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Project Title/Work Order Test Plan for Westinghouse Hanford Company's Hedgehog Shielded Container, Docket 94-39-7A, Type A Container		EDT No. <u>608458</u> ECN No.

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
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ENGINEERING DATA TRANSMITTAL

Page 1 of 1
1. EDT 608458

2. To: (Receiving Organization) Packaging Programs & Testing	3. From: (Originating Organization) Packaging Programs & Testing	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: 84400/YHXAA	6. Cog. Engr.: D. L. Kelly	7. Purchase Order No.: N/A
8. Originator Remarks:		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: N/A
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: 02/03/95

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-TP-OTP-001		0	Test Plan for Westinghouse Hanford Company's Hedgehog Shielded Container, Docket 94-39-7A, Type A Container	SQ	1	/	/

16. KEY					
Approval Designator (F)		Reason for Transmittal (G)		Disposition (H) & (I)	
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)		1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment	4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)										(G)	(H)
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1	1	Cog.Eng./D. L. Kelly/	<i>D.L. Kelly</i>	1-30-8	62-02						
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1	1	QA/S. B. Dutta/	<i>S.B. Dutta</i>	1/31/95	L6-35						
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18. D. L. Kelly/ <i>D.L. Kelly</i> 1-30-95 Signature of ED Originator	19. D. L. Kelly/ <i>D.L. Kelly</i> 1-30-95 Authorized Representative Date for Receiving Organization	20. D. L. McCall/ <i>D.M. McCall</i> 2/17/95 Cognizant Manager Date	21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
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Document Number: WHC-SD-TP-OTP-001, REV. 0

Document Title: Test Plan for Westinghouse Hanford Company's Hedgehog Shielded Container, Docket 94-39-7A, Type A Container

Release Date: 2/23/95

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

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SUPPORTING DOCUMENT

1. Total Pages ~~158~~ / 55

2. Title

Test Plan for Westinghouse Hanford Company's Hedgehog Shielded Container, Docket 94-39-7A, Type A Container

3. Number

WHC-SD-TP-OTP-001

4. Rev No.

0

5. Key Words

Test Plan, DOT-7A, Type A, Radioactive Material, Package, Packaging, Hedgehog

6. Author

Name: D. L. Kelly

Signature

Organization/Charge Code 84400/E37197

7. Abstract

This report documents the U.S. Department of Transportation Specification 7A Type A (DOT-7A) compliance testing to be followed for qualification of the Westinghouse Hanford Company's Hedgehog Shielded Container for use as a Type A packaging. The packaging configurations being tested are intended for liquids and solids, and for air transportation.

8. RELEASE STAMP

OFFICIAL RELEASE
BY WHC

DATE FEB 27 1995

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TEST PLAN FOR WESTINGHOUSE HANFORD COMPANY'S HEDGEHOG
SHIELDED CONTAINER, DOCKET 94-39-7A,
TYPE A CONTAINER

1.0 INFORMATION

The packaging being tested in this Test Plan is designed and constructed for Westinghouse Hanford Company (WHC). Because WHC is conducting the tests, the 7A Testing Program sponsor requires that an independent observer be present, although some of the preliminary steps may be completed without the observer being present. NOTE: Instructions pertaining to the presence of the independent observer should be followed closely.

The objective of this Test Plan is to describe the testing for certification of the WHC Hedgehog Shielded Container (Hedgehog). The Hedgehog packaging system is designed to ship Type A liquid or solid radioactive materials in several configurations. The packaging configurations being tested consist of an internal bottle varying in size. Testing is intended to show that the bottles are not required for the packaging to pass Type A requirements, with the exception of the 1-L version, in which the poly-coated bottles used for testing are considered a part of the containment system.

The stainless steel pigs (outer and inner container assemblies) are fabricated in accordance with WHC drawings. The SafeSend¹ container is manufactured by the 3M Company as the SP-R11 Kit, and is available through various packaging vendors such as Labelmaster.² The foam inserts used are provided in this kit; however, not all component parts of this kit are used with the Hedgehog container as described (i.e., fiberboard shipper). The outer case is manufactured by Hardigg Cases.³ The case is a rotationally molded plastic case with steel butterfly latches. Polyethylene foam (2 pounds per cubic foot [2-PCF]) and a 0.32-cm (0.125-in.) high-density polyethylene (HDPE) load spreader are added internally to hold the SafeSend container into place. The referenced part number of the Hardigg Case includes the case hardware, polyethylene foam, and HDPE load spreader. A spacer assembly (two half-moon-shaped disks and a round disk glued together) is fabricated in accordance with WHC drawings. The gross weight of the packaging system is estimated to not exceed 30 kg (65 lb).

The solid versions would allow the shipment of normal or special form solids in the stainless steel pigs. The solid materials would be limited in weight, to include packaging, to the gross weight of the "as-tested" liquids and bottles. This maximum weight will be determined during testing.

¹Safesend is a trademark of the 3M Company.

²Labelmaster Industrial Compliance Products, 1994 General Catalog, No. G-800, Chicago, Illinois. Labelmaster is an American Labelmark Company.

³Hardigg Cases is a trademark of Hardigg Industries, Inc.

Refer to Appendix A for sketches and additional information. Descriptions also are provided in Section 2.0 of this Test Plan. For testing purposes, all internal sample bottles will be filled with simulated contents of water and carbon steel shot to simulate a liquid with a specific gravity of 2. The packaging system configurations being tested and evaluated are as follows.

30-mL Hedgehog Assembly: Hardigg Case (PN AL2216-1205-14274-HHBA00)
Spacer assembly
3M SafeSend SP-R1L Kit (four foam inserts, no fiberboard shipper)
Outer container assembly
Inner container assembly (30 mL)
30-mL sample bottle

125-mL Hedgehog Assembly: Hardigg Case (PN AL2216-1205-14274-HHBA00)
Spacer assembly
3M SafeSend SP-R1L Kit (four foam inserts, no fiberboard shipper)
Outer container assembly
Inner container assembly (125 mL)
125-mL sample bottle

250-mL Hedgehog Assembly: Hardigg Case (PN AL2216-1205-14274-HHBA00)
Spacer assembly
3M SafeSend SP-R1L Kit (four foam inserts, no fiberboard shipper)
Outer container assembly
250-mL sample bottle

1-L Hedgehog Assembly: Hardigg Case (PN AL2216-1205-14274-HHBA00)
Spacer assembly
3M SafeSend SP-R1L Kit (six foam inserts, no fiberboard shipper)
1-L polycoated glass bottle

Test Date: Scheduled to begin February 6, 1995

Docket No.: 94-39-7A

Packaging Name(s): WHC Hedgehog Shielded Container

Applicant Name and Address: Michael S. Mercado
Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352

Applicant Phone: (509) 376-9129

2.0 PACKAGING DATA

Packaging Manufacturer:

Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352

Gross Weight:

Estimated at 30 kg (65 lb). Actual gross weights for all configurations will be obtained at time of testing.

Net Weight:

To be determined for all configurations during preloading inspection.

Hardigg Case Manufacturer:

Hardigg Industries, Inc.
P.O. Box 201
393 North Main St.
South Deerfield, Massachusetts 01373

Supplier: H. H. Bauer & Associates
2212 S.E. 132nd Court
Vancouver, Washington 98684
(206) 896-7467

Part No: AL2216-1205-14274-HHBA00

Consists of the outer polyethylene case with zinc chromate hardware, 10- by 15-cm (4- by 6-in.) cardholder, 2-PCF polyethylene foam, and a 0.32-cm (0.125-in.) thick HDPE load spreader (see Table 1)

Weight:

10.39 kg (22.9 lb)

Table 1. Hardigg Case Dimensions.

Inside dimensions			Outside dimensions			Inside cavity dimensions		
L	W	H	L	W	H	L	W	H
22 in.	16 in.	17 in.	25 in.	19 in.	19 in.	12.6 in.	7.25 in.	7.25 in.
56 cm	41 cm	43 cm	64 cm	48 cm	48 cm	32 cm	18 cm	18 cm

Spacer Assembly:

Half-moon spacers	Maple, 4.9-cm wide by 3.0-cm thick (1.937-in. wide by 1.187-in. thick)
Round disk spacer	Fir plywood, 0.64-cm thick by 17.7-cm diameter (0.25-in. thick by 7-in. diameter)

SafeSend SP-R1L Kit
Manufacturer:

3M Occupational Health &
Environmental Safety Division
3M Center, Bldg. 275-6W-01
St. Paul, Minnesota 55144-1000

Supplier: 3M

Labelmaster Catalog Part Number: KSP-1LR

SP-R1L Kit consists of the following components (see Table 2):

Lid	Supplier: Contract Design, Inc. Supplier Part Number: 78-8051-6983-2 or 78-8076-78-49-1
Quad ring	Supplier: Minnesota Rubber Supplier Part Number: 26-1009-6327-6
Sorbent	Supplier: 3M Supplier Part Number: 11-0011-2920-1
Latch	Supplier: Plastic Products, Inc. Supplier Part Number: 78-8069-8865-1
Cylinder cover	Supplier: Contract Design, Inc. Supplier Part Number: 78-8051-6982-4 or 78-8076-7848-3
Cylinder base	Supplier: Custom Pak Supplier Part Number: 78-8051-6984-0
Sorbent	Supplier: 3M
Spacer elements	Supplier: Illbruck, Inc. Supplier Part Number: 78-8076-7798-0
Sealing mechanism	Supplier: 3M Supplier Part Number: 70-0060-8939-8
Bag	Supplier: Carlisle Plastics, Inc. Supplier Part Number: 26-1009-3913-6
Fiberboard shippers*	Not used as part of the WHC Hedgehog Shielded Container

*NOTE: The fiberboard shippers provided in this kit are not used as a part of the WHC Hedgehog Shielded Container packaging system as tested.

Table 2. 3M SP-R1L SafeSend Container Dimensions.

Item	Thickness	Outside diameter	Overall height
Lid	0.229 cm (0.090 in.)	13.75 cm (5.41 in.)	6.16 cm (2.43 in.)
Quad ring	0.356 cm (0.140 in.) (nominal)	12.34 cm (4.86 in.)	N/A
Base	0.229 cm (0.090 in.) (nominal)	12.40 cm (4.88 in.)	31.5 cm (12.4 in.)
Spacers	2.54 cm (1 in.)	12.7 cm (5 in.)	N/A

Weight: 2,313 g (5.1 lb)
2.31 kg

SP-R1L Container Identification Numbers:

The identification numbers for the 3M SP-R1L container located on the label to the right of the instruction book and located in the right corner of the red label on the cap must be identical. Do not use if they are not identical.

Outer Container Assembly:

(30-, 125-, and 250-mL versions)

Estimated weight = 7.3 kg (16 lb)

Dimensions (nominal):

External: 17.8-cm tall by 11.3-cm diameter
(7-in. tall by 4.5-in. diameter)

Internal: 15.2-cm tall by 9.4-cm diameter
(6-in. tall by 3.7-in. diameter)

Outer container cover	304 stainless steel, ASTM A 240. Screws are alloy steel, ASTM F 835, hexagon socket flat counter-sunk head cap screw; #8-32UNC-3A by 1 in.
Outer container wall	304 stainless steel, ASTM A 511, cold finish, or ASTM A 276
Outer container base	304 stainless steel, ASTM A 240. Screws are alloy steel, ASTM F 835, hexagon socket flat counter-sunk head cap screw; #8-32UNC-3A by 0.75 in.
O-rings	Nitrile, Parker* #2-153-N304-75 or #2-153-N103-70; 8.9-cm (3.487-in.) inner diameter (ID), 0.26-cm (0.103-in.) cross section

*Parker O-Ring Handbook, Parker Seals Catalog No. ORD5700, Parker Hannifin Corp., Cleveland, Ohio, 1992.

Lifting cable	SAVA* #2065, 19.05-cm (7.5-in.) long by 0.159-cm (0.063-in.) diameter, uncoated stainless steel, 7 by 19 construction
Cable fitting	SAVA #805-C for 0.159-cm (0.063-in.) cable, 0.528-cm (0.208-in.) diameter by 0.762-cm (0.3-in.) long sleeve, copper. To be crimped onto lifting cable using SAVA tool T-188
<u>Inner Container Assembly:</u>	(30-mL version) Estimated weight = 6 kg (13 lb) Dimensions (nominal): External: 13.2-cm tall by 8.9-cm diameter (5.2-in. tall by 3.5-in. diameter) Internal: 9.9-cm tall by 3.8-cm diameter (3.9-in. tall by 1.5-in. diameter)
Inner container cover	304 stainless steel, ASTM A 240. Screws, alloy steel, ASTM F 835, hexagon socket flat counter-sunk head cap screw; #8-32UNC-3A by 1 in.
Inner container wall	304 stainless steel, ASTM A 511, cold finish, or ASTM A 276
Inner container base	304 stainless steel, ASTM A 240. Screws, alloy steel, ASTM F 835, hexagon socket flat counter-sunk head cap screw; #8-32UNC-3A by 1 in.
O-rings	Nitrile, Parker #2-153-N304-75 or #2-153-N103-70; 3.3-cm (1.299-in.) ID, 0.26-cm (0.103-in.) cross section
Lifting cable	SAVA #2065, 14-cm (5.5-in.) long by 0.159-cm (0.063-in.) diameter, uncoated stainless steel, 7 by 19 construction
Cable fitting	SAVA #805-C for 0.159-cm (0.063-in.) cable, 0.528-cm (0.208-in.) diameter by 0.76-cm (0.3-in.) long sleeve, copper. To be crimped onto lifting cable using SAVA tool T-188
<u>Inner Container Assembly:</u>	(125-mL version) Estimated weight = 4.5 kg (10 lb) Dimensions (nominal): External: 13.7-cm tall by 8.9-cm diameter 5.4-in. tall by 3.5-in. diameter Internal: 10.9-cm tall by 6.6-cm diameter 4.3-in. tall by 2.6-in. diameter

*SAVA Industries Inc., Riverdale, New Jersey.

Inner container cover	304 stainless steel, ASTM A 240. Screws, alloy steel, ASTM F 835, hexagon socket flat counter-sunk head cap screw; #8-32UNC-3A by 0.75 in.
Inner container wall	304 stainless steel, ASTM A 511, cold finish, or ASTM A 276
Inner container base	304 stainless steel, ASTM A 240. Screws, alloy steel, ASTM F 835, hexagon socket flat counter-sunk head cap screw; #8-32UNC-3A by 0.75 in.
O-rings	Nitrile, Parker #2-153-N304-75 or #2-142-N103-70; 6.0-cm (2.362-in.) ID, 0.26-cm (0.103-in.) cross section

The 125-mL version utilizes the same outer container assembly as the 30-mL version. The inner container assembly design is basically the same as that of the 30-mL version; however, it accommodates a 125-mL sample bottle. Because of the design similarities between these two versions, the 125-mL version will be evaluated and not tested.

Inner Sample Bottles:
(30 mL, 125 mL, and 250 mL)

All sample bottles are to be supplied by the user. The bottles used in these three configurations are considered packaging not required. The bottles used in the 30-, 125-, and 250-mL versions may be made of glass, polyethylene, or Teflon* with Teflon- or polyethylene-coated lids.

(1-L version)

All sample bottles are to be supplied by the user. The bottles used for the 1-L version may not break due to the bottle being a part of the identified containment system. Therefore, glass is unacceptable for this particular configuration. The bottles used for the 1-L version are polycoated, wide-mouth glass with a Teflon-lined phenolic lid.

1-L bottle

Labelmaster Catalog Part Number: KG3280

1-L lid

Labelmaster Catalog Part Number: KC70PTW

Contents:

The packagings described herein are designed to ship Type A quantities of radioactive materials, normal form. Contents may be in solid or liquid form. Liquids may have a specific gravity equal to 2 or less.

The simulated payload used for testing purposes in all configurations will be water and carbon steel shot to equal a liquid with a specific gravity of 2. Three packaging configurations will be tested (30 mL,

*Teflon is a trademark of E. I. du Pont de Nemours & Company.

250 mL, and 1 L). Each tested configuration will utilize the appropriately sized inner bottle filled with the simulated payload noted above. Water will be placed inside the stainless steel containment assemblies to challenge the containment boundaries.

3.0 TEST UNIT MARKING

THE IMPARTIAL OBSERVER DOES NOT NEED TO BE PRESENT DURING TEST UNIT MARKING.

The 125-mL version will not be tested. Performance has been based on an evaluation by the test and project engineers. The test applicant will supply the following:

- Hardigg Case assemblies (three test units)
- 3M SafeSend SP-R1L Kit assemblies (16 test units)
- Type 304 stainless steel outer containers (two test units)
- Type 304 stainless steel inner containers (two test units)
- 30-mL sample bottles and lids (two test units)
- 250-mL sample bottles and lids (two test units)
- 1-L sample bottles and lids (seven test units)
- Spacer assembly (three sets each)
- Additional O-rings for the inner and outer container assemblies (four sets each).

Each test unit should be marked in accordance with *DOT-7A Packaging Test Procedure*, Section 6.3 (Kelly 1995). The components to be marked are the Hardigg Case, and the SafeSend canister body and lid. The numbers to be used in marking the test units are listed below. Mark the exterior assembled surface with four axis lines, 90° apart. The axis lines shall be labelled W, X, Y, and Z. Orientation angles for drop test or penetration test impact locations will be measured from the W axis.

Marking

Hardigg Case:	39-TU-01 through 39-TU-03
SafeSend:	39-TU-01 through 39-TU-16
1-L bottle:	39-TU-03-1 through 39-TU-03-7

Marking of the stainless steel pigs is not needed as they are serialized.

4.0 PRELOADING INSPECTIONS

<p>THE IMPARTIAL OBSERVER DOES NOT NEED TO BE PRESENT DURING THE PRELOADING INSPECTIONS.</p>

Perform preloading inspections on each test unit in accordance with *DOT-7A Packaging Test Procedure*, Section 6.4 (Kelly 1995) and the applicable opening, loading, and closure sections within Appendix B. Record the data on the supplied test data sheets 6.4.1, 6.4.2, and 6.4.3 (see Appendix C of this Test Plan). A separate set of data sheets is supplied for each test unit.

Perform a visual inspection in accordance with *DOT-7A Packaging Test Procedure*, Section 6.4.1 (Kelly 1995). Visually inspect all surfaces of all units received to ensure that they are in good condition and in accordance with sponsor-supplied drawings. The visual inspection should include the following.

Hardigg Case:

- Ensure that hardware (hinges, handles, rivets, locking mechanism) is in workable condition. All handles and latches must be present and operate properly. Attachment rivets should not be missing or loose enough to allow latch to move away from package surface.
- Inspect the case exterior for cracks or dents. Small dents or cracks are acceptable if there is no degradation of the integrity of the case.
- Inspect the foam to ensure it is in place and has no significant gouges (about 2.54 cm [1 in.]).
- Inspect the HDPE spacer. It must be in place and not cracked or broken. Note that this is the bottom of the case on which the packaging normally sits.
- Note that the lid gasket will be slit for relief of air prior to closure.
- Ensure the case is properly marked "this end up" prior to testing.

After inspection, close the Hardigg Case according to the appropriate section within Appendix B.

Spacer Assembly:

- Inspect to ensure all parts are present according to drawings provided. There should be no gouges, cracks, or deformation in these components.

After inspection, set aside and store in a safe location.

SafeSend:

- Canister base and cap must be free from cracks, dents, deformation, warpage, or other evidence of damage. Cap must turn freely on the base.
- Lid locking mechanism must lock easily into place.
- Sorbent material and foam spacers must be free from tears, gouges, and contamination.
- Gasket must be free of nicks, twists, dirt, residue, or other damage.
- Confirm identical identification numbers on canister base and lid.

After inspection, close lid in accordance with manufacturer's instructions for storage.

Outer Container (SS Pig) (30 mL, 125 mL, and 250 mL):

- Inspect to ensure all parts are present according to assembly drawings provided.
- Lifting cable should not have broken wires or kinks.
- O-ring should not be stretched, and should be free of nicks, twists, dirt, residue, or other damage.
- Inspect O-ring grooves to ensure no deep scratches or foreign materials are present.

After inspection, assemble the base to body of container following the appropriate section in Appendix B. Store in a clean, safe location.

Inner Container (SS Pig) (30 mL):

- Inspect to ensure all parts are present according to assembly drawings provided.
- Lifting cable should not have broken wires or kinks.
- O-ring should not be stretched, and should be free of nicks, twists, dirt, residue, or other damage.
- Inspect O-ring grooves to ensure no deep scratches or foreign materials are present.

After inspection, assemble the base to body of container following the appropriate section in Appendix B. Store in a clean, safe location.

1-L Bottle:

- Inspect the polycoated glass bottle for cracks, deformation, and flaws.
- Inspect the Teflon-coated phenolic lid for cracks, deformation, and flaws.

After inspection, store in a clean, safe location.

Note any deviations from the specifications or drawings; defects in construction, deterioration, deformation; or distortion of features. Record the data on the Packaging Visual Inspection Data Sheet (6.4.1) (see Appendix C of this Test Plan). Use a separate data sheet for each test unit.

Weigh the major components of all major packaging parts. The major components to be weighed are the following:

- Hardigg Case (include foam and HDPE load spreader)
- Spacer assembly
- SafeSend lid and cylinder base (include foam spacers)
- Outer container (include lid, screws)
- Inner container (include lid, screws).

Conduct the weighing in accordance with *DOT-7A Packaging Test Procedure*, Section 6.4.2 (Kelly 1995). Measure the net weight of the assembled and closed packaging without contents; measure the gross weight of the package loaded with simulated contents. Note the weight of the inspected parts on the Packaging Component Weight Data Sheet (6.4.2) (see Appendix C of this Test Plan). Use a separate data sheet for each test unit.

The package consists of two containment boundaries. The primary containment is provided by the stainless steel pigs or 1-L bottle. The 30- and 125-mL versions utilize two stainless steel pigs, and the 250-mL version utilizes one stainless steel pig. Secondary containment is provided by the SafeSend container.

Conduct the containment inspection in accordance with *DOT-7A Packaging Test Procedure*, Section 6.4.3 (Kelly 1995). Record the results and locations of the measurements of the Packaging Component Wall Thickness Data Sheet (6.4.3) (see Appendix C of this Test Plan). Use a separate data sheet for each test unit.

- Check the thickness of the outer container lid, bottom, and wall in three randomly chosen places for each part.
- Check the thickness of the inner container lid, bottom, and wall in three randomly chosen places for each part.
- Measure the external heights and external and internal diameters of the outer and inner containers. Verify the tolerances that are provided on the sponsor's drawings.

- Measure the outside diameter and overall height of the SafeSend canister; measure the inside height of the lid near the hand-hold.
- Measure the dimensions of the Hardigg Case; measure the dimensions and thickness of the foam and HDPE spreader.
- Measure the dimensions and thickness of the spacer assembly.
- Measure the thickness of the 1-L polycoated bottle in several places. Verify that the bottles supplied for testing are those identified in this Test Plan.

The packaging provides containment for liquids. Conduct the containment boundary verification in accordance with Section 6.1 of this Test Plan. The verification will consist of the primary containment boundary for the configurations utilizing the stainless steel pigs to verify if the O-ring in the lid and base of the pigs meet containment requirements. A containment boundary verification will not be performed for the 1-L version. The SafeSend will hold containment at 100 kPa (14.5 psig). The 1-L polycoated glass bottles used in testing will not be allowed to break.

5.0 SIMULATED PAYLOAD

The simulated payload to be used is described below.

39-TU-01 30-mL version:

Follow the opening, loading, and closure instructions in Appendix B. Use the pigs marked as s/n 424437-12/94-01. Use the pigs marked as s/n 424437-12/94-02 after test unit 39-TU-02 has completed the vibration test. The 30-mL bottle should be filled with water and carbon steel shot to equal a specific gravity of 2 (fill bottle with at least 60 g of shot, then fill remainder with water, leaving 10% ullage). The 30-mL bottle will be inserted into the first pig, and a water and fluorescein mixture will be added for leak detection purposes prior to closing the pig (fill level to about three-fourths full). This assembly will then be inserted into the second pig, and water only will be added for leak detection purposes prior to closing the second pig (fill level to about three-fourths full). This assembly will then be inserted into the SafeSend container, which is inserted into the Hardigg Case.

