Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

December 17, 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 Instruction

The following approved WBN Unit 2 Pre-op Test Instruction (PTI) is enclosed:

PTI NUMBER	Rev.	TITLE
2-PTI-063-06	0	Safety Injection System Check Valve Test

If you have any questions, please contact Nick Welch at (423) 365-7820.

Respectfully,

R. A. Hruby, Jr.

Raymond A. Hruby, Jr.
General Manager, Technical Services
Watts Bar Unit 2

Enclosure

D030
NRR

cc (Enclosure):

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NRC Resident Inspector Unit 2
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WATTS BAR NUCLEAR PLANT

UNIT 2 STARTUP

TITLE: Safety Injection System Check Valve Test

Instruction No: 2-PTI-063-06

Revision No: 0

PREPARED BY: Curt Evans Curt Evans DATE 9-6-11

PRINT NAME/ SIGNATURE

REVIEWED BY: Kurt McCormack Kurt McCormack DATE 9/6/11

PRINT NAME/ SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING NO: 2-12-022

JTG CHAIRMAN: Nick Welch DATE 11/29/12

APPROVED BY: Nick Welch DATE 11/29/12

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	11/29/12	ALL	Initial Issue based on Unit 1 PTI-063-06

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Date _____

1.0 INTRODUCTION

1.1 Test Objectives

This test is being performed to ensure the Primary Safety Injection System to Reactor Coolant System Loop Check Valves will perform their design function and have acceptable leakage rates.

1.2 Scope

A. Verify the primary safety injection to reactor coolant loop check valves will open with the Reactor Coolant System (RCS) at nominal RCS pressure.

B. Verify the Accumulator Outlet Check Valves will open with the Reactor Coolant System (RCS) at hot conditions.

C. Verify the primary safety injection to reactor coolant loop check valves will open with the Reactor Coolant System (RCS) at normal operating pressure and temperature. (CCP to supply opening pressure)

D. Verify acceptable leakage rate for Reactor Boundary Valves, (primary and secondary), at normal RCS operating pressure and temperature.

E. Verify total Reactor Boundary Leakage, (primary and secondary), does not exceed Tech Spec requirements.

Date _____

2.0 REFERENCES

2.1 Performance References

A. SMP-7.0, Control of Cleanness, Layup and Flushing

B. SMP-9.0, Conduct of Test

C. GOI-7, Generic Equipment Operating Guidelines

2.2 Developmental References

A. Unit 2 Final Safety Analysis Report - Amendment 109

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

2. FSAR Section 3.9.3.2, Pump and Valve Operability Assurance

3. FSAR Section 5.2.7.4, Intersystem Leakage Detection

B. Drawings

1. Flow Diagrams

a. 2-47W809-1 R3, Flow Diagram Chemical and Volume Control System (Boron Recovery)

b. 2-47W809-3 R0, Flow Diagram Chemical and Volume Control System and Boron Recovery System

(1) DRA T93090722002 R0

c. 2-47W810-1 R5, Flow Diagram Residual Heat Removal System

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

e. 2-47W600-124 R0, Electrical Instruments and Controls

(1) DRA 53580-603 R0

(2) DRA 53580-604 R0

Date _____

2.2 Developmental References (continued)

C. Documents

1. System Description
   a. 2N3-63-4001, Rev 1, System Description For Safety Injection System
2. Test Scoping Documents
   a. 2-TSD-63-6, SIS - Integrated Check Valve Flow and Integrity Test
3. Scaling Setpoint Documents
   a. SSD-2-FI-63-75, R0
   b. SSD-2-FI-63-76, R0
4. System Operating Instruction
   a. 2-SOI-63.01 R0, Safety Injection System

Date _____

3.0 PRECAUTIONS AND NOTES

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 open problems are to be tracked by a corrective action document and entered on the appropriate system punch list.

E. 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.

F. Observe all Radiation Protection (RP) requirements when working in or near contaminated areas.

G. Exercise caution when obtaining high pressure leakage flow through the test lines.

H. When operating either Safety Injection Pump, observe a minimum run time of 20 minutes, followed by a minimum cool down of 45 minutes to lessen the possibility of bearing damage due to short duration periods of pump operation.

I. Section 6.1 will inject lower temperature water from the RWST into the Reactor Vessel at approximately 532°F. Preparation for expedient data collection is necessary to limit the thermal transient of the injection line nozzles to the Reactor Coolant System.

Date _____

3.0 PRECAUTIONS AND NOTES (continued)

J. Section 6.2 will inject lower temperature water into the Reactor Vessel at Normal operating pressure and temperature. Preparation for expedient data collection is necessary to limit the thermal transient of the injection line nozzles to the Reactor Coolant System.

K. Section 6.3 will require isolation and subsequent placing in service of Flow Indicators 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, and 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW. "Isolation" and "Placing the indicator in service" is defined as follows:

1. Isolation of Flow Indicators 2-FI-63-75 and 2-FI-63-76 is defined as having the High Side and Low Side Valve closed with the equalizing valve open.

2. Placing the Flow Indicator in service is defined as having the equalizing valve closed with the High Side and Low Side valve open for normal in-service use.

3. To protect the equipment, placing the flow indicator in service must be done in a certain sequence.

   a. Open low side valve.

   b. Close equalizing valve.

   c. Open high side valve.

4. To protect the equipment, isolating the flow indicator from service must be done in a certain sequence.

   a. Close high side valve.

   b. Open equalizing valve.

   c. Close low side valve.

5. These conditions will only be established after the indicators have been filled, vented, and placed in normal service.

L. Valve Logic Testing for the Safety Injection System Test Lines is performed in 2-PTI-063-05.

M. Section 6.3 places SI Pump A in operation and on mini-flow for long duration while manipulating Test Line Valves. If operating conditions require SI Pump A to be shut down, SI Pump B may be used and vice versa. Annotate any changes in the Chronological Test Log.

Date _____

3.0 PRECAUTIONS AND NOTES (continued)

N. Section 6.3 places SI Pump A in operation and on mini-flow for long duration while manipulating Test Line Valves. To protect the pumps, monitor the following ICS points for pump in service.

1. T1050A SIS PUMP A-A MOTOR PH A WNDG
2. T1051A SIS PUMP A-A MOTOR PH B WNDG
3. T1052A SIS PUMP A-A MOTOR PH C WNDG
4. T1053A SIS PMP A-A MTR OUTBRD GUIDE BRG
5. T1054A SIS PMP A-A MTR INBRD GUIDE BRG
6. T1055A SIS PUMP B-B MOTOR PH A WNDG
7. T1056A SIS PUMP B-B MOTOR PH B WNDG
8. T1057A SIS PUMP B-B MOTOR PH C WNDG
9. T1058A SIS PMP B-B MTR OUTBRD GUIDE BRG
10. T1059A SIS PMP B-B MTR INBRD GUIDE BRG

O. Section 6.3 background leakage flow should be determined after the selected flow indicator has been placed in service and any leakage flow has stabilized.

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 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. _____

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

ENSURE they will NOT adversely affect the test performance.

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

Date _____

4.1 Preliminary Actions (continued)

[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 _____

[7] **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. _____

[8] **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. _____

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

[10] **VERIFY** System has been filled and vented in accordance with 2-SOI-63.01. _____

[11] **VERIFY** plant instruments, listed on Appendix C, Permanent Plant Instrumentation Log, are placed in service and are within their calibration interval. _____

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

A. Subsection 6.1 _____

B. Subsection 6.2 _____

Date _____

4.1 Preliminary Actions (continued)

[13] **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 _____

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

[15] **ENSURE** components contained within the boundaries of this test have been tested and proven functional for the purposes of this test. _____

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

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

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

[19] **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, M&TE, Parts, and Supplies

[1] **ENSURE** the following M&TE is available:

A. Eight (8) Differential Pressure Gauges with maximum ranges of 0-10 psid (± 1.0%) (Subsections 6.1 and 6.2). _____

B. Polysonics Ultrasonic Flow Meter DHT-P 40 FPS with minimum range of 0-10 gpm (± 2 gpm), or equivalent (Subsection 6.1). _____

Date _____

4.3 Field Preparations

[1] Prerequisites for Subsection 6.1

[1.1] **REMOVE** Pipe Caps downstream of the following valves:

A. 2-RTV-63-393A, RT VLV TO FE-63-122 _____

B. 2-RTV-63-394A, RT VLV TO FE-63-122 _____

C. 2-RTV-63-409A, RT VLV TO FE-63-162 _____

D. 2-RTV-63-410A, RT VLV TO FE-63-162 _____

E. 2-RTV-63-395A, RT VLV TO FE-63-123 _____

F. 2-RTV-63-396A, RT VLV TO FE-63-123 _____

G. 2-RTV-63-387A, RT VLV TO FE-63-160 _____

H. 2-RTV-63-388A, RT VLV TO FE-63-160 _____

I. 2-RTV-63-397A, RT VLV TO FE-63-124 _____

J. 2-RTV-63-398A, RT VLV TO FE-63-124 _____

K. 2-RTV-63-389A, RT VLV TO FE-63-161 _____

L. 2-RTV-63-390A, RT VLV TO FE-63-161 _____

M. 2-RTV-63-399A, RT VLV TO FE-63-125 _____

N. 2-RTV-63-400A, RT VLV TO FE-63-125 _____

O. 2-RTV-63-391A, RT VLV TO FE-63-159 _____

P. 2-RTV-63-392A, RT VLV TO FE-63-159 _____

Date _____

4.3 Field Preparations (continued)

[1.2] **INSTALL** Differential Pressure Gauges at the following locations:

A. 2-FE-63-122, SIS FLOW TO CL 1 FLOW ELEMENT

M&TE _____ Cal Due Date _____ _____

B. 2-FE-63-162, SIS PUMP OUT LP 1 HL

M&TE _____ Cal Due Date _____ _____

C. 2-FE-63-123, SIS FLOW TO CL 2 FLOW ELEMENT

M&TE _____ Cal Due Date _____ _____

D. 2-FE-63-160, SIS PUMP OUT TO LP 2 HL

M&TE _____ Cal Due Date _____ _____

E. 2-FE-63-124, SIS FLOW TO CL 3 FLOW ELEMENT

M&TE _____ Cal Due Date _____ _____

F. 2-FE-63-161, SIS PUMP OUT TO LP 3 HL

M&TE _____ Cal Due Date _____ _____

G. 2-FE-63-125, SIS FLOW TO CL 4 FLOW ELEMENT

M&TE _____ Cal Due Date _____ _____

H. 2-FE-63-159, SIS PUMP OUT TO LP 4 HL

M&TE _____ Cal Due Date _____ _____

[1.3] **INSTALL** Ultrasonic Flow Meter on 1" Safety Injection Accumulator Fill Line upstream of valve 2-FCV-63-23, SIS ACCUM FILL LINE ISOLATION VLV. _____

Date _____

4.3 Field Preparations (continued)

[1.4] **ENSURE** the RCS is at normal hot no-load temperature, with pressure at 1380 to 1420 psig. _____

[1.5] **ENSURE** the Safety Injection System is aligned for cold leg injection and the test may be performed as stated in 2-PTI-068-01. _____

[1.6] **OPEN** the following root valves to place the temporary differential pressure gauges in service:

A. 2-RTV-63-393A, RT VLV TO FE-63-122 _____

B. 2-RTV-63-394A, RT VLV TO FE-63-122 _____

C. 2-RTV-63-319A, RT VLV TO FE-63-122 _____

D. 2-RTV-63-320A, RT VLV TO FE-63-122 _____

E. 2-RTV-63-409A, RT VLV TO FE-63-162 _____

F. 2-RTV-63-410A, RT VLV TO FE-63-162 _____

G. 2-RTV-63-311A, RT VLV TO FE-63-162 _____

H. 2-RTV-63-312A, RT VLV TO FE-63-162 _____

I. 2-RTV-63-395A, RT VLV TO FE-63-123 _____

J. 2-RTV-63-396A, RT VLV TO FE-63-123 _____

K. 2-RTV-63-321A, RT VLV TO FE-63-123 _____

L. 2-RTV-63-322A, RT VLV TO FE-63-123 _____

M. 2-RTV-63-387A, RT VLV TO FE-63-160 _____

N. 2-RTV-63-388A, RT VLV TO FE-63-160 _____

O. 2-RTV-63-313A, RT VLV TO FE-63-160 _____

P. 2-RTV-63-314A, RT VLV TO FE-63-160 _____

Q. 2-RTV-63-397A, RT VLV TO FE-63-124 _____

R. 2-RTV-63-398A, RT VLV TO FE-63-124 _____

Date _____

4.3 Field Preparations (continued)

S. 2-RTV-63-323A, RT VLV TO FE-63-124 _____

T. 2-RTV-63-324A, RT VLV TO FE-63-124 _____

U. 2-RTV-63-389A, RT VLV TO FE-63-161 _____

V. 2-RTV-63-390A, RT VLV TO FE-63-161 _____

W. 2-RTV-63-315A, RT VLV TO FE-63-161 _____

X. 2-RTV-63-316A, RT VLV TO FE-63-161 _____

Y. 2-RTV-63-399A, RT VLV TO FE-63-125 _____

Z. 2-RTV-63-400A, RT VLV TO FE-63-125 _____

AA. 2-RTV-63-325A, RT VLV TO FE-63-125 _____

BB. 2-RTV-63-326A, RT VLV TO FE-63-125 _____

CC. 2-RTV-63-391A, RT VLV TO FE-63-159 _____

DD. 2-RTV-63-392A, RT VLV TO FE-63-159 _____

EE. 2-RTV-63-317A, RT VLV TO FE-63-159 _____

FF. 2-RTV-63-318A, RT VLV TO FE-63-159 _____

Date _____

4.3 Field Preparations (continued)

[2] Prerequisites for Subsection 6.2.

[2.1] **REMOVE** Pipe Caps downstream of the following valves:

A. 2-RTV-63-407A, RT VLV TO FE-63-33 _____

B. 2-RTV-63-408A, RT VLV TO FE-63-33 _____

C. 2-RTV-63-401A, RT VLV TO FE-63-27 _____

D. 2-RTV-63-402A, RT VLV TO FE-63-27 _____

E. 2-RTV-63-403A, RT VLV TO FE-63-29 _____

F. 2-RTV-63-404A, RT VLV TO FE-63-29 _____

G. 2-RTV-63-405A, RT VLV TO FE-63-31 _____

H. 2-RTV-63-406A, RT VLV TO FE-63-31 _____

[2.2] **INSTALL** Differential Pressure Gauges at the following locations:

A. 2-FE-63-33, SIS BORON INJ TANK TO CL RCS LOOP 1.

M&TE _____ Cal Due Date _____ _____

B. 2-FE-63-27, SIS BORON INJ TNK FLOW TO CL RCS LOOP 4.

M&TE _____ Cal Due Date _____ _____

C. 2-FE-63-29, SIS BORON INJ TNK FLOW TO CL RCS LOOP 3.

M&TE _____ Cal Due Date _____ _____

D. 2-FE-63-31, SIS BORON INJ TNK FLOW TO CL RCS LOOP 2.

M&TE _____ Cal Due Date _____ _____

Date _____

4.3 Field Preparations (continued)

[2.3] **ENSURE** that RCS is at normal hot no-load temperature and normal operating pressure (2235 psig ± 20 psig) in accordance with 2-PTI-068-01. _____

[2.4] **ENSURE** the CVCS System is operating in normal letdown operation. _____

[2.5] **OPEN** the following root valves to place the temporary differential pressure gauges in service:

A. 2-RTV-63-407A, RT VLV TO FE-63-33 _____

B. 2-RTV-63-408A, RT VLV TO FE-63-33 _____

C. 2-RTV-63-333A, RT VLV TO FE-63-33 _____

D. 2-RTV-63-334A, RT VLV TO FE-63-33 _____

E. 2-RTV-63-401A, RT VLV TO FE-63-27 _____

F. 2-RTV-63-402A, RT VLV TO FE-63-27 _____

G. 2-RTV-63-327A, RT VLV TO FE-63-27 _____

H. 2-RTV-63-328A, RT VLV TO FE-63-27 _____

I. 2-RTV-63-403A, RT VLV TO FE-63-29 _____

J. 2-RTV-63-404A, RT VLV TO FE-63-29 _____

K. 2-RTV-63-329A, RT VLV TO FE-63-29 _____

L. 2-RTV-63-330A, RT VLV TO FE-63-29 _____

M. 2-RTV-63-405A, RT VLV TO FE-63-31 _____

N. 2-RTV-63-406A, RT VLV TO FE-63-31 _____

O. 2-RTV-63-331A, RT VLV TO FE-63-31 _____

P. 2-RTV-63-332A, RT VLV TO FE-63-31 _____

Date _____

4.3 Field Preparations (continued)

[3] Prerequisites for Subsection 6.3

[3.1] **ENSURE** that RCS is at normal hot no-load temperature and normal operating pressure (2235 psig ± 20 psig) in accordance with 2-PTI-068-01. _____

[3.2] **ENSURE** the Safety Injection System is aligned for cold leg injection and the test may be performed as stated in 2-PTI-068-01. _____

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

Date _____

5.0 ACCEPTANCE CRITERIA

A. The following check valves will open with the RCS at normal hot no-load temperature and an RCS pressure of 1400 psig ± 20 psig:

1. 2-CKV-63-560, SIS L1 CL INJ CHECK (Step 6.1[5]A)
2. 2-CKV-63-561, SIS L2 CL INJ CHECK (Step 6.1[6]A)
3. 2-CKV-63-562, SIS L3 CL INJ CHECK (Step 6.1[7]A)
4. 2-CKV-63-563, SIS L4 CL INJ CHECK (Step 6.1[8]A)
5. 2-CKV-63-641, RHR HX DISCH CHECK (Step 6.1[19]A)
6. 2-CKV-63-559, SIS L2 HL INJ CHECK (Step 6.1[20]A)
7. 2-CKV-63-644, RHR HX DISCH CHECK (Step 6.1[21]A)
8. 2-CKV-63-558, SIS L4 HL INJ CHECK (Step 6.1[22]A)

B. The following check valves will open with the RCS at normal hot no-load temperature and an RCS pressure of 1400 psig ± 20 psig:

1. 2-CKV-63-622, ACCUM 1 OUT CHECK (Step 6.1[35]A)
2. 2-CKV-63-623, ACCUM 2 OUT CHECK (Step 6.1[43]A)
3. 2-CKV-63-624, ACCUM 3 OUT CHECK (Step 6.1[51]A)
4. 2-CKV-63-625, ACCUM 4 OUT CHECK (Step 6.1[59]A)

C. The following check valves will open with the RCS at normal hot no-load temperature and an RCS pressure of 2235 psig ± 20 psig:

