



Serial: RNP-RA/02-0009

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United States Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2  
DOCKET NO. 50-261/LICENSE NO. DPR-23

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION  
FOR THE FOURTH TEN-YEAR INTERVAL INSERVICE TESTING PROGRAM PLAN

Ladies and Gentlemen:

The Fourth Ten-Year Interval Inservice Testing (IST) program plan for H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, was submitted to the NRC by letter dated August 24, 2001. An electronic mail message received on November 21, 2001, requested additional information pertaining to Relief Requests IST-RR-6 and IST-RR-7. The request for additional information was discussed in a conference call on December 4, 2001, between HBRSEP, Unit No. 2, personnel and NRC Staff personnel involved in the review of these relief requests.

The request for additional information provided on November 21, 2001, has been repeated in entirety in Attachment I. Supporting information is provided in Attachments II through V. Based on the discussion of these questions, it has been concluded that IST-RR-6 should be revised. The revised IST-RR-6 is provided in Attachment VI, which also provides a complete copy of the updated IST program plan. A summary of the changes associated with Revision 1 to the IST program plan is also provided in Attachment VI.

As stated in the Carolina Power and Light (CP&L) Company to NRC letter dated August 24, 2001, the Fourth Ten-Year Interval for HBRSEP, Unit No. 2, starts on February 19, 2002. Therefore, approval of relief requests associated with this inservice test plan update is requested as soon as practicable to allow efficient implementation of the IST program plan requirements.

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If you have any questions regarding this matter, please contact Mr. C. T. Baucom.

Sincerely,



B. L. Fletcher III  
Manager - Regulatory Affairs

CAC/cac

Attachments:

- I. Responses to Requests for Additional Information
- II. Valve Test Data Graphs 1996-2001
- III. P&ID G-190262, Revision 28, Isolation Valve Seal Water System
- IV. OST-933, "Containment Isolation Valves Leakage Test," Revision 16
- V. Isolation Valve Seal Water System Check Valve Diagrams
- VI. Inservice Testing Program Plan – Fourth Interval, Revision 1

c: Mr. L. A. Reyes, NRC, Region II  
Mr. A. G. Hansen, NRC, NRR  
NRC Resident Inspector, HBRSEP

CAROLINA POWER AND LIGHT COMPANY

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

RESPONSES TO REQUESTS FOR ADDITIONAL INFORMATION

### **Request for Additional Information for IST-RR-6:**

The OM Code specifies that a rapid acting valve has a stroke time of 2 seconds or less. Typically, when traditional method stroke timing are used, such rapid acting valves preclude reasonable application of the acceptance criteria requirements of ISTC 4.2.8(c) and (d). As stated in Section 4.2.2 of NUREG 1482, NRC and OM established the 2-second limit for rapid-acting valves for the conventional method of measuring stroke-time using a stopwatch. However, new technologies and new applications of existing technologies enable licensees to time the stroke of rapid-acting valves within milliseconds. Although licensees are not required to do so by the Code, they are encouraged to investigate new methodologies. Nevertheless, the licensee must address, in its relief request, the fundamental purpose of inservice testing, i.e., whether the proposed test is able to detect degrading conditions to ensure timely corrective actions.

The proposed change from 2 seconds to 5 seconds appears quite substantial and involves a major change of Code requirement. The change impacts not only H. B. Robinson but also the industry. The licensee should find out whether there are any on-going activities or information on this change from the industry or OM working group, or whether similar relief requests were submitted to NRC for review.

More specifically, for H. B. Robinson, the licensee should provide a list of the affected POVs, their stroke time history, and their failure modes. The licensee must be able to demonstrate from previous test results that these valves indeed operated either quickly (successfully) or fail within a very narrow range of stroke times such that the acceptance criteria requirements of ISTC 4.2.8(c) and (d) are not meaningful or applicable to these valves. If failures ever occurred, what has the licensee done or proposed to prevent future failures. The licensee should also substantiate, for each affected POV, how a limiting value of 5 seconds provide a substantial margin to any design limit assumed for the component in performing its specified function.

### **Response to Request for Additional Information for IST-RR-6:**

The above request for additional information was discussed in a conference call on December 4, 2001, between H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, personnel and NRC Staff personnel involved in the review of these relief requests. Based on discussions during that conference call, it was determined that IST-RR-6 should be revised. The following information provides additional details pertaining to IST-RR-6, as discussed during the December 4, 2001, conference call.

The target population of valves for this relief request are air-operated, containment isolation valves. These particular containment isolation valves (24 total valves) have typical closure times of less than 4 seconds. These valves operate substantially more rapidly than the containment isolation valve design limit of 60 seconds.

Some variability in valve stroke time is inherent in these valves. Also, some variability can occur due to planned maintenance and frequency of operation of the valves. These are the factors that the

proposed relief is intended to address. Therefore, based on these factors, the need for relief is valid and special stroke-time testing equipment would not resolve the situation.

The proposed relief has been modified to address the specific valves at HBRSEP, Unit No. 2, and to provide specific justification and basis for this relief.

Further evaluation of test data for the 24 valves that would be subject to this relief request was performed to address the issues identified in this request for additional information. It has been concluded that use of a modified acceptance criterion would be appropriate for these valves. The objective of the proposed acceptance criteria is to avoid unnecessary declaration of valve inoperability while maintaining appropriately conservative limiting acceptance criteria for this group of valves. Based on evaluation of past data, the acceptance criterion being proposed in IST-RR-6 is  $\pm 75\%$  of the reference valve stroke time established in accordance with ASME OM 95/96 Code, ISTC 3.3 and ISTC 3.4, for valves with a reference stroke time of 4 seconds or less.

The following table provides a list of the 24 valves and technical information for these valves:

Valve I.D.	Size (inches)	Manufacturer	Valve Type	Operator Type
PS-956A, PS-956B PS-956C, PS-956D PS-956E, PS-956F PS-956G, PS-956H	3/8	Copes-Vulcan	Globe	Air
FCV-1933A, FCV-1933B FCV-1934A, FCV-1934B FCV-1935A, FCV-1935B	3/4	Copes-Vulcan	Globe	Air
WD-1721, WD-1722	3	ITT Engineered Valves	Diaphragm	Air
WD-1723, WD-1728	2	ITT Engineered Valves	Diaphragm	Air
WD-1786, WD-1787	1	ITT Engineered Valves	Diaphragm	Air
WD-1789, WD-1794	3/4	ITT Engineered Valves	Diaphragm	Air
RC-519A, RC-519B	3	ITT Engineered Valves	Diaphragm	Air

The valves listed in the above table are relatively small diameter (i.e., 3 inches or less). The rapid stroke times associated with these valves result in a relatively narrow Code-allowed time limit range. These valves have substantial variability in measured stroke time (when calculated as a percentage deviation from a reference value). This variability can be influenced by normal conditions that may occur during the course of plant operations, such as fluctuations in instrument air header pressure, air regulator adjustment following maintenance or replacement, and frequency of valve operation.

Additionally, the following subset of these valves is subject to stroke time variations based on the method of test: FCV-1933A, FCV-1933B, FCV-1934A, FCV-1934B, FCV-1935A, FCV-1935B,

WD-1789, and WD-1794. Two individuals that are physically separated communicate the initiation and end of the operating valve stroke to test these valves.

During the review of past data, it became apparent that post-maintenance testing could result in valve stroke times that are more rapid than the normally expected stroke time. One possible explanation of the more rapid test result is that during the course of maintenance a valve is normally opened and closed one or more times to accomplish the intended work. This opening and closing of a valve during maintenance can improve the spread of lubricants in the valve and valve operator.

Based on a review of past data, application of the ASME OM 95/96 Code, ISTC 3.4, could have resulted in several circumstances of establishing post-maintenance test results as the new reference values for the associated valves. The lower reference stroke times associated with these post-maintenance tests would have generated smaller acceptable time limit ranges, based on the allowable factors listed in the ASME OM 95/96 Code (i.e.,  $\pm 50\%$  of the reference stroke time in accordance with ISTC 4.2.8). The smaller acceptable time limit ranges could have led to subsequent declarations of valve inoperability or unnecessary retesting in accordance with ISTC 4.2.9. Therefore, the valve acceptance criteria proposed in IST-RR-6 will improve plant safety by reducing inappropriate declarations of valve inoperability and unnecessary maintenance and retesting.

In evaluating the potential impact of the new Code version on this valve group, a review of maintenance and test data dating back to 1996 was performed. The test data used for the review of the 24 valves is provided in Attachment II.

The following examples are provided to demonstrate the effects of the ASME OM 95/96 Code requirements as compared to the proposed IST-RR-6 requirements. Comparison to ASME Section XI – 1986 requirements, which was applied in the third interval, is also provided in these examples.

#### Example 1: FCV-1934B

A post-maintenance test was performed on 7/13/97 that resulted in a stroke test closure time of 1.35 seconds. The maintenance performed on this valve was a packing adjustment. The post-maintenance test result showed that the valve characteristics were not adversely affected by the maintenance. At the time of this test, the limiting stroke time value for this valve, established in accordance with IWV-3413, of ASME Section XI – 1986, was 4 seconds. The measured closure times for this valve during the preceding 8 tests ranged from 1.08 seconds to 2.14 seconds.

Based on application of ISTC 3.4 of the ASME OM 95/96 Code, this result could have been used to establish the new reference value. It is unlikely that the 2-second acceptance criteria [ISTC 4.2.8(e)] would have been chosen based on a review of previous data that showed a test result greater than 2 seconds could occur under expected test conditions. Therefore, based on application of ISTC 3.4 on the 7/13/97 test result, the acceptance criteria for this valve would have been established after the post-maintenance test, in accordance with ISTC 4.2.8 as follows:

Criteria	Lower	Upper
+/- 50%	0.68 sec.	2.02 sec.

Based on application of the proposed relief request, IST-RR-6, the acceptance criteria following the post-maintenance test would have been established as:

Criteria	Lower	Upper
+/- 75%	0.34 sec.	2.36 sec.

Subsequent to the 7/13/97 test, the following test results were measured for this valve:

Date	Result
8/19/97	1.40 sec.
10/12/97	1.41 sec.
1/4/98	1.67 sec.
3/29/98	1.77 sec.
6/20/98	1.99 sec.
9/12/98	1.69 sec.
12/5/98	2.27 sec.
2/28/99	1.66 sec.

The subsequent test result on 12/5/98 exceeded the upper 50% acceptance limit; however, the proposed upper 75% limit would have been met. Additionally, no corrective action thresholds associated with the ASME Section XI – 1986 requirements were triggered based on the 12/5/98 test result. The subsequent test on 2/28/99 further showed that the valve was not exhibiting an adverse trend. Additionally, no maintenance was performed on this valve in the time between the 12/5/98 and the 2/28/99 tests that would have caused the result to change from 2.27 to 1.66 seconds.

As stated previously, the objective of IST-RR-6 is to prevent unnecessary declaration of valve inoperability while maintaining appropriately conservative limiting acceptance criteria for this group of valves. This example shows that the relief request would have prevented an unwarranted declaration of inoperability or an unnecessary retest of the valve based on nominal stroke time deviation.

Example 2: FCV-1933A

A post-maintenance test performed on 1/3/98 resulted in a stroke test closure time of 1.04 seconds. The maintenance performed on this valve was an air regulator filter replacement. The post-maintenance test result showed that the valve characteristics were not adversely affected by the maintenance. At the time of this test, the limiting stroke time value for this valve, established in

accordance with IWV-3413, of ASME Section XI 1986, was 4 seconds. The measured closure times for this valve during the preceding 13 tests ranged from 1.20 seconds to 2.13 seconds.

It is likely that the 2-second acceptance criteria [ISTC 4.2.8(e)] would have been chosen because the upper limit associated with 50% of the reference value would have been 1.56 seconds. There were 5 test results that would have exceeded 1.56 seconds during the previous 12 tests. Only one test result greater than 2 seconds had occurred during the previous 12 tests. Therefore, based on the 1/3/98 test result the acceptance criteria for this valve would have been established after the post-maintenance test, in accordance with ISTC 4.2.8 as follows:

Criteria	Lower	Upper
2-second	N/A	2.00 sec.

Based on application of the proposed relief request, IST-RR-6, the acceptance criteria following the post-maintenance test would have been established as:

Criteria	Lower	Upper
+/- 75%	0.26 sec.	1.82 sec.

Subsequent to the 1/3/98 test, the following test results were measured for this valve:

Date	Result
3/29/98	2.19 sec.
4/28/98	1.16 sec.
5/26/98	1.10 sec.
6/20/98	2.10 sec.
7/18/98	1.29 sec.
8/15/98	1.25 sec.
8/15/98	1.75 sec.
9/12/98	1.68 sec.
12/5/98	1.77 sec.
2/18/99	1.81 sec.
5/24/99	1.48 sec.

The subsequent test result on 3/29/98 exceeded the 2-second acceptance limit. The proposed upper 75% limit would also have been exceeded. Additionally, the corrective action thresholds associated with the ASME Section XI – 1986 requirements were triggered based on the 3/29/98 test result. At

that time, the test frequency for the valve was increased to once each month in accordance with IWV-3417.

As stated previously, the objective of IST-RR-6 is to prevent unnecessary declaration of valve inoperability while maintaining appropriately conservative limiting acceptance criteria for this group of valves. This example shows that the proposed acceptance criteria is conservative, because corrective action or a retest would have been performed even though this valve was operating within expected ranges, as shown by the variability of the test data.

Example 3: WD-1794

A post-maintenance test was performed on 4/3/98 that resulted in a stroke test closure time of 2.09 seconds. The maintenance performed on this valve was replacement and repair of the vent tubing. The post-maintenance test result showed that the valve characteristics were not adversely affected by the maintenance. The measured closure times for this valve during the preceding 22 tests ranged from 0.24 seconds to 2.51 seconds.

Based on application of ISTC 3.4 of the ASME OM 95/96 Code, this result could have been used to establish the new reference value. Therefore, based on application of ISTC 3.4 and on the 4/3/98 test result, the acceptance criteria for this valve would have been established after the post-maintenance test, in accordance with ISTC 4.2.8 as follows:

Criteria	Lower	Upper
+/- 50%	1.05 sec.	3.13 sec.

Based on application of the proposed relief request, IST-RR-6, the acceptance criteria following the post-maintenance test would have been established as:

Criteria	Lower	Upper
+/- 75%	0.53 sec.	3.65 sec.

Subsequent to the 4/3/98 test, the following test results were measured for this valve:

Date	Result
7/12/98	0.76 sec.
9/12/98	1.52 sec.
10/10/98	1.74 sec.
11/9/98	2.45 sec.
12/7/98	2.85 sec.
1/6/99	2.04 sec.

Date	Result
2/3/99	2.05 sec.
2/27/99	1.97 sec.
5/21/99	5.18 sec.
5/26/99	1.94 sec.
5/27/99	1.69 sec.
6/18/99	2.16 sec.

The subsequent test result on 7/12/98 exceeded the lower 50% acceptance limit; however, the proposed lower 75% limit would have been met. Additionally, no corrective action thresholds associated with the ASME Section XI – 1986 requirements were triggered based on the 7/12/98 test result.

The next test on 9/12/98 did trigger the corrective action threshold associated with ASME Section XI – 1986 requirements, based on the 7/12/98 test result, and monthly testing was started at that time. The monthly testing was discontinued on 2/27/99.

In a test performed on 5/21/99, the valve closure time was measured to be 5.18 seconds. Additional testing and maintenance was performed on this valve. The test on 5/27/99 was performed following maintenance. It was concluded that this valve was operating normally at that time.

The test on 5/21/99 would have resulted in exceeding the +/- 50% and the proposed +/- 75% range limits. This case exhibits that the +/- 75% range proposed in this relief request will appropriately trigger a retest or other corrective action. The 5.18 second result remains substantially less than the containment isolation design limit of 60 seconds. Therefore, performing a retest or declaring this valve inoperable based on this test result provides an appropriately proactive initiation of corrective action.

### Summary

The preceding examples are intended to show how the proposed IST-RR-6 could have been applied to past valve data. These examples show that the proposed IST-RR-6 acceptance criteria would have provided appropriately conservative limits for valve operation. The examples were chosen as representative applications of IST-RR-6 as compared to the ASME OM 95/96 Code and ASME Section XI – 1986.

In the review of the data for the 24 valves covered under the proposed IST-RR-6, other circumstances of valve test data were found that show IST-RR-6 would have met the previously stated objective to avoid unnecessary declaration of valve inoperability while maintaining appropriately conservative limiting acceptance criteria for this group of valves. Therefore, the proposed alternative will provide an acceptable level of quality and safety, and compliance with the

new requirements of the ASME OM 95/96 Code would result in unusual difficulty without a compensating increase in quality or safety.

**Request for Additional Information for Relief Request IST-RR-7:**

P&ID 190262 of Isolation Valve Seal Water System is not found in the submittal. Please provide the P&ID showing the system from water inventory to the affected containment isolation valves. Also provide the valve configuration and details of seal water injection to the valve.

Whether the closed position of a check valve has a safety function or not, a closure test must be performed to verify that the valve is still intact and remain in its seat. If the closure test is not performed, the worst failure mode of the valve maybe that the valve disc falls to a position to block the seal water from getting to the valve. The licensee states that it is likely that failure of the valve in this manner would be detected by the current test method which is performed at refueling outages in conjunction with required Appendix J leak rate testing of associated containment penetration. Please provide the test procedures, and description how these procedures and associated test results are used to detect a detached valve disc and to verify that adequate pressure or injection flow is maintained at the valve location.

**Response to Request for Additional Information for IST-RR-7:**

As requested, P&ID G-190262, Revision 28, Isolation Valve Seal Water System, (Attachment III) and OST-933, "Containment Isolation Valves Leakage Test," Revision 16, (Attachment IV) are provided for NRC review.

Additionally, drawings of the two types of check valve used in this application (the spring-loaded ball check valve and the spring-loaded poppet check valve) are provided in Attachment V. These figures show that the physical configuration of the internals of these valves is not susceptible to the valve disc falling into a position to block seal water flow.

United States Nuclear Regulatory Commission  
Attachment II to Serial: RNP-RA/02-0009  
25 Pages

CAROLINA POWER AND LIGHT COMPANY  
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

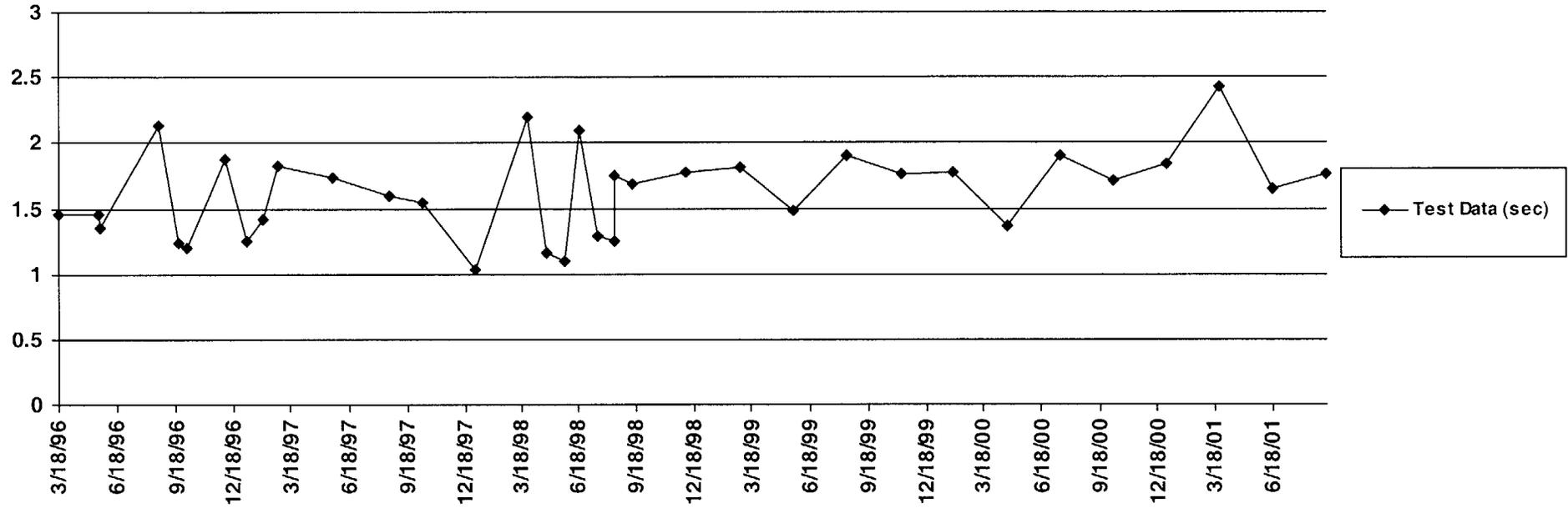
VALVE TEST DATA GRAPHS

1996-2001

# FCV-1933A

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
GL	AO	0.75	Close	1.9	0.95	2.85	60

## Stroke Time History

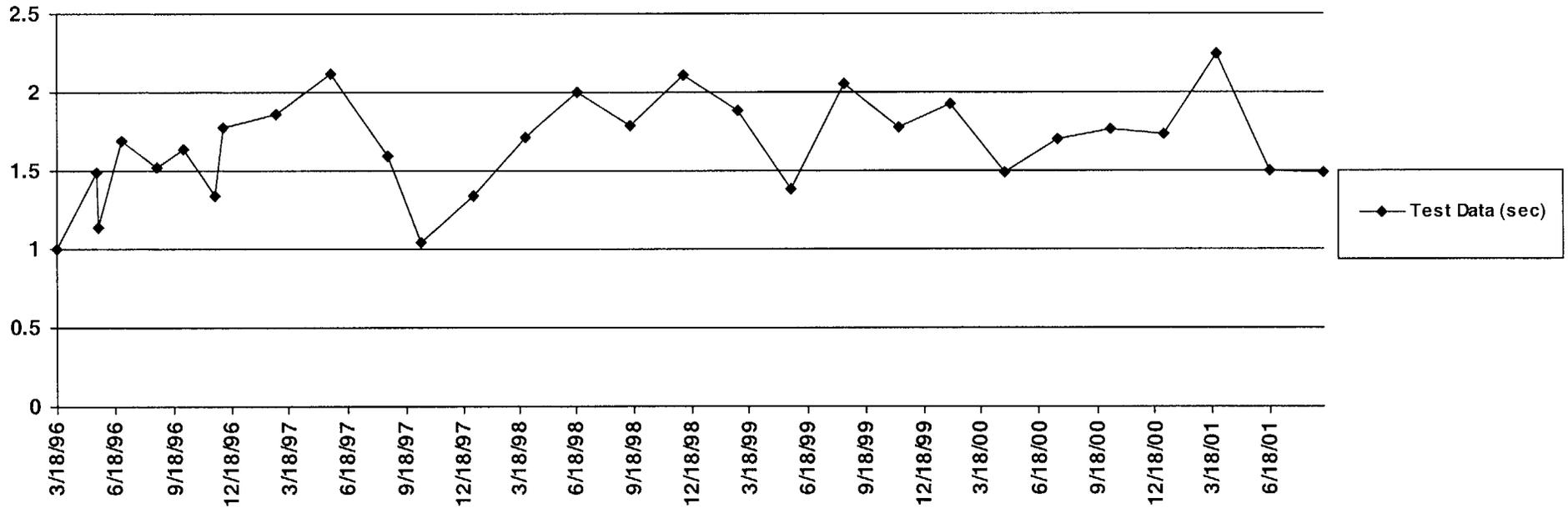


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
3/18/96	1.46	3/29/98	2.19	4/24/00	1.37
5/20/96	1.46	4/28/98	1.16	7/17/00	1.9
5/23/96	1.35	5/26/98	1.1	10/9/00	1.71
8/22/96	2.13	6/20/98	2.1	1/1/01	1.84
9/21/96	1.24	7/18/98	1.29	3/25/01	2.42
10/6/96	1.2	8/15/98	1.25	6/17/01	1.65
12/5/96	1.88	8/15/98	1.75	9/9/01	1.76
1/6/97	1.25	9/12/98	1.68		
2/3/97	1.42	12/5/98	1.77		
2/26/97	1.82	2/28/99	1.81		
5/23/97	1.74	5/24/99	1.48		
8/19/97	1.6	8/14/99	1.9		
10/12/97	1.55	11/9/99	1.76		
1/3/98	1.04	1/29/00	1.77		

# FCV-1933B

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
GL	AO	0.75	Close	1.79	0.90	2.69	60

## Stroke Time History

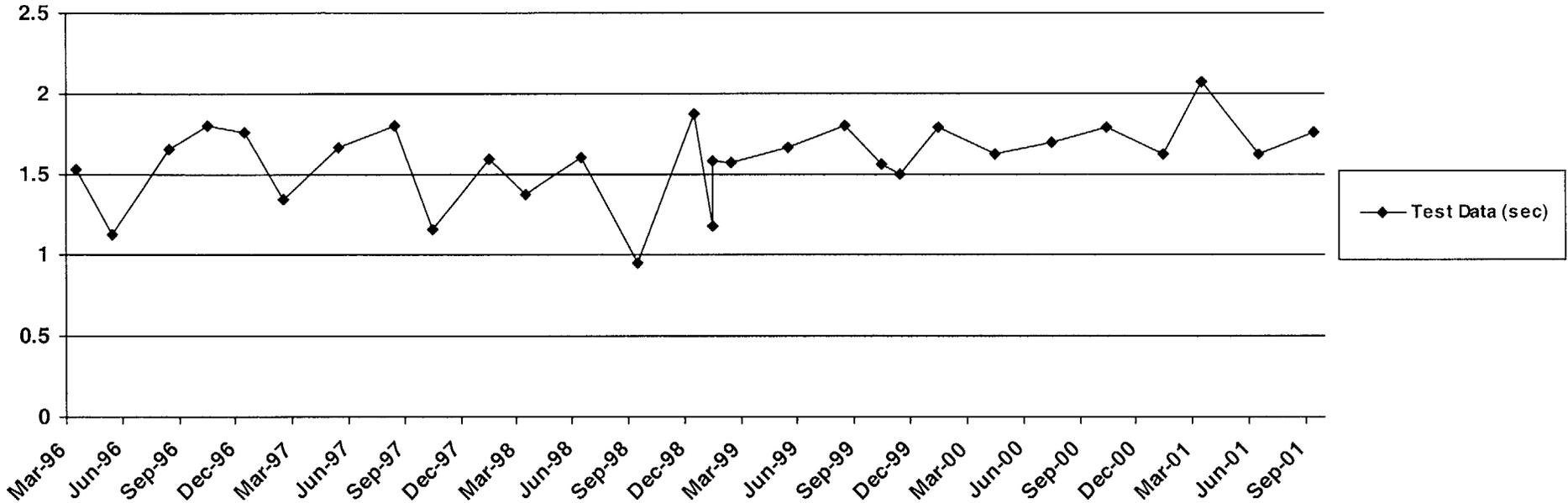


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
3/18/96	1	6/20/98	2	9/9/01	1.49
5/20/96	1.49	9/12/98	1.79		
5/23/96	1.14	12/5/98	2.11		
6/27/96	1.69	2/28/99	1.88		
8/22/96	1.52	5/24/99	1.38		
10/2/96	1.64	8/14/99	2.05		
11/21/96	1.34	11/9/99	1.78		
12/5/96	1.78	1/29/00	1.93		
2/26/97	1.86	4/24/00	1.49		
5/23/97	2.12	7/17/00	1.7		
8/19/97	1.6	10/9/00	1.77		
10/12/97	1.04	1/1/01	1.73		
1/3/98	1.34	3/25/01	2.25		
3/29/98	1.71	6/17/01	1.5		

# FCV-1934A

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
GL	AO	0.75	Close	1.76	0.88	2.64	60

## Stroke Time History

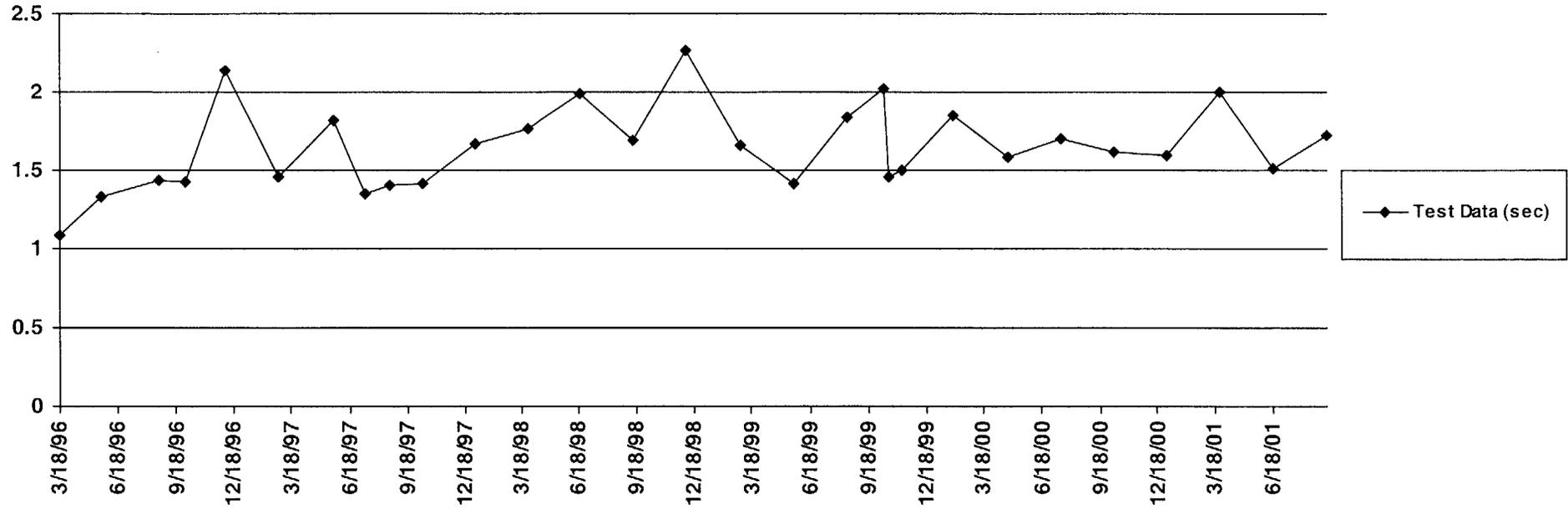


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
3/18/96	1.53	1/2/99	1.18	9/9/01	1.76
5/23/96	1.13	1/30/99	1.58		
8/22/96	1.66	2/28/99	1.57		
10/2/96	1.8	5/24/99	1.67		
12/5/96	1.76	8/14/99	1.8		
2/26/97	1.34	10/12/99	1.56		
5/23/97	1.67	11/9/99	1.5		
8/19/97	1.8	1/29/00	1.79		
10/12/97	1.16	4/24/00	1.63		
1/4/98	1.59	7/17/00	1.7		
3/29/98	1.37	10/9/00	1.79		
6/20/98	1.6	1/1/01	1.62		
9/12/98	0.95	3/25/01	2.07		
12/5/98	1.88	6/17/01	1.62		

# FCV-1934B

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
GL	AO	0.75	Close	1.69	0.85	2.54	60

## Stroke Time History

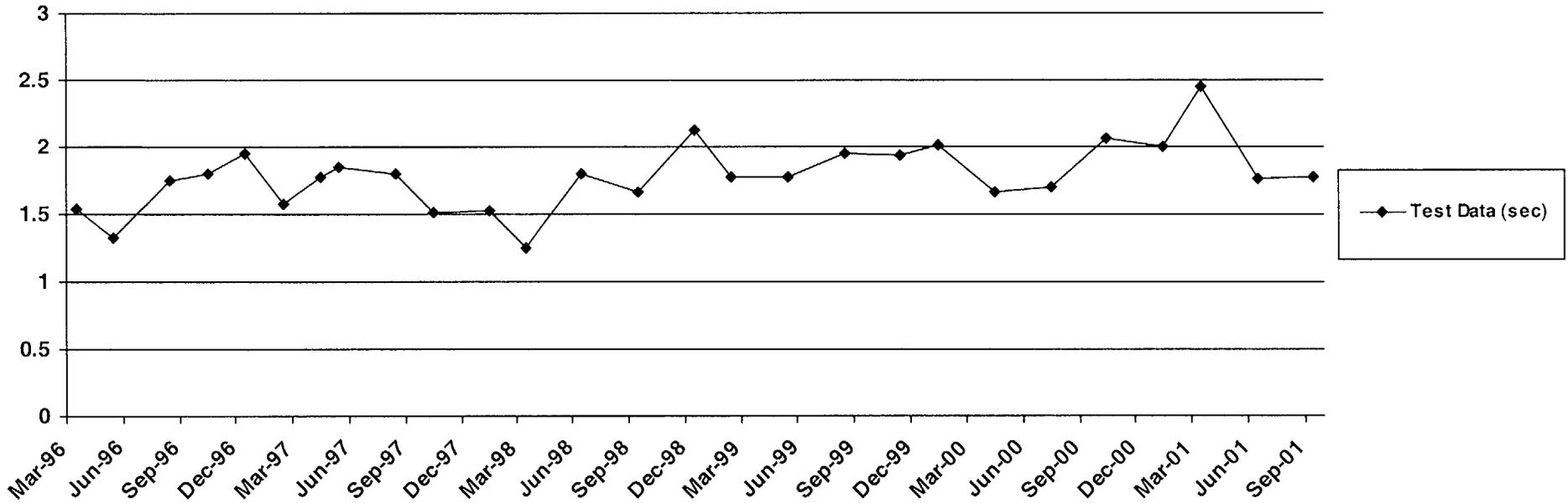


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
3/18/96	1.08	12/5/98	2.27	9/9/01	1.72
5/23/96	1.33	2/28/99	1.66		
8/22/96	1.44	5/24/99	1.41		
10/2/96	1.43	8/14/99	1.84		
12/5/96	2.14	10/12/99	2.02		
2/26/97	1.46	10/19/99	1.46		
5/23/97	1.82	11/9/99	1.5		
7/13/97	1.35	1/29/00	1.85		
8/19/97	1.4	4/24/00	1.59		
10/12/97	1.41	7/17/00	1.7		
1/4/98	1.67	10/9/00	1.62		
3/29/98	1.77	1/1/01	1.6		
6/20/98	1.99	3/25/01	2		
9/12/98	1.69	6/17/01	1.51		

# FCV-1935A

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
GL	AO	0.75	Close	1.99	1.00	2.99	60

## Stroke Time History

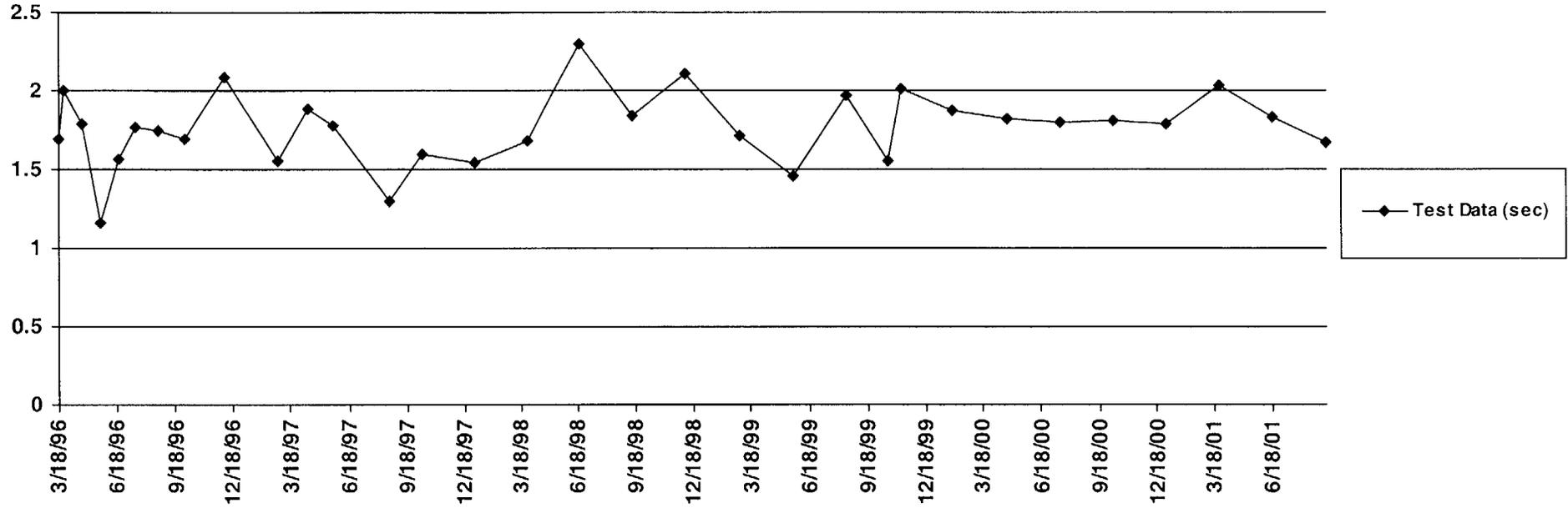


Test Date	Stroke Time	Test Date	Stroke Time
3/18/96	1.54	12/5/98	2.13
5/23/96	1.33	2/28/99	1.78
8/22/96	1.75	5/24/99	1.78
10/2/96	1.8	8/14/99	1.95
12/5/96	1.95	11/9/99	1.94
2/26/97	1.57	1/29/00	2.01
4/13/97	1.78	4/24/00	1.66
5/23/97	1.85	7/17/00	1.7
8/19/97	1.8	10/9/00	2.06
10/12/97	1.51	1/1/01	2
1/4/98	1.52	3/25/01	2.45
3/29/98	1.25	6/17/01	1.76
6/20/98	1.8	9/9/01	1.78
9/12/98	1.66		

# FCV-1935B

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
GL	AO	0.75	Close	1.85	0.93	2.78	60

## Stroke Time History

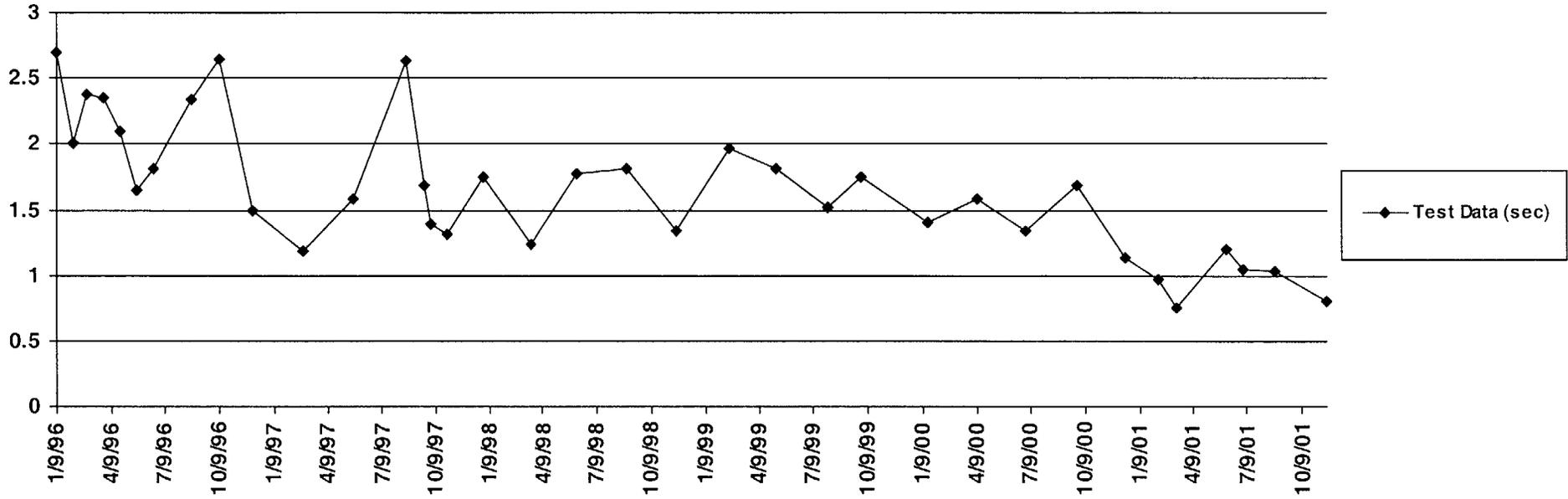


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
3/18/96	1.69	1/4/98	1.54	1/1/01	1.79
3/26/96	2	3/29/98	1.68	3/25/01	2.03
4/23/96	1.79	6/20/98	2.3	6/17/01	1.83
5/23/96	1.16	9/12/98	1.84	9/9/01	1.67
6/19/96	1.56	12/5/98	2.11		
7/17/96	1.77	2/28/99	1.71		
8/22/96	1.75	5/24/99	1.46		
10/2/96	1.69	8/14/99	1.97		
12/5/96	2.08	10/19/99	1.55		
2/26/97	1.55	11/9/99	2.01		
4/13/97	1.88	1/29/00	1.87		
5/23/97	1.78	4/24/00	1.82		
8/19/97	1.3	7/17/00	1.8		
10/12/97	1.6	10/9/00	1.81		

# PS-956A

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
GL	AO	0.375	Close	1.15	0.58	1.73	60

## Stroke Time History

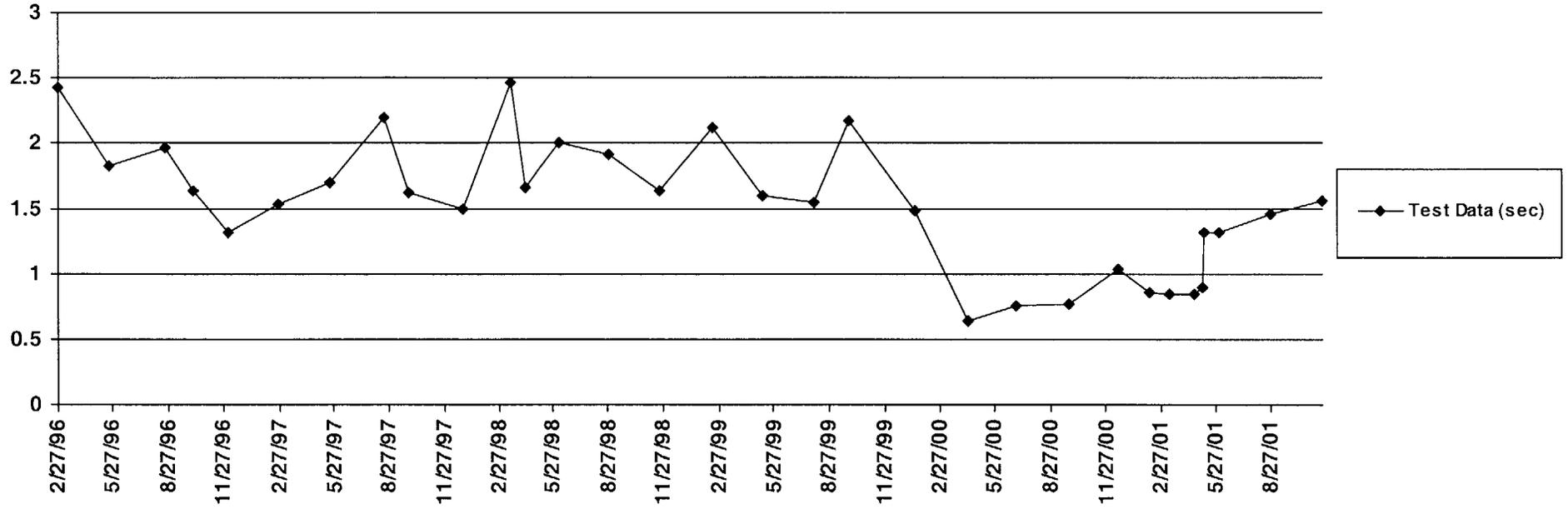


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
1/9/96	2.7	9/28/97	1.39	9/26/00	1.68
2/5/96	2	10/26/97	1.32	12/16/00	1.13
2/27/96	2.37	12/27/97	1.75	2/8/01	0.97
3/26/96	2.35	3/18/98	1.24	3/12/01	0.75
4/23/96	2.1	6/6/98	1.78	6/3/01	1.2
5/21/96	1.65	8/29/98	1.81	7/2/01	1.05
6/19/96	1.81	11/21/98	1.34	8/25/01	1.04
8/22/96	2.34	2/17/99	1.97	11/18/01	0.81
10/8/96	2.64	5/8/99	1.81		
12/3/96	1.5	8/1/99	1.52		
2/25/97	1.19	9/28/99	1.75		
5/20/97	1.58	1/17/00	1.41		
8/18/97	2.63	4/11/00	1.58		
9/17/97	1.69	7/1/00	1.34		