125-mL version:

This configuration is similar to the 30-mL version. It utilizes the inner and outer stainless steel pigs and O-rings that are similar in construction to those of the 30-mL version. The only difference is in the size of

the bottle and internal pig. This also results in the pig assembly and contents being lighter in weight than the 30-mL configuration. The pig assembly is then inserted into the SafeSend container, which is inserted into the Hardigg Case. Because of these similarities, the project and test engineers have determined that the packaging configuration will be evaluated. Testing of this configuration is not necessary.

39-TU-02 *250-mL version:

Follow the opening, loading, and closure instructions in Appendix B. Use the pigs marked as s/n 424437-12/94-02. The 250-mL bottle should be filled with water and carbon steel shot to equal a specific gravity of 2 (fill bottle with at least 500 g of shot, then fill remainder with water, leaving 10% ullage). The 250-mL bottle will be inserted into the pig, and water will be added for leak detection purposes prior to closing the pig (fill level to about three-fourths full). This assembly will then be inserted into the SafeSend container, which is inserted into the Hardigg Case.

NOTE: This test unit will be used for the vibration test. After completion of the vibration test, the pigs marked as s/n 424437-12/94-02 will be used for the remainder of testing that will be conducted with test unit 39-TU-01. As such, the pigs will need to be emptied and loaded according to the simulated payload outlined for test unit 39-TU-01.

39-TU-02 *Empty Case:

Follow the opening, loading, and closure instructions in Appendix B. This test configuration will be an empty Hardigg Case, to include only the foam and impact limiters that are included as a part of the case. An empty case will be used during the water spray, penetration bar (1.0 m and 1.7 m [3.3 ft and 5.5 ft]), and compression tests.

39-TU-03 1-L version:

Follow the opening, loading, and closure instructions in Appendix B. The 1-L bottle should be filled with water and carbon steel shot to equal a specific gravity of 2 (fill bottle with enough steel shot and water so that the total content weight is equal to 2,000 g).

*NOTE: Test unit 39-TU-02 will be tested in the 250-mL version and as an empty case.

Add fluorescein for leak detection. Leave a 10% ullage). The 1-L bottle will be inserted into the SafeSend container, which is inserted into the Hardigg Case.

6.0 DESIGN CONFIRMATION SEQUENCE

6.1 PRIMARY CONTAINMENT BOUNDARY VERIFICATION

AN IMPARTIAL OBSERVER NEED NOT BE PRESENT FOR THIS TEST.

The following containment boundary verification will be performed prior to testing. This procedure simulates the reduced ambient pressure conditions by reducing the external pressure to the primary containment boundary (stainless steel pigs). Complete the following steps, recording all data and observations onto test data sheet 7.1.3 (see Appendix C of this Test Plan).

Except for the 1-L version, the primary containment boundary exists through the utilization of stainless steel pigs that contain O-rings. The 1-L version utilizes the polycoated glass bottle as the primary containment boundary system. No containment boundary verification will be conducted on the SafeSend container as it has been manufacturer-tested by the 3M Company to a pressure of 100 kPa (14.5 psig).

The following test units will be used for this verification:

39-TU-01 30-mL version
Using both sets of stainless steel pigs with the noted serial numbers as described below.

39-TU-01 (30-mL version):

NOTE: This configuration utilizes the inner and outer stainless steel pigs. Two sets of pigs are being supplied by the sponsor and will undergo this verification process. The pigs are marked as s/n 424437-12/94-01 and s/n 424437-12/94-02. If one set of pigs will fit into the vacuum chamber, then conduct this verification on both components at the same time. The inner and outer pigs will need to undergo this verification process whether they can fit into the chamber simultaneously.

1. Follow the applicable opening and closure instructions in Appendix B.
2. Fill the inside of the pig three-fourths full of water so that it will cover the area where the O-ring is located on the base or lid when inverted. Close the pig in accordance with instructions in Appendix B.
3. Invert assembly onto blotter paper or a terri-wipe towel.

4. Place the closed package in a vacuum chamber and reduce the ambient (external) pressure to 24 kPa (3.5 +0.0/-0.5 psia). Ensure this pressure is achieved due to temperature, atmospheric pressure, and calibration information on the instrument used for testing.
5. Let the assembly stand for 15 minutes, minimum, while observing for water leakage.
6. At the completion of the hold period, evaluate the time, pressure, and temperature data. Indicate a leakage rate of zero if no water is detected, and "pass" if this is the case.

If detectable leakage occurs, indicate "fail."

Failure of the containment boundary will result in the cancellation of the testing that follows Section 6.

7. Record the results of this effort on test data sheet 7.1.3 (see Appendix C of this Test Plan).
8. Relieve the vacuum and secure the test equipment. Turn assembly over onto opposite end. Perform Steps 2 through 7 until both ends of each set of pigs have undergone the containment boundary verification procedure.

6.2 SECONDARY CONTAINMENT BOUNDARY VERIFICATION

The SafeSend container has been manufacturer-tested by the 3M Company to a pressure of 100 kPa (14.5 psig). No containment boundary verification will be conducted on this portion of the packaging system.

6.3 PRIMARY CONTAINER SHIELDING VERIFICATION

The primary container shield consists of stainless steel pigs. Verification will be performed against the design requirement by measurements and visual checks. The position of the shielding within the packaging will be documented. If the shield is free to move within another container, the distance of the movement will be documented.

For the 1-L version only, shielding is not a component of this packaging configuration. A measurement of the SafeSend container within the Hardigg Case will be made. The position of the SafeSend container within the Hardigg Case will be documented. A visual check for cracks in the exterior of the SafeSend canister body and lid will be made before and after each test. A visual check for breakage of the bottle will be made before and after each test.

6.4 SECONDARY CONTAINER SHIELDING VERIFICATION

Shielding is not a component of the SafeSend container. The walls and absorbent material provide containment of contents. A measurement of the SafeSend container within the Hardigg Case will be made. The position of the SafeSend container within the Hardigg Case will be documented. A visual check for cracks in the exterior of the SafeSend canister body and lid will be made before and after completion of testing.

7.0 TEST SEQUENCE: TEST UNITS 39-TU-01 THROUGH 39-TU-03

<p>AN IMPARTIAL OBSERVER MUST BE PRESENT FOR THE TESTS LISTED IN SECTION 7.0 OR AUTHORIZE TESTS TO BE CONDUCTED WITHOUT THIRD-PARTY OBSERVATION.</p>

Test units will undergo marking, inspection, and assembly. Each test unit will be subjected to the water spray test as a prerequisite to any other testing (with the exception of the vibration test) unless it is determined by the test engineer that after the water spray test is conducted on the first test unit, this test does not result in any significant deterioration of the packaging.

The vibration test will be conducted before the water spray test. As stated, the water spray test will precede each of the following tests: compression, penetration (1.0 m [3.3 ft]); penetration (1.7 m [5.5 ft]); drop test (1.2 m [4 ft]); and drop test (9 m [30 ft]). The test sequence shown in Table 3 may be varied by the test engineer, except where prohibited.

The packages must perform adequately when subjected to the applicable performance tests, which are described below. There should be evidence that the integrity of the packaging would remain with no release of the hazardous materials to the environment (49 CFR 173.24), no loss or dispersal of radioactive contents, and no significant increase in the radiation levels recorded or calculated at the external surfaces for the condition before the test [49 CFR 173.412(m)].

Each configuration will be considered a unique package for testing purposes. Failure of one configuration does not eliminate the further satisfactory completion of testing for the remaining configurations. In the event of a failed configuration, the test and project engineer, in conjunction with the test sponsor, may make an evaluation to determine whether an alternative internal packaging arrangement may warrant further testing.

Table 3. Testing Sequence.

Type of test	Reference	Test unit number
Vibration test	(Section 7.2)	39-TU-01 39-TU-02 ^a (250-mL version) 39-TU-03
Water spray test ^b	(Section 7.3)	39-TU-02 ^c (Empty)
Penetration test - 1.0 m (3.3 ft)	(Section 7.4)	39-TU-02 (Empty)
Penetration test - 1.7 m (5.5 ft)	(Section 7.5)	39-TU-02 (Empty)
Compression test	(Section 7.6)	39-TU-02 (Empty)
Drop test - 9.0 m (30 ft)	(Section 7.7)	39-TU-01 39-TU-03
Drop test - 1.2 m (4 ft)	(Section 7.8)	39-TU-01 39-TU-03
Containment boundary verification	(Section 8.1)	39-TU-01 (both sets of pigs)

^aNOTE: Test unit 39-TU-02 will be tested in the 250-mL version and as an empty case.

^bThe time interval between the end of the water spray test and the beginning of the next test shall be such that the water has soaked in to the maximum extent without appreciable drying of the exterior of the package. The time interval is 2 hours if the spray is applied simultaneously from four different directions. Other tests will follow immediately if the spray is applied consecutively from each of the four directions. Testing will need to be carefully scheduled to ensure the time period is not exceeded by a significant time interval to the extent that the exterior of the package dries out.

^cIf after the first water spray test the test engineer determines that the water spray test does not result in any significant deterioration of the packaging, no further water spray tests will be performed on packagings before testing.

7.1 ASSEMBLY, LOADING, AND CLOSURE

<u>Event/Test No.</u>	<u>Event/Test Description</u>
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39-TU-01-1	Assemble, load, and close the packaging with simulated payload in position in accordance with Section 5.0 of this Test Plan and Appendix B.
39-TU-02-1*	
39-TU-03-1	

*This test unit will be loaded with simulated contents for the 250-mL version when used for the vibration test. This will be an empty packaging when used for the water spray, penetration bar, compression, and drop tests.

Take pretest photographs.

7.2 VIBRATION TEST

NOTE: The water spray test is not a precondition for the following test.

AN IMPARTIAL OBSERVER MUST BE PRESENT FOR THIS TEST OR AUTHORIZE THE TEST TO BE CONDUCTED WITHOUT THIRD-PARTY OBSERVATION.

<u>Event/Test No.</u>	<u>Event/Test Description</u>
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39-TU-01-2	Photograph the pretest condition.
39-TU-02-2*	
39-TU-03-2	

*This test unit will be the 250-mL version and loaded with simulated contents. Perform the vibration testing in accordance with 49 CFR 178.608.

Use test units as prepared in Section 7.1 of this Test Plan. Place the test units on a vibrating platform that has a vertical, double amplitude (peak-to-peak displacement) of one inch. The packages should be constrained horizontally to prevent them from falling off the platform but must be left free to move vertically, bounce, and rotate.

The test must be performed continuously for 1 hour at a frequency that causes each package to be raised from the vibrating platform to such a degree that a piece of material of approximately 1.6-mm (0.063-in.) thickness (such as steel strapping or paperboard) can be passed between the bottom of any package and the platform.

Immediately following the vibration period, each package shall be removed from the platform, turned onto its side, and observed for any evidence of leakage. The package will be judged to pass if there is no significant damage to the packaging and no loss of the simulated load. Open the Hardigg Case and

SafeSend container according to instructions outlined in Appendix B. Rupture or leakage from any of the packages constitutes failure of the test.

Take post-test photographs. Record the results on the supplied Vibration Test Data Sheet (see Appendix C of this Test Plan). Use a separate data sheet for each test unit.

Remove the stainless steel pig used in test unit 39-TU-02. Open the pigs according to the appropriate section in Appendix B and empty the contents. The pigs identified as s/n 424437-12/94-02 will need to be filled according to the simulated payload identified for use with test unit 39-TU-01 in Section 5.0 of this Test Plan.

Next, conduct the water spray test described in Section 7.3 of this Test Plan.

7.3 WATER SPRAY TEST

NOTE: The following step is a precondition for any further testing. Because timing is a critical element of this step, it is important to plan the water spray and soak such that the packaging is ready when required for the next test.

Refer to Section 7.0 of this Test Plan, Table 3, Notes b and c, before conducting this test.

<p>AN IMPARTIAL OBSERVER MUST BE PRESENT FOR THIS TEST OR AUTHORIZE THE TEST TO BE CONDUCTED WITHOUT THIRD-PARTY OBSERVATION.</p>
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Ensure that the package is elevated such that no additional water, other than would normally be introduced during the water spray, may soak into the package. Do not handle the package until the soak and inspection have been accomplished.

<u>Event/Test No.</u>	<u>Event/Test</u>
39-TU-02-3	<p>This is an empty packaging. Close the Hardigg Case in accordance with Appendix B, and without any contents in accordance with Section 5.0 of this Test Plan.</p> <p>Photograph the pretest condition.</p> <p>Perform a water spray test in accordance with <i>DOT-7A Packaging Test Procedure</i>, Section 7.2 (Kelly 1995).</p> <p>This test simulates exposure to rainfall of approximately 5 cm (2 in.) per hour for at least 1 hour.</p>

Record the results on the Water Spray Test Data Sheet (see Appendix C of this Test Plan).

Open the package according to the appropriate section within Appendix B. The package is judged to pass if water does not enter the Hardigg Case in such a manner that degradation of the interior foam within the case cavity results so that shifting and movement of contents would allow an increase in radiation of more than 20%. Because of the hard plastic exterior of the case and the steel latches, no damage to these components is expected. However, the Hardigg Case utilizes a slitted gasket that could allow water to enter the package.

Take post-test photographs. Record the results on the Water Spray Test Data Sheet (see Appendix C of this Test Plan). Use a separate data sheet for each test unit.

NOTE: If the above noted test unit is not adversely affected by the water spray test, the test engineer may determine that further water spray testing is not necessary before additional tests are conducted. If the water spray test appears to negatively influence the performance of the packaging, then the water spray test will be conducted on the remaining test units in the same manner as stated above.

Next, conduct the 1.0 m (3.3 ft) penetration bar drop test outlined in Section 7.4.

7.4 PENETRATION TEST - 1.0 m (3.3 ft)

NOTE: Refer to Section 7.0 of this Test Plan, Table 3, Notes b and c, before conducting this test.

AN IMPARTIAL OBSERVER MUST BE PRESENT FOR THIS TEST OR AUTHORIZE THE TEST TO BE CONDUCTED WITHOUT THIRD-PARTY OBSERVATION.

<u>Event/Test No.</u>	<u>Event/Test Description</u>
39-TU-02-4	This is an empty packaging. Close the Hardigg Case in accordance with Appendix B, and without any contents in accordance with Section 5.0 of this Test Plan.

Photograph the pretest condition.

Perform a penetration test* in accordance with *DOT-7A Packaging Test Procedure*, Section 7.4 (Kelly 1995) with the following parameters.

*NOTE: During the penetration test, personnel shall be excluded from the impact area to the extent to be clear of any fragments that could result from the impact. As a minimum, this distance shall be 6.1 m (20 ft).

Penetration bar: 3.2-cm (1.25-in.) diameter with a hemispherical end. The bar shall weigh 6 kg (13.2 lb). Drop bar with its longitudinal axis vertical.

Drop height of penetration bar: 1.0 m (3.3 ft), +2.5 cm (1 in.), -0 (3 ft, 5 in.)

Impact point: The impact location will be measured from the W axis. Lay the Hardigg Case flat onto the widest lengthwise side so that the impact point will be onto the center of the Hardigg Case lid.

Take photographs after the test and ensure any damage is documented.

The package will be judged to pass if there is no penetration of the outer packaging. Any change from the pretest condition will be evaluated by the test engineer to determine if the packaging passed or failed the test and if any additional testing will be necessary.

Record the results on the test data sheets provided in Appendix C of this Test Plan. Use a separate data sheet for each test unit.

If the package passed the testing conducted in the previous step, conduct the penetration bar test as described in Section 7.5 of this Test Plan.

7.5 PENETRATION TEST - 1.7 m (5.5 ft)

NOTE: Refer to Section 7.0 of this Test Plan, Table 3, Notes b and c, before conducting this test.

AN IMPARTIAL OBSERVER MUST BE PRESENT FOR THIS TEST OR AUTHORIZE THE TEST TO BE CONDUCTED WITHOUT THIRD-PARTY OBSERVATION.

Event/Test No.

Event/Test Description

39-TU-02-5

This is an empty packaging. Ensure the Hardigg Case is closed in accordance with Appendix B, and without any contents in accordance with Section 5.0 of this Test Plan.

Photograph the pretest condition.

Perform a penetration test* in accordance with *DOT-7A Packaging Test Procedure*, Section 7.4 (Kelly 1995) with the following parameters.

Penetration bar: 3.2-cm (1.25-in.) diameter with a hemispherical end. The bar shall weigh 6 kg (13.2 lb). Drop bar with its longitudinal axis vertical.

Drop height of penetration bar: 1.7 m (5.5 ft), +2.5 cm (1 in.), -0 (5 ft, 7 in.)

Impact point: The impact location will be measured from the W axis. Lay the Hardigg Case flat onto the widest lengthwise side so that the impact point will be onto the center of the Hardigg Case lid.

Take photographs after the test and ensure any damage is documented.

The package will be judged to pass if there is no penetration of the outer packaging. Any change from the pretest condition will be evaluated by the test engineer to determine if the packaging passed or failed the test and if any additional testing will be necessary.

Record the results on the test data sheets provided in Appendix C of this Test Plan. Use a separate data sheet for each test unit.

If the package passed the testing conducted in the previous step, conduct the compression test as described in Section 7.6 of this Test Plan.

7.6 COMPRESSION TEST

NOTE: Refer to Section 7.0 of this Test Plan, Table 3, Notes b and c, before conducting this test.

AN IMPARTIAL OBSERVER MUST BE PRESENT FOR THIS TEST OR AUTHORIZE THE TEST TO BE CONDUCTED WITHOUT THIRD-PARTY OBSERVATION.

<u>Event/Test No.</u>	<u>Event/Test Description</u>
39-TU-02-6	This is an empty packaging. Ensure the Hardigg Case is closed in accordance with Appendix B, and without any contents in accordance with Section 5.0 of this Test Plan.

*NOTE: During the penetration test, personnel shall be excluded from the impact area to the extent to be clear of any fragments that could result from the impact. As a minimum, this distance shall be 6.1 m (20 ft).

Photograph the pretest condition.

Perform a compression test in accordance with *DOT-7A Packaging Test Procedure*, Section 7.3 (Kelly 1995) for at least 24 hours with the compressive load as specified in the calculation below. The load is applied uniformly to two opposite sides of the package, one of which must be the base on which the package normally would stand.

<u>Test unit number</u>	<u>Compressive load, kg (lb)</u>
39-TU-02	300 (661)

Apply 318 kg (700 lb) weight

Calculations were determined as follows.

- a. Five times the estimated weight of the package is calculated to be:

$$5 \times 32 \text{ kg} = 160 \text{ kg} \quad (5 \times 70 \text{ lb} = 350 \text{ lb})$$

- b. The weight based on the vertically projected area of the package as it is to be loaded and transported is calculated to be:

$$48 \text{ cm (length)} \times 48 \text{ cm (width)} = 2,304 \text{ cm}^2 = 0.2304 \text{ m}^2$$

$$\begin{aligned} 0.2304 \text{ m}^2 \times 1,300 \text{ kg/m}^2 &= 300 \text{ kg} \\ &= (661 \text{ lb}) \end{aligned}$$

The compressive load was determined by using the greater of the vertically projected area of the packaging as it is intended for loading and transportation and five times the estimated weight of the packaging. The load is applied uniformly to two opposite sides of the package, one of which must be the base on which the package would normally stand.

Photograph the package within 1 hour after applying the compressive load. Take photographs of the package at the end of the 24-hour test period before removing the compressive load and after removal.

After removing the compressive load from the packaging, conduct a visual inspection of the container. If the packaging shows signs of damage, take measurements in the same locations as were used for the pretest measurements to document any change. The package will be considered to pass if there is no fracturing of the case and no change in the exterior dimensions of the Hardigg Case >2.54 cm (1 in.).

Record the results on the Compression Test Data Sheet (see Appendix C of this Test Plan). Use a separate data sheet for each test unit.

If the package passed the testing conducted in the previous step, conduct the 9-m (30-ft) drop test outlined in Section 7.7 of this Test Plan.

7.7 DROP TEST - 9 m (30 ft)

NOTE: Refer to Section 7.0 of this Test Plan, Table 3, Notes b and c, before conducting this test.

AN IMPARTIAL OBSERVER MUST BE PRESENT FOR THIS TEST OR AUTHORIZE THE TEST TO BE CONDUCTED WITHOUT THIRD-PARTY OBSERVATION.

Event/Test No.

Event/Test Description

39-TU-01-7

This is the 30-mL version.

Assemble, load, and close this packaging according to the instructions in Section 5.0 and Appendix B of this Test Plan. Note that both sets of stainless steel pigs provided by the sponsor will be utilized.

A total of four drops will be performed on this packaging configuration from this drop height.

After each drop, the Hardigg Case and SafeSend containers will be opened according to Appendix B. This portion of the packaging will be checked visually to detect leakage of simulated contents from the stainless steel pigs.

A new SafeSend container will be used for each drop.

Alternate each set of pigs for each drop.

Photograph and videotape the pretest condition.

Perform the drop test* in accordance with *DOT-7A Packaging Test Procedure*, Section 7.5 (Kelly 1995) with the following parameters.

Drop height: 9.0 m (30.0 ft), +7.5 cm (3.0 in.), -0
(30 ft, 3 in.)

Impact angle: See orientation instructions.

Orientation:	Impact lid--flat onto the widest lengthwise side of package	39-TU-01
	Impact top corner of lid on latch side, center of gravity (CG) (45° angle)	
	Flat on top	39-TU-01
	Flat on bottom	39-TU-01

*NOTE: During the drop test, personnel shall be excluded from the impact area to the extent to be clear of any fragments that could result from the impact. As a minimum, this distance shall be 9.1 m (30 ft).

Take photographs and provide video coverage during and after each drop test to ensure any damage of the packaging is documented.

Open the packaging according to Appendix B and check for any damage or leakage of contents.

Record the results on the test data sheets provided in Appendix C of this Test Plan. Use a separate data sheet for each test unit. Include the serial number of the pig; identify the SafeSend container used for each test.

Replace the SafeSend container after each drop. Alternate each set of pigs after each drop.

Load and close packaging according to Appendix B, and repeat the test sequence for each orientation. When complete, conduct the following test.

Event/Test No.

Event/Test Description

39-TU-03-7

This is the 1-L version.

Assemble, load, and close this packaging according to the instructions in Section 5.0 and Appendix B of this Test Plan.

A total of three drops will be performed on this packaging configuration from this drop height.

After each drop, the Hardigg Case and SafeSend containers will be opened according to Appendix B. The packaging will be checked visually for leakage of contents.

A new SafeSend container will be used for each drop.

Photograph and videotape the pretest condition.

Perform the drop test* in accordance with *DOT-7A Packaging Test Procedure*, Section 7.5 (Kelly 1995) with the following parameters.

Drop height: 9.0 m (30.0 ft), +7.5 cm (3.0 in.), -0
(30 ft, 3 in.)

Impact angle: See orientation instructions.

Orientation: Impact lid--flat onto the widest
lengthwise side of package
Flat on top
Flat on bottom

39-TU-03
39-TU-03
39-TU-03

*NOTE: During the drop test, personnel shall be excluded from the impact area to the extent to be clear of any fragments that could result from the impact. As a minimum, this distance shall be 9.1 m (30 ft).

Take photographs and provide video coverage during and after each drop test to ensure any damage of the packaging is documented.

Open the packaging according to Appendix B and check for any damage or leakage of contents.

Record the results on the test data sheets provided in Appendix C of this Test Plan. Use a separate data sheet for each test unit. Identify the SafeSend container used for each test.

Replace the SafeSend container after each drop.

Load and close packaging according to Appendix B, and repeat the test sequence for each orientation. When complete, perform the 1.2-m (4-ft) drop test as described in Section 7.8 of this Test Plan.

7.8 DROP TEST - 1.2 m (4.0 ft)

NOTE: Refer to Section 7.0 of this Test Plan, Table 3, Notes b and c, before conducting this test.

AN IMPARTIAL OBSERVER MUST BE PRESENT FOR THIS TEST OR AUTHORIZE THE TEST TO BE CONDUCTED WITHOUT THIRD-PARTY OBSERVATION.

