DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	G. A. Ritter	Date 1/23/95
Project Title/Work Order		EDT No. 609852
Acceptance Test Report, 241-SY-101 Flexible Receiver System, Phase III Testing		ECN No. NA

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
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FEB 06 1995 38 **ENGINEERING DATA TRANSMITTAL**

Page 1 of 1

1. EDT 609852

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
See Distribution List	Nuclear Analysis and Characterization	NA
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241-SY-101	G. A. Ritter	NA
8. Originator Remarks:		**9. Equip./Component No.:**
See attached Acceptance Test Report for the 241-SY-101 Flexible Receiver System Phase III Testing for your approval.		NA
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11. Receiver Remarks:		**12. Major Assm. Dwg. No.:** NA
		13. Permit/Permit Application No.: NA
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16. KEY

Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
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1	1	Cog.Eng.	GA Ritter	1/26/95	H0-38	OSTI (2)		2.8.07			
1	1	Cog. Mgr.	CE Hanson	1/27/95	H5-09						
1	1	QA	ML McElroy		S1-57	2-2-95					
1	1	Safety	LS Krogsrud	for 2/3/95	R3-08						
		Env.									
		Proj/Prog.									
1	1	Other	MJ Ostrom	2-2-95	H5-68						

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G. A. Ritter 1/26/95 Signature of EDT Originator / Date	C. E. Hanson 2/6/95 Authorized Representative for Receiving Organization / Date	H. Toffer 1/27/95 Cognizant/Project Engineer's Manager / Date	[ ] Approved [ ] Approved w/comments [ ] Disapproved w/comments

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RELEASE AUTHORIZATION

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This document was reviewed following the procedures described in WHC-CM-3-4 and is:

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

V. L. Birkland — 2/6/95

V.L. Birkland

SUPPORTING DOCUMENT

1. Total Pages 53

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5. Key Words

Phase III
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flexible receiver

6. Author

Name: G. A. Ritter

G L Ritter 1/26/95

Signature

Organization/Charge Code 8D520/N2B2K

7. Abstract

This report summarizes the results of the leak testing of the 241-SY-101 Flexible Receiver System performed at the 306E Facility. This acceptance test verified the sealing integrity of the Flexible Receiver System to ensure that release of waste and aerosols will be minimized during the removal of the test mixer pump from tank SY-101.

8. RELEASE STAMP

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38

CONTENTS

ACCEPTANCE TEST REPORT
241-SY-101 FLEXIBLE RECEIVER SYSTEM
PHASE III TESTING

1.0 INTRODUCTION

This document summarizes the results of the phase III acceptance test of the 241-SY-101 Flexible Receiver System (FRS). The purpose of this acceptance test is to verify the sealing integrity of the FRS to ensure that the release of waste and aerosols will be minimized during the removal of the test mixer pump from Tank 241-SY-101. The FRS is one of six major components of the Equipment Removal System, which has been designed to retrieve, transport, and store the mixer pump. This test encompasses test requirements for the Phase III test as defined in WHC-SD-WM-TP-257, *Test Plan for Qualification Testing of the 241-SY-101 Flexible Receiver System.*

This acceptance test was performed at the 306E Facility in the 300 area from January 10, 1995 to January 17, 1995. The 306E Equipment Development Group conducted the acceptance test under the direction of the FRS Cognizant engineer. The test was witnessed by TWRS Quality Assurance and a 300 area Industrial Health and Safety representative performed a job walk down and assisted in the preparation of a Hanford Job Hazard Analysis. Funding for this test was provided by the 101-SY Hydrogen Mitigation Program.

2.0 DESCRIPTION OF TEST

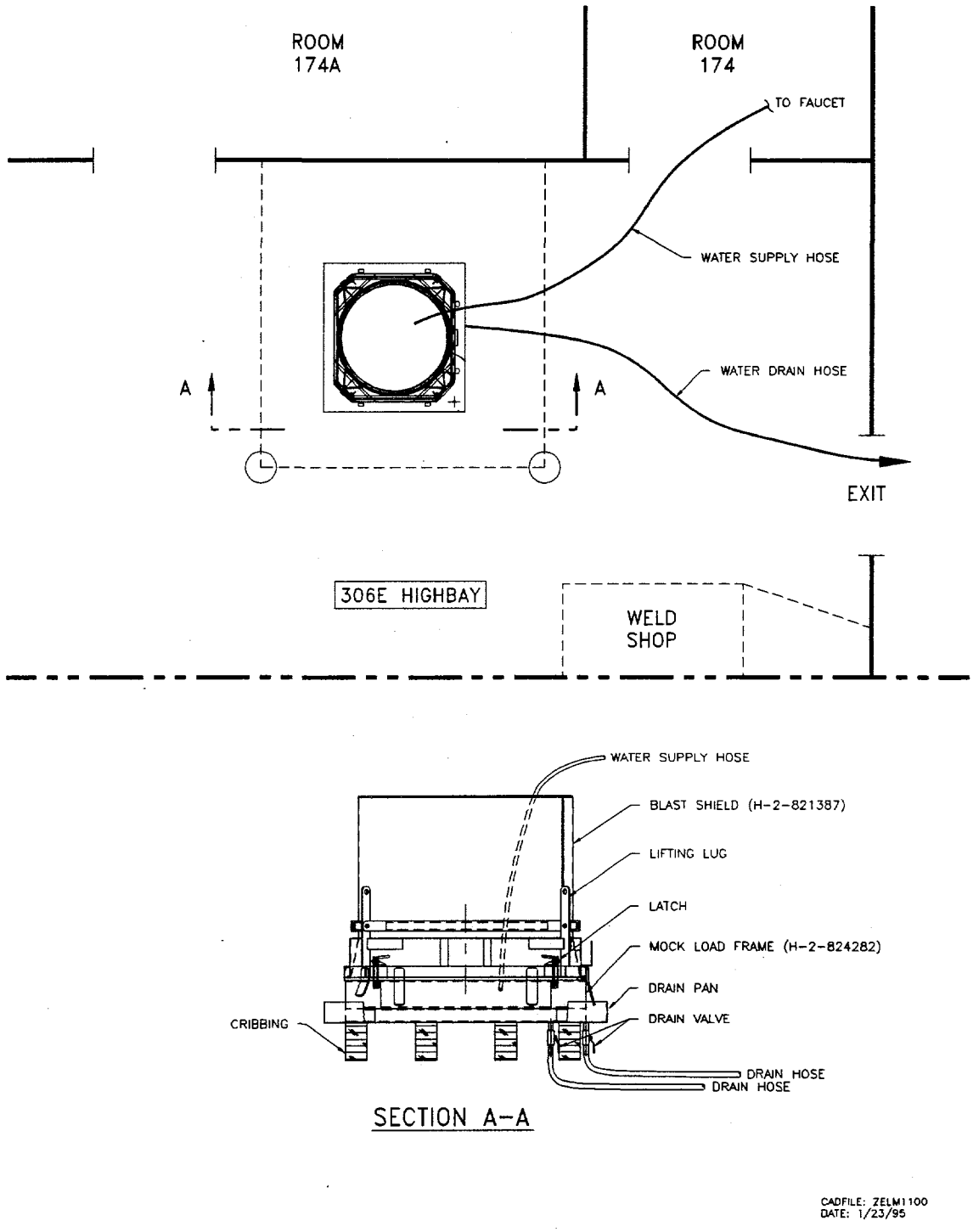
The Phase III test consisted of two parts. Part one was a water leak test of the seal between the blast shield and mock load distribution frame (LDF) to ensure that significant contamination of the pump pit and waste interaction with the aluminum impact-limiting material under the LDF are prevented during the pump removal operation. The second part of this acceptance test was an air leak test of the assembled flexible receiver system. The purpose of this test was to verify that the release of hazardous aerosols will be minimized if the tank dome pressure becomes slightly positive during the decontamination of the mixer pump.

3.0 TEST METHOD AND TEST EQUIPMENT

3.1 BLAST SHIELD WATER LEAK TEST

The blast shield water leak test was performed by setting the blast shield on a mock LDF and engaging the latches at the base of the blast shield. Figure 1 shows a sketch of the test setup at the 306E Facility. The blast shield and mock LDF assembly was then filled with 25 cm (10 inches) of water, measured from the top of the LDF, to obtain a static pressure on the seal between the blast shield and the mock LDF. A catch basin that is built into the mock LDF was used to collect water (if any) that leaked through the seal. If leakage occurred for the 25-cm (10-inch) water level, then tests at decreasing water levels of 7.6 cm (3 inches) and 2.5 cm (1 inch) were to be

Figure 1. Blast Shield Water Leak Test Setup at the 306E Facility



performed. The volume of water that leaked (if any) through the seal during a 1 hour time period was measured and recorded for each water level. This process was repeated for a total of three tests. More detail of the test is provided in Appendix A, the test control copy of the acceptance test procedure.

3.2 FRS AIR LEAK TEST

Part two of this acceptance test consisted of an air leak test of the assembled FRS. The intent of this test was to assemble the FRS in the same manner as would be done in preparation for an actual pump removal. The bag was assembled on the blast shield and sealed to the blast shield by pressurizing the inflatable seal. The blast shield was then set on the mock LDF and the latches were engaged. The pump cap assembly was attached to a test fixture that mocked up the top of the pump and this test fixture was suspended by an overhead crane. Finally, the bag was attached to the pump cap and sealed using two large band clamps. A sketch of the test setup is given in Figure 2.

