

## Engineering Report 49994-1

### Free-Fall Drop Test

for

**SEAHORSE**

Prepared by



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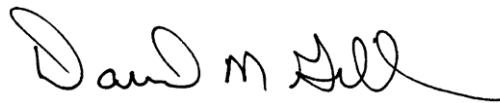
Phillip M. Toftely, Test Engineer



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Daniel J. Larson, Senior Test Technician

Approved by



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David M. Gillen, Vice President

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## Revision history

Revision	Total number of pages	Date	Description
--	71	June 3, 2014	Original

<b>Prepared for:</b>  SEAHORSE  Attention: Mr. Flavio Valencia	<b>Test dates</b>
	<b>Start:</b> 4/25/2014 <b>Completion:</b> 5/9/2014
	<b>Environ test number:</b> 49994-1
	<b>Purchase order number:</b> 17133 <b>Purchase date:</b> 1/29/2014

## Free-Fall Drop Test

### 1.0 Abstract

#### 1.1 Object

Subject eleven Cases to a Free-Fall Drop Test as specified in Test Method Standard *MIL-STD-3010C*, dated August 1, 2013, Section 5.5.2, Test Method 5007-Free Fall Drop Test, as requested in SEAHORSE purchase order 17133, dated January 29, 2014.

#### 1.2 Conclusions

All cases were subjected to the required 26 drops, on flat sides, corners, and edges. Post-test visual inspection of the test units revealed no evidence of significant test unit damage. Test details and photographs are included in Section 4.3 of this report.

### 2.0 Unit(s) tested

**Table 2-1: Units tested**

<b>Manufacturer</b>	SEAHORSE Protective Equipment Cases
<b>Device</b>	Eleven (11) Cases
<b>Model/part number</b>	SE120, SE300, SE430, SE520, SE540, SE630, SE710, SE720, SE920, SE1220, SE1530
<b>Serial number</b>	N/A

*The results of this test apply only to the units identified in this Engineering Report by device identifier and model / part number, or serial number.*

### 3.0 Test requested

Subject eleven Cases to a Free-Fall Drop Test as specified in Test Method Standard *MIL-STD-3010C*, dated August 1, 2013, Section 5.5.2, Test Method 5007-Free Fall Drop Test.

#### **Test Method 5007 – Free Fall Drop Test**

##### **Scope.**

This method determines the ability of containers to withstand free fall drop impacts while evaluating the ability of the preservation methods and applicable pack levels as specified *MIL-STD-2073-I I* used to protect the containers weighing up to 150 pounds, except those with skids or those having any edge or diameter over 60 inches.

##### **Apparatus.**

Any apparatus that conforms to the following requirements shall be used:

- a. Permits the container to be placed in a position prior to release that shall ensure free unobstructed fall that impacts the container at the orientation and in the direction required.
- b. Permits accurate and convenient control of the height of the drop.
- c. Utilizes lifting devices that do not damage the containers.
- d. Provides an instantaneous release mechanism that does not impart rotational or sidewise forces to the test container.
- e. Provides an impact surface, horizontal and flat, massive enough to be immovable and rigid enough to be non-deformable under the test condition.

##### **Test specimens.**

One container and its contents shall constitute a single specimen. The container shall be loaded for the test with the interior packing and the actual contents for which it was designed. If use of the actual contents is not practical, a dummy load shall be substituted to simulate the contents with weight, rigidity, shape, and CG position in the container. The contents, or dummy load, shall be blocked, braced, and cushioned in place, as for shipment. The test specimen shall require no special conditioning prior to test.

##### **Test conditions.**

All tests shall be conducted at ambient temperature.

##### **Rectangular containers.**

Rectangular containers shall be subjected to the following procedure, but dropped not more than once on any flat face, edge, or corner. For edgewise drops, the striking edge of the container shall be parallel with the dropping surface at the instant of release. For edgewise and cornerwise drops, the package CG shall be directly above the striking edge or corner of the package at the instant of release.

Procedure A, Level A: One drop on each flat face, edge, and corner (26 drops).



## 4.0 Instrumentation, procedure, and results

### 4.1 Instrumentation

All instrumentation is calibrated regularly by instruments directly traceable to the National Institute of Standards and Technology, and in accordance with *MIL-I-45208A*, *ANSI/NCSL Z540.3-2006*, and *ISO/IEC 17025: 2005*.

**Table 4-1: Instrumentation list**

Equipment Number	Description	Manufacturer	Model Number	Last Calibration	Due Calibration	Range
503-213	Precision Drop Tester	Lansmont	PDT-56ED	N/A	N/A	0 to 48 inches
770-029	Steel Rule	L.S. Starrett	404R	2/25/2014	2/25/2019	0 to 48 inches

### 4.2 Procedure

Each equipment case was provided with a dead weight, selected in accordance with Seahorse instructions. Each case was lined with foam, and the dead weights were installed. The specific weights and drop heights are recorded on Figures 4-1 through 4-11, the data sheets included in this report. The cases were subjected to the specified 26 drops, on the flat sides, edges, and corners. All testing was conducted at room ambient temperature. Visual inspection was performed on the interior and exterior of each test item.

### 4.3 Results

All cases were subjected to the required 26 drops, on flat sides, corners, and edges. Post-test visual inspection of the test units revealed no evidence of significant test unit damage.

The test items were retained at Environ Laboratories LLC until the end of the test program.

Test details and photographs are included in the following pages.



# Data Sheet

Job number 49994 - 1

Test date(s) 4-24-14

DCAS ☐ Certified witness ☐

Witness ☐ Customer present ☐

Explain in results section ☐ Interruption ☐  
Specification deviation ☐

Specification approved by client (initial)

Company Seahorse  
Device Case  
Model number SE 120  
Serial number N/A  
Test description Free Fall Drop  
Specification MIL-STD-3010C  
Section 5.5.2

## Equipment list

770-029  
503-213

## Test conditions and summary

Weight added to test unit 13.5 lbs ✓  
Drop height 36"

Drop #1 Bottom	✓	Drop #15 Edge 9	✓
Drop #2 Top	✓	Drop #16 Edge 10	✓
Drop #3 Front	✓	Drop #17 Edge 11	✓
Drop #4 Back	✓	Drop #18 Edge 12	✓
Drop #5 Right	✓	Drop #19 Corner 1	✓
Drop #6 Left	✓	Drop #20 Corner 2	✓
Drop #7 Edge 1	✓	Drop #21 Corner 3	✓
Drop #8 Edge 2	✓	Drop #22 Corner 4	✓
Drop #9 Edge 3	✓	Drop #23 Corner 5	✓
Drop #10 Edge 4	✓	Drop #24 Corner 6	✓
Drop #11 Edge 5	✓	Drop #25 Corner 7	✓
Drop #12 Edge 6	✓	Drop #26 Corner 8	✓
Drop #13 Edge 7	✓		
Drop #14 Edge 8	✓		

## Findings

No signs of case damage noted

Disposition ☐ Retained at Environ ☐ Returned to client ☒ Other

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Test performed by [Signature]