1. 2-CKV-63-586, BORON INJ CHECK CL L1 (Step 6.2[7]A)
2. 2-CKV-63-587, BORON INJ CHECK CL L2 (Step 6.2[8]A)
3. 2-CKV-63-588, BORON INJ CHECK CL L3 (Step 6.2[9]A)
4. 2-CKV-63-589, BORON INJ CHECK CL L4 (Step 6.2[10]A)

Date _____

5.0 ACCEPTANCE CRITERIA (continued)

D. When tested with the RCS at normal operating pressure (2235 psig ± 20 psig), the following primary and secondary check valve leak rates do not exceed 0.5 gpm per nominal inch of valve size to a maximum of 5.0 gpm:

1. 2-CKV-63-581, BORON INJ CHECK, ≤ 1.5 gpm (Step 6.3.2[23])
2. 2-CKV-63-543, SIS L1 HL INJ CHECK, ≤ 1.0 gpm (Step 6.3.3[19])
3. 2-CKV-63-640, RHR HX DISCH CHECK, ≤ 4.0 gpm (Step 6.3.4[17])
4. 2-CKV-63-545, SIS L3 HL INJ CHECK, ≤ 1.0 gpm (Step 6.3.5[17])
5. 2-CKV-63-643, RHR HX DISCH CHECK, ≤ 4.0 gpm (Step 6.3.6[17])
6. 2-CKV-63-549, SIS L4 HL INJ CHECK, ≤ 1.0 gpm (step 6.3.7[17])
7. 2-CKV-63-547, SIS L2 HL INJ CHECK, ≤ 1.0 gpm (Step 6.3.8[18])
8. 2-CKV-63-551, SIS L1 CL INJ CHECK, ≤ 1.0 gpm (Step 6.3.9[20])
9. 2-CKV-63-633, RHR PUMP DISCH CHECK, ≤ 3.0 gpm (Step 6.3.10[17])
10. 2-CKV-63-553, SIS L2 CL INJ CHECK, ≤ 1.0 gpm (Step 6.3.11[17])
11. 2-CKV-63-632, RHR PUMP DISCH CHECK, ≤ 3.0 gpm (Step 6.3.12[17])
12. 2-CKV-63-555, SIS L3 CL INJ CHECK, ≤ 1.0 gpm (step 6.3.13[17])
13. 2-CKV-63-634, RHR PUMP DISCH CHECK, ≤ 3.0 gpm (step 6.3.14[17])
14. 2-CKV-63-557, SIS L4 CL INJ CHECK, ≤ 1.0 gpm (Step 6.3.15[17])
15. 2-CKV-63-635, RHR PUMP DISCH CHECK, ≤ 3.0 gpm (Step 6.3.16[17])
16. 2-FCV-74-2, RHR SYSTEM ISOLATION VALVE & 2-FCV-74-8, RHR SYSTEM ISOLATION BYPASS VALVE Total Combined Leakage, is ≤ 5.0 gpm (Step 6.3.17[26])
17. 2-CKV-63-622, ACCUM 1 OUT CHECK, ≤ 5.0 gpm (Step 6.3.18[19])
18. 2-CKV-63-623, ACCUM 2 0UT CHECK, ≤ 5.0 gpm (Step 6.3.19[17])
19. 2-CKV-63-624, ACCUM 3 OUT CHECK, ≤ 5.0 gpm (Step 6.3.20[17])
20. 2-CKV-63-625, ACCUM 4 OUT CHECK, ≤ 5.0 gpm (Step 6.3.21[17])

Date _____

5.0 ACCEPTANCE CRITERIA (continued)

21. 2-CKV-63-586, BORON INJ CHECK CL L1, 2-CKV-63-587, BORON INJ CHECK CL L2, 2-CKV-63-588, BORON INJ CHECK CL L3, 2-CKV-63-589, BORON INJ CHECK CL L4, Total Combined Leakage, is ≤ 0.75 gpm (Step 6.3.22[15])

22. 2-CKV-63-560, SIS L1 CL INJ CHECK, ≤ 5.0 gpm (Step 6.3.23[15])

23. 2-CKV-63-561, SIS L2 CL INJ CHECK, ≤ 5.0 gpm 6.3.24[14])

24. 2-CKV-63-562, SIS L3 CL INJ CHECK, ≤ 5.0 gpm (Step 6.3.25[14])

25. 2-CKV-63-563, SIS L4 CL INJ CHECK, ≤ 5.0 gpm (Step 6.3.26[14])

26. 2-FCV-74-1, RHR SYSTEM ISOLATION VALVE & 2-FCV-74-9, RHR SYSTEM ISOLATION BYPASS VALVE Total Combined Leakage, is ≤ 5.0 gpm (Step 6.3.27[14])

27. 2-CKV-63-641, RHR HX DISCH CHECK, ≤ 3.0 gpm (Step 6.3.28[14])

28. 2-CKV-63-559, SIS L2 HL INJ CHECK, ≤ 3.0 gpm (Step 6.3.29[14])

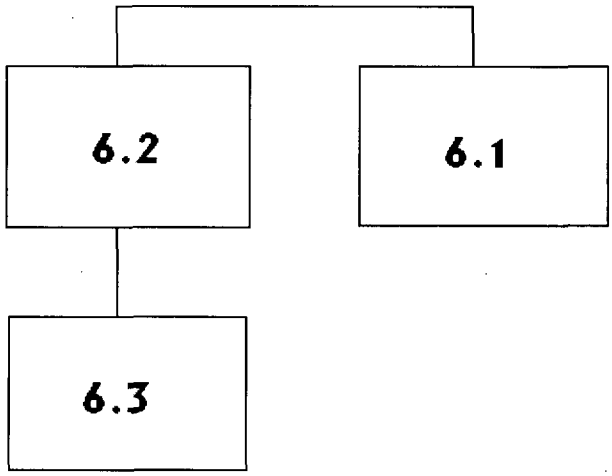
29. 2-CKV-63-644, RHR HX DISCH CHECK, ≤ 3.0 gpm (Step 6.3.30[14])

30. 2-CKV-63-558, SIS L4 HL INJ CHECK, ≤ 3.0 gpm (Step 6.3.31[14])

Date _____

6.0 PERFORMANCE

The subsections of this test shall be performed per the flow diagram below.



Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig

NOTE

The temporary ΔP gauges that are installed are for obtaining qualitative data to provide indication that the associated check valves open.

[1] **VERIFY** all prerequisites listed in Section 4.0 for Subsection 6.1 have been completed. _____

[2] **VERIFY** each of the following temporary differential pressure gauges reads 0 psid (± 0.10 psid):

A. Temporary ΔP gauge at 2-FE-63-122, SIS FLOW TO CL 1 FLOW ELEMENT _____

B. Temporary ΔP gauge at 2-FE-63-123, SIS FLOW TO CL 2 FLOW ELEMENT _____

C. Temporary ΔP gauge at 2-FE-63-124, SIS FLOW TO CL 3 FLOW ELEMENT _____

D. Temporary ΔP gauge at 2-FE-63-125, SIS FLOW TO CL 4 FLOW ELEMENT _____

CAUTION

Steps 6.1[4] thru 6.1[11] will inject RWST water into the Reactor Vessel. Close coordination of test activities is necessary to limit the thermal transient on the injection line nozzles to the Reactor Coolant System. Test data should be obtained as quickly as possible.

[3] **NOTIFY** Operations to adjust charging and letdown to balance SI pump injection flow to maintain pressurizer level in an acceptable band. _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

[4] **PLACE** Hand Switch 2-HS-63-10A, SI PMP A, to START, **AND**

VERIFY by light indication SAFETY INJECTION PMP 2A-A is RUNNING, **AND**

RECORD the start time of the SI Pump.

TIME _____ _____

[5] **RECORD** the differential pressure across 2-FE-63-122, SIS FLOW TO CL 1 FLOW ELEMENT.

_____ psid (greater than 0.75 psid)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-560, SIS L1 CL INJ CHECK, OPENS with RCS at 1400 psig (± 20 psig) by ΔP across 2-FE-63-122, SIS FLOW TO CL 1 FLOW ELEMENT, greater than 0.75 psig. **(ACC. CRIT. 5.0A.1)** _____

[6] **RECORD** the differential pressure across 2-FE-63-123, SIS FLOW TO CL 2 FLOW ELEMENT.

_____ psid (greater than 0.75 psid)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-561, SIS L2 CL INJ CHECK, OPENS with RCS at 1400 psig (± 20 psig) by ΔP across 2-FE-63-123, SIS FLOW TO CL 2 FLOW ELEMENT, greater than 0.75 psig. **(ACC. CRIT. 5.0A.2)** _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

[7] **RECORD** the differential pressure across 2-FE-63-124, SIS FLOW TO CL 3 FLOW ELEMENT.

_____ psid (greater than 0.75 psid)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-562, SIS L3 CL INJ CHECK, OPENS with RCS at 1400 psig (± 20 psig) by ΔP across 2-FE-63-124, SIS FLOW TO CL 3 FLOW ELEMENT, greater than 0.75 psig. **(ACC. CRIT. 5.0A.3)** _____

[8] **RECORD** the differential pressure across 2-FE-63-125, SIS FLOW TO CL 4 FLOW ELEMENT.

_____ psid (greater than 0.75 psid)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-563, SIS L4 CL INJ CHECK, OPENS with RCS at 1400 psig (± 20 psig) by ΔP across 2-FE-63-125, SIS FLOW TO CL 4 FLOW ELEMENT, greater than 0.75 psid. **(ACC. CRIT. 5.0A.4)** _____

[9] **ENSURE** 20 minutes have passed since the start of the SI Pump noted in step 6.1[4] before proceeding to the next step to ensure proper bearing lubrication. _____

[10] **NOTIFY** Operations to adjust charging and letdown to account for the loss of SI pump injection flow to maintain pressurizer level in an acceptable band. _____

[11] **PLACE** 2-HS-63-10A, SI PMP A, to PULL-TO-LOCK position, **AND**

VERIFY by light indication SAFETY INJECTION PMP 2A-A STOPS, **AND**

RECORD the stop time of the SI Pump.

TIME _____ _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

[12] **VERIFY** each of the following temporary differential pressure gauges reads 0 psid (± 0.10 psid):

A. Temporary ΔP gauge at 2-FE-63-162, SIS PUMP OUT LP 1 HL _____

B. Temporary ΔP gauge at 2-FE-63-160, SIS PUMP OUT TO LP 2 HL _____

C. Temporary ΔP gauge at 2-FE-63-161, SIS PUMP OUT TO LP 3 HL _____

D. Temporary ΔP gauge at 2-FE-63-159, SIS PUMP OUT TO LP 4 HL _____

[13] **PLACE** 2-HS-63-22A, SI PMPS TO CL 1-2-3-4, to CLOSE, **AND**

VERIFY by light indication 2-FCV-63-22, SIS PUMP COLD LEG INJ, CLOSES. _____

[14] **PLACE** 2-HS-63-156A, SI PMP A TO HL 1&3, to OPEN, **AND**

VERIFY by light indication 2-FCV-63-156, SIS PUMP OUT RCS LP 1&3 HL, OPENS. _____

[15] **PLACE** 2-HS-63-157A. SI PMP B TO HL 2&4, to OPEN, **AND**

VERIFY by light indication 2-FCV-63-157, SIS PUMP OUT RCS LP 2&4 H L, OPENS. _____

CAUTION

Steps 6.1[18] thru 6.1[25] will inject RWST Water into the Reactor Vessel. Close coordination of test activities is necessary to limit the thermal transient on the injection line nozzles to the Reactor Coolant System. Test data should be obtained as quickly as possible.

[16] **ENSURE** 45 minutes have passed since the stopping of the SI Pump noted in step 6.1[11] before proceeding to the next step to ensure acceptable pump downtime before restart. _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

[17] **NOTIFY** Operations to adjust charging and letdown to balance SI pump injection flow to maintain pressurizer level in an acceptable band. _____

[18] **PLACE** 2-HS-63-10A, SI PMP A, to START, **AND**

VERIFY by light indication SAFETY INJECTION PMP 2A-A is RUNNING, **AND**

RECORD the start time of the SI Pump.

TIME _____ _____

[19] **RECORD** the differential pressure across 2-FE-63-162, SIS PUMP OUT TO LP 1 HL.

_____ psid (greater than 0.75 psid)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-641, RHR HX DISCH CHECK, OPENS with RCS at 1400 psig (± 20 psig) by ΔP across 2-FE-63-162, SIS PUMP OUT TO LP 1 HL, greater than 0.75 psid. **(ACC. CRIT. 5.0A.5)** _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

[20] **RECORD** the differential pressure across 2-FE-63-160, SIS PUMP OUT TO LP 2 HL.

_____ psid (greater than 0.75 psid)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-559, SIS L2 HL INJ CHECK, OPENS with RCS at 1400 psig (± 20 psig) by ΔP across 2-FE-63-160, SIS PUMP OUT TO LP 2 HL, greater than 0.75 psid. **(ACC. CRIT. 5.0A.6)** _____

[21] **RECORD** the differential pressure across 2-FE-63-161, SIS PUMP OUT TO LP 3 HL.

_____ psid (greater than 0.75 psid)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-644, RHR HX DISCH CHECK, OPENS with RCS at 1400 psig (± 20 psig) by ΔP across 2-FE-63-161, SIS PUMP OUT TO LP 3 HL, greater than 0.75 psid. (**ACC. CRIT.** 5.0A.7) _____

[22] **RECORD** the differential pressure across 2-FE-63-159, SIS PUMP OUT TO LP 4 HL.

_____ psid (greater than 0.75 psid)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-558, SIS L4 HL INJ CHECK, OPENS with RCS at 1400 psig (± 20 psig) by ΔP across 2-FE-63-159, SIS PUMP OUT TO LP 4 HL, greater than 0.75 psid. **(ACC. CRIT. 5.0A.8)** _____

[23] **ENSURE** 20 minutes have passed since the start of the SI Pump noted in step 6.1[18] before proceeding to the next step to ensure proper bearing lubrication. _____

[24] **NOTIFY** Operations to adjust charging and letdown to account for the loss of SI pump injection flow to maintain pressurizer level in an acceptable band. _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

[25] **PLACE** 2-HS-63-10A, SI PMP A, to PULL-TO-LOCK position, **AND**

VERIFY by light indication SAFETY INJECTION PMP 2A-A STOPS, **AND**

RECORD the stop time of the SI Pump.

TIME _____ _____

[26] **PLACE** 2-HS-63-156A, SI PMP A TO HL 1&3, to CLOSE, **AND**

VERIFY by light indication 2-FCV-63-156, SIS PUMP OUT RCS LP 1&3 HL, CLOSES. _____

[27] **PLACE** 2-HS-63-157A, SI PMP B TO HL 2&4, to CLOSE, **AND**

VERIFY by light indication 2-FCV-63-157, SIS PUMP OUT RCS LP 2&4 HL, CLOSES. _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

[28] **PERFORM** the following Valve Lineup:

A. **VERIFY/CLOSE** 2-FCV-63-118, SIS ACCUM TK 1 FLOW ISOLATION VLV, **AND**

RECORD "as found" position. (2-HS-63-118A, CL ACCUM 1 OUTLET)

As found position: _____ _____

B. **VERIFY/CLOSE** 2-FCV-63-98, SIS ACCUM TK 2 FLOW ISOLATION VLV, **AND**

RECORD "as found" position. (2-HS-63-98A, CL ACCUM 2 OUTLET)

As found position: _____ _____

C. **VERIFY/CLOSE** 2-FCV-63-80, SIS ACCUM TK 3 FLOW ISOL VLV, **AND**

RECORD "as found" position. (2-HS-63-80A, CL ACCUM 3 OUTLET)

As found position: _____ _____

D. **VERIFY/CLOSE** 2-FCV-63-67, SIS ACCUM TK 4 FLOW ISOLATION VLV, **AND**

RECORD "as found" position. (2-HS-63-67A, CL ACCUM 4 OUTLET)

As found position: _____ _____

E. **CLOSE** 2-ISV-63-601, SIS TEST LINE ISLN. _____

F. **PLACE** 2-HS-63-23, CLA FILL FROM SI PMPS, to OPEN. _____

G. **VERIFY** 2-FCV-63-23, SIS ACCUM FILL LINE ISOLATION VLV, is OPEN by light indication. _____

H. **PLACE** 2-HS-63-71A, CKV TEST LINE TO HUT, to OPEN. _____

I. **VERIFY** 2-FCV-63-71, SIS CHECK VLV LEAK ISOLATION, is OPEN by light indication. _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

J. **DEPRESS** 2-HS-63-187, TEST LINE ISOL, at Hand Switch Panel 2-XS-63-100, to OPEN 2-FCV-63-187, RHR SUPPLY TEST LINE. _____

K. **VERIFY** 2-FCV-63-187, RHR SUPPLY TEST LINE, OPENS by light indication. _____

NOTES

1) The following steps will place the SI Pump on mini-flow for long duration while manipulating Test Line Valves for Accumulator Check Valve Testing.
2) If operating conditions require SI Pump A to be shut down, SI Pump B may be used, and vice versa. Ensure that the outlet pressure is monitored for the appropriate pump discharge. Annotate any changes in the Test Log.

[29] **ENSURE** 45 minutes have passed since the stopping of the SI Pump noted in step 6.1[25] before proceeding to the next step to ensure acceptable pump downtime before restart. _____

[30] **PLACE** 2-HS-63-10A, SI PMP A, to START, **AND**

VERIFY by light indication SAFETY INJECTION PMP 2A-A is RUNNING, **AND**

RECORD the start time of the SI Pump.

TIME _____ _____

NOTE

The Ultrasonic Flow Meter that is installed is for obtaining qualitative data to provide indication that the associated check valves open.

[31] **VERIFY** the Ultrasonic Flow Meter installed on the 1" Accumulator Fill Line indicates 0 gpm. (± 2.0 gpm). _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

CAUTION

The following step will begin injecting RWST water into the Reactor Vessel. Close coordination of test activities is necessary to limit the thermal transient on the injection line nozzles to the Reactor Coolant system. Test data should be obtained as quickly as possible.

[32] **NOTIFY** Operations to adjust charging and letdown to balance SI pump injection flow to maintain pressurizer level in an acceptable band. _____

[33] **DEPRESS** Hand Switch 2-HS-63-116, CL ACCUM 1, at 2-XS-63-100, CKV LEAK TEST, on 2-M-6, to OPEN 2-FCV-63-116, SIS ACCUM TK 1 CHECK VLV LEAK TEST. _____

[34] **VERIFY** 2-FCV-63-116, SIS ACCUM TK 1 CHECK VLV LEAK TEST, OPENS by light indication. _____

[35] **RECORD** the flow as observed on Ultrasonic Flow Meter.

