# $C \ C \ S$ Technical Information

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To: Relevant ship owners, shipyards, product manufacturers and designers, CCS surveyors, Plan Approval Centers, relevant departments of the Headquarters of CCS.

Technical Notice on the Revised Standardized Life-Saving Appliance Evaluation and Test Report Forms (MSC.1/Circ.1628 to 1633)

## Issued by IMO

The Maritime Safety Committee of the International Maritime Organization, at its 102nd session, approved MSC.1/Circ.1628 to 1633 "Revised Standardized Life-Saving Appliance Evaluation and Test Report Forms". MSC.1/Circ.980 was revised by these series of circulars, incorporating the latest amendments to LSA Code and MSC.81(70), which were divided into six parts according to the type of life-saving appliance.

The existing MSC.1/Circ.980 was revoked.

This technical notice is made public on CCS website (<u>www.ccs.org.cn</u>), and be transmitted to the relevant ship owners, shipyards, product manufacturers and designers by the branches/plan approval centers of CCS within their responsible areas. Please contact the Technology & Information Department of CCS Headquarter For any inquiry in this regard (E-mail: <u>ti@ccs.org.cn</u>).

Annexes:

MSC.1/Circ.1628 Revised Standardized Life-Saving Appliance Evaluation and Test Report Forms (Personal Life-Saving Appliances)

MSC.1/Circ.1629 Revised Standardized Life-Saving Appliance Evaluation and Test

Report Forms (Visual Signals)

MSC.1/Circ.1630 Revised Standardized Life-Saving Appliance Evaluation and Test Report Forms (Survival Craft)

MSC.1/Circ.1631 Revised Standardized Life-Saving Appliance Evaluation and Test Report Forms (Rescue Boats)

MSC.1/Circ.1632 Revised Standardized Life-Saving Appliance Evaluation and Test Report Forms (Launching And Embarkation Appliances)

MSC.1/Circ.1633 Revised Standardized Life-Saving Appliance Evaluation and Test Report Forms (Other Life-Saving Appliances)



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> MSC.1/Circ.1628 14 December 2020

#### REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (PERSONAL LIFE-SAVING APPLIANCES)

1 The Maritime Safety Committee, at its 102nd session (4 to 11 November 2020), approved the *Revised standardized life-saving appliance evaluation and test report forms*.

2 The original forms, as set forth in the Standardized life-saving appliance evaluation and test report forms (MSC/Circ.980) and its addenda, were developed on the basis of the requirements of the International Life-Saving Appliance (LSA) Code and the Revised recommendation on testing of life-saving appliances (resolution MSC.81(70)) by the Maritime Safety Committee, at its seventy-third session in 2001, with a view to providing guidance on how to conduct tests, record test data and verify tests. The Committee has since adopted seven amendments to the LSA Code and eight amendments to resolution MSC.81(70). These amendments have been incorporated in the original forms which, due to their volume, are now presented in six separate circulars, i.e. MSC.1/Circ.1628, MSC.1/Circ.1629, MSC.1/Circ.1630, MSC.1/Circ.1631, MSC.1/Circ.1632 and MSC.1/Circ.1633, pertaining to the equipment addressed in chapters II to VII of the LSA Code, respectively. The forms annexed to this circular apply to the equipment addressed in chapter II of the LSA Code, i.e. personal life-saving appliances (lifebuoys and associated equipment; lifejackets and associated equipment; immersion suits and associated equipment; anti-exposure suits; and thermal protective aids).

3 The use of the revised forms will continue to be of benefit to Administrations and other parties, such as manufacturers, test facilities, owners and surveyors, and will be a major help in mutually accepting the type approval of appliances approved by other Administrations.

4 Member Governments are invited to bring the annexed revised forms to the attention of all parties concerned with approving, manufacturing and testing life-saving appliances and to encourage them to use the forms.

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5 This circular supersedes MSC/Circ.980.

SUSTAINABLE SHIPPING FOR A SUSTAINABLE PLANET

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#### ANNEX

#### REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (PERSONAL LIFE-SAVING APPLIANCES)

#### INTRODUCTION

#### Reference

These standardized life-saving appliance evaluation and test report forms have been revised on the basis of the requirements of the International Life-Saving Appliance (LSA) Code, as amended through resolution MSC.425(98), *the Revised recommendation on testing of life-saving appliances* (resolution MSC.81(70)), as amended through resolution MSC.427(98), and the *Recommendation on means of rescue on ro-ro passenger ships* (MSC/Circ.810).

#### Status

In general, the tests described in the Revised recommendation (resolution MSC.81(70)) constitute the test procedures and the LSA Code sets the acceptance criteria. The evaluation and test report forms are guidelines on how to conduct tests, record test data and verify tests. These forms are not intended to change the standards given in the LSA Code and resolution MSC.81(70), as amended. In the case of inconsistency between the forms and the LSA Code or the Revised recommendation, the text of the Code/resolution should prevail over that of the forms.

#### Layout

Each Administration may use electronically distributed evaluation and test report forms as the basis for customising the layout to reflect the profile of the approving body, without changing the original contents.

#### Internal references

The evaluation and test report forms should be stand-alone documents. Therefore, all internal references in the original text from the LSA Code or resolution MSC.81(70) have been replaced by either the full-length text or a reference to other relevant evaluation and test report forms. However, in some of the forms, external references are kept for updating purposes.

#### **Documentation of tests**

For approval purposes, all detailed records of test data are to be enclosed with the report forms.

#### Verification of tests

Each test is to be verified passed or failed by an Administration representative's initials (e.g. recognized organization or surveyor) and date of testing. Each page is to be verified on completion by the Administration representative's signature and its date of completion.

#### Reporting of type approval

To facilitate unified reporting procedures, the completed evaluation and test report forms are to be seen as a documented verification of required type approval tests for each type of equipment. When documentation of type approval is required by a third party, the verified evaluation and test report forms should constitute the complete documentation of the type approval together with the relevant approval certificates.

#### REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (PERSONAL LIFE-SAVING APPLIANCES)

#### TABLE OF CONTENTS

LSA Code chapter II (Personal life-saving appliances) – Equipment:

- 2.1 Lifebuoys and associated equipment
  - 2.1.1 Lifebuoys
  - 2.1.2 Lifebuoy self-igniting lights
  - 2.1.3 Lifebuoy self-activating smoke signals
- 2.2 Lifejackets and associated equipment
  - 2.2.1 Inherently buoyant lifejackets
  - 2.2.2 Inflatable lifejackets
  - 2.2.3 Lifejacket/immersion suit lights
  - 2.2.4 Reference Test Device (RTD)
- 2.3 Immersion suits and associated equipment
  - 2.3.1 Immersion suits (non-insulated)
  - 2.3.2 Immersion suits (insulated)
- 2.4 Anti-exposure suits
- 2.5 Thermal protective aids

#### 2.1 LIFEBUOYS AND ASSOCIATED EQUIPMENT

#### 2.1.1 LIFEBUOYS

#### **EVALUATION AND TEST REPORT**

- 2.1.1.1 Submitted drawings, reports and documents
- 2.1.1.2 Quality assurance
- 2.1.1.3 Visual inspection
- 2.1.1.4 Temperature cycling test
- 2.1.1.5 Drop test
- 2.1.1.6 Test for oil resistance
- 2.1.1.7 Fire test
- 2.1.1.8 Flotation test
- 2.1.1.9 Strength test
- 2.1.1.10 Test for operation with a light and smoke signal

#### 2.1.1 LIFEBUOYS

## **EVALUATION AND TEST REPORT**

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Lifebuoys	Manufacturer: Model: Lot/Serial Number:		Date: Time:            Surveyor:            Organization:	
2.1.1.1	Submitted	drawings, reports and		
			Submitted drawings and documents	Status
Drawing	No.	Revision No. & date	Title of drawing	
			Submitted reports and documents	Status
Report/Docu	ument No.	Revision No. & date	Title of report / document	
			Maintenance Manual -	
			Operations Manual -	

Lifebuoys Manufacturer: Model: Lot/Serial Number:	Date: Time: Surveyor: Organization:		
2.1.1.2 Quality assurance	Regulations: MSC.81(70) 2/1.1, 1.2		
Except where all appliances of a particular type are required by chapter III of the International Convention for the Safety of Life at Sea, 1974, as amended,	Quality Assurance Standard Used:	Passed/ Failed	
or the International Life-Saving Appliance (LSA) Code, to be inspected, representatives of the Administration should make random inspection of	Quality Assurance Procedure:	Passed/ Failed	
manufacturers to ensure that the quality of life-saving appliances and the materials used comply with the specification of the approved prototype life-saving appliance.	Quality Assurance Manual:	Passed/ Failed	
Manufacturers should be required to institute a quality control procedure to ensure that life-saving appliances are produced to the same standard as the prototype life-saving appliance approved by the Administration and to keep records of any production tests carried out in accordance with the Administration's instructions.			

Lifebuoys	Manufacturer: Model: Lot/Serial Number:		Date: Time: Surveyor: Organization:		
2.1.1.3	/isual inspection		Regulations: LSA Co	de 1.2.2	
	Test Procedure	Acceptance C	Criteria	Signi	ficant Test Data
	pect the lifebuoy. Conduct ts and verify characteristics as	Be of international or vivid reduced comparably highly visible color will assist detection at sea.		Colour(s): Passed	Failed
·				Quantity:	Spacing:
		Fitted with approved retro-reflective material in compliance with resolution A.658(16).		Passed	Failed
				Any operational restrictions?	
		Clearly marked with approval information from the organization that approved it and any operational		Passed	Failed
		restrictions.		Comments/Observati	ons

	Manufacturer:		Date:	Time:	
	Model:		Survevor:		
Lifebuoys	Lot/Serial Number:		Organization:		
2.1.1.3	I Visual inspection (continued)		Regulations: LS	SA Code 2.1.1	
	Test Procedure	Acceptance Crite	eria	Significant Test Data	
It should be	established by measurement,	Be constructed of inherently b	ouoyant material;	Construction materials:	
weighing and	inspection that:	it should not depend upon	n rushes, cork		
		shavings or granulated cork,		Outer diameter: mm	
		granulated material or any a		Inner diameter: mm	
		which depends on inflation for	buoyancy.	Maaa	
Measure the	inner and outer diameter.	Chauld have an autor diameter	a of motions and	Mass: kg	
		Should have an outer diameter of not more than 800 mm and an inner diameter of not			
Weigh the life	buoy.	less than 400 mm		Type / description of quick release arrangement:	
	ed to operate the quick-release provided for a self-activated	Not designed for quick release: Should have a mass of not less than 2.5 kg		Does the lifebuoy have sufficient mass to activate the quick-release arrangement for a self-activated smoke signal and self-igniting light? Passed/ Failed	
	and self-igniting light, conduct	If it is intended to operate the quick-release arrangement provided for a self-activated smoke signal and self-igniting light, the lifebuoy has a mass of not less than 4 kg.		Weight: kg	
				Grab-line diameter: mm	
Measure the	lifebuoy grab-line diameter and	Be fitted with a grab-line not le	ess than 9.5 mm	Grab-line length: mm	
outside dia length. The grab-		in diameter and not less that outside diameter of the body length.		Buoy outer diameter times four: mm Grab-line four times the outer diameter of body? Passed/ Failed	
		The grab-line should be s equidistant points around the	circumference of	Grab-line secured in four equal loops? Passed/ Failed	
		the buoy to form four equal loo	ps.	Comments/Observations	

Lifebuoys	Manufacturer: Model: Lot/Serial Number:		Date: Time: Surveyor: Organization:		
2.1.1.4	Temperature cycling test		Regulations: LSA Code 1.2.	2; MSC.81(70) 1 / 1.2	
	Test Procedure	Acceptano	ce Criteria	Significant Test Data	
The following two lifebuoys	test should be carried out on	Not be damaged in stowage t range - 30°C to + 65°C	hroughout the air temperature	Passed Failed	
	ys should be alternately surrounding temperatures of 5°C.		sign of loss of rigidity under high ests, should show no sign of	(See following page for test data)	
immediately	ating cycles need not follow after each other and the cedure, repeated for a total of acceptable:		acking, swelling, dissolution or		
	ure at a minimum temperature be completed in one day			Observations after testing for shrinking, cracking etc.	
chamber tha under ordin	ens removed from the warm t same day and left exposed ary room conditions at a			Lifebuoy No. 2 Observations on rigidity under high temp	
temperature day	of 20°C ± 3°C until the next			Observations after testing for shrinking, cracking etc.	
	osure at a maximum temperature be completed the next day			Intact after these tests?	
chamber tha under ordin	ens removed from the cold t same day and left exposed ary room conditions at a of $20^{\circ}C \pm 3^{\circ}C$ until the next	ne day and left exposed room conditions at a		lifebuoy No.1: Passed/ Failed lifebuoy No.2: Passed/ Failed	
day.				Comments/Observations	

Lifebuoy	Model:	Lot/Serial Number:			Date: Surveyor: Organization:			
2.1.1.4	Temperature cyclir				Regulations: LSA Code I/1.2.			
		Н	OT CYCLE			COL	D CYCLE	
Cycle 1	Date In: Time In: Temperature:		Date Out: Time Out: Duration:	hours	Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 2	Date In: Time In: Temperature:		Date Out: Time Out: Duration:	hours	Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 3	Date In: Time In: Temperature:		Date Out: Time Out: Duration:	hours	Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 4	Date In: Time In: Temperature:		Date Out: Time Out: Duration:	hours	Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 5	Date In: Time In: Temperature:	0	Date Out: Time Out: Duration :		Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 6	Date In: Time In : Temperature :	0C	Date Out: Time Out: Duration :		Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 7	Date In: Time In : Temperature :		Date Out: Time Out: Duration:	hours	Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 8	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 9	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 10	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: Time In: Temperature:		Date Out: Time Out: Duration:	

Lifebuoys	Manufacturer: Model: Lot/Serial Number:		Date: Time: Surveyor: Organization:		
2.1.1.5	Drop test		Regulations: LSA Code	2.1.1.6; MSC.81(70) 1 / 1.3	
	Test Procedure	Acceptance	Criteria	Significant Test Data	
upper edge v lower edge o which it is inte their lightest whichever is the water with In addition, or suspended fre device so that	r should be suspended from its ia a release device so that the f the lifebuoy is at the height at ended to be stowed on ships in seagoing condition, or 30 m, the greater, and dropped into nout suffering damage. The lifebuoy should be om its upper edge via a release the lower edge of the lifebuoy of 2 m, and dropped three concrete floor.	Be constructed to withstand a the height at which it is stowed lightest seagoing condition or greater, without impairing eithe that of its attached components The lifebuoy should withstand of 2m on to a concrete floor with	above the waterline in the 30 m, whichever is the r its operating capability or s. three drops from a height	Number of lifebuoys:	

Lifebuoys Manufacturer Model: Lot/Serial Nu			Date:      Surveyor:      Organization:		
2.1.1.6 Test for oil res	sistance	Regulations: LSA	Code 1.2.2; MSC.81(70) 1 / 1.4		
Test Pro	cedure	Ac	ceptance Criteria	Significant Test Data	
One of the lifebuoys should for a period of 24 h under a at normal room temperature	l be immersed horizontally 100 mm head of diesel oil	After this test the damage such as	lifebuoy should show no sign of shrinking, cracking, swelling, e of mechanical qualities.		

Lifebuoys	Manufacturer: Model: Lot/Serial Number:		Date:            Surveyor:            Organization:		
2.1.1.7	Fire test		<b>Regulations: LSA Cod</b>	e 2.1.1.5; MSC.81(70) 1/1.5	
	Test Procedure	Acceptance C	Criteria	Significant Test Data	
fire test. A ter should be draught-free the bottom of followed by minimum tota The petrol s allowed to bu The lifebuoy s flames in an position, with 25 cm above	buoy should be subjected to a st pan 30 cm x 35 cm x 6 cm placed in an essentially area. Water should be put in the test pan to a depth of 1 cm enough petrol to make a I depth of 4 cm. should then be ignited and rn freely for 30 s. should then be moved through upright, forward, free-hanging a the bottom of the lifebuoy the top edge of the test pan so ion of exposure to the flames	The lifebuoy should not susta melting after being removed fro		Lifebuoy No. Dimensions test pan: xxcm Water depth:cm Depth incl. petrol:cm Exposure time:seconds Sustain burning or continue melting after being removed from the flame Passed/ Failed Comments/Observations	

Lifebuoys	Manufacturer: Model: Lot/Serial Number:		Date:          Surveyor:          Organization:			
2.1.1.8 Flotation test			<b>Regulations: LSA Cod</b>	e 2.1.1.3; MSC.81(70) 1/	/1.6	
	Test Procedure	Acceptance (	Criteria	Signific	cant Test Data	
tests should I not less than 2	uoys subjected to the above be floated in fresh water with 14.5 kg of iron suspended from and should remain floating for h.	h deformation. The lifebuoys should float throughout the 24 h test period.		Lifebuoy no. 1Lifebuoy no. 2Suspended mass:kgFloat duration:minminminIntact after this test?Passed/ FailedFloat for entire test period?Passed/ FailedComments/ObservationsValue		
2.1.1.9 9	Strength test		Regulations: LSA Cod	e 1.2.2; MSC.81(70) 1/1.	.7	
	Test Procedure	Acceptance (	Criteria	Significant Test Data		
50 mm wide s passed aroun with a 90 kg r	dy should be suspended by a trap. A similar strap should be d the opposite side of the body mass suspended from it. After e lifebuoy body should be	There should be no breaks, cra deformation.	acks or permanent	Lifebuoy No. Suspended mass: Suspension duration: Passed/Failed Comments/Observation	min	

	Manufacturer:		_ Date: Time:					
Lifebuoys	Model:		Surveyor:					
Lifebuoys	Lifebuoys Model: Lot/Serial Number:		Organization:					
2.1.1.10	Test for operation with a light	and smoke signal	Regulations: LSA Co	ode 2.1.1.7; MSC.81(70) 1/1.8				
	Test Procedure	Acceptance C	Criteria	Significant Test Data				
lifebuoy is int light and smo The lifebuoy manner simu for release fro A lifebuoy ligh attached to	hould be carried out if the ended for quick release with a	· · · ·	ed and should activate ignal.	Lifebuoy No. Type / description of quick activating arrangement: Type of light and smoke signal: Light activated? Passed/ Failed Smoke activated? Passed/ Failed, Weight of the lifebuoykg Length of the line connected to the lifebuoy m Passed Failed Comments/Observations				

# 2.1.2 LIFEBUOY SELF-IGNITING LIGHTS EVALUATION AND TEST REPORT

# Remark: If a lifebuoy self-igniting light is a combined light/smoke signal it should be treated as a sole lifebuoy self-igniting light.

- 2.1.2.0 Quality assurance
- 2.1.2.1 General information
  - 2.1.2.1.1 General data and specifications
  - 2.1.2.1.2 Submitted drawings, reports and documents
- 2.1.2.2 Visual inspection
  - 2.1.2.2.1 Approval marking
  - 2.1.2.2.2 Expiry marking
  - 2.1.2.2.3 Additional markings
  - 2.1.2.2.4 Electrical short circuit protection
  - 2.1.2.2.5 Construction and materials
  - 2.1.2.2.6 Colour of lifebuoy light
- 2.1.2.3 Temperature cycling test
- 2.1.2.4 Light tests
- 2.1.2.5 Chromaticity test
- 2.1.2.6 Rain test and watertightness test
- 2.1.2.7 Case resistance test
- 2.1.2.8 Lens drop test
- 2.1.2.9 Floatation test
- 2.1.2.10 Drop test
- 2.1.2.11 Fitting test
- 2.1.2.12 Release and operation test
- 2.1.2.13 Vibration test
- 2.1.2.14 Mould growth test
- 2.1.2.15 Corrosion and seawater resistance test
- 2.1.2.16 Solar radiation test
- 2.1.2.17 Test for oil resistance
- 2.1.2.18 Fire test

# 2.1.2 LIFEBUOY SELF-IGNITING LIGHTS EVALUATION AND TEST REPORT

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Lifebuoy self-igniting lights	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization:	_ Time:
2.1.2.0 Quality assurance	ce	Regula	tions: MSC.81(70) 2/1.1, 1.2	
Except where all appliances of the International Convention for or the International Life-Savin representatives of the Admin manufacturers to ensure that materials used comply with life-saving appliance. Manufacturers should be require ensure that life-saving appliance	a particular type are required by chapter III of or the Safety of Life at Sea, 1974, as amended, ing Appliance (LSA) Code, to be inspected, istration should make random inspection of the quality of life-saving appliances and the the specification of the approved prototype nired to institute a quality control procedure to ces are produced to the same standard as the e approved by the Administration and to keep tests carried out in accordance with the	Quality Quality	tions: MSC.81(70) 2/1.1, 1.2 Assurance Standard Used: Assurance Procedure: Assurance Manual:	Passed/ Failed Passed/ Failed Passed/ Failed

Lifebuoy self-igniting lights	Manufacturer: Model: Lot/Serial Number:	Surveyor:	Time:		
2.1.2.1.1 General data and	d specifications	Regulations: LSA Code;	MSC.81(70)		
General Informati	on	Lifejacket Lifebuoy Light Dimensions	Lifejacket Lifebuoy Light Weight		
TYPE OF SWITCHING			Details of Dulls Dettery (9.) (alternation		
			Details of Bulb, Battery & Voltages:		
FLASHING LIGHT			Comments/Observations		
STEADY LIGHT					

Lifebuoy self-ignitin	g lights	Manufacture Model: Lot/Serial Nu	r:	Date: Time: Time: Organization:	
2.1.2.1.2 Submitt	ed drawi	ngs, reports	and documents		
			Submitted drawings and document	S	Status
Drawing No.	Revis date	ion No. &	Titl	le of drawing	
	-				
			Submitted reports and documents	5	<b>0</b> 1.1
Report/Document No.	Revis date	ion No. &	Title of	report / document	Status
			Maintenance Manual -		
			Operations Manual -		
	<u> </u>				
	<u> </u>				

Model:		acturer: : rial Number:		Surveyor:	Time:	
2.1.2.2 Visual Inspection	n		Regulatio	ns: LSA Code 1.2.	2.1/1.2.2.6/1.2.2.9/1.2.2.10/1.	2.3
Test Procedure		Acceptance C	criteria		Significant	Test Data
Thirteen lifebuoy self-igniting li should be examined in detail fo following items:	•	The lifebuoy self-igniting lights shoul		·	<u>Results:</u> PASS:	FAIL:
Approval marking Expiry marking		<ul> <li>be clearly marked with approve Administration which approved restrictions;</li> <li>be marked with a date of expiry;</li> </ul>			PASS:	FAIL:
		<ul> <li>The Administration should determine the:</li> <li>period of acceptability, owing to deterioration with age. The established life must be justified by the manufacturer.</li> </ul>			<u>Results:</u> PASS:	FAIL:
Additional markings		Be provided the following information precise definition of intended use (e. light"); serial number; identification of the manufacturer; where applicable, information on pr words: "DO NOT INCINERATE / DO TAMPER";	g. "Lifebuo <u>y</u> oper batter	y disposal by the	<u>Results:</u> PASS: PASS: PASS: PASS:	FAIL: FAIL: FAIL: FAIL:
Electrical short circuit protectio	'n	<ul> <li>be provided with electrical short of damage or injury;</li> </ul>	ircuit prote	ction to prevent	<u>Results:</u> PASS: Comments/Observations	FAIL:

2.1.2.2 Visual Inspection (continued	) Regulations: LSA Code 1.2.	2.1/1.2.2.6/1.2.2.9/1.2.2.10/1.2.3
Test Procedure	Acceptance Criteria	Significant Test Data
	The lifebuoy self-igniting lights should:	<u>Results:</u>
Construction and materials	- be constructed with proper workmanship and materials.	PASS: FAIL:
Colour of lifebuoy light	- be of an international or vivid reddish orange, or a comparably highly visible colour on all parts where this will assist detection at sea	PASS: FAIL: Comments/Observations

	Manufacturer:		Date:					
ifebuoy self-igniting lights	Model:	Surveyor:	Surveyor:					
nebuoy sen-iginting lights	Lot/Serial Number:	Organizatio	Organization:					
ifebuoy self-igniting light te	esting flow chart							
	light 1 temp cycle test 2.1.2.3	then light 2.1.2.4	1 performs Light test (hot)	light 1 the 2.1.2.5	en performs Chromaticity Test			
	light 2 temp cycle test 2.1.2.3	then light 2.1.2.4	2 performs Light test (cold)	light 2 the 2.1.2.5	n performs Chromaticity Test			
	light 3 temp cycle test 2.1.2.3							
	light 4 Case Resistance Test 2.1.2.7							
	light 5 Lens Drop Test 2.1.2.8 (if fitted)							
Visual Inspection	light 6 24 hr Floatation Test 2.1.	.2.9						
(all 13 lights) 2.1.2.1	light 7 30 m drop test (x 2) 2.1.2	light 7 then performs Fittii 2.1.2.11	ng Test	light 7 then performs Release/Op 2.1.2.12	eration Test			
	light 8 Vibration Test 2.1.2.13							
	light 9 Mould growth test (may be waived) 2.1.2.14							
	light 10 corrosion and sea water resistance test 2.1.2.15							
	light 11 Solar radiation test (may be waived) 2.1.2.16							
	light 12 Oil resistance test 2.1.2	.17						
	light 13 Fire test 2.1.2.18							

Lifebu	uoy self-igniting lights	Model:	umber:		Date: Surveyor: Organization:		
		Lot Condition					
2.1.2.3	Temperature cycli	ng test		Regulation	s: LSA Code 1.2.2.2	; MSC.81(70) 1/ 1.2, 1.2.1,	1.2.2, 10.2, 10.2.1
	Test Procedure		Acceptan	ce Criteria		Significa	ant Test Data
alterna tempe These immed follow not les	Test Procedure lifebuoy self-igniting ligh ately subjected to eratures - 30°C and at I e alternating cycles nee diately after each othe ing procedure, repeated ss than 10 cycles, is acce an 8 h exposure at temperature of +65 completed in one day; a the specimens remove warm chamber that sat left exposed under ore conditions at a tempera ± 3°C until the next day; an 8 h exposure at temperature of -30°C to the next day; and the specimens remove cold chamber that same	surrounding least +65°C. d not follow er and the for a total of eptable: a minimum °C to be ind ed from the me day and dinary room ture of 20°C ; a maximum be completed ed from the	The lifebuoy self-igniting light stowage throughout the air +65°C. The lifebuoy self-igniti of loss of rigidity under high ter should show no sign of damag swelling, dissolution or chang should function after the test.	ts should no temperature ng lights sho nperatures a ge such as sl	e range -30°C to buld show no sign nd, after the tests, hrinking, cracking,	Results:	rcling chart to record times ature. FAIL:
	exposed under ordi conditions at a tempera ± 3°C until the next day.	nary room ture of 20°C					

Lifebuo	y self-igniting lights	Model:	urer: Number:	Surveyor:		_ Time:	· · · · · · · · · · · · · · · · · · ·	
2.1.2.3 Temperature cycling test – Test data Regulations: LSA Code I/1.2.2; MSC.81(70) 1/1.2								
			OT CYCLE				LD CYCLE	
Cycle 1	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: In: Temperature:		Date Out: Time Out: Duration:	
Cycle 2	Date In: Time In: Temperature:		Date Out: Time Out: Duration:	<u> </u>	Date In: In: Temperature:		Date Out: Time Out: Duration:	
Cycle 3	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: In: Temperature:	Time	Date Out: Time Out: Duration:	
Cycle 4	Date In: Time In: Temperature :		Date Out: Time Out: Duration:		Date In: In: Temperature:		Date Out: Time Out: Duration:	
Cycle 5	Date In: Time In: Temperature :		Date Out: Time Out: Duration:		Date In: In: Temperature:	Time	Date Out: Time Out: Duration:	
Cycle 6	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: In : Temperature :		Date Out: Time Out: Duration:	
Cycle 7	Date In: Time In: Temperature:	0 -	Date Out: Time Out: Duration:		Date In: In: Temperature:	Time	Date Out: Time Out: Duration:	
Cycle 8	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: In: Temperature:	Time		
Cycle 9	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: In: Temperature:	Time	Date Out: Time Out: Duration:	
Cycle 10	Date In:		Date Out: Time Out: Duration:		Date In: In: Temperature:	Time	Date Out: Time Out: Duration:	

Lifebuoy self-igniting lights	Lifebuoy self-igniting lights Manufacturer: Lot/Serial Number:			Date: Surveyor: Organization:	Time:	
2.1.2.4 Light tests			Regulatio	ns: LSA Code 2.1.	2/2.1.2.2/2.1.2.3; MSC.81(	(70) 1/ 10.2.2, 10.4, 10.4.9
Test Procedure		Acceptance	ce Criteria		Significa	nt Test Data
One lifebuoy self-igniting ligh passed the temperature cycling be taken from a stowage tem 30°C and then be operated is seawater at a temperature of - lifebuoy self-igniting light which the temperature cycling test taken from a stowage tem +65°C and be operated in seawater at a temperature of + third light should be taken fr room condition and operated fresh water at ambient temper end of the first hour of op lifebuoy self-igniting lights immersed to a depth of 1 m for	g test should berature of - mmersed in 1°C, another has passed should be perature of nmersed in 30°C, and a om ordinary immersed in ature. At the beration the should be	After immersion, all the lifebuo be extinguished and should co hour longer. All of the lights should be of continue to provide a luminous in all directions of the upper h flashing light, flash at a rate o not more than 70 flashes p corresponding effective lumin 2 cd for at least 2 h. (see for effective luminous intensity.) The effective luminous intensity.	white colours intensity of emisphere of f not less the per minute ous intensity ormula below	ating for at least an r and they should not less than 2 cd or, in the case of a an 50 flashes and with at least the y of not less than w to calculate the	All luminous intensity dat PASS: Comments/Observations	a is to be attached here. FAIL:
If the voltage at 5 min of operation than the recorded voltage at the it is permissible to use a lar same build standard for the test. Using the lowest recorder light output test can be car described below. The voltage units should be monitored con 2 h. To make sure that all the provide a luminous intensity than 2 cd in all directions of hemisphere for 2 h operation, test should be performed:	he end of life np from the light output d voltage, a ried out as of the 3 test tinuously for he test units of not less f the upper	$\left(\frac{\int_{t_1}^{t_2} Id}{0.2 + (t_2)}\right)$ where: I is the instantaneous intensity 0.2 is the Blondel-Rey constant of integration in seconds.	, max	t <sub>2</sub> are time - limits		

Lifebuoy self-igniting lights	Model:	umber:		Surveyor:	Time:
2.1.2.4 Light tests (conti	inued)		Regulatio	ns: LSA Code	2.1.2/2.1.2.2/2.1.2.3; MSC.81(70) 1/ 10.2.2, 10.4, 10.4.9
Test Procedure		Acceptance	Criteria		Significant Test Data
It must be demonstrated that all lights reach the required lumino in all directions of the upper when using a photometer calibrated to the photometric s the appropriate National or Sta Institute (Note: CIE Publ. No. further information.). Luminous all test unit lights should be me photometer directed at the ce light source with the test light of table. Luminous intensity measured in a horizontal dire level of the center of the light continuously recorded throug rotation. The first measurement taken at 0° (horizontal) and sho to be taken in the azimuth a intervals to a single measurer (vertical). Luminous intensity should be re a vertical direction, beginning a of the light source at the point recorded light output, and co recorded through an arc of 180	bus intensity hemisphere which is standards of the Standard 70 contains intensity of easured by a enter of the on a rotating should be action at the source and gh a 360° ht should be uld continue angle at 5° ment at 90° measured in at the center nt of lowest continuously	Flashing lights with a flast than 0.3 s may be considered the measurement of their lumi should provide the required directions of the upper hemis between switching on and luminous intensity (incandes spent below the required lum light switches off sho (see figure 10.4.1 "On-time" m	as fixed/ste nous intensi luminous in sphere. The reaching cence time) ninous inten buld be neasuremen	eady lights for ty. Such lights ntensity in all time interval the required and all time sity when the disregarded	<ul> <li>PassedFailed</li> <li>Comments/Observations</li> <li>All lights operated for first one hour and immersed to a depth of 1m for 1 min as mentioned below</li> <li>1) Light 1, taken from -30°C, immersed in seawater temperature -10°C</li> <li>2) Light 2, taken from +65°C, immersed in seawater of +30°C</li> <li>3) Light 3, taken from ordinary temperature, immersed in fresh water at ambient temperature</li> <li>After immersion as mentioned above, all lifebuoy self-igniting lights continue operated for at least an hour longer: Yes/ No</li> <li>Comments/Observations</li> </ul>

		er: umber:		Surveyor:		Time:
2.1.2.5 Chromaticity tes	st			s: LSA Code		0) 1/10.2.2, 10.4, 10.4.10
All measured data of lumino and voltage should be docume One lifebuoy self-igniting ligh passed the light tests should l chromaticity to determine that the boundaries of the area "w diagram specified for each of International Commission on (CIE). The chromaticities of the igniting light should be measure of colorimetric measurement which is calibrated to the National or State Standar (Note: CIE Publ. No.15.2 corr information.). Measurement on points of the upper hemisphe taken.	bus intensity ented. at which has be tested for it lies within white" of the colour by the Illumination elifebuoy self- ed by means t equipment appropriate rds Institute itains further at least four	Acceptance The measured chromaticity coo the boundaries of the area of th The boundaries of the area for the following corner coordinates x 0.500 0.500 0.440 0.300 y 0.382 0.440 0.433 0.344 (International Standard on Colo colour tables to be developed b	Criteria ordinates sho le diagram as white lights a s: 0.300 0.44 0.278 0.38 ours of Light S	uld fall within per CIE. re given by 0 2	Results:	Significant Test Data ata is to be attached here. FAIL:

Lifebuoy self-igniting lights	Model:	er: umber:		Surveyor:	Time:	
2.1.2.6 Rain test and Wa	atertightness	Test Regulations: LSA Code 1.2.2 10.4.7			2.8; MSC.81(70) 1/ 10.2.5,	
Test Procedure		Acceptance Criteria		Significant Test Data		
Test ProcedureAcceptanceOne lifebuoy self-igniting light which has passed the temperature cycling test should be subjected to the rain test according to IEC 60945:2002, paragraph 8.8. After having passed the rain test, the lifebuoy self- igniting light and its complete power source should be immersed horizontally 		should be ro pable of sati light should jht should 02, paragraj	sfactory operation d function after comply with the ph 8.8.2.		FAIL:	

Lifebuoy self-igniting lights	Model:	er: umber:	Surveyor:			
2.1.2.7 Case resistance test		Regulations: MSC.81(70) 1/ 10.2.7				
Test Procedure		Acceptance Criteria		Sig	Significant Test Data	
One lifebuoy self-igniting light should be placed on its side on a rigid surface and a steel sphere having a mass of 500 g should be dropped from a height of 1.3 m on to the case at least three times. The sphere should strike the case near its centre on one drop, approximately 12 mm from one end of the case on another drop and approximately 12 mm from the other end of the case on the third drop.		The case should not break or crack, or be distorted in a way that would affect its watertightness. The lifebuoy self-igniting light should function after the test.		PASS:	FAIL:	
2.1.2.8 Lens drop test		Regulations: MSC.81(70) 1/ 10.2.6				
Test Procedure		Acceptance Criteria		Sig	Significant Test Data	
If a lifebuoy self-igniting light h should be subjected to the dom The lifebuoy self-igniting light cooled to -18°C and dropped to height of 1 m on to a rigidly me plate or concrete surface. T should be measured from the lens to the impact surface. T self- igniting light should strike on the top centre of the lens.	t should be wice from a ounted steel he distance top of the The lifebuoy	The lifebuoy self-igniting light should function afte		est. PASS: Comments/Observa	FAIL:	

2.1.2.9 Floatation test	Regulations: LSA Code 1.2	Regulations: LSA Code 1.2.2.8; MSC.81(70) 1/ 10.2.4			
Test Procedure	Acceptance Criteria	Significant Test Data			
One lifebuoy self-igniting light should be subjected to the floatation test. If the unit has an automatic activation, it should be	The lifebuoy self-igniting light should be capable of satisfactory operation in a seaway.	<u>Results:</u>			
disabled during this test. The lifebuoy self-igniting light should be	The lifebuoy self-igniting light should function after the test and there should be no evidence of water inside the lifebuoy self-igniting light.	PASS: FAIL:			
allowed to float in water in its normal operating position for 24 h.		Comments/Observations			
If the lifebuoy self-igniting light is an electric light, it should be disassembled at the end of the tests and examined for the presence of water.					

	Manufacturer:			Date:		ime:		
Lifebuoy self-igniting lights	Model:			Surveyor:				
	Lot/Serial Number:			Organization:				
2.1.2.10 Drop test			Regulations: LSA Code 2.1.2.4/2.1.1.6; MSC.81(70) 1/ 1.3, 10.2.3					
Test Proce	Acce	eptance Crit	eria		Significant Test Data			
One lifebuoy self-igniting light which has passed the		The lifebuoy self-igniting light should withsta			Results:			
visual inspection should be sul		this test without im	pairing eithe	er its operating				
The lifebuoy self-igniting light s	bould be subjected to at	capability or that o	f its attached	d components.				
least two drop tests as follows:					PASS:	FAIL:		
		The lifebuoy self-ig						
The lifebuoy self-igniting light	should be dropped into	damage and shou	ld operate sa	atisfactorily after	Comments/Obs	ocrutions		
water, such that the lower edge		each drop.			Comments/Ob:	Servations		
at which it is intended to be s	stowed on ships in their							
lightest sea going condition,	or 30 m, whichever is							
greater.								
-								
The lifebuoy self-igniting light s								
first by itself and then attached	to a lifebuoy.							
On sea activated lights this te								
with the sealing plugs fitted to								
water which will cause the light	t to operate.							
2.1.2.11 Fitting test			Regulation	ns: MSC.81(70) 1/	10.2.8			
Test Proce	dure	Acce	eptance Crit	eria		Significant Test Data		
The lifebuoy self-igniting light	which has passed the	Neither the fitting	and lanvard	nor the lifebuov	Results:			
drop test should be subjected		self-igniting light s			·····			
	0	of this test.		5	PASS:	FAIL:		
A force of 225 N should be a								
lanyard that attaches the lifebu	The lifebuoy self-ig	niting light s	hould function after	Comments/Obs	servations			
lifebuoy.		the test.						
After having passed the fitting	test the light should be							
subjected to the release and o								

Lifebuoy self-igniting lights	Manufacturer: Model: Lot/Serial Number:			Survey	or:	Time:			
			· · · · · · · ·	Organiz					
2.1.2.12 Release and ope	eration test		Regulations: LSA Code 2.1.1.7; MSC.81(70) 1/1.8						
Test Proce	Acce	eptance Crit	eria			Significant Test Data			
One lifebuoy intended for on lifebuoy self-igniting light whice test and a smoke signal should test and a smoke signal should test and a smoke signal should be the second state of th	h has passed the fitting	The lifebuoy sh self-igniting light.	ould activa	ite the	lifebuoy	<u>Results:</u>			
chemical material intended should be substituted by an eq material. The lifebuoy should b	to produce the smoke uivalent non- dangerous					PASS:	FAIL:		
simulating its installation on a simulating bridge. The lifebuoy smoke signal should be attach manner recommended by the lifebuoy should be released.					Comments/Ob	oservations			
2.1.2.13 Vibration test		Regulations: LSA Code 1.2.2.1/1.2.2.8; MSC.81(70) 1/ 10.4, 10.4.1							
Test Proce	dure	Acceptance Criteria				Significant Test Data			
One lifebuoy self-igniting light visual inspection should be sub		The lifebuoy se constructed with				<u>Results:</u>			
according to IEC 60945:2002	baragraph 8.7.	materials.				PASS:	FAIL:		
	T				function	Comments/Ob	oservations		

Lifebuoy self-igniting lights	Manufacturer: Model: Lot/Serial Number:			Date: Surveyor: Organization:		Time:			
2.1.2.14 Mould growth te	st	_	Regulations: LSA Code 1.2.2.4; MSC.81(70) 1/10.4, 10.4.2						
Test Proce	dure	Acc	eptance Crite	eria	S	Significant Test Data			
One lifebuoy self-igniting light visual inspection should be su growth test.		The lifebuoy self-igniting light should be rot-proof and not be unduly affected by fungal attack.			FAIL:				
The lifebuoy self-igniting light spraying with an aqueous susp containing all the following cult Aspergillus niger; Aspergillus t	There should be r naked eye and t should function aff	he lifebuoy		Comments/O	bservations				
pullulans; Paecilomyces variot funiculosum; Penicillium ochro brevicaulis; and Trichoderma	chloron; Scopulariopsis /iride.								
The lifebuoy self-igniting craiplaced in a mould growth charmaintained at a temperature relative humidity of not less the incubation should be 28 day lifebuoy self-igniting light shout (Note: The mould growth test									
the manufacturer is able to pro external materials employed w									

Lifebuoy self-igniting lights	Manufacturer: Model: Lot/Serial Number:			Date: Surveyor: Organization:			
2.1.2.15 Corrosion and s	eawater resistance test		Regulation	s: LSA Code 1.2.2.4; MS	C.81(70) 1/ 10.4	, 10.4.4	
Test Prod		Acceptance	e Criteria		Significant Test Data		
<ul> <li>One lifebuoy self-igniting light inspection should be subjected as a subject of the seawater resistance test according paragraph 8.12.</li> <li>(Note: <ul> <li>.1 If there are no exposed and Seawater Resist conducted.</li> </ul> </li> <li>.2 The Corrosion and Seawater the produce evidence that the will satisfy the test.</li> <li>.3 Automatic activated very from switching during the subject of the su</li></ul>	resistant and r Furthermore, comply with t paragraph 8.1 There should parts and th function after Where the ex	The lifebuoy self-igniting light should be corrosion resistant and not be unduly affected by seawater. Furthermore, the lifebuoy self-igniting light should comply with the requirements of IEC 60945:2002, paragraph 8.12.2. There should be no undue deterioration of metal parts and the lifebuoy self-igniting light should function after the test. Where the exposed metal is part of the automatic switch sensor, the function test after the 28-day test			Results: PASS: FAIL: Comments/Observations		
2.1.2.16 Solar radiation t	est		Regulation	s: LSA Code 1.2.2.5; MS	C.81(70) 1/ 10.4	, 10.4.5	
Test Proc	cedure		Acceptance	e Criteria		Significant Test Data	
One lifebuoy self-igniting light inspection should be subject according to IEC 60945:2002, (Note: The solar radiation tes	The lifebuoy self-igniting light should be resistant to deterioration by sunlight. Furthermore, the mechanical properties and labels should be resistant to harmful deterioration by			Results:         PASS:       FAIL:         Comments/Observations			
manufacturer is able to pr materials employed will satisfy	oduce evidence that the	sunlight and the lifebuoy self-igniting light should function after the test.					

Lifebuoy self-igniting lights	Model:	er: umber:		Surveyor:			
2.1.2.17 Test for oil resis	tance		Regulation	s: LSA Code 1.2.	2.4; MSC.81(70) 1/ 10	0.4, 10.4.6	
Test Procedure		Acceptanc	ce Criteria		Sigr	nificant Test Data	
One lifebuoy self-igniting light passed the visual inspection subjected to the test for oil according to IEC 6 paragraph 8.11. Automatic version should be preven switching during the test.	should be resistance 0945:2002 activated	unduly affected by oil and should show no sign of damage such as shrinking, cracking, swelling, dissolution or change of mechanical qualities.			Results:PASS:FAIL:Comments/Observations		
2.1.2.18 Fire rest		Regulations: LSA Code 2.1.			1.5; MSC.81(70) 1/ 10	0.4, 10.4.8	
Test Procedure		Acceptance Criteria			Significant Test Data		
One lifebuoy self-igniting ligh passed the visual inspection subjected to a fire test. A test than 30 cm x 35 cm x 6 cm placed in an essentially draug Water should be put in the b test pan to a depth of at least 1 by enough petrol to make a m depth of not less than 4 cm should then be ignited and allo freely for at least 30 s. T self- igniting light should then through the flames, facing the lifebuoy self-igniting light not 25 cm above the top edge of so that the duration of expo flames is at least 2 s.	a should be pan not less n should be ht-free area. ottom of the cm followed inimum total . The petrol owed to burn The lifebuoy n be moved em, with the cmore than the test pan	The lifebuoy self-igniting light continue melting after being to period of not less than 2 s and flames. The lifebuoy self-igniting light s	otally envelop I after being r	bed in a fire for a emoved from the	<u>Results:</u> PASS: Comments/Observa	FAIL: tions	

## 2.1.3 LIFEBUOY SELF-ACTIVATING SMOKE SIGNALS EVALUATION AND TEST REPORT

- 2.1.3.1 Submitted drawings, reports and documents
  - 2.1.3.1.1 Quality assurance
  - 2.1.3.1.2 Visual inspection
  - 2.1.3.1.3 General data and specification
- 2.1.3.2 Temperature cycling test
- 2.1.3.3 Low temperature conditioning test
- 2.1.3.4 High temperature conditioning test
- 2.1.3.5 Ambient temperature conditioning and drop test
- 2.1.3.6 Humidity conditioning
- 2.1.3.7 Water and corrosion resistance test
  2.1.3.7.1 Immersed for 24 h under 1 m
  2.1.3.7.2 10 cm immersion ready-to-fire for 5 mins. test
  2.1.3.7.3 Salt spray conditioning
- 2.1.3.8 Heptane test
- 2.1.3.9 Laboratory smoke obscuration test
- 2.1.3.10 Wave test
- 2.1.3.11 Attachment fitting strength test
- 2.1.3.12 Safety inspection

## 2.1.3 LIFEBUOY SELF-ACTIVATING SMOKE SIGNALS

#### **EVALUATION AND TEST REPORT**

Manufacturer	
Type/Model	
Date of Approval	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Lifebuoy self-activating smoke signals       Manufacturer:         Model:       Lot/Serial Number:					Date: Surveyor: Organization:	Time:			
2.1.3.1 Submitte	2.1.3.1 Submitted drawings, reports and documents								
			Submitted drawings a	and documents	5		Status		
Drawing No.	Revis date	sion No. &		Title of drawing					

Submitted reports and documents								
Report/Document No.	Revision No. & date	Title of report / document	Status					
		Maintenance Manual -						
		Operations Manual -						

Lifebuoy self-activating smoke signals	Manufacturer: Model: Lot/Serial Number:	Surveyor:						
2.1.3.1.1 Quality assuran	ce	Regulations: - MSC.81(70) 2/1.1, 1.2						
of the International Convention amended, or the international L representatives of the Administ manufacturers to ensure that materials used comply with the saving appliance. Manufacturers should be require ensure that life-saving appliant the prototype life-saving appliant	f a particular type are required by Chapter III on for the Safety of Life at Sea, 1974, as Life-Saving Appliance Code, to be inspected, stration should make random inspections of t the quality of life-saving appliances and e specification of the approved prototype life- ired to institute a quality control procedure to aces are produced to the same standard as ance approved by the Administration and to on tests carried out in accordance with the	Quality Assurance Standard Used: - Quality Assurance Procedure: - Quality Assurance Manual: - Description of System.						
			ssurance System acceptable: Yes/No s/Observations					

Lifebuoy self-activating smoke signals	Model:	er:		Surveyor:		ne:
2.1.3.1.2 Visual inspec	tion		Regulatio	.2; MSC.81(70) 1/	/1.9 and 4.5	
Test Procedure	Э	Acceptan	ce Criteria		Significant Test Data	
Visual examination		Lifebuoy Self-Activating Smok	e Signal sho	uld: -		
Approval markings		be clearly marked with approval information including the Administration which approved it, date of manufacture and expiry and operational restrictions, markings are to be indelible;			Passed	Failed
Operating instructions.		be provided with brief instr illustrating the use of the lifebu printed on the casing also the	oy self-activa	ating smoke signal	Passed	Failed
Outer casing.		not depend on adhesive tapes or plastic envelopes for its water-resistant properties			Passed	
Ignition System.		be fitted with an integral mean	is of ignition;		Passed	Failed
Fitted with light		if fitted with lights be test requirements of Lifebuoy Self-				Failed
Acceptable life		The administration should determine the period of acceptability of the unit which are subject to deterioration with age.			Comments/Observations	

Lifebuoy self-activating smoke signals	Model:	Date:         Time:            Surveyor:         Organization:							
2.1.3.1.3 General data an	d specifications	Regulations: LSA Code I/1.2 & III/3.3; MSC.81(70) 1 /4.8							
General Informat	ion	Din	nensions		Weight				
Construction Material:		Dimensions:							
Casing:		Length of Casing:			Design Weight:				
Top cover (If applicable):		Maximum Diameter	of Casing:		Weight as Tested:				
Bottom Cover (If applicable):		Minimum Diameter of Casing			Weight of Smoke Material				
Method of Ignition					Comments/Observations				
Operational Safety Delay (i	f Applicable)								
Number of lights (if Applica	ble)								
Type of lens dome									
Amperage of Bulb									
Number of Batteries:	_								
Voltage of Batteries:	-								
Acceptable life of the item:	yrs								

#### LIFEBUOY SELF-ACTIVATING SMOKE SIGNAL CONDITIONING & SEQUENCE TEST CHART

TEST ITEMS CONDITIONING SEQUENCE									REFERENCES	REMARKS
Specimen No>	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22	MSC.81(70)	
Measuring dimensions and mass	A	A	А	А	А	А	А	А		
Temperature cycling test (2.1.3.2)	В	В	В						1.9.1 & 1.2.1.	
Low temperature conditioning (2.1.3.3)	С								1.9.2	
High temperature conditioning (2.1.3.4)		С							1.9.2	
Ambient temperature conditioning (2.1.3.5)			С						1.9.3	
Operate Immersed under 25mm for 10 secs (2.1.3.4)	С	С							1.9.2	
Humidity conditioning (2.1.3.6)				С					1.9.4 & 4.2.4	
1 metre for 24 hours (2.1.3.7.1)					С				1.9.4 & 4.3.1	
Salt water spray (2.1.3.7.2)						С			1.9.4 & 4.3.3	
Safety inspection (2.1.3.12)	D	D	D	D	D	D	D	D	4.5 & 1.9.4	
Operation at ambient temperature			E		Е	Е	Е	E	1.9.3, 4.3.1	

Specimen No>	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22	References	Remarks
Operate at conditioning Temperature	E	Е		E					1.9.2, 4.2.4	
Heptane test (2.1.3.8)							F		1.9.4 & 4.8.2	
Attachment fitting strength (2.1.3.11)	F	F							10.2.8 & 1.9.6	May be carried out by an independent laboratory acceptable to the administration and report submitted. Use specimens 1 and 4.
Wave height test (2.1.3.10)								F	1.9.5	
30 m drop test (2.1.3.5)			Н						1.9.3	
Smoke colour and emission time 15 minutes minimum	G	G	G	G	G	G	G	G	1.9.2 & 1.9.3	
Smoke obscuration (2.1.3.9)									4.8.3 & 1.9.4	May be carried out by an independent laboratory acceptable to the administration and report submitted.

#### LIFEBUOY SELF-ACTIVATING SMOKE SIGNAL CONDITIONING & SEQUENCE TEST CHART (continued)

Note: The letters in the above 'boxes' refer to the sequence of testing of each specimen lifebuoy self-activating smoke signal.

Lifebuoy self-activating smoke signals	Manufacturer: Model: Lot/Serial Number:			Date:            Surveyor:            Organization:				
2.1.3.2 Temperature cycling test		Regulations: LSA Code I/1.2				2.2; MSC.81(70) I/1.2.1		
Test Procedure		Acceptanc				Significant	Test Data	
Nine self-activating smoke signals should be alternately subjected to surrounding temperatures of -30°C and +65°C. These alternating cycles need not follow immediately after each other and the following procedure, repeated for a total of		should show no sign of damage such as shrinking, cracking, swelling, dissolution or change of mechanical properties.			<u>Specim</u> 1. 2.	Passed	Failed	
10 cycles, is acceptable:					3.	Passed	Failed	
<ol> <li>an 8 h exposure at temperature of +65°C to b in one day; and</li> </ol>					4.	Passed	Failed	
					5.	Passed	Failed	
<ol> <li>the specimens removed from chamber that same date exposed under ordinal</li> </ol>	y and left				6.	Passed	Failed	
conditions at a temperatur					7.	Passed	Failed	
3°C until the next day;					8.	Passed	Failed	
3. an 8 h exposure at a temperature -30°C to be co					9.	Passed	Failed	
next day; and	·				Comme	nts/Observations		
<ol> <li>the specimen removed from chamber that same date exposed under ordin conditions at a temperatur 3°C until the next day.</li> </ol>	ly and left lary room				Passed	Failed		

Lifebuoy self-activating smoke signals	Manufacture Model: Lot/Serial N	er:		Date: Surveyor: Organization:	Tin	ne:		
2.1.3.3 Low temperature	e conditionin	g test	Regulatio	2.2; MSC.81(70) 1	.2; MSC.81(70) 1/1.9.2			
Test Procedure		Acceptance	ce Criteria			Significant Test D	ata	
After at least ten complete		The 3 specimens should funct	ion effective	ly.	Specimen Numb	per	•	
cycles the first three smoke si be subjected to a temperature		Each specimen should show	no sian of	damage such as	1	2	3	
at least 48 h, then taken from temperature be activated and	this stowage l operated in	shrinking, cracking, swelling mechanical properties afte	, dissolutio	on or change of	Condition after 0	Conditioning (Pass	s/Fail)	
seawater at a temperature of function effectively at that tem		conditioning.			Smoke emissior	n time (min/sec)		
,	•	The signal should not ignite						
		dangerous to persons close by entire smoke emission time of			Smoke emission quality (Pass/Fail)			
		The colour of the smoke should be orange as defined by sections 34, 48, 49 or 50 of the publication Colour: Universal Language and Dictionary of Names.*			Smoke colour (F	Pass/Fail)	T	
					Smoke emissior	ns during submerg	ence (Pass/Fail)	
		*Special Publication 440, Na		au of Standards,				
		Washington, DC 20402, USA.			Comments/Obse	ervations		
		After the smoke signals have minutes, the smoke-emitting should be immersed to a dept released the smoke signals sh quantity of smoke of a highly for a period of not less than 15 water.	ends of th h of 25 mm ould continu visible colou	ne smoke signals for 10 s. On being ue to emit a steady r at a uniform rate	Passed	Failed		

Lifebuoy self-activating smoke signals	Model:	er: umber:		Date: Surveyor: Organization:	Time:				
2.1.3.4 High temperature condition		ng test Regulations: LSA Code I/1.2.			.2 and II/2.1.3; MSC.81(70) 1/1.9.2				
Test Procedure		Acceptano	ce Criteria			Significant Test Da	ata		
After at least 10 complete		The 3 specimens should funct	ion effective	ly.	Specimen Numb	per			
cycles, the next three smoke si be subjected to a temperature		Each specimen should show	no sign of	damage such as	4	5	6		
at least 48 h, then taken from	this stowage	shrinking, cracking, swelling	, dissolutio	n or change of	Condition after C	Conditioning (Pass	/Fail)		
temperature be activated and seawater at a temperature of		mechanical properties after conditioning.	er complet	ing the +65°C					
function effectively at that tem		conditioning.			Smoke emission time (min/sec)				
		The smoke signal should not	t ignite expl	osively or in a					
		manner dangerous to persons		emit any flame	Smoke emission	quality (Pass/Fail	)		
		during the entire smoke emiss	ion time.						
		After the smoke signals have been emitting smoke for			Smoke colour (F	ass/Fail)			
		7 minutes, the smoke-emitting should be immersed to a dept							
		released the smoke signals sh			Smoke emission	during submerge	nce (Pass/Fail)		
		quantity of smoke of a highly							
		vater.	for a period of not less than 15 minutes when floating in calm water.			ervations			
		The colour of the smoke sho							
		sections 34, 48, 49 or 50 of the Language and Dictionary of N		Colour: Universal					
		Language and Dictionary of Names."			Passed	Failed			
		*Special Publication 440, Na Washington, DC 20402, USA.		au of Standards,					

Lifebuoy self-activating smoke signals	Model:	er: umber:		Date: Surveyor: Organization:	Time:			
2.1.3.5 Ambient Tempe	rature Condit	tioning & Drop Test	.2 & II/2.1.1.6; MSC.81(70) 1/1.9.3					
Test Procedure		Acceptan	ce Criteria			Significant Test Da	ata	
After at least ten complete		The 3 specimens should fund	tion effectiv	ely for a period of	Specimen No.			
cycles, the last three smoke s from ordinary room cond		at least 15 min.			7	8	9	
attached by a line to a lifebu	loy having a	Each specimen should show			Condition after	Conditioning (Pass	/Fail)	
mass of not more than 4 kg sho the drop test into water p		shrinking, cracking, swelling mechanical properties after of						
MSC.81(70) 1/1.3. The life		conditions at a temperature of			Drop height (me	etre)		
have both a smoke signal ar								
light attached in the manner re by the manufacturers and be o				Smoke emissio	n time (min/sec)			
a quick-release fitting. The sr	noke signals	The smoke signal should not ignite explosively or in a manner dangerous to persons close by nor emit any flame						
should not be damaged function for a period of at least		during the entire smoke emission time.			Smoke emissio	n quality (Pass/Fail	)	
		The smoke signal should not b	e damaged	after the drop test.				
A lifebuoy and the smoke sign dropped each into the water fro					Smoke colour (	Pass/Fail)		
at which they are intended to b		The colour of the smoke sho			Smoke signal d	amaged after drop	test (Pass/Fail)	
ships in their lightest seagoing		sections 34, 48, 49 or 50 of the Language and Dictionary of N		Colour: Universal				
30 m, whichever is the great suffering damage	ater, without				Comments/Obs	ervations		
		*Special Publication 440, Na		au of Standards,				
The lifebuoy and smoke signa dropped from a quick release		Washington, DC 20402, USA.						
for housing the signals.								
					Passed	Failed		

Lifebuoy self-activating smoke signals		er: umber:		Surveyor:	Time:				
2.1.3.6 Humidity condit	ioning	Regulations: LSA Code I/1.2			2.2 & II/2.1.3; MSC	2.2 & II/2.1.3; MSC.81(70) 1/4.2.4, 1.9.4			
Test Procedure		Acceptanc	ce Criteria			Significant Test D	ata		
Three specimens of smoke si		The 3 specimens should funct	ion effective	ly.	Specimen No.				
be subjected to a temperatu and 90% relative humidity for		Each specimen should show	no sian of c	lamage such as	10	11	12		
followed by ten days at 20°0		shrinking, cracking, swelling,	dissolutior	or change of	Condition after C	Conditioning (Pass	/Fail)		
65% relative humidity.		mechanical properties after co +65°C and 90% relative humid							
After the humidity test the		by ten days at 20°C to 25°C			Smoke emission	time (min/sec)			
should be subjected to the fun ambient temperature.	nction test at	conditioning.							
		The smoke signal should no	t ignite exp	losively or in a	Smoke emission	quality (Continuo	ous/Intermittent)		
		manner dangerous to persons close by nor emit any flame during the entire smoke emission time.			Smoke emission	colour: (Passed/ł	Failed)		
		Each specimen should emit	smoke of	a highly visible					
		colour at a uniform rate for 15 minutes when floating in ca	a period o		Comments/Obse	ervations			
		The colour of the smoke shou sections 34, 48, 49 or 50 Universal Language and Dictio *Special Publication 440, Nat Washington, DC 20402, USA.	of the pub onary of Nar ional Burea	lication Colour: nes.*	Passed	Failed			

Lifebuoy self-activating smoke signals	Manufacture Model: Lot/Serial Nu	er: umber:		Surveyor:	r: Time: r: ation:					
2.1.3.7.1 Immersed for 24	ed for 24 h under 1 m			Regulations: LSA Code I/1.2.2 and II/2.1.3; MSC.81(70) 1/4.3.1, 1.9.4						
Test Procedure		Acceptar	ce Criteria			Significant Test Da	ata			
Three specimens of smoke s		The three specimens should s					-			
be immersed horizontally for 1 m of water.	24 h under	shrinking, cracking, swellin mechanical properties.	g, dissoluti	on or change of	13	14	15			
					Condition after 0	Conditioning (Pass	/Fail)			
After this test the specimen subjected to the function test		The signals should establish the without injury to the operator, of								
temperature.	at ambiont	during firing or burning.	or any porce	in in cloco proximity,	Smoke emission	n time (min/sec)	1			
		The specimen signal should	not ignite	explosively or in a			1			
		manner dangerous to person	s close by,	nor emit any flame		n quality (Continuo	us/Intermittent)			
		during the entire smoke em smoke of a highly visible colo					<u> </u>			
		of not less than 15 minutes w			Smoke emissior	n colour: Passed/F I	ailed			
							<u> </u>			
		The colour of the smoke sh sections 34, 48, 49 or 50 of th Language and Dictionary of N	ne publicatio		Comments/Obse	ervations				
		*Special Publication 440, N Washington, DC 20402, USA		eau of Standards,						
					Passed	Failed				

Lifebuoy self-activating smoke signals	Manufacture Model: Lot/Serial N	er: umber:	Surveyor:			Time:				
2.1.3.7.2 10 cm immersio	n ready-to-fir	e for 5 mins. test	or 5 mins. test Regulations: LSA Code I/1.			.2 & II/2.1.3; MSC.81(70) 1/4.3.2				
Test Procedure		Acceptan	ce Criteria			Significant Test D	ata			
Three specimens of smoke sig		The three specimens should s			Specimen No					
be made ready-to-fire, sub 10 cm of water for 5 min.	omerged in	as shrinking, cracking, swell mechanical properties.	ng, dissolut	ion or change of	16	17	18			
					Condition after 0	Conditioning (Pass	/Fail)			
The three signals should be ambient temperature in acco		The signals should establis effectively without injury to the								
the manufacturer's operating in		close proximity, during firing o		, , , , , , , , , , , , , , , , , , ,	Smoke emissior	n time (min/sec)				
		manner dangerous to persons	The specimen signal should not ignite explosively or in a manner dangerous to persons close by, nor emit any flame during the entire smoke emission time. They should emit			l n quality (Continuo	us/Intermittent)			
		smoke of a highly visible colou	ir at a uniforr	n rate for a period	Smoke emissior	n colour: Passed/F	ailed			
		of not less than 15 minutes wh	ien floating i	in calm water.						
		The colour of the smoke sho sections 34, 48, 49 or 50 of the Language and Dictionary of N	e publication		Comments/Obs	ervations				
		*Special Publication 440, Na Washington, DC 20402, USA.	*Special Publication 440, National Bureau of Standards,							
					Passed	Failed				

Lifebuoy self-activating smoke signals			Surveyor:			ne:			
2.1.3.7.3 Salt spray cond	itioning	Regulations: L			/1.2.2 & II/2.1.3; MSC.81(70) 1/1.9.4, 4.3.3				
Test Procedure		Acceptan	ce Criteria			Significant Test D	ata		
Three specimens of smoke sig		The three specimens should s			Specimen No				
be subjected to a salt spray ( chloride solution) at a tem		as shrinking, cracking, swell mechanical properties.	ing, dissolut	ion or change of	19	20	21		
+35±3°C for at least 100 h.					Condition after 0	Conditioning (Pass	s/Fail)		
The three signals should be	activated at	The signals should establis effectively without injury to the							
ambient temperature in acco	ordance with	close proximity, during firing o		or any percent in	Smoke emission time (min/sec)				
the manufacturer's operating i	instructions.	The specimen signal should	not ignite e	xplosively or in a					
		manner dangerous to persons	s close by, n	or emit any flame	Smoke emission	n quality (Continuo I	us/Intermittent)		
		during the entire smoke emis smoke of a highly visible colou					<u> </u>		
		of not less than 15 minutes wh			Smoke emission	n colour: Passed/F I	ailed		
		The colour of the smoke sho sections 34, 48, 49 or 50 of the Language and Dictionary of N	e publication		Comments/Obse	ervations			
		*Special Publication 440, Na Washington, DC 20402, USA.		au of Standards,					
					Passed	Failed			

Lifebuoy self-activating smoke signals	Manufacture Model: Lot/Serial N	er: umber:		Date: Surveyor: Organization:	Tir	ne:		
2.1.3.8 Heptane test			Regulation	ons: LSA Code I/1.2.2 & II/2.1.3.1; MSC.81(70) 1/4.8.2, 1.9.4				
Test Procedure		Acceptanc	e Criteria			Significant Test Da	ata	
Three smoke signals should water covered by 2 mm layer		The three specimens should n	ot ignite the	heptane.	Specimen No			
floating on a layer of water.		The specimen signal should	not ignite e	xplosively or in a	22	23	24	
signal should be allowed completely.	d to burn	manner dangerous to persons during the entire smoke emiss		or emit any flame	Heptane ignitior	(Passed/Failed)		
		They should emit smoke of uniform rate for a period of no			Smoke emissior	n time (min/sec)		
		floating in calm water.		15 minutes when	Smoko omissior	n quality (Continuo		
		The colour of the smoke sho			SITIONE ETTISSIO		us/internittent/	
		sections 34, 48, 49 or 50 of the Language and Dictionary of Na		Colour: Universal	Smoke emissior	n colour: (Passed/F	ailed)	
		*Special Publication 440, Na Washington, DC 20402, USA.		au of Standards,	Comments/Obs	ervations		
					Passed	Failed		

Lifebuoy self-activating smoke signals		ber:		Date: Surveyor: Organization:	Time:		
2.1.3.9 Laboratory smo	ke obscuration t	test Regulations: LSA Code I/1.2			.2 & II/2.1.3; MSC.81(70) 1/4.8.3, 1.9.4		
Test Procedure	)	Accepta	nce Criteria		Significant Test Data		
The smoke density and colousignal should be determined testing conducted at a water +20°C to +25°C as follows: The smoke should be draw apparatus consisting of a 19 duct with a fan capable of entrance air flow of 18.4 m3/m a light source with at least 10 of the tunnel and a photoeled other side the density of the should be recorded. If the phy the total emitted light from the then the smoke density is zero means that no smoke is pass tunnel. The smoke density is to be 100% when the photoced pick up any light of the light sou passing smoke in the tunnel. F of light which the photocell is the smoke density should Before each measurement, th of the 100% value should be measurement should be record	A by laboratory temperature of wn through an 0 mm diameter producing an in. By means of cd on one side ctric cell on the passing smoke otocell picks up he light source, o percent which ing through the then considered ell is not able to urce through the rom the amount able to pick up be calculated. he light intensity checked. Each	Smoke density should be minimum emission time. The colour of the orange s means of visual comparis comparison chart contain orange colours. The colour a gloss or matte finish, and five orange colour chips, co orange (Munsell notation orange (Munsell notation 5 hue, chroma, and lightness secured adjacent to one ar from reddish orange to yel at least one side to the edge should be at least 50 mm x Note 1: A typical acceptable 6/14; 10 R 6/14; 1.25 YR 6/ Note 2: ASTM D1535-97 s between Munsell notation a	moke shouk son, in day ing the ran comparison l consist of a overing the ran 8.75 R 6 YR MAX) in 5. The colour tother, in orce lowish orang of the chart 100 mm in e progressio 14; 3.75 YR specifies a r	d be evaluated by ight, to a colour ge of acceptable chart should have a series of at least ange from reddish 14) to yellowish a gradual steps of r chips should be der of progression ge, and extend on . Each colour chip size. n would be 8.75 R MAX; 5 YR MAX.	Laboratory Testing Report No. Report acceptable (Yes/No) Smoke obscuration rate achieved at -30°C % Burning time of smoke signal sec Smoke obscuration rate achieved at +20°C to +25°C% Burning time of smoke signal sec Smoke obscuration rate achieved at +65°C% Burning time of smoke signal sec Colour of smoke achieved Comments/Observations Passed Failed		

Lifebuoy self-activating smoke signals	Model:	Surveyor:			Time:		
2.1.3.10 Wave test			Regulatio	ns: LSA Code I/1.2	2.2 & II/2.1.3; MSC.81(70) 1/1.9.5		
Test Procedure		Acceptanc	ce Criteria		Significant Test Data		
Test Procedure A smoke signal should be tes at least 300 mm high.	ted in waves	Acceptance The specimen should funct swamped. The smoke signal should ne manner dangerous to persons during the entire smoke emiss It should emit smoke of a hig rate for a period of not less that to waves of at least 300 mm h The colour of the orange sm means of visual compariso comparison chart containing th colours. The colour comparis or matte finish, and consist of colour chips, covering the (Munsell notation 8.75 R 6/14) notation 5 YR MAX) in gradu lightness. The colour chips s one another, in order of progra	tion effective ot ignite ex s close by, n ion time. hly visible c an 15 minute igh. noke should n, in daylig the range of a son chart sh a series of a range from ) to yellowist al steps of hould be se ession from	plosively or in a or emit any flame blour at a uniform as when subjected be evaluated by ght, to a colour acceptable orange ould have a gloss t least five orange reddish orange n orange (Munsell hue, chroma, and cured adjacent to reddish orange to			
		of the chart. Each colour chip 100 mm in size. Note: A typical acceptable prog 10 R 6/14; 1.25 YR 6/14; 3.79 ASTM D1535-97 specifies a Munsell notation and CIE coor	gression wou 5 YR MAX; method to	PassedFailed			

Lifebuoy self-activating smoke signals	Model:	urer:		Date: Time: Surveyor: Organization:		
2.1.3.11 Attachment fitting strength tes		est	Regulatio	ns: LSA Code I/1.	2.2, II/2.1.3 & II/2.1.1.6; MSC.81(70) 1/1.9.6 & 10.2.8	
Test Procedure		Acceptan	ce Criteria		Significant Test Data	
A force of 225 N should be ap fitting that attaches the self-ac smoke signal to the lifebuoy. T be carried out at temperatures and +65°C.	tivating The test is to	The smoke signal or the fitting result of the test.				
					Passed Failed	

Lifebuoy self-activating smoke signals	Manufacture Model: Lot/Serial N	anufacturer: odel: t/Serial Number:		Date:         Time:           Surveyor:         Organization:		
2.1.3.12 Safety inspectio	'n	-	Regulation	ns: LSA Code I/1.2	2.2, MSC.81(70) 1/ 1.9.4/ 4.5	
Test Procedure		Acceptance	ce Criteria		Significant Test Data	
It should be established by visual inspection that the self-activating smoke signal:						
<ol> <li>is indelibly marked with clear and precise instructions on how it should be operated and mounted and that the danger end can be identified by day or night;</li> </ol>		marked on the smoke signal.		Markings and identification of signal: Passed Failed		
<ol> <li>does not depend on adhesive tapes or plastic envelopes for its water resistant properties; and</li> </ol>		Adhesive tapes or plastic envelopes are not used to maintain water-resistant properties.		Water resistant without the use of envelopes or adhesive tape. Passed Failed		
<ol> <li>can be indelibly marked with means of determining its age.</li> </ol>		Date of manufacturing and date of expiry indelible printed on the outside.		Smoke signal indelible date stamped Passed Failed Comments/Observations		

#### 2.2 LIFEJACKETS AND ASSOCIATED EQUIPMENT

#### 2.2.1 INHERENTLY BUOYANT LIFEJACKETS

**EVALUATION AND TEST REPORT** 

- 2.2.1.1 Submitted drawings, reports and documents
- 2.2.1.2 Quality assurance
- 2.2.1.3 Visual inspection
- 2.2.1.4 General data and specification
- 2.2.1.5 Temperature cycling test
- 2.2.1.6 Buoyancy test
- 2.2.1.7 Fire test
- 2.2.1.8 Oil resistance test
- 2.2.1.9 Tests of components other than buoyancy materials
- 2.2.1.10 Strength tests Body or lifting loop strength tests
- 2.2.1.11 Strength tests Shoulder lift test
- 2.2.1.12 Tests for lifejacket buoyancy material Stability under temperature cycling
- 2.2.1.13 Tests for lifejacket buoyancy material Compression and water absorption test
- 2.2.1.14 Tests for lifejacket buoyancy material Tensile strength test
- 2.2.1.15 Donning test
- 2.2.1.16 Water performance tests Preparation for water performance tests
- 2.2.1.17 Water performance tests Righting tests
- 2.2.1.18 Water performance tests Static balance measurements
- 2.2.1.19 Water performance tests Jump and drop tests
- 2.2.1.20 Water performance tests Stability test
- 2.2.1.21 Water performance tests Swimming and water emergence test
- 2.2.1.22 Infant and children's lifejacket Test subjects selection
- 2.2.1.23 Infant and children's lifejacket Water performance tests Righting test
- 2.2.1.24 Infant and children's lifejacket Water performance tests Static balance measurements

- 2.2.1.25 Children's lifejacket Water performance tests Jump and drop test
- 2.2.1.26 Infant and children's lifejacket Water performance tests Stability test
- 2.2.1.27 Infant and children's lifejacket Mobility test

# 2.2.1 INHERENTLY BUOYANT LIFEJACKETS EVALUATION AND TEST REPORT

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Inherently buoyant       Manufacture         Iifejackets       Model:         2.2.1.1       Submitted drawings, reports and		r: umber: I <b>documents</b>	Organization:	Organization:			
	Submitted drawings and documents						
Drawing No. Revision No. & date			Title of drawing				
		Submitted reports and docum	nents		Status		
Report/Document No.	Revision No. & date	Title	e of report / document				
		Maintenance Manual -					
		Operations Manual -					

Inherently buoyant lifejackets	oyant Manufacturer: Model: Lot/Serial Number:						
2.2.1.2 Quality assurance			s: - MSC.81(70) 2/1.1, 1.2	2			
Except where all appliances of a particular type are required by Chapter III of the International Convention for the Safety of Life at Sea, 1974, as amended, or the international Life-Saving Appliance (LSA) Code, to be inspected, representatives of the Administration should make random inspections of manufacturers to ensure that the quality of life-saving appliances and materials used comply with the specification of the approved prototype life-saving appliance.			Quality Assurance Standard Used:				
			Quality Assurance Procedure:				
Manufacturers should be required to institute a quality control procedure to ensure that life-saving appliances are produced to the same standard as the prototype life-saving appliance approved by the Administration and to keep records of any production tests carried out in accordance with the Administration's instructions.		Quality Assurance Manual:					
		Description of System.					
		Quality Assurance System acceptable					
		YesNo					
	Comments/Observations						

Inherently buoyant Model:		Model:		Surveyor:		e:	
2.2.′	1.3 Visual inspection		Regulations: LSA Code I/1.2.2.1, 1.2.2.6, 1.2.2.7, 1.2.2.9, 1.2.3; LSA 2.2.1.5.5, 2.2.1.10, 2.2.1.13, 2.2.1.16 & 2.2.1.17			A Code II/ 2.2.1.14, 2.2.1.5.3 &	
	Test Procedure		Acceptance Criteria	a	Sign	nificant Test Data	
.1     Approval markings     be       .2     Retro-reflective tape     be		be cle Admir operat the ap be fitte with a resolu the ar	herently buoyant lifejackets should: e clearly marked with approval information including the dministration which approved it, date of manufacturer any berational restrictions, and (if an infant or child lifejacket) e appropriate symbol according to resolution A.760(18). e fitted with approved patches of retro-reflective material ith a total area of at least 400 cm <sup>2</sup> according to solution A.658(16). In the case of a reversible lifejacket, e arrangement should be complied with no matter which		Passed		
.3	Lifejacket light	as hig	e lifejacket is put on. Such mater h on the lifejacket as possible. provision to be fitted with a light	iai snouid de placed	Passed	Failed	
.4	Donning and comfort	or is donne	constructed that it is capable of b clearly capable of being worn d incorrectly, it is not injurious to e comfortable to wear;	in one way and, if	Passed	_ Failed	
.5	Whistle		be fitted with a whistle firmly secured by lifejacket.		Passed	_ Failed	
.6	Colour of lifejacket		nternational or vivid reddish orar visible colour.	nge or a comparably	Passed	Failed	

.7 wearer	-	A lifejacket shall be provided with a releasable buoyant line or other means to secure it to a lifejacket worn by another person in the water. A lifejacket shall be provided with a suitable means to allow a rescuer to lift the wearer from the water into a survival craft or a rescue boat.	Passed	Failed
.8	Oversized lifejacket	If an adult lifejacket is not designed to fit persons weighing up to 140 kg and with a chest girth of up to 1,750 mm, suitable accessories shall be available to allow it to be secured to such persons.		Failed

Inherently buoyant lifejackets				Date: Surveyor: Organization:		me:
2.2.1.4 General data and s	pecifications		Regulation	s: LSA Code / M	SC.81(70)	
Construction Material:		Additional equipment	:		Donning instruc	tions:
Fabric produced by:		Retro reflective materia Type: Whistle: -			□ YES	□NO
Buoyant material produced by:		Туре:				
Туре:		Light (if fitted): Type:		□NO		
					Passed	Failed

Inherently buoyant lifejackets	Manufacturer: Model: Lot/Serial Number:			Date:         Time:           Surveyor:         Organization:		
2.2.1.5 Temperature cyclin	ng test		Regulation	s: LSA Code I/1.	2.2.2; MSC.81(70) 1/2.1	
Test Procedu	ire	Accept	ance Criteria		Significant 7	Test Data
A lifejacket should be subjected to a temperature cycling test of surrounding temperatures of -30°C and +65°C. These alternating cycles need not follow immediately after each other and the following procedure, repeated for a total of 10 cycles, is acceptable:		The lifejacket materia damage such as sh dissolution or changes	nrinking, cra	cking, swelling,	(See following page for test Passed	data) Failed
<ol> <li>an 8 h exposure at a minin +65°C to be completed in</li> </ol>						
<ol> <li>the specimens removed from the warm chamber that same day and left exposed under ordinary room conditions at a temperature of 20°C ± 3°C until the next day;</li> </ol>					Comments/Observations	
3. an 8 h exposure at a max of -30°C to be completed t						
<ol> <li>the specimen removed from that same day and let ordinary room conditions a 20°C ± 3°C until the next of</li> </ol>	ft exposed under at a temperature of					
The lifejacket should then be examined.	externally					

2.2.1.5	Temperature cycling test – Test of	lata Regu	lations: LSA Code I/1.2.2.2; MSC.81(7	ations: LSA Code I/1.2.2.2; MSC.81(70) 1/2.1			
	НОТ	CYCLE	COLL	) CYCLE			
Cycle 1	Date In: Time In: Temperature:°C	Date Out: Time Out: Duration: hours	_ Date In: Time In: Temperature:°C	Date Out:			
Cycle 2	Date In: Time In: Temperature:°C	Date Out: Time Out: Duration: hours	_ Date In: Time In: Temperature:°C	Date Out:			
Cycle 3	Date In: Time In: Temperature:°C	Date Out: Time Out: Duration: hours	_ Date In: Time In: Temperature:°C	Date Out: Time Out: Duration: hours			
Cycle 4	Date In: Time In: Temperature:°C	Date Out: Time Out: Duration: hours	_ Date In: Time In: Temperature:°C	Date Out:			
Cycle 5	Date In: Time In: Temperature:°C	Date Out: Time Out: Duration: hours	_ Date In: Time In: Temperature:°C	Date Out:			
Cycle 6	Date In: Time In: Temperature:°C	Date Out: Time Out: Duration: hours	_ Date In: Time In: Temperature:°C	Date Out:			
Cycle 7	Date In: Time In: Temperature:°C	Date Out: Time Out: Duration: hours	_ Date In: Time In:°C	Date Out: Time Out: Duration: hours			
Cycle 8	Date In: Time In: Temperature:°C	Date Out: Time Out: Duration: hours	_ Date In: Time In: Temperature:°C	Date Out: Time Out: Duration: hours			
Cycle 9	Date In: Time In: Temperature:°C	Date Out: Time Out: Duration: hours	_ Date In: Time In: Temperature:°C	Date Out: Time Out: Duration: hours			
Cycle 10	Date In: Time In: Temperature:°C	Date Out: Time Out: Duration: hours	_ Date In: Time In: Temperature:°C	Date Out:			

Inherently buoyant lifejackets	Manufacturer: Model: Lot/Serial Number:			Surveyor:			
2.2.1.6 Buoyancy test			Regulation	s: LSA Code II	/2.2.1.11; MSC.8	31(70) 1/2.2	
Test Proced	ure	Accepta	ance Criteria			Significant Test	Data
The two lifejackets subjecter cycling and the hot and cold in then be used for the buoyand The buoyancy of the two lifer measured before and after submersion to just below the water. The test to be repeater as necessary to perform the te compartment in the uninflated	figure field for the set should be for 24 h complete for surface in fresh fresh ed as many times for surface with each	The difference betwee the final buoyancy sho initial buoyancy.			Start (time): Temperature: Finish (time): Temperature: Buoyancy 1	Buoyancy 2 kg Fai	%difference % led

Inherently buoyant lifejackets	Model:	r:	<u></u>	Surveyor:		e:			
2.2.1.7 Fire test	4	Regulations: LSA Code II/2.2.1.1; MSC.81(70) 1/1.5, 2.3							
Test Procedu	re	Accept	ance Criteria		Sigi	nificant Test Data			
A test pan 30 cm x 35 cm : placed in an essentially draug should be put into the bottom depth of 1 cm followed by eno a minimum total depth of 4 cm then be ignited and allowed to The lifejacket should then be i flames in an upright, forw position, with the bottom of th above the top edge of the te duration of exposure to the fla	than 6s or continue melting after being removed from the flames.			Passed Failed					
2.2.1.8 Oil resistance test			Regulations	s: LSA Code II/1	.2.2; MSC.81(70) 1/1.4				
Test Procedu	re	Accept	ance Criteria		Sigi	nificant Test Data			
The lifejacket should be immersed horizontally for a period of 24 h under 100 mm head of diesel oil at normal room temperature.		After this test, the lifejacket should show no signs of damage such as shrinking, cracking, swelling, dissolution or change of mechanical qualities.		Passed					

Inherently buoyant lifejackets	Manufacturer: Model: Lot/Serial Number:		Surveyor:							
2.2.1.9 Tests of component	s other than buoyancy materials (	Continued)	Regulations: LSA Code I/1.2.2; MSC.81(70) 1/2.4							
Test Procedure	Acceptance Criteria		Significant Test Data							
All the materials, other buoyancy materials, used in construction of the lifeja including the cover, tapes, see and closures should be tester establish that they are: .1 rot-proof, .2 colour-fast and .3 resistant to deterioration to exposure to sunlight and that they are not unduly affected by .4 seawater, .5 oil or .6 fungal attack	acket International Organization for Standardization, in particular publication ISO 12402-7:2006 Personal Flotation Devices – Part 7: Materials and Components – Safety Requirements and Test Methods (to be published)	Tensile stren (new materia Tear strengt .1 Tensi Metho (N/25 (% re .2 Resis Cycle .3 Tensi Weat (N/25 (% re Acceptable: .4 Tensi Metho (N/25	Cover:       Tapes:       Seams:       Additional equipment:         ngth as received       all       (N/25 mm width) :							

.5       Tensile strength after exposure to oil         Type of oil:       Duration:         (N/25 mm width)
.6 Tensile strength after fungal attach. Type of oil: Duration: (N/25 mm width)
Acceptable: 4) □ Yes □ No 5) □ Yes □ No 6) □ Yes □ No

Inherently buoyant lifejackets	Manufacturer: Model: Lot/Serial Number:			Date:          Time:            Surveyor:          Organization:				
2.2.1.10 Strength tests - Bo	dy or lifting loop strength	tests	Regulations	s: LSA Code I/1.	2.2; MSC.81(70) 1/	2.5.1		
Test Procedure		Ac	ceptance Crit	eria	S	ignificant Test [	Data	
The lifejacket should be imme of 2 min. It should then be re- closed in the same manner person. A force of not less that case of a child or infant-size lift for 30 min to the part of the lifej body of the wearer (see figur lifting loop of the lifejacket.	moved from the water and as when it is worn by a an 3,200 N (2,400 N in the fejacket) should be applied jacket that secures it to the e 1) and separately to the e 1) and separately to the	result of this te	st. uld be repe	damaged as a ated for each	Force applied: _ Time: _ Slippage: Closure(s) tested:	acket lifting loop	test arrangement if	

Inherently buoyant       Manufacturer:         Iifejackets       Model:         Lot/Serial Number:       Model:								Surv	eyor:			Time:
2.2.1.11 Strength tests - Sho	oulder lift test					Regu	ulation	s: LS/	A Cod	e I/1.2.	2; MSC	2.81(70) 1/2.5.2
Test Procedure	•				Acc	eptanc	e Crite	eria				Significant Test Data
Vest-type lifejacket Yoke of	hould then be losed on a form ame manner as A force of not case of a child d be applied for d the shoulder gure 3).	Size Adult Child Infant	A 610 508 305	B 114 63,5	C 76,2 38,1	or Beyent reference D 127 102 63,5 Densio	E 381 279 191 ns in n	F 432 330 203 mm	orm du	H 25,4 22,2 19,1	J 178 152 76,2	Force applied: Shoulder tested: Test result: Passed Failed Comments/Observations

Inherently buoyant lifejackets	Manufacturer: Model: Lot/Serial Number:			Date:            Surveyor:            Organization:					
2.2.1.12 Tests for lifejack temperature cycling	ket buoyancy mat	erial – Stability under	Regula	ations:	LSA Code I/1.2.2; MSC.8	1(70) 1/2.6	(2.6.1-2.	.6.4)	
Test Procedur	e	Acceptance Criteria			Sig	nificant Test	Data		
The following tests should be of specimens of each lifejacket to A further four specimens of buoyancy material should be tensile strength test in 2.2.1.14 The specimens should be at le and be of the same thickness lifejacket. The specimen should be dimension should be recorded the case of kapok, the entire life subjected to the test. The dim recorded at the beginning and Where multiple layers of mat achieve the total thickness lifejacket, the specimens so thinnest material used. ← Six specimens should temperature cycling as prescri	carried out on eight buoyancy material. of each lifejacket- e prepared for the 4. ast 300mm square ss as used in the labelled and the prior to the test. In ifejacket should be end of these tests. erials are used to desired for the hould be of the	The specimens should not s of internal and external char structure or of mechanical q	how any ige of	sign	Dimensions prior to test Specimen No. 1 Specimen No. 2 Specimen No. 3 Specimen No. 4 Specimen No. 5 Specimen No. 6 Dimensions after test Specimen No. 1 Specimen No. 2 Specimen No. 3 Specimen No. 4 Specimen No. 5 Specimen No. 6 Passed Specimen No.2 Specimen No.2 Specimen No.2 Specimen No.2 Specimen No.3	Length	Width		
↑ The dimensions of the s kapok) should be recorded at cycle. The specimens sho examined.	the end of the last				Specimen No.4 Specimen No.5 Specimen No.6 Mechanical qualities		and p	procedure	used:

2.2.1.12 Tests for lifejacket buoyancy mate temperature cycling	erial – Stability under F	Regulations:	s: LSA Code I/1.2.2; MSC.81(70) 1/2.6 (2.6.1-2.6.4)				
Test Procedure	Acceptance Criteria	a	Significant Test Data				
<ul> <li>→Two of the specimens should be cut open and should be carefully examined.</li> <li>↓ Four of the specimens should be used for compression and water absorption tests, two of which should be so tested after they have also been subjected to the diesel oil test as prescribed in 2.2.1.8.</li> </ul>	Acceptance Criteria	now any sign	Signific         ↑       Passed         →       Passed         ↓       Passed         Comments/Observations       (See following page for test of the second seco	Failed Failed Failed			

Inherenti lifejacket	ly buoyant ts	Model:	nber:		Date: Surveyor: Organization:						
2.2.1.12	Temperature cy	cling test – Test d	ata	Regula	ations: LSA Code I/1.2						
		НОТ	CYCLE	•	COLD CYCLE						
Cycle 1	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours			
Cycle 2	Date In: Time In: Temperature:		Date Out: Time Out: Duration:	hours	Date In: Time In: Temperature:		Date Out: Time Out: Duration:	hours			
Cycle 3	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours			
Cycle 4	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours			
Cycle 5	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours			
Cycle 6	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours			
Cycle 7	Date In: Time In: Temperature:	°C	Time Out: Duration:	hours	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours			
Cycle 8	Date In: Time In: Temperature:	°C	Date Out:            Time Out:            Duration:	hours	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours			
Cycle 9	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours			
Cycle 10	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	hours			

Inherently buoyant lifejackets	Manufacturer: Model: Lot/Serial Numb	er:	Date:            Surveyor:            Organization:					
2.2.1.13 Tests for lifejacket k	buoyancy material	I – Compression and water absorption test Regulat			tions: LSA Code I/1.2.2; MSC.81(70) 1/2.6 (2.6.5-2.6.7)			
Test Procedur	e	Acceptance Criteria				Significant T	est Data	
The following tests should be specimens of each type of life material. The tests should b fresh water and the specin immersed for a period of sev	ejacket buoyancy e carried out in nens should be	The specimens should show no sig such as shrinking, cracking, swelling, change of mechanical qualities. The results should state the buoyar	<u>Test results</u> :	(As supplied s After 1 day		ays %diff.		
1.25 m head of water. The tests should be carried o	ut:	which each specimen exerts when submerged in water after 1 and 7 days immersion.			Test results: (Specimens subjected to temperature cycling)			temperature
.1 on two specimens as si	upplied;				Specimen No.			
.2 on two specimens window subjected to the temper prescribed in 2.2.1.12;	rature cycling as				Passed			N %
.3 on two specimens w	hich have been				Passed		Failed _	,
subjected to the tempe prescribed in 2.2.1.12 diesel oil test as prescri	rature cycling as followed by the				<u>Test results</u> :	(Specimens si cycling and		
					Specimen No.	5 <u> </u> N	I	N %
					Passed		Failed _	
					Specimen No.	6N	I	N %
					Passed		Failed _	
					Comments/Obs	servations		

Inherently buoyant lifejackets	Manufacturer: Model: Lot/Serial Number:	Surveyor:
2.2.1.14 Tests for lifejacke	et buoyancy material – Tensile strength test	t Regulations: LSA Code I/1.2.2; MSC.81(70) 1/ 2.6.8
Test Procedure	Acceptance Criteria	Significant Test Data
Four specimens of each life buoyancy material should be to The tensile strength at break material should be measured and after the combined ex described in 2.6.6.3. of MSC.8	standard, ISO 12402-7:2006 F flotation devices – Part 7: Materi components – Safety requirements methods, acceptable to the Organiza	Personal       Min. Tensile Strength =140kPa (?)         rials and       Specimen No 1 Yes No         and test       Failed         ation, the       Specimen No 2 Yes No         m tensile       Specimen No 2 Yes No         re, which       Failed         han 25%       Test Results: (Specimens after combined exposure)         Reduction in Tensile Strength <25%

Inher lifeja	ently buoyant ckets	Manufacturer: Model: Lot/Serial Number:	Surveyor:	Date:         Time:           Surveyor:            Organization:						
2.2.1	.15 Donning Test			Regulations: LSA Code II/2.2.1.5; MSC.81(70) 1/2.7.1 to 2.7.4.3						
	Tes	st Procedure	Acc	eptance Criteria	Significant Test Data					
ofter the f	n in adverse conditions following features and t	rrect donning by uninitiated persons, , lifejackets should be examined for rested as follows:	performance simple and	necessary for proper e should be few and l provide quick and osure that does not						
	t subjects		require tying							
pers sele	ons who are complete	d out with at least 12 able-bodied by unfamiliar with the lifejacket and heights and weights in table 2.1 and	various size and heavily should be o	kets should readily fit s of adults, both lightly / clad. All lifejackets capable of being worn or clearly in only one						
.1	small test subjects ne	ed not be adults;	way.							
.2		nore than 1/2 of test subjects should at least 1 per height category but eight;								
.3	weight group and one	ould be from the lowest and highest e female should be from the lowest e female should be more than 80 kg								
.4 at least one subject should be selected from each cell containing a "1"; and										
.5 enough additional subjects should be selected from cells containing a "X" to total the required number of test subjects, with no more than one subject per cell. A uniform distribution across weight ranges should be maintained.										

2.2.1.15 Donning Test								Regulations: LSA Code II/2.2.1.5; MSC.81(70) 1/2.7.1 to 2.7.4.3							
		Test Pro	cedure			Ac	ceptance C	Significant Test Data							
				Weight	range - kg										
Height range (m)	40 -43	43 – 60	60 -70	70 – 80	80 - 100	100 – 110	110 – 120	> 120	Comments/Observations:						
< 1,5	1	Х	Х	Х											
1,5 – 1,6	Х	1	1	Х	Х										
1,6 – 1,7		Х	Х	1	Х	Х									
1,7 -,1,8			Х	Х	1	Х	Х	Х							
1,8 – 1,9			Х	Х	Х	1	1	Х							
> 1,9					Х	Х	Х	1							
Т	able – Tes	t subject sel	ection for a	dult lifejacke	ets				Subj	SEX (M/F)	HEIGHT (m)	WEIGHT (kg)	Good Swimmer? (Yes/No)		
									1						
									2						
									3						
									4						
									5						
									6						
									7						
									8						
									9						
									10						
									11						
									12						
									14			I	L		

2.2.1.15 Donning Test (Continued)	Regulations: LSA Code II/2.2.1.5; MSC	.81(70) 1/2.7.1 to 2.7.4.3
Test Procedure	Acceptance Criteria	Significant Test Data
<ul> <li>Clothing</li> <li>Each test subject should be tested wearing the clothing specified for the test and appropriate to their size, as follows:</li> <li>.1 <i>Normal clothing</i> means normal indoor clothing, which would not normally interfere with the donning of a lifejacket;</li> <li>.2 <i>Heavy-weather clothing</i> means the attire appropriate for a hostile environment, including a hooded arctic parka and warm cotton gloves.</li> </ul>		See following page for test data
Each test should be timed from when the order is given until the test subject declares that donning is complete.	For assessment purposes donning is considered complete when the subject has donned and securely adjusted all methods of securing the lifejacket to the extent needed to meet the in -water performance requirements, including inflation, if needed.	Total number of aubicates
Test without instruction The test subjects may be tested individually or as a group. Wearing normal clothing, the first attempt should be with no assistance, guidance or prior demonstration. The lifejacket, with closures in the stored condition, should be placed on the floor, face up, in front of the test subject. The instruction provided should be identical for each subject and should be equivalent to the following: "PLEASE DON THIS LIFEJACKET AS QUICKLY AS POSSIBLE AND ADJUST IT TO A SNUG FIT SO YOU CAN ABANDON SHIP."	The lifejacket should be capable of being donned by at least 75 % of the subjects, and within 1 minute. If a subject dons the lifejacket substantially correctly but fails to secure and/or adjust all closures, the jump test in 2.8.8 of MSC.81(70) and in-water performance tests in 2.8.5 of MSC.81(70) and 2.8.6 of MSC.81(70) should be performed with the lifejacket as donned to establish whether the performance is acceptable and the donning is successful.	Total number of subjects: # of subjects successful: # of subjects successful: Pass / Fail

2.2.1.15 Donning Test (Continued)		Regulations: LSA Code II/2.2.1.5; MSC	.81(70) 1/2.7.1 to 2.7.4.3		
Test Procedure		Acceptance Criteria	Significant Test Data		
Test after instruction					
For each subject whose first attempt exceeds 1 min or is incomplete, after demonstration or instruction to familiarize the subject with the donning procedure, the test subject should then don the lifejacket without assistance while wearing normal clothing, using the same instruction and timing method as above.	within	subject should correctly don the lifejacket a period of 1 min.	t Pass / Fail		
Heavy-weather clothing test					
Each subject should then don the lifejacket without assistance while wearing heavy-weather clothing, using the same instruction and timing method as above.		subject should don the lifejacket correctly a period of 1 min.	Pass / Fail		

Inherently b lifejackets	ouoyant	Manufacturer: Model: Lot/Serial Number:				Date:          Surveyor:          Organization:				
2.2.1.15 D	onning Test – Te					ations: LSA Code	e II/2.2.1.5; MSC.81(70)	1/2.7.1 to 2.7.4.3		
	Test without instruction						Test after instruction	Heavy weather clothing test		
Subject	Donning time (se	ec) All closures (Y/N)	secured?	Jump test (P/F	) In-	water test (P/F)	Donning Time (sec)	Donning time (sec)		
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
Comments/0	Observations:									

Inherently buoyant lifejackets	Manufacturer: Model: Lot/Serial Number:			Date: Surveyor Organiza	: tion:		Time	:		
2.2.1.16 Water performance	tests- Preparation for water pe	erformance tests			LSA Code II/2.2.1.2.5 & 2.2.1.3 – 2.2.1.4; 2.8 to 2.8.4, Annex 1, MSC.1/Circ.1470					
Test Pr	rocedure	Acceptance	e Criter	ia			Significa	ant Test Dat	а	
the lifejacket to assist a hi exhausted or unconscious stat does not unduly restrict moved The in-water performance of comparison to the performan reference lifejacket, i.e. Refe specified in appendices 1 to 3 All tests should be carried conditions. Each test for a relevant RTD should be condu These tests should be carried mentioned in paragraph 2.2.1. be used, since the ability to otherwise obtained. The test subjects should wear Each test subject should be tests in 2.2.1.17 and 2.2.1.18 regarding relaxing and exhalin The test subjects should don only the instructions provided taking measurements, the prop	f a lifejacket is evaluated by ice of a suitable size standard erence Test Device (RTD) as out in fresh water under still a candidate lifejacket and the ucted on the same day. out with at least 12 persons as 15. Only good swimmers should b relax in the water is rarely ronly swimming costumes.	The RTD should and calibrated MSC.81(70), an validated act MSC.1/Circ.1470.	be cor accor inex cording	nstructed ding to 1, and	Validat Calibra Test si	ted by: _ ated by: _ ubjects s	ed by:	da da da 2.2.1.15?	ate: te:	

2.2.1.16 Water performance tests- Preparation for water pe	Regulations: MSC.81(70) 1/		II/2.2.1.2.9 Nex 1, MSC.2			-	2.2.1.4;	
Test Procedure	Acceptance	Criteria		Significa	nt Test	t Data		
After entering the water, care should be taken to ensure that there is no significant amount of air unintentionally trapped in the lifejacket or swimming costume.			11 12					

	/anufacturer: /odel: .ot/Serial Number:					Date: Surve Orga	eyor: nizatio	n:			Time:					
2.2.1.17 Water performance tes				Organization:            Regulations: LSA Code II/ 2.2.1.6.2; MSC.81(70)1/ 2.8.5												
Test Procedure	Acceptance Criteria							Signifi	icant Te	st Dat	a					
Each test subject should assum a prone, face down position in th	e the mouth of the test	Quiki		CAN	DIDA	TE DE\ TRI	/ICE TI AL	ME (se	c)		REF	EREN	CE VE TRIA	ST TIME	E (sec)	
water, but with the head lifted u so the mouth is out of the wate The subject's feet should b	subject comes clear of	Subj	#1	#2	#3	#4	#5	#6	AVG *	#1	#2	#3	#4	#5	#6	AV G *
supported, shoulder width apar with the heels just below th	t, 1/10 of a second, starting															
surface of the water.	feet are released.	2 3														
After assuming a starting positio with the legs straight and arm	s conducted a total of six times, and the highest and lowest times	4														
along the sides, the subject should then be instructed in the following sequence to allow the		5 6														
body to gradually and completed relax into a natural floatin	y should then be conducted	7														
posture: allow the arms an shoulders to relax; allow the leg	d RTD and the highest and s lowest times discarded.	8 9														
to relax; and then the spine an neck, letting the head fall into th	d e	10														
water while breathing ou normally.	turn time for all subjects in	11 12														
During the relaxation phase, th subject should be maintained in		12	Ave	age c	andic	ate tur	n time	(sec):			Av	erage F	RTD tu	ırn time	(sec):	
stable face down position.	plus 1 s.			# of	cand	idate n	o turns	s (NT):		# of RTD no turns (NT):						
Immediately after the subject ha relaxed, with the face in the wate simulating a state of utte exhaustion, the subject's fee should be released.	, if any, should not exceed the number in the RTD.					ne <u>&lt;</u> A\	/érage l	RTD tui ) no turr	rn time R าร (NT) :	RTD +1	s Pas Pa	ssed issed		_ Faile _ Faile	d ed	

Inherently buoyant lifejackets	Manufacturer: Model: Lot/Serial Number:				Date: Survey Organ	yor: ization:	Т	ime:			
2.2.1.18 Water performanc					ns: LSA Code II/ 2.2.1.4; MSC.81(70)						
Test Proced	lure	Aco	ceptanc	e Criteria	Significant Test Data						
At the conclusion of the rig making any adjustments in		Freebo	ard (mm)	Facep	olane (deg)	Torso ang	le (deg)	Light			
position, the following meas made with the subject floating position of static balance		CLJ	RTD	CLJ	RTD	CLJ	RTD	Visible?			
preceding tests.		1									
		2									
		3									
		5									
		6									
		7			-						
		8									
		9			-						
		11									
		12									
		Avg							XXXXX		
	CLJ – Candio RTD – Refero										

2.2.1.18 Water performance tests-Static balance	e measurements	Regulations: LSA	Code II/ 2.2.1.4; MSC.81(70) 1/ 2.8.6 and 2.8.7
Test Procedure	Acceptano	ce Criteria	Significant Test Data
1. Freeboard – The distance measured perpendicularly from the surface of the water to the lowest point of the subject's mouth where respiration may be impeded, if the mouth were not held shut. The lowest side of the mouth should be measured if the left and right sides are not level.	Freeboard: the aver the subjects should average for the RTE	not be less than the	Average freeboard, all subjects <u>&gt;</u> average freeboard for RTD minus 10 mm Passed Failed
2. Faceplane angle – The angle, relative to the surface of the water, of the plane formed between the most forward part of the forehead and chin.	Faceplane Angles: subjects' faceplane not less than the ar minus 10º.	angles should be	Average faceplane angle, all subjects <u>&gt;</u> average for RTD minus 10° Passed Failed
3. Torso angle – The angle, relative to vertical, of the line formed by the forward points of the shoulder and hipbone (ilium portion of the pelvis).		e average of all gles should be not erage for the RTD	Average torso angles, all subjects ≥ average for RTD minus 10° Passed Failed
<ol> <li>List angle – The angle relative to the surface of the water and a line between the left and right shoulder or a line through the ears if only the head is tilted.</li> </ol>		hould permit it to be at a segment of the	Does the location of the lifejacket light permit it to be visible over as great a segment of the upper hemisphere as practicable? Comments/Observations

Inherently buoyant lifejackets	Model:	: mber:		Date:          Surveyor:          Organization:						
2.2.1.19 Water performance	ce tests – Jum	p and drop tests	Regulatio	egulations: LSA Code II/ 2.2.1.5.6; MSC.81(70)1/2.8.8 and 2.8.9						
Test Procedure		Acceptance Criteria		Significant Test Data						
Without readjusting the lifejac subject should jump vertically i feet first, from a height of at le holding the arms over the li- entering the water, the test s relax to simulate a state of utter The freeboard to the mout recorded after the test subject of The test should be repeated from at least 4.5 m. When jumping into the water, the should hold on to the lifejacker entry to avoid possible injury. If the water, the test subject sh simulate a state of utter exha freeboard to the mouth should after the test subject comes to The lifejacket and its attachme examined for any damage. believed likely from any jump or lifejacket should be rejected delayed until test from a lower additional precautions demons risk from the required test is ac	into the water, east 1m while head. Upon subject should er exhaustion. h should be comes to rest. om a height of he test subject t during water Upon entering hould relax to austion. The d be recorded rest. ents should be If injury is r drop test, the I or the test height or with strate that the cceptable.	<ul> <li>Following the jump and drop test the lifejacket should:</li> <li>.1 surface the test subject in a face up position with an average freeboard for all the subjects of not less than the average determined for the RTD after the turning test in accordance with 2.2.1.18 minus 15 mm;</li> <li>.2 not be dislodged or cause harm to the test subject;</li> <li>.3 have no damage that would affect its in-wate performance or buoyance and</li> <li>.4 have no damage to its attachments.</li> </ul>	1 m Jur Average (B) - (A) Did the Yes / N Did the buoyan Did the 4.5 m J Average (B) - (A) Did the buoyan Did the 0 - (A) Did the buoyan Did the Did the 0 - (A) Did the (A) Did the 0 - (A) Did the (A)	ump         ige freeboard, all subjects: mm (A)         ige freeboard for RTD (from 2.2.1.18): mm (B)         (A)= ≤ 15 mm Pass / Fail         ie lifejacket become dislodged or cause harm to the test subject?: No         ie lifejacket have damage that would affect its in-water performance or ance?: Yes / No         ie lifejacket have damage to its attachments?: Yes / No         jump         ige freeboard, all subjects: mm (A)         ige freeboard for RTD (from 2.2.1.18) : mm (B)         (A)= ≤ 15 mm Pass / Fail         ie lifejacket become dislodged or cause harm to the test subject?: Yes /						
NOTE: JUMP TESTS <u>SHOU</u> REPEATED IN THE RTD.	<u>ILD NOT</u> BE			e lifejacket have damage to its attachments?: Yes / No nents/Observations						

Inherently lifejackets	y buoyant s	Manufacturer Model: Lot/Serial Nur	nber:		Date: Surveyor: Organization:	Time:					
2.2.1.19	Water performance				Regulations: LSA Code II/ 2.2.1.5.6; MSC.81(70)1/2.8.8 and 2.8.9						
TEST DAT	A SHEET (1 m Jum	p)									
Subj	Subject surfaced faceup? (Yes/No)	Freeboard (mm)	Lifejacket became dislodged (Yes/No)	Subject wa harmed? (Yes/No)	Damage to Comments/ Obs lifejacket or attachments (Yes/No)	servations					
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											

Inherently lifejackets	buoyant	Manufacturer: _ Model: Lot/Serial Numb	per:			Surveyor:	Time:				
2.2.1.19	Water performan	ce tests – Jump a	and drop tests (Co	ontinued)	Regulatio	egulations: LSA Code II/ 2.2.1.5.6; MSC.81(70)1/2.8.8 and 2.8.9					
TEST DATA	A SHEET (4.5 m Ju	mp)									
Subj	Subject surfaced faceup? (Yes/No)	Freeboard (mm)	Lifejacket became dislodged (Yes/No)	Subject was harmed? (Yes/No)	lifeja attao	nage to acket or chments s/No)	Comments/ Observations				
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											

Inherently buoyant lifejackets	Model:	urer: Number:		Surveyo	r:							
2.2.1.20 Water performanc	e tests – Sta	ability test	Regulations: LSA Code II/2.2.1.4; MSC.81(70) 1/2.8.10									
Test Procedure		Acceptance Criteria			l							
The test subject should attain a relax face-up position of static balance in t water. The subject should be instruct to assume a foetal position as follow		The candidate lifejacket should not roll any subject face down in the water.			the subj down?				the subj ble face (Ye			
ace your elbows against your sides, (a) + (b) = 0 ur hands on your stomach, under the		Can	didate	R	TD	Can	didate	F	RTD			
lifejacket if possible, and knees up as close to you possible." The subject should be rotate around the longitudinal axis by grasping the subject's sl upper areas of the lifejacket subject attains a $55 \pm 5$ degr subject should then be rele subject should return to a sta position.	bring your r chest as d clockwise of the torso houlders or so that the ee list. The eased. The	The number of subjects who are returned to the stable face- up foetal position in the candidate lifejacket should be at least equal to the number who are returned to the stable face-up foetal position in the RTD. (e) $\leq$ (g) And (f) $\leq$ (h)	Subj           1           2           3           4           5           6           7	CW	CCW					CW	CCW	
The test should then be con the subject rotated counter-c The entire test should then b	clockwise.	8 9 10										
with the test subject wearing	the RTD.		11									
			12									
			Total "No"	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	

Inherently buoyant lifejackets	Model:	er:		Surveyo	r:		Time:			
2.2.1.21 Water performance test	tests -swim	ming and water emergence	Regulations				31(70) 1/2.8.11			
Test Procedure Acceptance			Criteria		Significant Test Data					
All test subjects, without w lifejacket, should attempt to and board a liferaft or rigid pl its surface 300 mm above surface. All test subjects who s complete this task should perfe wearing the lifejacket.	swim 25 m latform with the water successfully	At least two-thirds of the accomplish the task without also be able to perform it with (b) ≥ 2/3 (a)	the lifejacke	t should	Liferat	ft or Rigid Pla		n successfully board liferaft		
					1			(b) (a)		
					2			Passed / Failed		
					4					
					5 6					
					7					
					8			-		
					9 10					
					11					
					12					
					Total Comm	(a) ents/Observ	(b) ations			

Inherently buoyant lifejackets	Manufactur Model: Lot/Serial N									[ 5 (	Date: Surve Drgan	yor: iizatio	on:		Tin	ne:			
2.2.1.22 Infant and children'	s lifejacket	- Test sı	ıbjec	ts se	electi	on	I	Regu	latio	ns:	LSA	Code	e II/2.2	.1.8; MSC	C.81(70)	1/2.9 – 2.9	.1		
Test Procedure		Acceptance Criteria									Significant Test Data								
As far as possible, similar tes adult tests) should be ap approval of lifejackets sui	plied for	Heigh	Та				Weigh	t Rang	ge (kg)	)	bjects	s		Size: Ir	nfant / Cl	fant / Child			
infants and children.		t range	14 -	17 -	20 -	22 -	25 -	28 -	30 -	33 -	-	38 -	-						
For child-size lifejackets, tests should be carried out with at least 9 able- bodied persons, and for infant-size lifejackets, tests should be carried out with at least 5 able-bodied persons.		(cm) 79-	17	20 X	22	25	28	30	33	36	38	41	43	Subj	SEX (M/F)	HEIGHT (m)	WEIGHT (kg)	Manikin? (Yes*/No)	
		105		^										1					
		90- 118		х	1									2					
		102- 130				1	х							3					
All test subjects should be according to table 2.2 or tab follows:		130 112- 135					х	1						4 5					
.1 One subject should be sel each cell containing a "1".	lected per	122- 150							1	1	x			6					
C		145- 165									х	1	1	7					
.2 Remaining subjects sh selected from cells conta														8					
"X", without repeating a ce	ell.													9					
.3 At least 40% of the subject																			
be male and at least 40%	temale.																		
.4 Devices for infants should on infants as small as 6 kg														*Manikir	n descrip	tion:			

2.2.1.22 Infant and children's lifejacket	- Test subjects sele	ction	Regulations: LSA Code II/2.2.1.8; MSC.81(70) 1/2.9 – 2.9.1								
Test Procedure	est Procedure Accepta					Significant Test Data					
.5 A manikin or manikins may be substituted for test subjects if the	Table 2.3 -	Selection of	of Infant T	fest Subjec							
manikin or manikins have been	Height range		Weight F	Range (kg)							
demonstrated to provide representative results compared to	(cm)	Less the	an 11	11-14	14-17						
human subjects.	Less than 83	1		Х							
	79-105	х		1	1						
	90-118				Х						

Inherently buoyant lifejackets	Lot/Serial Number:				Date: Time: Surveyor: Organization:						
	dren's lifejacket – ance tests – Righting test		Regulations: LSA Code II/ 2.2.1.8; MSC.81(70)1/ 2.9.2-2.9.3, Annex 2, Annex								
Test Proc	cedure	A	cceptance Crit	teria	Significant tes	t data					
This portion of the test is inten of the lifejacket to assist a he exhausted or unconscious si lifejacket does not unduly rest	elpless person or one in an tate and to show that the	calibrated	according	constructed and to resolution applicable to the	RTD Size: Infant / Child RTD Constructed by:	date:					
The in-water performance of comparison to the perform standard reference lifejacket, (RTD) as specified in appendi	ance of a suitable size i.e. Reference Test Device				Validated by:						
All tests should be carried ou conditions. Each test for a c relevant RTD should be condu	andidate lifejacket and the										
The tests may be modified for 12 years of age who are not o to ensure their safety and coo	comfortable in water, so as										
Prior to taking measurement and fastening of the RTD o checked and corrected as neo	on the subject should be										
After entering the water, care that there is no significant an trapped in the lifejacket or swi	nount of air unintentionally										

initerentity subjunt	Manufacturer: Model: Lot/Serial Number:						Date:          Surveyor:          Organization:									
2.2.1.23 Infant and children's Righting test (Contin	lifejacket – Water performa															
Test Procedure	Acceptance Criteria	Acceptance Criteria Significant Test Data														
Each test subject should assum a prone, face down position in th	the mouth of the test subject comes clear of the water should be recorded to the nearest 1/10 of a second, starting from when the subject's feet are	Subj		CAN	DIDA	TE DEN TRI		ME (se	c)		RE	FERE		EST TII IAL	/IE (sec	)
water, but with the head lifted u so the mouth is out of the water		Subj	#1	#2	#3	#4	#5	#6	AVG *	#1	#2	#3	#4	#5	#6	AVG *
The subject's feet should be supported, shoulder width apar		1														<b></b>
with the heels just below the		2														<b></b>
After assuming a starting position with the legs straight and arms The te		3														<u> </u>
	1	4														<b></b>
		5														ļ
along the sides, the subject should then be instructed in the	conducted a total of six times, and the highest	6														
following sequence to allow the	and lowest times	7														
body to gradually and completel relax into a natural floating		8														
posture: allow the arms an		9														
shoulders to relax; allow the leg	times in the RTD and the															
to relax; and then the spine an neck, letting the head fall into the																
water while breathing ou																
normally.	Turning time: the		Aver	age ca	andid	ate tur	n time	(sec):			Ave	erage F	RTD tu	rn time	(sec):	
During the relaxation phase, the subject should be maintained in a	subjects in the candidate			# of	candi	date n	o turns	(NT):				# of	RTD n	o turns	(NT):	
stable face down position.	lifejacket should not exceed the average time in the RTD plus 1 s.	(* Delet					,	-								
		Averag	e cano	lidate	turn tir	ne <u>&lt;</u> A	verage	RTD tu	Irn time	RTD +	1s Pa	assed _		Fai	led	
# of candidate no turns (NT): ≤ # of RTD no turns (NT): Passed Failed								led								

2.2.1.23 Infant and children's lit Righting test (Continue		ance tests – Regulations: LSA Code II/ 2.2.1.8; MSC.81(70)1/ 2.9.2-2.9.3, Annex 2, Annex 3
Test Procedure	Acceptance Criteria	Significant Test Data
Immediately after the subject has relaxed, with the face in the water, simulating a state of utter exhaustion, the subject's feet should be released.	The number of "no- turns", if any, should not exceed the number in the RTD.	

Inherently buoyant lifejackets	Manufacturer: Model: Lot/Serial Number:		· · · · · · ·		Surveyor: _	n:		ne:				
2.2.1.24 Infant and children' – Static balance		formance test	nance tests Regulations: LSA Code II/ 2.2.1.8; MSC.81(70)1/ 2.8.6, 2.9.2-2.9.3, Annex 2 & 3									
Test Proce	dure				Sig	nificant Tes	t Data					
At the conclusion of the righting tests, without making any adjustments in body or lifejacket position, the following measurements should be made with the		F	reeboa	ard (mm)	Facepla	ne (deg)	Torso an	gle (deg)	Light			
subject floating in the relaxed f balance resulting from the prec	ace-up position of static	(	CLJ	RTD	CLJ	RTD	CLJ	RTD	Visible?			
<b>c</b> .												
	fant lifejackets should meet the turning time and eeboard requirements, however, the requirements for											
torso angle, faceplane and mo necessary in order to:	obility may be relaxed if	3										
-		4										
.1 contribute to the rescue caretaker;	e of the infant by a	5								_		
		6										
.2 allow the infant to be faste contribute to keeping the		7										
caretaker;		8										
.3 keep the infant dry, with free	e respiratory passages:	9										
.4 protect the infant against l the evacuation; and	bumps and jolts during											
.5 allow a caretaker to monito by the infant.	Avg							XXXXX				
-	CLJ – Candidate Lifejacket RTD – Reference Test Device											

Inherently buoyant       Manufacturer:				Surv	te: Time: rveyor: ganization:				
2.2.1.24 Infant and children's Static balance mea			Regulatio 3	ns: L	LSA Code II/ 2.2.1.8; MSC.81(70)1/ 2.8.6, 2.9.2-2.9.3, Annex 2 &				
Test Procedure	1	Acceptance Crite	ria		Significant Test Data				
<ol> <li>Freeboard – The distar perpendicularly from the water to the lowest point of mouth where respiration ma if the mouth were not held s side of the mouth should be</li> </ol>	surface of the of the subject's ay be impeded, hut. The lowest	Freeboard: the average freek subjects should not be less the for the RTD minus 10 mm							
<ul> <li>the left and right sides are in</li> <li>2. Faceplane angle – The are the surface of the water, formed between the most the forehead and chin.</li> </ul>	ngle, relative to , of the plane	Faceplane Angles: The a subjects' faceplane angles less than the average for the l	should be	not	Average faceptate angle, all subjects $\geq$ average for RTD fillings $10^{\circ}$				
<ol> <li>Torso angle – The ang vertical, of the line formed points of the shoulder and portion of the pelvis).</li> </ol>	by the forward	torso angles should be not less than the							
<ol> <li>List angle – The angle surface of the water and a li left and right shoulder or a l ears if only the head is tilter</li> </ol>	ne between the ine through the	Lifejacket light location: the lifejacket light should permit over as great a segment hemisphere as is practicable.	it to be vis of the up	ible	Does the location of the lifejacket light permit it to be visible over as great a segment of the upper hemisphere as practicable?				
					Comments/Observations:				

Inherently buoyant lifejackets	Manufacturer: _ Model: Lot/Serial Numl	Der:	Date:         Time:           Surveyor:            Organization:						
2.2.1.25 Children's lifejack test	ket – Water perfor	mance tests – Jump and drop	Regulations: LSA Code II/2.2.1.8, 2.2.1.5.6; MSC.81(70) 1/ 2.9, 2.8.8, 2.8.9						
Test Procedu	ire	Acceptance Criteria	Significant Test Data						
Without readjusting the lift subject should jump vertical feet first, from a height of holding the arms over the he the water, the test subject simulate a state of utter freeboard to the mouth sh after the test subject comes should be repeated from a 4.5m.	Illy into the water, at least 1m while ad. Upon entering t should relax to exhaustion. The ould be recorded to rest. The test	Five of the nine subjects should perform the jump and drop test. When conducting water performance tests under 2.8, infant and child-size lifejackets should meet the following requirements for their critical flotation stability characteristics.	1 m Jump Average freeboard, all subjects: mm (A) Average freeboard for RTD (from 2.2.18) : mm (B) (B) – (A)= $\leq$ 15 mm Pass / Fail Did the lifejacket become dislodged or cause harm to the test subject?:						
When jumping into the water should hold on to the lifeja entry to avoid possible inju the water, the test subject simulate a state of utter freeboard to the mouth sh after the test subject comes The lifejacket and its attack examined for any damage. I likely from any jump or drop should be rejected or the test from a lower height or precautions demonstrate that required test is acceptable.	cket during water ry. Upon entering t should relax to exhaustion. The ould be recorded to rest. ments should be lf injury is believed test, the lifejacket t delayed until test with additional	<ul> <li>Following the jump and drop test, the lifejacket should:</li> <li>.1 surface the test subject in a face up position with an average freeboard for all the subjects of not less than the average determined for the RTD after the turning test in accordance with 2.2.1.23 minus 15 mm;</li> <li>.2 not be dislodged or cause harm to the test subject;</li> </ul>	Did the lifejacket have damage that would affect its in-water performance or buoyance?: Yes / No Did the lifejacket have damage to its attachments?: Yes / No 4.5  m Jump Average freeboard, all subjects: mm (A) Average freeboard for RTD (from 2.2.18) : mm (B) (B) – (A)= ≤ 15 mm Pass / Fail Did the lifejacket become dislodged or cause harm to the test subject?: Yes / No						
<u>NOTE</u> : JUMP AND DROP T <u>NOT</u> BE REPEATED IN TH			Did the lifejacket have damage that would affect its in-water performance or buoyance?: Yes / No						

2.2.1.25 Children's lifejacket – Water perfor test	mance tests – Jump and drop	Regulations: LSA Code II/2.2.1.8, 2.2.1.5.6; MSC.81(70) 1/ 2.9, 2.8.8, 2.8.9
Test Procedure	Acceptance Criteria	Significant Test Data
Note: Water tests using children should avoid causing distress or risk to the child. Consideration should be taken of their age and ability.	<ul> <li>.3 have no damage that would affect its in-water performance or buoyance; and</li> <li>.4 have no damage to its attachments.</li> </ul>	Did the lifejacket have damage to its attachments?: Yes / No Comments/Observations

Inherently lifejackets	buoyant	Manufacturer: _ Model: Lot/Serial Num	ber:			Date: Surveyor: Organization:	Time:
Ju	hildren's lifejacket - ump and drop tests	- Water perforr					5.6; MSC.81(70)1/2.9, 2.8.8 and 2.8.9
TEST DATA	A SHEET (1 m Jump						
Subj	Subject surfaced faceup? (Yes/No)	Freeboard (mm)	Lifejacket became dislodged (Yes/No)	Subject was harmed? (Yes/No)	armed? attachments (Yes/I		Comments/ Observations
1							
2							
3							
4 5							
5							
	hildren's lifejacket - ump and drop tests		nance tests – R	egulations: LS	SA Co	de II/ 2.2.1.8, 2.2.1.	5.6; MSC.81(70)1/2.9, 2.8.8 and 2.8.9
TEST DATA	A SHEET (4.5 m Jur	ıp)					
Subj	Subject surfaced faceup? (Yes/No)	Freeboard (mm)	Lifejacket became dislodged (Yes/No)	Subject was harmed? (Yes/No)		age to lifejacket or hments (Yes/No)	Comments/ Observations
1							
2							
3							
4					ļ		
5							
					<u> </u>		

Inherently buoyant lifejackets	Manufact Model: Lot/Seria		Surveyo	or: ation:			Time:				
2.2.1.26 Infant and children Stability test	Regulations: LSA Code II/2.2.1.8, 2.2.1.4; MSC.81(70) 1/2.8.10, 2.9										
Test Procedure		Acceptance Criteria				Signi	ficant Te	est Data	1		
The test subject should attain a relaxed face-up position of static balance in the water. The subject should be instructed to assume a foetal position as follows:		The candidate lifejacket should not roll any subject face down in the water.			the subj down?(				the subj Ible face (Ye		
"place your elbows against y your hands on your stomach,		(a) + (b) = 0		Can	didate	F	RTD	Can	didate	F	RTD
lifejacket if possible, and t knees up as close to your	oring your	The number of subjects who are returned to the stable face-	Subj	CW	CCW	CW	CCW	CW	CCW	CW	CCW
possible."		up foetal position in the candidate lifejacket should be	2								
The subject should be rotated around the longitudinal axis o		at least equal to the number who are returned to the stable	3								
by grasping the subject's sh upper areas of the lifejacket s	so that the	face-up foetal position in the RTD.	4								
subject attains a 55 ± 5 degre subject should then be rele	ased. The	(e) ≤ (g)	5 6								
subject should return to a stat position.	ole face-up	And (f) ≤ (h)	7								
The test should then be cond		$(\cdot) = (\cdot)$	8								
the subject rotated counter-cl			9								
The entire test should then be repeated with the test subject wearing the RTD.											
			Total "No"	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Inherently buoyant lifejackets	Model:	er: lumber:		Date: Surveyor: Organization:	Time:		
2.2.1.27 Infant and children	's lifejacket	- Mobility test	Regulation	s: LSA Code II/2	.2.1.8; MSC.81(70) 1/2.9.2.5		
Test Procedure		Acceptanc	e Criteria		Significant Test Data		
To be considered in and out of Mobility of the subject both in the water should be given considetermining the acceptability for approval and should be comobility when wearing the size RTD when climbing out of going up and down stairs, pic article from the floor, and the from a cup.	and out of sideration in of a device ompared to appropriate of the water, cking up an	Assistance may be given to wearer mobility should not be than by the appropriate size F	reduced to an		Does the lifejacket provide for acceptable mobility of the test subjects both in and out of the water and is comparative to the mobility of wearing the RTD? YES NO Passed Failed Method of evaluation: Comments/Observations		

## 2.2.2 INFLATABLE LIFEJACKETS (ADULTS & CHILD) EVALUATION AND TEST REPORT

- 2.2.2.1 Submitted drawings, reports and documents
- 2.2.2.2 Quality assurance
- 2.2.2.3 Visual inspection
- 2.2.2.4 General data and specification
- 2.2.2.5 Temperature cycling test 2.2.2.5.1 Inflation system function 2.2.2.5.2 Test data
- 2.2.2.6 Buoyancy test
- 2.2.2.7 Fire test
- 2.2.2.8 Oil resistance test

#### 2.2.2.9 Test of materials for inflatable bladders, inflation systems and components

- 2.2.2.9.1 Coated fabrics test
- 2.2.2.9.2 Operating head load test
- 2.2.2.9.3 Pressure test
- 2.2.2.9.4 Compression test
- 2.2.2.9.5 Test of metallic components
- 2.2.2.9.6 Inadvertent inflation test
- 2.2.2.10 Strength tests Body or lifting loop strength test
- 2.2.2.11 Strength tests Shoulder lift test
- 2.2.2.12 Donning test (Uninflated situation)
- 2.2.2.13 Donning test (Inflated situation)
- 2.2.2.14 Water performance tests Preparation for water performance test
- 2.2.2.15 Water performance tests Righting test
- 2.2.2.16 Water performance tests Static balance measurements
- 2.2.2.17 Water performance tests Jump and drop test
- 2.2.2.18 Water performance tests Stability test
- 2.2.2.19 Water performance tests Swimming and water emergence test
- 2.2.2.20 Infant and children's lifejacket Test subjects
- 2.2.2.21 Infant and children's lifejacket Water performance tests Righting test
- 2.2.2.22 Infant and children's lifejacket Water performance tests Static balance measurements
- 2.2.2.23 Children's lifejacket Water performance tests Jump and drop test
- 2.2.2.24 Infant and children's lifejacket Water performance tests Stability test
- 2.2.2.25 Infant and children's lifejacket Mobility test

# 2.2.2 INFLATABLE LIFEJACKETS (ADULTS & CHILD) EVALUATION AND TEST REPORT

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Inflatable lifejackets (Adults & Child)	Manufacturer: Model: Lot/Serial Number:		Date:         Time:           Surveyor:			
	drawings, reports and		·····			
	arawings, reports and	Submitted drawings and docum	nents			
		·			Status	
Drawing No. Revision No. & date			Title of drawing			
	1	Submitted reports and docume	ents		Status	
Report/Document No.	Revision No. & date	Title	e of report / document			
		Maintenance Manual -				
		Operations Manual -				

Inflatable lifejackets (Adults & Child)	Manufacturer: Model: Lot/Serial Number:		_ Date: Time: _ Surveyor: _ Organization:					
2.2.2.2 Quality assurance		Regulations: - MSC.81(70) 2/1.1, 1.2						
of the International Convention amended, or the international inspected, representatives of inspections of manufacturers appliances and materials us approved prototype life-saving Manufacturers should be requi to ensure that life-saving appli as the prototype life-saving appli	a particular type are required by Chapter III on for the Safety of Life at Sea, 1974, as Life-Saving Appliance (LSA) Code to be the Administration should make random to ensure that the quality of life-saving ed comply with the specification of the appliance. ired to institute a quality control procedure fances are produced to the same standard pliance approved by the Administration and ion tests carried out in accordance with the	Quality Assurance         Standard Used:         Quality Assurance Procedure:         Quality Assurance Manual:         Description of System:						
Administration's instructions.		Quality Assu	surance System acceptable Yes/No					
		Comments/C	s/Observations					

Inflatable lifejackets (Adults & Child)	Manufacturer: Model: Lot/Serial Number:	Surveyor:	Time:				
2.2.2.3 Visual inspection		Regulations: LSA Code I/1.2.2 & II/2.2					
Test Procedure	Acceptanc	e Criteria	Significant Test Data				
1. Approval markings	Inflatable lifejackets should: be clearly marked with appro	val information including the	Passed	Failed			
	Administration which approved any operational restrictions	l it, date of manufacturer and					
2. Retro-reflective tape	be fitted with approved patche with a total area of at lea resolution A.658(16). In the ca the arrangement should be co way the lifejacket is put on. Su as high on the lifejacket as pos	ast 400 cm <sup>2</sup> according to ase of a reversible lifejacket, omplied with no matter which ich material should be placed	Passed	Failed			
3. Lifejacket light	have provision to be fitted with	a light.	Passed	Failed			
4. Donning and comfort	be so constructed that it is cap or is clearly capable of being w incorrectly, it is not injurious to comfortable to wear;	orn in one way and, if donned	Passed	Failed_			
5. Whistle	be fitted with a whistle firmly lifejacket.	secured by a lanyard to the	Passed	Failed			
6. Colour of lifejacket	be of international or vivid red highly visible colour	dish orange or a comparably	Passed	Failed			
			Passed	Failed			

7. Buoyant Line & Means to lift the wearer	A lifejacket shall be provided with a releasable buoyant line		
	or other means to secure it to a lifejacket worn by another		
	person in the water. A lifejacket shall be provided with a		
	suitable means to allow a rescuer to lift the wearer from the	Deeped	Failed
		Fasseu	
	water into a survival craft or rescue boat.		
8. Oversized lifejacket			
	If an adult life jacket is not designed to fit persons weighing		
	up to 140 kg and with a chest girth of up to 1750 mm,		
	suitable accessories shall be available to allow it to be		
		Passed	Failed
	secured to such persons.	Fasseu	
9. Damaged in stowage and operation			
	A lifejacket shall not be damaged in stowage throughout the		
	air temperature range -30°C to +65°C and remain		
	operational throughout the air temperature range		
		Commonte/Observations	
	-15°C to +40°C. (After testing of temperature cycling.)	Comments/Observations	

Inflatable lifejackets (Adults & Child)	Model:	ırer: Number:		Date:            Surveyor:            Organization:					
2.2.2.4 General data and specifications			Regulation	Regulations: LSA Code II/2.2; MSC.81(70)					
Construction Material:		Additional equipment:			Donning instruction	ns:			
Fabric produced by:		Retro reflective material: -		□NO		□NO			
		Туре:							
Туре:		Whistle: -		□NO					
		Туре:							
Inflation system produced by:		Light (if fitted):		□NO					
Туре:		Туре:							
Cover fabric produced by:		Marked	size	range:					
Туре:									
Fabric for the inflatable chamberProper marking for infants and lifejacket:		nd children's □ YES	□NO	Passed	Failed				
Туре:									
Size and type of gas:									
Means of activating the inflation system:									

Inflatable lifejackets (Adults & Child)	Manufacturer: Model: Lot/Serial Number		Date:      Surveyor:      Organization:				
2.2.2.5 Temperature cycling					2.2 & 1.2.2.3; MSC.81(70) 1/2.10.1.1		
Test Procedur	e	Acce	otance Criteria		Significant Test Data		
<ul> <li>Two inflatable lifejackets sho to a temperature cycling test temperatures of -30°C and uninflated condition. These a need not follow immediately and the following procedure total of 10 cycles, is acceptable</li> <li>1. an 8 h exposure at a minimut +65°C to be completed in or</li> <li>2. the specimens removed chamber that same day under ordinary room of temperature of 20°C ± 3°C to</li> <li>3. an 8 h exposure at a maximut-30°C to be completed the r</li> <li>4. the specimen removed from that same day and left exposion conditions at a tem ± 3°C until the next day;</li> </ul>	t of surrounding I +65°C in the Ilternating cycles after each other , repeated for a le: um temperature of ne day; and from the warm and left exposed conditions at a until the next day; um temperature of next day; and the cold chamber sed under ordinary	Two uninflated inflata of the temperature externally. The inflata show no signs of cracking, swelling mechanical qualities. Temperature test data	cycling should able lifejacket m damage such dissolution or	be examined aterials should as shrinking, changes of	Examination 1. Lifejacket No. 1 Passed Failed 2. Lifejacket No. 2 Passed Failed 3. Cold inflation test, auto inflation Temperature of water°C. Time to inflate and relief valves blowing sec. Auto inflation PassedFailed 4. Cold inflation test, manual inflation Temperature of water°C. Time to inflate and relief valves blowing sec Manual inflation PassedFailed		

Inflatable lifeicekate	Manufacturer:			Date:	Time:			
Inflatable lifejackets (Adults & Child)	Model: Lot/Serial Number	r:	·····	Surveyor: Organization: _	Time:			
2.2.2.5.1 Temperature cycling					.2.2 & 1.2.2.3; MSC.81(70) 1/2.10.1.1 - 2.10.1.3			
Test Procedur	е	Acce	ptance Criteria		Significant Test Data			
<ul> <li>The automatic and manual should each be tested immediate temperature cycling test as fol</li> <li>1. After a high temperature inflatable lifejackets should I stowage temperature of + 6 be activated using the automatic system by placing it in temperature of + 30°C and th activated using the manual i</li> <li>2. After a low temperature inflatable lifejackets should I stowage temperature of -30° activated using the automatic by placing it in seawater at a 1°C and the other should b the manual inflation system.</li> <li>After exposure to a temperature period of at least 8 h, two life activated using the manual inflate.</li> <li>After exposure to a temperature period of at least 8 h, two life activated using the manual inflate.</li> </ul>	diately after each lows: cycle, the two be taken from the 55°C. One should utomatic inflation seawater at a ne other should be inflation system. cycle, the two be taken from the C. One should be ic inflation system a temperature of - e activated using ure of -15°C for a ejacket should be lation system and re of +40 °C for a jackets should be	The lifejackets should fully The lifejackets should fully The lifejackets should fully	y inflate. function satisfac		<ul> <li>.5 Hot inflation test, automatic inflation <ul> <li>Temperature of water°C.</li> <li>Time to inflate and relief valves blowing sec</li> <li>Automatic inflation PassedFailed</li> </ul> </li> <li>.6 Hot inflation test, manual inflation <ul> <li>Temperature of water°C.</li> <li>Time to inflate and relief valves blowing sec</li> <li>Manual inflation PassedFailed</li> </ul> </li> <li>.7 Exposure to temperature of -15°C for 8h <ul> <li>Did the two lifejackets fully inflate using the manual inflation system?</li> <li>Passed Failed</li> </ul> </li> <li>.8 Exposure to temperature of +40°C for 8h <ul> <li>Did the two lifejackets fully inflate using the manual inflation system?</li> <li>Passed Failed</li> </ul> </li> </ul>			

	Inflatable lifejackets       Manufacturer:         (Adults & Child)       Model:         Lot/Serial Number:       Model:				Date: Surveyor: Organization: _		Time:	
2.2.2.5.2	Temperature cycl	ing test – Test o	data	Regul	lations: LSA Code I/1.2.	2.2 & 1.2.2.3;	; MSC.81(70) 1/2.1	0.1.1
			T CYCLE				LD CYCLE	
Cycle 1	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	
Cycle 2	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:	
Cycle 3	Date In: Time In: Temperature:	°C	Date Out: Time Out: Duration:		Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 4	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 5	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 6	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 7	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 8	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 9	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: Time In: Temperature:		Date Out: Time Out: Duration:	
Cycle 10	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: Time In: Temperature:		Date Out: Time Out: Duration:	

Inflatable lifejackets (Adults & Child)	Manufacturer: Model: Lot/Serial Number:			Surveyor:	Time:			
2.2.2.6 Buoyancy test			Regulatio		II/2.2.2.3, 2.2.2; MSC.81(70) 1/2.2, 2.10.1.1			
Test Pr	ocedure	Acc	ceptance Cr	iteria	Significant Test Data			
<ul> <li>and cold inflation test should test.</li> <li>The buoyancy of the two lifejac and after 24 h complete submin fresh water. The test to be necessary to perform the test the uninflated condition.</li> <li>A lifejacket subjected to automatically with one compashould be repeated until each of the uninflated condition.</li> <li>(The following equipment alternatives may be used to califejacket:</li> <li>1. a mesh basket or tray large and adequate weights to califejacket;</li> <li>2. a tank of fresh water large basket or tray and the lifejacket 50 mm below 3. a spring balance accurate to the uninflated condition.</li> </ul>	cket with the uppermost part of the surface of the water; and o $\pm$ 0.015 kg. corded at the start of each test	buoyancy a should not buoyancy.	ind the fir exceed 5% er should l	en the initial hal buoyancy of the initial be fitted with	1. Lifejacket No.1         Weight of the mesh basket with the lifejacket:Kg         Buoyancy of front chamber at startKg.         Buoyancy of front chamber at 24 hrKg.         Difference in buoyancy < 5%Kg			

Inflatable lifejackets (Adults & Child)	Manufacturer: Model: Lot/Serial Number:			Date: Surveyor: Organization:			
2.2.2.7 Fire test			Regulatio	ons: LSA Code II/2.2	2.1.1; MSC.81(70) 1/2.3, 2.10.1	.1	
Test Pr	ocedure	/	Acceptance	Criteria	Significant Tes	t Data	
and cold inflation test should the lifejacket should be inflated and A test pan 30 cm x 35 cm x essentially draught-free area. bottom of the test pan to a de petrol to make a minimum total then be ignited and allowed the lifejackets, one inflated the of moved through the flames in a position, with the bottom of the	with correct gas cylinder: temperature cycling and the hot ten be used for the fire test. One d one uninflated during the test. a 6 cm should be placed in an Water should be put into the pth of 1 cm followed by enough depth of 4 cm. The petrol should o burn freely for 30 s. The two ther uninflated, should then be in upright, forward, free-hanging e lifejacket 25 cm above the top the duration of exposure to the	burning for melting after The inflated a result of pa	more than being remo lifejacket sh assing throu	hould not sustain o 6 s or continue wed from the flame. hould not deflate as gh the flames. ould remain inflated t.	Size of pan x 1. Lifejacket No.1 Passed 2. Lifejacket No.2 Passed Comments/Observations	x cm. Failed	

Inflatable lifejackets (Adults & Child)	Manufacturer: Model: Lot/Serial Number:			Date: Surveyor: Organization:	Time:		
2.2.2.8 Oil resistance test			Regulations: LSA Code I/1.2.2.4; MSC.81(70) 1/2.4				
Test Pi	rocedure		Acceptance	Criteria	Significant Test Data		
resistance test. The lifejacket should be immer	s should be subjected to the oil rsed horizontally for a period of of diesel oil at normal room	examined e sign of dama	xternally an age such as dissolution	ejacket should be id should show no shrinking, cracking, or change of	Condition of Lifejacket No.1 after 24 hours. Passed Failed Condition of Lifejacket No.2 after 24 hours. Passed Failed Comments/Observations		

Mod	facturer: : erial Number:	
2.2.2.9 Tests of materials for infla components	able bladders, inflation systems and	Regulations: LSA Code I/1.2.2.1, 1.2.2.4 & 1.2.2.5; MSC.81(70) 1/2.4, 2.10.4 - 2.10.4.1
Test Procedure	Acceptance Criteria	Significant Test Data
All the materials used in the construct of the lifejacket, including the con- tapes, seams and closures, inflata bladders, inflation systems components should be tested establish that they are: .1 rot – proof, .2 colour-fast; and .3 resistant to deterioration fro exposure to sunlight, and that they are not unduly affected by .4 seawater; .5 oil; or .6 fungal attack	r, the International Organization for Standardization, in particular publication ISO 12402-7:2006 Personal flotation devices – Part 7: Materials and components – Safety requirements and test methods. The results should be acceptable to the International Organization for Standardization, in particular publication ISO 12402-7:2006 Personal flotation devices – Part 7: Materials and components – Safety	or Ar 6 <u>Cover: Tapes: Seams: Additional</u> 7: y 0 0 0 0 0 0 0 7: 1 1 1 1 1 1 1 1 1 1 1 1 1

Inflatable lifejackets (Adults & Child)       Manufacturer:         Inflatable lifejackets (Adults & Child)       Model:				Surveyor:		Time:			
2.2	2.2.9.1 Coated fabrics test			Regulations	LSA Code I/1.	.2.2.1, 1.2	2.2.4 & 1.2.2.5; M	SC.81(70) 1/2.10.4	1.1.1-4
	Test Procedure		Acceptanc	ce Criteria			Significa	nt Test Data	
inf	bated fabrics used in the cons latable buoyancy chambers s mply with the following requir	should							
			(1) After being tested accor coating adhesion should not width.				Coating Adhesion N, I	,	ts in the : N
2.	coating adhesion should when wet following ageing a ISO 188:2007 with an expo $\pm$ 0.5 h in fresh water at (70 following which the meth 2411:2000, paragraph 5.1 applied at 100mm/min.	according to osure of 336 0.0 ± 1.0) <sup>°C</sup> ood at ISO	(2) After being tested acco coating adhesion when wet s per 50 mm width.				Coating Adhesion N, I	. ,	lts in the : N
3.	tear strength should be accordance with ISO 4674- ISO 4674-2:1998 using me	-1:2003 and	(3) After being tested accord ISO 4674-2:1998, method A1 be less than 35 N.			3. Passec 4.	Tear strength:	Failed	N
4.	resistance to flex cracking tested in accordance 7854:1995 method A using cycles.	with ISO	(4) After being tested accordir A there should be no visible o			Passed	ents/Observations	Failed	

			Surveyor:			Time:			
2.2	.2.9.1 Coated fabric test (c	continued)		Regulations	LSA Code I/1.	.2.2.1, 1.2.2.4	& 1.2.2.5; MSC.81	(70) 1/2.10	.4.1.5-8
	Test Procedure		Acceptanc	e Criteria			Significant Te	st Data	
5.	breaking strength should accordance with ISO 1421 the CRE or CRT methor conditioning for 24 ± 0.5 temperature and should than 200 N per 50 mm wice	:1998 using d, following h at room not be less	(5) After being tested accord breaking strength should not b width.				eak Strength (dry). <u>.</u>		N:
6.	breaking strength should accordance with ISO 1421 the CRE or CRT methor conditioning immersed in for $24 \pm 0.5$ h at room temp should not be less than 50 mm width.	:1998 using d, following fresh water perature and	(6) After being tested accord breaking strength when wet s per 50 mm width.				ak Strength (wet)		N:
7.	elongation to break shoul in accordance with ISO using the CRE or CF following conditioning temperature for 24 ± 0.5 h	1421:1998 RT method at room	(7) After being tested accordir temperature the elongation t 60%.				ngation (dry)	Failed	
8.	elongation to break shoul in accordance with ISO using the CRE or CF following conditioning in fresh water at room temper ± 0.5 h.	1421:1998 RT method nmersed in	(8) After being tested accordir water at room temperature th not exceed 60%.			Passed	ngation (wet)  Observations	Failed	

Model: Surv				Surveyor:	Time:	
2.2	.2.9.1 Coated fabric test (o	continued)		Regulations:	LSA Code I/1.2	2.2.1, 1.2.2.1.4 & 1.2.2.1.5; MSC.81(70) 1/2.10.4.1.9-11
	Test Procedure		Acceptan	ce Criteria		Significant Test Data
when tested in accordance with ISO with 105-B02: 2013.		(9) After being exposed to lig with ISO 105 – B02:2013 unexposed and exposed sar class 5.	, the contrast	between the	9. Accelerated light test Class Passed Failed	
10.	0. the resistance to wet and dry rubbing when tested in accordance with ISO 105-X12: 2001. (10) After being wet and dry r 105- X12:2001, the staining not be less than class 3.				10. Wet staining after rubbing Class Passed Failed	
11.	the resistance to seawate be less than class 4 in with ISO 105 EO2: 1994.		(11) After being tested in EO2:1994, the change in control not less than class 4.			11. Dry staining after rubbing      Class .      Passed         Failed
						Comments/Observations

Inflatable lifejackets (Adults & Child)	Model:	er: lumber:		Surveyor:	Time:		
2.2.2.9.2 Operating head load	d test		Regulations:		I.2.2.1, 1.2.2.4 & 1.2.2.5; MSC.81(70) 1/2.10.4.2		
Test Procedure		Acceptanc	ce Criteria		Significant Test Data		
The operating head load tes carried out using two lifej lifejacket to be conditioned a 8 hours and the other at +65°C After mounting on the manikir form the lifejacket should be in steady force of (220±10) N ap operating head as near as po point where it enters the chamber. This load should be for 5 minutes during which the o angle in which it is applied continuously varied.	ackets one at -30°C for c for 8 hours. n or the test flated, and a oplied to the ssible to the e buoyancy e maintained direction and	On completion of the test, intact and should hold its pre-			<ol> <li>Security of operating head -30°C(Jacket 1) Load applied N.</li> <li>Visible damage Passed Failed</li> <li>Security of operating head +65°C (Jacket 2) Load applied N.</li> <li>Visible damage Passed Failed</li> <li>Visible damage Passed Failed</li> <li>Pressure at the beginning of the test at -30°C after 30 min.</li> <li>Jacket 1 at the beginning after 30 min</li> <li>Pressure at the beginning of the test at +65°C after 30 min.</li> <li>Jacket 2 at the beginning after 30 min</li> <li>Comments/Observations</li> </ol>	and	

Inflatable lifejackets	Model:	er:		Date: Surveyor:	Time:	
(Adults & Child)	Lot/Serial N	Number: Organizatio		Organization:		
2.2.2.9.3 Pressure test (1)			Regulations		2.2.2; MSC.81(70) 1/2.10.4.3.1	
Test Procedure		Acceptanc	e Criteria		Significant Test Da	ta
Overpressure test The inflatable buoyancy cham be capable of withstanding an in pressure at ambient tempe chambers of a lifejacket should using the manual method of in inflation the relief valves should and a fully charged gas cylinde to the manufacturers recon- should be fitted to the same infl and fired. All fully charged ga used in this test should be size to the markings on lifejacket.	internal over erature. All d be inflated flation, after l be disabled er according mmendation lation device as cylinders	The lifejacket should remain pressure for 30 minutes. The lifejackets should show n cracking, swelling or changes that there has been no signifi- inflation component.	no signs of dai s of mechanica	mage such as I qualities and	<ol> <li>Double charge test.</li> <li>Size of gas bottle gram: Duration of test min.</li> <li>Chamber 1 - Pressure at the test and after 30 min.</li> <li> at the beginn after 30 min.</li> <li>Chamber 2 - Pressure at the test and after 30 min.</li> <li>Chamber 2 - Pressure at the test and after 30 min.</li> <li> at the beginn after 30 min.</li> <li>Chambers 3 - Pressure at the test and after 30 min.</li> <li>Chamber 4 - Pressure at the test and after 30 min.</li> <li>Chamber 4 - Pressure at the test and after 30 min.</li> <li>Damage to lifejacket PassedFailed</li> <li>Comments/Observations</li> </ol>	he beginning of the hing he beginning of the hing the beginning of the hing

Inflatable lifejackets (Adults & Child)	Model:	er:		Surveyor:	Time:
	Lot/Serial N	lumber: Organization: _		Organization:	
2.2.2.9.3 Pressure test (2)		F	Regulations:	LSA Code; M	SC.81(70) 1/2.10.4.3.2
Test Procedure		Acceptance	Criteria		Significant Test Data
Relief valve test With one buoyancy chamber i operating head on the opposit chamber should be fired manua fully charged gas cylinder acco manufacturer's recommendat operation of the relief valves noted to ensure that the excess relieved.	e buoyancy ally, using a ording to the tions. The should be	The lifejacket should remain in pressure for 30 minutes. The lifejackets should show no cracking, swelling or changes of that there has been no significat inflation component.	signs of dar	mage such as I qualities and	1.       Chamber 1         Size of gas bottle grams.         Pressure at the beginning of the test and after 30 min.

