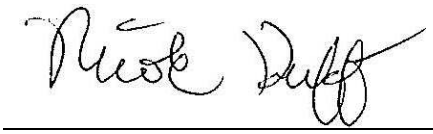
Engineering Report 58687-1A

Immersion Test

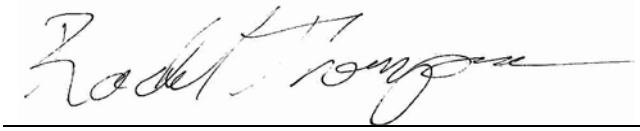
for

Seahorse Protective Equipment Cases

Prepared by

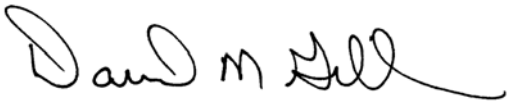


Nicole T. Duff, Technical Writer



Rachel A. Thompson, Associate Test Engineer

Approved by



David M. Gillen, Senior Program Manager

Revision history

Revision	Total pages	Date	Description
--	8	June 4, 2019	Original

Prepared for	Seahorse Protective Equipment Cases		
Attention	Flavio Valencia	**Test number**	58687-1
Test start	2/6/2019	**Test completion**	2/6/2019
PO number	**22660**	**Purchase date**	2/12/2019

Immersion Test

1.0 Abstract

1.1 Object

Subject one Seahorse Case to an Immersion Test as specified in *MIL-STD-810F*, dated May 5, 2003, Method 512.4, Procedure I—Immersion, as requested in Seahorse Protective Equipment Cases purchase order 22660, dated February 12, 2019.

1.2 Conclusions

No water intrusion was noted inside the test unit.

2.0 Unit(s) tested

Table 2-1: Units tested

Manufacturer	Seahorse Protective Equipment Cases
Device	One (1) Seahorse Case
Model/part number	530
Serial number	N/A
Sample identifier	UUT-58687-3

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 one Seahorse Case to an Immersion Test as specified in *MIL-STD-810F*, dated May 5, 2003, Method 512.4, Procedure I—Immersion.

Use a test item configuration that reproduces, as close as possible, the anticipated materiel configuration during storage or use.

Conditioning temperature

Test unit shall be within 5K of the temperature of the water.

Depth of immersion

For testing the integrity of a test item, use a 1 meter representative covering depth (measured from the uppermost surface of the test item to the surface of the water).

Procedure I—immersion

Step 1 Close all sealed areas and valves; assemble the test item in its test configuration and, as quickly as possible, immerse the test item in water so that the uppermost point of the test item is 1 ±0.1 meter below the surface of the water, or as otherwise required by the test plan. The orientation of the test item should represent that of its expected in-service orientation. If several orientations are possible, select that which is most severe.

Step 2 Following a 30 minute immersion, remove the test item from the water, wipe the exterior surfaces dry (giving special attention to areas around seals and relief valves) and, if applicable, equalize the air pressure inside by activating any manual valves. Be careful to not allow water to enter the test item while activating the manual valves.

Step 3 Open the test item and examine the interior and contents for evidence of and quantity of any leakage, and for probable areas of entry, if leakage occurred.

4.0 Instrumentation, procedure performed, 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 *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
200-322	Digital Thermometer	Fluke	52 II	1/14/2019	1/14/2020	-200°C to +1372°C Type K; -250°C to +400°C Type T
400-062	Stopwatch	Extech	365510	1/11/2019	1/11/2021	0 to 23 hrs, 59 mins, 59 sec
770-068	Measuring Tape	Starrett	530-100	5/22/2018	5/22/2019	0 to 100 feet

4.2 Procedure

The test unit was rapidly submerged in water to a depth of 1 meter. The water temperature and test unit temperature were within 5K of each other. The test unit was immersed for 30 minutes.

The test unit was removed from the water and examined for evidence of leakage.

4.3 Results

No water intrusion was noted inside the test unit.

The test units were retained at Element Minneapolis.