_____ GPM (greater than 5.0 GPM)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-622, ACCUM 1 OUT CHECK, OPENS with RCS at normal hot no-load temperature and an RCS pressure of 1400 psig ± 20 psig by flow on Ultrasonic Flow Meter greater than 5.0 gpm. **(ACC. CRIT. 5.0B.1)** _____

[36] **NOTIFY** Operations to adjust charging and letdown to account for the loss of SI pump injection flow to maintain pressurizer level in an acceptable band. _____

[37] **DEPRESS** Hand Switch 2-HS-63-116, CL ACCUM 1, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-116, SIS ACCUM TK 1 CHECK VLV LEAK TEST. _____

[38] **VERIFY** 2-FCV-63-116, SIS ACCUM TK 1 CHECK VLV LEAK TEST, CLOSES by light indication. _____

[39] **VERIFY** the Ultrasonic Flow Meter installed on the 1" Accumulator Fill Line indicates 0 gpm (± 2.0 gpm). _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

CAUTION

The following step will begin injecting RWST water into the Reactor Vessel. Close coordination of test activities is necessary to limit the thermal transient on the injection line nozzles to the Reactor Coolant System. Test data should be obtained as quickly as possible.

[40] **NOTIFY** Operations to adjust charging and letdown to balance SI pump injection flow to maintain pressurizer level in an acceptable band. _____

[41] **DEPRESS** Hand Switch 2-HS-63-96, CL ACCUM 2, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-96, SIS ACCUM TK 2 CHECK VLV LEAK TEST. _____

[42] **VERIFY** 2-FCV-63-96, SIS ACCUM TK 2 CHECK VLV LEAK TEST, OPENS by light indication. _____

[43] **RECORD** the flow as observed on Ultrasonic Flow Meter.

_____ GPM (greater than 5.0 GPM)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-623, ACCUM 2 OUT CHECK, OPENS with RCS at normal hot no-load temperature and an RCS pressure of 1400 psig ± 20 psig by flow on Ultrasonic Flow Meter greater than 5.0 gpm. **(ACC. CRIT. 5.0B.2)** _____

[44] **NOTIFY** Operations to adjust charging and letdown to account for the loss of SI pump injection flow to maintain pressurizer level in an acceptable band. _____

[45] **DEPRESS** 2-HS-63-96, CL ACCUM 2, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-96, SIS ACCUM TK 2 CHECK VLV LEAK TEST. _____

[46] **VERIFY** 2-FCV-63-96, SIS ACCUM TK 2 CHECK VLV LEAK TEST, CLOSES by light indication. _____

[47] **VERIFY** the Ultrasonic Flow Meter installed on the 1" Accumulator Fill Line indicates 0 gpm (± 2.0 gpm). _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

CAUTION

The following step will begin injecting RWST water into the Reactor Vessel. Close coordination of test activities is necessary to limit the thermal transient on the injection line nozzles to the Reactor Coolant System. Test data should be obtained as quickly as possible.

[48] **NOTIFY** Operations to adjust charging and letdown to balance SI pump injection flow to maintain pressurizer level in an acceptable band. _____

[49] **DEPRESS** Hand Switch 2-HS-63-78, CL ACCUM 3, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-78, SIS ACCUM TK 3 CHECK VLV LEAK TEST. _____

[50] **VERIFY** 2-FCV-63-78, SIS ACCUM TK 3 CHECK VLV LEAK TEST, OPENS by light indication. _____

[51] **RECORD** the flow as observed on Ultrasonic Flow Meter.

_____ GPM (greater than 5.0 GPM)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-624, ACCUM 3 OUT CHECK, OPENS with RCS at normal hot no-load temperature and an RCS pressure of 1400 psig ± 20 psig by flow on Ultrasonic Flow Meter greater than 5.0 gpm. **(ACC. CRIT. 5.0B.3)** _____

[52] **NOTIFY** Operations to adjust charging and letdown to account for the loss of SI pump injection flow to maintain pressurizer level in an acceptable band. _____

[53] **DEPRESS** 2-HS-63-78, CL ACCUM 3, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-78, SIS ACCUM TK 3 CHECK VLV LEAK TEST. _____

[54] **VERIFY** 2-FCV-63-78, SIS ACCUM TK 3 CHECK VLV LEAK TEST, CLOSES by light indication. _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

[55] **VERIFY** the Ultrasonic Flow Meter installed on the 1" Accumulator Fill Line indicates 0 gpm (± 2.0 gpm). _____

CAUTION

The following step will begin injecting RWST water into the Reactor Vessel. Close coordination of test activities is necessary to limit the thermal transient on the injection line nozzles to the Reactor Coolant System. Test data should be obtained as quickly as possible.

[56] **NOTIFY** Operations to adjust charging and letdown to balance SI pump injection flow to maintain pressurizer level in an acceptable band. _____

[57] **DEPRESS** Hand Switch 2-HS-63-68, CL ACCUM 4, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-68, SIS ACCUM TK 4 CHECK VLV LEAK TEST. _____

[58] **VERIFY** 2-FCV-63-68, SIS ACCUM TK 4 CHECK VLV LEAK TEST, OPENS by light indication. _____

[59] **RECORD** the flow as observed on Ultrasonic Flow Meter.

_____ GPM (greater than 5.0 GPM)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-625, ACCUM 4 OUT CHECK, OPENS with RCS at normal hot no-load temperature and an RCS pressure of 1400 psig ± 20 psig by flow on Ultrasonic Flow Meter greater than 5.0 gpm. **(ACC. CRIT. 5.0B.4)** _____

[60] **NOTIFY** Operations to adjust charging and letdown to account for the loss of SI pump injection flow to maintain pressurizer level in an acceptable band. _____

[61] **DEPRESS** 2-HS-63-68, CL ACCUM 4, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-68, SIS ACCUM TK 4 CHECK VLV LEAK TEST. _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

[62] **VERIFY** 2-FCV-63-68, SIS ACCUM TK 4 CHECK VLV LEAK TEST, CLOSES by light indication. _____

[63] **ENSURE** 20 minutes have passed since the start of the SI Pump noted in step 6.1[30] before proceeding to the next step to ensure proper bearing lubrication. _____

[64] **PLACE** Hand Switch 2-HS-63-10A, SI PMP A, to PULL-TO-LOCK position. _____

[65] **VERIFY** by light indication SI Pump STOPS. _____

[66] **PERFORM** the following Valve Lineup:

A. **PLACE** Hand Switch 2-HS-63-23, CLA FILL FROM SI PMPS, to CLOSE, **AND**

VERIFY 2-FCV-63-23, SIS ACCUM FILL LINE ISOLATION VLV, is CLOSED by light indication. _____

B. **PLACE** 2-HS-63-71A, CKV TEST LINE TO HUT, to CLOSE, **AND**

VERIFY 2-FCV-63-71, SIS CHECK VLV LEAK TEST ISOLATION, is CLOSED by light indication. _____

C. **DEPRESS** 2-HS-63-187, TEST LINE ISOL, at Hand Switch Panel 2-XS-63-100, to CLOSE 2-FCV-63-187, RHR SUPPLY TEST LINE, **AND**

VERIFY 2-FCV-63-187, RHR SUPPLY TEST LINE, CLOSES by light indication. _____

D. **OPEN** 2-ISV-63-601, SIS TEST LINE ISLN. _____

E. **VERIFY/PLACE** 2-FCV-63-118, SIS ACCUM TK 1 FLOW ISOLATION VLV, to the "as found" position as recorded in Step 6.1[28]A.

6.1[28]A As Found Position: _____ _____

F. **VERIFY/PLACE** 2-FCV-63-98, SIS ACCUM TK 2 FLOW ISOLATION VLV, to the "as found" position as recorded in Step 6.1[28]B.

6.1[28]B As Found Position: _____ _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

G. **VERIFY/PLACE** 2-FCV-63-80, SIS ACCUM TK 3 FLOW ISOLATION VLV, to the "as found" position as recorded in Step 6.1[28]C. _____

6.1[28]C As Found Position: _____

H. **VERIFY/PLACE** 2-FCV-63-67, SIS ACCUM TK 4 FLOW ISOLATION VLV, to the "as found" position as recorded in Step 6.1[28]D. _____

6.1[28]D As Found Position: _____

I. **PLACE** 2-HS-63-22A, SI PMPS TO CL 1-2-3-4, to OPEN, **AND**

VERIFY by light indication 2-FCV-63-22, SIS PUMP COLD LEG INJ, OPENS. _____

[67] **PLACE** 2-HS-63-10A, SI PMP A, to A-AUTO. _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

[68] **NOTIFY** the US/SRO/SM to return the following valves to their normal position per 2-SOI-63.01 ATT 1V:

A. 2-RTV-63-393A, RT VLV TO FE-63-122 _____

B. 2-RTV-63-394A, RT VLV TO FE-63-122 _____

C. 2-RTV-63-395A, RT VLV TO FE-63-123 _____

D. 2-RTV-63-396A, RT VLV TO FE-63-123 _____

E. 2-RTV-63-397A, RT VLV TO FE-63-124 _____

F. 2-RTV-63-398A, RT VLV TO FE-63-124 _____

G. 2-RTV-63-399A, RT VLV TO FE-63-125 _____

H. 2-RTV-63-400A, RT VLV TO FE-63-125 _____

I. 2-RTV-63-409A, RT VLV TO FE-63-162 _____

J. 2-RTV-63-410A, RT VLV TO FE-63-162 _____

K. 2-RTV-63-387A, RT VLV TO FE-63-160 _____

L. 2-RTV-63-388A, RT VLV TO FE-63-160 _____

M. 2-RTV-63-389A, RT VLV TO FE-63-161 _____

N. 2-RTV-63-390A, RT VLV TO FE-63-161 _____

O. 2-RTV-63-391A, RT VLV TO FE-63-159 _____

P. 2-RTV-63-392A, RT VLV TO FE-63-159 _____

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

[69] **REMOVE/VERIFY REMOVED** the Differential Pressure Gauge across 2-FE-63-122, SIS FLOW TO CL 1 FLOW ELEMENT.

_____ 1st

_____ CV

A. **INSTALL** Pipe Cap downstream of 2-RTV-63-393A, RT VLV TO FE-63-122.

_____ 1st

_____ CV

B. **INSTALL** Pipe Cap downstream of 2-RTV-63-394A, RT VLV TO FE-63-122.

_____ 1st

_____ CV

[70] **REMOVE/VERIFY REMOVED** the Differential Pressure Gauge across 2-FE-63-162, SIS PUMP OUT LP 1 HL.

_____ 1st

_____ CV

A. **INSTALL** Pipe Cap downstream of 2-RTV-63-409A, RT VLV TO FE-63-162.

_____ 1st

_____ CV

B. **INSTALL** Pipe Cap downstream of 2-RTV-63-410A, RT VLV TO FE-63-162.

_____ 1st

_____ CV

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

[71] **REMOVE/VERIFY REMOVED** the Differential Pressure Gauge across 2-FE-63-123, SIS FLOW TO CL 2 FLOW ELEMENT.

_____ 1st

_____ CV

A. **INSTALL** Pipe Cap downstream of 2-RTV-63-395A, RT VLV TO FE-63-123.

_____ 1st

_____ CV

B. **INSTALL** Pipe Cap downstream of 2-RTV-63-396A, RT VLV TO FE-63-123.

_____ 1st

_____ CV

[72] **REMOVE/VERIFY REMOVED** the Differential Pressure Gauge across 2-FE-63-160, SIS PUMP OUT TO LP 2 HL.

_____ 1st

_____ CV

A. **INSTALL** Pipe Cap downstream of 2-RTV-63-387A, RT VLV TO FE-63-160.

_____ 1st

_____ CV

B. **INSTALL** Pipe Cap downstream of 2-RTV-63-388A, RT VLV TO FE-63-160.

_____ 1st

_____ CV

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

[73] **REMOVE/VERIFY REMOVED** the Differential Pressure Gauge across 2-FE-63-124, SIS FLOW TO CL 3 FLOW ELEMENT.

_____ 1st

_____ CV

A. **INSTALL** Pipe Cap downstream of 2-RTV-63-397A, RT VLV TO FE-63-124.

_____ 1st

_____ CV

B. **INSTALL** Pipe Cap downstream of 2-RTV-63-398A, RT VLV TO FE-63-124.

_____ 1st

_____ CV

[74] **REMOVE/VERIFY REMOVED** the Differential Pressure Gauge across 2-FE-63-161, SIS PUMP OUT TO LP 3 HL.

_____ 1st

_____ CV

A. **INSTALL** Pipe Cap downstream of 2-RTV-63-389A, RT VLV TO FE-63-161.

_____ 1st

_____ CV

B. **INSTALL** Pipe Cap downstream of 2-RTV-63-390A, RT VLV TO FE-63-161.

_____ 1st

_____ CV

Date _____

6.1 Check Valve Flow Test at 1400 psig ± 20 psig (continued)

[75] **REMOVE/VERIFY REMOVED** the Differential Pressure Gauge across 2-FE-63-125, SIS FLOW TO CL 4 FLOW ELEMENT.

_____ 1st

_____ CV

A. **INSTALL** Pipe Cap downstream of 2-RTV-63-399A, RT VLV TO FE-63-125.

_____ 1st

_____ CV

B. **INSTALL** Pipe Cap downstream of 2-RTV-63-400A, RT VLV TO FE-63-125.

_____ 1st

_____ CV

[76] **REMOVE/VERIFY REMOVED** the Differential Pressure Gauge across 2-FE-63-159, SIS PUMP OUT TO LP 4 HL.

_____ 1st

_____ CV

A. **INSTALL** Pipe Cap downstream of 2-RTV-63-391A, RT VLV TO FE-63-159.

_____ 1st

_____ CV

B. **INSTALL** Pipe Cap downstream of 2-RTV-63-392A, RT VLV TO FE-63-159.

_____ 1st

_____ CV

[77] **REMOVE** Ultrasonic Flow Meter from the 1" Accumulator Fill Line.

_____ 1st

_____ CV

[78] **NOTIFY** Hot Functional Test Director that Subsection 6.1 is complete.

_____

Date _____

6.2 RCS Boundary Ck Valve Flow Test at NOP

NOTE

The Temporary ΔP gauges that are installed are for obtaining qualitative data to provide indication that the associated check valves open.

[1] **VERIFY** all prerequisites listed in Section 4.0 for Subsection 6.2 have been completed. _____

[2] **VERIFY** each of the following temporary differential pressure gauges reads 0 psid (± 0.10 psid):

A. Temporary ΔP gauge at 2-FE-63-27, SIS BORON INJ TNK FLOW TO CL RCS LOOP 4. _____

B. Temporary ΔP gauge at 2-FE-63-29, SIS BORON INJ TNK FLOW TO CL RCS LOOP 3. _____

C. Temporary ΔP gauge at 2-FE-63-31, BORON INJ TNK FLOW TO CL RCS LOOP 2. _____

D. Temporary ΔP gauge at 2-FE-63-33, BORON INJ TANK TO CL RCS LOOP 1. _____

NOTE

If Operating Conditions require CCP-2A-A to be shutdown, CCP 2B-B may be used and vice versa. Annotate any changes in the Chronological Test Log.

[3] **ENSURE** that only one Centrifugal Charging Pump (CCP) 2A-A or 2B-B is running, and indicate below:

Centrifugal Charging Pump Running _____ _____

[4] **ENSURE** the VCT is at a minimum 50% level as observed on 2-LI-62-129, VOL CONT TK LEVEL, on 2-M-6. _____

Date _____

6.2 RCS Boundary Ck Valve Flow Test at NOP (continued)

CAUTIONS

1) The following step may cause fluctuation or drop in seal injection flow to the Reactor Coolant Pumps.
2) Steps 6.2[6] thru 6.2[11] will inject VCT water into the reactor vessel. Close coordination of test activities is necessary to limit the thermal transient on the injection line nozzles to the Reactor Coolant System. Test data should be obtained as quickly as possible.
3) The VCT level should not be allowed to drop below 20%. Low VCT level will automatically shift CVCS suction to the RWST.

[5] **NOTIFY** Operations to adjust charging and letdown to balance centrifugal charging pump injection flow to maintain pressurizer level in an acceptable band. _____

[6] **MANUALLY THROTTLE** 2-FCV-63-25, SIS BORON INJ TANK SHUTOFF VLV, until differential pressure of greater than 0.75 psid is observed on all ΔP gauges from Step 6.2[2]. _____

[7] **RECORD** the differential pressure across 2-FE-63-33, SIS BORON INJ TANK FLOW TO CL RCS LOOP 1.

_____ psid (greater than 0.75 psid)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-586, BORON INJ CHECK CL L1, OPENS with the RCS at normal hot no-load temperature and an RCS pressure of 2235 psig ± 20 psig by ΔP across 2-FE-63-33, SIS BORON INJ TANK TO CL RCS LOOP 1, greater than 0.75 psid.
(ACC. CRIT. 5.0C.1) _____

Date _____

6.2 RCS Boundary Ck Valve Flow Test at NOP (continued)

[8] **RECORD** the differential pressure across 2-FE-63-31, SIS BORON INJ TANK FLOW TO CL RCS LOOP 2.

_____ psid (greater than 0.75 psid)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-587, BORON INJ CHECK CL L2, OPENS with the RCS at normal hot no-load temperature and an RCS pressure of 2235 psig ± 20 psig by ΔP across 2-FE-63-31, SIS BORON INJ TANK TO CL RCS LOOP 2, greater than 0.75 psid.
(ACC. CRIT. 5.0C.2) _____

[9] **RECORD** the differential pressure across 2-FE-63-29, SIS BORON INJ TANK FLOW TO CL RCS LOOP 3.

_____ psid (greater than 0.75 psid)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-588, BORON INJ CHECK CL L3, OPENS with the RCS at normal hot no-load temperature and an RCS pressure of 2235 psig ± 20 psig by ΔP across 2-FE-63-29, SIS BORON INJ TANK TO CL RCS LOOP 3, greater than 0.75 psid.
(ACC. CRIT. 5.0C.3) _____

Date _____

6.2 RCS Boundary Ck Valve Flow Test at NOP (continued)

[10] **RECORD** the differential pressure across 2-FE-63-27, SIS BORON INJ TANK FLOW TO CL RCS LOOP 4.

_____ psid (greater than 0.75 psid)

M&TE _____ Cal Due Date _____ _____

A. **VERIFY** Check Valve 2-CKV-63-589, BORON INJ CHECK CL L4, OPENS with the RCS at normal hot no-load temperature and an RCS pressure of 2235 psig ± 20 psig by ΔP across 2-FE-63-27, SIS BORON INJ TANK TO CL RCS LOOP 4, greater than 0.75 psid. **(ACC. CRIT. 5.0C.4)** _____

CAUTION

The following step may cause fluctuation or increase in Seal Injection Flow to the Reactor Coolant Pumps.