The assembled system was then pressurized to 250 Pa (1.0 in. H_2O) using the 306E building standard air supply. The system's internal pressure was monitored and the flow rate required to maintain the system steady-state pressure at 250 Pa (1.0 in. H_2O) was measured and recorded. This process was repeated three times, and the maximum flow (leak) rate was used to determine the acceptability of the test. The acceptance test procedure in Appendix A contains a list of the equipment used along with calibration reports.

4.0 TEST RESULTS

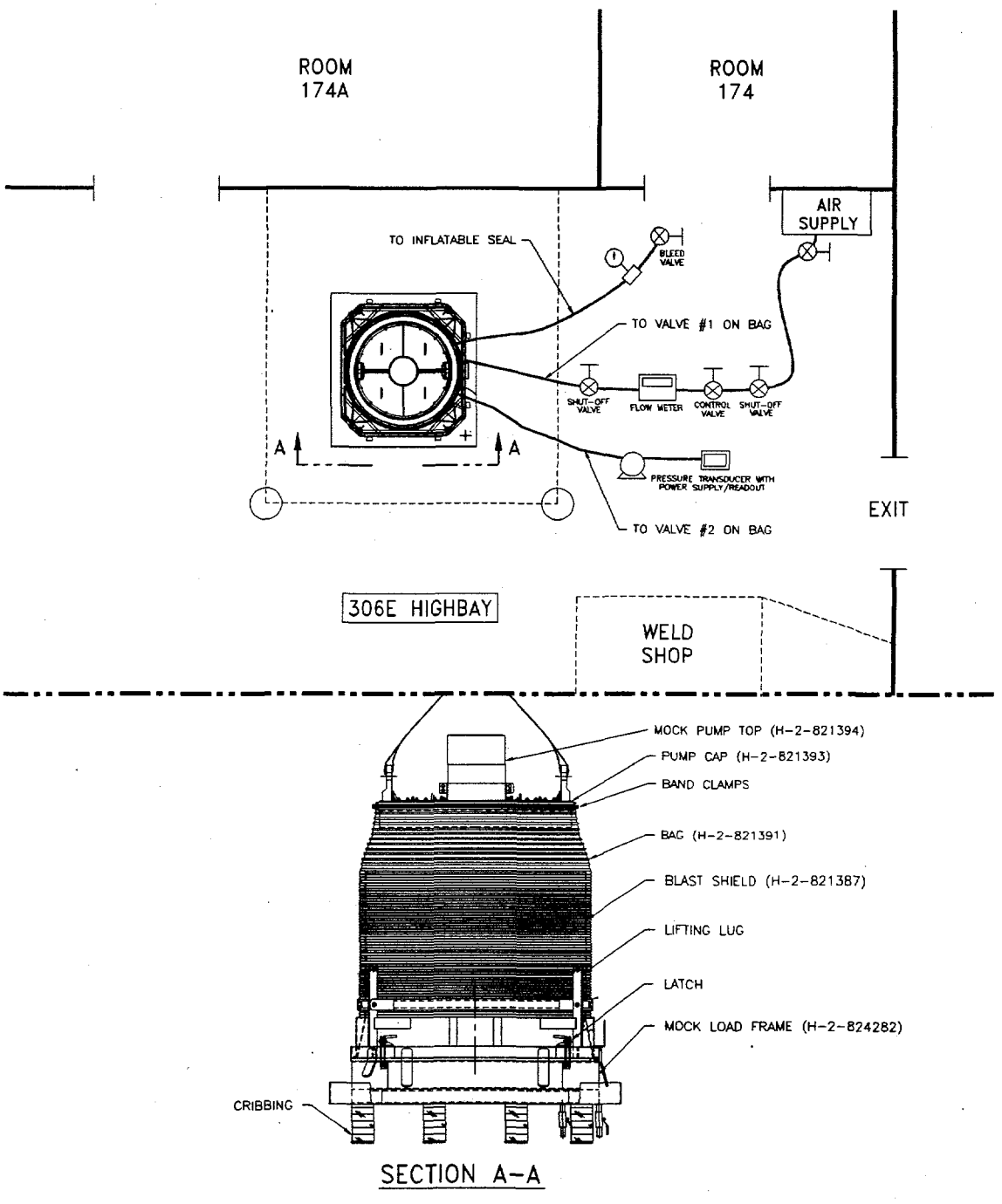
4.1 BLAST SHIELD WATER LEAK TEST

The test was performed at the 25-cm (10-inch) water level three times and no significant leakage occured in any of the tests. Therefore, it was not necessary to perform the test at the 7.6-cm (3-inch) and 2.5-cm (1-inch) water levels. No leakage at all occured for the first and third tests. A few drips leaked from the gasket for the second test. The leak volume was estimated at 0.5 cm^3, which is below the precision of the measuring equipment.

It should be noted that maintenance work was required prior to performing the official acceptance test. An unofficial test was conducted in which a significant amount of water leaked through the seal at several of the joint locations. The foam gasket material used on the blast shield was procured in sheet form, but the width of the sheet was not large enough to cut out the gasket in one piece. Instead, several strips of gasket material were spliced together to form the gasket. It was discovered after the unofficial test that only a minimal amount of adhesive was used to splice the gasket material together. The gasket was repaired by cutting open the gasket material at the joint locations and applying an ample amount of adhesive. The first official test was then performed and absolutely no leakage occured.

After the first test, the blast shield was lifted off the LDF and a small amount of adhesive along with gasket material tore off the blast shield

Figure 2. FRS Air Leak Test Setup at the 306E Facility



gasket and stuck to the LDF. The adhesive was allowed approximately 2 hours to harden before performing the first test, but actually requires 24 hours to fully cure. If the adhesive had been fully cured, it is very unlikely that it would have bonded to the LDF. The gasket material was scraped off the LDF and the blast shield was reseated on the LDF. For the second test, a few drips leaked out at four joint locations where damage to the gasket occurred. Before performing the third test, the gasket was repaired by adding more adhesive at the joint locations. No leakage occurred for the third test.

4.2 FRS AIR LEAK TEST

The results for this part of the acceptance test, taken from Appendix A, are summarized in the table below. The uncertainty on the pressure measurements is ± 0.5% and the uncertainty on the flow rate measurements is ± 3%. The measured leak rate was 8.2×10^{-3} m^3/s (1.7 ft^3/min) for all three tests. This leak rate is almost 3 times less than the acceptance criteria of 2.4×10^{-3} m^3/s (5 ft^3/min) and therefore the results clearly meet the acceptance criteria.

Test Number	Initial Pressure Reading (inches water gauge)	Final Pressure Reading (inches water gauge)	Steady-State Flow/Leak Rate (ft^3/min)
1	-0.059	1.030	1.7
2	-0.055	1.024	1.7
3	-0.060	1.031	1.7

An unofficial air leak test was also conducted prior to performing the official tests. During this unofficial test, the leak rate was unacceptable because some of the small joints on the pump cap had not been sealed with silicone RTV. Also, the gasket around the 16-inch mock pump top column did not seal properly because of the configuration specified on the pump cap drawing, H-2-821393. That gasket was not cut flush with the joint--this was intended to make the gasket material overlap the joint. However, due to the tight fit of the pump cap around the 16-inch column, the gasket did not overlap the joint, but instead compressed flat and left a small gap at the pump cap joint. The gasket was modified to be flush with the joint and the drawing updated accordingly. Silicone RTV sealant must be used at all of the joints/small gaps in the pump cap assembly to ensure an adequate seal.

4.3 TEST EXCEPTIONS

Several minor test exceptions to the original ATP occurred and are documented in Appendix A. One exception worth noting is that during a dry run of the FRS air leak test, the internal pressure of 250 Pa (1.0 in. H_2O) provided enough force to pull some of the bag off of the blast shield. This behavior made it nearly impossible to stabilize the pressure inside the bag and obtain a steady-state condition. The bag continued to inflate and pull

off the blast shield until the air supply was shut off. A pressure of 250 Pa (1.0 in. H_2O) will give an upward force on the bag of approximately 220 N (50 lb.). If there were no friction between the bag and the blast shield this force would be enough to pull one third of the bag off of the blast shield. To allow the air leak test to be performed, two straps were run under the mock LDF and over the top of the bag and pump cap to hold down the bag and keep it from pulling off. This exception does not affect the results of the leak test, but a positive pressure of 250 Pa (1.0 in. H_2O) may adversely affect the deployment of the bag during the actual removal of the mixer pump from Tank 241-SY-101.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The results of the blast shield water leak test were found to be acceptable. Although there is no defined acceptance criteria for this part of the test, the result of no leakage from the gasket between the blast shield and LDF is clearly acceptable. Additional care must be used when installing/replacing the gasket on the blast shield to ensure that an adequate amount of adhesive is used at the joint locations. A note has been added to the blast shield drawing, H-2-821387, to help ensure that the gasket material is installed properly.

The measured leak rate of the FRS air leak test was well below the acceptable leak rate of 2.4 x 10^{-3} m^3/s (5 ft^3/min) and was therefore found to be acceptable. To ensure that the pump cap assembly is installed properly in the field, it is recommended that an ample amount of silicone RTV sealant be used at the joint locations to seal the pump cap to the top of the mixer pump. A good visual inspection to verify that there are no gaps or holes at the pump cap joints should be adequate to ensure proper installation.