# PS-956B

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
GL	AO	0.375	Close	1.04	0.52	1.56	60

## Stroke Time History

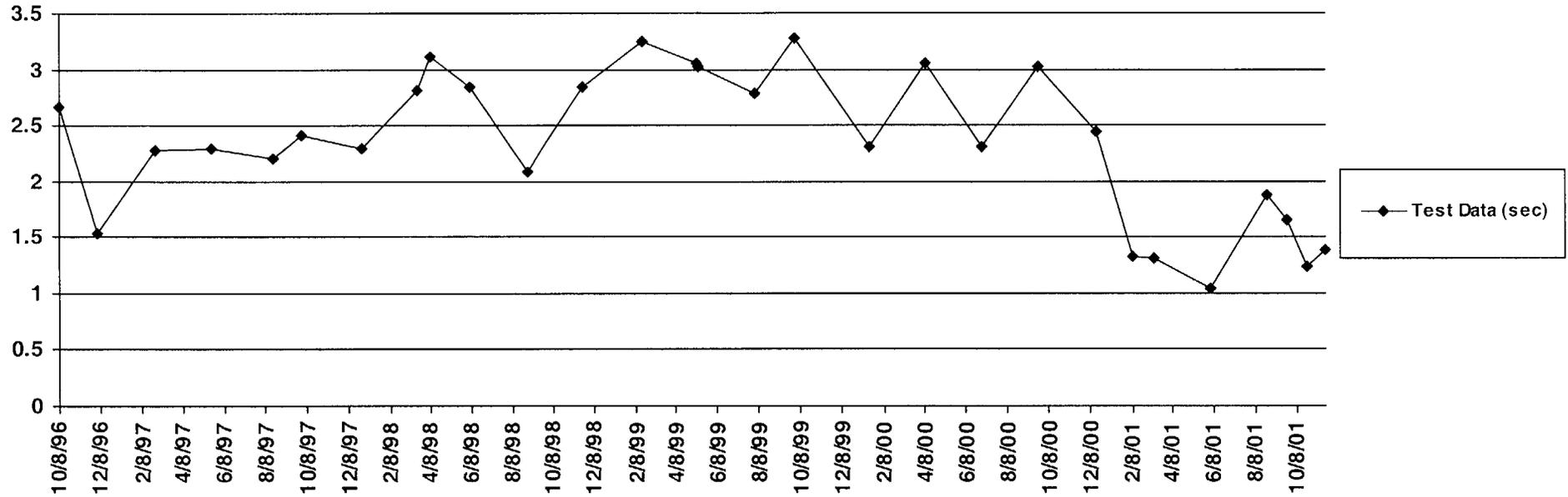


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
2/27/96	2.43	11/21/98	1.64	5/7/01	1.31
5/21/96	1.82	2/17/99	2.12	6/3/01	1.32
8/22/96	1.97	5/8/99	1.6	8/25/01	1.45
10/8/96	1.64	8/1/99	1.54	11/18/01	1.56
12/3/96	1.31	9/28/99	2.17		
2/25/97	1.53	1/17/00	1.48		
5/20/97	1.7	4/11/00	0.64		
8/18/97	2.2	7/1/00	0.75		
9/28/97	1.62	9/26/00	0.77		
12/27/97	1.5	12/16/00	1.03		
3/18/98	2.47	2/8/01	0.85		
4/10/98	1.66	3/12/01	0.84		
6/6/98	2	4/21/01	0.84		
8/29/98	1.92	5/6/01	0.9		

# PS-956C

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
GL	AO	0.375	Close	1.23	0.62	1.85	60

## Stroke Time History

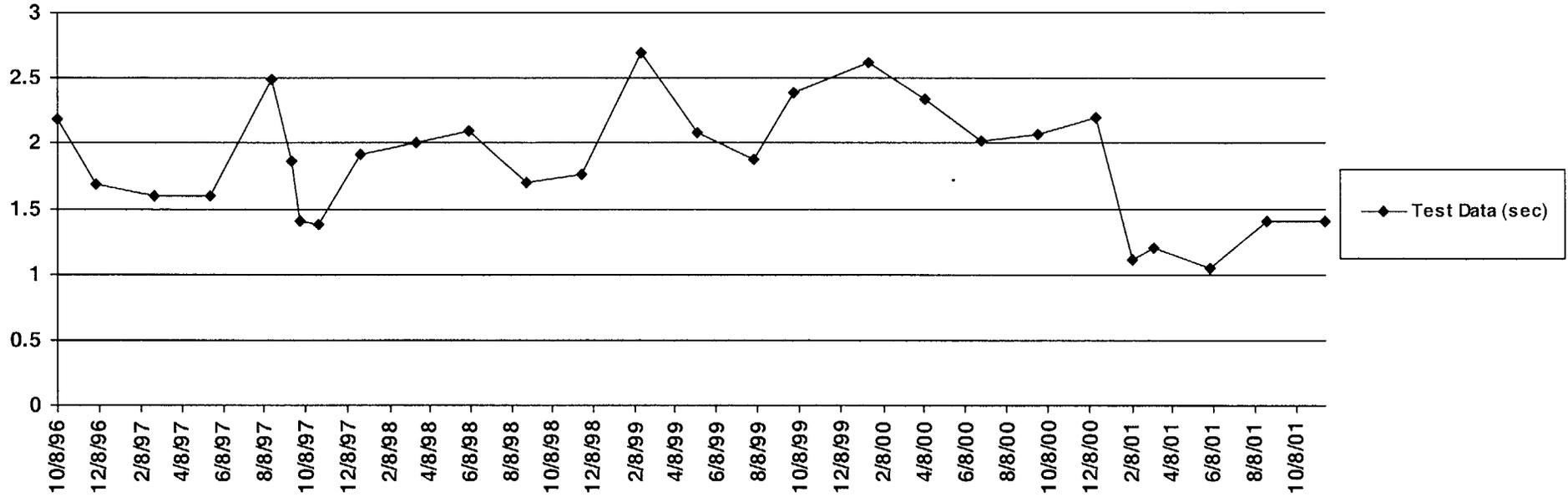


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
10/8/96	2.66	5/10/99	3.02	11/18/01	1.39
12/3/96	1.53	8/1/99	2.79		
2/25/97	2.28	9/28/99	3.27		
5/20/97	2.3	1/17/00	2.31		
8/18/97	2.2	4/10/00	3.06		
9/28/97	2.41	7/1/00	2.31		
12/27/97	2.3	9/23/00	3.02		
3/18/98	2.82	12/16/00	2.45		
4/8/98	3.12	2/8/01	1.33		
6/6/98	2.84	3/12/01	1.31		
8/29/98	2.09	6/3/01	1.05		
11/21/98	2.85	8/25/01	1.88		
2/17/99	3.24	9/24/01	1.66		
5/9/99	3.06	10/22/01	1.24		

# PS-956D

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
GL	AO	0.375	Close	1.12	0.56	1.68	60

## Stroke Time History

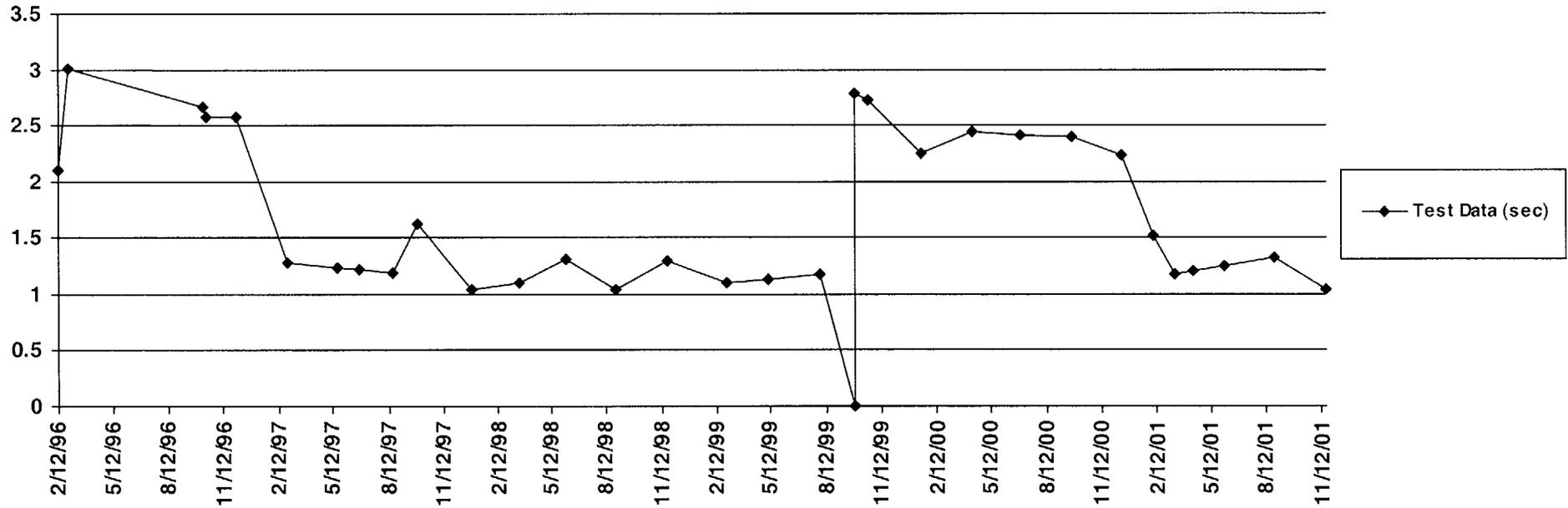


Test Date	Stroke Time	Test Date	Stroke Time
10/8/96	2.18	5/10/99	2.08
12/3/96	1.68	8/1/99	1.88
2/25/97	1.60	9/28/99	2.39
5/20/97	1.60	1/17/00	2.62
8/18/97	2.49	4/10/00	2.33
9/17/97	1.87	7/1/00	2.02
9/28/97	1.41	9/23/00	2.07
10/26/97	1.38	12/16/00	2.20
12/27/97	1.91	2/8/01	1.11
3/18/98	2.00	3/12/01	1.20
6/6/98	2.09	6/3/01	1.05
8/29/98	1.70	8/25/01	1.40
11/21/98	1.76	11/18/01	1.41
2/17/99	2.70		

# PS-956E

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
GL	AO	0.375	Close	1.29	0.65	1.94	60

## Stroke Time History

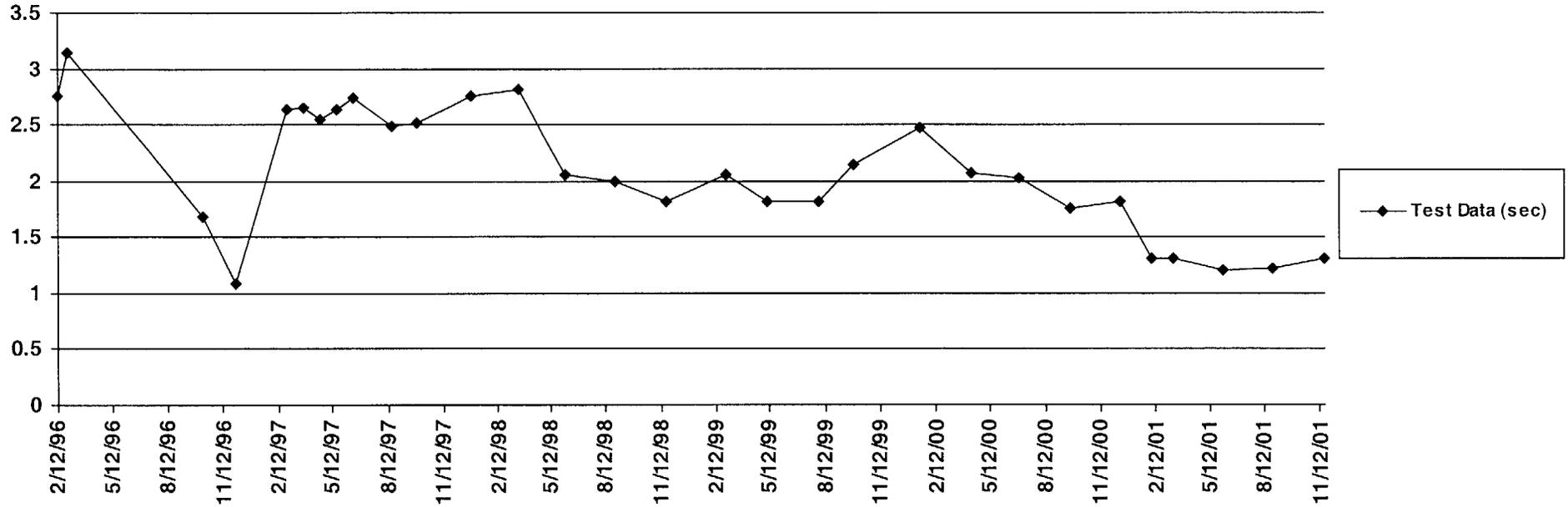


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
2/12/96	2.1	11/21/98	1.3	4/11/01	1.2
2/27/96	3.01	3/1/99	1.1	6/3/01	1.25
10/8/96	2.66	5/8/99	1.13	8/25/01	1.32
10/14/96	2.58	8/1/99	1.18	11/18/01	1.05
12/3/96	2.58	9/28/99	0		
2/25/97	1.28	9/29/99	2.79		
5/20/97	1.24	10/19/99	2.72		
6/25/97	1.22	1/17/00	2.25		
8/18/97	1.19	4/10/00	2.45		
9/28/97	1.63	7/1/00	2.41		
12/27/97	1.04	9/23/00	2.4		
3/18/98	1.1	12/16/00	2.24		
6/6/98	1.31	2/6/01	1.52		
8/29/98	1.04	3/12/01	1.18		

# PS-956F

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
GL	AO	0.375	Close	1.48	0.74	2.22	60

## Stroke Time History

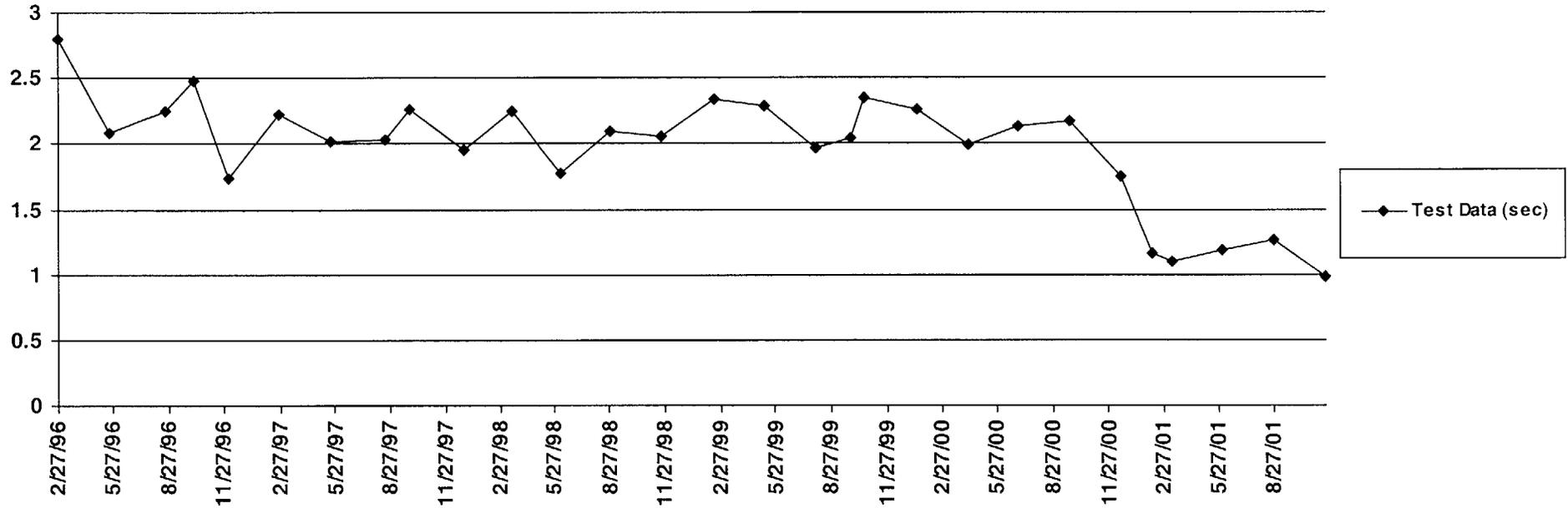


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
2/12/96	2.75	8/29/98	2	8/25/01	1.22
2/27/96	3.14	11/21/98	1.81	11/18/01	1.31
10/8/96	1.68	3/1/99	2.06		
12/3/96	1.08	5/8/99	1.82		
2/25/97	2.63	8/1/99	1.81		
3/25/97	2.65	9/28/99	2.14		
4/22/97	2.54	1/17/00	2.47		
5/20/97	2.64	4/10/00	2.07		
6/17/97	2.74	7/1/00	2.03		
8/18/97	2.49	9/23/00	1.76		
9/28/97	2.52	12/16/00	1.81		
12/27/97	2.75	2/6/01	1.31		
3/18/98	2.81	3/12/01	1.31		
6/6/98	2.06	6/3/01	1.2		

# PS-956G

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
GL	AO	0.375	Close	1.47	0.74	2.21	60

## Stroke Time History

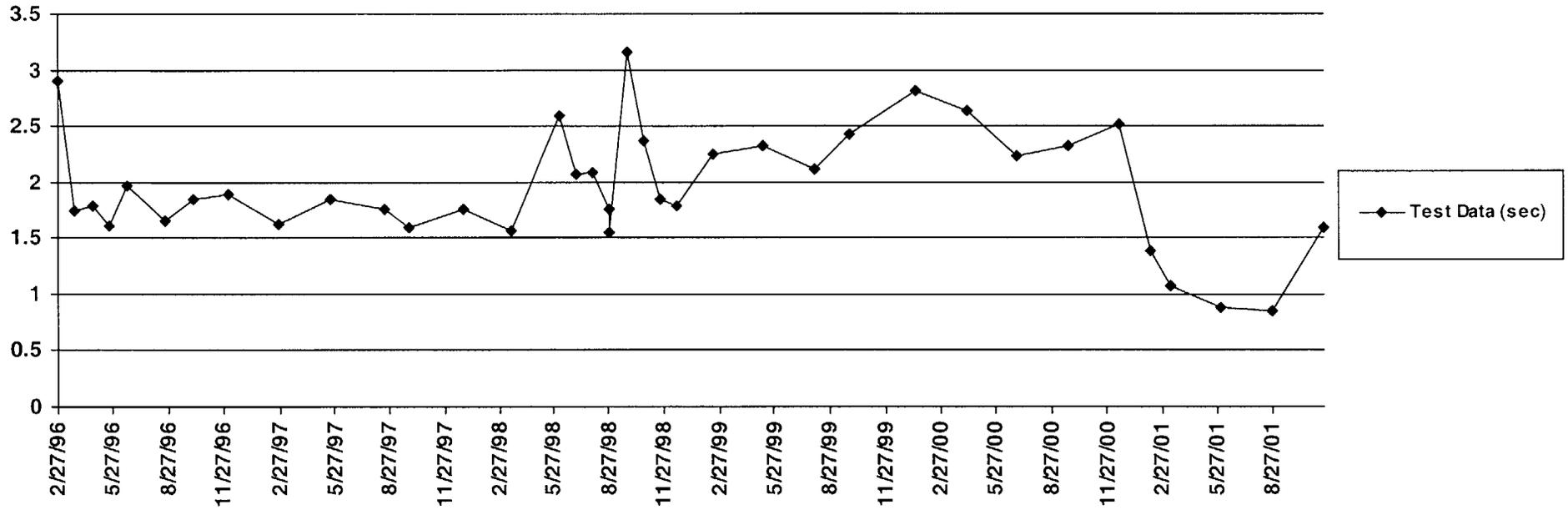


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
2/27/96	2.79	2/17/99	2.34	11/18/01	0.98
5/22/96	2.08	5/8/99	2.29		
8/22/96	2.25	8/1/99	1.96		
10/8/96	2.48	9/28/99	2.04		
12/3/96	1.73	10/19/99	2.35		
2/25/97	2.22	1/17/00	2.26		
5/20/97	2.02	4/10/00	1.99		
8/18/97	2.03	7/1/00	2.13		
9/28/97	2.26	9/23/00	2.17		
12/27/97	1.95	12/16/00	1.75		
3/18/98	2.25	2/6/01	1.16		
6/6/98	1.78	3/12/01	1.1		
8/29/98	2.09	6/3/01	1.19		
11/21/98	2.06	8/25/01	1.27		

# PS-956H

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
GL	AO	0.375	Close	1.12	0.56	1.68	60

## Stroke Time History

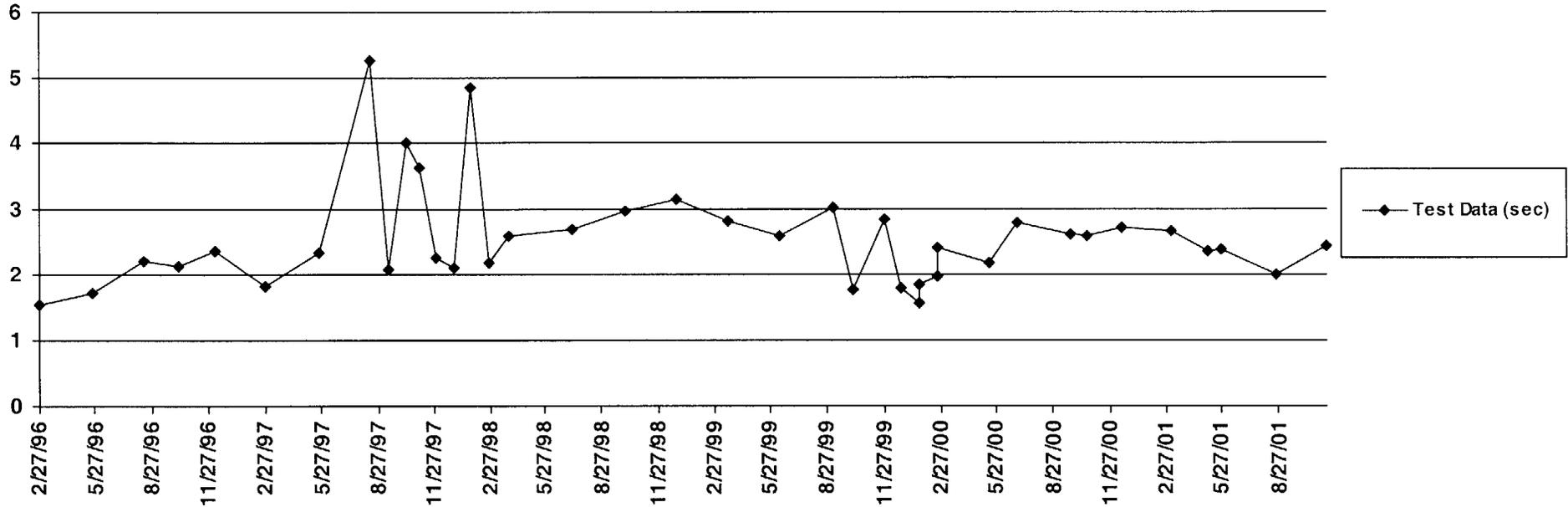


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
2/27/96	2.9	6/6/98	2.59	4/10/00	2.64
3/26/96	1.75	7/4/98	2.07	7/1/00	2.24
4/23/96	1.78	8/1/98	2.09	9/23/00	2.33
5/22/96	1.61	8/29/98	1.76	12/16/00	2.52
6/19/96	1.97	8/29/98	1.55	2/6/01	1.39
8/22/96	1.66	9/26/98	3.16	3/12/01	1.07
10/8/96	1.85	10/24/98	2.37	6/3/01	0.88
12/3/96	1.89	11/21/98	1.85	8/25/01	0.85
2/25/97	1.63	12/18/98	1.78	11/18/01	1.59
5/20/97	1.85	2/17/99	2.25		
8/18/97	1.76	5/8/99	2.32		
9/28/97	1.59	8/1/99	2.12		
12/27/97	1.76	9/28/99	2.43		
3/18/98	1.57	1/17/00	2.82		

# RC-519A

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
DA	AO	3	Close	2.54	1.27	3.81	60

## Stroke Time History

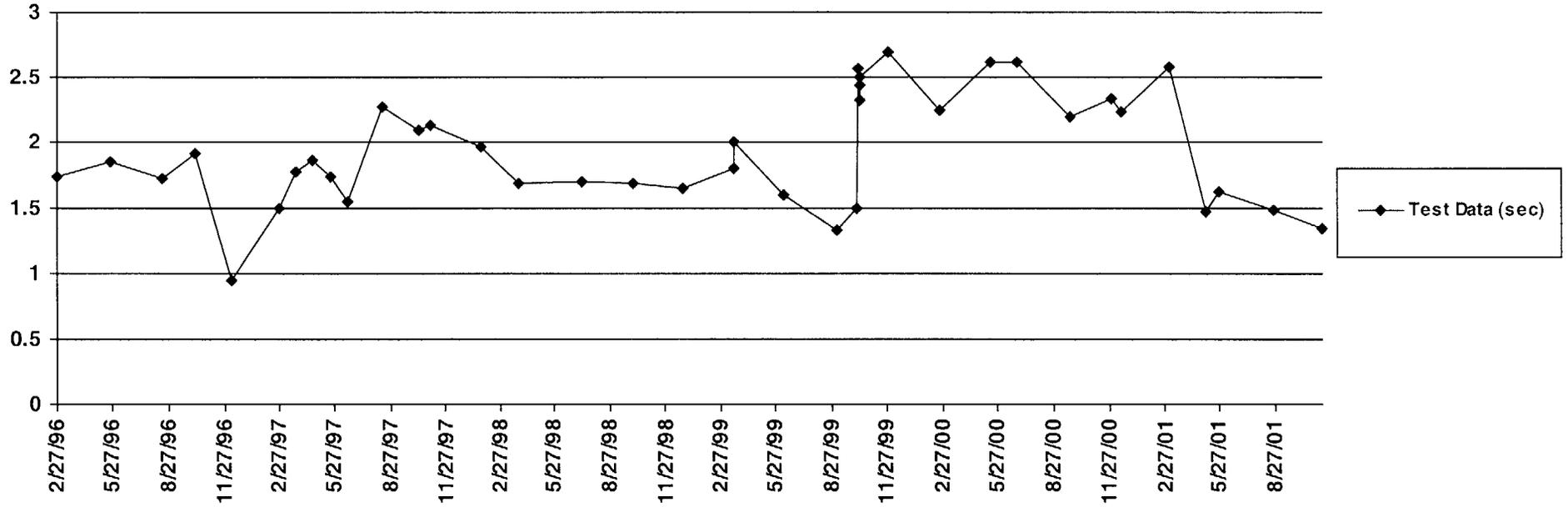


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
2/27/96	1.52	2/24/98	2.16	2/22/00	2.41
5/23/96	1.72	3/28/98	2.58	5/15/00	2.16
8/15/96	2.19	7/11/98	2.67	6/29/00	2.78
10/9/96	2.12	10/4/98	2.97	9/23/00	2.6
12/8/96	2.35	12/26/98	3.13	10/20/00	2.59
2/25/97	1.81	3/21/99	2.8	12/16/00	2.71
5/22/97	2.33	6/11/99	2.57	3/6/01	2.66
8/15/97	5.27	9/5/99	3.02	5/4/01	2.34
9/12/97	2.08	10/7/99	1.76	5/27/01	2.38
10/12/97	4	11/28/99	2.84	8/24/01	2
11/2/97	3.63	12/26/99	1.79	11/11/01	2.43
12/1/97	2.24	1/24/00	1.56		
12/30/97	2.09	1/24/00	1.84		
1/25/98	4.85	2/22/00	1.96		

# RC-519B

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
DA	AO	3	Close	1.55	0.78	2.33	60

## Stroke Time History

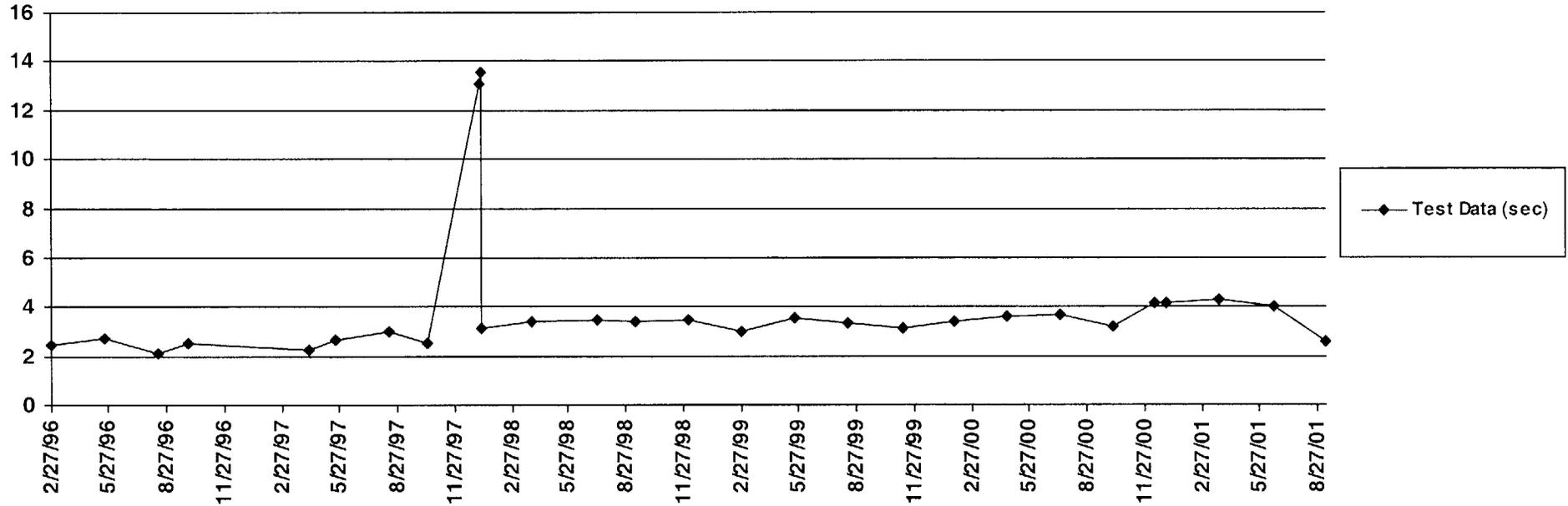


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
2/27/96	1.73	3/28/98	1.69	2/22/00	2.25
5/23/96	1.85	7/11/98	1.7	5/15/00	2.62
8/15/96	1.72	10/4/98	1.69	6/29/00	2.62
10/9/96	1.91	12/26/98	1.65	9/23/00	2.2
12/8/96	0.94	3/20/99	1.8	12/1/00	2.34
2/25/97	1.5	3/21/99	2	12/16/00	2.23
3/25/97	1.78	6/11/99	1.59	3/6/01	2.58
4/22/97	1.87	9/5/99	1.33	5/4/01	1.47
5/20/97	1.73	10/7/99	1.5	5/27/01	1.62
6/17/97	1.54	10/10/99	2.56	8/24/01	1.48
8/15/97	2.27	10/12/99	2.44	11/11/01	1.34
10/12/97	2.1	10/12/99	2.32		
11/2/97	2.13	10/14/99	2.5		
1/25/98	1.96	11/28/99	2.7		

# WD-1721

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
DA	AO	3	Close	3.97	1.99	5.96	60

## Stroke Time History

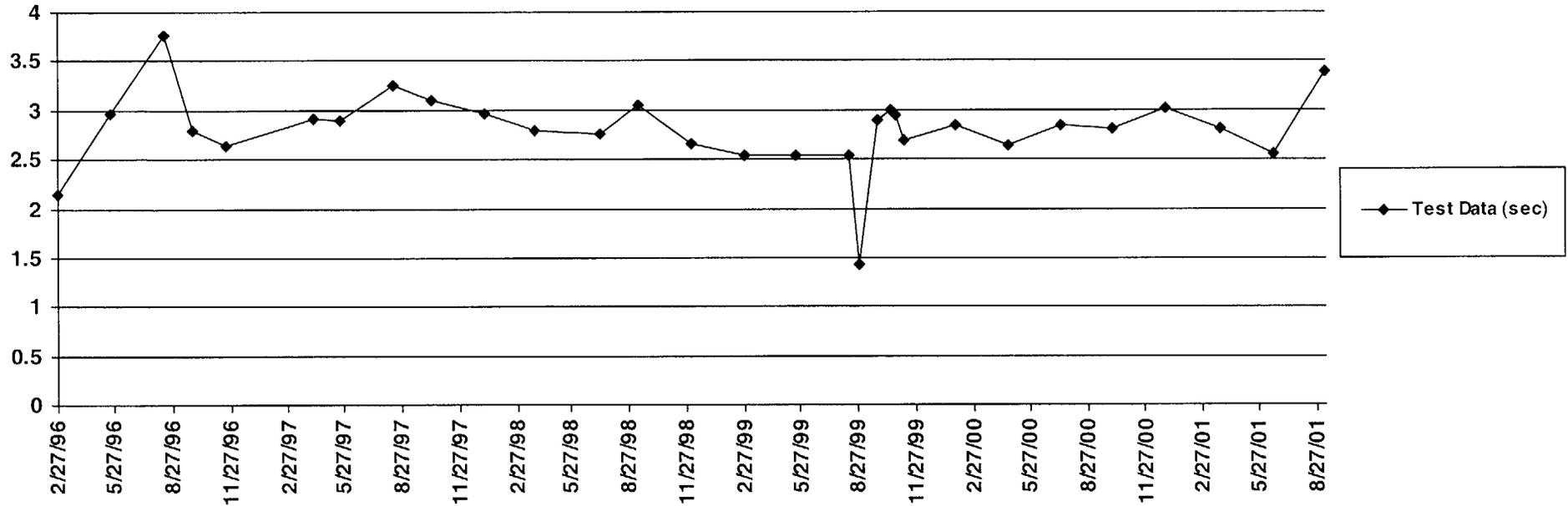


Test Date	Stroke Time	Test Date	Stroke Time
2/27/96	2.43	12/5/98	3.48
5/21/96	2.72	2/27/99	2.99
8/13/96	2.13	5/21/99	3.55
9/28/96	2.54	8/14/99	3.34
4/8/97	2.25	11/9/99	3.15
5/22/97	2.64	1/29/00	3.39
8/13/97	2.97	4/22/00	3.59
10/12/97	2.52	7/15/00	3.65
1/6/98	13.06	10/7/00	3.2
1/7/98	13.57	12/12/00	4.17
1/8/98	3.13	12/30/00	4.13
3/29/98	3.4	3/26/01	4.31
7/12/98	3.49	6/19/01	4.05
9/12/98	3.41	9/9/01	2.56

# WD-1722

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
DA	AO	3	Close	2.81	1.41	4.22	60

## Stroke Time History

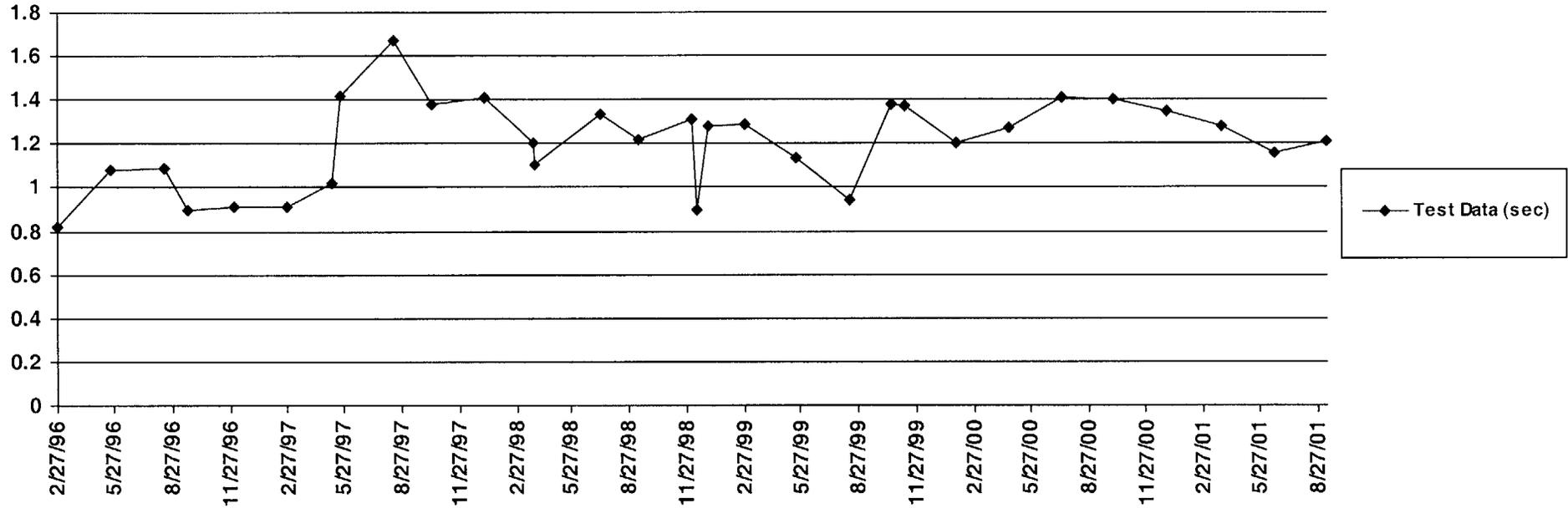


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
2/27/96	2.15	2/27/99	2.53	6/19/01	2.56
5/21/96	2.96	5/21/99	2.54	9/9/01	3.39
8/13/96	3.76	8/14/99	2.53		
9/28/96	2.79	8/30/99	1.43		
11/19/96	2.63	9/28/99	2.9		
4/8/97	2.91	10/19/99	2.99		
5/22/97	2.9	10/27/99	2.94		
8/13/97	3.25	11/9/99	2.69		
10/12/97	3.1	1/29/00	2.85		
1/7/98	2.97	4/22/00	2.63		
3/29/98	2.8	7/15/00	2.84		
7/12/98	2.75	10/7/00	2.81		
9/12/98	3.04	12/30/00	3.02		
12/5/98	2.66	3/26/01	2.81		

# WD-1723

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
DA	AO	2	Close	1.32	0.66	1.98	60

## Stroke Time History

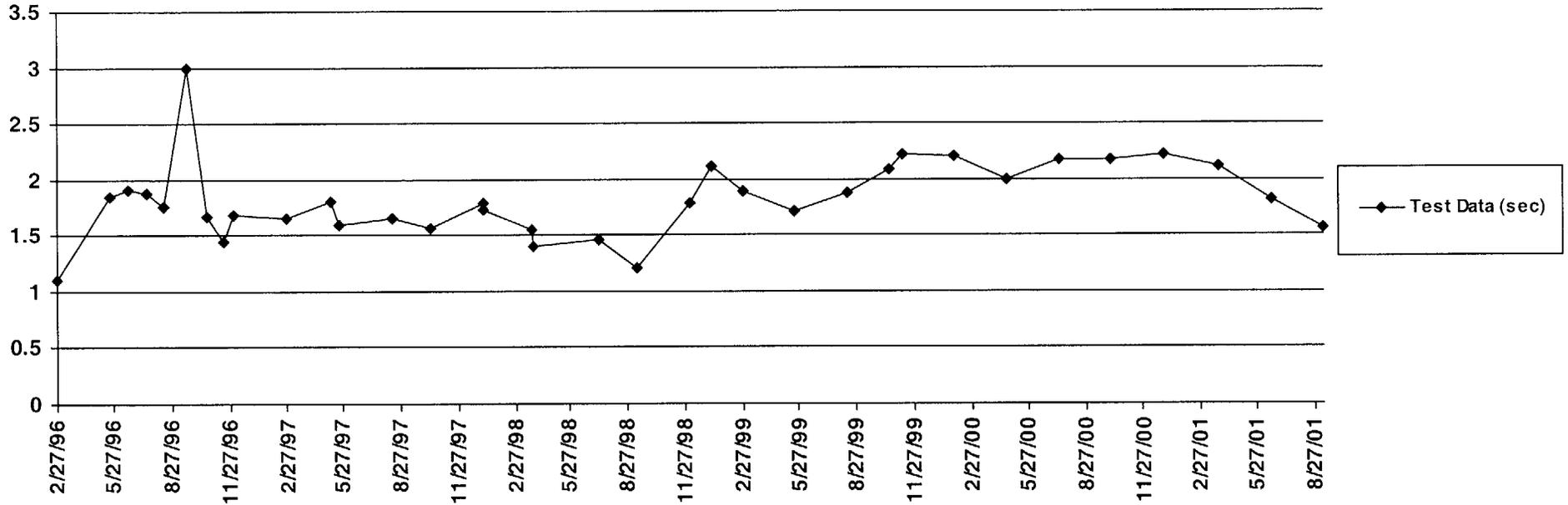


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
2/27/96	0.82	9/12/98	1.22	3/26/01	1.28
5/21/96	1.08	12/5/98	1.31	6/19/01	1.16
8/13/96	1.09	12/13/98	0.9	9/9/01	1.21
9/20/96	0.9	12/31/98	1.28		
12/3/96	0.91	2/27/99	1.29		
2/25/97	0.91	5/21/99	1.13		
5/8/97	1.02	8/14/99	0.94		
5/22/97	1.42	10/18/99	1.38		
8/13/97	1.67	11/9/99	1.37		
10/12/97	1.38	1/29/00	1.2		
1/7/98	1.41	4/22/00	1.27		
3/27/98	1.2	7/15/00	1.41		
3/29/98	1.1	10/7/00	1.4		
7/12/98	1.33	12/31/00	1.35		