Figure 4-1: Free-Fall Drop Test data sheet (1 of 11)



Photograph 4-1: Test unit identification markings

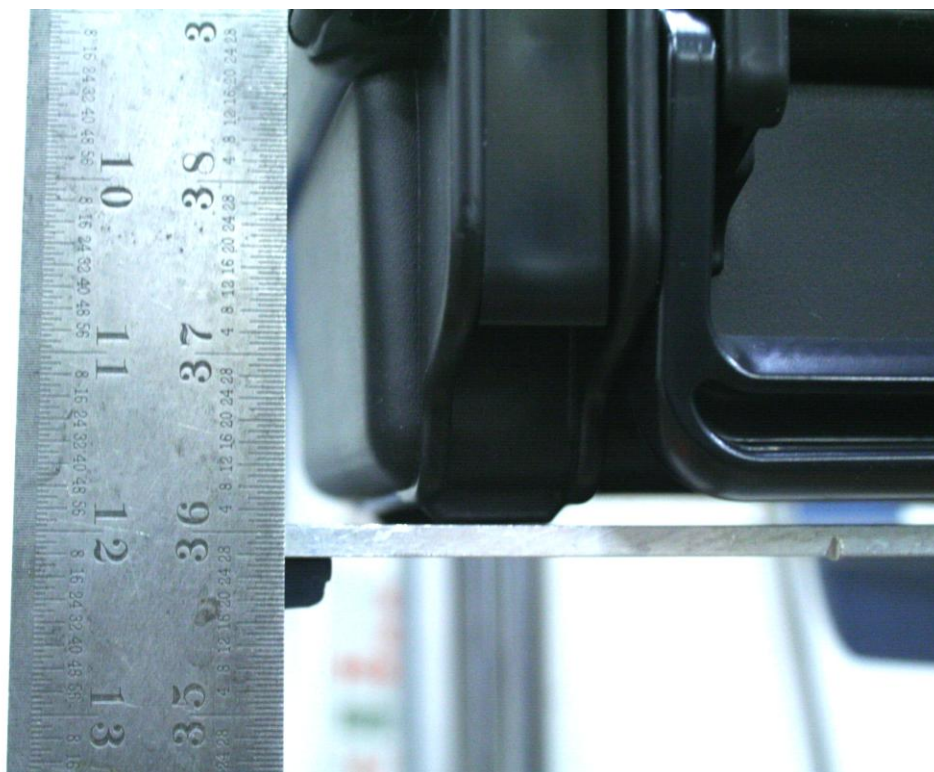


Photograph 4-2: Dead weight checked before placement into the test unit





Photograph 4-3: Dead weight placed into test unit



Photograph 4-4: Drop height is adjusted



Photograph 4-5: Overall view of the test setup



Photograph 4-6: Test unit positioned for the first drop





Photograph 4-7: Post-test view of the test unit



Photograph 4-8: Post-test view of the test unit



## Data Sheet

Job number 49994 - 1

Test date(s) 4-24-14

Company Seahorse  
Device Case  
Model number SE 300  
Serial number N/A  
Test description Free Fall Drop  
Specification MIL-STD-3010C  
Section 5.5.2

DCAS ☐ Certified witness ☐Witness ☐ Customer present ☐

Explain in results section ☐ Interruption ☐  
Specification deviation ☐

Specification approved by client (initial) \_\_\_\_\_

### Equipment list

770.029  
503-213

### Test conditions and summary

Weight added to test unit 13.8 lbs ✓  
Drop height 30"

Drop #1 Bottom	✓	Drop #15 Edge 9	✓
Drop #2 Top	✓	Drop #16 Edge 10	✓
Drop #3 Front	✓	Drop #17 Edge 11	✓
Drop #4 Back	✓	Drop #18 Edge 12	✓
Drop #5 Right	✓	Drop #19 Corner 1	✓
Drop #6 Left	✓	Drop #20 Corner 2	✓
Drop #7 Edge 1	✓	Drop #21 Corner 3	✓
Drop #8 Edge 2	✓	Drop #22 Corner 4	✓
Drop #9 Edge 3	✓	Drop #23 Corner 5	✓
Drop #10 Edge 4	✓	Drop #24 Corner 6	✓
Drop #11 Edge 5	✓	Drop #25 Corner 7	✓
Drop #12 Edge 6	✓	Drop #26 Corner 8	✓
Drop #13 Edge 7	✓		
Drop #14 Edge 8	✓		

### Findings

No signs of case damage noted

Disposition ☐ Retained at Environ ☐ Returned to client ☒ Other

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Test performed by Dan

Figure 4-2: Free-Fall Drop Test data sheet (2 of 11)