6.0 REFERENCES

WHC, 1994, *Test Plan for Qualification Testing of the 241-SY-101 Flexible Receiver System*, WHC-SD-WM-TP-257, Westinghouse Hanford Company, Richland, Washington.

WHC, 1995a, *Flexible Receiver Drawing Tree*, drawing H-2-821385, Rev. 0, Draft, Westinghouse Hanford Company, Richland, Washington.

WHC, 1995b, *Flexible Receiver Assembly*, drawing H-2-821386, Rev. 0, Draft, Westinghouse Hanford Company, Richland, Washington.

WHC, 1995c, *Flexible Receiver Blast Shield Assembly*, drawing H-2-821387, Rev. 0, Draft, Westinghouse Hanford Company, Richland, Washington.

WHC, 1995d, *Flexible Receiver Bag Assembly*, drawing H-2-821391, Rev. 0, Draft, Westinghouse Hanford Company, Richland, Washington.

WHC, 1995e, *Flexible Receiver Installation*, drawing H-2-821392, Rev. 0, Draft, Westinghouse Hanford Company, Richland, Washington.

WHC, 1995f, *Flexible Receiver Pump Cap*, drawing H-2-821393, Rev. 0, Draft, Westinghouse Hanford Company, Richland, Washington.

WHC, 1995g, *Flexible Receiver Mock Pump Top*, drawing H-2-821394, Rev. 0, Draft, Westinghouse Hanford Company, Richland, Washington.

APPENDIX A - ACCEPTANCE TEST PROCEDURE TEST CONTROL COPY

TEST CONTROL COPY

RELEASE AUTHORIZATION

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WHC Information Release Administration Specialist:

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241-SY-101	G. A. Ritter	NA
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See attached Acceptance Test Procedure for the 241-SY-101 Flexible Receiver System Phase III Testing for your approval.		NA
		10. System/Bldg./Facility: 241-SY-101
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16. KEY

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1	1	Cog.Eng.	GA Ritter	11/22/94	H0-38						
1	1	Cog. Mgr.	CE Hanson	11/23/94	H5-09						
1	1	QA	ML McElroy	11/23/94	S1-57						
1	1	Safety	LS Krogsrud	11/23/94	R3-08						
		Env.									
1	1	Proj/Prog.	JW Lentsch	11/28/94	R2-78						
1	1	Other	MJ Ostrom	11/28/94	H5-68						

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retrieval system
241-SY-101
leak test
flexible receiver

6. Author

Name: G. A. Ritter

G A Ritter 11/22/94

Signature

Organization/Charge Code 8D520/N2B2K

7. Abstract

This Acceptance Test Procedure is for the 241-SY-101 Flexible Receiver System, Phase III Testing. This procedure will test the sealing integrity of the Flexible Receiver System to ensure that release of waste and aerosols will be minimized during the removal of the test mixer pump from tank SY-101.

8. RELEASE STAMP

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CONTENTS

ACCEPTANCE TEST PROCEDURE
241-SY-101 FLEXIBLE RECEIVER SYSTEM
PHASE III TESTING

1.0 INSTRUCTION SECTION

1.1 PURPOSE/SCOPE

The purpose of this acceptance test procedure is to provide a means of verifying that the 101-SY Flexible Receiver System (FRS) is capable of performing its intended function adequately by meeting specified test criteria. This procedure will test the sealing integrity of the flexible receiver system to ensure that the release of waste and aerosols will be minimized during the removal of the test mixer pump from tank SY-101. This test procedure encompasses test requirements for the Phase III test as defined in WHC-SD-WM-TP-257, *Test Plan for Qualification Testing of the 241-SY-101 Flexible Receiver System.*

The Phase III test consists of two parts. Part one consists of a water leak test of the seal between the blast shield and mock load distribution frame (LDF) to ensure that significant contamination of the pump pit and waste interaction with the aluminum impact-limiting material are prevented during the pump removal operation. The second part of this acceptance test will be an air leak test of the assembled flexible receiver system. This test is intended to verify that the release of hazardous aerosols will be minimized if the tank dome pressure becomes slightly positive during the wash down of the pump. All parts of this test must be completed before the FRS is either rejected or accepted. The test will be performed three times and the maximum leak volume or leak rate will be used to determine the acceptability from this test. Testing is scheduled to begin in early-December, 1994 and will take approximately 7 - 10 days to complete.

1.2 REFERENCES

WHC, 1994a, *Test Plan for Qualification Testing of the 241-SY-101 Flexible Receiver System*, WHC-SD-WM-TP-257, Westinghouse Hanford Company, Richland, Washington.

WHC, 1994b, *Flexible Receiver Drawing Tree*, drawing H-2-821385, Rev. 0, Draft, Westinghouse Hanford Company, Richland, Washington.

WHC, 1994c, *Flexible Receiver Assembly*, drawing H-2-821386, Rev. 0, Draft, Westinghouse Hanford Company, Richland, Washington.

WHC, 1994d, *Flexible Receiver Bag Assembly*, drawing H-2-821391, Rev. 0, Draft, Westinghouse Hanford Company, Richland, Washington.

WHC, 1994e, *Flexible Receiver Installation*, drawing H-2-821392, Rev. 0, Draft, Westinghouse Hanford Company, Richland, Washington.

WHC, 1994f, *Flexible Receiver Pump Cap*, drawing H-2-821393, Rev. 0, Draft, Westinghouse Hanford Company, Richland, Washington.

WHC, 1994g, *Flexible Receiver Mock Pump Top*, drawing H-2-821394, Rev. 0, Draft, Westinghouse Hanford Company, Richland, Washington.

DOE-RL, 1992, *Hanford Site Hoisting and Rigging Manual*, DOE-RL-92-36, U.S. Department of Energy Field Office, Richland, Washington.

1.3 RESPONSIBILITIES

1.3.1 Equipment Removal System Cognizant Manager

- Responsible for overall control of the Equipment Removal System (ERS), including the testing of the FRS.
- Assigns responsibilities related to the ERS, which includes the FRS.

1.3.2 Equipment Removal System Project Engineer

- Identifies and specifies requirements for the ERS.
- Approves test procedures and criteria changes as required.
- Provides technical expertise during testing of the FRS.
- Approves acceptability of test activities and results.

1.3.3 FRS Cognizant Engineer

- Responsible for preparing test specifications and procedures.
- Identifies equipment and facilities for the acceptance test.
- Acts as a liaison between the participants in FRS testing.
- Ensures informal testing and inspection is complete.
- Provides guidance and technical expertise during the acceptance test.
- Designates a recorder for this ATP.
- Takes necessary action to clear exceptions to this ATP.
- Approves acceptability of test activities and results.

1.3.4 Quality Assurance Manager

- Assigns and manages Quality Assurance representatives to participate in the FRS testing.

1.3.5 Quality Assurance Representative

- Approves Acceptance Criteria changes.
- Witnesses the acceptance test.
- Evaluates results of testing and approves field changes and exceptions to the ATP.
- Assists in maintenance and control of test records.

1.3.6 Safety Engineering

- Reviews the test procedure and specifications for safety conformance.
- Provides test facility inspection and support as needed to conduct testing within the safety standards of WHC.

1.3.7 Equipment Development Group Manager

- Assigns personnel to perform this acceptance test.
- Responsible for training of personnel who will be performing the test.

1.3.8 Equipment Development Group Technicians

- Responsible for transporting equipment to the test facility.
- Responsible for equipment set-up and instrument calibration, if necessary.
- Assists the FRS cognizant engineer in performing this acceptance test.

1.3.9 Test Recorder

- Observes test, records test data using black ink, and maintains Test Log (Appendix D).
- Records names of all designated personnel on the Test Execution sheet (Appendix E) on the Test Control copy of the ATP prior to testing.
- Initials and dates every test step on the Test Control copy as it is completed, next to the step number or on a table, when provided.
- Records authorized field changes to the ATP.

- Records exceptions and test steps that are not performed on a Test Exception sheet (Appendix C). Additional Exception sheets will be reproduced as needed.

- Assigns page numbers to Test Data sheets and Test Exceptions sheets after the ATP is complete, and submits the completed Test Control copy of the ATP for approval signatures.

1.4 SYSTEM DESCRIPTION

The FRS is one of six major components of the Equipment Removal System, which has been designed to retrieve, transport, and store the existing mixer pump that may require removal from Tank 241-SY-101. The FRS is designed to function as a waste/aerosol-containment device during the removal and handling of the mixer pump prior to insertion of the pump into the storage container.

The FRS consists of a containment bag, pump cap, blast shield, and gamma detector system. The containment bag is a long cylindrical fiber-reinforced plastic bag that is slipped over the pump as it is lifted from the tank. The bag is 1.7 m (67 in.) in diameter, and approximately 17.4 m (57 ft.) long. A manually operated cinching mechanism closes the bag bottom and pulls it up to one side of the pump. The pump cap is a two-piece sheet-metal cap that is used to seal off the top of the pump above the mounting flange and provides a sealing interface between the bag and pump. The blast shield is a large diameter steel cylinder that provides a sealing surface to the load distribution frame (LDF) and contains the spray water from the high pressure nozzles located in the LDF. The blast shield protects the containment bag from the impingement of the wash water blast and also supports the containment bag prior to the pump removal. The gamma detector system is mounted to the base of the blast shield to measure dose rates as the pump is lifted from the tank.

