THEN**

PLACE 2-HS-30-1A, CNTMT PURGE SUP & EXH FANS 2A AND FCO-30-1A & 1B in STOP PULL TO LOCK. ________

Date ________

6.1.6 HEPA Filter Inplace Test

NOTE

This test verifies the physical integrity of the HEPA filter bank in regard to leakage of unfiltered air past the bank. A polydispersed stream of dioctyl phthalate (DOP) is injected upstream of the filter bank and the ratio of the concentrations (downstream and upstream of the HEPA bank) is determined. This ratio is directly indicative of the leak-tightness of the HEPA filters, their gaskets, and their mounting frames.

[1] **VERIFY** the following Subsections have been completed:

A. Subsection 6.1.3, Air Flow Test ________

B. Subsection 6.1.4, Air Flow Distribution Test ________

C. Subsection 6.1.5 Air/Aerosol Mixing Uniformity Test ________

[2] **VERIFY** that system configuration has not changed since those measurements. ________

[3] **ENSURE** Fans 2-FAN-30-1 and 2-FAN-30-1E, CONTAINMENT PURGE AIR SUPPLY FAN 2A, and CONTAINMENT PURGE AIR EXHAUST FAN 2A, are ON, **AND**

VERIFY stable fan operation (no surges or oscillations) for a period of at least 15 minutes. ________

[4] **PERFORM** a DOP leak test for the HEPA Filter bank using Data Sheet 7. ________

[5] **RECORD** the percent penetration calculated from Data Sheet 7, **AND**

VERIFY it meets acceptance criteria.

Penetration: _____________ %
Acc Crit: Less than 1.00% at rated air flow

____

[6] **IF** Train-A Containment Purge Supply and Exhaust Fans are to be secured (N/A step if testing is to continue), **THEN**

PLACE 2-HS-30-1A, CNTMT PURGE SUP & EXH FANS 2A AND FCO-30-1A & 1B in STOP PULL TO LOCK. ________

Date ________

6.1.7 Charcoal Adsorber Inplace Test

NOTE

This test verifies the physical integrity of the Charcoal Adsorber bank in regard to leakage of unfiltered air past the bank. A stream of a Refrigerant R-11 is injected upstream of the adsorber bank and the ratio of the concentrations (downstream and upstream of the adsorber bank) is determined. This ratio is directly indicative of the leak-tightness of the adsorbers, their gaskets, and their mounting frames.

[1] **VERIFY** the following Subsections have been completed:

A. Subsection 6.1.3, Air Flow Test ________

B. Subsection 6.1.4, Air Flow Distribution Test ________

C. Subsection 6.1.5 Air/Aerosol Mixing Uniformity Test ________

[2] **VERIFY** that system configuration has not changed since those measurements. ________

[3] **ENSURE** Fans 2-FAN-30-1 and 2-FAN-30-1E, CONTAINMENT PURGE AIR SUPPLY FAN 2A, and CONTAINMENT PURGE AIR EXHAUST FAN 2A, are ON, **AND**

VERIFY stable fan operation (no surges or oscillations) for a period of at least 15 minutes. ________

[4] **PERFORM** a Halide leak test for the Charcoal Adsorber bank using Data Sheet 9. ________

[5] **RECORD** the percent penetration calculated from Data Sheet 9, **AND**

VERIFY it meets acceptance criteria.

Penetration: _____________ %

Acc Crit: Less than 1.00% at rated air flow

____

[6] **IF** Train-A Containment Purge Supply and Exhaust Fans are to be secured (N/A step if testing is to continue), **THEN**

PLACE 2-HS-30-1A, CNTMT PURGE SUP & EXH FANS 2A AND FCO-30-1A & 1B in STOP PULL TO LOCK. ________

Date ________

6.1.8 Filter Housing Access Door Leak Test

NOTES

1) Do NOT open access doors while Airflow, HEPA, or Charcoal Adsorber testing is in progress. Coordinate with respective test performer(s).
2) This Subsection may be performed concurrently with Subsection 6.1.3 and/or any subsequent Subsection of Section 6.1 thereafter.

[1] **VERIFY** the filter housing access doors are properly secured. ________

[2] **ENSURE** Fans 2-FAN-30-1 and 2-FAN-30-1E, CONTAINMENT PURGE AIR SUPPLY FAN 2A, and CONTAINMENT PURGE AIR EXHAUST FAN 2A, are ON. ________

[3] **PERFORM** a "smoke test" of the filter housing access door seals to identify any air leaks. ________

[4] **PERFORM** one of the following steps (N/A the unused step):

A. **VERIFY** no air leakage around access doors. **(Acc Crit)** ________

B. **IF** leaks are identified, **THEN**

PERFORM Attachment 1, **AND**

VERIFY no air leakage around access doors. **(Acc Crit)** ________

[5] **PLACE** 2-HS-30-1A, CNTMT PURGE SUP & EXH FANS 2A AND FCO-30-1A & 1B in STOP PULL TO LOCK. ________

Date ________

6.2 Train B Containment Purge Air Cleanup Unit

6.2.1 Visual Inspection/Setup

NOTES

1) The Visual Inspection applies to those components which are accessible. The inspection of components inside the filter housing verifies that no damage has been incurred by the filter or adsorber media or the structural components which would impair the performance of the system. Proper installation of filters, adsorbers, and the physical integrity of the hold down or clamping devices is also verified. The inspection of components outside the filter housing verifies that no damage has been incurred to the housing or duct work which would impair the performance of the system. All accessible items on the checklist should be visually inspected for signs of wear and abuse. All unsatisfactory conditions relating to the physical integrity of the filter housing, duct, HEPA bank, or adsorber bank is to be repaired before further testing. Other unsatisfactory items should be repaired if practical before further testing or a WO initiated for corrective action. Document all unsatisfactory conditions and corrective actions taken/initiated in the CTL.
2) The remaining steps in this Subsection may be performed in any order.
3) Subsection 6.2.2 may be performed concurrently with this Subsection.

[1] **ENSURE** all prerequisites listed in Section 4.0 for Section 6.2 have been completed. _________

[2] **ENSURE** all interior light bulbs within the filter housing are functional and have a vapor-tight globe and shield. _________

NOTE

Steps 6.2.1[3] through 6.2.1[9] may be completed in any order or in parallel.

[3] **INSPECT** Prefilters, **AND**

INDICATE condition of the following:

	SAT	UNSAT
A. No unacceptable damage to filter media or frame	☐	☐
B. No excessive dirt loading or debris	☐	☐
C. Proper installation	☐	☐

____

Date ________

6.2.1 Visual Inspection/Setup (continued)

[4] **INSPECT** Prefilter clamping devices, **AND**

INDICATE condition of the following: SAT UNSAT

A. All clamping hardware complete ☐ ☐

B. General condition of clamping devices ☐ ☐

____

[5] **INSPECT** HEPA Filters, **AND**

INDICATE condition of the following: SAT UNSAT

A. No unacceptable damage to filter media or frame ☐ ☐

B. General conditions of separators (no visible damage) ☐ ☐

C. Filters properly installed with pleats vertical ☐ ☐

____

[6] **INSPECT** HEPA Filter clamping devices, **AND**

INDICATE condition of the following: SAT UNSAT

A. All clamping hardware complete ☐ ☐

B. General condition of clamping devices ☐ ☐

____

[7] **INSPECT** Adsorber cells, **AND**

INDICATE condition of the following SAT UNSAT

A. Adsorbers appear properly seated against frame ☐ ☐

B. No unacceptable damage to adsorbers ☐ ☐

____

Date ________

6.2.1 Visual Inspection/Setup (continued)

[8] **INSPECT** Adsorber cell clamping devices, **AND**

INDICATE condition of the following: SAT UNSAT

A. All clamping hardware complete ☐ ☐

B. General condition of clamping devices ☐ ☐

____

[9] **INSPECT** filter housing (plenum), **AND**

INDICATE condition of the following: SAT UNSAT

A. Door seals and door frame sealing surfaces ☐ ☐

B. Condition of latches on access doors ☐ ☐

C. Housekeeping in and around filter housing ☐ ☐

D. Condition of ΔP gauges and sense lines ☐ ☐

E. Fan discharge flexible duct connection ☐ ☐

F. General conditions of filter housing, associated test ports, conduit connections, and related devices ☐ ☐

____

[10] **INSTALL/ATTACH** test manifolds and required sampling connections at their respective locations as determined by test personnel. _________

[11] **VERIFY** successful completion of Subsection 6.2.1. **(Acc Crit)** _________

Date ________

6.2.2 Charcoal Sample Laboratory Test

[1] **ENSURE** all prerequisites listed in Section 4.0 for Section 6.2 have been completed. ________

NOTE

Elapsed Time Meter 2-II-30-4E records in hours and tenths of an hour and is located in the back of 480V Reactor Vent Board 2B-B, Compartment 16D.

[2] **RECORD** reading from Meter 2-II-30-4E, TIME TOTALIZING METER FAN B.

_________________ hours ________

[3] **RECORD** the date and the meter reading from Step 6.2.2[2] on a new label. ________

[4] **ATTACH** new label to Meter 2-II-30-4E, TIME TOTALIZING METER FAN B (to indicate meter reading and date when new charcoal was installed).

WO that installed new charcoal: _________________ ________

NOTE

Steps 6.2.2[5] and 6.2.2[5] shall be performed for each Lot/Batch of new charcoal installed. (N/A extra lines if not used)

[5] **RECORD** charcoal sample analysis results for each Lot/Batch number of new charcoal installed, **AND**

VERIFY they meet acceptance criteria (**Acc Crit:** < 10% penetration at ≤ 30°C & ≥ 95% relative humidity).

Lot/Batch	Date Lab Analysis Performed	% Penetration	Initials

[6] **ATTACH** a copy of the laboratory test report to this data package. ________

Date ________

6.2.3 Air Flow Test

NOTE

Subsection 6.2.8 may be performed concurrently with this Subsection and/or any subsequent Subsection of Section 6.2 hereafter.

[1] **ENSURE** all test connections are in place and sealed if needed. ________

[2] **ENSURE** filter housing access doors are closed and properly secured by their normal closure mechanisms. ________

[3] **RECORD** as-found component and handswitch positions in Appendix D.
(N/A if this was previously performed in step 6.1.3[3]) ________

[4] **ENSURE** Containment Purge components are aligned in accordance with Appendix F. ________

[5] **START** Train-B Containment Purge Supply and Exhaust Fans using 2-HS-30-4A, CNTMT PURGE SUP & EXH FANS 2B AND FCO-30-4A & 4B, [2-M-9]. ________

[6] **VERIFY** stable fan operation (no surges or oscillations) for a period of at least 15 minutes. ________

[7] **MEASURE** air flow for Train-B Containment Purge Air Cleanup System in the 24'' round duct in the annulus [EL 767 AZ 30°] using Data Sheet 2. ________

[8] **RECORD** air flow reading from Data Sheet 2 **AND**

VERIFY it meets acceptance criteria.

________________________ CFM
Acc Crit: 12,600 - 15,400 CFM

____

Date ________

6.2.3 Air Flow Test (continued)

[9] **INSTALL** a U-Tube manometer between the most upstream and most downstream test ports on the Train-B Purge Air Cleanup Filter Housing (upstream of the Prefilters and downstream of the Charcoal Adsorbers). ________

[10] **RECORD** the differential pressure across Train-B Purge Air Cleanup Filter Housing, **AND**

VERIFY it meets acceptance criteria.

______________________ inH_2O

Acc Crit: less than 4.6 inH_2O ________

[11] **REMOVE** the U-Tube manometer, **AND**

REINSTALL the test ports. ________

1st

____

CV

NOTE

The following step contains the recommended maximum ΔP for the filter unit's individual filter banks. For exceeded recommended maximum ΔP, record in the CTL, and initiate corrective actions as necessary.

[12] **RECORD** the ΔP for each filter bank using its associated ΔP gauge:

Filter Bank	Gauge	Measured ΔP	Recommended Maximum ΔP
Prefilter	2-IPDI-30-1015/C	____________ inH_2O	0.5 inH_2O
HEPA	2-IPDI-30-1016/B	____________ inH_2O	3.5 inH_2O
Charcoal	2-IPDI-30-1015/D	____________ inH_2O	≅ 1.0 inH_2O

____

[13] **IF** Train-B Containment Purge Supply and Exhaust Fans are to be secured (N/A step if testing is to continue), **THEN**

PLACE 2-HS-30-4A, CNTMT PURGE SUP & EXH FANS 2B AND FCO-30-4A & 4B in STOP PULL TO LOCK. ________

Date ________

6.2.4 Air Flow Distribution Test

NOTE

The Air Flow Distribution Test verifies that the air flow in the filter housing is evenly distributed across the face of the HEPA Filter bank. This ensures that one segment of the filter bank is not being excessively loaded relative to the rest of the bank.

[1] **VERIFY** the Air Flow Test of Subsection 6.2.3 has been successfully completed. ________

[2] **ENSURE** Fans 2-FAN-30-4 and 2-FAN-30-4E, CONTAINMENT PURGE AIR SUPPLY FAN 2B, and CONTAINMENT PURGE AIR EXHAUST FAN 2B, are ON. ________

NOTES

1) Only one test port shall be uncapped at a time.
2) A hotwire anemometer shall be used to take these air flow measurements due to low airflow velocities in the filter housing. When inserting the anemometer probe, be certain to cover the test port open area with hand, glove, or other suitable means.
3) Airflow measurements shall be taken on the downstream side of the HEPA filters.

[3] **MEASURE** and **RECORD** the velocity at each point identified on Data Sheet 3, which are at the center of each HEPA filter and at equal distances downstream from the filter. ________

[4] **CALCULATE** the average velocity and upper and lower limit acceptance criteria in accordance with Data Sheet 4. ________

[5] **RECORD** the following data from Data Sheet 4, **AND**

VERIFY the minimum and maximum measured air flow velocities are within the range of acceptance criteria.

Min. measured velocity: ________________ FPM

Max. measured velocity: ________________ FPM

Acc Crit: _________ - _________ FPM
(lower limit) (upper limit)

____

[6] **IF** Train-B Containment Purge Supply and Exhaust Fans are to be secured (N/A step if testing is to continue), **THEN**

PLACE 2-HS-30-4A, CNTMT PURGE SUP & EXH FANS 2B AND FCO-30-4A & 4B in STOP PULL TO LOCK. ________

Date ________

6.2.5 Air/Aerosol Mixing Uniformity Test

NOTE

The Air/Aerosol Mixing Uniformity Test verifies that the injections ports and manifolds are located and configured in a manner which allows proper and thorough mixing of the aerosol or tracer gas to adequately challenge the HEPA and Charcoal Adsorber banks.
For multibank testing, a separate test is required for each injection port/manifold.

[1] **VERIFY** the following Subsections have been completed:

A. Subsection 6.2.3, Air Flow Test ________

B. Subsection 6.2.4, Air Flow Distribution Test ________

[2] **ENSURE** Fans 2-FAN-30-4 and 2-FAN-30-4E, CONTAINMENT PURGE AIR SUPPLY FAN 2B, and CONTAINMENT PURGE AIR EXHAUST FAN 2B, are ON. ________

[3] **ENSURE** DOP generator is ON and the DOP detector is setup and calibrated. ________

NOTE

Only one test port shall be uncapped at a time.

[4] **MEASURE** and **RECORD** the relative concentration at each point identified on Data Sheet 6, which are at the center of each filter and approximately one (1) foot upstream of the filter. ________

NOTE

It is recommended to re-take the first concentration measurement after all the other measurements are taken to verify that the DOP generator output remained constant.

[5] **TURN OFF** the pressure to the DOP generator, **AND**

SECURE the DOP detector. ________

Date ________

6.2.5 Air/Aerosol Mixing Uniformity Test (continued)

[6] **CALCULATE** the average concentration and upper and lower limit acceptance criteria in accordance with Data Sheet 6. ________

NOTE
If acceptance criteria is not met, either the injection manifold must be modified or an additional means of mixing the air and aerosol provided.

[7] **RECORD** the following data from Data Sheet 6, **AND**

VERIFY the minimum and maximum measured concentrations are within the range of acceptance criteria.

Min. measured concentration: ______________________

Max. measured concentration: ______________________

Acc Crit: _________ - _________ FPM
(lower limit) (upper limit)

____

[8] **IF** Train-B Containment Purge Supply and Exhaust Fans are to be secured (N/A step if testing is to continue), **THEN**

PLACE 2-HS-30-4A, CNTMT PURGE SUP & EXH FANS 2B AND FCO-30-4A & 4B in STOP PULL TO LOCK. ________

Date ________

6.2.6 HEPA Filter Inplace Test

NOTE

This test verifies the physical integrity of the HEPA filter bank in regard to leakage of unfiltered air past the bank. A polydispersed stream of dioctyl phthalate (DOP) is injected upstream of the filter bank and the ratio of the concentrations (downstream and upstream of the HEPA bank) is determined. This ratio is directly indicative of the leak-tightness of the HEPA filters, their gaskets, and their mounting frames.

[1] **VERIFY** the following Subsections have been completed:

A. Subsection 6.2.3, Air Flow Test ________

B. Subsection 6.2.4, Air Flow Distribution Test ________

C. Subsection 6.2.5 Air/Aerosol Mixing Uniformity Test ________

[2] **VERIFY** that system configuration has not changed since those measurements. ________

[3] **ENSURE** Fans 2-FAN-30-4 and 2-FAN-30-4E, CONTAINMENT PURGE AIR SUPPLY FAN 2B, and CONTAINMENT PURGE AIR EXHAUST FAN 2B, are ON, **AND**

VERIFY stable fan operation (no surges or oscillations) for a period of at least 15 minutes. ________

[4] **PERFORM** a DOP leak test for the HEPA Filter bank using Data Sheet 8. ________

[5] **RECORD** the percent penetration calculated from Data Sheet 8, **AND**

VERIFY it meets acceptance criteria.

Penetration: _____________ %

Acc Crit: Less than 1.00% at rated air flow

____

[6] **IF** Train-B Containment Purge Supply and Exhaust Fans are to be secured (N/A step if testing is to continue), **THEN**

PLACE 2-HS-30-4A, CNTMT PURGE SUP & EXH FANS 2B AND FCO-30-4A & 4B in STOP PULL TO LOCK. ________

Date ________

6.2.7 Charcoal Adsorber Inplace Test

NOTE

This test verifies the physical integrity of the Charcoal Adsorber bank in regard to leakage of unfiltered air past the bank. A stream of a Refrigerant R-11 is injected upstream of the adsorber bank and the ratio of the concentrations (downstream and upstream of the adsorber bank) is determined. This ratio is directly indicative of the leak-tightness of the adsorbers, their gaskets, and their mounting frames.

[1] **VERIFY** the following Subsections have been completed:

A. Subsection 6.2.3, Air Flow Test ________

B. Subsection 6.2.4, Air Flow Distribution Test ________

C. Subsection 6.2.5 Air/Aerosol Mixing Uniformity Test ________

[2] **VERIFY** that system configuration has not changed since those measurements. ________

[3] **ENSURE** Fans 2-FAN-30-4 and 2-FAN-30-4E, CONTAINMENT PURGE AIR SUPPLY FAN 2B, and CONTAINMENT PURGE AIR EXHAUST FAN 2B, are ON, **AND**

VERIFY stable fan operation (no surges or oscillations) for a period of at least 15 minutes. ________

[4] **PERFORM** a Halide leak test for the Charcoal Adsorber bank using Data Sheet 10. ________

[5] **RECORD** the percent penetration calculated from Data Sheet 10, **AND**

VERIFY it meets acceptance criteria.

Penetration: ______________ %

Acc Crit: Less than 1.00% at rated air flow

____

[6] **IF** Train-B Containment Purge Supply and Exhaust Fans are to be secured (N/A step if testing is to continue), **THEN**

PLACE 2-HS-30-4A, CNTMT PURGE SUP & EXH FANS 2B AND FCO-30-4A & 4B in STOP PULL TO LOCK. ________

Date ________

6.2.8 Filter Housing Access Door Leak Test

NOTES

1) Do NOT open access doors while Airflow, HEPA, or Charcoal Adsorber testing is in progress. Coordinate with respective test performer(s).
2) This Subsection may be performed concurrently with Subsection 6.2.3 and/or any subsequent Subsection of Section 6.2 thereafter.

[1] **VERIFY** the filter housing access doors are properly secured. ________

[2] **ENSURE** Fans 2-FAN-30-4 and 2-FAN-30-4E, CONTAINMENT PURGE AIR SUPPLY FAN 2B, and CONTAINMENT PURGE AIR EXHAUST FAN 2B, are ON. ________

[3] **PERFORM** a “smoke test” of the filter housing access door seals to identify any air leaks. ________

[4] **PERFORM** one of the following steps (N/A the unused step):

A. **VERIFY** no air leakage around access doors. **(Acc Crit)** ________

B. **IF** leaks are identified, **THEN**

PERFORM Attachment 1, **AND**

VERIFY no air leakage around access doors. **(Acc Crit)** ________

[5] **PLACE** 2-HS-30-4A, CNTMT PURGE SUP & EXH FANS 2B AND FCO-30-4A & 4B in STOP PULL TO LOCK. ________

Date ________

7.0 POST PERFORMANCE ACTIVITY

[1] **ENSURE** components and their handswitches are returned to their as-found position recorded in Appendix D. ________

[2] **ENSURE/VERIFY** the following:

A. All M&TE and test connections are removed.
________ 1st
________ CV

B. Test caps/plugs removed during performance of this test are installed.
________ 1st
________ CV

C. All Containment Purge Air Cleanup System housing openings are sealed.
________ 1st
________ CV

D. All Containment Purge Air Cleanup System housing doors are closed and secured.
________ 1st
________ CV

[3] **VERIFY** that Post-test calibration of the M&TE used to record quantitative acceptance criteria has been satisfactorily performed, **AND**

RECORD the results on M&TE Log. ________

[4] **ATTACH** a copy of the Contractor's M&TE Post-Use calibration reports to this Data Package. ________

[5] **ENSURE** any information recorded in other documents used to perform this instruction are attached to this data package. ________

[6] **NOTIFY** the Unit 2 US/SRO of the test completion and system alignment. ________

Date ________

8.0 RECORDS

A. QA Records

Complete Test Package

B. Non-QA Records

None

Appendix A
(Page 1 of 1)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

Date ________

NOTES

1) Additional copies of this table may be made as necessary.
2) Initial and date indicates review has been completed for impact.

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	IMPACT Yes/No	INITIAL AND DATE. (N/A for no change)
2-TSD-30J-2			
WBN2-30RB-4002			
FSAR Section 9.4.6 Table 14.2-1 Sh 38 & 39			
Unit 2 Tech Specs Section 3.9.8 Section 5.7.2.14			
G-37			
GTM-05			
2-PTI-030J-01			
DCN 31688-A			
TI-5			
TI-5.01			
1-SI-30-11-A			
1-SI-30-11-B			
VTD-C733-0020			
Regulatory Guide 1.52			
ASME N510-1989			

Appendix B
(Page 1 of 1)

TEMPORARY CONDITION LOG

Date _________

NOTES
1) Additional copies of this table may be made as necessary.
2) These steps will be N/A'd if no temporary condition existed.

ITEM NUMBER	TEMPORARY CONDITION LOG	PERFORMED		RETURN TO NORMAL	
		Step Number	Perf By/Date CV By/Date	Step Number	Perf By/Date CV By/Date

Appendix C
(Page 1 of 1)

PERMANENT PLANT INSTRUMENTATION LOG

Date ________

INSTRUMENT OR INSTRUMENT LOOP	CAL DUE DATE	FILLED AND VENTED(1)	PLACED IN SERVICE(1)	USED FOR QUANTITATIVE ACC CRIT		POST-TEST CAL DATE(2)	POST-TEST CALIBRATION ACCEPTABLE
		INIT/DATE	INIT/DATE	YES	NO		INIT/DATE
2-IPDI-30-1015/A		N/A			NO	N/A	N/A
2-IPDI-30-1015/B		N/A			NO	N/A	N/A
2-IPDI-30-1015/C		N/A			NO	N/A	N/A
2-IPDI-30-1015/D		N/A			NO	N/A	N/A
2-IPDI-30-1016/A		N/A			NO	N/A	N/A
2-IPDI-30-1016/B		N/A			NO	N/A	N/A

(1) These items may be initialed and dated by personnel performing the task. Instrumentation not required to be filled and vented may be identified as Not Applicable (NA).

(2) May be identified as Not Applicable (N/A) if instrument was not used to verify/record quantitative acceptance criteria data

Appendix D
(Page 1 of 1)

As-Found & As-Left Containment Purge Equipment Positions

Date ________

NOTE
All handswitches listed in this Appendix are on 2-M-9

COMPONENT	HANDSWITCH	AS-FOUND		COMPONENT & HANDSWITCH RETURNED TO AS-FOUND POSITION			
		COMPONENT POSITION	HANDSWITCH POSITION	COMPONENT		HANDSWITCH	
				INITIALS			
				1st	CV	1st	CV
2-FCV-30-2	2-HS-30-2						
2-FCV-30-5	2-HS-30-5						
2-FCV-30-61	2-HS-30-61						
2-FCV-30-62	2-HS-30-62						
2-FCV-30-213	2-HS-30-213						
2-FCV-30-216	2-HS-30-216						
2-FCV-30-7 & -51	2-HS-30-7						
2-FCV-30-8 & -50	2-HS-30-8						
2-FCV-30-9 & -53	2-HS-30-9						
2-FCV-30-10 & -52	2-HS-30-10						
2-FCV-30-19 & -58	2-HS-30-19						
2-FCV-30-20 & -59	2-HS-30-20						
2-FCV-30-14 & -56	2-HS-30-14						
2-FCV-30-15 & -57	2-HS-30-15						
2-FCV-30-16	2-HS-30-16						
2-FCV-30-17	2-HS-30-17						
2-FCV-30-12	2-HS-30-12						
2-FCV-30-54	2-HS-30-54						
2-FCV-30-37	2-HS-30-37						
2-FCV-30-40	2-HS-30-40						
2-FAN-30-1 & -1E	2-HS-30-1A						
2-FAN-30-4 & -4E	2-HS-30-4A						
2-FAN-30-11 & -11E	2-HS-30-11A						

Appendix E
(Page 1 of 1)

Train A Containment Purge Valve & Handswitch Alignment - Section 6.1

Date ________

NOTE

All handswitches listed in this Appendix are on 2-M-9

SECTION 6.1 - Train A Containment Purge Air Cleanup Unit Test			
COMPONENT	**HANDSWITCH**	**REQUIRED COMPONENT POSITION**	**INITIALS**
2-FCV-30-2	2-HS-30-2	OPEN	
2-FCV-30-5	2-HS-30-5	CLOSED	
2-FCV-30-61	2-HS-30-61	OPEN	
2-FCV-30-62	2-HS-30-62	CLOSED	
2-FCV-30-213	2-HS-30-213	OPEN	
2-FCV-30-216	2-HS-30-216	CLOSED	
2-FCV-30-7 & -51	2-HS-30-7	OPEN / CLOSED[1]	
2-FCV-30-8 & -50	2-HS-30-8	OPEN / CLOSED[1]	
2-FCV-30-9 & -53	2-HS-30-9	CLOSED / OPEN[1]	
2-FCV-30-10 & -52	2-HS-30-10	CLOSED / OPEN[1]	
2-FCV-30-19 & -58	2-HS-30-19	OPEN	
2-FCV-30-20 & -59	2-HS-30-20	OPEN	
2-FCV-30-14 & -56	2-HS-30-14	OPEN	
2-FCV-30-15 & -57	2-HS-30-15	OPEN	
2-FCV-30-16	2-HS-30-16	OPEN	
2-FCV-30-17	2-HS-30-17	OPEN	
2-FCV-30-12	2-HS-30-12	CLOSED	
2-FCV-30-54	2-HS-30-54	CLOSED	
2-FCV-30-37	2-HS-30-37	CLOSED	
2-FCV-30-40	2-HS-30-40	CLOSED	
2-FAN-30-1 & -1E	2-HS-30-1A	OFF	
2-FAN-30-4 & -4E	2-HS-30-4A	OFF	
2-FAN-30-11 & -11E	2-HS-30-11A	OFF	

[1] **IF** 2-FCV-30-7 & -51 and 2-FCV-30-8 & -50 are CLOSED, **THEN** the required position of 2-FCV-30-9 & -53 and 2-FCV-30-10 & -52 is OPEN.

IF 2-FCV-30-7 & -51 and 2-FCV-30-8 & -50 are OPEN, **THEN** the required position of 2-FCV-30-9 & -53 and 2-FCV-30-10 & -52 is CLOSED.

Appendix F
(Page 1 of 1)
Train B Containment Purge Valve & Handswitch Alignment - Section 6.2

Date ________

NOTE

All handswitches listed in this Appendix are on 2-M-9

SECTION 6.2 - Train B Containment Purge Air Cleanup Unit Test			
COMPONENT	**HANDSWITCH**	**REQUIRED COMPONENT POSITION**	**INITIALS**
2-FCV-30-2	2-HS-30-2	CLOSED	
2-FCV-30-5	2-HS-30-5	OPEN	
2-FCV-30-61	2-HS-30-61	CLOSED	
2-FCV-30-62	2-HS-30-62	OPEN	
2-FCV-30-213	2-HS-30-213	CLOSED	
2-FCV-30-216	2-HS-30-216	OPEN	
2-FCV-30-7 & -51	2-HS-30-7	OPEN / CLOSED[1]	
2-FCV-30-8 & -50	2-HS-30-8	OPEN / CLOSED[1]	
2-FCV-30-9 & -53	2-HS-30-9	CLOSED / OPEN[1]	
2-FCV-30-10 & -52	2-HS-30-10	CLOSED / OPEN[1]	
2-FCV-30-19 & -58	2-HS-30-19	OPEN	
2-FCV-30-20 & -59	2-HS-30-20	OPEN	
2-FCV-30-14 & -56	2-HS-30-14	OPEN	
2-FCV-30-15 & -57	2-HS-30-15	OPEN	
2-FCV-30-16	2-HS-30-16	OPEN	
2-FCV-30-17	2-HS-30-17	OPEN	
2-FCV-30-12	2-HS-30-12	CLOSED	
2-FCV-30-54	2-HS-30-54	CLOSED	
2-FCV-30-37	2-HS-30-37	CLOSED	
2-FCV-30-40	2-HS-30-40	CLOSED	
2-FAN-30-1 & -1E	2-HS-30-1A	OFF	
2-FAN-30-4 & -4E	2-HS-30-4A	OFF	
2-FAN-30-11 & -11E	2-HS-30-11A	OFF	

[1] **IF** 2-FCV-30-7 & -51 and 2-FCV-30-8 & -50 are CLOSED, **THEN** the required position of 2-FCV-30-9 & -53 and 2-FCV-30-10 & -52 is OPEN.

IF 2-FCV-30-7 & -51 and 2-FCV-30-8 & -50 are OPEN, **THEN** the required position of 2-FCV-30-9 & -53 and 2-FCV-30-10 & -52 is CLOSED.

Data Sheet 1
(Page 1 of 1)

Air Flow Test - Train A (Subsection 6.1.3)

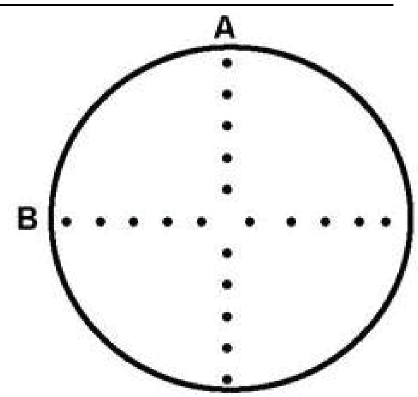
Date ________

Manometer M&TE ID: ____________________

Thermometer M&TE ID: ____________________ Barometer M&TE ID: ____________________

Test Performed By: ______________________________ Date: ____________________

Inside Duct Diameter = 23.75 in.
Duct Area (A) = 3.08 ft^2



1 - 5/8 in.
2 - 2 in.
3 - 3 1/2 in.
4 - 5 3/8 in.
5 - 8 1/8 in.

6 - 45 5/8 in.
7 - 18 3/8 in.
8 - 20 1/4 in.
9 - 21 3/4 in.
10 - 23 1/8 in.

Dimensions are from inside wall.

Traverse Point	Velocity Pressure (VP)	SQRT Velocity Pressure $(\sqrt{VP})$
A1		
A2		
A3		
A4		
A5		
A6		
A7		
A8		
A9		
A10		

Traverse Point	Velocity Pressure (VP)	SQRT Velocity Pressure $(\sqrt{VP})$
B1		
B2		
B3		
B4		
B5		
B6		
B7		
B8		
B9		
B10		

Barometric Pressure (B): _______in. Hg. Airstream Temperature (T): ________ °F

Test port caps/plugs reinstalled: __________ 2nd Party Verified:__________

$$\sqrt{VP_{AVG}} = \left(\sum \sqrt{VP}\right) \div 20 = \frac{\_\_\_\_\_\_\_\_}{20} = \_\_\_\_\_\_\_\_$$

$$\text{Airflow} = 951 \times A \times \sqrt{VP_{AVG}} \times \sqrt{\frac{460 + T}{B}} = 951 \times 3.08 \times \_\_\_\_\_\_\_\_ \times \sqrt{\frac{460 + \_\_\_\_\_\_}{\_\_\_\_\_\_}} = \_\_\_\_\_\_\_\_ \text{ACFM}$$

Calculated By:________________________ Checked By:________________________

Data Sheet 2
(Page 1 of 1)

Air Flow Test - Train B (Subsection 6.2.3)

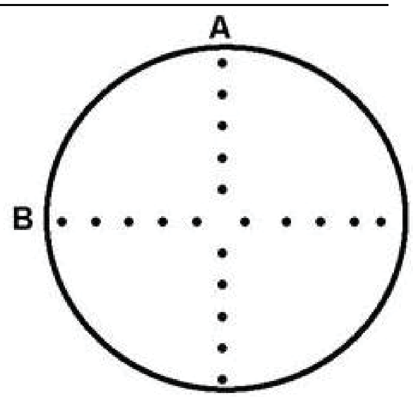
Date ________

Manometer M&TE ID: ____________________

Thermometer M&TE ID: ____________________ Barometer M&TE ID: ____________________

Test Performed By: ______________________________ Date: ____________________

Inside Duct Diameter = 23.75 in.
Duct Area (A) = 3.08 ft^2



1 - 5/8 in.
2 - 2 in.
3 - 3 1/2 in.
4 - 5 3/8 in.
5 - 8 1/8 in.

6 - 45 5/8 in.
7 - 18 3/8 in.
8 - 20 1/4 in.
9 - 21 3/4 in.
10 - 23 1/8 in.

Dimensions are from inside wall.

Traverse Point	Velocity Pressure (VP)	SQRT Velocity Pressure $(\sqrt{VP})$
A1		
A2		
A3		
A4		
A5		
A6		
A7		
A8		
A9		
A10		

Traverse Point	Velocity Pressure (VP)	SQRT Velocity Pressure $(\sqrt{VP})$
B1		
B2		
B3		
B4		
B5		
B6		
B7		
B8		
B9		
B10		

Barometric Pressure (B): _______in. Hg. Airstream Temperature (T): ________ °F

Test port caps/plugs reinstalled: __________ 2nd Party Verified:__________

$$\sqrt{VP_{AVG}} = \left(\sum \sqrt{VP}\right) \div 20 = \frac{\qquad}{20} = \underline{\qquad}$$

$$\text{Airflow} = 951 \times A \times \sqrt{VP_{AVG}} \times \sqrt{\frac{460+T}{B}} = 951 \times 3.08 \times \underline{\qquad} \times \sqrt{\frac{460+\underline{\qquad}}{\underline{\qquad}}} = \underline{\qquad} \text{ ACFM}$$

Calculated By:________________________ Checked By:________________________

Data Sheet 3
(Page 1 of 1)

Air Flow Distribution Test - Train A (Subsection 6.1.4)

Date ________

Anemometer M&TE ID: ________________

Test Performed By: ________________________ Date: ________________

DESIGNATE one test point for the center of each filter.

1	**2**	**3**	**4**
5	**6**	**7**	**8**
9	**10**	**11**	**12**
13	**Blankoff**	**Blankoff**	**14**

Test Point	Relative Velocity
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
TOTAL:	

$$\text{Average Velocity } (V_{AVG}) = \frac{\text{TOTAL}}{\text{No. of Test Points}} = \frac{\_\_\_\_\_\_}{14} = \_\_\_\_\_\_$$

$\text{Lower Limit} = V_{AVG} \times 0.8 =$ __________ $\text{Upper Limit} = V_{AVG} \times 1.2 =$ __________

Lowest Measured Velocity: __________ Highest Measured Velocity: __________

Acc Crit: All measured Relative Velocities between Lower Limit and Upper Limit

Test port caps/plugs reinstalled: __________ 2nd Party Verified: __________

Calculated By: ______________________ Checked By: ______________________

Data Sheet 4
(Page 1 of 1)

Air Flow Distribution Test - Train B (Subsection 6.2.4)

Date ________

Anemometer M&TE ID: ___________________

Test Performed By: _____________________________ Date: ___________________

DESIGNATE one test point for the center of each filter.

1	**2**	**3**	**4**
5	**6**	**7**	**8**
9	**10**	**11**	**12**
13	**Blankoff**	**Blankoff**	**14**

Test Point	Relative Velocity
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
TOTAL:	

$$\text{Average Velocity } (V_{AVG}) = \frac{\text{TOTAL}}{\text{No. of Test Points}} = \frac{\qquad}{14} = \underline{\qquad\qquad}$$

$\text{Lower Limit} = V_{AVG} \times 0.8 =$ __________ $\text{Upper Limit} = V_{AVG} \times 1.2 =$ __________

Lowest Measured Velocity: ___________ Highest Measured Velocity: ___________

Acc Crit: All measured Relative Velocities between Lower Limit and Upper Limit

Test port caps/plugs reinstalled: ___________ 2nd Party Verified: ___________

Calculated By: ________________________ Checked By: ________________________

Data Sheet 5
(Page 1 of 1)

Air/Aerosol Mixing Uniformity Test - Train A (Subsection 6.1.5)

Date ________

Injection Point: ______________________________

DOP Detector ID: __________________

Test Performed By: _____________________________ Date: ___________________

DESIGNATE one test point for each filter approximately 1 foot upstream of the center of each filter.

1	**2**	**3**	**4**
5	**6**	**7**	**8**
9	**10**	**11**	**12**
13	**Blankoff**	**Blankoff**	**14**

Test Point	Relative Concentration
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
TOTAL:	

$$\text{Average Concentration } (C_{AVG}) = \frac{\text{TOTAL}}{\text{No. of Test Points}} = \frac{\_\_\_\_\_\_\_\_}{14} = \_\_\_\_\_\_\_\_$$

$\text{Lower Limit} = C_{AVG} \times 0.8 =$ __________ $\text{Upper Limit} = C_{AVG} \times 1.2 =$ __________

Lowest Measured Concentration: __________ Highest Measured Concentration: _________

Acc Crit: All measured Relative Concentrations between Lower Limit and Upper Limit

Test port caps/plugs reinstalled: ___________ 2nd Party Verified: ___________

Calculated By: ________________________ Checked By: ________________________

Data Sheet 6
(Page 1 of 1)

Air/Aerosol Mixing Uniformity Test - Train B (Subsection 6.2.5)

Date ________

Injection Point: ______________________________

DOP Detector ID: __________________

Test Performed By: ______________________________ Date: ___________________

DESIGNATE one test point for each filter approximately 1 foot upstream of the center of each filter.