<u>Event/Test No.</u>	<u>Event/Test Description</u>
39-TU-03-8	<p>This is the 1-L version.</p> <p>Assemble, load, and close the packaging with simulated contents according to Section 5.0 and Appendix B of this Test Plan.</p> <p>Photograph and videotape the pretest condition.</p> <p>A total of three drops will be performed on this packaging configuration from this drop height.</p> <p>After each drop, the Hardigg Case and SafeSend containers will be opened according to Appendix B. This portion of the packaging will be checked visually.</p> <p>A new SafeSend container will be used for each drop.</p>

Perform the drop test* in accordance with *DOT-7A Packaging Test Procedure*, Section 7.5 (Kelly 1995) with the following parameters.

Drop height:	1.2 m (4.0 ft), +2.5 cm (1.0 in.), -0 (4 ft, 1 in.)	
Impact angle:	See orientation instructions.	
Orientation:	Impact lid--flat onto the widest lengthwise side of package	39-TU-03
	Flat on bottom	39-TU-03
	Flat on top	39-TU-03

Take photographs and provide video coverage during and after each test to ensure any damage is documented.

Open the packaging according to Appendix B and check for any damage or leakage of contents.

Record the results on the test data sheets provided in Appendix C of this Test Plan. Use a separate data sheet for each test unit. Identify the SafeSend container used for each test.

Replace the SafeSend container after each drop.

Load and close packaging according to Appendix B and repeat the test sequence for each orientation. When complete, conduct the following test.

<u>Event/Test No.</u>	<u>Event/Test Description</u>
39-TU-01-8	<p>This is the 30-mL version.</p> <p>Assemble, load, and close the packaging with simulated contents according to Section 5.0 and Appendix B of this Test Plan. Note that both sets of stainless steel pigs provided by the sponsor will be utilized.</p> <p>Photograph and videotape the pretest condition.</p> <p>A total of three drops will be performed on this packaging configuration from this drop height.</p> <p>After each drop, the Hardigg Case and SafeSend containers will be opened according to Appendix B. This portion of the packaging will be checked visually to detect leakage of simulated contents from the stainless steel pigs.</p>

*NOTE: During the drop test, personnel shall be excluded from the impact area to the extent to be clear of any fragments that could result from the impact. As a minimum, this distance shall be 6.1 m (30 ft).

A new SafeSend container will be used for each drop.

Use one set of pigs for the first drop conducted.
Use the second set of pigs for the remaining two drops.

Perform the drop test* in accordance with *DOT-7A Packaging Test Procedure*, Section 7.5 (Kelly 1995) with the following parameters.

Drop height:	1.2 m (4.0 ft), +2.5 cm (1.0 in.), -0 (4 ft, 1 in.)	
Impact angle:	See orientation instructions.	
Orientation:	Impact lid--flat onto the widest lengthwise side of package	39-TU-01
	Impact top corner of lid on latch side, CG (45° angle)	39-TU-01
	Flat on top	39-TU-01

Take photographs and provide video coverage during and after each test to ensure any damage is documented.

Open the packaging according to Appendix B and check for any damage or leakage of contents.

Record the results on the test data sheets provided in Appendix C of this Test Plan. Use a separate data sheet for each test unit. Include the serial number of the pig; identify the SafeSend container used for each test.

Replace the SafeSend container after each drop. Use one set of pigs for the first drop, record results as noted above, then set aside in a safe place until ready to perform the containment boundary verification as outlined in Section 8.1 of this Test Plan. Use the second set of pigs for the remaining two drops.

Load and close packaging according to Appendix B and repeat the test sequence for each orientation. After the third drop at this height on test unit 39-TU-01, gather both sets of pigs and conduct the containment boundary verification procedure as described in Section 8.1 of this Test Plan.

*NOTE: During the drop test, personnel shall be excluded from the impact area to the extent to be clear of any fragments that could result from the impact. As a minimum, this distance shall be 6.1 m (30 ft).

8.0 POST-TEST ACTIONS - INTERNAL PACKAGING

8.1 CONTAINMENT BOUNDARY VERIFICATION

This process will be performed as noted at the completion of the drop tests as indicated in Section 7.0 of this Test Plan.

THE IMPARTIAL OBSERVER MUST BE PRESENT DURING THIS VERIFICATION PROCEDURE OR AUTHORIZE THE PROCEDURE TO BE CONDUCTED WITHOUT THIRD-PARTY OBSERVATION.

39-TU-01 (30-mL version):

NOTE: This configuration utilizes the inner and outer stainless steel pigs. Two sets of pigs are being supplied by the sponsor and will undergo this verification process. The pigs are marked as s/n 424437-12/94-01 and s/n 424437-12/94-02. If one set of pigs will fit into the vacuum chamber, then conduct this verification on both components at the same time. The inner and outer pigs will need to undergo this verification process whether they can fit into the chamber simultaneously.

1. Gather both sets of pigs (s/n 424437-12/94-01 and 424437-12/94-02).
2. Invert one end of the pig assembly onto blotter paper or a terri-wipe towel.
3. Place this assembly in a vacuum chamber and reduce the ambient (external) pressure to 24 kPa (3.5 +0.0/-0.5 psia). Ensure this pressure is achieved due to temperature, atmospheric pressure, and calibration information on the instrument used for testing.
4. Let the assembly stand for 15 minutes, minimum, while observing for water solution leakage.
5. At the completion of the hold period, evaluate the time, pressure, and temperature data. Indicate a leakage rate of zero if no water solution is detected, and "pass" if this is the case.

If detectable leakage occurs, indicate "fail."

6. Record the results of this effort on test data sheet 7.1.3 (see Appendix C of this Test Plan).
7. Relieve the vacuum and secure the test equipment. Turn assembly over onto opposite end. Perform Steps 2 through 6 until both ends of each set of pigs have undergone the containment boundary verification procedure.
8. Open the outer pig according to Appendix B and remove the inner pig. Be sure to dry the inner pig completely before continuing.

9. Perform Steps 2 through 7 on one end of the inner pig. NOTE: Observe for leakage of water and dye solution.
10. Turn pig over onto opposite end and perform Steps 2 through 6 again until both ends of each set of pigs have undergone the containment boundary verification procedure. NOTE: Observe for leakage of water and dye solution.
11. Relieve the vacuum and secure the test equipment.

8.2 SHIELDING VERIFICATION

The primary container shield consists of stainless steel pigs. Verification will be performed visually during testing and with the use of a black light after testing to ensure no leakage of simulated contents occurs. Movement of the pig or the 1-L bottle within the SafeSend container will be measured. The distance of the movement will be documented.

Shielding is not a component of the SafeSend container. The walls and absorbent material provide containment of contents. A measurement of the SafeSend container within the Hardigg Case will be made. The position of the SafeSend container within the Hardigg Case will be documented. A visual check for cracks in the exterior of the SafeSend canister body and lid will be made before and after testing.

Movement of the load will be evaluated to determine changes in dose rate at the surface of the package. An increase of 20% or greater will be judged as a failure.

9.0 POST-TEST ACTIONS - ADMINISTRATIVE

Written measurements will be thoroughly documented on the appropriate test data sheets after each drop test has been performed. Photographs of damage and video coverage of the tests performed also will be used as documentation.

Perform post-test activities outlined in Section 8.0 of *DOT-7A Packaging Test Procedure* (Kelly 1995).

Upon test completion, test units shall be marked as follows:

- a. Packaging is a test unit belonging to "Westinghouse Hanford Company, Richland, Washington"
- b. Package testing completed "enter month/day/year"
- c. Packaging is an "on hold" test unit; do not return or dispose of without the approval of 7A Testing Support Program Project Engineer, Packaging Programs and Testing

- d. Packaging "does not contain" radioactive material
- e. Packaging "does not contain" hazardous material
- f. Packaging "does not contain" material that requires disposal as a hazardous waste
- g. Packaging surface "does not contain" radioactive contamination.

Refer to TP-D01, *Transportation and Packaging Desk Instructions* (O'Brien 1992), for guidance on returning test units to the test sponsor.

10.0 SIGNATURES

Prepared: D.L. Kelly 1-30-95
(Test Engineer) Date

Reviewed: Tim Brown 1-31-95
(Independent Review) Date

Reviewed: S.B. Dutta 1-31-95
(Quality Assurance) Date

Reviewed: DeW. M. Nally 1-31-95
(Safety) Date

11.0 REFERENCES

- 49 CFR 173, "Shippers - General Requirements for Shipments and Packaging," *Code of Federal Regulations*, as amended.
- 49 CFR 178, "Shipping Container Specification," *Code of Federal Regulations*, as amended.
- Kelly, D. L., 1995, *DOT-7A Packaging Test Procedure*, WHC-SD-TP-RPT-018, Rev. 0, Westinghouse Hanford Company, Richland, Washington.
- O'Brien, J. H., 1992, *Transportation and Packaging Desk Instructions*, TP-D01, "Return/Disposal of Test Packaging," Rev. 00, Westinghouse Hanford Company, Richland, Washington.

12.0 BIBLIOGRAPHY

- 3M, *SP-R1L Kit, SafeSend Reusable Super Pack Shipping System [34-7032-9928-8]*, 3M Occupational Health and Environmental Safety Division, St. Paul, Minnesota.
- ANSI, 1987, *American National Standard for Radioactive Materials--Leakage Tests on Packages for Shipment*, ANSI N14.5-1987, American National Standards Institute, New York, New York.

13.0 GLOSSARY

ABBREVIATIONS AND ACRONYMS

ASTM	American Society for Testing and Materials
CG	center of gravity
HDPE	high-density polyethylene
Hedgehog	WHC Hedgehog Shielded Container
ID	inner diameter
WHC	Westinghouse Hanford Company

*NOTE: Westinghouse Hanford Company will be writing and supplying new Operating and Maintenance Instructions after testing to accompany this packaging, as tested, for a U.S. Department of Transportation Specification 7A Type A package.

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APPENDIX A

WESTINGHOUSE HANFORD COMPANY HEDGEHOG CONTAINER CONFIGURATIONS

LIST OF FIGURES

A-1	Hedgehog Container, 30-mL Version	A-5
A-2	Hedgehog Container, 125-mL Version	A-6
A-3	Hedgehog Container, 250-mL Version	A-7
A-4	Hedgehog Container, 1-L Version	A-8
A-5	Hardigg Case - External View	A-9
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Table A-1. Hedgehog Container Materials and Parts Listing. (sheet 1 of 2)

Quantity											Part/dash #	Description	Material/ reference	Page	Item #
										X		30-mL Hedgehog assembly		1	1
										X		125-mL Hedgehog assembly		2	2
										X		250-mL Hedgehog assembly		3	3
									X			1-L Hedgehog assembly		4	4
						X	1	1	1	1	AL2216-1205-14274-HHBA00	Polyethylene overpack case with zinc chromate hardware, 10-cm x 15-cm (4-in. x 6-in.) cardholder, 2 PCF polyethylene foam and HDPE load spreader	Hardigg Industries, Inc.	1-4	5
					X		1	1	1	1	SP-R1L	Polyethylene SafeSend® container	3M	1-4	6
				X			1	1	1	1	-100	Spacer assembly		5	7
			X					1	1	1	-200	Outer container assembly		6	8
			X	1							-300	Outer container lifting cable assembly		6, 7	9
		X								1	-400	30-mL inner container assembly		11	10
	X	1									-500	30-mL inner container lifting cable assembly		11, 12	11
X										1	-600	125-mL inner container assembly		16	12
															13
															14
		8		4							-001	Hexagon socket flat counter-sunk head cap screw #8-32UNC-3A x 1 in.	Alloy steel, ASTM F 835	6, 11	15
8				4							-002	Hexagon socket flat counter-sunk head cap screw #8-32UNC-3A x 0.75 in.	Alloy steel, ASTM F 835	6, 16	16
				2							2-153-N304-75 or 2-153-N103-70	Outer container O-ring, Nitrile 8.86-cm (3.497-in.) inner diameter, 0.26-cm (0.103-in.) cross section	Parker ^b	6	17
			1								2065	Cable, 19.1-cm (7.5-in.) long x 0.16-cm (0.063-in.) diameter, uncoated stainless steel, 7x19 construction	SAVA ^c	6, 7	18
	2		2								805-C	Cable fitting for 0.16-cm (0.063-in.) cable, 0.53-cm (0.208-in.) diameter by 0.8-cm (0.3-in.) long sleeve, copper	SAVA	6, 7, 11, 12	19
				1							-003	Outer container cover	304 stainless steel, ASTM A 240	6, 8	20
				1							-004	Outer container wall	304 stainless steel, ASTM A 511 cold finish, or ASTM A 276	6, 9	21
				1							-005	Outer container base	304 stainless steel, ASTM A 240	6, 10	22
		2									2-125-N304-75 or 2-125-N103-70	30-mL inner container O-ring, Nitrile 3.3-cm (1.299-in.) inner diameter, 0.26-cm (0.103-in.) cross section	Parker	11	23

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Table A-1. Hedgehog Container Materials and Parts Listing. (sheet 2 of 2)

Quantity										Part/dash #	Description	Material/ reference	Page	Item #
	1									2065	Cable, 14.0-cm (5.5-in.) long x 0.16-cm (0.063-in.) diameter, uncoated stainless steel, 7x19 construction	SAVA	11, 12	24
		1								-006	30-mL inner container cover	304 stainless steel, ASTM A 240	11, 13	25
		1								-007	30-mL inner container wall	304 stainless steel, ASTM A 511 cold finish, or ASTM A 276	11, 14	26
		1								-008	30-mL inner container base	304 stainless steel, ASTM A 240	11, 15	27
2										2-142-N304-75 or 2-142-N103-70	125-mL inner container O-ring, Nitrile 6.0-cm (2.362-in.) inner diameter, 0.26-cm (0.103-in.) cross section	Parker	16	28
2										-009	125-mL inner container cover/base	304 stainless steel, ASTM A 240	16, 17	29
1										-010	125-mL inner container wall	304 stainless steel, ASTM A 511 cold finish, or ASTM A 276	16, 18	30

^aSafeSend is a trademark of the 3M Company.

^bParker O-Ring Handbook, Parker Seals Catalog No. ORD5700, Parker Hannifin Corp., Cleveland, Ohio, 1992.

^cSAVA Industries Inc., Riverdale, New Jersey.

ASTM = American Society for Testing and Materials

Hedgehog = Westinghouse Hanford Company Hedgehog Shielded Container

HDPE = High-density polyethylene

PCF = Pounds per cubic foot

Figure A-1. Hedgehog Container, 30-mL Version.

Figure A-2. Hedgehog Container, 125-mL Version.

Figure A-3. Hedgehog Container, 250-mL Version.

Figure A-4. Hedgehog Container, 1-L Version.

Figure A-5. Hardigg Case - External View.

Figure A-6. Hardigg Case - Internal Cavity.

APPENDIX B

OPENING, LOADING, AND CLOSURE PROCEDURE FOR TESTING

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APPENDIX B**OPENING, LOADING, AND CLOSURE PROCEDURE FOR TESTING****B1.0 GENERAL INFORMATION**

Refer to Appendix A for an assembly sketch of each configuration. The following Westinghouse Hanford Company Shielded Hedgehog Container (Hedgehog) assemblies will be tested.

30-mL Hedgehog Assembly:	Hardigg Case ¹ (PN AL2216-1205-14274-HHBA00) Spacer assembly 3M SafeSend ² SP-R1L Kit (four foam inserts, no fiberboard shipper) Outer container assembly Inner container assembly (30 mL) 30-mL sample bottle
125-mL Hedgehog Assembly:	Will not be tested.
250-mL Hedgehog Assembly:	Hardigg Case (PN AL2216-1205-14274-HHBA00) Spacer assembly 3M SafeSend SP-R1L Kit (four foam inserts, no fiberboard shipper) Outer container assembly 250-mL sample bottle
1-L Hedgehog Assembly:	Hardigg Case (PN AL2216-1205-14274-HHBA00) Spacer assembly 3M SafeSend SP-R1L Kit (six foam inserts, no fiberboard shipper) 1-L polycoated glass bottle

B2.0 HARDIGG CASE**B2.1 HARDIGG CASE - OPENING INSTRUCTIONS**

1. Ensure that the proper orientation of the case is marked. The internal, black, high-density polyethylene (HDPE) load spacer is the bottom of the packaging in which it normally sits. The exterior top of the Hardigg Case will need to be marked "this end up" to ensure that the packaging is loaded and unloaded properly.

¹Hardigg Cases is a trademark of Hardigg Industries, Inc.

²SafeSend is a trademark of the 3M Company.

If this is the first time the case is to be opened, there will be no markings. Open the case in accordance with the following instructions and mark as depicted above.

2. Open the Hardigg Case by unlatching and lifting each butterfly latch up and over the lip of the catch mechanism. Turn each latch counterclockwise.
3. Set the case aside in a clean, dry location.

B2.2 HARDIGG CASE - CLOSURE INSTRUCTIONS

1. Orient the case so that the lid faces upward. Close the lid.
2. Secure the Hardigg Case lid by hooking the butterfly latches up and over the lip of the catch mechanism, then turn clockwise until tight.
3. Store the case in a safe location.

B3.0 SAFESSEND CONTAINER

NOTE: The 3M SafeSend SP-R1L Kit comes with 1 SafeSend container, two plastic bags, and six foam inserts. In addition, the kit contains eight fiberboard shippers. Not all component parts of this kit are used with the Hedgehog container as described (i.e., fiberboard shipper). Refer to the configurations in Appendix A when assembling the packagings to be tested.

The SP-R1L Kit will need to be opened and its contents sorted as to what will be used. Discard the fiberboard shippers as they will not be used.

NOTE: The SafeSend container has identification numbers located on the label to the right of the 3M instruction book and in the right corner of the red label on the cap. These numbers must be identical. Do not use if they are not identical.

B3.1 SAFESSEND CONTAINER - OPENING INSTRUCTIONS

1. Unlatch the SafeSend canister cap by pressing on the left side of the black latch. Unscrew the cap counterclockwise. Remove the plastic bag and foam inserts from inside the SafeSend canister.
2. Gather the appropriate number of foam inserts to be used for the appropriate configuration to be tested and place into the plastic bag supplied.
3. Set the SafeSend container, plastic bag, and foam inserts aside in a clean, dry location.

NOTE: For general storage of the SafeSend container, follow the manufacturer's supplied information. The lid of the SafeSend container should not be tightened such that the lid locking mechanism is engaged.

B3.2 SAFESEND CONTAINER - CLOSURE INSTRUCTIONS

NOTE: For general storage of the SafeSend container, follow the manufacturer's supplied information. The lid of the SafeSend container should not be tightened such that the lid locking mechanism is engaged.

NOTE: The SafeSend container has identification numbers located on the label to the right of the 3M instruction book and in the right corner of the red label on the cap. These numbers must be identical. Do not use if they are not identical.

1. Thoroughly wipe the threaded area of the SafeSend canister base and lid with a lint-free cloth to remove any debris.
2. Screw the cap on the SafeSend canister clockwise until the latch can be seen and heard to lock into place. Do not force the lid beyond the locked position.

B4.0 STAINLESS STEEL PIGS

<p>CAUTION: TWO DIFFERENT SCREW SIZES EXIST WITH THE OUTER PIG ASSEMBLY. THE SHORTER SCREWS ARE TO BE USED TO ATTACH THE BASE TO THE BODY; THE LONGER SCREWS ARE TO BE USED TO ATTACH THE LID TO THE BODY. THE 30-ML INNER ASSEMBLY USES 1-IN. SCREWS FOR THE COVER AND BASE.</p>
--

NOTE: The top lid of each pig will be notched. Each set of pigs also has a serial number. Do not use if the serial numbers for each set of pigs are not identical.

B4.1 STAINLESS STEEL PIGS - OPENING INSTRUCTIONS

1. To remove the lids on the stainless steel pig assemblies, unscrew the four screws and pull straight upward on the lifting cable.
2. To remove the base of the stainless steel pig assemblies, unscrew the four screws and pull straight outward on the base of the pig.
3. For storage purposes, the pigs should be kept in a clean, dry location. It should be noted that the screw length for the lid is longer than the screw length for the base.

B4.2 STAINLESS STEEL PIGS - CLOSURE INSTRUCTIONS

CAUTION: TWO DIFFERENT SCREW SIZES EXIST WITH THE OUTER PIG ASSEMBLY. THE SHORTER SCREWS ARE TO BE USED TO ATTACH THE BASE TO THE BODY; THE LONGER SCREWS ARE TO BE USED TO ATTACH THE LID TO THE BODY. THE 30-ML INNER ASSEMBLY USES 1-IN. SCREWS FOR THE COVER AND BASE.

1. Ensure that the base is on the pig. If the base is not on the pig, wipe the area around the O-ring and groove within the base to ensure they are clean. Ensure that the O-ring is not damaged in any way. Apply O-ring lubricant to the O-ring.
2. Place the base onto the appropriate pig container.
3. Push the base down onto the body so it fits into place and the screw holes are aligned. Insert the appropriate-sized screws. Tighten the screws in a crisscross pattern. Torque all screws to 17-18 in-lb.
4. Ensure that the lid is on the pig. If the lid is not on the pig, wipe the area around the O-ring and groove within the lid to ensure they are clean. Ensure that the O-ring is not damaged in any way. Apply O-ring lubricant to the O-ring.
5. Place the lid onto the inner pig container.
6. Align the grooves in the body with the grooves in the lid. The screw holes should also be aligned.
7. Push the lid down onto the body so that it snaps securely into place. Insert the appropriate-sized screws. Tighten the screws in a crisscross pattern. Torque all screws to 17-18 in-lb.

NOTE: If using the inner and outer pig assemblies, be sure the lifting cable to the inner pig assembly lies flat against the inner pig.

B5.0 SAMPLE BOTTLES

Three different sizes of bottles will be used for testing: 30 mL, 250 mL, and 1 L. The 30- and 250-mL bottles will be plastic. Nalgene,¹ high-density, polyethylene-coated, wide-mouth glass jars and Teflon²-lined, phenolic lids will be used for the 1-L version.

¹Nalgene is a trademark of Sybron Corporation.

²Teflon is a trademark of E. I. du Pont de Nemours & Company.

B5.1 BOTTLES - OPENING INSTRUCTIONS

1. Turn the lid counterclockwise until it can be removed.

B5.2 BOTTLES - CLOSURE INSTRUCTIONS

1. Wipe the bottle and lid with a dust-free cloth.
2. Place the lid onto the bottle.
3. Turn the lid clockwise until hand-tight.

B6.0 ASSEMBLY INSTRUCTIONS**B6.1 INTERNAL BOTTLES**

1. Open bottle.
2. Fill the appropriate bottle to be used with the simulated contents as shown below.

Simulated Contents:

30 mL	60-g shot--Fill remainder of bottle with water, leaving a slight head space.
250 mL	500-g shot--Fill remainder of bottle with water, leaving a slight head space.
1 L	Fill this bottle with enough steel shot and water so that the total content weight is equal to 2,000 g, leaving a slight head space. Add fluorescein for leak detection purposes.

3. Close the bottle until the lid is hand-tight.

B6.2 PIGS - 30-ML VERSION

NOTE: The inner and outer pig containers are used for this version.

1. Place the closed 30-mL bottle, filled with simulated contents, inside the 30-mL inner container. Add a water and fluorescein mixture into the pig for leak detection purposes prior to closing (fill level to about three-fourths full).
2. Close the inner pig in accordance with the appropriate closure instructions.

3. Place the 30-mL inner pig assembly into the outer pig body. Add water only for leak detection purposes prior to closing (fill level to about three-fourths full).
4. Close the outer pig in accordance with the appropriate closure instructions.
5. Open the SafeSend container and place two foam inserts into the bottom of the SafeSend canister. The flat side of the bottom foam insert should face the bottom of the SafeSend. Use the foam inserts supplied with the SafeSend SP-R1L Kit.
6. Insert the pig assembly, lid side up, into the SafeSend canister.
7. Place two foam inserts onto the top of the pig assembly. The flat side of the top insert should face toward the lid of the SafeSend container. Use the foam inserts supplied with the SafeSend SP-R1L Kit.
8. Close the SafeSend container in accordance with the appropriate instructions.

B6.3 PIGS - 250-ML VERSION

NOTE: The outer pig container is used for this version.