Other equipment associated with the FRS includes the lifting yoke, the yoke brace, and the aluminum stages. The lifting yoke is a below-the-hook lifting device that is used to lift the test mixer pump. It attaches to the two lugs on the pump mounting flange. The yoke brace secures the yoke to the upper pump column so that the crane can be disconnected from the yoke and the FRS can be lowered over the yoke and onto the LDF. The aluminum stages serve as access platforms for rigging and manual manipulation of attachment hardware.

1.5 TEST CONDITIONS AND EQUIPMENT REQUIRED

The Phase III test will be conducted at the 300 Area in Building 306E. Part one of this acceptance test consists of a water leak test for the seal between the blast shield and a mock LDF. The FRS water leak test will be performed by setting the blast shield on the mock LDF and engaging the blast shield latches. The blast shield and mock LDF assembly will then be filled with water to obtain several different static pressures on the seal between the blast shield and the mock LDF. A catch basin that is built into the mock LDF will be used to collect water that leaks through the seal. The volume of water that leaks through the seal during a 1 hour time period will be measured

and recorded for each pressure. This process will be repeated for a total of three tests.

This part of the acceptance test does not have specific test criteria. During the actual pump removal, administrative controls will be in place to prevent water accumulation inside the blast shield. A static head of water on this seal will result only if the controls fail. Therefore, the results from this part of the test are for information only.

Part two of this acceptance test consists of an air leak test of the assembled FRS. The intent of this test is to assemble the FRS in the same manner as would be done in preparation for an actual pump removal. The bag will be assembled on the blast shield and sealed to the blast shield by pressurizing the inflatable seal. The blast shield will be set on the mock LDF and the latches will be engaged and tightened. The pump cap assembly will be attached to a test fixture that mocks up the top of the pump and this test fixture will be suspended by an overhead crane. Finally, the bag will be attached to the pump cap and sealed using band clamps.

The assembled system will then be pressurized to 250 Pa (1.0 in. H_2O) using the 306E building standard air supply. The system's internal pressure will be monitored and the flow rate required to maintain the system steady-state pressure at 250 Pa (1.0 in. H_2O) will be measured and recorded. This process will be repeated three times, and the maximum flow (leak) rate will be used to determine the acceptability of the test. If the results of the three tests vary by more than 25% from lowest to highest flow rates, the test shall be repeated until the test witnesses concur that the results are satisfactorily consistent. If the measured maximum leak rate through the system is less than 2.4×10^{-3} m^3/s (5 ft^3/min) at 250 Pa (1.0 in. H_2O) internal pressure, then the FRS will be functioning as intended and the test shall be considered satisfactory.

The following equipment will be required for this ATP:

- Containment bag approximately 17.4 m (57 ft.) in length
- Pump-cap assembly
- Blast shield assembly
- Test fixture to mock up the top of the pump (pump flange and lifting lugs)
- Mock LDF with spray-ring housing and catch basin with a minimum capacity of 18.9 L (5 gal)
- Crane with a minimum 3-m (10-ft) lift height and 900-kg (1-ton) lift capacity or other support structure for suspending the test fixture and bag
- Dry compressed-air source with assorted hoses and connections
- Flow meter with a minimum range of 0 to 4.7×10^{-3} m^3/s (0 to 10 ft^3/min) and a minimum precision of $\pm 2.35 \times 10^{-4}$ m^3/s (0.5 ft^3/min).

- One pressure transducer with a minimum range of 0 to 500 Pa (0 to 2 in. H_2O) and a minimum precision of ± 25 Pa (0.1 in. H_2O)
- Water source with assorted hoses and connections
- Minimum 1.5-m- (5-ft-) long tape measure for measuring depth of water in blast shield and catch basin
- Graduated cylinder with minimum precision of 0.4 L (0.1 gal.) for measuring water leak volume.

1.6 ACCEPTANCE TEST

The test is to be performed per the following sequence of step-by-step instructions.

1.6.1 Preliminary Conditions

The following shall be satisfactorily completed before performing Section 1.6.2.

___ 1.6.1.1 All equipment (listed in Section 1.5) required for the test is located at the test site.

___ 1.6.1.2 The containment bag has been inspected for workmanship and for compliance with design.

___ 1.6.1.3 The blast shield assembly and pump cap assembly have been inspected for workmanship and for compliance with design.

___ 1.6.1.4 All rigging meets the inspections requirements in the *Hanford Site Hoisting and Rigging Manual*, DOE-RL-92-36.

___ 1.6.1.5 All nameplates, equipment tags, etc. are installed/attached.

___ 1.6.1.6 All test instruments requiring calibration have a currently valid calibration stamp attached that indicates a calibration traceable to the National Institute of Standards and Testing.

___ 1.6.1.7 Personnel responsible for directing and witnessing the performance of the test described in this ATP have read and understand their roles.

___ 1.6.1.8 A representative from the 300 area Industrial Health and Safety has performed a job walk down, a Pre-Job Safety Meeting has been conducted, and a Hanford Job Hazard Analysis Checklist and a 306E Specific Job Hazard Analysis have been completed.

___ 1.6.1.9 All personnel have hard hats, safety glasses, and safety shoes with steel or fiberglass toes to be worn during crane operation.

1.6.2 Blast Shield Water Leak Test Setup

___ 1.6.2.1 Verify that all of the steps in section 1.6.1 are complete.

___ 1.6.2.2 Place the mock LDF with catch basin on a support framework (such as wood blocks) so that water can be easily drained from the LDF catch basin.

___ 1.6.2.3 Using a waterproof marker, mark elevations of 2.5 cm (1 in.), 7.6 cm (3 in.), and 25.4 cm (10 in.) above the blast shield

bottom gasket on the inside of the blast shield for future reference.

✓ 1.6.2.4 Attach rigging to the blast shield and lift onto the LDF. Engage and tighten the four latches between the blast shield and the mock LDF per the FRS cognizant engineer's directions. Refer to drawing H-2-821392. Verify that the gasket between the blast shield and LDF is in its proper seating location.

✓ 1.6.2.5 Connect the water hose to the water supply.

1.6.3 Blast Shield Water Leak Test Procedure

✓ 1.6.3.1 Verify that all steps in section 1.6.2 are complete.

✓ 1.6.3.2 Fill the LDF and blast shield assembly with water to the 25.4 cm (10 in.) mark on the inside of the blast shield.

✓ 1.6.3.3 Record the current time on the test data sheet after the water level above has been reached.

✓ 1.6.3.4 Observe seal for water leakage and record comments on the test data sheet and/or Test Log (Appendix D).

✓ 1.6.3.5 At the end of 1 hour, drain the water from the blast shield to below the seal elevation and record current time on test data sheet.

✓ 1.6.3.6 Drain the water (if any) from the catch basin and measure the volume using a graduated cylinder. Record the volume of water that leaked on the test data sheet.

✓ 1.6.3.7 If leakage occured during the test, repeat steps 1.6.3.2 through 1.6.3.6 inclusive for a blast shield water level of 7.6 cm (3 in.). If leakage occurs for a water level of 7.6 cm (3 in.), then repeat steps 1.6.3.2 through 1.6.3.6 inclusive for a water level of 2.5 cm (1 in.).

✓ 1.6.3.8 Repeat steps 1.6.2.4 through 1.6.3.7 inclusive two more times for a total of three identical tests.

1.6.4 FRS Air Leak Test Setup

✓ 1.6.4.1 Verify that all of the steps in section 1.6.3 are complete.

✓ 1.6.4.2 Attach rigging to the blast shield and lift onto the LDF. Engage and tighten the four latches between the blast shield and the mock LDF. Verify that the gasket between the blast shield and LDF is in its proper seating location (NA if already completed).

✓ 1.6.4.3 Seal the containment bag to the outside of the blast shield by pressurizing the inflatable seal to ~~240~~ ± 14 kPa (~~35~~ ± 2 psi). Refer to drawing H-2-821392. 20 TE #2

✓ 1.6.4.4 Install pump cap assembly on the mock pump test fixture by inserting and tightening the provided bolts per drawing H-2-821392.

✓ 1.6.4.5 Attach containment bag to mock pump test fixture by ~~connecting the bag cable assembly around the 0.4 m (16 inch) test fixture upper column~~ per drawing H-2-821392. INSTALLING GROMMETS OVER THREADED STUDS AND TIGHTENING NUTS TE#5

✓ 1.6.4.6 Seal the containment bag to the pump cap assembly using Two band clamps per drawing H-2-821392.

✓ 1.6.4.7 Attach rigging to the mock pump test fixture and lift the pump cap and bag assembly to an elevation that will locate the top of the bag approximately ~~1.5~~ m (~~5~~ feet) above the top of the blast shield. TE #3 1 foot

✓ 1.6.4.8 The bag is equipped with two inflation/deflation valves: one for filling the assembly with air and the other for measuring internal pressure. Connect the hose from the building standard air supply to the flow meter and connect a hose from the flow meter to the bag fill valve. Connect the pressure transducer to the second bag valve and to the power supply/readout unit. Record the initial pressure transducer reading on the test data sheet.

✓ 1.6.4.9 ~~Lower and raise the mock pump test fixture approximately 1.5 m (5 feet) 5 times to simulate actual pump removal that could potentially loosen seals on the FRS. For the final position, locate the top of the bag approximately 1.5 m (5 feet) above the top of the blast shield.~~ TE#4 ATTACH STRAPS AROUND BAG AND BLAST SHIELD TO SECURE BAG AND KEEP IT FROM PULLING OFF DURING INFLATION

1.6.5 FRS Air Leak Test Procedure

✓ 1.6.5.1 Verify that all of the steps in section 1.6.4 are complete.