1	**2**	**3**	**4**
5	**6**	**7**	**8**
9	**10**	**11**	**12**
13	**Blankoff**	**Blankoff**	**14**

Test Point	Relative Concentration
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
TOTAL:	

$$\text{Average Concentration } (C_{AVG}) = \frac{\text{TOTAL}}{\text{No. of Test Points}} = \frac{\underline{\qquad\qquad}}{14} = \underline{\qquad\qquad}$$

$\text{Lower Limit} = C_{AVG} \times 0.8 =$ __________ $\text{Upper Limit} = C_{AVG} \times 1.2 =$ __________

Lowest Measured Concentration: __________ Highest Measured Concentration: _________

Acc Crit: All measured Relative Concentrations between Lower Limit and Upper Limit

Test port caps/plugs reinstalled: ___________ 2nd Party Verified: ___________

Calculated By: ________________________ Checked By: ________________________

Data Sheet 7
(Page 1 of 1)

HEPA Filter Inplace Test - Train A (Subsection 6.1.6)

Date ________

DOP Detector ID: ____________________ DOP Generator ID: _______________________

Test Performed By: ________________________________ Date: ___________________

REPEAT data collection **UNTIL** readings are within ±5% of previous readings with a minimum of three (3) upstream readings and two (2) downstream readings recorded.

Upstream Concentration (C_U)		**Downstream Concentration (C_D)**	
		Background Concentration: ____________	
Range: _________________		Range: _________________	
Meter Reading (% Full Scale)	% Difference Between Readings	Meter Reading (% Full Scale)	% Difference Between Readings
1. __________		1. __________	
2. __________	__________	2. __________	__________
3. __________	__________	3. __________	__________
4. __________	__________	4. __________	__________
5. __________	__________	5. __________	__________

VERIFY the final set of readings is within ±5% of previous readings. ________

CALCULATE percent penetration using the final set of readings:

Upstream Concentration (C_U)

$$C_U = \text{Range} \times \text{Meter Reading}$$

$$C_U = \_\_\_\_\_\_\_\_\_\_ \times \_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_$$

Downstream Concentration (C_D)

$$C_D = \text{Range} \times \text{Meter Reading}$$

$$C_D = \_\_\_\_\_\_\_\_\_\_ \times \_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_$$

% Penetration $= 100 \times \dfrac{C_U}{C_D} = \_\_\_\_\_\_\_\_\_\_ \%$

Calculated By: ________________________ Checked By: ________________________

Data Sheet 8
(Page 1 of 1)

HEPA Filter Inplace Test - Train B (Subsection 6.2.6)

Date ________

DOP Detector ID: ____________________ DOP Generator ID: ______________________

Test Performed By: ______________________________ Date: __________________

REPEAT data collection **UNTIL** readings are within ±5% of previous readings with a minimum of three (3) upstream readings and two (2) downstream readings recorded.

Upstream Concentration (C_U)

Range: _________________

Downstream Concentration (C_D)

Background Concentration: ____________

Range: _________________

Upstream Meter Reading (% Full Scale)	Upstream % Difference Between Readings	Downstream Meter Reading (% Full Scale)	Downstream % Difference Between Readings
1. __________		1. __________	
2. __________	__________	2. __________	__________
3. __________	__________	3. __________	__________
4. __________	__________	4. __________	__________
5. __________	__________	5. __________	__________

VERIFY the final set of readings is within ±5% of previous readings. ________

CALCULATE percent penetration using the final set of readings:

Upstream Concentration (C_U)

$C_U = \text{Range} \times \text{Meter Reading}$

$C_U =$ __________ $\times$ ________ $=$ ________

Downstream Concentration (C_D)

$C_D = \text{Range} \times \text{Meter Reading}$

$C_D =$ __________ $\times$ ________ $=$ ________

% Penetration $= 100 \times \frac{C_U}{C_D} =$ __________%

Calculated By: ________________________ Checked By: ________________________

Data Sheet 9
(Page 1 of 1)

Charcoal Adsorber Inplace Test - Train A (Subsection 6.1.7)

Date ________

Upstream Detector ID: ____________________

Downstream Detector ID: ____________________ R-11 Generator ID: __________________

Test Performed By: ________________________________ Date: __________________

MONITOR and **RECORD** upstream and downstream challenge gas concentrations at 10 second intervals for 5 minutes. Injection may stop after 4 consecutive upstream concentration readings within ±20% of their average have been recorded.

Background Downstream Concentration: _____________ ppb

TIME	CONCENTRATION Upstream	CONCENTRATION Downstream	TIME	CONCENTRATION Upstream	CONCENTRATION Downstream
0:10	_________ ppm	_________ ppb	2:40	_________ ppm	_________ ppb
0:20	_________ ppm	_________ ppb	2:50	_________ ppm	_________ ppb
0:30	_________ ppm	_________ ppb	3:00	_________ ppm	_________ ppb
0:40	_________ ppm	_________ ppb	3:10	_________ ppm	_________ ppb
0:50	_________ ppm	_________ ppb	3:20	_________ ppm	_________ ppb
1:00	_________ ppm	_________ ppb	3:30	_________ ppm	_________ ppb
1:10	_________ ppm	_________ ppb	3:40	_________ ppm	_________ ppb
1:20	_________ ppm	_________ ppb	3:50	_________ ppm	_________ ppb
1:30	_________ ppm	_________ ppb	4:00	_________ ppm	_________ ppb
1:40	_________ ppm	_________ ppb	4:10	_________ ppm	_________ ppb
1:50	_________ ppm	_________ ppb	4:20	_________ ppm	_________ ppb
2:00	_________ ppm	_________ ppb	4:30	_________ ppm	_________ ppb
2:10	_________ ppm	_________ ppb	4:40	_________ ppm	_________ ppb
2:20	_________ ppm	_________ ppb	4:50	_________ ppm	_________ ppb
2:30	_________ ppm	_________ ppb	5:00	_________ ppm	_________ ppb

Average Upstream Concentration (C_U) = _________ Average Downstream Concentration (C_D) = _________

±20% of C_U: $0.8 \times C_U =$ ________ $1.2 \times C_U =$ ________

IDENTIFY the 4 readings used to calculate C_U and C_D, **AND**

VERIFY the 4 readings used to calculate C_U do NOT exceed ±20% of C_U. _________

$$\%\ \text{Penetration} = 100 \times \frac{C_U}{1000 \times C_D} = \_\_\_\_\_\_\_\_\_\_ \%$$

Calculated By: ______________________ Checked By: ______________________

Data Sheet 10
(Page 1 of 1)

Charcoal Adsorber Inplace Test - Train B (Subsection 6.2.7)

Date ________

Upstream Detector ID: ____________________

Downstream Detector ID: ____________________ R-11 Generator ID: ____________________

Test Performed By: ________________________________ Date: ____________________

MONITOR and **RECORD** upstream and downstream challenge gas concentrations at 10 second intervals for 5 minutes. Injection may stop after 4 consecutive upstream concentration readings within ±20% of their average have been recorded.

Background Downstream Concentration: ____________ ppb

TIME	CONCENTRATION Upstream	CONCENTRATION Downstream	TIME	CONCENTRATION Upstream	CONCENTRATION Downstream
0:10	________ ppm	________ ppb	2:40	________ ppm	________ ppb
0:20	________ ppm	________ ppb	2:50	________ ppm	________ ppb
0:30	________ ppm	________ ppb	3:00	________ ppm	________ ppb
0:40	________ ppm	________ ppb	3:10	________ ppm	________ ppb
0:50	________ ppm	________ ppb	3:20	________ ppm	________ ppb
1:00	________ ppm	________ ppb	3:30	________ ppm	________ ppb
1:10	________ ppm	________ ppb	3:40	________ ppm	________ ppb
1:20	________ ppm	________ ppb	3:50	________ ppm	________ ppb
1:30	________ ppm	________ ppb	4:00	________ ppm	________ ppb
1:40	________ ppm	________ ppb	4:10	________ ppm	________ ppb
1:50	________ ppm	________ ppb	4:20	________ ppm	________ ppb
2:00	________ ppm	________ ppb	4:30	________ ppm	________ ppb
2:10	________ ppm	________ ppb	4:40	________ ppm	________ ppb
2:20	________ ppm	________ ppb	4:50	________ ppm	________ ppb
2:30	________ ppm	________ ppb	5:00	________ ppm	________ ppb

Average Upstream Concentration (C_U) = ________ Average Downstream Concentration (C_D) = ________

±20% of C_U: $0.8 \times C_U =$ ________ $1.2 \times C_U =$ ________

IDENTIFY the 4 readings used to calculate C_U and C_D, **AND**

VERIFY the 4 readings used to calculate C_U do NOT exceed ±20% of C_U. ________

$$\% \text{ Penetration } = 100 \times \frac{C_U}{1000 \times C_D} = \_\_\_\_\_\_\_\_ \%$$

Calculated By: ______________________ Checked By: ______________________

Attachment 1
(Page 1 of 3)

Filter Housing Access Door Latch ("Dogs") Adjustment

Date ________

NOTE

Additional copies of this Attachment may be made if necessary.

[1] **RECORD** which Train of Containment Purge and which Subsection of this PTI this Attachment is being performed for.

☐ Train A - Subsection 6.1.8
☐ Train B - Subsection 6.2.8 ________

[2] **IDENTIFY** leaking access door(s) and approximate location of leakage. ________

____
____
____
____
____
____

____

NOTES

1) The following steps are to be performed while no inplace filter testing is in progress and preferably after the inplace tests are complete.
2) To correct door leaks, this Attachment uses a repeat of steps until the leaks are corrected

[3] **ENSURE** no inplace filter or adsorber tests are in progress. ________

[4] **STOP** appropriate train of Containment Purge using the appropriate Handswitch on 2-M-9:

☐ Train A: 2-HS-30-1A, CNTMT PURGE SUP & EXH FANS 2A AND FCO-30-1A & 1B

☐ Train B: 2-HS-30-4A, CNTMT PURGE SUP & EXH FANS 2B AND FCO-30-4A & 4B

____

Attachment 1
(Page 2 of 3)

Filter Housing Access Door Latch ("Dogs") Adjustment

Date ________

NOTE

The following step ensures ABSCE boundary integrity is maintained while the Containment Purge Filter Housing access door(s) are open.

[5] **CLOSE** appropriate Containment Purge Discharge Valve using the appropriate Handswitch on 2-M-9:

☐ Train A: 2-HS-30-213, PURGE EXH FAN 2A TO SHIELD BLDG VNT

☐ Train B: 2-HS-30-216, PURGE EXH FAN 2B TO SHLD BLDG VENT

____

[6] **INSPECT** and **ADJUST** latch(es) on leaking door(s) as needed to eliminate air leakage. ________

[7] **CLOSE** access door(s). ________

[8] **OPEN** appropriate Containment Purge Discharge Valve using the appropriate Handswitch on 2-M-9:

☐ Train A: 2-HS-30-213, PURGE EXH FAN 2A TO SHIELD BLDG VNT

☐ Train B: 2-HS-30-216, PURGE EXH FAN 2B TO SHLD BLDG VENT

____

[9] **START** appropriate train of Containment Purge using the appropriate Handswitch on 2-M-9:

☐ Train A: 2-HS-30-1A, CNTMT PURGE SUP & EXH FANS 2A AND FCO-30-1A & 1B

☐ Train B: 2-HS-30-4A, CNTMT PURGE SUP & EXH FANS 2B AND FCO-30-4A & 4B

____

Attachment 1
(Page 3 of 3)

Filter Housing Access Door Latch ("Dogs") Adjustment

Date ________

[10] **CHECK** door(s) for leakage. (i.e. "smoke test") ________

NOTE

If the leaks require additional maintenance beyond latch adjustment to correct, initiate a WO for corrective maintenance and include pertinent information in the CTL.

[11] **REPEAT** steps [4] through [10] as needed until no leaks are identified. ________

[12] **VERIFY** no air leakage around access doors. ________

WATTS BAR NUCLEAR PLANT
UNIT 2 STARTUP

TITLE: System 063 - Safety Injection System SIS Accumulators

Instruction No: 2-PTI-063-02

Revision No: 0

PREPARED BY: Curt Evans Curt Evans DATE 6-16-11
PRINT NAME/ SIGNATURE

REVIEWED BY: Bob Griffin Robert Griffin DATE 6-16-11
PRINT NAME/ SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING NO: 2-12-003
JTG CHAIRMAN: ____________ DATE 2/2/12
APPROVED BY: ____________ DATE 2/2/12
PREOPERATIONAL STARTUP MANAGER

TEST RESULTS APPROVAL

JTG MEETING NO: ____________
JTG CHAIRMAN: ____________ DATE ____________
APPROVED BY: ____________ DATE ____________
PREOPERATIONAL STARTUP MANAGER

Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0000	2/2/12	ALL	Initial Issue based on Unit 1 PTI-063-02.

Table of Contents

Table of Contents (continued)

Table of Contents (continued)

Date ________

1.0 INTRODUCTION

1.1 TEST OBJECTIVES

This test is being performed to ensure the Safety Injection System Accumulators will perform their design function.

1.2 SCOPE

A. Verify the Safety Injection Accumulator isolation valves will open properly under maximum differential pressure conditions, with the RCS depressurized and the accumulators at maximum expected pressure.

B. Demonstrate accumulator injection by a blow down into an open reactor vessel and obtain data to confirm that the pipe resistance is within the design range.

C. Verify automatic controls function properly in response to simulated input signals in accordance with design drawings.

D. Verify level alarm setpoints during filling of the accumulators.

Date ________

2.0 REFERENCES

2.1 Performance References

A. SMP-9.0 R1, Watts Bar Nuclear Plant Unit 2 Conduct of Test

B. SMP-15.0 R3, Watts Bar Nuclear Plant Unit 2 Status and Control of Isolation Devices

2.2 Developmental References

A. Test Scoping Document

1. 2-TSD-63-2, SIS-Accumulators and Related System Performance Test

B. Final Safety Analysis Report (FSAR)

1. FSAR–Amendment 107

a. FSAR Section 6.3, Emergency Core Cooling System

b. FSAR Table 14.2-1 Sheets 22, 23, and 24 of 90 Safety Injection System Test Summary

C. Drawings

1. Flow Diagrams

a. 2-47W811-1 R4, "Flow Diagram Safety Injection System"

(1) 52636-023 R0

(2) 53611-005 R0

(3) 53612-005 R0

(4) 54008-006 R0

b. 2-47W830-6 R5, "Flow Diagram Waste Disposal System"

(1) 53580-002 R2

Date ________

2.2 Developmental References (continued)

2. Electrical

a. 2-47W610-63-2 R1, "Electrical Control Diagram Safety Injection System"

(1) 52671-027 R1

(2) 52671-028 R1

(3) 52378-468 R1

(4) 52378-469 R1

(5) 52378-470 R1

(6) 52378-471 R1

b. 2-45W600-63-1 R0, 'Wiring Diagram Safety Injection System Schematic Diagram"

(1) 52378-138 R0

(2) 52671-088 R0

c. 1-45W703-7 R12, Wiring Diagrams 125V Vital Battery Board III Single Line - Sheet 7

d. 1-45W703-8 R13, Wiring Diagrams 125V Vital Battery Board IV Single Line - Sheet 8

e. 2-45W724-3 R0, Wiring Diagrams 6900V Shutdown Board 2A-A Single Line

f. 2-45W751-2 R0, Wiring Diagrams 480V Reac Mov Bds 2A1-A & 2A1-A Single Line SH-2

g. 2-45W751-7 R1, Wiring Diagrams 480V Reac Mov Bds 2B1-B & 2B1-B Single Line SH-1

h. 2-45W751-8 R1, Wiring Diagrams 480V Reac Mov Bds 2B1-B & 2B1-B Single Line SH-2

Date ________

2.2 Developmental References (continued)

i. 2-45W760-63-4 R0, "Wiring Diagrams Safety Injection System Schematic Diagram"

(1) 53287-106 R0

(2) 53287-108 R0

(3) 53292-060 R0

(4) 53292-086 R0

(5) 54499-004 R0

(6) 54499-125 R0

(7) 54870-140 R0

(8) 54870-141 R0

j. 45N2645-1 R13, Wiring Diagrams Unit Control Board - Panel 2-M-6 Connection Diagrams - Sheet 1

k. 45N2645-2 R11, Wiring Diagrams Unit Control Board - Panel 2-M-6 Connection Diagrams - Sheet 2

l. 45N2645-5 R11, Wiring Diagrams Unit Control Board - Panel 2-M-6 Connection Diagrams - Sheet 5

m. 45N2645-9 R12, Wiring Diagrams Unit Control Board - Panel 2-M-6 Connection Diagrams - Sheet 9

n. 45W1766-4 R8, Wiring Diagrams 480V Reactor MOV BD 1A1-A Connection Diagram

o. 45W1766-5 R15, Wiring Diagrams 480V Reactor MOV BD 1A1-A Connection Diagram

p. 45W1766-6 R17, Wiring Diagrams 480V Reactor MOV BD 1A1-A Connection Diagram

3. Mechanical

a. 47W435-5 R18, Mechanical Safety Injection System Piping

b. 47W435-8 R25, Mechanical Safety Injection System Piping

2.2 Developmental References (continued)

D. Documents

a. ARI-1-L-10 R5, Misc Aux Control

b. WCAP-17093-P R0, Westinghouse Document

c. N3C-945 R0, Procedure for Evaluation and Qualification of Piping System Vibrations

Date ________

3.0 PRECAUTIONS AND LIMITATIONS

A. Standard precautions shall be followed for working around energized electrical equipment in accordance with TVA Safety Manual Procedure 1021.

B. Steps may be repeated if all components cannot be tested in a step. However, if the test has been exited, prerequisite steps must be re-verified and a Chronological Test Log (CTL) entry made.

C. Discrepancies between component ID tags and the description in a procedure/instruction do not require a Test Deficiency Notice, TDN, in accordance with SMP-14.0, if the UNIDs match, exclusive of place keeping zeros and train designators (e.g.; 2-HS-31-468 vs. 2-HS-031-0468) and the noun description is sufficient to identify the component. If the component label needs to be changed, a Tag Request Form (TR Card) should be processed in accordance with TI-12.14. Make an entry in the CTL and continue testing.

D. All wires removed/lifted from a terminal shall be identified and taped or covered with an insulator to prevent personnel or equipment hazard and possible spurious initiations. The wires should be grouped together and labeled with the work implementing document number that required them to be lifted if left unattended.

E. All open problems are to be tracked by a corrective action document and entered on the appropriate system punchlist.

F. Problems identified during the test shall be annotated on the Chronological Test Log (CTL) from SMP-9.0 including a description of the problem, the procedure step when/where the problem was identified, corrective action steps taken to resolve the problem, and the number of the corrective action document, if one was required.

G. Observe all Radiation Protection (RP) requirements when working in or near radiological areas.

H. Ensure there are no adverse effects to the operation of Unit 1 structures, systems, or components.

I. The minimum external surface temperature for accumulator pressurization is 73°F.

J. Nitrogen will not support life. Make sure all personnel are clear before venting nitrogen into the atmosphere.

3.0 PRECAUTIONS AND LIMITATIONS (continued)

K. Ensure the water in the RWST meets chemistry requirements for contact with the reactor coolant system.

L. Ensure personnel safety when dumping water into the reactor vessel.

M. Ensure that a direct path from the RWST to the reactor vessel is not provided while lining up systems to perform this test.

N. Limit operation of an SI Pump to 45 minutes at indicated pump flow of less than 40.5 gpm. The pump should be allowed to cool for at least one hour prior to restart.

O. Closely monitor pump operating parameters while the SI Pump is running.

P. When filling an accumulator, closely observe the tygon tube level indication to preclude overflow from the vent line.

Q. When pressurizing an accumulator do not exceed 685 psig.

R. During the performance of this procedure visual observation of piping and components is required in accordance to engineering specification N3C-945. This includes steady state transient operations with visual confirmation that vibration is not excessive.

S. If vibration is determined to be excessive, the Test Engineer shall initiate a Test Deficiency Notice (TDN).

T. Acceptable recorder traces and data logger printouts are those that are legible and fall within the expected range parameter.

Date ________

4.0 PREREQUISITE ACTIONS

> **NOTE**
>
> Prerequisite steps may be performed in any order unless otherwise stated and should be completed as close in time as practicable to the start of the instruction subsection to which they apply.

4.1 Preliminary Actions

[1] **VERIFY** the test/performance copy of this Preoperational Test Instruction (PTI) is the current revision including any change notices and as needed, each test person assisting in this test has the current revision including any change notices. ________

[2] **OBTAIN** copies of the applicable forms from the latest revision of SMP-9.0, **AND**

ATTACH to this PTI for use during the performance of this PTI. ________

[3] **ENSURE** changes to the references listed on "Test Procedure and Instruction Reference Review", Appendix A, have been reviewed, and determined not to adversely affect the test performance. ________

[4] **VERIFY** current revisions and change paper for referenced drawings has been reviewed and determined NOT to adversely affect the test performance, **AND**

ATTACH documentation of current drawing revision numbers and change paper that were reviewed to the data package. ________

Date ________

4.1 Preliminary Actions (continued)

[5] **EVALUATE** open items in Watts Bar Integrated Task Equipment List (WITEL) **AND**

ENSURE that they will not adversely affect the test performance.

A. Subsection 6.1 ________

B. Subsection 6.2 ________

C. Subsection 6.3 ________

D. Subsection 6.4 ________

[6] **ENSURE** required Component Testing has been completed prior to start of test.

A. Subsection 6.1 ________

B. Subsection 6.2 ________

C. Subsection 6.3 ________

D. Subsection 6.4 ________

[7] **ENSURE** outstanding Design Change Notices (DCN's), Engineering Design Construction Release (EDCR's) or Temporary Alterations (TA's) do not adversely impact testing, **AND**

ATTACH documentation of DCN's, EDCR's and TA's that were reviewed to the data package. ________

[8] **ENSURE** a review of outstanding U2 Clearances has been coordinated with Operations for impact to the test performance, **AND**

RECORD in Appendix B, Temporary Condition Log if required. ________

Date ________

4.1 Preliminary Actions (continued)

[9] **VERIFY** System cleanliness as required for the performance of this test has been completed in accordance with SMP-7.0.

A. Subsection 6.1 ________

B. Subsection 6.2 ________

C. Subsection 6.3 ________

D. Subsection 6.4 ________

CAUTION

Verify the contactor light is off on the main breaker any time the shunt breaker for the accumulators is being closed. To drop out the contactor, one must open the main breaker.

[10] **PERFORM** the following breaker lineups:

A. Appendix L for Subsection 6.1 ________

B. Appendix M for Subsection 6.2 ________

C. Appendix N for Subsection 6.3 ________

D. Appendix O for Subsection 6.4 ________

[11] **VERIFY** Measuring and Test Equipment (M&TE) required for test performance has been (as required) filled, vented, place in service and recorded on Measuring and Test Equipment Log in SMP-9.0.

A. Subsection 6.1 ________

B. Subsection 6.2 ________

C. Subsection 6.3 ________

D. Subsection 6.4 ________

Date ________

4.1 Preliminary Actions (continued)

[12] **VERIFY** Measuring and Test Equipment (M&TE) calibration due dates will support the completion of this test performance.

A. Subsection 6.1 ________

B. Subsection 6.2 ________

C. Subsection 6.3 ________

D. Subsection 6.4 ________

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) or Shift Manager (SM). ________

[14] **VERIFY** Design Change Notices (DCNs) for Type I Supports identified for System 63 testing are issued. ________

[15] **VERIFY** Design Change Notices (DCNs) for Type I Supports identified for System 63 testing are field work complete. ________

[16] **VERIFY** remaining supports required for System 63 testing are in place or an equivalent engineering approved temporary support is installed. ________

[17] **VERIFY** spring cans identified for System 63 testing are installed, unpinned, and on scale with no visual indication of damage, loose parts or interferences. ________

[18] **VERIFY** snubbers identified for System 63 testing are installed, with no visual indication of damage, loose parts or interferences. ________

[19] **PERFORM** a pretest walk down on equipment to be tested to ensure no conditions exist that will impact the test performance. ________

[20] **CONDUCT** a pretest briefing with Test and Operations personnel in accordance with SMP-9.0. ________

Date ________

4.1 Preliminary Actions (continued)

[21] **ENSURE** that communications are available for areas where testing is to be conducted.

A. Subsection 6.1 ________

B. Subsection 6.2 ________

C. Subsection 6.3 ________

D. Subsection 6.4 ________

[22] **PERFORM** the following Switch Lineups:

A. Appendix P for Subsection 6.1 ________

B. Appendix Q for Subsection 6.2 ________

C. Appendix R for Subsection 6.3 ________

D. Appendix S for Subsection 6.4 ________

[23] **PERFORM** the Breaker Lineup as listed in Appendix K. ________

[24] **PERFORM** the following Breaker Lineups:

A. Appendix L for Subsection 6.1 ________

B. Appendix M for Subsection 6.2 ________

C. Appendix N for Subsection 6.3 ________

D. Appendix O for Subsection 6.4 ________

[25] **PERFORM** the following Valve Lineups:

A. Appendix G for Subsection 6.1 ________

B. Appendix H for Subsection 6.2 ________

C. Appendix I for Subsection 6.3 ________

D. Appendix J for Subsection 6.4 ________

Date ________

4.1 Preliminary Actions (continued)

[26] **VERIFY** the following systems are operational and have been placed in service to the extent necessary to perform this test:

A. 6900V SHUTDOWN BD 2A-A is energized. ________

B. 480V REACTOR MOV BOARD 2A1-A is energized. ________

C. 480V REACTOR MOV BOARD 2B1-B is energized. ________

D. 125V dc VITAL BATTERY BOARD I is energized. ________

E. 125V dc VITAL BATTERY BOARD II is energized. ________

F. 120V AC Vital Bd 2-I is energized. ________

G. 120V AC Vital Bd 2-II is energized. ________

H. Nitrogen supply to the accumulators is available. ________

Date ________

4.2 Special Tools, Measuring and Test Equipment (M&TE), Parts, and Supplies

[1] The following M&TE or equivalent is available:

A. 0-1000 psig gage (± 0.25% Full Scale) ________

B. 0-200 psig gage (± 0.25% Full Scale) ________

C. 0-100 psig transmitter (± 0.5% Full Scale) ________

D. 0-150 psig wc d/p transmitter (± 0.5% Full Scale) ________

E. 0-200°F contact thermometer (± 3°F) ________

F. AstroMed Recorder ________

[2] The following are available:

A. Jumpers as required ________

B. 100 feet of 3/8" tygon tubing ________

C. 4 test valves (2”, minimum pressure 700 psig) ________

Date ________

4.3 Field Preparations

[1] **VERIFY/INSTALL** plastic screws and washers in accordance with SMP-15.0 at the vendor terminals listed in Appendix T. ________

[2] **VERIFY** the RWST level is greater than 10 Ft. as read on the local level indicator or greater than 30% as read in the Main Control Room. ________

[3] **ENSURE** scaffolding is installed to provide access to the accumulator level instrumentation.

A. Accumulator No. 1 Subsection 6.1 ________

B. Accumulator No. 2 Subsection 6.2 ________

C. Accumulator No. 3 Subsection 6.3 ________

D. Accumulator No. 4 Subsection 6.4 ________

[4] **ENSURE** the appropriate accumulator water level is below the lower instrument level tap.

A. Accumulator No. 1 Subsection 6.1 ________

B. Accumulator No. 2 Subsection 6.2 ________

C. Accumulator No. 3 Subsection 6.3 ________

D. Accumulator No. 4 Subsection 6.4 ________

[5] **ENSURE** the Reactor Coolant Drain Tank System is capable of accepting water from the accumulators and disposing of the effluent.

A. Accumulator No. 1 Subsection 6.1 ________

B. Accumulator No. 2 Subsection 6.2 ________

C. Accumulator No. 3 Subsection 6.3 ________

D. Accumulator No. 4 Subsection 6.4 ________

Date ________

4.3 Field Preparations (continued)

[6] **ENSURE** Safety Injection Pump 2A-A and piping is lined up to take suction from the RWST and is ready to supply water for accumulator filling.

A. Accumulator No. 1 Subsection 6.1 ________

B. Accumulator No. 2 Subsection 6.2 ________

C. Accumulator No. 3 Subsection 6.3 ________

D. Accumulator No. 4 Subsection 6.4 ________

CAUTION
Prior to removing blind flanges, be aware of any pressure or water.

[7] **ENSURE** the blind flanges or pipe caps are removed at valves for the appropriate accumulator.

[7.1] Subsection 6.1

A. 2-VTV-63-606, ACCUM 1 VENT ________

B. 2-DRV-63-667, ACCUM LEVEL STANDPIPE DRAIN ________

C. 2-DRV-63-668, ACCUM LEVEL STANDPIPE DRAIN ________

[7.2] Subsection 6.2

A. 2-VTV-63-607, ACCUM 2 VENT ________

B. 2-DRV-63-669, ACCUM LEVEL STANDPIPE DRAIN ________

C. 2-DRV-63-670, ACCUM LEVEL STANDPIPE DRAIN ________

Date ________

4.3 Field Preparations (continued)

[7.3] Subsection 6.3

A. 2-VTV-63-608, ACCUM 3 VENT ________

B. 2-DRV-63-671, ACCUM LEVEL STANDPIPE DRAIN ________

C. 2-DRV-63-672, ACCUM LEVEL STANDPIPE DRAIN ________

[7.4] Subsection 6.4

A. 2-VTV-63-609, ACCUM 4 VENT ________

B. 2-DRV-63-673, ACCUM LEVEL STANDPIPE DRAIN ________

C. 2-DRV-63-674, ACCUM LEVEL STANDPIPE DRAIN ________

[8] **INSTALL** temporary spool pieces in the flanges for the following level transmitters as shown in Appendix Y:

A. 2-LT-63-129 for Accumulator No. 1 Subsection 6.1 ________

B. 2-LT-63-109 for Accumulator No. 2 Subsection 6.2 ________

C. 2-LT-63-89 for Accumulator No. 3 Subsection 6.3 ________

D. 2-LT-63-82 for Accumulator No. 4 Subsection 6.4 ________

[9] **INSTALL** a temporary spool piece to the following drain valves with a tygon hose attached vertically to the accumulator with a means to measure the level between the instrument taps of the accumulator as shown in Appendix Y:

A. 2-DRV-63-667 for Accumulator No. 1 Subsection 6.1 ________

B. 2-DRV-63-669 for Accumulator No. 2 Subsection 6.2 ________

C. 2-DRV-63-671 for Accumulator No. 3 Subsection 6.3 ________

D. 2-DRV-63-673 for Accumulator No. 4 Subsection 6.4 ________

Date ________

4.3 Field Preparations (continued)

[10] **INITIATE** work order to connect an AstroMed Recorder to monitor the following data points for each subsection:

A. For Accumulator No. 1 Subsection 6.1:

- Temporary d/p transmitter ________
- 2-PT-63-128 ________
- 2-FCV-63-118 open Red Light ________
- 2-FCV-63-118 close Green Light ________

B. For Accumulator No. 2 Subsection 6.2:

- Temporary d/p transmitter ________
- 2-PT-63-108 ________
- 2-FCV-63-98 open Red Light ________
- 2-FCV-63-98 close Green Light ________

C. For Accumulator No. 3 Subsection 6.3:

- Temporary d/p transmitter ________
- 2-PT-63-88 ________
- 2-FCV-63-80 open Red Light ________
- 2-FCV-63-80 close Green Light ________

D. For Accumulator No. 4 Subsection 6.4:

- Temporary d/p transmitter ________
- 2-PT-63-62 ________
- 2-FCV-63-67 open Red Light ________
- 2-FCV-63-67 close Green Light ________

Date ________

4.3 Field Preparations (continued)

[11] **INSTALL** temporary d/p transmitter with the high pressure side attached to TV-4 and the low pressure side to the following drain valves for each subsection. The transmitter must be at a lower elevation than the low pressure connection.

A. 2-DRV-63-668 for Accumulator No. 1 Subsection 6.1 ________

B. 2-DRV-63-670 for Accumulator No. 2 Subsection 6.2 ________

C. 2-DRV-63-672 for Accumulator No. 3 Subsection 6.3 ________

D. 2-DRV-63-674 for Accumulator No. 4 Subsection 6.4 ________

[12] **VERIFY/INSTALL** a jumper across terminals TB602-11 and TB602-12 in Panel 2-R-48 on the field side of the plastic insulators, prior to performing Subsection 6.1 (Close inhibit on SI). ________

[13] **VERIFY/INSTALL** a jumper across terminals TB602-11 and TB602-12 in Panel 2-R-51 on the field side of the plastic insulators, prior to performing Subsection 6.2 (Close inhibit on SI). ________

[14] **VERIFY/INSTALL** a jumper across terminals TB620-11 and TB620-12 in Panel 2-R-48 on the field side of the plastic insulators, prior to performing Subsection 6.3 (Close inhibit on SI). ________

[15] **VERIFY/INSTALL** a jumper across terminals TB620-11 and TB620-12 in Panel 2-R-51 on the field side of the plastic insulators, prior to performing Subsection 6.4 (Close inhibit on SI). ________

[16] **VERIFY/INSTALL** a jumper across terminals TB611-9 and TB611-10 in Panel 2-R-48 on the field side of the plastic isolators (CIS A signal). ________

[17] **VERIFY/INSTALL** a jumper across terminals TB612-1 and TB612-2 in Panel 2-R-48 on the field side of the plastic isolators (CIS A signal). ________

[18] **VERIFY/INSTALL** a jumper across terminals TB630-5 and TB630-6 in Panel 2-R-51 on the field side of the plastic isolators (CIS A signal). ________

Date ________

4.3 Field Preparations (continued)

[19] **VERIFY** the reactor vessel head and upper and lower internals packages are removed. ________

[20] **VERIFY** the reactor vessel level is at least 15 feet below the nozzles and pumps are available to pump out the vessel water as required. ________

[21] **VERIFY** reactor vessel is available to receive water from SIS accumulators. ________

[22] **VERIFY** Work Order is ready for installation of an instrument air connection for each subsection. ________

[23] **VERIFY** that the SI Accumulator relief valves are calibrated and installed.

A. Subsection 6.1

2-RFV-63-602, ACCUM 1 RELIEF ________

B. Subsection 6.2

2-RFV-63-603, ACCUM 2 RELIEF ________

C. Subsection 6.3

2-RFV-63-604, ACCUM 3 RELIEF ________

D. Subsection 6.4

2-RFV-63-605, ACCUM 4 RELIEF ________

[24] **RECORD** as found pressure setpoint of Pressure Control Valve 2-PCV-63-58, SIS COLD LEG ACCUM N2 HDR INLET PRESS CNT, [BIT RM]:

PRESSURE ____________ psig ____________

Date ________

4.4 Approvals and Notifications

[1] **OBTAIN** permission of the Preoperational Startup Manager to start the test.

Preoperational Startup Manager Signature	Date

[2] **OBTAIN** the Unit 2 Supervisor's (US/SRO) or Shift Manager's (SM) authorization.

U2 US/SRO/SM Signature	Date

Date ________

5.0 ACCEPTANCE CRITERIA

[1] Safety Injection Accumulator Isolation valves open in less than or equal to 49 sec. at a maximum differential pressure of greater than 674 psig, on a simulated Safety Injection Signal.

ACCUM. NO.	VALVE NO.	DESCRIPTION	STEPS
1	2-FCV-63-118	COLD LEG ACCUMULATOR 1 OUTLET ISOLATION	6.1[63], 6.1[111]
2	2-FCV-63-98	COLD LEG ACCUMULATOR 2 OUTLET ISOLATION	6.2[63], 6.2[111]
3	2-FCV-63-80	COLD LEG ACCUMULATOR 3 OUTLET ISOLATION	6.3[63], 6.3[111]
4	2-FCV-63-67	COLD LEG ACCUMULATOR 4 OUTLET ISOLATION	6.4[63], 6.4[111]

[2] Accumulator discharge line resistance (f L/D) is greater than or equal to 4.5 and less than or equal to 6.7.

ACCUMULATOR NO.	STEPS
1	6.1[113]
2	6.2[113]
3	6.3[113]
4	6.4[113]

Date ________

5.0 ACCEPTANCE CRITERIA (continued)

[3] Safety Injection Accumulator Isolation valves open automatically on a simulated Safety Injection Signal.

ACCUM. NO.	VALVE NO.	DESCRIPTION	STEPS
1	2-FCV-63-118	COLD LEG ACCUMULATOR 1 OUTLET ISOLATION	6.1[67]
2	2-FCV-63-98	COLD LEG ACCUMULATOR 2 OUTLET ISOLATION	6.2[67]
3	2-FCV-63-80	COLD LEG ACCUMULATOR 3 OUTLET ISOLATION	6.3[67]
4	2-FCV-63-67	COLD LEG ACCUMULATOR 4 OUTLET ISOLATION	6.4[67]

[4] The following annunciators alarm in the MCR and the alarms reset on decreasing level below the alarm setpoint for an alarm high and on increasing level above the alarm setpoint for an alarm low.

ACCUM. NO.	ALARM	STEPS
1	CL ACCUM 1 LEVEL HI/LO	6.1[14], 6.1[17], 6.1[23], 6.1[26]
2	CL ACCUM 2 LEVEL HI/LO	6.2[14], 6.2[17], 6.2[23], 6.2[26]
3	CL ACCUM 3 LEVEL HI/LO	6.3[14], 6.3[17], 6.3[23], 6.3[26]
4	CL ACCUM 4 LEVEL HI/LO	6.4[14], 6.4[17], 6.4[23], 6.4[26]

Date ________

5.0 ACCEPTANCE CRITERIA (continued)

[5] The following annunciators alarm in the MCR and the alarms reset on increasing pressure above the alarm setpoint for an alarm low and on decreasing pressure below the alarm setpoint for an alarm high.

ACCUM. NO.	ALARM	STEPS
1	CL ACCUM 1 PRESS HI/LO	6.1[45], 6.1[48], 6.1[54], 6.1[58]
2	CL ACCUM 2 PRESS HI/LO	6.2[45], 6.2[48], 6.2[54], 6.2[58]
3	CL ACCUM 3 PRESS HI/LO	6.3[45], 6.3[48], 6.3[54], 6.3[58]
4	CL ACCUM 4 PRESS HI/LO	6.4[45], 6.4[48], 6.4[54], 6.4[58]

[6] The following annunciators alarm in the ACR and the alarms reset on decreasing pressure below the alarm setpoint for an alarm high.

ACCUM. NO.	ALARM	STEPS
1	CL ACCUM 1 PRESS HI	6.1[49], 6.1[55]
2	CL ACCUM 2 PRESS HI	6.2[49], 6.2[55]
3	CL ACCUM 3 PRESS HI	6.3[49], 6.3[55]
4	CL ACCUM 4 PRESS HI	6.4[49], 6.4[55]

Date ________

6.0 PERFORMANCE

NOTES

1) Subsections 6.1 through 6.4 may be performed in any order provided the Prerequisites for the individual Subsection are complete.
2) Tygon hose measurements for accumulator level will be referenced to the center line of the tank lower level tap.
3) In accordance to precaution 3.0R, vibration must be monitored in accordance to engineering specification N3C-945 during the performance of each subsection of 6.0.