2.2.2.9.3 Pressure test (2) Continued		Regulations: LSA C	ode; MSC.81(70) 1/2.10.4.4.2
Test Procedure	Acceptance C	riteria	Significant Test Data
Test Procedure	Acceptance C	riteria	Significant Test Data         7.       Chamber 3         Size of gas bottle grams.         Pressure at the beginning of the test and after 30 min.
			Comments/Observations

Model:	turer:al Number:	Surveyor:
2.2.2.9.3 Pressure test (3)		Regulations: LSA Code; MSC.81(70) 1/2.10.4.3.3
Test Procedure	Acceptance Criteria	Significant Test Data
Air retention test One inflation chamber of a lifejacket is filled with air until air escapes from the over-pressure valve or, if the lifejacked does not have an over-pressure valve until its design pressure, as stated in the plans and specifications, is reached. This test is then repeated as many times as necessary to test a different chamber until each chamber has been tested in this manner. The pressure release valve should be settled when the measurement starts.		

Inflatable lifejackets (Adults & Child)	Model:	Sur			ite: Time: rveyor: ganization:		
2.2.2.9.4 Compression test			Regulations:	Regulations: LSA Code; MSC.81(70) 1/2.10.4.4			
Test Procedure		Acceptano	ce Criteria		Significant Te	est Data	
The inflatable lifejacket, packed in the normal manner, should be laid on a table. A bag containing 75 kg of sand and having a base of 320 mm diameter should be lowered onto the lifejacket from a height of 150 mm in a time of 1 s. This should be repeated ten times, after which the bag should remain on the jacket for not less than 3 hours.			cket to be inspec of mechanical pr	ted to ensure operties has	Weight of sand bag Area of sand bag Drop Height Drop Time No. of Drops Length of test Passed Comments/Observations	mm mm sec	
2.2.2.9.5 Test of metallic con	nponents		Regulations: LSA Code; MSC.81(70) 1/2.10.4.5				
Test Procedure		Acceptano	ce Criteria		Significant Te	est Data	
Metal parts and components of a lifejacket should be corrosion resistant to seawater and should be tested in accordance with ISO 9227:2006 for a		corrosion, or affect any other and should not impair the			nponents. Failed		
period of 96 h. Metal components should not affect a magnetic compass of a type used in small boats by more than 5°, when placed at a distance of 500 mm from it.			ect the magnetic	compass by	2. Magnetic Test on Comp Passed Comments/Observations	oonents. Failed	

Matable mejackets Mo	lanufacturer: lodel: ot/Serial Number:		Date: Surveyor: Organization:	Time:				
2.2.2.9.6 Inadvertent inflation tes	est	Regulations:	LSA Code; MS	SC.81(70) 1/2.10.4.6				
Test Procedure	Acc	eptance Criteria		Significant Test Data				
The resistance of an automatic infinadvertent operation should be exposing the entire lifejacket to sprifixed period. The lifejacket should be fitted corristanding manikin of adult size, with shoulder height of 1500 mm (sea alternatively to an appropriately shown in figure 2. The lifejacl deployed in the mode in which it is use but not deployed as used in the is equipped with a cover which is closed, then the cover should be test). Two sprays should be installed so a water onto the lifejacket, as shown One should be positioned 500 m highest point of the lifejacket. The should be installed horizontally a 500 mm from the bottom line of the lifejacket. The should be installed horizontally a 500 mm from the bottom line of the lifejacket. The should be installed horizontally a 500 mm from the bottom line of the lifejacket. The should be installed horizontally a 500 mm from the bottom line of the lifejacket. The should be installed horizontally a 500 mm from the bottom line of the lifejacket.	e assessed by prays of water for prectly to a free with a minimum ee figure 5), or sized form as cket should be s worn ready for he water (i.e. if it s normally worn e closed for the as to spray fresh n in the diagram. mm above the d at an angle of the manikin and The other nozzle at a distance of he lifejacket, and t. These nozzles each orifice being total area of the the orifice being	-		1.       Inadvertent Inflation.         Passed       Failed         2.       Auto inflation test.         Auto inflation system operable.       Failed         Passed       Failed         Comments/Observations       Failed				

Inflatable lifejackets (Adults & Child)	Model: Su				Date:          Surveyor:          Drganization:									
					LSA Code; MSC.81(70) 1/2.10.4.6									
Test Procedure Acceptance Crite								Sign	ificant <sup>-</sup>	Test D	)ata			
The air temperature should be water should be supplied to nozzles at a flow of 600 l/h temperature of 18°C to 20°C.	the spray	The lifejacket should not infla	te during the te	est	1. Passed			t Inflatio		ailed				
The sprays should be turned lifejacket should be expos following series of test to asses of the jacket to resist inadverter .1 5 minutes with the high s	lifejacket shoul at the auto-infla		2. Auto in Time to Passed	flation o inflate	e:	n opera	Se	ec. <sup>-</sup> ailed						
<ul> <li>front of the lifejacket;</li> <li>.2 5 minutes with the high s left side of the lifejacket;</li> <li>.3 5 minutes with the high s back of the lifejacket; and</li> <li>.4 5 minutes with the high s right side of the lifejacket.</li> </ul>	pray on the				Comme			tions						
During exposures .1, .2 the horizontal spray should be 10 periods of 3 sec each to the right sides (but not back) as w spray.	applied for front, left or	Figure – Alternative form			Size Adult Child Infant	A 610 508 305	B 114 102 63,5	C 76,2 76,2 38,1	D 127 102 63,5	E 381 279 191	F 432 330 203	G 508 406 241	H 25,4 22,2 19,1	J 178 152 76,2

Inflatable lifejackets (Adults & Child)		er: lumber:			Surveyor:							
2.2.2.10 Strength tests - Boo	ly or lifting l	oop strength test		Regulations:	LSA Code; N	MSC.81(70) 1/2.5.1, 2.10.1.1						
Test Procedure		A	Acceptanc	ce Criteria		Significant Test Data						
The lifejacket should be immers for a period of 2 min. It shour removed from the water and c same manner as when it is person. A force of not less th (2,400 N in the case of a child of lifejacket) should be applied for the part of the lifejacket that s the body of the wearer (see separately to the lifting loop of the The test should be repeater encircling closure. The two lifejackets sub temperature cycling and the h inflation test should then be u strength test.	uld then be losed in the worn by a an 3,200 N or infant-size or 30 min to secures it to figure) and he lifejacket. d for each ojected to not and cold	The lifejacket or lifti result of this test.	Yoke or rrangeme	r over-the-head ent for lifejacket diameter for a n diameter for a	type lifejacket ts dult sizes	Time: Slippage: Closure(s) testec	Passed _	p test arrangement if				

Inflatable lifejackets (Adults & Child)	Manufacturer: Model: Lot/Serial Number:	Survevor:									
2.2.2.11 Strength tests - S	Regulations: LSA Code; MSC.81(70) 1/2.5.2, 2.10.1.1										
Tes	Accepta	nce Criteria					Signifi	cant Test	Data		
2.2.2.7, 2.2.2.8 and 2.2.2.1 shoulder strength test. The lifejacket should be imm should then be removed fror shown in figure 2 in the sat person. A force of not less the or infant-size lifejacket) shou	pjected to the tests in 2.2.2.5, 2.2.2.6, 0 above should be subjected to the ersed in water for a period of 2 min. It m the water and closed on a form as me manner as when it is worn by a an 900 N (700 N in the case of a child uld be applied for 30 min across the n of the lifejacket. (see figure).	The lifejacket should result of this test. The lifejacket should form during this test under the state of the	d remain sect		n the	Time Sign Pass	force a of dam ed	applied _			
Vest-type lifejacket Yoke Figure - Shoulder lift test arra lifejackets C– Cylinder; 125mm diamete 50mm diameter for infant L– Test load	er for adult sizes	Size         A         B           Adult         610         114           Child         508         102           Infant         305         63,5	C D 76,2 127 76,2 102 38,1 63,5	E 381 279 191	F 432 330 203	G 508 406 241	H 25,4 22,2 19,1	J 178 152 76,2			

Inflatable lifejackets (Adults & Child)							Date:         Time:           Surveyor:							
2.2.2.12 Donning Test (Unin		Regulations: LSA Code II/2.2.1.5; MSC.81(70) 1/2.7.1 to 2.7.4.3, 2.10.2												
Test F		Ac	ceptance	e Criteri	ia			Significant	Test Data					
To minimize the risk of incorre often in adverse conditions, life following features and tested a The test should be carried out w who are completely unfamilia	d for the persons selected	Fastenings performance s provide quick a not require tyir Adult lifejacke	and positi ng of kno ets_shoule	e few ar tive clos ots. Id readi	ily fit various	Comr	nents/C	bservations	:					
according to the heights and we	eights in table 2	.1 and the fo	, in the second s	sizes of adults All lifejackets	should b	be <sup>°</sup> capa	able of being	Subj	SEX (M/F)	HEIGHT (m)	WEIGHT (kg)	Good Swimmer? (Yes/No)		
.1 small test subjects need not		aubicata ak		worn inside-out, or clearly in only one way.								(100/110)		
		an 1/2 of test subjects should be per height category but excluding						1 2						
the tallest height;			-					3						
.3 at least one male should be group and one female shou								4						
and one female should be n	ore than 80 kg	and 1.8 m;	<b>U</b> .					5						
.4 at least one subject should b a "1"; and	e selected from	each cell co	ontaining					6						
.5 enough additional subject	s should be s	selected fro	om cells					7						
containing a "X" to total the								8						
with no more than one sub across weight ranges should			tribution					9						
	Test subject		or adult life	jackets				10						
	-		ight range -					11						
Ht range (m) 40 -43 43 -		70 – 80	80 – 100	100 – 110	110 – 1	120	> 120	12						
<pre>&lt; 1,5 1 X</pre>	X 1	X X	X											
1,5-1,0 X 1 1,6-1,7 X		1	X	X										
1,7 -,1,8	X	X	1	X	X	<	Х							
1,8 – 1,9	Х	Х	Х	1	1	•	Х							
> 1,9			Х	Х	Х	<	1							

Inflatable lifejackets (Adults & Child)	Manufacturer: Model: Lot/Serial Number:									
2.2.2.12 Donning Test (Uni	nflated situation)	Regulation	s: LSA Code II/2.2.1.5; MSC.81(70) 1/2.7.1 to 2.7.4.3, 2.10.2							
Clothing Each test subject should be to for the test and appropriate to .1 <i>Normal clothing</i> means no not normally interfere with	o their size, as follows: ormal indoor clothing, v	vhich would	complete when t securely adjusted lifejacket to the ex	urposes donning is considered he subject has donned and all methods of securing the ktent needed to meet the in - ce requirements, including						
.2 Heavy-weather clothing r hostile environment, incluc cotton gloves.				ld be capable of being donned of the subjects, and within						
Each test should be timed from test subject declares that don <i>Test without instruction</i> The test subjects may be Wearing normal clothing, the assistance, guidance or prior closures in the stored condit face up, in front of the test should be identical for each so the following: "PLEASE DON AS POSSIBLE AND ADJUST ABANDON SHIP."	tested individually or a tested individually or a e first attempt should demonstration. The life sion, should be placed of subject. The instruction subject and should be e N THIS LIFEJACKET AS	as a group. be with no ejacket, with on the floor, on provided quivalent to S QUICKLY	correctly but fails closures, the jump and in-water per MSC.81(70) and 2 performed with t establish whether and the donning is Each subject show within a period of 2	uld correctly don the lifejacket I min. uld don the lifejacket correctly	Total number of subjects: # of subjects successful: # of subjects successful: Pass / Fail					

Inflatable lifejackets (Adults & Child)	Manufacturer: Model: Lot/Serial Number:			Date: Surveyor: Organization:	Time:
2.2.2.12 Donning Test (Uni	nflated situation)	Regulations	: LSA Code II/2.2.	1.5; MSC.81(70) 1/2.7.1 t	o 2.7.4.3, 2.10.2
Test after instruction For each subject whose fin incomplete, after demonstrat subject with the donning proc don the lifejacket without clothing, using the same instr	tion or instruction to far cedure, the test subject assistance while wear	niliarize the should then ing normal			
Heavy-weather clothing test Each subject should then do while wearing heavy-weather and timing method as above.	clothing, using the same				

Inflatable lifejackets (Adults & Child)	Manufacturer: Model: Lot/Serial Number:			Date: Surveyor: Organization: _		_ Time:	
2.2.2.13 Donning Test (Infla	ted situation)		Regula	tions: LSA Cod	de II/2.2.1.5; M	ISC.81(70) 1/2.7.1	to 2.7.4.3
Τe	est Procedure	Ac	ceptanc	e Criteria		Significant Test	Data
<ul> <li>in adverse conditions, lifejacke features and tested as follows:</li> <li>The test should be carried out are completely unfamiliar with the heights and weights in tabl</li> <li>.1 small test subjects need not</li> <li>.2 at least 1/3, but not more that including at least 1 per he height;</li> <li>.3 at least one male should be female should be more than</li> <li>.4 at least one subject should "1"; and</li> <li>.5 enough additional subjects a "X" to total the required nu</li> </ul>	with at least 12 able-bodied persons who a the lifejacket and selected according to le 2.1 and the following: t be adults; an 1/2 of test subjects should be females, eight category but excluding the tallest from the lowest and highest weight group from the lowest weight group and one	few and quick and does not Adult life fit various lightly an lifejackets	erforma simple d positi require jackets s sizes nd hea s should vorn i	ecessary for nce should be and provide ve closure that tying of knots. should readily of adults, both wily clad. All d be capable of nside-out, or ne way.			

Weight range - kg           Ht range (m)         40 -43         43 - 60         60 - 70         70 - 80         80 - 100         100 - 110         110 - 120         > 120           <1.5         1         X         X         X         Image - kg         Image - kg </th <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>ct selection f</th> <th>Test subje</th> <th></th> <th></th> <th></th>										ct selection f	Test subje			
< 1,5			servations:	ients/OI	Comr			kg	eight range -	We				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $						> 120	110 – 120	100 – 110	80 – 100	70 – 80	60 -70	43 – 60	40 -43	Ht range (m)
1.6 - 1.7     X     X     1     X     X     I       1.7 - 1.8     X     X     X     1     X     X     X       1.8 - 1.9     X     X     X     1     1     X       >1.9     X     X     X     1     1     X       >1.9     X     X     X     X     1     1											Х	Х	1	< 1,5
1,7 -,1,8     X     X     X     1     X     X     X       1,8 - 1,9     X     X     X     1     1     X       >1,9     X     X     X     X     1     1     X       >1,9     X     X     X     X     X     1     1       >1,9     X     X     X     X     X     1       >1,9     X     X     X     X     1     1       X     X     X     X     X     1     1       >1,9     X     X     X     X     X     1       X     X     X     X     X     1     1       X     X     X     X     X     1       X     X     X     X     X     1       X     X     X     X     X     1       X     X     X     X     X     1       X     X     X     X     X     1       X     X     X     X     X     1       X     X     X     X     X     1       X     X     X     X     X     X       X     X     X </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Х</td> <td>Х</td> <td>1</td> <td>1</td> <td>Х</td> <td>1,5 – 1,6</td>									Х	Х	1	1	Х	1,5 – 1,6
1.8 - 1.9     X     X     X     X     1     1     X       > 1.9     X     X     X     X     X     1     1     X       > 1.9     X     X     X     X     X     1     1     X       2     X     X     X     X     X     X     1     1       3     X     X     X     X     X     X     1       4     X     X     X     X     X     X     X       5     X     X     X     X     X     X     X       6     X     X     X     X     X     X     X       10     X     X     X     X     X     X								Х	Х	1	Х	Х		1,6 – 1,7
X     X     X     I     I     X       >1,9     X     X     X     X     I       2     I     I     I       3     I     I       4     I       5     I       6     I       7     I       8     I       9     I       10     I	Good Swimmer?			SEX (M/F)	Subj									
2       2         3       3         4       3         5       3         6       3         7       3         8       3         9       3         10       3	(Yes/No)	(19)	(,	. ,						X	X			
3		<u> </u>			1		X	X	X					> 1,9
4					2									
5					3									
5					4									
6														
7	+													
8														
9					7									
10					8									
					9									
					10									
		1												
12	<u> </u>				12									

Inflatable lifejackets (Adults & Child)	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:
2.2.2.13 Donning test (In	flated situation) (Continued)	Regu		C.81(70) 1/2.7.1 to 2.7.4.3, 2.10.2
	Test Procedure		Acceptance Criteria	Significant Test Data
<ul> <li>test and appropriate to their</li> <li>.1 Normal clothing means normally interfere with th</li> <li>.2 Heavy-weather clothing environment, including gloves.</li> </ul>	s normal indoor clothing, which would not the donning of a lifejacket; y means the attire appropriate for a hostile a hooded arctic parka and warm cotton from when the order is given until the test	complete wh securely adju lifejacket to t	ent purposes donning is considere en the subject has donned an usted all methods of securing th he extent needed to meet the in rmance requirements, includin eded.	d e -
normal clothing, the first atte or prior demonstration. To condition, should be place subject. The instruction pr and should be equivalent	tested individually or as a group. Wearing empt should be with no assistance, guidance The lifejacket, with closures in the stored d on the floor, face up, in front of the test ovided should be identical for each subject t to the following: "PLEASE DON THIS Y AS POSSIBLE AND ADJUST IT TO A BANDON SHIP."		should be capable of being donne 75 % of the subjects, and withi	

2.2.2.13 Donning test (Inflated situation) (Continued)	F	Regulations: LSA Code II/2.2.1.5; MSC.	81(70) 1/2.7.1 to 2.7.4.3, 2.10.2
Test Procedure		Acceptance Criteria	Significant Test Data
<i>Test after instruction</i> For each subject whose first attempt exceeds 1 min or is incomplete, after demonstration or instruction to familiarize the subject with the donning procedure, the test subject should then don the lifejacket without assistance while wearing normal clothing, using the same instruction and timing method as above.	correctly closures, in-water MSC.81( performe establish	bject dons the lifejacket substantially but fails to secure and/or adjust all the jump test in 2.8.8 of MSC.81(70) and performance tests in 2.8.5 of 70) and 2.8.6 of MSC.81(70) should be ad with the lifejacket as donned to whether the performance is acceptable donning is successful.	Pass / Fail
<i>Heavy-weather clothing test</i> Each subject should then don the lifejacket without assistance while wearing heavy-weather clothing, using the same instruction and timing method as above.		bject should correctly don the lifejacket period of 1 min.	Pass / Fail
		bject should don the lifejacket correctly period of 1 min.	Pass / Fail

Inflata (Adult	able lifejack ts & Child)	tets	Manufac Model: _ Lot/Seria	turer: al Number: <sub>_</sub>				Date: Surveyor: Organization:				
2.2.2.	12 – 2.2.2.1	3 Donning	Tests – Te	est Data		Regulati		Code II/2.2.1.5 -				
			Uninfla	ted situatio	n				Inflated	situation		
		Test without i	instruction		Test after instruction	Heavy weather clothing		Test withou	t instruction		Test after instruction	Heavy weather clothing
Subj	Donning time (sec)	All closures secured? (Y/N)	Jump test (P/F)	In-water test (P/F)	Donning Time (sec)	Donning Time (sec)	Donning time (sec)	All closures secured? (Y/N)	Jump test (P/F)	In-water test (P/F)	Donning Time (sec)	Donning Time (sec)
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
					<u>                                     </u>							
						Comments/O	bservation	IS:				

Inflatable lifejackets	Manufacturer: Model:		Date:		Tir	me:					
(Adults & Child)	Lot/Serial Number:		Surveyor: Organization:					· · · · · · · · · · · · · · · · · · ·			
2.2.2.14 Water performance water performance	e tests- Preparation for			– 2.2.1.4; MSC.81(70) 1/2.8 to 2.8.4, 2.10.3. Annex 1,							
Test Proc	edure	Acceptance Cri	teria			Significant	Test Data				
This portion of the test is inten- of the lifejacket to assist a he exhausted or unconscious sta- lifejacket does not unduly restri The in-water performance of a comparison to the performance reference lifejacket, i.e. Refere specified in appendices 1 to 3. All tests should be carried ou conditions. Each test for a ca- relevant RTD should be conduct These tests should be carried ou conditioned in paragraph 2.2 should be used, since the abi- rarely otherwise obtained. The test subjects should wear of Each test subject should be ma- tests in 2.2.2.15 and 2.2.2.16, p regarding relaxing and exhaling The test subjects should don using only the instructions pro Prior to taking measurements, fastening of the RTD on the sub- corrected as necessary.	Ipless person or one in an ate and to show that the ct movement. a lifejacket is evaluated by e of a suitable size standard ence Test Device (RTD) as t in fresh water under still andidate lifejacket and the cted on the same day. but with at least 12 persons .1.15. Only good swimmers lity to relax in the water is only swimming costumes. ade familiar with each of the particularly the requirements g in the face-down position. the lifejacket, unassisted, vided by the manufacturer. the proper fit, donning, and	The RTD should be construct calibrated according to MSC and validated according to M	81(70), annex 1,	Validat Calibra Test si	ted by: _ ated by: <sub>_</sub> ubjects s		dat 2.2.2.12?	te:			

2.2.2.14 Water performance tests- Preparation for water performance tests	Regulations: LSA Code II/2.2.1.2.5 & 2.2.1.3 - MSC.1/Circ.1470	- 2.2.1.4	; MSC.8	1(70) 1/2.8	to 2.8.4, 2.10	).3. Annex 1,
Test Procedure	Acceptance Criteria			Significant	Test Data	
After entering the water, care should be taken to ensure that there is no significant amount of air unintentionally trapped in the lifejacket or swimming costume.		Significant Test Data           11           12				

Inflatable lifejackets (Adults & Child)			Surveyor:	Time:
2.2.2.15 Water performance te	ests – Righting test	Regulations: LSA Code II/ 2.2.1		
Test Procedu		Acceptance Criteria		Significant Test Data
Each test subject should assu down position in the water, but up so the mouth is out of the w feet should be supported, sho with the heels just below the su	with the head lifted vater. The subject's oulder width apart,	The period of time until the mouth subject comes clear of the water recorded to the nearest 1/10 of a sec from when the subject's feet are relea	should be ond, starting	See following pages for test data. Average candidate turn time <u>&lt;</u> Average RTD turn time RTD +1s
After assuming a starting pos straight and arms along the should then be instructed sequence to allow the body completely relax into a natura allow the arms and shoulders legs to relax; and then the spir the head fall into the water v normally.	sition with the legs sides, the subject in the following to gradually and al floating posture: to relax; allow the ne and neck, letting	The test should be conducted a total and the highest and lowest times dis test should then be conducted a tota in the RTD and the highest and I discarded. Turning time: the average turn time for in the candidate lifejacket should not average time in the RTD plus 1 s.	carded. The l of six times owest times r all subjects	All Chambers:       Automatic:       Manual:         Passed       Failed       Passed         Chamber #1:       Automatic:       Manual:         Passed       Failed       Passed         Chamber #1:       Automatic:       Manual:         Passed       Failed       Passed         Chamber #2:       Automatic:       Manual:         Passed       Failed       Passed         Chamber #3:       Automatic:       Manual:         Passed       Failed       Passed         Chamber #4:       Automatic:       Manual:         Passed       Failed       Passed
During the relaxation phase, the maintained in a stable face dow Immediately after the subject ha face in the water, simulating exhaustion, the subject's feet s The test should be conducted us have been inflated both manually, and also with one of uninflated.	wn position. as relaxed, with the g a state of utter should be released. Ising lifejackets that automatically and	The number of "no-turns", if any, exceed the number in the RTD. The test should be repeated compartment deflated until each comp been tested in the uninflated condition	with one partment has	<pre># of candidate no turns (NT): ≤ # of RTD no turns (NT): All Chambers: Automatic: Manual:     Passed Failed Passed Failed Chamber #1: Automatic: Manual:     Passed Failed Passed Failed Chamber #2: Automatic: Manual:     Passed Failed Passed Failed Chamber #3: Automatic: Manual:     Passed Failed Passed Failed Chamber #4: Automatic: Manual:     Passed Failed Passed Failed Chamber #4: Automatic: Manual:     Passed Failed Passed Failed Chamber #4: Automatic: Manual:     Passed Failed Passed Failed Comments/Observations:</pre>

			MO	del:						- 	Surve	eyor:				Time:					
1											ns: LS	A Cod	le II/ 2.	2.1.3.2;	MSC.	81(70)	1/ 2.8.	5, 2.1	0.3		
							Sig	gnifica	int Te	st Da	ta										
		C										/ICE TI al inlfla		C)		REF	ERENG	CE VE TRIA	ST TIME	(sec)	
Subj	#1	#2	#3	#4	#5	#6	AVG *	#1	#2	#3	#4	#5	#6	AVG *	#1	#2	#3	#4	#5	#6	AVG *
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
					date turn t lidate no ti			Ave				rn time o turns	<u>,                                    </u>			Av			urn time no turns		
Àverage	candidate		<u>Average</u>		time RTD - (NT):	ed															
	its/Observ	· · ·	<u>&gt;</u> # 01 K I L	no tums	(111).	rass	eu	F	alleu _												
Commer	IIS/ODSEIV	auvus.																			

Inflatable lifejackets (Adults & Child)	Model:	Irer:	Time: yor: ization:							
2.2.2.16 Water performance	e tests – Sta	atic balance measurements	Regulations	: LSA C	ode II/2.2.2, 2.	2.1.4; MSC.8	31(70) 1/2	2.8.6 and 2.8.7	7, 2.10.3	
Test Procedure		Acceptance Cr	iteria			Signif	ficant Test D	Data		
At the conclusion of the righ without making any adjustments lifejacket position, the		Freeboard: The average freebo should not be less than the a minus 10 mm			See following	pages for tes	st data.			
measurements should be made subject floating in the relaxed position of static balance res	ed face-up				Average freet minus 10 mm	ooard, all sul	ojects <u>&gt;</u> ave	erage freeboa	rd for RTD	
the preceding tests. 1. Freeboard – The	distance				All Chambers: Chamber #1:	Automatic:	Failed	Manual:	Failed	
measured perpendicu the surface of the wa	larly from				Chamber #2:	Passed Automatic: Passed	Failed Failed	Manual:	Failed Failed	
lowest point of the subjection where respiration	ect's mouth				Chamber #3:	Automatic: Passed	Failed	Manual:	Failed	
impeded, if the mouth held shut. The lowest mouth should be meas left and right sides are	were not side of the sured if the				Chamber #4:	Automatic: Passed	Failed	Manual:	Failed	
<ol> <li>Faceplane angle – The ang to the surface of the water, of</li> </ol>		Faceplane angles: The average faceplane angles should be not	less than the	5'	Average facep 10º	blane angle, a	all subjects :	≥ average for l	RTD minus	
formed between the most for of the forehead and chin.		average for the RTD minus 10°			All Chambers:	Automatic: Passed	Failed	Manual: Passed	Failed	
or the lorenead and chin.					Chamber #1:	Automatic: Passed	Failed	Manual:	Failed	
					Chamber #2:	Automatic:		Manual:		
					Chamber #2:	Passed	Failed	Passed	Failed	
					Chamber #3:	Automatic: Passed	Failed	Manual: Passed	Failed	
					Chamber #4:	Automatic: Passed	Failed	Manual: Passed	Failed	

2.2.2.16 Water performance tests – Sta	tic balance measurements	Regulations: LSA C	Code II/2.2.2, 2.	2.1.4; MSC.8	81(70) 1/	2.8.6 and 2.8	.7, 2.10.3
Test Procedure	Acceptance Cr	iteria		Signi	ficant Test	Data	
<ol> <li>3. Torso angle – The angle, relative to vertical, of the line formed by the forward points of the shoulder and hipbone (ilium portion of the pelvis).</li> <li>4. List angle – The angle relative to the surface of the water and a line between the left and right shoulder or a line through the ears if only the head is tilted.</li> </ol>	Torso angles: the average o angles should be not less than RTD minus 10º.		Average torso All Chambers: Chamber #1: Chamber #2: Chamber #3: Chamber #4:	Automatic: Passed Automatic: Passed Automatic: Passed Automatic: Passed Automatic:	Failed Failed Failed Failed	Manual: Passed Manual: Passed Manual: Passed Manual: Passed Manual:	_ Failed Failed Failed Failed
	Lifejacket light location: the pos light should permit it to be vis segment of the upper hemisphe	ible over as great a	Does the loca as great a sec Comments/O	gment of the	ejacket light	permit it to be	

Inflatable lifejackets (Adults & Child)	Manut Model Lot/Se	facturer: : erial Nur	nber:						Date: _ Survey Organi	/or: _ izatio	n:	· · · · · · · · · ·	Time:		· · · · · ·		
2.2.2.16 Water performance	e tests-	Static b	alance	measu	rement	s	Regu	lations					MSC.81(7				2.10.3
Test Procedure													Significa	nt Test D	ata		
The test should be repeated wit compartment deflated until					Aut	omatic	Inflatio	า		Manual Inlfation							
compartment denated until compartment has been tested uninflated condition.			Freeb (m		Face (de	plane eg)		o angle eg)	Ligh	nt	Freeb (m		Facep (de		Torso (de	•	Light
		CLJ	RTD	CLJ	RTD	CLJ	RTD	Visibl	le?	CLJ	RTD	CLJ	RTD	CLJ	RTD	Visible?	
		1															
		2															
		3															
		4															
		5															
		6							_								
		7															
		8															
		9															
		10															
		11															
		12 Avg							xxxx	/							XXXX
		Avg	Candida	to Lifeir	neket				1 ~~~~					<u> </u>		<u> </u>	~~~~
			Referen	-		0											
		RID-	Releien	ice res		e											

	Manufacturer: _ Model: Lot/Serial Numb	er:		Date:          Surveyor:          Organization:						
2.2.2.17 Water performance	tests – Jump a	nd drop tests	Regulatio	ns: LSA Code II/ 2.2.1.5.6; MSC.81(70)1/2.8.8 and 2.8.9, 2.10.3						
Test Procedure		Acceptance Criteria	l	Significant Test Data						
Without readjusting the lifejacket, should jump vertically into the w from a height of at least 1m wh arms over the head. Upon enter the test subject should relax to so of utter exhaustion. The freeboar should be recorded after the test to rest. The test should be re- height of at least 4.5 m. When jumping into the water, to should hold on to the lifejacket due to avoid possible injury. Upo water, the test subject should rela- state of utter exhaustion. The fir mouth should be recorded after comes to rest. The lifejacket and its attachme examined for any damage. If in likely from any jump or drop test should be rejected or the test de from a lower height or with addition demonstrate that the risk from the is acceptable. The test should be conducted up that have been inflated both au manually, and also with one of the uninflated.	water, feet first, hile holding the ering the water, simulate a state and to the mouth t subject comes epeated from a the test subject aring water entry on entering the ax to simulate a reeboard to the the test subject ents should be jury is believed st, the lifejacket elayed until test onal precautions he required test using lifejackets tomatically and	<ul> <li>lifejacket should:</li> <li>.1 surface the test subject in position with an average freadly all the subjects of not less average determined for the the turning test in accord 2.2.2.16 minus 15 mm;</li> <li>.2 not be dislodged or cause h test subject;</li> </ul>	a face up eeboard fo ss than the e RTD afte dance with harm to the harm to the byance; and hments.	<ul> <li>Did the lifejacket become dislodged or cause harm to the test subject?: Yes / No</li> <li>Did the lifejacket have damage that would affect its in-water performance or buoyance?: Yes / No</li> <li>Did the lifejacket have damage to its attachments?: Yes / No</li> </ul>						

Inflatable (Adults &	lifejackets Child)	Manufacturer: _ Model: Lot/Serial Num	ber:			Date: Surveyor: Organization:	Time:
2.2.2.17	Water performance						e II/ 2.2.1.5.6; MSC.81(70)1/2.8.8 and 2.8.9, 2.10.3
TEST DAT	A SHEET (1 m Jum	p)					
Subj	Subject surfaced faceup? (Yes/No)	Freeboard (mm)	Lifejacket became dislodged (Yes/No)	Subject was harmed? (Yes/No)	lifej atta	nage to acket or chments s/No)	Comments/ Observations
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

Inflatable (Adults &	lifejackets Child)	Manufacturer: Model: Lot/Serial Nur	nber:		Date:       Time:         Surveyor:          Organization:
2.2.2.17	Water performance				Regulations: LSA Code II/ 2.2.1.5.6; MSC.81(70)1/2.8.8 and 2.8.9, 2.10.3
TEST DAT	TA SHEET (4.5 m Ju	mp)			
Subj	Subject surfaced faceup? (Yes/No)	Freeboard (mm)	Lifejacket became dislodged (Yes/No)	Subject wa harmed? (Yes/No)	as Damage to Comments/Observations lifejacket or attachments (Yes/No)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

Inflatable lifejackets (Adults & Child)	Model:	ırer: Number:		Surveyo	or:								
2.2.2.18 Water performance t	tests – Stal	bility test	Regulation	s: LSA C	ode II/2.	2.1.4; N	/ISC.81(	70) 1/2	.8.10				
Test Procedure		Acceptance Criteria	Significant Test Data										
The test subject should attain face-up position of static balar water. The subject should be ins assume a foetal position as	nce in the structed to	The candidate lifejacket should not roll any subject face down in the water.			the subj down?				able face	ject return to a -up position? es/No)			
"place your elbows against yo		(a) + (b) = 0		Can	didate	R	TD	Can	ndidate	I	RTD		
your hands on your stomach, lifejacket if possible, and bring y up as close to your chest as pos- The subject should be rotated around the longitudinal axis of by grasping the subject's sho upper areas of the lifejacket so subject attains a $55 \pm 5$ degree subject should then be releas subject should return to a stabl position. The test should then be condu- the subject rotated counter-close	our knees ssible." clockwise the torso bulders or o that the e list. The lsed. The le face-up	The number of subjects who are returned to the stable face-up foetal position in the candidate lifejacket should be at least equal to the number who are returned to the stable face-up foetal position in the RTD. (e) $\leq$ (g) And (f) $\leq$ (h)	Subj           1           2           3           4           5           6           7           8	CW	CCW	CW		CW		CW			
The entire test should then be with the test subject wearing the The test should be conduct lifejackets that have been infl automatically and manually, and one of the compartments uninfla	repeated e RTD. ted using ated both d also with		9 10 11 12 Total "No"	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)		

Inflatable lifejackets (Adults & Child)	Model:	er: umber:	Surv	eyor:		Time:					
2.2.2.19 Water performance t test	nming and water emergence	Regulations: LSA	Code II/2.2	ode II/2.2.1.4; MSC.81(70) 1/2.8.11							
Test Procedure		Acceptance C	Criteria		Significant Test Data						
All test subjects, without w lifejacket, should attempt to swi board a liferaft or rigid platfo surface 300 mm above the wa All test subjects who successful this task should perform it aga the lifejacket. The test should be condu- lifejackets that have been in automatically and manually, ar one of the compartments uninfl	m 25 m and rm with its ter surface. ly complete ain wearing cted using flated both ad also with	At least two-thirds of the accomplish the task without th be able to perform it with the lit $(b) \ge 2/3$ (a)	e subjects who c le lifejacket should a	Iso Lifera		atform	n successfully board liferaft (b) 2/3 (a) Passed / Failed Comments/Observations				

Inflatable lifejackets (Adults & Child)	Manufactur Model: Lot/Serial N	Manufacturer: Model: Lot/Serial Number:						C S C	Date:      Surveyor:      Organization:									
2.2.2.20 Infant and children's lifejacket tests – Test subjects Regulations: LSA Co																		
Test Procedure		Acceptance Criteria									S	ignificant T	est Data					
As far as possible, similar tests (to the adult tests) should be applied for approval of lifejackets suitable for infants and children.		eight range (cm)	14	17 -	20	22	Weigh 25 -	Child It Rang 28	ge (kg) 30 -	33	36	38	41	Size: I	nfant / C	hild		
For child-size lifejackets, tests carried out with at least 9 a persons, and for infant-size	ble-bodied		17		22	25	28	30	33	36	38	41	43	Subj	SEX (M/F)	HEIGHT (m)	WEIGHT (kg)	Manikin? (Yes*/No)
tests should be carried out wi		79- 105	1	X										1		(,	(	
5 able-bodied persons. All test subjects should be	e selected	90- 118		х	1									2				
according to table 2.2 or table 2.3 as follows:		102- 130				1	х							3				
.1 One subject should be se	elected per	112- 135					х	1						4				
each cell containing a "1".		122- 150							1	1	х			5 6				
.2 Remaining subjects should b from cells containing an "2		145-									x	1	1	7				
repeating a cell.		165	Та	ble 2	.3 - S	electi	on of	Infan	it Tes	t Sub	ojects	;		8				
.3 At least 40% of the subjects male and at least 40% femal								Weigl	ht Ra	nge (	(kg)			9				
		Hei	ght ra (cm)			Les	s tha	n 11		11-1	4	14-	-17					
.4 Devices for infants should be tested on infants as small as 6 kg mass.		Les	s tha	n 83			1			Х								
.5 A manikin or manikins may be substituted for test subjects if the manikin or manikins have been demonstrated to provide representative results compared to human subjects.			79-10	5			Х			1	1 1		1					
		(	90-11	8								>	<	*Manikin	descrip	tion:		

Inflatable lifejackets (Adults & Child)	Manufacturer: Model: Lot/Serial Number:		Date:         Time:           Surveyor:         Organization:							
2.2.2.21 Infant and childr – Righting test	ren's lifejacket – Water perfo	rmance tests Regulations: LSA Code II/ 2.2.1.8; MSC.81(70)1/ 2.9.2-2.9.3, Annex 2, A 2.10.3								
Test Pro	ŀ	Acceptance (	Criteria	Significant tes	t data					
This portion of the test is intend the lifejacket to assist a hel exhausted or unconscious s lifejacket does not unduly restr		MSC.81(70)	ucted and calibrated , annex 2 or 3, as	RTD Size: Infant / Child RTD Constructed by:	date:					
The in-water performance of comparison to the performance reference lifejacket, i.e. Refer specified in appendices 2 to 3.	e of a suitable size standard rence Test Device (RTD) as				Validated by:					
All tests should be carried o conditions. Each test for a relevant RTD should be condu	candidate lifejacket and the									
The tests may be modified for years of age who are not co ensure their safety and cooper	mfortable in water, so as to									
Prior to taking measurements, fastening of the RTD on the su corrected as necessary.										
After entering the water, care s there is no significant amount o the lifejacket or swimming cost	of air unintentionally trapped in									
The test should be conducted to been inflated both automaticall with one of the compartments	y and manually, and also									

	Manufacturer: Model: Lot/Serial Number:						Date:            Surveyor:            Organization:									
	lifejacket – Water performa						:: LSA Code II/ 2.2.1.8; MSC.81(70)1/ 2.9.2-2.9.3, annex 2, annex 3,									
Test Procedure	Acceptance Criteria		Significant Test Data													
Each test subject should assume a prone, face down	The period of time until the mouth of the test subject comes clear of the water should be			CAN	DIDA		VICE TI IAL	ME (se	c)		RE	FERE			IE (sec)	)
position in the water, but with the head lifted up so the mouth is		Subj	#1	#2	#3	#4	#5	#6	AVG *	#1	#2	#3	#4	#5	#6	AVG *
out of the water. The subject's feet should be supported, shoulder width apart, with the	recorded to the nearest 1/10 of a second, starting	1														
heels just below the surface of the water.	and lowest times discarded. The test	3														
After assuming a starting position with the legs straight																
and arms along the sides, the subject should then be		7														
instructed in the following sequence to allow the body to gradually and completely relax	should then be conducted a total of six times in the RTD and the highest and	8 9														
into a natural floating posture: allow the arms and shoulders to	lowest times discarded.															
relax; allow the legs to relax; and then the spine and neck, letting																
the head fall into the water while breathing out normally.			Ave				e turn time (sec):				Average RTD turn time (sec): # of RTD no turns (NT):					

2.2.2.21 Infant and children's I Righting test (Continu	ifejacket – Water performa ıed)		sts – Regulations: LSA Code II/ 2.2.1.8; MSC.81(70)1/ 2.9.2-2.9.3, annex 2, annex 3, 2.10.3								
Test Procedure	Acceptance Criteria		Significant Test Data	a							
During the relaxation phase, the subject should be maintained in a stable face down position. Immediately after the subject has relaxed, with the face in the water, simulating a state of utter exhaustion, the subject's feet should be released.	Turning time: the average turn time for all subjects in the candidate lifejacket should not exceed the average time in the RTD plus 1 s. The number of "no-turns", if any, should not exceed the number in the RTD.	Average cand	est and lowest value) lidate turn time ≤ Average RTD turn time RTD +1s e no turns (NT): ≤ # of RTD no turns (NT): oservations:	Passed Failed Passed Failed							

Inflatable lifejackets (Adults & Child)	lults & Child) Lot/Serial Number:						Tin	ne:		-		
2.2.2.22 Infant and childre – Static balance	en's lifejacket - Water per measurements	formance tests	ance tests Regulations: LSA Code II/ 2.2.1.8; MSC.81(70)1/ 2.8.6, 2.9.2-2.9.3, 2.10.3, Annex 2 & 3									
Test Proce	dure				Sig	nificant Tes	t Data					
At the conclusion of the rightin any adjustments in body or	Fr	eeboard	(mm)	Faceplar	ne (deg)	Torso ano	gle (deg)	Light				
subject floating in the relaxed f	Ilowing measurements should be made with the ubject floating in the relaxed face-up position of static alance resulting from the preceding tests.		J	RTD	CLJ	RTD	CLJ	RTD	Visible?			
balance recarding from the proc	e resulting from the preceding tests.											
Infant lifejackets should mee		2										
freeboard requirements, howey torso angle, faceplane and mo		3					-					
necessary in order to:		4										
.1 contribute to the rescue of the	5											
		6										
.2 allow the infant to be faste contribute to keeping the		7										
caretaker;		8										
.3 keep the infant dry, with free	e respiratory passages;	9										
.4 protect the infant against bu	mps and jolts during the											
evacuation; and	inpo una jono duning the											
.5 allow a caretaker to monitor and control heat loss by the infant.		Avg							XXXXX			
	CLJ – Candida RTD – Referen	-										

Inflatable lifejackets (Adults & Child)	Model:		S	Date: Time: Surveyor: Drganization:
2.2.2.22 Infant and children Static balance mea				s: LSA Code II/ 2.2.1.8; MSC.81(70)1/ 2.8.6, 2.9.2-2.9.3, 2.10.3,
Test Procedure	9	Acceptance Crite	ria	Significant Test Data
<ol> <li>Freeboard – The distant perpendicularly from the water to the lowest point of mouth where respiration m if the mouth were not h lowest side of the mouth measured if the left and rig level.</li> <li>Faceplane angle – The art the surface of the water formed between the most the forehead and chin.</li> <li>Torso angle – The ang vertical, of the line formed points of the shoulder and portion of the pelvis).</li> </ol>	surface of the of the subject's ay be impeded, neld shut. The uth should be ht sides are not ngle, relative to , of the plane forward part of gle, relative to by the forward	Freeboard: the average freeb subjects should not be less the for the RTD minus 10 mm. Faceplane angles: The av subjects' faceplane angles less than the average for the F Torso angles: the average of torso angles should be not average for the RTD minus 10	an the averag verage of a should be no RTD minus 10 of all subject less than th	Average freeboard, an subjects ≥ average freeboard for RTD minus 10 mm         Passed       Failed         All ot o.       Average faceplane angle, all subjects ≥ average for RTD minus 10°         Passed       Failed         s'       Failed
<ol> <li>List angle – The angle surface of the water and the left and right shoulder of the ears if only the head is</li> </ol>	a line between or a line through	Lifejacket light location: the lifejacket light should permit over as great a segment hemisphere as is practicable.	it to be visible of the upper	Does the location of the lifejacket light permit it to be visible over

Inflatable lifejackets (Adults & Child)	Manufacturer: _ Model: Lot/Serial Num	oer:	Date:       Time:          Surveyor:          Organization:
2.2.2.23 Children's lifejac test	ket – Water perfor	mance tests – Jump and drop	Regulations: LSA Code II/2.2.1.8, 2.2.2.21; MSC.81(70) 1/ 2.9, 2.8.8, 2.8.9, 2.10.3
Test Procedu	ıre	Acceptance Criteria	Significant Test Data
Without readjusting the li subject should jump vertical feet first, from a height of holding the arms over the entering the water, the te relax to simulate a state of The freeboard to the m recorded after the test subj The test should be repeate at least 4.5m.	ally into the water, at least 1m while he head. Upon st subject should f utter exhaustion. nouth should be ect comes to rest.	Five of the nine subjects should perform the jump and drop test. When conducting water performance tests under 2.8, infant and child-size lifejackets should meet the following requirements for their critical flotation stability characteristics.	See following page for test data         1 m Jump         Average freeboard, all subjects: mm (A)         Average freeboard for RTD (from 2.2.18) : mm (B)         (B) – (A)= ≤ 15 mm Pass / Fail         Did the lifejacket become dislodged or cause harm to the test subject?:         Yes / No
When jumping into the wate should hold on to the lifeja entry to avoid possible inju the water, the test subject simulate a state of utter freeboard to the mouth sh after the test subject comes The lifejacket and its attact examined for any damage. I likely from any jump or drop should be rejected or the test from a lower height precautions demonstrate th required test is acceptable.	acket during water iry. Upon entering et should relax to exhaustion. The bould be recorded to rest. hments should be if injury is believed test, the lifejacket test delayed until or with additional	<ul> <li>Following the jump and drop test, the lifejacket should:</li> <li>.1 surface the test subject in a face up position with an average freeboard for all the subjects of not less than the average determined for the RTD after the turning test in accordance with 2.2.1.23 minus 15 mm;</li> <li>.2 not be dislodged or cause harm to the test subject;</li> </ul>	Did the lifejacket have damage that would affect its in-water performance or buoyance?: Yes / No Did the lifejacket have damage to its attachments?: Yes / No
NOTE: JUMP AND DROP		.3 have no damage that would affect its in-water performance or buoyance;	Did the lifejacket have damage that would affect its in-water performance or buoyance?: Yes / No

2.2.2.23 Children's lifejacket – Water perform test	nance tests – Jump and drop	Regulations: LSA Code II/2.2.1.8, 2.2.2.21; MSC.81(70) 1/ 2.9, 2.8.8, 2.8.9, 2.10.3
Test Procedure	Acceptance Criteria	Significant Test Data
Note: Water tests using children should avoid causing distress or risk to the child. Consideration should be taken of their age and ability. The test should be conducted using lifejackets that have been inflated both automatically and manually, and also with one of the compartments uninflated.	and .4 have no damage to its attachments.	Did the lifejacket have damage to its attachments?: Yes / No Comments/Observations

(Adults	Inflatable lifejackets       Manufacturer:						Time:						
2.2.2.23 drop tes		ket – Water pe	rformance tests	– Jump and	Regula 2.10.3	gulations: LSA Code II/ 2.2.1.8, 2.1.5.6; MSC.81(70)1/2.9, 2.8.8, 2.8.9and 0.3							
TEST DA	ATA SHEET (1 m Jum	(ar											
Subj		Subject surfacedFreeboardLifejacketSubject wasfaceup?(mm)becameharmed?		lif at	amage to ejacket or tachments ′es/No)	Comments/ Observations							
1						•							
2													
3													
4													
5													
2.2.1.23 drop tes	Children's lifejac ts ATA SHEET (4.5 m Ju	-	rformance tests	– Jump and	Regula 2.8.9	tions: LSA Co	ode II/ 2.2.1.8, 2.2.1.2.5; MSC.81(70)1/2.9, 2.8.8 and						
Subj	Subject surfaced		Lifejacket	Subject wa		amage to	Comments/ Observations						
Subj	faceup? (Yes/No)	(mm)	became dislodged (Yes/No)	harmed? (Yes/No)	life at	einage to ejacket or tachments ′es/No)							
1													
2													
3													
4													
5													

(A dulta 8 Obilet)	ufacturer: el: Serial Number:		Surveyo	or:				· · · · · · · · · ·					
2.2.2.24 Infant and children's life stability test	acket – Water performance tests –	Regulations: LSA Code II/2.2.1.8, 2.2.1.4; MSC.81(70) 1/2.8.10, 2.9.2, 2.10.3											
Test Procedure	Acceptance Criteria		Significant Test Data										
The test subject should attain a rela face-up position of static balance ir water. The subject should be instru	the not roll any subject face down in ted the water.			the subj down? (				id the subject return to a stable face-up position? (Yes/No)					
to assume a foetal position as foll "place your elbows against your si	assume a foetal position as follows: ace your elbows against your sides, (a) + (b) = 0		Can	didate	F	TD	Can	didate	F	RTD			
your hands on your stomach, under	hands on your stomach, under the	Subj	cw	ccw	cw	ccw	cw	ccw	cw	ccw			
lifejacket if possible, and bring knees up as close to your ches possible." The subject should be rotated clock around the longitudinal axis of the t by grasping the subject's shoulder upper areas of the lifejacket so tha subject attains a 55 ± 5 degree list. subject should then be released. subject should then be released. subject should then be conducted the subject rotated counter-clockwis The entire test should then be repe with the test subject wearing the RT The test should be conducted u lifejackets that have been inflated automatically and manually, and with one of the compartm	as are returned to the stable face- up foetal position in the candidate lifejacket should be at least equal to the number who are returned to the stable face-up foetal position in the RTD. (e) $\leq$ (g) (f) $\leq$ (h) with e. ted D. sing oth llso	1 2 3 4 5 6 7 8 9 9 	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)			

Inflatable lifejackets (Adults & Child)	Model:	rer: Number:		Date: Surveyor: Organization: _	Time:		
2.2.2.25 Infant and children	's lifejacket	- Mobility test	Regulation	.2.1.8; MSC.81(70) 1/2.9.2.5, 2.10.3			
Test Procedure		Acceptanc	e Criteria	Significant Test Data			
To be considered in and out of Mobility of the subject both in the water should be given considetermining the acceptability for approval and should be comobility when wearing the size RTD when climbing out co going up and down stairs, pic article from the floor, and the from a cup.	n and out of sideration in of a device compared to appropriate of the water, cking up an	Assistance may be given to wearer mobility should not be than by the appropriate size F	reduced to an		Does the lifejacket provide for acceptable mobility of the test subjects both in and out of the water and is comparative to the mobility of wearing the RTD? YES NO Passed Failed Method of evaluation: Comments/Observations		

## 2.2.3 LIFEJACKET/IMMERSION SUIT LIGHTS EVALUATION AND TEST REPORT

Remarks: If an immersion suit is designed to be worn without a lifejacket, it should be fitted with a light complying with the requirements for lifejacket lights. The immersion suit light should be treated as a lifejacket light.

2.2.3.1	General ir	nformation
	2.2.3.1.1	General data and specifications
	2.2.3.1.2	Submitted drawings, reports and documents
2.2.3.2	Visual insp	pection
	2.2.3.2.1	Approval marking
		Expiry marking
	2.2.3.2.3	Additional markings
	2.2.3.2.4	•
	2.2.3.2.5	5
	2.2.3.2.6	Construction and materials
2.2.3.3	Temperati	ure cycling test
2.2.3.4	Light tests	
2.2.3.5	Chromatic	ity test
2.2.3.6	Drop test	
2.2.3.7	2 m light d	lrop test
2.2.3.8	Switch arr	angement test
2.2.3.9	Vibration t	est
2.2.3.10	Mould gro	wth test
2.2.3.11	Corrosion	and seawater resistance test
2.2.3.12	Test for oi	l resistance
2.2.3.13	Rain test a	and watertightness test
2.2.3.14	Fire test	

# 2.2.3 LIFEJACKET/IMMERSION SUIT LIGHTS EVALUATION AND TEST REPORT

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Lifejacket/immersion suit lights Manufacturer: Model: Lot/Serial Number:			Date:         Time:           Surveyor:         Organization:			
2.2.3.1.1 General	data and	d specifications		Regulations: LSA Code;	MSC.81(70)	
General Ir	nformatio	on	Life	jacket Light Dimensions	Lifejacket Light Weight	
TYPE OF SWITCHING:	Autom Manua				Detail of Buld, Battery & Voltages Comments/Observations	
FLASHING						
LIGHT STEADY						
LIGHT						

#### SSE 7/21/Add.1 Annex 7, page 168

Lifejacket/immersion lights	suit	Manufacturer: Model: Lot/Serial Num	nber:	Date: Surveyor: Organization:	Time:	
2.2.3.1.2 Submitte	d drawin	igs, reports and				
			Submitted drawings and documer	ts		Status
Drawing No.	Revis	ion No. & date	Т	itle of drawing		

Submitted reports and documents					
Report/Document No.	Revision No. & date	Title of report / document	Status		
		Maintenance Manual -			
		Operations Manual -			

Lifejacket/immersion suit lights	Model:	umber:	Date:          Time:            Surveyor:          Organization:			
2.2.3.2 Visual Inspection	า		Regulations: LSA Code 1.2	.2.1/1.2.2.6/1.2.2.9/1.	2.2.10/1.2.3/2.2.3.1.3	
Test Procedure		Acceptance	ce Criteria	Si	ignificant Test Data	
Twenty lifejacket lights should in detail for the following items:		The lifejacket lights should:		<u>Results:</u>		
Approval marking		<ul> <li>be clearly marked with approval information including the Administration which approved it, and any operational restrictions;</li> </ul>			FAIL:	
Expiry marking		<ul> <li>be marked with a date of expiry; The Administration should determine the period of acceptability, owing to deterioration with age. The established life must be justified by the manufacturer.</li> </ul>		PASS: <u>Results:</u> PASS:	FAIL: FAIL:	
Additional markings		<ul> <li>precise definition of intended use (e.g. "Lifejacket light"); serial number; identification of the manufacturer; easily understandable symbols for on/off switching; where applicable, information on proper battery</li> </ul>			FAIL: FAIL: FAIL: FAIL: FAIL:	
				Comments/Obser	vations	

### SSE 7/21/Add.1 Annex 7, page 170

Model:		r: Date: Date: Surveyor: Organization:				
2.2.3.2 Visual Inspection	(continued)		Regulation	s: LSA Code 1.2.2	.1/1.2.2.6/1.2.2.9/1.	2.2.10/1.2.3/2.2.3.1.3
Test Procedure		Acceptanc	e Criteria		Si	ignificant Test Data
		The lifejacket lights should:			<u>Results:</u>	
Electrical short circuit protection	n	- be provided with electric prevent damage or injur		iit protection to	PASS:	FAIL:
Visibility when attached to a lifejacket Construction and materials		<ul> <li>be visible over as great hemisphere as is praction lifejacket;</li> </ul>			PASS:	FAIL:
		- be constructed with prop materials; and	per workman	ship and	PASS:	FAIL:
		- if the light is a flashing li manually operated swite		ded with a	PASS:	FAIL:
Colour of lifejacket light		- be of an international or comparably highly visibl will assist detection at s	le colour on a	orange, or a Il parts where this	PASS:	FAIL:
					Comments/Observ	vations

Lifejacket/immersion suit		Manufacturer:		ate:	Time:		
lights	Model: Lot/Serial Number:			Surveyor: Organization:			
•	· ·						
lifejacket and imi	mersion sui	t light test flow chart					
				lights 1 through 4:	Light test (hot) 2.2.3.3		
		rature Cycling (12 lights in groups of 4)		lights 5 through 8:	light test (cold) 2.2.3.3		
	2.2.3.2			lights 9 through 12:	light test (ambient) 2.2.3.3		
	Any one of	f the 12 lights - Chromaticity Test 2.2.3.4					
Visual	Any one of	f the 12 lights - 4.5 m drop test 2.2.3.5 Same light: Light sau test (ambient) Ch	ime light: promaticity	y Test			
Inspection (all 12	Any one of		ame light: Chromaticit	ty test			
lights) 2.2.3.1	Any one of 2.2.3.7	f the 12 lights - Switch arrangement testsame light subjected	d to Vibrati	ion test 2.2.3.8			
		f the 12 lights - 28 day mould growth test aived) 2.2.3.9					
		f the 12 lights - Corrosion and seawater test (may be waived) 2.2.3.10					
	Any one of	f the 12 lights - Oil resistance test 2.2.3.11					
	Any one of	f the 12 lights - rain test and watertightness test 2.2.3.12					
	Any one of	f the 12 lights - fire test 2.2.3.13					

Lifejacket/immersion suit lights	Manufacturer: Model: Lot/Serial Number:			Date:            Surveyor:            Organization:		
2.2.3.3 Temperature cycling	test	-	Regulatio	ons: LSA Code 1.2.2.2; MS	SC.81(70) 1/ 1.2/1.2.	1/1.2.2/10.3/10.3.1/10.3.2
Test	Procedure		Accept	ance Criteria	Si	gnificant Test Data
	have passed the visual inspection erature cycling. The following test ve lifejacket lights:					FAIL:
The lifejacket lights should be alternately subjected to surrounding temperatures of -30°C and at least +65°C. These alternating cycles need not follow immediately after each other and the following procedure, repeated for a total of not less than 10 cycles, is acceptable:			rigidity unde tests, shou as shrinkii ion or chang	s should show no sign of er high temperatures and, ld show no sign of damage ng, cracking, swelling, ge of mechanical qualities after the test.	Attach temperature times spent at eac	e cycling chart to record h temperature.
.1 8 h exposure at a min completed in 1 day; and	imum temperature of +65°C to be d					
same day and left expo	ed from the warm chamber that sed under ordinary room conditions $C \pm 3^{\circ}C$ until the next day;					
.3 an 8 h exposure at a ma completed the next day	aximum temperature of -30°C to be /; and					
	d from the cold chamber that same nder ordinary room conditions at a 3°C until the next day.					
After having passed the tempe be subjected next to the light	erature cycling test the lights should tests.					

Lifejack lights	et/immersion suit	Model:	urer:		Date: Surveyor: Organization:		ime:	
2.2.3.3	Temperature cyc		est data OT CYCLE		Regulations: LSA Code 1.2.2	.2; MSC.81(70) 1/ 1. COLD C		1/10.3.2
Cycle 1	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: In : Temperature :	Time	Date Out: Time Out: Duration:	
Cycle 2	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: In: Temperature:		Date Out: Time Out: Duration:	
Cycle 3	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: In: Temperature:	Time <u>°</u> C	Date Out: Time Out: Duration:	
Cycle 4	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: In: Temperature:		Date Out: Time Out: Duration:	
Cycle 5	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: In: Temperature:		Date Out: Time Out: Duration:	
Cycle 6	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: In: Temperature:		Date Out: Time Out: Duration:	
Cycle 7	Date In: Time In: Temperature:		Date Out: Time Out: Duration:	hours	Date In: In: Temperature:		Date Out: Time Out: Duration:	
Cycle 8	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: In: Temperature:		Date Out: Time Out: Duration:	
Cycle 9	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date In: In: Temperature:		Date Out: Time Out: Duration:	
Cycle 10	Date In: Time In: Temperature:		Date Out: Time Out: Duration:	hours	Date In: In: Temperature:		Date Out: Time Out: Duration:	hours

Lifejacket/immersion suit lights	Model:	umber:		Date: Surveyor: Organization:	Time:	
2.2.3.4 Light tests				ns: LSA Code 1.2 3.5/ 10.3.5.2/10.3.5		2.2.3.2.2; MSC.81(70) 1/
Test Procedure		Acceptan	ce Criteria		Signi	ficant Test Data
Four lifejacket lights which have temperature cycling test sho from a stowage temperature then be operated immersed in a temperature of -1°C, four life which have passed the temper test should be taken from temperature of +65°C and immersed in seawater at a te +30°C, and four lifejacket light passed the temperature cycline be taken from ordinary room co be operated immersed in f ambient temperature. If the voltage at 5 min of oper than the recorded voltage at to it is permissible to use a las same build standard for the test. Using the lowest record light output test can be ca described below. The voltage units should be monitored con 8 h. To make sure that all test a luminous intensity of no 0.75 cd in all directions o hemisphere for 8 h operation, test should be performed.	uld be taken of -30°C and n seawater at ejacket lights rature cycling a stowage be operated mperature of s which have og test should onditions and reshwater at ation is lower he end of life mp from the e light output ed voltage a rried out as of all 12 test ntinuously for units provide ot less than f the upper	Water-activated lifejacket functioning within 2 min and intensity of not less than 0.75 freshwater a luminous intensis should have been attained wit the 12 lifejacket lights should of intensity of not less than 0.75 of hemisphere for a period of at l In the case of a flashing light it rate of flashing for the 8 h op 50 flashes and not more than the effective luminous intensis directions of the upper hemis calculate the effective luminous	d have rea cd within 5 n sity of not le thin 10 min. continue to p cd in all direc east 8 h. should be es erative perio 70 flashes p sity is at lea phere. (See	ched a luminous nin in seawater. In ess than 0.75 cd At least 11 out of rovide a luminous ctions of the upper stablished that the id is not less than er minute and that ast 0.75 cd in all	PASS: Recorded voltage at t Voltage at 5 min of op Lowest recorded volta Details of three lights Al luminous intensity, detai8ls, color of light attached here for eac a) Taken form -3 b) Taken from +6	peration: age: selected for light output test hours of operation, flash and Voltage data is to be h light 50°C: 55°C: rdinary room conditions:

Lifejacket/immersion suit lights	Model:	er: umber:		Date: Surveyor: Organization:		
2.2.3.4 Light tests (continu	ed)		Regulations: LSA Code 1.2.2.3/2.2.3.1.1/2.2.3.1.2/2.2.3.2.2; MSC.81(70) 1/ 10.3.2/10.3.5/ 10.3.5.2/10.3.5.3/10.4/10.4.9			
Test Procedure		Acceptano	ce Criteria		Significant Test Data	
It must be demonstrated that light from each of the specified ranges reaches the requir intensity in all directions of hemisphere when using a which is calibrated to the standards of the appropriate State Standard Institute (No No.70 contains further inform lowest voltage light of the cold test sample lot, the highest ver the high temperature test sa the mean voltage light of temperature sample lot should These three lights must be use output tests. In the event filament burns out during the test, a second light from performance test lot may Luminous intensity should be a photometer directed at the light source with the test light table. Luminous intensity measured in a horizontal dir level of the center of the light continuously recorded thro rotation.	d temperature ed luminous of the upper photometer photometer photometric e National or te: CIE Publ. mation.). The d temperature oltage light of imple lot and the ambient d be selected. ed for the light that a lamp e light output n the same / be used. measured by center of the on a rotating should be rection at the the source and	The effective luminous intensiformula: $\begin{bmatrix} \int_{t_1}^{t_2} Id \\ 0.2 + (t_2) \end{bmatrix}$ where: I is the instantaneous intensity 0.2 is the Blondel-Rey constant t_1 and t_2 are time limits of integrations of the second s	$\left[\frac{t}{t}-t_{1}\right]_{max}$		Comments/Observations	

Lifejacket/immersion suit lights	Manufacturer: Model: Lot/Serial Number:		Surv	Date:         Time:           Surveyor:		
2.2.3.4 Light tests (continue	ed)	Regulations: LSA Code 1.2.2.3/2.2.3.1.1/2.2.3.1.2/2.2.3.2.2; MSC.81(70) 1. 10.3.2/10.3.5/ 10.3.5.2/10.3.5.3/10.4/10.4.9				
Test Procedure		Acceptance Criteria		Significant Test Data		
The first measurement should be taken at 0° (horizontal) and should continue to be taken in azimuth angle at 5° intervals to a single measurement at 90° (vertical). Luminous intensity should be measured in a vertical direction, beginning at the center of the light source at the point of lowest recorded light output, and continuously recorded through an arc of 180°. All measured data of luminous intensity and voltage should be documented. After having passed the light tests one light should be subjected to the chromaticity test.		may be considered as f measurement of their luminous provide the required luminous upper hemisphere. The time is and reaching the required lumi time) and all time spent below to when the light switches off figure 10.4.1.) Figure 10.4.1 "On time" measure recover	a duration of not less than 0.3 s, s fixed/steady lights for the hous intensity. Such lights should bus intensity in all directions of the ne interval between switching on uminous intensity (incandescence bow the required luminous intensity off should be disregarded (see easurement diagram		Comments/Observations	

Lifejacket/immersion suit lights	Manufacturer: Model: Lot/Serial Number:			Date: Surveyor: Organization:	Time:
2.2.3.5 Chromaticity test			Regulatio	ns: LSA Code 2.2.	.3.1.4; MSC.81(70) 1/ 10.3.2/10.4/10.4.10
2.2.3.5 Chromaticity test Test Proced One lifejacket light which has should be tested for chromatici lies within the boundaries of th diagram specified for each colo Commission on Illumination (C The chromaticities of the lifeja measured by means of colori equipment which is calibrate National or State Standards Publ. No.15.2 contains for Measurement on at least four hemisphere should be taken.	ure passed the light tests ty to determine that it he area "white" of the ur by the International IE). acket light should be metric measurement d to the appropriate Institute (Note: CIE urther information).		aticity coordi of the area c ies of the area ving corner c 0.300 0.300 0.344 0.278 d on Colours	ns: LSA Code 2.2. ia nates should fall of the diagram as a for white lights oordinates: 0 0.440 3 0.382 of Light Signals,	

Lifejacket/immersion suit lights	Model:	er:		Date: Surveyor: Organization:		:
2.2.3.6 Drop test			Regulation	ns: LSA Code 2.2	1.5.6; MSC.81(70) 1	/ 10.3.3
Test Procedure		Acceptanc	ce Criteria		Się	gnificant Test Data
One lifejacket light which has visual inspection should be at lifejacket and then be subjected test as follows: Without readjusting the lifejact subject should jump vertical water, feet first, from a heigh 4.5 m. When jumping into the test subject should hold on to t during water entry to avoid pose For the approval of the lifejack test result obtained from the p subject should be acceptable provided otherwise. After this drop test the light taken from ordinary room cor operate immersed in free ambient temperature. The light should then be subject light tests (see 2.2.3.3).	tached to a ed to a drop ket, the test lly into the t of at least e water, the he lifejacket ssible injury. ket light, the participating e except as should be aditions and shwater at	The lifejacket light should not dislodged from the lifejacket, and should be switched on an conspicuous whilst the test su Water-activated lights should 2 min and have reached a lu than 0.75cd within 5 min in luminous intensity of not less th attained within 10 min. The lig a luminous intensity of not less of the upper hemisphere for a further details see Light Tests	suffer damag should not in d seen to be bject is still i commence f uminous inte seawater. nan 0.75 cd s ht should co s than 0.75 c a period of a	jure the wearer, e illuminated and n the water. unctioning within ensity of not less In freshwater a should have been ntinue to provide d in all directions	Results: PASS: Comments/Observ	FAIL:

	Manufacture	er:		Date:	Time:	
Lifejacket/immersion suit lights	Model:			Surveyor:		
	Lot/Serial N		lumber: Organization:			······
2.2.3.7 2 m light drop test			Regulation	ns: MSC.81(70) 1/	10.3.4	
Test Procedure		Acceptano	ce Criteria		Signifi	icant Test Data
One lifejacket light which has passed the visual inspection should be dropped from a height of 2 m onto a rigidly mounted steel plate or concrete surface.		capable of providing a luminous intensity of not less than 0.75 cd for a period of at least 8 h when operated immersed		<u>Results:</u> PASS:	FAIL:	
After this test the light should b ordinary room conditions a immersed in freshwater temperature.	ind operate	g colo di			Comments/Observatio	ons
The light should be subjected light tests (see 2.2.3.3).	I next to the					
2.2.3.8 Switch arrangement	test		Regulation	10.3.5/10.3.5.1/10.4/10.	.3.5/10.3.5.1/10.4/10.4.3	
Test Procedure		Acceptance Criteria		Significant Test Data		
If a manual switch is fitted, arrangement test should be ca		The light must function proper	ly.		<u>Results:</u>	
One lifejacket light which has visual inspection should be sub switch arrangement test.					PASS:	FAIL:
A test person wearing imm gloves, must be able to switch light in its normal operational and off three times. After having passed t arrangement test the light subjected next to the vibration	the lifejacket position on he switch should be				Comments/Observatio	ons

Lifejacket/immersion suit lights	Model:	er: umber:	Surveyor:	Time:	
2.2.3.9 Vibration test		Regulat	ions: LSA Code 1	.2.2.1/1.2.2.8; MSC.81(	70) 1/ 10.4/10.4.1
Test Procedure		Acceptance Criteria		Sig	nificant Test Data
The lifejacket light which has switch arrangement test subjected to a vibration test	should be	The lifejacket light should be constructed workmanship and materials	d with proper	<u>Results:</u>	
IEC 60945:2002, paragraph 8	.7.	The lifejacket light should function after	the test.	PASS:	FAIL:
				Comments/Observa	ations

Lifejacket/immersion suit lights	Model:	er:				ne:
2.2.3.10 Mould growth test			Regulatior	s: LSA Code 1.2.	2.4; MSC.81(70) 1	/ 10.4/10.4.2
Test Procedure		Acceptanc	e Criteria		5	Significant Test Data
One lifejacket light which has visual inspection should be the mould growth test. The lif	subjected to	The lifejacket light should be affected by fungal attack.	rot-proof ar	nd not be unduly	<u>Results:</u>	
should be inoculated by spra aqueous suspension of mo containing all the following cul	ying with an ould spores	There should be no mould gra and the lifejacket light should t			PASS:	FAIL:
Aspergillus niger; Aspergi Aureobasidium pullulans; I variotii; Penicillium Penicillium ochro- chloron; S brevicaulis; and Trichodern The lifejacket light should then a mould growth chamber whic maintained at a temp 29°C +/- 1°C and a relative hu less than 95 %. The period of should be 28 days. After this lifejacket light should be inspe (Note: The mould growth to waived where the manufactur produce evidence that th materials employed will satisfy	Paecilomyces funiculosum, copulariopsis na viride. be placed in ch should be erature of midity of not of incubation s period the cted. est may be er is able to ne external				Comments/Obse	rvations

Lifeja lights	acket/immersion suit s	Model:	er: umber:		Date: Surveyor: Organization:	Time	:
2.2.3	.11 Corrosion and s	eawater resi	stance test	Regulatior	s: LSA Code 1.2.	2.4; MSC.81(70) 1/ 1	0.4/10.4.4
	Test Procedure		Acceptanc	e Criteria		Sig	nificant Test Data
visua corro	lifejacket light which has I inspection should be su sion and seawater res	ibjected to a istance test	The lifejacket light should be ounduly affected by seawater.			<u>Results:</u>	
accor parag	rding to IEC graph 8.12.	60945:2002,	Furthermore, the lifejacket li requirements of IEC 60945:20			PASS:	FAIL:
(Note .1	e: If there are no exposed the Corrosion and Resistance Test new conducted.	Seawater	There should be no undue de the lifejacket light should funct			Comments/Observa	ations
.2	The Corrosion and Resistance Test may where the manufacture produce evidence that metals employed will test.	be waived er is able to the external					
.3	Automatic activated ve be prevented from swit the test.)						
.4	Where the exposed me the automatic switch function test after the cannot be done.	sensor, the					

Lifejacket/immersion suit       Manufacturer:         Model:       Lot/Serial Number:			Surveyor:			
2.2.3.12 Test for oil resis	2.2.3.12 Test for oil resistance			ns: LSA Code 1.2.	2.4; MSC.81(70) 1/ 1	0.4/10.4.6
Test Procedure		Acceptanc	ce Criteria		Sigi	nificant Test Data
One lifejacket light which has passed the visual inspection should be subjected to the test for oil resistance according to IEC 60945:2002, paragraph 8.11. Automatic activated version should be prevented from switching during the test.		by oil and should show no sign cracking, swelling, dissolutio qualities.	by oil and should show no sign of damage such as shrinking, cracking, swelling, dissolution or change of mechanical qualities.		<u>Results:</u> PASS: Comments/Observa	FAIL: tions
2.2.3.13 Rain test and wa	itertightness	test Regulations: LSA Code 1.2.2			2.4/1.2.2.8; MSC.81(70) 1/ 10.4/10.4.7	
Test Procedure		Acceptance Criteria		Significant Test Data		
One lifejacket light which has passed the visual inspection should be subjected to a rain test according to IEC 60945:2002, paragraph 8.8. After having passed the rain test the lifejacket light and the complete power source should be immersed horizontally under not less than 300 mm of fresh water for at least 24 h. Automatic activated version should be prevented from switching during the test.		ply with the .8.2 and sho he lifejacket	uld function after light should	<u>Results:</u> PASS: Comments/Observa	FAIL: tions	

Lifejacket/immersion suit lights	Manufactur Model: Lot/Serial N	er: lumber:	Date: Surveyor: Organization: _		
2.2.3.14 Fire Test		Regulation	ons: LSA Code 2.	2.1.1; MSC.81(70) 1	/ 10.4/10.4.8
Test Procedure		Acceptance Criteria		Signi	ficant Test Data
Test Procedure One lifejacket light which has visual inspection should be su fire test. A test pan not less th 35 cm x 6 cm should be p essentially draught-free ar should be put in the bottom of to a depth of at least 1 cm enough petrol to make a mi depth of not less than 4 cm should then be ignited and allo freely for at least 30 s. The lif should then be moved through facing them, with the lifejack more than 25 cm above the the test pan so that the exposure to the flames is at lease	bjected to a han 30 cm x laced in an rea. Water the test pan followed by nimum total . The petrol bwed to burn ejacket light o the flames, ket light not top edge of duration of	Acceptance Criteria The lifejacket light should not sustain b melting after being totally enveloped in a at least 2 s and after being removed from The lifejacket light should function after	a fire for a period of m the flames.	Signi <u>Results:</u> PASS: Comments/Observati	FAIL:

### 2.2.4 REFERENCE TEST DEVICE (RTD) CONSTRUCTION VALIDATION AND CALIBRATION

2.2.4.1 Adult Lifejacket RTD

2.2.4.1.1 Buoyancy calibration
2.2.4.1.2 Construction validation – General
2.2.4.1.3 Construction Validation – Fabric and Webbing measurements

- 2.2.4.2 Child Lifejacket RTD
  - 2.2.4.2.1 Buoyancy calibration
- 2.2.4.3 Infant Lifejacket RTD
  - 2.2.4.3.1 Buoyancy calibration

## 2.2.4 REFERENCE TEST DEVICE (RTD) CONSTRUCTION VALIDATION AND CALIBRATION

Manufacturer	
Serial number	
Size (Adult/Child/Infant)	
Date of construction	
Place of construction	
Date of validation/calibration	
Place of validation/calibration	
Signature	

Reference test device (RTD)       Manufacturer:         Model:       Lot/Serial Number:					Surveyor:		Time:
2.2.4.1.1	Buoyancy cali		R	egulations: L			Annex 1, Appendix
	Test Proce	dure		Acceptance	e Criteria		Significant Test Data
the overall between the maintained The buoya allowable shrinkage stabilizes. I have stabili be checked and then a used for te may require with buoya for certifica At the time distribution adjusted to achieve the -up" inserts front and in may need inserts from within toler the back o	buoyancy and dia he front and back d within a tight tole ancy of a new F tolerance range or compression Until the buoyanc lized, buoyancy a d at regular intervant testing, whichever i re more frequent ancies within toler ation testing. me of manufac n of buoyancy in o be within 1.3 is tolerance, thin I s) may have been nside front foam in to increase the s n time to time to k rance, or may nee	RTD may exceed the e until the normal of the foam inserts ies of the foam inserts and distribution should vals (perhaps weekly), hereafter or whenever s longer (frequent use checks). Only RTDs rance should be used ture the left-to-right the front inserts was N of each other. To layers of foam ("make inserted between the heserts. The test house size of these make-up eep these parameters ed to add buoyancy to r trim buoyancy, if the	<sup>2</sup> buoyancy dis	tribution is cal the total buoyan of 6.5 mm thick or areas, an is o be replaced. I ue, measure th t the proper d I difference) be	culated by div ncy foam is requir inside front o f the front buoy le buoyancy of listribution of l	r back insert vancy is under f the right and buoyancy (no	Left front buoyancy: N   Right front buoyancy: N   Total front buoyancy: N   Total back buoyancy: N   Total buoyancy: N   Buoyancy distribution: % in   front   Make-up inserts added/removed: Foam inserts replaced: Comments:

Reference test device (RTD)	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:
2.2.4.1.2 Construction va	alidation – General	Regulations: LS	A Code 2.2.1.4	; MSC.81(70), annex 1, table A.4; MSC.1/Circ.1470, 2.1
Test Procedure		Acceptance Criteria		Significant Test Data
Spot check foam inserts. Wh necessary to conduct a full of the dimensions of the foam, a of one out of every five RTDs made of a representative sa foam pieces against the dim the appropriate annex to th recommendation on testing of appliances (resolution MSC.8	heck of all spot check should be ampling of ensions in e Revised life-saving	hould be within ± 6 mm.		<ul> <li>a. Front foam insert (figure A.27) Pass Fail</li> <li>b. Inside front foam insert (figure A.28) Pass Fail</li> <li>c. Collar foam insert (figure A.29) Pass Fail</li> <li>d. Back foam insert (figure A.30) Pass Fail</li> <li>Comments/observations:</li> </ul>

Reference test device (RTD)	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time: on:			
2.2.4.1.3 Construction Valic measurements	dation – Fabric and Webbing	Regulations	Regulations: LSA Code 2.2.1.4; MSC.81(70) Annex 1; MSC.1/Circ.1470, 3				
Test Pro	ocedure	Acceptance Crit	eria	Significant Test Data			
Establish reference point on the shoulder seam. Place a small mark on the shoulder seam 44.5 mm from the inside edge of the neck seam.		This mark will be the refe for measuring distances and back panels.					
Vertical webbing. Measure fro vertical webbing.	om the reference point to the	The vertical webbing shout ± 6.5 mm of this point.	uld be within	Vertical webbing distance: mm Pass Fail			
Shoulder loop. Measure the distance from the reference point to the location where the inside edge of the yellow webbing first passes under the black shoulder loop.		This distance should be $73 \pm 6$ mm.		Shoulder loop distance: mm Pass Fail			
Chest strap. Measure the distant to the top of the chest strap.	ance from the reference point	This distance should be 1	68 ± 6 mm.	Chest strap distance: mm Pass Fail			
Waist belt. Measure the dista to the top of the waist belt.	nce from the reference point	This distance should be 4	16 ± 3 mm.	Waist belt distance:   mm     Pass   Fail			
Front panel length. Measu reference point to the bottom		This distance should be 4	89 ± 6 mm.	Front panel length mm Pass Fail			
Back panel length. Measure the distance from the reference point to the bottom of the back panel.		This distance should be $550 \pm 6$ mm.		Pass   Pail     Back panel length.   mm     Pass   Fail			

2.2.4.1.3 Construction Validation – Fabric and Webbing measurements	Regulations: LSA Code 2	2.2.1.4; MSC.81(70) Annex 1; MSC.1/Circ.1470, 3
Test Procedure	Acceptance Criteria	Significant Test Data
Collar attachment location. To check the collar attachment location, hold the RTD by the collar, keeping the collar level so the RTD hangs freely. Measure from the top back edge of the foam down to the centre of the neck seam.	This distance should be 342 ± 6 mm.	Collar attachment location: mm Pass Fail
Webbing attachment to collar. To check the location of the vertical webbing attachment to the collar, measure the distance from the edge of the foam (at the end opposite from the zipper) to the front seams of the box-X stitching.	This distance should be 111 ± 6 mm.	Webbing attachment to collar location: mm Pass Fail
Webbing length (chest strap to collar attachment). To check the length of the vertical webbing from the top of the chest strap to the attachment at the collar, measure the inside distance between the box-X stitches located on the chest strap (front panel) and on the underside of the collar.	This distance should be 263 ± 6 mm.	Webbing length: mm Pass Fail
Finished waist belt assembly length. To check the finished length of the waist belt assembly, measure the overall length with the buckle unfastened and the adjustments in the full open position (maximum length). Lay the RTD on a flat surface and measure the fully extended length of the assembly. For consistency, measure the distance from where the snap hook fastens in the D-Ring.	This distance should be 1700 ± 12 mm.	Finished waist belt assembly length: mm Pass Fail

2.2.4.1.3 Construction Validation – Fabric and Webbing measurements	Regulations: LSA Code :	2.2.1.4; MSC.81(70) Annex 1; MSC.1/Circ.1470, 3
Test Procedure	Acceptance Criteria	Significant Test Data
Finished neck size. A suitably sized cone (such as a traffic cone) should be used to check the finished neck size. The cone should be rigid, have a slope of $8.5^{\circ} \pm 1.5^{\circ}$ , and be tall enough to allow the RTD to fit snugly. If a flexible cone (such as a plastic traffic safety cone) is used it should be filled with rigid foam, concrete, or similar substance to make it rigid.	The circumference should be $395 \pm 6$ mm.	Finished neck size: mm Pass Fail
With both chest and waist belt buckles fastened and the waist belt adjusted to the full open position, place the RTD on the cone with just enough force so it will fit snug to the cone, but not forcing it down.		
Place a mark on both sides of the cone where the shoulder seam contacts the cone. This mark may be used to facilitate subsequent validations. Measure the circumference around the cone at the mark.		

Reference test device (RTD)	Model:	per:		Time:		
2.2.4.2.1 Buoyancy calib	oration		ons: LSA Cod	e 2.2.1.4; MSC.	81(70) Annex 3, Appendix	
Test Procedur		Accepta	nce Criteria		Significant Test Data	
To achieve repeatability in human subje	human subject		Design	Max	Min	
testing, the overall buoyancy and distribution of buoyancy between the front and back of the RTD must be maintained within a tight		Front Buoyancy <sup>1</sup>	63 N	65.4 N	60.6 N	Left front buoyancy: N
tolerance.	wiunin a ugni	Back	25 N	26.2 N	23.8 N	Right front buoyancy: N
The buoyancy of a new RTD		Buoyancy				Total front buoyancy: N
allowable tolerance range u shrinkage or compression of	the foam inserts	Total Buoyancy	88 N	91.6 N	84.4 N	Total back buoyancy: N
stabilizes. Until the buoyanc inserts have stabilized, distribution should be chec	buoyancy and	Buoyancy Distribution <sup>2</sup>	71.5% in front	73% in front	70% in front	Total buoyancy: N
intervals (perhaps weekly), a monthly thereafter or when	ind then at least	<sup>1</sup> values at or co	prrected to stan	e Buoyancy distribution:% in front		
testing, whichever is longer (fir require more frequent check	requent use may	<sup>2</sup> buoyancy distr by the total bue		ancy		
with buoyancies within toler used for certification testing.		At the time of mar in the front inserts	s was adjusted	er.		
To check buoyancy tolerance need to be removed from th		To achieve this to achieve the cum	ulative insert b	ew		
care that all trapped air is checking buoyancy and t maintained in their proper reinstalled (considerable e	device exceeds the be altered or replay house may need maintain the front-	aced to bring t to add make	est Foam inserts replaced: to			
needed to remove entrapped air if test intact device).		maintain the front-to-back and side-to-side insert tolerances. If the front buoyancy is under the minimum value, measure the buoyancy of the right and left sides so that the proper distribution of buoyancy (no more than a 1. 3 N difference) between the right and left front panels can be maintained.			ion	

nfant Lifejacket     Manufacturer:       Reference test device     Model:       RTD)     Lot/Serial Number:				Surve	Date:       Time:         Surveyor:          Organization:			
2.2.4.3.1 Buoyancy calib			Regulatio	ons: LSA Cod	e 2.2.1.4; MSC.81(7	70) Annex 3, Appendix		
Test Procedure			Accept	ance Criteria		Significant Test Data		
To achieve repeatability in testing, the overall buoyancy of buoyancy between the from RTD must be maintained tolerance. The buoyancy of a new RTD allowable tolerance range shrinkage or compression of stabilizes. Until the buoyand inserts have stabilized, distribution should be che- intervals (perhaps weekly), a monthly thereafter or whe testing, whichever is longer (f require more frequent cheo with buoyancies within toler used for certification testing. To check buoyancy tolerand need to be removed from t care that all trapped air is checking buoyancy and f maintained in their proper reinstalled (considerable e needed to remove entrapped intact device).	human subject y and distribution at and back of the within a tight may exceed the until the normal the foam inserts cies of the foam buoyancy and cked at regular and then at least never used for frequent use may sks). Only RTDs rance should be	the total buoys At the time of ma the front inserts achieve this tolera the cumulative in the upper limits replaced to bring to add make -up and side -to-side minimum value, n that the proper	Design 42 N 29 N 71 N 59.2 % in front orrected to stand ibution is calcul ancy nufacture the le was adjusted to ance, the layers sert buoyancy. I one layer pe the unit into co layers from time insert tolerance measure the bu distribution of	Max 44.4 N 30.2 N 74.6 N 60.7 % in front dard temperatu lated by dividir ated	Min         39.6 N         27.8 N         67.4 N         57.7 %         in front         ure and pressure         ng the front buoyancy         a new device exceed         a new device exceed         intain the front-to-bac         buoyancy is under the         right and left sides so         o more than a 1.3	Left front buoyancy:N Right front buoyancy:N Total front buoyancy:N Total back buoyancy:N Total buoyancy:N Buoyancy distribution:N Buoyancy distribution:N in front y by Make-up inserts added/removed: % Foam inserts replaced: comments: k		

#### 2.3 IMMERSION SUITS AND ASSOCIATED EQUIPMENT

### 2.3.1 IMMERSION SUITS (NON-INSULATED) EVALUATION AND TEST REPORT

- 2.3.1.1 General data and specifications
- 2.3.1.2 Submitted drawings, reports and documents
- 2.3.1.3 Quality assurance
- 2.3.1.4 Visual inspection
- 2.3.1.5 Test subjects
- 2.3.1.6 Test with a lifejacket
- 2.3.1.7 Test clothing
- 2.3.1.8 Donning tests 1 & 2
- 2.3.1.9 Ergonomic test
- 2.3.1.10 Field of vision test
- 2.3.1.11 Flotation test
- 2.3.1.12 Righting test
- 2.3.1.13 Water ingress and jump test
- 2.3.1.14 Jump test
- 2.3.1.15 Leak test
- 2.3.1.16 Swimming and water emergence test
- 2.3.1.17 Oil resistance test
- 2.3.1.18 Alternative oil resistance test
- 2.3.1.19 Fire test
- 2.3.1.20 Temperature cycling test
- 2.3.1.21 Temperature cycling test Test data
- 2.3.1.22 Buoyancy test
- 2.3.1.23 Strength test
- 2.3.1.24 Thermal protective test (General)
- 2.3.1.25 Thermal protective test (Continued)
- 2.3.1.26 Test sheets for temperatures during immersion tests

# 2.3.1 IMMERSION SUITS (NON-INSULATED) EVALUATION AND TEST REPORT

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Immersion suits (non-isolated)	IVIODEI						
2.3.1.1 General data an	d specifications		Regulatio	ns: LSA Code II	/2.3; MSC.81(7	70) I/3.1 & 3.2	2
Construction Material:		Additional equipment:					Donning instructions:
Fabric produced by:		Retro reflective material produced by:			Type:		□ YES □ NO
Туре:		Whistle produced by (if fitted):			Type:		
Buoyant material produced by:		Life-line produced by (if fit	ted):		_Туре		
Туре:		Light produced by (if fitted	):		_ Туре:		

Immersion suits (non-isolated)     Manufacturer: Model:       Lot/Serial Nun		: mber:	Date: Surveyor: Organization:	_ Time:					
2.3.1.2 Submitte									
		Submitted drawings and document	ts		Status				
Drawing No.	Revision No. & date	Tit	le of drawing						
		Submitted reports and documents	6		<b>0</b> 1 1				
Report/Document No.	Revision No. & date	Title of	report / document		Status				
		Maintenance Manual -							
		Operations Manual -							

	Manufacturar		Data: Tima:			
Immersion suits	Manufacturer:		Date: Time:			
(non-isolated)	Model:		Surveyor:			
	Lot/Serial Number:	<u> </u>	Organization:			
2.3.1.3 Quality assurance			ons: - MSC.81(70) 2/1.1, 1.2			
Except where all appliances of a particular type are required by chapter III of the International Convention for the Safety of Life at Sea, 1974, as amended, or the international Life-Saving Appliance (LSA) Code, to be inspected, representatives of the Administration should make random inspections of manufacturers to ensure that the quality of life-saving appliances and materials used comply with the specification of the approved prototype life-saving appliance. Manufacturers should be required to institute a quality control procedure to ensure that life-saving appliances are produced to the same standard as the prototype life- saving appliance approved by the Administration and to keep records of any production tests carried out in accordance with the Administration's instructions.		Regulations: - MSC.81(70) 2/1.1, 1.2         Quality Assurance         Standard Used:				
			ssurance System acceptable Yes No s/Observations			

Immersion suits (non-isolated)	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time: ion:	
			ations: LSA C	Code I/1.2.2, II/2.3.1.1.3 & 2.3.1	1.1.4
Test Procedure		Acceptance Criteria		Significan	it Test Data
Non-insulated immersion suit a .1 be clearly marked w information including the which approved it, date of and any operational restric	vith approval Administration <sup>-</sup> manufacturer			Passed	Failed
.2 be provided with labels gi instructions, general info manufacturers details as and	ormation and			Passed	Failed
.3 be fitted with approved pa reflective material with a to least 400 cm <sup>2</sup> and with 10 back if the suit does not aut the wearer face up resolution A.658(16).	otal area of at 00 cm² on the omatically turn			Passed	Failed
				Comments/Observations	

Immersion suits (non-isolated)				Survey	Tir or: zation:	ne:
2.3.1.4 Visual inspection (C	ontinued)	Reg	gulations: LSA Code I/1.2.2, II/2.	.3.1.1.3	& 2.3.1.1.4, 2.3.1.4, 2.3.1.5,	2.13.1.6
Test Procedu	re		Acceptance Criteria		Signifi	cant Test Data
Does the non-insulated imm whole body with the exception		the	Be of an international or vivid or a comparably highly		Passed	Failed
Are the hands covered, or immersion suit equipped with gloves?			colour on all parts where this wi detection at sea.		Passed	Failed
Are their arrangements to pre in the legs?	vent excessive free	e air			Passed	Failed
Is the non-insulated immersic colour?	on suit of highly vis	ible			Passed	Failed
Is the non-insulated immersion suit designed to be worn without a lifejacket? If yes Is the non-insulated immersion suit fitted with a light complying with paragraph 2.2.3 of the LSA Code?		ight			Passed	
Is the non-insulated immers whistle complying with paragra Code?					Passed Passed	
Fitted with releasable buoyant to secure it to a suit worn by water and provided with a su rescuer to lift the wearer from	another person in uitable means to al	the llow			Passed	Failed
or rescue craft.					Comments/Observations	

Immersion suits (non-isolated)	Manufacturer: Model: Lot/Serial Number:			Surveyor:	Time: 		
2.3.1.5 Test subjects		Regulations: L	SA Code II/2.3.1.1.	5, 2.3.1.3.1	4; MSC.81(70) 1/3.1.1 & 2	2.8.2	
Test Procedu	Ire	Ac	ceptance Criteria		Significan	t Test Data	
At least six able-bodied perse females of the following he should be used. At least one two of the persons should b more than one female in the s	eights and weights and not more than e females with not	<u>Height</u> 1.4m - 1.6m; 1.6m - 1.8m over 1.8m	Weight 1 person under 1 person over 6 1 person under 1 person under 1 person over 8	ölkg	Male/Female         Subject No.1         Subject No.2         Subject No.3         Subject No.4         Subject No.5         Subject No.6         Comments/Observations	<u>Height</u>	<u>Weight</u>

Model:		Surveyor:		Time: on:				
2.3			Regulations: LSA Code II/2.3.1.5;	Regulations: LSA Code II/2.3.1.5; MSC.81(70) 1/3.1.2				
	Test Procedu	ıre	Acceptance Criteria		Significant Test Data			
life	he suit is to be worn in jacket, the lifejacket should t for the tests prescribed in	d be worn over the			Manufacturer of lifejacket:	Туре:		
					Manufacturer of lifejacket:	_		
					Туре:	_		
					Manufacturer of lifejacket:	_Type:		
					Comments/Observations	-		
2.3	.1.7 Test clothing		Regulations: LSA Code II/2.3.1.1.1; MSC.81(70) 1/3.2.6 to 3.2.8					
	Test Procedu	ıre	Acceptance Criteria		Significant Test Data			
	e test subjects should wear thing consisting of	a standard range			Did all test subject use the specified test clothing			
.1 .2 .3 .4	underwear (short sleeved, shirt (long sleeved) trousers (not woollen, and woollen socks				□ YES □ NO			
.5	in addition to the clothin should wear two woollen thermal protective tests.	pullovers during the			Comments/Observations			
.6	If suit is to be worn in lifejacket, the lifejacket sho the thermal protective test	ould be worn during						

Immersion suits Model:		ber:	Surveyor	:	Time:			
2.3.1.8 Donning test (1)		Regulations: LSA Cod	le II/2.3.1.1.1; MSC.81	(70) 1/3.	.1.3			
Test Procedu	ire	Acceptanc	ce Criteria		Significant Test	Data		
Following a demonstration, each test subject should be able to unpack, don and secure the immersion suit over their test clothing without assistance in less than 2 min. This time should include the time to don any associated clothing, inflate any orally inflated chambers if fitted and don a lifejacket, if such is to be worn in conjunction		the don and secure the im test clothing (see 2.3.1.) less than 2 min. This ti time to don any associa orally inflated chamber lifejacket, if such is to b with the immersion suit.	Each test subjects should be able to unpack, don and secure the immersion suit over their test clothing (see 2.3.1.7) without assistance in less than 2 min. This time should include the time to don any associated clothing, inflate any orally inflated chambers if fitted, and don a lifejacket, if such is to be worn in conjunction with the immersion suit.					
2.3.1.8 Donning test (2)			Regulations: LSA Code I/2.3.1.1.1; MSC.81(70) 1/3.1.4					
Test Procedure		Acceptan	Acceptance Criteria			Significant Test Data		
The immersion suit should be being donned in 5 min at temperature as low as -30° C donning test the packed imm should be kept in a refrigerated a temperature of -30° C for 24	an ambient 5 C. Before the mersion suit d chamber at	The test subject should be a	able to complete this	task in	Donning time at - 30°C Time Subject No.1sea Subject No.2sea Subject No.3sea Subject No.4sea Subject No.5sea Subject No.6sea		d Failed	

Immersion suits (non-isolated)	Manufacturer: Model: Lot/Serial Number:	Date:         Time:           Surveyor:         Organization:	
2.3.1.9 Ergonomic Test	t	Regulations: LSA Code II/2.3.1.3.1, 2.3.1.3.2; MSC.81(70)	1/3.1.5
Test Procedure	Acceptar	ce Criteria Significant Te	est Data
<ul> <li>When wearing the immersion subjects should be able to:</li> <li>.1 climb up and down a v of at least 5 m in length</li> <li>.2 perform all duties ass abandonment; and</li> <li>.3 to pick up a pencil and</li> </ul>	vertical ladder n; sociated with	n in walking, bending over or ter of the pencil should be □YES □NO All the test subjects were able and write: □YES □NO All the test subjects were able lifejacket without assistance: □YES □NO All the test subjects were able associated with abandonmen operate a rescue boat: □YES □NO All the test subjects were able associated with abandonmen operate a rescue boat: □YES □NO All the test subjects were able associated with abandonmen operate a rescue boat: □YES □NO All the test subjects were able associated with abandonmen operate a rescue boat: □YES □NO All the test subjects were able down a vertical ladder of 5 me □YES □NO	e to pick up a pencil e to put on the e to perform all duties t, assist others and

Immersion suits (non-isolated)	Manufacturer: Model: Lot/Serial Number:		Date:            Surveyor:            Organization:					
2.3.1.10 Field of vision test	Regulations: LSA Code II/2.3.1.1.3; MSC	.81(70) 1/3.1.						
Test Procedure	Acceptance Criteria		Significant	Test Data				
Each test subject should be	The lateral field of vision should be at least		F	ield of vision angle: ≥	: 120°			
seated with the head in a fixed position, and the lateral field of vision measured.	120°.	Subject No.1 Subject No.2 Subject No.3 Subject No.4 Subject No.5 Subject No.6		Passed		Failed		
		Comments/	Observations					
2.3.1.11 Flotation test	Regulations: LSA Code II/2.3.1.1; MSC.8	1(70) 1/3.1.7						
Test Procedure	Acceptance Criteria		Significant					
With the test subject floating at rest, wearing the suit in conjunction with a lifejacket if required, the freeboard should be measured from the water surface to the nose or mouth.	The test subject should float face-up with their mouths clear of the water by at least 120mm and be stable in that position. The position of the lifejacket light should permit it to be visible over as great a segment of the upper hemisphere as is practicable.	Subject No.1 Subject No.2 Subject No.3 Subject No.5 Subject No.6 Comments/O		Mouth Freeboard	Nose Freeboard	Light P (Y/N)	Postion	ok?

Immersion suits (non-isolated)	Manufacturer: Model: Lot/Serial Number:			Date: Surveyor: Organization:	Time:
2.3.1.12 Righting test			Regulations	: LSA Code II/2.3.	3.1.2; MSC.81(70) 1/3.1.8
Test Procedure		Acceptan	ce Criteria		Significant Test Data
either a non-insulated immersion suit or a non-insulated immersion suit non-insulated immersion suit with a 5 s, the test subjects should		Except where it has be non-insulated immersion suit v 5 s, the test subjects should e turn themselves from a face-de more than 5 s.	vill right the te ach demonst	est subjects within trate that they can	Subject No.1            Subject No.2
2.3.1.13 Water ingress and j	jump test	Regulations: MSC.81(70) 1/3.1.9			
Test Procedure		Acceptan	ce Criteria		Significant Test Data
The test subjects should pre-w non-insulated immersion suit a weighed. Following a jump into from a height sufficient to total the body, each test subject sho weighed again. Weighing should be perfor machine accurate to ± 100g.	and then be o the water ly immerse ould be	The difference in the combine the suit should not exceed 500		e test subject and	Mass difference ≤ 500g         Pass       Fail         Subject No.1

Immersion suits (non-isolated)	Model: Surve		Date:            Surveyor:            Organization:			
2.3.1.14 Jump test	1		Regulation	ns: LSA Code II/	2.3.1.3.3; MSC.81(70) 1/3.1.10	
Test Procedure		Acceptan	ce Criteria		Significant Test	Data
The test subjects should jump and lifejacket if required from 4.5m vertically into the wate jump, the suit and its attachr be examined for damage or dis the test subject should be concerning whether the suit injury to the wearer.	n a height of er. After the nents should slodging, and questioned	The suit and its attachments s dislodged in any way. The te injured by the suit.			Passed Subject No.1 Subject No.2 Subject No.3 Subject No.4 Subject No.5 Subject No.6 Comments/Observations	Failed
2.3.1.15 Leak test			Regulation	ns: LSA Code II/	2.3.1.1.1; MSC.81(70) 1/3.1.11	
Test Procedure		Acceptan	ce Criteria		Significant Test	Data
<ul> <li>The test subject should immersion suit and be weigh subject should then be instruct of the following:</li> <li>.1 a period of flotation in calman 1h; or</li> <li>.2 swimming for 20 min for a at least 200 m</li> <li>The test subject should be we after the task.</li> <li>The weighing machine should to ± 100g.</li> </ul>	ed. The test ted to do one n water of distance of eighed again	The ingress of water into the p exceed a mass of 200g.	pre-wetted su	uit should not	Indicate which alternative is used ☐Alternative 1 ☐Alterna Water ingress ≤ 200g Passed Subject No.1 Subject No.2 Subject No.3 Subject No.4 Subject No.5 Subject No.6 Comments/Observations	

Immersion suits (non-isolated)	Model:	er:		Date: Surveyor:			
	Lot/Serial N	umber:	· · · · · · · · · · · ·	Organization:			······································
2.3.1.16 Swimming and v	vater emerge	nce test	Regulation	ns: LSA Code II/2.	.3.1.3.4; MSC.8	81(70) 1/3.1.12	
Test Procedure		Acceptanc	e Criteria			Significant Te	
All test subjects, each wearing	n a lifeiacket	All qualified test subjects shou	ld be able to	board the liferaft	1) 25m s	swim and boardi	ng without lifejacket.
but not the suit, should atter 25 m and board a liferaft or ri	npt to swim	or platform while wearing the r			Subject No.1	Passed	Failed
with its surface 300 mm abov					Subject No.1 Subject No.2		
surface.					Subject No.3		
					Subject No.4		
Test subjects who successfu					Subject No.5		
this task should also perform it	wearing the				Subject No.6		
suit.					2) 25 ı	m swim and boar	rding with suit
If designed to be used with a life						Passed	Failed
non-insulated immersion suit tested with the subject also					Subject No.1		
lifejacket.	wearing a				Subject No.2		
					Subject No.3 Subject No.4		
					Subject No.4 Subject No.5		
					Subject No.6		
					3) 25 m swim if required	•	th suit and a lifejacket,
						Passed	Failed
					Subject No.1		
					Subject No.2		
					Subject No.3 Subject No.4		
					Subject No.5		
					Subject No.6		
					Comments/Ob	servations	

Immersion suits (non-isolated)	MODEL		Date:         Time:           Surveyor:         Organization:		
2.3.1.17 Oil resistance t	est	Regulatio	ns: LSA Code; M	SC.81(70) 1/3.1.13	
Test Procedure		Acceptance Criteria		Significant Test Data	
After all its apertures have b non- insulated immersion su immersed for a period of 100 mm head of diesel oil at temperature. The surface oil should then and the immersion suit subject prescribed in 2.3.1.15.	uit should be 24 h under normal room be wiped off	The ingress of water should not exceed a	mass of 200g.	Indicate which alternative is used. □Alternative 1 □Alternative 2 Water ingress ≤ 200g Passed Failed Subject No.1	

Immersion suits (non-isolated)	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization:	Time:			
2.3.1.18 Alternative oil resis	stance test		Regulation	ns: LSA Code; MS	SC.81(70) 1/3.1.14.1 & .2		
Test Proced	lure	Acce	otance Criter	ia	Significant Test Data		
In lieu of the test for oil res 2.3.1.17 either of the follo conducted. After all apertures have non-insulated immersion suit for a period of 24 h under 100 at normal room temperature weights to keep suit submer should then be wiped off a immersion suit turned inside then be laid on a table suita draining off any leakage and neck aperture by a suitable of suit should then be filled with which should be 300mm abov Representative samples of th seams should be immersed u diesel oil for 24 h. After rem samples should be wiped off b to the following tests: .1 a hydrostatic test of a 1r .2 a tensile test of represent	been sealed, the should be immersed mm head of diesel oil if necessary using ged. Any surface oil nd the non-insulated out. The suit should ble for collecting and be supported at the lesigned hanger. The n water to neck level e the table. The exterior fabric and inder 100mm head of ioval from the oil the lefore being subjected m water head; and	After 1h in this position exceeding a mass of The seam strength sh The samples should so of water	200g nould be not	less than 150 N	Indicate which alternative is used. ☐Alternative 1 ☐Alternative 2 Water ingress ≤ 200g Passed Failed Subject No.1		

Immersion suits	Manufacture Model:	er:		Date:	Time:	
(non-isolated)		umber:		Surveyor: Organization:		
2.3.1.19 Fire test			Regulation	ns: LSA Code II/2.	3.1.1.2; MSC.81(70) 1/3.1.15	
Test Procedure		Acceptanc	e Criteria		Significant Test Data	
A test pan 30 cm x 35 cm x 6 c placed in an essentially draug Water should be put in the b test pan to make a minimum t 1 cm followed by enough petr minimum depth of 4 cm. The p then be ignited and allowed to for 30 s. If necessary the im should be draped over a hang the whole of the suit is enve flames, with the bottom of the above the top edge of the tes the duration of exposure to is 2 s.	ht-free area. bottom of the cotal depth of ol to make a petrol should o burn freely mersion suit ger to ensure eloped in the e suit 25 cm t pan so that	The non-insulated immersion s for more than 6 s or continue from exposure to the flames.		er being removed	Did the immersion suit sustain burning for more than 6 s or continue melting after being removed from the flames? □YES □NO Comments/Observations	

Immersion suits (non-isolated)	Model:	er: umber:		Date: Surveyor: Organization:	Time:
2.3.1.20 Temperature cycling	g test		Regulatio	ns: LSA Code I/1.2	2.2.2; MSC.81(70) 1/3.1.16
Test Procedure		Acceptanc	e Criteria		Significant Test Data
Test Procedure The following test should be ca two immersion suits The non-insulated immersion so be alternately subjected to so temperatures of -30°C and +6 alternating cycles need in immediately after each other following procedure, repeated for 10 cycles, is acceptable: .1 an 8 h exposure at a temperature of +65°C to be in one day; and .2 the specimens removed warm chamber that same exposed under ordin conditions at a temp 20°C ± 3°C until the next of .3 an 8 h exposure at a temperature of -30°C to be the next day; and .4 the specimens removed fr chamber that same da exposed under ordin conditions at a temp 20°C ± 3°C until the next of .4 the specimens removed fr chamber that same da exposed under ordin conditions at a temp 20°C ± 3°C until the next of .4 the specimens removed fr chamber that same da exposed under ordin conditions at a temp 20°C ± 3°C until the next of .4 the specimens removed fr .4 the specimens removed fr .5 and a temp	suits should surrounding 5°C. These not follow er and the for a total of a minimum e completed d from the day and left hary room berature of day; a maximum e completed rom the cold ay and left hary room berature of	The non-insulated immersion damage such as shrinking, sv of mechanical qualities.	suits should		

Immersion suits       Manufacturer:         (non-isolated)       Model:         Lot/Serial Number:				Date:       Time:         Surveyor:          Organization:					
2.3.1.21	Temperature cy				Regulation	s: LSA Code	ł.	31(70) 1/3.1.16	
			HOT CYCLE					LD CYCLE	
Cycle 1	Date In: Time In: Temperature:	0	Date Out: Time Out: Duration:		Time I	n: In: erature:		Date Out: Time Out: Duration:	
Cycle 2	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Time I	n: In: erature:	C	Date Out: Time Out: Duration:	
Cycle 3	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Time I	n: In: erature:		Date Out: Time Out: Duration:	
Cycle 4	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Time I	n: In: erature:		Date Out: Time Out: Duration:	
Cycle 5	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Time I	n: In: erature:		Date Out: Time Out: Duration:	
Cycle 6	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Time I	n: In: erature:		Date Out: Time Out: Duration:	
Cycle 7	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Time I	n: In: erature:		Date Out: Time Out: Duration:	
Cycle 8	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Time I	n: In: erature:	C	Date Out: Time Out: Duration:	
Cycle 9	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Time I	n: In: erature:	C	Date Out: Time Out: Duration:	
Cycle 10	Date In: Time In: Temperature:	0C	Date Out: Time Out: Duration:	hours	Time I	n: In: erature:		Date Out: Time Out: Duration:	

Immersion suits (non-isolated)	Manufacture Model: Lot/Serial N	er: umber:		Date: Surveyor: Organization:	Time:	
2.3.1.22 Buoyancy test			Regulatior	ns: LSA Code II/2.	3.1.8; MSC.81(70) 1/3.1.17	
Test Procedure		Acceptanc	e Criteria		Significant Test Data	
The buoyancy of a non-insulated immersion suit designed to be worn without a lifejacket should be measured before and after 24 h complete submersion to just below the surface in fresh water. The buoyancy shall not depend on the use of loose granulated materials		The difference between the ini buoyancy should not exceed 5			Buoyancy 1 Buoyancy 2 %difference kg kg % Passed Failed Comments/Observations	
2.3.1.23 Strength test		Regulations: LSA Code II; N			NSC.81(70) 1/3.1.18	
Test Procedure		Acceptance Criteria		Significant Test Data		
The non-insulated immersion be immersed in water for a per It should then be removed fro and closed in the same manr worn by a person A force of n 3200 N should be applied to th and a force of not less than 13 be applied to the parts other th loop for 30 min. The non-inflated immersion sui if necessary to accommodate device.	iod of 2 min. m the water her as when hot less than he lifting loop 50 N should han the lifting	The non-insulated immersion s as a result of this test.			Passed Failed Comments/Observations	
		Vest-type lifejacket Yoke or over-the	-head type lifejacket			

Immersion suits (non-isolated)	Manufacturer: Model: Lot/Serial Number:	Surveyor:	Time:
2.3.1.24 Thermal protect	tive test (General)	Regulations: LSA Code	∋ II/2.3.2.1; MSC.81(70) 1/3.2.1 – 3.2.4
Tes	t Procedure	Acceptance Criteria	Significant Test Data
manikin, when such a method has been demonstrated to satisfactorily in all aspects to If human subjects are used, before being accepted for the is to be tested by test subjects Where human subjects are conducted under the sup resuscitation equipment shous safety reasons, ECG should b should be stopped at the wis temperature of hand, foot or I or if the attending physician co When testing with human temperature (rectal temperat region, both hands, calves, for measured. The accuracy of	used, the tests should always be pervision of physician. Emergency uld be available during all tests. For be monitored during every test. Testing sh of the test subjects, or if the skin umbar region should fall below 10° C, onsiders it advisable. In subjects, continuous body core ure) and skin temperature of lumbar pot (foot instep) and heels, should be f the measuring system should be nding measurements should be taken		Comments/Observations

Immersion suits (non-isolated)	Model:	er: umber:		Surveyor:	Time:		
2.3.1.25 Thermal Protect	ive test (Con	tinued)	Regulatio	ns: LSA Code II/2.	3.2.1.2; MSC.81(70) 1/3	.2.9 & 3.2.10	
Test Procedure		Acceptanc	e Criteria			cant Test Data	
Prior to tests, the same amount of water resulting from the water ingress and jump test in 2.3.1.13 should be poured into the		Following immersion each temperature should not fall mo level of the subject's temperate	re than 2°Č		Same amount of wate ingress and jump test is be poured into the dry s	in paragraph 2.3	
dry suit worn over the dry specified in 2.3.1.7 by the test down.					Beginning of test Subject No.1		normal mperature
Each test subject should w insulated immersion suit subjected to the jump test	previously				Subject No.2 Subject No.3 Subject No.4 Subject No.5		
Following a 1 h period of imm hands gloved, in circulating ca 5° C, each test subject's	nersion, with Im water at +				Subject No.6 Passed	Failed	
temperature should not fall mo below the normal level of t temperature.	ore than 2° C				Pick up a pencil and immersion:		
The non-insulated immersion provide sufficient thermal p ensure that immediately on water after completion o prescribed above each test	f the test subject can				Subject No 1 UYES Subject No 2 YES Subject No 3 YES Subject No 4 YES Subject No 5 YES	□NO □NO □NO □NO □NO	
pick up a pencil as specified ir write.	n 2.3.1.9 and				Subject No 6 _YES Passed	□NO Failed	
					See attached test shee the immersion tests.		es during

Immersion suits (non-isolated)     Manufacturer:					Surveyor:	Time:	
2.1.3.26 Test sheets for to	emperatures during imm	ersion tests	Regu	ulations:	LSA Code II/2.	3.2.1.2; MSC.81(70) 1/3.2.9	& 3.2.10
SUBJECT 1	SUBJECT 2	SUBJECT 3		SU	BJECT 4	SUBJECT 5	SUBJECT 6
Rectal temp after 1 hr:	Rectal temp after 1 hr:	Rectal temp after 1	hr:_	Rectal te	emp after 1 hr:_	Rectal temp after 1 hr:	Rectal temp after 1 hr:
Skin temp at lumbar region after 1 hr:	Skin temp at lumbar region after 1 hr:					Skin temp at lumbar region after 1 hr:	Skin temp at lumbar region after 1 hr:
Skin temp at left hand after 1 hr:	Skin temp at left hand after 1 hr:	Skin temp at left ha after 1 hr:			ip at left hand	Skin temp at left hand after 1 hr:	Skin temp at left hand after 1 hr:
Skin temp at right hand after 1 hr:	Skin temp at right hand after 1 hr:	Skin temp at right hand after 1 hr:		Skin tem	ip at right hand r:	Skin temp at right hand after 1 hr:	Skin temp at right hand after 1 hr:
Skin temp at calves after 1 hr:	Skin temp at calves after 1 hr:	Skin temp at calves	S	Skin terr	p at calves	Skin temp at calves after 1 hr:	Skin temp at calves after 1 hr:
Skin temp at left foot (foot instep) after 1 hr:	Skin temp at left foot (foot instep) after 1 hr:	after 1 hr: Skin temp at left foot (foot instep) after 1 hr:		after 1 hr: Skin temp at left foot (foot instep) after 1 hr:		Skin temp at left foot (foot instep) after 1 hr:	Skin temp at left foot (foot instep) after 1 hr:
Skin temp at right foot (foot instep) after 1 hr: Skin temp at left heel after	Skin temp at right foot (foot instep) after 1 hr: Skin temp at left heel	Skin temp at right foot (foot instep) after 1 hr:		Skin tem foot (foo after 1 h	• •	Skin temp at right foot (foot instep) after 1 hr: Skin temp at left heel after	Skin temp at right foot (foot instep) after 1 hr:
1 hr:	after 1 hr:	Skin temp at left he after 1 hr:	el	Skin tem after 1 h	ip at left heel r:	1 hr:	Skin temp at left heel after 1 hr:

#### 2.3.2 IMMERSION SUITS (INSULATED)

#### **EVALUATION AND TEST REPORT**

- 2.3.2.1 General data and specifications
- 2.3.2.2 Submitted drawings, reports and documents
- 2.3.2.3 Quality assurance
- 2.3.2.4 Visual inspection
- 2.3.2.5 Test subjects
- 2.3.2.6 Test with a lifejacket
- 2.3.2.7 Test clothing
- 2.3.2.8 Donning tests 1 & 2
- 2.3.2.9 Ergonomic test
- 2.3.2.10 Field of vision test
- 2.3.2.11 Flotation test
- 2.3.2.12 Righting test
- 2.3.2.13 Water ingress and jump test
- 2.3.2.14 Jump test
- 2.3.2.15 Leak test
- 2.3.2.16 Swimming and water emergence test
- 2.3.2.17 Oil resistance test
- 2.3.2.18 Alternative oil resistance test
- 2.3.2.19 Fire test
- 2.3.2.20 Temperature cycling test
- 2.3.2.21 Temperature cycling test Test data
- 2.3.2.22 Buoyancy test
- 2.3.2.23 Strength test
- 2.3.2.24 Thermal protective test (General)
- 2.3.2.25 Thermal protective test (Continued)
- 2.3.2.26 Test sheets for temperatures during immersion tests

# 2.3.2 IMMERSION SUITS (INSULATED)

## **EVALUATION AND TEST REPORT**

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Immersion suits (insulated)	Model:	ıber:		Surveyor:		Time:	
2.3.2.1 General data and sp	pecifications		Regulation	s: LSA Code 2	.3; MSC.81(70) 1	/3.1 & 3.2	
Construction Material:		Additional equipment:				Donni	ng instructions:
Fabric produced by:		Retro reflective material produced by:			Туре:	□YES	□NO
Туре:		Whistle produced by (if fitted):			Туре:		
Buoyant material produced by:		Life-line produced by (if fitted	d):		Туре		
Туре:		Light produced by (if fitted):_			Туре:		

Immersion suits (insulated)	Lot/Serial Nu	r:	Surveyor:	Time:	
2.3.2.2 Submitted di	rawings, reports and				
		Submitted drawings and	documents		Status
Drawing No.	Revision No. & date		Title of drawing		
		Submitted reports and o	documents		
Report/Document No.	Revision No. & date		Title of report / document		Status
		Maintenance Manual -			
		Operations Manual -			

Immersion suits (insulated)	Manufacturer: Model: Lot/Serial Number:	Date:         Time:           Surveyor:         Organization:					
2.3.2.3 Quality assurance		Regulations: MSC.81(70) 2/1.1, 1.2					
Except where all appliances o of the International Conventi- amended, or the international inspected, representatives of inspections of manufacturers appliances and materials us approved prototype life-saving Manufacturers should be required to ensure that life-saving appliances and materials	f a particular type are required by Chapter III on for the Safety of Life at Sea, 1974, as I Life-Saving Appliance (LSA) Code, to be f the Administration should make random s to ensure that the quality of life-saving sed comply with the specification of the g appliance. uired to institute a quality control procedure iances are produced to the same standard opliance approved by the Administration and tion tests carried out in accordance with the	Quality Assurance Standard Used: -         Quality Assurance Procedure: -         Quality Assurance Manual: -         Description of System.         Quality Assurance System acceptable Yes/No         Comments/Observations					

Immersion suits (insulated)	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:	
2.3.2.4 Visual inspection	·	Regulations	s: LSA Code I/1.2.2	2, & II/2.3.1.1.3 & 2.3.1.1.4	
Insulated Immersion suit sho	uld:				
.1 be clearly marked wit information including the Ad which approved it, date of r and any operational restrict	dministration nanufacturer			Passed	Failed
				Passed	Failed
<ul> <li>.2 be provided with labels givi instructions, general informanufacturers details as and</li> <li>.3 be fitted with approved patereflective material with a toreleast 400 cm<sup>2</sup> and with 100 back if the suit does not a statement of the suit does not a statem</li></ul>	rmation and appropriate; ches of retro- tal area of at 0 cm <sup>2</sup> on the automatically			Passed	Failed
turn the wearer face up a resolution A.658(16).	according to			Comments/Observations	

Immersion suits (insulated)	Manufacturer: Model: Lot/Serial Number:			Surveyor:	Time:	
2.3.2.4 Visual Inspection	on (continued)		Regulations	s: LSA Code I/1.2.2	2, & II/2.3.1.1.3 & 2.3.1.1.4,	2.3.1.4-6
Test Procedure		Acceptar	nce Criteria		Significant	Test Data
Does the immersion suit cove body with the exception of the		Be of an international or comparably highly visible col assist detection at sea.			Passed	Failed
Are the hands covered, or is t immersion suit equipped with attached gloves?					Passed	Failed
Are their arrangements excessive free air in the legs?					Passed	Failed
Is the immersion suit of h					Passed	Failed
colour?	ingring violoic				Passed	Failed
Is the immersion suit designe without a lifejacket?	ed to be worn					
If yes,					Passed	Failed
Is the immersion suit fitted complying with paragraph 2.2					Passed	Failed
Is the immersion suit fitted w complying with paragraph 2.2 Code?						
Fitted with releasable buoya other means to secure it to a					Passed	Failed
another person in the water & a suitable means to allow reso wearer from the water into rescue craft.	cuer to lift the				Comments/Observations	

Immersion suits (insulated)	Model:			Surveyor:	Time: 		
2.3.2.5 Test subjects			Regula	tions: LSA Code I/; M	MSC.81(70) 1/3.1.1		
Test Procedure			Acceptance Criteri	a	Significant Test Data		
At least six able-bodied persons both male and females of the following heights and weights should be used. At least one and not more than two of the persons should be females with not more than one female in the same height range.		<u>Height</u> 1.4 m - 1.6 m; 1.6 m - 1.8 m over 1.8 m	<u>Weight</u> 1 person under 60 1 person over 60k 1 person under 70 1 person over 70k 1 person under 80	lkg	Male/FemaleHeightWeightSubject No.1Subject No.2Subject No.3Subject No.4Subject No.5Subject No.6Comments/Observations		
			1 person over 80	(g			
2.3.2.6 Test with a lifejacket		Regulations: LSA Code 2.3					
Test Procedure		Acceptance Criteria		a	Significant Test Data		
If the suit is to be worn in con a lifejacket, the lifejacket sho over the suit for the tests p 2.3.2.8 to 2.3.2.16.	uld be worn				Manufacturer of lifejacket:		
					Manufacturer of lifejacket:		
					Manufacturer of lifejacket:		

Immersion suits (insulated)	Model:	Number: Organization:		Time:			
2.3.2.7 Test clothing		Regulations: LSA Code II/2.3			3.1.1.1; MSC.81(70) 1/3.2.6, 3.2.7		
Test Procedure		Acceptance Criteria			Significant Test Data		
<ul> <li>The test subjects should wear a standard range clothing consisting of</li> <li>.1 underwear (short sleeved, short legged)</li> <li>.2 shirt(long sleeved)</li> <li>.3 trousers(not woollen, and</li> <li>.4 woollen socks</li> <li>.5 If suit is to be worn in conjunction with a lifejacket, the lifejacket should be worn during the thermal protective</li> </ul>					Did all test subject use the specified test clothing? YES NO Comments/Observations		
tests. 2.3.2.8 Donning test (1)			Regulation	ns: LSA Code II/2.3	3.1.1.1; MSC.81(70) 1/3.1.3		
Test Procedure		Acceptance Criteria			Significant Test Data		
Following a demonstration, each test subject should be able to unpack, don and secure the suit over their test clothing without assistance in less than 2 min. This time should include the time to don any associated clothing, inflate any orally inflated chambers if fitted, and don a lifejacket, if such is to be worn in conjunction with the suit, and the test subjects should be able to don such lifejacket without assistance.		Each test subjects should be able to unpack, don and secure the immersion suit over their test clothing (see 2.3.2.7) without assistance in less than 2 min. This time should include the time to don any associated clothing, and a lifejacket, if such is to be worn in conjunction with the immersion suit.		Donning time normal clothing         Time       Pass       Fail         Subject No.1sec         Subject No.2sec         Subject No.3sec         Subject No.4sec         Subject No.5sec         Subject No.6sec         Subject No.6sec         Subject No.6sec			

Immersi (insulate	ion suits ed)	Model:	er: umber:		Surveyor:	Time:		
2.3.2.8	Donning test (2)			Regulations: LSA Code II/2.3.1.1.1; MSC.81(70) 1/3.1.4				
	Test Procedure		Ac	ceptance Crit	eria	Significant Test Data		
The immersion suit should be capable of being donned in 5 min at an ambient temperature as low as -30° C. Before the donning test the packed immersion suit should be kept in a refrigerated chamber at a temperature of -30° C for 24 h.			3	ould be able to complete this task in       Donning time at - 30°C         Time       Pass         Subject No.1sec       Subject No.2sec         Subject No.3sec       Subject No.4sec         Subject No.5sec       Subject No.6sec         Subject No.6sec       Comments/Observations				
2.3.2.9	Ergonomic Test		•	Regulations: LSA Code II/2.3.1.3.2; MSC.81(70) 1/3.1.5				
	Test Procedure		Acceptance Criteria	Significant Test Data				
When wearing the immersion suit, the test subjects should be able to:There should be no restriction in walking, bending over or arm movement1Climb up and down a vertical ladder of at least 5 m in length;movement2Perform all duties associated with				Restriction in walking, bending over or arm movement: PYES DNO All the test subjects were able to pick up a pencil and write: PYES DNO All the test subjects were able to put on the lifejacket without assistance: PYES DNO				
	bandonment; and				operate a rescue boa	t: DYES DNO		
.3 To pick up a pencil and write. The diameter of the pencil should be 8-10 mm.			All the test subjects were able to climb up and down a vertical ladder of 5 meter in length: □YES □NO Comments/Observations					

Immersion suits (insulated)	Model:	er: umber:		Date:          Surveyor:          Organization:				
2.3.2.10 Field of vision test			Regulations: LSA Code II/2.3.1.1.3; MSC.81(70) 1/3.1.6					
Test Procedure		Acceptano	ce Criteria			Significant Test	Data	
Each test subject should be seated with the head in a fixed position, and the lateral field of vision measured.				Field of vision angle       120°         Passed       Failed         Subject No.1				
2.3.2.11 Flotation test			Regulatio	ns: LSA Code II/2.	3.1.1; MSC.81	I(70) 1/3.1.7		
Test Procedure		Acceptano	ce Criteria		Significant Test Data			
With the test subject floating at rest, wearing the suit in conjunction with a lifejacket if required, the freeboard should be measured from the water surface to the nose or mouth. The test subject should float fa of the water by at least 120mm For a buoyant insulated imm lifejacket, an auxiliary mean orally inflated bladder behind used to obtain this freeboard, obtained without the auxiliar least 50 mm. The position of the lifejacket visible over as great a segme as is practicable.		n and be stable in that position. mersion suit worn without a ns of buoyancy such as an d the wearer's head may be l, provided that the freeboard ry means of buoyancy is at t light should permit it to be		Mouth Nose		Nose Freeboard = ↓ 		

Immersion suits (insulated)	Model:	mber:		Surveyor:			
2.3.2.12 Righting test				ons: LSA Code II/2.	3.1.2; MSC.81(	70) 1/3.1.8	
Test Procedure		Acceptano	ce Criteria			Significant Test D	ata
The test subjects, in fresh water wearing either an immersion suit or an immersion suit with lifejacket, should each demonstrate that they can turn themselves from a face-down to a face-up position in not more than 5 s.		immersion suit will right the test subjects within 5 s, the test subjects should each demonstrate that they can turn themselves from a face-down to a face-up position in not more than 5 s.		Righting time Subject No.1 Subject No.2 Subject No.3 Subject No.4 Subject No.5 Subject No.6 Comments/Ol	Passed	Failed	
2.3.2.13 Water ingress and	jump test		Regulati	ons: MSC.81(70) 1/3	5.1.9		
Test Procedure		Acceptance Criteria			Significant Test Data		
The test subjects should immersion suit and then Following a jump into the wate sufficient to totally immerse th test subject should be weigher Weighing should be performed accurate to ± 100g.	be weighed. r from a height ne body, each d again.	The difference in the combine the suit should not exceed 500		the test subject and	Mass differen Subject No.1 Subject No.2 Subject No.3 Subject No.4 Subject No.5 Subject No.6 Comments/Ol	Passed	Failed

Immersion suits (insulated)	Manufacturer: Model: Lot/Serial Number:		Date:       Time:         Surveyor:          Organization:					
2.3.2.14 Jump test		Regulations: LSA Code II/2.3.1.3	.3; MSC.81(70) 1/3	3.1.10				
Test Proced	ure	Acceptance Criter	ia	Significant Test Data	a			
The test subjects should jump with the suit and lifejacket if required from a height of 4.5m vertically into the water. After the jump, the immersion suit and its attachments should be examined for damage or dislodging, and the test subject should be questioned concerning whether the suit caused any injury to the wearer.		The test subject should not be injured by the suit.		Passed Subject No.1 Subject No.2 Subject No.3 Subject No.4 Subject No.5 Subject No.6 Comments/Observations	Failed			
2.3.2.15 Leak test		Regulations: LSA Code II/2.3.1.1.1; MSC.81(70) 1/3.1.11						
Test Proced	dure	Acceptance Criteria Significant Test Data						
<ul> <li>The test subject should pre-wand be weighed. The test subject should pre-wand be weighed. The test subject of the follow.</li> <li>.1 a period of flotation in calm</li> <li>.2 swimming for 20 min for a 200 m</li> <li>The test subject should be we task.</li> <li>The weighing machine shou 100g.</li> </ul>	bject should then be owing: water of 1h; or a distance of at least ighed again after the	The ingress of water into the pre- not exceed a mass of 200g.		Indicate which alternative is used. □Alternative 1 □Alternative Water ingress ≤ 200g Passed Subject No.1 Subject No.2 Subject No.3 Subject No.4 Subject No.5 Subject No.6 Comments/Observations	2 Failed			