✓ 1.6.5.2 Slowly open the valve from the building air supply and begin filling the flexible receiver assembly with air. Verify that the flow meter is functional and indicating flow. If not functional, close air supply valve, and inspect the flow meter for damage. Repair/replace as required.

✓ 1.6.5.3 Fill system with air at a rate of approximately 2.4×10^{-3} m^3/s (5 ft^3/min). Assuming no major leaks, it should take less than 1 minute to pressurize the system to 250 Pa (1.0 in. H_2O) at this fill rate. Observe pressure transducer readout and close air supply valve when internal gage pressure reaches 250 Pa (1.0 in. H_2O).

✓ 1.6.5.4 Allow internal pressure to stabilize. Again slowly open air supply valve and adjust valve position until a steady-state

condition is obtained, i.e., the flow rate into the system equals the leak rate out of the system such that the internal gage pressure is maintained at a minimum 250 Pa (1.0 in. H_2O). Record final pressure transducer reading on test data sheet.

✓ 1.6.5.5 Record the steady-state flow rate above on the test data sheet. Close air supply valve. Record comments from observations on the Test Log (Appendix D).

✓ 1.6.5.6 Repeat steps 1.6.4.2 through 1.6.5.5 inclusive two more times for a total of three identical tests. If the maximum flow/leak rate of the three tests is less than 2.4×10^{-3} m^3/s (5 ft^3/min), then the FRS has met its acceptance criteria and the test shall be considered satisfactory.

✓ 1.6.5.7 As the last step in this test, review the test to verify that all steps have been completed.

1.7 TEST DATA SHEETS

The Test Data Sheets are to provide a record of the test and to document any procedure steps requiring verification. Instructions for filling out the data sheets are provided below. The Test Data Sheets are provided in Appendix B.

1. Date: Record the date the test is performed.

2. Test Section Title: There are several sections of this acceptance test being performed, e.g., the preliminary conditions, equipment setup, etc.

3. Test Unit Number: Record the unit number of the test unit, if any.

4. Test Performed By: Print the name of the person performing the test.

5. Procedure Step Number: This column contains the test steps requiring verification.

6. Attribute: This column contains the item being verified or the parameter being measured/recorded.

7. Value: This column is for recording the quantitative or qualitative measure of the item being verified, i.e. a line voltage may have a value of 120V, whereas a pump may have a value of ON or OFF.

8. Range: This column indicates the anticipated value of the item being measured. If a value is recorded for later analysis, there may not be a tolerance associated with it.

9. Accept/Reject: Indicate whether the value obtained is acceptable in comparison with the Range. If a value is recorded for later analysis, the accept/reject decision may be determined later.

10. Comment: Provide any pertinent observations or comments. If the value is rejected, give a justification for denial.

11. Complete Sig/Init: Initial in this column to indicate the step has been completed.

1.8 TEST EQUIPMENT SHEETS

The Test Equipment Sheets provide a record of equipment used for the acceptance test. The Test Equipment Sheets are provided in Appendix A and can be copied as needed. Provide a description of the equipment used and record the equipment serial number. For instrumentation, record the calibration expiration date, if applicable.

2.0 CHANGE CONTROL AND EXCEPTIONS TO ACCEPTANCE TEST SECTION

Acceptance testing is to be conducted in accordance with the steps and requirements specified in this procedure. Any required field changes or other discrepancies must be recorded as an exception and resolved/approved following the method described in this section.

2.1 TEST EXECUTION

The acceptance test procedures detailed in Section 1.6 shall be performed in sequential steps starting with Section 1.6.1. As required by Section 1.3.9, the Recorder will initial and date every test step in the space provided on the Test Control copy of the ATP as each step is completed. Any step that requires verification must also be recorded on the Test Data Sheet. The Test Execution Sheet (Appendix E) will be completed per the following directions.

2.1.1 Without Exception

2.1.1.1 Check applicable space on the Test Execution Sheet (Appendix E) to show that the ATP has been performed and no exceptions have been recorded.

2.1.1.2 Sign and date in the spaced provided in the Test Execution and Test Approval and Acceptance sections of the Test Execution Sheet.

2.1.1.3 Distribute the Test Control copy of the ATP as required.

2.1.2 With Exception/Resolved

2.1.2.1 Check applicable space on the Test Execution Sheet to show that the ATP has been performed with exceptions recorded and resolved.

2.1.2.2 Sign and date in the spaced provided in the Test Execution and Test Approval and Acceptance sections of the Test Execution Sheet.

2.1.2.3 Distribute the Test Control copy of the ATP as required.

2.1.3 With Exception/Outstanding

2.1.3.1 Check applicable space on the Test Execution Sheet to show that the ATP has been performed with exceptions recorded, part or all of which are presently outstanding, unresolved.

2.1.3.2 Sign and date in the spaces provided in the Test Execution section of the Test Execution Sheet.

2.1.3.3 Distribute the Test Control copy of the ATP as required.

2.1.3.4 After all outstanding exceptions have been resolved, sign and date in the spaces provided in the Test Approval and Acceptance section of the Test Execution Sheet.

2.2 RECORDING AND RESOLVING EXCEPTIONS

2.2.1 GENERAL

Exceptions to the ATP are sequentially numbered and recorded on individual Exception Sheets (Appendix C). This enables case-by-case resolution, recording, approval, and distribution of each exception.

2.2.2 RECORDING

2.2.2.1 Number each exception sequentially as it occurs and record it on an Exception Sheet.

2.2.2.2 Enter name and organization of objecting party for each exception.

2.2.2.3 Enter planned action to resolve each exception when such determination is made.

2.2.3 RETEST/RESOLUTION

2.2.3.1 Record the action taken to resolve each exception. Action taken may not be the same as planned action.

2.2.3.2 When action taken results in an acceptable retest, complete Retest Execution section of the Exception Sheet.

2.2.3.3 When action taken does not involve an acceptable retest, strike out the Retest Execution and Acceptance section of the Exception Sheet. Resolve exception per section 2.2.4 below.

2.2.4 APPROVAL AND ACCEPTANCE

2.2.4.1 The Cognizant Engineer is responsible for resolving exceptions to the ATP and obtaining final approval and acceptance of exceptions by checking one of the following on the Exception Sheet:

- Acceptable Retest Performed: Applicable when Retest Execution and Acceptance section is completed.
- Exception Accepted-As-Is: Requires detailed explanation.
- Other: Requires detailed explanation.

2.2.4.2 The Cognizant Engineer signs and dates the Exception Sheet and obtains other approvals, if required.

2.2.5 DISTRIBUTION

Attach completed Exception Sheets to the Test Control copy of the ATP and distribute for final approval.

APPENDIX A - TEST EQUIPMENT SHEET
(Copy as needed)

TEST EQUIPMENT

Serial Number	Description	Calibration Exp. Date
68823-6,	BARATRON PRESSURE TRANSDUCER, 0-5" H_2O	679-80-02-022, 2/2/95
60916-35B	PDR-C-1C Power supply Readout	679-80-02-022, 2/2/95
FL4511	Omega Flow meter	679-28-03-026 1-16-96
N/A	Wallace + Tiernan 0-100 PSIA	584-31-04-003 4-25-95
SEE ATTACHED CALIBRATION REPORTS.		- -

WESTINGHOUSE STANDARDS LABORATORY PHYSICAL AND ELECTRICAL REPORT

CUSTODIAN/ADDRESS	STANDARDS CODE NUMBER	NEW / MODIFY ✓	REFERENCE NUMBER
HOPKINS BL L6-38	679-80-02-022		378178
		ORGANIZATION CODE: W22330	WORK ORDER: E67457

INSTRUMENT	SERIAL NUMBER	PROPERTY NUMBER	RECALL STATUS (1 ACTIVE, 2 NONRECALL, 3 SUSPENDED, 4 DELETED)	RECALL CYCLE	TOLERANCE HISTORY
ESSURE TRANSDUCER MKS BARATRON 223B 0-5 IN/H20	~~38823-6~~ 68823-6	N/A	1	360	0

ROOM	BUILDING	SERVICE DEPARTMENT	DATE RECEIVED	TOLERANCE (AS RECEIVED, 1 IN, 2 OUT, 3 NA, 4 FAILED)
N/A	306E	9	940202	AS RECEIVED

SENDER	COMMENTS	SHIPPING DAY
	WITH READOUT MKS 60916-35B ±.5% FS	WE

INSTRUMENT SPECIFICATIONS: MFG. Specs +/- .5% F.S.