# WD-1728

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
DA	AO	2	Close	2.1	1.05	3.15	60

## Stroke Time History

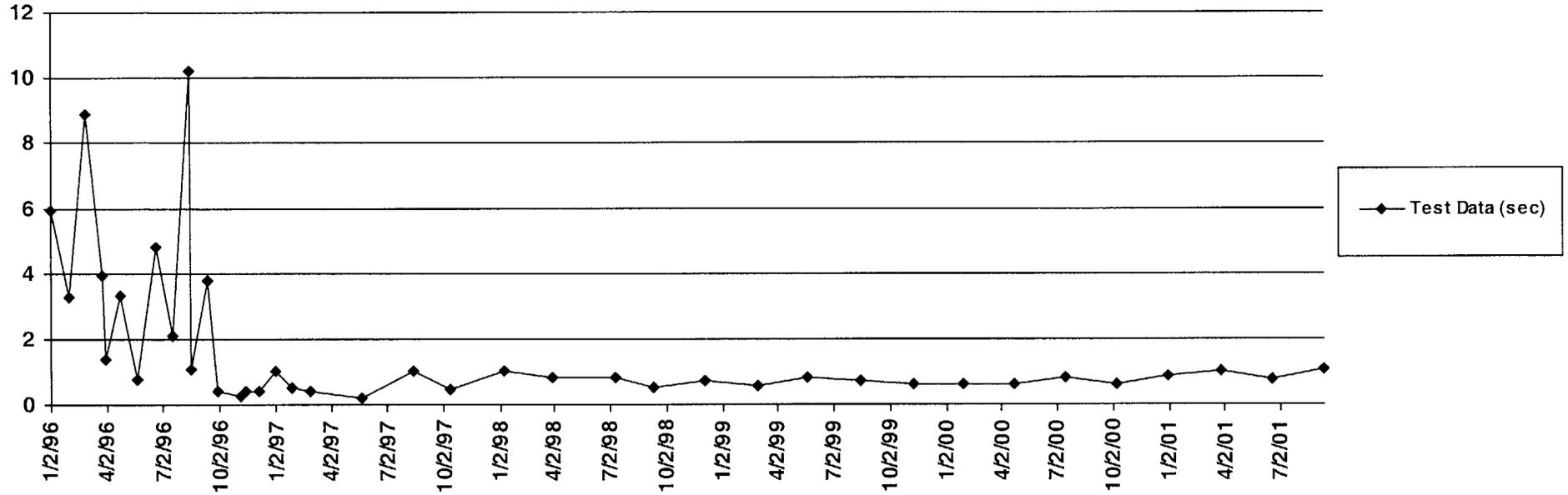


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
2/27/96	1.1	1/6/98	1.78	4/22/00	1.99
5/21/96	1.84	1/7/98	1.73	7/16/00	2.17
6/19/96	1.91	3/27/98	1.55	10/7/00	2.17
7/17/96	1.88	3/29/98	1.4	12/31/00	2.22
8/13/96	1.76	7/12/98	1.46	3/26/01	2.12
9/20/96	3	9/12/98	1.2	6/19/01	1.81
10/22/96	1.67	12/5/98	1.78	9/9/01	1.56
11/18/96	1.45	1/8/99	2.12		
12/3/96	1.69	2/27/99	1.89		
2/25/97	1.65	5/21/99	1.72		
5/8/97	1.8	8/14/99	1.87		
5/22/97	1.59	10/18/99	2.09		
8/13/97	1.66	11/9/99	2.22		
10/12/97	1.57	1/29/00	2.2		

# WD-1786

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
DA	AO	1	Close	0.83	0.42	1.25	60

## Stroke Time History

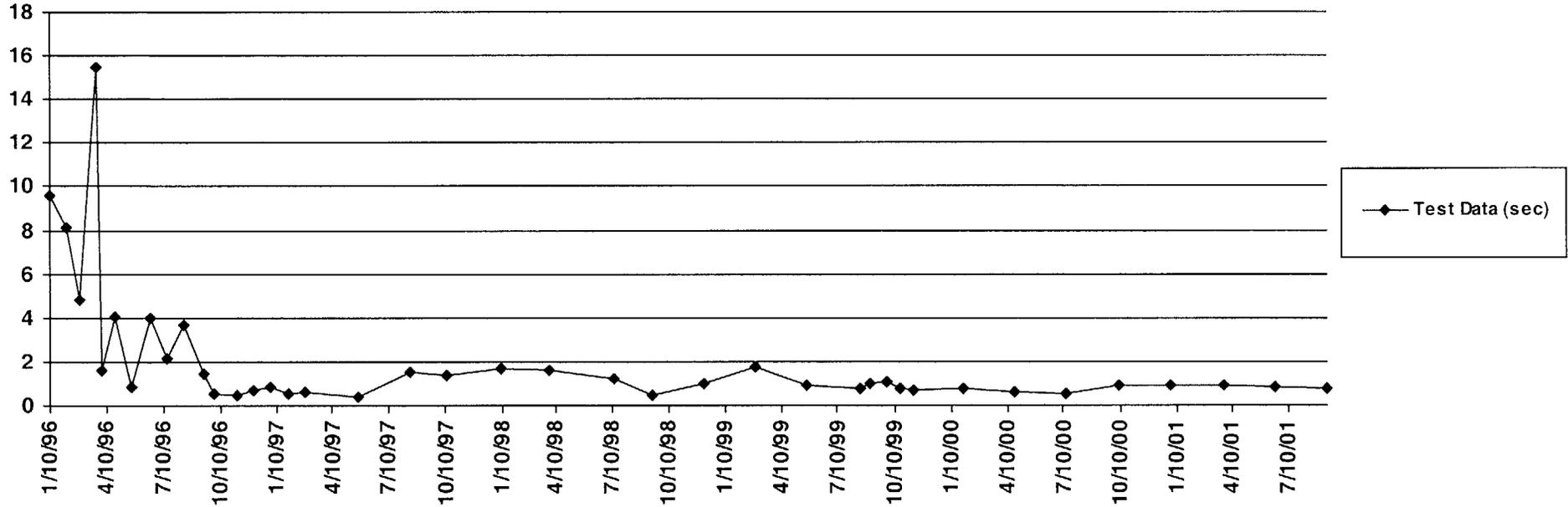


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
1/2/96	5.91	11/12/96	0.39	5/21/99	0.8
1/30/96	3.27	12/3/96	0.42	8/14/99	0.74
2/27/96	8.87	12/31/96	1.03	11/9/99	0.62
3/26/96	3.94	1/28/97	0.53	1/29/00	0.6
4/1/96	1.36	2/25/97	0.4	4/22/00	0.63
4/23/96	3.34	5/22/97	0.2	7/15/00	0.84
5/21/96	0.78	8/13/97	1.03	10/7/00	0.6
6/19/96	4.81	10/12/97	0.48	12/30/00	0.89
7/17/96	2.08	1/7/98	1.01	3/26/01	1.03
8/13/96	10.22	3/29/98	0.8	6/19/01	0.78
8/16/96	1.07	7/12/98	0.83	9/9/01	1.08
9/12/96	3.76	9/12/98	0.51		
9/28/96	0.42	12/5/98	0.7		
11/5/96	0.27	2/27/99	0.54		

# WD-1787

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
DA	AO	1	Close	0.83	0.42	1.25	60

## Stroke Time History

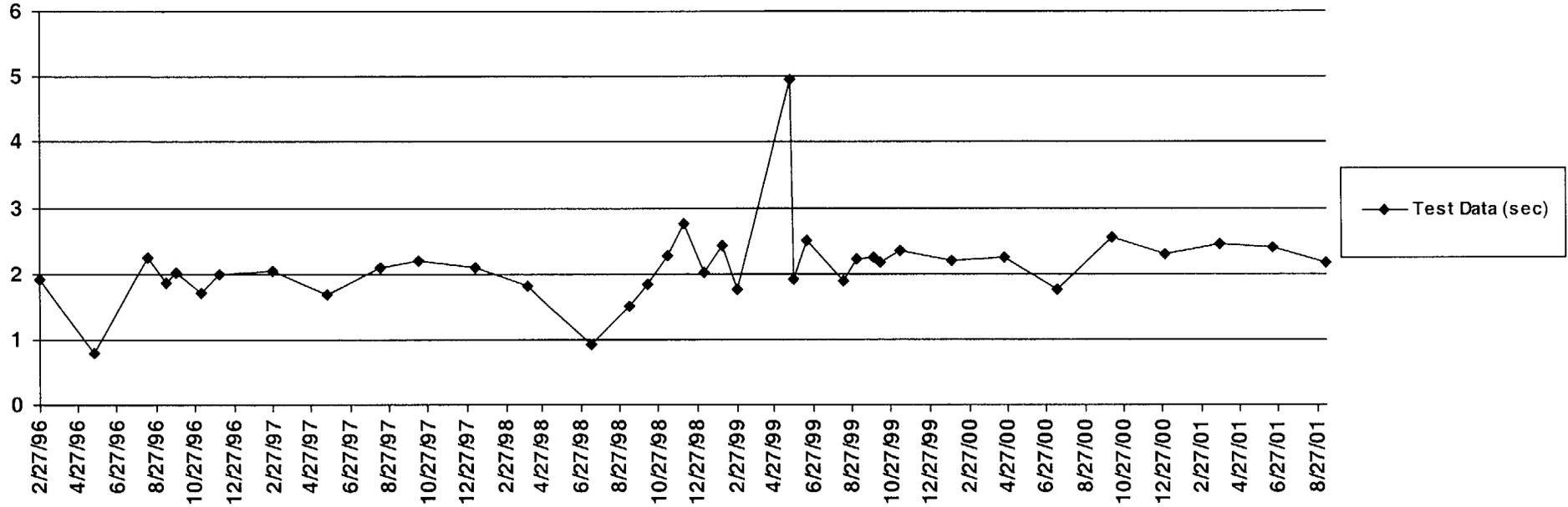


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
1/10/96	9.6	12/31/96	0.83	9/1/99	1.02
2/5/96	8.12	1/28/97	0.57	9/28/99	1.07
2/27/96	4.8	2/25/97	0.63	10/19/99	0.74
3/26/96	15.5	5/22/97	0.41	11/9/99	0.71
4/1/96	1.63	8/13/97	1.57	1/29/00	0.8
4/23/96	4.03	10/12/97	1.36	4/22/00	0.58
5/21/96	0.86	1/7/98	1.67	7/15/00	0.56
6/19/96	3.97	3/29/98	1.6	10/7/00	0.94
7/17/96	2.14	7/12/98	1.23	12/31/00	0.91
8/13/96	3.66	9/12/98	0.47	3/26/01	0.9
9/12/96	1.47	12/5/98	0.99	6/19/01	0.83
9/28/96	0.56	2/27/99	1.77	9/9/01	0.74
11/5/96	0.49	5/21/99	0.89		
12/3/96	0.66	8/14/99	0.73		

# WD-1789

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
DA	AO	0.75	Close	2.29	1.15	3.44	60

## Stroke Time History

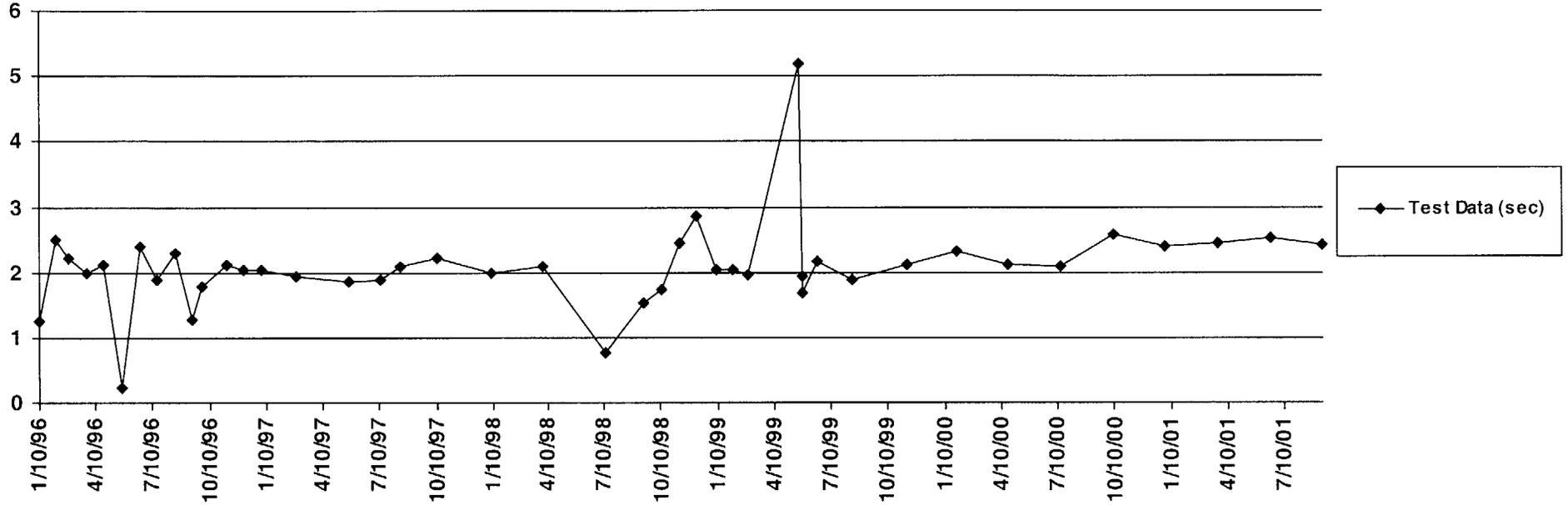


Test Date	Stroke Time	Test Date	Stroke Time	Test Date	Stroke Time
2/27/96	1.91	9/12/98	1.51	11/9/99	2.35
5/22/96	0.79	10/10/98	1.84	1/29/00	2.2
8/15/96	2.24	11/9/98	2.27	4/22/00	2.24
9/12/96	1.87	12/7/98	2.75	7/15/00	1.75
9/28/96	2.01	1/6/99	2.02	10/8/00	2.56
11/5/96	1.71	2/3/99	2.42	12/30/00	2.31
12/3/96	2	2/27/99	1.75	3/26/01	2.44
2/25/97	2.03	5/21/99	4.96	6/19/01	2.39
5/22/97	1.69	5/26/99	1.91	9/9/01	2.16
8/13/97	2.1	6/18/99	2.49		
10/12/97	2.19	8/14/99	1.9		
1/8/98	2.1	9/2/99	2.23		
4/3/98	1.82	9/28/99	2.25		
7/12/98	0.93	10/10/99	2.16		

# WD-1794

Valve Type	Actuator Type	Size	Stroke Direction	Proposed Refer Value (Sec)	Low Acceptance Criteria (-50%)	High Acceptance Criteria (+50%)	Limiting Value
DA	AO	0.75	Close	2.41	1.21	3.62	60

## Stroke Time History



Test Date	Stroke Time						
1/10/96	1.26	2/25/97	1.94	2/27/99	1.97	9/9/01	2.42
2/5/96	2.51	5/22/97	1.86	5/21/99	5.18		
2/27/96	2.23	7/11/97	1.88	5/26/99	1.94		
3/26/96	2	8/13/97	2.1	5/27/99	1.69		
4/23/96	2.12	10/12/97	2.23	6/18/99	2.16		
5/22/96	0.24	1/8/98	2	8/14/99	1.9		
6/19/96	2.41	4/3/98	2.09	11/9/99	2.12		
7/17/96	1.9	7/12/98	0.76	1/29/00	2.32		
8/15/96	2.31	9/12/98	1.52	4/22/00	2.13		
9/12/96	1.28	10/10/98	1.74	7/15/00	2.1		
9/28/96	1.8	11/9/98	2.45	10/8/00	2.58		
11/5/96	2.11	12/7/98	2.85	12/30/00	2.4		
12/3/96	2.05	1/6/99	2.04	3/26/01	2.45		
12/31/96	2.04	2/3/99	2.05	6/19/01	2.52		

United States Nuclear Regulatory Commission  
Attachment III to Serial: RNP-RA/02-0009  
2 Pages

CAROLINA POWER AND LIGHT COMPANY

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

P&ID G-190262, REVISION 28, ISOLATION VALVE SEAL WATER SYSTEM

**THIS PAGE IS AN  
OVERSIZED DRAWING  
OR FIGURE,**

**THAT CAN BE VIEWED AT  
THE RECORD TITLED:  
DWG. NO. G-190262  
ISOLATION VALVE SYSTEM  
WATER FLOW DIAGRAM  
WITHIN THIS PACKAGE...OR,  
BY SEARCHING USING THE  
DRAWING NUMBER  
G-190292**

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**D-1**

United States Nuclear Regulatory Commission  
Attachment IV to Serial: RNP-RA/02-0009  
207 Pages

CAROLINA POWER AND LIGHT COMPANY  
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

OST-933  
CONTAINMENT ISOLATION VALVES LEAKAGE TEST  
REVISION 16

CAROLINA POWER & LIGHT COMPANY  
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 3  
PART 9

OPERATIONS SURVEILLANCE TEST

**OST-933**

***CONTAINMENT ISOLATION VALVES LEAKAGE TEST  
(AS REQUIRED AND EVERY 18 MONTHS)***

REVISION 16

## SUMMARY OF CHANGES

STEP/SECTION	REVISION COMENTS
	Revised due to ASME Code Upgrade Project.
1.3	Revised to state"... IAW TMM-004."
1.7	Added to address inclusion of manually stroking of various CVCS and IVSW valves. These valves were relocated from OLD OST-703 and OST-701-12. SI-895V & 898F have also been added as part of the ASME Code Update.
2.20	Revised the title of TMM-004.
OLD 2.21	Deleted. This reference is no longer applicable. TMM-004 contains the necessary code references.
6.2.6	Added acceptance criteria for manually cycled valves.
7.9.1.8c, 7.9.2.9.b, 7.9.3.6.b, 7.9.4.7.b, 7.9.5.7.b, 7.9.6.12.b	Added evaluation of full stroke exercise testing for CVC-202A, CVC-282, IVSW-16, IVSW-16A IVSW-16D, IVSW-16E, IVSW-16F, IVSW-16G.
7.9.2.10.h, 7.12.4.5	Added a new step for full stroke exercise testing of CVC-297A, CVC-297B, CVC-297C, CVC-295, CVC-293C, CVC-293A, SI-895V and SI-898F.
7.12.3.5	Revised step to perform the CC-731 inspection IAW EST-132 and removed all applicable Mechanical steps.
OLD Attachments 8.6 & 8.7	Deleted. These are no longer needed due to reference to EST-132.
Attachment 8.6	Added evaluation of manual valve stroke test results for various valves

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**1.0 PURPOSE**

- 1.1 To verify the proper operation of the Isolation Valve Seal Water System.
- 1.2 To measure the leakage associated with all Containment Isolation Valves. Satisfactory completion fulfills the requirements of 10CFR50 Appendix J, Improved Technical Specifications SR 3.6.1.1 and 5.5.8.
- 1.3 To verify the mechanical performance and assess the operational readiness of CC-731, CCW FROM RCP LUBE OIL COOLERS IAW TMM-004 and Improved Technical Specifications SR 3.6.1.1 and 5.5.8.
- 1.4 To satisfy the requirements of ITS SR 3.6.8.5 by verifying that each dedicated nitrogen bottle is capable of pressurizing the IVSW tank to greater than or equal to 44.6 psig.
- 1.5 To satisfy the requirements of ITS SR 3.6.8.6 by verifying seal integrity of the isolation valves sealed by the IVSW system.
- 1.6 To assess the proper operation of checks valves in the performance of their specified function. This satisfies the requirements of the Inservice Testing Program.
- 1.7 To manually stroke the following valves IAW TMM-004, as set forth in Technical Specification 5.5.8.

CVC-202A CVC-282 CVC-293A CVC-293C CVC-295 CVC-297A  
CVC-297B CVC-297C IVSW-16 IVSW-16A IVSW-16D IVSW-16E  
IVSW-16F IVSW-16G SI-895V SI-898F

**2.0 REFERENCES**

- 2.1 Updated Final Safety Analysis Report, Section 6.8, Isolation Valve Seal Water System
- 2.2 H. B. Robinson Technical Specifications, Section 3.6.8, Isolation Seal Water System
- 2.3 H. B. Robinson Technical Specifications, Section 3.6.1, Containment
- 2.4 10CFR50 Appendix J, Primary Rx Containment Leakage Testing for Water-Cooled Power Reactors
- 2.5 OP-101, Reactor Coolant System and Reactor Coolant Pump Startup and Operation
- 2.6 OP-103, Pressurizer Relief Tank Control System

- 2.7 OP-201, Residual Heat Removal
- 2.8 OP-202, Safety Injection and Containment Vessel Spray
- 2.9 OP-301, Chemical and Volume Control System
- 2.10 OP-306, Component Cooling Water
- 2.11 OP-406, Steam Generator Blowdown/Wet Layup System
- 2.12 OP-701, Waste Disposal Liquid
- 2.13 OP-702, Waste Disposal Gas
- 2.14 OP-703, Gas Analyzer
- 2.15 OP-910, Spent Fuel Pit Cooling and Purification
- 2.16 OP-911, Isolation Valve Seal Water System
- 2.17 OP-917, Secondary Sampling System
- 2.18 OP-919, Primary Sampling System
- 2.19 PLP-037, Conduct of Infrequently Performed Tests or Evolutions
- 2.20 TMM-004, Inservice Testing Program
- 2.21 NRC Generic Letter 89-04
- 2.22 Calculation, 93-C-0002, IVSW Flow Acceptance Criteria
- 2.23 TMM-005, 10CFR50, Appendix J Testing Program
- 2.24 PRO-NGGC-0200, Procedure Use and Adherence
- 2.25 MMM-010, Cleanliness and Flushing Requirements
- 2.26 OMM-033, Implementation of CV Closure
- 2.27 CM-131, Velan Check Valve Maintenance
- 2.28 PM-308, Velan Cast Body Swing Check Valve Inspection
- 2.29 ESR 95-00343, IVSW Allowed Leakage Criteria
- 2.30 ESR 97-00326, IVSW Tank Low Pressure Alarm

- 2.31 OMM-015, Operations Surveillance Testing
- 2.32 CP-015, Gas Analyzer
- 2.33 APP-007, Condensate & Feedwater
- 2.34 CR 95-01222, OST-933, IVSW Leakage Evaluation On B S/G BD Line
- 2.35 CR 95-01527, Failure To Obtain Timely Reviews of OST's
- 2.36 OMP-003, Shutdown Safety Function Guidelines
- 2.37 PLP-075, Reactivity Management
- 2.38 CR 97-001458, Inadequate Leak Test of RC-553 and WD-1794
- 2.39 NCR 30585, Inadvertent Flow Path Established From the RWST to RCS
- 2.40 CR 94-00511, Change Normal Position of SS-8A, B, C to Closed
- 2.41 Drawings:
  - G-190262, Sheet 1, Isolation Valve Seal Water Flow Diagram
  - G-190234, Sheet 1 and 2, Steam Generator Blowdown and Wet Layup System Flow Diagram
  - 5379-353, Sheet 1, Primary Sampling System Flow Diagram
  - 5379-376, Sheet 1, 2 and 3, Component Cooling Water System Flow Diagram
  - 5379-685, Sheet 1, 2 and 3, Chemical & Volume Control System Purification & Make-Up Flow Diagram
  - 5379-920, Sheet 2 and 3, Liquid Waste Disposal System Flow Diagram
  - 5379-921, Sheet 1, Gaseous Waste Disposal System Flow Diagram
  - 5379-1082, Sheets 1, 2, 3 and 4, Safety Injection System Flow Diagram
  - 5379-1971, Sheets 1 and 2, Reactor Coolant System Flow Diagram
  - HBR2-8261, Sheet 2, Post Accident Sample Station Flow Diagram
  - HBR2-9006, Sheet 2, Secondary Sampling System Flow Diagram
- 2.42 EST-132, Component Cooling Water Check Valves (CC-731 and CC-738) Inspection



#### 4.0 PRECAUTIONS AND LIMITATIONS

- 4.1 A Safety Injection signal shall not be used to open PCV-1922A or PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE.
- 4.2 Normal cold shutdown (MODE 5 or MODE 6) operations may be performed during the retesting of individual valves and headers. The Reactor Coolant Pumps may run provided the seal injection lines and component cooling lines are not being tested. Testing either of these lines requires that the REACTOR COOLANT PUMPS be OFF.
- 4.3 The principles of ALARA shall be used in planning and performing work and operations in the Radiation Control Area. Drainage from systems shall be conducted to the floor drains IAW HP procedures.
- 4.4 Each valve to be tested shall be closed by normal operation and without any preliminary exercising or adjustment. For example, no manual torquing of valves after motor closure, is permitted.
- 4.5 Each IVSW header flow meter has a specific calibration sheet. Caution must be used when correcting indicated flow rates to ensure the calibration sheet used matches the respective flow meter.
- 4.6 The Superintendent Shift Operations shall be immediately notified if any test fails to meet its acceptance criteria during the performance of this procedure.
- 4.7 IVSW tank pressure should be monitored during make-up to prevent lifting of system relief valves at 70 psig (68 psig to 72 psig).
- 4.8 Performance of this procedure will actuate Control Room annunciators APP-007-D6, SEAL WTR INJ TK LO PRESS, and APP-007-E6, SEAL WTR INJ TK LO LEVEL.
- 4.9 Any steps not applicable shall be marked N/A and the reason(s) noted in the Comments Section of Attachment 8.8.
- 4.10 This procedure/activity has been screened in accordance with PLP-037 criteria and determined not applicable (N/A) to PLP-037.

- 4.11 Performance of this procedure shall meet the requirements of OMM-033, Implementation of CV Closure.
- 4.12 Subsections of this test may be performed in any sequence. However, all the steps in a subsection shall be performed in sequence to prevent placing any system in an unsafe configuration.
- 4.13 Caution Tags are the recommended method for controlling penetration leakage test boundaries and component lineups (CR 95-01222).
- 4.14 Performance of any section of this procedure with the potential of RCS dilution shall be IAW OMP-003 and PLP-075. The operating shift shall be notified prior to the actual penetration(s) being pressurized, and test personnel should be aware that excessive leakage represents a challenge to RCS reactivity control.
- 4.15 Pumps required to be Racked Out for individual lineups shall either be Caution Tagged/Capped, or under a local clearance with an individual actually performing the test signed on as a worker.

**5.0 SPECIAL TOOLS AND EQUIPMENT**

5.1 Calibration data and conversion sheets for each of the following:

- 5.1.1 FI-1914, IVSW HEADER "A" FLOW METER
- 5.1.2 FI-1919, IVSW HEADER "B" FLOW METER
- 5.1.3 FI-1920, IVSW HEADER "C" FLOW METER
- 5.1.4 FI-1921, IVSW HEADER "D" FLOW METER

5.2 Drain hoses or sleeving

5.3 Flashlight

5.4 Inspection mirror

5.5 Locked Valve Key

5.6 Previous IVSW Header Penetration Leak Rates

5.7 Pipe Wrench

5.8 Tape

## 6.0 ACCEPTANCE CRITERIA

### 6.1 General

6.1.1 The reviewing and approving authority may accept this test IAW provisions set forth in OMM-015, "Operations Surveillance Testing".

### 6.2 Valves

6.2.1 Valve disc movement is the acceptance criteria for the forward flow check valve testing portion of this test and is verified by:

1. Off-scale flow indication from the respective IVSW header flow indicator for IVSW-70 through IVSW-98.
2. Flow under pressure noted after down-stream side tubing disconnected for:
  - IVSW-100A, IVSW TO FCV-1930A CHECK VALVE
  - IVSW-100B, IVSW to FCV-1931A CHECK VALVE
  - IVSW-100C, IVSW to FCV-1932A CHECK VALVE
3. IVSW tank repressurization occurring within specified tolerances in the applicable steps for:
  - IVSW-68A, N<sub>2</sub> SUPPLY FROM PRV-1715A CHECK VALVE
  - IVSW-68B, N<sub>2</sub> SUPPLY FROM PRV-1715B CHECK VALVE
  - IVSW-68C, N<sub>2</sub> SUPPLY FROM PRV-1715C CHECK VALVE
  - IVSW-68D, N<sub>2</sub> SUPPLY FROM PRV-1715D CHECK VALVE

6.2.2 Valve disc seating is the acceptance criteria for the reverse flow check valve testing portion of this test and is verified by:

1. Visual inspection of free disc movement for IVSW-66A, N<sub>2</sub> HEADER SUPPLY TO SEAL WTR INJ TANK CHK VALVE to both the full open and closed positions.
2. No audible nitrogen leaking from inlet side after tubing disconnected for IVSW-66B, N<sub>2</sub> HEADER SUPPLY TO SEAL WTR INJ TANK CHK VALVE.

- 6.2.3 IVSW tank repressurization as specified in applicable steps is the acceptance criteria for pressure regulating valve:
- PRV-1715A, NITROGEN BOTTLES PRESSURE CONTROL VALVE
  - PRV-1715B, NITROGEN BOTTLES PRESSURE CONTROL VALVE
  - PRV-1715C, IVSW TANK PRESSURE CONTROL VALVE
  - PRV-1715D, IVSW TANK PRESSURE CONTROL VALVE
- 6.2.4 Satisfactory seating surface condition, general visual inspection, and full valve disk travel to both the open and closed positions IAW CM-131 and/or PM-308 is the acceptance criteria for CC-731, RCP BRG CLG WTR OUTLET.
- 6.2.5 Measured IVSW header flow acceptance criteria is met if: (ESR 95-00343)
- Header "A"  $\leq$  49.40 cc/min.
  - Header "B"  $\leq$  15.67 cc/min.
  - Header "C"  $\leq$  30.87 cc/min.
  - Header "D"  $\leq$  21.85 cc/min.
  - Total Header  $\leq$  118.75 cc/min.
- These values are 5% more conservative than Technical Specifications (TS). Values between these values and TS are acceptable but must be approved by the IVSW Engineer.
- 6.2.6 Manual valve testing is satisfactory if the valve(s) being tested can be stroked as described in this OST.

### 6.3 ANNUNCIATORS

- 6.3.1 Annunciator acceptance criteria are met if actuation of APP-007-D6, SEAL WTR INJ TK LO PRESS, AND APP-007-E6, SEAL WTR INJ TK LO LEVEL, annunciators are within the acceptable tolerance range listed in the applicable section of this test.

7.0	<b>PROCEDURE</b>	<u>INIT</u>
7.1	Initial Conditions	
7.1.1	Verify the prerequisites in Section 3.0 have been satisfied.	_____
7.1.2	Verify the precautions and limitations in Section 4.0 have been reviewed.	_____
7.1.3	<u>IF</u> IVSW tank level is <u>NOT</u> between 70 and 90%, <u>THEN</u> Go To the section for Returning IVSW Tank Level to Normal.	_____
7.1.4	Record the IVSW tank level as indicated by LIT-1912, ISO VALVE SEAL WATER TANK LEVEL, <u>OR</u> the IVSW Tank Level Column.  Circle the indication used: LIT-1912/IVSW Tank Level Column  _____ %	_____
7.1.5	Record the IVSW Tank pressure as indicated by PI-1910, IVSW TANK PRESSURE, OR PI-1715, IVSW TANK NITROGEN PRESSURE.  Circle the indication used: PI-1910/PI-1715  _____ psig	_____
7.1.6	From the M&TE Lab, obtain the IVSW header flow gage calibration conversion sheets for each header supplying penetrations required to be tested.	_____
7.1.7	<u>IF</u> the pressure recorded in Step 7.1.5 above is less than 53 psig <u>OR</u> greater than 55 psig, <u>THEN</u> perform the section for <u>Operability Test of PRV-1715A and PRV-1715D and Forward Flow Test of IVSW-68A and IVSW-68D (which sets PRV-1715D),</u> prior to proceeding with any other section.	_____

INIT

7.2 Operability Test of PRV-1715A and PRV-1715D and Forward Flow Test of IVSW-68A and IVSW-68D

PRV-1715A, NITROGEN BOTTLES PRESSURE CONTROL VALVE  
PRV-1715D, IVSW TANK PRESSURE CONTROL VALVE  
IVSW-68A, N<sub>2</sub> SUPPLY FROM PRV-1715A CHECK VALVE  
IVSW-68D, N<sub>2</sub> SUPPLY FROM PRV-1715D CHECK VALVE

7.2.1 Complete the following valve lineup:

- Close IVSW-43A, PRV-1715C INLET \_\_\_\_\_
- Close IVSW-44A, PRV-1715C OUTLET \_\_\_\_\_
- Close IVSW-61, NITROGEN BOTTLE "B" OUTLET \_\_\_\_\_
- Close IVSW-64, PRV-1715B ISOLATION \_\_\_\_\_
- Close IVSW-66, NITROGEN HEADER SUPPLY TO IVSW TANK \_\_\_\_\_
- Unlock AND close IVSW-12, SEAL WATER SUPPLY TO PENETRATIONS \_\_\_\_\_
- Open IVSW-43B, PRV-1715D INLET \_\_\_\_\_
- Open IVSW-60, NITROGEN BOTTLE "A" OUTLET \_\_\_\_\_
- Open IVSW-63, PRV-1715A ISOLATION \_\_\_\_\_
- Close IVSW-44B, PRV-1715D OUTLET \_\_\_\_\_

7.2.2 Notify the Control Room that venting nitrogen from the IVSW tank may actuate Control Room annunciator APP-007-D6, SEAL WTR INJ TK LO PRESS. \_\_\_\_\_

INIT

**NOTE:** IVSW tank pressure may be read locally at PI-1910, IVSW INJECTION TANK PRESSURE INDICATOR, or PI-1715, IVSW TANK NITROGEN PRESSURE.

- 7.2.3 Vent the IVSW tank to establish 48 to 50 psig by throttling open IVSW-10, IVSW TANK VENT. \_\_\_\_\_
  - 7.2.4 Verify CLOSED IVSW-10. \_\_\_\_\_
  - 7.2.5 Open IVSW-44B, PRV-1715D OUTLET. \_\_\_\_\_
  - 7.2.6 IF the IVSW tank does NOT repressurize to greater than or equal to 53 psig AND less than or equal to 55 psig, THEN record the As Found pressure, AND perform regulator adjustment(s) below. Indicate the pressure gage used, AND N/A those adjustments not performed. (ITS SR 3.6.8.5)
- PI-1910 / PI-1715 used. As Found \_\_\_\_\_ psig. \_\_\_\_\_
1. IF pressure is greater than 55 psig, THEN reduce set pressure as follows:
    - a. Close IVSW-44B. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_
    - b. Open IVSW-10 to vent the IVSW tank until pressure is within a range of 48 to 50 psig. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_
    - c. Verify CLOSED IVSW-10. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_
    - d. Direct Maintenance personnel to reduce PRV-1715D setpoint slightly. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_

7.2.6.1 (Continued)

INIT

e. Open IVSW-44B. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_

f. Allow pressure to stabilize. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_

g. IF pressure remains greater than 55 psig, THEN repeat Step 7.2.6.1 Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_

2. IF pressure is less than 53 psig, THEN increase set pressure as follows:

a. Direct Maintenance personnel to increase the PRV-1715D setpoint slightly. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_

b. Allow pressure to stabilize. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_

c. IF pressure is NOT between 53 and 55 psig, THEN repeat Steps 7.2.6.1 AND 7.2.6.2. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_

7.2.7 Record As Left pressure from gage selected in Step 7.2.6.

As Left \_\_\_\_\_ psig \_\_\_\_\_

INIT VERI

**NOTE:** IVSW Tank repressurization to the specified pressure band following tank venting meets the acceptance criteria for the forward flow test of IVSW-68A, N<sub>2</sub> SUPPLY FROM PRV-1715A CHECK VALVE **AND** IVSW-68D, N<sub>2</sub> SUPPLY FROM PRV-1715D CHECK VALVE.

- 7.2.8 Record forward flow test results for IVSW-68A **AND** IVSW-68D on Attachment 8.6. \_\_\_\_\_
  
- 7.2.9 Perform the following to restore the valve lineup:
  - Close IVSW-10, IVSW TANK VENT \_\_\_\_\_
  - Open IVSW-43A, PRV-1715C INLET \_\_\_\_\_
  - Open IVSW-44A, PRV-1715C OUTLET \_\_\_\_\_
  - Open IVSW-61, NITROGEN BOTTLE "B" OUTLET \_\_\_\_\_
  - Open IVSW-64, PRV-1715B ISOLATION \_\_\_\_\_
  - Open IVSW-66, NITROGEN HEADER SUPPLY TO IVSW TANK \_\_\_\_\_
  - Lock Open IVSW-12, SEAL WATER SUPPLY TO PENETRATIONS \_\_\_\_\_
  - Open IVSW-43B, PRV-1715D INLET \_\_\_\_\_
  - Open IVSW-60, NITROGEN BOTTLE "A" OUTLET \_\_\_\_\_
  - Open IVSW-63, PRV-1715A ISOLATION \_\_\_\_\_
  - Open IVSW-44B, PRV-1715D OUTLET \_\_\_\_\_
  
- 7.2.10 IF the pressure recorded in Step 7.1.5 was less than 53 psig OR greater than 55 psig, THEN perform the section for Operability Test of PRV-1715B and PRV-1715C and Forward Flow Test of IVSW-68B and IVSW-68C (which sets PRV-1715C), prior to proceeding with any other section. \_\_\_\_\_

INIT

7.3 Operability Test of PRV-1715B and PRV-1715C and Forward Flow Test of IVSW-68B and IVSW-68C

PRV-1715B, NITROGEN BOTTLES PRESSURE CONTROL VALVE  
PRV-1715C, IVSW TANK PRESSURE CONTROL VALVE  
IVSW-68B, N<sub>2</sub> SUPPLY FROM PRV-1715B CHECK VALVE  
IVSW-68C, N<sub>2</sub> SUPPLY FROM PRV-1715C CHECK VALVE

7.3.1 Complete the following valve lineup:

- Open IVSW-43A, PRV-1715C INLET \_\_\_\_\_
- Open IVSW-61, NITROGEN BOTTLE "B" OUTLET \_\_\_\_\_
- Open IVSW-64, PRV-1715B ISOLATION \_\_\_\_\_
- Close IVSW-66, NITROGEN HEADER SUPPLY TO IVSW TANK \_\_\_\_\_
- Unlock AND close IVSW-12, SEAL WATER SUPPLY TO PENETRATIONS \_\_\_\_\_
- Close IVSW-43B, PRV-1715D INLET \_\_\_\_\_
- Close IVSW-44B, PRV-1715D OUTLET \_\_\_\_\_
- Close IVSW-60, NITROGEN BOTTLE "A" OUTLET \_\_\_\_\_
- Close IVSW-63, PRV-1715A ISOLATION \_\_\_\_\_
- Close IVSW-44A, PRV-1715C OUTLET. \_\_\_\_\_

7.3.2 Notify the Control Room that venting nitrogen from the IVSW tank may actuate Control Room annunciator APP-007-D6, SEAL WTR INJ TK LO PRESS. \_\_\_\_\_

INIT

**NOTE:** IVSW tank pressure may be read locally at PI-1910, IVSW INJECTION TANK PRESSURE INDICATOR, or PI-1715, IVSW TANK NITROGEN PRESSURE.

- 7.3.3 Vent the IVSW tank to establish 48 to 50 psig by throttling open IVSW-10, IVSW TANK VENT. \_\_\_\_\_
- 7.3.4 Verify CLOSED IVSW-10. \_\_\_\_\_
- 7.3.5 Open IVSW-44A, PRV-1715C OUTLET. \_\_\_\_\_
- 7.3.6 IF the IVSW tank does NOT repressurize to greater than or equal to 53 psig AND less than or equal to 55 psig, THEN record the As Found pressure, AND perform regulator adjustment(s) below. Indicate the pressure gage used, AND N/A those adjustments not performed. (ITS SR 3.6.8.5)  
 PI-1910 / PI-1715 used. As Found \_\_\_\_\_ psig. \_\_\_\_\_
  - 1. IF pressure is greater than 55 psig, THEN reduce set pressure as follows:
    - a. Close IVSW-44A. Adjustment # 1 \_\_\_\_\_  
 Adjustment # 2 \_\_\_\_\_  
 Adjustment # 3 \_\_\_\_\_
    - b. Open IVSW-10 as necessary to vent the IVSW tank to between 48 and 50 psig. Adjustment # 1 \_\_\_\_\_  
 Adjustment # 2 \_\_\_\_\_  
 Adjustment # 3 \_\_\_\_\_
    - c. Verify CLOSED IVSW-10. Adjustment # 1 \_\_\_\_\_  
 Adjustment # 2 \_\_\_\_\_  
 Adjustment # 3 \_\_\_\_\_
    - d. Direct Maintenance personnel to reduce the PRV-1715C setpoint slightly. Adjustment # 1 \_\_\_\_\_  
 Adjustment # 2 \_\_\_\_\_  
 Adjustment # 3 \_\_\_\_\_

7.3.6.1 (Continued)

INIT

e. Open IVSW-44A. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_

f. Allow pressure to stabilize. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_

g. IF pressure remains greater than 55 psig, THEN repeat Step 7.3.6.1. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_

2. IF pressure is less than 53 psig, THEN increase set pressure as follows:

a. Direct Maintenance personnel to increase the PRV-1715C setpoint slightly. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_

b. Allow pressure to stabilize. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_

c. IF pressure is NOT between 53 and 55 psig, THEN repeat Steps 7.3.6.1 AND 7.3.6.2. Adjustment # 1 \_\_\_\_\_  
Adjustment # 2 \_\_\_\_\_  
Adjustment # 3 \_\_\_\_\_

7.3.7 Record As Left pressure from gage selected in Step 7.3.6.

As Left \_\_\_\_\_ psig \_\_\_\_\_

INIT VERI

**NOTE:** IVSW Tank repressurization to the specified pressure band following tank venting meets the acceptance criteria for the forward flow test of IVSW-68B, N<sub>2</sub> SUPPLY FROM PRV-1715B CHECK VALVE **AND** IVSW-68C, N<sub>2</sub> SUPPLY FROM PRV-1715C CHECK VALVE.