[11] **NOTIFY** Operations to adjust charging and letdown to account for the loss of centrifugal charging pump injection flow to maintain pressurizer level in an acceptable band. _____

Date _____

6.2 RCS Boundary Ck Valve Flow Test at NOP (continued)

[12] **CLOSE** 2-FCV-63-25, SIS BORON INJ TANK SHUTOFF VLV, and **VERIFY**, by light indication at 2-HS-63-25A. BIT OUTLET, valve is CLOSED. _____

A. **NOTIFY** US/SRO/SM to return the following orifice root valves to their normal position per 2-SOI-63.01 ATT 1V:

- 2-RTV-63-407A, RT VLV TO FE-63-33 _____
- 2-RTV-63-408A RT VLV TO FE-63-33 _____
- 2-RTV-63-401A, RT VLV TO FE-63-27 _____
- 2-RTV-63-402A RT VLV TO FE-63-27 _____
- 2-RTV-63-403A, RT VLV TO FE-63-29 _____
- 2-RTV-63-404A RT VLV TO FE-63-29 _____
- 2-RTV-63-405A, RT VLV TO FE-63-31 _____
- 2-RTV-63-406A RT VLV TO FE-63-31 _____

[13] **REMOVE** the Differential Pressure Gauge across 2-FE-63-33, SIS BORON INJ TANK TO CL RCS LOOP 1. _____ 1st _____ CV

A. **INSTALL** Pipe Cap downstream of 2-RTV-63-407A, RT VLV TO FE-63-33. _____ 1st _____ CV

B. **INSTALL** Pipe Cap downstream of 2-RTV-63-408A RT VLV TO FE-63-33. _____ 1st _____ CV

Date _____

6.2 RCS Boundary Ck Valve Flow Test at NOP (continued)

[14] **REMOVE** the Differential Pressure Gauge across 2-FE-63-27, SIS BORON INJ TANK TO CL RCS LOOP 4.

_____ 1st

_____ CV

A. **INSTALL** Pipe Cap downstream of 2-RTV-63-401A, RT VLV TO FE-63-27.

_____ 1st

_____ CV

B. **INSTALL** Pipe Cap downstream of 2-RTV-63-402A RT VLV TO FE-63-27.

_____ 1st

_____ CV

[15] **REMOVE** the Differential Pressure Gauge across 2-FE-63-29, SIS BORON INJ TANK TO CL RCS LOOP 3.

_____ 1st

_____ CV

A. **INSTALL** Pipe Cap downstream of 2-RTV-63-403A, RT VLV TO FE-63-29.

_____ 1st

_____ CV

B. **INSTALL** Pipe Cap downstream of 2-RTV-63-404A RT VLV TO FE-63-29.

_____ 1st

_____ CV

Date _____

6.2 RCS Boundary Ck Valve Flow Test at NOP (continued)

[16] **REMOVE** the Differential Pressure Gauge across 2-FE-63-31, SIS BORON INJ TANK TO CL RCS LOOP 2.

_____ 1st

_____ CV

A. **INSTALL** Pipe Cap downstream of 2-RTV-63-405A, RT VLV TO FE-63-31.

_____ 1st

_____ CV

B. **INSTALL** Pipe Cap downstream of 2-RTV-63-406A RT VLV TO FE-63-31.

_____ 1st

_____ CV

[17] **NOTIFY** Hot Functional Test Director that Subsection 6.2 is complete. _____

Date _____

6.3 RCS Boundary Valve Leakage Testing

6.3.1 Backflow Leakage Test Prep

NOTE

Subsection 6.3 must be performed at normal operating pressure (2235 psig ± 20 psig) to meet acceptance criteria. If at any point, RCS pressure falls out of range, the test is to be suspended until RCS pressure has been restored to normal operational range.

[1] **VERIFY** all prerequisites listed in Section 4.0 for Subsection 6.3 have been completed. _____

[2] **VERIFY/OPEN** valve 0-ISV-62-1080, HOLDUP TANK UNIT 2. _____

[3] **VERIFY/OPEN** valve 2-ISV-62-953, HOLDUP TK IN COLL HDR. _____

[4] **PLACE** Hand Switch 2-HS-63-71A, CKV TEST LINE TO HUT, to OPEN, **AND**

VERIFY 2-FCV-63-71, SIS CHECK VLV LEAK TEST ISOLATION, is OPEN by light indication. _____

[5] **PLACE** Hand Switch 2-HS-63-84, CKV TEST LINE TO HUT, to OPEN, **AND**

VERIFY 2-FCV-63-84, SIS CHECK VLV LEAK TEST ISOL, is OPEN by light indication. _____

Date _____

6.3.1 Backflow Leakage Test Prep (continued)

NOTES

1) The following steps will place a Safety Injection Pump on Mini-Flow for long duration while manipulating Test Line Valves.
2) If Operating Conditions require SI Pump A to be shut down, SI Pump B may be used, and vice versa. Ensure that the outlet pressure is monitored for the appropriate pump discharge. Annotate any changes in the Chronological Test Log.

[6] **PLACE** Hand Switch 2-HS-63-10A, SI PMP A, to START, **AND**

VERIFY by light indication that SAFETY INJECTION PUMP 2A-A is RUNNING. _____

Date _____

6.3.2 Backflow Leakage of 2-CKV-63-581, BORON INJ CHECK

NOTE

The following valve manipulations will be performed from Hand Switch Panel 2-XS-63-100, CKV LEAK TEST, at 2-M-6.

[1] **DEPRESS** Hand Switch 2-HS-63-187, TEST LINE ISOL, to OPEN 2-FCV-63-187, RHR SUPPLY TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[2] **DEPRESS** Hand Switch 2-HS-63-174, BIT OUTLET, to OPEN 2-FCV-63-174, SIS TEST LINE CHECK VLV TEST, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) Isolation of Flow Indicators 2-FI-63-75 and 2-FI-63-76 is defined as having the High Side Valve closed with the equalizing valve open.
2) Placing the Flow Indicator in service is defined as having the equalizing valve closed with the High Side valve open for normal in-service use.

[3] **ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554 (713 A11-V). _____

[4] **ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

[5] **DEPRESS** Hand Switch 2-HS-63-121, SI PMPS TO CL, at 2-XS-63-100, to OPEN 2-FCV-63-121, SIS FLOW TO CL CHECK VLV TEST, **AND**

VERIFY valve OPENS by light indication. _____

Date _____

6.3.2 Backflow Leakage of 2-CKV-63-581, BORON INJ CHECK (continued)

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow. (Panel 2-L-554, A13-V, El. 713)
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[6] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[7] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[8] **ISOLATE** the Flow Indicator used in the previous step. _____

[9] **CALCULATE** a corrected test line leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.2[7], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.2[7] - M&TE Error

_____ - _____ = _____ GPM _____

1st

_____

CV

Date _____

6.3.2 Backflow Leakage of 2-CKV-63-581, BORON INJ CHECK (continued)

NOTE

The following step will provide SI pressure for testing 2-CKV-63-581, BORON INJ CHECK.

[10] **DEPRESS** 2-HS-63-24A, CLA MAKEUP FRM BIT OUTLET, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-24, SIS ACCUM FILL LINE ISOLATION VLV, and

VERIFY valve OPENS by light indication. _____

[11] **PLACE** Flow Indicator(s) in service, as required, to determine Test Line leakage flow in SIS Test Line. _____

[12] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[13] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.2[12]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.2[12] + M&TE Error

_____ + _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.2 Backflow Leakage of 2-CKV-63-581, BORON INJ CHECK (continued)

[14] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS, on 2-M-6.

Test Pressure _____ psig _____

[15] **DEPRESS** Hand Switch 2-HS-63-121, SI PMPS TO CL, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-121, SIS FLOW TO CL CHECK VLV TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[16] **DEPRESS** Hand Switch 2-HS-63-24A, CLA MAKEUP FRM BIT OUTLET, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-24, SIS ACCUM FILL LINE ISOLATION VLV, **AND**

VERIFY valve CLOSES by light indication. _____

[17] **DEPRESS** Hand Switch 2-HS-63-174, BIT OUTLET, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-174, SIS TEST LINE CHECK VLV TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[18] **DEPRESS** Hand Switch 2-HS-63-187, TEST LINE ISOL, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-187, RHR SUPPLY TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[19] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[20] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.2 Backflow Leakage of 2-CKV-63-581, BORON INJ CHECK (continued)

[21] **CALCULATE** 2-CKV-63-581, BORON INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-581 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.2[13] Step 6.3.2[9]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.2 Backflow Leakage of 2-CKV-63-581, BORON INJ CHECK (continued)

[22] **CALCULATE** 2-CKV-63-581, BORON INJ CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-581 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.2[21]

TEST PRESSURE = 6.3.2[14]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

_____ $\times \sqrt{2235 \div}$ _____ =

_____ GPM

Calculations Performed By _____ (Initials) _____ (Date)

Calculations Verified By _____ (Initials) _____ (Date)

[23] **VERIFY** the leakage flow for 2-CKV-63-581, BORON INJ CHECK, recorded in Step 6.3.2[22] is less than or equal to 1.5 gpm. **(ACC. CRIT. 5.0D.1)** _____

[24] **RECORD** leakage flow from Step 6.3.2[22] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.3 Backflow Leakage of 2-CKV-63-543, SIS L1 HL INJ CHECK

NOTE

The following valve manipulations will be performed from Hand Switch Panel 2-XS-63-100, CKV LEAK TEST, at 2-M-6.

[1] **DEPRESS** Hand Switch 2-HS-63-117, SI PMPS TO CL 1, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-117, SIS CL 1 CHECK VLV LEAK TEST, **AND**

VERIFY valve OPENS by light indication. _____

[2] **DEPRESS** Hand Switch 2-HS-63-188, TEST LINE ISOL, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-188, RHR SUPPLY TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[3] **DEPRESS** Hand Switch 2-HS-63-21, TO HL 1&3, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-21, SIS PUMP OUTLET TO SIS TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[4] **PLACE** Flow Indicator(s) in service, as required, to determine background test line leakage flow in SIS Test Line. _____

Date _____

6.3.3 Backflow Leakage of 2-CKV-63-543, SIS L1 HL INJ CHECK (continued)

[5] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[6] **ISOLATE** the Flow Indicator used in the previous step. _____

[7] **CALCULATE** a corrected Test Line leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.3[5], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.3[5] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide SI pressure for testing 2-CKV-63-543, SIS L1 HL INJ CHECK.

[8] **DEPRESS** 2-HS-63-163, SI-RHR TO HL 1 at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-163, RCS LP 1 HL FEED TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[9] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

Date _____

6.3.3 Backflow Leakage of 2-CKV-63-543, SIS L1 HL INJ CHECK (continued)

[10] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[11] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.3[10]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.3[10] + M&TE Error

_____ + _____ = _____ GPM _____ 1st

_____ CV

[12] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[13] **DEPRESS** Hand Switch 2-HS-63-163, SI-RHR TO HL 1, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-163, RCS LP 1 HL FEED TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[14] **DEPRESS** Hand Switch 2-HS-63-21, TO HL 1 & 3, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-21, SIS PUMP OUTLET TO SIS TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

Date _____

6.3.3 Backflow Leakage of 2-CKV-63-543, SIS L1 HL INJ CHECK (continued)

[15] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[16] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

[17] **CALCULATE** 2-CKV-63-543, SIS L1 HL INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-543 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.3[11] Step 6.3.3[7]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.3 Backflow Leakage of 2-CKV-63-543, SIS L1 HL INJ CHECK (continued)

[18] **CALCULATE** 2-CKV-63-543, SIS L1 HL INJ CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-543 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.3[17]

TEST PRESSURE = 6.3.3[12]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

_____ $\times \sqrt{2235 \div}$ _____ =

_____ GPM

Calculations Performed By _____ Initials _____ Date

Calculations Verified By _____ Initials _____ Date

[19] **VERIFY** the leakage flow for 2-CKV-63-543, SIS L1 HL INJ CHECK, recorded in Step 6.3.3[18] is less than or equal to 1.0 gpm. **(ACC. CRIT. 5.0D.2)** _____

[20] **RECORD** leakage flow from Step 6.3.3[18] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.4 Backflow Leakage of 2-CKV-63-640, RHR HX DISCH CHECK

[1] **DEPRESS** Hand Switch 2-HS-63-158, RHR TO HL, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-158, RHR FROM SIS SAMPLE, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[2] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[3] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[4] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.4 Backflow Leakage of 2-CKV-63-640, RHR HX DISCH CHECK (continued)

[5] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.4[3], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.4[3] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide SI pressure for testing 2-CKV-63-640, RHR HX DISCH CHECK.

[6] **DEPRESS** 2-HS-63-163, SI-RHR TO HL 1 at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-163, RCS LP 1 HL FEED TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[7] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[8] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.4 Backflow Leakage of 2-CKV-63-640, RHR HX DISCH CHECK (continued)

[9] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.4[8]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.4[8] + M&TE Error

_____ + _____ = _____ GPM _____ 1st _____ CV

[10] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[11] **DEPRESS** Hand Switch 2-HS-63-163, SI-RHR TO HL 1, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-163, RCS LP 1 HL FEED TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[12] **DEPRESS** Hand Switch 2-HS-63-158, RHR TO HL, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-158, RHR RETURN FROM SIS SAMPLE, **AND**

VERIFY valve CLOSES by light indication. _____

[13] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[14] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.4 Backflow Leakage of 2-CKV-63-640, RHR HX DISCH CHECK (continued)

[15] **CALCULATE** 2-CKV-63-640, RHR HX DISCH CHECK, backflow leakage at test pressure as follows:

2-CKV-63-640 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.4[9] Step 6.3.4[5]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[16] **CALCULATE** 2-CKV-63-640, RHR HX DISCH CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-640 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.4[15]

TEST PRESSURE = 6.3.4[10]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

$$_____ \times \sqrt{2235 \div _____} =$$

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.4 Backflow Leakage of 2-CKV-63-640, RHR HX DISCH CHECK (continued)

[17] **VERIFY** the leakage flow for 2-CKV-63-640, RHR HX DISCH CHECK, recorded in Step 6.3.4[16] is less than or equal to 4.0 gpm. **(ACC. CRIT. 5.0D.3)** _____

[18] **RECORD** leakage flow from Step 6.3.4[16] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.5 Backflow Leakage of 2-CKV-63-545, SIS L3 HL INJ CHECK

[1] **DEPRESS** Hand Switch 2-HS-63-21, TO HL 1&3, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-21, SIS PUMP OUTLET TO SIS TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[2] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[3] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[4] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.5 Backflow Leakage of 2-CKV-63-545, SIS L3 HL INJ CHECK (continued)

[5] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.5[3], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.5[3] - M&TE Error

_____ - _____ = _____ GPM _____ 1st

_____ CV

NOTE

The following step will provide SI pressure for testing 2-CKV-63-545, SIS L3 HL INJ CHECK.

[6] **DEPRESS** 2-HS-63-164, SI-RHR TO HL 3, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-164, RCS LP 3 HL FEED TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[7] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[8] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.5 Backflow Leakage of 2-CKV-63-545, SIS L3 HL INJ CHECK (continued)

[9] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.5[8]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.5[8] + M&TE Error

_____ + _____ = _____ GPM

_____ 1st

_____ CV

[10] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[11] **DEPRESS** Hand Switch 2-HS-63-164, SI-RHR TO HL 3, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-164, RCS LP 3 HL FEED TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[12] **DEPRESS** Hand Switch 2-HS-63-21, TO HL 1 & 3, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-21, SIS PUMP OUTLET TO SIS TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[13] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[14] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.5 Backflow Leakage of 2-CKV-63-545, SIS L3 HL INJ CHECK (continued)

[15] **CALCULATE** 2-CKV-63-545, SIS L3 HL INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-545 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.5[9] Step 6.3.5[5]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[16] **CALCULATE** 2-CKV-63-545, SIS L3 HL INJ CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-545 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.5[15]

TEST PRESSURE = 6.3.5[10]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

$$_____ \times \sqrt{2235 \div _____} =$$

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.5 Backflow Leakage of 2-CKV-63-545, SIS L3 HL INJ CHECK (continued)

[17] **VERIFY** the leakage flow for 2-CKV-63-545, SIS L3 HL INJ CHECK, recorded in Step 6.3.5[16] is less than or equal to 1.0 gpm. **(ACC. CRIT. 5.0D.4)** _____

[18] **RECORD** leakage flow from Step 6.3.5[16] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.6 Backflow Leakage of 2-CKV-63-643, RHR HX DISCH CHECK

[1] **DEPRESS** Hand Switch 2-HS-63-158, RHR TO HL, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-158, RHR FROM SIS SAMPLE, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[2] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[3] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[4] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.6 Backflow Leakage of 2-CKV-63-643, RHR HX DISCH CHECK (continued)

[5] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.6[3], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.6[3] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide SI pressure for testing 2-CKV-63-643, RHR HX DISCH CHECK.

[6] **DEPRESS** 2-HS-63-164, SI-RHR TO HL 3 at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-164, RCS LP 3 HL FEED TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[7] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

Date _____

6.3.6 Backflow Leakage of 2-CKV-63-643, RHR HX DISCH CHECK (continued)

[8] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[9] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.6[8]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.6[8] + M&TE Error

_____ + _____ = _____ GPM _____ 1st

_____ CV

[10] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[11] **DEPRESS** Hand Switch 2-HS-63-164, SI-RHR TO HL 3, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-164, RCS LP 3 HL FEED TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[12] **DEPRESS** Hand Switch 2-HS-63-158, RHR TO HL, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-158, RHR RETURN FROM SIS SAMPLE, **AND**

VERIFY valve CLOSES by light indication. _____

Date _____

6.3.6 Backflow Leakage of 2-CKV-63-643, RHR HX DISCH CHECK (continued)

[13] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[14] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

[15] **CALCULATE** 2-CKV-63-643, RHR HX DISCH CHECK, backflow leakage at test pressure as follows:

2-CKV-63-643 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.6[9] Step 6.3.6[5]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.6 Backflow Leakage of 2-CKV-63-643, RHR HX DISCH CHECK (continued)

[16] **CALCULATE** 2-CKV-63-643, RHR HX DISCH CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-643 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.6[15]

TEST PRESSURE = 6.3.6[10]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

_____ $\times \sqrt{2235 \div}$ _____ =

_____ GPM

Calculations Performed By _____ (Initials) _____ (Date)

Calculations Verified By _____ (Initials) _____ (Date)

[17] **VERIFY** the leakage flow for 2-CKV-63-643, RHR HX DISCH CHECK, recorded in Step 6.3.6[16] is less than or equal to 4.0 gpm. **(ACC. CRIT. 5.0D.5)** _____

[18] **RECORD** leakage flow from Step 6.3.6[16] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.7 Backflow Leakage of 2-CKV-63-549, SIS L4 HL INJ CHECK

[1] **DEPRESS** Hand Switch 2-HS-63-167, TO HL 2&4, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-167, SIS PUMP OUT TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[2] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[3] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[4] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.7 Backflow Leakage of 2-CKV-63-549, SIS L4 HL INJ CHECK (continued)

[5] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.7[3], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.7[3] - M&TE Error

_____ - _____ = _____ GPM _____ 1st

_____ CV

NOTE

The following step will provide SI pressure for testing 2-CKV-63-549, SIS L4 HL INJ CHECK.