6.1 SI Accumulator No. 1 Functional Test

[1] **VERIFY** Prerequisites listed in Section 4.0 for Subsection 6.1 have been completed. ________

[2] **VERIFY** the test connection spools are installed. ________

[3] **VERIFY** a tygon hose level indicator to the Accumulator No. 1 level standpipe TV-2 is attached. ________

[4] **VERIFY** the tygon hose is installed vertically on Accumulator No. 1 from below the lower level tap to above the tank vent. ________

[5] **VERIFY** a means to measure Accumulator No. 1 level between the instrument taps is provided. Level should be referenced to the center line of the accumulator lower level tap. ________

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

[6] **OPEN** the following valves:

A. TV-2 ________

B. 2-DRV-63-667, SIS COLD LEG ACCUM 1 2-LT-63-129 DRAIN ________

C. 2-FCV-63-127, N2 TO CL ACCUM 1 ________

D. 2-FCV-63-65, CLA N2 VENT HDR CONTROL ________

E. 2-RTV-63-351A, 2-LT-63-129 ROOT ________

F. 2-RTV-63-352A, 2-LT-63-129 ROOT ________

[7] **VERIFY** Annunciator Window 131-A, CL ACCUM 1 LEVEL HI/LO, at 2-XA-55-6D is in ALARM. ________

CAUTIONS

1) The SI Pump should not be run at a flow of less than 40.5 GPM for longer than 45 minutes.
2) The SI Pump should have a 1 hour cool down period before restart.

[8] **PLACE** Hand Switch 2-HS-63-10A, SI PMP A (ECCS), at 2-M-6, to the START position. ________

[9] **PLACE** Hand Switch 2-HS-63-115A, MAKEUP TO CL ACCUM 1, at 2-M-6, to the OPEN position. ________

[10] **PLACE** Hand Switch 2-HS-63-187, RHR SUPPLY TEST LINE VALVE, at 2-M-6, to the OPEN position. ________

[11] **PLACE** and **HOLD** Hand Switch 2-HS-63-71A, CKV TEST LINE TO HUT, at 2-M-6, to the OPEN position until the Red Light is ON. ________

[12] **PLACE** and **HOLD** Hand Switch 2-HS-63-23, CLA FILL FROM SI PMPS, at 2-M-6, to the OPEN position until the Red Light is ON. ________

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

[13] **THROTTLE** 2-ISV-63-610, ACCUM 1 FILL ISLN, as necessary to control accumulator fill rate. ________

NOTE

The following steps verify alarms as level in the accumulator rises. Steps 6.1[14], 6.1[15], and 6.1[16] may be signed in the order in which they are verified.

[14] **VERIFY** Annunciator Window 131-A, CL ACCUM 1 LEVEL HI/LO, CLEARS. **(Acc Crit** 5.0[4]**)** ________

[15] **VERIFY** Unit 2 Alarm Printer indicates 131-A CL ACCUM 1 LEVEL LO (LS-63-119B) is NORMAL (Blue). ________

[16] **VERIFY** Unit 2 Alarm Printer indicates 131-A CL ACCUM 1 LEVEL LO (LS-63-129B) is NORMAL (Blue). ________

NOTE

The following steps verify alarms as level in the accumulator continues to rise. Steps 6.1[17], 6.1[18], and 6.1[19] may be signed in the order in which they are verified.

[17] **VERIFY** Annunciator Window 131-A, CL ACCUM 1 LEVEL HI/LO, ALARMS. **(Acc Crit** 5.0[4]**)** ________

[18] **VERIFY** Unit 2 Alarm Printer indicates 131-A CL ACCUM 1 LEVEL HI (LS-63-119A) is ALARM (Red). ________

[19] **VERIFY** Unit 2 Alarm Printer indicates 131-A CL ACCUM 1 LEVEL HI (LS-63-129A) is ALARM (Red). ________

[20] **PLACE** Hand Switch 2-HS-63-115A, SIS ACCUM TK 1 FILL VLV, at 2-M-6, to the CLOSE position. ________

[21] **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, at 2-M-6, to the STOP position. ________

[22] **PLACE** Hand Switch 2-HS-63-130A, CL ACCUM 1 DRAIN, at 2-M-6, to the OPEN position. ________

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

NOTE

The following steps verify alarms as level in the accumulator is lowered. Steps 6.1[23], 6.1[24], and 6.1[25] may be signed in the order in which they are verified.

[23] **VERIFY** Annunciator Window 131 A, CL ACCUM 1 LEVEL HI/LO, CLEARS. **(Acc Crit** 5.0[4]**)** _________

[24] **VERIFY** Unit 2 Alarm Printer indicates 131-A CL ACCUM 1 LEVEL HI (LS-63-119A) is NORMAL (Blue). _________

[25] **VERIFY** Unit 2 Alarm Printer indicates 131-A CL ACCUM 1 LEVEL HI (LS-63-129A) is NORMAL (Blue). _________

NOTE

The following steps verify alarms as level in the accumulator is lowered. Steps 6.1[26], 6.1[27], and 6.1[28] may be signed in the order in which they are verified.

[26] **VERIFY** Annunciator Window 131 -A, CL ACCUM 1 LEVEL HI/LO, ALARMS. **(Acc Crit** 5.0[4]**)** _________

[27] **VERIFY** Unit 2 Alarm Printer indicates 131-A CL ACCUM 1 LEVEL LO (LS-63-119B) is ALARM (Red). _________

[28] **VERIFY** Unit 2 Alarm Printer indicates 131-A CL ACCUM 1 LEVEL LO (LS-63-129B) is ALARM (Red). _________

[29] **PLACE** Hand Switch 2-HS-63-130A, SIS ACCUM TK 1 DRAIN VLV, at 2-M-6, to the CLOSE position. _________

CAUTIONS

1) The SI Pump should not be run at a flow of less than 40.5 GPM for longer than 45 minutes.
2) The SI Pump should have a 1 hour cool down period before restart.

[30] **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, at 2-M-6, to the START position. _________

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

[31] **PLACE** Hand Switch 2-HS-63-115A, SIS ACCUM TK 1 FILL VLV, at 2-M-6, to OPEN position. ________

[32] **PLACE** Hand Switch 2-HS-63-118A, SIS ACCUM TK 1 FLOW ISOLATION VLV, at 2-M-6, to the OPEN position. ________

[33] **PLACE** Hand Switch 2-HS-63-118A, SIS ACCUM TK 1 FLOW ISOLATION VLV, at 2-M-6, to the CLOSE position when water just begins to flow into the reactor vessel from RCS Loop 1 cold leg. ________

[34] **THROTTLE** 2-ISV-63-610, ACCUM 1 FILL ISLN, as necessary to control accumulator fill rate. ________

[35] **PLACE** Hand Switch 2-HS-63-115A, SIS ACCUM TK 1 FILL VLV, at 2-M-6, to the CLOSE position when the tygon hose indicates that Accumulator No. 1 level is above the cylindrical portion of the tank. ________

[36] **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, at 2-M-6, to the STOP position. ________

[37] **DRAIN** approximately five gallons of water from Accumulator No. 1 from TV-1. ________

[38] **CLOSE** the following valves:

A. 2-VTV-63-606, SIS COLD LEG ACCUM 1 VENT ________

B. 2-DRV-63-667, ACCUM LEVEL STANDPIPE DRAIN ________

C. 2-FCV-63-127, SIS COLD LEG ACCUM 1 N2 MAKEUP ________

D. 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT ________

[39] **VERIFY/ADJUST** the set point on 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to approximately 500 psig. ________

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

[40] **VERIFY** Accumulator No. 1 tank external surface temperature is greater than 73°F **AND**

RECORD.

M&TE ______________________ Cal Due Date ___________

TEMPERATURE ___________ °F ___________

[41] **PLACE** and **HOLD** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, at 2-M-6, to the OPEN position until Red Light is ON. ________

[42] **PLACE** Hand Switch 2-HS-63-127A, N2 TO CL ACCUM 1, at 2-M-6, to the OPEN position. ________

[43] **VERIFY** the following indications when Accumulator No. 1 pressure reaches approximately 500 psig as read on 2-PT-63-128:

A. Annunciator Window 131-B, CL ACCUM 1 PRESS HI/LO, 2-XA-55-6D is in Alarm. ________

B. Annunciator window 276-E, CL ACCUM 1 PRESS HI, 2-XA-55-L10 is CLEAR. ________

CAUTION

Do not exceed 685 psig as read on 2-PT-63-128.

[44] **BEGIN** increasing the pressure in Accumulator No. 1, by slowly increasing the set point on valve 2-PCV-63-58, SIS ACCUM TANK N2 HDR INLET VALVE PRESS CNTL. ________

NOTE

The following steps verify alarms as accumulator pressure is increased. Steps 6.1[45], 6.1[46], and 6.1[47] may be signed in the order in which they are verified.

[45] **VERIFY** Annunciator Window 131-B, CL ACCUM 1 PRESS HI/LO, CLEARS. **(Acc Crit** 5.0[5]**)** ________

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

[46] **VERIFY** Unit 2 Alarm Printer indicates 131-B CL ACCUM 1 PRESS LO (PS-63-126B) is NORMAL (Blue). ________

[47] **VERIFY** Unit 2 Alarm Printer indicates 131 -B CL ACCUM 1 PRESS LO (PS-63-128B) is NORMAL (Blue). ________

NOTE
The following steps verify alarms as accumulator pressure continues to increase. Steps 6.1[48], 6.1[49], 6.1[50], and 6.1[51] may be signed in the order in which they are verified.

[48] **VERIFY** Annunciator Window 131-B, CL ACCUM 1 PRESS HI/LO, ALARMS. **(Acc Crit** 5.0[5]**)** ________

[49] **VERIFY** Annunciator Window 276-E, CL ACCUM 1 PRESS HI, 2-XA-55-L10, ALARMS. **(Acc Crit** 5.0[6]**)** ________

[50] **VERIFY** Unit 2 Alarm Printer indicates, 131-B, CL ACCUM 1 PRESS HI, (PS-63-126A), is in Alarm (Red). ________

[51] **VERIFY** Unit 2 Alarm Printer indicates, 131-B, CL ACCUM 1 PRESS HI, (PS-63-128A), is in Alarm (Red). ________

[52] **PLACE** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the CLOSE position. ________

CAUTION
Nitrogen will not support life. Make sure all personnel are clear before venting nitrogen into the atmosphere.

[53] **BEGIN** to slowly reduce pressure in Accumulator No. 1 using 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, at 2-M-6. ________

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

> **NOTE**
>
> The following steps verify alarms as accumulator pressure decreases. Steps 6.1[54], 6.1[55], 6.1[56], and 6.1[57] may be signed in the order in which they are verified.

[54] **VERIFY** Annunciator Window 131-B, CL ACCUM 1 PRESS HI/LO, CLEARS. **(Acc Crit** 5.0[5]**)** ________

[55] **VERIFY** Annunciator Window 276-E, CL ACCUM 1 PRESS HI, 2-XA-55-L10, CLEARS. **(Acc Crit** 5.0[6]**)** ________

[56] **VERIFY** Unit 2 Alarm Printer indicates, 131 -B, CL ACCUM 1 PRESS HI, (PS-63-126A), is NORMAL (Blue). ________

[57] **VERIFY** Unit 2 Alarm Printer indicates, 131-B, CL ACCUM 1 PRESS HI, (PS-63-128A), is NORMAL (Blue). ________

> **NOTE**
>
> The following steps verify alarms as accumulator pressure continues to decrease. Steps 6.1[58], 6.1[59], and 6.1[60] may be signed in the order in which they are verified.

[58] **VERIFY** Annunciator Window 131 -B, CL ACCUM 1 PRESS HI/LO, ALARMS. **(Acc Crit** 5.0[5]**)** ________

[59] **VERIFY** Unit 2 Alarm Printer indicates, 131-B, CL ACCUM 1 PRESS LO, (PS-63-126B), is in ALARM (Red). ________

[60] **VERIFY** Unit 2 Alarm Printer indicates, 131-B, CL ACCUM 1 PRESS LO, (PS-63-128B), is in ALARM (Red). ________

[61] **ADJUST** 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to CLOSE 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT. ________

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

> **CAUTION**
>
> Do not exceed 685 psig as read on 2-PT-63-128.

[62] **PLACE** and **HOLD** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the OPEN position until Red Light is on. ________

[63] **PLACE** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the CLOSE position when Accumulator No. 1 pressure is greater than 676.5 psig as read on 2-PT-63-128, **AND**

RECORD pressure. **(Acc Crit** 5.0[1]**)**

M&TE ______________________ Cal Due Date ____________

Pressure ____________ psig (greater than 674 psig) ____________

[64] **PLACE** Hand Switch 2-HS-63-127A, N2 TO CL ACCUM 1, to the CLOSE position. ________

[65] **ENSURE/ANNOTATE** the recorder with the step number, range/parameter for each channel used, time and date. ________

[66] **START** the recorder. ________

> **NOTE**
>
> During the performance of Step 6.1[67] visual observation of transient vibration in accordance to engineering specification N3C-945 is required.

[67] **MOMENTARILY PLACE** a jumper across Terminals TB602-5 and TB602-6 in Panel 2-R-48 to simulate a Safety Injection Signal, **AND**

VERIFY 2-FCV-63-118, COLD LEG ACCUMULATOR 1 OUTLET ISOLATION, OPENS. **(Acc Crit** 5.0[3]**)** ________

[68] **PLACE** Hand Switch 2-HS-63-118A, CL ACCUM 1 OUTLET, to the CLOSE position when 2-FCV-63-118 reaches its full open position. ________

[69] **STOP** the recorder. ________

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

[70] **PLACE** Hand Switch 2-HS-63-127A, N2 TO CL ACCUM 1, to the OPEN position. ________

CAUTION

Nitrogen will not support life. Make sure all personnel are clear before venting nitrogen into the atmosphere of Accumulator Room 4.

[71] **ADJUST** 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to vent remaining pressure from Accumulator No. 1. ________

[72] **ADJUST** 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to CLOSE 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT. ________

[73] **PLACE** Hand Switch 2-HS-63-127A, N2 TO CL ACCUM 1, to the CLOSE position. ________

[74] **OPEN** valve 2-DRV-63-667, ACCUM LEVEL STANDPIPE DRAIN. ________

[75] **OPEN** the following valves:

A. TV-4 ________

B. 2-DRV-63-668, ACCUM LEVEL STANDPIPE DRAIN ________

[76] **OPEN** the following valves:

A. 2-VTV-63-606, ACCUM 1 VENT ________

B. 2-FCV-63-127, SIS COLD LEG ACCUM 1 N2 MAKEUP ________

C. 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT ________

[77] **ENSURE** the test transmitters and sensing lines are properly filled and vented. ________

A. **OPEN** equalizer valve on Temporary d/p transmitter. ________

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

[78] **IF** Accumulator No. 1 level is greater than 128 3/4 inches as read on the tygon hose, **THEN**

PERFORM Steps 6.1[78]A through 6.1[78]D and N/A Steps 6.1[79]A thru 6.1[79]F. ________

A. **PLACE** Hand Switch 2-HS-63-130A, SIS ACCUM TK 1 DRAIN VLV, to the OPEN position. ________

B. **CONTINUE** draining Accumulator No. 1 until the level is between 128-1/8 in. and 128-3/4 in. as read on the temporary tygon hose. ________

C. **PLACE** Hand Switch 2-HS-63-130A, SIS ACCUM TK 1 DRAIN VLV, to the CLOSE position. ________

D. **RECORD** Accumulator No. 1 level from the temporary tygon hose:

LEVEL ___________ inches (128 1/8 - 128 3/4) IN. __________

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

[79] **IF** Accumulator No. 1 level is less than 128 1/8 inches as read on the tygon hose, **THEN**

PERFORM Steps 6.1[79]A through 6.1[79]F and N/A Steps 6.1[78]A thru 6.1[78]D. ________

CAUTIONS

1) The SI Pump should not be run at a flow of less than 40.5 GPM for longer than 45 minutes.
2) The SI Pump should have a 1 hour cool down period before restart.

A. **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, to the START position. ________

NOTE

The fill valve may be cycled, as necessary, to obtain the specified level, and TV-1 can be used to drain down in case of an overfill.

B. **PLACE** Hand Switch 2-HS-63-115A, SIS ACCUM TK 1 FILL VALVE, to the OPEN position. ________

C. **CONTINUE** to fill Accumulator No. 1 throttling 2-ISV-63-610, ACCUM 1 FILL ISLN, as necessary, until the level is between 128-1/8 in. and 128-3/4 in. as read on the temporary tygon hose. ________

D. **PLACE** Hand Switch 2-HS-63-115A, SIS ACCUM TK 1 FILL VALVE, to the CLOSE position. ________

E. **RECORD** Accumulator No. 1 level from the temporary tygon hose:

LEVEL ___________ inches (128 1/8 - 128 3/4IN.) ___________

F. **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, to the STOP position. ________

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

[80] **CLOSE** valve 2-DRV-63-667, ACCUM LEVEL STANDPIPE DRAIN. ________

[81] **CLOSE** the following valves:

A. 2-FCV-63-127, SIS COLD LEG ACCUM 1 N2 MAKEUP ________

B. 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT ________

[82] **CLOSE** equalizer valve on Temporary d/p Transmitter. ________

[83] **CONNECT** a source of instrument air to the flange at valve 2-VTV-63-606, ACCUM 1 VENT. ________

[84] **VERIFY** Accumulator No. 1 tank external surface temperature is greater than 73°F, **AND**

RECORD.

M&TE ______________________ Cal Due Date ___________

TEMPERATURE ___________ °F ___________

[85] **PRESSURIZE** Accumulator No. 1 to approximately 90 psig as read on 2-PT-63-128 using the instrument air source at 2-VTV-63-606, ACCUM 1 VENT.

ACCUMULATOR NO. 1 PRESSURE ___________ psig ___________

[86] **CLOSE** valve 2-VTV-63-606, ACCUM 1 VENT. ________

[87] **PLACE** and **HOLD** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the OPEN position until Red Light is ON. ________

[88] **ADJUST** the set point on 2-PIC-63-58, SIS ACCUM TANK N2 HDR INLET VALVE PRESS CNTL, [BIT RM] to 0 psig. ________

[89] **PLACE** Hand Switch 2-HS-63-127A, N2 TO CL ACCUM 1, to the OPEN position. ________

[90] **ADJUST** the set point on 2-PIC-63-58, SIS ACCUM TANK N2 HDR INLET VALVE PRESS CNTL, [BIT RM] to pressurize Accumulator No. 1 to between 99.5 and 100 psig as read on 2-PT-63-128. ________

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

[91] **PLACE** Hand Switch 2-HS-63-127A, N2 TO CL ACCUM 1, to the CLOSE position. ________

[92] **RECORD** Accumulator No. 1 pressure as read on 2-PT-63-128.

PRESSURE ____________ psig (99.5 - 100 psig) ___________

[93] **PLACE** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the CLOSE position. ________

[94] **CLOSE** valve 2-RTV-63-352A, RT VLV TO LE-63-129L. ________

[95] **VERIFY** reactor vessel level is at least 15 ft. below the nozzles. ________

A. **VERIFY/PROGRAM** data logger per Appendix U. ________

[96] **ENSURE/ANNOTATE** the recorder with the step number, range/parameter of each channel used, time and date. ________

[97] **START** the recorder. ________

[98] **PLACE** Hand Switch 2-HS-63-118A, SIS ACCUM TK 1 FLOW ISOLATION VLV, to the OPEN position. ________

[99] **STOP** the recorder when the blow down is complete (all water expelled from the accumulator) and valve 2-FCV-63-118, COLD LEG ACCUMULATOR 1 OUTLET ISOLATION is FULL OPEN. ________

[100] **PLACE** Hand Switch 2-HS-63-118A, SIS ACCUM TK 1 FLOW ISOLATION VLV, to the CLOSE position. ________

[101] **DISCONNECT** the source of instrument air from the flange at valve 2-VTV-63-606, ACCUM 1 VENT. ________
1st
____
CV

[102] **OPEN** valve 2-VTV-63-606, ACCUM 1 VENT, to vent any remaining pressure in Accumulator No. 1. ________

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

[103] **CLOSE** the following valves:

A. 2-DRV-63-668. ACCUM LEVEL STANDPIPE DRAIN ________

B. TV-2 ________

C. TV-3 ________

D. TV-4 ________

E. 2-RTV-63-351A, RT VLV TO LE-63-129U ________

[104] **PLACE** Hand Switch 2-HS-63-187, RHR SUPPLY TEST LINE to the CLOSE position. ________

[105] **PLACE** Hand Switch 2-HS-63-71A, SIS CHECK VLV LEAK TEST ISOLATION, to the CLOSE position. ________

[106] **PLACE** Hand Switch 2-HS-63-23, SIS ACCUM FILL LINE ISOLATION VLV, to the CLOSE position. ________

[107] **CLOSE** 2-VTV-63-606, ACCUM 1 VENT. ________

[108] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. ________

[109] **REMOVE** the temporary d/p transmitter from TV-4 and 2-DRV-63-668.

____
1st

____
CV

[110] **REMOVE** the test spool pieces and recorder installed in steps 4.3[8], 4.3[9], and 4.3[10] for Accumulator 1.

____
1st

____
CV

Date ________

6.1 SI Accumulator No. 1 Functional Test (continued)

NOTE
Valve stroke time is from the time the Red Open Light comes on until the Green Close Light goes off.

[111] **DETERMINE** from the recorder, valve 2-FCV-63-118, COLD LEG ACCUMULATOR 1 OUTLET ISOLATION, opening time for step 6.1[67], **AND**

RECORD. **(Acc Crit** 5.0[1]**)**

OPEN TIME __________ seconds (less than or equal to 49 sec) ______________

[112] **CALCULATE** the accumulator discharge line resistance (f L/D) per Appendix U. ________

[113] **VERIFY** the accumulator discharge line resistance (f L/D) from Appendix U is greater than or equal to 4.5 and less than or equal to 6.7. **(Acc Crit** 5.0[2]**)** ________

Date ________

6.2 SI Accumulator No. 2 Functional Test

[1] **VERIFY** Prerequisites in Section 4.0 for Subsection 6.2 have been completed. ________

[2] **VERIFY** the test connection spools are installed. ________

[3] **VERIFY** a tygon hose level indicator to the Accumulator No. 2 level standpipe TV-2 is attached. ________

[4] **VERIFY** the tygon hose is installed vertically on Accumulator No. 2 from below the lower level tap to above the tank vent. ________

[5] **VERIFY** a means to measure Accumulator No. 2 level between the instrument taps is provided. Level should be referenced to the center line of the accumulator lower level tap. ________

[6] **OPEN** the following valves:

A. TV-2 ________

B. 2-DRV-63-669, SIS COLD LEG ACCUM 2 2-LT-63-109 DRAIN ________

C. 2-FCV-63-107, N2 TO CL ACCUM 2 ________

D. 2-FCV-63-65, CLA N2 VENT HDR CONTROL ________

E. 2-RTV-63-355A, 2-LT-63-109 ROOT ________

F. 2-RTV-63-356A, 2-LT-63-109 ROOT ________

[7] **VERIFY** Annunciator Window 132-A, CL ACCUM 2 LEVEL HI/LO, at 2-XA-55-6D, is in ALARM. ________

Date ________

6.2 SI Accumulator No. 2 Functional Test (continued)

CAUTIONS

1) The SI Pump should not be run at a flow of less than 40.5 GPM for longer than 45 minutes.
2) The SI Pump should have a 1 hour cool down period before restart.

[8] **PLACE** Hand Switch 2-HS-63-10A, SI PMP A (ECCS), at 2-M-6, to the START position. ________

[9] **PLACE** Hand Switch 2-HS-63-95A, MAKEUP TO CL ACCUM 2, at 2-M-6, to the OPEN position. ________

[10] **PLACE** Hand Switch 2-HS-63-187, RHR SUPPLY TEST LINE VALVE, at 2-M-6, to the OPEN position. ________

[11] **PLACE** and **HOLD** Hand Switch 2-HS-63-71A, CKV TEST LINE TO HUT, at 2-M-6, to the OPEN position until the Red Light is ON. ________

[12] **PLACE** and **HOLD** Hand Switch 2-HS-63-23, CLA FILL FROM SI PMPS, at 2-M-6, to the OPEN position until the Red Light is ON. ________

[13] **THROTTLE** 2-ISV-63-611, ACCUM 2 FILL ISLN, as necessary to control accumulator fill rate. ________

NOTE

The following steps verify alarms as level in the accumulator rises. Steps 6.2[14], 6.2[15], and 6.2[16] may be signed in the order in which they are verified.

[14] **VERIFY** Annunciator Window 132-A, CL ACCUM 2 LEVEL HI/LO, CLEARS. **(Acc Crit** 5.0[4]**)** ________

[15] **VERIFY** Unit 2 Alarm Printer indicates 132 -A CL ACCUM 2 LEVEL LO (LS-63-99B) is NORMAL (Blue). ________

[16] **VERIFY** Unit 2 Alarm Printer indicates 132-A CL ACCUM 2 LEVEL LO (LS-63-109B) is NORMAL (Blue). ________

Date ________

6.2 SI Accumulator No. 2 Functional Test (continued)

NOTE

The following steps verify alarms as level in the accumulator continues to rise. Steps 6.2[17], 6.2[18], and 6.2[19] may be signed in the order in which they are verified.

[17] **VERIFY** Annunciator Window 132 -A, CL ACCUM 2 LEVEL HI/LO, ALARMS. **(Acc Crit** 5.0[4]**)** ________

[18] **VERIFY** Unit 2 Alarm Printer indicates 132 -A CL ACCUM 2 LEVEL HI (LS-63-99A) is in ALARM (Red). ________

[19] **VERIFY** Unit 2 Alarm Printer indicates 132-A CL ACCUM 2 LEVEL HI (LS-63-109A) is in ALARM (Red). ________

[20] **PLACE** Hand Switch 2-HS-63-95A, SIS ACCUM TK 2 FILL VLV, at 2-M-6, to the CLOSE position. ________

[21] **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, at 2-M-6, to the STOP position. ________

[22] **PLACE** Hand Switch 2-HS-63-110A, CL ACCUM 2 DRAIN, at 2-M-6, to the OPEN position. ________

NOTE

The following steps verify alarms as level in the accumulator is lowered. Steps 6.2[23], 6.2[24], and 6.2[25] may be signed in the order in which they are verified.

[23] **VERIFY** Annunciator Window 132 A, CL ACCUM 2 LEVEL HI/LO, CLEARS. **(Acc Crit** 5.0[4]**)** ________

[24] **VERIFY** Unit 2 Alarm Printer indicates 132-A CL ACCUM 2 LEVEL HI (LS-63-99A) is NORMAL (Blue). ________

[25] **VERIFY** Unit 2 Alarm Printer indicates 132-A CL ACCUM 2 LEVEL HI (LS-63-109A) is NORMAL (Blue). ________

Date ________

6.2 SI Accumulator No. 2 Functional Test (continued)

NOTE

The following steps verify alarms as level in the accumulator is lowered. Steps 6.2[26], 6.2[27], and 6.2[28] may be signed in the order in which they are verified.

[26] **VERIFY** Annunciator Window 132 -A, CL ACCUM 2 LEVEL HI/LO, ALARMS. **(Acc Crit** 5.0[4]**)** ________

[27] **VERIFY** Unit 2 Alarm Printer indicates 132-A CL ACCUM 2 LEVEL LO (LS-63-99B) is in ALARM (Red). ________

[28] **VERIFY** Unit 2 Alarm Printer indicates 132-A CL ACCUM 2 LEVEL LO (LS-63-109B) is in ALARM (Red). ________

[29] **PLACE** Hand Switch 2-HS-63-110A, SIS ACCUM TK 2 DRAIN VLV, at 2-M-6, to the CLOSE position. ________

CAUTIONS

1) The SI Pump should not be run at a flow of less than 40.5 GPM for longer than 45 minutes.
2) The SI Pump should have a 1 hour cool down period before restart.

[30] **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, at 2-M-6, to the START position. ________

[31] **PLACE** Hand Switch 2-HS-63-95A, SIS ACCUM TK 2 FILL VLV, at 2-M-6, to OPEN position. ________

[32] **PLACE** Hand Switch 2-HS-63-98A, SIS ACCUM TK 2 FLOW ISOLATION VLV, at 2-M-6, to the OPEN position. ________

[33] **PLACE** Hand Switch 2-HS-63-98A, SIS ACCUM TK 2 FLOW ISOLATION VLV, at 2-M-6, to the CLOSE position when water just begins to flow into the reactor vessel from RCS Loop 2 cold leg. ________

[34] **THROTTLE** 2-ISV-63-611, ACCUM 2 FILL ISLN, as necessary to control accumulator fill rate. ________

Date ________

6.2 SI Accumulator No. 2 Functional Test (continued)

[35] **PLACE** Hand Switch 2-HS-63-95A, SIS ACCUM TK 2 FILL VLV, at 2-M-6, to the CLOSE position when the tygon hose indicates that Accumulator No. 2 level is above the cylindrical portion of the tank. ________

[36] **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, at 2-M-6, to the STOP position. ________

[37] **DRAIN** approximately five gallons of water from Accumulator No. 2 from TV-1. ________

[38] **CLOSE** the following valves:

A. 2-VTV-63-607, SIS COLD LEG ACCUM 2 VENT ________

B. 2-DRV-63-669, ACCUM LEVEL STANDPIPE DRAIN ________

C. 2-FCV-63-107, SIS COLD LEG ACCUM 2 N2 MAKEUP ________

D. 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT ________

[39] **VERIFY/ADJUST** the set point on 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to approximately 500 psig. ________

[40] **VERIFY** Accumulator No. 2 tank external surface temperature is greater than 73°F **AND**

RECORD.

M&TE ______________________ Cal Due Date ____________

TEMPERATURE ____________ °F ____________

[41] **PLACE** and **HOLD** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, at 2-M-6, to the OPEN position until Red Light is ON. ________

[42] **PLACE** Hand Switch 2-HS-63-107A, N2 TO CL ACCUM 2, at 2-M-6, to the OPEN position. ________

Date ________

6.2 SI Accumulator No. 2 Functional Test (continued)

[43] **VERIFY** the following indications when Accumulator No. 2 pressure reaches approximately 500 psig as read on 2-PT-63-109:

A. Annunciator Window 132-B, CL ACCUM 2 PRESS HI/LO, 2-XA-55-6D, is in Alarm. ________

B. Annunciator window 277-E, CL ACCUM 2 PRESS HI, 2-XA-55-L10, is CLEAR. ________

CAUTION
Do not exceed 685 psig as read on 2-PT-63-109.

[44] **BEGIN** increasing the pressure in Accumulator No. 2, by slowly increasing the set point on valve 2-PCV-63-58, SIS ACCUM TANK N2 HDR INLET VALVE PRESS CNTL. ________

NOTE
The following steps verify alarms as accumulator pressure is increased. Steps 6.2[45], 6.2[46], and 6.2[47] may be signed in the order in which they are verified.

[45] **VERIFY** Annunciator Window 132-B, CL ACCUM 2 PRESS HI/LO, CLEARS. **(Acc Crit** 5.0[5]**)** ________

[46] **VERIFY** Unit 2 Alarm Printer indicates 132-B CL ACCUM 2 PRESS LO (PS-63-106B) is NORMAL (Blue). ________

[47] **VERIFY** Unit 2 Alarm Printer indicates 132 -B CL ACCUM 2 PRESS LO (PS-63-108B) is NORMAL (Blue). ________

NOTE
The following steps verify alarms as accumulator pressure continues to increase. Steps 6.2[48], 6.2[49], 6.2[50], and 6.2[51] may be signed in the order in which they are verified.

[48] **VERIFY** Annunciator Window 132-B, CL ACCUM 2 PRESS HI/LO, ALARMS. **(Acc Crit** 5.0[5]**)** ________

Date ________

6.2 SI Accumulator No. 2 Functional Test (continued)

[49] **VERIFY** Annunciator Window 277-E, CL ACCUM 2 PRESS HI, ALARMS. **(Acc Crit** 5.0[6]**)** ________

[50] **VERIFY** Unit 2 Alarm Printer indicates, 132-B, CL ACCUM 2 PRESS HI, (PS-63-106A), is in Alarm (Red). ________

[51] **VERIFY** Unit 2 Alarm Printer indicates, 132-B, CL ACCUM 2 PRESS HI, (PS-63-108A), is in Alarm (Red). ________

[52] **PLACE** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the CLOSE position. ________

CAUTION

Nitrogen will not support life. Make sure all personnel are clear before venting nitrogen into the atmosphere.

[53] **BEGIN** to slowly reduce pressure in Accumulator No. 2 using 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, at 2-M-6. ________

NOTE

The following steps verify alarms as accumulator pressure decreases. Steps 6.2[54], 6.2[55], 6.2[56], and 6.2[57] may be signed in the order in which they are verified.

[54] **VERIFY** Annunciator Window 132-B, CL ACCUM 2 PRESS HI/LO, CLEARS. **(Acc Crit** 5.0[5]**)** ________

[55] **VERIFY** Annunciator Window 277-E, CL ACCUM 2 PRESS HI, CLEARS. **(Acc Crit** 5.0[6]**)** ________

[56] **VERIFY** Unit 2 Alarm Printer indicates, 132 -B, CL ACCUM 2 PRESS HI, (PS-63-106A), is NORMAL (Blue). ________

[57] **VERIFY** Unit 2 Alarm Printer indicates, 132-B, CL ACCUM 2 PRESS HI, (PS-63-108A), is NORMAL (Blue). ________

Date ________

6.2 SI Accumulator No. 2 Functional Test (continued)

NOTE

The following steps verify alarms as accumulator pressure continues to decrease. Steps 6.2[58], 6.2[59], and 6.2[60] may be signed in the order in which they are verified.

[58] **VERIFY** Annunciator Window 132 -B, CL ACCUM 2 PRESS HI/LO, ALARMS. **(Acc Crit** 5.0[5]**)** ________

[59] **VERIFY** Unit 2 Alarm Printer indicates, 132-B, CL ACCUM 2 PRESS LO, (PS-63-106B), is in ALARM (Red). ________

[60] **VERIFY** Unit 2 Alarm Printer indicates, 132-B, CL ACCUM 2 PRESS LO, (PS-63-108B), is in ALARM (Red). ________

[61] **ADJUST** 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to CLOSE 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT. ________

CAUTION

Do not exceed 685 psig as read on 2-PT-63-108.

[62] **PLACE** and **HOLD** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the OPEN position until Red Light is ON. ________

[63] **PLACE** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the CLOSE position when Accumulator No. 2 pressure is greater than 676.5 psig as read on 2-PT-63-108, **AND**

RECORD pressure. **(Acc Crit** 5.0[1]**)**

M&TE ______________________ Cal Due Date ___________

Pressure _________ psig (greater than 674 psig) ___________

[64] **PLACE** Hand Switch 2-HS-63-107A, N2 TO CL ACCUM 2, to the CLOSE position. ________

[65] **ENSURE/ANNOTATE** the recorder with the step number, range/parameter for each channel used, time and date. ________

Date ________

6.2 SI Accumulator No. 2 Functional Test (continued)

[66] **START** the recorder. ________

> **NOTE**
>
> During the performance of Step 6.2[67] visual observation of transient vibration in accordance to engineering specification N3C-945 is required.

[67] **MOMENTARILY PLACE** a jumper across Terminals TB602-5 and TB602-6 in Panel 2-R-51 to simulate a Safety Injection Signal, **AND**

VERIFY 2-FCV-63-98, COLD LEG ACCUMULATOR 2 OUTLET ISOLATION, OPENS. **(ACC. CRIT** 5.0[3]**)** ________

[68] **PLACE** Hand Switch 2-HS-63-98A, CL ACCUM 2 OUTLET, to the CLOSE position when 2-FCV-63-98 reaches its full open position. ________

[69] **STOP** the recorder. ________

[70] **PLACE** Hand Switch 2-HS-63-107A SIS ACCUM TK 2 N2 MAKEUP VLV, to the OPEN position. ________

> **CAUTION**
>
> Nitrogen will not support life. Make sure all personnel are clear before venting nitrogen into the atmosphere of Accumulator Room 4.

[71] **ADJUST** 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to vent remaining pressure from Accumulator No. 2. ________

[72] **ADJUST** 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to CLOSE 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT. ________

[73] **PLACE** Hand Switch 2-HS-63-107A, N2 TO CL ACCUM 2, to the CLOSE position. ________

Date ________

6.2 SI Accumulator No. 2 Functional Test (continued)

[74] **OPEN** valve 2-DRV-63-669, ACCUM LEVEL STANDPIPE DRAIN. ________

[75] **OPEN** the following valves:

A. TV-4 ________

B. 2-DRV-63-670, ACCUM LEVEL STANDPIPE DRAIN ________

[76] **OPEN** the following valves:

A. 2-VTV-63-607, ACCUM 2 VENT ________

B. 2-FCV-63-107, SIS COLD LEG ACCUM 2 N2 MAKEUP ________

C. 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT ________

[77] **ENSURE** the test transmitters and sensing lines are properly filled and vented. ________

A. **OPEN** equalizer valve on Temporary d/p transmitter. ________

[78] **IF** Accumulator No. 2 level is greater than 128 3/4 inches as read on the tygon hose, **THEN**

PERFORM Steps 6.2[78]A through 6.2[78]D and N/A Steps 6.2[79]A thru 6.2[79]F.

A. **PLACE** Hand Switch 2-HS-63-110A, SIS ACCUM TK 2 DRAIN VLV, to the OPEN position. ________

B. **CONTINUE** draining Accumulator No. 2 until the level is between 128-1/8 in. and 128-3/4 in. as read on the temporary tygon hose. ________

C. **PLACE** Hand Switch 2-HS-63-110A, SIS ACCUM TK 2 DRAIN VLV, to the CLOSE position. ________

D. **RECORD** Accumulator No. 2 level from the temporary tygon hose:

LEVEL ___________ inches (128 1/8 - 128 3/4) IN. __________

Date ________

6.2 SI Accumulator No. 2 Functional Test (continued)

[79] **IF** Accumulator No. 2 level is less than 128 1/8 inches as read on the tygon hose, **THEN**

PERFORM Steps 6.2[79]A through 6.2[79]F and N/A Steps 6.2[78]A thru 6.2[78]D. ________

CAUTIONS

1) The SI Pump should not be run at a flow of less than 40.5 GPM for longer than 45 minutes.
2) The SI Pump should have a 1 hour cool down period before restart.

A. **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, to the START position. ________

NOTE

The fill valve may be cycled, as necessary, to obtain the specified level, and TV-1 can be used to drain down in case of an overfill.

B. **PLACE** Hand Switch 2-HS-63-95A, SIS ACCUM TK 2 FILL VALVE, to the OPEN position. ________

C. **CONTINUE** to fill Accumulator No. 2 throttling 2-ISV-63-611, ACCUM 2 FILL ISLN, as necessary, until the level is between 128-1/8 in. and 128-3/4 in. as read on the temporary tygon hose. ________

D. **PLACE** Hand Switch 2-HS-63-95A, SIS ACCUM TK 2 FILL VALVE, to the CLOSE position. ________

E. **RECORD** Accumulator No. 2 level from the temporary tygon hose:

LEVEL ___________ inches (128 1/8 - 128 3/4 IN.) ___________

F. **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, to the STOP position. ________

[80] **CLOSE** valve 2-DRV-63-669, ACCUM LEVEL STANDPIPE DRAIN. ________

Date ________

6.2 SI Accumulator No. 2 Functional Test (continued)

[81] **CLOSE** the following valves:

A. 2-FCV-63-107, SIS COLD LEG ACCUM 2 N2 MAKEUP ________

B. 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT ________

[82] **CLOSE** equalizer valve on Temporary d/p Transmitter ________

[83] **CONNECT** a source of instrument air to the flange at valve 2-VTV-63-607, ACCUM 2 VENT. ________

[84] **VERIFY** Accumulator No. 2 tank external surface temperature is greater than 73°F, **AND**

RECORD.