TRAINING HOURS: ____

CALIBRATION HOURS: 2.0

REPAIR HOURS: ____

OTHER HOURS: ____

MATERIALS: ____

TOTAL CHARGE = ($120 x SUM OF HOURS) + MATERIAL

STANDARD(S) USED IN CALIBRATION TRACEABLE TO NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY OR NATIONALLY RECOGNIZED STANDARDS — 4:1 RATIO Y [X] N [ ]

EXPIRATION DATE	EXPIRATION DATE
00245080445-3-94	

REMARKS: * AFTER ZERO ADJUST

DATE CALIBRATED	DATE DUE
2/2/94	2/2/95

PROCEDURE NUMBER: WHC-IHP-PRSGA Rev 2

AMBIENT TEMPERATURE = 21.3

TEST POINTS	*AS FOUND	FINAL	LIMITS
0 IN H2O	-0.005		+/- 0.05
1	.994		
2	1.992		
3	2.991		
4	3.987		
5	4.982		
+ 5		5.004	
3		3.004	
+ 1		1.001	
0		-.002	
- 1		- 3.007	
3		- 5.007	
- 5			

APPROVED BY: [signature] 020294

CALIBRATED BY: WHC STD LAB 21

Hanford Operations and Engineering Contractor for the United States Department of Energy

Westinghouse Hanford Company Subsidiary of Westinghouse Electric Corporation Box 1970, Richland, WA 99352

PAGE 1 OF 1

WESTINGHOUSE STANDARDS LABORATORY PHYSICAL AND ELECTRICAL REPORT

CUSTODIAN/ADDRESS	STANDARDS CODE NUMBER	NEW / MODIFY	REFERENCE NUMBER
CHAFIN RG L6-36	584-31-04-003	MODIFY X	380061
		ORGANIZATION CODE: W22970	WORK ORDER: E12443

INSTRUMENT	SERIAL NUMBER	PROPERTY NUMBER	RECALL STATUS (1 ACTIVE, 2 NONRECALL, 3 SUSPENDED, 4 DELETED)	RECALL CYCLE	TOLERANCE HISTORY
ESSURE GAUGE W&T 61A-1A-0100 0-100 PSI ABS.	ZZ12791	N/A	1	360	IFII

ROOM	BUILDING	SERVICE DEPARTMENT	DATE RECEIVED	TOLERANCE AS RECEIVED (1 IN, 2 OUT, 3 NA, 4 FAILED)
165	306E	5	940406	1 IN

SENDER	COMMENTS	SHIPPING DAY
R CHAFIN 6-8604	WSL Ass ± .1%FS	WE

INSTRUMENT SPECIFICATIONS: ±.1% of Full Scale, Assigned WSL

TRAINING HOURS: .

CALIBRATION HOURS: 2.0

REPAIR HOURS: .

OTHER HOURS: .

MATERIALS:

TOTAL CHARGE = ($120 x SUM OF HOURS) + MATERIAL

STANDARD(S) USED IN CALIBRATION TRACEABLE TO NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY OR NATIONALLY RECOGNIZED STANDARDS — 4:1 RATIO Y [X] N [ ]

EXPIRATION DATE	EXPIRATION DATE
002-77-01-005 6-94	

REMARKS:

DATE CALIBRATED	DATE DUE
4-25-94	4-25-95

PROCEDURE NUMBER: WHC-IHP-PRESGA REV.2 PSIA100

AMBIENT TEMPERATURE = 23.9°C

STANDARD PSIA	AS FOUND PSIA	FINAL PSIA	LIMITS PSIA
20	20	same	±.1
40	40		
60	60		
80	80		
100	100		

APPROVED BY	CALIBRATED BY			PAGE
D E Ball 4-26-94	WHC STD LAB 48	Hanford Operations and Engineering Contractor for the United States Department of Energy	Westinghouse Hanford Company Subsidiary of Westinghouse Electric Corporation Box 1970, Richland, WA 99352	1 OF 1

WESTINGHOUSE STANDARDS LABORATORY PHYSICAL AND ELECTRICAL REPORT

CUSTODIAN/ADDRESS: CASTO ML -38	STANDARDS CODE NUMBER: 679-28-03-026			NEW / MODIFY	REFERENCE NUMBER: 388118
				ORGANIZATION CODE: W8D620	WORK ORDER: J8D6F
INSTRUMENT: FLOWMETER OMEGA FL4511	SERIAL NUMBER: N/A	PROPERTY NUMBER: N/A	RECALL STATUS: 1 ACTIVE, 2 NONRECALL, 3 SUSPENDED, 4 DELETED, 5 PM, 6 NONDATA M&TE — 1	RECALL CYCLE: 360	TOLERANCE HISTORY
	ROOM: N/A / BUILDING: 306E	SERVICE DEPARTMENT: B		DATE RECEIVED: 950116	TOLERANCE AS RECEIVED: 1 IN, 2 OUT, 3 NA, 4 FAILED — 2
SENDER: BLAINE 6-5013	COMMENTS			SHIPPING DAY: WE	

INSTRUMENT SPECIFICATIONS: SEE PAGE TWO — Sat Report

TRAINING HOURS:

CALIBRATION HOURS: 3.5

REPAIR HOURS:

OTHER HOURS:

MATERIALS:

TOTAL CHARGE = ($ 84 x SUM OF HOURS) + MATERIALS

STANDARD(S) USED IN CALIBRATION TRACEABLE TO NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY OR NATIONALLY RECOGNIZED STANDARDS — 4:1 RATIO Y ☑ N ☐

	WK 1/95 EXPIRATION DATE		WK 1/95 EXPIRATION DATE
002-28-06-001	4-6-97	002-75-06-030	7-27-95
002-31-04-035	3-28-95	002-45-18-038	7/15/95
002-31-04-036	3-7-95	002-78-02-002	5/31/95

REMARKS: DATA SHEET IN LOTUS

DATE CALIBRATED: 1-16-95 — DATE DUE: 1-16-96

PROCEDURE NUMBER: WHC-B-ROTOMETER REV.0

AMBIENT TEMPERATURE =

APPROVED BY: 1-17-95 D.J. Nelson	CALIBRATED BY: [illegible] 52	Hanford Operations and Engineering Contractor for the United States Department of Energy	Westinghouse Hanford Company Subsidiary of Westinghouse Electric Corporation Box 1970, Richland, WA 99352	PAGE ___ OF ___

WESTINGHOUSE STANDARDS LABORATORY PHYSICAL AND ELECTRICAL REPORT

DATE CAL.:	STDS CODE NUMBER:	REFERENCE #	SERIAL NUMBER	
16-Jan-95	679-28-03-026	388118	N/A	

NCLATURE : ROTAMETER SCALE DENSITY 0.07488
MFG - MODEL : OMEGA / FL4511
ANGE : .4 - 4.0 SCFM AIR
TD. CONDITIONS : SCALE TEMP. R° 529.69 ; SCALE PRESS. PSIA 14.696
OLERANCE : ±2.5% OF FULL SCALE, (MFGR'S SPECS); ±3% (ASSIGNED)
ROCEDURE : WHC-B-ROTOMETER REV. 0

	AS FOUND (Qc)					FINAL (Qc)	
OMEGA TEST POINTS SCFM	COX STANDARD SCFM		OMEGA ERROR SCFM	TOL SCFM		COX STANDARD SCFM	OMEGA ERROR SCFM
1.0	1.03		-0.028	0.132		1.01	-0.013
1.5	1.51		-0.007	0.132		1.51	-0.006
2.0	2.02		-0.022	0.132		2.02	-0.024
2.5	2.52		-0.017	0.132		2.51	-0.009
3.0	3.04		-0.042	0.132		3.04	-0.045
3.5	3.56		-0.063	0.132		3.58	-0.080
4.0	4.12	*	-0.122	0.132		4.12	-0.120 *

AS FOUND DATA

OMEGA TEST POINTS	Pc mmHg	Tc °F	Po PSIA	UUT To °F	Kc CONSTANT	Pc PSIA	Tc °R	To °R
1.0	1917	74.8	14.537	75.2	0.0007920	37.069	534.5	534.9
1.5	2801	74.9	14.537	75.0	0.0007950	54.162	534.6	534.7
2.0	1855	75.4	14.537	74.8	0.0016110	35.870	535.1	534.5
2.5	2303	75.2	14.537	74.8	0.0016150	44.533	534.9	534.5
3.0	2780	75.1	14.536	74.9	0.0016170	53.756	534.8	534.6
3.5	3253	75.3	14.532	74.5	0.0016190	62.902	535.0	534.2
4.0	1883	74.5	14.532	74.9	0.0032320	36.411	534.2	534.6

FINAL DATA

OMEGA TEST POINTS	Pc mmHg	Tc °F	Po PSIA	UUT To °F	Kc CONSTANT	Pc PSIA	Tc °R	To °R
1.0	1889	74.7	14.529	75.2	0.0007920	36.527	534.4	534.9
1.5	2795	74.8	14.529	75.6	0.0007950	54.046	534.5	535.3
2.0	3752	75.2	14.530	75.1	0.0007970	72.551	534.9	534.8
2.5	2295	75.5	14.531	75.2	0.0016150	44.378	535.2	534.9
3.0	2780	74.7	14.531	75.2	0.0016170	53.756	534.4	534.9
3.5	3265	74.7	14.531	75.1	0.0016190	63.134	534.4	534.8
4.0	1882	74.5	14.531	75.1	0.0032320	36.392	534.2	534.8

COMMENTS:

MADE TWO (2) RUNS ON ROTAMETER, BOTH OUT OF SPEC AT TOP END.

(*) INDICATES OUT OF MFGR'S SPECS: ±3% ASSIGNED.

Qe=((Pc*90*K*√((Do)*(Ts))/√((Pe*Pc)*(Ts/Te))½

Qe=SCFM;Pe=COX PRESS.;Te=COX TEMP.;Pe=OPERATING PRESS.;Te=OPERATING TEMP.;Ke=COX CONSTANT;De= AIR DENSITY, Ps=SCALE PRESS.,Ts=SCALE TEMP.