- |       |  |       |       |
|-------|--|-------|-------|
| 7.3.8 | Record forward flow test results for IVSW-68B <b>AND</b> IVSW-68C on Attachment 8.6. |       | _____ |
| 7.3.9 | Complete the following valve lineup:   |       |       |
|       | – Close IVSW-10, IVSW TANK VENT  | _____ | _____ |
|       | – Open IVSW-43A, PRV-1715C INLET   | _____ | _____ |
|       | – Open IVSW-61, NITROGEN BOTTLE "B" OUTLET   | _____ | _____ |
|       | – Open IVSW-64, PRV-1715B ISOLATION  | _____ | _____ |
|       | – Open IVSW-66, NITROGEN HEADER SUPPLY TO IVSW TANK                                  | _____ | _____ |
|       | – Lock Open IVSW-12, SEAL WATER SUPPLY TO PENETRATIONS                               | _____ | _____ |
|       | – Open IVSW-43B, PRV-1715D INLET   | _____ | _____ |
|       | – Open IVSW-44B, PRV-1715D OUTLET  | _____ | _____ |
|       | – Open IVSW-60, NITROGEN BOTTLE "A" OUTLET   | _____ | _____ |
|       | – Open IVSW-63, PRV-1715A ISOLATION  | _____ | _____ |
|       | – Open IVSW-44A, PRV-1715C OUTLET  | _____ | _____ |

INIT VERI

- |       |   |       |       |
|-------|---|-------|-------|
| 7.4   | IVSW Tank Low Pressure Alarm Test   |       |       |
| 7.4.1 | Close IVSW-44A, PRV-1715C OUTLET.   | _____ |       |
| 7.4.2 | Close IVSW-44B, PRV-1715D OUTLET.   | _____ |       |
| 7.4.3 | Establish communications with the Control Room.   | _____ |       |
| 7.4.4 | Check Control Room annunciator APP-007-D6, SEAL WTR INJ TK LO PRESS, is EXTINGUISHED.   | _____ |       |
| 7.4.5 | Perform the following:  |       |       |
| 1.    | Slowly open IVSW-10, IVSW TANK VENT,<br>1/4 to 1/2 turn.  | _____ |       |
| 2.    | Check Control Room annunciator<br>APP-007-D6, SEAL WTR INJ TK LO PRESS,<br>ILLUMINATES when IVSW tank pressure is greater<br>than or equal to 47 psig <u>AND</u> less than or equal to<br>53 psig, as indicated by PI-1911, ISO VALVE SEAL<br>WATER TANK PRESS. | _____ |       |
| 3.    | Record PI-1911 pressure below.<br>PI-1911 _____ psig  | _____ |       |
| 7.4.6 | Close IVSW-10, IVSW TANK VENT.  | _____ | _____ |
| 7.4.7 | Open IVSW-44A, PRV-1715C OUTLET.  | _____ | _____ |
| 7.4.8 | Open IVSW-44B, PRV-1715D OUTLET.  | _____ | _____ |

INIT VERI

7.5 IVSW Tank Low Level Alarm Test

7.5.1 Check the Control Room annunciator APP-007-E6, SEAL WTR INJ TK LO LEVEL, is EXTINGUISHED. \_\_\_\_\_

7.5.2 Monitor LI-1912, ISO VALVE SEAL WATER TANK LEVEL, and PI-1911, ISO VALVE SEAL WATER TANK PRESS, while performing the following:

1. Throttle open IVSW-7, IVSW TANK DRAIN, to slowly reduce level. \_\_\_\_\_

2. IF the tank low pressure alarm occurs before APP-007-E6 ANNUNCIATES, THEN stop draining until APP-007-D6 EXTINGUISHES. \_\_\_\_\_

3. Check the Control Room annunciator APP-007-E6, SEAL WTR INJ TK LO LEVEL, ILLUMINATES when IVSW tank level is 68 to 72% as indicated by LI-1912, AND close IVSW-7. \_\_\_\_\_

4. Record the final IVSW tank level AND pressure below. \_\_\_\_\_

Instrument	Minimum	Actual	Maximum
LI-1912	68%		72%
PI-1911	53 psig		N/A

7.5.3 Refill the IVSW Tank IAW Section 7.7 of this procedure. \_\_\_\_\_

7.5.4 Verify annunciators APP-007-D6, SEAL WTR INJ TK LO PRESS, AND APP-007-E6, SEAL WTR INJ TK LO LEVEL, are EXTINGUISHED.

APP-007-D6 \_\_\_\_\_  
APP-007-E6 \_\_\_\_\_

INIT VERI

7.6 Reverse Flow Test of Check Valves IVSW-66A and IVSW-66B

7.6.1 Perform the following valve lineup:

- Close IVSW-67, NITROGEN HEADER SUPPLY ISOLATION. \_\_\_\_\_
- Close IVSW-63, PRV-1715A ISOLATION. \_\_\_\_\_
- Close IVSW-64, PRV-1715B ISOLATION. \_\_\_\_\_

7.6.2 Notify the Control Room that venting the IVSW tank will actuate annunciator APP-007-D6, SEAL WTR INJ TK LO PRESS. \_\_\_\_\_

7.6.3 Throttle open IVSW-10, IVSW TANK VENT, until IVSW tank depressurization is complete. \_\_\_\_\_

7.6.4 Verify CLOSED IVSW-10. \_\_\_\_\_

7.6.5 Close IVSW-66, NITROGEN HEADER SUPPLY TO IVSW TANK. \_\_\_\_\_

7.6.6 Direct maintenance to disconnect inlet tubing from IVSW-66B, N<sub>2</sub> HEADER SUPPLY TO SEAL WTR INJ TANK CHK VALVE. \_\_\_\_\_

\_\_\_\_\_ Maintenance \_\_\_\_\_

7.6.7 Close IVSW-43A, PRV-1715C INLET. \_\_\_\_\_

7.6.8 Close IVSW-43B, PRV-1715D INLET. \_\_\_\_\_

7.6.9 Open IVSW-61, NITROGEN BOTTLE "B" OUTLET. \_\_\_\_\_

7.6.10 Open IVSW-64, PRV-1715B ISOLATION. \_\_\_\_\_

INIT

- 7.6.11 Record PI-1749, IVSW N2 SUPPLY HDR PRESS INDICATOR, below:  
PI-1749 \_\_\_\_\_ psig \_\_\_\_\_
- 7.6.12 Check for audible nitrogen leakage from the inlet of IVSW-66B. \_\_\_\_\_
- 7.6.13 Close IVSW-61. \_\_\_\_\_
- 7.6.14 Close IVSW-64 \_\_\_\_\_
- 7.6.15 IF nitrogen leakage was noted in Step 7.6.10 above, THEN perform the following:
  - 1. Direct Maintenance to replace IVSW-66B. \_\_\_\_\_  
\_\_\_\_\_ Maintenance \_\_\_\_\_
  - 2. Open IVSW-61. \_\_\_\_\_
  - 3. Open IVSW-64. \_\_\_\_\_
  - 4. Record PI-1749, IVSW N2 SUPPLY HDR PRESS INDICATOR, below.  
PI-1749 \_\_\_\_\_ psig \_\_\_\_\_
  - 5. Check no audible leakage from inlet of IVSW-66B. \_\_\_\_\_
  - 6. Close IVSW-61. \_\_\_\_\_
  - 7. Close IVSW-64. \_\_\_\_\_

**NOTE:** No audible leakage from inlet of IVSW-66B meets the acceptance criteria for the reverse flow test of IVSW-66B.

- 7.6.16 Record reverse flow test results for IVSW-66B on Attachment 8.6. \_\_\_\_\_

INIT VERI

7.6.17 Direct Maintenance to perform Step 7.6.17, Steps 1 through 6.

\_\_\_\_\_ Maintenance \_\_\_\_\_

- 1. Reconnect inlet tubing to IVSW-66B. \_\_\_\_\_
- 2. Remove IVSW-66A, N2 HDR SUPPLY TO SEAL WTR INJ TANK CHK VALVE, from the system by disconnecting the inlet and outlet tubing fittings. \_\_\_\_\_

**NOTE:** A visual check that the valve disc moves freely to both the full open and closed positions meets the acceptance criteria for the reverse flow test of IVSW-66A.

- 3. Manually manipulate IVSW-66A to the full open and closed positions to ensure the valve disc moves freely AND perform a visual inspection of accessible areas for evidence of wear or corrosion. \_\_\_\_\_
- 4. Record reverse flow test results for IVSW-66A on Attachment 8.6. \_\_\_\_\_
- 5. IF the valve disc fails to move freely in either direction, THEN replace IVSW-66A. \_\_\_\_\_
- 6. Reinstall IVSW-66A by reconnecting fittings. \_\_\_\_\_
- 7. Perform leak test as follows:
  - a. Open IVSW-66. \_\_\_\_\_
  - b. Open IVSW-61. \_\_\_\_\_
  - c. Open IVSW-64. \_\_\_\_\_
  - d. Open IVSW-67. \_\_\_\_\_
  - e. Verify IVSW-66A and IVSW-66B fittings are leak-free using Leak-Tek (or equivalent). \_\_\_\_\_

7.6.17 (Continued)

INIT VERI

- 8. Restore lineup as follows:
  - a. Open IVSW-63. \_\_\_\_\_
  - b. Open IVSW-43A. \_\_\_\_\_
  - c. Open IVSW-43B. \_\_\_\_\_
- 9. Record IVSW Tank repressurization.  
PI-1910/PI-1715 used. (Circle one)  
As Found \_\_\_\_\_ psig. \_\_\_\_\_
- 10. IF pressure does not stabilize greater than or equal to 53 psig AND less than or equal to 55 psig, THEN adjust IVSW Tank pressure regulators by performing Sections 7.2 and 7.3 prior to continuing with this procedure. \_\_\_\_\_

7.7 Returning IVSW Tank Level to Normal

INIT VERI

**NOTE:** This section may be used to document multiple IVSW level adjustments. For each additional adjustment, initialing the appropriate step in the table at the end of this section, serves as documentation of performance.

7.7.1 IF draining the IVSW tank to 70 to 90% is necessary, THEN perform the following:

1. Open IVSW-7, IVSW TANK DRAIN. \_\_\_\_\_
2. WHEN IVSW tank level reaches 80%, THEN close IVSW-7. \_\_\_\_\_

**CAUTION**

IVSW tank pressure should be monitored during make-up to the tank to prevent system relief valves lifting between 68 and 72 psig.

7.7.2 IF filling the IVSW tank to 70 to 90% is necessary, THEN perform the following:

1. Check the Demineralized and Primary Water System is AVAILABLE for filling the IVSW tank. \_\_\_\_\_
2. Close IVSW-44A, PRV-1715C OUTLET. \_\_\_\_\_
3. Close IVSW-44B, PRV-1715D OUTLET. \_\_\_\_\_
4. During water addition to the IVSW tank, throttle open IVSW-10, IVSW TANK VENT, to maintain IVSW tank pressure 53 to 55 psig. \_\_\_\_\_
5. Start a Primary Water Pump. \_\_\_\_\_

7.7.2 (Continued)

INIT VERI

- |     |  |       |       |
|-----|--|-------|-------|
| 6.  | Open PW-38, PRIMARY WATER TO SEAL WATER INJECTION TANK.          | _____ | _____ |
| 7.  | Throttle open PW-37, PRIMARY WATER TO SEAL WATER INJECTION TANK. | _____ | _____ |
| 8.  | <u>AFTER</u> achieving 80% level, <u>THEN</u> close PW-37.       | _____ | _____ |
| 9.  | Close PW-38.   | _____ | _____ |
| 10. | Stop the Primary Water Pump.                                     | _____ | _____ |
| 11. | Verify CLOSED IVSW-10.   | _____ | _____ |
| 12. | Open IVSW-44A, PRV-1715C OUTLET.                                 | _____ | _____ |
| 13. | Open IVSW-44B, PRV-1715D OUTLET.                                 | _____ | _____ |

STEP #	2 <sup>ND</sup> Fill/Drn (INIT)/(VERI- If Reqd.)	3 <sup>RD</sup> Fill/Drn (INIT)/(VERI- If Reqd.)	4 <sup>TH</sup> Fill/Drn (INIT)/(VERI- If Reqd.)	5 <sup>TH</sup> Fill/Drn (INIT)/(VERI- If Reqd.)	6 <sup>TH</sup> Fill/Drn (INIT)/(VERI- If Reqd.)	7 <sup>TH</sup> Fill/Drn (INIT)/(VERI- If Reqd.)
7.7.1.1	_____	_____	_____	_____	_____	_____
7.7.1.2	___/___	___/___	___/___	___/___	___/___	___/___
7.7.2.1	_____	_____	_____	_____	_____	_____
7.7.2.2	_____	_____	_____	_____	_____	_____
7.7.2.3	_____	_____	_____	_____	_____	_____
7.7.2.4	_____	_____	_____	_____	_____	_____
7.7.2.5	_____	_____	_____	_____	_____	_____
7.7.2.6	_____	_____	_____	_____	_____	_____
7.7.2.7	_____	_____	_____	_____	_____	_____
7.7.2.8	_____	_____	_____	_____	_____	_____
7.7.2.9	_____	_____	_____	_____	_____	_____
7.7.2.10	_____	_____	_____	_____	_____	_____
7.7.2.11	___/___	___/___	___/___	___/___	___/___	___/___
7.7.2.12	___/___	___/___	___/___	___/___	___/___	___/___
7.7.2.13	___/___	___/___	___/___	___/___	___/___	___/___

- |       |  |             |
|-------|--|-------------|
| 7.8   | Establishing Initial Conditions for Header Leakage Measurement | <u>INIT</u> |
| 7.8.1 | Return the IVSW tank valve lineup to normal as follows:        |             |
| 1.    | Verify CLOSED IVSW-7, IVSW TANK DRAIN.                         | _____       |
| 2.    | Lock open IVSW-12, SEAL WATER SUPPLY TO PENETRATIONS.          | _____       |
| 3.    | Perform the following valve lineup:                            |             |
|       | – Open N <sub>2</sub> BOTTLE "A" ISOLATION.                    | _____       |
|       | – Open N <sub>2</sub> BOTTLE "B" ISOLATION.                    | _____       |
|       | – Open IVSW-60, NITROGEN BOTTLE "A" OUTLET.                    | _____       |
|       | – Open IVSW-61, NITROGEN BOTTLE "B" OUTLET.                    | _____       |
|       | – Close IVSW-62, NITROGEN BOTTLE OUTLET CROSS CONNECT.         | _____       |
|       | – Open IVSW-63, PRV-1715A ISOLATION.                           | _____       |
|       | – Open IVSW-64, PRV-1715B ISOLATION.                           | _____       |
|       | – Open IVSW-66, NITROGEN HEADER SUPPLY TO IVSW TANK.           | _____       |
|       | – Open IVSW-43A, PRV-1715C INLET.                              | _____       |
|       | – Open IVSW-44A, PRV-1715C OUTLET.                             | _____       |
|       | – Open IVSW-43B, PRV-1715D INLET.                              | _____       |
|       | – Open IVSW-44B, PRV-1715D OUTLET.                             | _____       |
|       | – Open IVSW-45, PI-1715 ISOLATION.                             | _____       |
|       | – Open IVSW-67, NITROGEN HEADER SUPPLY.                        | _____       |

INIT

7.8.2 Record the following indications in the table below: \_\_\_\_\_

- LIT-1912, IVSW TANK LEVEL TRANSMITTER (Local)
- LI-1912, ISO VALVE SEAL WATER TANK LEVEL (Control Room)
- PI-1910, IVSW INJECTION TANK PRESSURE INDICATOR (Local)
- PI-1911, ISO VALVE SEAL WATER TANK PRESS (Control Room)

Indicator	Minimum	Actual	Maximum
LIT-1912	70%		90%
LI-1912	70%		90%
PI-1910	53 psig		55 psig
PI-1911	53 psig		55 psig

7.8.3 IF any IVSW level OR pressure is NOT within the ranges listed above, AND the cause is not due to a loss of power, THEN submit a Work Request to have the appropriate channel(s) checked by I&C.

Work Request \_\_\_\_\_

7.8.4 Perform the following Header "A" valve alignment: \_\_\_\_\_

- Open IVSW-35A, FI-1914 INLET. \_\_\_\_\_
- Open IVSW-35B, FI-1914 OUTLET. \_\_\_\_\_
- Close IVSW-35, FI-1914 BYPASS. \_\_\_\_\_
- Close IVSW-16, IVSW TO PEN 24, CHARGING LINE ISOLATION. \_\_\_\_\_
- Close IVSW-16A, IVSW TO PEN 25, 26, & 27, RCPS SEAL INJECTION. \_\_\_\_\_
- Close IVSW-16D, IVSW TO PEN 62, 63, & 64, SI COLD LEG INJECTION. \_\_\_\_\_

- |  |             |
|--|-------------|
| 7.8.4 (Continued)  | <u>INIT</u> |
| – Close IVSW-16E, IVSW TO PEN 44, CV SPRAY HEADER "A".   | _____       |
| – Close IVSW-16F, IVSW TO PEN 45, CV SPRAY HEADER "B".   | _____       |
| – Close IVSW-16G, IVSW TO PEN 43, SI HOT LEG INJECTION.  | _____       |
| 7.8.5 Perform the following Header "B" valve alignment:  |             |
| – Open IVSW-36A, FI-1919 INLET.                          | _____       |
| – Open IVSW-36B, FI-1919 OUTLET.                         | _____       |
| – Close IVSW-36, FI-1919 BYPASS.                         | _____       |
| – Close IVSW-26, IVSW TO PEN 6, RCDT PUMP DISCHARGE.     | _____       |
| – Close IVSW-26A, IVSW TO PEN 20, RCPS CCW OUTLET.       | _____       |
| – Close IVSW-26B, IVSW TO PEN 28, RCP SEAL WATER RETURN. | _____       |
| – Close IVSW-26C, IVSW TO PEN 29, PZR STEAM SAMPLE.      | _____       |
| – Close IVSW-26D, IVSW TO PEN 30, PZR LIQUID SAMPLE.     | _____       |
| – Close IVSW-26E, IVSW TO PEN 31, RCS SAMPLE.            | _____       |
| 7.8.6 Perform the following Header "C" valve alignment:  |             |
| – Open IVSW-37A, FI-1920 INLET.                          | _____       |
| – Open IVSW-37B, FI-1920 OUTLET.                         | _____       |
| – Close IVSW-37, FI-1920 BYPASS.                         | _____       |
| – Close IVSW-30, IVSW TO PEN 1, PRT TO GAS ANALYZER.     | _____       |
| – Close IVSW-30A, IVSW TO PEN 3, PRIMARY WATER TO PRT.   | _____       |
| – Close IVSW-30B, IVSW TO PEN 4, RCDT TO VENT HEADER.    | _____       |

7.8.6 (Continued)

INIT

- Close IVSW-30C, IVSW TO PEN 13, S/G "B" BLOWDOWN LINE. \_\_\_\_\_
- Close IVSW-30D, IVSW TO PEN 14, S/G "C" BLOWDOWN LINE. \_\_\_\_\_
- Close IVSW-30E, IVSW TO PEN 15, S/G "A" BLOWDOWN LINE. \_\_\_\_\_
- Close IVSW-30F, IVSW TO PEN 23, LETDOWN LINE. \_\_\_\_\_
- Close IVSW-30G, IVSW TO PEN 15, S/G "A" SAMPLE. \_\_\_\_\_
- Close IVSW-30G1, IVSW TO PEN 13, S/G "B" SAMPLE. \_\_\_\_\_
- Close IVSW-30G2, IVSW TO PEN 14, S/G "C" SAMPLE. \_\_\_\_\_
- Close IVSW-30H, IVSW TO PEN 61, CV SUMP PUMP DISCHARGE. \_\_\_\_\_

7.8.7 Perform the following Header "D" valve alignment:

- Open IVSW-38A, FI-1921 INLET. \_\_\_\_\_
- Open IVSW-38B, FI-1921 OUTLET. \_\_\_\_\_
- Close IVSW-38, FI-1921 BYPASS. \_\_\_\_\_
- Close IVSW-34, IVSW TO PEN 5, RCDT TO GAS ANALYZER. \_\_\_\_\_
- Close IVSW-34A, IVSW TO PEN 18, RCP CCW INLET. \_\_\_\_\_
- Close IVSW-34B, IVSW TO PEN 19, RCP CCW OUTLET. \_\_\_\_\_
- Close IVSW-34C, IVSW TO PEN 48, SI HIGH HEAD TEST LINE. \_\_\_\_\_
- Close IVSW-34D, IVSW TO PEN 60, ACCUMULATOR SAMPLE LINE. \_\_\_\_\_

INIT

- 7.8.8 IF this is for initial testing, THEN obtain all individual penetration, AND the total header leakages for all relevant headers, from the IVSW Engineer. \_\_\_\_\_
- 7.8.9 IF this is a retest, THEN obtain all individual penetration, AND the total header leakages for all relevant headers, from the most recent OST-933 performed. \_\_\_\_\_
- 7.8.10 Record in Attachment 8.1, the data obtained above. \_\_\_\_\_

7.9 Header "A" Leakage Measurement INIT

7.9.1 Pen. 24 - CVC Charging Line (CVC-282, CVC-202A, CVC-309A)

1. Record flow meter FI-1914 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1914 is attached to this procedure. \_\_\_\_\_

<b>NOTE:</b> TRMS 3.7 may be applicable to the following step.
--

3. Verify the following pumps STOPPED:
  - RCP "A" \_\_\_\_\_
  - RCP "B" \_\_\_\_\_
  - RCP "C" \_\_\_\_\_
  - CHARGING PUMP "A" \_\_\_\_\_
  - CHARGING PUMP "B" \_\_\_\_\_
  - CHARGING PUMP "C" \_\_\_\_\_

<b>NOTE:</b> A Locked Valve key will be required for operation of CVC-312, CVC-310A BYPASS.
---

4. Perform the following valve lineup:
  - Close CVC-202A, HCV-121 OUTLET. \_\_\_\_\_
  - Close CVC-282, CHARGING LINE FLOW ISOL. \_\_\_\_\_
  - Close CVC-309A, HCV-121 BYPASS. \_\_\_\_\_
  - Close CVC-286, CHARGING PUMP "C" TO CHARGING LINE. \_\_\_\_\_
  - Close CVC-289, CHARGING PUMP "B" TO CHARGING LINE. \_\_\_\_\_

7.9.1.4 (Continued)

INIT

- Close CVC-290, CHARGING PUMP "A" TO CHARGING LINE. \_\_\_\_\_
  - Open CVC-202B, HCV-121 INLET. \_\_\_\_\_
  - Close CVC-311, AUX PZR SPRAY. \_\_\_\_\_
  - Close CVC-310A, CHARGING TO LOOP "A" HOT LEG. \_\_\_\_\_
  - Close CVC-310B, CHARGING TO LOOP "B" COLD LEG. \_\_\_\_\_
  - Open HCV-121, CHARGING FLOW. \_\_\_\_\_
  - Close CVC-312, CVC-310A BYPASS. \_\_\_\_\_
5. Align the following vent and drain valves:
- a. Verify CLOSED CVC-310E, REGEN HX CHARGING LINE OUTLET DRAIN. \_\_\_\_\_
  - b. Remove pipe cap AND install a portable drain line to CVC-310E. CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_
  - c. Open CVC-310E. \_\_\_\_\_
  - d. Connect a portable drain line to CVC-121A, HCV-121 OUTLET DRAIN. \_\_\_\_\_
  - e. Open CVC-121A. \_\_\_\_\_
6. Perform the following to depressurize the test boundary:
- a. Open CVC-202A, CVC-282, OR CVC-309A. Record valve opened \_\_\_\_\_.
  - b. Close valve recorded in Step 7.9.1.6.a. \_\_\_\_\_

7.9.1 (Continued)

INIT

**CAUTION**

To speed filling of the line in the steps below, IVSW-35, FI-1914 BYPASS, may be opened. However, IVSW-35 must be closed before flow data is recorded.

- 7. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-35 to speed line fill. \_\_\_\_\_

**NOTE:** IVSW-16 full stroke exercise test is performed to meet IST requirements IAW TMM-004.

- b. Open IVSW-16, IVSW TO PEN 24, CHARGING LINE ISOLATION and record completion of the Full Stroke Exercise test on Attachment 8.6. \_\_\_\_\_
- c. Verify CLOSED IVSW-35, FI-1914 BYPASS. \_\_\_\_\_
- d. WHEN FI-1914 stabilizes, THEN record flows:
  - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
  - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
- e. Open CVC-202A, CVC-282, OR CVC-309A.  
Record valve opened \_\_\_\_\_.

**NOTE:** Observing FI-1914 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-71, CVCS CHARGING LINE CHECK VALVE.

- f. Check FI-1914 goes OFF-SCALE HIGH. \_\_\_\_\_
- g. Close IVSW-16. \_\_\_\_\_
- h. Record forward flow test results for IVSW-71 on Attachment 8.6. \_\_\_\_\_

7.9.1 (Continued)

INIT VERI

- |    |   |       |       |
|----|---|-------|-------|
| 8. | Perform the following to restore the system valve line-up:                      |       |       |
| a. | Lock closed CVC-310E, REGEN HX CHARGING LINE OUTLET DRAIN.                      | _____ | _____ |
|    | 1) Remove the portable drain line <u>AND</u> install the pipe cap for CVC-310E. |       |       |
|    | LINE REMOVED  | _____ |       |
|    | CAP INSTALLED   | _____ |       |
| b. | Close CVC-121A, HCV-121 OUTLET DRAIN.   | _____ |       |
|    | 1) Remove the portable drain line from CVC-121A.                                | _____ |       |

**NOTE:** CVC-202A and CVC-282 full stroke exercise test is performed to meet IST requirements IAW TMM-004.

- |    |   |       |       |
|----|---|-------|-------|
| c. | Perform the following lineup:   |       |       |
|    | - Open CVC-202A, HCV-121 OUTLET and record completion of the Full Stroke Exercise test on Attachment 8.6.         | _____ | _____ |
|    | - Close CVC-309A, HCV-121 BYPASS.   | _____ |       |
|    | - Open CVC-286, CHARGING PUMP "C" TO CHARGING LINE.   | _____ | _____ |
|    | - Open CVC-289, CHARGING PUMP "B" TO CHARGING LINE.   | _____ | _____ |
|    | - Open CVC-290, CHARGING PUMP "A" to CHARGING LINE.   | _____ | _____ |
|    | - Open CVC-202B, HCV-121 INLET.   | _____ |       |
|    | - Open CVC-282, CHARGING LINE FLOW ISOL and record completion of the Full Stroke Exercise test on Attachment 8.6. | _____ | _____ |
|    | - Lock open CVC-312, CVC-310A BYPASS.   | _____ | _____ |



7.9.1 (Continued)

INIT

- 16. IF present plant conditions require RCP operation,  
THEN restart IAW OP-101 while continuing with this  
procedure. \_\_\_\_\_
  
- 17. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
  
- 18. IF this is a partial OST performed for PMT OR retest,  
THEN immediately submit package for review. \_\_\_\_\_

INIT

7.9.2 Penetration 25, 26, and 27 - RCP Seal Injection (CVC-297A, B, C, CVC-293A, CVC-293C, CVC-295, CVC-295A)

1. Record flow meter FI-1914 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1914 is attached to this procedure.
3. Verify the following pumps STOPPED:
  - RCP "A"
  - RCP "B"
  - RCP "C"

**CAUTION**

If Charging Pump operation is desired during performance of this section, charging line flow must be maintained during the period RCP seal injection is isolated. This will preclude lifting of Charging Pump Discharge Reliefs.

4. Perform the following:
  - a. Place a Caution Tag (Cap) on HIC-121, HCV-121 FLOW CONTROLLER, stating that due to RCP seal injection isolation, an adequate charging flow path must be maintained.
  - b. Record the Caution Tag number below.  
Caution Tag Number \_\_\_\_\_

7.9.2 (Continued)

INIT

5. IF all Charging Pumps are stopped, THEN perform the following:
- a. Place a Caution Tag (Cap) on each pump. \_\_\_\_\_
  - b. The position/condition will be "TAGGED", AND the reason will be to alert the Control Operator that RCP seal injection is isolated. Care must be exercised when starting Charging Pumps to prevent possible lifting of Charging Pump Discharge Reliefs. \_\_\_\_\_
  - c. Record the Caution Tag number below.  
Caution Tag Number \_\_\_\_\_
6. Perform the following valve lineup:
- Close CVC-295, SEAL INJECTION FILTER "A" & "B" BYPASS. \_\_\_\_\_
  - Close CVC-297A, RCP "A" SEAL WATER FLOW CONTROL VALVE. \_\_\_\_\_
  - Close CVC-297B, RCP "B" SEAL WATER FLOW CONTROL VALVE. \_\_\_\_\_
  - Close CVC-297C, RCP "C" SEAL WATER FLOW CONTROL VALVE. \_\_\_\_\_
  - Verify locked closed CVC-295A, SEAL INJECTION FILTERS OUTLET VENT. \_\_\_\_\_
  - Close CVC-292B, SEAL INJECTION FILTER PIC-157 ISOLATION. \_\_\_\_\_
  - Close CVC-292A, SEAL INJECTION FILTER PIC-157 ISOLATION. \_\_\_\_\_
  - Close CVC-293C, SEAL INJECTION FILTER "B" OUTLET. \_\_\_\_\_
  - Close CVC-293A, SEAL INJECTION FILTER "A" OUTLET. \_\_\_\_\_

7.9.2.6 (Continued)

INIT

- Open CVC-293B, SEAL INJECTION FILTER "A" INLET. \_\_\_\_\_
- Open CVC-293D, SEAL INJECTION FILTER "B" INLET. \_\_\_\_\_
- Close CVC-291, CHARGING PUMP "A" TO SEAL INJECTION. \_\_\_\_\_
- Close CVC-288, CHARGING PUMP "B" TO SEAL INJECTION. \_\_\_\_\_
- Close CVC-287, CHARGING PUMP "C" TO SEAL INJECTION. \_\_\_\_\_

**NOTE:** A Locked Valve key will be required for operation of CVC-299R, RCP "A" SEAL INJECTION LINE VENT

7. Align the following vent and drain valves:

- Open CVC-294D, SEAL INJECTION FILTER "B" DRAIN. \_\_\_\_\_
- Open CVC-294I, SEAL INJECTION FILTER "B" DRAIN. \_\_\_\_\_
- Open CVC-294C, SEAL INJECTION FILTER "A" DRAIN. \_\_\_\_\_
- Connect a portable drain line to CVC-299K, RCP "C" SEAL INJECTION LINE VENT AND Open CVC-299K.  

INSTALLED \_\_\_\_\_

OPEN \_\_\_\_\_
- Connect a portable drain line to CVC-299M, RCP "B" SEAL INJECTION LINE VENT, AND open CVC-299M.  

INSTALLED \_\_\_\_\_

OPEN \_\_\_\_\_
- Verify CLOSED CVC-299R, RCP "A" SEAL INJECTION LINE VENT. \_\_\_\_\_

7.9.2.7 (Continued)

INIT

- Remove the pipe cap from CVC-299R AND install a portable drain line. CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_
  - Open CVC-299R. \_\_\_\_\_
8. Perform the following to depressurize the test boundary:
- a. IF CVC-295A is to be opened in the step below, THEN verify a portable drain line installed. \_\_\_\_\_
  - b. Open CVC-297A/B/C, CVC-293A, CVC-293C, CVC-295, OR unlock AND open CVC-295A. Record valve opened \_\_\_\_\_ \_\_\_\_\_
  - c. Close valve recorded in Step 7.9.2.8.b. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-35, FI-1914 BYPASS, may be opened. However, IVSW-35 must be closed before flow data is recorded.

9. Perform the following to leak test the penetration:
- a. IF desired, THEN open IVSW-35 to speed line fill. \_\_\_\_\_

**NOTE:** IVSW-16A full stroke exercise test is performed to meet IST requirements IAW TMM-004.

- b. Open IVSW-16A, IVSW TO PEN 25, 26, & 27, RCPS SEAL INJECTION and record completion of the Full Stroke Exercise test on Attachment 8.6. \_\_\_\_\_
- c. Verify CLOSED IVSW-35, FI-1914 BYPASS. \_\_\_\_\_
- d. WHEN FI-1914 stabilizes, THEN record flows:
  - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
  - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
- e. IF CVC-295A is to be opened in the step below, THEN verify a portable drain line installed. \_\_\_\_\_

7.9.2.9 (Continued)

INIT VERI

- f. Open CVC-297A/B/C, CVC-293A, CVC-293C, CVC-295, OR unlock AND open CVC-295A.  
Record valve opened \_\_\_\_\_.

**NOTE:** Observing FI-1914 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-72, RCP A, B, & C SEAL WTR SUPPLY CHECK VALVE.

- g. Check FI-1914 goes OFF-SCALE HIGH. \_\_\_\_\_
- h. Close IVSW-16A. \_\_\_\_\_
- i. Record forward flow test results for IVSW-72 on Attachment 8.6. \_\_\_\_\_
10. Perform the following to restore the system valve lineup:
- a. Isolate the following drains:
- Close CVC-294D, SEAL INJECTION FILTER "B" DRAIN. \_\_\_\_\_
  - Close CVC-294I, SEAL INJECTION FILTER "B" DRAIN. \_\_\_\_\_
  - Close CVC-294C, SEAL INJECTION FILTER "A" DRAIN. \_\_\_\_\_
- b. Close CVC-299K, RCP "C" SEAL INJECTION LINE VENT. \_\_\_\_\_
- c. Remove the portable drain line from CVC-299K. \_\_\_\_\_
- d. Close CVC-299M, RCP "B" SEAL INJECTION LINE VENT. \_\_\_\_\_
- e. Remove the portable drain line from CVC-299M. \_\_\_\_\_
- f. Lock closed CVC-299R, RCP "A" SEAL INJECTION LINE VENT. \_\_\_\_\_



7.9.2.10 (Continued)

INIT VERI

- i. Perform the following lineup:
  - Open/Close (circle one) CVC-297A, RCP "A" SEAL WATER FLOW CONTROL VALVE. \_\_\_\_\_
  - Open/Close (circle one) CVC-297B, RCP "B" SEAL WATER FLOW CONTROL VALVE. \_\_\_\_\_
  - Open/Close (circle one) CVC-297C, RCP "C" SEAL WATER FLOW CONTROL VALVE. \_\_\_\_\_
  - Verify locked closed CVC-295A, SEAL INJECTION FILTERS OUTLET VENT. \_\_\_\_\_
  - IF applicable, THEN remove portable drain line installed on CVC-295A. \_\_\_\_\_
  - Close CVC-295, SEAL INJECTION FILTERS "A" & "B" BYPASS. \_\_\_\_\_
  - Open CVC-292A, SEAL INJECTION FILTER PIC-157 ISOLATION. \_\_\_\_\_
  - Open CVC-292B, SEAL INJECTION FILTER PIC-157 ISOLATION. \_\_\_\_\_
  - Open/Close (circle one) CVC-293C, SEAL INJECTION FILTER "B" OUTLET. \_\_\_\_\_
  - Open/Close (circle one) CVC-293A, SEAL INJECTION FILTER "A" OUTLET. \_\_\_\_\_
  - Open/Close (circle one) CVC-293B, SEAL INJECTION FILTER "A" INLET. \_\_\_\_\_

7.9.2.10.i (Continued)

INIT VERI

- Open/Close (circle one) CVC-293D, SEAL INJECTION FILTER "B" INLET. \_\_\_\_\_
  - Open CVC-291, CHARGING PUMP "A" TO SEAL INJECTION. \_\_\_\_\_
  - Open CVC-288, CHARGING PUMP "B" TO SEAL INJECTION. \_\_\_\_\_
  - Open CVC-287, CHARGING PUMP "C" TO SEAL INJECTION. \_\_\_\_\_
11. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal. \_\_\_\_\_
12. IF corrected leakage values obtained in Step 7.9.2.9.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required. Maintenance is / is not required. (circle one)
- \_\_\_\_\_  
IVSW Engineer
13. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking). WR # \_\_\_\_\_
14. Record in Attachment 8.2 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.9.2.9.d. \_\_\_\_\_
15. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.2. \_\_\_\_\_
16. IF maintenance is NOT required, THEN record in Attachment 8.2 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.9.2.9.d. \_\_\_\_\_

7.9.2 (Continued)

INIT

17. Remove Caution Tags (Caps) utilized in Step 7.9.2.4 AND 7.9.2.5. \_\_\_\_\_
18. IF present plant conditions require Charging pump operation, THEN restart IAW OP-301 while continuing with this procedure. \_\_\_\_\_
19. IF present plant conditions require RCP operation, THEN restart IAW OP-101 while continuing with this procedure. \_\_\_\_\_
20. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
21. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.9.3 Pen. 62,63, & 64 - Cold Leg SI Headers (SI-870A/B, SI-883L, & SI-883W)

1. Record flow meter FI-1914 Serial Number: \_\_\_\_\_
2. Verify the calibration conversion sheet for flow meter FI-1914 is attached to this procedure. \_\_\_\_\_

**NOTE:** TRMS 3.7 may be applicable to the following step.

3. Rack out the SI pump breakers:
  - SAFETY INJECTION PUMP "A" BKR 52/21C \_\_\_\_\_
  - 480V BUSS E-1 SUPPLY TO SI PUMP "B" 52/22B \_\_\_\_\_
  - 480V BUSS E-2 SUPPLY TO SI PUMP "B" 52/29B \_\_\_\_\_
  - SAFETY INJECTION PUMP "C" BKR 52/23B \_\_\_\_\_

**NOTE:** A Locked Valve Key will be required for several of the valves listed below.

4. Verify CLOSED the following valves:
  - SI-868A, HIGH HEAD TO LOOP "C" COLD LEG ISOLATION. \_\_\_\_\_
  - SI-868B, HIGH HEAD TO LOOP "B" COLD LEG ISOLATION. \_\_\_\_\_
  - SI-868C, HIGH HEAD TO LOOP "A" COLD LEG ISOLATION. \_\_\_\_\_

**NOTE:** SI-883L is located in pipe alley, behind four electrical heat trace boxes just below SI-868A, B, and C.

- SI-883L, SI-868A, B, & C TEST LINE ISOLATION. \_\_\_\_\_

7.9.3.4 (Continued)

INIT

- SI-870A, BIT OUTLET. \_\_\_\_\_
  - SI-870B, BIT OUTLET. \_\_\_\_\_
  - SI-883W, SI-870A AND B LEAK OFF. \_\_\_\_\_
5. Verify OPEN the following valves:
- SI-867A AND/OR SI-867B, BIT INLET.  
Initial valve(s) opened. N/A those that do not apply. SI-867A \_\_\_\_\_  
SI-867B \_\_\_\_\_
  - SI-895T, BIT BYPASS. \_\_\_\_\_
  - SI-895U, BIT BYPASS TO SI TEST LINE. \_\_\_\_\_
  - SI-895P, SI TEST LINE ISOLATION. \_\_\_\_\_
  - SI-856A, SI PUMP RECIRC. \_\_\_\_\_
  - SI-856B, SI PUMP RECIRC. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-35, FI-1914 BYPASS, may be opened. However, IVSW-35 must be closed before flow data is recorded.

6. Perform the following to leak test the penetration:
- a. IF desired, THEN open IVSW-35 to speed line fill. \_\_\_\_\_

**NOTE:** IVSW-16D full stroke exercise test is performed to meet IST requirements IAW TMM-004.

- b. Open IVSW-16D, IVSW TO PEN 62, 63, & 64, SI COLD LEG INJECTION and record completion of the Full Stroke Exercise test on Attachment 8.6. \_\_\_\_\_
- c. Verify CLOSED IVSW-35, FI-1914 BYPASS. \_\_\_\_\_

7.9.3.6 (Continued)

INIT VERI

- d. WHEN FI-1914 stabilizes, THEN record flows:
  - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
  - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
- e. Open SI-870A/B, SI-883L, OR SI-883W.  
Record valve opened \_\_\_\_\_.

**NOTE:** Observing FI-1914 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-98, SI COLD LEG SUPPLY CHECK VALVE.

- f. Check FI-1914 goes OFF-SCALE HIGH. \_\_\_\_\_
- g. Close IVSW-16D. \_\_\_\_\_
- h. Record forward flow test results for IVSW-98 on Attachment 8.6. \_\_\_\_\_
- 7. Perform the following to restore the system valve line-up:
  - a. Close SI-870A, BIT OUTLET. \_\_\_\_\_
  - b. Close SI-870B, BIT OUTLET. \_\_\_\_\_
  - c. Close SI-883W, SI-870A AND B LEAK OFF. \_\_\_\_\_
  - d. Open SI-867A, BIT INLET. \_\_\_\_\_
  - e. Open SI-867B, BIT INLET. \_\_\_\_\_
  - f. Lock Closed SI-895T, BIT BYPASS \_\_\_\_\_
  - g. Lock Closed SI-895U, BIT BYPASS TO SI TEST LINE. \_\_\_\_\_
  - h. Lock Closed SI-895P, SI TEST LINE ISOLATION. \_\_\_\_\_
  - i. Open SI-856A, SI PUMP RECIRC. \_\_\_\_\_
  - j. Open SI-856B, SI PUMP RECIRC. \_\_\_\_\_

7.9.3.7 (Continued)

	<u>INIT</u>	<u>VERI</u>
k. Lock Closed SI-883L, SI-868A, B, & C TEST LINE ISOLATION.	_____	_____
l. Lock open SI-868A, HIGH HEAD TO LOOP "C" COLD LEG ISOLATION.	_____	_____
m. Lock open SI-868B, HIGH HEAD TO LOOP "B" COLD LEG ISOLATION.	_____	_____
n. Lock open SI-868C, HIGH HEAD TO LOOP "A" COLD LEG ISOLATION.	_____	_____
8. <u>IF</u> the IVSW tank requires filling, <u>THEN</u> Go To the section for Returning IVSW Tank Level to Normal.	_____	
9. <u>IF</u> corrected leakage values obtained in Step 7.9.3.6.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, <u>THEN</u> the IVSW Engineer will determine whether maintenance is required. Maintenance is / is not required. (circle one)		
_____ IVSW Engineer	_____	
10. <u>IF</u> the penetration leakage value is determined to be excessive, <u>THEN</u> submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, <u>AND</u> which valve(s) are leaking). WR # _____	_____	
11. Record in Attachment 8.2 the AS FOUND Indicated <u>AND</u> Corrected penetration leakages recorded in Step 7.9.3.6.d.	_____	
12. <u>IF</u> maintenance is required, <u>THEN</u> N/A the AS LEFT Indicated <u>AND</u> Corrected values in Attachment 8.2.	_____	
13. <u>IF</u> maintenance is <u>NOT</u> required, <u>THEN</u> record in Attachment 8.2 the AS LEFT Indicated <u>AND</u> Corrected penetration leakages recorded in Step 7.9.3.6.d.	_____	

7.9.3 (Continued)

INIT

14. Rack in the SI pump breakers IAW plant conditions:
- SAFETY INJECTION PUMP "A" BKR 52/21C \_\_\_\_\_
  - 480V BUSS E-1 SUPPLY TO SI PUMP "B" 52/22B \_\_\_\_\_
  - 480V BUSS E-2 SUPPLY TO SI PUMP "B" 52/29B \_\_\_\_\_
  - SAFETY INJECTION PUMP "C" BKR 52/23B \_\_\_\_\_
15. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
16. IF this is a partial OST performed for PMT OR retest, THEN  
immediately submit package for review. \_\_\_\_\_

INIT

7.9.4 Penetration 44 - Containment Spray Header "A" Supply Line (SI-891A)

1. Record flow meter FI-1914 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1914 is attached to this procedure. \_\_\_\_\_
3. Verify CV SPRAY PUMP "A" breaker RACKED OUT.  
E1 - BKR 52/19A \_\_\_\_\_

**NOTE:** A Locked Valve key is required to unlock several valves for this test.

4. Perform the following valve lineup:
  - Close SI-891A, CV SPRAY PUMP "A" HEADER DISCHARGE. \_\_\_\_\_
  - Close SI-880A, CV SPRAY PUMP "A" DISCHARGE. \_\_\_\_\_
  - Close SI-880B, CV SPRAY PUMP "A" DISCHARGE. \_\_\_\_\_
  - Verify LOCKED CLOSED SI-883M, CV SPRAY PUMP "A" DISCH TO TEST LINE. \_\_\_\_\_
  - Verify CLOSED SI-890D, CV SPRAY PUMP "A" DISCH PIPING DRAIN. \_\_\_\_\_
5. Remove the pipe cap AND install a portable drain line for SI-890D.
 

CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_
6. Open SI-890D. \_\_\_\_\_

INIT

7.9.4 (Continued)

**CAUTION**

To speed filling of the line in the steps below, IVSW-35, FI-1914 BYPASS, may be opened. However, IVSW-35 must be closed before flow data is recorded.

- 7. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-35 to speed line fill. \_\_\_\_\_

**NOTE:** IVSW-16E full stroke exercise test is performed to meet IST requirements IAW TMM-004.

- b. Open IVSW-16E, PEN 44, CV SPRAY HEADER "A" and record completion of the Full Stroke Exercise test on Attachment 8.6. \_\_\_\_\_
- c. Verify CLOSED IVSW-35, FI-1914 BYPASS. \_\_\_\_\_
- d. WHEN FI-1914 stabilizes, THEN record flows:
  - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
  - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_

**NOTE:** To prevent excessive water accumulation on the SI Pump Room floor, SI-890D must be throttled partially closed prior to opening SI-891A.

- 8. Throttle partially closed SI-890D. \_\_\_\_\_
- 9. Open SI-891A, CV SPRAY PUMP "A" HEADER DISCHARGE. \_\_\_\_\_

**NOTE:** Observing FI-1914 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-74, CV SPRAY HDR A SUPPLY CHECK VALVE.

- 10. Check FI-1914 is OFF-SCALE HIGH. \_\_\_\_\_
- 11. Close IVSW-16E. \_\_\_\_\_

INIT VERI

7.9.4 (Continued)

- |     |   |       |       |
|-----|---|-------|-------|
| 12. | Record forward flow test results for IVSW-74 on Attachment 8.6.   | _____ |       |
| 13. | Perform the following to restore the system valve line-up:  |       |       |
| a.  | Lock Closed SI-890D, CV SPRAY PUMP "A" DISCH PIPING DRAIN.  | _____ | _____ |
| b.  | Remove the portable drain line and reinstall the pipe cap at SI-890D.   |       |       |
|     | LINE REMOVED  | _____ |       |
|     | CAP INSTALLED   | _____ | _____ |
| c.  | Perform the following lineup:   |       |       |
|     | – Close SI-880A, CV SPRAY PUMP "A" DISCHARGE.   | _____ | _____ |
|     | – Close SI-880B, CV SPRAY PUMP "A" DISCHARGE.   | _____ | _____ |
|     | – Lock Closed SI-883M, CV SPRAY PUMP "A" DISCH TO TEST LINE.  | _____ | _____ |
|     | – Lock open SI-891A, CV SPRAY PUMP "A" HEADER DISCHARGE.  | _____ | _____ |
| 14. | <u>IF</u> the IVSW tank requires filling, <u>THEN</u> Go To the section for Returning IVSW Tank Level to Normal.  | _____ |       |
| 15. | <u>IF</u> corrected leakage values obtained in Step 7.9.4.7.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, <u>THEN</u> the IVSW Engineer will determine whether maintenance is required. Maintenance is / is not required. (circle one) |       |       |

\_\_\_\_\_  
IVSW Engineer

7.9.4 (Continued)

INIT

16. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_
17. Record in Attachment 8.2 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.9.4.7.d. \_\_\_\_\_
18. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.2. \_\_\_\_\_
19. IF maintenance is NOT required, THEN record in Attachment 8.2 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.9.4.7.d. \_\_\_\_\_
20. Verify CV SPRAY PUMP "A" breaker is RACKED IN IAW plant conditions. E1 - 52/19A \_\_\_\_\_
21. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
22. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.9.5 Penetration 45 - Containment Spray Header "B" Supply Line (SI-891B)

1. Record flow meter FI-1914 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1914 is attached to this procedure. \_\_\_\_\_
3. Verify CV SPRAY PUMP "B" breaker is RACKED OUT.  
E2 - 52/25C \_\_\_\_\_

**NOTE:** A Locked Valve key is required to unlock several valves for this test.

4. Perform the following valve lineup:
  - Close SI-891B, CV SPRAY PUMP "B" HEADER DISCHARGE. \_\_\_\_\_
  - Close SI-880C, CV SPRAY PUMP "B" DISCHARGE. \_\_\_\_\_
  - Close SI-880D, CV SPRAY PUMP "B" DISCHARGE. \_\_\_\_\_
  - Verify LOCKED CLOSED SI-883N, CV SPRAY PUMP "B" DISCH TO TEST LINE. \_\_\_\_\_
  - Verify CLOSED SI-890C, CV SPRAY PUMP "B" DISCH PIPING DRAIN. \_\_\_\_\_
5. Remove the pipe cap AND install a portable drain line for SI-890C.  
CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_
6. Open SI-890C. \_\_\_\_\_

7.9.5 (Continued)

INIT

**CAUTION**

To speed filling of the line in the steps below, IVSW-35, FI-1914 BYPASS, may be opened. However, IVSW-35 must be closed before flow data is recorded.

7. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-35 to speed line fill. \_\_\_\_\_

**NOTE:** IVSW-16F full stroke exercise test is performed to meet IST requirements IAW TMM-004.

- b. Open IVSW-16F, IVSW TO PEN 45, CV SPRAY HEADER "B" and record completion of the Full Stroke Exercise test on Attachment 8.6.
- c. Verify CLOSED IVSW-35, FI-1914 BYPASS. \_\_\_\_\_
- d. WHEN FI-1914 stabilizes, THEN record flows:
  - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
  - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_

**NOTE:** To prevent excessive water accumulation on the SI Pump Room floor, SI-890C must be throttled partially closed prior to opening SI-890B.

8. Throttle partially closed SI-890C. \_\_\_\_\_
9. Open SI-891B, CV SPRAY PUMP "B" HEADER DISCHARGE. \_\_\_\_\_

**NOTE:** Observing FI-1914 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-75, CV SPRAY HDR B SUPPLY CHECK VALVE.

10. Check FI-1914 is OFF-SCALE HIGH. \_\_\_\_\_
11. Close IVSW-16F. \_\_\_\_\_
12. Record forward flow test results for IVSW-75 on Attachment 8.6. \_\_\_\_\_



7.9.5 (Continued)

INIT

- 17. Record in Attachment 8.2 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.9.5.7.d. \_\_\_\_\_
- 18. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.2. \_\_\_\_\_
- 19. IF maintenance is NOT required, THEN record in Attachment 8.2 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.9.5.7.d. \_\_\_\_\_
- 20. Verify CV SPRAY PUMP "B" breaker is RACKED IN IAW plant conditions. E2 - 52/25C \_\_\_\_\_
- 21. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
- 22. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.9.6 Pen. 43 - Hot Leg SI Header (SI-869)

1. Record flow meter FI-1914 Serial Number: \_\_\_\_\_. \_\_\_\_\_
2. Verify the calibration conversion sheet for flow meter FI-1914 is attached to this procedure. \_\_\_\_\_

<b>NOTE:</b> TRMS 3.7 may be applicable to the following step.
--

3. Rack out the SI pump breakers:
  - SAFETY INJECTION PUMP "A" BKR 52/21C \_\_\_\_\_
  - 480V BUSS E-1 SUPPLY TO SI PUMP "B" 52/22B \_\_\_\_\_
  - 480V BUSS E-2 SUPPLY TO SI PUMP "B" 52/29B \_\_\_\_\_
  - SAFETY INJECTION PUMP "C" BKR 52/23B \_\_\_\_\_

<b>NOTE:</b> A locked valve key is required to unlock SI-888B and SI-888C.
--

4. Perform the following valve lineup:
  - Close SI-869, LOOPS "B" AND "C" HOT LEG INJECTION SHUTOFF. \_\_\_\_\_
  - Close SI-866A, LOOP "C" HOT LEG INJECTION VALVE. \_\_\_\_\_
  - Close SI-866B, LOOP "B" HOT LEG INJECTION VALVE. \_\_\_\_\_
  - Close SI-883R, HIGH HEAD SI TO ACCUMS MAKE-UP. \_\_\_\_\_
5. Install a portable drain line on SI-874E, HIGH HEAD TO HOT LEGS VENT. \_\_\_\_\_
6. Open SI-874E. \_\_\_\_\_

7.9.6 (Continued)

INIT

- |     |  |       |
|-----|--|-------|
| 7.  | Perform the following valve line-up:   |       |
|     | – Close SI-897G, SFPC LOOP TO SI HEADER.   | _____ |
|     | – Close SI-888C, SI PUMP "C" DISCHARGE.  | _____ |
|     | – Close SI-888B, SI PUMP "B" DISCHARGE.  | _____ |
|     | – Open SI-878B, SI PUMP DISCH HDR<br>CROSS-CONNECT.  | _____ |
|     | – Close SI-878A, SI PUMP DISCH HDR<br>CROSS-CONNECT.   | _____ |
| 8.  | Install a portable drain line on SI-878C, SI PUMPS<br>DISCH VENT.                                | _____ |
| 9.  | Open SI-878C.  | _____ |
| 10. | Open SI-869, LOOPS "B" AND "C" HOT LEG<br>INJECTION SHUTOFF, to depressurize the test<br>volume. | _____ |
| 11. | Close SI-869.  | _____ |

**CAUTION**

To speed filling of the line in the steps below, IVSW-35, FI-1914 BYPASS, may be opened. However, IVSW-35 must be closed before flow data is recorded.

- |     |   |       |
|-----|---|-------|
| 12. | Perform the following to leak test the penetration:                   |       |
|     | a. <u>IF</u> desired, <u>THEN</u> open IVSW-35 to speed<br>line fill. | _____ |

**NOTE:** IVSW-16G full stroke exercise test is performed to meet IST requirements IAW TMM-004.

- |    |   |       |
|----|---|-------|
| b. | Open IVSW-16G, IVSW TO PEN 43, SI HOT LEG<br>INJECTION and record completion of the<br>Full Stroke Exercise test on Attachment 8.6. | _____ |
| c. | Verify CLOSED IVSW-35, FI-1914 BYPASS.  | _____ |

7.9.6.12 (Continued)

INIT VERI

- d. WHEN FI-1914 stabilizes, THEN record flows:
- 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
  - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
13. Open SI-869, LOOPS "B" AND "C" HOT LEG INJECTION SHUTOFF. \_\_\_\_\_

**NOTE:** Observing FI-1914 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-70, SI BORON INJ / HOT LEG CHECK VALVE.

- 14. Check FI-1914 goes OFF-SCALE HIGH. \_\_\_\_\_
- 15. Close IVSW-16G, IVSW TO PEN 43, SI HOT LEG INJECTION. \_\_\_\_\_
- 16. Record forward flow test results for IVSW-70 on Attachment 8.6. \_\_\_\_\_
- 17. Close SI-878C, SI PUMPS DISCH VENT. \_\_\_\_\_
- 18. Remove the portable drain line from SI-878C. \_\_\_\_\_
- 19. Close SI-874E, HIGH HEAD TO HOT LEGS VENT. \_\_\_\_\_
- 20. Remove the portable drain line from SI-874E. \_\_\_\_\_
- 21. Perform the following to restore the system valve line-up:
  - Close SI-866A, LOOP "C" HOT LEG INJECTION. \_\_\_\_\_
  - Close SI-866B, LOOP "B" HOT LEG INJECTION. \_\_\_\_\_
  - Open SI-883R, HIGH HEAD SI TO ACCUMS MAKE-UP. \_\_\_\_\_
  - Close SI-869, LOOPS "B" AND "C" HOT LEG INJECTION SHUTOFF. \_\_\_\_\_

7.9.6.21 (Continued)

	<u>INIT</u>	<u>VERI</u>
– Close SI-897G, SFPC LOOP TO SI HEADER.	_____	_____
– Lock open SI-888C, SI PUMP "C" DISCHARGE.	_____	_____
– Lock open SI-888B, SI PUMP "B" DISCHARGE.	_____	_____
– Open SI-878B, SI PUMP DISCH HDR CROSS-CONNECT.	_____	_____
– Open SI-878A, SI PUMP DISCH HDR CROSS-CONNECT.	_____	_____
22. <u>IF</u> the IVSW tank requires filling, <u>THEN</u> Go To the section for Returning IVSW Tank Level to Normal.	_____	
23. <u>IF</u> corrected leakage values obtained in Step 7.9.6.12.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, <u>THEN</u> the IVSW Engineer will determine whether maintenance is required. Maintenance is / is not required. (circle one)		
_____ IVSW Engineer	_____	
24. <u>IF</u> the penetration leakage value is determined to be excessive, <u>THEN</u> submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, <u>AND</u> which valve(s) are leaking). WR # _____	_____	
25. Record in Attachment 8.2 the AS FOUND Indicated <u>AND</u> Corrected penetration leakages recorded in Step 7.9.6.12.d.	_____	
26. <u>IF</u> maintenance is required, <u>THEN</u> N/A the AS LEFT Indicated <u>AND</u> Corrected values in Attachment 8.2.	_____	
27. <u>IF</u> maintenance is <u>NOT</u> required, <u>THEN</u> record in Attachment 8.2 the AS LEFT Indicated <u>AND</u> Corrected penetration leakages recorded in Step 7.9.6.12.d.	_____	

7.9.6 (Continued)

INIT

28. Rack in the SI pump breakers IAW plant conditions:
- SAFETY INJECTION PUMP "A" BKR 52/21C \_\_\_\_\_
  - 480V BUSS E-1 SUPPLY TO SI PUMP "B" 52/22B \_\_\_\_\_
  - 480V BUSS E-2 SUPPLY TO SI PUMP "B" 52/29B \_\_\_\_\_
  - SAFETY INJECTION PUMP "C" BKR 52/23B \_\_\_\_\_
29. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
30. IF this is a partial OST performed for PMT OR retest, THEN  
immediately submit package for review. \_\_\_\_\_

7.10 Header "B" Leakage Measurement INIT

7.10.1 Pen. 6 - RCDT Discharge Line (WD-1721, WD-1722)

1. Record flow meter FI-1919 Serial Number: \_\_\_\_\_
2. Verify the calibration conversion sheet for flow meter FI-1919 is attached to this procedure. \_\_\_\_\_
3. Verify RCDT PUMP "A" STOPPED. \_\_\_\_\_
4. Verify RCDT PUMP "B" STOPPED. \_\_\_\_\_
5. Open RCDT PUMP "A" breaker (MCC-2, Compt. # 5M). \_\_\_\_\_
6. Open RCDT PUMP "B" breaker (MCC-1, Compt. # 2M). \_\_\_\_\_
7. Open LEAKOFF COLLECTION TANK PUMPS breaker (MCC-5, Compt. # 1CR). \_\_\_\_\_
8. Perform the following valve lineup:
  - Close WD-1721, RCDT PUMP DISCHARGE LINE AUTO ISOLATION. \_\_\_\_\_
  - Close WD-1722, RCDT PUMP DISCHARGE LINE AUTO ISOLATION. \_\_\_\_\_
  - Close WD-1731, RCDT DISCHARGE TO WHUT. \_\_\_\_\_
  - Close CVC-409, COLLECTION TANK TRANSFER PUMPS COMBINED DISCH. \_\_\_\_\_
  - Close CVC-1101, RCDT/CHARGING PUMP LEAK OFF TO CVCS HUTS (CVCS HUT Room). \_\_\_\_\_
  - Close SFPC-804, RWP PUMP SUCTION FROM RCDT. \_\_\_\_\_
9. Verify CLOSED WD-1721A, RCDT PUMP DISCHARGE LINE VENT. \_\_\_\_\_
10. Remove the pipe cap AND install a portable drain line on WD-1721A.
 

CAP REMOVED \_\_\_\_\_  
 LINE INSTALLED \_\_\_\_\_

- |  |             |
|--|-------------|
| 7.10.1 (Continued)   | <u>INIT</u> |
| 11. Open WD-1721A.   | _____       |
| 12. Install a portable drain line on WD-1820, RCDT TO CVCS HOLDUP TANK DRAIN.                            | _____       |
| 13. Open WD-1820.  | _____       |
| 14. Open WD-1721 OR WD-1722, RCDT PUMP DISCHARGE LINE AUTO ISOLATION, to depressurize the test volume.   | _____       |
| 15. Record valve opened in Step 7.10.1.14. _____   | _____       |
| 16. Close valve opened Step 7.10.1.14.   | _____       |
| 17. Perform the following to fail open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE: |             |
| a. Close IA-205A, IA TO PCV-1922A & B.   | _____       |
| b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B.                             | _____       |
| c. Verify OPEN PCV-1922A.  | _____       |
| d. Verify OPEN PCV-1922B.  | _____       |

**CAUTION**

To speed filling of the line in the steps below, IVSW-36, FI-1919 BYPASS, may be opened. However, IVSW-36 must be closed before flow data is recorded.

- |  |       |
|--|-------|
| 18. Perform the following to leak test the penetration:            |       |
| a. <u>IF</u> desired, <u>THEN</u> open IVSW-36 to speed line fill. | _____ |
| b. Open IVSW-26, IVSW TO PEN 6, RCDT PUMP DISCHARGE.               | _____ |
| c. Verify CLOSED IVSW-36, FI-1919 BYPASS.                          | _____ |

7.10.1.18 (Continued)

INIT

d. WHEN FI-1919 stabilizes, THEN record flows:

- 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
- 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_

19. Open valve recorded in Step 7.10.1.15. \_\_\_\_\_

**NOTE:** Observing FI-1919 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-76, CVCS CHARGING LINE CHECK VALVE.

20. Check FI-1919 goes OFF-SCALE HIGH. \_\_\_\_\_

21. Close IVSW-26, IVSW TO PEN 6, RCDT PUMP DISCHARGE. \_\_\_\_\_

22. Record forward flow test results for IVSW-76 on Attachment 8.6. \_\_\_\_\_

23. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_

24. Open IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_

25. Verify CLOSED PCV-1922A. \_\_\_\_\_

26. Verify CLOSED PCV-1922B. \_\_\_\_\_

27. Lock closed WD-1721A, RCDT PUMP DISCHARGE LINE VENT. \_\_\_\_\_

28. Remove the portable drain line at WD-1721A, AND install the pipe cap. LINE REMOVED  
CAP INSTALLED \_\_\_\_\_

29. Close WD-1820, RCDT TO CVCS HOLDUP TANK DRAIN. \_\_\_\_\_

30. Remove the portable drain line at WD-1820. \_\_\_\_\_

7.10.1 (Continued)

INIT VERI

- |     |  |                          |       |
|-----|--|--------------------------|-------|
| 31. | Perform the following to restore the system valve line-up:   |                          |       |
|     | – Open WD-1722, RCDT PUMP DISCHARGE LINE AUTO ISOLATION, <u>AND</u> place control switch in Auto.                | OPEN _____<br>AUTO _____ |       |
|     | – Open WD-1721, RCDT PUMP DISCHARGE LINE AUTO ISOLATION, <u>AND</u> place control switch in Auto.                | OPEN _____<br>AUTO _____ |       |
|     | – Close WD-1731, RCDT DISCHARGE TO WHUT.   | _____                    |       |
|     | – Open CVC-409, COLLECTION TANK TRANSFER PUMPS COMBINED DISCH.   | _____                    | _____ |
|     | – Open CVC-1101, RCDT/CHARGING PUMP LEAK OFF TO CVCS HUTS.   | _____                    | _____ |
|     | – Close SFPC-804, RWP PUMP SUCTION FROM RCDT.  | _____                    |       |
| 32. | Close RCDT PUMP "A" breaker (MCC-2, Compt. # 5M).  | _____                    |       |
| 33. | Close RCDT PUMP "B" breaker (MCC-1, Compt. # 2M).  | _____                    |       |
| 34. | Close LEAKOFF COLLECTION TANK PUMPS breaker (MCC-5, Compt. # 1CR).   | _____                    | _____ |
| 35. | Verify RCDT PUMP "A" switch is in AUTO.  | _____                    |       |
| 36. | Verify RCDT PUMP "B" switch is in AUTO.  | _____                    |       |
| 37. | <u>IF</u> the IVSW tank requires filling, <u>THEN</u> Go To the section for Returning IVSW Tank Level to Normal. | _____                    |       |

7.10.1 (Continued)

INIT

38. IF corrected leakage values obtained in Step 7.10.1.18.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required. Maintenance is / is not required. (circle one)
- \_\_\_\_\_
- IVSW Engineer
39. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking). WR # \_\_\_\_\_
40. Record in Attachment 8.3 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.10.1.18.d.
41. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.3.
42. IF maintenance is NOT required, THEN record in Attachment 8.3 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.10.1.18.d.
43. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
44. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review.

INIT

7.10.2 Pen. 20 - RCP Thermal Barrier Return (CC-735, CC-922, & FCV-626)

1. Record flow meter FI-1919 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1919 is attached to this procedure. \_\_\_\_\_
3. Verify RCP "A", "B", AND "C" are STOPPED. A \_\_\_\_\_  
B \_\_\_\_\_  
C \_\_\_\_\_
4. Perform the following:
  - a. Notify Control Room that various CCW flow related alarms may be received in subsequent steps. \_\_\_\_\_
  - b. Perform the following lineup:
    - Close FCV-626, THERM BARRIER OUTLET. \_\_\_\_\_
    - Close CC-728A, RCP "A" THERMAL BARRIER CC OUTLET STOP. \_\_\_\_\_
    - Close CC-728B, RCP "B" THERMAL BARRIER CC OUTLET STOP. \_\_\_\_\_
    - Close CC-728C, RCP "C" THERMAL BARRIER CC OUTLET STOP. \_\_\_\_\_
    - Close CC-736, CC FROM RCP "A", "B", "C" THERMAL BARRIER. \_\_\_\_\_
  - c. Remove the cap AND install a portable drain line for CC-743, CC FROM RCP "B" THERMAL BARRIER DRAIN. CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_
  - d. Open CC-743. \_\_\_\_\_

7.10.2.4 (Continued)

INIT

- e. Remove the cap AND install a portable drain line for CC-922, RCP "A", "B", "C" THERMAL BARRIER OUTLET DRAIN.
  - CAP REMOVED \_\_\_\_\_
  - LINE INSTALLED \_\_\_\_\_
- f. Open CC-922. \_\_\_\_\_
- 5. Open CC-735, THERM BARRIER OUTLET, to depressurize the test volume. \_\_\_\_\_
- 6. Close CC-735. \_\_\_\_\_
- 7. Close CC-922. \_\_\_\_\_
- 8. Open CC-736. \_\_\_\_\_
- 9. Perform the following to fail open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
  - a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-36, FI-1919 BYPASS, may be opened. However, IVSW-36 must be closed before flow data is recorded.

- 10. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-36 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-26A, IVSW TO PEN 20, RCPS CCW OUTLET. \_\_\_\_\_
  - c. Verify CLOSED IVSW-36, FI-1919 BYPASS. \_\_\_\_\_

7.10.2.10 (Continued)

INIT VERI

- d. WHEN FI-1919 stabilizes, THEN record flows:
  - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
  - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
- 11. Open FCV-626 OR CC-922.  
Record valve opened. \_\_\_\_\_

**NOTE:** Observing FI-1919 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-77, RCP CCW OUTLET CHECK VALVE.

- 12. Check FI-1919 goes OFF-SCALE HIGH. \_\_\_\_\_
- 13. Close IVSW-26A. \_\_\_\_\_
- 14. Record forward flow test results for IVSW-77 on Attachment 8.6. \_\_\_\_\_
- 15. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_
- 16. Open IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
- 17. Verify CLOSED PCV-1922A. \_\_\_\_\_
- 18. Verify CLOSED PCV-1922B. \_\_\_\_\_
- 19. Perform the following to restore the system valve line-up:
  - a. Close CC-743, CC FROM RCP "B" THERMAL BARRIER DRAIN. \_\_\_\_\_
  - 1) Remove the portable drain line from CC-743. \_\_\_\_\_
  - 2) Install the pipe cap on CC-743. \_\_\_\_\_

7.10.2.19 (Continued)

	<u>INIT</u>	<u>VERI</u>
b. Verify close CC-922, RCP "A", "B", "C" THERMAL BARRIER OUTLET DRAIN.	_____	_____
1) Remove the portable drain line from CC-922.	_____	
2) Install the pipe cap on CC-922.	_____	_____
c. Perform the following lineup:	_____	
– Verify open FCV-626, THERM BARRIER OUTLET.	_____	
– Open CC-735, CC THERM BARRIER OUTLET.	_____	
d. <u>IF</u> RCP "A" thermal barrier flow adjustment is desired, <u>THEN</u> throttle open CC-728A, RCP "A" THERMAL BARRIER CC OUTLET STOP, to achieve 25 to 28 gpm on FI-630, CCW RCP "A" THERMALBARRIER RETURN FLOW IND.	_____	
e. <u>IF</u> RCP "A" thermal barrier flow adjustment is <u>NOT</u> desired, <u>THEN</u> open CC-728A.	_____	
f. <u>IF</u> RCP "B" thermal barrier flow adjustment is desired, <u>THEN</u> throttle open CC-728B, RCP "B" THERMAL BARRIER CC OUTLET STOP, to achieve 25 to 28 gpm on FI-633, CCW RCP "B" THERMAL BARRIER RETURN FLOW IND.	_____	
g. <u>IF</u> RCP "B" thermal barrier flow adjustment is <u>NOT</u> desired, <u>THEN</u> open CC-728B.	_____	
h. <u>IF</u> RCP "C" thermal barrier flow adjustment is desired, <u>THEN</u> throttle open CC-728C, RCP "C" THERMAL BARRIER CC OUTLET STOP, to achieve 25 to 28 gpm on FI-636, CCW RCP "C" THERMAL BARRIER RETURN FLOW IND.	_____	

7.10.2.19 (Continued)

INIT

- i. IF RCP "C" thermal barrier flow adjustment is NOT desired, THEN open CC-728C. \_\_\_\_\_
- 20. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal. \_\_\_\_\_
- 21. IF corrected leakage values obtained in Step 7.10.2.10.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required.  
Maintenance is / is not required. (circle one)  
\_\_\_\_\_  
IVSW Engineer \_\_\_\_\_
- 22. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_
- 23. Record in Attachment 8.3 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.10.2.10.d. \_\_\_\_\_
- 24. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.3. \_\_\_\_\_
- 25. IF maintenance is NOT required, THEN record in Attachment 8.3 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.10.2.10.d. \_\_\_\_\_
- 26. IF present plant conditions require RCP operation, THEN restart IAW OP-101 while continuing with this procedure. \_\_\_\_\_
- 27. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
- 28. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.10.3 Pen. 28 - RCP Seal Water Return (CVC-381)

1. Record flow meter FI-1919 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1919 is attached to this procedure.
3. Verify CHARGING PUMP "A", "B", AND "C" are STOPPED.
  - A \_\_\_\_\_
  - B \_\_\_\_\_
  - C \_\_\_\_\_
4. Verify RCP "A", "B", AND "C" are STOPPED.
  - A \_\_\_\_\_
  - B \_\_\_\_\_
  - C \_\_\_\_\_
5. Perform the following valve lineup:
  - Record CVC-381, RCP SEAL WATER RETURN, pretest condition. OPEN / CLOSED \_\_\_\_\_  
(circle one)
  - Verify CLOSED CVC-381. \_\_\_\_\_
  - Record CVC-307, RCP PRIMARY SEAL BYPASS, pretest condition. OPEN / CLOSED \_\_\_\_\_  
(circle one)
  - Verify CLOSED CVC-307. \_\_\_\_\_
  - Direct CVC-389, EXCESS LETDOWN DIVERSION, to the RCDT. \_\_\_\_\_
  - Close CVC-320, SEAL WATER RETURN FILTER OUTLET. \_\_\_\_\_
  - Close CVC-318, SEAL WATER RETURN FILTER BYPASS. \_\_\_\_\_
  - Open CVC-380, SEAL WATER RETURN FILTER INLET. \_\_\_\_\_

7.10.3.5 (Continued)

INIT

- Close CVC-306A, RCP "A" #1 SEAL WATER RETURN FLOW B/P FT-156A & B. \_\_\_\_\_
  - Close CVC-306B, RCP "B" #1 SEAL WATER RETURN FLOW B/P FT-155A & B. \_\_\_\_\_
  - Close CVC-306C, RCP "C" #1 SEAL WATER RETURN FLOW B/P FT-154A & B. \_\_\_\_\_
  - Close CVC-304F, RCP "B" #1 SEAL RETURN FLOW FT-155A & B ISOL. \_\_\_\_\_
  - Close CVC-304B, RCP "A" #1 SEAL RETURN FLOW FT-156A & B ISOL. \_\_\_\_\_
  - Close CVC-304K, RCP "C" #1 SEAL RETURN FLOW FT-154A & B ISOL. \_\_\_\_\_
6. Perform the following drain lineup:
- a. Verify CLOSED CVC-389A, EXCESS LETDOWN TO VCT LINE DRAIN. \_\_\_\_\_
  - b. Remove the pipe cap AND install a portable drain line on CVC-389A, EXCESS LETDOWN TO VCT LINE DRAIN. CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_
  - c. Open CVC-389A. \_\_\_\_\_
  - d. Open CVC-319B. \_\_\_\_\_
7. Perform the following to fail open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
- a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_

7.10.3 (Continued)

INIT

**CAUTION**

To speed filling of the line in the steps below, IVSW-36, FI-1919 BYPASS, may be opened. However, IVSW-36 must be closed before flow data is recorded.

8. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-36 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-26B, IVSW TO PEN 28, RCP SEAL WATER RETURN. \_\_\_\_\_
  - c. Verify CLOSED IVSW-36, FI-1919 BYPASS. \_\_\_\_\_
  - d. WHEN FI-1919 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
9. Open CVC-381, RCP SEAL WATER RETURN. \_\_\_\_\_

**NOTE:** Observing FI-1919 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-78, RCP SEAL WTR RETURN CHECK VALVE.

10. Check FI-1919 goes OFF-SCALE HIGH. \_\_\_\_\_
11. Close IVSW-26B. \_\_\_\_\_
12. Record forward flow test results for IVSW-78 on Attachment 8.6. \_\_\_\_\_
13. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_
14. Open IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_



7.10.3 (Continued)

INIT

- Restore CVC-381, RCP SEAL WATER RETURN, to pretest position recorded in Step 7.10.3.5. OPEN / CLOSED \_\_\_\_\_  
(circle one)
  - Restore CVC-307, RCP PRIMARY SEAL BYPASS, to the pretest position recorded in Step 7.10.3.5. OPEN / CLOSED \_\_\_\_\_  
(circle one)
  - Direct CVC-389, EXCESS LETDOWN DIVERSION, to the VCT. \_\_\_\_\_
18. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal. \_\_\_\_\_
19. IF corrected leakage values obtained in Step 7.10.3.8.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required. Maintenance is / is not required. (circle one) \_\_\_\_\_
- \_\_\_\_\_  
IVSW Engineer
20. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_
21. Record in Attachment 8.3 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.10.3.8.d. \_\_\_\_\_
22. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.3. \_\_\_\_\_
23. IF maintenance is NOT required, THEN record in Attachment 8.3 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.10.3.8.d. \_\_\_\_\_

7.10.3 (Continued)

INIT

- 24. IF present plant conditions require Charging pump operation, THEN restart IAW OP-301 while continuing with this procedure. \_\_\_\_\_
- 25. IF present plant conditions require RCP operation, THEN restart IAW OP-101 while continuing with this procedure. \_\_\_\_\_
- 26. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
- 27. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.10.4 Pen 29 - PZR Steam Space Sample (PS-956A, PS-956B)

1. Record flow meter FI-1919 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1919 is attached to this procedure. \_\_\_\_\_
3. Perform the following valve line-up:
  - Verify CLOSED PS-956A, PZR STEAM SPACE SAMPLE. \_\_\_\_\_
  - Verify CLOSED PS-956B, PZR STEAM SPACE SAMPLE. \_\_\_\_\_
  - Verify CLOSED PS-951, AIR OPERATED ISOLATION. \_\_\_\_\_
  - Open PS-989A, SAMPLE TO HX. \_\_\_\_\_
  - Open PS-966, PZR STEAM SAMPLE VESSEL BYPASS. \_\_\_\_\_
4. Perform the following drain lineup:
  - a. Open PS-971A, SAMPLE TO SAMPLE SINK. \_\_\_\_\_
  - b. Install a portable drain line on PS-951A, SAMPLE LINE VENT. \_\_\_\_\_
  - c. Open PS-951A. \_\_\_\_\_
5. Open PS-956A AND/OR PS-956B, PZR STEAM SPACE SAMPLE, to depressurize the test volume. Initial valve(s) opened. N/A those that do not apply.
 

PS-956A	_____
PS-956B	_____
6. Verify CLOSED PS-956A AND PS-956B.
 

PS-956A	_____
PS-956B	_____

7.10.4 (Continued)

INIT

7. Perform the following to fail open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
- a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-36, FI-1919 BYPASS, may be opened. However, IVSW-36 must be closed before flow data is recorded.

8. Perform the following to leak test the penetration:
- a. IF desired, THEN open IVSW-36 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-26C, IVSW TO PEN 29, PZR STEAM SAMPLE. \_\_\_\_\_
  - c. Verify CLOSED IVSW-36, FI-1919 BYPASS. \_\_\_\_\_
  - d. WHEN FI-1919 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
9. Open the valve(s) used to depressurize the test volume in Step 7.10.4.5. N/A those that do not apply.

PS-956A \_\_\_\_\_  
PS-956B \_\_\_\_\_

7.10.4 (Continued)

INIT VERI

**NOTE:** Observing FI-1919 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-79, PZR STEAM SAMPLE CHECK VALVE.

- |     |  |       |       |
|-----|--|-------|-------|
| 10. | Check FI-1919 goes OFF-SCALE HIGH.   | _____ |       |
| 11. | Close IVSW-26C, IVSW TO PEN 29, PZR STEAM SAMPLE.  | _____ |       |
| 12. | Record forward flow test results for IVSW-79 on Attachment 8.6.  | _____ |       |
| 13. | Close the IA regulator petcocks supplying PCV-1922A <u>AND</u> PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. | _____ |       |
| 14. | Open IA-205A, IA TO PCV-1922A & B.   | _____ |       |
| 15. | Verify CLOSED PCV-1922A.   | _____ |       |
| 16. | Verify CLOSED PCV-1922B.   | _____ |       |
| 17. | Perform the following to restore the system valve line-up:   |       |       |
| a.  | Close PS-951A, SAMPLE LINE VENT.   | _____ |       |
| b.  | Remove the portable drain line from PS-951A.   | _____ |       |
| c.  | Close PS-971A, SAMPLE TO SAMPLE SINK.  | _____ |       |
| d.  | Perform the following lineup:  |       |       |
| -   | Close PS-951, AIR OPERATED ISOLATION.  | _____ |       |
| -   | Close PS-956A <u>AND</u> PS-956B, PZR STEAM SPACE SAMPLE.  | _____ |       |
|     | PS-956A  | _____ | _____ |
|     | PS-956B  | _____ | _____ |
| -   | Open PS-989A, SAMPLE TO HX.  | _____ |       |
| -   | Close PS-966, PZR STEAM SAMPLE VESSEL BYPASS.  | _____ |       |

7.10.4 (Continued)

INIT

18. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal. \_\_\_\_\_
19. IF corrected leakage values obtained in Step 7.10.4.8.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required.  
Maintenance is / is not required. (circle one)  
\_\_\_\_\_  
IVSW Engineer \_\_\_\_\_
20. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_
21. Record in Attachment 8.3 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.10.4.8.d. \_\_\_\_\_
22. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.3. \_\_\_\_\_
23. IF maintenance is NOT required, THEN record in Attachment 8.3 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.10.4.8.d. \_\_\_\_\_
24. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
25. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.10.5 Pen 30 - PZR Liquid Space Sample (PS-956C, PS-956D)

1. Record flow meter FI-1919 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1919 is attached to this procedure.
3. Perform the following valve line-up:
  - Verify CLOSED PS-956C, PZR LIQUID SPACE SAMPLE.
  - Verify CLOSED PS-956D, PZR LIQUID SPACE SAMPLE.
  - Verify CLOSED PS-953, PZR LIQUID SAMPLE VALVE.
  - Open PS-989B, SAMPLE TO HX.
  - Open PS-965A, PZR LIQUID SAMPLE VESSEL BYPASS.
4. Perform the following drain lineup:
  - a. Open PS-971B, SAMPLE TO SAMPLE SINK.
  - b. Install a portable drain line on PS-953C, SAMPLE LINE TEST TAP ISOLATION.
  - c. OPEN PS-953C.
5. Open PS-956C AND/OR PS-956D, PZR LIQUID SPACE SAMPLE, to depressurize the test volume. Initial valve(s) opened. N/A those that do not apply.
 

PS-956C	_____
PS-956D	_____
6. Verify CLOSED PS-956C AND PS-956D.
 

PS-956C	_____
PS-956D	_____

7.10.5 (Continued)

INIT

7. Perform the following to fail open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
- a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-36, FI-1919 BYPASS, may be opened. However, IVSW-36 must be closed before flow data is recorded.

8. Perform the following to leak test the penetration:
- a. IF desired, THEN open IVSW-36 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-26D, IVSW TO PEN 30, PZR LIQUID SAMPLE. \_\_\_\_\_
  - c. Verify CLOSED IVSW-36, FI-1919 BYPASS. \_\_\_\_\_
  - d. WHEN FI-1919 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
9. Open the valve(s) used to depressurize the test volume in Step 7.10.5.5 N/A those that do not apply. PS-956C \_\_\_\_\_  
PS-956D \_\_\_\_\_

7.10.5 (Continued)

INIT VERI

**NOTE:** Observing FI-1919 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-80, PZR LIQUID SAMPLE CHECK VALVE.

- |     |  |       |       |
|-----|--|-------|-------|
| 10. | Check FI-1919 goes OFF-SCALE HIGH.   | _____ |       |
| 11. | Close IVSW-26D, IVSW TO PEN 30, PZR LIQUID SAMPLE.   | _____ |       |
| 12. | Record forward flow test results for IVSW-80 on Attachment 8.6.  | _____ |       |
| 13. | Close the IA regulator petcocks supplying PCV-1922A <u>AND</u> PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. | _____ |       |
| 14. | Open IA-205A, IA TO PCV-1922A & B.   | _____ |       |
| 15. | Verify CLOSED PCV-1922A.   | _____ |       |
| 16. | Verify CLOSED PCV-1922B.   | _____ |       |
| 17. | Perform the following to restore the system valve line-up:   |       |       |
| a.  | Close PS-953C, SAMPLE LINE TEST TAP ISOLATION.   | _____ |       |
| b.  | Remove the portable drain line from PS-953C.   | _____ |       |
| c.  | Close PS-971B, SAMPLE TO SAMPLE SINK.  | _____ |       |
| d.  | Perform the following:   |       |       |
| -   | Close PS-956C, PZR LIQUID SPACE SAMPLE.  | _____ | _____ |
| -   | Close PS-956D, PZR LIQUID SPACE SAMPLE.  | _____ | _____ |
| -   | Close PS-953, PZR LIQUID SAMPLE VALVE.   | _____ |       |

- 7.10.5.17 (Continued) INIT
- Open PS-989B, SAMPLE TO HX. \_\_\_\_\_
  - Close PS-965A, PZR LIQUID SAMPLE VESSEL BYPASS. \_\_\_\_\_
18. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal. \_\_\_\_\_
19. IF corrected leakage values obtained in Step 7.10.5.8.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required. Maintenance is / is not required. (circle one)
- \_\_\_\_\_
- IVSW Engineer \_\_\_\_\_
20. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_ \_\_\_\_\_
21. Record in Attachment 8.3 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.10.5.8.d. \_\_\_\_\_
22. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.3. \_\_\_\_\_
23. IF maintenance is NOT required, THEN record in Attachment 8.3 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.10.5.8.d. \_\_\_\_\_
24. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_ \_\_\_\_\_  
TIME \_\_\_\_\_ \_\_\_\_\_
25. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.10.6 Pen. 31 - RCS Loops "B" and "C" Samples (PS-956E, PS-956F)

1. Record flow meter FI-1919 Serial Number: \_\_\_\_\_
2. Verify the calibration conversion sheet for flow meter FI-1919 is attached to this procedure. \_\_\_\_\_
3. Verify CB-12 on PP-27 is ON. \_\_\_\_\_
4. Perform the following valve lineup:
  - Verify CLOSED PS-956E, RCS HOT LEG SAMPLE. \_\_\_\_\_
  - Verify CLOSED PS-956F, RCS HOT LEG SAMPLE. \_\_\_\_\_

**NOTE:** Contact Chemistry prior to operating the PASS Panel.

HCV-4125, RCS SAMPLE ISOLATION, and HCV-4124, RCS SAMPLE INLET TO PASS, are operated from a common switch located on the PASS Panel. If PASS is de-energized, HCV-4125 will be in the FAILED OPEN position and valve HCV-4124 will be in the FAILED CLOSED position. If PASS is energized, placing the selector switch in the "NORMAL SYS" position will open HCV-4125 and close HCV-4124.

- Verify HCV-1424/1425, RCS sample inlet to PASS, in the "Normal Sys" position. \_\_\_\_\_
- Close PS-957A, SAMPLE LINE TO HOT LEG SAMPLE HX. \_\_\_\_\_
- Open PS-989C, SAMPLE TO HX. \_\_\_\_\_
- Open PS-965B, HOT LEG SAMPLE VESSEL BYPASS. \_\_\_\_\_
- Open PS-990, SAMPLE FROM HEAT EXCHANGER. \_\_\_\_\_
- Close PS-991, SAMPLE TO SAMPLE VESSEL. \_\_\_\_\_
- Close PS-955A, LOOP "B" HOT LEG SAMPLE. \_\_\_\_\_
- Close PS-955B, LOOP "C" HOT LEG SAMPLE. \_\_\_\_\_

7.10.6 (Continued)

INIT

- |    |  |                                |
|----|--|--------------------------------|
| 5. | Perform the following drain lineup:  |                                |
| a. | Install a portable drain line on PS-955G, LOOP "B" SAMPLE LINE VENT.   | _____                          |
| b. | Open PS-955G.  | _____                          |
| c. | Open PS-971C, SAMPLE TO SAMPLE SINK.   | _____                          |
| 6. | Open PS-956E <u>AND/OR</u> PS-956F, RCS HOT LEG SAMPLE, to depressurize the test volume. Initial valve(s) opened. N/A those that do not apply. | PS-956E _____<br>PS-956F _____ |
| 7. | Verify CLOSED PS-956E <u>AND</u> PS-956F.  | PS-956E _____<br>PS-956F _____ |
| 8. | Perform the following to fail Open PCV-1922A <u>AND</u> PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:                                    |                                |
| a. | Close IA-205A, IA TO PCV-1922A & B.  | _____                          |
| b. | Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B.  | _____                          |
| c. | Verify OPEN PCV-1922A.   | _____                          |
| d. | Verify OPEN PCV-1922B.   | _____                          |

**CAUTION**

To speed filling of the line in the steps below, IVSW-36, FI-1919 BYPASS, may be opened. However, IVSW-36 must be closed before flow data is recorded.