Test data and photographs are included in the following pages.

element

Data sheet
[Immersion]

Company name	Seahorse Protective Equipment Cases	Performed by	Rachel Thompson	Page	1	of	1
Project number	58687-1	Specification	MIL-STD-810F, Method 512.4, Procedure I				
DUT description	Seahorse Case	Test date(s)	2/6/2019				

Device under test information			
Description	Model / part number	Serial number	Sample identifier
Seahorse Case	530	N/A	UUT-58687-3

Equipment list					
770-068	400-062	200-322			

Test		
Requirement		
Temperature = water and test unit shall not differ by >5 Kelvin		
Immersion level = 1 meter		
Duration = 30 minutes		

Unit: UUT-58687-3	
Water temperature = 19.2°C	Test unit temperature = 30.4°C
1m below surface of water	
30 minutes	

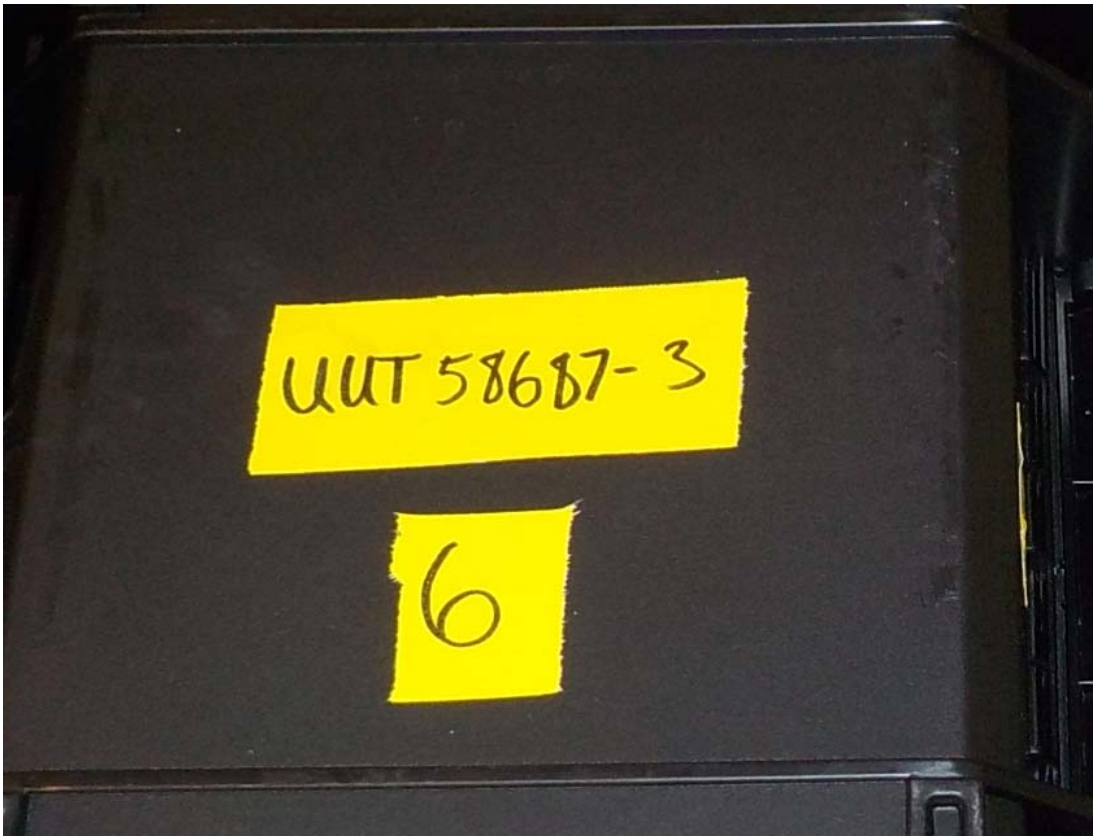
Results

No water intrusion was observed inside the unit.

DUT disposition [X] Retained at Element Minneapolis [ ] Returned to customer [ ] Other (describe):

QAT- GEN-001_3.0 Generic (no results, not ruled) data sheet template | 1/15/2018 |

Figure 4-1: Immersion Test data sheet



Photograph 4-1: Test unit identification

Photograph 4-2: Representative Immersion Test setup

Photograph 4-3: Representative Immersion Test setup

Photograph 4-4: Test unit 58678-3 post-test, no water intrusion is visible