Photograph 4-9: Test unit identification markings



Photograph 4-10: Pretest view of the test unit





Photograph 4-11: Dead weight checked before placement into the test unit



Photograph 4-12: Dead weight placed into the test unit

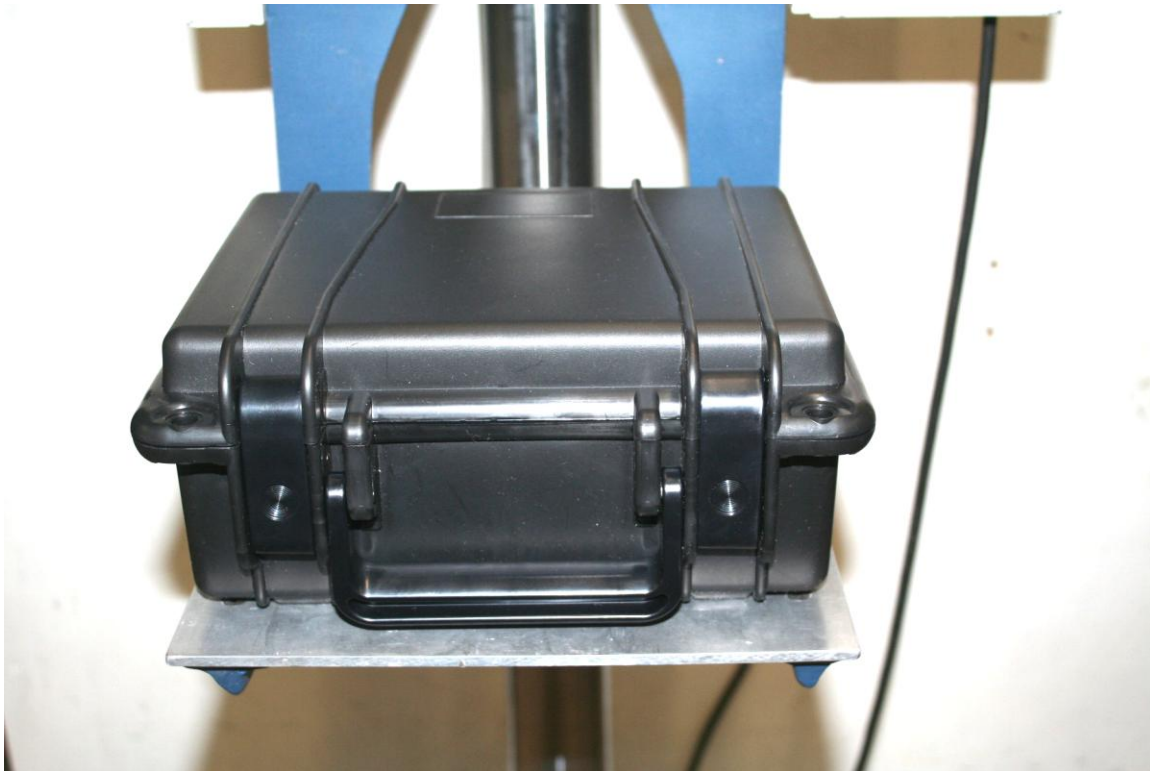


Photograph 4-13: Drop height is adjusted



Photograph 4-14: Overall view of the test setup





Photograph 4-15: Test unit set up for the first drop



Photograph 4-16: Test unit interior checked after 14 drops



Photograph 4-17: Post-test view of the test unit



Photograph 4-18: Post-test view of the test unit





Photograph 4-19: Post-test view of the test unit



Photograph 4-20: Post-test view of the test unit



Photograph 4-21: Post-test view of the test unit



Photograph 4-22: Post-test view of the test unit





Photograph 4-23: Post-test view of the test unit interior



Photograph 4-24: Post-test view of the test unit interior



## Data Sheet

Job number 49994 - 1

Test date(s) 4-24-14

DCAS ☐ Certified witness ☐Witness ☐ Customer present ☐Explain in results section ☐ Interruption ☐  
Specification deviation ☐

Specification approved by client (initial)

Company Seahorse  
Device Case  
Model number SE436  
Serial number N/A  
Test description Free Fall Drop  
Specification MIL-STD-3010C  
Section 5.5.2

### Equipment list

770-029  
503-213

### Test conditions and summary

Weight added to test unit 21.1 lbs  
Drop height 30"

Drop #1 Bottom	✓	Drop #15 Edge 9	✓
Drop #2 Top	✓	Drop #16 Edge 10	✓
Drop #3 Front	✓	Drop #17 Edge 11	✓
Drop #4 Back	✓	Drop #18 Edge 12	✓
Drop #5 Right	✓	Drop #19 Corner 1	✓
Drop #6 Left	✓	Drop #20 Corner 2	✓
Drop #7 Edge 1	✓	Drop #21 Corner 3	✓
Drop #8 Edge 2	✓	Drop #22 Corner 4	✓
Drop #9 Edge 3	✓	Drop #23 Corner 5	✓
Drop #10 Edge 4	✓	Drop #24 Corner 6	✓
Drop #11 Edge 5	✓	Drop #25 Corner 7	✓
Drop #12 Edge 6	✓	Drop #26 Corner 8	✓
Drop #13 Edge 7	✓		
Drop #14 Edge 8	✓		

### Findings

No signs of case damage noted

Disposition ☐ Retained at Environ ☐ Returned to client ☒ Other

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Test performed by *Bursh*

Figure 4-3: Free-Fall Drop Test data sheet (3 of 11)