- |    |   |       |
|----|---|-------|
| 9. | Perform the following to leak test the penetration:             |       |
| a. | <u>IF</u> desired, <u>THEN</u> open IVSW-36 to speed line fill. | _____ |
| b. | Open IVSW-26E, IVSW TO PEN 31, RCS SAMPLE.                      | _____ |
| c. | Verify CLOSED IVSW-36, FI-1919 BYPASS.                          | _____ |

7.10.6.9 (Continued)

INIT

- d. WHEN FI-1919 stabilizes, THEN record flows:
- 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
  - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
10. Open the valve(s) used to depressurize the test volume in Step 7.10.6.6. N/A those that do not apply. PS-956E \_\_\_\_\_  
PS-956F \_\_\_\_\_

**NOTE:** Observing FI-1919 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-81, RCS SAMPLE CHECK VALVE.

- 11. Check FI-1919 goes OFF-SCALE HIGH. \_\_\_\_\_
- 12. Close IVSW-26E, IVSW TO PEN 31, RCS SAMPLE. \_\_\_\_\_
- 13. Record forward flow test results for IVSW-81 on Attachment 8.6. \_\_\_\_\_
- 14. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_
- 15. Open IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
- 16. Verify CLOSED PCV-1922A. \_\_\_\_\_
- 17. Verify CLOSED PCV-1922B. \_\_\_\_\_
- 18. Perform the following to restore the system valve line-up:
  - a. Close PS-955G, LOOP "B" SAMPLE LINE VENT. \_\_\_\_\_
  - b. Remove the portable drain line from PS-955G. \_\_\_\_\_
  - c. Close PS-971C, SAMPLE TO SAMPLE SINK. \_\_\_\_\_

7.10.6.17 (Continued)

INIT VERI

d. Perform the following:

- Close PS-956E, RCS HOT LEG SAMPLE. \_\_\_\_\_
- Close PS-956F, RCS HOT LEG SAMPLE. \_\_\_\_\_

**NOTE:**HCV-4125, RCS SAMPLE ISOLATION, AND HCV-4124, RCS SAMPLE INLET TO PASS, are operated from a common switch located on the PASS Panel. If PASS is de-energized, HCV-4125 will be in the FAILED OPEN position and valve HCV-4124 will be in the FAILED CLOSED position. If PASS is energized, placing the selector switch in the "Normal Sys" position will open HCV-4125 and close HCV-4124.

- Verify HCV-1424/1425, RCS Sample inlet to PASS, in the "Normal Sys" position. \_\_\_\_\_
- Verify CB-12 on PP-27 is OFF. \_\_\_\_\_
- Open PS-989C, SAMPLE TO HX. \_\_\_\_\_
- Close PS-965B, HOT LEG SAMPLE VESSEL BYPASS. \_\_\_\_\_
- Open PS-990, SAMPLE FROM HEAT EXCHANGER. \_\_\_\_\_
- Close PS-991, SAMPLE TO SAMPLE VESSEL. \_\_\_\_\_
- Close PS-955A, LOOP "B" HOT LEG SAMPLE. \_\_\_\_\_
- Close PS-955B, LOOP "C" HOT LEG SAMPLE. \_\_\_\_\_

e. IF RHR System is aligned for Low Head Safety Injection, THEN close PS-957A, SAMPLE LINE TO HOT LEG SAMPLE HX. \_\_\_\_\_

f. IF RHR System is in service for RCS temperature control, THEN open PS-957A, SAMPLE LINE TO HOT LEG SAMPLE HX. \_\_\_\_\_

7.10.6 (Continued)

INIT

19. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal. \_\_\_\_\_
20. IF corrected leakage values obtained in Step 7.10.6.9.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required.  
Maintenance is / is not required. (circle one)  
\_\_\_\_\_  
IVSW Engineer \_\_\_\_\_
21. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking). WR # \_\_\_\_\_
22. Record in Attachment 8.3 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.10.6.9.d. \_\_\_\_\_
23. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.3. \_\_\_\_\_
24. IF maintenance is NOT required, THEN record in Attachment 8.3 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.10.6.9.d. \_\_\_\_\_
25. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
26. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.11 Header "C" Leakage Measurement

7.11.1 Pen. 1 - PRT to Gas Analyzer (RC-516, RC-553)

1. Record flow meter FI-1920 Serial Number: \_\_\_\_\_
2. Verify the calibration conversion sheet for flow meter FI-1920 is attached to this procedure. \_\_\_\_\_
3. Perform the following:
  - a. Notify E&C prior to operating the Gas Analyzer.  
\_\_\_\_\_ E&C \_\_\_\_\_
  - b. Place Gas Analyzer selector switch to "C" (Calibrate). \_\_\_\_\_
4. Close RC-611, PCV-480 ISOLATION. \_\_\_\_\_
5. Perform the following:
  - a. Obtain Health Physics assistance prior to opening the Waste Gas System in Step 7.11.1.5.b below. \_\_\_\_\_
  - b. Direct Maintenance to disconnect the outlet tubing from PCV-480. \_\_\_\_\_
  - c. Collect any condensate from the disconnected tubing AND consider it contaminated until verified otherwise. \_\_\_\_\_
  - d. Install a portable drain line on the disconnected tubing, AND route to a suitable container or contaminated drain. \_\_\_\_\_
  - e. Direct Maintenance to install an air jumper on RC-516 AND RC-553, PRT TO GAS ANALYZER, to permit valve operation.  
RC-516 JUMPER INSTALLED \_\_\_\_\_  
RC-553 JUMPER INSTALLED \_\_\_\_\_

7.11.1.5 (Continued)

INIT

- f. Obtain Health Physics assistance prior to opening the Waste Gas System in Step 7.11.1.5.g below. \_\_\_\_\_
  - g. Direct Maintenance to disconnect the inlet tubing from WD-1600E, PRT TO GAS ANALYZER SOLENOID ISOLATION. \_\_\_\_\_
  - h. Collect any condensate from the disconnected tubing AND consider it contaminated until verified otherwise. \_\_\_\_\_
  - i. Open RC-516 OR RC-553, PRT TO GAS ANALYZER. N/A valve not opened. RC-516 OPEN \_\_\_\_\_  
RC-553 OPEN \_\_\_\_\_
  - j. Verify CLOSED RC-516 AND RC-553. RC-516 CLOSED \_\_\_\_\_  
RC-553 CLOSED \_\_\_\_\_
6. Perform the following to fail Open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
- a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-37, FI-1920 BYPASS, may be opened. However, IVSW-37 must be closed before flow data is recorded.

7. Perform the following to leak test the penetration:
- a. IF desired, THEN open IVSW-37 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-30, IVSW TO PEN 1, PRT TO GAS ANALYZER. \_\_\_\_\_

- 7.11.1.7 (Continued) INIT
- c. Verify CLOSED IVSW-37, FI-1920 BYPASS. \_\_\_\_\_
  - d. WHEN FI-1920 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
  - 8. Open RC-516 OR RC-553, PRT TO GAS ANALYZER. \_\_\_\_\_  
 N/A valve not opened. RC-516 OPEN \_\_\_\_\_  
RC-553 OPEN \_\_\_\_\_

**NOTE:** Observing FI-1920 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-82, PZR RELIEF TNK TO GAS ANALYZER CHECK VALVE.

- 9. Check FI-1920 goes OFF-SCALE HIGH. \_\_\_\_\_
- 10. Close IVSW-30, IVSW TO PEN 1, PRT TO GAS ANALYZER. \_\_\_\_\_
- 11. Record forward flow test results for IVSW-82 on Attachment 8.6. \_\_\_\_\_
- 12. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_
- 13. Open IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
- 14. Verify CLOSED PCV-1922A. \_\_\_\_\_
- 15. Verify CLOSED PCV-1922B. \_\_\_\_\_
- 16. Perform the following to restore the system valve line-up:
  - a. Open RC-516 AND RC-553. RC-516 OPEN \_\_\_\_\_  
RC-553 OPEN \_\_\_\_\_
  - b. Direct Maintenance to remove the drain line installed to the outlet tubing from PCV-480. \_\_\_\_\_

7.11.1.15 (Continued)

INIT VERI

- |    |   |       |       |
|----|---|-------|-------|
| c. | Direct Maintenance to connect an IA, SA, or Nitrogen pressure source to outlet tubing of PCV-480.   | _____ |       |
| d. | Verify all personnel in the vicinity of WD-1600E have been notified that pressurization is about to commence. Condensate should be directed into a suitable container or drain IAW Health Physics requirements. | _____ |       |
| e. | <u>Slowly</u> pressurize tubing by throttling open the pressure source isolation.   | _____ |       |
| f. | <u>When</u> water is no longer observed flowing from the disconnected tubing at WD-1600E, <u>THEN</u> close the pressure source isolation.  | _____ |       |
| g. | Verify CLOSED RC-516 <u>AND</u> RC-553, PRT TO GAS ANALYZER.  | _____ | _____ |
|    | RC-516 CLOSED   | _____ | _____ |
|    | RC-553 CLOSED   | _____ | _____ |
| h. | Direct Maintenance to disconnect the pressure source, <u>AND</u> reconnect PCV-480 outlet tubing.   |       |       |
|    | PRESSURE SOURCE DISCONNECTED  | _____ |       |
|    | PCV-480 OUTLET TUBING RECONNECTED   | _____ | _____ |
| i. | Direct Maintenance to disconnect WD-1600E tubing drain, <u>AND</u> reconnect the inlet tubing to WD-1600E.  |       |       |
|    | DRAIN REMOVED   | _____ |       |
|    | WD-1600E INLET TUBING RECONNECTED   | _____ | _____ |
| j. | Direct Maintenance to disconnect RC-516 and RC-553 air jumpers, <u>AND</u> reconnect normal IA tubing.  |       |       |
|    | AIR JUMPERS DISCONNECTED  | _____ | _____ |
|    | RC-516 IA LINE RECONNECTED  | _____ | _____ |
|    | RC-553 IA LINE RECONNECTED  | _____ | _____ |

7.11.1.16 (Continued)

INIT

k. Open RC-611. \_\_\_\_\_

l. Inform E&C that the Gas Analyzer can be returned to normal operation IAW CP-015. \_\_\_\_\_

\_\_\_\_\_  
E&C

17. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal. \_\_\_\_\_

18. IF corrected leakage values obtained in Step 7.11.1.7.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required.  
Maintenance is / is not required. (circle one)

\_\_\_\_\_  
IVSW Engineer

19. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_

20. Record in Attachment 8.4 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.11.1.7.d. \_\_\_\_\_

21. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.4. \_\_\_\_\_

22. IF maintenance is NOT required, THEN record in Attachment 8.4 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.11.1.7.d. \_\_\_\_\_

23. Record current date AND time (CR 95-01527).

DATE \_\_\_\_\_  
TIME \_\_\_\_\_

24. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.11.2 Pen. 3 - Primary Water to PRT (RC-519A, RC-519B)

1. Record flow meter FI-1920 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1920 is attached to this procedure.
3. Verify the Pressurizer Relief Tank pressure is as close as possible to zero psig as indicated on PI-472, PZR RELIEF TANK PRESS INDICATOR.
4. Verify PRIMARY WATER PUMP "A" STOPPED.
5. Verify PRIMARY WATER PUMP "B" STOPPED.
6. Open RC-519C, PRIMARY WATER TO PRESSURIZER RELIEF TANK.
7. Obtain E&C concurrence prior to performing PASS System manipulation in the steps below.

\_\_\_\_\_  
E&C

8. Perform the following valve lineup:
  - a. Close the breaker for Circuit 15 on Power Panel 27 (PASS).
  - b. Open HCV-4174, PZR RELIEF TANK ISOLATION.
  - c. Close HCV-4179, PW TO PRT.
  - d. Close HCV-4177, GRAB SAMPLE OUTLET.
  - e. Close HCV-4178, GRAB SAMPLE INLET.
  - f. Close HCV-4126, STRAINER BACKFLUSH PATH ISOLATION.
  - g. Close HCV-4164, DEPRESSURIZED LIQUID SAMPLE VESSEL FLUSH.

- |                      |   |                                |
|----------------------|---|--------------------------------|
| 7.11.2.8 (Continued) |   | <u>INIT</u>                    |
| h.                   | Open HCV-4176, CDT ISOLATION.   | _____                          |
| i.                   | Open V-4189, CAL LOOP OUT.  | _____                          |
| j.                   | Close HCV-4129, LIQUID SAMPLE BACK PRESS VALVE.   | _____                          |
| 9.                   | Open RC-519A <u>AND</u> RC-519B, PRIMARY WATER TO PRESSURIZER RELIEF TANK, to depressurize the test volume. Initial valve(s) opened. N/A those that do not apply. | RC-519A _____<br>RC-519B _____ |
| 10.                  | Verify CLOSED RC-519A <u>AND</u> RC-519B.   | RC-519A _____<br>RC-519B _____ |
| 11.                  | Perform the following to fail open PCV-1922A <u>AND</u> PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:   |                                |
| a.                   | Close IA-205A, IA TO PCV-1922A & B.   | _____                          |
| b.                   | Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B.   | _____                          |
| c.                   | Verify OPEN PCV-1922A.  | _____                          |
| d.                   | Verify OPEN PCV-1922B.  | _____                          |

**CAUTION**

To speed filling of the line in the steps below, IVSW-37, FI-1920 BYPASS, may be opened. However, IVSW-37 must be closed before flow data is recorded.

- |     |   |       |
|-----|---|-------|
| 12. | Perform the following to leak test the penetration:             |       |
| a.  | <u>IF</u> desired, <u>THEN</u> open IVSW-37 to speed line fill. | _____ |
| b.  | Open IVSW-30A, IVSW TO PEN 3, PRIMARY WATER TO PRT.             | _____ |
| c.  | Verify CLOSED IVSW-37, FI-1920 BYPASS.                          | _____ |

7.11.2.12 (Continued)

INIT

- d. WHEN FI-1920 stabilizes, THEN record flows:
  - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
  - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
- 13. Open the valve(s) used to depressurize the test volume in Step 7.11.2.9. N/A those that do not apply. RC-519A \_\_\_\_\_  
RC-519B \_\_\_\_\_

**NOTE:** Observing FI-1920 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-83, PZR RELIEF TNK MAKE-UP WTR CHECK VALVE.

- 14. Check FI-1920 goes OFF-SCALE HIGH. \_\_\_\_\_
- 15. Close IVSW-30A, IVSW TO PEN 3, PRIMARY WATER TO PRT. \_\_\_\_\_
- 16. Record forward flow test results for IVSW-83 on Attachment 8.6. \_\_\_\_\_
- 17. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_
- 18. Open IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
- 19. Verify CLOSED PCV-1922A. \_\_\_\_\_
- 20. Verify CLOSED PCV-1922B. \_\_\_\_\_
- 21. Perform the following to restore the system valve line-up:
  - a. Open HCV-4179, PW TO PRT. \_\_\_\_\_
  - b. Close HCV-4174, PZR RELIEF TANK ISOLATION. \_\_\_\_\_

7.11.2.21 (Continued)

	<u>INIT</u>	<u>VERI</u>
c. Close HCV-4177, GRAB SAMPLE OUTLET.	_____	
d. Close HCV-4178, GRAB SAMPLE INLET.	_____	
e. Close HCV-4126, STRAINER BACKFLUSH PATH ISOLATION.	_____	
f. Close HCV-4164, DEPRESSURIZED LIQUID SAMPLE VESSEL FLUSH.	_____	
g. Open HCV-4176, CDT ISOLATION.	_____	
h. Open V-4189, CAC LOOP OUT.	_____	
i. Close HCV-4129, LIQUID SAMPLE BACK PRESS VALVE.	_____	
j. Close RC-519A <u>AND</u> RC-519B, PRIMARY WATER TO PRESSURIZER RELIEF TANK.		
	RC-519A	_____
	RC-519B	_____
k. Close RC-519C, PRIMARY WATER TO PRESSURIZER RELIEF TANK.	_____	_____
22. Open the breaker for Circuit 15 on Power Panel 27.	_____	
23. Restore the Pressurizer Relief Tank pressure IAW plant conditions.	_____	
24. Restart Primary Water Pumps IAW OP-915-1, as desired.	_____	
25. <u>IF</u> the IVSW tank requires filling, <u>THEN</u> Go To the section for Returning IVSW Tank Level to Normal.	_____	
26. <u>IF</u> corrected leakage values obtained in Step 7.11.2.12.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, <u>THEN</u> the IVSW Engineer will determine whether maintenance is required. Maintenance is / is not required. (circle one)	_____	
_____ IVSW Engineer		

7.11.2 (Continued)

INIT

- 27. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking). WR # \_\_\_\_\_
- 28. Record in Attachment 8.4 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.11.2.12.d. \_\_\_\_\_
- 29. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.4. \_\_\_\_\_
- 30. IF maintenance is NOT required, THEN record in Attachment 8.4 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.11.2.12.d. \_\_\_\_\_
- 31. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
- 32. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.11.3 Pen. 4 - RCDT to Vent Header (WD-1786, WD-1787)

1. Record flow meter FI-1920 Serial Number: \_\_\_\_\_
2. Verify the calibration conversion sheet for flow meter FI-1920 is attached to this procedure. \_\_\_\_\_
3. Verify WASTE GAS COMPRESSOR "A" AND "B" STOPPED.
 

A	_____
B	_____
4. Verify the following valve lineup:
 

– WD-1793, NITROGEN SUPPLY TO RCDT.	LOCKED CLOSED	_____
– RC-549, PRT VENT.	CLOSED	_____
– WD-1716, REACTOR COOLANT DRAIN TANK VENT.	OPEN	_____
5. Verify Open WD-1786 AND/OR WD-1787, RCDT VENT, to depressurize the test volume. Initial valves opened. N/A those that do not apply.
 

WD-1786	_____
WD-1787	_____
6. Verify CLOSED WD-1786 AND WD-1787.
 

WD-1786	_____
WD-1787	_____
7. Record the following pressures:
 

– RCDT pressure indicated on PI-1004, WDS REACTOR COOLANT DRAIN TANK PRESSURE INDICATOR	PI-1004 _____ psig	_____
– Vent Header pressure indicated on PI-1025, WASTE GAS COMPRESSOR VENT HEADER PRESS	PI-1025 _____ psig	_____

7.11.3 (Continued)

INIT

8. Adjust IVSW tank pressure as necessary to achieve IVSW tank pressure at least 46 psig greater than the highest pressure recorded for PI-1004 AND PI-1025.
  - PI-1004 \_\_\_\_\_ psig + 46 psig = \_\_\_\_\_ psig
  - PI-1025 \_\_\_\_\_ psig + 46 psig = \_\_\_\_\_ psig
9. Record the IVSW tank pressure indicated on PI-1911, IVSW TANK PRESSURE INDICATOR.  
PI-1911 \_\_\_\_\_ psig
10. Perform the following to fail Open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
  - a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-37, FI-1920 BYPASS, may be opened. However, IVSW-37 must be closed before flow data is recorded.

11. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-37 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-30B, IVSW TO PEN 4, RCDT TO VENT HEADER. \_\_\_\_\_
  - c. Verify CLOSED IVSW-37, FI-1920 BYPASS. \_\_\_\_\_



7.11.3 (Continued)

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- |     |   |              |                |
|-----|---|--------------|----------------|
| 20. | Perform the following to restore the system valve line-up:  |              |                |
|     | – Open WD-1786, RCDT VENT, <u>AND</u> place the control switch in Auto.   | OPEN<br>AUTO | _____<br>_____ |
|     | – Open WD-1787, RCDT VENT, <u>AND</u> place the control switch in Auto.   | OPEN<br>AUTO | _____<br>_____ |
| 21. | Restart WASTE GAS COMPRESSOR "A" <u>AND</u> "B" IAW OP-702, as required.  |              | _____          |
| 22. | <u>IF</u> the IVSW tank requires filling, <u>THEN</u> Go To the section for Returning IVSW Tank Level to Normal.  |              | _____          |
| 23. | <u>IF</u> corrected leakage values obtained in Step 7.11.3.11.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, <u>THEN</u> the IVSW Engineer will determine whether maintenance is required. Maintenance is / is not required. (circle one) |              | _____          |
|     | _____<br>IVSW Engineer  |              | _____          |
| 24. | <u>IF</u> the penetration leakage value is determined to be excessive, <u>THEN</u> submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, <u>AND</u> which valve(s) are leaking).<br>WR # _____   |              | _____          |
| 25. | Record in Attachment 8.4 the AS FOUND Indicated <u>AND</u> Corrected penetration leakages recorded in Step 7.11.3.11.d.   |              | _____          |
| 26. | <u>IF</u> maintenance is required, <u>THEN</u> N/A the AS LEFT Indicated <u>AND</u> Corrected values in Attachment 8.4.   |              | _____          |

7.11.3 (Continued)

INIT

- 27. IF maintenance is NOT required, THEN record in Attachment 8.4 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.11.3.11.d. \_\_\_\_\_
- 28. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
- 29. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.11.4 Pen. 13 - S/G "B" Blowdown Line (FCV-1931A, FCV-1931B)

1. Record flow meter FI-1920 Serial Number: \_\_\_\_\_ . \_\_\_\_\_
2. Verify the calibration conversion sheet for flow meter FI-1920 is attached to this procedure. \_\_\_\_\_
3. Verify the respective STEAM GENERATOR DRAIN/WET LAYUP PUMP "A", "B", OR "C", is STOPPED for the Blowdown line to be tested. N/A those which don't apply.  
A \_\_\_\_\_  
B \_\_\_\_\_  
C \_\_\_\_\_
4. Inform E&C that STEAM GENERATOR "B" Blowdown and Sample valves will be cycled from the R-19B, STEAM GENERATOR "B" SAMPLE FLOW RADIATION MONITOR, cabinet for this test.  
\_\_\_\_\_

E&C \_\_\_\_\_

<p><b>NOTE:</b> All four air operated Blowdown and Sample Valves for STEAM GENERATOR "B" operate simultaneously whenever the toggle switch is operated from R-19B in the steps below.</p>
---

5. Perform the following:
  - a. Notify Control Room that R-19 alarms may be received in the next step. \_\_\_\_\_
  - b. Move the R-19B toggle switch inside the cabinet to the OFF position. \_\_\_\_\_

7.11.4 (Continued)

INIT

- 6. Perform the following:
  - Check CLOSED FCV-1931A, SG "B" BLOWDOWN FLOW CONTROL. \_\_\_\_\_
  - Check CLOSED FCV-1931B, SG "B" BLOWDOWN FLOW CONTROL. \_\_\_\_\_
  - Check CLOSED FCV-1934A, SG "B" SAMPLE FLOW CONTROL. \_\_\_\_\_
  - Check CLOSED FCV-1934B, SG "B" SAMPLE FLOW CONTROL. \_\_\_\_\_
  - Close SGB-55B, N2 TO SGBD LINE "B". \_\_\_\_\_
  - Close SGB-57B, SGBD LINE "B" TO WLU SYSTEM. \_\_\_\_\_
  - Close SGB-38B, SGBD HX "B" INLET. \_\_\_\_\_
  - Close SGB-56B, SGBD HX "B" BYPASS/HX FLOW CONTROL ISOLATION. \_\_\_\_\_
  
- 7. Perform the following drain line-up:
  - a. Close SGB-31, SG "B" BLOWDOWN AND SAMPLE ISOLATION. \_\_\_\_\_
  - b. Verify CLOSED SGB-94B, SGBD LINE "B" DRAIN/TEST CONNECTION. \_\_\_\_\_
  - c. Remove the cap from SGB-94B AND install a portable drain line.
    - CAP REMOVED \_\_\_\_\_
    - LINE INSTALLED \_\_\_\_\_
  - d. Open SGB-94B. \_\_\_\_\_
  - e. Verify CLOSED SGB-92B, SGBD LINE "B" DRAIN. \_\_\_\_\_
  - f. Remove the cap from SGB-92B AND install a portable drain line.
    - CAP REMOVED \_\_\_\_\_
    - LINE INSTALLED \_\_\_\_\_
  - g. Open SGB-92B. \_\_\_\_\_

7.11.4 (Continued)

INIT

**NOTE:** The Containment Isolation may have to be reset at the SGBD and Sample Indication Panel in order for the valves to operate in the step below.

8. Move the R-19B toggle switch inside the cabinet to ON position to open FCV-1931A AND/OR FCV-1931B and depressurize the test volume. Initial valve(s) opened. N/A those that do not apply.
 

FCV-1931A	
FCV-1931B	
  
9. Move the R-19B toggle switch inside the cabinet to the OFF position.
 

--
  
10. Check CLOSED FCV-1931A AND FCV-1931B.
 

FCV-1931A	
FCV-1931B	
  
11. Perform the following to fail open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
  - a. Close IA-205A, IA TO PCV-1922A & B.
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B.
  - c. Verify OPEN PCV-1922A.
  - d. Verify OPEN PCV-1922B.
  
12. Perform the following to check operability of IVSW-100B, IVSW TO STEAM GENERATOR "B" BLOWDOWN CONTROL:
  - a. Verify CLOSED IVSW-37, FI-1920 BYPASS.
  - b. Direct Maintenance to remove the IVSW tubing at packing to FCV-1931A, SG "B" BLOWDOWN FLOW CONTROL.
  - c. Verify the IVSW tubing at packing to FCV-1931A is REMOVED.

7.11.4.12 (Continued)

INIT

- d. Open IVSW-30C, IVSW TO PEN 13, S/G "B"  
BLOWDOWN LINE. \_\_\_\_\_

**NOTE:** Observing a flow under pressure from the disconnected tubing at FCV-1931A when IVSW-30C is opened meets the forward flow test requirement for IVSW-100B.

- e. Verify flow under pressure from IVSW-100B. \_\_\_\_\_
- f. Close IVSW-30C. \_\_\_\_\_
- g. Record forward flow test results for IVSW-100B  
on Attachment 8.6. \_\_\_\_\_
- h. Direct Maintenance to reconnect the IVSW tubing  
at FCV-1931A. \_\_\_\_\_
- i. Verify the IVSW tubing at FCV-1931A is  
RECONNECTED. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-37, FI-1920 BYPASS, may be opened. However, IVSW-37 must be closed before flow data is recorded.

- 13. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-37 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-30C, IVSW TO PEN 13, S/G "B"  
BLOWDOWN LINE. \_\_\_\_\_
  - c. Verify CLOSED IVSW-37, FI-1920 BYPASS. \_\_\_\_\_
  - d. Verify NO LEAKAGE from the connection  
reassembled in Step 7.11.4.12.h above. \_\_\_\_\_
  - e. WHEN FI-1920 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration  
conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_

7.11.4 (Continued)

INIT

14. Move the R-19B toggle switch inside the cabinet to ON position to open FCV-1931A AND/OR FCV-1931B. Initial valve(s) opened. N/A those that do not apply.
- FCV-1931A \_\_\_\_\_  
FCV-1931B \_\_\_\_\_

**NOTE:** Observing FI-1920 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-86, SG B BLDN LINE CHECK VALVE.

15. Check FI-1920 goes OFF-SCALE HIGH. \_\_\_\_\_
16. Close IVSW-30C, IVSW TO PEN 13, S/G "B" BLOWDOWN LINE. \_\_\_\_\_
17. Record forward flow test results for IVSW-86 on Attachment 8.6. \_\_\_\_\_
18. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_
19. Open IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
20. Verify CLOSED PCV-1922A. \_\_\_\_\_
21. Verify CLOSED PCV-1922B. \_\_\_\_\_
22. Close SGB-94B, SGBD LINE "B" DRAIN/TEST CONNECTION. \_\_\_\_\_
23. Remove the portable drain line from SGB-94B AND install the pipe cap. \_\_\_\_\_  
LINE REMOVED \_\_\_\_\_  
CAP INSTALLED \_\_\_\_\_
24. Close SGB-92B, SGBD LINE "B" DRAIN. \_\_\_\_\_
25. Remove the portable drain line from SGB-92B AND install the pipe cap. \_\_\_\_\_  
LINE REMOVED \_\_\_\_\_  
CAP INSTALLED \_\_\_\_\_

7.11.4 (Continued)

INIT

26. Perform the following to restore the system valve lineup:
- Open SGB-31, SG "B" BLOWDOWN AND SAMPLE ISOLATION. \_\_\_\_\_
  - Close SGB-55B, N2 TO SGBD LINE "B" ISOLATION. \_\_\_\_\_
  - Open SGB-57B, SGBD LINE "B" TO WLU SYSTEM. \_\_\_\_\_
  - Close SGB-38B, SGBD HX "B" INLET. \_\_\_\_\_
  - Close SGB-56B, SGBD HX "B" BYPASS/HX FLOW CONTROL ISOLATION. \_\_\_\_\_
27. Inform E&C of the completion of this test. \_\_\_\_\_
- \_\_\_\_\_
- E&C
28. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal. \_\_\_\_\_
29. IF corrected leakage values obtained in Step 7.11.4.13.e are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required.  
Maintenance is / is not required. (circle one)
- \_\_\_\_\_
- IVSW Engineer
30. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking). WR # \_\_\_\_\_

7.11.4 (Continued)

INIT

- 31. Record in Attachment 8.4 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.11.4.13.e. \_\_\_\_\_
- 32. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.4. \_\_\_\_\_
- 33. IF maintenance is NOT required, THEN record in Attachment 8.4 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.11.4.13.e. \_\_\_\_\_
- 34. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
- 35. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.11.5 Pen. 14 - S/G "C" Blowdown Line (FCV-1932A, FCV-1932B)

1. Record flow meter FI-1920 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1920 is attached to this procedure. \_\_\_\_\_
3. Verify the respective STEAM GENERATOR DRAIN/WET LAYUP PUMP "A", "B", OR "C", is STOPPED for the Blowdown line to be tested. N/A those which don't apply.
 

A	_____
B	_____
C	_____
4. Inform E&C that STEAM GENERATOR "C" Blowdown and Sample valves will be cycled from the R-19C, STEAM GENERATOR "C" SAMPLE FLOW RADIATION MONITOR, cabinet for this test. \_\_\_\_\_

\_\_\_\_\_  
E&C

**NOTE:** All four air operated Blowdown and Sample Valves for STEAM GENERATOR "C" operate simultaneously whenever the toggle switch is operated from R-19C in the steps below.

5. Perform the following:
  - a. Notify Control Room that R-19 alarms may be received in the next step. \_\_\_\_\_
  - b. Move the R-19C toggle switch inside the cabinet to the OFF position. \_\_\_\_\_
6. Perform the following:
  - Check CLOSED FCV-1932A, SG "C" BLOWDOWN FLOW CONTROL. \_\_\_\_\_
  - Check CLOSED FCV-1932B, SG "C" BLOWDOWN FLOW CONTROL. \_\_\_\_\_

7.11.5.6 (Continued)

INIT

- Check CLOSED FCV-1935A, SG "C" SAMPLE FLOW CONTROL. \_\_\_\_\_
  - Check CLOSED FCV-1935B, SG "C" SAMPLE FLOW CONTROL. \_\_\_\_\_
  - Close SGB-55C, N2 TO SGBD LINE "C". \_\_\_\_\_
  - Close SGB-57C, SGBD LINE "C" TO WLU SYSTEM. \_\_\_\_\_
  - Close SGB-38C, SGBD HX "C" INLET. \_\_\_\_\_
  - Close SGB-56C, SGBD HX "C" BYPASS/HX FLOW CONTROL ISOLATION. \_\_\_\_\_
7. Perform the following drain line-up:
- a. Close SGB-32, SG "C" BLOWDOWN AND SAMPLE ISOLATION. \_\_\_\_\_
  - b. Verify CLOSED SGB-94C, SGBD LINE "C" DRAIN/TEST CONNECTION. \_\_\_\_\_
  - c. Remove the cap from SGB-94C AND install a portable drain line. CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_
  - d. Open SGB-94C. \_\_\_\_\_
  - e. Close SGB-168, SG "C" SAMPLE FLOW ISOLATION. \_\_\_\_\_
  - f. Verify CLOSED SGB-169, SG "C" SAMPLE FLOW ISOLATION. \_\_\_\_\_
  - g. Remove the cap from SGB-169 AND install a portable drain line. CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_
  - h. Open SGB-169. \_\_\_\_\_
  - i. Open SGB-92C. \_\_\_\_\_

7.11.5 (Continued)

INIT

**NOTE:** The Containment Isolation may have to be reset at the SGBD and Sample Indication Panel in order for the valves to operate in the step below.

8. Move the R-19C toggle switch inside the cabinet to ON position to open FCV-1932A AND/OR FCV-1932B and depressurize the test volume. Initial valve(s) opened.  
N/A those that do not apply.
 

FCV-1932A	
FCV-1932B	
  
9. Move the R-19C toggle switch inside the cabinet to the OFF position.
 

--
  
10. Check CLOSED FCV-1932A AND FCV-1932B.
 

FCV-1932A	
FCV-1932B	
  
11. Perform the following to fail Open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
  - a. Close IA-205A, IA TO PCV-1922A & B.
 

--
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B.
 

--
  - c. Verify OPEN PCV-1922A.
 

--
  - d. Verify OPEN PCV-1922B.
 

--
  
12. Perform the following to check operability of IVSW-100C, IVSW TO STEAM GENERATOR "C" BLOWDOWN CONTROL:
  - a. Verify CLOSED IVSW-37, FI-1920 BYPASS.
 

--
  - b. Direct Maintenance to remove the IVSW tubing at packing to FCV-1932A, SG "C" BLOWDOWN FLOW CONTROL.
 

--
  - c. Verify the IVSW tubing at packing to FCV-1932A is REMOVED.
 

--

7.11.5.12 (Continued)

INIT

- d. Open IVSW-30D, IVSW TO PEN 14, S/G "C"  
BLOWDOWN LINE. \_\_\_\_\_

**NOTE:** Observing a flow under pressure from the disconnected tubing at FCV-1932A when IVSW-30D is opened meets the forward flow test requirement for IVSW-100C.

- e. Verify flow under pressure from IVSW-100C. \_\_\_\_\_
- f. Close IVSW-30D. \_\_\_\_\_
- g. Record forward flow test results for IVSW-100C  
on Attachment 8.6. \_\_\_\_\_
- h. Direct Maintenance to reconnect the IVSW tubing  
at FCV-1932A. \_\_\_\_\_
- i. Verify the IVSW tubing at FCV-1932A is  
RECONNECTED. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-37, FI-1920 BYPASS, may be opened. However, IVSW-37 must be closed before flow data is recorded.

- 13. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-37 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-30D, IVSW TO PEN 14-SG "C"  
BLOWDOWN LINE. \_\_\_\_\_
  - c. Verify CLOSED IVSW-37, FI-1920 BYPASS. \_\_\_\_\_
  - d. Verify NO LEAKAGE from the connection  
reassembled in Step 7.11.5.12.h above. \_\_\_\_\_
  - e. WHEN FI-1920 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration  
conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_

7.11.5 (Continued)

INIT

14. Move the R-19C toggle switch inside the cabinet to the ON position to open FCV-1932A AND/OR FCV-1932B. Initial valve(s) opened. N/A those that do not apply.
- FCV-1932A \_\_\_\_\_  
FCV-1932B \_\_\_\_\_

**NOTE:** Observing FI-1920 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-87, SG C BLDN LINE CHECK VALVE.

15. Check FI-1920 goes OFF-SCALE HIGH. \_\_\_\_\_
16. Close IVSW-30D, IVSW TO PEN 14, S/G "C" BLOWDOWN LINE. \_\_\_\_\_
17. Record forward flow test results for IVSW-87 on Attachment 8.6. \_\_\_\_\_
18. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_
19. Open IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
20. Verify CLOSED PCV-1922A. \_\_\_\_\_
21. Verify CLOSED PCV-1922B. \_\_\_\_\_
22. Close SGB-94C, SGBD LINE "C" DRAIN/TEST CONNECTION. \_\_\_\_\_
23. Remove the portable drain line from SGB-94C AND install the pipe cap. \_\_\_\_\_  
LINE REMOVED \_\_\_\_\_  
CAP INSTALLED \_\_\_\_\_
24. Close SGB-169, SG "C" SAMPLE FLOW ISOLATION. \_\_\_\_\_
25. Remove the portable drain line from SGB-169 AND install the pipe cap. \_\_\_\_\_  
LINE REMOVED \_\_\_\_\_  
CAP INSTALLED \_\_\_\_\_

7.11.5 (Continued)

INIT

26. Perform the following to restore the system valve line-up:
- Close SGB-92C, SGBD LINE "C" DRAIN. \_\_\_\_\_
  - Close SGB-168, SG "C" SAMPLE FLOW ISOLATION. \_\_\_\_\_
  - Open SGB-32, SG "C" BLOWDOWN AND SAMPLE ISOLATION. \_\_\_\_\_
  - Close SGB-55C, N2 TO SGBD LINE "C" ISOLATION. \_\_\_\_\_
  - Open SGB-57C, SGBD LINE "C" TO WLU SYSTEM. \_\_\_\_\_
  - Close SGB-38C, SGBD HX "C" INLET. \_\_\_\_\_
  - Close SGB-56C, SGBD HX "C" BYPASS/HX FLOW CONTROL ISOLATION. \_\_\_\_\_
27. Inform E&C of the completion of this test.  
\_\_\_\_\_
- E&C
28. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal. \_\_\_\_\_
29. IF corrected leakage values obtained in Step 7.11.5.13.e are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required.  
Maintenance is / is not required. (circle one)
- \_\_\_\_\_  
IVSW Engineer

7.11.5 (Continued)

INIT

- 30. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_
- 31. Record in Attachment 8.4 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.11.5.13.e. \_\_\_\_\_
- 32. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.4. \_\_\_\_\_
- 33. IF maintenance is NOT required, THEN record in Attachment 8.4 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.11.5.13.e. \_\_\_\_\_
- 34. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
- 35. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.11.6 Pen. 15 - S/G "A" Blowdown Line (FCV-1930A, FCV-1930B)

1. Record flow meter FI-1920 Serial Number: \_\_\_\_\_
2. Verify the calibration conversion sheet for flow meter FI-1920 is attached to this procedure. \_\_\_\_\_
3. Verify the respective STEAM GENERATOR DRAIN/WET LAYUP PUMP "A", "B", OR "C", is STOPPED for the Blowdown line to be tested. N/A those which don't apply.
 

A	_____
B	_____
C	_____
4. Inform E&C that STEAM GENERATOR "A" Blowdown and Sample valves will be cycled from the R-19A, STEAM GENERATOR "A" SAMPLE FLOW RADIATION MONITOR, cabinet for this test.
 

_____	_____
E&C	_____

**NOTE:** All four air operated Blowdown and Sample Valves for STEAM GENERATOR "A" operate simultaneously whenever the toggle switch is operated from R-19A in the steps below.

5. Perform the following:
  - a. Notify Control Room that R-19 alarms may be received in the next step. \_\_\_\_\_
  - b. Move the R-19A toggle switch inside the cabinet to the OFF position. \_\_\_\_\_
6. Perform the following:
  - Check CLOSED FCV-1930A, SG "A" BLOWDOWN FLOW CONTROL. \_\_\_\_\_
  - Check CLOSED FCV-1930B, SG "A" BLOWDOWN FLOW CONTROL. \_\_\_\_\_

7.11.6.6 (Continued)

INIT

- Check CLOSED FCV-1933A, SG "A" SAMPLE FLOW CONTROL. \_\_\_\_\_
  - Check CLOSED FCV-1933B, SG "A" SAMPLE FLOW CONTROL. \_\_\_\_\_
  - Close SGB-55A, N2 TO SGBD LINE "A" ISOLATION. \_\_\_\_\_
  - Close SGB-57A, SGBD LINE "A" TO WLU SYSTEM. \_\_\_\_\_
  - Close SGB-38A, SGBD HX "A" INLET. \_\_\_\_\_
  - Close SGB-56A, SGBD HX "A" BYPASS/HX FLOW CONTROL ISOLATION. \_\_\_\_\_
7. Perform the following valve lineup:
- a. Close SGB-30, SG "A" BLOWDOWN AND SAMPLE ISOLATION. \_\_\_\_\_
  - b. Verify CLOSED SGB-94A, SGBD LINE "A" DRAIN/TEST CONNECTION. \_\_\_\_\_
  - c. Remove the cap from SGB-94A AND install a portable drain line. CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_
  - d. Open SGB-94A. \_\_\_\_\_
  - e. Verify CLOSED SGB-92A, SGBD LINE "A" DRAIN. \_\_\_\_\_
  - f. Remove the cap from SGB-92A AND install a portable drain line. CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_
  - g. Open SGB-92A. \_\_\_\_\_

7.11.6 (Continued)

INIT

**NOTE:** The Containment Isolation may have to be reset at the SGBD and Sample Indication Panel in order for the valves to operate in the step below.

8. Move the R-19A toggle switch inside the cabinet to ON position to open FCV-1930A AND/OR FCV-1930B and depressurize the test volume. Initial valve(s) opened.  
N/A those that do not apply.
 

FCV-1930A	_____
FCV-1930B	_____
  
9. Move the R-19A toggle switch inside the cabinet to the OFF position.
 

_____
-------
  
10. Check CLOSED FCV-1930A AND FCV-1930B.
 

FCV-1930A	_____
FCV-1930B	_____
  
11. Perform the following to fail Open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
  - a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_
  
12. Perform the following to check operability of IVSW-100A, IVSW TO STEAM GENERATOR "A" BLOWDOWN CONTROL:
  - a. Verify CLOSED IVSW-37, FI-1920 BYPASS. \_\_\_\_\_
  - b. Direct Maintenance to remove the IVSW tubing at packing to FCV-1930A, SG "A" BLOWDOWN FLOW CONTROL. \_\_\_\_\_
  - c. Verify the IVSW tubing at packing to FCV-1930A is REMOVED. \_\_\_\_\_

7.11.6.12 (Continued)

INIT

- d. Open IVSW-30E, IVSW TO PEN 15, SG "A"  
BLOWDOWN LINE. \_\_\_\_\_

**NOTE:** Observing a flow under pressure from the disconnected tubing at FCV-1930A when IVSW-30E is opened meets the forward flow test requirement for IVSW-100A.

- e. Verify flow under pressure from IVSW-100A. \_\_\_\_\_
- f. Close IVSW-30E. \_\_\_\_\_
- g. Record forward flow test results for IVSW-100A  
on Attachment 8.6. \_\_\_\_\_
- h. Direct Maintenance to reconnect the IVSW tubing  
at FCV-1930A. \_\_\_\_\_
- i. Verify the IVSW tubing at FCV-1930A is  
RECONNECTED. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-37, FI-1920 BYPASS, may be opened. However, IVSW-37 must be closed before flow data is recorded.

