

NUS

PROCESS SERVICES



A Halliburton Company

NO.

WM-011

REVISION

E

PAGE

1 of 7

TITLE

SOAP BUBBLE LEAK TEST
NUS PROCESS SERVICES CORPORATION
TYPE A SHIPPING CASKS

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NUS PROCESS SERVICES								

NO.	WM-011	REVISION	E	PAGE	2 of 7
-----	--------	----------	---	------	--------

TABLE OF CONTENTS

	<u>Page</u>
1.0 PURPOSE	3
2.0 APPLICABILITY	3
3.0 DEFINITIONS	3
4.0 REFERENCES	4
5.0 RESPONSIBILITIES	4
6.0 EQUIPMENT	4
7.0 PROCEDURE	4
8.0 ACCEPTANCE CRITERIA	5
9.0 RECORDS	6
Figure 1 - Test Performance Form	7

NO.	WM-011	REVISION	E	PAGE	3 of 7
-----	--------	----------	---	------	--------

1.0 PURPOSE

This procedure states the requirements for performing a Low Pressure Soap Bubble Leak Test for NUS Type A shipping casks. The fabrication contractor shall submit for approval detailed leak test procedures. The purpose of this test will be to check the integrity of welds, threaded fittings, flanges and any other joints where pressure tests below 8 psi are adequate to meet contractual/functional requirements.

2.0 APPLICABILITY

This test shall be performed before painting on all NUS Process Services Type A shipping casks prior to acceptance from a fabricator. Additionally, the test shall be performed yearly as a verification of gasket and gasket seating surfaces integrity. This soap bubble leak test is sensitive for leak testing where a sensitivity of no greater than 10^{-3} atm.cm³/sec is required.

3.0 DEFINITIONS

None.

4.0 REFERENCES

4.1 ANSI N14.5, 1977 - American National Standards for leakage tests on packages for shipment of radioactive materials.

4.2 Code of Federal Regulation (CFR) Title 10 Part 71

NO.	WM-011	REVISION	E	PAGE	4 of 7
-----	--------	----------	---	------	--------

5.0 RESPONSIBILITIES

Quality Assurance Manager or his designee - shall witness the performance of the applicable leak test and sign the test performance form (Figure 1).

6.0 EQUIPMENT

The following equipment is required for a Low Pressure Soap Bubble Test.

6.1 Air Supply - A standard shop compressor or bottle compressed air capable of pressurizing the tested cavity to 8 to 10 psig shall be utilized.

6.2 Gauge - A properly calibrated gauge capable of indicating 0 - 15 psi range with an accuracy of $\pm 2\%$ of the indicated reading shall be utilized.

6.3 Bubble Test Solution - A leak indicating solution equivalent to the following shall be utilized:

Dasco-Kleen Leak-Finding Compound #3183
D. A. Stewart Oil Company
2727 S. Gray Street
Chicago, Illinois 60623

6.4 Relief valve - A relief valve set and checked at 10 percent over maximum pressurization pressure.

7.0 PROCEDURE

7.1 The test shall be conducted by NUSPSC O.A. approved personnel.

NO. WM-011	REVISION E	PAGE 5 of 7
---------------	---------------	----------------

7.2 The item shall be leak tested with all lids, gaskets, plugs, valves, and fasteners in place and in the normal closed position. The only exception shall be the port or valve utilized to pressure the cavity.

7.3 Pressurize the cavity to 8 psi + 1, -0 psi.

7.4 Close off or maintain pressure at pressurization location to hold specified pressure in cavity.

7.5 Apply the leak detecting solution to all gasketed areas, threads, seal welds, ports or valves by brush or spray. Inspect for bubbles.

7.6 Conduct leak test for 5 minutes.

8.0 ACCEPTANCE CRITERIA

8.1 No bubbles shall be visible to the unaided eye during the 5 minute test.

8.2 If bubbles appear during the test, weld integrity, gasket condition, flange or lid tightness, valve position, plug security, etc., shall be checked and the test rerun.

8.3 The results of the leak test shall be recorded on the Test Performance form (Figure 1).

8.3.1 Leak Test Pressure

8.3.2 Gauge Model, P/N and S/N, as applicable

8.3.3 Leak Test Duration

8.3.4 Date

8.3.5 Results, including discrepancies and acceptance

NO. WM-011	REVISION E	PAGE 6 of 7
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9.0 RECORDS

Test Performance forms shall be maintained by the Quality Assurance Manager for one (1) year after completed usable life of tested item.

NO.

WM-011

REVISION

E

PAGE

7 of 7

Figure 1

TEST PERFORMANCE

Equipment Tested: _____ Date Tested: _____

Leak Test Pressure: _____ psi

Gauge Information:

Model # _____

Range _____

Calibration Date _____

Leak Test Duration: _____ minutes

PASSED _____ FAILED _____

Discrepancies: _____

_____Next Leak Test Due (< 12 months): _____

Date

Signatures:

Test Performer_____
Date_____
Quality Assurance_____
Date