Photograph 4-25: Test unit identification markings

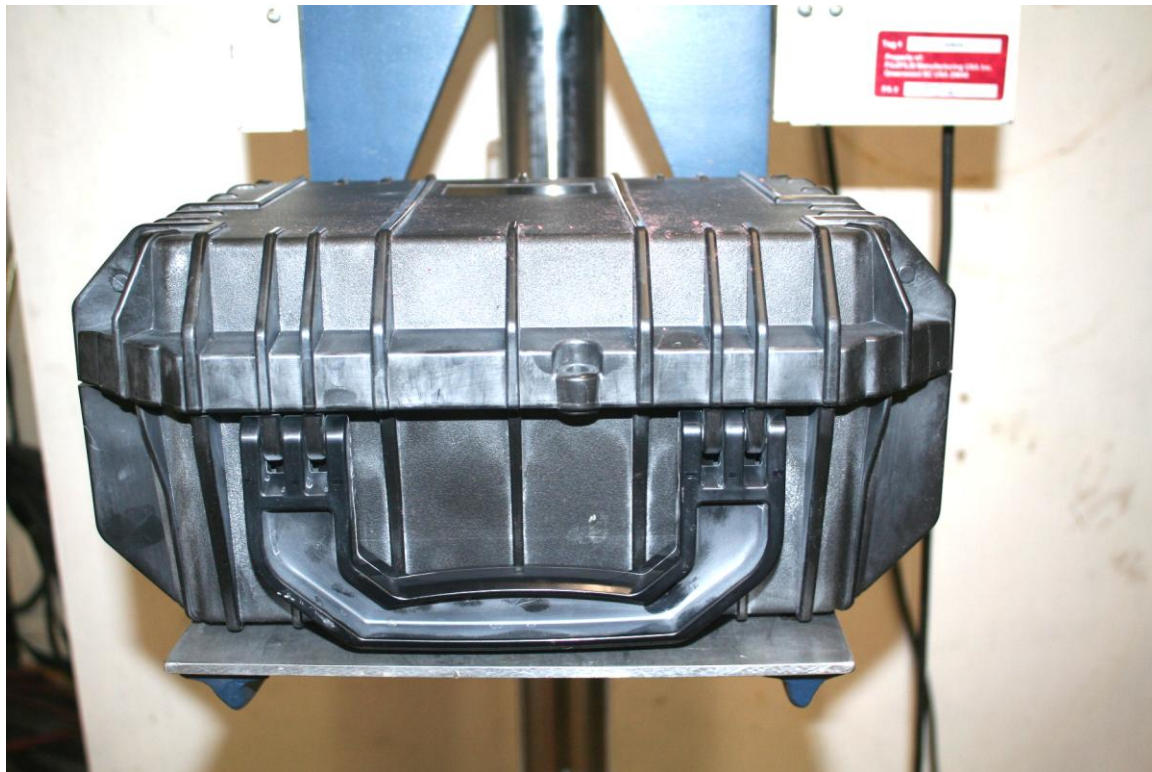


Photograph 4-26: Dead weight is checked before placement into test unit





Photograph 4-27: Dead weight is placed into test unit



Photograph 4-28: Test unit set up for the first drop





Photograph 4-29: Test unit interior inspected after 14 drops

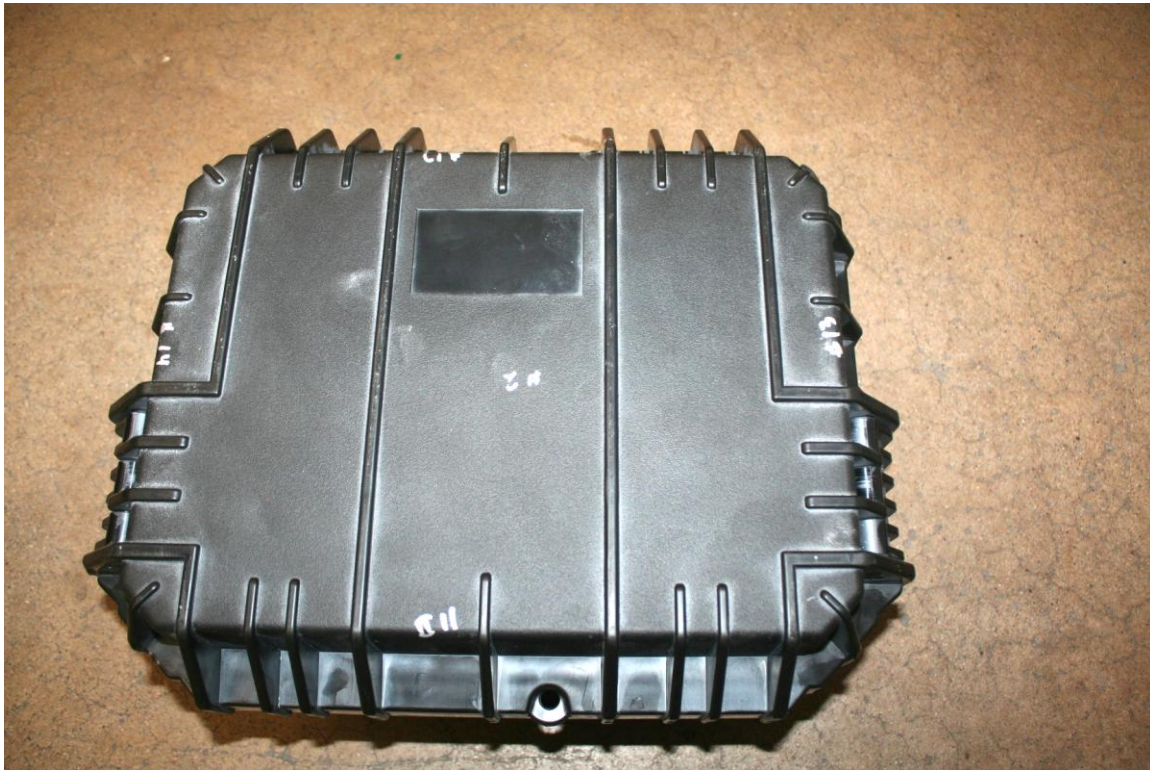


Photograph 4-30: Post-test view of the test unit





Photograph 4-31: Post-test view of the test unit



Photograph 4-32: Post-test view of the test unit





Photograph 4-33: Post-test view of the test unit



Photograph 4-34: Post-test view of the test unit





Photograph 4-35: Post-test view of the test unit



Photograph 4-36: Post-test view of the test unit interior



Photograph 4-37: Post-test view of the test unit interior





## Data Sheet

Company Seahorse  
Device Case  
Model number SE 520  
Serial number N/A  
Test description Free Fall Drop  
Specification MIL-STD-3010C  
Section 5.5.2

Job number 49994 - 1

Test date(s) 4-25-14

DCAS ☐ Certified witness ☐

Witness ☐ Customer present ☐

Explain in results section ☐ Interruption ☐  
☐ Specification deviation ☐

Specification approved by client (initial) \_\_\_\_\_

### Equipment list

770-029  
503-213

### Test conditions and summary

Weight added to test unit 27.5 lbs ✓  
Drop height 25"

Drop #1 Bottom	✓	Drop #15 Edge 9	✓
Drop #2 Top	✓	Drop #16 Edge 10	✓
Drop #3 Front	✓	Drop #17 Edge 11	✓
Drop #4 Back	✓	Drop #18 Edge 12	✓
Drop #5 Right	✓	Drop #19 Corner 1	✓
Drop #6 Left	✓	Drop #20 Corner 2	✓
Drop #7 Edge 1	✓	Drop #21 Corner 3	✓
Drop #8 Edge 2	✓	Drop #22 Corner 4	✓
Drop #9 Edge 3	✓	Drop #23 Corner 5	✓
Drop #10 Edge 4	✓	Drop #24 Corner 6	✓
Drop #11 Edge 5	✓	Drop #25 Corner 7	✓
Drop #12 Edge 6	✓	Drop #26 Corner 8	✓
Drop #13 Edge 7	✓		
Drop #14 Edge 8	✓		

### Findings

No signs of case damage noted

Disposition ☐ Retained at Environ ☐ Returned to client ☒ Other

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Test performed by Dan E

Figure 4-4: Free-Fall Drop Test data sheet (4 of 11)





Photograph 4-38: Test unit identification markings



Photograph 4-39: Dead weight is checked before placement into the test unit



Photograph 4-40: Test unit set up for the first drop



Photograph 4-41: Test unit interior checked after 14 drops





Photograph 4-42: Post-test view of the test unit



Photograph 4-43: Post-test view of the test unit





Photograph 4-44: Post-test view of the test unit



Photograph 4-45: Post-test view of the test unit





Photograph 4-46: Post-test view of the test unit



Photograph 4-47: Post-test internal inspection of the test unit



Photograph 4-48: Post-test internal inspection of the test unit





## Data Sheet

Job number 49994 - 1

Test date(s) 4-26-14

Company Seahorse  
Device Case  
Model number SE 540  
Serial number N/A  
Test description Free Fall Drop  
Specification MIL-STD-3010C  
Section 5.5.2

DCAS ☐ Certified witness ☐

Witness ☐ Customer present ☐

Explain in results section ☐ Interruption ☐  
Specification deviation ☐

Specification approved by client (initial)

### Equipment list

770-029

503-213

### Test conditions and summary

Weight added to test unit 38.5 lbs

Drop height 25"

Drop #1 Bottom	✓	Drop #15 Edge 9	✓
Drop #2 Top	✓	Drop #16 Edge 10	✓
Drop #3 Front	✓	Drop #17 Edge 11	✓
Drop #4 Back	✓	Drop #18 Edge 12	✓
Drop #5 Right	✓	Drop #19 Corner 1	✓
Drop #6 Left	✓	Drop #20 Corner 2	✓
Drop #7 Edge 1	✓	Drop #21 Corner 3	✓
Drop #8 Edge 2	✓	Drop #22 Corner 4	✓
Drop #9 Edge 3	✓	Drop #23 Corner 5	✓
Drop #10 Edge 4	✓	Drop #24 Corner 6	✓
Drop #11 Edge 5	✓	Drop #25 Corner 7	✓
Drop #12 Edge 6	✓	Drop #26 Corner 8	✓
Drop #13 Edge 7	✓		
Drop #14 Edge 8	✓		

### Findings

No signs of damage noted

Disposition ☐ Retained at Environ ☐ Returned to client ☒ Other

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Test performed by

Figure 4-5: Free-Fall Drop Test data sheet (5 of 11)