[6] **DEPRESS** 2-HS-63-166, SI-RHR TO HL 4, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-166, RCS LP 4 HL FEED TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[7] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[8] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.7 Backflow Leakage of 2-CKV-63-549, SIS L4 HL INJ CHECK (continued)

[9] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.7[8]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.7[8] + M&TE Error

_____+ _____ = _____ GPM

_____ 1st

_____ CV

[10] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[11] **DEPRESS** Hand Switch 2-HS-63-166, SI-RHR TO HL 4, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-166, RCS LP 4 HL FEED TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[12] **DEPRESS** Hand Switch 2-HS-63-167, TO HL 2 & 4, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-167, SIS PUMP OUTLET TO SIS TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[13] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[14] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.7 Backflow Leakage of 2-CKV-63-549, SIS L4 HL INJ CHECK (continued)

[15] **CALCULATE** 2-CKV-63-549, SIS L4 HL INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-549 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.7[9] Step 6.3.7[5]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[16] **CALCULATE** 2-CKV-63-549, SIS L4 HL INJ CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-549 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.7[15]

TEST PRESSURE = 6.3.7[10]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

$$_____ \times \sqrt{2235 \div _____} =$$

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.7 Backflow Leakage of 2-CKV-63-549, SIS L4 HL INJ CHECK (continued)

[17] **VERIFY** the leakage flow for 2-CKV-63-549, SIS L4 HL INJ CHECK, recorded in Step 6.3.7[16] is less than or equal to 1.0 gpm. **(ACC. CRIT. 5.0D.6)** _____

[18] **RECORD** leakage flow from Step 6.3.7[16] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.8 Backflow Leakage of 2-CKV-63-547, SIS L2 HL INJ CHECK

[1] **DEPRESS** Hand Switch 2-HS-63-167, TO HL 2&4, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-167, SIS PUMP OUT TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[2] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[3] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[4] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.8 Backflow Leakage of 2-CKV-63-547, SIS L2 HL INJ CHECK (continued)

[5] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.8[3], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.8[3] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide SI pressure for testing 2-CKV-63-547, SIS L2 HL INJ CHECK.

[6] **DEPRESS** 2-HS-63-165, SI-RHR TO HL 2, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-165, RCS LP 2 HL FEED TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[7] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[8] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.8 Backflow Leakage of 2-CKV-63-547, SIS L2 HL INJ CHECK (continued)

[9] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.8[8]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.8[8] + M&TE Error

_____ + _____ = _____ GPM

_____ 1st

_____ CV

[10] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[11] **DEPRESS** Hand Switch 2-HS-63-165, SI-RHR TO HL 2, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-165, RCS LP 2 HL FEED TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[12] **DEPRESS** Hand Switch 2-HS-63-167, TO HL 2 & 4, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-167, SIS PUMP OUT TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[13] **DEPRESS** Hand Switch 2-HS-63-117, SI PMPS TO CL 1, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-117, SIS CL 1 CHECK VLV LEAK TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[14] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

Date _____

6.3.8 Backflow Leakage of 2-CKV-63-547, SIS L2 HL INJ CHECK (continued)

[15] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

[16] **CALCULATE** 2-CKV-63-547, SIS L2 HL INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-547 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.8[9] Step 6.3.8[5]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.8 Backflow Leakage of 2-CKV-63-547, SIS L2 HL INJ CHECK (continued)

[17] **CALCULATE** 2-CKV-63-547, SIS L2 HL INJ CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-547 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.8[16]

TEST PRESSURE = 6.3.8[10]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

_____ $\times \sqrt{2235 \div$ _____ $} =$

_____ GPM

Calculations Performed By _____ Initials _____ Date

Calculations Verified By _____ Initials _____ Date

[18] **VERIFY** the leakage flow for 2-CKV-63-547, SIS L2 HL INJ CHECK, recorded in Step 6.3.8[17] is less than or equal to 1.0 gpm. **(ACC. CRIT. 5.0D.7)** _____

[19] **RECORD** leakage flow from Step 6.3.8[17] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.9 Backflow Leakage of 2-CKV-63-551, SIS L1 CL INJ CHECK

[1] **PLACE** Hand Switch 2-HS-63-22A, SI PMPS TO CL 1-2-3-4, to CLOSE **AND**

VERIFY valve 2-FCV-63-22, SIS PUMP COLD LEG INJ, is CLOSED by light indication. _____

[2] **PLACE** Hand Switch 2-HS-63-157A, SI PMP B TO HL 2&4, to OPEN **AND**

VERIFY valve 2-FCV-63-157, SIS PUMP OUT RCS LP 2&4 HL, is OPEN by light indication. _____

NOTE

The following valve manipulations will be performed from Hand Switch Panel 2-XS-63-100, CKV LEAK TEST, at 2-M-6.

[3] **DEPRESS** Hand Switch 2-HS-63-117, SI PMPS TO CL 1, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-117, SIS CL 1 CHECK VLV LEAK TEST, **AND**

VERIFY valve OPENS by light indication. _____

[4] **DEPRESS** Hand Switch 2-HS-63-121, SI PMPS TO CL, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-121, SIS FLOW TO CL CHECK VLV TEST, **AND**

VERIFY valve OPENS by light indication. _____

Date _____

6.3.9 Backflow Leakage of 2-CKV-63-551, SIS L1 CL INJ CHECK (continued)

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[5] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[6] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[7] **ISOLATE** the Flow Indicator used in the previous step. _____

[8] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.9[6], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.9[6] - M&TE Error

_____ - _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.9 Backflow Leakage of 2-CKV-63-551, SIS L1 CL INJ CHECK (continued)

NOTE

The following step will provide SI pressure for testing 2-CKV-63-551, SIS L1 CL INJ CHECK.

[9] **DEPRESS** 2-HS-63-165, SI-RHR TO HL 2, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-165, RCS LP 2 HL FEED TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[10] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[11] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[12] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.9[11]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.9[11] + M&TE Error

_____ + _____ = _____ GPM _____

1st

_____

CV

Date _____

6.3.9 Backflow Leakage of 2-CKV-63-551, SIS L1 CL INJ CHECK (continued)

[13] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[14] **DEPRESS** Hand Switch 2-HS-63-165, SI-RHR TO HL 2, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-165, RCS LP 2 HL FEED TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[15] **DEPRESS** Hand Switch 2-HS-63-121, SI PMPS TO CL, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-121, SIS FLOW TO CL CHECK VLV TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[16] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[17] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

[18] **CALCULATE** 2-CKV-63-551, SIS L1 CL INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-551 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.9[12] Step 6.3.9[8]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.9 Backflow Leakage of 2-CKV-63-551, SIS L1 CL INJ CHECK (continued)

[19] **CALCULATE** 2-CKV-63-551, SIS L1 HL INJ CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-551 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.9[18]

TEST PRESSURE = 6.3.9[13]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

_____ $\times \sqrt{2235 \div}$ _____ =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[20] **VERIFY** the leakage flow for 2-CKV-63-551, SIS L1 CL INJ CHECK, recorded in Step 6.3.9[19] is less than or equal to 1.0 gpm. **(ACC. CRIT. 5.0D.8)** _____

[21] **RECORD** leakage flow from Step 6.3.9[19] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.10 Backflow Leakage of 2-CKV-63-633, RHR PUMP DISCH CHECK:

[1] **DEPRESS** Hand Switch 2-HS-63-112, RHR TO CL 1&4, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-112, SIS CHECK VLV LEAK TEST ISOLATION VLV, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[2] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[3] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[4] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.10 Backflow Leakage of 2-CKV-63-633, RHR PUMP DISCH CHECK: (continued)

[5] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.10[3], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.10[3] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide SI pressure for testing 2-CKV-63-633, RHR PUMP DISCH CHECK.

[6] **DEPRESS** 2-HS-63-165, SI-RHR TO HL 2, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-165, RCS LP 2 HL FEED TEST LINE, and **VERIFY** valve OPENS by light indication. _____

[7] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[8] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.10 Backflow Leakage of 2-CKV-63-633, RHR PUMP DISCH CHECK: (continued)

[9] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.10[8]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.10[8] + M&TE Error

_____ + _____ = _____ GPM _____ 1st _____ CV

[10] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[11] **DEPRESS** Hand Switch 2-HS-63-117, SI PMPS TO CL 1, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-117, SIS CL 1 CHECK VLV LEAK TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[12] **DEPRESS** Hand Switch 2-HS-63-112, RHR TO CL 1&4, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-112, SIS CHECK VLV LEAK TEST ISOLATION VLV, **AND**

VERIFY valve CLOSES by light indication. _____

[13] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[14] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.10 Backflow Leakage of 2-CKV-63-633, RHR PUMP DISCH CHECK: (continued)

[15] **CALCULATE** 2-CKV-63-633, RHR PUMP DISCH CHECK, backflow leakage at test pressure as follows:

2-CKV-63-633 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.10[9] Step 6.3.10[5]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[16] **CALCULATE** 2-CKV-63-633, RHR PUMP DISCH CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-633 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.10[15]

TEST PRESSURE = 6.3.10[10]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

$$_____ \times \sqrt{2235 \div _____} =$$

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.10 Backflow Leakage of 2-CKV-63-633, RHR PUMP DISCH CHECK: (continued)

[17] **VERIFY** the leakage flow for 2-CKV-63-633, RHR PUMP DISCH CHECK, recorded in Step 6.3.10[16] is less than or equal to 3.0 gpm. **(ACC. CRIT. 5.0D.9)** _____

[18] **RECORD** leakage flow from Step 6.3.10[16] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.11 Backflow Leakage of 2-CKV-63-553, SIS L2 CL INJ CHECK

[1] **DEPRESS** Hand Switch 2-HS-63-121,SI PMPS TO CL, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-121, SIS FLOW TO CL CHECK VLV TEST, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[2] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[3] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[4] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.11 Backflow Leakage of 2-CKV-63-553, SIS L2 CL INJ CHECK (continued)

[5] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.11[3], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.11[3] - M&TE Error

_____ - _____ = _____ GPM _____ 1st

_____ CV

NOTE

The following step will provide SI pressure for testing 2-CKV-63-553, SIS L2 CL INJ CHECK.

[6] **DEPRESS** 2-HS-63-97, SI PMPS TO CL 2, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-97, SIS CL 2 CHECK VLV LEAK TEST, **AND**

VERIFY valve OPENS by light indication. _____

[7] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[8] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.11 Backflow Leakage of 2-CKV-63-553, SIS L2 CL INJ CHECK (continued)

[9] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.11[8]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.11[8] + M&TE Error

_____ + _____ = _____ GPM _____ 1st _____ CV

[10] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[11] **DEPRESS** Hand Switch 2-HS-63-165, SI-RHR TO HL 2, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-165, RCS LP 2 HL FEED TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[12] **DEPRESS** Hand Switch 2-HS-63-121, SI PMPS TO CL, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-121, SIS FLOW TO CL CHECK VLV TEST, AND

VERIFY valve CLOSES by light indication. _____

[13] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[14] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.11 Backflow Leakage of 2-CKV-63-553, SIS L2 CL INJ CHECK (continued)

[15] **CALCULATE** 2-CKV-63-553, SIS L2 CL INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-553 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.11[9] Step 6.3.11[5]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[16] **CALCULATE** 2-CKV-63-553, SIS L2 HL INJ CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-553 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.11[15]

TEST PRESSURE = 6.3.11[10]

$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$

_____ $\times \sqrt{2235 \div$ _____ $} =$

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.11 Backflow Leakage of 2-CKV-63-553, SIS L2 CL INJ CHECK (continued)

[17] **VERIFY** the leakage flow for 2-CKV-63-553, SIS L2 CL INJ CHECK, recorded in Step 6.3.11[16] is less than or equal to 1.0 gpm. **(ACC. CRIT. 5.0D.10)** _____

[18] **RECORD** leakage flow from Step 6.3.11[16] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.12 Backflow Leakage of 2-CKV-63-632, RHR PUMP DISCH CHECK

[1] **DEPRESS** Hand Switch 2-HS-63-111, RHR TO CL 2&3, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-111, SIS CHECK VLV LEAK TEST ISOLATION VLV, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[2] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[3] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[4] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.12 Backflow Leakage of 2-CKV-63-632, RHR PUMP DISCH CHECK (continued)

[5] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.12[3], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.12[3] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide SI pressure for testing 2-CKV-63-632, RHR PUMP DISCH CHECK.

[6] **DEPRESS** 2-HS-63-165, SI-RHR TO HL 2, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-165, RCS LP 2 HL FEED TEST LINE, and

VERIFY valve OPENS by light indication. _____

[7] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[8] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.12 Backflow Leakage of 2-CKV-63-632, RHR PUMP DISCH CHECK (continued)

[9] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.12[8]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.12[8] + M&TE Error

_____ + _____ = _____ GPM

_____ 1st

_____ CV

[10] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[11] **DEPRESS** Hand Switch 2-HS-63-97, SI PMPS TO CL 2, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-97, SIS CL 2 CHECK VLV LEAK TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[12] **DEPRESS** Hand Switch 2-HS-63-111, RHR TO CL 2&3, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-111, SIS CHECK VLV LEAK TEST ISOLATION VLV, **AND**

VERIFY valve CLOSES by light indication. _____

[13] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[14] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.12 Backflow Leakage of 2-CKV-63-632, RHR PUMP DISCH CHECK (continued)

[15] **CALCULATE** 2-CKV-63-632, RHR PUMP DISCH CHECK, backflow leakage at test pressure as follows:

2-CKV-63-632 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.12[9] Step 6.3.12[5]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[16] **CALCULATE** 2-CKV-63-632, RHR PUMP DISCH CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-632 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.12[15]

TEST PRESSURE = 6.3.12[10]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

_____ $\times \sqrt{2235 \div$ _____ $} =$

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.12 Backflow Leakage of 2-CKV-63-632, RHR PUMP DISCH CHECK (continued)

[17] **VERIFY** the leakage flow for 2-CKV-63-632, RHR PUMP DISCH CHECK, recorded in Step 6.3.12[16] is less than or equal to 3.0 gpm. **(ACC. CRIT. 5.0D.11)** _____

[18] **RECORD** leakage flow from Step 6.3.12[16] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.13 Backflow Leakage of 2-CKV-63-555, SIS L3 CL INJ CHECK

[1] **DEPRESS** Hand Switch 2-HS-63-121, SI PMPS TO CL, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-121, SIS FLOW TO CL CHECK VLV TEST, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[2] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[3] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[4] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.13 Backflow Leakage of 2-CKV-63-555, SIS L3 CL INJ CHECK (continued)

[5] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.13[3], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.13[3] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide SI pressure for testing 2-CKV-63-555, SIS L3 CL INJ CHECK.

[6] **DEPRESS** 2-HS-63-79, SI PMPS TO CL 3, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-79, SIS CL 3 CHECK VLV LEAK TEST, **AND**

VERIFY valve OPENS by light indication. _____

[7] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[8] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.13 Backflow Leakage of 2-CKV-63-555, SIS L3 CL INJ CHECK (continued)

[9] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.13[8]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.13[8] + M&TE Error

_____ + _____ = _____ GPM _____ 1st _____ CV

[10] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[11] **DEPRESS** Hand Switch 2-HS-63-165, SI-RHR TO HL 2, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-165, RCS LP 2 HL FEED TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[12] **DEPRESS** Hand Switch 2-HS-63-121, SI PMPS TO CL, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-121, SIS FLOW TO CL CHECK VLV TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[13] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[14] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.13 Backflow Leakage of 2-CKV-63-555, SIS L3 CL INJ CHECK (continued)

[15] **CALCULATE** 2-CKV-63-555, SIS L3 CL INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-555 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.13[9] Step 6.3.13[5]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[16] **CALCULATE** 2-CKV-63-555, SIS L3 HL INJ CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-555 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.13[15]

TEST PRESSURE = 6.3.13[10]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

_____ $\times \sqrt{2235 \div$ _____ $} =$

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.13 Backflow Leakage of 2-CKV-63-555, SIS L3 CL INJ CHECK (continued)

[17] **VERIFY** the leakage flow for 2-CKV-63-555, SIS L3 CL INJ CHECK, recorded in Step 6.3.13[16] is less than or equal to 1.0 gpm. **(ACC. CRIT. 5.0D.12)** _____

[18] **RECORD** leakage flow from Step 6.3.13[16] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.14 Backflow Leakage of 2-CKV-63-634, RHR PUMP DISCH CHECK

[1] **DEPRESS** Hand Switch 2-HS-63-111, RHR TO CL 2&3, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-111, SIS CHECK VLV LEAK TEST ISOLATION VLV, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[2] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[3] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[4] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.14 Backflow Leakage of 2-CKV-63-634, RHR PUMP DISCH CHECK (continued)

[5] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.14[3], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.14[3] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide SI pressure for testing 2-CKV-63-634, RHR PUMP DISCH CHECK.