M&TE ____________________ Cal Due Date ___________

TEMPERATURE ___________ °F ___________

[85] **PRESSURIZE** Accumulator No. 2 to approximately 90 psig as read on 2-PT-63-108 using the instrument air source at 2-VTV-63-607, ACCUM 2 VENT.

ACCUMULATOR NO. 2 PRESSURE ___________ psig ___________

[86] **CLOSE** valve 2-VTV-63-607, ACCUM 2 VENT. ________

[87] **PLACE** and **HOLD** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the OPEN position until Red Light is ON. ________

[88] **ADJUST** the set point on 2-PIC-63-58, SIS ACCUM TANK N2 HDR INLET VALVE PRESS CNTL, [BIT RM] to 0 psig. ________

[89] **PLACE** Hand Switch 2-HS-63-107A, N2 TO CL ACCUM 2, to the OPEN position. ________

[90] **ADJUST** the set point on 2-PIC-63-58, SIS ACCUM TANK N2 HDR INLET VALVE PRESS CNTL, [BIT RM] to pressurize Accumulator No. 2 to between 99.5 and 100 psig as read on 2-PT-63-108. ________

[91] **PLACE** Hand Switch 2-HS-63-107A, N2 TO CL ACCUM 2, to the CLOSE position. ________

Date ________

6.2 SI Accumulator No. 2 Functional Test (continued)

[92] **RECORD** Accumulator No. 2 pressure as read on 2-PT-63-108.

PRESSURE ____________ psig (99.5 - 100 psig) ___________

[93] **PLACE** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the CLOSE position. ________

[94] **CLOSE** valve 2-RTV-63-356A, RT VLV TO LE-63-109L. ________

[95] **VERIFY** reactor vessel level is at least 15 ft. below the nozzles. ________

A. **VERIFY/PROGRAM** data logger per Appendix U. ________

[96] **ENSURE/ANNOTATE** the recorder with the step number, range/parameter of each channel used, time and date. ________

[97] **START** the recorder. ________

[98] **PLACE** Hand Switch 2-HS-63-98A, SIS ACCUM TK 2 FLOW ISOLATION VLV, to the OPEN position. ________

[99] **STOP** the recorder when the blow down is complete (all water expelled from the accumulator) and valve 2-FCV-63-98, COLD LEG ACCUMULATOR 2 OUTLET ISOLATION is FULL OPEN. ________

[100] **PLACE** Hand Switch 2-HS-63-98A, SIS ACCUM TK 2 FLOW ISOLATION VLV, to the CLOSE position. ________

[101] **DISCONNECT** the source of instrument air from the flange at valve 2-VTV-63-607, ACCUM 2 VENT.

____
1st

____
CV

[102] **OPEN** valve 2-VTV-63-607, ACCUM 2 VENT, to vent any remaining pressure in Accumulator No. 2. ________

Date ________

6.2 SI Accumulator No. 2 Functional Test (continued)

[103] **CLOSE** the following valves:

A. 2-DRV-63-670. ACCUM LEVEL STANDPIPE DRAIN ________

B. TV-2 ________

C. TV-3 ________

D. TV-4 ________

E. 2-RTV-63-355A, RT VLV TO LE-63-109U ________

[104] **PLACE** Hand Switch 2-HS-63-187, RHR SUPPLY TEST LINE to the CLOSE position. ________

[105] **PLACE** Hand Switch 2-HS-63-71A, SIS CHECK VLV LEAK TEST ISOLATION, to the CLOSE position. ________

[106] **PLACE** Hand Switch 2-HS-63-23, SIS ACCUM FILL LINE ISOLATION VLV, to the CLOSE position. ________

[107] **CLOSE** 2-VTV-63-607, ACCUM 2 VENT. ________

[108] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. ________

[109] **REMOVE** the temporary d/p transmitter from TV-4 and 2-DRV-63-670.

____
1st

____
CV

[110] **REMOVE** the test spool pieces and recorder installed in steps 4.3[8], 4.3[9], and 4.3[10] for Accumulator 2.

____
1st

____
CV

Date ________

6.2 SI Accumulator No. 2 Functional Test (continued)

NOTE
Valve stroke time is from the time the Red Open Light comes on until the Green Close Light goes off.

[111] **DETERMINE** from the recorder, valve 2-FCV-63-98, COLD LEG ACCUMULATOR 2 OUTLET ISOLATION, opening time for step 6.2[67], **AND**

RECORD. **(Acc Crit** 5.0[1]**)**

OPEN TIME __________ seconds (less than or equal to 49 sec) ______________

[112] **CALCULATE** the accumulator discharge line resistance (f L/D) per Appendix V. ________

[113] **VERIFY** the accumulator discharge line resistance (f L/D) from Appendix V is greater than or equal to 4.5 and less than or equal to 6.7. **(Acc Crit** 5.0[2]**)** ________

Date ________

6.3 SI Accumulator No. 3 Functional Test

[1] **VERIFY** Prerequisites in Section 4.0 for Subsection 6.3 have been completed. ________

[2] **VERIFY** the test connection spools are installed. ________

[3] **VERIFY** a tygon hose level indicator to the Accumulator No. 3 level standpipe TV-2 is attached. ________

[4] **VERIFY** the tygon hose is installed vertically on Accumulator No. 3 from below the lower level tap to above the tank vent. ________

[5] **VERIFY** a means to measure Accumulator No. 3 level between the instrument taps is provided. Level should be referenced to the center line of the accumulator lower level tap. ________

[6] **OPEN** the following valves:

A. TV-2 ________

B. 2-DRV-63-671, SIS COLD LEG ACCUM 3 2-LT-63-89 DRAIN ________

C. 2-FCV-63-87, N2 TO CL ACCUM 3 ________

D. 2-FCV-63-65, CLA N2 VENT HDR CONTROL ________

E. 2-RTV-63-359A, 2-LT-63-89 ROOT ________

F. 2-RTV-63-360A, 2-LT-63-89 ROOT ________

[7] **VERIFY** Annunciator Window 133-A, CL ACCUM 3 LEVEL HI/LO, at 2-XA-55-6D is in ALARM. ________

Date ________

6.3 SI Accumulator No. 3 Functional Test (continued)

CAUTIONS

1) The SI Pump should not be run at a flow of less than 40.5 GPM for longer than 45 minutes.
2) The SI Pump should have a 1 hour cool down period before restart.

[8] **PLACE** Hand Switch 2-HS-63-10A, SI PMP A (ECCS), at 2-M-6, to the START position. ________

[9] **PLACE** Hand Switch 2-HS-63-77A, MAKEUP TO CL ACCUM 3, at 2-M-6, to the OPEN position. ________

[10] **PLACE** Hand Switch 2-HS-63-187, RHR SUPPLY TEST LINE VALVE, at 2-M-6, to the OPEN position. ________

[11] **PLACE** and **HOLD** Hand Switch 2-HS-63-71A, CKV TEST LINE TO HUT, at 2-M-6, to the OPEN position until the Red Light is ON. ________

[12] **PLACE** and **HOLD** Hand Switch 2-HS-63-23, CLA FILL FROM SI PMPS, at 2-M-6, to the OPEN position until the Red Light is ON. ________

[13] **THROTTLE** 2-ISV-63-612, ACCUM 3 FILL ISLN, as necessary to control accumulator fill rate. ________

NOTE

The following steps verify alarms as level in the accumulator rises. Steps 6.3[14], 6.3[15], and 6.3[16] may be signed in the order in which they are verified.

[14] **VERIFY** Annunciator Window 133-A, CL ACCUM 3 LEVEL HI/LO, CLEARS. **(Acc Crit** 5.0[4]**)** ________

[15] **VERIFY** Unit 2 Alarm Printer indicates 133 -A CL ACCUM 3 LEVEL LO (LS-63-81B) is NORMAL (Blue). ________

[16] **VERIFY** Unit 2 Alarm Printer indicates 133-A CL ACCUM 3 LEVEL LO (LS-63-89B) is NORMAL (Blue). ________

Date ________

6.3 SI Accumulator No. 3 Functional Test (continued)

NOTE

The following steps verify alarms as level in the accumulator continues to rise. Steps 6.3[17], 6.3[18], and 6.3[19] may be signed in the order in which they are verified.

[17] **VERIFY** Annunciator Window 133 -A, CL ACCUM 3 LEVEL HI/LO, ALARMS. **(Acc Crit** 5.0[4]**)** _________

[18] **VERIFY** Unit 2 Alarm Printer indicates 133-A CL ACCUM 3 LEVEL HI (LS-63-89A) is in ALARM (Red). _________

[19] **VERIFY** Unit 2 Alarm Printer indicates 133-A CL ACCUM 3 LEVEL HI (LS-63-81A) is in ALARM (Red). _________

[20] **PLACE** Hand Switch 2-HS-63-77A, SIS ACCUM TK 3 FILL VLV, at 2-M-6, to the CLOSE position. _________

[21] **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, at 2-M-6, to the STOP position. _________

[22] **PLACE** Hand Switch 2-HS-63-90A, CL ACCUM 3 DRAIN, at 2-M-6, to the OPEN position. _________

NOTE

The following steps verify alarms as level in the accumulator is lowered. Steps 6.3[23], 6.3[24], and 6.3[25] may be signed in the order in which they are verified.

[23] **VERIFY** Annunciator Window 133 A, CL ACCUM 3 LEVEL HI/LO, CLEARS. **(Acc Crit** 5.0[4]**)** _________

[24] **VERIFY** Unit 2 Alarm Printer indicates 133-A CL ACCUM 3 LEVEL HI (LS-63-89A) is NORMAL (Blue). _________

[25] **VERIFY** Unit 2 Alarm Printer indicates 133-A CL ACCUM 3 LEVEL HI (LS-63-81A) is NORMAL (Blue). _________

Date ________

6.3 SI Accumulator No. 3 Functional Test (continued)

NOTE

The following steps verify alarms as level in the accumulator continues to lower. Steps 6.3[26], 6.3[27], and 6.3[28] may be signed in the order in which they are verified.

[26] **VERIFY** Annunciator Window 133-A, CL ACCUM 3 LEVEL HI/LO, ALARMS. **(Acc Crit** 5.0[4]**)** ________

[27] **VERIFY** Unit 2 Alarm Printer indicates 133-A CL ACCUM 3 LEVEL LO (LS-63-89B) is in ALARM (Red). ________

[28] **VERIFY** Unit 2 Alarm Printer indicates 133-A CL ACCUM 3 LEVEL LO (LS-63-81B) is in ALARM (Red). ________

[29] **PLACE** Hand Switch 2-HS-63-90A, SIS ACCUM TK 3 DRAIN VLV, at 2-M-6, to the CLOSE position. ________

CAUTIONS

1) The SI Pump should not be run at a flow of less than 40.5 GPM for longer than 45 minutes.
2) The SI Pump should have a 1 hour cool down period before restart.

[30] **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, at 2-M-6, to the START position. ________

[31] **PLACE** Hand Switch 2-HS-63-77A, SIS ACCUM TK 3 FILL VLV, at 2-M-6, to OPEN position. ________

[32] **PLACE** Hand Switch 2-HS-63-80A, SIS ACCUM TK 3 FLOW ISOLATION VLV, at 2-M-6, to the OPEN position. ________

[33] **PLACE** Hand Switch 2-HS-63-80A, SIS ACCUM TK 3 FLOW ISOLATION VLV, at 2-M-6, to the CLOSE position when water just begins to flow into the reactor vessel from RCS Loop 3 cold leg. ________

[34] **THROTTLE** 2-ISV-63-612, ACCUM 3 FILL ISLN, as necessary to control accumulator fill rate. ________

Date ________

6.3 SI Accumulator No. 3 Functional Test (continued)

[35] **PLACE** Hand Switch 2-HS-63-77A, SIS ACCUM TK 3 FILL VLV, at 2-M-6, to the CLOSE position when the tygon hose indicates that Accumulator No. 3 level is above the cylindrical portion of the tank. ________

[36] **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, at 2-M-6, to the STOP position. ________

[37] **DRAIN** approximately five gallons of water from Accumulator No. 3 from TV-1. ________

[38] **CLOSE** the following valves:

A. 2-VTV-63-608, SIS COLD LEG ACCUM 3 VENT ________

B. 2-DRV-63-671, ACCUM LEVEL STANDPIPE DRAIN ________

C. 2-FCV-63-87, SIS COLD LEG ACCUM 3 N2 MAKEUP ________

D. 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT ________

[39] **VERIFY/ADJUST** the set point on 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to approximately 500 psig. ________

[40] **VERIFY** Accumulator No. 3 tank external surface temperature is greater than 73°F **AND**

RECORD.

M&TE ______________________ Cal Due Date ___________

TEMPERATURE ___________ °F ___________

[41] **PLACE** and **HOLD** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, at 2-M-6, to the OPEN position until Red Light is ON. ________

[42] **PLACE** Hand Switch 2-HS-63-87A, N2 TO CL ACCUM 3, at 2-M-6, to the OPEN position. ________

Date ________

6.3 SI Accumulator No. 3 Functional Test (continued)

[43] **VERIFY** the following indications when Accumulator No. 3 pressure reaches approximately 500 psig as read on 2-PT-63-88:

A. Annunciator Window 133-B, CL ACCUM 3 PRESS HI/LO, 2-XA-55-6D, is in Alarm. ________

B. Annunciator window 278-E, CL ACCUM 3 PRESS HI, 2-XA-55-L10, is CLEAR. ________

CAUTION
Do not exceed 685 psig as read on 2-PT-63-88.

[44] **BEGIN** increasing the pressure in Accumulator No. 3, by slowly increasing the set point on valve 2-PCV-63-58, SIS ACCUM TANK N2 HDR INLET VALVE PRESS CNT. ________

NOTE
The following steps verify alarms as accumulator pressure is increased. Steps 6.3[45], 6.3[46], and 6.3[47] may be signed in the order in which they are verified.

[45] **VERIFY** Annunciator Window 133-B, CL ACCUM 3 PRESS HI/LO, CLEARS. **(Acc Crit** 5.0[5]**)** ________

[46] **VERIFY** Unit 2 Alarm Printer indicates 133-B CL ACCUM 3 PRESS LO (PS-63-88B) is NORMAL (Blue). ________

[47] **VERIFY** Unit 2 Alarm Printer indicates 133-B CL ACCUM 3 PRESS LO (PS-63-86B) is NORMAL (Blue). ________

NOTE
The following steps verify alarms as accumulator pressure continues to increase. Steps 6.3[48], 6.3[49], 6.3[50], and 6.3[51] may be signed in the order in which they are verified.

[48] **VERIFY** Annunciator Window 133-B, CL ACCUM 3 PRESS HI/LO, ALARMS. **(Acc Crit** 5.0[5]**)** ________

Date ________

6.3 SI Accumulator No. 3 Functional Test (continued)

[49] **VERIFY** Annunciator Window 278-E, CL ACCUM 3 PRESS HI, ALARMS. **(Acc Crit** 5.0[6]**)** ________

[50] **VERIFY** Unit 2 Alarm Printer indicates, 133-B, CL ACCUM 3 PRESS HI, (PS-63-88A), is in Alarm (Red). ________

[51] **VERIFY** Unit 2 Alarm Printer indicates, 133-B, CL ACCUM 3 PRESS HI, (PS-63-86A), is in Alarm (Red). ________

[52] **PLACE** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the CLOSE position. ________

CAUTION

Nitrogen will not support life. Make sure all personnel are clear before venting nitrogen into the atmosphere.

[53] **BEGIN** to slowly reduce pressure in Accumulator No. 3 using 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, at 2-M-6. ________

NOTE

The following steps verify alarms as accumulator pressure decreases. Steps 6.3[54], 6.3[55], 6.3[56], and 6.3[57] may be signed in the order in which they are verified.

[54] **VERIFY** Annunciator Window 133-B, CL ACCUM 3 PRESS HI/LO, CLEARS. **(Acc Crit** 5.0[5]**)** ________

[55] **VERIFY** Annunciator Window 278-E, CL ACCUM 3 PRESS HI, CLEARS. **(Acc Crit** 5.0[6]**)** ________

[56] **VERIFY** Unit 2 Alarm Printer indicates, 133 -B, CL ACCUM 3 PRESS HI, (PS-63-88A), is NORMAL (Blue). ________

[57] **VERIFY** Unit 2 Alarm Printer indicates, 133-B, CL ACCUM 3 PRESS HI, (PS-63-86A), is NORMAL (Blue). ________

Date ________

6.3 SI Accumulator No. 3 Functional Test (continued)

NOTE

The following steps verify alarms as accumulator pressure continues to decrease. Steps 6.3[58], 6.3[59], and 6.3[60] may be signed in the order in which they are verified.

[58] **VERIFY** Annunciator Window 133 -B, CL ACCUM 3 PRESS HI/LO, ALARMS. **(Acc Crit** 5.0[5]**)** ________

[59] **VERIFY** Unit 2 Alarm Printer indicates, 133-B, CL ACCUM 3 PRESS LO, (PS-63-88B), is in ALARM (Red). ________

[60] **VERIFY** Unit 2 Alarm Printer indicates, 133-B, CL ACCUM 3 PRESS LO, (PS-63-86B), is in ALARM (Red). ________

[61] **ADJUST** 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to CLOSE 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT. ________

CAUTION

Do not exceed 685 psig as read on 2-PT-63-88.

[62] **PLACE** and **HOLD** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the OPEN position until Red Light is ON. ________

[63] **PLACE** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the CLOSE position when Accumulator No. 3 pressure is greater than 676.5 psig as read on 2-PT-63-88, **AND**

RECORD pressure. **(Acc Crit** 5.0[1]**)**

M&TE ______________________ Cal Due Date ____________

Pressure __________ psig (greater than 674 psig) ____________

[64] **PLACE** Hand Switch 2-HS-63-87A, N2 TO CL ACCUM 3, to the CLOSE position. ________

Date ________

6.3 SI Accumulator No. 3 Functional Test (continued)

[65] **ENSURE/ANNOTATE** the recorder with the step number, range/parameter for each channel used, time and date. ________

[66] **START** the recorder. ________

NOTE

During the performance of Step 6.3[67] visual observation of transient vibration in accordance to engineering specification N3C-945 is required.

[67] **MOMENTARILY PLACE** a jumper across Terminals TB621-7 and TB621-8 in Panel 2-R-48 to simulate a Safety Injection Signal, **AND**

VERIFY 2-FCV-63-80, COLD LEG ACCUMULATOR 1 OUTLET ISOLATION, OPENS. **(ACC. CRIT** 5.0[3]**)** ________

[68] **PLACE** Hand Switch 2-HS-63-80A, CL ACCUM 3 OUTLET, to the CLOSE position when 2-FCV-63-80 reaches its full open position. ________

[69] **STOP** the recorder. ________

[70] **PLACE** Hand Switch 2-HS-63-87A SIS ACCUM TK 3 N2 MAKEUP VLV, to the OPEN position. ________

CAUTION

Nitrogen will not support life. Make sure all personnel are clear before venting nitrogen into the atmosphere of Accumulator Room 4.

[71] **ADJUST** 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to vent remaining pressure from Accumulator No. 3. ________

[72] **ADJUST** 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to CLOSE 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT. ________

[73] **PLACE** Hand Switch 2-HS-63-87A, N2 TO CL ACCUM 3, to the CLOSE position. ________

Date ________

6.3 SI Accumulator No. 3 Functional Test (continued)

[74] **OPEN** valve 2-DRV-63-671, ACCUM LEVEL STANDPIPE DRAIN. ________

[75] **OPEN** the following valves:

A. TV-4 ________

B. 2-DRV-63-672, ACCUM LEVEL STANDPIPE DRAIN ________

[76] **OPEN** the following valves:

A. 2-DRV-63-608, ACCUM 3 VENT ________

B. 2-FCV-63-87, SIS COLD LEG ACCUM 3 N2 MAKEUP ________

C. 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT ________

[77] **ENSURE** the test transmitters and sensing lines are properly filled and vented. ________

A. **OPEN** equalizer valve on Temporary d/p transmitter. ________

[78] **IF** Accumulator No. 3 level is greater than 128 3/4 inches as read on the tygon hose, **THEN**

PERFORM Steps 6.3[78]A through 6.3[78]D and N/A Steps 6.3[79]A through 6.3[79]F.

A. **PLACE** Hand Switch 2-HS-63-90A, SIS ACCUM TK 3 DRAIN VLV, to the OPEN position. ________

B. **CONTINUE** draining Accumulator No. 3 until the level is between 128-1/8 in. and 128-3/4 in. as read on the temporary tygon hose. ________

C. **PLACE** Hand Switch 2-HS-63-90A, SIS ACCUM TK 3 DRAIN VLV, to the CLOSE position. ________

D. **RECORD** Accumulator No. 3 level from the temporary tygon hose:

LEVEL ____________ inches (128 1/8 - 128 3/4) IN. __________

Date ________

6.3 SI Accumulator No. 3 Functional Test (continued)

[79] **IF** Accumulator No. 3 level is less than 128 1/8 inches as read on the tygon hose, **THEN**

PERFORM Steps 6.3[79]A through 6.3[79]F and N/A Steps 6.3[78]A through 6.3[78]D. ________

CAUTIONS

1) The SI Pump should not be run at a flow of less than 40.5 GPM for longer than 45 minutes.
2) The SI Pump should have a 1 hour cool down period before restart.

A. **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, to the START position. ________

NOTE

The fill valve may be cycled, as necessary, to obtain the specified level, and TV-1 can be used to drain down in case of an overfill.

B. **PLACE** Hand Switch 2-HS-63-77A, SIS ACCUM TK 3 FILL VALVE, to the OPEN position. ________

C. **CONTINUE** to fill Accumulator No. 3 throttling 2-ISV-63-612, ACCUM 3 FILL ISLN, as necessary, until the level is between 128-1/8 in. and 128-3/4 in. as read on the temporary tygon hose. ________

D. **PLACE** Hand Switch 2-HS-63-77A, SIS ACCUM TK 3 FILL VALVE, to the CLOSE position. ________

E. **RECORD** Accumulator No. 3 level from the temporary tygon hose:

LEVEL ___________ inches (128 1/8 - 128 3/4 IN.) ___________

F. **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, to the STOP position. ________

Date ________

6.3 SI Accumulator No. 3 Functional Test (continued)

[80] **CLOSE** valve 2-DRV-63-671, ACCUM LEVEL STANDPIPE DRAIN. ________

[81] **CLOSE** the following valves:

A. 2-FCV-63-87, SIS COLD LEG ACCUM 1 N2 MAKEUP ________

B. 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT ________

[82] **CLOSE** equalizer valve on Temporary d/p Transmitter. ________

[83] **CONNECT** a source of instrument air to the flange at valve 2-VTV-63-608, ACCUM 3 VENT. ________

[84] **VERIFY** Accumulator No. 3 tank external surface temperature is greater than 73°F, **AND**
RECORD.

M&TE ______________________ Cal Due Date ____________

TEMPERATURE ____________ °F ____________

[85] **PRESSURIZE** Accumulator No. 3 to approximately 90 psig as read on 2-PT-63-88 using the instrument air source at 2-VTV-63-608, ACCUM 1 VENT.

ACCUMULATOR NO. 3 PRESSURE ____________ psig ____________

[86] **CLOSE** valve 2-VTV-63-608, ACCUM 3 VENT. ________

[87] **PLACE** and **HOLD** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the OPEN position until Red Light is ON. ________

[88] **ADJUST** the set point on 2-PIC-63-58, SIS ACCUM TANK N2 HDR INLET VALVE PRESS CNTL, [BIT RM] to 0 psig. ________

[89] **PLACE** Hand Switch 2-HS-63-87A, N2 TO CL ACCUM 3, to the OPEN position. ________

[90] **ADJUST** the set point on 2-PIC-63-58, SIS ACCUM TANK N2 HDR INLET VALVE PRESS CNTL, [BIT RM] to pressurize Accumulator No. 3 to between 99.5 and 100 psig as read on 2-PT-63-88. ________

Date ________

6.3 SI Accumulator No. 3 Functional Test (continued)

[91] **PLACE** Hand Switch 2-HS-63-87A, N2 TO CL ACCUM 3, to the CLOSE position. ________

[92] **RECORD** Accumulator No. 3 pressure as read on 2-PT-63-88.

PRESSURE ____________ psig (99.5 - 100 psig) ___________

[93] **PLACE** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the CLOSE position. ________

[94] **CLOSE** valve 2-RTV-63-360A, RT VLV TO LE-63-89L. ________

[95] **VERIFY** reactor vessel level is at least 15 ft. below the nozzles. ________

A. **VERIFY/PROGRAM** data logger per Appendix U. ________

[96] **ENSURE/ANNOTATE** the recorder with the step number, range/parameter of each channel used, time and date. ________

[97] **START** the recorder. ________

[98] **PLACE** Hand Switch 2-HS-63-80A, SIS ACCUM TK 3 FLOW ISOLATION VLV, to the OPEN position. ________

[99] **STOP** the recorder when the blow down is complete (all water expelled from the accumulator) and valve 2-FCV-63-80, COLD LEG ACCUMULATOR 3 OUTLET ISOLATION is FULL OPEN. ________

[100] **PLACE** Hand Switch 2-HS-63-80A, SIS ACCUM TK 3 FLOW ISOLATION VLV, to the CLOSE position. ________

[101] **DISCONNECT** the source of instrument air from the flange at valve 2-VTV-63-608, ACCUM 3 VENT.

____
1st

____
CV

[102] **OPEN** valve 2-VTV-63-608, ACCUM 3 VENT, to vent any remaining pressure in Accumulator No. 3. ________

Date ________

6.3 SI Accumulator No. 3 Functional Test (continued)

[103] **CLOSE** the following valves:

A. 2-DRV-63-672. ACCUM LEVEL STANDPIPE DRAIN ________

B. TV-2 ________

C. TV-3 ________

D. TV-4 ________

E. 2-RTV-63-359A, RT VLV TO LE-63-89U ________

[104] **PLACE** Hand Switch 2-HS-63-187, RHR SUPPLY TEST LINE to the CLOSE position. ________

[105] **PLACE** Hand Switch 2-HS-63-71A, SIS CHECK VLV LEAK TEST ISOLATION, to the CLOSE position. ________

[106] **PLACE** Hand Switch 2-HS-63-23, SIS ACCUM FILL LINE ISOLATION VLV, to the CLOSE position. ________

[107] **CLOSE** 2-VTV-63-608, ACCUM 3 VENT. ________

[108] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. ________

[109] **REMOVE** the temporary d/p transmitter from TV-4 and 2-DRV-63-672.

____
1st

____
CV

[110] **REMOVE** the test spool pieces and recorder installed in steps 4.3[8], 4.3[9], and 4.3[10] for Accumulator 3.

____
1st

____
CV

Date ________

6.3 SI Accumulator No. 3 Functional Test (continued)

NOTE

Valve stroke time is from the time the Red Open Light comes on until the Green Close Light goes off.

[111] **DETERMINE** from the recorder valve 2-FCV-63-80, COLD LEG ACCUMULATOR 3 OUTLET ISOLATION, opening time for step 6.3[67], **AND**

RECORD. **(Acc Crit** 5.0[1]**)**

OPEN TIME __________ seconds (less than or equal to 49 sec) ______________

[112] **CALCULATE** the accumulator discharge line resistance (f L/D) per Appendix W. ________

[113] **VERIFY** the accumulator discharge line resistance (f L/D) from Appendix W is greater than or equal to 4.5 and less than or equal to 6.7. **(Acc Crit** 5.0[2]**)** ________

Date ________

6.4 SI Accumulator No. 4 Functional Test

[1] **VERIFY** Prerequisites in Section 4.0 for Subsection 6.4 have been completed. ________

[2] **VERIFY** the test connection spools are installed. ________

[3] **VERIFY** a tygon hose level indicator to the Accumulator No. 4 level standpipe TV-2 is attached. ________

[4] **VERIFY** the tygon hose is installed vertically on Accumulator No. 4 from below the lower level tap to above the tank vent. ________

[5] **VERIFY** a means to measure Accumulator No. 4 level between the instrument taps is provided. Level should be referenced to the center line of the accumulator lower level tap. ________

[6] **OPEN** the following valves:

A. TV-2 ________

B. 2-DRV-63-673, SIS COLD LEG ACCUM 4 2-LT-63-82 DRAIN ________

C. 2-FCV-63-63, N2 TO CL ACCUM 4 ________

D. 2-FCV-63-65, CLA N2 VENT HDR CONTROL ________

E. 2-RTV-63-363A, 2-LT-63-82 ROOT ________

F. 2-RTV-63-364A, 2-LT-63-82 ROOT ________

[7] **VERIFY** Annunciator Window 134-A, CL ACCUM 4 LEVEL HI/LO, at 2-XA-55-6D is in ALARM. ________

CAUTIONS

1) The SI Pump should not be run at a flow of less than 40.5 GPM for longer than 45 minutes.

2) The SI Pump should have a 1 hour cool down period before restart.

[8] **PLACE** Hand Switch 2-HS-63-10A, SI PMP A (ECCS), at 2-M-6, to the START position. ________

Date ________

6.4 SI Accumulator No. 4 Functional Test (continued)

[9] **PLACE** Hand Switch 2-HS-63-70A, MAKEUP TO CL ACCUM 4, at 2-M-6, to the OPEN position. ________

[10] **PLACE** Hand Switch 2-HS-63-187, RHR SUPPLY TEST LINE VALVE, at 2-M-6, to the OPEN position. ________

[11] **PLACE** and **HOLD** Hand Switch 2-HS-63-71A, CKV TEST LINE TO HUT, at 2-M-6, to the OPEN position until the Red Light is ON. ________

[12] **PLACE** and **HOLD** Hand Switch 2-HS-63-23, CLA FILL FROM SI PMPS, at 2-M-6, to the OPEN position until the Red Light is ON. ________

[13] **THROTTLE** 2-ISV-63-613, ACCUM 4 FILL ISLN, at El. 716/AZ 300, as necessary to control accumulator fill rate. ________

NOTE

The following steps verify alarms as level in the accumulator rises. Steps 6.4[14], 6.4[15], and 6.4[16] may be signed in the order in which they are verified.

[14] **VERIFY** Annunciator Window 134-A, CL ACCUM 4 LEVEL HI/LO, CLEARS. **(Acc Crit** 5.0[4]**)** ________

[15] **VERIFY** Unit 2 Alarm Printer indicates 134-A CL ACCUM 4 LEVEL LO (LS-63-60B) is NORMAL (Blue). ________

[16] **VERIFY** Unit 2 Alarm Printer indicates 134-A CL ACCUM 4 LEVEL LO (LS-63-82B) is NORMAL (Blue). ________

NOTE

The following steps verify alarms as level in the accumulator continues to rise. Steps 6.4[17], 6.4[18], and 6.4[19] may be signed in the order in which they are verified.

[17] **VERIFY** Annunciator Window 134-A, CL ACCUM 4 LEVEL HI/LO, ALARMS. **(Acc Crit** 5.0[4]**)** ________

Date ________

6.4 SI Accumulator No. 4 Functional Test (continued)

[18] **VERIFY** Unit 2 Alarm Printer indicates 134-A CL ACCUM 4 LEVEL HI (LS-63-82A) is in ALARM (Red). ________

[19] **VERIFY** Unit 2 Alarm Printer indicates 134-A CL ACCUM 4 LEVEL HI (LS-63-60A) is in ALARM (Red). ________

[20] **PLACE** Hand Switch 2-HS-63-70A, SIS ACCUM TK 4 FILL VLV, at 2-M-6, to the CLOSE position. ________

[21] **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, at 2-M-6, to the STOP position. ________

[22] **PLACE** Hand Switch 2-HS-63-66A, CL ACCUM 4 DRAIN, at 2-M-6, to the OPEN position. ________

NOTE

The following steps verify alarms as level in the accumulator is lowered. Steps 6.4[23], 6.4[24], and 6.4[25] may be signed in the order in which they are verified.

[23] **VERIFY** Annunciator Window 134 A, CL ACCUM 4 LEVEL HI/LO, CLEARS. **(Acc Crit** 5.0[4]**)** ________

[24] **VERIFY** Unit 2 Alarm Printer indicates 134-A CL ACCUM 4 LEVEL HI (LS-63-82A) is NORMAL (Blue). ________

[25] **VERIFY** Unit 2 Alarm Printer indicates 134-A CL ACCUM 4 LEVEL HI (LS-63-60A) is NORMAL (Blue). ________

NOTE

The following steps verify alarms as level in the accumulator continues to lower. Steps 6.4[26], 6.4[27], and 6.4[28] may be signed in the order in which they are verified.

[26] **VERIFY** Annunciator Window 134 -A, CL ACCUM 4 LEVEL HI/LO, ALARMS. **(Acc Crit** 5.0[4]**)** ________

[27] **VERIFY** Unit 2 Alarm Printer indicates 134-A CL ACCUM 4 LEVEL LO (LS-63-82B) is in ALARM (Red). ________

Date ________

6.4 SI Accumulator No. 4 Functional Test (continued)

[28] **VERIFY** Unit 2 Alarm Printer indicates 134-A CL ACCUM 4 LEVEL LO (LS-63-60B) is in ALARM (Red). ________

[29] **PLACE** Hand Switch 2-HS-63-66A, SIS ACCUM TK 4 DRAIN VLV, at 2-M-6, to the CLOSE position. ________

CAUTIONS

1) The SI Pump should not be run at a flow of less than 40.5 GPM for longer than 45 minutes.
2) The SI Pump should have a 1 hour cool down period before restart.

[30] **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, at 2-M-6, to the START position. ________

[31] **PLACE** Hand Switch 2-HS-63-70A, SIS ACCUM TK 4 FILL VLV, at 2-M-6, to OPEN position. ________

[32] **PLACE** Hand Switch 2-HS-63-67A, SIS ACCUM TK 4 FLOW ISOLATION VLV, at 2-M-6, to the OPEN position. ________

[33] **PLACE** Hand Switch 2-HS-63-67A, SIS ACCUM TK 4 FLOW ISOLATION VLV, at 2-M-6, to the CLOSE position when water just begins to flow into the reactor vessel from RCS Loop 4 cold leg. ________

[34] **THROTTLE** 2-ISV-63-613, ACCUM 4 FILL ISLN, as necessary to control accumulator fill rate. ________

[35] **PLACE** Hand Switch 2-HS-63-70A, SIS ACCUM TK 4 FILL VLV, at 2-M-6, to the CLOSE position when the tygon hose indicates that Accumulator No. 4 level is above the cylindrical portion of the tank. ________

[36] **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, at 2-M-6, to the STOP position. ________

[37] **DRAIN** approximately five gallons of water from Accumulator No. 4 from TV-1. ________

Date ________

6.4 SI Accumulator No. 4 Functional Test (continued)

[38] **CLOSE** the following valves:

A. 2-VTV-63-609, SIS COLD LEG ACCUM 4 VENT ________

B. 2-DRV-63-673, ACCUM LEVEL STANDPIPE DRAIN ________

C. 2-FCV-63-63, SIS COLD LEG ACCUM 4 N2 MAKEUP ________

D. 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT ________

[39] **VERIFY/ADJUST** the set point on 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to approximately 500 psig. ________

[40] **VERIFY** Accumulator No. 4 tank external surface temperature is greater than 73°F **AND**

RECORD.

M&TE ____________________ Cal Due Date ___________

TEMPERATURE ___________ °F ___________

[41] **PLACE** and **HOLD** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, at 2-M-6, to the OPEN position until Red Light is ON. ________

[42] **PLACE** Hand Switch 2-HS-63-63A, N2 TO CL ACCUM 4, at 2-M-6, to the OPEN position. ________

[43] **VERIFY** the following indications when Accumulator No. 4 pressure reaches approximately 500 psig as read on 2-PT-63-82:

A. Annunciator Window 134-B, CL ACCUM 4 PRESS HI/LO, 2-XA-55-6D, is in Alarm. ________

B. Annunciator window 279-E, CL ACCUM 4 PRESS HI, 2-XA-55-L10, is CLEAR. ________

Date ________

6.4 SI Accumulator No. 4 Functional Test (continued)

CAUTION

Do not exceed 685 psig as read on 2-PT-63-82.

[44] **BEGIN** increasing the pressure in Accumulator No. 4, by slowly increasing the set point on valve 2-PCV-63-58, SIS ACCUM TANK N2 HDR INLET VALVE PRESS CNT. ________

NOTE

The following steps verify alarms as accumulator pressure is increased. Steps 6.4[45], 6.4[46], and 6.4[47] may be signed in the order in which they are verified.

[45] **VERIFY** Annunciator Window 134-B, CL ACCUM 4 PRESS HI/LO, CLEARS. **(Acc Crit** 5.0[5]**)** ________

[46] **VERIFY** Unit 2 Alarm Printer indicates 134-B CL ACCUM 4 PRESS LO (PS-63-62B) is NORMAL (Blue). ________

[47] **VERIFY** Unit 2 Alarm Printer indicates 134 -B CL ACCUM 4 PRESS LO (PS-63-61B) is NORMAL (Blue). ________

NOTE

The following steps verify alarms as accumulator pressure continues to increase. Steps 6.4[48], 6.4[49], 6.4[50], and 6.4[51] may be signed in the order in which they are verified.

[48] **VERIFY** Annunciator Window 134-B, CL ACCUM 4 PRESS HI/LO, ALARMS. **(Acc Crit** 5.0[5]**)** ________

[49] **VERIFY** Annunciator Window 279-E, CL ACCUM 4 PRESS HI, ALARMS. **(Acc Crit** 5.0[6]**)** ________

[50] **VERIFY** Unit 2 Alarm Printer indicates, 134-B, CL ACCUM 4 PRESS HI, (PS-63-62A), is in Alarm (Red). ________

[51] **VERIFY** Unit 2 Alarm Printer indicates, 134-B, CL ACCUM 4 PRESS HI, (PS-63-61A), is in Alarm (Red). ________

Date ________

6.4 SI Accumulator No. 4 Functional Test (continued)

[52] **PLACE** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the CLOSE position. ________

CAUTION

Nitrogen will not support life. Make sure all personnel are clear before venting nitrogen into the atmosphere.

[53] **BEGIN** to slowly reduce pressure in Accumulator No. 4 using 2-HIC-63-65A, SIS ACCUM TANK N2, CLA N2 VENT HDR CONTROL, at 2-M-6. ________

NOTE

The following steps verify alarms as accumulator pressure decreases. Steps 6.4[54], 6.4[55], 6.4[56], and 6.4[57] may be signed in the order in which they are verified.

[54] **VERIFY** Annunciator Window 134-B, CL ACCUM 4 PRESS HI/LO, CLEARS. **(Acc Crit** 5.0[5]**)** ________

[55] **VERIFY** Annunciator Window 279-E, CL ACCUM 4 PRESS HI, CLEARS. **(Acc Crit** 5.0[6]**)** ________

[56] **VERIFY** Unit 2 Alarm Printer indicates, 134-B, CL ACCUM 4 PRESS HI, (PS-63-62A), is NORMAL (Blue). ________

[57] **VERIFY** Unit 2 Alarm Printer indicates, 134-B, CL ACCUM 4 PRESS HI, (PS-63-61A), is NORMAL (Blue). ________

NOTE

The following steps verify alarms as accumulator pressure continues to decrease. Steps 6.4[58], 6.4[59], and 6.4[60] may be signed in the order in which they are verified.