Photograph 4-49: Test unit identification markings



Photograph 4-50: Dead weight is checked before placement into test unit





Photograph 4-51: Dead weight is placed into test unit



Photograph 4-52: Test unit set up for the first drop



Photograph 4-53: Test unit internal inspection after 14 drops



Photograph 4-54: Post-test view of the test unit





Photograph 4-55: Post-test view of the test unit



Photograph 4-56: Post-test view of the test unit



Photograph 4-57: Post-test view of the test unit



Photograph 4-58: Post-test view of the test unit





Photograph 4-59: Post-test view of the test unit



Photograph 4-60: Post-test view of the test unit interior



Photograph 4-61: Post-test view of the test unit interior





## Data Sheet

Company Seahorse  
Device Case  
Model number SE 630  
Serial number N/A  
Test description Free Fall Drop  
Specification MIL-STD-3010C  
Section 5.5.2

Job number 49994 - 1

Test date(s) 4-29-19

DCAS ☐ Certified witness ☐

Witness ☐ Customer present ☐

Explain in results section ☐ Interruption ☐  
Specification deviation ☐

Specification approved by client (initial) \_\_\_\_\_

### Equipment list

770-029  
503-213

### Test conditions and summary

Weight added to test unit 37.4 lbs  
Drop height 25"

Drop #1	Bottom	✓	Drop #15	Edge 9	✓
Drop #2	Top	✓	Drop #16	Edge 10	✓
Drop #3	Front	✓	Drop #17	Edge 11	✓
Drop #4	Back	✓	Drop #18	Edge 12	✓
Drop #5	Right	✓	Drop #19	Corner 1	✓
Drop #6	Left	✓	Drop #20	Corner 2	✓
Drop #7	Edge 1	✓	Drop #21	Corner 3	✓
Drop #8	Edge 2	✓	Drop #22	Corner 4	✓
Drop #9	Edge 3	✓	Drop #23	Corner 5	✓
Drop #10	Edge 4	✓	Drop #24	Corner 6	✓
Drop #11	Edge 5	✓	Drop #25	Corner 7	✓
Drop #12	Edge 6	✓	Drop #26	Corner 8	✓
Drop #13	Edge 7	✓			
Drop #14	Edge 8	✓			

### Findings

No signs of damage noted

Disposition ☐ Retained at Environ ☐ Returned to client ☒ Other

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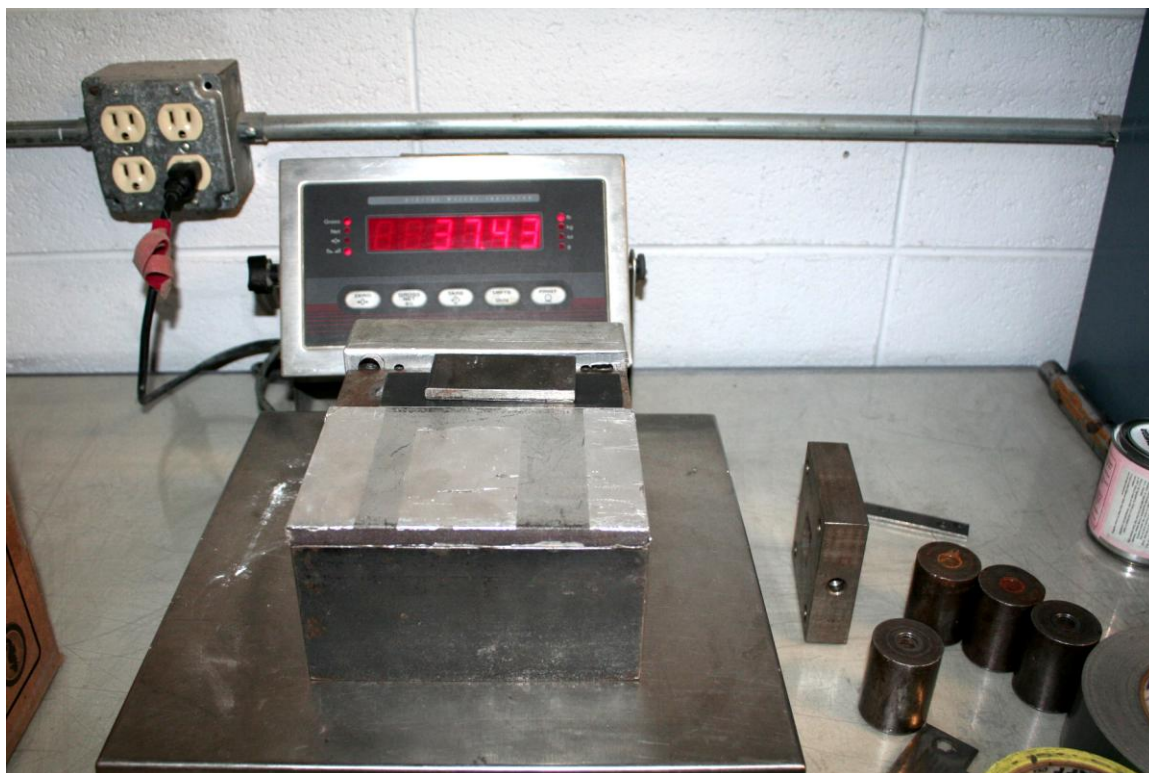
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Test performed by [Signature]

Figure 4-6: Free-Fall Drop Test data sheet (6 of 11)