1. Place the closed 250-mL bottle, filled with simulated contents, inside the outer container. Add water only into the pig for leak detection purposes prior to closing (fill level to about three-fourths full).
2. Close the outer pig in accordance with the appropriate closure instructions.
3. Open the SafeSend canister and place two foam inserts into the bottom of the SafeSend canister. The flat side of the bottom foam insert should face the bottom of the SafeSend. Use the foam inserts supplied with the SafeSend SP-R1L Kit.
4. Insert the pig assembly, lid side up, into the SafeSend canister.
5. Place two foam inserts onto the top of the pig assembly. The flat side of the top insert should face toward the lid of the SafeSend container. Use the foam inserts supplied with the SafeSend SP-R1L Kit.
6. Close the SafeSend container in accordance with the appropriate instructions.

B6.4 1-L VERSION

1. Assemble one of the plastic bags, six foam inserts, and the closed 1-L bottle that has been filled with the simulated contents. Refer to Appendix A for this particular configuration.
2. Place one foam insert, flat side down, into the plastic bag. Four foam inserts are placed around the sides of the 1-L bottle in an interlocking pattern as shown in Figure B-1. Place this assembly on top of the existing foam insert that is in the bag. Place one foam insert on top of the lid of the bottle, inside the bag, with the flat side facing up.
3. Insert bag with contents assembled into the SafeSend canister.
4. Roll and tuck the end of the bag down into the SafeSend canister. Be careful to keep the bag away from threaded sealing area.
5. Close the SafeSend container in accordance with the appropriate instructions.

B6.5 FINAL ASSEMBLY - ALL VERSIONS

1. Place one of the plastic bags supplied with the SafeSend SP-R1L Kit around the outside of the SafeSend container.
2. Gather the plastic bag around the top of the SafeSend where the blue closure piece joins with the white base. Refer to Appendix A for reference to orientation. The plastic bag eases removal of the SafeSend container from the Hardigg Case only.
3. Set the wooden spacer assembly (two, semicircular pieces glued onto a disk) on the lid of the SafeSend. The semicircular disks will fit around the handle on the SafeSend lid.

NOTE: The top portion of the wooden disk assembly must not be in contact with the top of the base of the SafeSend container. If it is, do not use.

4. Open the Hardigg Case. Orient the case so that the side marked "this side up" is in an upright position.
5. Place the SafeSend container into the foam cavity within the Hardigg Case. Ensure the top of the SafeSend container matches the case orientation markings (i.e., black, HDPE, load spacer is the bottom of the case; top, exterior of the case should be marked "this side up").
6. Close the Hardigg Case in accordance with closure instructions.

Figure B-1. Foam Placement for 1-L Bottle.

B7.0 GLOSSARY

ABBREVIATIONS AND ACRONYMS

Hedgehog	WHC Hedgehog Shielded Container
HDPE	high-density polyethylene
WHC	Westinghouse Hanford Company

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APPENDIX C

TEST DATA SHEETS

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DOT-7A PROGRAM
TEST DATA SHEET 6.4.1
PACKAGING VISUAL INSPECTIONS

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-01

Perform Inspections Per Procedure Section 6.4.1.

Component: HARDIGG CASE☒ - Accept ☐ - RejectRemarks: Hardware (hinges, handles, rivets, locking mechanism) *ok*Case exterior *ok*Internal foam and HDPE load spreader *ok*Lid gasket *ok*Component: SAFESEND CONTAINER☒ - Accept ☐ - RejectRemarks: Canister base and cap; lid locking mechanism *ok*Sorbent material; foam spacers *ok*Lid gasket *ok*Identification numbers on base & cap *ok*

S/N: 14203085

Component: OUTER PIG (TYPE 304 SS)

S/N: 424437-12/94-01

☒ - Accept ☐ - RejectRemarks: Inspect to ensure according to drawings *ok*Lifting cable *ok*O-Rings (top & bottom) *ok*O-Ring grooves *ok*Component: INNER PIG (TYPE 304 SS)

S/N: 424437-12/94-01

☒ - Accept ☐ - RejectRemarks: Inspect to ensure according to drawings *ok*Lifting cable *ok*O-Rings (top & bottom) *ok*O-Ring grooves *ok*Component: Spacer Assembly
~~LOAD SPREADER~~☒ - Accept☐ - Reject

Remarks:

COMPLETION:

Test Engineer

Dana L. Kelly

2-1-95

Date

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.1

PACKAGING VISUAL INSPECTIONS

DOCKET:

94-39-7A

TEST UNIT NO.:

39-TU-02

Perform Inspections Per Procedure Section 6.4.1.

Component: HARDIGG CASE☒ - Accept☐ - RejectRemarks: Hardware (hinges, handles, rivets, locking mechanism) *ok*Case exterior *ok*Internal foam and HDPE load spreader *ok*Lid gasket *ok*Component: SAFESEND CONTAINER☒ - Accept☐ - RejectRemarks: Canister base and cap; lid locking mechanism *ok*Sorbent material; foam spacers *ok*Lid gasket *ok*Identification numbers on base & cap *ok*

S/N:

14203088

Component: OUTER PIG (TYPE 304 SS)

S/N:

424437-12/94-02

☒ - Accept☐ - RejectRemarks: Inspect to ensure according to drawings *ok*Lifting cable *ok*O-Rings (top & bottom) *ok*O-Ring grooves *ok*Component: INNER PIG (TYPE 304 SS)

S/N:

424437-12/94-02

☒ - Accept☐ - RejectRemarks: Inspect to ensure according to drawings *ok*Lifting cable *ok*O-Rings (top & bottom) *ok*O-Ring grooves *ok*

Component:

Spacer Assembly
~~LOAD SPREADER~~☒ - Accept☐ - Reject

Remarks:

COMPLETION:

Dana L. Kelly
Test Engineer2-1-95
Date

[Use additional sheets as needed]

DOT-7A PROGRAM
TEST DATA SHEET 6.4.1
PACKAGING VISUAL INSPECTIONS

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-03

Perform Inspections Per Procedure Section 6.4.1.

Component: HARDIGG CASE☒ - Accept ☐ - RejectRemarks: Hardware (hinges, handles, rivets, locking mechanism) *ok*Case exterior *ok*Internal foam and HDPE load spreader *ok*Lid gasket *ok*Component: SAFESEND CONTAINER☒ - Accept ☐ - RejectRemarks: Canister base and cap; lid locking mechanism *ok*Sorbent material; foam spacers *ok*Lid gasket *ok*Identification numbers on base & cap *ok* S/N: 14203089Component: OUTER PIG (TYPE 304 SS)

S/N:

☐ - Accept ☐ - RejectRemarks: Inspect to ensure according to drawings *all 2-1-95*Lifting cableO-Rings (top & bottom)O-Ring groovesComponent: INNER PIG (TYPE 304 SS)

S/N:

☐ - Accept ☐ - RejectRemarks: Inspect to ensure according to drawings *all 2-1-95*Lifting cableO-Rings (top & bottom)O-Ring grooves

Component:

Spacer Assembly
LOAD SPREADER☒ - Accept☐ - Reject

Remarks:

COMPLETION:

Dorisa L. Kelley
Test Engineer2-1-95
Date

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.1

PACKAGING VISUAL INSPECTIONS

DOCKET:

94-39-7A

TEST UNIT NO.:

SAFESENDS

Perform Inspections Per Procedure Section 6.4.1.

Component: SAFESEND 39-TU-12☒ - Accept☐ - RejectRemarks: Canister base and cap; lid locking mechanismSorbent material; foam spacersLid gasketIdentification numbers on base & capS/N: 14206005Component: SAFESEND 39-TU-13☒ - Accept☐ - RejectRemarks: Canister base and cap; lid locking mechanismSorbent material; foam spacersLid gasketIdentification numbers on base & capS/N: 14203122Component: SAFESEND 39-TU-14☒ - Accept☐ - RejectRemarks: Canister base and cap; lid locking mechanismSorbent material; foam spacersLid gasketIdentification numbers on base & capS/N: 14203123Component: SAFESEND 39-TU-15☒ - Accept☐ - RejectRemarks: Canister base and cap; lid locking mechanismSorbent material; foam spacersLid gasketIdentification numbers on base & capS/N: 14206001

Remarks:

COMPLETION:

Donna Kelly
Test Engineer2-1-95

Date

[Use additional sheets as needed]

DOT-7A PROGRAM
TEST DATA SHEET 6.4.1
PACKAGING VISUAL INSPECTIONS

DOCKET: 94-39-7A

TEST UNIT NO.: SAFESENDS

Perform Inspections Per Procedure Section 6.4.1.

Component: SAFESEND 39-TU-04

☒ - Accept ☐ - Reject

Remarks: Canister base and cap; lid locking mechanism

Sorbent material; foam spacers

Lid gasket

Identification numbers on base & cap S/N: 14203083

Component: SAFESEND 39-TU-05

☒ - Accept ☐ - Reject

Remarks: Canister base and cap; lid locking mechanism

Sorbent material; foam spacers

Lid gasket

Identification numbers on base & cap S/N: 14203084

Component: SAFESEND 39-TU-06

☒ - Accept ☐ - Reject

Remarks: Canister base and cap; lid locking mechanism

Sorbent material; foam spacers

Lid gasket

Identification numbers on base & cap S/N: 14203121

Component: SAFESEND 39-TU-07

☒ - Accept ☐ - Reject

Remarks: Canister base and cap; lid locking mechanism

Sorbent material; foam spacers

Lid gasket

Identification numbers on base & cap S/N: 14206003

Remarks:

COMPLETION:

Donna L. Kelly
Test Engineer2-1-95
Date

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.1

PACKAGING VISUAL INSPECTIONS

DOCKET:

94-39-7A

TEST UNIT NO.:

SAFESENDS

Perform Inspections Per Procedure Section 6.4.1.

Component: SAFESEND 39-TU-08☒ - Accept☐ - RejectRemarks: Canister base and cap; lid locking mechanismSorbent material; foam spacersLid gasketIdentification numbers on base & capS/N: 14203126Component: SAFESEND 39-TU-09☒ - Accept☐ - RejectRemarks: Canister base and cap; lid locking mechanismSorbent material; foam spacersLid gasketIdentification numbers on base & capS/N: 14206007Component: SAFESEND 39-TU-10☒ - Accept☐ - RejectRemarks: Canister base and cap; lid locking mechanismSorbent material; foam spacersLid gasketIdentification numbers on base & capS/N: 14203127Component: SAFESEND 39-TU-11☒ - Accept☐ - RejectRemarks: Canister base and cap; lid locking mechanismSorbent material; foam spacersLid gasketIdentification numbers on base & capS/N: 14206008

Remarks: _____

COMPLETION:

Donna L Kelly
Test Engineer2-1-95
Date

[Use additional sheets as needed]

DOT-7A PROGRAM
TEST DATA SHEET 6.4.1
PACKAGING VISUAL INSPECTIONS

DOCKET: 94-39-7ATEST UNIT NO.: SAFESENDS

Perform Inspections Per Procedure Section 6.4.1.

Component: SAFESEND 39-TU-16☒ - Accept ☐ - RejectRemarks: Canister base and cap; lid locking mechanismSorbent material; foam spacersLid gasketIdentification numbers on base & capS/N: 14203125Component: SAFESEND 39-TU-☐ - Accept ☐ - RejectRemarks: Canister base and cap; lid locking mechanismSorbent material; foam spacersLid gasketIdentification numbers on base & cap

S/N:

Component: SAFESEND 39-TU-☐ - Accept ☐ - RejectRemarks: Canister base and cap; lid locking mechanismSorbent material; foam spacersLid gasketIdentification numbers on base & cap

S/N:

Component: SAFESEND 39-TU-☐ - Accept ☐ - RejectRemarks: Canister base and cap; lid locking mechanismSorbent material; foam spacersLid gasketIdentification numbers on base & cap

S/N:

Remarks:

COMPLETION:

Donna L Kelly
Test Engineer2-1-95
Date

(Use additional sheets as needed)

PACKAGING NET AND GROSS WEIGHT INFORMATION

DOCKET: 94-39-7A

TEST UNIT NO./POUNDS	VERSION	NET WEIGHT	GROSS WEIGHT
Used for Vibration Test: 39-TU-01 - Hardigg Case 29.5 39-TU-01 - SafeSend Container 3.675 s/n 424437-12/94-01 - Inner Pig 12.65 s/n 424437-12/94-01 - Outer Pig 16.08 30 mL bottle & lid (empty) 0.024 30 mL bottle filled w/contents 0.219 39-TU-01 - Spacer Assembly 0.574	30 mL	62.503	62.698 Additional H2O between bottle & pigs = 62.83
Used for Vibration Test: 39-TU-02 - Hardigg Case 30.5 39-TU-02 - SafeSend Container 3.69 s/n 424437-12/94-02 - Outer Pig 16.11 250 mL bottle & lid (empty) 0.084 250 mL bottle filled w/contents 1.24 39-TU-02 - Spacer Assembly 0.575	250 mL	50.959	52.115 Additional H2O between bottle & pig = 53
Used for Vibration Test: 39-TU-03 - Hardigg Case 30.5 39-TU-03 - SafeSend Container 3.82 39-TU-03 #1 - bottle & lid (empty) 1.0 bottle filled w/contents 5.4 39-TU-03 - Spacer Assembly 0.566	1-L	35.886	40.286
Used for 30-ft Drop Test: 39-TU-01 - Hardigg Case 29.5 39-TU-06 - SafeSend Container 3.69 s/n 424437-12/94-01 - Inner Pig 12.65 s/n 424437-12/94-01 - Outer Pig 16.08 30 mL bottle & lid (empty) 0.024 30 mL bottle filled w/contents 0.219 39-TU-02 - Spacer Assembly 0.575	30 mL	62.519	62.714 Additional H2O between bottle & pigs = 62.846
Used for 30-ft Drop Test: 39-TU-01 - Hardigg Case 29.5 39-TU-07 - SafeSend Container 3.69 s/n 424437-12/94-02 - Inner Pig 12.65 s/n 424437-12/94-02 - Outer Pig 16.11 30 mL bottle & lid (empty) 0.024 30 mL bottle filled w/contents 0.195 39-TU-02 - Spacer Assembly 0.575	30 mL	62.549	62.72 Additional H2O between bottle & pigs = 62.852

Test Engineer:

Date: 2-8-95

TEST UNIT NO./POUNDS	VERSION	NET WEIGHT	GROSS WEIGHT
Used for 30-ft Drop Test: 39-TU-01 - Hardigg Case 29.5 39-TU-05 - SafeSend Container 3.69 s/n 424437-12/94-01 - Inner Pig 12.65 s/n 424437-12/94-01 - Outer Pig 16.08 30 mL bottle & lid (empty) 0.024 30 mL bottle filled w/contents 0.219 39-TU-01 - Spacer Assembly 0.574	30 mL	62.518	62.713 Additional H2O added between bottle & pigs = 62.845
Used for 30-ft Drop Test: 39-TU-01 - Hardigg Case 29.5 39-TU-04 - SafeSend Container 3.64 s/n 424437-12/94-01 - Inner Pig 12.65 s/n 424437-12/94-01 - Outer Pig 16.08 30 mL bottle & lid (empty) 0.024 30 mL bottle filled w/contents 0.219 39-TU-01 - Spacer Assembly 0.574	30 mL	62.468	62.663 Additional H2O added between bottle & pigs = 62.795
Used for 30-ft Drop Test: 39-TU-03 - Hardigg Case 30.5 39-TU-13 - SafeSend Container 3.83 39-TU-03 #4 - bottle & lid (empty) 1.0 bottle filled w/contents 5.43 39-TU-03 - Spacer Assembly 0.566	1-L	35.896	40.326
Used for 30-ft Drop Test: 39-TU-03 - Hardigg Case 30.5 39-TU-12 - SafeSend Container 3.85 39-TU-03 #3 - bottle & lid (empty) 1.0 bottle filled w/contents 5.42 39-TU-03 - Spacer Assembly 0.566	1-L	35.916	40.336
*Used for 30-ft Drop Test: 39-TU-03 - Hardigg Case 30.5 39-TU-17 - SafeSend Container 3.83 39-TU-03 #8 - bottle & lid (empty) 1.0 bottle filled w/contents 4.4 39-TU-03 - Spacer Assembly 0.566 *This test unit was used due to leakage of bottle 39-TU-03 #3 from previous drop.	1-L	35.896	39.296
Used for 30-ft Drop Test: 39-TU-03 - Hardigg Case 30.5 39-TU-08 - SafeSend Container 3.77 39-TU-03 #2 - bottle & lid (empty) 1.0 bottle filled w/contents 5.57 39-TU-03 - Spacer Assembly 0.566	1-L	35.836	40.406

WHC-SD-TP-OTP-001
Revision 0

Page 3

TEST UNIT NO./POUNDS	VERSION	NET WEIGHT	GROSS WEIGHT
Used for 4-ft Drop Test: 39-TU-01 - Hardigg Case 29.5 39-TU-10 - SafeSend Container 3.73 s/n 424437-12/94-02 - Inner Pig 12.65 s/n 424437-12/94-02 - Outer Pig 16.11 30 mL bottle & lid (empty) 0.024 30 mL bottle filled w/contents 0.195 39-TU-02 - Spacer Assembly 0.575	30 mL	62.489	62.66 Additional H2O added between bottle & pigs = 62.792
Used for 4-ft Drop Test: 39-TU-01 - Hardigg Case 29.5 39-TU-09 - SafeSend Container 3.48 s/n 424437-12/94-01 - Inner Pig 12.65 s/n 424437-12/94-01 - Outer Pig 16.08 30 mL bottle & lid (empty) 0.024 30 mL bottle filled w/contents 0.219 39-TU-02 - Spacer Assembly 0.575	30 mL	62.309	62.504 Additional H2O added between bottle & pigs = 62.636
Used for 4-ft Drop Test: 39-TU-01 - Hardigg Case 29.5 39-TU-11 - SafeSend Container 3.69 s/n 424437-12/94-01 - Inner Pig 12.65 s/n 424437-12/94-01 - Outer Pig 16.08 30 mL bottle & lid (empty) 0.024 30 mL bottle filled w/contents 0.219 39-TU-02 - Spacer Assembly 0.575	30 mL	62.519	62.714 Additional H2O added between bottle & pigs = 62.846
Used for 4-ft Drop Test: 39-TU-03 - Hardigg Case 30.5 39-TU-16 - SafeSend Container 3.68 39-TU-03 #7 - bottle & lid (empty) 1.0 bottle filled w/contents 5.46 39-TU-03 - Spacer Assembly 0.566	1-L	35.746	40.206
Used for 4-ft Drop Test: 39-TU-03 - Hardigg Case 30.5 39-TU-14 - SafeSend Container 3.7 39-TU-03 #5 - bottle & lid (empty) 1.0 bottle filled w/contents 5.46 39-TU-03 - Spacer Assembly 0.566	1-L	35.766	40.226
Used for 4-ft Drop Test: 39-TU-03 - Hardigg Case 30.5 39-TU-15 - SafeSend Container 3.8 39-TU-03 #6 - bottle & lid (empty) 1.0 bottle filled w/contents 5.48 39-TU-03 - Spacer Assembly 0.566	1-L	35.866	40.346

DOT-7A PROGRAM
TEST DATA SHEET 6.4.2
PACKAGING COMPONENT WEIGHTS

DOCKET: 94-39-7A
TEST UNIT NUMBER: (as noted)
(SAFESEND CONTAINERS)

COMPONENT: SAFESSEND CONTAINER (INCLUDES FOAM & PLASTIC BAG)

TEST UNIT NUMBER	WEIGHT (1-L version)	WEIGHT (30 mL versions)
	2 BAGS/6 FOAM INSERTS	1 BAG/4 FOAM INSERTS
39-TU-04	1686.7 GRAMS	1648.4 GRAMS = 3.64
39-TU-05	1712.4 GRAMS	1673.9 GRAMS = 3.69
39-TU-06	1709.7 GRAMS	1672.1 GRAMS = 3.69
39-TU-07	1712.1 GRAMS	1674.3 GRAMS = 3.69
39-TU-08	1710.5 GRAMS = 3.77	1672.6 GRAMS
39-TU-09	1616.8 GRAMS	1578.0 GRAMS = 3.48
39-TU-10	1728.8 GRAMS	1690.7 GRAMS = 3.73
39-TU-11	1705.6 GRAMS	1668.0 GRAMS = 3.69
39-TU-12	1746.3 GRAMS = 3.85	1708.2 GRAMS
39-TU-13	1737.3 GRAMS = 3.83	1698.7 GRAMS
39-TU-14	1674.9 GRAMS = 3.7	1637.0 GRAMS
39-TU-15	1721.2 GRAMS = 3.8	1683.1 GRAMS
39-TU-16	1669.3 GRAMS = 3.68	1631.4 GRAMS

Equipment Notes:

Mettler PK 36 Scales
347-06-01-004, calibration expires 4-20-95

Dorinda L. Kelly
Test Engineer/Date

2-1-95
Date Measured

added during testing:

39-TU-17 3.83
(S/n 13362028)

2 bags + 6 foam inserts
dlr 2-9-95

WHC-SD-TP-OTP-001
Revision 0

DOT-7A PROGRAM
TEST DATA SHEET 6.4.2
PACKAGING COMPONENT WEIGHTS

DOCKET: 94-39-7A
TEST UNIT NUMBER: (as noted)
(1 L BOTTLES)

COMPONENT: 1 L BOTTLES (39-TU-03 #1 THROUGH 39-TU-03 #7)

TEST UNIT NUMBER	WEIGHT EMPTY POLY BOTTLE & LID	WEIGHT BOTTLE FILLED W/CONTENTS	
		Contents only	total wt.
39-TU-03 #1	451.3 GRAMS = 1.0	<u>2001.2 g</u>	= 2452.5 (5.4)
39-TU-03 #2	455.6 GRAMS = 1.0	<u>2067.4 g</u>	= 2523.0 (5.57)
39-TU-03 #3	455.2 GRAMS = 1.0	<u>2003.3 g</u>	= 2458.5 (5.42)
39-TU-03 #4	456.6 GRAMS = 1.0	<u>2003.9 g</u>	= 2460.5 (5.43)
39-TU-03 #5	452.5 GRAMS = 1.0	<u>2022.5 g</u>	= 2475.0 (5.46)
39-TU-03 #6	454.4 GRAMS = 1.0	<u>2031.4 g</u>	= 2485.8 (5.48)
39-TU-03 #7	456.0 GRAMS = 1.0	<u>2017.7 g</u>	= 2473.7 (5.46)

Equipment Notes: Mettler PK 36 Scales
347-06-01-004, calibration expires 4-20-95

Donna L. Kelly 2-8-95 + 2-9-95
Test Engineer/Date Date Measured

added during testing:

see 2-9-95

39-TU-03 #8

bottle filled w/contents = 2000 g (4.4)
total wt.

DOT-7A PROGRAM
TEST DATA SHEET 6.4.2-1/2
PACKAGING COMPONENT WEIGHTS

DOCKET: 94-39-7A
TEST UNIT NO.: 39-TU-01

Measure Major Component Weights and Record Per Procedure Section 6.4.2.

Component: HARDIGG CASE (Includes internal foam & HDPE plastic)

Weight: 29.5 (lb.) Date Measured: 2-1-95
Equipment Note 2 Test Engineer - Initial/Date dlk 12-1-95

Component: SAFESEND CONTAINER (Includes foam & plastic bag) 4 foam spaces + 1 bag

Weight: 1665.7 g (lb.) Date Measured: 2-1-95
3.675 (lbs)
Equipment Note 1 Test Engineer - Initial/Date dlk 12-1-95

Component: INNER PIG (Type 304 ss) s/n: 424437-12/94-01

Weight: 5733.5 g (lb.) Date Measured: 2-1-95
12.65 (lbs)
Equipment Note 1 Test Engineer - Initial/Date dlk 12-1-95

Component: OUTER PIG (Type 304 ss) s/n: 424437-12/94-01

Weight: 7288.0 g (lb.) Date Measured: 2-1-95
16.08 (lbs)
Equipment Note 1 Test Engineer - Initial/Date dlk 12-1-95

Component: LOAD SPACERS Spacer Assembly

Weight: 260.0 g (lb.) Date Measured: 2-1-95
0.574 (lbs)
Equipment Note 1 Test Engineer - Initial/Date dlk 12-1-95

Component: BOTTLE FILLED WITH SIMULATED CONTENTS (30mL) used in s/n -01 pig (*)

Weight: 99.3 g (lb.) Date Measured: 2-7-95
0.219 (lbs)
Equipment Note 1 Test Engineer - Initial/Date dlk 12-7-95

Component: Bottle & lid (only) (30mL) used in s/n -01 pig (*)

Weight: 11.0 g (lb.) Date Measured: 2-7-95
0.024 (lbs)
Equipment Note 1 Test Engineer - Initial/Date dlk 12-7-95

Remarks: zero scales out after bottles & lid wt.
Load bottles to wt of 88.3g (0.195 lbs)
total bottle wt w/ contents shown above. (*)

COMPLETION: Dana L. Kelly 2-7-95
Test Engineer Date

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.2-2/2

PACKAGING COMPONENT WEIGHTS

DOCKET:

94-39-7A

TEST UNIT NO.:

39-TU-01

(30 mL)

Measure Major Component Weights and Record Per Procedure Section 6.4.2.