- 13. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-37 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-30E, IVSW TO PEN 15, SG "A"  
BLOWDOWN LINE. \_\_\_\_\_
  - c. Verify CLOSED IVSW-37, FI-1920 BYPASS. \_\_\_\_\_
  - d. Verify NO LEAKAGE from the connection  
reassembled in Step 7.11.6.12.h above. \_\_\_\_\_
  - e. WHEN FI-1920 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration  
conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_

7.11.6 (Continued)

INIT

14. Move the R-19A toggle switch inside the cabinet to ON position to open FCV-1930A AND/OR FCV-1930B. Initial valve(s) opened. N/A those that do not apply
- FCV-1930A \_\_\_\_\_  
FCV-1930B \_\_\_\_\_

**NOTE:** Observing FI-1920 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-85, SG A BLDN LINE CHECK VALVE.

15. Check FI-1920 goes OFF-SCALE HIGH. \_\_\_\_\_
16. Close IVSW-30E, IVSW TO PEN 15, S/G "A" BLOWDOWN LINE. \_\_\_\_\_
17. Record forward flow test results for IVSW-85 on Attachment 8.6. \_\_\_\_\_
18. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_
19. Open IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
20. Verify CLOSED PCV-1922A. \_\_\_\_\_
21. Verify CLOSED PCV-1922B. \_\_\_\_\_
22. Close SGB-94A, SGBD LINE "A" DRAIN/TEST CONNECTION. \_\_\_\_\_
23. Remove the portable drain line from SGB-94A AND install the pipe cap. \_\_\_\_\_  
LINE REMOVED \_\_\_\_\_  
CAP INSTALLED \_\_\_\_\_
24. Close SGB-92A, SGBD LINE "A" DRAIN. \_\_\_\_\_
25. Remove the portable drain line from SGB-92A AND install the pipe cap. \_\_\_\_\_  
LINE REMOVED \_\_\_\_\_  
CAP INSTALLED \_\_\_\_\_

7.11.6 (Continued)

INIT

26. Perform the following to restore the system valve lineup:
- a. Open SGB-30, SG "A" BLOWDOWN AND SAMPLE ISOLATION. \_\_\_\_\_
  - b. Close SGB-55A, N2 TO SGBD LINE "A" ISOLATION. \_\_\_\_\_
  - c. Open SGB-57A, SGBD LINE "A" TO WLU SYSTEM. \_\_\_\_\_
  - d. Close SGB-38A, SGBD HX "A" INLET. \_\_\_\_\_
  - e. Close SGB-56A, SGBD HX "A" BYPASS/HX FLOW CONTROL ISOLATION. \_\_\_\_\_
27. Inform E&C of the completion of this test. \_\_\_\_\_

\_\_\_\_\_  
E&C

28. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal. \_\_\_\_\_
29. IF corrected leakage values obtained in Step 7.11.6.13.e are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required.  
Maintenance is / is not required. (circle one)

\_\_\_\_\_  
IVSW Engineer

30. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_

7.11.6 (Continued)

INIT

- 31. Record in Attachment 8.4 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.11.6.13.e. \_\_\_\_\_
- 32. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.4. \_\_\_\_\_
- 33. IF maintenance is NOT required, THEN record in Attachment 8.4 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.11.6.13.e. \_\_\_\_\_
- 34. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
- 35. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.11.7 Pen. 23 - CVCS Letdown Line (CVC-204A, CVC-204B)

1. Record flow meter FI-1920 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1920 is attached to this procedure. \_\_\_\_\_

**NOTE:** ITS 3.9.4 & 3.9.5 may be applicable to the following step.

3. Verify RHR PUMP "A" AND "B" are STOPPED. A \_\_\_\_\_  
B \_\_\_\_\_
4. Perform the following valve lineup:
  - Close CVC-200A, LETDOWN ORIFICE ISOLATION. \_\_\_\_\_
  - Close CVC-200B, LETDOWN ORIFICE ISOLATION. \_\_\_\_\_
  - Close CVC-200C, LETDOWN ORIFICE ISOLATION. \_\_\_\_\_
  - Open PCV-145, LOW PRESSURE LETDOWN PRESSURE CONTROL VALVE. \_\_\_\_\_
  - Close HCV-142, RHR TO LETDOWN & PURIFICATION FLOW CONTROL. \_\_\_\_\_
  - Open CVC-205A, NON REGEN HX OUTLET. \_\_\_\_\_
  - Open CVC-309B, PCV-145 INLET. \_\_\_\_\_
  - Open CVC-309C, PCV-145 OUTLET. \_\_\_\_\_
  - Open PS-974B, SAMPLE LINE ISOLATION. \_\_\_\_\_
  - Close SFPC-802B, RWP PUMP DISCHARGE TO MIXED BED DEMIN. \_\_\_\_\_
  - Direct TCV-143, VCT/DEMIN DIVERSION, to DEMIN. \_\_\_\_\_

7.11.7.4 (Continued)

INIT

- Close CVC-245, LETDOWN LINE TO DEBORATING DEMIN'S. \_\_\_\_\_
- Close CVC-212, MIXED BED DEMIN "B" INLET. \_\_\_\_\_
- Close CVC-223, MIXED BED DEMIN "A" INLET. \_\_\_\_\_
- Open PS-988, SAMPLE LINE FLUSH. \_\_\_\_\_
- 5. Perform the following drain lineup:
  - a. Open PS-971F, SAMPLE TO SAMPLE SINK. \_\_\_\_\_
  - b. Verify CLOSED CVC-204C, LETDOWN LINE DRAIN UPSTREAM CVC-204A. \_\_\_\_\_
  - c. Remove the pipe cap from CVC-204C AND install a portable drain line. CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_
  - d. Open CVC-204C. \_\_\_\_\_
- 6. Open CVC-204A AND CVC-204B, LETDOWN LINE ISOL, to depressurize the test volume. Initial valve(s) opened. N/A those that do not apply. CVC-204A \_\_\_\_\_  
CVC-204B \_\_\_\_\_
  - a. Verify CLOSED CVC-204A AND CVC-204B. CVC-204A \_\_\_\_\_  
CVC-204B \_\_\_\_\_
- 7. Perform the following to fail open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
  - a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_

7.11.7 (Continued)

INIT

**CAUTION**

To speed filling of the line in the steps below, IVSW-37, FI-1920 BYPASS, may be opened. However, IVSW-37 must be closed before flow data is recorded.

8. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-37 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-30F, IVSW TO PEN 23, LETDOWN LINE. \_\_\_\_\_
  - c. Verify CLOSED IVSW-37, FI-1920 BYPASS. \_\_\_\_\_
  - d. WHEN FI-1920 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
9. Open CVC-204A OR CVC-204B, LETDOWN LINE ISOL. Initial valve(s) opened. N/A those that do not apply.
 

CVC-204A \_\_\_\_\_  
CVC-204B \_\_\_\_\_

**NOTE:** Observing FI-1920 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-88, CVC REGEN HTX LETDOWN CHECK VALVE.

10. Check FI-1920 goes OFF-SCALE HIGH. \_\_\_\_\_
11. Close IVSW-30F. \_\_\_\_\_
12. Record forward flow test results for IVSW-88 on Attachment 8.6. \_\_\_\_\_
13. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_

- | 7.11.7 (Continued)  | <u>INIT</u>         |
|---|---------------------|
| 14. Open IA-205A, IA TO PCV-1922A & B.  | _____               |
| 15. Verify CLOSED PCV-1922A.  | _____               |
| 16. Verify CLOSED PCV-1922B.  | _____               |
| 17. Perform the following to restore the drain lineup:                            |                     |
| a. Lock closed CVC-204C, LETDOWN LINE DRAIN<br>UPSTREAM CVC-204A.                 | _____               |
| b. Remove the portable drain line at CVC-204C<br><u>AND</u> install the pipe cap. | _____               |
|   | LINE REMOVED _____  |
|   | CAP INSTALLED _____ |
| 18. Close PS-971F, SAMPLE TO SAMPLE SINK.   | _____               |
| 19. Perform the following to restore the system valve line-up:                    |                     |
| - Close CVC-200A, LETDOWN ORIFICE ISOLATION.                                      | _____               |
| - Close CVC-200B, LETDOWN ORIFICE ISOLATION.                                      | _____               |
| - Close CVC-200C, LETDOWN ORIFICE ISOLATION.                                      | _____               |
| - Close PCV-145, LOW PRESSURE LETDOWN<br>PRESSURE CONTROL VALVE.                  | _____               |
| - Open CVC-204A, LETDOWN LINE ISOL.   | _____               |
| - Open CVC-204B, LETDOWN LINE ISOL.   | _____               |
| - Close HCV-142, RHR TO LETDOWN &<br>PURIFICATION FLOW CONTROL.                   | _____               |
| - Open CVC-205A, NON REGEN HX OUTLET.   | _____               |
| - Open CVC-309B, PCV-145 INLET.   | _____               |
| - Open CVC-309C, PCV-145 OUTLET.  | _____               |
| - Open PS-974B, SAMPLE LINE ISOLATION.  | _____               |
| - Close SFPC-802B, RWP PUMP DISCHARGE TO<br>MIXED BED DEMIN.                      | _____               |

- |   |                                |
|---|--------------------------------|
| 7.11.7.19 (Continued)   | <u>INIT</u>                    |
| - Close PS-988, SAMPLE LINE FLUSH.  | _____                          |
| - Place TCV-143, VCT/DEMIN DIVERSION, to AUTO.  | _____                          |
| - Close CVC-245, LETDOWN LINE TO DEBORATING DEMIN'S.  | _____                          |
| - Open / Close CVC-212, MIXED BED "B" DEMIN INLET (Circle one).   | _____                          |
| - Open / Close CVC-223, MIXED BED "A" DEMIN INLET (Circle one).   | _____                          |
| 20. Restart RHR PUMP "A" <u>AND</u> "B" IAW OP-201 as desired.  | _____                          |
| 21. Throttle PCV-145, LOW PRESSURE LETDOWN PRESSURE CONTROL VALVE <u>AND</u> HCV-142, RHR TO LETDOWN & PURIFICATION FLOW CONTROL, as required by plant conditions.  | PCV-145 _____<br>HCV-142 _____ |
| 22. <u>IF</u> the IVSW tank requires filling, <u>THEN</u> Go To the section for Returning IVSW Tank Level to Normal.  | _____                          |
| 23. <u>IF</u> corrected leakage values obtained in Step 7.11.7.8.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, <u>THEN</u> the IVSW Engineer will determine whether maintenance is required.<br>Maintenance is / is not required. (circle one) | _____                          |
| _____   | _____                          |
| IVSW Engineer   |                                |
| 24. <u>IF</u> the penetration leakage value is determined to be excessive, <u>THEN</u> submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, <u>AND</u> which valve(s) are leaking).<br>WR # _____   | _____                          |

- |   |             |
|---|-------------|
| 7.11.7 (Continued)  | <u>INIT</u> |
| 25. Record in Attachment 8.4 the AS FOUND Indicated <u>AND</u> Corrected penetration leakages recorded in Step 7.11.7.8.d.  | _____       |
| 26. <u>IF</u> maintenance is required, <u>THEN</u> N/A the AS LEFT Indicated <u>AND</u> Corrected values in Attachment 8.4.   | _____       |
| 27. <u>IF</u> maintenance is <u>NOT</u> required, <u>THEN</u> record in Attachment 8.4 the AS LEFT Indicated <u>AND</u> Corrected penetration leakages recorded in Step 7.11.7.8.d. | _____       |
| 28. Record current date <u>AND</u> time (CR 95-01527).  | _____       |
|   | DATE _____  |
|   | TIME _____  |
| 29. <u>IF</u> this is a partial OST performed for PMT <u>OR</u> retest, <u>THEN</u> immediately submit package for review.  | _____       |

7.11.8 Pen. 15 - S/G "A" Blowdown Sample (FCV-1933A, FCV-1933B)

1. Record flow meter FI-1920 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1920 is attached to this procedure. \_\_\_\_\_
3. Verify the respective STEAM GENERATOR DRAIN/WET LAYUP PUMP "A", "B", OR "C", is STOPPED for the Blowdown line to be tested. N/A those which don't apply.
 

A \_\_\_\_\_  
 B \_\_\_\_\_  
 C \_\_\_\_\_
4. Inform E&C that STEAM GENERATOR "A" Blowdown and Sample valves will be cycled from the R-19A, STEAM GENERATOR "A" SAMPLE FLOW RADIATION MONITOR, cabinet for this test.
 

\_\_\_\_\_  
 E&C

**NOTE:** All four air operated Blowdown and Sample Valves for STEAM GENERATOR "A" operate simultaneously whenever the toggle switch is operated from R-19A in the steps below.

5. Perform the following:
  - a. Notify Control Room that R-19 alarms may be received in the next step. \_\_\_\_\_
  - b. Move the R-19A toggle switch inside the cabinet to the OFF position. \_\_\_\_\_
6. Perform the following:
  - Check CLOSED FCV-1930A, SG "A" BLOWDOWN FLOW CONTROL \_\_\_\_\_
  - Check CLOSED FCV-1930B, SG "A" BLOWDOWN FLOW CONTROL \_\_\_\_\_

7.11.8.6 (Continued)

INIT

- Check CLOSED FCV-1933A, SG "A" SAMPLE FLOW CONTROL \_\_\_\_\_
  - Check CLOSED FCV-1933B, SG "A" SAMPLE FLOW CONTROL \_\_\_\_\_
  - Open SGB-36, SG "A" SAMPLE FLOW ISOLATION. \_\_\_\_\_
  - Open SS-8D, SGBD "A" SAMPLE COOLER OUTLET. \_\_\_\_\_
  - Close SS-882, SGBD "A" SAMPLE ISOLATION FOR SSS ROOM (AUX. BLDG). \_\_\_\_\_
  - Close SS-8A, SGBD "A" SAMPLE TO FI-1937-1. \_\_\_\_\_
7. Perform the following valve lineup:
- a. Close SGB-30, SG "A" BLOWDOWN AND SAMPLE ISOLATION. \_\_\_\_\_
  - b. Verify CLOSED SGB-94A, SGBD LINE "A" DRAIN/TEST CONNECTION. \_\_\_\_\_
  - c. Remove the pipe cap from SGB-94A AND install a portable drain line. CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_
  - d. Open SGB-94A. \_\_\_\_\_
  - e. Open SS-9A, SGBD "A" SAMPLE TO SAMPLE SINK. \_\_\_\_\_

**NOTE:** The Containment Isolation may have to be reset at the SGBD and Sample Indication Panel in order for the valves to operate in the step below.

- 8. Move the R-19A toggle switch inside the cabinet to the ON position to open FCV-1933A AND/OR FCV-1933B and depressurize the test volume. Initial valve(s) opened. N/A those that do not apply. FCV-1933A \_\_\_\_\_  
FCV-1933B \_\_\_\_\_
- 9. Move the R-19A toggle switch inside the cabinet to the OFF position. \_\_\_\_\_

7.11.8 (Continued)

INIT

10. Check CLOSED FCV-1933A AND FCV-1933B. FCV-1933A \_\_\_\_\_  
FCV-1933B \_\_\_\_\_
11. Perform the following to fail open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
- a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-37, FI-1920 BYPASS, may be opened. However, IVSW-37 must be closed before flow data is recorded.

12. Perform the follow to leak test the penetration:
- a. IF desired, THEN open IVSW-37 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-30G, IVSW TO PEN 15, S/G "A" SAMPLE. \_\_\_\_\_
  - c. Verify CLOSED IVSW-37, FI-1920 BYPASS. \_\_\_\_\_
  - d. WHEN FI-1920 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_

7.11.8 (Continued)

INIT

13. Move the R-19A toggle switch inside the cabinet to ON position to open FCV-1933A AND/OR FCV-1933B. Initial valve(s) opened. N/A those that do not apply.
- FCV-1933A \_\_\_\_\_  
FCV-1933B \_\_\_\_\_

**NOTE:** Observing FI-1920 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-90, SG A BLDN SAMPLE LINE CHECK VALVE.

14. Check FI-1920 goes OFF-SCALE HIGH. \_\_\_\_\_
15. Close IVSW-30G, IVSW TO PEN 15, S/G "A" SAMPLE. \_\_\_\_\_
16. Record forward flow test results for IVSW-90 on Attachment 8.6. \_\_\_\_\_
17. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_
18. Open IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
19. Verify CLOSED PCV-1922A. \_\_\_\_\_
20. Verify CLOSED PCV-1922B. \_\_\_\_\_
21. Close SGB-94A, SGBD LINE "A" DRAIN/TEST CONNECTION. \_\_\_\_\_
22. Remove the portable drain line AND install the pipe cap.  
LINE REMOVED \_\_\_\_\_  
CAP INSTALLED \_\_\_\_\_
23. Close SS-9A, SGBD "A" SAMPLE TO SAMPLE SINK. \_\_\_\_\_

7.11.8 (Continued)

INIT

24. Perform the following to restore the system valve line-up:
- Open SGB-30, SG "A" BLOWDOWN AND SAMPLE ISOLATION. \_\_\_\_\_
  - Open SGB-36, SG "A" SAMPLE FLOW ISOLATION. \_\_\_\_\_
  - Open SS-8D, SGBD "A" SAMPLE COOLER OUTLET. \_\_\_\_\_
  - Open SS-882, SGBD "A" SAMPLE ISOLATION FOR SSS ROOM (AUX BLDG). \_\_\_\_\_
  - Close SS-8A, SGBD "A" SAMPLE TO FI-1937-1. \_\_\_\_\_
25. Inform E&C of the completion of this test. \_\_\_\_\_
- \_\_\_\_\_  
E&C
26. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal. \_\_\_\_\_
27. IF corrected leakage values obtained in Step 7.11.8.12.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required.  
Maintenance is / is not required. (circle one)  
\_\_\_\_\_  
IVSW Engineer
28. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_

7.11.8 (Continued)

INIT

- 29. Record in Attachment 8.4 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.11.8.12.d. \_\_\_\_\_
- 30. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.4. \_\_\_\_\_
- 31. IF maintenance is NOT required, THEN record in Attachment 8.4 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.11.8.12.d. \_\_\_\_\_
- 32. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
- 33. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.11.9 Pen. 14 - S/G "C" Blowdown Sample (FCV-1935A, FCV-1935B)

1. Record flow meter FI-1920 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1920 is attached to this procedure. \_\_\_\_\_
3. Verify the respective STEAM GENERATOR DRAIN/WET LAYUP PUMP "A", "B", OR "C", is STOPPED for the Blowdown line to be tested. N/A those which don't apply.  
A \_\_\_\_\_  
B \_\_\_\_\_  
C \_\_\_\_\_
4. Inform E&C that STEAM GENERATOR "C" Blowdown and Sample valves will be cycled from the R-19C, STEAM GENERATOR "C" SAMPLE FLOW RADIATION MONITOR, cabinet for this test. \_\_\_\_\_

\_\_\_\_\_  
E&C

<p><b>NOTE:</b> All four air operated Blowdown and Sample Valves for STEAM GENERATOR "C" operate simultaneously whenever the toggle switch is operated from R-19C in the steps below.</p>
---

5. Perform the following:
  - a. Notify Control Room that R-19 alarms may be received in the next step. \_\_\_\_\_
  - b. Move the R-19C toggle switch inside the cabinet to the OFF position. \_\_\_\_\_
6. Perform the following:
  - Check CLOSED FCV-1932A, SG "C" BLOWDOWN FLOW CONTROL. \_\_\_\_\_
  - Check CLOSED FCV-1932B, SG "C" BLOWDOWN FLOW CONTROL. \_\_\_\_\_

7.11.9.6 (Continued)

INIT

- Check CLOSED FCV-1935A, SG "C" SAMPLE FLOW CONTROL. \_\_\_\_\_
  - Check CLOSED FCV-1935B, SG "C" SAMPLE FLOW CONTROL. \_\_\_\_\_
  - Open SGB-38, SG "C" SAMPLE FLOW ISOLATION. \_\_\_\_\_
  - Open SS-8F, SGBD "C" SAMPLE COOLER OUTLET. \_\_\_\_\_
  - Close SS-880, SGBD "C" SAMPLE ISOLATION FOR SSS ROOM (AUX BLDG). \_\_\_\_\_
  - Close SS-8C, SGBD "C" SAMPLE TO FI-1937-3. \_\_\_\_\_
  - Close SGB-168, SG "C" SAMPLE FLOW ISOLATION. \_\_\_\_\_
7. Perform the following valve lineup:
- a. Close SGB-32, SG "C" BLOWDOWN AND SAMPLE ISOLATION. \_\_\_\_\_
  - b. Verify CLOSED SGB-94C, SGBD LINE "C" DRAIN/TEST CONNECTION. \_\_\_\_\_
  - c. Remove the pipe cap from SGB-94C AND install a portable drain line. CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_
  - d. OPEN SGB-94C. \_\_\_\_\_
  - e. Open SS-9C, SGBD "C" SAMPLE TO SAMPLE SINK. \_\_\_\_\_

**NOTE:** The Containment Isolation may have to be reset at the SGBD and Sample Indication Panel in order for the valves to operate in the step below.

8. Move the R-19C toggle switch inside the cabinet to ON position to open FCV-1935A AND/OR FCV-1935B and depressurize the test volume. Initial valve(s) opened. N/A those that do not apply. FCV-1935A \_\_\_\_\_  
FCV-1935B \_\_\_\_\_

7.11.9 (Continued)

INIT

- 9. Move the R-19C toggle switch inside the cabinet to the OFF position. \_\_\_\_\_
- 10. Check CLOSED FCV-1935A AND FCV-1935B. \_\_\_\_\_  
FCV-1935A \_\_\_\_\_  
FCV-1935B \_\_\_\_\_
- 11. Perform the following to fail open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
  - a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-37, FI-1920 BYPASS, may be opened. However, IVSW-37 must be closed before flow data is recorded.

- 12. Perform the follow to leak test the penetration:
  - a. IF desired, THEN open IVSW-37 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-30G2, IVSW TO PEN 14, S/G "C" SAMPLE. \_\_\_\_\_
  - c. Verify CLOSED IVSW-37, FI-1920 BYPASS. \_\_\_\_\_
  - d. WHEN FI-1920 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_

7.11.9 (Continued)

INIT

13. Move the R-19C toggle switch inside the cabinet to ON position to open FCV-1935A AND/OR FCV-1935B. Initial valve(s) opened. N/A those that do not apply.
- FCV-1935A \_\_\_\_\_  
FCV-1935B \_\_\_\_\_

**NOTE:** Observing FI-1920 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-92, SG C BLDN SAMPLE LINE CHECK VALVE.

14. Check FI-1920 goes OFF-SCALE HIGH. \_\_\_\_\_
15. Close IVSW-30G2, IVSW TO PEN 14, S/G "C" SAMPLE. \_\_\_\_\_
16. Record forward flow test results for IVSW-92 on Attachment 8.6. \_\_\_\_\_
17. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_
18. Open IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
19. Verify CLOSED PCV-1922A. \_\_\_\_\_
20. Verify CLOSED PCV-1922B. \_\_\_\_\_
21. Close SGB-94C, SGBD LINE "C" DRAIN/TEST CONNECTION. \_\_\_\_\_
22. Remove the portable drain line AND install the pipe cap on SGB-94C. \_\_\_\_\_  
LINE REMOVED \_\_\_\_\_  
CAP INSTALLED \_\_\_\_\_
23. Close SS-9C, SGBC "C" SAMPLE TO SAMPLE SINK. \_\_\_\_\_

7.11.9 (Continued)

INIT

24. Perform the following to restore the system valve lineup:
- Open SGB-32, SG "C" BLOWDOWN AND SAMPLE ISOLATION. \_\_\_\_\_
  - Open SGB-38, SG "C" SAMPLE FLOW ISOLATION. \_\_\_\_\_
  - Open SS-8F, SGBD "C" SAMPLE COOLER OUTLET. \_\_\_\_\_
  - Open SS-880, SGBD "C" SAMPLE ISOLATION FOR SSS ROOM (AUX BLDG). \_\_\_\_\_
  - Close SGB-168, SG "C" SAMPLE FLOW ISOLATION. \_\_\_\_\_
  - Close SS-8C, SGBD "C" SAMPLE TO FI-1937-3. \_\_\_\_\_
25. Inform E&C of the completion of this test.  
\_\_\_\_\_
- E&C
26. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal. \_\_\_\_\_
27. IF corrected leakage values obtained in Step 7.11.9.12.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required.  
Maintenance is / is not required. (circle one)  
\_\_\_\_\_
- IVSW Engineer
28. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_

7.11.9 (Continued)

INIT

- |     |  |                |
|-----|--|----------------|
| 29. | Record in Attachment 8.4 the AS FOUND Indicated <u>AND</u> Corrected penetration leakages recorded in Step 7.11.9.12.d.  | _____          |
| 30. | <u>IF</u> maintenance is required, <u>THEN</u> N/A the AS LEFT Indicated <u>AND</u> Corrected values in Attachment 8.4.  | _____          |
| 31. | <u>IF</u> maintenance is <u>NOT</u> required, <u>THEN</u> record in Attachment 8.4 the AS LEFT Indicated <u>AND</u> Corrected penetration leakages recorded in Step 7.11.9.12.d. | _____          |
| 32. | Record current date <u>AND</u> time (CR 95-01527).<br>DATE _____<br>TIME _____   | _____<br>_____ |
| 33. | <u>IF</u> this is a partial OST performed for PMT <u>OR</u> retest, <u>THEN</u> immediately submit package for review.   | _____          |

7.11.10 Pen. 13 - S/G "B" Blowdown Sample (FCV-1934A, FCV-1934B)

1. Record flow meter FI-1920 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1920 is attached to this procedure. \_\_\_\_\_
3. Verify the respective STEAM GENERATOR DRAIN/WET LAYUP PUMP "A", "B", OR "C", is STOPPED for the Blowdown line to be tested.  
N/A those which don't apply. A \_\_\_\_\_  
B \_\_\_\_\_  
C \_\_\_\_\_
4. Inform E&C that STEAM GENERATOR "B" Blowdown and Sample valves will be cycled from the R-19B, STEAM GENERATOR "B" SAMPLE FLOW RADIATION MONITOR, cabinet for this test. \_\_\_\_\_

\_\_\_\_\_  
E&C

**NOTE:** All four air operated Blowdown and Sample Valves for STEAM GENERATOR "B" operate simultaneously whenever the toggle switch is operated from R-19B in the steps below.

5. Perform the following:
  - a. Notify Control Room that R-19 alarms may be received in the next step. \_\_\_\_\_
  - b. Move the R-19B toggle switch inside the cabinet to the OFF position. \_\_\_\_\_
6. Perform the following:
  - Check CLOSED FCV-1931A, SG "B" BLOWDOWN FLOW CONTROL \_\_\_\_\_
  - Check CLOSED FCV-1931B, SG "B" BLOWDOWN FLOW CONTROL \_\_\_\_\_

7.11.10.6 (Continued)

INIT

- Check CLOSED FCV-1934A, SG "B" SAMPLE FLOW CONTROL \_\_\_\_\_
  - Check CLOSED FCV-1934B, SG "B" SAMPLE FLOW CONTROL \_\_\_\_\_
  - Open SGB-37, SG "B" SAMPLE FLOW ISOLATION. \_\_\_\_\_
  - Open SS-8E, SGBD "B" SAMPLE COOLER OUTLET. \_\_\_\_\_
  - Close SS-881, SGBD "B" SAMPLE ISOLATION FOR SSS ROOM (AUX BLDG). \_\_\_\_\_
  - Close SS-8B, SGBD "B" SAMPLE TO FI-1937-2. \_\_\_\_\_
7. Perform the following valve lineup:
- a. Close SGB-31. SG "B" BLOWDOWN AND SAMPLE ISOLATION. \_\_\_\_\_
  - b. Verify CLOSED SGB-94B, SGBD LINE "B" DRAIN/TEST CONNECTION. \_\_\_\_\_
  - c. Remove the pipe cap from SGB-94B AND install a portable drain line.   

CAP REMOVED \_\_\_\_\_

LINE INSTALLED \_\_\_\_\_
  - d. OPEN SGB-94B. \_\_\_\_\_
  - e. Open SS-9B, SGBD "B" SAMPLE TO SAMPLE SINK. \_\_\_\_\_

**NOTE:** The Containment Isolation may have to be reset at the SGBD and Sample Indication Panel in order for the valves to operate in the step below.

- 8. Move the R-19B toggle switch inside the cabinet to ON position to open FCV-1934A AND/OR FCV-1934B and depressurize the test volume. Initial valve(s) opened.  
N/A those that do not apply. FCV-1934A \_\_\_\_\_  
FCV-1934B \_\_\_\_\_
- 9. Move the R-19B toggle switch inside the cabinet to the OFF position. \_\_\_\_\_

7.11.10 (Continued)

INIT

10. Check CLOSED FCV-1934A AND FCV-1934B
- FCV-1934A \_\_\_\_\_  
FCV-1934B \_\_\_\_\_
11. Perform the following to fail Open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
- a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-37, FI-1920 BYPASS, may be opened. However, IVSW-37 must be closed before flow data is recorded.

12. Perform the follow to leak test the penetration:
- a. IF desired, THEN open IVSW-37 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-30G1, IVSW TO PEN 13, S/G "B" SAMPLE. \_\_\_\_\_
  - c. Verify CLOSED IVSW-37, FI-1920 BYPASS. \_\_\_\_\_
  - d. WHEN FI-1920 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_

7.11.10 (Continued)

INIT

13. Move the R-19B toggle switch inside the cabinet to ON position to open FCV-1934A AND/OR FCV-1934B. Initial valve(s) opened. N/A those that do not apply.
- FCV-1934A \_\_\_\_\_  
FCV-1934B \_\_\_\_\_

**NOTE:** Observing FI-1920 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-91, SG B BLDN SAMPLE LINE CHECK VALVE.

14. Check FI-1920 goes OFF-SCALE HIGH. \_\_\_\_\_
15. Close IVSW-30G1, IVSW TO PEN 13, S/G "B" SAMPLE. \_\_\_\_\_
16. Record forward flow test results for IVSW-91 on Attachment 8.6. \_\_\_\_\_
17. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_
18. Open IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
19. Verify CLOSED PCV-1922A. \_\_\_\_\_
20. Verify CLOSED PCV-1922B. \_\_\_\_\_
21. Close SGB-94B, SGBD LINE "B" DRAIN/TEST CONNECTION. \_\_\_\_\_
22. Remove the portable drain line AND install the pipe cap on SGB-94B. \_\_\_\_\_  
LINE REMOVED \_\_\_\_\_  
CAP INSTALLED \_\_\_\_\_
23. Close SS-9B, SGBD "B" SAMPLE TO SAMPLE SINK. \_\_\_\_\_
24. Perform the following to restore the system valve line-up:
- Open SGB-31, SG "B" BLOWDOWN AND SAMPLE ISOLATION. \_\_\_\_\_
  - Open SGB-37, SG "B" SAMPLE FLOW ISOLATION. \_\_\_\_\_



7.11.10 (Continued)

INIT

32. Record current date AND time (CR 95-01527).

DATE \_\_\_\_\_  
TIME \_\_\_\_\_

33. IF this is a partial OST performed for PMT OR retest, THEN  
immediately submit package for review. \_\_\_\_\_

INIT

7.11.11 Pen. 61 - Containment Sump Discharge (WD-1723, WD-1728)

1. Record flow meter FI-1920 Serial Number: \_\_\_\_\_.
2. Verify the calibration conversion sheet for flow meter FI-1920 is attached to this procedure.
3. Open CV SUMP PUMP "A" breaker (MCC-2, Compt. # 3M).
4. Open CV SUMP PUMP "B" breaker (MCC-1, Compt. # 5H).
5. Perform the following valve lineup:
  - Close WD-1723, CONTAINMENT SUMP PUMP DISCHARGE AUTO ISOLATION.
  - Close WD-1728, CONTAINMENT SUMP PUMP DISCHARGE ISOLATION.
  - Close WD-1731, RCDT DISCHARGE TO WHUT.
  - Open WD-1854, WHUT INLET.
  - Open WD-1855, WHUT INLET.
6. Install a portable drain line on WD-1757B, CONTAINMENT SUMP PUMPS "A" & "B" DISCHARGE VENT.
  - a. Open WD-1757B.
7. Open WD-1723 OR WD-1728, CONTAINMENT SUMP PUMP DISCHARGE AUTO ISOLATION, to depressurize the test volume, AND record the valve opened in the space provided. \_\_\_\_\_
8. Close the valve opened in Step 7.11.11.7.
9. Perform the following to fail open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
  - a. Close IA-205A, IA TO PCV-1922A & B.

7.11.11.9 (Continued)

INIT

- b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
- c. Verify OPEN PCV-1922A. \_\_\_\_\_
- d. Verify OPEN PCV-1922B. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-37, FI-1920 BYPASS, may be opened. However, IVSW-37 must be closed before flow data is recorded.

- 10. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-37 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-30H, IVSW TO PEN 61, CV SUMP PUMP DISCHARGE. \_\_\_\_\_
  - c. Verify CLOSED IVSW-37, FI-1920 BYPASS. \_\_\_\_\_
  - d. WHEN FI-1920 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
- 11. Open WD-1723 AND WD-1728, CONTAINMENT SUMP PUMP DISCHARGE AUTO ISOLATION, to depressurize the test volume, AND record the valve opened in the space provided. \_\_\_\_\_

**NOTE:** Observing FI-1920 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-89, CV SUMP PMP DISCH CHECK VALVE.

- 12. Check FI-1920 goes OFF-SCALE HIGH. \_\_\_\_\_
- 13. Close IVSW-30H, IVSW TO PEN 61, CV SUMP PUMP DISCHARGE. \_\_\_\_\_

- | 7.11.11 (Continued)  | <u>INIT</u>              |
|--|--------------------------|
| 14. Record forward flow test results for IVSW-89 on Attachment 8.6.  | _____                    |
| 15. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE.      | _____                    |
| 16. Open IA-205A, IA TO PCV-1922A & B.   | _____                    |
| 17. Verify CLOSED PCV-1922A.   | _____                    |
| 18. Verify CLOSED PCV-1922B.   | _____                    |
| 19. Perform the following to restore the drain line-up:  |                          |
| a. Close WD-1757B, CONTAINMENT SUMP PUMPS "A" & "B" DISCHARGE VENT.  | _____                    |
| b. Remove the portable drain line from WD-1757B.   | _____                    |
| 20. Perform the following:   |                          |
| – Open WD-1854, WHUT INLET.  | _____                    |
| – Open WD-1855, WHUT INLET.  | _____                    |
| – Close WD-1731, RCDT DISCHARGE TO WHUT.   | _____                    |
| – Open WD-1723, CONTAINMENT SUMP PUMP DISCHARGE AUTO ISOLATION, <u>AND</u> place the control switch in Auto.         | OPEN _____<br>AUTO _____ |
| – Open WD-1728, CONTAINMENT SUMP PUMP DISCHARGE AUTO ISOLATION, <u>AND</u> place the control switch in Auto.         | OPEN _____<br>AUTO _____ |
| 21. Close CV SUMP PUMP "A" breaker (MCC-2, Compt. # 3M).   | _____                    |
| 22. Close CV SUMP PUMP "B" breaker (MCC-1, Compt. # 5H).   | _____                    |
| 23. <u>IF</u> the IVSW tank requires filling, <u>THEN</u> Go To the section for Returning IVSW Tank Level to Normal. | _____                    |

7.11.11 (Continued)

INIT

24. IF corrected leakage values obtained in Step 7.11.11.10.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required. Maintenance is / is not required. (circle one)
- \_\_\_\_\_
- IVSW Engineer
25. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_
26. Record in Attachment 8.4 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.11.11.10.d.
27. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.4.
28. IF maintenance is NOT required, THEN record in Attachment 8.4 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.11.11.10.d.
29. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
30. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review.

7.12 Header "D" Leakage Measurement INIT

7.12.1 Pen. 5 - RCDT to Gas Analyzer (WD-1789, WD-1794)

1. Record flow meter FI-1921 Serial Number: \_\_\_\_\_
2. Verify the calibration conversion sheet for flow meter FI-1921 is attached to this procedure. \_\_\_\_\_
3. Close WD-1717, RCDT TO GAS ANALYZER ISOLATION. \_\_\_\_\_

**NOTE:** TRMS 3.11 may be applicable to the following step.

4. Place the GAS ANALYZER SELECTOR SWITCH to "C" (Calibrate) position. \_\_\_\_\_
5. Perform the following to depressurize the test volume:
  - a. Direct Maintenance to install an air jumper on WD-1789 AND WD-1794, RCDT SAMPLE LINE TO GAS ANALYZER, to permit valve operation.  
     WD-1789 JUMPER INSTALLED \_\_\_\_\_  
     WD-1794 JUMPER INSTALLED \_\_\_\_\_
  - b. Open WD-1789 OR WD-1794. N/A valve not opened.  
     WD-1789 OPEN \_\_\_\_\_  
     WD-1794 OPEN \_\_\_\_\_
  - c. Verify CLOSED WD-1789 AND WD-1794.  
     WD-1789 CLOSED \_\_\_\_\_  
     WD-1794 CLOSED \_\_\_\_\_
  - d. Obtain Health Physics assistance prior to opening the Waste Gas System in Step 7.12.1.5.e below. \_\_\_\_\_
  - e. Direct Maintenance to disconnect the inlet tubing from WD-1600A, RCDT TO GAS ANALYZER SOLENOID VALVE. \_\_\_\_\_
  - f. Collect any condensate from the disconnected tubing AND consider it contaminated until verified otherwise. \_\_\_\_\_

7.12.1 (Continued)

INIT

- 6. Obtain Health Physics assistance prior to opening the Waste Gas System in Step 7.12.1.7 below. \_\_\_\_\_
- 7. Direct Maintenance to disconnect the outlet tubing from PCV-1073, RCDT SAMPLE LINE TO GAS ANALYZER. \_\_\_\_\_
- 8. Collect any condensate from the disconnected tubing AND consider it contaminated until verified otherwise. \_\_\_\_\_
- 9. Install a portable drain line on the disconnected tubing, AND route to a suitable container or contaminated drain. \_\_\_\_\_
- 10. Perform the following to fail open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
  - a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-38, FI-1921 BYPASS, may be opened. However, IVSW-38 must be closed before flow data is recorded.

- 11. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-38 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-34, IVSW TO PEN 5, RCDT TO GAS ANALYZER. \_\_\_\_\_
  - c. Verify CLOSED IVSW-38, FI-1921 BYPASS. \_\_\_\_\_



7.12.1.20 (Continued)

	<u>INIT</u>	<u>VERI</u>
c. Direct Maintenance to connect an IA, SA, or Nitrogen pressure source to outlet tubing of PCV-1073.	_____	
d. Verify all personnel in the vicinity of WD-1600A have been notified that pressurization is about to commence. Condensate should be directed into a suitable container or drain IAW Health Physics requirements.	_____	
e. <u>Slowly</u> pressurize tubing by throttling open the pressure source isolation.	_____	
f. <u>WHEN</u> water is no longer observed flowing from the disconnected tubing at WD-1600A, <u>THEN</u> close the pressure source isolation.	_____	
g. Verify CLOSED WD-1789 AND WD-1794, RCDT SAMPLE LINE TO GAS ANALYZER. WD-1789 CLOSED WD-1794 CLOSED	_____ _____ _____	_____ _____ _____
h. Direct Maintenance to disconnect the pressure source, <u>AND</u> reconnect PCV-1073 outlet tubing. PRESSURE SOURCE DISCONNECTED PCV-1073 OUTLET TUBING RECONNECTED	_____ _____ _____	_____ _____ _____
i. Direct Maintenance to disconnect the WD-1600A tubing drain, <u>AND</u> reconnect the inlet tubing to WD-1600A. DRAIN REMOVED WD-1600A INLET TUBING RECONNECTED	_____ _____ _____	_____ _____ _____
j. Direct Maintenance to disconnect WD-1689 and WD-1794 air jumpers, <u>AND</u> reconnect normal IA tubing. AIR JUMPERS REMOVED WD-1789 IA LINE RECONNECTED WD-1794 IA LINE RECONNECTED	_____ _____ _____	_____ _____ _____
k. Open WD-1717, RCDT TO GAS ANALYZER ISOLATION.	_____	

7.12.1.20 (Continued)

INIT

I. Inform E&C that the Gas Analyzer can be returned to normal operation IAW CP-015.

\_\_\_\_\_  
E&C

21. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal.

22. IF corrected leakage values obtained in Step 7.12.1.11.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required.  
Maintenance is / is not required. (circle one)

\_\_\_\_\_  
IVSW Engineer

23. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_

24. Record in Attachment 8.5 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.12.1.11.d.

25. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.5.

26. IF maintenance is NOT required, THEN record in Attachment 8.5 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.12.1.11.d.

27. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_

28. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review.

INIT

7.12.2 Pen. 18 - CCW to Containment (CC-716B)

1. Record flow meter FI-1921 Serial Number: \_\_\_\_\_
2. Verify the calibration conversion sheet for flow meter FI-1921 is attached to this procedure. \_\_\_\_\_
3. Verify RCP "A", "B", AND "C" are STOPPED. A \_\_\_\_\_  
B \_\_\_\_\_  
C \_\_\_\_\_
4. Perform the following:
  - a. Notify Control Room that various CCW flow related alarms may be received in subsequent steps. \_\_\_\_\_
  - b. Perform the following valve lineup:
    - Close CC-716A, COOLING WATER INLET. \_\_\_\_\_
    - Close CC-716B, COOLING WATER INLET. \_\_\_\_\_
    - Verify OPEN CC-718A, CC TO RCP "A". \_\_\_\_\_
    - Close CC-718B, CC TO RCP "B". \_\_\_\_\_
    - Close CC-718C, CC TO RCP "C". \_\_\_\_\_
    - Close CC-719D, CC TO CRDM COOLER. \_\_\_\_\_
    - Close CC-728A, RCP "A" THERMAL BARRIER CC OUTLET STOP. \_\_\_\_\_
    - Close CC-727A, RCP "A" OIL COOLER CC OUTLET STOP. \_\_\_\_\_
  - c. Perform the following drain lineup:
    - 1) Verify CLOSED CC-918A, RCP "A" THERMAL BARRIER INLET DRAIN. \_\_\_\_\_
    - 2) Remove the pipe cap for CC-918A AND install a portable drain line. \_\_\_\_\_  

CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_

7.12.2.4.c (Continued)

INIT

- 3) Open CC-918A. \_\_\_\_\_
- 5. Open CC-716B, COOLING WATER INLET, to depressurize the test volume. \_\_\_\_\_
- 6. Close CC-716B. \_\_\_\_\_
- 7. Perform the following to fail open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
  - a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-38, FI-1921 BYPASS, may be opened. However, IVSW-38 must be closed before flow data is recorded.