Immersion suits (insulated)	Lot/Serial Number:			Date: Surveyor: Organization:		Time:		
2.3.2.16 Swimming and v	water emerge	ence test	Regulations	gulations: LSA Code II/2.3.1.3.4; MSC.81(70) 1/3.1.12				
Test Procedure		Acceptar	ice Criteria			Significant Test D	ata	
All test subjects, each wearing but not the immersion suit, sh to swim 25 m and board a lif platform with its surface 300 m water surface. Test subjects who successfu this task should also perform it immersion suit. If designed to be used with a lif immersion suit should be test subject also wearing a lifejack	iould attempt feraft or rigid in above the ally complete t wearing the fejacket, then sted with the		uld be able to		Subject No.1 Subject No.2 Subject No.3 Subject No.4 Subject No.5 Subject No.6	and boarding witho Pass Pass and boarding with i Pass Pass	ut lifejacket. Fail 	

### MSC.1/Circ.1628 Annex, page 232

Immersion suits (insulated)	Model:	r: ımber:		Date:         Time:            Surveyor:            Organization:				
2.3.2.17 Oil resistance test			Regulatio	ons: LSA Code; MS	SC.81(70) 1/3.1.13			
Test Procedure Acceptance		ce Criteria		Significant Test Data				
After all its apertures have be immersion suit should be im period of 24 h under 100 mm l oil at normal room temperature The surface oil should then be the immersion suit subjected prescribed in 2.3.1.15.	mersed for a nead of diesel e. wiped off and	The ingress of water should no	ot exceed a	mass of 200g.	Indicate which alternative is used.         □Alternative 1 □Alternative 2         Water ingress ≤ 200g         □Pass       Fail         Subject No.1			

Immersion suits (insulated)	Model:	umber:		Surveyor:	Time: on:			
2.3.2.18 Alternative oil resis	stance test		Regulation	ations: LSA Code; MSC.81(70) 1/3.1.14				
Test Procedure		Acceptance (	Criteria		Significant Test Data			
In lieu of the test for or prescribed in 2.3.2.17 eit following tests may be conduct After all apertures have beer immersion suit should be immersion suit should be immersion of 24 h under 100 mm h oil at normal room temperature using weights to keep suit sub surface oil should then be wipe immersion suit turned inside should then be laid on a table collecting and draining off any be supported at the neck a suitable designed hanger. Th then be filled with water to nec should be 300mm above the to Representative samples of fabric and seams should be under 100mm head of diesel After removal from the oil should be wiped off before bei to the following tests: .1 a hydrostatic test of a 1m and .2 a tensile test of representation is to the following tests of the test of test of the test of tes	her of the sted. In sealed, the mersed for a lead of diesel e if necessary merged. Any ed off and the out. The suit e suitable for leakage and perture by a e suit should ck level which able. The exterior re immersed oil for 24 h. the samples ing subjected water head	After 1h in this position there s exceeding a mass of 200g. The samples should successful of water. The seam strength should be	ully support 1	m head	Indicate which alternative 1 □Alternative 2         Water ingress ≤ 200g         Pass       Fail         Subject No.1			

Immersion suits (insulated)	Manufacture Model: Lot/Serial No	r: Date: Jumber: Organization:					
2.3.2.19 Fire test			3.1.1.2; MSC.81(70) 1/3.1.15				
Test Procedure		Acceptance Criteria			Significant Test Data		
A test pan 30 cm x 35 cm x 6 placed in an essentially draw Water should be put in the fit test pan to make a minimum 1 cm followed by enough pet minimum depth of 4 cm. The then be ignited and allowed for 30 s. If necessary, the ir should be draped over a han the whole of the suit is enve flames, with the bottom of the above the top edge of the test the duration of exposure to is 2 s.	ght-free area. bottom of the total depth of rol to make a petrol should to burn freely nmersion suit ger to ensure eloped in the ne suit 25 cm st pan so that	The immersion suit should not 6 s or continue melting after to to the flames.			Did the immersion suit continue to burn for more than 6 s or continue melting after being removed from the flames? □YES □NO Comments/Observations		

-	ersion suits lated)	Model:	er: umber:		Surveyor:	Date: Time: Surveyor: Organization:		
2.3.2	20 Temperature cyc	cling test		Regulation	ns: LSA Code I/1.2	2.2.2; MSC.81(70) 1/3.1.16		
	Test Procedure		Acceptanc	ce Criteria		Significant Test Data		
	ollowing test should be ca o immersion suits.	arried out	The immersion suits should sh as shrinking, swelling dissoluti qualities.			(See following page for test data) Passed Failed		
subje 30°C need other	mmersion suits should b cted to surrounding temp and +65°C. These alterr not follow immediately and the following procedu total of 10 cycles, is acce	peratures of - nating cycles / after each ure, repeated				Comments/Observations		
.1	an 8 h exposure at temperature of +65 completed in one day; a	°C to be						
.2	the specimens remove warm chamber that sa left exposed under or conditions at a tempera ± 3°C until the next day;	me day and dinary room ature of 20°C						
.3	an 8 h exposure at temperature of -30 completed the next day;	°C to be						
.4	the specimens remove cold chamber that same exposed under ordi conditions at a tempera ± 3°C until the next day.	e day and left inary room ature of 20°C						

Immersion suits (insulated)	Model:	Manufacturer: Model: Lot/Serial Number:			e: veyor: janization:	Tim	e:		
2.3.2.21 Tem	perature cycling test - Tes	t data		Regulations: LSA Code I/1.2.1.2; MSC.81(70) 1/3.1.16					
		HOT CYCLE				COLL	CYCLE		
	Date In:		Date Out:		Date In:		Date Out:		
Cycle 1	Time In:		Time Out:		Time In:		Time Out:		
	Temperature:	0C	Duration:	hours	Temperature:	0C	Duration:	hours	
	Date In:		Date Out:		Date In:		Date Out:		
Cycle 2	Time In :		Time Out:		Time In:		Time Out:		
	Temperature :	0 <sup>0</sup> C	Duration:	hours	Temperature:	0 <sup>0</sup>	Duration:	hours	
	Date In:		Date Out:		Date In:		Date Out:		
Cycle 3	Time In:		Time Out:		Time In:		Time Out:		
	Temperature:		Duration :	hours	Temperature:	O <sup>0</sup>	Duration:	hours	
	Date In:		Date Out:		Date In:		Date Out:		
Cycle 4	Time In:		Time Out:		Time In:		Time Out:		
	Temperature:	<sup>0</sup> C	Duration:		Temperature:		Duration:		
	Date In:		Date Out:		Date In:		Date Out:		
Cycle 5	Time In:		Time Out:		Time In:		Time Out:		
- <b>J</b> -	Temperature:	°C	Duration :		Temperature:		Duration:		
	Date In:		Date Out:		Date In:		Date Out:		
Cycle 6	Time In:		Time Out:		Time In:		Time Out:		
,	Temperature:	<sup>0</sup> C	Duration:		Temperature:	O <sub>0</sub>	Duration:		
	Date In:				Date In:		Date Out:		
Cycle 7	Time In:	<u> </u>	Time Out:		Time In:		Time Out:		
,	Temperature:		Duration :		Temperature:		Duration:		
	Date In:				Date In:		Date Out:		
Cycle 8	Time In:		Time Out:		Time In:		Time Out:		
	Temperature:	0	Duration :		Temperature:	0 <sup>0</sup>	Duration:	hours	
	Date In:				Date In:		Date Out:		
Cycle 9	Time In:		Time Out:		Time In:		Time Out:		
<b>,</b> -	Temperature:		Duration:	hours	Temperature:	0 <sup>0</sup> C	Duration:	hours	
	Date In:	-			Date In:	_	Date Out:		
Cycle 10	Time In:		Time Out:		Time In:	<u> </u>	Time Out:		
-,	Temperature:		Duration:	hours	Temperature:		Duration:	hours	

Immersion suits (insulated)	Model:	er: umber:		Date: Surveyor: Organization:	Time:		
2.3.2.22 Buoyancy test			3.1.8; MSC.81(70	) 1/3.1.17			
Test Procedure		Acceptanc	e Criteria			Significant Test D	Data
The buoyancy of an immersion suit designed to be worn without a lifejacket should be measured before and after 24 h complete submersion to just below the surface in fresh water.					kg % Pa	Buoyancy 2 kg assed d Comments/Obs	%difference  servations
2.3.2.23 Strength test		Regulations: LSA Code; MSC.81(70) 1/3.1.18					
Test Procedure		Acceptance Criteria			Significant Test Data		
The immersion suit should be immersed in water for a period of 2 min. It should then be removed from the water and closed in the same manner as when worn by a person. A force of not less than 3200 N should be applied to the lifting loop and a force of not less than 1350N should be applied to the parts other than the lifting loop for 30 min. The immersion suit may be cut if necessary to accommodate to the test device.		test.	be damage		Passed		ed

Immersion suits (insulated)	Manufacturer: Model: Lot/Serial Number:	Date: Surveyor: Organization:				
2.3.2.24 Thermal prote	ctive test (General)	Regulations: LSA Code II/2.3.2.2; MSC.81(70) 1/3.2.1 – 3.2.5				
Te	st Procedure	Acceptance Criteria	Significant Test Data			
manikin, when such a metho has been demonstrated to satisfactorily in all aspects to If human subjects are used before being accepted for the is to be tested by test subject Where human subjects are conducted under the sup resuscitation equipment sho safety reasons, ECG shou Testing should be stopped a falling rate of the core temp after the first half hour, if the lumbar region should fall bel considers it advisable. When testing with human temperature (rectal tempera region, both hands, calves, f measured. The accuracy of	e used, the tests should always be pervision of physician. Emergency buld be available during all tests. For all be monitored during every test. at the wish of the test subjects, if the perature is more than 1.5°C per hour skin temperature of the hand, foot or ow 10° C, or if the attending physician an subjects, continuous body core ture) and skin temperature of lumbar foot (foot instep) and heels, should be of the measuring system should be sponding measurements should be		Comments/Observations			

Immersion suits (insulated)	S Manufacturer: Model: Lot/Serial Number:			Surveyor:	on: T		
2.3.2.25 Thermal Protect	ctive test (Continued)				de II/2.3.2.2; MSC.81(7		
Test Proce	edure	Acceptar	nce Criteria		Sig	nificant Test D	Data
Prior to tests, the same am from the water ingress paragraph 2.3.2.13 should be worn over the dry test clothin the test subject lying down. Each test subject wearin previously subjected to paragraph 2.3.2.14. Followi immersion, with hands glow water at between 0°C and + body core temperature should below the normal level of the	and jump test in e poured into the dry suit ing specified in 2.3.2.7 by ag an immersion suit the jump test in ing a 6 h period of ved, in circulating calm 2°C, each test subject's Id not fall more than 2°C	Same mass of water from test 2.3.2.13, st the immersion suit. Following immersion body core temperatu than 2°C below the subject's temperatur	hould be pou n each test ire should no e normal le	ured into subject's ot fall more	Same mass of water w should be poured into Beginning of test Subject No 1 Subject No.2 Subject No.3 Subject No.4 Subject No.5 Subject No.6 Passed Pick up a pencil and w	the immersio End of test Failed	normal temperature
The immersion suit should p protection to ensure that imm water after a 1 hr period of hands, in water circulating at can pick up a pencil as specif and write.	nediately on leaving the immersion, with gloved t +5°C each test subject fied in paragraph 2.3.2.9 turers' option, the ability	The test subjects sho a pencil and write.	ould be able	to pick up	Subject No 1 UYES Subject No 2 YES Subject No 3 YES Subject No 4 YES Subject No 5 YES Subject No 6 YES Passed	-	period of immersion:
to pick up a pencil and write as specified paragraph 2.3.2.9 above may be demonstrate immediately after leaving the water upon completion of the above (6 hr) test.		See attached test sheets for		peratures	Subject No 1 □YES Subject No 2 □YES Subject No 3 □YES	□NO □NO □NO	
		Comments/Observat	tions		Subject No 4□YESSubject No 5□YESSubject No 6□YESPassed□	□NO □NO □NO Failed	

2.3.2.25 Ther	mal Protective test (Continued)	Regulations: LSA Code II/2.3.2.2; MSC.81(70) 1/, 3.2.11 & 3.2.12					
Test Procedure		Acceptance Criteria			Significant Test Data		
				immersion t		for temperatures	during the

Immersion (insulated)	Immersion suits       Manufacturer:         (insulated)       Model:         Lot/Serial Number:			Date: Surveyor: Organization:			
2.3.2.26 Te tests	est sheets for temp	eratures during immersion	Regulations: LSA Coo	Regulations: LSA Code II/2.3.2.2; MSC.81(70) 1/, 3.2.11 & 3.2.12			
Subject 1	Rectal temp after 1 hr: Skin temp at lumbar region after 1 hr : Skin temp at left hand after 1 hr: Skin temp at right hand after 1 hr: Skin temp at calves aft 1 hr: Skin temp at left foot (foot instep) after 1 hr: Skin temp at right foot (foot instep) after 1 hr: Skin temp at left heel after 1 hr:	Skin temp at lumbar region after 2 hr:         Skin temp at left hand after 2 hr:         Skin temp at right hand after 2 hr:         er       Skin temp at calves after 2 hr:         Skin temp at left foot (foot instep) after 2 hr:         Skin temp at right foot (foot instep) after 2 hr:         Skin temp at right foot (foot instep) after 2 hr:         Skin temp at left heel after	Rectal temp after 3 hr: Skin temp at lumbar region after 3 hr : Skin temp at left hand after 3 hr: Skin temp at right hand after 3 hr: Skin temp at calves after 3 hr: Skin temp at left foot (foot instep) after 3 hr: Skin temp at right foot(foot instep) after 3 hr: Skin temp at left heel after 3 hr:	Skin temp at lumbar region after 4 hr : Skin temp at left hand after 4 hr: Skin temp at right hand	Rectal temp after 5 hr: Skin temp at lumbar region after 5 hr: Skin temp at left hand after 5 hr: Skin temp at right hand after 5 hr: Skin temp at calves after 5 hr: Skin temp at left foot (foot instep) after 5 hr: Skin temp at right foot(foot instep) after 5 hr: Skin temp at left heel after 5 hr:	Rectal temp after 6 hr: Skin temp at lumbar region after 6 hr : Skin temp at left hand after 6 hr: Skin temp at right hand after 6 hr: Skin temp at calves after 6 hr: Skin temp at left foot (foot instep) after 6 hr: Skin temp at right foot (foot instep) after 6 hr: Skin temp at left heel after 6 hr:	
Subject 2	Rectal temp after 1 hr: Skin temp at lumbar region after 1 hr : Skin temp at left hand after 1 hr: Skin temp at right hand after 1 hr: Skin temp at calves aft 1 hr: Skin temp at left foot (foot instep) after 1 hr: Skin temp at left heel after 1 hr:	Skin temp at lumbar region after 2 hr :         Skin temp at left hand after 2 hr:         Skin temp at right hand after 2 hr:         er         Skin temp at calves after 2 hr:         Skin temp at left foot (foot instep) after 2 hr:         Skin temp at left foot (foot instep) after 2 hr:         Skin temp at right foot (foot instep) after 2 hr:         Skin temp at left heel after	Rectal temp after 3 hr: Skin temp at lumbar region after 3 hr : Skin temp at left hand after 3 hr: Skin temp at right hand after 3 hr: Skin temp at calves after 3 hr: Skin temp at left foot (foot instep) after 3 hr: Skin temp at right foot (foot instep) after 3 hr: Skin temp at left heel after 3 hr:	After 4 hr: Skin temp at right hand after 4 hr: Skin temp at calves after 4 hr: Skin temp at left foot (foot instep) after 4 hr: Skin temp at right foot	Rectal temp after 5 hr: Skin temp at lumbar region after 5 hr : Skin temp at left hand after 5 hr: Skin temp at right hand after 5 hr: Skin temp at calves after 5 hr: Skin temp at left foot(foot instep) after 5 hr: Skin temp at right foot (foot instep) after 5 hr:	Rectal temp after 6 hr: Skin temp at lumbar region after 6 hr : Skin temp at left hand after 6 hr: Skin temp at right hand after 6 hr: Skin temp at calves after 6 hr: Skin temp at left foot (foot instep) after 6 hr: Skin temp at left heel after 6 hr: Skin temp at left heel after 6 hr:	

Immersion (insulated)	Immersion suits       Manufacturer:         (insulated)       Model:         Lot/Serial Number:       Model:		Surveyor:			
	est sheets for tem nmersion tests (co	· •	Regulations: LSA Coo	s: LSA Code II/2.3.2.2; MSC.81(70) 1/, 3.2.11 & 3.2.12		
Subject 3	Rectal temp after 1 hr: Skin temp at lumbar region after 1 hr : Skin temp at left hand after 1 hr: Skin temp at right hand after 1 hr: Skin temp at calves aff 1 hr: Skin temp at left foot (foot instep) after 1 hr: Skin temp at right foot (foot instep) after 1 hr: Skin temp at left heel after 1 hr:	Skin temp at lumbar region         after 2 hr :         Skin temp at left hand after         2 hr:         Skin temp at right hand after         2 hr:         Skin temp at calves after         2 hr:         Skin temp at left foot (foot         instep) after 2 hr:         Skin temp at right foot (foot         instep) after 2 hr:         Skin temp at left heel after	Rectal temp after 3 hr: Skin temp at lumbar region after 3 hr : Skin temp at left hand after 3 hr: Skin temp at right hand after 3 hr: Skin temp at calves after 3 hr: Skin temp at left foot (foot instep) after 3 hr: Skin temp at right foot (foot instep) after 3 hr: Skin temp at left heel after 3 hr:	Skin temp at right hand after 4 hr: Skin temp at calves after 4 hr: Skin temp at left foot (foot instep) after 4 hr:	Rectal temp after 5 hr: Skin temp at lumbar region after 5 hr : Skin temp at left hand after 5 hr: Skin temp at right hand after 5 hr: Skin temp at calves after 5 hr: Skin temp at left foot (foot instep) after 5 hr: Skin temp at right foot(foot instep) after 5 hr: Skin temp at left heel after 5 hr:	Rectal temp after 6 hr: Skin temp at lumbar region after 6 hr : Skin temp at left hand after 6 hr: Skin temp at right hand after 6 hr: Skin temp at calves after 6 hr: Skin temp at left foot (foot instep) after 6 hr: Skin temp at right foot(foot instep) after 6 hr: Skin temp at left heel after 6 hr:
Subject 4	Rectal temp after 1 hr: Skin temp at lumbar region after 1 hr : Skin temp at left hand after 1 hr: Skin temp at right hand after 1 hr: Skin temp at calves aff 1 hr: Skin temp at left foot (foot instep) after 1 hr: Skin temp at right foot (foot instep) after 1 hr: Skin temp at left heel after 1 hr:	Skin temp at lumbar region         after 2 hr :         Skin temp at left hand after         2 hr:         Skin temp at right foot (foot         instep) after 2 hr:         Skin temp at right foot (foot         instep) after 2 hr:         Skin temp at left heel after	Rectal temp after 3 hr: Skin temp at lumbar region after 3 hr : Skin temp at left hand after 3 hr: Skin temp at right hand after 3 hr: Skin temp at calves after 3 hr: Skin temp at left foot (foot instep) after 3 hr: Skin temp at right foot(foot instep) after 3 hr: Skin temp at left heel after 3 hr:	Skin temp at lumbar region after 4 hr : Skin temp at left hand	Rectal temp after 5 hr: Skin temp at lumbar region after 5 hr : Skin temp at left hand after 5 hr: Skin temp at right hand after 5 hr: Skin temp at calves after 5 hr: Skin temp at left foot (foot instep) after 5 hr: Skin temp at right foot(foot instep) after 5 hr: Skin temp at left heel after 5 hr:	Rectal temp after 6 hr: Skin temp at lumbar region after 6 hr : Skin temp at left hand after 6 hr: Skin temp at right hand after 6 hr: Skin temp at calves after 6 hr: Skin temp at left foot (foot instep) after 6 hr: Skin temp at right foot(foot instep) after 6 hr: Skin temp at left heel after 6 hr:

	Immersion suits (insulated)       Manufacturer:         Model:       Lot/Serial Number:         2.3.2.26 Test sheets for temperatures during immersion tests (continued)		Surveyor:			1 · · · · · · · · · · · · · · · · · · ·
			Regulations: LSA Code II/2.3.2.2; MSC.81(70) 1/, 3.2.11 & 3.2.12			
Subject 5	Rectal temp after 1 hr: Skin temp at lumbar region after 1 hr : Skin temp at left hand after 1 hr: Skin temp at right hand after 1 hr: Skin temp at calves aft 1 hr: Skin temp at left foot (foot instep) after 1 hr: Skin temp at left foot (foot instep) after 1 hr: Skin temp at left heel after 1 hr:	Rectal temp after 2 hr:         Skin temp at lumbar region         after 2 hr :         Skin temp at left hand after         2 hr:         Skin temp at right hand         after 2 hr:         Skin temp at right hand         after 2 hr:         Skin temp at calves after         2 hr:         Skin temp at calves after         2 hr:         Skin temp at left foot (foot         instep) after 2 hr:         Skin temp at right foot(foot         instep) after 2 hr:	Rectal temp after 3 hr: Skin temp at lumbar region after 3 hr : Skin temp at left hand after 3 hr: Skin temp at right hand after 3 hr: Skin temp at calves after 3 hr: Skin temp at left foot (foot instep) after 3 hr: Skin temp at right foot (foot instep) after 3 hr: Skin temp at left heel after 3 hr:	Rectal temp after 4 hr: Skin temp at lumbar region after 4 hr : Skin temp at left hand after 4 hr: Skin temp at right hand after 4 hr: Skin temp at calves after 4 hr: Skin temp at left foot(foot instep) after 4 hr: Skin temp at right foot(foot instep) after 4 hr: Skin temp at left heel after 4 hr:	Rectal temp after 5 hr: Skin temp at lumbar region after 5 hr : Skin temp at left hand after 5 hr: Skin temp at right hand after 5 hr: Skin temp at calves after 5 hr: Skin temp at left foot (foot instep) after 5 hr: Skin temp at right foot(foot instep) after 5 hr: Skin temp at left heel after 5 hr:	Rectal temp after 6 hr: Skin temp at lumbar region after 6 hr : Skin temp at left hand after 6 hr: Skin temp at right hand after 6 hr: Skin temp at calves after 6 hr: Skin temp at left foot (foot instep) after 6 hr: Skin temp at left foot (foot instep) after 6 hr: Skin temp at left heel after 6 hr:
Subject 6	Rectal temp after 1 hr: Skin temp at lumbar region after 1 hr : Skin temp at left hand after 1 hr: Skin temp at right hand after 1 hr: Skin temp at calves aft 1 hr: Skin temp at left foot (foot instep) after 1 hr: Skin temp at left heel after 1 hr: Skin temp at left heel after 1 hr:	Skin temp at lumbar region after 2 hr: Skin temp at left hand after 2 hr: Skin temp at right hand after 2 hr: Skin temp at calves after 2 hr: Skin temp at calves after 2 hr: Skin temp at left foot (foot instep) after 2 hr: Skin temp at right foot (foot	Rectal temp after 3 hr: Skin temp at lumbar region after 3 hr : Skin temp at left hand after 3 hr: Skin temp at right hand after 3 hr: Skin temp at calves after 3 hr: Skin temp at left foot (foot instep) after 3 hr: Skin temp at right foot (foot instep) after 3 hr: Skin temp at left heel after 3 hr:	Rectal temp after 4 hr:         Skin temp at lumbar         region after 4 hr :         Skin temp at left hand         after         4 hr:         Skin temp at right hand         after 4 hr:         Skin temp at calves after         4         Skin temp at left foot (foot instep) after 4 hr:         Skin temp at left foot (foot instep) after 4 hr:         Skin temp at left heel after         4         Skin temp at left heel after         4         Ar:	Rectal temp after 5 hr: Skin temp at lumbar region after 5 hr : Skin temp at left hand after 5 hr: Skin temp at right hand after 5 hr: Skin temp at calves after 5 hr: Skin temp at left foot (foot instep) after 5 hr: Skin temp at right foot (foot instep) after 5 hr: Skin temp at left heel after 5 hr:	Rectal temp after 6 hr: Skin temp at lumbar region after 6 hr : Skin temp at left hand after 6 hr: Skin temp at right hand after 6 hr: Skin temp at calves after 6 hr: Skin temp at left foot (foot instep) after 6 hr: Skin temp at right foot(foot instep) after 6 hr: Skin temp at left heel after 6 hr:

# 2.4 ANTI-EXPOSURE SUITS

### **EVALUATION AND TEST REPORT**

2.4.1	General data and specifications
2.4.2	Submitted drawings, reports and documents
2.4.3	Quality assurance
2.4.4	Visual inspection
2.4.5	Test subjects
2.4.6	Test with a lifejacket
2.4.7	Test clothing
2.4.8	Donning tests 1 & 2
2.4.9	Ergonomic test
2.4.10	Field of vision test
2.4.11	Flotation test
2.4.12	Righting test
2.4.13	Water ingress and jump test
2.4.14	Jump test
2.4.15	Leak test
2.4.16	Swimming and water emergency test
2.4.17	Oil resistance test
2.4.18	Alternative oil resistance test
2.4.19	Fire test
2.4.20	Temperature cycling test
2.4.21	Temperature cycling test – Test data
2.4.22	Buoyancy test
2.4.23	Strength test
2.4.24	Thermal protective test (General)
2.4.25	Thermal protective test (Continued)
2.4.26	Test sheets for temperatures during immersion tests

# 2.4 ANTI-EXPOSURE SUITS EVALUATION AND TEST REPORT

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

## MSC.1/Circ.1628 Annex, page 246

Anti-exposure suits	Manufacturer: Model: Lot/Serial Number:			Date:         Time:           Surveyor:         Organization:			
2.4.1 General data and s	pecifications		Regulation	ns: LSA Cod	e 2.3; MSC.81	(70);	
Construction Material:		Additional equipment:				Donning instructio	ns:
Fabric produced by:		Retro reflective material	:	□YES		□YES	
Туре:		Whistle produced:		□YES			
Buoyant material produced by:		Life-line:		□YES			
		Light:		□YES			
Туре:							

Anti-exposure suits 2.4.2 Submitted du	Manufacture Model: Lot/Serial Nu rawings, reports and o	r: imber:	Surveyor:	Time:	
	iuwingo, reporto unu (	Submitted drawings an	d documents		Status
Drawing No.	Revision No. & date	5			
	T	Submitted reports and	l documents		Status
Report/Document No.	Revision No. & date		Title of report / document		Status
		Maintenance Manual -			
		Operations Manual -			

Anti-exposure suits	Manufacturer:		Surveyor:	_ Time:		
	Lot/Serial Number:		Organization:			
2.4.3 Quality assurance		Regulatio	ns: - MSC.81(70) 2/1.1, 1.2			
of the International Convention for the Safety of Life at Sea, 1974, as			Quality Assurance Standard Used: -			
inspected, representatives of the Administration should make random inspections of manufacturers to ensure that the quality of life-saving appliances and materials used comply with the specification of the approved prototype life-saving appliance.		Quality Assurance Procedure:				
Manufacturers should be requ	ired to institute a quality control procedure	Quality As	surance Manual:			
to ensure that life-saving appliances are produced to the same standard as the prototype life-saving appliance approved by the Administration and to keep records of any production tests carried out in accordance with the Administration's instructions.		Description of System.				
		Quality Assurance System acceptable				
		Yes/No				
		Comments/Observations				

Anti-exposure suits	Model:	per:		Surveyor:	Time:	
2.4.4 Visual inspection			Regulation	ons: LSA Code I/1.	2.2, II/2.4.1.1.3 & 2.4.1.1.4	
Test Procedure	9	Acceptanc	e Criteria		Significant	Test Data
Anti-Exposure suit should:						
Be clearly marked with appro including the Administration w it, date of manufacturer and a restrictions.	vhich approved				Passed	Failed
Be provided with labels gi details and intervals betwo operating instructions, gener and manufacturers details.	een servicing,				Passed	Failed
Be fitted with approved pat reflective material with a total 400 cm <sup>2</sup> and with 100 cm <sup>2</sup> on suit does not automatically to face up according to resolutio	area of at least the back if the urn the wearer				Passed Comments/Observations	Failed

2.4.4 Visual Inspection (continued)		Regulations: LSA Code I/1.2	/1.2.2, II/2.4.1.3			
Test Procedure	Acceptanc	ce Criteria	Significant Test Data			
Is the anti-exposure suit of highly visible colour?	Covers the whole body except where the Administration so permits, the feet; covering for the hands and head may be provided by separate gloves and a hood, both of which shall be permanently attached to the suit.		Passed	Failed		
Is the anti-exposure suit designed to be worn without a lifejacket?		sour.	Passed	Failed		
lf yes,	Be of international or vivid red highly visible colour on all parts					
Is the anti-exposure suit fitted with a light complying with paragraph 2.2.3 of LSA Code?	at sea.		Passed	Failed		
Is the anti-exposure suit fitted with a whistle complying with paragraph 2.2.1.14 of LSA Code?			□YES □NO			
Is the anti-exposure suit specified as must be worn in conjunction with a lifejacket?			Passed	Failed		
Is the anti-exposure suit equipped with a pocket for a portable VHF telephone?			Passed	Failed		
			Passed	Failed		
			Passed	Failed		
			Comments/Observations			

Anti-exposure suits	Model:	Manufacturer: Model: Lot/Serial Number:			Date:            Surveyor:            Organization:			
2.4.5 Test subjects				Regulatio	ns: LSA Co	ode II/2.3.1.1.5 & 2.3.1.3.14; MSC.81(70) 1/3.1.1 & 2.8.2		
Test Procedure		Δ	Acceptance C	Criteria		Significant Test Data		
At least six able-bodied persons both male and females of the following heights and weights should be used. At least one and not more than two of the persons should be females with not more than one female in the same height range.		<u>Height</u> 1.40m - 1.60m; 1.60m - 1.80m over 1.80m	HeightWeightIm - 1.60m;1 person under 60kg 1 person over 60kgIm - 1.80m1 person under 70kg 1 person over 70kg			Male/FemaleHeightWeightSubject No.1Subject No.2Subject No.3Subject No.4Subject No.5Subject No.6Comments/Observations		
2.4.6 Test with a lifejack	et			Regulatio	ns: LSA Co	ode II/2.3.1.5; MSC.81(70) 1/3.1.2		
Test Procedure		Α	Acceptance C	Criteria		Significant Test Data		
If the anti-exposure suit is to conjunction with a lifejacket, should be worn over the anti-e for the tests prescribed in 2.4.	the lifejacket exposure suit					Manufacturer of lifejacket:         Type:         Manufacturer of lifejacket:         Type:         Manufacturer of lifejacket:         Type:         Manufacturer of lifejacket:         Comments/Observations		

Anti-exposure suits	Model:	rer:         Date:         Time:           Surveyor:         Organization:					
2.4.7 Test clothing					MSC.81(70) 1/3.2.6 & 3.2.7		
Test Procedure Ad			e Criteria		Significant Test Data		
The test subjects should wear a standard range clothing consisting of .1 underwear (short sleeved, short legged) .2 shirt (long sleeved) .3 trousers (not woollen, and .4 woollen socks .5 if suits to be worn in conjunction with a lifejacket, the lifejacket should be worn during the thermal protective test.					Did all test subject use the specified test clothing <ul> <li>YES</li> <li>NO</li> </ul> Comments/Observations		
2.4.8 Donning test (1)			Regulation	ns: LSA Code II/2.4	4.1.1.4; MSC.81(70) 1/3.1.3		
Test Procedure		Acceptanc	e Criteria		Significant Test Data		
It can be unpacked and donned without assistance within 2 min, taking into account test clothing 2.4.7 and a lifejacket if the anti-exposure suit is to be worn in conjunction with a lifejacket.		e anti-expos t assistance time to do ted chamber	ure suit over their in less than 2 min. n any associated s if fitted, and don	Donning time with normal clothing TimePassFailSubject No.1secSubject No.2secSubject No.3secSubject No.4secSubject No.5secSubject No.6secComments/Observations			

Anti-exposure suits	Model:	er: umber:	Surveyor:	Date:            Surveyor:            Organization:		
Anti-exposure suits         2.4.8       Donning test (2)         Test Procedur         The test subjects should be and don in 5 mins the anti-e ambient temperature of -30° donning test the anti-expos be kept in a refrigerated temperature of -30°C for 24	Lot/Serial N e able to unpack xposure suit in ' C. Before the ure suit should chamber at a		Organization: tions: LSA Code I/2.	4.1.1.4; MSC.81(70) 1/3.1.4	Pass c c c c c c c	Fail

Anti-exposure suits       Manufacturer:         Model:       Lot/Serial Number:					Time:		
2.4.9	Ergonomic test			Regulatio	ns: LSA Code II/2.4	4.1.2; MSC.81(70) 1/3.1.5	
	Test Procedure		Acceptanc	e Criteria		Significant Test Data	
	vearing the anti-exposubjects should be able to climb up and down a ve of at least 5 m in length perform all duties assist abandonment, assist operate a rescue boat; a pick up a pencil and diameter of the penci 8-10 mm.	ertical ladder ociated with other and and write. The	There should be no restriction arm movement. The diamete 8-10 mm.	n in walking		Restriction in walking, bending over or arm movement:         □YES □NO         All the test subjects were able to pick up a pencil and write:         □YES □NO         All the test subjects were able to put on the lifejacket without assistance:         □YES □NO         All the test subjects were able to put on the lifejacket without assistance:         □YES □NO         All the test subjects were able to perform all duties associated with abandonment, assist others and operate a rescue boat:	
						<ul> <li>☐YES □NO</li> <li>All the test subjects were able to climb up and down a vertical ladder of 5 meter in length:</li> <li>□YES □NO</li> <li>Comments/Observations</li> </ul>	

Anti-exposure suits	Model:	Surv			Time: yor: nization:				
2.4.10 Field of vision test	•	Regulations: I			Code II/2.4.1.7; I	MSC.81(70	) 1/3.1.6		
Test Procedure		Acceptance C	riteria			Sign	nificant Te	est Data	
Each test subject should be s the head in a fixed position, and field of vision measured.		The lateral field of vision should be at least 120°.			Field of vision angle ≥ 120°         Angle(degs.)       Pass       Fail         Subject No.1				
2.4.11 Flotation test			Regulations	s: LSA (	Code; MSC.81(7	′0) 1/3.1.7			
Test Procedure		Acceptance C	riteria		Significant Test Data				
		When wearing the anti- conjunction with a lifejacket subject should float face-up w of the water by at least 120n that position. The freeboard s from the water surface to the n the test subject at rest. The fine exposure suit without a lifejack 50 mm. The position of the lifejacket to be visible over as great a s hemisphere as is practicable.	if required, their mouth ith their mouth nm and be st should be me nose and mou reeboard of the ket should be light should p segment of the	he test as clear able in asured uth with he anti- at least ermit it	Freeboard Subject No.1 Subject No.2 Subject No.3 Subject No.4		Nose (mm) 	Without lifejac Mouth (mm)	n Nose (mm) 

Anti-exposure suits	Model:	Manufacturer: Model: Lot/Serial Number:		Date:         Time:           Surveyor:				
2.4.12 Righting test			Regulations	s: LSA Code II/2.4.	.3; MSC.81(70)	1/3.1.8		
Test Procedure		Acceptar	nce Criteria			Significant Te	st Data	
Test subjects in fresh water wearing an anti-exposure suit complying with the requirements of this section should be able to turn from a face-down to a face-up position in not more than 5 s and should be stable face-up. The suit should have no tendency to turn the wearer face-down in moderate sea condition.		Except where it has been demonstrated that th anti-exposure suit will right the test subjects within 5 s.			Righting time = Subject No.1 Subject No.2 Subject No.3 Subject No.4 Subject No.5 Subject No.6 Comments/Obs	Time (s)	Pass  	Fail 
2.4.13 Water ingress and	jump test	-		ns: MSC.81(70) 1/3				
Test Procedure			nce Criteria			Significant Te	st Data	
The test subjects should pre-v Exposure suit and then the Following a jump into the v height sufficient to totally it body, each test subject should again. Weighing should be perform achine accurate to ± 100g.	be weighed. vater from a immerse the d be weighed	The difference in the combine the suit should not exceed 50		e test subject and	Mass difference Subject No.1 Subject No.2 Subject No.3 Subject No.4 Subject No.5 Subject No.6 Comments/Obs	Pass		

Anti-exposure suits	Model:	er:		Date:         Time:           Surveyor:			
2.4.14 Jump test	umber:	Regulation		4.1.1.2; MSC.81(70) 1/3.1.10			
Test Procedure		Acceptan	ce Criteria		S	Significant Te	st Data
The test subjects should jump with the Anti- Exposure suit and lifejacket if required from a height of 4.5m vertically into the water. After the jump, the anti-exposure suit and its attachments should be examined for damage or dislodging, and the test subject should be questioned concerning whether the suit caused any injury to the wearer.		<ul><li>The Anti - Exposure suit and its attachments should not be damaged or dislodged in any way.</li><li>The test subject should not be injured by the suit.</li><li>The light, if fitted, should not injure the test subject.</li></ul>		Subject No.1 Subject No.2 Subject No.3 Subject No.4 Subject No.5 Subject No.6 Comments/Obs		Fail	
2.4.15 Leak test			Regulations: LSA Code II/2.4.1.1; MSC.81(70) 1/3.1.11				
Test Procedure		Acceptan	ce Criteria		S	Significant Te	st Data
<ul> <li>The test subject should anti-exposure suit and be we test subject should then be instone of the following:</li> <li>.1 a period of flotation in calmor</li> <li>.2 swimming for 20 min for a cleast 200 m</li> <li>The test subject should be we after the task.</li> <li>The weighing machine should to ± 100g.</li> </ul>	eighed. The tructed to do water of 1h; listance of at eighed again	The ingress of water into th exceed a mass of 200g.	e pre-wette	d suit should not	Indicate which a ☐Alter Water ingress ≤ Subject No.1 Subject No.2 Subject No.3 Subject No.4 Subject No.5 Subject No.6 Comments/Obs	native 1 ⊡Alte 200g Pass 	

Anti-exposure suits	Model:	er: umber:		Date: Surveyor: Organization:			
2.4.16 Swimming and wa	ter emergent t	test	Regulatio	ns: LSA Code II/2.4			
Test Procedure		Acceptano	ce Criteria			Significant Te	st Data
All test subjects, each wearin but not the anti-exposure attempt to swim 25 m and boa rigid platform with its surfa above the water surface. Test subjects who successfu this task should also perform i anti-exposure suit. If designed to be used with a li anti-exposure suit should be to subject also wearing a lifejack	suit, should and a liferaft or ace 300 mm ully complete it wearing the fejacket, then ested with the	All qualified test subjects shou or platform while wearing the a	lld be able to		1) 25m swim Subject No.1 Subject No.2 Subject No.3 Subject No.4 Subject No.5 Subject No.6	n and boarding	g with immersion suit

Anti-exposure suits Model:				Time:	
2.4.17 Oil resistance te	est	Regulat	ions: LSA Code; M	SC.81(70) 1/3.1.13	
Test Procedure		Acceptance Criter	ia	Significant Test Data	
After all its apertures have be anti-exposure suit should be it a period of 24 h under 100 diesel oil at normal room temp The surface oil should then and the suit subjected to the te in 2.4.15.	immersed for mm head of perature. be wiped off	The ingress of water should not excee	d a mass of 200g.	Indicate which alternative is used.         △Alternative 1 △Alternative 2         Water ingress ≤ 200g         Pass       Fail         Subject No.1	

Anti-exposure suits	Lot/Serial Number:		Surveyor:		
2.4.18 Alternative oil re			lations: LSA Code; M		
Test Procedu	ure	Acceptance C	Criteria	Significant Test Data	
In lieu of the test for oil resistance prescribed in 2.4.17 either of the following tests may be conducted.				Indicate which alternative is used. □Alternative 1 □Alternative 2	
After all apertures have been sealed, the anti-exposure suit should be immersed for a period of 24 h under 100 mm head of diesel oil at normal room temperature if necessary, using weights to keep suit submerged. Any surface oil should then be wiped off and the anti-exposure suit turned inside out. The suit should then be laid on a table suitable for collecting and draining off any leakage and be supported at the neck aperture by a suitable designed hanger.				Water ingress ≤ 200g       Pass       Fail         Subject No.1	
The suit should then be filled level which should be 300mm	above the table.	The seam strength should be	not less than 150 N.	Strength > 150N Pass Fail The samples should support a 1 m head of water	
Representative samples of the seams should be immersed u of diesel oil for 24 h. After re the samples should be wiper	nder 100mm head moval from the oil d off before being	The samples should successf of water.	ully support 1 m head	Pass Fail	
subjected to the following test .1 a hydrostatic test of a 1m .2 a tensile test of representa	water head and			Comments/Observations	

Anti-exposure suits Model:		umber:	Date: Surveyor: Organization:	Time:
2.4.19 Fire test		Regulation	s: LSA Code II/2.4	4.1.1.5; MSC.81(70) 1/3.1.15
Test Procedure		Acceptance Criteria		Significant Test Data
A test pan 30 cm x 35 cm x 6 c placed in an essentially draug Water should be put in the b test pan to make a minimum t 1 cm followed by enough petr minimum depth of 4 cm. The p then be ignited and allowed to for 30 s. If necessary the anti- should be draped over a hang the whole of the suit is enve flames , with the bottom of th above the top edge of the test the duration of exposure to t 2 s.	ht-free area. ottom of the otal depth of ol to make a petrol should o burn freely exposure suit ger to ensure eloped in the e suit 25 cm t pan so that	The anti-exposure suit should not sustain than 6 s or continue melting after being re flames.		Did the anti-exposure suit continue to burn for more than 6 s or continue melting after being removed from the flames? □ YES □ NO Comments/Observations

Anti-e	exposure suits	Model:	Survey		Surveyor:	te: Time: rveyor: ganization:		
2.4.20 Temperature cycling test			amber	Regulation		2.2.2; MSC.81(70) 1/3.1.16		
	Test Procedure	ing toot	Acceptanc			Significant Test Data		
The following test should be carried out on two immersion suits The anti-exposure suits should be alternately subjected to surrounding temperatures of -30°C and +65°C. These		such as shrinking, swelling dissolution or changes of mechanical qualities.		(See following page for test data) PassedFailed Comments/Observations				
imme follow	ating cycles need diately after each oth ring procedure, repeated cles, is acceptable:	er and the						
.1	an 8 h exposure at temperature of +65 completed in one day; a	°C to be						
.2	the specimens remove warm chamber that sat left exposed under ord conditions at a tempera ± 3°C until the next day;	me day and dinary room ture of 20°C						
.3	an 8 h exposure at a temperature of -30° completed the next day;	°C to be						
.4	the specimens remove cold chamber that same exposed under ordi conditions at a tempera	day and left nary room						

±	3°C until the next of	day.							
Anti-exposure suits Manufacturer: Lot/Serial Number:							Time:		
2.4.21	Temperature		t – Test Data HOT CYCLE		Regulation	s: LSA Code I	/1.2.1; MSC.81 CO	(70) 1/3.1.16 LD CYCLE	
Cycle 1	Date In: Time In: Temperature:	0 <sup>0</sup>	Date Out: Time Out: Duration:		Time	In: In: perature:	C	Date Out: Time Out: Duration:	
Cycle 2	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Time	In: In: perature:		Date Out: Time Out: Duration:	
Cycle 3	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date Time	In: In: perature:		Date Out: Time Out: Duration:	
Cycle 4	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Date Time	In: In: perature:		Date Out: Time Out: Duration:	
Cycle 5	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Time	In: In: perature:	C	Date Out: Time Out: Duration:	
Cycle 6	Date In: Time In: Temperature:	0 <sup>0</sup>	Date Out: Time Out: Duration:	hours	Time	In: n: perature:	0C	Date Out: Time Out: Duration:	
Cycle 7	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Time	In: n: perature:		Date Out: Time Out: Duration:	
Cycle 8	Date In: Time In: Temperature:		Date Out: Time Out: Duration:		Time	In: n: perature:		Date Out: Time Out: Duration:	
Cycle 9	Date In: Time In : Temperature:		Date Out: Time Out: Duration:		Time	In: n: perature:		Date Out: Time Out: Duration:	
	Date In:		Date Out:		Date	In:		Date Out:	

Cycle 10 Time In: Tim Temperature: <sup>0</sup> C Dur	e Out: ation:hours	Time	n: perature:		Time Out: Duration:	hours
	er:		Date: Surveyor: Organization:		Time:	
2.4.22 Buoyancy test		Regulation	ns: LSA Code II/2.4	4.1.1.1; MSC.	81(70) 1/3.1.17	
Test Procedure	Acceptan	ce Criteria			Significant Tes	t Data
The Anti-exposure suit should have inherent buoyancy of at least 70 N	The difference between the buoyancy should not exceed s				l Buoyancy 2 gkg	%difference %
The buoyancy of an anti-exposure suit designed to be worn without a lifejacket should be measured before and after 24 h complete submersion to just below the surface in fresh water.				Passed Comments/C	Faile Dbservations	d
2.4.23 Strength test	Regulations: LSA Code II; MSC.81(70) 1/3.1.18					
Test Procedure	Acceptance Criteria				Significant Tes	t Data
The anti-exposure suit should be immersed in water for a period of 2 min. It should then be removed from the water and closed in	The anti-exposure suit should this test.	not be dama	aged as a result of	Passed	Failed	
the same manner as when worn by a person. A force of not less than 3200 N should be applied to the lifting loop and a force of not less than 1350 N should be applied to the parts other than the lifting loop for 30 min. The anti-exposure suit may be cut if necessary to accommodate the test	Vest-type lifejacket Yoke or ov	Ver-the-head typ	ve lifejacket	Comments/C	Dbservations	
device.						

Anti-exposure suits	Anti-exposure suits Manufacturer: Model: Lot/Serial Number:		Time:
2.4.24 Thermal prote	ective test (General)	Regulations: LSA Code II/2	.4.2; MSC.81(70) 1/3.2.1 – 3.2.5
	t Procedure	Acceptance Criteria	Significant Test Data
thermal manikin, when su Administration and has be	alities may be measured using a uch a method is required by an een demonstrated to provide test factorily in all aspects to test results		Comments/Observations
	they should be medically examined he tests. Each design of immersion ubjects specified in 2.4.5		
conducted under the sup resuscitation equipment sh For safety reasons, ECG test. Testing should be stop if the falling rate of the cor per hour after the first half	e used, the tests should always be ervision of physician. Emergency nould be available during all tests. should be monitored during every ped at the wish of the test subjects, e temperature is more than 1.5° C hour. or if the skin temperature of n should fall below 10° C, or if the ers it advisable.		
temperature (rectal temperature) lumbar region, both hands, should be measured. The should be +/- 0.2°C. Approp	a subjects, continuous body core erature) and skin temperature of calves, foot (foot instep) and heels, accuracy of the measuring system priate corresponding measurements in is used in lieu of human subjects.		
jump test in paragraph 2.4.	ount of water resulting from the 15 should be poured into the dry clothing specified in 2.4.7 by the		

Anti-exposure suits	Anti-exposure suits Manufacturer: Model: Lot/Serial Number:			Surveyor:		
2.4.25 Thermal Protec		inued)		s: LSA Code II/2.4.2; MSC.81(70) 1/3.2.13, 3.2.14		
Test Procedure		Acceptance Criteri	ia	Significant Test Data		
Each test subject should w exposure suit previously sub water ingress and jump test 2.4.13. Following a 1 h immersion, with hands glow donned, in circulating calm w each test subject's body core should not fall more than 2 normal level of the subject's t Immediately on leaving the completion of the test prescri each test subject should be a a pencil as specified in paragr write. The anti-exposure suit sh constructed, that when worr the suit continues to prov thermal protection following of the water which totally submo subject and should ensure th worn in calm water at a tempe the test subject's body core does not fall at a rate of mon per hour, after the first 0.5 h.	pjected to the in paragraph n period of ed and hood ater at + 5°C, te temperature °C below the emperature. e water after ibed in 2.4.24 ble to pick up raph 2.4.9 and hould be so n as marked, ide sufficient one jump into erges the test nat when it is erature of 5°C, te temperature	Same mass of water which of from test 2.4.15, should be p immersion suit. See attached test sheets for during the immersion tests: Comments/Observations	ooured into the	e of test of test temperature Subject No.2		

2.4.25 Thermal Protective test (Continued)			Regulations: LSA Code II/2.4.2; MSC.81(70) 1/3.2.13, 3.2.14			
Test Procedure Acceptance Criter		Acceptance Criteri	а	Significant Test Data		
				Passed	Failed	
				See attached tests:	test sheets for temperatures during the immersion	
				Comments/Ob	oservations	

Anti-exposure suits	Manufacturer: Model: Lot/Serial Number:			Surveyor:	Time:	
2.4.26 Test sheets for te	mperatures during imme	rsion tests	Regulatior	ns: LSA Code II/	2.4.2.1.2; MSC.81(70) 1/3.2.	13 & 3.2.14
SUBJECT 1	SUBJECT 2	SUBJECT 3	SU	BJECT 4	SUBJECT 5	SUBJECT 6
Rectal temp after 1 hr:	Rectal temp after 1 hr:	Rectal temp after 1 h	r: Rectal te	emp after 1 hr:	Rectal temp after 1 hr:	Rectal temp after 1 hr:
Skin temp at lumbar region after 1 hr :	Skin temp at lumbar region after 1 hr :	Skin temp at lumbar region after 1 hr :		np at lumbar fter 1 hr :	Skin temp at lumbar region after 1 hr :	Skin temp at lumbar region after 1 hr :
Skin temp at left hand after 1 hr:		Skin temp at left h after 1 hr:	after	mp at left hand	Skin temp at left hand after 1 hr:	Skin temp at left hand after 1 hr:
Skin temp at right hand after 1 hr:	after	after	and Skin ter		Skin temp at right hand after 1 hr:	Skin temp at right hand after 1 hr:
Skin temp at calves after 1 hr:	Skin temp at calves after	1 hr: Skin temp at calves a 1 hr:	1 hr: <u> </u>	np at calves after	Skin temp at calves after 1 hr:	Skin temp at calves after 1 hr:
Skin temp at left foot (foot instep) after 1 hr:	Skin temp at left foot (foot instep) after 1 hr:	Skin temp at left foot (foot instep) after 1 hr	r: Skin tem	np at left foot	Skin temp at left foot (foot instep) after 1 hr:	Skin temp at left foot (foot instep) after 1 hr:
Skin temp at right foot (foot instep) after 1 hr:	Skin temp at right foot (foot instep) after 1 hr:	Skin temp at right foo (foot instep) after 1 hr	t r: Skin terr	tep) after 1 hr: np at right foot	Skin temp at right foot (foot instep) after 1 hr:	Skin temp at right foot (foot instep) after 1 hr:
Skin temp at left heel after 1 hr:	Skin temp at left heel after 1 hr:	after	heel Skin te	tep) after 1 hr: mp at left heel	Skin temp at left heel after 1 hr:	Skin temp at left heel after 1 hr:
Did the wearer's body core temperature fall at a rate more than 1,5°C per hour, after the first 0,5 h? □ Yes □ No	core temperature fall at a rate more than 1,5°C per	Did the wearer's bo	1 hr: ody at a Did the per core tem i h? rate mor	perature fall at a	temperature fall at a rate more than 1,5°C per hour, after the first 0,5 h?	Did the wearer's body core temperature fall at a rate more than 1,5°C per hour, after the first 0,5 h? □ Yes □ No

## 2.5 THERMAL PROTECTIVE AIDS

## **EVALUATION AND TEST REPORT**

- 2.5.1 General data and specifications
- 2.5.2 Submitted drawings, reports and documents
- 2.5.3 Quality assurance
- 2.5.4 Visual inspection
- 2.5.5 Fabric test Water resistance
- 2.5.6 Fabric test Thermal conductance
- 2.5.7 Temperature cycling test
- 2.5.8 Test subjects
- 2.5.9 Test clothing
- 2.5.10 Donning test 1
- 2.5.11 Donning test 2 at low temperature
- 2.5.12 Discarding test
- 2.5.13 Oil resistance test

# 2.5 THERMAL PROTECTIVE AIDS EVALUATION AND TEST REPORT

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Thermal protective aids       Manufacturer:         Model:       Lot/Serial Number:		Surveyor:					
2.5.1 General data and s		Regulations: LSA Code II/2.5; MSC.81(70) 1/ 3.3					
General Informa	ation						
Construction Material:		Donning instructions:					
Fabric manufactured by:							
Туре:							
Is the TPA of highly visible c	olour?	□YES □ NO					

Thermal protective aids         Manufacturer: Model: Lot/Serial Nur		r: umber:	Date:      Surveyor:      Organization:					
2.5.2 Submitted d								
	Submitted drawings and documents							
Drawing No.	Drawing No. Revision No. & Title of drawing date							
			Submitted reports and documents			01-1-1-2		
Report/Document No.	Revisio date	n No. &	Title of I	report / document		Status		
			Maintenance Manual -					
			Operations Manual -					

Thermal protective aids	Manufacturer: Model: Lot/Serial Number:		Date: Time: Surveyor: Organization:				
2.5.3 Quality Assurance		Regulations: - MSC.81(70) 2/1.1, 1.2					
Except where all appliances of of the International Conventi amended, of the international inspected, representatives of inspections of manufacturer appliances and materials u approved prototype life-saving Manufacturers should be require to ensure that life-saving app as the prototype life-saving app	of a particular type are required by Chapter III ion for the Safety of Life at Sea, 1974, as al Life-Saving Appliances (LSA) Code, to be of the Administration should make random is to ensure that the quality of life-saving used comply with the specification of the g appliance. uired to institute a quality control procedure blances are produced to the same standard opliance approved by the Administration and otion tests carried out in accordance with the	Quality As Quality As Quality As Description Quality As	surance Standard Used: - surance Procedure: - surance Manual: - n of System. surance System acceptable: s/Observations	Yes/No			

Thermal protective aids	Model:	er:		Date: Surveyor: Organization:		_ Time:	
2.5.4 Visual Inspection			Regulatio	ns: LSA Code I/1.2.2			
Test Procedure		Acceptano			Significant Test Data		
Is the thermal protection aid o colour?	f high visible	Be of an international or vivid reddish orange, or a comparably high visible colour on all parts where this will assist detection at sea.			□Yes	□No	
Does the thermal protection a		Cover the whole body of pe		ll sizes wearing a	□Yes	□No	
whole body of the weare exception of the face?	er with the	lifejacket with the exception of	the face.		□Yes	□No	
If provided with arms, are covered, or are permanen gloves provided? Be clearly marked with information including the A which approved it, date of mar any operational restrictions. with labels giving servicing intervals between servicing instructions, general inform manufacturer's details.	tly attached n approval dministration ufacture and Be provided details and g, operating						

Thermal protective aids	Model:	er: umber:		Date: Surveyor: Organization:		e:	
2.5.5 Fabric Test - Water r	esistance		Regulation	ns: LSA Code ; MS	SC.81(70) 1/3.3.1		
Test Procedure		Acceptano	ce Criteria		Significant Test Data		
The fabric from which the thermal protective aid is constructed should be tested to determine its resistance to penetration by a 2m head of water.		supporting a column of water 2 m high.		Does the material support a column of water of 2 r high YES NO Test method used: Comments/Observations			
2.5.6 Fabric test - Therma	conductanc	<u>م</u>	Regulation	ns: LSA Code II/2.	5 1: MSC 81(70) 1/	13 3 2	
Test Procedure		Acceptance Criteria			Significant Test Data		
which the thermal protective aid is th manufactured should be measured.		The fabric should have a ther than 7800 W/m²K and shall l used to enclose a person, it sh and evaporative heat loss from	mal conduct be so consti all reduce bo	ucted that, when oth the convective	Passed	attached here.	

Thermal protective aids         Manufacturer           Lot/Serial Number         Lot/Serial Number								
2.5.7	Temperature cy	cling test		Regulations: LSA Code II/1.2.2.2; MSC.81(70) 1/3.3.3				
	Test Procedure		Acceptanc	e Criteria		Significant Test Data		ta
A thermal protective aid should be subjected to surrounding temperatures of -30°C and +65°C. These alternating cycles need not follow immediately after each other and the following procedure, repeated for a total of 10 cycles, is acceptable:		The thermal protective aid sho such as shrinking, swelling mechanical qualities			See following	g page for test data. Failed		
.1	an 8 h exposure at temperature of +65 completed in one day;	5°C to be				Comments/C	Observations	
.2	the specimens remove warm chamber that sate left exposed under of conditions at a temperate ± 3°C until the next day	ame day and rdinary room ature of 20°C						
.3	an 8 h exposure at temperature of -30 completed the next day	°C to be						
.4	the specimen removed chamber that same exposed under ord conditions at a tempera ± 3°C until the next day	day and left linary room ature of 20°C						

Therma	al protective aids	Manufacturer: Model: Lot/Serial Number:		Surveyo	or:	Time:			
2.5.7	Temperature of	cycling test – Test data		Regulations: LSA C	ode I/1.2.2.2; M	SC.81(70) 1/3.3.3			
		HOT CYCLE							
	Date In:	Date Out:		Date In:		Date Out:			
Cycle 1	Time In: Time Out:		Time In:		Time Out:				
			Temperature:		Duration:	hours			
	Date In:	Date Out:		Date In:		Date Out:			
Cycle 2	Time In:	Time Out:		Time In:		Time Out:			
	Temperature:	<sup>0</sup> C Duration:	hours	Temperature:		Duration:			
	Date In:	Date Out:		Date In:		Date Out:			
Cycle 3	Time In:	Time Out:		Time In:		Time Out:	ime Out:		
	Temperature:			Temperature:	0 <sup>0</sup>	Duration:	hours		
	Date In:	Date Out:		Date In:		Date Out:			
Cycle 4	Time In:	Time Out:		Time In:		Time Out:			
	Temperature:	<sup>0</sup> C Duration:	hours	Temperature:	0C	Duration:	hours		
	Date In:	Date Out:		Date In:		Date Out:			
Cycle 5	Time In:	Time Out:		Time In:		Time Out:			
	Temperature:			Temperature:		Duration:			
	Date In:	Date Out:		Date In:		Date Out:			
Cycle 6	cle 6 Time In: Time			Time In:		Time Out:			
	Temperature:	<sup>0</sup> C Duration:	hours	Temperature:		Duration:	hours		
	Date In:	Date Out:		Date In:		Date Out:			
Cycle 7	Time In:	Time Out:		Time In:		Time Out:			
	Temperature:			Temperature:		Duration:	hours		
	Date In:	Date Out:		Date In:		Date Out:			
Cycle 8	Time In:	Time Out:		Time In:		Time Out:			
	Temperature:	<sup>0</sup> C Duration:		Temperature:		Duration:			
	Date In:	Date Out:		Date In:		Date Out:			
Cycle 9	Time In:	Time Out:		Time In:		Time Out:			
	Temperature:	<sup>0</sup> C Duration:	hours	Temperature:	0 <mark>0</mark>	Duration:	hours		
	Date In:	Date Out:		Date In:		Date Out:			
Cycle 10	Time In:	Time Out:		Time In:		Time Out:			
	Temperature:	<sup>0</sup> C Duration:	hours	Temperature:	0	Duration:	hours		

Thermal protective aids	r: umber:		Date: Surveyor: Organization:	Time:				
2.5.8 Test subjects			Regulatio	ns: LSA Code II/2	.5.2; MSC.81(70) 1/3.3.4			
Test Procedure		Accep	otance Criteria		Significant Test Data			
For these tests a group of at least six test subjects of different ages, both male and female in the large, medium and small size range should be selected.		, , ,		]	Comments/Observations         Male/Female       Height       Weight         Subject 1			
2.5.9 Test clothing			Regulatio	ns: LSA Code II/2	.5; MSC.81(70) 1/3.3.5, 3.2.6	& 3.2.8		
Test Procedure		Acceptance Criteria			Significant Test Data			
The test subjects should we range clothing consisting of .1 underwear (short sleeved, .2 shirt (long sleeved) .3 trousers (not woollen, socks .4 in addition to the cloth subjects should wear pullovers during the tests 2.5.10; 2.5.11 and 2.5.12.	short legged) and woollen hing the test two woollen prescribed in				Did all test subject use the s □YES □NO Comments/Observations	specified tes	t clothing	

	Manufacture	ufacturer:		Date:	Time:		
Thermal protective aids Model: _ Lot/Seria		el: Serial Number:		Surveyor:Organization:			
2.5.10 Donning test (1)					II/2.5.2.; MSC.81(70) 1/3.3.6		
Test Procedure		Acceptance Criteria			Significant Test Data		
Following a demonstration, the test subjects should be able to unpack and don the thermal protection aids over a lifejacket when seated in a survival craft or a rescue boat.		thermal protection aid.		k and don the	TimePassed       Failed         Subject No.1       sec         Subject No.2       sec         Subject No.3       sec         Subject No.4       sec         Subject No.5       sec         Subject No.6       sec         Subject No.6       sec		
2.5.11 Donning test (2) at	low temperat	ure	II/2.5.3; MSC.81(70) 1/3.3.7				
Test Procedure		Acceptance	Criteria		Significant Test Data		
The thermal protective aid capable of being unpacked an an ambient temperature of -30 the donning test the thermal p should be kept in a refrigerated a temperature of -30°C for 24	nd donned at 0° C. Before protective aid d chamber at	The test subjects should be able to successfully unpack and don the thermal protective aid without assistance in a survival craft or rescue boat. The thermal protective aid shall function properly throughout an air temperature range of -30°C to +20°C.		assistance in the second secon	TimePassed       Failed         Subject No.1       sec         Subject No.2       sec         Subject No.3       sec         Subject No.4       sec         Subject No.5       sec         Subject No.6       sec         Subject No.6       sec		

Thermal protective aids	Manufacturer: Model:			Date: Survevor:	Time:		
		Lot/Serial Number:		Organization:			
2.5.12 Discarding Test			Regulatio	ns: LSA Code	II/2.5; MSC.81(70) 1/3.3.8		
Test Procedure		Acceptance	Criteria		Significant Test Data		
If the thermal protective aid impairs the ability of the test subjects to swim, it should be demonstrated that it can be discarded by the test subjects, when immersed in water, in not more than 2 min.		less than 2 min.			TimePassedFailedSubject No.1secSubject No.2secSubject No.3secSubject No.4secSubject No.5secSubject No.6secSubject No.6sec		
2.5.13 Oil resistance test		Regulations: LSA Code I/1.2.2.4; MSC.81(70) 1/3.3.9					
Test Procedure		Acceptance Criteria			Significant Test Data		
After all its apertures have been sealed, a thermal protective aid should be immersed under 100 mm head of diesel oil for 24 h. The surface oil should then be wiped off and it should be established the thermal		signs of damage, such as shrinking dissolution or change of mechan thermal conductance should be		king, swelling, qualities. The	Is the thermal conductance of the thermal protective aid not more than 7800 W/m² K? □YES □NO		
conductance of the material.					Is there any sign of damage, such as shrinking, cracking, swelling, dissolution or change of mechanical qualities?		
					□YES □NO		
					Comments/Observations		



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> MSC.1/Circ.1629 14 December 2020

## REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (VISUAL SIGNALS)

1 The Maritime Safety Committee, at its 102nd session (4 to 11 November 2020), approved the *Revised standardized life-saving appliance evaluation and test report forms*.

The original forms, as set forth in the *Standardized life-saving appliance evaluation and test report forms* (MSC/Circ.980) and its addenda, were developed on the basis of the requirements of the International Life-Saving Appliance (LSA) Code and the *Revised recommendation on testing of life-saving appliances* (resolution MSC.81(70)) by the Maritime Safety Committee, at its seventy-third session in 2001, with a view to providing guidance on how to conduct tests, record test data and verify tests. The Committee has since adopted seven amendments to the LSA Code and eight amendments to resolution MSC.81(70). These amendments have been incorporated in the original forms which, due to their volume, are now presented in six separate circulars, i.e. MSC.1/Circ.1628, MSC.1/Circ.1629, MSC.1/Circ.1630, MSC.1/Circ.1631, MSC.1/Circ.1632 and MSC.1/Circ.1633, pertaining to the equipment addressed in chapters II to VII of the LSA Code, respectively. The forms annexed to this circular apply to the equipment addressed in chapter III of the LSA Code, i.e. visual signals (rocket parachute flares, hand flares and buoyant smoke signals).

3 The use of the revised forms will continue to be of benefit to Administrations and other parties, such as manufacturers, test facilities, owners and surveyors, and will be a major help in mutually accepting the type approval of appliances approved by other Administrations.

4 Member Governments are invited to bring the annexed, revised forms to the attention of all parties concerned with approving, manufacturing and testing life-saving appliances and to encourage them to use the forms.

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5 This circular supersedes MSC/Circ.980.



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## ANNEX

## REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (VISUAL SIGNALS)

## INTRODUCTION

## Reference

These standardized life-saving appliance evaluation and test report forms have been revised on the basis of the requirements of the International Life-Saving Appliance (LSA) Code, as amended through resolution MSC.425(98), *the Revised recommendation on testing of life-saving appliances* (resolution MSC.81(70)), as amended through resolution MSC.427(98), and the *Recommendation on means of rescue on ro-ro passenger ships* (MSC/Circ.810).

## Status

In general, the tests described in the Revised recommendation (resolution MSC.81(70)) constitute the test procedures and the LSA Code sets the acceptance criteria. The evaluation and test report forms are guidelines on how to conduct tests, record test data and verify tests. These forms are not intended to change the standards given in the LSA Code and the Revised recommendation, as amended. In the case of inconsistency between the forms and the LSA Code or the Revised recommendation, the text of the Code/resolution should prevail over that of the forms.

## Layout

Each Administration may use electronically distributed evaluation and test report forms as the basis for customising the layout to reflect the profile of the approving body, without changing the original contents.

## **Internal references**

The evaluation and test report forms should be stand-alone documents. Therefore, all internal references in the original text from the LSA Code or the Revised recommendation have been replaced by either the full-length text or a reference to other relevant evaluation and test report forms. However, in some of the forms, external references are kept for updating purposes.

## **Documentation of tests**

For approval purposes, all detailed records of test data are to be enclosed with the report forms.

## Verification of tests

Each test is to be verified passed or failed by an Administration representative's initials (e.g. recognized organization or surveyor) and date of testing. Each page is to be verified on completion by the Administration representative's signature and its date of completion.

## Reporting of type approval

To facilitate unified reporting procedures, the completed evaluation and test report forms are to be seen as a documented verification of required type approval tests for each type of equipment. When documentation of type approval is required by a third party, the verified evaluation and test report forms should constitute the complete documentation of the type approval together with the relevant approval certificates.

#### REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (VISUAL SIGNALS)

### TABLE OF CONTENTS

LSA Code chapter III (Visual signals) – Equipment:

- 3.1 Rocket parachute flares
- 3.2 Hand flares
- 3.3 Buoyant smoke signals

### 3 VISUAL SIGNALS

### 3.1 ROCKET PARACHUTE FLARES

### **EVALUATION AND TEST REPORT**

- 3.1.1 Submitted drawings, reports and documents
  - 3.1.1.1 Quality assurance
  - 3.1.1.2 Visual inspection
  - 3.1.1.3 General data and specifications
- 3.1.2 Temperature cycling test
- 3.1.3 Low temperature conditioning test
- 3.1.4 High temperature conditioning test
- 3.1.5 Humidity conditioning test
- 3.1.6 Water and corrosion resistance test
  - 3.1.6.1 1 m immersion for 24 h test
  - 3.1.6.2 10 cm immersion for 5 min test
  - 3.1.6.3 Salt spray test

#### 3.1.7 Handling safety

- 3.1.7.1 2 m drop test
- 3.1.7.2 Immersion suit glove test
- 3.1.8 Luminous intensity test
- 3.1.9 Safety inspection
- 3.1.10 Liferaft drop test

### 3.1 ROCKET PARACHUTE FLARES

### **EVALUATION AND TEST REPORT**

Manufacturer	
Type/Model	
Date of Approval	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Rocket parachute fla					Date: Time: Surveyor: Organization:			
3.1.1 Submitted	draw	vings, reports and	I documents					
	Submitted drawings and documents							
Drawing No.	Re dat	vision No. &		Status				
Banart/Deaumant No	Ba	vision No. & date	Submitted reports and docu			Status		
Report/Document No.	Re		Maintenance Manual -		eport/document			
			Operations Manual -					
			-1					

Rocket parachute flares	Manufacturer: Model: Lot/Serial Number:	Surveyor:			
3.1.1.1 Quality assura	nce	Regulations: MSC.81(70) 2/1.2, 1.1			
the International Convention or the International Life-Sa representatives of the Admi manufacturers to ensure the materials used comply with life-saving appliance. Manufacturers should be reconsure that life-saving applian prototype life-saving applian	of a particular type are required by chapter III of for the Safety of Life at Sea, 1974, as amended, ving Appliance (LSA) Code to be inspected, inistration should make random inspections of hat the quality of life-saving appliances and in the specification of the approved prototype quired to institute a quality control procedure to inces are produced to the same standard as the ce approved by the Administration and to keep in tests carried out in accordance with the	Quality Assurance Standard Used: Quality Assurance Procedure: Quality Assurance Manual: Description of System: Quality Assurance System acceptable Yes/No Comments/Observations			

Rocket parachute flares	Model:	r:	Surveyor:	Time:		
3.1.1.2 Visual inspection		-	Regulations: LSA Code	ə I/1.2.2 & III/3.1, 1.2.3		
Test Procedu	re	Acceptance (	Criteria	Significant Test Data		
Visual examination:		Rocket Parachute Flares should	l:			
1. Approval markings.		<ol> <li>be clearly marked with appr the Administration which manufacture and expiry an markings are to be indelible</li> </ol>	n approved it, date of nd operational restrictions,			
2. Operating instructions.		<ol> <li>be provided with brief instruing illustrating the use of the printed on the casing;</li> </ol>		2. Operating instructions. Pass/Pail		
3. Outer casing.		<ol><li>not depend on adhesive ta for its water-resistant prope</li></ol>		3. Outer casing: Pass/Fail		
4. Comfort.		<ol> <li>be so designed as not to person holding the casing with the manufacturers' operation</li> </ol>	when used in accordance	4. Comfort: Pass/Fail		
5. Operation.		<ol> <li>be so constructed that the is ejected can be positively</li> </ol>	end from which the rocke			
6. Ignition System.		and 6. be fitted with an integral me	eans of ignition.	<ol> <li>Ignition system: Pass/Fail</li> <li>Period of acceptability:</li> </ol>		
Lifetime		The Administration should d acceptability of the unit which a with age.				

Rocket parachute flares		per:				
3.1.1.3 General data and	specifications		Regulations: LSA Co	de 1.2; MSC.81(70) Pt 1/4.6		
General Informa	tion	Dimensions	6	Weight		
Construction Material:		Dimensions:		Design Weight:		
Casing:		Length of Casing:		Weight as Tested: Weight of Flare Material:		
Top cover (if applicable):		Diameter of Casing:	_	Weight of Rocket Charge:		
Bottom cover (if applicable):		Parachute Dimensions:		Comments/Observations		
Method of Ignition	_	Number of attachment Cords:				
Operational Safety Delay (	(if applicable):	Diameter of Line:				
Parachute  Acceptable life of the item	Material yrs					

Rocket parachute flares	Manufacturer: Model: Lot/Serial Number:					Date: Surveyo Organiza	r: ation:	_ Time:			
TEST ITEMS CONDITIONING SEQUENCE		SPECIMEN NUMBER						REFERENCES	REMARKS		
Specimen No>	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-28	MSC81(70)	
Measuring dimensions and mass	А	А	А	А	А	А	А	A	A		
Temperature cycling test (3.1.2)	В									4.2.1	
Low temperature conditioning (3.1.3)		В								4.2.2	
High temperature conditioning (3.1.4)			В							4.2.3	
Humidity conditioning (3.1.5)				В						4.2.4	
1 m immersion for 24 hours (3.1.6.1)					В					4.3.1	
100 mm for 5 minutes (3.1.6.2)						В				4.3.2	
Salt water spray (3.1.6.3)							В			4.3.3	
2 m Drop Test (3.1.7.1)								В		4.4.1	
Safety inspection (3.1.9)	С	С	С	С	С	С	С	С		4.5	
Operation at ambient temperature	D				D	D	D	D		4.2.1, 4.3.1, 4.3.2, 4.3.3 & 4.4.1	

Rocket parachute flares	Manufacturer: Model: Lot/Serial Number:							Model:						Sur	Date:            Surveyor:            Organization:			
Specimen No>	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			Remarks							
Operate at conditioning Temperature		D	D	D						4.2.2, 4.2.3 & 4.2.4								
Operational test using immersion suit glove (3.1.7.2)	E				Е			E		/4.4.2	Use specimens #2, #14 and #23.							
Vertical firing height, descent speed, burn time. (Note 1)			Е		Е	E	Е			4.6.1								
45° firing to horizontal. (Note 2)	Е	Е		E				Е		4.6.3								
Rocket recoil test for hand- held only. (Note 3)	E	Е	Е	E	E	E	E	E		4.6.4								
Flare material test colour and luminosity (3.1.8)										4.6.2	Additional flares may be used to measure the luminous intensity and may be carried out by an independent laboratory acceptable to the administration and report submitted.							
Chute examination after recovery. (Note 4)	F	F	F	F	F	F	F	F		LSA. Code Chapter III/ 3.1.2.5								
Liferaft Drop Test (4.2.4)									G	LSA Code Chapter IV/ 4.1.1.2	The liferaft manufacturer should complete this form.							

Note: The letters in the above 'boxes' refer to the sequence of testing of each specimen Rocket Parachute Flare. Note 1. Not all samples marked need to be fired at 90°. A representative sample of at least 18 specimens should be so assessed, so that a representative descent rate can be found.

Note 2. Not all samples marked need to be fired at 45°. A representative sample of at least 3 specimens should be so assessed.

Note 3. Not all samples need to be recoil tested. A representative sample of at least 3 rockets should be so assessed by hand firing.

Note 4. It is accepted that all parachutes may not be recoverable - as many as possible should be recovered and inspected for damage.

Rocket parachute flares			Date: Surveyor: Organization:	Date:            Surveyor:            Organization:			
3.1.2 Temperature cy	cling test	Regulations: LSA Code I/1.2 & III/3.1; MSC.81(70) 1/1.2.1, 4.2 & 4.6					
Test Proce	dure	Accept	tance Criteria		Significant T	est Data	
The three specimens of p should be alternately sub temperatures of -30°C and + cycles need not follow imme	jected to surrounding 65°C. These alternating diately after each other	damage such as sl	cimen should show no sign of nrinking, cracking, swelling, of mechanical qualities and ambient temperature.	1 Condition after Ejection height			
<ul> <li>and the following procedure, 10 cycles, is acceptable:</li> <li>.1 an 8 h exposure at a m +65°C to be completed in</li> </ul>	inimum temperature of	.1 It should be estab measuring instrume specimens 1 and 2 less than 300 m.	90° Burn out heigh		N/A es) N/A		
<ul> <li>.2 the specimens removed f that same day and left e room conditions at a tem until the next day;</li> <li>.3 an 8 h exposure at a ma -30°C to be completed the</li> </ul>	exposed under ordinary perature of 20°C ± 3°C aximum temperature of	burning period shou .3 It should be measurements that than 5 m/s and the	h the flare burns out and the Ild also be measured. established from these the rate of descent is not more burning period is not less than	Burn time of fla Descent rate o Operation at 4 N/A Height reached	of flare (m/s) 5° (Pass/Fail) N/A	N/A	
.4 the specimen removed fro same day and left expose conditions at a temperatur next day.	m the cold chamber that ed under ordinary room	not reach a height c	f function efficiently but need of 300 metres. -held when operated, it should	Parachute cond Recoil minimal	ition (Pass/Fai	N/A I)	
The three parachute rock temperature cycling should ambient temperature Samples 1 and 2 should Sample 3 should be fired at a	function effectively at be fired vertically.	.6 It should be determ	at its recoil is minimal. nined by examination that the lamaged its parachute or it was burning.	Comments/Ob Passed	servations		

Deskat nereshute fleres	Manufacturer: Model: _ot/Serial Number:	Surveyor: _	Date:            Surveyor:            Organization:			
3.1.3 Low temperature	conditioning test	Regulations: LSA	ns: LSA Code I/1.2 & .III/3.1; MSC.81(70) 1/4.2.2			
Test Procedure	Acceptance Criteria			Significant Test D	Data	
Three parachute rockets sho	I ATTAR THA TART ARCH CHARINAN CHAILIN CHAI	no sign of damage	4	5	6	
be subjected to a temperature -30°C for at least 48 h and th	OI auch as abrinking gracking swelling disa	<b>v</b>	Condition after of	conditioning (Pass	/Fail)	
function effectively immediat	elv mechanical qualities and should then					
upon removal from the c			Ejection height	of flare (metres) O		
chamber.	1 It should be established by means of	accurate maccuring			N/A	
	.1 It should be established by means of instruments that the parachute flares of s		Burn out height of flare (metres)			
	ejected at a height of not less than 300 m	•			N/A	
Specimen 4 and 5 should be fir			Burn time of flar	e (sec)	-	
vertically. Specimen 6 should	be .2 The height of which the flare burns out a	nd the burning period				
fired at an angle of 45°.	should also be measured.		Descent rate of	flare (m/s)	I	
	.3 It should be established from these me	asurements that the			N/A	
	rate of descent is not more than 5 m/s ar		Operation at 45	° (Pass/Fail)		
	is not less than 40 s.	ia ale balling period	N/A	N/A		
			Height reached	Height reached (metres)		
	.4 Specimen 6 should function efficiently b	out need not reach a			N/A	
	height of 300 metres.		Parachute cond	Parachute condition (Pass/Fail)		
	.5 If the rocket is hand-held when ope	rated it should be				
	demonstrated that its recoil is minimal.	Tated, it should be	Recoil minimal (	Recoil minimal (Pass/Fail)		
	.6 It should be determined by examination	that the flare has not	Comments/Obs	ervations		
	damaged its parachute or attachments w		Passed	Failed		

Rocket parachute flares	Manufacturer: Model: Lot/Serial Nur	nber:		Date:            Surveyor:            Organization:			
3.1.4 High temperatu	re conditioning	y test	Regulations	: LSA Code I/1.2	& III/3.1; MSC	C.81(70) 1/4.2.3, 4	4.6
Test Procedure	•	Acceptano	ce Criteria			Significant Te	est Data
Three parachute rockets		After the test, each specimen s	hould show n	o sign of damage	7	8	9
subjected to a temperature of least 48 h and then function		such as shrinking, cracking, sw			Condition af	ter conditioning (I	Pass/Fail)
immediately upon removal		mechanical qualities and she	ould then fur	nction effectively			
chamber.		immediately.			Ejection heio 90°	ght of flare (metre	s) Operation
The three rockets should be f	ired vertically.	1. It should be established by means of accurate measuring instruments that the parachute flares of the three rockets are ejected at a height of not less than 300 m.					
	,				Burn out hei	ght of flare (metre	es)
		are ejected at a height of ho	0 111.				
		2. The height of which the flare burns out and the burning period should also be measured.			Burn time of	flare (sec)	1
					Decembrat	<b>f f</b>   ( ( ()	
						Descent rate of flare (m/s)	
		<ol> <li>It should be established from rate of descent is not more</li> </ol>				 ondition (Pass/Fa	 \il\
		period is not less than 40 s.		and the burning	Faracritice c		 
					Recoil minin	nal (Pass/Fail)	
		4. If the rocket is hand-held	•	ed, it should be			
		demonstrated that its recoil	is minimal.		Comments/0	Observations	
		5. It should be determined by examination that the flare has not damaged its parachute or attachments whilst it was burning.					
					Passed	Failed	

	Manufacturor	Data:	Timo:			
	Manufacturer: Model:		Time:	· · · ·		
Rocket parachute flares	Lot/Serial Number:	Organization:	Surveyor: Organization:			
3.1.5 Humidity conditi	ioning test	Regulations: LSA Code I/1.2	& III/3.1; MSC.81(70) 1/4.2.4			
Test Procedure	Acceptance Crite	eria	Significant Test	Data		
Three specimens of parachut	e After the test, each specimen should show	w no sign of damage such as	10 11	12		
rockets should be subjected to			Condition after conditioning (Pa	ss/Fail)		
a temperature of +65°C an				,		
90% relative humidity for a			Ejection height of flare (metres)	Operation		
least 96 h, followed by 10 day			90°			
at 20°C to 25°C at 65% relativ				N/A		
humidity.	ejected at a height of not less than 300 n	1.	Burn out height of flare (metres)			
Specimen 10 and 11 should be	.2 The height of which the flare burns out	and the burning period should		N/A		
fired vertically. Specimen 12			Burn time of flare (sec)			
should be fired at an angle						
of 45°.	.3 It should be established from these m		Descent rate of flare (m/s)			
	descent is not more than 5 m/s and the	burning period is not less than		N/A		
	40 s.		Operation at 45° (Pass/Fail)			
	.4 Specimen 12 should function efficiently	but need not reach a height of	N/A N/A			
	300 metres.	5	Height reached (metres)			
				N/A		
	.5 If the rocket is hand-held when operated,	it should be demonstrated that	Parachute condition (Pass/Fail)			
	its recoil is minimal.					
	.6 It should be determined by examination t	that the flare has not damaged	Recoil minimal (Pass/Fail)			
	its parachute or attachments whilst it was					
		Ū	Comments/Observations PassedFailed			

Rocket parachute flares		nber:		Date:          Time:            Surveyor:          Organization:			
3.1.6.1 1 m immersion	for 24 hours te	st	Regulations	: LSA Code I/1.2	& III/3.1; MSC.	81(70) 1/4.3.1,	4.6
Test Procedure		Acceptan	ce Criteria			Significant T	est Data
Three parachute rockets immersed horizontally for 24 h water. The three rockets should be fi	n under 1 m of	After the test, each rocket shou	ld show no sign ing, dissolutior buld then func means of accu nute flares of th ot less than 300 are burns out a ured. m these measure than 5 m/s a when operate is minimal. examination th	n or change of tion at ambient urate measuring ne three rockets ) m. and the burning rements that the and the burning ed, it should be nat the flare has	Ejection heigh 90° Burn out heig Burn time of f Descent rate	14 er conditioning nt of flare (metr ht of flare (metr lare (sec) of flare (m/s) ndition (Pass/F al (Pass/Fail) bservations	15 (Pass/Fail) es) Operation res) ail)

Rocket parachute flares		er:		Date: Surveyor: Organization: _		_ Time:	
3.1.6.2 10 cm immersion for 5 min test				ions: LSA Cod	e I/1.2 & III/3.1;	MSC.81(70) 1/4.3	3.2, 4.6
Test Procedure Acceptance Cri		riteria				Data	
Three parachute rockets	should be	After the test, each rocket should show no sign of			16	17	18
immersed in the ready to fir		damage such as shrinking, crack	king, swelli	ing, dissolution	Condition after	conditioning (Pas	ss/Fail)
5 min under 10 cm of water.		or change of mechanical qua		should then			
The three rockets should be f	ired vertically	function at ambient temperature	•		Ejection height	t of flare (metres)	Operation 90°
	irea vertically.	.1 It should be established I	by means	of accurate	Burn out height	t of flare (metres)	<u>.                                    </u>
		measuring instruments that th			Barrioathoigh		
		three rockets are ejected at a 300 m. The height of which the			Burn time of flare (sec)		
		300 m. The height of which the flare burns out and the burning period should also be measured. It should be established from these measurements that the rate of					
				Descent rate of flare (m/s)			
		descent is not more than 5 m/ is not less than 40 s.	/s and the	burning period	Deve altrate a ser		l
		is not less than 40 s.			Paracnute con	dition (Pass/Fail)	
		.2 If the rocket is hand-held whe		d, it should be	Recoil minimal	(Pass/Fail)	
		demonstrated that its recoil is	s minimal.				
		.3 It should be determined by examination that the flare has not damaged its parachute or attachments whilst it was burning.		Comments/Obs	servations		
					Passed	Failed	

Rocket parachute flares	arachute flares Manufacturer: Model: Lot/Serial Number:			Date:          Time:            Surveyor:          Organization:			
3.1.6.3 Salt spray test			Regulations	s: LSA Code I/1.2	& III/3.1; MSC.8	81(70) 1/4.3.3, 4	1.6
Test Procedure	•	Acceptan	ce Criteria			Significant Te	est Data
Three specimens of parachute rockets should be subjected to a salt spray (5% Natrium Chloride solution) at a temperature of +35±3°C for at least 100 h.		After the test, each specimen s such as shrinking, cracking, sw mechanical qualities and sho temperature.	velling, dissolu	ution or change of		20 r conditioning (F t of flare (metre	
The three rockets should be fired vertically. Note: Natrium and Sodium are the same		<ol> <li>It should be established by means of accurate measuring instruments that the parachute flares of the three rockets are ejected at a height of not less than 300 m.</li> <li>The height of which the flare burns out and the burning period should also be measured.</li> <li>It should be established from these measurements that the rate of descent is not more than 5 m/s and the burning period is not less than 40 s.</li> <li>If the rocket is hand-held when operated, it should be demonstrated that its recoil is minimal.</li> <li>It should be determined by examination that the flare has not damaged its parachute or attachments whilst it was burning.</li> </ol>		Burn out heigh Burn time of fl Descent rate of		25)	
					ndition (Pass/Fa	il)	
				Comments/Ob	pservations		

Rocket parachute flares       Manufacturer:         Model:       Lot/Serial Number:		Surveyor:			
3.1.7.1 2 m drop test		Regulations: LSA Code I/1.2	& III/3.1; MSC.	81(70) 1/4.4.1, 4	4.6
Test Procedure	Acceptan	ce Criteria		Significant Te	est Data
Three parachute rockets should be dro	oed After the test, each specimen s	After the test, each specimen should show no sign of damage		23	24
in turn end-on and horizontally from a h	ight such as shrinking, cracking, sw	elling, dissolution or change of		er conditioning (F	Pass/Fail)
of 2 m on to a steel plate about 6 mm cemented on to a concrete floor. should remain in a safe condition afte	hey temperature.	uld then function at ambient		nt of flare (metre	s) Operation
test.	.1 It should be established by				N/A
Specimen 22 and 23 should be		ute flares of specimens 22 and	Burn out height of flare (metres)		
vertically. Specimen 24 should be fire		23 are ejected at a height of not less than 300 m.		l	N/A
an angle of 45°.	.2 The height of which the fla	<ul><li>.2 The height of which the flare burns out and the burning period should also be measured.</li><li>.3 It should be established from these measurements that the rate of descent is not more than 5 m/s and the burning period is not less than 40 s.</li></ul>		lare (sec)	
	period should also be meas				
	3. It should be established from			of flare (m/s)	
					N/A
	period is not less than 40 s.			45° (Pass/Fail) N/A	
	4. Specimen 24 should function	n efficiently but need not reach	N/A N/A Height reached (metres)		
	a height of 300 metres.	In enciently but need not reach	Tieght Teache		N/A
			Parachute co	ndition (Pass/Fa	
		when operated, it should be			
	demonstrated that its recoil	is minimal.	Recoil minima	al (Pass/Fail)	
	.6 It should be determined by	examination that the flare has			
		or attachments whilst it was	Comments/O	bservations	
			Passed	Failed	

Rocket parachute flares	Model:	nber:		Date: Surveyor: Organization:			
3.1.7.2 Immersion suit g	glove test		Regulations	s: LSA Code I/1.2	& III/3.1; MSC.8	1(70) 1/4.4.2, 4.	6
Test Procedure		Acceptanc	e Criteria	Criteria Significant Test Data			t Data
Three parachute rockets activated in accordance manufacturer's operating instru operator wearing an insulat immersion suit or the gloves ta insulated buoyant immersion establish that they can be effectively without injury to the any person in close proximity or burning. The three rockets should be fir	with the uctions by an ted buoyant aken from an on suit to be operated operator, or during firing	<ul> <li>After the test, each specimen s such as shrinking, cracking, sw mechanical qualities and sho temperature.</li> <li>.1 It should be established by instruments that the parach are ejected at a height of no</li> <li>.2 The height of which the fla period should also be measured is not less than 40 s.</li> <li>.3 It should be established from rate of descent is not more period is not less than 40 s.</li> <li>.4 If the rocket is hand-held demonstrated that its recoil is not damaged its parachute burning.</li> </ul>	hould show n elling, dissolu uld then fun means of acc ute flares of t less than 30 are burns out ured. n these measu e than 5 m/s when operat is minimal. examination	ation or change of ction at ambient curate measuring the three rockets 0 m. and the burning urements that the and the burning ted, it should be that the flare has	Ejection height 90° Burn out height Burn time of fla Descent rate of	14 conditioning (Pa of flare (metres) t of flare (metres) re (sec) f flare (m/s) dition (Pass/Fail) (Pass/Fail)	23 Iss/Fail) Operation

Rocket parachute flares	Manufacturer: Model: Lot/Serial Number:	Surveyor:
3.1.8 Luminous inten	sity test	Regulations: LSA Code I/1.2 & III/3.1.2; MSC.81(70) 1/4.6.2
Test Procedure Acceptance Criteria		Significant Test Data
Laboratory testing of the ro parachute flare should estal that it will burn with the requ luminous intensity and colour.	blish lired .1 that it will burn uniformly with an a intensity of not less than 30,000 cd f	average luminous for a period of not res from -30°C to       Luminous intensity levels at -30°C: KCd         Burning time of Flaresec         colour coordinates: xy         vivid red with CIE = 0.3 to 0.39, or wavelength of 608         Burning time of Flaresec         S should be within

Rocket parachute flares	Decket parachute flares       Manufacturer:       Date:         Model:       Surveyor:       Organizatio		Date: Surveyor: Organization: _	Time:		
3.1.9 Safety inspection	on		Regulations:	LSA Code I/1.	.2 & III/3.1; MSC.81(70) 1/4.5	
Test Procedure		Acceptance	e Criteria		Significant Test Data	
It should be established by vis inspection that the rocket para						
.1 is indelibly marked with cle instructions on how it shou and that the danger end ca by day or night;	ld be operated	Clear and precise operating insparachute rocket flare and the identifies the danger end.			Markings and identification of ends acceptable PassedFailed	
.2 can, if hand operated, be operated from the bottom (safe end) or that it contains an operational safety delay of 2 seconds;		If operated from the top the than 2 s.	time delay is	not to be less	Time delay if operated from the top	_sec
.3 has a simple and integ ignition which requires the preparation and can be re in adverse conditions wi aid and with wet, cold or g	e minimum of adily operated thout external	It has a simple and integral m operated by cold, wet and glove		n and can be	Operation of specimen when wet, cold and gloved hands. PassedFailed	
.4 does not depend on adhe plastic envelopes for its v properties; and		Adhesive tapes or plastic envelo water-resistant properties.	opes are not us	ed to maintain	Water resistant without the use of envelopes or adhesive tape.	S
.5 can be indelibly marked we determining its age.	with means of	Date of manufacturing and date the outside.	e of expiry indel	ible printed on	PassedFailed Indelible date stamped PassedFailed Comments/Observations	

Rocket parachute flares	Model:	Date: nber: Organization:			Time:			
3.1.10 Liferaft drop tes	st		Regulatio	ns: LSA Code 1.2	& 4.1.1.2, MS	SC.81(70)	/5.1.2	
Test Procedure		Acceptanc	e Criteria			Signifi	cant Test Da	ata
The liferaft in the operation		Damage to any item of equipme	•	2	25	26	27	28
condition should be suspen dropped from a height of 18 m		administration being satisfied t has not been impaired.	hat the oper	ational efficiency	Condition of	units (Pas	s/Fail)	
If the liferaft is to be stowe	ed at a height							
greater than 18 m above the v lightest seagoing condition,					Passed	I	ailed	
Note: This test sheet should by the liferaft manufacture should be made to the test sh	hich it is to be be completed er. Reference	After the test, each rocket parac of damage such as shrinking, cr change of mechanical qualities.	acking, swelli		Comments/	Observatio	ns	

#### 3.2 HAND FLARES

#### **EVALUATION AND TEST REPORT**

- 3.2.1 Submitted drawings, reports and documents
  - 3.2.1.1 Quality assurance
  - 3.2.1.2 Visual inspection
  - 3.2.1.3 General data and specifications
- 3.2.2 Temperature cycling test
- 3.2.3 Low temperature conditioning test
- 3.2.4 High temperature conditioning test
- 3.2.5 Humidity conditioning test
- 3.2.6 Water and corrosion resistance test
  - 3.2.6.1 1 metre immersion for 24 hours test
  - 3.2.6.2 100 mm immersion for 5 minutes test
  - 3.2.6.3 Salt spray test
- 3.2.7 Handling safety
  - 3.2.7.1 2 m drop test
  - 3.2.7.2 Immersion suit glove test
  - 3.2.7.3 Handling safety immersion test
- 3.2.8 Heptane test
- 3.2.9 Luminous intensity test
- 3.2.10 Liferaft drop test
- 3.2.11 Safety inspection

#### 3.2 HAND FLARES

### **EVALUATION AND TEST REPORT**

Manufacturer	
Type/Model	
Date of Approval	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Hand flares	Manufacturer: Model: Lot/Serial Nun	nber:		Date: Surveyor: Organization:	 
3.2.1 Su	bmitted drawing	gs, reports and	documents		
		Sub	mitted drawings and documents	6	Status
Drawing N	o. Revis	sion No. & date	Ti	tle of drawing	
		Su	bmitted reports and documents		Status
Report/Docum	ent No. Revis	sion No. & date	Title o	f report/document	Status
			Maintenance Manual -		
			Operations Manual -		

Hand flares	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:			
Except where a chapter III of the Sea, 1974, as ar (LSA) Code to b should make rar the quality of life- the specification Manufacturers s procedure to ens same standard a the Administration	ality assurance Il appliances of a particular type are required by e International Convention for the Safety of Life at mended, or the International Life-Saving Appliance e inspected, representatives of the Administration ndom inspections of manufacturers to ensure that -saving appliances and materials used comply with of the approved prototype life-saving appliance. should be required to institute a quality control sure that life-saving appliances are produced to the as the prototype life-saving appliance approved by on and to keep records of any production tests	Regulations: MSC.81(70) 2/1.1, 1.2         Quality Assurance         Standard Used:					
carried out in ac	cordance with the Administration's instructions.		ce System acceptable nts/Observations				

Hand flares	Model:	nber:	Surveyor:	Date:          Time:            Surveyor:          Organization:		
3.2.1.2 Vi	sual inspectio	n	Regulations: LS	A Code I/1.2.2, 1.2	2.3 & III/3.2	
Test Pro	cedure	Acceptance Criteria	Significant Test Data			
Visual examinati	on:	Red hand flares should:				
Approval markin	gs	.1 be clearly marked with approval informati Administration which approved it, date of n expiry and operational restrictions, mark indelible;	nanufacture and		Failed	
Operating instruc	ctions	.2 be provided with brief instructions or d illustrating the use of the hand flare printer			Failed	
Outer casing		.3 not depend on adhesive tapes or plastic e water-resistant properties;	envelopes for its		Failed	
Comfort		.4 be so designed as not to cause discomfor holding the casing when used in accor manufacturers' operating instructions;			Failed	
Operation		.5 be so constructed that the end from wh burning can be positively identified by day			Failed	
Ignition System		.6 be fitted with an integral means of ignition				
Life of Hand Flar	e	The Administration should determine the period of the unit which are subject to deterioration with the unit which are subject to deterior to deterior the unit which are subject to deterior the unit which are subject to deterior to deterio			Failed	
				Comments/Obser	rvations	

Hand flares	Manufacturer: Model: Lot/Serial Number:		Date:          Surveyor:          Organization:			
3.2.1.3 Ge	neral data and specifications		Regulations: LSA Cod	e 1.2; MSC.81(70) 1/4.7		
Gen	eral Information	Dimensio	ns	Weight		
Construction Ma	terial:	Dimensions:		Design Weight:		
Casing <u>:</u> Top cover (if app  Bottom Cover (if		Length of Casing:		Weight as Tested: Weight of Flare Material Comments/Observations		
Method of Ignitio	ety Delay (if applicable)					
Acceptable life	of the item yrs					

Hand flares	Manufactur Model: Lot/Serial N								Surveyo	r:	Time	D:
TEST ITEMS CONDITIONING SEQUENCE					SPECI	MEN NU	JMBER				REFERENCES	REMARKS
Specimen No>		1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	MSC81(70)	
Measuring dimer mass	nsions and	А	A	А	A	А	А	А	A			
Temperature cyc (3.2.2)	cling test	В									4.2.1	
Low temperature conditioning (3.2			В								4.2.2	
High temperature conditioning (3.2				В							4.2.3	
Humidity condition (3.2.5)	oning				В						4.2.4	
1 metre immersie hours (3.2.7.1)	on for 24					В					4.3.1	
100 mm for 5 mi (3.2.7.2)	n						В				4.3.2	
Salt water spray	(3.2.7.3)							В			4.3.3	
2 m Drop Test (3	8.2.8.1)								В		4.4.1	
Safety inspection	า (3.2.12)	С	С	С	С	С	С	С	С	С	4.5	
Operation at am temperature	bient	D				D	D	D	D	D	4.2.1, 4.3.1, 4.3.2, 4.3.3 & 4.4.1	

Hand flares	Manufacturer Model: Lot/Serial Nu							Sur	/eyor:			ne:
Specimen No>	>	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-30	References	Remarks
Operate at cond Temperature	itioning		D	D	D						4.2.2, 4.2.3 & 4.2.4	
Operational test immersion suit g									E		/4.4.2	
Burning time of f	lare	Е	Е	Е	Е	Е	Е	Е	Е		4.7.1	
Flare immersion water (3.2.8.3)	test under			Е							4.7.1	
Heptane test (3.	2.9)								E		4.7.3	
Flare material te Colour and lumin (3.2.10)										F	4.7.2	May be carried out by an independent laboratory acceptable to the Administration & report submitted. Use specimens 29 to 30.
Liferaft Drop Tes	st (3.2.11)									G	LSA Code Chapter IV/4.1.1.2	The liferaft manufacturer should complete this form.

Note: The letters in the above 'boxes' refer to the sequence of testing of each specimen Hand Flare.

Har	d flares	Manufacturer: Model: Lot/Serial Number:			Date:            Surveyor:            Organization:					
3.2.2	Ten	perature cycling test		Regulations: LSA Code I/1.2 & III/3.2; MSC.81(70) 1/1.2.1 & 4.2.1						
	Те	st Procedure	Acceptance	Criteria	а		Significant Test			
The three specimens of hand flares should be alternately subjected to surrounding		subjected to surrounding	damage such as shrinking, cracking, swelling, dissolution			1 Condition (Pass	2 /Fail)	3		
		-30°C and +65°C. These cles need not follow	or change of mechanical que function at ambient temperature		and should then	Burn time (sec)	I	L		
imme	diately aft	er each other and the	·							
following procedure, repeated for a total of 10 cycles, is acceptable:			The three flares should burn for a period of not less than 1 minute.			Time delay (if a	oplicable) (sec)	1		
.1	temperatu	exposure at a minimum re of +65°C to be in one day;				Comments/Obs	ervations			
.2 the specimens removed from the holding th warm chamber that same day and left burning o		The hand flare should not cause holding the casing and not enda burning or glowing residues w with the manufacturer's operati	anger t hen u	he survival craft by sed in accordance						
.3		exposure at a maximum re of -30°C to be completed ay; and								
.4	chamber exposed conditions 3°C until tl	nen removed from the cold that same day and left under ordinary room at a temperature of 20°C ± ne next day.				Passed	Failed			
temp	erature cy	I flares after completing /cling should function pient temperature.								

Hand flares	Manufacturer: Model: Lot/Serial Number:			Date:            Surveyor:            Organization:				
3.2.3 Lov	w temperature conditioning	test	Regu	lations: LSA Code I/	1.2 & III/3.2; MSC	.81(70) 1/4.2.2		
Te	est Procedure	Acceptance	e Criter	criteria Significant Test Data				
	ns of hand flare should be	After the test, each specime			4	5	6	
	temperature of -30°C for at	damage such as shrinking, cra			Condition (Pass	/Fail)		
	nd should then function	or change of mechanical qualiti effectively immediately.	les and	should then function				
immediately upon removal from the cold effectively immediately.					Burn time (sec)	•	-	
onumber.		The three flares should burn f	for a pe	eriod of not less than				
		1 minute.	•		Time delay (if ap	oplicable) (sec)	<u>_</u>	
		The hand flare should not cau holding the casing and not en- burning or glowing residues wh the manufacturer's operating ir	danger nen use	the survival craft by ed in accordance with	Comments/Obse			

Hand flares	Manufacturer: Model: Lot/Serial Number:		Date:            Surveyor:            Organization:				
3.2.4 Hig	h temperature conditioning te	est	Regulations: LSA Co	ode I/1.2 & III/3.2; MSC.81(70) 1/4.3			
	Test Procedure	Acceptance Cr	Significant Test Data				
Three specime subjected to a least 48 h a	Test Procedure ns of hand flares should be temperature of +65°C for at nd then function effectively pon removal from the hot	Acceptance Cr After the test, each specimen s damage such as shrinking dissolution or change of med should then function effectively The three flares should burn for than 1 minute. The hand flare should not ca person holding the casing an survival craft by burning or g used in accordance with the ma instructions.	hould show no sign of cracking, swelling, chanical qualities and immediately. or a period of not less use discomfort to the nd not endanger the lowing residues when	7 Condition (Pass/Fa Burn time (sec) Time delay (if appli	8 ill) cable) (sec) ations	9	
				Passed	_ Failed		

Hand flares	Manufacturer: Model: Lot/Serial Number:			Date:            Surveyor:            Organization:				
3.2.5 Hu	midity conditioning test		Regulat	tions: LSA Code I/1.2	& III/3.2; MSC.81(70) 1/4.2.4			
Te	est Procedure	Acceptanc	ce Criteria	a	Significant Test Data			
	ns of hand flares should be	After the test, each specimen s			10	11	12	
	temperature of +65°C and	such as shrinking, cracking, sw			Condition (Pas	ss/Fail)		
	umidity for at least 96 h, lays at 20°C to 25°C at 65%	mechanical qualities and should	a then fur	nction effectively.				
relative humidity		The three flares should burn	for a per	riod of not less than	Burn time (sec	;)		
-		1 minute.	•		Time to be different of the			
		The band flare abould not as	una diaa	amfart to the naroon	Time delay (If	applicable) (sec)		
		The hand flare should not ca holding the casing and not e burning or glowing residues who manufacturer's operating instru	ndanger en used ir	the survival craft by	Comments/Ob			

Hand flares	Manufacturer: Model: Lot/Serial Number:		Date:          Surveyor:          Organization:					
3.2.6.1 1 m	etre immersion for 24 hour	rs test	Regulations: LSA Code I/1.2 & III/3.2; MSC.81(70) 1/4.3.1					
Te	est Procedure	Acceptance C	riteria		Significant Test Data			
immersed horizontally for 24 h under 1 m of water.		After the test, each specimen should show no sign of damage such as shrinking, cracking, swelling,			13 Condition (Pass/Fa	14 ail)	15	
			dissolution or change of mechanical qualities and should then function at ambient temperature.					
		The three flares should burn for a period of not less than 1 minute.			Time delay (if app	icable) (sec)	<u> </u>	
		The hand flare should not ca person holding the casing a survival craft by burning or g used in accordance with the ma instructions.	nd not endanger Iowing residues w	the hen	Comments/Observ	/ations		
					Passed	_ Failed		

Hand flares	Manufacturer: Model: Lot/Serial Number:		Date:            Surveyor:            Organization:					
3.2.6.2 100	mm immersion for 5 min t	est R	Regulations: LSA Code I/1.2 & III/3.2; MSC.81(70) 1/4.3.2					
Τe	est Procedure	Acceptance Crit	eria		Significant Test D			
Three specimens of hand flares should be immersed horizontally in the ready to fire condition for 5 min under 100 mm of water.		After the test, each specimen sho damage such as shrinking, dissolution or change of mech	16 Condition (Pass/F	ail)	18			
		should then function at ambient te	Burn time (sec)					
		The three flares should burn for a p 1 minute.	period of not less than	Time delay (if app	blicable) (sec)	l		
		The hand flare should not cause person holding the casing and not craft by burning or glowing res accordance with the manut instructions.	endanger the survival idues when used in	Comments/Obser	rvations			
				Passed	Failed			

Hand flares	Manufacturer: Model: Lot/Serial Number:		Date:            Surveyor:            Organization:					
3.2.6.3 Sal	t spray test	Regu	lations: LSA	A Code I/1.2 & III/3.2; MSC.81(70) 1/4.3.3				
Te	est Procedure	Acceptance Criteria	Signi	ficant Test Data				
Three specimens of hand flares should be subjected to a salt spray (5% natrium chloride solution) at a temperature of +35±3°C for at least 100 h.		After the test, each specimen should s of damage such as shrinking, crackin dissolution or change of mechanical of should then function effectively.	19 Condition (Pass/Fail) Burn time (sec)	20	21			
	The three flares should burn for a pe than 1 minute.		od of not less	Time delay (if applica	ble) (sec)			
Note: Natrium a compound	and Sodium are the same	The hand flare should not cause discorperson holding the casing and not e survival craft by burning or glowing resused in accordance with the matoperating instructions.	ndanger the sidues when	Comments/Observation	ons			

Hand flares	Manufacturer: Model: Lot/Serial Number:	Date: Time: Surveyor: Organization:				
3.2.7.1 2 m	n drop test		<b>Regulations:</b>	LSA Code I/1.2 & II	I/3.2; MSC.81(70) <sup>/</sup>	1/4.4.1
1	Test Procedure	Acceptance Criteria	а		nificant Test Data	
Three specimens of hand flare should be dropped in turn on both ends and horizontally from a height of 2 m on to a steel plate about		swelling, dissolution or change of mechanical		22 Condition (Pass/Fa	23 il)	24
6 mm lnick ceme	ented on to a concrete floor.	qualities and remain operable subsequently be operated		Burn time (sec)		1
		effectively.		Time delay (if appli	cable) (sec)	<u>I</u>
		They should burn for a period of not less than 1 minute. The hand flare should not cause discomfort to the person holding the casing and not endanger the survival craft by burning or		Comments/Observa	ations	
glowing re		glowing residues when used i with the manufacturer's operating				
				Passed	_ Failed	

Hand flares	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Tim		
3.2.7.2 Im	nersion suit glove test	Regu	lations: LSA C	ode I/1.2 & III/3.2; M	SC.81(70) 1/4.2.2	
Те	est Procedure	Acceptance Criteria	Significant Test Data			
activated in manufacturer's o operator weari immersion suit o	is of hand flare should be accordance with the operating instructions by an ng an insulated buoyant or the gloves taken from an in immersion suit.	The three specimens should be cap operated effectively without injury to t any person in close proximity during fir they must burn for a period of not less The hand flare should not cause dis person holding the casing and not survival craft by burning or glowing used in accordance with the operating instructions.	he operator, or ring or burning, than 1 minute. comfort to the endanger the residues when	19 Operation using glo Burn time (sec) Time delay (if applic Type of Glove used Comments/Observa	able) (sec)	

Hand flares       Manufacturer:         Model:       Lot/Serial Number:		Surveyor:		me:	
3.2.7.3 Handling safety immersion test	t Re	gulations: LSA Cod	de I/1.2 & III/3.2; I	MSC.81(70) 1/4.7.1	
Test Procedure	Acceptance Criteri	а		Significant Test Data	a
Three hand flares should be activated and	The three specimens should operate	e effectivelv under	7	8	9
should burn for a period of not less than	water without injury to the operator for		Under-water ope	ration (Pass/Fail)	
1 min. After burning for 30 s each flare	the flare should burn for a period of n	not less than 1 min.			
should be immersed horizontally under 100 mm of water for a period of 10 s and	The hand flare should not cause	diacomfort to the	Burn time (sec)		
should continue to burn for at least a further	person holding the casing and r		Time delay (if ap	nlicable) (see)	
20 s.	survival craft by burning or glowin		Time delay (il ap		
	used in accordance with the manufainstructions.	acturer's operating	Comments/Obse		

Hand flares	Model: Surveyor:			Time:		
3.2.8 Hep	otane test	Regu	lations: LSA Code	e I/1.2 & III/3.2; M	SC.81(70) 1/4.7.3	\$
Τe	est Procedure	Acceptance Criteria	l		Significant Test D	Jata
	es should be activated at test pan 1 m square		The three specimens should not ignite the heptane. The flare should burn for a period of not less than 1 minute.			24
containing 2 litre layer of water. Th	es of heptane floating on a ne test should be conducted	The hand flare should not cause		Burn time (sec)		<u> </u>
+25°C. The flare		craft by burning or glowing residue	es when used in	Time delay (if ap	plicable) (sec)	<u> </u>
at an ambient temperature of +20°C to +25°C. The flare should be allowed to burn completely. person holding the casing and not er craft by burning or glowing resid accordance with the manufac instructions.			urers operating	Comments/Obse		
				Passed	Failed	

Hand flares	Model:	urer: Number:	Time: or: zation:		
3.2.9 Lur	ninous inte	ensity test	Regulations:	LSA Code I/1.2 & III/3.2.2; MSC.81(70) 1/4.7.2	
Test Proce	dure	Acceptance Criteria		Significant Test Data	
Test Procest Laboratory testin flare should esta it will burn required intensity and colo	ng of the ablish that with the luminous	· ·	nsity of at least 1 minute, at CIE coordinates uted from these at the average Cd.	Significant Test Data         Laboratory Testing report No.:         Report acceptable (Yes/No):         Luminous intensity levels at -30°C         KCd         Burning time of Flare         sec         Colour coordinates: xy         Luminous intensity levels at +20°C         KCd         Burning time of Flare         sec         Colour coordinates: xy         Luminous intensity levels at +20°C         KCd         Burning time of Flare         sec         Colour coordinates: xy         Luminous intensity levels at + 65°C         KCd         Burning time of Flare         sec         Colour coordinates: xy         Colour coordinates: xy         Colour coordinates: xy         Comments/Observations         Passed       Failed	

Model:	Manufacturer: Model: Lot/Serial Number:			Date:            Surveyor:            Organization:				
3.2.10 Liferaft drop test	Regula	tions: LSA Code 1.2 8	4.1.1.2, M	SC.81(70) I/	5.1.2			
Test Procedure	Acceptance Criteria	3		Signif	icant Test D	ata		
The liferaft in the operationally packed			25	26	27	28		
condition should be suspended and ther dropped from a height of 18 m into the water		erational eπiciency has	Condition	of units (Pa	ss/Fail)			
Note: This test sheet should be completed by the liferaft manufacturer. Reference should be made to the test sheet 4.2.4.	After the test, each hand flare should sho such as shrinking, cracking, swelling, dis mechanical qualities.		Comment	s/Observatio	ons			

Hand flares	Manufacturer: Model: Lot/Serial Number:	Date: Surve Organ	Date:            Surveyor:            Organization:		
3.2.11 Saf	ety inspection	Regulations	s: LSA Code I/1.2 & III/3.2; MSC.81(70) 1/4.5		
Те	st Procedure	Acceptance Criteria	Significant Test Data		
It should be esta that the hand flar	blished by visual inspection e:				
.1 is indelibly marked with clear and precise instructions on how it should be operated and that the danger end can be identified by day or night;		Clear and precise operating instructions are marked on the hand flare and the hand flare clearly identifies the danger end.	Markings and identification of ends acceptable         Passed          Time delay if operated from the top       sec		
.2 can, if hand operated, be operated from the bottom (safe end) or that it contains an operational safety delay of 2 seconds;		If operated from the top the time delay is not less than 2 s.			
.3 has a simple and integral means of ignition which requires the minimum of preparation and can be readily operated in adverse conditions without external aid and with wet, cold or gloved hands;		It has a simple and integral means of ignition and can be operated by cold, wet and gloved hands.			
plastic envelo properties; ar	bly marked with means of	Adhesive tapes or plastic envelopes are not used to maintain water-resistant properties.	PassedFailed Hand flare indelible date stamped. PassedFailed		
		Date of manufacturing and date of expiry indelible printed on the outside.	Comments/Observations		

### 3.3 BUOYANT SMOKE SIGNALS

### **EVALUATION AND TEST REPORT**

- 3.3.1 Submitted drawings, reports and documents
  - 3.3.1.1 Quality assurance
  - 3.3.1.2 Visual inspection
  - 3.3.1.3 General data and specifications
- 3.3.2 Temperature cycling test
- 3.3.3 Low temperature conditioning test
- 3.3.4 High temperature conditioning test
- 3.3.5 Ambient temperature conditioning test
- 3.3.6 Humidity conditioning test
- 3.3.7 Water and corrosion resistance test
  - 3.3.7.1 1 metre immersion for 24 hours test
  - 3.3.7.2 100 mm immersion for 5 min test
  - 3.3.7.3 Salt spray test
- 3.3.8 Handling safety
  - 3.3.8.1 2 m drop test
  - 3.3.8.2 Immersion suit glove test
- 3.3.9 Heptane test
- 3.3.10 Laboratory smoke obscuration test
- 3.3.11 Wave test
- 3.3.12 Liferaft drop test
- 3.3.13 Safety inspection

### 3.3 BUOYANT SMOKE SIGNALS

# **EVALUATION AND TEST REPORT**

Manufacturer	
Type/Model	
Date of Approval	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Buoyant smoke signa	als	Manufacturer: Model: Lot/Serial Number	· · · · · · · · · · · · · · · · · · ·	Date: Surveyor: Organization:	Time:
3.3.1 Submitted	drav	vings, reports and	documents		
		Submitt	ed drawings and documents		Status
Drawing No.	Re	evision No. & date	Title o	of drawing	
		Submit	ted reports and documents		Status
Report/Document No.	Re	vision No. & date	Title of re	port/document	
			Maintenance Manual -		
			Operations Manual -		

Buoyant smoke signals	Manufacturer: Model: Lot/Serial Number:	- !! - !!	Date: Surveyor: Organization:	Time:	
3.3.1.1 Quality assurat	nce	Regulation	ons: MSC.81(70) 2/1	.1, 1.2	
International Convention for t International Life-Saving App of the Administration should ensure that the quality of life-	of a particular type are required by chapter III of the he Safety of Life at Sea, 1974, as amended, or the liance (LSA) Code to be inspected, representatives d make random inspections of manufacturers to saving appliances and materials used comply with ved prototype life-saving appliance.		ssurance Standard U ssurance Procedure:		
		Quality A	ssurance Manual:		
ensure that life-saving applian prototype life-saving applian	quired to institute a quality control procedure to ances are produced to the same standard as the ice approved by the Administration and to keep in tests carried out in accordance with the	Descriptio	on of System:		
		Quality A	ssurance System		
		acceptab	le Yes/No		
		Commen	ts/Observations		

Buoyant smoke signals	Manufacturer:	Su	ite: T	
, ,	Lot/Serial Number:	Org	ganization:	· · · · · · · · · · · · · · · · · · ·
3.3.1.2 Visual inspection	-	<b>Regulations:</b>	: LSA Code I/1.2.2, 1.2.3 & III/3	3.3
Test Procedure	Acceptance Criteria		Significant	t Test Data
Visual examination:	Buoyant Smoke Signals should:			
Approval markings	.1 be clearly marked with approval information including the Administration which approved it, date of manufacture and expiry and operational restrictions, markings are to be indelible;		Passed	Failed
Operating instructions	.2 be provided with brief instructions or diagrams clearly illustrating the use of the buoyant smoke signal printed on the casing;		Passed	
Outer casing	.3 not depend on adhesive tapes or plastic envelopes for its water-resistant properties;		Passed	
Comfort	.4 be so designed not to ignite explosively w accordance with the manufacturers' instructions;			
Operation	.5 be so constructed that the end from which emitted can be positively identified by day should not emit flame during the entire emissi	/ or night, it	Passed	
	swamped in a seaway; and		Passed	Failed
Ignition System	.6 has a simple means of ignition which minimum of preparation.	requires the	Passed	Failed
Life of Smoke Signal The Administration should determine the period of acceptability of the unit which are subject to deterioration with age.		Comments/Observations		

Buovent emoke signale Mod	del:	er:	 	Surveyor:	Time:
3.3.1.3 General data and spe	ecifications		Regula	tions: LSA Cod	e 1.2; MSC.81(70) 1/4.5
General Information		Dimensio	ns		Weight
Construction Material: Casing: Top cover (if applicable): Bottom cover (if applicable): Method of Ignition Operational Safety Delay (if applic Acceptable life of the item	-	Dimensions:			Design Weight: Weight as Tested: Weight of smoke-generating Material Comments/Observations

Buoyant smoke signals	Manu Mode Lot/S	Ifacturei el: erial Nu	": mber: _	· · · · · · · · ·	· · · · · · · · · · ·				Date:            Surveyor:            Organization:				
TEST ITEMS CONDITIONING SEQUENCE	1				SPEC	CIMEN N	UMBER				REFERENCES	REMARKS	
Specimen No>		1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	MSC81(70)		
Measuring dimensions and m	nass	А	А	А	А	А	А	А	Α	А			
Temperature cycling test (3.3	8.2)	В	В	В							4.8.1		
Low temperature conditioning (3.3.3)		С									4.8.1		
High temperature conditionin (3.3.4)	g		С								4.8.1		
Ambient temperature conditioning. (3.3.5)				С							4.8.1		
Humidity conditioning (3.3.6)					С						4.2.4		
1 metre immersion for 24 hou (3.2.7.1)						С					4.3.1		
100 mm for 5 minutes (3.2.7.	2)						С				4.3.2		
Salt water spray (3.2.7.3)	·							С			4.3.3		
2 m Drop Test (3.3.8.1)									С		4.4.1		
Safety inspection (3.3.13)		D	D	D	D	D	D	D	D		4.5		

Buoyant smoke signals	Manu Mode Lot/S	ufacture el: serial Nu	r: ımber: _						Date:            Surveyor:            Organization:				
Specimen No>		1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-26	References	Remarks	
Operation at ambient temperation	ature			E		E	E	E	E		4.3.1, 4.3.2, 4.3.3 & 4.4.1, 4.8.1		
Operate at conditioning Temperature		E	E		E						4.2.4 4.8.1		
Operational test using immer suit glove (3.3.8.2)	sion							F			4.4.2		
Heptane test (3.3.9)									F		4.8.2		
Smoke material test Smoke obscuration (3.3.10)											4.8.3	Additional smoke signals may be submitted to an independent laboratory acceptable to the Administration and report submitted.	
Wave height test (3.3.11)					G						4.8.4		
Smoke emission time: 3 min minimum, Smoke colour		Н	Н	Н	Н	Н	Н	Н	Н		4.8.1		
Drop Test (3.3.12) & (4.2.4)										I	LSA Code Chapter IV/ 4.1.1.2	The liferaft manufacturer should complete this form.	

Note: The letters in the above 'boxes' refer to the sequence of testing of each specimen Buoyant Smoke Signal.

Buoyant smoke signals	Model:	er:		Surveyor:		Time:	
3.3.2 Temperature cy	/cling test		Regulat	tions: LSA Co	de I/1.2 & III/3.3	3; MSC.81(70) 1/1.2	2.1 & 4.8.1
Test Procedu	re	Acceptance Cr	iteria			Significant Test	
The 9 specimens of smoke s	signals should be	After 10 alternating cycles each	n specime	en should no	1	2	3
alternately subjected to		sign of damage such as shrinki			Condition (Pas	ss/Fail)	
temperatures of -30°C and	d +65°C. These	dissolution or change of mech	anical pr				
alternating cycles need not for		should function effectively imme	diately.				
after each other and the follo					4	5	6
repeated for a total of 10 cycl	es, is acceptable:				Condition (Pas	ss/Fail)	
.1 an 8 h exposure at a minir	num temperature						
of $+65^{\circ}$ C to be completed					7	8	9
	•					Ű	9
.2 the specimens removed					Condition (Pas	ss/Fall)	
chamber that same day a under ordinary room o temperature of 20°C ± 3 day;	conditions at a				Comments/Ob	oservations	
.3 an 8 h exposure at a maxir of -30°C to be completed t							
.4 the specimen removed chamber that same day under ordinary room of temperature of 20°C ± 3 day.	and left exposed conditions at a						
					Passed	Failed	

Buoyant smoke signals	Model:	er:	Surve	Time: yor: ization:				
3.3.3 Low temperatu	re conditioning te	est	<b>Regulations:</b>	LSA Code I/1.2 & III/	3.3; MSC.81(70) 1	/4.8.1		
Test Procedu	re	Acceptance Criter	ia	Si	Significant Test Data			
Three smoke signals that have undergone After conditioning each specimer			n should no sian	1	2	3		
	temperature cycling should be taken from a of damage such as shrinking, cr			Condition (Pass/Fa	ail)	1		
stowage temperature of -30		dissolution or change of mechar	nical properties.					
and operate in seawater at a temperature of -1°C. The 3 specimens of smoke function effectively, they should e highly visible colour at a uniform r of not less than 3 minutes when water.				Smoke emission ti	me (min/sec)			
					Smoke colour (Pass/Fail)			
					55/Fall)			
			floating in calm	Time delay (if appl	icable) (sec)			
		The buoyant smoke signal sh	ould not ignite	Smoke emission q	uality (Continuous/	/Intermittent)		
		explosively when used in acco			2			
		manufacturer's operating instru any flame during the entire smok	Comments/Observ	ations				
evalı dayli the r the		The colour of the orange sm evaluated by means of visual daylight, to a colour comparison the range of acceptable orange of the acceptance criteria on te Acceptance Criteria.	comparison, in chart containing colours. Refer to					
				Passed	_ Failed			

Buoyant smoke signals	Model:	ber:	Si	urvey	or: zation:				
3.3.4 High temperatu	re conditioning	i test	Regulations: I	LSA (	Code I/1.2 & III/3.3;	MSC.81(70) 1/4.8	.1		
Test Procedure	•	Acceptance Cri	Acceptance CriteriaSignificant Test Dataioning each specimen should no sign of uch as shrinking, cracking, swelling,45			Significant Test Data			
Three smoke signals that hat temperature cycling should b						6			
stowage temperature of +65° and operate in seawater at a		dissolution or change of mechanical properties.			Smoke emission time (min/sec)				
+30°C.		The 3 specimens of smok effectively, they should emit	smoke of a hig	ghly	Smoke colour (Pa	ss/Fail)			
		visible colour at a uniform rate for a period of not less than 3 minutes when floating in calm water.			,	ł			
			ng in caim water	in calm water.	Time delay (if applicable) (sec)				
		The buoyant smoke signal explosively when used in ac	cordance with the	Smoke emission q	uality (Continuous	/Intermittent)			
		manufacturers' operating instructions, not emit any _ flame during the entire smoke emission time.			Comments/Observ	vations	1		
		The colour of the orange smoke should be evaluated by means of visual comparison, in daylight, to a colour comparison chart containing the range of acceptable orange colours. Refer to the acceptance criteria on test form 3.3.10 Acceptance Criteria.							
				Passed	_ Failed				

Buoyant smoke signals		nber:		Date: Surveyo Organiza	Time: or: zation:			
3.3.5 Ambient tempe	rature conditio	ning test	Regulations	s: LSA C	A Code I/1.2 & III/3.3; MSC.81(70) 1/4.8.1			
Test Procedure	e	Acceptance Cr	iteria		Significant Test Data			
Three smoke signals that hat temperature cycling should ordinary room conditions and emitting smoke for 1 minute	damage such as shrinking,	ter conditioning each specimen should no sign of mage such as shrinking, cracking, swelling, ssolution or change of mechanical properties				9		
fully submerged for a period of not less than 10 seconds. The 3 specimens of smoke effectively, they should emits colour at a uniform rate for a 3 minutes when floating in ca			oke of a highly eriod of not le	y visible	Smoke colour (Pass/Fail)			
		The buoyant smoke signal should not ignite - explosively when used in accordance with the - manufacturer's operating instructions, not emit any - flame during the entire smoke emission time.			Time delay (if app	blicable) (sec)		
					Smoke emission	during submerge to	est (Pass/Fail)	
					Comments/Obser	vations		
		The colour of the orange smoke by means of visual comparison colour comparison chart conta acceptable orange colours. Refe criteria on test form 3.3.10.	on, in dayligh aining the rai	t, to a nge of				
					Passed	Failed		

Buoyant smoke signals	Model:	ber:		Date:          Surveyor:          Organization:					
3.3.6 Humidity condit	tioning test		Regulation	is: LSA C	ode I/1.2 & III/3.3;	MSC.81(70) 1/4.2	2.4		
Test Procedure	)	Acceptance Cr	iteria		Significant Test Data				
Three specimens of smoke sig subjected to a temperature 90% relative humidity for a followed by ten days at 20°C for relative humidity.	gnals should be of +65°C and at least 96 h,	After conditioning each specim damage such as shrinking, dissolution or change of mecha The 3 specimens should func should emit smoke of a highly uniform rate for a period of not when floating in calm water. The buoyant smoke signal explosively when used in a manufacturers' operating instru- flame during the entire smoke e The colour of the orange smoke by means of visual compariso colour comparison chart cont acceptable orange colours. Ref criteria on test form 3.3.10.	en should no cracking, s nical propert tion effective y visible colo less than 3 should no ccordance w actions, not e emission time should be ev on, in daylig aining the r	swelling, ies. ely, they our at a minutes t ignite with the emit any e. valuated ht, to a ange of	10 Condition (Pass/F Smoke emission Smoke colour(Pa Time delay (if app	11 Fail) time (min/sec) iss/Fail) plicable) (sec) quality (continuous rvations	12		

Buoyant smoke signals			Dat Sur Org	te: veyor: ganization:	Time:			
3.3.7.1 1 metre immers	sion for 24 hour	rs test	Regulations: LS	SA Code I/1.2 & III/3.3; MSC.81(70) 1/4.3.1				
Test Procedure	Э	Acceptance Crit	eria	Significant Test Data				
Three specimens of smoke be immersed horizontally for of water and then subjected test at ambient temperature.	24 h under 1 m	After conditioning each specim of damage such as shrinking, dissolution or change of mecha The three specimens should fu they should emit smoke of a hi at a uniform rate for a period 3 minutes when floating in calm The buoyant smoke signal	cracking, swelling anical properties. unction effectively ighly visible colour d of not less thar n water.	, , n	14	15		
		explosively when used in acc	cordance with the	e Condition (Pass/F	ail)			
		manufacturer's operating instr any flame during the entire smo		Smoke emission time (min/sec)				
		any name during the entire sind						
		The colour of the orange s						
		evaluated by means of visual daylight, to a colour compariso						
		the range of acceptable orange	e colours. Refer to		licable) (sec)			
		the acceptance criteria on test	form 3.3.10.	Smoke emission (	Continuous/Intermitter			
				Smoke emission (		11)		
				Comments/Observ	/ations			
				Passed	Failed	_		

Buoyant smoke signals	Manufacturer: Model: Lot/Serial Num	ber:	Date: Surveyor: Organizat	ion:	Time:			
3.3.7.2 100 mm immers	sion for 5 min t	est	Regulation	s: LSA Coo	de I/1.2 & III/3.3; N	MSC.81(70) 1/4.3.	2	
Test Procedure	)	Acceptance Cr	riteria		Significant Test Data			
Three specimens of smoke be immersed in the ready to fi 5 minutes under 10 cm of v subjected to the function te	re condition for vater and then	After conditioning each specimen should no sign of damage such as shrinking, cracking, swelling, dissolution or change of mechanical properties.			16 Condition (Pass/ Smoke emission		18	
temperature.	ected to the function test at ambient erature. The three specimens should function correctly, the should emit smoke of a highly visible colour at uniform rate for a period of not less than 3 minute when floating in calm water.			lour at a	Smoke colour (P Time delay (if ap	ass/Fail)		
The buoyant smoke signal shou explosively when used in accorda manufacturers' operating instructions flame during the entire smoke emissio			accordance uctions, not	with the emit any	Smoke emission	 (continuous/Interr   ervations	nittent)	
		The colour of the orange smoke by means of visual comparison, comparison chart containing th orange colours. Refer to the acc form 3.3.10.	in daylight, t e range of a	o a colour cceptable				
					Passed	Failed		

Buoyant smoke signals	Model:	ıber:	Date: Time: Surveyor: Organization: Ilations: LSA Code I/1.2 & III/3.3; MSC.81(70) 1/4.3.3, 4.4.1				
3.3.7.3 Salt spray test		Regulation					
Test Procedure	•	Acceptance Criteria			Significant Test Da		
Three specimens of smoke si subjected to a salt spray chloride solution) at a te +35±3°C for at least 100 subjected to the function te temperature.	(5% natrium* emperature of h and then	After conditioning each specimen should damage such as shrinking, cracking, dissolution or change of mechanical proper The three specimens should function corr should emit smoke of a highly visible of uniform rate for a period of not less than when floating in calm water. The buoyant smoke signal should explosively when used in accordance manufacturer's operating instructions, no	swelling, ties. rectly, they olour at a 3 minutes not ignite with the r emit any		time (min/sec) ass/Fail) plicable) (sec) (Continuous/Interr	21 nittent)	
*Note: Natrium and sodium compound.	are the same	flame during the entire smoke emission tim The colour of the orange smoke should be by means of visual comparison, in daylight, comparison chart containing the range of orange colours. Refer to the acceptance test form 3.3.10.	e evaluated to a colour acceptable	Comments/Obse			

Buoyant smoke signals			Survey	or:	Time:	
3.3.8.1 2 m drop test		Regulations	s: LSA	Code I/1.2 & III/3.3;	; MSC.81(70) 1/4.4. <sup>-</sup>	1
Test Procedure	)	Acceptance Criteria			gnificant Test Data	
Three specimens of buoyant should be dropped in turr horizontally from a height of 2 plate about 6 mm thick cerr concrete floor.	m end-on and m on to a steel	The three specimens should function corr they should emit smoke of a highly visible col- a uniform rate for a period of not less 3 minutes when floating in calm water.	our at	22 Condition (Pass/Factorial Smoke emission ti		24
The three specimens should r condition after the 2 m Drop T function effectively.		The buoyant smoke signal should not explosively when used in accordance with manufacturer's operating instructions, nor em flame during the entire smoke emission time.	Smoke colour (Pass/Fail) Time delay (if applicable) (sec)			
		The colour of the orange smoke shoul	Smoke emission (	Continuous/Intermitt	ent)	
		evaluated by means of visual comparisor daylight, to a colour comparison chart conta the range of acceptable orange colours. Re the acceptance criteria on test form 3.3.10.	on, in aining	Comments/Observ	vations	
				Passed	Failed	

Buoyant smoke signals		ber:	Date	te: Time: veyor: ganization:			
3.3.8.2 Immersion suit	glove test		Regulations: LS	A Code I/1.2 & III/3	.3; MSC.81(70) 1/4.4.	2	
Test Procedure	)	Acceptance Crit	eria	S	Significant Test Data		
Three specimens of buoyant should be activated in accor- manufacturer's operating inst operator wearing an insu immersion suit or the gloves	dance with the tructions by an lated buoyant	The three specimens should be operated effectively without inju or any person in close proximi burning.	19     20     21       Condition (Pass/Fail)				
insulated buoyant suit.		The three specimens should they should emit smoke of a hi at a uniform rate for a period 3 minutes when floating in calm	Smoke emission time (min/sec) Smoke colour (Pass/Fail)				
		The buoyant smoke signal explosively when used in acc manufacturer's operating inst any flame during the entire smo		(Continuous/Intermitte	ent)		
		The colour of the orange s evaluated by means of visua daylight, to a colour compariso the range of acceptable orange the acceptance criteria on test	al comparison, in on chart containing e colours. Refer to				
				Passed	Failed		

	Date:        Surveyor:        Organizati	on:			
3.3.9 Heptane test	Regulations: LSA	Code I/1.2 & III/3.3; MSC.81(70) 1/4.8.2			
Test Procedure	Acceptance Criteria	Significant Test Data			
Three smoke signals should function in wa	er The three specimens should not ignite the heptane,	22 23 24			
covered by 2 mm layer of heptane.	they should emit smoke of a highly visible colour at a uniform rate for a period of not less than 3 minutes	Hontano ignition (Pass/Fail)			
	when floating in calm water.				
		Smoke emission time (min/sec)			
	The buoyant smoke signal should not ignite				
	explosively when used in accordance with the manufacturer's operating instructions, nor emit any				
	flame during the entire smoke emission time.	Time delay (if applicable) (sec)			
	The colour of the orange smoke should be evaluated	Smoke emission (continuous/Intermittent)			
	by means of visual comparison, in daylight, to a colour comparison chart containing the range of acceptable				
	orange colours. Refer to the acceptance criteria on test form 3.3.10.	Comments/Observations			
		Passed Failed			

Busuent and la simula Model:		Surveyor		Time: eyor: nization:		
3.3.10 Laboratory smo	oke obscuratio	n test	Regulations: LS	A Code I/1.2 & III/3.3; MSC.81(70) 1/4.8.3		
Test Procedure		Acceptance Criteria		Significant Test Data		
Three additional specimens from should be used. The smoke colour of the smoke sign determined by laboratory test at a water temperature of +20 follows: The smoke should be an apparatus consisting of diameter duct with a fan capate an entrance air flow of 18 means of a light source with a one side of the tunnel and a pl on the other side the density smoke should be recorded. I picks up the total emitted ligh source, then the smoke d percent which means that passing through the tunne density is then considered to the photocell is not able to pick the tunnel. From the amount o photocell is able to pick up the should be calculated. measurement, the light intenss value should be record	e density and all should be ting conducted °C to +25°C as a drawn through f a 190 mm ble of producing .4 m <sup>3</sup> /min. By t least 10 cd on hotoelectric cell of the passing If the photocell at from the light ensity is zero no smoke is I. The smoke be 100% when k up any light of assing smoke in f light which the e smoke density Before each ity of the 100% ecked. Each		st 70% throughout t e should be evaluat on, in daylight, to taining the range ne colour comparis atte finish, and cons orange colour chip dish orange (Muns wish orange (Muns steps of hue, chrom os should be secur er of progression fro nge, and extend on he chart. Each colo x 100 mm in size. ession would be 8. & 6/14; 3.75 YR MA	ne       Laboratory Testing Report No. Report acceptable         ed       (Yes/No)         a       Smoke obscuration rate         achieved at -30°C%         Burning time of smoke signalsec         Smoke obscuration rate         achieved at +20°C to +25°C%         Burning time of smoke signalsec         achieved at +20°C to +25°C%         Burning time of smoke signalsec         Smoke obscuration rate achieved at +65°C:        %         75         Burning time of smoke signal sec         75         Comments/Observations		
				PassedFailed		

		Date: Surve Organ	yor: ization:	Time: pr: ation:			
3.3.11 Wave test	•	Regulations: LSA	A Code I/1.2 & III/3.3; MSC.81(70) 1/4.8.4				
Test Procedure	)	Acceptance Criteria		Significant Test Data			
A smoke signal should be tested in waves at least 300 mm high and should be allowed to		The three specimens should function correctly, the should emit smoke of a highly visible colour at	a 10	11	12		
burn completely.		uniform rate for a period of not less than 3 minutes.	Smoke emiss	Smoke emission time (min/sec)			
		The buoyant smoke signal should not ignite					
		explosively when used in accordance with th					
		manufacturer's operating instructions, nor emit any flame during the entire smoke emission time. The colour of the orange smoke should be evaluated by means of visual comparison, in daylight, to a	-	Time delay (if applicable) (sec)			
			a Smoke emiss	ion (continuous/Interm	hittent)		
		colour comparison chart containing the range of acceptable orange colours. Refer to the acceptanc criteria on test form 3.3.10.		oservations			
			Passed	Failed			

Buoyant smoke signals       Manufacturer:         Model:       Lot/Serial Number:			Surveyor:					
3.3.12 Liferaft drop te	st				Regulation I/5.1.2	s: LSA Code	1.2 & 4.1.1.2,	MSC.81(70)
Test Procedure		Acceptance Criteria		Significant Test Data				
The liferaft in the operati	onally packed	Damage to any item of equipment is acceptable subject to the administration being satisfied that the operational efficiency has not been impaired.			25	26		
condition should be susper					Condition of units (Pass/Fail)			
dropped from a height of 18 m into the water. If the liferaft is to be stowed at a height greater than 18 m above the waterline in the lightest seagoing condition, it should be dropped from the height at which it is to be stowed.		After the test, each buoyant smoke signal should show no sign of damage such as shrinking, cracking, swelling, dissolution or change of mechanical qualities.						
Note: This test sheet should by the liferaft manufactur should be made to the test sh	er. Reference							

Buovent emeke signala			er: umber:		Date: Time: Surveyor: Organization:		
3.3.	13 Safety inspection			Regulations	: LSA Code I/1.2 & III/3.3; MSC.81(70) 1/4.5		
	Test Procedure		Acceptance Criteria		Significant Test Data		
ins	hould be established by v pection that the buoyant s nal: is indelibly marked wit precise instructions on h be operated and that the can be identified by day can, if hand operated, from the bottom (safe e contains an operational of 2 seconds;	smoke th clear and now it should e danger end or night; be operated end) or that it	Clear and precise operating ins marked on the buoyant smoke s buoyant smoke signal clearly danger end. It operated from the top the time to be less than 2 s.	ignal and the identifies the	Markings and identification of ends acceptable Passed Failed Time delay if operated from the top sec Operation of specimen when wet, cold and gloved hands.		
.3 .4 5.	has a simple means of it requires the minimum of and can be readily adverse conditions with aid and with wet, col- hands; does not depend on ad or plastic envelopes for resistant properties; and can be indelibly marked we determining its age.	f preparation operated in nout external d or gloved hesive tapes or its water-	It has a simple means of ignition operated by cold, wet and glove Adhesive tapes or plastic envel used to maintain water-resistan Date of manufacturing and da indelible printed on the outside.	ed hands. opes are not t properties. ate of expiry	Passed Failed Water resistant without the use of envelopes or adhesive tape. Passed Failed Buoyant smoke signal indelible date stamped. Passed Failed Comments/Observations		



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KMENT 7SR Fax: +44 (0)20 7587 3210

> MSC.1/Circ.1630 14 December 2020

### REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (SURVIVAL CRAFT)

1 The Maritime Safety Committee, at its 102nd session (4 to 11 November 2020), approved the *Revised standardized life-saving appliance evaluation and test report forms*.