Component:

Bottle filled with simulated contents (30mL)used in (*)
s/n -02 p'p

Weight:

88.6 g (lb.)

Date Measured:

del 2-8-95

Equipment Note

1

Test Engineer - Initial/Date

del 12-8-95

Component:

Bottle + lid (only) 30 mLused in s/n -02 p'p (*)

Weight:

11.0 g (lb.)

Date Measured:

2-8-95

Equipment Note

1

Test Engineer - Initial/Date

del 12-8-95

Component:

Complete Packaging - Assembled and Closed (Net)W/O CONTENTS

Weight:

(lb.)

Date Measured:

Equipment Note

Test Engineer - Initial/Date

see separate
page

Component:

Package - Loaded with Simulated Payload (Gross)W/ CONTENTS

Weight:

(lb.)

Date Measured:

Equipment Note

Test Engineer - Initial/Date

see separate
page.

Equipment Notes:

1) Description:

36 Mettler PK⁺ Scales

Serial No.

WA49517

Accuracy:

Calibration No. & Expiration:

347-06-01-004, 4-20-95

2) Description:

Fairbanks - Morse Scales

Serial No.

4551027

Accuracy:

Calibration No. & Expiration:

750-66-06-001, 10-25-95

3) Description:

Serial No.

Accuracy:

Calibration No. & Expiration:

Remarks:

COMPLETION:

Test Engineer

Date

(Use additional sheets as needed)

DOT-7A PROGRAM
TEST DATA SHEET 6.4.2-1/2

PACKAGING COMPONENT WEIGHTS

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-02

(250mL)

Measure Major Component Weights and Record Per Procedure Section 6.4.2.

Component: HARDIGG CASE (Includes internal foam & HDPE plastic)Weight: 30.5 (lb.)Date Measured: 2-1-95Equipment Note 2Test Engineer - Initial/Date dlk 12-1-95Component: SAFESEND CONTAINER (Includes foam & plastic bag)4 foam spacers + 1 bagWeight: 1675.5 g (lb.)Date Measured: 2-1-95Equipment Note 1Test Engineer - Initial/Date dlk 12-1-95Component: INNER PIG (Type 304 ss)s/n: 424437-12/94-02 (used in testing 30 mL version)Weight: 5735.5 g (lb.)Date Measured: 2-1-95Equipment Note 1Test Engineer - Initial/Date dlk 12-1-95Component: OUTER PIG (Type 304 ss)s/n: 424437-12/94-02Weight: 7302.0 g (lb.)Date Measured: 2-1-95Equipment Note 1Test Engineer - Initial/Date dlk 12-1-95Component: Spacer AssemblyLOAD SPACERSWeight: 260.8 g (lb.)Date Measured: 2-1-95Equipment Note 1Test Engineer - Initial/Date dlk 12-1-95Component: BOTTLE FILLED WITH SIMULATED CONTENTS(250mL bottle)Weight: 562.9 g (lb.)Date Measured: 2-8-95Equipment Note 1Test Engineer - Initial/Date dlk 12-8-95Component: bottle & lid (250mL) EmptyWeight: 38.0 g (lb.)Date Measured: 2-8-95Equipment Note 1Test Engineer - Initial/Date dlk 12-8-95

Remarks:

zero out scales after bottle & lid wt.
Load bottles to wt of 524.9 g (1.158 lbs).
Total bottle wt. w/ contents shown above ⊕

COMPLETION:

Dana L Kelly
Test Engineer2-8-95
Date

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.2-2/2

PACKAGING COMPONENT WEIGHTS

DOCKET:

94-39-7A

TEST UNIT NO.:

39-TU-02

(250mL)

Measure Major Component Weights and Record Per Procedure Section 6.4.2.

Component:

Weight: _____ (lb.)

Date Measured: _____

Equipment Note _____

Test Engineer - Initial/Date _____ /

Component:

Weight: _____ (lb.)

Date Measured: _____

Equipment Note _____

Test Engineer - Initial/Date _____ /

Component:

Complete Packaging - Assembled and Closed (Net)W/O CONTENTS

Weight: _____ (lb.)

Date Measured: _____

Equipment Note _____

Test Engineer - Initial/Date _____ /

see separate pg

Component:

Package - Loaded with Simulated Payload (Gross)W/ CONTENTS

Weight: _____ (lb.)

Date Measured: _____

Equipment Note _____

Test Engineer - Initial/Date _____ /

see separate pg

Equipment Notes:

1) Description:

Mettler PK 36 Scales

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: _____ /

2) Description:

Inchbush-Morse Scales

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: _____ /

3) Description:

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: _____ /

Remarks:

COMPLETION:

Test Engineer _____

Date _____

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.2-1/2

PACKAGING COMPONENT WEIGHTS

DOCKET:

94-39-7A

TEST UNIT NO.:

39-TU-03

1-L version

Measure Major Component Weights and Record Per Procedure Section 6.4.2.

Component:

HARDIGG CASE (Includes internal foam & HDPE plastic)Weight: 30.5 (lb.)Date Measured: 2-1-95Equipment Note 2Test Engineer - Initial/Date dek 2-1-95

Component:

SAFESEND CONTAINER (Includes foam & plastic bag)6 foam spacers + 2 bagsWeight: 1732.3 (lb.)Date Measured: 2-1-95Equipment Note 3.82 lbs 1Test Engineer - Initial/Date dek 12-1-95

Component:

Weight: _____ (lb.)

Date Measured: _____

Equipment Note _____

Test Engineer - Initial/Date 1

Component:

Weight: _____ (lb.)

Date Measured: _____

Equipment Note _____

Test Engineer - Initial/Date 1

Component:

LOAD SPACERSSpacer AssemblyWeight: 356.6 g (lb.)Date Measured: 2-1-95Equipment Note 0.56 lbs 1Test Engineer - Initial/Date dek 12-1-95

Component:

BOTTLE FILLED WITH SIMULATED CONTENTS* see attached page

Weight: _____ (lb.)

Date Measured: _____

Equipment Note _____

Test Engineer - Initial/Date 1

Component:

Weight: _____ (lb.)

Date Measured: _____

Equipment Note _____

Test Engineer - Initial/Date 1

Remarks: _____

COMPLETION:

Test Engineer

Diana Kelly

Date

2-1-95

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.2-2/2

PACKAGING COMPONENT WEIGHTS

DOCKET:

94-39-7A

TEST UNIT NO.:

39-TU-03

Measure Major Component Weights and Record Per Procedure Section 6.4.2.

Component:

Weight: _____ (lb.)

Date Measured: _____

Equipment Note _____

Test Engineer - Initial/Date _____ / _____

Component:

Weight: _____ (lb.)

Date Measured: _____

Equipment Note _____

Test Engineer - Initial/Date _____ / _____

Component:

Complete Packaging - Assembled and Closed (Net)W/O CONTENTS

Weight: _____ (lb.)

Date Measured: _____

Equipment Note _____

Test Engineer - Initial/Date _____ / _____

Component:

Package - Loaded with Simulated Payload (Gross)W/ CONTENTS

Weight: _____ (lb.)

Date Measured: _____

Equipment Note _____

Test Engineer - Initial/Date _____ / _____

Equipment Notes:

1) Description:

Mettler PK 36 Scales

Serial No.

WA49517

Accuracy:

Calibration No. & Expiration:

347-CG-01-0041 4-20-95

2) Description:

Jaw banks - Morse Scales

Serial No.

Accuracy:

Calibration No. & Expiration:

/

3) Description:

Serial No.

Accuracy:

Calibration No. & Expiration:

/

Remarks:

COMPLETION:

Test Engineer _____

Date _____

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-1/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:
TYPE 304 SS PIGS

S/N = 424437-12/94-01

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: OUTER PIG (Type 304 ss) *measure in 3 random places*
 Feature or Location: LID *overall thickness = 1.000" top rim = .625"*
 Thickness: _____ (in.) Date Measured: 2-1-95
 Equipment Note _____ Test Engineer - Initial/Date dlk 12-1-95

Component: OUTER PIG (Type 304 ss) *measure in 3 random places*
 Feature or Location: WALL *.4616"*
BOTTOM *.4616"*
 Thickness: .4616 (in.) Date Measured: 2-1-95
 Equipment Note _____ Test Engineer - Initial/Date dlk 12-1-95

Component: OUTER PIG (Type 304 ss) *measure in 3 random places*
 Feature or Location: WALL *overall thickness = .563"*
BOTTOM *bottom rim = .188"*
 Thickness: _____ (in.) Date Measured: 2-1-95
 Equipment Note _____ Test Engineer - Initial/Date dlk 12-1-95

Component: OUTER PIG (Type 304 ss) *measure in 3 random places*
 Feature or Location: OVERALL EXTERNAL HEIGHT
 Thickness: 7 (in.) Date Measured: 2-1-95
 Equipment Note _____ Test Engineer - Initial/Date dlk 12-1-95

Component: OUTER PIG (Type 304 ss) *measure in 3 random places*
 Feature or Location: EXTERNAL DIAMETER
 Thickness: 4.5 (in.) Date Measured: 2-1-95
 Equipment Note _____ Test Engineer - Initial/Date dlk 12-1-95

Remarks: _____

COMPLETION:

Test Engineer

Donna L Kelly

Date

2-1-95

(Use additional sheets as needed)

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-2/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:

S/N = 424437-12/94-01

TYPE 304 SS PIGS

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component:

OUTER PIG (Type 304 ss)

Feature or Location:

INTERNAL DIAMETER

3 3/4" ^{outer edge}

3 3/8" innermost edge to innermost edge

Thickness:

3.578" (in.)

Date Measured:

2-1-95

Equipment Note

Test Engineer - Initial/Date

dlh 12-1-95

Component:

OUTER PIG (Type 304 ss)

Feature or Location:

VERIFY TOLERANCES PROVIDED ON DRAWINGS

Thickness:

(in.)

Date Measured:

Equipment Note

Test Engineer - Initial/Date

dlh 12-1-95

Component:

Feature or Location:

Thickness:

(in.)

Date Measured:

Equipment Note

Test Engineer - Initial/Date

1

Equipment Notes:

1) Description:

LuPKin Micrometer

Range 0 to 1" No 230

Serial No.

Accuracy:

Range 1 to 2"

Calibration No. & Expiration:

1

2) Description:

Serial No.

Accuracy:

Calibration No. & Expiration:

1

3) Description:

Serial No.

Accuracy:

Calibration No. & Expiration:

1

Remarks:

COMPLETION:

Test Engineer

Donna L Kelly

2-1-95

Date

[Use additional sheets as needed]

DOT-7A PROGRAM
TEST DATA SHEET 6.4.3-1/2
PACKAGING COMPONENT WALL THICKNESS

DOCKET: 94-39-7A

TEST UNIT NO.:
TYPE 304 SS PIGS

S/N = 424437-12/94 -01

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: INNER PIG (Type 304 ss)

Feature or Location: LID

Thickness: .625 (in.)

Date Measured: 2-1-95

Equipment Note

Test Engineer - Initial/Date

dlk 12-1-95

Component: INNER PIG (Type 304 ss)

Feature or Location: BOTTOM

Thickness: .624 (in.)

Date Measured: 2-1-95

Equipment Note

Test Engineer - Initial/Date

dlk 12-1-95

Component: INNER PIG (Type 304 ss)

Feature or Location: WALL

Thickness: 1.24 (in.)

Date Measured: 2-1-95

Equipment Note

Test Engineer - Initial/Date

dlk 12-1-95

Component: INNER PIG (Type 304 ss)

Feature or Location: OVERALL EXTERNAL HEIGHT

Thickness: 5 3/16 (in.)

Date Measured: 2-1-95

Equipment Note

Test Engineer - Initial/Date

dlk 12-1-95

Component: INNER PIG (Type 304 ss)

Feature or Location: EXTERNAL DIAMETER

Thickness: 3.5 (in.)

Date Measured: 2-1-95

Equipment Note

Test Engineer - Initial/Date

dlk 12-1-95

Remarks:

COMPLETION:

Test Engineer

Dorinda L. Kelly

Date

2-1-95

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-2/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:

S/N = 424437-12/94-01

TYPE 304 SS PIGS

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component:

INNER PIG (Type 304 ss)

Feature or Location:

INTERNAL DIAMETER

Thickness: 1 1/2 (in.)Date Measured: 2-1-95

Equipment Note

Test Engineer - Initial/Date

dlk 12-1-95

Component:

INNER PIG (Type 304 ss)

Feature or Location:

VERIFY TOLERANCES PROVIDED ON DRAWINGS dlk

Thickness: _____ (in.)

Date Measured: _____

Equipment Note

Test Engineer - Initial/Date

dlk 1 2-1-95

Component:

Feature or Location:

Thickness: _____ (in.)

Date Measured: _____

Equipment Note

Test Engineer - Initial/Date

1

Equipment Notes:

1) Description:

Lufkin Micrometer

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: _____

1

2) Description:

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: _____

1

3) Description:

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: _____

1

Remarks:

COMPLETION:

Donna L Kelly
Test Engineer2-1-95

Date

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-1/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:

TYPE 304 SS PIGS

S/N = 424437-12/94 -02

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: OUTER PIG (Type 304 ss)Feature or Location: LID1.000" overall thickness .625" outer edge

Thickness: _____ (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 12-1-95Component: OUTER PIG (Type 304 ss)Feature or Location: BOTTOMThickness: .563 (in.)Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 12-1-95Component: OUTER PIG (Type 304 ss)Feature or Location: WALL.4616" dlkThickness: .4616 (in.)Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 12-1-95Component: OUTER PIG (Type 304 ss)Feature or Location: OVERALL EXTERNAL HEIGHTThickness: 7 (in.)Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 12-1-95Component: OUTER PIG (Type 304 ss)Feature or Location: EXTERNAL DIAMETERThickness: 4 1/2 (in.)Date Measured: dlk 2-1-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 12-1-95

Remarks: _____

COMPLETION:

Donna L. Kelly
Test Engineer2-1-95

Date

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-2/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:

S/N = 424437-12/94

TYPE 304 SS PIGS

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: OUTER PIG (Type 304 ss)

Feature or Location: INTERNAL DIAMETER

Thickness: 3 3/8 (in.)

Date Measured:

Equipment Note

Test Engineer - Initial/Date

Component: OUTER PIG (Type 304 ss)

Feature or Location: VERIFY TOLERANCES PROVIDED ON DRAWINGS

Thickness: (in.)

Date Measured:

Equipment Note

Test Engineer - Initial/Date

Component:

Feature or Location:

Thickness: (in.)

Date Measured:

Equipment Note

Test Engineer - Initial/Date

Equipment Notes:

1) Description:

Serial No.

Accuracy:

Calibration No. & Expiration:

2) Description:

Serial No.

Accuracy:

Calibration No. & Expiration:

3) Description:

Serial No.

Accuracy:

Calibration No. & Expiration:

Remarks:

COMPLETION:

Test Engineer

Date

[Use additional sheets as needed]

DOT-7A PROGRAM
TEST DATA SHEET 6.4.3-1/2
PACKAGING COMPONENT WALL THICKNESS

DOCKET: 94-39-7A

TEST UNIT NO.:
TYPE 304 SS PIGS

S/N = 424437-12/94-02

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: INNER PIG (Type 304 ss)

Feature or Location: LID

Thickness: .625 (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 1 2-1-95

Component: INNER PIG (Type 304 ss)

Feature or Location: BOTTOM

Thickness: .624 (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 1 2-1-95

Component: INNER PIG (Type 304 ss)

Feature or Location: WALL

Thickness: 1.22 (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 1 2-1-95

Component: INNER PIG (Type 304 ss)

Feature or Location: OVERALL EXTERNAL HEIGHT

Thickness: 5 3/16 (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 1 2-1-95

Component: INNER PIG (Type 304 ss)

Feature or Location: EXTERNAL DIAMETER

Thickness: 3.5 (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 1 2-1-95

Remarks: _____

COMPLETION:

Donna L. Kelly
Test Engineer

2-1-95
Date

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-2/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:

S/N = 424437-12/94-02

TYPE 304 SS PIGS

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: INNER PIG (Type 304 ss)

Feature or Location: INTERNAL DIAMETER

Thickness: 1 1/2 (in.)

Date Measured: 2-1-95

Equipment Note

Test Engineer - Initial/Date

dlk 12-1-95

Component: INNER PIG (Type 304 ss)

Feature or Location: VERIFY TOLERANCES PROVIDED ON DRAWINGS

Thickness: (in.)

Date Measured:

Equipment Note

Test Engineer - Initial/Date

dlk 12-1-95

Component:

Feature or Location:

Thickness: (in.)

Date Measured:

Equipment Note

Test Engineer - Initial/Date

Equipment Notes:

1) Description:

Lufkin micrometer

Serial No.

Accuracy:

Calibration No. & Expiration:

2) Description:

Serial No.

Accuracy:

Calibration No. & Expiration:

3) Description:

Serial No.

Accuracy:

Calibration No. & Expiration:

Remarks:

COMPLETION:

Test Engineer

Date

[Use additional sheets as needed]

DOT-7A PROGRAM
TEST DATA SHEET 6.4.3-1/2
PACKAGING COMPONENT WALL THICKNESS

DOCKET: 94-39-7A
TEST UNIT NO.: 39-TU-01

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: HARDIGG CASE

Feature or Location: EXTERNAL DIMENSIONS (L / W / H) L = 25" W = 19" H = 19"

Thickness: _____ (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dlk 1-31-95

Component: HARDIGG CASE

Feature or Location: INTERNAL DIMENSIONS (L / W / H) L = 22" W = 16" H = 17"

Thickness: _____ (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dlk 1-31-95

Component: HARDIGG CASE

Feature or Location: INTERNAL CAVITY DIMENSIONS (L, W, H) L = 12 5/8" W = 7 1/4" H = 7 1/4" *Note: Top HDPE load spreader removed - cavity is larger than originally planned.*

Thickness: _____ (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dlk 1-31-95

Component: HARDIGG CASE

Feature or Location: HDPE LOAD SPREADER THICKNESS

Thickness: 1/8 (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dlk 1-31-95

Component: HARDIGG CASE

Feature or Location: HDPE LOAD SPREADER DIMENSIONS (L, W, H) L = 15 3/4" W = 7 1/4"

Thickness: _____ (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dlk 1-31-95

Remarks: 2 HDPE load spreaders had originally been ordered for inside the Hardigg Case. The top load spreader was removed in all cases - this increases the cavity size by 1/8". The internal foam spacers were also cut (top spacer only) all the way to the top of the packaging to allow movement inside the container for impact purposes.

COMPLETION:

Test Engineer

Donna L. Kelley 1-31-95

Date

(Use additional sheets as needed)

DOT-7A PROGRAM
TEST DATA SHEET 6.4.3-2/2
PACKAGING COMPONENT WALL THICKNESS

DOCKET: 94-39-7A
TEST UNIT NO.: 39-TU-01

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: HARDIGG CASE

top
Bottom $L = 15\frac{3}{4}$ $W = 4\frac{3}{8}$ $H = 7\frac{1}{4}$ *w*

Feature or Location: FOAM THICKNESS AND DIMENSIONS (L, W, H) W/ BASE

Thickness: _____ (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dlk 1-31-95

Component: HARDIGG CASE

Feature or Location: FOAM DIMENSIONS (L, W, H) ON LID $L = 21\frac{3}{4}$ $W = 15\frac{3}{4}$

Thickness: _____ (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dlk 1-31-95

Component: Hardigg Case (*Sides)

$L = 17$ $W = 4\frac{1}{4}$ $H = 7\frac{1}{4}$

Feature or Location: foam thickness + dimensions (L, W, H) w/ Base

Thickness: $W = 4\frac{1}{4}$ " across sides (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dlk 1-31-95

Equipment Notes:

1) Description: Tape measure

Serial No. _____

Accuracy: $\frac{1}{16}$ "

Calibration No. & Expiration: _____

2) Description: _____

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: _____

3) Description: _____

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: _____

Remarks: _____

COMPLETION: dlk 1-31-95

Test Engineer

Date

[Use additional sheets as needed]

DOT-7A PROGRAM
TEST DATA SHEET 6.4.3-1/2
PACKAGING COMPONENT WALL THICKNESS

DOCKET: 94-39-7A
TEST UNIT NO.: 39-TU-02

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: HARDIGG CASE

Feature or Location: EXTERNAL DIMENSIONS (L / W / H)

L = 25" W = 19" H = 19"

Thickness: _____ (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dek 1-31-95

Component: HARDIGG CASE

Feature or Location: INTERNAL DIMENSIONS (L / W / H)

L = 22" W = 16" H = 17"

Thickness: _____ (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dek 1-31-95

Component: HARDIGG CASE

NOTE: Top HDPE load spreader removed - cavity is

Feature or Location: INTERNAL CAVITY DIMENSIONS (L, W, H)

L = 12 3/4" W = 7 1/4" H = 7 1/4"

Thickness: _____ (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dek 1-31-95

Component: HARDIGG CASE

Feature or Location: HDPE LOAD SPREADER THICKNESS

Thickness: 1/8 (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dek 1-31-95

Component: HARDIGG CASE

Feature or Location: HDPE LOAD SPREADER DIMENSIONS (L, W, H)

L = 15 3/4" W = 7 1/4"

Thickness: _____ (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dek 1-31-95

Remarks:

2 HDPE load spreaders had originally been ordered for inside the Hardigg Case. The top load spreader was removed in all cases - this increased the cavity size by 1/8". The internal foam spreaders were also cut (top spreaders only) all the way to the top of the packaging to allow movement inside the

COMPLETION:

Test Engineer Dore L. Kelly

Date 1-31-95

(Use additional sheets as needed)

* + + = cut

Container for input purposes.

HDPE spreader

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-2/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:

39-TU-02

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component:

HARDIGG CASE

top & bottom

L = 15 3/4 W = 4 3/8

Feature or Location:

FOAM THICKNESS AND DIMENSIONS (L, W, H) W/ BASE

H = 7 1/4"

Thickness: _____ (in.)

Date Measured:

1-31-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 1-31-95

Component:

HARDIGG CASE

Feature or Location:

FOAM DIMENSIONS (L, W, H) ON LID

L = 21 3/4 W = 15 3/4"

Thickness: _____ (in.)

Date Measured:

1-31-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 1-31-95

Component:

Hardigg Case (*sides) L = 17" W = 4 1/4" H = 7 1/4"

Feature or Location:

Foam Thickness & dimensions (L, W, H)

Thickness: W = 4 1/4 2 sides (in.)

Date Measured:

1-31-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 1-31-95

Equipment Notes:

1) Description:

Tape Measure

Serial No. _____

Accuracy:

1/16"

Calibration No. & Expiration:

1

2) Description:

Serial No. _____

Accuracy: _____

Calibration No. & Expiration:

1

3) Description:

Serial No. _____

Accuracy: _____

Calibration No. & Expiration:

1

Remarks: _____

COMPLETION:

Test Engineer

Date

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-1/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:

39-TU-03

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: HARDIGG CASEFeature or Location: EXTERNAL DIMENSIONS (L / W / H) L = 25" W = 19" H = 19"

Thickness: _____ (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dlk 1-31-95Component: HARDIGG CASEFeature or Location: INTERNAL DIMENSIONS (L / W / H) L = 22" W = 16" H = 17"

Thickness: _____ (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dlk 1-31-95Component: HARDIGG CASEFeature or Location: INTERNAL CAVITY DIMENSIONS (L, W, H) L = 12 5/8" W = 7 1/4" H = 7 1/4"

Thickness: _____ (in.)

Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dlk 1-31-95Component: HARDIGG CASEFeature or Location: HDPE LOAD SPREADER THICKNESSThickness: 1/8 (in.)Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dlk 1-31-95Component: HARDIGG CASEFeature or Location: HDPE LOAD SPREADER DIMENSIONS (L, W, H) L = 15 3/4" W = 7 1/4"Thickness: 1/8 (in.)Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date dlk 1-31-95

Remarks:

2 HDPE load spreaders had originally been ordered for inside the Hardigg Case. The top load spreader was removed in all cases - this increased the cavity size by 1/8". The internal foam spacers were also cut (top spacers only) all the way to the top of the packaging to allow movement inside the container for impact purposes.

COMPLETION:

Test Engineer

Anna L. Kelly

Date

1-31-95

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-2/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:

39-TU-03

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component:

HARDIGG CASE

top & bottom

L = 15 3/4" W = 4 3/8" H = 7 1/4"

Feature or Location:

FOAM THICKNESS AND DIMENSIONS (L, W, H) W/ BASE

Thickness: _____ (in.)

Date Measured:

1-31-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 1-31-95

Component:

HARDIGG CASE

Feature or Location:

FOAM DIMENSIONS (L, W, H) ON LID

L = 21 3/4" W = 15 3/4"

Thickness: _____ (in.)

Date Measured:

1-31-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 1-31-95

Component:

Hardigg Case (* Sides)

L = 17" W = 4 1/4" H = 7 1/4"

Feature or Location:

foam thickness & dimensions (w/ base)

Thickness: _____ (in.)

Date Measured:

1-31-95

Equipment Note _____

Test Engineer - Initial/Date

dlk 1-31-95

Equipment Notes:

1) Description:

Tape Measure

Serial No. _____

Accuracy:

1/16"

Calibration No. & Expiration: _____

/

2) Description:

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: _____

/

3) Description:

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: _____

/

Remarks:

COMPLETION:

Test Engineer

1-31-95

Date

[Use additional sheets as needed]

DOT-7A PROGRAM
TEST DATA SHEET 6.4.3-1/2
PACKAGING COMPONENT WALL THICKNESS

DOCKET: 94-39-7A

TEST UNIT NO.: LOAD SPREADERS
& 1 L BOTTLES*(Spacer Assembly)*

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: LOAD SPREADER - SAFESEND LID - HALF-MOONS 39-TU-01Feature or Location: OVERALL DIMENSIONS & THICKNESS1 5/16" @ widest pointThickness: 1 3/16" (in.)Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date

dek 11-31-95Component: LOAD SPREADER - SAFESEND LID - DISK 39-TU-01Feature or Location: OVERALL DIMENSIONS & THICKNESS7" diameterThickness: 1/4" (in.)Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date

dek 11-31-95Component: LOAD SPREADER - SAFESEND LID - HALF-MOONS 39-TU-02Feature or Location: OVERALL DIMENSIONS & THICKNESS1 5/16" @ widest pointThickness: 1 3/16" (in.)Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date

dek 11-31-95Component: LOAD SPREADER - SAFESEND LID - DISK 39-TU-02Feature or Location: OVERALL DIMENSIONS & THICKNESS7" diameterThickness: 1/4" (in.)Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date

dek 11-31-95Component: LOAD SPREADER - SAFESEND LID - HALF-MOONS 39-TU-03Feature or Location: OVERALL DIMENSIONS & THICKNESS1 5/16" @ widest pointThickness: 1 3/16" (in.)Date Measured: 1-31-95

Equipment Note _____

Test Engineer - Initial/Date

dek 11-31-95

Remarks: _____

COMPLETION:

Dorcas L. Kelly
Test Engineer1-31-95

Date

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-2/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:

LOAD SPREADERS
& 1 L BOTTLES

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: LOAD SPREADER - SAFESEND LID - DISK 39-TU-03Feature or Location: OVERALL DIMENSIONS & THICKNESS 2" diameterThickness: 1/4" (in.) Date Measured: 1-31-95Equipment Note _____ Test Engineer - Initial/Date dlk 1-31-95Component: 1 L POLY-COATED GLASS BOTTLE 39-TU-03 - (#1)Feature or Location: SIDE/BOTTOM .020Thickness: _____ (in.) Date Measured: 2-1-95Equipment Note _____ Test Engineer - Initial/Date dlk 2-1-95Component: 1 L POLY-COATED GLASS BOTTLE 39-TU-03 - (#2)Feature or Location: SIDE/BOTTOMThickness: .028 (in.) Date Measured: dlk 2-1-95Equipment Note _____ Test Engineer - Initial/Date ✓ 1

Equipment Notes:

1) Description:

Tape measure
Serial No. _____ Accuracy: 1/16"Calibration No. & Expiration: 1

2) Description:

Starrett micrometer
Serial No. _____ Accuracy: _____Calibration No. & Expiration: 1

3) Description:

Serial No. _____ Accuracy: _____

Calibration No. & Expiration: 1

Remarks: NOTE ADDITIONAL POLY-COATED GLASS BOTTLES USED FOR TESTING WITH

TEST UNIT 39-TU-03 HERE: (#3) .0255" (#4) .0257"

(#5) .036" (#6) .027" (#7) .038"

COMPLETION:

Diana L. Kelly 2-1-95
Test Engineer Date

(Use additional sheets as needed)

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-1/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:

SAFESEND CONTAINERS

39-TU-01 THROUGH 39-TU-16

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component:

SAFESEND BASE & LID

39-TU-

01

Feature or Location:

OUTSIDE DIAMETER - LID =

5 3/8"

BASE =

6 1/2"

Thickness:

(in.)

Date Measured:

2-1-95

Equipment Note

Test Engineer - Initial/Date

dlk 2-1-95

Component:

SAFESEND OVERALL HEIGHT =

12 7/16"

39-TU-

01

Feature or Location:

INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD =

1 3/16"

Thickness:

(in.)

Date Measured:

2-1-95

Equipment Note

Test Engineer - Initial/Date

dlk 2-1-95

Component:

SAFESEND BASE & LID

39-TU-

02

Feature or Location:

OUTSIDE DIAMETER - LID =

5 3/8"

BASE =

6 1/2"

Thickness:

(in.)

Date Measured:

2-1-95

Equipment Note

Test Engineer - Initial/Date

dlk 2-1-95

Component:

SAFESEND OVERALL HEIGHT =

12 3/8"

39-TU-

02

Feature or Location:

INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD =

1 3/16"

Thickness:

(in.)

Date Measured:

2-1-95

Equipment Note

Test Engineer - Initial/Date

dlk 2-1-95

Component:

SAFESEND BASE & LID

39-TU-

03

Feature or Location:

OUTSIDE DIAMETER - LID =

5 3/8"

BASE =

6 1/2"

Thickness:

(in.)

Date Measured:

2-1-95

Equipment Note

Test Engineer - Initial/Date

dlk 2-1-95

Remarks:

COMPLETION:

Test Engineer

Dana L. Kelly

Date

2-1-95

(Use additional sheets as needed)

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-2/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:

SAFESEND CONTAINERS

39-TU-01 THROUGH 39-TU-16

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: SAFESEND OVERALL HEIGHT = 12 3/8" 39-TU-03Feature or Location: INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD = 1 3/16"

Thickness: _____ (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date dlk, 2-1-95Component: SAFESEND BASE & LID 39-TU-04Feature or Location: OUTSIDE DIAMETER - LID = 5 3/8" BASE = 6 1/2"

Thickness: _____ (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date dlk, 2-1-95Component: SAFESEND OVERALL HEIGHT = 12 7/16" 39-TU-04Feature or Location: INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD = 1 1/8"

Thickness: _____ (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date dlk, 2-1-95

Equipment Notes:

1) Description: Ruler - straight edge

Serial No. _____

Accuracy: 1/16"

Calibration No. & Expiration: _____

2) Description: _____

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: _____

3) Description: _____

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: _____

Remarks: _____

COMPLETION:

Test Engineer Dana L KellyDate 2-1-95

[Use additional sheets as needed]

DOT-7A PROGRAM
TEST DATA SHEET 6.4.3-1/2
PACKAGING COMPONENT WALL THICKNESS

DOCKET: 94-39-7A
TEST UNIT NO.: SAFESEND CONTAINERS
39-TU-01 THROUGH 39-TU-16

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: SAFESEND BASE & LID 39-TU-05

Feature or Location: OUTSIDE DIAMETER - LID = $5\frac{3}{8}$ " BASE = $6\frac{1}{2}$ "

Thickness: _____ (in.) Date Measured: _____

Equipment Note _____ Test Engineer - Initial/Date 1

Component: SAFESEND OVERALL HEIGHT = $12\frac{3}{8}$ " 39-TU-05

Feature or Location: INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD = $1\frac{1}{8}$ "

Thickness: _____ (in.) Date Measured: 2-1-95

Equipment Note _____ Test Engineer - Initial/Date dlk, 2-1-95

Component: SAFESEND BASE & LID 39-TU-06

Feature or Location: OUTSIDE DIAMETER - LID = $5\frac{3}{8}$ " BASE = $6\frac{1}{2}$ "

Thickness: _____ (in.) Date Measured: 2-1-95

Equipment Note _____ Test Engineer - Initial/Date dlk, 2-1-95

Component: SAFESEND OVERALL HEIGHT = $12\frac{3}{8}$ " 39-TU-06

Feature or Location: INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD = $1\frac{1}{8}$ "

Thickness: _____ (in.) Date Measured: 2-1-95

Equipment Note _____ Test Engineer - Initial/Date dlk, 2-1-95

Component: SAFESEND BASE & LID 39-TU-07

Feature or Location: OUTSIDE DIAMETER - LID = $5\frac{3}{8}$ " BASE = $6\frac{1}{2}$ "

Thickness: _____ (in.) Date Measured: 2-1-95

Equipment Note _____ Test Engineer - Initial/Date dlk, 2-1-95

Remarks: _____

COMPLETION:

Test Engineer

Donna L. Kelly

Date

2-1-95

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-2/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:

SAFESEND CONTAINERS

39-TU-01 THROUGH 39-TU-16

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component:

SAFESEND OVERALL HEIGHT = $12\frac{3}{8}"$ 39-TU- 07

Feature or Location:

INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD = $1\frac{1}{8}"$

Thickness:

(in.)

Date Measured:

2-1-95

Equipment Note

Test Engineer - Initial/Date

dlr 2-1-95

Component:

SAFESEND BASE & LID

39-TU- 08

Feature or Location:

OUTSIDE DIAMETER - LID = $5\frac{3}{8}"$ BASE = $6\frac{1}{2}"$

Thickness:

(in.)

Date Measured:

2-1-95

Equipment Note

Test Engineer - Initial/Date

dlr 2-1-95

Component:

SAFESEND OVERALL HEIGHT = $12\frac{3}{8}"$ 39-TU- 08

Feature or Location:

INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD = $1\frac{1}{8}"$

Thickness:

(in.)

Date Measured:

2-1-95

Equipment Note

Test Engineer - Initial/Date

dlr 2-1-95

Equipment Notes:

1) Description:

Ruler & straight edge

Serial No.

Accuracy:

 $\frac{1}{16}"$

Calibration No. & Expiration:

/

2) Description:

Serial No.

Accuracy:

Calibration No. & Expiration:

/

3) Description:

Serial No.

Accuracy:

Calibration No. & Expiration:

/

Remarks:

COMPLETION:

Donna L Kelly
Test Engineer

2-1-95

Date

(Use additional sheets as needed)

DOT-7A PROGRAM
TEST DATA SHEET 6.4.3-1/2
PACKAGING COMPONENT WALL THICKNESS

DOCKET: 94-39-7A
TEST UNIT NO.: SAFESEND CONTAINERS
39-TU-01 THROUGH 39-TU-16

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: SAFESEND BASE & LID 39-TU- 09
Feature or Location: OUTSIDE DIAMETER - LID = $5\frac{3}{8}$ " BASE = $6\frac{1}{2}$ "
Thickness: _____ (in.) Date Measured: 2-1-95
Equipment Note _____ Test Engineer - Initial/Date dlk 12-1-95

Component: SAFESEND OVERALL HEIGHT = $12\frac{7}{16}$ " 39-TU- 09
Feature or Location: INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD = $1\frac{1}{8}$ "
Thickness: _____ (in.) Date Measured: 2-1-95
Equipment Note _____ Test Engineer - Initial/Date dlk 12-1-95

Component: SAFESEND BASE & LID 39-TU- 10
Feature or Location: OUTSIDE DIAMETER - LID = $5\frac{3}{8}$ " BASE = $6\frac{1}{2}$ "
Thickness: _____ (in.) Date Measured: 2-1-95
Equipment Note _____ Test Engineer - Initial/Date dlk 12-1-95

Component: SAFESEND OVERALL HEIGHT = $12\frac{3}{8}$ " 39-TU- 10
Feature or Location: INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD = $1\frac{3}{16}$ "
Thickness: _____ (in.) Date Measured: 2-1-95
Equipment Note _____ Test Engineer - Initial/Date dlk 12-1-95

Component: SAFESEND BASE & LID 39-TU- 11
Feature or Location: OUTSIDE DIAMETER - LID = $5\frac{3}{8}$ " BASE = $6\frac{1}{2}$ "
Thickness: _____ (in.) Date Measured: 2-1-95
Equipment Note _____ Test Engineer - Initial/Date dlk 12-1-95

Remarks: _____

COMPLETION:

Test Engineer

David Kelly

Date

2-1-95

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-2/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:

SAFESEND CONTAINERS

39-TU-01 THROUGH 39-TU-16

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: SAFESEND OVERALL HEIGHT = 12⁷/₁₆" 39-TU- 11Feature or Location: INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD = 1¹/₈"

Thickness: _____ (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date dlk 2-1-95Component: SAFESEND BASE & LID 39-TU- 12Feature or Location: OUTSIDE DIAMETER - LID = 5³/₈" BASE = 6¹/₂"

Thickness: _____ (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date dlk 2-1-95Component: SAFESEND OVERALL HEIGHT = ~~12⁷/₁₆"~~ 12³/₈" 39-TU- 12Feature or Location: INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD = 1¹/₈"

Thickness: _____ (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date dlk 2-1-95

Equipment Notes:

1) Description: ruler & straight edge

Serial No. _____

Accuracy: 1/16"Calibration No. & Expiration: 1

2) Description: _____

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: 1

3) Description: _____

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: 1

Remarks: _____

COMPLETION:

Test Engineer Anna L KellyDate 2-1-95

[Use additional sheets as needed]

DOT-7A PROGRAM

TEST DATA SHEET 6.4.3-1/2

PACKAGING COMPONENT WALL THICKNESS

DOCKET:

94-39-7A

TEST UNIT NO.:

SAFESEND CONTAINERS

39-TU-01 THROUGH 39-TU-16

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: SAFESEND BASE & LID 39-TU-13

Feature or Location: OUTSIDE DIAMETER - LID = $5\frac{3}{8}$ " BASE = $6\frac{1}{2}$ "

Thickness: _____ (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date dlk 12-1-95Component: SAFESEND OVERALL HEIGHT = $12\frac{3}{8}$ " 39-TU-13Feature or Location: INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD = $1\frac{1}{8}$ "

Thickness: _____ (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date dlk 12-1-95

Component: SAFESEND BASE & LID 39-TU-14

Feature or Location: OUTSIDE DIAMETER - LID = $5\frac{3}{8}$ " BASE = $6\frac{1}{2}$ "

Thickness: _____ (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date dlk 12-1-95Component: SAFESEND OVERALL HEIGHT = $12\frac{7}{16}$ " 39-TU-14Feature or Location: INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD = $1\frac{1}{8}$ "

Thickness: _____ (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date dlk 12-1-95

Component: SAFESEND BASE & LID 39-TU-15

Feature or Location: OUTSIDE DIAMETER - LID = $5\frac{3}{8}$ " BASE = $6\frac{1}{2}$ "

Thickness: _____ (in.)

Date Measured: 2-1-95

Equipment Note _____

Test Engineer - Initial/Date dlk 12-1-95

Remarks: _____

COMPLETION:

Dana Kelley
Test Engineer

2-1-95

Date

(Use additional sheets as needed)

DOT-7A PROGRAM
TEST DATA SHEET 6.4.3-2/2
PACKAGING COMPONENT WALL THICKNESS

DOCKET: 94-39-7A
TEST UNIT NO.: SAFESEND CONTAINERS
39-TU-01 THROUGH 39-TU-16

Measure Component Wall Thicknesses Per Test Plan and Record Per Procedure Section 6.4.3.

Component: SAFESEND OVERALL HEIGHT = 12³/₈" 39-TU- 15
Feature or Location: INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD = 1³/₁₆"
Thickness: _____ (in.) Date Measured: 2-1-95
Equipment Note _____ Test Engineer - Initial/Date dlk 12-1-95

Component: SAFESEND BASE & LID 39-TU- 16
Feature or Location: OUTSIDE DIAMETER - LID = 5³/₈" BASE = 6¹/₂"
Thickness: _____ (in.) Date Measured: 2-1-95
Equipment Note _____ Test Engineer - Initial/Date dlk 12-1-95

Component: SAFESEND OVERALL HEIGHT = 12³/₈" 39-TU- 16
Feature or Location: INSIDE HEIGHT OF LID ONLY NEAR HANDHOLD = 1³/₁₆"
Thickness: _____ (in.) Date Measured: 2-1-95
Equipment Note _____ Test Engineer - Initial/Date dlk 12-1-95

Equipment Notes:

- 1) Description: rule & straight edge
Serial No. _____ Accuracy: 1/16"
Calibration No. & Expiration: 1
- 2) Description: _____
Serial No. _____ Accuracy: _____
Calibration No. & Expiration: 1
- 3) Description: _____
Serial No. _____ Accuracy: _____
Calibration No. & Expiration: 1

Remarks: _____

COMPLETION:

Test Engineer

Anna L Kelly

2-1-95

Date

[Use additional sheets as needed]

[illegible]

DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TEST

DOCKET: 94-39-7A

TEST UNIT NO.: S/N:424437-12/94-01

INITIAL CONT. BOUND. VERIF. BASE

**OUTER CONTAINER*

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3:

Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-2-95

through

7.1.3.2

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

dlk 12-2-95

Time: 08:35 (use military notation - 1:30 p.m. = 13:30)

Pressure 2.95 (psia)

24 inches of mercury

Temperature: 68.2° (F)

20.1°C

7.1.2.4 Hold (15) Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.5 Record Final Data.

Time: 08:51 (use military notation - 1:30 p.m. = 13:30)

Pressure 2.95 (psia)

24 inches of mercury

Temperature: 62.5° (F)

19.7°C

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

dlk 12-2-95

☒ - Pass☐ - Fail

Remarks: Torque all screws 17-18 in/lbs

Pressure Gauge: #950-31-04-004, calibration expires 9/22/95. Tolerance +/- 0.3

24 inches of mercury = 2.95 psia

COMPLETION:

Test Engineer

Donna L. Kelly

Date

2-2-95

DOT-7A PROGRAM

TEST DATA SHEET 7.1.3

REDUCED PRESSURE TEST

DOCKET:

94-39-7A

TEST UNIT NO.:

S/N:424437-12/94-01

INITIAL CONT. BOUND. VERIF.-LID

OUTER CONTAINER

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3.
Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-2-95

through

7.1.3.2

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

dlk 12-2-95

Time: 08:57 (use military notation - 1:30 p.m. = 13:30)

Pressure 2.9 (psia) 24.1 inches of mercury

Temperature: 67° (F) 19.8°C

7.1.2.4 Hold (15) Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.5 Record Final Data.

Time: 09:14 (use military notation - 1:30 p.m. = 13:30)

Pressure 2.9 (psia) 24.1 inches of mercury

Temperature: 64.8° (F) 18.2°C

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

dlk 12-2-95

☒ - Pass☐ - Fail

Remarks: Torque all screws 17-18 in/lbs

Pressure Gauge: #950-31-04-004, calibration expires 9/22/95. Tolerance +/- 0.3

24 inches of mercury = 2.95 psia

COMPLETION:

Test Engineer

Donna L. Kelly

Date

2-2-95

DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TEST

DOCKET: 94-39-7ATEST UNIT NO.: S/N:424437-12/94-02

INITIAL CONT. BOUND. VERIF.-BASE

OUTER CONTAINER

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3.

Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-2-95

through

7.1.3.2

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

dlk 12-2-95Time: 09:18 (use military notation - 1:30 p.m. = 13:30)Pressure 2.95 (psia)24 inches of mercury

Temperature:

67.8° (F)19.9° C7.1.2.4 Hold (15 Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.5 Record Final Data.

Time: 09:33 (use military notation - 1:30 p.m. = 13:30)Pressure 2.95 (psia)24 inches of mercury

Temperature:

69° (F)20.5° C

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

dlk 12-2-95☒ - Pass☐ - FailRemarks: Torque all screws 17-18 in/lbsPressure Gauge: #950-31-04-004, calibration expires 9/22/95. Tolerance +/- 0.324 inches of mercury = 2.95 psia

COMPLETION:

Test Engineer

Dana L. Kelly

Date

2-2-95

DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TEST

DOCKET: 94-39-7ATEST UNIT NO.: S/N:424437-12/94-02

INITIAL CONT. BOUND: VERIF.-LID

**OUTER CONTAINER*

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3:

Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-2-95

through

7.1.3.2

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

dlk 12-2-95Time: 09:40 (use military notation - 1:30 p.m. = 13:30)Pressure 2.95 (psia) 24 inches of mercuryTemperature: 69.3° (F) 20.7°C7.1.2.4 Hold (15) Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.5 Record Final Data.

Time: 09:55 (use military notation - 1:30 p.m. = 13:30)Pressure 2.95 (psia) 24 inches of mercuryTemperature: 69.1° (F) 20.6°

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

dlk 12-2-95☒ - Pass☐ - FailRemarks: Torque all screws 17-18 in/lbsPressure Gauge: #950-31-04-004, calibration expires 9/22/95. Tolerance +/- 0.324 inches of mercury = 2.95 psia

COMPLETION:

Donna L. Kelly
Test Engineer2-2-95
Date

DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TEST

DOCKET: 94-39-7A

TEST UNIT NO.: S/N:424437-12/94-01

INITIAL CONT. BOUND VERIF.-BASE

INNER CONTAINER

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3.

Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-2-95

through

7.1.3.2

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

dlk 12-2-95Time: 10:05 (use military notation - 1:30 p.m. = 13:30)Pressure 2.95 (psia) 24 inches of mercuryTemperature: 69.8 (F) 21°C7.1.2.4 Hold (15) Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.5 Record Final Data.

Time: 10:20 (use military notation - 1:30 p.m. = 13:30)Pressure 2.95 (psia) 24 inches of mercuryTemperature: 69.3 (F) 20.7°C

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

dlk 12-2-95☒ - Pass☐ - FailRemarks: Torque all screws 17-18 in/lbsPressure Gauge: #950-31-04-004, calibration expires 9/22/95. Tolerance +/- 0.324 inches of mercury = 2.95 psiaPressure test was performed at the same time & in
the same chamber with S/N 424437-12/94-02.

COMPLETION:

Donna L. Kelly
Test Engineer2-2-95
Date

DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TEST

DOCKET: 94-39-7ATEST UNIT NO.: S/N:424437-12/94-02

INITIAL CONT. BOUND. VERIF.-BASE

INNER CONTAINER

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3;
Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-2-95

through

7.1.3.2

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

dlk 12-2-95Time: 10:05 (use military notation - 1:30 p.m. = 13:30)Pressure 2.95 (psia) 24 inches of mercuryTemperature: 69.8 (F) 21°C7.1.2.4 Hold 15 Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.5 Record Final Data.

Time: 10:20 (use military notation - 1:30 p.m. = 13:30)Pressure 2.95 (psia)Temperature: 69.3 (F) 20.7°C

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

dlk 12-2-95

[] - Pass

[X] - Fail

This container was used for proof testing prior to this test. Container was filled with a mixture of H₂O and fluoresceine. Due to

extensive cleaning - believe that inside

screw holes were still wet when conducting this test. Will reperform test.