[58] **VERIFY** Annunciator Window 134-B, CL ACCUM 4 PRESS HI/LO, ALARMS. **(Acc Crit** 5.0[5]**)** ________

Date ________

6.4 SI Accumulator No. 4 Functional Test (continued)

[59] **VERIFY** Unit 2 Alarm Printer indicates, 134-B, CL ACCUM 4 PRESS LO, (PS-63-62B), is in ALARM (Red). ________

[60] **VERIFY** Unit 2 Alarm Printer indicates, 134-B, CL ACCUM 4 PRESS LO, (PS-63-61B), is in ALARM (Red). ________

[61] **ADJUST** 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to CLOSE 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT. ________

CAUTION

Do not exceed 685 psig as read on 2-PT-63-82.

[62] **PLACE** and **HOLD** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the OPEN position until Red Light is ON. ________

[63] **PLACE** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the CLOSE position when Accumulator No. 4 pressure is greater than 676.5 psig as read on 2-PT-63-62, **AND**

RECORD pressure. **(Acc Crit** 5.0[1]**)**

M&TE ______________________ Cal Due Date ____________

Pressure _________ psig (greater than 674 psig) ___________

[64] **PLACE** Hand Switch 2-HS-63-63A, N2 TO CL ACCUM 4, to the CLOSE position. ________

[65] **ENSURE/ANNOTATE** the recorder with the step number, range/parameter for each channel used, time and date. ________

[66] **START** the recorder. ________

Date ________

6.4 SI Accumulator No. 4 Functional Test (continued)

NOTE

During the performance of Step 6.4[67] visual observation of transient vibration in accordance to engineering specification N3C-945 is required.

[67] **MOMENTARILY PLACE** a jumper across Terminals TB621-7 and TB621-8 in Panel 2-R-51 to simulate a Safety Injection Signal, **AND**

VERIFY 2-FCV-63-67, COLD LEG ACCUMULATOR 4 OUTLET ISOLATION, OPENS. **(ACC. CRIT** 5.0[3]**)** ________

[68] **PLACE** Hand Switch 2-HS-63-67A, CL ACCUM 4 OUTLET, to the CLOSE position when 2-FCV-63-67 reaches its full open position. ________

[69] **STOP** the recorder. ________

[70] **PLACE** Hand Switch 2-HS-63-63A SIS ACCUM TK 4 N2 MAKEUP VLV, to the OPEN position. ________

CAUTION

Nitrogen will not support life. Make sure all personnel are clear before venting nitrogen into the atmosphere of Accumulator Room 4.

[71] **ADJUST** 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to vent remaining pressure from Accumulator No. 4. ________

[72] **ADJUST** 2-HIC-63-65A, CLA N2 VENT HDR CONTROL, to CLOSE 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT. ________

[73] **PLACE** Hand Switch 2-HS-63-63A, N2 TO CL ACCUM 4, to the CLOSE position. ________

Date ________

6.4 SI Accumulator No. 4 Functional Test (continued)

[74] **OPEN** valve 2-DRV-63-673, ACCUM LEVEL STANDPIPE DRAIN. ________

[75] **OPEN** the following valves:

A. TV-4 ________

B. 2-DRV-63-674, ACCUM LEVEL STANDPIPE DRAIN ________

[76] **OPEN** the following valves:

A. 2-DRV-63-609, ACCUM 4 VENT ________

B. 2-FCV-63-63, SIS COLD LEG ACCUM 4 N2 MAKEUP ________

C. 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT ________

[77] **ENSURE** the test transmitters and sensing lines are properly filled and vented. ________

A. **OPEN** equalizer valve on Temporary d/p transmitter. ________

[78] **IF** Accumulator No. 4 level is greater than 128 3/4 inches as read on the tygon hose, **THEN**

PERFORM Steps 6.4[78]A through 6.4[78]D and N/A Steps 6.4[79]A through 6.4[79]F.

A. **PLACE** Hand Switch 2-HS-63-66A, SIS ACCUM TK 4 DRAIN VLV, to the OPEN position. ________

B. **CONTINUE** draining Accumulator No. 4 until the level is between 128-1/8 in. and 128-3/4 in. as read on the temporary tygon hose. ________

C. **PLACE** Hand Switch 2-HS-63-66A, SIS ACCUM TK 4 DRAIN VLV, to the CLOSE position. ________

D. **RECORD** Accumulator No. 4 level from the temporary tygon hose:

LEVEL ____________ inches (128 1/8 - 128 3/4) IN. __________

Date ________

6.4 SI Accumulator No. 4 Functional Test (continued)

[79] **IF** Accumulator No. 4 level is less than 128 1/8 inches as read on the tygon hose, **THEN**

PERFORM Steps 6.4[79]A through 6.4[79]F and N/A 6.4[78]A through 6.4[78]D. ________

CAUTIONS

1) The SI Pump should not be run at a flow of less than 40.5 GPM for longer than 45 minutes.
2) The SI Pump should have a 1 hour cool down period before restart.

A. **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, to the START position. ________

NOTE

The fill valve may be cycled, as necessary, to obtain the specified level, and TV-1 can be used to drain down in case of an overfill.

B. **PLACE** Hand Switch 2-HS-63-70A, SIS ACCUM TK 4 FILL VALVE, to the OPEN position. ________

C. **CONTINUE** to fill Accumulator No. 4 throttling 2-ISV-63-613, ACCUM 4 FILL ISLN, as necessary, until the level is between 128-1/8 in. and 128-3/4 in. as read on the temporary tygon hose. ________

D. **PLACE** Hand Switch 2-HS-63-70A, SIS ACCUM TK 4 FILL VALVE, to the CLOSE position. ________

E. **RECORD** Accumulator No. 4 level from the temporary tygon hose:

LEVEL ____________ inches (128 1/8 - 128 3/4 IN.) ____________

F. **PLACE** Hand Switch 2-HS-63-10A, SIS PUMP A-A MOTOR, to the STOP position. ________

Date ________

6.4 SI Accumulator No. 4 Functional Test (continued)

[80] **CLOSE** valve 2-DRV-63-673, ACCUM LEVEL STANDPIPE DRAIN. ________

[81] **CLOSE** valve the following valves: ________

A. 2-FCV-63-63, SIS COLD LEG ACCUM 4 N2 MAKEUP ________

B. 2-FCV-63-65, SIS COLD LEG ACCUM N2 HDR ATMOSPHERE VENT ________

[82] **CLOSE** equalizer valve on Temporary d/p Transmitter. ________

[83] **CONNECT** a source of instrument air to the flange at valve 2-VTV-63-609, ACCUM 4 VENT. ________

[84] **VERIFY** Accumulator No. 4 tank external surface temperature is greater than 73°F, **AND**
RECORD.

M&TE ____________________ Cal Due Date ___________

TEMPERATURE ___________ °F ___________

[85] **PRESSURIZE** Accumulator No. 4 to approximately 90 psig as read on 2-PT-63-62 using the instrument air source at 2-VTV-63-609, ACCUM 1 VENT.

ACCUMULATOR NO. 4 PRESSURE ___________ psig ___________

[86] **CLOSE** valve 2-VTV-63-609, ACCUM 4 VENT. ________

[87] **PLACE** and **HOLD** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the OPEN position until Red Light is ON. ________

[88] **ADJUST** the set point on 2-PIC-63-58, SIS ACCUM TANK N2 HDR INLET VALVE PRESS CNTL, [BIT RM] to 0 psig. ________

[89] **PLACE** Hand Switch 2-HS-63-63A, N2 TO CL ACCUM 4, to the OPEN position. ________

[90] **ADJUST** the set point on 2-PIC-63-58, SIS ACCUM TANK N2 HDR INLET VALVE PRESS CNTL, [BIT RM] to pressurize Accumulator No. 4 to between 99.5 and 100 psig as read on 2-PT-63-62. ________

Date ________

6.4 SI Accumulator No. 4 Functional Test (continued)

[91] **PLACE** Hand Switch 2-HS-63-63A, N2 TO CL ACCUM 4, to the CLOSE position. ________

[92] **RECORD** Accumulator No. 4 pressure as read on 2-PT-63-62.

PRESSURE ____________ psig (99.5 - 100 psig) ____________

[93] **PLACE** Hand Switch 2-HS-63-64A, N2 HDR TO CL ACCUMS, to the CLOSE position. ________

[94] **CLOSE** valve 2-RTV-63-364A, RT VLV TO LE-63-82L. ________

[95] **VERIFY** reactor vessel level is at least 15 ft. below the nozzles. ________

A. **VERIFY/PROGRAM** data logger per Appendix U. ________

[96] **ENSURE/ANNOTATE** the recorder with the step number, range/parameter of each channel used, time and date. ________

[97] **START** the recorder. ________

[98] **PLACE** Hand Switch 2-HS-63-67A, SIS ACCUM TK 4 FLOW ISOLATION VLV, to the OPEN position. ________

[99] **STOP** the recorder when the blow down is complete (all water expelled from the accumulator) and valve 2-FCV-63-67, COLD LEG ACCUMULATOR 4 OUTLET ISOLATION is FULL OPEN. ________

[100] **PLACE** Hand Switch 2-HS-63-67A, SIS ACCUM TK 4 FLOW ISOLATION VLV, to the CLOSE position. ________

[101] **DISCONNECT** the source of instrument air from the flange at valve 2-VTV-63-609, ACCUM 4 VENT.

____
1st

____
CV

[102] **OPEN** valve 2-VTV-63-609, ACCUM 4 VENT, to vent any remaining pressure in Accumulator No. 4. ________

Date ________

6.4 SI Accumulator No. 4 Functional Test (continued)

[103] **CLOSE** the following valves:

A. 2-DRV-63-674. ACCUM LEVEL STANDPIPE DRAIN ________

B. TV-2 ________

C. TV-3 ________

D. TV-4

E. 2-RTV-63-363A, RT VLV TO LE-63-82U ________

[104] **PLACE** Hand Switch 2-HS-63-187, RHR SUPPLY TEST LINE to the CLOSE position. ________

[105] **PLACE** Hand Switch 2-HS-63-71A, SIS CHECK VLV LEAK TEST ISOLATION, to the CLOSE position. ________

[106] **PLACE** Hand Switch 2-HS-63-23, SIS ACCUM FILL LINE ISOLATION VLV, to the CLOSE position. ________

[107] **CLOSE** 2-VTV-63-609, ACCUM 4 VENT. ________

[108] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. ________

[109] **REMOVE** the temporary d/p transmitter from TV-4 and 2-DRV-63-674.

____
1st

____
CV

[110] **REMOVE** the test spool pieces and recorder installed in steps 4.3[8], 4.3[9], and 4.3[10] for Accumulator 4.

____
1st

____
CV

Date ________

6.4 SI Accumulator No. 4 Functional Test (continued)

NOTE

Valve stroke time is from the time the Red Open Light comes on until the Green Close Light goes off.

[111] **DETERMINE** from the recorder valve 2-FCV-63-67, COLD LEG ACCUMULATOR 4 OUTLET ISOLATION, opening time for step 6.4[67], **AND**

RECORD. **(Acc Crit** 5.0[1]**)**

OPEN TIME __________ seconds (less than or equal to 49 sec) ______________

[112] **CALCULATE** the accumulator discharge line resistance (f L/D) per Appendix X. ________

[113] **VERIFY** the accumulator discharge line resistance (f L/D) from Appendix X is greater than or equal to 4.5 and less than or equal to 6.7. **(Acc Crit** 5.0[2]**)** ________

Date ________

7.0 POST PERFORMANCE ACTIVITY

[1] **INSTALL** the blind flanges at the following valves:

A. 2-VTV-63-606, ACCUM 1 VENT

________ 1st

________ CV

B. 2-DRV-63-667, ACCUM LEVEL STANDPIPE DRAIN

________ 1st

________ CV

C. 2-DRV-63-668, ACCUM LEVEL STANDPIPE DRAIN

________ 1st

________ CV

D. 2-VTV-63-607, ACCUM 2 VENT

________ 1st

________ CV

E. 2-DRV-63-669, ACCUM LEVEL STANDPIPE DRAIN

________ 1st

________ CV

F. 2-DRV-63-670, ACCUM LEVEL STANDPIPE DRAIN

________ 1st

________ CV

G. 2-VTV-63-608, ACCUM 3 VENT

________ 1st

________ CV

H. 2-DRV-63-671, ACCUM LEVEL STANDPIPE DRAIN

________ 1st

________ CV

Date ________

7.0 POST PERFORMANCE ACTIVITY (continued)

I. 2-DRV-63-672, ACCUM LEVEL STANDPIPE DRAIN ________ 1st

________ CV

J. 2-VTV-63-609, ACCUM 4 VENT ________ 1st

________ CV

K. 2-DRV-63-673, ACCUM LEVEL STANDPIPE DRAIN ________ 1st

________ CV

L. 2-DRV-63-674, ACCUM LEVEL STANDPIPE DRAIN ________ 1st

________ CV

[2] **RESTORE** Pressure Control Valve 2-PCV-63-58, SIS COLD LEG ACCUM N2 HDR INLET PRESS CNT, [BIT RM] to its as found set point from step 4.3[24]. ________ 1st

________ CV

[3] **VERIFY** that Post-test calibration of the M&TE used to record quantitative acceptance criteria has been satisfactorily performed and the results RECORDED on Measuring and Test Equipment (M&TE) Log in SMP-9.0

A. Subsection 6.1 ________

B. Subsection 6.2 ________

C. Subsection 6.3 ________

D. Subsection 6.4 ________

Date ________

7.0 POST PERFORMANCE ACTIVITY (continued)

[4] **VERIFY** that Post-test calibration of permanent plant instruments used to record quantitative acceptance criteria has been satisfactorily performed **AND**

RECORD the results on Appendix C, Permanent Plant Instrumentation Log for Subsection 6.1.

________ 1st

________ CV

[5] **VERIFY** that Post-test calibration of permanent plant instruments used to record quantitative acceptance criteria has been satisfactorily performed **AND**

RECORD the results on Appendix D, Permanent Plant Instrumentation Log for Subsection 6.2.

________ 1st

________ CV

[6] **VERIFY** that Post-test calibration of permanent plant instruments used to record quantitative acceptance criteria has been satisfactorily performed **AND**

RECORD the results on Appendix E, Permanent Plant Instrumentation Log for Subsection 6.3.

________ 1st

________ CV

[7] **VERIFY** that Post-test calibration of permanent plant instruments used to record quantitative acceptance criteria has been satisfactorily performed **AND**

RECORD the results on Appendix F, Permanent Plant Instrumentation Log for Subsection 6.4.

________ 1st

________ CV

[8] **NOTIFY** the Unit Supervisor/SRO/Shift Manager of test completion and system realignment. ________

Date ________

7.0 POST PERFORMANCE ACTIVITY (continued)

[9] **ENSURE** participants who initiated or signed steps in the prerequisite and instruction Subsections, test logs, or data sheets enter their initials and signature on Attachment 1, Signature Log. ________

[10] **REMOVE** jumper across terminals TB602-11 and TB602-12 in Panel 2-R-48. ________

[11] **REMOVE** jumper across terminals TB602-11 and TB602-12 in Panel 2-R-51. ________

[12] **REMOVE** jumper across terminals TB620-11 and TB620-12 in Panel 2-R-48. ________

[13] **REMOVE** jumper across terminals TB620-11 and TB620-12 in Panel 2-R-51. ________

[14] **REMOVE** jumper across terminals TB611-9 and TB611-10 in Panel 2-R-48 on the field side of the plastic isolators (CIS A signal). ________

[15] **REMOVE** jumper across terminals TB612-1 and TB612-2 in Panel 2-R-48 on the field side of the plastic isolators (CIS A signal). ________

[16] **REMOVE** jumper across terminals TB630-5 and TB630-6 in Panel 2-R-51 on the field side of the plastic isolators (CIS A signal). ________

Date ________

8.0 RECORDS

A. QA Records

Complete Test Package

B. Non-QA Records

None

Appendix A
(Page 1 of 1)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

Date ________

Additional copies of this table may be made as necessary.

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	INITIAL AND DATE. (N/A for no change)
FSAR Table 14.2-1 Sheets 22, 23, and 24, of 90 Section 6.3		
ARI-1-L-10		
REG GUIDE 1.68		
REG GUIDE 1.79		

Appendix B
(Page 1 of 1)

TEMPORARY CONDITION LOG

Date ________

These steps will be N/A'd if no temporary condition existed. Additional copies of this table may be made as necessary.

ITEM No.	TEMPORARY CONDITION DESCRIPTION	PERFORMED		RETURNED TO NORMAL	
		Step No.	Performed By/Date CV By/Date	Step No.	Returned By/Date CV By/Date

Appendix C
(Page 1 of 1)

PERMANENT PLANT INSTRUMENTATION LOG FOR SECTION 6.1

Date ________

INSTRUMENT OR INSTRUMENT LOOP #	CAL DUE DATE	FILLED AND VENTED[1]	PLACED IN SERVICE[1]	USED FOR QUANTITATIVE ACC CRIT		POST-TEST CAL DATE[2]	POST-TEST CALIBRATION ACCEPTABLE[2] INITIAL/DATE
		INIT/DATE	INIT/DATE	YES	NO		
2-LPL-63-119							
2-LPL-63-129							
2-LPP-63-126							
2-LPP-63-128							
2-LPP-63-120C							

1 These items may be initialed and dated by personnel performing the task. Instrumentation not required to be filled and vented may be identified as Not Applicable. (N/A)

2 May be identified as Not Applicable (N/A) if instrument was not used to verify/record quantitative acceptance criteria data.

Appendix D
(Page 1 of 1)

PERMANENT PLANT INSTRUMENTATION LOG FOR SECTION 6.2

Date ________

INSTRUMENT OR INSTRUMENT LOOP #	CAL DUE DATE	FILLED AND VENTED[1]	PLACED IN SERVICE[1]	USED FOR QUANTITATIVE ACC CRIT		POST-TEST CAL DATE[2]	POST-TEST CALIBRATION ACCEPTABLE[2] INITIAL/DATE
		INIT/DATE	INIT/DATE	YES	NO		
2-LPL-63-99							
2-LPL-63-109							
2-LPP-63-106							
2-LPP-63-108							
2-LPP-63-102C							

1 These items may be initialed and dated by personnel performing the task. Instrumentation not required to be filled and vented may be identified as Not Applicable. (N/A)

2 May be identified as Not Applicable (N/A) if instrument was not used to verify/record quantitative acceptance criteria data.

Appendix E
(Page 1 of 1)

PERMANENT PLANT INSTRUMENTATION LOG FOR SECTION 6.3

Date ________

INSTRUMENT OR INSTRUMENT LOOP #	CAL DUE DATE	FILLED AND VENTED[1]	PLACED IN SERVICE[1]	USED FOR QUANTITATIVE ACC CRIT		POST-TEST CAL DATE[2]	POST-TEST CALIBRATION ACCEPTABLE[2] INITIAL/DATE
		INIT/DATE	INIT/DATE	YES	NO		
2-LPL-63-81							
2-LPL-63-89							
2-LPP-63-86							
2-LPP-63-88							
2-LPP-63-83C							

1 These items may be initialed and dated by personnel performing the task. Instrumentation not required to be filled and vented may be identified as Not Applicable. (N/A)

2 May be identified as Not Applicable (N/A) if instrument was not used to verify/record quantitative acceptance criteria data.

Appendix F
(Page 1 of 1)

PERMANENT PLANT INSTRUMENTATION LOG FOR SECTION 6.4

Date ________

INSTRUMENT OR INSTRUMENT LOOP #	CAL DUE DATE	FILLED AND VENTED[1]	PLACED IN SERVICE[1]	USED FOR QUANTITATIVE ACC CRIT		POST-TEST CAL DATE[2]	POST-TEST CALIBRATION ACCEPTABLE[2] INITIAL/DATE
		INIT/DATE	INIT/DATE	YES	NO		
2-LPL-63-60							
2-LPL-63-82							
2-LPP-63-61							
2-LPP-63-62							
2-LPP-63-59C							

1 These items may be initialed and dated by personnel performing the task. Instrumentation not required to be filled and vented may be identified as Not Applicable. (N/A)

2 May be identified as Not Applicable (N/A) if instrument was not used to verify/record quantitative acceptance criteria data.

Appendix G
(Page 1 of 4)

VALVE LINEUP FOR SUBSECTION 6.1

Date ________

VALVE NUMBER	NOMENCLATURE	POSITION	1ST	CV
2-FCV-63-23	CLA FILL FROM SI PMPS	CLOSED		
2-FCV-63-84	SIS CHECK VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-71	CKV TEST LINE TO HUT	CLOSED		
2-FCV-63-78	SIS COLD LEG ACCUM 3 CKV LEAK TEST ISOL	CLOSED		
2-FCV-63-187	SIS LEAK TEST LINE ISOLATION VALVE	CLOSED		
2-FCV-63-186	RHR SUPPLY 2-FCV-74-1 LEAK TEST LINE ISOL	CLOSED		
2-FCV-63-174	BORON INJ TO COLD LEGS CHK VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-70	MAKEUP TO CL ACCUM 4	CLOSED		
2-FCV-63-68	SIS COLD LEG ACCUM 4 CKV LEAK TEST ISOL	CLOSED		
2-FCV-63-69	SI PUMP TO COLD LEG 4 CKV VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-166	HOT LEG 4 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-116	SIS COLD LEG ACCUM 1 CKV LEAK TEST ISOL	CLOSED		
2-FCV-63-163	HOT LEG 1 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-117	SIS PMP TO COLD LEG 1 CKV VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-115	MAKEUP TO CL ACCUM 1	CLOSED		
2-FCV-63-95	MAKEUP TO CL ACCUM 2	CLOSED		
2-FCV-63-96	SIS ACCUM TK 2 CHECK VLV LEAK TEST	CLOSED		
2-FCV-63-164	HOT LEG 3 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-97	SI PUMP TO COLD LEG 2 CKV VLV LEAK TEST ISOL	CLOSED		

Appendix G
(Page 2 of 4)

VALVE LINEUP FOR SUBSECTION 6.1

Date ________

VALVE NUMBER	NOMENCLATURE	POSITION	1ST	CV
2-FCV-63-165	HOT LEG 2 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-79	SI PUMP TO COLD LEG 3 CKV VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-77	MAKEUP TO CL ACCUM 3	CLOSED		
2-FCV-63-64	N2 HDR TO CL ACCUMS	CLOSED		
2-FCV-63-65	CLA N2 VENT HDR CONTROL	CLOSED		
2-TV-63-537	SIS COLD LEG ACCUM FILL LINE TEST CONN	CLOSED		
2-TV-63-684	SIS COLD LEG ACCUM FILL LINE TEST CONN	CLOSED		
2-TV-63-598	SIS LEAK TEST LINE TEST CONN	CLOSED		
2-TV-63-679	SIS LEAK TEST LINE TEST CONN	CLOSED		
2-DRV-63-647	COLD LEG ACCUM MAKEUP LEAK TEST HEADER DRAIN	CLOSED		
2-FCV-63-188	SIS LEAK TEST LINE ISOLATION	CLOSED		
2-ISV-63-666	SIS LEAK TEST HDR ISOLATION	OPEN		
2-DRV-63-646	SIS COLD LEG ACCUMULATOR 1	CLOSED		
2-FCV-63-118	CL ACCUM 1 OUTLET	CLOSED		
2-FCV-63-130	CL ACCUM 1 DRAIN	CLOSED		
2-FCV-63-127	N2 TO CL ACCUM 1	CLOSED		
2-ISV-63-618	SIS COLD LEG ACCUM 1 DRAIN ISOLATION	OPEN		

Appendix G
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VALVE LINEUP FOR SUBSECTION 6.1

Date ________

VALVE NUMBER	NOMENCLATURE	POSITION	1ST	CV
2-SMV-63-614	SIS COLD LEG ACCUM 1 SAMPLE	CLOSED		
2-VTV-63-606	SIS COLD LEG ACCUM 1 VENT	OPEN		
2-RTV-63-377A	2-PT-63-128 ROOT	OPEN		
2-RTV-63-378A	2-PT-63-126 ROOT	OPEN		
2-RTV-63-351A	2-LT-63-129 ROOT	CLOSED		
2-RTV-63-352A	2-LT-63-129 ROOT	CLOSED		
2-RTV-63-353A	2-LT-63-119 ROOT	OPEN		
2-RTV-63-354A	2-LT-63-119 ROOT	OPEN		
2-FCV-63-107	SIS COLD LEG ACCUM 2 N2 MAKEUP	CLOSED		
2-FCV-63-87	SIS COLD LEG ACCUM 3 N2 MAKEUP	CLOSED		
2-FCV-63-63	SIS COLD LEG ACCUM 4 N2 MAKEUP	CLOSED		
2-VTV-63-826	2-LT-63-129 STANDPIPE VENT	CLOSED		
2-DRV-63-818	2-LT-63-129 STANDPIPE DRAIN	CLOSED		
2-VTV-63-827	2-LE-63-119 STANDPIPE VENT	CLOSED		
2-DRV-63-819	2-LE-63-119 STANDPIPE DRAIN	CLOSED		
2-DRV-63-667	SIS COLD LEG ACCUM 1 2-LT-63-129 DRAIN	CLOSED		
2-TV-63-834	SIS COLD LEG ACCUM 1 2-LT-63-129 TEST	CLOSED		

Appendix G
(Page 4 of 4)

VALVE LINEUP FOR SUBSECTION 6.1

Date ________

VALVE NUMBER	NOMENCLATURE	POSITION	1ST	CV
2-DRV-63-668	SIS COLD LEG MINI FLOW ACCUM 1 2-LE-63-119 DRAIN	CLOSED		
2-TV-63-835	SIS COLD LEG ACCUM 1 2-LE-63-119 TEST	CLOSED		
2-FCV-63-5	RWST TO SI PUMP SUCTION ISOL	OPEN		
2-FCV-63-3	SI PUMP MINI FLOW RECIRC TO RWST ISOL	OPEN		
2-FCV-63-4	SI PUMP 2A-A MINI FLOW RECIRC TO RWST ISOL	OPEN		
2-FCV-63-47	SAFETY INJ PMP 2A-A SUCTION ISOLATION	OPEN		
2-FCV-63-152	SIP 2A-A COLD LEG INJ FLOW CNTL	CLOSED		
2-FCV-63-156	SI PUMP 2A-A HOT LEG 1 & 3 INJECTION	CLOSED		
2-ISV-63-610	SIS COLD LEG ACCUM 1 MAKEUP ISOLATION	OPEN		
2-RTV-63-344A	2-PI-63-74 ROOT	OPEN		

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VALVE LINEUP FOR SUBSECTION 6.2

Date ________

VALVE NUMBER	NOMECLATURE	POSITION	1ST	CV
2-FCV-63-23	CLA FILL FROM SI PMPS	CLOSED		
2-FCV-63-84	SIS CHECK VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-71	CKV TEST LINE TO HUT	CLOSED		
2-FCV-63-78	SIS COLD LEG ACCUM 3 CKV LEAK TEST ISOL	CLOSED		
2-FCV-63-187	SIS LEAK TEST LINE ISOLATION VALVE	CLOSED		
2-FCV-63-186	RHR SUPPLY 2-FCV-74-1 LEAK TEST LINE ISOL	CLOSED		
2-FCV-63-174	BORON INJ TO COLD LEGS CHK VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-70	MAKEUP TO CL ACCUM 4	CLOSED		
2-FCV-63-68	SIS COLD LEG ACCUM 4 CKV LEAK TEST ISOL	CLOSED		
2-FCV-63-69	SI PUMP TO COLD LEG 4 CKV VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-166	HOT LEG 4 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-116	SIS COLD LEG ACCUM 1 CKV LEAK TEST ISOL	CLOSED		
2-FCV-63-163	HOT LEG 1 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-117	SIS PMP TO COLD LEG 1 CKV VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-115	MAKEUP TO CL ACCUM 1	CLOSED		
2-FCV-63-95	MAKEUP TO CL ACCUM 2	CLOSED		
2-FCV-63-96	SIS ACCUM TK 2 CHECK VLV LEAK TEST	CLOSED		
2-FCV-63-164	HOT LEG 3 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-97	SI PUMP TO COLD LEG 2 CKV VLV LEAK TEST ISOL	CLOSED		

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(Page 2 of 4)

VALVE LINEUP FOR SUBSECTION 6.2

Date ________

VALVE NUMBER	NOMECLATURE	POSITION	1ST	CV
2-FCV-63-165	HOT LEG 2 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-79	SI PUMP TO COLD LEG 3 CKV VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-77	MAKEUP TO CL ACCUM 3	CLOSED		
2-FCV-63-64	N2 HDR TO CL ACCUMS	CLOSED		
2-FCV-63-65	CLA N2 VENT HDR CONTROL	CLOSED		
2-TV-63-537	SIS COLD LEG ACCUM FILL LINE TEST CONN	CLOSED		
2-TV-63-684	SIS COLD LEG ACCUM FILL LINE TEST CONN	CLOSED		
2-TV-63-598	SIS LEAK TEST LINE TEST CONN	CLOSED		
2-TV-63-679	SIS LEAK TEST LINE TEST CONN	CLOSED		
2-DRV-63-647	COLD LEG ACCUM MAKEUP LEAK TEST HEADER DRAIN	CLOSED		
2-FCV-63-188	SIS LEAK TEST LINE ISOLATION	CLOSED		
2-ISV-63-666	SIS LEAK TEST HDR ISOLATION	OPEN		
2-DRV-63-646	SIS COLD LEG ACCUMULATOR 1	CLOSED		
2-FCV-63-98	CL ACCUM 2 OUTLET	CLOSED		
2-FCV-63-110	CL ACCUM 2 DRAIN	CLOSED		
2-FCV-63-107	N2 TO CL ACCUM 2	CLOSED		
2-ISV-63-619	SIS COLD LEG ACCUM 2 DRAIN ISOLATION	OPEN		

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VALVE LINEUP FOR SUBSECTION 6.2

Date ________

VALVE NUMBER	NOMECLATURE	POSITION	1ST	CV
2-SMV-63-615	SIS COLD LEG ACCUM 2 SAMPLE	CLOSED		
2-VTV-63-607	SIS COLD LEG ACCUM 2 VENT	OPEN		
2-RTV-63-379A	2-PT-63-108 ROOT	OPEN		
2-RTV-63-380A	2-PT-63-106 ROOT	OPEN		
2-RTV-63-355A	2-LT-63-109 ROOT	CLOSED		
2-RTV-63-356A	2-LT-63-109 ROOT	CLOSED		
2-RTV-63-357A	2-LT-63-99 ROOT	OPEN		
2-RTV-63-358A	2-LT-63-99 ROOT	OPEN		
2-FCV-63-127	SIS COLD LEG ACCUM 1 N2 MAKEUP	CLOSED		
2-FCV-63-87	SIS COLD LEG ACCUM 3 N2 MAKEUP	CLOSED		
2-FCV-63-63	SIS COLD LEG ACCUM 4 N2 MAKEUP	CLOSED		
2-VTV-63-828	2-LT-63-109 STANDPIPE VENT	CLOSED		
2-DRV-63-820	2-LT-63-109 STANDPIPE DRAIN	CLOSED		
2-VTV-63-829	2-LE-63-99 STANDPIPE VENT	CLOSED		
2-DRV-63-821	2-LE-63-99 STANDPIPE DRAIN	CLOSED		
2-DRV-63-669	SIS COLD LEG ACCUM 2 2-LT-63-109 DRAIN	CLOSED		
2-TV-63-836	SIS COLD LEG ACCUM 2 2-LT-63-109 TEST	CLOSED		

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VALVE LINEUP FOR SUBSECTION 6.2

Date ________

VALVE NUMBER	NOMECLATURE	POSITION	1ST	CV
2-DRV-63-670	SIS COLD LEG MINI FLOW ACCUM 2 2-LE-63-99 DRAIN	CLOSED		
2-TV-63-837	SIS COLD LEG ACCUM 2 2-LE-63-99 TEST	CLOSED		
2-FCV-63-5	RWST TO SI PUMP SUCTION ISOL	OPEN		
2-FCV-63-3	SI PUMP MINI FLOW RECIRC TO RWST ISOL	OPEN		
2-FCV-63-4	SI PUMP 2A-A MINI FLOW RECIRC TO RWST ISOL	OPEN		
2-FCV-63-47	SAFETY INJ PMP 2A-A SUCTION ISOLATION	OPEN		
2-FCV-63-152	SIP 2A-A COLD LEG INJ FLOW CNTL	CLOSED		
2-FCV-63-156	SI PUMP 2A-A HOT LEG 1 & 3 INJECTION	CLOSED		
2-ISV-63-611	SIS COLD LEG ACCUM 2 MAKEUP ISOLATION	OPEN		
2-RTV-63-344A	2-PI-63-74 ROOT	OPEN		

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VALVE LINEUP FOR SUBSECTION 6.3

Date ________

VALVE NUMBER	NOMECLATURE	POSITION	1ST	CV
2-FCV-63-23	CLA FILL FROM SI PMPS	CLOSED		
2-FCV-63-84	SIS CHECK VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-71	CKV TEST LINE TO HUT	CLOSED		
2-FCV-63-78	SIS COLD LEG ACCUM 3 CKV LEAK TEST ISOL	CLOSED		
2-FCV-63-187	SIS LEAK TEST LINE ISOLATION VALVE	CLOSED		
2-FCV-63-186	RHR SUPPLY 2-FCV-74-1 LEAK TEST LINE ISOL	CLOSED		
2-FCV-63-174	BORON INJ TO COLD LEGS CHK VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-70	MAKEUP TO CL ACCUM 4	CLOSED		
2-FCV-63-68	SIS COLD LEG ACCUM 4 CKV LEAK TEST ISOL	CLOSED		
2-FCV-63-69	SI PUMP TO COLD LEG 4 CKV VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-166	HOT LEG 4 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-116	SIS COLD LEG ACCUM 1 CKV LEAK TEST ISOL	CLOSED		
2-FCV-63-163	HOT LEG 1 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-117	SIS PMP TO COLD LEG 1 CKV VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-115	MAKEUP TO CL ACCUM 1	CLOSED		
2-FCV-63-95	MAKEUP TO CL ACCUM 2	CLOSED		
2-FCV-63-96	SIS ACCUM TK 2 CHECK VLV LEAK TEST	CLOSED		
2-FCV-63-164	HOT LEG 3 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-97	SI PUMP TO COLD LEG 2 CKV VLV LEAK TEST ISOL	CLOSED		

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VALVE LINEUP FOR SUBSECTION 6.3

Date ________

VALVE NUMBER	NOMECLATURE	POSITION	1ST	CV
2-FCV-63-165	HOT LEG 2 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-79	SI PUMP TO COLD LEG 3 CKV VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-77	MAKEUP TO CL ACCUM 3	CLOSED		
2-FCV-63-64	N2 HDR TO CL ACCUMS	CLOSED		
2-FCV-63-65	CLA N2 VENT HDR CONTROL	CLOSED		
2-TV-63-537	SIS COLD LEG ACCUM FILL LINE TEST CONN	CLOSED		
2-TV-63-684	SIS COLD LEG ACCUM FILL LINE TEST CONN	CLOSED		
2-TV-63-598	SIS LEAK TEST LINE TEST CONN	CLOSED		
2-TV-63-679	SIS LEAK TEST LINE TEST CONN	CLOSED		
2-DRV-63-647	COLD LEG ACCUM MAKEUP LEAK TEST HEADER DRAIN	CLOSED		
2-FCV-63-188	SIS LEAK TEST LINE ISOLATION	CLOSED		
2-ISV-63-666	SIS LEAK TEST HDR ISOLATION	OPEN		
2-DRV-63-646	SIS COLD LEG ACCUMULATOR 1	CLOSED		
2-FCV-63-80	CL ACCUM 3 OUTLET	CLOSED		
2-FCV-63-90	CL ACCUM 3 DRAIN	CLOSED		
2-FCV-63-87	N2 TO CL ACCUM 3	CLOSED		
2-ISV-63-620	SIS COLD LEG ACCUM 3 DRAIN ISOLATION	OPEN		

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VALVE LINEUP FOR SUBSECTION 6.3

Date ________

VALVE NUMBER	NOMECLATURE	POSITION	1ST	CV
2-SMV-63-616	SIS COLD LEG ACCUM 3 SAMPLE	CLOSED		
2-VTV-63-608	SIS COLD LEG ACCUM 3 VENT	OPEN		
2-RTV-63-381A	2-PT-63-88 ROOT	OPEN		
2-RTV-63-382A	2-PT-63-86 ROOT	OPEN		
2-RTV-63-359A	2-LT-63-89 ROOT	CLOSED		
2-RTV-63-360A	2-LT-63-89 ROOT	CLOSED		
2-RTV-63-361A	2-LT-63-81 ROOT	OPEN		
2-RTV-63-362A	2-LT-63-81 ROOT	OPEN		
2-FCV-63-127	SIS COLD LEG ACCUM 1 N2 MAKEUP	CLOSED		
2-FCV-63-107	SIS COLD LEG ACCUM 2 N2 MAKEUP	CLOSED		
2-FCV-63-63	SIS COLD LEG ACCUM 4 N2 MAKEUP	CLOSED		
2-VTV-63-830	2-LT-63-89 STANDPIPE VENT	CLOSED		
2-DRV-63-822	2-LT-63-89 STANDPIPE DRAIN	CLOSED		
2-VTV-63-831	2-LE-63-81 STANDPIPE VENT	CLOSED		
2-DRV-63-823	2-LE-63-81 STANDPIPE DRAIN	CLOSED		
2-DRV-63-671	SIS COLD LEG ACCUM 3 2-LT-63-89 DRAIN	CLOSED		
2-TV-63-838	SIS COLD LEG ACCUM 3 2-LT-63-89 TEST	CLOSED		

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VALVE LINEUP FOR SUBSECTION 6.3

Date ________

VALVE NUMBER	NOMECLATURE	POSITION	1ST	CV
2-DRV-63-672	SIS COLD LEG MINI FLOW ACCUM 3 2-LE-63-81 DRAIN	IC/716 AZ 230	CLOSED	
2-TV-63-839	SIS COLD LEG ACCUM 3 2-LE-63-81 TEST	IC/723 AZ 230	CLOSED	
2-FCV-63-5	RWST TO SI PUMP SUCTION ISOL	A12U/692	OPEN	
2-FCV-63-3	SI PUMP MINI FLOW RECIRC TO RWST ISOL	A11U/692	OPEN	
2-FCV-63-4	SI PUMP 2A-A MINI FLOW RECIRC TO RWST ISOL	A10V692	OPEN	
2-FCV-63-47	SAFETY INJ PMP 2A-A SUCTION ISOLATION	A10V/692	OPEN	
2-FCV-63-152	SIP 2A-A COLD LEG INJ FLOW CNTL	A11W/713	CLOSED	
2-FCV-63-156	SI PUMP 2A-A HOT LEG 1 & 3 INJECTION	A11W/713	CLOSED	
2-ISV-63-612	SIS COLD LEG ACCUM 3 MAKEUP ISOLATION	IC/716 AZ 222	OPEN	
2-RTV-63-344A	2-PI-63-74 ROOT	A11W/713	OPEN	

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VALVE LINEUP FOR SUBSECTION 6.4