APPROVED BY: 1-17-95
D. J. Nelson

CALIB. BY:

Physical and Electrical Standards Laboratory

NOTICE OF DISCREPANCY MEASURING AND TEST EQUIPMENT 388118

To: CASTO ML
L6-38

Instrument Name OMEGA ROTAMETER
Standards Code No. 679-28-03-026
Property No. N/A
Date 1-16-95

While performing "as found" calibration on the above M&TE, out-of-tolerance readings were noted as seen on the attached report. The disposition of the item is as follows:

☐ Repaired and calibrated to original manufacturer specifications

☒ * Conditionally accept item "as is".

☐ * Repaired to acceptable conditions within the following limits:

REJECT:

☐ – Beyond economical repair at Standards Laboratory

☐ – No parts available at Standards Laboratory

☐ – No manual, prints, etc., available at Standards Laboratory

*Attach Limited Calibration Label

If your investigations into situations where material inspected or data collected by the discrepant item since last calibrated may have been erroneously accepted; notify Quality Assurance of actions initiated to control such material or data.

Stds Lab: D. J. Nelson
1-17-95

Distribution: Custodian
Quality Assurance
File

Hanford Operations and
Engineering Contractor
for the U.S. Department of Energy

Westinghouse Hanford Co.
Subsidiary of Westinghouse
Electrical Corpration
Box 1970
Richland, WA 99352

APPENDIX B - TEST DATA SHEETS

TEST DATA SHEET

Date of test: 1-11-95			Test Unit Number:			
Test Section Title: Blast Shield Water Leak Test #1 Test Performed By: 306E Equipment Development Group			R = Recorder E = Cognizant Engineer Q = Quality S = Safety O = Other Defined: _____			
Procedure Step Number	Attribute	Value	Range	Accept/ Reject	Comment	Complete Sig/Init
1.6.2.1	Section 1.6.1	Y	Completed (yes)	A		E GAL Q
1.6.3.1	Section 1.6.2	Y	Completed (yes)	A	- -	E GAL Q
1.6.3.3	Current time	1:45 PM 1/11/95	Record	NA		E GAL Q
1.6.3.5	Current time	2:45 PM 1/11/95	Record	NA		E GAL Q
1.6.3.6	Leak volume for 10 in. water head	ZERO!	Record	NA	NO LEAK	E GAL Q
1.6.3.3	Current time	N/A	Record	NA		E Q N/A
1.6.3.5	Current time		Record	NA		E Q
1.6.3.6	Leak volume for 3 in. water head		Record	NA		E Q
1.6.3.3	Current time		Record	NA		E Q
1.6.3.5	Current time		Record	NA		E Q
1.6.3.6	Leak volume for 1 in. water head	N/A	Record	NA		E Q N/A

TEST DATA SHEET

Date of test: 1-11-95			Test Unit Number:			
Test Section Title: Blast Shield Water Leak Test #2 Test Performed By: 306E EQUIPMENT DEVELOPMENT GROUP			R = Recorder E = Cognizant Engineer Q = Quality S = Safety O = Other Defined: _____			
Procedure Step Number	Attribute	Value	Range	Accept/ Reject	Comment	Complete Sig/Init
1.6.3.3	Current time	4:35 PM 1-11-95	Record	NA		E Q GHL
1.6.3.5	Current time	10:35 AM 1-11-95	Record	NA	W/ SMALL LEAKS IN GASKET JOINTS	E Q GHL
1.6.3.6	Leak volume for 10 in. water head	< 1 cm^3 W	Record	NA	BEGIN DISASSEMBLY OF MEASURING EQUIPMENT	E Q GHL
1.6.3.3	Current time	~~1:25 PM~~ W 1/11/95 N/A	Record	NA		E Q N/A
1.6.3.5	Current time	~~2:20 PM~~ W 1/11/95	Record	NA	~~NO LEAKS~~ W	E Q
1.6.3.6	Leak volume for 3 in. water head		Record	NA		E Q
1.6.3.3	Current time		Record	NA		E Q
1.6.3.5	Current time		Record	NA		E Q
1.6.3.6	Leak volume for 1 in. water head	N/A	Record	NA		E Q N/A

TEST DATA SHEET

Date of test: 1-11-95			Test Unit Number:			
Test Section Title: Blast Shield Water Leak Test #3 Test Performed By:			R = Recorder E = Cognizant Engineer Q = Quality S = Safety O = Other Defined: _____			
Procedure Step Number	Attribute	Value	Range	Accept/ Reject	Comment	Complete Sig/Init
1.6.3.3	Current time	1:25pm 1/11/95	Record	NA		E GHC Q
1.6.3.5	Current time	2:25pm 1/11/95	Record	NA	- -	E GHC Q
1.6.3.6	Leak volume for 10 in. water head	ZERO	Record	NA	NO LEAKS	E GHC Q
1.6.3.3	Current time	N/A	Record	NA		E Q N/A
1.6.3.5	Current time		Record	NA		E Q
1.6.3.6	Leak volume for 3 in. water head		Record	NA		E Q
1.6.3.3	Current time		Record	NA		E Q
1.6.3.5	Current time		Record	NA		E Q
1.6.3.6	Leak volume for 1 in. water head	N/A	Record	NA		E Q N/A

TEST DATA SHEET

Date of test: ~~1/26/95~~ BH 1-17-95			Test Unit Number:			
Test Section Title: FRS Air Leak Test #1 Test Performed By: B. Hopkins			R = Recorder E = Cognizant Engineer Q = Quality S = Safety O = Other Defined: _____			
Procedure Step Number	Attribute	Value	Range	Accept/ Reject	Comment	Complete Sig/Init
1.6.4.1	Section 1.6.3	Yes	Completed (yes)	A		E GHL WHC ID 115 Q
1.6.4.9	Initial gage pressure	-.059	Record	NA	- -	E BH WHC ID 115 Q
1.6.5.1	Section 1.6.4	yes	Completed (yes)	A		E BH WHC ID 115 Q
1.6.5.4	Final gage pressure	1.030	> 250 Pa	A		E BH WHC ID 115 Q
1.6.5.5	Flow/leak rate	1.7	< 5 cfm	A		E BH WHC ID 115 Q

TEST DATA SHEET

Date of test: 1-17-95			Test Unit Number:			
Test Section Title: FRS Air Leak Test #2			R = Recorder E = Cognizant Engineer Q = Quality S = Safety O = Other Defined: _____			
Test Performed By: B. Hopkins						
Procedure Step Number	Attribute	Value	Range	Accept/ Reject	Comment	Complete Sig/Init
1.6.4.9	Initial gage pressure	-0.055	Record	NA		E BH Q
1.6.5.1	Section 1.6.4	yes	Completed (yes)	A		E BH Q
1.6.5.4	Final gage pressure	1.024	> 250 Pa	A		E BH Q
1.6.5.5	Flow/leak rate	1.7	< 5 cfm	A		E BH Q

TEST DATA SHEET

Date of test: 1-17-95			Test Unit Number:			
Test Section Title: FRS Air Leak Test #3			R = Recorder E = Cognizant Engineer Q = Quality S = Safety O = Other Defined: _____			
Test Performed By: B. Hopkins						
Procedure Step Number	**Attribute**	**Value**	**Range**	**Accept/ Reject**	**Comment**	**Complete Sig/Init**
1.6.4.9	Initial gage pressure	-0.060	Record	NA		E BH Q
1.6.5.1	Section 1.6.4	yes	Completed (yes)	NA		E BH Q
1.6.5.4	Final gage pressure	1.031	> 250 Pa	A		E BH Q
1.6.5.5	Flow/leak rate	1.7	< 5 cfm	A		E BH Q
1.6.5.7	Section 1.6	yes	Completed (yes)	A		E BH Q

APPENDIX C - TEST EXCEPTION SHEET
(Copy as needed)

TEST EXCEPTION SHEET # 1

Test Title: Acceptance Test Procedure, 241-SY-101 Flexible Receiver System Phase III Testing			Test Item Number:	
EXCEPTIONS			RESOLUTION	
Procedure Step Number	Date	Description	Planned Action	Action Taken
1.6.1.1 - 1.6.1.3 1.6.1.6	1/11/95	FOR THE FIRST PART OF THE ATP - THE PUMP CAP, RAG, MOCK PUMP TOP, AND INSTRUMENTATION ARE NOT REQUIRED.	PERFORM FIRST PART OF ATP WITHOUT SPECIFIED EQUIP.	✓

OBJECTING PARTY: ERNIE WEGENER _____ 1/11/95
Recorder Date

RETEST EXECUTION AND ACCEPTANCE:

Date of Test:			Test Unit Number:			
Test Section Title:			R = Recorder E = Cognizant Engineer Q = Quality S = Safety O = Other Defined: _____			
Test Performed By:						
Procedure Step Number	Attribute	Value	Range	Accept/ Reject	Comment	Complete Sig/Init

CORRECTION APPROVAL:

____ ACCEPTABLE RETEST PERFORMED

X EXCEPTION ACCEPTED AS-IS
EXPLAIN: PUMP CAP & MOCK PUMP TOP WERE NOT AVAILABLE FOR THE FIRST PART OF THIS ATP - AND ARE NOT NEEDED.