Photograph 4-62: Test unit identification markings



Photograph 4-63: Dead weight checked before placement into test unit





Photograph 4-64: Dead weight placed into test unit



Photograph 4-65: Overall view of the test setup



Photograph 4-66: Test unit set up for first drop



Photograph 4-67: Test unit internal inspection after 14 drops



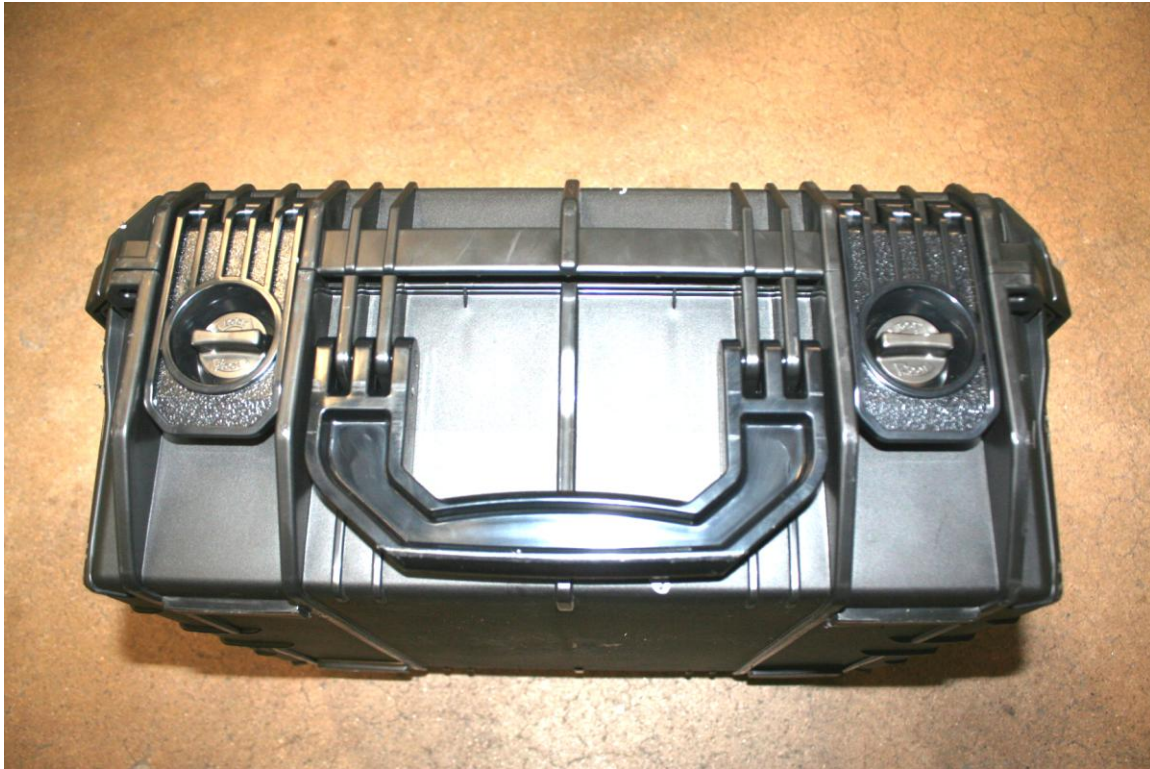


Photograph 4-68: Post-test view of the test unit



Photograph 4-69: Post-test view of the test unit





Photograph 4-70: Post-test view of the test unit

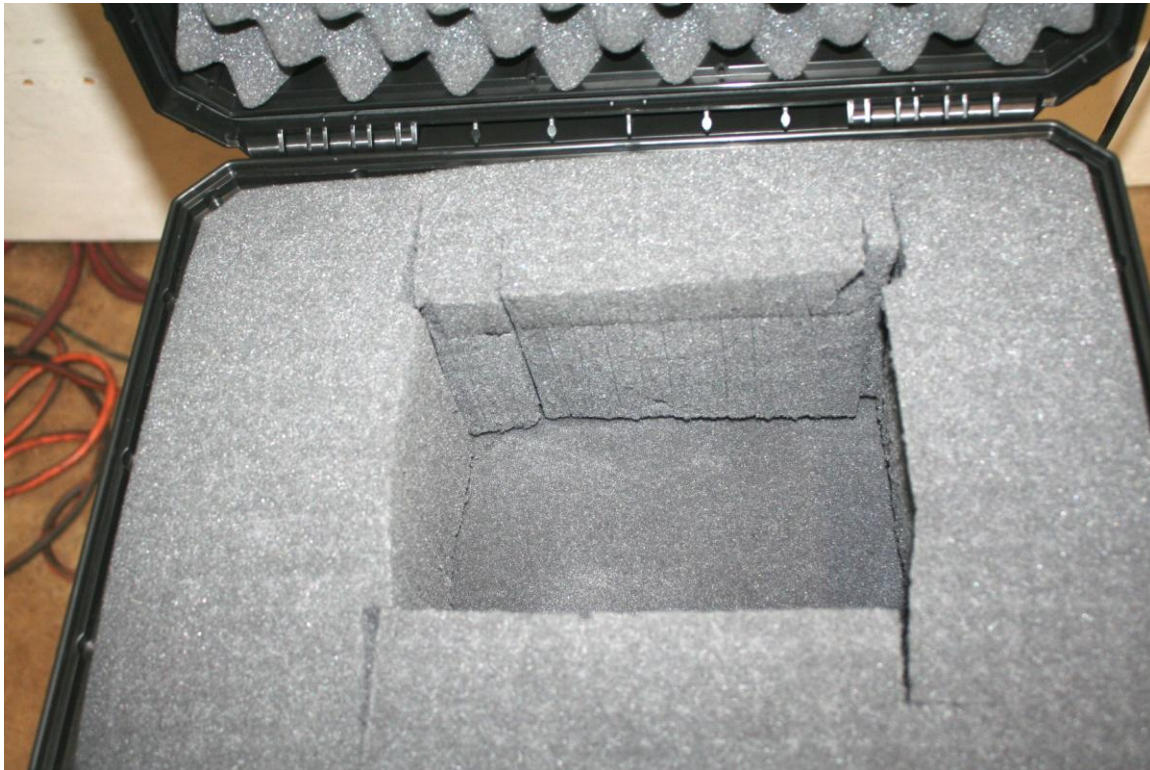


Photograph 4-71: Post-test view of the test unit





Photograph 4-72: Post-test internal inspection of the test unit



Photograph 4-73: Post-test internal inspection of the test unit

Job number 49994 - 1

Test date(s) 4-28-14

 DCAS ☐ Certified witness ☐

 Witness ☐ Customer present ☐

 Explain in results section ☐ Interruption ☐  
 Specification deviation ☐

Specification approved by client (initial)

 Company Seahorse  
 Device Case  
 Model number SE 716  
 Serial number N/A  
 Test description Free Fall Drop  
 Specification MIL-STD-3010C  
 Section 5.5.2

**Equipment list**

 770-029  
 503-213

**Test conditions and summary**

 Weight added to test unit 37.9  
 Drop height 25"

Drop #1 Bottom	✓	Drop #15 Edge 9	✓
Drop #2 Top	✓	Drop #16 Edge 10	✓
Drop #3 Front	✓	Drop #17 Edge 11	✓
Drop #4 Back	✓	Drop #18 Edge 12	✓
Drop #5 Right	✓	Drop #19 Corner 1	✓
Drop #6 Left	✓	Drop #20 Corner 2	✓
Drop #7 Edge 1	✓	Drop #21 Corner 3	✓
Drop #8 Edge 2	✓	Drop #22 Corner 4	✓
Drop #9 Edge 3	✓	Drop #23 Corner 5	✓
Drop #10 Edge 4	✓	Drop #24 Corner 6	✓
Drop #11 Edge 5	✓	Drop #25 Corner 7	✓
Drop #12 Edge 6	✓	Drop #26 Corner 8	✓
Drop #13 Edge 7	✓		
Drop #14 Edge 8	✓		

**Findings**

No signs of damage noted

**Disposition** ☐ Retained at Environ ☐ Returned to client ☒ Other

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 Test performed by 

Figure 4-7: Free-Fall Drop Test data sheet (7 of 11)





Photograph 4-74: Test unit identification markings



Photograph 4-75: Dead weight checked before placement into test unit



Photograph 4-76: Dead weight placed into test unit



Photograph 4-77: Test unit set up for the first drop





Photograph 4-78: Post-test view of the test unit



Photograph 4-79: Post-test view of the test unit





Photograph 4-80: Post-test view of the test unit



Photograph 4-81: Post-test view of the test unit





Photograph 4-82: Post-test internal inspection of the test unit

Job number 49994 - 1

Test date(s) 5-9-14

DCAS ☐ Certified witness ☐

Witness ☐ Customer present ☐

Explain in results section ☐ Interruption ☐  
Specification deviation ☐

Specification approved by client (initial)