- 8. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-38 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-34A, IVSW TO PEN 18, RCP CCW INLET. \_\_\_\_\_
  - c. Verify CLOSED IVSW-38, FI-1921 BYPASS. \_\_\_\_\_
  - d. WHEN FI-1921 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_

7.12.2 (Continued)

INIT VERI

9. Open CC-716B, COOLING WATER INLET. \_\_\_\_\_

**NOTE:** Observing FI-1921 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-94, RCP CCW INLET CHECK VALVE.

10. Check FI-1921 goes OFF-SCALE HIGH. \_\_\_\_\_

11. Close IVSW-34A, IVSW TO PEN 18, RCP  
CCW INLET. \_\_\_\_\_

12. Record forward flow test results for IVSW-94  
on Attachment 8.6. \_\_\_\_\_

13. Close the IA regulator petcocks supplying  
PCV-1922A AND PCV-1922B, AUTOMATIC  
HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_

14. Open IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_

15. Verify CLOSED PCV-1922A. \_\_\_\_\_

16. Verify CLOSED PCV-1922B. \_\_\_\_\_

17. Perform the following:

a. Close CC-918A, RCP "A" THERMAL  
BARRIER INLET DRAIN. \_\_\_\_\_

b. Remove the portable drain line from  
CC-918A, AND install the pipe cap.  
LINE REMOVED \_\_\_\_\_  
CAP INSTALLED \_\_\_\_\_

c. Perform the following valve lineup:

- Open CC-716A, COOLING WATER INLET. \_\_\_\_\_

- Open CC-719D, CC TO CRDM COOLER. \_\_\_\_\_

- Open CC-718A, CC TO RCP "A". \_\_\_\_\_

- Open CC-718B, CC TO RCP "B". \_\_\_\_\_

7.12.2.17.c (Continued)	<u>INIT</u>
– Open CC-718C, CC TO RCP "C".	_____
– Open CC-727A, RCP "A" OIL COOLER CC OUTLET STOP.	_____
d. <u>IF</u> RCP "A" Thermal Barrier Flow will <u>NOT</u> be set, <u>THEN</u> open CC-728A, RCP "A" THERMAL BARRIER CC OUTLET STOP, <u>AND</u> N/A Step 7.12.2.17.e.	_____
e. <u>IF</u> RCP "A" Thermal Barrier flow will be set, <u>THEN</u> perform the following:	
1) Verify OPEN CC-716A, COOLING WATER INLET.	_____
2) Verify OPEN CC-716B, COOLING WATER INLET.	_____
3) Verify OPEN FCV-626, THERM BARRIER OUTLET.	_____
4) Verify at least one CCW pump is running.	_____
5) Throttle open CC-728A, RCP "A" THERMAL BARRIER CC OUTLET STOP, to achieve a CCW flow rate of 25 to 28 gpm as indicated on FI-630, CCW RCP "A" THERMAL BARRIER RETURN FLOW IND.	_____
18. Restart RCP "A", "B", <u>AND</u> "C" IAW OP-101 as necessary for present plant conditions.	_____
19. <u>IF</u> the IVSW tank requires filling, <u>THEN</u> Go To the section for Returning IVSW Tank Level to Normal.	_____

7.12.2 (Continued)

INIT

20. IF corrected leakage values obtained in Step 7.12.2.8.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required.  
Maintenance is / is not required. (circle one)

\_\_\_\_\_  
IVSW Engineer

21. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_

22. Record in Attachment 8.5 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.12.2.8.d.

23. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.5.

24. IF maintenance is NOT required, THEN record in Attachment 8.5 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.12.2.8.d.

25. Record current date AND time (CR 95-01527).

DATE \_\_\_\_\_  
TIME \_\_\_\_\_

26. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review.

INIT

7.12.3 Pen. 19 - CCW Return From RCPs (CC-730)

1. Record flow meter FI-1921 Serial Number: \_\_\_\_\_
2. Verify the calibration conversion sheet for flow meter FI-1921 is attached to this procedure. \_\_\_\_\_
3. Verify RCP "A", "B", AND "C" are STOPPED. A \_\_\_\_\_  
B \_\_\_\_\_  
C \_\_\_\_\_
4. Perform the following:
  - a. Notify Control Room that various CCW flow related alarms may be received in subsequent steps. \_\_\_\_\_

**CAUTION**

Check valve CC-731, RCP BRG CLG WTR OUTLET, will be physically opened in the following steps. For worker safety, boundary control must be maintained by the use of a local clearance(s).

- b. For each valve listed below, initial for position, AND sign on to the appropriate local clearance:
  - Close CC-727A, RCP "A" OIL COOLER CC OUTLET STOP. \_\_\_\_\_
  - Close CC-727C, RCP "C" OIL COOLER CC OUTLET STOP. \_\_\_\_\_
  - Close CC-719E, CC FROM CRDM COOLER. \_\_\_\_\_
  - Close CC-732, CC FROM R.C.P. "A", "B", "C" OIL COOLER. \_\_\_\_\_
  - Close CC-724B, CC FROM RCP "B" UPPER OIL COOLER. \_\_\_\_\_
  - Close CC-720B, CC TO RCP "B" LOWER OIL COOLER. \_\_\_\_\_

7.12.3.4 (Continued)

INIT

- c. Perform the following valve lineup:
    - Open CC-727B, RCP "B" OIL COOLER CC  
OUTLET STOP. \_\_\_\_\_
    - Open CC-723B, CC FROM RCP "B" LOWER  
OIL COOLER. \_\_\_\_\_
  - d. Perform the following drain lineup:
    - 1) Verify CLOSED CC-914B, RCP "B" FI-631  
INLET DRAIN. \_\_\_\_\_
    - 2) Remove the pipe cap from CC-914B, AND  
install a portable drain line. CAP REMOVED \_\_\_\_\_  
LINE INSTALLED \_\_\_\_\_
    - 3) Open CC-914B. \_\_\_\_\_
  - 5. Perform inspection of CC-731, RCP BRG CLG WTR  
OUTLET, IAW EST-132.
  - 6. Notify Maintenance that Opening CC-730, BEARING  
COOLING WATER OUTLET, may release significant  
additional quantities of CCW from the open CC-731. \_\_\_\_\_
- 
- Maintenance
- 7. Open CC-730, to depressurize the test volume. \_\_\_\_\_
  - 8. Close CC-730. \_\_\_\_\_

7.12.3 (Continued)

INIT

9. Perform the following to fail open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
  - a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_

**CAUTION**

To speed filling of the line in the steps below, IVSW-38, FI-1921 BYPASS, may be opened. However, IVSW-38 must be closed before flow data is recorded.

10. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-38 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-34B, IVSW TO PEN 19, RCP CCW OUTLET. \_\_\_\_\_
  - c. Verify CLOSED IVSW-38, FI-1921 BYPASS. \_\_\_\_\_
  - d. WHEN FI-1921 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
11. Open CC-730, BEARING COOLING WATER OUTLET. \_\_\_\_\_

7.12.3 (Continued)

INIT VERI

**NOTE:** Observing FI-1921 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-95, RCP CCW OUTLET CHECK VALVE.

- |     |  |               |       |
|-----|--|---------------|-------|
| 12. | Check FI-1921 goes OFF-SCALE HIGH.   | _____         |       |
| 13. | Close CC-730.  | _____         |       |
| 14. | Close IVSW-34B, IVSW TO PEN 19, RCP CCW OUTLET.  | _____         |       |
| 15. | Record forward flow test results for IVSW-95 on Attachment 8.6.  | _____         |       |
| 16. | Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE.  | _____         |       |
| 17. | Open IA-205A, IA TO PCV-1922A & B.   | _____         |       |
| 18. | Verify CLOSED PCV-1922A.   | _____         |       |
| 19. | Verify CLOSED PCV-1922B.   | _____         |       |
| 20. | Close CC-914B, RCP "B" FI-631 INLET DRAIN.   | _____         | _____ |
| 21. | Remove the portable drain line from CC-914B AND install the pipe cap.  | _____         | _____ |
|     |  | LINE REMOVED  | _____ |
|     |  | CAP INSTALLED | _____ |
| 22. | Perform the following:   |               |       |
| a.  | Notify QC to inspect CC-731, RCP BRG CLG WTR OUTLET, for cleanliness prior to closure IAW MMM-010 (Group C). | _____         |       |
|     | _____  |               |       |
|     | QC   |               |       |
| b.  | Cleanliness of CC-731 is:<br>Accepted / Rejected (circle one)  | _____         |       |
|     | _____  |               |       |
|     | QC   |               |       |

7.12.3.22 (Continued)

INIT

- c. Direct Maintenance to reinstall the following components for CC-731 IAW CM-131 OR PM-308:
  - 1) GASKET (New) \_\_\_\_\_
  - 2) CAP \_\_\_\_\_
  - 3) CAP BOLTS \_\_\_\_\_
  - 4) NUTS \_\_\_\_\_
  
- 23. Perform the following:
  - a. For each valve listed below, sign off the appropriate local clearance:
    - CC-727A, RCP "A" OIL COOLER CC OUTLET STOP. \_\_\_\_\_
    - CC-727C, RCP "C" OIL COOLER CC OUTLET STOP. \_\_\_\_\_
    - CC-719E, CC FROM CRDM COOLER. \_\_\_\_\_
    - CC-732, CC FROM RCP "A", "B", "C" OIL COOLER. \_\_\_\_\_
    - CC-724B, CC FROM RCP "B" UPPER OIL COOLER. \_\_\_\_\_
    - CC-720B, CC TO RCP "B" LOWER OIL COOLER. \_\_\_\_\_
  
  - b. Perform the following to restore system valve lineup:
    - Open CC-727B, RCP "B" OIL COOLER CC OUTLET STOP. \_\_\_\_\_
    - Open CC-719E, CC FROM CRDM COOLER. \_\_\_\_\_
    - Open CC-727C, RCP "C" OIL COOLER CC OUTLET STOP. \_\_\_\_\_

7.12.3.23.b (Continued)

INIT

- Open CC-727A, RCP "A" OIL COOLER CC OUTLET STOP. \_\_\_\_\_
- Open CC-732, CC FROM RCP "A", "B", "C" OIL COOLER. \_\_\_\_\_
- Open CC-720B, CC TO RCP "B" LOWER OIL COOLER. \_\_\_\_\_
- c. IF RCP "B" Oil Cooler flows are to be set, THEN perform the following:
  - 1) Open CC-730, BEARING COOLING WATER OUTLET. \_\_\_\_\_
  - 2) Verify open CC-716A AND CC-716B, COOLING WATER INLET. CC-716A \_\_\_\_\_  
CC-716B \_\_\_\_\_
  - 3) Verify at least one CCW pump running. \_\_\_\_\_
  - 4) Throttle open CC-723B, CC FROM RCP "B" LOWER OIL COOLER, to achieve a CCW flow rate of 5 to 10 gpm as indicated on FI-631, CCW RCP "B" LOWER BEARING RETURN FLOW IND. \_\_\_\_\_
  - 5) Throttle open CC-724B, CC FROM RCP "B" UPPER OIL COOLER, to achieve a CCW flow rate of 160 to 180 gpm as indicated on FIC-632, CCW RCP "B" BRG RETURN FLOW IND & LO ALARM. \_\_\_\_\_
- d. IF RCP "B" Oil Cooler flows are not to be set, THEN open CC-723B AND CC-724B. CC-723B \_\_\_\_\_  
CC-724B \_\_\_\_\_
- 24. Restart RCP "A", "B", AND "C" IAW OP-101 as necessary for present plant conditions. \_\_\_\_\_
- 25. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal. \_\_\_\_\_

7.12.3 (Continued)

INIT

26. IF corrected leakage values obtained in Step 7.12.3.10.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required.  
Maintenance is / is not required. (circle one)  
\_\_\_\_\_
- IVSW Engineer
27. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_
28. Record in Attachment 8.5 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.12.3.10.d. \_\_\_\_\_
29. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.5. \_\_\_\_\_
30. IF maintenance is NOT required, THEN record in Attachment 8.5 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.12.3.10.d. \_\_\_\_\_
31. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
32. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.12.4 Pen. 48 - SI High Head Test Line (SI-895V & SI-898F)

1. Record flow meter FI-1921 Serial Number: \_\_\_\_\_
2. Verify the calibration conversion sheet for flow meter FI-1921 is attached to this procedure. \_\_\_\_\_

**NOTE:** ITS 3.7 may be applicable to the following step.

3. Rack out the SI pump breakers:
  - SAFETY INJECTION PUMP "A" BKR 52/21C \_\_\_\_\_
  - 480V BUSS E-1 SUPPLY TO SI PUMP "B" 52/22B \_\_\_\_\_
  - 480V BUSS E-2 SUPPLY TO SI PUMP "B" 52/29B \_\_\_\_\_
  - SAFETY INJECTION PUMP "C" BKR 52/23B \_\_\_\_\_

**NOTE:** A Locked Valve key is required to unlock several valves in the steps below.

4. Perform the following:
  - a. Perform the following valve lineup:
    - Close SI-869, LOOPS "B" AND "C" HOT LEG INJECTION SHUTOFF. \_\_\_\_\_
    - Close SI-866A, LOOP "C" HOT LEG INJECTION. \_\_\_\_\_
    - Close SI-866B, LOOP "B" HOT LEG INJECTION. \_\_\_\_\_
    - Close SI-883R, HIGH HEAD SI TO ACCUMS MAKE-UP. \_\_\_\_\_
    - Close SI-850A, ACCUMULATOR "A" TEST VALVE. \_\_\_\_\_
    - Close SI-850B, LOOP "A" COLD LEG INJECTION LINE TEST VALVE. \_\_\_\_\_
    - Close SI-850C, ACCUMULATOR "B" TEST VALVE. \_\_\_\_\_

7.12.4.4.a (Continued)

INIT

- Close SI-850D, LOOP "B" COLD LEG INJECTION LINE TEST VALVE. \_\_\_\_\_
- Close SI-850E, ACCUMULATOR "C" TEST VALVE. \_\_\_\_\_
- Close SI-850F, LOOP "C" COLD LEG INJECTION LINE TEST VALVE. \_\_\_\_\_
- Open SI-895P, SI TEST LINE ISOLATION. \_\_\_\_\_
- Open SI-856A, SI PUMP RECIRC. \_\_\_\_\_
- Open SI-856B, SI PUMP RECIRC. \_\_\_\_\_
- b. Install a portable drain line for SI-895I, SI COLD LEG TEST LINE DRAIN (Located near the Transfer Canal on the Excess Letdown Hx Exchanger side). \_\_\_\_\_
- c. Open SI-895I. \_\_\_\_\_

**NOTE:** SI-895V and SI-898F full stroke exercise test is performed to meet IST requirements IAW TMM-004. Opening either valve will also depressurize the test volume.

- 5. Fully stroke SI-895V and SI-898F and record the full stroke test results on Attachment 8.6.
  - SI-895V \_\_\_\_\_
  - SI-898F \_\_\_\_\_
- 6. Verify CLOSED SI-895V. \_\_\_\_\_
- 7. VERIFY CLOSED SI-898F. \_\_\_\_\_
- 8. Perform the following to fail Open PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE:
  - a. Close IA-205A, IA TO PCV-1922A & B. \_\_\_\_\_
  - b. Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B. \_\_\_\_\_
  - c. Verify OPEN PCV-1922A. \_\_\_\_\_
  - d. Verify OPEN PCV-1922B. \_\_\_\_\_

7.12.4 (Continued)

INIT

**CAUTION**

To speed filling of the line in the steps below, IVSW-38, FI-1921 BYPASS, may be opened. However, IVSW-38 must be closed before flow data is recorded.

9. Perform the following to leak test the penetration:
  - a. IF desired, THEN open IVSW-38 to speed line fill. \_\_\_\_\_
  - b. Open IVSW-34C, IVSW TO PEN 48, SI HIGH HEAD TEST LINE. \_\_\_\_\_
  - c. Verify CLOSED IVSW-38, FI-1921 BYPASS. \_\_\_\_\_
  - d. WHEN FI-1921 stabilizes, THEN record flows:
    - 1) Indicated \_\_\_\_\_ (no units) \_\_\_\_\_
    - 2) Convert to Corrected flow using calibration conversion sheet.  
Corrected \_\_\_\_\_ cc/min. \_\_\_\_\_
  
10. Open SI-895V OR SI-898F, SI TEST LINE ISOLATION. Initial the valve opened. N/A the valve that does not apply.
 

SI-895V \_\_\_\_\_  
SI-898F \_\_\_\_\_

**NOTE:** Observing FI-1921 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-96, SI TEST LINE HIGH HEAD CHECK VALVE.

11. Check FI-1921 goes OFF-SCALE HIGH. \_\_\_\_\_
12. Close IVSW-34C, IVSW TO PEN 48, SI HIGH HEAD TEST LINE. \_\_\_\_\_
13. Record forward flow test results for IVSW-96 on Attachment 8.6. \_\_\_\_\_
14. Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. \_\_\_\_\_

7.12.4 (Continued)

	<u>INIT</u>	<u>VERI</u>
15. Open IA-205A, IA TO PCV-1922A & B.	_____	
16. Verify CLOSED PCV-1922A.	_____	
17. Verify CLOSED PCV-1922B.	_____	
18. Close SI-895I, SI COLD LEG TEST LINE DRAIN (Located near the Transfer Canal on the Excess Letdown Hx Exchanger side).	_____	_____
19. Remove the portable drain line from SI-895I.	_____	
20. Perform the following to restore the system valve line-up:		
– Close SI-869, LOOPS "B" AND "C" HOT LEG INJECTION SHUTOFF.	_____	_____
– Close SI-866A, LOOP "C" HOT LEG INJECTION.	_____	_____
– Close SI-866B, LOOP "B" HOT LEG INJECTION.	_____	_____
– Open SI-883R, HIGH HEAD SI TO ACCUMS MAKE-UP.	_____	_____
– Close SI-850A, ACCUMULATOR "A" TEST VALVE.	_____	_____
– Close SI-850B, LOOP "A" COLD LEG INJECTION LINE TEST VALVE.	_____	_____
– Close SI-850C, ACCUMULATOR "B" TEST VALVE.	_____	_____
– Close SI-850D, LOOP "B" COLD LEG INJECTION LINE TEST VALVE.	_____	_____
– Close SI-850E, ACCUMULATOR "C" TEST VALVE.	_____	_____
– Close SI-850F, LOOP "C" COLD LEG INJECTION LINE TEST VALVE.	_____	_____
– Lock closed SI-895P, SI TEST LINE ISOLATION.	_____	_____

7.12.4 20(Continued)

	<u>INIT</u>	<u>VERI</u>
– Open SI-856A, SI PUMP RECIRC.	_____	_____
– Open SI-856B, SI PUMP RECIRC.	_____	_____
– Lock closed SI-895V, SI TEST LINE ISOLATION.	_____	_____
– Lock closed SI-898F, SI TEST LINE ISOLATION.	_____	_____
21. Rack in the SI pump breakers IAW plant conditions:		
– SAFETY INJECTION PUMP "A" BKR 52/21C	_____	
– 480V BUSS E-1 SUPPLY TO SI PUMP "B" 52/22B	_____	
– 480V BUSS E-2 SUPPLY TO SI PUMP "B" 52/29B	_____	
– SAFETY INJECTION PUMP "C" BKR 52/23B	_____	
22. <u>IF</u> the IVSW tank requires filling, <u>THEN</u> Go To the section for Returning IVSW Tank Level to Normal.	_____	
23. <u>IF</u> corrected leakage values obtained in Step 7.12.4.9.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, <u>THEN</u> the IVSW Engineer will determine whether maintenance is required. Maintenance is / is not required. (circle one)		
_____	_____	
IVSW Engineer		
24. <u>IF</u> the penetration leakage value is determined to be excessive, <u>THEN</u> submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, <u>AND</u> which valve(s) are leaking). WR # _____	_____	
25. Record in Attachment 8.5 the AS FOUND Indicated <u>AND</u> Corrected penetration leakages recorded in Step 7.12.4.9.d.	_____	

7.12.4 (Continued)

INIT

26. IF maintenance is required, THEN N/A the AS LEFT indicated AND Corrected values in Attachment 8.5. \_\_\_\_\_
27. IF maintenance is NOT required, THEN record in Attachment 8.5 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.12.4.9.d. \_\_\_\_\_
28. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
29. IF this is a partial OST performed for PMT OR retest, THEN immediately submit package for review. \_\_\_\_\_

INIT

7.12.5 Pen. 60 - SI Accumulator Sample Line (PS-956G & PS-956H)

1. Record flow meter FI-1921 Serial Number: \_\_\_\_\_
2. Verify the calibration conversion sheet for flow meter FI-1921 is attached to this procedure. \_\_\_\_\_
3. Perform the following to restore the system valve line-up:
  - a. Perform the following:
    - Verify CLOSED PS-956G AND PS-956H, ACCUM SAMPLE LINE AIR OPERATED ISOLATION. PS-956G \_\_\_\_\_  
PS-956H \_\_\_\_\_
    - Close PS-955C, ACCUMULATOR "A" AIR OPERATED ISOLATION. \_\_\_\_\_
    - Close PS-955D, ACCUMULATOR "B" AIR OPERATED ISOLATION. \_\_\_\_\_
    - Close PS-955E, ACCUMULATOR "C" AIR OPERATED ISOLATION. \_\_\_\_\_
    - Open PS-989E, ACCUM SAMPLE LINE FLUSH. \_\_\_\_\_
  - b. Perform the following drain lineup:
    - 1) Open PS-971E, ACCUM SAMPLE TO SAMPLE SINK. \_\_\_\_\_
    - 2) Install a portable drain line for PS-955I, ACCUM "B" SAMPLE LINE DRAIN. \_\_\_\_\_
    - 3) Open PS-955I. \_\_\_\_\_
4. Open PS-956G AND/OR PS-956H, ACCUM SAMPLE LINE AIR OPERATED ISOLATION, to depressurize the test volume. Initial the valve(s) opened. N/A those that do not apply. PS-956G \_\_\_\_\_  
PS-956H \_\_\_\_\_

7.12.5 (Continued)

INIT

- |    |   |                                |
|----|---|--------------------------------|
| 5. | Verify CLOSED PS-956G <u>AND</u> PS-956H.   | PS-956G _____<br>PS-956H _____ |
| 6. | Perform the following to fail Open PCV-1922A <u>AND</u> PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE: |                                |
| a. | Close IA-205A, IA TO PCV-1922A & B.   | _____                          |
| b. | Open the IA regulator petcocks & bleed air pressure off of PCV-1922A & B.                                   | _____                          |
| c. | Verify OPEN PCV-1922A.  | _____                          |
| d. | Verify OPEN PCV-1922B.  | _____                          |

**CAUTION**

To speed filling of the line in the steps below, IVSW-38, FI-1921 BYPASS, may be opened. However, IVSW-38 must be closed before flow data is recorded.

- |    |   |                                |
|----|---|--------------------------------|
| 7. | Perform the following to leak test the penetration:   |                                |
| a. | <u>IF</u> desired, <u>THEN</u> open IVSW-38 to speed line fill.                                       | _____                          |
| b. | Open IVSW-34D, IVSW TO PEN 60, ACCUMULATOR SAMPLE LINE.   | _____                          |
| c. | Verify CLOSED IVSW-38, FI-1921 BYPASS.  | _____                          |
| d. | <u>WHEN</u> FI-1921 stabilizes, <u>THEN</u> record flows:   |                                |
|    | 1) Indicated _____ (no units)   | _____                          |
|    | 2) Convert to Corrected flow using calibration conversion sheet.<br>Corrected _____ cc/min.           | _____                          |
| 8. | Open the valve(s) used to depressurize the test volume in Step 7.12.5.4. N/A those that do not apply. | PS-956G _____<br>PS-955H _____ |

7.12.5 (Continued)

INIT VERI

**NOTE:** Observing FI-1921 indication goes off scale high meets the acceptance criteria for the forward flow test of IVSW-97, ACCUM SAMPLE LINE CHECK VALVE.

- |     |   |       |       |
|-----|---|-------|-------|
| 9.  | Check FI-1921 goes OFF-SCALE HIGH.  | _____ |       |
| 10. | Close IVSW-34D, IVSW TO PEN 60, ACCUMULATOR SAMPLE LINE.  | _____ |       |
| 11. | Record forward flow test results for IVSW-97 on Attachment 8.6.   | _____ |       |
| 12. | Close the IA regulator petcocks supplying PCV-1922A AND PCV-1922B, AUTOMATIC HEADER PRESSURE CONTROL VALVE. | _____ |       |
| 13. | Open IA-205A, IA TO PCV-1922A & B.  | _____ |       |
| 14. | Verify CLOSED PCV-1922A.  | _____ |       |
| 15. | Verify CLOSED PCV-1922B.  | _____ |       |
| 16. | Perform the following:  |       |       |
|     | a. Perform the following to secure the drain lineup:  |       |       |
|     | 1) Close PS-955I, ACCUM "B" SAMPLE LINE DRAIN.  | _____ |       |
|     | 2) Remove the portable drain line from PS-955I.   | _____ |       |
|     | 3) Close PS-971E, ACCUM SAMPLE TO SAMPLE SINK.  | _____ |       |
|     | b. Perform the following valve lineup:  |       |       |
|     | – Close PS-956G, ACCUM SAMPLE LINE AIR OPERATED ISOLATION.  | _____ | _____ |
|     | – Close PS-956H, ACCUM SAMPLE LINE AIR OPERATED ISOLATION.  | _____ | _____ |

7.12.5.16.b (Continued)

INIT

- Close PS-955C, ACCUM "A" AIR OPERATED ISOLATION. \_\_\_\_\_
  - Close PS-955D, ACCUM "B" AIR OPERATED ISOLATION. \_\_\_\_\_
  - Close PS-955E, ACCUM "C" AIR OPERATED ISOLATION. \_\_\_\_\_
  - Open PS-989E, ACCUM SAMPLE LINE FLUSH. \_\_\_\_\_
17. IF the IVSW tank requires filling, THEN Go To the section for Returning IVSW Tank Level to Normal. \_\_\_\_\_
18. IF corrected leakage values obtained in Step 7.12.5.7.d are greater than or equal to 125% of the corresponding previous values recorded in Attachment 8.1, THEN the IVSW Engineer will determine whether maintenance is required.  
Maintenance is / is not required. (circle one)  
\_\_\_\_\_  
IVSW Engineer \_\_\_\_\_
19. IF the penetration leakage value is determined to be excessive, THEN submit a work request to repair. Include all pertinent information (such as Internal vs. External leakage, AND which valve(s) are leaking).  
WR # \_\_\_\_\_
20. Record in Attachment 8.5 the AS FOUND Indicated AND Corrected penetration leakages recorded in Step 7.12.5.7.d. \_\_\_\_\_
21. IF maintenance is required, THEN N/A the AS LEFT Indicated AND Corrected values in Attachment 8.5. \_\_\_\_\_
22. IF maintenance is NOT required, THEN record in Attachment 8.5 the AS LEFT Indicated AND Corrected penetration leakages recorded in Step 7.12.5.7.d. \_\_\_\_\_

7.12.5 (Continued)

INIT

23. Record current date AND time (CR 95-01527).  
DATE \_\_\_\_\_  
TIME \_\_\_\_\_
24. IF this is a partial OST performed for PMT OR retest,  
THEN immediately submit package for review. \_\_\_\_\_

INIT

7.13 System Restoration

7.13.1 IF IVSW system realignment is desired, THEN perform IAW OP-911. \_\_\_\_\_

7.13.2 IF necessary, THEN notify Maintenance to drain the Gas Analyzer lines. \_\_\_\_\_

7.13.3 For each IVSW header having ALL penetrations completed, record the following on the appropriate Attachment 8.2 through 8.5 (N/A the blocks if ALL the penetrations for the respective header were NOT tested):

- TOTAL As Found leakage \_\_\_\_\_

- TOTAL As Left leakage \_\_\_\_\_

**NOTE:** Total IVSW headers flow acceptance criteria is less than or equal to 118.75 cc/min.

7.13.4 IF ALL of the IVSW header penetrations were tested, THEN add the CURRENT TOTAL As Left leakage from Attachments 8.2 through 8.5.

- IVSW HDR "A" TOTAL As Left leakage \_\_\_\_\_ cc/min

- IVSW HDR "B" TOTAL As Left leakage \_\_\_\_\_ cc/min

- IVSW HDR "C" TOTAL As Left leakage \_\_\_\_\_ cc/min

- IVSW HDR "D" TOTAL As Left leakage \_\_\_\_\_ cc/min

- TOTAL IVSW As Left leakage \_\_\_\_\_ cc/min \_\_\_\_\_

INIT

7.13.5 IF this is a partial test AND ALL the IVSW penetrations were NOT tested, THEN using the IVSW leakage obtained from this test for the tested penetration(s) AND the most recent IVSW leakage data from a previous test for the IVSW penetrations NOT tested on this test, recalculate new TOTAL IVSW As Left header leakage for each IVSW header AND the TOTAL IVSW As Left leakage.

- IVSW HDR "A" TOTAL As Left leakage \_\_\_\_\_ cc/min
- IVSW HDR "B" TOTAL As Left leakage \_\_\_\_\_ cc/min
- IVSW HDR "C" TOTAL As Left leakage \_\_\_\_\_ cc/min
- IVSW HDR "D" TOTAL As Left leakage \_\_\_\_\_ cc/min
- TOTAL IVSW As Left leakage \_\_\_\_\_ cc/min \_\_\_\_\_

7.13.6 Verify this test is reviewed by the following personnel:

\_\_\_\_\_ Date: \_\_\_\_\_  
Appendix J Engineer

7.13.7 Make copies of Attachments 8.1 through 8.6, AND route to the IVSW Engineer. \_\_\_\_\_

**8.0 ATTACHMENTS**

- 8.1 Previous IVSW Header Penetration Leak Rates
- 8.2 Current IVSW HDR "A" Penetration Leak Rates
- 8.3 Current IVSW HDR "B" Penetration Leak Rates
- 8.4 Current IVSW HDR "C" Penetration Leak Rates
- 8.5 Current IVSW HDR "D" Penetration Leak Rates
- 8.6 Velan Cast Body Swing Check Valve Part Identification
- 8.7 Valve CC-731 Surveillance Test Check List
- 8.8 IVSW Check Valve Data Sheet
- 8.9 Surveillance Test Procedure Certification and Review Form

ATTACHMENT 8.1  
Page 1 of 4  
**PREVIOUS IVSW HEADER PENETRATION LEAK RATES**

IVSW HEADER "A" PENETRATIONS	LEAK RATE (cc/min)
PEN 24 - CVC CHARGING LINE (CVC-282, CVC-202A, CVC-309A)	
PEN 25, 26, & 27 - RCP SEAL INJECTION (CVC-297A, B, C, CVC-293A, CVC-293C, CVC-295, CVC-295A)	
PEN 62, 63, 64 - COLD LEG SI HEADERS (SI-870A, B, SI-883L, SI-883W)	
PEN 44 - CONTAINMENT SPRAY HEADER "A" SUPPLY LINE (SI-891A)	
PEN 45 - CONTAINMENT SPRAY HEADER "B" SUPPLY LINE (SI-891B)	
PEN 43 - HOT LEG SI HEADER (SI-869)	
TOTAL HEADER "A" LEAKAGE	

ATTACHMENT 8.1

Page 2 of 4

**PREVIOUS IVSW HEADER PENETRATION LEAK RATES**

IVSW HEADER "B" PENETRATIONS	LEAK RATE (cc/min)
PEN 6 - RCDT DISCHARGE LINE (WD-1721, WD-1722)	
PEN 20 - RCP THERMAL BARRIER RETURN (CC-735, CC-922, FCV-626)	
PEN 28 - RCP SEAL WATER RETURN (CVC-381)	
PEN 29 - PZR STEAM SPACE SAMPLE (PS-956A, PS-956B)	
PEN 30 - PZR LIQUID SPACE SAMPLE (PS-956C, PS-956D)	
PEN 31 - RCS LOOPS "B" AND "C" SAMPLES (PS-956E, PS-956F)	
TOTAL HEADER "B" LEAKAGE	

ATTACHMENT 8.1  
Page 3 of 4  
**PREVIOUS IVSW HEADER PENETRATION LEAK RATES**

IVSW HEADER "C" PENETRATIONS	LEAK RATE (cc/min)
PEN 1 - PRT TO GAS ANALYZER (RC-516, RC-553)	
PEN 3 - PRIMARY WATER TO PRT (RC-519A, RC-519B)	
PEN 4 - RCDT TO VENT HEADER (WD-1786, WD-1787)	
PEN 13 - S/G "B" BLOWDOWN LINE (FCV-1931A, FCV-1931B)	
PEN 14 - S/G "C" BLOWDOWN LINE (FCV-1932A, FCV-1932B)	
PEN 15 - S/G "A" BLOWDOWN LINE (FCV-1930A, FCV-1930B)	
PEN 23 - CVCS LETDOWN LINE (CVC-204A), CVC-204B)	
PEN 15 - S/G "A" BLOWDOWN SAMPLE (FCV-1933A, FCV-1933B)	
PEN 14 - S/G "C" BLOWDOWN SAMPLE (FCV-1935A, FCV-1935B)	
PEN 13 - S/G "B" BLOWDOWN SAMPLE (FCV-1934A, FCV-1934B)	
PEN 61 - CONTAINMENT SUMP DISCHARGE (WD-1723, WD-1728)	
TOTAL HEADER "C" LEAKAGE	

**PREVIOUS IVSW HEADER PENETRATION LEAK RATES**

IVSW HEADER "D" PENETRATIONS	LEAK RATE (cc/min)
PEN 5 - RCDT TO GAS ANALYZER (WD-1789, WD-1794)	
PEN 18 - CCW TO CONTAINMENT (CC-716B)	
PEN 19 - CCW RETURN FROM RCPS (CC-730)	
PEN 48 - SI HIGH HEAD TEST LINE (SI-895V, SI-898F)	
PEN 60 - SI ACCUMULATOR SAMPLE LINE (PS-956G, PS-956H)	
TOTAL HEADER "D" LEAKAGE	

ATTACHMENT 8.2  
Page 1 of 1  
**CURRENT IVSW HDR "A" PENETRATION LEAK RATES**

Referenced Step	AS FOUND Indicated Flow Meter	AS FOUND Corrected cc/min	AS LEFT Indicated Flow meter	AS LEFT Corrected cc/min
7.9.1.12 7.9.1.14				
7.9.2.14 7.9.2.16				
7.9.3.11 7.9.3.13				
7.9.4.17 7.9.4.19				
7.9.5.17 7.9.5.19				
7.9.6.25 7.9.6.27				
7.13.3	TOTAL		TOTAL	

ATTACHMENT 8.3  
Page 1 of 1  
**CURRENT IVSW HDR "B" PENETRATION LEAK RATES**

Referenced Step	AS FOUND Indicated Flow Meter	AS FOUND Corrected cc/min	AS LEFT Indicated Flow Meter	AS LEFT Corrected cc/min
7.10.1.40 7.10.1.42				
7.10.2.23 7.10.2.25				
7.10.3.21 7.10.3.23				
7.10.4.21 7.10.4.23				
7.10.5.21 7.10.5.23				
7.10.6.22 7.10.6.24				
7.13.3	TOTAL		TOTAL	

ATTACHMENT 8.4  
Page 1 of 1  
**CURRENT IVSW HDR "C" PENETRATION LEAK RATES**

Referenced Step	AS FOUND Indicated Flow Meter	AS FOUND Corrected cc/min	AS LEFT Indicated Flow Meter	AS LEFT Corrected cc/min
7.11.1.20 7.11.1.22				
7.11.2.28 7.11.2.30				
7.11.3.25 7.11.3.27				
7.11.4.31 7.11.4.33				
7.11.5.31 7.11.5.33				
7.11.6.31 7.11.6.33				
7.11.7.25 7.11.7.27				
7.11.8.29 7.11.8.31				
7.11.9.29 7.11.9.31				
7.11.10.29 7.11.10.31				
7.11.11.26 7.11.11.28				
7.13.3	TOTAL		TOTAL	

ATTACHMENT 8.5  
Page 1 of 1  
**CURRENT IVSW HDR "D" PENETRATION LEAK RATES**

Referenced Step	AS FOUND Indicated Flow Meter	AS FOUND Corrected cc/min	AS LEFT Indicated Flow Meter	AS LEFT Corrected cc/min
7.12.1.24 7.12.1.26				
7.12.2.22 7.12.2.24				
7.12.3.28 7.12.3.30				
7.12.4.25 7.12.4.27				
7.12.5.20 7.12.5.22				
7.13.3	TOTAL		TOTAL	

ATTACHMENT 8.6  
Page 1 of 4  
**VALVE DATA SHEET**

VALVE NUMBER	REFERENCE STEP	TEST DESCRIPTION	ACCEPTANCE CRITERIA	TEST RESULTS (1)	
				CIRCLE ONE	INIT/DATE/TIME
IVSW-68A	7.2.8	FORWARD FULL STROKE	IVSW TANK PRESSURE INCREASE TO NORMAL	SAT / UNSAT	/ /
IVSW-68D	7.2.8	FORWARD FULL STROKE	IVSW TANK PRESSURE INCREASE TO NORMAL	SAT / UNSAT	/ /
IVSW-68B	7.3.8	FORWARD FULL STROKE	IVSW TANK PRESSURE INCREASE TO NORMAL	SAT / UNSAT	/ /
IVSW-68C	7.3.8	FORWARD FULL STROKE	IVSW TANK PRESSURE INCREASE TO NORMAL	SAT / UNSAT	/ /
IVSW-66B	7.6.16	REVERSE FULL STROKE	NO AUDIBLE NITROGEN LEAKING FROM INLET	SAT / UNSAT	/ /
IVSW-66A	7.6.17.4	REVERSE FULL STROKE	INSPECTED FOR FREE DISC MOVEMENT	SAT / UNSAT	/ /
IVSW-16	7.9.1.7.b	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
IVSW-71	7.9.1.7.h	FORWARD FULL STROKE	FI-1914 OFF SCALE HIGH	SAT / UNSAT	/ /
CVC-202A	7.9.1.8.c	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
CVC-282	7.9.1.8.c	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
IVSW-16A	7.9.1.8.c	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
IVSW-72	7.9.2.9.i	FORWARD FULL STROKE	FI-1914 OFF SCALE HIGH	SAT / UNSAT	/ /

(1) Evaluate test results, circle SAT **OR** UNSAT and enter initials, date, and time for each valve.

Comments: \_\_\_\_\_  
\_\_\_\_\_

ATTACHMENT 8.6  
Page 2 of 4  
**VALVE DATA SHEET**

VALVE NUMBER	REFERENCE STEP	TEST DESCRIPTION	ACCEPTANCE CRITERIA	TEST RESULTS (1)	
				CIRCLE ONE	INIT/DATE/TIME
CVC-297A	7.9.2.10.h	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
CVC-297B	7.9.2.10.h	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
CVC-297C	7.9.2.10.h	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
CVC-293A	7.9.2.10.h	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
CVC-293B	7.9.2.10.h	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
CVC-293C	7.9.2.10.h	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
IVSW-16D	7.9.3.6.b	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
IVSW-98	7.9.3.6.h	FORWARD FULL STROKE	FI-1914 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-16E	7.9.4.7.b	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
IVSW-74	7.9.4.12	FORWARD FULL STROKE	FI-1914 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-16F	7.9.5.7.b	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
IVSW-75	7.9.5.12	FORWARD FULL STROKE	FI-1914 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-16G	7.9.6.12.b	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
IVSW-70	7.9.6.16	FORWARD FULL STROKE	FI-1914 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-76	7.10.1.22	FORWARD FULL STROKE	FI-1919 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-77	7.10.2.14	FORWARD FULL STROKE	FI-1919 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-78	7.10.3.12	FORWARD FULL STROKE	FI-1919 OFF SCALE HIGH	SAT / UNSAT	/ /

(1) Evaluate test results, circle SAT OR UNSAT and enter initials, date, and time for each valve.

Comments: \_\_\_\_\_  
\_\_\_\_\_

ATTACHMENT 8.6  
Page 3 of 4  
**VALVE DATA SHEET**

VALVE NUMBER	REFERENCE STEP	TEST DESCRIPTION	ACCEPTANCE CRITERIA	TEST RESULTS (1)	
				CIRCLE ONE	INIT/DATE/TIME
IVSW-79	7.10.4.12	FORWARD FULL STROKE	FI-1919 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-80	7.10.5.12	FORWARD FULL STROKE	FI-1919 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-81	7.10.6.13	FORWARD FULL STROKE	FI-1919 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-82	7.11.1.11	FORWARD FULL STROKE	FI-1920 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-83	7.11.2.16	FORWARD FULL STROKE	FI-1920 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-84	7.11.3.15	FORWARD FULL STROKE	FI-1920 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-100B	7.11.4.12	FORWARD FULL STROKE	FLOW UNDER PRESSURE	SAT / UNSAT	/ /
IVSW-86	7.11.4.17	FORWARD FULL STROKE	FI-1920 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-100C	7.11.5.12	FORWARD FULL STROKE	FLOW UNDER PRESSURE	SAT / UNSAT	/ /
IVSW-87	7.11.5.17	FORWARD FULL STROKE	FI-1920 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-100A	7.11.6.12	FORWARD FULL STROKE	FLOW UNDER PRESSURE	SAT / UNSAT	/ /

(1) Evaluate test results, circle SAT **OR** UNSAT and enter initials, date, and time for each valve.

Comments: \_\_\_\_\_  
\_\_\_\_\_

ATTACHMENT 8.6  
Page 4 of 4  
**VALVE DATA SHEET**

VALVE NUMBER	REFERENCE STEP	TEST DESCRIPTION	ACCEPTANCE CRITERIA	TEST RESULTS (1)	
				CIRCLE ONE	INIT/DATE/TIME
IVSW-85	7.11.6.17	FORWARD FULL STROKE	FI-1920 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-88	7.11.7.12	FORWARD FULL STROKE	FI-1920 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-90	7.11.8.16	FORWARD FULL STROKE	FI-1920 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-92	7.11.9.16	FORWARD FULL STROKE	FI-1920 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-91	7.11.10.16	FORWARD FULL STROKE	FI-1920 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-89	7.11.11.14	FORWARD FULL STROKE	FI-1920 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-93	7.12.1.15	FORWARD FULL STROKE	FI-1921 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-94	7.12.2.12	FORWARD FULL STROKE	FI-1921 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-95	7.12.3.15	FORWARD FULL STROKE	FI-1921 OFF SCALE HIGH	SAT / UNSAT	/ /
SI-895V	7.12.4.5	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
SI-898F	7.12.4.5	FULL STROKE	SAT CYCLING	SAT / UNSAT	/ /
IVSW-96	7.12.4.13	FORWARD FULL STROKE	FI-1921 OFF SCALE HIGH	SAT / UNSAT	/ /
IVSW-97	7.12.5.11	FORWARD FULL STROKE	FI-1921 OFF SCALE HIGH	SAT / UNSAT	/ /

(1) Evaluate test results, circle SAT OR UNSAT and enter initials, date, and time for each valve.

Comments: \_\_\_\_\_

\_\_\_\_\_



United States Nuclear Regulatory Commission  
Attachment V to Serial: RNP-RA/02-0009  
3 Pages

CAROLINA POWER AND LIGHT COMPANY  
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

ISOLATION VALVE SEAL WATER SYSTEM  
CHECK VALVE DIAGRAMS

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**D-2**

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**D-3**