2 The original forms, as set forth in the *Standardized life-saving appliance evaluation and test report forms* (MSC/Circ.980) and its addenda, were developed on the basis of the requirements of the International Life-Saving Appliance (LSA) Code and the *Revised recommendation on testing of life-saving appliances* (resolution MSC.81(70)) by the Maritime Safety Committee, at its seventy-third session in 2001, with a view to providing guidance on how to conduct tests, record test data and verify tests. The Committee has since adopted seven amendments to the LSA Code and eight amendments to resolution MSC.81(70). These amendments have been incorporated in the original forms which, due to their volume, are now presented in six separate circulars, i.e. MSC.1/Circ.1628, MSC.1/Circ.1629, MSC.1/Circ.1630, MSC.1/Circ.1631, MSC.1/Circ.1632 and MSC.1/Circ.1633, pertaining to the equipment addressed in chapters II to VII of the LSA Code, respectively. The forms annexed to this circular apply to the equipment addressed in chapter IV of the LSA Code, i.e. survival craft (inflatable liferafts; rigid liferafts; components for survival craft; davit-launched lifeboats; and free-fall lifeboats).

3 The use of the revised forms will continue to be of benefit to Administrations and other parties, such as manufacturers, test facilities, owners and surveyors, and will be a major help in mutually accepting the type approval of appliances approved by other Administrations.

4 Member Governments are invited to bring the annexed, revised forms to the attention of all parties concerned with approving, manufacturing and testing life-saving appliances and to encourage them to use the forms.

5 This circular supersedes MSC/Circ.980.

SUSTAINABLE SHIPPING FOR A SUSTAINABLE PLANET

### ANNEX

### DRAFT REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (SURVIVAL CRAFT)

### INTRODUCTION

#### Reference

These standardized life-saving appliance evaluation and test report forms have been revised on the basis of the requirements of the International Life-Saving Appliance (LSA) Code, as amended through resolution MSC.425(98), *the Revised recommendation on testing of life-saving appliances* (resolution MSC.81(70)), as amended through resolution MSC.427(98), and the *Recommendation on means of rescue on ro-ro passenger ships* (MSC/Circ.810).

#### Status

In general, the tests described in the Revised recommendation (resolution MSC.81(70)) constitute the test procedures and the LSA Code sets the acceptance criteria. The evaluation and test report forms are guidelines on how to conduct tests, record test data and verify tests. These forms are not intended to change the standards given in the LSA Code and the Revised recommendation, as amended. In the case of inconsistency between the forms and the LSA Code or the Revised recommendation, the text of the Code/resolution should prevail over that of the forms.

#### Layout

Each Administration may use electronically distributed evaluation and test report forms as the basis for customizing the layout to reflect the profile of the approving body, without changing the original contents.

#### Internal references

The evaluation and test report forms should be stand-alone documents. Therefore, all internal references in the original text from the LSA Code or the Revised recommendation have been replaced by either the full-length text or a reference to other relevant evaluation and test report forms. However, in some of the forms, external references are kept for updating purposes.

#### **Documentation of tests**

For approval purposes, all detailed records of test data are to be enclosed with the report forms.

### Verification of tests

Each test is to be verified passed or failed by an Administration representative's initials (e.g. recognized organization or surveyor) and date of testing. Each page is to be verified on completion by the Administration representative's signature and its date of completion.

### Reporting of type approval

To facilitate unified reporting procedures, the completed evaluation and test report forms are to be seen as a documented verification of required type approval tests for each type of equipment. When documentation of type approval is required by a third party, the verified evaluation and test report forms should constitute the complete documentation of the type approval together with the relevant approval certificates.

### REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (SURVIVAL CRAFT)

### TABLE OF CONTENTS

LSA Code chapter IV (Survival craft) – Equipment:

- 4.1 Inflatable liferafts
- 4.2 Rigid liferafts
- 4.3 Components for survival craft
  - 4.3.1 Hydrostatic release units
  - 4.3.2 Lifeboat and rescue boat inboard engines
  - 4.3.3 Lifeboat buoyant material
  - 4.3.4 Inflatable liferaft materials
  - 4.3.5 Searchlights for lifeboats and rescue boats
  - 4.3.6 Survival craft position indicating lights
- 4.4 Davit-launched lifeboats
- 4.5 Free-fall lifeboats

### 4 SURVIVAL CRAFT

### 4.1 INFLATABLE LIFERAFTS

### **EVALUATION AND TEST REPORT**

- 4.1.1 Submitted drawings, reports and documents
  - 4.1.1.1 General data and specifications
- 4.1.2 Quality assurance
- 4.1.3 Visual inspection
- 4.1.4 Drop test
- 4.1.5 Jump test
- 4.1.6 Weight test
- 4.1.7 Towing test
- 4.1.8 Mooring out tests
- 4.1.9 Liferaft painter system test
- 4.1.10 Weak link strength test
- 4.1.11 Loading and seating test
- 4.1.12 Boarding test
- 4.1.13 Closing arrangement test
- 4.1.14 Stability test
- 4.1.15 Manoeuvrability test
- 4.1.16 Swamp test
- 4.1.17 Canopy closure test
- 4.1.18 Buoyancy of float-free liferaft tests
- 4.1.19 Damage test
- 4.1.20 Righting test (conventional liferaft)
- 4.1.21 Inflation test
- 4.1.22 Pressure test
- 4.1.23 Detailed inspection

- 4.1.24 Lifting components strength test
- 4.1.25 Impact test
- 4.1.26 Drop test
- 4.1.27 Davit-launched liferaft boarding test
- 4.1.28 Davit-launched inflatable liferafts Strength test
- 4.1.29 Cold overload test
- 4.1.30 Lowering abrasion test
- 4.1.31 Self-righting test (self-righting liferafts only)
- 4.1.32 Submergence test (self-righting liferafts only)
- 4.1.33 Wind velocity test
- 4.1.34 Self-draining test (self-righting liferafts only)
- 4.1.35 Seam strength test

#### 4.1 INFLATABLE LIFERAFTS

#### **EVALUATION AND TEST REPORT**

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Inflatable liferafts	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization:	 
4.1.1 Submitted dra	awings, reports and docu	ments		
Drawing No.	Sut Revision No. & date	mitted drawings and documents Title of drawing		 Status
				Status
Submitted reports and	documents			
Report/Document No.	Revision No. & date	Title of report/document		Status
		Maintenance Manual -		
		Operations Manual -		

Inflatable liferafts	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization:	_ Time:
4.1.1.1 General data	a and specifications	Regu	lations: -	
Cylinder:				
Release head:				
Fabric:				

Inflatable liferafts	Manufacturer: Model: Lot/Serial Number:	Date:         Time:           Surveyor:	
4.1.2 Quality assur	ance	Regulations: MSC.81(70)2/1.1,1.2	
International Conventior International Life-Savi representatives of the	nces of a particular type are required by chapter III of the in for the Safety of Life at Sea, 1974, as amended or the ing Appliance (LSA) Code, to be inspected, Administration should make random inspections of that the quality of life-saving appliances and materials	e Quality assurance e d, Standard Used:	
	specification of the approved prototype life-saving		
that life-saving appliance	e required to institute a quality control procedure to ensure ces are produced to the same standard as the prototype oproved by the Administration and to keep records of any	e y	
production tests carried	out in accordance with the Administration's instructions.	s. Description of System:	
		Quality assurance System acceptable:	
		Yes/No	
		Comments/Observations:	

Inflatable liferafts			Surveyor:	Time:
4.1.3 Visual inspec	tion	Regulatio	ons: LSA Code IV/4.2	; MSC.81(70) 1/5.14
Test Pro	ocedure	Acceptance Criteria		Significant Test Data
The liferaft should be s visual inspection. The fo confirmed during the ins	llowing items should be			Passed Failed
- proper workmanship		Be of an international or vivid reddish orang highly visible colour on all parts where this at sea		Comments/Observations
- suitable materials				
- rot proof, corrosion re	sistant			
- not affected by seawa	ater, oil or fungal attack			
- resistant to sunlight				
- highly visible colour				
- retro reflective tape t A.658(16)	o be as per resolution			
- safely used in a seaw	ay			
- certification				
- whether the light is a out insulation test	ctivated when carrying			

Inflatable liferafts	fte Model: S		Date:            Surveyor:            Organization:		
4.1.4 Drop test		Reg	ulations: LSA Co	ode IV/4.1.1.2; MSC.81(70) 1/5.1.1 – 5.1.4.2	
	ocedure	Acceptance Criteria		Significant Test Data	
a minimum of two drop	should be subjected to tests. Where the liferaft ndition is packed in a	The liferaft should inflate upright ar prescribed in 4.1.21.	nd in the time	Container details: -	
	he such test should be	Damage to the container or valise,	f the liferaft is	Type of emergency pack	
carried out with the life of container or valise in	raft packed in each type which the manufacturer	normally within it when launched, provided the Administration is satisfied	is acceptable I that it would	Inflation system details:	
proposes to mark it. The liferaft, in the	e operational packed	not be a hazard to the liferaft. Damage equipment is acceptable subject to the being satisfied that the operational eff	Administration	Height of drop m Painter length m	
dropped from a heigh	suspended and then t of 18 m into the water.	been impaired. Damage to freshwater re be accepted provided they do not leal	. However, for	Floating position:	
it should be dropped fro is to be stowed. The	height greater than 18 m, om the height at which it free end of the painter the point of suspension	drop tests from heights exceeding 18 m to 5% of the receptacles may be acc that:		Inflation times: Container open afters Boardable afters	sec sec
simulating actual cond	s the liferaft drops, thus itions. eft floating for 30 min. It	the equipment list for the liferaft specifies the carriage of 5% excess water or means of desalination adequate to produce an equivalent amount; or		Relief valves venting:	sec
should then be inflated. The liferaft should be lifted from the water to permit thorough inspection of the liferaft, the contents of the		the water receptacles are contained i overwrap.	n a waterproof	Condition: Container Liferaft	
equipment container the container or valise				*Equipment	
	equipment after the test.			Passed Failed	<u>NA</u>
Unless the liferaft is a davit-launched type or to be fitte on a passenger ship, does the sea anchor deple automatically upon inflation?				Comments/Observations	

Inflatable liferafts	rafts Manufacturer: Model: Lot/Serial Number:			Surveyor:	Time:	
4.1.5 Jump test			Regulati	ons: LSA Cod	e IV/4.1.1.3; MSC.81(70) 1/5.2.1 - 5.2.4	
	Procedure	Acceptance	Criteria		Significant Test Data	
on to the liferaft, with erected, from a height 4.5 m without damag subject should weigh r should be wearing hard soles and no protrudi jumps performed shou number of persons for approved. The jump test may be suitable and equivalent impact the liferaft with above paragraph. Unless the configurat	and without the canopy above the floor of at least ing the liferaft. The test not less than 82.5 kg and bottom shoes with smooth ing nails. The number of ald be equal to the total which the liferaft is to be e simulated by dropping a t mass, arranged so as to shoes as described in the ions of both sides of a eraft are identical, this test		ric, or dan	nage to seams	Number of jumps         Height of jump         Weight of dummy         Condition of raft during and after test:         Tested both sides? Yes         Comments/Observations         Passed       Failed	
4.1.6 Weight test		1	Regulati	ons: LSA Cod	Code IV/4.1.2.2; MSC.81(70) 1/5.3	
The fully packed life	Procedure raft container should be whether its mass exceeds	Acceptance	e Criteria		Significant Test Data Type A Type B	
185 kg. The weight test heaviest variation of different containers an may be used. If the n different combinations of	whether its mass exceeds should be performed on the the liferaft, considering d equipment packs, which nass exceeds 185 kg, the f containers and equipment ed to determine which will ed 185 kg.				Emergency pack type: Measured liferaft weight kg Comments/Observations	

Inflatable liferafts	Model:		Date: Surve	T eyor:	「ime:	
Innatable meraits	Lot/Serial Numb	ber:	Orga	nization:		_
4.1.7 Towing test		Regulat	ions: L	SA Code IV/4.1.1.4; MSC.8	31(70) 1/5.4	
Test Procedure		Acceptance Criteria			ant Test Data	
loaded and equipped liferaft is a	capable of being	It should be shown that the liferaft of satisfactorily towed at a speed of up to 3 knows and the state of the	ots with			knots
calm water. Towing should be b	y a line attached	the anchor streamed without significant da	mage.	Sea anchor streamed:	Yes No _	
to the liferaft's towing connection should be streamed while the	liferaft is towed.			Raft towing connections:		
The liferaft should be towed for least 1 km.	a distance of at			Distance covered:		
Record the towing strain at 2 kr				Total Load in raft:		
and include on the Type Approva	al certificate.			Towing strain at 2 knots _		kN
				Towing strain at 3 knots _		kN
				Sea state		
				Comments/Observations		
				Passed	Failed	

	Manufacturer:		Date <sup>.</sup>	Tir	ne.	
				I !!	no	
Inflatable liferafts	Lot/Serial Number		Organiza	Surveyor: Organization:		
			organiza			
4.1.8 Mooring out	tests	Reg	gulations: I	LSA Code IV/4.1.1.1; MS0	C.81(70) 1/5.5	
Test P	rocedure	Acceptance Criteria		Significant Test Data		
The liferaft should be lo	oaded with mass equal to			Location		
	mber of persons for which				· · · · · · · · · · · · · · · · · · ·	
in a location at sea or ir	its equipment and moored a seawater harbour. The	inflatable liferaft should be subjected pressure test prescribed in 4.1.22.	ed to the	Mooring out period	days	
days. In the case of	float in that location for 30 an inflatable liferaft, the			Number of times pressur	e topped up and dates:	
manual pump; howeve	d up once a day using the r, during any 24 h period			Condition of liferaft:		
the liferaft should retain	n its shape.			Pressure test results:		
				Comments/Observations	3	
				Pressure test results:		
				Passed	Failed	
4.1.9 Liferaft paint	er system test	Reg	gulations: I	LSA Code IV/4.1.6.1, 4.1.3	3.2; MSC.81(70) 1/5.6	
Test P	rocedure	Acceptance Criteria			icant Test Data	
The painter system incl be tensile tested.	luding attachments should	Liferaft painter system and attachme have a breaking strain as follows: -	nts should	Number of persons: -		
		Not less than 7.5 kN for liferafts to ca persons	rry up to 8	Testing strain on painter	system:	
		Not less than 10.0 kN for liferafts to ca persons	rry 9 to 25	Comments/Observations	3	
		Not less than 15.0 kN for liferafts to persons or more	o carry 26	Passed	Failed	

Model:	Model: S		Time:
4.1.10 Weak link strength test	Regu	lations: LSA Code IV/4.1.6	.2: MSC.81(70) 1/5.15
Test Procedure	Acceptance Criteria		nificant Test Data
The weak link should be tensile tested.	A weak link in the painter system should have a breaking strain of $2.2 \pm 0.4$ kN and not be broken by the force required to pull the painter from the liferaft container. (Refer to HRU test form 4.3.1.11.)	Measured breaking strain o Comments/Observations	of weak link:kN
	If applicable, be of sufficient strength to permit the inflation of the liferaft.	Passed	Failed
4.1.11 Loading and seating test	Regu	lations: LSA Code IV/4.2.3	; MSC.81(70) 1/5.7
Test Procedure	Acceptance Criteria	Sig	nificant Test Data
The freeboard of the liferaft in the ligh condition, including its full equipment but n personnel, should be recorded. The freeboar of the liferaft should again be recorded whe the number of persons for which the liferaft it to be approved, having an average mass of 82.5 kg, and each wearing immersion suit an a lifejacket, have boarded and are seated. should be established that all the seate persons have sufficient space and headroor and it should be demonstrated that the variou items of equipment can be used within the lif raft in this condition and, in the case of a inflated liferaft, with the floor inflated. Unless the configurations of both sides of canopied reversible liferaft are identical, this test should be repeated for both sides of the liferaft.	sufficient space and headroom and the various items of equipment can be used within the liferaft in this condition and, in the case of an inflated liferaft, with the floor inflated. The freeboard, when loaded with the mass of the number of persons for which it is to be approved and its equipment, with the liferaft on an even keel and, in the case of an inflatable liferaft, with the floor not inflated, should not be less than 300 mm.	Freeboards: Light 12 o'clock 3 o'clock 9 o'clock Loaded 12 o'clock 3 o'clock 9 o'clock 3 o'clock 3 o'clock 3 o'clock 3 o'clock	Inflatable

	Manufacturer:							· · · · · · · · · · · · · · · · · · ·	
Inflatable liferafts	Model: Lot/Serial Number:			Organ	nization:				
4.1.12 Boarding tes	t			Regulation	s: LSA Co	ode IV/4.2.4:	MSC.81(70)	1/5.8	
	rocedure	Acceptar	nce Criteria	j			Significant Tes		
swimming pool by a te	build be carried out in a am of not more than four	satisfactory if three o	f the person	s board the				Woight	
differing physiques a Administration. Prefera strong swimmers. For clothed in shirt and trou should wear approved adult. They must each reaching the liferaft for There must be no rest and the boarding attem	period between the swim	assistance of any of t		ras with the	P1 P2 P3 P4 Boarded	AgeY Y Y unaided: aided: ts/Observatio	person	m m m	kg kg
individually with no swimmers or persons a water should be of a d any external assistan liferaft. If the liferaft is of the o	assistance from other already in the liferaft. The lepth sufficient to prevent ace when boarding the canopied reversible type, d be tested, unless the				Passed _		_ F	ailed	

Inflatable liferafts	Manufacturer: Model: Lot/Serial Number:		Date:            Surveyor:            Organization:		
4.1.13 Closing arran	aement test	Regu	lations:	: LSA Code IV/4.1.1.5.3; MSC.81(70) 1/5.8	
	ocedure				
The boarding test shipersons clothed in lifejackets. After the k clothed in approved demonstrate that the en quickly closed in 1 minu quickly opened from in minute.	ould be repeated with immersion suits and poarding test a person immersion suit should trance can be easily and te and can be easily and nside and outside in 1 anopied reversible type, be tested, unless the	3 out of 4 persons wearing immersion	suit and d. in less pproved ed from aring an ed from	Record particulars of persons:         Age       Height       Weight         P1       Y       m       kg         P2       Y       m       kg         P3       Y       m       kg         P4       Y       m       kg         Boarded unaided:       persons       gersons         Boarded aided:       persons       gersons	

Inflatable liferafts	Model:	Survey	vor: ization:
4.1.14 Stability test		Regulations: LS	A Code IV/4.2.5; MSC.81(70) 1/5.9.1 & .2
	ocedure	Acceptance Criteria	Significant Test Data
<ul> <li>.1 The number of p liferaft is to be accommodated or one end and freeboard should these conditions to be such that there liferaft being swam</li> <li>.2 The stability of boarding may be a</li> <li>two persons each lifejackets should boar should then be demo</li> </ul>	ersons for which the approved should be one side and then at n each case the be recorded. Under the freeboard should e is no danger of the ped. the liferaft during scertained as follows: wearing approved rd the empty liferaft. It nstrated that the two ft can readily assist hird person who is nconsciousness. The ye his back towards	Each freeboard measurement should be taken fror to the top surface of the uppermost main buoyar lowest point. It should be demonstrated that the water pocker counteract the upsetting moment on the liferaft a danger of the liferaft capsizing.	n the waterline Freeboards with all persons on one side: ncy tube at its 12 o'clockmm 3 o'clockmm 6 o'clockmm 9 o'clockmm Observations when boarding:

Inflatable liferafts       Model: Lot/Serial Number:         4.1.15       Manoeuvrability test         Test Procedure       It should be demonstrated that with the		Surveyor: Organization: _		e IV/4.1.5.1.6; MSC.81(70) 1 Significant Distance manoeuvred:	/ <b>5.10</b> Test Data	
propelled when fully laden in calm conditions over a distance of at least 25 m.		s 25 m.		Comments/Observations Passed	Failed	
4.1.16 Swamp test				ions: LSA Cod	e; MSC.81(70) 1/5.11	
Test Pro		Acceptance C			Significant	Test Data
It should be demonstrated that the liferaft, when fully swamped, is capable of supporting its full equipment and the number of persons for which it is to be approved. During this test self-draining arrangements fitted in the floor of the liferaft are to be closed to prevent the ingress of water.		for which it is to be approved. The liferaft should not seriously deform in this condition. Unless the configuration of both sides of a canopied reversible liferaft are identical, this test should be		Loaded liferaft swamped Freeboards: 12 o'clock 3 o'clock 6 o'clock 9 o'clock	mm mm mm mm	
					Deformation If self-bailing, time to self-ba Comments/Observations Passed	

Inflatable liferafts Manufacturer: Model: Lot/Serial Number:					
4.1.17 Canopy clo	osure test	Regulat	ions: LSA Code IV/4.1	.1.5; MSC.81(70) 1/5.12	
Test Pro	ocedure	Acceptance Criteria		Significant Test Data	
	veness of the canopy g water entering the f the closed entrances			Capacity of water hosel/min	
should be demonstrate test or by any other eq		Unless the configuration of both sides of liferaft are identical, this test should be n		Condition of canopy during test:	
The requirement for the 2,300 I of water per min	hose test is that about ute be directed at and			Liters of water accumulated	
around the entrances the from a point 3.5 m away level of the buoyancy to min.	y and 1.5 m above the			Comments/Observations	
				Passed Failed	
4.1.18 Buoyancy of	float-free liferafts test				
Test Procedure		Acceptance Criteria		Significant Test Data	
sufficient inherent buoya by means of the actua	hich are float-free, have ancy to inflate the liferaft ating line in the event The combination of ner or valise should be		aft by means of the	Comments/Observations Passed Failed	

Inflatable liferafts	Model:		Organization:			
4.1.19 Damage test	•	Regulat	tions: LSA (	Code; MSC.81(7	70) 1/5.17.1	
Test Pro	ocedure	Acceptance Criteria			Significant T	est Data
	ted that, in the event of cy compartments being to inflate, the intact ompartments should freeboard over the number of persons for be approved. This can persons each having a seated in their normal	The intact compartments should sup positive freeboard over the liferaft's perinumber of persons for which the lifera approved, with any one of the compartments deflated.         Compartment deflated:         Treeboards:         12 o'clock       mm         3 o'clock       mm         9 o'clock       mm         So'clock       mm         9 o'clock       mm	phery, the ft is to be buoyancy =>	Freeboards:	deflated: 12 o'clock 3 o'clock 6 o'clock 9 o'clock deflated: 12 o'clock 3 o'clock 6 o'clock 9 o'clock	mm mm mm mm
				Passed		Failed

Inflatable liferafts	Model:		Date: Surveyor: Organization:	Time:
4.1.20 Righting test	t (conventional liferaft)	Regula	tions: LSA Code IV/4.2.	.5.2; MSC.81(70) 1/5.17.2.14
Test Pr	ocedure	Acceptance Criter	ia	Significant Test Data
its heaviest equip entrances, ports, a the liferaft canop order to allow the i the canopy when c .2 The canopy of the completely filled necessary, by pa canopy support, uninflated liferaft onto the surface down and infla automatically self-righting liferat this condition a boardable in the u min after the stat inflatable liferat automatically self- not self-right, it s	inflation. ft should be loaded with ment pack. All of the and other openings in by should be open in nfiltration of water into apsized. liferaft should then be d with water, if artially collapsing the or alternatively the should be flaked out of the water upside ation initiated. An ft should self-right in and should become pright position within 1 rt of the test. If the aft, other than righting liferafts, does should be allowed to ted position for at least	The righting arrangements will be consid person rights the liferaft unaided. There the structure of the inflatable liferaft, a should remain secured in its place. (See form 4.1.31 for self-righting)	should be no damage to	

Inflatable liferafts	Manufacturer: Model: Lot/Serial Number:		Date:            Surveyor:            Organization:	
	(conventional liferaft) (c			.2.5.2; MSC.81(70) 1/5.17.2.14
	ocedure	Acceptance Crite		Significant Test Data
	ould be carried out by the rsons required for the	The righting arrangements will be concerning the person rights the liferaft unaided		1st person righting test
	arly clothed and wearing er completing the swim	damage to the structure of the infl equipment pack should remain secure		2nd person righting test
	. At least one of the inflatable liferaft should			3rd person righting test
should attempt to r	82.5 kg. Each person ight the liferaft unaided.			4th person righting test
give no external ass	be of sufficient depth to sistance to the swimmers	(See form 4.1.31 for self-righting)		results with pack A and B
when mounting the	inverted liferaft.			Damage to raft
				Details of persons
				Comments/Observations
				Passed Failed

Inflatable liferafts	Model:	er:	Surveyor:	Time: on:	
4.1.21 Inflation test			ons: LSA C	ode; MSC.81(70) 1/ 5.17.3 to 5.17.6	
Test Proce		Acceptance Criteria		Significant Test Data	
tested: .1 at an ambi of between .2 at a tempe and	flated by pulling ne recorded: - boardable, i.e. ubes are inflated diameter. e erect; and o reach its full ressure when ent temperature 18°C and 20°C; rature of -30°C; rature of +65°C. at -30°C the be kept at room st 24 h, then d chamber at a or 24 h prior to e painter. Two	When inflated in an ambient temperature of bet and 20°C it should achieve total inflation in not 1 min. In the case of automatic self-righting liferaft should achieve total inflation and be bo the upright position in not more than 1 min, re- the orientation in which the liferaft inflates. When inflated at -30°C the liferaft should rea- pressure in 3 min. There should be no sean cracking, or other defect in the liferaft and it ready for use after the tests. When inflated at +65°C the gas pressure re- must be of sufficient capacity to prevent dam liferaft by excess pressure and to prevent the pressure during the inflation from reaching tw seat pressure of the release valve. There m seam slippage, cracking or other defect in the I The force to pull out the painter should not be 150 N.	t more than liferaft, the oardable in gardless of ch working n slippage, should be elief valves hage to the e maximum vice the re- nust be no liferaft.	Boardable	sec sec sec sec sec

4.1.21	Inflation test	Regulations: LSA C	Regulations: LSA Code; MSC.81(70) 1/ 5.17.3 to 5.17.6		
	Test Procedure	Acceptance Criteria	Significant Test Data		
			Lights int./ext/ Working Pressure Peak pressure Comments/Observations	sec Mpa Mpa	
			Passed Fa	ailed	

Inflatable liferafts	Manufacturer: Model: Lot/Serial Number:	Surveyor:	Time:
4.1.21 Inflation test (continued)		Regulations: LSA Code;	MSC.81(70) 1/5.17.46
	ocedure	Acceptance Criteria	Significant Test Data
liferaft should be kept at least 24 h, then plac at a temperature of +65' prior to inflation by pul	er should be measured		Hot temperature: °C         Hours: _h         Inflation times: -         Air temperature °C         Container opensec         Boardable: sec         Relief valves: Upper open: sec         Lower open: sec         Lights int./ext/ sec         Working Pressure: Mpa         Peak pressure: Mpa         Comments/Observations:
			Passed: Failed:

Inflatable liferafts			Surveyor:	Time:
4.1.22 Pressure test		Regu	ulations: LSA Code;	MSC.81(70) 1/5.17.7 & 5.17.8
	ocedure	Acceptance Criteria		Significant Test Data
Each inflatable compart be tested to a pressure working pressure. Eac should be made inop should be used to inflate the inflation source re continue for at least 30 The measurement of leakage can be start assumed that compart completely stretched du and achieved equilibrium The term "operational meaning as the term "w pressure determined H pressure of the relief va if the actual reseat press determined by testing,	ment in the liferaft should equal to three times the ch pressure relief valve erative, compressed air the inflatable liferaft and moved. The test should min. pressure drop due to red when it has been ment material has been e to the inflation pressure	The pressure should not decrease by determined without compensating for atmospheric pressure changes, and seam slippage, cracking or other defect	y more than 5% as or temperature and there should be no	Design WP      °C         Design atmos.      bar         3 times WP      bar         Pressure drop after 30 min          Above should cover each compartments 1, 2 3, etc.

Inflatable liferafts		ber:	Date:            Surveyor:            Organization:
4.1.23 Detailed inspection		-	Regulations: LSA Code IV/4.2; MSC.81(70) 1/5.14
Test Proced		Acceptance Criteria	Significant Test Data
	verify that it	The liferaft should comply with the requirements of the LSA Code in all respects	If provided, boarding ladders: interior not to cause discomfort to occupants 
		interior not to cause discomfort to occupants at least one viewing port means for collection	at least one viewing port
		rainwater sufficient headroom 8 persons at least two entrances equipment to be stowed	means for collection rainwater
		inside liferaft, but capable of floating at least 30 minutes in water without damage to content at	sufficient headroom
		least one boarding ramp means to assist a person to pull themselves into the liferaft	8 persons at least two entrances
		container markings marking on raft.	equipment to be stowed inside liferaft, but capable of floating at least 30 minutes in water without damage to content 
			at least one boarding ramp
			means to assist a person to pull themselves into the liferaft
			container markings
			marking on raft
			means to change ship's name & Port of Registry without opening containers? YES/NO
			Comments/Observations
			Passed Failed

Inflatable liferafts	Model:		Su	te: Time: rveyor: ganization:
4.1.24 Lifting compo	onents strength test		<b>Regulations: L</b>	SA Code IV/4.2.8; MSC.81(70) 1/5.16.1
Test Proc		Acceptance Crite		Significant Test Data
		components should be at lea mass of the liferaft when loaded	ast six times the I with the numbe	Mass of liferaft when loaded with the number of persons for
4.1.25 Impact test		Regulations: LSA Code; MSC.81(70) 1/5.16.2		
Test Proc	edure	Acceptance Crite	ria	Significant Test Data
The liferaft should be equal to the mass of th for which it is to be equipment. With the lifer position it should be position so that when rel rigid vertical surface at a The liferaft should then b against the rigid vertical Note: The liferaft should	e number of persons approved and its raft in a free hanging pulled laterally to a eased it will strike a a velocity of 3.5 m/s. be released to impact surface.	After this test the liferaft should of damage which would af functioning.	•	

Inflatable liferafts	Manufacturer: Model: Lot/Serial Number:		Date:            Surveyor:            Organization:		
4.1.26 Drop test		Regulati	ions: LSA Code; MSC	.81(70) 1/5.16.3	
Test Pro		Acceptance Criteria		Significant Test Data	
The liferaft, loaded with mass of the number o is to be approved and be suspended from an height of 3 m above th and allowed to fall free liferaft should then be	f persons for which it its equipment, should on-load release at a ne water, be released y into the water. The	The liferaft should sustain no damage,			

	Manufacturer: Model:		Date: Surveyor:		Time:
Inflatable liferafts	Lot/Serial Number:		Organizati	on:	
4.1.27 Davit-launch	ed liferaft boarding test		Regulations: L	SA Code; MSC.8	31(70) 1/5.16.4
Test Pr	rocedure	Acceptan	ce Criteria		Significant Test Data
A davit-launched liferaft boarding test prescribed the following test. The launching appliance or sheave of similar height s side or simulated s should then be board persons for which it is to mass 82.5 kg. There distortion of the liferaft. be released and the life It should then be lowerd unloaded. At least three succession, with the	t should, in addition to the	There should be no undue disto should be timed and the time reco	rtion of the liferaf	t. The boarding	
.2 half the beam o .3 half the beam o The boarding, which	f the liferaft +150 mm; f the liferaft; and f the liferaft -150 mm. is intended to simulate ions, should be timed and				Comments/Observations Passed: Failed:

Inflatable liferafts	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:
44.00 Douit Jourse			• <u> </u>	
	d inflatable liferafts – Strength test Test Procedure	Acceptance (		e; MSC.81(70) 1/5.17.10 Significant Test Data
	ted by an overload test on the liferaft			ÿ
	support that the bridle system has an		should remain	temperature: °C
.1 the liferaft should b for a period of at le	be placed in a temperature of 20±3°C east 6 h;			time in temperature: h
O fallouine this name	d of open disions in a star life woft of out dates			number of persons:
suspended from its	d of conditioning, the liferaft should be lifting hook or bridle and the buoyancy ding an inflatable floor) inflated;			load: kg
3 when fully inflated	and when the relief valves have re-			time suspended: min
	, all relief valves should be made			pressure before loading:
, , , , , , , , , , , , , , , , , , ,				pressure suspended/loaded:
	then be lowered and loaded with a uvalent to four times the mass of the			pressure after test after unloading:
	for which it is to be approved and its s of each person being taken as 82.5			dimensional deflections or distortions:
.5 the liferaft should the at least 5 min;	en be raised and remain suspended for			Comments/Observations
	e and after the test after the weight is e it remains suspended, should be			Passed: Failed:
.7 any dimensional de should be recorded.	eflections or distortions of the liferaft			

Inflatable liferafts		Su	irveyor:	Time:
4.1.29 Cold overload	d test	Regulations	: LSA Code; MSC/	Circ.809 Annex3; MSC.81(70) 1/5.17.11
	ocedure	Acceptance Criteria		Significant Test Data
	· ·	During the test and after it its completion, th	ne inflatable liferaft	Conditioning:
	erature of -30°C, that the	should remain suitable for its intended use.		
	load of 1.1 times the			time in cold chamber:
approved and its equ	or which it is to be uipment with all relief liferaft should be loaded			temperature in cold chamber: °C
with the test weight in the	e refrigerated chamber. e inflated. The loaded			number of persons:
inflatable liferaft should	d remain suspended for latable liferaft must be			test weight: kg
	ber in order to suspend			(Relief valves operative/floor not inflated) time
	should be suspended			suspended: min.
immediately upon remo	oval from the chamber.			Comments/Observations
				Passed: Failed:

	Manufacturer:				Time:
Inflatable liferafts	Model:			Surveyor:	
	Lot/Serial Number:	· · · · · · · · · · · · · · · · · · ·		Organization:	
4.1.30 Lowering abr	rasion test		Regulat	ions: LSA Code; MSC	/Circ.809 Annex3; MSC.81(70) 1/5.17.12
	rocedure	Accepta	nce Criteri		Significant Test Data
The inflatable liferaft s	should be loaded with a	During the test and after its	completi	on, the liferaft should	Number of persons
		not sustain damage or distor			
	ne number of persons for	would render it unsuitable for	its intende	ed purpose.	Load: kg
	oved, the mass of each				
	82.5 kg. Except for the				Height of the head sheave: mm
	be inflated, the inflatable				
	/ inflated with all relief raft should be lowered for				Comments/Observations
	m in continuous contact				Comments/Observations
-	cted to represent the side				
of a ship having a 20°					
	t from which the hook is				
	comparable to that of a				
shipboard launching app	pliance				
					Passed: Failed:

	Manufacturer:			Date:	Tin	1e:		
Inflatable liferafts	Model:			Surveyor:				
	Lot/Serial Number:	· · · · · · · · · · · · · · · · · · ·		Organization:				
			T					
	est (self-righting lifera				nex3; MSC.81(70) 1/5.18			
Test Pro		Acceptan				Significant Tes		
		After release the liferaft shou		natically return to the			ght position fro	om the
the liferaft about a lor		upright position without assista	nce.		following and	gles of heel:		
angle of heel in calm wa					+ 45°		- 45°	
The liferaft should be		Righting action should be					- 90°	
equipped, with no one or		complete righting should oc	cur withir	n the time difference			- 135°	
and openings in the as-		between the liferaft reaching b			+ 180°			
in the case of an inflatab		by 4.1.21 at ambient temperatu	ire and at	1 minute.				
The liferaft should be in								
angles of heel up to an	id including 180° and				Comments/C	Observations		
should be released.								
					Righting active	on:		
					Passed:	Failed:		
					Righting acti	on: Failed:		

	Manufacturer: Model:			Date: Time: Surveyor:		
Inflatable liferafts Lot/Serial Number:		·····		Organization:		
4.1.32 Submergence	e test (self-righting liferafts on	llv)	Regulat	ions: MSC/Circ.809 Ar	nnex3; MSC.81(70) 1/5.19	
Test	Procedure	Accer	tance Cri	teria	Significant Test Data	
	acked condition, should be	The liferaft should float	to the su	rface and come to its	Significant wave height	
	of at least 4 m. A rigid liferaft nis depth, and, if an inflatable	designed operational co	nation re	ady to be boarded.	Method of determining Significant wave height:	
	t this depth, so as to simulate				wind force: Beaufort	
	ration. The liferaft should float				depth submerged:	
	e to its designed operational				Comments/Observations	
	poarded from the sea in a sea					
	etres significant wave height in				Passed: Failed:	
	force of Beaufort force 6.					
4.1.33 Wind velocity					nnex 3; MSC.81(70) 1/5.20.1 & .2	
	Procedure		tance Cri		Significant Test Data	
	ould from a range of liferafts					
require at least:		affecting its efficient fun	ction as a	result of this test.		
	e of 6 to 25 persons capacity					
similar; and	construction arrangements are					
each liferaft greater than	25 persons capacity, except in					
the case where it can be	e shown that the material and					
	nts deem this unnecessary:					
To be tested under the c in following paragraphs.	onditions of wind velocity given					
	the packed condition with the				Passed: Failed:	
	nat it will be open on inflation,					
	, be inflated in a wind velocity					
	be left in this condition for 10				Continued/	
minutes.						

Inflatable liferafts				Surveyor:		Time:	
4.1.33 Wind velocity	v test (continued)		Regulation	ons: MSC/Circ.809 Ar	nnex3	; MSC.81(70) 1/5.20.3 to 5.20.5.3	}
Test Pro	cedure	Acceptan	ce Criteria			Significant Test Data	
During the above-m			ow no sig	n of damage affecting	Wind	d velocity measured:	_m/s
whenever practicable,		its efficient function as a result of	of this test.				
should be swung over					Time	e in high winds: sec	
starboard, from that pos							
30° to port and return to	the starting position.				Com	nments/Observations	
On completion of the there should be no de support or canopy from tube or other damage efficient function of the li	tachment of the arch in the upper buoyancy ge which affects the						
Then the liferaft or lifera to the above-mentione minutes in each of the f	ed wind velocity for 5						
.1 with the entrance to the other closed, in one entrance;	o the wind open and f there is more than				1	Passed: Failed:	
.2 with the entrance to the other entrance more than one entr	es open, if there is				2 3	Passed: Failed: Passed: Failed:	
.3 with all entrances cl	osed.						

Inflatable liferafts	Model:			Date: Surveyor:	
	Lot/Serial Number:			Organization:	
4.1.34 Self draining	test (self-righting lifera	afts only)	Regulat	ions: MSC.81(70) 1/5.2	21
Test Proc	edure	Acceptar	ce Criteria	a	Significant Test Data
	d into the interior of the at a rate of 2300 I per nto separate areas, by each such area should	After the water has been shut o	off and has	s drained, there should	
					Passed: Failed:

Inflatable liferafts Manufacturer: Lot/Serial Number:		Surveyor:	Time:			
4.1.35 Seam stre	angth test Test Procedure	Regulations: LSA Code IV/4.2; MSC.81(70) 1/5.17.9.1 & 5.17.9.2           Acceptance Criteria         Significant Test Data				
Seam Strer		.1 It should be demonstrated that sample seams, prepared in the same condition as in production, can withstand a test load equal to the minimum specified liferaft fabric tensile strength.	Fabric minimum specified liferaft tensile:         strength N/50 mm.         Seam strength N/50 mm.			
150 mm	<u>mm</u> 25 mm	Sewn seams on outer canopy fabric should withstand a test load of at least 70% of the minimum specified fabric tensile strength when tested by the method described in ISO 1421:1998 and by using test samples as shown in fig.1 below.	Outer canopy minimum specified tensile: strength N/50 mm. Seam strength N/50 mm. Weld strength N			
Sewn s	seam 50 mm	<ul> <li>.2 Weld strength</li> <li>1.1 When tested by the method prescribed below, the load required to initiate failure of the weld should be not less than 175 N;</li> </ul>	Comments/Observations			
.1 Samples of all t be tested. .2 Seam construc should be tester .3 The test specin	ble specification for sewn canopy types of sewing used in production to stions in both warp and weft direction d. nens should be cut out from pre-sewn ric-and no locking of thread ends take	2.2 Specimens should be prepared and tested as given in .3.3 below:	Passed: Failed:			

Inflatable liferafts	Manufacturer: Model: Lot/Serial Number:	Surveyor:	Time:
4.1.35 Seam streng	gth test (continued)	Regulations: LSA Code IV/4.2; MSC.	81(70) 1/5.17.9.3
Tes	t Procedure	Acceptance Criteria	Significant Test Data
		.3 Hydrolysis tests should be conducted on sample welded seams where thermoplastic-coated materials are to be used. The tests should be conducted as follows:	Weld strength:N
		3.1 When tested by the method prescribed below, the weld strength of the sample seam should achieve 125 N/25 mm minimum.	
		3.2 Test method:	
		<ul> <li>.1 Store the test specimens for 12 weeks over water in a closed container at 93°C ± 2°C.</li> <li>.2 After the conditioning as above, dry the specimens for 1 h at 80 ± 2°C and condition at 20 ± 2°C, 65% RH for 24 h.</li> </ul>	
		3.3 Welded test samples should be prepared as follows:	
		Two samples of fabric 300 mm x 200 mm, cut with the short side parallel to the warp direction, should be superimposed face to back for double coated fabrics, or coated face to coated face for single or asymmetrically coated fabrics. They should be welded with a tool $10\pm 1$ mm width of convenient length. 25 mm wide test specimens should be cut transversely to the line of the weld. The test samples should be mounted in a test machine as in ISO 1421:1998. The maximum peel load should be recorded.	Passed: Failed:

#### 4.2 **RIGID LIFERAFTS**

- 4.2.1 Submitted drawings, reports and documents 4.2.1.1 General data and specifications
- 4.2.2 Quality assurance
- 4.2.3 Visual inspection
- 4.2.4 Drop test
- 4.2.5 Jump test
- 4.2.6 Weight test
- 4.2.7 Towing test
- 4.2.8 Mooring out tests
- 4.2.9 Liferaft painter system test
- 4.2.10 Loading and seating test
- 4.2.11 Boarding test
- 4.2.12 Closing arrangement test
- 4.2.13 Stability test
- 4.2.14 Manoeuvrability test
- 4.2.15 Swamp test
- 4.2.16 Canopy closure test
- 4.2.17 Detailed inspection
- 4.2.18 Weak link strength test
- 4.2.19 Lifting components strength test
- 4.2.20 Impact test
- 4.2.21 Drop test
- 4.2.22 Davit-launched liferaft boarding test
- 4.2.23 Self-righting test (self-righting liferafts only)
- 4.2.24 Submergence test (self-righting liferafts only)
- 4.2.25 Wind velocity test

- 4.2.26 Self-draining test (self-righting liferafts only)
- 4.2.27 Inherently buoyant material

#### 4.2 **RIGID LIFERAFTS**

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

	Manufacturer:		Date:	Time:	
Rigid liferafts	Model:		Surveyor:		
Rigid meralts	Lot/Serial Number:		Organization:		
4.2.1 Submitte	d drawings, reports and o	locuments			
Submitted drawing					
Drawing No.	Revision No. & date	Title of drawing			Status
Submitted reports		I			Status
Report/Document No.	Revision No. & date	Title of report/document			Status
		Maintenance Manual -			
		Operations Manual -			

Rigid liferafts	Manufacturer: Model: Lot/Serial Number:	Date:            Surveyor:            Organization:	Time:
4.2.1.1 Gener	al data and specifications	Regulations: -	
Cylinder:			
Release head:			
Fabric:			

Rigid liferafts	Manufacturer: Model: Lot/Serial Number:	Date: Time: Surveyor: Organization:				
	ssurance	Regulations: MSC.81(70) 2/1.1, 1.2				
III of the Internatio as amended or the be inspected, repre	opliances of a particular type are required by chapter nal Convention for the Safety of Life at Sea, 1974, International Life-Saving Appliance (LSA) Code, to esentatives of the Administration should make random nufacturers to ensure that the quality of life-saving	Standard Used:				
appliances and m	aterials used comply with the specification of the life-saving appliance.					
ensure that life-sav	IId be required to institute a quality control procedure to ing appliances are produced to the same standard as wing appliance approved by the Administration and to	Quality assurance Manual:				
keep records of any Administration's ins	production tests carried out in accordance with the tructions.					
		Quality assurance System acceptable				
		Yes/No				
		Comments/Observations				

	Manufacturer:	Da	ate:	Time:	
Rigid liferafts	Model:	Si	urveyor:		
Rigiu meraits	Lot/Serial Number:	O	rganization:		
4.2.3 Visual in	spection	Regulations:	: LSA Code I/1.2,	, IV/4.3; MSC.81(70)	
	Test Procedure	Acceptance Criteria		Significant Test	Data
The liferaft should	be subjected to a thorough visual	Be of an international or vivid reddi	ish orange, or at		
	llowing items should be confirmed	a comparably highly visible colo	our on all parts		
during the inspection	on:	where this will assist detection at s	sea		
				Passed	Failed
- proper workman					
- suitable materials				Passed	Failed
- rot proof, corrosic				Decod	Failed
- resistant to sunlig	eawater, oil or fungal attack			Passed	Failed
<ul> <li>highly visible colo</li> </ul>				Passed	Failed
	tape to be as per				
	δ) safely used in a seaway				
				Passed	Failed
				Passed	Failed
				Passed	Failed
				Descad	E e il e el
				Passed	Failed
				Comments/Observations	

Rigid liferafts	Model:	Surveyor:	Time:
A.2.4     Drop test       Test Procedure       (Overload test)		Organization:	IV/4.1.1.2; MSC.81(70) 1/5.1         Significant Test Data         Container details:         mally         Type of emergency pack         the         the Height of dropm         able         the Painter lengthm         e to         v do       Floating position:
The liferaft, in the operational packed condition, should be suspended and then dropped from a height of 18 m into the water. If it is to be stowed at a height greater than 18 m, it should be dropped from the height at which it is to be stowed. The free end of the painter should be attached to the point of suspension so that it pays out as the liferaft drops, thus simulating actual conditions. The liferaft should be left floating for 30 min.		<ul> <li>m, leakage from up to 5% of the receptacles may accepted provided that:</li> <li>.1 the equipment list for the liferaft specifies the carriage 5% excess water or means of desalination adequato produce an equivalent amount; or</li> <li>.2 the water receptacles are contained in a waterproverwrap.</li> <li>*If any additional equipment was placed in the liferaft for test, e.g. SART, state type and condition of the equipment</li> </ul>	be Condition: Container e of Liferaft *Equipment oof Comments/Observations this

Rigid liferafts	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:	
4.2.5 Jump tes	t	Re	egulations: LSA Code IV/4	4.1.1.3; MSC.81(70) 1/5.2	
7	Test Procedure	Acceptanc		Significant Test Data	
to the liferaft, with from a height above damaging the lifera not less than 82.5 bottom shoes with nails. The number equal to the total r liferaft is to be appr The jump test ma suitable and equiv	strated that a person can jump on and without the canopy erected, the floor of at least 4.5 m without ft. The test subject should weigh kg and should be wearing hard smooth soles and no protruding of jumps performed should be number of persons for which the roved. Any be simulated by dropping a ralent mass, arranged so as to with shoes as described in the		bric, or damage to seams	Number of jumps: m Height of jump: m Comments/Observations Passed: Failed:	
4.2.6 Weight te	est	Regulations: LSA Code IV/4.1.2.2; MSC.81(70) 1/5.3			
7	Test Procedure	Acceptanc	ce Criteria	Significant Test Data	
to determine wheth weight test should variation of the containers and eq used. If the mass combinations of co	eraft container should be weighed er its mass exceeds 185 kg. The be performed on the heaviest liferaft, considering different juipment packs, which may be exceeds 185 kg, the different ontainers and equipment packs to determine which will and which kg.			Emergency pack type: Measured liferaft weightkg Comments/Observations	
				Passed: Failed:	

Rigid liferafts			Su	rveyor	Time: r: ttion:			
4.2.7 Towing to				LSA C	Code IV/4.1.1.4; MSC.81(70) 1/5.4			
	Procedure	Acceptance Criter			Significant Test Data			
fully loaded and eq	uipped liferaft is capable	It should be shown that the satisfactorily towed at a speed of	up to 3 knots	s with	Speed during test	knots		
	ily towed at speeds of up water. Towing should be	the anchor streamed without sign	iificant dama	mage.	Raft towing connections:			
by a line attached connection. The s streamed while the	I to the liferaft's towing ea anchor should be e liferaft is towed. The wed for a distance of at				Distance covered:			
	strain of 2 knots and at 3 lso on the Type Approval				Total Load in raft:			
					Towing strain at 2 knots	kN		
					Towing strain at 3 knots	kN		
					Comments/Observations			
					Passed Failed			

Rigid liferafts	Model:	Survey	yor:	Time:
4.2.8 Mooring	out tests	Regulations: LSA	A Code IV/4.	1.1.1; MSC.81(70) 1/5.5
	Procedure	Acceptance Criteria		Significant Test Data
equal to the mass persons for which it equipment and mod or in a seawater ha remain afloat in that	s of the total number of t is to be approved and its ored in a location at sea rbour. The liferaft should location for 30 days. The sustain any damage that	The liferaft should not sustain any damage impair its performance.	that would	Location Mooring out period_days Condition of liferaft: Comments/Observations Passed: Failed:
4.2.9 Liferaft p	ainter system test	Regulations: LSA	1.6.1, 4.1.3.2/; MSC.81(70) 1/5.6	
	Procedure	Acceptance Criteria	Significant Test Data	
The painter syster should be tensile to	n including attachments ested.	Liferaft painter system and attachments shou breaking strain as follows: 7.5 kN for liferafts to carry up to 8 persons	uld have a	Breaking strain of painter system:
		10.0 kN for liferafts to carry 9 to 25 persons 15.0 kN for liferafts to carry 26 persons or more		Comments/Observations Passed: Failed:

			Date Sur	ite: Time: irveyor:
Rigid liferafts	Lot/Serial Number:		Org	ganization:
4.2.10 Loading	and seating test	Regulatio	ns: L	LSA Code IV/4.3.3; MSC.81(70) 1/5.7
	Procedure	Acceptance Criteria		Significant Test Data
condition, including	its full equipment but	All the seated persons should have suffic space and headroom and the various item	s of	
freeboard of the li	ould be recorded. The feraft should again be number of persons for	equipment can be used within the liferaft in condition. The freeboard, when loaded with mass of the number of persons for which	the	Freeboards: Light
which the liferaft is an average mass	to be approved, having of 82.5 kg, and each n suit and a lifejacket,	to be approved and its equipment, with liferaft on an even keel, should not be	the	12 O'CIOCK mm
have boarded and established that a	are seated. It should be all the seated persons			9 o'clock mm Loaded 12 o'clock mm
should be demons	te and headroom and it strated that the various t can be used within the			3 o'clock mm 6 o'clock mm
liferaft in this condit				9 o'clock mm Number of persons seated
				Equipment accessible/usable? YESNO
				Comments/Observations

	Madalı			Date:	/or:	Tir	ne:		
Rigid liferafts			_	Organi	ization:				
4.2.11 Boarding	test		Regulati	ons: LSA	A Code IV/4.3.4	4; MSC.81(70)	) 1/5.8		
	Procedure	Acceptance				<u> </u>	icant Test Data		
		The arrangements w				ulars of perso	ns:		
		satisfactory if three of th							
	who should be of	liferaft unaided and the f		with the		ge	Height	Weight	
		assistance of any of the otl	hers.		P1	Y	m		_kg
	the Administration.				P2 P3	Y Y	m		_kg
	should not be strong s test they should be				P3	ř	m		_kg _kg
	trousers or a boiler suit				F4	I			_ĸy
	r approved lifejackets				Boarded unai	ded persons			
	It. They must each swim				Dour dou dria	<u>uou_poioono</u>			
	reaching the liferaft for				Boarded aide	d	persons		
boarding.	0								
					Comments/O	bservations			
	rest period between the								
swim and the board	ling attempt.								
D									
	be attempted by each								
	with no assistance from persons already in the								
	should be of a depth								
	any external assistance								
when boarding the life									
					Passed:	Failed:			

Rigid liferafts	Model:		Surveyor:	Time: r: ation:	
4.2.12 Closing a	arrangement test	Regulati	ons: LSA Co	Code IV/4.1.1.5.3; MSC.81(70) 1/5.8	
The boarding test		Acceptance Criteria 3 out of 4 persons wearing immersio		Significant Test Data           I         Record particulars of persons:	
lifejackets. After the	n immersion suits and e boarding test a person d immersion suit should	lifejackets must board the liferaft unaided The entrance should be easily closed in		Age Height Weight	kg
demonstrate that easily and quickly	the entrance can be closed in 1 minute and	min. by a person wearing an approved suit.		n P2Ym P3Ym	kg kg
can be easily and quant and outside in 1 mi	uickly opened from inside nute.	The entrance should be easily opened fro less than 1 min. by a person wearing a immersion suit. The entrance should be easily opened fro less than 1 min. by a person wearing a immersion suit.	n approved moutside in	Boarded unaidedpersons Boarded aidedPersons	kg

Bigid liferofte Model:	Date:            Surveyor:            Organization:	Time:
4.2.13 Stability test	Regulations: LSA Code IV/4.	3.5; MSC.81(70) 1/5.9
Test Procedure	Acceptance Criteria	Significant Test Data
<ul> <li>.1 The number of persons for which the liferaft is to be approved should be accommodated on one side and then at one end and in each case the freeboard should be recorded. Under these conditions the freeboard should be such that there is no danger of the liferaft being swamped.</li> <li>.2 The stability of the liferaft during boarding may be ascertained as follows:</li> <li>Two persons each wearing approved lifejackets should board the empty liferaft. It should then be demonstrated that the two persons in the liferaft can readily assist from the water a third person who is required to feign unconsciousness. The third person must have his back towards the entrance so that he cannot assist the rescuers.</li> </ul>	Each freeboard measurement should be taken from the waterline to the top surface at its lowest point. It should be demonstrated that the water pockets adequately counteract the upsetting moment on the liferaft and there is no danger of the liferaft capsizing.	Freeboards with all persons on one side: 12 o'clockmm 3 o'clockmm 6 o'clockmm 9 o'clockmm

		Dat		Time:	· · · · · · · · · · · · · · · · · · ·
Rigid liferafts		Sur Org	anization:		
4.2.14 Manoeuv	rability test	Regulations: L	_SA Code	IV/4.1.5.1.6; MSC.81(70) 1/5.1	0
Test	Procedure	Acceptance Criteria		Significant T	est Data
		The liferaft should be capable of being propell			
			of at least	Approx. speed:k	nots
	nen fully laden in calm	25 m within a reasonable timescale.			
conditions over a c	listance of at least 25 m.			Comments/Observations	
				Passed: Failed:	
4.2.15 Swamp to	est	Regulations: L	SA Code	; MSC.81(70) 1/5.11	
	Procedure	Acceptance Criteria		Significant Test Data	
		The liferaft when fully swamped, should be capable of supporting its full equipment and the number of persons		Loaded liferaft swamped	
	I equipment and the			Freeboards:	
	s for which it is to be		P.C.	12 o'clock	mm
approved.		The liferaft should not seriously deform in this c	condition.	3 o'clock	mm
The liferaft should	not seriously deform in	During this test self-draining arrangements fitt	ad in tha	6 o'clock	mm
this condition.		floor of the liferaft are to be closed to prevent the		9 o'clock	mm
		of water	<b>g</b>	Martin I and Carton	
				Maximum depth of water meas mm	sured inside the liferaft:
				111111	
				Deformation	
				If self-bailing, time to self-bail:	min
				Comments/Observations	
				Passed	Failed

Rigid liferafts	Model:			Surveyor:	Time:
4.2.16 Canopy of			Regulatio		.1.1.5; MSC.81(70) 1/5.12
Test	Procedure	Accept	ance Criteria		Significant Test Data
To ensure the effe	ctiveness of the canopy	The accumulation of wate	r inside the	liferaft should not	Significant Test Data Capacity of water hosel/min
closures in preven liferaft, the effic entrances should means of a hose tes effective method. hose test is that ab minute be directed entrances through point 3.5 m away a	ting water entering the iency of the closed be demonstrated by st or by any other equally The requirement for the bout 2,300 I of water per ed at and around the a 63.5 mm hose from a nd 1.5 m above the level bes for a period of 5 min.	exceed 4 I.			Condition of canopy during test
					Comments/Observations Passed: Failed:

Rigid liferafts	Manufacturer: Model: Lot/Serial Number:		Surve	eyor: nization:	Time:
4.2.17 Detailed	inspection		Regulations: I	LSA Code; M	SC.81(70) 1/5.14
	Procedure	Acceptance	e Criteria		Significant Test Data
detailed inspection	Id be subjected to a to verify that it complies its of the LSA-code.	The liferaft should comply with Code in all respects including: interior not to cause dia at least one viewing por means for collection ra sufficient headroom 8 persons- at least two equipment to be stowe of floating at least 30 damage to content at least one boarding r means to assist a per- the liferaft container markings marking on raft	scomfort to occu ort inwater e entrances ed inside liferaft, l o minutes in wa amp	pants but capable ater without	<ul> <li>.1 Interior not to cause discomfort to occupants:</li> <li>.2 At least one viewing port:</li></ul>

Rigid liferafts	Manufacturer: Model: Lot/Serial Number:		Time:
4.2.18 Weak lin	k strength test	Regulations: LSA Code I	V/4.1.6.2; MSC.81(70) 1/5.15
	Procedure	Acceptance Criteria	Significant Test Data
The weak link should be tensile tested.		A weak link in the painter system should have a breaking str of $2.2 \pm 0.4$ kN It should be expected that the force required to pull the pair from the liferaft container will not break the weak link.	
		(Refer to HRU test form 4.3.1.11) if applicable, be of suffici strength to permit the inflation of the liferaft,	
¥	omponents strength test		//4.3.7;MSC.81(70) 1/5.16.1
	Procedure	Acceptance Criteria	Significant Test Data
and the attachment the lifting bridle sh	of the webbing or rope the to the liferaft used for hould be established by eparate pieces of each	The combined strength of the lifting bridle components sho be at least six times the mass of the liferaft when loaded w the number of persons for which it is to be approved and equipment.	/ith

Rigid liferafts	Manufacturer: Model: Lot/Serial Number:	Surv	e: /eyor: anization:	Time:
4.2.20 Impact te	st	Regulations: L	SA Code; MS	6C.81(70) 1/5.16.2
	est Procedure	Acceptance Criteria		Significant Test Data
the mass of the nun be approved and its a free hanging p laterally to a position strike a rigid vertic	nber of persons for which it is to s equipment. With the liferaft in position it should be pulled on so that when released it will al surface at a velocity of 3.5 puld then be released to impact	After this test the liferaft should show damage which would affect its efficient fu		Comments/Observations Passed: Failed:
	hould be lifted up 650 mm.			
4.2.21 Drop test		Regulations: LSA Code; MSC.81(70) 1/5.16.3		
	est Procedure	Acceptance Criteria		Significant Test Data
should be suspend height of 3 m abov	ed as prescribed in 4.2.20, ed from an on-load release at a ve the water, be released and ely into the water. The liferaft mined.	The liferaft should sustain no damage, affect its efficient functioning.	, which would	Comments/Observations Passed: Failed:

	Manufacturer:		Date:	Time:
Rigid liferafts	Model: Lot/Serial Number:		Surveyor:	
			Organization:	
	nched liferaft boarding test	Regulation	ns: LSA Code; MS	C.81(70) 1/5.16.4
	est Procedure	Acceptance Criteria		Significant Test Data
		There should be no undue distortion		Boarding time 1:
	cribed in 4.2.11, be subjected	boarding should be timed and the tim	e recorded.	
	t. The liferaft, hanging from a			Distortion test 1:
	e, or from a crane with a head			
	height and bowsed into the			De endire e tirre e O
	ulated ship's side, the liferaft			Boarding time2:
	by the number of persons for proved of average mass 82.5			Distortion test 2:
	be no undue distortion of the			Distortion test 2.
	g should then be released and			
	ing for 5 min. It should then be			Boarding time 3:
	or floor and unloaded. At least			
	uired in succession, with the			Distortion test 3:
	g appliance so positioned that			
its distance from th				
				Comments/Observations
.1 half the beam	n of the liferaft +150 mm;			
.2 half the beam	n of the liferaft; and			
.3 half the beam	n of the liferaft -150 mm.			
The bearding wh	ich is intended to simulate			
	ich is intended to simulate onditions, should be timed and			
the time recorded.				
				Passed: Failed:

	Manufacturer:			Date:	Time	9:	
Rigid liferafts	Model:			Surveyor:			
Rigiu merans	Lot/Serial Number:			Organization:			
4.2.23 Self-right	ting test (self-righting lif	erafts only)	Regulation	ns: LSA Code 4.3.5	.1: MSC.81(70) 1\	//5.18	
V	Procedure		ince Criteria			ignificant Test Data	
		After release the liferaft she upright position without as	ould automati		The liferaft retur	ned to upright posit	ion from the
		be positive and continuous.		5	+ 10°	- 10°	
release it. The lif	feraft should be fully	•			+ 20°	- 20°	
	o one on board, with				+ 30°	- 30°	
	enings in the as-packed				+ 40°	- 40°	
	liferaft should be				+ 50°	- 50°	
	ed to angles of hull up to				+ 60°	- 60°	
and including 180° a	and should be released.				+ 70°	- 70°	
					+ 80°	- 80°	
					+ 90°	- 90°	
					+ 100°	- 100°	
					+ 110°	- 110°	
					+ 120°	- 120°	
					+ 130°	- 130°	
					+ 140°	- 140°	
					+ 150°	- 150°	
					+ 160°	- 160°	
					+ 170°	- 170°	
					+ 180°	- 180°	
					Comments/Obser	rvations	
					Passed: Fa	ailed:	

Rigid liferafts	Model:			Date: Surveyor:	
Rigid merans	Lot/Serial Number:			Organization:	
4.2.24 Submerg	jence test (self-righting	liferafts only)	Regulatio	ns: MSC/Circ.809 A	nnex3; MSC.81(70) 1/5.19
	Procedure	Acceptan	ce Criteria		Significant Test Data
of at least 4 m. A released at this de liferaft, initiate infl to simulate automa The liferaft should come to its design ready to be boarde state of at least 2					Significant wave height: Method of determining Significant wave height: wind force: Beaufort depth submerged: m
beauton force o.					Comments/Observations Passed: Failed:

	Manufacturer:	· · · · · · · · · · · · · · · · · · ·	Date:		
Rigid liferafts	Model:		Surveyor:		
	Lot/Serial Number:		Organization:		
4.2.25 Wind vel	ocity test	Regul	ations: LSA Code; MS	C.81(70) 1/5.20	
Test	Procedure			0:	cant Test Data
liferafts require at le one liferaft from a r capacity provided t	should from a range of east: ange of 6 to 25 persons he material construction similar; and each liferaft	detachment of the arch support or	ult of this test. sts there should be no canopy from the upper		ons
greater than 25 per the case where it material and con deem this unneces	sons capacity, except in can be shown that the struction arrangements sary: to be tested under ind velocity given in the		ion aneols the enicient	Passed:	_ Failed:
condition with the e it will be open, but v	ferafts in the packed ntrance so arranged that without the container, in a m/s and should be left r 10 minutes.				_ Failed:
whenever practical should be swung o starboard, from that	e-mentioned conditions, ole, the liferaft or liferafts ver approximately 30° to position to approximately on to the starting position.			Continued/	

Rigid liferafts	Model:		Surveyor:	Time:
4.2.25 Wind velo	ocity test (continued)	Regulatio	ns: LSA Code; MS	C.81(70) 1/5.20
	Procedure	Acceptance Criteria		Significant Test Data
exposed to the velocity for 5 minute conditions:	above-mentioned wind s in each of the following	The liferaft or liferafts should show no affecting its efficient function because of t		Wind velocity measured: m/s Time in high winds: sec
the other clo than one entr .2 with the entra and the other	nce to the wind closed entrances open, if there			Comments/Observations
	one entrance; and			Passed: Failed:

	Manufacturer:				Time:
Rigid liferafts		·····		Surveyor:	·····
5	Lot/Serial Number:			Organization:	
4.2.26 Self drain	ing test (self-righting li	ferafts only)	Regulatio	ns: MSC.81(70) 1/5.	21
	Procedure		nce Criteria		Significant Test Data
Water should be pu	mped into the interior of	After the water has been sl	hut off and I	has drained, there	
the liferaft, while i	t is afloat, at a rate of	should be no appreciable acc	umulation of	water in the liferaft.	Period of delivery of water: min
2300 I per minute for	or 1 min.				Area of liferaft: m <sup>2</sup>
					Area of drainage point: m <sup>2</sup>
	ed into separate areas,				- · · · · · · · · · · · · · · · · · · ·
	means, each such area				Draining area sufficient to remove water:
should be subjected	d to the test.				YES/NO:
					Comments/Observations
					Comments/Observations
					Passed: Failed:
		1		ns: LSA Code 4.3.2	
		Acceptar	nce Criteria		0
					Comments/Observations
the tensile strength	test.				
					Passed <sup>.</sup> Failed <sup>.</sup>
Test I The buoyancy of th by inherently bu	y Buoyant Material Procedure e rigid liferaft should be loyant material tested sts in form 4.3.3 except test.	Acceptar	Regulation	ns: LSA Code 4.3.2	2.1; MSC.81(70) 1/6.2.2

### 4.3 COMPONENTS FOR SURVIVAL CRAFT

- 4.3.3 LIFEBOAT BUOYANT MATERIAL
- 4.3.1 HYDROSTATIC RELEASE UNITS

- 4.3.1.1 Submitted drawings, reports and documents
- 4.3.1.2 Quality assurance
- 4.3.1.3 Visual and dimensional examination
- 4.3.1.4 Corrosion resistance test
- 4.3.1.5 Temperature tests
- 4.3.1.6 Submergence and manual release test
- 4.3.1.7 Strength test
- 4.3.1.8 Technical tests on the membrane 1
- 4.3.1.9 Technical tests on the membrane 2
- 4.3.1.10 Solar radiation test
- 4.3.1.11 Performance test
- 4.3.1.12 Weak link test

### 4.3.1 HYDROSTATIC RELEASE UNITS

Manufacturer	
Type (serviceable/disposable)	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Hydrostatic release units Lot/Serial Numb		Manufacturer: _ Model: Lot/Serial Numb	per:	Date: Time: Surveyor: Organization:					
4.3.1.1 Submitted dra			cuments			1			
Submitted drawings and documents									
Drawing No.	Revis	sion No. & date	Title of drawing	Title of drawing					
Submitted reports and	docum	nents	·			Otation			
Report/Document No.	Revis	sion No. & date	Title of report/document			Status			
			Maintenance Manual -						
			Operations Manual -						

Hydrostatic release units	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization:	Time:		
4.3.1.2 Quality assurance						
Except where all appliances of a the International Convention amended or the International inspected, representatives of	Quality assurance Standard Used:					
	to ensure that the quality of life-saving comply with the specification of the approved					
Manufacturers should be requirent ensure that life-saving appliance prototype life-saving appliance						
records of any production te Administration's instructions.	sts carried out in accordance with the	Description of System:				
		Quality assurance System acceptable				
		Yes/No				
		Comments/Observations:				

Hydrostatic release units	Model:			Date:          Time:            Surveyor:          Organization:	
4.3.1.3 Visual and dimensio	nal examina	tion	<b>Regulations: LS</b>	A Code IV/4.	1.6.3; MSC.81(70) 1/11.1
Test Procedure		Acceptanc			Significant Test Data
Two samples of hydrostatic release units should be given a visual and dimensional examination. If the devices conform to the manufacturer's drawings and specifications, they should be accepted and assembled for further testing under the technical and performance tests as prescribed below. The examination should include proper markings, clear instructions (indelible), expiry date and confirmation that the materials are: .1 compatible; and			becifications. hould undergo all 5 4.3.1.4 to 4.3.1.1 I between the test	the following 10. No parts ts. The tests	Comments/Observations
.2 not galvanized or metallic coated. The lifespan should be determ					Lifespan: Passed: Failed:

Hydrostatic release units	Model:	rer:        Date:        Time:          Number:        Organization:			
4.3.1.4 Corrosion resistance	e test	Reg	ulations: LS	A Code IV/4.	1.6.3; MSC.81(70) 1/11.2.1
Test Procedure		Acceptance Cri			Significant Test Data
A hydrostatic release unit exposed to a salt water spra natrium chloride solution) at a	y test (5%				Salt water solution:
of 35±3°C for 160 h without (not stated)	interruption.	The Hydrostatic Release Unit should Temperature test of 4.3.1.5.	d be next sub	jected to the	Time exposed to spray: hrs
					Comments/Observations
					Passed: Failed:

Ну	drostatic release units	Model:	er: umber:	Surveyor:	Time: n:
4.	3.1.5 Temperature tests		Regulations: LS	A Code I/1.2	.2.2; MSC.81(70) 1/11.2.2
	Test Procedure		Acceptance Criteria		Significant Test Data
		e-cycling alternately beratures of ating cycles after each procedure,	temperatures and after the tests, the unit sho sign of damage such as shrinking cracki	ge -30°C to under high uld show no ng swelling	
		e completed im the warm y and left ary room	One HRU should be taken from a stowage of -30°C and should then operate in sea	awater at a emperature of e of +30°C.	Passed: Failed:
.3	an 8 h exposure at a temperature of -30°C to be the next day; and		the Submergence and manual release test of 4.3		
.4	the specimens removed fro chamber that same day exposed under ordina conditions at a temperatu ±3°C until the next day.	y and left ary room			

Hydrostatia release unite	Model: Su		Surveyor:	Time:	
4.3.1.6 Submergence and ma	nual release	e test	Regulations: LS	A Code IV/4.	1.6.3; MSC.81(70) 1/11.2.3
Test Procedure		Acceptance Criteria		Significant Test Data	
The hydrostatic release unit shou tested by applying a buoyant loa its designed capacity while the submerged in a water or in a pressure testing tank. It should re depth of not more than 4 m. On of these tests and reset hydrostatic release unit should b of being released manually if it is to allow manual release of the un	ad equal to e device is water-filled elease at a completion tting, the be capable s designed hit.	The unit should release the b more than 4 m. After being reset the unit s manually released if it is desig It should be opened for insp significant signs of corrosion o The Hydrostatic Release Unit to the Strength Test of 4.3.1.7	should be capab ined for manual rel pection and shou r degradation. should then next l	le of being lease. Ild show no	Comments/Observations Depth of release: Passed:Failed:

Model:		Surveyor:		Time: r: ation:
4.3.1.7 Strength test		Regulations: LS	A Code l	V/4.1.6.3; MSC.81(70) 1/11.2.4
Test Procedure		Acceptance Criteria		Significant Test Data
		There should be no change of mechanical properties.		Tensile test load: kN Tensile test time: minutes. Operated manually: yes/ no Comments/Observations
				Passed: Failed:
4.3.1.8 Technical tests on	the membra	ane - 1 Regulations: LS	A Code I	1.2.2; MSC.81(70) 1/11.2.5
Test Procedure		Acceptance Criteria		Significant Test Data
Resistance to cold:Number of specimens2 mTemperature-30°CExposure time30 mFlex testing:180° with bothoutside stretched.	iin	Resistance to cold: The membranes should show no visible cracking		Comments/Observations (Cold): Passed: Failed:
Resistance to heat:Number of specimens2 mTemperature+65Exposure time7 da		Resistance to heat: The membranes should show no visible cracking		Comments/Observations (Heat): Passed: Failed:

Model:		er: lumber:		Surveyor:	Time: :
4.3.1.9 Technical tests on th	ne membran	e - 2 Re	egulations: LS	A Code I/1.2.2	2; MSC.81(70) 1/11.6
Test Procedure		Acceptance C	Criteria		Significant Test Data
Test for surface resistance to	oil:	Test for surface resistance to oil:			Comments/Observations (oil)
<ul> <li>.1 Number of specimens: 2 r</li> <li>.2 Temperature: +18°C to +2</li> <li>.3 Type of oil: A mineral oil r</li> <li>following requirements: <ul> <li>.a Aniline point: 12</li> <li>Flashpoint: minimum</li> <li>.b Viscosity: 10</li> <li>99.0°C</li> </ul> </li> <li>.4 The following oils may ASTM Oil No.1, ASTM O</li> <li>ISO Oil No. 1</li> <li>.5 Testing Period: 3 h on each</li> </ul>	20°C meeting the 0°±5°C 240°C -25 cSt at 25 cSt at be used: il No.5, and	The material should show no dete	rioration.		Passed: Failed: Comments/Observations ( <b>seawater</b> ) Passed: Failed:
Resistance to natrium Chlorid	le:	Resistance to seawater:			
Two membranes should be immersed for 7 days in 5% natrium chloride solution at a test temperature of +18°C to +20°C.		The material should show no dete	rioration.		Comments/Observations ( <b>detergents</b> )
Resistance to detergents:		Resistance to detergents:		Types used: -	
Two membranes should be imn days in detergents commonl board ships at least temperatur to +20°C.	y used on	The membranes should not be affect The Hydrostatic Release Unit sho to the Solar radiation test of 4.3.1.	ould then next b	C C	Passed: Failed:

Hydrostatic release units	Manufacturer: Model: Lot/Serial Number:		Date: Time: Surveyor: Organization:	
4.3.1.10 Solar radiation test			SA Code I/1.2	.2; MSC.81(70) 1/11.2.6
Test Procedure		Acceptance Criteria		Significant Test Data
Solar radiation test:		Solar radiation test:		Comments/Observations (Solar radiation)
One unit should be subjected to a solar radiation test to paragraph 8.10 of standard IEC 60945:2002.				
Note: The solar radiation test may be waived where the manufacturer is able to produce evidence that the materials employed will satisfy the test, i.e. UV stabilized.				Passed: Failed:

	Manufacturer Model:	rer: Date: Surveyor		Time: r:	
Hydrostatic release units		mber:	Organization	]: 	
4.3.1.11 Performance test		Regulations:	LSA Code IV/4.	1.6.3; MSC.81(70) 1/11.3.1 & 11.3.2	
Test Procedure		Acceptance Criteria		Significant Test Data	
This test should be performed smallest and the largest liferafts hydrostatic release unit may be	with which the	In all tests the hydrostatic release unit sho liferaft at a depth of less than 4.0 m.	ould release the	Release in the following positions:	
occupant range between the largest liferaft exceeds 25 pers intermediate size liferaft sho	smallest and sons, then the ould also be			.2 Raft tilted 45° with the HRU at the lower side: Passed/Failed	
tested. The liferaft should horizontally on a rack or platform weight to submerge the hydrostatic release unit and pair	m of sufficient liferaft. The			.3 Raft tilted 100° with the HRU at the lower side: Passed/Failed	
installed as aboard a ship. The f should be carried out in a suit water. The platform should be	ollowing tests able depth of			.4 Raft tilted 45° with the HRU at the upper side: Passed/Failed	
the water as follows:				.5 Raft tilted 100° with the HRU at the upper side: Passed/Failed	
.1 Raft horizontal. .2 Raft tilted 45° with the lower side.	HRU at the			.6 Raft vertically: Passed/Failed	
.3 Raft tilted 100° with the lower side.	-			Comments/Observations	
.4 Raft tilted 45° with the upper side.	-				
.5 Raft tilted 100° with the upper side.	e HRU at the				
.6 Raft vertically.				Passed: Failed:	

4.3.1.12 Weak link test Regulations: L			.1.6.2; MSC.81(70) 1/5.15	
Mode	facturer:	rer: Date: Time: Surveyor:		
Test Procedure	Acceptance Criteria	- I	Significant Test Data	
	ed (if A weak link in the painter system should have a	orce required to	Measured breaking strain: Comments/Observations	

### 4.3.2 LIFEBOAT AND RESCUE BOAT INBOARD ENGINES

- 4.3.2.1 Submitted drawings, reports and documents
- 4.3.2.2 Quality assurance
- 4.3.2.3 Cold engine starting test
- 4.3.2.4 Engine-out-of-water test
- 4.3.2.5 Submerged engine test
- 4.3.2.6 Engine inversion test

### 4.3.2 LIFEBOAT AND RESCUE BOAT INBOARD ENGINES

Manufacturer	
Engine type	
Serial number	
Fuel type	
Design power output (kW)	
Propeller diameter and pitch	
Gear box type and No.	
Required battery capacity	
Starting aids	
Date	
Place	
Name and signature of surveyor	
Approval Organization	

inboard engines		Date: Time: _            Surveyor:           ber:         Organization:		Time:			
4.3.2.1 Submitted drawings, reports and documents							
Submitted drawings an	d docu	uments				01-1	
Drawing No.	Revis	sion No. & date	Title of drawing			Status	
Submitted reports and	docum	nents				Status	
Report/Document No.	Revis	sion No. & date	Title of report / document			Status	
			Maintenance Manual -				
			Operations Manual -				

Lifeboat and rescue boat	Manufacturer: Model:		Date:	Time:		
inboard engines	Model: Lot/Serial Number:	(				
4.3.2.2 Quality assurance		Regulations: MSC.81(70) 2/1.1 and 1.2				
III of the International Convent amended, or the International International Life-Saving Apprepresentatives of the Adminis manufacturers to ensure that materials used comply with the saving appliance. Manufacturers should be require ensure that life-saving appliant the prototype life-saving appliant	of a particular type are required by chapter tion for the Safety of Life at Sea, 1974, as al Life-Saving Appliance (LSA) Code, or the pliance (LSA) Code to be inspected, stration should make random inspection of the quality of life-saving appliances and the specification of the approved prototype life- red to institute a quality control procedure to aces are produced to the same standard as ance approved by the Administration and to n tests carried out in accordance with the	Standard Used: Quality assurance Procedure: Quality assurance Manual: Description of System:				
		Quality assurance Yes/No Comments/Observ	System acceptable			

feboat and rescue boat Model:		Sur\	Time:		
4.3.2.3 Cold engine starting	test	Regulations: LSA Co	ode 4.4.6.2	2; MSC.81(70) 1/6.10.2 - 6.10.4	
Test Procedure		Acceptance Criteria		Significant Test Data	
The engine may be removed f for this test, however, it shou with accessories and the trans be used in the lifeboat. The engine, along with its fu and starting power sources and starting aids should also be should be placed in a chamber of -15°C. The temperature of the fuel and cooling fluid (if any) shou at the beginning of this test ar higher than -15°C. Samples of each fluid at this terr be collected in a container for o The engine should be started th The first two times, the engine sh to operate long enough to der runs at operating speed. After the first two starts the er allowed to stand until all pa reached chamber temperature. After the third start, the engine sh to continue to run for a least 10 this period the transmission sho through its gear positions.	Id be equipped mission that will lel and coolant d any necessary e provided and at a temperature , lubricating oil ld be measured ad should not be operature should observation. The times. Thould be allowed monstrate that it ngine should be arts have again hould be allowed o min and during	independent rechargeable energy sources. The engine starting systems and starting aids shou the engine at an ambient temperature of -15°C v min of commencing the start procedure unless opinion of the Administration having regard particular voyages in which the ship carrying the life constantly engaged, a different temperat	with two puld start I within 2 s, in the to the ifeboat is ture is I I	Starting aids used:	

Lifeboat and rescue boat inboard engines	Model:	urer:          Date:          Time:            Number:          Organization:			
4.3.2.4 Engine-out-of-water	test	Regulations: LSA C	Code 4.4.6	.3; MSC.81(70) 1/6.10.5	
Test Procedure		Acceptance Criteria		Significant Test Data	
The engine should be operated for at least 5 min at idling speed under conditions simulating normal storage.					
4.3.2.5 Submerged engine to	est	Regulations: LSA Code 4.4.6.4; MSC.81(70) 1/6.10.6			
Test Procedure		Acceptance Criteria			
The engine should be operated for at least 5 min while submerged in water to the level of the centreline of the crankshaft with		The engine should be capable of operating w lifeboat is flooded up to the centreline of the cranks		Engine flooded up to centreline of crankshaft? Yes / No	
the engine in a horizontal positi	ion.	The engine should not be damaged as a result of this test. Duration:m		Duration:min	
				Any damage after this test? Passed/Failed	
				Condition of engine oil? Passed/Failed	
				Comments/Observations	

4.3.2.6 Engine inversion test	Regulations: LSA Code 4.6.4	.2; MSC.81(70) 1/6.14.6 - 6.14.8
Test Procedure	Acceptance Criteria	Significant Test Data
The engine and its fuel tank should be mounted on a frame that is arranged to rotate about an axis equivalent to the longitudinal axis of the boat. A pan should be located under the engine to collect any oil which may leak from the engine so that the quantity of such oil can be measured.	The engine and engine installation should be capable of running in any position during capsize and continue to run after the lifeboat returns to the upright or should automatically stop on capsizing and be easily restarted after the lifeboat returns to the upright. The design of the fuel and lubricating systems should prevent the loss of fuel and the loss of more than 250 ml of lubricating oil from the engine during capsize.	Passed: Failed:
	During these tests, the engine should not overheat, fail to operate or leak more than 250 ml of oil during any one inversion. When examined after being dismantled the engine should show no evidence of overheating or excessive wear. Note: These tests are only applicable for self-righting totally enclosed lifeboats and fast rescue boats.	

Time:	
C.81(70) 1/6.14.6 - 6.14.8	
Significant Test Data	
I the tests carried out according to the lure as prescribed? Passed/Failed the engine stop when turned in either on? Passed/Failed ps, does it easily restart? Passed/Failed the engine fulfil the requirements after the have been carried out according to the lure? Passed/Failed nt of oil lost from engine during each inversion: ml ml ml ml ml ml ml ml ml ml	

- 4.3.3.1 Submitted drawings, reports and documents
  - 4.3.3.1.1 Quality assurance
- 4.3.3.2 Measure dimensions
- 4.3.3.3 Temperature cycling test
- 4.3.3.4 Examination of internal structure
- 4.3.3.5 Temperature cycling and water absorption test
- 4.3.3.6 Temperature cycling, high octane petroleum spirit and water absorption test
- 4.3.3.7 Tests for water absorption
- 4.3.3.8 Crude oil test
- 4.3.3.9 Marine fuel oil test (Grade C)
- 4.3.3.10 Diesel oil test (Grade A)
- 4.3.3.11 High octane petroleum spirit test
- 4.3.3.12 Kerosene test

#### 4.3.3 LIFEBOAT BUOYANT MATERIAL

Manufacturer	
Type/Model	
Date of Approval	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Lifeboat buoyant material		Lot/Serial Nu	r: Date: Time: _ Surveyor: Organization:			
4.3.3.1 Submitted drawings, reports and documents Submitted drawings and documents						
Drawing No.	Revisio	on No. & date	Title of drawing			
Submitted reports and	l docum	ents			Status	
Report/Document No.	Revisi	on No. & date	Title of report/document			
			Maintenance Manual -			
			Operations Manual -			

Lifeboat buoyant material	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization:	
4.3.3.1.1 Quality assurance		Regulations: MS	SC.81(70)2/1.1,1.2	
Except where all appliances of a the International Convention for or the International Life-Savin representatives of the Administr manufacturers to ensure that materials used comply with the saving appliance. Manufacturers should be requir ensure that life-saving appliance prototype life-saving appliance	particular type are required by chapter III of the Safety of Life at Sea, 1974, as amended, g Appliance (LSA) Code to be inspected, ation should make random inspections of the quality of life-saving appliances and specification of the approved prototype life- ed to institute a quality control procedure to es are produced to the same standard as the approved by the Administration and to keep sts carried out in accordance with the	Quality assurance Standard Used: _ Quality assurance Quality assurance Description of Sys	e Procedure: e Manual: stem:	
		Quality assurance	e System acceptable?	
		Yes/No		
		Comments/Obse	rvations:	

Lifeboat buoyant material	Lot/S	erial Nu	ımber:						Su	ate: Time: urveyor: Organization:
TEST ITEMS	REFE	RENCE	S							REMARKS
CONDITIONING SEQUENCE	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	3 MSC 70/23/Add.1
Measure dimensions (4.3.3.2)	А	A	A	A	A	A	A	А	A	
Temperature cycling test (4.3.3.3)		В	В							
Measure dimensions at end of temperature cycling test. (4.3.3.3)	С	С	С							
Examination of internal structure (4.3.3.4)	D									
Measure initial buoyancy		D	D	D	D	D	D	D	D	
High octane petroleum spirit (4.3.3.6) & (4.3.3.11)			E					E		
Crude oil (4.3.3.8)					E					
Marine fuel oil (Grade C) (4.3.3.9)						E				
Diesel oil (Grade A) (4.3.3.10)							E			
Kerosene (4.3.3.12)									Е	
Measure dimensions			F		F	F	F	F	F	
Fresh water absorption test $(4.3.3.5)$ & $(4.5.2.7)$		G	G	G	G	G	G	G	G	
Measure dimensions		Н	Н	Н	Н	Н	Н	Н	Н	
Measure final buoyancy		I	I	I	1	1	1	1	1	

Model:		Surveyor:	Time:
S	Re	gulations: LSA Code 1.2; MSC.81(70)	1/6.2 and 2.6
	Acceptance Criteria	Signi	ficant Test Data
east 300 mm		1XX         2XX         3XX         4XX         5XX         6XX         7XX         8XX         9XX         10XX         Passed:Failed:	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
	Model:	Model:	Model:         Surveyor:         Organization:           s         Regulations: LSA Code 1.2; MSC.81(70)           Acceptance Criteria         Signi           east 300 mm         1         X           thickness as         2         X           3         X         X           4         X         X           5         X         X           6         X         X           7         X         X           8         X         X           9         X         X

Lifeboot buoyant material	odel:		Surveyor:	Time:		
4.3.3.3 Temperature cycling test	t	Regulations:	LSA Code 1.2; M	SC.81(70) 1 /1.2.1, 6.2.2	and 2.6.1	
Test Procedure		Acceptance Criter	а	Significa	nt Test Data	
Six specimens should be subjected surrounding temperatures of -30°C and the surrounding temperatures of surroundin	and +65°C. These	at the end of the ten-cycle period	I. The specimens			ns after test
<ul> <li>alternating cycles need not follow each other and the following procesten cycles is acceptable:</li> <li>.1 An 8 h exposure at a minimum +65°C to be completed in one date.</li> <li>.2 the specimens removed from the that same day and left exposed room conditions at a temperate until the next day;</li> <li>.3 an 8 h exposure at a maximum -30°C to be completed the next day.</li> <li>.4 the specimens removed from the that same day and left exposed from the that same day and left exposed from the specimens removed from the that same day and left exposed from the that same day.</li> </ul>	edure, repeated for im temperature of lay; and he warm chamber ed under ordinary ture of 20°C ±3°C im temperature of day; and the cold chamber ed under ordinary	should be carefully examined and any sign of external change of mechanical qualities.	should not show structure or of	1       X       X         2       X       X         3       X       X         4       X       X         5       X       X         6       X       X         Passed:       Failed:         Comments/Observation	xx xx xx xx xx	
4.3.3.4 Examination of internal s	structure			SC.81(70) 1/2.6.1 and 2		
Test Procedure		Acceptance Criter		9	nt Test Data	
Following the temperature cycling specimens should be cut open and e		Neither of the two specimens cut of any sign of internal change of stru	•	Specimen No. (Passed/Failed)	1 Internal	condition
				Specimen No. 2 (Passed/Failed)	2 Internal	condition
				Comments/Observation	าร	

Lifeboat buoyant material	Model:	er:		Surve Orga	eyor: nization:	
4.3.3.5 Temperature cycling					le 1.2; MSC.81(70) 1/2.6.7	
Test Procedure The test should be carried of		Acceptance C	Criteria		Signific	cant Test Data
The test should be carried of specimens which have been so the temperature cycling test. The test should be carried out in and the specimens should be in a period of seven days under a 1 of water.	ubjected to fresh water nmersed for	The reduction of buoyancy s The specimens should show n as shrinking, cracking swelling, of mechanical qualities.	hould not exceed o signs of damage dissolution or cha	5%. such ange	Dimensions before test 3XX 4XX % change in dimensions 3% 4%	Dimensions after test
The results should state the buin N which each specimen con- out of the water after 1 ar immersion (the selection of a t suitable for obtaining this result indirectly is left to the discre- testing authority).	uld support nd 7 days est method directly or				Buoyancy after 1 day 3 4 % change in buoyancy 3% Comments/Observations Passed: Failed:	4%

Lifebeet buovent meterial	Model:	er: lumber:		Date: Surveyor: Organization:	
4.3.3.6 Temperature cycling, h absorption test	high octane	e petroleum spirit and water	Regulations: LSA	A Code 1.2; MSC.81(70) 1/2.	6.1, 2.6.6.3, 6.2.2 & 6.2.5
Test Procedure		Acceptance Cri	teria	Signif	ficant Test Data
The test should be carried ou specimens which have been su the temperature cycling test fo being immersed horizontally for a 24 h under 100 mm head of hig petroleum spirit at norma temperature. After completing the above the to be carried out in fresh water specimens should be immers period of seven days under a 1.2 of water. The dimensions s recorded at the beginning and en tests. The results should state the buc in N which each specimen coul out of the water after 1 and immersion (the selection of a te suitable for obtaining this result indirectly is left to the discre testing authority).	bjected to blowed by a period of h-octane al room est should and the sed for a 25 m head should be ad of these by ant force ld support d 7 days est method directly or	The reduction of buoyancy sho The specimens should show	uld not exceed 16% no sign of damag relling, dissolution c	bimensions         before test           5         X         X           e         6         X         X	Dimensions after test        XX        XX        %         6        %         6        %

Lifeboat huovant material Model: Surveyor:	Time:
Lot/Serial Number:       Organization:         4.3.3.7       Tests for water absorption    Regulations: LSA Code 1.2; MSC.81(70) 1/2	2.6.5, 2.6.6, 6.2.2 & 6.2.8         ficant Test Data         Dimensions after test         X       X         X       X         8       %         Buoyancy after 7 days         8       %         8       %

Lifeboat buoyant material	Model:	er: lumber:		Date: Surveyor: Organization:				
4.3.3.8 Crude oil test			Regulations: LSA	Code 1.2; MSC	.81(70) 1/6.2.	2, 6.2.3.	1, 6.2.7 & 2	2.6.7
Test Procedure		Acceptance Cri				cant Tes		
Two specimens of the materia immersed in crude oil for a p days under a 100 mm head. The should be tested as supplie manufacturer and at non temperature (approximately 18° After completing the above imm two specimens should be imm period of seven days under a 1 of water. The results should state the bu in N which each specimen co out of the water after 1 al immersion (the selection of a t suitable for obtaining this result indirectly is left to the discr testing authority).	eriod of 14 especimens ed by the mal room C). nersion, the ersed for a .25 m head uoyant force uld support nd 7 days test method t directly or	The reduction of buoyancy mus The two specimens should sho such as shrinking, cracking, sw	t not exceed 5%. w no sign of dama velling, dissolution	ge or 9X 10X_ % change in 9 Buoyancy aft 9 10 % change in 9 Comments/C	before test XX dimensions er 1 day  buoyancy %	Dime % 10	nsions after X X 10	

Lifeboat buoyant material	Model:	er:		Date: Surveyor: Organization:		 
4.3.3.9 Marine fuel oil test (G	Grade C)*	Regulations:	: LS	A Code 1.2; MSC.81(7	0) 1/6.2.2	2, 6.2.3.2, 6.2.7 & 2.6.7
Test Procedure		Acceptance Criteria				Test Data
Two specimens of the material should be immersed in marine fuel oil (grade C) for a period of 14 days under a 100 mm head. The specimens should be tested as supplied by the manufacturer and at normal room		The specimen should show no sign of	11 12	nensions before test X X X X Change in dimensions		Dimensions after test XX XX
temperature (approximately 18°C). After completing the above immersion, the two specimens should be immersed for a period of seven days under a 1.25 m head of water.		mechanical qualities.	11	oyancy after 1 day	%	12% Buoyancy after 7 days
The results should state the buoyant force in N which each specimen could support out of the water after 1 and 7 days immersion (the selection of a test method suitable for obtaining this result directly or indirectly is left to the discretion of the testing authority).			11	change in buoyancy % mments/Observations	12	%
* Refer to ISO standards ISO 82 8217– Petroleum products.	216 and ISO		Pa	ssed: Failed:		

Lifeboat buoyant material	Model:	rer:	Surveyor:	Time:
4.3.3.10 Diesel oil test (Grade	A)*		SA Code 1.2; MSC.81(70)	) 1/6.2.2, 6.2.3.3, 6.2.7 & 2.6.7
Test Procedure		Acceptance Criteria		gnificant Test Data
Two specimens of the materia immersed in diesel oil (grade A) of 14 days under a 100 mm specimens should be tested as the manufacturer and at no temperature (approximately 18° After completing the above imm two specimens should be imm period of seven days under a 1 of water.	for a period head. The supplied by ormal room C) nersion, the ersed for a	The specimen should show no sign of damage such as shrinking, cracking, swelling,	13 <u>XX</u> 14 <u>X</u>	XX XX % 14%
The results should state the buin N which each specimen co out of the water after 1 arimmersion (the selection of a t suitable for obtaining this result indirectly is left to the discritesting authority). * Refer to ISO standards ISO 82 8217– Petroleum products.	uld support nd 7 days est method directly or etion of the		% change in buoyancy 13% Comments/Observations Passed: Failed: _	

Lifeboat buoyant material	Model:	er:	Su	ate: urveyor: rganization:			·
4.3.3.11 High octane petroleu	n spirit test	Regula	tions: LSA C	Code 1.2; MSC.81(70) 1/6.2.	2, 6.2.3.4	, 6.2.7 & 2.6	6.7
Test Procedure		Acceptance Criteria			cant Test		
immersed in high octane petro	leum spirit a 100 mm e tested as er and at	The reduction of buoyancy must not ex The specimen should show no sigr such as shrinking, cracking, swelling, change of mechanical qualities.	n of damage				test _X _X%
After completing the above imm two specimens should be imme period of seven days under a 1 of water. The results should state the bu in N which each specimen cou out of the water after 1 ar immersion (the selection of a te suitable for obtaining this result indirectly is left to the discre- testing authority).	ersed for a 25 m head oyant force ald support ad 7 days est method directly or			Buoyancy after 1 day 15 16 % change in buoyancy 15 Comments/Observations Passed: Failed:			after 7 days

Lifeboat buoyant material	Model:		Date: Surveyor: Organization:		
4.3.3.12 Kerosene test			Code 1.2; MSC.81(70) 1/6		
Test Procedure		Acceptance Criteria		ificant Test	
Two specimens of the materia immersed in kerosene for a p days under a 100 mm head. The should be tested as supplie manufacturer and at not temperature (approximately 18°	eriod of 14 specimens ed by the mal room	Specimen should show no sign of damage such as shrinking, cracking, swelling, dissolution or change			sions after test XX XX 18%
After completing the above imm two specimens should be imm period of 7 days under a 1.25 water.	ersed for a		Buoyancy after 1 day 17 18		Buoyancy after 7 days
The results should state the buin N which each specimen co out of the water after 1 and immersion (the selection of a t suitable for obtaining this result indirectly is left to the discr testing authority).	uld support nd 7 days sest method directly or		% change in buoyancy 17% Comments/Observations	18	%
			Passed: Failed:		

### 4.3.4 INFLATABLE LIFERAFT MATERIALS

- 4.3.4.0 Submitted drawings, reports and documents
- 4.3.4.1 Quality assurance
- 4.3.4.2 Fabric marking and selection
- 4.3.4.3 Tensile strength
- 4.3.4.4 Tear strength
- 4.3.4.5 Surface receptiveness and adhesion of surface coating
- 4.3.4.6 Effects of ageing
- 4.3.4.7 Low temperature flexing
- 4.3.4.8 Flex cracking
- 4.3.4.9 Porosity
- 4.3.4.10 Oil resistance
- 4.3.4.11 Weft distortion
- 4.3.4.12 Resistance to blocking
- 4.3.4.13 Hydrolysis resistance for thermoplastic coated materials only
- 4.3.4.14 Ozone resistance
- 4.3.4.15 Tensile strength (Fabrics used for outer canopies)
- 4.3.4.16 Tear strength (Fabrics used for outer canopies)
- 4.3.4.17 Low temperature flexing (Fabrics used for outer canopies)
- 4.3.4.18 Waterproofness (Fabrics used for outer/inner canopies)
- 4.3.4.19 Surface receptiveness and adhesion of surface coating (Fabrics used for outer canopies)
- 4.3.4.20 Colour (Fabrics used for outer canopies)
- 4.3.4.21 Effect of ageing (Fabrics used for outer canopies)
- 4.3.4.22 Tensile strength (Fabrics used for inner canopies)
- 4.3.4.23 Porosity (Fabrics used for inner canopies)

#### 4.3.4 INFLATABLE LIFERAFT MATERIALS

Manufacturer	
Туре	
Date of Approval	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Inflatable liferaft materials			Date: Time: Surveyor: Organization:	
	Lot/Serial Numb	er:	Organization:	
4.3.4.0 Submitted draw	vings, reports and docu	iments		
Submitted drawings and	documents			
Drawing No.	Revision No. & date	Title of drawing		Status
Submitted reports and d	ocuments			Status
Report/Document No.	Revision No. & date	Title of report/document		Status

Inflatable liferaft materials	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:			
4.3.4.1 Quality assurance		Regulations: MSC.81(70)2/1.1,1.2					
Except where all appliances of a particular type are required by chapter III of the International Convention for the Safety of Life at Sea, 1974, or the International Life-Saving Appliance (LSA) Code, as amended, to be inspected, representatives of the Administration should make random inspections of manufacturers to ensure that the quality of life-saving appliances and materials used comply with the specification of the approved prototype life-saving appliance.		Quality assurance     Standard Used:					
Manufacturers should be require ensure that life-saving appliance prototype life-saving appliance a records of any production test Administration's instructions.							
		Comments/Obse					

Inflatable li	Inflatable liferaft materials Manufacturer: Model: Lot/Serial Number:			Surveyor: _	n:
4.3.4.2 Fa	abric Marking & Sele	ction	Regulations: LS	A Code IV/4.	2; MSC.81(70) 1/5.17.13.1
	Test Procedure		Acceptance Criteria		Significant Test Data
The fabric should be marked traceability of the fabric ma number.		d be marked in such a manner ne fabric manufacturer and proc		Marking Schedule: Comments/Observations	
1010 T				A Q a al a 13//4	Passed: Failed:
4.3.4.3 Te	ensile Strength			A Code IV/4.	2; MSC.81(70) 1/5.17.13.2.2.1
Test ProcedureAcceptaTensile Strength ISO 1421:1998When tested by the method tensile strength should be a for warp and weft. Maximum be 30% over a 200 mm gau be expressed as a percent between the jaws. Where provided to form an inflatable specified. The inner/outer		Acceptance Criteria the method described in ISO 14 should be a minimum of 2255 N/5 t. Maximum elongation, for the a 200 mm gauge length, the elongs s a percentage of the initial ws. Where two layers of floor an inflatable floor, the main floor s inner/outer layer may have of 1470 N/50 mm widths in wa	50 mm width bove should ation should test length r fabric are should be as a minimum	Weft tensile strength N/50mm Warp elongation % Weft elongation % The floor inner/outer layer tensile strength: Warp N/50mm	

1	Manufacturer:	Date:	Time:			
	Model: Lot/Serial Number:	Surveyor: _				
	Lot/Serial Number:	Organization:				
4.3.4.4 Tear Strength	Regulations: LS	A Code IV/4.:	2; MSC.81(70) 1/5.17.13.2.2.2			
Test Procedure	Acceptance Criteria		Significant Test Data			
Tear Strength ISO 1421:1998	When tested with the apparatus described in ISO 142	1:1998, the	Tear strength			
	tear strength should be:		WarpN			
			vveftN			
	Minimum warp and weft 1030 N.		(record for samples 1,2, 3 and average)			
	Where two layers of the floor fabric are provided to form	an inflatable				
	floor, the main floor should be as specified. The inner/out		The floor inner/outer layer tear strength			
	have a minimum tear strength of 735 N in warp and weft di		WarpN			
			WeftN			
	The preparation of the test specimens should be as follows	5:	(record for samples 1, 2, 3 and average)			
	directions, 76 mm ±1 mm wide and 400 mm long, wit closely parallel to the warp and weft yarns. Space th across the full length and width of the sample. Make	e test sample cut 3 specimens each in warp and weft ns, 76 mm ±1 mm wide and 400 mm long, with the length parallel to the warp and weft yarns. Space the selection the full length and width of the sample. Make a 12.5 mm pass the middle of each specimen at right angles to the				
	.2 grip the specimen under test securely and evenly which should be 200 mm apart, so that the specim closely in the direction of the pull.					
	Operate the machine in accordance with ISO 1421 maximum load sustained is recorded as the wound tear s the average for the 3 specimens is calculated.		Passed: Failed:			

Inflatable liferoft materials Model:		: Surve		Surveyor:	Time:
4.3.4.5 Surface Receptivene	ss and Adhesic			Code IV/4.2	2; MSC.81(70) 1/5.17.13.2.2.3
Test Procedure		Acceptance			Significant Test Data
Surface Receptiveness and Adhesion of Surface Coating ISO 2411:2000		/hen tested by the method d urface Receptiveness on e nan 75 N/50 mm width. or dry Surface Coating Adhes	either face should n	not be less	
	.3 F	equired. or wet Surface Coating Adh elow a minimum of 50 N/50 n	nm is required.		
	b	.4 Each coated face should be tested. The specimens should be made up as in ISO 2411:2000 bonding like-coated face to like-coated face.			
	b fa	he bonding used and the e agreed between the liferaf abric manufacturer, and sho uring the manufacture of the	t manufacturer and t uld be the same as t	the finished	Comments/Observations
	.6 O w	n each test specimen the bo eld and the coating sho etermine the surface recepti	onding between the a uld be initially me		
	.7 T m	he adhesion of the coating neasured by cutting through ne required mode of separat	g to the base text n one coating layer		
	.8 A te 3' ei fr	fter testing in .4 above for a extile the specimen should b % aqueous solution of sodiu	dhesion of coating t be immersed for 24 m chloride at 20°C ± e specimen should b	hours in a 2°C. At the be removed	Passed: Failed:

	Manufacturer:	Date:	Time:	
Inflatable liferaft materials		lodel:   Surveyor:		
	Lot/Serial Number:	Serial Number: Organization		
4.3.4.6 Effects of Ageing	Regulation	2; MSC.81(70) 1/5.17.13.2.2.4		
Test Procedure	Acceptance Criteria		Significant Test Data	
Effects of Ageing ISO 4892-4:20	<ul> <li>1 Folding Test – when tested as prescribed bel be no cracks, separation of plies or brittleness samples are inspected under a magnification of .2 Tensile Test – when tested as prescribed be strength after ageing should be not less th original tensile strength before ageing.</li> <li>3 Ultra-Violet Resistance – (option 1) this performed in accordance with the methods strength and the strength and the strength and the strength at the strength at the methods strength at the methods strength at the methods strength at the strength before ageing.</li> </ul>	Folding test: Were there cracks, separation of plies or brittleness visible YES/ NO Tensile test: Tensile strength after ageing %.		
	<ul> <li>4892-4:2004 - Open-flame carbon- arc lamps, a</li> <li>.a Expose the conditioned samples to an enclude lamp without "Corex D" filters for 100 h. The</li> </ul>	osed carbon arc e carbons should	Dimensional stability Air % Over water %	
	be Copper Clad Sunshine Arc Type, No. 22 f and No. 13 for the lower pair, or equivalent. C outside surface of the fabric is to be exposed testing apparatus. The specimens should water spray, with the apparatus operate specimens are exposed to successive cycle light without spray and 18 min of light with s panel temperature should be 80°C ±5°C. Th	Only the intended I to the arc in the be exposed to ed so that the es of 102 min of spray. The black	Comments/Observations	
	<ul> <li>time should be 100 h.</li> <li>b Test the tensile strength of the material following the procedure in 4.3.4.3. The tensile be not less than 90% of the original tensile ageing.</li> <li>c The exposed material should be bent, more side out, around a 3.2 mm mandrel and exan cracking. There should be no cracking.</li> </ul>	after exposure e strength should strength before e heavily coated	% change: - Passed: Failed:	

Inflatable liferaft materials	Manufacturer:	Date:	Time:
	Model:	Surveyor:	
Inflatable liferaft materials	Lot/Serial Number:	Organization:	

4.3.4.6 Effects of Ageing (con	tinued)	Regu	lations:	LSA Code IV	/4.2; MS	SC.81(70) 1/5.17.13.2.2.4
Test Procedure	Acceptance Criteria				Significant Test Data	
		.3 Ultra-Violet Resistance – (option 2) Alternatively, this test may be Ir performed in accordance with the methods specified in ISO 4892-				Inspect for:
	2:2006 with ame	endment 1:2009 – 2 Id be exposed unde	Xenon A	rc type testir	ng. The	Stickiness/cracks? YES/NO
	using a controlled a total exposure	d irradiance water-co time of 150 h.	ooled Xer	non Arc appar	atus for	Separation of piles? YES/NO
	Exposure conditions	Dark cycle (1 hour)	Light	cycle (2 hours	)	Brittleness? YES/NO
	Automatic irradiance (Filter Q/B)	Nil	0.55 V	V/m² -nm at 34	40 nm	Sample: 1 2 Average
	Black panel temperature	38°C ±2°C	70°C	± 2°C		Dry aged specimen
	Dry bulb temperature	38°C ± 2°C	47°C	± 2°C		Wet aged specimen
	Relative humidity	95 ± 5%	50 ± 5	%		
	Conditioning water	40°C ± 4°C	45°C	± 4°C		
	Water spray	60 min on front and back of	40 min	20 min	60 min	Tensile strength after exposure %
		specimen Nil Front of Nil specime n only			Were there cracks in material? YES/NO	
	Only the intended outside surface of the fabric should be exposed to the arc. The tensile strength of the material should be tested after exposure following the procedure in 4.3.4.3. The tensile strength should be not					
	less than 90% of the original strength before ageing. The exposed material should be bent, with heavily coated side out, around a 3.2 mm mandrel					
	and each coated face e cracking during this exa		r crackinę	g. There shoul	d be no	

	Manufacturer:	Date:	Time:	
Inflatable liferaft materials		Surveyor:		
	Lot/Serial Number:			
A 2 A C Effecte of Arcing (or		LCA Code W/A Dr. M		
4.3.4.6 Effects of Ageing (co Test Procedure	SC.81(70) 1/5.17.13.2.2.4 Significant Test Data			
	Acceptance Criteria The performance requirements specified in this subpara	aranh ralata ta tha	Significant Test Data	
	behaviour of individual specimens under particular condit spectrum of light from the Carbon Arc differs from tha	ions of test. As the	% change:	
	caution should be exercised in interpreting the test result		Inspect for:	
	.4 Three separate specimens should be tested as . .a Dimensional Stability	follows:	Stickiness/cracks? YES/NO	
	.b Folding and .c Tensile Strength		Separation of piles? YES/NO	
	5		Brittleness? YES/NO	
		3.4.6.4.1 and 4.3.4.6.4.2 cut from the test sample 4 specimens at least		
	100 mm square with the sides closely parallel to the war Measure the dimensions of two specimens accura		Sample: 1 2 Average	
	For 4.3.4.6.4.3 cut two sets of specimens as in 4.3.4.3.			
			Dry aged specimen	
	.5 When tested as below the difference in dimension before and after ageing should not differ by more the statement of the st		Wet aged specimen	
	.6 Ageing of specimens test procedure:	jeing of specimens test procedure:		
	.a Freely suspend one specimen each for 4.3.4.6.4.2, and one set of specimens for 4.3. days at 70°C ± 2°C. Suspend the other specimen loosely closed vessel for 7 days at 70°C ±2°C.	.4.6.4.3 in air for 7		
	.b Remove the two measured specimens from the 15 min at room temperature measure the dime the percentage changes in warp and weft direct	ensions and report	Passed: Failed:	

	Manufacturer:	Date:	Time:			
Inflatable liferaft materials	Model:	Surveyor:				
	Lot/Serial Number:	Organization:				
4.3.4.6 Effects of Ageing (c	ontinued)	ulations: LSA Code IV/4.2; M	Code IV/4.2; MSC.81(70) 1/5.17.13.2.2.4			
Test Procedure	Acceptance Criteri	a	Significant Test Data			
	<ul> <li>.c Remove the other two specimens. After 15 min at room temperature fold the specimens consecutively in two directions parallel to the edges at right angles to each other so as to reduce the exposed area of each specimen to one quarter of its original size. Unfold and refold along the same creases but with each fold reversed in direction. After each folding, press the fold by rubbing fingers and thumb along it: inspect the specimens for cracks, separation of plies, stickiness or brittleness.</li> <li>.d For the Tensile Strength Test remove the two sets of specimens from the ageing oven. Dry the wet aged specimens for 1 h in air at 70°C ±2°C, and then condition both sets for 24 h. Test in accordance with paragraph 4.3.4.3.</li> </ul>					
4.3.4.7 Low Temperature FI		ulations: LSA Code IV/4.2; M	SC.81(70) 1/5.17.13.2.2.5			
Test Procedure	Acceptance Criteria		Significant Test Data			
Low Temperature Flexing ISO 4675:1990	<ul> <li>.1 When tested at a temperature not hig method prescribed below, there should be sample when inspected under a magnification be independently applied to each face of .2 The apparatus, preparation of test specirishould be as described in ISO 4675:1990,</li> <li>.a when tested at the specified low temperation show cracks; and</li> <li>.b there should be 6 test specimens, 3 cut parallel to the warp and 3 cut with the to the weft direction.</li> </ul>	no visible cracking of the of xi tion of 2. The test should Spe f the coated fabric. Pas nens and test procedure Pas except that: Pas ature no specimen should Pas Cor with the long side closely Pas	ecimen No. s Fail: s Fail: s Fail: s Fail: s Fail: s Fail: mments/Observations			

Inflatable liferaft materials	Manufacturer: Model: Lot/Serial Number:		n:		
4.3.4.8 Flex Cracking	Regula	ations: LSA Code IV/4.	/4.2; MSC.81(70) 1/5.17.13.2.2.6		
Test Procedure	Acceptance Criter		Significant Test Data		
Flex Cracking ISO 7854:1995	After the specimen has been conditione face to a 3% aqueous solution of sod days at 20°C ±2°C, it should be tester 7854:1995. After 200,000 flexin delamination should be visible when magnification of 2.	ium chloride for seven d as described in ISO ngs no cracking or			
			Passed: Failed:		
4.3.4.9 Porosity			2; MSC.81(70) 1/5.17.13.2.2.7.1		
Test Procedure	Acceptance Criter		Significant Test Data		
Porosity ISO TR 6065	When tested by the method describ pressure of 27.5 kPa applied and m fabric, there should be no signs of minimum period of 5 min. .1 Test for porosity A specimen of the fabric should be p accordance with ISO TR 6065 paragra	aintained beneath the f any leakage over a prepared and tested in			

	Manufacturer:		Time:	
Inflatable liferaft materials	Model: Lot/Serial Number:	Surveyor: Organization	n:	
4.3.4.10 Oil resistance	Regula	ations: LSA Code IV/4.	2; MSC.81(70) 1/5.17.13.2.2.8.13	
Test Procedure	Acceptance Criter		Significant Test Data	
Oil resistance ISO TR 6065	exposing the outer surface to oil at 20°C ± 2°C, there should be no from textile and no residual t exposed faces are pressed to	.1 When tested by the method prescribed below, after exposing the outer surface to oil ASTM No. 1, for 2 h at 20°C ± 2°C, there should be no separation of coating from textile and no residual tackiness when two exposed faces are pressed together. The coating should not smear when rubbed with a single pass of		
	vulcanization or curing. .3 The apparatus, preparation of	.3 The apparatus, preparation of specimens and test procedure should be in accordance with ISO TR 6065,		
4.3.4.11 Weft Distortion			2; MSC.81(70) 1/5.17.13.2.2.9	
Test Procedure	Acceptance Criter		Significant Test Data	
Weft Distortion	The weft distortion should be not more 100 mm maximum over a fabric width of drawn across the fabric at right angles weft distortion, skew and/or bow shoul	1.5 m. A line should be s to the selvedge. The		
			Passed: Failed:	

Inflatable liferaft materials	Model:		Date:          Surveyor:          Organization:	
4.3.4.12 Resistance to Blockin	ng	Regulations: LSA	Code IV/4.2	2; MSC.81(70) 1/5.17.13.2.2.10
Test Procedure		Acceptance Criteria		Significant Test Data
Resistance to Blocking ISO 5978	fabr .2 The sho	hen tested by the method prescribed bric should exhibit no blocking. The preparation of specimens and test rould be in accordance with ISO 5978:19 at the duration of time under load should	below the procedure 990 except be 7 days.	Was the weight lifted? YES/NO         Comments/Observations         Passed:

Inflatable liferaft materials	Model:	cturer:al Number:	Surveyor:	Time:
4.3.4.13 Hydrolysis Resistand	ce for The	rmoplastic Coated Materials only Regul	ations: LSA Code IV/4.2;	; MSC.81(70) 1/5.17.13.2.2.11
Test Procedure		Acceptance Criteria		Significant Test Data
Hydrolysis Resistance Thermoplastic Coated Materials	for s only	.1 When tested by the methods prescriperformance values should be achiev .a Coating adhesion 50 N/50 mi .b Blocking resistance 100 g ma	red: m minimum	Coating adhesion N/50 mm. Blocking Test:
		.c Folding test – No cracks, deterioration	Was the weight lifted? YES/NO	
		.2 The following test requirements a specimens, which have been stored for a closed container at 93°C.		Folding Test:
		.3 The following test should be perf specimens for 1 h at 80°C ±2°C, a ±2°C, 65% RH for 24 h.		YES/NO
		.4 The coating adhesion of the stored n be made up and tested in accordan requirements of 4.3.4.13.2 above hav	ice with 4.3.4.5 after the	Comments/Observations
		.5 The blocking resistance should be to 4.3.4.12.	ested in accordance with	
		.6 Two test samples 100 mm ±2 mm so the stored material. The samples sho in 4.3.4.6.6.3 and examined for e separation, stickiness or brittleness.	ould be folded as defined	Passed: Failed:

Inflatable liferaft materials	Manufacturer: Model: Lot/Serial Number:	Surveyor:	n:
4.3.4.14 Ozone resistance	F	Regulations: LSA Code IV/4.2	2 MSC.81(70) 1/5.17.13.2.2.12
Test Procedure	Acceptance Criteria		Significant Test Data
Ozone resistance ISO 3011:199	7 .1 When tested by the meth cracks should be visible at a		Were there any cracks visible at a magnification of 5? YES/ NO
	.2 The preparation of samples be in accordance with speci		Comments/Observations
	The following conditions sho	ould apply:	
	.1Ozone concentration: 5.2Temperature: 20.3Exposure time: 8.4Mandrel diameter: 6	0°C ±2°C	
			Passed: Failed:

Inflatable liferaft materials	Manufacturer: Model: Lot/Serial Number:			Surveyor: _	n:
4.3.4.15 Tensile Strength (Fab	rics used for outer	outer canopies) Regulations: LSA Code IV/			2; MSC.81(70) 1/5.17.13.2.3.1
Test Procedure		Acceptan	ce Criteria		Significant Test Data
Tensile Strength		ested by the method pr h should be:	escribed in 4.3.4.3	3, the tensile	Tensile strength: - Warp:N/50 mm
	Minimu	im: For warp ai	nd weft 930N/50mn	n of width	Weft:N/50 mm
					Comments/Observations
					Passed: Failed:
4.3.4.16 Tear Strength (Fabric	s used for outer ca	. /		A Code IV/4.	2; MSC.81(70) 1/5.17.13.2.3.2
Test Procedure		Acceptan			Significant Test Data
Tear Strength		tested by the method pr r strength should be:	escribed in paragra	aph 4.3.4.4,	Tear strength Warp:N
	Minimu	ım: For warp aı	nd weft 490 N		Weft:N
					Comments/Observations
					Passed: Failed:

	Monufactu	nufacturer: Date:			Timo
	Manufactu			Date: Time:	
Inflatable liferaft materials	Model:	Numerican		Surveyor:	
	Lot/Serial I	Number:	· · · · · · · · · · · · · · · · · · ·	Organizatio	n:
4.3.4.17 Low Temperature Flex	ing (Fabric			A Code IV/4.	2; MSC.81(70) 1/5.17.13.2.3.3
Test Procedure		Acceptanc			Significant Test Data
Low Temperature Flexing		When tested at a temperature	not higher than -3	30°C by the	Was there visible cracking of the sample?
		method prescribed in 4.3.4.7,	, there should be	no visible	
		cracking of the sample when ir	nspected under a m	agnification	YES/NO (Face 1)
		of 2.		-	
					YES/NO (Face 2)
		The test should be independer	ntly applied to each	n face of the	
		coated fabric.	5 11		
					Passed: Failed:
4.3.4.18 Waterproofness (Fab	rics used fo	r outer/inner canopies)	Regulations: I SA	A Code IV/4	2; MSC.81(70) 1/5.17.13.2.3.4
Test Procedure		Acceptance Criteria		Significant Test Data	
Waterproofness		.1 When tested by the metho		, no water	Did water pass through the cone?
Waterprooffiess		should pass through the co			YES/NO
		fabric should not contain a			
		be injurious to a survivo			
					Comments/Observations
		from the canopy. Fabrics may be coated on one or both			Comments/Observations
		sides.			
		.2 The test specimen sho			
		300 mm x 300 mm and te	ested in accordance	ce with the	
		following procedure:			
		Fold the specimen twice at rig			
	it into a suitable		cone with a paper cl		
		water into the cone. Record a		water to the	
		outside of the cone after 30 m	in.		

Inflatable liferaft materials	Manufacturer: Model: Lot/Serial Number:			Surveyor:	n:
4.3.4.19 Surface Receptiveness and Adhesion of Surface Coating Regulations: LSA Code (Fabrics used for outer canopies)			SA Code IV	/4.2; MSC.81(70) 1/5.17.13.2.3.5	
Test Procedure	,	Acceptance	Criteria		Significant Test Data
	dhesion of	When tested by the method prese receptiveness on either face sho mm width surface. For coating adhesion, a minimum	cribed in 4.3.4.5 uld not be less t	than 25N/50	Surface receptiveness on each face?
4.3.4.20 Colour (Fabrics used	for outer ca	anopies)	Regulations: L	SA Code IV	/4.2; MSC.81(70) 1/5.17.13.2.3.6
Test Procedure		Acceptance	Criteria		Significant Test Data
Colour		The liferaft canopy should be eva test in 4.18 or an equivalent me determine whether the coating is	thod using artif	ficial light to	Reference should be made to mooring out test. Comments/Observations: Passed: Failed:

Inflatable liferaft materials	Model:			Surveyor: _	n:
4.3.4.21 Effects of Ageing (Fal	brics used for outer	r canopies)	<b>Regulations: LS</b>	A Code IV/4.	2; MSC.81(70) 1/5.17.13.2.3.7
Test Procedure			ce Criteria		Significant Test Data
Effects of Ageing		prescribed in 4.3.4.6. separation of plies or samples are inspected Tensile Test – wh prescribed in 4.3.4.6	1 there should be brittleness visibl d under a magnifi en tested by th .2 at least 90% of	e no cracks, e when the ication of 2. he method the original	
4.3.4.22 Tensile Strength (Fab	rics used for inner	canopies)	<b>Regulations: LS</b>	A Code IV/4.	2; MSC.81(70) 1/5.17.13.2.4.1
Test Procedure		Acceptance			Significant Test Data
Tensile Strength		ested by the method promited in the method promited by the method pr		should be: -	Tensile strength Warp: N/50 mm Weft: N/50 mm Comments/Observations Passed: Failed:

Inflatable liferaft materials	Manufacturer: Model: Lot/Serial Number:			Surveyor:	n:
4.3.4.23 Porosity (Fabrics us	ed for inner	canopies)	<b>Regulations: LS</b>	A Code IV/4.	2; MSC.81(70) 1/5.17.13.2.4.2
Test Procedure		Acceptance Criteria			Significant Test Data
		As the inner canopy serves as a of air, it should either be of a have a low porosity to air.			Comments/Observations

## 4.3.5 SEARCHLIGHTS FOR LIFEBOATS AND RESCUE BOATS EVALUATION AND TEST REPORT

#### 4.3.5.0 **General information** 4.3.5.0.1 General data and specifications Submitted drawings, reports and documents 4.3.5.0.2 4.3.5.0.3 Quality assurance 4.3.5.1 **Visual Inspection** 4.3.5.1.1 Approval marking 4.3.5.1.2 **Expiry Marking** 4.3.5.1.3 Additional Markings

- 4.3.5.1.4 Electrical short circuit protection
- 4.3.5.1.5 Construction and materials
- 4.3.5.1.6 Operational Controls
- 4.3.5.2 Temperature tests
- 4.3.5.3 Vibration test
- 4.3.5.4 Corrosion and rain test
- 4.3.5.5 Interference tests
- 4.3.5.6 Power supply test
- 4.3.5.7 Light tests

### 4.3.5 SEARCHLIGHTS FOR LIFEBOATS AND RESCUE BOATS EVALUATION AND TEST REPORT

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Searchlights for lifeboats and rescue boats	Manufacturer: Model: Lot/Serial Number:	[ S	Date: Surveyor: Drganization:	Time:
4.3.5.0.1 General data and specifications		Regulations: LSA Code/Regulations	es. MSC.81(70)	
General Information	Search Light Dimensions		Search Light Weight	

Searchlights for lifebo boats	oats and rescue	Manufacturer: Model: Lot/Serial Number:	Date: Surveyor: Organization:	Time:
4.3.5.0.2 Submitted du	rawings, reports and d	ocuments		
Submitted drawings a	and documents			
Drawing No.	Revision No. & date	Title of drawing	Status	
Submitted reports and	documents			Statua
Report/Document No.	Revision No. & date	Title of report/document		Status
		Maintenance Manual -		
		Operations Manual -		

Searchlights for lifeboats and rescue boats	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:
<ul> <li>4.3.5.0.3 Quality assurance</li> <li>Except where all appliances of a particular t of the International Convention for the Sa amended, or the International Life-Saving inspected, representatives of the Adminis inspections of manufacturers to ensure the appliances and materials used comply with the prototype life-saving appliance.</li> <li>Manufacturers should be required to institute ensure that life-saving appliances are produce prototype life-saving appliance approved by records of any production tests carried Administration's instructions.</li> </ul>	fety of Life at Sea, 1974, as Appliance (LSA) Code to be tration should make random that the quality of life-saving he specification of the approved e a quality control procedure to he d to the same standard as the the Administration and to keep	Quality assurance Proce Quality assurance Manu	20)2/1.1,1.2	

Searchlights for lifeboats and rescue	Manufacturer:	Date:	Time:
boats	Model:	Surveyor:	

	Lot/Serial Number:	Organization:
4.3.5.1 Visual Inspection		1.2.2.9/1.2.2.10/1.2.3/4.4.6.11; MSC.81(70) 1/ 13.1/13.3
Test Procedure	Acceptance Criteria	Significant Test Data
One search light should be examined in detail for the following items:		
Approval marking	.1 be clearly marked with approval informa including the Administration which approved it, any operational restrictions;	
Manufacturer's label Additional markings	.2 be marked with the voltage and power consumption	on; Passed: Failed:
	<ul> <li>.3 provide the following information:</li> <li>serial number;</li> </ul>	Passed: Failed:
Electrical short circuit protection	<ul> <li>identification of the manufacturer;</li> <li>easily understandable symbols for on/off switching</li> <li>where applicable, information on proper batter disposal by the words: "DO NOT INCINERATE DO NOT RECHARGE/DO NOT TAMPER"; and</li> </ul>	ry E/ I
	.4 where applicable, be provided with electrical s circuit protection to prevent damage or injury.	short Passed: Failed:
		Comments/Observations

Searchlights for lifeboats and rescue	Manufacturer:	Date:	Time:
boats	Model:	Surveyor:	
	Lot/Serial Number:	Organization:	

4.3.5.1 Visual Inspection (continued)	Regulations: LSA Code 1 2 2 1/1 2 2	.9/1.2.2.10/1.2.3/4.4.6.11; MSC.81(70) 1 13.1/13.3
Test Procedure	Acceptance Criteria	Significant Test Data
Construction and materials	Search lights should: .1 be constructed with proper workmanship and materials and in such a way that the accumulation of condensed water in hazardous quantities is avoided;	
	.2 be designed in such a way that the illuminant is safely fitted in the search light without using screwed sockets and can easily be replaced also in darkness;	
	<ul><li>.3 be made of non-magnetic material;</li><li>.4 be constructed to avoid accidental access to dangerous voltages;</li></ul>	Passed: Failed:
Operational controls	.5 be constructed in such a way that outer parts do not reach temperatures during operation which restrict their manual use; and	
After having passed the visual inspection the searchlight should be subjected next to the temperature tests.	.6 have operational controls in compliance with A.694(17) paragraph 3, IEC 60447:2004, and IEC 60945:2002 paragraphs 4.2.1.2, 4.2.1.3 and 4.2.1.4.	Passed: Failed:
		Comments/Observations

Searchlights for lifeboats and rescue boats	Model: 8	Date: Time: Surveyor: Drganization:
4.3.5.2 Temperature Tests	Regulations: LSA Code I	/1.2.2.1, 1.2.2.2; MSC.81(70) 1/ 13.2/13.2.1
Test Procedure	Acceptance Criteria	Significant Test Data
inspection should be subjected to a dry heat test according to IEC 60945:2002,	The searchlight should not be damaged in stowa throughout the air temperature range of -30° to +65°C.	
paragraph 8.2, followed by a damp heat test (8.3), a low temperature test (8.4), and thermal shock (8.5).	After these tests, the search light should show no sign damage such as shrinking, cracking, swelling, dissolution change of mechanical qualities and should be capable being operated.	or Comments/Observations
After having passed the temperature tests the searchlight should be subjected next to the vibration test.		Passed: Failed:
4.3.5.3 Vibration Test		1.2.2.1, 1.2.2.8; MSC.81(70) 1/13.2/13.2.2
Test Procedure	Acceptance Criteria	Significant Test Data
The searchlight, which has passed the temperature tests, should be subjected to a vibration test according to IEC 60945:2002, paragraph 8.7.	The searchlight should be constructed with pro workmanship and materials. The searchlight should function after the test.	per Results:
After having passed the vibration test the searchlight should be subjected next to the corrosion and rain test.		Comments/Observations
		Passed: Failed:

Searchlights for lifeboats and rescue boats	Manufacturer: Model: Lot/Serial Number:		: Time: eyor: nization:	
4.3.5.4 Corrosion and Rain Test		tions: LSA Code 1.2.2	2.1/1.2.2.4; MSC.81(70) 1/ 13.2/13.2.3	
Test Procedure	Acceptance Criteria		Significant Test Data	
The search light which has passed the vibrati test should, where applicable, be subjected a corrosion test according to IEC 60945:200 paragraph 8.12, and a rain test according IEC 60945:2002, paragraph 8.8.	to workmanship and materials, and 2, rot-proof, corrosion resistant and to by seawater.	where applicable, be not be unduly affected		
After having passed the corrosion and rain te the searchlight should be subjected next the interference test.			Comments/Observations Passed: Failed:	
4.3.5.5 Interference Test		tions: MSC.81(70) 1/ '		
Test Procedure	Acceptance Crit		Significant Test Data	
The search light which has passed the corrosi and rain test should be subjected to t interference test for unwanted electromagne emission according to resolution A. 694(17) a IEC 60945:2002, paragraph 9.	ne electromagnetic emission accordir tic paragraph 9 to ensure electror	ng to IEC 60945:2002, nagnetic compatibility diocommunication and		
After having passed the interference test t searchlight should be subjected next to t power supply test.				
			Passed: Failed:	

Searchlights for lifeboats and rescue boats	Model: Surve		: Time: eyor: nization:	
4.3.5.6 Power Supply Test		Regulations: MSC.81(70	0) 1/ 1	13.2/13.2.5
Test Procedure	Acceptance	ce Criteria		Significant Test Data
		tinue to operate also in power supply according to and 7.2. Means should n of the search light from and voltage, transient er supply polarity or pl 945:2002, paragraph 7.2. ing the search light from r nergy, arrangements for ra- ne other should be provided	DIEC d be n the and hase more apidly d but	

Searchlights for lifeboats and rescue boats	Mode	facturer: l: erial Number:			Sur∖	e: /eyor: anization:	
4.3.5.7 Light Tests				 LSA 13.4.3	C	ode 4.4.8.29/5.1.2.2.11;	MSC.81(70) 1/
Test Procedure The searchlight, which has passed the power sitest, should be subjected to light tests. The viso of the test unit should be monitored continuous the specific time. To make sure that the test provides a light distribution and a lum intensity of not less than the specified lum intensity after the specified time of operatio following test should be performed: It must be demonstrated that the light reaches the distribution and the required luminous intensity using a photometer which is calibrated the test photometric standards of the appropriate Natic State Standard Institute (Note: CIE Publ. N contains further information). Luminous intensity should be measured by a photometer directed center of the light source with the test light rotating table. Luminous intensity should be measured that a 360° rotation. These measurements should taken in the azimuth angle at 0.5° intervals abo horizon up to 3°. Luminous intensity should measured in a vertical direction, beginning center of the light source at the point of I recorded light output, and continuously recorded through an arc of 6°.	oltage usly for st unit ninous n, the he light when to the onal or No. 70 tensity l at the t on a asured nter of urough uld be at the lowest	Acceptance Criteria The luminous intensity least 2.5 x 10 <sup>3</sup> cd. The a be at least 90 % of the The luminous intensity center of the luminous ensured. The effective l circular and reach vertic The searchlight should operation of not less the requirements of light intensity should be fulfill	of the searchlight sh axial luminous inten- maximum luminou should be at a maxin ous intensity distribution intensity distribution ight emission sector cally and horizontally l be suitable for a p an 3 h. During this distribution and	nould sity sl s inter num i bution shou shou at lea perma	be at hould nsity. in the n. A uld be uld be uld be st 6°. anent d the	All measured data of lumino should be documented. Comments/Observations	

# 4.3.6 SURVIVAL CRAFT POSITION INDICATING LIGHTS EVALUATION AND TEST REPORT

**Definitions:** 

Survival craft lights are liferaft lights and lifeboat lights. Survival craft exterior lights are liferaft exterior lights (liferaft canopy lights) and lifeboat exterior lights (lifeboat enclosure lights or lifeboat cover lights). Survival craft interior lights are liferaft interior lights and lifeboat interior lights.