____ OTHER
EXPLAIN: _____

Quality	1-11-95 Date	C L A Nitt Cognizant Engineer	1/11/95 Date
SA Nalezny Safety	1-27-95 Date		

TEST EXCEPTION SHEET # 2

Test Title: Acceptance Test Procedure, 241-SY-101 Flexible Receiver System Phase III Testing			Test Item Number:	
EXCEPTIONS			RESOLUTION	
Procedure Step Number	Date	Description	Planned Action	Action Taken
1.6.4.3	1/16/95	INFLATE SEAL TO 20 ± 2 psi INSTEAD OF 35 ± 2 psi	CHANGE PROCEDURE STEP	/

OBJECTING PARTY: ERNIE WEGENER _____ Recorder - Date

RETEST EXECUTION AND ACCEPTANCE:

Date of test:			Test Unit Number:			
Test Section Title:			R = Recorder E = Cognizant Engineer Q = Quality S = Safety O = Other Defined: _____			
Test Performed By:						
Procedure Step Number	Attribute	Value	Range	Accept/ Reject	Comment	Complete Sig/Init

CORRECTION APPROVAL:

___ ACCEPTABLE RETEST PERFORMED

X EXCEPTION ACCEPTED AS-IS
EXPLAIN: INFLATION PRESSURE WAS CHANGED PER MANUFACTURER'S SPECIFICATION.

___ OTHER
EXPLAIN: _____

Quality — 1-12-95 Date

Cognizant Engineer — 1/16/95 Date

Safety — 1-27-95 Date

TEST EXCEPTION SHEET # 3

Test Title: Acceptance Test Procedure, 241-SY-101 Flexible Receiver System Phase III Testing			Test Item Number:	
EXCEPTIONS			RESOLUTION	
Procedure Step Number	Date	Description	Planned Action	Action Taken
1.6.4.6	1/16/95	USE TWO BAND CLAMPS TO SEAL BAG	✓	✓
1.6.4.7	1/16/95	RAISE TOP OF BAG ~1 foot ABOVE BLAST SHIELD.		

OBJECTING PARTY: N/A

Recorder - Date

RETEST EXECUTION AND ACCEPTANCE:

Date of test:			Test Unit Number:			
Test Section Title:			R = Recorder E = Cognizant Engineer Q = Quality S = Safety O = Other Defined: _____			
Test Performed By:						
Procedure Step Number	Attribute	Value	Range	Accept/ Reject	Comment	Complete Sig/Init

CORRECTION APPROVAL:

___ ACCEPTABLE RETEST PERFORMED

X EXCEPTION ACCEPTED AS-IS
EXPLAIN: HEIGHT OF TOP OF BAG ABOVE BLAST SHIELD IS ARBITRARY. A LOWER HEIGHT IS NEEDED FOR STRAPPING DOWN BAG - SEE TE# 4.

___ OTHER
EXPLAIN: _____

Quality Date

G L A Date 1/16/95
Cognizant Engineer Date

SA Date 1-23-95
Safety Date

TEST EXCEPTION SHEET # 4

Test Title: Acceptance Test Procedure, 241-SY-101 Flexible Receiver System Phase III Testing			Test Item Number:	
EXCEPTIONS			RESOLUTION	
Procedure Step Number	Date	Description	Planned Action	Action Taken
1.6.4.9	1/16/95	CHANGE STEP TO: ~~SECURE~~ ATTACH STRAPS AROUND BAG + BLAST SHIELD TO SECURE BAG AND KEEP IT FROM PULLING OFF DURING INFLATION.	/	/

OBJECTING PARTY: N/A

Recorder - Date

RETEST EXECUTION AND ACCEPTANCE:

Date of test:			Test Unit Number:			
Test Section Title:			R = Recorder E = Cognizant Engineer Q = Quality S = Safety O = Other Defined: _____			
Test Performed By:						
Procedure Step Number	Attribute	Value	Range	Accept/ Reject	Comment	Complete Sig/Init

CORRECTION APPROVAL:

___ ACCEPTABLE RETEST PERFORMED

X EXCEPTION ACCEPTED AS-IS
EXPLAIN: BAG / PUMP CAP SEALS WILL HAVE LOOSENED DURING HANDLING AND ATTACHMENT OF BAG TO PUMP CAP IF THEY ARE GOING TO LOOSEN.

___ OTHER
EXPLAIN: _____

Quality — Date: 1-12-95

Cognizant Engineer — Date: 1/16/95

Safety — Date: 1-23-95

TEST EXCEPTION SHEET # 5

Test Title: Acceptance Test Procedure, 241-SY-101 Flexible Receiver System Phase III Testing			Test Item Number:	
EXCEPTIONS			RESOLUTION	
Procedure Step Number	Date	Description	Planned Action	Action Taken
1.6.4.5	1/16/95	CHANGE STEP TO: "INSTALL GROMMETS OVER THREADED STUDS + TIGHTEN NUTS"	✓	✓

OBJECTING PARTY: N/A

Recorder - Date

RETEST EXECUTION AND ACCEPTANCE:

Date of test:			Test Unit Number:			
Test Section Title:			R = Recorder E = Cognizant Engineer Q = Quality S = Safety O = Other Defined: _____			
Test Performed By:						
Procedure Step Number	Attribute	Value	Range	Accept/ Reject	Comment	Complete Sig/Init

CORRECTION APPROVAL:

____ ACCEPTABLE RETEST PERFORMED

X EXCEPTION ACCEPTED AS-IS
EXPLAIN: BAG CABLE ASSEMBLY IS NO LONGER USED — BAG IS SECURED BY INSTALLING BAG GROMMETS OVER STUDS + SECURING WITH WASHERS + NUTS.

____ OTHER
EXPLAIN: _____

	1/16/95	GL L. Nutt	1/16/95
Quality	Date	Cognizant Engineer	Date
S A Hulling	1-23-95		
Safety	Date		

APPENDIX D - TEST LOG SHEET
(Copy as needed)

TEST LOG

DATE/TIME	COMMENTS
1/10/95 1:15 p.m	BEGIN FILLING BLAST SHIELD WITH WATER FOR TEST # 1
9:10 a.m 1/11/95	BEGIN FILLING BLAST SHIELD WITH WATER FOR TEST # 2.
10:00 a.m 1/11/95	SMALL DRIPS COMING FROM 4 JOINTS ON THE GASKET ARE OBSERVED. IT SHOULD BE NOTED THAT A DRY RUN WAS PERFORMED ON 1/6/95 AND SIGNIFICANT LEAKAGE - DRIZZLING - OCCURED AT MOST OF THE GASKET JOINTS. GASKET MATERIAL SHEETS ARE NOT LARGE ENOUGH TO MAKE GASKET OUT OF ONE SHEET - THEREFORE, SEVERAL STRIPS MUST BE JOINED TOGETHER. INITIALLY, NOT ENOUGH ADHESIVE WAS USED IN THE JOINTS. THE BLAST SHIELD WAS REMOVED AND THE JOINTS WERE REPAIRED BY CUTTING OPEN AND APPLYING AMPLE AMOUNTS OF ADHESIVE. TEST #1 WAS THEN PERFORMED AND ABSOLUTELY NO LEAKAGE OCCURRED. HOWEVER, WHEN THE BLAST SHIELD WAS REMOVED FROM THE LOAD FRAME, SOME OF THE ADHESIVE STUCK TO THE LOAD FRAME AND TORE THE GASKET MATERIAL SLIGHTLY. THIS DAMAGE IS MOST LIKELY THE CAUSE FOR THE SMALL DRIPS IN TEST # 2. THIS DAMAGE WILL BE REPAIRED BY ADDING MORE ADHESIVE TO THE JOINTS FOR TEST # 3.

TEST LOG

DATE/TIME	COMMENTS
10:36 1/11/95	STOP TEST #2 – OPEN VALVE TO DRAIN WATER INSIDE BLAST SHIELD.
1/16/95	BAND CLAMP TIGHTENED AS FOLLOWS: TOP CLAMP: 1.580", 0.850" OF THREADS PROTRUDING FROM NUT. (ONE SIDE TIGHTENED ALL THE WAY, THE OTHER SIDE ABOUT HALF WAY
	BOTTOM CLAMP: 1.620", 0.800" OF THREADS (SAME AS TOP CLAMP – ONE SIDE TIGHTENED ALL OF THE WAY, OTHER SIDE ABOUT HALF WAY)
1/18/95	COG. ENGR. G.L. RITTER WAS NOT PRESENT FOR TESTING ON 1/17/95 IN WHICH THE SECOND PART OF THIS ATP, THE AIR LEAK TEST, WAS CONDUCTED.
	B. HOPKINS, TEST DIRECTOR, CONDUCTED THIS PART OF THE TEST. G.L. RITTER WAS PRESENT FOR THE TEST SET UP ON 1/16/95 AND THE ONLY RUN WHICH WAS PERFORMED ON 1/16/95.

APPENDIX E - TEST EXECUTION SHEET

TEST EXECUTION SHEET

Date: 1/11/95 Document Number: WHC-SD-WM-ATP-093, Rev. 0

Test Unit Number:

TEST PERSONNEL

Cognizant Engineer: GLENN A. RITTER

Recorder: ERNEST N WEGENER

Safety: S. A. NORLING

Quality: ERNEST N WEGENER

Others: BLAINE HOPKINS, MIKE DAHL, JASON GUNTER, SCOTT DEMITER

TEST EXECUTION

____ Without Exception X With Exception/Resolved ____ With Exception/Outstanding

GL A Ritter	1/18/95		1-23-95
Cognizant Engineer	Date	Recorder	Date
SA Norling	1-23-95		1-23-95
Safety	Date	Quality	Date

TEST APPROVAL AND ACCEPTANCE

GL A. Ritter	1/18/95		1-23-95
Cognizant Engineer	Date	Quality	Date
SA Norling	1-23-95		
Safety	Date		