[6] **DEPRESS** 2-HS-63-165, SI-RHR TO HL 2, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-165, RCS LP 2 HL FEED TEST LINE, AND

VERIFY valve OPENS by light indication. _____

[7] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[8] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.14 Backflow Leakage of 2-CKV-63-634, RHR PUMP DISCH CHECK (continued)

[9] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.14[8]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.14[8] + M&TE Error

_____ + _____ = _____ GPM _____ 1st _____ CV

[10] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[11] **DEPRESS** Hand Switch 2-HS-63-79, SI PMPS TO CL 3, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-79, SIS CL 3 CHECK VLV LEAK TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[12] **DEPRESS** Hand Switch 2-HS-63-111, RHR TO CL 2&3, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-111, SIS CHECK VLV LEAK TEST ISOLATION VLV, and

VERIFY valve CLOSES by light indication. _____

[13] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[14] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.14 Backflow Leakage of 2-CKV-63-634, RHR PUMP DISCH CHECK (continued)

[15] **CALCULATE** 2-CKV-63-634, RHR PUMP DISCH CHECK, backflow leakage at test pressure as follows:

2-CKV-63-634 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.14[9] Step 6.3.14[5]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.14 Backflow Leakage of 2-CKV-63-634, RHR PUMP DISCH CHECK (continued)

[16] **CALCULATE** 2-CKV-63-634, RHR PUMP DISCH CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-634 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.14[15]

TEST PRESSURE = 6.3.14[10]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

_____ $\times \sqrt{2235 \div}$ _____ =

_____ GPM

Calculations Performed By _____ Initials _____ Date

Calculations Verified By _____ Initials _____ Date

[17] **VERIFY** the leakage flow for 2-CKV-63-634, RHR PUMP DISCH CHECK, recorded in Step 6.3.14[16] is less than or equal to 3.0 gpm. **(ACC. CRIT. 5.0D.13)** _____

[18] **RECORD** leakage flow from Step 6.3.14[16] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.15 Backflow Leakage of 2-CKV-63-557, SIS L4 CL INJ CHECK

[1] **DEPRESS** Hand Switch 2-HS-63-121, SI PMPS TO CL, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-121, SIS FLOW TO CL CHECK VLV TEST, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[2] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[3] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[4] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.15 Backflow Leakage of 2-CKV-63-557, SIS L4 CL INJ CHECK (continued)

[5] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.15[3], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.15[3] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide SI pressure for testing 2-CKV-63-557, SIS L4 CL INJ CHECK.

[6] **DEPRESS** 2-HS-63-69, SI PMPS TO CL 4, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-69, SIS CL 4 CHECK VLV LEAK TEST, and

VERIFY valve OPENS by light indication. _____

[7] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[8] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.15 Backflow Leakage of 2-CKV-63-557, SIS L4 CL INJ CHECK (continued)

[9] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.15[8]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.15[8] + M&TE Error

_____ + _____ = _____ GPM

1st _____

CV _____

[10] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[11] **DEPRESS** Hand Switch 2-HS-63-165, SI-RHR TO HL 2, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-165, RCS LP 2 HL FEED TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[12] **DEPRESS** Hand Switch 2-HS-63-121, SI PMPS TO CL, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-121, SIS FLOW TO CL CHECK VLV TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[13] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[14] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.15 Backflow Leakage of 2-CKV-63-557, SIS L4 CL INJ CHECK (continued)

[15] **CALCULATE** 2-CKV-63-557, SIS L4 CL INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-557 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.15[9] Step 6.3.15[5]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[16] **CALCULATE** 2-CKV-63-557, SIS L4 HL INJ CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-557 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.15[15]

TEST PRESSURE = 6.3.15[10]

$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$

_____ $\times \sqrt{2235 \div}$ _____ =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.15 Backflow Leakage of 2-CKV-63-557, SIS L4 CL INJ CHECK (continued)

[17] **VERIFY** the leakage flow for 2-CKV-63-557, SIS L4 CL INJ CHECK, recorded in Step 6.3.15[16] is less than or equal to 1.0 gpm. **(ACC. CRIT. 5.0D.14)** _____

[18] **RECORD** leakage flow from Step 6.3.15[16] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.16 Backflow Leakage of 2-CKV-63-635, RHR PUMP DISCH CHECK

[1] **DEPRESS** Hand Switch 2-HS-63-112, RHR TO CL 1&4, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-112, SIS CHECK VLV LEAK TEST ISOLATION VLV, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[2] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[3] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[4] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.16 Backflow Leakage of 2-CKV-63-635, RHR PUMP DISCH CHECK (continued)

[5] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.16[3], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.16[3] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide SI pressure for testing 2-CKV-63-635, RHR PUMP DISCH CHECK.

[6] **DEPRESS** 2-HS-63-165, SI-RHR TO HL 2, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-165, RCS LP 2 HL FEED TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[7] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[8] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.16 Backflow Leakage of 2-CKV-63-635, RHR PUMP DISCH CHECK (continued)

[9] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.16[8]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.16[8] + M&TE Error

_____ + _____ = _____ GPM _____ 1st _____ CV

[10] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[11] **DEPRESS** Hand Switch 2-HS-63-69, SI PMPS TO CL 4, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-69, SIS CL 4 CHECK VLV LEAK TEST, and

VERIFY valve CLOSES by light indication. _____

[12] **DEPRESS** Hand Switch 2-HS-63-112, RHR TO CL 1&4, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-112, SIS CHECK VLV LEAK TEST ISOLATION VLV, and

VERIFY valve CLOSES by light indication. _____

[13] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[14] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.16 Backflow Leakage of 2-CKV-63-635, RHR PUMP DISCH CHECK (continued)

[15] **CALCULATE** 2-CKV-63-635, RHR PUMP DISCH CHECK, backflow leakage at test pressure as follows:

2-CKV-63-635 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.16[9] Step 6.3.16[5]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[16] **CALCULATE** 2-CKV-63-635, RHR PUMP DISCH CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-635 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.16[15]

TEST PRESSURE = 6.3.16[10]

$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$

_____ $\times \sqrt{2235 \div$ _____ $} =$

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.16 Backflow Leakage of 2-CKV-63-635, RHR PUMP DISCH CHECK (continued)

[17] **VERIFY** the leakage flow for 2-CKV-63-635, RHR PUMP DISCH CHECK, recorded in Step 6.3.16[16] is less than or equal to 3.0 gpm. **(ACC. CRIT. 5.0D.15)** _____

[18] **RECORD** leakage flow from Step 6.3.16[16] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.17 Backflow Leakage of 2-FCV-74-2, RHR SYSTEM ISOLATION VALVE, and 2-FCV-74-8, RHR SYSTEM ISOLATION BYPASS VALVE.

NOTE

This subsubsection, 6.3.17, will require the RHR pumps to be isolated from the RWST and RCS Boundaries.

[1] **RECORD** the "as found" position for the following:

A. 2-HS-74-10A, RHR PUMP 2A-A (2-M-6)

As found position: _____ _____

B. 2-HS-74-20A, RHR PUMP 2B-B (2-M-6)

As found position: _____ _____

[2] **VERIFY/PLACE** the following Hand Switches to PULL TO LOCK:

A. 2-HS-74-10A, RHR PUMP 2A-A (2-M-6) _____

B. 2-HS-74-20A, RHR PUMP 2B-B (2-M-6) _____

[3] **PLACE** Hand Switch 2-HS-63-185, RHR SUPPLY TEST LINE VALVE, to OPEN, **AND**

VERIFY valve 2-FCV-63-185, RHR SUPPLY TEST LINE, OPENS by light indication. _____

[4] **PLACE** Hand Switch 2-HS-63-1, RHR PUMPS A-A & B-B SUCTION FROM RWST, to CLOSE 2-FCV-63-1, RWST TO RHR PUMP FLOW CNTL VLV, **AND**

VERIFY valve CLOSES by light indication. _____

Date _____

6.3.17 Backflow Leakage of 2-FCV-74-2, RHR SYSTEM ISOLATION VALVE, and 2-FCV-74-8, RHR SYSTEM ISOLATION BYPASS VALVE. (continued)

[5] **RECORD** the "as found" position for the following:

A. 2-HS-74-3, RHR PUMP A-A INLET FLOW CONTROL VLV (2-M-6)

As found position: _____ _____

B. 2-HS-74-21, RHR PUMP B-B INLET FLOW CONTROL VLV (2-M-6)

As found position: _____ _____

[6] **VERIFY/CLOSE** the following valves:

A. 2-FCV-74-3, RHR PUMP A-A INLET FLOW CONTROL VLV _____

B. 2-FCV-74-21, RHR PUMP B-B INLET FLOW CONTROL VLV _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[7] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

Date _____

6.3.17 Backflow Leakage of 2-FCV-74-2, RHR SYSTEM ISOLATION VALVE, and 2-FCV-74-8, RHR SYSTEM ISOLATION BYPASS VALVE. (continued)

[8] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[9] **ISOLATE** the Flow Indicator used in the previous step. _____

[10] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.17[8], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.17[8] - M&TE Error

_____ - _____ = _____ GPM _____ 1st

_____ CV

NOTE

The following step will provide SI Pressure for testing 2-FCV-74-2, RHR SYSTEM ISOLATION VALVE, and 2-FCV-74-8, RHR SYSTEM ISOLATION BYPASS VALVE.

[11] **DEPRESS** 2-HS-63-186, BETWEEN FCV-74-2, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-186, RHR SUPPLY TEST LINE, and

VERIFY valve OPENS by light indication. _____

[12] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

Date _____

6.3.17 Backflow Leakage of 2-FCV-74-2, RHR SYSTEM ISOLATION VALVE, and 2-FCV-74-8, RHR SYSTEM ISOLATION BYPASS VALVE. (continued)

[13] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[14] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.17[13]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.17[13] + M&TE Error

_____ + _____ = _____ GPM _____ 1st

_____ CV

[15] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[16] **DEPRESS** 2-HS-63-186, BETWEEN FCV-74-2, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-186, RHR SUPPLY TEST LINE, AND

VERIFY valve CLOSES by light indication. _____

Date _____

6.3.17 Backflow Leakage of 2-FCV-74-2, RHR SYSTEM ISOLATION VALVE, and 2-FCV-74-8, RHR SYSTEM ISOLATION BYPASS VALVE.
(continued)

[17] **PLACE** 2-HS-63-185, RHR SUPPLY TEST LINE VALVE, to CLOSE 2-FCV-63-185, RHR SUPPLY TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[18] **DEPRESS** 2-HS-63-165, SI-RHR TO HL 2, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-165, RCS LP 2 HL FEED TEST LINE, AND

VERIFY valve CLOSES by light indication. _____

[19] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[20] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

[21] **VERIFY/PLACE** the following valves to the "as found" position as recorded in Step 6.3.17[5]:

A. 2-FCV-74-3, RHR PUMP A-A INLET FLOW CONTROL VLV

6.3.17[5]A As found position: _____ _____

B. 2-FCV-74-21, RHR PUMP B-B INLET FLOW CONTROL VLV

6.3.17[5]B As found position: _____ _____

[22] **PLACE** Hand Switch 2-HS-63-1, RHR PUMPS A-A & B-B SUCTION FROM RWST, to OPEN 2-FCV-63-1, RWST TO RHR PUMP FLOW CNTL VLV, **AND**

VERIFY valve OPENS by light indication. _____

Date _____

6.3.17 Backflow Leakage of 2-FCV-74-2, RHR SYSTEM ISOLATION VALVE, and 2-FCV-74-8, RHR SYSTEM ISOLATION BYPASS VALVE. (continued)

[23] **VERIFY/PLACE** the following Hand Switches to the "as found" position as recorded in Step 6.3.17[1]:

A. 2-HS-74-10A, RHR PUMP 2A-A)

6.3.17[1]A As found position: _____ _____

B. 2-HS-74-20A, RHR PUMP 2B-B)

6.3.17[1]B As found position: _____ _____

[24] **CALCULATE** 2-FCV-74-2, RHR SYSTEM ISOLATION VALVE, 2-FCV-74-8, RHR SYSTEM ISOLATION BYPASS VALVE, backflow leakage at test pressure as follows:

2-FCV-74-2 and 2-FCV-74-8 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.17[14] Step 6.3.17[10]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.17 Backflow Leakage of 2-FCV-74-2, RHR SYSTEM ISOLATION VALVE, and 2-FCV-74-8, RHR SYSTEM ISOLATION BYPASS VALVE. (continued)

[25] **CALCULATE** 2-FCV-74-2, RHR SYSTEM ISOLATION VALVE, 2-FCV-74-8, RHR SYSTEM ISOLATION BYPASS VALVE, backflow leakage at test pressure as follows:

2-FCV-74-2 and 2-FCV-74-8 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.17[24]

TEST PRESSURE = 6.3.17[15]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

_____ $\times \sqrt{2235 \div$ _____ $} =$

_____ GPM

Calculations Performed By _____ (Initials) _____ (Date)

Calculations Verified By _____ (Initials) _____ (Date)

[26] **VERIFY** the combined leakage flow for 2-FCV-74-2, RHR SYSTEM ISOLATION VALVE, and 2-FCV-74-8, RHR SYSTEM ISOLATION BYPASS VALVE, recorded in Step 6.3.17[25] is less than or equal to 5.0 gpm. **(ACC. CRIT. 5.0D.16)** _____

[27] **PLACE** 2-HS-63-157A, SI PMP B TO HL 2&4, to CLOSE, **AND**

VERIFY valve 2-FCV-63-157, SIS PUMP OUT RCS LP 2&4 HL, is CLOSED by light indication. _____

[28] **PLACE** 2-HS-63-22A, SI PMPS TO CL 1-2-3-4, to OPEN, and VERIFY Valve 2-FCV-63-22, SIS PUMP COLD LEG INJ, is OPEN by light indication. _____

Date _____

6.3.17 Backflow Leakage of 2-FCV-74-2, RHR SYSTEM ISOLATION VALVE, and 2-FCV-74-8, RHR SYSTEM ISOLATION BYPASS VALVE. (continued)

[29] **RECORD** leakage flow from Step 6.3.17[25] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.18 Backflow Leakage of 2-CKV-63-622, ACCUM 1 OUT CHECK.

NOTE

Subsubsections 6.3.18, 6.3.19, 6.3.20, and 6.3.21 require the isolation of Accumulators 1, 2, 3, and 4 from the RCS Boundary.

[1] **DEPRESS** 2-HS-63-188, TEST LINE ISOL, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-188, RHR SUPPLY TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[2] **DEPRESS** 2-HS-63-187, TEST LINE ISOL, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-187, RHR SUPPLY TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[3] **RECORD** "as found" position of 2-HS-63-118A, CL ACCUM 1 OUTLET.

As Found position: _____ _____

[4] **VERIFY/CLOSE** 2-FCV-63-118, SIS ACCUM TK 1 FLOW ISOLATION VLV. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[5] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

Date _____

6.3.18 Backflow Leakage of 2-CKV-63-622, ACCUM 1 OUT CHECK. (continued)

[6] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[7] **ISOLATE** the Flow Indicator used in the previous step. _____

[8] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.18[6], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.18[6] - M&TE Error

_____ - _____ = _____ GPM _____ 1st

_____ CV

NOTE

The following step will provide leakage path for testing 2-CKV-63-622, ACCUM 1 OUT CHECK.

[9] **DEPRESS** 2-HS-63-116, CL ACCUM 1, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-116, SIS ACCUM TK 1 CHECK VLV LEAK TEST, **AND**

VERIFY valve OPENS by light indication. _____

[10] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

Date _____

6.3.18 Backflow Leakage of 2-CKV-63-622, ACCUM 1 OUT CHECK. (continued)

[11] **WAIT** for flow to stabilize,

RECORD the total leakage flow indicated by 2-FI-63-76 (2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[12] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.18[11]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.18[11] + M&TE Error

_____ + _____ = _____ GPM _____ 1st

_____ CV

[13] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[14] **DEPRESS** 2-HS-63-116, CL ACCUM 1, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-116, SIS ACCUM TK 1 CHECK VLV LEAK TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[15] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

Date _____

6.3.18 Backflow Leakage of 2-CKV-63-622, ACCUM 1 OUT CHECK. (continued)

[16] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

[17] **CALCULATE** 2-CKV-63-622, ACCUM 1 OUT CHECK, backflow leakage at test pressure as follows:

2-CKV-63-622 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.18[12] Step 6.3.18[8]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.18 Backflow Leakage of 2-CKV-63-622, ACCUM 1 OUT CHECK. (continued)

[18] **CALCULATE** 2-CKV-63-622, ACCUM 1 OUT CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-622 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.18[17]

TEST PRESSURE = 6.3.18[13]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

_____ $\times \sqrt{2235 \div}$ _____ =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[19] **VERIFY** the leakage flow for 2-CKV-63-622, ACCUM 1 OUT CHECK, recorded in Step 6.3.18[18] is less than or equal to 5.0 gpm. **(ACC. CRIT. 5.0D.17)** _____

[20] **VERIFY/PLACE** 2-FCV-63-118, SIS ACCUM TK 1 FLOW ISOLATION VLV, to the "as found" position as recorded in Step 6.3.18[3].

6.3.18[3] As Found position: _____ _____

[21] **RECORD** leakage flow from Step 6.3.18[18] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.19 Backflow Leakage of 2-CKV-63-623, ACCUM 2 OUT CHECK.

[1] **RECORD** "as found" position of 2-HS-63-98A, CL ACCUM 2 OUTLET.

As Found position: _____ _____

[2] **VERIFY/CLOSE** 2-FCV-63-98, SIS ACCUM TK 2 FLOW ISOLATION VLV. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[3] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[4] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[5] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.19 Backflow Leakage of 2-CKV-63-623, ACCUM 2 OUT CHECK. (continued)

[6] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.19[4], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.19[4] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide leakage path for testing 2-CKV-63-623, ACCUM 2 OUT CHECK.

[7] **DEPRESS** 2-HS-63-96, CL ACCUM 2, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-96, SIS ACCUM TK 2 CHECK VLV LEAK TEST, **AND**

VERIFY valve OPENS by light indication. _____

[8] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[9] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.19 Backflow Leakage of 2-CKV-63-623, ACCUM 2 OUT CHECK. (continued)

[10] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.19[9]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.19[9] + M&TE Error

_____ + _____ = _____ GPM

_____ 1st

_____ CV

[11] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[12] **DEPRESS** 2-HS-63-96, CL ACCUM 2, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-96, SIS ACCUM TK 2 CHECK VLV LEAK TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[13] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[14] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.19 Backflow Leakage of 2-CKV-63-623, ACCUM 2 OUT CHECK. (continued)

[15] **CALCULATE** 2-CKV-63-623, ACCUM 2 OUT CHECK, backflow leakage at test pressure as follows:

2-CKV-63-623 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.19[10] Step 6.3.19[6]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.19 Backflow Leakage of 2-CKV-63-623, ACCUM 2 OUT CHECK. (continued)

[16] **CALCULATE** 2-CKV-63-623, ACCUM 2 OUT CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-623 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.19[15]

TEST PRESSURE = 6.3.19[11]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

_____ $\times \sqrt{2235 \div}$ _____ =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[17] **VERIFY** the leakage flow for 2-CKV-63-623, ACCUM 2 OUT CHECK, recorded in Step 6.3.19[16] is less than or equal to 5.0 gpm. **(ACC. CRIT. 5.0D.18)** _____

[18] **VERIFY/PLACE** 2-FCV-63-98, SIS ACCUM TK 2 FLOW ISOLATION VLV, to the "as found" position as recorded in Step 6.3.19[1].