### Remark:

### Rescue boat exterior lights should be treated as lifeboat exterior lights.

4.3.6.0	General information					
	4.3.6.0.1	General data and specifications				
	4.3.6.0.2 4.3.6.0.3	Submitted drawings, reports and documents				
	4.3.0.0.3	Quality assurance				
4.3.6.1	Visual inspec 4.3.6.1.1 4.3.6.1.2 4.3.6.1.3 4.3.6.1.4 4.3.6.1.5 4.3.6.1.6 4.3.6.1.7	tion Approval marking Expiry marking Additional markings Electrical short circuit protection Construction and materials Fitting Lights				
4.3.6.2	Temperature cycling test					
4.3.6.3	Light tests					
4.3.6.4	Chromaticity	test				
4.3.6.5	Switch arrangement test					
4.3.6.6	Vibration test					
4.3.6.7	Mould growth test					
4.3.6.8	Corrosion an	Corrosion and seawater resistance test				
4.3.6.9	Solar radiation test (not for survival craft interior lights)					
4.3.6.10	Test for oil resistance (not for survival craft interior lights)					
4.3.6.11	Rain test and watertightness test					
4.3.6.12	Fire test (not for survival craft interior lights)					

## 4.3.6 SURVIVAL CRAFT POSITION INDICATING LIGHTS EVALUATION AND TEST REPORT

Manufacturer	
Date	
Туре	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Survival craft position indicating lights	Manufacturer: Model: Lot/Serial Number:	Date	: Time: eyor: nization:
4.3.6.0.1 General data and specifications	Regulations:	LSA Code/Res.	MSC.81(70)
General Information	Survival Craft Light Dimension	S	Survival Craft Light Weight
TYPE OF SWITCHING:			
Automatic/Manual			Comments/Observations
FLASHING LIGHT			
or			
STEADY LIGHT			

Survival craft position indicating lights		Manufacturer: Model: Lot/Serial Number:	unufacturer:				
4.3.6.0.2 Submitted drawings, reports and documents							
Submitted drawings and	Submitted drawings and documents						
Drawing No.	Revision No. & d	ate Title of drawing		Status			
Submitted reports and d	ocuments			Status			
Report/Document No.	Revision No. & D	ate Title of report/document		Status			
		Maintenance Manual -					
		Operations Manual -					

Survival craft position indicating lights	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization:		
4.3.6.0.3 Quality assurance	Regulations: - MSC.81(70)2/1.1,1.2				
of the International Convention for the Safety of Life at Sea, 1974, as amended, or the International Life-Saving Appliance (LSA) Code to be inspected, representatives of the Administration should make random inspections of manufacturers to ensure that the quality of life-saving		Standard Used:			
prototype life-saving appliance. Manufacturers should be required to institute					
ensure that life-saving appliances are produced to the same standard as the prototype life-saving appliance approved by the Administration and to keep records of any production tests carried out in accordance with the Administration's instructions.					
		Quality assurance Syste	em acceptable?		
		Yes/No			
		Comments/Observations	S:		

Survival craft position indicating lights	Manufacturer:            Model:            Lot/Serial Number:	Date: Time: Surveyor:
4.3.6.1 Visual Inspection		1.2.2.1/1.2.2.9/1.2.2.10/1.2.3/4.1.3.4/4.4.7.11
Test Procedure	Acceptance Criteria	Significant Test Data
Nineteen survival craft exterior or sixteen interior lights (as the case may be) should be detailed examined for the following items:		Results:
Approval marking	The survival craft lights should be clearly marked approval information including the Administration w approved it, and any operational restrictions;	
Expiry marking	Be marked with the date of expiry; the Administration she determine the period of acceptability, due to deteriora with age. The established life must be justified by manufacturer. Provide the following information:	tion
Additional markings	<ul> <li>.1 precise definition of intended use (e.g. "Exterior ligh inflatable liferafts");</li> <li>.2 serial number;</li> <li>.3 identification of the manufacturer;</li> <li>.4 easily understandable symbols for on/off switching; a</li> <li>.5 where applicable, information on proper battery disp by the words: "DO NOT INCINERATE/DO N RECHARGE/DO NOT TAMPER".</li> </ul>	nd osal

	Survival craft position indicating lights	Manufacturer:	Date:	Time:
--	---	---------------	-------	-------

	Model:	Surv	/eyor:	
	Lot/Serial Number:	Orga	anization:	
4.3.6.1 Visual Inspection (continued)		Regulations: LSA Code 1.2.2	.1/1.2.2.9/1.2.2.10/1.2.3/4.1.3.4/4.4.7.11	
Test Procedure	Acceptance	e Criteria	Significant Test Data	
Nineteen survival craft exterior or sixteen interior lights (as the case may be) should be detailed examined for the following items (continued):			Results:	
Electrical short circuit protection	The survival craft lights should be circuit protection to prevent dan		Short circuit protection: PASS/FAIL	
Construction and materials	Be constructed with proper work	manship and materials.	Construction: PASS/FAIL	
Fitting				
Lights	Should only be electric lights.		Comments/Observations	

## SURVIVAL CRAFT INTERNAL AND EXTERNAL LIGHTS FLOWCHART

		lights 1 through 4:	Light test (hot) 4.3.6.3						
	Temperature Cycling (12 internal and 12 external lights in groups of 4) 4.3.6.2:	lights 5 through 8:	light test (cold) 4.3.6.3						
	In groups of 4) 4.3.0.2.	lights 9 through 12:	light test (ambient) 4.3.6.3						
	Any one of the 12 external lights that has passed the Light test - Chromaticity T	est 4.3.6.4							
Visual Inspection	Light 13 (Internal and External) – Switch arrangement test 4.3.6.5 same lights subjected to Vibration test 4.3.6.6								
(all 19 external	Light 14 (Internal and External) - 28 day mould growth test (may be waived) 4.3.6.7								
lights and 16 internal lights)	Light 15 (Internal and External) - Corrosion and seawater resistance test (may be waived) 4.3.6.8								
lights) 4.3.6.1	Light 16 (External Light Only) - Solar Radiation (may be waived) 4.3.6.9								
	Light 17 (External Light only) - Oil resistance test 4.3.6.10								
	Light 18 (External Light and Light 16 Internal Light) - rain test and watertightnes	ss test 4.3.6.11							
	Light 19 (External Light only)– fire test 4.3.6.12								

	Manufa	acturer:	Date	: Time:
Survival craft position indicating lights		Surve		
	ial Number:	Orga	nization:	
4.3.6.2 Temperature cycling test		Regulations: LSA Code	1.2.2	.2; MSC.81(70) 1/ 1.2/1.2.1/1.2.2/10.1/10.1.1
Test Procedure		Acceptance Criteria		Significant Test Data
Twelve survival craft exterior or interior lights	(as the	The survival craft lights should not be damaged	d in	Results:
case may be) which have passed the inspection should be subjected to temp cycling. The following test should be carried	perature	stowage throughout the air temperature ran of -30°C to +65°C.	nge	Attach temperature cycling chart to record times
twelve survival craft lights:		The survival craft lights should show no sign of l of rigidity under high temperatures and, after	the	spent at each temperature
The survival craft lights should be alte subjected to surrounding temperatures of r than -30°C and +65°C. These alternating	not less cycles	shrinking, cracking, swelling, dissolution or char of mechanical qualities and should function after	nge the	
need not follow immediately after each other a following procedure, repeated for a total of it		test.		PASS/FAIL Comments/Observations
than 10 cycles, is acceptable:				Comments/Observations
.1 at least an 8 h exposure at a mir temperature of +65°C to be completed day; and				
.2 the specimens removed from the chamber that same day and left exposed ordinary room conditions at a temperat 20°C ±3°C until the next day;	under			
.3 at least an 8 h exposure at a max temperature of -30°C to be completed th day; and				
.4 the specimens removed from the cold chat that same day and left exposed under or room conditions at a temperature of ±3°C until the next day.	dinary			

Survival craft position indicating lights	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:
4.3.6.2 Temperature cycling test (contin			1.2.2.2; MSC.81(7	0) 1/ 1.2/1.2.1/1.2.2/10.1/10.1.1
Test Procedure	Acceptar	nce Criteria		Significant Test Data
If the lifeboat enclosure light, lifeboat cover light or lifeboat interior light is connected to the lifeboat's electrical network and can be supplied with electrical power from any of the lifeboat's batteries as well as from the lifeboat's engine-driven generator set, the light should only be subjected to the test as far as practicable. After having passed the temperature cycling test the lights should be subjected next to the light tests.			Comments/C	

		Manufacturer:		Date:	Time:
Survival craft position indicating lights		Madal		Surveyor:	
Survival c	Lot/Serial Number:			Organization:	
4.3.6.2 7	Femperature cycling test – Test	data	Regulations: LSA Cod	de 1.2.2.2; MSC.8 <sup>,</sup>	1(70) 1/ 1.2/1.2.1/1.2.2/10.1/10.1.1
	HOT CYCLE			ŕ	
	Date In:	Date Out:	Date In:		Date Out:
Cycle 1	Time In:	Time Out:	Time In:		Time Out:
- ,	Temperature: °C	Temperature: °C	Temperature:	°C	Temperature: °C
	Date In:	Date Out:	Date In:		Date Out:
Cycle 2	Time In:	Time Out:	Time In:		Time Out:
,	Temperature:°C	Temperature: °C	Temperature:	°C	Temperature: °C
	Date In:	Date Out:	Date In:		Date Out:
Cycle 3	Time In:	Time Out:	Time In:		Time Out:
,	Temperature: °C	Temperature: °C	Temperature:	°C	Temperature: °C
	Date In:	Date Out:	Date In:		Date Out:
Cycle 4	Time In:	Time Out:	Time In:		Time Out:
- ,	Temperature: °C	Temperature: °C	Temperature:	°C	Temperature: °C
	Date In:	Date Out:	Date In:		Date Out:
Cycle 5	Time In:	Time Out:	Time In:		Time Out:
,	Temperature:°C	Temperature:°C	Temperature:	°C	Temperature:°C
	Date In:	Date Out:	Date In:		Date Out:
Cycle 6	Time In:	Time Out:	Time In:		Time Out:
•	Temperature:°C	Temperature:°C	Temperature:	°C	Temperature:°C
	Date In:	Date Out:	Date In:		Date Out:
Cycle 7	Time In:	Time Out:	Time In:		Time Out:
•	Temperature:°C	Temperature:°C	Temperature:	°C	Temperature:°C
	Date In:	Date Out:	Date In:		Date Out:
Cycle 8	Time In:	Time Out:	Time In:		Time Out:
•	Temperature:°C	Temperature:°C	Temperature:	°C	Temperature:°C
	Date In:	Date Out:	Date In:		Date Out:
Cycle 9	Time In:	Time Out:	Time In:		Time Out:
-	Temperature:°C	Temperature:°C	Temperature:	°C	Temperature:°C
	Date In:	Date Out:	Date In:		Date Out:
Cycle 10	Time In:	Time Out:	Time In:		Time Out:
-	Temperature: °C	Temperature: °C	Temperature:	°C	Temperature: °C

	·		Date:	Time:	
Survival craft position indicating lights			Surve	eyor:	
	mber:	·····	Orga	nization:	
4.3.6.3 Light tests			Regulations: MSC.81(70)	LSA 1/10.1.3	Code 4.1.3.3/4.1.3.4/4.4.7.10/4.4.7.11/5.1.1.1; 2, 10.1.3, 10.1.4, 10.4, 10.4.9
Test Procedure		Aco	ceptance Criteria		Significant Test Data
In the case of seawater cell power sources craft lights which have passed the temperature should be taken from a stowage temperature be operated immersed in seawater at a temper four survival craft lights which have temperature cycling test should be taken fro temperature of +65°C and be operated seawater at a temperature of +30°C; and four lights which have passed the temperature should be taken from ordinary room condo operated immersed in fresh water at ambient to	re cycling test e of -30°C and erature of -1°C; passed the om a stowage immersed in in survival craft e cycling test ditions and be	Survival craft ligh a luminous inten all directions of period of not les a flashing light, the rate of flashin is not less than 70 flashes per r luminous intens directions of the	nts should continue to p isity of not less than 4.3 the upper hemisphere ss than 12 h. In the ca- it should be established of for the 12 h operative 50 flashes and not mor ninute and that the ef ity is at least 4.3 cd e upper hemisphere. to calculate the ef	3 cd in a for a ase of ed that period than fective in all (See	Results: All luminous intensity data is to be attached here.
In the case of dry cell power sources, provided not come into contact with seawater, four lights which have passed the temperatu should be operated at an air temperature of survival craft lights which have passed the cycling test should be operated at an air te +65°C, and four survival craft lights which ha temperature cycling test should be operate temperature. If the voltage at 5 min of ope than the recorded voltage at the end of life it to use a lamp from the same build standar output test.	survival craft re cycling test of -30°C, four e temperature emperature of ve passed the ed at ambient ration is lower is permissible	The interior lights mean luminous in when measure hemisphere to instructions and period of not less	s should provide an arit ntensity of not less than d over the entire permit reading of s equipment instructions	0.5 cd upper urvival	

	lanufacturer: lodel:	Survey	Time: or:
	Lot/Serial Number: C		Organization:
4.3.6.3 Light tests (continued)		Regulations: LSA Code 4.1.3.3 1/10.1.2, 10.1.3, 10.1.4, 10.4, 10	/4.1.3.4/4.4.7.10/4.4.7.11/5.1.1.1; MSC.81(70) .4.9
Test Procedure	Acc	eptance Criteria	Significant Test Data
Using the lowest recorded voltage, a light output test can be carried out as described below. The voltage of the 12 test units should be monitored continuously for 12 h. To make sure that all these test units provide a luminous intensity of not less than 4.3 cd in all directions of the upper hemisphere for 12 h operation, the following test should be performed: It must be demonstrated that at least one light from each of the specified temperature ranges reaches the required luminous intensity in all directions of the upper hemisphere when using a photometer which is calibrated to the photometric standards of the appropriate National or State Standard Institute (Note: CIE Publ. No. 70 contains further information.). The lowest voltage light of the cold temperature test sample lot, the highest voltage light of the high temperature test sample lot and the mean voltage light of the ambient temperature sample lot should be selected. These three lights must be used for the light output tests. In the event that a lamp filament burns out during the light output test, a second light from the same performance test lot may be used. Luminous intensity should be measured by a photometer directed at the center of the light source with the test light on a rotating table.	The effective luminous inter $\left( \begin{array}{c} \hline \\ \hline $	$\frac{\int_{t_1}^{t_2} I dt}{I (t_2 - t_1)} \int_{max}^{t_2} I dt$ h duration of not less than 0.3 s r ady lights for the measurement of t lights should provide the requirections of the upper hemisphere. itching on and reaching the required descence time) and all time spus intensity when the light switches	ula: Comments/Observations mits may heir ired The ired oent

Survival craft position indicating lights	Manufacturer:		Date:	Time:	
	Model:		_ Surveyor:		
	Lot/Serial Number:		_ Organization:	Surveyor: Organization:	
4.3.6.3 Light tests (continued)		Regulations: LSA C o d e 4 . 1 . 3 . 3 /4.1.3.4/4.4.7.10/4.4.7.11/5.1.1.1; MSC.81(70) 1/10.1.2, 10.1.3, 10.1.4, 10.4, 10.4.9			
Test Procedure	Acc	ceptance Criteria		Significant Test Data	
Luminous intensity should be measured horizontal direction at the level of center of the source and continuously recorded through a rotation. The first measurements should be ta 0° (horizontal) and should continue to be tak the azimuth angle at 5° intervals to a measurement at 90° (vertical). Luminous int should be measured in a vertical dire beginning at the center of the light source point of lowest recorded light output, continuously recorded through an arc of 180°. All measured data of luminous intensity voltage should be documented. After having passed the light tests, one ex light should be subjected next to the chrom test.	e light 360° ken at and single ensity ection, at the and and tternal	·	Comments/C		

Survival craft position indicating lights	Model:	cturer:	Surve	ate: Time: urveyor: rganization:		
4.3.6.4 Chromaticity test		Regulations: LSA Code 4.1.3.3/4.1.3.4/4.4.7.10/4.4.7.11/5.1.1.1; MSC.81(70 1/10.4/10.4.10				
Test Procedure		Acceptance Criteria		Significant Test Data		
One external light which has passed the light tests should be tested for chromaticity to determine that it lies within the boundaries of the area "white" of the diagram specified for each colour by the International Commission on Illumination (CIE). The chromaticities of the survival craft lights should be measured by means of colorimetric measurement equipment which is calibrated to the appropriate National or State Standards Institute (Note: CIE Publ. No. 15.2 contains further information). Measurement on at least four points of the upper		The measured chromaticity coordinates should fall within the boundaries of the area of the diagram as per CIE. The boundaries of the area for white lights are given by the following corner coordinates: x 0.500 0.500 0.440 0.300 0.300 0.440 y 0.382 0.440 0.433 0.344 0.278 0.382 (International Standard on Colours of Light Signals, with colour tables to be developed by CIE.)		All chromaticity data is to be attached here. PASS/FAIL Comments/Observations		
hemisphere should be taken. 4.3.6.5 Switch arrangement test		Regulations: LSA Co 1/10.4/10.4.3	de 4.1	1.3.3/4.1.3.4/4.4.7.10/4.4.7.11/5.1.1.1; MSC.81(70)		
Test Procedure		Acceptance Criteria		Significant Test Data		
One survival craft exterior or interior light (as t may be) which has passed the visual inspectior be subjected to the switch arrangement test.		The survival craft exterior or interior light (as case may be) must function properly.	s the			
A test person, wearing immersion suit gloves, must be able to switch the survival craft light in its normal operational position on and off three times.				PASS/ FAIL Comments/Observations		
After having passed the switch arrangement light should be subjected next to the vibration						

Survival craft position indicating lights		ber:	Surve	Time: eyor: nization:		
4.3.6.6 Vibration test		Regulations: LSA Code	€ € 1.2.2.	.1/1.2.2.8; MSC.81(70) 1/10.4/10.4.1		
Test Procedure	Acceptance Criteria		Significant Test Data			
The survival craft exterior or interior light (as the case may be) which has passed the switch arrangement test should be subjected to a vibration test according to	aft light should be constructed with pr id materials, ft light should function after the test.		Results: PASS/FAIL			
IEC 60945:2002, paragraph 8.7.		it light should function after the test.				
4.3.6.7 Mould growth test		Pagulationau L SA Code		Comments/Observations		
4.3.6.7 Mould growth test Test Procedure		Acceptance Criteria	3 1.Z.Z.	4; MSC.81(70) 1/10.4/10.4.2 Significant Test Data		
One survival craft exterior or interior light (as	the energy may		fond	Results:		
be) which has passed the visual inspects subjected to the mould growth test. The su	ction should be irvival craft light	not be unduly affected by fungal attack.				
should be inoculated by spraying with suspension of mould spores containing a cultures:				PASS/ FAIL		
Aspergillus niger; Aspergillus terreus; pullulans; Paecilomyces variotii; Penicilliu Penicillium ochro- chloron; Scopulariopsis Trichoderma viride.			Comments/Observations			
The survival craft light should then be pla growth chamber which should be ma temperature of 29°C +/- 1°C and a relative less than 95%. The period of incubation sho After this period the survival craft light shou						
(Note: The mould growth test may be wa manufacturer is able to produce evidence materials employed will satisfy the test.)						

	Manufacturer:		Date:	e: Time:			
Survival craft position indicating lights	Model:		Surve	Surveyor:			
	Lot/Serial Number: Or			anization:			
4.3.6.8 Corrosion and seawater resistan			1.2.2	2.4/4.1.3.3/4.1.3.4; MSC.81(70) 1/10.4/10.4.4			
Test Procedure	Acceptan			Significant Test Data			
One survival craft exterior or interior light (as the case may be) which has passed the visual inspection should be subjected to a	not be unduly affected by sea	water.					
corrosion and seawater resistance test according to IEC 60945:2002, paragraph 8.12.	does not deteriorate due to da	impness or humidity.					
Note: .1 If there are no exposed metal parts	Furthermore, the survival cra requirements of IEC 60945:200 There should be no undue dete survival craft light should funct	02, paragraph 8.12.2. prioration of metal parts and		Comments/Observations			
the Corrosion and Seawater Resistance Test need not be conducted.	Where the exposed metal is sensor, the function test after t	part of the automatic sw					
.2 The Corrosion and Seawater Resistance Test may be waived where the Manufacturer is able to produce evidence that the external metal parts employed will satisfy the test.							
.3 Automatic activated version should be prevented from switching during the test.							

Survival craft position indicating lights		S	e: Time: reyor: anization:		
4.3.6.9 Solar radiation test (not for survival	craft interior lights)	Regulations: LSA Code 1.	2.2.5; MSC.81(70) 1/10.4/10.4.5		
Test Procedure	Ac	cceptance Criteria	Significant Test Data		
One survival craft exterior light which has pathe visual inspection should be subjected solar radiation test according to IEC 60945: paragraph 8.10. (Note: The Solar Radiation Test may be wwhere the manufacturer is able to previdence that the materials employed will structure is a solar to the test is a solar test is	to a deterioration by sur 2002, Furthermore, the r should be resistar vaived sunlight and the s boduce function after the ter	nlight. mechanical properties and labe nt to harmful deterioration l survival craft exterior light shou	els PASS/FAIL by		
the test, i.e. UV stabilized.) 4.3.6.10 Test for oil resistance (not for surv	vival craft interior lights)	Regulations: LSA Code 1	2.2.4; MSC.81(70) 1/ 10.4/10.4.6		
Test Procedure		cceptance Criteria	Significant Test Data		
One survival craft exterior light which has part the visual inspection should be subjected to test for oil resistance according to IEC 60945: paragraph 8.11. Automatic activated version should be prev from switching during the test.	o the not be unduly affec 2002, of damage such a dissolution or chang	survival craft exterior light shou cted by oil and should show no sig as shrinking, cracking, swellin ge of mechanical qualities. cterior light should function after th	gn <sup>Ig,</sup> PASS/ FAIL		

Survival craft position indicating lights	Model:	Surveyo		Time: /or: ization:			
4.3.6.11 Rain test and watertightness test	1	Regulations: LSA Code 1.2.2.4	Regulations: LSA Code 1.2.2.4/1.2.2.8/4.1.3.3/4.1.3.4; MSC.81(70) 1/ 10.4/10.4				
Test Procedure		Acceptance Criteria		Significant Test Data			
One survival craft exterior or interior light (as may be) which has passed the visual in including its complete power source sh subjected to a rain test according to IEC 609 paragraph 8.8. After having passed the rain survival craft light, including its complete source, should be immersed horizontally u less than 300 mm of fresh water for at lead Automatic activated version should be p from switching during the test.	spection, ould be 45:2002, test the e power nder not ast 24 h.	The survival craft light should be rot-proof. The survi craft light should comply with the requirements of I 60945:2002, paragraph 8.8.2 and should funct after the rain test. Additionally, after the wat tightness test the survival craft light should funct and there should be no evidence of water inside survival craft light.	EC on er- PASS: on	PASS: FAIL:			
4.3.6.12 Fire test (not for survival craft inte	rior lights	Regulations: LSA Code 4.9.1;	MSC.81(70)	1/ 10.4/10.4.8			
Test Procedure		Acceptance Criteria		Significant Test Data			
One survival craft exterior light which has parvisual inspection should be subjected to a fir A test pan not less than 30 cm x 35 cm should be placed in an essentially draught-fit Water should be put in the bottom of the test depth of at least 1 cm followed by enough make a minimum total depth of not less that The petrol should then be ignited and allowed freely for at least 30 s. The survival craft light should then be moved through the facing them, with the survival craft exterior more than 25 cm above the top edge of the so that the duration of exposure to the flat least 2 s.	e test. x 6 cm ree area. pan to a petrol to an 4 cm. to burn to burn exterior flames, light not test pan	The survival craft exterior light should not sust burning or continue melting after being tota enveloped in a fire for a period of at least 2 s and at being removed from the flames. The survival craft exterior light should function at the test.	ally ter PASS:	FAIL: ents/Observations			

# 4.4 DAVIT-LAUNCHED LIFEBOATS EVALUATION AND TEST REPORT

4.4.0 General Information
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- 4.4.0.1 General data and specifications
- 4.4.0.2 Submitted drawings, reports and documents
- 4.4.0.3 Quality assurance

#### 4.4.1 Visual inspection

- 4.4.1.1 Occupant space
- 4.4.1.2 Fittings, provisions and ladders
- 4.4.1.3 Engine and starting system
- 4.4.1.4 Steering mechanism
- 4.4.1.5 Release mechanism
- 4.4.1.6 Drain valve

### 4.4.2 Freeboard, stability and self-righting tests

- 4.4.2.1 Flooded stability test
- 4.4.2.2 Freeboard test
- 4.4.2.3 Self-righting test
- 4.4.2.4 Flooded capsizing test (totally enclosed lifeboats)

### 4.4.3 Seating strength and space tests

- 4.4.3.1 Seating strength test
- 4.4.3.2 Seating space test

#### 4.4.4 Release mechanism tests

- 4.4.4.1 Simultaneous release
- 4.4.4.2 Towing release test
- 4.4.4.3 Load and release test
- 4.4.4.4 Cyclic loading test
- 4.4.4.5 Actuation force test
- 4.4.4.6 Second release mechanism tests actuation force and tensile strength
- 4.4.5 Operational tests
  - 4.4.5.1 Manoeuvring
    - 4.4.5.2 Liferaft towing
    - 4.4.5.3 Endurance, speed and fuel consumption
    - 4.4.5.4 Engine out of water
    - 4.4.5.5 Compass test
    - 4.4.5.6 Helpless person recovery
- 4.4.6 Towing and painter tests
  - 4.4.6.1 Towing test
    - 4.4.6.2 Painter release test

### 4.4.7 Strength tests

- 4.4.7.1 Impact test
- 4.4.7.2 Drop test
- 4.4.7.3 Operation after drop and impact test
- 4.4.7.4 Overload test

- 4.4.8Additional tests for fire-protected lifeboats4.4.8.1Air supply test4.4.8.2Fire test4.4.8.3Water spray test
- 4.4.9 Additional tests for partially-enclosed lifeboats 4.4.9.1 Canopy closure test

# 4.4 DAVIT-LAUNCHED LIFEBOATS EVALUATION AND TEST REPORT

Manufacturer	
Date	
Туре	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Davit-launched lifeboats	Manufacturer: Model: Lot/Serial Num	ıber:		Date:         Time:           Surveyor:         Organization:		
4.4.0.1 General data and sp	ecifications	Regulations: L		_SA Code 4.4, 4.5, 4.6, 4.8 & 4.9		
General Information		Lifeboat Dimensions			Lifeboat Weight	
Construction Material: Hull Canopy: Lifeboat Inherent Buoyancy M Volume: Engine Installed: Manufacturer: Type: Power: Gear Ratio: Propeller Release Mechanism: Manufacturer: Type SWL: Service: Passenger ship/Carg Occupancy (150 max.): Persons (75 kg each): Or Persons (82.5 kg each): (150 max.)	: :	Molded Dimensions: Length: Breadth: Depth:			Design Weight: Unloaded Boat: Loose Equipment: Food: Water: Fuel: Persons: Calculated Loaded Weight: Fully Equipped: With Persons: Weight as Tested: Fully Equipped: Comments/Observations Passed: Failed:	

Davit-launched lifeboats			per:	Date: Surveyor: Organization:		
4.4.0.2 Submitted d	rawing	js, reports and o	locuments			
Submitted drawings a	and do	cuments				
Drawing No.	Revis	sion No. & date	Title of drawing			Status
Submitted reports an	d docı	iments				Status
Report/Document No.	Revis	sion No. & date	Title of report/document			Status
			Maintenance Manual -			
			Operations Manual -			

Davit-launched lifeboats	Manufacturer: Model: Lot/Serial Number:							
<b>4.4.0.3 Quality assurance</b> Except where all appliances		Regulations: MSC.81(70)2/1.1,1.2 Quality assurance						
of the International Convent amended, or the Internatio	tion for the Safety of Life at Sea, 1974, as nal Life-Saving Appliance (LSA) Code to be of the Administration should make random	2						
inspections of manufacture	ers to ensure that the quality of life-saving d comply with the specification of the approved	uality assurance Procedure:						
ensure that life-saving appliar	uired to institute a quality control procedure to nces are produced to the same standard as the ce approved by the Administration and to keep	uality assurance Manual:						
	tests carried out in accordance with the							
		Quality assurance System acceptable? Yes/No Comments/Observations:						

Davit-launched lifeboats 4.4.1.1 Occupant space	Model:	nber:	Time:		
Test Procedure	2		8, 4.4.2.2/3, 4.4.3.5 Significant Test Data		
Visually inspect the lifebo		Interior Floor to Canopy Height		olgnindant rest Data	
Conduct measurements clearances as required.	and verify	Over 50% of the floor area the height should be 1.3 m for lifeboats carrying 9 or fever person for lifeboats carrying 24 or more per- interpolation for occupancy between 9 and 2 permitted.	ns and 1.7 m sons. Linear	Height: m	
		<ul> <li>Seating Space</li> <li>Width – at least 430 mm</li> <li>Depth – at least 100 mm each side of a p from the back</li> <li>Knee Space (Seating on seats) at least 6 the back</li> <li>Knee Width – at least 250 mm</li> <li>Leg Space (Seating on floor) – at least 11 the back</li> <li>Overlapping Seat Vertical Separation – mm</li> <li>Seat Horizontal Overlap – 150 mm maxir</li> <li>Each seating position should be clearly in</li> </ul>	35 mm from 90 mm from at least 350 num	Typically: Width: mm Depth: mm Knee Space: mm Leg Space: mm Vert. Separation: mm Overlap: mm Position Indication: Passed/Failed Number of seats provided:	
		The surfaces on which persons might walk s non-skid finish.	hould have a	Comments/Observations	

	Manuf Model	acturer:		Date: Surve	evor:		Time:		
Davit-launched lifeboats		erial Number:		Surveyor: Organization:					
4.4.1.2 Fittings, provision	s and la	adders (1 of 4)	Regulations: L	SA Co	A Code 4.4.7.3/4/5/8/10/11/12				
Test Procedure		Acceptance Criteria					gnificant Test [	Data	
Visually inspect the lifeboat.		Fittings and Provisions							
Conduct measurements verify clearances as required.		.1 Suitable handholds or buoyant lifeli the lifeboat above the waterline and			.1	Passed:	Failed:		
		person in the water, except in the and propeller.	vicinity of the rue	dder	.2	Passed:	Failed:	Not Applicable	
		.2 On other than self-righting lifeboats underside arranged to break away w			.3	Passed:	Failed:		
		lifeboat when subjected to a sufficien .3 Sufficient watertight lockers,	nt impact.		.4	Passed:	Failed:		
		arrangements to provide for storage of the small items of equipment water and provision.			.5	Passed:	Failed:		
		.4 Means provided for collecting rainwater. .5 Means provided for storing collected water.			.6	Passed:	Failed:		
		.6 Means provided for siting and so operating position (if required).		a in	.7	Passed:	Failed:		
		.7 Approved position-indicating lights provided.	with 12 h capa	acity	.8	Passed:	Failed:		
		<ul> <li>Approved light with 12 h capacity s provided inside.</li> </ul>	sufficient for rea	ding	.9	Passed:	Failed:		
		.9 Adequate view on all sides for s maneuvering.	safe launching	and	.10	Passed:	Failed:		
		.10 Each lifeboat shall be fitted with a approval plate, endorsed by the A							
		representative containing at least manufacturer's name and address, serial number, month and year of ma of persons the lifeboat is approve approval information required under	the following ite lifeboat model anufacturer, nun d to carry, and	ems: and nber the	Comme	nts/Observatio	ons		

Davit-launched lifeboats	Manufacturer: Model: Lot/Serial Number:	Surveyor:
4.4.1.2 Fittings, provision	s and ladders (2 of 4)	Regulations: LSA Code 4.4.8, 4.5.2.1/4, 4.5.2/3/4, 4.6.2.8
Test Procedure	Acceptance C	riteria Significant Test Data
	<ul> <li>.11 The lifeboat is of a highly visible col</li> <li>.12 Sufficient buoyant oars to make he</li> <li>.13 Provided with a manual pump sui automatically self-bailing.</li> <li>Partially enclosed lifeboats</li> </ul>	adway in calm seas. Colour of hull:
	Partially enclosed medicals	Number and execution:
	.14 Provided with permanently attached less than 20% of the length of the less than 20% of the length of the line the lifeboat.	A rigid covers extending over not e lifeboat from the stem and not reboat from the after-most part of PassedFailed PassedFailed
	.15 Fitted with permanently attached fo the rigid covers completely en lifeboat in a weatherproof shelter a	closes the occupants of the nd protects them from exposure. Passed: Failed:
	.16 Entrances at both ends and on eac	h side are provided. Passed: Failed:
	.17 Entrances in the rigid covers shoul .18 Exterior of the lifeboat is of a high	y visible color and its interior of
	a color which does not cause disco	mfort for the occupants. Passed: Failed:
	.19 The canopy should be so arranged .a it is provided with adequate r erection of the canopy;	that: igid sections or battens to permit Passed: Failed: Passed: Failed:
		Comments/Observations

	Manufacturer:	Date:	Time:
	Model:	Survevor:	
Davit-launched lifeboats	Lot/Serial Number:	Organization:	
4.4.1.2 Fittings, provision	ns and ladders (3 of 4)	Regulations: LSA Code 4.5.2	2.3/5/6/8, 4.5.4, 4.6.2.2/3/4/5
Test Procedure	Acceptance Criteri		Significant Test Data
	.b it is insulated to protect the occupa	ants against heat and cold by	Passed: Failed:
	means of not less than two layers of		
	gap or other equally efficient means		
	prevent accumulation of water in the		
	.c entrances in the canopy are prov		
	closing arrangements which can be		
	closed from inside or outside so as to		
	seawater, wind and cold; means sho		
	entrances securely in the open and		
	.d with the entrances closed, it ad	mits sufficient air for the	
	occupants at all times; and .e the occupants can escape in the evo	ant of the lifeboat capaizing	Passad: Failed:
	le life occupants can escape in the evo	ent of the medoat capsizing.	Passed: Failed: Passed: Failed:
	If the lifeboat is intended to have a fixed	two-way VHE radiotelephone	
	apparatus, the lifeboat should either have		
	accommodate both the equipment and the		
	construction of the lifeboat must provide a shelt		
	· ·		
	Totally Enclosed Lifeboats		
	The enclosures should be so arranged that:		Passed: Failed:
	.1 access to the lifeboat is provided by hate	hes which can be closed to	
	make the lifeboat watertight;		Passed: Failed:
	.2 hatches are positioned so as to allow launch		
	to be performed without any occupant having		
	a. access hatches can be opened an	a closed from both inside and	Passed: Falled:
	outside the lifeboat; and	d them ecouroly in the erer	
	<ul> <li>access hatches have means to he position</li> </ul>	big them securely in the open	
	position.		Comments/Observations:

Davit-launched lifeboats	Manufacturer: Model: Lot/Serial Number:		Surveyor:		_ Time:
		SA Code 4.4.4		6.3.1/3, 4.6.4.1/3	
Test Procedure	Acceptance Criteria				Significant Test Data
	.3 it is possible to row the lifeboat; .4 handrails provide a secure handhold for p			Passed: Passed:	Failed: Failed:
	exterior of the lifeboat, and aid embarkatio .5 persons have access to their seats from an climb over thwarts or other obstructions;			Passed:	Failed:
	.6 windows or translucent panels to make a day light; and	Ū		Passed:	Failed:
	.7 its exterior is of a highly visible colour and its in does not cause discomfort to the occupants.	nterior of a light	colour which	Passed:	Failed:
	Each seating space is fitted with a safety belt.	Passed:	Failed:		
	The safety belt is of a color contrasting with the adjacent and with the seat on which it is fitted	e belts for seat	s immediately	Passed:	Failed:
	Engine and transmission are controlled from the h	elmsman positi	on	Passed:	Failed:
	Air-cooled engines have a duct system to take in a it to, the outside of the lifeboat. Manually ope enable cooling air to be taken in from, and exha lifeboat.	erated damper	s provided to		
	<b>Lifeboat Ladders</b> Ladders that can be used at any boarding entranc lowest step when in place should not be less waterline.			Passed:	Failed:
	<b>Other Provisions</b> No buoyant material should be installed external to in addition to buoyant material required to float			Passed: Comments/Obs	

	Manut	acturer	:: Dat	te:	Time:	
Davit-launched lifeboats	Model	odel:		Surveyor:		
Davit-launched meddats						
4.4.1.3 Engine and startin	ig syste	em	Regulations: LSA	Code 4.4.6.2/5/6/		
Test Procedure			Acceptance Criteria		Significant Test Data	
Visually inspect the lifeboat.		Type o	f starting system		Manual/Power	
		.1	Two independent rechargeable energy sources avail starting systems.	ilable for power	YES/NO/NOT APPLICABLE	
Conduct measurements and	verify	.2	Any required starting aids provided		Passed: Failed:	
clearances as required.		.3	Starting system is not impeded by engine casin other obstructions.	ng, thwarts, or	Passed: Failed:	
		.4	Propeller arranged to be disengaged from the engine	0	Passed: Failed:	
		.5	Provision for ahead and astern propulsion.	с.	Passed: Failed: Passed: Failed:	
		.6	Exhaust arranged to prevent water from enter	ring ongino in	Passed: Failed:	
		.0	normal operation.	ing engine in		
		.7	The lifeboat is designed with due regard to the safet	ty of porcona in	Passed: Failed:	
		.7	the water and to the possibility of damage to system by floating debris.			
		.8	Engine casing made of fire-retardant material or	other suitable	Fire retardant materials used:	
		.0	arrangements providing similar protection.		Passed: Failed:	
		.9	Personnel are protected from hot and moving parts.		Passed: Failed:	
		.10	Shouted order can be heard with engine running at sp for 6 knot operation.	beed necessary	Passed: Failed: Passed: Failed:	
		.11	Watertight casing around bottom and sides of si with a tightly fitting top which provides for necessary		Passed: Failed:	
	.12 Means for recharging engine starting, radio, and searchlight batteries provided by solar charge or ships power supply.			Passed: Failed:		
		.13	Radio batteries not used to provide power for engine		Passed: Failed:	
		.14	Recharging means provided for lifeboat batteries	•	Passed: Failed: Passed: Failed:	
			50 V) from ship's power supply can be disconnected			
		4 -	embarkation station.		Passad: Failad:	
		.15	Instructions for starting and operating engine are		Passed: Failed: Comments/Observations	
			and mounted in a conspicuous place near the e	engine starting		
			controls.			

Davit-launched lifeboats	Model:		Surveyor:	Time:
4.4.1.4 Steering mechanis			s: LSA Code 4.4.7	
Test Procedure	9	Acceptance Criteria		Significant Test Data
Visually inspect the lifeboat. Conduct measurements clearances as required.	and verify	<ul> <li>A tiller should be capable of control</li> <li>Rudder permanently attached to the</li> <li>Except when remote steering is p is permanently attached or linked to</li> <li>Rudder and tiller arranged so as not operation of the release mechanism</li> </ul>	e lifeboat rovided, the tiller o the rudder stock to be damaged by	Passed: Failed: Passed: Failed: Passed: Failed:

Davit-launched lifeboats	Model:	Surveyor	Time: :: ition:
4.4.1.5 Release mechanis		Regulations: LSA Code	
Test Procedure		Acceptance Criteria	Significant Test Data
Visually inspect the lifeboa	at.	Clear operating instructions	Passed: Failed:
Conduct measurements clearances as required.	and verify	Suitably worded danger sign for on load release	Passed: Failed: N/A
		On-load release:	
		<ul> <li>The mechanical protection (interlock) engages only we mechanism is completely and properly reset, to preaccidental release during recovery of the boat</li> </ul>	
		On-load release mechanism needs deliberate sustained action by the operator	
		<ul> <li>Mechanical protection provided beyond that non required for off load release</li> </ul>	
		<ul> <li>Release control marked in a color that contrasts with surroundings</li> </ul>	<sup>n the</sup> Passed: Failed:
		Where a single fall system is provided: Off-load release:	
		<ul> <li>Where a single fall and hook system is used for launce</li> </ul>	Passed: Failed: N/A
		<ul> <li>Where a single fail and hook system is used for faunce a lifeboat or rescue boat in combination with a sur- painter, the requirements of onload release capa need not be applicable; in such an arrangement a s capability to release the lifeboat or rescue boat, only w it is fully waterborne, will be adequate.</li> </ul>	able Comments/Observations bility ingle

Davit-launched lifeboats	Model:		Surveyor:	Time:
4.4.1.6 Drain valve		Regulations: L	SA Code 4.4.7	.1
Test Procedure	9	Acceptance Criteria		Significant Test Data
Visually inspect the lifebo Conduct measurements clearances as required. (Not applicable for self-bailing	at. and verify	<ul> <li>Fitted near lowest point on the hull</li> <li>Automatically opens to drain water from the boat is not waterborne and close entry of water when the boat is wate</li> <li>Cap or plug attached to the boat by a or other suitable means</li> <li>Readily accessible from inside the life</li> <li>Position clearly indicated</li> </ul>	es to prevent rborne lanyard, chain	Passed: Failed: Passed: Failed: Passed: Failed: Passed: Failed: Comments/Observations

	Manufacturer:		Date:	Time:	
Davit-launched lifeboats	Model:				
Davit-launcheu meboats	Lot/Serial Number:		Organization:		
4.4.2.1 Flooded stability te	est	Regulations:	LSA Code 4.4.1.1, 4	.6.3.3; MSC.81(70) 1/6.8.1, 6.8.2,6.8.3	
Test Pro	ocedure	Acceptance Cr	teria	Significant Test Data	
The lifeboat should be loa	aded with its equipment. If	When loaded as specified, the			
provision lockers, water tank				Passed: Failed:	
removed, they should be fl		flooding which would occur w			
waterline resulting from this		holed in any one location		Trim: List:	
watertight stowage compa		assuming no loss of buoyancy i	material and no other		
individual drinking water con		damage.			
containers aboard and					
compartments, which should		In case of totally enclosed li			
the flooding tests. Ballast					nm
density should be substituted 1		condition is not more than 500 mm above the seat			
installed equipment that can	be damaged by water.	pan at any occupant seating po	sition.	Passed (Y/N):	
Maighte representing parts					
Weights representing perso water when the lifeboat is				Comments/Observations	
than 500 mm above the se				Comments/Observations	
Weights representing person					
water when the lifeboat is					
than 500 mm above seat p					
normal seating positions of					
centre of gravity approximat					
pan.	ely 500 min above the seat				
pun					
Weights representing pers	ons who would be partly				
submerged in the water wi					
(water level between 0 and 5					
should additionally have an					
kg/dm <sup>3</sup> (for example wat					
represent a volume similar to	,				

Davit-launched lifeboats	Manufacturer: Model: Lot/Serial Nun	 nber:		Date: Surveyor: Organization: _	Time:
4.4.2.2 Freeboard test			Pogulations: I	SA Codo 4 4 5	5.1/2.1/2; MSC.81(70) 1/ 6.8.4/5
Test Procedure			Acceptance Criteria	.5A Code 4.4.5.	Significant Test Data
The lifeboat with its engine sh		Fach lifebaat w			
with a mass equal to that of all		Each medual w	rd measured from the waterlin		Measured Freeboard:mm
One half of the number of per					1.5% of Boat's Length: mm
the lifeboat is to be approv			lifeboat's length or 100 mm, w		
seated in a proper seating po		greater; and	meddats lengtror roo min, w		Angle of heel, if applicable:Deg.
side of the centreline. The free		greater, and			Angle of freel, if applicableDeg.
then be measured on the lows		Each lifeboat with	nout side openings near the gun	wale should not	Passed: Failed:
			e of heel of 20° and should have		
			the waterline to the lowest op		Comments/Observations
			t may become flooded, of at le		
			or 100 mm, whichever is the gre		
4.4.2.3 Self-Righting Test	(Totally Enclose	sed Lifeboats)	Regulations: L		.2/4, 4.6.4.2; MSC.81(70) 1/ 6.14.1/1.1/1.2/2/2.1/2.2
	rocedure	•	Acceptance Cr		Significant Test Data
A suitable means should b	e provided to ro	tate the lifeboat	After release, the lifeboat sho	ould always retur	rn to
about a longitudinal axis					
release it. The lifeboat, in	the enclosed	condition, should	occupants.		Passed Failed
be incrementally rotated to					
including 180° and should					
be conducted in the followi	ing conditions c	fload:	be running in neutral position	and:	Light:
.1 when the lifeboat with its e	engine is loaded	in the normal	.1 unless arranged to stop automatically Passed: Failed:		
position with properly see			when inverted, the engi		
fully equipped lifeboat wit			to run when inverted and	for 30 min after t	the
on board. The weight us			lifeboat has returned to the	ne upright positio	ion;
assumed to have an aver			and		Passed: Failed:
secured at each seat lo			.2 if the engine is a	ranged to at	ton
gravity approximately 300 mm above the seat pan so as			automatically when inve		
to have the same effect on stability as when the lifeboat is loaded with the number of persons for which it is to be			easily restarted and run		
	r or persons for	which it is to be	lifeboat has returned to t		
approved; and				ine aprigrit poolitie	
.2 when the lifeboat is in the	light condition.		Water does not enter the eng	ine.	Comments/Observations

r	1				
	Manufacturer:		Date:	Time:	
Davit-launched lifeboats	Model:	· · · · · · · · · · · · · · · · · · ·	Surveyor:		
Davit-launched medoats	Lot/Serial Number:		Organization:		
4.4.2.4 Flooded capsizing	test (totally enclosed	l lifeboats) Regulations:	LSA Code 4.1.6	6.3; MSC.81(70) 1/6.14.3-5	
Test Proced		Acceptance Criteria		Significant Test Data	
		After release, the lifeboat should at		Passed: Failed:	
		that provides an above-water e	scape for the		
water. All entrances and		occupants.			
secured to remain open during	g the test.				
		Note: Several tests may have to be con			
		in different areas would create dif	ferent flooding		
However, the equipment,					
should be secured in the li	ifeboat in the normal				
operating position.				Passed: Failed:	
Lleing a cuitable means th	a lifebaat abaula ba				
Using a suitable means, th				Comments/Observations	
rotated about a longitudinal a 180° and then released.	axis to a neel angle of			Comments/Observations	
4.4.3.1 Seating strength te	het	Bogulations:	ISA Codo 44	⊥ 1.5.1; MSC.81(70) 1/ 6.6.1	
Test Proced		Acceptance Criteria	L3A Coue 4.4.	Significant Test Data	
			ant this loading		
		The seating should be able to support without any permanent or damage.	on this loading	Passed: Failed:	
lifeboat.		without any permanent of damage.			
meboat.		The seat belts should hold a mass of 10		Passed: Failed:	
For a totally enclosed lifel	hoat the seat helts				
should be demonstrated to be		place with the mebbat in the capsized	position.		
person with a mass of 100				Comments/Observations	
with the lifeboat in the capsize				Comments/Observations	
may be conducted in connect					
test.					

Davit-launched lifeboats	Model:	Surve	eyor:	Time:
4.4.3.2 Seating space test		Regulations: LSA C	ode 4.4.2.2.	.1, 4.4.3.1/2; MSC.81(70) 1/ 6.7.1
Test Proced		Acceptance Criteria		Significant Test Data
The lifeboat should be fitted v equipment. The number of p lifeboat is to be approved, hav of 75 kg for a lifeboat	vith its engine and its ersons for which the ing an average mass intended for a kg for a lifeboat nip and wearing a essential equipment quickly as possible. maneuvered and all by an individual to ent can be operated	The number of persons should be able to be lifeboat and be properly seated within a per min in the case of a lifeboat intended for a ca	riod of 3 argo ship a lifeboat parkation P nt can be with the P S	Cargo Ship: Boarding Time:min Passed: Failed:

Davit-launched lifeboats	Manufacturer: Model: Lot/Serial Number:			Surveyor:	Time:
4.4.4.1 Simultaneous relea	ase	Regulat	ions: LSA	Code 4.4.7.6,	4.4.7.6.1/2/2.1/2.2/5; MSC.81(70) 1/ 6.9.1, 6.9.2
Test Procedure		Acceptance Cr			Significant Test Data
Every lifeboat to be launched with its engine fitted should to from the release mechanism ju ground or the water. The lifeb loaded so that the total ma times the mass of the lifed equipment and the number of which the lifeboat is to be a lifeboat release control should	by fall or falls, be suspended ust clear of the oat should be ass equals 1.1 boat, all its of persons for approved. The d be activated.	It should be confirmed that the life release from each fall which it is cor damage to any part of the lifeboat or It should be confirmed that the life release from each fall to which it waterborne in the light condition condition. Single fall systems not intended for exempt from this test.	feboat will nnected wit the release feboat will is connect and in a	hout binding or e mechanism. simultaneously ted when fully 10% overload	1.1 x Loaded Weight:N         On load release: <u>1.1 load</u> Passed: Failed:         Waterborne release: <u>1.1 load</u> :

Davit-launched lifeboats	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization: _	Time:		
4.4.4.2 Towing release tes	st	Regulations:	LSA Code 4.4.7	.6.5; MSC.81(70) 1/6.9.3		
	ocedure	Acceptance Criter	ia	Significant Test Data Operating mechanism disconnected and boat		
demonstrated when the lifeboat is loaded with its full complement of persons and equipment and towed at speeds of 5 knots that the moveable hook component stays closed.		these tests.		towed at 5 kts:Pass Fail		
	ing mechanism connected, it the lifeboat when loaded with			Test 1: 25% SWL, lengthwise to the boat at 45° to		
		Single fall eveteme not intend	ad for an load	the vertical:		
				Force Applied: N. Forward direction:Pass Fail Aft direction:Pass Fail Test 2: 100% SWL, athwartships at 20° to the vertical:		
<ul> <li>should be applied to the direction at an angle of should be conducted on</li> <li>.3 a force equal to the safe should be applied to the between the positions of</li> </ul>	e working load of the hook he hook in an athwartships 20° to the vertical. This test both sides; and fe working load of the hook hook in a direction halfway tests 1 and 2 (i.e. 45° to the poat in plan view) at an angle			Force Applied:N. Starboard:PassFail Port:PassFail Test 3: 100% SWL, 45° to the longitudinal axis of the boat in plan view at an angle of 33° to the vertical. Force Applied:N. Position 1:PassFail Position 2:PassFail		
of 33° to the vertical. This four positions.	s test should be conducted in			Position 3:PassFail Position 4:PassFail Comments/Observations		

Davit-launched lifeboats	Model:	Sur	ate: Time: urveyor: rganization:
4.4.4.3 Load and release	test	Regulations: LSA (	Code 4.4.7.6.4; MSC.81(70) 1/6.9.4.1, 6.9.4.2
Test Procee		Acceptance Criteria	Significant Test Data
A release mechanism shoul tested as follows: The lifeboat release and reta longest used connection cat with the system should be n according to instructions equipment manufacturer and of its safe working load and r Load and release should be n the lifeboat release and ref then be disassembled, the wear recorded. The release should then be reassembled.	rieval system and the ole/linkage associated nounted and adjusted from the original then loaded to 100% eleased. repeated 50 times. rieval system should parts examined and and retrieval system	<b>U</b>	eleased       Force Applied:N         h it is       Cable Length:m         Cable Length:m       m         cto any       Check the box for each release:         d" if any       1:2:3:4:5:6:         d" if any       1:2:3:4:5:6:         1:2:3:4:5:6:       10:11:12:         13:14:15:16:17:18:       19:20:21:22:23:24:         25:26:27:28:29:30:       30:

			Date:	Time:
Davit-launched lifeboats	Model: Lot/Serial Nun	nber:	Organizati	on:
4.4.4.4 Cyclic loading tes	<b>t</b>	Regulations: I	SA Code 4	.4.7.6.4; MSC.81(70) 1/6.9.4.3
Test Procedure				Significant Test Data
The hook assembly, whilst				Working Load:N
from the operating mechanis		The specimen should remain closed during the	e test.	Force Applied:N
tested 10 times with cyclic loa				
load to 1.1 times the safe wor		The system should be considered as "failed" if		
nominal 10 seconds per cyc		during this test or any unintended release	or opening	cam rotation if no applicable:
release mechanism has be		occurs.		Cam rotation 0°:
designed to operate as an off- on-load capability using the				
boat to close the hook, in this				1: 2: 3: 4: 5: 6: 7: 8: 9: 10:
load should be from no more		Single fall systems not intended for on-load op	peration are	
times the SWL.		exempt from this test.		Cam rotation +45°:
For cam-type designs, the t	test should be			1: 2: 3: 4: 5: 6: 7: 8: 9: 10:
carried out at an initial cam	rotation of 0°			
(fully reset position), and repo				Cam rotation -45°:
either direction, or 45° in o restricted by design.	ne direction if			1:  2:  3:  4:  5:  6:  7:  8:  9:  10:
				Passed: Failed:
				Comments/Observations

Davit-launched lifeboats			Date: Time: Surveyor: Organization:				
4.4.4.5 Actuation force te			SA Code 4	.4.7.6.4; MSC.81(70) 1/6.9.4.4			
Test Proc		Acceptance Criteria		Significant Test Data			
The cable and operating mechanism should then be reconnected to the hook assembly; and the lifeboat release and retrieval system should then be demonstrated to operate satisfactorily under its safe working load.		N and no more than 300 N, if a cabl should be the maximum length spec	e is used it ified by the	Actuation Force: N Cable Length:m Passed: Failed:			
The demonstration should v indicators and handles are correctly positioned in accord and safety instruction from manufacturer.	still functioning and are dance with the operation	passed the testing in 4.4.4.3, 4	.4.4.4 and conducted considered test or any rs.	Comments/Observations			

Davit-launched lifeboats	Model:	nber:		Date: Time: Surveyor: Organization:			
4.4.4.6 Second release mostrength	echanism tests	- actuation force and tensile	Regulations: L	SA Code 4	.4.7.6.4; MSC.81(70) 1/6.9.5.1, 6.9.5.2		
Test Procedure		Acceptance	Criteria		Significant Test Data		
A second release mechanis tested as follows: .1 the actuation force of mechanism should be loaded with 100% of its load. If a cable is used, it the maximum length spe manufacturer, and sec same manner it would be lifeboat. The demonstri- verify that any interlock and handles are still fur are correctly positioned in with the operation instruction from the origin manufacturer; and	the release e measured safe working should be of ecified by the ured in the esecured in a ation should (s, indicators notioning and n accordance and safety	.1 The actuation force should no more than 300 N.	d be no less than	100 N and	Actuation Force:N Cable Length:m Tensile strength @ 6xSWL. Force applied:N. Passed: Failed: Comments/Observations		
.2 the release mechanism mounted on a tensile str device. The load should to at least six times the of the release mechanism	ength testing be increased working load	.2 The release mechanism c	loes not fail.				
		Single fall systems not intende exempt from this test.	d for on-load ope	eration are			

Davit-launched lifeboats	Manufacturer:	Date:	_ Time:			
	Model:	Surveyor:				
	Lot/Serial Number:	Organization:				

4.4.5.1 Manoeuvring			Regulations: LSA Code 1.2.2	.8; MSC.81(70) I/ 6.10.1
Test Procedure		Acceptanc	e Criteria	Significant Test Data
The lifeboat should be loaded with weights	The lifeboat s	hould manoeuvre	and operate satisfactorily.	Passed Failed
equal to the mass of its equipment and the				
number of persons for which the lifeboat is				
to be approved. The engine should be				Comments/Observations
started and the lifeboat manoeuvred for a				
period of at least 4 h to demonstrate				
satisfactory operation.				
4.4.5.2 Liferaft Towing			Regulations: LSA Code 4.4.6	.8; MSC.81(70) I/ 6.10.1
Test Procedure		Aco	ceptance Criteria	Significant Test Data
The lifeboat should be loaded with weights				
mass of its equipment and the number of perse				
	towing force		•	Bollard Pull:N (To be recorded on type
of the lifeboat should then be determined.			rded on the type approval	approval certificate)
		certificate.		
This information should be used to determin	•			
fully loaded liferaft the lifeboat can tow at 2 kr	nots.			Passed: Failed:
The fitting designshed for touring other and	<b>4</b>			
The fitting designated for towing other cra				Decend. Failed:
secured to a stationary object by a towrope.				Passed: Failed:
should be operated ahead at full speed for a			Commente/Observations	
least 2 minutes, and the towing force me	easured and	nuing or its supp	orting structure.	Comments/Observations
recorded.				
1		1		

Davit-launched lifeboats	Manufacturer:			Date:            Surveyor:            Organization:			
4.4.5.3 Endurance, speed	d and fuel cons	sumption	Regulations: L	SA Code 4.4.6	6.8; MSC.81(70) 1/6.10.1		
Test Procedure			ice Criteria		Significant Test Data		
The lifeboat should be loaded with weights equal to the mass of its equipment and the number of persons for which the lifeboat is to be approved. The lifeboat should be run at a speed of not less than 6 knots for a period, which is sufficient to ascertain the fuel consumption and to establish that the fuel tank has the required capacity.		<ul><li>when loaded with its full complement of persons and equipment and with all engine-powered auxiliary equipment in operation, should be at least 6 knots.</li><li>Sufficient fuel, suitable for use thought out the temperature ranged expected in the area in which the ship operates, should be provided to run the fully loaded lifeboat at 6 knots for a period of not less than 24 h.</li></ul>			knots Measured Speed (with spray system): knots Passed: Failed:		
4.4.5.4 Engine Out of Wa	ter	Regulations: LSA Code 4.4.6.3; MSC.81(70) I/ 6.10.5					
Test Procedure		Acceptance Criteria			Significant Test Data		
The engine should be operate min at idling speed und simulating normal storage.		The engine should not be dam	aged as a result	of this test.	Passed: Failed: For engines with "wet" exhaust system: Type of impeller, if applicable:  Impeller damaged after test: Y/N Comments/Observations		

Davit-launched lifeboats	Model:	Surveyor:	Time:				
4.4.5.5 Compass test		Regulations: LSA Code 4.4	.8.5; MSC.81(70) I/ 6.10.7				
Test Procedure	)	Acceptance Criteria	Significant Test Data				
It should be determined that		The compass operates satisfactorily.	Compass Type: Passed: Failed:				
performance is satisfactory and that it is not unduly affected by magnetic fittings and equipment in the lifeboat.							
			Comments/Observations				
4.4.5.6 Helpless person re	ecovery	Regulations: LSA Code 4.4.3.4; MSC.81(70) I/ 6.10.8					
Test Procedure		Acceptance Criteria	Significant Test Data				
It should be demonstrated by test that it is possible to bring helpless people on board		Helpless people can be brought on board the lifeboat from the	e Passed: Failed:				
		sea.					
possible to bring helpless pe the lifeboat from the sea.			Comments/Observations				
			Comments/Observations				
			Comments/Observations				
			Comments/Observations				

Davit-launched lifeboats	Model:	Model: S Lot/Serial Number: O				-	Date:            Surveyor:            Organization:		
4.4.6.1 Towing test					Regu	lations: L	.SA (	Code 4.4.7	.7; MSC.81(70) I/ 6.11.1
Test Procedure	ł		Ac	ccepta	nce Crite	eria			Significant Test Data
equipped lifeboat, loaded w distributed mass equal to the number of persons for wh approved, can be towed at a	It should be demonstrated that the fully equipped lifeboat, loaded with a properly distributed mass equal to the mass of the number of persons for which it is to be approved, can be towed at a speed of not less than 5 knots in calm water and on an								
4.4.6.2 Painter release test					Regul	ations: LS	SA C	ode 4.4.7.7	7; MSC.81(70) I/ 6.11.1,6.11.2,6.11.3
Test Procedure			Ad	ccepta	nce Crite	eria			Significant Test Data

It should be demonstrated that the painter	The painter should release and there should be no damage to	Passed Failed
release mechanism can release the painter	the lifeboat or its equipment as a result of this test.	
on a fully equipped and loaded lifeboat that		Test Direction
is being towed at a speed of not less than		Position 1:Pass Fail
5 knots in calm water.		Position 2:PassFail
		Position 3:PassFail
The painter release mechanism should be		Position 4:Pass Fail
tested in several distinct directions of the		
upper hemisphere not obstructed by the		Comments/Observations
canopy or other constructions in the lifeboat.		
The directions specified in test 4.4.4.2		
should be used if possible.		

Davit-launched lifeboats	Manufacturer: Model: Lot/Serial Number:		Date:        Time:           Surveyor:            Organization:						
4.4.7.1 Impact test (1 of 3 Test Procedu In case of lifeboats launched I The fully equipped lifeboat, i should be loaded with weights the number of persons for wh be approved. The weights sho represent the normal loading in or fenders, if required, should lifeboat, in a free hanging p pulled laterally to a position so it will strike a fixed rigid very velocity of 3.5 m/s (keel is rai the free hanging position). The released to impact against the In the case of totally enclosed lifeboat to determine the mode exposure to acceleration cons fenders, lifeboat elasticitar arrangement. In case of totally enclosed lifebres safety belts and fastenings w high loads as a result of the secured about weights equal to the secured	Lot/Serial Number: a) ure by falls; ncluding its engine, equal to the mass of ich the lifeboat is to uld be distributed to in the lifeboat. Skates be in position. The position, should be o that when released ertical surface at a ised 0.624 m above The boat should be rigid vertical surface. osed lifeboats, the be measured and s within the prototype st severe occupant idering the effects of ty, and seating oats, representative thich will experience in position is hould be to 100 kg to simulate	<ul> <li>The impact test should be .1 no damage has bee the lifeboat's efficien</li> <li>.2 machinery and othe full satisfaction;</li> <li>.3 no significant ingres and</li> <li>.4 accelerations measu subsequent rebound test, are in complia "Emergency Limits" s respectively.</li> </ul>	Regulations: 6.4.7.1/2/3/4/5, ance Criteria e considered suc an sustained that it functioning; r equipment has s of seawater h ured during the d, if required during nce with the c	LSA Code 6.17 cessful if: t would affect s operated to has occurred; impact and ng the impact riteria of the	4.4.1.7, CDRR II CAR Inc Final Ev Passed: Comme	<b>4.6.5;</b> ndex: dex: valuation	MSC.81(70) Significant Test N/A N/A	I/ 6.4.1/2,	6.4.5,
holding a person during the te	οι.								

	Manufacturer:		Date:	Time:
Davit-launched lifeboats	Model:		Surveyor:	
Davit-launched medoats	Lot/Serial Number:		Organization:	
4.4.7.1 Impact test ( 2 of 3)		Regulations: LSA Code 4.6.5; MSC.81(70) 1/6.17.1 to 6.17.14		
Measuring and Evaluating Acceleration Forces Selection,		Evaluation with the dynamic response model		
placement and mounting of accelerometers		The dynamic response model is the preferred method to evaluate potential for the occupant		
The accelerometers used to measure the acceleration forces in the		in a lifeboat to be injured by exposure to acceleration forces. In the dynamic response		
lifeboat should:		model, the human body is idealized as a single-degree-of-freedom, spring-mass acting in		
.1 have adequate frequency response for the test in which they are		each coordinate direction as shown in figure 1. The response of the body mass relative		
to be used but the frequency response should at least be in the		to the seat support, which is excited by the measured accelerations, can be evaluated		
range of 0 to 200 Hz;		using a procedure acceptable to the Administration. The parameters to be used in the		
.2 have adequate capacity for the acceleration forces that will		analysis are shown in table 1 for each coordinate direction.		
occur during the tests; and		Before performing the dynamic response analysis, the measured accelerations should		
.3 have an accuracy of $\pm 5\%$ . Accelerometers should be placed in		be oriented to the primary axes of the seat.		
the lifeboat, parallel to the principal axes of the lifeboat, at those		The desired outcome from the dynamic response analysis is the displacement time-history of		
locations necessary to determine the worst occupant exposure		the body mass relative to the seat support in each coordinate direction.		
to acceleration.		At all times, the following expression should be satisfied:		
The accelerometers should be mounted on a rigid part of the interior of		$CDRR = \sqrt{\left(\frac{d_x}{S_x}\right)^2 + \left(\frac{d_y}{S_y}\right)^2 + \left(\frac{d_z}{S_z}\right)^2} \le 1$		
the lifeboat in a manner to minimize vibration and slipping. A sufficient number of accelerometers should be used at each				
		$\sqrt{3_x}$ $(3_y)$ $(3_z)$		
location at which acceleration forces are measured so that all likely				
acceleration forces at that location can be measured.		where $d_X$ , $d_Y$ and $d_Z$ are the concurrent relative displacements of body mass with respect		
The selection, placement, and mounting of the accelerometers should be to the satisfaction of the Administration.		to the seat support, in the $x$ , $y$ and $z$ body axes, as computed from the dynamic response		
		analysis and $S_X$ , $S_y$ , and $S_z$ , are relative displacements which are presented in table 2		
Recording method and rate		for the appropriate launch condition.		
The measured acceleration forces may be recorded on magnetic				
	or a digital signal or a paper plot of the	Evaluation using the SRSS method		
acceleration signal may be produced. If acceleration forces are to be		In lieu of the evaluation with the dynamic response model, the potential for an occupant in a lifeboat to become injured by an acceleration can be evaluated using the SRSS method.		
recorded and stored as a digital signal, the sampling rate should be at				
least 500 samples per second.				
Whenever an analogue acce	Defers neuforming the CDCC enclusion the measured excelorations should be evidented			
signal, the sampling rate should be at least 500 samples per second.		Before performing the SRSS analysis, the measured accelerations should be oriented		
		to the primary axes of the seat.		

Davit-launched lifeboats	Manufac Model: _ Lot/Seria	Manufacturer: Model: Lot/Serial Number:			Surveyor:		Time:
4.4.7.1 Impact test ( 3 of	3)			Regulations:	LSA Code 4	6 5' MSC 81(70) 1/	6 17 9 to 6 17 17
Figure 1 - Independent Single Degree-of-Freedom Representation of the Human Body				<b>Regulations: - LSA Code 4.6.5; MSC.81(70)</b> 1/ 6.17.9 to 6.17.17 Full-scale acceleration data should be filtered with no less than the equivalent of a 20 Hz low-pass filter. Any filtering procedure acceptable to the Administration may be used.			
			Acceleration data measured on a model should be filtered with a low-pass filter having a frequency not less than that obtained with the following expression: $f_{model} = \frac{20}{\sqrt{\frac{L_{model}}{L_{prototype}}}}$				
1 - Seal Sala	The second second			Where $f_{\text{model}}$ is the frequency of the filter to be used, $L_{\text{model}}$ is the length of the model lifeboat, and $L_{\text{prototype}}$ is the length of the prototype lifeboat. At all times, the following expression should be satisfied: $CAR = \sqrt{\left(\frac{g_x}{G_x}\right)^2 + \left(\frac{g_y}{G_y}\right)^2 + \left(\frac{g_z}{G_z}\right)^2} \le 1$			
Table 1 - Parameters of the						N STREET	
	Natural	Frequency	Damping Ratio				tions in the x, y and z seat axes, and
	(rad/s) 62.8		0.100				ich are presented in table 3 for the
	58.0		0.090	appropriate lau	nch condition.		
	52.9		0.224	Table 3 – SRSS Acceleration Limits for Lifeboats			
Table 2 – Suggested Disp	lacements L	imits for Lifeb	oats	Acceleration of	liroction	Acceleration Training	Emorgonov
Acceleration direction	Displaceme	ent (cm)		+X = Eyeballs		15.0	Emergency 18.0
	Training	- •	Emergency	-X = Eyeballs		15.0	18.0
<u> </u>	6.96		8.71	+Y = Eyeballs		7.0	7.0
, , , , , , , , , , , , , , , , , , ,	6.96	.09 4.95			Left	7.0	7.0
, ,	4.09				Down	7.0	7.0
5	4.09 4.95			-Z = Eyeballs		7.0	7.0
5	5.33		6.33		- 1	-	
-Z = Eyeballs Up	3.15		4.22				

Devit lownshed lifeheets   Mod	del:		Date:          Time:            Surveyor:          Organization:			
4.4.7.2 Drop test		Regulations:	LSA Code 4.4.1	1.7; MSC.81(70) 1/6.4.3/4/5, 6.4.7.1/2/3/4		
Test Procedure		Acceptance Criteria		Significant Test Data		
The fully equipped lifeboat, with its		The drop test should be considered successful	if:	Passed: Failed:		
should be loaded with weights equ						
mass of the maximum number of pe which the lifeboat is to be a		<ul> <li>.1 no damage has been sustained that wo lifeboat's efficient functioning;</li> </ul>	affect the	Comments/Observations		
Included in this loading should be		meboars encient functioning,				
of 100 kg loaded in one of each typ		.2 the damage caused by the drop te	sts has not			
installed in the lifeboat. The remainstalled		increased significantly as a result of the tes				
the weights should be distrib						
represent the normal loading con		.3 machinery and other equipment has op				
need not be placed 300 mm above pan. The lifeboat should t		satisfaction; and				
suspended above the water so		.4 no significant ingress of seawater has occurred.				
distance from the lowest point						
lifeboat to the water is 3 m. The						
should then be released so that	at it falls					
freely into the water.	-l					
The drop test should be conducted lifeboat that was used in the impact						
	. 1631.					

Davit-launched lifeboats	Model:	nber:		Surveyor:	Time:
4.4.7.3 Operation after dro		test	Regulations:	_SA Code 4.4.1	.7; MSC.81(70) 1f/ 6.4.5, 6.4.7.2, 6.10.1
Test Procedure			ce Criteria		Significant Test Data
Test Procedure After the impact and drop tes should be carefully examined position and extent of dam have occurred as a result of and an operational test conducted in accordance wit the lifeboat should be unloa and carefully examined to position and extent of addit that may have occurred as a drop and impact tests.	ts, the lifeboat I to detect the age that may of these tests, should be h 4.4.5.3 Then aded, cleaned o detect the ional damage	The damage caused by the i	mpact and drop		V

Davit-launched lifeboats	Model:		Date:            Surveyor:            Organization:		
4.4.7.4 Overload test (1 o	f 3)	Regulations: LSA Code 4.4.1.6		.6/6.2; MSC.81(70) 1/6.3.1/2/3/4/4.1/4.2/4.3/4.4/5	
Test Proce	dure	Acceptance Crite	eria	Significant Test Data	
<ul> <li>In case of lifeboat's launched lifeboat should be placed or from the lifting hooks and sig for measuring keel s measurements should then b</li> <li>.1 deflection of keel amids</li> <li>.2 change in length as meas of stem and stern posts</li> <li>.3 change in breadth ove quarter length forwa (ΔB 2) and the quarter</li> <li>.4 change in depth meas keel (ΔD).</li> <li>The lifeboat should then be distributed weights to repress lifeboat loaded with the full cor the type of ship for which it i measurements should again</li> <li>Additional weights should the suspended load is 25%, 5 greater than the weight of t loaded lifeboat. In the case</li> </ul>	by falls; The unloaded by blocks or suspended ghts should be erected ag. The following e made: hips ( $\Delta$ K); asured between the top ( $\Delta$ L); er the gunwale at the rd ( $\Delta$ B1), amidships er length aft ( $\Delta$ B3); and ured from gunwale to e loaded with properly eent the fully equipped nplement of persons for is to be approved. The be made. n be added so that the 50%, 75% and 100% he fully equipped and	The keel deflection amidships and over the gunwale at the quar	d change in breadth ter length forward, eed 1/400th of the	Unloaded (Initial measurement): KL/400	

	Manufacturer:		Date:	Time:	
Davit-launched lifeboats	Lot/Serial Nur	nber:	Organization:		
			<u></u>		
4.4.7.4 Overload test (2 o	if 3)	Regulations: L	Regulations: LSA Code 4.4.1.6/6.2; MSC.81(70) 1/ 6.3.3/4/5/6		
Test Procedure	)	Acceptance Criteria		Significant Test Data	
The weights for the vari	ous overload	The results at 100% overload, if required	a, should be	50% Overland	
		approximately in proportion to those obtain	ined at 25%		
proportion to the loading of its service condition, but the		ovenoad.		ΚΔΚ	
to represent the persons need				LΔL BΔB	
300 mm above the seat pa				<u>D</u> ΔD	
filling the lifeboat with water					
accepted as this method of lo				75% Overload:	
give the proper distribution				κΔκ	
Machinery may be removed	d in order to	No significant residual deflection should	result. Any	LΔL	
avoid damage to it, in which	n case weights	permanent deflection as a result of these tes	sts should be	ΒΔΒ	
should be added to the	e lifeboat to	recorded.		DΔD	
compensate for the remo					
machinery. At each increme				100% Overload:	
the measurements should be	made.			κΔκ	
				<b>♦</b> K 100% ≤≈4 x ΔK 25%	
The weights should then be	removed and			Passed Failed	
the dimensions of the lifeboat				LΔL	
lifeboat is made of					
measurement should be take	,			♦L 100% ≤≈4 x ΔL 25%	
of time sufficient to permit	the GRP to			Passed Failed	
recover its original form (	(approximately			ΒΔΒ	
18 h).					
				Comments/Observations	

Davit-launchod lifeboats		Surveyor:	Date:            Surveyor:            Organization:			
4.4.7.4 Overload test (3 c	of 3)	Regulations: LSA Code	4.4.1.6/6.2; MSC.81(70) 1/ 6.4.5			
Test Procedure	e Accepta	nce Criteria	Significant Test Data			
			B100% ≤≈4 x ΔB 25% Passed Failed D ΔD			
			D100% ≤≈4 x ΔD 25% Passed Failed			
		K K	Jnloaded (Final measurement):			
		L P	ΔL _ (Initial)  = ≈ L (Final) Passed			
		В	B ΔB B (Initial) ≈ B (Final) Passed Failed			
		D	D			
		w P	Final measurement taken h/min after removal of the veights Passed Failed Comments/Observations			

Davit-launched lifeboats	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:	
4.4.8.1 Air supply test		Regulations: LSA Code 4.8; MSC.81(70) 1/6.15			
Test Procedure		Acceptance Criteria		Significant Test Data	
All entrances and openings of the lifeboat should be closed, and the air supply to the inside of the lifeboat turned on to the design air pressure. The engine should then be run at revolutions necessary to achieve full speed with the fully loaded boat including all persons and with the sprinkler system in use for a period of 5 min, stopped for 30 s, then restarted for a total running time of 10 min.		During the 10-minute running time, the atmosph within the enclosure should be continuously ascertain that a small positive air pressure is main the lifeboat and to confirm that noxious gases ca The internal air pressure should never fall below atmospheric pressure, nor should it exc atmospheric pressure by more than 20 hPa durin It should be ascertained, by starting the engine w turned off, that when the air supply is deplete means are activated to prevent a dangerous un	min Engine stopped; Overpressure: hPa Air Supply depleted Underpressure: hPa		
		of more than 20 hPa being developed within the The system should have visual indicators to pressure of the air supply at all times.	e lifeboat.	Passed Failed Air System: rpm Nominal max. pressure: bar total air bottle volume: I Bottle pressure at srart: bar Bottle pressure after 10 min bar Total required air vollume= Pressure at start Pressure after 10') x total air bottle volume= I Comments/Observations	

Davit-launched lifeboats	Model:		Surveyor:	Time:		
	Lot/Serial Number:		Organization:			
4.4.8.2 Fire test (1 of 3)		Regulations:	LSA Code 4.9.1	; MSC.81(70) 1/ 6.16.1/2/3/4/4.1/4.2/4.3/7		
Test Proc		Acceptance Criteria		Significant Test Data		
<ul> <li>The lifeboat should be moore which is not less than five time plan area of the lifeboat. Suffi floated on the water within the it will sustain a fire, which lifeboat for 8 min. The bound capable of completely retainin The engine should be run at propeller need not be turn protective systems should be the fire test. The kerosene should be test. The kerosene should be test. The kerosene should be the f</li></ul>	d in the centre of an area es the maximum projected icient kerosene should be area so that when ignited completely envelops the ary of the area should be ig the fuel. If ull speed; however, the sing. The gas and fire- in operation throughout hould be ignited. It should the lifeboat for 8 min. temperature should be minimum at the following ions on the inside surface to by occupants and away and of the lifeboat. ature recorders should be nistration. re measurement should	At the conclusion of the fire test, t the lifeboat should be such that it to be used in the fully loaded condi	he condition of could continue	Temperatures inside surface of the lifeboat:		

Davit-launched lifeboats	Model:	nber:		Date: Surveyor: Organization:			
4.4.8.2 Fire test (2 of 3)				LSA Code 4.9.1; MS			
Test Procedure		Acceptance Crit			Significa	nt Test Data	
The atmosphere inside the l be continuously sampled and retained samples should be a presence and quantity of a	representative nalysed for the	The analysis of gases show there is sufficient oxygen ar levels of toxic or injuri	nd no dangerous		Level	<u>Accepta</u>	ible_
presence and quantity of e and injurious gases or sub analysis should cover th anticipated gases or substan be produced and which can to the materials and fabricat used to manufacture the lifeb	ostances. The le range of nces that may vary according on techniques	substances.		Oxygen		Passed Passed Passed Passed Passed Passed Passed Passed Passed	Failed Failed Failed Failed Failed Failed Failed Failed Failed Failed

		S	urveyor:	Time:		
4.4.8.2 Fire test (3 of 3)		Regulations: LSA Code 4.9.1; MSC.81(70) 1/ 6.16.6/7				
Test Procedure		Acceptance Criteria		Significant Test Data		
•		A positive pressure should be maintained inside the	he lifeboat.	Internal pressure range		
continuously recorded to confirm						
positive pressure is being maintair	ined inside			Min Max		
the lifeboat.				Passed Failed		
The protective system should	d be as					
effective as that of the lifeboat te				Comments/Observations		
water delivery rate and film thic						
various locations around the						
canopy should be equal to or ex				Defense to mentions to stiff any list black		
measurements made on the originally fire tested.	e lifeboat			Reference to previous test, if applicable;		
originally life tested.						
Note: The Administration may waiv	ve this test					
for any totally enclosed lifeboat						
identical in construction to anothe						
which has successfully comple						
test, provided the lifeboat diffe						
size, and retains essentially the sai	ame form.					

Davit-launched lifeboats	Model:	Sur	Date:          Time:            Surveyor:          Organization:		
4.4.8.3 Water spray test	•	Regulations: LSA	Code 4.9.2	/2.1/2.2/2.3; MSC.81(70) 1/6.16.8/8.1/8.2/9/10	
Test Procedure		Acceptance Criteria		Significant Test Data	
	ay pump. With ned output, the d to obtain the nd the pump to suction and ump to obtain re. position, on an ndition, run the Measure the ickness of the kternal surface 5° by the head	Acceptance Criteria Water for the system should be drawn from the sea priming motor pump. It should be possible to turn "on" and turn "off" the flor over the exterior of the lifeboat. The seawater intake should be so arranged as to pr intake of flammable liquids from the sea surface. The system should be arranged for flushing with fro and allowing complete drainage.	a by a self- ow of water orevent the resh water n thickness on of the er the whole		

Davit-launched lifeboats	Manufacturer: Model: Lot/Serial Number:			Date:            Surveyor:            Organization:		
4.4.9.1 Canopy closure te	st		Regulations: I	_SA Code 4.5.2	2.2; MSC.81(70) 1/ 6.13.1/2	
Test Procedure		Acceptance Criteria			Significant Test Data	
This test is required only enclosed lifeboats. During lifeboat should be loaded with persons for which it is to be an	the test the hthe number of		rected by not r	nore than two	Passed: Failed: Comments/Observations	
persons for which it is to be ap It should be demonstrated th can be easily erected by not persons.	at the canopy				Comments/Observations	

### 4.5 FREE-FALL LIFEBOATS

### **EVALUATION AND TEST REPORT**

4.5.0	General Inf 4.5.0.1 4.5.0.2 4.5.0.3	ormation General data and specifications Submitted drawings, reports and documents Quality assurance
4.5.1	Visual inspe 4.5.1.1 4.5.1.2 4.5.1.3 4.5.1.4 4.5.1.5	ection Occupant space Fittings, provisions and ladders Engine and starting system Steering mechanism Release mechanism
4.5.2	Freeboard, 4.5.2.1 4.5.2.2 4.5.2.3 4.5.2.4	stability and self-righting tests Flooded stability test Freeboard test Self-righting test Flooded capsizing test
4.5.3	Seating stre 4.5.3.1 4.5.3.2	ength and space tests Seating strength test Seating space test
4.5.4	Release me 4.5.4.1 4.5.4.2	echanism tests Release test Load test
4.5.5	Operationa 4.5.5.1 4.5.5.2 4.5.5.3 4.5.5.4 4.5.5.5 4.5.5.6	I tests Manoeuvering Liferaft towing Endurance, speed and fuel compensation Engine out of water Compass test Helpless person recovery
4.5.6	Towing test	:
4.5.7	Strength te 4.5.7.1 4.5.7.2	sts Free-fall tests Overload test
4.5.8	Additional t 4.5.8.1 4.5.8.2 4.5.8.3	ests for fire-protected lifeboats Air supply test Fire test Water spray test

### 4.5 FREE-FALL LIFEBOATS

### **EVALUATION AND TEST REPORT**

Manufacturer	
Date	
Туре	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Free-fall lifeboats	ree-fall lifeboats       Manufacturer:         Model:       Lot/Serial Number:			Organization:	
4.5.0.1 General data and s	pecifications		<b>Regulations:</b>	LSA Code 4.4,	4.5, 4.6, 4.8 & 4.9
General Information		Lifeboat Dimensions			Lifeboat Weight
Construction Material: Hull: Canopy: Lifeboat Inherent Buoyancy Material: Weight: Volume: Engine Installed: Manufacturer: Type: Power: Gear Ratio: Propeller Release Mechanism: Manufacturer: Type: SWL: Service: Cargo only Occupancy (150 max.): Persons (82.5 kg each):	<u>.</u>	Molded Dimensions: Length: Breadth: Depth: Free-Fall Certification Characte Free-Fall Height: Launch Angle: Minimum ramp length: Tested angle of list, if exceedin			Design Weight: Unloaded Boat: Loose Equipment: Food: Water: Fuel: Persons: Calculated Loaded Weight: Fully Equipped: With Persons: Weight As Tested: Fully Equipped: Comments/Observations
					Passed: Failed:

Free-fall lifeboats Manufacturer: Model: Lot/Serial Numb				
4.5.0.2 Submitted d	rawings, reports and c	ocuments		
Submitted drawings a	and documents			
Drawing No.	Revision No. & date	Title of drawing		Status
Submitted reports an	d documents			Otatus
Report/Document No.	Revision No. & date	Title of report/document		Status
		Maintenance Manual -		
		Operations Manual -		

Free-fall lifeboats	Manufacturer: Model: Lot/Serial Number:				
4.5.0.3 Quality assurance		Regulations: M	ISC.81(70)2/1.1,1.2		
		Quality assuran	ice		
of the International Conven	of a particular type are required by chapter III tion for the Safety of Life at Sea, 1974, as	Standard Used:	:		
amended, or the International Life-Saving Appliance (LSA) Code to be inspected, representatives of the Administration should make random inspections of manufacturers to ensure that the quality of life-saving appliances and materials used comply with the specification of the approved		Quality assuran	ice Procedure:		
prototype life-saving applianc		Quality assurance Manual:			
ensure that life-saving applian prototype life-saving applian	uired to institute a quality control procedure to nces are produced to the same standard as the ce approved by the Administration and to keep tests carried out in accordance with the	Description of S	System:		
		Quality assuran	nce System acceptable?		
		Yes/No			
		Comments/Observations:			

Free-fall lifeboats	Model:		Date:          Time:            Surveyor:          Organization:		
4.5.1.1 Occupant space			Regulations:	LSA Code 4.4.1	.8, 4.4.2.2/3, 4.4.3.5
Test Procedure		Acceptanc	e Criteria		Significant Test Data
Visually inspect the lifeboat		Interior Floor to Canopy Heig	ht		
Conduct measurements clearances as required.	and verify	Over 50% of the floor area the 1.3 m for lifeboats carrying 9 for lifeboats carrying 24 interpolation for occupancy b permitted.	or fever perso or more pe	ons and 1.7 m rsons. Linear	Height: m
		<b>Seating Space</b> Width – at least 480 mm Free clearance in front of the ba The backrest should extend at l pan.			Typical: Width: mm Free clearance:mm Extend of backrest:mm Number of seats provided:
		Walkway Surfaces The surfaces on which persor non-skid finish.	ns might walk s	should have a	Non-Skid Surface:Passed:Failed: Comments/Observations Passed:Failed:

Free-fall lifeboats	Model:	ber:	8	urveyor:	Time:	
4.5.1.2 Fittings, provisions and ladders (1 of 2) Regulations: LSA Con			A Code 4.4.7.	.3/5/8/10/11/12, 4.4.8.25		
Test Procedure		Acceptance Crite	eria		Significant Test	Data
Visually inspect the lifeb measurements and verify o required.		<ul> <li>Fittings and Provisions <ol> <li>Suitable handholds or buoy around the lifeboat above the reach of a person in the vicinity of the rudder and provisinity of the rudder and provisinity of the rudder and provisinity of the rudder and provision the vicinity of the rudder and provided for storing the soft of equipment water and a means provided for collecting and in operating position (if requises a provided for siting and in operating position (if requises a provided for siting and in operating position (if requises a provided for siting and in operating position (if requises a provided for siting and in operating position (if requises a provided for siting and in operating position (if requises a provided for siting and in operating provided.</li> <li>Approved light with 12 h carreading provided inside.</li> <li>Adequate view on all sides for maneuvering.</li> <li>Provided with a manual effective bailing or be auto and understand or be auto and a provided with a manual effective bailing or be auto and understand or be auto and the provided bailing bailing</li></ol></li></ul>	waterline and water, except in opeller. s, compartmen of storage of the od provision. Ig rainwater. collected water. nd securing ant ired). g lights light with apacity sufficien or safe launching pump suitable matically self-ba- nels to make art	vithin 1 P is or ismall .2 P .3 P .4 P .4 P .4 P .4 P .4 P .5 P .4 P .6 P .12 h .6 P .12 h .6 P .13 P .6 P .13 P .4 P .5 P .3 P .4 P .5 P .5 P .3 P .4 P .5 P .5 P .3 P .4 P .5 P	PassedFailed PassedFailed PassedFailed PassedFailed PassedFailed PassedFailed PassedFailed PassedFailed PassedFailed	- - - -

	Manufacturer:	Date:	Time:		
Free-fall lifeboats	Model: Lot/Serial Number:	Surveyor: Organization:			
4.5.1.2 Fittings, provisions		Regulations: LSA Code 4.4.3.3, 4.4.4			
Test Procedure	Acceptance		Significant Test Data		
	Exterior of the of the lifeboat enclosure (i.e		Colour of canopy: Colour of hull:		
	and its interior of a color, which does not ca	and its interior of a color, which does not cause discomfort to the occupants.			
			Colour of interior:		
	Handrails for persons moving about	exterior of lifeboat and to aid			
	embarkation and disembarkation		Passed: Failed:		
	The enclosures should be so arranged that:				
	.1 access to the lifeboat is provided by the lifeboat watertight;	hatches which can be closed to make	Passed: Failed:		
		ed and closed from both inside and			
	1.2 access hatches have means	to hold them securely in the open			
	position.				
	climb over thwarts or other obstructi	s from an entrance without having to ons;			
	Each seat is fitted with a safety harness.		Passed: Failed:		
	The adjacent safety harnesses are to be of	contrasting color.	Passed: Failed:		
	Lifeboat Ladders		Passed: Failed:		
	Ladders that can be used at any boarding of lowest step when in place should not be lest				
	Other Provisions		Passed: Failed:		
	No buoyant material should be installed exte				
	addition to buoyant material required to fl	oat the flooded lifeboat.	O a man and a (O b a a most is ma		
			Comments/Observations		

	Manufacturer: D	ate: Time:
Erec fall lifebaate	Model: S	urveyor:
Free-fall lifeboats	Lot/Serial Number: O	Organization:
4.5.1.3 Engine and star		A Code 4.4.6.2, 4.4.6.5/6/7/9/11/12, 4.6.4.1/3
Test Procedure	Acceptance Criteria	Significant Test Data
Visually inspect the	Type of starting system	Manual/ Power
lifeboat.	.1 Two independent rechargeable energy sources available for	power starting YES/NO/NOT APPLICABLE
	systems	
Conduct measurements	.2 Any required starting aids provided	Passed: Failed:
and verify clearances as	.3 Starting system is not impeded by engine casing, thwa	arts, or other Passed: Failed:
required.	obstructions	
	.4 Propeller arranged to be disengaged from the engine	Passed: Failed:
	.5 Provision for ahead and astern propulsion	Passed: Failed:
	.6 Exhaust arranged to prevent water from entering engir	ne in normal Passed: Failed:
	operation	
	.7 The lifeboat is designed with due regard to the safety of persor	ns in the water Passed: Failed:
	and to the possibility of damage to the propulsion system by	
	.8 Engine casing made of fire-retardant material or other suitable	e
	.9 Arrangements providing similar protection	Fire retardant materials used:
	.10 Personnel are protected from hot and moving parts	Passed: Failed:
	.11 Shouted order can be heard with engine running at speed neces	ssary for 6 knot Passed: Falled:
	operation	Passed: Failed:
	.12 Watertight casing around bottom and sides of starter batteries	
	fitting top which provides for necessary gas venting	Passed: Failed:
	.13 Means for recharging engine starting, radio, and search	
	provided by solar charge or ships power supply	Passed: Failed:
	.14 Radio batteries not used to provide power for engine starting	
	.15 Recharging means provided for lifeboat batteries (not exceed	
	ship's power supply can be disconnected at the lifeboat emba	rkation station Passed: Failed:
	.16 Instructions for starting and operating engine are water	
	mounted in a conspicuous place near the engine starting con	
	with a tightly fitting top which provides for necessary gas ventir	ng Comments/Observations

Free-fall lifeboats	Manufacturer:            Model:            Lot/Serial Number:				
4.5.1.4 Steering mechanis	sm		<b>Regulations: LSA</b>	Code 4.4.7.2	
Test Procedure	9	Acc	ceptance Criteria		Significant Test Data
Visually inspect the lifeboat. Conduct measurements clearances as required.	and verify	<ul> <li>Air-cooled engines have a dexhaust it to, the outside of t</li> <li>Manually operated dampers from, and exhausted to, the</li> <li>A tiller should be capable of</li> <li>Rudder permanently attached</li> <li>Except when remote steer attached or linked to the rud</li> <li>Rudder and tiller arranged s release mechanism or proper</li> </ul>	the lifeboat. s provided to enable interior of the lifebo f controlling the rudd ed to the lifeboat. ering is provided, the dder stock. so as not to be dama	cooling air to be taken in at. ler. he tiller is permanently	<u> </u>

Free-fall lifeboats	Model: Surveyor:		te: Time: veyor: ganization:
4.5.1.5 Release mechanis		Regulations: LSA	
Test Procedure	•	Acceptance Criteria	Significant Test Data
Visually inspect the lifeboat. Conduct measurements clearances as required.	and verify	<ul> <li>General</li> <li>Has two independent activation systems for the mechanism which may only be operated from the lifeboat.</li> </ul>	ne release Passed: Failed: the inside
		<ul> <li>Release control marked in a color that contrast surroundings.</li> </ul>	ts with the Passed: Failed:
		Release capability is adequately protected	d against Passed: Failed:
		<ul><li>accidental and premature use.</li><li>Designed to test the release system without lau</li></ul>	nching the Passed: Failed:
		lifeboat.	Comments/Observations

Free-fall lifeboats	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:
4.5.2.1 Flooded stability te	est	Regulations: I	LSA Code 4.4.1	.1, 4.6.3.3; MSC.81(70) 1/6.8.1, 6.8.2, 6.8.3
	Procedure	Acceptance Crit		Significant Test Data
The lifeboat should be loaded lockers, water tanks and fueld should be flooded or filled to the test. Lifeboats fitted with wat accommodate individual drinks these containers aboard compartments, which should flooding tests. Ballast of eact be substituted for the engine at that can be damaged by water Weights representing persons the lifeboat is flooded (water less seat pan) may be omitted. We would not be in the water wh level less than 500 mm ab in the normal seating positic centre of gravity approximate Weights representing persons in the water when the lifeboat and 500 mm above the seat approximate density of 1 kg containers) to represent a vol	d with its equipment. If provision tanks cannot be removed, they e final waterline resulting from this tertight stowage compartments to ing water containers should have and placed in the stowage be sealed watertight during the uivalent weight and density should and any other installed equipment s who would be in the water when evel more than 500 mm above the /eights representing persons who en the lifeboat is flooded (water ove seat pan) should be placed ions of such persons with their ly 300 mm above the seat pan. s who would be partly submerged is flooded (water level between 0 pan) should additionally have an u/dm <sup>3</sup> (for example water ballast ume similar to a human body.	The lifeboat should have p when filled with water flooding which would oc lifeboat is holed in any one the waterline assuming no lo material and no other dama The water level measure seatback in stable flooded more than 500 mm above the	ositive stability to represent cur when the location below uss of buoyancy age. ed along each condition is not the seat pan at	Passed: Failed: Max water level above seat pan: mm Passed (Y/N):

Manufacturer:	Date:	Time:
Model:	Surveyor	······································
Lot/Serial Num	ber: Organiza	ation:
	Demulationer I CA Code	A A E 4/0 4/0, MOC 04/70) 4/ C 0 4/E
4.5.2.2 Freeboard test Test Procedure	Acceptance Criteria	4.4.5.1/2.1/2; MSC.81(70) 1/ 6.8.4/5 Significant Test Data
	Each lifeboat with side openings near the gunwale sh	
	have a freeboard measured from the waterline to the lo	
	opening through which the lifeboat may become flooded,	
	least 1.5% of the lifeboat's length or 100 mm, whichever i	
seated in a proper seating position on one	greater; and	Angle of heel, if applicable:Deg.
side of the centreline. The freeboard should		Passed: Failed:
then be measured on the low side.	Each lifeboat without side openings near the gunwale shoul	
	exceed an angle of heel of 20° and should have a freebo measured from the waterline to the lowest opening thro	
	which the lifeboat may become flooded, of at least 1.5% of	
	lifeboats length or 100 mm, whichever is the greater.	

Free-fall lifeboats	Model:		Surveyor:	Time:
4.5.2.3 Self-righting test			A Code 4.6.3.2	/4, 4.6.4.2; MSC.81(70) 1/6.14.1/1.1/1.2/2/2.1/2.2
Test Procedure		Acceptance Criteria		Significant Test Data
		After release, the lifeboat should always return		Loaded:
rotate the lifeboat about a lor	0	position without the assistance of the occupant	S.	
to any angle of heel and then				Passed: Failed:
lifeboat, in the enclosed condi			uld be running	
incrementally rotated to angles		in neutral position and:		Light:
and including 180° and shoul These tests should be con		.1 unless arranged to stop automatically	when inverted	Passed: Failed:
following conditions of load:		.1 unless arranged to stop automatically the engine should continue to run when in		
following conditions of load.		30 min after the lifeboat has returned		
.1 when the lifeboat with i	its engine is	position; and	to the uplight	
loaded in the normal				
properly secured	weights	.2 if the engine is arranged to stop autor	matically when	
representing the fully	•	inverted, it should be easily restarted and		
lifeboat with a full con		after the lifeboat has returned to the upri		
persons on board. The w			5 1	
represent each person,		Water does not enter the engine.		Comments/Observations
have an average mass	of 82.5 kg,			
should be secured at	t each seat			Passed: Failed:
location and have its cent				
approximately 300 mm at				
pan so as to have the sa				
stability as when the lifeb				
with the number of person	ns for which it			
is to be approved; and				
Quiden the lifebert in	in the lind-t			
.2 when the lifeboat is condition.	in the light			

Free-fall lifeboats	Model:	Surveyor:	Time: on:
4.5.2.4 Flooded capsizing			4.1.1, 4.6.3.3; MSC.81(70) 1/ 6.14.3/4/5
Test Procedure		Acceptance Criteria	Significant Test Data
The lifeboat should be placed in the water and fully flooded until the lifeboat can contain no additional water. All entrances and openings should be secured to remain open during the test.		After release, the lifeboat should attain a position to provides an above-water escape for the occupants.	nat Passed: Failed:
For the purpose of this test, distribution of the occupa disregarded. However, the	ants may be	In case of totally enclosed lifeboats, water level measural along each seatback in stable flooded condition is not me than 500 mm above the seat pan at any occupant seat position.	ore
equivalent mass, should be s lifeboat in the normal operat	secured in the ing position.		
Using a suitable means, should be rotated about a lo to a heel angle of 180° and th	ngitudinal axis		

			Surveyor:	Time:
4.5.3.1 Seating strength te	st	Regulation	ns: LSA Code 4.4.1	1.5.3, 4.6.3.1; MSC.81(70) 1/ 6.6.2
Test Procedure		Acceptance Criteria		Significant Test Data
	the highest e seats which different from pat, should be kg. The load at so that both are affected. as part of the pat, the seat to be capable ass of 100 kg ifeboat in the st may be	The seating should be able to support this lo launch from a height of 1.3 times the appra any permanent deformation or damage. The seat belts should hold a mass of 100 k with the lifeboat in the capsized position.	oved height without	Passed: Failed:

	Madala			Date:	Time:
Free-fall lifeboats		nber:			
4.5.3.2 Seating space test			Regulations: L	SA Code 4.4.2	2.2.1, 4.4.3.1/2; MSC.81(70) 1/6.7.1
Test Procedure		Acceptance			Significant Test Data
The lifeboat should be fitted y and its equipment. The numb for which the lifeboat is to having an average mass of wearing a lifejacket and any of equipment should board the quickly as possible.	ber of persons be approved, 82.5 kg and other essential	The number of persons should and be properly seated within a of a lifeboat intended for a c possible in the case of a lifeb ship.	a period of 3 m argo ship and	in in the case as rapidly as	Boarding Time:min Passed: Failed:
The lifeboat should then be and all equipment on board individual to demonstrate equipment can be operated w and without interference with the	tested by an e that the <i>i</i> ithout difficulty	The boat can be manoeuvered operated without interference wit			SOLAS inherently buoyancy lifejacket worn: Yes/No Comments/Observations
4.5.4.1 Release test			Regulations: L	SA Code 4.7.6	6.2; MSC.81(70) 1/6.9.6
Test Procedure		Acceptance			Significant Test Data
The free-fall release mechani loaded with a force equal to at the normal load caused equipped lifeboat when loa number of persons for which approved.	least 200% of by the fully aded with the	It should be demonstrated that th should operate effectively whe procedure.			

Free-fall lifeboats	Model:			Surveyor:	Time:
4.5.4.2 Load test			Regulations: L	.SA Code 4.7.6	5.5; MSC.81(70) 1/6.9.7
Test Procedure	9	Acceptanc			Significant Test Data
The release mechanism should be mounted on a tensile strength testing device. The load should be increased to at least six times the working load of the release mechanism.		The release mechanism should equal to six times the working lo		d less than or	Working Load:N Force Applied:N Passed: Failed:
(Testing to failure is suggerequired.)	ested, but not	(If tested to failure, working load load.)	may be taken as	s1/6 the failure	
		,			Comments/Observations
4.5.5.1 Manoeuvring		Regulations: LSA Code 1.2.2.8; MSC.81(70) 1/ 6.10.1		2.8; MSC.81(70) 1/ 6.10.1	
Test Procedure		Acceptanc			Significant Test Data
The lifeboat should be loade equal to the mass of its equip number of persons for which to be approved. The engir started and the lifeboat man period of at least 4 h to satisfactory operation.	oment and the the lifeboat is ne should be noeuvred for a	The lifeboat should manoeuvre	and operate sat	isfactorily.	Passed: Failed: Comments/Observations

	Manufacturer:			Date:	Time:
Free-fall lifeboats	Model:			Surveyor:	
	Lot/Serial Nur	nber:		Organization:	
4.5.5.2 Liferaft towing			Pogulations: I	SA Codo 4 4 6	5.8; MSC.81(70) 1/ 6.10.1
Test Procedure	<u> </u>	Acceptanc		-5A Coue 4.4.0	Significant Test Data
		The lifeboat can successfully		as described	
equal to the mass of its equip		in the procedure.			
number of persons for which					
to be approved. The maximu					
of the lifeboat should then be	determined.				
This information should		The maximum towing force of t		ld be recorded	
determine the largest fully loa	ded liferaft the	on the type approval certificate			approval certificate)
lifeboat can tow at 2 knots.					
The fitting designated for tou	ing other craft				
The fitting designated for tow should be secured to a sta					
by a towrope. The engin					
operated ahead at full speed		There should be no damage	e to the towing	a fitting or its	Passed <sup>.</sup> Failed <sup>.</sup>
at least 2 minutes, and the				g nung of no	Comments/Observations
measured and recorded.	5	11 3			

4.5.5.3 Endurance, speed and fuel consu	Imption Regulations: LSA Code 4.4.6	5.8; MSC.81(70) 1/ 6.10.1
Test Procedure	Acceptance Criteria	Significant Test Data
The lifeboat should be loaded with weights equal to the mass of its equipment and the number of persons for which the lifeboat is to be approved. The lifeboat should be run at a speed of not less than 6 knots for a period, which is sufficient to ascertain the	Acceptance Criteria The speed of a lifeboat when proceeding ahead in calm water when loaded with its full complement of persons and equipment and with all engine-powered auxiliary equipment in operation, should be at least 6 knots. Sufficient fuel, suitable for use thought out the temperature ranged expected in the area in which the ship operates, should be provided to run the fully loaded lifeboat at 6 knots for a period of not less than 24 h.	Measured Speed (without spray system) <u>:</u> knots Measured Speed (with spray system <u>):</u> knots Passed: Failed:

4.5.5.4 Engine out of water	Regulations: LSA Code 4.4.6	6.3; MSC.81(70) 1/6.10.5
Test Procedure	Acceptance Criteria	Significant Test Data
The engine should be operated for at least 5 min at idling speed under conditions simulating normal storage.	The engine should not be damaged as a result of this test.	Passed: Failed: Normal storage angle tested: deg. Comments/Observations
4.5.5.5 Compass test	Regulations: LSA Code 4.4.8	3.5: MSC.81(70) 1/ 6.10.7
Test Procedure	Acceptance Criteria	Significant Test Data
It should be determined that the compass performance is satisfactory and that it is not unduly affected by magnetic fittings and equipment in the lifeboat.	The compass operates satisfactorily.	Passed: Failed: Comments/Observations

4.5.5.6 Helpless person recovery		Regulations: LSA Code 4.	4.3.4; MSC.81(70) 1/ 6.10.8	
Test Procedure		ce Criteria	Significant Test Data	est Data
It should be demonstrated by test that it is possible to bring helpless people on board the lifeboat from the sea.		nt on board the lifeboat from tl	he Passed: Failed: Comments/Observations	_
4.5.6 Towing test		Regulations: LSA Code 4.	4.7.7; MSC.81(70) 1/ 6.11.1	
Test Procedure	Acceptan	ce Criteria	Significant Test Data	est Data
It should be demonstrated that the fully equipped lifeboat, loaded with a properly distributed mass equal to the mass of the number of persons for which it is to be approved, can be towed at a speed of not less than 5 knots in calm water and on an even keel.	The lifeboat should not characteristics. There should be no damage to	exhibit unsafe or unstab	le Passed: Failed: Passed: Failed:	

Free-fall lifeboats	Model:		Surveyor:	Time:
4.5.7.1 Free-fall test (1 of Test Procedu	ire	Acceptance Criteria		70) 1/ 6.5.1/2/3/3.1/3.2/3.3/3.4/4/4.1/4.2/4.3, 6.17 Significant Test Data
A lifeboat design for free-fall la subjected to test launches of height at which the lifeboat stowed taking into accou- unfavourable list and trim, unf- of the centre of gravity, and ex- load. During the free-fall launche section, acceleration foro- measured and the data evalua- with tables 2 and 3 at differen- lifeboat to determine the exposure to acceleration consideration the seating arra. The tests required in this conducted with correctly scale least 1m in length. As a minima and mass of the lifeboat, the lo of gravity, and its second mor be scaled in a reasonable mor on the construction and bef- fall lifeboat, other paramete to be reasonably scaled to effe- of the model. If models are u scale tests should be condu- accuracy of the model measu- (continued)	onducted from the is intended to be int conditions of avourable locations treme conditions of s required in this ces should be ated in accordance in locations in the worst occupant on taking into angement. section may be d models that are at um, the dimensions ocation of its centre nent of mass, must nanner. Depending navior of the free- rs may also have ect correct behavior sed, sufficient full- ucted to verify the	<ul> <li>considered acceptable if:</li> <li>.1 the acceleration are in compliance "Training" condition specified in table during the launch, free- fall, and subset entry for those tests with the ship on ever</li> <li>.2 the acceleration forces are in complian "Emergency" condition specified in tab during the launch, free-fall, and subset entry for those tests with the se unfavourable conditions of list and trim;</li> <li>.3 the lifeboat makes positive headway in after water entry.</li> </ul>	e with the es 2 and 3 quent water en keel; nce with the les 2 and 3 quent water ship under and	Complete data for this test are to be recorded on the form provided. Summary of Test Data: Free-Fall Height:m Maximum CDRR:N/A, OR Maximum CAR:N/A Was Model Used: YES NO Which Tests: Model Scale: Weight:kg Radius of Gyration: % Loa Free-Fall Height:m Positive Headway: PassFail Comments/Observations

Free-fall lifeboats	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:
4.5.7.1 Free-fall test (	1 of 4) continued	Regulations: LSA Co	ode 4.7.5; MSC.81(70	) 1/ 6.5.1/2/3/3.1/3.2/3.3/3.4/4/4.1/4.2/4.3, 6.17
Test Proce		Acceptance Criteria	3	Significant Test Data
	th the ship on an e type of launching luction lifeboat and h the lifeboat is to			Comments/Observations
equipment and o complement of p	with its required one half of the full persons distributed half of the seating feboat; and			
equipment and c complement of	with its required one half of the full persons seated in of the seating lifeboat.			

	Manufacturer:		Date:	Time:		
Free-fall lifeboats	Model:		Surveyor:			
	Lot/Serial Number:		Organization:	·····		
	0					
4.5.7.1 Free-fall test (2 of			A Code 4.7.5; MSC.81(7			
	Acceleration Forces Selection, placement		the dynamic response			
and mounting of accelerome			• •	ferred method to evaluate potential for the		
	easure the acceleration forces in the lifeboat			oosure to acceleration forces. In the dynamic		
should:				lized as a single-degree-of-freedom, spring-		
1 have adequate frequency	y response for the test in which they are to			as shown in figure 1. The response of the port, which is excited by the measured		
	cy response should at least be in the range			rocedure acceptable to the Administration.		
of 0 to 200 Hz;	cy response should at least be in the range			is are shown in table 1 for each coordinate		
,	for the acceleration forces that will occur	direction.				
during the tests; and			a the dvnamic respon	se analysis, the measured accelerations		
.3 have an accuracy of ±5%	).	should be oriented to the primary axes of the seat.				
		The desired outcome from the dynamic response analysis is the displacement time-history				
Accelerometers should be pla	aced in the lifeboat, parallel to the principal	of the body mass relative to the seat support in each coordinate direction.				
	locations necessary to determine the worst	At all times, the following expression should be satisfied:				
occupant exposure to accele		$(d)^{2} (d)^{2} (d)^{2}$				
	e mounted on a rigid part of the interior of the	$CDRR = \sqrt{\left(\frac{d_x}{S_x}\right)^2 + \left(\frac{d_y}{S_y}\right)^2 + \left(\frac{d_z}{S_z}\right)^2} \le 1$				
lifeboat in a manner to minim			$\sqrt{3_x}$	$(3_y)$ $(3_z)$		
	erometers should be used at each location are measured so that all likely acceleration					
forces at that location can be		whore d d an	d d are the concurrent	relative displacements of body mass with		
	nd mounting of the accelerometers should	where $d_X$ , $d_y$ and $d_z$ are the concurrent relative displacements of body mass with				
be to the satisfaction of the				I z body axes, as computed from the dynamic		
				$S_{z}$ , are relative displacements which are		
Recording method and rate		presented in table	e 2 for the appropriate la	aunch condition.		
The measured acceleration f	orces may be recorded on magnetic media	Evaluation using	g the SRSS method			
	tal signal or a paper plot of the acceleration			esponse model, the potential for an occupant		
	acceleration forces are to be recorded and			celeration can be evaluated using the SRSS		
<b>o o</b> ,	he sampling rate should be at least 500	method.		solution can be evaluated doing the encee		
samples per second.						
0	eration signal is converted to a digital signal, at least 500 samples per second.	Before performing to the primary ax		measured accelerations should be oriented		

	Manufacturer:		Date:		Time:		
Free-fall lifeboats		-	or:				
	Lot/Serial Number:		Organization:				
4.5.7.1 Free-fall test (3			Regulations: LSA Code				
Figure 1 – Independent a Human Body	Single Degree-of-Freedom	Representation of the	Hz low-pass filter. Any filte	iltering procedure a red on a model shou in that obtained with $f_{model} = - \sqrt{\int_{L_p}^{L_p}}$ quency of the filter t	$\frac{20}{L_{model}}$ prototype to be used, $L_{model}$ is the length of the		
Table 1 – Parameters of	the Dynamic Response M	odel	model lifeboat, and <i>L</i> <sub>prof</sub> At all times, the following		be satisfied:		
Coordinate Axis		Damping Ratio	where $g_X$ , $g_V$ , and $g_Z$ are t	the concurrent acce	lerations in the x, y and z seat axes, and		
X Y	(rad/s) 62.8 58.0	0.100 0.090	$G_X$ , $G_y$ , and $G_Z$ are allowable accelerations, which are presented in table 3 for the appropriate launch condition.				
Z	52.9	0.224	Table 3 – SRSS Acceleration Limits for Lifeboats				
	placements Limits for Life	ooats		Acceleration			
Acceleration direction	Displacement (cm) Training 6.96	Emergency 8.71	Acceleration direction +X = Eyeballs In	Training 15.0	Emergency 18.0		
+X = Eyeballs In			-X = Eyeballs Out	15.0	18.0		
-X = Eyeballs Out	6.96	8.71	+Y = Eyeballs Right	7.0	7.0		
+Y = Eyeballs Right	4.09	4.95	-Y = Eyeballs Left	7.0	7.0		
-Y = Eyeballs Left	4.09	4.95	+Z = Eyeballs Down	7.0	7.0		
+Z = Eyeballs Down -Z = Eyeballs Up	5.33 3.15	6.33 4.22	-Z = Eyeballs Up	7.0	7.0		

		Manufa	cturer:				Date:		Time:		<u> </u>
Free-fall li	ifeboats	Model:	al Number				Surveyor: Organization:				
		Lotioch					organization	•			
4.5.7.1	Free-fall test	(4 of 4)			R	egulations:	LSA Code 4.7.	5; MSC.81(7	0) I/ 6.17.9/1	2/13/14/15/1	6/17
Launch	Load	List/Trim	CDRR	CAR	Headway	Launch	Load	List/Trim	CDRR	CAR	Headway
Full 1	Total	0/0				5	50% Fwd	20/+10 *			
Full 2	50% Fwd	0/0				6	50% Fwd	20/-10 *			
Full 3	50% Aft	0/0				7	50% Aft	0/0			
Full 4	Op Crew	0/0				8	50% Aft	20/+10 *			
1	Total	0/0				9	50% Aft	20/-10 *			
2	Total	20/+10 *				10	Op Crew	0/0			
3	Total	20/-10 *				11	Op Crew	20/+10 *			
4	50% Fwd	0/0				12	Op Crew	20/-10 *			
Comments	s/Observations	i									
Comments	s/Observations										
Comments	s/Observations										
Comments	s/Observations										
Comments	s/Observations	i									
Comments	s/Observations										
Comments	s/Observations										
Comments	s/Observations										
Comments	s/Observations	·									

NOTE: Tests Full-1, Full-2, Full-3, and Full-4 must be conducted with the full-scale lifeboat. The other tests can be conducted either with a properly constructed model or with the full-scale lifeboat

Free-fall lifeboats	Model:			Surveyor:	Time:
4.5.7.2 Overload test				SA Code 4.7.4	; MSC.81(70) 1/ 6.3.7/8/9, 6.10
Test Proced		Acceptanc			Significant Test Data
It should be demonstrated the sufficient strength to withstar upon it when loaded with a dist to the mass of the number of the paper over and its equilation it is to be approved and its equilation and the second of the transplance of the paper over and the second of the transplance of the paper over a second of the transplance of the	hat the lifeboat has not the forces acting stributed mass equal bersons for which it is oment when free-fall 8 times the height for e lifeboat is normally is not available, this ropping the lifeboat he same angle that entry. should be unloaded, nined to detect the age that may have st. An operational test in accordance with boat should again be		red successfu t to the satis has been s fficient functio opy as measu	faction of the sustained that oning; and any ured during the	

	Manufacturer:			Date:	Time:		
Free-fall lifeboats	Model:			Surveyor:			
	Lot/Serial Nur	nber:		Organization:			
		I	Demulation of l		NOO 04/70\ 4/ 0.45		
4.5.8.1 Air supply test		Regulations: LSA Code 4.8;					
Test Procedure	. <b>6</b> 41	Acceptance Criteria		· · · · · · · · · · · · · · · · · · ·	Significant Test Data		
		During the 10-minute running ti					
should be closed, and the air		within the enclosure should b			min		
inside of the lifeboat turned or		ascertain that a small positive a			Engine stepped: Overpressure:		
at revolutions necessary to		the lifeboat and to confirm that	loxious gases c	annot enter.	Engine stopped; Overpressure: hPa		
speed with the fully loaded boa					IIF a		
persons and with the sprink					Air supply depleted; Underpressure:		
use for a period of 5 min, sto					hPa		
then restarted for a total runn		The internal air pressure should	never fall belo	w the outside			
min.		atmospheric pressure nor					
		atmospheric pressure by more					
		,		0			
		It should be ascertained, by sta			Passed: Failed:		
		turned off, that when the air s					
		means are activated to preven			Air System:		
		of more than 20 hPa being dev	eloped within th	e lifeboat.	engine rev at test:rpm		
		The sector should be a site			Nominal max. pressure:bar		
		The system should have visu		o indicate the			
		pressure of the air supply at al	umes.		Bottle pressure at start:bar Bottle pressure after 10 min bar		
					Total required air volume=		
					(Pressure at start-Pressure after 10') x total air bottle		
					volume= I		
					Comments/Observations		

	Manufacturer: Model:		Date: Survevor:	Time:
Free-fall lifeboats	Lot/Serial Number:		Organization:	
4.5.8.2 Fire test (1 of 3)		Regulatio	ns: LSA Code 4.9.1	; MSC.81(70) 1/ 6.16.1/2/3/4/4.1/4.2/4.3/7
Test Proc	cedure	Acceptance Cri	teria	Significant Test Data
The lifeboat should be moore	ed in the centre of an area	At the conclusion of the fire te	est, the condition of	Temperatures inside surface of the lifeboat:
which is not less than five tim	nes the maximum projected	the lifeboat should be such th	at it could continue	1 6
plan area of the lifeboat. Sut		to be used in the fully loaded	condition.	2 7
floated on the water within th	e area so that when ignited			3 8
it will sustain a fire, which				4 9
lifeboat for 8 min. The boun	5			5 10
capable of completely retainin				Temperatures inside the lifeboat at locations
The engine should be run a				normally taken by occupants and away from the
propeller need not be tur				inside surface:
protective systems should b				11
the fire test. The kerosene s				12
continue to burn and envelop				13
During the fire test, the				14
measured and recorded as a	a minimum at the following			15
locations:				Temperature on the external surface
.1 at no less than 10 position	ns on the inside surface of			Comments/Observations
the lifeboat;				
.2 at not less than 5 positi				
	by occupants and away			
from the inside surface; a				
.3 on the external surface of				
The positions of such tempera				
the satisfaction of the Adm				
temperature measurement s	mould allow the maximum			
temperature to be recorded.				

Free-fall lifeboats	Model:	nber:		Date: Surveyor: Organization:		me:
4.5.8.2 Fire test (2 of 3)			Regulations:	LSA Code 4.9.1; MS	SC.81(70) 1/6.4	16.5
Test Procedure		Acceptance C			Significant T	
	npled and	there is sufficient oxygen	The analysis of gases should indicate that there is sufficient oxygen and no dangerous			
representative retained sample analysed for the presence a	nd quantity of	levels of toxic or injustances.	unous gases of	Gas	Level	<u>Acceptable</u>
essential, toxic, and injurio substances. The analysis sh	ould cover the			<u>Oxygen</u>		Passed Failed Passed       Failed
range of anticipated gases of						Passed Failed
that may be produced and w						Passed Failed
according to the materials a						Passed Failed
techniques used to manufactu	re the lifeboat.					Passed Failed
						Passed Failed
						Passed Failed
						Passed Failed
						Passed Failed
						Passed Failed
				Comments/Observa	tions	Passed Failed

Erec fell lifebaste	lodel:	Surv	Time:		
4.5.8.2 Fire test (3 of 3)		Regulations: LSA 0	Regulations: LSA Code 4.9.1; MSC.81(70) 1/ 6.16.6/7		
Test Procedure		Acceptance Criteria		Significant Test Data	
The pressure inside the lifeboat continuously recorded to confi positive pressure is being mainta the lifeboat. The protective system shoul effective as that of the lifeboat t water delivery rate and film th various locations around the canopy should be equal to or e measurements made on the originally fire tested. <i>Note</i> : The Administration may wai for any totally enclosed lifeboat identical in construction to anoth which has successfully comp test, provided the lifeboat diff size, and retains essentially the sa	firm that a ained inside uld be as tested. The hickness at hull and exceed the ne lifeboat aive this test bat which is ther lifeboat pleted this ffers only in	A positive pressure should be maintained inside the	M Pa Co	iternal pressure range lin Max assed: Failed: omments/Observations eference to previous test, if applicable;	

-fall lifeboats Manufacturer: Model: Lot/Serial Number:			Surveyor: _			
		<b>Regulations:</b> L	SA Code 4.9	9.2/2.1/2.2/2.3; N	MSC.81(70)	1/ 6.16.8/8.1/8.2/9/10
		e Criteria			Significant	Test Data
d output, the o obtain the the pump to nd uction and p to obtain sition, on an	Water for the system should to self-priming motor pump. It should be possible to turn "o water over the exterior of the line The seawater intake should be the intake of flammable liquids The system should be arran water and allowing complete d The delivery rate of water or the over the lifeboat should be Administration.	be drawn from the on" and turn "off feboat. e so arranged as from the sea sur ged for flushing rainage. sprayed water fil to the satisfac	' the flow of s to prevent face. with fresh m thickness stion of the	Pump RPM: Suction Pressu Delivery Pressu Film Thickness: Delivery Rate: Trim or Heel 5° Head Passed: 5° Stern Passed: 5° Port Passed: 5° Starboard Passed:	re:_Pa ure:_Pa Water Fi Failed: Failed: Failed:	mm L/h ilm Covering Surface 
The stiller of the st	bdel: t/Serial Nun bump. With output, the obtain the he pump to d action and to obtain ition, on an on, run the easure the ness of the nal surface	bodel:	bodel:	bodel:	bdel:       Surveyor:       Organization:         It/Serial Number:       Regulations: LSA Code 4.9.2/2.1/2.2/2.3; I         Regulations: LSA Code 4.9.2/2.1/2.2/2.3; I         Acceptance Criteria         pump. With       Water for the system should be drawn from the sea by a self-priming motor pump.         obtain the       self-priming motor pump.         It should be possible to turn "on" and turn "off" the flow of water over the exterior of the lifeboat.       Engine RPM:	bdel:



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> MSC.1/Circ.1631 14 December 2020

## REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (RESCUE BOATS)

1 The Maritime Safety Committee, at its 102nd session (4 to 11 November 2020), approved the *Revised standardized life-saving appliance evaluation and test report forms*.

The original forms, as set forth in the Standardized life-saving appliance evaluation 2 and test report forms (MSC/Circ.980) and its addenda, were developed on the basis of the requirements of the International Life-Saving Appliance (LSA) Code and the Revised recommendation on testing of life-saving appliances (resolution MSC.81(70)) by the Maritime Safety Committee, at its seventy-third session in 2001, with a view to providing guidance on how to conduct tests, record test data and verify tests. The Committee has since adopted seven amendments to the LSA Code and eight amendments to resolution MSC.81(70). These amendments have been incorporated in the original forms which, due to their volume, are now presented in six separate circulars, i.e. MSC.1/Circ.1628, MSC.1/Circ.1629, MSC.1/Circ.1630, MSC.1/Circ.1631, MSC.1/Circ.1632 and MSC.1/Circ.1633, pertaining to the equipment addressed in chapters II to VII of the LSA Code, respectively. The forms annexed to this circular apply to the equipment addressed in chapter V of the LSA Code, i.e. rescue boats (outboard engines for rescue boats; rigid rescue boats; inflated rescue boats; rigid/inflated rescue boats; rigid fast rescue boats; inflated fast rescue boats; and rigid/inflated fast rescue boats).

3 The use of the revised forms will continue to be of benefit to Administrations and other parties, such as manufacturers, test facilities, owners and surveyors, and will be a major help in mutually accepting the type approval of appliances approved by other Administrations.

4 Member Governments are invited to bring the annexed, revised forms to the attention of all parties concerned with approving, manufacturing and testing life-saving appliances and to encourage them to use the forms.

5 This circular supersedes MSC/Circ.980.

SUSTAINABLE SHIPPING FORA SUSTAINABLE PLANET

#### ANNEX

## REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (RESCUE BOATS)

#### INTRODUCTION

#### Reference

These standardized life-saving appliance evaluation and test report forms have been revised on the basis of the requirements of the International Life-Saving Appliance (LSA) Code, as amended through resolution MSC.425(98), *the Revised recommendation on testing of life-saving appliances* (resolution MSC.81(70)), as amended through resolution MSC.427(98), and the *Recommendation on means of rescue on ro-ro passenger ships* (MSC/Circ.810).

#### Status

In general, the tests described in the Revised recommendation (resolution MSC.81(70)) constitute the test procedures and the LSA Code sets the acceptance criteria. The evaluation and test report forms are guidelines on how to conduct tests, record test data and verify tests. These forms are not intended to change the standards given in the LSA Code and the Revised recommendation, as amended. In the case of inconsistency between the forms and the LSA Code or the Revised recommendation, the text of the Code/resolution should prevail over that of the forms.

#### Layout

Each Administration may use electronically distributed evaluation and test report forms as the basis for customizing the layout to reflect the profile of the approving body, without changing the original contents.

#### **Internal references**

The evaluation and test report forms should be stand-alone documents. Therefore, all internal references in the original text from the LSA Code or the Revised recommendation have been replaced by either the full-length text or a reference to other relevant evaluation and test report forms. However, in some of the forms, external references are kept for updating purposes.

#### **Documentation of tests**

For approval purposes, all detailed records of test data are to be enclosed with the report forms.

#### Verification of tests

Each test is to be verified passed or failed by an Administration representative's initials (e.g. recognized organization or surveyor) and date of testing. Each page is to be verified on completion by the Administration representative's signature and its date of completion.

### Reporting of type approval

To facilitate unified reporting procedures, the completed evaluation and test report forms are to be seen as a documented verification of required type approval tests for each type of equipment. When documentation of type approval is required by a third party, the verified evaluation and test report forms should constitute the complete documentation of the type approval together with the relevant approval certificates.

#### REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (RESCUE BOATS)

## TABLE OF CONTENTS

- LSA Code chapter V (Rescue boats):
- 5.1 Outboard engines for rescue boats
- 5.2 Rigid rescue boats
- 5.3 Inflated rescue boats
- 5.4 Rigid/inflated rescue boats
- 5.5 Rigid fast rescue boats
- 5.6 Inflated fast rescue boats
- 5.7 Rigid/inflated fast rescue boats

#### 5 RESCUE BOATS

#### 5.1 OUTBOARD ENGINES FOR RESCUE BOATS

- 5.1.1 Submitted drawings, reports and documents
- 5.1.2 Quality assurance
- 5.1.3 Visual inspection
- 5.1.4 Power test
- 5.1.5 Water drench test
- 5.1.6 Hot start test
- 5.1.7 Manual start test
- 5.1.8 Cold start test
- 5.1.9 Engine-out-of-water test
- 5.1.10 Extra test for outboard engine for fast rescue boats

## 5.1 OUTBOARD ENGINES FOR RESCUE BOATS

## **EVALUATION AND TEST REPORT**

Manufacturer	
Engine type	
Serial number	
Fuel type	
Design power output (kW)	
Propeller diameter and pitch	
Required battery capacity	
Starting aids	
Date	
Place	
Name and signature of surveyor	
Approving organization	

Outboard engines for rescue boats Manufa Lot/Seri		cturer:al Number:	_ Date: Time: _ Surveyor: _ Organization:					
5.1.1 Submitted drawings, reports and documents								
Submitted drawings and documents								
Drawing No.	Revision No.	& Date	Title of	drawing		Status		
			Submitted reports and documents			Status		
Report/Document No.	Revision No.	& Date	Title of repo	t / document		Status		
			Maintenance Manual -					
			Operations Manual -					

	Manufacturer: Model:		Date:	Time:	
Outboard engines for rescue boats	Model: Lot/Serial Number:		Surveyor:            Organization:		
5.1.2 Quality assurance		Regulations: MSC.	81(70) 2/1.1, 1.2		
Except where all appliances of a particu of the International Convention for the amended or the International Life-Savi inspected, representatives of the Adm	Safety of Life at Sea, 1974, as ng Appliance (LSA) Code, to be ninistration should make random	Quality assurance Standard Used:			
inspections of manufacturers to ensure appliances and materials used comp approved prototype life-saving appliance	ly with the specification of the	Quality assurance P	rocedure:		
Manufacturers should be required to inst ensure that life-saving appliances are p the prototype life-saving appliance appr keep records of any production tests c Administration's instructions.	Quality assurance Manual: Description of System:				
		Quality assurance S	ystem acceptable		
		Yes/No			
		Comments/Observa	tions		

Outboard engines for rescue boats       Manufacturer:         Model:       Lot/Serial Number:			Surveyor:		
5.1.3 Visual inspection	_	Regulations: LSA C	ode 1.2,	4.4.6; MSC.81(70) 1 /7.7	
Test Procedure	Acceptano	ce Criteria		Significant Test Data	
Visually inspect the engine. Conduct measurements and ver	system, or a power starting sy	The engine should be provided with either a manual starting system, or a power starting system with two independent rechargeable energy sources.		PassedFailed	
equipment as required.	Any necessary starting aids sh	nould be provided.		PassedFailed	
	Propeller protection should be	in place during test.		PassedFailed	
				Comments/Observations	
5.1.4 Power test Regulations: LSA		Regulations: LSA C	Code 5.1.1.8; MSC.81(70) 1 /7.7.2 - 7.7.3		
Test Procedure	Acceptano	Acceptance Criteria		Significant Test Data	
The motor, fitted with a suitable propelle should be placed in a test rig such that t propeller is completely submerged in	ne damage from such a loading	•		Protection of propeller in place Passed Failed	
water tank, simulating service conditions		The motor should not overheat or be damaged.		Duration :min	
Propeller protection should be in pla during the test.	ce			Any significant damage?	
				Passed Failed	
The motor should be run at the maximum continuous rated speed using the maximum power obtainable for 20 min.				Overheating?	
				Passed Failed	
				Comments/Observations	

Outboard engines for rescue boats	Manufacturer: Model: Lot/Serial Number:		Surveyor	Time: pr: ation:		
5.1.5 Water drench test	-	Regulations: LSA C	ode 5.1.1	1.8; MSC.81(70) 1 /7.7.4		
Test Procedure	Acceptan	ce Criteria		Significant Test Data		
The motor protective cover should removed and the motor thoroug drenched with water, by hose, except the intake to the carburetor.	roughly		or thoroughly ose, except for			Duration :min Any significant damage? PassedFailed
The motor should be started and run speed for at least 5 min while it is still bei drenched.				Comments/Observations		
5.1.6 Hot start test		Regulations: LSA C	ode 5.1.1	1.1.8; MSC.81(70) 1 /7.7.5		
Test Procedure	Acceptan	ce Criteria		Significant Test Data		
<ul><li>While still in the test rig referred to in 5.7 (Power Test) 7.7.2, the motor should be rat idling speed in order to heat up to cylinder block.</li><li>At the maximum temperature achievab the motor should be stopped a immediately restarted.</li><li>This test should be carried out at least two stopped be carrie</li></ul>	un he le, nd	start.		Test carried out :times Restarts Passed Failed Any significant damage? Passed Failed Comments/Observations		

Outboard engines for rescue boats	Manufacturer: Model: Lot/Serial Number:	S	Surveyo	Time: r: ation:
5.1.7 Manual start test		Regulations: LSA Cod	de 5.1.1	.8; MSC.81(70) 1 /7.7.6 - 7.7.7
Test Procedure	Acceptan	ce Criteria		Significant Test Data
The motor should be started at ambie temperature by manual means. The means should be either a manu automatic-rewind system or a pull co round the top flywheel of the motor. The motor should be started twice with 2 minutes of commencement of the sta procedure. The motor should be run until norm operating temperatures are reached, ther should be stopped and started manua twice within 2 minutes, by means of manual automatic-rewind system or a pi cord round the top flywheel of the motor.	The motor should not fail to st al rd ain art al n it lly a ull		iny uy.	Ambient temperature test carried out :times         Does the motor start twice within 2 min?         Passed Failed         Operating temperature         Does the motor start twice within 2 min?         Passed Failed         Comments/Observations

Outboard engines for rescue boats	Manufacturer: Model: Lot/Serial Number:		Survey	or: Time: zation:
5.1.8 Cold start test		Regulations: LSA C	ons: LSA Code 4.4.6.2; MSC.81(70) 1 /7.7.8 - 7.7.9	
Test Procedure	Acceptano	ce Criteria		Significant Test Data
The motor, together with the fuel, fuel line and battery, should be placed in a chamb at a temperature of $-15^{\circ}$ C and allowed remain until the temperature of all parts he reached the temperature of the chamber The temperature of the fuel, battery at motor should be measured for this test. The motor should be started twice, with 2 min of commencement of the sta procedure, and allowed to run long enoug to demonstrate that it runs at operatin speed. It is recommended that this period shound not exceed 15 s. Where lower temperature service intended, that lower temperature should it substituted for $-15^{\circ}$ C in the above-mentioned test.	er the engine at an ambient temp of commencing the start proce the Administration having rega which the ship carrying the engaged, a different temperate and in art gh ng Id The engine must start at the s	perature of –15°C withi edure unless, in the op ard to the particular voy e rescue boat is co ure is appropriate.	in 2 min binion of vages in nstantly	Starting power Source: Starting aids used: Measured temperatures Chamber: °C Fuel: °C Lubricant oil: °C Cooling fluid: °C Number of starts: Duration of first run: seconds Duration of second run: seconds Duration of last run: seconds Type of battery: Required capacity of starting battery: Passed Failed Comments/Observations

Outboard engines for rescue boats	Ianufacturer:        Date:         Iodel:        Surve         ot/Serial Number:       Orgar		Date: Surveyc Organiz	ate: Time: irveyor: ganization:	
5.1.9 Engine-out-of-water test		Regulations: LSA Co	ode 4.4.(	6.2; MSC.81(70) 1 /7.7.10	
Test Procedure	Acceptano	ce Criteria		Significant Test Data	
	The engine should be operated for at least 5 min at idling speed under conditions 5 min after starting from cold with the rescue boat out of th water.			Cooling water supplied during test? Yes/ No If so, by what method? Durationmin	
	The engine should not be dam	naged as a result of this	s test.	Any damage after this test? Passed Failed	
				Comments/Observations	

Outboard engines for rescue boats	Manufacturer: Model: Lot/Serial Number:	
5.1.10 Extra test for outboard e	engine for fast rescue boats	Regulations: LSA Code 5.1.4.8; MSC.81(70) 1/7.7.11
Test Procedure	Acc	eptance Criteria Significant Test Data
<ul> <li>First Procedure</li> <li>Engine inversion test:</li> <li>The engine and its fuel tank should be on a frame that is arranged to rotate axis equivalent to the longitudinal axis of at the height of the boat transom.</li> <li>The propeller should be in a water ba height of the cavitation plate.</li> <li>The engine should then be subjected following test procedures, and then d for examination:</li> <li>1 start the engine and run it at full 5 min;</li> <li>2 stop the engine and rotate it in a direction through 360°;</li> <li>3 restart the engine and run it at for 10 min;</li> <li>4 stop the engine and run it at full 10 min, and then stop the engine.</li> <li>6 allow the engine to cool;</li> <li>7 restart the engine and run it at for 5 min;</li> </ul>	e mounted about an of the boat usin to the ed to the lismantled speed for clockwise full speed it in a ugh 360°; speed for e;	Amount of loss:       ml         Passed       Failed         Comments/Observations       Are all the tests carried out according to the procedur as prescribed?         Passed/Failed       If it stops, does it easily restart?       Passed/Failed         Does the engine fulfil the requirements after the test have been carried out according to the procedure Passed/Failed       Passed/Failed

Out	ooard engines for rescue boats	Manufacturer:		Date: Surveyo Organiza	r: ation:
5.1.1	0 Extra test for outboard engir (continued)	ne for fast rescue boats	Regulations: LSA C	ode 5.1.4	.8; MSC.81(70) 1/7.7.11
	(continued) Test Procedure e inversion test (continued): slowly rotate the running engine a clockwise direction through 180 hold at the 180° position for 10 and then rotate it 180° further in clockwise direction to complete or revolution; if the engine is arranged to sto automatically when inverted, resta it; allow the engine to continue to ru at full speed for 10 min; shut the engine down and allow it cool; repeat the procedure in .7 throug .11 above, except that the engine	Acceptan With regard to step .9, the automatically or by the hel switch when inverted. when the rescue boat has should be capable of be helmsman's emergency relea The design of the fuel and lubr the loss of more than 250 ml of propulsion system should the The engine should not overhea when examined after being show no evidence of overhea	ce Criteria e engine should be s imsman's emergency ing restarted, provide se, if fitted, has been re icating systems should p of fuel or lubricating oil fi rescue boat capsize. eat or fail to operate. dismantled the engine	stopped release r motor ed the eset. prevent rom the should	Significant Test Data         Amount of oil lost from engine during each inversion:         .2 :       ml         .4 :       ml         .8 :       ml         .12 :       ml         Total amount of oil lost from engine:       ml Evidence of overheating or excessive wear?         Passed/ Failed         Comments/Observations

## 5.2 RIGID RESCUE BOATS

## **EVALUATION AND TEST REPORT**

- 5.2.0 General information
  - 5.2.0.1 General data and specifications
  - 5.2.0.2 Submitted drawings, reports and documents
  - 5.2.0.3 Quality assurance
- 5.2.1 Visual inspection
  - 5.2.1.1 Occupant space
  - 5.2.1.2 Fittings, provisions and ladders
  - 5.2.1.3 Engine and starting system
  - 5.2.1.4 Steering mechanism and fuel tank
  - 5.2.1.5 Release mechanism
  - 5.2.1.6 Drain valve
- 5.2.2 Freeboard, stability and self-righting tests
  - 5.2.2.1 Flooded stability test
  - 5.2.2.2 Freeboard test
  - 5.2.2.3 Righting test (for non self-righting rescue boats)
- 5.2.3 Seating strength and space tests
  - 5.2.3.1 Seating strength test
  - 5.2.3.2 Seating space test
- 5.2.4 Release mechanism tests
  - 5.2.4.1 Simultaneous release
  - 5.2.4.2 Towing release test
  - 5.2.4.3 Load and release test
  - 5.2.4.4 Cyclic loading test
  - 5.2.4.5 Actuation force test
  - 5.2.4.6 Second release mechanism test actuation force and tensile strength
- 5.2.5 Operational tests
  - 5.2.5.1 Liferaft towing
  - 5.2.5.2 Endurance, speed and fuel consumption
  - 5.2.5.3 Engine out of water
  - 5.2.5.4 Compass test
  - 5.2.5.5 Helpless person recovery
  - 5.2.5.6 Manoeuvrability with paddles or oars
- 5.2.6 Towing and painter tests
  - 5.2.6.1 Towing test
  - 5.2.6.2 Painter release test
- 5.2.7 Strength tests
  - 5.2.7.1 Impact, drop and operation after impact and drop test
  - 5.2.7.2 Overload test

## 5.2 **RIGID RESCUE BOATS**

## **EVALUATION AND TEST REPORT**

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Rigid rescue boats	Model:	er:		Surveyor:	Time:
5.2.0.1 General da	ta and specification	ons	Regulations	: LSA Code 4.4,	5.1, MSC.81(70) 1/7.1.9
General Info	ormation	Rescue bo	oat Dimensions	3	Rescue boat Weight
Construction Material: Hull:		Dimensions:			Design Weight:
Canopy:		LOA:			Unloaded Boat:
Fire-retardancy docun	nentation:				Loose Equipment:
		Breadth Maximum:			Fuel:
					Persons:
Rescue Boat Inherent Bu		Depth to Sill:			
(Type App.) Material:		Dopth to Cupwala:			Calculated Loaded Weight:
Weight: Occupancy:		Depth to Gunwale:			Fully Equipped:
Persons (82.5 kg each	):	Moulded Breadth:			With Persons:
Engine(s) Installed:		Moulded Depth:			Weight as Tested:
Type App by: Manufacturer:		Provision for securing	hanging_off	pendant	Fully Equipped:
Type:		(if applicable):			
Power:					
Gear ratio (inboard en	gine):				Comments/Observations
Additional rigid or inflatat	ble buoyancy:				
Release mechanism(s) (	if applicable) 1 2				
Manufacturer:					
Tupo:					
SWL:					

Rigid rescue boats	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization:	_ Time:				
5.2.0.2 Submitted drawings, reports and documents								
Submitted drawings and documents								
Drawing No.	Revision No. & date	Tit	e of drawing	Status				
	S	ubmitted reports and documents		Status				
Report/Document No.	Revision No. & date	Title of	report / document	Status				
		Maintenance Manual -						
		Operations Manual -						

Rigid rescue boats       Manufacturer:         Model:       Lot/Serial Number:	Date:         Time:           Surveyor:
5.2.0.3 Quality assurance	Regulations: MSC.81(70) 2/1.1, 1.2
Except where all appliances of a particular type are required by chapter of the International Convention for the Safety of Life at Sea, 1974, a amended, or the International Life-Saving Appliance (LSA) Code to be inspected, representatives of the Administration should make rando inspections of manufacturers to ensure that the quality of life-savin appliances and materials used comply with the specification of the approved prototype life-saving appliance. Manufacturers should be required to institute a quality control procedure ensure that life-saving appliances are produced to the same standard a the prototype life-saving appliance approved by the Administration and keep records of any production tests carried out in accordance with the Administration's instructions.	Standard used: Quality assurance procedure: Quality assurance manual: Description of system:
	Quality assurance system acceptable Yes/No Comments/Observations

Divid receive beets	Manufacturer: Model: _ot/Serial Number:	Surveyo	r: Time: r: ation:
5.2.1.1 Occupant spa	ace	Regulations: LSA Co	de 4.4.2.2, 4.4.3.5, 5.1, MSC.81(70) 1/7.1.9
Test Procedure	Acceptance Cr	iteria	Significant Test Data
Visually inspect the rescue Conduct measurements verify clearances as require	e boat. <b>General</b> and Unless the rescue boat has adequate s	theer, it should be provid than 15% of its length. 5 m. a point 215 mm from the t 635 mm from the back st 1190 mm from the back st 1190 mm from the back at least 350 mm ximum r indicated. rying at least five seated her of minimum 2130 x 6	led       Passed       Failed         Passed       Failed         passed       Failed         back       Width:mm         Depth:mm       mm         ack       Knee Space:mm         Leg Space:mm       Vert. Separation:mm         Overlap:mm       Position Indication: PASSED FAILED         i10       Stretcher space:Xmm         Location:       Failed         Passed       Failed

Rigid rescue boats	Manufacturer:			Surveyor:	Tir		
5.2.1.2 Fittings, pro	ovisions and ladd	ers	rs Regulations: LSA Code 4.4.3, 4.4.7, 5.1, MSC.81(70) 1/7.1.9			31(70) 1/7.1.9	
Test Proced	dure	Acceptance Criteria		Significant Test Data			
Visually inspect the rescue boat. Conduct measurements and verify clearances as required.		Fittings and Provisions			Failed		
		On other than self-righting rescue boats, handholds on the underside arranged to break away without damaging the rescue boat		Passed	Failed		
		Weathertight stowage for small items of equipment		Passed	Failed	N/A	
		Approved position indicating light provided at highest point		Passed	Failed		
		Provided with effective means self-bailing.	of bailing or b	e automatically	Passed	Failed	
		Ladders Ladders that can be used at board and the lowest step who than 0.4 m below the light wate	en in place sho		Passed	Failed	

Rigid rescue boats	Manufacturer:			Date:          Time:            Surveyor:          Organization:			
5.2.1.2 Fittings, pro	ovisions and ladd	ers Regulations: LSA Code 4.4.			3, 4.4.7, 5.1, MSC.81(70) 1/7.1.9		
Test Procee	dure	Acceptance Criteria		Significant Test Data			
5.2.1.2 Fittings, provisions and lade Test Procedure Visual Inspection-Fittings, provisions and ladders (continued)		Other Provisions Buoyant material may be insta boat, provided it is adequately is capable of withstanding ex- open deck on a ship at sea ar condition. Colour The boat is of a highly visit detection.	alled external to protected agair xposure when nd for 30 days	nst damage and stowed on an afloat in all sea	Lowest stepm below waterline YES NO N/A Passed Failed		

5.2.1.3       Engine and starting system       Regulations: LSA Code 4.4.6, 5.1, MSC.81(70)1/7.1.9         Test Procedure       Acceptance Criteria       Significant Test Data         Visually inspect the rescue boat. Conduct       Type of starting system       Manual Power	Divid receive heads Mod	rescue boats Manufacturer: Model: Lot/Serial Number:		Time:	
	5.2.1.3 Engine and star	ting system	Regulations: LSA Code 4.4.6, 5.1, MSC.81(70)1/7.1.9		
Visually inspect the rescue boat. Conduct Type of starting system	Test Procedure	Accepta	ice Criteria	Significant Test Data	
measurements and verify clearances as required.       Two independent rechargeable energy sources provided for power starting systems       Note in formation in the power starting systems         Required starting system is not impeded by engine casing, thwarts, or other obstructions       Passed Failed         Propeller arranged to be disengaged from the engine and provision for ahead and astern propulsion       Passed Failed         System designed with due regard to the safety of persons in the water and to the possibility of damage to the propulsion system from floating debris       Passed Failed         System designed with due regard to the safety of persons in the water and to the possibility of damage to the propulsion system from floating debris       Passed Failed         Passed Failed       Passed F	Visually inspect the rescue be measurements and verify cle	<ul> <li>bat. Conduct</li> <li>bat. Conduct</li> <li>barances as</li> <li>Type of starting system</li> <li>Two independent recharge power starting systems</li> <li>Required starting aids provised to be optimized to be optimized to be optimized to be optimized to provision for ahead and as</li> <li>Exhaust arranged to prevent of a system designed with due the water and to the possil system from floating debrise</li> <li>Engine casing made of suitable arrangements proised order can be head necessary for 6 knot operation</li> <li>Shouted order can be head necessary for 6 knot operation</li> <li>Watertight casing around batteries with a tightly fit venting</li> <li>Means for recharging engitibatteries provided by solar</li> </ul>	ble energy sources provided for ded led by engine casing, thwarts, or sengaged from the engine and ern propulsion at water from entering engine in egard to the safety of persons in lity of damage to the propulsion ire-retardant material or other ding similar protection m hot and moving parts d with engine running at speed on bottom and sides of starter ng top which provides for gas e starting, radio, and searchlight charger or ship's power supply	Manual Power         YES       NO       N/A         Passed       Failed         Passed       Failed	

Rigid rescue boats	Model:	r:		Date: Surveyor: Organization:		_ Time:	
5.2.1.3 Engine and	starting system	Regulations: LSA Code 4.4.6			, 5.1, MSC.81(70)1/7.1.9		
Test Procedure		Acceptance Criteria - Recharging for engine batteries provided by ship's power			Significant Test Data		
Visual Inspection-Engine and starting system (continued)		<ul> <li>Recharging for engine batters supply does not exceed 50 v</li> </ul>		by ship's power		Failed	
		- Recharging means for engine batteries can be disconnected		Passed	Failed		
		at the rescue boat embarkation station			Passed	Failed	
		<ul> <li>Instructions for starting an resistant and mounted in a engine starting controls</li> <li>Towing arrangements for magina starting controls</li> </ul>	a conspicuous	place near the			

Rigid rescue boats		er:		Surveyor:		ime:	
5.2.1.4 Steering mecl	hanism and fuel ta	ink	nk Regulations: LSA Code 4.4.7.2, 5.1.1.8, MSC.81(70)1/7.1.9				
Test Proce	dure	Acceptance Criteria		Significant Test Data			
Visually inspect the rescue boat. Conduct measurements and verify clearances as required.		<b>Steering</b> A tiller should be capable of controlling the rudder (rudder and tiller may form part of outboard motor).		Passed	Failed		
		Rudder permanently attached to the rescue boat. Except when remote steering is provided, the tiller is permanently attached or linked to the rudder stock.			Passed	FailedN/A	
					Passed	FailedN/A	
		Rudder and tiller arranged s operation of the release mech			Passed	Failed	
		Fuel Tank					
		If fitted with petrol-driven outboard motor, the fuel tank(s			Passed	FailedN/A	
		should be specially protected against fire and explosion.		Comments/Observations			

Rigid rescue boats	Manufacturer:			Surveyor:		-ime:	
5.2.1.5 Release me	echanism	1	Regulations	: LSA Code 4.4.	7, 5.1, MSC.81(70	)1/7.1.9	
Test Proce	dure	Acceptance	ce Criteria		Significant Test Data		
Visually inspect the rescue boat. Conduct measurements and verify clearances as required.		Clear operating instructions Release control marked in a surroundings	colour that co	ntrasts with the		_ Failed	
		For on-load release mechanis	ms:				
		Suitably worded danger sign f	or on load relea	ase	Passed	Failed	N/A
	Mechanical protection (interlock) engages only when mechanism is completely and properly reset, to prevent accidental release during recovery			Passed	_ Failed	N/A	
		On-load release mechanism n action by the operator			Passed	_ Failed	N/A
		Mechanical protection prov required for off load release	ided beyond	that normally	Passed	Failed	N/A
		For a single fall and hook			Comments/Obse	ervations	
		on-load release capability is not required; in such an arrangement a single capability to release the boat only when it is fully waterborne will be adequate.		Passed	Failed	N/A	
				release mechani	sm type (if installed	d in boat):	
	NOTE: Such single fall hook systems may be attached to the boat or to the davit fall wire.		Approval:				

Rigid rescue boats	e boats Manufacturer: Model: Lot/Serial Number:			Surveyor:	Time:
5.2.1.6 Drain valve Regulations: LSA Co			LSA Code 4.4.	7.1, 5.1, MSC.81(70)1/7.1.9	
Test Proce		Acceptance (			Significant Test Data
Test Procee Visually inspect the resc measurements and veri required (not applicable boats)	ue boat. Conduct fy clearances as	Acceptance         Fitted near lowest point on the         Automatically opens when the         closes to prevent water entry water         Cap or plug attached to the         equivalent.         Readily accessible from inside         Position clearly marked.	hull. e boat is not v when the boat i boat by a lar	is waterborne. nyard, chain or	Significant Test Data         Passed Failed         Passed Failed         Passed Failed         Passed Failed         Passed Failed         Comments/Observations

Rigid rescue boats	Model:	r:		Date: Surveyor: Organization: _	Time	:
5.2.2.1 Flooded st	ability test		Regulations	: LSA Code 4.4.	1.1, MSC.81(70)1/6.8.	13
Test Proce	dure	Acceptano	ce Criteria		Sign	ificant Test Data
The rescue boat should equipment. If provision lo and fuel tanks cannot I should be flooded or waterline resulting from boats fitted with wa compartments to accom drinking water contain these containers aboard stowage compartments sealed watertight during Ballast of equivalent w should be substituted fo any other installed equip damaged by water. Weights representing por mass) who would be in the rescue boat is flooded than 500 mm above the omitted.	ckers, water tanks be removed, they filled to the final this test. Rescue itertight stowage modate individual ers should have and placed in the which should be the flooding tests. eight and density or the engine and oment that can be ersons (of 82.5kg he water when the (water level more	When loaded as specified, t positive stability when filled w which would occur when the ra location below the waterline a material and no other damage	ith water to rep escue boat is h assuming no lo	oresent flooding loled in any one	Comments/Observat	ions Failed

Rigid rescue boats	Model:		Surveyor:	Time:
5.2.2.1 Flooded s	tability test		Regulations: LSA Code 4.4	4.1.1, MSC.81(70)1/6.8.13
Test Proc		Acceptar	nce Criteria	Significant Test Data
Flooding Stability test (c	continued):			
Weights representing p not be in the water when flooded (water level le above seat pan) should normal seating position with their centre of gra 300 mm above the s representing persons w submerged in the water flooded (water level betw above the seat pan) have an approximate of (for example water bal represent a volume si body. Note: Several tests conducted if holes in di create different flooding	the rescue boat is ess than 500 mm d be placed in the s of such persons avity approximately seat pan. Weights tho would be partly when the lifeboat is veen 0 and 500 mm should additionally lensity of 1 kg/dm <sup>3</sup> llast containers) to milar to a human			

Rigid rescue boats       Manufacturer:         Model:       Lot/Serial Number:			Surveyor:	Time:	
5.2.2.2 Freeboard	test	-	Regulations	: LSA Code 4.4.	5, MSC.81(70)1/6.8.45
Test Proce	dure	Acceptance	ce Criteria		Significant Test Data
The rescue boat with its loaded with a mass equa equipment. One half of persons for which the re approved should be se seating position on of centreline. The freeboar measured on the low side The freeboard of the boas in the loading condition v engine and fuel, or positioned to represent e	al to that of all the f the number of scue boat is to be ated in a proper ne side of the d should then be e. at should be taken with all equipment, equivalent mass	This test should be considere freeboard, on the low side, is n boat's length or 100 mm, whic	ot less than 1.5	% of the rescue	Measured Freeboardmm 1.5% of Boat's Length:mm Passed Failed Comments/Observations

odel: Si		Surveyor:				
or non self-rig	hting rescue boats)	Regulations	: MSC.81(70)1/7	.1.7		
	Acceptanc	e Criteria			est Data	
hat both with fuel or an e engine and s capable of two persons d engines, the not applicable. ighting test in erformed.	The rescue boat is capable of I two persons if it is inverted on	peing righted by	y not more than	Is the boat self-righting? (If YES, refer to lifeboat report 4.4.2.3) Can the boat be righted by 2 With engine and fuel: Passed Without engine and fuel:	YES ort 4.5.2.3 persons?	
	el: Serial Numbe non self-rig at both with uel or an engine and capable of wo persons engines, the ot applicable. Jhting test in	el:	el:	el:	eliOrganization:Organ	Bit:

Rigid rescue boats	Manufacturer: Model: Lot/Serial Number:			Surveyor:		_ Time:	
5.2.3.1 Seating stre	ength test	-	Regulations	: LSA Code 4.4.	1.5, MSC.81(7	0)1/6.6.1	
Test Proced	lure	Acceptanc	ce Criteria			Significant Test I	Data
Test Proced The seating should be load of 100 kg in each position person to sit in the rescue In the case of a rescue k falls, each type of seat s with a mass of 100 kg ir location when dropped im height of at least 3 m. (7 performed in conjunction v in 5.2.7.1.)	ded with a mass n allocated for a e boat. boat launched by should be loaded n any single seat to the water from This test may be	Acceptance The seating should be able to any permanent deformation or The seating should be capable damage should be sustained efficient functioning.	o support this damage.	this loading. No	Passed	mage Failed Failed	

Rigid rescue boats	Rigid rescue boats       Manufacturer:			Surveyor:	Time:
5.2.3.2 Seating spa	ace test		Regulations:	LSA Code 5.1.	1.3.2, MSC.81(70)1/7.1.3
Test Procee	dure	Acceptanc	ce Criteria		Significant Test Data
The rigid rescue boat she its engine and all its number of persons for boat is to be approved, h mass of at least 82.5 kg lifejackets and immersion other essential equipment then board; one person s a stretcher of similar din shown in the figure and be properly seated in the rigid rescue boat s manoeuvred and all equitested to demonstrate operated without difficult with the occupants.	equipment. The which the rescue aving an average i, and all wearing on suits and any t required, should hould lie down on hensions to those the others should rescue boat. The hould then be sipment on board that it can be ty or interference	Equipment can be operated occupants. The rescue boat must be cap persons and a person lying do Except the helmsmen, person provided the space used of requirements of test form 5.2.7 No seating is on the gunv chambers on the sides of the b	bable of carryin wn on a stretch s may be seat conforms to t 1.1. vale, transom,	ng at least five ner. ed on the floor, he leg space	Equipment operated: YES NO Number of persons carried: Seated on seats Seated on floor Lying on a stretcher Total PassedFailed Lifejacket and immersion suit used during the test: Lifejacket– Inflatable/Inherently BuoyantInmersion suit– Uninsulated/Buoyant Insulated

Rigid rescue boats	rescue boats Manufacturer: Model: Lot/Serial Number:			Surveyor:	Ti		
5.2.4.1 Simultaneo	us release		Regulations:	LSA Code 4.4.	7.6, MSC.81(70)1/6	.9.12	
Test Procee	lure	Acceptanc	e Criteria		S	ignificant Test Dat	ta
For rescue boats launch the rescue boat with its er be suspended from the re just clear of the ground rescue boat should be lo total mass equals 1.1 time rescue boat, all its eq number of persons for boat is to be approved. should be released sim each fall to which it is of binding or damage to any boat or the release mech Single fall systems not int operation are exempt from	ngine fitted should lease mechanism or the water. The baded so that the es the mass of the uipment and the which the rescue The rescue boat iultaneously from ionnected without part of the rescue anism.	It should be confirmed to simultaneously release from ea without binding or damage to a the release mechanism. It should be confirmed to simultaneously release from ea when fully waterborne in the overload condition. There should be no damage connection to the boat.	ach fall which any part of the hat the reso ach fall to which light condition	it is connected rescue boat or cue boat will n it is connected and in a 10%	Light condition Passed (N/A 1.1 x Loaded Mas Passed (N/A Comments/Obser	– Single fall, of s: Failed – Single fall, of	f-load only) _kg N/A

	Manufacturer:		Date <sup>.</sup>	Time:
	Model:	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · ·
Rigid rescue boats	Lot/Serial Number:	· · · · · · · · · · · · · · · · · · ·	Organization	:
		<u> </u>	Organization	·
5.2.4.2 Towing release	e test		Regulations: L	.SA Code 4.4.7.6.5; MSC.81(70) 1/6.9.3
	est Procedure	Acceptance C		Significant Test Data
With the operating me	chanism disconnected it should be	There should be no	damage as a	Operating mechanism disconnected and boat towed
	e rescue boat is loaded with its full	result of these tests.	-	at 5 kts:PassFail
complement of persons a	and equipment and towed at speeds of			
5 knots that the moveable	e hook component stays closed.	The rescue boat	is released	Operating mechanism connected tests.
		, , ,	the release	
	operating mechanism connected, it	mechanism.		Test 1: 25% SWL, lengthwise to the boat at 45° to the
	that the rescue boat when loaded with			vertical:
	ersons and equipment when towed at			
	released. Both of the above should be	Single fall systems not intended for		Force Applied: N.
demonstrated as follows:		on-load operation are exempt from		
1 a farma a gual ta 250/	of the option working load of the book	this test		Aft direction:Pass Fail
	o of the safe working load of the hook			Test 2: 100% SWIL athwartships at 20° to the vertical
	the hook in the lengthwise direction ngle of 45° to the vertical. This test			Test 2: 100% SWL, athwartships at 20° to the vertical:
	in the aftward as well as the forward			Force Applied: N.
direction;				Starboard:Pass Fail
direction,				Port: Pass Fail
2 a force equal to the	safe working load of the hook should			
	ok in an athwartships direction at an			Test 3: 100% SWL, 45° to the longitudinal axis of the
	ertical. This test should be conducted			boat in plan view at an angle of 33° to the vertical.
on both sides; and				
,				Force Applied: N.
.3 a force equal to the	safe working load of the hook should			Position 1: Pass Fail
	ok in a direction halfway between the			Position 2:PassFail
	and 2 (i.e. 45° to the longitudinal axis			Position 3:Pass Fail
	ew) at an angle of 33° to the vertical.			Position 4:Pass Fail
This test should be o	conducted in four positions.			
				Comments/Observations

Rigid rescue boats	Model:		Surveyor: _	Time: n:		
5.2.4.3 Load and relea	ise test	Regulation	Regulations: LSA Code 4.4.7.6.4; MSC.81(70) 1/6.9.4.1, 6.9.4.2			
	ocedure	Acceptance Criteria		Significant Test Data		
A release mechanism sh tested as follows: The rescue boat release the longest used co associated with the syste adjusted according to ins equipment manufacturer of its safe working load a Load and release should The rescue boat release should then be disassem	and retrieval system and onnection cable/linkage m should be mounted and tructions from the original and then loaded to 100% nd released. be repeated 50 times. se and retrieval system bled, the parts examined release and retrieval	During the 50 releases, the rescue and retrieval system should I simultaneously from each fall to connected without any binding or da part of the lifeboat release and retrie The system should be considered any failure during the conditioning or release occurs when load is app system has not yet been operated.	be released which it is image to any val system. as "failed" if ir unintended	· · · · · · · · · · · · · · · · · · ·		

Rigid rescue boats	Manufacturer: Model: Lot/Serial Number:		Surveyor: _	n:
5.2.4.4 Cyclic loading	test		LSA Code 4	.4.7.6.4; MSC.81(70) 1/6.9.4.3
Test Procee		Acceptance Criteria		Significant Test Data
The hook assembly, wh from the operating mech tested 10 times with cy zero load to 1.1 times	anism, should be clic loading from	The specimen should remain closed during the system should be considered as "failed" i		Working Load:       N         Force Applied:       N         Check the box for each release and/or strike out the
load, at a nominal 10 se unless the release mech	anism has been	during this test or any unintended release occurs.	or opening	cam rotation if no applicable:
specifically designed to off-load hook with on-loa the weight of the boat to this case the cyclic load s	d capability using close the hook, in			Cam rotation 0°: 1: 2: 3: 4: 5: 6: 7: 8: 9: 10: 10: 10: 10: 10: 10: 10: 10: 10: 10
more than 1% to 1.1 time For cam-type designs, th	s the SWL. ne test should be			Cam rotation +45°: 1: 2: 3: 4: 5: 6: 7: 8: 9: 10: 10: 10: 10: 10: 10: 10: 10: 10: 10
carried out at an initial c (fully reset position), and either direction, or 45° in restricted by design.	repeated at 45° in			Cam rotation -45°: 1: 2: 3: 4: 5: 6: 7: 8: 9: 10: 10: 10: 10: 10: 10: 10: 10: 10: 10
				Passed: Failed:
				Comments/Observations

Rigid rescue boats	Manufacturer: Model: Lot/Serial Number:	· · · · · · · · · · · · · · · · · · ·	Surveyor: _	Time: n:
5.2.4.5 Actuation for	ce test	Regulations	: LSA Code 4	4.4.7.6.4; MSC.81(70) 1/6.9.4.4
Test	Procedure	Acceptance Criteria		Significant Test Data
The cable and operating reconnected to the hoo boat release and retrie demonstrated to operate working load. The demonstration shou indicators and handles correctly positioned in ac	g mechanism should then be k assembly; and the rescue val system should then be e satisfactorily under its safe ald verify that any interlocks, are still functioning and are ccordance with the operation from the original equipment	The actuation force should be r 100 N and no more than 300 N, used it should be the maxir specified by the manufacturer, an the same manner it would be se rescue boat. The release mechanism is deen passed the testing in 5.2.4.3,	if a cable is num length d secures in cured in the ned to have 5.2.4.4 and n conducted should be e during this	Actuation Force:N Passed: Failed: Comments/Observations

Rigid rescue boats	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:
5.2.4.6 Second releas	e mechanism test - actuation fo	rce and tensile strength	Regulations:	LSA Code 4.4.7.6.4, MSC.81(70)1/6.9.5.1, 6.9.5.2
Tes	t Procedure	Acceptance Cri	teria	Significant Test Data
<ul> <li>.1 the actuation force of be measured loaded load. If a cable is user length specified by the same manner it we demonstration shou indicators and handle correctly positioned if and safety instruction manufacturer; and</li> <li>.2 the release mechanist tensile strength testility.</li> </ul>	the release mechanism should with 100% of its safe working ed, it should be of the maximum ne manufacturer, and secured in ould be secured in a lifeboat. The ld verify that any interlocks, es are still functioning and are n accordance with the operation on from the original equipment the six should be mounted on a ng device. The load should be six times the working load of the	.1 The actuation force shoul 100 N and no more than The release mechanism doe	300 N.	Actuation Force: N Tensile strength @ 6xSWL. Force applied: N. Passed: Failed: Comments/Observations

Rigid rescue boats	Manufacturer: Model: Lot/Serial Number:			Surveyo	Time: or: ation:
5.2.5.1 Liferaft tow	ving	-	Regulations	: LSA Co	de 4.4.6.8, 5.1.1.7, 5.1.1.9, MSC.81(70) 1/7.1.2
Test	Procedure		tance Criteria		Significant Test Data
The rescue boat should be loaded with weights equal to the mass of its equipment and the number of persons for which the rescue boat is to be approved. The maximum towing force of the rescue boat should then be determined.		The maximum rescue boat sho type approval ce There should to towing fitting or i	uld be recordeo rtificate. pe no damage	d on the	Smallest Engine Largest Engine Make/model:
	be used to determine the largest ft the rescue boat can tow at a				Bollard pull: N (Record on type approval certificate)
The fitting designated for towing other craft should be secured to a stationary object by a tow rope fitted with a means to measure bollard pull. The engine should be operated ahead at full speed for a period of at least 2 min. and the maximum force recorded.					Observed damage: Propeller: Pitch:
pull trials may be carried	bed with outboard motor, bollard ed out with engines of various scue boat's performance.)				Diameter: Passed Failed Comments/Observations

	_ Surv	e: Time: veyor: anization:
sumption	Regulations: LS	SA Code 4.4.6.8, 5.1.1.6, MSC.81(70)1/7.1.5, 1/7.1.6
Acceptance C	riteria	Significant Test Data
The boat should operate satisfac operation. The fuel tank should have sufficie	torily throughout t ent capacity to ope	the 4-h Make/model: Largest Engine Engine Speed: rpm Boat Speed: kts
r: s	:	Sumption       Regulations: Ls         Acceptance Criteria         The boat should operate satisfactorily throughout

Bigid recours heats Model:		r:		Date: Surveyor: Organization: _	Time:	
5.2.5.3 Engine out	of water		Regulations:	LSA Code 4.4	.6.3, MSC.81(70)1/6.10.5	
Test Proced	dure	Acceptanc	ce Criteria		Significant Test Data	
The engine should be op 5 minutes at idling speed simulating normal storage	l under conditions	The engine should not be domaged as a result of this test		Passed   Failed     Comments/Observations		
Note: If a water flushing device is intended to be used for this purpose, it should be fitted during the test.						
5.2.5.4 Compass test			Regulations:	LSA Code 5.1	2.2.3, MSC.81(70)1/6.10.7	
Test Procedure		Acceptance Criteria		Significant Test Data		
It should be determined that the compass performance is satisfactory and that it is not unduly affected by magnetic fittings and equipment in the rescue boat.		The compass operates satisfactorily.		Compass Make:		
5.2.5.5 Helpless pe	erson recovery		Regulations: LSA Code 4.4.3.4, 5.1.1.7, MSC.81(70)1/6.10.8, 7.1.1			
Test Proced	dure	Acceptano	ce Criteria		Significant Test Data	
It should be demonstrated by test that it is possible to bring helpless people on board the rescue boat from the sea.		ht on board the	e rescue boat	Method of recovery: Number of Persons required and any special equipment used: Comments/Observations		

	Manufacturer: Model:			Date: Survevor:	Time:	
Rigid rescue boats	Lot/Serial Number	: rial Number:		Organization:		
5.2.5.6 Manoeuvrability with paddles or oars Regulati			Regulations	ns: LSA Code 5.1.2.2.1, MSC.81(70)1/7.1.8		
Test Proce		Acceptance			Significant Test Data	
It should be demonstrated that the rescue boat can be propelled and manoeuvred by its oars or paddles in calm water conditions at a speed of at least 0.5 knots over a distance of at least 25 m. when laden with the number of persons, all wearing lifejackets and immersion suits, for which it is to be approved.		paddled and manoeuvred.		atisfactorily	Distance travelled:      m         Time Required:      s         Calculated speed:      m/s =knots         Lifejacket and immersion suit used during the test:      knots         Lifejacket and immersion suit used during the test:      knots         Immersion suit – Uninsulated/Buoyant Insulated          Passed       Failed	
					Comments/Observations	
5.2.6.1 Towing test		1	<b>Regulations:</b>	LSA Code	4.4.1.3.2, 4.4.7.7, MSC.81(70)1/6.11.1	
Test Proce	dure	Acceptance	Criteria		Significant Test Data	
It should be demonstrated that the fully equipped rescue boat, loaded with a properly distributed mass equal to the mass of the number of persons for which it is to be approved, can be towed at a speed of not less than 5 knots in calm water and on an even keel using the rescue boat's painter securing device.		o the rescue bo		Passed Failed Comments/Observations		

nber:	Surveyor: _	Time: n:
	Regulations: LSA Code	4.4.7.7, MSC.81(70)1/6.11.23
Acceptan	ce Criteria	Significant Test Data
The painter should release ar to the rescue boat or its equip bat ss be he he ue	nd there should be no damag	ge Passed Failed
int bo le d l tl tl	umber:Acceptan	umber:       Organizatio         Regulations: LSA Code         Acceptance Criteria         inter       The painter should release and there should be no damage         inter       The rescue boat or its equipment as a result of this test.         boat       Its colspan="2">Its colspan="2"         Inter       Its colspan="2">Its colspan="2"         Inter       Its colspan="2"       Its colspan="2"         Is colspan="2"       Its colspan="2"       Its colspan="2"         Is colspan="2">Its colspan="2"       Its colspan="2"         Is colspan="2">Its colspan="2"       Its colspan="2"         Is colspan="2">Its colspan="2"         Is colspan="2">Its colspan="2"         Is colspan="2"       Its colspan="2"         Is colspan="2"       Its colspan="2"       Its colspan="2"         Is colspan="2"       Its colspan="2"       Its colspan="2"         Is colspan="2"       Its colspan="2"       Its

Rigi	Model:	Model: Survey	Time: or: zation:
5.2.	7.1 Impact, drop and operation after impact and drop to	p and operation after impact and drop test Regulations	s: LSA Code 4.4.1.7, MSC.81(70)1/6.4.1, 6.4.3, 6.4.5, 6.4.7
	Test Procedure		Significant Test Data
.1 .2 .3	For boats launched by fall or falls, the fully equipped rescue boat, including its engine, should be loaded with weights equal to the mass of the number of persons for which the rescue boat is to be approved. Included in this loading should be a weight of 100 kg loaded in one of each type of seat installed in the lifeboat. The remainder of the weights should be distributed to represent the normal loading in the rescue boat. (These weights need not be placed 300 mm above the seatpan.) Skates or fenders, if required, should be in position. The rescue boat, in a free hanging position, should be pulled laterally to a position so that when released it will strike a fixed rigid vertical surface at a velocity of 3.5 m/s. The boat should be released to impact against the rigic vertical surface. The same rescue boat with its engine, loaded as described above, should then be suspended above the water so that the distance from the lowest point of the rescue boat to the water is 3 m. The rescue boat should then be released so that it falls freely into the water. After the impact and drop tests, the boat should be examined to detect the position and extent of damage tha may have occurred as a result of the tests, and ar operational test should then be conducted in accordance with 5.2.5.2.	The impact and drop tests should be approved. Included in this loading should 00 kg loaded in one of each type of seat reboat. The remainder of the weights should represent the normal loading in the rescue ights need not be placed 300 mm above the ess or fenders, if required, should be in cue boat, in a free hanging position, should by to a position so that when released it will id vertical surface at a velocity of 3.5 m/s. d be released to impact against the rigid e boat with its engine, loaded as described in the lowest point of the rescue boat to the e rescue boat should then be released so into the water. ct and drop tests, the boat should be ect the position and extent of damage that urred as a result of the tests, and an	Id       Load in boat:kg         Observed Damage:         en       Increased Damage:         ent       Satisfactory Operation: YES         Satisfactory Operation: YES       NO         he       Ingress of Water: YES         2;       Weight of heaviest engine tested:         Final Evaluation:       Final Evaluation:
.4	After the operational test, the rescue boat should be unloaded, cleaned, and carefully examined to detect the position and extent of damage that may have occurred as a result of the tests.	ed, and carefully examined to detect the ent of damage that may have occurred as	

Rigid rescue boats	Model:			Surveyor:	Time	
5.2.7.2 Overload te	est		Regulations	: MSC.81(70)1/7	.1.4	
Test Proce	edure	Acceptar	ice Criteria		Sign	ificant Test Data
The rescue boat should properly distributed load weight to represent the complement of person 82.5 kg for which it is to suspended for 5 minute hooks. The weights shou proportion to the loading service condition, but the represent the persons in 300 mm above the seat bridle or hooks and faste be examined after the conducted.	I of four times the equipment and full as each weighing b be approved and s from its bridle or uld be distributed in g of the boat in its ne weights used to need not be placed pan. The boat and ening device should	The rescue boat and its I should not show any signs o		ise mechanism	Load in boat:	
Testing by filling the boar not be accepted. This me not give the proper dis Machinery may be remove damage, in which case added to the boat to or removal of such machine The rescue boat and it (release mechanism) ar should be examined aft signs of damage.	thod of loading does tribution of weight. ved in order to avoid weights should be compensate for the ry. ts bridle or hooks ad fastening device				Passed	Failed

#### 5.2.8 INFLATED RESCUE BOATS

#### **EVALUATION AND TEST REPORT**

- 5.3.0 General Information
  - 5.3.0.1 General data and specifications
    - 5.3.0.2 Submitted drawings, reports and documents
    - 5.3.0.3 Quality assurance
- 5.3.1 Visual inspection
  - 5.3.1.1 Occupant space
  - 5.3.1.2 Fittings, provisions and ladders
  - 5.3.1.3 Engine and starting system
  - 5.3.1.4 Steering mechanism and fuel tank
  - 5.3.1.5 Release mechanism
  - 5.3.1.6 Drain valve
- 5.3.2 Stability, damage, and loading tests
  - 5.3.2.1 Damage test
  - 5.3.2.2 Stability test
  - 5.3.2.3 Loading test
  - 5.3.2.4 Swamp test
  - 5.3.2.5 Righting test (for non self-righting rescue boats)
- 5.3.3 Seating strength and space tests
  - 5.3.3.1 Seating strength test
  - 5.3.3.2 Seating space test
- 5.3.4 Release mechanism tests
  - 5.3.4.1 Simultaneous release test
  - 5.3.4.2 Towing release test
  - 5.3.4.3 Load and release test
  - 5.3.4.4 Cyclic loading test
  - 5.3.4.5 Actuation force test
  - 5.3.4.6 Second release mechanism test actuation force and tensile strength
- 5.3.5 Operational tests
  - 5.3.5.1 Liferaft towing
  - 5.3.5.2 Endurance, speed and fuel consumption
  - 5.3.5.3 Engine out of water
  - 5.3.5.4 Compass test
  - 5.3.5.5 Manoeuvrability with paddles or oars
  - 5.3.5.6 Heavy weather/seas test
- 5.3.6 Towing and painter tests
  - 5.3.6.1 Towing test
  - 5.3.6.2 Painter release test
- 5.3.7 Strength tests
  - 5.3.7.1 Impact, drop and operation after impact and drop tests
  - 5.3.7.2 Ambient overload test
  - 5.3.7.3 Cold overload test
  - 5.3.7.4 Mooring out test
- 5.3.8 Materials tests
  - 5.3.8.1 Inflation chamber characteristics tests

#### 5.3 INFLATED RESCUE BOATS

#### **EVALUATION AND TEST REPORT**

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Inflated receive boote Model	facturer: : erial Number:	Surveyor:
5.3.0.1 General data and sp	ecifications	Regulations: LSA Code 5.1
General Information	Rescue	boat Dimensions Rescue boat Weight
Construction Material:	Dimensions:	Design Weight:
Hull:	Breadth Maximum:	Loose Equipment: Fuel: Persons: Calculated Loaded Weight: Fully Equipped: With Persons:

Inflated rescue boats	Manufacturer: Model: Lot/Serial Number:		Date: Time: Surveyor: Organization:				
5.3.0.2 Submitted of	drawings, reports and do	cuments		Τ			
	Submitted drawings and documents						
Drawing No.	Revision No. & date	Title	e of drawing	Status			
	S	ubmitted reports and documents		Ctatua			
Report/Document No.	Revision No. & date	Title of r	eport / document	Status			
		Maintenance Manual -					
		Operations Manual -					

Inflated rescue boats	Manufacturer: Model: Lot/Serial Number:					
5.3.0.3 Quality assur	ance	Regulations: MSC.81(70) 2/1.1,1.2				
of the International Conve amended or the Internatio inspected, representatives inspections of manufactur appliances and materials approved prototype life-sav Manufacturers should be re ensure that life-saving app the prototype life-saving app	equired to institute a quality control procedure to liances are produced to the same standard as opliance approved by the Administration and to action tests carried out in accordance with the	Quality assurance         Standard Used:         Quality assurance Procedure:         Quality assurance Manual:         Description of System:				
		Quality assurance System acceptable				
		Yes/No				
		Comments/Observations				

Inflated rescue boats	receive heaten Model: Surveyor			Surveyor:	Time: 
5.3.1.1 Occupant sp	ace		Regulations:	LSA Code	5.1, MSC.81(70)1/7.2.16
Test Procedu	re	Acceptance	Criteria		Significant Test Data
Visually inspect the rescue Conduct measurements clearances as required.	boat.	General Unless the rescue boat has ad provided with a bow cover ex 15% of its length. Length is at least 3.8 m and n Seating Space Width – at least 430 mm Depth – at least 100 mm eac from the back Knee Space (Seating on seats back Knee Width – at least 250 mm Leg Space (Seating on floor) the back Overlapping Seat Vertical Sep Seat Horizontal Overlap – 150 Each seating position should b Stretcher(s) space: Rescue boats should be capa seated persons and a perso minimum 2130 x 610 mm. Walkway Surfaces The surfaces on which person a non-skid finish.	lequate sheer, it xtending for not ot over 8.5 m. ch side of a poin s) at least 635 mr – at least 1190 paration – at leas 0 mm maximum be clearly indicat ble of carrying at on lying on a str	should be less than t 215 mm n from the mm from tt 350 mm ted. t least five retcher of	Passed       Failed         Passed       Failed         Passed       Failed         Width:      mm         Depth:      mm         Knee Space:      mm         Leg Space:      mm         Vert. Separation:      mm         Overlap:      mm         Position Indication:       PASSED FAILED         Stretcher space:      mm         Location:          Passed       Failed         Non-Skid Surface:       Passed         Comments/Observations       Failed

Inflated rescue boats	Model:	: Surveyor:				Time:	
5.3.1.2 Fittings, prov	isions and ladd	ers	<b>Regulations:</b>	LSA Code 4.4.	3.3, 5.1.3, MSC.8	1(70)1/7.2.16	
Test Procedu	re	Acceptano				Significant Test Data	a
Visually inspect the rescue	boat.	Colour: The boat is of international or vivid reddish orange, or a highly visible colour where it will assist detection.		Passed	Failed	-	
Conduct measurements	and verify				Passed	Failed	_
clearances as required.		Buoyancy compartments fitt Non-return valve for manual ir			Passed	Failed	_N/A
		Means for deflation			Passed	Failed	_
		Safety relief valve unless waived by Administration Suitable patches for securing painters fore and aft			Passed	Failed	-
		Fittings and Provisions Suitable handholds or buoyar outside of the rescue boat al reach of a person in the wate rudder and propeller	ove the waterli	ne and within	Passed	Failed	_N/A
		On other than self-righting rea	scue boats, han	dholds on the	Passed	Failed	
		underside arranged to break away without damaging the rescue boat Weathertight stowage for small items of equipment			Passed	Failed	-
		Approved position indicating li	ght provided at I	nighest point	Passed	Failed	-
		Rubbing strips on bottom a outside Transom, if fitted, not inset l length			Passed	Failed	-

5.3.1.2 Fittings, provisions and ladders (cont'd)		Regulations: LSA Code 4.4.	3.3, 5.1.3, MSC.81(70)1/7.2.16		
Test Procedure Acceptance		ptance Criteria	Significant Test Data		
Visually inspect the rescue boat. Conduct measurements and verify clearances as required.	Provided with effective mo self-bailing.	eans of bailing or be automatically	Passed Failed Comments/Observations		
	Ladders				
		at any entrance should be on board n in place should not be less than	YES NO N/A		
	0.4 m below the light wate		Lowest stepm below waterline		
			Comments/Observations		

Inflated rescue boats Manufa Lot/Seri	Number:	Surveyor:	Time:
5.3.1.3 Engine and starting sy	em	Regulations: LSA Code 4.4.6,	5.1, MSC.81(70)1/7.2.16
Test Procedure	Accepta	nce Criteria	Significant Test Data
Visually inspect the rescue boat. Conduct measurements and clearances as required.	<ul> <li>Type of starting system</li> <li>Two independent recharges power starting systems</li> <li>Required starting aids provident obstructions</li> <li>Starting system is not imperent other obstructions</li> <li>Propeller arranged to be deprovision for ahead and ast</li> <li>Exhaust arranged to prevent ormal operation</li> <li>System designed with due net the water and to the possible system from floating debriss</li> <li>Engine casing made of the suitable arrangements provident or suitable arrangements provident or the suitable arrangement provident or the transport of the suitable arrangement provident or the suitable arrangement provident or the transport of the suitable arrangement provident provident or the transport of the suitable arrangement provident provident provided by solar</li> </ul>	able energy sources provided for ided ded by engine casing, thwarts or isengaged from the engine and ern propulsion nt water from entering engine in regard to the safety of persons in ility of damage to the propulsion fire-retardant material or other riding similar protection on hot and moving parts rd with engine running at speed tion bottom and sides of starter ing top which provides for gas ne starting, radio, and searchlight charger or ship's power supply provide power for engine starting	Manual Power         YES       NO       N/A         Passed       Failed         Passed       Failed

Inflated rescue boats	Model:	Model: Surveyor			Time:
5.3.1.3 Engine and s	tarting system	-	<b>Regulations:</b>	LSA Code 4.4.6,	<u>,</u> 5.1, MSC.81(70)1/7.2.16
Test Procedu	re		ice Criteria		Significant Test Data
Visual Inspection-Engine system (continued)		<ul> <li>Recharging for engine battle supply does not exceed 50 v</li> <li>Recharging means for engine at the rescue boat embarkat</li> <li>Instructions for starting an resistant and mounted in a engine starting controls</li> </ul>	eries provided I v e batteries can t ion station d operating en	be disconnected gine are water	PassedFailed PassedFailed

Inflated rescue boats	Model:	lanufacturer: lodel: ot/Serial Number:		Surveyor:	Time		
5.3.1.4 Steering mechai	nism and fuel ta	nk	Regulations:	LSA Code 4.4.	7.2, 5.1.1.8, MSC.81(7	0)1/7.2.16	
Test Procedu	re	Acceptanc	ce Criteria		Signi	ificant Test Data	à
Visually inspect the rescue Conduct measurements clearances as required		Steering A tiller should be capable of and tiller may form part of outb Rudder permanently attached Except when remote steerin permanently attached or linked Rudder and tiller arranged s operation of the release mecha Fuel Tank If fitted with petrol-driven our should be specially protected a	controlling the r board motor) to the rescue bo ng is provided, d to the rudder s o as not to be anism or propell tboard motor, th	the tiller is tock damaged by er ne fuel tank(s)	Passed Passed Passed Passed	Failed Failed Failed	N/A N/A
					Comments/Observati	ons	

Inflated rescue boats	Manufactur Model: Lot/Serial N	Manufacturer: Model: Lot/Serial Number:			e: veyor: anization:	Time:		
5.3.1.5 Release mecl	hanism		<b>Regulations:</b>	LSA	Code 4.4.7, 5.1, MS	C.81(70)1/7.2.16		
Test Procedure		Acceptance Criter	ia		Sig	nificant Test Data		
Visually inspect the rescue	boat.	Clear operating instructions			Passed	Failed		
Conduct measurements clearances as required	and verify	Release control marked in a colour the surroundings	that contrasts	with	Passed	Failed		
		For on-load release mechanisms:						
		Suitably worded danger sign for or	load release		Passed	Failed	N/A	
		Mechanical protection (interlock) engages only when mechanism is completely and properly reset, to prevent accidental release during recovery			Passed	Failed	N/A	
		On-load release mechanism nee continued action by the operator	ds deliberate	and	Passed	Failed	N/A	
		Mechanical protection provided be required for off load release	yond that norm	nally				
					Passed	Failed	N/A	
		For a single fall and hook system with suitable painter, on-load release capability is not required; in such an arrangement a single capability to release the boat only when it is fully waterborne will be adequate		n an	Passed Comments/Observa		N/A	
		NOTE: Such single fall hook system to the boat or to the davit fall wire	ns may be attac	ched				

Inflated rescue boats       Manufacturer:         Model:       Lot/Serial Number:				Surveyor:		Time:	
5.3.1.6 Drain valve			Regulation	s: LSA Code 4	.4.7.1, 5. <sup>-</sup>	1, MSC.81(70)1/7	.2.16
Test Proce	dure	Acceptar	nce Criteria			Significa	ant Test Data
Visually inspect the rescue	boat	Fitted near lowest point or	n the hull		Passed	F	ailed
Conduct measurements and verify clearances as required (not applicable for self-bailing boats)		Automatically opens when the boat is not waterborne and closes to prevent water entry when the boat is waterborne		Passed _	F	Failed	
		Cap or plug attached to t	ha haat hu a k	anvard chain	Passed	F	ailed
		Cap or plug attached to the boat by a lanyard, chain or equivalent		Passed _	F	<sup>-</sup> ailed	
		Readily accessible from ir	iside the rescu	e boat	Passed	F	Failed
		Position clearly marked		Comments/Observations			
5.3.2.1 Damage test		Regulations: LSA Code 5.1.3.5, MSC.81(70)1/7.2.89					9
Test Proce		Acceptance Criteria		Significant Test Data			
The following tests should be carried out with the In each of the c inflated rescue boat loaded with the number of persons for wh		persons for which the res	n each of the conditions prescribed, the full number of ersons for which the rescue boat is to be approve hould be supported within the rescue boat.		Comments/Observations           1         With engine and fuel:           Passed         Failed           Without engine and fuel		Failed
engine and fuel tank:					Passed _		Failed
.1 with forward buoy deflated;	vancy compartment				2 Passed _	With engine and F Without engine a	Failed
.2 with the entire buoya the rescue boat deflat						F	<sup>-</sup> ailed
.3 with the entire buoyar the bow compartment					3 Passed _ Passed _	Without engine a	Failed

Model:				Surveyor:	Time:
5.3.2.2 Stability test			Regulations	LSA Code 4.4	4.5, MSC.81(70)1/6.10.8, 7.2.67
Test Procedure		Acceptan	ce Criteria		Significant Test Data
<ul> <li>The following tests should be called engine and fuel or an equivalent of the engine and fuel tanks:</li> <li>.1 the number of persons for inflated rescue boat is to should be crowded to one this complement seated on tube, and then to one end. In freeboard should be recorded</li> </ul>	for which the be approved side with half the buoyancy each case the	.1 Under these conditions everywhere positive.	the freeboard	should be	1       Freeboard crowded to one sidemm         To bow:mm       To stern:mm         PassedFailed
.2 the stability of the rescue boarding should be ascerta persons in the rescue boat of that they can readily assist f a third person who is requ unconsciousness. The third have his back towards the rescue boat so that he can rescuers. All persons so approved lifejackets.	tained by two demonstrating from the water juired to feign person should e side of the not assist the should wear	.2 The rescue boat should be stable.			<ul> <li>Stability observations during recovery of unconscious person:</li> <li>Clothing/Suits on helpless person:</li> <li>Method of recovery:</li> <li>Number of persons required and any special equipment used:</li> </ul>
These stability tests may be carrie rescue boat floating in still water.					Passed Failed Comments/Observations

Inflated rescue boats	flated rescue boats Manufacturer: Model: Lot/Serial Number:			Surveyor:	Time:
				Organization.	
5.3.2.3 Loading test		1	Regulations:	MSC.81(70)1/7	2.45
Test Proc	cedure	Acce	ptance Criteria		Significant Test Data
The freeboard of the inflated rescue boat should be taken in the various loading conditions as follows:		In each condition the minimum freeboard should be not less than 300 mm at the buoyancy tubes and not less than 250 mm from the lowest part of the			.1 Freeboard at Buoyancy Tubes:mm Freeboard at Transom:mm
<ul> <li>.1 rescue boat with all its e</li> <li>.2 rescue boat with all its fuel, or an equivaler represent engine and fu</li> </ul>	equipment, engine and it mass positioned to	transom.			.2       Freeboard at Buoyancy Tubes:mm         Freeboard at Transom:mm         .3       Freeboard at Buoyancy Tubes:mm
having an average mas that a uniform freeboard buoyancy tubes; and	which it is to be approved s of 82.5 kg so arranged d is achieved at the side				Freeboard at Transom:      mm         .4       Freeboard at Buoyancy Tubes:      mm         Freeboard at Transom:      mm         Passed       Failed
.4 rescue boat with the nur it is to be approved and and fuel or an equivalen engine and fuel and the re-trimmed as necessar	all its equipment, engine t mass to represent rescue boat being				Comments/Observations
5.3.2.4 Swamp test			Regulations:	MSC.81(70)1/7	
Test Proc	cedure	Acce	ptance Criteria		Significant Test Data
It should be demonstrated when fully swamped, is cap equipment, the number of 82.5 kg for which it is to b equivalent to its engine an should also be demonstrat does not seriously deform in	able of supporting its full persons each weighing e approved and a mass d fully filled fuel tank. It ted that the rescue boat	The rescue boat sho the full load and sho			Passed Failed Comments/Observations

Inflated rescue boats	tod receive heate Model: Surveyo			Surveyor:	Time		
5.3.2.5 Righting test	(for non self-righting rescue b	oats)	Regulations: M	/ISC.81(70)1/7.1	.7		
Test F	Procedure	A	Acceptance Criter	ria	Sign	nificant Test Data	
It should be demonstrated that both with and without The r engine and fuel or an equivalent mass in place of the righte			oat should be ca t more than two e water.			oat report 4.5.2.3) ted by 2 persons? : Failed fuel: Failed	2
					Comments/Observat	tions	
5.3.3.1 Seating stren					1.5, MSC.81(70)1/6.6.1		
	Procedure		cceptance Criter		ů.	ficant Test Data	
	ded with a mass of 100 kg in a person to sit in the rescue		should be able t ut any permaner		Observed damage Passed	Failed	
seat should be loaded with seat location when dropped	t launched by falls, each type of a mass of 100 kg in any single l into the water from height of at e performed in conjunction with	this loading. N	hould be capable o damage should affect the se	d be sustained	Passed Comments/Observation		N/A

Inflated rescue boats       Manufacturer:         Model:       Lot/Serial Number:				Surveyor:	Time:	
5.3.3.2 Seating space	e test		Regulations:	LSA Code 5.1	.1.3.2, MSC.81(70)1/7.1.3	
Test Procedur	e	Acceptanc	ce Criteria		Significar	nt Test Data
The rigid rescue boat sh with its engine and all its en- number of persons for whi boat is to be approved average mass of at least 8 wearing lifejackets and im and any other essentia required, should then boar should lie down on a stretch dimensions to those show and the others should be pr in the rescue boat. The rig should then be manoeur equipment on board demonstrate that it can without difficulty or interfer occupants.	quipment. The ch the rescue d, having an 2.5 kg, and all unersion suits al equipment d; one person cher of similar n in the figure roperly seated id rescue boat vred and all tested to be operated rence with the	Equipment can be operated occupants. The rescue boat must be of 5 persons and a person lying Except the helmsmen, pers floor, provided the space used requirements of test form 5.3 No seating is on the gunw chambers on the sides of the	capable of carry down on a stret ons may be se d conforms with t .1.1. vale, transom, o	ying at least tcher. eated on the the leg space	Equipment operated: Number of persons carried: Seated on seats Seated on floor Lying on a stretcher Total Passed F Lifejacket and immersion su Lifejacket – Inflatable/Infl 	Failedit used during the test: nerently Buoyant

Inflated rescue boats	Model:	er:		Surveyor:	Time:		
5.3.4.1 Simultaneou	is release test		Regulation	s: LSA Code 4.4	.7.6, MSC.81(70)1/6.9.12		
Test Procedu	ire	Acceptanc	e Criteria		Significan	t Test Data	
For rescue boats launched the rescue boat with its should be suspended fro mechanism just clear of th water. The rescue boat sh so that the total mass equa mass of the rescue boat, a and the number of person rescue boat is to be approvide boat should be released from each fall to which without binding or damage the rescue boat or the release (Single fall systems no on-load operation are ex- test.)	s engine fitted om the release the ground or the nould be loaded als 1.1 times the all its equipment the for which the ved. The rescue simultaneously it is connected the to any part of ase mechanism. t intended for	It should be confirmed to simultaneously release from e without binding or damage to or the release mechanism. It should be confirmed to simultaneously release from connected when fully waterboo in a 10% overload condition.	each fall which any part of th hat the resc n each fall to	it is connected le rescue boat ue boat will o which it is	Light condition PassedFailed_ (N/A – Single fall, off-load 1.1 x Loaded Mass: PassedFail (N/A – Single fall, off-load Comments/Observations	d only) kg ed	N/A

Inflated rescue boats	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:			
5.3.4.2 Towing release to	est	Regulations:	Regulations: LSA Code 4.4.7.6.5; MSC.81(70) 1/6.9.3				
	Procedure	Acceptance Criter		Significant Test Data			
With the operating mechan demonstrated when the res complement of persons a speeds of 5 knots that the m closed. Furthermore, with the oper should be demonstrated tha with its full complement of towed at speeds of 5 knots above should be demonstrated	hism disconnected it should be scue boat is loaded with its full and equipment and towed at hoveable hook component stays ating mechanism connected, it at the rescue boat when loaded persons and equipment when s can be released. Both of the	There should be no damage a these tests. The rescue boat is released sa the release mechanism. Single fall systems not intende operation are exempt from this	s a result of atisfactorily by ed for on-load	Operating mechanism disconnected and boat towed at 5 kts:PassFail         Operating mechanism connected tests.         Test 1: 25% SWL, lengthwise to the boat at 45° to the vertical:         Force Applied:N.         Forward direction:PassFail         Aft direction:PassFail         Test 2: 100% SWL, athwartships at 20° to the			
<ul> <li>hook should be applied direction of the boat at This test should be consistent of the forward direction.</li> <li>2 a force equal to the signal should be applied to direction at an angle of should be conducted.</li> <li>.3 a force equal to the signal be applied to the signal be applied</li></ul>	d to the hook in the lengthwise an angle of 45° to the vertical. onducted in the aftward as well on; safe working load of the hook the hook in an athwartships of 20° to the vertical. This test on both sides; and safe working load of the hook he hook in a direction halfway of tests 1 and 2 (i.e. 45° to the			vertical: Force Applied:N. Starboard:PassFail Port:PassFail Test 3: 100% SWL, 45° to the longitudinal axis of the boat in plan view at an angle of 33° to the vertical. Force Applied:N. Position 1:PassFail Position 2:PassFail			
	boat in plain view) at an angle This test should be conducted			Position 3:PassFail Position 4:PassFail Comments/Observations			

Inflated rescue boats	Model:		Date:          Surveyor:          Organization:	
5.3.4.3 Load and relea	ase test	Regulations: L	SA Code 4.	4.7.6.4; MSC.81(70) 1/6.9.4.1, 6.9.4.2
Test Proc		Acceptance Criteria		Significant Test Data
A release mechanism shou tested as follows: The rescue boat release ar the longest used con associated with the syster and adjusted according to original equipment manufa to 100% of its safe working Load and release should be The rescue boat release should then be disassembland wear recorded. The system should then be reas	Id be conditioned and nd retrieval system and nection cable/linkage m should be mounted o instructions from the cturer and then loaded load and released. e repeated 50 times. and retrieval system ed, the parts examined release and retrieval	Acceptance Criteria During the 50 releases, the rescue bo and retrieval system should be simultaneously from each fall to w connected without any binding or dam part of the lifeboat release and retrieva The system should be considered as any failure during the conditioning or u release occurs when load is applie system has not yet been operated.	released /hich it is age to any al system. s "failed" if unintended	, and the second s

	Manufacturer: _ Model:		Date: Surveyor:	Time:
Inflated rescue boats	Lot/Serial Num	ber:	Organizati	on:
5.3.4.4 Cyclic loading tes	st	Regulations: LS	SA Code 4.	4.7.6.4; MSC.81(70) 1/6.9.4.3
Test Procedu	re	Acceptance Criteria		Significant Test Data
The hook assembly, while				Working Load:N
from the operating mechar tested 10 times with cycli		The specimen should remain closed during the	e test.	Force Applied:N
zero load to 1.1 times th		The system should be considered as "failed" if a		
load, at a nominal 10 sec		during this test or any unintended release o	or opening	cam rotation if no applicable:
unless the release mecha specifically designed to op		occurs.		Cam rotation 0°:
load hook with on-load cap				
weight of the boat to close				1:  2:  3:  4:  5:  6:  7:  8:  9:  10:
case the cyclic load shou				
more than 1% to 1.1 times	the SWL.			Cam rotation +45°:
For cam-type designs, the	test should be			1: 2: 3: 4: 5: 6: 7: 8: 9: 10:
carried out at an initial car				
(fully reset position), and re				Cam rotation -45°:
either direction, or 45° in	one direction if			1: 2: 3: 4: 5: 6: 7: 8: 9: 10:
restricted by design.				7: [ 8: [ 9: [ 10: [
				Passed: Failed:
				Comments/Observations

Inflated rescue boats			Surveyor:	Time: on:	
5.3.4.5 Actuation force	test	Regulations:	LSA Code 4	1.4.7.6.4; MSC.81(70) 1/6.9.4.4	
Test Pro	ocedure	Acceptance Criteria		Significant Test Data	
The cable and operating m reconnected to the hook a boat release and retrieva demonstrated to operate s working load.	assembly; and the rescue I system should then be	and no more than 300 N, if a cabl should be the maximum length spec manufacturer, and secures in	The actuation force should be no less than 100 N       Actuation Force: N         and no more than 300 N, if a cable is used it       Actuation Force: N         should be the maximum length specified by the       Passed: Failed:         manufacturer, and secures in the same       Passed: Failed:         manner it would be secured in the rescue boat.       Failed:		
The demonstration should indicators and handles are correctly positioned in acco and safety instruction from manufacturer.	e still functioning and are		5.3.4.4 and conducted hould be during this	Comments/Observations	

Inflated rescue boats	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:
5.3.4.6 Second release	mechanism tests- actuation fo	orce and tensile strength	<b>Regulations: LSA</b>	Code 4.4.7.6.4, MSC.81(70)1/6.9.5.1, 6.9.5.2
Test P	rocedure	Acceptance	Criteria	Significant Test Data
<ol> <li>the actuation force of t be measured loaded v load. If a cable is used length specified by the the same manner it w The demonstration sho indicators and handles correctly positioned in and safety instruction manufacturer; and</li> <li>the release mechanis tensile strength testing</li> </ol>	n should be tested as follows: he release mechanism should with 100% of its safe working l, it should be of the maximum manufacturer, and secured in ould be secured in a lifeboat. ould verify that any interlocks, s are still functioning and are accordance with the operation from the original equipment m should be mounted on a g device. The load should be x times the working load of the	.1 The actuation force than 100 N and no m The release mechanism o	should be no less ore than 300 N.	

Inflated rescue boats	Manufacturer: Model: Lot/Serial Number:			Date:            Surveyor:            Organization:		
5.3.5.1 Liferaft towin	g		Regulations:	LSA Co	de 4.4.6.8, 5.1.1.7, 5.1.1.9, MSC.81(70)1/7.1.2	
Test Pro	ocedure		ance Criteria		Significant Test Data	
for which the rescue boa	loaded with weights equal and the number of persons t is to be approved. The ne rescue boat should then	The maximum tow boat should be approval certificate There should be ne fitting or its suppor	recorded on the e. o damage to the	e type	Smallest Engine Largest Engine Make/model:	
	e used to determine the liferaft the rescue boat can knots.				Bollard pull: N (Record on type approval certificate)	
secured to a stationary obje a means to measure bollard operated ahead at full spe 2 minutes and the maximur (For rescue boats equipt bollard pull trials may be o	owing other craft should be ect by a tow rope fitted with I pull. The engine should be ed for a period of at least n force recorded. Ded with outboard motor, carried out with engines of sess the rescue boat's				Observed damage: Propeller: Pitch: Diameter: Passed Failed Comments/Observations	

Inflated rescue boats	Model:	ber:		Surveyor: _	Time: on:	
5.3.5.2 Endurance, speed	l and fuel consu	mption	Regulatio	ns: LSA Co	ode 5.1.1.6, MSC.81(70)1/7.1.5, 1/7.1.6	
Test Procedu	re	Acceptance Crit	teria		Significant Test Data	
(Note: Run this test after in tests in 5.3.7.1.)		The boat should operate satisfacto operation.	orily through		Smallest Engine       Largest Engine         Make/model:	<u>ne</u>
The rescue boat should l weights equal to the mass of and the number of person rescue boat is to be approv	of its equipment s for which the	The fuel tank should have sufficien a speed of 6 knots for a period of 4	it capacity to hours in ca	o operate at	Engine Speed: rpm	
The engine should be start manoeuvred for a period o demonstrate satisfactory op	f at least 4 h to				Consumption: L/h Fuel Tank Capacity: L	
The rescue boat should be of not less than 6 knots for is sufficient to ascert consumption and to establi tank has the required	a period which ain the fuel ish that the fuel capacity. (This				Endurance: hrs Propeller: Pitch: Diameter:	
determination may be the 4-hour period of operati	•				Passed Failed	
For rescue boats equipped motor, speed and man should be carried out w various powers to assess th performance.	oeuvring trials rith engines of				Comments/Observations	

Inflated rescue boats	Model:	ber:		Surveyor:	Time:		
5.3.5.3 Engine out of	water		Regulations:	LSA Code 4.4.	6.3, MSC.81(70)1/6.10.5		
Test Procedu	re	Acceptan	ce Criteria		Significant Test Data		
The engine should be operated for at least 5 minutes at idling speed under conditions simulating normal storage.The engine should not be defined to be used for this purpose, it should be fitted during the test.		The engine should not be dam	naged as a resul	t of this test.	Passed Failed Comments/Observations		
5.3.5.4 Compass test	t		<b>Regulations:</b>	gulations: LSA Code 5.1.2.2.3, MSC.81(70)1/6.10.7			
Test Procedu	re	Acceptano	nce Criteria		Significant Test Data		
It should be determined the performance is satisfactory unduly affected by magne equipment in the rescue bo	and that it is not etic fittings and	The compass operates satisfa	ctorily.		Compass Make: Compass Model: Passed Failed Comments/Observations		

Inflated rescue boats	Manufacturer: _ Model: Lot/Serial Numl	ber:		Surveyor:	Time:
5.3.5.5 Manoeuvrability	, with paddles o	r oars	Regulations:	LSA Code 5.1.	2.2.1, MSC.81(70)1/7.1.8
Test Procedu	re	Acceptano	e Criteria		Significant Test Data
It should be demonstrated boat can be propelled and its oars or paddles in calm v at a speed of at least 0.3 distance of at least 25 m. v the number of persons lifejackets and immersion s is to be approved.	manoeuvred by vater conditions 5 knots over a vhen laden with 5, all wearing	The rescue boat should be ca paddled and manoeuvred.	bable of being s	atisfactorily	Distance travelled:m Time Required:s Calculated speed:m/s =knots Lifejacket and immersion suit used during the test: Lifejacket – Inflatable/Inherently Buoyant Immersion suit – Uninsulated/Buoyant Insulated Passed Failed Comments/Observations

Inflated rescue boats       Manufacturer:         Model:       Lot/Serial Number:			-	Surveyor:	n: Ti		
5.3.5.6 Heavy weather/	seas test		Regulatio	ons: LSA Co	de 5.1.3, MSC.81(70)1	/7.2.10	
Test Procedur	е	Acceptance Crite	eria			ificant Test Data	
To simulate use in heavy weather the inflated rescue boat should be fitted with a larger powered engine than is intended to be fitted and driven hard in a wind of force		ne rescue boat should not show undue flexing or		Pressure relief valves	e test:mba		
4 or 5 or equivalent rough w 30 minutes.					Wave height Wind Speed		
For boats with inboard eng does not need to be gre intended to be used.					Tube pressure after to Passed Comments/Observati	est:mbar Failed ions	
5.3.6.1 Towing test			Regulatio	ons: LSA Co	de 4.4.1.3.2, 4.4.7.7, N	/ISC.81(70)1/6.11.1	
Test Procedur	е	Acceptance Crite	eria		Signi	ificant Test Data	
It should be demonstrated equipped rescue boat, It properly distributed mass mass of the number of pers is to be approved, can be to of not less than 5 knots in of on an even keel using the painter securing device.	oaded with a equal to the ons for which it wed at a speed calm water and	The rescue boat should not exhib characteristics. There should be no damage to t equipment as a result of this test.					

Inflated rescue boats	Model:	ber:		Surveyor:			
5.3.6.2 Painter releas	se test		Regulations:	LSA Code 4.4.	.7.7, MSC.81(70) <sup>2</sup>	1/6.11.23	
Test Procedur	re	Acceptanc	ce Criteria			Significant T	est Data
It should be demonstrated release mechanism can rele on a fully equipped and load that is being towed at a sp than 5 knots in calm water. The painter release mecha tested in several distinct d upper hemisphere not obs canopy or other construction boat. The directions specifie should be used if possible.	that the painter ease the painter ded rescue boat beed of not less anism should be directions of the structed by the ons in the rescue ed in test 5.3.4.2	The painter should release and to the rescue boat or its equipt	d there should b		Passed Test Direction	Passed Passed Passed Passed Passed Passed	Failed Failed Failed Failed Failed Failed

Model:			Date: Surveyor: Organizat	Tim ion:	ne:	
5.3.	7.1 Impact, drop a	and operation after impac	t and drop tests	Regulatior	ns: LSA Code 4.4.1.7, MS	C.81(70)1/6.4.1, 7.2.2. & 7.2.3
	Test Pro		Acceptance Criteria			ant Test Data
.1	For boats launched equipped rescue boa should be loaded with of the number of pers boat is to be approved should be a weight of each type of seat insi weights should be dis normal loading in th weights need not be p seatpan.) Skates or fe be in position. The resc position, should be pu so that when released vertical surface at a v raised 0.624 m above to the rigid vertical surface	by fall or falls, the fully at, including its engine, weights equal to the mass ons for which the rescue d. Included in this loading 100 kg loaded in one of talled in the lifeboat. The stributed to represent the ne rescue boat. (These blaced 300 mm above the enders, if required, should cue boat, in a free hanging lled laterally to a position d it will strike a fixed rigid elocity of 3.5 m/s (keel is the free hanging position). eleased to impact against	<ul> <li>The impact and drop tests should considered successful if:</li> <li>.1 no damage has been sus would affect the efficient fur the rescue boat and its equipation.</li> <li>.2 the damage caused by the drop tests has not increased sas a result of the operation 5.3.5.2;</li> <li>.3 machinery and other equipation operated to full satisfaction; a</li> <li>.4 no significant ingress of set</li> </ul>	tained that nctioning of ment; impact and significantly onal test in pment has nd	Load in boat: Observed Damage: Increased Damage: Satisfactory Operation: Ingress of Water: Weight of heaviest engin Final Evaluation:	_kg YES NO YES NO YES NO
.3	and with a mass equivalent in the position of its ended by the dropped three time 3 m on to water. The 45-degree bow-down, stern-down attitudes.	alent to its engine and fuel igine and fuel tank should s from a height of at least drops should be from the level trim, and 45-degree			Comments/Observations	
	its equipment should b					

Inflated rescue boats	Model:	ber:		Time:		
5.3.7.2 Ambient over	load test	-	Regulations: LSA Code 5.1.3.2.2, MSC.81(70)1/7.2.12			
Test Procedu	re	Acceptanc	ce Criteria		Significant	Test Data
With all relief valves inoperative, the inflated rescue boat should be loaded with four times the mass of the full complement of persons and equipment for which it is to be approved and suspended for 5 minutes from its bridle at an ambient temperature of $+20 \pm 3^{\circ}$ C.			nanism should	Passed Comments/Observations	Failed	
The rescue boat and its b examined after the test is c						
5.3.7.3 Cold overload	d test	Regulations: LSA Code 5.1.3.2.3, MSC.81(70)1/7.2.13				
Test Procedu	re	Acceptance Criteria		Significant Test Data		
With all relief valves operative, after 6 hours conditioning at a temperature of -30°C, the inflated rescue boat should be loaded with 1.1 times the mass of the full complement of persons and equipment for which it is to be approved and suspended for 5 minutes from its bridle. The rescue boat and bridle should be examined after the test is conducted.			nanism should	Passed	Failed	

Inflated rescue boats	Manufacturer:		Time:		
5.3.7.4 Mooring out t	est		<b>Regulations:</b>	LSA Code 5.1.	3.3, MSC.81(70)1/7.2.15, 5.5, 5.17.78
Test Proce	dure	Accepta	ance Criteria		Significant Test Data
The rescue boat should be equal to the mass of the tota for which it is to be approve and moored in a location at harbour. The rescue boat s in that location for 30 days be topped up once a day pump; however, during any rescue boat should retain it Each inflatable compartmen should be tested to a pres- times the working pressure. valve should be made inop air should be used to inflate boat and the inflation source should continue for at least The measurement of pre- leakage can be started assumed that compartmen completed stretching dur- pressure and achieved equal	al number of persons ed and its equipment sea or in a seawater should remain afloat a. The pressure may y using the manual y 24-hour period the s shape. In the rescue boat ssure equal to three Each pressure relief erative, compressed the inflatable rescue e removed. The test 30 minutes. ssure drop due to when it has been t material has been e to the inflation	The rescue boat should would impair its performa The pressure should not determined without comp atmospheric pressure cha seam slippage, cracking boat.	not sustain any nce. decrease by mo vensating for ter anges, and there	re than 5% as nperature and should be no	Compartment 1         Initial Pressure:mbar         Final Pressure:mbar         Calculated Decrease:Percent         Compartment 2         Initial Pressure:mbar         Final Pressure:mbar         Calculated Decrease:Percent         Compartment 3         Initial Pressure:mbar         Calculated Decrease:Percent         Compartment 4         Initial Pressure:mbar         Calculated Decrease:Percent         Compartment 5         Initial Pressure:mbar         Calculated Decrease:Percent         Percent 5         Initial Pressure:mbar         Calculated Decrease:Percent         Percent 5         Initial Pressure:mbar         Calculated Decrease:Percent         Percent 5         Initial Pressure:mbar         Calculated Decrease:Percent         Passed Failed
					Comments/Observations

Inflated rescue boats	Manufacturer: _ Model: Lot/Serial Num	nber:		Date:          Time:            Surveyor:          Organization:		
5.3.8.1 Inflation char	nber characteris	stics tests	<b>Regulations:</b>	LSA Code	1.2.2, MSC.81(70)1/7.2.14	
Test Procedu	re	Acceptance	Criteria		Significant Test Data	
The inflatable compartment to construct the rescue to tested for the following char .1 tensile strength .2 tear strength .3 heat resistance .4 cold resistance .5 heat ageing .6 weathering .7 flex cracking .8 abrasion .9 coating adhesion .10 oil resistance .11 elongation at break .12 piercing strength .13 ozone resistance .14 gas permeability .15 seam strength .16 ultraviolet light resistance	ooat should be racteristics:	The material characteristics st ISO 15372:2000.	nould comply wi		.1       tensile strengthN         .2       tear strengthN         .3       heat resistance – Blocking         .4       cold resistance – Cracking         .5       heat ageing% retained strength N/50 mm width         .6       weathering% retained strength N/50 mm width         .6       weathering% retained strength N/50 mm width         .7       flex cracking – Cracking or deterioration         .8       abrasionmg/rev.; Base fabric not visible         .9       coating adhesionN/50 mm width         .10       oil resistance – Tackiness or other deterioration         .11       elongation at break%         .12       piercing strength	

# 5.4 RIGID/INFLATED RESCUE BOATS EVALUATION AND TEST REPORT

- 5.4.0 General Information
  - 5.4.0.1 General data and specifications
    - 5.4.0.2 Submitted drawings, reports and documents
  - 5.4.0.3 Quality assurance
- 5.4.1 Visual inspection
  - 5.4.1.1 Occupant space
  - 5.4.1.2 Fittings, provisions and ladders
  - 5.4.1.3 Engine and starting system
  - 5.4.1.4 Steering mechanism and fuel tank
  - 5.4.1.5 Release mechanism
  - 5.4.1.6 Drain valve
- 5.4.2 Stability, damage and loading tests
  - 5.4.2.1 Damage test
  - 5.4.2.2 Stability test
  - 5.4.2.3 Loading test
  - 5.4.2.4 Swamp test
  - 5.4.2.5 Flooded stability test
  - 5.4.2.6 Righting test (for non self-righting rescue boats)
- 5.4.3 Seating strength and space tests
  - 5.4.3.1 Seating strength test
  - 5.4.3.2 Seating space test
- 5.4.4 Release mechanism tests
  - 5.4.4.1 Simultaneous release
  - 5.4.4.2 Towing release test
  - 5.4.4.3 Load and release test
  - 5.4.4.4 Cyclic loading test
  - 5.4.4.5 Actuation force test
  - 5.4.4.6 Second release mechanism test actuation force and tensile strength
- 5.4.5 Operational tests
  - 5.4.5.1 Liferaft towing
  - 5.4.5.2 Endurance, speed and fuel consumption
  - 5.4.5.3 Engine out of water
  - 5.4.5.4 Compass test
  - 5.4.5.5 Manoeuvrability with paddles or oars
  - 5.4.5.6 Heavy weather/seas test
- 5.4.6 Towing and painter tests
  - 5.4.6.1 Towing test
  - 5.4.6.2 Painter release test
- 5.4.7 Strength tests
  - 5.4.7.1 Impact, drop and operation after impact & drop test
  - 5.4.7.2 Overload test
  - 5.4.7.3 Mooring out test
- 5.4.8 Materials tests
  - 5.4.8.1 Inflation chamber characteristics tests

#### 5.4 RIGID/INFLATED RESCUE BOATS

#### **EVALUATION AND TEST REPORT**

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Rigid/inflated rescue boats       Manufacturer:         Model:       Lot/Serial Number:			Surveyor	Time: : tion:		
5.4.0.1 General data and s	pecifications		Regulations: LS	A Code 4.4, 5.1, MSC.81(70)1/7.2.16		
General Information		Rescue b	oat Dimensions		Rescue boat Weight	
Construction Material: Hull: Canopy: Fire-retardancy documentation Rescue Boat Inherent Buoyancy ( App.) Material: Weight: Occupancy: Persons (82.5 kg each): Persons (82.5 kg each): Engine(s) Installed: 1 Type App by: Manufacturer: Type: Power: Gear ratio (inboard engine): Additional rigid or inflatable buoya Release mechanism(s) (if applica 1 Manufacturer: Type: SWL:	Di	imensions: LOA: Breadth Maximum: Depth to Sill: Depth to Gunwale: Moulded Breadth: Moulded Depth: rovision for securing hanging pplicable):	g-off pendant (if		Design Weight: Unloaded Boat: Loose Equipment: Fuel: Persons: Calculated Loaded Weight: Fully Equipped: With Persons: Weight as Tested: Fully Equipped: Comments/Observations	

Rigid/inflated rescue boa	d rescue boats Manufacturer: Model: Lot/Serial Number:			Date: Time: _ Surveyor: Organization:	
5.4.0.2 Submitted d	rawings, re	ports and doc	uments		
	-	Sub	mitted drawings and documents		Status
Drawing No.	Revisior	n No. & date	Title o	of drawing	Status
	-	Su	bmitted reports and documents		Statua
Report/Document No.	Revisior	n No. & date	Title of rep	oort / document	Status
			Maintenance Manual -		
			Operations Manual -		

Rigid/inflated rescue boats	Manufacturer: Model: Lot/Serial Number:		Date:         Time:            Surveyor:         Organization:					
5.4.0.3 Quality assurance		Regulations: MS	6C.81(70) 2/1.1, 1.2					
of the International Convention amended or the International Lit inspected, representatives of the inspections of manufacturers to appliances and materials used approved prototype life-saving app Manufacturers should be required ensure that life-saving appliances the prototype life-saving appliances	particular type are required by chapter III for the Safety of Life at Sea, 1974, as fe-Saving Appliance (LSA) Code, to be the Administration should make random to ensure that the quality of life-saving comply with the specification of the upliance. It to institute a quality control procedure to a are produced to the same standard as the approved by the Administration and to tests carried out in accordance with the	Quality assurance Standard Used: Quality assurance Quality assurance Description of Sys	e Procedure: e Manual:					
	Quality assurance System acceptable							
	Yes/No							
		Comments/Observations						

Divid/inflated reasons hasts   Model:		Sur		Survey	or: zation:
5.4.1.1 Occupant space	I	-	Regulations: LS	A Code	4.4.2.2, 4.4.3.5, 5.1, MSC.81(70)1/7.2.16
Test Procedure		Acceptance	Criteria		Significant Test Data
Visually inspect the rescue boat. Conduct measurements and verify clearances as required.		provided with a bow cover ex 15% of its length.	General Unless the rescue boat has adequate sheer, it should be provided with a bow cover extending for not less than Pa		
		Length is at least 3.8 m and no	ot over 8.5 m.		Passed Failed
		Seating Space Width – at least 430 mm Depth – at least 100 mm eac from the back Knee Space (Seating on seats back Knee Width – at least 250 mm Leg Space (Seating on floor) the back Overlapping Seat Vertical Sep Seat Horizontal Overlap – 150 Each seating position should the Stretcher(s) space: Rescue boats should be capal seated persons and a person minimum 2130 x 610 mm. Walkway Surfaces The surfaces on which person a non-skid finish.	at least 635 mm fr – at least 1190 m paration – at least 3 mm maximum be clearly indicated ble of carrying at lea n lying on a streto	om the m from 50 mm ast five cher of	Width:      mm         Depth:      mm         Knee Space:      mm         Leg Space:      mm         Vert. Separation:      mm         Overlap:      mm         Position Indication:       PASSED FAILED         Stretcher space:      mm         Passed

Rigid/inflated rescue boats	flated rescue boats Manufacturer: Model: Lot/Serial Number:		Date:          Surveyor:          Organization:			
5.4.1.2 Fittings, provisions	s and ladd	ers	Regulations: LS	A Code 5.1.	3, MSC.81(70)1/7.2	2.16
Test Procedure			ce Criteria		S	ignificant Test Data
Visually inspect the rescue boat.		Buoyancy compartments fitte Non-return valve for manual in			Passed	_ Failed
Conduct measurements and clearances as required.	d verify	Means for deflation			Passed	_ Failed
•		Safety relief valve unless waiv	ed by Administratio	on	Passed	N/A
		Suitable patches for securing <b>Fittings and Provisions</b>	Suitable patches for securing painters fore and aft			_ Failed
		Suitable handholds or buoyar outside of rescue boat above of a person in the water, exce and propeller	the waterline and w	ithin reach/	Passed	_ Failed
		On other than self-righting resunderside arranged to break rescue boat			Passed	_ Failed
		Weathertight stowage for small items of equipment Approved position indicating light provided at highest point			Passed	FailedN/A
		Provided with effective means of bailing or be automatically self-bailing		Passed	_Failed	
					Comments/Obser	vations

Rigid/inflated rescue boats	igid/inflated rescue boats Manufacturer: Model: Lot/Serial Number:			Date:            Surveyor:            Organization:		
5.4.1.2 Fittings, provisions	5.4.1.2 Fittings, provisions and ladders (cont'd)		Regula	ations: LSA	Code 4.4.3.3, 5.1.3, MSC.81(70)1/7.2.16	
Test Procedure		Acceptance Criteria			Significant Test Data	
Visually inspect the rescue boat. Conduct measurements and clearances as required.	d verify	Ladders Ladders that can be used at any entr board and the lowest step when in place than 0.4 m below the light waterline. Other Provisions Buoyant material may be installed exter boat, provided it is adequately protect and is capable of withstanding exposure open deck on a ship at sea and for 30 c condition. Colour The boat should be of a highly visible assist detection.	ance should nal to the ed again when sto lays afloa	not be less hull of the st damage owed on an at in all sea	Passed Failed Lowest stepm below waterline YES NO N/A Passed Failed Highly visible colour: PassedFailed Comments/Observations	

Rigid/inflated rescue boats       Manufacturer:         Model:       Lot/Serial Number:				Surveyor:			Time:	
			Regulations: LS	A Code 4.4.	6, 5.1, MS	SC.81(70	)1/7.2.16	
Test Procedure		Acceptanc	e Criteria				Significant Test Data	
Test Procedure Visually inspect the rescue boat. Conduct measurements and clearances as required.	d verify	Acceptance Type of starting system - Two independent rechargeat for power starting systems. - Required starting aids provide - Starting system is not impedent or other obstructions. - Propeller arranged to be dis- provision for ahead and aster - Exhaust arranged to prevent normal operation. - System designed with due re- in the water and to the propulsion system from float - Engine casing made of fire- suitable arrangements provide - Personnel are protected from - Shouted order can be heard necessary for 6 knot operation - Watertight casing around 1 batteries with a tightly fitting venting. - Means for recharging e	ble energy source led. led by engine casi engaged from the rn propulsion. water from enterin egard to the safety possibility of dama ing debris. e-retardant materia ding similar protect n hot and moving p with engine runnin on. bottom and sides g top which provid	ng, thwarts engine and g engine in of persons age to the al or other ion. parts. ng at speed of starter les for gas	Manual YES Passed_ Passed_ Passed_ Passed_ Passed_ Passed_ Passed_ Passed_ Passed_	Power NO	Significant Test Data N/A _Failed Failed	
		<ul> <li>searchlight batteries provide power supply.</li> <li>Radio batteries not used starting.</li> <li>Towing arrangements for mageneous fo</li></ul>	ed by solar charge to provide power	er or ship's	_		_Failed	

Rigid/inflated rescue boats	Manufacturer: Model: Lot/Serial Number:	Date: Surveyor: Organizati				
5.4.1.3 Engine and starting	g system	Regulations: LSA Code 4.4.6, 5.1, MSC.81(70)1/7.2.16				
Test Procedure	Acceptar	nce Criteria	Significant Test Data			
Visual Inspection-Engine and sta system (continued)	supply does not exceed 50 - Recharging means for engir at the rescue boat embarka - Instructions for starting an	ne batteries can be disconnecte	d PassedFailed			

Rigid/inflated rescue boats	Model:	urer: Number:		Date: Surveyor: Organization:		
5.4.1.4 Steering mechanis	m and fuel	tank	Regulations: L	SA Code 4.4.7.2, 5.1.1.8, MS	C.81(70)1/7.2.16	
Test Procedure		Acceptance Crit	eria	Significa	nt Test Data	
Visually inspect the rescue boat.		Steering		Passed	Failed	
Conduct measurements and clearances as required.	d verify	A tiller should be capable of co (rudder and tiller may form part			Failed	N/A
		Rudder permanently attached to	o the rescue boat	Passed	Failed	N/A
		Except when remote steering is permanently attached or lir stock			Failed	
		Rudder and tiller arranged so as by operation of the release mec <b>Fuel Tank</b>			Failed	N/A
		If fitted with petrol-driven outbo tank(s) should be specially pro and explosion				

Divisiting factorial managements Model:		Surv		Surveyor: _	Date: Time: Surveyor: Organization:		
5.4.1.5 Release mechanisr	n				7.6.5, MSC.81(70)1	/7.2.16	
Test Procedure Accepta		ce Criteria		Si	gnificant Test Data		
Visually inspect the rescue boat. Clear operating instructions		Clear operating instructions			Passed	Failed	_
Conduct measurements and verify clearances as required.		Release control marked in a surroundings	colour that contras	sts with the	Passed	_ Failed	_
		For on-load release mechanis	ms:				
		Suitably worded danger sign f	Suitably worded danger sign for on load release			_ Failed	N/A
		Mechanical protection (interlock) engages only when mechanism is completely and properly reset, to prevent accidental release during recovery		Passed	_ Failed	N/A	
		On-load release mechanism n action by the operator	On-load release mechanism needs deliberate and continued action by the operator		Passed	_ Failed	N/A
		Mechanical protection provi required for off load release	ided beyond tha	t normally	Passed	_ Failed	N/A
		For a single fall system with su capability is not required; in s capability to release the boat o will be adequate	uch an arrangeme	ent a single	Passed		N/A
		NOTE: Such single fall hook sy boat or to the davit fall wire	ystems may be atta	iched to the			

[	Manufacturer:		Date <sup>.</sup>	Time <sup>.</sup>			
	Manufacturer: Model:	· · · · · · · · · · · · · · · · · · ·	Surveyor				
Rigid/inflated rescue boats	Lot/Serial Number:		Organization:				
			bint on the hull.       PassedFailed				
5.4.1.6 Drain valve			Regulations: LS	SA Code 4.4.7.1, 5.1, MSC.81(70)1/7.2.16			
Test Pro	ocedure	Acceptance (	Criteria	Significant Test Data			
Visually inspect the rescue boat.		Fitted near lowest point o	n the hull.	PassedFailed			
(not applicable for self-bailing boats).		waterborne and closes to prevent water entry when the boat is waterborne.		PassedFailed			
				PassedFailed			
		Readily accessible from boat.	inside the rescue	PassedFailed			
		Position clearly marked.		PassedFailed			
· · · ·	not apply if waterline is below low						
lest Pro	ocedure	Acceptance	Criteria	<u> </u>			
The following tests should be c	carried out with the rigid inflated	In each of the conditions					
	ber of persons (of 82.5 kg mass)	number of persons for wh					
	n with and without engine and fuel		be supported within	Without engine and fuel			
or an equivalent mass in the posi	tion of the engine and fuel tank:	the rescue boat.		Passed Failed			
.1 with forward buoyancy con	npartment deflated;			2 With engine and fuel:			
.2 with the entire buoyancy of deflated; and	n one side of the rescue boat			PassedFailed 3 With engine and fuel:			
.3 with the entire buoyancy or compartment deflated.	n one side and the bow			Passed Failed Without engine and fuel Passed Failed			

Rigid/inflated rescue boats	Model:	r: mber:		Surveyor: _	n:
5.4.2.2 Stability test			Regulations: LSA	A Code 4.4.	5, MSC.81(70)1/6.10.8, 7.2.67,
Test Procedure		Acceptan	ce Criteria		Significant Test Data
The following tests should be car engine and fuel or an equivalent n of the engine and fuel tanks: .1 the number of persons for rigid/inflated rescue boat approved should be crow side with half this comple on the buoyancy tube, and end. In each case the should be recorded; and	nass in place or which the at is to be wded to one ment seated d then to one	.1 Under these condition everywhere positive.	s the freeboard sh	hould be	.1 Freeboard crowded to one sidemm To bow:mm To stern:mm PassedFailed
.2 the stability of the rescue boarding should be ascert persons in the re demonstrating that they assist from the water a who is required unconsciousness. The f should have his back tows of the rescue boat so the assist the rescuers. All pe wear approved lifejackets	tained by two scue boat can readily third person to feign third person ards the side at he cannot rsons should	.2 The rescue boat should	l be stable.		.2       Stability observations during recovery of unconscious person:         Clothing/Suits on helpless person:
These stability tests may be car the rescue boat floating in still wa					Comments/Observations

Rigid/inflated rescue boats	Manufacturer: Model: Lot/Serial Number:			Surveyor: _	Time:	
5.4.2.3 Loading test			Regulations: LS	A Code 5.1.3	3.6, MSC.81(70)1/7.2.45	
Test Proc	edure		Acceptance Criteri	а	Significant Test Data	
Test Procedure         The freeboard of the rescue boat should be taken in the various loading conditions as follows:         .1 rescue boat with all its equipment;       .2 rescue boat with all its equipment, engine and fuel, or an equivalent mass positioned to represent engine and fuel;         .3 rescue boat with all its equipment and the number of persons for which it is to be approved having an average mass of 82.5 kg so arranged that a uniform freeboard is achieved at the side buoyancy tubes; and         .4 rescue boat with the number of persons for which it is to be approved and all its equipment, engine and fuel or an equivalent mass to represent engine and fuel and the rescue		In each condition the freeboard should be not le mm at the buoyancy tubes than 250 mm from the lowe transom.		s than 300 nd not less	.1       Freeboard at Buoyancy Tubes:mm         Freeboard at Transom:mm         .2       Freeboard at Buoyancy Tubes:mm         .3       Freeboard at Buoyancy Tubes:mm         .3       Freeboard at Buoyancy Tubes:mm         .4       Freeboard at Buoyancy Tubes:mm         Freeboard at Buoyancy Tubes:mm         .4       Freeboard at Buoyancy Tubes:mm         Passed       Failed	
boat being retrimmed as nece	ssary.				Comments/Observations	
5.4.2.4 Swamp test			Regulations: M	ons: MSC.81(70)1/7.2.11		
Test Proc	edure		Acceptance Criter	ia	Significant Test Data	
It should be demonstrated that swamped, is capable of suppo number of persons each weighin approved and a mass equivalent t tank. It should also be demonstra not seriously deform in this condit	orting its full equipment, the g 82.5 kg for which it is to be to its engine and fully filled fuel ted that the rescue boat does		ue boat should be c g the full load and s deform.		Passed Failed Comments/Observations	

Rigid/inflated rescue boats	Model:		Surveyo	Time: or: ation:
5.4.2.5 Flooded stability te inflated tube)	n waterline is below lower side of	F	Regulations: LSA Code 4.4.1.1, MSC.81(70)1/6.8.13	
Test Proced	ure	Acceptance Criteria		Significant Test Data
The rescue boat should be loade provision lockers, water tanks ar removed, they should be floode waterline resulting from this test. watertight stowage compartme individual drinking water contain containers aboard and plac compartments which should be s the flooding tests. Ballast of equiv- should be substituted for the installed equipment that can be d Weights representing persons ( would be in the water when the (water level more than 500 mm a be omitted.	ad fuel tanks cannot be ad or filled to the final Rescue boats fitted with ents to accommodate ers should have these ed in the stowage sealed watertight during alent weight and density engine and any other amaged by water. of 82.5 kg mass) who rescue boat is flooded	When loaded as specified, the should have positive stability whe water to represent flooding which when the rescue boat is holed location below the waterline assur of buoyancy material and no other	en filled v would oc in any o ming no l	vith ccur one Comments/Observations

Rigid/inflated rescue boats	Model:		Date:            Surveyor:            Organization:		
5.4.2.5 Flooded stability te inflated tube) (cont		red only when waterline is below lower side of	Reg	gulations: LSA Code 4.4.1.1, MSC.81(70)1/6.8.13	
Test Procedure Weights representing persons w not be in the water when the resc flooded (water level more than above the seat pan) should be pla normal seating positions of such with their centre of gravity appr 300 mm above the seat pan. representing persons who would submerged in the water when the flooded (water level between 0 an above the seat pan) should a have an approximate density of (for example water ballast cont represent a volume similar to body.	ue boat is 500 mm iced in the n persons roximately Weights be partly lifeboat is d 500 mm dditionally 1 kg/dm <sup>3</sup> ainers) to	Acceptance Criteria		Significant Test Data	
Note: Several tests may have conducted if holes in different are create different flooding condition	eas would				

Rigid/inflated rescue boats	Manufacturer: Model: Lot/Serial Number:			Date: Time: Surveyor: Organization:		
5.4.2.6 Righting test (for n	on-self-rig	hting rescue boats)	Regulations: MS	SC.81(70)1/7	<b>'</b> .1.7	
Test Procedure		Acceptane	ce Criteria		Significant Test Data	
It should be demonstrated that and without engine and fue equivalent mass in place of the e fuel tank, the rescue boat is c being righted by not more than tw if it is inverted on the water.	el or an ngine and apable of	The rescue boat should be ca more than two persons if it is i			Is the boat self-righting? YES NO (If YES, refer to lifeboat report 4.5.2.3) Can the boat be righted by 2 persons? With engine and fuel:	
For rescue boats with inboard en- test without engine and fuel is not applicable.					Passed Failed	
Note: Test without engine is only a	applicable				Without engine and fuel:	
for outboard engines.					Passed Failed	
					Method used to right boat:	
					Comments/Observations	

Rigid/inflated rescue boats	Model:	urer: Number:		Date:            Surveyor:            Organization:		
5.4.3.1 Seating strength te	st		Regulations: LS	A Code 4.4.	1.5, MSC.81(70)1/6.6.1	
Test Procedure		Acceptance	ce Criteria		Significant Test Data	
The seating should be loaded wit of 100 kg in each position alloca person to sit in the rescue boat.		The seating should be able to any permanent deformation or		g without	Observed damage Passed Failed	
In the case of a rescue boat lau falls, each type of seat should b with a mass of 100 kg in any s location when dropped into the w height of at least 3 m. (This tes performed in conjunction with the in 5.4.7.1)	be loaded ingle seat vater from it may be	The seating should be capable No damage should be sustain efficient functioning.			Passed Failed PassedN/A Comments/Observations	

Rigid/inflated rescue boats	Manufacturer: Model: Lot/Serial Number:		Surveyor: _	Time: n:
5.4.3.2 Seating space test		Regulations: LSA	A Code 5.1.	1.3.2, MSC.81(70)1/7.1.3
Test Procedure	Acceptance	ce Criteria		Significant Test Data
The rescue boat should be fitte engine and all its equipment. The of persons for which the rescue be approved, having an average r least 82.5 kg, and all wearing I and immersion suits and an essential equipment required, sh board; one person should lie do stretcher of similar dimensions shown in the figure below and t should be properly seated in th boat. The rescue boat should manoeuvred and all equipment tested to demonstrate that it operated without difficulty or int with the occupants.	e number boat is to nass of at lifejackets ny other ould then bown on a to those he others re rescue then be on board can be erference	apable of carrying own on a stretcher. Is may be seated of onforms with the 1.1. vale, transom, or	at least 5 n the floor, leg space	Equipment operated: YES NO   Number of persons carried: Seated on seats

Rigid/inflated rescue boats       Manufacturer:         Model:       Lot/Serial Number:		Date:            Surveyor:            Organization:			
5.4.4.1 Simultaneous relea	se		Regulations: LS	A Code 4.4.	7.6, MSC.81(70)1/6.9.12
Test Procedure		Acceptan	ce Criteria		Significant Test Data
For rescue boats launched by fall the rescue boat with its engine fitte be suspended from the release me just clear of the ground or the wa rescue boat should be loaded so total mass equals 1.1 times the ma rescue boat, all its equipment number of persons for which the boat is to be approved. The res should be released simultaneou each fall to which it is connected binding or damage to any part of the boat or the release mechanism.	d should simultaneous without bindir the release m that the and the simultaneous e rescue when fully w cue boat sly from d without	sly release from on ng or damage to nechanism. be confirmed sly release from e raterborne in the	that the rescue each fall which it is any part of the resc that the rescue ach fall to which it is light condition and	connected cue boat or boat will connected	Light condition PassedFailedN/A (N/A – Single fall, off-load only) 1.1 x Loaded Mass:kg PassedFailedN/A (N/A – Single fall, off-load only) Comments/Observations
(Single fall systems not inter on-load operation are exempt f test.)					

	Manufacturer:		Date:	Time:
	Madalı		Surveyor	Three
Rigid/inflated rescue boats	Lot/Serial Number:		Organiza	 tion:
			5.3	
5.4.4.2 Towing release test		Regulations: LS	A Code 4.4	4.7.6.5; MSC.81(70) 1/6.9.3
Test Proce	dure	Acceptance Criteria		Significant Test Data
With the operating mechanism		There should be no damage as	a result of	Operating mechanism disconnected and boat towed
demonstrated when the rescue		these tests.		at 5 kts:Pass Fail
complement of persons and equi				
of 5 knots that the moveable hoo	k component stays closed.	The rescue boat is released sat by the release mechanism.	tisfactorily	Operating mechanism connected tests.
Furthermore, with the operating	mechanism connected, it	,		Test 1: 25% SWL, lengthwise to the boat at 45° to
should be demonstrated that the	e rescue boat when loaded			the vertical:
with its full complement of pers		Single fall systems not inte		
towed at speeds of 5 knots car		on-load operation are exempt	from this	Force Applied: N. Forward direction:Pass Fail
above should be demonstrated a	s follows:	test		Forward direction:PassFail
				Aft direction:Pass Fail
.1 a force equal to 25% of t				
	the hook in the lengthwise			Test 2: 100% SWL, athwartships at 20° to the
	angle of 45° to the vertical. ucted in the aftward as well			vertical:
as the forward direction;	ucted in the altward as well			Force Applied: N.
				Starboard: Pass Fail
.2 a force equal to the safe	e working load of the book			Port: Pass Fail
	e hook in an athwartships			
	20° to the vertical. This test			Test 3: 100% SWL, 45° to the longitudinal axis of
should be conducted on				the boat in plan view at an angle of 33° to the
				vertical.
.3 a force equal to the safe				
	hook in a direction halfway			Force Applied: N.
	tests 1 and 2 (i.e. 45° to the			Position 1:Pass Fail
	pat in plan view) at an angle			Position 2:PassFail
	s test should be conducted			Position 3:PassFail
in four positions.				Position 4:PassFail
				Comments/Observations

Rigid/inflated rescue boats	Manufacturer: Model: Lot/Serial Number:		Date: Time: Surveyor: Organization:		
5.4.4.3 Load and release test			A Code 4	4.4.7.6.4; MSC.81(70) 1/6.9.4.1, 6.9.4.2	
Test Procedure		Acceptance Criteria		Significant Test Data	
Test Procedure A release mechanism should be c tested as follows: The rescue boat release and retri- the longest used connection associated with the system should adjusted according to instructions equipment manufacturer and then of its safe working load and releas Load and release should be repea The rescue boat release and n should then be disassembled, the and wear recorded. The releas system should then be reassembled	eval system and n cable/linkage be mounted and from the original loaded to 100% sed. ated 50 times. retrieval system parts examined se and retrieval	Acceptance Criteria During the 50 releases, the rescue boat and retrieval system should be r simultaneously from each fall to whic connected without any binding or damage part of the lifeboat release and retrieval sy The system should be considered as "f any failure during the conditioning or unin release occurs when load is applied system has not yet been operated.	eleased ch it is e to any ystem. failed" if ntended	Working Load:       N         Force Applied:       N         Check the box for each release:       1:         1:       2:       3:       4:       5:       6:         7:       8:       9:       10:       11:       12:       12:	

Rigid/inflated rescue boats	Manufact Model:	urer:	Date: _ Survey	Time: /or:
Lot/Serial		Number:	Organi	zation:
5.4.4.4 Cyclic loading test		Regulations: LS	A Code	4.4.7.6.4; MSC.81(70) 1/6.9.4.3
Test Procedure		Acceptance Criteria		Significant Test Data
The hook assembly, while disc from the operating mechanism, tested 10 times with cyclic loa	should be	The specimen should remain closed during the t	est.	Working Load:N Force Applied:N
zero load to 1.1 times the safe load, at a nominal 10 seconds unless the release mechanism	per cycle;	The system should be considered as "failed" if a failure during this test or any unintended release opening occurs.		Check the box for each release and/or strike out the cam rotation if no applicable:
specifically designed to opera off-load hook with on-load capat the weight of the boat to close th this case the cyclic load should b	oility using e hook, in			Cam rotation 0°: 1: 2: 3: 4: 5: 6: 7: 8: 9: 10: 7
more than 1% to 1.1 times the SV For cam-type designs, the test carried out at an initial cam rota	NL. should be			Cam rotation +45°: 1: 2: 3: 4: 5: 6: 7: 8: 9: 10: 10: 10: 10: 10: 10: 10: 10: 10: 10
(fully reset position), and repeate either direction, or 45° in one of restricted by design.	d at 45° in			Cam rotation -45°: 1: 2: 3: 4: 5: 6: 7: 8: 9: 10: 10: 10: 10: 10: 10: 10: 10: 10: 10
				Passed: Failed:
				Comments/Observations

Rigid/inflated rescue boats	Manufacturer: Model:			or: Time:		
	Lot/Serial Number:		Organization:			
5.4.4.5 Actuation force test		Regulations: LS	Regulations: LSA Code 4.4.7.6.4; MSC.81(70) 1/6.9.4.4			
Test Procedur		Acceptance Criteria		Significant Test Data		
The cable and operating mechar reconnected to the hook assem boat release and retrieval syste demonstrated to operate satisfac working load. The demonstration should verify indicators and handles are still correctly positioned in accordanc and safety instruction from the manufacturer.	hism should then be bly; and the rescue em should then be storily under its safe that any interlocks, functioning and are e with the operation	The actuation force should be no less th N and no more than 300 N, if a cable is should be the maximum length specifier manufacturer, and secures in the manner it would be secured in the rescu The release mechanism is deemed the passed the testing in 5.4.4.3, 5.4.4 5.4.4.5 when the tests have been cor	s used it d by the same ue boat. to have 4.4 and nducted ld be ring this			

Rigid/inflated rescue boats	Model:		Date:          Time:            Surveyor:          Organization:			
5.4.4.6 Second release m	nechanism tests- actuatio	on force and tensile strength	ength Regulations: LSA Code 4.4.7.6.4, MSC.81(70)1/6.9.5.1, 6.9.5.2			
Test Proced	lure	Acceptance Criteri	a	Significant Test Data		
<ul> <li>A second release mechanism should be measured loade working load. If a cable is u maximum length specified and secured in the same secured in a lifeboat. The verify that any interlocks, are still functioning and are accordance with the construction from the manufacturer; and</li> <li>.2 the release mechanism should the release mechanism.</li> </ul>	build be tested as follows: the release mechanism d with 100% of its safe used, it should be of the l by the manufacturer, e manner it would be e demonstration should indicators and handles e correctly positioned in operation and safety original equipment mould be mounted on a ice. The load should be	.1 The actuation force should than 100 N and no more the The release mechanism does	1 be no less an 300 N.	Actuation Force:       N         Tensile strength @ 6xSWL.         Force applied:       N.         Passed:       Failed:         Comments/Observations		

Rigid/inflated rescue boats	Manufacturer: Model: Lot/Serial Number:				Surveyor:	Time:	
5.4.5.1 Liferaft towing			Regulatio	ns: LS	SA Code 4.4.6.8, 5	5.1.1.7, 5.1.1.9, MSC.8	1(70)1/7.1.2
Test Procedu	ure	Acceptance			Signifi	icant Test Data	
Test Procedul The rescue boat should be load to the mass of its equipment persons for which the rescue by The maximum towing force of the then be determined. This information should be us largest size of fully loaded liferaft can tow at a speed of at least 2 The fitting designated for towing secured to a stationary object by a means to measure bollard pull operated ahead at full speed for 2 minutes and the maximum for (For rescue boats equipped to bollard pull trials may be carried various powers to assess performance.)	led with weights equal t and the number of oat is to be approved. he rescue boat should sed to determine the twhich the rescue boat knots. g other craft should be y a tow rope fitted with . The engine should be or a period of at least ce recorded. with outboard motor, ed out with engines of	Acceptance The maximum to force of the resor- should be record type approval co There should damage to th fitting or its s structure.	owing cue boat ded on the ertificate. be no le towing	Bolla (Reco Obse Prope Pi D Pass	e/model: rd pull: N ord on type approv erved damage: eller: itch:	Smallest Engine	

Rigid/inflated rescue boats	d/inflated rescue beats Model: S		Date:            Surveyor:            Organization:		
5.4.5.2 Endurance, speed	and fuel	consumption	Regulat	ations: LSA Code 5.1.1.6,MSC.81(70)1/7.1.5, 1/7.1.6	
Test Procedure		Acceptance Criteria		Significant Test Data	
<ul> <li>(Note: Run this test after impadrop tests in 5.4.7.1.)</li> <li>The rescue boat should be load weights equal to the mass equipment and the number of for which the rescue boat is approved.</li> <li>The engine should be started boat manoeuvred for a period of 4 hours to demonstrate sat operation.</li> <li>The rescue boat should be r speed of not less than 6 knd period which is sufficient to ascefuel consumption and to estab the fuel tank has the required of (This determination may be made the 4-hour period of operation.)</li> <li>For rescue boats equipped with a motor, speed and manoeuvries should be carried out with en various powers to assess the boat's performance.</li> </ul>	led with of its persons to be and the f at least isfactory un at a ts for a ertain the lish that capacity. le during putboard ng trials gines of	The boat should operate satisfactoril the 4-h operation. The fuel tank should have sufficient of operate at a speed of 6 knots for a p 4 hours in calm water.	capacity to	Make/model: Engine Speed: rpm	

Bigid/inflated recouse heats			Surveyor:		Time: on:	
5.4.5.3 Engine out of wate	er		Regulations: L	SA Code 4.4	.6.3, MSC.81(70)1/6.10.5	
Test Procedure		Acceptanc	e Criteria		Significant Test Data	
The engine should be operated for at least 5 minutes at idling speed under conditions simulating normal storage. Note: If a water flushing device is intended to be used for this purpose, it should be fitted during the test.		The engine should not be damaged as a result of this test.		Passed Failed Comments/Observations		
5.4.5.4 Compass test	Regulations: LSA Code 5.1			.2.2.3, MSC.81(70)1/6.10.7		
Test Procedure		Acceptance Criteria			Significant Test Data	
It should be determined th compass performance is sat and that it is not unduly affe magnetic fittings and equipmer rescue boat.	isfactory ected by	The compass operates satisf	actorily.		Compass Make: Compass Model: Passed Failed Comments/Observations	

Rigid/inflated rescue boats	Manufacturer: Model: Lot/Serial Number:		Date:          Time:            Surveyor:          Organization:		
5.4.5.5 Manoeuvrability w	vith paddle	s or oars	Regulatio	ns: LSA Coo	de 5.1.2.2.1, MSC.81(70)1/7.1.8
Test Procedure		Acceptance Cr	iteria		Significant Test Data
It should be demonstrated to rescue boat can be propell manoeuvred by its oars or pa calm water conditions at a spe least 0.5 knots over a distance of 25 m. when laden with the nut persons, all wearing lifejacked immersion suits, for which it is approved. For boats with inboard engine power does not need to be great that intended to be used.	led and addles in eed of at f at least imber of ets and is to be nes the	The rescue boat should be capable paddled and manoeuvred.	e of being sat	tisfactorily	Distance travelled:m Time Required:s Calculated speed:m/s =knots Lifejacket and immersion suit used during the test: Lifejacket - Inflatable/Inherently Buoyant Immersion suit - Uninsulated/Buoyant Insulated Passed Failed Comments/Observations

Rigid/inflated rescue boats	rescue boats       Manufacturer:         Model:       Lot/Serial Number:			Survey	Time: or: zation:
5.4.5.6 Heavy weather/seas	s test		Regulations: L	SA Code	∋ 5.1.3, MSC.81(70)1/7.2.10
Test Procedure		Acceptance	Criteria		Significant Test Data
To simulate use in heavy weather the rescue boat should be fitted with a larger powered engine than is intended to be fitted and driven hard in a wind of force 4 or 5 or equivalent rough water for at least 30 minutes.		Show undue flexing or lost more than minimal       Tube pressure before test:         Wave height m         Wind Speed m/s         Tube pressure after test:		Wind Speedm/s Tube pressure after test:mbar PassedFailed	
5.4.6.1 Towing test			Regulations: L	SA Code	e 4.4.1.3.2, 4.4.7.7, MSC.81(70)1/6.11.1
Test Procedure		Acceptance	Criteria		Significant Test Data
It should be demonstrated that equipped rescue boat, loaded properly distributed mass equa mass of the number of persons f it is to be approved, can be tow speed of not less than 5 knots water and on an even keel u rescue boat's painter securing d	d with a al to the for which wed at a a in calm sing the	The rescue boat should not characteristics. There should be no damage equipment as a result of this	to the rescue boat		Passed Failed Comments/Observations

Rigid/inflated rescue boats	Model:	urer: Number:		Surveyor:	on:	Time:
5.4.6.2 Painter release te	st		Regulations: L	SA Code 4.4	I.7.7, MSC.81(70)	1/6.11.23
Test Procedure		Acceptanc	ce Criteria			Significant Test Data
It should be demonstrated to painter release mechanism can the painter on a fully equipp loaded rescue boat that is being a speed of not less than 5 knots water. The painter release mechanism be tested in several distinct dire the upper hemisphere not obstr the canopy or other construction rescue boat. The directions spe test 5.4.4.2 should be used if po	n release ped and towed at s in calm m should ections of ructed by ns in the ecified in	The painter should release a damage to the rescue boat o this test.	nd there should be		Passed Test Direction	Failed PassedFailed PassedFailed PassedFailed PassedFailed PassedFailed

Rigid/inflated rescue boats	rescue boats       Manufacturer:         Model:       Lot/Serial Number:			Surveyor: _		Time:
5.4.7.1 Impact, drop and	operation after imp	act and drop test	Regulations:	LSA Code 4	4.4.1.7, MSC.81(70)1	1/6.4.1, 7.2.2, 7.2.3
Test Procedur		Accept	ance Criteria		S	ignificant Test Data
.1 For boats launched by fal equipped rescue boat, ind should be loaded with we mass of the number of per rescue boat is to be approv loading should be a weight in one of each type of se lifeboat. The weights shoul represent the normal load boat. (These weights nee 300 mm above the sea fenders, if required, should rescue boat, in a free hangi be pulled laterally to a pos released it will strike a f surface at a velocity of 3 should be released to impa	cluding its engine, ights equal to the sons for which the ed. Included in this t of 100 kg loaded that installed in the d be distributed to ling in the rescue ed not be placed tpan.) Skates or be in position. The ng position, should dition so that when fixed rigid vertical 8.5 m/s. The boat	successful if: .1 no damage has affect the efficien boat and its equ .2 the damage caus tests has not in result of the ope .3 machinery and operated to full s	been sustained th nt functioning of th ipment; sed by the impact acreased significa rational test in 5.4 other equipm	hat would he rescue and drop antly as a 4.5.2; hent has	S Load in boat: Increased Damage Satisfactory Opera Ingress of Water: Weight of heaviest Final Evaluation:	e: YES NO tion: YES NO
<ul> <li>vertical surface.</li> <li>.2 The rescue boat comp equipment and with a mas engine and fuel in the pos and fuel tank should be dr from a height of at least 3 r drops should be from bow-down, level trim, stern-down attitudes.</li> <li>.3 On completion of these tes and its equipment sho examined.</li> </ul>	es equivalent to its sition of its engine opped three times m on to water. The the 45-degree and 45-degree				Passed	

Rigid/inflated rescue boats	Manufacturer: _ Model: Lot/Serial Numb	per:		Surveyor:	Time: on:
5.4.7.2 Overload test	-		Regulations: MS	SC.81(70)1/7	7.1.4
Test Procedure		Accept	tance Criteria		Significant Test Data
The rescue boat should be loaded distributed load of four times represent the equipment and full persons each weighing 82.5 kg to be approved and suspended for its bridle or hooks. The weig distributed in proportion to the load in its service condition, but the represent the persons need 300 mm above the seat pan. The or hooks and fastening dev examined after the test has been Testing by filling the boat with w be accepted. This method of load give the proper distribution of we	the weight to I complement of for which it is to 5 minutes from ghts should be ading of the boat weights used to not be placed boat and bridle ice should be a conducted. water should not bading does not	The rescue boat and its should not show any sig	bridle or release m	nechanism	Load in boat:kg Comments/Observations
may be removed in order to ave which case weights should be ac to compensate for the rem machinery.	dded to the boat				
The rescue boat and its bridle or mechanism) and fastening dev examined after the test for any si	vice should be				Passed Failed

Rigid/inflated rescue boats	Manufacturer: Model: Lot/Serial Number:			Date: Surveyor: _ Organizatio	Time: on:
5.4.7.3 Mooring out test (I lower side of inflat		f waterline is below Regulations: LSA Code 5.1.3		3.3, MSC.81(70)1/7.2.15, 5.5, 5.17.78	
Test Procedure	•	Accept	ance Criteria		Significant Test Data
The rescue boat should be load equal to the mass of the total nur for which it is to be approved an and moored in a location at sea of harbour. The rescue boat should that location for 30 days. The pri topped up once a day using the however, during any 24-hour per boat should retain its shape. Each inflatable compartment in the should be tested to a pressure times the working pressure. Each valve should be made inoperative air should be used to inflate the i boat and the inflation source ren should continue for at least 30 m The measurement of pressure leakage can be started when assumed that compartment ma completed stretching due to the in and achieved equilibrium.	nber of persons d its equipment or in a seawater remain afloat in ressure may be a manual pump; driod the rescue the rescue boat equal to three on pressure relief ve; compressed inflatable rescue noved. The test inutes.	The rescue boat should would impair its perform The pressure should not determined without com atmospheric pressure ch seam slippage, cracking boat.	ance. decrease by more pensating for tempe nanges, and there sl	than 5% as erature and hould be no	Compartment 1         Initial Pressure:       mbar         Final Pressure:       mbar         Calculated Decrease:       Percent         Compartment 2       Initial Pressure:         Initial Pressure:       mbar         Calculated Decrease:       Percent         Compartment 2       Initial Pressure:         Initial Pressure:       mbar         Calculated Decrease:       Percent         Compartment 3       Initial Pressure:         Initial Pressure:       mbar         Calculated Decrease:       Percent         Compartment 4       Initial Pressure:         Initial Pressure:       mbar         Calculated Decrease:       Percent         Compartment 5       Initial Pressure:         Initial Pressure:       mbar         Calculated Decrease:       Percent         Passed       Percent         Passed       Failed         Comments/Observations       Failed

Rigid/inflated rescue boats	Manufact Model: Lot/Seria	urer: Number:		Date: Time: Surveyor: Organization:
5.4.8.1 Inflation chamber of	characteris	stics tests	Regulations:	: LSA Code 1.2.2, MSC.81(70)1/7.2.14
Test Procedure		Acceptance Criter	ia	Significant Test Data
The inflatable compartment mate to construct the rescue boat se tested for the following charactering .1 tensile strength .2 tear strength .3 heat resistance .4 cold resistance .5 heat ageing .6 weathering .7 flex cracking .8 abrasion .9 coating adhesion .10 oil resistance .11 elongation at break .12 piercing strength .13 ozone resistance .14 gas permeability .15 seam strength .16 ultraviolet light resistance	should be stics:	The material characteristics sl with ISO 15372:2000.	hould comply	.1       tensile strengthN         .2       tear strengthN         .3       heat resistance – Blocking

#### 5.5 RIGID FAST RESCUE BOATS

#### **EVALUATION AND TEST REPORT**

- 5.5.0 General Information
  - 5.5.0.1 General data and specifications
  - 5.5.0.2 Submitted drawings, reports and documents
  - 5.5.0.3 Quality assurance
- 5.5.1 Visual inspection
  - 5.5.1.1 Occupant space
  - 5.5.1.2 Fittings, provisions and ladders
  - 5.5.1.3 Engine and starting system
  - 5.5.1.4 Steering mechanism and fuel tank
  - 5.5.1.5 Release mechanism
- 5.5.2 Freeboard, stability and self-righting tests
  - 5.5.2.1 Flooded stability test
  - 5.5.2.2 Freeboard test
  - 5.5.2.3 Righting test (for non self-righting fast rescue boats)
  - 5.5.2.4 Self-righting test (for self-righting fast rescue boats only)
  - 5.5.2.5 Flooded capsizing test
  - 5.5.2.6 Engine inversion test (inboard)
- 5.5.3 Seating strength and space tests
  - 5.5.3.1 Seating strength test
  - 5.5.3.2 Seating space test
- 5.5.4 Release mechanism tests
  - 5.5.4.1 Simultaneous release
  - 5.5.4.2 Towing release test
  - 5.5.4.3 Load and release test
  - 5.5.4.4 Cyclic loading test
  - 5.5.4.5 Actuation force test
  - 5.5.4.6 Second release mechanism test actuation force and tensile strength
- 5.5.5 Operational tests
  - 5.5.5.1 Liferaft towing
  - 5.5.5.2 Endurance, speed, and fuel consumption
  - 5.5.5.3 Engine out of water
  - 5.5.5.4 Compass test
  - 5.5.5.5 Helpless person recovery
  - 5.5.5.6 Manoeuvrability with paddles or oars
- 5.5.6 Towing and painter tests
  - 5.5.6.1 Towing test
  - 5.5.6.2 Painter release test
- 5.5.7 Strength tests
  - 5.5.7.1 Impact, drop and operation after impact & drop test
  - 5.5.7.2 Overload test

#### 5.5 RIGID FAST RESCUE BOATS

# **EVALUATION AND TEST REPORT**

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Rigid fast rescue boats	Manufacturer: Model: Lot/Serial Number:			Date:          Time:            Surveyor:          Organization:	
5.5.0.1 General data ar	nd specification	ons	Regulations: L	.SA Code 4.4,	5.1, MSC.81(70)1/7.1.9
General Informa	tion	Rescue bo	oat Dimensions		Rescue boat Weight
General Informa         Construction Material:         Hull:         Canopy:         Fire-retardancy documenta         Rescue Boat Inherent Buoyar         (Type App.) Material:         Weight:         Occupancy:         Persons (82.5 kg each):         Engine(s) Installed:         Type App by:         Manufacturer:         Type:         Power:         Gear ratio (inboard engine)         Additional rigid or inflatable built         Release mechanism(s) (if app	ation: ncy 2  : uoyancy:	Dimensions:         LOA (including fixed fender         Breadth Maximum:         Depth to Sill:         Depth to Gunwale:         Moulded Breadth:         Moulded Depth:         Provision for securing hanging	ers, if any):	  	Design Weight:         Unloaded Boat:         Loose Equipment:         Fuel:         Persons:         Calculated Loaded Weight:         Fully Equipped:         With Persons:         Weight as Tested:         Fully Equipped:         Comments/Observations
Manufacturer: Type: SWL: Propeller	2				

Rigid fast rescue boats	Manufacturer: Model: Lot/Serial Number:	Date:       Time:          Surveyor:         Organization:       Organization:						
5.5.0.2 Submitted drawings, reports and documents								
Submitted drawings and documents								
Drawing No.	Drawing No. Revision No. & date Title of drawing							
	Su	bmitted reports and documents	Ctatura					
Report/Document No.	Revision No. & date	Title of report / document	Status					
		Maintenance Manual -						
		Operations Manual -						

Rigid fast rescue boats	Manufacturer: Model: Lot/Serial Number:	Surveyor:				
5.5.0.3 Quality assuran	ice	Regulations: MSC.81(70) 2/1.1, 1.2				
of the International Conventi amended or the International inspected, representatives of inspections of manufacturers appliances and materials u approved prototype life-saving Manufacturers should be requ ensure that life-saving applian the prototype life-saving appliant	ired to institute a quality control procedure to nces are produced to the same standard as iance approved by the Administration and to	Quality assurance         Standard Used:         Quality assurance Procedure:         Quality assurance Manual:				
Reep records of any products Administration's instructions.	ion tests carried out in accordance with the	Description of System: Quality assurance System acceptable Yes/No Comments/Observations				

Rigid fast rescue boats	Model: Surveyor:			Time: n:	
5.5.1.1 Occupant spac	е		Regulations: I	_SA Code 4.4	.2.2, 4.4.3.5, 5.1, MSC.81(70)1/7.1.9
Test Procedure		Acceptanc	ce Criteria		Significant Test Data
Visually inspect the rescue boat. Conduct measurements and verify clearances as required.		<b>General</b> Unless the rescue boat has adequate sheer, it should be provided with a bow cover extending for not less than 15% of its length.		Passed Failed	
		Length is at least 6.0 m and n	ot over 8.5 m.		Passed Failed
		<ul> <li>Seating Space</li> <li>Width – at least 430 mm</li> <li>Depth – at least 100 mm each side of a point 215 mm</li> <li>from the back</li> <li>Knee Space (Seating on seats) at least 635 mm from</li> <li>the back</li> <li>Knee Width – at least 250 mm</li> <li>Leg Space (Seating on floor) – at least 1190 mm from</li> <li>the back</li> <li>Overlapping Seat Vertical Separation – at least</li> <li>350 mm</li> <li>Seat Horizontal Overlap – 150 mm maximum</li> <li>Each seating position should be clearly indicated.</li> </ul>		Width:      mm         Depth:      mm         Knee Space:      mm         Knee Width:      mm         Leg Space:      mm         Vert. Separation:      mm         Overlap:      mm         Position Indication:       PASSED FAILED         Stretcher space:      mm         Passed       Failed	
		<ul> <li>Stretcher(s) space: Rescue boats should be ca seated persons and a personinimum 2130 x 610 mm.</li> <li>Walkway Surfaces The surfaces on which per a non-skid finish.</li> </ul>	on lying on a stre	etcher of	Non-Skid Surface: PassedFailed Comments/Observations

Rigid fast rescue boats	Manufacturer:          Model:          Lot/Serial Number:			Time:		
5.5.1.2 Fittings, provis	ions and ladders	Regulations: LS	SA Code 4.4.	3, 4.4.7, 5.1, MSC.81(70)1/7.1.9		
Test Procedure	Acceptance Crite	ria		Significant Test Data		
Visually inspect the rescue boat.	Fittings and Provisions Suitable handholds or buoyant lifeline bec rescue boat above the waterline and within re except in the vicinity of the rudder and propel	each of a person i		Passed Failed		
Conduct measurements and verify clearances as required.	On other than self-righting rescue boats, arranged to break away without damaging the	Passed FailedN/A				
	Weathertight stowage for small items of equip	Weathertight stowage for small items of equipment.				
	Approved position-indicating light provided at	highest point.		Passed Failed		
	Automatically self-bailing or capable of rapidly	Automatically self-bailing or capable of rapidly clearing water.				
	Ladders Ladders that can be used at any entrance sho step when in place should not be less than 0. Other Provisions Buoyant material may be installed external to it is adequately protected against damage a exposure when stowed on an open deck on afloat in all sea condition. Colour The boat is of a highly visible colour where it	4 m below the ligh o the hull of the bo nd is capable of v a ship at sea and	nt waterline. bat, provided withstanding for 30 days	Passed FailedN/A YES NO N/A Lowest stepm below waterline Passed Failed Highly visible colour: Passed Failed		
				Comments/observations:		

Rigid fast rescue boats	Madal	Lot/Serial Number: Organization			_ Time:	
5.5.1.3 Engine and sta	arting system	Regulations: L	SA Code 4.4.6	5, 5.1, MSC.81(7	0)1/7.1.9	
Test Procedure	Acceptance Crite	ria		Significant Test Data		
Visually inspect the rescue boat.	Type of starting system - Two independent rechargeable energy sour starting systems.	ces provided for	power	Manual Powe YES NO	r N/A	
Conduct measurements	- Required starting aids provided.			Passed	Failed	
and verify clearances as	<ul> <li>Starting system is not impeded by engine ca obstructions.</li> </ul>	asing, thwarts, or	other	Passed	Failed	
required.	<ul> <li>Propeller arranged to be disengaged from the ahead and astern propulsion.</li> </ul>	ne engine and pro	ovision for	Passed	Failed	
	<ul> <li>Exhaust arranged to prevent water from ent operation.</li> </ul>	ering engine in n	ormal.	Passed	Failed	
	<ul> <li>System designed with due regard to the safe to the possibility of damage to the propulsion</li> <li>Engine casing made of fire-retardant material</li> </ul>	n system from flo	ating debris	Passed	Failed	
	<ul> <li>arrangements providing similar protection.</li> <li>Personnel are protected from hot and movir</li> </ul>			Passed	Failed	
	- Shouted order can be heard with engine rur	• •	ecessary for	Passed	Failed	
	6 knot operation			Passed	Failed	
	<ul> <li>Watertight casing around bottom and sides tightly fitting top which provides for gas vent</li> <li>Means for recharging engine starting, radio,</li> </ul>	ing.		Passed	Failed	
	provided by solar charger or ship's power su	ipply.		Passed	Failed	
	<ul> <li>Radio batteries not used to provide power for</li> <li>Recharging for engine batteries provided by</li> </ul>			Passed	Failed	
	exceed 50 v.			Passed	Failed	
	- Recharging means for engine batteries can be disconnected at the rescue boat embarkation station.			Passed	Failed	
	<ul> <li>Instructions for starting and operating engine mounted in a conspicuous place near the er Touring errongements for merchalling liferent</li> </ul>	ngine starting cor		Passed	Failed	
	- Towing arrangements for marshalling liferaf	lS.				

Rigid fast rescue boats       Manufacturer:         Model:       Lot/Serial Number:		Date: Surveyor: Organization	Tìi :	me:			
5.5.1.4 Steering mechanism and fuel tank Regulations: LSA Code				SA Code 4.4.	7.2, 5.1.1.8, MSC.81(	70)1/7.1.9	
Test Procedure		Acceptano	ce Criteria		Sigr	nificant Test Data	a
Visually inspect the rescue bo Conduct measurements and		<b>Steering</b> A tiller should be capable of	controlling the ru	udder (rudder	Passed	Failed	
clearances as required	Verny	and tiller may form part of out	poard motor)				
		Rudder permanently attached	to the rescue bo	at	Passed	Failed	N/A
		Rudder and tiller arranged so as not to be damaged by operation of the release mechanism or propeller			Passed	Failed	
		Steered by wheel at helmsman's position			Passed	Failed	N/A
		Has emergency steering system providing direct control of rudder, water jet or outboard motor		Passed	Failed	_	
		Hands-free, watertight VHF radio provided		Passed	Failed		
		Fuel Tank					
		If fitted with petrol-driven outboard motor, the fuel tank(s) should be specially protected against fire and explosion			Passed	Failed	N/A
					Comments/Observa	tions	

Rigid fast rescue boats	d fast rescue boats Manufacturer: Model: Lot/Serial Number:			Surveyor:	Τ		
5.5.1.5 Release mecha	Regulations:	LSA Code 4.4.	7, 5.1, MSC.81(70)1	I/7.1.9			
Test Procedure	9	Acceptano	ce Criteria		Si	ignificant Test Da	ta
Visually inspect the rescue bo	pat.	Clear operating instructions			Passed		
Conduct measurements and clearances as required	verify	Release control marked in a surroundings	colour that con	trasts with the	Passed	_ Failed	
		For on-load release mechanis	ms:				
		Suitably worded danger sign for on load release			Passed	Failed	N/A
		Mechanical protection (interlock) engages only when mechanism is completely and properly reset, to prevent accidental release during recovery		Passed	_ Failed	N/A	
		On-load release mechanism needs deliberate and continued action by the operator		Passed	_ Failed	N/A	
		Mechanical protection provided beyond that normally required for off load release		Passed	_ Failed	N/A	
		For a single fall system with suitable painter, on-load release capability is not required; in such an arrangement a single capability to release the boat only when it is fully waterborne will be adequate		Passed Comments/Observ release mechanisi	vations m type:		
		This capability to release the boat may be attached to the boat or to the davit			Approval:		

Rigid fast rescue boats	Manufacturer: Model: Lot/Serial Number:			Date: Surveyor: Organization: _	Time:	:
5.5.2.1 Flooded stability test			Regulations: L	SA Code 4.4.1.	1, MSC.81(70)1/6.8.1	3
Test F	Procedure		Acceptance Crite	eria	Signi	ficant Test Data
provision lockers, water tar removed, they should be floo resulting from this test. Res stowage compartments to a water containers should hav placed in the stowage compa- watertight during the flooding and density should be substitu- installed equipment that can b Weights representing persons in the water when the rescue than 500 mm above the sea representing persons who we rescue boat is flooded (wate seat pan) should be placed in such persons with their centre above the seat pan. Weights be partly submerged in the w (water level between 0 and 50 additionally have an approx example water ballast contain to a human body.	s (of 82.5 kg mass) who would be boat is flooded (water level more it pan) may be omitted. Weights buld not be in the water when the r level less than 500 mm above in the normal seating positions of e of gravity approximately 300 mm representing persons who would vater when the lifeboat is flooded 00 mm above the seat pan) should timate density of 1 kg/dm <sup>3</sup> (for ers) to represent a volume similar ve to be conducted if holes in	should ha with wate would occ in any on assuming		he rescue boat lity when filled looding which le boat is holed the waterline		ons Failed

Rigid fast rescue boats	Manufacturer: Model: Lot/Serial Number:				Surveyor:	Time:		
5.5.2.2 Freeboard test				Regulations: L	SA Code 4.4.	5, MSC.81(70)1/6.8.45		
Test Procedure	e		Accepta	cceptance Criteria Significant Test Data				
loaded with a mass equal to that of all the measured fre			eeboard, on t	nsidered succes he low side, is n length or 100 mm	ot less than	Measured Freeboard:mm 1.5% of Boat's Length:mm PassedFailed Comments/Observations		
5.5.2.3 Righting test (for	or non self-righti	ing fast rescu	e boats)	Regulations:	MSC.81(70)1/	7.1.7		
Test Pr	ocedure			Acceptance Criter	ia	Significant Test Data		
Test Procedure It should be demonstrated that both with and without engine and fuel or an equivalent mass in place of the engine and fuel tank, the rescue boat is capable of being righted by not more than two persons if it is inverted on the water. The engine should be running in neutral position and, after stopping automatically or by the helmsman's emergency release switch when inverted, it should be easily restarted and run for 30 minutes after the rescue boat has returned to the upright position. For rescue boats with inboard engines, the test without engine and fuel is not applicable. (This test is not required if the righting test in 5.5.2.4 has been performed.)		righted by no inverted on t When the r engine or mo restarted, emergency r The design systems sho than 250 ml	escue boat has otor should be cap provided the release, if fitted, ha of the fuel an ould prevent the of fuel or lubricatir	persons if it is righted, each bable of being helmsman's as been reset. Ind lubricating loss of more	With engine and fuel:       Failed         Passed       Failed         Without engine and fuel:       Failed         Passed       Failed         Method used to right boat:			

Rigid fast rescue boats       Manufacturer:         Model:       Lot/Serial Number:			Date: Surveyor: Organization	n:	1 	Гіте:		-
5.5.2.4 Self-Righting test (for self-righting fast rescue boats only)			Regulations: MSC/	Circ.809, A	nnex, 4.1	.5, 4.1.8; N	<b>/ISC.81(70)</b> 1	/6.14
Test Proc	edure	Acceptance	e Criteria		S	ignificant 7	Fest Data	
the normal position weights representing the boat with a full complem The weight used to assumed to have an a should be secured at have its centre of gravit above the seatpan so a on stability as when the	dinal axis to any angle of e rescue boat should be gles of heel up to and e released.	continue to run u helmsman's emerg and .2 after resetting emergency releas engine should be run for 30 minutes has returned to the Water should not enter	position without the ants. ese tests, the engine utral position and: o stop automatically the engine should intil stopped by the gency release switch; the helmsman's e, if necessary, the easily restarted and after the rescue boat e upright position. the engine.	Heel 45° - 90° - 135° - 180° - Result: F		FAILED		FAILED
.2 when the rescue boat is	s in the light condition.	The design of the the systems should prevent 250 ml of fuel or lub	the loss of more than					
In the case of open fast resc test should only be done in t		propulsion system.	-					

Rigid fast rescue boats	boats       Manufacturer:         Model:          Lot/Serial Number:			Surveyor:		Time:
5.5.2.5 Flooded capsizing rescue boats only)		righting fully enclosed fast	Regulations	: MSC.81(70)	1/6.14.3, 6.14.4, 6. <sup>-</sup>	14.5, 7.4.1
Test Procedure		Acceptance	Criteria		S	ignificant Test Data
Perform the following for boats with a closable canopy not applicable to open fast re The rescue boat should be p	. This test is scue boats. placed in the	After release, the lifeboat sho provides an above-water escape			Result: PASSED	
water and fully flooded until boat can contain no addition entrances and openings secured to remain open durir	al water. All should be ng the test.				Comments/Obser	vations
Using a suitable means, the should be rotated about a axis to a heel angle of 180 released.	longitudinal					
For the purpose of this test, the distribution of the occupan disregarded. However, the en- equivalent mass, should be the rescue boat in the norm position.	nts may be quipment, or secured in					

Rigid fast rescue boat	Rigid fast rescue boats       Manufacturer:         Model:       Lot/Serial Number:				Surveyor:	Time:
-		Lot/Senai Number:			Organization	:
5.5.2.6 Engine inversion test (inboard) (for self- boats only)			f-righting fast rescue	Regulation	ns: LSA Code	4.6.4.2; MSC.81(70) 1/6.14.6 - 6.14.8, 7.4.1
Test	t Proce	edure	Acceptar	e Criteria Significant Test Data		
frame that is arrange	ed to	should be mounted on a rotate about an axis axis of the boat	The engine and engin capable of running in ar and continue to run afte	ny position d	uring capsize	
equivalent to the longitudinal axis of the boat. A pan should be located under the engine to collect any oil which may leak from the engine so that the quantity of such oil can be measured.			ld automation restarted aff	cally stop on		
		ld be followed during this	The design of the fuel should prevent the lose more than 250 ml of lubr during capsize.	s of fuel an	d the loss of	
5 minutes; .2 stop the engine	and	run it at full speed for rotate it in a clockwise				
.3 restart the engin 10 minutes;	direction through 360°; restart the engine and run it at full speed for 10 minutes; During these tests, overheat, fail to opera of oil during any one i			or leak mor		
		and rotate it in a stion through 360°;	When examined after	being dis	mantled the	
10 minutes, and t	then s		engine should show no or excessive wear.			
.6 allow the engine						
.7 restart the engin 5 minutes;	e and	run it at full speed for				

Rigid	gid fast rescue boats Manufacturer: Model: Lot/Serial Number:			Surveyor:	Time:
				Organization	·
5.5.2.6 Engine inversion test (inboard) (continued)			Regulations: L	SA Code 4.6.4	4.2; MSC.81(70) 1/6.14.6 - 6.14.8, 7.4.1
		rocedure	Acceptance Criter		Significant Test Data
		uld be followed during this test	During these tests, the engir		
(Con	tinued):		overheat, fail to operate or leads of the second se		procedure as prescribed? Passed/Failed
.8		g engine in a clockwise direction			Does the engine stop when turned in either
		e 180° position for 10 s, and then	When examined after being		direction?
		a clockwise direction to complete	the engine should show no		Passed/ Failed
0	one revolution;		overheating or excessive we	ear.	If it stops, does it easily restart? Passed/Failed
.9	inverted, restart it;	jed to stop automatically when			Does the engine fulfil the requirements after the tests have been carried out according to the
10		ontinue to run at full speed for			procedure?
.10	10 minutes;	shande to full at full speed for			Passed/ Failed
.11		nd allow it to cool:			
.12		n .7 through .11 above, except			Amount of oil lost from engine during each
		be turned in a counter-clockwise			inversion:
	direction;				.2 : ml
		un it at full speed for 5 minutes;			.4 : ml
.14		clockwise direction through 180°			.8 : ml
		otate it 180° further to complete a			.12: ml
15	full clockwise revolution	; un it at full speed for 10 minutes;			.14 : ml .16 : ml
		n .14 above, turning the engine			.10. 111
.10	counter-clockwise;				Total amount of oil lost from engine: ml
.17		t at full speed for 10 minutes and			Evidence of overheating or excessive wear?
	then shut it down; and				Passed/ Failed
.18	dismantle the engine fo	r examination.			
					Amount of oil lost from engine ml
					Comments/Observations

Rigid fast rescue boats				Surveyor: _	n:	Time:	
5.5.3.1 Seating strength test			Regulations: L	SA Code 4.4.	1.5, MSC.81(70)	1/6.6.1	
Test Procedure Acceptanc		e Criteria				ata	
of 100 kg in each position allocated for a any person to sit in the rescue boat. In the case of a rescue boat launched by The		any permanent deformation or damage.		Observed damage			
		The seating should be capable No damage should be sustain			Passed Passed		N/A
with a mass of 100 kg in an location when dropped into th height of at least 3 m. (This performed in conjunction w Test in 5.5.7.1).	test may be	seat's efficient functioning.			Comments/Obs	ervations	

Rigid fast rescue boats       Manufacturer:         Model:       Lot/Serial Number:				Surveyor:	Time:
5.5.3.2 Seating space t	est	-	Regulations:	LSA Code 5.1.	1.3.2, MSC.81(70)1/7.1.3
Test Procedure		Acceptan	ce Criteria		Significant Test Data
The rigid rescue boat should be engine and all its equipment. If persons for which the rescue approved, having an average least 82.5 kg, and all wearing immersion suits and any of equipment required, should the person should lie down on similar dimensions to those figure and the others should seated in the rescue boat. The boat should then be manore equipment on board tested to that it can be operated without interference with the occupant 2130 2130	The number of boat is to be mass of at lifejackets and ther essential ther essential then board; one a stretcher of shown in the d be properly the rigid rescue to demonstrate but difficulty or ts.	Equipment can be operated occupants. The rescue boat must be of 5 persons and a person lying Except the helmsmen, person provided the space used correquirements of test form 5.5. No seating is on the gunv chambers on the sides of the	capable of carr down on a streto is may be seated onforms with th 1.1. vale, transom,	rying at least cher. d on the floor, ne leg space	Equipment operated: YES NO Number of persons carried: Seated on seats Seated on floor Lying on a stretcher Total PassedFailed Lifejacket and immersion suit used during the test: Lifejacket– Inflatable/Inherently Buoyant Immersion suit– Uninsulated/Buoyant Insulated Comments/Observations

Rigid fast rescue boats	Manufacturer Model: Lot/Serial Nu	r: Date: 		Date: Surveyor: Organization	Time:	
5.5.4.1 Simultaneous r	elease		Regulations: L	SA Code 4.4.	7.6, MSC.81(70)1/6.9.12	
Test Procedure		Acceptano	ce Criteria		Significant Test Data	
For rescue boats launched b the rescue boat with its engine be suspended from the releas just clear of the ground or the rescue boat should be loade total mass equals 1.1 times the rescue boat, all its equipment number of persons for whice boat is to be approved. The should be released simultant each fall to which it is connect binding or damage to any part boat or the release mechanist Single fall systems not intended operation are exempt from this	e fitted should e mechanism he water. The d so that the e mass of the hent and the h the rescue rescue boat neously from ected without of the rescue m.	It should be confirmed to simultaneously release from ea without binding or damage to the release mechanism. It should be confirmed to simultaneously release from ea when fully waterborne in the overload condition. There should be no damage connection to the boat.	each fall which it any part of the re that the rescue ach fall to which it light condition a	is connected escue boat or e boat will is connected nd in a 10%	Light condition PassedFailedN/A (N/A – Single fall, off-load only) 1.1 x Loaded Mass:kg PassedFailedN/A (N/A – Single fall, off-load only) type of release system:Comments/Observations	

	Manufacturer: Model:		Date:	Time:
Rigid fast rescue boats	Model: Lot/Serial Number:		Organization	:
5.5.4.2 Towing release tes	st	Regulations: L	SA Code 4.4.	7.6.5; MSC.81(70) 1/6.9.3
	ocedure	Acceptance Criteri	а	Significant Test Data
	m disconnected it should be	There should be no damage a	as a result of	Operating mechanism disconnected and boat
demonstrated when the resc		these tests.		towed at 5 kts:Pass Fail
	d equipment and towed at			
speeds of 5 knots that the mov	veable hook component stays	The rescue boat is released sa the release mechanism.	atisfactorily by	Operating mechanism connected tests.
				Test 1: 25% SWL, lengthwise to the boat at 45° to
Furthermore, with the operat should be demonstrated that	ing mechanism connected, it	Single fall systems not intende	d for on load	the vertical:
	ersons and equipment when	operation are exempt from this		Force Applied: N.
towed at speeds of 5 knots				Force Applied: N. Forward direction:PassFail
above should be demonstrate	ed as follows:			Aft direction:Pass Fail
hook should be app	the safe working load of the lied to the hook in the			Test 2: 100% SWL, athwartships at 20° to the vertical:
	the boat at an angle of 45°			
aftward as well as the fe	should be conducted in the			Force Applied: N. Starboard:Pass Fail
				Port:Pass Fail
	fe working load of the hook			
	ne hook in an athwartships 20° to the vertical. This test			Test 3: 100% SWL, 45° to the longitudinal axis of the boat in plan view at an angle of 33° to the
should be conducted or				vertical.
	fe working load of the hook			Force Applied: N.
	e hook in a direction halfway of tests 1 and 2 (i.e. 45° to			Position 1:PassFail Position 2:PassFail
	the boat in plain view) at an			Position 3: Pass Fail
angle of 33° to the ve	ertical. This test should be			Position 4:Pass Fail
conducted in four positi	ons.			
				Comments/Observations

	Surveyor:	: Time: eyor: nization:		
	Regulations: LSA	A Code 4.4	4.7.6.4; MSC.81(70) 1/6.9.4.1, 6.9.4.2	
е	Acceptance Criteria		Significant Test Data	
e conditioned and etrieval system and ion cable/linkage hould be mounted structions from the er and then loaded d and released. beated 50 times. d retrieval system he parts examined ease and retrieval holed.	During the 50 releases, the rescue boat and retrieval system should be r simultaneously from each fall to whic connected without any binding or damag part of the lifeboat release and retrieval s The system should be considered as " any failure during the conditioning or uni	released l ch it is e to any system. failed" if ntended but the	Working Load:N Force Applied:N	
	Aodel:	Model:       Regulations: LSA         a       Acceptance Criteria         a       Acceptance Criteria         b       During the 50 releases, the rescue boat and retrieval system should be in simultaneously from each fall to whi connected without any binding or damag part of the lifeboat release and retrieval system should be considered as " any failure during the conditioning or uni released.         eated 50 times.       The system has not yet been operated.	Model:       Surveyor:         ordySerial Number:       Regulations: LSA Code 4.         e       Acceptance Criteria         b conditioned and       During the 50 releases, the rescue boat release and retrieval system should be released simultaneously from each fall to which it is connected without any binding or damage to any part of the lifeboat release and retrieval system.         tructions from the r and then loaded and released.       The system should be considered as "failed" if any failure during the conditioning or unintended release occurs when load is applied but the system has not yet been operated.         retrieval system he parts examined ase and retrieval bled.       Surveyor:	

	Manufacture			Date:	Time:
	Model:			Surveyor	·······
Rigid fast rescue boats	Lot/Serial Nu	mber:		Organiza	tion:
5.5.4.4 Cyclic loading tes				SA Code	4.4.7.6.4; MSC.81(70) 1/6.9.4.3
Test Procedure		Acceptance	Criteria		Significant Test Data
The hook assembly, while					Working Load:N
from the operating mechanis		The specimen should remain of	closed during the	e test.	Force Applied:N
tested 10 times with cyclic					
zero load to 1.1 times the		The system should be conside			Check the box for each release and/or strike out the
load, at a nominal 10 secor unless the release mechani		failure during this test or any u opening occurs.	nintended releas	se or	cam rotation if no applicable:
specifically designed to op		opening occurs.			Cam rotation 0°:
off-load hook with on-load ca					
the weight of the boat to close					1: 2: 3: 4: 5: 6: 7: 8: 9: 10:
this case the cyclic load should					
more than 1% to 1.1 times th					Cam rotation +45°:
					1: 2: 3: 4: 5: 6: 7: 8: 9: 10:
For cam-type designs, the t					7: 🔲 8: 🔲 9: 🗌 10: 🗌
carried out at an initial cam					
(fully reset position), and repe					Cam rotation $-45^{\circ}$ :
either direction, or 45° in or restricted by design.	ne airection ii				1: 2: 3: 4: 5: 6: 7: 8: 9: 10: 10:
restricted by design.					
					Passed: Failed:
					Comments/Observations

Rigid fast rescue boats		Surve	Time: eyor: nization:
5.5.4.5 Actuation force te	est	Regulations: LSA Cod	e 4.4.7.6.4; MSC.81(70) 1/6.9.4.4
Test Proce		Acceptance Criteria	Significant Test Data
	edure chanism should then be sembly; and the rescue system should then be sfactorily under its safe erify that any interlocks, still functioning and are ance with the operation		Significant Test Data Significant Si

Rigid fast rescue boats	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:
5.5.4.6 Second release	mechanism tests- actuatio	n force and tensile strength	Regulations: I	LSA Code 4.4.7.6.4, MSC.81(70)1/6.9.5.1, 6.9.5.2
Test Pro		Acceptance Crite		Significant Test Data
<ul> <li>A second release mechanism s</li> <li>.1 the actuation force of the be measured loaded wit load. If a cable is used, it length specified by the measured by the measured loaded withe same manner it wout the same manner it wout the demonstration shoul indicators and handles a correctly positioned in action and safety instruction from manufacturer; and</li> <li>.2 the release mechanism tensile strength testing of the same mechanism tensile strength testing tes</li></ul>			ld be no less than 300 N.	Actuation Force: N Tensile strength @ 6xSWL. Force applied: N. Passed: Failed: Comments/Observations

Rigid fast rescue boats			Surveyor:	Time:	
5.5.5.1 Liferaft towing			Regulations: L	SA Code 4.4.	6.8, 5.1.1.7, 5.1.1.9, MSC.81(70)1/7.1.2
Test Proce	edure		eptance Criteria		Significant Test Data
The rescue boat should be lo to the mass of its equipme persons for which the rescue The maximum towing force of then be determined.	certificate.			Smallest Engine Largest Engine Make/model:	
This information should be largest size of fully loaded life tow at a speed of at least 2 kr	raft the rescue boat can				Bollard pull: N (Record on type approval
The fitting designated for tow secured to a stationary object a means to measure bollard be operated ahead at full spee 2 minutes and the maximum f	by a tow rope fitted with pull. The engine should ed for a period of at least				certificate) Observed damage:
(For rescue boats equipped bollard pull trials may be car various powers to asses performance.)	ried out with engines of				Propeller: Pitch: Diameter: Passed Failed Comments/Observations

Divid foot we save he sto	Model:	Surveyo		Surveyo	or: zation:		
5.5.5.2 Endurance, spee	ed and fuel cor	sumption	Regulations: L	SA Code	e 4.4.6.8, 5.1.1.6 MSC.81(70)1/7.1.6, 7.4.2.12		
Test Procedure		Acceptance			Significant Test Data		
<ul> <li>(Note: Run this test after the im tests in 5.5.7.1.)</li> <li>The rescue boat should be weights equal to the mass of and the number of persons rescue boat is to be approved.</li> <li>The engine should be started manoeuvred for a period of at to demonstrate satisfactory ope</li> <li>The rescue boat should be run not less than 8 knots with a fu of persons and equipment and a crew of 3 persons for a persons for a persufficient to ascertain the fuel required capacity. (This deter be made during the 4-hou operation.)</li> <li>For rescue boats equipped with engines of v to assess the rescue boat's personal persona</li></ul>	and the boat for which the and the boat least 4 hours eration. at a speed of ll complement 20 knots with eriod which is l consumption tank has the mination may ur period of with outboard g trials should various powers	The boat should operate sat 4-hour operation. The fuel tank should hav operate at a speed of 8 know with its full complement of portion The fuel tank should hav operate at a speed of 20 know with a crew of 3 persons.	isfactorily through e sufficient capa ts for a period of 4 ersons and equip e sufficient capa	acity to 4 hours ment.			