Date ________

VALVE NUMBER	NOMECLATURE	POSITION	1ST	CV
2-FCV-63-23	CLA FILL FROM SI PMPS	CLOSED		
2-FCV-63-84	SIS CHECK VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-71	CKV TEST LINE TO HUT	CLOSED		
2-FCV-63-78	SIS COLD LEG ACCUM 3 CKV LEAK TEST ISOL	CLOSED		
2-FCV-63-187	SIS LEAK TEST LINE ISOLATION VALVE	CLOSED		
2-FCV-63-186	RHR SUPPLY 2-FCV-74-1 LEAK TEST LINE ISOL	CLOSED		
2-FCV-63-174	BORON INJ TO COLD LEGS CHK VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-70	MAKEUP TO CL ACCUM 4	CLOSED		
2-FCV-63-68	SIS COLD LEG ACCUM 4 CKV LEAK TEST ISOL	CLOSED		
2-FCV-63-69	SI PUMP TO COLD LEG 4 CKV VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-166	HOT LEG 4 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-116	SIS COLD LEG ACCUM 1 CKV LEAK TEST ISOL	CLOSED		
2-FCV-63-163	HOT LEG 1 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-117	SIS PMP TO COLD LEG 1 CKV VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-115	MAKEUP TO CL ACCUM 1	CLOSED		
2-FCV-63-95	MAKEUP TO CL ACCUM 2	CLOSED		
2-FCV-63-96	SIS ACCUM TK 2 CHECK VLV LEAK TEST	CLOSED		
2-FCV-63-164	HOT LEG 3 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-97	SI PUMP TO COLD LEG 2 CKV VLV LEAK TEST ISOL	CLOSED		

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VALVE LINEUP FOR SUBSECTION 6.4

Date ________

VALVE NUMBER	NOMECLATURE	POSITION	1ST	CV
2-FCV-63-165	HOT LEG 2 SIS CHECK VLV LEAK TEST ISOLATION	CLOSED		
2-FCV-63-79	SI PUMP TO COLD LEG 3 CKV VLV LEAK TEST ISOL	CLOSED		
2-FCV-63-77	MAKEUP TO CL ACCUM 3	CLOSED		
2-FCV-63-64	N2 HDR TO CL ACCUMS	CLOSED		
2-FCV-63-65	CLA N2 VENT HDR CONTROL	CLOSED		
2-TV-63-537	SIS COLD LEG ACCUM FILL LINE TEST CONN	CLOSED		
2-TV-63-684	SIS COLD LEG ACCUM FILL LINE TEST CONN	CLOSED		
2-TV-63-598	SIS LEAK TEST LINE TEST CONN	CLOSED		
2-TV-63-679	SIS LEAK TEST LINE TEST CONN	CLOSED		
2-DRV-63-647	COLD LEG ACCUM MAKEUP LEAK TEST HEADER DRAIN	CLOSED		
2-FCV-63-188	SIS LEAK TEST LINE ISOLATION	CLOSED		
2-ISV-63-666	SIS LEAK TEST HDR ISOLATION	OPEN		
2-DRV-63-646	SIS COLD LEG ACCUMULATOR 1	CLOSED		
2-FCV-63-67	CL ACCUM 4 OUTLET	CLOSED		
2-FCV-63-66	CL ACCUM 4 DRAIN	CLOSED		
2-FCV-63-63	N2 TO CL ACCUM 4	CLOSED		
2-ISV-63-621	SIS COLD LEG ACCUM 4 DRAIN ISOLATION	OPEN		

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VALVE LINEUP FOR SUBSECTION 6.4

Date ________

VALVE NUMBER	NOMECLATURE	POSITION	1ST	CV
2-SMV-63-617	SIS COLD LEG ACCUM 4 SAMPLE	CLOSED		
2-VTV-63-609	SIS COLD LEG ACCUM 4 VENT	OPEN		
2-RTV-63-383A	2-PT-63-62 ROOT	OPEN		
2-RTV-63-384A	2-PT-63-61 ROOT	OPEN		
2-RTV-63-363A	2-LT-63-82 ROOT	CLOSED		
2-RTV-63-364A	2-LT-63-82 ROOT	CLOSED		
2-RTV-63-365A	2-LT-63-60 ROOT	OPEN		
2-RTV-63-366A	2-LT-63-60 ROOT	OPEN		
2-FCV-63-127	SIS COLD LEG ACCUM 1 N2 MAKEUP	CLOSED		
2-FCV-63-107	SIS COLD LEG ACCUM 2 N2 MAKEUP	CLOSED		
2-FCV-63-87	SIS COLD LEG ACCUM 3 N2 MAKEUP	CLOSED		
2-VTV-63-832	2-LT-63-82 STANDPIPE VENT	CLOSED		
2-DRV-63-824	2-LT-63-82 STANDPIPE DRAIN	CLOSED		
2-VTV-63-833	2-LE-63-60 STANDPIPE VENT	CLOSED		
2-DRV-63-825	2-LE-63-60 STANDPIPE DRAIN	CLOSED		
2-DRV-63-673	SIS COLD LEG ACCUM 4 2-LT-63-82 DRAIN	CLOSED		
2-TV-63-840	SIS COLD LEG ACCUM 4 2-LT-63-82 TEST	CLOSED		

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VALVE LINEUP FOR SUBSECTION 6.4

Date ________

VALVE NUMBER	NOMECLATURE	POSITION	1ST	CV
2-DRV-63-674	SIS COLD LEG MINI FLOW ACCUM 4 2-LE-63-60 DRAIN	CLOSED		
2-TV-63-841	SIS COLD LEG ACCUM 4 2-LE-63-60 TEST	CLOSED		
2-FCV-63-5	RWST TO SI PUMP SUCTION ISOL	OPEN		
2-FCV-63-3	SI PUMP MINI FLOW RECIRC TO RWST ISOL	OPEN		
2-FCV-63-4	SI PUMP 2A-A MINI FLOW RECIRC TO RWST ISOL	OPEN		
2-FCV-63-47	SAFETY INJ PMP 2A-A SUCTION ISOLATION	OPEN		
2-FCV-63-152	SIP 2A-A COLD LEG INJ FLOW CNTL	CLOSED		
2-FCV-63-156	SI PUMP 2A-A HOT LEG 1 & 3 INJECTION	CLOSED		
2-ISV-63-613	SIS COLD LEG ACCUM 4 MAKEUP ISOLATION	OPEN		
2-RTV-63-344A	2-PI-63-74 ROOT	OPEN		

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COMMON BREAKER LINEUP

Date ________

BREAKER IDENTIFICATION	BREAKER NOMENCLATURE	BREAKER LOCATION	POSITION	VERIFIED BY INITIALS
2-BKR-063-3	SIP MINI FLOW RECIRC TO RWST (2-FCV-63-3)	480V RX MOV BD 2A1-A COMPT 10B	ON	
2-BKR-063-4	SIP 2A MINI FLOW RECIRC TO RWST (2-FCV-63-4)	480V RX MOV BD 2B1-B COMPT 10A	ON	
2-BKR-063-5	RWST TO SIP SUCT ISOL (2-FCV-63-5)	480V RX MOV BD 2B1-B COMPT 10B	ON	
2-BKR-063-47	SIP 2A SUCT ISOL (2-FCV-63-47)	480V RX MOV BD 2A1-A COMPT 12A	ON	
2-BKR-063-152	SIP 2A COLD LEG INJ FLOW (2-FCV-63-152)	480V RX MOV BD 2A1-A COMPT 12E	ON	
2-BKR-063-153	SIP 2B COLD LEG INJ FLOW (2-FCV-63-153)	480V RX MOV BD 2B1-B COMPT 13A	ON	

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BREAKER LINEUP FOR SUBSECTION 6.1

Date ________

BREAKER IDENTIFICATION	BREAKER NOMENCLATURE	BREAKER LOCATION	POSITION	VERIFIED BY INITIALS
0-BKR-236-1-217	PANEL 4 COLUMN D FUSE ASSEMBLY	125V DC BD I, PNL 2 (A12R/757)	ON	
0-BKR-236-1-218	PANEL 4 COLUMN E FUSE ASSEMBLY	125V DC BD I, PNL 2 (A12R/757)	ON	
0-BKR-236-1-310	PANEL 4 COLUMN A FUSE ASSEMBLY	125V DC BD I, PNL 3 (A12R/757)	ON	
0-BKR-236-1-311	PANEL 4 COLUMN B FUSE ASSEMBLY	125V DC BD I, PNL 3 (A12R/757)	ON	
0-BKR-236-2-310	PANEL 4 COLUMN A FUSE ASSEMBLY	125V DC BD II, PNL 3 (A12R/757)	ON	
2-BKR-63-118A	SIS CL ACCUM 1 OUT ISOL	480V RX MOV BD 2A1-A COMPT 3F2	ON	
2-BKR-63-118B	SIS CL ACCUM 1 OUT ISOL	480V RX MOV BD 2A1-A COMPT 8D	ON	
2-BKR-235-3/28	2-FCV-63-65	120V AC VIT INST PWR BD 2-III	ON	
2-BKR-63-10	SAFETY INJECTION PUMP 2A-A (2-PMP-63-10)	6900V SHUTDOWN BD 2A-A COMPT 15	CONNECTED	
2-BKR-236-2-311	PANEL 4 COLUMN B FUSE ASSEMBLY	125V DC II, PNL 3 (A11R/757)	ON	
2-BKR-236-2-217	PANEL 4 COLUMN D FUSE ASSEMBLY	125V DC II, PNL 2 (A11R/757)	ON	
2-BKR-236-2-218	PANEL 4 COLUMN E FUSE ASSEMBLY	125V DC II, PNL 2 (A11R/757)	ON	

Appendix M
(Page 1 of 1)

BREAKER LINEUP FOR SUBSECTION 6.2

Date ________

BREAKER IDENTIFICATION	BREAKER NOMENCLATURE	BREAKER LOCATION	POSITION	VERIFIED BY INITIALS
0-BKR-236-1-217	PANEL 4 COLUMN D FUSE ASSEMBLY	125V DC BD I, PNL 2 (A12R/757)	ON	
0-BKR-236-1-218	PANEL 4 COLUMN E FUSE ASSEMBLY	125V DC BD I, PNL 2 (A12R/757)	ON	
0-BKR-236-1-310	PANEL 4 COLUMN A FUSE ASSEMBLY	125V DC BD I, PNL 3 (A12R/757)	ON	
0-BKR-236-1-311	PANEL 4 COLUMN B FUSE ASSEMBLY	125V DC BD I, PNL 3 (A12R/757)	ON	
0-BKR-236-2-310	PANEL 4 COLUMN A FUSE ASSEMBLY	125V DC BD II, PNL 3 (A12R/757)	ON	
2-BKR-63-98A	SIS CL ACCUM 2 OUT ISOL	480V RX MOV BD 2B1-B COMPT 3F2	ON	
2-BKR-63-98B	SIS CL ACCUM 2 OUT ISOL	480V RX MOV BD 2B1-B COMPT 8D	ON	
2-BKR-235-3/28	2-FCV-63-65	120V AC VIT INST PWR BD 2-III	ON	
2-BKR-63-10	SAFETY INJECTION PUMP 2A-A (2-PMP-63-10)	6900V SHUTDOWN BD 2A-A COMPT 15	CONNECTED	
2-BKR-236-2-311	PANEL 4 COLUMN B FUSE ASSEMBLY	125V DC II, PNL 3 (A11R/757)	ON	
2-BKR-236-2-217	PANEL 4 COLUMN D FUSE ASSEMBLY	125V DC II, PNL 2 (A11R/757)	ON	
2-BKR-236-2-218	PANEL 4 COLUMN E FUSE ASSEMBLY	125V DC II, PNL 2 (A11R/757)	ON	

Appendix N
(Page 1 of 1)

BREAKER LINEUP FOR SUBSECTION 6.3

Date ________

BREAKER IDENTIFICATION	BREAKER NOMENCLATURE	BREAKER LOCATION	POSITION	VERIFIED BY INITIALS
0-BKR-236-1-217	PANEL 4 COLUMN D FUSE ASSEMBLY	125V DC BD I, PNL 2 (A12R/757)	ON	
0-BKR-236-1-218	PANEL 4 COLUMN E FUSE ASSEMBLY	125V DC BD I, PNL 2 (A12R/757)	ON	
0-BKR-236-1-310	PANEL 4 COLUMN A FUSE ASSEMBLY	125V DC BD I, PNL 3 (A12R/757)	ON	
0-BKR-236-1-311	PANEL 4 COLUMN B FUSE ASSEMBLY	125V DC BD I, PNL 3 (A12R/757)	ON	
0-BKR-236-2-310	PANEL 4 COLUMN A FUSE ASSEMBLY	125V DC BD II, PNL 3 (A12R/757)	ON	
2-BKR-63-80A	SIS CL ACCUM 3 OUT ISOL	480V RX MOV BD 2A1-A COMPT 17F2	ON	
2-BKR-63-80B	SIS CL ACCUM 3 OUT ISOL	480V RX MOV BD 2A1-A COMPT 7D	ON	
2-BKR-235-3/28	2-FCV-63-65	120V AC VIT INST PWR BD 2-III	ON	
2-BKR-63-10	SAFETY INJECTION PUMP 2A-A (2-PMP-63-10)	6900V SHUTDOWN BD 2A-A COMPT 15	CONNECTED	
2-BKR-236-2-311	PANEL 4 COLUMN B FUSE ASSEMBLY	125V DC II, PNL 3 (A11R/757)	ON	
2-BKR-236-2-217	PANEL 4 COLUMN D FUSE ASSEMBLY	125V DC II, PNL 2 (A11R/757)	ON	
2-BKR-236-2-218	PANEL 4 COLUMN E FUSE ASSEMBLY	125V DC II, PNL 2 (A11R/757)	ON	

Appendix O
(Page 1 of 1)

BREAKER LINEUP FOR SUBSECTION 6.4

Date ________

BREAKER IDENTIFICATION	BREAKER NOMENCLATURE	BREAKER LOCATION	POSITION	VERIFIED BY INITIALS
0-BKR-236-1-217	PANEL 4 COLUMN D FUSE ASSEMBLY	125V DC BD I, PNL 2 (A12R/757)	ON	
0-BKR-236-1-218	PANEL 4 COLUMN E FUSE ASSEMBLY	125V DC BD I, PNL 2 (A12R/757)	ON	
0-BKR-236-1-310	PANEL 4 COLUMN A FUSE ASSEMBLY	125V DC BD I, PNL 3 (A12R/757)	ON	
0-BKR-236-1-311	PANEL 4 COLUMN B FUSE ASSEMBLY	125V DC BD I, PNL 3 (A12R/757)	ON	
0-BKR-236-2-310	PANEL 4 COLUMN A FUSE ASSEMBLY	125V DC BD II, PNL 3 (A12R/757)	ON	
2-BKR-63-67A	SIS CL ACCUM 4 OUT ISOL	480V RX MOV BD 2B1-B COMPT 16F2	ON	
2-BKR-63-67B	SIS CL ACCUM 4 OUT ISOL	480V RX MOV BD 2B1-B COMPT 7D	ON	
2-BKR-235-3/28	2-FCV-63-65	120V AC VIT INST PWR BD 2-III	ON	
2-BKR-63-10	SAFETY INJECTION PUMP 2A-A (2-PMP-63-10)	6900V SHUTDOWN BD 2A-A COMPT 15	CONNECTED	
2-BKR-236-2-311	PANEL 4 COLUMN B FUSE ASSEMBLY	125V DC II, PNL 3 (A11R/757)	ON	
2-BKR-236-2-217	PANEL 4 COLUMN D FUSE ASSEMBLY	125V DC II, PNL 2 (A11R/757)	ON	
2-BKR-236-2-218	PANEL 4 COLUMN E FUSE ASSEMBLY	125V DC II, PNL 2 (A11R/757)	ON	

Appendix P
(Page 1 of 1)

SWITCH LINEUP FOR SUBSECTION 6.1

Date ________

SWITCH NUMBER	SWITCH LOCATION	NOMENCLATURE	POSITION	VERIFIED BY INITIALS
2-XS-63-70	2-L-11B	SIS ACCUM TK 4 FILL VLV TRF	NORMAL	
2-XS-63-71	2-L-11A	SIS CHECK VLV LEAK TEST ISOLATION	NORMAL	
2-XS-63-115	2-L-11A	SIS ACCUM TK 1 FILL VLV TRF	NORMAL	
2-XS-63-95	2-L-11B	SIS ACCUM TK 2 FILL VLV TRF	NORMAL	
2-XS-63-77	2-L-11A	SIS ACCUM TK 3 FILL VLV TRF	NORMAL	
2-XS-63-64	2-L-11A	SIS ACCUM TANK N2 HDR INLET VLV TRF	NORMAL	
2-XS-63-65	2-L-11B	SIS ACCUM TANK N2 HDR INLET VLV TRF	NORMAL	
2-XS-63-118	RX MOV BD 2A1-A COMPT 8D	SIS ACCUM TK 1 FLOW ISOLATION VLV TRF	NORMAL	
2-XS-63-130	2-L-11A	SIS ACCUM TK 1 DRAIN VLV TRF	NORMAL	
2-XS-63-127	2-L-11A	SIS ACCUM TK 1 N2 MAKEUP VLV TRF	NORMAL	
2-XS-63-10A	2-M-6	SIS PUMP A-A MOTOR	PULL-TO-LOCK	
2-XS-63-10	SHUTDOWN BD 2A-A COMPT 15	SIS PUMP A-A MOTOR TRF	NORMAL	

Appendix Q
(Page 1 of 1)

SWITCH LINEUP FOR SUBSECTION 6.2

Date ________

SWITCH NUMBER	SWITCH LOCATION	NOMENCLATURE	POSITION	VERIFIED BY INITIALS
2-XS-63-70	2-L-11B	SIS ACCUM TK 4 FILL VLV TRF	NORMAL	
2-XS-63-71	2-L-11A	SIS CHECK VLV LEAK TEST ISOLATION	NORMAL	
2-XS-63-115	2-L-11A	SIS ACCUM TK 1 FILL VLV TRF	NORMAL	
2-XS-63-95	2-L-11B	SIS ACCUM TK 2 FILL VLV TRF	NORMAL	
2-XS-63-77	2-L-11A	SIS ACCUM TK 3 FILL VLV TRF	NORMAL	
2-XS-63-64	2-L-11A	SIS ACCUM TANK N2 HDR INLET VLV TRF	NORMAL	
2-XS-63-65	2-L-11B	SIS ACCUM TANK N2 HDR INLET VLV TRF	NORMAL	
2-XS-63-98	RX MOV BD 2B1-B COMPT 8D	SIS ACCUM TK 2 FLOW ISOLATION VLV TRF	NORMAL	
2-XS-63-110	2-L-11B	SIS ACCUM TK 2 DRAIN VLV TRF	NORMAL	
2-XS-63-107	2-L-11B	SIS ACCUM TK 2 N2 MAKEUP VLV TRF	NORMAL	
2-XS-63-10A	2-M-6	SIS PUMP A-A MOTOR	PULL-TO-LOCK	
2-XS-63-10	SHUTDOWN BD 2A-A COMPT 15	SIS PUMP A-A MOTOR TRF	NORMAL	

Appendix R
(Page 1 of 1)

SWITCH LINEUP FOR SUBSECTION 6.3

Date ________

SWITCH NUMBER	SWITCH LOCATION	NOMENCLATURE	POSITION	VERIFIED BY INITIALS
2-XS-63-70	2-L-11B	SIS ACCUM TK 4 FILL VLV TRF	NORMAL	
2-XS-63-71	2-L-11A	SIS CHECK VLV LEAK TEST ISOLATION	NORMAL	
2-XS-63-115	2-L-11A	SIS ACCUM TK 1 FILL VLV TRF	NORMAL	
2-XS-63-95	2-L-11B	SIS ACCUM TK 2 FILL VLV TRF	NORMAL	
2-XS-63-77	2-L-11A	SIS ACCUM TK 3 FILL VLV TRF	NORMAL	
2-XS-63-64	2-L-11A	SIS ACCUM TANK N2 HDR INLET VLV TRF	NORMAL	
2-XS-63-65	2-L-11B	SIS ACCUM TANK N2 HDR INLET VLV TRF	NORMAL	
2-XS-63-80	RX MOV BD 2A1-A COMPT 7D	SIS ACCUM TK 1 FLOW ISOLATION VLV TRF	NORMAL	
2-XS-63-90	2-L-11B	SIS ACCUM TK 3 DRAIN VLV TRF	NORMAL	
2-XS-63-87	2-L-11B	SIS ACCUM TK 3 N2 MAKEUP VLV TRF	NORMAL	
2-XS-63-10A	2-M-6	SIS PUMP A-A MOTOR	PULL-TO-LOCK	
2-XS-63-10	SHUTDOWN BD 2A-A COMPT 15	SIS PUMP A-A MOTOR TRF	NORMAL	

Appendix S
(Page 1 of 1)

SWITCH LINEUP FOR SUBSECTION 6.4

Date ________

SWITCH NUMBER	SWITCH LOCATION	NOMENCLATURE	POSITION	VERIFIED BY INITIALS
2-XS-63-70	2-L-11B	SIS ACCUM TK 4 FILL VLV TRF	NORMAL	
2-XS-63-71	2-L-11A	SIS CHECK VLV LEAK TEST ISOLATION	NORMAL	
2-XS-63-115	2-L-11A	SIS ACCUM TK 1 FILL VLV TRF	NORMAL	
2-XS-63-95	2-L-11B	SIS ACCUM TK 2 FILL VLV TRF	NORMAL	
2-XS-63-77	2-L-11A	SIS ACCUM TK 3 FILL VLV TRF	NORMAL	
2-XS-63-64	2-L-11A	SIS ACCUM TANK N2 HDR INLET VLV TRF	NORMAL	
2-XS-63-65	2-L-11B	SIS ACCUM TANK N2 HDR INLET VLV TRF	NORMAL	
2-XS-63-67	RX MOV BD 2B1-B COMPT 7D	SIS ACCUM TK 1 FLOW ISOLATION VLV TRF	NORMAL	
2-XS-63-66	2-L-11B	SIS ACCUM TK 4 DRAIN VLV TRF	NORMAL	
2-XS-63-63	2-L-11B	SIS ACCUM TK 4 N2 MAKEUP VLV TRF	NORMAL	
2-XS-63-10A	2-M-6	SIS PUMP A-A MOTOR	PULL-TO-LOCK	
2-XS-63-10	SHUTDOWN BD 2A-A COMPT 15	SIS PUMP A-A MOTOR TRF	NORMAL	

Appendix T
(Page 1 of 1)

SSPS VENDOR TERMINALS ON PLASTIC

Date ________

SSPS RELAY PANEL VENDOR TERMINAL	SSPS RELAY PANEL	INITIAL/DATE
TB602-11	2-R-48	
TB602-12	2-R-48	
TB611-9	2-R-48	
TB611-10	2-R-48	
TB612-1	2-R-48	
TB912-2	2-R-48	
TB620-11	2-R-48	
TB620-12	2-R-48	
TB649-9	2-R-48	
TB649-10	2-R-48	
TB649-11	2-R-48	
TB649-12	2-R-48	
TB602-11	2-R-51	
TB602-12	2-R-51	
TB620-11	2-R-51	
TB620-12	2-R-51	
TB630-5	2-R-51	
TB630-6	2-R-51	
TB649-9	2-R-51	
TB649-10	2-R-51	
TB649-11	2-R-51	
TB649-12	2-R-51	

Appendix U
(Page 1 of 4)

ACCUMULATOR NO. 1 F L/D CALCULATION

Date ________

1.0 STEP 6.1.111

[1] **ENTER** P1, P2, L1, AND L2 on Page 4 for all time intervals from the time the accumulator discharge valve is fully open until the accumulator discharge flow rate is less than 3000 gpm, from the data logger, where,

P1	=	pressure in accumulator at beginning of time interval
P2	=	pressure in accumulator at end of time interval
L1	=	accumulator level at the beginning of the time interval, inches above the lower level tap
L2	=	accumulator level at the end of the time interval, inches above the lower level tap

____
1st

____
CV

[2] **CALCULATE** the average injection flow rate during each time interval and enter on Page 4. Attach all calculation sheets to this Data Sheet.

$$\text{Flowrate} = 2711.1\frac{(\text{L1} - \text{L2})}{2}\,\text{GPM}$$

Calculation Performed By: ____________ ____________
Initials Date

Calculation Verified By: ____________ ____________
Initials Date

Appendix U
(Page 2 of 4)

ACCUMULATOR NO. 1 F L/D CALCULATION

Date ________

1.0 STEP 6.1.111 (continued)

[3] **CALCULATE** the pressure (P) for each time interval and enter in Page 4. Attach all calculation sheets to this Data Sheet.

$$P = \frac{(P1 + P2)}{2} + 0.4329 \times \frac{(L1 + L2)}{24} + 1.98PSI$$

Calculation Performed By: __________ Initials __________ Date

Calculation Verified By: __________ Initials __________ Date

[4] **CALCULATE** f L/D for each time interval and enter in Page 4. Attach all calculation sheets to this Data Sheet.

$$fL / D = \frac{0.64472 \times P \times 4}{62.34 \times (L1 - L2)^2 \times 0.0143}$$

Calculation Performed By: __________ Initials __________ Date

Calculation Verified By: __________ Initials __________ Date

Appendix U
(Page 3 of 4)

ACCUMULATOR NO. 1 F L/D CALCULATION

Date ________

1.0 STEP 6.1.111 (continued)

[5] **CALCULATE** f L/D for the overall time the accumulator discharge valve is full open to when the accumulator discharge flow rate is less than 3000 gpm. Attach all calculation sheets to this Data Sheet.

$$fL/D = \frac{(0.64472)\times Pn \times (deltaT)^2}{62.34\times (deltaL)^2 \times 0.0143}$$

Where,

Pn	=	the sum of the calculated P's at each time interval divided by number of time intervals
deltaT	=	total time for the intervals considered
deltaL	=	total accumulator level change for the intervals considered

$$fL/D = \frac{(0.64472)\times(\underline{\qquad\qquad\qquad})\times(\underline{\qquad\qquad\qquad})^2}{62.34\times(\underline{\qquad\qquad\qquad})^2\times 0.0143}$$

f L/D=________________

Calculation Performed By: ____________ Initials ____________ Date

Calculation Verified By: ____________ Initials ____________ Date

Appendix U
(Page 4 of 4)

ACCUMULATOR NO. 1 F L/D CALCULATION

Date ________

1.0 STEP 6.1.111 (continued)

Interval No.	P1 psig	P2 psig	L1 in.	L2 in.	Average Flow Rate GPM	P psi	f L/D

NOTE: Time intervals not used may be marked N/A.

Appendix V
(Page 1 of 4)

ACCUMULATOR NO. 2 F L/D CALCULATION

Date ________

1.0 STEP 6.2.111

[1] **ENTER** P1, P2, L1, AND L2 on Page 4 for all time intervals from the time the accumulator discharge valve is fully open until the accumulator discharge flow rate is less than 3000 gpm, from the data logger, where,

P1	=	pressure in accumulator at beginning of time interval
P2	=	pressure in accumulator at end of time interval
L1	=	accumulator level at the beginning of the time interval, inches above the lower level tap
L2	=	accumulator level at the end of the time interval, inches above the lower level tap

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1st

____
CV

[2] **CALCULATE** the average injection flow rate during each time interval and enter on Page 4. Attach all calculation sheets to this Data Sheet.

$$\text{Flowrate} = 2711.1\frac{(\text{L1} - \text{L2})}{2}\text{GPM}$$

Calculation Performed By: ____________ ____________
Initials Date

Calculation Verified By: ____________ ____________
Initials Date

Appendix V
(Page 2 of 4)

ACCUMULATOR NO. 2 F L/D CALCULATION

Date ________

1.0 STEP 6.2.111 (continued)

[3] **CALCULATE** the pressure (P) for each time interval and enter in Page 4. Attach all calculation sheets to this Data Sheet.

$$P = \frac{(P1 + P2)}{2} + 0.4329 \times \frac{(L1 + L2)}{24} + 1.98PSI$$

Calculation Performed By: ____________ ____________
Initials Date

Calculation Verified By: ____________ ____________
Initials Date

[4] **CALCULATE** f L/D for each time interval and enter in Page 4. Attach all calculation sheets to this Data Sheet.

$$fL / D = \frac{0.64472 \times P \times 4}{62.34 \times (L1 - L2)^2 \times 0.0143}$$

Calculation Performed By: ____________ ____________
Initials Date

Calculation Verified By: ____________ ____________
Initials Date

Appendix V
(Page 3 of 4)

ACCUMULATOR NO. 2 F L/D CALCULATION

Date ________

1.0 STEP 6.2.111 (continued)

[5] **CALCULATE** f L/D for the overall time the accumulator discharge valve is full open to when the accumulator discharge flow rate is less than 3000 gpm. Attach all calculation sheets to this Data Sheet.

$$fL/D = \frac{(0.64472) \times Pn \times (deltaT)^2}{62.34 \times (deltaL)^2 \times 0.0143}$$

Where,

Pn	=	the sum of the calculated P's at each time interval divided by number of time intervals
deltaT	=	total time for the intervals considered
deltaL	=	total accumulator level change for the intervals considered

$$fL/D = \frac{(0.64472) \times (\underline{\hspace{4cm}}) \times (\underline{\hspace{4cm}})^2}{62.34 \times (\underline{\hspace{4cm}})^2 \times 0.0143}$$

f L/D=________________

Calculation Performed By: ____________ ____________
Initials Date

Calculation Verified By: ____________ ____________
Initials Date

Appendix V
(Page 4 of 4)

ACCUMULATOR NO. 2 F L/D CALCULATION

Date ________

1.0 STEP 6.2.111 (continued)

Interval No.	P1 psig	P2 psig	L1 in.	L2 in.	Average Flow Rate GPM	P psi	f L/D

NOTE: Time intervals not used may be marked N/A.

Appendix W
(Page 1 of 4)

ACCUMULATOR NO. 3 F L/D CALCULATION

Date ________

1.0 STEP 6.3.111

[1] **ENTER** P1, P2, L1, AND L2 on Page 4 for all time intervals from the time the accumulator discharge valve is fully open until the accumulator discharge flow rate is less than 3000 gpm, from the data logger, where,

P1	=	pressure in accumulator at beginning of time interval
P2	=	pressure in accumulator at end of time interval
L1	=	accumulator level at the beginning of the time interval, inches above the lower level tap
L2	=	accumulator level at the end of the time interval, inches above the lower level tap

____
1st

____
CV

[2] **CALCULATE** the average injection flow rate during each time interval and enter on Page 4. Attach all calculation sheets to this Data Sheet.

$$\text{Flowrate} = 2711.1\frac{(\text{L1} - \text{L2})}{2}\text{GPM}$$

Calculation Performed By: ____________ Initials ____________ Date

Calculation Verified By: ____________ Initials ____________ Date

Appendix W
(Page 2 of 4)

ACCUMULATOR NO. 3 F L/D CALCULATION

Date ________

1.0 STEP 6.3.111 (continued)

[3] **CALCULATE** the pressure (P) for each time interval and enter in Page 4. Attach all calculation sheets to this Data Sheet.

$$P = \frac{(P1 + P2)}{2} + 0.4329 \times \frac{(L1 + L2)}{24} + 1.98 PSI$$

Calculation Performed By: __________ Initials __________ Date

Calculation Verified By: __________ Initials __________ Date

[4] **CALCULATE** f L/D for each time interval and enter in Page 4. Attach all calculation sheets to this Data Sheet.

$$fL / D = \frac{0.64472 \times P \times 4}{62.34 \times (L1 - L2)^2 \times 0.0143}$$

Calculation Performed By: __________ Initials __________ Date

Calculation Verified By: __________ Initials __________ Date

Appendix W
(Page 3 of 4)

ACCUMULATOR NO. 3 F L/D CALCULATION

Date ________

1.0 STEP 6.3.111 (continued)

[5] **CALCULATE** f L/D for the overall time the accumulator discharge valve is full open to when the accumulator discharge flow rate is less than 3000 gpm. Attach all calculation sheets to this Data Sheet.

$$fL/D = \frac{(0.64472) \times Pn \times (deltaT)^2}{62.34 \times (deltaL)^2 \times 0.0143}$$

Where,

Pn	=	the sum of the calculated P's at each time interval divided by number of time intervals
deltaT	=	total time for the intervals considered
deltaL	=	total accumulator level change for the intervals considered

$$fL/D = \frac{(0.64472) \times (\_\_\_\_\_\_\_\_\_\_) \times (\_\_\_\_\_\_\_\_\_\_)^2}{62.34 \times (\_\_\_\_\_\_\_\_\_\_)^2 \times 0.0143}$$

f L/D=________________

Calculation Performed By: ____________ Initials ____________ Date

Calculation Verified By: ____________ Initials ____________ Date

Appendix W
(Page 4 of 4)

ACCUMULATOR NO. 3 F L/D CALCULATION

Date ________

1.0 STEP 6.3.111 (continued)

Interval No.	P1 psig	P2 psig	L1 in.	L2 in.	Average Flow Rate GPM	P psi	f L/D

NOTE: Time intervals not used may be marked N/A.

Appendix X
(Page 1 of 4)

ACCUMULATOR NO. 4 F L/D CALCULATION

Date ________

1.0 STEP 6.4.111

[1] **ENTER** P1, P2, L1, AND L2 on Page 4 for all time intervals from the time the accumulator discharge valve is fully open until the accumulator discharge flow rate is less than 3000 gpm, from the data logger, where,

P1	=	pressure in accumulator at beginning of time interval
P2	=	pressure in accumulator at end of time interval
L1	=	accumulator level at the beginning of the time interval, inches above the lower level tap
L2	=	accumulator level at the end of the time interval, inches above the lower level tap

____
1st

____
CV

[2] **CALCULATE** the average injection flow rate during each time interval and enter on Page 4. Attach all calculation sheets to this Data Sheet.

$$\text{Flowrate} = 2711.1\frac{(\text{L1} - \text{L2})}{2}\text{GPM}$$

Calculation Performed By: ____________ ____________
Initials Date

Calculation Verified By: ____________ ____________
Initials Date

Appendix X
(Page 2 of 4)

ACCUMULATOR NO. 4 F L/D CALCULATION

Date ________

1.0 STEP 6.4.111 (continued)

[3] **CALCULATE** the pressure (P) for each time interval and enter in Page 4. Attach all calculation sheets to this Data Sheet.

$$P = \frac{(P1 + P2)}{2} + 0.4329 \times \frac{(L1 + L2)}{24} + 1.98\text{PSI}$$

Calculation Performed By:	________ Initials	________ Date
Calculation Verified By:	________ Initials	________ Date

[4] **CALCULATE** f L/D for each time interval and enter in Page 4. Attach all calculation sheets to this Data Sheet.

$$fL/D = \frac{0.64472 \times P \times 4}{62.34 \times (L1 - L2)^2 \times 0.0143}$$

Calculation Performed By:	________ Initials	________ Date
Calculation Verified By:	________ Initials	________ Date

Appendix X
(Page 3 of 4)

ACCUMULATOR NO. 4 F L/D CALCULATION

Date ________

1.0 STEP 6.4.111 (continued)

[5] **CALCULATE** f L/D for the overall time the accumulator discharge valve is full open to when the accumulator discharge flow rate is less than 3000 gpm. Attach all calculation sheets to this Data Sheet.

$$fL/D = \frac{(0.64472) \times Pn \times (deltaT)^2}{62.34 \times (deltaL)^2 \times 0.0143}$$

Where,

Pn	=	the sum of the calculated P's at each time interval divided by number of time intervals
deltaT	=	total time for the intervals considered
deltaL	=	total accumulator level change for the intervals considered

$$fL/D = \frac{(0.64472) \times (\underline{\hspace{4cm}}) \times (\underline{\hspace{4cm}})^2}{62.34 \times (\underline{\hspace{4cm}})^2 \times 0.0143}$$

f L/D=________________

Calculation Performed By: ____________ ____________
Initials Date

Calculation Verified By: ____________ ____________
Initials Date

Appendix X
(Page 4 of 4)

ACCUMULATOR NO. 4 F L/D CALCULATION

Date ________

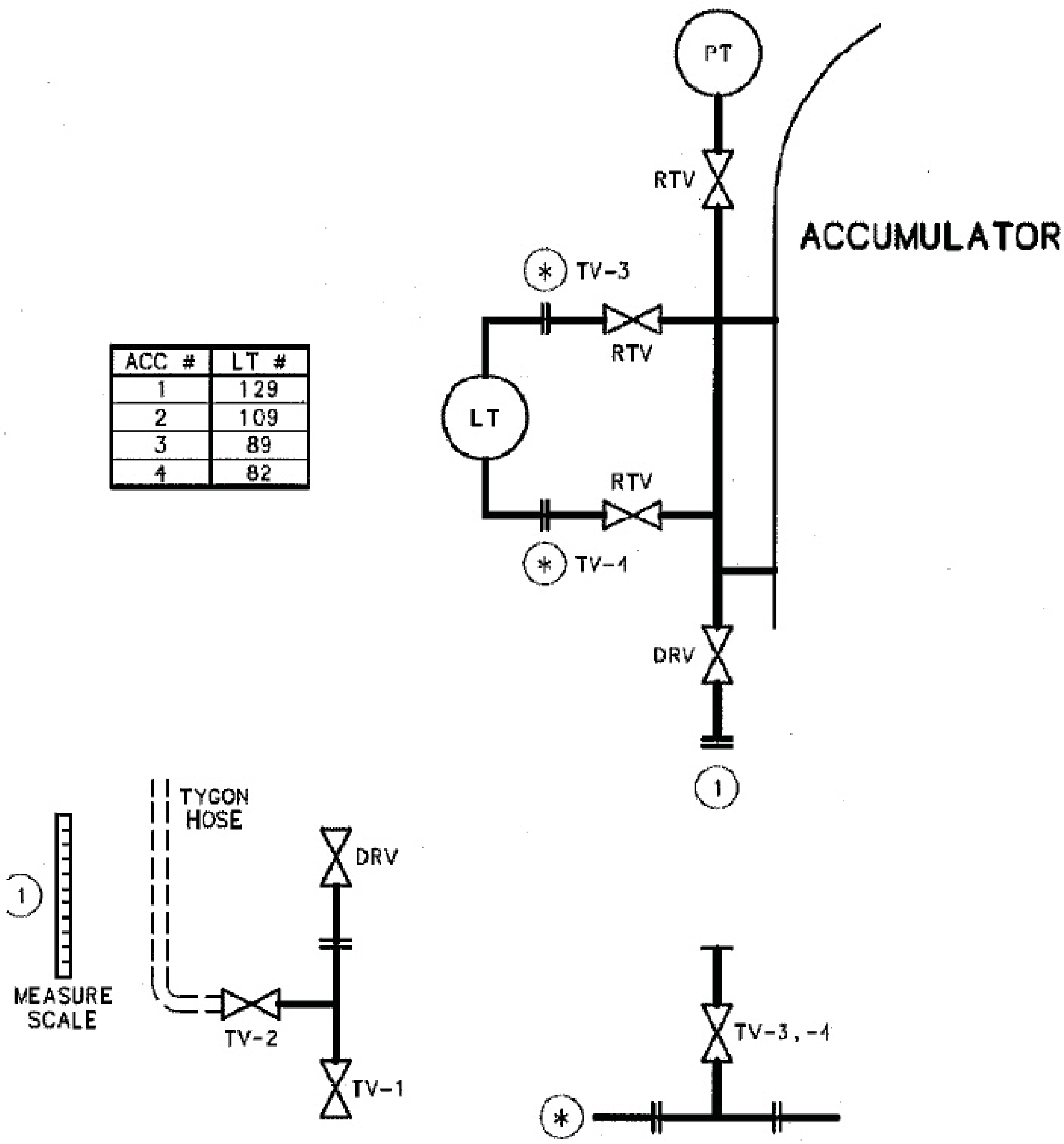
1.0 STEP 6.4.111 (continued)

Interval No.	P1 psig	P2 psig	L1 in.	L2 in.	Average Flow Rate GPM	P psi	f L/D

NOTE: Time intervals not used may be marked N/A.