Company Seahorse  
Device Case  
Model number SE 720  
Serial number N/A  
Test description Free Fall Drop  
Specification MIL-STD-3010C  
Section 5.5.2

**Equipment list**

770-029  
503-213

**Test conditions and summary**

Weight added to test unit 36.6  
Drop height 25"

Drop #1 Bottom	✓	Drop #15 Edge 9	✓
Drop #2 Top	✓	Drop #16 Edge 10	✓
Drop #3 Front	✓	Drop #17 Edge 11	✓
Drop #4 Back	✓	Drop #18 Edge 12	✓
Drop #5 Right	✓	Drop #19 Corner 1	✓
Drop #6 Left	✓	Drop #20 Corner 2	✓
Drop #7 Edge 1	✓	Drop #21 Corner 3	✓
Drop #8 Edge 2	✓	Drop #22 Corner 4	✓
Drop #9 Edge 3	✓	Drop #23 Corner 5	✓
Drop #10 Edge 4	✓	Drop #24 Corner 6	✓
Drop #11 Edge 5	✓	Drop #25 Corner 7	✓
Drop #12 Edge 6	✓	Drop #26 Corner 8	✓
Drop #13 Edge 7	✓		
Drop #14 Edge 8	✓		

**Findings**

No sign of damage noted to exterior

**Disposition** ☐ Retained at Environ ☐ Returned to client ☒ Other

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Test performed by 

Figure 4-8: Free-Fall Drop Test data sheet (8 of 11)





Photograph 4-83: Test unit identification markings



Photograph 4-84: Dead weight checked before placement into test unit



Photograph 4-85: Dead weight placed into test unit



Photograph 4-86: Test unit set up for the first drop



Job number 49994 - 1

Test date(s) 5-9-14

 DCAS ☐ Certified witness ☐

 Witness ☐ Customer present ☐

 Explain in results section ☐ Interruption ☐  
☐ Specification deviation

Specification approved by client (initial)

 Company Seahorse  
 Device Case  
 Model number SE 920  
 Serial number NA  
 Test description Free Fall Drop  
 Specification MIL-STD-3010C  
 Section 5.5.2

**Equipment list**

 770-029  
 503-213

**Test conditions and summary**

 Weight added to test unit 45 lbs  
 Drop height 20"

Drop #1 Bottom	✓	Drop #15 Edge 9	✓
Drop #2 Top	✓	Drop #16 Edge 10	✓
Drop #3 Front	✓	Drop #17 Edge 11	✓
Drop #4 Back	✓	Drop #18 Edge 12	✓
Drop #5 Right	✓	Drop #19 Corner 1	✓
Drop #6 Left	✓	Drop #20 Corner 2	✓
Drop #7 Edge 1	✓	Drop #21 Corner 3	✓
Drop #8 Edge 2	✓	Drop #22 Corner 4	✓
Drop #9 Edge 3	✓	Drop #23 Corner 5	✓
Drop #10 Edge 4	✓	Drop #24 Corner 6	✓
Drop #11 Edge 5	✓	Drop #25 Corner 7	✓
Drop #12 Edge 6	✓	Drop #26 Corner 8	✓
Drop #13 Edge 7	✓		
Drop #14 Edge 8	✓		

**Findings**

No signs of damage to exterior noted

**Disposition** ☐ Retained at Environ ☐ Returned to client ☒ Other

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 Test performed by 

Figure 4-9: Free-Fall Drop Test data sheet (9 of 11)



Photograph 4-87: Test unit identification markings



Photograph 4-88: Dead weight checked before placement into test unit





Photograph 4-89: Dead weight placed into test unit



Photograph 4-90: Test unit set up for the first drop





Photograph 4-91: Post-test internal inspection of the test unit



Photograph 4-92: Post-test internal inspection of the test unit





Photograph 4-93: Post-test internal inspection of the test unit



Photograph 4-94: Post-test external inspection of the test unit



Photograph 4-95: Post-test external inspection of the test unit





# Data Sheet

Job number 49994 - 1

Test date(s) 5-9-14

DCAS ☐

Certified witness ☐

Witness ☐

Customer present ☐

Company Seahorse

Device Case

Model number SF 1220

Serial number N/A

Test description Free Fall Drop

Specification MIL-STD-3010C

Section 5.5.2

Explain in  
results  
section

Interruption ☐

Specification deviation ☐

Specification approved by client (initial)

## Equipment list

770-029

503-213

## Test conditions and summary

Weight added to test unit 55.3

Drop height 18"

Drop #1	Bottom	✓	Drop #15	Edge 9	✓
Drop #2	Top	✓	Drop #16	Edge 10	✓
Drop #3	Front	✓	Drop #17	Edge 11	✓
Drop #4	Back	✓	Drop #18	Edge 12	✓
Drop #5	Right	✓	Drop #19	Corner 1	✓
Drop #6	Left	✓	Drop #20	Corner 2	✓
Drop #7	Edge 1	✓	Drop #21	Corner 3	✓
Drop #8	Edge 2	✓	Drop #22	Corner 4	✓
Drop #9	Edge 3	✓	Drop #23	Corner 5	✓
Drop #10	Edge 4	✓	Drop #24	Corner 6	✓
Drop #11	Edge 5	✓	Drop #25	Corner 7	✓
Drop #12	Edge 6	✓	Drop #26	Corner 8	✓
Drop #13	Edge 7	✓			
Drop #14	Edge 8	✓			

## Findings

No signs of damage noted to exterior of test unit

## Disposition

☐ Retained at Environ ☐ Returned to client ☒ Other

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Test performed by

Figure 4-10: Free-Fall Drop Test data sheet (10 of 11)