Rigid fast rescue boats	Model:	Su		Surveyor:	Time:	
5.5.5.3 Engine out of w	vater		Regulations: L	SA Code 4.4.	6.3, MSC.81(70)1/6.10.5	
Test Procedure		Acceptanc	e Criteria		Significant Test Data	
The engine should be operated for at least 5 minutes at idling speed under conditions simulating normal storage. Note: If a water flushing device is intended to be used for this purpose, it should be fitted during the test.		The engine should not be damaged as a result of this test.		Passed Failed Comments/Observations		
5.5.5.4 Compass test		Regulations: LSA Code 5.1.			2.2.3, MSC.81(70)1/6.10.7	
Test Procedure		Acceptance Criteria			Significant Test Data	
It should be determined that performance is satisfactory ar unduly affected by magnetic equipment in the rescue boat	nd that it is not c fittings and	The compass operates satisfa	ctorily.		Compass Make: Compass Model: Passed Failed Comments/Observations	

Rigid fast rescue boats	Model:	r: ımber:		Date:        Time:           Surveyor:        Toganization:		
5.5.5.5 Helpless Person	Recovery		Regulatio	ons: LSA Co	de 4.4.3.4, 5.1.1.7, MSC.81(70)1/6.10.8, 7.1.1	
Test Procedure		Acceptance Crit	eria		Significant Test Data	
It should be demonstrated by test that it is possible to bring helpless people on board the rescue boat from the sea.		from the sea.		Number of Persons required and any special equipment used: Passed Failed Comments/Observations		
5.5.5.6 Maneuverability	With Paddles	Or Oars	Regulatio	ons: LSA Co	de 5.1.2.2.1, MSC.81(70)1/7.1.8	
·		Acceptance Crit			Significant Test Data	
Test Procedure It should be demonstrated that the rescue boat can be propelled and manoeuvred by its oars or paddles in calm water conditions at a speed of at least 0.5 knots over a distance of at least 25 m. when laden with the number of persons, all wearing lifejackets and immersion suits, for which it is to be approved.		The rescue boat should be capable paddled and manoeuvred.		tisfactorily	Distance travelled:m Time Required:s Calculated speed:m/s = knots Lifejacket and immersion suit used during the test: Lifejacket – Inflatable/Inherently Buoyant Immersion suit – Uninsulated/Buoyant Insulated Passed Failed Comments/Observations	

Rigid fast rescue boats	Model: Surveyor: _					Time: r: ation:		
5.5.6.1 Towing test			Regulations: L	SA Code 4.4.	1.3.2, 4.4.7.7, MS	SC.81(70)1/6	.11.1	
Test Procedu	re	Accepta	ance Criteria			Significant T	est Data	
It should be demonstrated that the fully equipped rescue boat, loaded with a properly distributed mass equal to the mass of the number of persons for which it is to be approved, can be towed at a speed of not less than 5 knots in calm water and on an even keel using the rescue boat's painter securing device.		characteristics. There should be no damage to the rescue boat or its equipment as a result of this test.			Passed Failed Comments/Observations			
5.5.6.2 Towing & Painter	Tests—Painter rele	ease test	Regulations: L	SA Code 4.4.	7.7, MSC.81(70)1	1/6.11.23		
Test Procedu	re	Acceptance Criteria				Significant T		
It should be demonstrated release mechanism can release fully equipped and loaded re- being towed at a speed of nor in calm water. The painter release mecha tested in several distinct direct hemisphere not obstructed lo other constructions in the directions specified in test s used if possible.	that the painter se the painter on a escue boat that is t less than 5 knots anism should be ctions of the upper by the canopy or rescue boat. The	The painter should releas damage to the rescue box of this test.	e and there shou		Passed Test Direction	Passed Passed Passed Passed Passed Passed	Failed Failed Failed Failed Failed Failed	

		Manufacturer:			Date:	Time:				
Rigid fast rescue boats       Model:					Surveyor:					
					Organization:					
5.5.		d operation after impact and drop test	Re	Regulations: LSA Code 4.4.1.7, MSC.81(70)1/6.4.1, 6.4.3, 6.4.5, 6.4.7						
		est Procedure		Acceptance				st Data		
.1		all or falls, the fully equipped rescue boat,			op tests should be	Load in boat:	_kg			
		ould be loaded with weights equal to the	cor	nsidered succes	sful if:					
		persons for which the rescue boat is to be				Observed Damage:	YES	NO		
		his loading should be a weight of 100 kg	.1		s been sustained			NO		
		ype of seat installed in the lifeboat. The		boat's efficient	fect the rescue	Increased Damage:	YES	NO		
		ts should be distributed to represent the escue boat. (These weights need not be		boats enicient	functioning,					
		e seatpan). Skates or fenders, if required,	2	the damage	caused by the					
		le rescue boat, in a free hanging position,	.2		op tests has not	Satisfactory Operation:	YES	NO		
		to a position so that when released it will			inificantly as a					
		I surface at a velocity of 3.5 m/s. The boat								
		pact against the rigid vertical surface.		5.5.5.2;	1	Ingress of Water:	YES	NO		
.2		ith its engine, loaded as described above,	.3	machinery	and other					
		led above the water so that the distance			s operated to full			ed:		
		the rescue boat to the water is 3 m. The		satisfaction; ar	nd	Final Evaluation:				
		be released so that it falls freely into the			,					
	water.		.4	no significar	•	Passed F	ailed			
2	After the impact and dra	on tasts, the bast should be evenined to		seawater has	occurred.					
.3		op tests, the boat should be examined to extent of damage that may have occurred				Comments/Observatior				
		and an operational test should then be				Comments/Observation	15			
	conducted in accordance	•								
.4	After the operational test	st, the rescue boat should be unloaded,								
		xamined to detect the position and extent								
		e occurred as a result of the tests.								

Rigid fast rescue boats	lanufacturer: lodel: ot/Serial Number:		Date: Surveyor: Organization:	Time:	
5.5.7.2 Overload test		Regulations: MS	SC.81(70)1/7	.1.4	
Test Procedure	Acceptanc	e Criteria		Test Pro	ocedure
The rescue boat should be loade properly distributed load of four weight to represent the equipmen complement of persons each weig kg for which it is to be appro- suspended for five minutes from or hooks. The weights should be d in proportion to the loading of the l service condition, but the weights represent the persons need not k 300 mm above the seat pan. The bridle or hooks and fastening device be examined after the test h conducted.	times the ent and full ighing 82.5 roved and n its bridle distributed boat in its ts used to be placed e boat and vice should		nism should	Load in boat:	_kg
Testing by filling the boat with wat not be accepted. This method of does not give the proper distri weight. Machinery may be rer order to avoid damage, in wh weights should be added to the compensate for the removal machinery. The rescue boat and its bridle (release mechanism) and fastenin should be examined after the tes signs of damage.	of loading ribution of emoved in hich case ne boat to of such or hooks ing device			Passed	Failed

#### 5.6 INFLATED FAST RESCUE BOATS

#### **EVALUATION AND TEST REPORT**

- 5.6.0 General information
  - 5.6.0.1 General data and specifications
  - 5.6.0.2 Submitted drawings, reports and documents
  - 5.6.0.3 Quality assurance
- 5.6.1 Visual inspection
  - 5.6.1.1 Occupant space
  - 5.6.1.2 Fittings, provisions and ladders
  - 5.6.1.3 Engine and starting system
  - 5.6.1.4 Steering mechanism and fuel tank
  - 5.6.1.5 Release mechanism
- 5.6.2 Stability, damage and loading tests
  - 5.6.2.1 Damage test
  - 5.6.2.2 Stability test
  - 5.6.2.3 Loading test
  - 5.6.2.4 Swamp test
  - 5.6.2.5 Righting test (for non self-righting fast rescue boats)
  - 5.6.2.6 Self-righting test (for self-righting fast rescue boats only)
  - 5.6.2.7 Flooded capsizing test (for self-righting fully enclosed fast rescue boats only)
  - 5.6.2.8 Engine inversion test (for self-righting fast rescue boats only)
- 5.6.3 Seating strength and space tests
  - 5.6.3.1 Seating strength test
  - 5.6.3.2 Seating space test
- 5.6.4 Release mechanism tests
  - 5.6.4.1 Simultaneous release
  - 5.6.4.2 Towing release test
  - 5.6.4.3 Load and release test
  - 5.6.4.4 Cyclic loading test
  - 5.6.4.5 Actuation force test
  - 5.6.4.6 Second release mechanism test actuation force and tensile strength
- 5.6.5 Operational test
  - 5.6.5.1 Liferaft towing
  - 5.6.5.2 Endurance, speed and fuel compensation
  - 5.6.5.3 Engine out of water
  - 5.6.5.4 Compass test
  - 5.6.5.5 Manoeuvrability with paddles or oars
  - 5.6.5.6 Heavy weather/seas test
- 5.6.6 Towing and painter tests
  - 5.6.6.1 Towing test
  - 5.6.6.2 Painter release test

- 5.6.7.1 Impact, drop & operation after impact and drop test
- 5.6.7.2 Ambient overload test
- 5.6.7.3 Cold overload test
- 5.6.7.4 Mooring out test
- 5.6.8 Materials tests
  - 5.6.8.1 Inflation chamber characteristics tests

#### 5.6 INFLATED FAST RESCUE BOATS

#### **EVALUATION AND TEST REPORT**

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

#### SSE 7/21/Add.4 Annex, page 150

Inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:	Surveyor:
5.6.0.1 General data and	specifications	Regulations: LSA Code 4.4, 5.1, MSC.81(70) 1/7.2
General Informatio	n Rescue b	oat dimensions Rescue boat weight
Construction Material: Hull:	Dimensions:	Design Weight:
Canopy:	LOA:	Unloaded Boat:
	Breadth Maximum:	Loose Equipment: Fuel:
Rescue Boat Inherent Buoyanc		Persons:
(Type App.) Material:		Calculated Loaded Weight:
Weight: Occupancy:	 Depth to Gunwale:	
Persons (82.5 kg each):		With Persons:
	Moulded Breadth:	
Engine(s) Installed: 1 Type App by: Manufacturer:	Moulded Depth:	Weight As Tested: Fully Equipped:
Туре:	Provision for securing hangin	g-off pendant
Power:	(if applicable):	Comments/Observations
Gear ratio (inboard engine):_		
Additional rigid or inflatable buo	yancy:	
Release mechanism(s) (if applie		
Manufacturer:		
Туре:		
SWL:		
Propeller:		

Inflated fast rescue boat	S Manufacturer: Model: Lot/Serial Number	cturer:		
5.6.0.2 Submitted of	Irawings, reports and do	cuments		
	Su	bmitted drawings and documents		Status
Drawing No.	Revision No. & date	Title	of drawing	Status
	S	ubmitted reports and documents		Statua
Report/Document No.	Revision No. & date	Title of re	port / document	Status
		Maintenance Manual -		
		Operations Manual -		

Inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:	Surveyor:				
5.6.0.3 Quality assurance	9	Regulations: MSC.8	81(70) 2/1.1, 1.2			
of the International Convention amended or the International I inspected, representatives of inspections of manufacturers appliances and materials use approved prototype life-saving a Manufacturers should be require ensure that life-saving appliance the prototype life-saving appliance	a particular type are required by chapter III a for the Safety of Life at Sea, 1974, as Life-Saving Appliance (LSA) Code, to be the Administration should make random to ensure that the quality of life-saving ed comply with the specification of the appliance. ed to institute a quality control procedure to the same standard as not approved by the Administration and to an tests carried out in accordance with the	Quality assurance Pro	ocedure:anual:			
		Quality assurance System acceptable				
		Yes/No				
		Comments/Observati	ions			

Inflated fact receive bacto Model: Si		Date:            Surveyor:            Organization:		
5.6.1.1 Occupant space		Regulations: LSA	Code 5.	1, MSC.81(70)1/7.2.16
Test Procedure		Acceptance Criteria		Significant Test Data
Visually inspect the rescue Conduct measurements and clearances as required.		General Unless the rescue boat has adequate sheer, it sho provided with a bow cover extending for not less than its length. Length is at least 6.0 m and not over 8.5 m. Seating Space Width – at least 430 mm Depth – at least 100 mm each side of a point 215 mm fr back Knee Space (Seating on seats) at least 635 mm from th Knee Width – at least 250 mm Leg Space (Seating on floor) – at least 1190 mm from th Overlapping Seat Vertical Separation – at least 350 mm Seat Horizontal Overlap – 150 mm maximum Each seating position should be clearly indicated.	15% of from the he back he back	Passed       Failed         Passed       Failed         Width:       mm         Depth:       mm         Knee Space:       mm         Knee Width:       mm         Leg Space:       mm         Vert. Separation:       mm         Overlap:       mm         Position Indication:       PASSED FAILED
<b>Stretcher(s) space:</b> Rescue boats should be capable of carrying at least fi seated persons and a person lying on a stretcher of minimu 2130 x 610 mm.			Stretcher space:xmm Passed Failed Non-Skid Surface: PassedFailed	
		<b>Walkway Surfaces</b> The surfaces on which persons might walk should hav non-skid finish.	/e a	Comments/Observations

Inflated fact recouse basts	lodel: Surveyor: _		Time: on:				
5.6.1.2 Fittings, provisions	and ladders	Regulations: LS	SA Code 5.1.	1.3, MSC.81(70)1/7.2.16			
Test Procedure	Acceptance Cr	iteria			Significant Test Dat	а	
Visually inspect the rescue boat. Conduct measurements and	Buoyancy compartments fitted with: Non-return valve for manual i	nflation		Passed	Failed	_	
verify clearances as required.	Means for deflation			Passed	Failed	_	
	Safety relief valve unless waived by Adn	ninistration		Passed	Failed	_N/A	
	Suitable patches for securing painters fore and aft			Passed	Failed	_	
<b>Fittings and Provisions</b> Suitable handholds or buoyant lifeline becketed around the outside of rescue boat above the waterline and within reach of a person in the water, except in the vicinity of the rudder and propeller				Passed	Failed	_	
	On other than self-righting rescue boats, handholds on the underside arranged to break away without damaging the rescue boat			Passed	Failed	_N/A	
	Weathertight stowage for small items of		Passed	_Failed	_		
	Approved position indicating light provide	t	Passed	_Failed	_		
	Rubbing strips on bottom and vulner	Rubbing strips on bottom and vulnerable places on the outside			_Failed	_	
	Transom, if fitted, not inset by more	than 20% of ov	erall length	Passed	_Failed	_	
	Automatically self-bailing or capable of r	apidly clearing wa	ter	Passed Comments/Obse	_Failed	_	

Inflated fast rescue boats	Model:	rer: Number:		Surveyor:	Time: on:
5.6.1.2 Fittings, provisio	ons and ladd	ers (cont'd)	Regulations: LS	SA Code 4.4.	.3.3, 5.1.3, MSC.81(70)1/7.2.16
Test Procedure					Significant Test Data
Visually inspect the rescue bo measurements and verify cle required.		Ladders Ladders that can be used at board and the lowest step who than 0.4 m below the light wat	en in place should		Passed Failed Lowest stepm below waterline
		The boat should be of a highly visible colour where it will		Highly visible colour: PassedFailed	
					Comments/Observations

Inflated fact was also heats	Image: Interference content of the second content of the			Time:		
5.6.1.3 Engine and startin	5.6.1.3 Engine and starting system Regulations: LSA Code 4.4.6, 5.1, N				.16	
Test Procedure	Acceptance	e Criteria			Significant Test Data	
Conduct measurements and	Visually inspect the rescue boat. Conduct measurements and verify clearances as required. - Two independent rechargeable energy sources provided for power starting systems - Required starting aids provided - Starting system is not impeded by engine casing, thwarts, or other obstructions			Manual Powe YES NO	er N/A	
venty clearances as required.				Passed Passed	Failed Failed	
	<ul> <li>Propeller arranged to be disengaged fr and astern propulsion</li> </ul>	om the engine and	provision for ahead	Passed	Failed	
	<ul> <li>Exhaust arranged to prevent water from</li> <li>System designed with due regard to t</li> </ul>			Passed	Failed	
	<ul> <li>to the possibility of damage to the prop</li> <li>Engine casing made of fire-retardant m</li> <li>providing similar protection</li> </ul>	oulsion system from	n floating debris	Passed	Failed	
	<ul> <li>Personnel are protected from hot and</li> <li>Shouted order can be heard with eng</li> </ul>		ed necessary for 6	Passed	Failed	
	knot operation			Passed	Failed	
	- Watertight casing around bottom and fitting top which provides for gas ventir	tteries with a tightly	Passed	Failed		
	- Means for recharging engine starting, radio, and searchlight batteries provided by solar charger or ship's power supply			Passed	Failed	
	<ul> <li>Radio batteries not used to provide po</li> <li>Recharging for engine batteries provi</li> </ul>	wer for engine sta		Passed	Failed	
	exceed 50 v	ded by ship's pow	ler supply uses not	Passed	Failed	
	- Recharging means for engine batteries can be disconnected at the rescue			Passed	Failed	
	<ul> <li>boat embarkation station</li> <li>Instructions for starting and operati mounted in a conspicuous place near</li> </ul>			Passed	Failed	
	- Towing arrangement for marshalling lit		,	Passed	Failed	

Inflated fact recours bacto	Manufacturer: Model: Lot/Serial Number:		Surveyor: _	Time: on:			
5.6.1.4 Steering mechanis	m and fuel tank	Regulations	: LSA Code 4	4.4.7.2, 5.1.1.8, MSC.81(70)1/7.2.16			
Test Procedure	Acceptance Criter	ia		Sig	gnificant Test Da	ta	
Test Procedure Visually inspect the rescue boat. Conduct measurements and verify clearances as required.	Acceptance Criter         Steering         A tiller should be capable of controlling the reform part of outboard motor)         Rudder permanently attached to the rescue         Rudder and tiller arranged so as not to be darelease mechanism or propeller         Steered by wheel at helmsman's position         Has emergency steering system providing water jet or outboard motor         Hands-free, watertight VHF radio provided         Fuel Tank         If fitted with petrol-driven outboard motor, specially protected against fire and explosite	udder (rudder a boat amaged by ope g direct contro the fuel tank(s	eration of the	Passed Passed Passed Passed Passed Passed Passed	Failed Failed Failed Failed Failed	N/A N/A 	
				Comments/Observa	ations		

Inflated fast rescue boats	Manufactur Model: Lot/Serial N	rer: Date: Surveyor: Number: Organization			Time:		
5.6.1.5 Release mechanism Regulations: LSA Code 4.4.7				7,.6.5, MSC.81(70)1/7	7.2.16		
Test Procedure		Acceptan	ce Criteria		Sigr	nificant Test Dat	ta
Visually inspect the rescue boa measurements and verify clea		Clear operating instructions			Passed		
required.		Release control marked in a surroundings	colour that contra	ists with the	Passed	Failed	
		For on-load release mechanis	ms:				
		Suitably worded danger sign f	or on load release		Passed	Failed	N/A
		Mechanical protection (interlock) engages only when mechanism is completely and properly reset, to prevent accidental release during recovery		Passed	Failed	N/A	
		On-load release mechanism n action by the operator	action by the operator Mechanical protection provided beyond that normally		Passed	Failed	N/A
		Mechanical protection prov required for off load release			Passed	Failed	N/A
		For a single fall system with su capability is not required; in s capability to release the boat of will be adequate.	such an arrangem	ent a single	Passed Comments/Observa		N/A

Inflated fast rescue boats	Model:	rer:		Surveyor: _	n:
5.6.2.1 Damage test			Regulations: LS	SA Code 5.1.	3.5, MSC.81(70)1/7.2.89
Test Procedure		Acceptanc	ce Criteria		
Test Procedure The following tests should be with the inflated rescue boat I the number of persons (of 82.5k which it is to be approved bot without engine and fuel or an mass in the position of the engineration tank: .1 with forward buoyancy con- deflated; .2 with the entire buoyancy con- of the rescue boat deflated .3 with the entire buoyancy con- and the bow compartment	oaded with g mass) for th with and equivalent ne and fuel ompartment on one side ; and on one side	Acceptance In each of the conditions pr persons for which the rescue be supported within the rescue	escribed, the full boat is to be appro	number of	Comments/Observations         1       With engine and fuel:         Passed       Failed         Without engine and fuel         Passed       Failed         2       With engine and fuel:         Passed       Failed         Without engine and fuel:       Passed         Without engine and fuel
					Passed Failed Without engine and fuel Passed Failed

Inflated fast rescue basts Model:		Surveyo		Surveyor:	n:
5.6.2.2 Stability test		Re	egulations: LS	A Code 4.4.	5, MSC.81(70)1/6.10.8, 7.2.67
Test Procedure		Acceptance (	Criteria		Test Procedure
The following tests should be carried out with engine and fuel or an equivalent mass in place of the engine and fuel tanks: .1 the number of persons for which the inflated rescue boat is to be approved should be crowded to one side with half this complement seated on the buoyancy tube, and then to one end. In each case the freeboard should be recorded; and		.1 Under these conditions the freeboard should be everywhere positive.		uld be	.1    Freeboard crowded to one sidemm      To bow:mm      .2    To stern:mm      PassedFailed
<ul> <li>.2 the stability of the resc boarding should be a two persons in the demonstrating that the assist from the water who is required unconsciousness. The should have his back to of the rescue boat so to assist the rescuers. should wear approved</li> <li>These stability tests may be c the rescue boat floating in still w</li> </ul>	scertained by rescue boat ey can readily a third person to feign third person wards the side that he cannot All persons ifejackets.	.2 The rescue boat should be st	stable.		.3       Stability observations during recovery of unconscious person:         Clothing/Suits on helpless person:

				Date:	Time:	-
Inflated fast rescue boats	Model:			Surveyor:		_
	Lou/Serial Number.		·····	Organizatio	on:	
5.6.2.3 Loading test			Regulations: M	7.2.45		
Test Procedu	re	Acce	ptance Criteria	• •	Significant Test Data	
The freeboard of the inflated rescue boat should be taken in the various loading conditions as follows: .1 rescue boat with all its equipment;		In each condition the not less than 300 m not less than 250 m transom.	m at the buoyanc	y tubes and	.1 Freeboard at Buoyancy Tubes: Freeboard at Transom: .2 Freeboard at Buoyancy Tubes:	<u> </u>
.2 rescue boat with all its equ fuel, or an equivalent m represent engine and fuel;					.2 Freeboard at Buoyancy Tubes: Freeboard at Transom: .3 Freeboard at Buoyancy Tubes:	mm
.3 rescue boat with all its e number of persons for which having an average mass of that a uniform freeboard is a buoyancy tubes; and	it is to be approved 82.5 kg so arranged				.4 Freeboard at Buoyancy Tubes: Freeboard at Buoyancy Tubes: Freeboard at Transom:	mm mm
.4 rescue boat with the number it is to be approved and all it and fuel or an equivalent ma engine and fuel and the resc re-trimmed as necessary.	s equipment, engine ss to represent				Passed Failed Comments/Observations	
5.6.2.4 Swamp test			Regulations: M	SC.81(70)1/7	7.2.11	
Test Procedu	re	Acce	ptance Criteria		Significant Test Data	
It should be demonstrated that when fully swamped, is capable equipment, the number of pers 82.5 kg for which it is to be ap equivalent to its engine and ful should also be demonstrated to does not seriously deform in this	of supporting its full sons each weighing proved and a mass lly filled fuel tank. It hat the rescue boat	The rescue boat shout the full load and shout			Passed Failed Comments/Observations	

Inflated fast rescue boats	Manufactur Model: Lot/Serial N	rer:          Date:            Surveyor:          Organization		Time: n:		
5.6.2.5 Righting test (for	5 Righting test (for non self-righting fast rescue boats)			SC.81(70)1/7	.1.7	
Test Procedure		Acceptan	ce Criteria		Significant 7	Test Data
Test Procedure It should be demonstrated that and without engine and fit equivalent mass in place of the fuel tank, the rescue boat is being righted by not more than the if it is inverted on the water. The engine should be running position and, after stopping and or by the helmsman's emergent switch when inverted, it should restarted and run for 30 minute rescue boat has returned to position. For rescue boats with inboard et test without engine and fit applicable. (This test is not required if the ri 5.6.2.6 has been performed.)	uel or an engine and capable of wo persons g in neutral utomatically ncy release d be easily es after the the upright engines, the uel is not	The rescue boat should be c more than two persons if it is When the rescue boat has r should be capable of be helmsman's emergency relea The design of the fuel and prevent the loss of more than from the propulsion system.	apable of being rig inverted on the wat righted, each engir ing restarted, pr se, if fitted, has bee d lubricating syste	ter. ne or motor rovided the en reset. ems should	Significant 1 Can the boat be righted by 2 With engine and fuel: Passed Without engine and fuel: Passed Method used to right boat: Comments/Observations	

Model					Date: Survevor:	Time:
Inflated fast rescue k	ooats				Organizatio	n:
5.6.2.6 Self-rig	hting tes	t (for self-righting fast re	escue boats only)	Regulati	ons: MSC.81	1(70)1/6.14
Т	est Proce	dure	Acceptanc	e Criteria		Significant Test Data
rescue boat about a heel and then releas incrementally rotated including 180° and sl These tests should conditions of load: .1 when the rescue the normal p weights represe boat with a full o The weight us assumed to hav should be secu have its centre above the seatp on stability as s	longitudir se it. The d to angl hould be r be cond e boat wit osition we enting the compleme sed to re ve an ave ured at e of gravity oan so as when the	provided to rotate the nal axis to any angle of rescue boat should be les of heel up to and released. Incted in the following h its engine is loaded in with properly secured e fully equipped rescue ent of persons on board. epresent each person, erage mass of 82.5 kg, each seat location and approximately 300 mm to have the same effect rescue boat is loaded ons for which it is to be	After release, the rescureturn to the upright assistance of the occure At the beginning of the should be running in model. 1 unless arranged when inverted, continue to run helmsman's emergand .2 after resetting emergency releatengine should be run for 30 minutes has returned to the Water should not enter the should not ent	position w pants. ese tests, eutral positi to stop au the engir until stopp gency relea the h se, if nece e easily res s after the re e upright po	vithout the the engine on and: tomatically ne should ed by the ase switch; elmsman's essary, the tarted and escue boat psition.	Angle of Heel       Righting Moment Light         45°
.2 when the rescu	e boat is i	n the light condition.	The design of the systems should prever 250 ml of fuel or lul	t the loss of	more than	
In the case of open fa test should only be d		e boats, the self-righting e light condition.	propulsion system.			

Inflated fast rescue boats	Model:	rer: Number:		Surveyor: _	Time: n:
5.6.2.7 Flooded capsizing to rescue boats only)	est (for self-	righting fully enclosed fast	Regulations: M	SC.81(70) 1/6	6.14.3, 6.14.4, 6.14.5, 7.4.1
Test Procedure		Acceptano	ce Criteria		Significant Test Data
Perform the following for fully rigid fast rescue boats. This applicable to open fast rescue The rescue boat should be pla water and fully flooded until the boat can contain no additional entrances and openings as secured to remain open during Using a suitable means, the re- should be rotated about a longit to a heel angle of 180° and ther For the purpose of this test, the distribution of the occupants disregarded. However, the equivalent mass, should be secon rescue boat in the normal position.	test is not boats. aced in the the rescue water. All should be the test. escue boat udinal axis n released. e mass and s may be lipment, or cured in the	After release, the lifeboat s provides an above-water esca	hould attain a p		

Inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:			Surveyor:	n:
5.6.2.8 Engine inversion tes	t (for self-righting fast res	cue boats only)	Regulations:	LSA Code 4	4.6.4.2; MSC.81(70) 1/6.14.6 - 6.14.8, 7.4.1
Test Proce	edure	Acce	otance Criteria		Significant Test Data
<ul> <li>The engine and its fuel tank shout that is arranged to rotate about longitudinal axis of the boat.</li> <li>A pan should be located under t which may leak from the engine oil can be measured.</li> <li>The following procedure shoul test: <ul> <li>.1 start the engine and ru 5 minutes;</li> <li>.2 stop the engine and rotate through 360°;</li> <li>.3 restart the engine and 10 minutes;</li> </ul> </li> </ul>	uld be mounted on a frame an axis equivalent to the he engine to collect any oil so that the quantity of such d be followed during this un it at full speed for it in a clockwise direction run it at full speed for	The engine and en capable of runnin capsize and contin boat returns to automatically stop restarted after the upright. The design of the f should prevent the more than 250 m engine during cap During these test overheat, fail to c	ngine installation ng in any posi- nue to run after the upright on capsizing ar rescue boat re uel and lubrication loss of fuel and size.	ition during the rescue or should nd be easily turns to the ing systems d the loss of oil from the should not more than	
<ul> <li>.4 stop the engine and rotate direction through 360°;</li> <li>.5 restart the engine, run it at and then stop the engine;</li> <li>.6 allow the engine to cool;</li> <li>.7 restart the engine and run 5 minutes;</li> </ul>	full speed for 10 minutes,	250 ml of oil during When examined a engine should overheating or exc	after being disr show no ev	nantled the	

		Manufacturer:		Date:	Time:
			Surveyor: _	n:	
				Organizatio	
5.6.2.	8 Engine inversion test	(continued)	Regulations:	LSA Code 4.6.4	.2; MSC.81(70) 1/6.14.6 - 6.14.8, 7.4.1
	Test Proced		Acceptance Criteri		Significant Test Data
	following procedure should (Continued):	be followed during this	During these tests, the engin overheat, fail to operate or le 250 ml of oil during any one inve	eak more than	Are all the tests carried out according to the procedure as prescribed? Passed/Failed
.8	slowly rotate the running direction through 180°, ho for 10 s, and then rotate clockwise direction to com	ld at the 180° position e it 180° further in a	When examined after being of engine should show no evidence or excessive wear.	dismantled the	Does the engine stop when turned in either direction? Passed/Failed If it stops, does it easily restart? Passed/Failed Does the engine fulfil the requirements after the
.9	if the engine is arranged when inverted, restart it;	to stop automatically			tests have been carried out according to the procedure? Passed/Failed
	allow the engine to continue 10 minutes;				Amount of oil lost from engine during each
.12	shut the engine down and repeat the procedure in except that the engine s counter-clockwise direction	.7 through .11 above, hould be turned in a n;			inversion: .2 : ml .4 : ml .8 : ml
	restart the engine and ru 5 minutes;				.12 : ml .14 : ml
.14	rotate the engine in a clock 180° and stop the engine. complete a full clockwise ro	Rotate it 180° further to			.16 : ml Total amount of oil lost from engine: ml Evidence
.15	restart the engine and ru 10 minutes;				of overheating or excessive wear? Passed/Failed
	repeat the procedure in . engine counter-clockwise;				Amount of oil lost from engine ml
	restart the engine, run 10 minutes and then shut i	t down; and			Comments/Observations
.18	dismantle the engine for ex	kamination.			

Inflated fast rescue boats	Model:	: mber:		Surveyor: _	n: T		
5.6.3.1 Seating strength	test		LSA Code 4.4.1.5, MSC.81(70)1/6.6.1				
Test Procedure		Acceptanc	e Criteria		Sign	nificant Test Data	
The seating should be loaded of 100 kg in each position allo person to sit in the rescue boat In the case of a rescue boat I falls, each type of seat should with a mass of 100 kg in any location when dropped into the height of at least 3 m. (This t performed in conjunction with th in 5.6.7.1).	aunched by d be loaded T single seat da water from ei test may be	The seating should be able to any permanent deformation or The seating should be capable lamage should be sustained officient functioning.	damage.	loading. No	Observed damage Passed Passed Comments/Observat		

Model:		rer:		Surveyor: _	n:
5.6.3.2 Seating space test			Regulations: LS	SA Code 5.1.	1.3.2, MSC.81(70)1/7.1.3
Test Procedure		Acceptan	ce Criteria		Significant Test Data
The rigid rescue boat should be its engine and all its equip number of persons for which boat is to be approved, having mass of at least 82.5 kg, and lifejackets and immersion suit other essential equipment requi then board; one person should a stretcher of similar dimension shown in the figure and the oth be properly seated in the rescu rigid rescue boat should manoeuvred and all equipment tested to demonstrate that operated without difficulty or i with the occupants.	ment. The the rescue an average all wearing is and any red, should lie down on ns to those hers should e boat. The then be t on board it can be nterference	Equipment can be operated occupants. The rescue boat must be 5 persons and a person lying Except the helmsmen, person provided the space used c requirements of test form 5.6. No seating is on the gunv chambers on the sides of the b	capable of carryin down on a stretche ns may be seated o onforms with the 1.1. wale, transom, on	ng at least er. on the floor, leg space	Equipment operated: YES NO   Number of persons carried:   Seated on seats   Seated on floor   Lying on a stretcher   Total   Passed   Failed   Lifejacket and immersion suit used during the test: Lifejacket– Inflatable/Inherently Buoyant Immersion suit– Uninsulated/Buoyant Insulated Comments/Observations

Inflated fast rescue boats       Manufacturer:         Model:       Lot/Serial Number:			Surveyor:	n:		
5.6.4.1 Simultaneous rel	ease		Regulations: LS	SA Code 4.4.	7.6, MSC.81(70)1/6.9.12	
Test Procedure		Acceptan	ce Criteria		Significant Test Data	
For rescue boats launched by the rescue boat with its engine f be suspended from the release just clear of the ground or the rescue boat should be loaded total mass equals 1.1 times the rescue boat, all its equipmen number of persons for which boat is to be approved. The r should be released simultance each fall to which it is connect binding or damage to any part o boat or the release mechanism (Single fall systems not in on-load operation are exemp test.)	itted should mechanism water. The so that the mass of the nt and the the rescue escue boat ously from ted without f the rescue	It should be confirmed to simultaneously release from e without binding or damage to the release mechanism. It should be confirmed to simultaneously release from ea when fully waterborne in the overload condition.	each fall which it is any part of the res that the rescue ach fall to which it is	s connected scue boat or boat will s connected	Light condition Passed FailedN/A (N/A – Single fall, off-load only) 1.1 x Loaded Mass:kg Passed FailedN/A (N/A – Single fall, off-load only) Comments/Observations	

	Manufacturer:		Date:	Time:		
Inflated fast rescue boats	Inflated fast rescue boats Model:Lot/Serial Number:					
			Organization:			
5.6.4.2 Towing release test		Regulations: L	SA Code 4.4.	7.6.5; MSC.81(70) 1/6.9.3		
Test Proc		Acceptance Criteria		Significant Test Data		
With the operating mechanism demonstrated when the rescue	e boat is loaded with its full	There should be no damage a these tests.	s a result of	Operating mechanism disconnected and boat towed at 5 kts:Pass Fail		
complement of persons and speeds of 5 knots that the move closed.		The rescue boat is released sat the release mechanism.	tisfactorily by	Operating mechanism connected tests.		
Furthermore, with the operating		Single fall systems not intended	d for on-load	Test 1: 25% SWL, lengthwise to the boat at 45° to the vertical:		
should be demonstrated that the rescue boat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:		Single fall systems not intended for on-load operation are exempt from this test.		Force Applied: N. Forward direction:Pass Fail Aft direction:Pass Fail		
.1 a force equal to 25% of the hook should be applied to t direction of the boat at an a This test should be conducte the forward direction;	the hook in the lengthwise ingle of 45° to the vertical.			Test 2: 100% SWL, athwartships at 20° to the vertical: Force Applied: N. Starboard:Pass Fail		
.2 a force equal to the safe should be applied to the direction at an angle of 20 should be conducted on bot	hook in an athwartships ° to the vertical. This test			Port:Pass Fail Test 3: 100% SWL, 45° to the longitudinal axis of the boat in plan view at an angle of 33° to the vertical.		
should be applied to the he between the positions of te longitudinal axis of the boat	.3 a force equal to the safe working load of the hook should be applied to the hook in a direction halfway between the positions of tests 1 and 2 (i.e. 45° to the longitudinal axis of the boat in plain view) at an angle of 33° to the vertical. This test should be conducted in			Force Applied:N. Position 1:PassFail Position 2:PassFail Position 3:PassFail Position 4:PassFail Comments/Observations		

	Manufacturer:		Date:	Time:
	Ma dali			۲:
Inflated fast rescue boats	Lot/Serial Number	•	Organiza	ation:
			-	
5.6.4.3 Load and release tes	st	Regulations: L	SA Code 4	4.4.7.6.4; MSC.81(70) 1/6.9.4.1, 6.9.4.2
Test Procedur		Acceptance Criteria		Significant Test Data
A release mechanism should be	e conditioned and	During the 50 releases, the rescue boa		
tested as follows:		and retrieval system should be		Force Applied:N
		simultaneously from each fall to wh		
The rescue boat release and re		connected without any binding or damage		Check the box for each release:
the longest used connect associated with the system should be associated with the system should be associated with the system should be associated by the system should by the system should by		part of the lifeboat release and retrieval	system.	
adjusted according to instruction		The system should be considered as	"failed" if	1: 2: 3: 4: 5: 6: 7: 8: 9: 10: 11: 12: 12:
equipment manufacturer and th		any failure during the conditioning or ur		13: 14: 15: 16: 17: 18:
of its safe working load and rele		release occurs when load is applied		19: 20: 21: 22: 23: 24:
5		system has not yet been operated.		25: 26: 27: 28: 29: 30: 2
Load and release should be rep	peated 50 times.			31: 🗌 32: 🗌 33: 🗌 34: 🗌 35: 🔲 36: 🗌
				37: 🔄 38: 🔄 39: 🔄 40: 🔄 41: 🔄 42: 📃
The rescue boat release and				43: 44: 45: 46: 47: 48:
should then be disassembled, t				49: 🗌 50: 🔲
and wear recorded. The rele				Desced Failed
system should then be reassem	ibled.			Passed Failed
				Comments/Observations

Inflated fact was and bacts	Manufacturer:		Date:            Surveyor:            Organization:		
5.6.4.4 Cyclic loading test			SA Code 4	4.4.7.6.4; MSC.81(70) 1/6.9.4.3	
Test Procedure		Acceptance Criteria		Significant Test Data	
The hook assembly, while disco from the operating mechanism be tested 10 times with cyclic from zero load to 1.1 times working load, at a nominal 10 per cycle; unless the release me has been specifically desig operate as an off-load hook with capability using the weight of the close the hook, in this case th load should be from no more tha 1.1 times the SWL. For cam-type designs, the test s carried out at an initial cam rotat (fully reset position), and repeate in either direction, or 45° in one if restricted by design.	n, should c loading the safe seconds echanism gned to n on-load e boat to he cyclic an 1% to should be tion of 0° red at 45°	The specimen should remain closed during the f The system should be considered as "failed" if an during this test or any unintended release or occurs.	ny failure	Working Load:       N         Force Applied:       N         Check the box for each release and/or strike out the cam rotation if no applicable:         Cam rotation $0^{\circ}$ :         1:       2:         3:       4:         7:       8:         9:       10:         Cam rotation +45°:         1:       2:         3:       4:         5:       6:         7:       8:         9:       10:         Cam rotation +45°:         1:       2:         3:       4:         5:       6:         7:       8:         9:       10:         Cam rotation -45°:       6:         1:       2:         1:       2:         1:       2:         1:       2:         1:       2:         1:       1:         2:       1:         1:       1:         1:       1:         1:       1:         2:       1:         1:       1:         2:       1:         2:       1:	

Inflated fast rescue boats	Model:			Date:            Surveyor:            Organization:		
5.6.4.5 Actuation force test		Regulations: L	SA Code 4	4.4.7.6.4; MSC.81(70) 1/6.9.4.4		
Test Proced		Acceptance Criteria		Significant Test Data		
The cable and operating mech reconnected to the hook asse boat release and retrieval sy demonstrated to operate satisf working load. The demonstration should veri indicators and handles are sti correctly positioned in accordan and safety instruction from the manufacturer.	mbly; and the rescue stem should then be actorily under its safe fy that any interlocks, Il functioning and are nce with the operation	100 N and no more than 300 N, if a used it should be the maximum specified by the manufacturer, and so the same manner it would be secur rescue boat. The release mechanism is deemed passed the testing in 5.6.4.3, 5.6	to have .4.4 and onducted uring this	Actuation Force:N Passed: Failed: Comments/Observations		

Inflated fast rescue boats	Model:		Surveyor:	Date:            Surveyor:            Organization:		
5.6.4.6 Second release me	chanism tests- actuation	force and tensile strength	Regulations:	LSA Code 4.4.7.6.4, MSC.81(70)1/6.9.5.1, 6.9.5.2		
Test Proce	edure	Acceptance Crite		Significant Test Data		
<ul> <li>A second release mechanism sl</li> <li>.1 the actuation force of the release measured loaded with 1 load. If a cable is used, it sh length specified by the many the same manner it would 1 The demonstration should v indicators and handles are correctly positioned in accor and safety instruction from manufacturer; and</li> <li>.2 the release mechanism sh tensile strength testing dev increased to at least six time</li> </ul>	hould be tested as follows: lease mechanism should 00% of its safe working hould be of the maximum ufacturer, and secured in be secured in a lifeboat. verify that any interlocks, still functioning and are dance with the operation in the original equipment hould be mounted on a ice. The load should be	.1 The actuation force shou than 100 N and no more t	ld be no less han 300 N.	Actuation Force: N Tensile strength @ 6xSWL. Force applied: N. Passed: Failed: Comments/Observations		

Inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:			Dat Sui Org	te: Time: rveyor: ganization:
5.6.5.1 Liferaft towing				LSA	Code 4.4.6.8, 5.1.1.7, 5.1.1.9, MSC.81(70)1/7.1.2
Test Proced The rescue boat should be load to the mass of its equipment persons for which the rescue b The maximum towing force of t then be determined. This information should be us largest size of fully loaded liferat tow at a speed of at least 2 known The fitting designated for towing secured to a stationary object with a means to measure bold should be operated ahead at f of at least 2 minutes and recorded. (For rescue boats equipped w bollard pull trials may be carried various powers to assess performance.)	led with weights equal t and the number of oat is to be approved. he rescue boat should sed to determine the aft the rescue boat can ots. g other craft should be t by a tow rope fitted lard pull. The engine full speed for a period the maximum force with outboard motors, ed out with engines of	The maximum rescue boat shou type approval cer There should be	nce Criteria towing force of Id be recorded on tificate. e no damage to t or its supporti	the the	Significant Test Data         Smallest Engine       Largest Engine         Make/model:

Inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:			Date:         Time:           Surveyor:            Organization:			
5.6.5.2 Endurance, spee	ed and fuel co	nsumption	Regulatio	ns: LSA	Code MSC.81(70)1/	7.1.6, 7.4.2.12	
Test Procedure		Acceptance Crit				Significant Test D	ata
(Note: Run this test after the drop tests in 5.6.7.1.)	impact and	The boat should operate satisfact 4-hour operation.	ctorily through	nout the	Make/model:	Smallest Engin	e Largest Engine
The rescue boat should be	loaded with				Fuel Tank Capacity:		L
weights equal to the mass of its and the number of persons for	s equipment or which the				Propeller: Pitch:		
rescue boat is to be approved.					Diameter:		
The engine should be started a manoeuvred for a period of at le to demonstrate satisfactory op	east 4 hours				@8 knots: Engine speed (RPM		
The rescue boat should be rur		The fuel tank should have sufficient capacity to operate at a speed of 8 knots for a period of 4 hours with its full complement of persons and equipment.			Boat speed (kts)		
of not less than 8 knots complement of persons and					Consumption (L/h)		
and 20 knots with a crew of 3 a period which is sufficient to a					Endurance (hrs.)		
fuel consumption and to estab fuel tank has the required cap determination may be made	lish that the bacity. (This				@20 knots: Engine speed (RPM	l):	
4-hour period of operation.)	during the				Boat speed (kts)		
For rescue boats equipped wi		The fuel tank should have su			Consumption (L/h)		
motor, speed and manoeuvring trials should be carried out with engines of		operate at a speed of 20 knots fo with a crew of 3 persons.	r a period of 4	hours	Endurance (hrs.)		
various powers to assess the re performance.	escue doat s				Comments/Observa	tions	

Inflated fast rescue boats	Model:	acturer:		Date: Time: Surveyor: Organization:		
5.6.5.3 Engine out of wat	ter		Regulations: LS	SA Code 4.4.	6.3, MSC.81(70)1/6.10.5	
Test Procedure		Acceptano	ce Criteria		Significant Test Data	
The engine should be operated for at least 5 minutes at idling speed under conditions simulating normal storage.				Passed Failed Comments/Observations		
Note: If a water flushing device to be used for this purpose, it fitted during the test.						
5.6.5.4 Compass test		Regulations: LSA Code 5.1.			2.2.3, MSC.81(70)1/6.10.7	
Test Procedure		Acceptance Criteria		Significant Test Data		
It should be determined that th performance is satisfactory and unduly affected by magnetic equipment in the rescue boat.	that it is not	The compass operates satisfa	ctorily.		Compass Make: Compass Model: Passed Failed Comments/Observations	

Inflated fast rescue boats	Model:	l: Surve		Surveyor:	te: Time: rveyor: ganization:		
5.6.5.5 Manoeuvrability v	with paddles	or oars	Regulati	ons: LSA Co	de 5.1.2.2.1, MSC.81(70)1/7.1.8		
Test Procedure		Acceptance Crite	ria		Significant Test Data		
It should be demonstrated that boat can be propelled and man its oars or paddles in calm wate at a speed of at least 0.5 kn distance of at least 25 m. when the number of persons, a lifejackets and immersion suits, is to be approved.	oeuvred by r conditions ots over a laden with II wearing	The rescue boat should be capable o paddled and manoeuvred.	f being sati	isfactorily	Distance travelled:n Time required:s Calculated speed:m/s =knots Lifejacket and immersion suit used during the test: Lifejacket – Inflatable/Inherently Buoyant Immersion suit – Uninsulated/Buoyant Insulated Passed Failed Comments/Observations		

Inflated fast rescue boats	Model:	rer: Number:		Date:          Surveyor:          Organization:		
5.6.5.6 Heavy weather/seas	test		Regulations: LS	SA Code 5.1.	3, MSC.81(70)1/7.2.10	
Test Procedure		Acceptano	ce Criteria		Significant Test Data	
To simulate use in heavy w inflated rescue boat should be f larger powered engine than is i be fitted and driven hard in a wi 4 or 5 or equivalent rough water 30 minutes. For boats with inboard engines does not need to be greater intended to be used.	itted with a intended to ind of force for at least the power	The rescue boat should not show undue flexir permanent strain nor have lost more than minimal pres		0	0	
5.6.6.1 Towing test			Regulations: LS	SA Code 4.4.	1.3.2, 4.4.7.7, MSC.81(70)1/6.11.1	
Test Procedure		Acceptano	ce Criteria		Significant Test Data	
It should be demonstrated that equipped rescue boat, loaded properly distributed mass equipass of the number of persons is to be approved, can be towed of not less than 5 knots in calm on an even keel using the resp painter securing device.	ed with a ual to the for which it at a speed water and	The rescue boat should no characteristics. There should be no damag equipment as a result of this te	e to the rescue		Passed Failed Comments/Observations	

Inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:			Date:          Time:            Surveyor:          Organization:			
5.6.6.2 Painter release te	st	-	Regulations: LS	SA Code 4.4.	7.7, MSC.81(70)	1/6.11.23	
Test Procedure		Acceptano	ce Criteria			Significant T	est Data
It should be demonstrated that release mechanism can release on a fully equipped and loaded that is being towed at a speed than 5 knots in calm water. The painter release mechanism tested in several distinct direc upper hemisphere not obstruct canopy or other constructions in boat. The directions specified in should be used if possible.	e the painter rescue boat of not less n should be tions of the cted by the n the rescue	The painter should release an to the rescue boat or its equip	d there should be	-	Passed Test Direction	Passed Passed Passed Passed Passed Passed	Failed Failed Failed Failed Failed Failed

	st rescue boats Manufacturer: Model: Lot/Serial Number:			Time: /or: ization:
5.6.7.1 Impact, drop and operative	ration after impac	ct and drop test	Regulation	s: LSA Code 4.4.1.7, MSC.81(70)1/6.4.1, 7.2.2 & 7.2.3
Test Procedure		Acceptance Criteria		Significant Test Data
.1 For boats launched by fall or equipped rescue boat, includi should be loaded with weights ec of the number of persons for wi boat is to be approved. Included should be a weight of 100 kg lo each type of seat installed in th weights should be distributed to normal loading in the rescue weights need not be placed 300 seatpan.) Skates or fenders, if r be in position. The rescue b hanging position, should be pull position so that when released fixed rigid vertical surface at a m/s. The boat should be relea against the rigid vertical surface	ding its engine, equal to the mass which the rescue ed in this loading loaded in one of the lifeboat. The to represent the e boat. (These 0 mm above the required, should boat, in a free lled laterally to a ed it will strike a a velocity of 3.5 eased to impact	<ul> <li>The impact and drop tests considered successful if:</li> <li>.1 no damage has been sustained affect the efficient function rescue boat and its equipment.</li> <li>.2 the damage caused by the drop tests has not increased as a result of the operation 5.6.5.2;</li> <li>.3 machinery and other equipment operated to full satisfaction; and occurred.</li> </ul>	ed that would hing of the ht; impact and significantly onal test in ipment has ind	Observed Damage: Increased Damage: YES NO Satisfactory Operation: YES NO Ingress of Water: YES NO
<ul> <li>.2 The rescue boat complete with a and with a mass equivalent to its in the position of its engine and f be dropped three times from a h 3 m on to water. The drops sho 45-degree bow-down, level trim, stern-down attitudes.</li> <li>.3 On completion of these tests th and its equipment should examined.</li> </ul>	s engine and fuel fuel tank should height of at least ould be from the n, and 45-degree the rescue boat			Final Evaluation: Passed Failed Comments/Observations

Inflated fact receive boots Model:		urer: Number:		Date:         Time:           Surveyor:            Organization:		
5.6.7.2 Ambient overload	test		Regulations: LS	SA Code 5.1.	3.2.2, MSC.81(70)1/7.2.12	
Test Procedure		Acceptanc	ce Criteria		Significant Test Data	
With all relief valves inoperative, the inflated rescue boat should be loaded with four times the mass of the full complement of persons and equipment for which it is to be approved and suspended for 5 minutes from its bridle at an ambient temperature of $+20 \pm 3^{\circ}$ C.		not show any signs of damage.		Passed Failed Comments/Observations		
The rescue boat and its bridle examined after the test is condu						
5.6.7.3 Cold overload test		Regulations: LSA Code 5.1.3.2.3, MSC.81(70)1/7.2.13				
Test Procedure		Acceptance Criteria		Significant Test Data		
With all relief valves operative conditioning at a temperature or inflated rescue boat should be 1.1 times the mass of the full of of persons and equipment for w be approved and suspende minutes from its bridle. The rescue boat and bridle examined after the test is condu	at a temperature of -30°C, the e boat should be loaded with mass of the full complement ad equipment for which it is to and suspended for five its bridle. boat and bridle should be			nism should	Passed Failed	

Inflated fast rescue boats Manufacturer: Lot/Serial Numb		r: ımber:		Surveyor: _	n:
5.6.7.4 Mooring out test			Regulations: LS	SA Code 5.1.	3.3, MSC.81(70)1/7.2.15, 5.5, 5.17.78
Test Procedure	)	Accepta	ance Criteria		Significant Test Data
The rescue boat should be loa equal to the mass of the total nu- for which it is to be approved a and moored in a location at sea harbour. The rescue boat shou in that location for 30 days. Th be topped up once a day us pump; however, during any 24 rescue boat should retain its sh Each inflatable compartment in should be tested to a pressur times the working pressure. Eac valve should be made inoperat air should be used to inflate the boat and the inflation source re should continue for at least 30 The measurement of pressu leakage can be started whe assumed that compartment m completed stretching due to pressure and achieved equilibri	imber of persons nd its equipment or in a seawater uld remain afloat he pressure may sing the manual -hour period the lape. the rescue boat e equal to three ch pressure relief ive, compressed inflatable rescue moved. The test minutes. re drop due to en it has been aterial has been o the inflation	The rescue boat should would impair its performa The pressure should not determined without comp atmospheric pressure cha seam slippage, cracking boat.	nce. decrease by more pensating for temp anges, and there s	than 5% as berature and should be no	

Inflated fast rescue boats	Manufactu Model: Lot/Serial N	rer:	Date:         Time:            Surveyor:         Organization:		
5.6.8.1 Inflation chambe	r characteris	stics tests	<b>Regulations:</b>	LSA Code 1.2.2, MSC.81(70)1/7.2.14	
Test Procedure		Acceptance Crite	ria	Significant Test Data	
The inflatable compartment ma to construct the rescue boat tested for the following character .1 tensile strength .2 tear strength .3 heat resistance .4 cold resistance .5 heat ageing .6 weathering .7 flex cracking .8 abrasion .9 coating adhesion .10 oil resistance .11 elongation at break .12 piercing strength .13 ozone resistance .14 gas permeability .15 seam strength .16 ultraviolet light resistan	should be eristics:	The material characteristics sh with ISO 15372:2000.	nould comply	.1       tensile strengthN         .2       tear strengthN         .3       heat resistance – Blocking	

#### 5.7 RIGID/INFLATED FAST RESCUE BOATS

#### EVALUATION AND TEST REPORT

- 5.7.0 General information
  - 5.7.0.1 General data and specifications
  - 5.7.0.2 Submitted drawings, reports and documents
  - 5.7.0.3 Quality assurance
- 5.7.1 Visual inspection
  - 5.7.1.1 Occupant space
  - 5.7.1.2 Fittings, provisions and ladders
  - 5.7.1.3 Engine and starting system
  - 5.7.1.4 Steering mechanism and fuel tank
  - 5.7.1.5 Release mechanism
- 5.7.2 Stability, damage and loading tests
  - 5.7.2.1 Damage test
  - 5.7.2.2 Stability test
  - 5.7.2.3 Loading test
  - 5.7.2.4 Swamp test
  - 5.7.2.5 Flooded stability test
  - 5.7.2.6 Righting test (for non self-righting fast rescue boats)
  - 5.7.2.7 Self-righting test (for self-righting fast rescue boats only)
  - 5.7.2.8 Flooded capsizing test (for self-righting fully enclosed fast rescue boats only)
  - 5.7.2.9 Engine inversion test (for self-righting fast rescue boats only)
- 5.7.3 Seating strength and space tests
  - 5.7.3.1 Seating strength test
  - 5.7.3.2 Seating space test
- 5.7.4 Release mechanism tests
  - 5.7.4.1 Simultaneous release
  - 5.7.4.2 Towing release test
  - 5.7.4.3 Load and release test
  - 5.7.4.4 Cyclic loading test
  - 5.7.4.5 Actuation force test
  - 5.7.4.6 Second release mechanism tests- actuation force and tensile strength
- 5.7.5 Operational tests
  - 5.7.5.1 Liferaft towing
  - 5.7.5.2 Endurance, speed and fuel consumption
  - 5.7.5.3 Engine out of water
  - 5.7.5.4 Compass test
  - 5.7.5.5 Manoeuvrability with paddles or oars
  - 5.7.5.6 Heavy weather/seas test
- 5.7.6 Towing and painter tests
  - 5.7.6.1 Towing tests
  - 5.7.6.2 Painter release test

5.7.7	Strength t 5.7.7.1 5.7.7.2 5.7.7.3	ests Impact, drop and operation after impact and drop test Overload test Mooring out test	
5.7.8	Materials	tests	

5.7.8.1 Inflation chamber characteristics tests

### 5.7 RIGID/INFLATED FAST RESCUE BOATS

### **EVALUATION AND TEST REPORT**

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Rigid/inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:	Surveyor:
5.7.0.1 General data and spec	cifications	Regulations: LSA Code 4.4, 5.1, MSC.81(70)1/7.2.16
General Information		oat Dimensions Rescue boat Weight
Construction Material: Hull:	Dimensions:	Design Weight:
Canopy:	LOA:	Unloaded Boat:
Fire-retardancy documentation:	Breadth Maximum:	Loose Equipment:            Fuel:            Persons:
Rescue Boat Inherent Buoyancy	Depth to Sill:	
(Type App.) Material: Weight: Occupancy: Persons (82.5 kg each):	Depth to Gunwale:	Calculated Loaded Weight:
Engine(s) Installed: 1 2 Type App by: Manufacturer: Type:		g-off pendant Comments/Observations
Power: Gear ratio (inboard engine):		
Additional rigid or inflatable buoyanc	sy:	
Release mechanism(s) (if applicable 1	2	
Manufacturer: Type: SWL:		

Rigid/inflated fast rescue boats       Manufacturer: Model:         Lot/Serial Num			Date: Time: Surveyor: Organization:				
5.7.0.2 Submittee	5.7.0.2 Submitted drawings, reports and documents						
	1	S	ubmitted drawings and documents			Status	
Drawing No.	Revision	No. & date	Title	of drawing		Status	
	• •		Submitted reports and documents			Otatus	
Report/Document No.	Revisio	on No. & date	Title of re	port / document		Status	
			Maintenance Manual -				
			Operations Manual -				

Rigid/inflated fast rescue boats		Date: Surveyor: Organization:	Time:					
5.7.0.3 Quality assurance		Regulations: MSC.81(70) 2/1.1, 1.2						
of the International Convention for amended or the International Life-S inspected, representatives of the A inspections of manufacturers to er appliances and materials used co approved prototype life-saving applia Manufacturers should be required to ensure that life-saving appliances ar the prototype life-saving appliance a	ticular type are required by chapter III the Safety of Life at Sea, 1974, as Saving Appliance (LSA) Code, to be Administration should make random neure that the quality of life-saving omply with the specification of the nce. institute a quality control procedure to re produced to the same standard as pproved by the Administration and to is carried out in accordance with the	Quality assurance   Standard Used:   Quality assurance Procedure:   Quality assurance Manual:   Description of System:						
	Quality assurance Yes/No Comments/Observ	System acceptable						

Rigid/inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:		te: Time: veyor: ganization:		
5.7.1.1 Occupant space		Regulations: LSA Code 4	.4.2.2, 4.4.3.5, 5.1, MSC.81(70)1/7.2	.16	
Test Procedure	Acceptanc	ce Criteria	Significant Test Da	ta	
Visually inspect the rescue boat. Co measurements and verify clearanc required.	es as Unless the rescue boat has a	adequate sheer, it should be tending for not less than 15%	Passed Failed _		
	Length is at least 6.0 m and r	not over 8.5 m.	Passed Failed _		
Seating Space         Width – at least 430 mm         Depth – at least 100 mm each         the back         Knee Space (Seating on seat         back         Knee Width – at least 250 m         Leg Space (Seating on floor)         back         Overlapping Seat Vertical Seat         Seat Horizontal Overlap – 15         Each seating position should         Stretcher(s) space:         Rescue boats should be cap         seated persons and a person         minimum 2130 x 610 mm.         Walkway Surfaces		– at least 1190 mm from the paration – at least 350 mm 0 mm maximum	Leg Space:mm Vert. Separation:mm		

Mode		Model:		Date: Time: Surveyor: Organization:			
5.7.1.2 Fittings, provisions an	d ladd	ers	Regulations: LSA	Code 5.1.	3, MSC.81(70)1/7	.2.16	
Test Procedure			ce Criteria			Significant Test Dat	a
Visually inspect the rescue boat.		Buoyancy compartments fitt Non-return valve for manual ir			Passed	Failed	
Conduct measurements and clearances as required.	verify	Means for deflation			Passed	Failed	
		Safety relief valve unless waiv	ved by Administration		Passed	Failed	N/A
		Suitable patches for securing	painters fore and aft		Passed	Failed	
		Fittings and Provisions	Fittings and Provisions				
		Suitable handholds or buoyant lifeline becketed around the outside of rescue boat above the waterline and within reach of a person in the water, except in the vicinity of the rudder and propeller		Passed	Failed		
			On other than self-righting rescue boats, handholds on the underside arranged to break away without damaging the rescue boat		Passed	Failed	
		Weathertight stowage for small items of equipment Approved position indicating light provided at highest point		Passed	Failed	N/A	
		Provided with effective means of bailing or be automatically self-bailing			Failed		
					Comments/Obse	ervations	

Rigid/inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:			Date:            Surveyor:            Organization:		
5.7.1.2 Fittings, provisions and	Code 4.4.3.3, 5.1.3, MSC.81(70)1/7.2.16					
Test Procedure		Acceptance Criteria			Significant Test Data	
Visually inspect the rescue boat. Conduct measurements and victure of the second secon	verify	Ladders Ladders that can be used at any entra board and the lowest step when in place			Passed Failed Lowest stepm below waterline	
		than 0.4 m below the light waterline.			YES NO N/A	
		Other Provisions			TES NO N/A	
		Buoyant material may be installed extern boat, provided it is adequately protecte and is capable of withstanding exposure open deck on a ship at sea and for 30 da condition.	d against when stow	damage /ed on an	Passed Failed Highly visible colour: PassedFailed	
		The boat should be of a highly visible of a ssist detection.	colour wh	ere it will	Comments/Observations	

Rigid/inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:	Date:          Time:            Surveyor:          Organization:			
<b>5740</b> Facility and starting					
5.7.1.3 Engine and starting s		Regulations: LSA	Code 4.4.6, 5.1,	MSC.81(70)1/7.	
Test Procedure	Acceptance	e Criteria			Significant Test Data
	Type of starting system - Two independent rechargeable energ systems	y sources provided fo	or power starting	Manual Powe YES NO	er N/A
	- Required starting aids provided.			Passed	Failed
	- Starting system is not impeded by eng	gine casing, thwarts, o	or other	Passed	Failed
	obstructions			1 03300	
	<ul> <li>Propeller arranged to be disengaged the ahead and astern propulsion</li> </ul>	from the engine and p	provision for	Passed	Failed
	Exhaust arranged to prevent water from entering engine in normal operation.			Passed	Failed
	- System designed with due regard to the to the possibility of damage to the pro			Passed	Failed
	<ul> <li>Engine casing made of fire-retardant r</li> </ul>				
	arrangements providing similar protec	tion.		Passed	Failed
	<ul> <li>Personnel are protected from hot and</li> <li>Shouted order can be heard with engi</li> </ul>		necessary for 6	Passed	Failed
	knot operation				Failed Failed
	- Watertight casing around bottom and	sides of starter batter	ries with a tightly	Passed	
	fitting top which provides for gas venti	Passed	Failed		
	- Means for recharging engine starting,		nt batteries		
	provided by solar charger or ship's po			Passed	Failed
	<ul> <li>Radio batteries not used to provide po</li> </ul>				
	- Recharging for engine batteries provid	ded by ship's power s	supply does not	Passed	Failed
	exceed 50 v			Passed	Failed
	- Recharging means for engine batterie	s can be disconnecte	ed at the rescue	Desert	E - U - J
	boat embarkation station			Passed	Failed
	<ul> <li>Instructions for starting and operating mounted in a conspicuous place near</li> </ul>	the engine starting c		Passed	Failed
	<ul> <li>Towing arrangement for marshalling li</li> </ul>	terafts			

		Model:			Date: Time: Surveyor: Organization:			
5.7.1.4 Steering mechanism a	and fue	l tank	Regulations: LSA C	ode 4.4.7	.2, 5.1.1.8, , MSC.81(7	70)1/7.2.16		
Test Procedure		Acceptar	nce Criteria			nificant Test Data		
Visually inspect the rescue boat. Conduct measurements and clearances as required.	verify	Steering A tiller should be capable of and tiller may form part of ou Rudder permanently attached Rudder and tiller arranged operation of the release mec Steered by wheel at helmsma Has emergency steering sys rudder, water jet or outboard Hands-free, watertight VHF r Fuel Tank If fitted with petrol-driven ou should be specially protected	f controlling the rudde tboard motor) d to the rescue boat so as not to be dam hanism or propeller an's position stem providing direct of motor adio provided	control of	Passed	FailedN/A FailedN/A FailedN/A Failed Failed		
					Comments/Observat	tions		

Rigid/inflated fast rescue boats		Manufacturer: Model: Lot/Serial Number:			Date: Time: Surveyor: Organization:			
5.7.1.5 Release mechanism		-	Regulations: LSA	Code 4.4.	7.6.5, MSC.81(70)1/7	<b>.</b> 2.16		
Test Procedure		Acceptano	ce Criteria		Sig			
Visually inspect the rescue boat. Conduct measurements and	verify	Clear operating instructions			Passed			
clearances as required.		Release control marked in a colour that contrasts with the surroundings			Passed	Failed		
		For on-load release mechanis	ms:					
		Suitably worded danger sign f	Suitably worded danger sign for on load release				N/A	
		mechanism is completely an	Mechanical protection (interlock) engages only when mechanism is completely and properly reset, to prevent accidental release during recovery			Failed	N/A	
		On-load release mechanism nation by the operator	On-load release mechanism needs deliberate and continued action by the operator			Failed	N/A	
	Mechanical protection provided beyond required for off load release			normally	Passed	Failed	N/A	
		For a single fall system with suitable painter, on-load relea capability is not required; in such an arrangement a sing capability to release the boat only when it is fully waterborn will be adequate.			Passed		N/A	

Bigid/inflated fact receive basts Mode		facturer:	Surveyo	Date: Time: Surveyor: Organization:			
5.7.2.1 Damage test (Does no tube)	t apply	if waterline is below lower side of inflated	Regulat	ations: LSA Code 5.1.3.5, MSC.81(70)1/7.2.89, 7.3.2			
Test Procedure		Acceptance Criteria		Significant Test Data			
The following tests should be carried with the inflated rescue boat loaded the number of persons (of 82.5 kg main which it is to be approved both with without engine and fuel or an equinass in the position of the engine and tank: with forward buoyancy compare deflated; .1 with the entire buoyancy of side of the rescue boat defined and .2 with the entire buoyancy of side and the bow compare deflated.	d with ss) for h and valent id fuel tment n one flated; n one			1       With engine and fuel:         Passed       Failed         Without engine and fuel         Passed       Failed         2       With engine and fuel:         Passed       Failed			

Dividing late of fact was and hands Model:		Survey		Time: /or: ization:		
5.7.2.2 Stability test			Regulations: LSA	Code 4.	4.5, MSC.81(70)1/6.10.8, 7.2.67	
Test Procedure		Acceptanc	e Criteria		Significant Test Data	
The following tests should be carried engine and fuel or an equivalent r place of the engine and fuel tanks:	mass in					
.1 the number of persons for which the inflated rescue boat is to be approved should be crowded to one side with half this complement seated on the buoyancy tube, and then to one end. In each case the freeboard should be recorded; and		.1 Under these conditions the freeboard should be everywhere positive.		1 Freeboard crowded to one sidemm To bow:mm To stern:mm PassedFailed		
<ul> <li>.2 the stability of the rescue boar boarding should be ascertained persons in the rescue demonstrating that they can assist from the water a third persons is required to feign unconscio. The third person should have h towards the side of the rescue that he cannot assist the rescupersons should wear a lifejackets.</li> <li>These stability tests may be carried the rescue boat floating in still water.</li> </ul>	l by two boat readily son who usness. his back boat so uers. All pproved out with	.2 The rescue boat should b	e stable.		<ul> <li>2 Stability observations during recovery of unconscious person:</li> <li>Clothing/Suits on helpless person:</li></ul>	

Digid/inflated fact receive basts Model:				Surveyo	Dr: Time: ation:
5.7.2.3 Loading test			Regulations: MSC	.81(70)1/7	7.2.45
Test Procedure		Ac	ceptance Criteria		Significant Test Data
The freeboard of the inflated rescue boat should be taken in the various loading conditions as follows:		In each condition the minimum free should be not less than 300 mm		n at the	.1 Freeboard at Buoyancy Tubes:mm Freeboard at Transom:mm
.1 rescue boat with all its equipment	,		and not less than part of the transom.	250 mm	.2 Freeboard at Buoyancy Tubes:mm
.2 rescue boat with all its equipment, engine and fuel, or an equivalent mass positioned to represent engine		nom the lowest			Freeboard at Transom:mm
and fuel;	1 0				.3 Freeboard at Buoyancy Tubes:mm
<ul> <li>.3 rescue boat with all its equipment and the number of persons for which it is to be approved having an average mass of 82.5 kg so arranged that a uniform freeboard is achieved at the side buoyancy tubes; and</li> <li>.4 rescue boat with the number of persons for which it is to be approved and all its equipment, engine and fuel or an equivalent mass to represent engine and fuel and the rescue boat being re-trimmed as necessary.</li> </ul>					Freeboard at Transom:mm .4 Freeboard at Buoyancy Tubes:mm Freeboard at Transom:mm
					Passed Failed Comments/Observations
5.7.2.4 Swamp test			Regulations: MS	C.81(70)1/	/7 <mark>.2.11</mark>
Test Procedure		Acceptar	nce Criteria		Significant Test Data
It should be demonstrated that the boat, when fully swamped, is capa supporting its full equipment, the nur persons each weighing 82.5 kg for v is to be approved and a mass equiva its engine and fully filled fuel tank. It also be demonstrated that the rescu does not seriously deform in this con-	able of load and sh nber of vhich it alent to should ie boat	e boat should be c nould not seriously	apable of supporting y deform.	the full	Passed   Failed     Comments/Observations

Rigid/inflated fast rescue boats		Date: Surveyor: Organization:	Time:	
5.7.2.5 Flooded stability test below lower side of in	(Required only when waterline is flated tube)	s Regulations: LSA	Code 4.4.1.1, MSC.	81(70)1/6.8.13
Test Proce	edure	Acceptance	Criteria	Significant Test Data
The rescue boat should be loaded lockers, water tanks and fuel tanks of be flooded or filled to the final wa Rescue boats fitted with watertig accommodate individual drinking with these containers aboard and placed which should be sealed watertight d of equivalent weight and density shou and any other installed equipment the Weights representing persons (of 82 water when the rescue boat is flo 500 mm above the seat pan) may be persons who would not be in the with flooded (water level more than 500 m be placed in the normal seating post centre of gravity approximately 300 m representing persons who would be when the lifeboat is flooded (water above the seat pan) should additional	with its equipment. If provision cannot be removed, they should terline resulting from this test. ht stowage compartments to water containers should have d in the stowage compartments uring the flooding tests. Ballast uld be substituted for the engine at can be damaged by water. .5 kg mass) who would be in the boded (water level more than e omitted. Weights representing water when the rescue boat is mm above the seat pan) should itions of such persons with their nm above the seat pan. Weights a partly submerged in the water level between 0 and 500 mm illy have an approximate density	Acceptance When loaded as specifi should have positive stal water to represent floodir when the rescue boat i location below the waterli of buoyancy material and	ed, the rescue boat bility when filled with g which would occur s holed in any one ne assuming no loss	
of 1 kg/dm <sup>3</sup> (for example water bal volume similar to a human body. Note: Several tests may have to be areas would create different flooding	conducted if holes in different			

Rigid/inflated fast rescue boats	id/inflated fast rescue boats Model: Surveyor			Time: :: tion:	
5.7.2.6 Righting test (for non-	self-rig	hting fast rescue boats)	Regulations: MSC	.81(70)1/7	.1.7
Test Procedure		Acceptan	ce Criteria		Significant Test Data
It should be demonstrated that both and without engine and fuel of equivalent mass in place of the engine fuel tank, the rescue boat is capa being righted by not more than two per if it is inverted on the water.	or an ne and ble of	The rescue boat should be ca more than two persons if it is i When the rescue boat has r should be capable of be helmsman's emergency releas	nverted on the water. ighted, each engine ing restarted, provi	or motor ided the	Can the boat be righted by 2 persons? With engine and fuel:
The engine should be running in r position and, after stopping automa or by the helmsman's emergency re switch when inverted, it should be restarted and run for 30 minutes aft rescue boat has returned to the u position. For rescue boats with inboard engine test without engine and fuel is applicable. (This test is not required if the rightin	atically elease easily eer the upright es, the s not	The design of the fuel and prevent the loss of more than from the propulsion system.			Passed    Failed      Without engine and fuel:      Passed    Failed      Method used to right boat:
in 5.7.2.7 has been performed.)					Comments/Observations

Bigid/inflated fact recours basts	Surveyo		Surveyo	r: Time: ation:					
5.7.2.7 Self-righting test (for self-righ	nting fast rescu	ue boats only)	Regulations: MS	SC.81(70)1/6	5.14				
Test Procedure		Acc	eptance Criteria			S	ignificant T	est Data	
A suitable means should be provided rescue boat about a longitudinal axis to heel and then release it. The rescue boat incrementally rotated to angles of hee including 180° and should be released. These tests should be conducted in conditions of load: .1 when the rescue boat with its engine the normal position with properly sec representing the fully equipped rescu full complement of persons on board used to represent each person, assi an average mass of 82.5 kg, should each seat location and have its cer approximately 300 mm above the sea have the same effect on stability rescue boat is loaded with the numb for which it is to be approved; and .2 when the rescue boat is in the light of In the case of open fast rescue boats, the test should only be done in the light cond	any angle of oat should be el up to and the following the following the is loaded in cured weights the boat with a rd. The weight sumed to have be secured at ntre of gravity eatpan so as to as when the ber of persons condition.	After release, the return to the u assistance of the o At the beginning should be running .1 unless arrang inverted, the until stopp emergency running .2 after resettin release, if ne easily restart	e rescue boat sho pright position v occupants. of these tests, in neutral position ged to stop automa engine should cor ed by the l elease switch; and g the helmsman's cessary, the engin ed and run for 30 m pat has returned to enter the engine.	vithout the the engine and: tically when tinue to run helmsman's emergency e should be hinutes after the upright ng systems n 250 ml of	Angle o Heel 45 <sup>0</sup> 90 <sup>0</sup> 135 <sup>0</sup> 180 <sup>0</sup> Result: F Commer	f Loade 	Righting d FAILED	Moment Light	FAILED

Rigid/inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:		Su	r: Time: r: ation:	
5.7.2.8 Flooded capsizing test (fo	or self-	righting fully enclosed fast rescue boats only)		Regu	ulations: MSC.81(70) 1/6.14.3, 6.14.4, 6.14.5, 7.4.1
Test Procedure		Acceptance Criteria			Significant Test Data
Perform the following for fully end rigid fast rescue boats. This test i applicable to open fast rescue boats.	is not	After release, the lifeboat should attain a posi provides an above-water escape for the occupants.		n that	Result: PASSED FAILED
The rescue boat should be placed water and fully flooded until the rescue can contain no additional water entrances and openings should be se to remain open during the test.	e boat r. All				Comments/Observations
Using a suitable means, the rescue should be rotated about a longitudina to a heel angle of 180° and then relea	al axis				
For the purpose of this test, the mas distribution of the occupants ma disregarded. However, the equipme equivalent mass, should be secured rescue boat in the normal ope position.	ay be ent, or in the				

Rigid/inflated fast rescue boats			Date: Surveyor Organiza	Time: : tion:			
5.7.2.9 Engine inversion test (for	self-righting fast res			SA Code	4.6.4.2; MSC.81(70) 1/6.14.6 - 6.14.8, 7.4.1		
Test Procedure			ance Criteria		Significant Test Data		
The engine and its fuel tank should be that is arranged to rotate about an a longitudinal axis of the boat. A pan should be located under the en which may leak from the engine so tha oil can be measured.	ixis equivalent to the gine to collect any oil	The engine and eng capable of running capsize and continu- boat returns to automatically stop o restarted after the re- upright.	in any positio le to run after th the upright or n capsizing and	n during e rescue should be easily	PassedFailed		
<ul> <li>The following procedure should be test:</li> <li>.1 start the engine and run it at full</li> <li>.2 stop the engine and rotate it in through 360°;</li> <li>.3 restart the engine and run 10 minutes;</li> <li>.4 stop the engine and rotate it in direction through 360°;</li> <li>.5 restart the engine, run it at full s and then stop the engine;</li> <li>.6 allow the engine to cool;</li> <li>.7 restart the engine and run 5 minutes;</li> </ul>	I speed for 5 minutes; a clockwise direction it at full speed for a counter- clockwise speed for 10 minutes,	The design of the fue should prevent the la more than 250 ml of engine during capsis During these tests overheat, fail to op 250 ml of oil during When examined af engine should s overheating or exce	oss of fuel and th of lubricating oil ze. , the engine sh erate or leak m any one inversio ter being disma how no evide	ne loss of from the nould not nore than n. ntled the			

		Manufacturer:		Date:	Time:
Rigid	l/inflated fast rescue boats	Model: Lot/Serial Number	er:	Organiza	::
572	9 Engine inversion test (co	ntinued)	Pogulations: LSA		4.2; MSC.81(70) 1/6.14.6 - 6.14.8, 7.4.1
5.7.2.9 Engine inversion test (continued) Test Procedure			Acceptance Criteria	1 COUE 4.0.	Significant Test Data
The f	ollowing procedure should be fo	llowed during this		hould not	Are all the tests carried out according to the
	Continued):		overheat, fail to operate or leak more th of oil during any one inversion.		
.8	slowly rotate the running engine direction through 180°, hold at for 10 s, and then rotate it clockwise direction to complete	the 180° position 180° further in a	When examined after being disma engine should show no evidence of o or excessive wear.		Does the engine stop when turned in either direction? Passed/Failed If it stops, does it easily restart? Passed/Failed
.9 .10	if the engine is arranged to s when inverted, restart it; allow the engine to continue to	top automatically			Does the engine fulfil the requirements after the tests have been carried out according to the procedure?
44	for 10 minutes;				Passed/Failed
.12	shut the engine down and allow repeat the procedure in .7 the except that the engine should counter-clockwise direction;	rough .11 above, d be turned in a			Amount of oil lost from engine during each inversion: .2 : ml
.13	restart the engine and run it 5 minutes;	at full speed for			.4 : ml .8 : ml
	rotate the engine in a clo through 180° and stop the engi further to complete a full clocky restart the engine and run it	ne. Rotate it 180° wise revolution;			.12 : ml .14 : ml .16 : ml
	10 minutes; repeat the procedure in .14 a				Total amount of oil lost from engine: ml Evidence of overheating or excessive wear?
	engine counter-clockwise;				Passed/ Failed
	restart the engine, run it a 10 minutes and then shut it do dismantle the engine for exam	wn; and			Amount of oil lost from engine ml Comments/Observations

Rigid/inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:		Date: Time: Surveyor: Organization:			
5.7.3.1 Seating strength test	·	Regulations: LSA Code 4.4.1.5, MSC.81(70)1/6.6.1				
Test Procedure	Acceptance	ce Criteria		Significant Test Data		
The seating should be loaded with a of 100 kg in each position allocated person to sit in the rescue boat.			vithout	Observed damage		
In the case of a rescue boat launch falls, each type of seat should be k with a mass of 100 kg in any single location when dropped into the wate height of at least 3 m. (This test m performed in conjunction with the Drop	baded No damage should be sustain e seat efficient functioning. r from ay be			Passed	Failed	
in 5.7.7.1.)				Comments/Observat	ions	

Rigid/inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:	Surveyor:	Time:
5.7.3.2 Seating space test	MSC.81(70)1/7.1.3		
Test Procedure	Accepta	ance Criteria	Significant Test Data
The rigid rescue boat should be fitted its engine and all its equipment. number of persons for which the re- boat is to be approved, having an av- mass of at least 82.5 kg, and all we lifejackets and immersion suits and other essential equipment required, s- then board; one person should lie dow a stretcher of similar dimensions to shown in the figure and the others s- be properly seated in the rescue boar rigid rescue boat should ther manoeuvred and all equipment on tested to demonstrate that it ca operated without difficulty or interfer with the occupants.	The occupants. escue erage earing d any should wn on those should t. The n be board in be in be	ons may be seated on the floor, conforms with the leg space	Equipment operated: YES NO Number of persons carried: Seated on seats Seated on floor Lying on a stretcher Total PassedFailed Lifejacket and immersion suit used during the test: Lifejacket– Inflatable/Inherently Buoyant Immersion suit– Uninsulated/Buoyant Insulated Comments/Observations

Rigid/inflated fast rescue boats       Manufacturer:         Model:       Lot/Serial Number:			Date: Time: Surveyor: Organization:
5.7.4.1 Simultaneous release		Regulations: LSA C	ode 4.4.7.6, MSC.81(70)1/6.9.12
Test Procedure	Acceptance (	Criteria	Significant Test Data
For rescue boats launched by fall or the rescue boat with its engine fitted s be suspended from the release mecha just clear of the ground or the water rescue boat should be loaded so that total mass equals 1.1 times the mass rescue boat, all its equipment and number of persons for which the re- boat is to be approved. The rescue should be released simultaneously each fall to which it is connected w binding or damage to any part of the re- boat or the release mechanism. (Single fall systems not intended on-load operation are exempt from test.)	should simultaneously release from connected without binding or the rescue boat or the release at the of the It should be confirmed that simultaneously release from connected when fully waterboa and in a 10% overload conditi from vithout escue	each fall which it is damage to any part of mechanism. the rescue boat will each fall to which it is rne in the light condition	FailedN/A (N/A – Single fall, off-load only)

demonstrated when the rescue boat is loaded with its full complement of persons and equipment and towed at speeds of 5 knots that the moveable hook component stays closed.       these tests.       these tests.       towed at 5 kts:PassFail         Furthermore, with the operating mechanism connected, it should be demonstrated that the rescue boat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:       The rescue boat is released satisfactorily by the release mechanism.       Test 1: 25% SWL, lengthwise to the boat at 45° to the vertical:         Force Applied: N.       Force Applied: N.       Forward direction: Pass Fail
5.7.4.2       Towing release test       Regulations: LSA Code 4.4.7.6.5; MSC.81(70) 1/6.9.3         Test Procedure       Acceptance Criteria       Significant Test Data         With the operating mechanism disconnected it should be demonstrated when the rescue boat is loaded with its full complement of persons and equipment and towed at speeds of 5 knots that the moveable hook component stays closed.       There should be no damage as a result of these tests.       Operating mechanism connected tests.         Furthermore, with the operating mechanism connected, it should be demonstrated that the rescue boat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:       Single fall systems not intended for on-load operation are exempt from this test.       Force Applied: N. Forward direction: Pass Fail
Test ProcedureAcceptance CriteriaSignificant Test DataWith the operating mechanism disconnected it should be demonstrated when the rescue boat is loaded with its full complement of persons and equipment and towed at speeds of 5 knots that the moveable hook component stays closed.There should be no damage as a result of these tests.Operating mechanism disconnected and boat towed at 5 kts:PassFailFurthermore, with the operating mechanism connected, it should be demonstrated that the rescue boat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:Single fall systems not intended for on-load operation are exempt from this test.Test 1: 25% SWL, lengthwise to the boat at 45° to the vertical:Force Applied:N. Forward direction:PassFailFail Aft direction:PassFail
demonstrated when the rescue boat is loaded with its full complement of persons and equipment and towed at speeds of 5 knots that the moveable hook component stays closed.       these tests.       these tests.       towed at 5 kts:PassFail         Furthermore, with the operating mechanism connected, it should be demonstrated that the rescue boat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:       The rescue boat is released satisfactorily by the release mechanism.       Test 1: 25% SWL, lengthwise to the boat at 45° to the vertical:         Force Applied: N.       Force Applied: N.       Forward direction: Pass Fail
demonstrated when the rescue boat is loaded with its full complement of persons and equipment and towed at speeds of 5 knots that the moveable hook component stays closed.       these tests.       towed at 5 kts:PassFail         Furthermore, with the operating mechanism connected, it should be demonstrated that the rescue boat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:       The rescue boat is released satisfactorily by the release mechanism.       Test 1: 25% SWL, lengthwise to the boat at 45° to the vertical:         Furthermore, with the operating mechanism connected, it should be demonstrated that the rescue boat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:       Single fall systems not intended for on-load operation are exempt from this test.       Force Applied: N.         Forward direction:Pass Fail       Aft direction:Pass Fail
demonstrated when the rescue boat is loaded with its full complement of persons and equipment and towed at speeds of 5 knots that the moveable hook component stays closed.       these tests.       towed at 5 kts:PassFail         Furthermore, with the operating mechanism connected, it should be demonstrated that the rescue boat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:       The rescue boat is released satisfactorily by the release mechanism.       Test 1: 25% SWL, lengthwise to the boat at 45° to the vertical:         Furthermore, with the operating mechanism connected, it should be demonstrated that the rescue boat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:       Single fall systems not intended for on-load operation are exempt from this test.       Force Applied: N.         Forward direction:Pass Fail       Aft direction:Pass Fail
speeds of 5 knots that the moveable hook component stays closed.The rescue boat is released satisfactorily by the release mechanism.Operating mechanism connected tests.Furthermore, with the operating mechanism connected, it should be demonstrated that the rescue boat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:The rescue boat is released satisfactorily by the release mechanism.Deerating mechanism connected tests.Furthermore, with the operating mechanism connected, it should be demonstrated that the rescue boat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:Single fall systems not intended for on-load operation are exempt from this test.Deerating mechanism connected tests.Force Applied:N.Forward direction:PassPassFailAft direction:PassFail
closed. Furthermore, with the operating mechanism connected, it should be demonstrated that the rescue boat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows: the release mechanism. Single fall systems not intended for on-load operation are exempt from this test. Single fall systems not intended for on-load operation are exempt from this test. Force Applied: N. Forward direction:Pass Fail Aft direction:Pass Fail
Furthermore, with the operating mechanism connected, it should be demonstrated that the rescue boat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:Single fall systems not intended for on-load operation are exempt from this test.Test 1: 25% SWL, lengthwise to the boat at 45° to the vertical:Force Applied:N.Forward direction:PassFailAft direction:PassFail
Furthermore, with the operating mechanism connected, it should be demonstrated that the rescue boat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:       Single fall systems not intended for on-load operation are exempt from this test.       the vertical:         Single fall systems not intended for on-load operation are exempt from this test.       Force Applied: N.         Forward direction: Pass Fail       Aft direction: Pass Fail
with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:       operation are exempt from this test.       Force Applied: N.         Forward direction:       Pass Fail         Aft direction:       Pass Fail
towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows:
above should be demonstrated as follows: Aft direction: Pass Fail
.1 a force equal to 25% of the safe working load of the Test 2: 100% SWL, athwartships at 20° to the
hook should be applied to the hook in the lengthwise vertical:
direction of the boat at an angle of 45° to the vertical.
This test should be conducted in the aftward as well as the forward direction;       Force Applied:N.         Starboard:PassFail
Port: Pass Fail
.2 a force equal to the safe working load of the hook
should be applied to the hook in an athwartships Test 3: 100% SWL, 45° to the longitudinal axis of
direction at an angle of 20° to the vertical. This test the boat in plan view at an angle of 33° to the
should be conducted on both sides; and vertical.
.3 a force equal to the safe working load of the hook Force Applied: N.
should be applied to the hook in a direction halfway Position 1: Pass Fail
between the positions of tests 1 and 2 (i.e. 45° to the Position 2: Pass Fail
longitudinal axis of the boat in plan view) at an angle Position 3:Pass Fail
of 33° to the vertical. This test should be conducted in four positions.
four positions. Comments/Observations

Rigid/inflated fast rescue boats	Model:		Date: Time: Surveyor: Organization:		
5.7.4.3 Load and release test		Regulations: LSA C	ode 4.	.4.7.6.4; MSC.81(70) 1/6.9.4.1	, 6.9.4.2
Test Procedure				Significant T	「est Data
A release mechanism should be cor tested as follows: The rescue boat release and retrieva the longest used connection associated with the system should and adjusted according to instruction original equipment manufacturer and to 100% of its safe working load and Load and release should be repeated The rescue boat release and retr should then be disassembled, the pa and wear recorded. The release system should then be reassembled.	I system and cable/linkage be mounted ons from the then loaded released. d 50 times. ieval system rts examined and retrieval	Acceptance Criteria During the 50 releases, the rescue boat re and retrieval system should be rele simultaneously from each fall to which connected without any binding or damage t part of the lifeboat release and retrieval sys The system should be considered as "fail any failure during the conditioning or uninte release occurs when load is applied bu system has not yet been operated.	elease eased it is o any tem. led" if ended	Working Load:       N         Force Applied:       N         Check the box for each releating       1:       2:       3:       4:       1         7:       8:       9:       10:       1       1       13:       14:       15:       16:       1         13:       14:       15:       16:       1       1       19:       20:       21:       22:       2       2       2       2       2       2       2       2       2       2       2       3       3       34:       3       3       34:       3       3       3       3       34:       3       3       34:       3       3       3       40:       4       4       45:       46:       4       4       45:       46:       4       4       45:       46:       4       4       45:       46:       4       4       45:       46:       4       4       45:       46:       4       4       45:       46:       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4       4	NN ase: 5:6: 11:12: 17:18: 23:24: 29:30: 35:36: 41:42:

Rigid/inflated fast rescue boats	Model:	r: mber:		Surve	Time: eyor: nization:
5.7.4.4 Cyclic loading test Regulation		Regulations: LSA	Code 4	4.4.7.6.4; MSC.81(70) 1/6.9.4.3	
Test Procedure		Acceptance			Significant Test Data
The hook assembly, while disconner from the operating mechanism, shou tested 10 times with cyclic loading zero load to 1.1 times the safe wo load, at a nominal 10 seconds per of unless the release mechanism has specifically designed to operate a off-load hook with on-load capability the weight of the boat to close the hoot this case the cyclic load should be fro more than 1% to 1.1 times the SWL. For cam-type designs, the test shou carried out at an initial cam rotation (fully reset position), and repeated at 4 either direction, or 45° in one direct restricted by design.	Id be from brking The sy cycle; during been occurs s an using ok, in m no Id be of 0° 45° in	pecimen should remain o ystem should be conside y this test or any uninte	closed during the tes red as "failed" if any f	failure	Working Load:       N         Force Applied:       N         Check the box for each release and/or strike out the cam rotation if no applicable:         Cam rotation 0°:       1:         1:       2:       3:       4:       5:       6:         7:       8:       9:       10:       10:       10:       10:         Cam rotation +45°:       1:       2:       3:       4:       5:       6:       10:         7:       8:       9:       10:       10:       10:       10:       10:         Cam rotation -45°:       1:       2:       3:       4:       5:       6:       11:         7:       8:       9:       10:       10:       10:       10:       10:         Passed:       Failed:

Rigid/inflated fast rescue boats	Model:	per:	Surve	Time: eyor: nization:			
5.7.4.5 Actuation force test		Regulations: LSA	Regulations: LSA Code 4.4.7.6.4; MSC.81(70) 1/6.9.4.4				
Test Procedure		Acceptance Criteria		Significant Test Data			
The cable and operating mechanism reconnected to the hook assembly; boat release and retrieval system	and the rescue	The actuation force should be no les 100 N and no more than 300 N, if a c used it should be the maximum	able is				
demonstrated to operate satisfactori working load.	ly under its safe	specified by the manufacturer, and sec the same manner it would be secured rescue boat.		Passed: Failed:			
The demonstration should verify tha indicators and handles are still func correctly positioned in accordance w and safety instruction from the original manufacturer.	tioning and are ith the operation	The release mechanism is deemed to passed the testing in 5.7.4.3, 5.7.4	.4 and iducted d be ing this	Comments/Observations			

Rigid/inflated fast rescue boats	ast rescue boats Manufacturer: Model: Lot/Serial Number:		-	Surveyor	r: Time: ation:
5.7.4.6 Second release mechanism tests- actuation		force and tensile strength	Reg	gulations:	LSA Code 4.4.7.6.4, MSC.81(70)1/6.9.5.1, 6.9.5.2
	Test Procedure		eria		Significant Test Data
A second release mechanism should .1 the actuation force of the release be measured loaded with 100% load. If a cable is used, it should length specified by the manufacture the same manner it would be see The demonstration should verify indicators and handles are still correctly positioned in accordance and safety instruction from the manufacturer; and	e mechanism should of its safe working be of the maximum urer, and secured in ecured in a lifeboat. that any interlocks, functioning and are e with the operation	1. The actuation force should 100 N and no more than 300 N The release mechanism does	J.		Actuation Force: N Tensile strength @ 6xSWL. Force applied: N. Passed: Failed: Comments/Observations
.2 the release mechanism should tensile strength testing device. T increased to at least six times the release mechanism.	The load should be				

Divid/inflated fact receive basts Model:				Date: Time: Surveyor: Organization:	
5.7.5.1 Liferaft towing			Regulations: LSA	Code 4.4.6.8, 5.1.1.7, 5.1.1.9, MSC.81(70)1/7.1.2	
Test Procedure			ance Criteria	Significant Test Data	
The rescue boat should be loaded w to the mass of its equipment and the r for which the rescue boat is to b maximum towing force of the rescue be determined.	number of persons e approved. The boat should then	rescue boat shou type approval cer There should be	towing force of the ld be recorded on the tificate. no damage to the or its supporting		
This information should be used largest size of fully loaded liferaft the tow at a speed of at least 2 knots.				Bollard pull: N (Record on type approval certificate)	
The fitting designated for towing oth secured to a stationary object by a to a means to measure bollard pull. The operated ahead at full speed for a p minutes and the maximum force reco (For rescue boats equipped with bollard pull trials may be carried ou various powers to assess the performance.)	ow rope fitted with e engine should be eriod of at least 2 orded. outboard motors, ut with engines of			Observed damage: Propeller: Pitch: Diameter: Passed Failed Comments/Observations	

Test Procedure       Acceptance Criteria       Significant Test Data         (Note: Run this test after the impact and drop tests in 5.7.7.1.)       The boat should operate satisfactorily throughout the 4-hour operation.       Smallest Engine 1         The rescue boat should be loaded with weights equal to the mass of its equipment and the number of persons for which the rescue boat is to be approved.       Fuel Tank Capacity:	Date:         Time:            Surveyor:         Organization:	Divid/inflated fact was use heads Model:			
(Note: Run this test after the impact and drop tests in 5.7.7.1.)       The boat should operate satisfactorily throughout the 4-hour operation.       Smallest Engine 1         The rescue boat should be loaded with weights equal to the mass of its equipment and the number of persons for which the rescue boat is to be approved.       Fuel Tank Capacity:	Dition Regulations: LSA Code 5.1.1.6,MSC.81(70)1/7.1.5, 1/7.1.6	5.7.5.2 Endurance, speed and fuel consumption Regul			
drop tests in 5.7.7.1.)       4-hour operation.       Make/model:					
weights equal to the mass of its equipment and the number of persons for which the rescue boat is to be approved.       Propeller: Pitch:         The engine should be started and the boat manoeuvred for a period of at least 4 hours, to demonstrate acting for term       Diameter:					
operation.       Image: Construction of the section of t	Propeller:	<ul> <li>weights equal to the mass of its equipment and the number of persons for which the rescue boat is to be approved.</li> <li>The engine should be started and the boat manoeuvred for a period of at least 4 hours to demonstrate satisfactory operation.</li> <li>The rescue boat should be run at a speed of not less than 8 knots with a full complement of persons and equipment and 20 knots with a crew of 3 persons for a period which is sufficient to ascertain the fuel consumption and to establish that the fuel tank has the required capacity. (This determination may be made during the 4- hour period of operation.)</li> <li>For rescue boats equipped with outboard motor, speed and manoeuvring trials should be carried out with engines of various powers to assess the rescue</li> </ul>			

Rigid/inflated fast rescue boats	Ast rescue boats Manufacturer:		ate: urveyor: rganization:	Time:	
5.7.5.3 Engine out of water	Regulations: LSA Code 4.4.6.3, MSC.81(70)1/6.10.5				
Test Procedure	Acceptanc	e Criteria		Significant Test Data	
The engine should be operated for at 5 minutes at idling speed under condi simulating normal storage. Note: If a water flushing device is inte to be used for this purpose, it shou fitted during the test.	nded	aged as a result of this	est. Passed Comments/Obse		
5.7.5.4 Compass test		Regulations: LSA (	ode 5.1.2.2.3, MSC.81(70)	1/6.10.7	
Test Procedure	Acceptanc	e Criteria		Significant Test Data	
It should be determined that the com performance is satisfactory and that not unduly affected by magnetic fit and equipment in the rescue boat.	t it is	ctorily.			

Rigid/inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:			Surveyor	Time: : tion:		
5.7.5.5 Manoeuvrability with	Manoeuvrability with paddles or oars Regula			ns: LSA Code 5.1.2.2.1, MSC.81(70)1/7.1.8			
Test Procedure		Acceptance Crite	eria		Significant Test Data		
It should be demonstrated that the re- boat can be propelled and manoeuvre- its oars or paddles in calm w conditions at a speed of at least 0.5 k over a distance of at least 25 m. w laden with the number of persons wearing lifejackets and immersion s for which it is to be approved.	ed by water knots when s, all	The rescue boat should be capable of paddled and manoeuvred.	f being satisfa	actorily	Distance travelled:m   Time Required:s   Calculated speed:m/s =knots   Lifejacket and immersion suit used during the test: Lifejacket - Inflatable/Inherently   Buoyant		

				1			
	Manu	lanufacturer:			Date: Time:		
Rigid/inflated fast rescue boats		del: /Serial Number:			r:		
	LOUS			Organiza	ation:		
5.7.5.6 Heavy weather/seas test Regulations: L					SA Code 5.1.3, MSC.81(70)1/7.2.10		
Test Procedure		Acceptanc	e Criteria		Significant Test Data		
To simulate use in heavy weather	r the	The rescue boat should no		xing or			
inflated rescue boat should be fitted		permanent strain nor have lost	more than minimal p	ressure.			
a larger powered engine than is inter					Pressure relief valves open/closed?		
to be fitted and driven hard in a wir force 4 or 5 or equivalent rough wate					Wave height m		
at least 30 minutes.	51 101						
					Wind Speed m/s		
For boats with inboard engines the p							
does not need to be greater than	that				Tube pressure after test:mbar		
intended to be used.					Passed Failed		
					Comments/Observations		
5.7.6.1 Towing test			Regulations: LSA	A Code 4.	4.1.3.2, 4.4.7.7, MSC.81(70)1/6.11.1		
Test Procedure		Acceptanc	e Criteria		Significant Test Data		
It should be demonstrated that the		The rescue boat should not	exhibit unsafe or u	unstable	Passed Failed		
equipped rescue boat, loaded wi		characteristics.					
properly distributed mass equal to mass of the number of persons for w		There should be no damage	to the rescue hor	at or ite			
it is to be approved, can be towed		equipment as a result of this te			Comments/Observations		
speed of not less than 5 knots in							
water and on an even keel using							
rescue boat's painter securing device	э.						

Rigid/inflated fast rescue boats	Model:	del: Surv			Date:          Time:            Surveyor:           Organization:		
5.7.6.2 Painter release test		Regulations: LS	A Code 4.4	.7.7, MSC.81(70)	1/6.11.23		
Test Procedure	Acceptan	ce Criteria			Significant Test	t Data	
It should be demonstrated that the pair release mechanism can release painter on a fully equipped and loa rescue boat that is being towed at a sp of not less than 5 knots in calm water The painter release mechanism shoul tested in several distinct directions of upper hemisphere not obstructed by canopy or other constructions in rescue boat. The directions specifie test 5.7.4.2 should be used if possible	inter The painter should release and to the rescue boat or its equip aded beed to the rescue boat or its equip to the rescue boat or its equip to the	d there should be no		Passed	Fassed Passed Passed Passed Passed Passed Passed	_Failed _Failed _Failed _Failed _Failed _Failed	

Rigid/inflated fast rescue boats	Manufacturer: _ Model: Lot/Serial Numb	Date:            Surveyor:            Organization:		
5.7.7.1 Impact, drop and operation	on after impact a	nd drop test	Regulat	ations: LSA Code 4.4.1.7, MSC.81(70)1/6.4.1, 7.2.2
Test Procedure		Acceptance Criteria		Significant Test Data
.1 For boats launched by fall or equipped rescue boat, includ should be loaded with weight mass of the number of person rescue boat is to be approved. loading should be a weight of in one of each type of seat i lifeboat. The weights should be represent the normal loading boat. (These weights need	ing its engine, s equal to the s for which the Included in this 100 kg loaded nstalled in the e distributed to in the rescue	<ul> <li>The impact and drop tests considered successful if:</li> <li>.1 no damage has been sus would affect the efficient of the rescue boat equipment;</li> <li>.2 the damage caused by and drop tests has not</li> </ul>	stained that functioning and its the impact	Observed Damage: Increased Damage: YES NO its Act Satisfactory Operation: YES NO
300 mm above the seatpar fenders, if required, should be i rescue boat, in a free hanging p be pulled laterally to a position released it will strike a fixed surface at a velocity of 3.5	n.) Skates or in position. The position, should in so that when d rigid vertical m/s. The boat	significantly as a result operational test in 5.7.5.2 .3 machinery and other equination operated to full satisfaction	ult of the c; ipment has on; and	ne Ingress of Water: YES NO as
should be released to impact a vertical surface.	gainst the rigid	.4 no significant ingress of seawater ha		has Weight of heaviest engine tested:
.2 The rescue boat complete				Final Evaluation:
equipment and with a mass e engine and fuel in the position and fuel tank should be dropp from a height of at least 3 n The drops should be from t bow-down, level trim, an stern-down attitudes.	n of its engine ed three times n on to water. the 45-degree nd 45-degree			Passed Failed Comments/Observations
<ul> <li>.3 On completion of these tests the and its equipment should examined.</li> </ul>				

Rigid/inflated fast rescue boats       Manufacturer:         Model:       Lot/Serial Number:		urer:		Surveyor	Time: :: tion:
5.7.7.2 Overload test			<b>Regulations: MS</b>	C.81(70)1/	7.1.4
Test Procedure		Accepta	nce Criteria		Significant Test Data
The rescue boat should be loaded properly distributed load of four times to to represent the equipment and full con- of persons each weighing 82.5 kg for weighing to be approved and suspended for 5 from its bridle or hooks. The weights and distributed in proportion to the loadid boat in its service condition, but the used to represent the persons need placed 300 mm above the seat pan. and bridle or hooks and fastening should be examined after the test the conducted.	he weight mplement which it is 5 minutes should be ng of the e weights d not be The boat g device	The rescue boat and its b should not show any sign:		nanism	Load in boat:kg Comments/Observations
Testing by filling the boat with water s be accepted. This method of loading give the proper distribution of Machinery may be removed in order damage, in which case weights s added to the boat to compensate removal of such machinery. The rescue boat and its bridle of (release mechanism) and fastenin should be examined after the test for a of damage.	does not weight. r to avoid hould be e for the or hooks g device				Passed Failed

Rigid/inflated fast rescue boats	Manufacturer: Model: Lot/Serial Number:			Date: Time: Surveyor: Organization:		
5.7.7.3 Mooring out test (Doe side of inflated tube)	es not apply	/ if waterline is below lower	if waterline is below lower Regulations: LSA Code 5.1.3.3, MSC.81(7			
Test Procedure		Acceptance	Criteria		Significant Test Data	
The rescue boat should be loaded wite equal to the mass of the total me persons for which it is to be approve equipment and moored in a location in a seawater harbour. The rescue boat remain afloat in that location for 30 of pressure may be topped up once a of the manual pump; however, during an period the rescue boat should retain it Each inflatable compartment in the re- should be tested to a pressure equa- times the working pressure. Each relief valve should be made ind compressed air should be used to it inflatable rescue boat and the inflation removed. The test should continue for 30 minutes. The measurement of pressure dro leakage can be started when it he assumed that compartment material completed stretching due to the pressure and achieved equilibrium.	umber of ed and its at sea or pat should days. The day using y 24-hour ts shape. scue boat it to three pressure operative, nflate the on source or at least p due to has been has been	The rescue boat should not so would impair its performance. The pressure should not decr as determined without compe and atmospheric pressure cha be no seam slippage, crackin rescue boat.	ustain any dama ease by more t nsating for temp inges, and there	han 5% perature e should	Compartment 1         Initial Pressure:mbar         Final Pressure:mbar         Calculated Decrease:Percent         Compartment 2         Initial Pressure:mbar         Calculated Decrease:Percent         Compartment 3         Initial Pressure:mbar         Calculated Decrease:Percent         Compartment 3         Initial Pressure:mbar         Calculated Decrease:Percent         Compartment 4         Initial Pressure:mbar         Calculated Decrease:Percent         Compartment 5         Initial Pressure:mbar         Calculated Decrease:Percent         Percent 5         Initial Pressure:mbar         Calculated Decrease:Percent         Passed Failed	
					Comments/Observations	

	Manufacturer: Model: Lot/Serial Number:	Surveyor:
5.7.8.1 Inflation chamber char	acteristics tests	Regulations: LSA Code 1.2.2, MSC.81(70)1/7.2.14
Test Procedure	Acceptance Criter	ia Significant Test Data
The inflatable compartment materiused to construct the rescue boat shobe tested for the following characteristic.1tensile strength.2tear strength.3heat resistance.4cold resistance.5heat ageing.6weathering.7flex cracking.8abrasion.9coating adhesion.10oil resistance.11elongation at break.12piercing strength.13ozone resistance.14gas permeability.15seam strength.16ultraviolet light resistance	uld with ISO 15372:2000.	ould comply       .1 tensile strengthN         .2 tear strengthN         .3 heat resistance – Blocking         .4 cold resistance – Cracking         .5 heat ageing% retained strength N/50 mm width         .6 weathering% retained strength N/50 mm width         .7 flex cracking – Cracking or deterioration         .8 abrasionmg/rev.;         Base fabric not visible         .9 coating adhesionN/50 mm width         .10 oil resistance – Tackiness or other deterioration         .11 elongation at break%         .12 piercing strength         .13 ozone resistance - Visible cracking         .14 gas permeability



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> MSC.1/Circ.1632 14 December 2020

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## REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (LAUNCHING AND EMBARKATION APPLIANCES)

1 The Maritime Safety Committee, at its 102nd session (4 to 11 November 2020), approved the *Revised standardized life-saving appliance evaluation and test report forms*.

The original forms, as set forth in the *Standardized life-saving appliance evaluation and test report forms* (MSC/Circ.980) and its addenda, were developed on the basis of the requirements of the International Life-Saving Appliance (LSA) Code and the *Revised recommendation on testing of life-saving appliances* (resolution MSC.81(70)) by the Maritime Safety Committee, at its seventy-third session in 2001, with a view to providing guidance on how to conduct tests, record test data and verify tests. The Committee has since adopted seven amendments to the LSA Code and eight amendments to resolution MSC.81(70). These amendments have been incorporated in the original forms which, due to their volume, are now presented in six separate circulars, i.e. MSC.1/Circ.1628, MSC.1/Circ.1629, MSC.1/Circ.1630, MSC.1/Circ.1631, MSC.1/Circ.1632 and MSC.1/Circ.1633, pertaining to the equipment addressed in chapters II to VII of the LSA Code, respectively. The forms annexed to this circular apply to the equipment addressed in chapter VI of the LSA Code, i.e. launching and embarkation appliances (launching and embarkation appliances; marine evacuation systems; and means of rescue).

3 The use of the revised forms will continue to be of benefit to Administrations and other parties, such as manufacturers, test facilities, owners and surveyors, and will be a major help in mutually accepting the type approval of appliances approved by other Administrations.

4 Member Governments are invited to bring the annexed, revised forms to the attention of all parties concerned with approving, manufacturing and testing life-saving appliances and to encourage them to use the forms.

5 This circular supersedes MSC/Circ.980.

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### ANNEX

### REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (LAUNCHING AND EMBARKATION APPLIANCES)

### INTRODUCTION

### Reference

These standardized life-saving appliance evaluation and test report forms have been revised on the basis of the requirements of the International Life-Saving Appliance (LSA) Code, as amended through resolution MSC.425(98), *the Revised recommendation on testing of life-saving appliances* (resolution MSC.81(70)), as amended through resolution MSC.427(98), and the *Recommendation on means of rescue on ro-ro passenger ships* (MSC/Circ.810).

#### Status

In general, the tests described in the Revised Recommendation (resolution MSC.81(70)) constitute the test procedures and the LSA Code sets the acceptance criteria. The evaluation and test report forms are guidelines on how to conduct tests, record test data and verify tests. These forms are not intended to change the standards given in the LSA Code and the Revised Recommendation, as amended. In the case of inconsistency between the forms and the LSA Code or the Revised Recommendation, the text of the Code/resolution should prevail over that of the forms.

#### Layout

Each Administration may use electronically distributed evaluation and test report forms as the basis for customising the layout to reflect the profile of the approving body, without changing the original contents.

#### Internal references

The evaluation and test report forms should be stand-alone documents. Therefore, all internal references in the original text from the LSA Code or the Revised Recommendation have been replaced by either the full-length text or a reference to other relevant evaluation and test report forms. However, in some of the forms, external references are kept for updating purposes.

#### **Documentation of tests**

For approval purposes, all detailed records of test data are to be enclosed with the report forms.

### Verification of tests

Each test is to be verified passed or failed by an Administration representative's initials (e.g. recognized organization or surveyor) and date of testing. Each page is to be verified on completion by the Administration representative's signature and its date of completion.

### Reporting of type approval

To facilitate unified reporting procedures, the completed evaluation and test report forms are to be seen as a documented verification of required type approval tests for each type of equipment. When documentation of type approval is required by a third party, the verified evaluation and test report forms should constitute the complete documentation of the type approval together with the relevant approval certificates.

### REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (LAUNCHING AND EMBARKATION APPLIANCES)

# TABLE OF CONTENTS

LSA Code chapter VI (Launching and embarkation appliances) – Equipment:

- 6.1 Launching and embarkation appliances
  - 6.1.1 Launching and recovery appliances
  - 6.1.2 Free-fall launching and recovery appliances
  - 6.1.3 Davit-launched liferaft automatic release hooks
  - 6.1.4 Launching and recovery appliances for fast rescue boats
- 6.2 Marine evacuation systems
- 6.3 Means of rescue

## 6 LAUNCHING AND EMBARKATION APPLIANCES

## 6.1 LAUNCHING AND EMBARKATION APPLIANCES

## 6.1.1 LAUNCHING AND RECOVERY APPLIANCES

## **EVALUATION AND TEST REPORT**

- 6.1.1.1 Submitted drawings, reports and documents
- 6.1.1.2 Quality assurance
- 6.1.1.3 Visual inspection
- 6.1.1.4 Static proof load test
- 6.1.1.5 Operational load test
- 6.1.1.6 Turning in test
- 6.1.1.7 Winch brake test
- 6.1.1.8 Rescue boat launching appliance recovery speed test
- 6.1.1.9 Hand operation test

## 6.1.1 LAUNCHING AND RECOVERY APPLIANCES

## **EVALUATION AND TEST REPORT**

Manufacturer	
System type	
Serial Number	
Maximum Working Load	
Maximum Turning Moment	
Winch type	
Serial number	
Date	
Place	
Name and signature of surveyor	
Approval Organization	

Launching and recovery appliances Manu Lot/S		Manufacturer: Model: Lot/Serial Number:				
6.1.1.1 Submitted drawi	ngs, reports	and docume	nts			
Submitted drawings and	documents					
Drawing No.	Revision N	lo. & date	Title of drawing			Status
Submitted reports and de						
Report/Document No.	Revision N	lo. & date	Title of report/document			Status
			Maintenance Manual			
			Operations Manual			

Launching and recovery appliances	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:
6.1.1.2 Quality assurance		Regulations: MSC.81(70) 2/1	1.1 and 1.2	
Except where all appliances of a particula chapter III of the International Conventio at Sea, 1974, as amended, or the Int Appliance (LSA) Code, to be inspected, Administration should make rand manufacturers to ensure that the of appliances and the materials used compl of the approved prototype life-saving app Manufacturers should be required to ins procedure to ensure that life-saving applii the same standard as the prototype approved by the Administration and to production tests carried out in a Administration's instructions.	n for the Safety of Life ernational Life-Saving representatives of the dom inspection of quality of life-saving y with the specification liance. Stitute a quality control ances are produced to life-saving appliance keep records of any	Quality assurance   Standard Used:   Quality assurance Procedure:   Quality assurance Manual:   Description of System:		
		Quality assurance System acc Yes/No Comments/Observations	eptable	

	acturer:		Date:	Time:	
Launching and recovery appliances		: rial Number:		Organization:	
6.1.1.3 Visual inspection			Regulations:	LSA Code 6.1;	SOLAS III, 16
Test Procedure		Acceptanc	e Criteria		Significant Test Data
Confirm that installation has manufactured to approved drawings.	been	Amount of maintenance should	be restricted to	a minimum.	Passed/Failed
Visually inspect the appliance. Conduct measurements and verify clearances as		Parts which require maintenance should be easily accessible and easily maintained.			Passed/Failed
required.		Effectiveness under icing conditions.		Passed/Failed	
		The launching mechanism should be so arranged that it may be actuated by one person from a position within the survival craft or rescue boat.		Passed/Failed	
Remote control		Manual brakes should be so arranged that the brake is always applied, unless the operator or a mechanism activated by operator holds the brake control in the "off" position.		Туре:	
Limit switches		Where davit arms are recovered by power, safety devices should be fitted which will automatically cut off the power before the davit arms reach the stops in order to prevent over-stressing the falls or davits, unless the motor is designed to prevent such over-stressing.		Туре:	
			ere should be provisions for hanging-off the lifeboat to free release gear for maintenance.		Passed/Failed continued

Launching and recovery appliances	Manufacturer: Model: Lot/Serial Number:	Date: Surveyor: Organizat	Time: on:
6.1.1.3 Visual inspection (continued)		Regulations: LSA Code	e 6.1.1.6; SOLAS III, 16
Test Procedure	Acceptance	Criteria	Significant Test Data
	Structural members and all blo fastenings and all other fittings launching equipment should be safety on the basis of the maxin and the ultimate strengths o construction. A minimum factor applied to all structural member components and a minimum fac applied to falls, suspension chain	s used in connection with designed with a factor of num working load assigned f the materials used for of safety of 4.5 should b s including winch structura tor of safety of 6 should b	h of Comments/Observations d or e al

Launching and recovery appliances	Manufacturer: Model: Lot/Serial Number:			Surveyor:	Time:	
6.1.1.4 Static proof load test			Regulations: L	SA Code 6.1.1.	5 - 6.1.1.6; MSC.81(70)	1/8.1.1
Test Procedure		Acceptan	ce Criteria		Significant	Test Data
For lifeboats other than free-fall lifeb davits and launching appliances, ex- winches, should be subjected to a static load of 2.2 times their maximum working With the load at the full outboard position load should be swung through an a approximately 10° to each side of vertic the intended fore and aft plane. The test should be done first in the up position, followed by tests simulatir shipboard condition of list of 20° both int and outboard.	xcept proof load. n, the rc of cal in pright	The launching appliance an winches should be of sufficier proof load on test of not less working load. There should be no evidenc other damage as a result of th	nt strength to with s than 2.2 times t e of significant de	stand a static he maximum	MWL: Test load (2.2 x MWL There should be no e deformation or other Passed/Failed Upright 20 <sup>0</sup> inboard list 20 <sup>0</sup> outboard list	.): kN vidence of significant

Launching and recovery appliances	Manufacturer: Model: Lot/Serial Number:			Date: Surveyor: Organization:	Time:
6.1.1.5 Operational load test	-		Regulations: LSA Code 6.1.1.1 - 6.1.1.3; MSC.81(70) 1 /8.1.2		
Test Procedure		Acceptan	ce Criteria		Significant Test Data
For lifeboats other than free-fall lifeboat mass equal to 1.1 times the maximum wo load should be suspended from the I points with the launching appliance in upright position. The load should be moved from the inboard to the full outboard position using means of operation that is used on the sh The test should be repeated with the launce appliance positioned to simulate a comb 20° inboard list and 10° trim. All the tests should be repeated with a r equal to that of a fully equipped lifet without persons, or the lightest survival intended for the use with the davit to er the satisfactory functioning of the davit u very light load conditions.	e full g the nip. ching bined mass boat, craft nsure	The appliance should success the conditions, and there should deformation or other damage Each launching appliance too recovery gear should be so a survival craft or rescue boat i against a trim of up to 10 <sup>0</sup> and When boarded, as required by full complement of persons; an Without persons in the surviva	IId be no evidence as a result of the to gether with all its rranged that the fu t serves can be sa a list of up to 20 <sup>0</sup> regulation III/23 o nd	of significant ests. lowering and ully equipped afely lowered either way: or III/33, by its	<pre>weight of the lightest lifeboat / rescue boat *** intended for use: LWL:</pre>

Launching and recovery appliances	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:		
6.1.1.5 Operational load test (continu	ed)	Regulations: LSA Code 6.1		.1.1 - 6.1.1.3; MSC.81(70) 1 /8.1.2		
Test Procedure		Acceptance Criteria			Test Procedure	
Note: Notwithstanding the 10 <sup>o</sup> trim and 20 requirements, lifeboat launching applia for oil tankers, chemical tankers and carriers with a final angle of heel greater 20 <sup>o</sup> should be capable of operating at the angle of heel on the lower side of the taking into consideration the final dam waterline of the ship.	<sup>0</sup> list than grav nces of the sh gas rescue b than condition ship,	ing appliance should no vity or stored mechanica hip's power supplies to boat it serves in the and also in the light co	l power which is launch the sur fully loaded a	independent rvival craft or	Stored power Passed/Failed Start pressure: k Pa Min. pressure: k Pa Pressure drop after one movement: k Pa Time from inboard to outboard: sec ** if applicable	

Launching and recovery appliances	Manufacturer: Model: Lot/Serial Number:			Date: Time: Surveyor: Organization:	
6.1.1.6 Turning in test	1		Regulations: L	SA Code 6.1.1.	3; MSC.81(70) 1 /8.1.3
Test Procedure		Acceptan	ce Criteria		Significant Test Data
A mass equal to 1.1 times the maxi working load should be suspended fror lifting points with the launching applian the full upright position. The load shou moved from the full inboard position to th outboard using the means of operation to used on the ship.	m the nce in ıld be he full	The appliance should succ designed hoisting load from position without causing per damage.	the outboard to	the inboard	maximum designed hoisting load: kN Does the launching appliance successfully move the load from outboard to inboard? Passed/Failed Does the launching appliance show any evidence of significant deformation or other damage as a result of this test? Passed/Failed

Model		Manufacturer: Model:			Date: Surveyor:		
		erial Number:		Organization:			
6.1.1.7 Winch brake test		Regulations: LSA Code 6.1.2.5; MSC.81(70) 1 /8.1.4				/8.1.4	
Test Procedure		Acceptance Criteria		Significant Test Data			
Winch drums should be wound to	the	The test load should drop	no more	weight of the lightest lifeboat/rescue boat*			oat*
maximum number of turns permitted a	and a	than 1 m when the brake is		:			
static test load of 1.5 times the maxi		(except that the stopping		MWL: kN			
working load should be applied and he		may be exceeded if an	exposed				
the brake. This load should then be low		brake is wetted).		Test 1	:		
for at least one complete revolution of				<u> </u>			
barrel shaft. A test load of 1.1 times				Static	Static test load (1.5 x MWL): kN		(N
maximum working load should ther lowered at maximum lowering speed thr				Deeg	the brake test hale	d the test load	(1 Ex M/M/L)2
a distance of at least 3 m and stoppe					Does the brake test hold the test load (1.5x MWL)? pass/fail		
applying the hand brake sharply.	Ju by			pass/laii			
applying the hand brane charply.				MWM	:	kNm	
This test should be repeated a numb	er of			Drum	diam	mm	
times.				Wire d	liam.	mm	
				Numb	er of turns		
If the winch design incorporates an exp		The launching appliance		Max. I	owering speed	m/s	
brake, one of these tests should be carrie		successfully lower a mass					
with the brake wetted but in this case	e the	that of a fully equipped		Test 2			
stopping distance may be exceeded.		without persons, or the light		_			
The various tests should achieve a cumu	lativo	(or rescue boat) intended for	use with		nic Test load (1,1 :		
lowering distance of at least 150 m.	lauve	the winch.			1 metre?	aller > 3m with	h max lowering speed Stop
					d/Failed		
Operation of the winch with a load of a	mass			rasse			
equal to that of a fully equipped life				* dele	te as appropriate	continue	ed
without persons, or the lightest survival				2.510			
intended for use with the winch should al	so be						
demonstrated.							