Appendix Y
(Page 1 of 1)

Sketch for Temporary Spool Pieces



ACC #	LT #
1	129
2	109
3	89
4	82

WATTS BAR NUCLEAR PLANT
UNIT 2 STARTUP

TITLE: SAFEGUARDS SYSTEM TEST PANEL

Instruction No: 2-PTI-099-08
Revision No: 0000

PREPARED BY: Mark D. Runion / Mark D. Runion DATE 7/16/11
PRINT NAME/ SIGNATURE

REVIEWED BY: A. Blake Lowe / A. Blake Lowe DATE 7/16/11
PRINT NAME/ SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING NO: 2-12-002
JTG CHAIRMAN: [signature] DATE 1/26/12
APPROVED BY: [signature] DATE 1/26/12
PREOPERATIONAL STARTUP MANAGER

TEST RESULTS APPROVAL

JTG MEETING NO: ____________
JTG CHAIRMAN: ______________________ DATE ____________
APPROVED BY: ______________________ DATE ____________
PREOPERATIONAL STARTUP MANAGER

Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0000	01-30-2012	ALL	Initial issue based on 1-PTI-099-08, rev 0, CN-01 & 02.

Date ________

Table of Contents

Date ________

Table of Contents (continued)

Date ________

Table of Contents (continued)

Date ________

1.0 INTRODUCTION

1.1 Test Objectives

This test demonstrates the operability of the Engineered Safety Features Actuation System (ESFAS) to perform “Go Test” and “Block Test” functions using the Safeguards System Test Panels.

1.2 Test Scope

A. The scope of the ESFAS “Go Test” functions includes the following:

1. Safety Injection (SI)
2. Containment Isolation Phase A (CI ∅A)
3. Containment Isolation Phase B (CI ∅B)
4. Containment Ventilation Isolation (CVI)
5. Containment Spray (CS)
6. Lo-Lo Tavg Steam Dump
7. Lo-Lo Steam Generator level 1/4 & 2/4
8. Steam Line Isolation (SLI)
9. Safety Injection and RWST/Sump Level Switchover to Recirculation

B. The scope of the ESFAS “Block Test” functions includes the following:

1. Containment Isolation Phase A (CI ∅A)
2. Containment Isolation Phase B (CI ∅B)
3. Steam Line Isolation (SLI)
4. Generator Trip and Steam Dump Interlock
5. Reactor Coolant Pump Underfrequency Trip
6. Feedwater Isolation (FWI)

2.0 REFERENCES

2.1 Performance References

A. SMP-9.0, CONDUCT OF TEST

B. 2-SI-99-300-A, Engineered Safety Features Actuation System Slave Relay Go Test Train A

C. 2-SI-99-300-B, Engineered Safety Features Actuation System Slave Relay Go Test Train B

D. 2-PTI-262-01, Integrated Safeguards Test, Train A

E. 2-PTI-262-02, Integrated Safeguards Test, Train B

F. 2-SI-1-906-A, Main Steam Valves Position Indication Verification, Train A

G. 2-SI-1-906-B, Main Steam Valves Position Indication Verification, Train B

H. 2-SI-99-301-A, Engineered Safety Features Actuation System Slave Relay Block Test Train A

I. 2-SI-99-301-B, Engineered Safety Features Actuation System Slave Relay Block Test Train B

J. 2TS1027, Westinghouse SSPS Train A Output Slave Relay Tests, Work Order 110807203

K. 2TS1028, Westinghouse SSPS Train B Output Slave Relay Tests, Work Order 110807316

2.2 Developmental References

A. Final Safety Analysis Report (FSAR) - Amendment 106

1. Section 7.2, Reactor Trip System

2. Section 7.3, Engineered Safety Features Actuation System

3. Table 14.2-1, Sheet 57 of 89, Reactor Protection System Test Summary

Date ________

2.2 Developmental References (continued)

B. Vendor Drawings

1. 2-54114-8756D77-1, Rev 0, (ANT)
   DRA 52328-817, Rev 0
   Westinghouse Electric Corporation for Tennessee Valley Authority Watts Bar Nuclear Plant 1&2 Safeguards Test Cabinet
   Sheet 1

2. 2-54114-8756D77-2, Rev 0, (ANT)
   DRA 52328-818, Rev 0
   Westinghouse Electric Corporation for Tennessee Valley Authority Watts Bar Nuclear Plant 1&2 Safeguards Test Cabinet
   Sheet 2

3. 2-54114-8756D77-3, Rev 0, (ANT)
   DRA 52328-819, Rev 0
   Westinghouse Electric Corporation for Tennessee Valley Authority Watts Bar Nuclear Plant 1&2 Safeguards Test Cabinet
   Sheet 3

4. 2-54114-8756D77-4, Rev 0, (ANT)
   DRA 52328-820, Rev 0
   Westinghouse Electric Corporation for Tennessee Valley Authority Watts Bar Nuclear Plant 1&2 Safeguards Test Cabinet
   Sheet 4

5. 2-54114-8756D77-5, Rev 0, (ANT)
   DRA 52328-821, Rev 0
   Westinghouse Electric Corporation for Tennessee Valley Authority Watts Bar Nuclear Plant 1&2 Safeguards Test Cabinet
   Sheet 5

6. 2-54114-8756D77-6, Rev 0, (ANT)
   DRA 52328-822, Rev 0
   Westinghouse Electric Corporation for Tennessee Valley Authority Watts Bar Nuclear Plant 1&2 Safeguards Test Cabinet
   Sheet 6

7. 2-54114-8756D77-7, Rev 0, (ANT)
   DRA 52328-823, Rev 0
   Westinghouse Electric Corporation for Tennessee Valley Authority Watts Bar Nuclear Plant 1&2 Safeguards Test Cabinet
   Sheet 7

Date ________

2.2 Developmental References (continued)

8. 2-54114-8756D77-8, Rev 0, (ANT)
DRA 52328-824, Rev 0
Westinghouse Electric Corporation for Tennessee Valley Authority Watts Bar Nuclear Plant 1&2 Safeguards Test Cabinet
Sheet 8

9. 2-54114-8756D77-9, Rev 0, (ANT)
DRA 52328-825, Rev 0
Westinghouse Electric Corporation for Tennessee Valley Authority Watts Bar Nuclear Plant 1&2 Safeguards Test Cabinet
Sheet 9

10. 2-54114-8756D77-10, Rev 0, (ANT)
DRA 52328-826, Rev 0
Westinghouse Electric Corporation for Tennessee Valley Authority Watts Bar Nuclear Plant 1&2 Safeguards Test Cabinet
Sheet 10

11. 2-54114-8756D77-11, Rev 0, (ANT)
DRA 52328-827, Rev 0
Westinghouse Electric Corporation for Tennessee Valley Authority Watts Bar Nuclear Plant 1&2 Safeguards Test Cabinet
Sheet 11

12. 2-54114-8756D77-12, Rev 0, (ANT)
DRA 52328-828, Rev 0
Westinghouse Electric Corporation for Tennessee Valley Authority Watts Bar Nuclear Plant 1&2 Safeguards Test Cabinet
Sheet 12

C. Documents

1. 1-PTI-99-08, Safeguards Test Panel, Rev 0, CN-1 and CN-2

2. 2-TSD-99-8, Safeguards System Test Panel, Rev 0

3. WBN2-99-4003, System Description for Reactor Protection System, Rev 0

Date ________

3.0 PRECAUTIONS AND LIMITATIONS

A. Standard precautions shall be followed for working around energized electrical equipment in accordance with TVA Safety Manual Procedure 1021.

B. Steps may be repeated if all components cannot be tested in a step. However, if the test has been exited, prerequisite steps must be re-verified and a Chronological Test Log (CTL) entry made.

C. Discrepancies between component ID tags and the description in a procedure/instruction do not require a Test Deficiency Notice,TDN, in accordance with SMP-14.0, if the UNIDs match, exclusive of place-keeping zeros and train designators (e.g. 2-HS-31-468 vs. 2-HS-031-0468) and the noun description is sufficient to identify the component. If the component label needs to be changed, a Tag Request Form (TR Card) should be processed in accordance with TI-12.14. Make an entry in the CTL and continue testing.

D. All wires removed/lifted from a terminal shall be identified and taped or covered with an insulator to prevent personnel or equipment hazard and possible spurious initiations. The wires should be grouped together and labeled with the work implementing document number that required them to be lifted if left unattended.

E. All open problems are to be tracked by a corrective action document and entered on the appropriate system punchlist.

F. Problems identified during the test shall be annotated on the CTL from SMP-9.0 including a description of the problem, the procedure step when/where the problem was identified, corrective action steps taken to resolve the problem, and the number of the corrective action document, if one was required.

G. Observe all Radiation Protection (RP) requirements when working in or near contaminated areas.

H. Ensure there are no adverse effects to the operation of Unit 1 structures, systems, or components.

I. Test personnel will coordinate with Unit 1 Operations when manipulating Unit 1 equipment if required.

J. Precautions and Limitations prescribed in Section 3.0 of the referenced Surveillance Instructions shall be observed during the performance of this test.

Date ________

4.0 PREREQUISITE ACTIONS

NOTE

Prerequisite steps may be performed in any order unless otherwise stated and should be completed as close in time as practicable to the start of the instruction subsection to which they apply.

4.1 Preliminary Actions

[1] **EVALUATE** open items in Watts Bar Integrated Task Equipment List (WITEL), **AND**

ENSURE they will NOT adversely affect the test performance and results. ________

[2] **ENSURE** changes to the references listed on Appendix A have been reviewed, and determined NOT to adversely affect the test performance. ________

[3] **VERIFY** current revisions and change paper for referenced drawings has been reviewed and determined NOT to adversely affect the test performance, **AND**

ATTACH documentation of current drawing revision numbers and change paper that were reviewed to the data package. ________

[4] **VERIFY** the test/performance copy of this Preoperational Test Instruction (PTI) is the current revision including any change notices and as needed, each test person assisting in this test has the current revision including any change notices. ________

[5] **ENSURE** outstanding Design Change Notices (DCN's), Engineering Document Construction Releases (EDCR's) or Temporary Alterations (TA's) do NOT adversely impact testing, **AND**

ATTACH documentation of DCN's, EDCR's and TA's that were reviewed to the data package. ________

Date ________

4.1 Preliminary Actions (continued)

[6] **ENSURE** required Component Testing has been completed prior to start of test.

Subsection 6.1 ________

Subsection 6.2 ________

Subsection 6.3 ________

Subsection 6.4 ________

[7] **VERIFY** the following Surveillance Instructions have been submitted to JTG for concurrence that these instructions adequately satisfy the requirements of this procedure:

A. 2-SI-99-300-A, Engineered Safety Features Actuation System Slave Relay Go Test Train A

JTG Meeting __________ ________

B. 2-SI-99-300-B, Engineered Safety Features Actuation System Slave Relay Go Test Train B

JTG Meeting __________ ________

C. 2-SI-1-906-A, Main Steam Valves Position Indication Verification - Train A

JTG Meeting __________ ________

D. 2-SI-1-906-B, Main Steam Valves Position Indication Verification - Train B

JTG Meeting __________ ________

E. 2-PTI-262-01, Integrated Safeguards Test, Train A

JTG Meeting __________ ________

F. 2-PTI-262-02, Integrated Safeguards Test, Train B

JTG Meeting __________ ________

Date ________

4.1 Preliminary Actions (continued)

G. 2-SI-99-301-A, Engineered Safety Features Actuation System Slave Relay Block Test Train A

JTG Meeting __________ ________

H. 2-SI-99-301-B, Engineered Safety Features Actuation System Slave Relay Block Test Train B

JTG Meeting __________ ________

NOTE

Go and block tests for K627, K628, K631, K641, and K635 are not included in the surveillance testing program. Testing of these relays was performed by Westinghouse under procedures 2TS1027 for Train A and 2TS1028 for Train B.

[8] **VERIFY** the following Westinghouse procedures have been submitted to JTG for concurrence that these instructions satisfy block or go tests for relays K627, K628, K631, K641, and K635:

A. 2TS1027 SSPS Train A Output Slave Relay Tests, Work Order 110807203. ________

B. 2TS1028 SSPS Train B Output Slave Relay Tests, Work Order 110807316. ________

[9] **CONDUCT** a pretest briefing with Test and Operations personnel in accordance with SMP-9.0. ________

[10] **ENSURE** communications are available for areas where testing is to be conducted. ________

[11] **VERIFY** that all applicable Unit 1 & 2 interfaces are identified and are in the correct configuration prior to performing this PTI. ________

Date ________

4.1 Preliminary Actions (continued)

NOTE

Any Annunciator points associated with 2-MUX-55-12 and 2-MUX-55-13 ONLY have master switches at the bottom of each terminal strip.

All points associated with 2-TBK-55-25, 2-TBK-55-26, 2-TBK-55-27, and 2-TBK-55-28 will not have individual switches or a master switch.

[12] **VERIFY** System 55, Annunciator and Sequential Events Recording System, FTA switch (in Panel 2-M-21) associated with the following annunciator windows inputs are in the ON position.

Annunciator	Description	Initials/ Date
2-XA-55-6A-113E	RHR SUCT FCV-74-1, 2, 8, 9 OPEN & HI PRESS	
2-XA-55-6A-114B	SAFEGUARDS TEST RACK A IN TEST	
2-XA-55-6A-115B	SAFEGUARDS TEST RACK B IN TEST	
2-XA-55-6A-114A	SSPS-A GEN WARNING	
2-XA-55-6A-115A	SSPS-B GEN WARNING	

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) and/or Plant Operations. ________

[14] **ENSURE** a review of outstanding Clearances has been coordinated with Operations for impact to the test performance, **AND**

RECORD in Appendix B, Temporary Condition Log if required. ________

[15] **OBTAIN** copies of the applicable forms from the latest revision of SMP-9.0, **AND**

ATTACH to this PTI for use during the performance of this PTI. ________

Date ________

4.1 Preliminary Actions (continued)

[16] **VERIFY** Measuring and Test Equipment (M&TE) calibration due dates will support the completion of this test performance.

Subsection 6.1 ________

Subsection 6.2 ________

Subsection 6.3 ________

Subsection 6.4 ________

[17] **PERFORM** a pretest walkdown on equipment to be tested to ensure no conditions exist that will impact test performance. ________

[18] **REVIEW** preventive maintenance for system/components covered by this test, **AND**

VERIFY no conditions exist that will impact test performance. ________

Date ________

4.2 Special Tools, Measuring and Test Equipment, Parts, and Supplies

4.2.1 Test Equipment

- (2) Voltage-Ohm Meters (VOM's) or Digital Multi-Meters (DMM's) to monitor approximately 15 vdc for slave relays.

NOTE
Voltages measured are qualitative only, as defined in SMP 8.0.

- M&TE required in accordance with applicable Surveillance Instructions.

4.3 Field Preparations

See sub-sections 6.1 and 6.2.

Date ________

4.4 Approvals and Notifications

[1] **OBTAIN** permission of the Preoperational Startup Manager to start the test.

Preoperational Startup Manager Signature ______________________ Date ________

[2] **OBTAIN** the Unit 2 Supervisor's (US/SRO) or Shift Manager's (SM) authorization.

US/SRO/SM Signature ______________________ Date ________

[3] **OBTAIN** the Unit 1 Supervisor's (US/SRO) or Shift Manager's (SM) authorization.

U1 US/SRO/SM Signature ______________________ Date ________

Date ________

5.0 ACCEPTANCE CRITERIA

A. The Engineered Safety Features Actuation System (ESFAS) functions in response to “Go Test” signals in accordance with the design requirements as described in FSAR Section 7.3 and design drawings (by verifying relay actuated for affected equipment) during performance of the following test instructions: 2-SI-99-300-A, 2-SI-99-300-B, 2-SI-1-906-A, 2-SI-1-906-B, 2-PTI-262-01 and 2-PTI-262-02.

ESFAS circuitry will also be verified by continuity test through the slave relay coils (K600 series) and using the ESFAS Go Tests circuits (S800 series switches) located in the Safeguards Test Cabinets.

Verify the following Go Test switches and associated slave relays:

1. Safety Injection

    a. Safety Injection Unblock Pressure P11
    (Steps 6.1.6[7], 6.2.6[7], for S827/K628)

    b. Safety Injection
    (Steps 6.1.7[7] ,6.2.7[7], 6.1.28[7], 6.2.28[7] for S828/K609)

    c. Safety Injection
    (Steps 6.1.8[7], 6.2.8[7], 6.1.28[7], 6.1.28[3], 6.2.28[3] for S829/K603)

    d. Safety Injection
    (Steps 6.1.9[7], 6.2.9[7], 6.1.28[3], 6.2.28[3] for S830/K604)

    e. Safety Injection
    (Steps 6.1.13[7], 6.2.13[7], 6.1.28[7], 6.2.28[7] for S834/K608)

    f. Safety Injection
    (Steps 6.1.14[7], 6.2.14[7], 6.1.28[7], 6.2.28[7] for S835/K611)

2. Containment Isolation Phase A

    a. Containment Isolation Phase A
    (Steps 6.1.10[7], 6.2.10[7], 6.1.28[7], 6.2.28[7] for S831/K605)

    b. Containment Isolation Phase A
    (Steps 6.1.11[7], 6.2.11[7], 6.1.28[7], 6.2.28[7] for S832/K606)

    c. Containment Isolation Phase A
    (Steps 6.1.12[7], 6.2.12[7], 6.1.28[7], 6.2.28[7] for S833/K607)

Date ________

5.0 ACCEPTANCE CRITERIA (continued)

d. Containment Isolation Phase A
(Steps 6.1.15[7], 6.2.15[7], 6.1.28[7], 6.2.28[7] for S836/K612)

e. Containment Isolation Phase A
(Steps 6.1.16[7], 6.2.16[7], 6.1.28[7], 6.2.28[7] for S837/K613)

f. Containment Isolation Phase A
(Steps 6.1.26[8], 6.2.26[8], 6.1.28[7], 6.2.28[7] for S848/K630)

3. Containment Ventilation Isolation

a. Containment Ventilation Isolation
(Steps 6.1.17[7], 6.2.17[7], 6.1.28[7], 6.2.28[7] for S838/K615)

b. Containment Ventilation Isolation
(Steps 6.1.18[7], 6.2.18[7], 6.1.28[7], 6.2.28[7] for S839/K622)

4. Containment Isolation Phase B

a. Containment Isolation Phase B
(Steps 6.1.3[7], 6.2.3[7], 6.1.28[7], 6.2.28[7] for S824/K626)

b. Containment Isolation Phase B
(Steps 6.1.23[7], 6.2.23[7], 6.1.28[7], 6.2.28[7] for S845/K 625)

5. Lo-Lo Tavg Steam Dump
(Steps 6.1.19[7], 6.2.19[7], 6.3[4], 6.4[4] for S840/K631)

6. Lo-Lo Steam Generator Level

a. Lo-Lo Steam Generator Level 1/4
(Steps 6.1.20[7], 6.2.20[7], 6.1.28[3], 6.2.28[3] for S842/K633)

b. Lo-Lo Steam Generator Level 2/4
(Steps 6.1.21[7], 6.2.21[7], 6.1.28[3], 6.2.28[3] for S843/K634)

7. Steam Line Isolation

a. Steam Line Isolation
(Steps 6.1.24[7], 6.2.24[7], 6.1.28[4], 6.2.28[4] for S846/K617)

b. Steam Line Isolation
(Steps 6.1.25[7], 6.2.25[7], 6.1.28[4], 6.2.28[4] for S847/K624)

Date ________

5.0 ACCEPTANCE CRITERIA (continued)

8. Safety Injection and RWST/Sump Level Switchover to Recirculation
(Steps 6.1.4[7], 6.2.4[7], 6.1.28[3], 6.2.28[3] for S825/K602 & K647)
(Steps 6.1.5[9], 6.2.5[9], 6.1.28[3], 6.2.28[3] for S826/K648)

9. Containment Spray
(Steps 6.1.2[9], 6.2.2[9], 6.1.28[3], 6.2.28[3] for S820/K644)
(Steps 6.1.22[9], 6.2.22[9], 6.1.28[7], 6.2.28[7], for S844/K643)

B. Verify the ESFAS functions in response to “Block Test” signals in accordance with the design requirements as described in FSAR Section 7.3 and design drawings (by test lamp indication) during performance of Surveillance Instructions: 2-SI-99-301-A (Train A) and 2-SI-99-301-B (Train B) for the following:

1. Containment Isolation Phase A (S810/K614)
(Steps 6.3[3] and 6.4[3])

2. Containment Isolation Phase B
(Steps 6.3[3] and 6.4[3])

   a. Containment Isolation Phase B (S805/K618)

   b. Containment Isolation Phase B (S816/K619)

3. Steam Line Isolation
(Steps 6.3[3] and 6.4[3])

   a. Steam Line Isolation (S807/K616)

   b. Steam Line Isolation (S809/K623)

4. Generator Trip and Steam Dump Interlock (S811/K635)
(Steps 6.3[4] and 6.4[4])

5. Reactor Coolant Pump Underfrequency (S817/K627)
(Steps 6.3[4] and 6.4[4])

6. Feedwater Isolation
(Steps 6.3[3] and 6.4[3])

   a. Feedwater Isolation (S801/K601, K620, K636)

   b. Feedwater Isolation (S802/K601, K620, K636)

   c. Feedwater Isolation (S803/K601, K620, K636)

Date ________

5.0 ACCEPTANCE CRITERIA (continued)

d. Feedwater Isolation (S812/K610, K637, K649)

e. Feedwater Isolation (S813/K610, K637, K649)

f. Feedwater Isolation (S814/K610, K637, K649)

Date ________

6.0 PERFORMANCE

NOTE

Subsections 6.1 through 6.4 may be performed in any order.

6.1 Engineered Safety Features Actuation System Slave Relay Go Test Train A

[1] **VERIFY** prerequisites listed in Section 4.0 for Section 6.1 have been completed. ________

NOTE

Wire lift in Step 6.1[2] blocks annunciator 2-XA-55-6A-114B Safeguards Test Rack A in Test.

[2] **LIFT** vendor wire from TB828-1 [2-R-52]. ________

____
CV

[3] **ENSURE** MASTER RELAY SELECTOR Switch [2-R-48] is OFF. ________

NOTE

Annunciator 2-XA-55-6A-114A, SSPS-A GEN WARNING will alarm during Step 6.1[4].

[4] **PLACE** MULTIPLEXER TEST Switch [2-R-47] to INHIBIT. ________

[5] **PLACE** INPUT ERROR INHIBIT Switch [2-R-47] to INHIBIT. ________

[6] **PLACE** MODE SELECTOR Switch [2-R-48] to TEST. ________

Date ________

6.1 Engineered Safety Features Actuation System Slave Relay Go Test Train A (continued)

NOTES

Performance of Step 6.1[7] will cause the following:

1) De-energize K629 Source Range Block disabling the Source Range Reactor Trip Block.
2) Disable the RHR Suction Valve Open Permissive to 2-FCV-74-1 and 8.
3) Alarm 2-XA-55-6A/113E if the RHR Suction Valves are open.
4) Disable the Containment Spray Pump Recirc Valve Auto Open feature to 2-FCV-72-34.
5) Close 2-FCV-72-34 if it was open.

[7] **REMOVE** OUTPUT RELAY POWER FUSE (6FU2) [2-R-48]. ________

____
CV

NOTE

Temporary jumper in Step 6.1[8] connects SSPS dc (logic) ground and ac ground.

[8] **INSTALL** temporary jumper from TB654-9 to TB656-8 in 2-R-48. ________

____
CV

[9] **VERIFY** SLAVE OPERATED lights A1, A2, A3, A4, B1, B2, B3, B4 [2-R-48] are NOT LIT. ________

[10] **PUSH** SLAVE TEST A and B pushbuttons, [2-R-48], **AND**

VERIFY SLAVES OPERATED lights A1, A2, A3, A4, B1, B2, B3, B4 are NOT LIT. ________

[11] **CONNECT** one lead of multi-meter set to monitor for approximately 15 vdc to Slave Relay K602 terminal 1 [2-R-48] (ac ground). ________

Date ________

6.1.2 Containment Spray (S820/ K644)

> **NOTE**
>
> Temporary jumper in Step 6.1.2[1] bypasses Containment Spray Valve Interlock to allow continuity test of Slave Relay K644. No equipment actuations will occur.

[1] **INSTALL** temporary jumper from TB853-1 to TB853-3 in 2-R-52. ________

____
CV

[2] **TURN** and **HOLD** Switch S820, CONTAINMENT SPRAY ACTUATION, [2-R-52], to PUSH TO TEST, **AND**

CHECK Red test lamp 081 is LIT. ________

> **NOTE**
>
> Switch S820 must be pushed in and held during performance of Steps 6.1.2[3] through 6.1.2[4.4].

[3] **PUSH** and **HOLD** Switch S820, CONTAINMENT SPRAY ACTUATION, in PUSH TO TEST. ________

[4] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[4.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[4.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[4.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[4.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[5] **RELEASE** Switch S820, CONTAINMENT SPRAY ACTUATION. ________

Date ________

6.1.2 Containment Spray (S820/ K644) (continued)

[6] **PLACE AND RELEASE** Switch S821, RESET [2-R-52] in RESET. ________

[7] **VERIFY** Red test lamp 081 is NOT LIT. ________

[8] **REMOVE** temporary jumper from TB853-1 to TB853-3 in 2-R-52. ________

____
CV

[9] **VERIFY** Subsection 6.1.2 completed satisfactorily. **(Acc Crit)** ________

6.1.3 Containment Isolation Phase B (S824/ K626)

[1] **TURN** and **HOLD** Switch S824, CONTAINMENT ISOLATION PHASE “B” [2-R-52], in PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE
Switch S824 must be pushed in and held during performance of Steps 6.1.3[2] through 6.1.3[3.4]

[2] **PUSH** and **HOLD** Switch S824, CONTAINMENT ISOLATION PHASE “B”, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S824, CONTAINMENT ISOLATION PHASE "B”. ________

Date ________

6.1.3 Containment Isolation Phase B (S824/ K626) (continued)

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52] in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.3 completed satisfactorily. **(Acc Crit)** ________

6.1.4 Safety Injection (S825/ K602 & K647)

[1] **TURN** and **HOLD** Switch S825, SAFETY INJECTION [2-R-52], to PUSH TO TEST, **AND**

CHECK Red test lamp 081 is LIT. ________

NOTE

Switch S825 must be pushed in and held during performance of Steps 6.1.4[2] through 6.1.4[3.4].

[2] **PUSH** and **HOLD** Switch S825, SAFETY INJECTION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S825, SAFETY INJECTION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.4 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.5 RWST Sump Level (S826/K648)

> **NOTE**
>
> Temporary jumper in Step 6.1.5[1] bypasses RHR Valve Interlock to allow continuity test of Slave Relay K648. No equipment actuations will occur.

[1] **INSTALL** temporary jumper from TB841-1 to TB841-2 [2-R-52]. ________

____
CV

[2] **TURN** and **HOLD** Switch S826, RWST SUMP LEVEL [2-R-52], to PUSH TO TEST, **AND**

CHECK Red test lamp 081 is LIT. ________

> **NOTE**
>
> Switch S826 must be pushed in and held during performance of Steps 6.1.5[3] through 6.1.5[4.4].

[3] **PUSH** and **HOLD** Switch S826, RWST SUMP LEVEL, in PUSH TO TEST. ________

[4] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[4.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[4.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[4.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[4.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[5] **RELEASE** Switch S826, RWST SUMP LEVEL. ________

[6] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

Date ________

6.1.5 RWST Sump Level (S826/K648) (continued)

[7] **VERIFY** Red test lamp 081 is NOT LIT. ________

[8] **REMOVE** temporary jumper from TB841-1 and TB841-2 [2-R-52]. ________

____
CV

[9] **VERIFY** Subsection 6.1.5 completed satisfactorily. **(Acc Crit)** ________

6.1.6 Safety Injection Unblock Pressure P11 (S827/K628)

[1] **TURN** and **HOLD** Switch S827, S.I. UNBLOCK PRESSURE P11 [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE
Switch S827 must be pushed in and held during performance of Step 6.1.6[2] through 6.1.6[3.4].

[2] **PUSH** and **HOLD** Switch S827, S.I. UNBLOCK PRESSURE P11, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S827, S.I. UNBLOCK PRESSURE P11. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

Date ________

6.1.6 Safety Injection Unblock Pressure P11 (S827/K628) (continued)

[7] **VERIFY** Subsection 6.1.6 completed satisfactorily. **(Acc Crit)** ________

6.1.7 Safety Injection (S828/ K609)

[1] **TURN** and **HOLD** Switch S828, SAFETY INJECTION [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S828 must be pushed in and held during performance of Steps 6.1.7[2] through 6.1.7[3.4].

[2] **PUSH** and **HOLD** Switch S828, SAFETY INJECTION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S828, SAFETY INJECTION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.7 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.8 Safety Injection (S829/ K603)

[1] **TURN** and **HOLD** Switch S829, SAFETY INJECTION [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE
Switch S829 must be pushed in and held in during performance of Steps 6.1.8[2] through 6.1.8[3.4].

[2] **PUSH** and **HOLD** Switch S829, SAFETY INJECTION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S829, SAFETY INJECTION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.8 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.9 Safety Injection (S830/ K604)

[1] **TURN** and **HOLD** Switch S830, SAFETY INJECTION [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S830 must be pushed in and held during performance of Steps 6.1.9[2] through 6.1.9[3.4].

[2] **PUSH** and **HOLD** Switch S830, SAFETY INJECTION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S830, SAFETY INJECTION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.9 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.10 Containment Isolation Phase A (S831/ K605)

[1] **TURN** and **HOLD** Switch S831, CONTAINMENT ISOLATION PHASE “A” [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE
Switch S831 must be pushed in and held during performance of Steps 6.1.10[2] through 6.1.10[3.4].

[2] **PUSH** and **HOLD** Switch S831, CONTAINMENT ISOLATION PHASE “A”, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S831, CONTAINMENT ISOLATION PHASE “A”. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.10 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.11 Containment Isolation Phase A (S832/ K606)

[1] **TURN** and **HOLD** Switch S832, CONTAINMENT ISOLATION PHASE "A" [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S832 must be pushed in and held during performance of Steps 6.1.11[2] through 6.1.11[3.4]

[2] **PUSH** and **HOLD** Switch S832, CONTAINMENT ISOLATION PHASE "A", in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S832, CONTAINMENT ISOLATION PHASE "A". ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.11 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.12 Containment Isolation Phase A (S833/ K607)

[1] **TURN** and **HOLD** Switch S833, CONTAINMENT ISOLATION PHASE "A" [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE
Switch S833 must be pushed in and held during performance of Steps 6.1.12[2] through 6.1.12[3.4].

[2] **PUSH** and **HOLD** Switch S833, CONTAINMENT ISOLATION PHASE "A", in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S833, CONTAINMENT ISOLATION PHASE "A". ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.12 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.13 Safety Injection (S834/ K608)

[1] **TURN** and **HOLD** Switch S834, SAFETY INJECTION [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S834 must be pushed in and held during performance of Steps 6.1.13[2] through 6.1.13[3.4].

[2] **PUSH** and **HOLD** Switch S834, SAFETY INJECTION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S834, SAFETY INJECTION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.13 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.14 Safety Injection (S835/ K611)

[1] **TURN** and **HOLD** Switch S835, SAFETY INJECTION [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S835 must be pushed in and held during performance of Steps 6.1.14[2] through 6.1.14[3.4].

[2] **PUSH** and **HOLD** Switch S835, SAFETY INJECTION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S835, SAFETY INJECTION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.14 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.15 Containment Isolation Phase A (S836/ K612)

[1] **TURN** and **HOLD** Switch S836, CONTAINMENT ISOLATION PHASE “A” [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE
Switch S836 must be pushed in and held during performance of Steps 6.1.15[2] through 6.1.15[3.4].

[2] **PUSH** and **HOLD** Switch S836, CONTAINMENT ISOLATION PHASE “A”, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S836, CONTAINMENT ISOLATION PHASE “A”. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.15 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.16 Containment Isolation (S837/ K613)

[1] **TURN** and **HOLD** Switch S837, CONTAINMENT ISOLATION PHASE “A” [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

> **NOTE**
>
> Switch S837 must be pushed in and held during performance of Steps 6.1.16[2] through 6.1.16[3.4].

[2] **PUSH** and **HOLD** Switch S837, CONTAINMENT ISOLATION PHASE “A”, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S837, CONTAINMENT ISOLATION PHASE “A”. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.16 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.17 Containment Ventilation Isolation (S838/ K615)

[1] **TURN** and **HOLD** Switch S838, CONTAINMENT VENTILATION ISOLATION [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S838 must be pushed in and held during performance of Steps 6.1.17[2] through 6.1.17[3.4].

[2] **PUSH** and **HOLD** Switch S838, CONTAINMENT VENTILATION ISOLATION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S838, CONTAINMENT VENTILATION ISOLATION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.17 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.18 Containment Ventilation Isolation (S839/K622)

[1] **TURN** and **HOLD** Switch S839, CONTAINMENT VENTILATION ISOLATION [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE
Switch S839 must be pushed in and held during performance of Steps 6.1.18[2] through 6.1.18[3.4].

[2] **PUSH** and **HOLD** Switch S839, CONTAINMENT VENTILATION ISOLATION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S839, CONTAINMENT VENTILATION ISOLATION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.18 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.19 Steam Dump Interlock (S840/K631)

[1] **TURN** and **HOLD** Switch S840, STEAM DUMP INTERLOCK [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S840 must be pushed in and held during performance of Steps 6.1.19[2] through 6.1.19[3.4].

[2] **PUSH** and **HOLD** Switch S840, STEAM DUMP INTERLOCK [2-R-52], in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S840, STEAM DUMP INTERLOCK. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.19 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.20 Auxiliary Feedwater Pump Start (S842/ K633)

[1] **TURN** and **HOLD** Switch S842, AUXILIARY FEEDWATER PUMP START [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S842 must be pushed in and held during performance of Steps 6.1.20[2] through Steps 6.1.20[3.4].

[2] **PUSH** and **HOLD** Switch S842, AUXILIARY FEEDWATER PUMP START, PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S842, AUXILIARY FEEDWATER PUMP START. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.20 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.21 Auxiliary Feedwater Pump Start (S843/ K634)

[1] **TURN** and **HOLD** Switch S843, AUXILIARY FEEDWATER PUMP START [2-R-52], to PUSH TO TEST **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S843 must be pushed in and held during performance of Steps 6.1.21[2] through Steps 6.1.21[3.4].

[2] **PUSH** and **HOLD** Switch S843, AUXILIARY FEEDWATER PUMP START, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S843, AUXILIARY FEEDWATER PUMP START. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.21 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.1.22 Containment Spray Actuation (S844/ K643)

NOTE

Temporary jumper in Step 6.1.22[1] bypasses Containment Spray Pump Interlock to allow continuity test of Slave Relay K643. No equipment actuations will occur.

[1] **INSTALL** temporary jumper from TB839-9 to TB839-11 [2-R-52]. ________

____
CV

[2] **TURN** and **HOLD** Switch S844, CONTAINMENT SPRAY ACTUATION [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S844 must be pushed in and held during performance of Steps 6.1.22[3] through 6.1.22[4.4].

[3] **PUSH** and **HOLD** Switch S844, CONTAINMENT SPRAY ACTUATION, in PUSH TO TEST. ________

[4] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48], and perform the following:

[4.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[4.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[4.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[4.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[5] **RELEASE** Switch S844, CONTAINMENT SPRAY ACTUATION. ________

Date ________

6.1.22 Containment Spray Actuation (S844/ K643) (continued)

[6] **PLACE AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[7] **VERIFY** Red test lamp 081 is NOT LIT. ________

[8] **REMOVE** temporary jumper from TB839-9 to TB839-11 [2-R-52]. ________

____
CV

[9] **VERIFY** Subsection 6.1.22 completed satisfactorily. **(Acc Crit)** ________

6.1.23 Containment Isolation Phase B (S845/ K625)

[1] **TURN** and **HOLD** Switch S845, CONTAINMENT ISOLATION PHASE “B” [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE
Switch S845 must be pushed in and held during performance of Steps 6.1.23[2] through 6.1.23[3.4].

[2] **PUSH** and **HOLD** Switch S845, CONTAINMENT ISOLATION PHASE “B”, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

Date ________

6.1.23 Containment Isolation Phase B (S845/ K625) (continued)

[4] **RELEASE** Switch S845, CONTAINMENT ISOLATION PHASE "B". ________

[5] **TURN AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.1.23 completed satisfactorily. **(Acc Crit)** ________

6.1.24 Steam Line Isolation (S846/ K617)

[1] **TURN** and **HOLD** Switch S846, STEAM LINE ISOLATION, [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S846 must be pushed in and held during performance of Steps 6.1.24[2] through 6.1.24[3.4].

[2] **PUSH** and **HOLD** Switch S846, STEAM LINE ISOLATION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

[4] **RELEASE** Switch S846, STEAM LINE ISOLATION. ________

[5] **TURN AND RELEASE** Switch S821, RESET [2-R-52], in RESET. ________

Date _________

6.1.24 Steam Line Isolation (S846/ K617) (continued)

[6] **VERIFY** Red test lamp 081 is NOT LIT. _________

[7] **VERIFY** Subsection 6.1.24 completed satisfactorily. **(Acc Crit)** _________

6.1.25 Steam Line Isolation (S847/ K624)

[1] **TURN** and **HOLD** Switch S847, STEAM LINE ISOLATION [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. _________

NOTE
Switch S847 must be pushed in and held during performance of Steps 6.1.25[2] through 6.1.25[3.4].

[2] **PUSH** and **HOLD** Switch S847, STEAM LINE ISOLATION, in PUSH TO TEST. _________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. _________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. _________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. _________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. _________

[4] **RELEASE** Switch S847, STEAM LINE ISOLATION. _________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-52] in RESET. _________

[6] **VERIFY** Red test lamp 081 is NOT LIT. _________

[7] **VERIFY** Subsection 6.1.25 completed satisfactorily. **(Acc Crit)** _________

Date ________

6.1.26 Containment Isolation Phase A (S848/ K630)

NOTE
Wire connected in Step 6.1.26[1] enables Annunciator 2-XA-55-6A/114B, SAFEGUARDS TEST RACK A IN TEST.

[1] Connect vendor wire lifted in Step 6.1[2] to TB828-1 [2-R-52]. ________

____
CV

[2] **TURN** and **HOLD** Switch S848, CONTAINMENT ISOLATION PHASE “A”, [2-R-52], to PUSH TO TEST. ________

VERIFY the following:

Red test lamp 081 is LIT. ________

Annunciator 2-XA-55-6A-114B, in ALARM ________

NOTE
Switch S848 must be pushed in and held during performance of Steps 6.1.26[3] through 6.1.26[4.4].