6.3.19[1] As Found position: _____ _____

[19] **RECORD** leakage flow from Step 6.3.19[16] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.20 Backflow Leakage of 2-CKV-63-624, ACCUM 3 OUT CHECK.

[1] **RECORD** "as found" position of 2-HS-63-80A, CL ACCUM 3 OUTLET.

As Found position: _____ _____

[2] **VERIFY/CLOSE** 2-FCV-63-80, SIS ACCUM TK 3 FLOW ISOLATION VLV. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[3] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[4] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[5] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.20 Backflow Leakage of 2-CKV-63-624, ACCUM 3 OUT CHECK. (continued)

[6] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.20[4], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.20[4] - M&TE Error

_____ - _____ = _____ GPM _____ 1st

_____ CV

NOTE

The following step will provide leakage path for testing 2-CKV-63-624, ACCUM 3 OUT CHECK.

[7] **DEPRESS** 2-HS-63-78, CL ACCUM 3, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-78, SIS ACCUM TK 3 CHECK VLV LEAK TEST, **AND**

VERIFY valve OPENS by light indication. _____

[8] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[9] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.20 Backflow Leakage of 2-CKV-63-624, ACCUM 3 OUT CHECK. (continued)

[10] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.20[9]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.20[9] + M&TE Error

_____ + _____ = _____ GPM _____ 1st _____ CV

[11] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[12] **DEPRESS** 2-HS-63-78, CL ACCUM 3, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-78, SIS ACCUM TK 3 CHECK VLV LEAK TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[13] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[14] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.20 Backflow Leakage of 2-CKV-63-624, ACCUM 3 OUT CHECK. (continued)

[15] **CALCULATE** 2-CKV-63-624, ACCUM 3 OUT CHECK, backflow leakage at test pressure as follows:

2-CKV-63-624 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.20[10] Step 6.3.20[6]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[16] **CALCULATE** 2-CKV-63-624, ACCUM 3 OUT CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-624 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.20[15]

TEST PRESSURE = 6.3.20[11]

$$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$$

_____ $\times \sqrt{2235 \div}$ _____ =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.20 Backflow Leakage of 2-CKV-63-624, ACCUM 3 OUT CHECK. (continued)

[17] **VERIFY** the leakage flow for 2-CKV-63-624, ACCUM 3 OUT CHECK, recorded in Step 6.3.20[16] is less than or equal to 5.0 gpm. **(ACC. CRIT. 5.0D.19)** _____

[18] **VERIFY/PLACE** 2-FCV-63-80, SIS ACCUM TK 3 FLOW ISOLATION VLV, to the "as found" position as recorded in Step 6.3.20[1].

6.3.20[1] As Found position: _____ _____

[19] **RECORD** leakage flow from Step 6.3.20[16] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.21 Backflow Leakage of 2-CKV-63-625, ACCUM 4 OUT CHECK.

[1] **RECORD** "as found" position of 2-HS-63-67A, CL ACCUM 4 OUTLET.

As Found position: _____ _____

[2] **VERIFY/CLOSE** 2-FCV-63-67, SIS ACCUM TK 4 FLOW ISOLATION VLV. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[3] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[4] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[5] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.21 Backflow Leakage of 2-CKV-63-625, ACCUM 4 OUT CHECK. (continued)

[6] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.21[4], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.21[4] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide leakage path for testing 2-CKV-63-625, ACCUM 4 OUT CHECK.

[7] **DEPRESS** 2-HS-63-68, CL ACCUM 4, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-68, SIS ACCUM TK 4 CHECK VLV LEAK TEST, **AND**

VERIFY valve OPENS by light indication. _____

[8] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[9] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.21 Backflow Leakage of 2-CKV-63-625, ACCUM 4 OUT CHECK. (continued)

[10] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.21[9]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.21[9] + M&TE Error

_____ + _____ = _____ GPM _____ 1st _____ CV

[11] **RECORD** the test pressure indicated by 2-PI-63-150, SI PMP A DISCH PRESS.

Test Pressure _____ psig _____

[12] **DEPRESS** 2-HS-63-68, CL ACCUM 4, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-68, SIS ACCUM TK 4 CHECK VLV LEAK TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[13] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[14] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.21 Backflow Leakage of 2-CKV-63-625, ACCUM 4 OUT CHECK. (continued)

[15] **CALCULATE** 2-CKV-63-625, ACCUM 4 OUT CHECK, backflow leakage at test pressure as follows:

2-CKV-63-625 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.21[10] Step 6.3.21[6]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[16] **CALCULATE** 2-CKV-63-625, ACCUM 4 OUT CHECK, backflow leakage at rated pressure as follows:

2-CKV-63-625 Leakage at rated pressure =

TEST LEAKAGE = Step 6.3.21[15]

TEST PRESSURE = 6.3.21[11]

$\text{TEST LEAKAGE} \times \sqrt{2235 \div \text{TEST PRESSURE}} =$

_____ $\times \sqrt{2235 \div$ _____ $} =$

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Date _____

6.3.21 Backflow Leakage of 2-CKV-63-625, ACCUM 4 OUT CHECK. (continued)

[17] **VERIFY** the leakage flow for 2-CKV-63-625, ACCUM 4 OUT CHECK, recorded in Step 6.3.21[16] is less than or equal to 5.0 gpm. **(ACC. CRIT. 5.0D.20)** _____

[18] **VERIFY/PLACE** 2-FCV-63-67, SIS ACCUM TK 4 FLOW ISOLATION VLV, to the "as found" position as recorded in Step 6.3.21[1].

6.3.21[1] As Found position: _____ _____

[19] **PLACE** 2-HS-63-10A, SI PMP A, to PULL-TO-LOCK, **AND**

VERIFY SI Pump A is NOT RUNNING by light indication. _____

[20] **DEPRESS** 2-HS-63-187, TEST LINE ISOL, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-187, RHR SUPPLY TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[21] **RECORD** leakage flow from Step 6.3.21[16] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.22 Backflow Leakage of 2-CKV-63-586, BORON INJ CHECK CL L1, 2-CKV-63-587, BORON INJ CHECK CL L2, 2-CKV-63-588, BORON INJ CHECK CL L3, and 2-CKV-63-589, BORON INJ CHECK CL L4.

NOTE

Subsubsections 6.3.22 through 6.3.30 use RCS normal operating pressure, (2235 ± 20 psig), for pressurization and therefore will not require correction calculations for leakage rate.

[1] **DEPRESS** 2-HS-63-188, TEST LINE ISOL, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-188, RHR SUPPLY TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[2] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[3] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[4] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.22 Backflow Leakage of 2-CKV-63-586, BORON INJ CHECK CL L1, 2-CKV-63-587, BORON INJ CHECK CL L2, 2-CKV-63-588, BORON INJ CHECK CL L3, and 2-CKV-63-589, BORON INJ CHECK CL L4. (continued)

[5] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.22[3], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.22[3] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide the combined leakage path for testing check valves 2-CKV-63-586, 2-CKV-63-587, 2-CKV-63-588, 2-CKV-63-589.

[6] **DEPRESS** 2-HS-63-24A, CLA MAKEUP FRM BIT OUTLET, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-24, SIS ACCUM FILL LINE ISOLATION VLV, **AND**

VERIFY valve OPENS by light indication. _____

[7] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[8] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.22 Backflow Leakage of 2-CKV-63-586, BORON INJ CHECK CL L1, 2-CKV-63-587, BORON INJ CHECK CL L2, 2-CKV-63-588, BORON INJ CHECK CL L3, and 2-CKV-63-589, BORON INJ CHECK CL L4. (continued)

[9] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.22[8]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.22[8] + M&TE Error

_____ + _____ = _____ GPM _____ 1st _____ CV

[10] **RECORD** the test pressure indicated by 2-PI-68-340, PZR PRESS.

Test Pressure _____ psig _____

[11] **DEPRESS** 2-HS-63-24A, CLA MAKEUP FRM BIT OUTLET, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-24, SIS ACCUM FILL LINE ISOLATION VLV, **AND**

VERIFY valve CLOSES by light indication. _____

[12] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[13] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.22 Backflow Leakage of 2-CKV-63-586, BORON INJ CHECK CL L1, 2-CKV-63-587, BORON INJ CHECK CL L2, 2-CKV-63-588, BORON INJ CHECK CL L3, and 2-CKV-63-589, BORON INJ CHECK CL L4. (continued)

[14] **CALCULATE** combined backflow leakage of
2-CKV-63-586, BORON INJ CHECK CL L1,
2-CKV-63-587, BORON INJ CHECK CL L2,
2-CKV-63-588, BORON INJ CHECK CL L3,
2-CKV-63-589, BORON INJ CHECK CL L4,
at test pressure as follows:

Combined Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.22[9] Step 6.3.22[5]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[15] **VERIFY** the combined leakage flow for
2-CKV-63-586, BORON INJ CHECK CL L1,
2-CKV-63-587, BORON INJ CHECK CL L2,
2-CKV-63-588, BORON INJ CHECK CL L3,
2-CKV-63-589, BORON INJ CHECK CL L4
recorded in Step 6.3.22[14] is less than or equal to 0.75 gpm.
(ACC. CRIT. 5.0D.21) _____

[16] **DEPRESS** 2-HS-63-188, TEST LINE ISOL, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-188, RHR SUPPLY TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[17] **RECORD** leakage flow from Step 6.3.22[14] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.23 Backflow Leakage of 2-CKV-63-560, SIS L1 CL INJ CHECK

[1] **DEPRESS** 2-HS-63-187, TEST LINE ISOL, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-187, RHR SUPPLY TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[2] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[3] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[4] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.23 Backflow Leakage of 2-CKV-63-560, SIS L1 CL INJ CHECK (continued)

[5] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.23[3], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.23[3] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide leakage path for testing 2-CKV-63-560, SIS L1 CL INJ CHECK.

[6] **DEPRESS** 2-HS-63-117, SI PMPS TO CL 1, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-117, SIS CL 1 CHECK VLV LEAK TEST, **AND**

VERIFY valve OPENS by light indication. _____

[7] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[8] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.23 Backflow Leakage of 2-CKV-63-560, SIS L1 CL INJ CHECK (continued)

[9] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.23[8]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.23[8] + M&TE Error

_____ + _____ = _____ GPM _____ 1st _____ CV

[10] **RECORD** the test pressure indicated by 2-PR-68-340, PZR PRESS-PSIG.

Test Pressure _____ psig _____

[11] **DEPRESS** 2-HS-63-117, SI PMPS TO CL 1, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-117, SIS CL 1 CHECK VLV LEAK TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[12] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[13] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.23 Backflow Leakage of 2-CKV-63-560, SIS L1 CL INJ CHECK (continued)

[14] **CALCULATE** 2-CKV-63-560, SIS L1 CL INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-560 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.23[9] - Step 6.3.23[5] =

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ Initials _____ Date

Calculations Verified By _____ Initials _____ Date

[15] **VERIFY** the leakage flow for 2-CKV-63-560, SIS L1 CL INJ CHECK, recorded in Step 6.3.23[14] is less than or equal to 5.0 gpm. **(ACC. CRIT. 5.0D.22)** _____

[16] **RECORD** leakage flow from Step 6.3.23[14] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.24 Backflow Leakage of 2-CKV-63-561, SIS L2 CL INJ CHECK

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[1] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[2] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[3] **ISOLATE** the Flow Indicator used in the previous step. _____

[4] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.24[2], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.24[2] - M&TE Error

_____ - _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.24 Backflow Leakage of 2-CKV-63-561, SIS L2 CL INJ CHECK (continued)

NOTE

The following step will provide leakage path for testing 2-CKV-63-561, SIS L2 CL INJ CHECK.

[5] **DEPRESS** 2-HS-63-97, SI PMPS TO CL 2, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-97, SIS CL 2 CHECK VLV LEAK TEST, **AND**

VERIFY valve OPENS by light indication. _____

[6] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[7] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[8] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.24[7]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.24[7] + M&TE Error

_____ + _____ = _____ GPM _____
1st

_____
CV

Date _____

6.3.24 Backflow Leakage of 2-CKV-63-561, SIS L2 CL INJ CHECK (continued)

[9] **RECORD** the test pressure indicated by 2-PR-68-340, PZR PRESS-PSIG.

Test Pressure _____ psig _____

[10] **DEPRESS** 2-HS-63-97, SI PMPS TO CL 2, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-97, SIS CL 2 CHECK VLV LEAK TEST, and

VERIFY valve CLOSES by light indication. _____

[11] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[12] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

[13] **CALCULATE** 2-CKV-63-561, SIS L2 CL INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-561 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.24[8] Step 6.3.24[4]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[14] **VERIFY** the leakage flow for 2-CKV-63-561, SIS L2 CL INJ CHECK, recorded in Step 6.3.24[13] is less than or equal to 5.0 gpm. **(ACC. CRIT. 5.0D.23)** _____

[15] **RECORD** leakage flow from Step 6.3.24[13] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.25 Backflow Leakage of 2-CKV-63-562, SIS L3 CL INJ CHECK

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[1] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[2] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[3] **ISOLATE** the Flow Indicator used in the previous step. _____

[4] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.25[2], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.25[2] - M&TE Error

_____ - _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.25 Backflow Leakage of 2-CKV-63-562, SIS L3 CL INJ CHECK (continued)

NOTE

The following step will provide leakage path for testing 2-CKV-63-562, SIS L3 CL INJ CHECK.

[5] **DEPRESS** 2-HS-63-79, SI PMPS TO CL 3, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-79, SIS CL 3 CHECK VLV LEAK TEST, **AND**

VERIFY valve OPENS by light indication. _____

[6] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[7] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[8] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.25[7]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.25[7] + M&TE Error

_____ + _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.25 Backflow Leakage of 2-CKV-63-562, SIS L3 CL INJ CHECK (continued)

[9] **RECORD** the test pressure indicated by 2-PR-68-340, PZR PRESS-PSIG, Panel 2-M-5.

Test Pressure _____ psig _____

[10] **DEPRESS** 2-HS-63-79, SI PMPS TO CL 3, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-79, SIS CL 3 CHECK VLV LEAK TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[11] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[12] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

[13] **CALCULATE** 2-CKV-63-562, SIS L3 CL INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-562 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.25[8] Step 6.3.25[4]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[14] **VERIFY** the leakage flow for 2-CKV-63-562, SIS L3 CL INJ CHECK, recorded in Step 6.3.25[13] is less than or equal to 5.0 gpm. **(ACC. CRIT. 5.0D.24)** _____

[15] **RECORD** leakage flow from Step 6.3.25[13] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.26 Backflow Leakage of 2-CKV-63-563, SIS L4 CL INJ CHECK

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[1] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[2] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[3] **ISOLATE** the Flow Indicator used in the previous step. _____

[4] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.26[2], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.26[2] - M&TE Error

_____ - _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.26 Backflow Leakage of 2-CKV-63-563, SIS L4 CL INJ CHECK (continued)

NOTE

The following step will provide leakage path for testing 2-CKV-63-563, SIS L4 CL INJ CHECK.

[5] **DEPRESS** 2-HS-63-69, SI PMPS TO CL 4, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-69, SIS CL 4 CHECK VLV LEAK TEST, **AND**

VERIFY valve OPENS by light indication. _____

[6] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[7] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[8] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.26[7]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.26[7] + M&TE Error

_____ + _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.26 Backflow Leakage of 2-CKV-63-563, SIS L4 CL INJ CHECK (continued)

[9] **RECORD** the test pressure indicated by 2-PR-68-340, PZR PRESS-PSIG, Panel 2-M-5.

Test Pressure _____ psig _____

[10] **DEPRESS** 2-HS-63-69, SI PMPS TO CL 4, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-69, SIS CL 4 CHECK VLV LEAK TEST, **AND**

VERIFY valve CLOSES by light indication. _____

[11] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[12] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

[13] **CALCULATE** 2-CKV-63-563, SIS L4 CL INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-563 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.26[8] Step 6.3.26[4]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[14] **VERIFY** the leakage flow for 2-CKV-63-563, SIS L4 CL INJ CHECK, recorded in Step 6.3.26[13] is less than or equal to 5.0 gpm. **(ACC. CRIT. 5.0D.25)** _____

[15] **RECORD** leakage flow from Step 6.3.26[13] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.27 Backflow Leakage of 2-FCV-74-1, RHR SYSTEM ISOLATION VALVE and 2-FCV-74-9, RHR SYSTEM ISOLATION BYPASS VALVE

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[1] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[2] **RECORD** the background test line leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Test Line Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[3] **ISOLATE** the Flow Indicator used in the previous step. _____

Date _____

6.3.27 Backflow Leakage of 2-FCV-74-1, RHR SYSTEM ISOLATION VALVE and 2-FCV-74-9, RHR SYSTEM ISOLATION BYPASS VALVE (continued)

[4] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.27[2], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.27[2] - M&TE Error

_____ - _____ = _____ GPM _____ 1st _____ CV

NOTE

The following step will provide the combined leakage path for testing 2-FCV-74-1 and 2-FCV-74-9.

[5] **DEPRESS** 2-HS-63-186, BETWEEN FCV-74-2, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-186, RHR SUPPLY TEST LINE, and

VERIFY valve OPENS by light indication. _____

[6] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[7] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

Date _____

6.3.27 Backflow Leakage of 2-FCV-74-1, RHR SYSTEM ISOLATION VALVE and 2-FCV-74-9, RHR SYSTEM ISOLATION BYPASS VALVE (continued)

[8] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.27[7]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.27[7] + M&TE Error

_____ + _____ = _____ GPM _____ 1st _____ CV

[9] **RECORD** the test pressure indicated by 2-PR-68-340, PZR PRESS-PSIG.

Test Pressure _____ psig _____

[10] **DEPRESS** 2-HS-63-186, BETWEEN FCV-74-2, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-186, RHR SUPPLY TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[11] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[12] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

Date _____

6.3.27 Backflow Leakage of 2-FCV-74-1, RHR SYSTEM ISOLATION VALVE and 2-FCV-74-9, RHR SYSTEM ISOLATION BYPASS VALVE (continued)

[13] **CALCULATE** combined backflow leakage 2-FCV-74-1, RHR SYSTEM ISOLATION VALVE and 2-FCV-74-9, RHR SYSTEM ISOLATION BYPASS VALVE at test pressure as follows:

Combined Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.27[8] Step 6.3.27[4]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[14] **VERIFY** the combined leakage flow for 2-FCV-74-1, RHR SYSTEM ISOLATION VLV, and 2-FCV-74-9, RHR SYSTEM ISOLATION BYPASS VLV, recorded in Step 6.3.27[13] is less than or equal to 5.0 gpm. **(ACC. CRIT. 5.0D.26)** _____

[15] **RECORD** leakage flow from Step 6.3.27[13] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.28 Backflow Leakage of 2-CKV-63-641, RHR HX DISCH

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[1] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[2] **RECORD** the background test leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[3] **ISOLATE** the Flow Indicator used in the previous step. _____

[4] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.28[2], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.28[2] - M&TE Error

_____ - _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.28 Backflow Leakage of 2-CKV-63-641, RHR HX DISCH (continued)

NOTE

The following step will provide the leakage path for testing 2-CKV-63-641, RHR HX DISCH CHECK.