Launching and recovery appliances	Manufacturer: Model: Lot/Serial Number:	Surve	Date: Time: Surveyor:			
	Lot/Serial Number:	Organ	Organization:			
6.1.1.7 Winch brake test (continued)		Regulations: LSA Code 6.1.2.5; MSC.81(70) 1 /8.1.4				
Test Procedure	Acceptance	Criteria	Significant Test Data			
Following completion of these test (and 6 6.1.1.9), the winch should be strippe inspection.	6.1.1.8, Inspection of the stripped v	winch should reveal no	1 <sup>st</sup> stop > 3m 2 <sup>nd</sup> stop: m 3 <sup>rd</sup> stop: m 4 <sup>th</sup> stop: m 5 <sup>th</sup> stop: m Total lowering distance > 150 m Passed/ Failed Test 3 ( if applicable) Winch design incorporates an exposed brake? Yes / No Wet stopping distance m Passed/ Failed Test 4 Test load (LWL) kN Lowering test with LWL satisfactory? Passed/ Failed Does the inspection of the stripped winch reveal any significant damage or undue wear? Passed/ Failed			
			Remarks:			

Launching and recovery appliances	Manufacturer: Model: Lot/Serial Number:		Date:          Time:            Surveyor:          Organization:					
6.1.1.8 Rescue boat launching appliance recovery speed test Regulations: LSA Code 6.1.1.9; MSC.81(70) 1 /8.1.5								
Test Procedure		Acceptance Criteria		Significant Test Data				
It should be demonstrated that a winch intended for use with a rescue boat is capable of recovering the rescue boat with the number		Each rescue boat launching appliance should powered winch motor capable of raising the re the water with its full rescue boat complement equipment at a rate of not less than 0.3 m/s.	Hoisting load: measured recovering speed of the boat: m/s					
of persons for which it is to be approved and its equipment or an equivalent mass at a rate of not less than 0.3 m/s.		equipment at a rate of not less than 0.5 m/s.	11/5					
6.1.1.9 Hand operation test		Regulations: L	SA Code 6.1.2.6	; MSC.81(70) 1 /8.1.6				
Test Procedure		Acceptance Criteria		Significant Test Data				
The hand operation of the winch should be demonstrated.		An efficient hand gear should be provided for recovery of each survival craft and rescue boat. Hand gear handles or wheels should not be rotated by moving parts of the winch when the		Hoisting load: Test 1:				
If the winch is designed for quick recovery by hand with no load, this should be demonstrated with a load of 1.5 times the mass of the empty lifting arrangements.		survival craft or rescue boat is being lowered or hoisted by power.	when it is being	Test load (1 x hoisting load): winch can be operated satisfactorily by hand? Passed/ Failed				
				Arrangement provided for protection against moving parts and rotating handles? Passed/ Failed Type: Test 2: Only for quick recovery Test load (1.5 x weight of empty lifting arrangement): kN				
				Is quick recovery satisfactory? Passed/ Failed				

## 6.1.2 FREE-FALL LAUNCHING AND RECOVERY APPLIANCES EVALUATION AND TEST REPORT

- 6.1.2.1 Submitted drawings, reports and documents
- 6.1.2.2 Quality assurance
- 6.1.2.3 Visual inspection
- 6.1.2.4 Static proof load test
- 6.1.2.5 Operational load test (secondary means of launching)
- 6.1.2.6 Turning in test
- 6.1.2.7 Winch brake test

#### 6.1.2 FREE-FALL LAUNCHING AND RECOVERY APPLIANCES

#### **EVALUATION AND TEST REPORT**

Manufacturer	
System type Serial number	
Maximum Working Load	
Maximum Turning Moment	
Winch type	
Serial number	
Date	
Place	
Name and signature of surveyor	
Approval Organization	

Free-fall launching and recovery appliances       Manufacturer: Model:         Lot/Serial Num		Manufacturer: Model: Lot/Serial Number:		Date: Time: Surveyor: Organization:		
6.1.2.1 Submitted drawi			nts			
Submitted drawings and	document					
Drawing No.	Revisio	n No. & date	Title of drawing			Status
Submitted reports and de			1			_
Report/Document No.	Revisio	n No. & date	Title of report/document			Status
			Maintenance Manual			
			Operations Manual			

Free fell lounghing and recovery	Manufacturer:		Date:	Time:			
Free-fall launching and recovery appliances	Model: Lot/Serial Number:	· · · · · · · · · · · · · · · · · · ·	Surveyor:				
appliances		Organization:					
6.1.2.2 Quality assurance		Regulations: MSC.81(70) 2/1.1 and 1.2					
Except where all appliances of a particular		Quality assurance					
of the International Convention for the amended, or the International Life-Sa inspected, representatives of the Adr	ving Appliance (LSA) Code, to be	Standard Used:					
inspection of manufacturers to ensu							
appliances and the materials used co approved prototype life-saving applian	mply with the specification of the	Quality assurance F	Procedure:				
Manufacturers should be required to ir to ensure that life-saving appliances a		Quality assurance N	Manual:				
as the prototype life-saving appliances a							
to keep records of any production tests Administration's instructions.		Description of System:					
		Quality assurance S	System acceptable				
		Yes/No					
		Comments/Observa	ations				

Free-fall launching and recovery appliances	Model:	al Number:		Date: Surveyor: Organization:	Time:	
6.1.2.3 Visual inspection		F	Regulations:	ulations: LSA Code 6.1.1.6, 6.1.4		
Test Procedure		Acceptance			Significant Test Data	
Confirm that installation has	been	Amount of maintenance to be re		nimum.	Passed/Failed	
manufactured to approved drawings.		Parts which require maintenanc	e should be e	easily accessible	Passed/Failed	
		and easily maintained.			Passed/Failed	
Visually inspect the launching ap	pliance.	Effectiveness under icing conditi	ons.		Туре	
Conduct measurements and verify c	earance	Where davit arms are recover	ed by power	, safety devices		
as required.		should be fitted which will aut				
		before the davit arms reach the			Passed/Failed	
		over-stressing the falls or davits	, unless the m	notor is designed		
		to prevent such over-stressing.			Туре	
		Arrangements for simulated lau				
		strength to withstand a static pro		t of not less than	Comments/Observations	
		2.2 times the maximum working				
		Structural members and all blocks, falls, pad eyes, links,				
Limit switches		fastenings and all other fitting				
		launching equipment should be o				
		on the basis of the maximum w				
Arrangements for simulated lounship		ultimate strengths of the mater				
Arrangements for simulated launching	)	minimum factor of safety of 4 structural members including wir				
		a minimum factor of safety of				
		suspension chains, links and blo		applied to fails,		

Free-fall launching and recovery	Model:	:turer:	Date: Surveyor: _	Time:	
appliances	Lot/Seria	al Number:	Organizatio	on:	
6.1.2.4 Static proof load test			Regulations: LSA Code 6.1.1.5 - 6.1.1.6; MSC.81(70) 1 /8.1.1		
Test Procedure		Acceptance Criteria		Significant Test Data	
Test Procedure The launching appliances for low free-fall lifeboat by falls, except v should be subjected to a static proo 2.2 times the maximum working load a outboard position. The launching ramp and its connection release mechanism should also be s to a static proof load of 2.2 times the m working load.	winches, f load of at the full on to the ubjected	Acceptance Criteria The launching appliance and its attachme winches should be of sufficient strength t static proof load on test of not less than maximum working load. There should be no evidence of significar or other damage as a result of this test.	o withstand a 2.2 times the	Significant Test Data         MWL	

E fall have block and a second		r:		Date:	Time:
Free-fall launching and recovery appliances	Model: Lot/Serial Nu	umber:	· · · · · · · · · · · · · · · · · · ·	Organiza	r:ation:
6.1.2.5 Operational load test (seco	ondary means	of launching)	Regulations:	LSA Code	e 6.1.4.7; MSC.81(70) 1 /8.1.2
Test Procedure			ce Criteria		Significant Test Data
A mass equal to 1.1 times the m working load should be suspended f lifting points. The load should be moved from inboard to the full outboard position u means of operation that is to be used ship. The test should be repeated with the la appliance positioned to simulate a co 5 degree list either way and 2 degree down trim. The test should be repeated with a man to that of the fully equipped lifeboat, persons, to ensure the satisfactory fun of the appliance under light load cond	from the ur be the full using the d on the aunching ombined ees bow uss equal , without nctioning	he appliance should sunder all of the specified c e no evidence of signifi amage as a result of the f	ccessfully lower the onditions and there cant deformation of the cant deformat	e should	MWL:
					Does the appliance successfully lower the load under these conditions without evidence of significant deformation or damage? Passed/Failed
					Comments/Observations

Free-fall launching and recovery appliances	Model:	l Number:	Sur	rveyor:	Time:
6.1.2.6 Turning in test		Regulatio	ns: LSA	Code 6.1.1.3;	MSC.81(70) 1 /8.1.3
Test Procedure		Acceptance Criteria			Significant Test Data
A mass equal to 1.1 times the m working load should be suspended f lifting points with the appliance in upright position, the maximum design load should be moved from the full out the full inboard position using the m operation that is used on the ship.	rom the the full hoisting board to	The appliance should successfully m designed hoisting load from the outbo position without causing permanent de damage.	ard to t	the inboard	<ul> <li>Hoisting load:</li></ul>

Free-fall launching and recovery appliances	Manufac Model: _ Lot/Seria	turer:al Number:		Surveyor:	Date: Time: Surveyor: Drganization:	
6.1.2.7 Winch brake test					; MSC.81(70) 1 /8.1.4	
		Acceptar				st Data
Test Procedure Winch drums should be wound maximum number of turns permitte static test load of 1.5 times the m working load should be applied and the brake. This load should then be for at least one complete revolution barrel shaft. A test load of 1.1 tin maximum working load should t lowered at maximum lowering speed a distance of at least 3 m and sto applying the hand brake sharply. This test should be repeated a nut times. If the winch design incorporates an brake, one of these tests should be ca with the brake wetted but in this of stopping distance may be exceeded. The various tests should achieve a cu lowering distance of at least 150 m.	d and a haximum held by lowered n of the mes the hen be through pped by mber of exposed rried out case the	Acceptar The test load should drop no is applied (except that the stop if an exposed brake is wetted The launching appliance sho equal to that of a fully equipp	oping distance m ). buld successfull	ay be exceeded	Significant Te Weight of the lightest life MWL : Test 1: Static test load (1.5 x MV Does the brake test hr (1.5x MWL)? Passed MWM: Drum diam Wire diam. Number of turns Max. lowering speed Test 2 Dynamic Test load (1.1 x Brake test carried out aff lowering speed Stop within 1 metre?	boat / rescue boat kN WL):kN old the test load l/ Failed kNm mm mm mm x MWL): kN
Operation of the winch with a load of equal to that of a fully equipped without persons, or the lightest surv intended for use with the winch should demonstrated.	lifeboat, val craft	the lightest craft (or rescue l winch.	boat) intended f	or use with the	Comments/Observations * delete as appropriate	

Free-fall launching and recovery appliances	Model:	turer:	Date: Surveyor: Organization:	Time:
6.1.2.7 Winch brake test (continue	ed)	Regulations: I	LSA Code 6.1.2.5;	MSC.81(70) 1 /8.1.4
Test Procedure	•	Acceptance Criteria		Significant Test Data
Following completion of these test (ar as applicable), the winch should be st inspection.		Inspection of the stripped winch should reve damage or undue wear.	eal no significant	$1^{st}$ stop > 3m $2^{nd}$ stop: m $3^{rd}$ stop: m $4^{th}$ stop: m $5^{th}$ stop: m Total lowering distance > 150 m Passed/ Failed Test 3 (if applicable) Winch design incorporates an exposed brake? Yes/No Wet stopping distance m Passed/ Failed Test 4 Test 10ad (LWL) kN Lowering test with LWL satisfactory? Passed/ Failed Does the inspection of the stripped winch reveal any significant damage or undue wear? Passed/Failed Comments/Observations

# 6.13 DAVIT-LAUNCHED LIFERAFT AUTOMATIC RELEASE HOOKS EVALUATION AND TEST REPORT

- 6.1.3.1 Submitted drawings, reports and documents
- 6.1.3.2 Quality assurance
- 6.1.3.3 Visual inspection
- 6.1.3.4 Corrosion resistance test
- 6.1.3.5 Maximum load for automatic release test
- 6.1.3.6 Dynamic forces release tests
- 6.1.3.7 Actuating force test
- 6.1.3.8 Securing force test
- 6.1.3.9 Manual release force test
- 6.1.3.10 Holding test, loaded
- 6.1.3.11 Holding test, light
- 6.1.3.12 Inertia test
- 6.1.3.13 Automatic release test
- 6.1.3.14 Automatic release test overloaded
- 6.1.3.15 Endurance test
- 6.1.3.16 Compatibility of liferaft and release hook test
- 6.1.3.17 Proof load test
- 6.1.3.18 Inadvertent release tests
- 6.1.3.19 Icing test
- 6.1.3.20 Impact test

#### 6.1.3 DAVIT-LAUNCHED LIFERAFT AUTOMATIC RELEASE HOOKS

#### **EVALUATION AND TEST REPORT**

Manufacturer	
System Type	
Serial Number	
Maximum Working Load	
Maximum Turning Moment	
Winch type	
Serial Number	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Davit-launched liferaft automatic       Manufacturer         release hooks       Model:		Manufacturer: Model: Lot/Serial Number:		_ Date: Time: _ Surveyor: _ Organization:		
6.1.3.1 Submitted drawi			ents			Γ
Submitted drawings and						
Drawing No.	Revisio	n No. & date	Title of drawing			Status
Submitted reports and de						
Report/Document No.	Revisio	n No. & date	Title of report/document			Status
			Maintenance Manual			
			Operations Manual			

	Manufacturer:	Date: Time:				
Davit-launched liferaft automatic	Model:	· · · · · · · · · · · · · · · · · · ·	Surveyor:			
release hooks	Model: Lot/Serial Number:	• • • • • • • • • • • • • • • • • • • •	Organization:			
6.1.3.2 Quality assurance	·	Regulations: MSC	.81(70) 2/1.2 MSC.81	(70) 2/1.1, 1.2		
Except where all appliances of a partie		Quality assurance				
III of the International Convention for t						
amended or the international Life-Sav		Standard Used:				
inspected, representatives of the Adr						
inspections of manufacturers to ensu						
appliances and materials used com		Quality assurance	Procedure:			
approved prototype life-saving applian	ce.					
Manufacturers should be required to ir	stitute a quality control procedure	Quality assurance	Manual <sup>.</sup>			
to ensure that life-saving appliances a						
as the prototype life-saving appliance a						
to keep records of any production tests		Description of System:				
Administration's instructions.						
		Quality and waters eccentable				
		Quality assurance System acceptable				
		Yes/No				
		Comments/Observ	ations			

Davit-launched liferaft automatic release hooks	Model:	urer: Number:	Date: Surveyor: Organization:	Time:
6.1.3.3 Visual inspection		Regulations: MS	C.81(70) 1/8.2.2	
Test Procedure		Acceptance Criteria		Significant Test Data
The hooks complete in every respect s given a visual and dimensional exam verify that they conform to the drawings and specifications.	ination to	The hooks must conform with the manufac and specifications.	turer's drawings	Hook 1 PassedFailed Hook 2 PassedFailed Comments/Observations
6.1.3.4 Corrosion Resistance Test		Regulations: MS	C.81(70) 1/8.2.3, 8.	2.4
Test Procedure		Acceptance Criteria		Significant Test Data
Two hooks should be submitted to a resistance test which should be made mist chamber in accordance with the ISO 9227:2006 – Corrosion tests in atmospheres – Salt spray tests for 1,0 or equivalent national standard. Both hooks should be subjected five the tests required by 6.1.3.5 to 6.1.3.2 6.1.3.16.	e in a salt standard a artificial 000 hours times to	The hook should pass the test without failure	2.	Any corrosion effects and other damage to the hooks should be recorded: Hook 1: Hook 2:

Davit-launched liferaft automatic release hooks	Model:	ırer: Number:			Time:
6.1.3.5 Maximum Load for Automa	tic Release	Test Regu	ulations: MSC	C.81(70) 1/8.2.5	
Test Procedure		Acceptanc			Significant Test Data
The maximum load on the hook to a automatic release should be determ follows:		The minimum allowable "F" i release which should not be les 30 kg.			Hook 1         Hook 2           Test 1            Test 2
.1 the hook should be loaded with of 200 kg and the actuating me set;		Record the maximum load "F" (	5 tests).		Test 3          Test 4          Test 5
.2 the load should be reduced gra stages until the hook automatically, but at not more the to establish load "F"; and	releases				Hook 1: Passed Failed Hook 2: Passed Failed Comments/Observations
.3 the load "F" should be measu recorded.	ired and				
The test should be repeated five tin each hook.	nes with				

Davit-launched liferaft automatic release hooks	Model:	r:	Date: Time: Surveyor: Organization:		
6.1.3.6 Dynamic Forces Release To	ests		GC.81(70) 1/8.2.6 –7		
Test Procedure		Acceptance Criteria	Significant Test Data		
The load limit for automatic release loads, should be determined using b methods: .1 The hook should be loaded with	oth the following		Record the number of cycles before hook released or test was discontinued (5 tests)		
and the actuating mechanism should then be subjected to between 30 kg and 200 kg using ±0.2 Hz. The hook should not re cycles. The number of cycles a opened or whether the test wa 300 cycles should be recorded.	n set. The hook o cyclic loading g a frequency of 1 elease before 300 at which the hook s discontinued at	.1 The hook should not release cyclic loads.	before 300       Hook 1       Hook 2         Test 1		
.2 The hook should then be reload the actuating mechanism set. Th subjected to a cyclic loading, t which is +200 kg, and the lowe using a frequency of 1 ±0.2 H release should operate withir number of cycles at which the whether the test was disconti cycles should be recorded. "F1" the minimum load on the ho automatic release, as paragraph 6.1.3.5 reduced by 2	the hook should be the upper limit of er limit being "F1" z. The automatic n 3 cycles. The hook opened or nued after three ' is to be taken as book to allow for established in	.2 The automatic release shou within three cycles.	Comments/Observations		

Davit-launched liferaft automatic release hooks	Model:	urer: Number:		Surveyo Organiz	Time: or: ation:
6.1.3.7 Actuating force test				LSA Coo	de 4.1.1.2; MSC.81(70) 1/8.2.11
Test Procedure		Acceptance C			Significant Test Data
should be determined in the following way: 15 red .1 The hook should be loaded to 0%, 25%, red		The actuating force should in all tests be between 150 N and 250 N if lanyard operated, or the action required to set the actuating mechanism should be readily performed by a single person without difficulty.		Record actuating force (5 tests) when loaded to:         Hook 1       Hook 2         0%	
6.1.3.8 Securing force test			Regulations:	MSC.81(	70) 1/8.2.12
Test Procedure		Acceptance C		•	Significant Test Data
The securing force should be determi an unloaded hook. The securing force be recorded.		The securing force should be l measured securing force (five		Record	Hook 1       Hook 2         Test 1

Davit-launched liferaft automatic release hooks	Model:	Number:		Time:
6.1.3.9 Manual Release Force Test		Regulations:	MSC.81(70) 1/8.2	2.13
Test Procedure		Acceptance Criteria		Significant Test Data
<ul> <li>The manual release force sho determined as follows:</li> <li>.1 the hook should be loaded with of 150 kg;</li> <li>.2 the actuating mechanism should for automatic release;</li> <li>.3 the force required to release the manually should be establish recorded; and</li> <li>.4 the manual release force for a 150 kg on the hook should be 600 N but not more than 70 lanyard-operated designs. Alt designs should be demonstrate satisfaction of the Participating A to provide adequate protection inadvertent release under load.</li> </ul>	a mass d be set he hook hed and n load of at least 0 N for ternative ed to the Authority	For a load of 150 kg, the manual release for least 600N but not more than 700 N for la designs. Other designs should provide adeq from inadvertent release under load. Rec release force (five tests).	nyard operated uate protection	Hook 1       Hook 2         Test 1

Davit-launched liferaft automatic release hooks	Model:	urer: Number:		Date: Surveyor: Organization:		e:
6.1.3.10 Holding Test, loaded			Regulations	: MSC.81(70) 1/8.2	2.10	
Test Procedure		Acceptanc	e Criteria		Signific	ant Test Data
The automatic release hook should be to a test load of 1.1 times its maximum load using an approved launching a The load should be lowered at m lowering speed through a distance of 3 m and stopped by applying the har sharply. This test should be conducted once with the release mechanism automatic release, and again w mechanism set to closed.	working opliance. naximum f at least nd break ed twice, set for	The release mechanism should	l not open in e	either test.	Hook 1 Test 1 Test 2 Test 3 Test 4 Test 5 Hook 1: Passed_ Hook 2: Passed_ Comments/Obser	Failed Failed Failed
6.1.3.11 Holding test, light			Regulations	: MSC.81(70) 1/8.2	2.14	
Test Procedure		Acceptanc			Signific	ant Test Data
The automatic release hook should be to a test load equal to the mass of the liferaft for which the automatic release to be approved, with the actuating me in the locked position (i.e. not set for a release). The load should then be raise it is clear of the ground. The mechanism should then be set to a release.	e lightest e hook is echanism utomatic ed so that actuating	This should be easily accompl should not release the load.	ished by a siı	ngle person and	Hook 1 Test 1 Test 2 Test 3 Test 4 Test 5 Hook 1: Passed_ Hook 2: Passed_ Comments/Obser	Failed Failed

Davit-launched liferaft automatic release hooks	Model:	urer:		Date:            Surveyor:            Organization:
6.1.3.12 Inertia test		Regulations:	MSC.81(70) 1/8.2.8	
Test Procedure		Acceptance Cri		Significant Test Data
The hook should be attached to a s rope fall, approximately 1.5 m, and loa a mass of 10 kg. It should be secured lifted 1 m. From this position it s released to perform a free fall be abruptly stopped by the wire rope fall.	aded with and then hould be fore it is	The hook should not release test.	as a result of	this         Hook 1         Hook 2           Test 1
6.1.3.13 Automatic release test				MSC.81(70) 1/8.2.9
Test Procedure		Acceptance Cri		Significant Test Data
The automatic release hook should be to a test load equal to 1.1 times the S the actuating mechanism in the locked The load should be raised to a height 6 m and then be lowered at a spec m/sec. When the load is 1.5 m a ground or water surface, the mechanism should be set for a release, and the lowering completed.	SWL, with d position. of at least ed of 0.6 bove the actuating	The automatic release hook a load when it strikes the ground		
				Passed Failed Comments/Observations

Davit-launched liferaft automatic release hooks	Model:	Number:	Surveyor:	Time:
6.1.3.14 Automatic release test - ov	verloaded	Regulations:	MSC.81(70) 1/8	8.2.9
Test Procedure		Acceptance Criteria		Significant Test Data
The automatic release hook should be to a test load equal to 2.2 times the S the actuating mechanism in the locked The load should be raised to a height of 6 m and then be lowered at a spee m/sec. When the load is 1.5 m at ground or water surface, the a mechanism should be set for a release, and the lowering completed.	WL, with position. of at least ed of 0.6 pove the actuating	There should be no evidence of permanent and the hook should function after the test.	t deformation	Hook 1       Hook 2         Test 1
6.1.3.15 Endurance test		Regulations:	MSC.81(70) 1/8	8.2.15
Test Procedure		Acceptance Criteria		Significant Test Data
The hook should be released 100 time failure by each of its modes of release maximum load permitting release mode. It should then be disassembled parts examined.	using the for that	There should be no evidence of excessive part.	wear on any	Hook 1       Hook 2         Test 1

Davit-launched liferaft automatic release hooks	Manufacturer: Model: Lot/Serial Number:			Date:          Time:            Surveyor:          Organization:	
6.1.3.16 Compatibility of liferaft an	d release h	ook test Reg	gulations:	MSC.81(70)	1/8.2.18
Test Procedure		Acceptance Crite			Significant Test Data
Where automatic release hooks are for use with liferafts made by manufacturers, operational tests with e and size of lifting or attachment fitting the different manufacturers of the should be carried out before the combination of liferaft and release accepted by the Administration.	different each type used by liferafts particular	The hook must be found to be con the different lifting or attachment manufacturers for whom the hook is	fittings us	ed by the	The hook can be used for rings with the following minimum and maximum diameter: Min. hole:mm Max. material $\phi$ :mm (optionally fill in attached list) Comments/Observations
6.1.3.17 Proof load test		Reg	gulations:	Res. A.689	1/8.2.11 (missing in MSC.81(70) by mistake)
Test Procedure		Acceptance Crite			Significant Test Data
The automatic release hook should loaded to 6 times the SWL and this I for at least 5 min. After the removal of the hook should be dismantled and e for damage.	load held the load,	Under the test load of 6xSWL for mechanism should not fail.	r 5 min, tł	he release	Hook 1Hook 2Test 1Test 2Test 3Test 4Test 5Hook 1: PassedFailedHook 2: PassedFailedComments/ObservationsPassedFailedComments/Observations

Davit-launched liferaft automatic release hooks	Model:	urer: Number:		Date: Surveyor: Organization:	Time:
6.1.3.18 Inadvertent release tests		Regi	ulations:	MSC.81(70) 1/8.2	
Test Procedure		Acceptance Crit	teria		Significant Test Data
It should be demonstrated to the satisf the Administration, that the automatic hook cannot be inadvertently releas under load.	release	It must not be possible to inadverten	tly releas	e the hook.	Hook 1       Hook 2         Test 1
6.1.3.19 Icing test		Regi	ulations:	MSC.81(70) 1/8.2	
Test Procedure		Acceptance Crit	teria		Significant Test Data
The hook should be arranged in a cold -30°C to simulate operational readin loaded with 25 kg. A 3.5 cm thick unife of icing should be built onto it by spra- water from angles above 45° from he with intermittent pauses to let icing fo hook should then be actuated and as release the load without failure.	less and orm layer ying cold orizontal, orm. The	As a result of this test the hook should failure.	d release	the load without	Hook 1Hook 2Test 1

Davit-launched liferaft automatic release hooks	Model:	urer: Number:	Date: Surveyor: Organization:	Time:
6.1.3.20 Impact test	<b>I</b> .	Regulations	: MSC.81(70) 1/8.2	2.17
Test Procedure		Acceptance Criteria	\$ <i>i</i>	Significant Test Data
It should be demonstrated that the ho damaged as a result of 10 impact horizontal speed of 3.5 m/s on to a resembling a vertical ship's side. A practical all sides of the hook, especia with exposed controls, should imp structure.	cts at a structure s far as ally areas	The hook must not sustain any damage where with the normal function of the hook.	nich will interfere	Hook 1       Hook 2         Test 1

## List of davit-launched liferafts for which the hook is approved:

Manufacturer:

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## 6.1.4 LAUNCHING AND RECOVERY APPLIANCES FOR FAST RESCUE BOATS EVALUATION AND TEST REPORT

- 6.1.4.1 Submitted drawings, reports and documents
- 6.1.4.2 Quality assurance
- 6.1.4.3 Visual inspection
- 6.1.4.4 Static proof load test
- 6.1.4.5 Operational load test
- 6.1.4.6 Turning in test
- 6.1.4.7 Winch brake test
- 6.1.4.8 Rescue boat launching appliance recovery speed test
- 6.1.4.9 Hand operation test
- 6.1.4.10 Sea state test

#### 6.1.4 LAUNCHING AND RECOVERY APPLIANCES FOR FAST RESCUE BOATS

#### **EVALUATION AND TEST REPORT**

Manufacturer	
System type	
Serial number	
Maximum Working Load	
Maximum Turning Moment	
Winch type	
Serial number	
Date	
Place	
Name and signature of surveyor	
Approval Organization	

Launching and recovery appliances for fast rescue boats	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:
	ngs, reports and docume	nts		
Submitted drawings and	documents			
Drawing No.	Revision No. & date	Title of drawing		Status
Submitted reports and do				
Report/Document No.	Revision No. & date	Title of report/document		Status
		Maintenance Manual		
		Operations Manual		

Launching and recovery appliances for fast rescue boats	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization:	Time:	
chapter III of the Internatio 1974, as amended, or th Code, to be inspected, repr random inspection of ma life-saving appliances ar specification of the approve Manufacturers should be re to ensure that life-saving a as the prototype life-saving	ices of a particular type are required by nal Convention for the Safety of Life at Sea, e International Life-Saving Appliance (LSA) esentatives of the Administration should make anufacturers to ensure that the quality of nd the materials used comply with the ed prototype life-saving appliance. equired to institute a quality control procedure opliances are produced to the same standard appliance approved by the Administration and uction tests carried out in accordance with the	Regulations: MSC         Quality assurance         Standard Used:         Quality assurance F         Quality assurance M         Description of Syste         Quality assurance S         Quality assurance S         Operative S         Quality assurance S         Operative S         Quality assurance S         Quality assurance S         Operative S         Quality assurance S         Operative S         Operative S         Quality assurance S         Operative S <tr< th=""><th>Manual: em: System acceptable</th><th></th><th></th></tr<>	Manual: em: System acceptable		

Launching and recovery appliances for fast rescue boats	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:
6.1.4.3 Visual inspection	1	Regulations	: LSA Code 6.1; III,	16.2
Test Proce	dure	Acceptance Criteria		Significant Test Data
Confirm that installation has to approved drawings. Visually inspect the applia		Amount of maintenance should be restricted Parts which require maintenance should be and easily maintained.		Passed/Failed
Conduct measurements an as required.	nd verify clearances	Effectiveness under icing conditions.		Passed/Failed
Provisions for hanging off p	pendants	There should be provisions for hanging-off the fast rescue boat to free the release gear for maintenance.		Passed/Failed
Remote control		The launching mechanism should be so arranged that it may be actuated by one person from a position within the survival craft or rescue boat.		Passed/Failed
Limit switches		Manual brakes should be so arranged that th applied, unless the operator or a mechanism operator holds the brake control in the "off" p Where davit arms are recovered by powe should be fitted which will automatically c before the davit arms reach the stops in over-stressing the falls or davits, unless the r to prevent such over-stressing.	n activated by the osition. r, safety devices ut off the power order to prevent	Passed/Failed Type:

Launching and recovery appliances for fast rescue boats	Model:		Date: Surveyor: Organization:	Time:
6.1.4.3 Visual inspection			lations: LSA Code 6.1.1.6	
Test Proce	dure	Acceptance Crite	eria	Significant Test Data
		Structural members and all blocks, fastenings and all other fittings us launching equipment should be design on the basis of the maximum working	sed in connection with ned with a factor of safety g load assigned and the	Passed/Failed Type:
		ultimate strengths of the materials used for construction. A minimum factor of safety of 4.5 should be applied to all structural members including winch structural components and a minimum factor of safety of 6 should be applied to falls, suspension chains, links and blocks.		Comments/Observations

Launching and recovery appliances for fast rescue boats	Model:	Surve	Time: eyor: nization:
6.1.4.4 Static proof load			Code 6.1.1.5 - 6.1.1.6; MSC.81(70) 1/- 8.1.1
Test Proce	dure	Acceptance Criteria	Significant Test Data
For fast rescue boats, da appliances, except wind subjected to a static proof lo maximum working load. With the load at the full ou load should be swung to approximately 10° to each s intended fore and aft plane. The test should be done position, followed by to shipboard condition of list and outboard.	avits and launching ches, should be bad of 2.2 times their atboard position, the through an arc of side of vertical in the first in the upright ests simulating a	The launching appliance and its attachments othe winches should be of sufficient strength to withs static proof load on test of not less than 2.2 tim maximum working load. There should be no evidence of significant deforma other damage as a result of this test.	er than MWL:

Launching and recovery appliances for fast rescue boats	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization:			
6.1.4.5 Operational load	test		Regula	ations: LSA Code 6.1.1.1 - 6.1.1.3; MS	C.81(70) 1 /8.1.2	
Test Proce	dure	Acceptance Criteria		Significant Test Data		
For fast rescue boats, a mathe maximum working suspended from the liftin launching appliance in the The load should be moved to the full outboard position operation that is used on the The test should be repeate appliance positioned to si 20 <sup>0</sup> inboard list and 10 <sup>0</sup> trim All the tests should be re- equal to that of a fully fast persons, or the lightest intended for the use with the satisfactory functioning of light load conditions.	load should be ng points with the upright position. from the full inboard a using the means of e ship. d with the launching mulate a combined n. peated with a mass rescue boat, without fast rescue boat e davit to ensure the	The appliance should success lower the load under all of conditions, and there should evidence of significant deform or other damage as a result tests. Each launching appliance tog with all its lowering and rec gear should be so arranged the fully equipped fast rescue be serves can be safely low against a trim of up to 10° and of up to 20° either way: When boarded, as require regulation III/23 or III/33, by in complement of persons; -without persons in the fast re- boat.	of the be no nation of the gether overy at the oat it wered t a list d by ts full	Weight of the lightest fast rescue boat LWL:	wer the load under these	

Launching and recovery appliances for fast rescue boats	Model:			Date: Ti Surveyor: Organization:	me:
6.1.4.5 Operational load				: LSA Code 6.1.1.1 - 6.1.1.3; MSC.	
Test Proce	dure	Acceptance Criteria		Significant Te	est Data
		A launching appliance should any means other than gra mechanical power which is the ship's power supplies to rescue boat it serves in the f equipped condition and als condition.	avity or stored independent of launch the fast ully loaded and	Start pressure: Min. pressure: Pressure drop after one mover	

Launching and recovery appliances for fast rescue boats	Model:			Date:          Time:            Surveyor:          Organization:	
6.1.4.6 Turning in test			Regulatio	ons: LSA Code 6.1.1.3; MSC.81(70) 1 /8.1.3	
Test Proce		Acceptance Criteria		Significant Test Data	
A mass equal to 1.1 til working load should be s lifting points with the applian position, the maximum d should be moved from the full inboard position usi operation that is used on th	uspended from the nce in the full upright esign hoisting load full outboard to the ng the means of	The appliance should suc move the maximum designed load from the outboard to the position without causing pe deformation or other damage.	hoisting inboard ermanent	Maximum designed hoisting load: kN Does the launching appliance successfully move the load from outboard to inboard? Passed/Failed Does the launching appliance show any evidence of significant deformation or other damage as a result of this test? Passed/Failed Comments/Observations	

Launching and recovery appliances for fast rescue boats	Manufacturer: Model: Lot/Serial Number:			Date:          Time:            Surveyor:          Organization:
6.1.4.7 Winch brake test	t		Regulations	s: LSA Code 6.1.2.5; MSC.81(70) 1 /8.1.4
Test Proce	edure	Acceptance Criteri		Significant Test Data
Winch drums should be we number of turns permitted of 1.5 times the maximum be applied and held by should then be lowered for revolution of the barrel sha times the maximum workin lowered at maximum lowe distance of at least 3 m and the hand brake sharply. This test should be repeated If the winch design incom- brake, one of these tests with the brake wetted be stopping distance may be of The various tests should lowering distance of at lease Operation of the winch w equal to that of a fully equi without persons, or the ligh intended for use with the demonstrated.	and a static test load working load should the brake. This load at least one complete aft. A test load of 1.1 g load should then be bring speed through a d stopped by applying ed a number of times. rporates an exposed should be carried out but in this case the exceeded. achieve a cumulative st 150 m. ith a load of a mass pped fast rescue boat htest fast rescue boat	The test load should drop no m when the brake is applied the stopping distance may b if an exposed brake is wetted The launching applianc successfully lower a mass eq a fully equipped fast rescue b persons, or the lightest fast intended for use with the wind Inspection of the stripped w reveal no significant damag wear.	(except that e exceeded )). e should ual to that of boat, without rescue boat ch. inch should	Weight of the lightest fast rescue boat* :

Launching and recovery appliances for fast rescue boats	Manufacturer: Model: Lot/Serial Number:		Date: Time: Surveyor: Organization:		
6.1.4.7 Winch brake test		Regulations: LSA Code 6.1.2.5; MSC.81(70) 1 /8.1.4			
Test Proce	dure	Acceptance Criteria	Significant Test Data		
Following completion of the 6.1.4.9, 6.1.4.10), the wind for inspection.			1 <sup>st</sup> stop: > 3m 2 <sup>nd</sup> stop: m 3 <sup>rd</sup> stop: m 4 <sup>th</sup> stop: m 5 <sup>th</sup> stop: m Total lowering distance > 150 m Passed/ Failed Test 3 (if applicable) Winch design incorporates an exposed brake? Yes / No Wet stopping distance m Passed/ Failed Test 4 Test 4 Test load (LWL) kN Lowering test with LWL satisfactory? Passed/Failed Does the inspection of the stripped winch reveal any significant damage or undue wear? Passed/Failed Comments/Observations		

	and recovery Manufacturer:			Time:	
appliances for fast	Model:		Surveyor:		
rescue boats	Lot/Serial Number:		Organization:		
6.1.4.8 Rescue boat lau	6.1.4.8 Rescue boat launching appliance recovery speed test			.809 4.2.5; MSC.81(70) 1 /8.1.5	
Test Proce		Acceptance	Criteria	Significant Test Data	
Test Proce Fast rescue boat loaded w hoisted. Demonstrate also the recov boat with the maximum nu can be accommodated in t under par. 4.4.2 of the LSA <b>6.1.4.9 Hand operation t</b> Test Proce The hand operation of t demonstrated. If the winch recovery by hand with no demonstrated with a load o of the empty lifting arrange	very of the fast rescue umber of persons that he boat as calculated a code. <b>test</b> edure he winch should be is designed for quick load, this should be of 1.5 times the mass	Acceptance Notwithstanding 6.1.4.9 laur be capable of hoisting the fi boat loaded with six persons 0.8 m/s. The appliance should be ca rescue boat with the maximu can be accommodated in the par. 4.4.2 of the LSA code. Acceptance An efficient hand gear should of each fast rescue boat. Har should not be rotated by m when the fast rescue boat is is being hoisted by power.	Aching appliances should ally equipped fast rescue with a speed not less than pable of hoisting the fast m number of persons that boat as calculated under <b>Regulations: LSA Code</b> Criteria I be provided for recovery of gear handles or wheels oving parts of the winch	Significant Test Data         Maximum load to be hoisted with a speed of at least 0.8 m/s:       kN         Appliance is able to hoist the fast rescue boat with maximum number of persons?       Passed/ Failed         Comments/Observations       Comments/Observations         e 6.1.2.6; MSC.81(70) 1 /8.1.6       Significant Test Data         Hoisting load:       Test 1:         Test 1:       Test load (1 x hoisting load): winch can be operated satisfactorily by hand?         Passed/ Failed       Arrangement provided for protection against moving parts and rotating handles?         Passed/ Failed       Type:         Test 2:       Only for quick recovery Test load (1.5 x weight of empty lifting arrangement):         kN       Is quick recovery satisfactor??         Passed/ Failed       Statisfactor??	

applia	ching and recovery inces for fast e boats	Model:		Date: Surveyor: Organization: _	Time:	· · · · · · · · · · · · · · · · · · ·
6.1.4	1.10 Sea state test			Regulations: LSA Code 6.1		
	Test Proce		Acceptanc	e Criteria	Significant Test Da	ta
be de force with a test s fast re	monstrated in a sea s 6 wind on the Beaufor a significant wave heig hould include launchi escue boat and demon satisfactory operatio	on of the device to l oscillations due to	device to dampen the	nce should be fitted with a forces due to interaction with st rescue boat is launched or	Wind speed:Significant wave height: Method of determination: MWL (= test load)Working satisfactory?Working of Vorking of winch brake satisf	sed/ Failed
	satisfactory operation	n of the winch brake.	element to soften sh element to minimize os		Pass Gradual action? Pass Additional dynamic force in w kN	sed/ Failed sed/ Failed ire
		mic force induced in etardation should be	high-speed tensioning wire from going slack	e fitted with an automatic device which prevents the in all sea state conditions in oat is intended to operate.	<ul> <li>&lt; 0.5 x MWL? Pase</li> <li>Tensioning device operation s</li> <li>Passed/ Failed</li> </ul>	sed/ Failed satisfactory?
	satisfactory operation device.	on of the tensioning	the fast rescue boat is brakes are applied sha force induced in the w	I have a gradual action. When lowered at full speed and the rply, the additional dynamical ire due to retardation should s the working load of the	Wire prevented from going sla Passed/ Failed Comments/Observations	ack?

#### 6.2 MARINE EVACUATION SYSTEMS

#### **EVALUATION AND TEST REPORTS**

#### 6.2.1 General information

- 6.2.1.1 Submitted drawings, reports and documents
- 6.2.1.2 Quality assurance
- 6.2.1.3 General data and specifications
- 6.2.1.4 Platform carrying capacity
- 6.2.1.5 Markings on container
- 6.2.1.6 Markings on passage
- 6.2.1.7 Visual inspection

#### **Test procedures**

- 6.2.2 Material test
- 6.2.3 Deployment instructions
- 6.2.4 Container static load test
  - 6.2.4.1 Container door hose test
  - 6.2.4.2 Container door dry release test 6.2.4.3 Container door trim release test

#### Inclined inflated passages

#### 6.2.5 Passage load test

- 6.2.5.1 Dry sliding test
  - 6.2.5.2 Loss of pressure test
  - 6.2.5.3 Load test of passage to container
  - 6.2.5.4 Cold inflation test
  - 6.2.5.5 Hot inflation test
  - 6.2.5.6 Wet sliding test
  - 6.2.5.7 Three times pressure test

#### Vertical descent passages

6.2.6 Two times sliding test6.2.6.1 Load test of passage to container6.2.6.2 Cold passage test6.2.6.3 Wet descent test

#### Platform (if fitted)

- 6.2.7 Platform carrying capacity
  - 6.2.7.1 Loaded freeboard and 50% buoyancy loss loaded test
  - 6.2.7.2 Self-draining test
  - 6.2.7.3 Cold inflation test
  - 6.2.7.4 Hot inflation test
  - 6.2.7.5 Three times overpressure test

#### **Associated liferafts**

6.2.8 Liferaft construction6.2.8.1 Liferaft release from stowage position6.2.8.2 Liferaft release from passage

#### **Evacuation Trials**

6.2.9 Timed evacuation test

#### Sea trails

- 6.2.10 Heavy weather sea trial
  - 6.2.10.1 Heavy weather sea trial (Phase 1) 6.2.10.2 Heavy weather sea trial (Phase 2)
  - 6.2.10.3 Heavy weather sea trial (Phase 3)

6.2.10.4 Heavy weather sea trial (Phase 4)

#### Data recording sheets

- 6.2.11 Evacuation trial timings (MES with platform and liferafts)
- 6.2.12 Evacuation trial timings (MES straight into liferafts)

#### 6.2 MARINE EVACUATION SYSTEMS

#### **EVALUATION AND TEST REPORTS**

Manufacturer	
Type/Model	
Date of Approval	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Marine evacuation systems	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization:	Time:		
6.2.1.1 Submitted drawings, reports and documents						
Submitted drawings and	documents			Status		
Drawing No.	Revision No. & date	Title of drawing				
Submitted reports and de						
Report/Document No.	Revision No. & date	Title of report/document		Status		
		Maintenance Manual				
		Operations Manual				

	Manufacturer				
Marine evacuation	Manufacturer: Model:	Date: Time:			
	Model: Lot/Serial Number:	Surveyor:			
systems		Organization:			
6.2.1.2 Quality assuranc	Ce				
Except where all appliances of the International Conver International Life-Saving A inspected, representatives inspections of manufactur appliances and materials us prototype life-saving applian Manufacturers should be re ensure that life-saving app the prototype life-saving app	es of a particular type are required by chapter III ntion for the Safety of Life at Sea, 1974, or the Appliance (LSA) Code as amended, to be s of the Administration should make random rers to ensure that the quality of life-saving sed comply with the specification of the approved nce. equired to institute a quality control procedure to bliances are produced to the same standard as opliance approved by the Administration and to uction tests carried out in accordance with the	Regulations: SOLAS III/4; MSC.81(70) 2/1.1, 1.2         Quality assurance         Standard Used:         Quality assurance Procedure:         Quality assurance Manual:         Description of System:         Quality assurance System acceptable         Yes/No         Comments/Observations			
of the International Conver International Life-Saving A inspected, representatives inspections of manufactur appliances and materials us prototype life-saving applian Manufacturers should be re ensure that life-saving app the prototype life-saving app keep records of any production	es of a particular type are required by chapter III ntion for the Safety of Life at Sea, 1974, or the Appliance (LSA) Code as amended, to be s of the Administration should make random rers to ensure that the quality of life-saving sed comply with the specification of the approved nce. equired to institute a quality control procedure to bliances are produced to the same standard as opliance approved by the Administration and to uction tests carried out in accordance with the	Standard Used: Quality assurance Procedure: Quality assurance Manual: Description of System: Quality assurance System acceptable Yes/No			

Marine evacuation systems	Model:			Surveyor:	Time:	
6.2.1.3 General data and	specifications		Regulations: I	LSA Code I/1.2	& VI/6.2	
-	specifications nation respects, in its fully subject to a detailed acturers' works to a re complied with. of the passage and satisfaction of the be: buoyancy will be ng load. In the case atform, the main which for this de thwarts or floor mbers, are to meet ection 4.4.3 based noity, except that the ained by dividing by	Dimen Length of passage: Vertical System Inclined System Installation Height of System Diameter of Platform Carrying Capacity of Platform Number of passages Angle of Slide Path	sions m _m m m	Organization: _		kg

Marine evacuation systems	Model:		S	Date: Surveyor: Organization:	Time:
6.2.1.3 General data an	specifications (cont	inued)	Regulations: LS	SA Code I/1.2 & VI/ 6.2	
General Info			nensions		Weight
when the ship is upriving seagoing condition.	de to the horizontal range of 30 <sup>°</sup> to 35 <sup>°</sup> ght and in the lightest In the case of a aximum of 55 <sup>°</sup> in the	Angle of Slide Path Inclined Slide:			
	oding set by the	PRV lifting pressure		k Pa	
requirements in regul	ation II-I/8.	PRV re-seat pressure		k Pa	
pressure"; i.e. the pre the designed reseat valves, if fitted, exce reseat pressure o determined by tes	the term "working essure determined by pressure of the relief pt that, if the actual the relief valve, ting, exceeds the ssure by more than				

Marine evacuation	Manufacturer: Model: Lot/Serial Number:			Date: Time: Surveyor:	
systems	Lot/Serial Number: _			Organization:	
6.2.1.4 Platform carrying	capacity		Regulations:	: LSA Code I/1.2 & VI/6.2; MSC.81(70) 1/12.4.1	
Test Proced	dure	Acceptance Criteria		Significant Test Data	
Marine Evacuation Platform such that sufficient buoyar	icy will be provided	This usable platform area should be at least equal to:		No. of persons platform is designed for	
for the working load. The which the platform shoul accommodate should be ed	d be permitted to	(20% of total number of person System is certified for)/4 m²; or		.1 Capacity of platform using buoyancy	
		10 m <sup>2</sup> whichever is the greate		.2 Capacity of platform using area	
The greatest whole number by 0.096 the volume, measured	ured in cubic metres			Lesser of 1 and 2 above	
of the main buoyancy tu thwarts or floor inflatable				.3 Usable area requirement for platform.	
inflated; or				.4 Number of persons platform can actually carry.	
The greatest whole number by 0.25 the inner usable cro the platform measured in so for this purpose may inc thwarts, if fitted) measure edge of the buoyancy tubes	uss-sectional area of quare metres (which lude the thwart or d to the innermost			Comment/Observation	
However, Administrations alternative arrangement demonstrated to comply prescribed performance rec	ts which are with all of the				
				Passed Failed	

Marine evacuation systems			Surveyor:			
6.2.1.5 Markings on container Regulations:LSA Code I			_			
						nt Test Data
Test Procedure The container should be marked with; Maker's name or trademark; Serial number; Name of approval authority and the capacity of the system; (6.2.0.2) SOLAS; Date of manufacture (month and year); Date and place of last service; Maximum permitted height of stowage above waterline; and Stowage position on board. Launching and operating instructions should be marked on or in the vicinity of the container.		Acceptance Criteria All instructions and markings to be indelible.		Passed Faile	container below:	
6.2.1.6 Markings on pass	sage	Regulations: LSA Code I/1.2 & VI/ 6.2				
Test Proced	lure	Acceptance Criteria			nt Test Data	
The marine evacuation s marked with: .1 maker's name or tra .2 serial number; .3 date of manufacture .4 name of approving .5 name and place of where it was last s the date of servicing .6 the capacity of the s	ademark; e (month and year); authority; of servicing station serviced, along with g; and	All instructions & markings to be	indelible.		Indicate markings on PassedFaile	

Marine evacuation	Model:		Time:	
systems	Lot/Serial Number: _		Organization:	
6.2.1.7 Visual inspection		Regula	tions: Chapter III/13.4	I; LSA Code I/1.2 & VI/6.2; MSC.81(70) 1/12.5.5
Test Proce		Acceptance Criteria		Significant Test Data
Inflatable liferafts assoc evacuation systems Any inflatable liferaft used ir marine evacuation system with pre-connected or	eraft Release From Passage If the passage is to give direct access to the liferaft(s), it should be demonstrated that it can be easily and quickly		<ul> <li>.1 Are liferafts launched with passage Yes/No</li> <li>.2 Method of connection of liferafts to passage</li> <li>.3 Method of release from passage</li> <li>.4 Method of release acceptable? Yes/No</li> <li>Comments/observations</li> <li>Passed Failed</li> </ul>	
6.2.2 Material test		Pogula	tions: ISA Codo 1/1 2	& VI/6.2; MSC.81(70) 1/ 5.17.13 & 12.1
Test Proce	dure	Acceptance Criteria	Significant Test Data	
Inflated materials used in marine evacuation systems the standards laid down in t	the construction of are to be tested to	Fabric must be type approved in ac Report 4.3.4, Material Tests for Liferafts	cordance with Test	Fabric Complies Yes No
				Comments/Observation
				PassedFailed

Marine evacuation	Madalı		Date: Time:
systems			Surveyor: Organization:
6.2.3 Deployment inst	ructions	Regu	ulations:LSA Code I/1.2 & VI/6.2.2.1; MSC.81(70) 1/12.2.1
Test Proce	dure	Acceptance Criteria	Significant Test Data
Marine evacuation system of It should be demonstrated t platform if fitted, or liferafts can be deployed from the person in a sequence manufacturer's instruction. action is necessary to of means should be provided operation.	hat the passage and s in any other case, e container by one prescribed in the If more than one operate the system	The deployment of the system by one and instructions to be acceptable administration.	
6.2.4 Container static	load test	Regu	ulations: LSA Code I/ 1.2 & VI/6.2; MSC.81(70) 1/ 12.2.2
Test Proce	dure	Acceptance Criteria	Significant Test Data
Marine evacuation system of A static load of 2.2 times the the system applied to its s to the ship for a period of 30 load is to be equivalent to imposed by the maximum fully loaded liferafts for w designed, attached to the I the ship moving through the against a head wind of force scale.	tructural attachment tructural attachment ) minutes. This static the calculated load number and size of which the system is oaded platform with he water at 3 knots	There should be no evidence of sig deformation or other damage as a resu factory test.	significant 1. Calculated static load target

Manufacturer:					r: Time:
systems	Lot/Serial Number: _			Organiz	ation:
6.2.4.1 Container door h	ose test		Regulations:L	SA Code	e I/1.2 & VI/6.2; MSC8.1(70) 1/ 5.12 & 12.2.3
Test Proce	dure	Acceptance			Significant Test Data
Marine evacuation system		The container to remain rear prevent the ingress of water significant accumulation of wa	and there should	d be no	.1 Capacity of water hosel/min Diameter of hosemm
preventing water entering		significant accumulation of wa		italliel.	.2 Ingress of water in container litres
efficiency of the sealing arra	ingements should be	The accumulation of water ins exceed 4 I.	ide the liferaft sho	ould not	.3 Drainage adequate Yes/No
other equally effective meth	od. The requirement				.4 Diameter of drain holesmm
for the hose test is that ab per minute be directed at an					.5 Number of drain holes
arrangements through a 63 point 3.5 m away and 1.5 r					
of 5 min. Alternatively, wh	nen hose testing is				Comment/Observations
required to verify the tightnet the minimum pressure in the					
to 2 bar, is to be applied at a	a maximum distance				Passed Failed
of 1.5 m. The nozzle diamet than 12 mm.	er snould hot be less				
(Note:- If the system is insta ship and the door is not structure then this test is	t part of the ships				
carried out).					

Marine evacuation systems				Surveyo	Dime: Dr: ation:
6.2.4.2 Container door d				LSA Cod	e I/1.2 & VI/6.2; MSC.81(70) 1/ 12.2.4
	in the release and or any internal or attisfactorily tested by	Acceptance of The door should operate s damaged as a result of this te	Criteria atisfactory and	LSA Cod	

Marine evacuation systems	Model:			Date:            Surveyor:            Organization:
6.2.4.3 Container door tr	im release test		Regulations:	LSA Code I/1.2 & VI/6.2; MSC.81(70) 1/ 12.2.5
Test Proce		Acceptance Cr		Significant Test Data
Marine evacuation system of It should be demonstrated to of the system, with the com- simulate an unfavourable to list of up to 20 <sup>o</sup> either way passage and platform (if f damage which will render intended purpose.	by 2 dry deployments tainer angled back to rim of up to $10^{\circ}$ and that outer door, the itted), will not suffer	There should be no damage passage and platform if fitted system unusable. The door of the container shou system deploy without interfer	e to the outer do which will render Ild open fully and	oor, the .1 Height of deployment m .2 Adverse trim and list 10 <sup>0</sup> trim 20 <sup>0</sup> list
6.2.5 Passage load tes	t	1	Regulations:	LSA Code I/1.2 & VI/6.2; MSC.81(70) 1/ 12.3.1.1
Test Proce	dure	Acceptance Cr	riteria	Significant Test Data
Marine Evacuation Inclined A fully inflated passage sh solid base at the height at w on board. Each single path s 150 kg weight at mid length	ould be arranged on hich it is to be stowed should be loaded with	Slide path must be usable and distorted.	d not become und	duly       .1 Height of slide above ground m         .2 Length of slide m         .3 Number of slide paths         .4 Angle of slide path <sup>0</sup> Comments/Observations.         Passed Failed

Marine evacuation				Date: Time: Surveyor:		
systems	Lot/Serial Number:		0	Drganization:		
6.2.5.1 Dry sliding test		Reg	gulations: LS	SA Code I/1.2 & VI/6.2; MSC.81(70) 1/12.3.1.2		
	Test Procedure Acceptance Criteria			Significant Test Data		
Marine Evacuation Inclined A fully inflated passage sho individual sliding operations which it is to be certificated persons of varied physique a used.	ould be subjected to twice the number for . For this test actual	On completion the passage path sh serviceable condition.	ould remain i	<ul> <li>In a</li> <li>.1 Number of slide paths</li> <li>.2 Number of persons passage is certified for</li> <li>.3 Number of sliding operations</li> <li>Comments/Observations.</li> </ul>		
				PassedFailed		
6.2.5.2 Loss of pressure	test	Reg	gulations: LS	Code I/1.2 & VI/6.2; MSC.81(70) 1/12.3.1.3		
Test Proce		Acceptance Criteria		Significant Test Data		
Marine Evacuation Inclined	using actual persons	Passage should remain usable thro relevant section of the slide depress		the       .1       Height of slide above groundm.         .2       No. of persons using system		
that the loss of pressure in a passage will not limit its o evacuation.				.3 Sequence of deflation of slide tubes; Section deflated 1. 2. 3. 4. .4 Angle of passage° Comments/Observations. Passed Failed		

	Manufacturer:		Date:	Time:
Marine evacuation	Model:		Surveyor:	r:
systems	Lot/Serial Number:		Organizat	ation:
6.2.5.3 Load test of pass		1	LSA Code	e I/1.2 & VI/6.2; MSC.81(70) 1/ 12.2.2 & 12.3.1.4
Test Proce		Acceptance		Significant Test Data
Marine Evacuation Inclined A static load of 2.2 times t		On completion there must be or stranding of its connection result of this factory test.		.1 Calculated static loadtonnes
which the system is to be	designed should be	result of this factory lest.		.2 2.2 x calc. loadtonnes
applied for a period of connection between the container.				.3 Period of test loadmin
				.4 Calculated breaking load of connectionT.
This static load is to be calculated load imposed number and size of fully load the system is designed, at	by the maximum ded liferafts for which			.5 Method used to calculate static load test
platform with the ship movi at 3 knots against a head w Beaufort scale.				Comments/Observations.
				Passed Failed

Marine evacuation systems	Model: Si		Date:          Surveyor:          Organization:	
6.2.5.4 Cold inflation tes	t			LSA Code I/1.2 & VI/6.2; MSC.81(70) 1/12.3.1.5
Test Proce	dure	Acceptance Crite	eria	
Marine Evacuation Inclined The uninflated passage w should be placed in a o temperature of - 30°C. Afte than 24 hours at this temp should reach its working minutes.	vith its gas cylinders cold chamber at a er a period of not less perature the passage	The passage and components sign of cracking, seam slip defects. The gas inflation system shou of cracking or other defects.	page or other	.1       Cold Chamber temperature0C         Time in Time out         Hours in chamber @ -30°C         .2       Design WP kPa         .3       System usable in secs         .4       Time to reach working pressure secs         .5       Relief valves blowing at:         .6       Passage reached working pressure in 5 Min Yes/No         Gas Inflation System Acceptable Yes/No         .7       Details of gas inflation system         .1       Slide - No. of cylinders         Weight of cylinders kg.         Gas charge kgCO2, kg N2         Bottle details         .2       Platform – No. of cylinders         Weight of cylinders kg.         Gas charge kg CO2, kg N2         Bottle details

	Manufacturer:			Date:	Time:
Marine evacuation	Model:	······································		Surveyor:	Time:
systems	Lot/Serial Number:			Organization:	
-					
6.2.5.4 Cold inflation tes	st (continued)		Regulations:	LSA Code I/1.2	2 & VI/6.2; MSC.81(70) 1/12.3.1.5
Test Proce	edure	Acceptanc	e Criteria		Significant Test Data
		Continued:			.8 Details of high-pressure hose
					.1 Material of hose
					.2 Pressure rating of hose
					.9 Details of Cylinder valve
					.10 Details of Operating Head
					.11 Details of Inflation Valve
					.12 Details of Pressure Relief Valve
					.1 Lifting pressure
					.2 Reseat pressure
					.13 Additional Inflatable Structures associated with passage and platform:
					Comments/Observations.
					Passed Failed

Marine evacuation systems	Model:		Surve	: Time: eyor: nization:
6.2.5.5 Hot inflation test	1	Regulations	LSA	Code I/1.2 & VI/6.2; MSC.81(70) 1/12.3.1.6
Test Proce	dure	Acceptance Criteria		Significant Test Data
Marine Evacuation Inclined The uninflated passage w should be placed in a temperature of +65°C for no	Inflated Passage; ith its gas cylinders hot chamber at a	On inflation the pressure relief valves on passage should be of sufficient capacity to pre pressure in excess of twice the designed wou pressure. The passage and components sh show no sign of cracking, seam slippage or o defects. (The inflation system should be identical to system described in 6.2.4.4 above)	event rking nould other	.1       Hot chamber temperature0C         Time inTime out         Hours in chamber

Marine evacuation systems	Model: Su			Date:          Surveyor:          Organization:		
6.2.5.6 Wet sliding test		Regulations: LSA Code	I/1.2	& VI/6.2; MSC.81(70) 1/12.3.1.7		
Test Pro	cedure	Acceptance Criteria		Significant Test Data		
I est Pro Marine Evacuation Inclined It should be demonstrated operations on a slide path water to simulate wet weath	Inflated Passage; with at least 10 sliding thoroughly wetted with	Acceptance Criteria The speed of descent should not considered excessive or dangerous.	be	.1       Height of slide above groundm         .2       Angle of slide path to horizontal0         .3       No. of persons sliding         Comments/Observation         PassedFailed		

6.2.5.7 Three times pressure test	Regulations: LSA Code I/1.2 & VI/6.2; MSC.81(70) 1/ 12.3.1.8, 5.17.7 & 5.17.8					
Test Procedure	Acceptance Criteria	Significant Test Data				
Marine Evacuation Inclined Inflated Passage; Each inflatable compartment in the passage should be tested to a pressure equal to three times the working pressure. Each pressure relief valve should be made inoperative, compressed air should be used to inflate the passage and the inflation source removed. The test should continue for at least 30 min. The measurement of pressure drop due to leakage can be started when it has been assumed that compartment material has completed stretching due to the inflation pressure and achieved equilibrium.	The pressure should not decrease by more than 5% as determined without compensating for temperature and atmospheric pressure changes, and there should be no seam slippage, cracking or other defect in the passage.	1. Passage         .1 Design Working Pressurekpa         .2 3 x working pressurekPa         .3 Pressure at startkPa         .4 Calculated 5% pressure drop maximumkPa         .5 Pressure drop after 30 minuteskPa         .6 Percentage drop%         Comment/Observations         PassedFailed				

Marine evacuation systems	Model:		Survey	yor: ization:
6.2.6 Two times sliding	g test	Regulations	: LSA Co	ode I/1.2 & VI/6.2; MSC.81(70) 1/12.3.2.1
Test Proce		Acceptance Criteria		Significant Test Data
Marine Evacuation Vertical The vertical passage sho individual descent operatio for which it is to be certi actual persons of varied p should be used.	uld be subjected to ns twice the number ficated. For this test	On completion the passage path should rema a serviceable condition.		<ol> <li>Number of vertical passages</li> <li>Number of sliding operations per passage</li> <li>Passage remains in serviceable condition Yes/No</li> <li>Comments/observations.</li> <li>Passed Failed</li> </ol>
6.2.6.1 Load test of pass	age to container	Regulations	s: LSA C	ode I/1.2 & VI/6.2; MSC.81(70) 1/12.3.2.2
Test Proce	dure	Acceptance Criteria		Significant Test Data
Marine Evacuation Vertical A static load of 2.2 times the the system is to be design for a period of 30 minute between the passage and t This static load is to be calculated load imposed number and size of fully loa the system is designed, at platform with the ship movi at 3 knots against a head w Beaufort scale.	the maximum to which and should be applied as to the connection the container. The equivalent to the by the maximum ded liferafts for which tached to the loaded ng through the water	On completion there must be no signs of fracture or stranding of its connections, or damage as a result of this factory test.	other	<ol> <li>Calculated static loadtonnes</li> <li>2. 2.2 x calc. loadtonnes</li> <li>Period of test loadmin</li> <li>Calculated breaking load of connectionT. Method used to calculate static load test</li> <li>Comments/Observations.</li> <li>Passed Failed</li> </ol>

	Manufacturer:			Date:	Time:	
Marine evacuation	Model:			Surve	eyor:	
systems	Lot/Serial Number:	· · · · · · · · · · · · · · · · · · ·		Orgar	nization:	
6.2.6.2 Cold passage tes				LSA C	A Code I/1.2 & VI/6.2; MSC.81(70) 1/12.3.2.3	
Test Proce		Acceptance Cri			Significant Test Data	
Marine Evacuation Vertical The stowed passage should chamber at a temperature of of 24 hours.	d be placed in a cold	At this temperature the passa signs of cracking or other defe			Cold chamber temperature _ºC Time inTime out Total time in chamberhr Total time to deploysecs Does passage show signs of cracking or other defects Yes/No Comments/observations. Passed Failed	
6.2.6.3 Wet descent test			Regulations:	LSA C	ode I/1.2 & VI/6.2; MSC.81(70) 1/12.3.2.4	
Test Proce	dure	Acceptance Cri			Significant Test Data	
Marine Evacuation Vertical It should be demonstrate descent operations, in the o passages with the path tho water to simulate wet weath	d with at least 10 case of open vertical proughly wetted with	The speed of descent should excessive or dangerous.		.1		

systems       Lot/Serial Number:       Organization:         6.2.7.1       Loaded freeboard and 50% buoyancy loss loaded test       Regulations: LSA Code I/1.2 & VI/6.2.1.3.3; MSC.81(70) 1/12.4.1, 12.4.2         Test Procedure       Acceptance Criteria       Significant Test Data         Marine Evacuation Platform, if fitted       Freeboard should be measured all round, and should not be less than 300 mm. and should have a positive freeboard.       No. of persons on platform         The platform should be inflated and loaded with the number of persons carried in accordance with form 6.2.1.4.       Freeboard should be measured all round all wearing an approved lifejacket.       No. of persons on platform         It should then be demonstrated that in the event of the loss of 50% of the buoyancy in the tubes, the platform should be capable of supporting the number of persons specified, all wearing approved lifejacket.       Buoyancy tube deflated Upper/Lower         Buoyancy tube deflated Upper/Lower       Freeboard recorded       Positive       Negative	Marine evacuation				Time:
Test Procedure       Acceptance Criteria       Significant Test Data         Marine Evacuation Platform, if fitted       Freeboard should be measured all round, and should not be less than 300 mm. and should have a positive freeboard.       No. of persons on platform         The platform should be inflated and loaded with the number of persons carried in accordance with form 6.2.1.4. Freeboards should be measured all round all wearing an approved lifejacket.       No. of persons on platform         It should then be demonstrated that in the event of the loss of 50% of the buoyancy in the tubes, the platform should be capable of supporting the number of persons specified, all wearing approved lifejacket.       Significant Test Data         Buoyancy tube deflated Upper/Lower       Significant Test Data       No. of persons on platform         Freeboard in undamaged condition       Freeboard in undamaged condition       Freeboard recorded       Positive       Negative         12 o'clock       mm			 -	Organization:	
Test Procedure       Acceptance Criteria       Significant Test Data         Marine Evacuation Platform, if fitted       Freeboard should be measured all round, and should not be less than 300 mm. and should have a positive freeboard.       No. of persons on platform         The platform should be inflated and loaded with the number of persons carried in accordance with form 6.2.1.4. Freeboards should be measured all round all wearing an approved lifejacket.       No. of persons on platform         It should then be demonstrated that in the event of the loss of 50% of the buoyancy in the tubes, the platform should be capable of supporting the number of persons specified, all wearing approved lifejacket.       Significant Test Data         Buoyancy tube deflated Upper/Lower       Significant Test Data       No. of persons on platform         Freeboard in undamaged condition       Freeboard in undamaged condition       Freeboard recorded       Positive       Negative         12 o'clock       mm					
Marine Evacuation Platform, if fitted       Freeboard should be measured all round, and should not be less than 300 mm. and should have a positive freeboard.       No. of persons on platform         The platform should be inflated and loaded with the number of persons carried in accordance with form 6.2.1.4. Freeboards should be measured all round all wearing an approved lifejacket.       Freeboard should be measured all round, and should not be less than 300 mm. and should have a positive freeboard.       No. of persons on platform         It should then be demonstrated that in the event of the loss of 50% of the buoyancy in the tubes, the platform should be capable of supporting the number of persons specified, all wearing approved lifejacket.       Positive loss of 50% of the buoyancy in the tubes, the platform should be capable of supporting the number of persons specified, all wearing approved lifejacket.       Buoyancy tube deflated Upper/Lower         Freeboard recorded       Positive       Negative         9 o'clock       mm       mm         9 o'clock       mm       mm         9 o'clock       mm       mm         12 o'clock       mm       mm       mm         9 o'clock       mm       mm       mm         9 o'clock       mm       mm       mm       mm         9 o'clock       mm       mm       mm       mm       mm         9 o'clock       mm       mm       mm       mm       mm       mm				SA Code I/1.2	
The platform should be inflated and loaded with the number of persons carried in accordance with form 6.2.1.4. Freeboards should be measured all round all wearing an approved lifejacket. It should then be demonstrated that in the event of the loss of 50% of the buoyancy in the tubes, the platform should be capable of supporting the number of persons specified, all wearing approved lifejacket. Buoyancy tube deflated Upper/Lower Freeboard recorded Positive Negative 3 o'clock mm buoyancy tube deflated Upper/Lower Freeboard recorded Positive Negative 3 o'clock mm buoyancy tube deflated Upper/Lower Freeboard recorded positive Negative 3 o'clock mm buoyancy tube deflated Upper/Lower Freeboard recorded positive Negative 3 o'clock mm buoyancy tube deflated Upper/Lower Freeboard recorded positive Negative 3 o'clock mm buoyancy tube deflated Upper/Lower Freeboard recorded positive Negative 3 o'clock mm buoyancy tube deflated Upper/Lower Freeboard recorded positive Negative 3 o'clock mm buoyancy bub deflated Upper/Lower Freeboard recorded positive Negative 3 o'clock mm buoyancy tube deflated Upper/Lower Freeboard recorded positive Negative 3 o'clock mm buoyancy bub deflated Upper/Lower Freeboard recorded positive Negative 3 o'clock mm buoyancy tube deflated Upper/Lower Freeboard recorded positive Negative 3 o'clock mm buoyancy bub deflated Upper/Lower Freeboard recorded positive Negative 3 o'clock mm buoyancy tube deflated Upper/Lower Buoyancy tube deflated Upper/Lower Buoyancy bub deflated Upper/Lower Buoyancy Buoya				nd abould not	Significant Test Data
The platform should be inflated and loaded with the number of persons carried in accordance with form 6.2.1.4. Freeboards should be measured all round all wearing an approved lifejacket.       Freeboard recorded       Positive       Negative         It should then be demonstrated that in the event of the loss of 50% of the buoyancy in the tubes, the platform should be capable of supporting the number of persons specified, all wearing approved lifejacket.       12 o'clock mm		, ii iiileu	,		No. of persons on platform
Passed Failed	The platform should be infla the number of persons ca with form 6.2.1.4. Free measured all round all we lifejacket. It should then be demonstra of the loss of 50% of the bu the platform should be capa number of persons spe	ated and loaded with rried in accordance boards should be earing an approved ated that in the event loyancy in the tubes, ble of supporting the	,		Freeboard in undamaged condition         Freeboard recorded       Positive       Negative         12 o'clock       mm
					Passed Failed

Marine evacuation systems	Model:		Surveyor:	Time:
6.2.7.2 Self-draining tes	t	Regulations	LSA Code I/1.2	2 & VI/6.2; MSC.81(70) 1/12.4.3
Test Proce		Acceptance Criteria		Significant Test Data
Test Proce Marine Evacuation Platforr Water should be pumped platform, while it is afloat, minute for 1 minute, the shut off. If the platform is divided in thwarts or other means, e be subjected to the test.	n, if fitted into the interior of the at a rate of 2300 l per water should then be to separate areas, by	Acceptance Criteria There should be no appreciable accumulatio the platform. The platform should remain stab during this test.	n of water on le and usable	Significant Test Data         .1 Hose delivery rate l/min         .2 Period of delivery of water min         .3 Area of platform m²         .4 Area of drainage point m²         .5 Drainage area sufficient to remove water Yes/No         Comments/observations.         Passed Failed

	Manufacturer:			Date <sup>.</sup>	Time:
Marine evacuation	Madalı			Survevo	r:
systems				Organiza	ation:
				Ŭ	
6.2.7.3 Cold inflation tes		-		LSA Cod	e I/1.2 & VI/6.2; MSC.81(70) 1/12.4.4
Test Proce	edure	Acceptance			Significant Test Data
Marine Evacuation Platform	n, if fitted;	The passage and component	s must show no	sign of	.1 Cold temperature0C
		cracking, seam slippage or ot	her defects.		Time in Time out
The uninflated platform wit					.1 Cold temperature <sup>0</sup> C Time in Time out Hours in chamber @ -30 <sup>0</sup> C
should be placed in a temperature of -30ºC.	cold chamber at a	The gas inflation system sh cracking or other defects.	iould show no	sign of	.2 Design WP kPa
After a period of not less t temperature the platform or		The Pressure Relief Valves ensure that they operate sat			.3 System usable in min
reach its working pressure		and during the warming up of			.4 Time to reach working pressure min
					.5 Relief valves blowing at:
					Gas Inflation System Acceptable to Administration Yes/No
					.6 Details of gas inflation system
					.1 Platform - No. of cylinders Weight of cylinders Kg. Gas charge kg CO <sub>2</sub> , kg N <sub>2</sub> Bottle details
					.7 Details of high pressure hose
					.1 Material of Hose .2 Pressure rating of hose continued

Marine evacuation systems	Model:			Date: Time: Surveyor: Organization:
6.2.7.3 Cold inflation t	est (continued)		Regulations	LSA Code I/1.2 & VI/6.2; MSC.81(70) 1/12.4.4
Test Pro	cedure	Acceptance Cr	teria	Significant Test Data
Continued:		Continued:		.8 Details of Cylinder valve         .9 Details of Operating Head         .10 Details of Inflation Valve         .11 Details of Pressure Relief Valve         .11 Details of Pressure Relief Valve         .11 Lifting pressure         .2 Reseat pressure         .12 Additional Inflatable Structures associated with platform         Comments/Observations.
				Passed Failed

Marine evacuation	Madal		Date: Surveyor:	Time:
systems	Lot/Serial Number:			
6.2.7.4 Hot inflation test		Regulations:	LSA Code I/1.2	2 & VI/6.2; MSC.81(70) 1/12.4.5
Test Proce	dure	Acceptance Criteria		Significant Test Data
Test Proce Marine Evacuation Platform The platform with its inflation placed in a hot chamber +65°C for not less than 7 ho	n, if fitted: on system should be at a temperature of	Acceptance Criteria On being inflated the pressure relief valves or should be of sufficient capacity to prevent excess of twice the designed working pressur The passage and components should show cracking, seam slippage or other defects. The maximum pressure achieved during th align with the Pressure Relief Valves Lifting pressures. (The inflation system should be identical to described in 6.2.6.3 above)	t pressure in re. w no sign of he hot should and Re-seat	Significant Test Data         .1 Hot temperature

Marine evacuation	Madalı			Date: Surve	Time: eyor:		
systems		ber: Orga			ganization:		
6.2.7.5 Three times over				SA Cod	de I/1.2 & VI/6.2; MSC.81(70) 1/ 5.17.7, 5.17.8 & 12.4.6		
Test Procedure		Acceptance 0			Significant Test Data		
Marine Evacuation Platform		The pressure should not decrease by more th 5% as determined without compensating temperature and atmospheric pressure chang	for <sup>.</sup>	1 Passage			
should be tested to a pres times the working pressure.	ssure equal to three	and there should be no sea or other defect in the platfor	m slippage, crack		.1 Design Working Pressure kPa		
valve should be made inop air should be used to inflate	erative, compressed				.2 PRV lifting pressurekPa		
inflation source removed continue for at least 30 min	. The test should				.3 PRV reseat pressurekPa		
The measurement of pre					.4 3 x working pressurekPa		
leakage can be started	when it has been				.5 Pressure at startkPa		
assumed that compartn completed stretching due and achieved equilibrium.					.6 Calculated 5% pressure drop maximum_kPa		
and achieved equilibrium.					.7 Pressure drop after 30 minuteskPa		
					.8 Percentage drop%		
					Comment/Observations		
					Passed Failed		

Marine evacuation systems	Model:			Surveyor:	Time:
-					
6.2.8 Liferaft construc				LSA Code I/1.2	2 IV/4.2 & VI/6.2; MSC.81(70) 1/12.5.1
Test Proce		Acceptanc			Significant Test Data
Inflatable liferafts assoc evacuation systems Any inflatable liferaft used i marine evacuation system the requirements of the LSA	ciated with marine n conjunction with the should conform with	Liferafts used in conjunction system should conform and requirements of section 4.2.	with the marin		Type       approval       certifications       confirms         compliance with LSA Code section 4.2 and       liferafts testing consistent with section 4.1 of       the Survival Craft Evaluation and Test Report         Forms       Conforms to LSA Code section 4.2?       Yes/No         Testing       consistent with Test Reports in         Section 4.1 Inflatable liferafts?       Yes/No         Comments/observations.       Passed

Marine evacuation systems	Model:			Date:         Time:           Surveyor:		
6.2.8.1 Liferaft release fr	om stowage position			Ilations: Chapter III/ 13.4; LSA Code I/1.2 & VI/6.2; MSC.81(70) 5.2, 12.5.3, 12.5.4		
Test Proce	dure	Acceptance Criteria		Significant Test Data		
Inflatable liferafts assoc evacuation systems	iated with marine	It should be demonstrated tha liferafts can be deployed from stowage position, and mo	their	.1 Height of stowage position in lightest seagoing conditionm.		
Any inflatable liferaft used in		alongside the platform, if f	itted,	.2 Certified drop height of liferaftm.		
marine evacuation syste applicable;	em should, where	before being inflated, and bov in ready for boarding.	wsed	.3 Operation carried out successfully Yes/No		
.1 be sited close to the		It should be demonstrated that		.4 Method of release automaticmanual		
be capable of dropping system and boarding p		liferafts can be deployed from stowed positions independent	tly of	.5 Description of release method		
.2 be capable of release	one at a time from its	the marine evacuation system		.6 Liferafts launched independently of the MES Yes/No		
stowage rack with arra enable it to be mo		It should be demonstrated that the liferafts will float free from their		('ommonte/obconvotione		
platform.		stowage positions, inflate and break free in the event of the		Passed Failed		
.3 be provided with pre- connected retrieving lin	<u> </u>	sinking.				

Marine evacuation systems	Model:			Surve	z Time: eyor: nization:
6.2.8.2 Liferaft release fr	om passage		Regulations:-Cha	apter I	II/13.4; LSA Code I/1.2 & VI/6.2; MSC.81(70) 1/12.5.5
Test Proce		Acceptance	Criteria		Significant Test Data
Test Proce Inflatable liferafts assoc evacuation systems Any inflatable liferaft used ir marine evacuation system with pre-connected or retrieving lines to the platfor	iated with marine a conjunction with the should be provided easily connected	Acceptance If the passage is to give liferaft(s), it should be der be easily and quickly deta	direct access to the monstrated that it car	.1 .2 .3 .4	Significant Test Data         Are liferafts launched with passage Yes/No         Method of connection of liferafts to passage         Method of release from passage         Method of release acceptable Yes/No         Method of release acceptable Yes/No         Comments/observations         assed Failed

	Manufacturer:			Date: Time:	
Marine evacuation	Model				—
	Lot/Serial Number:		Surveyor:		
systems Lot/Serial Number: O		Organization:			
6.2.9 Timed evacuation	n test		Regulations:	LSA Code I/1.2 & VI/6.2; MSC.81(70) 1/12.6.1	
Test Proce	dure	Acceptance Criteri	a	Significant Test Data	
Performance of the marine		The passage of the marine evacuation system should provide for safe decent of		No. of persons system is certificated for	
A marine evacuation system for capacity by mean o	f timed evacuation	persons of various ages, sizes capabilities, wearing approve	d lifejackets,	No. of platform crew	
deployments conducted in h		from the embarkation station to platform or survival craft.	o the floating	Number evacuated after 10 min (cargo	vessel)
It should be demonstrated in harbour by a full deployment of a system, including the launching and inflation of all the associated liferafts, that the system will provide a satisfactory means of				Number evacuated after 30 min (passenger	vessel)
evacuation.				Number actually evacuated	
For this trial the number of should be that for which the certificated.				Time taken	
				No. of associated liferafts	
The various stages of this tri as to permit the calculatic	on of the number of			Carrying capacity of liferafts	
persons that can be evacuated period, a representative contract of the period.	mposition of persons			Height of embarkation deck above water	_ m
with normal health, height and weight should be used in the demonstration, and should consist of different sexes and ages so far as it is practicable and reasonable.			Weather conditions: Comments/Observations		
Time Trial Sheets Attached to be completed					
				Passed Failed	

Marine evacuation systems	Manufacturer: Model: Lot/Serial Number:		Date: Time: Surveyor: Organization:
-	sea trial (Phase 1)		ns: LSA Code I/1.2 & VI/6.2; MSC.81(70) 1/12.6.2.1
	st Procedure	Acceptance Criteria	Significant Test Data
Conditions during the heavy weather sea trial should not fall below a sea state associated with a wind of force 6 on the Beaufort scale. It should be demonstrated at sea by a full deployment of a system, including the launching and inflation of the associated liferafts, that the system will provide a satisfactory means of evacuation in a sea state associated with a wind of force 6 on the Beaufort scale, and in association with a significant wave height of at least 3 m. During the sea trial, a spectrum analysis of the recorded wave height should be performed. The signal should be high-pass filtered at 0.08 Hz to exclude any contributions from swell. The significant wave height should be calculated based on filtered spectrum and should not be less than 3.0 m.		System to remain usat throughout the trials and shou not suffer damage to the platfor passage, or liferafts, or oth defects. System capable of providing a metres significant wave heig satisfactory means of evacuati in a sea state associated with wind of force 6 on the Beaufor scale.	ble       .1       Position of vessel during trials         buld       Weather conditions at start      BF;         rm,       Weather conditions at end of trials      BF.         her       Wind speed at start      m/s         Wind speed at end      m/s         ght       Significant wave height      m         h a       Maximum wave height      m
<ul> <li>The demonstration should be carried out in accordance with the following procedures:</li> <li>Phase 1 – Initial deployment of system.</li> <li>.1 with the vessel in a simulated "dead ship" condition, and the bow into the wind the system (passage and platform or</li> </ul>			Time taken for system to become usablemin Weather conditions remained with test limits Yes/No Comments/Observations
any other configurati design manner; and .2 The platform and pa ship to verify in th evacuation system for	ssage are to be observed from the s condition that it forms a stable or the platform crew to descend and duties in preparation for evacuation;		

Marine evacuation		Manufacturer:		Da Su Oro	te: Time: rveyor: ganization:
Marine evacuation systems       Model: Lot/Serial Number:         6.2.10.2 Heavy weather sea trial (Phase 2)         Test Procedure         Conditions during the heavy weather sea trial should not fall below a sea state associated with a wind of force 6 on the Beaufort scale.         Phase 2 – Lee Side Trial         .1       the ship to be manoeuvred to place the system on the lee side and then allowed to freely drift;         .2       where the system employs a platform, the nominated number of the platform crew are to		Org		Time: eyor: eyor: inization: <b>LSA Code I/1.2 &amp; VI/6.2 ; MSC.81(70) 1/12.6.2.2</b> Significant Test Data      .2 Number of platform crew Number of liferafts deployed Safe to evacuate 20 persons to liferafts     Yes/No3 Evacuation satisfactory Yes/No Comments/Observations.	
.3	two liferafts whi separately; where the system direct access to number of liferaft b via the passage. employed with the launched separate liferaft crew; and after the liferafts deployed, dep considerations 2	employs a passage giving the liferaft, the nominated oarding crew are to descend If additional liferafts are system, then they should be by and be retrieved by the have been satisfactorily endant upon safety 0 persons in suitable g are to evacuate to the e passage.	may vary, such that the configurat arrangement of the liferafts as de the test procedure may not be a The Heavy weather sea trial s based upon the manufacturer concept, for the system, for evacu number of persons in the required	scribed in pplicable. hould be s design uating the	

Marine evacuation	Manufacturer: Model:		Date Surv	: Time: eyor:	
systems Lot/Serial Number: Orga		anization:			
6.2.10.3 Heavy weather se	a trial (Phase 3)	Reg	ulations	: LSA Code I/1.2 & VI/6.2; MSC.81(70) 1/12.6.2.3	
Test Pr	ocedure	Acceptance Criteria		Significant Test Data	
Conditions during the heavy weather sea trial should not fall below a sea state associated with a wind of force 6 on the Beaufort scale.		System to remain usable throughout the trials and should not suffer damage to the platform, passage, liferafts, or other defects.		Number of persons platform can carry Platform weight loaded = persons X 75 kg = kg	
liferafts are to be loaded to weights representing 75 kg/ When loaded with the requi be observed for a period of free to drift.	d the required number of their certified capacity with	defects. System capable of providing a satis means of evacuation in a sea associated with a wind of force 6 Beaufort scale. The system should continue to pro safe and stable evacuation system.	on the		

	Manufacturer:		Date	: Time:	
Marine evacuation	Model:			eyor:	
systems Lot/Serial Number:			Orga	nization:	
6.2.10.4 Heavy weather se	ea trial (Phase 4)	-		LSA Code I/1.2 & VI/6.2; MSC.81(70) 1/12.6.2.4	
Test Pro	ocedure	Acceptance Crite	ia	Significant Test Data	
	weather sea trial should not	System to remain usable t		Number of persons platform can carry	
fall below a sea state assoc	ciated with a wind of force 6	trials and should not suffer o	•	Number of persons platform can carry	
on the Beaufort scale.		platform, passage, liferafts, or	other defects.	Platform weight loaded = persons X 75 kg	
Phase 4 – Loaded trial wea	ther side	System capable of providing		= kg	
The platform, if fitted, an	d the required number of	means of evacuation in a sea state associated with a wind of force 6 on the Beaufort scale.		Number of liferafts inflated	
liferafts are to be loaded to weights representing 75 kg/	their certified capacity with person.			Carrying capacity of liferaft	
The trials of phase 2 and 3 should be repeated with the system deployed on the weather side of the ship. The lee side trials and the weather side trials may be conducted in any convenient order.		The system should be tested, as far as practicable, on a vessel having similar characteristics to the types of ships the equipment is to be fitted to.		Liferaft weight loaded = persons X 75 kg = kg Method of loading liferafts	
Where ship manoeuvres are required to place the					
sustained during this manoe	e, any damage or failure euvre should not constitute a			Average drift speed during trial m/s	
failure of the system.				Length of loaded trial weather side min	
Vessel allowed to drift for a minimum period of 30 minutes.				Comments/Observations	
				Passed Failed	

Marine system	evacuation IS	Manufacturer: Model: Lot/Serial Number:	Surveyor:
6.2.11	Evacuation trial	timings (MES with platform and liferafts)	Regulations: Chapter III/15; LSA Code I/1.2 & VI/6.2; MSC81(70) 1/6.1.5
			TIMINGS
1 ME	ES door open		
2 ME	ES in water		
3 ME	ES slide/platform infla	ated	
4 4 p	platform crew on plat	form	
5 Sig	gnal to release liferaf	ts given	
6 <b>1S</b>	T LIFERAFT LAUN	CHED	
6.′	1 ILR container bow	vsed in	
6.2	2 ILR boardable		
6.3	3 1st person descer	nds system	
6.4	4 Last person in life	raft No 1	
6.5	5 Liferaft marshalled	d clear	
7 <b>2</b> N	7 2ND LIFERAFT LAUNCHED		
7.′	1 ILR container bow	vsed in	
7.2	2 ILR boardable		
7.3	7.3 1st person descends system		
7.4	4 Last person in life	raft No 2	
7.5	5 Liferaft marshalled	d clear	

Continued.....

(Co	ontinued)	TIMINGS
8	3RD LIFERAFT LAUNCHED	
	8.1 ILR container bowsed in	
	8.2 ILR boardable	
	8.3 1st person descends system	
	8.4 last person in liferaft No 3	
	8.5 Liferaft marshalled clear	
9	4TH LIFERAFT LAUNCHED	
	9.1 ILR container bowsed in	
	9.2 ILR boardable	
	9.3 1st person descends system	
	9.4 Last person in liferaft No 4	
	9.5 Liferaft marshalled clear	
10	5TH LIFERAFT LAUNCHED	
	10.1 ILR container bowsed in	
	10.2 ILR boardable	
	10.3 1st person descends system	
	10.4 Last person in liferaft No 5	
	10.5 Liferaft marshalled clear	

Continued.....

(Continued)	TIMINGS
11 6TH LIFERAFT LAUNCHED	
11.1 ILR container bowsed in	
11.2 ILR boardable	
11.3 1st person descends system	
11.4 Last person in liferaft No 6	
11.5 Liferaft marshalled clear	
12 7TH LIFERAFT LAUNCHED	
12.1 ILR container bowsed in	
12.2 ILR boardable	
12.3 1st person descends system	
12.4 Last person in liferaft No 7	
12.5 Liferaft marshalled clear	
13 8TH LIFERAFT LAUNCHED	
13.1 ILR container bowsed in	
13.2 ILR boardable	
13.3 1st person descends system	
13.4 Last person in liferaft No 8	
13.5 Liferaft marshalled clear	
Evacuation trial completed at hr min sec	
Total Time for Evacuation	hr min

Marine system	evacuation s	Manufacturer: Model: Lot/Serial Number:	Surveyor:
6.2.12	Evacuation trial t	imings (MES straight into liferafts)	Regulations: Chapter III/15; LSA Code I/1.2 & VI/6.2; MSC81(70) 1/6.1.5
			TIMINGS
1 MES	S door open		
2 ME	S in water		
3 MES	S passage, liferafts ir	nflated and boardable	
4 ME\$	6 crew descend		
4.1	Additional liferaft l	aunched (if required)	
4.2	ILR container bow	vsed in	
4.3	ILR boardable		
5 Sigi	nal to receive passer	ngers given	
6 <b>1S</b> T	PERSON DESCEN	IDS (liferaft No 1)	
6.1	Last person in life	raft No 1	
6.2	Liferaft marshalled	d clear	
7 <b>1S</b>	PERSON DESCEN	IDS (liferaft No 2)	
7.1	Last person in life	raft No 2	
7.2 Liferaft marshalled clear			
8 1ST PERSON DESCENDS (liferaft No 3)		IDS (liferaft No 3)	
8.1	Last person in life	raft No 3	
8.2	Liferaft marshalled	d clear	

Continued.....

Continued	TIMINGS	
9 <b>1ST PERSON DESCENDS</b> (liferaft No 4)		
9.1 Last person in liferaft No 4		
9.2 Liferaft marshalled clear		
10 <b>1ST PERSON DESCENDS</b> (liferaft No 5)		
10.1 Last person in liferaft No 5		
10.2 Liferaft marshalled clear		
11 <b>1ST PERSON DESCENDS</b> (liferaft No 6)		
11.1 Last person in liferaft No 6		
11.2 Liferaft marshalled clear		
12 <b>1ST PERSON DESCENDS</b> (liferaft No 7)		
12.1 Last person in liferaft No 7		
12.2 Liferaft marshalled clear		
13 <b>1ST PERSON DESCENDS</b> (liferaft No 8)		
13.1 Last person in liferaft No 8		
13.2 Liferaft marshalled clear		
Evacuation trial completed at hr min sec		
Total Time for Evacuation hr min		

#### 6.3 MEANS OF RESCUE

#### **EVALUATION AND TEST REPORT**

- 6.3.1 Submitted drawings, reports and documents
  - 6.3.1.1 General data and specifications
  - 6.3.1.2 Quality assurance
  - 6.3.1.3 Visual inspection
- 6.3.2 Means of rescue Marine evacuation systems
  - 6.3.2.1 Visual inspection of means of rescue types
  - 6.3.2.2 Means to ascend to the deck
    - 6.3.2.2.1 Visual inspection of means to ascend to the deck
    - 6.3.2.2.2 Handholds on inclined MESs
    - 6.3.2.2.3 Visual inspection of ladders (or equivalents)
  - 6.3.2.3 Mechanical hoist
    - 6.3.2.3.1 Static proof load test of safety hoist
    - 6.3.2.3.2 Operational load test
    - 6.3.2.3.3 Turning in test
    - 6.3.2.3.4 Winch brake test
    - 6.3.2.3.5 Safety hoist recovery speed test
    - 6.3.2.3.6 Hand operation test
- 6.3.3 Means of rescue Davit launching system
  - 6.3.3.1 Visual inspection of davit-launched means of rescue
  - 6.3.3.2 Markings on davit-launched means of rescue
  - 6.3.3.3 Impact test
  - 6.3.3.4 Inflatable means of rescue
    - 6.3.3.4.1 Damage test of inflatable means of rescue
    - 6.3.3.4.2 Inflation test
    - 6.3.3.4.3 Pressure test
    - 6.3.3.4.4 Strength test
  - 6.3.3.5 Rigid means of rescue
    - 6.3.3.5.1 Construction of rigid means of rescue
    - 6.3.3.5.2 Strength of rigid means of rescue
  - 6.3.3.6 Means of rescue launching appliance
    - 6.3.3.6.1 Static proof load test
    - 6.3.3.6.2 Operational load test
    - 6.3.3.6.3 Turning in test
    - 6.3.3.6.4 Winch brake test
    - 6.3.3.6.5 Means of rescue recovery speed test
    - 6.3.3.6.6 Hand operation test

#### 6.3 MEANS OF RESCUE

#### **EVALUATION AND TEST REPORT**

Manufacturer	
System Type	
Serial Number	
Maximum Working Load	
Maximum Turning Moment	
Winch type	
Serial Number	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Means of rescue			Surveyor:	Time:	
6.3.1 Submitted draw	ings, reports and documer	its			
Submitted drawings and	documents			01-	<b>4</b>
Drawing No.	Revision No. & date	Title of drawing		Sta	tus
Submitted reports and d					
Report/Document No.	Revision No. & date	Title of report/document		Sta	tus
		Maintenance Manual			
		Operations Manual			

Means of rescue	Model:	Survey		Surveyor: _	n:
6.3.1.1 General data an	d specifications		Regulations: I		//4.4, V/5.1; MSC.81(70)1/7.2.16
General Information		MOR Dimensions		N	IOR Weight
C11/1	ntation: Type App.) ): e buoyancy: applicable) 1 2	Dimensions: LOA: Breadth Maximum: Depth to Sill: Depth to Gunwale: Moulded Breadth: Moulded Depth: (Insert diagram of hull for refe		Ca	esign Weight: Unloaded:

	Manufacturer:	Date: Time:				
	Model:	Surveyor:				
Means of rescue	Lot/Serial Number:	Organization:				
6.3.1.2 Quality assurance	Ce	Regulations: MSC.81(70) 2/1.1, 1.2				
	s of a particular type are required by chapter III	Quality assurance				
	ention for the Safety of Life at Sea, 1974, as					
	nal Life-Saving Appliance (LSA) Code, to be	Standard Used:				
	s of the Administration should make random					
	rers to ensure that the quality of lifesaving					
approved prototype life-sav	used comply with the specification of the	Quality assurance Procedure:				
approved prototype me-sa						
Manufacturers should be r	equired to institute a quality control procedure	Quality assurance Manual:				
	ppliances are produced to the same standard					
as the prototype life-saving	appliance approved by the Administration and					
	duction tests carried out in accordance with the	Description of System:				
Administration's instruction	IS.					
		Quality assurance System acceptable				
		Yes/No				
		Comments/Observations				
		Comments/Observations				

Means of rescue	Model:		Surveyor:		:
6.3.1.3 Visual inspection	n	Regulations:SOLAS III/26.4	; LSA Code I/1.2.2.9;	MSC/Circ.810-2.2, 2.4.2	2.1, 2.4.2.4, 2.4.2.9
Test Proced		Acceptance Criteria		Significant	: Test Data
Visual examination. .1 Approval markings		he means of rescue should: e clearly marked with approval inforn dministration which approved it, date kpiry and operational restrictions;		Passed	Failed
		arkings are to be indelible;		Passed	Failed
		e conspicuously marked with the mersons the means of rescue is permit		Passed	Failed
	1	e conspicuously marked to preve erafts and, if applicable to a marine nless these also form part of the mea	evacuation system,	Passed	Failed
.2 Operating instructions		e provided with brief instructions o ustrating the use of the means of reso		Passed	Failed
				Comments/Observation	าร

Means of rescue	rescue Manufacturer: Model: Lot/Serial Number:			Time:	
6.3.2.1 Visual inspection	on of means of rescue	e types	Regulations:	SOLAS III/26.	4; LSA Code 1.2.2.9; MSC/Circ.810-2.4
Test Proce		Acceptan	ce Criteria		Significant Test Data
the LSA Code p floating platform, wi means to ascend able-bodied persons		Is the MES Type Approved in above? Is a suitable floating platform Is a ladder or other mean provided? Is a mechanical hoist provide	n provided? s of ascending		Yes/No Yes/No Yes/No
in paragraphs 4.1.3 and in the case of 4.2.2, 4.2.2.1, 4.2 4.2.8.1, 4.2.8.2 (if fitt the case of a rigid 4.3.6.2, 4.3.6.3, 4.3 4.3.6.10 and 4.3.7 provide a suitable fi device should be us appliance, meeting 6.1 or equivalent. A	wit-launched liferafts .1, 4.1.4.1, 4.1.5.1.1, an inflatable device, .2.3, 4.2.2.4, 4.2.7, ted) and 4.2.9.1, or in device, 4.3.1, 4.3.2, .6.4, 4.3.6.6, 4.3.6.9, of the LSA Code, to loating platform. The sed with a launching the requirements of safety device should t over stressing the	Is the device designed to con a davit-launched liferaft? Is the Means of Rescue a device?			Yes/No Inflatable/Rigid Comments/Observations

Means of rescue	Model:			Surveyor:		me:
6.3.2.2.1 Visual inspecti	on of means to asce		Regulations: N	MSC/Circ.810		
Test Proced		Acceptanc			Signific	ant Test Data
The MES is to be provide able-bodied persons to asc		A means of ascending to the corresponds to the approved of		ovided and	Passed	Failed
In the case of a vertical M be a ladder or by other me						
For inclined MESs, this providing suitable handho ladders with steps having a surface.	lds or by portable	The amount of maintenance minimum.			Passed	Failed
Visually inspect the appliar Conduct measurements ar as required.		Parts which require maint accessible and easily maintair		be easily	Passed Comments/Observa	Failed
					Means provided to a	ascend to the deck:

Means of rescue	Model:	S	ate: urveyor: rganization:	Time:
6.3.2.2.2 Handholds on	Inclined MESs	Regulations: MS	C/Circ. 810 –2.4.1	
Test Proced	lure	Acceptance Criteria		Significant Test Data
Materials used for hand suitable for the intended pu		Are handholds fitted?		0
		The material and its means of attachment use handholds is to be of sufficient strength to acco the expected use.	mmodate	Failed
6.3.2.2.3 Visual inspec	tion of ladders (or ec	uivalents) Regulations: MS	C/Circ. 810 –2.4.1	
Test Proced		Acceptance Criteria		Significant Test Data
The steps of the ladder should be suitable for the in	(or its equivalent)	The construction of the ladder and its means of at are to be of sufficient strength to accommon expected use.	Daccar	d Failed
			Comm	ents/Observation

Means of rescue Model:			Date: Time: Surveyor:		
Moone of receive Model:	er: Thoist Reg Acceptance Criteri Acceptance Acceptance Criteri Acceptance Acceptance Criteri Acceptance Acceptan	Surveyo Organiz ulations: LSA Cod a ttachments other cient strength to it of not less than d. e of significant	Time: ation: e 6.1.1.5 - 6.1.1.6; MSC.81(70) 1/8.1.1 Significant Test Data MWL: kN Test load (2.2 x MWL): kN There should be no evidence of significant deformation or other damage Passed/Failed Upright Passed/ Failed 20° inboard list Passed/ Failed 20° outboard list Passed/ Failed 20° outboard list Passed/ Failed		

	Manufacturer:		Date:	_ Time:
Means of rescue	Model:		Surveyor:	
	Lot/Serial Number:		Organization:	
6.3.2.3.2 Operational lo	oad test	Regulations: L	SA Code 6.1.1.1 - 6.1.1.3; MSC.81(	70) 1/8.1.2
Test Procedure Acceptance Criteria		Acceptance Criteria	Significant T	
For safety hoist a mass ed	qual to 1.1 times the	The appliance should successfully lower	Weight of the lightest safety hoist	intended for use:
maximum working load sh		the load under all of the conditions, and		
from the lifting points	with the launching	there should be no evidence of	LWL:	kN
appliance in the upright po	osition.	significant deformation or other damage		
		as a result of the tests.	MWL:	. kN
The load should be me				
inboard to the full outboar		Each launching appliance together with	Test load (1.1 x MWL) :	kN
means of operation that is	used on the ship.	all its lowering and recovery gear should		
		be so arranged that the fully equipped	Clear of davit horn?*	Passed/Failed
The test should be repeate		safety hoist it serves can be safely		
appliance positioned to s		lowered against a trim of up to 10 <sup>0</sup> and a	Does the appliance successfully	
20º inboard list and 10º tri		list of up to 20 <sup>0</sup> either way:	conditions without evidence or damage? Passed/Failed	
All the tests should be re	peated with a mass	When boarded, as required by regulation		
equal to that of a fully eq without persons, or the s		III/23 or III/33, by its full complement of persons; and	Upright (1.1x MWL)	Passed/Failed
for the use with the da			20 <sup>o</sup> inboard list +10 <sup>°</sup> trim (1.1xM)	WL)Passed/Failed
satisfactory functioning of	the davit under very	Without persons in the safety hoist.	, , , , , , , , , , , , , , , , , , ,	,
light load conditions.			20º inboard list +10° trim (LWL)	Passed/Failed
			Stored power	Passed/Failed
			Start pressure:	k Pa
			Min. pressure:	k Pa
			Pressure drop after one movemer	nt: k Pa
			Time from inboard to outboard:	sec
			Comments/Observations	
			*if applicable	

Means of rescue	Model:			Surveyor:	Time:
6.3.2.3.3 Turning in test	 ·		Regulations:	LSA Code 6.1.1	.3; MSC.81(70) 1/8.1.3
Test Procee		Acceptanc			Significant Test Data
A mass equal to 1.1 tin working load should be su lifting points with the laun the upright position. With t full upright position the hoisting load should be m outboard to the full inboard means of operation that is	nes the maximum uspended from the iching appliance in he appliance in the maximum design noved from the full d position using the	The appliance should succe designed hoisting load from position without causing pern damage.	ssfully move t the outboard to	o the inboard	maximum designed hoisting load: kN Does the launching appliance successfully move the load from outboard to inboard? Passed/ Failed Does the launching appliance show any evidence of significant deformation or other damage as a result of this test? Passed/ Failed Comments/Observations

Means of rescue	Model: 5		Date:          Surveyor:          Organization:	
6.3.2.3.4 Winch brake test	t		Regulations:	LSA Code 6.1.2.5; MSC.81(70) 1/8.1.4
Test Procedu	re	Acceptance Crite		Significant Test Data
Vinch drums should be maximum number of turns static test load of 1.5 time working load should be app the brake. This load should for at least one complete r barrel shaft. A test load of maximum working load s lowered at maximum lowerin a distance of at least 3 m applying the hand brake shar This test should be repeate times. If the winch design incorpora brake, one of these tests should with the brake wetted but stopping distance may be exec The various tests should achi lowering distance of at least 7 Operation of the winch with a equal to that of a fully equip without persons, or the ligh intended for use with the winc demonstrated.	wound to the permitted and a as the maximum blied and held by then be lowered revolution of the of 1.1 times the should then be ng speed through and stopped by rply. ed a number of rates an exposed uld be carried out in this case the ceeded. ieve a cumulative 150 m. a load of a mass oped safety hoist, ntest safety hoist	Acceptance Crite The test load should drop no when the brake is applied stopping distance may be exposed brake is wetted). The launching appliance sho lower a mass equal to that of safety hoist, without persons safety hoist intended for use v Inspection of the stripped win no significant damage or undu	p more than 1 m (except that the exceeded if ar puld successfully a fully equipped s, or the lightes with the winch.	<ul> <li>Weight of the lightest safety hoist *</li> <li>e</li> <li>:</li> <li>MWL</li> <li>MWL</li> <li>Test 1:</li> <li>Static test load (1.5 x MWL):</li> <li>Does the brake test hold the test load (1.5x MWL)?</li> <li>Passed/Failed</li> <li>MWM: kNm</li> <li>Drum diam. mm</li> <li>Wire diam. mm</li> <li>Number of turns</li> <li>y</li> <li>Max. lowering speed m/s</li> <li>d</li> <li>st</li> <li>Test 2</li> <li>Dynamic Test load (1.1 x MWL):</li> </ul>

Means of rescue	Model:		Surveyor:
6.3.2.3.4 Winch brake	e test (continued)		Regulations: LSA Code 6.1.2.5; MSC.81(70) 1/8.1.4
Test Pro	cedure	Acceptance Criteria	Significant Test Data
Following completion 6.3.2.3.5 and 6.3.2.3.6), stripped for inspection.			1 <sup>st</sup> stop > 3m         2 <sup>nd</sup> stop:       m         3 <sup>rd</sup> stop:       m         4 <sup>th</sup> stop:       m         5 <sup>th</sup> stop:       m         Total lowering distance > 150 m       Passed/ Failed         Test 3 ( if applicable)       Winch design incorporates an exposed brake? Yes / No         Wet stopping distance       m         Passed/ Failed       Test 4         Test load (LWL)       kN         Lowering test with LWL satisfactory?         Passed/ Failed         Does the inspection of the stripped winch reveal any significant damage or undue wear?         Passed/ Failed         Remarks:

Means of rescue	Manufacturer: Model: Lot/Serial Number:			Survey	Time: /or: ization:
6.3.2.3.5 Safety hoist i	recovery speed test		<b>Regulations:</b>	LSA Co	de 6.1.1.9; MSC.81(70) 1/8.1.5
Test Proce		Acceptance C			Significant Test Data
It should be demonstrative intended for use with a sation of recovering the safety here of persons for which it is the its equipment or an equivation of not less than 0.3 m/s.	fety hoist is capable bist with the number to be approved and	Each safety hoist launching fitted with a powered winch me the safety hoist from the wa hoist complement of persons rate of not less than 0.3 m/s.	otor capable of r ter with its full	aising safety	Hoisting load: Measured recovering speed of the safety hoist: m/s
					Comments/Observations Passed Failed

6.3.2.3.6       Hand operation test       Regulations: LSA Code 6.1.2.6; MSC.81(70) 1/8.1.6         Test Procedure       Acceptance Criteria       Significant Test Data         The hand operation of the winch should be demonstrated.       An efficient hand gear should be provided for recovery of each safety hoist. Hand gear handles or wheels should not be rotated by       Hoisting load:	Means of rescue	Manufacturer: Model: Lot/Serial Number:		-	Date:         Time:           Surveyor:	
hand with no load, this should be hoist is being lowered or when it is being satisfactorily by hand? Passed/ Failed demonstrated with a load of 1.5 times the hoisted by power.	Means of rescue         6.3.2.3.6       Hand operation         Test Procedu         The hand operation of the demonstrated.         If the winch is designed for hand with no load, to demonstrated with a load	Model: Lot/Serial Number: n test ure winch should be quick recovery by this should be of 1.5 times the	Acceptance Criteria An efficient hand gear should for recovery of each safety hois handles or wheels should not b moving parts of the winch whe hoist is being lowered or whe	Regulations: a be provided st. Hand gear be rotated by en the safety	Surveyor:	ted

Means of rescue	Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time:	·····
6.3.3.1 Visual inspectio (continued)	on of davit-launched means of rescue	Regulations: LSA Cod	de - 1.2.2.9 MSC/Circu	ılar.810 -2.2, 2.4.2.1, 2	2.4.2.4, 2.4.2.9
Test Procedure	Acceptance	e Criteria	S	Significant Test Data	
Visual examination.	The means of rescue should	1:		<u> </u>	
.1 Approval markings	the Administration which	Be clearly marked with approval information including the Administration which approved it, date of manufacture and expiry and operational restrictions,		Failed	
	Markings are to be indelible	;	Passed	Failed	
	Be conspicuously marked w of persons the means of res		Passed	Failed	
.2 Operating instructions	Be conspicuously marked to liferafts and, if applicable m unless these form part of the	arine evacuation system,	Passed	Failed	
.3 Landing Area at water le	evel Be provided with brief instru illustrating the use of the me		Passed	Failed	
.4 Colour	The means of rescue is t receiving rescued persons:	o have at least 9m² for	Passed	Failed	
.5 Protection	Be of a highly visible colour:		Passed	Failed	
	Be protected against dama the ship's side;	ge when moving against		Failed	
	Offer protection to the rescu the launching appliance;	ued person from injury by	Passed	Failed	-

Means of rescue	scue Manufacturer: Model: Lot/Serial Number:			Sumovori			
6.3.3.1 Visual inspection (continued)	on of davit-launch			Circular.810 -2	2.4.2.1, 2.4.2.2, 2.4.2.5 to		
Test Proced	lure	Acceptane	ce Criteria		Significant Test Data		
Visual examination (cont.)		The means of rescue sho	ould (cont.):	Passed	Failed		
.5 Protection (cont.)		Prevent occupants from rescue should it come in like the ship's side;			Failed		
		Be arranged such that the need to traverse any gap rescue and the platform a	os between the means	of Passed	Failed		
		The floor is to be self-dra	ining:	Passed	Failed		
.6 Self-draining floor .7 Means provided for bo	wsing	Be provided with means rescue against the ship's		of Passed	Failed	N/A	
.8 Equipment	wonig	Be provided with one k 4.1.5.1.2 of the LSA Cod			Failed	N/A	
.9 Controls		The inflation system con type, are to be manual co			Failed	N/A	
		Be fitted with retro-reflect IMO Resolution A.658(16		ice			
.10 Retro-reflective materi	al	Be fitted with at least two	boarding ramps.	Passed	Failed	N/A	
.11 Boarding ramps							

Mea	ns of rescue	Model:	acturer: ial Number:				Surveyor:		_ Time:
6.3.3	3.1 Visual inspecti (continued)	on of	davit-launched	means of	rescue	Regulations:	LSA Code – 4	1.1.3.1 and 4.1.5.1.	.1
	Test Pro	cedure			Accept	tance Criteria		Significant Test Data	
Visu .12 .13 .14	Lifelines should be s the inside and outside A buoyant rescue qu than 30m of buoyant Means are to be container of the mea are prevented from f inflation and/or laur rescue.	e of the r loit, attac line. provided ns of res alling int	neans of rescue. ched to not less such that the scue or parts of it o the sea during	Lifelines pro A buoyant 30m of buo	of rescue s ovided and s rescue quo yant line is p ingements trength.	should (cont.): securely fitted. bit, attached to n provided. are provided w		Passed	Failed
.15 .16	Every inflatable me provided with at lea repairing punctu compartments. Every inflatable me provided with at least a pair of bellows.	ast one res ans of i	repair outfit for in buoyancy rescue is to be	One topping	g-up pump o	or pair of bellows	is provided.		Failed

Moore of receive		Date:          Surveyor:          Organization:
6.3.3.2 Markings on davit-launched means of	rescue Regulation	pns: LSA Code I/1.2 and 4.2
Test Procedure	Acceptance Criteria	Significant Test Data
The means of rescue should be marked with: Maker's name or trademark; Serial number; Name of approval authority and the capacity of the system; SOLAS; Date of manufacture (month and year); Date and place of last service; Maximum permitted height of stowage above waterline; and The maximum number of persons the means of rescue is permitted to accommodate. Launching and operating instructions should be marked on or in the vicinity of the container.	The means of rescue should be either packed in a container or stowed such that it is so constructed as to withstand hard wear under conditions encountered at sea and as far as practicable weathertight, except for drain holes in the container bottom. All instructions and markings to be indelible.	Makers name:

Means of rescue				Surveyor:	Time:
6.3.3.3 Impact test			<b>Regulations:</b>	LSA Code IV/4	4.1.4.1.1; MSC.81(70) 5.16.2
Test Proce	dure	Acceptance		Significant Test Data	
The liferaft should be loaded to the mass of the number it is to be approved and its liferaft in a free hanging p pulled laterally to a posi- released it will strike a rigin a velocity of 3.5 m/s. The should then be released to rigid vertical surface.	of persons for which equipment. With the position it should be ition so that when d vertical surface at Means of Rescue	After this test the means of res damage which would affect its			Comments/Observations

Means of rescue	Model: Lot/Serial Nu	::mber:	-	Date: Surveyor: Organization:	
6.3.3.4.1 Damage test of			Regulations: L	_SA Code IV/4.2.2.1; MSC.81(	
Test Procedure		Acceptance Criteria		Significant	t Test Data
It should be demonstrated event of any one of the compartments being da failing to inflate, the intact of or compartments should su positive freeboard over the rescue's periphery, the persons for which the mean is to be approved. Th demonstrated with pers having a mass of 82.5 kg an their normal positions or by distributed mass.	that, in the buoyancy maged or ompartment upport, with e means of number of ns of rescue is can be sons each nd seated in	The intact compartments should support freeboard over the means of rescue's number of persons for which the means of rescues number of persons for which the means of rescues number of persons for which the means of rescues number of persons for which the means of rescues number of persons for which the means of rescues number of persons for which the means of rescues number of persons for which the means of rescues number of persons for which the means of rescues number of persons for which the means of rescues number of persons for which the means of rescues number of persons number of	s periphery, the ans of rescue is the buoyancy =>	Compartment deflated: Freeboards: 12 o'clock 3 o'clock 6 o'clock 9 o'clock Compartment deflated: Freeboards: 12 o'clock 6 o'clock 9 o'clock Compartment deflated: Freeboards: 12 o'clock 6 o'clock 9 o'clock 3 o'clock 6 o'clock 9 o'clock 5 o'clock 9 o'clock 9 o'clock 5 o'clock 9 o'clock	mm mm mm mm 
				Passed	Failed

Means of rescue       Manufacturer:         Model:       Lot/Serial Number:	Date:            Surveyor:            Organization:			
6.3.3.4.2 Inflation test		s: LSA Code IV/4.2.2.3; MSC.81(70) 5.17.3 to 5.17.6		
Test ProcedureAn inflatable means of rescue, packed in each of container, should be inflated by pulling the pa and the time recorded:.1for it to become boardable, i.e. when buoy tubes are inflated to full shape and diamete .2.2for the cover to be erect; and.3for the means of rescue to reach its operational pressure when tested:.1at an ambient temperature of between the test of the cover to be erect; and.3for the means of rescue to reach its operational pressure when tested:.1at an ambient temperature of between tested:.2at a temperature of -30°C; and .3.3at a temperature of +65°C.For the inflation test at -30°C the packed mean rescue should be kept at room temperature for least 24 h, then placed in a refrigerated chamb a temperature of -30°C for 24 h prior to inflation pulling the painter. Two means of rescue should subject to an inflation test at +65°C the packed mean rescue should be kept at room temperature.For the inflation test at +65°C the packed mean rescue should be kept at room temperature for least 24 h, then placed in a heating chamber temperature of +65°C for not less than 7 h pri inflation by pulling the painter.Force to pull out painter should be measure ambient temperature.	thertemperature of between 18°C and 20°C it should achieve total inflation in not more than 1 min.ncyWhen inflated at -30°C the means of rescue should reach working pressure in 3 min. There should be no seam slippage, cracking, or other defect in the means of rescue and it should be ready for use after the tests.s of r at r at beWhen inflated at +65°C the gas pressure relief valves must be of sufficient capacity to prevent damage to the means of rescue by excess pressure and to prevent the maximum pressure during the inflation from reaching twice the re- seat pressure of the release valve.s of r at r at t a r toThere must be no seam slippage, cracking or other defect in the means of rescue.	Significant Test Data         1) Force to pull the painterN         Inflation times:         Container opensec         Boardablesec         Relief valves:       Upper opensec         Lights int./ext/sec         Working PressureMPa         2) Cold temperature0C         Hours:h         Inflation times:         Raft 1       Raft 2         Container opensec         Boardableh         Inflation times:       Raft 1         Relief valves:       Upper opensec         Boardablen       sec         Boardableh       sec         Boardablesec       Working Pressure         Lights int./ext/sec       Working Pressure         Hours:       MPa         3) Hot temperature       NHPa         3) Hot temperature		

Means of rescue	Model:		Date:          Time:            Surveyor:          Organization:
6.3.3.4.3 Pressure test			LSA Code IV/4.2.2.4; MSC.81(70) 5.17.7 to 5.17.8
Each inflatable compartmerescue should be tested to three times the working prerelief valve should be compressed air should be compressed air should be inflatable means of rescues ource removed. The test seleast 30 min. The measurement of proleakage can be started assumed that compartmere completed stretching due to and achieved equilibrium. The term "operational preemeaning as the term "work pressure determined by testing, expressed pressure by more figure should be used.	edure ent in the means of o a pressure equal to assure. Each pressure made inoperative, e used to inflate the ue and the inflation should continue for at essure drop due to when it has been of the inflation pressure stressure 'has the same ing pressure''; i.e. the the designed re-seat s, if fitted, except that, re of the relief valves, acceeds the designed	Acceptance Criteria The pressure should not decrease by more than 5% as determined without compensating for temperature and atmospheric pressure changes, and there should be no seam slippage, cracking or other defects in the means of rescue.	Significant Test Data         Design WP         Design temp

Mean	s of rescue	Model:		_	Date:          Time:            Surveyor:          Organization:
6.3.3	3.4.4 Strength test				LSA Code IV/4.2.8.1.1; MSC.81(70) 5.17.10
	Test Proced	ure	Acceptance	e Criteria	Significant Test Data
	ould be demonstrated b		During the test and after its		
centr	he means of rescue re support that the brid juate factor of safety as	dle system has an	inflatable means of rescue suitable for its intended use.	should remain	Temperature:ºC
	, ,				Time in temperature h
	the liferaft should temperature of 20±3°C least 6 h;				Number of persons
.2	following this period c	of conditioning, the			Loadkg
liferaft should be suspended from its lifting hook or bridle and the buoyancy chambers (not including an inflatable				Time suspendedmin	
	floor) inflated;	1			Pressure before loading
	when fully inflated ar valves have re-seate relief valves should be	ed themselves, all			Pressure suspended/loaded
.4	the liferaft should the	n be lowered and			Pressure after test after unloading
	loaded with a c equivalent to four time number of persons fo	es the mass of the or which it is to be			Dimensional deflections or distortions:
.5	approved and its equip each person being tak the liferaft should the remain suspended for	en as 82.5 kg. en be raised and			Comments/Observations
.6	the pressure before a fter the weight is ren remains suspended, s and	and after the test noved and while it			Passed Failed
	any dimensional distortions of the li recorded.				

Means of rescue			-	Surv	e: veyor: anization:	
6.3.3.5.1 Construction	of rigid means of re	escue	Regulations: L	LSA (	Code IV/4.3.2	
Test Procee	dure	Acceptance Cri			Significa	ant Test Data
The buoyancy of the mear be provided by approved material placed as near periphery of the liferaft. Th should be fire-retardant or fire-retardant covering.	inherently buoyant as possible to the le buoyant material	Material to be certified as beir	g fire retardant.		Passed	Failed
The floor of the means prevent the ingress of	water and should	The rigid means of rescue ingress of water.			Passed	Failed
effectively support the oc water and insulate them fro		The rigid means of rescue occupant out of the water.	is to support th	he	Passed	Failed
					Comments/Observations	
					Passed	Failed

Means of rescue	Model:			Survey	/or: ization:	_ Time:
	rigid means of rescue		<b>Regulations:</b>	LSA Co		
Test Proce		Acceptance C			Signif	icant Test Data
In addition to the above re liferaft for use with an a appliance should, when a	approved launching	The rigid means of rescue permanent damage from such		w any	Passed	Failed
lifting hook or bridle, with times the mass of its to persons and equipment.	stand a load of four				Comments/Observation	ons

			Date:	Tim	ie:	
Means of rescue			Organization	Surveyor: Organization:		
6.3.3.6.1 Static proc	of load test	Regulatio	Regulations: LSA Code 6.1.1.5 - 6.1.1.6; MSC.81(70) 1/8.1.1			
Test Proc	edure	Acceptance Criteria		Significa	nt Test Data	
For rigid means of rescue appliances, except wi subjected to a static pro	inches, should be	The launching appliance and its attachn winches should be of sufficient strength static proof load on test of not less that	n to withstand a	MWL :	kN	
their maximum working lo	bad.	maximum working load.		Test load (2.2 x MWI	_): kN	
With the load at the full outboard position, the load should be swung through an arc of approximately 10° to each side of vertical in		There should be no evidence of significant deformation or other damage as a result of this test.		There should be no deformation or other	evidence of significant damage	
the intended fore and aft				Passed/Failed		
The test should be done first in the upright position, followed by tests simulating a				Upright	Passed/Failed	
shipboard condition of lis				20º inboard list	Passed/Failed	
and outboard.				20º outboard list	Passed/Failed	
				Comments/Observat	ions	

	Model:		Date: Time: Surveyor:
Means of rescue Lot/Serial Number:			
	nal load test		ions: LSA Code 6.1.1.1 - 6.1.1.3; MSC.81(70) 1/8.1.2
Test Proc	cedure	Acceptance Criteria	Significant Test Data
For rigid means of rescu times the maximum wo suspended from the lif launching appliance in th The load should be r	rking load should be iting points with the ne upright position.	The appliance should successfully lower the load under all of the conditions, an there should be no evidence of significan deformation or other damage as a result of the tests.	nd LWL kN nt MWL: kN
inboard to the full outboard means of operation that The test should be repear appliance positioned to 20 <sup>0</sup> inboard list and 10 <sup>0</sup> t	is used on the ship. ted with the launching simulate a combined	Each launching appliance together with a its lowering and recovery gear should b so arranged that the fully equippe survival craft or rescue boat it serves ca be safely lowered against a trim of up to 10 <sup>0</sup> and a list of up to 20 <sup>0</sup> either way:	conditions without evidence of significant deformation or damage? An Passed/Failed
All the tests should be r equal to that of a full without persons, or the intended for the use wit the satisfactory function very light load conditions	y equipped lifeboat, lightest survival craft h the davit to ensure ng of the davit under	when boarded, as required by regulatio III/23 or III/33, by its full complement of persons; and without persons in the survival craft of	on 20 <sup>o</sup> inboard list +10 <sup>o</sup> trim (1.1xMWL) of Passed/Failed 20 <sup>o</sup> inboard list +10 <sup>o</sup> trim (LWL) Passed/Failed
Note: Notwithstanding the 10 requirements, lifeboat 1 for oil tankers, chemic carriers with a final angle 20 <sup>0</sup> should be capable of angle of heel on the lot taking into consideratio waterline of the ship.	0 <sup>0</sup> trim and 20 <sup>0</sup> list aunching appliances al tankers and gas of heel greater than f operating at the final wer side of the ship,	rescue boat. A launching appliance should not depend on any means other than gravity or store mechanical power which is independent of the ship's power supplies to launch the survival craft or rescue boat it serves in the fully loaded and equipped condition and also in the light condition.	Stored power Passed/Failed Start pressure: k Pa Min. pressure: k Pa Pressure drop after one movement: k Pa of Time from inboard to outboard: sec

# MSC.1/Circ.1632 Annex, page 128

Model:	r:	Date:            Surveyor:            Organization:
Model:	r: Regulations: LSA Acceptance Criteria The appliance should successfully move the maximum designed hoisting load from the outboard to the inboard position without causing permanent deformation or other damage.	Surveyor:

	Manufacturer:		_	Date:	Time:
				Surve	eyor:
Means of rescue Lot/Serial Number: _		Orgai		Orgar	nization:
	_		-		
6.3.3.6.4 Winch brake tes	st		Regulations:	LSA Co	ode 6.1.2.5; MSC.81(70) 1/8.1.4
Test Procedu	ure	Acceptance Cr	iteria		Significant Test Data
Winch drums should be		The test load should drop no r			Weight of the lightest safety hoist
maximum number of turns		the brake is applied (except			: kN
static test load of 1.5 time		distance may be exceeded if a	an exposed brak	ke is	
working load should be app		wetted).			MWL : kN
the brake. This load should					
for at least one complete					Test 1:
barrel shaft. A test load o					Static test load (1.5 x MWL): kN
maximum working load					Does the brake test hold the test load (1.5x MWL)?
lowered at maximum lowerin					Passed/Failed
a distance of at least 3 m					
applying the hand brake sha	arply.				MWM: kNm
This test should be new set	4				Drum diam. mm
This test should be repeat	ted a number of				Wire diam. mm
times.		The lounshing appliance shoul	d au acacafully la		Number of turns
If the winch design income	ratao an avragad	The launching appliance shoul			Max. lowering speed m/s
If the winch design incorpor brake, one of these tests sho		a mass equal to that of a function hoist, without persons, or the			Test 2
with the brake wetted but		intended for use with the wincl	•	IOISL	Dynamic Test load (1.1 x MWL):
stopping distance may be ex			1.		Dynamic Test load (1.1 x MWL).
stopping distance may be ex	kceeueu.	Inspection of the stripped wind	ch should revea		Brake test carried out after > 3m with max lowering
The various tests should ach	nieve a cumulative	significant damage or undue w			speed
lowering distance of at least		significant damage of dilude w	ical.		speed
Operation of the winch with					Stop within 1 metre? Passed/Failed
equal to that of a fully equip					
without persons, or the light					continued
intended for use with the win					
demonstrated.					

# MSC.1/Circ.1632 Annex, page 130

Means of rescue	Manufacturer: Model: Lot/Serial Number:		Date:          Time:            Surveyor:          Organization:		
6.3.3.6.4 Winch brake test (continued) Regu		Regulatio	ons: LSA Code 6.1.2.5; I	MSC.81(70) 1/8.1.4	
Following completion of 6.3.3.6.5 and 6.3.3.6.6), is stripped for inspection.	edure f these test (and	Acceptance Criteria	1 <sup>st</sup> stop 2 <sup>nd</sup> stop 3 <sup>rd</sup> stop: 4 <sup>th</sup> stop: 5 <sup>th</sup> stop: Total low Test 3 ( Winch c Yes/No Wet sto Test 4 Test loa Lowerin Does th significa Passed,	Significant Test Data         o > 3m       m         :       m         :       m         :       m         :       m         :       m         wering distance > 150 m       Passed/Failed         if applicable)       design incorporates an exposed brake?         pping distance       m         Passed/Failed       m         d (LWL)       kN         ng test with LWL satisfactory?       Passed/ Failed         e inspection of the stripped winch reveal any ant damage or undue wear?	

Means of rescue	Manufacturer: Model: Lot/Serial Number:		-	Date:          Time:            Surveyor:          Organization:
6.3.3.6.5 Means of rescue recovery speed test		Regulations: L	SA Code 6.1.1.9; MSC.81(70) 1/8.1.5	
Test Procee		Acceptance Crite		Significant Test Data
intended for use with a n capable of recovering the with the number of persons	It should be demonstrated that a winch intended for use with a means of rescue is capable of recovering the means of rescue with the number of persons for which it is to be approved and its equipment or an equivalent mass at a rate of not less		red winch motor of rescue from the t of persons and	Measured recovering speed of the boat:
6.3.3.6.6 Hand operatio	n test		Regulations: L	SA Code 6.1.2.6; MSC.81(70) 1/8.1.6
Test Procee		Acceptance Crite		Significant Test Data
The hand operation of the demonstrated. If the winch is designed fo hand with no load, demonstrated with a load mass of the empty lifting an	r quick recovery by this should be I of 1.5 times the	An efficient hand gear should recovery of each means of re handles or wheels should no moving parts of the winch wh rescue is being lowered or w hoisted by power.	scue. Hand gear ot be rotated by en the means of	Test 1: Test load (1 x hoisting load): winch can be operated



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> MSC.1/Circ.1633 14 December 2020

## REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (OTHER LIFE-SAVING APPLIANCES)

1 The Maritime Safety Committee, at its 102nd session (4 to 11 November 2020), approved the *Revised standardized life-saving appliance evaluation and test report forms*.

The original forms, as set forth in the *Standardized life-saving appliance evaluation and test report forms* (MSC/Circ.980) and its addenda, were developed on the basis of the requirements of the International Life-Saving Appliance (LSA) Code and the *Revised recommendation on testing of life-saving appliances* (resolution MSC.81(70)) by the Maritime Safety Committee, at its seventy-third session in 2001, with a view to providing guidance on how to conduct tests, record test data and verify tests. The Committee has since adopted seven amendments to the LSA Code and eight amendments to resolution MSC.81(70). These amendments have been incorporated in the original forms which, due to their volume, are now presented in six separate circulars, i.e. MSC.1/Circ.1628, MSC.1/Circ.1629, MSC.1/Circ.1630, MSC.1/Circ.1631, MSC.1/Circ.1632 and MSC.1/Circ.1633, pertaining to the equipment addressed in chapters II to VII of the LSA Code, respectively. The forms annexed to this circular apply to the equipment addressed in chapter VII of the LSA Code, i.e. other lifesaving appliances (line-throwing appliances).

3 The use of the revised forms will continue to be of benefit to Administrations and other parties, such as manufacturers, test facilities, owners and surveyors, and will be a major help in mutually accepting the type approval of appliances approved by other Administrations.

4 Member Governments are invited to bring the annexed, revised forms to the attention of all parties concerned with approving, manufacturing and testing life-saving appliances and to encourage them to use the forms.

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5 This circular supersedes MSC/Circ.980.

SUSTAINABLE SHIPPING PORA SUSTAINABLE PLANET

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## ANNEX

## REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (OTHER LIFE-SAVING APPLIANCES)

### INTRODUCTION

#### Reference

These standardized life-saving appliance evaluation and test report forms have been revised on the basis of the requirements of the International Life-Saving Appliance (LSA) Code, as amended through resolution MSC.425(98), the *Revised recommendation on testing of life-saving appliances* (resolution MSC.81(70)), as amended through resolution MSC.427(98), and the *Recommendation on means of rescue on ro-ro passenger ships* (MSC/Circ.810).

#### Status

In general, the tests described in the Revised Recommendation (resolution MSC.81(70)) constitute the test procedures and the LSA Code sets the acceptance criteria. The evaluation and test report forms are guidelines on how to conduct tests, record test data and verify tests. These forms are not intended to change the standards given in the LSA Code and the Revised Recommendation, as amended. In the case of inconsistency between the forms and the LSA Code or the Revised Recommendation, the text of the Code/resolution should prevail over that of the forms.

#### Layout

Each Administration may use electronically distributed evaluation and test report forms as the basis for customising the layout to reflect the profile of the approving body, without changing the original contents.

#### Internal references

The evaluation and test report forms should be stand-alone documents. Therefore, all internal references in the original text from the LSA Code or the Revised Recommendation have been replaced by either the full-length text or a reference to other relevant evaluation and test report forms. However, in some of the forms, external references are kept for updating purposes.

### **Documentation of tests**

For approval purposes, all detailed records of test data are to be enclosed with the report forms.

### Verification of tests

Each test is to be verified passed or failed by an Administration representative's initials (e.g. recognized organization or surveyor) and date of testing. Each page is to be verified on completion by the Administration representative's signature and its date of completion.

## Reporting of type approval

To facilitate unified reporting procedures, the completed evaluation and test report forms are to be seen as a documented verification of required type approval tests for each type of equipment. When documentation of type approval is required by a third party, the verified evaluation and test report forms should constitute the complete documentation of the type approval together with the relevant approval certificates.

### REVISED STANDARDIZED LIFE-SAVING APPLIANCE EVALUATION AND TEST REPORT FORMS (OTHER LIFE-SAVING APPLIANCES)

## TABLE OF CONTENTS

LSA Code Chapter VII (Other life-saving appliances) – Equipment:

7.1 Line-throwing appliances

## 7 OTHER LIFE-SAVING APPLIANCES

### 7.1 LINE-THROWING APPLIANCES EVALUATION AND TEST REPORTS

- 7.1.1 Submitted drawings, reports and documents
  - 7.1.1.1 Quality assurance
  - 7.1.1.2 Visual Inspection
  - 7.1.1.3 General data and specifications
- 7.1.2 Temperature cycling test
- 7.1.3 Low temperature conditioning test
- 7.1.4 High temperature conditioning test
- 7.1.5 Humidity conditioning
- 7.1.6 Water and corrosion resistance test7.1.6.1 1 m immersion for 24 hours test7.1.6.2 Salt spray test
- 7.1.7 Handling safety test 7.1.7.1 2 m drop test 7.1.7.2 Immersion suit glove test
- 7.1.8 Double charge test
- 7.1.9 Line tensile test
- 7.1.10 Safety inspection

## 7.1 LINE-THROWING APPLIANCES

## **EVALUATION AND TEST REPORT**

Manufacturer	
Туре	
Date	
Place	
Name Surveyor printed	
Signature	
Approving Organization	

Line-throwing appliar	Lot/Serial Number:		Date: Time: _ Surveyor: Organization:	
7.1.1 Submitted	d drawings, reports and do	cuments		
	Sul	mitted drawings and documents		Status
Drawing No.	Revision No. & date	Title	of drawing	Status
	Sı	bmitted reports and documents		04-1-1-
Report/Document No.	Revision No. & Date	Title of re	eport/document	Status
		Maintenance Manual -		
		Operations Manual -		

Line-throwing appliances	Manufacturer: Model: Lot/Serial Number:				
7.1.1.1 Quality assurance	Ce	Regulations: MSC.81(70) 2/1.1, 1.2			
Except where all appliances of a of the International Conventior amended, or the International inspected, representatives of the second sec	Quality assurance Standard Used:				
inspected, representatives of the Administration should make random inspections of manufacturers to ensure that the quality of life-saving appliances and materials used comply with the specification of the approved prototype life-saving appliance.		Quality assurance Procedure:			
Manufacturers should be required to institute a quality control procedure to ensure that life-saving appliances are produced to the same standard as the prototype life-saving appliance approved by the Administration and to keep records of any production tests carried out in accordance with the Administration's instructions.		Quality assurance Manual:			
		Description of System:			
		Quality assurance System acceptable			
		Yes/No			
		Comments/Observations			

	Manufacturer:	Date:	Date: Time:			
Line-throwing appliances	Model:	Surveyo	r:			
3 1	Lot/Serial Number:	Organiza	anization:			
7.1.1.2 Visual inspection		Regulations: LSA Code	SA Code Chapter I/1.2 and MSC.81(70) 1/ 9.4			
Test Procedure	Acceptance Cri		Significant Test Data			
Visual examination:	Line-Throwing Appliance should:					
Approval markings	Be clearly marked with approva the Administration which ap manufacture and expiry and o markings are to be indelible;	proved it, date of	Passed	Failed		
Operating instructions			Passed	Failed		
	diagrams printed on the casing cle	Be provided with clear and precise instructions or diagrams printed on the casing clearly illustrating the use				
Outer casing	of the line-throwing appliance;		Passed	Failed		
	Be so designed as not to cause d holding the casing when used in manufacturer's instructions; do adhesive tapes or plastic	n accordance with the bes not depend on				
Comfort	water-resistant properties;		Passed	Failed		
Ignition System	Be so constructed that the end fr ejected can be positively identified be capable of throwing a line with	ed by day or night and	Passed	Failed		
	be in the case of a pistol-fired roch the case of an integral rocket ar water-resistant casing. In additi pistol-fired rocket, the line and ro means of ignition should be stowe provides protection from the weat	nd line, contained in a on, in the case of a ckets together with the ed in a container, which	Comments/Obse	ervations		

Line-throwing appliances	Manufacturer: Model: Lot/Serial Number:			Date:         Time:           Surveyor:		
7.1.1.3 General Data ar	nd Specification	S	Regulations: L	ations: LSA Code 1.2; MSC.81(70) 1 /9.1		
General Informat	ion	Line-T	hrower Dimensio	ns	Line-Thrower Weight	
Construction Material:		Dimensions:				
Rocket Casing:		Length of Rocket: _			Design Weight: Rocket:	
Outer Casing (If applicable	e):	Diameter of Rocket:				
Line Material:		Length of Line:		Weight as Tested: Fully Equipped:		
		Length of Line.			Fully Equipped.	
		Number of Strands:			Comments/Observations	
		Diameter of Line:				

# MSC.1/Circ.1633 Annex, page 10

Line-throwing appliances		Manufacturer: Model: Lot/Serial Number:						-	Date:            Surveyor:            Organization:		
TEST ITEMS CONDITIONING SEQUENCE			S	PECIN	IEN NU	MBER			REFERENCES	REMARKS	
Specimen No. >>	1-3	4	5	6	7-9	10-12	13-15	16	MSC.81(70)		
Measuring dimensions and mass	A	A	A	A	A	A	A	А	LSA Code 1.2		
Temp cycling test (7.1.2)	В								1.2.1, 4.2.1		
Low temp cond. (7.1.3)		В							9.5, 4.2.2		
High temp cond. (7.1.4)			В						9.5, 4.2.3		
Humidity conditioning (7.1.5)				В					9.5, 4.2.4		
1 m for 24 hours (7.1.6.1)					В				9.1, 4.3.1		
Salt water spray (7.6.1.2)						В			9.1, 4.3.3		
Drop test (7.1.7.1)							В		9.5, 4.4.1		
Safety inspection (7.1.10)	С	С	С	С	С	С	С	С	9.1, 4.5.1, 4.5.5, 4.5.6		
Visual inspection (7.1.1.2)	С	С	С	С	С	С	С	С	9.4		
Operation at ambient temp.	D				D	D	D		9.5, 1.2.1, 4.2, 1.9.1,4.3.1, 4.3.3, 4.4.1		
Operate at conditioning temp.		D	D	D					9.5, 4.2.2, 4.2.3, 4.2.4		

Line-throwing appliances	Model:	Model: S						Surv	Date:          Surveyor:          Organization:			
TEST ITEMS CONDITIONING SEQUENCE				SPEC	CIMEN NU	JMBER			REFERENCES	REMARKS		
Specimen No. >>	1-3	4	5	6	7 - 9	10-12	13-15	16	MSC.81(70)			
Operational test using immersion suit (7.1.7.2)							E		9.1, 4.4.2	May be carried out with any specimen and the number recorded on the test sheet.		
Function test Line firing	Е	Е	Е	Е	Е	Е	E	Е	9.2			
Double charge firing test (7.1.8)								F	9.2			
Line tensile test (7.1.9)		G	G	G					9.3	May be carried out by an independent laboratory acceptable to the Administration and report submitted.		

**Note**: The letters in the above 'boxes' refer to the sequence of testing of each specimen Line-Throwing Appliance Projectile.

Line-throwing ap	pliances	Model:			Surveyo	r: ation:				
7.1.2 Temp	erature cy	cling test		Regulations: LSA Code 1.2 and 7.1; MSC.81(70) 1/9.5 & 4.2.1						
Τe	est Procedu	ire	Accepta	ance Criteria			nificant Test Data			
The three specime			Each specimen sh			1	2	3		
alternately subjected			damage such as shri			Condition after con	ditioning (Pass/Fa	uil)		
of -30°C and +65°C.			dissolution or ch	nange of mech	nanical					
not follow immediat			properties.			Distance travelled t	by line (metres)			
cycles, is acceptable			The projectiles shou		at least	Lateral deflection (	%)			
			230 m in calm condit	ions.						
		nimum temperature d in 1 day; and	The lateral deflectio should not exceed 1		0	Comments/Observa	ations			
chamber tha under ordin	t same day ary room	d from the warm and left exposed conditions at a 3°C until the next	of the projectile.							
		imum temperature I the next day; and				Passed	Failed			
chamber tha under ordin	t same day ary room	d from the cold y and left exposed conditions at a 3°C until the next				. 40004	<u> </u>			
The three projectiles a line and should the										

Line-throwing appliances		rer: Number:		Date: Time: Surveyor: Organization:				
7.1.3 Low temperature conditioning test Re			Regulations: L	Regulations: LSA Code 1.2 & 7.1; MSC.81(70) 1/ 9.5 & 4.2.2				
Test Procedure		Acceptanc	ce Criteria		Significant Test Data			
A line-throwing appliance unit, of projectiles, firing system and I be subject to a temperature of -3 least 48 h. and should ther effectively at that temperature.	line should 30°C for at	The specimen should show r shrinking, cracking, swelling, mechanical qualities. The specimen should carry th conditions. The lateral deflection from th exceed 10% of the length of fli	no sign of damag , dissolution or o ne line at least 230 he line of firing s	change of 0 m in calm should not	Specimen 4         Condition after conditioning (Pass/Fail)         Distance travelled by line (metres)         Lateral deflection (%)         Comments/Observations         Passed       Failed			

Line-throwing appliances	Manufactur Model: Lot/Serial N	Surveyor:			Time: 		
7.1.4 High temperatur	e condition	ing test	Regulations: L	& 7.1; MSC.81(70) 1/ 9.5 & 4.2.3			
Test Procedure		Acceptanc	e Criteria		Significant Test Data		
A line-throwing appliance unit of projectiles, firing system and I be subject to a temperature of at least 48 h. The specimen function effectively at that temper	ine should +65°C for ns_should	The specimen should show no shrinking, cracking, swelling, d mechanical qualities. The specimen should carry the conditions. The lateral deflection from the exceed 10% of the length of fli	sign of damage s issolution or chang line at least 230 r line of firing should	ge of m in calm d not	Specimen 5   Condition after conditioning (Pass/Fail)   Distance travelled by line (metres)   Lateral deflection (%)   Comments/Observations     Passed   Failed		

Line-throwing appliances		rer: Number:		Date:         Time:           Surveyor:		
7.1.5 Humidity condit	ioning		Regulations: L	& 7.1; MSC.81(70) 1/ 9.5 & 4.2.4		
Test Procedure		Acceptanc	e Criteria		Significant Test Data	
One individual line-throwing unit consisting of projectiles, firi and line should subjecte temperature of +65°C and 90° humidity for at least 96 h, follow days at 20°C to 25°C at 65° humidity and should then effectively at that temperature. The specimen should be fired or a line.	ing system d to a % relative wed by 10 % relative function	The specimen of line throws damage such as shrinking, crac change of mechanical qualities The specimen should carry th conditions. The lateral deflection from th exceed 10% of the length of flip	cking, swelling, dis s. le line at least 230 he line of firing s	ssolution or 0 m in calm should not	Specimen 6   Condition after conditioning (Pass/Fail)   Distance travelled by line (metres)	

Line-throwing appliances Manufact Lot/Seria	urer:		Date:          Time:            Surveyor:          Organization:						
7.1.6.1 1 m immersion for 24 hou	Regulations: L	Regulations: LSA Code 1.2 & 7.1; MSC.81(70) 1/ 9.1 & 4.3.1							
Test Procedure	Acceptan	ce Criteria			Significant Test I	Data			
Three rockets used in the line-throwing	The three specimens should s	how no sign of dar	mage such	7	8	9			
appliance units, should be immersed horizontally for 24 h under 1 m of water.	as shrinking, cracking, swelli mechanical qualities.	ng, dissolution or	change of	Condition after	conditioning (Pas	s/Fail)			
The specimens should be fired connected	The three specimens should o	arry the line at leas	st 230 m in	Distance trave	lled by line (metres	s)			
to a line and should function efficiently at that temperature.	calm conditions.								
·	The lateral deflection from t exceed 10% of the length of fl		Lateral deflecti	on (%)					
				Comments/Ob		led			

Line-throwing appliances	Model:	Manufacturer: Model: Lot/Serial Number:			Date:          Time:            Surveyor:          Organization:			
7.1.6.2 Salt spray test	4		Regulations: L	SA Code 1.2	2 & 7.1; MSC.81(7	/0) 1/ 9.1 & 4.3.3		
Test Procedure		Acceptanc	e Criteria			Significant Test	Data	
Three rockets used in line appliance units, should be subj		The three specimens should each specimen should show			10	11	12	
salt spray (5% natrium chloride at a temperature of +35±3°	e solution)	shrinking, cracking, swelling, mechanical qualities.			Condition after	conditioning (Pas	ss/Fail)	
least 100 h.	• ••• ••		Distance travel	led by line (metre	s)			
The specimens should be fired	connected	The three specimens should c calm conditions.	arry the line at leas	st 230 m in				
to a line and should function of			Lateral deflection (%)					
ambient temperature.		The lateral deflection from the						
Note: Natrium and sodium are compound.	the same	exceed 10% of the length of fli	gnt of the projecti	le.	Comments/Obs		iled	

Line-throwing appliances		rer: Number:		Date:          Time:            Surveyor:          Organization:					
7.1.7.1 2 m drop test			Regulations: L	: LSA Code 1.2 & 7.1; MSC.81(70) 1/ 9.1 & 4.4.1					
Test Procedure		Acceptanc	e Criteria			Significant Test	Data		
Three line-throwing appliances rockets should be dropped in turn end-on and horizontally from a height of 2 m on to a		The three specimens should remain in a safe condition after the drop test and should show no sign of damage such as cracking, swelling, dissolution or change of mechanical			131415Condition after conditioning (Pass/Fail)				
steel plate about 6 mm thick cer to a concrete floor.	nented on	qualities.	Distance travel	led by line (metres	s)				
The specimens should be fired to a line.	connected	The three specimens should ca calm conditions. The lateral deflection from the exceed 10% of the length of fli	Lateral deflection						
					Passed	Fail	led		

Line-throwing appliances		rer: Number:						
7.1.7.2 Immersion suit g	Regulations: LSA Code 1.2 & 7.1; MSC.81(70) 1/ 9.1 & 4.4.2							
Test Procedure		Acceptanc	e Criteria			Significant Test	Data	
Three specimens of line		The three specimens should b	e capable of bein	g operated	13	14	15	
appliance rockets should be a accordance with the man		effectively without injury to the close proximity during firing.	e operator, or any	y person in	Condition after	conditioning (Pas	s/Fail)	
operating instructions by an		<b>T</b> I. (1						
wearing an insulated buoyant suit or the gloves taken from ar		The three specimens should ca calm conditions.	arry the line at lea	ist 230 m in	Distance travell	ed by line (metre	s) I	
buoyant immersion suit.		The lateral deflection from the	ne line of firing	should not	Lateral deflection (%)			
The specimens should be fired	connected	exceed 10% of the length of flight of the projectile.						
to a line.					Operation using	g immersion suit g	love (Pass/fail)	
					Comments/Obs			

Line-throwing appliances	Model:	rer: Number:		Date:          Time:            Surveyor:          Organization:					
7.1.8 Double charge to	est		Regulations: LSA Code 1.2 & 7.1; MSC.81(70) 1/ 9.2						
Test Procedure		Acceptanc	ce Criteria		Significant Test Data				
If the line-throwing appliance p fired using an explosive charge of the projectiles should be fi double the normal charge. The specimen should be fired of to a line.	, then one red using	The launcher should remain double charge test. This test should establish tha double charge effectively with any person in close proximity The specimen should carry th conditions. The lateral deflection from t exceed 10% of the length of fl	at it can be opera out injury to the o during firing or bur e line at least 230 he line of firing s	ited with a perator, or ning. m in calm should not	Specimen 16   Normal weight of charge (grams)   Double weight of charge (grams)   Double charge test (Pass/Fail)   Launcher remaining in safe condition after double charge test (Pass/Fail)   Distance travelled by line (metres)   Lateral deflection (%)   Comments/Observations   Passed Failed				

Line-throwing appliances	Manufacturer: Model: Lot/Serial Number:			Surve	Time: yor: ization:
7.1.9 Line tensile test	nsile test Regulations:			LSA Cod	de 1.2 & 7.1; MSC.81(70) 1/ 9.3
Test Procedure		Acceptance	Criteria		Significant Test Data
The fired lines from specimen with a knot in the middle of the should be subjected to a tensile	test length	The line should have a brea than 2 kN.		t less	Line manufacturer Diameter of linemm Number of strands Breaking strainkN. Line acceptable (Pass/Fail) Comments/Observations PassedFailed

# MSC.1/Circ.1633 Annex, page 22

Model:		Su		ate: Time: urveyor: rganization:	
7.1.10 Safety inspectio	n	Regulations: LSA Code 1.2 & 7.1; MSC.81(70) 1/ 4.5.1, 4.5.5 & 4.5.6			
Test Procedure		Acceptance Criteria		Significant Test Data	
It should be established by visual inspection that the line-throwing appliance: .1 is indelibly marked with clear and precise instructions on how it should be operated and that the danger end can be identified by day		Clear and precise operating instructions are marked on the line-throwing appliance clearly identifies the danger end.		Markings and identification of ends acceptable. (Pass/Fail)	
.2 does not depend on adhe or plastic envelopes water-resistant properties	sive tapes for its			Water resistant without the use of envelopes or adhesive tape. (Pass/Fail)	
.3 can be indelibly marked with means of determining its age.		Adhesive tapes or plastic envel to maintain water-resistant prop Date of manufacturing and date printed on the outside.	erties.	Line-throwing appliance rocket and striker unit indelible date stamped. (Pass/Fail) Comments/Observation Passed Failed	