[3] **PUSH** and **HOLD** Switch S848, CONTAINMENT ISOLATION PHASE “A”, in PUSH TO TEST. ________

[4] **PUSH** SLAVE TEST pushbuttons A and B [2-R-48] and perform the following:

[4.1] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[4.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[4.3] **VERIFY** SLAVES OPERATED lamp status on Table 1. ________

[4.4] **VERIFY** voltage values, with multi-meter connected in Step 6.1[11], to Terminal 6 for each relay listed in Table 2. ________

Date ________

6.1.26 Containment Isolation Phase A (S848/ K630) (continued)

[5] **RELEASE** Switch S848, CONTAINMENT ISOLATION PHASE "A". ________

[6] **PLACE AND RELEASE** Switch S821, RESET [2-R-52] in RESET. ________

[7] **VERIFY** the following:

Red test lamp 081 is NOT LIT. ________

Annunciator 2-XA-55-6A-114B, is CLEAR. ________

[8] **VERIFY** Subsection 6.1.26 completed satisfactorily. **(Acc Crit)** ________

6.1.27 Post Test Restoration

[1] **REMOVE** temporary jumper in TB654-9 to TB656-8 [2-R-48]. ________

____
CV

[2] **INSTALL** OUTPUT RELAY POWER FUSE (6FU2) [2-R-48]. ________

____
CV

[3] **PLACE** MODE SELECTOR Switch [2-R-48] in OPERATE. ________

[4] **REQUEST** UO establish blocks with the following [2-M-4]:

A. 2-N33A, SR TRIP TR A RESET BLOCK P-6. ________

B. 2-N38A, IR TRIP BLOCK P-10. ________

C. 2-N47A, PR LO POWER TRIP BLOCK P-10. ________

D. 2-HS-63-135A, STEAM LINE SI BLOCK. ________

E. 2-HS-63-136A, LO PZR PRESS SI BLOCK P-11. ________

[5] **PLACE** and **HOLD** 2-HS-3-99A1, MFW ISOL ACT RESET TR-A, [2-M-3] in RESET until Step 6.1.27[6] is complete. ________

[6] **PLACE** INPUT ERROR INHIBIT Switch [2-R-47] in NORMAL. ________

Date ________

6.1.27 Post Test Restoration (continued)

[7] **PLACE** MULTIPLEXER TEST SWITCH [2-R-47] in NORMAL. ________

[8] **DISCONNECT** multi-meter lead from Slave Relay K602 terminal 1 [2-R-48] (ac ground). ________

6.1.28 Train A Go Test Surveillance and PTI Performance

[1] **PERFORM** Surveillance Instruction 2-SI-99-300-A, Engineered Safety Features Actuation System Slave Relay Go Test Train A. ________

[2] **PERFORM** Surveillance Instruction 2-SI-1-906-A, Main Steam Valves Position Indication Verification, Train A. ________

[3] **VERIFY** Surveillance Instruction 2-SI-99-300-A, Engineered Safety Features Actuation System Slave Relay Go Test Train A, has satisfactorily met all acceptance criteria stated within the instruction. (**Acc Crit**) ________

[4] **VERIFY** Surveillance Instruction 2-SI-1-906-A, Main Steam Valves Position Indication Verification, Train A, has satisfactorily met all acceptance criteria stated within the instruction. (**Acc Crit**). ________

[5] **ATTACH** a copy of the completed Surveillance Instruction 2-SI-99-300-A to this procedure. ________

[6] **ATTACH** a copy of the completed Surveillance Instruction 2-SI-1-906-A to this procedure. ________

Date ________

6.1.28 Train A Go Test Surveillance and PTI Performance (continued)

NOTE

2-PTI-262-01, Integrated Safeguards Test, Train A satisfies go test requirements for relays not tested in the above surveillance tests (see list below). 2-PTI-099-08 will not execute or control the performance and completion of 2-PTI-262-01 due to the complexity of scheduling and coordination of the test. At the completion of 2-PTI-262-01, the following step will verify applicable sections of the PTI has satisfied acceptance criteria for go testing the following slave relays: K605, K606, K607, K608, K609, K611, K612, K613, K615, K617, K622, K624, K625, K626, K630, and K643.

[7] **VERIFY** 2-PTI-262-01, Integrated Safeguards Test, Train A, has satisfactorily met all acceptance criteria for go testing the following slave relays: (**Acc Crit**) ________

Slave Relay	Initial / Date	Slave Relay	Initial / Date
K605		K606	
K607		K608	
K609		K611	
K612		K613	
K615		K617	
K622		K624	
K625		K626	
K630		K643	

[8] **ATTACH** applicable sections of 2-PTI-262-01 for relays K605, K606, K607, K608, K609, K611, K612, K613, K615, K617, K622, K624, K625, K626, K630, and K643 to this procedure. ________

Date ________

6.2 Engineered Safety Features Actuation System Slave Relay Go Test Train B

[1] **VERIFY** prerequisites listed in Section 4.0 for subsection 6.2 have been completed. ________

NOTE

Wire lift in Step 6.2[2] blocks annunciator 2-XA-55-6A-115B Safeguards Test Rack B in Test.

[2] **LIFT** vendor wire from TB828-1 [2-R-53]. ________

____
CV

[3] **ENSURE** MASTER RELAY SELECTOR Switch [2-R-51] is OFF. ________

[4] **ENSURE** MULTIPLEXER TEST SWITCH [2-R-47] in NORMAL. ________

NOTE

Annunciator 2-XA-55-6A-115A, SSPS-B GEN WARNING will alarm during Step 6.2[5].

[5] **PLACE** MULTIPLEXER TEST Switch [2-R-50] in INHIBIT. ________

[6] **PLACE** INPUT ERROR INHIBIT Switch [2-R-50] in INHIBIT. ________

[7] **PLACE** MODE SELECTOR Switch [2-R-51] in TEST. ________

Date ________

6.2 Engineered Safety Features Actuation System Slave Relay Go Test Train B (continued)

NOTES

Performance of Step 6.2[8] will cause the following:

1) De-energize K629 Source Range Block disabling the Source Range Reactor Trip Block.
2) Disable the RHR Suction Valve Open Permissive to 2-FCV-74-2 and 9.
3) Alarm 2-XA-55-6A-113E if the RHR Suction Valves are open.
4) Disable the Containment Spray Pump Recirc Valve Auto Open Feature to 2-FCV-72-13.
5) Close 2-FCV-72-13 if it was open.

[8] **REMOVE** OUTPUT RELAY POWER FUSE (6FU2) [2-R-51]. ________

________ CV

NOTE

Temporary jumper in Step 6.2[9] connects SSPS dc (logic) ground and ac ground.

[9] **INSTALL** temporary jumper from TB654-9 to TB656-8 in 2-R-51. ________

________ CV

[10] **VERIFY** SLAVE OPERATED lights A1, A2, A3, A4, B1, B2, B3, B4 [2-R-51] are NOT LIT. ________

[11] **PUSH** SLAVE TEST A and B pushbuttons [2-R-51] **AND**

VERIFY SLAVES OPERATED lights A1, A2, A3, A4, B1, B2, B3, B4 are NOT LIT. ________

[12] **CONNECT** one lead of multi-meter set to monitor for approximately 15 vdc to Slave Relay K602 terminal 1 [2-R-51] (ac ground). ________

Date ________

6.2.2 Containment Spray (S820/ K644)

> **NOTE**
>
> Temporary jumper in Step 6.2.2[1] bypasses Containment Spray Valve Interlock to allow continuity test of Slave Relay K644. No equipment actuations will occur.

[1] **INSTALL** temporary jumper from TB853-1 to TB853-3 in 2-R-53. ________

____
CV

[2] **TURN** and **HOLD** Switch S820, CONTAINMENT SPRAY ACTUATION [2-R-53], to PUSH TO TEST, **AND**

CHECK Red test lamp 081 is LIT. ________

> **NOTE**
>
> Switch S820 must be pushed in and held during performance of Steps 6.2.2[3] through 6.2.2[4.4].

[3] **PUSH** and **HOLD** Switch S820, CONTAINMENT SPRAY ACTUATION, in PUSH TO TEST. ________

[4] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[4.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[4.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[4.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[4.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[5] **RELEASE** Switch S820, CONTAINMENT SPRAY ACTUATION. ________

Date ________

6.2.2 Containment Spray (S820/ K644) (continued)

[6] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[7] **VERIFY** Red test lamp 081 is NOT LIT. ________

[8] **REMOVE** temporary jumper from TB853-1 to TB853-3 in 2-R-53. ________

____
CV

[9] **VERIFY** Subsection 6.2.2 completed satisfactorily. **(Acc Crit)** ________

6.2.3 Containment Isolation Phase B (S824/ K626)

[1] **TURN** and **HOLD** Switch S824, CONTAINMENT ISOLATION PHASE “B” [2-R-53] in PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S824 must be pushed in and held during performance of Steps 6.2.3[2] through 6.2.3[3.4].

[2] **PUSH** and **HOLD** Switch S824, CONTAINMENT ISOLATION PHASE “B”, to PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S824, CONTAINMENT ISOLATION PHASE “B". ________

Date ________

6.2.3 Containment Isolation Phase B (S824/ K626) (continued)

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.3 completed satisfactorily. **(Acc Crit)** ________

6.2.4 Safety Injection (S825/ K602 & K647)

[1] **TURN** and **HOLD** Switch S825, SAFETY INJECTION [2-R-53], to PUSH TO TEST, **AND**

CHECK Red test lamp 081 is LIT. ________

NOTE

Switch S825 must be pushed in and held during performance of Steps 6.2.4[2] through 6.2.4[3.4].

[2] **PUSH** and **HOLD** Switch S825, SAFETY INJECTION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S825, SAFETY INJECTION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.4 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.5 RWST Sump Level (S826/K648)

NOTE
Temporary jumper in Step 6.2.5[1] bypasses RHR Valve Interlock to allow continuity test of Slave Relay K648. No equipment actuations will occur.

[1] **INSTALL** temporary jumper from TB841-1 to TB841-2 [2-R-53]. ________

____
CV

[2] **TURN** and **HOLD** Switch S826, RWST SUMP LEVEL [2-R-53], to PUSH TO TEST, **AND**

CHECK Red test lamp 081 is LIT. ________

NOTE
Switch S826 must be pushed in and held during performance of Steps 6.2.5[3] through 6.2.5[4.4].

[3] **PUSH** and **HOLD** Switch S826, RWST SUMP LEVEL, in PUSH TO TEST. ________

[4] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[4.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[4.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[4.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[4.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[5] **RELEASE** Switch S826, RWST SUMP LEVEL. ________

[6] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

Date ________

6.2.5 RWST Sump Level (S826/K648) (continued)

[7] **VERIFY** Red test lamp 081 is NOT LIT. ________

[8] **REMOVE** temporary jumper from TB841-1 and TB841-2 [2-R-53]. ________

____
CV

[9] **VERIFY** Subsection 6.2.5 completed satisfactorily. **(Acc Crit)** ________

6.2.6 Safety Injection Unblock Pressure P11 (S827/K628)

[1] **TURN** and **HOLD** Switch S827, S.I. UNBLOCK PRESSURE P11 [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE
Switch S827 must be pushed in and held during performance of Step 6.2.6[2] through 6.2.6[3.4]

[2] **PUSH** and **HOLD** Switch S827, S.I. UNBLOCK PRESSURE P11, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S827, S.I. UNBLOCK PRESSURE P11. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

Date ________

6.2.6 Safety Injection Unblock Pressure P11 (S827/K628) (continued)

[7] **VERIFY** Subsection 6.2.6 completed satisfactorily. **(Acc Crit)** ________

6.2.7 Safety Injection (S828/ K609)

[1] **TURN** and **HOLD** Switch S828, SAFETY INJECTION, [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S828 must be pushed in and held during performance of Steps 6.2.7[2] through 6.2.7[3.4].

[2] **PUSH** and **HOLD** Switch S828, SAFETY INJECTION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S828, SAFETY INJECTION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.7 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.8 Safety Injection (S829/ K603)

[1] **TURN** and **HOLD** Switch S829, SAFETY INJECTION [2-R-52], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S829 must be pushed in and held in during performance of Steps 6.2.8[2] through 6.2.8[3.4].

[2] **PUSH** and **HOLD** Switch S829, SAFETY INJECTION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S829, SAFETY INJECTION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.8 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.9 Safety Injection (S830/ K604)

[1] **TURN** and **HOLD** Switch S830, SAFETY INJECTION [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S830 must be pushed in and held during performance of Steps6.2.9[2] through 6.2.9[3.4].

[2] **PUSH** and **HOLD** Switch S830, SAFETY INJECTION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S830, SAFETY INJECTION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.9 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.10 Containment Isolation Phase A (S831/ K605)

[1] **TURN** and **HOLD** Switch S831, CONTAINMENT ISOLATION PHASE “A” [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S831 must be pushed in and held during performance of Steps 6.2.10[2] through 6.2.10[3.4].

[2] **PUSH** and **HOLD** Switch S831, CONTAINMENT ISOLATION PHASE “A”, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S831, CONTAINMENT ISOLATION PHASE “A”. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.10 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.11 Containment Isolation Phase A (S832/ K606)

[1] **TURN** and **HOLD** Switch S832, CONTAINMENT ISOLATION PHASE “A” [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S832 must be pushed in and held in during performance of Steps 6.2.11[2] through 6.2.11[3.4].

[2] **PUSH** and **HOLD** Switch S832, CONTAINMENT ISOLATION PHASE “A”, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S832, CONTAINMENT ISOLATION PHASE “A”. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.11 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.12 Containment Isolation Phase A (S833/ K607)

[1] **TURN** and **HOLD** Switch S833, CONTAINMENT ISOLATION PHASE “A” [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S833 must be pushed in and held during performance of Steps 6.2.12[2] through 6.2.12[3.4]

[2] **PUSH** and **HOLD** Switch S833, CONTAINMENT ISOLATION PHASE “A”, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S833, CONTAINMENT ISOLATION PHASE “A”. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.12 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.13 Safety Injection (S834/ K608)

[1] **TURN** and **HOLD** Switch S834, SAFETY INJECTION [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

> **NOTE**
>
> Switch S834 must be pushed in and held during performance of Steps 6.2.13[2] through 6.2.13[3.4].

[2] **PUSH** and **HOLD** Switch S834, SAFETY INJECTION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S834, SAFETY INJECTION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.13 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.14 Safety Injection (S835/ K611)

[1] **TURN** and **HOLD** Switch S835, SAFETY INJECTION [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE
Switch S835 must be pushed in and held during performance of Steps 6.2.14[2] through 6.2.14[3.4].

[2] **PUSH** and **HOLD** Switch S835, SAFETY INJECTION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S835, SAFETY INJECTION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.14 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.15 Containment Isolation Phase A (S836/ K612)

[1] **TURN** and **HOLD** Switch S836, CONTAINMENT ISOLATION PHASE “A” [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S836 must be pushed in and held during performance of Steps 6.2.15[2] through 6.2.15[3.4]

[2] **PUSH** and **HOLD** Switch S836, CONTAINMENT ISOLATION PHASE “A”, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S836, CONTAINMENT ISOLATION PHASE “A”. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.15 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.16 Containment Isolation (S837/ K613)

[1] **TURN** and **HOLD** Switch S837, CONTAINMENT ISOLATION PHASE “A” [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

> **NOTE**
>
> Switch S837 must be pushed in and held during performance of Steps 6.2.16[2] through 6.2.16[3.4].

[2] **PUSH** and **HOLD** Switch S837, CONTAINMENT ISOLATION PHASE “A”, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S837, CONTAINMENT ISOLATION PHASE “A”. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.16 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.17 Containment Ventilation Isolation (S838/ K615)

[1] **TURN** and **HOLD** Switch S838, CONTAINMENT VENTILATION ISOLATION [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE
Switch S838 must be pushed in and held during performance of Steps 6.2.17[2] through 6.2.17[3.4].

[2] **PUSH** and **HOLD** Switch S838, CONTAINMENT VENTILATION ISOLATION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S838, CONTAINMENT VENTILATION ISOLATION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.17 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.18 Containment Ventilation Isolation (S839/K622)

[1] **TURN** and **HOLD** Switch S839, CONTAINMENT VENTILATION ISOLATION [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. _________

NOTE
Switch S839 must be pushed in and held during performance of Steps 6.2.18[2] through 6.2.18[3.4]

[2] **PUSH** and **HOLD** Switch S839, CONTAINMENT VENTILATION ISOLATION, in PUSH TO TEST. _________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. _________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. _________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. _________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. _________

[4] **RELEASE** Switch S839, CONTAINMENT VENTILATION ISOLATION. _________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. _________

[6] **VERIFY** Red test lamp 081 is NOT LIT. _________

[7] **VERIFY** Subsection 6.2.18 completed satisfactorily. **(Acc Crit)** _________

Date ________

6.2.19 Steam Dump Interlock (S840/K631)

[1] **TURN** and **HOLD** Switch S840, STEAM DUMP INTERLOCK [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S840 must be pushed in and held during performance of Steps 6.2.19[2] through 6.2.19[3.4].

[2] **PUSH** and **HOLD** Switch S840, STEAM DUMP INTERLOCK [2-R-53], in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S840, STEAM DUMP INTERLOCK. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.19 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.20 Auxiliary Feedwater Pump Start (S842/ K633)

[1] **TURN** and **HOLD** Switch S842, AUXILIARY FEEDWATER PUMP START [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S842 must be pushed in and held during performance of Steps 6.2.20[2] through 6.2.20[3.4].

[2] **PUSH** and **HOLD** Switch S842, AUXILIARY FEEDWATER PUMP START, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S842, AUXILIARY FEEDWATER PUMP START. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.20 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.21 Auxiliary Feedwater Pump Start (S843/ K634)

[1] **TURN** and **HOLD** Switch S843, AUXILIARY FEEDWATER PUMP START [2-R-53], to PUSH TO TEST **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S843 must be pushed in and held during performance of Steps 6.2.21[2] through 6.2.21[3.4].

[2] **PUSH** and **HOLD** Switch S843, AUXILIARY FEEDWATER PUMP START, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51], and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S843, AUXILIARY FEEDWATER PUMP START. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.21 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.22 Containment Spray Actuation (S844/ K643)

NOTE

Temporary jumper in Step 6.2.22[1] bypasses Containment Spray Pump Interlock to allow continuity test of Slave Relay K643. No equipment actuations will occur.

[1] **INSTALL** temporary jumper from TB839-9 to TB839-11 [2-R-53]. ________

____
CV

[2] **TURN** and **HOLD** Switch S844, CONTAINMENT SPRAY ACTUATION [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S844 must be pushed in and held during performance of Steps 6.2.22[3] through 6.2.22[4.4].

[3] **PUSH** and **HOLD** Switch S844, CONTAINMENT SPRAY ACTUATION, in PUSH TO TEST. ________

[4] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[4.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[4.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[4.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[4.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[5] **RELEASE** Switch S844, CONTAINMENT SPRAY ACTUATION. ________

Date ________

6.2.22 Containment Spray Actuation (S844/ K643) (continued)

[6] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[7] **VERIFY** Red test lamp 081 is NOT LIT. ________

[8] **REMOVE** temporary jumper from TB839-9 to TB839-11 [2-R-53]. ________

____
CV

[9] **VERIFY** Subsection 6.2.22 completed satisfactorily. **(Acc Crit)** ________

6.2.23 Containment Isolation Phase B (S845/ K625)

[1] **TURN** and **HOLD** Switch S845, CONTAINMENT ISOLATION PHASE “B” [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE
Switch S845 must be pushed in and held during performance of Steps 6.2.23[2] through 6.2.23[3.4].

[2] **PUSH** and **HOLD** Switch S845, CONTAINMENT ISOLATION PHASE “B”, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

Date ________

6.2.23 Containment Isolation Phase B (S845/ K625) (continued)

[4] **RELEASE** Switch S845, CONTAINMENT ISOLATION PHASE "B". ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.23 completed satisfactorily. **(Acc Crit)** ________

6.2.24 Steam Line Isolation (S846/ K617)

[1] **TURN** and **HOLD** Switch S846, STEAM LINE ISOLATION [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE

Switch S846 must be pushed in and held during performance of Steps 6.2.24[2] through 6.2.24[3.4].

[2] **PUSH** and **HOLD** Switch S846, STEAM LINE ISOLATION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S846, STEAM LINE ISOLATION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

Date ________

6.2.24 Steam Line Isolation (S846/ K617) (continued)

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.24 completed satisfactorily. **(Acc Crit)** ________

6.2.25 Steam Line Isolation (S847/ K624)

[1] **TURN** and **HOLD** Switch S847, STEAM LINE ISOLATION, [2-R-53], to PUSH TO TEST, **AND**

VERIFY Red test lamp 081 is LIT. ________

NOTE
Switch S847 must be pushed in and held during performance of Steps 6.2.25[2] through 6.2.25[3.4].

[2] **PUSH** and **HOLD** Switch S847, STEAM LINE ISOLATION, in PUSH TO TEST. ________

[3] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[3.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[3.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[3.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

[4] **RELEASE** Switch S847, STEAM LINE ISOLATION. ________

[5] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[6] **VERIFY** Red test lamp 081 is NOT LIT. ________

[7] **VERIFY** Subsection 6.2.25 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.26 Containment Isolation Phase A (S848/ K630)

NOTE

Wire connected in Step 6.2.26[1] enables Annunciator 2-XA-55-6A/115B, SAFEGUARDS TEST RACK B IN TEST.

[1] Connect vendor wire lifted in Step 6.2[2] to TB828-1 [2-R-53]. ________

____
CV

[2] **TURN** and **HOLD** Switch S848, CONTAINMENT ISOLATION PHASE "A" [2-R-53], to PUSH TO TEST.

VERIFY the following:

Red test lamp 081 is LIT. ________

Annunciator 2-XA-55-6A-115B, in ALARM. ________

NOTE

Switch S848 must be pushed in and held during performance of Steps 6.2.26[3] through 6.2.26[4.4].

[3] **PUSH** and **HOLD** Switch S848, CONTAINMENT ISOLATION PHASE "A", in PUSH TO TEST. ________

[4] **PUSH** SLAVE TEST pushbuttons A and B [2-R-51] and perform the following:

[4.1] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[4.2] **RELEASE** SLAVE TEST PUSHBUTTONS A and B. ________

[4.3] **VERIFY** SLAVES OPERATED lamp status on Table 3. ________

[4.4] **VERIFY** voltage values, with multi-meter connected in Step 6.2[12], to Terminal 6 for each relay listed in Table 4. ________

Date ________

6.2.26 Containment Isolation Phase A (S848/ K630) (continued)

[5] **RELEASE** Switch S848, CONTAINMENT ISOLATION PHASE "A". ________

[6] **PLACE AND RELEASE** Switch S821, RESET [2-R-53], in RESET. ________

[7] **VERIFY** the following:

Red test lamp 081 is NOT LIT. ________

Annunciator 2-XA-55-6A-115B, is CLEAR. ________

[8] **VERIFY** Subsection 6.2.26 completed satisfactorily. **(Acc Crit)** ________

Date ________

6.2.27 Post Test Restoration for Section 6.2

[1] **REMOVE** temporary jumper in TB654-9 to TB656-8 [2-R-51]. ________

____
CV

[2] **INSTALL** OUTPUT RELAY POWER FUSE (6FU2) [2-R-51]. ________

____
CV

[3] **PLACE** MODE SELECTOR Switch [2-R-51] in OPERATE. ________

[4] **DISCONNECT** multi-meter lead from Slave Relay K602 terminal 1 [2-R-51] (ac ground). ________

[5] **REQUEST** UO establish blocks with the following [2-M-4]:

A. 2-N33B, SR TRIP TR B RESET BLOCK P-6. ________

B. 2-N38B, IR TRIP BLOCK P-10. ________

C. 2-N47B, PR LO POWER TRIP BLOCK P-10. ________

D. 2-HS-63-135B, STEAM LINE SI BLOCK. ________

E. 2-HS-63-136B, LO PZR PRESS SI BLOCK P-11. ________

[6] **PLACE** and **HOLD** 2-HS-3-99B1, MFW ISOL ACT RESET TR-B, [2-M-3] in RESET until Step 6.2.27[7] is complete. ________

[7] **PLACE** INPUT ERROR INHIBIT Switch [2-R-50] in NORMAL. ________

[8] **PLACE** MULIPLEXER TEST Switch [2-R-47] in A+B. ________

[9] **PLACE** MULTIPLEXER TEST Switch [2-R-50] in NORMAL. ________

Date ________

6.2.28 Train B Go Test Surveillance and PTI Performance

[1] **PERFORM** Surveillance Instruction 2-SI-99-300-B, Engineered Safety Features Actuation System Slave Relay Go Test, Train B. ________

[2] **PERFORM** Surveillance Instruction 2-SI-1-906-B, Main Steam Valves Position Indication Verification, Train B. ________

[3] **VERIFY** Surveillance Instruction 2-SI-99-300-B, Engineered Safety Features Actuation System Slave Relay Go Test Train B, has satisfactorily met all acceptance criteria stated within the instruction. (**Acc Crit**) ________

[4] **VERIFY** Surveillance Instruction 2-SI-1-906-B, Main Steam Valves Position Indication Verification, Train B, has satisfactorily met all acceptance criteria stated within the instruction. (**Acc Crit**). ________

[5] **ATTACH** a copy of the completed Surveillance Instruction 2-SI-99-300-B to this procedure. ________

[6] **ATTACH** a copy of the completed Surveillance Instruction 2-SI-1-906-B to this procedure. ________

Date ________

6.2.28 Train B Go Test Surveillance and PTI Performance (continued)

NOTE

2-PTI-262-02, Integrated Safeguards Test, Train B satisfies go test requirements for relays not tested in the above surveillance tests (see list below). 2-PTI-099-08 will not execute or control the performance and completion of 2-PTI-262-02 due to the complexity of scheduling and coordination of the test. At the completion of 2-PTI-262-02, the following step will verify applicable sections of the PTI has satisfied acceptance criteria for go testing the following slave relays: K605, K606, K607, K608, K609, K611, K612, K613, K615, K617, K622, K624, K625, K626, K630, and K643.

[7] **VERIFY** 2-PTI-262-02, Integrated Safeguards Test, Train B, has satisfactorily met all acceptance criteria for go testing the following slave relays:
(**Acc Crit**) ________

Slave Relay	Initial / Date	Slave Relay	Initial / Date
K605		K606	
K607		K608	
K609		K611	
K612		K613	
K615		K617	
K622		K624	
K625		K626	
K630		K643	

[8] **ATTACH** applicable sections of 2-PTI-262-02 for relays K605, K606, K607, K608, K609, K611, K612, K613, K615, K617, K622, K624, K625, K626, K630, and K643 to this procedure. ________

Date ________

6.3 Engineered Safety Features Actuation System Slave Relay Block Test Train A

[1] **VERIFY** prerequisites listed in Section 4.0 for subsection 6.3 have been completed. ________

[2] **PERFORM** Surveillance Instruction 2-SI-99-301-A, Engineered Safety Features Actuation System Slave Relay Block Test Train A. ________

[3] **VERIFY** Surveillance Instruction 2-SI-99-301-A, Engineered Safety Features Actuation System Slave Relay Block Test Train A, has satisfactorily met all acceptance criteria stated within the instruction. (**Acc Crit**) ________

[4] **VERIFY** Westinghouse procedure 2TS1027, SSPS Train A Output Slave Relay Tests, Work Order 110807203, has satisfactorily met all acceptance criteria for testing relays K627, K628, K631, K641, and K635. (**Acc Crit**) ________

[5] **ATTACH** a copy of the completed Surveillance Instruction 2-SI-99-301-A and applicable sections of 2TS1027, to this procedure. ________

Date ________

6.4 Engineered Safety Features Actuation System Slave Relay Block Test Train B

[1] **VERIFY** prerequisites listed in Section 4.0 for subsection 6.4 have been completed. ________

[2] **PERFORM** Surveillance Instruction 2-SI-99-301-B, Engineered Safety Features Actuation System Slave Relay Block Test Train B. ________

[3] **VERIFY** Surveillance Instruction 2-SI-99-301-B, Engineered Safety Features Actuation System Slave Relay Block Test Train B, has satisfactorily met all acceptance criteria stated within the instruction. (**Acc Crit**) ________

[4] **VERIFY** Westinghouse procedure 2TS1028, SSPS Train B Output Slave Relay Tests, Work Order 110807316, has satisfactorily met all acceptance criteria for testing relays K627, K628, K631, K641, and K635. (**Acc Crit**) ________

[5] **ATTACH** a copy of the completed Surveillance Instruction 2-SI-99-301-B and applicable sections of 2TS1028, to this procedure. ________

Date ________

7.0 POST PERFORMANCE ACTIVITY

[1] **NOTIFY** the Unit 2 US/SRO of the test completion and system alignment. ________

[2] **VERIFY** that Post-test calibration of the M&TE used to record quantitative acceptance criteria has been satisfactorily performed and the results RECORDED on Measuring and Test Equipment (M&TE) Log, Appendix E in SMP-9.0. ________

8.0 RECORDS

A. QA Records

Completed Test Package

B. Non-QA Records

None

Appendix A
(Page 1 of 1)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

Date ________

1) Additional copies of this table may be made as necessary.
2) Initial and date indicates review has been completed for impact.

PROCEDURE/ INSTRUCTION	REVISION CHANGES	IMPACT Yes/No	INITIAL AND DATE. (N/A for no change)
Unit 2 FSAR - Amendment 106 Table 14.2-1 Sht 57 of 89, Reactor Protection System Test Summary			
Unit 2 FSAR - Amendment 106 Section 7.2, Reactor Trip System			
Unit 2 FSAR - Amendment 106 ESFAS			
1-PTI-99-08, Safeguards Test Panel, CN-1 and CN-2			
2-TSD-099-08, Safeguards System Test Panel			
WBN2-99-4003, System Description for Reactor Protection System			

Appendix B
(Page 1 of 1)

TEMPORARY CONDITION LOG

These steps will be N/A'd if no temporary condition existed. Additional copies of this table may be made as necessary.

ITEM No.	TEMPORARY CONDITION DESCRIPTION	PERFORMED		RETURNED TO NORMAL	
		Step No.	Performed By/Date CV By/Date	Step No.	Returned By/Date CV By/Date

Table 1
(Page 1 of 2)

Slaves Operated Lamps (Train A)

TEST SWITCH	SLAVE TEST PB A & B	A1	A2	A3	A4	B1	B2	B3	B4	INTIAL / DATE
S820	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S820	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S824	PUSHED	OFF	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	
S824	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S825	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S825	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S826	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S826	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S827	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S827	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S828	PUSHED	OFF	OFF	**ON**	OFF	OFF	OFF	OFF	OFF	
S828	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S829	PUSHED	OFF	OFF	OFF	OFF	OFF	**ON**	OFF	OFF	
S829	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S830	PUSHED	OFF	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	
S830	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S831	PUSHED	OFF	OFF	OFF	OFF	**ON**	OFF	OFF	OFF	
S831	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S832	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S832	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S833	PUSHED	OFF	OFF	OFF	OFF	OFF	**ON**	OFF	OFF	
S833	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S834	PUSHED	OFF	OFF	OFF	OFF	OFF	OFF	**ON**	OFF	
S834	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S835	PUSHED	OFF	OFF	OFF	**ON**	OFF	OFF	OFF	OFF	
S835	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S836	PUSHED	OFF	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	
S836	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	

Table 1
(Page 2 of 2)

Slaves Operated Lamps (Train A)

TEST SWITCH	SLAVE TEST PB A & B	A1	A2	A3	A4	B1	B2	B3	B4	INTIAL / DATE
S837	PUSHED	OFF	OFF	OFF	OFF	OFF	OFF	**ON**	OFF	
S837	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S838	PUSHED	OFF	OFF	OFF	OFF	**ON**	OFF	OFF	OFF	
S838	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S839	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S839	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S840	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S840	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S842	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S842	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S843	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S843	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S844	PUSHED	OFF	OFF	OFF	OFF	**ON**	OFF	OFF	OFF	
S844	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S845	PUSHED	OFF	OFF	OFF	OFF	OFF	**ON**	OFF	OFF	
S845	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S846	PUSHED	OFF	OFF	OFF	OFF	OFF	**ON**	OFF	OFF	
S846	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S847	PUSHED	OFF	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	
S847	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S848	PUSHED	OFF	OFF	OFF	**ON**	OFF	OFF	OFF	OFF	
S848	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	

Table 2
(Page 1 of 3)

Slave Relay Check (Train A)

(Voltage values listed are nominal values)

TEST SWITCH	K602	K606	K619	K620	K622	K623	K627	K628	K631	K633	K634	K635	K636	K644	K648	INITIAL DATE
S820	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	**0 v**	15 v	
S825	**0 v**	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	
S826	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	**0 v**	
S827	15 v	15 v	15 v	15 v	15 v	15 v	15 v	**0 v**	15 v	15 v	15 v	15 v	15 v	15 v	15 v	
S832	15 v	**0 v**	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	
S839	15 v	15 v	15 v	15 v	**0 v**	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	
S840	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	**0 v**	15 v	15 v	15 v	15 v	15 v	15 v	
S842	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	**0 v**	15 v	15 v	15 v	15 v	15 v	
S843	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	**0 v**	15 v	15 v	15 v	15 v	

Table 2
(Page 2 of 3)

Slave Relay Check (Train A)

TEST SWITCH	K601	K605	K615	K616	K618	K637	K641	K643	K649	K604	K612	K624	K626	INITIAL DATE
S831	15 v	**0 v**	15 v	15 v	15 v	15 v	15 v	15 v	15 v	N/A	N/A	N/A	N/A	
S838	15 v	15 v	**0 v**	15 v	15 v	15 v	15 v	15 v	15 v	N/A	N/A	N/A	N/A	
S844	15 v	15 v	15 v	15 v	15 v	15 v	15 v	**0 v**	15 v	N/A	N/A	N/A	N/A	
S824	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15 v	15 v	15 v	**0 v**	
S830	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0 v**	15 v	15 v	15 v	
S836	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15 v	**0 v**	15 v	15 v	
S847	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15 v	15 v	**0 v**	15 v	

Table 2
(Page 3 of 3)

Slave Relay Check (Train A)

TEST SWITCH	K608	K613	K609	K614	K611	K630	K603	K607	K617	K625	INITIAL DATE
S834	**0 v**	15 v	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
S837	15 v	**0 v**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
S828	N/A	N/A	**0 v**	15 v	N/A	N/A	N/A	N/A	N/A	N/A	
S835	N/A	N/A	N/A	N/A	**0 v**	15 v	N/A	N/A	N/A	N/A	
S848	N/A	N/A	N/A	N/A	15 v	**0 v**	N/A	N/A	N/A	N/A	
S829	N/A	N/A	N/A	N/A	N/A	N/A	**0 v**	15 v	15 v	15 v	
S833	N/A	N/A	N/A	N/A	N/A	N/A	15 v	**0 v**	15 v	15 v	
S845	N/A	N/A	N/A	N/A	N/A	N/A	15 v	15 v	15 v	**0 v**	
S846	N/A	N/A	N/A	N/A	N/A	N/A	15 v	15 v	**0 v**	15 v	

Table 3
(Page 1 of 2)

Slaves Operated Lamps (Train B)

TEST SWITCH	SLAVE TEST PB A & B	A1	A2	A3	A4	B1	B2	B3	B4	INTIAL / DATE
S820	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S820	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S824	PUSHED	OFF	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	
S824	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S825	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S825	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S826	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S826	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S827	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S827	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S828	PUSHED	OFF	OFF	**ON**	OFF	OFF	OFF	OFF	OFF	
S828	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S829	PUSHED	OFF	OFF	OFF	OFF	OFF	**ON**	OFF	OFF	
S829	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S830	PUSHED	OFF	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	
S830	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S831	PUSHED	OFF	OFF	OFF	OFF	**ON**	OFF	OFF	OFF	
S831	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S832	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S832	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S833	PUSHED	OFF	OFF	OFF	OFF	OFF	**ON**	OFF	OFF	
S833	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S834	PUSHED	OFF	OFF	OFF	OFF	OFF	OFF	**ON**	OFF	
S834	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S835	PUSHED	OFF	OFF	OFF	**ON**	OFF	OFF	OFF	OFF	
S835	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S836	PUSHED	OFF	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	
S836	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	

Table 3
(Page 2 of 2)

Slaves Operated Lamps (Train B)

TEST SWITCH	SLAVE TEST PB A & B	A1	A2	A3	A4	B1	B2	B3	B4	INTIAL / DATE
S837	PUSHED	OFF	OFF	OFF	OFF	OFF	OFF	**ON**	OFF	
S837	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S838	PUSHED	OFF	OFF	OFF	OFF	**ON**	OFF	OFF	OFF	
S838	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S839	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S839	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S840	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S840	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S842	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S842	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S843	PUSHED	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S843	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S844	PUSHED	OFF	OFF	OFF	OFF	**ON**	OFF	OFF	OFF	
S844	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S845	PUSHED	OFF	OFF	OFF	OFF	OFF	**ON**	OFF	OFF	
S845	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S846	PUSHED	OFF	OFF	OFF	OFF	OFF	**ON**	OFF	OFF	
S846	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S847	PUSHED	OFF	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	
S847	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
S848	PUSHED	OFF	OFF	OFF	**ON**	OFF	OFF	OFF	OFF	
S848	RELEASED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	

Table 4
(Page 1 of 3)

Slave Relay Check (Train B)

(Voltage values listed are nominal values)

TEST SWITCH	K602	K606	K619	K620	K622	K623	K627	K628	K631	K633	K634	K635	K636	K644	K648	INITIAL DATE
S820	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	**0 v**	15 v	
S825	**0 v**	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	
S826	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	**0 v**	
S827	15 v	15 v	15 v	15 v	15 v	15 v	15 v	**0 v**	15 v	15 v	15 v	15 v	15 v	15 v	15 v	
S832	15 v	**0 v**	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	
S839	15 v	15 v	15 v	15 v	**0 v**	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	
S840	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	**0 v**	15 v	15 v	15 v	15 v	15 v	15 v	
S842	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	**0 v**	15 v	15 v	15 v	15 v	15 v	
S843	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	15 v	**0 v**	15 v	15 v	15 v	15 v	

Table 4
(Page 2 of 3)

Slave Relay Check (Train B)

TEST SWITCH	K601	K605	K615	K616	K618	K637	K641	K643	K649	K604	K612	K624	K626	INITIAL DATE
S831	15 v	**0 v**	15 v	15 v	15 v	15 v	15 v	15 v	15 v	N/A	N/A	N/A	N/A	
S838	15 v	15 v	**0 v**	15 v	15 v	15 v	15 v	15 v	15 v	N/A	N/A	N/A	N/A	
S844	15 v	15 v	15 v	15 v	15 v	15 v	15 v	**0 v**	15 v	N/A	N/A	N/A	N/A	
S824	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15 v	15 v	15 v	**0 v**	
S830	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0 v**	15 v	15 v	15 v	
S836	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15 v	**0 v**	15 v	15 v	
S847	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15 v	15 v	**0 v**	15 v	

Table 4
(Page 3 of 3)

Slave Relay Check (Train B)

TEST SWITCH	K608	K613	K609	K614	K611	K630	K603	K607	K617	K625	INITIAL DATE
S834	**0 v**	15 v	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
S837	15 v	**0 v**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
S828	N/A	N/A	**0 v**	15 v	N/A	N/A	N/A	N/A	N/A	N/A	
S835	N/A	N/A	N/A	N/A	**0 v**	15 v	N/A	N/A	N/A	N/A	
S848	N/A	N/A	N/A	N/A	15 v	**0 v**	N/A	N/A	N/A	N/A	
S829	N/A	N/A	N/A	N/A	N/A	N/A	**0 v**	15 v	15 v	15 v	
S833	N/A	N/A	N/A	N/A	N/A	N/A	15 v	**0 v**	15 v	15 v	
S845	N/A	N/A	N/A	N/A	N/A	N/A	15 v	15 v	15 v	**0 v**	
S846	N/A	N/A	N/A	N/A	N/A	N/A	15 v	15 v	**0 v**	15 v	