[5] **DEPRESS** 2-HS-63-163, SI-RHR TO HL 1, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-163, RCS LP 1 HL FEED TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[6] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[7] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[8] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.28[7]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.28[7] + M&TE Error

_____ + _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.28 Backflow Leakage of 2-CKV-63-641, RHR HX DISCH (continued)

[9] **RECORD** the test pressure indicated by 2-PR-68-340, PZR PRESS-PSIG.

Test Pressure _____ psig _____

[10] **DEPRESS** 2-HS-63-163, SI-RHR TO HL 1, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-163, RCS LP 1 HL FEED TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[11] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[12] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

[13] **CALCULATE** 2-CKV-63-641, RHR HX DISCH CHECK backflow leakage at test pressure as follows:

2-CKV-63-641 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.28[8] Step 6.3.28[4]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[14] **VERIFY** the leakage flow for 2-CKV-63-641, RHR HX DISCH CHECK, recorded in Step 6.3.28[13] is less than or equal to 3.0 gpm. **(ACC. CRIT. 5.0D.27)** _____

[15] **RECORD** leakage flow from Step 6.3.28[13] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.29 Backflow Leakage of 2-CKV-63-559, SIS L2 HL INJ CHECK.

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[1] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[2] **RECORD** the background test leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[3] **ISOLATE** the Flow Indicator used in the previous step. _____

[4] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.29[2], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.29[2] - M&TE Error

_____ - _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.29 Backflow Leakage of 2-CKV-63-559, SIS L2 HL INJ CHECK. (continued)

NOTE

The following step will provide the leakage path for testing 2-CKV-63-559, SIS L2 HL INJ CHECK.

[5] **DEPRESS** 2-HS-63-165, SI-RHR TO HL 2, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-165, RCS LP 2 HL FEED TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[6] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[7] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[8] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.29[7]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.29[7] + M&TE Error

_____ + _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.29 Backflow Leakage of 2-CKV-63-559, SIS L2 HL INJ CHECK. (continued)

[9] **RECORD** the test pressure indicated by 2-PR-68-340, PZR PRESS-PSIG.

Test Pressure _____ psig _____

[10] **DEPRESS** 2-HS-63-165, SI-RHR TO HL 2, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-165, RCS LP 2 HL FEED TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[11] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[12] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

[13] **CALCULATE** 2-CKV-63-559,SIS L2 HL INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-559 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.29[8] Step 6.3.29[4]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[14] **VERIFY** the leakage flow for 2-CKV-63-559, SIS L2 HL INJ CHECK, recorded in Step 6.3.29[13] is less than or equal to 3.0 gpm. **(ACC. CRIT. 5.0D.28)** _____

[15] **RECORD** leakage flow from Step 6.3.29[13] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.30 Backflow Leakage of 2-CKV-63-644, RHR HX DISCH

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[1] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[2] **RECORD** the background test leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[3] **ISOLATE** the Flow Indicator used in the previous step. _____

[4] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.30[2], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.30[2] - M&TE Error

_____ - _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.30 Backflow Leakage of 2-CKV-63-644, RHR HX DISCH (continued)

NOTE

The following step will provide the leakage path for testing 2-CKV-63-644, RHR HX DISCH CHECK.

[5] **DEPRESS** 2-HS-63-164, SI-RHR TO HL 3, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-164, RCS LP 3 HL FEED TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[6] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[7] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[8] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.29[7]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.29[7] + M&TE Error

_____ + _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.30 Backflow Leakage of 2-CKV-63-644, RHR HX DISCH (continued)

[9] **RECORD** the test pressure indicated by 2-PR-68-340, PZR PRESS-PSIG.

Test Pressure _____ psig _____

[10] **DEPRESS** 2-HS-63-164, SI-RHR TO HL 3, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-164, RCS LP 3 HL FEED TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[11] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[12] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

[13] **CALCULATE** 2-CKV-63-644,RHR HX DISCH CHECK, backflow leakage at test pressure as follows:

2-CKV-63-644 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.30[8] Step 6.3.30[4]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[14] **VERIFY** the leakage flow for 2-CKV-63-644, RHR HX DISCH CHECK, recorded in Step 6.3.30[13] is less than or equal to 3.0 gpm. **(ACC. CRIT. 5.0D.29)** _____

[15] **RECORD** leakage flow from Step 6.3.30[13] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.31 Backflow Leakage of 2-CKV-63-558, SIS L4 HL INJ

NOTES

1) 2-FI-63-75 has a range of 0-10 gpm. 2-FI-63-76 has a range of 0-1.0 gpm. If the flow is less than or equal to 1.0 gpm, 2-FI-63-76 should be used. If flow is greater than 1.0 gpm, 2-FI-63-75 should be used to indicate leakage flow.
2) When placing the Flow Indicators 2-FI-63-75 and 2-FI-63-76 back in service, 2-FI-63-75 should be placed in service first to determine background leakage greater than 1.0 gpm.
3) Do NOT place 2-FI-63-76 in service if flow is over 1.0 gpm.

[1] **PLACE** Flow Indicator(s) in service, as required, to determine background leakage flow in SIS Test Line. _____

[2] **RECORD** the background test leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) at Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[3] **ISOLATE** the Flow Indicator used in the previous step. _____

[4] **CALCULATE** a corrected background leakage by subtracting the M&TE error listed below for the flow instrument used in Step 6.3.31[2], but do not record a value less than zero:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Test Line Leakage = Step 6.3.31[2] - M&TE Error

_____ - _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.31 Backflow Leakage of 2-CKV-63-558, SIS L4 HL INJ (continued)

NOTE

The following step will provide the leakage path for testing 2-CKV-63-558, SIS L4 HL INJ CHECK.

[5] **DEPRESS** 2-HS-63-166, SI-RHR TO HL 4, at 2-XS-63-100, CKV LEAK TEST, to OPEN 2-FCV-63-166, RCS LP 4 HL FEED TEST LINE, **AND**

VERIFY valve OPENS by light indication. _____

[6] **PLACE** Flow Indicator(s) in service, as required, to determine leakage flow in SIS Test Line. _____

[7] **WAIT** for flow to stabilize, **THEN**

RECORD the total leakage flow indicated by 2-FI-63-76 (or 2-FI-63-75) Panel 2-L-554.

Total Leakage Flow _____ GPM

Flow Indicator Used (2-FI-63-_____) _____

[8] **CALCULATE** a corrected test line leakage by adding the M&TE error listed below for the flow instrument used in Step 6.3.31[7]:

Instrument	M&TE Error
2-FI-63-75	0.1 GPM
2-FI-63-76	0.01 GPM

Corrected Total Leakage = Step 6.3.31[7] + M&TE Error

_____ + _____ = _____ GPM _____ 1st

_____ CV

Date _____

6.3.31 Backflow Leakage of 2-CKV-63-558, SIS L4 HL INJ (continued)

[9] **RECORD** the test pressure indicated by 2-PR-68-340, PZR PRESS-PSIG.

Test Pressure _____ psig _____

[10] **DEPRESS** 2-HS-63-166, SI-RHR TO HL 4, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-166, RCS LP 4 HL FEED TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[11] **VERIFY/ISOLATE** 2-FI-63-76, SIS LEAK TEST HEADER LO FLOW, at Panel 2-L-554. _____

[12] **VERIFY/ISOLATE** 2-FI-63-75, SIS LEAK TEST HEADER HI FLOW, at Panel 2-L-554. _____

[13] **CALCULATE** 2-CKV-63-558,SIS L4 HL INJ CHECK, backflow leakage at test pressure as follows:

2-CKV-63-558 Leakage at test pressure =

Total Leakage Flow - Test Line Leakage Flow =

Step 6.3.31[8] Step 6.3.31[4]

(_____) - (_____) =

_____ GPM

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

[14] **VERIFY** the leakage flow for 2-CKV-63-558, SIS L4 HL INJ CHECK, recorded in Step 6.3.31[13] is less than or equal to 3.0 gpm. **(ACC. CRIT. 5.0D.30)** _____

[15] **RECORD** leakage flow from Step 6.3.31[13] on Appendix D, Reactor Boundary Leakage Log. _____

Date _____

6.3.31 Backflow Leakage of 2-CKV-63-558, SIS L4 HL INJ (continued)

[16] **DEPRESS** 2-HS-63-187, TEST LINE ISOL, at 2-XS-63-100, CKV LEAK TEST, to CLOSE 2-FCV-63-187, RHR SUPPLY TEST LINE, **AND**

VERIFY valve CLOSES by light indication. _____

[17] **PLACE** 2-HS-63-71A, CKV TEST LINE TO HUT, to CLOSE, **AND**

VERIFY Valve 2-FCV-63-71, SIS CHECK VLV LEAK TEST ISOLATION, is CLOSED by light indication. _____

[18] **PLACE** 2-HS-63-84, CKV TEST LINE TO HUT, to CLOSE, **AND**

VERIFY Valve 2-FCV-63-84, SIS CHECK VLV LEAK TEST ISOLATION, is CLOSED by light indication. _____

[19] **CALCULATE** total leakage flow by performing Appendix E. Total Reactor Coolant Boundary Leakage. _____

Date _____

7.0 POST-PERFORMANCE ACTIVITIES

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

RECORD the results on Measuring and Test Equipment (M&TE) Log. _____

[2] **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. _____

[3] **NOTIFY** the Unit 2 US/SRO of the test completion and System alignment. _____

Date _____

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 _____

Additional copies of this table may be made as necessary.

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	INITIAL AND DATE. (N/A for no change)
FSAR Section 5.2.7.4 Section 3.9.3.2 Table 14.2-1 Sheets 22, 23 & 24		
2-TSD-63-6		

Appendix B
(Page 1 of 1)

TEMPORARY CONDITION LOG

Date _____

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

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-FI-63-75							
2-FI-63-76							
2-PI-63-150							
2-PR-68-340							

[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 3)

REACTOR BOUNDARY LEAKAGE LOG

Date _____

RECORD STEP	VALVE NO.	DESCRIPTION	CALCULATE STEP	LEAKAGE	ACCEPTABLE LEAKAGE
6.3.2[24]	2-CKV-63-581	BORON INJ CHECK	6.3.2[23]		≤ 1.5 GPM
6.3.3[20]	2-CKV-63-543	SIS L1 HL INJ CHECK	6.3.3[19]		≤ 1.0 GPM
6.3.4[18]	2-CKV-63-640	RHR HX DISCH CHECK	6.3.4[17]		≤ 4.0 GPM
6.3.5[18]	2-CKV-63-545	SIS L3 HL INJ CHECK	6.3.5[17]		≤ 1.0 GPM
6.3.6[18]	2-CKV-63-643	RHR HX DISCH CHECK	6.3.6[17]		≤ 4.0 GPM
6.3.7[18]	2-CKV-63-549	SIS L4 HL INJ CHECK	6.3.7[17]		≤ 1.0 GPM
6.3.8[19]	2-CKV-63-547	SIS L2 HL INJ CHECK	6.3.8[18]		≤ 1.0 GPM
6.3.9[21]	2-CKV-63-551	SIS L1 CL INJ CHECK	6.3.9[20]		≤ 1.0 GPM
6.3.10[18]	2-CKV-63-633	RHR PUMP DISCH CHECK	6.3.10[17]		≤ 3.0 GPM
6.3.11[18]	2-CKV-63-553	SIS L2 CL INJ CHECK	6.3.11[17]		≤ 1.0 GPM
6.3.12[18]	2-CKV-63-632	RHR PUMP DISCH CHECK	6.3.12[17]		≤ 3.0 GPM
6.3.13[18]	2-CKV-63-555	SIS L3 CL INJ CHECK	6.3.13[17]		≤ 1.0 GPM
6.3.14[18]	2-CKV-63-634	RHR PUMP DISCH CHECK	6.3.14[17]		≤ 3.0 GPM
6.3.15[18]	2-CKV-63-557	SIS L4 CL INJ CHECK	6.3.15[17]		≤ 1.0 GPM
6.3.16[18]	2-CKV-63-635	RHR PUMP DISCH CHECK	6.3.16[17]		≤ 3.0 GPM
6.3.17[29]	2-FCV-74-2 2-FCV-74-8	RHR SYSTEM ISOLATION VALVE RHR SYSTEM ISOLATION BYPASS VALVE	6.3.17[26]		≤ 5.0 GPM

Appendix D
(Page 2 of 3)

REACTOR BOUNDARY LEAKAGE LOG

Date _____

RECORD STEP	VALVE NO.	DESCRIPTION	CALCULATE STEP	LEAKAGE	ACCEPTABLE LEAKAGE
6.3.18[21]	2-CKV-63-622	ACCUM 1 OUT CHECK	6.3.18[19]		≤ 5.0 GPM
6.3.19[19]	2-CKV-63-623	ACCUM 2 OUT CHECK	6.3.19[17]		≤ 5.0 GPM
6.3.20[19]	2-CKV-63-624	ACCUM 3 OUT CHECK	6.3.20[17]		≤ 5.0 GPM
6.3.21[21]	2-CKV-63-625	ACCUM 4 OUT CHECK	6.3.21[17]		≤ 5.0 GPM
6.3.22[17]	2-CKV-63-586 2-CKV-63-587 2-CKV-63-588 2-CKV-63-589	BORON INJ CHECK CL L1 BORON INJ CHECK CL L2 BORON INJ CHECK CL L3 BORON INJ CHECK CL L4	6.3.22[15]		≤ .75 GPM
6.3.23[16]	2-CKV-63-560	SIS L1 CL INJ CHECK	6.3.23[15]		≤ 5.0 GPM
6.3.24[15]	2-CKV-63-561	SIS L2 CL INJ CHECK	6.3.24[14]		≤ 5.0 GPM
6.3.25[15]	2-CKV-63-562	SIS L3 CL INJ CHECK	6.3.25[14]		≤ 5.0 GPM
6.3.26[15]	2-CKV-63-563	SIS L4 CL INJ CHECK	6.3.26[14]		≤ 5.0 GPM
6.3.27[15]	2-FCV-74-1 2-FCV-74-9	RHR SYSTEM ISOLATION VALVE RHR SYSTEM ISOLATION BYPASS VALVE	6.3.27[14]		≤ 5.0 GPM
6.3.28[15]	2-CKV-63-641	RHR HX DISCH CHECK	6.3.28[14]		≤ 3.0 GPM
6.3.29[15]	2-CKV-63-559	SIS L2 HL INJ CHECK	6.3.29[14]		≤ 3.0 GPM

Appendix D
(Page 3 of 3)

REACTOR BOUNDARY LEAKAGE LOG

Date _____

RECORD STEP	VALVE NO.	DESCRIPTION	CALCULATE STEP	LEAKAGE	ACCEPTABLE LEAKAGE
6.3.30[15]	2-CKV-63-644	RHR HX DISCH CHECK	6.3.30[14]		≤ 3.0 GPM
6.3.31[15]	2-CKV-63-558	SIS L4 HL INJ CHECK	6.3.31[14]		≤ 3.0 GPM

Appendix E
(Page 1 of 2)

TOTAL REACTOR COOLANT BOUNDARY LEAKAGE

Date _____

INSTRUCTIONS FOR CALCULATING TOTAL RCS BOUNDARY LEAKAGE

NOTE

The calculation of Total RCS Boundary Leakage is for information only.

Sheet 2, is divided into two columns of valves; "VALVE(S) IN SERIES", (col 1), which are directly in series with the RCS boundary valve, and "RCS BOUNDARY VALVES" (col 4), which are direct boundary valves adjacent to the RCS.

As can be seen by the table, a boundary valve may have more than one valve in series. For example, 2-CKV-63-560 has three valves in series; 2-CKV-63-551, 2-CKV-63-622, and 2-CKV-63-633.

A. Record the LEAKAGE valves from Appendix D to the applicable "VLV LKG" column, (col 2 or col 5), for valves or valve combinations identified on sheet 2 of Appendix E.

B. Total the valve leakage of the "series" of valves applicable to the RCS Boundary Valve and Record the sums in the "TOTAL SERIES VLV LKG", (col 3).

Example: 2-CKV-63-641 has two series valves, 2-CKV-63-543 and 2-CKV-63-640. The sum of the valve leakage of those two valves will be entered in col 3.

NOTE

On "series" valves that are "N/A" in col 3, use the "VLV LKG" valve in col 2 for comparison values.

C. Compare the valve leakage of the RCS Boundary valves, (col 5), to that of its associated series valve(s) leakage, (col 2 or col 3), and Record the lesser leakage value of the two in the "RCS BOUND LKG"' (col 6).

D. Add the "RCS BOUND LKG" column to determine Total RCS Leakage.

Appendix E
(Page 2 of 2)
TOTAL REACTOR COOLANT BOUNDARY LEAKAGE

Date _____

VALVE(S) IN SERIES COL 1	VLV LKG COL 2	TOTAL SERIES VLV LKG COL 3	RCS BOUNDARY VALVES COL 4	VLV LKG COL 5	RCS BOUND LKG COL 6
2-CKV-63-581		N/A	2-CKV-63-586 2-CKV-63-587 2-CKV-63-588 2-CKV-63-589		
2-CKV-63-543			2-CKV-63-641		
2-CKV-63-640					
2-CKV-63-545			2-CKV-63-644		
2-CKV-63-643					
2-CKV-63-549			2-CKV-63-558		
2-CKV-63-547			2-CKV-63-559		
2-CKV-63-551			2-CKV-63-560		
2-CKV-63-622					
2-CKV-63-633					
2-CKV-63-553			2-CKV-63-561		
2-CKV-63-623					
2-CKV-63-632					
2-CKV-63-555			2-CKV-63-562		
2-CKV-63-624					
2-CKV-63-634					
2-CKV-63-557			2-CKV-63-563		
2-CKV-63-625					
2-CKV-63-635					
2-FCV-74-2 2-FCV-74-8		N/A	2-FCV-74-1 2-FCV-74-9		
6.3.31[19] TOTAL RCS LEAKAGE					

Calculations Performed By: _____ Initials _____ Date

Calculations Verified By: _____ Initials _____ Date