Photograph 4-96: Test unit identification markings



Photograph 4-97: Dead weight checked before placement into test unit

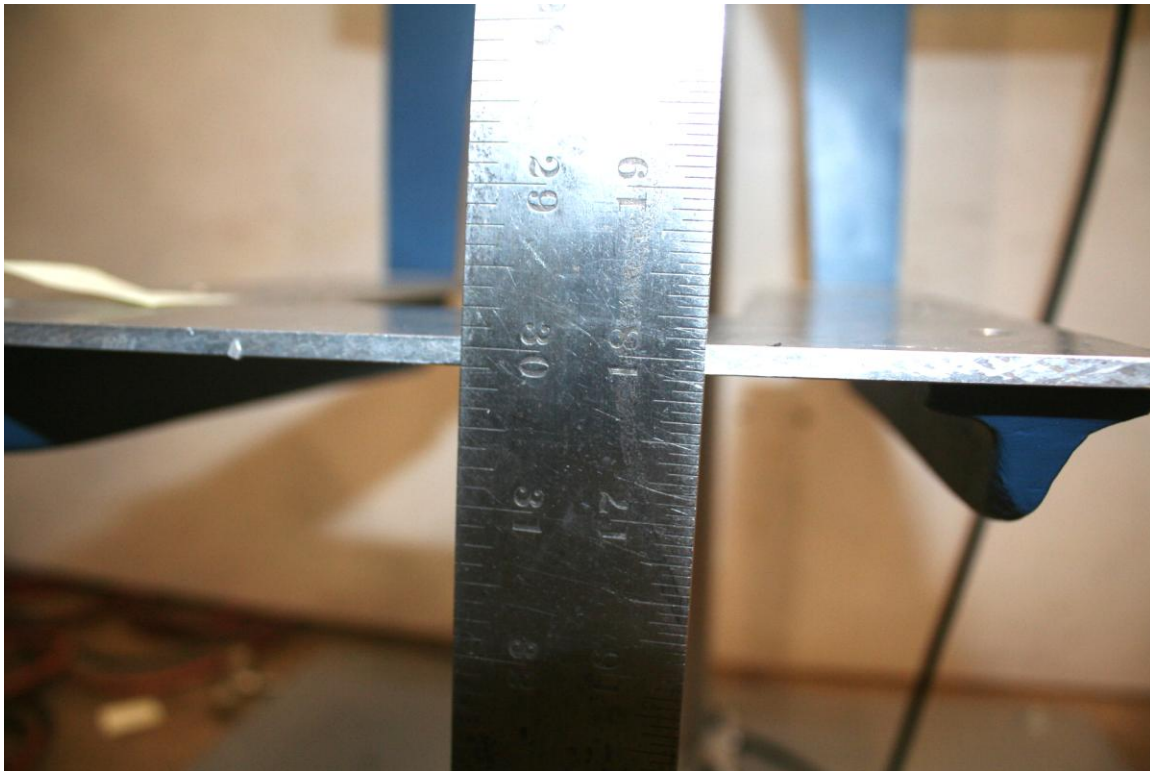




Photograph 4-98: Dead weight placed into test unit



Photograph 4-99: Pretest view of test unit interior



Photograph 4-100: Drop height is adjusted



Photograph 4-101: Test unit is set up for first drop





Photograph 4-102: Post-test view of test unit interior



Photograph 4-103: Post-test view of test unit exterior



Photograph 4-104: Post-test view of test unit exterior





# Data Sheet

Job number 49994 - 1

Test date(s) 4-28-14

Company Seahorse  
Device Case  
Model number SE1530  
Serial number N/A  
Test description Free Fall Drop  
Specification MIL-STD-3010C  
Section 5.5.2

DCAS ☐ Certified witness ☐

Witness ☐ Customer present ☐

Explain in results section ☐ Interruption ☐  
Specification deviation ☐

Specification approved by client (initial)

## Equipment list

770-029  
563-213

## Test conditions and summary

Weight added to test unit 53.4 lbs  
Drop height 21 "

Drop #1 Bottom	✓	Drop #15 Edge 9	✓
Drop #2 Top	✓	Drop #16 Edge 10	✓
Drop #3 Front	✓	Drop #17 Edge 11	✓
Drop #4 Back	✓	Drop #18 Edge 12	✓
Drop #5 Right	✓	Drop #19 Corner 1	✓
Drop #6 Left	✓	Drop #20 Corner 2	✓
Drop #7 Edge 1	✓	Drop #21 Corner 3	✓
Drop #8 Edge 2	✓	Drop #22 Corner 4	✓
Drop #9 Edge 3	✓	Drop #23 Corner 5	✓
Drop #10 Edge 4	✓	Drop #24 Corner 6	✓
Drop #11 Edge 5	✓	Drop #25 Corner 7	✓
Drop #12 Edge 6	✓	Drop #26 Corner 8	✓
Drop #13 Edge 7	✓		
Drop #14 Edge 8	✓		

## Findings

No signs of case damage noted

Disposition ☐ Retained at Environ ☐ Returned to client ☒ Other

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Test performed by [Signature]

Figure 4-11: Free-Fall Drop Test data sheet (11 of 11)

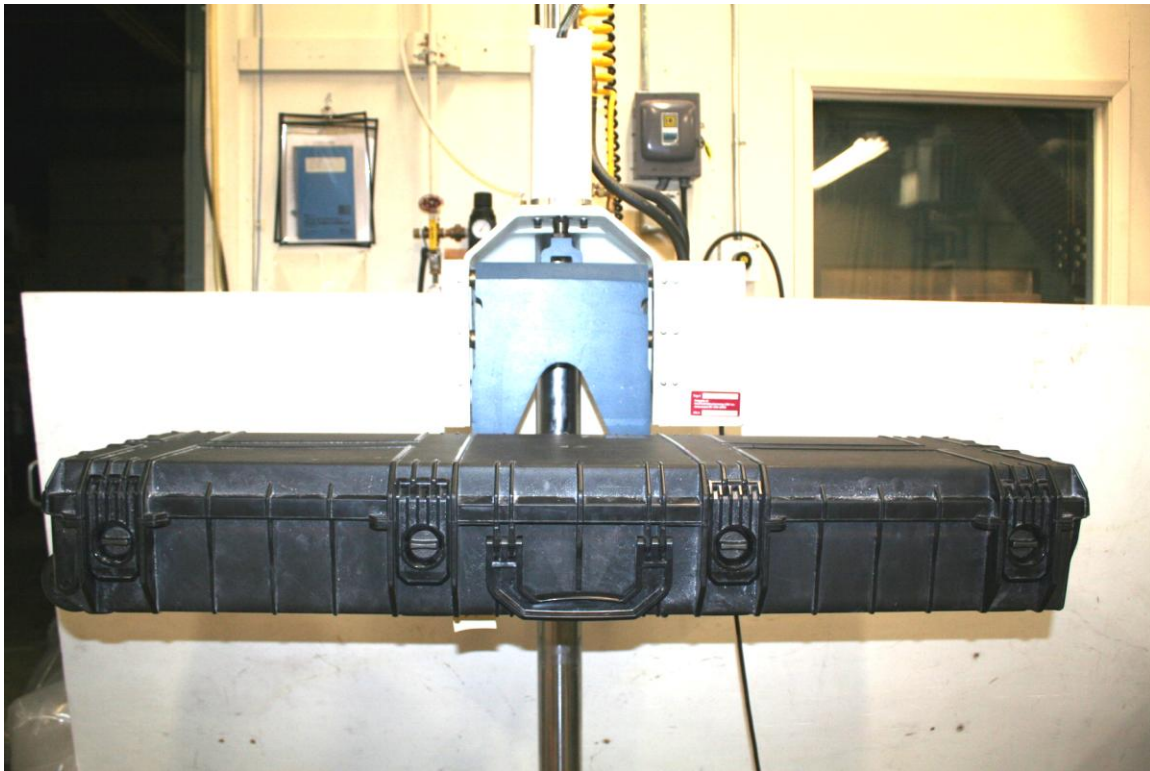


Photograph 4-105: Dead weight checked before placement into test unit



Photograph 4-106: Dead weight placed into test unit





Photograph 4-107: Test unit set up for first drop



Photograph 4-108: Post-test view of test unit interior