Remarks: Torque all screws 17-18 in/lbs

Pressure Gauge: #950-31-04-004, calibration expires 9/22/95. Tolerance +/- 0.3

24 inches of mercury = 2.95 psia

Pressure test was performed at the same time & in the same chamber with S/N 424437-12/94-01

COMPLETION:

Donna L. Kelly2-2-95

Test Engineer

Date

Note: slight leakage & detection of fluoresceine where screws go into base plate. Believe this is from leftover water & flu. from proof testing & not an actual failure.

DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TEST

DOCKET: 94-39-7ATEST UNIT NO.: S/N:424437-12/94-02

INITIAL CONT. BOUND. VERIF.-BASE

INNER CONTAINER

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3;

Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-2-95

through

7.1.3.2

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

dlk 12-2-95Time: 10:45 (use military notation - 1:30 p.m. = 13:30)Pressure 2.95 (psia) 24 inches of mercuryTemperature: 68.9 (F) 20.5°C7.1.2.4 Hold (15) Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.5 Record Final Data.

Time: 11:00 (use military notation - 1:30 p.m. = 13:30)Pressure 2.95 (psia) 24 inches of mercuryTemperature: 68.9 (F) 20.5°C

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

dlk 12-2-95☒ - Pass☐ - FailRemarks: Torque all screws 17-18 in/lbsPressure Gauge: #950-31-04-004, calibration expires 9/22/95. Tolerance +/- 0.324 inches of mercury = 2.95 psiaWiped exterior of container & reconducted test. No indication of any leakage was noted.

COMPLETION:

Dana Kelly
Test Engineer2-2-95

Date

DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TEST

DOCKET: 94-39-7A

TEST UNIT NO.: S/N:424437-12/94-01

INITIAL CONT. BOUND. VERIF.-LID

INNER CONTAINER

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3;
Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.3.1 through
7.1.3.2

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

dlk 12-2-95

Time: 10:25 (use military notation - 1:30 p.m. = 13:30)

Pressure 2.9 (psia)

24.1 inches of mercury

Temperature: 69.3 (F) 20.7°C

7.1.2.4 Hold (15) Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.5 Record Final Data.

Time: 10:40 (use military notation - 1:30 p.m. = 13:30)

Pressure 2.9 (psia)

24.1 inches of mercury

Temperature: 68.9 (F) 20.5°C

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

dlk 12-2-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

dlk 12-2-95

[4] - Pass

[] - Fail

Remarks: Torque all screws 17-18 in/lbs

Pressure Gauge: #950-31-04-004, calibration expires 9/22/95. Tolerance +/- 0.3

24 inches of mercury = 2.95 psia

Pressure test was performed at the same time &
in the same chamber with S/N 424437-12/94-02.

COMPLETION:

Test Engineer

Donna L. Kelly

Date

2-2-95

DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TEST

DOCKET: 94-39-7ATEST UNIT NO.: S/N:424437-12/94-02

INITIAL CONT. BOUND. VERIF.-LID

INNER CONTAINER

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3:

Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

dkk 12-2-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dkk 12-2-95

through

"

7.1.3.2

"

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

dkk 12-2-95Time: 10:25 (use military notation - 1:30 p.m. = 13:30)Pressure 2.9 (psia) 24.1 inches of mercuryTemperature: 69.3 (F) 20.77.1.2.4 Hold (15 Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

dkk 12-2-95

7.1.2.5 Record Final Data.

Time: 10:40 (use military notation - 1:30 p.m. = 13:30)Pressure 2.9 (psia) 24.1 inches of mercuryTemperature: 68.9 (F) 20.5°C

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

dkk 12-2-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

dkk 12-2-95☒ - Pass☐ - FailRemarks: Torque all screws 17-18 in/lbsPressure Gauge: #950-31-04-004, calibration expires 9/22/95. Tolerance +/- 0.324 inches of mercury = 2.95 psiaPressure test was performed at the same time &
in the same chamber w/ S/N 424437-12/94-01

COMPLETION:

Test Engineer

Donna L. Kelly

Date

2-2-95

DOT-7A PROGRAM
TEST DATA SHEET
VIBRATION TEST

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-01

(30 mL)
versimPerform the Vibration Test per 49 CFR 178.608, "Vibration Standards," and Record Data
Indicate Completion of Steps as Follows:

1)	Initial Conditions Established.	Test Engineer - Initial/Date	<u>ALA 12-8-95</u>
2)	Test Assembly Set-up.	Test Engineer - Initial/Date	<u>ALA 12-8-95</u>
3)	Start Vibration.	Test Engineer - Initial/Date	<u>ALA 12-8-95</u>
	Time: <u>11:42am</u> (use military notation - 1:30 p.m. = 13:30)		
4)	Maintain Vibration, Observe, Photograph.	Test Engineer - Initial/Date	<u>ALA 12-8-95</u>
5)	Stop Vibration, Secure Equipment.	Test Engineer - Initial/Date	<u>ALA 12-8-95</u>
	Time: <u>12:45pm</u> (use military notation - 1:30 p.m. = 13:30)		
6)	Evaluate Performance.	Test Engineer - Initial/Date	<u>ALA 12-8-95</u>
	☒ - Pass ☐ - Fail		

Equipment Notes:

- 1) Description: MRAID vibration table
- Serial No. _____ Accuracy: _____
- Calibration No. & Expiration: _____
- 2) Description: Mettler PK Scales
- Serial No. _____ Accuracy: _____
- Calibration No. & Expiration: 347-06-01-0041 4-20-95

Remarks:

gross wt = 28,480 grams (62.83 lbs)

slight marking of 2-PCF inner foam

on case lid

COMPLETION:

Amra Kelly

Test Engineer

2-8-95

Date

(Use additional sheets as needed)

DOT-7A PROGRAM
TEST DATA SHEET
VIBRATION TEST

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-02

(250mL
version)Perform the Vibration Test per 49 CFR 178.608, "Vibration Standards," and Record Data
Indicate Completion of Steps as Follows:

1)	Initial Conditions Established.	Test Engineer - Initial/Date	<u>dlh 12-8-95</u>
2)	Test Assembly Set-up.	Test Engineer - Initial/Date	<u>dlh 12-8-95</u>
3)	Start Vibration.	Test Engineer - Initial/Date	<u>dlh 12-8-95</u>
	Time: <u>10:30 a.m.</u> (use military notation - 1:30 p.m. = 13:30)		
4)	Maintain Vibration, Observe, Photograph.	Test Engineer - Initial/Date	<u>dlh 12-8-95</u>
5)	Stop Vibration, Secure Equipment.	Test Engineer - Initial/Date	<u>dlh 12-8-95</u>
	Time: <u>11:35 a.m.</u> (use military notation - 1:30 p.m. = 13:30)		
6)	Evaluate Performance.	Test Engineer - Initial/Date	<u>dlh 12-8-95</u>
- [X] - Pass [] - Fail

Equipment Notes:

1) Description:

MIRAD vibration table

Serial No. _____

Accuracy: Non Calibrated.

Calibration No. & Expiration: _____

2) Description:

Mettler PK 36 Scales

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: 347-06-01-0041 4-20-95

Remarks:

pkg gross wt. = 24,040 grams (53 lbs)
slight marking of inner 2 PCF foam on case
lid due to rubbing of Safesend container
against it.

COMPLETION:

Linda L. Kelly

Test Engineer

2-8-95

Date

(Use additional sheets as needed)

DOT-7A PROGRAM
TEST DATA SHEET
VIBRATION TEST

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-03

(1-L Version)

Perform the Vibration Test per 49 CFR 178.608, "Vibration Standards," and Record Data
Indicate Completion of Steps as Follows:

1)	Initial Conditions Established.	Test Engineer - Initial/Date	<u>DLA 12-8-95</u>
2)	Test Assembly Set-up.	Test Engineer - Initial/Date	<u>DLA 12-8-95</u>
3)	Start Vibration.	Test Engineer - Initial/Date	<u>DLA 12-8-95</u>
	Time: <u>1:10 p.m.</u> (use military notation - 1:30 p.m. = 13:30)		
4)	Maintain Vibration, Observe, Photograph.	Test Engineer - Initial/Date	<u>DLA 12-8-95</u>
5)	Stop Vibration, Secure Equipment.	Test Engineer - Initial/Date	<u>DLA 12-8-95</u>
	Time: <u>2:12 p.m.</u> (use military notation - 1:30 p.m. = 13:30)		
6)	Evaluate Performance.	Test Engineer - Initial/Date	<u>DLA 12-8-95</u>
- ☒ - Pass ☐ - Fail

Equipment Notes:

1) Description:

MRAID Vibration Table

Serial No. _____

Accuracy: not calibrated

Calibration No. & Expiration: _____

2) Description:

Mettler PK 36 Scales

Serial No. _____

Accuracy: _____

Calibration No. & Expiration: 347-06-01-004, 4-20-95

Remarks:

gross wt. of pkg = 18,387 (40.56 lbs)
slight marking on inner 2-PCF foam
in case lid.

COMPLETION:

Test Engineer

Dmra L Kelly

Date

2-8-95

(Use additional sheets as needed)

DOT-7A PROGRAM
TEST DATA SHEET 7.2
WATER SPRAY TEST

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-02
EMPTY CASE

Perform the Water Spray Test and Record Data per Procedure Section 7.2;
Indicate Completion of Steps as Follows:

7.2.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-8-95

7.2.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-8-95

7.2.2.2 Start Water Spray.

Test Engineer - Initial/Date

dlk 12-8-95

Time: 11:45 a.m. (use military notation - 1:30 p.m. = 13:30)

7.2.2.3 Maintain Spray, Observe, Photograph.

Test Engineer - Initial/Date

dlk 12-8-95

7.2.2.4 Stop Water Spray, Secure Equipment.

Test Engineer - Initial/Date

dlk 12-8-95

Time: 12:50 p.m. (use military notation - 1:30 p.m. = 13:30)

7.2.2.5 Evaluate Performance.

Test Engineer - Initial/Date

dlk 12-8-95

☒ - Pass☐ - Fail

Remarks:

slight amount of water on inside gasket - up to edge
foam was not wet. of outer gasket
edge.

⊕ gasket slit at bottom of case as it sits during normal
shipment.

COMPLETION:

Dana L. Kelly
Test Engineer2-8-95
Date

DOT-7A PROGRAM
TEST DATA SHEET 7.4
PENETRATION TEST

3 FT, 5 IN)

DOCKET:

94-39-7A

TEST UNIT NO.:

39-TU-02

EMPTY CASE

Perform the Penetration Test and Record Data per Procedure Section 7.4;
Indicate Completion of Steps as Follows:

7.4.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-8-95

7.4.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-8-95

Drop Height:

41 inches

(in.)

Impact Area:

impact center of lid on
Hardigg Case

7.4.2.2 Elevate Penetration Bar, Photograph Set-up

Test Engineer - Initial/Date

dlk 12-8-95

7.4.2.3 Drop Penetration Bar.

Test Engineer - Initial/Date

dlk 12-8-95

7.4.2.4 Examine, Photograph Impact Area.

Test Engineer - Initial/Date

dlk 12-8-95

7.4.2.5 Evaluate Performance.

Test Engineer - Initial/Date

dlk 12-8-95

☒ - Pass☐ - Fail

Remarks:

W axis - centerline between center & bottom
bumper. 4" from bottom bumper
indented .234"
3/4" across

COMPLETION:

Test Engineer

Donna L Kelly

2-8-95

Date

DOT-7A PROGRAM
TEST DATA SHEET 7.4
PENETRATION TEST

(5 FT, 7 IN)

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-02
EMPTY CASEPerform the Penetration Test and Record Data per Procedure Section 7.4;
Indicate Completion of Steps as Follows:

7.4.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-8-95

7.4.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-8-95

Drop Height: 67 inches (in.)

Impact Area:

impact center of lid on
Hardigg Case

7.4.2.2 Elevate Penetration Bar, Photograph Set-up

Test Engineer - Initial/Date

dlk 12-8-95

7.4.2.3 Drop Penetration Bar.

Test Engineer - Initial/Date

dlk 12-8-95

7.4.2.4 Examine, Photograph Impact Area.

Test Engineer - Initial/Date

dlk 12-8-95

7.4.2.5 Evaluate Performance.

Test Engineer - Initial/Date

dlk 12-8-95☒ - Pass☐ - Fail

Remarks:

3" from bottom bumper Way's - centerline
indented .346"
3/4" across

COMPLETION:

Test Engineer

Donna Kelly

Date

2-8-95

DOT-7A PROGRAM
TEST DATA SHEET 7.3
COMPRESSION TEST

(700 LBS)

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-02
EMPTY CASEPerform the Compression Test and Record Data per Procedure Section 7.3;
Indicate Completion of Steps as Follows:

7.3.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-8-95

7.3.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-8-95through
7.3.2.2Test Load: 700 lbs (lb.)

7.3.2.3 Load Package, Record Time.

Test Engineer - Initial/Date

dlk 12-8-95Time: 1:35 p.m. (use military notation - 1:30 p.m. = 13:30)

7.3.2.4 Hold (24 hrs), Observe, Photograph.

Test Engineer - Initial/Date

dlk 12-9-95

7.3.2.5 Unload Package, Record Time.

Test Engineer - Initial/Date

dlk 12-9-95Time: 3:10 p.m. (use military notation - 1:30 p.m. = 13:30)

7.3.2.6 Evaluate Performance.

Test Engineer - Initial/Date

dlk 12-9-95☒ - Pass☐ - Fail

Remarks:

lead bricks & plywood = 700 lbs.no damage or compression of case
exterior or interior noted.

COMPLETION:

Test Engineer

Date

Dana L Kelly 2-9-95

DOT-7A PROGRAM

TEST DATA SHEET 7.5-1/2

FREE DROP TEST

DOCKET:

94-39-7A

TEST UNIT NO.:

39-TU-01

30mL version

PIG S/N:

-01

SAFESEND:

~~39-TU-01~~ 39-TU-06

Spacer assembly -02

Perform the Free Drop Test and Record Data per Procedure Section 7.5;
Indicate Completion of Steps as Follows:

7.5.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlb 12-9-95

7.5.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlb 12-9-95

Drop Height:

30 FT, 3 IN

(in.)

(363 inches)

Impact Angle:

flat

(deg.)

Orientation:

impact lid - flat onto lengthwise
side of package.

Sketch - Drop Orientation

COMPLETION:

Test Engineer

Dana L. Kelly

Date

2-9-95

DOT-7A PROGRAM
TEST DATA SHEET 7.5-2/2
FREE DROP TEST

DOCKET: 94-39-7A
TEST UNIT NO.: 39-TU-01
FIG S/N:
SAFESEND:

7.5.2.2	Rig Package Per 7.5.2.1.	Test Engineer - Initial/Date	<u>dek 2-9-95</u>
7.5.2.3	Photograph Set-up, Start Video Coverage.	Test Engineer - Initial/Date	<u>dek 12-9-95</u>
7.5.2.4	Drop Package, Secure Video.	Test Engineer - Initial/Date	<u>dek 12-9-95</u>
7.5.2.5	Clear Drop Area for Approach.	Test Engineer - Initial/Date	<u>dek 12-9-95</u>
7.5.2.6	Examine, Photograph, Videotape Package Damage.	Test Engineer - Initial/Date	<u>dek 12-9-95</u>
7.5.2.7	Evaluate Performance.	Test Engineer - Initial/Date	<u>dek 12-9-95</u>

(X) - Pass () - Fail

Remarks: This was the 3rd drop with Hardigg Case 39-TU-01.

The spacer assembly was changed to 39-TU-02 due to
previous damage of spacer assembly 39-TU-01.
HDPE 1/4" (existing movement) from previous testing.

COMPLETION:

Dora L. Kelly
Test Engineer

2-9-95
Date

foam compressed on lid of Hardigg Case (ingression of SafeSend)
(top SafeSend) = .47"
(bottom SafeSend) = .558"

.435" top foam (X side of Hardigg Case) =
.745" bottom foam (X side of Hardigg Case) =

slight movement
foam angled outward as noted.

DOT-7A PROGRAM

TEST DATA SHEET 7.5-1/2

FREE DROP TEST

DOCKET:

94-39-7A

TEST UNIT NO.:

39-TU-01

30 mL version

PIG S/N:

-02

SAFESEND:

39-TU-07

spare

-02

Perform the Free Drop Test and Record Data per Procedure Section 7.5;
Indicate Completion of Steps as Follows:

7.5.1 Initial Conditions Established.

Test Engineer - Initial/Date

dkk 12-9-95

7.5.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dkk 12-9-95

Drop Height:

30 FT, 3 IN

(in.)

Impact Angle:

45° (CG)

(deg.)

Orientation:

impact top corner of lid
on latch side

Sketch - Drop Orientation

COMPLETION:

Test Engineer

Dana L Kelly

Date

2-9-95

DOT-7A PROGRAM
TEST DATA SHEET 7.5-2/2
FREE DROP TEST

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-01

FIG S/N: -02

SAFESEND: 39-TU-07

Spacer -02

7.5.2.2 Rig Package Per 7.5.2.1.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.3 Photograph Set-up, Start Video Coverage.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.4 Drop Package, Secure Video.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.5 Clear Drop Area for Approach.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.6 Examine, Photograph, Videotape Package Damage.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.7 Evaluate Performance.

Test Engineer - Initial/Date dlk 12-9-95

[4 - Pass

[1 - Fail

Impact lid of Case & top of SafeSend.

Remarks:

This is the 4th drop on Harding Case. See Previous drop (flat onto lid) for existing damage to interior of Harding Case. Spacer assembly -02 was used again as no damage was noted.

Top corner at W & X axis indented $1\frac{9}{16}$ " ^{Warp's} at impact
X & W axis indented $1\frac{1}{2}$ " at impact
Warp's on lid near latch $\frac{1}{2}$ " outward push from dent

COMPLETION:

Dana L Kelly
Test Engineer

2-9-95
Date

foam on lid - SafeSend impact (left side) = .574"
foam on lid of Case - Compression by SafeSend = .275"
foam on lid - SafeSend impact (bottom) = .532

Case lid (lengthwise edge) beginning to show slight deformation by top bumper near card holder.

DOT-7A PROGRAM
TEST DATA SHEET 7.5-1/2
FREE DROP TEST

DOCKET: 94-39-7ATEST UNIT NO.: 39-TU-01 30 mL versionFIG S/N: -01SAFESEND: 39-TU-05spacer assembly -01

Perform the Free Drop Test and Record Data per Procedure Section 7.5;
Indicate Completion of Steps as Follows:

7.5.1 Initial Conditions Established.

Test Engineer - Initial/Date dek 12-8-95

7.5.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date dek 12-8-95Drop Height: 30 FT, 3 IN (in.)Impact Angle: flat (deg.)Orientation: flat onto top of package

Sketch - Drop Orientation

COMPLETION:

Donna L. Kelly 2-8-95

Test Engineer

Date

DOT-7A PROGRAM
TEST DATA SHEET 7.5-2/2
FREE DROP TEST

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-01

PIG S/N: -01

SAFESEND: 39-TU-05

7.5.2.2 Rig Package Per 7.5.2.1.

Test Engineer - Initial/Date dlk 2-8-95

7.5.2.3 Photograph Set-up, Start Video Coverage.

Test Engineer - Initial/Date dlk 12-8-95

7.5.2.4 Drop Package, Secure Video.

Test Engineer - Initial/Date dlk 12-8-95

7.5.2.5 Clear Drop Area for Approach.

Test Engineer - Initial/Date dlk 12-8-95

7.5.2.6 Examine, Photograph, Videotape Package Damage.

Test Engineer - Initial/Date dlk 12-8-95

7.5.2.7 Evaluate Performance.

Test Engineer - Initial/Date dlk 12-8-95

[4] - Pass

[] - Fail

Remarks:

HDPE 1/4" on 2 sections - no change from 1st drop.foam spacer shifted upward 1/2" on top right &
1/4" on top left panels.

This was the 2nd drop.

COMPLETION:

Dana Kelly
Test Engineer

2-8-95
Date

wooden spacer bent ^{1/8" width} _{1/16"} down toward SafeSend. No further damage. Cannot use spacer for further testing due to damage. Impression of SafeSend was left on the underside of plywood portion of spacer.

DOT-7A PROGRAM
TEST DATA SHEET 7.5-1/2
FREE DROP TEST

DOCKET: 94-39-7ATEST UNIT NO.: 39-TU-01 30 mL versionFIG S/N: -01SAFESEND: 39-TU-04
spacer assembly -01

Perform the Free Drop Test and Record Data per Procedure Section 7.5;
Indicate Completion of Steps as Follows:

7.5.1 Initial Conditions Established.

Test Engineer - Initial/Date dlk 12-8-95

7.5.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date dlk 12-8-95Drop Height: 30 FT, 3 IN (in.)Impact Angle: flat (deg.)Orientation: flat into bottom of pkg

Sketch - Drop Orientation

COMPLETION:

Test Engineer

Dana L. Kelly

Date

2-8-95

DOT-7A PROGRAM
TEST DATA SHEET 7.5-2/2
FREE DROP TEST

DOCKET: 94-39-7ATEST UNIT NO.: 39-TU-01 30mL versionPIG S/N: -01SAFESEND: 39-TU-04

7.5.2.2 Rig Package Per 7.5.2.1.

Test Engineer - Initial/Date dlk 12-8-95

7.5.2.3 Photograph Set-up, Start Video Coverage.

Test Engineer - Initial/Date dlk 12-8-95

7.5.2.4 Drop Package, Secure Video.

Test Engineer - Initial/Date dlk 12-8-95

7.5.2.5 Clear Drop Area for Approach.

Test Engineer - Initial/Date dlk 12-8-95

7.5.2.6 Examine, Photograph, Videotape Package Damage.

Test Engineer - Initial/Date dlk 12-8-95

7.5.2.7 Evaluate Performance.

Test Engineer - Initial/Date dlk 12-8-95☒ - Pass☐ - Fail

Remarks:

HDPE compressed 1/4" in 2 places wherespike and impaled.This was the first drop in Harding Case 39-TU-01

COMPLETION:

Donna L. Kelly
Test Engineer2-8-95

Date

DOT-7A PROGRAM

TEST DATA SHEET 7.5-1/2

FREE DROP TEST

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-03

1-L version

SAFESEND: 39-TU-13

Bottle: -03 #4

Spacer -03

Perform the Free Drop Test and Record Data per Procedure Section 7.5;
Indicate Completion of Steps as Follows:

7.5.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-9-95

Drop Height: 30 FT, 3 IN (in.)

Impact Angle: flat (deg.)

Orientation:

impact lid - flat onto
lengthwise side of package.

Sketch - Drop Orientation

COMPLETION:

Test Engineer

Date

DOT-7A PROGRAM
TEST DATA SHEET 7.5-2/2
FREE DROP TEST

DOCKET: 94-39-7ATEST UNIT NO.: 39-TU-03

SAFESEND:

7.5.2.2 Rig Package Per 7.5.2.1.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.3 Photograph Set-up, Start Video Coverage.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.4 Drop Package, Secure Video.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.5 Clear Drop Area for Approach.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.6 Examine, Photograph, Videotape Package Damage.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.7 Evaluate Performance.

Test Engineer - Initial/Date

dlk 12-9-95☒ - Pass☐ - Fail

Remarks:

no damage 4th drop on Hardigg Case 39-TU-03

COMPLETION:

Test Engineer

Dana L Kelly

Date

2-9-95

DOT-7A PROGRAM
TEST DATA SHEET 7.5-1/2
FREE DROP TEST

DOCKET: 94-39-7A
TEST UNIT NO.: 39-TU-03 / L-version
SAFESEND: 39-TU-12
Bottle: -03 #3
spacer -03

Perform the Free Drop Test and Record Data per Procedure Section 7.5;
Indicate Completion of Steps as Follows:

7.5.1 Initial Conditions Established.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date dlk 12-9-95

Drop Height: 30 FT, 3 IN (in.)

Impact Angle: flat (deg.)

Orientation: flat onto top of package

Sketch - Drop Orientation

COMPLETION:

Test Engineer

Donna Kelly 2-9-95

Date

DOT-7A PROGRAM
TEST DATA SHEET 7.5-2/2
FREE DROP TEST

DOCKET: 94-39-7ATEST UNIT NO.: 39-TU-03SAFESEND: 39-TU-12Bottle: -03 #3Space: -03

7.5.2.2 Rig Package Per 7.5.2.1.

Test Engineer Initial/Date dlk 2-9-95

7.5.2.3 Photograph Set-up, Start Video Coverage.

Test Engineer - Initial/Date dlk 2-9-95

7.5.2.4 Drop Package, Secure Video.

Test Engineer - Initial/Date dlk 2-9-95

7.5.2.5 Clear Drop Area for Approach.

Test Engineer - Initial/Date dlk 2-9-95

7.5.2.6 Examine, Photograph, Videotape Package Damage.

Test Engineer - Initial/Date dlk 2-9-95

7.5.2.7 Evaluate Performance.

Test Engineer - Initial/Date dlk 2-9-95☒ - Pass☐ - Fail

Remarks:

This is the 2nd drop with Hardigg Case 39-TU-03
bottle didn't break however, slight leakage around
lid occurred. When unscrewed lid - seemed
tight.

COMPLETION:

Test Engineer

Diana L Kelly

Date

2-9-95

Changed bottle out 39-TU-03 #3 "second" drop
wt of bottle & contents = 2000 grams (4.4 lbs) (-63, #8)
loaded into new safe stand ID# 13362028 39-TU-17
Redrop flat into top of Hardigg Case
Slight leakage around lid - less than previous drop.

(Pass. ? yes)

This is the
3rd drop
with
Hardigg
Case.
39-TU-03

DOT-7A PROGRAM

TEST DATA SHEET 7.5-1/2

FREE DROP TEST

DOCKET:

94-39-7A

TEST UNIT NO.:

39-TU-03

1L version

SAFESEND:

39-TU-08

1L version bottle -03#2

Spacer - 03

Perform the Free Drop Test and Record Data per Procedure Section 7.5;
Indicate Completion of Steps as Follows:

7.5.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk, 2-9-95

7.5.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk, 2-9-95

Drop Height: 30 FT, 3 IN (in.)

Impact Angle: flat (deg.)

Orientation: flat onto bottom of package.

Sketch - Drop Orientation

COMPLETION:

Test Engineer

Donna L Kelly

2-9-95

Date

DOT-7A PROGRAM
TEST DATA SHEET 7.5-2/2
FREE DROP TESTDOCKET: 94-39-7ATEST UNIT NO.: 39-TU-03SAFESEND: 39-TU-08 spec -03
Bottle -03 #2

7.5.2.2 Rig Package Per 7.5.2.1.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.3 Photograph Set-up, Start Video Coverage.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.4 Drop Package, Secure Video.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.5 Clear Drop Area for Approach.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.6 Examine, Photograph, Videotape Package Damage.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.7 Evaluate Performance.

Test Engineer - Initial/Date dlk 12-9-95☒ Pass☐ - Fail

Remarks: This is the 1st drop with Hordigg Case 39-TU-03
no breakage or leakage from bottle.
no damage to safe and
no damage to Hordigg Case

COMPLETION:

Test Engineer

Donna L Kelly

Date

2-9-95

DOT-7A PROGRAM
TEST DATA SHEET 7.5-1/2
FREE DROP TESTDOCKET: 94-39-7ATEST UNIT NO.: 39-TU-03 / -L versionSAFESEND: 39-TU-16Bottle: -03 #7Spacer: -03Perform the Free Drop Test and Record Data per Procedure Section 7.5;
Indicate Completion of Steps as Follows:

7.5.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-10-95

7.5.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-10-95

Drop Height:

4 FT, 1 IN

(in.)

(49 inches)

Impact Angle:

flat

(deg.)

Orientation:

impact lid - flat onto
lengthwise side of package.

Sketch - Drop Orientation

COMPLETION:

dlk
Test Engineer2-10-95

Date

DOT-7A PROGRAM
TEST DATA SHEET 7.5.2/2
FREE DROP TEST

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-03

SAFESEND: 39-TU-16

Bottle -03 #7

7.5.2.2 Rig Package Per 7.5.2.1.

Test Engineer - Initial/Date dlk 12-10-95

7.5.2.3 Photograph Set-up, Start Video Coverage.

Test Engineer - Initial/Date dlk 12-10-95

7.5.2.4 Drop Package, Secure Video.

Test Engineer - Initial/Date dlk 12-10-95

7.5.2.5 Clear Drop Area for Approach.

Test Engineer - Initial/Date dlk 12-10-95

7.5.2.6 Examine, Photograph, Videotape Package Damage.

Test Engineer - Initial/Date dlk 12-10-95

7.5.2.7 Evaluate Performance.

Test Engineer - Initial/Date dlk 12-10-95☒ - Pass☐ - Fail

Remarks:

~~No damage~~ This is the 7th drop with Hordy's
Case 39-TU-03. See previous drop for
existing damage.

Butterfly latch came unlatched at W axis on
left side of Case lid top.

COMPLETION:

dlk
Test Engineer

2-10-95

Date

.40" lid foam on case lid where Safe Send
compresses

.389 Safe Send body imprint top of case lid
(-.265 ruler)

.124"

.397

Safe Send body imprint bottom of case lid

f. 265 ruler

.132"

DOT-7A PROGRAM
TEST DATA SHEET 7.5-1/2
FREE DROP TEST

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-03 1-L version

SAFESEND: 39-TU-14

Bottle: -03 #5

Spacer: -03

Perform the Free Drop Test and Record Data per Procedure Section 7.5;
Indicate Completion of Steps as Follows:

7.5.1 Initial Conditions Established.

Test Engineer - Initial/Date

dkh 12-10-95

7.5.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dkh 12-10-95

Drop Height: 4 FT, 1 IN (in.)

Impact Angle: flat (deg.)

Orientation:

flat onto bottom of pkg.

Sketch - Drop Orientation

COMPLETION:

Test Engineer

Date

dkh 2/10/95

DOT-7A PROGRAM
TEST DATA SHEET 7.5-2/2
FREE DROP TEST

DOCKET: 94-39-7ATEST UNIT NO.: 39-TU-03

SAFESEND:

7.5.2.2	Rig Package Per 7.5.2.1.	Test Engineer - Initial/Date	<u>dlk 12-10-95</u>
7.5.2.3	Photograph Set-up, Start Video Coverage.	Test Engineer - Initial/Date	<u>dlk 12-10-95</u>
7.5.2.4	Drop Package, Secure Video.	Test Engineer - Initial/Date	<u>dlk 12-10-95</u>
7.5.2.5	Clear Drop Area for Approach.	Test Engineer - Initial/Date	<u>dlk 12-10-95</u>
7.5.2.6	Examine, Photograph, Videotape Package Damage.	Test Engineer - Initial/Date	<u>dlk 12-10-95</u>
7.5.2.7	Evaluate Performance.	Test Engineer - Initial/Date	<u>dlk 12-10-95</u>

☒ - Pass
 ☐ - Fail

Remarks:

This is the 5th drop on Harding Case 39-TU-03.

bottom latch beginning to loosen slightly
at rivets. No damage to SafeSend, or
bottle.

COMPLETION:

dlk 2-10-95
 Test Engineer

Date

. 397" lid foam when Safe Send lid impressed
on case.

DOT-7A PROGRAM
TEST DATA SHEET 7.5-1/2
FREE DROP TEST

DOCKET: 94-39-7ATEST UNIT NO.: 39-TU-03 1-L versionSAFESEND: 39-TU-15Bottle: -03 #6Spacer -03

Perform the Free Drop Test and Record Data per Procedure Section 7.5;
Indicate Completion of Steps as Follows:

7.5.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-10-95

7.5.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-10-95Drop Height: 4 FT, 1 IN (in.)Impact Angle: flat (deg.)

Orientation:

flat onto top of pkg

Sketch - Drop Orientation

COMPLETION:

dlk 2-10-95

Test Engineer

Date

DOT-7A PROGRAM
TEST DATA SHEET 7.5-2/2
FREE DROP TEST

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-03

SAFESEND: 39-TU-15

7.5.2.2 Rig Package Per 7.5.2.1.

Test Engineer - Initial/Date dlk 12-10-95

7.5.2.3 Photograph Set-up, Start Video Coverage.

Test Engineer - Initial/Date dlk 12-10-95

7.5.2.4 Drop Package, Secure Video.

Test Engineer - Initial/Date dlk 12-10-95

7.5.2.5 Clear Drop Area for Approach.

Test Engineer - Initial/Date dlk 12-10-95

7.5.2.6 Examine, Photograph, Videotape Package Damage.

Test Engineer - Initial/Date dlk 12-10-95

7.5.2.7 Evaluate Performance.

Test Engineer - Initial/Date dlk 12-10-95

☒ - Pass

☐ - Fail

Remarks: This is the 6th drop with Harding Case
39-TU-03. See previous drop for
existing damage.
No damage to SafeSend or bottle

COMPLETION: dlk 2-10-95
Test Engineer Date

397" foam on case lid - no change from
previous drop.

DOT-7A PROGRAM
TEST DATA SHEET 7.5-1/2
FREE DROP TEST

DOCKET: 94-39-7ATEST UNIT NO.: 39-TU-0130-ml versionS/N FIG: - 02SAFESEND: 39-TU-10space - 02

Perform the Free Drop Test and Record Data per Procedure Section 7.5;
Indicate Completion of Steps as Follows:

7.5.1 Initial Conditions Established.

Test Engineer - Initial/Date

DLK 12-9-95

7.5.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date

DLK 12-9-95Drop Height: 4 FT, 1 IN (in.)Impact Angle: flat (deg.)

Orientation:

impact lid flat onto lengthwise
side of package.

Sketch - Drop Orientation

COMPLETION:

Test Engineer

Dana L Kelly

Date

2-9-95

DOT-7A PROGRAM
TEST DATA SHEET 7.5-2/2
FREE DROP TEST

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-01

S/N PIG: - 02

SAFESEND: 39-TU-10

Spacer - 02

7.5.2.2 Rig Package Per 7.5.2.1.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.3 Photograph Set-up, Start Video Coverage.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.4 Drop Package, Secure Video.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.5 Clear Drop Area for Approach.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.6 Examine, Photograph, Videotape Package Damage.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.7 Evaluate Performance.

Test Engineer - Initial/Date

dlk 12-9-95

M - Pass

[] - Fail

top center foam piece (left side) $\frac{3}{32}$ " downward toward cavity
(right side) $\frac{3}{16}$ " downward toward toward cavity

Remarks:

This is the 6th drop with Hardig Case 39-TU-01

See previous drop for existing damage to the case.

COMPLETION:

Dana L. Kelly

Test Engineer

2-9-95

Date

.1735" Hardig Case foam on lid left side when Safe Send impacts

.575" Hardig Case foam on lid bottom when Safe Send impacts

-.265" (rel) .580 Center of foam on lid

-.265

(.255)

.600

-.265

(.335)

bottom of foam on lid

DOT-7A PROGRAM

TEST DATA SHEET 7.5-1/2

FREE DROP TEST

DOCKET:

94-39-7A

TEST UNIT NO.:

39-TU-01

30-mL Version

S/N PIG:

-01

SAFESEND:

39-TU-09

Spacer

-02

Perform the Free Drop Test and Record Data per Procedure Section 7.5;
Indicate Completion of Steps as Follows:

7.5.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-9-95

Drop Height:

4 FT, 1 IN

(in.)

Impact Angle:

45° (CG)

(deg.)

Orientation:

impact top corner of lid
on latch side(impacted bottom portion
of Hardiss case)

Sketch - Drop Orientation

COMPLETION:

Test Engineer

Dana J Kelly

Date

2-9-95

DOT-7A PROGRAM
TEST DATA SHEET 7.5-2/2
FREE DROP TEST

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-01

S/N PIG: -01

SAFESEND: 39-TU-09

Spacer -02

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.2 Rig Package Per 7.5.2.1.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.3 Photograph Set-up, Start Video Coverage.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.4 Drop Package, Secure Video.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.5 Clear Drop Area for Approach.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.6 Examine, Photograph, Videotape Package Damage.

Test Engineer - Initial/Date dlk 12-9-95

7.5.2.7 Evaluate Performance.

☒ - Pass

☐ - Fail

top $\frac{1}{32}$ " left side center from section
top $\frac{3}{16}$ " right side " " "

Remarks:

This is the 5th drop with Hardigg Case 39-TU-01.
See previous drop for existing damage to the case
interior + exterior. Due to indentation of top corner
from 30ft. drop, case will be dropped on lid at opposite
corner - This makes the impact to the bottom of the SafeSend.

COMPLETION:

Donna Z Kelly 2-9-95
Test Engineer Date

.54" = bottom of Safe Send impact to foam on Case lid
.70" = top of Safe Send impact to foam on Case lid (far left)
.509" = top of Safe Send impact to foam on Case lid (far right)
* 265 ruler)
5.25
- .265
- .260
58"
- .265
↑
(.322)

flattening of foam on lid from impression top of lid (center)
flattening of foam on lid from impression bottom of lid (SafeSend)

DOT-7A PROGRAM
TEST DATA SHEET 7.5-1/2
FREE DROP TEST

DOCKET: 94-39-7ATEST UNIT NO.: 39-TU-01 30mL versionS/N FIG: -01SAFESEND: 39-TU-11Spacer - 02

Perform the Free Drop Test and Record Data per Procedure Section 7.5;
Indicate Completion of Steps as Follows:

7.5.1 Initial Conditions Established.

Test Engineer - Initial/Date dkk 12-9-95

7.5.2.1 Test Assembly Set-up.

Test Engineer - Initial/Date dkk 12-9-95Drop Height: 4 FT, 1 IN (in.)Impact Angle: flat (deg.)Orientation: flat onto top

Sketch - Drop Orientation

COMPLETION:

Test Engineer

Diana L Kelly

Date

2-9-95

DOT-7A PROGRAM
TEST DATA SHEET 7.5-2/2
FREE DROP TEST

DOCKET: 94-39-7A

TEST UNIT NO.: 39-TU-01

S/N PIG: -01

SAFESEND: 39-TU-11

Spaon -02

7.5.2.2 Rig Package Per 7.5.2.1.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.3 Photograph Set-up, Start Video Coverage.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.4 Drop Package, Secure Video.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.5 Clear Drop Area for Approach.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.6 Examine, Photograph, Videotape Package Damage.

Test Engineer - Initial/Date

dlk 12-9-95

7.5.2.7 Evaluate Performance.

Test Engineer - Initial/Date

dlk 12-9-95

☒ - Pass☐ - FailRemarks: This is the 7th drop with Hardigg Case 39-TU-01

See previous drop for existing damage to case

COMPLETION:

Dana Kelly
Test Engineer2-9-95
Date

.725" top left side Case foam inside

.600" bottom Case foam on lid

-.265" ruler)

.575

-.265

(.310)

foam center - Safe Sand rubbed

.544

-.265

(.279)

Bottom of foam
where Safe Sand rubbed

.552

-.265

(.287)

foam center
under previous
location

* Outer Container

DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TEST

DOCKET: 94-39-7A

TEST UNIT NO.: S/N: 424437-12/94-02
FINAL CONT. BOUND. VERIF. - BASE

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3;
Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date dlk 12-9-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date dlk 12-9-95

through

7.1.3.2 "

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date dlk 12-9-95

Time: 12:46 p.m. (use military notation - 1:30 p.m. = 13:30)

Pressure 24 inches of mercury (psia) 2.95 psi

Temperature: _____ (F) 20.6°C

7.1.2.4 Hold (20) Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date dlk 12-9-95

7.1.2.5 Record Final Data.

Time: 1:06 p.m. (use military notation - 1:30 p.m. = 13:30)

Pressure 2.95 psi (psig)

Temperature: _____ (F) 20.6°C

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date dlk 12-9-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date dlk 12-9-95

☒ - Pass

☐ - Fail

Remarks:

no water leakage indicated

COMPLETION:

Donna L Kelly
Test Engineer

2-9-95

Date

+ Water Container

DOT-7A PROGRAM

TEST DATA SHEET 7.1.3

REDUCED PRESSURE TEST

DOCKET:

94-39-7A

TEST UNIT NO.:

S/N: 424437-12/94-02

FINAL CONT. BOUND. VERIF. - LID

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3;

Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-9-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-9-95

through

7.1.3.2

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

dlk 12-9-95

Time: 1:19 p.m. (use military notation - 1:30 p.m. = 13:30)

Pressure 2.95 (psia) 24 inches of mercury

Temperature: (F) 21.0°C

7.1.2.4 Hold (20) Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

dlk 12-9-95

7.1.2.5 Record Final Data.

Time: 1:40 p.m. (use military notation - 1:30 p.m. = 13:30)

Pressure 2.95 (psig)

Temperature: (F) 19.7°C

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

dlk 12-9-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

dlk 12-9-95

☒ - Pass☐ - Fail

Remarks:

No water leakage indicated

COMPLETION:

Test Engineer

Dana Zilly

Date

2-9-95

4 Outer Containers

DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TEST

DOCKET: 94-39-7A

TEST UNIT NO.:

S/N: 424437-12/94-01

FINAL CONT. BOUND. VERIF. - BASE

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3;
Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

dkk 2-9-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dkk 12-9-95

through
7.1.3.2

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

dkk 12-9-95

Time: 1:37 p.m. (use military notation - 1:30 p.m. = 13:30)

Pressure 2.95 (psia) 24 inches of mercury

Temperature: (F) 20.4°C

7.1.2.4 Hold 23 Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

dkk 2-9-95

7.1.2.5 Record Final Data.

Time: 2:00 p.m. (use military notation - 1:30 p.m. = 13:30)

Pressure 2.95 (psig) 24 inches of mercury

Temperature: (F) 20.4°C

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

dkk 12-9-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

dkk 12-9-95

☒ - Pass☐ - Fail

Remarks:

No water leakage indicated

COMPLETION:

Test Engineer

Dana Kelly

Date

2-9-95

* Outer Container

DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TEST

DOCKET: 94-39-7A

TEST UNIT NO.:

S/N: 424437-12/94-01

FINAL CONT. BOUND. VERIF. - LID

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3;
Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-9-95

7.1.3.1 Test Assembly Set-up.
through "
7.1.3.2 "

Test Engineer - Initial/Date

dlk 12-9-95

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

dlk 12-9-95

Time: 2:02 p.m. (use military notation - 1:30 p.m. = 13:30)

Pressure 2.95 (psia) 24.2 inches of mercury

Temperature: (F) 20.7°C

7.1.2.4 Hold (16) Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

dlk 12-9-95

7.1.2.5 Record Final Data.

Time: 2:18 p.m. (use military notation - 1:30 p.m. = 13:30)

Pressure (psig) 24 inches of mercury

Temperature: (F) 20.7°

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

dlk 12-9-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

dlk 12-9-95

☒ - Pass☐ - Fail

Remarks:

no water leakage indicated

COMPLETION:

Test Engineer

Dana L Kelly

Date

2-9-95

*of Inner Container*DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TESTDOCKET: 94-39-7ATEST UNIT NO.: S/N: 424437-12/94-01
FINAL CONT. BOUND. VERIF. - BASEPerform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3;
Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

Alk 12-9-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date

Alk 12-9-95

through

7.1.3.2 "

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

Alk 12-9-95Time: 2:32 p.m. (use military notation - 1:30 p.m. = 13:30)Pressure 2.9 (psia) 24.2 inches of mercuryTemperature: _____ (F) 20.9°C7.1.2.4 Hold (28) Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

Alk 12-9-95

7.1.2.5 Record Final Data.

Time: 3:00 (use military notation - 1:30 p.m. = 13:30)Pressure 2.9 (psig) 24.2 inches of mercuryTemperature: _____ (F) 20.4°C

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

Alk 12-9-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

Alk 12-9-95☒ - Pass☐ - Fail

Remarks:

no fluoresceine detected with black light

COMPLETION:

Test Engineer

Diana L Kelly

Date

2-9-95

+ Inner Container

DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TEST

DOCKET: 94-39-7A

TEST UNIT NO.:

S/N: 424437-12/94-02

FINAL CONT. BOUND. VERIF. - BASE

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3;
Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

dlk 12-9-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dlk 12-9-95

through
7.1.3.2

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

dlk 12-9-95

Time: 2:30 p.m. (use military notation - 1:30 p.m. = 13:30)

Pressure 2.9 (psia)

24.2 inches of mercury

Temperature: (F)

20.9°C

28
30 min
7.1.2.4 Hold () Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

dlk 12-9-95

7.1.2.5 Record Final Data.

Time: 3:00 (use military notation - 1:30 p.m. = 13:30)

Pressure 2.9 (psig)

24.2

Temperature: (F)

20.4°

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

dlk 12-9-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

dlk 12-9-95

☒ - Pass☐ - Fail

Remarks:

no detection of fluorescence around base.
no leakage of water
used black light

COMPLETION:

Test Engineer

Dana Kelly

Date

2-9-95

** Known Container*DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TESTDOCKET: 94-39-7ATEST UNIT NO.: S/N: 424437-12/94-01
FINAL CONT. BOUND. VERIF. - LIDPerform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3;
Indicate Completion of Steps as Follows:

7.1.1 Initial Conditions Established.

Test Engineer - Initial/Date

dkk 12-9-95

7.1.3.1 Test Assembly Set-up.

Test Engineer - Initial/Date

dkk 12-9-95

through

"

7.1.3.2

"

7.1.3.3 Reduce Ambient Pressure.

Test Engineer - Initial/Date

dkk 12-9-95Time: 3:05 p.m. (use military notation - 1:30 p.m. = 13:30)Pressure: 2.95 (psia) 24 inches of mercuryTemperature: _____ (F) 20.6°C7.1.2.4 Hold (16 Minutes, Observe,
Conduct Leakage Rate Testing.

Test Engineer - Initial/Date

dkk 12-9-95

7.1.2.5 Record Final Data.

Time: 3:21 (use military notation - 1:30 p.m. = 13:30)Pressure: 2.95 (psig) 24 inches of mercuryTemperature: _____ (F) 20.7°C

7.1.2.6 Relieve Vacuum.

Test Engineer - Initial/Date

dkk 12-9-95

7.1.2.7 Evaluate Leakage Rate.

Test Engineer - Initial/Date

dkk 12-9-95☒ - Pass☐ - Fail

Remarks:

no indication of fluorescence or water
used black light

COMPLETION:

Test Engineer

Diana Kelly

Date

2-9-95

* Inner Container

DOT-7A PROGRAM
TEST DATA SHEET 7.1.3
REDUCED PRESSURE TEST

DOCKET: 94-39-7A
TEST UNIT NO.: S/N: 424437-12/94-02
FINAL CONT. BOUND. VERIF. - LID

Perform the Reduced Pressure Test and Record Data per Procedure Section 7.1.3;
Indicate Completion of Steps as Follows:

7.1.1	Initial Conditions Established.	Test Engineer - Initial/Date	<u>dlh 12-9-95</u>
7.1.3.1	Test Assembly Set-up.	Test Engineer - Initial/Date	<u>dlh 12-9-95</u>
through	"		
7.1.3.2	"		
7.1.3.3	Reduce Ambient Pressure.	Test Engineer - Initial/Date	<u>dlh 12-9-95</u>
	Time: <u>3:05 p.m.</u> (use military notation - 1:30 p.m. = 13:30)		
	Pressure <u>2.95</u> (psia) <u>24 inches of mercury</u>		
	Temperature: _____ (F) <u>20.6°C</u>		
7.1.2.4	Hold <u>16</u> Minutes, Observe, Conduct Leakage Rate Testing.	Test Engineer - Initial/Date	<u>dlh 12-9-95</u>
7.1.2.5	Record Final Data.		
	Time: <u>3:21 p.m.</u> (use military notation - 1:30 p.m. = 13:30)		
	Pressure <u>2.95</u> (psig) <u>24 inches of mercury</u>		
	Temperature: _____ (F) <u>20.6°C</u>		
7.1.2.6	Relieve Vacuum.	Test Engineer - Initial/Date	<u>dlh 12-9-95</u>
7.1.2.7	Evaluate Leakage Rate.	Test Engineer - Initial/Date	<u>dlh 12-9-95</u>
	☒ - Pass ☐ - Fail		

Remarks: Used black light.
No detection of water & fluorescein around lid of pig.
slight indication on bowl where screw contacted bowl.
Believe this was due to pre-testing conducted & slight
residue left inside screw holes (see Cont. Boundary
Check-initial) The water that was filled between the
COMPLETION: Donna L. Kelly 2-9-95
Test Engineer Date

inner & outer pig assemblies may have influenced
the residual fluorescein deep inside screw holes & not
indicated with black lt. prior to testing.

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